

7. WORKING WITH THE MACHINE

1) USING THE ATTACHMENTS AND SITE SAFETY

This section explains some techniques for efficient and safe use of the machine and its attachments. Attention is also drawn to the various safety aspects of operating on site. Read and understand this section before you start working with the machine. Practice using the attachments until you are completely familiar with the controls and what they do.

Before you start using the machine, tell your work mates what you will be doing and where you will be working. On a busy site, use a signalman.

Remember that your machine is mobile. Whenever possible, manoeuvre your machine into a position which combines safety with efficiency.

SAFETY MUST COME FIRST.

Choose the correct attachment for the job. Do not use an oversize bucket for rocky material. It could overload the system and shorten service life.

▲ General site safety

Before you start using the machine, inspect the job site. You could be killed or injured if the ground gives way under your machine or if piled material collapses onto it. Check for potholes and hidden debris, logs, ironwork etc. Any of these could cause you to lose control of your machine.

▲ Communications

Bad communications can cause accidents. If two or more people are working on the machine, make sure each is aware of what the others are doing. Before starting the engine make sure the others are clear of the danger areas ; examples of danger areas are : the rotating blades and belt on the engine, the attachments and linkages, and anywhere beneath or behind the machine. People can be killed or injured if these precautions are not taken.

▲ Safety Barriers

Unguarded machines in public places can be dangerous. In public places, or where your visibility is reduced, place barriers around the work area to keep people away.

▲ Work Sites

Work sites can be hazardous. Inspect the site before working in it. Look for potholes, weak ground, hidden rocks etc. Check for utilities such as electric cables (overhead and underground), gas and water pipes etc. Mark the positions of the underground cables and pipes. Make sure that you have enough clearance beneath overhead cables and structures.

▲ Hillside

Operating the machine on hillsides can be dangerous if proper precautions are not taken. Ground conditions can be changed by rain, snow, ice etc. Check the site carefully. Operate in first gear on hillsides, when applicable, keep all attachments low to the ground. Never coast down a hill with the engine off or the transmission in neutral.

▲ Banks and Trenches

Banked material and trenches can collapse. Do not work or drive too close to banks and trenched where there is danger of collapse.

2) LOADER OPERATION

(1) General

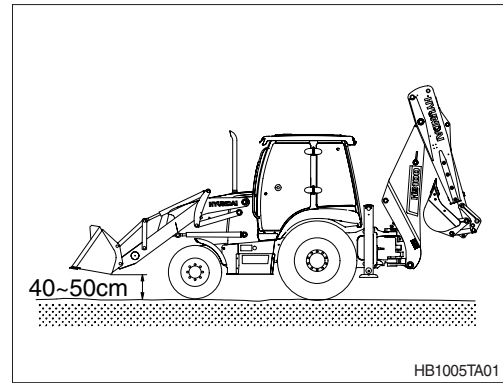
Remember that you will be driving the machine while you are using the loader. Keep alert for bystanders and possible hazards. Stay in the correct driving position. Keep your seat belt fastened.

When working with the loader, set the backhoe straight behind the machine.

Keep the loader shovel low to the ground when travelling. This increases your visibility and makes the machine more stable.

Whenever possible, travel in reverse when you are carrying a loaded shovel downhill. Travel forward when you are going uphill. With heavily loader shovels, do not travel faster than 8 km/h (5 mph).

If the ride control system is fitted and selected ON the loader can not power down. For duties other than light handling the system should be selected OFF.



(2) Shovel work

- ▲ When loading with material from a high bank or pile, remove any overhang first. Watch out for sliding material. If overhanging material falls, you and your machine could be buried.

On hard surfaces, select **Float**. As the shovel enters the pile, start rolling the shovel back while raising it at the same time. This will sweep the shovel up the pile, gathering material as it goes.

When entering a stockpile, pressing the low speed control switch will give more tractive force to the loader.

