

## 1. HYDRAULIC BREAKER

### 1) SELECTING HYDRAULIC BREAKER

- ※ Read safety hints in this manual and breaker & quick coupler manuals in website (Dealer Portal) before using breaker and quick coupler.
- (1) Become familiar with the manual and select breakers suitable to machine specifications.
- (2) Make careful selection in consideration of oil quantity, pressure and striking force, to enable satisfied performance.
- (3) When apply a breaker to the machine, consult your local dealer of HD Hyundai Construction Equipment for further explanation.

## 2) CIRCUIT CONFIGURATION

- (1) As for breaker oil pressure line, use extra spool of main control valve.
- (2) Set proper breaker pressure on load relief valve.  
※ **The initial setting pressure of load relief valve for breaker is 200 bar.**
- (3) The pressure of the HX480A L/HX520A L system is 280 kgf/cm<sup>2</sup> (3985 psi).

### (4) Adjusting oil quantity

- ① Use the breaker mode from work tool of cluster.  
Use select switch to control the oil flow quantity.  
· Setting oil quantity : 320 lpm

#### Flow set

- Max flow : Set the maximum flow for the attachment.

- ② If the quantity of hydraulic oil is not controlled properly, it causes short lifecycle of the breaker and the machine by increased breaking force and count.

- (5) The accumulator should be used to the breaker charging and return line.  
If the accumulator is not used, it can cause damage as the input wave is delivered.  
※ **Keep the pressure pulsation of pump below 60 kgf/cm<sup>2</sup> (853 psi) by installing the accumulator.**
- (6) Do not connect the breaker return line to the main control, but connect to the return line in front of oil cooler.
- (7) Do not connect the breaker return line to drain lines, such as swing motor, travel motor or pump, otherwise they will be damaged.
- (8) One spool of the main control valve should be connected to the tank.
- (9) Select the size of pipe required considering the amount of back pressure.
- (10) Shimless tube should be used for the piping. The hose and seal should be HD Hyundai Construction Equipment genuine parts.
- (11) Weld the bracket for pipe clamp to prevent damage caused by vibration.

Oil quantity setting



### 3) MAINTENANCE

#### (1) MAINTENANCE OF HYDRAULIC OIL AND FILTER

- ① A machine with hydraulic breaker can cause the hydraulic oil to become severely contaminated.
- ② Therefore machine may go down if not maintained properly.
- ③ Inspect and maintain hydraulic oil, hydraulic oil return filter and pilot line filter element.

#### (2) RELEASING THE PRESSURE IN BREAKER CIRCUIT

When breaker operating is finished, stop engine and push pedal or switch for breaker to release pressure in breaker circuit.

If you allow pressure to remain on the system, the lifetime of the diaphragm in the accumulator will be shortened.

- (3) Be careful to prevent contamination by dust, sand etc.  
If such pollution becomes mixed into the oil, the pump's moving parts will wear abnormally, shorten lifetime and become damaged. This could also contaminate the entire hydraulic system.
- (4) When operating breaker, bolts and nuts of main equipment may be loosened by vibration. Therefore, it must be inspected periodically.

Service interval unit : hours

Attachment	Operating rate	Hydraulic oil	Filter element
Breaker	100 %	600* <sup>1</sup>	200
		1000* <sup>2</sup>	

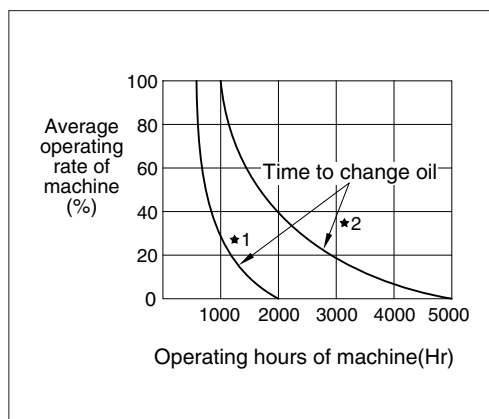
\*<sup>1</sup>: Conventional hydraulic oil

\*<sup>2</sup>: HD Hyundai Construction Equipment genuine long life hydraulic oil

#### ● Replace following filter at same time

- Hydraulic oil return filter : 1 EA
- Pilot line filter element : 1 EA

Hyd oil change guide for hydraulic breaker



\*<sup>1</sup>: Conventional hydraulic oil

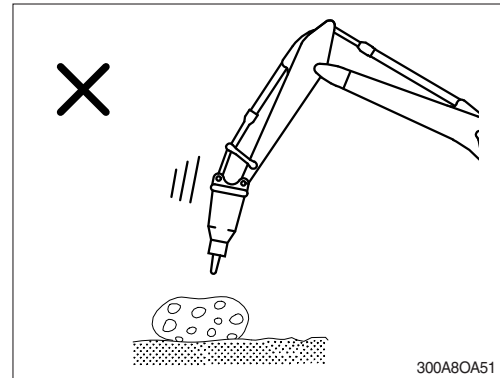
\*<sup>2</sup>: HD Hyundai Construction Equipment genuine long life hydraulic oil

#### 4) PRECAUTIONS WHILE OPERATING THE BREAKER

##### DO NOT BREAK ROCK WHILE LOWERING

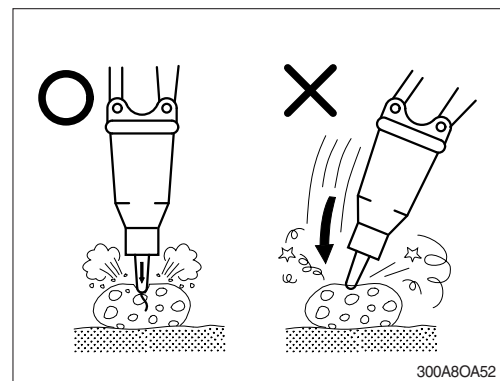
As the breaker is heavy in comparison with bucket, it must be operated slowly.

If breaker is rapidly pushed down, working device may be damaged.



