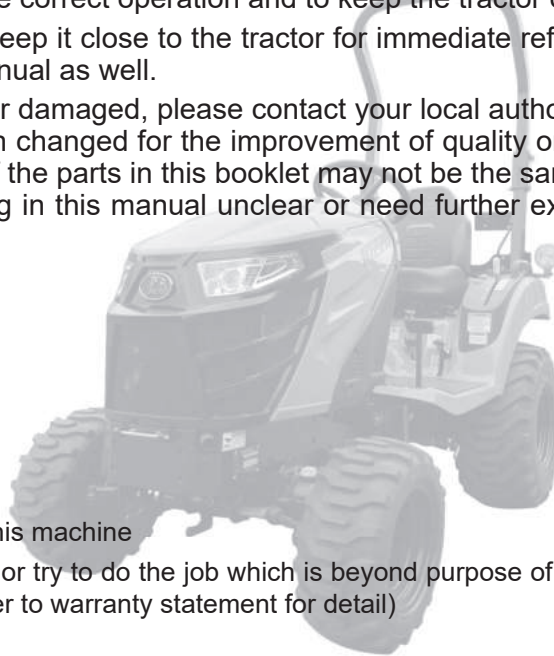


PREFACE

This operator's manual contains handling tips and precautions for safe operation of your **BAD BOY 1022H** tractor. Read it carefully before you operate your tractor and make sure that you have a full understanding of this manual. This will ensure correct operation and to keep the tractor optimum condition.

After reading the manual, keep it close to the tractor for immediate reference. When you loan your tractor to someone else, loan the manual as well.

In case the manual is lost or damaged, please contact your local authorized dealer for a copy. Some parts of this product may have been changed for the improvement of quality or for safety reasons, in which case the photographs or drawings of the parts in this booklet may not be the same as the actual parts installed on this product. If you find anything in this manual unclear or need further explanation, please contact your authorized dealer.



※ Regarding the purpose of this machine

Do not modify the machine or try to do the job which is beyond purpose of this machine. Otherwise it may cause the warranty cancellation. (Refer to warranty statement for detail)

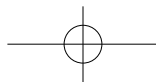
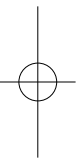
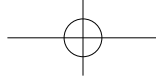
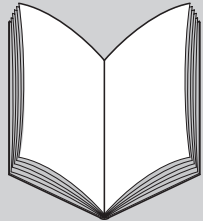


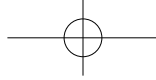


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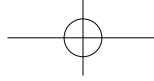
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- REGARDING WARRANTY SUPPORT..... 2
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- CONTROLS AND COMPONENTS 5
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SAFETY AND VEHICLE DAMAGE WARNING

The instructions given with the following marks are very important for your safety.

 DANGER	Failure to observe the instruction given with this mark may result in death or injury.
 WARNING	Failure to observe the instruction given with this mark may expose you to the risk of death or injury.
 CAUTION	Failure to observe the instruction given with this mark may expose you to injury. <ul style="list-style-type: none">• The section, “ To Ensure Safe Operation,” on the following pages details safety points to be observed to ensure safe operation of your tractor.• Please make sure you read it carefully before operating the tractor.
NOTE	This instruction is to give an additional description to operator so that he/she can operate the machine more effectively.
 IMPORTANT	Read this Manual for correct and safe use of the product. Failure to use the product properly may result in an accident. Keep this Manual close to the tractor after you have read it.



SYMBOL MARKS OF CONTROLLER

This manual includes symbol marks of the controller to simplify operations for maneuverability and maintenance. These meanings are as below, so carefully read it for a proper function.



Left side indicator



High Beam



Preheat



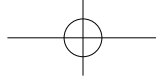
Right side indicator



Battery



Engine oil pressure

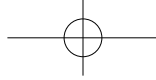


"USE AND DISPOSAL" POLICY CONCERNED WITH ENVIRONMENT PRESERVATION

We try our best to preserve the environment and are always concerned about our environmental impact at each step of planning, development, production, distribution, use and disposal of products, and for our overall operations through an “environmentally friendly” management system. We comply with international environmental regulations, environmental regulations designated by country and local authorities and other requirements with which we are in agreement, and we work towards the prevention of environmental pollution and the conservation of resources. We provide environmental education and have an awareness campaign to raise environmental awareness among all our employees and members of the supporting companies.

We introduce the “Use and Disposal” policy concerned with environment preservation as follows.

1. Please read the operator’s manual thoroughly for global environment protection. Overload on the machine shortens the product life and increases the harmful exhaust gas, which causes air pollution due to the incomplete combustion.
2. When replacing various fluids (for engine, transmission, hydraulics, etc.) by yourself, don’t dispose the used oil to anywhere not recommended. It can pollute the ground and water. Please contact your local dealer to dispose it legally.
3. Observe the operator’s manual and store or dispose the waste product properly. Rust, oil, etc. leaked from waste product improperly stored can pollute the ground and water. Accordingly for a waste product disposal, contact the necessarily “approved waste collection and recycling facility” to discard the used materials legally.



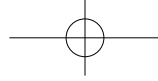
1. FOR SAFE OPERATION

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- BEFORE USING THE MACHINE 1-2
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1-2 BRANSON TRACTOR

SAFETY PRECAUTIONS

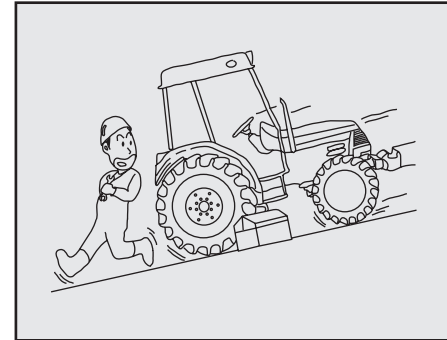
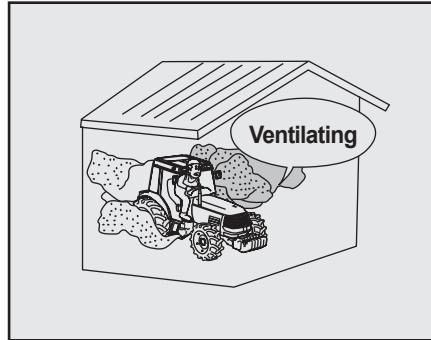
If the instructions in this chapter are ignored, it may cause a machine failure, a fatal accident with injury or death.

For further detailed information, refer to each chapter.

NOTE

- Please understand that some of the figures or contents in this manual may not match with your own machine due to the product variation.
- This tractor is not designed for road driving. Please use a truck to move this machine on the public roads.

BEFORE USING THE MACHINE



⚠ WARNING

Beware of exhaust gas;

- Running the engine, repairing (tightening) any painted part or grinding any painted area should be performed only in a well-ventilated area.

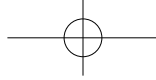
If this instruction is ignored, the exhaust gas or dust can cause intoxication and lead to fatal consequences.

⚠ WARNING

Wide and flat enough area;

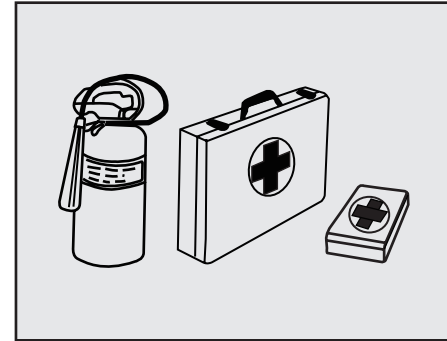
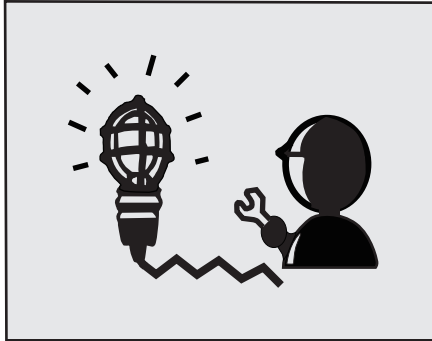
- Inspect or repair the tractor on a wide and flat area.

If this instruction is ignored, an unexpected accident may occur, such as overturning of the tractor.



! WARNING

Clean and arranged place;
• Do not mess the place by dust, mud, oil, or parts
If this instruction is ignored, an unexpected accident may occur.



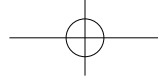
1

! WARNING

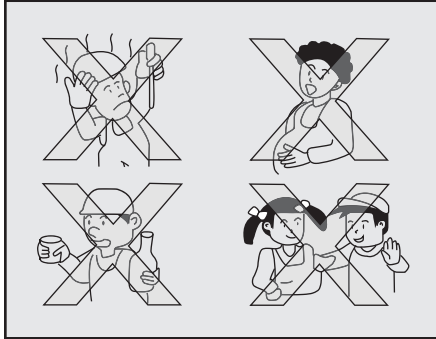
Carry out maintenance in a well-lit place;
• Make sure work area is properly lighted.
Use safety work lights with protective covering when working inside or under the machine.
If this instruction is ignored, an unexpected accident may occur, possibly fire or explosion.

! WARNING

Prepare for emergencies;
• Keep a first aid kit and fire extinguisher handy at all times while operating machine.



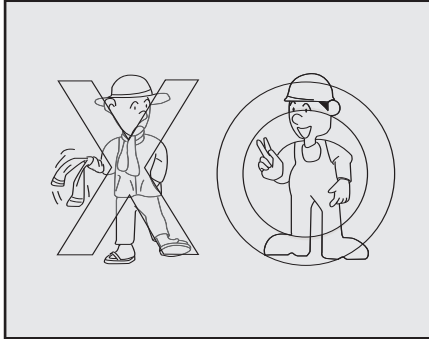
1-4 BRANSON TRACTOR



WARNING

Do not drive if you are;

- Unable to concentrate because of fatigue, under treatment of medicine.
- Under the influence of alcohol
- Pregnant
- Under the age of 18

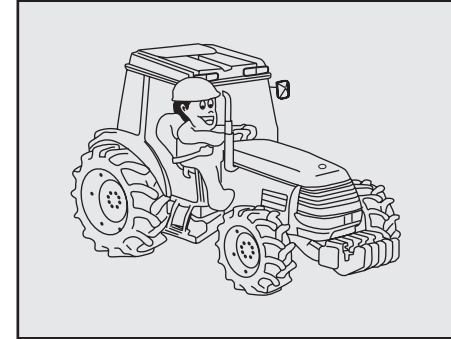


WARNING

Wear properly for the job;

- Hair band, loose clothing is not allowed. Wear tight clothes, work hat, and work shoes which have rough bottoms against slippery surface.

If this instruction is ignored, you will be exposed to a risk of being entangled, slipping, or falling.

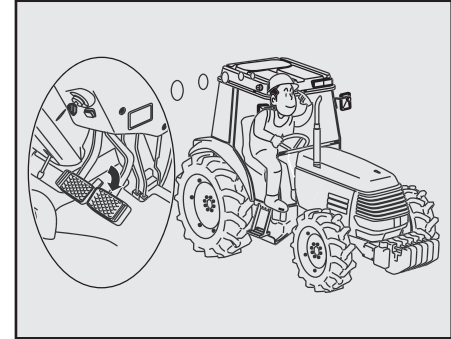
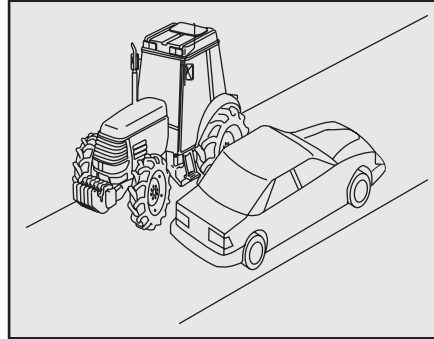
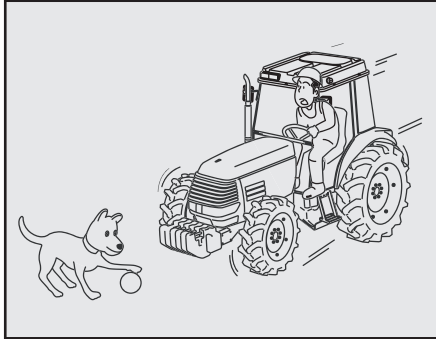
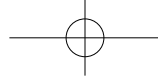


WARNING

Use only recommended implements;

- Be sure to use only implements which are recommended by manufacturer.

If this instruction is ignored, an unexpected accident may occur or tractor may not perform properly.



! WARNING

Start the machine slowly after reminding bystander;

- Start the engine after reminding bystanders of your intention. Do not start the machine abruptly.

If this instruction is ignored, unexpected accident or injury can happen.

! WARNING

Pay attention to the shoulder of the road;

- When moving along the unpaved road with ditches or slanted sides, pay attention to the shoulders.

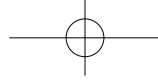
If this instruction is ignored, there is a risk of falling over.

! WARNING

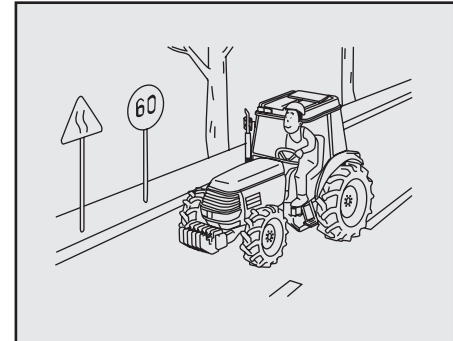
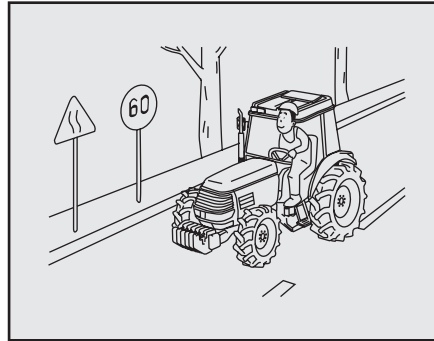
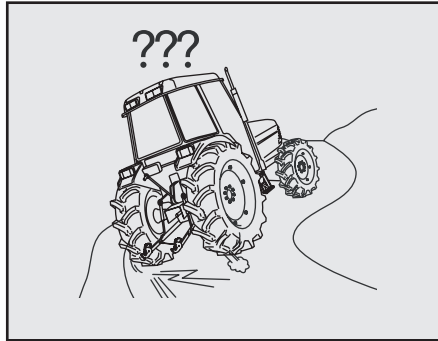
Interlock the brake pedals (left and right) when driving on a road;

- Make sure to interlock the brake pedals (left and right) when driving on a road

If this instruction is ignored, there is a risk of abrupt turning or overturning due to one-sided braking.



1-6 BRANSON TRACTOR



WARNING

Avoid rapid starting, braking, turning, and excessive speed;

- Start and stop the tractor slowly. Reduce engine speed when making a turn and driving on hilly or curved roads.

If this instruction is ignored, there is a risk of overturning or damage to the machine.

WARNING

Observe traffic regulations and drive safely;

- When driving on the road, observe the traffic regulations and wear a hard hat and seat belt.

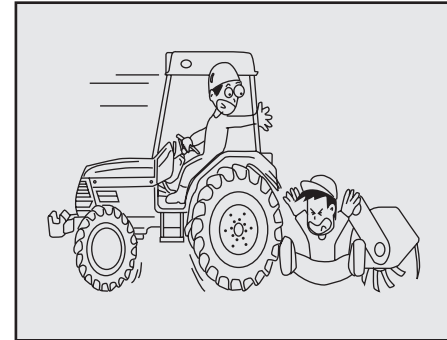
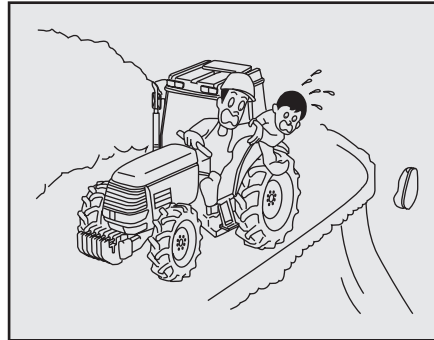
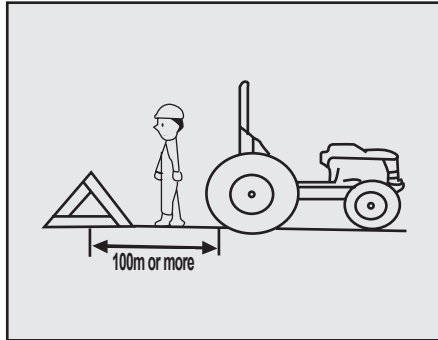
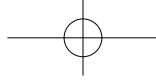
If this instruction is ignored, there is a risk of accident or injury.

WARNING

Observe traffic regulations when driving on a road safely;

- If the machine is broke down and stopped on the road, move the machine to a safe place out of the road.

If this instruction is ignored, there is a risk of accident or injury.



1

! WARNING

Put machine shut down sign if the machine is stopped on the road;

- If the tractor is stopped on the road due to the machine failure, put the machine shut down sign (Emergency triangle reflex reflector) at least 100~200 yards before failed machine in accordance with local traffic laws.

If this instruction is ignored, the machine can be hit by a car and cause a traffic accident with injury or death.

! WARNING

Only driver should be aboard the tractor while in operation;

- This tractor is designed to allow only one operator. The driver must not allow anyone else to get on the tractor.
- Especially never allow children on the machine while in use.

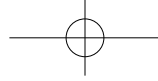
If this instruction is ignored, an unexpected accident may occur.

! WARNING

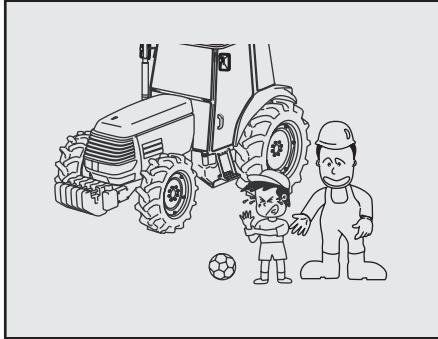
Do not allow anyone near while operating the tractor or implement;

- When engaging or disengaging the implement by moving the tractor, make sure that no one is around the tractor or between the implement and the tractor.

[If this instruction is ignored, there is a risk of accident or injury.]



1-8 BRANSON TRACTOR



WARNING

Precautions for children;

- Fully warn the children and keep them away from the tractor at all times.

If this instruction is ignored, unexpected accident of injury can happen.

WARNING

Properly train anyone operating;

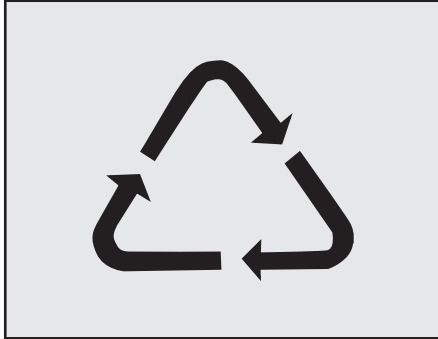
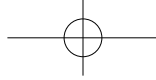
- Explain the handling tips in detail and make sure the driver reads the Manual before driving.

If this instruction is ignored, there is a risk of death, serious injury, or damage to tractor.

WARNING

Use Pesticides safely;

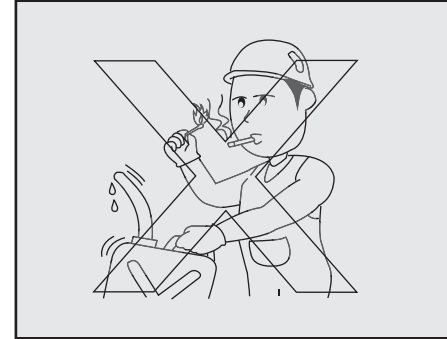
- Careless use of agricultural chemicals such as disinfectants, herbicide, pesticides, rat poison, and fertilizer can be harmful to environment and human body. Be sure to observe all relevant regulation and instructions to use the agricultural chemicals efficiently and safely. Then it may prevent injury or accident.



⚠ WARNING

Observe all relevant regulations for disposal;

- Be sure to observe all relevant regulations when you dispose of the engine oil, transmission oil, fuel, coolant, filters and battery.
- Never dispose the used oil directly to the river or drainage, follow legal procedures.



1

⚠ WARNING

Observe all relevant regulations for disposal;

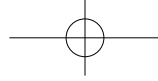
- Careless disposal of waste product can be harmful to environment and ecosystem.
- When draining the fuel and oil, use a proper container that is not leaking, not food or beverage containers to prevent from drinking. Do not bury the waste product in the ground or dispose to drainage.

⚠ WARNING

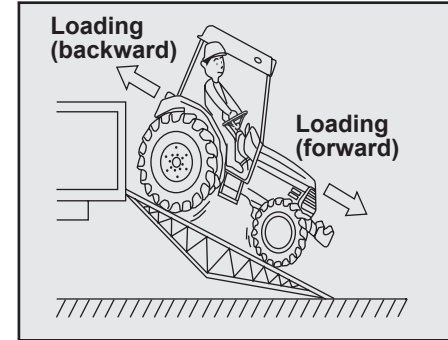
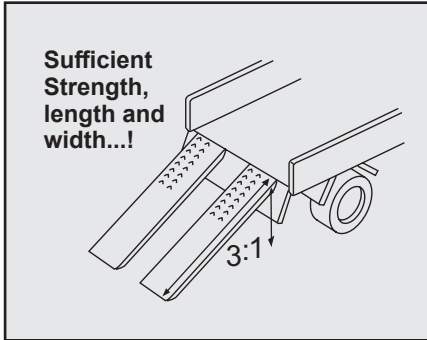
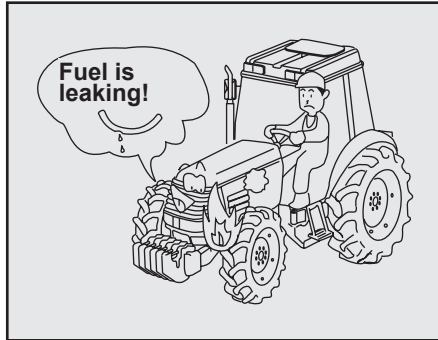
No smoking or open flame when fueling;

- Do not smoke or use match or lighter while refueling.