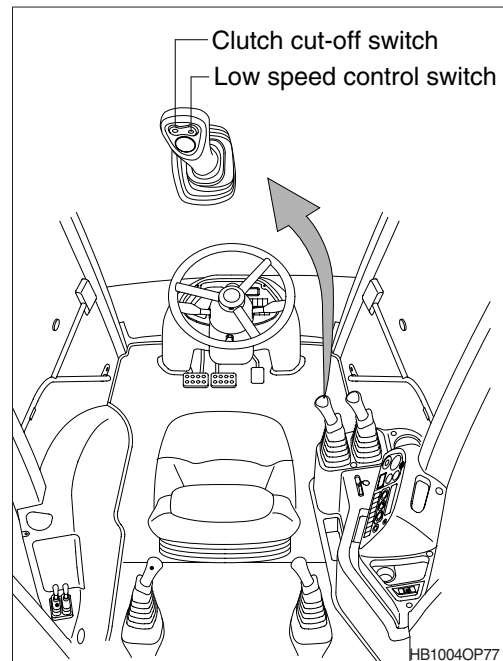
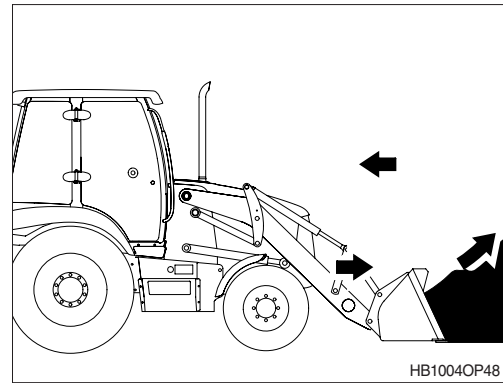
Pressing the clutch cut off switch will give more power to the loader and speed the operation. Try to fill the shovel in one pass. Half full shovels are less productive.

When moving the load, roll the shovel right back to prevent spillage.

When you are loading from a pile of loose material, start at the bottom and follow up the face as shown. Approach the pile with the shovel level and skimming the ground.

In tightly packed material, start at the top and work down.

When removing material from a stockpile, start at a shovel's height from the base. Once the height of the stockpile has been reduced, begin loading from the base.



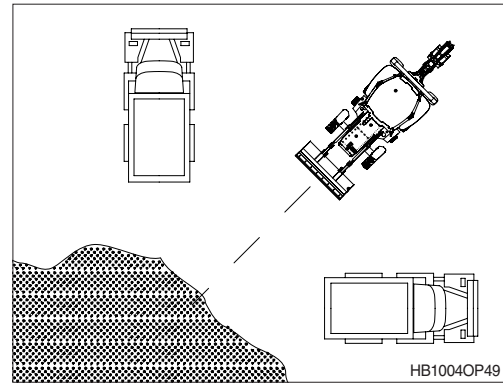
(3) Job layout

Set up the work cycle as short as possible. Truck positioning is very important for fast cycles.

Spend a few minutes leveling off the work area, if necessary. Smooth runways for the machine and a level parking area for trucks will speed up the job.

- ▲ **Operating a loader with a full bucket on a hill-side can cause the machine to roll over. If possible, avoid turning the machine and always move forward up the hill and back down. Always keep the load low. If you do not follow these instructions, you can be injured or killed.**

- ▲ **When you operate the machine, keep the loader bucket as low as possible. This low position gives better balance and permits you to see more clearly. If the bucket is full and you move the machine over ground that is rough or surfaces that can cause the machine to slide, always operate at slow speed. If you do not use this procedure, the machine can go out of control and roll-over.**



3) BACKHOE WORK

(1) General

▲ Before you start using the backhoe, you must convert the machine into a safe and stable working platform.

To use the Hyundai Backhoe Loader efficiently and safely you must know the machine and have the skill to use it.

If you be working with a labourer, make sure you both understand what each other will be doing. Learn and use the recognized signalling procedures. Do not rely on shouting - he will not hear you.

Make sure the correct bucket for the job is fitted.

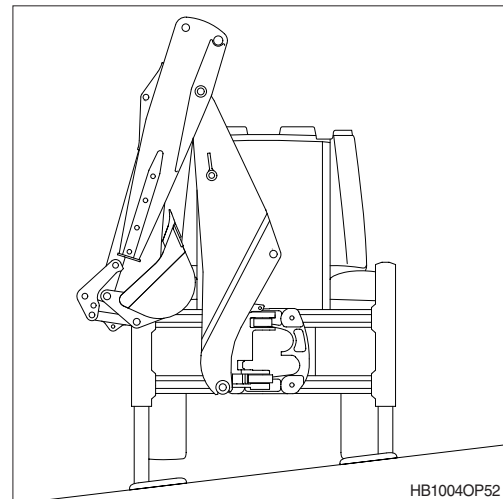
Repositioning the adjustable tipping lever. Refer to page 4-16.

For the best fuel economy when using the backhoe, keep the RPM gauge in 1500~1800 rpm.

(2) Preparing to use the backhoe

When choosing a digging position, avoid digging downhill if possible. Whenever possible, dump the load on the uphill side of the excavation. Both these precautions will help to keep the machine stable.

- ① When the machine is in the desired position on the site, roll the shovel forward, then lower it to take the weight off the front tires.
If the ride control system is fitted, switch OFF the system then lower the shovel in order to take the weight off the front tires.



▲ The machine will drop suddenly if the ride control system is selected ON when the machine is supported on the loader shovel.