##### DIRECTION OF THRUST

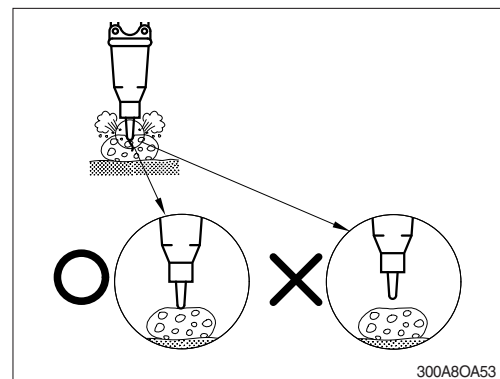
Apply a thrust in a straight line with the tool. Place the tool on a rock with the hammering side as vertically as possible. If the hammering side is oblique, the tool may slip during hammering, causing the chisel and piston to break, or seized. When breaking, select the point of a rock on which hammering can perform stably and fully stabilize the chisel to the hammer.



##### PROPER THRUST

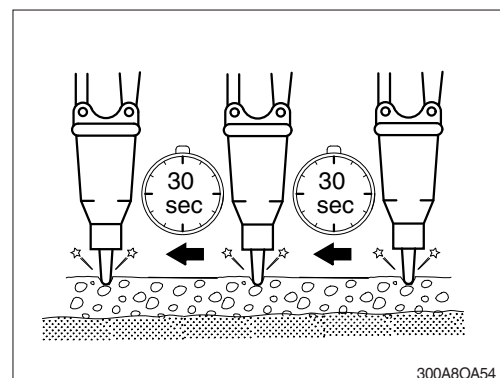
To break effectively, a proper thrust force must be applied to the breaker. If thrust is too low, impact energy of the piston may not be sufficient to break rocks.

Breaking force is transferred to the breaker body, arm and boom resulting in damage of those parts.



Move the impact point from the edge to the interior. Never try to break off a too large block, if the object has not broken within 30 seconds. The object should be broken up piece by piece in small blocks. Large distance steps will not improve working results.

Operating the breaker longer than 30 seconds may cause damage to the breaker.



### BLANKS THRUST

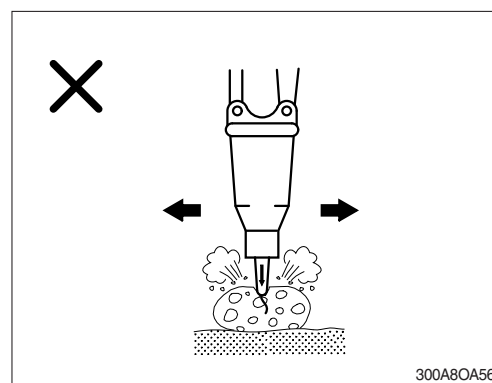
Blank blows, which are impact on the chisel without contact with the object, are very harmful for the breaker. Always press the chisel down onto the material before starting the breaker. And stop operation immediately as soon as the object has been broken. If operation is continued, blank blows could result in excessive wear to major components.



### DO NOT MOVE MACHINE OR BREAKER WHILE STRIKING

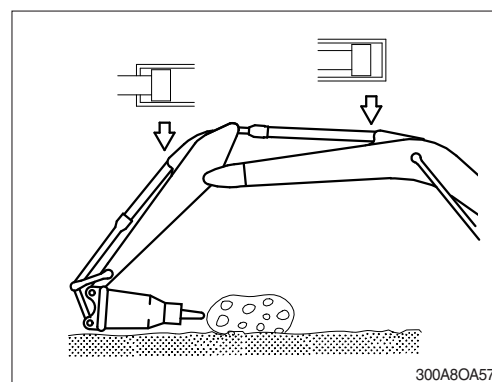
Do not move hammer while striking.

This will cause damage to the working device and the swing system.



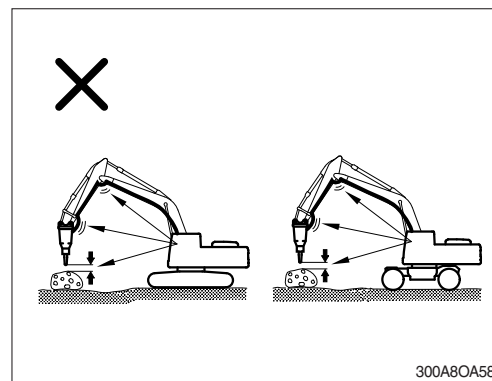
### OPERATE BREAKER WITH A GAP IN EXCESS OF 100 mm (4 inches) FROM THE END OF THE STROKE TIP

If breaker is operated with the end tip, the cylinder may be damaged.



### STOP THE OPERATION IMMEDIATELY IF HOSES VIBRATE EXCESSIVELY

Violent pulsations of the high / low pressure breaker hoses could indicate an accumulator fault. Check for oil leaks at the hose fitting points retightening as necessary. Should symptoms persist, contact the service shop appointed by the Hyundai dealer in your territory for repair. An excessive gap between tool and workpiece between strikes may indicate seizure of the tool in the front head. Disassemble the front head, inspect the components and repair or replace defective parts.

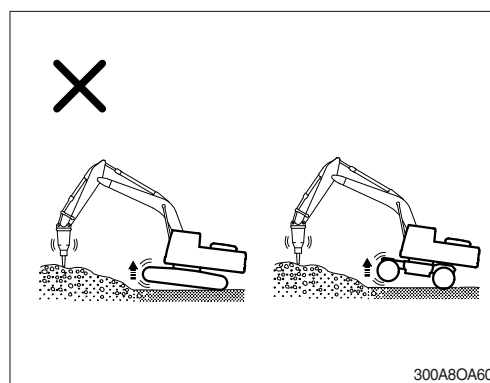


### DO NOT WORK WHILE IN A SWING STATE

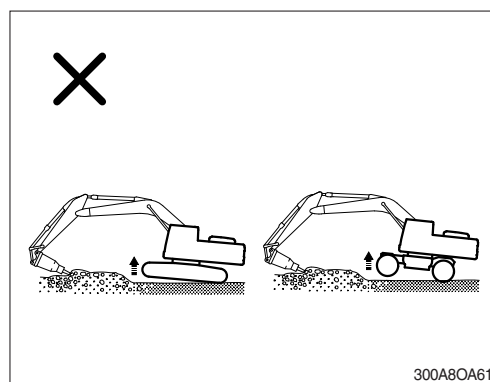
Do not work while swinging the upper structure. It cause oil leakage of the bend in the track shoe and rollers.