If this instruction is ignored, fuel can catch fire and lead to explosion or fatal injury with burn.



1-10 BRANSON TRACTOR



! WARNING

Inspect for fuel leaking;

- Check the fuel lines and hoses for damage or leakage

If this instruction is ignored, there is a risk of fire.

! WARNING

Consider the strength, length and width of loading ramps before using;

- Loading or unloading must be done on a flat and safe place, the tractor engine switched off, and the parking brake engaged. The loading ramps must be non-slip and have sufficient strength, length, and width for the tractor.

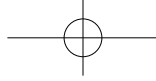
If this instruction is ignored, the tractor may roll backwards or fall off causing accident or injury.

! WARNING

Move the tractor backward when loading, and forward when unloading;

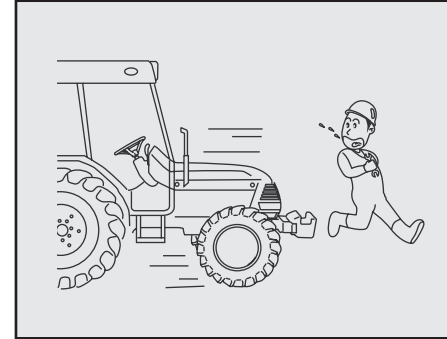
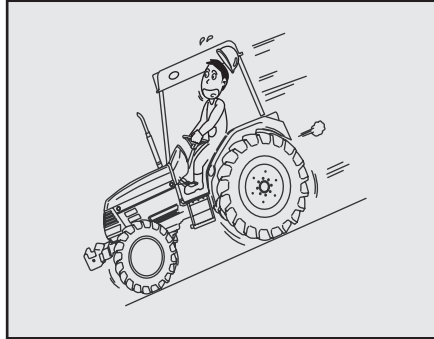
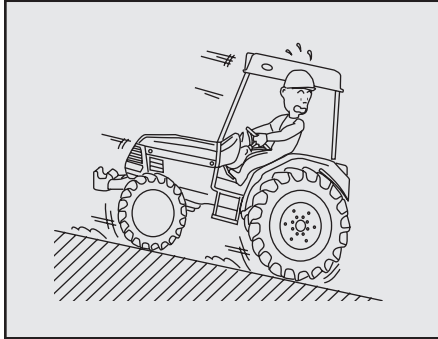
- Move the tractor backward when loading it on the truck, and forward when unloading from the truck.

If this instruction is ignored, the tractor may roll or fall off causing accident or injury.



BEFORE WORKING

1



WARNING

Be careful when driving on the loading ramps;

- Be careful when driving on the loading ramps. Do not disengage the clutch, shift the main shift, range shift, or forward/reverse lever.

If this instruction is ignored, the tractor may roll backwards or fall causing accident or injury.

WARNING

Do not shift gears on slopes or on the loading ramps;

- When driving on slopes or on loading ramps, select the proper shift gear before approaching the loading ramps and then do not shift the gear on the loading ramps.

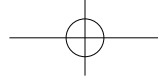
If this instruction is ignored, there is a risk of slipping, rolling, or overturning.

CAUTION

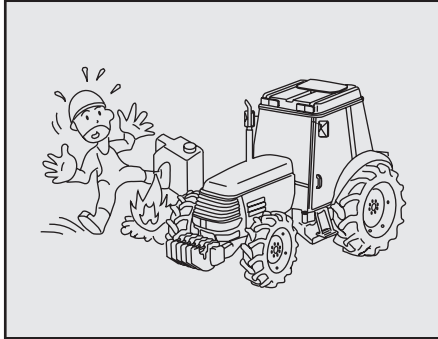
Stop the engine before maintenance;

- Stop the engine before maintenance when checking, repairing or cleaning the machine.

If this instruction is ignored, there is a risk of injury.



1-12 BRANSON TRACTOR



⚠ DANGER

Stop and cool down the engine before fueling or lubricating;

- Do not fill the fuel while the engine is running or machine is hot.

If this instruction is ignored, fuel can catch fire or lead to fatal injury with burn.

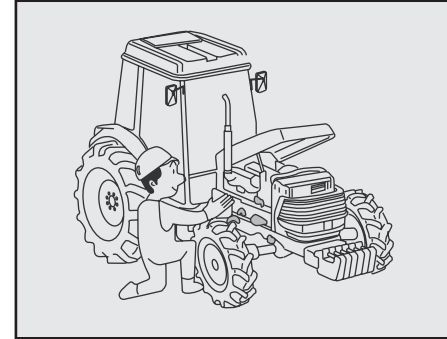


⚠ DANGER

No fire or spark near to the battery;

- No fire or spark near to the battery while checking and charging the battery.

If this instruction is ignored, the battery can cause a blaze or explosion and lead to a fatal injury or death.

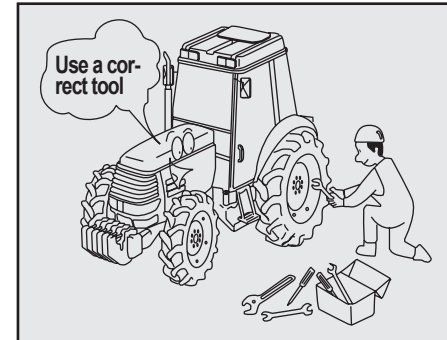
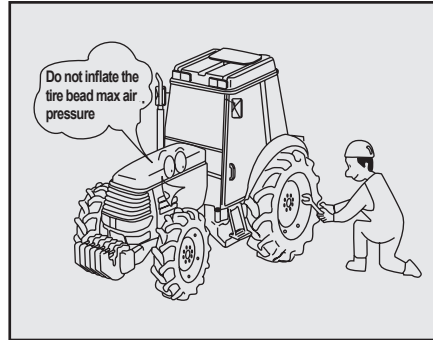
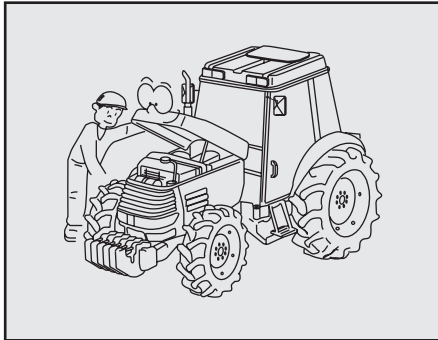
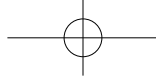


⚠ DANGER

Remove dirt and debris from muffler and engine before operating;

- Clean if there is dust, debris or fuel on the engine or muffler before operating the machine every day.

If this instruction is ignored, there is a risk of fire.

**⚠ WARNING**

Check electrical component and wire harness;

- Check before work if the wire harnesses are burned or stuck on any other component, if the cord cover is peeled off or if the wire connectors are loose.

If this instruction is ignored, the electrical short can cause fire and injury.

⚠ CAUTION

Do not over inflate tires;

- When filling tires with air, do not inflate it beyond the maximum pressure stated in this manual. (Refer to P5-22 of Proper inflation pressure)

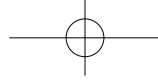
If this instruction is ignored, the tire may blow out, causing an injury.

⚠ CAUTION

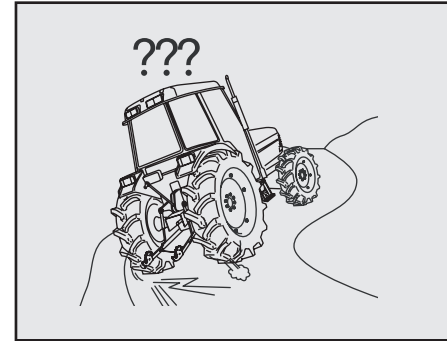
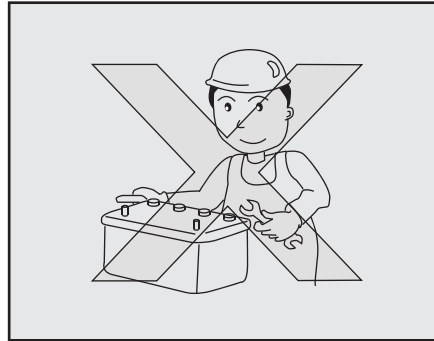
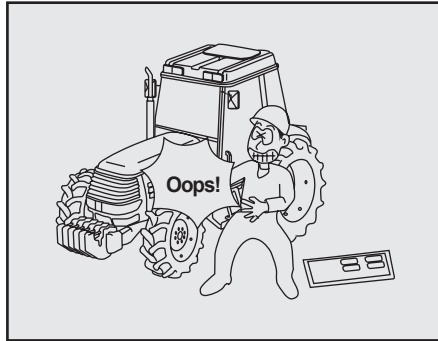
Use correct tools;

- Use proper tools to carry out all maintenance procedure. Also have available the required tools in the tractor at all times.

If this instruction is ignored, there is a risk of accident due to poor maintenance.



1-14 BRANSON TRACTOR



CAUTION

Secure hood and side covers before operating tractor;

- After detaching the covers for checking or maintenance, make sure to put them back in their place.

If this instruction is ignored, there is a risk that you may get entangled in the tractor or get injured.

CAUTION

Observe correct procedures when installing or removing the battery;

- Connect the (+) terminal first when installing the battery, and disconnect the (-) terminal first when removing it.

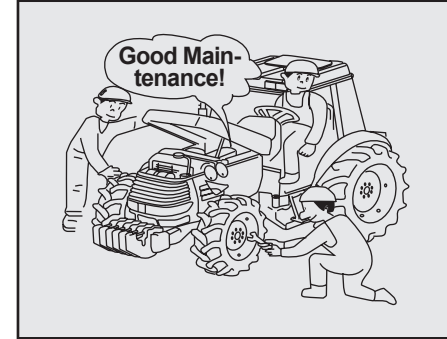
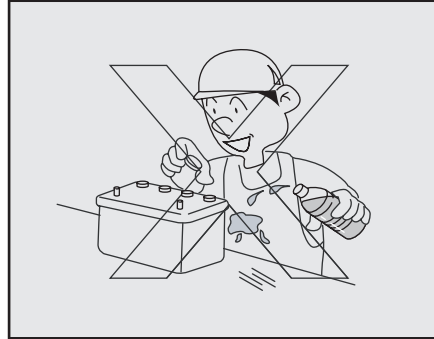
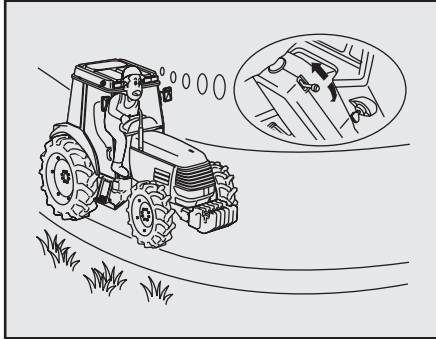
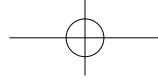
If this instruction is ignored, there is a risk of burn or fire due to short circuit.

WARNING

It is necessary to inspect the brake and steering wheel;

- Check if the brakes work properly and evenly on both sides or if the steering wheel is loose.

If this instruction is ignored, there is a risk of accident.

**! WARNING**

Lock tilt lever and telescopic knob when adjusting steering wheel;

- Except when you adjust the steering wheel, make sure that the tilt lever and telescopic knob are secured in the "No" and "Lock" positions.

If this instruction is ignored, the tractor may not turn properly, causing an accident.

! DANGER

Avoid contact with the battery solution;

- Be careful that your body or your clothes do not come in contact with the battery solution. If it contacts your skin, wash immediately with water.

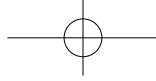
If this instruction is ignored, it can burn your skin or clothes.

! WARNING

Be sure to check before and after using machine;

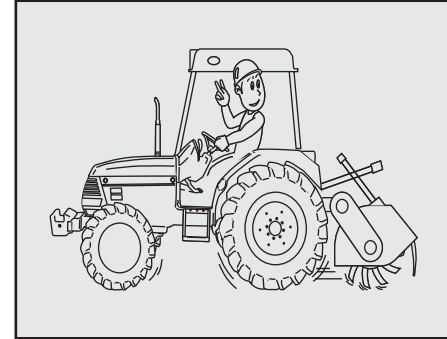
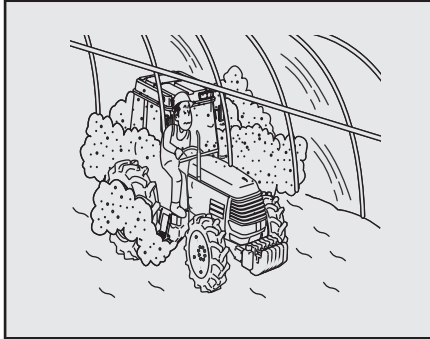
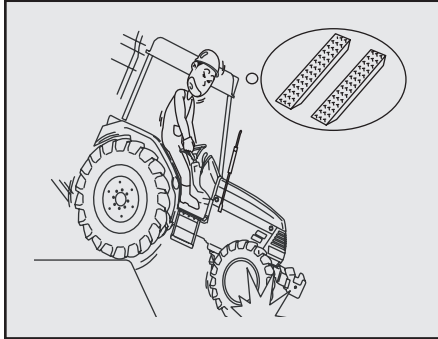
- Be sure to check the machine before and after using. Especially inspect and repair controls such as clutch, brake, lever, etc.

If this instruction is ignored, the machine can be broken or lead to an accident or injury.



1-16 BRANSON TRACTOR

WHILE WORKING



WARNING

Use the loading ramps when crossing a ditch or a dike;

- Be sure to use the loading ramps when crossing a ditch or dike, or when passing through soft land. The loading ramps must be suitable for the tractor in width, length and strength.

If this instruction is ignored, there is a risk of accident that the tractor may slip or turn over.

WARNING

Properly ventilate when working in a green house;

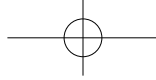
- Ventilate the green house to let out the exhaust gas.

If this instruction is ignored, the exhaust gas can cause intoxication and lead to fatal consequences.

WARNING

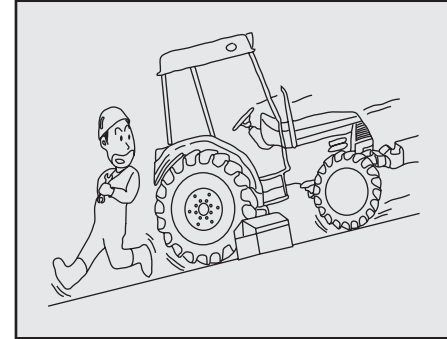
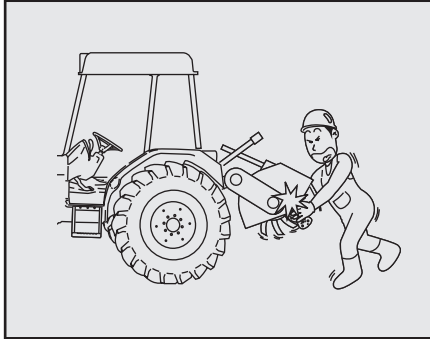
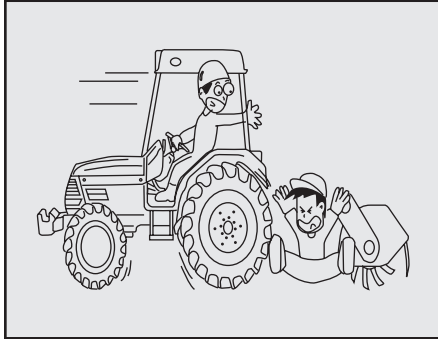
Pay attention and keep hands on the steering wheel while driving;

If this instruction is ignored, there is a risk of accident or injury.



AFTER USING THE MACHINE

1



WARNING

Do not allow anyone near while operating the tractor or implement;

- When engaging or disengaging the implement by moving the tractor, make sure that no one is around the tractor or between the implement and the tractor.

If this instruction is ignored, there is a risk of accident or injury.

WARNING

Stop the engine when removing grass, etc. from blades of the cultivator;

- Stop the engine when removing grass, etc. from blades of the cultivator and lock the flow control valve not to lower the implement.

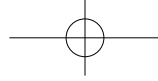
If this instruction is ignored, there is a risk that you will get entangled in the cultivator or sustain a serious injury due to lowering the implement.

WARNING

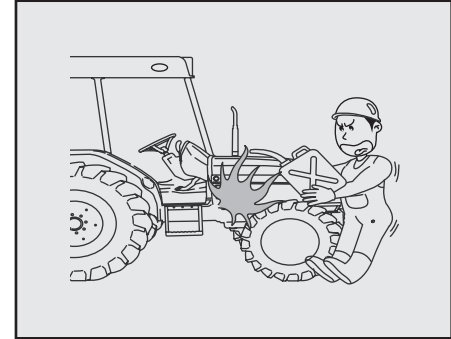
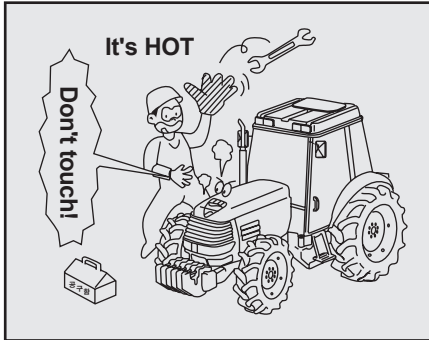
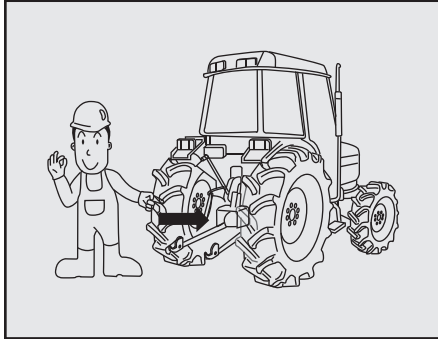
Perform the maintenance on a level and safe location;

- Perform the maintenance on a level and safe location that will keep the tractor in place and will not cause a risk to people passing by. Before carrying out the maintenance, place blocks at the front and rear tires to prevent movement.

If this instruction is ignored, an unexpected accident may occur, such as overturning of the tractor.



1-18 BRANSON TRACTOR



CAUTION

Cover the PTO shaft when not in use;

- When the PTO shaft is not in use, apply grease and keep it covered.

If this instruction is ignored, there is a risk that you may get entangled or get injured. Implement shaft installation on the PTO shaft will not be easy due to the rust on it.

CAUTION

Carry out maintenance after the parts have cooled down;

- Carry out the maintenance work after the heated area such as the muffler or the engine is fully cooled down.

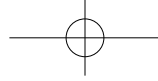
If this instruction is ignored, there is a risk of getting burnt.

CAUTION

Stop and cool down the engine before fueling or lubricating;

- Do not fill the fuel while the engine is running or machine is hot.

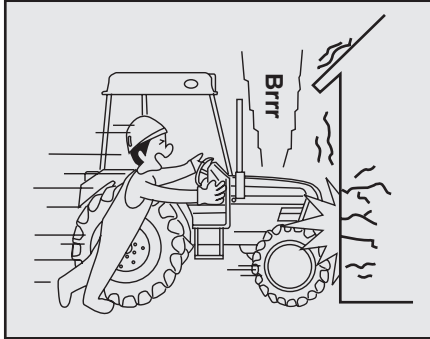
If this instruction is ignored, fuel can catch fire or lead to fatal injury with severe burns.



⚠ CAUTION

Be careful of high oil pressure;
• Make sure that the hydraulic coupling or the hose is not loose or damaged. Before separating the hydraulic coupling or the hose, eliminate the high pressure inside the hydraulic system by moving the control lever while engine is stopped.

If this instruction is ignored, the oil under high pressure may cause skin injury.

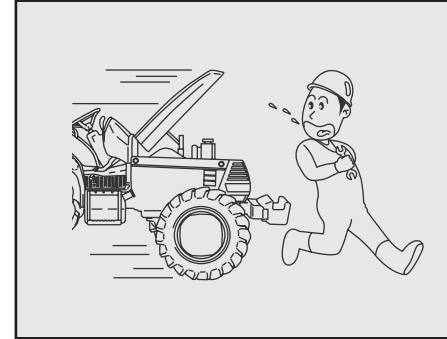


⚠ WARNING

Make sure that you are seated in the driver's seat with your seat belt fastened before starting engine;

- When starting the engine, make sure that you are seated in the driver's seat with your seat belt fastened and check the seat position and the safety of the tractor.

If this instruction is ignored, an unexpected accident may occur.

