

SKID STEER LOADER

**OPERATOR'S
MANUAL**

SERIES

V57/VJ57/V67/VJ67/V87/VJ87

BAWMOO COMPANY CORP





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FOREWORD

Congratulations, on being an owner of a versatile skid steer loader.

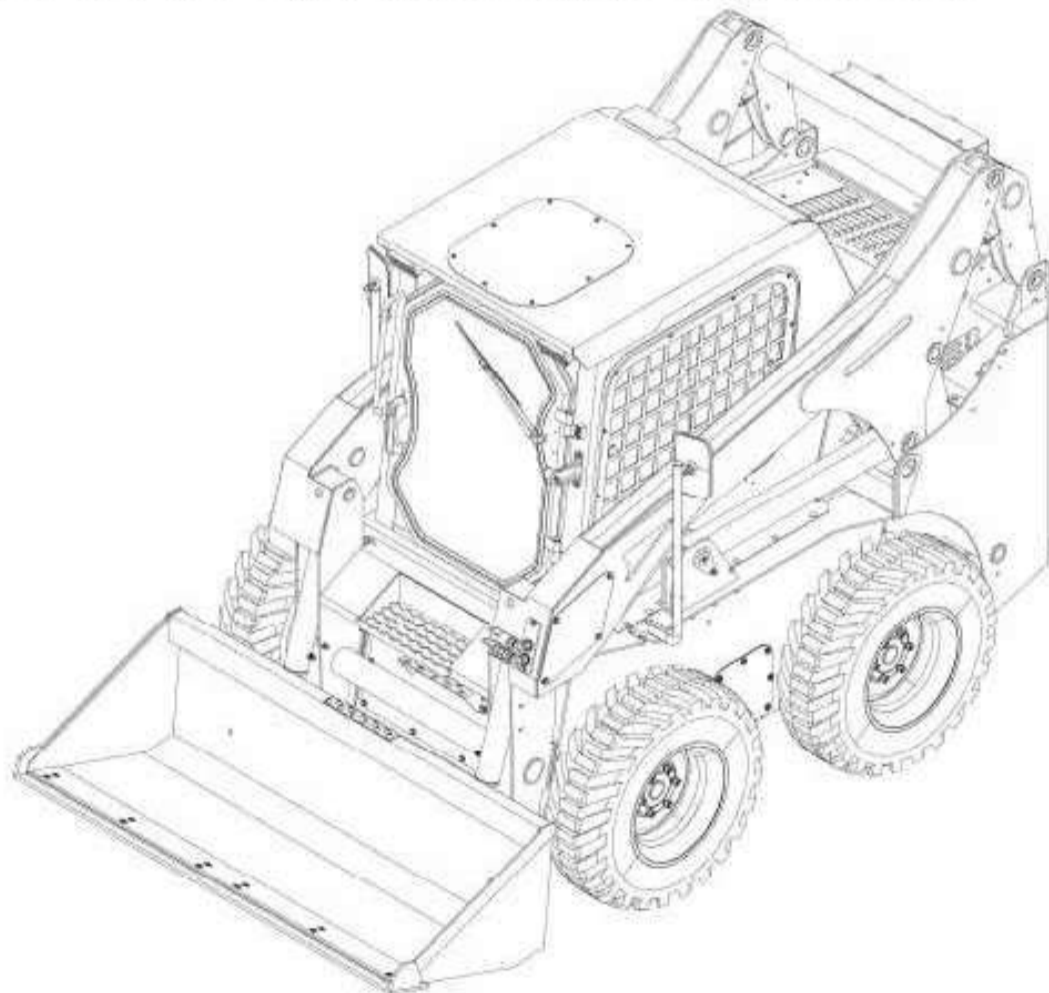
This manual contains a number of instructions and safety recommendations regarding driving, handling, lubrication, maintenance and adjustment of the skid steer loader.

This manual is to promote safety maintenance and enhance machine performance.

The procedures and precautions given in this manual apply only to intended uses of the machine. If you use your machine for any unintended uses that are not specifically prohibited, you must be sure that it is safe for you and others. In no event should you or others engage in prohibited uses of actions as described in this manual.

Continuing improvement in the design of this machine can lead to changes in detail which may not be reflected in this manual. Consult BAWOO COMPANY CORP or your BAWOO distributor for the latest available information for your machine or for questions regarding information in this manual.

Your skid steer loader distributor will be happy to help you.



SAFETY INSTRUCTIONS

WARNING

Instructions are necessary before operating or servicing machine. Read Operation & Maintenance Manual and signs (decals) on machine. Follow warning and instruction in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustment, repairs or service. Failure to follow instructions can cause injury or death.

SAFETY IS THE OPERATOR'S RESPONSIBILITY

Most accident happen because operators do not observe safety instructions. Accidents can be avoided if you are careful enough to recognize dangerous situations before they happens. Please have through knowledge of safety instructions before you carry out maintenance, operation and oil supply for skid steer loader. Basic precautionary measures and operation at a dangerous place are shown on safety instructions.

 THIS SIGNAL MEANS WATCHFULNESS, PRECAUTION FOR YOUR SAFETY.

BEFORE YOU OPERATE THE SKID STEER LOADER!

WARNING

Operator should understand all the direction as follows.




* It is reasonable for you to understand each instruction about operation and maintenance of equipment and follow related rules.

WARNING

All warnings on the loader are for your safety.

* Improper oil supply can sometimes cause dangerous and fatal situations when operating the loader.

* You are prohibited from operating and maintaining the loader and supplying oil before you have full knowledge of this operator's manual.

 This signal is to let you know that you must watch out, otherwise it can be the cause of fatal danger to operators and bystanders. It is attached on loader to let you notice dangerous situations. All warnings are marked on the signal located on the boards of loader and the operator's manual. We hope you are aware of all involved dangerous matters fully and try to prevent accident.

SAFETY INSTRUCTIONS (cont'd)

- Wear tight fitting clothing. Always wear safety glasses when maintaining or servicing loader. Safety glasses, hearing protection or loader special applications kit are required for some work.
- Do not use the loader where exhaust, arcs, sparks or hot components can contact flammable material, explosive fire hazard and overheating.
- The engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent fire hazard and overheating.
- Check all electrical wiring and connection for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part.
- Check fuel and hydraulic tubes, hoses and fitting for damage and leakage. Never use open flame or bare skin to check for leaks. Tighten or replace any parts that show leakage. Always clean oil spills. Do not use gasoline or diesel fuel for cleaning parts. Use commercial nonflammable solvents.
- Follow any environmental safety regulation when disposing of used oil such as engine oil, grease or anti-freeze.
- Do not use ether or starting oil on this engine. It has glow plugs. These starting aids can cause explosion and injure you or bystanders.
- Always clean the loader and disconnect the battery before doing any welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the loader when welding. Have good ventilation when grinding or welding painted parts. Wear dust mask when grinding painted parts. Toxic dust or gas can be produced.
- Stop the engine and let it cool before adding fuel. No smoking!
- Use the procedure in the Operation & Maintenance or Service Manuals for connecting the battery.

△ DANGER, △WARNING, △IMPORTANT, these signals are closely related to safety of the operator and loader.

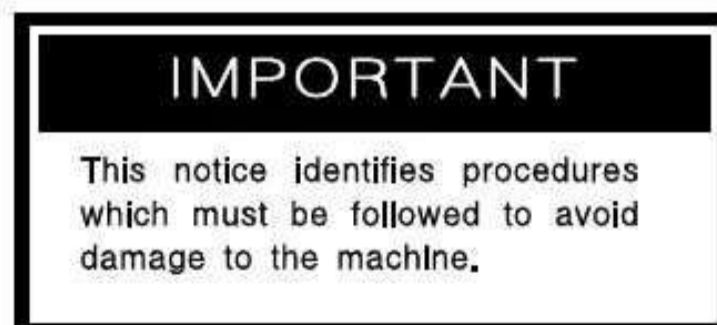
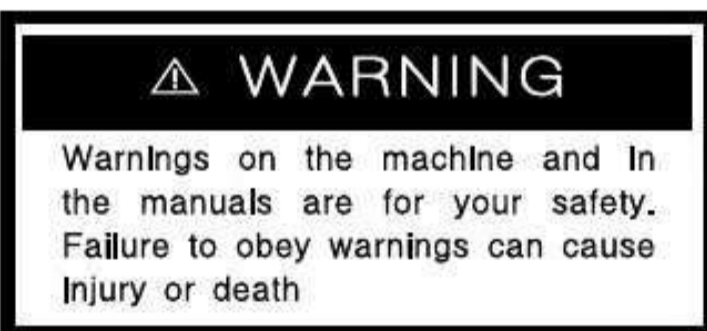


TABLE TO ENTER SERIAL NO.

Machine serial no.	
Engine serial no.	
Manufacturing year	
Manufacturer address	BAWOO COMPANY CORP. 937-2 Taegock-ri Buk-myun Jeongeup-city, Jeonbuk 580-924, The republic of Korea
Distributor address	

SERIAL NUMBER

Always use the serial number of the loader when requesting service information or when ordering parts. Early or later model (identification made by serial number) may use different parts, and it may be necessary to use a different procedure in doing a specific service operation.

1) Loader Serial Number

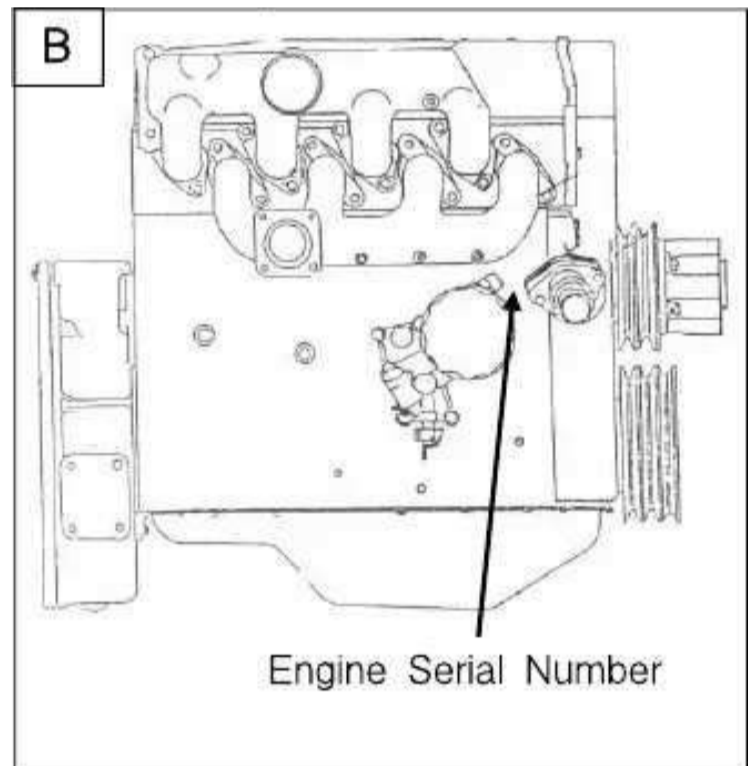
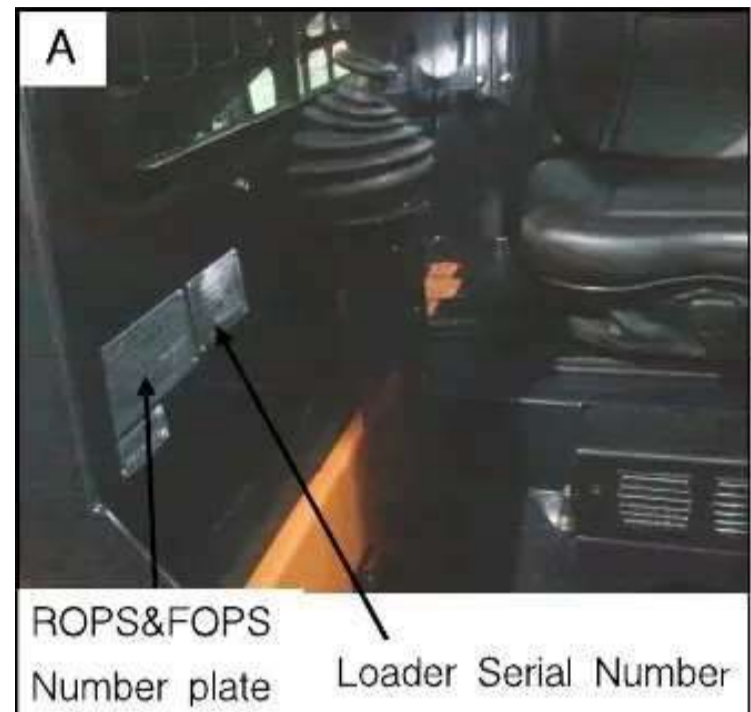
The loader serial number plate is located on the bottom of right side when you sit on operator's seat.

[A]

NOTE : Serial number plate is riveted on the frame and it kept always under any circumstance including weather.

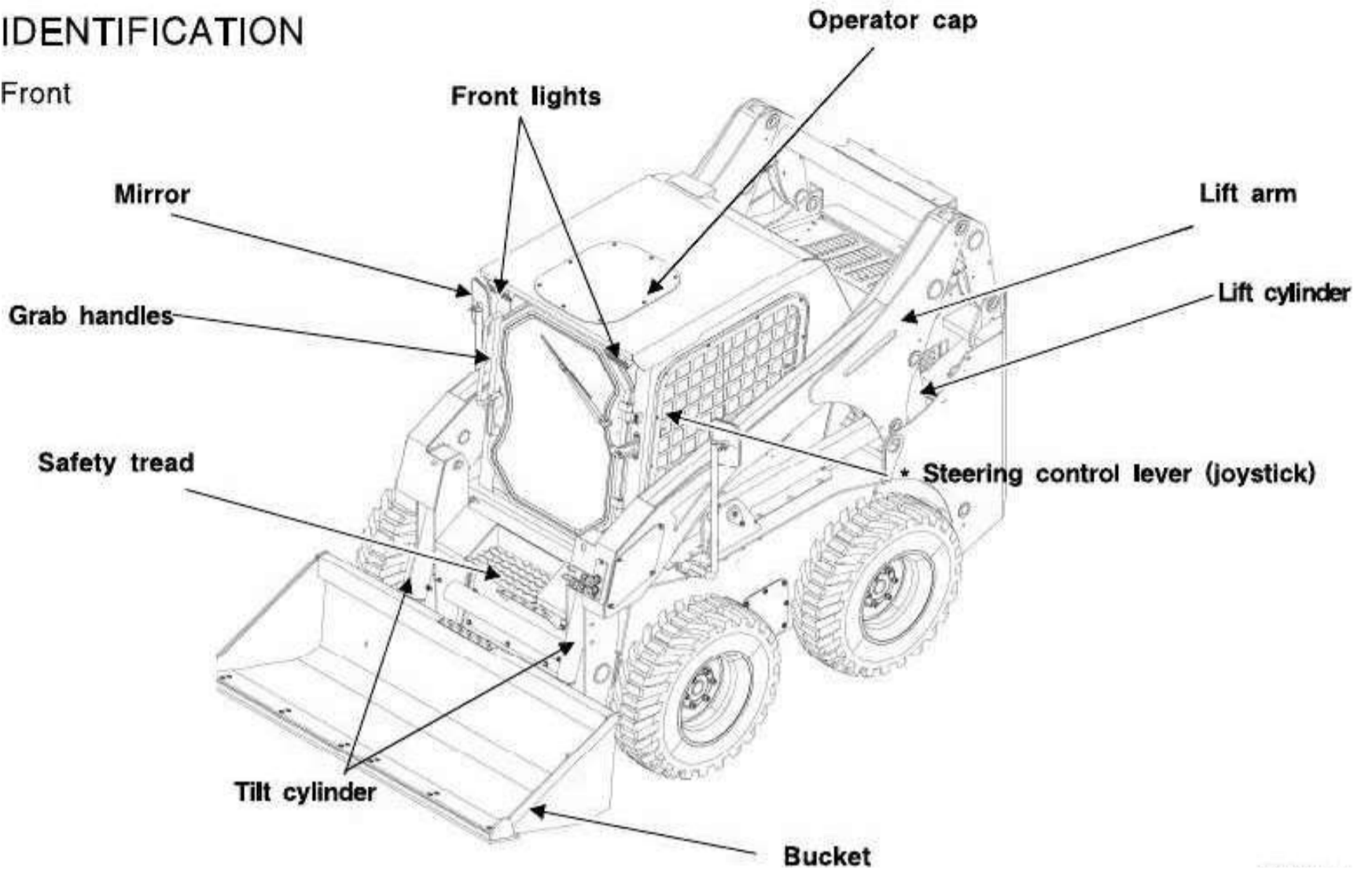
2) Engine Serial Number

The engine serial number is on the engine body. The serial number is in the location shown. [B]

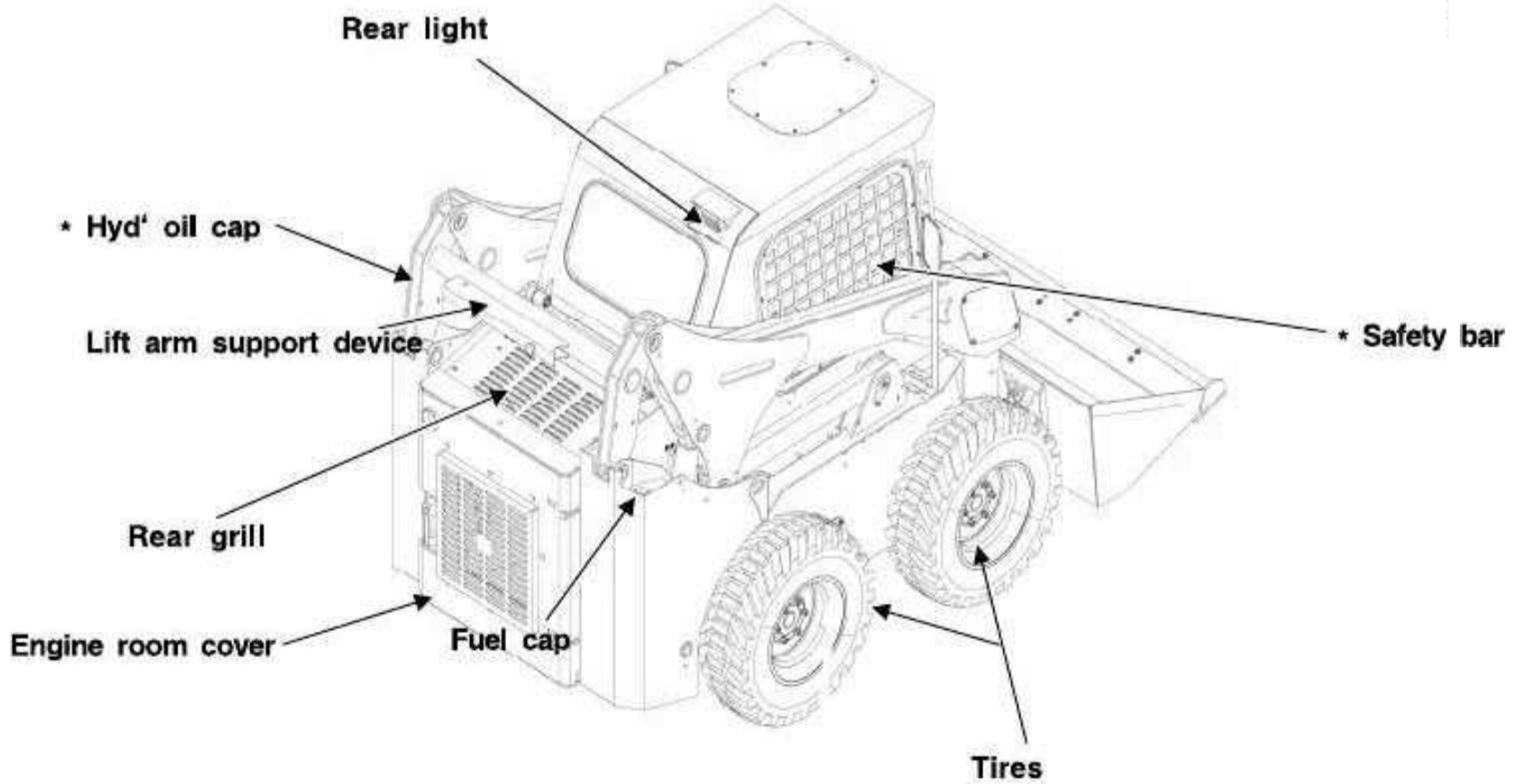


IDENTIFICATION

Front



Rear



* mark - located inside the frame

MACHINE SIGNS(DECALS)(Cont'd)

⊠ DANGER
IMPROPERLY GROUNDED HEATING UNIT CAN CAUSE ELECTRIC SHOCK OR ELECTROCUTION.
FAILURE TO HEED WILL RESULT IN DEATH OR SERIOUS INJURY.

⊠ WARNING
WHEN PARKED ON A GRADE, UNLESS THE STEERING LEVERS ARE PLACED IN NEUTRAL, LOADER CAN MOVE BY ITSELF AFTER STOPPING ENGINE. MOVEMENT MAY NOT HAPPEN IMMEDIATELY. SEE OPERATOR'S MANUAL FOR DETAILS.
NEVER TOUCH HOT ENGINE, MUFFLER, OR RADIATOR RIGHT AFTER THE MACHINE IS STOPPED.
ALWAYS PLACE STEERING LEVERS IN NEUTRAL POSITION BEFORE LEAVING OPERATOR'S STATION.
FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

⊠ WARNING
GAS-SHOCK ABSORBERS ARE USED ON THIS MACHINE.
CYLINDERS HAVE HIGH INTERNAL PRESSURE. DO NOT DISASSEMBLE.
DISASSEMBLY COULD RELEASE PARTS WITH GREAT FORCE.
FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

OPERATION
WHEN THE KEY IS TURNED TO THE "ON" POSITION, ALL MONITORING LIGHTS WILL COME ON MOMENTARILY AS A MEANS TO CHECK OPERATION. THE BATTERY LIGHT WILL REMAIN ON UNTIL THE ENGINE IS STARTED. AFTER THE GLOW PLUGS HAVE HEATED FOR A SUFFICIENT TIME, THE PREHEATING LIGHT WILL BE OFF. THE ENGINE CAN NOW BE STARTED. THE PREHEATING LIGHT WILL REMAIN OFF AND THE BATTERY LIGHT SHOULD GO OUT.
THE INSTRUMENTATION CIRCUITS ARE PROTECTED BY TWO FUSES. IF THE INSTRUMENTS DO NOT OPERATE, CHECK FUSES. REFER TO OPERATOR'S MANUAL OR SEE YOUR DEALER. DO NOT REPLACE FUSES WITH FUSES OF LARGER AMPERAGE.

⊠ WARNING
Never modify bucket capacity or others. To do so may cause overturn of loader. Your skid steer loader is one person machine. Never permit riders.

⊠ WARNING
ALWAYS INSTALL LIFT ARMS SUPPORT DEVICE WHEN LEAVING LIFT ARMS IN THE RAISED POSITION FOR SERVICING LOADER. BEFORE SERVICING LOADER, PROCEED AS SPECIFIED IN THE MAINTENANCE MANUAL.
FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

⊠ WARNING
Raise lift arm to the highest height and then lower lift arm support. Don't operate lift arm after installing lift arm support device. There is a likelihood of some clearance to cylinder rod but don't operate lift arm to adjust this clearance. It can cause the cylinder rod to be damaged.

⊠ DANGER
KEEP HANDS AND FINGERS AWAY FROM ROTATING COMPONENTS CAN CUT HANDS.
FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

⊠ WARNING
Do not touch the engine, radiator and muffler because the engine body is hot directly after the engine stopped. Touch the engine after engine is cool to prevent personal injury.

⊠ WARNING
A dirty air cleaner element will decrease engine output at work. It will also cause increased fuel consumption, increase in harmful contents of exhaust emission and black smoke.
Inspect and clean out air cleaner element every 8 or 10 hours. Failure to do so can result in engine damage.
For more information, refer to operator's manual.

⊠ WARNING
DO NOT BYPASS ENGINE KEYSWITCH BY CONNECTING AT THE STARTER TERMINALS TO JUMP START. FOLLOW RECOMMENDED PROCEDURE IN THE MAINTENANCE & SERVICE MANUAL FOR JUMP STARTING, USING THE ENGINE KEYSWITCH.
STARTING IN GEAR COULD OCCUR IF THE STARTING CONTROL CIRCUIT IS BYPASSED.
FAILURE TO HEED COULD RESULT IN DEATH OR SERIOUS INJURY.

HYDRAULIC OIL

⊠ Located inside the loader frame.
★ Located on the engine compartment.
☆ Located on the radiator compartment.



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FOR NEW LOADER

It takes about 100 operating hours to enhance its designed performance.

Operate according to below three steps and avoid excessive operation for the initial 100 hours.

Hour	Load
Until 10 hours	about 60%
Until 100 hours	about 80%
After 100 hours	100%

Be careful during the initial 100 operating hours.

⚠ WARNING

Excessive operation may deteriorate the potential performance of machine and shorten lifetime of the machine.

⚠ WARNING

Operator must have instructions before running the loader. Never allow an untrained or unqualified person to operate your machine. Loader must be operated by well-trained and competent operator. Loader Untrained operators can cause injury and death.

Each equipment is tested and inspected carefully before delivering the loader to customers.

To operate each parts well, you need to operate the loader carefully for about 100 hours since you purchased it. If you handle it roughly in an abnormal way, the life span would be reduced and efficiency might be fallen, too.

In case of new equipment, please especially pay attention to the matters below.

- Please warm up the engine properly for 5 minutes after starting the engine.
- Please avoid operating the loader at full speed.
- Please avoid quick start, acceleration, unnecessary quick stop and rotation.
- When you replace the oil filter element, please wash out dust and debris on it.
- If operation conditions get worse, please inspect possible causes before operating the loader.
- Please check the operating time on the hour meter.

GETTING READY FOR OPERATION

Read the Operation & Maintenance Manual before operating the loader.

Use the bucket or attachment steps, grab handles and safety tread get on and off the loader. [A]

Safety treads are installed on loader to provide a slip resistant surface for getting on and off the loader. Keep safety treads clean and replace when damaged.

Pull the seat lever (ITEM 1) and adjust the seat position for comfortable operation of the loader controls. [B]

Fasten the seat belt snugly and adjust it so that the buckle is centered between the hips. [C]

⚠ WARNING

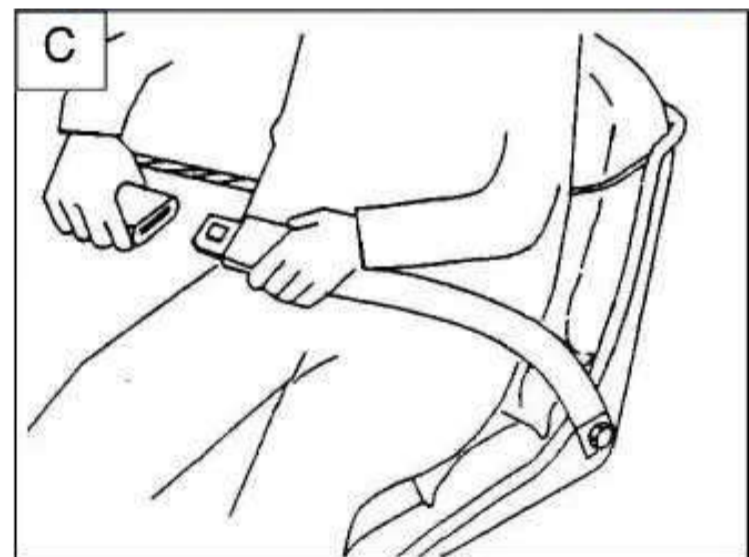
Avoid Injury or death

When operating the loader :

- Keep the seat belt fastened snugly.
- The safety bar must be lowered.

Lower the safety bar. [D]

All controls must be in the neutral position before you start the engine.



DAILY INSPECTION

The loader must be in good operating condition.

Look around machine and under the machine to check loose nut or bolts, collection of dirt or leakage of oil, fuel or coolant and check the condition of the work equipment and hydraulic system.

- Check daily for the following items :
 - Engine cooling system
 - Operator cap, seat belt, safety bar, lift arms
 - Tires & tire pressure
 - Any loose or broken parts
 - Safety signs
 - Instrument panel
- Check and clean the air filter on a daily basis.
- Check for the level and leakage of coolant, engine oil, hydraulic oil and fuel.
- Check regularly the lubrication and fill.
- Check the gauges and lights during operation.
- Check if the machine is operation normally during operation.
- Check loose wiring.
- Check collection of dust at places which reach high temperature.
- Grease daily all lubrication points.
- Tighten bolts
- Warm up the machine fully before operation.

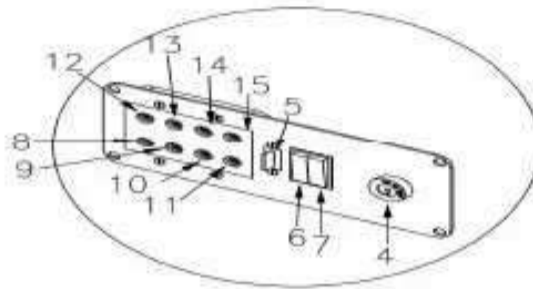
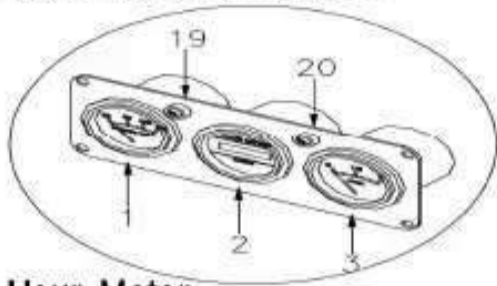
WARNING

Before working,

- Check and add engine oil, If needed.
- Check cooling system for coolant and airflow.
- Check and add hydraulic oil, If needed.
- Walk around machine and check for leakage, damaged or missing parts and proper tire inflation.

INSTRUMENT PANEL

Gauges and Switches



① Hour Meter



This is used to keep a record of the operating hours. This hour meter operates whenever the switch is on. The number inside the white circle indicates minute and the front number is hour.

② Water Temperature Gauge



When the ignition switch is on, the index points the temperature of coolant. When the ignition switch is off, the index does not work.

③ Fuel Gauge



Fuel gauge indicates the amount of remaining fuel. In case you want to keep the loader for a long time, you have to fill the tank with fuel.

"F" indicates full and "E" indicates empty. To avoid getting air into the fuel system, refuel before the indicator reaches "E".

NOTE : Confirm the amount of oil before operating, Fill up oil if there is not enough oil because the lack of oil can cause the loader to be stopped.

④ Ignition Switch



OFF - This is the normal position with the engine off. Remove the key when the machine is not use.

ON - This is the normal running position.

START - This will start the engine.

NOTE : Steering control lever must be In neutral to start the engine

⑤ Light Fuse & Panel Fuse



This fuse is designed to prevent a short of light. When lights are not running, Check this fuse. All warning lights, gauges are not running when this fuse are broken down. But, loader works steadily.

⑥ Light Switch



ON - Front lights and rear light come on.

OFF - Front lights and rear light go off.

⑦ Panel Switch



ON - Noctilucence at all W/L and Gagues come on.

OFF - Noctilucence at all W/L and Gauges go off.

INSTRUMENT PANEL (cont'd)

Gauges and Switches(cont'd)

⑧ Fuel Level Warning Light



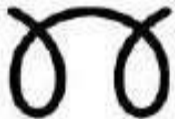
This light will be on when the fuel is too low at fuel tank. Fill the tank with diesel.

⑨ Hydraulic Oil Filter Warning Light (Option)



This light will be on when hydraulic filter is clogged. If this light is on, change the hydraulic filter. The condition of filter can be checked by the gauge on hydraulic filter.

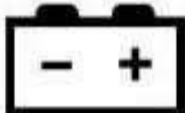
⑩ Preheating Light



If you turn the key to "ON", this light come on and the loader will be preheated for about 15 seconds automatically. When preheating the engine completely, this light go off. You can start the engine after the light is off.

NOTE : If you fail to start the engine at a first try, you should turn the key to the "OFF" and take a break for 30 seconds to 1 minute. Turn the key to the "ON" again. You can start the engine after the preheating light is on.

⑪ Charging Warning Light



This light come on when the operator turn on the ignition key and it go off after starting the engine and then raising the fixed accelerator more than the middle. This light come on if there is a problem with the electrical charging system during the engine rotation.

NOTE : Charging W/L may not go off when you re-start loader after stop loader at low rpm. This charging W/L don't go off, move the hand accelerator to the high rpm. You may use at any speed range after the charging W/L go off.

If the light come on while operating, stop the engine and check for the electrical charging system.

Check that charge W/L go off by raising the accelerator more than the middle before work. Charge W/L go off and then work after adjusting accelerator to speed you want. If you keep working even though charge W/L go off, battery may be discharged.

⑫ Parking Warning Light



This light is on when the safety bar is raised. When this light is on, you can't use loader. Travel system and lift arm & bucket are locked.

⑬ Air Cleaner Warning Light



This light is on when the air cleaner is clogged. Change the air cleaner filter and clean the air cleaner system if this light is on.

⑭ Fuel Filter Warning Light



This light will be on when water fills a fuel filter. It's designed to protect the engine from filling water.

NOTE : Even if you turn the key to "ON", this light doesn't work unlike the other warning light.

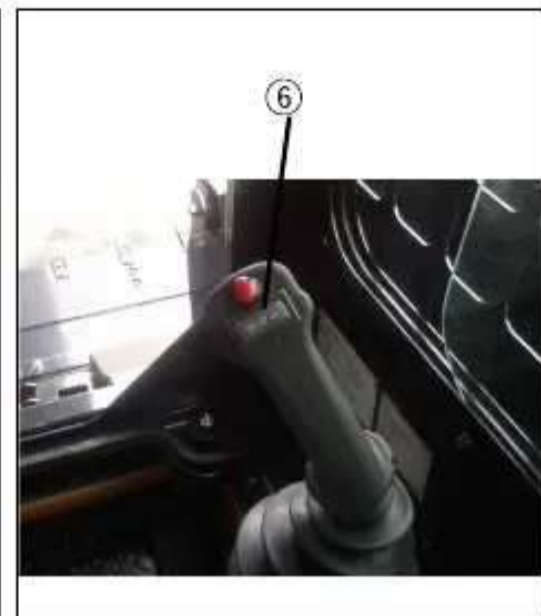
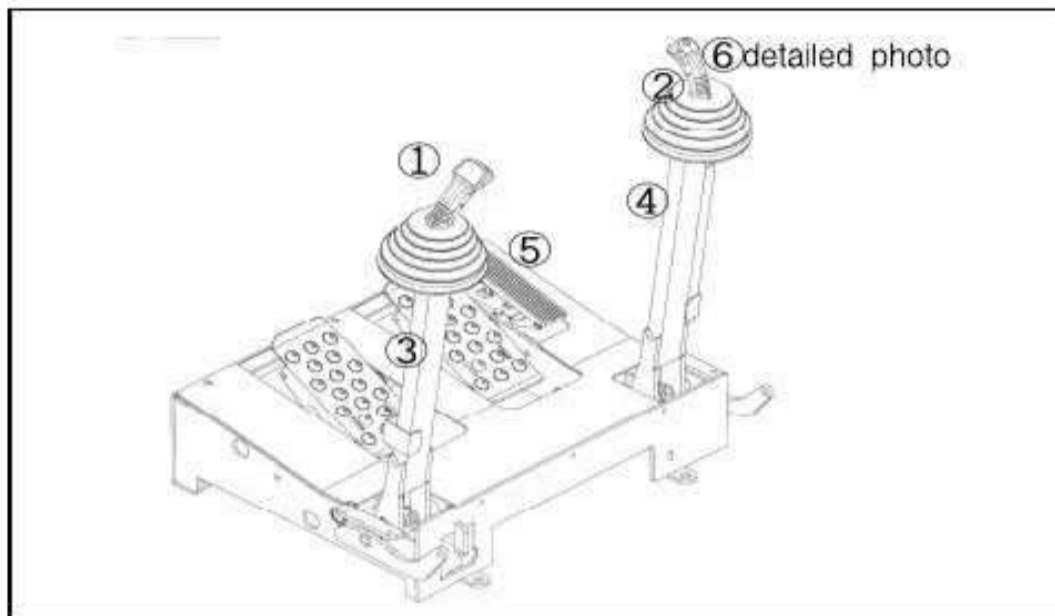
⑮ Engine Oil Warning Light



This light will come on when engine oil pressure is low abnormally. When you turn on the ignition switch after the engine is off, the light come on, and when you start the engine, the light go off.

NOTE : If the light is on during operation, stop the engine and check for the lubricating system

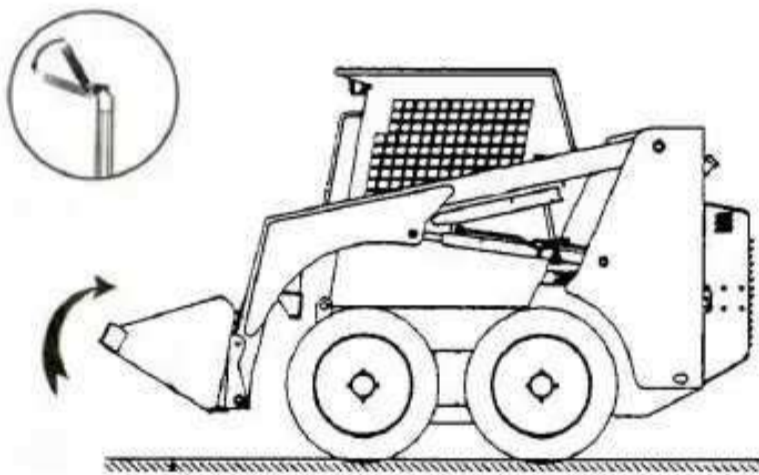
STEERING LEVER – Hand control



- ① Lift Arm Operation Lever ② Bucket Operation Lever ③ Steering Lever (L)
- ④ Steering Lever (R) ⑤ Aux. Hydraulic Pedal (To operate attachment) ⑥ Horn

Handle Of Steering Lever

Bucket operation



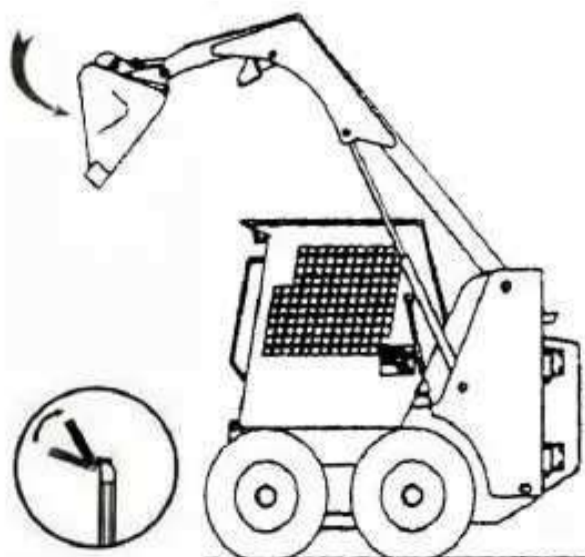
⚠ WARNING

Operator raise safety bar, the machine don't work and lift arm & bucket don't work. Lower safety bar in order to operate machine.