Conversely, if thrust is excessive or breaking is performed with boom of the lower chassis raised as shown, the machine may suddenly tip toward the movement. The breaker body may strike the broken rocks violently resulting in damage.



Do not extend the bucket cylinder fully and thrusting to raise the machine off the ground.



Excessive force as above may also result in vibrations being transmitted to the tracks causing damage.

Care is required to ensure adequate but not excessive force is applied to the breaker in operation.



## NEVER DRIVE THE CHISEL INTO THE GROUND

If the advance is too large and the chisel is not rocked to release the dust, the chisel will be driven into the material without breaking the material. This causes the chisel tip to glow red-hot and lose its hardness.

As a result, the chisel wears out more quickly. Operating in this way is not permitted.

Dust dampens impact power, when the chisel is inserted into the ground, and reduces the efficiency of the breaker. Tilt the breaker slightly backward and forward, not more than  $5^{\circ}$ , while operating so that the dust can escape.

Do not rock the breaker at angles greater than  $5^{\circ}$  or the chisel will be broken.

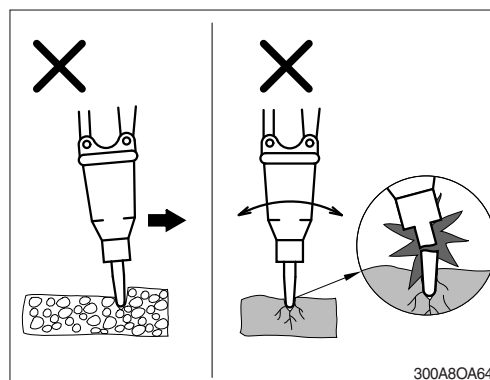


## NEVER USE AS A LEVER

Do not use the chisel as a lever; e.g. crowbar, as this will cause the chisel to break.

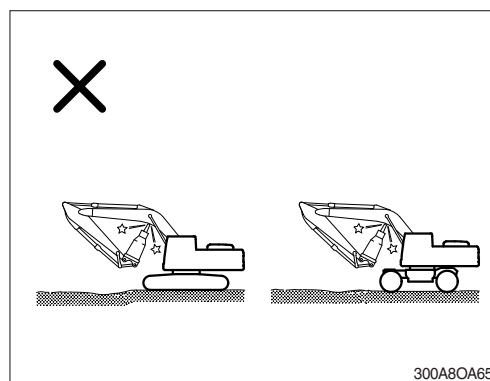
Under any circumstances, operating in this way is not permitted.

Most of bending failure of the chisel may be caused by lever action in stone that is inside hard or frozen ground. Be careful and stop operating if you feel sudden resistance under the chisel.



## TAKE CARE OF CHISEL AND BOOM INTERFACE

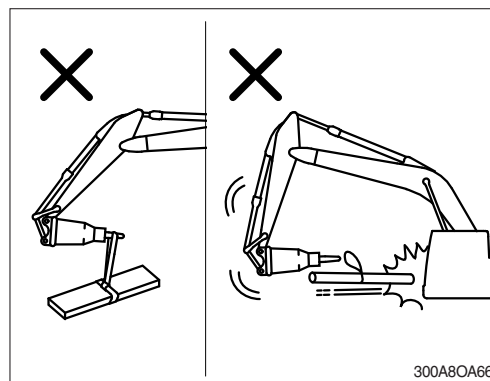
Be aware of clearance between breaker tip and the underside of boom as shown.



### **NEVER USE FOR LIFT OR TRANSPORT PURPOSES**

The hydraulic breaker is not designed to lift or transport loads. Never use the chisel as a lifting point.

This is dangerous and could damage the breaker or the chisel.



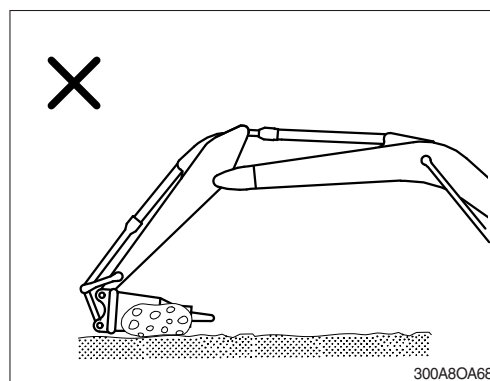
### **NEVER USE THE HYDRAULIC BREAKER UNDER WATER**

The hydraulic breaker, as a standard assembly, never be used in or under water without prior conversion. If you use under water, water fills the impact chamber between the piston and the chisel, a strong hydraulic pressure wave is generated and will damage the seals in the breaker. And, in addition, corrosion, lack of lubrication or penetration of water could result in further damage to components of the breaker and the lower chassis. To operate the breaker under water, compressed air must be supplied into the breaker, into the impact chamber of the front-head, prior to use. Consult your HD Hyundai Construction Equipment dealer for the underwater kit.



### **DO NOT USE BREAKER TO CARRY BROKEN STONE OR ROCK BY SWING OPERATING**

This may damage the operation device and swing system.



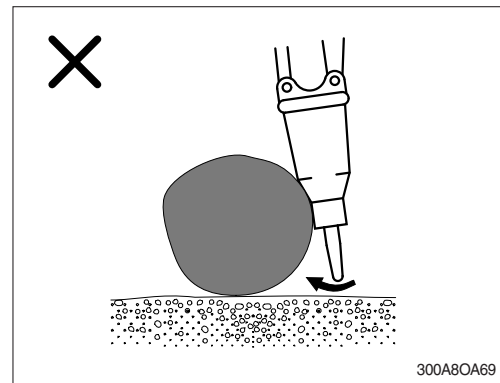


**NEVER USE THE CHISEL OR HYDRAULIC BREAKER TO MOVE ROCKS OR OTHER OBJECTS**

The hydraulic breaker is not designed for this usage.

Do not use the breaker or chisel to roll, push the object or reposition the lower chassis.

This may cause damage to the breaker and the lower chassis.