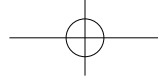


⚠ CAUTION

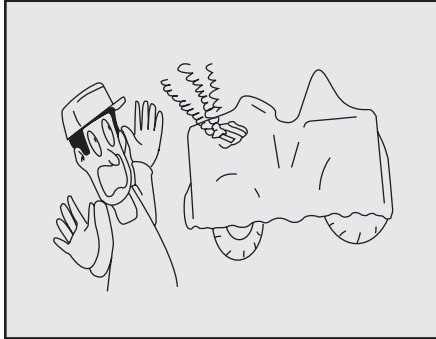
Stop the engine before maintenance;

- Stop the engine before maintenance such as checking, repairing or cleaning the machine.

If this instruction is ignored, there is a risk of injury.



1-20 BRANSON TRACTOR



WARNING

Put tractor rain cover on only after tractor has cooled down;

- Put tractor rain cover on only after parts such as the engine and muffler have cooled down.

If this instruction is ignored, there is a risk of fire.

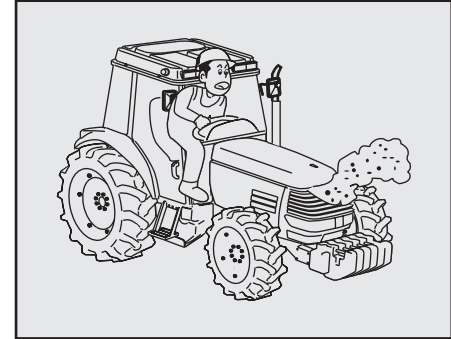


WARNING

Do not open the radiator cap when the radiator is hot;

- Never open the radiator cap when the radiator is heated.

If this instruction is ignored, hot water may spurt, causing burns or damage.

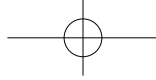


WARNING

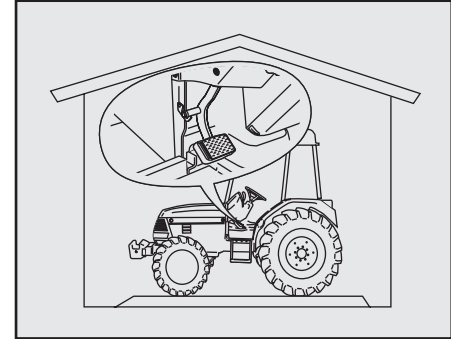
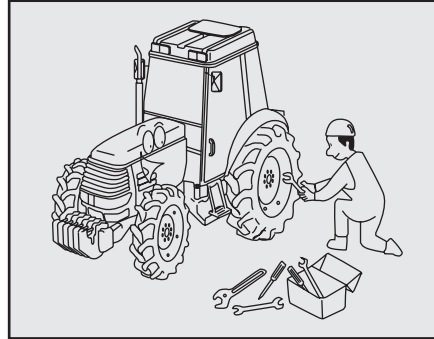
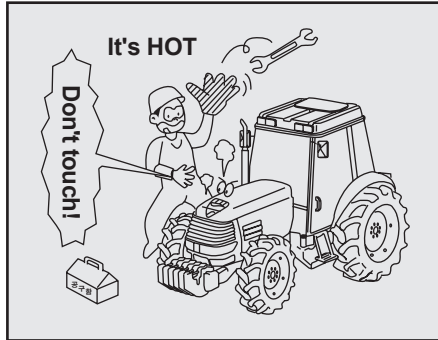
Remove dirt and debris from muffler and engine before operating;

- Clean if there is dust, debris or fuel on the engine or muffler before operating the machine every day.

If this instruction is ignored, there is a risk of fire.



PRECAUTION FOR PROLONGED STORAGE



1

CAUTION

Be careful of hot muffler;

- During operation and right after the engine is turned off, the muffler is very hot. Avoid touching it.

If this instruction is ignored, you may get burnt.

CAUTION

After working, immediately repair if necessary;

- Immediately repair or replace the faulty parts.
 - Tighten the loose bolt and nut right away.

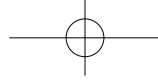
If this instruction is ignored, an unexpected accident may occur due to poor maintenance.

CAUTION

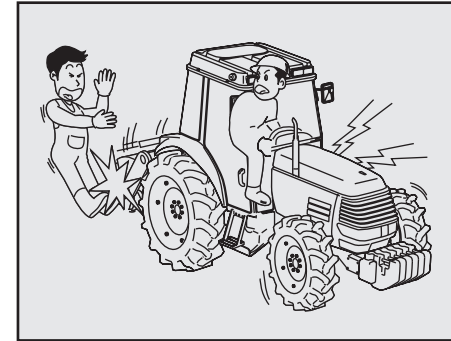
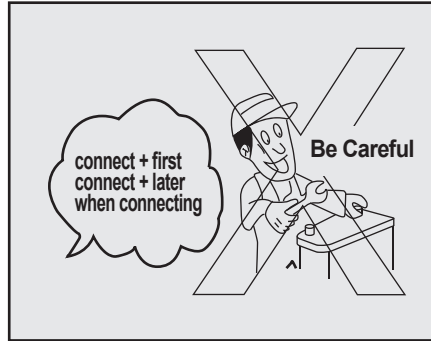
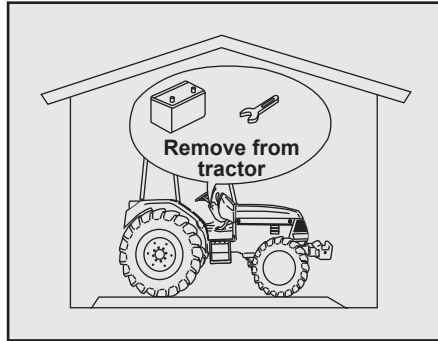
Disengage the clutch when storing the tractor for a long time;

- When storing the tractor for a long period of time, make sure to put the clutch pedal in the disengaging position.

If this instruction is ignored, the clutch disc can be stuck to the fly wheel after long period time.



1-22 BRANSON TRACTOR



WARNING

Disconnect the Battery and the key when storing the tractor for a long period of time;

- When storing the tractor without use for a long period of time, park the machine on the leveled ground and clean each component, remove the battery and keep the key in a safe place.

If this instruction is ignored, battery power may be weakened and starting will be failed.

CAUTION

Observe correct procedures when installing or removing the battery;

- Connect the (+) terminal first when installing the battery, and disconnect the (-) terminal first when removing it.

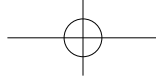
If this instruction is ignored, there is a risk of burn or fire due to short circuit.

WARNING

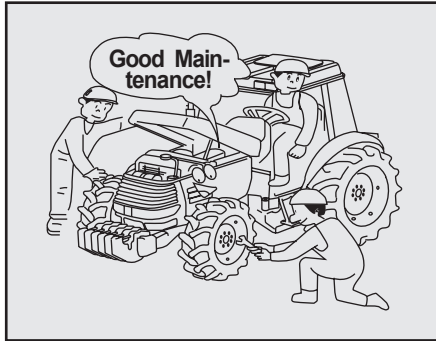
Confirm that the implement is down on the ground when starting the engine;

- When starting the engine, confirm that the control lever is on "Lowest" position.

If this instruction is ignored, implement may come down suddenly and cause an injury.



OTHER



WARNING

Maintenance periodically;

- After using tractor, visit your local dealer for maintenance, such as oil change and filters.
 - Contact the local dealer to discard the parts (battery, etc.) or waste materials.

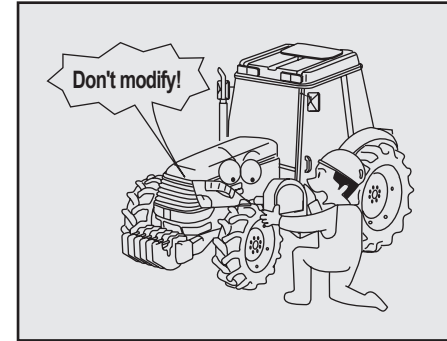
If this instruction is ignored, there is a risk of accident due to poor maintenance.

WARNING

Do not adjust or repair following components. Consult your local BRANSON dealer for these repair;

- Injection capacity and timing of the engine fuel injection pump.
- Correction and repair of hydraulic system (safety valve, hydraulic pump, brake valve, PST cylinder, SCV valve).

There is a risk of accident or injury or machinery breakdown. Remember it may cause the warranty cancellation. If this instruction is ignored, consult your local BRANSON dealer for those repair and adjustment.

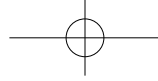


CAUTION

Do not modify the tractor;

- Use only the genuine parts or other approved parts. Do not modify the tractor.

If this instruction is ignored, there is a risk of accident or injury or machinery breakdown. Remember it may cause the warranty cancellation.



1-24 BRANSON TRACTOR

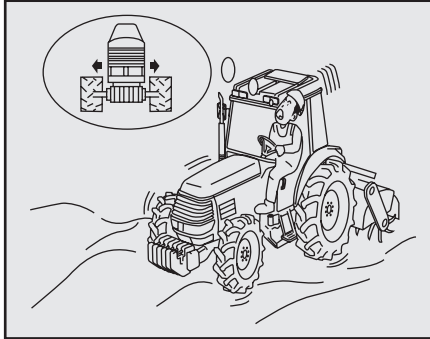


WARNING

Pay attention when turning with implement;

- Depending on implements, the overall length may become very long. Pay particular attention to people or objects nearby when making a turn.

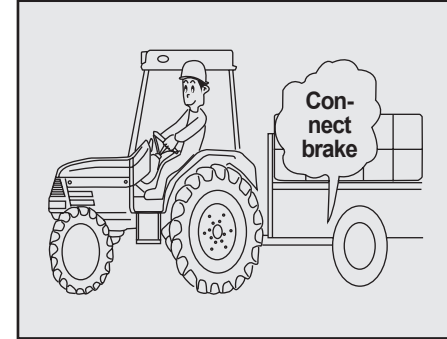
If this instruction is ignored, there is a risk of person injury or a collision of the implement.



WARNING

Move wheels to widest setting (width between left and right tires) when working slope or when towing;

If this instruction is ignored, there is a risk of turning over.

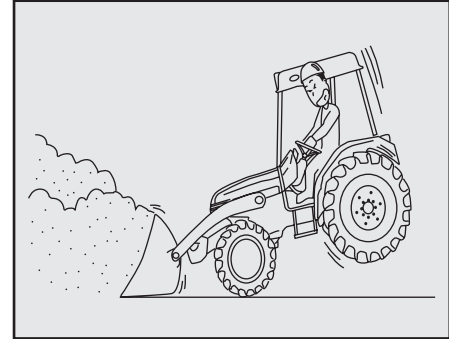
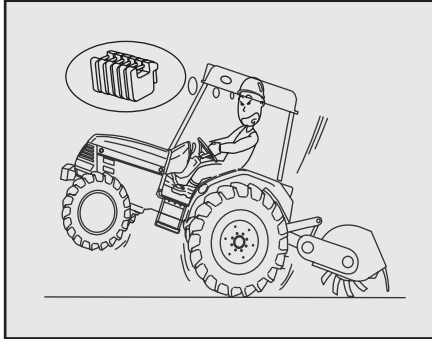
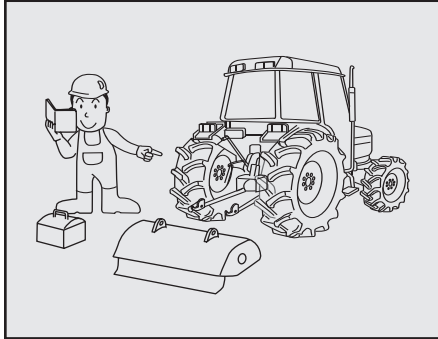
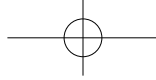


WARNING

Use caution sign when towing a trailer;

- Link the brake of the trailer with the brake of the tractor. Do not shift gears when driving on a hill.

If this instruction is ignored, there is a risk of accident or injury.



! WARNING

Follow the instruction manual when engaging an implement;

- When engaging an implement to the tractor, follow the instruction manual for the implement.

If this instruction is ignored, there is a risk of personal injury or damage to the tractor.

! WARNING

Balance a heavy implement with weights;

- When engaging a heavy implement, load the weights on the front of tractor to keep the balance of the tractor.

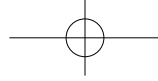
If this instruction is ignored, there is a risk of accident or injury due to loss of balance.

! WARNING

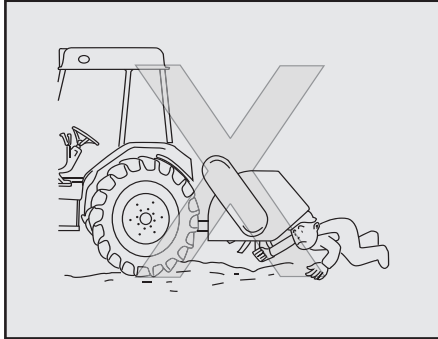
Pay attention to the balance between the front and rear side during the front-end-loader operation;

- During the front-end-loader operation, apply weights or implement to avoid losing balance between the front and the rear side of tractor.

If this instruction is ignored, there is a risk of overturning accident due to loss of balance.



1-26 BRANSON TRACTOR

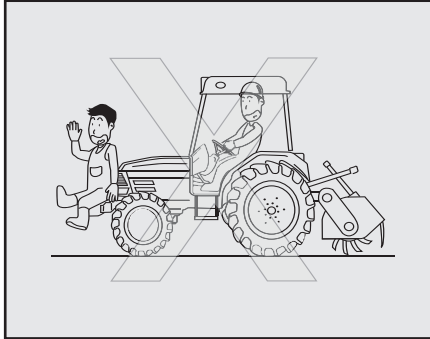


WARNING

Do not get under or put your feet under the implement;

- Do not get under or put your feet under the implement.

If this instruction is ignored, the implement unit may fall down and there is a risk of injury.

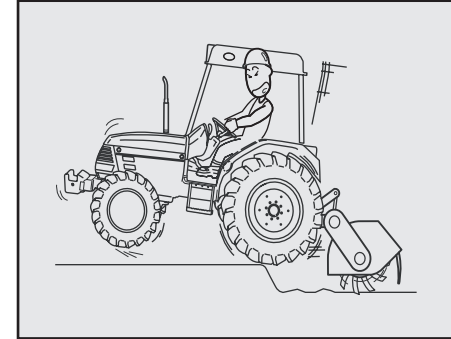


WARNING

Do not substitute balance weights with a person or anything else;

- Do not use a person or anything else in place of the balance weight. Use only genuine balance weight.

If this instruction is ignored, there is a risk of accident or injury.

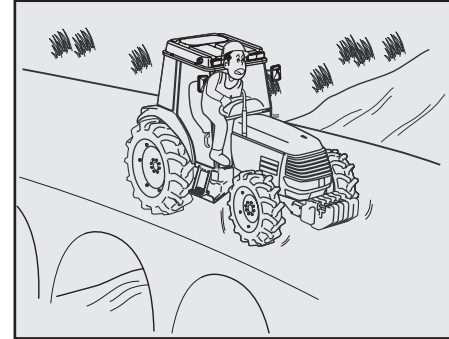
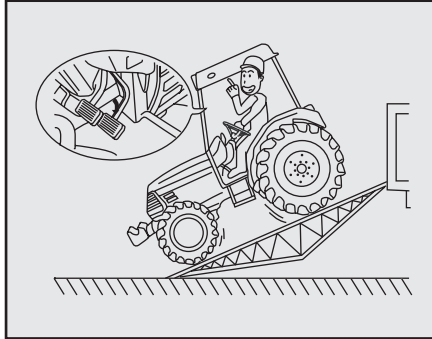
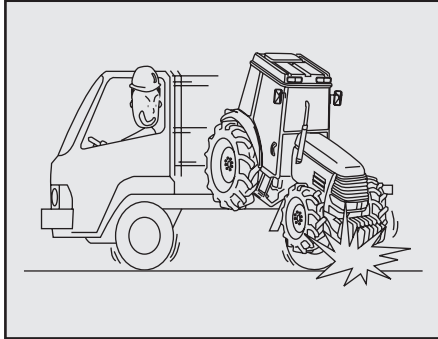
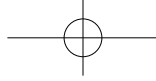


WARNING

Be careful of unexpected movement when using the rotary tiller;

- When working with the rotary tiller, put the tiller slowly on soft or rocky ground. The tractor may be pushed in an unexpected direction by the rotating force of the tiller.

If this instruction is ignored, there is a risk of accident or injury.



! WARNING

Properly secure tractor during transport;

- When transporting the tractor, apply the parking brake with gear engaged and fasten the tractor to the truck securely using ropes or belts with sufficient strength.

If this instruction is ignored, There is a risk of accident that the tractor may fall off the truck.

! DANGER

Interlock the brake pedals for both sides when loading or unloading the tractor;

- It is necessary to interlock the brake pedals for both sides when loading or unloading the tractor.

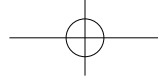
If this instruction is ignored, the tractor may overturn due to one-sided braking when the brake pedal is depressed in an emergency.

! WARNING

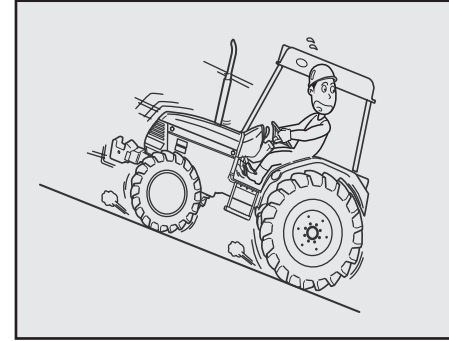
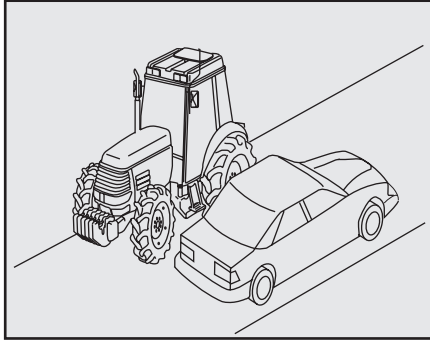
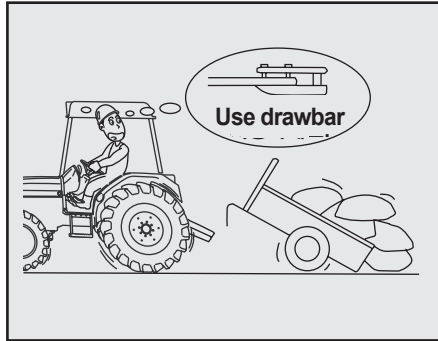
Release the differential gear lock when making a turn;

- Make sure to release the differential gear lock when making a turn.

If this instruction is ignored, the tractor may not turn to the intended direction and cause an accident.



1-28 BRANSON TRACTOR



WARNING

Use the drawbar when towing;

- Make sure to use the drawbar when towing. Never tow anything with the top link or the lower links.

If this instruction is ignored, the tractor may turn over.

WARNING

Pay attention to the shoulder of the road;

- When moving along the unpaved road with ditches or slanted sides, pay attention to the road shoulder.

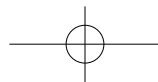
If this instruction is ignored, there is a risk of falling over.

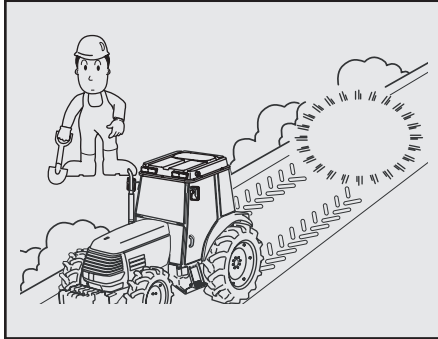
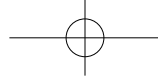
WARNING

Be careful when driving on a hill;

- Be careful when driving on a hill. Do not disengage the clutch on the hill. Do not shift the main shift lever, range shift lever, or shuttle lever in [neutral] on the hill.

If this instruction is ignored, the tractor may roll backwards or fall causing accident or injury.



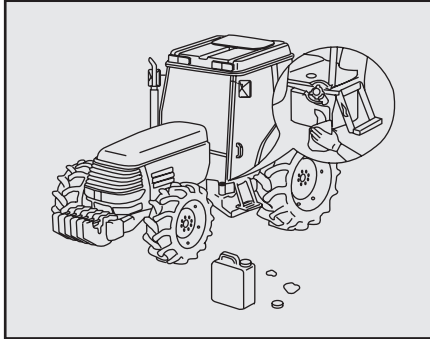


! WARNING

Turn off engine in a level area when leaving the tractor;

- When leaving the tractor, park the tractor on a level and safe area, turn off the engine, and apply the parking brake. Also, lower the implement on the ground.

If this instruction is ignored, the tractor may move and cause an accident.

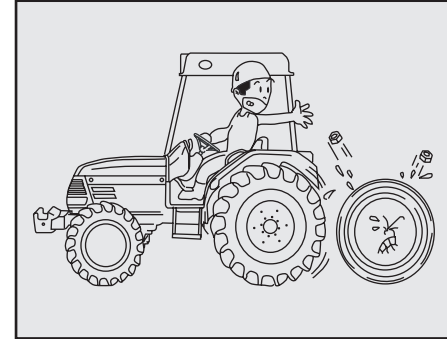


! WARNING

Remove spilled excess fuel after closing the fuel cap;

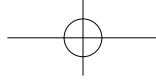
- After filling the fuel tank, close the fuel filler cap completely and wipe off the excess fuel thoroughly.

If this instruction is ignored, there is a risk of fire.