⚠ WARNING

The operating speed of the bucket or lift arm is controlled by the power which is given to its operation lever.

- Push down the right lever to curl up the bucket.
- You can put a deposit in the bucket.



⚠ WARNING

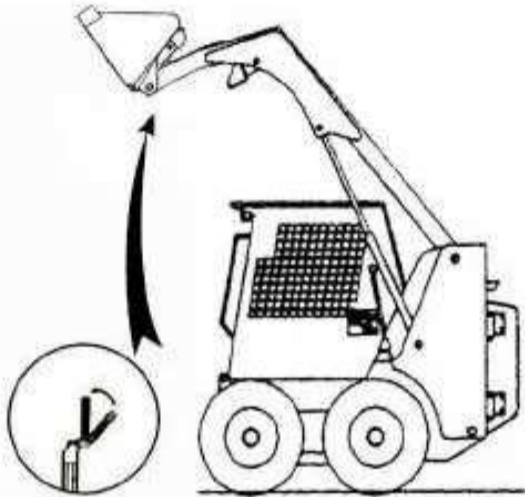
When you load and unload the stuff, operate the hydraulic control lever tenderly because sudden operation can cause the loader to incline forward and be overturned. So, operate it carefully.

- Pull up the right lever to tilt the bucket forward
- You can dump a deposit out of the bucket.

STEERING LEVER – Hand control (cont'd)

Handle Of Steering Lever (cont'd)

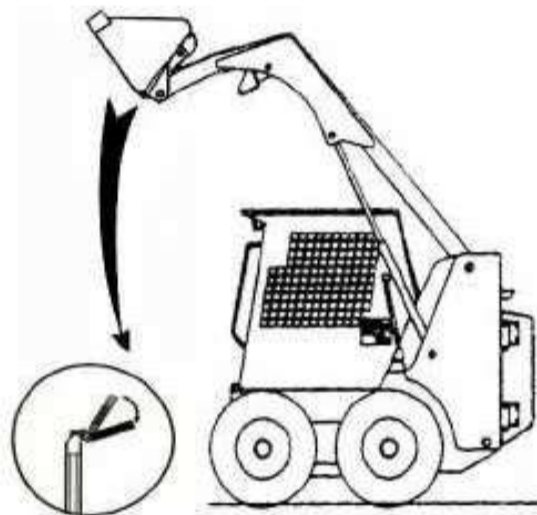
Lift arm operation



- Push up the left lever to raise the lift arms.
- It is used to load the contents of the bucket on a truck or other vehicles.

⚠ WARNING

The operating speed of the bucket or lift arm is controlled by the power which is given to its operation lever.

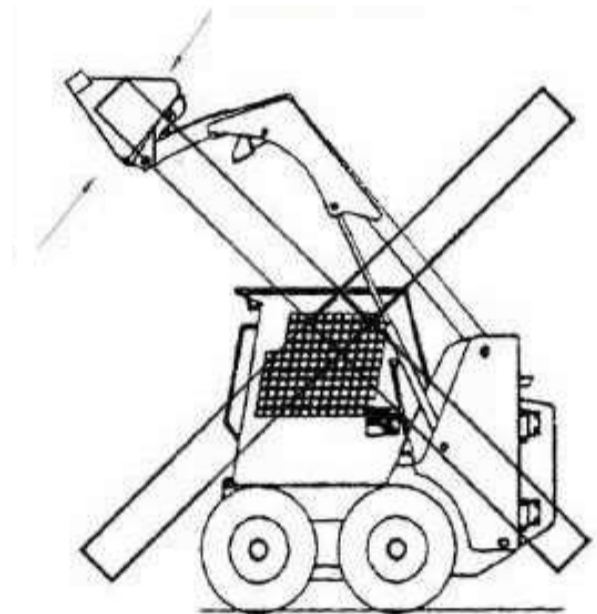


- Pull down the left lever to lower the lift arms.
- It is used when you put the loaded stuff down and dump.

• Self leveling system (option)

When the lift arms rise and descend, the bucket also goes up and down keeping the level automatically.

So it prevents operator from dropping cargo and reduces an equipment's shake.



⚠ DANGER

Do not travel or rotate with the lift arms raised. It can cause serious injury or death by overturning the equipment or dropping the loaded stuff.

⚠ WARNING

Never dump over an obstruction that can enter the operator cap. The machine could tip backward and cause injury and death.

STEERING LEVER – Foot control

Two foot pedals control the hydraulic cylinders for the lift and tilt function.

Put your feet on the pedals when you need to operate lift arm or bucket. Don't put your feet on the pedals when you travel loader.

Lift arm operation

The left pedal controls the lift arms.

Push on the bottom (by heel) (ITEM 1) of the pedal to raise the lift arms. [A]

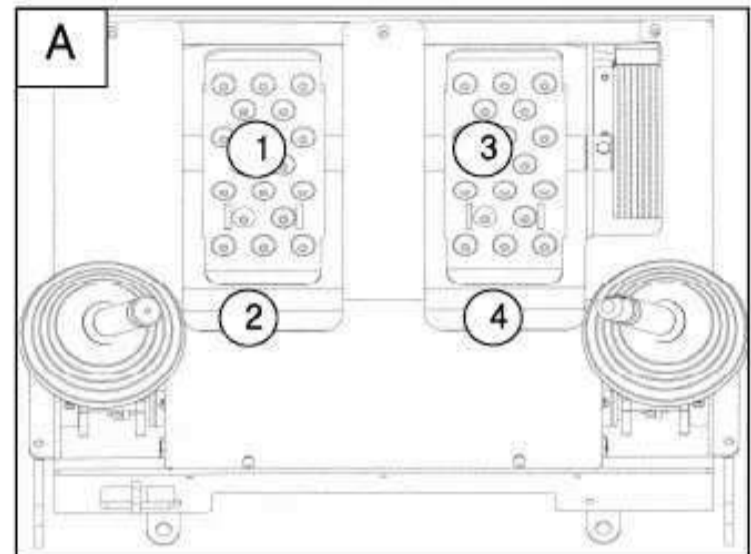
Push on the top (by toe) (ITEM 2) of the pedal to lower the lift arms. [A]

Bucket operation

The right pedal controls the action of the bucket.

Push the top (by toe) (ITEM 3) of the pedal to tilt the bucket forward (or to dump bucket). [A]

Push on the bottom (by heel) (ITEM 4) of the pedal to tilt the bucket backward (or to curl up bucket). [A]



⚠ WARNING

Don't put your feet on pedals when you travel loader. Failure to do so can cause serious injury.

STEERING LEVER – HOW TO OPERATE

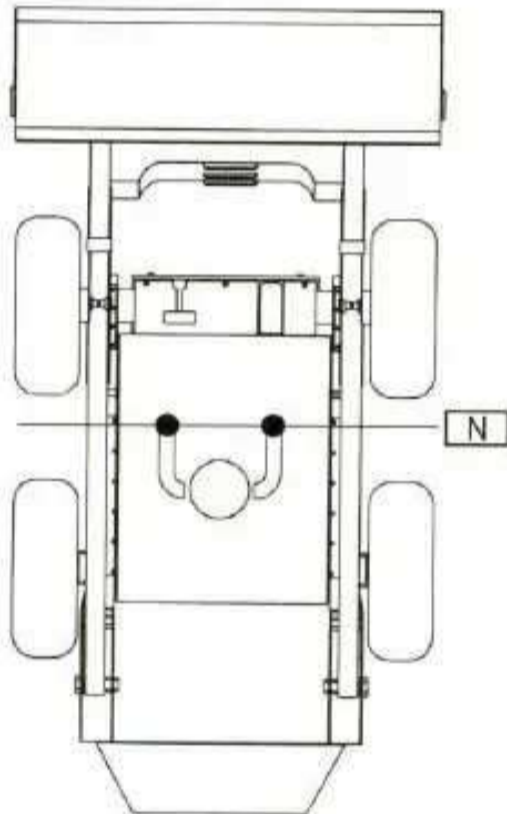
How to travel

- Lower the lift arms fully and the bucket only high enough to avoid obstructions when travelling.

⚠ DANGER

If you start or turn the loader rapidly with the lift arms raised, it can be overturned causing serious injury or death. Handle it carefully and slowly.

① Stop



⚠ WARNING

Operator have to lower safety bar in order to move machine. If operator try to move machine without lowering safety bar, machine don't work as well as noise happen from driving part because of lock of driving brake.

When traveling the loader, lower the safety bar and operate steering levers smoothly. It's dangerous to operate levers suddenly.

If you move the loader with no lowering safety bar, ear-splitting noise happen and machine don't work, then it causes a trouble.

⚠ WARNING

When stop · park the loader, stop the engine and then raise the safety bar.

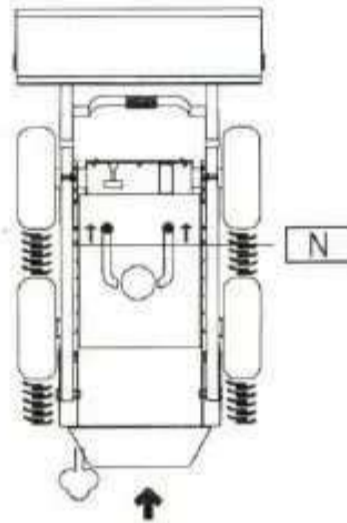
⚠ WARNING

When you operate the steering levers, avoid the abrupt movement and move them slowly.

STEERING LEVER – HOW TO OPERATE (cont'd)

How to travel (cont'd)

② Travelling forward



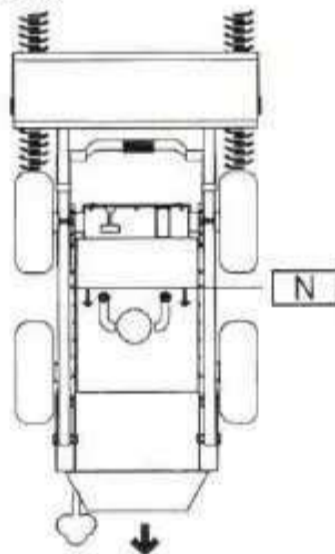
Move both steering levers forward at the same distance, then the loader will travel forward.

⚠ WARNING

Push steering levers to the end while traveling.

If you do not move both levers forward and backward fully to the end while travelling the loader, smell and smoke happen by overheating the brake or the disc plate, then it causes a trouble.

③ Travelling backward

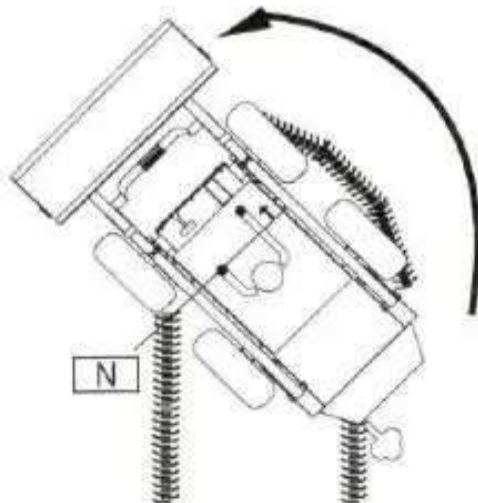


Move both steering levers backward at the same distance, then you can drive the loader in reverse.

⚠ WARNING

Confirm if there are obstructions behind while travelling in reverse.

④ Straight turn to the left



Put the right steering lever in neutral position and push the right steering lever, then the loader will turn to the left.

Put the right lever in neutral position while travelling forward, then the loader will turn to the same direction.

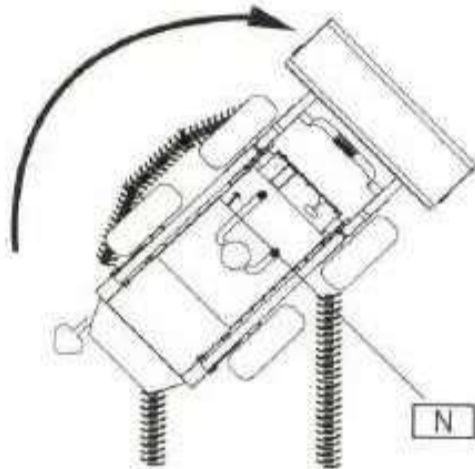
⚠ WARNING

If the loader turns with the lift arms raised, it can be overturned causing serious injury or death.

STEERING LEVER – HOW TO OPERATE (cont'd)

How to travel (cont'd)

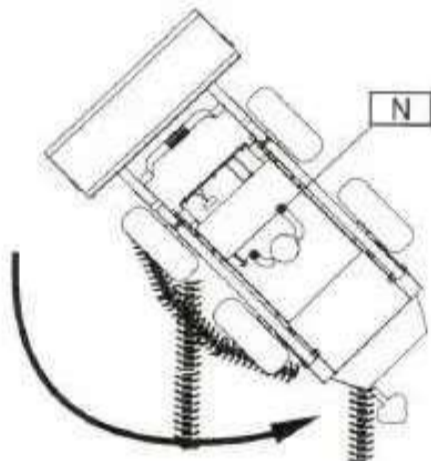
⑤ Straight turn to the right



Put the left steering lever in neutral position and the right lever, then the loader will turn to the right.

If you put the left steering lever in neutral position even while travelling forward, the loader will turn to the right.

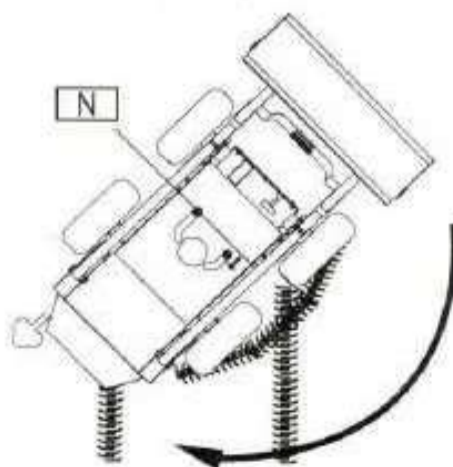
⑥ Opposite turn to the left



Put the left steering lever in neutral position and pull the right lever back, then the loader will turn to the left oppositely.

If you put the left steering lever in neutral position even while travelling backward, the loader will turn to the left oppositely.

⑦ Opposite turn to the right



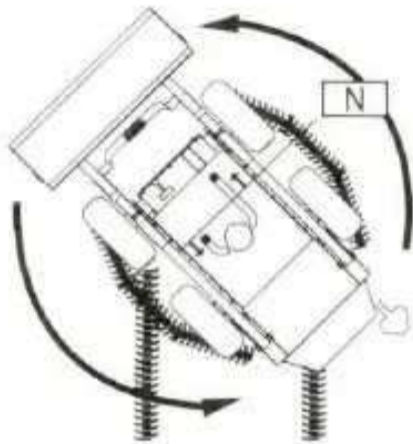
Put the right steering lever in neutral position and pull the left lever back, then the loader will turn to the right oppositely.

If you put the right steering lever in neutral position even while travelling backward, the loader will turn to the right oppositely.

STEERING LEVER - HOW TO OPERATE (cont'd)

How to travel (cont'd)

⑧ Straight and opposite rotation to the left

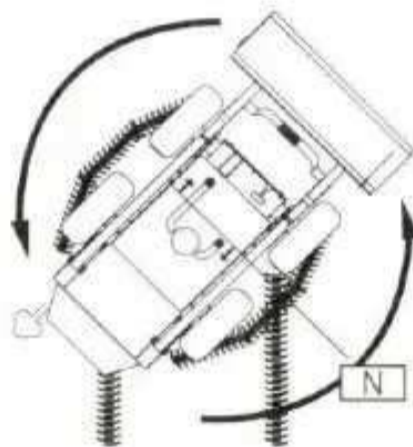


Pull the right steering lever back and push the left lever to the end, then the loader will rotate in a 360-degree arc.

⚠ WARNING

In case of turning and stopping suddenly with the lift arms raised, the loader can be overturned causing injury or death.

⑨ Straight and opposite rotation to the right



Push the right steering lever forward and pull the left steering lever back, the loader will rotate in a 180-degree arc.

⚠ WARNING

If you start and turn the loader suddenly with the lift arms raised and a large amount of stuff loaded in the bucket, it can be overturned.

⑩ Travelling on a slope

You had better travel and operate on the even place as you can. When you operate the loader on a slope, you should watch out.

NOTE : Put the hand accelerator to IDLE position before traveling or working. Please use hand accelerator with adjusting it according to working condition.

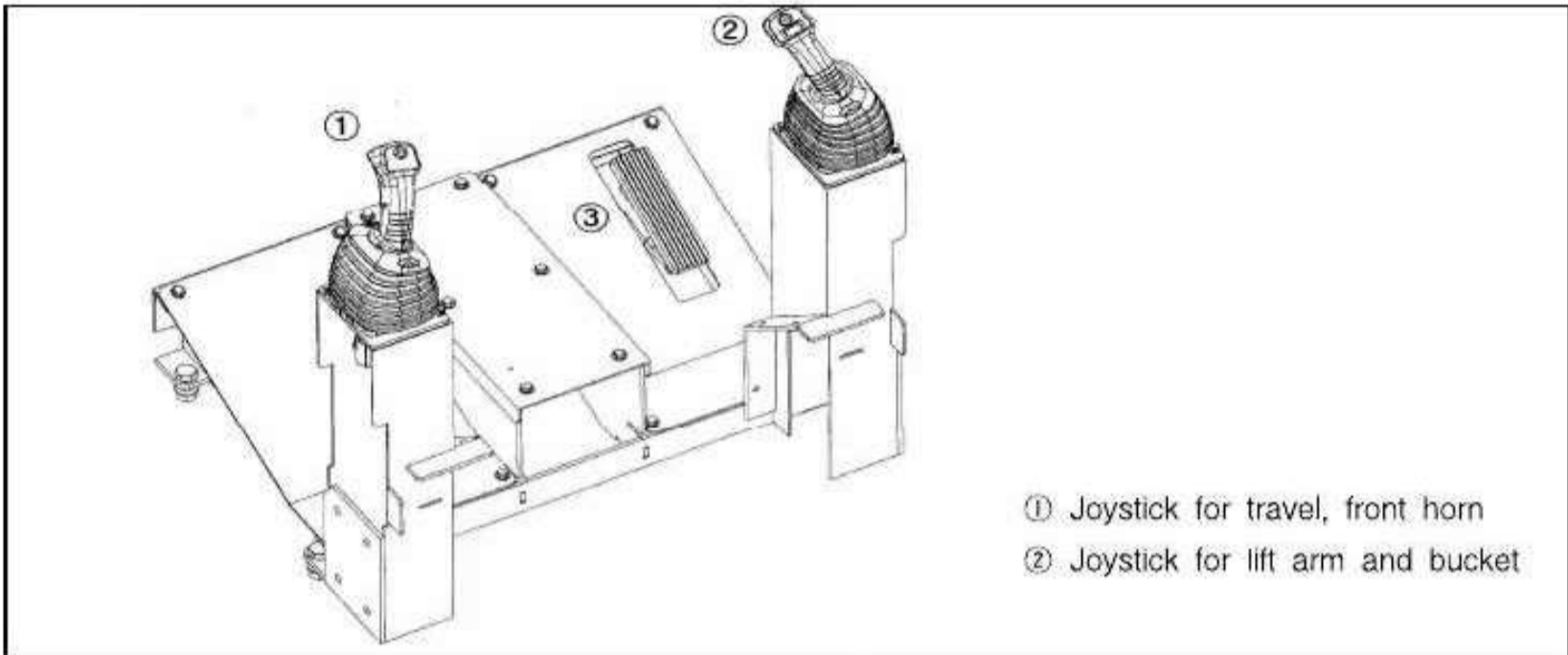
⚠ WARNING

Safety is reduced rapidly while travelling on a slope. So you should be careful when travelling on a slope. When you go up the slope, think over the angles of a slope or movement of the center of gravity. Please travel backward. (The loader is designed to put the center of gravity on the back side.)

⚠ WARNING

The more a radius of lever is large, the more a travelling speed fast. Avoid operating levers rapidly.

STEERING LEVER - JOYSTICK



Handle Of Joystick

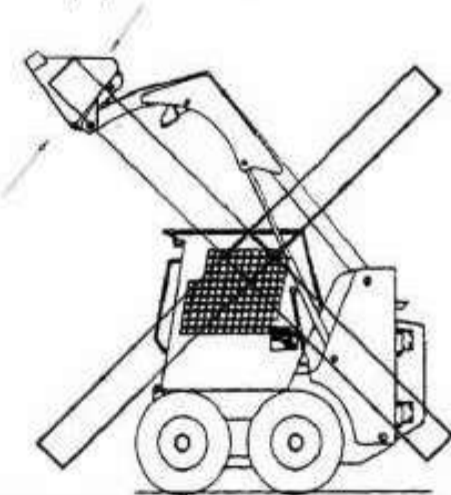
Hydraulic operation

- RH Joystick is for operation of lift arm and bucket.
- Detent switch is used for fixing hydraulic flow on aux. hydraulics. This optional switch is useful when operator use backhoe, sweeper and so on.

• Self leveling system (option)

When the lift arms rise and descend, the bucket also goes up and down keeping the level automatically.

So it prevents operator from dropping cargo and reduces an equipment's shake.



⚠ WARNING

Operator raise safety bar, the machine don't work and lift arm & bucket don't work. Lower safety bar In order to operate machine.

⚠ WARNING

The operating speed of the bucket or lift arm is controlled by the power which is given to its operation lever.

⚠ WARNING

When you load and unload the stuff, operate the hydraulic control lever tenderly because sudden operation can cause the loader to incline forward and be overturned. So, operate it carefully.

⚠ WARNING

Never dump over an obstruction that can enter the operator cap. The machine could tip backward and cause injury and death.

JOYSTICK (cont'd)

Hydraulic operation (cont'd)

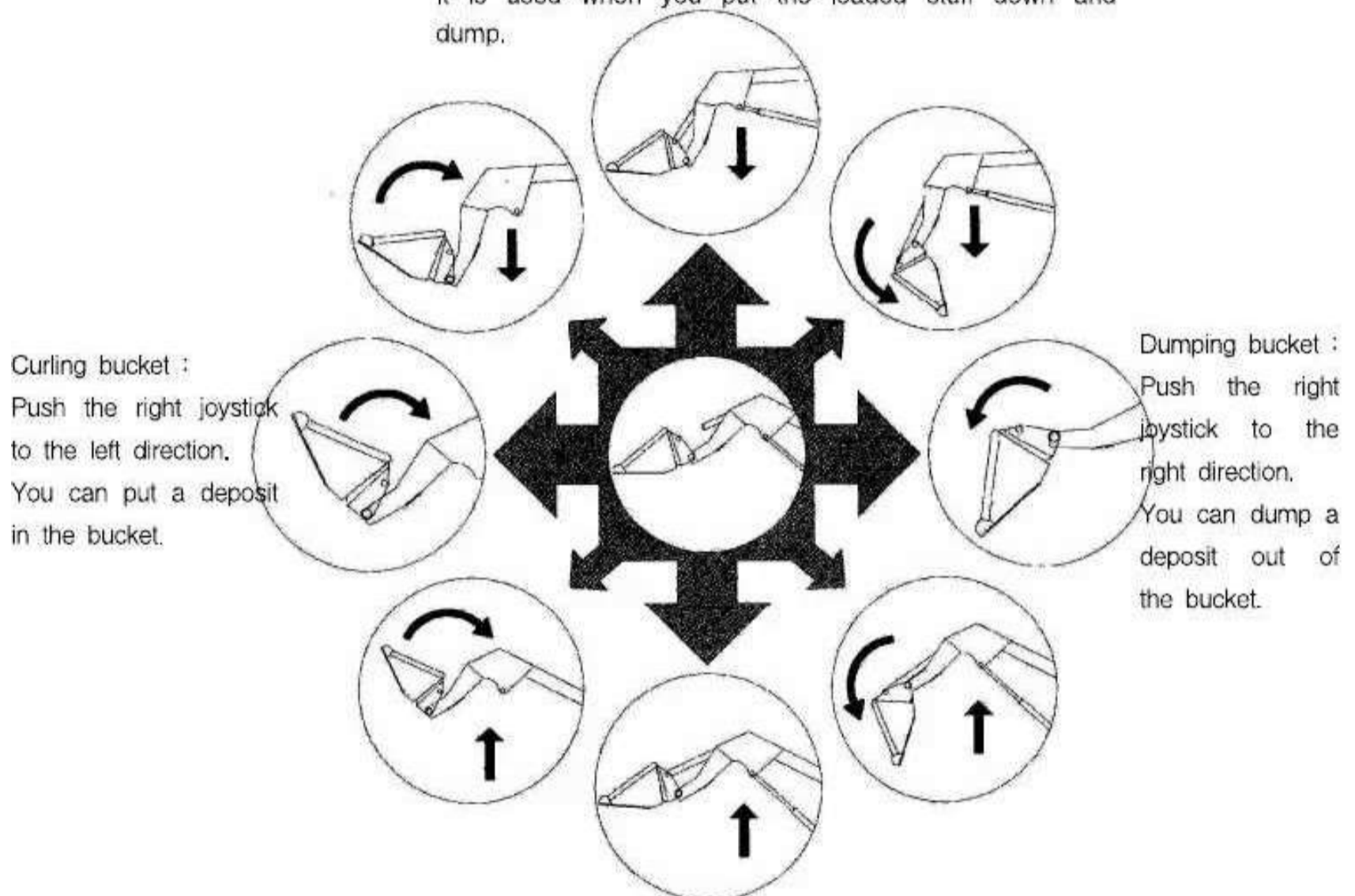
- * Floating function
- : When you push the right joystick completely, lift arm fall down to the ground and system is fixed. Under this condition, lift arm is floating.

NOTE : This system don't return automatically. So system must be returned by the operation of joystick.

Lowering lift arm :

Push the right joystick forward.

It is used when you put the loaded stuff down and dump.



Curling bucket :
Push the right joystick
to the left direction.
You can put a deposit
in the bucket.

Dumping bucket :
Push the right
joystick to the
right direction.
You can dump a
deposit out of
the bucket.

Raising lift arm :

Pull down the right joystick backward.

It is used to load the contents of the bucket
on a truck or other vehicles.

⚠ DANGER

Do not travel or rotate with the lift arms raised. It can cause serious injury or death by overturning the equipment or dropping the loaded stuff.

JOYSTICK – HOW TO OPERATE

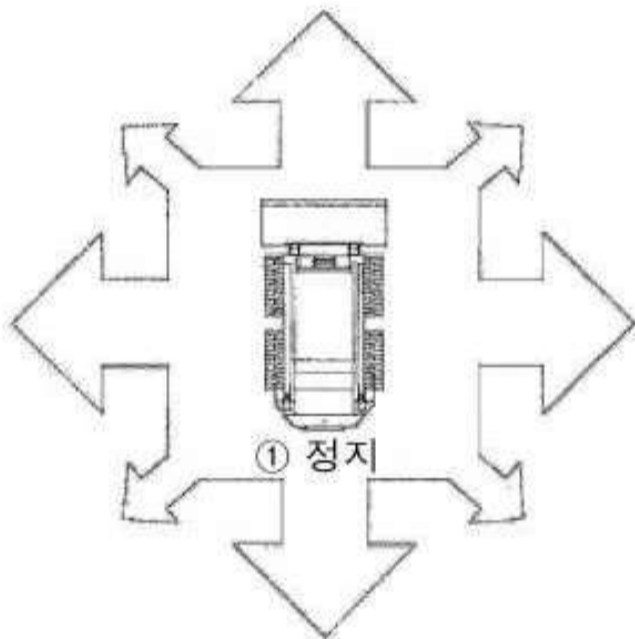
How to travel

- Lower the lift arms fully and the bucket only high enough to avoid obstructions when travelling.

⚠ DANGER

If you start or turn the loader rapidly with the lift arms raised, it can be overturned causing serious injury or death. Handle it carefully and slowly.

① Stop



⚠ WARNING

Operator have to lower safety bar in order to move machine. If operator try to move machine without lowering safety bar, machine don't work as well as noise happen from driving part because of lock of driving brake.

When traveling the loader, lower the safety bar and operate steering levers smoothly. It's dangerous to operate levers suddenly.

If you move the loader with no lowering safety bar, ear-splitting noise happen and machine don't work, then it causes a trouble.

⚠ WARNING

When stop · park the loader, stop the engine and then raise the safety bar.

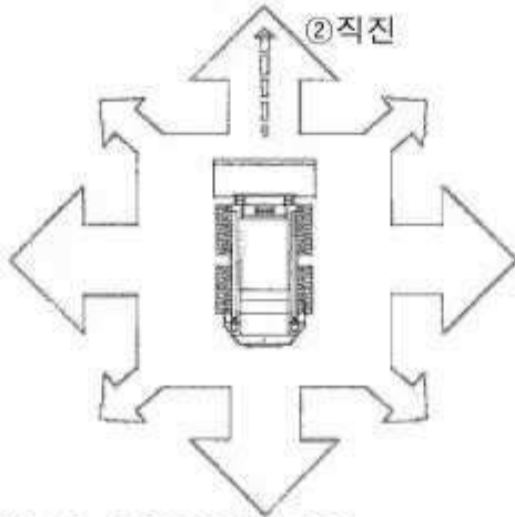
⚠ WARNING

When you operate the steering levers, avoid the abrupt movement and move them slowly.

JOYSTICK – HOW TO OPERATE (cont'd)

How to travel (cont'd)

② Travelling forward



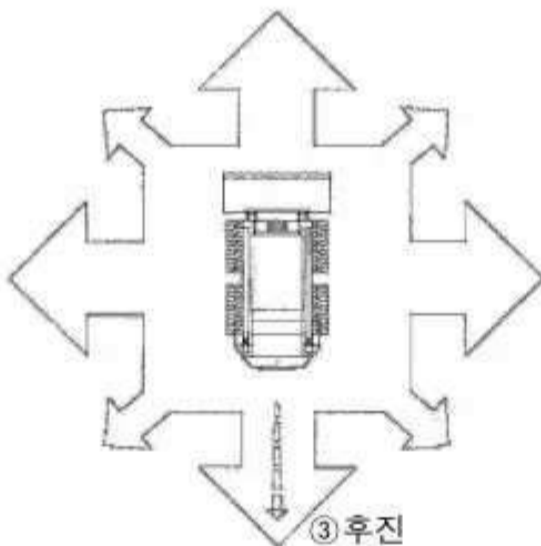
Push the left joystick forward smoothly.

⚠ WARNING

Push steering levers to the end while traveling.

If you do not move both levers forward and backward fully to the end while travelling the loader, smell and smoke happen by overheating the brake or the disc plate, then it causes a trouble.

③ Travelling backward

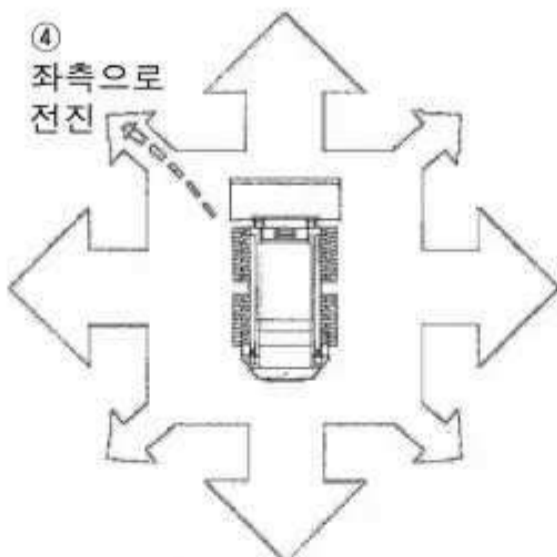


Push the left joystick backward.

⚠ WARNING

Confirm If there are obstructions behind while travelling in reverse.

④ Turning to the left



Push the left joystick to the left diagonal direction

⚠ WARNING

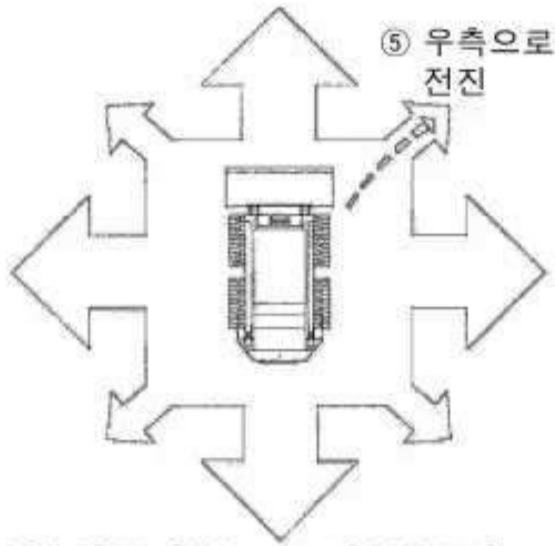
If the loader turns with the lift arms raised, it can be overturned causing serious injury or death.

JOYSTICK – HOW TO OPERATE (cont'd)

How to travel (cont'd)

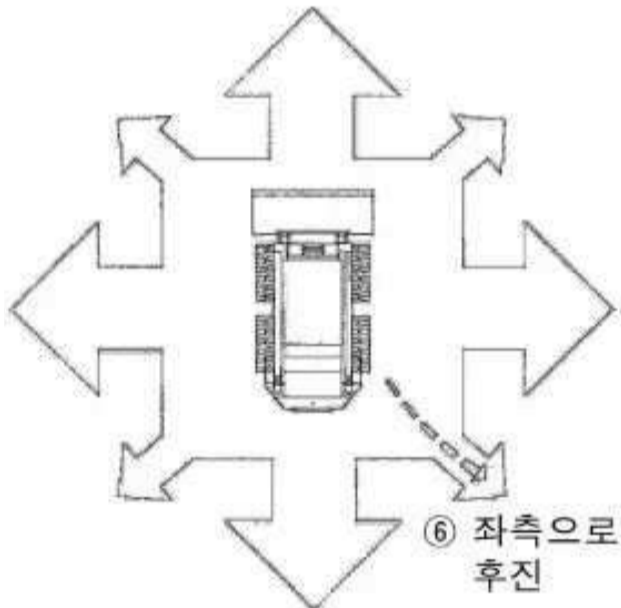
⑤ Turing to the right

Push the left joystick to the right diagonal direction.



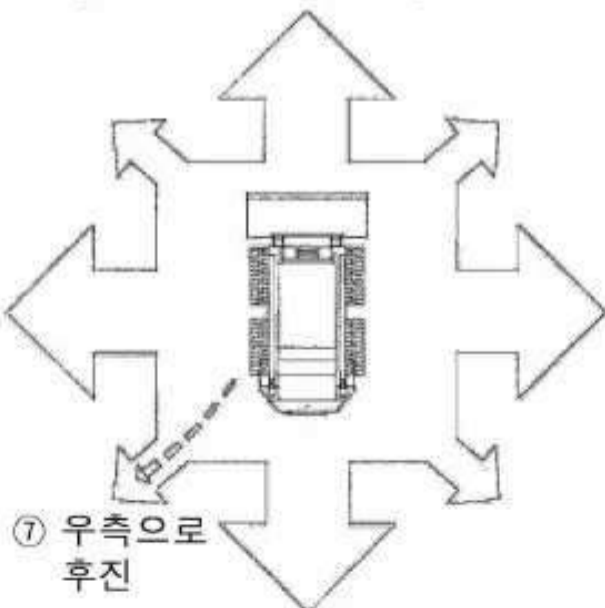
⑥ Going backward to the left

Pull the left joystick to the right diagonal direction.



⑦ Going backward to the right

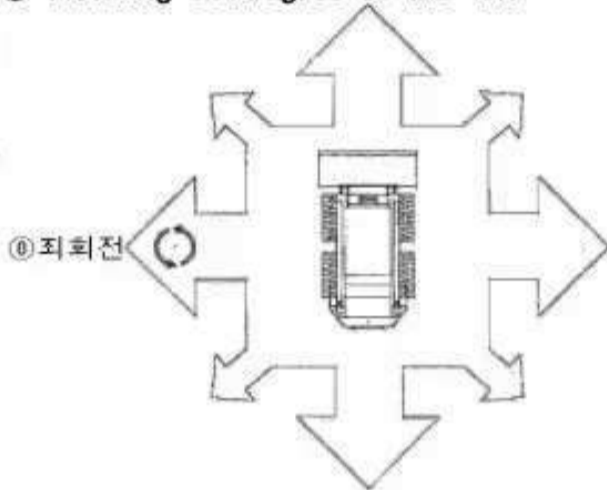
Pull the left joystick to the left diagonal direction.



JOYSTICK – HOW TO OPERATE (cont'd)

How to travel (cont'd)

⑧ Rotating 360degree to the left

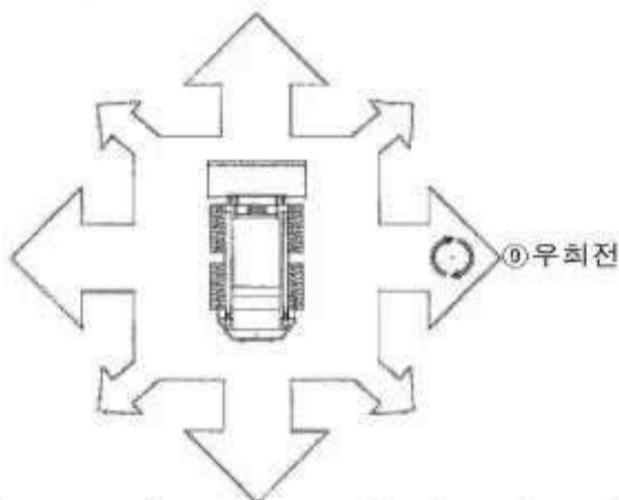


Pull the left joystick to the left direction, then the loader will rotate in a 360 degree car. at the original location.

⚠ WARNING

In case of turning and stopping suddenly with the lift arms raised, the loader can be overturned causing injury or death.

⑨ Straight and opposite rotation to the right



Pull the left joystick to the right direction, then the loader will rotate in a 360 degree car. at the original location.

⚠ WARNING

If you start and turn the loader suddenly with the lift arms raised and a large amount of stuff loaded in the bucket, it can be overturned.

⑩ Travelling on a slope

You had better travel and operate on the even place as you can. When you operate the loader on a slope, you should watch out.

NOTE : Put the hand accelerator to IDLE position before traveling or working. Please use hand accelerator with adjusting it according to working condition.

⚠ WARNING

Safety is reduced rapidly while travelling on a slope. So you should be careful when travelling on a slope. When you go up the slope, think over the angles of a slope or movement of the center of gravity. Please travel backward.
(The loader is designed to put the center of gravity on the back side.)

⚠ WARNING

The more a radius of lever is large, the more a travelling speed fast. Avoid operating levers rapidly.