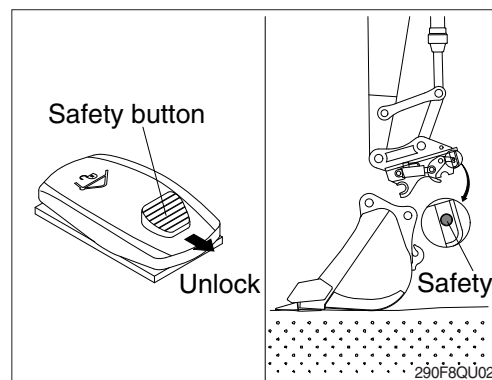
## 2. QUICK COUPLER

### ■ MACHINE SERIAL NO.

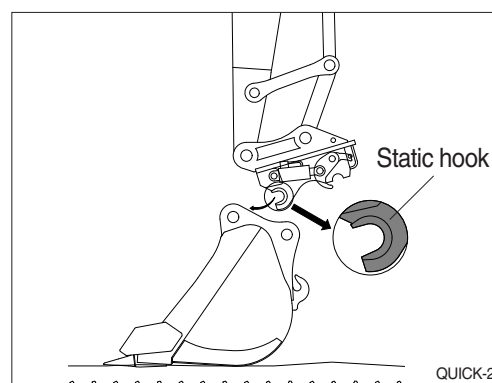
- HX480A L : -#0044
- HX520A L : -#0074, #0076, #0077

### 1) FIXING BUCKET WITH QUICK COUPLER

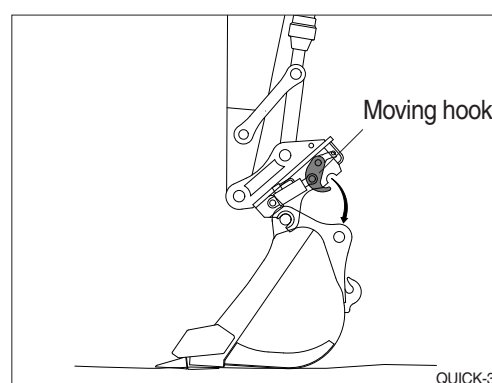
- (1) Before fixing bucket, remove safety pin of the moving hook.
- (2) Pulling safety button, press the quick coupler switch to unlock position. Then, the moving hook is placed in the release position.



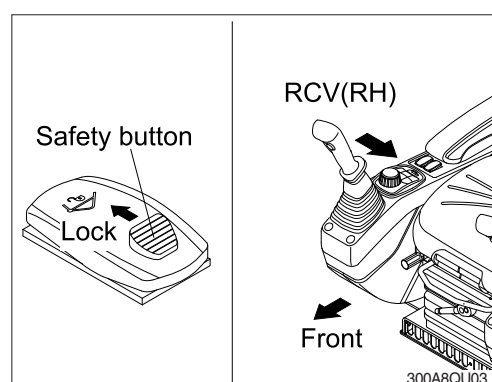
- (3) Aligning the arm and bucket, insert static hook of quick coupler to the bucket pin while pressing the quick coupler switch.



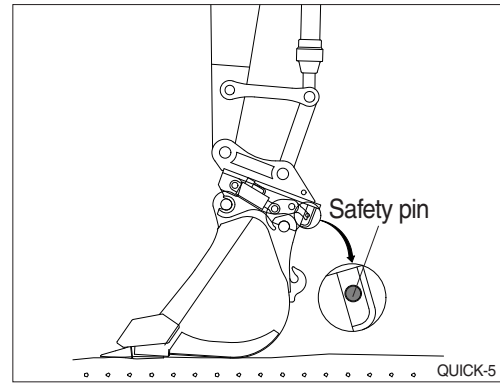
- (4) Operate RCV lever to bucket-in position. Then, the moving hook is coupled with the bucket link pin while pressing the quick coupler switch. Make sure that the moving hook is completely contacted with bucket link pin.



- (5) Push safety button to lock position.  
Operate RCV lever to bucket-in position.
- ※ **Be sure to check connection status between bucket pins and hooks of quick coupler.**



- (6) After checking the connection status between bucket pins and hooks of quick coupler, **insert safety pin of moving hook to lock position.**



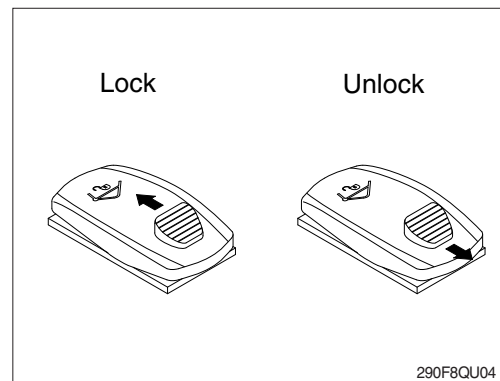
## 2) REMOVE BUCKET FROM QUICK COUPLER

Removing procedure is reverse of fixing.

## 3) PRECAUTION OF USING QUICK COUPLER

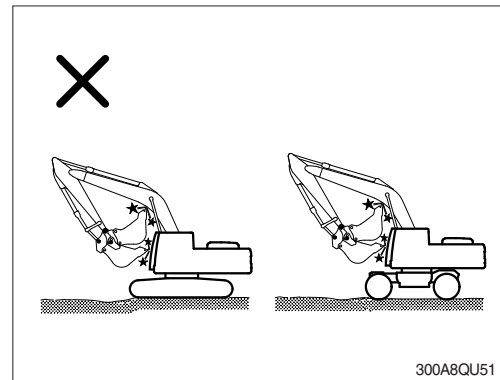
- ⚠ When operating the machine with quick coupler, confirm that the quick coupler switch is in the **LOCK** position and safety pin of moving hook is inserted.

Operating the machine with quick coupler switch unlocked and without safety pin of moving hook can cause the bucket to drop off and could result in personal injury, death, machine damage or property damage.



- ⚠ Be careful of the operating the machine which is equipped with quick coupler. The bucket may hit cab, boom and boom cylinders when it reaches the vicinity of them as shown in the illustration.

HD Hyundai Construction Equipment will not be responsible for any injury, death or damage in the event that the coupler, attachment and safety pin are not installed correctly.