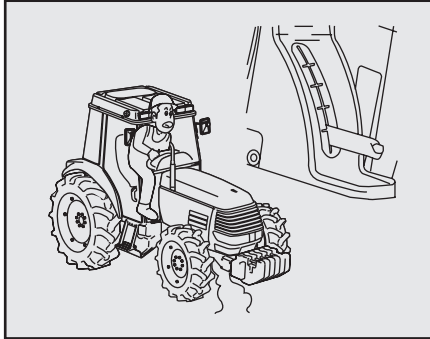
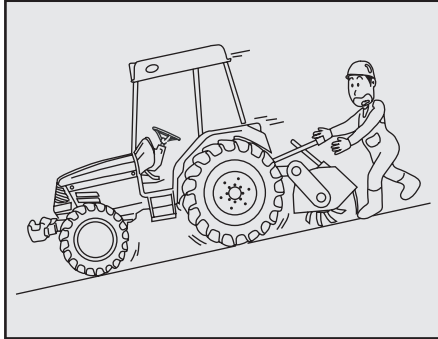


! WARNING

Be aware of the PTO RPM requirements for the implements;
If this instruction is ignored, there is a risk of accident or injury.



1-30 BRANSON TRACTOR



WARNING

Only engage or disengage implements on flat, level area:

- Engage or disengage the implement on a flat and safe place. Supply proper lighting at all times and especially night.

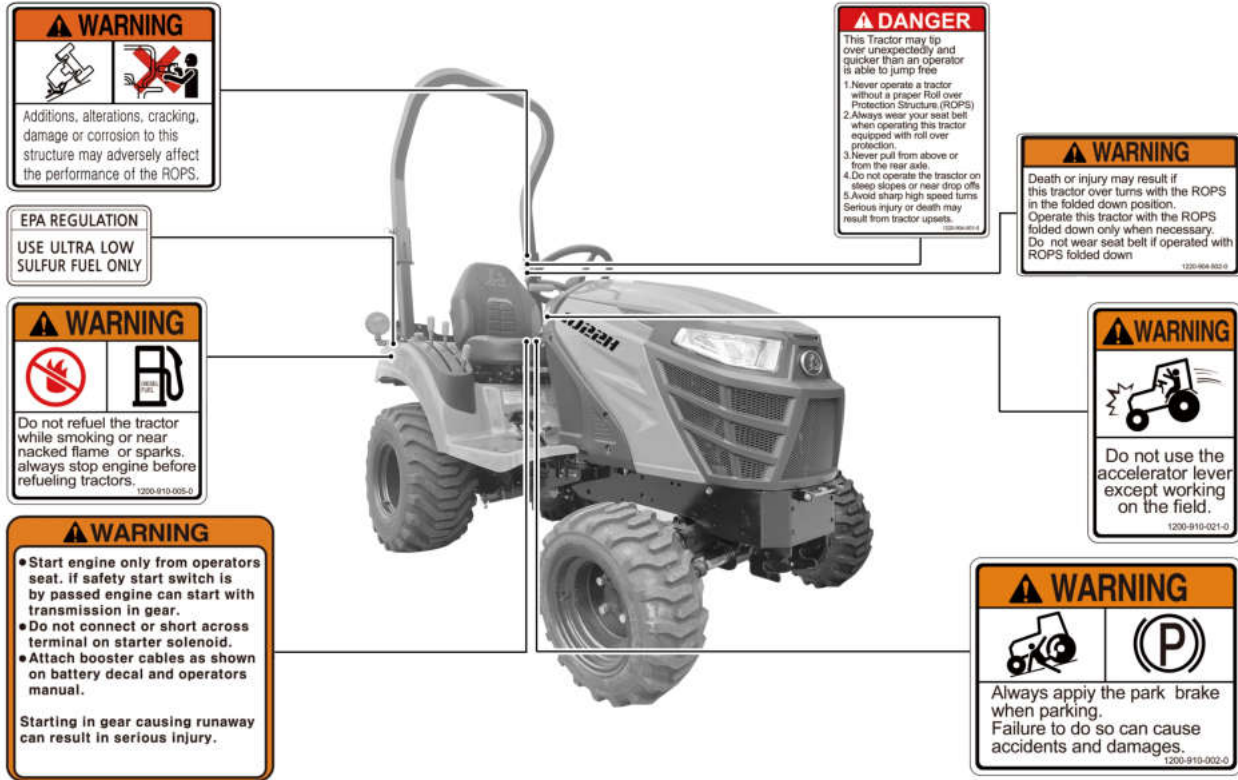
[Otherwise]

There is a danger of accident.

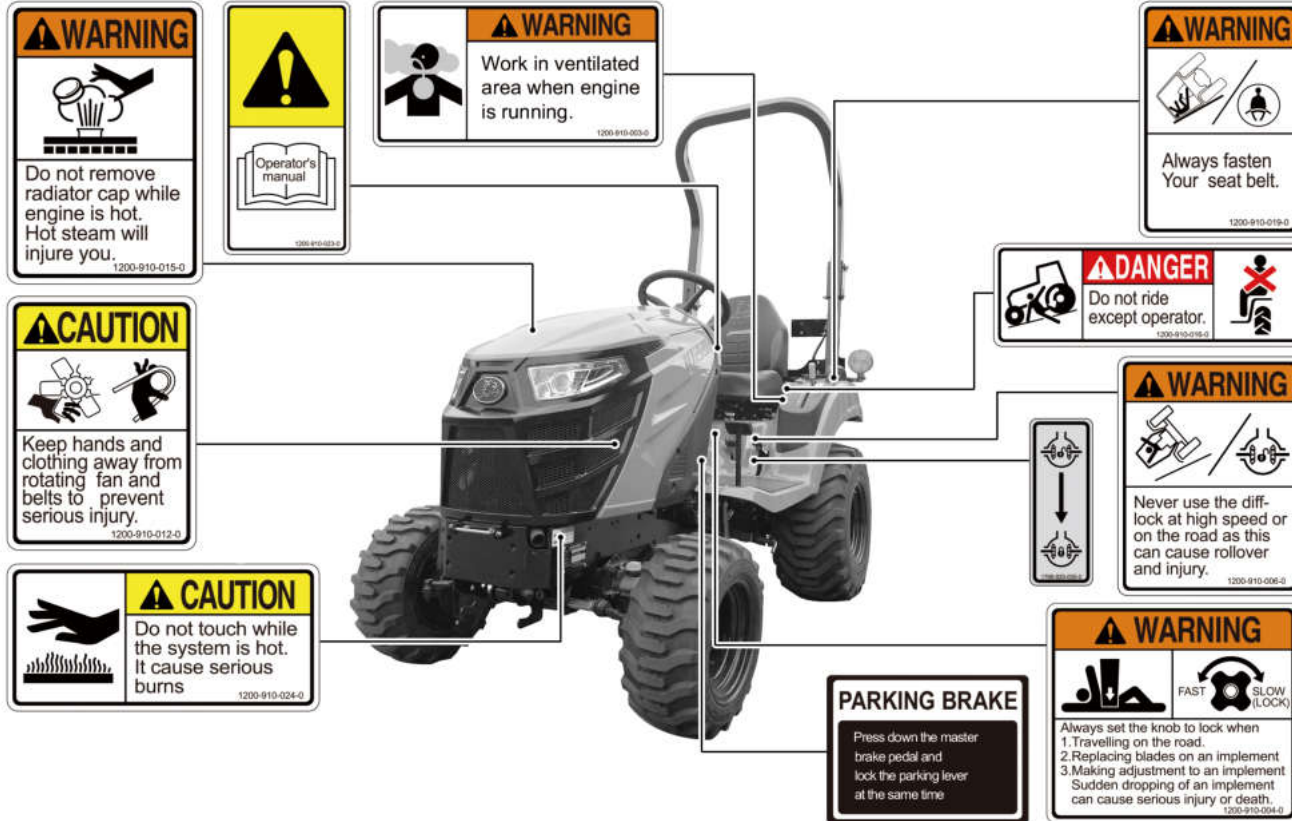
CAUTION

Engage the parking brake during warming up the engine;
If this instruction is ignored, the tractor may move and cause an accident or injury.

DECAL MOUNTING LOCATION

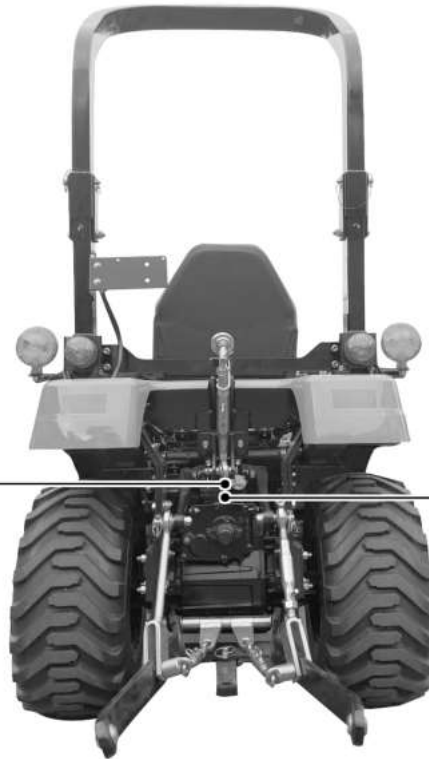


1-32 BAD BOY TRACTOR

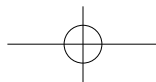


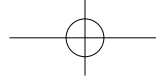



⚠ DANGER
 Rotating driveline contact can cause death.
KEEP AWAY!
 Keep all drive line.
 Tractor and equipment shields in place during operation.
1200-910-013-0




⚠ WARNING
 Attach implements and trailers to the tractor only using the prescribed drawbar or hitch.
1200-910-014-0





1-34 BAD BOY TRACTOR

CAUTIONS FOR DECAL MAINTENANCE

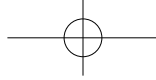
Safety decals are attached to the tractor for safe operation. Make sure to follow the instruction on the decals as well as the following instruction:

CAUTION

- **Keep the decals clean and intact.**
If any decal is dirty, wash it with soap and dry with a soft cloth.
- **Never use a solvent such a thinner or acetone, since it can ruin the decals.**
- **Do not spray high-pressure water directly onto the decal. The decal may fall off the tractor.**

IMPORTANT

- **If a decal is damaged or lost, contact your local BAD BOY dealer immediately to install a new decal.**
- **Make sure to attach the decal in the correct position cleanly without bubbles after cleaning its mounting surface.**
- **If a decal is attached to a component to be replaced, replace the decal as well.**



2. REGARDING WARRANTY SUPPORT

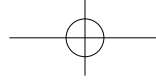
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REGARDING AFTER-SALES SERVICE2-2

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REGARDING SUPPLYING SERVICE PARTS.....2-3

REGARDING GENUINE PARTS AND FLUID 2-3



2-2 BAD BOY TRACTOR

REGARDING WARRANTY CERTIFICATE

WARNING

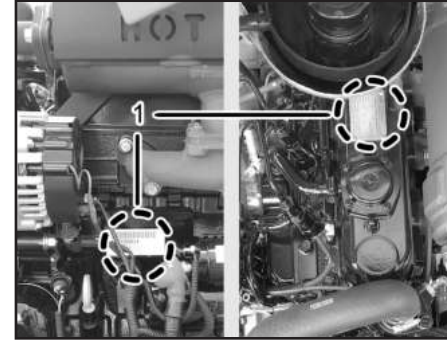
- Do not modify the machine. If it is damaged by unapproved modification and misuse against description of manual, it will not be covered under warranty.

REGARDING AFTER-SALES SERVICE VEHICLE IDENTIFICATION NUMBER (VIN) PRODUCTION SERIAL NUMBER ENGINE SERIAL NUMBER



(1) Model And Production Serial Number

The manufacturer's serial number is marked on the serial number decal which is attached to the front right side of the front axle bracket.



(1) Engine Serial Number

The engine number is stamped on the cylinder block and is specified on the decal which is attached to the cylinder block on the left side of the engine. Also, the decal indicating the engine model and standards is attached on the top of the engine cylinder head cover.

REGARDING SUPPLYING SERVICE PARTS

▶ REGARDING AFTER-SALES SERVICE

If you have a problem on your machine, refer to "Troubleshooting" of chapter 7 to check by yourself. Or contact immediately to authorized **BAD BOY** dealer nearby.

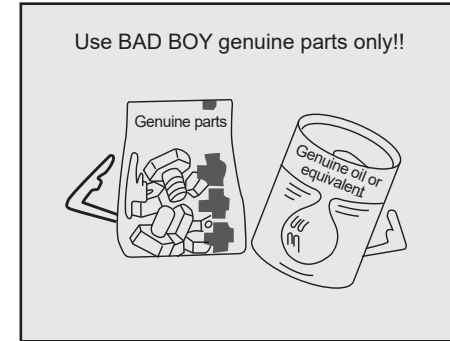
▶ BE PREPARE FOR THE FOLLOWING QUESTION BEFORE CALLING

- Model and product serial number
- In case of engine failure, engine serial number
- Working conditions (What kind of job and how fast)
- Run hour of machine
- Describe the problem in detail as possible

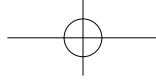
We supply the service parts in accordance with the separated quality assurance regulation.

Consult your local dealer for availability and pricing.

REGARDING GENUINE PARTS AND FLUID

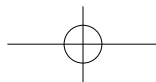
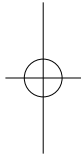
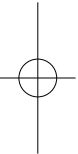


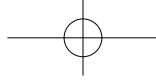
The **BAD BOY** genuine parts and fluid are passed severe durability and performance test. Please use **BAD BOY** genuine parts for your safety.



MEMO

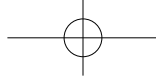
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3. SPECIFICATION

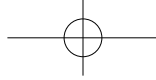
MAJOR SPECIFICATIONS3-2



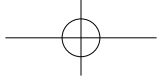
3-2 BAD BOY TRACTOR

MAJOR SPECIFICATIONS

ITEMS			1022H
1. Drive system			4 Wheel Drive
2. Dimensions	Overall length, with 3P	in. (mm)	94.2 (2,394)
	Overall with	in. (mm)	44.5 (1,130)
	Wheelbase	in (mm)	53.1 (1,350)
	Height to top of ROPS	in. (mm)	86.6 (2,200)
	Min. Ground Clearance	in. (mm)	F/A 8.3 (210)
	Min. Turn Radius, w/o brakes	in (mm)	86.6 (2,200)

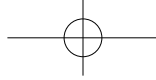


ITEMS		1022H
3. Engine	Engine Manufacturer	Yanmar
	Engine Model	3TNM74F
	Engine Type Natural	Aspiration
	Engine HP-Gross	16kw (21.5HP)
	Rated engine speed	3,200
	Number of cylinders	3
	Displacement-cu. in.(cc)	60.6 (993)
	Air Cleaner	Single Dry
	Generator	12V 40A
	Fuel System Type	Indirect Fuel Injection
4. Powertrain	Transmission type	HST
	Number of Speeds	2 Range
	Max Travelling Speed mph(km/h)	7.8 (12.5)
	Brakes	Wet Disc
	Steering	Hydrostatic



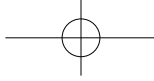
3-4 BAD BOY TRACTOR

ITEMS			1022H
5. Hydraulic System	Pump Type		Single Gear Pump with Flow Divider
	Implement pump cap.gpm	(L/Min)	4.17 (15.8)
	Steering pump cap.gpm	(L/Min)	2.11 (8)
	Max Total flow gpm	(L/Min)	6.97 (26.4)
	Category, 3 Point Hitch		1 (N)
	Hitch Lift capacity	lb. (kg)	1,100 (499)
	at 24 inches behind link ends	lb. (kg)	679 (308)
	Lift Control Type		Position
6. PTO	PTO Type		Independent
	PTO Control		Electric/Hydro
	PTO Mid-Option	(rpm)	2,500
	PTO rear	(rpm)	540
	PTO Shaft Diameter	in.(mm)	1 3/8 (35)



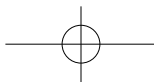
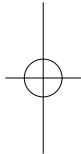
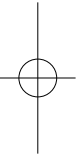
ITEMS			1022H
7. Capacities	Fuel Tank	U.S. gal.(L)	6.6 (25)
	Cooling system	U.S. qt. (L)	3.7 (3.5)
	Crankcase (with filter)	U.S. qt. (L)	2.1 (2)
	Trans & Hyd. System	U.S gal. (L)	3.6 (13.5)
	Front Axle	U.S. qt. (L)	2.6 (2.5)
8. Standard Tires	Agricultural Front		BAR F 16X7.50-9
	Agricultural Rear		BAR R 24X12.00-12
	Industrial Front		TURF F16X7.50-8
	Industrial Rear		TURF R16X12.00-12
9. ROPS & Weight	Rollover Protection Standard		ROPS
	Total Weight	lb. (kg)	1,433 (650)

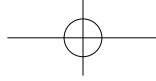
* Specifications are subject to change without notice. Contact your local BAD BOY dealer for more information.



MEMO

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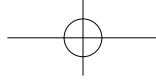
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4. OPERATION DESCRIPTION

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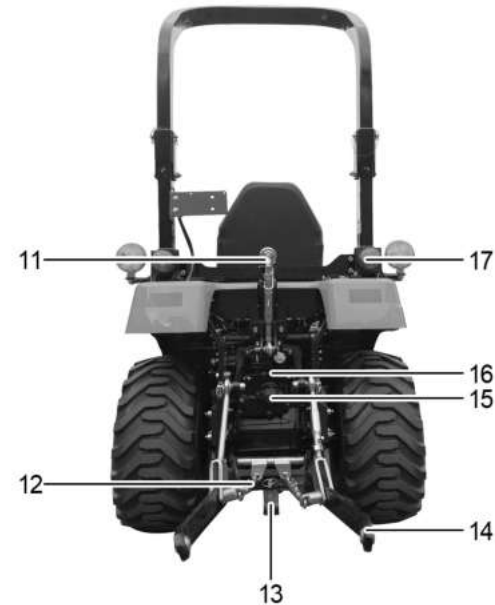
SAFETY FRAME ROPS4-30

EXTERIOR VIEW

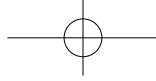


- (1) Seat
- (2) Turn Signal Lamp
- (3) Sub-fender
- (4) Rear Tire
- (5) Front Tire
- (6) Muffler Pipe

- (7) Head Lamp
- (8) HOOD
- (9) Steering Wheel
- (10) ROPS

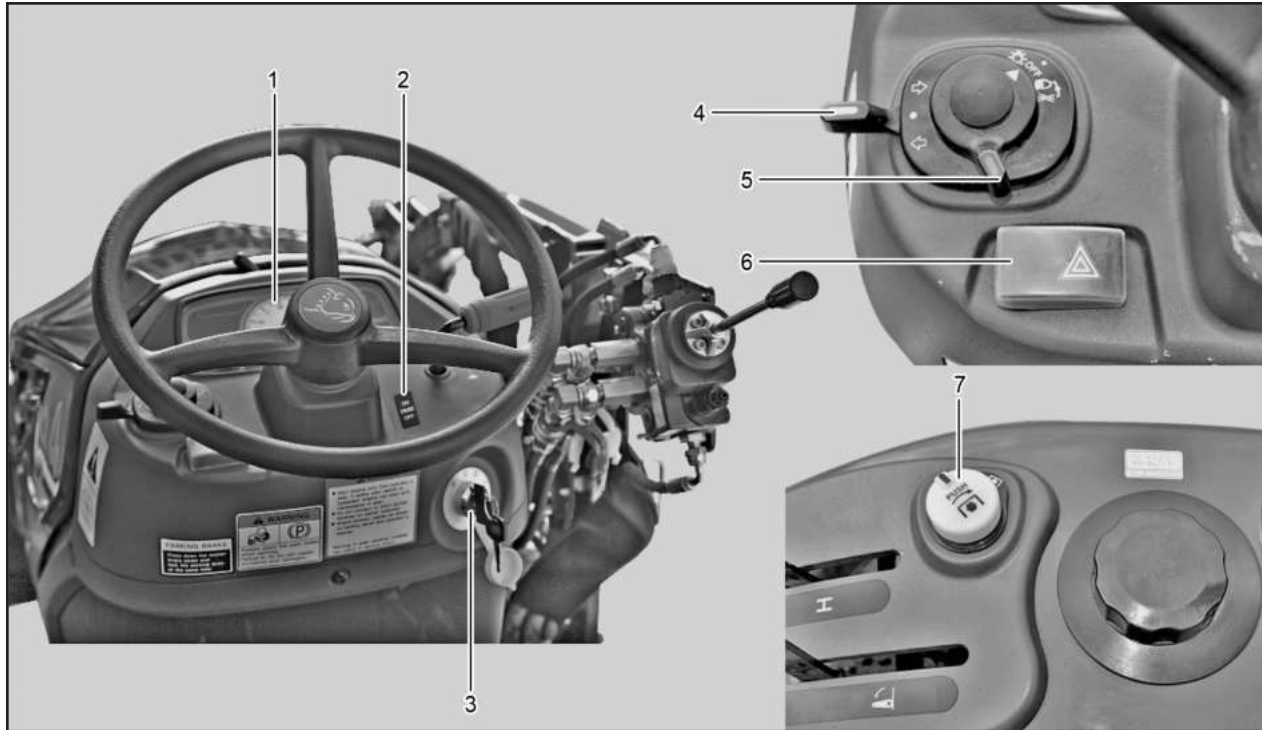


- (11) Top Link
- (12) Check Link
- (13) Towing Hitch
- (14) Lower Link
- (15) PTO Shaft
- (16) PTO Safety Cover
- (17) Brake Lamp



4-4 BAD BOY TRACTOR

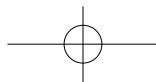
SWITCHES AND LEVERS



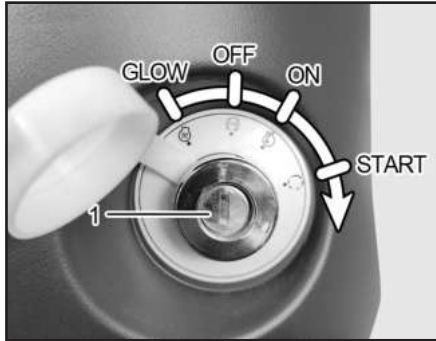
- (1) Tachometer
- (2) Cruise Control Switch
- (3) Key Switch

- (4) Turn Signal Switch
- (5) Light Switch
- (6) Hazard Switch

- (7) PTO ON/OFF Switch



MAIN SWITCH



(1) Main Switch

It is used to start and stop the engine.