AIR CONDITIONER AND HEATER CONTROLS

Air conditioner

Location of Air conditioner : at the back of seat.

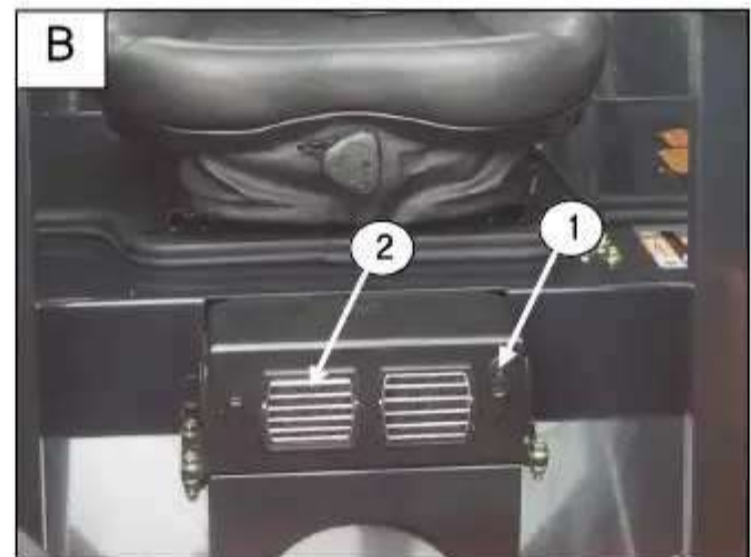
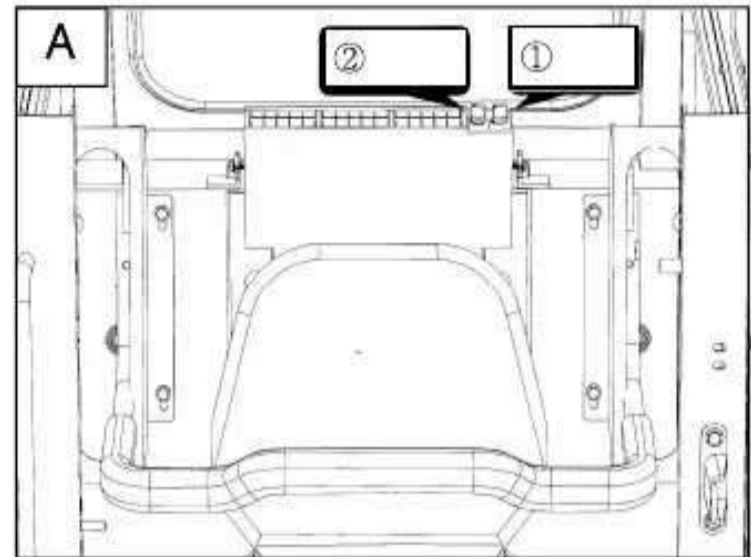
ITEM 1 – switch

ITEM 2 – temperature control switch

Air conditioner control switch (ITEM 1) controls a three speed fan.

Rotate control switch (ITEM 1) clockwise to turn on A/C and adjust temperature by rotating control switch (ITEM 2). [A]

NOTE : R-134a type gas is used and capacity is 450g.



⚠ WARNING

Pressurized refrigerant may penetrate eyes or cause burns. Wear goggles and protect skin.

Heater

Location of heater : underneath seat.

ITEM 1 – switch

ITEM 2 – heater fan

Press heater switch (ITEM 1) to turn on heater.

Open the both side heater fan (ITEM 2) to adjust temperature. [B]

Adjust temperature by opening one or all of both heater fan.

To obtain best results from the air conditioning system or from the heater system ensure that all doors and windows are closed.

OPERATING PROCEDURE

Starting the engine

Adjust the seat position for comfortable operation of steering control levers.

Fasten the seat belt snugly and adjust it so the buckle is centered between the hips.

Lower the safety bar.

Put the steering control lever in neutral position.

Turn the key to the "On" position.

Turn the key to the "Start" position after preheating light go off.

All warning lights come on and then go off when the key is on.

NOTE : stop the engine if the warning lights do not go off.

Start the engine and put the engine speed control lever to "Idle" position (to the photo of turtle).

Allow the engine to warm up for about five minutes.

NOTE : Do not use ether with glow plug(preheat) systems. Explosion can result which can cause injury or death.

If the temperature is below 0°C(32°F), use the following procedure to make starting the engine easier. :

- Replace the engine oil with the correct type and viscosity for the anticipated starting temperature. (See Oil Specification, Page 58)
- Make sure the battery is at full charge.

NOTE : upon failed start, If the key is turned OFF, wait for at least three seconds before turning the key ON to reset.

⚠ WARNING

When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless, invisible gases which can kill without warning.

⚠ WARNING

Do not engage the starter for longer than 15 seconds at a time. Longer use can damage the starter by overheating. Cool the stater for one minute between uses.

⚠ WARNING

Do not start the engine unless you are in the seat with the safety belt fastened and the safety bar down. Death or serious injury could result if the belt is not securely fastened.

⚠ WARNING

Loader warmed up with moderate engine speed and light load have longer life.

⚠ WARNING

The most suitable temperature for hydraulic oil is about 50°C(112°F). It can cause serious trouble in the hydraulic system by sudden operation when the hydraulic oil temperature is below 25°C(77°F). The temperature must be raised to at least 25°C(77°F) before starting work.

OPERATING PROCEDURE (cont'd)

Jump starting

Jump starting or battery replacement is required when the battery is discharged to a point where the battery will not turn the starter.

Follow the following procedure. :

To jump start, be sure the battery fluid levels are correct and vent caps are tight.

Place a damp cloth over the battery vent caps.

The booster battery must be a 12 volt type.

The vehicle used for jump starting must have a negatively grounded electrical system.

Connect the "+" jumper cable to the "+" post of the discharged battery.

Connect the other end the same jumper cable to the "+" terminal of the booster battery.

connect one end of the second jumper cable to the "-" post of the booster battery.

Make the final jumper cable connection to the engine block or the furthest ground point away from the battery.

Follow the steps in "Normal starting".

Remove jumper cables in the reverse order of their connection.

WARNING

To avoid personal injury when jump starting the loader with another vehicle, be sure the vehicles are not touching.

Keep sparks, flames and lit cigarettes away from the battery.

Lead acid batteries generate explosive gases when charging or when the engine is running. Wear safety glasses when working near batteries.

OPERATING PROCEDURE (cont'd)

Parking the loader

Stop the loader on level ground.

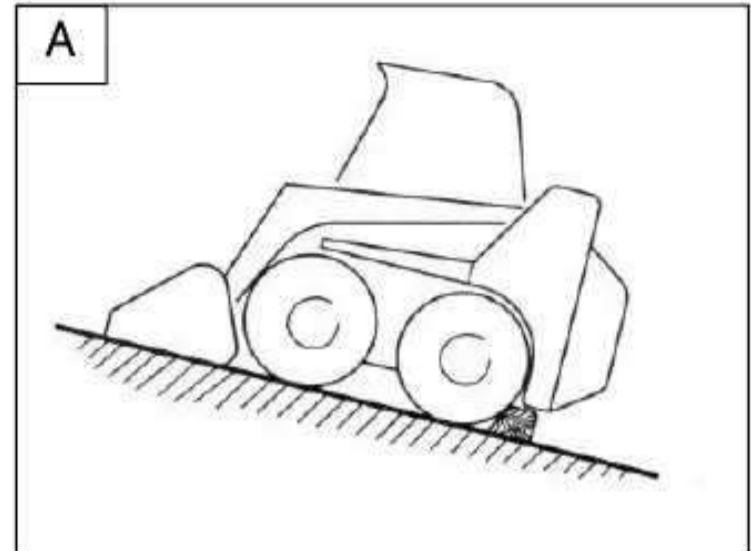
NOTE : Avoid parking and stopping on a slope, If park on a slope is needed, lower the bucket to the ground and raise the parking brake and block the tire. [A]

Move the steering control lever in neutral position.

Lower the lift arm fully and put the edge of the bucket on the ground.

Run the engine at low idling speed for about five minutes.

Put the engine speed control lever(ITEM 1) to "IDLE" position. [B]



⚠ WARNING

If engine is abruptly stopped before it has cooled down, engine life may be greatly shortened. Consequently, do not abruptly stop the engine apart from an emergency.

OPERATING PROCEDURE (cont'd)

Keeping the loader

Keeping after completion of work

When keep the loader after completion of work, follow the following precautions for the next work. :

Remove the mud and water on the machine body.

Park the loader on concrete or hard ground. If this is impossible, park the loader on wooden boards.

As battery capacity drops at low ambient temperature, cover the battery or remove it from the loader to be kept warm at night.

Long-term keeping

When keep the loader for a long time, follow the following precautions. :

Clean each part carefully.

Perform lubrication and oil change for all necessary parts without omission.

Apply grease thinly on the exposed portions of hydraulic cylinder piston rods.

Drain the coolant from the cylinder block and radiator.

Remove the battery after full charging and keep it in a cool & dry place.

Keep the loader indoors. If outdoor keeping is unavoidable, place the loader on blocks and cover with waterproof canvas.

WARNING

During long-term keeping

- Run the engine
- Move the loader back and forth
- Operate each pedal

Practice the above work at least once a month for lubrication of each part.

WARNING

After long-term keeping

- Remove the drain plug from the fuel tank, oil pan etc. to drain water accumulated in each part.
- After starting the engine, carry out sufficient warm up and inspect each part carefully.

OPERATING PROCEDURE (cont'd)

Travelling

Always warm up the engine before operating the loader.

New operators must operate the loader in an open area without bystanders. Operate the controls until the loader can be handled at an efficient and safe rate for all conditions of the work area.

Raise the bucket only high enough to avoid obstructions on rough ground.

The operation on slope is dangerous. Avoid operating the machine on a slope of over 10 degree.

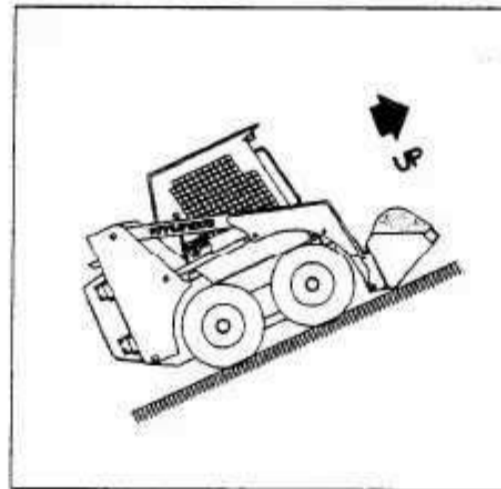
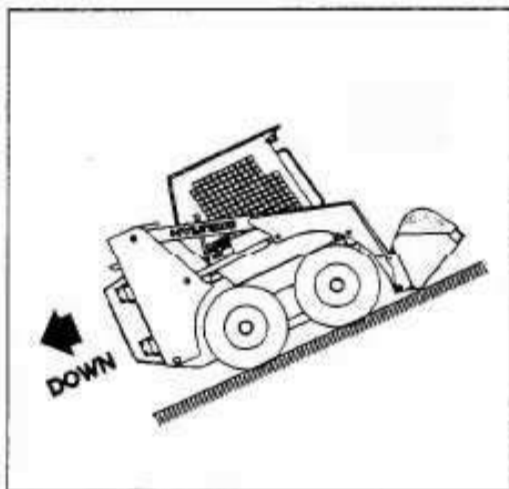
⚠ WARNING

As the center of gravity moves too much at a slope, the loader can be overturned. So do not operate by force. Operate the loader on a level surface as you can.

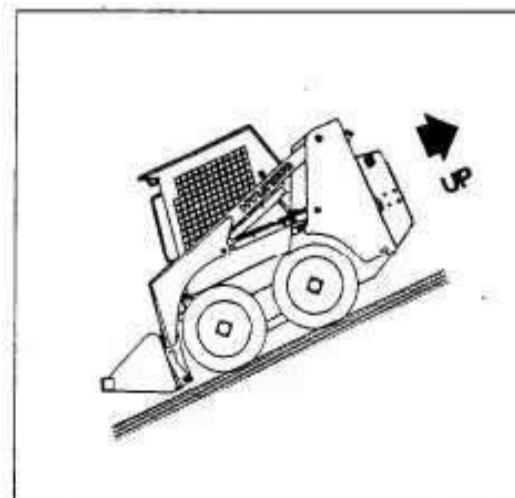
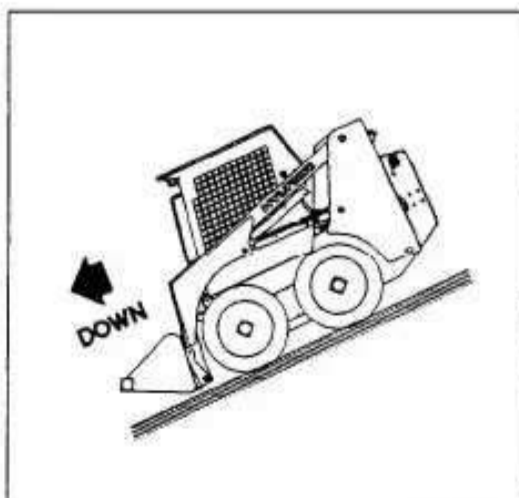
IMPORTANT

Machines warmed up with moderate engine speed and light load have longer life.

With a full bucket, go up or down the slope with the heavy end toward the top of the slope.



With a empty bucket, go down or up the slope with the heavy end toward the top of the slope.



OPERATING PROCEDURE (cont'd)

Filling the bucket

Drive slowly the material with the lift arms are all the way down and put the cutting edge of the bucket on the ground.

Push the steering control lever forward, Put the material in the bucket and raise the front of the bucket.

After filling the bucket with the material, operate the levers which control the lift arms and the bucket.

Drive backward away from the material.

NOTE :

- Flatten the bottom of the bucket on the ground and try not to exceed rated operating capacity.
- Never do work for which exceeds rated operating capacity of the loader.

Emptying the bucket

Raise the bucket over the truck box or bin.

Drive forward slowly until the bucket is the top of the truck box or bin.

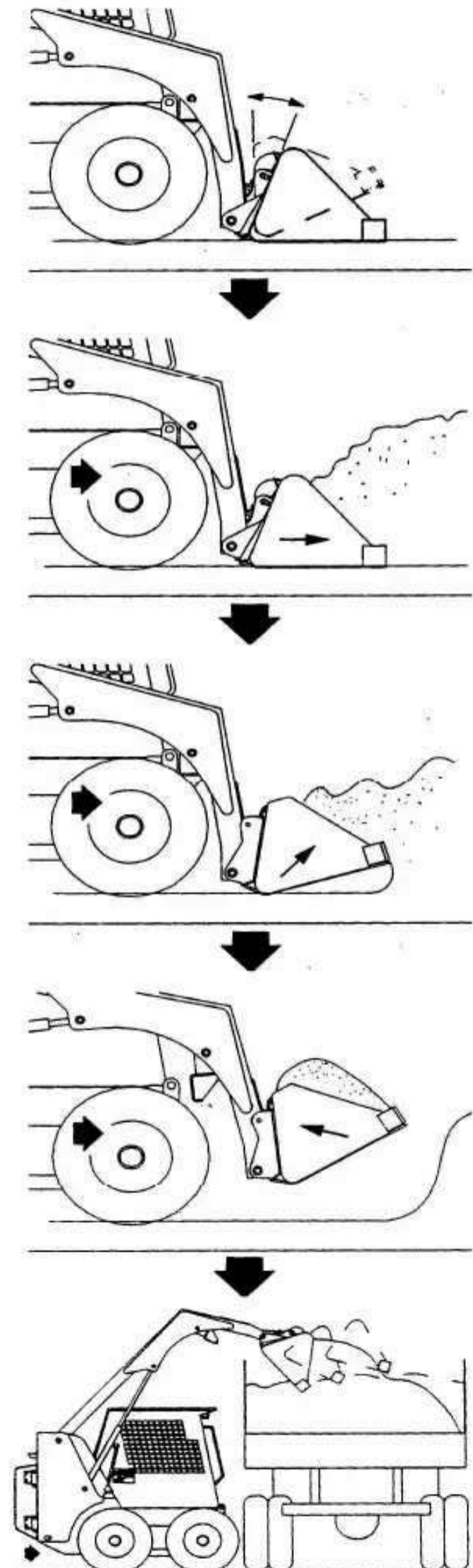
Empty the bucket with the bucket tilted forward after raising the lift arms enough.

Take attention not to collide the loader-body or the bucket with obstructions while loading and unloading and be careful not to drop the contents out of the bucket.

NOTE : Do not flutter the bucket back and forth excessively to remove loose material stuck in the bottom of the bucket. It could reduce the loader's life owing to damage on the cylinder.

WARNING

Do not permit others to approach within a work area while operating.



OPERATING PROCEDURE (cont'd)

Digging In the ground

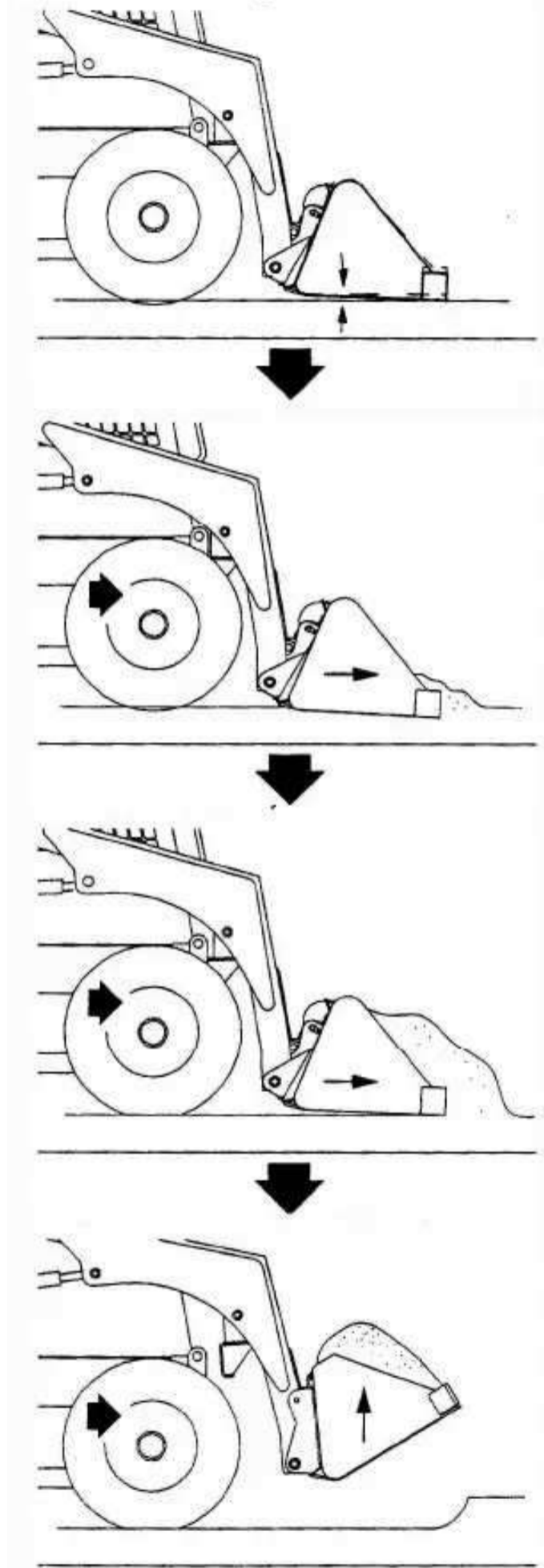
Put the lift arms all the way down and put the cutting edge of the bucket on the ground.

Drive forward slowly and continue to tilt the bucket down until it enters the ground.

Bucket keep digging angle of 10-15 degree from the ground.

Fill the material in the bucket, drive forward slowly and raise the lift arms with the bucket tilted backward.

NOTE : Do not make an excessive angle between the bucket and the ground.



OPERATING PROCEDURE (cont'd)

Leveling the ground

Spread material by driving forward with bucket tilted down and raised off the ground.

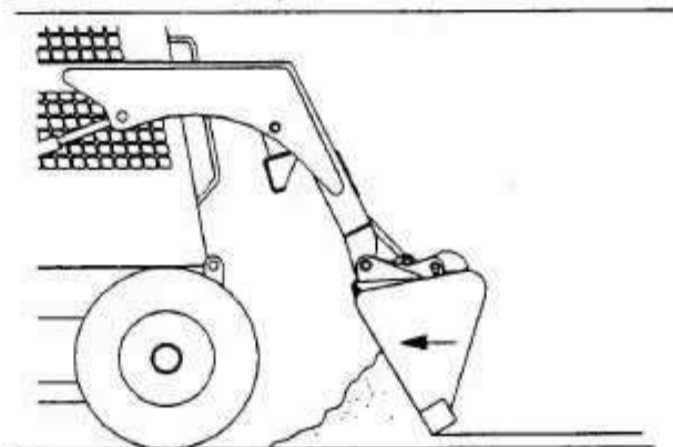
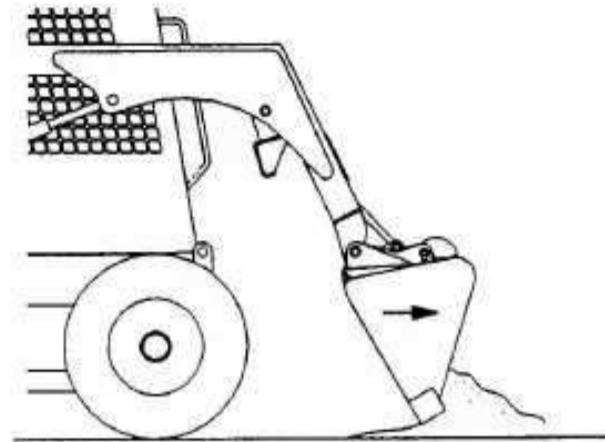
Drive backward and forward to level loose material.

With the bucket tilted farther forward, there is more force on the cutting edge and more loose material can be moved.

You can level the ground with the lift arms raised according to the situation of a work area.

When you do that, keep parallel between the ground and the bottom of the bucket as much as you can.

NOTE : Do not go forward with the lift arms raised.

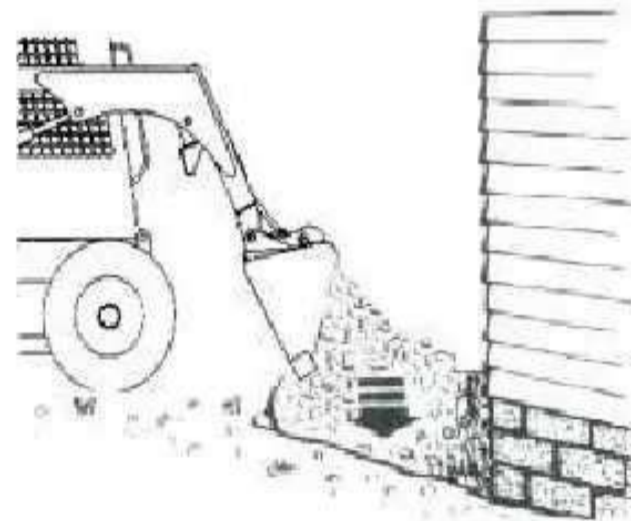


Backfilling

Lower the lift arms and put the cutting edge of the bucket on the ground.

Drive forward to the edge of the hole to push the material into the hole.

Tilt the bucket forward as soon as it is past the edge of the hole. If necessary, raise the lift arms to empty the bucket.



⚠ WARNING

Avoid Injury or death

- Keep the lift arms as low as possible.
- Do not travel or turn with the lift arms up.
- Turn on level ground.
- Go up and down slopes, not across them.
- Keep the heavy end of the machine uphill.
- Do not overload the machine.

Failure to obey warnings can cause the machine to tip or roll over and cause injury or death.

OPERATING PROCEDURE (cont'd)

Transporting the loader

Procedure

⚠ WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Failure to follow instructions can cause injury or death [A]

Be sure the transport and towing vehicles are of adequate size and capacity.

The rear of the trailer must be blocked or supported when loading or unloading the loader to prevent the front end of the trailer from raising up. [B]

Set left and right gangplanks which can sufficiently endure the vehicle weight.

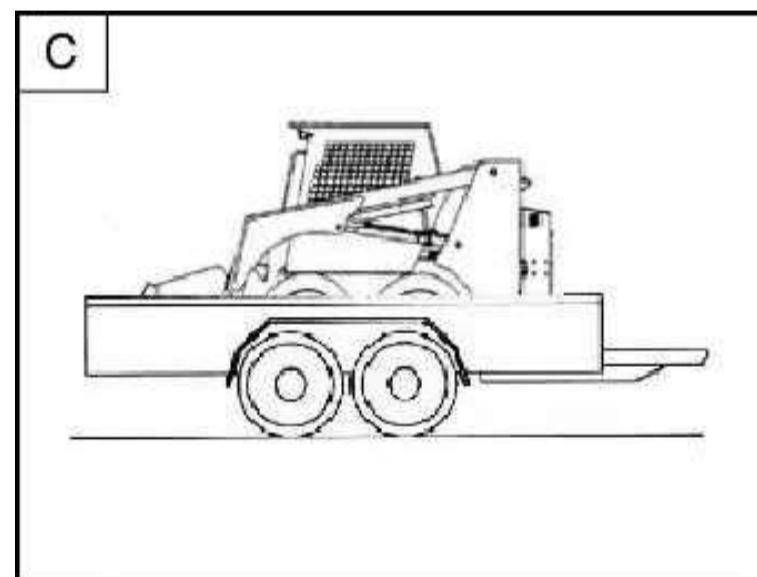
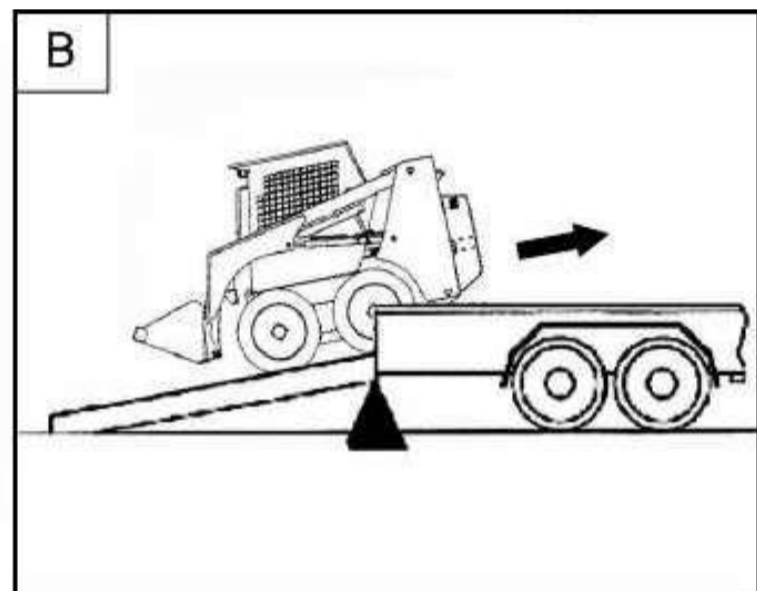
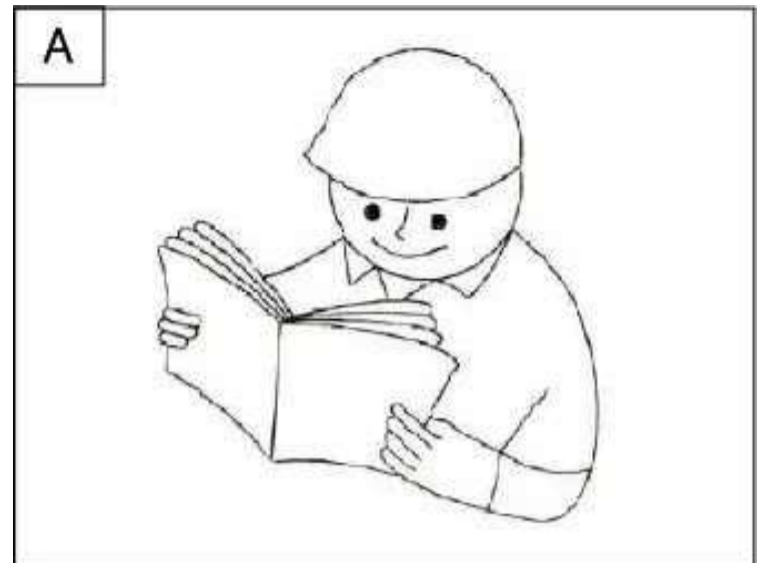
Install gangplanks without level difference between left and right. Fasten gangplanks firmly to the vehicle by using proper fittings.

Limit the board indication within 15 degree.

Adjust the vehicle direction before getting on the gangplanks and a loader with an empty bucket or no attachment must be loaded backward onto the vehicle. [B]

Use the following procedure to fasten the loader to the transport vehicle to prevent the loader from moving during sudden stops or when going up or down slopes. [C]

- Lower the bucket or attachment to the floor.
- Stop the engine.
- Install chains to the front side and rear side of loader.
- Fasten each end of the chain to the transport vehicle.



⚠ WARNING

Adequately designed ramps of sufficient strength are needed to support the weight of the machine when loading onto a transport vehicle. Wood ramps can break and cause personal injury.

OPERATING PROCEDURE (cont'd)

Lifting the loader

Procedure

Loader can be lifted with the four point lift. [A]
Make sure to check lifting devices visually before you use them.

Check the weight, length, width and height of the loader when you are going to hoist the loader.

Use a proper chain or cable.

Tie up holding eyes with the chain or cable.

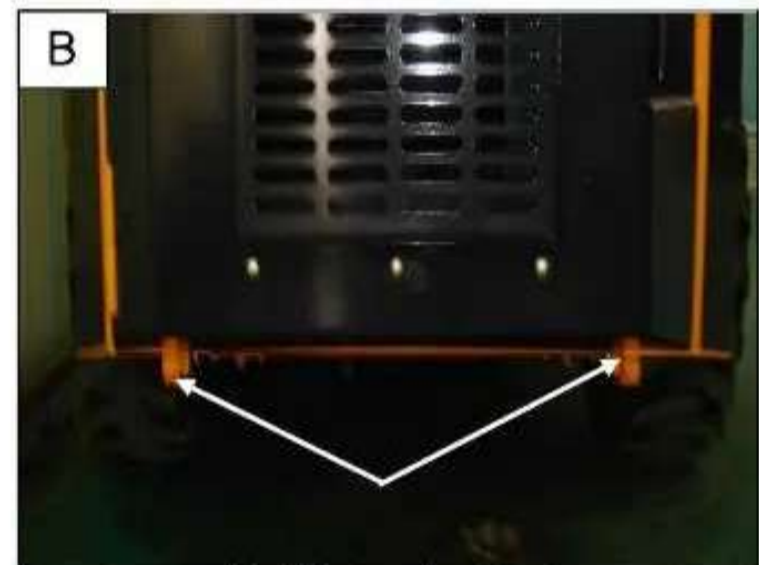
Put a rubber plate on a contact surface of chain or cable and loader to prevent damage.

Towing the loader

Make sure to check towing devices visually before you use them. [B]

NOTE : To prevent damage to the loader mechanical gear system, the loader must be towed only a short distance at slow speed.
(Example : Moving the loader onto a transport vehicle)

The towing chain or cable must be rated at 1-1/2 times the weight of the loader. (see Specification chart)



⚠ WARNING

- Make sure chain or cable is proper size.
- The wrong hoisting method or installation of chain or cable can cause damage to the machine.
- Do not load abruptly.
- Keep area clear of personnel.

ATTACHMENT

Installation And Removal

Installation

All loaders are equipped with quick coupler is used for fast changing of bucket and other attachment.

⚠ WARNING

Quick tach levers have spring tension. Hold levers tightly and release slowly. Failure to obey warning can cause injury.

Place the loader right behind the bucket.

Push down locking levers. [C]

Tilt the quick coupler forward. Drive the loader forward until the top edge of the quick coupler is completely under the flange of the bucket or other attachment.

Tilt the quick coupler backward after raising lift arm a little in order to make bucket or other attachments not to contact the ground.

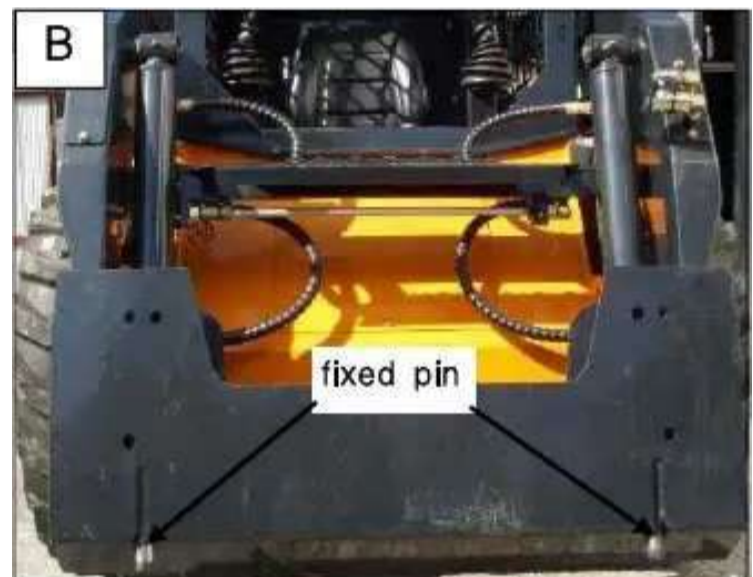
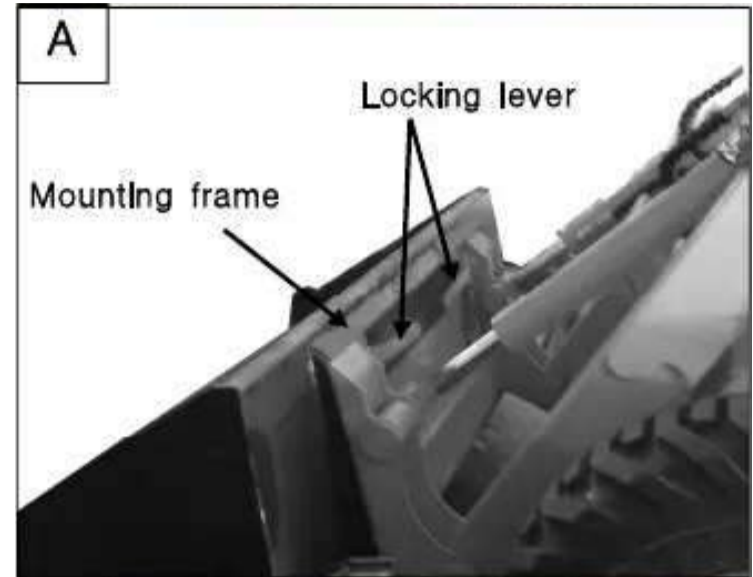
Stop the engine.

Pull up locking levers. [D]

Bucket or other attachments come down with a bang when pull up locking levers.

⚠ WARNING

Locking pin on quick coupler must extend through the holes in attachment. Levers must be fully down and locked. Failure to secure locking pins can allow attachment to come off and cause injury or death.



ATTACHMENT (cont'd)

Installation And Removal (cont'd)

Installation (cont'd)

Push down locking levers until they are in position. [A]

The fixed pins must extend through the holes in the bucket or attachment.

Make sure that fixed pins contact the lower fixed pin edge of the hole in the attachment. [B]

NOTE : If the fixed pin does not contact the lower edge of the hole, the attachment will be loose and can come off the loader.

Removal

Place the loader on the level ground.

Lower the bucket on the ground and tilt quick coupler forward enough to pull the locking lever out.

Pull the locking levers to fixed pins comes out of the fixed pot of the bucket.

Disconnect the upper part of quick coupler from the flange of the bucket, then tilt the bucket forward and back the loader away from the attachment.



ATTACHMENT (cont'd)

Auxiliary hydraulics

⚠ WARNING

Always clean up the coupling device of attachment.

Connect a pad of loader with a pad of attachment.

Connect a hydraulic hose of attachment to a coupling device of attachment on the loader (ITEM 1) [A].

Tighten the bolts and nuts.

⚠ WARNING

Tighten the bolts and nuts tightly not to move the attachment.
Failure to tighten tightly can cause the attachment to fall and cause damage of attachment.

Auxiliary hydraulic pedal

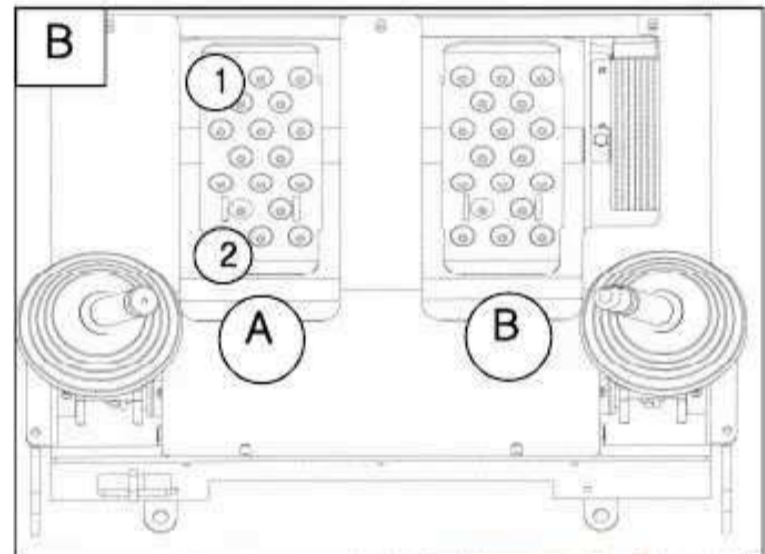
Only Backhoe - Press the aux. hydraulic pedal in ② direction and then Operate the Backhoe by the lever of valve attached to the Backhoe. [B]

Other attachment - When press the aux. hydraulic pedal in ① direction, the cylinder become extended. When attachment' cylinder extend, bucket shuts. On the contrary, when press the aux. hydraulic pedal in ② direction, attachment' cylinder return. When the cylinder return, bucket become open.

(Applicable attachments - Bucket grapple, Pallet fork grapple, Circular fork grapple)

⚠ WARNING

When you connect hose from auxiliary hydraulics of loader (ITEM 1) [A] to attachment, sometimes you may have difficulty in connecting hose because of pressure within hose. At this time, operate aux. hydraulic pedal right and left several times in order to remove pressure within hose.



⚠ WARNING

If press the aux. hydraulic pedal in ① direction and then take off, pedal return. But If press the aux. hydraulic pedal in ② direction and then take off, pedal don't return.

Pedal remain pressed down.

This principle is for continuous delivery of power when using backhoe.

When you use other attachments, press the aux. pedal in ② direction and then press the aux. pedal in ① direction slightly. If you do, pedal return.

If you work in pressing the aux. hydraulic pedal in ② direction (When you don't use aux. hydraulic line (i.e. bucket)), power of lift arm or bucket fall and it will can result in damage on hydraulic system.

Sure to check whether the aux. hydraulic pedal is in neutral or not when you don't use hydraulic line.