- ※ On tarmac surfaces, do not roll the shovel fully forward. Keep the bottom of the shovel flat on the ground. This will minimise damage to the surface. When a clamshovel is fitted, do not put weight on the fork carriers.
- ② Set the FNR lever to neutral. Make sure the lever is in its detent position.
 - ③ Engage the park brake.
 - ④ Turn the seat to face the backhoe. Then lower the stabilizers to raise the rear tires just clear of the ground. Adjust stabilizer positions until the machine is level. In soft ground, put heavy duty planks beneath the stabilizers. This will spread the weight and prevent sinking.

(3) Repositioning the adjustable tipping lever

The bucket tipping lever can be set to give either maximum force or maximum rotation of the bucket.

The two possible positions of the lever.

A : Maximum tearout force

B : Maximum rotation

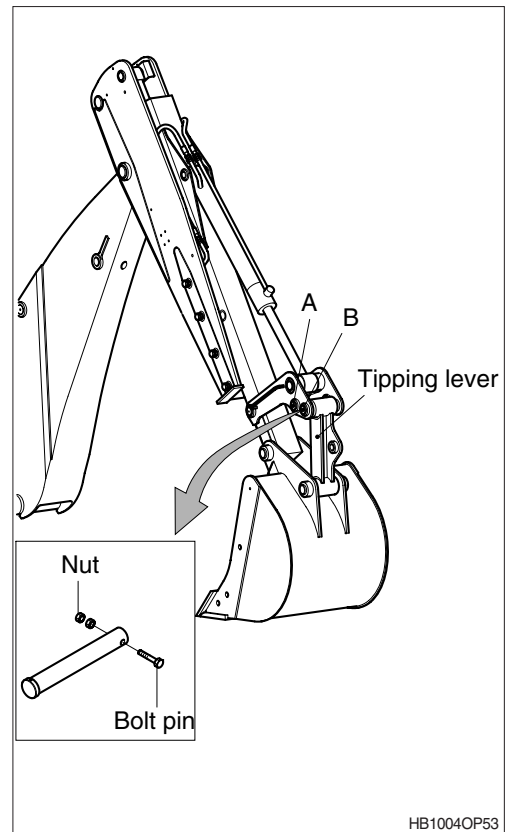
① Position the backhoe, set the backhoe straight behind the machine. Rest the bucket on the ground with the dipper positioned.

② Remove the nut and bolt which secure the tipping lever to pivot **B**. Remove the pivot pin.

▲ If two people are doing this job make sure that the person working the controls is a competent operator. If the wrong control lever is moved, or if the controls are moved violently, the other person could be killed or injured.

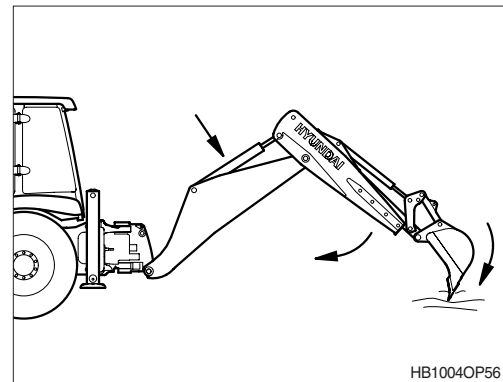
③ Reposition the tipping lever, operate the bucket ram to line the link up exactly with the other pair of holes in the tipping lever.

④ Refit the pivot pin, once the lever and link are lined up, carefully insert the pivot pin, making sure it is the right way round. Secure the pin with the nut and bolt.

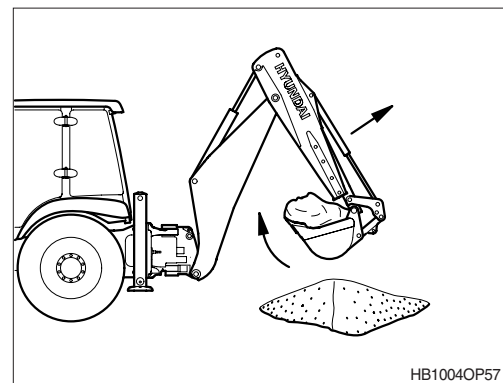


(4) Digging

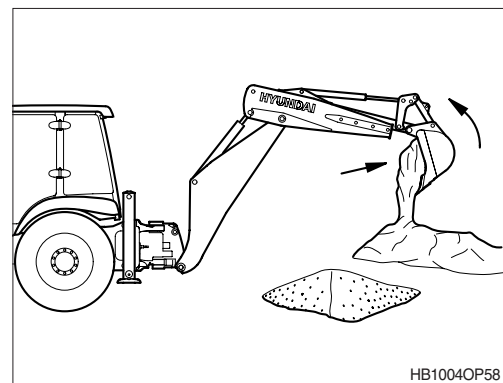
To start the dig, reach out with the boom and dipper and position the bucket.