• “OFF” position

The ignition key can be inserted and removed in this position. When turning the switch to the OFF position with the engine running, the engine is stopped.

• “ON” position

The engine is kept running and the switch is energized in this position.

• “START” position

The engine can be started in this position. When releasing the key, the switch is returned to the “ON” position.

• “GLOW” position

The engine’s combustion chamber is preheated in this position.

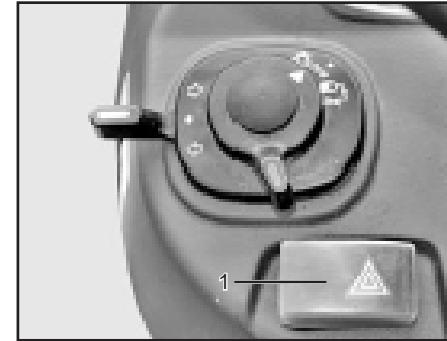
⚠ CAUTION

- **To start the engine, put the shuttle shift lever to the “Neutral” position to release the safety start system.**

⚠ CAUTION

- **When the tractor is not in use, take out the key and keep it in a safe place.**

HAZARD SWITCH



(1) Hazard Switch

This switch can be used to warn other vehicles when malfunction occurs in the tractor while driving on a public road. When pressing the switch once, the left and right hazard warning lamps blink. Pressing the switch again turns off the lamps.


CAUTION

- Prolonged operation can consume electricity excessively. Therefore, use it only in emergency. Use it only when necessary as it can discharge the battery and obstruct other drivers' view.

COMBINATION SWITCH



- (1) Lamp Switch
(2) Turn Signal Lamp Knob

(1) Light switch operation

The light switch can be operated with the main switch in the "ON" position.

- 「OFF」 : All light OFF
Instrument lamp, tail lamp and low beam lamp ON.

(2) Turn signal lamp operation

The turn signal lamps can be operated with the main switch in the "ON" position.

• Left turn

Turn the turn signal switch counterclockwise. Then, the left turn signal lamp and the left turn signal indicator on the instrument cluster blink.

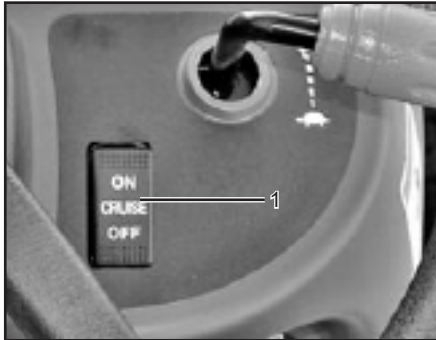
• Right turn

Push the turn signal switch clockwise. Then, the right turn signal lamp and the right turn signal indicator on the instrument cluster blink.

NOTE

- If one side is blinking, The other side is still
- This lever is not automatically returned to the neutral position. Therefore, set it back to the neutral position after turn.

CRUISE CONTROL SWITCH



(1) Cruise Control Switch

When the switch is pushed ON Position, the cruise control is engaged and the switch light and indicator lamp on instrument panel are ON.

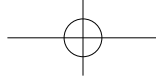
When the switch is pushed OFF Position or brake pedal is depressed, the cruise control and the lights are OFF.

CAUTION

- When stopping the machine cruise control automatically disengages.
- Make sure to connect the both Brake pedals when use cruise control function.

[Otherwise]

There is a risk abrupt turning or overturning due to onesided Braking when the Brake pedal is depressed.



4-8 BAD BOY TRACTOR

PTO ON/OFF SWITCH

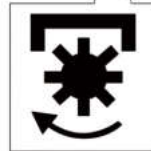


(1) PTO ON/OFF Switch

PTO ON/OFF switch is situated on the right hand side on the instrument panel and can be identified easily with its built in yellow colored indicator.

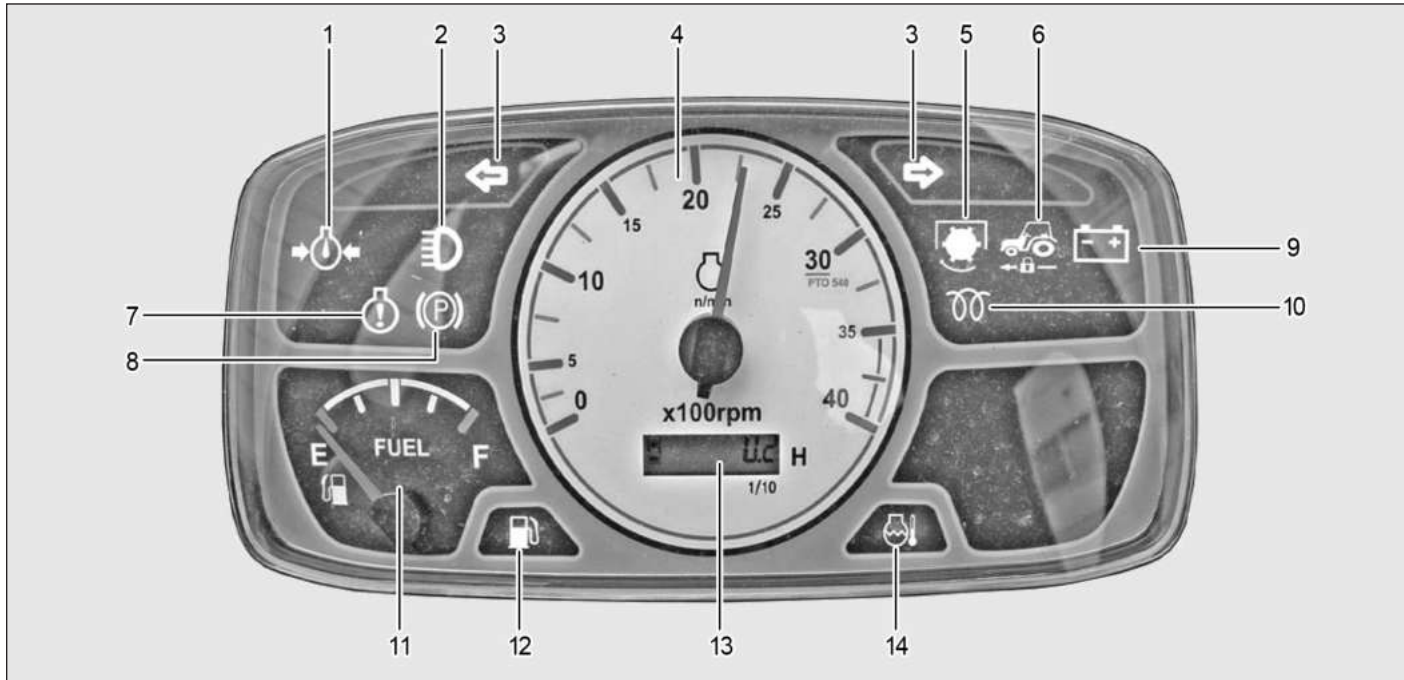
When the switch is pushed down to start the PTO indicator glows to indicate that the switch and the PTO are in ON position.

If the switch is pushed down and turn counter clock wise the indicator goes off signaling that the PTO is OFF.



- **PTO operation indicator**
ON - The PTO shaft is rotating.
OFF - The PTO shaft is stopped.

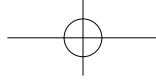
INSTRUMENT CLUSTER



(1) Engine Oil Pressure Warning Lamp
 (2) Low Beam Lamp
 (3) Turn Signal Indicator
 (4) Tachometer
 (5) PTO Indicator

(6) Crusie Control Lamp
 (7) Engine Warning Lamp
 (8) Parking Indicator
 (9) Charge Warning Lamp
 (10) Glow Indicator

(11) Fuel Gauge
 (12) Fuel level Warning Lamp
 (13) Hour Meter
 (14) Coolant Temperature Warning Lamp



4-10 BAD BOY TRACTOR

HOUR METER



It indicates the total time of use. The last digit indicates one tenth hours. (decimal place) While the hour meter on the leftmost section is in operation, the lamp below it blinks.

FUEL GAUGE

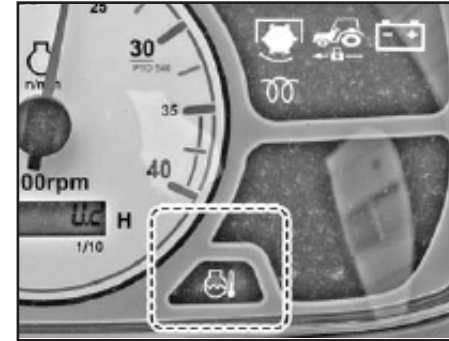


This indicates the amount of fuel while the main switch is in the "ON" position.
F - Full / E - Empty

NOTE

- **Poor fuel quality can damage the engine. Make sure to use only the specified genuine Diesel fuel.**
- **Use fuel for winter season in winter to enhance engine starting performance.**

COOLANT TEMPERATURE WARNING LAMP



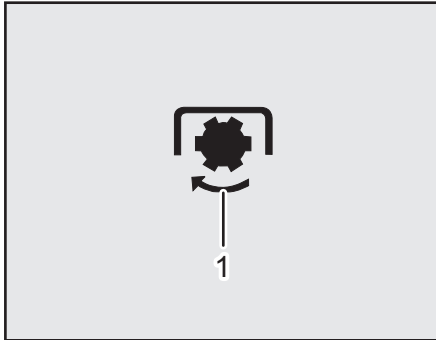
This indicates the temperature of coolant while the main switch is in the "ON" position.

If the needle is in the red "H" zone during driving, the coolant is overheated. In this case, stop driving and take any necessary action according to the troubleshooting instructions.

NOTE

- **The engine can be damaged if increasing its speed too fast.**

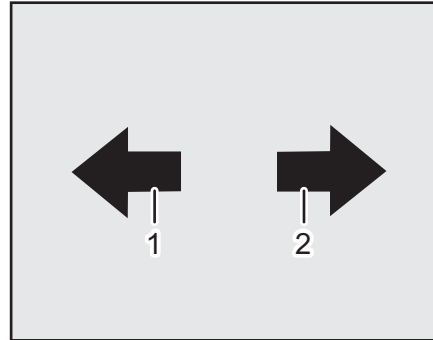
PTO INDICATOR



(1) PTO Indicator

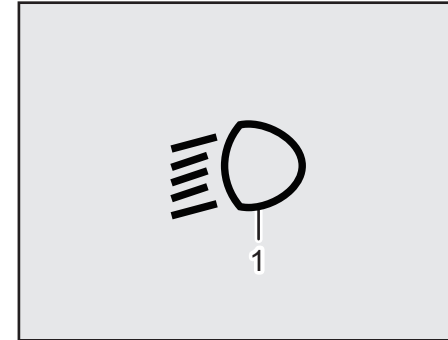
This comes on while the PTO shaft is rotating.

TURN SIGNAL INDICATOR

(1) Left Turn Signal Indicator
(2) Right Turn Signal Indicator

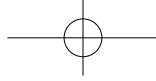
This lamp is used to indicate the intended turning direction of the driver. When pulling down the turn signal switch, the left turn signal lamp blinks. When pushing up the turn signal switch, the right turn signal lamp blinks. These lamps are operated when pressing the hazard warning lamp switch as well.

LOW BEAM INDICATOR

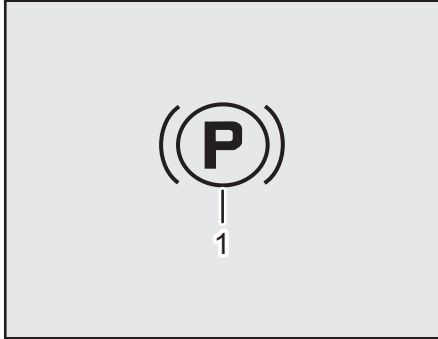


(1) Low Beam Indicator

This comes on when the low beam is turned on.



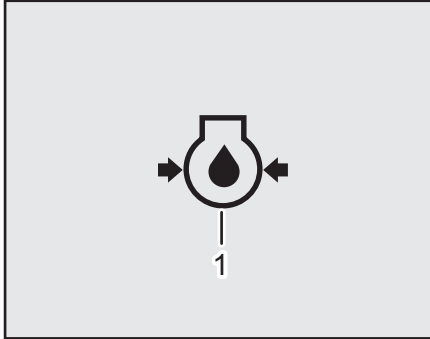
PARKING INDICATOR



(1) Parking Indicator

This comes on when the parking brake is applied.

ENGINE OIL PRESSURE WARNING LAMP



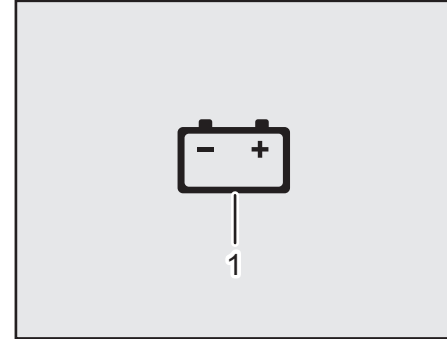
(1) Engine Oil Pressure Warning Lamp

This is illuminated when the engine oil pressure or oil amount is insufficient during driving.

NOTE

- When the oil pressure warning lamp comes on, this indicates malfunction of the lubrication system. Check the engine oil immediately and have your vehicle serviced by your workshop as necessary.

BATTERY CHARGE WARNING LAMP

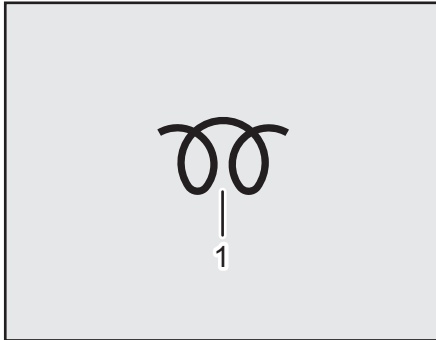


(1) Battery Charge Warning Lamp

This comes on when the Key switch is turned to the "ON" position, and goes off as soon as the engine is started.

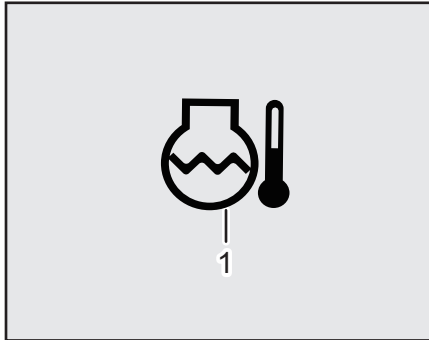
NOTE

- If the charge warning lamp comes on while driving, the battery is not properly charged. Therefore, turn off any unnecessary electrical devices and have your vehicle checked by your workshop immediately.

GLOW INDICATOR

(1) Glow Indicator

This comes on while the engine preheating function is activated. It goes off as soon as preheating is completed.

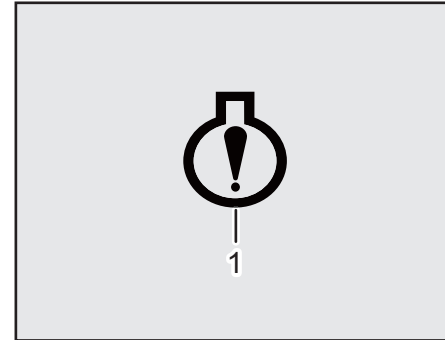
COOLANT TEMPERATURE WARNING LAMP

(1) Coolant Temperature Warning Lamp

If this lamp comes on, coolant is overheated.

NOTE

- When the coolant temperature warning lamp comes on, coolant is overheated so check the coolant.
- Coolant temperature over 5°C: 1 sec. or shorter / Less than 5°C: 3 - 30 seconds

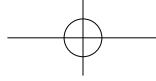
ENGINE WARNING LAMP

(1) Engine Warning Lamp

It comes on when the engine is malfunctioning.

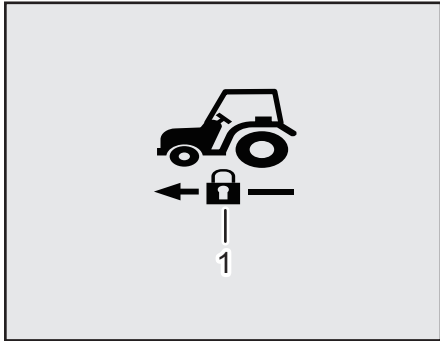
CAUTION

- When Engine warning lamp is lit, ensure that you operate the tractor only after the engine RPM reaches at the normal speed if this instruction is not kept, it may cause a performance degradation or accident due to a system error.



4-14 BAD BOY TRACTOR

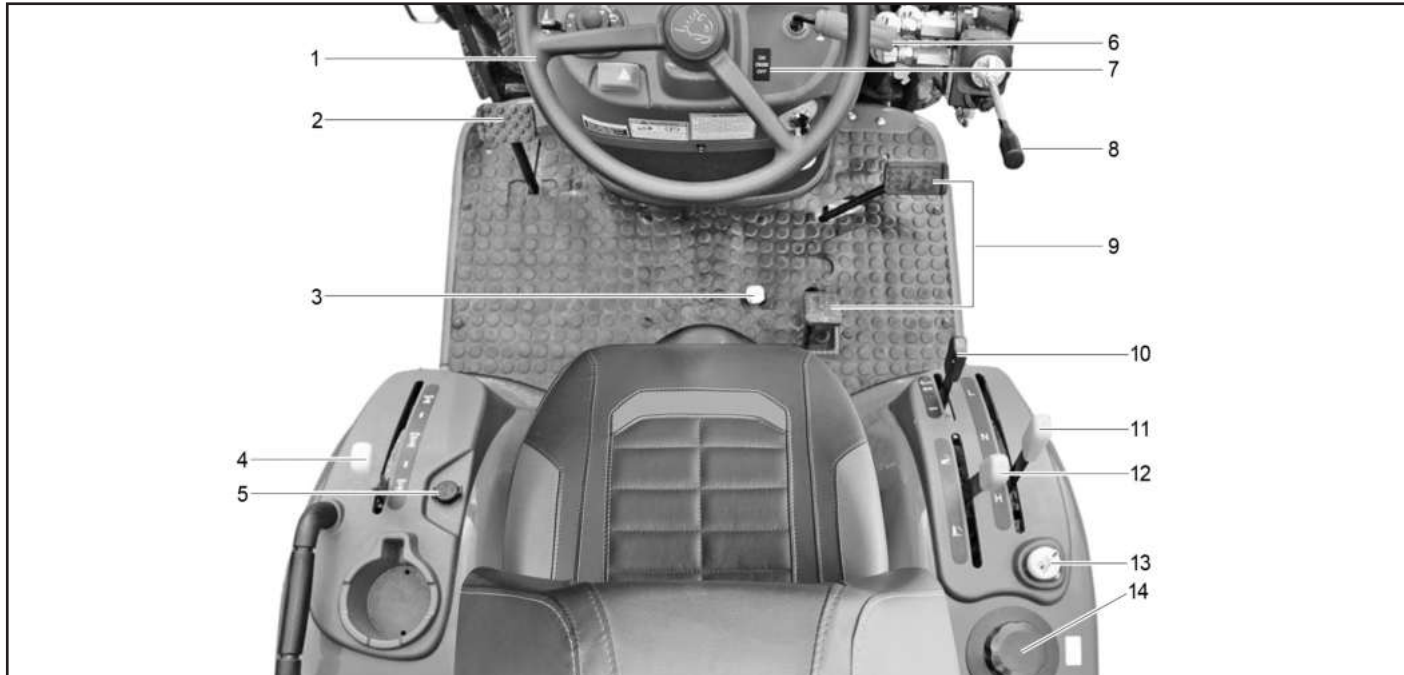
CRUISE CONTROL LAMP



(1) *Cruise Control Lamp*

This lamp will turn on when cruise control is engaged.