ATTACHMENT (cont'd)

High flow hydraulics (Option)

⚠ WARNING

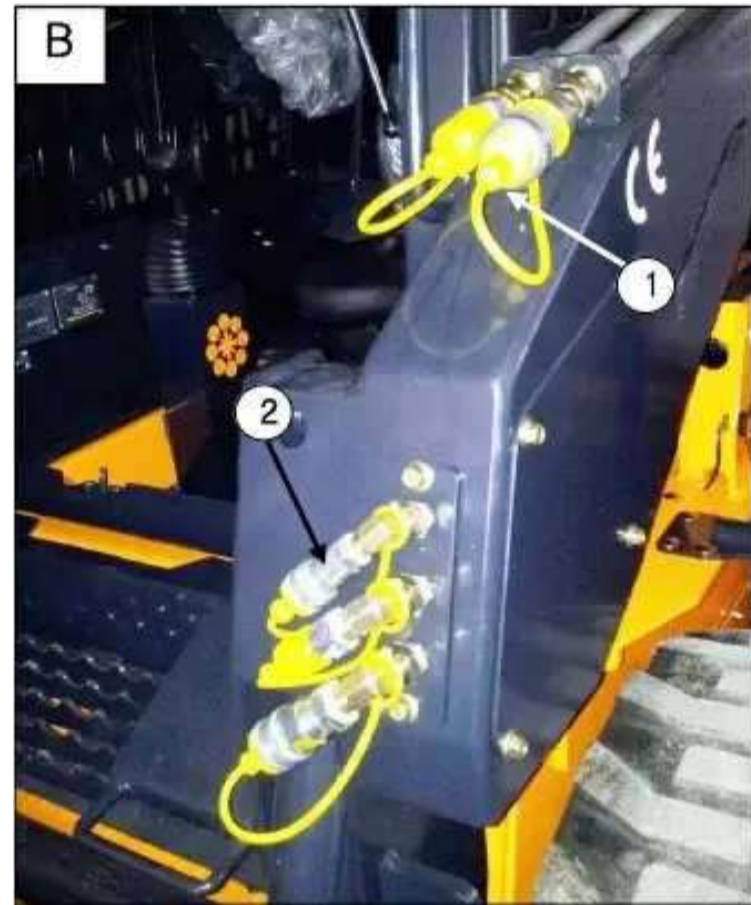
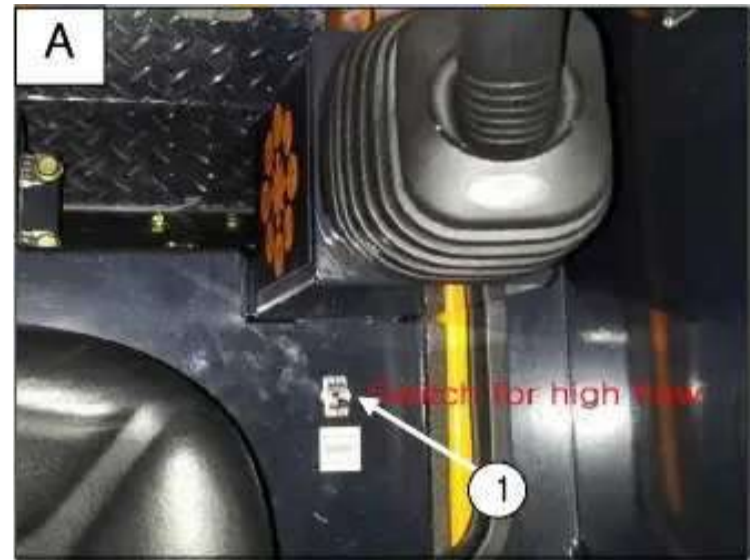
Use only the large quick couplers for high horse power function.

The on/off toggle switch (ITEM 1) is located on the right side of the operator's seat controls the high horse power function. [A]

The high horse power function provides additional hydraulic flow to the system to operate a high horse power attachment (example : planer, asphalt cutter). Additional hydraulic flows are available to operate the attachment. System pressure is also increased while the high horse power function is in use.

With the toggle switch in the off position, connect the attachment quick couplers to the large quick couplers (ITEM 1) on the left front of the loader.

The high horse power attachment may have a case drain which needs to be connected to the drain line. (ITEM 2) [B]



ATTACHMENT (cont'd)

Self leveling valve (Option)

Tools necessary for adjusting the volume :

Two spanners

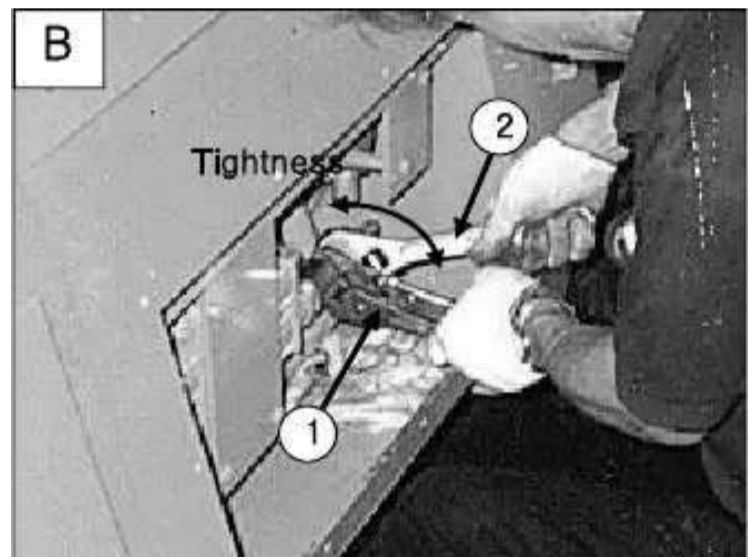
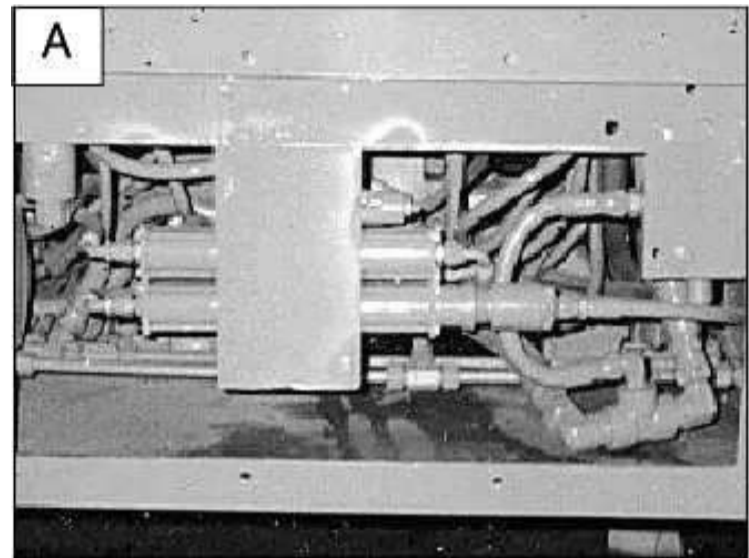
self leveling valve is installed as optional item. [A]

When raise the bucket high, the bucket have to keep a level in case that looking at from the side. If bucket is leaned forward or backward, control flow of the oil by the self leveling system. [B]

- * In case that bucket is leaned forward : hold spanner (ITEM1) to fix the self leveling system and loosen the self leveling system by the other spanner (ITEM 2) in order to decrease a volume.
- * In case that bucket is leaned backward : hold spanner to be fixed the self leveling system and tighten the self leveling system in order to increase a volume.

NOTE : It's possible to drop the contents out of the bucket because of Inadequate flow. Adjust flow by controlling the self levelling system.

NOTE : Adjust the self leveling system while looking at movement of the bucket from the side.



⚠ WARNING

Self levelling system is to adjust level of bucket against angle of boom automatically when operator raise boom.

At loader equipped self leveling system, you can't curl the bucket and raise the boom at the same time. Self leveling system resist operation that you operate these operations at the same time.

If you try to do these operation, you can feel engine slows down.

Don't curl the bucket and raise the boom at the same time, if your machine have self leveling system.

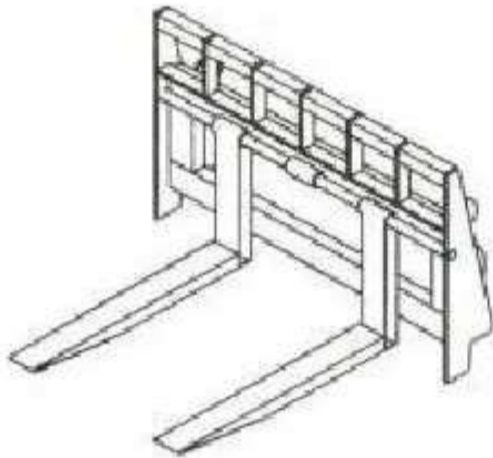
ATTACHMENT (cont'd)

Function

Equip your loader with one or several high-quality attachment. This versatile skid steer loader can be fitted for almost any application. Refer to page 36 "Auxiliary hydraulic pedal" before use attachments.

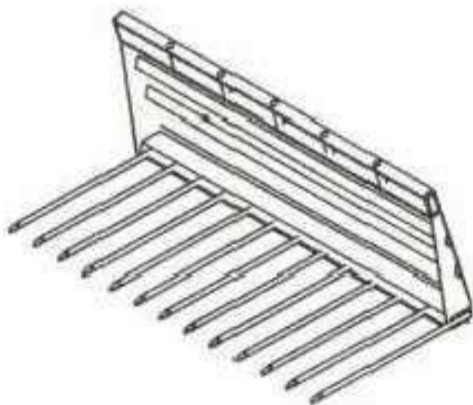
PALLET FORK

: Move bulky or bagged materials in one load. Hook on a pallet fork and move your bagged or bulk material fast. Ideal for all kinds of farm chores and fertilizer handling. In industrial plants and landscaping, handle baled or pallet materials.



FORK

: Handle loose or bulky landscaping or farming materials like straw, rugged barnyard manure.



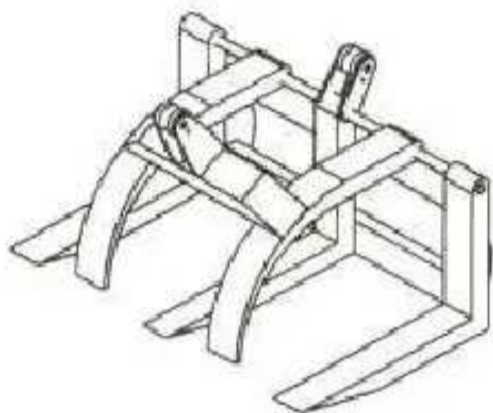
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ATTACHMENT (cont'd)

Function (cont'd)

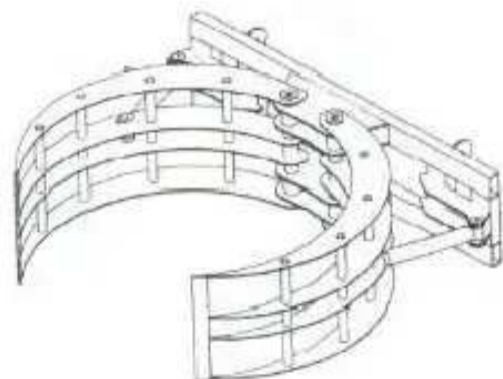
PALLET FORK GRAPPLE

: Pallet fork grapple is perfect for handling irregular-shaped metal and other assorted scrap and heavy-duty agricultural applications.



CIRCULAR FORK GRAPPLE

: Clamp or deliver a drum, the

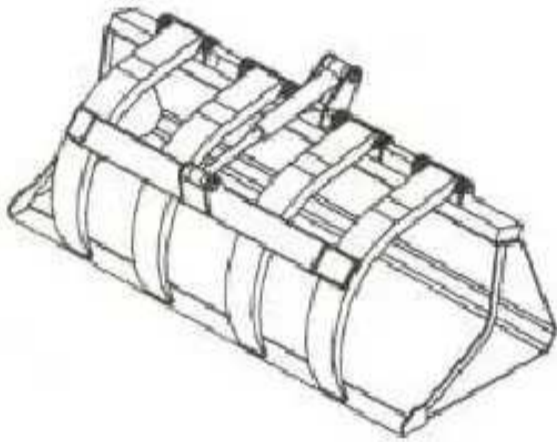


ATTACHMENT (cont'd)

Function(cont'd)

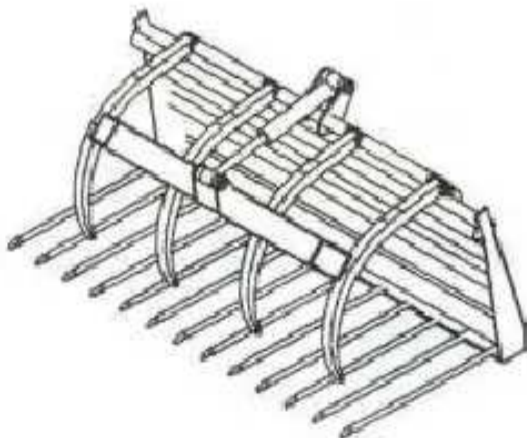
BUCKET GRAPPLE

: Clamp onto heavy and odd-shaped objects, and move them with ease. Bucket grapple is the ideal attachment for handling scrap, waste or pipe. It's built strong for tough working conditions.



UTILITY FORK GRAPPLE

: Cut down on daily hand chores and free up your time. Utility fork grapple is the ideal attachment for handling bundled material, loose straw, and manure.



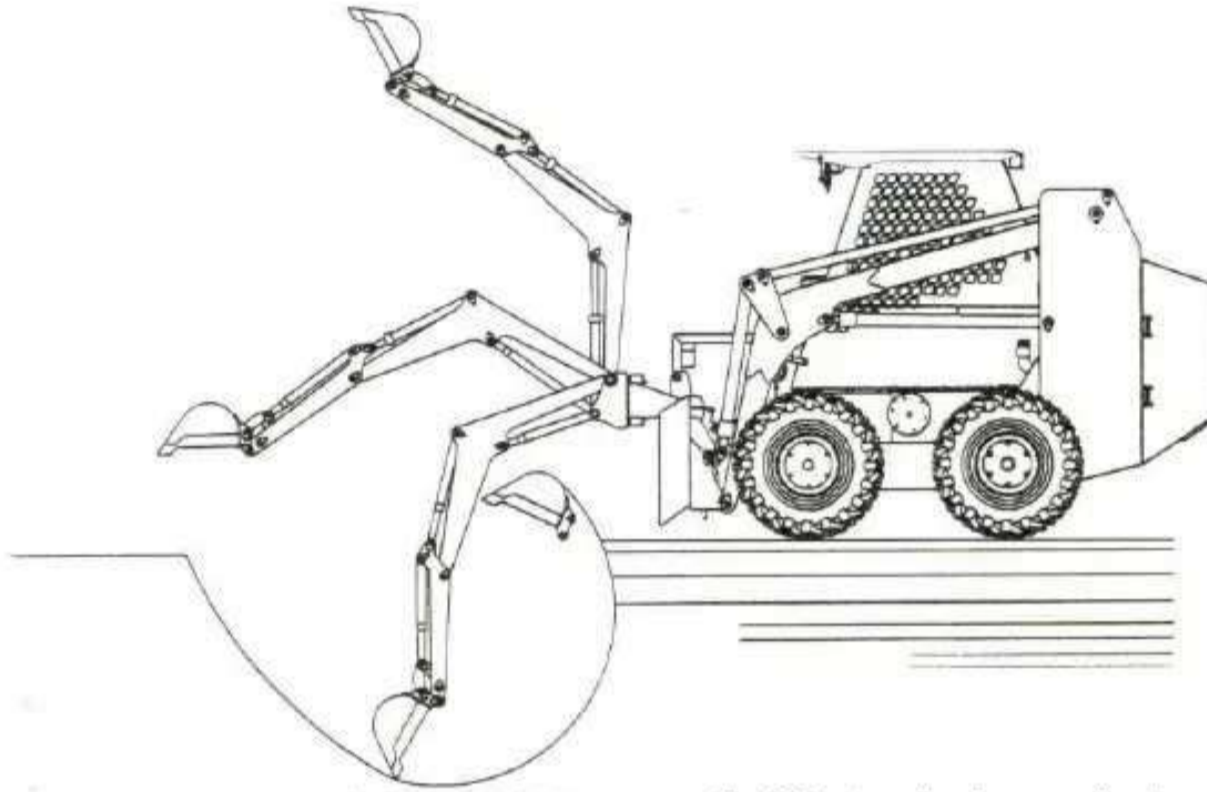
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ATTACHMENT (cont'd)

Function(cont'd)

BACKHOE

: Transforms skid steer loader into a excavator!
Backhoe are designed for high production digging.



TOOTH BUCKET

: Handle soil, sand and gravel and so on.



ATTACHMENT (cont'd)

Function (cont'd)

SWEeper

: Cleans up construction sites. Sweeps loose materials while loader moves forward and cleaning surface of debris. Sweeps parking lots, warehouse, docks, etc. Sweeps and collects debris with one attachment.

《Description》

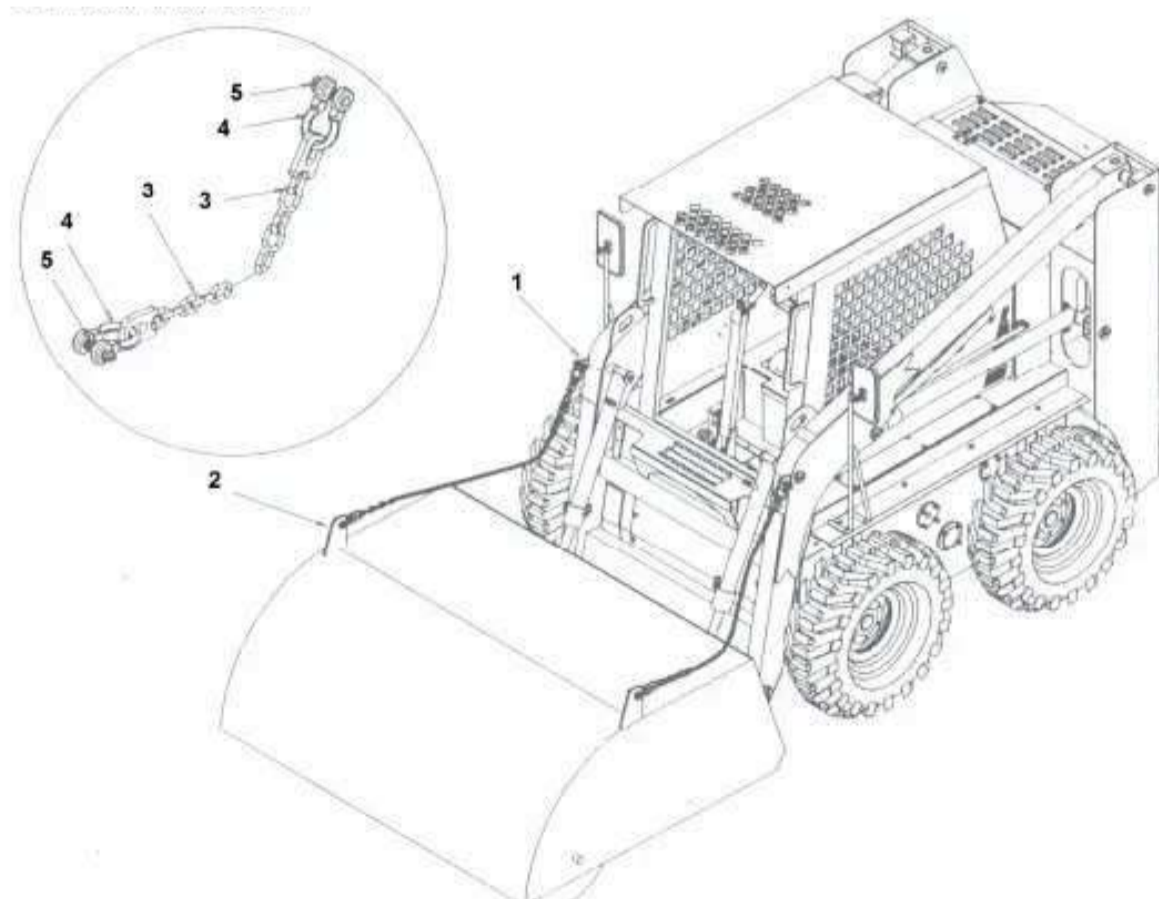
①Fixed bracket for loader ②Fixed bracket for sweeper ③Chain ④Shackle ⑤Shackle bolt

《How to connect chains》

- Attach the sweeper to loader in the same way of bucket.
- Disconnect the shackle bolt and then connect the shackle to the fixed bracket for loader
- Connect the opposite shackle to the fixed bracket for sweeper.
- Connect both chain

《How to use》

- Lift the sweeper to approx. 1.5m height with using the lift arm and then inspect that brush is working well.
- Goes down the sweeper to the working location. At this time keep the optimum height to brush is not folded.
- If you want to hold garbage, push the front part of aux. hydraulic pedal, brush turn forward. At this time, drive the loader backward. So sweeper hold garbage.
- If you want to dump garbage, extend the bucket cylinder. If you extend the bucket cylinder, sweeper dump garbage with bucket part operating only. At this time, sweeper is not go down because sweeper connects with the chain.
- Raise the bucket cylinder.



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ATTACHMENT (cont'd)

Function (cont'd)

BACKHOE – IDENTIFICATION

Driving lever



Auxiliary hydraulics



Bucket cylinder



Rotating cylinder



HOW TO OPERATE

Make sure the connection of loader and backhoe first and then start the engine.

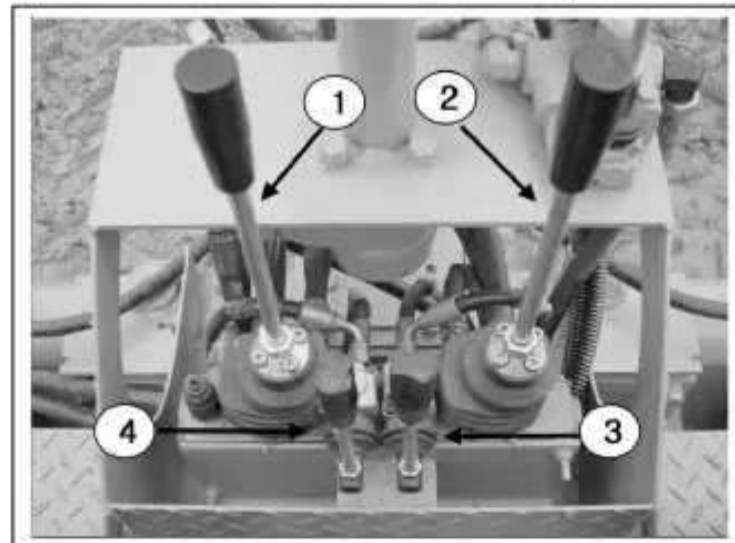
Move the loader with the outrigger raised. If there are unevenness, it can cause serious injury or death by overturning the equipment.

Move to the place of work.

Lower the right and left outrigger to the ground.

Make sure that control levers function properly.

- ITEM 1 : Arm operating lever
- ITEM 2 : Boom operating lever
- ITEM 3 : Right outrigger operating lever
- ITEM 4 : Left outrigger operating lever



NOTE : As the center of gravity moves too much at a slope, the loader can be overturned. So do not operate by force. Operate the loader on a level surface as you can.

With a full bucket, go up or down the slope with the heavy end toward the top of the slope.

ATTACHMENT (cont'd)

Function (cont'd)

HOW TO ATTACH TO THE LOADER

Stop the loader on a level. [A]

NOTE : Always stop the loader on a level when operator attach and detach the backhoe to the loader.

Move the loader forward to the backhoe slowly.
Fit a pad of loader (ITEM 1) in a pad rack of backhoe (ITEM 2) from the upper pad rack and then couple a pad and a pad rack slowly. [B]

Fasten a pad and pad rack with fixed levers by pushing them.
Adjust the pad vertically by operating the left lever (bucket operating lever).
Stop the engine. [C]

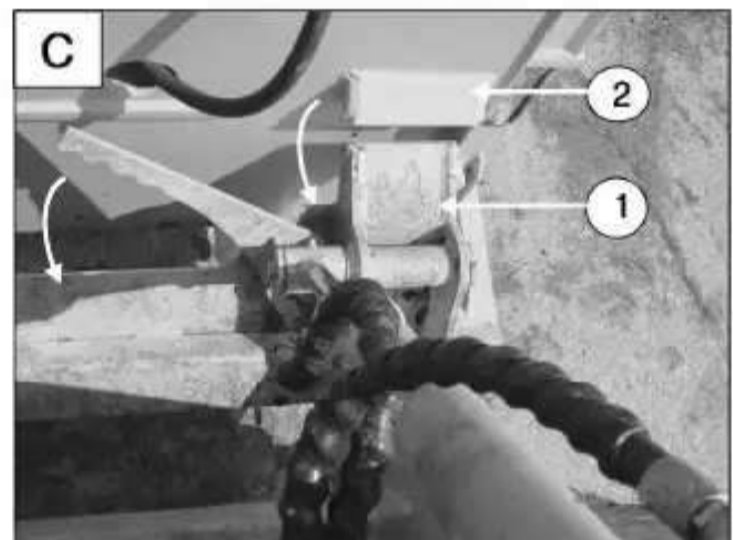
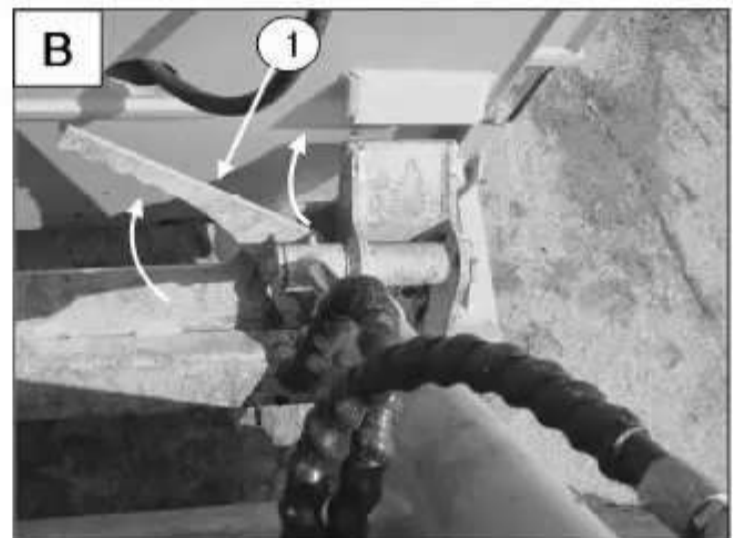
Remove the pressure in an auxiliary hydraulic line by pushing the auxiliary hydraulic switch several times.

NOTE : If you don't remove the pressure in an auxiliary hydraulic line, you may have difficulty in connecting hoses to the auxiliary hydraulics.

Connect hoses of backhoe to the auxiliary hydraulics of loader. [D]

Unfasten the lever for fixing and then lower the control lever inside of a driver's seat of loader.
Adjust the control lever position for comfortable operation of the backhoe and then start the engine.

NOTE : Make sure that the auxiliary hydraulic switch is in neutral position.



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ATTACHMENT (cont'd)

Function (cont'd)

HOW TO DETACH THE BACKHOE

Stop the loader on a level and lower the bucket to the ground.

Make sure that bucket and right and left outrigger (ITEM 1) touch the ground. Bucket and outrigger have to touch the ground in order to maintain a level. [A]

NOTE : Lower the bucket and right-left outrigger to the ground in order to detach the backhoe safely.

Adjust the pad vertically by operating the left lever (bucket operating lever).

Unfasten linkage of pad and pad rack by pulling fixed levers (ITEM 2) upward. [B]

Separate the pad (ITEM 1) from the lower part of pad rack (ITEM 2) with bending the pad forward slowly. [C]

Move the loader backward about 50cm slowly.

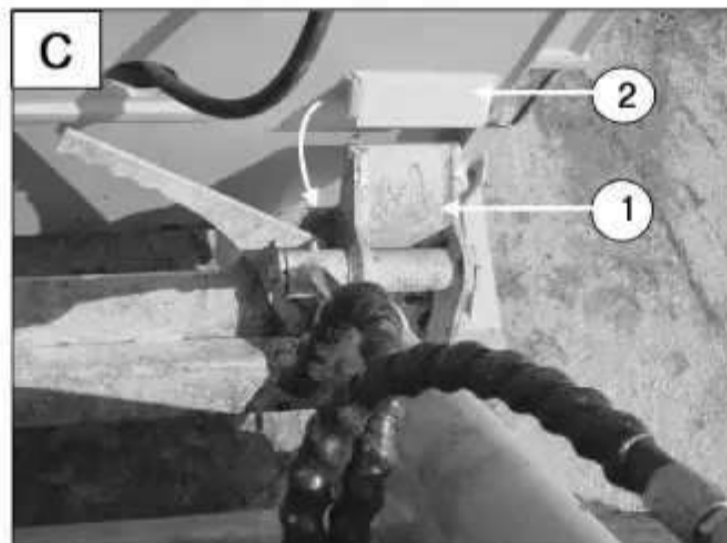
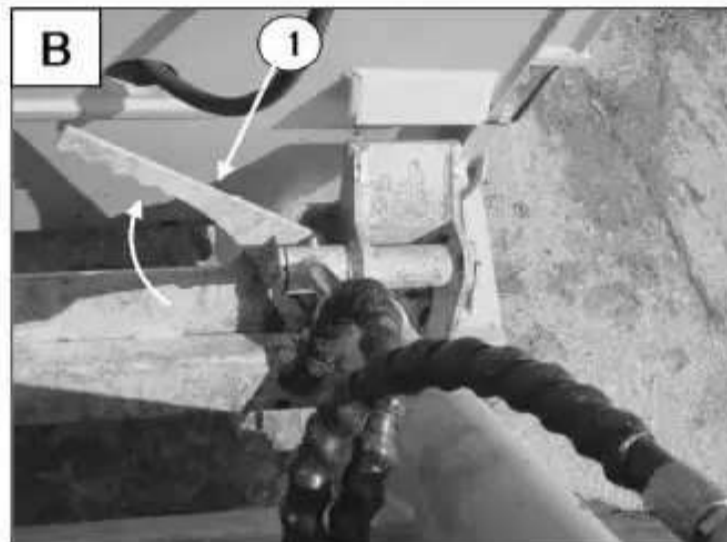
NOTE : Never travel the loader when you detach the backhoe from the loader.

Stop the engine.

Remove the pressure in the auxiliary hydraulic line by pushing the auxiliary hydraulic switch several times.

Disconnect hoses from the auxiliary hydraulics of loader. [D]

Start the engine.



ATTACHMENT (cont'd)

Function (cont'd)

BREAKER

: Breaker provides high-impact forces for vertical and horizontal breaking concrete, rock, pavement and other demolition project.



AUGER

: Auger is used for digging vertical holes, even though the loader is working on uneven terrain.



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PREVENTIVE MAINTENANCE

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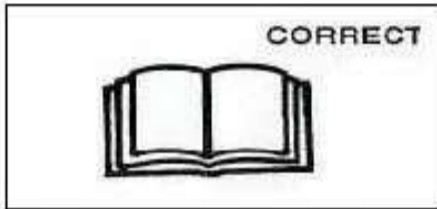
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MAINTENANCE SAFETY

⚠ WARNING

Instructions are necessary before operating or servicing machine. Read Operation & Maintenance Manual and signs (decals) on machine. Follow warning and instruction in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustment, repairs or service. Failure to follow instructions can cause injury or death.

⚠ Safety Alert Symbol : This symbol with a warning statement means : "warning, be alert! your safety is involved !" Carefully read the message that follows.



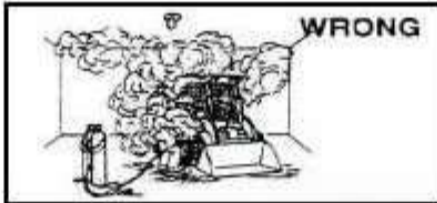
⚠ Never service the loader without instructions.



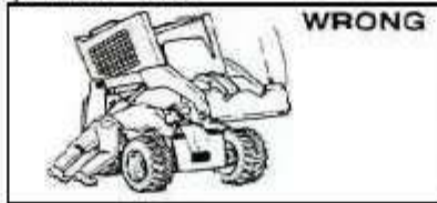
⚠ Use the correct procedure to lift or lower operator cab.



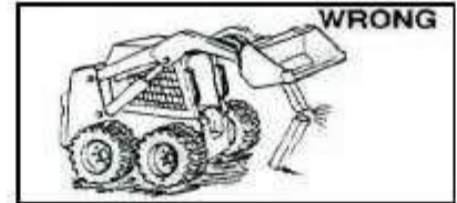
⚠ Cleaning and maintenance are required daily.



⚠ Have good ventilation when welding or grinding painted parts.
 ⚠ Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.
 ⚠ Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.

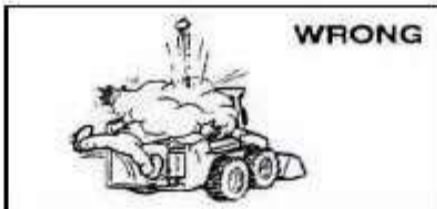


⚠ Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop. Do not go under lift arms when raised unless supported by an approved lift arm support device. Replace if damaged.



⚠ Never work on loader with lift arms up unless lift arms are held by an approved lift arm support device. Replace it damaged.

⚠ Never modify equipment or add attachments not approved by SHIN HEUNG company.



⚠ Stop, cool and clean engine of flammable material before checking fluids.
 ⚠ Never service or adjust loader with the engine running unless instructed to do so in the manual.
 ⚠ Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate the skin or eyes.
 ⚠ Never fill fuel tank with engine running, while smoking or when near open flame.



⚠ Keep body, jewelry and clothing away from moving parts, electrical contacts, hot parts and exhaust.
 ⚠ Wear eye protection to guard from battery acid, compressed springs, fluids under pressure and flying debris when engines are running or tools are used. Use eye protection approved for type of welding.
 ⚠ Keep engine room cover closed except for service. Close the engine room cover before operating the loader.



⚠ Lead-acid batteries produce flammable and explosive gases.
 ⚠ Keep arcs, sparks, flames and lighted tobacco away from batteries.
 ⚠ Batteries contain acid which burns eyes or skin on contact. Wear protective clothing. If acid contacts body, flush well with water. For eye contact flush well and get immediate medical attention.

Maintenance procedures which are given in the operation & Maintenance Manual can be performed by the owner/operator without any specific technical training. Maintenance procedure are not in the Operation & Maintenance Manual must be performed **ONLY BY QUALIFIED BAWOO COMPANY CORP. SERVICE PERSONAL**. Always use genuine BAWOO COMPANY replacement parts. The Service Safety Training Course is available from your dealer.

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SERVICE SCHEDULE

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The service schedule is a guide for correct maintenance of the all loader.

WARNING

Instructions are necessary before operating or servicing machine. Read and understand Operation & Maintenance Manual and signs (decals) on machine. Follow warning and instruction in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Failure to follow instructions can cause injury or death

The amount of wear to each part varies according to whether or not the periodic maintenance is carried out, machine operating skill, working condition, quality of lubricants in service, working environment, and amount of excavation. Operators are required to determine service intervals for their loaders based on engine conditions, hour meter readings, extent of wear of each component, hydraulic system condition and their own experience and related data.

Pre-operations Inspection

Check points	Check items	Remarks
Engine oil pan	Check oil level	Check before start-up
Fuel tank	Check fuel level	Ensure that oil level should be above the center of level gauge
Radiator	Check coolant level	Check to see if coolant in the reservoir tank is up to the specified level
Each grease point	Grease	
Check for looseness or damage of each part	Looseness, missing, oil leaks, coolant leaks	
Steering levers and gauges	Check for operation	Check to see if levers work properly
Hydraulic oil tank	Check oil level	Add if required
Bucket teeth and others	Wear	Check to determine if the teeth should be replaced with new ones
Electric wiring	Looseness or damage	Check terminals for looseness, missing or damage
Fan belt	Check and adjust	A firm push with the thumb at a point midway between the two pulleys should depress the belt 10-12mm
Each part of main body	Oil leaks, coolant leaks, looseness, damage etc	Remove mud, foreign matters etc. sticking to the main body
Fuel tank	Replenish fuel, if required	
Coolant	Check coolant level	Drain the coolant if freezing is expected.

SERVICE SCHEDULE (Cont'd)

Daily or 10hours intervals

		Check	Change	Lube	Serviceman
Air cleaner element	Check leaks and damaged components.	√			
Air cleaner dust indicator	Check dust level. (if filter is clogged, indicator turn on)	√			
Engine oil	Check engine oil level and add oil as needed.	√			
Hydraulic fluid	Check hydraulic fluid level add fluid as needed.	√			
Tires	Check damaged tires, wear and air pressure.	√			
Engine cooling system	Clean debris from oil cooler, radiator and grill. Check coolant level in aux. water tank and add coolant as needed.	√			
Fuel	Check fuel level add oil as needed.	√			
Steering levers	Check correct operation.	√			
Safety belt, safety bar	Check the condition of safety belt and safety bar. Clean dirt and debris from moving parts.	√			
Gauges and lights	Check correct operation of all indicators and lights.	√			
Operator cab	Check bolts, washers. Check condition of cab.	√			
Lubricate pivot pins & fixed pins on quick tach pad	Lubricate with multi-purpose lithium based grease.			√	

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SERVICE SCHEDULE (Cont'd)

At first 50hours of use only

		Check	Change	Lube	Service center
Battery	Check cables, connections and electrolyte level.	√			
Chain case	Check oil level add oil as needed..	√			
Wheel nuts	Check loose wheel nuts and tighten to 28~30kgf.m	√			
Fan belt	Check belt tension.	√			
Engine oil and filter	Replace oil and filter. Use turbo max or better grade oil and filter.		√		
Hydraulic fluid and filter	Check damage and leaks. Replace oil and filter.		√		

Service Advice 1

To the Service Centre/Repairer :
In the best interests of your customer,
Please fill out all the information below.

50 hours service

Invoice/Job No. _____

Serial No. _____

Hour meter : _____

Date : _____

Repairer/Service Centre Stamp.

1

SERVICE SCHEDULE (Cont'd)

100 hour interval (Please carry out the check as per 100 hour service check)

		Check	Change	Lube	Service center
Muffler	Clean the chamber.	√			
Fan belt	Check belt tension.	√			

250 hour interval

		Check	Change	Lube	Service center
Chain case	Check oil level add oil as needed.	√			
Battery	Check cables, connections and electrolyte level.	√			
Engine oil and filter	Replace oil and filter. Use turbo max or better grade oil and filter.		√		
Hydraulic oil filter	Check damage and leaks. Replace filter.		√		
Air cleaner filter	Check filter and replace filter, if needed.		√		
Fuel filter	Replace fuel filter.		√		

Service Advice 2

To the Service Centre/Repairer :
In the best interests of your customer,
Please fill out all the information below.