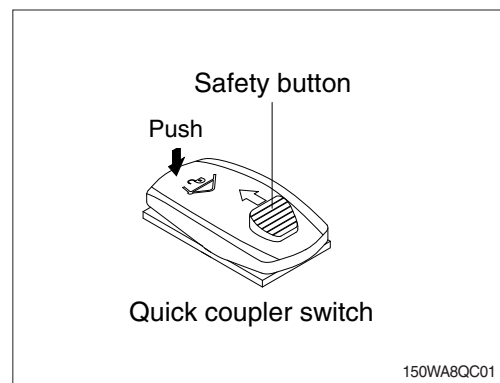


## ■ MACHINE SERIAL NO.

- HX480A L : #0045-
- HX520A L : #0075, #0078-

### 1) FIXING BUCKET WITH QUICK COUPLER

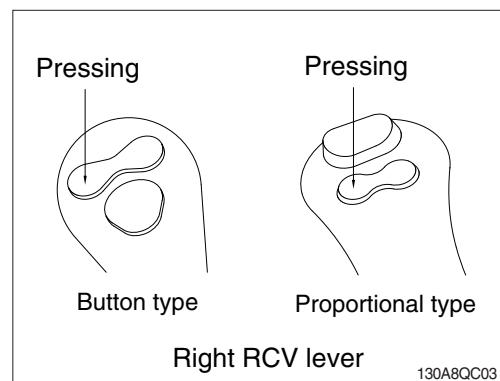
- (1) Park the excavator and attachment on firm and level ground.
- (2) After checking the safe environment conditions for installing/removing the quick coupler, perform the disengagement process.
- (3) To unlock the quick coupler switch, press the safety button forward and press the switch.



- (4) Quick coupler symbols and warning messages appear on the cluster screen, and warning buzzers sound.
- ※ The warning buzzer continues to operate up to step (12).



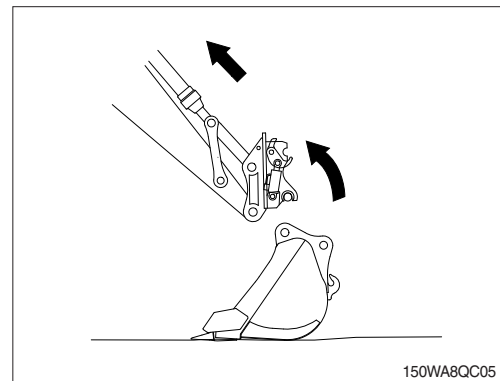
- (5) To unlock the quick coupler, press the quick coupler button on the right RCV lever. To maintain the unlock status of the quick coupler the operator must maintain pressing the coupler button.



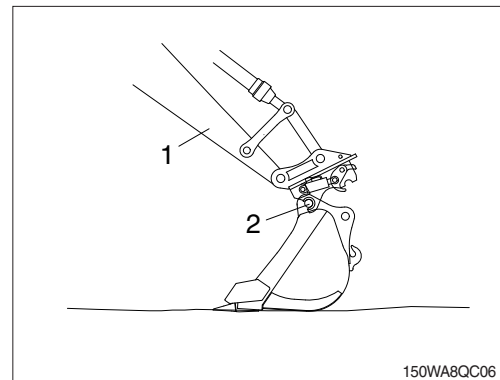
- (6) The warning message in the cluster screen is changed, and the quick coupler lock is released.



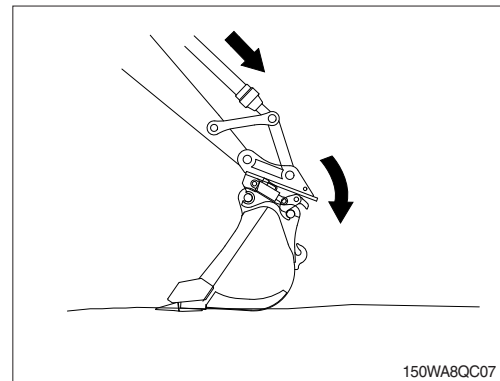
- (7) Retract the bucket cylinder. Align the quick coupler with attachment mounting pins or interface.



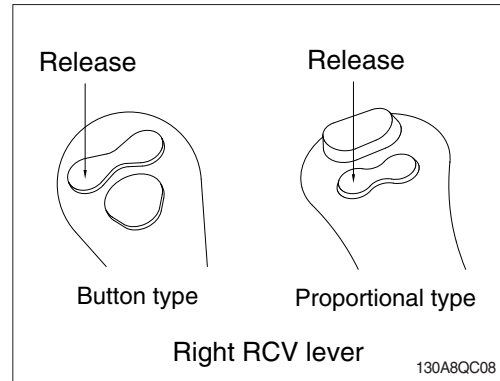
- (8) Move the arm (1) and raise it until hook engages the upper (2) pin or interface of attachment.



- (9) With the bucket crowded, engage the quick coupler to the lower attachment pin or interface.



- (10) To engage the quick coupler, release the quick coupler button on the right RCV lever.



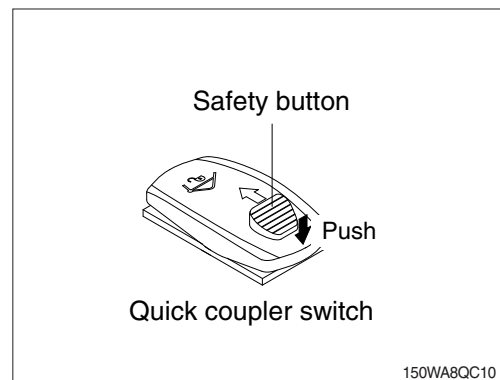
- (11) The warning message in the cluster screen is changed, and the quick coupler lock is engaged.

※ After changing warning message, the quick coupler will be locked even if the operator presses the quick coupler button of the right RCV lever again. To unlock the quick coupler again the operator must repeat from the process (3).

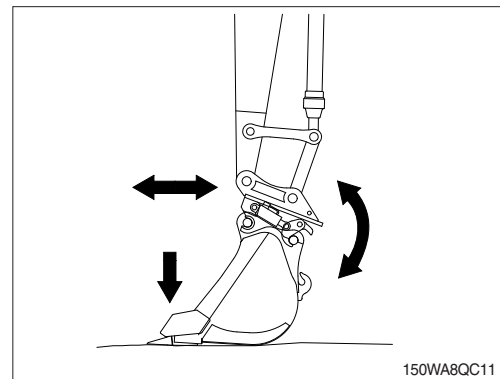


- (12) To confirm the engagement of the quick coupler, release the safety button to its original position.