OPERATION THE CONTROLS

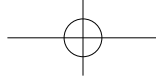


- (1) Steering Wheel
- (2) Brake Pedal
- (3) Parking Brake Pedal
- (4) P.T.O Shift Lever
- (5) Power Socket

- (6) Throttle Lever
- (7) Cruise Control Switch
- (8) Joystick Lever
- (9) Driving Speed Control Pedal
- (10) Front Wheel Drive Lever(4wd)

- (11) Sub Shift Lever
- (12) Position Lever
- (13) P.T.O Switch
- (14) Fuel Tank Cap

※ Refer to the relevant content for further detailed information





4-16 BAD BOY TRACTOR

HAND THROTTLE LEVER



(1) Hand Throttle Lever

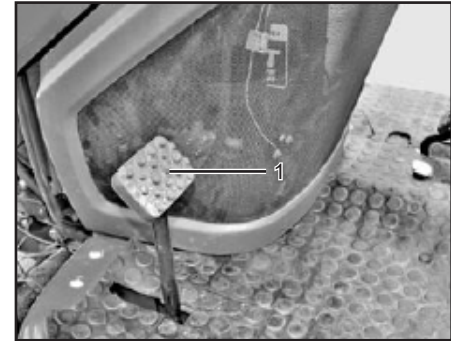
It is used to adjust the engine speed like the throttle pedal.

-  Pushing : increasing speed
-  Pulling : decreasing speed

NOTE

- Use the foot throttle pedal during driving for travel, not the hand throttle lever.

BRAKE PEDEL

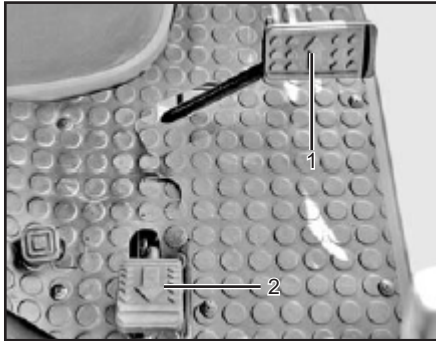


(1) Brake pedal

The brake pedal is located on the LHS of the operator.

- It is used for two functions.
- To stop the tractor
 - To release cruise control

DRIVING SPEED CONTROL PEDAL



(1) Forward

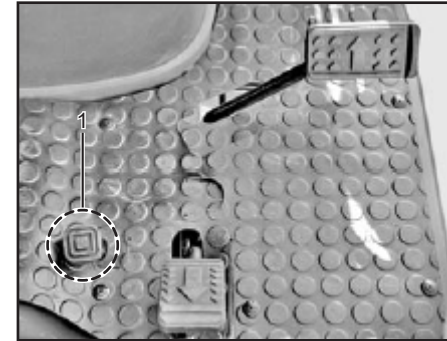
(2) Backward

When depressing the forward driving speed control pedal, forward driving is selected. Reverse driving is selected by depressing the reverse driving speed control pedal. When releasing the speed control pedal, it is returned to the neutral position and the tractor is stopped.

⚠ WARNING

- When switching the driving direction (forward/backward) directly during driving, a shock due to inertia can lead to an injury. Therefore, switch the driving direction while the tractor is stopped.
- Switch the driving direction only while you are on the driver's seat.

PARKING BRAKE PEDAL



(1) Parking Brake Pedal

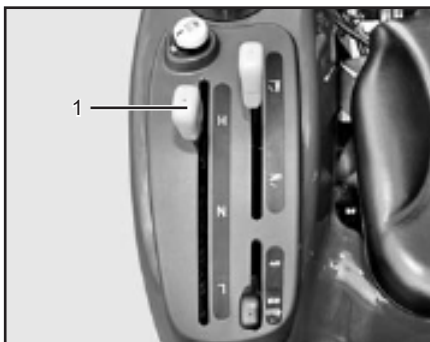
1. To engage the parking brake, at first depress the brake pedals down, and push the parking brake pedal down. At this time, Release the brake pedal first, then to be locked the parking brake pedal.
2. To release the Parking brake, depress the brake pedals again.



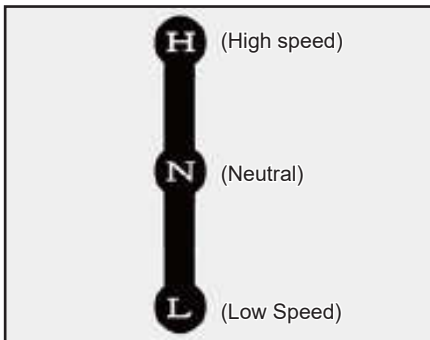
SUB SHIFT LEVER

NOTE

- The brake discs can be worn prematurely if driving the vehicle with the parking brake engaged partially.



(1) Sub Shift Lever



- The driving direction can be selected between forward direction and reverse direction using the shuttle shift lever and range shift lever.
- Use the throttle lever to increase/decrease the engine speed.

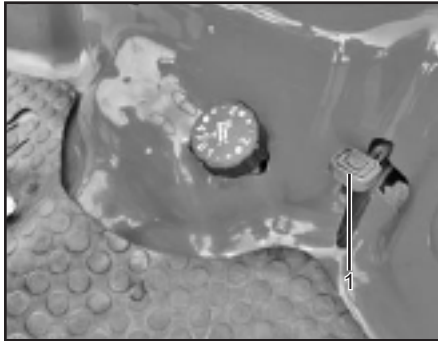
NOTE

- Operate the range shift lever only after the tractor is completely stopped and with the brake pedal depressed. Shifting the lever during driving can damage the gears.

⚠ WARNING

- When the range shift lever is placed in the position "H," the driving speed increased. Therefore, never put the range shift lever in the position "H" during driving backwards.

DIFFERENTIAL LOCK PEDAL



(1) Differential Lock Pedal

The differential lock is a device to lock the differential system in order to rotate the left and right wheels at the same speed. This function can be used when the rear wheels slip or one wheel spins.



Engagement - Depressing pedal



Disengagement - Releasing pedal

<Examples of useful conditions of differential lock>

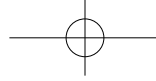
1. One wheel slips or tractor cannot be driven forward when moving into/out of a field.
2. A wheel slips during work requiring traction, such as plowing.
3. One wheel is stuck into a soft field and can't escape.

⚠ WARNING

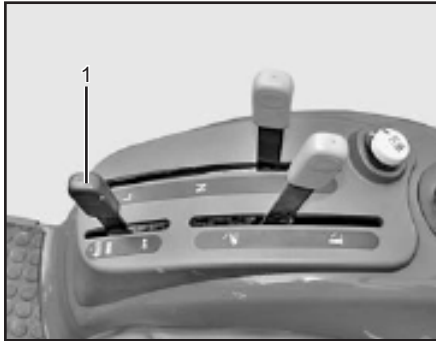
- **Never use the differential lock when driving on a road. A collision or rollover can occur.**
- **Make sure to release it during turning. Otherwise, it can lead to an injury or accident.**

NOTE

- **When using the differential lock, run the engine at a low speed.**
- **If differential lock is still not disengaged after releasing the differential lock pedal, gently depress the left and right brake pedals alternately.**



FRONT WHEEL DRIVE LEVER (4WD)



(1) Front Wheel Drive Lever(4WD)

Front wheel drive lever is located below the LHS of the Operator.

In the ON position the front wheels are engaged and in the OFF position they are disengaged.

Engage & disengage the front wheel drive with the front wheels in the straight position and at low speed.

< Examples of useful conditions of 4WD >

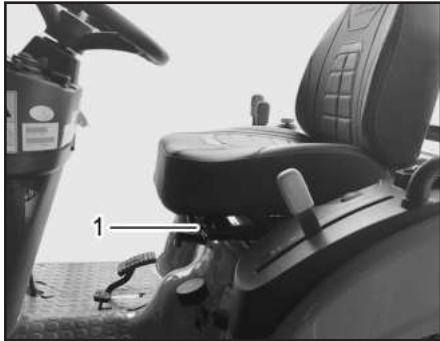
The 4WD can be used under the following conditions

1. When cultivating in a field.
2. When traction is required on a slope, in a wet field or for towing a trailer.
3. When working in a wet or sandy field.
4. When When cultivating on firm soil with a rotavator to prevent the tractor from being pushed forward.
5. When driving into/out of a field or going over a field bank.

NOTE

- Before operating the 4WD lever, make sure to stop the tractor.
- To avoid damage of transmission, when front wheel drive lever is not smoothly shifted, slightly step forward or rearward on speed control pedal.
- Tires will wear quickly if front wheel drive is engaged on paved roads.

SEAT AND SAFETY BELT



(1) Seat Sliding



(1) Seat sliding

The seat can be adjusted by moving it forwards and backwards with the seat sliding lever on its front pushed to the left. After adjustment, make sure that the seat is firmly secured.

(2) Seat belt



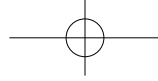
Before driving, adjust the belt's length to fit to your body and insert it into its buckle. When it is engaged properly, a clicking sound is heard.

(3) Folding seatback

The seatback can be folded down when it is raining or for long-term storage.

WARNING

- **Make sure to wear your seat belt to protect yourself from a possible rollover or crash accident.**
- **Never adjust the seat during driving.**



4-22 BAD BOY TRACTOR

PTO

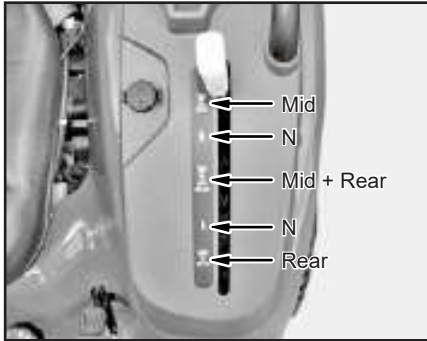
Both of the rear and mid PTO are provided for variable utility. They can be engaged simultaneously or separately at same time.

The engine will not start if PTO switch is ON position.

The engine will shutoff if the operator leaves the seat with parking brake released and PTO engaged.

CAUTION

- To avoid damage of transmission and implement, do not engage PTO with the engine running at high speed.



(1) PTO

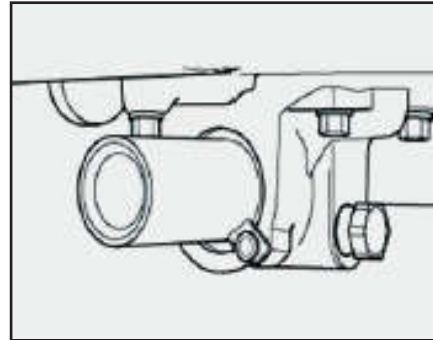
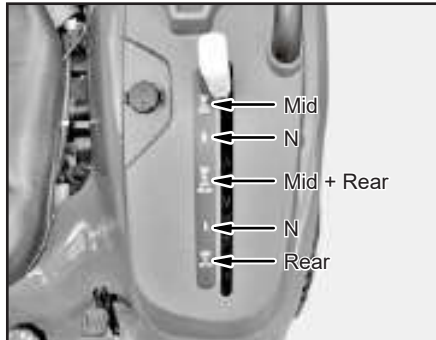
• REAR PTO

The tractor has one speed PTO (540rpm). Use the PTO lever to en-gage. The PTO switch must be OFF before PTO is engaged.

1. Decrease engine speed to near idle.
2. Make sure that PTO switch is OFF.
3. Engage rear PTO using the PTO lever.
4. Turn on the PTO switch.
5. Increase engine speed to de-sired speed.

REAR PTO SPEED

540 RPM

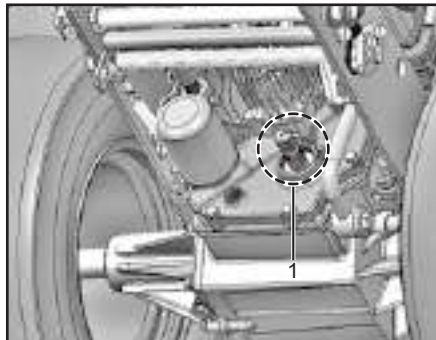


4. If rear PTO is needed to engage, shift the PTO lever to correct position.
5. Turn on the PTO switch.
6. Increase engine speed to desired speed.

MID PTO SPEED

2.500 RPM

4

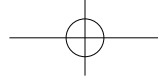


(1) Mid PTO Shaft

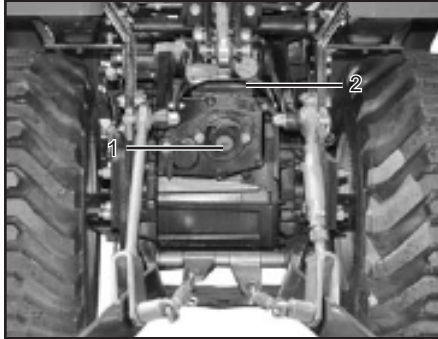
• MID PTO

The speed of mid PTO is 2.500 rpm. Use the PTO lever to engage. The PTO switch must be OFF before PTO is engaged.

1. Decrease engine speed to near idle.
2. Make sure that PTO switch is OFF.
3. Engage mid PTO using the PTO lever.





PTO SHAFT CAP



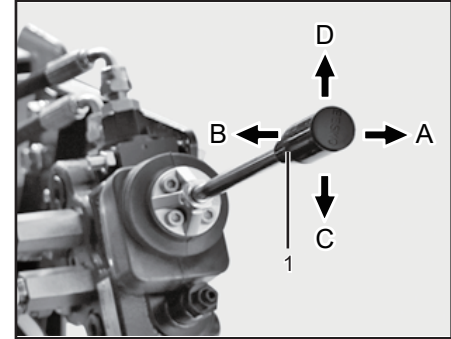
(1) Rear PTO Shaft Cap
(2) PTO Safety Cover

When the PTO shaft is not in use, grease the PTO shaft and install the

 CAUTION
<ul style="list-style-type: none"> • It is dangerous to use an implement at a high speed if it is designed to be operated at a low speed. • Before using an implement, make sure to read its owner's manual.





 DANGER
<ul style="list-style-type: none"> • If caught by the PTO shaft, a severe injury or even death can occur. • Stay out of the PTO shaft while it is rotating. • When the PTO shaft is not in use, place the cap over it. Also, never remove the PTO safety cover.

LOADER LEVER



(1) Loader Lever

Loader lever operating directions

-  - Bucket down (A)
-  - Bucket up (B)
-  - Boom up (C)
-  - Boom down (D)

NOTE

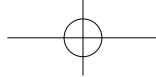
- **Do not operate the boom cylinder and bucket cylinder at the same time. A loader may malfunction due to insufficient oil flow.**

OPERATING TIPS FOR POWER STEERING WHEEL

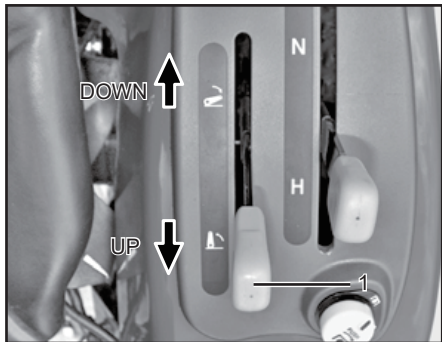
- (1) Operate the power steering wheel only while the engine is running. You may feel the steering wheel heavier with a low engine speed.
- (2) When an implement, such as a loader, is attached to the front, the steering wheel may be felt heavy with the tractor stopped. If so, operate the steering wheel while driving the tractor at a low speed.
- (3) When the steering wheel is completely turned to one end, the safety valve is activated to output the audible signal (relief sound). When this sounds, avoid using the steering wheel (O.K. only for a short time). Also, never turn the steering wheel completely continuously.
- (4) Turning the steering wheel to its end unnecessarily (with the tractor stopped) can wear tires rapidly.
- (5) In winter, warm up the engine sufficiently before use.
- (6) When repairing components, such as a pipe, make sure that no foreign material enters the system.
- (7) The steering wheel can be operated with a small amount of force. Therefore, operate it with care and keep your hands on it at all times.

⚠ WARNING

- **Releasing the steering wheel during driving can result in a collision and rollover. Never release the steering wheel during driving.**



IMPLEMENT LIFT CONTROL SYSTEM



(1) Position Lever

This lever is used to lift and lower an implement to a certain working height freely and maintain it.

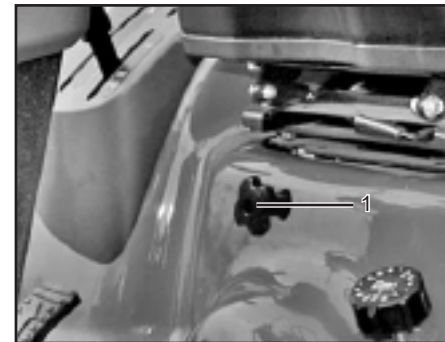
<Operation>

- Lifting implement
Pull the lever back to lift the implement.
- Lowering implement
Push the lever forward to lower the implement.

WARNING

- When leaving the tractor, make sure to lower the implement and stop the engine. Others may operate one of the controls, leading to a dangerous situation.

HYDRAULIC LOWERING SPEED CONTROL KNOB



(1) Hydraulic Lowering Speed Control Knob

This can be used to adjust the lowering speed of the implement.

Adjust the lowering speed according to the implement type and working environment.

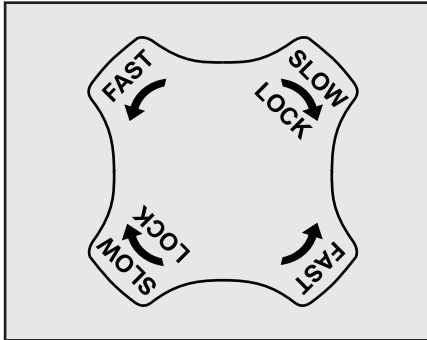
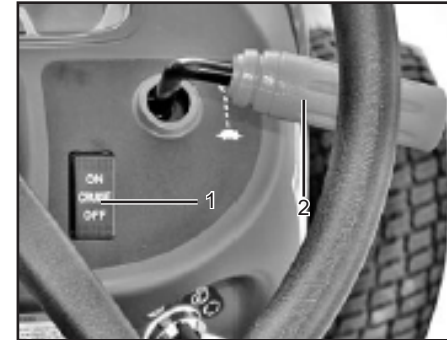
<Operation>

- Rotavator : Slow the lowering speed.
- Plow : Speed up the lowering speed.

⚠ WARNING

Set it to the Lock position under the following conditions to prevent falling of the implement :

- When driving on a public road
- When replacing the rotavator blade or removing straws and grass
- When servicing the implement

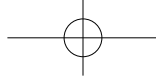
**CONTROLLING**

- (1) Cruise Control Switch
(2) Throttle Lever

4

- Decreasing lowering speed
Turn the knob clockwise (slower).
- Increasing lowering speed
Turn the knob counterclockwise (faster).
- Lock
Turn the knob clockwise (slower) to its end.





4-28 BAD BOY TRACTOR

<Cruise Control>

The cruise control function is provided for comfortable and efficient operation. When the cruise control is engaged, the cruise control lamp on instrument panel will turn on.

1. Engaging the cruise control.

- ① Depress the forward speed control pedal till getting desired speed.
- ② Push the cruise control switch to engage cruise control
- ③ Release the speed control pedal

2. Disengaging the cruise control

There are two methods to disengage the cruise control.

- ① Push cruise control switch "OFF"
or
- ② Depress the brake pedal.

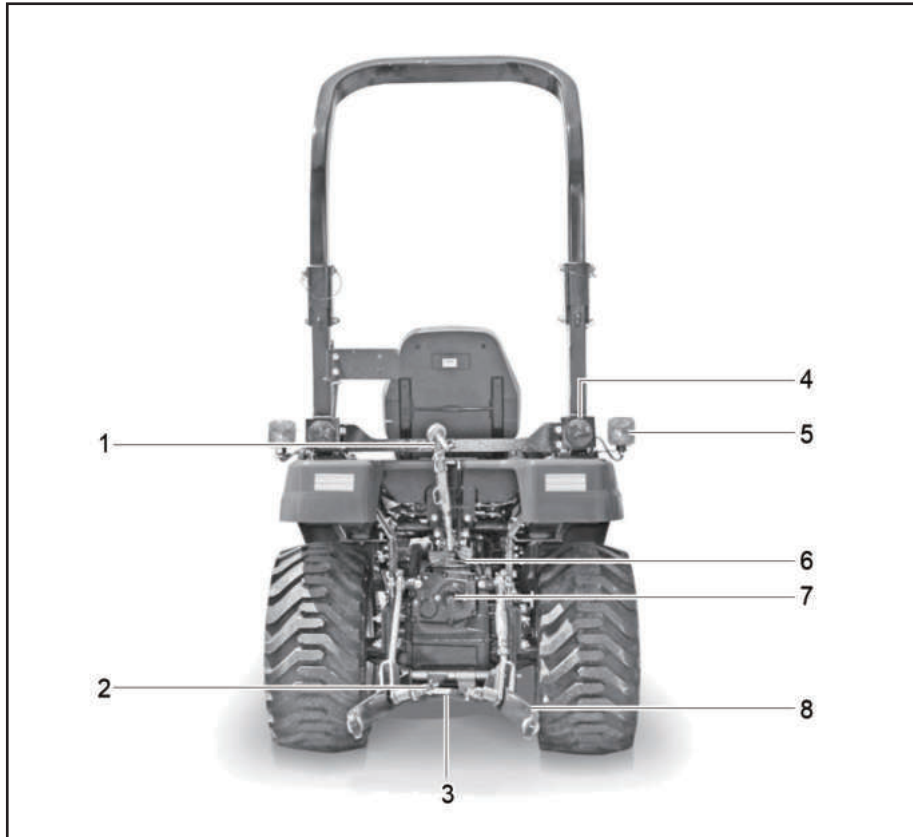
IMPORTANT

- To avoid damage of mechanism, do not depress both of the speed control pedals when the cruise control is engaged.

CAUTION

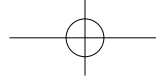
- To avoid personnel injury, do not use the cruise control in reverse.