100 hours service

Invoice/Job No. _____

Serial No. _____

Hour meter : _____

Date : _____

Repairer/Service Centre Stamp

2

Service Advice 3

To the Service Centre/Repairer :
In the best interests of your customer,
Please fill out all the information below.

250 hours service

Invoice/Job No. _____

Serial No. _____

Hour meter : _____

Date : _____

Repairer/Service Centre Stamp

3

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SERVICE SCHEDULE (Cont'd)**500 hour Interval**

		Check	Change	Lube	Service center
Engine oil and oil filter	Replace engine oil and oil filter		√		
Fuel filter	Replace fuel filter		√		
Hydraulic oil filter	Replace all hydraulic filter		√		
Air filter with pre cleaner	Replace air cleaner filter		√		
Chain case	Replace oil		√		
Electrical	Check all gauges and wiring	√			

750 hour interval

		Check	Change	Lube	Service center
Engine oil and oil filter	Replace engine oil and oil filter		√		
Battery	Check cables, connections and electrolyte level.	√			
Chain case	Replace oil		√		
Air filter with pre cleaner	Check & replace, if needed	√			
Fuel filter	Replace fuel filter		√		

Service Advice 2

To the Service Centre/Repairer :
In the best interests of your customer.
Please fill out all the information below.

500 hours service

Invoice/Job No. _____

Serial No. _____

Hour meter : _____

Date : _____

Repairer/Service Centre Stamp.

4

Service Advice 3

To the Service Centre/Repairer :
In the best interests of your customer.
Please fill out all the information below.

750 hours service

Invoice/Job No. _____

Serial No. _____

Hour meter : _____

Date : _____

Repairer/Service Centre Stamp.

5

BAWOO COMPANY CORP.

SERVICE SCHEDULE (Cont'd)

1000 hour Interval

		Check	Change	Lube	Service center
Chain case	Replace chain case oil.		√		
Hydraulic fluid and filter	Replace hydraulic oil and filter.		√		
Engine coolant	Replace coolant.		√		
Timing belts	Replace belts and check tensioners		√		
Engine oil and oil filter	Replace engine oil and oil filter		√		
Fuel filter	Replace fuel filter		√		
Air filter with pre cleaner	Check & replace, if needed	√			

Service Advice 1

To the Service Centre/Repairer :
In the best interests of your customer.
Please fill out all the information below.

1000 hours service

Invoice/Job No. _____

Serial No. _____

Hour meter : _____

Date : _____

Repairer/Service Centre Stamp.

6

BAWOO COMPANY CORP.

SPECIFICATION OF ALL OIL

Kind of fluid	Capacity	Ambient temperature °C (°F)						
		-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil	5700 : 5.4 ℓ 8700 : 8 ℓ	SAE 30						
		SAE 10W						
		SAE 15W-40						
Hydraulic oil	5700 : 65 ℓ 8700 : 75 ℓ	ISO VG 32						
		ISO VG 46						
		ISO VG 68						
Fuel	5700 : 65 ℓ 8700 : 75 ℓ	ASTM D975 NO.1						
		ASTM D975 NO.2						
Coolant	Mixture of antifreeze and water 50 : 50 5700 : 10 ℓ 8700 : 12 ℓ	Ethylene glycol base permanent type						
Grease	as required	NLGI NO.1						
		NLGI NO.2						
Gear oil (Chain case)	5700 : 22.5 ℓ 8700 : 40 ℓ	ISO VG 32						
		ISO VG 46						
		ISO VG 68						

Engine oil : API CI-4/15W-40

Hydraulic oil : AW46

Fuel : Diesel

Coolant : Mixture of 50% ethylene glycol base antifreeze and 50% water. To prevent freezing of the cooling system in extremely cold places, be sure to add a specified amount of antifreeze to coolant.

Grease : Lithium base grease ZRG#2

Gear oil : EP100-(AW46)

* Use only oils listed below or equivalent.

* Do not mix different brand oil.

TIGHTENING TORQUE

Use following table for unspecified torque.

Bolt and Nut tightening torque table

Bolt size	4T	7T	9T
	kg.m	kg.m	kg.m
M6	0.8~0.95	1.0~1.15	1.25~1.45
M8	1.8~2.1	2.4~2.8	3.0~3.5
M10	4.0~4.6	4.9~5.7	6.2~7.2
M12	6.4~7.4	7.9~9.2	10.5~12.0
M14	11.0~12.8	12.6~15.0	17.0~20.0
M16	17.0~19.5	20.0~23.0	26.5~31.0
M18	25.0~29.0	28.0~32.5	35.0~41.0
M20	34.0~40.0	37.5~44.0	50.0~58.0

(2) Pipe and Hose

Thread size	Width across flat (mm)	kg.m
1/4"	19	3
3/8"	22	4
1/2"	27	5
3/4"	36	12
1"	41	14

(3) Fitting

Thread size	Width across flat (mm)	kg.m
1/4"	19	4
3/8"	22	5
1/2"	27	6
3/4"	36	13
1"	41	15

NOTE : Torque represents the force required to tighten a bolt. To produce a torque of 12kg.m using a 25cm long spanner, force 48kg is necessary as follows..

$$0.25 \times (X \text{ kg}) = 12 \text{ kgm}$$

$$12 \div 0.25 = 48 \text{ kg}$$

BAWOO COMPANY CORP.

LIFT ARM SUPPORT DEVICE

Engaging the Lift Arm Support Device

Maintenance and service work can be done with the lift arms lowered. If the lift arms raised, use the following procedure :

All loaders are equipped with lift arm support device (ITEM 1). [A]

Put jack stands under the rear corners of the loader.

With the operator in the seat, seat belt fastened and safety bar lowered, start the engine.

Raise the lift arms to the maximum height. [B]

Stop the engine and raise safety bar.

Remove the cotter pin (ITEM 1) at the back and then remove the snap pin (ITEM 2) from the lift arm support device. [B]

Lower the lift arm support device on top of the lift cylinder. [C]

Insert the snap pin through the lift arm support and then install the cotter pin. [D]

Disengaging the Lift Arm Support Device

Remove the cotter pin and the snap pin from the lift arm support device.

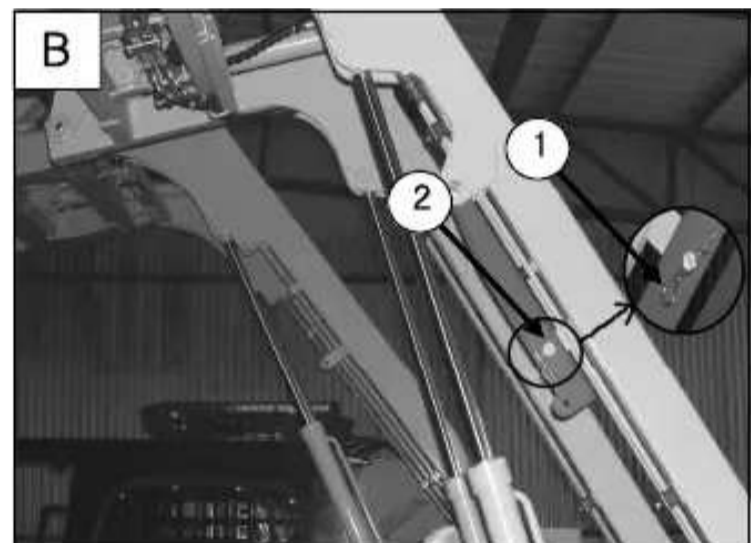
Fix the lift arm support device to holder of the lift arm.

With the operator in the seat, seat belt fastened and safety bar lowered.

Lower the lift arm.

⚠ WARNING

Raise lift arm to the highest height and then lower lift arm support.
Don't operate lift arm after installing lift arm support device. There is a likelihood of some clearance to cylinder rod but don't operate lift arm to adjust this clearance compulsorily. It can cause the cylinder rod to be damaged.



OPERATOR CAB

Description

The loader have an operator cab (ROPS and FOPS) as standard equipment to protect the operator from rollover and falling objects.

Check with your dealer for the operator cab has been damaged.

All operator cabs are protective structure from falling bricks, small concrete blocks and hand tools encountered in operations such as highway maintenance, landscaping and other construction site service.

Also this is a protective structure from falling trees, rocks ; for machines involved in site cleaning, overhead demolition or forestry.

ROPS : Roll Over Protective Structure

FOPS : Falling Object Protective Structure

⚠ WARNING

Never modify operator cab by welding, grinding, drilling holes or adding attachments unless instructed to do so by BAWOO COMPANY. Changes to the cab can cause loss of operator protection from rollover and falling objects, and result in injury or death.

Raising The Operator Cab

Stop the loader on a level surface.

Lower the lift arms.

Stop the engine. If the lift arms must be up while raising the operator cab, install the lift arm support device.

Put jack stands under the rear of the loader frame.

Loosen the bolt (ITEM 1) and the vibroisolating rubber (ITEM 2) (both sides) at the front corner of the operator cab. [A]

⚠ WARNING

AVOID INJURY OR DEATH

When operator cab is equipped with a cab enclosure kit (front door, side windows and top window) and other accessories, the cab will not stay in the fully raised position. Use a chain hoist to secure cab in fully raised position or lower cab until it rests against the cab lock on the rear of the operator cab.

Accidental movement of the loader, the lift arms or the attachment can occur if the lift or tilt control handles (steering control lever) are not positioned correctly before lifting or lowering the cab.

Move control linkage to top hole in handles, so cab does not hit handles when being lifted or lowered.



⚠ WARNING

In case of closed cabin, don't raise or lower lift arm when you open the front door. It can result in damage.

BAWOO COMPANY CORP.

OPERATOR CAB (cont'd)

Raising The Operator Cab (cont'd)

In order to prevent the operator's cab from dropping, after raising the operator's cab, make sure to install the fixed pin.

Insert the fixed pin. [B]

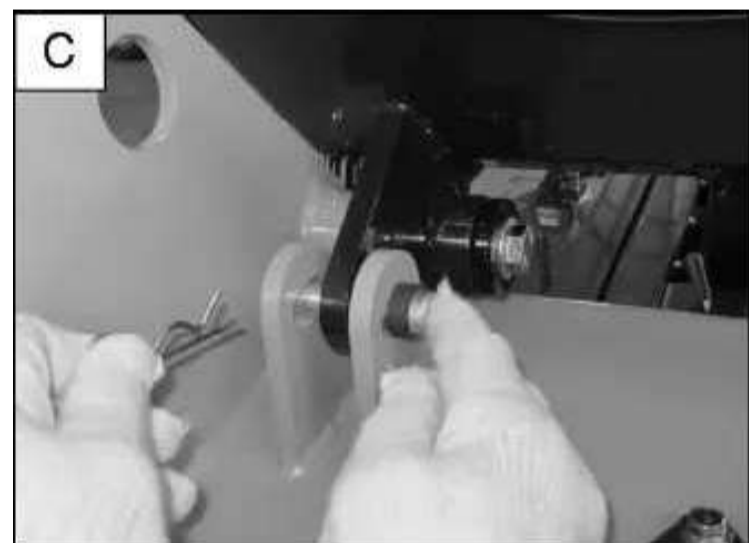
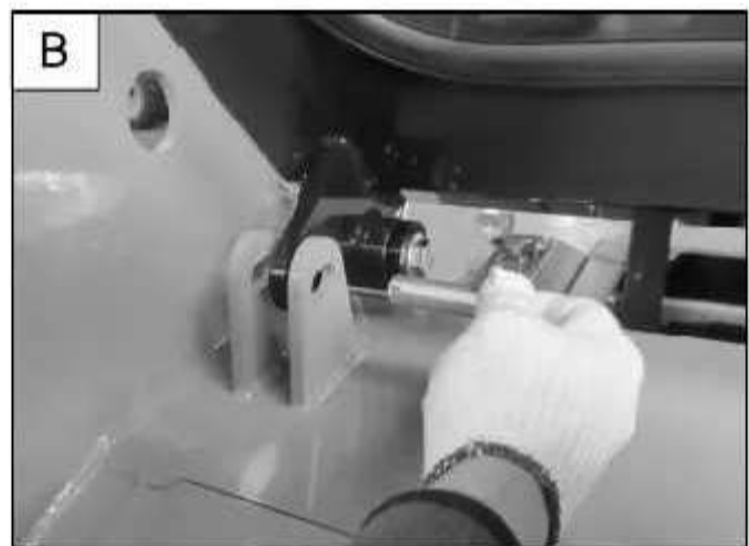
NOTE : Pls find this pin at the tool box. This pin is used for repairing.

Fix the pin with the cotter pin. [C]

⚠ WARNING

After Raising The Operator'S Cab, Always Install The Fixed Pin For The Operator'S Cab.

Without The Installation Of Pin, Operator'S Cab Could Fall Down And Failure To Heed Could Result In Death Or Serious Injury.



OPERATOR CAB (cont'd)

Lowering The Operator Cab

NOTE : Be sure the engine is stopped before lowering the cab. The safety bar must be fully raised or lowered when lowering the cab after fixing steering levers forward (In the direction of bucket). Always use the grab handle to lower the cab.

Fix steering levers forward and then drag down the bottom of the operator cab till it contacts with the frame of the loader. [A]

NOTE : Move both steering control lever forward (In the direction of bucket), so don't let the cab hit steering control lever when lifted or lowered.

Install the bolts (ITEM 1) and the vibroisolating rubber (ITEM 2) (both sides). [B]

Tighten the bolts to (12 -14.5 kg/m) torque.

Remove the jackstands.

Emergency Exit

The front opening on the operator cab and rear window provide exits.

To exit through the rear window, use the following procedure.

- Remove the rubber cord around the rear window.
- Push the rear window out of the rear of the operator cab with your foot. [C]

Exit through the rear of the operator cab. [D]

NOTE : You can also exit through the front opening on the operator cab.



BAWOO COMPANY CORP.

SAFETY BAR

Use Of The Safety Bar

NOTE : Operator raise safety bar, the machine don't work and lift arm & bucket don't work. Lower safety bar in order to operate machine.

The safety bar has a pivoting bar with arm rests. The safety bar in the down position helps to protect the operator in the seat from serious rollover and impact from the outside.

Therefore, you must lower the safety bar (ITEM 1) and fasten it. [A]

The safety bar will protect your safety in case that the loader will be overturned.

Safety Bar Maintenance

Clean any debris or dirt from the moving parts. Inspect the linkage bolts and nuts for tightness.

If the safety bar does not function correctly, check for free movement of each linkage part and excessive wear.

Replace parts that are worn or damaged.

Use only genuine Bawoo company replacement parts.

SAFETY BELT

When buckling the belt, make sure that it is not twisted and insert the plate on the right side into the buckle on the left until it clicks to the position.

If the belt length is short, lengthen the belt by adjusting it.

If the belt is loose, pull the belt to eliminate any slack.

When releasing the belt, press the button in the front of the buckle.



⚠ WARNING

Before you leave the operator's seat :

- Lower the lift arms, put the attachment flat on the ground.
- Stop the engine.
- Raise safety bar and fasten it.
- Move the bucket and lift arm operation levers to the NEUTRAL POSITION to make sure that both lift and tilt functions are activated. Service the system if both levers are deactivated.

⚠ WARNING

In case of Cable type safety bar
If condition is more stiffer than usual when you lower safety bar, lower safety bar after moving steering lever forward/backward slightly. Don't lower safety bar by force. Cable may cut off because the gear Interlocks.

⚠ WARNING

Always buckle the safety belt when operating the loader.

Always make sure the safety belt is disconnected when leaving the operator's seat.

AIR CLEANER

Description [A]

- Inlet (ITEM 1)
- Outlet (ITEM 2)

Cleaning the air filter (or element)

A dirty air cleaner will decrease engine output at worst. It will also cause increased fuel consumption and increase in harmful contents of exhaust emissions and black smoke.

So clean th air filter cyclically.

NOTE : Clean the air filter on a dally basis not to get dirty.

To clean the air cleaner, use the following procedure :

Loosen the wing nut and remove the element.

Clean the inside of the body.

Blow compressed air (2kg/cm² or lower) from the inside of the element to remove dust on the surface.

If the element is extremely dirty or damaged, replace it with a new one.

Clean the inside of the air cleaner, remove dust from the dust pan, and then install the element.

Replacing the air filter

The period of replacement : every 1000 hours or after four cleaning.

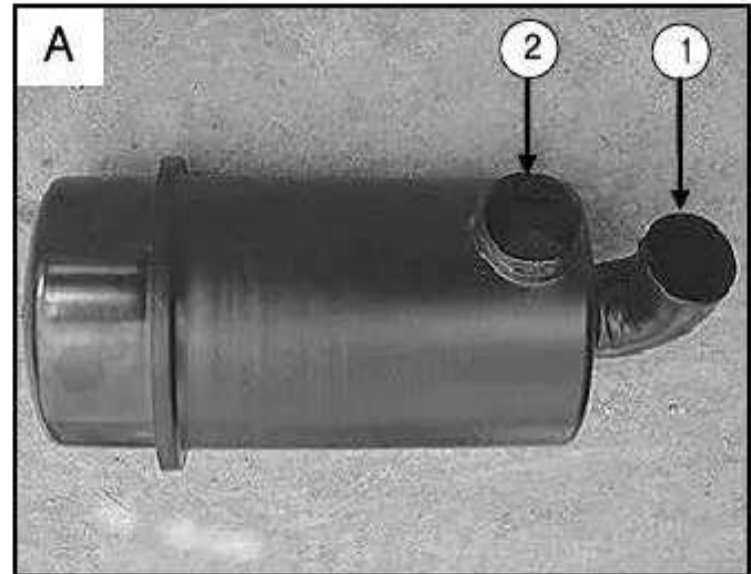
NOTE : when the engine is operated In dusty place, shorten the cleaning intervals properly.

When clean the air filter, don't strike the air filter

Clean the air filter as follows. :

Remove the thumb nut (ITEM 1) from the dust cover. [B]

Remove the dust cover (ITEM 2). [B]



BAWOO COMPANY CORP.

AIR CLEANER (cont'd)

Replacing the air filter (cont'd)

Remove the bottom cap (ITEM 1). [A]

Remove the thumb nut (ITEM 1) from the air filter. [B]

Remove the air filter (ITEM 1). [C]

Prior to installation, clean the inside of case, dust cover and air filter.

Install the new air filter in the opposite order.

: Air filter → thumb nut → bottom cap → dust cap
thumb nut.

NOTE : Make sure that a sealing surface are free of dirt and debris.

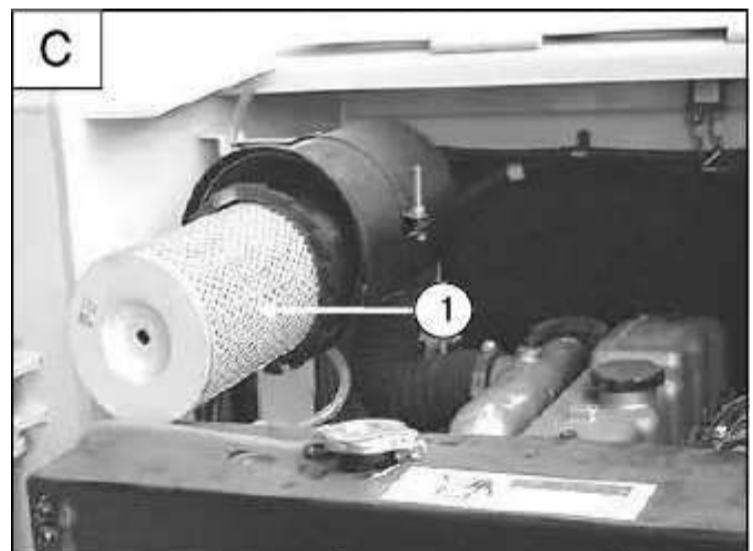
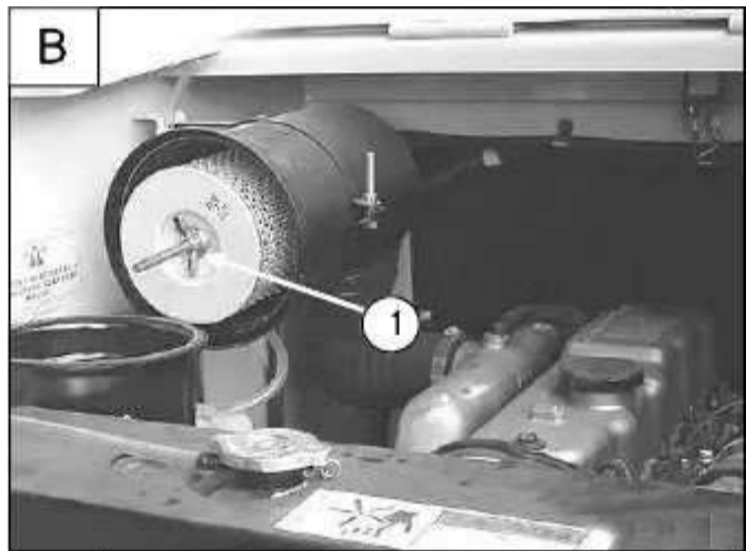
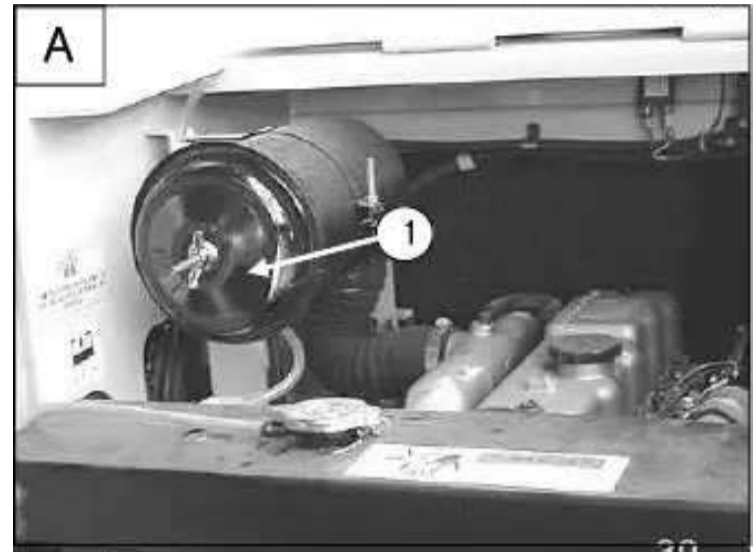
Install the dust cover and then tighten the thumb nut.

Make sure that all coupling part are installed tightly.

NOTE : Make sure that the air filter and dust cover are installed securely.

If it is installed loosely, dust will be drawn in and the air cleaner will fail to function properly.

NOTE : Check and clean the air filter on a dally basis. Cleaning interval depend on working condition.



AIR CLEANER (cont'd)

Dust Indicator

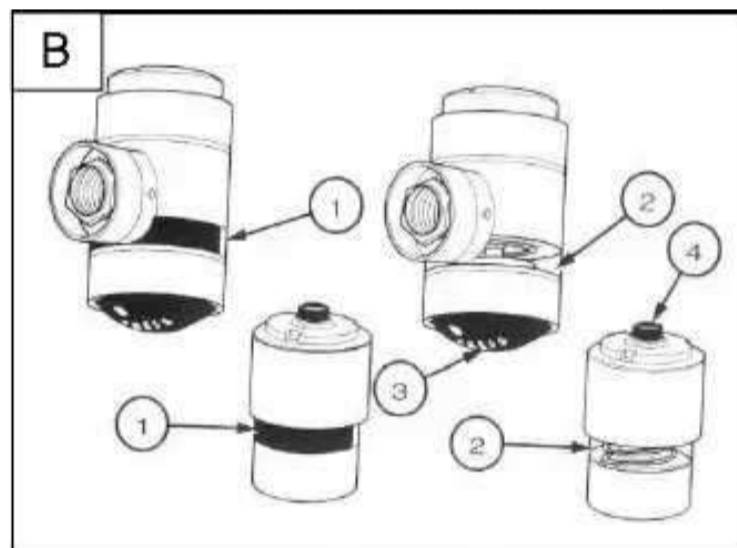
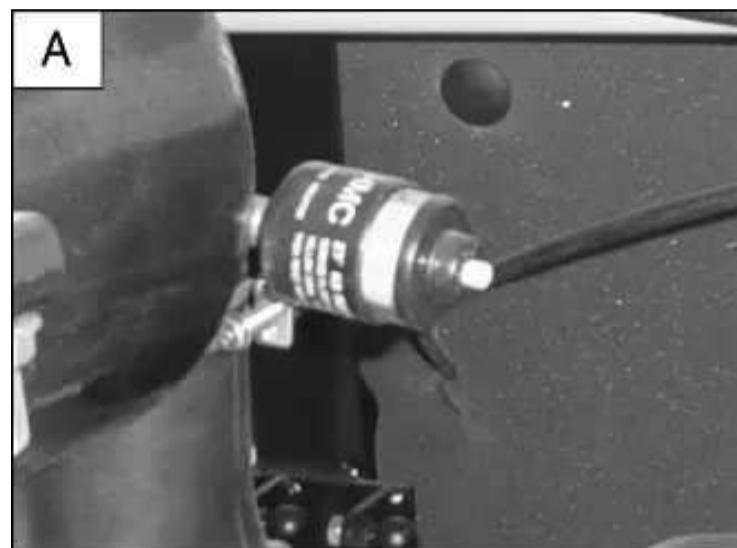
On an air cleaner with a dust indicator, the time to clean is indicated by a red signal when the element is clogged. When yellow color of the indicator turns red color, clean or replace the element regardless of the check intervals. Dust indicator will indicate precisely when the air filter element needs service. This prevents the premature removal of the filter element which causes extra cost or late removal of the element which can cause loss of engine power.

The dust indicator is fitted on the air filter outlet or between the air filter and the induction manifold.

The dust indicator is in the location shown. [A]

When the red warning indicator (ITEM 1) is seen through the clear panel (ITEM 2) after the engine has stopped, the air filter element must be removed for service.

After a clean element has been fitted, press the rubber bottom (ITEM 3) or the reset button (ITEM 4) of the dust indicator to reset the dust indicator to yellow color. [B]



BAWOO COMPANY CORP.

FUEL SYSTEM

Filling The Fuel

Use only clean, high quality diesel fuel.

- Grade No.1 or No.2

We recommend an operator to contact their fuel supplier for local recommendations.

⚠ WARNING

Stop and cool the engine before adding fuel. **NO SMOKING!** Failure to obey warnings can cause an explosion or fire.

Remove the fuel cap (ITEM 1). [A]

Use a clean, approved safety container to add fuel of the correct specifications. Add fuel only in an area that has free movement of air and no open flames or sparks. **NO SMOKING!** [B]

Install and tighten the fuel cap (ITEM 1). [A]

NOTE : Be sure to lock the cap of fuel tank.

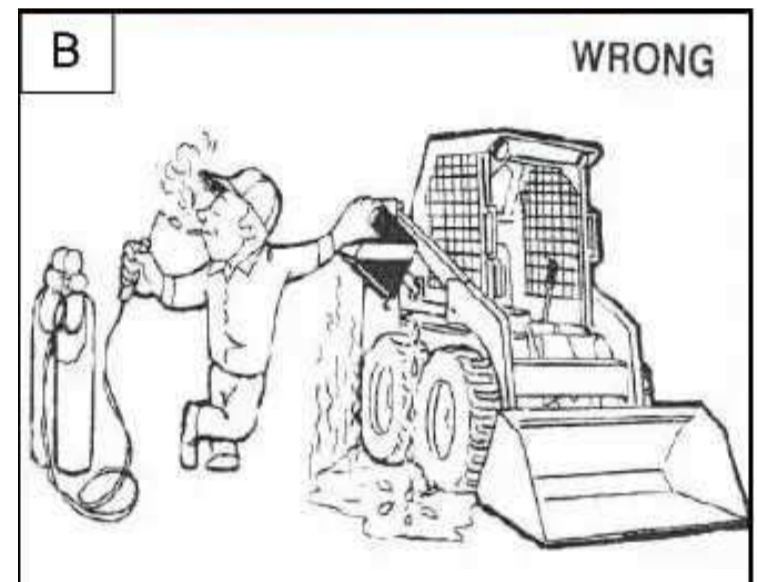
A problem with the components that send fuel to the engine can cause low fuel pressure. This can decrease engine performance.

Check the fuel level in the fuel tank. Ensure that the vent in the fuel cap is not filled with dirt.

Check all fuel lines for fuel leakage. The fuel lines must be free from restrictions and faulty bends. Verify that the fuel return line is not collapsed.

Inspect the fuel filter for excess contamination. If necessary, install a new fuel filter. Determine the source of the contamination. Make the necessary repairs.

Remove any air that may be in the fuel system.



⚠ WARNING

Work carefully around an engine that is running. Engine parts that are hot, or parts that are moving, can cause personal injury.

FUEL SYSTEM (For Hyundai) (cont'd)

Replacement Of Fuel Filter

Clean around the filter head.

Loosen the drain plug at the bottom of the filter element to drain any water from the filter. [A]

Remove the filter and clean the gasket surface.

To replace the fuel filter element, use a filter wrench to remove the filter element. [A]

Replace the o-ring.

Fully fill fuel in the new filter.

Apply engine oil on the gasket of filter when mounting.

Bleeding Of Air

⚠ WARNING

Check for fuel leakage after the engine start.

If air is in the fuel system, the engine will not start. Start engine after bleeding the air according to the method of bleeding air.

The fuel system should be bled to remove air as described below if the fuel supply is exhausted during driving. When the fuel filter is replaced, or if the engine is not used for a long time.

Loosen the air plug at the top of the fuel filter.

Pump the push pump until there are no more bubbles in the fuel coming out of the air plug. [B]
When doing this, place a cloth around the air plug to prevent the escaping fuel from spewing about.

Tighten the air plug when there are no more bubbles in the fuel.

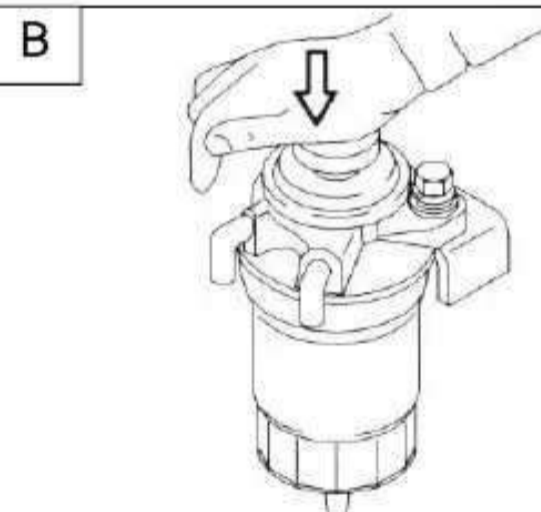
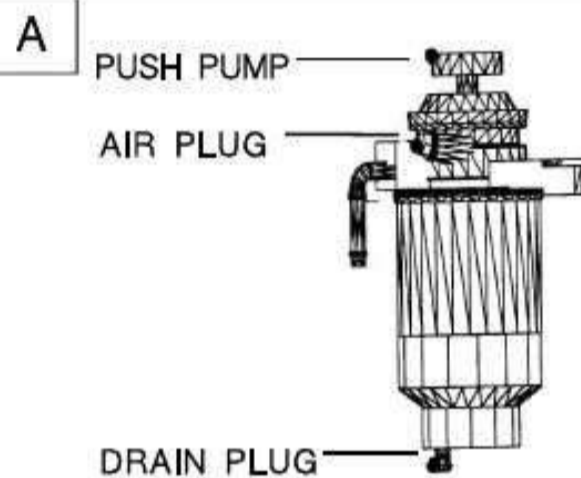
Continue pumping until the push pump becomes stiff.

Finally, check to be sure that there is no leakage of fuel. If in doubt, consult your nearest authorized BAWOO dealer.

⚠ WARNING

If air enters the fuel system, the air must be purged before the engine can be started. Air can enter the fuel system when the following events occur :

- The fuel tank is empty or the tank has been partially drained during normal operation.
- The fuel filter or the fuel pump is replaced.



BAWOO COMPANY CORP.

FUEL SYSTEM (For Hyundai) (cont'd)

Removal Of Water

If the fuel filter warning light luminate during driving, it indicates that water has accumulated in the fuel filter. If this occurs, remove the water as the following procedure.

Loosen the drain plug at the bottom of the fuel filter.

Operate the push pump slowly 6 or 7 times in order to force the water out through the drain plug.

Tighten the drain plug when water no longer comes out.

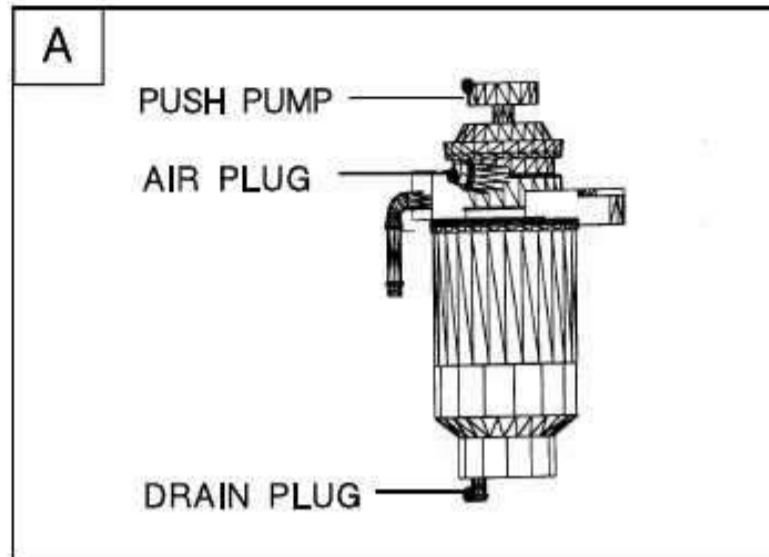
Loosen the air plug bleed the air.
(refer to "bleeding of air".)

Check to be sure that the fuel filter warning light luminate when the ignition key is turned to "ON" and that it goes off when the engine is started.

If in doubt, consult your nearest authorized BAWOO dealer.

NOTE

- Do not smoke or have any other open flame near the engine while bleeding the fuel system.
- Be sure to carefully wipe away any water in this manner, because the fuel mixed in the water might be ignited and result in a fire.



NOTE : This fuel filter is for Hyundai, have a push pump with a engine. (Location : in the middle of the engine toward fuel Injection)

⚠ WARNING

Diesel fuel or hydraulic oil under pressure can penetrate skin or eyes, causing serious injury or death. Oil leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If oil enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

⚠ WARNING

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire which can result in injury or death.

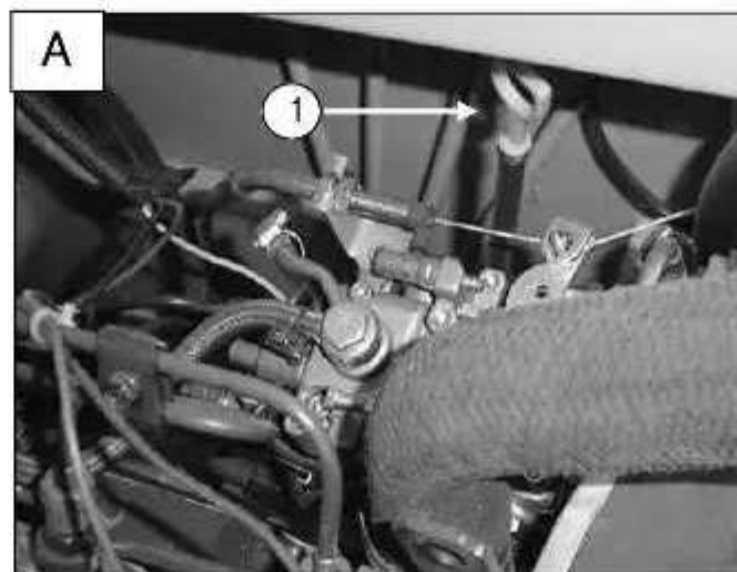
ENGINE LUBRICATION SYSTEM

Checking Engine Oil

Check the engine oil level every before starting the engine for the work shift.

Open the engine room cover and remove the dip stick (ITEM 1) [A]

Keep the oil level between the marks on the dip stick.



⚠ WARNING

If the oil is contaminated or diluted, change the oil regardless of the regular change interval.
Check oil level after engine has been stopped for 15 minutes.

Use a good quality motor oil that meets CE or better (refer to the Oil Chart below).

* Recommended viscosity grades

Kind of fluid	Capacity	Ambient temperature °C (°F)								
		-30 (-22)	-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)	
Engine oil	5.4 ℓ	SAE 10W						SAE 30		
		SAE 15W-40								

BAWOO COMPANY CORP.

ENGINE LUBRICATION SYSTEM (cont'd)

Replacing Engine Oil And Oil Filter

NOTE : This procedure is for Hyundai engine.

Warm up the engine and then stop the engine.
Open the engine room cover.

Remove drain bolt (ITEM 1). [A]

Drain the oil into a container and dispose of used oil in an environmentally safe manner.

Remove the oil filter (ITEM 1) by using filter wrench and clean the gasket surface. [B]

Put clean oil on the new oil filter gasket.

Install the new filter and tighten.

NOTE : Mechanical over-tightening may distort the threads or damage the filter element.

Install and tighten the drain bolt.

Remove the filter cap (ITEM 1) from the engine upper frame. [C]

Fill the engine with clean oil to the proper level.

Start the engine and let it run for several minutes.

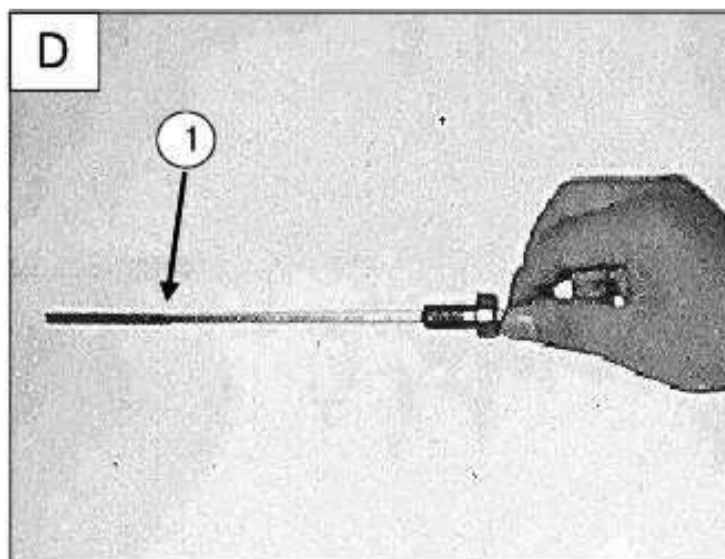
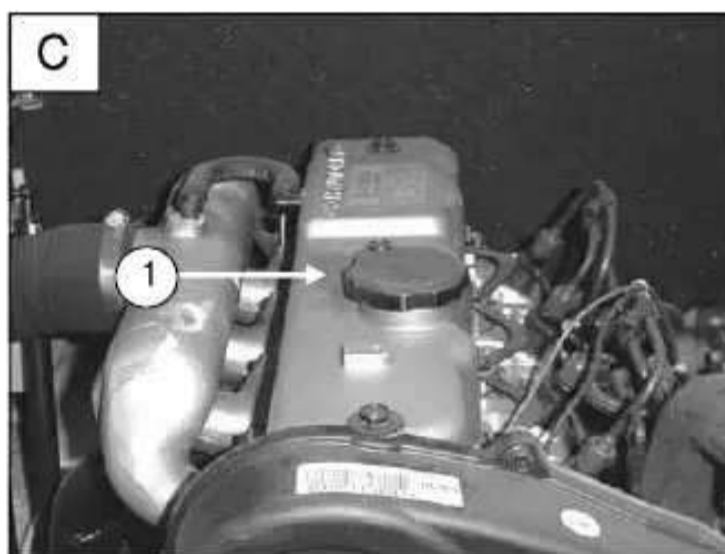
Stop the engine.