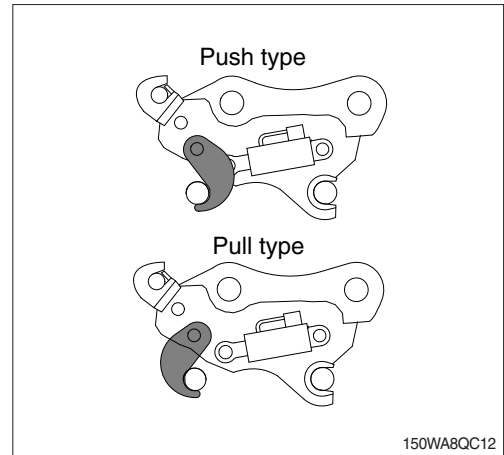
- The buzzer will stop activating.
- The warning message will disappear.



- (13) Shake the attachment vigorously and lower the boom to the ground and apply down pressure to the quick coupler and attachment to check that attachment is fully engaged and locked to the quick coupler.

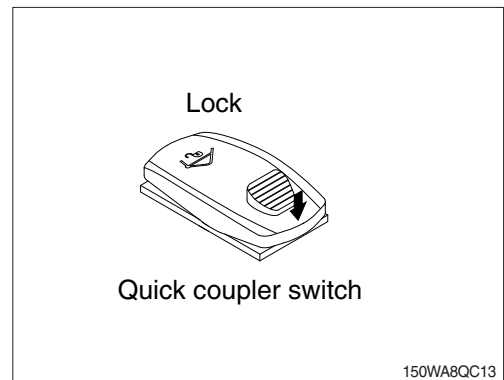


- (14) Visually check that quick coupler is fully engaged and locked before operating the machine and attachment.

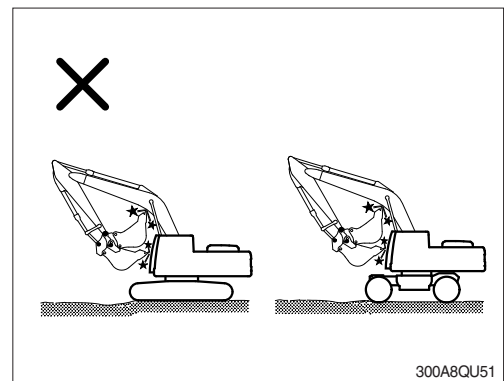


## 2) PRECAUTION OF USING QUICK COUPLER

- ⚠ When operating the machine with quick coupler, confirm that the quick coupler switch is in the LOCK position. Operating the machine with quick coupler switch unlocked can cause the bucket to drop off and could result in personal injury, death, machine damage or property damage.



- ⚠ Be careful of the operating the machine which is equipped with quick coupler. The bucket may hit cab, boom and boom cylinders when it reaches the vicinity of them as shown in the illustration. HD Hyundai Construction Equipment will not be responsible for any injury, death or damage in the event that the quick coupler and attachment are not install-ed correctly.



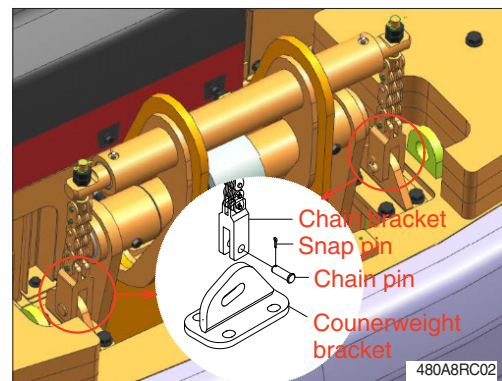
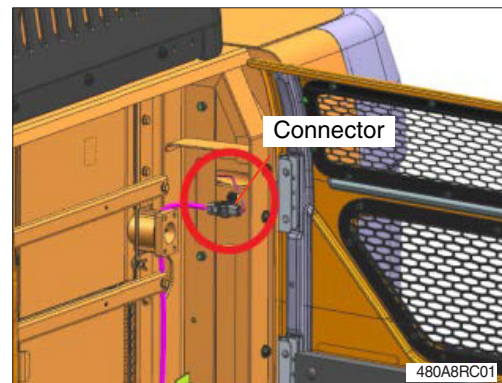
### 3. REMOVABLE COUNTERWEIGHT

#### 1) SAFETY INSTRUCTIONS

- ⚠ Personal injury or death can occur from a counterweight falling during installation and removal.
- ⚠ Do not allow personnel under or around the counterweight during installation and removal.
- ⚠ Use certified cables and shackles of adequate load rating.

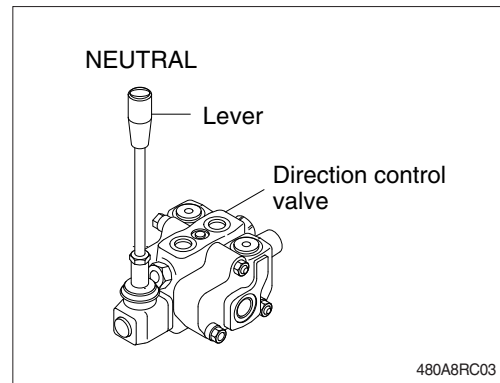
#### 2) REMOVAL PROCEDURE OF COUNTERWEIGHT

- (1) Stop the machine on the flat and firm ground.
- (2) Lower the bucket on the ground gently.
- (3) Stop the engine and remove the start switch.
- (4) Disconnect the connectors for the rear view camera and lamp on the counterweight in the engine cooling room.
- (5) Check that the counterweight removal device is free of defect, crack and any other damage.
- (6) Check the conditions of the components and hoses of the operation system.
- (7) Check that the chain bracket is connected to the counterweight bracket with chain pin and snap pin correctly.