OPERATING THE 3 POINT LINKAGE (TPL)

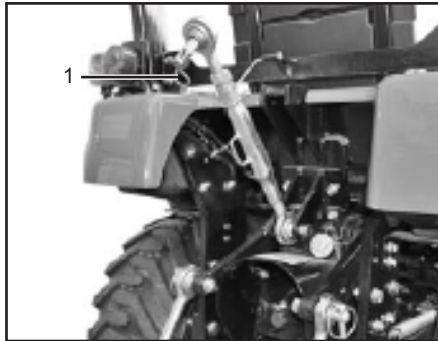


- (1) Top Link
- (2) Check Link
- (3) Towing Hitch
- (4) Brake Lamp
- (5) Turn Signal Lamp
- (6) PTO Safety Cover
- (7) PTO Shaft
- (8) Lower Link

** Refer to the relevant content for further detailed information*



TOP LINK ADJUSTMENT



(1) Top Link Adjustment

- (1) The angle of an implement can be adjusted by extending or retracting the top link.
- (2) After adjustment, fix the adjusting lever with its mounting nut.

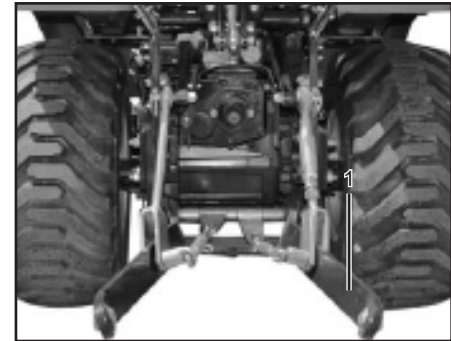
CHECK LINK



(1) Check Link

The check link can be adjusted to relieve vibration and shock of an implement.

LOWER LINK



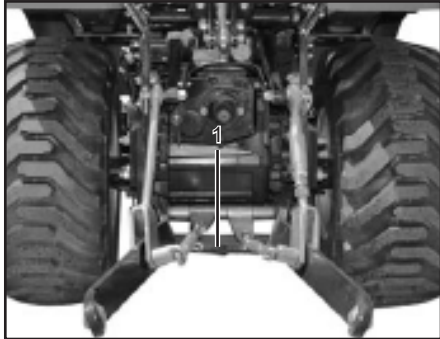
(1) Lower Link

An implement can be attached to this. The installation type is Category I.

NOTE

- When no implement is attached, fix the lower links with the left and right check links so that they do not touch the rear wheels.
- Engage the top link with the hook.

TOWING HITCH

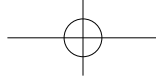


(1) Towing Hitch

Install only an implement applicable to this tractor.

WARNING

- Make sure to use the towing hitch for towing to avoid roll-over. Never tow anything by connecting a rope to the top link bracket, axle or safety frame.
- When using a rotavator that draws power through the universal joint from the PTO shaft, remove the towing hitch from the tractor. Otherwise, the universal joint hits and damages the towing hitch, leading to an accident.



SAFETY FRAME ROPS



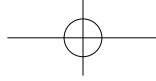
(1) ROPS

WARNING

- If a rollover accident occurs without the safety frame, the frame cannot protect the driver, leading to a severe injury or even death. Never drive with the safety frame detached.

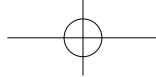
The safety frame is intended to reduce damage of an accident in case of a rollover, so it cannot prevent an accident.

Always have the safety frame installed securely for driving to ensure your safety unless going under an area with a low ceiling such as a garage.



5. OPERATION

<p>DAILY INSPECTION BEFORE STARTING5-3</p> <p>PRE-OPERATION CHECK.....5-3</p> <p style="padding-left: 20px;">RUNNING-IN PERIOD 5-10</p> <p>STARTING / STOPPING THE ENGINE.....5-11</p> <p style="padding-left: 20px;">ENGINE STARTING 5-11</p> <p style="padding-left: 20px;">ENGINE STOPPING..... 5-11</p> <p style="padding-left: 20px;">ENGINE IDLING5-12</p> <p style="padding-left: 20px;">RUNNING-IN PERIOD 5-12</p> <p style="padding-left: 20px;">STARTING OFF, SHIFTING AND DRIVING 5-13</p> <p style="padding-left: 20px;">STOPPING AND PARKING..... 5-13</p> <p style="padding-left: 20px;">DRIVING ON THE SLOPE 5-14</p> <p style="padding-left: 20px;">DRIVING ON THE ROAD..... 5-14</p> <p style="padding-left: 20px;">ENTERING AND LEAVING THE PAVEMENT 5-15</p> <p style="padding-left: 20px;">TURNING ON THE PAVEMENT 5-16</p> <p>ATTACHMENT OF IMPLEMENT5-17</p> <p style="padding-left: 20px;">INSTALLATION OF PTO DRIVEN IMPLEMENT 5-17</p> <p style="padding-left: 20px;">CYLINDER HOSE CONNECTION 5-18</p> <p style="padding-left: 20px;">PRECAUTIONS FOR CONNECTING THE IMPLEMENT..... 5-19</p>	<p>PRECAUTIONS FOR HANDLING IMPLEMENT 5-20</p> <p>ROTAVATOR 5-20</p> <p>EFFECTIVE PLOWING PATTERN..... 5-21</p> <p>TOWING INSTRUCTIONS.....5-24</p> <p>PTO SPECIFICATIONS & PRECAUTIONS5-24</p> <p>LOADER OPERATION5-25</p> <p>CARRYING THE LOAD5-26</p> <p>HANDLING LARGE HEAVY OBJECTS.....5-27</p> <p>ROPS FOLDING METHOD5-28</p> <p style="padding-left: 20px;">HOW TO FOLD DOWN THE ROPS 5-28</p> <p style="padding-left: 20px;">HOW TO STAND UP THE ROPS 5-28</p>
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5-2 BAD BOY TRACTOR

DAILY INSPECTION BEFORE STARTING

1. Check the engine oil level.

After wiping out the dipstick, insert it fully and then withdraw it. Oil should be between the two marks on dipstick.

Do not operate the engine if oil level is below minimum mark. If below, add the corresponding grade oil according to the season through the filler.

2. Feed grease to all greasing points indicated below every 10 hours when working in damp and muddy conditions.

- Front axle pin
- Steering shaft and Cylinder end
- Tie rod both ends
- Front axle supporter

3. After cleaning the machine with highly pressurized water, lubricate the indicated points with grease below if necessary.

- Bonnet latch
- Seat sliding rail

PRE-OPERATION CHECK

DANGER

- **Do not provide illumination with a lit cigarette or a lighter when fueling.**
- **Never fill the fuel tank while the engine is running or hot.**
- **After filling the fuel tank, close the fuel filler cap completely and wipe off the excess fuel thoroughly.**
- **If the fuel hoses are damaged, fuel will leak. Make sure that you check for any leakage.**

WARNING

- **Perform the maintenance on a flat and safe location that will keep the tractor in place and will not cause a risk to people passing by. Before carrying out the maintenance, place blocks at the front tires to prevent movement.**

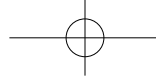
[Otherwise]

An unexpected accident may occur, such as overturning of the tractor.

- **When going under the implement, fully close the slow/stop valve.**

[Otherwise]

There is a risk of injury due to implement falling.

**⚠ CAUTION**

- Stop the engine during checking, maintenance, or repair
- Carry out the maintenance work after heated area such as the muffler or the engine have fully cooled down.

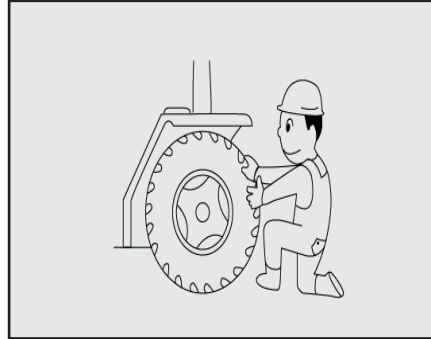
[Otherwise]

There is risk of burn.

- After detaching the covers for checking or maintenance, make sure to put them back in their place.

[Otherwise]

There is a risk that you may get entangled in the tractor or get injured.

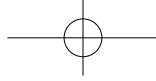


To ensure a safe and comfortable operation, please carry out the routine check-up everyday before starting work. Correct any problem immediately, and also check for problems after work. This checking should be done in the following sequence.

1. Check the suspicious parts of the previous day.
 - Check the parts that you thought were not normal during the work of previous day.

2. Check around the tractor.

- Deformation, damage or stains.
- Tire pressure and abrasion.
- Damage to the tractor, or loosened bolts.
- Loosening of wheel bolts.
- Fuel quantity, fuel leaks, or damage to the fuel hose.



5-4 BAD BOY TRACTOR



3. Open the engine hood.

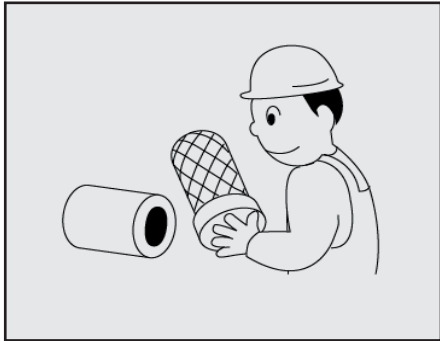
- Engine oil level, contamination, or leakage.



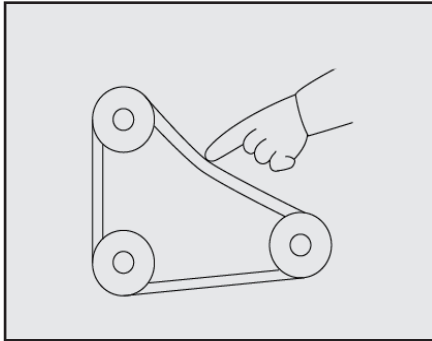
- Engine coolant level, leakage, or damage to the hose.



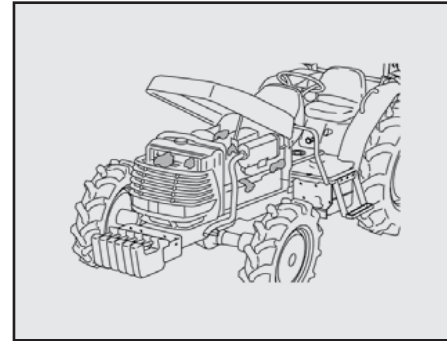
- Battery solution level.



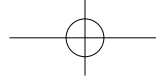
- Air cleaner.



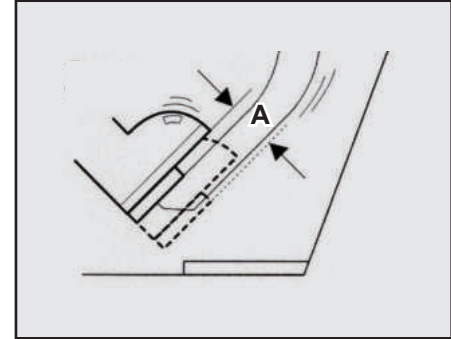
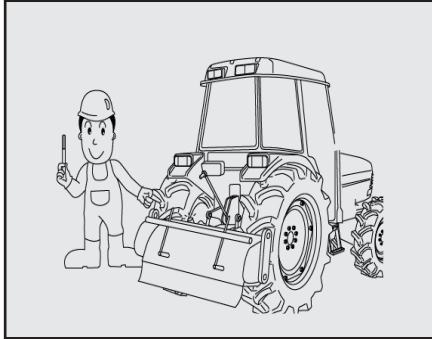
- Fan belt tension, damage.



- Dust or straw on the radiator grill or the engine.



5-6 BAD BOY TRACTOR



(A) Free play 0.2 ~ 0.4 in

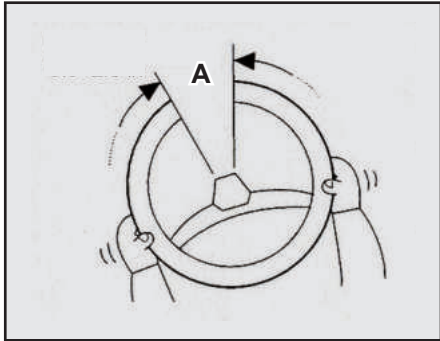
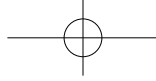
- Damage to the coating of the cables, or loosening of the contacts.

4. Check around the implement.

- Condition of the locking pin of the universal joint inserted in the PTO shaft.
- Condition of pins in each part.
- Loosening of the bolts holding the blade.
- Quantity of oil in each part. For more details, please refer to the implement manufacturer's instructions.

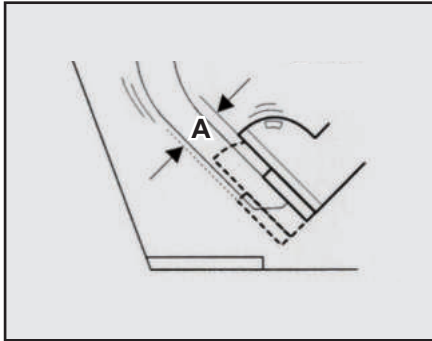
5. Check on the driver seat.

- Operational condition and free play of the brake. (0.2~0.4 in)



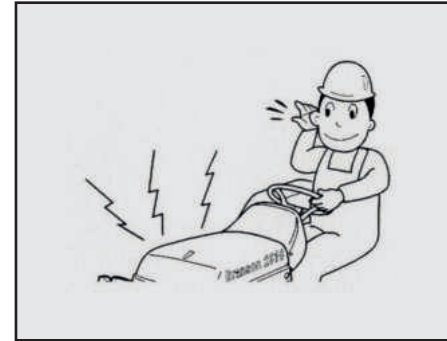
(A) Free play 0.8 ~ 2.0 in

- Free play of the steering wheel. (0.8~2.0 in)

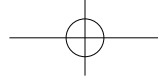


(A) Free play 1.0 ~ 1.4 in

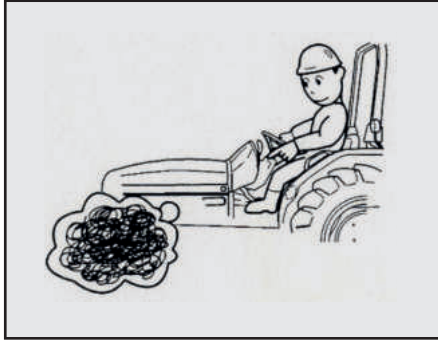
- Operational condition and free play of the clutch pedal. (Manual transmission only)



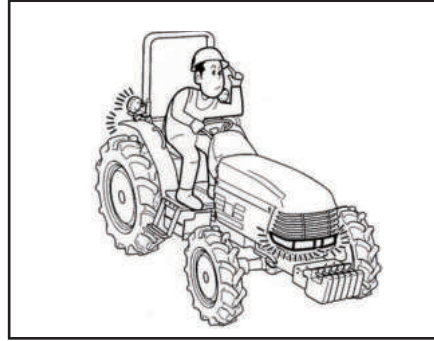
6. Start the engine.
 - Abnormal noise from the engine.



5-8 BAD BOY TRACTOR



- Color of the exhaust gas.



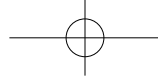
- Operation of lamps and gauges



► Boarding and Leaving The Tractor

Use Steps and Hand-holds Correctly

1. Prevent falls by facing the machine when getting on and off. Maintain 3-point contact with steps and handrails. Never use machine controls as hand-holds.
2. Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free



RUNNING-IN PERIOD

of grease or oil. Never jump when exiting machine. Never mount or dismount a moving machine

DANGER

- **Getting off the tractor, make the implement descend.**

[Otherwise]

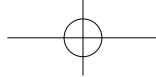
The implement descends itself, and then causes some unexpected accident.

IMPORTANT

- **Always keep wheel bolts tightened to prevent any accident. Confirm that the wheel bolts are tight before operation. Check wheel bolt torque at least twice within the first 10 hours of operation, check it periodically at every 50 hours thereafter. Change the oil and filter after first 50 hours of operation.**

- Change the transmission/hydraulic oil and oil filter element
- Change the engine oil and filter
- Change the front axle fluid

- ▶ Within first 10 hours of operation
 - Inspect daily or every 10 hours
 - Tighten the wheel bolts
- ▶ After first 50 hours of operation
 - Tighten the wheel, disc and hub bolts
 - Check the alternator and fan belt tension as well as air inlet
 - Tighten the cooling system's hose and clamp
 - Perform the scheduled 50-hour maintenance



5-10 BAD BOY TRACTOR

STARTING / STOPPING THE ENGINE ENGINE STARTING

1. Make sure that there is no obstacle around the tractor.
2. Seat on the driver's seat and confirm that the parking brake is applied.
3. Check that each shift lever and PTO switch are in the neutral position.
4. Pull the throttle lever halfway.
5. Insert the key into the main switch and turn the switch to the "ON" position. Check that the engine oil lamp and charge warning lamp come on.
6. Turn the main switch to the "START" position. When the engine is started, release the switch.
7. Confirm that all monitoring lamps go off after the engine is started.

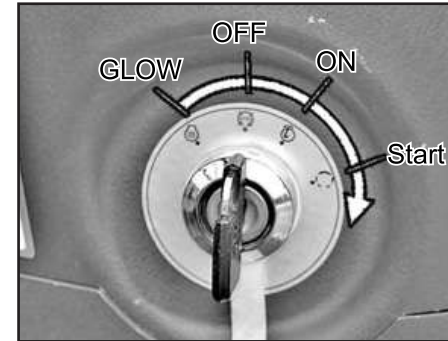
WARNING

- **Never start the engine by connecting the start motor terminal or safety switch directly. The tractor may move suddenly and cause an accident.**

NOTE

- **The engine will not start unless the brake pedal is depressed.**
- **Do not turn the main switch to the "START" position while the engine is running.**
- **Avoid running the start motor over 10 seconds. It consumes a lot of current.**
- **If the engine cannot be started within 10 seconds, wait for 30 seconds and try it again.**
- **The engine cannot be started unless the driver is seated on the driver's seat. Start the engine on the driver's seat.**

ENGINE STOPPING



1. Idle the engine.
2. Turn the main switch to the "OFF" position.
3. Remove the key from the switch.

NOTE

- **Do not stop the engine at a high speed.**
- **If the engine has been running for an extended period of time, stop the engine only after idling it for 5 to 10 minutes.**

ENGINE IDLING

► GENERAL ENGINE IDLING

After starting the engine, idle the engine for 5 to 10 minutes so that oil is delivered to each part of the engine.

NOTE

- **If the engine is loaded right after it is started, it may cause engine stalling and failure. Make sure to idle the engine first.**
- **If neglecting to idle the engine, it can cause:**
 - Seizure of the hydraulic pump
 - Filure in the hydraulic system.

WARNING

- **Make sure to apply the parking brake while idling the engine.**
- **Never idle the engine in a poorly ventilated area. It can cause carbon monoxide poisoning by emissions.**

► ENGINE IDLING IN COLD CONDITION

Hydraulic oil in this vehicle is also used as transmission fluid.

If the temperature drops in winter so oil gets cold, its viscosity rises and the hydraulic pump cannot suck oil in, causing malfunction.

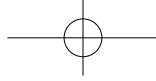
Make sure to idle the engine in winter according to the following instructions.

Temperature	Idling time
0°C or higher (32°F or higher)	At least 10 min
0~-10°C (32°F~-50°F)	10 ~ 20 min.
-10~-20°C (-50°F~-68°F)	20 ~ 30 min.
-20°C or less (-68°F or less)	At least 30 min

RUNNING-IN PERIOD

Make sure to keep the following instructions for the initial 50-hour use.

- (1) Avoid abrupt starting and abrupt stopping.
- (2) Do not use excessive speed or load.
- (3) Drive the tractor only when the engine is sufficiently warm.
- (4) Do not idle the engine at the maximum speed.
- (5) Check each part and change oil and fluid after 50-hour use.
- (6) Refer to the section Maintenance for adding and changing engine oil.



5-12 BAD BOY TRACTOR

STARTING OFF, SHIFTING AND DRIVING

▶ STARTING OFF

1. Lift an implement.
2. Place the main shift lever, range shift lever and shuttle shift lever into the desired positions.
3. Depress the brake pedal to release the parking brake.

WARNING

- **The driving speed in the reverse direction is almost the same to the speed in the forward direction. Make sure to check the surroundings carefully when driving backward.**
- **Especially, never drive backwards with the range shift lever in the position H. The driving speed becomes faster and it can cause an accident.**

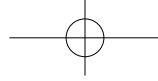
STOPPING AND PARKING



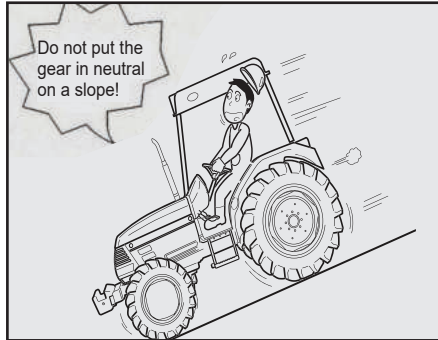
1. Operate the throttle lever to set the engine at a low speed.
2. Release the forward driving (HST type) and accelerator (mechanical) pedals slowly. Depress the brake pedals for abrupt braking.
3. When the vehicle is completely stopped, set the shift lever in the neutral position.
4. Apply the parking brake.
5. If an implement is attached to the vehicle, lower it.
6. Remove the key from the switch after parking vehicle.