Check for leaks at the oil filter and check the oil level.

Pull out the dip stick and wipe with a clean cloth.

Check the oil level by inserting the dip stick completely into the hole and pulling out again.

Add oil as needed if oil indication is not between the bottom mark and the top mark (ITEM 1) on the dip stick. [D]



COOLING SYSTEM

Check the cooling system every day to prevent over-heating, loss of performance or engine damage.

⚠ WARNING

If the radiator must be replaced due to bent or broken fins which can cause the engine to overheat, refer to the manufacturer's replacement procedure.

Structure of cooling system

Cooling system ass'y is composed of oil cooler (A part) and radiator (B part). [A]

Checking the coolant level.

Open the engine room cover.

Check the coolant level in the aux. water tank. (ITEM 1) [C]

If the coolant is low, fill clean water into the radiator.

Use the required amount of antifreeze in the winter.

Replace gasket of radiator cap when it's damaged.

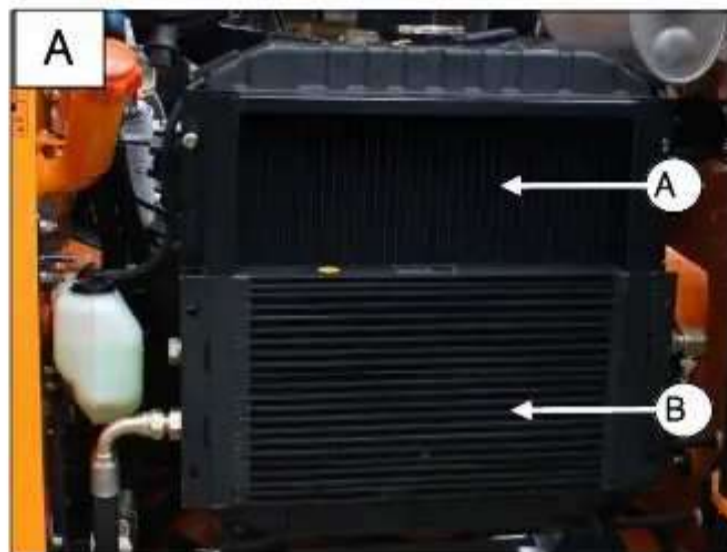
NOTE : Hot coolant can spray out If radiator cap is removed while engine is hot. Remove the cap after the engine has cooled down.

NOTE : It's recommended to continuously use the same brand oils when replenishing or changing.

To prevent freezing of the cooling system in extremely cold places, be sure to add a specified amount of antifreeze to coolant.

Mix ratio of antifreeze

Temperature	-5℃	-10℃	-15℃	-20℃	-25℃	-30℃
Antifreeze(L)	1.6	2.0	2.4	2.9	3.3	3.7



Direction of oil cooler : [A part]

Direction of radiator : [B part]

《Description》 - [B]

ITEM 1 : Thermostat & Water pump ass'y

ITEM 2 : Overflow hose

ITEM 3 : Radiator cap

ITEM 4 : Water inlet hose

ITEM 5 : Water outlet hose



BAWOO COMPANY CORP.

COOLING SYSTEM (cont'd)

Replacing The Coolant

⚠ WARNING

Do not remove radiator cap when the engine is hot. You can be seriously burned.

Open the engine room cover.

Remove the radiator cap (ITEM 1). [A]

Open the drain valve (ITEM 1) and drain the coolant into a container. [B]

(This drain valve is the back side of radiator.)

After all the coolant is removed, close the drain valve

Mix the coolant in a separate container.

NOTE : The loader is factory filled with monoethylene glycol coolant. Do not mix monoethylene glycol with propylene glycol.

Add premixed coolant, 50% water and 50% monoethylene glycol to the reservoir in case the coolant level is low.

One gallon of monoethylene glycol mixed with one gallon of water is the correct mixture of coolant to provide -37.3°C freeze protection.

Use a refractor-meter to check the ratio of monoethylene glycol and water in your cooling system,

Fill the radiator with the premixed coolant.

Fill the aux. water tank to one third.

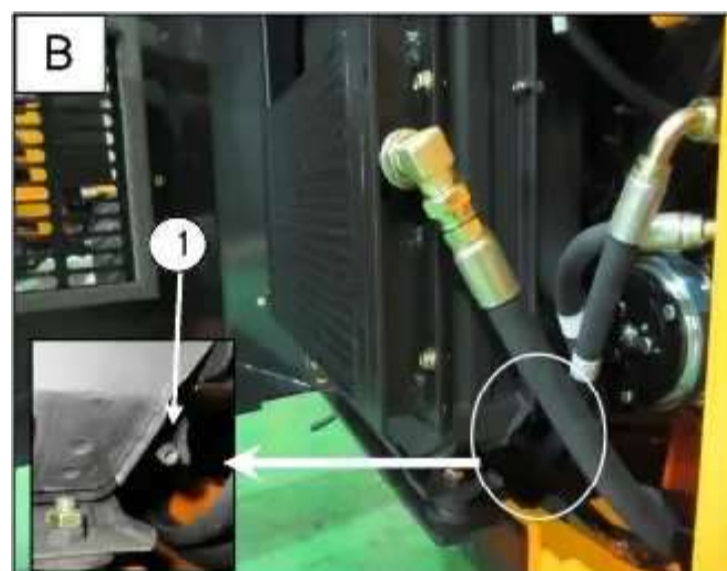
Install the radiator cap.

Run the engine until it is at operating temperature.

Stop the engine.

Check the coolant level in the aux. water tank when cool.

Add coolant to the aux. water tank as needed.



TYPICAL DATA

Color		Green
Freezing point($^{\circ}\text{C}$)	50V%	-37.3
	30V%	-16.5
PH		9.5
Density		1.123
Water content(%)		3.0

⚠ IMPORTANT

AVOID ENGINE DAMAGE

Always use the correct ratio of water to antifreeze.

Too much antifreeze reduces cooling system efficiency and may cause serious premature engine damage.

Too little antifreeze reduce the additives which protect the internal engine components; reduce the boiling point and freeze protection of the system.

Always add a premixed solution. Adding full strength concentrated coolant can cause serious premature engine damage.

COOLING SYSTEM (cont'd)

Cleaning The Radiator & Oil Cooler

Check, and if necessary, clean and dry outside of radiator and oil cooler. After working in a dusty place, clean radiator more frequently.

NOTE : Adjust the frequency of cleaning according to the effects of the operating environment.

Open the engine room cover.

Visually inspect the radiator & oil cooler.

Inspect the radiator for damaged fins, corrosion, dirt, grease, insects, leaves, oil and other debris.

Visually inspect the radiator & oil cooler for bent or broken fins.

Check the cooling system for leaks.

Use air pressure to blow the dirt and debris from the core. At this time, blow the air in the opposite direction of the fan's air flow. Hold nozzles approximately 6 mm away from the radiator's fins. Slowly move the air nozzle in a direction that is parallel with the radiator tube assembly. [A]

NOTE : If the radiator must be replaced due to bent or broken fins which can cause the engine to overheat, refer to the manufacturer's replacement procedures.



⚠ WARNING

Visually inspect the cooling fan daily. Check for cracks and bent or loose blades. Personal injury can result from a fan blade failure. Never pull or pry on the fan. This can damage the fan blade and cause fan failure.

BAWOO COMPANY CORP.

FAN BELT

Adjusting The Fan Belt

To adjust the belt tension for the alternator, use the following procedures :

Stop the engine.

Open the engine room cover.

Check the tension by pressing the center of the fan belt with your thumb (10kgf).

Proper flexure of the fan belt is 10–15mm.

If the tension is too high, the fan belt will be worn earlier.

Adjust the fan belt tension by loosening and moving the alternator mounting bolt (ITEM 1) and adjusting bolt (ITEM 2). [A]

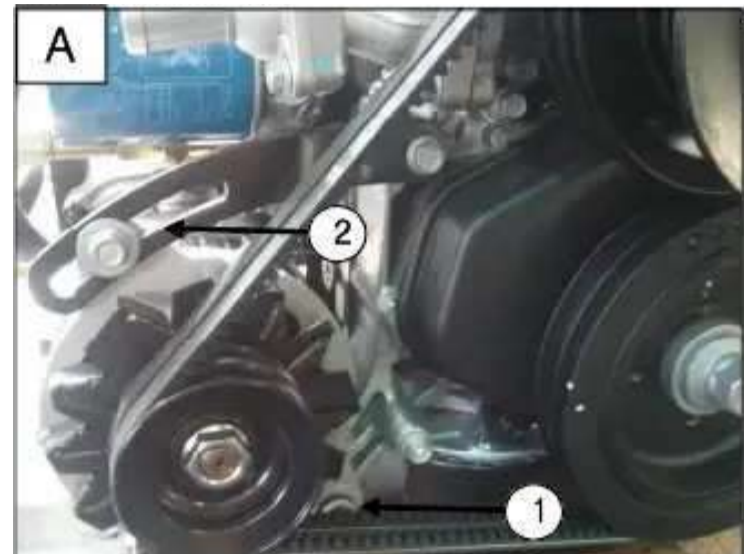
Move the alternator until the belt has about 8mm movement at the middle of the belt span with 66N of force.

Tighten the alternator mounting bolt and adjusting bolt.

Do not allow oil to deposit on the fan belt because the fan belt slips and is easily elongated.

Replace the damaged fan belt.

Close the engine room cover.



HYDRAULIC SYSTEM

Cleaning Hydraulic Filter

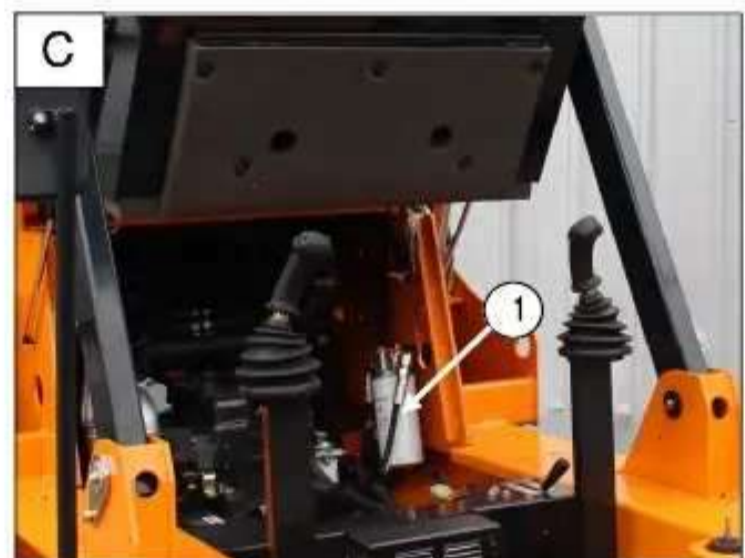
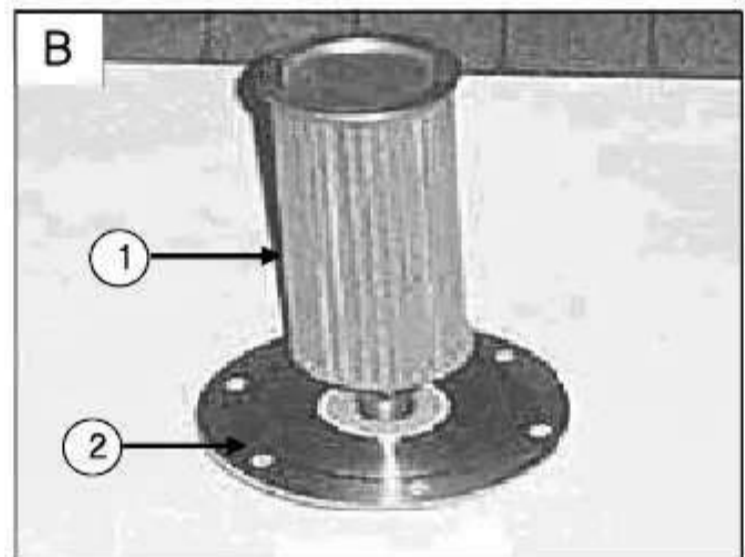
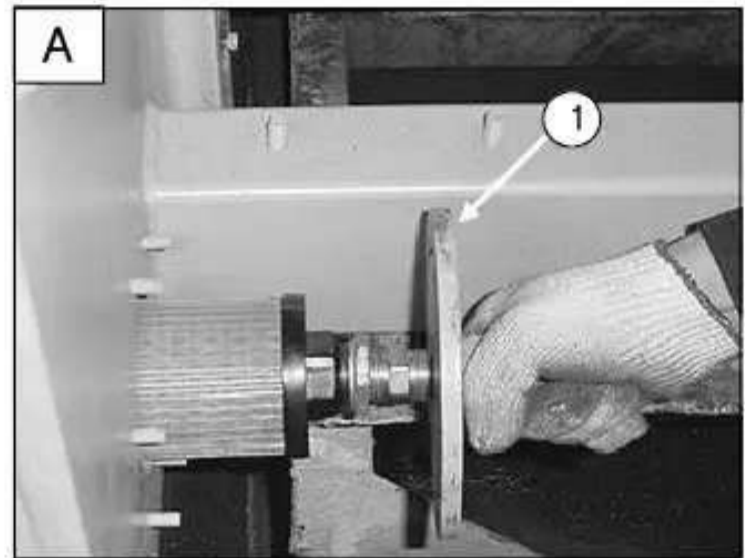
5000/6000/8000 series are equipped with three kind of hydraulic filter - [A] [B] [C] ..

- Lower the lift arms, ground any attachment.
- Stop the engine and then leave for 5 minutes.
- Remove the filter cover (ITEM 1). [A]
- Remove the filter (ITEM 1) and O-ring (ITEM 2). [B]
- Clean the filter head contact surface.
- Clean the filter by solvent or replace.
- Install and tighten with O-ring.
- Apply a film of oil to filter element gasket surface.
- Remove the filter cover (ITEM 1) with turning. Replace an used filter with new one. Don't use an used filter again. [C]

NOTE : Replace filters with new ones, when the needle of hydraulics filter point out more than the red line. [C] & [D]. You can check whether to change filters or not when engine run. That is why the needle of hydraulic filter work when engine run only.

WARNING

Clean or replace hydraulic oil filter regularly. Foreign materials at oil flow can give some damage to gear pump or hydraulic pump.
Clean oil is very important for longer life of hydraulic system.



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HYDRAULIC SYSTEM (cont'd)

Checking Hydraulic Fluid

Lower the bucket on the ground.

Stop the engine and then leave for about 5 minutes. Check the oil level at the level gauge of the hydraulic fluid tank.

Hydraulic fluid must be above the middle of oil level gauge (ITEM 1). [B]

If fluid is needed, remove the hydraulic oil cap (ITEM 2). [B]

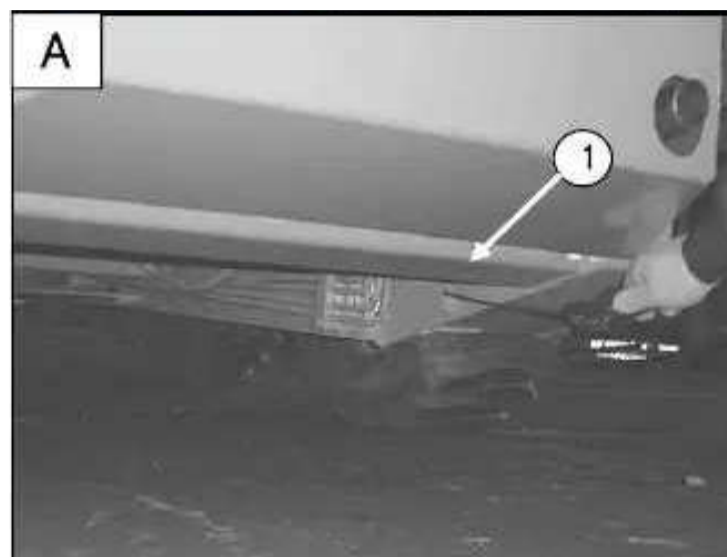
Replacing Hydraulic Fluid

The fluid must also be replaced if it becomes contaminated or after major repairs.

NOTE : If the HYD' oil tank is not clean, it may cause damage to hydraulic system.

To replace the oil in the hydraulic oil tank, Use the following procedure.

- Stop the loader on a level surface.
- Lower the lift arms and tilt the bucket fully back.
- Stop the engine and then leave for about 5 minutes.
- Remove the drain bolt and remove the all fluid from the HYD' oil tank. Drain fluid completely. Tighten the drain bolt [A]
- Remove the hydraulic oil cap (ITEM 2). [B]
- Fill the hydraulic fluid till the fluid is over the red line on oil level gauge (ITEM 1). [B]
- Tighten the oil cap.



⚠ WARNING

Hydraulic oil escaping under pressure can have sufficient force to enter a person's body by penetrating the skin and cause serious injury and possibly death. If proper medical treatment by a physician familiar with this injury is not received immediately.

HYDRAULIC SYSTEM (cont'd)

Replacing Hydraulic Fluid (Cont'd)

Check to make sure the rubber gasket is installed on the oil cap.

Start the engine and check if the hydraulic operate well.

Stop the engine. Check for leaks.

Keep loader over 0°C (-18°F) place. Cold fluid make flow of fluid slow. It have a bad effect on hydraulic system. Warm up engine enough before using machine.

WARNING

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire which can result in injury or death.

WARNING

Always warm up vehicle adequately in low temperature. If temperature is below 0°C (32°F), warm up engine during about five minutes. Warming-up is necessary to good operation of control device and safety device. For warming up, do not operate vehicle as well as any control device. Hydraulic system is not functioning properly in low temperature. If temperature is below 30°C (-20°F), hydraulic fluid may become overheat or warm. If possible, keep the loader over 0°C (-18°F) place.

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CHAIN CASE

Checking oil

After checking the chain case, add gear oil as followings:

Stop the loader on a level surface.

Stop the engine and let the oil settle for a few minutes.

Loosen the oil bolt (ITEM 1) between two tires. [A]

The oil level is satisfactory, if oil just starts flowing out when the bolt is removed.

If the oil is not flowing out, remove the oil cap (ITEM 1) (Two oil caps at right and left side) [B] and fill the oil till the oil starts flowing out through oil level bolt.

Tighten the oil bolt and oil cap.

Repeat the procedure for other chain case.

Changing oil

Lower the lift arms and ground any attachment.

Stop the engine and then leave for 5 minutes.

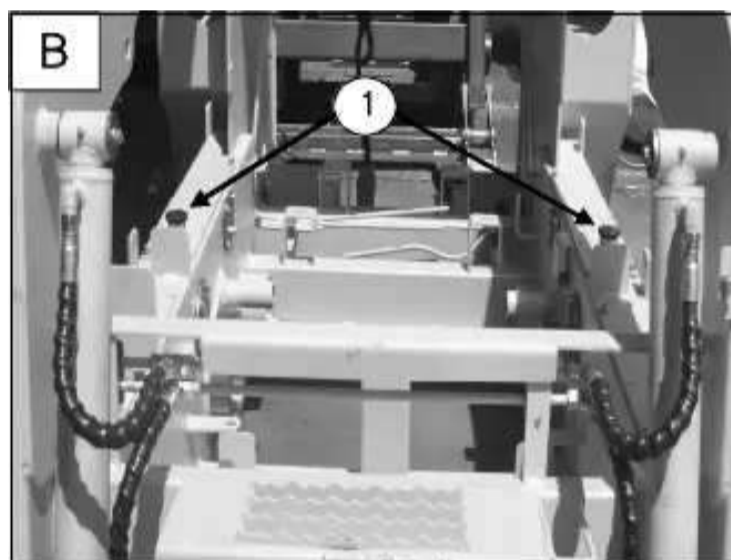
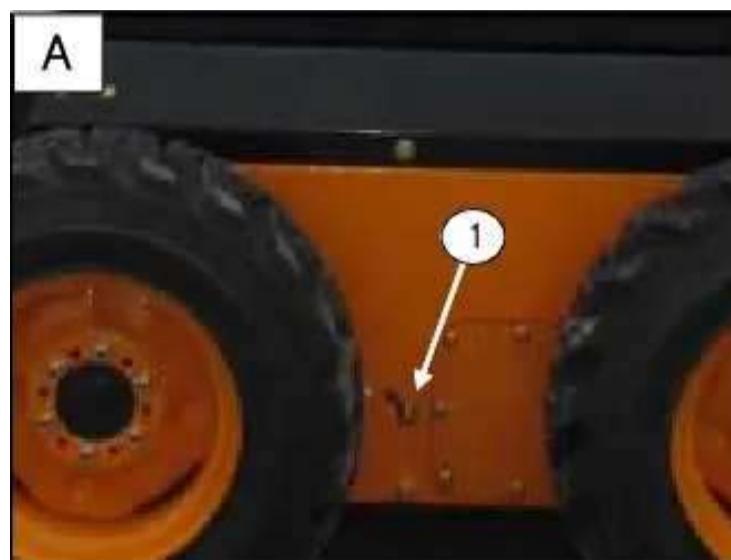
Remove the drain bolt (ITEM 1) and drain the oil into a container. [C]

Install the drain bolt.

Remove the oil bolt (ITEM 1) [A] and oil cap (ITEM 1). [C]

Add oil as needed. Fill the oil till the oil starts flowing out through oil level bolt.

Tighten the oil bolt and install the oil cap.



LUBRICATION

Procedure

Grease the loader as specified in the SERVICE SCHEDULE page 48 for the best performance of the loader.

Apply the lubricant until extra grease shows.

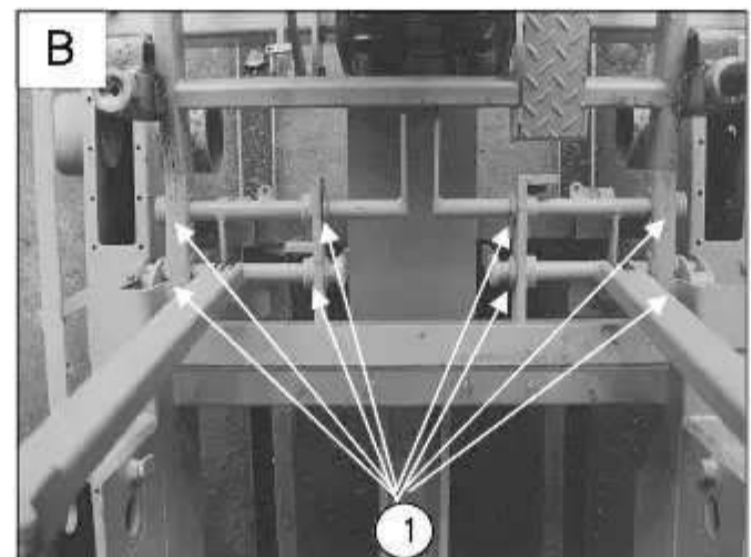
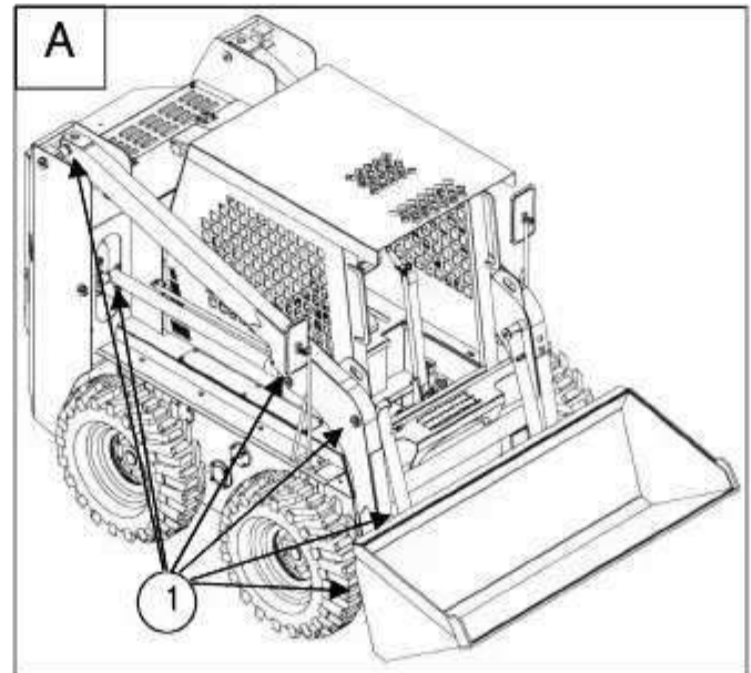
Record the operating hours each time you Grease the loader.

Always use a good quality SPHEEROL EPL-2 of CASTROL when grease the loader.

Grease the both side 12 nipple points (ITEM 1) [A] on the loader every 8-10 hours.

Grease another pivot point for controlling behind foot step.

Grease the following locations on the loader (ITEM 1) every 50 hours. [B]



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LUBRICATION (cont'd)

Grease fitting location

Grease the following locations (nipples) on the loader before operating.

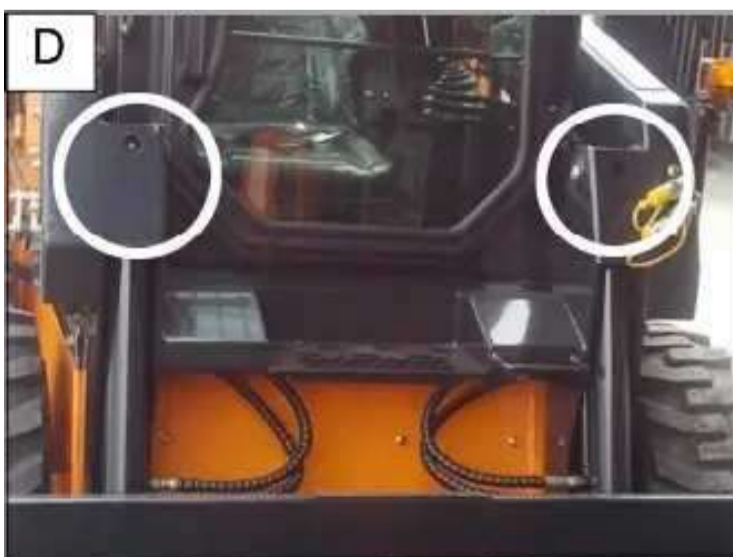
Wipe dirt from the fittings before greasing them to prevent contamination. Replace any missing or damaged fittings. To minimize dirt build-up, avoid excessive greasing.

Pin for lift arm (Both sides). [A]

Pin for lift cylinder (Both sides). [B]

Pin for lift cylinder (rod) (Both sides). [C]

Pin for tilt cylinder (Both sides). [D]



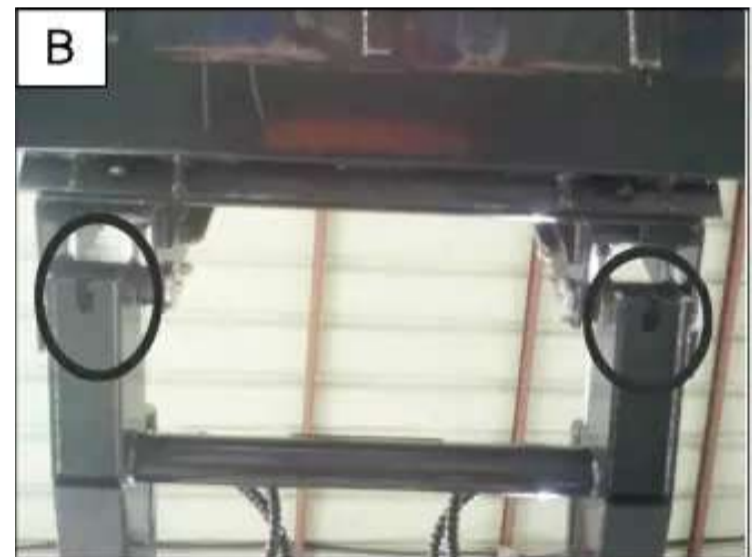
LUBRICATION (cont'd)

Grease fitting location (cont'd)

Pin for tilt cylinder (rod) (Both sides). [A]



Pin for pad (Both sides). [B]



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QUICK COUPLER

Inspection and maintenance

Move the levers to engage the fixed pins.

Check for free movement of fixed pins and quick coupler levers.

The levers and fixed pins must move freely.

⚠ WARNING

Quick coupler fixed pins must extend through the holes in attachment. Levers must be fully down and locked. Failure to secure fixed pins can allow attachment to come off and cause injury or death.

The fixed pins must extend through the holes in the attachment mounting frame.

The fixed pin must contact the lower edge of the hole in the attachment.

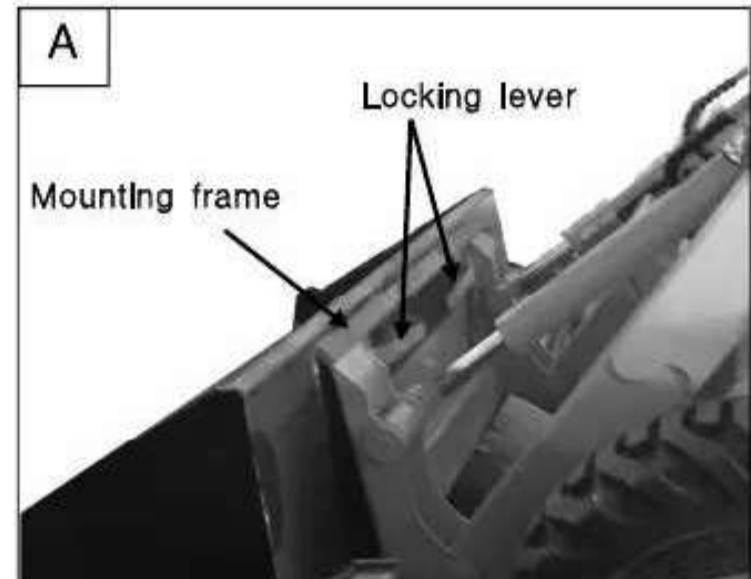
If the fixed pin does not contact the lower edge of the hole, the attachment will be loose and can come off the loader.

Inspect the flange on the attachment and the quick coupler, linkages and fixed pins for excessive wear or damage.

Replace any parts that are damaged, bent or missing. Keep all fasteners tight.

Look for cracked welds. Contact your dealer for repair or replacement parts.

Lubricate the fixed pins.



ELECTRICAL SYSTEM

Wiring and Gauges

Check regularly and repair loose or malfunction gauges when found.

The loader has a 12 volt, negative ground alternator charging system. The electrical system is protected by fuses located in the instrument panel. The fuses will protect the electrical system when there is an electrical overload. The reason for the overload must be found before starting the engine again. [A]

Battery

Removal And Installation

NOTE : series are equipped with the wet-charge typed battery. [B]

Stop the engine and pull the start key out.

Disconnect the negative \ominus cable first.
Disconnect the positive \oplus cable later.

Loosen the fixing bolts and then Remove the battery holddown clamp.

Remove the battery and then remove battery from the loader.

Confirm directions of terminal on the battery which will be installed.

Always clean the terminals and cable ends when installing a new battery.

When installing the battery in the loader, do not touch any metal parts with the battery terminal posts.

Connect and tight the battery cables. Connect the negative \ominus cables last to prevent sparks.

NOTE: Be sure that you should not connect each \oplus, \ominus terminal in the opposite place.

Tighten the M 5 terminal to 20 - 30 (kgf- Cm) torque and M 6 terminal to 40 - 50 (kgf- Cm) torque.



⚠ WARNING

The battery cables must be clean and tight. Check the water level in the battery. Remove any acid or corrosion from the battery and cables with a sodium bicarbonate and water solution.

⚠ WARNING

- Wear proper personal safety gear (safety goggle, rubber gloves, etc) when handle the battery. Handle It with care because It contains sulfuric acid.
- Wash out sulfuric acid immediately with which skin or clothes is stained, or It can cause serlous Injury or death.
- Keep the battery away from flames or heat.
- Use the battery only for the purpose of starting the engine, or It can cause the battery to be damaged or flames by hydrogen gases which are generated from the battery.

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ELECTRICAL SYSTEM (cont'd)

Battery (Cont'd)

Inspecting electrolyte and repair

Disconnect the \ominus cable of the battery.

Loosen the vent plug.

Check for a amount of electrolyte in each cell.

Inject regulation rated-distilled water when the level of electrolyte is below "the lowest limit".

Fill with distilled water to the prescribed level as necessary.

Wash the terminal with hot water if it is contaminated, and apply grease to the terminals after washing.

Handling the battery in winter

While the battery needs a higher voltage and more sufficient electric current to start the engine especially in winter than other seasons, the slow diffusion of electrolyte due to low temperature can cause the battery to fall its capacity for supplying an electric current. That is why it is more difficult to start the engine in winter than summer.

Don't keep the battery being electric discharged.

Never try to restart the engine immediately when you can not start it with only one try. It need more about 1 minute to restore a voltage.

Inspect and maintain the battery lineage especially in winter.

WARNING

Never start the engine by means of the battery of other vehicles in case the loader's battery is discharged electricity and electrolyte is frozen.

WARNING

Never connect with the cathode terminal of the discharged battery directly. Link the other edge of the jump cable which is connected with the cathode terminal of the battery to the engine block.

WARNING

Do not stain clothes or skin with electrolyte as it is acid. Be careful not to get the electrolyte in eyes. Wash with clean water and go to the doctor if it enters the eyes.

WARNING

Treatment of battery

Keep the battery at a cool area where air is well ventilated.
Don't expose the battery under a direct ray of the sun and avoid humid area.
Don't hit it with metal tools when installing.
Don't place metal tools on the upper part of the battery.
Wash the terminal with hot water if it is contaminated, and apply grease to the terminals after washing.

MUFFLER

Muffler maintenance

Do not operate the loader with a defective exhaust system.

Stop the engine. Open the engine room cover and rear grill.

Make a visual inspection of the muffler and replace the damaged muffler with new one, if there are holes and cracks on the muffler (ITEM 1). [A]

Lower the rear grill and close the engine room cover.

NOTE : When the engine is running during service, the steering control lever must be in neutral. Failure to do so can cause injury or death.



⚠ WARNING

When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless invisible gases which can kill without warning.

Stop the engine and allow the muffler to cool before checking for the muffler. Wear safety glasses or goggles. Failure to obey can cause serious injury.

Never use machine in atmosphere with explosive dust or gases or where exhaust can contact flammable material. Failure to obey warnings can cause injury or death.

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TIRE

Tire Pressure

Check the tire when the tire is at normal temperature and the machine is not loaded.

Inappropriate tire pressure is a primary cause for tire damage. Insufficient tire pressure will damage internal carcass of tire. Excessive tire pressure will also cause premature damage of tire.

Continuous operation will produce heat and increase pressure on tire. But such phenomenon was already taken into account when designing a tire. Do not try to remove normally increased air because tires may be crushed or overinflated.

The three major causes for excessive heat and pressure of tire are insufficient pressure, excessive load and overspeed.

Avoid excessive load and overspeed in order to keep tires in good shape.

Recommended tire pressure (when tire is cooled)

Size	Pressure
12×16.5	bar (psi)

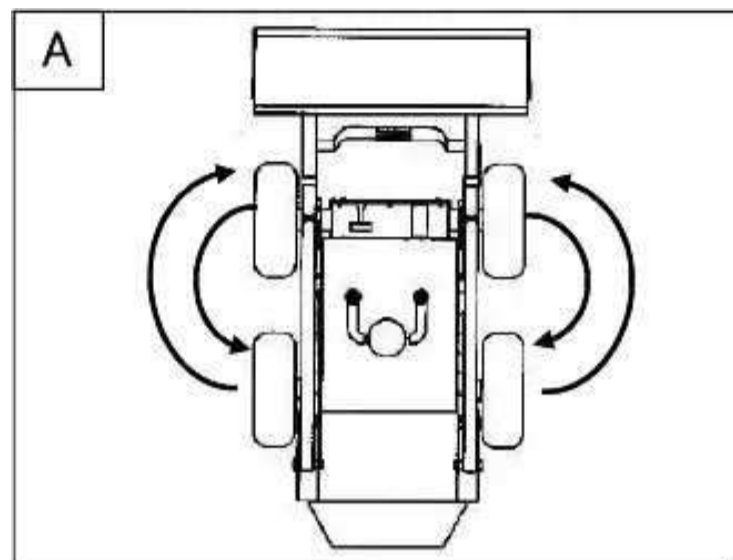
Tire Rotation

Check the tires regularly for wear, damage and pressure.

Rear tires usually wear faster than front tires. To keep both of front · rear tires wear equally, exchange the front tires for the rear and rear tires for the front periodically. [A]

It is important to keep the same size tires on each side of the loader. If different sizes are used, each tire will be turning at a different rate and cause excessive wear. The tread bars of all the tires must face the same direction.

Recommended tire pressure must be maintained to avoid excessive tire wear and loss of stability and handling capacity. Check for the correct pressure before operating the loader.



⚠ WARNING

Do not Inflate tires above specified pressure. Failure to use correct tire mounting procedure can cause an explosion which can result in injury or death.

⚠ WARNING

Inflate tires to the MAXIMUM pressure shown on the sidewall of the tire. DO NOT mix brands of tires used on the same loader.

TIRE (cont'd)

Wheel Nut

Check torque on all wheels to prevent shearing of the wheel studs and wheel damage.

The correct torque is 28 – 30 kgf.m torque. [A]

Replace damaged wheel.

Tire Maintenance

Tires are to be repaired only by an authorized person using the proper procedures and safety equipment. Tires and rims must always be checked for correct size before mounting. Check rim and tire bead for damage.

The rim flanges must be cleaned and free of rust. The tire bead and rim flange must be lubricated with a rubber lubricant before mounting the tires, avoid excessive pressure which can rupture the tire and cause serious injury or death. During inflation of the tire, check the tire pressure frequently to avoid over inflation.

Storing tires

As basic rule, store tires in a warehouse which unauthorized persons cannot enter. If tires are stored outside, always erect a fence around tires and put up "NO ENTRY" and other warning signs that even young children can understand.

Stand the tire on level ground, and block it securely so that it cannot roll or fall over.

If the tire should fall over, get out of the way quickly. The tires for construction equipment are extremely heavy, so trying to hold the tire may lead to serious injury.