Slow close the bucket and at the same time bring the dipper in. Make sure the bucket stays at the same angle to the ground while it travels. If necessary, at the same time apply a downward pressure on the boom, to increase the digging force on the bucket.



When the bucket is full, close it fully and at the same time move the dipper out a little way. This will keep soil from building up under the machine.



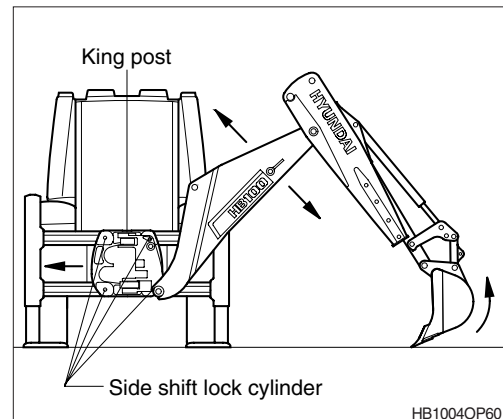
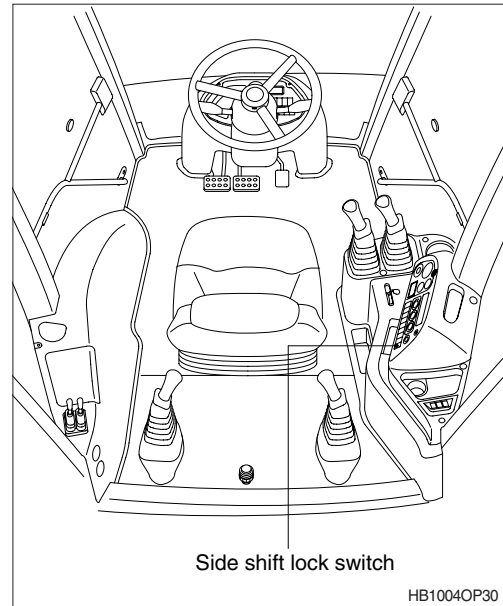
Swing the bucket toward the dump area. Start dumping as the bucket approaches the pile. Do not waste time by dumping too far from the excavation. Dump close to the start dig position. Swing the bucket back to the excavation and start the next dig.

(5) Side shifting the backhoe

※ Before side shifting the backhoe, make sure that the king post rails are clear of debris.

- ① Use the stabilizers to set the machine level and stable, with the king post vertical.
- ② Rest the bucket on the ground, straight behind the machine.
- ③ To release 4 side shift lock cylinders, press the side shift lock switch to the 'ON' position.
- ④ To loosen the king post on its rails, operate the boom up and down a few times.
- ⑤ Raise and slew the backhoe directly to one side of the machine. Slew to the left if you want to side shift to the right. Slew to the right if you want to side shift to the left. Set the bucket on the ground, with the dipper at 90° to the boom as shown.
- ⑥ Open the bucket. As the bucket opens, the king post will be pushed across the back of the machine. If the king post stick in mid-travel, raise or lower the boom slightly to keep the king post vertical to the rails.
- ⑦ Once the king post is in the required position, engage the 4 side shift lock cylinders by pressing side shift lock switch to the 'OFF' position.

※ Pressure generated in the backhoe service will ensure the side shift lock cylinder fully engage. Before operating the backhoe, move the bucket control lever to fully crowd the bucket, hold the lever in this position for a minimum of five seconds (engine at 1500 rpm).



(6) Using the extending dipper

The extending dipper gives you greater reach for digging and dumping. Before it can be used, the extending dipper must be unlocked.

- ① Rest the bucket on the ground and reposition the dipper securing pins as follow :
 - a. Pull out the self locking pin.
 - b. Lift the pin up as far as the second locking hole.
 - c. Insert the self locking pin into holes as shown figure B.
- ② Raise the bucket clear of the ground before operating the extending dipper.
- ③ Use the dipper control lever, extent (C) or retract (D) the dipper to the required reach or depth.
- ④ When using the dipper fully extended, take the following precautions. Otherwise the machine could become unstable or be damaged.
 - a. Make sure that you do not exceed the working capacity of the backhoe at maximum reach.
 - b. When the backhoe is shifted to one side take care when slewing to that side. Slew the backhoe slowly, to prevent any change of the machine becoming unstable. For the same reason, avoid dumping downhill if possible.
 - c. Do not extend or retract the dipper while you are tearing out material.

▲ Fully retract and lock the extending dipper when extradig is not required or if an attachment other than a bucket is fitted.

- ⑤ When not required, the dipper must be retracted and locked as follows.
 - a. Fully retract the extending dipper.
 - b. Pull out self locking pin.
 - c. Push the securing pin down as far as it will go.
 - d. Insert the self locking pin into the hole as shown figure A.