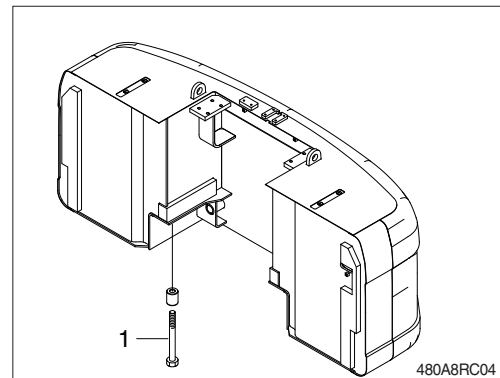
- (8) Confirm that the direction control lever is in the NEUTRAL position.



- (9) Remove the mounting bolts to fix the counterweight.

1 Lower side (6EA)

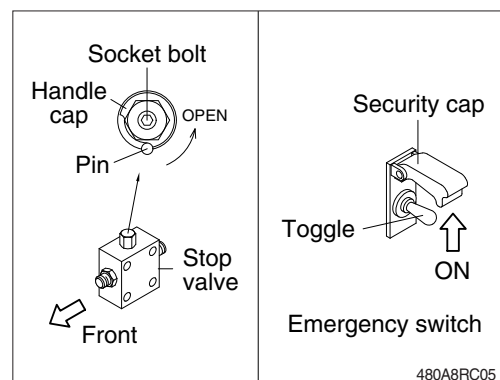
- (10) Start the engine and run the engine at low idle speed.



- (11) Turn the handle cap of the stop valve to OPEN position using a socket wrench.

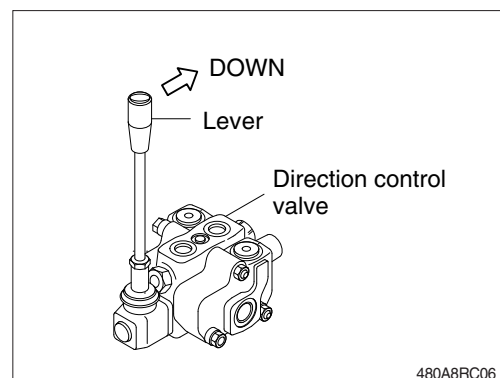
· Torque : 1~1.5 kgf·m (7.2~10.8 lbf·ft)

- (12) Turn ON the toggle of the emergency switch to energize the solenoid valve.



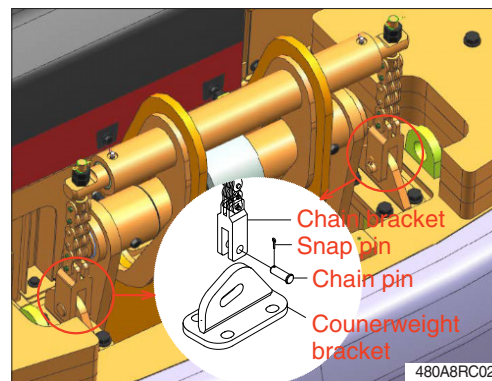
- (13) Lower the counterweight on the ground gently by operating the direction control lever slowly.

※ The counterweight can be placed on the ground directly.

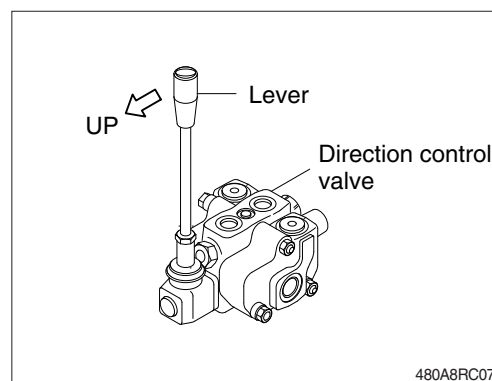


(14) Remove chain pin and snap pin from the chain bracket and counterweight bracket.

※ Lubricate to the pin and link of the counterweight removal device if necessary.



(15) Raise the counterweight removal device by operating the direction control lever slowly.

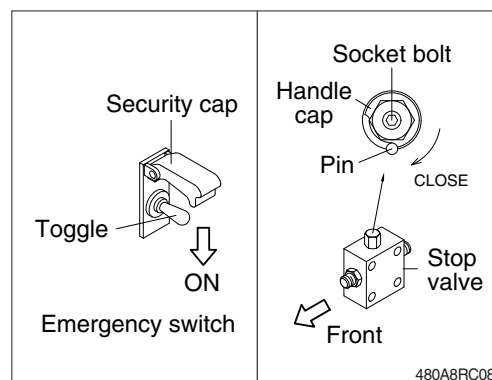


(16) Turn OFF the toggle of the emergency switch to de-energize the solenoid valve.

(17) Turn the handle cap of the stop valve to CLOSE position using a socket wrench.

· Torque : 1~1.5 kgf·m (7.2~10.8 lbf·ft)

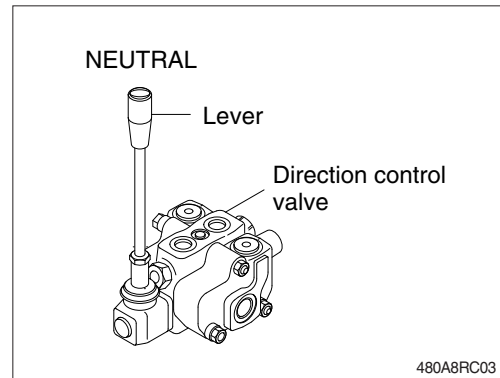
△ If the stop valve is not closed when the removable counterweight is not operated, it may cause functional problems in the machine.



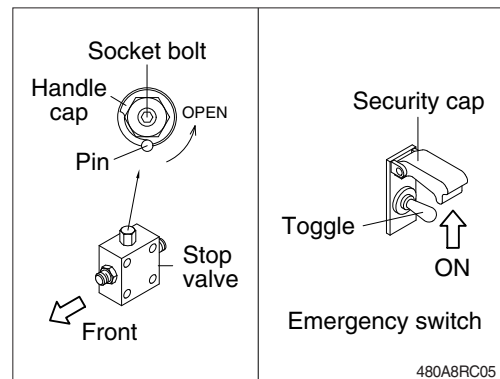
### 3) INSTALLATION PRECEDURES OF COUNTERWEIGHT

- (1) Stop the machine on the flat and firm ground.
- (2) Lower the bucket on the ground gently.
- (3) Stop the engine and remove the start switch.
- (4) Check that the counterweight removal device is free of defect, crack and any other damage.
- (5) Check the conditions of the components and hoses of the operation system.