⚠ WARNING

- Do not inflate tires using flammable gases or alcohol injector. This cause explosion or personal injury.
- Inflate tires at the recommended pressure level by the manufacturer, and check periodically pressure and wear of tires.
- When replacing the inflated tire, do not stand near the tire.

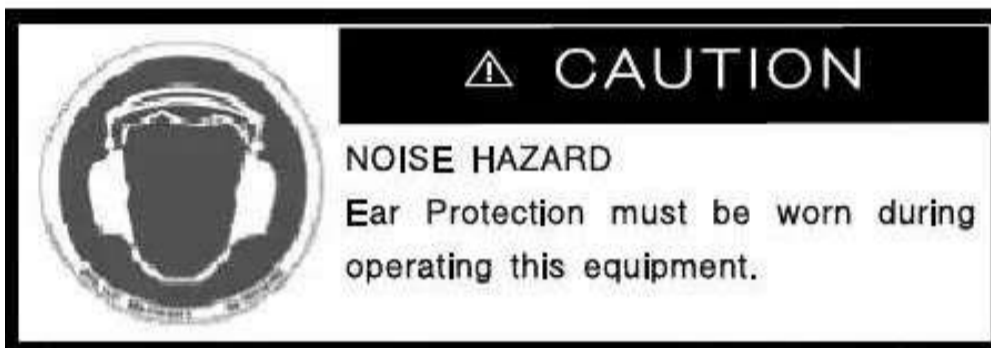
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NOISE (EAR PROTECTION)

This noise level is little more than 85dB in Normal Operation of this equipment.

Operator and service personnel must wear appropriate safety equipment; including hearing protection.

If the operator work with this machine for long time, the operator's ear can be injured by noise hazard condition.



TROUBLE SHOOTING – ENGINE

This trouble shooting is not intended to cover every conditions, however many of the more common possibilities are listed.

Trouble	Service	Remark
Engine oil warning light fails to go off immediately after the engine is started.	<ul style="list-style-type: none"> • Add the oil to the specified level. • Replace the oil filter • Check oil leakage from the tube or the joint. 	
Steam is emitted from the top part of radiator (the pressure valve).	<ul style="list-style-type: none"> • Supply the cooling water and check leakage. • Adjust the tension of fan belt. • Clean outside of cooling system. • Clean or repair the radiator fin. • Check the thermostat. • Check the engine cooling water temp. gauge. • Tighten the radiator cap firmly or replace the gasket of it. 	
Engine does not start when the starting motor is turned over.	<ul style="list-style-type: none"> • Repair where air is inhaled into fuel system. • Check the injection pump or the nozzle. 	
Exhaust gas is white or blue.	<ul style="list-style-type: none"> • Check the valve clearance. 	
Exhaust gas occasionally turns black.	<ul style="list-style-type: none"> • Adjust the oil level to the specified level. • Replace the fuel. • Clean or repair the air cleaner filter. • Check the nozzle. 	
Combustion noise occasionally change to breathing sound.	<ul style="list-style-type: none"> • Check engine compression pressure. 	
Unusual combustion noise or mechanical noise	<ul style="list-style-type: none"> • Check the nozzle. • Check the injection pump. • Replace the fuel. • Check overheating. • Check the muffler. • Check the valve clearance. 	

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TROUBLE SHOOTING – ELECTRICAL SYSTEM

Trouble	Service	Remark
Starting motor does not turn main switch is turned on.	<ul style="list-style-type: none"> · Inspect and repair the wiring. · Charge the battery. · Inspect the main switch. 	
Starting motor turns the engine sluggishly.	<ul style="list-style-type: none"> · Charge the battery. · Inspect the starting motor. 	
Starting motor disengages before the engine starts up.	<ul style="list-style-type: none"> · Check and repair the wiring. · Charge the battery. 	
Engine oil warning light does not light up when engine is stationery (when the main switch is "ON" position.)	<ul style="list-style-type: none"> · Inspect the warning light. · Inspect the engine oil warning light. 	
Charging warning light does not light up when engine is stationery (when the main switch is "ON" position.)	<ul style="list-style-type: none"> · Inspect the warning light. · Check and repair the wiring. 	

TROUBLE SHOOTING – HYDRAULIC SYSTEM

Trouble	Service	Remark
Bucket lifting speed is slow. Bucket lacks lifting power.	<ul style="list-style-type: none">· Check the hydraulic oil level and add if necessary.· Replace filter on rear.	
Bubbles in oil.	<ul style="list-style-type: none">· Replace oil.· Add oil if needed.	
Oil pressure is low.	<ul style="list-style-type: none">· Bleed air from oil line.· Add oil and bleed air.	
Cylinder vibrates when operating.	<ul style="list-style-type: none">· Add oil.	

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DELIVERY REPORTS

Dealer	Contents	Checking
How to operate	<ul style="list-style-type: none"> ◆ Sudden operation of steering lever can result in injury or damage. Don't operate lever suddenly. ◆ Drive or operate machine after lowering safety bar. (If drive machine by force without lowering safety bar, it will give rise to a serious problem on driving part.) 	
How to start and stop engine	<ul style="list-style-type: none"> ◆ Be sure to preheat machine before starting (for about 10~15 sec.) ◆ Check a location of key after stopping engine. (The cause of electric discharge) 	
How to bleed of air	<ul style="list-style-type: none"> ◆ Let air out of air cleaner after letting air out of fuel filter. 	
How to manage air cleaner	<ul style="list-style-type: none"> ◆ Check and clean the air filter on a dally basis. Cleaning interval depend on working condition. 	
How to change engine oil	<ul style="list-style-type: none"> ◆ Change or add engine oil after checking. 	
How to change oil for driving part and mission	<ul style="list-style-type: none"> ◆ Add oil after checking. 	
How to stop and park	<ul style="list-style-type: none"> ◆ Raise safety bar when you stop or park machine. ◆ Be sure to lower lift arm and bucket to the ground. There is possibility of falling even though engine stop or you don't run hydraulic operation. It can result in injury or damage. 	
Condition of workplace	<ul style="list-style-type: none"> ◆ Be sure to work after checking work place. 	
Center of weight	<ul style="list-style-type: none"> ◆ The center of weight is at the rear of machine. Be careful when you work or travel at a slope. ◆ Do not travel or rotate with the lift arms raised. It can cause serious injury or death by overturning the equipment or dropping the loaded stuff. ◆ Don't modify bucket as you please. Load of loader can be changed. 	
How to use lift arm	<ul style="list-style-type: none"> ◆ Don't travel or rotate and so on with lift arm raised. It can cause serious injury or death by overturning. 	

	Contents	Checking
Work	<ul style="list-style-type: none"> ◆ When you use machine first, be well aware of instructions. ◆ Operate machine after becoming accustomed how to use. ◆ Work after warming up enough. (No enough warming-up can cause damage.) ◆ Keep adequate RPM and speed. ◆ Don't travel with lift arm raised. ◆ Be well aware of how to use steering levers. (Don't operate steering levers suddenly.) ◆ Be careful when you use hydraulic system. Hydraulic system is sensitive. ◆ Be careful when you load and unload. (drive slow) ◆ Fasten safety belt and lower safety bar. ◆ Check conditions at work place. ◆ Don't modify size of bucket or other attachments. Machine can overturn. 	
Stop	<ol style="list-style-type: none"> ① Check whether steering levers are in Neutral or not. ② Check whether bucket and lift arm lowered to the ground or not. ③ Be sure to remove key. ④ Leave machine with safety bar raised. 	
The others	<ul style="list-style-type: none"> ◆ Be well aware of instructions or warning in the manuals or decals. 	
Purchaser		

CHECK LISTS

Pre - Delivery

The following checklist is an important reminder of valuable information and inspections. Check off each item after prescribed action is taken.

Check that :

- Unit has not been damaged in shipment. Check for such things as dents and loose or missing parts; correct or replace components as required.
- Battery is securely mounted and not cracked. Cable connections are tight and electrolyte is at proper level and strength. (Batteries for domestic sales are filled at the factory.)
- Lift and tilt cylinder, hoses and fittings are not damaged, leaking or loosely connected.
- Radiator hoses and fittings are not damaged, leaking or loosely connected.
- Filters are not damaged, leaking or loosely secured.
- Wheels are properly and securely attached and tires are properly inflated.
- Loader is properly lubricated and no grease fittings are missing or damaged.
- Hydraulic system reservoir, engine crankcase and drive chain-cases are filled to their proper levels.
- All guards, shields and decals are in place and securely attached.

Start loader engine and test run the unit while checking that proper operation is exhibited by all controls.

Check that :

- Steering control lever operate properly and are not damaged or binding.
- Steering control lever properly adjusted for a correct "neutral" position so that loader does not creep.
- The engine will not start unless the operator is sitting on the seat and the safety bar is lowered; furthermore, the lift arm will not lower unless the operator is sitting on the seat, the safety bar is lowered and the ignition key switch is in the Run position.

I acknowledge that pre-delivery procedures were performed on this unit as outlined above.

Dealership Name

Dealer Representative's Name

Date Checklist Filled out



SKID STEER LOADER

SAFETY MANUAL

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Safety alert symbol

This safety alert symbol means :
"ATTENTION!
BECOME ALERT!"
"YOUR SAFETY IS INVOLVED!"



The Safety Alert Symbol identifies important safety messages on machines, safety signs, in manuals, or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instruction in the safety message.

Foreword

This Safety Manual is intended to point out some of basic safety situations which may be encountered during the normal operation and maintenance of your machine and to suggest possible ways of dealing with these conditions.

Additional precautions may be necessary, depending on attachments used and conditions at the worksite or in the service area. The manufacturer has no direct control over machine application, operation, inspection, lubrication, or maintenance. Therefore, it is YOUR responsibility to use good safety practices in these areas.

This information provided in this manual supplements the specific information about your machine that is contained in the manufacturer's manual(s). Other information which may affect the safe operation of your machine may be concerned on safety signs, or in insurance requirements, employer's safety programs, safety codes, local laws, rules and regulations.

Important : If you do not have the manufacturer's manual(s) for your particular machine, get a replacement manual from your employer, equipment dealer or from the manufacturer of your machine. Keep this safety manual and the manufacturer's manual(s) with your machine.

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A word to the user/ operator

It is your responsibility to read and understand this safety manual and the manufacturer's manual(s) for this machine. This safety manual takes you step-by-step through your working day.

In reading this manual, you will note that any illustration depicting an unsafe work procedure or illustration is labeled both with the word "wrong" and the mark of an "X" on the illustration. Each illustration is also numbered and the same number appears in the next in parentheses. This number is placed at the end of the written text that refers to the illustration.

Remember that YOU are the key to safety. Good safety practices not only protect you but also protect the people around you. Study this manual and the manufacturer's manual(s) for your specific machine. Make them a working part of your safety program. Keep in mind that this safety manual is written for only this type of machine. Practice all other usual and customary safe working precautions, and above all-

**REMEMBER- SAFETY IS UP TO YOU.
YOU CAN PREVENT SERIOUS INJURY OR DEATH.**

Follow a safety program

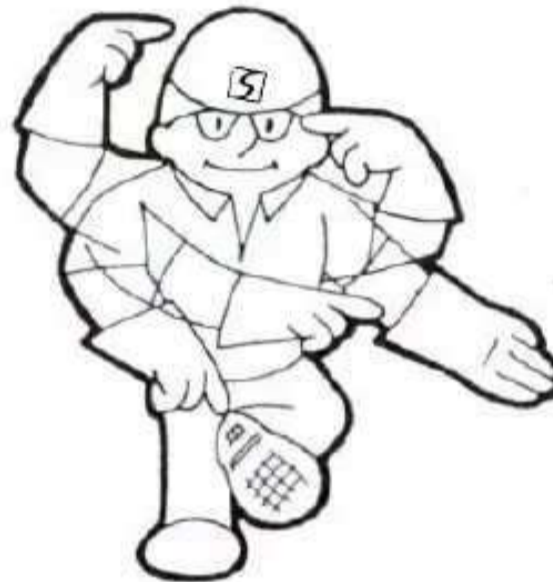
Protect Yourself.

Wear all the protective clothing and personal safety devices issued to you or called for by job condition.

You may need:

- A hard hat
- Safety shoes
- Safety glasses, goggle, or face shield
- Heavy gloves
- Hearing protection
- Reflective clothing
- Wet weather gear
- Respirator or filter mark

Wear whatever is needed, don't take chances .(1)



1
RIGHT



2
WRONG



Warning : Do not wear loose clothing or any accessory -flopping cuffs, dangling neckties and scarves, or jewelry and wrist watches- that can catch in moving parts.(2)

Be Alert!

Know where to get assistance. Know how to use a first aid kit and fire extinguisher/ fire suppression system.

Be Aware!

Take advantage of training programs offered.

Be Carefull

Human error is caused by many factors: carelessness, fatigue, overload, preoccupation, unfamiliarity of operator with the machine, drugs, and alcohol to name a few. Damage to the machine can be fixed in a short period of time, but injury or death, has a lasting effect.

For your safety and the safety of others, encourage your fellow workers to act safely.

BAWOO COMPANY CORP.

Follow a safety program

For safe operation

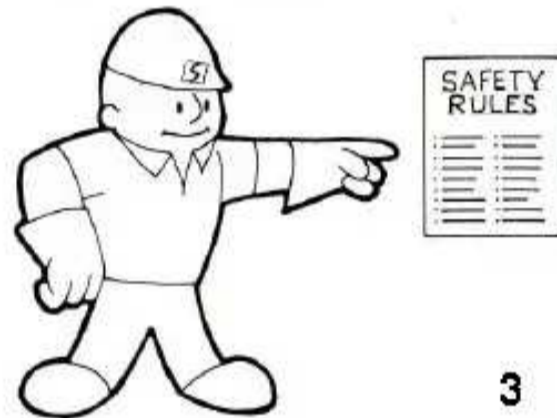
For safe operation of this machine, you must be a qualified and authorized operator. To be qualified, you must understand the written instruction supplied by the manufacturer, have training, including actual operation of this machine and know the safety rules and regulation for the jobsite.



Warning : Do not operate this machine if you are under the influence of drugs or alcohol which can impair your alertness or coordination. An operator on prescription or over-the-counter drugs needs medical advice on whether or not he can safely operate machines.

Know The Rules

Most employers have rules governing operation and maintenance of equipment. Before you start work at a new location. Check with your supervisor or the safety coordinator. Ask about rules you will be expected to obey.(3)



**3
RIGHT**

These are some of the rules you must work by :

- Know the capacity and operating characteristics of this machine.
- Never modify or remove any part of the machine. (except for service and reinstall before operating)
- Fasten your seat belt/ operator restraint before you start.
- Keep others away from your operation.
- Look before you backing up.
- Carry the load low.
- Whenever you leave your machine, always lower the lift arms and put the bucket or attachments flat on the ground or lock the lift arms with the lift arm restraint device(s). Stop the engine, cycle the hydraulic controls to eliminate pressure, and remove the key before you dismount. (See page 17, safe shutdown)

Make sure you understand the rules covering traffic at your jobsite. Make sure you know what all signs, flags, and markings mean.

Follow a safety program

Know Your Equipment

Know your skid-steer loader. Know how to operate all equipment on your machine. Know the purpose of all the controls, gauges and indicators. Know the rated load capacity, speed range, braking and steering characteristics, turning radius, and operating clearances. Keep in mind that rain, snow, ice, loose gravel, soft ground, etc., change the operating capabilities of your machine.

Study the DANGER, WARNING, safety signs on your machine and the information signs.

Read and understand the manufacturer's operator's manual before starting the engine.

If there is no manual with the machine, get one. Study it before you start work.(4)

If there is something in the manual you don't understand, ask your supervisor or equipment dealer to explain it to you.

Important : This manual covers safe practices for skid-steer loaders equipped with a bucket or pallet forks. If your machine is equipped with other devices, read the manufacturer's operating and safety manuals pertaining to that equipment before using it.

4
RIGHT



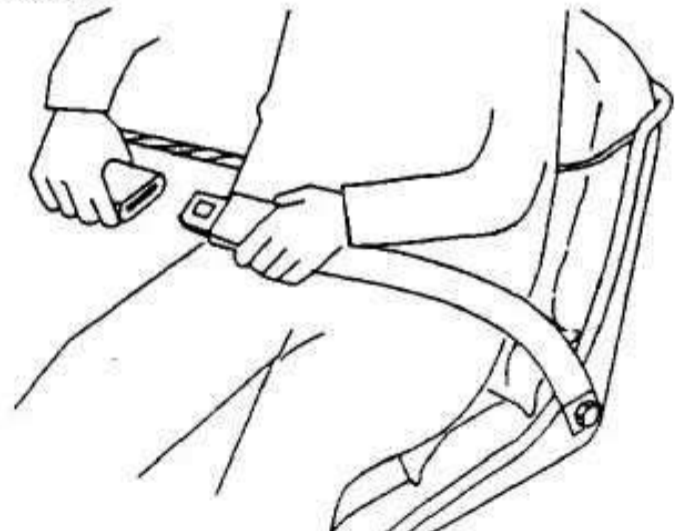
Prepare For Safe Operation

Check the safety equipment

To protect you and others around you, your machine may be equipped with the following safety equipment. See that each item is securely in place and in operating condition.

- FOPS (Falling object protective structure)
- ROPS (Rolling object protective structure)
- Seat belt
- Safety bar
- Grab handle
- Lift arm support device
- Lights
- Guard
- Warning stickers
- Anti-skid tread/steps

5
RIGHT



Use them!(5) Never remove or disconnect any safety device.



Warning : Never remove a FOPS/ROPS structure except for service (See page 24, FOPS/ ROPS for additional information).

BAWOO COMPANY CORP.

Prepare For Safe Operation

Check The Machine

Before you begin your workday, you must inspect your machine and have all systems in good operational condition. Do not operate the machine until all deficiencies are corrected.

- Check for broken, missing or damaged parts. Make necessary repairs.
- Check the tires for cuts, bulges and correct pressure. Replace badly worn or damaged tires.
- Check the brake for proper operation.
- Perform all maintenance procedures outlined by the manufacturer of you machine.
- Check the hydraulic system. Have any leaks repaired.



Warning : Diesel fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause serious injury, blindness or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks but do not use bare hand. Wear a face shield or safety goggles for eye protection. If any fluid is injected into the skin, it must be removed within a few hours by a doctor familiar with this type of injury. (See page 21, Be Careful with fluids under pressure)

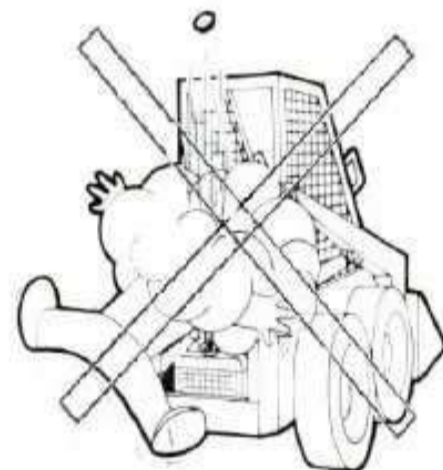
- Check cooling system. If air cooled, check for unobstructed air flow. If liquid cooled, check coolant level (at overflow tank provided).



Warning : If liquid cooled, allow the radiator to cool before checking the level. (See page 22, Be Careful with Hot Cooling System). (6)

6

WRONG



Clean Up



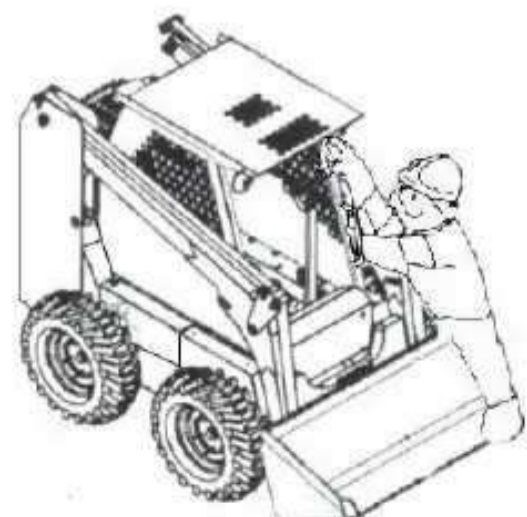
Warning : Always lower the lift arm and stop engine before cleaning loader.

Clean windshield, lights and safety signs.

Make sure the operator's area, steering levers, pedals, steps and grab handles are clean.(7) Oil, grease, snow, ice, mud or debris in these areas can cause you to slip and fall. Clean your boots of excess mud before getting on the machine.


Remove all personal items or other objects from the operator's area. Secure these items in a tool box or remove from the machine.

7
RIGHT



Prepare For Safe Operation

Use Caution When Fueling

 **Warning :** Never fill the fuel tank with the engine running, while smoking or when near an open flame.(8)

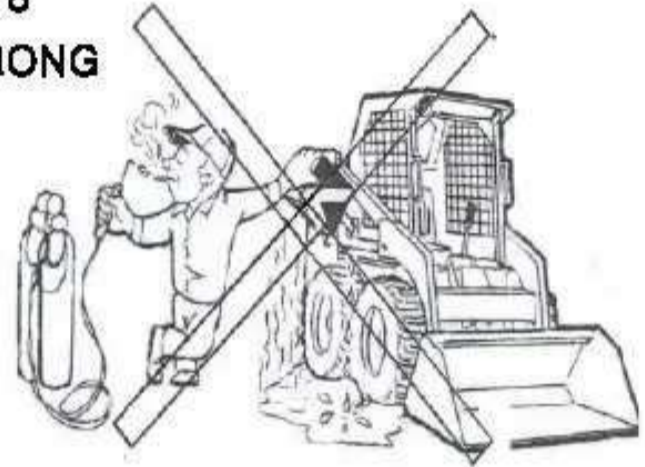
Never overfill the tank or spill fuel. If fuel is spilled, clean it up immediately.

Be sure to use the correct type and grade of fuel.

Ground the fuel funnel or nozzle against the filler neck to prevent sparks and be sure to replace the fuel tank cap.

(See page 22, the section on Fire Prevention, For additional information on fire hazards)

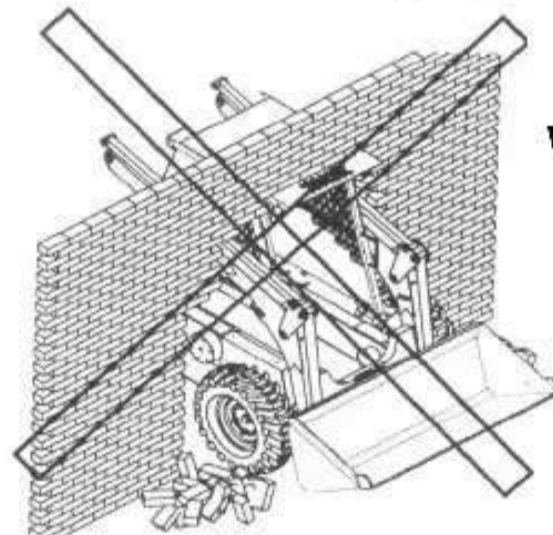
8
WRONG



Know The Working Area

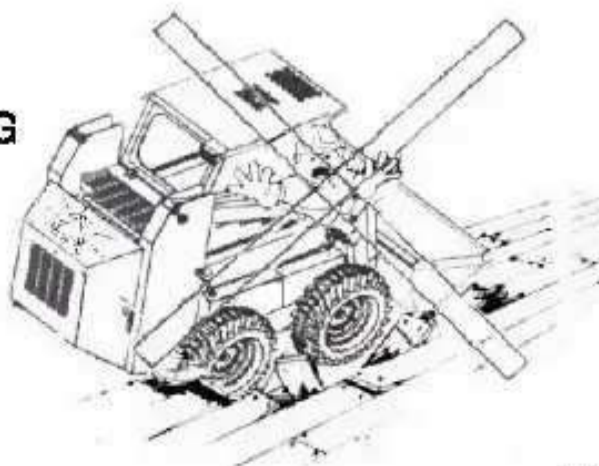
Learn-beforehand-as much about your working area as possible. Check at ground or floor level. Inspect the surface over which you will travel. Look for holes, drop-offs and obstacles. Look for rough spots or hidden obstacles on surfaces which could cause a collision or loss of control. Look for weak spots on docks, ramps or floors. (9) Look for oil spills, wet spot, slippery surfaces. Look for soft soil, deep mud, standing water. Watch for anything that might make you lose control or cause the loader to rollover.

10
WRONG



When operating your machine inside a building, know what clearances you will encounter - overhead, doorway, aisles, etc.; also, the weight limitations of floors and ramps.(10)

9
WRONG



BAWOC COMPANY CORP.


Prepare For Safe Operation


Know The Working Area (cont'd)

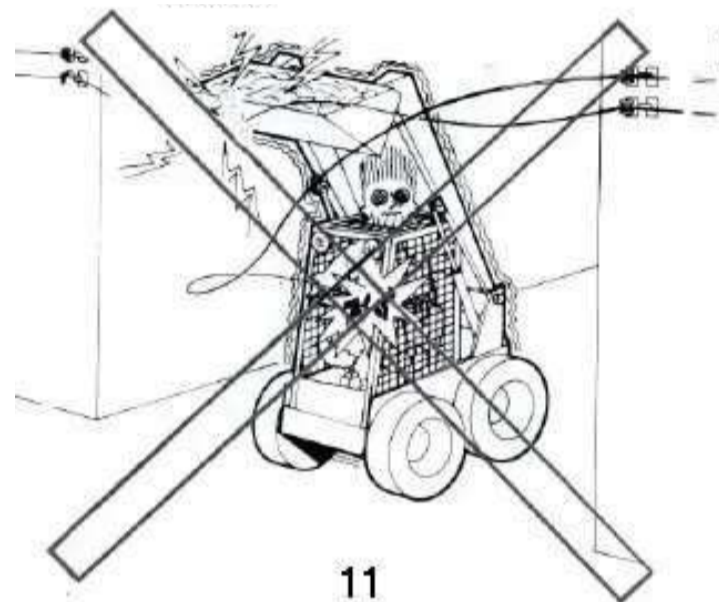
Plan travel routes for inside work in order to see and protect bystanders. Pick up debris that can puncture tires.

Plan your work. Make sure you know where you will make your pickups, lifts and turns. Before you raise a loader bucket, know where you will dump it and always carry the load low.

Check overhead. Check the clearance of doorways, canopies, and overheads. Know exactly how much clearance you have under power and telephone cables.(11)

 **Warning :** Never approach power lines with any part of your machine unless safety precaution have been taken. Use extreme caution.

 **Warning :** Keep away! Electrocutation can result from touching or being near a machine that is in contact with or near an electrical source.



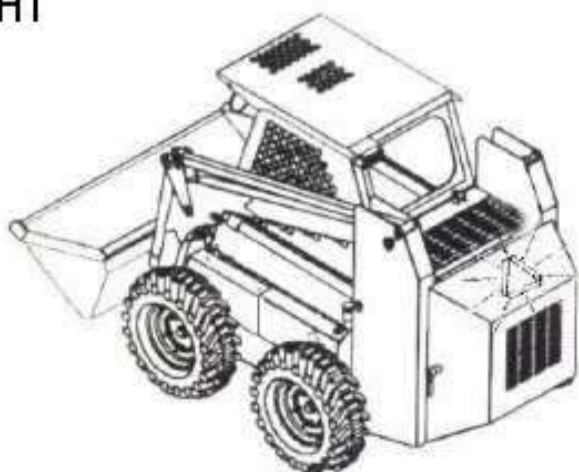
**11
WRONG**

Check underground. Know the location of underground cables, gas lines, and water and drain pipes.

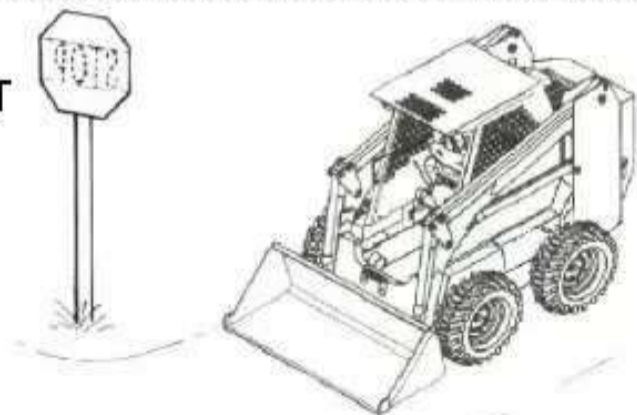
Rules Of The Road

Make sure lights and warning signs are in place and visible. Make sure a "slow moving vehicle" emblem is installed and visible to any vehicle approaching from the rear.(12)

**12
RIGHT**



**13
RIGHT**



When traveling on public roads or streets, obey all local traffic regulations appropriate to skid-steer loader use and classification. Find out if you must use an escort vehicle. Place the bucket in the transportation position. Approach intersections with caution, observe speed and traffic control signs. (13) Avoid panic stops and sharp turns. If traffic backs up behind you, pull over and allow other vehicles to pass. Stop at all railroad crossings and look both ways before proceeding. Never park in traffic area. If it is necessary to stop at night, pull off the road and set up flares or reflectors. When driving at night, use appropriate lights.

BAWOO COMPANY CORP.

Start safely

Mount safely

Never mount a machine unless the lift arms are lowered or restrained by a lift arm restraint device.

When you get on or leave the machine, always :

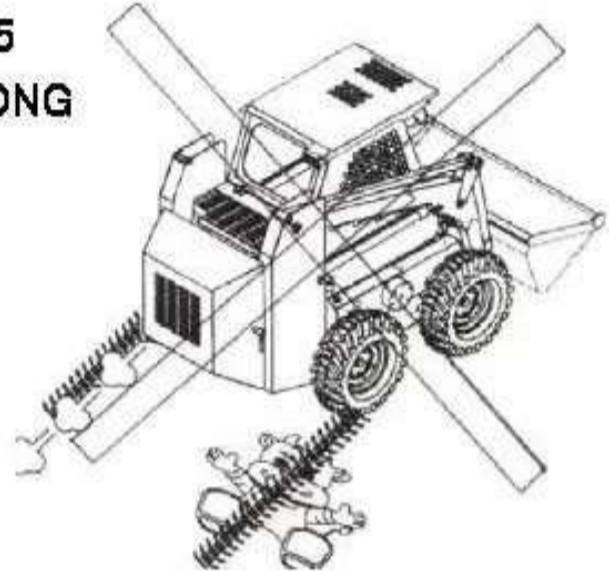
- Maintain a three point contact with the steps and grab handles provided.(14)
- Face the loader.
- Never jump on or off the machine. Never attempt to mount or dismount a moving machine.

Do not use a steering or control lever as a hand hold when you enter or leave the machine.



14
RIGHT

15
WRONG



Warn Personnel Before Starting

Before starting, Walk completely around the machine. Make sure no one is under the machine, on it, or close to it. Let other workers and bystanders know you are starting up and don't start until everyone is clear of the machine. (15)

Starting The Engine



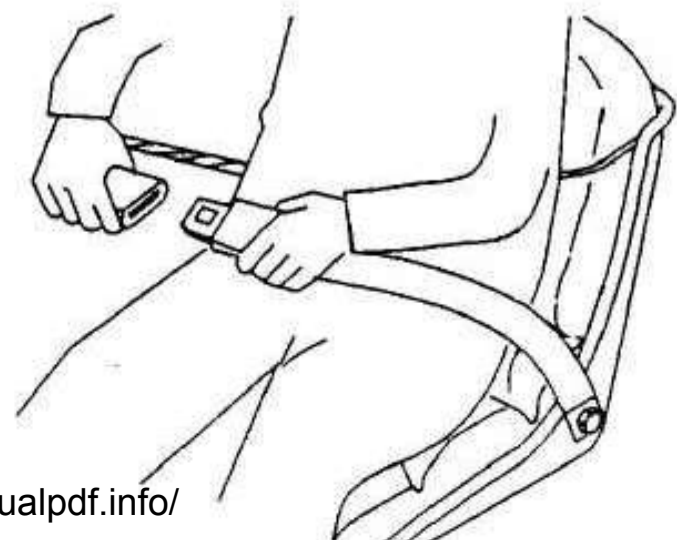
Warning : Start the engine from the operator's seat only. Never attempt to start the engine by shorting across starter terminals. Machine may move uncontrollably and cause serious injury or death to anyone in its path.

Know the exact starting procedure for your machine. See the manufacturer's manual(s) for starting.

1. Sit in the operator's seat and adjust the seat so you can operate all the controls properly.
2. Fasten the seat belt/ operator restraint. (16)
3. Familiarize yourself with warning devices, gauges and operating controls.

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16
RIGHT



BAWOO COMPANY CORP.

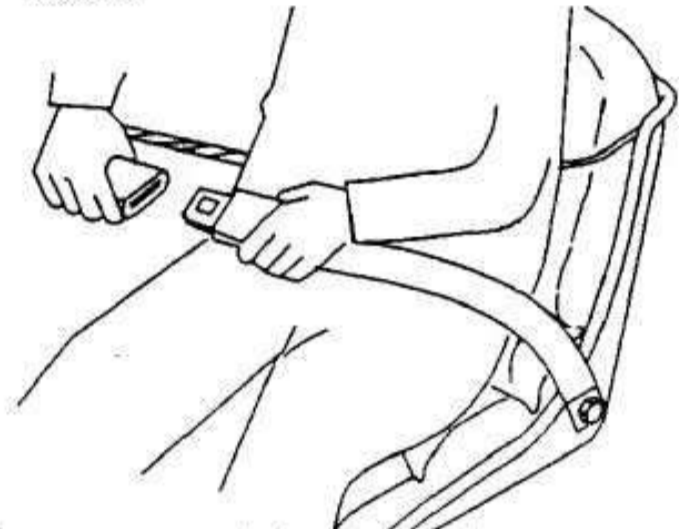
Start safely

Starting The Engine (cont'd)

4. Lower the operator seat bar(s) (if so equipped). (17)
5. Engage the brake and put all controls in the neutral/ park position.
6. Clear the area of all persons.
7. Start the engine following the instructions in the manufacturer's manual(s).

If necessary to run the engine or operate the machine within an enclosed area, be sure there is adequate ventilation.

17
RIGHT



Starting Aids

If jumper cables are used, follow the instructions in the manufacturer's manual(s). Jump starting is a two person operation. place gear in the neutral when jump starting engine so that skid steer loader will be under control when engine starts.



Warning : A battery explosion or a run-away machine could result from improper jump starting procedures.(See page 23, Avoid Battery Hazards).

Ether Cold-Start Fluid is highly flammable. Before using it, always read the instructions on the ether container and the instructions in the manufacturer's manual(s).



Warning : Do not use ether if the engine is equipped with glow plug type preheater or other intake manifold type preheater. It could cause an explosion or fire, and severe injury or death.

After Starting Engine

Observe gauges, instrument, and warning lights to assure that they are functioning and their readings are within the operating range.

Run An Operating Check

Do not use a machine that is not in proper operating condition. It is the operator's responsibility to check the condition of all systems, and to run the check in a safe area.

Test Controls

Make sure the engine is operating correctly.

With the control levers in neutral, test engine speed control.

Operate each control pedal or lever to make sure all lift arm and bucket functions are correct.

Start safely

Test Controls (cont'd)



Warning : Be certain you can control both speed and direction before moving.

Operate the travel control lever(s) to ensure correct operation in forward and reverse. (18) Test steering - forward and reverse or right and left - while moving slowly in a clear, safe area.

Work safely

Remember These Rules

Do not overload a bucket or attachment, or carry a load which can fall from bucket or attachment.(19)

Different attachments can change the weight distribution of the loader. They can also effect its stability and handling response. Be sure you can keep the loader under complete control.



Warning : Never modify your loader's ROPS(roll-over protective structure). To do so may cause severe injury or death. (20)

When changing buckets or installing attachment, make sure all connectors are securely fastened. Tighten all bolts, nuts and screw to torques recommended by the manufacturer.

Remember The Other Person

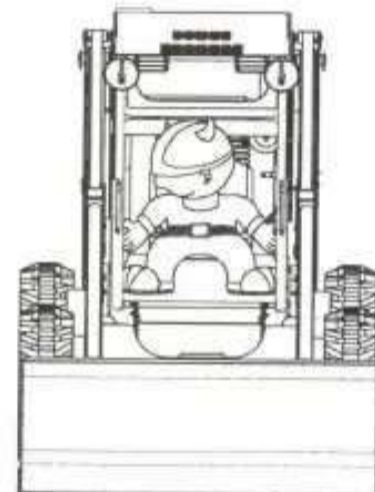
Never allow an untrained or unqualified person to operate your machine. Handled Improperly, this machine can cause severe injury or death.



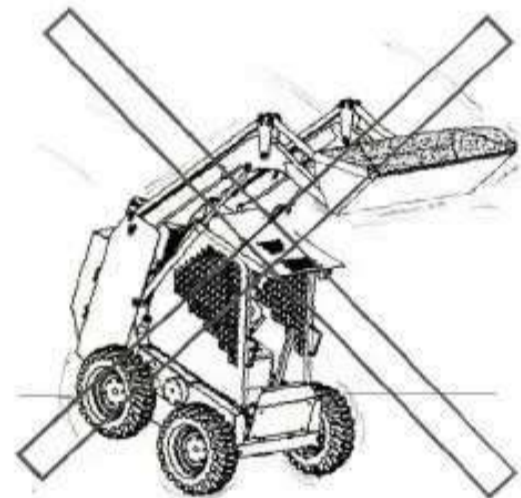
Warning : Your skid steer loader is one person machine. Never permit riders.(21)

Never use the bucket for a <https://www.tractormanualpdf.info/> personnel carrier.

18
RIGHT



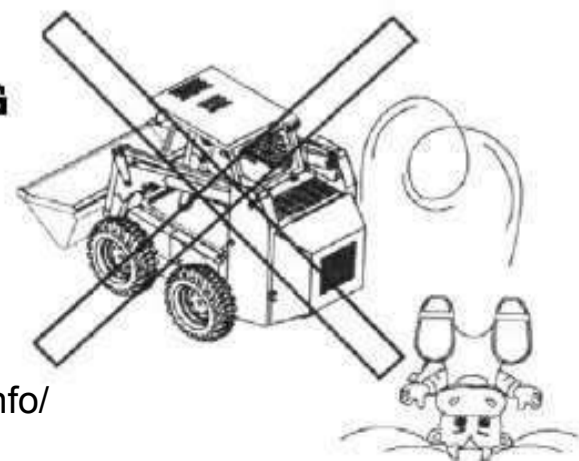
19
WRONG



20
WRONG



21
WRONG



Work safely

Remember The Other Person (cont'd)

Always look around before you back up, or swing an attachment. Be sure that everyone is in the clear.(22)

Know the pinch points and rotating parts on the loader, awareness on your part can prevent accidents.

Never overload the bucket with material which can injure someone if it spills. Keep loaded bucket level as lift arms are moved and as loader moves up or down on slopes and ramps.



Warning : Never lift, swing, or move a load over anyone.(23)

Keep others away from your operation.

Follow Safe Operating Practices

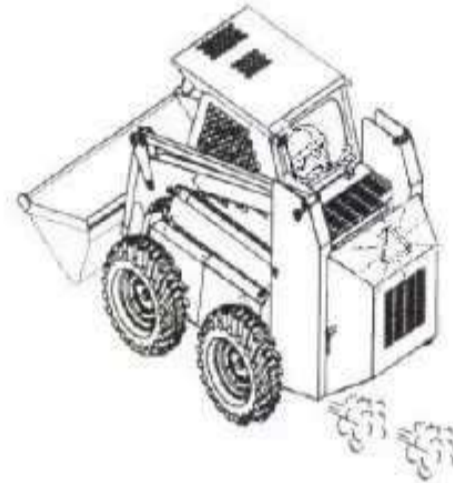
- Keep your seat belt/ operator restraint fastened.
- Never leave the operator's seat without first raising the operator seat bar(s)(if so equipped), lower the lift arm or engaging the lift arm restraints and stopping the engine.(See page 17 safe shutdown for detailed shutdown procedures).
- Operate the controls smoothly.
- Do not jerk the steering levers.
- Carry the load low.
- Avoid sudden stops, starts and turns.
- Use care and good judgment.
- Never attempt to work the controls unless properly seated.(24)



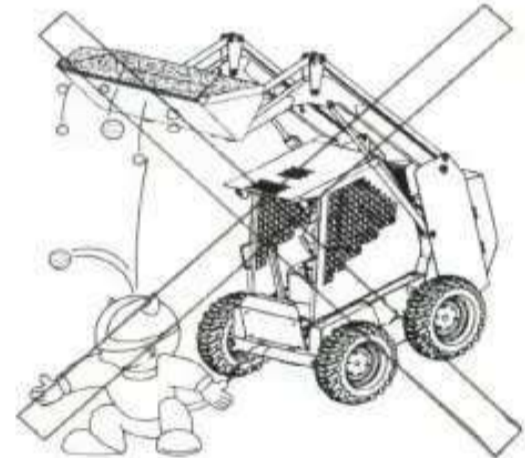
Warning : Keep your body inside the operator's cab while operating the skid steer loader. Never work with your arms, feet or legs beyond the operator's compartment(25)

Stay alert. Should something break, come loose, or fall to operate on your loader, stop work, lower the lift arms, stop the engine and inspect the machine.

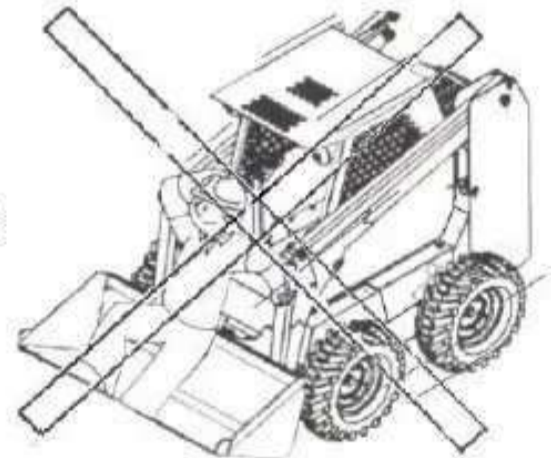
**22
RIGHT**



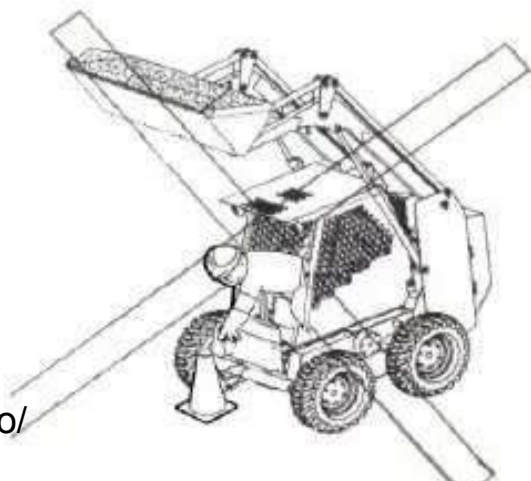
**23
WRONG**



**24
WRONG**



**25
WRONG**



Work safely

Operate Safely

Always have the lift arms down when traveling or turning. Plan operation to load, unload and turn on flat level ground.

Never ram the bucket into a material pile. Most loaders have more force at slow speeds.

When travelling over rough terrain, slow down to prevent losing control.

Raise loads slowly at an even rate and be ready to lower load quickly if loader gets in unstable situation.

Avoid steep slopes or unstable surfaces. If you must drive on a slope, keep the load low and proceed with extreme caution. Do not drive across an excessively steep slope under any circumstances.(26)

Travel straight up and down the slopes.



Warning : Travel up and down on inclines, slopes, and ramps as follow :

Travel up and down slope with the heavy end of the loader pointed uphill.

Loaded bucket : with bucket (and load) pointed uphill.

Empty bucket : with bucket pointed downhill



Warning : Do not dump, raising the lift arm. If you do so, it can cause lift arm to be dropped.(27)

follow the manufacturer's recommended dumping procedures.

- Raising the lift arm.
- Put controls in the neutral position.
- Dump.

when you dump raising the lift arm, you have to operate elaborately and dump a little <https://www.tractormanualpdf.info/>

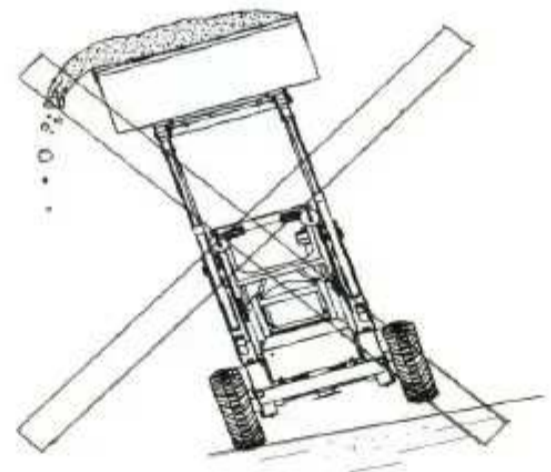
Traveling On Jobsite

Take it slow and easy when traveling through congested areas. Traffic courtesy pays off.

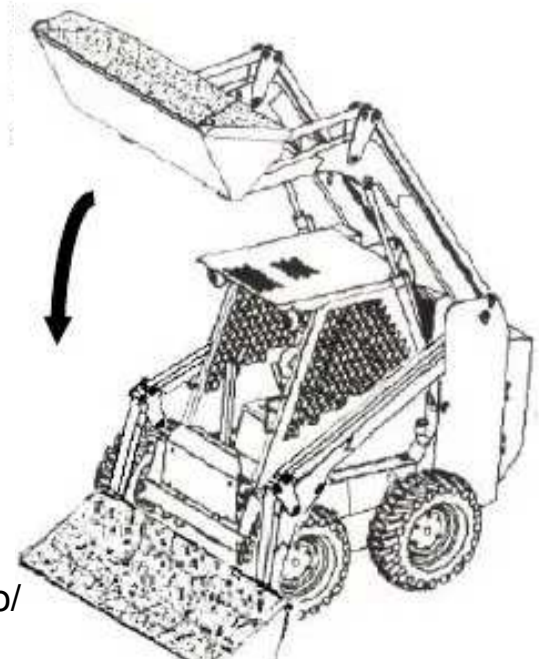
Give the right of way to loaded machines. Maintain a safe distance from other machines. Pass cautiously.

Don't obstruct your vision when traveling or working. Carry the bucket low for maximum stability and visibility while traveling. Operate at speeds slow enough so you have complete control at all times. Travel slowly over rough or slippery terrain and on hillsides.

**26
WRONG**



**27
WRONG**




BAWOO COMPANY CORP.


Work safely

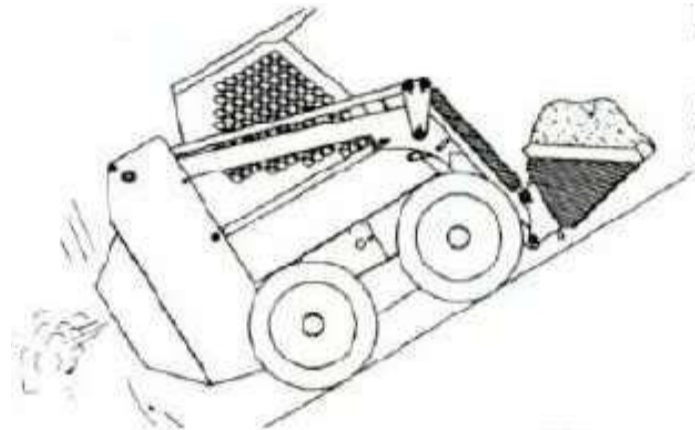
Check loader manufacturer's recommendations. Most loaders are heavier on the rear axle when unloaded and heavier on the front axle when fully loaded.

If you are working on a ramp or slope always have a flat, level turn-around area so you can turn, load and unload safely.

 **Warning :** Keep the load as low as possible for maximum stability.

The center of gravity of your skid steer loader shifts as loads are lifted and lowered. Never attempt to make sharp turns or travel on steep slopes with raised load.(28)

 **Warning :** Make sure you can see where you are going. Never travel with a load obstructing your vision.



28
RIGHT

Watch Out For Hazardous Working Conditions

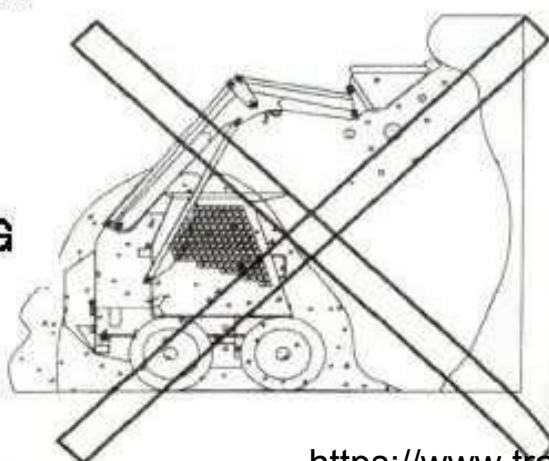
Be alert for hazards. Know where you are at all times. Watch for branches, cables, or doorways.

Use caution when working along docks, runways, banks, slopes. Keep away from the edges of drop offs.

Use caution when working beneath an overhang.

 **Warning :** Never undercut a high bank.(30)


30
WRONG



29
WRONG



Extreme caution should be used when working along the top of banks or slopes. Keep away from the edge.

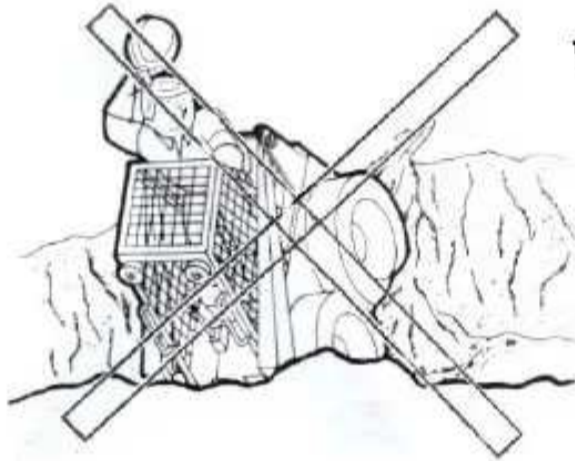
 **Warning :** Never operate the machine too close to the edge of an overhang or gully. The edges could collapse or a slide could occur causing severe injury or death.(29)

Work safely

Stay Alert. Cave-Ins Can Be Hazardous.

Use caution in backfilling.

Do not get too close to the trench wall. The combined weight of your equipment and the load could cause the trench wall to give way.(31) Before backfilling, see the manufacturer's operator manual.



31
WRONG



32
WRONG

When working under hazardous conditions, have a second man work with you to signal for dangers. Make certain he does not get too close to your loader.

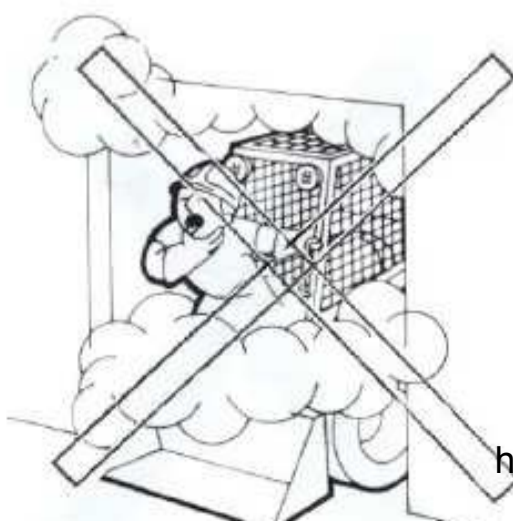
Be careful when handling materials such as rocks, gas cylinders, barrels etc. Lifting too high and rolling bucket too far back could result in these materials falling into the operator's compartment.(32) Special enclosures may be available for use with attachments. Check with your dealer.

Exhaust Gases Can Kill

Vent exhaust gases and assure a flow of fresh air when an internal combustion engine is used in a closed space. Exhaust fumes have deadly components which are odorless and invisible so that they can kill without warning.



Warning : Exhaust fumes from diesel, gasoline or LP gas engines can kill.(33)



33
WRONG



34
WRONG

Operation In Flammable/ Explosive Atmospheres.

Use only an "approved" skid steer loader with a label designating the machine as G, GS, D, DS, DY, LP, LPS, G/LP or GS/LPS when operating in areas with flammable or explosive atmospheres.

A standard loader or a loader equipped with a spark arrestor/ spark arresting muffler cannot be operated in these areas. Use of these machines in these areas can result in fires and/or explosions

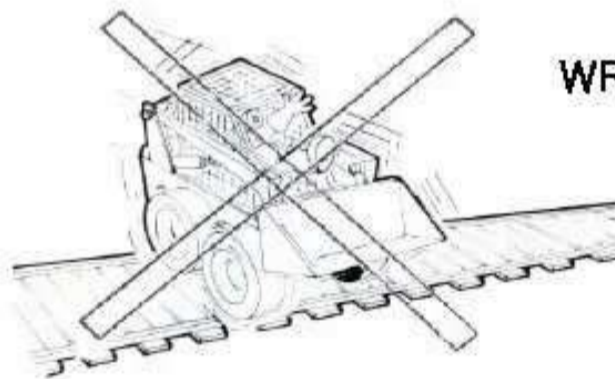
BAWOO COMPANY CORP.

Work safely

Watch Out For Obstacles

Adjust your speed to conditions.

Watch for obstacles. Go around rocks and stumps. Avoid crossing ditches, curbs or exposed railroad tracks.(35) If obstacles are unavoidable; reduce speed, raise bucket or attachment a short distance if needed for clearance, and cross at an angle. If loader bucket is being used to scrape pavement, check for hidden obstacles that could cause a collision. At railroad crossings, stop at approach, remove ear protectors, if any, and look and listen for trains before crossing the tracks.



**35
WRONG**



**36
WRONG**

Keep your skid steer loader under control.

Before entering underpasses, tunnels or bunkers, check for oncoming traffic or obstruction.(36)

Keep speed to a minimum when visibility is poor.

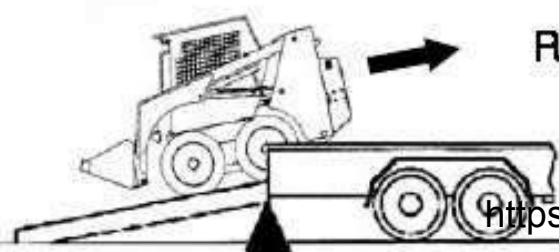
Load and unload your machine safely

Loading And Unloading

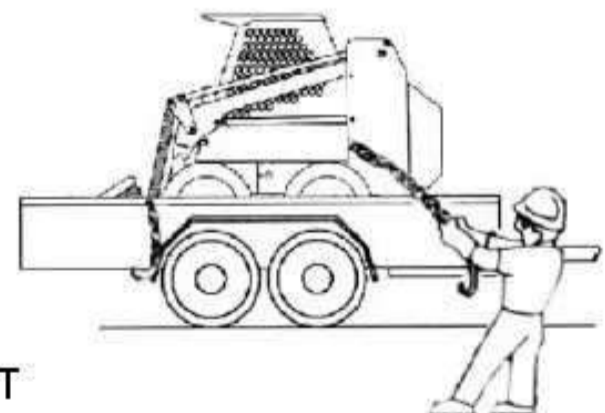
If machine is equipped with a ROPS, always wear your seat belt/ operator restraint when loading or unloading your machine.

When transporting a loader, follow the manufacturer's recommended loading and unloading procedures.

Several precautions are applicable to all machines:



**37
RIGHT**



**38
RIGHT**

- Load and unload on a level surface.
- Block transport vehicle so it cannot move.
- Use ramps of adequate size and strength ;low angle, and proper height.
- Keep trailer bed and ramps clean of clay, oil, ice, snow, and other materials which can become slippery.
- Back the loader up the ramp onto the transport vehicle.
- (Unload by driving forward, down the ramp).(37)
- Chain and block machine securely for

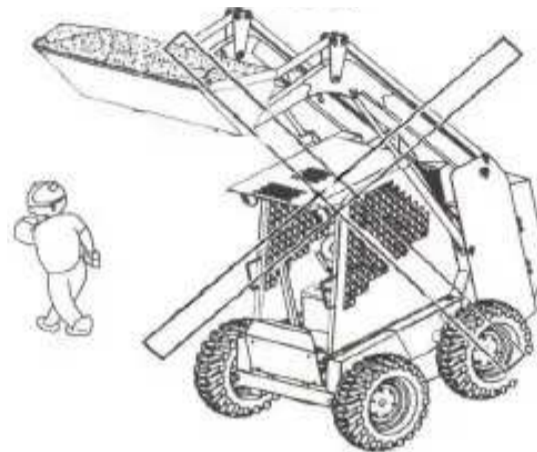
Park safely

Select A Site

Select level ground, whenever possible. If you must park on a slope or incline, position the machine at right angles to the slope, put the controls in the neutral, lower the bucket (and other attachment) to the ground and block the wheels.(39)



39
RIGHT



40
WRONG

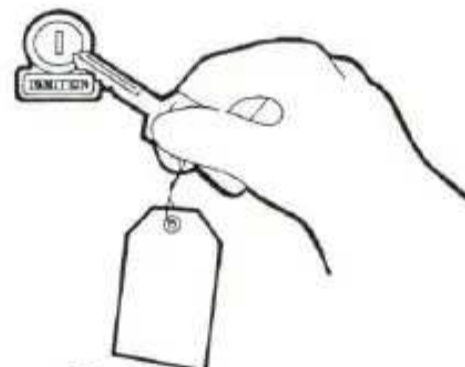


Warning : Never leave the loader with the engine running or the lift arms raised, unattended. If arms are left in raised position, they must be restrained by the lift arm restraining device(s).(40)

Safe Shutdown

The detailed shutdown procedure is given in your manufacturer's manual(s). In general, the procedure should include the following :

- Stop machine.
- Lower the bucket and other attachment flat on the ground.
- Pose controls in neutral.
- Idle engine for short cool-down period.
- Stop engine.
- Raise operator seat bar(s). (if so equipped.)
- Check that controls are locked in neutral. (if so equipped.)
- Unbuckle seat belt/ operator restraint
- Remove ignition key.(41)
- Shut off master electric switch.(if so equipped)
- When you leave the machine, always maintain a three point contact with the steps and grab handles. Face the machine as you dismount. Never jump off machine.(42)
- Be careful of slippery conditions on steps and grab handles when leaving machine.
- Block wheels if on a slope or incline.



41
RIGHT



42
RIGHT

BAWOO COMPANY CORP.

Perform maintenance safely

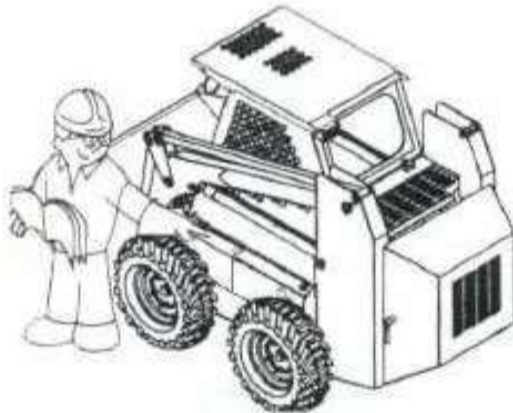
General Procedures

Do not perform any work on a machine unless you are authorized and qualified to do so.

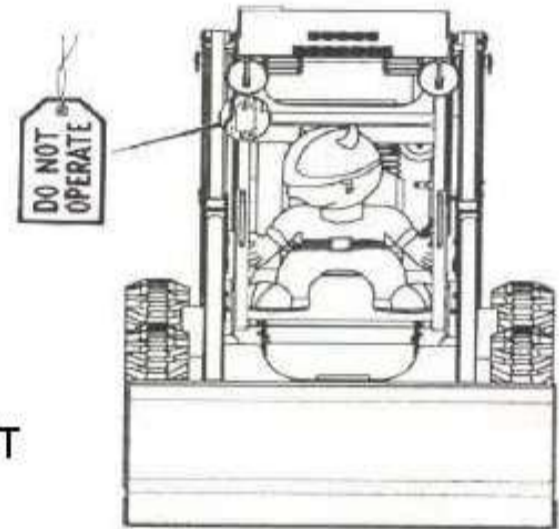
If you have been authorized to do maintenance, read the operator and service manuals. Study the instruction; Check the lubrication charts; examine all the instruction messages on the machine.(43)

Maintenance can be dangerous unless performed properly. Be sure you have the necessary skill, information, correct tools and equipment to do the job correctly.

**43
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**44
RIGHT**



Attach a "DO NOT OPERATE" tag or similar warning tag to the starter switch or steering lever before performing maintenance on the machine.(44)

If the engine should not be started, remove the ignition key.

Prepare The Work Area

Choose a clean, level work area. Make sure you have sufficient room. Check clearances. Make certain there is adequate light and ventilation.

Clean the walking and working surfaces. Remove oil, grease and water to eliminate slippery areas. (45)



**45
RIGHT**

**46
RIGHT**



Prepare Yourself

Wear all the protective clothing the job requires. (46)

Wear a rubber apron and rubber gloves when working with corrosives. Wear gloves and safety shoes when handling wooden blocks or sharp-edged metal.

Perform maintenance safely

Prepare Yourself (cont'd)

Safety glasses or goggles are always needed for eye protection from electric arcs from shorts, fluids under pressure, and flying debris or loose material when engine is running or tools are used.(47)

Wear a face shield when you disassemble spring loaded components or work with battery acid. Wear a helmet or goggles with special lenses when you weld or cut with a torch.

Do not stand, grind, flame-cut, braze or weld without appropriate ventilation or an approved respirator. If welding is required on this machine, refer to the manufacturer's manuals or consult your equipment dealer for proper procedures.



Warning : Keep clear of all rotating components. Wrapping or entanglement may result in serious injury or death. (48)

Keep hands and clothing away from moving parts. Do not tempt fate with dangling ties, loose sleeves, rings or long hair.

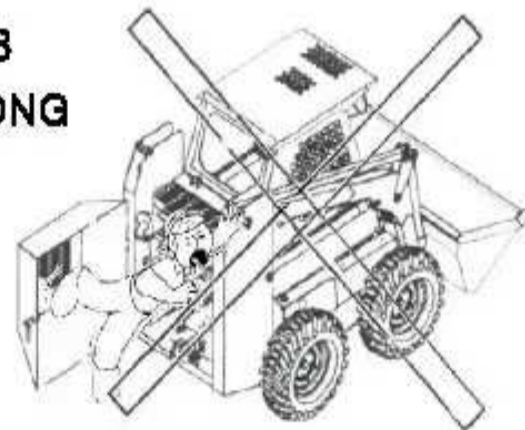
Keep pockets free of all objects which could fall out and into machinery.(49)

Handle tools and heavy parts sensibly with regard for yourself and other persons. Lower items. Do not drop them.

47
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48
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49
WRONG



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Perform maintenance safely

Prepare The Machine



Warning : Start the engine from the operator's seat only. Never attempt to start the engine by shorting across the starter terminals. Machine may move uncontrollably. This could cause serious injury or death to anyone in its path.

Move the machine onto a level surface. Stop engine, release all hydraulic pressure. (See page 30, Safe Shutdown). Engage attach lift arm restraints or block up all hydraulically operated attachments or lower attachment to the ground. (50) Place controls in Neutral.



Warning : Never work on machinery with the engine running unless so instructed by the manufacturer's operator's or service manuals, for specified service.



Warning : Never operate any type of engine without proper ventilation. Exhaust fumes can kill. (51)

If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension. If you do not have an exhaust pipe extension, make sure you open the doors and get outside air into the area.

If adjustment must be made 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. (52)

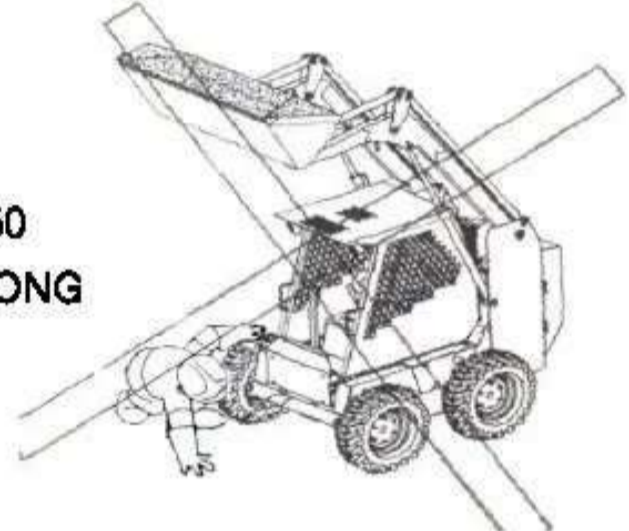
Block the wheels. Put the controls in the neutral. Disconnect the battery and remove the ignition key.

Remove only guards or covers that provide access. Wipe away excess grease and oil.

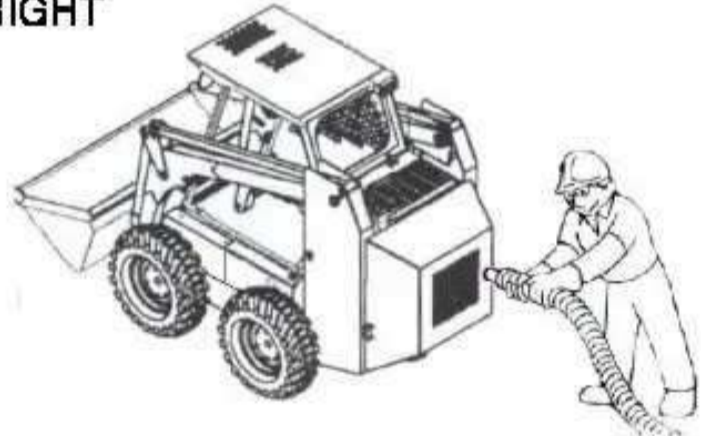
Never leave guards off or access doors open when unattended. Keep bystanders away if access doors are open.

Make certain all guards, screens or panels, and safety glass are reinstalled on the machine or

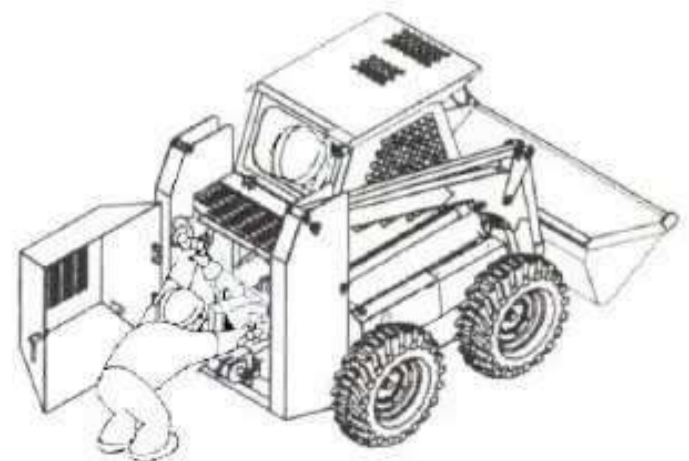
**50
WRONG**



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**52
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safety signs are reinstalled on the machine as recommended by the manufacturer.

SAFETY MANUAL

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Perform maintenance safely

Use Jacks And Hoists Carefully

If you must work beneath raised equipment, always use wood (NOT concrete) blocks, jack-stands or other rigid and stable supports. When using jacks and hoists, always be sure they are adequately supported.



Warning : Never use concrete blocks for supports. They can collapse under even light block. (53)

Make sure the hoists or jacks you use are in good repair. Never use jacks with cracked, bent or twisted parts. Never use frayed, twisted or pinched cables. Never use bent or distorted hooks.



53
WRONG

Avoid Electrical System Hazards

Disconnect the battery before working on the electrical system. Remove the ground cable first. When reconnecting the battery, connect the ground cable last.

Never work on the electrical system unless you are thoroughly familiar with system details and the special handling required. (54)

54
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Be Careful With Fluids Under Pressure

The hydraulic system is under pressure whenever the engine is running and may hold pressure even after shutdown.

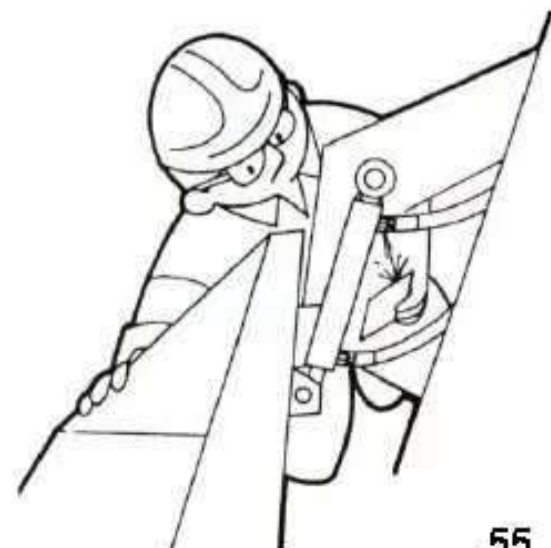
Install lift arm restraints (cylinder rod collars) or block the cylinders and equipment securely working on the hydraulic system.

Cycle steering and other controls after shutdown. When venting or filling the hydraulic system, loosen the filler cap slowly and remove it gradually.

Do not permit an open flame around the hydraulic system. Clean up spilled fluid immediately.



Warning : Diesel fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause serious injury, blindness or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks but do not use bare hand. Wear a face shield or safety goggles for eye protection. If any fluid is injected into the skin, it must be removed within a few hours by a doctor familiar with this type of injury.(55)



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Perform maintenance safely

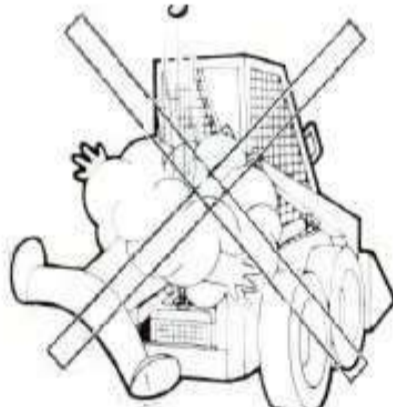
Be Careful With Hot Cooling System

Warning : Liquid cooling systems build up pressure as the engine gets hot. Before removing the radiator cap, stop the engine and let the system cool. Remove the radiator cap only after the coolant is cool .(56)

For cooling system with an overflow tank, the coolant can usually be checked at the tank without removal of the radiator cap. See manufacturer's instructions.

56

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57

WRONG

Avoid Fire And Explosion Hazards

Stop the engine and shut off electrical equipment while filling the fuel tank. Use extra caution when fueling a hot engine. Always ground the fuel nozzle against the filler neck to avoid sparks.

Warning : Never smoke while handling fuel or working on the fuel system. The fumes in an empty fuel container are explosive. Never cut or weld on fuel lines, tanks or containers.

Handle all solvents and dry chemicals according to procedures identified on manufacturer's containers. Work in a well ventilated area.

Remove all trash or debris from the machine. Make sure that oily rags or other flammable material are not stored on the machine.

Check for fuel, oil or hydraulic fluid leaks. Stop the leaks and clean the machine before operate it.

Ether is flammable. Do not smoke when using ether. Always follow the instructions on the ether can and in the manufacturer's manual(s) for your machine. Do not use ether if the engine is equipped with a glow plug or other type of preheater.

Always use a nonflammable solvent when you clean parts. Do not use gasoline, diesel fuel or other flammable fluids. (57)

Store all flammable fluids and materials away from your work area.

Know where fire extinguishers are kept -how they operate- and for what type of fire!

Perform maintenance safely

Avoid Battery Hazards



Warning : Lead-acid batteries contain sulfuric acid which will damage eyes or skin on contact. Always wear a face shield to avoid acid in eyes. If acid contacts eyes, flush immediately with clean water and get medical attention. Wear rubber gloves and protective clothing to keep acid off skin. If acid contacts skin, wash off immediately with clean water.



Warning : Lead-acid batteries produce flammable and explosive gases. Keep arcs, sparks, flames and lighted tobacco away. (58)

**58
WRONG**



Use a flashlight to check battery electrolyte level. Always check with engine stopped.(59)

Do not charge a battery or jump-start the engine if the battery is frozen. Warm to 60°F (15°C) or the battery may explode.

**59
RIGHT**



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Tire Maintenance



Warning : Explosive separation of a tire and/or rim parts can cause serious injury or death. Always follow the manufacturer's recommendations or see your tire supplier.

Special tools and procedures are required to change truck and off-highway tires. To do safely, it must be done correctly. Follow the step by step instructions given in a tire repair manual. Changing tires is a job better done by your tire service company.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Be sure to replace tire ballast if machine is so equipped. See manufacturer's specifications for ballast requirements.

Inspect tires and wheels daily. Do not operate with low pressure, cuts, bubbles, damaged rims or missing lug bolts or nuts.

Keep wheel lug nuts tightened to manufacturer's recommendations.

A rise in tire pressure during operation is normal, and should not be reduced.

When adding air to tire, do so from a distance. Use a long hose with self-attaching chuck. Always stand behind tread when adjusting tire pressure.(60)



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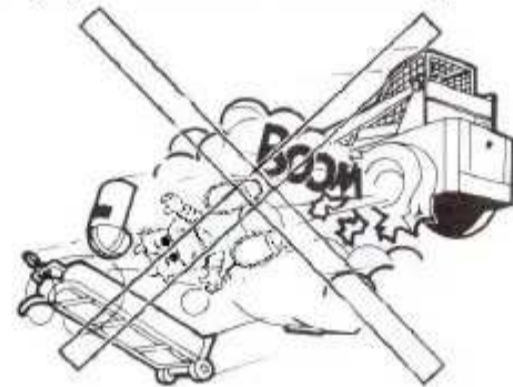
Perform maintenance safely

Tire Maintenance (cont'd)

Do not inflate tires with flammable gases or from systems utilizing an alcohol injector.

Never cut or weld on a wheel with an inflated tire mounted on it. This could cause explosive decompression.(61)

61
WRONG



Tire Repair

Tire are to be repaired only by an authorized person using the proper procedures and safety equipment. New or replacement tires and wheels should always be checked for proper size before mounting.



Warning : Always use a safety cage or cable restraints when reinflating a repaired tires. (62)

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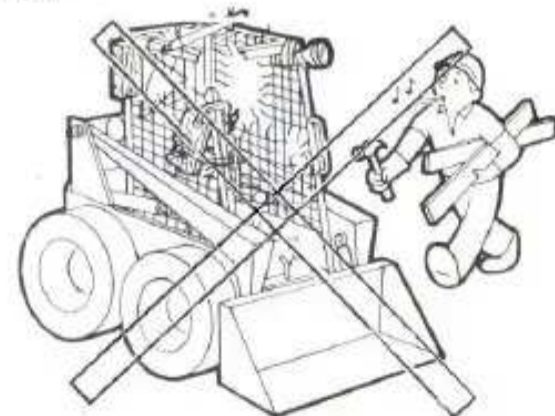
Roll-Over Protective Structure (ROPS) and Falling Object Protective Structure (FOPS) Safety Precautions

Do not remove the ROPS/ FOPS except for service. Reinstall them correctly before you operate the machine again.

Do not modify ROPS/ FOPS in any manner. Unauthorized modifications such as welding, drilling, cutting or adding attachments could weaken the structure and reduce your protection. (63)

Replace ROPS/ FOPS if subjected to rollover or damage. Do not attempt to repair them. See the manufacturer's manual(s) for this machine for complete instructions and inspection requirements.

63
WRONG



Perform maintenance safely

Complete Service And Repairs Before Machine Is Released

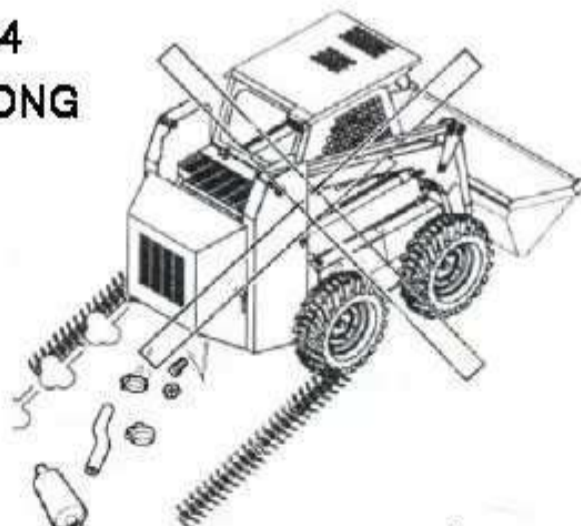
Tighten all bolts, fittings, connections to torques specified by the manufacturer.

Install all guards, covers, and shields after servicing. Replace or repair any damaged ones. Refill and recharge pressure systems only with manufacturer approved or recommended fluids.

Start the engine and check for leaks. (See page 37, Hydraulic Fluid Warning) Operate all controls to make sure machine is functioning properly. Road test machine if necessary. After testing, shut down, check the work you performed (any missing cotter pins, washers, locknuts, etc.) (64) Recheck all fluid levels before releasing machine for operation.

All parts should be inspected during repair and replaced if worn, cracked or damaged. Excessively worn or damaged parts can fall and cause injury or death. Replace any damaged or illegible decals.

64
WRONG



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Test your knowledge

Now that you have read this safety manual, do you understand...

- Your safety program?
- Your machine manufacturer's manual(s)?
- Proper clothing and personal safety equipment?
- Your machine's controls, warning signs and devices, and safety equipment?
- How to properly inspect, mount, and start your machine?
- How to check your machine for proper operation?
- Your work area and any special hazards that may exist?
- Proper operating procedures?
- Maximum load handling capacity of loader buckets and attachment?
- Proper parking, shutdown, and dismounting procedures?
- Proper maintenance procedures?
- Proper loading and unloading procedures for transporting?
- Under what conditions you should not operate your machine?
- Local rules or regulations that affect your machine's application?