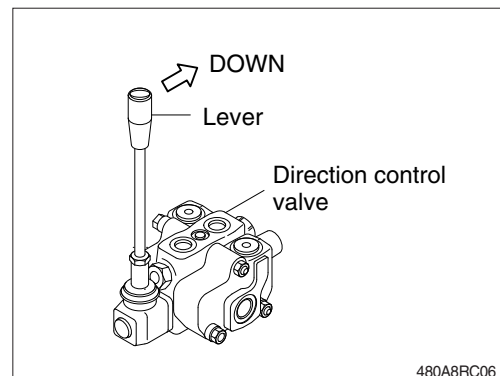
- (6) Confirm that the direction control lever is in the NEUTRAL position.
- (7) Start the engine and run the engine low idle speed.



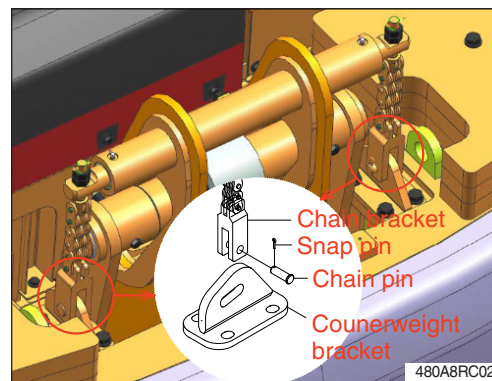
- (8) Turn ON the toggle of the emergency switch to energize the solenoid valve.
- (9) Turn the handle cap of the stop valve to OPEN direction using a socket wrench.
  - Torque : 1~1.5 kgf·m (7.2~10.8 lbf·ft)



- (10) Lower the counterweight removal device gently by operating the direction control lever slowly.

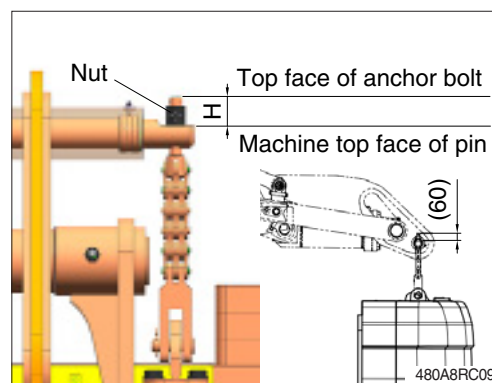


- (11) Connect the chain bracket to the counterweight bracket with chain pin and snap pin.

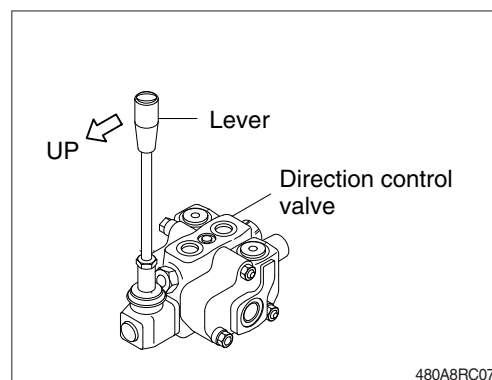


- (12) Adjust the height of the removal device to the correct install position to fit the mounting bolt with the nut if necessary.

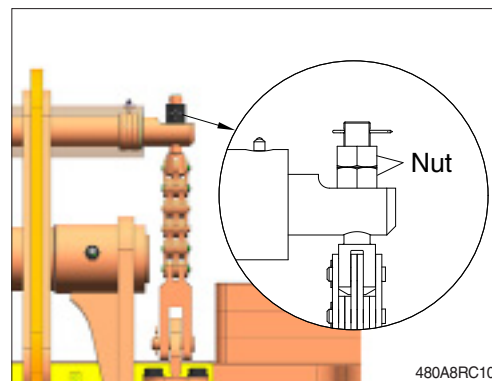
※ The height (H) is adjusted to 60 mm on the factory.



- (13) Raise the counterweight by moving the direction control lever slowly.

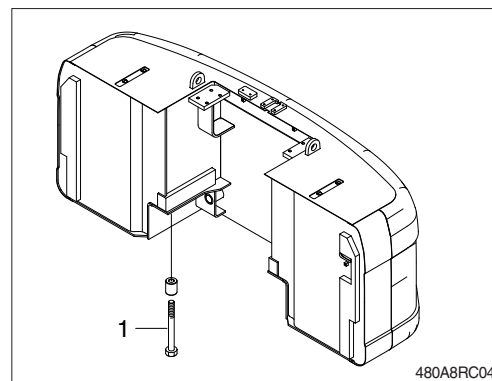


- (14) If the counterweight is not reached correct install position, adjust mounting height by turning the nut.



(15) Tighten the lower mounting bolts (1, 6EA)

- Tightening torque :  $390 \pm 40 \text{ kgf} \cdot \text{m}$   
( $2820 \pm 289 \text{ lbf} \cdot \text{ft}$ )



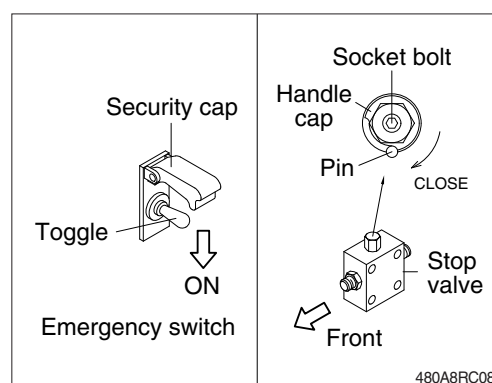
(16) Turn OFF the toggle of the emergency switch to de-energize the solenoid valve.

(17) Turn the handle cap of the stop valve to CLOSE position using a socket wrench.

- Torque :  $1 \sim 1.5 \text{ kgf} \cdot \text{m}$  ( $7.2 \sim 10.8 \text{ lbf} \cdot \text{ft}$ )

△ If the stop valve is not closed when the removable counterweight is not operated, it may cause functional problems in the machine.

(18) Stop the engine.



(19) Connect the connectors of the rear view camera and lamp in the engine cooling room.