WARNING

- **After parking, make sure to apply the parking brake.**
- **Avoid parking on a slope if possible. If it is absolutely necessary to park on a slope, chock the rear wheels.**



DRIVING ON THE SLOPE



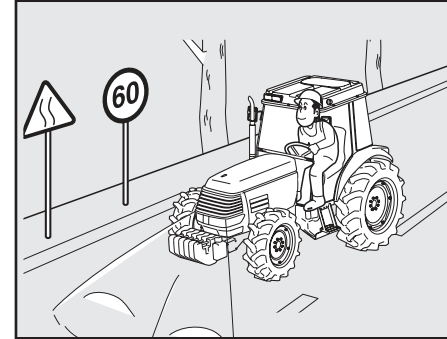
⚠ WARNING

- Select a proper speed, and do not shift the gear.
- Do not park on a slope. Otherwise, the tractor may slip or overturn and cause an accident.
- Reduce speed and pay special attention to the speed.

⚠ WARNING

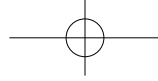
- Do not depress the clutch pedal when driving on a slope. The tractor may slide down and lead to a serious situation.
- When starting the tractor upwards on a slope, start slowly in low gear with low engine rpm. Otherwise, the front of the tractor may be lifted and cause a very dangerous situation.
- You may shift the gear when you are no longer on the slope. If you stop on a slope, apply the parking brake. Otherwise, you may be exposed to a risk of accident.

DRIVING ON THE ROAD



⚠ WARNING

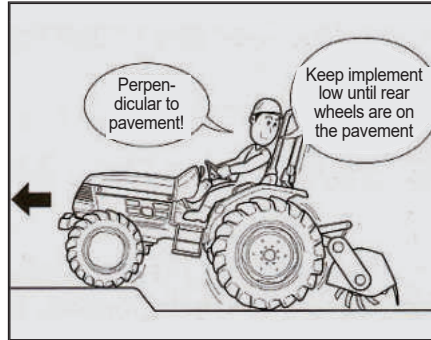
- When driving on a road or crossing a dike, make sure to connect the brake pedals. Otherwise, the tractor may turn abruptly or turn over due to one-sided braking.
- Observe the traffic regulations when driving on the road. Otherwise, you may be involved in an accident.



⚠ WARNING

- This tractor is designed to accommodate only one person. Do not allow anyone on the tractor other than the driver. Otherwise, you will be exposed to a risk of accident.
- Put the PTO lever into “N” and connect the brake pedals.
- When making a turn, turn on the direction indicator lamp to inform other vehicles of your intention.
- Pay particular cautions to narrow farm roads, slopes, and grassy shoulders, and reduce the speed.
- Put the position control lever to UP and lock it with the stopper. Otherwise, you will be exposed to a risk of an accident.
- Connect the brake pedals when driving on a road. Otherwise, there is a risk of abrupt turning or overturning due to one-sided braking.
- Before every operation, make sure that operator wears safety belt.

ENTERING AND LEAVING THE PAVEMENT



⚠ WARNING

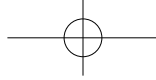
- Make sure to connect the brake pedal. Otherwise, the tractor may turnover due to one-sided braking.

⚠ WARNING

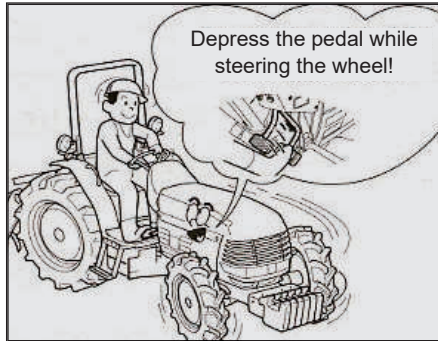
- When you cross a dike or raised ground to enter or leave the pavement, use loading ramps with sufficient strength, and lower the implement to achieve a lower center of gravity.
- Drive backward when climbing up a steep slope, and drive forward when climbing down.

NOTE

- Enter or leave the pavement in a perpendicular direction. When climbing onto the pavement, lower the implement to achieve a lower center of gravity. Once all wheels of the tractor are on the pavement, raise the implement.



TURNING ON THE PAVEMENT



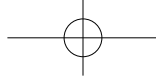
WARNING

- **Make sure to release the differential lock before making a turn.**

[Otherwise]

The tractor will not turn in the intended direction. It may cause an accident.

When making a turn, reduce the engine rpm and make a slow turn. When making a turn on the pavement, remove the connector of the brake pedals. Depress the brake pedal on the side to which to make a turn, while steering the wheel, this will allow the tractor to make the turn without moving ahead. Make sure to keep the implement in the up position when making a turn.



5-16 BAD BOY TRACTOR

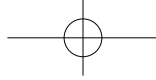
ATTACHMENT OF IMPLEMENT INSTALLATION OF PTO DRIVEN IMPLEMENT

1. Attach the implement to the tractor.
2. Lift the implement off the ground.
3. Stop the engine and put the PTO shift lever in the neutral position.
4. After opening the PTO cover, connect the universal joint shaft while turning the PTO shaft by hand so as to align the splines.
5. To check the PTO shaft is secured, check if the pin is returned to the original position by pulling the universal joint shaft.
6. Close the PTO cover.
7. Adjust the PTO shift lever according to the working speed.
8. Check if the safety shields are in place and working environment is normal. If the master safety shield is not installed, do not operate the PTO. Stop the engine to check the PTO shaft and its guards Repair or lubricate if required.
9. The PTO shaft should not be interfered by any surrounding parts.



CAUTION

- **If someone is entangled in the rotating part, it can cause a fatal injury. Always wear protective gear and install the safety shields and guards to the drive line. Don't wear loose clothing.**
- **Do not remove the installed protective cover of the PTO drive shaft without permission. If working with this protective cover removed, it can cause a severe injury. Refer to the warning decal on the cover.**



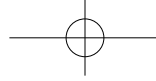
CYLINDER HOSE CONNECTION

1. **Make sure to use the correct hoses for expansion and retraction. The expanding hose must be connected to the left coupler. The retracting hose must be connected to the right coupler.**
2. **Remove the dust cap from the end of the hose.**
3. Slide the coupler cap.
4. Make sure the end of the hose and the coupler are clean. Insert the hose tip correctly into the coupler. Pull the hose once to make sure the hose is correctly inserted into the coupler.
5. When connecting an external hydraulic hose, be careful not to let foreign substances enter. Be sure to clean the connector and assemble it in a clean state.



CAUTION

- **High pressure oil leaking under pressure can penetrate the skin and cause severe wounds. Avoid danger by reducing pressure before disconnecting hydraulic or other wires. Tighten all connections before applying pressure.**
- **To check for leakage, use a piece of cardboard and protect your hands and feet from the pressurized fluid.**
- **Get medical attention immediately in case of accident. Fluids injected into the skin may rot if not removed surgically within a few hours.**
- **External hydraulic hoses can be damaged by physical damage, aging and explosion. Check the hoses regularly. If the hose is damaged, replace it immediately.**



5-18 BAD BOY TRACTOR

PRECAUTIONS FOR CONNECTING THE IMPLEMENT

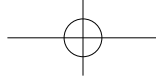
1. When engaging or disengaging the implement by moving the tractor, make sure that no one is allowed around the tractor or between the implement and the tractor.
2. Engage or disengage the implement on a flat and safe place. Supply proper lighting at all times and especially at night.
3. When engaging a heavy implement, load the weight on the front to keep the balance of the tractor.
4. When adjusting the implement, apply the parking brake, switch off the engine, and confirm that the PTO lever is on the "OFF" position.
5. When towing something, make sure to use the draw-bar.
6. Increase the wheel tread on a slope or when towing.
7. Depending on the implement, the overall length may become very long. Pay particular attention to people or objects nearby when making a turn.
8. Do not substitute the balance weight with a person or anything else. Always use the recommended balance weight.
9. For front loader work, mount an implement on the rear to keep the balance of the tractor.
10. Read the instruction manual of the implement mounted to the tractor.

WARNING

- **When the PTO shaft is not in use, affix the safety cover on it.**

[Otherwise]

There is a risk of getting entangled in the tractor or injured.



PRECAUTIONS FOR HANDLING IMPLEMENT

1. When driving the tractor to attach or detach an implement, make sure that there is no one in between or around the tractor and implement.
2. Install and remove the implement only on safe and level ground.
3. When engaging a heavy implement, load the weight on the front to keep the balance of the tractor.
4. When adjusting an implement, apply the parking brake, stop the engine and set the PTO switch in the OFF position in advance.
5. To tow anything, use the towing-hitch only.

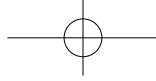
WARNING

- **Read instructions on warning decals on each implement thoroughly before work.**
- **To avoid an injury due to mishandling of an implement, read the user's manual of the implement thoroughly and work safely and precisely with caution.**
- **Installation of an improper implement can lead to an injury. Install only implements specified by the Manufacturer.**

ROTAVATOR

► Safety precautions for rotavator

- Never remove the safety cover of the rotavator.
- Do not remove the PTO shaft cover and safety cover on the universal joint.
- When adjusting each part, disengage the PTO and stop the engine in advance.
- When driving on a road, keep the PTO disengaged. Also, keep the rotavator lowered on a road as long as it does not hit the ground.
- For the universal joint, its inner shaft and outer shaft should be overlapped at least 15 cm.
- Check that the universal joint is firmly fixed to the tractor and rotavator shaft.

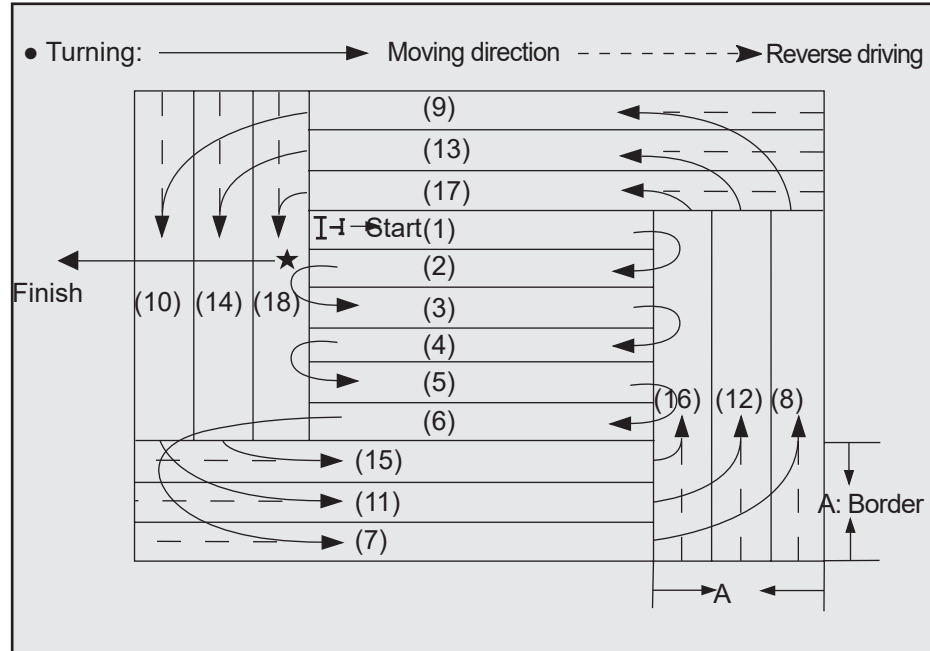


5-20 BAD BOY TRACTOR

EFFECTIVE PLOWING PATTERN

► Safety precautions for rotavator

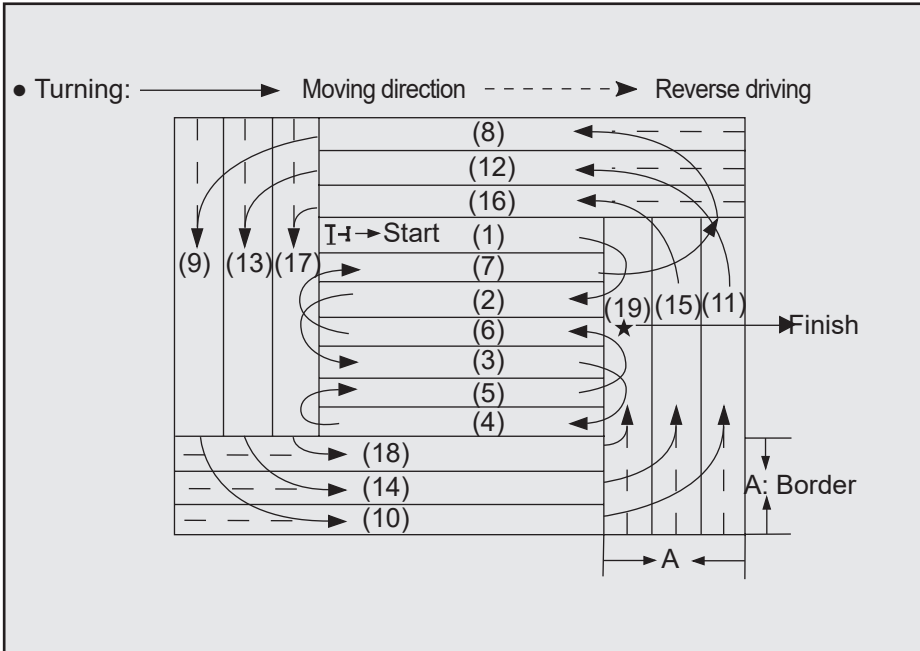
- This pattern can be useful in a well-planned field in a good condition.
- The border shown in the figure is the effective plowing width of the rotavator and should be set a little narrower than three times of one plowing width.
- The starting point is the ending point.
- Plow in a sequential pattern from (1) to (6) and in a circular pattern from (7) to (18).
- When driving forward to plow, have the bank on the right side.
- Be careful not to press already-plowed soil with the wheels.

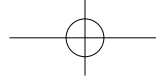




▶ Alternating returning plowing pattern

- This pattern is useful for narrow or short fields or poorly planned fields in which are not easy to turn.
- In the figure, the plowing width for (1), (2), (3) and (4) should be overlapped with the one for (5), (6) and (7) for approx. 10 cm.
- For the sections (1) to (7), perform plowing in an alternating pattern. For the sections (8) to (19), plow in a circular pattern.
- Refer to the sequential returning plowing pattern for other details.

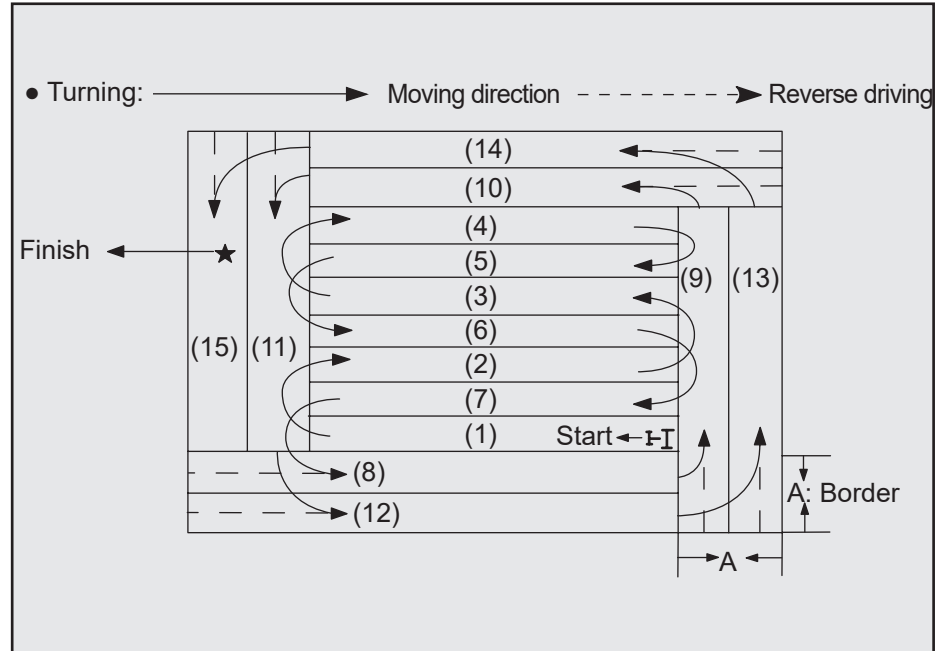


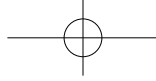


5-22 BAD BOY TRACTOR

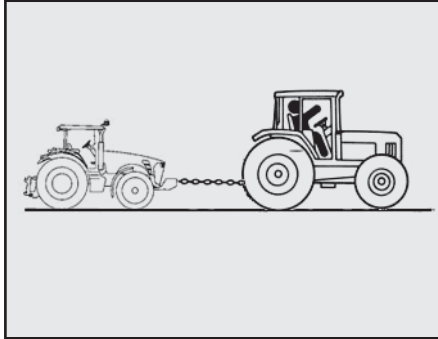
► Land leveling pattern

- The land leveling work may be performed after crushing soil or not.
- The vehicle speed can be set faster when performing the land leveling work with soil crushed already.
- When working in a wet field, fill the field with a sufficient amount of water so that the trace of plowing cannot be seen.
- The border shown in the figure should be set a little narrower than two times of one plowing width.
- Refer to the alternating returning pattern for other details.





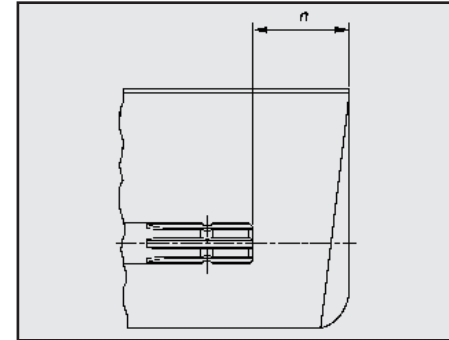
TOWING INSTRUCTIONS



1. Tractor traction should be conducted in short distance. (For instance, from inside to outside)
2. Long distance towing is not allowed in traffic congestion.
3. In case tractor needs to tow, use strong and safe checked chain.
4. Traction must be conducted from the rear in usage of tow bar, tow hook and 3-point linkage.

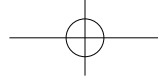
5. When driver turns the handle, use the brake if necessary.
6. During traction, the transmission and other parts, are not being lubricated but rotating. In order to prevent breakage, please note the following:
7. Towing should be in short distance.
8. Traction speed is restricted to less 8 km/h.
9. If possible, start the engine in order to make the power steering lubricated.
10. Place the main gearshift and sub gearshift in neutral.

PTO SPECIFICATIONS & PRECAUTIONS



Wear close fitting clothing. Stop the engine and be sure that PTO drive-line is stopped before making adjustments, connections, or cleaning out PTO driven equipment.

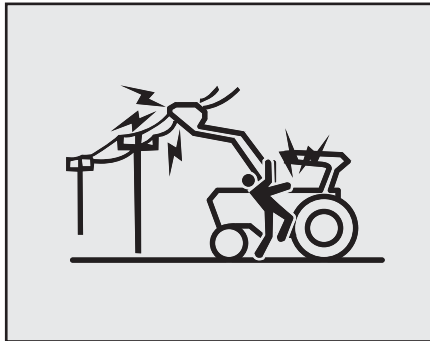
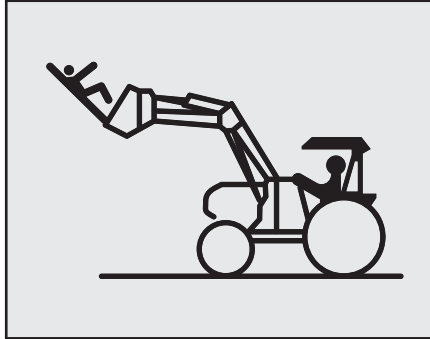
Do not install any adapter device that results in a portion of the rotating implement shaft, tractor shaft, or the adapter to be unguarded. The tractor master shield should overlap the end of the splined shaft and the added adaptor device as outlined in the table.



5-24 BAD BOY TRACTOR

LOADER OPERATION

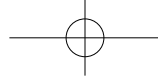
PTO Type	Diameter	Splines	$n \pm 0.2$ in. ($n \pm 5$ mm)
1	1.378 in. (35 mm)	6	3.81 in. (97 mm)



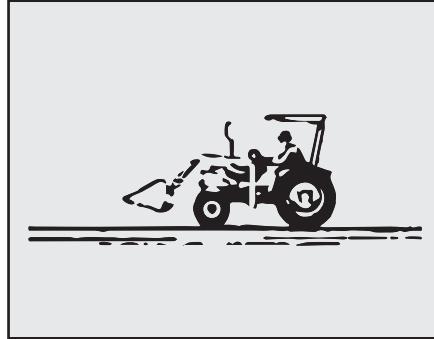
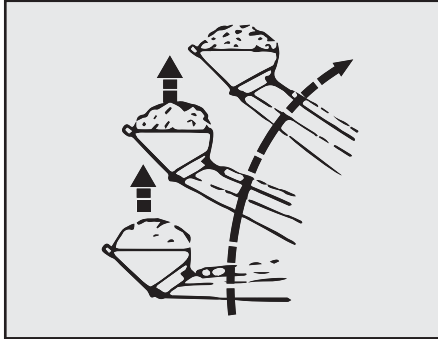
Work with front-end loader. (Risk of falling objects)

WARNING

- Avoid contact with electrical power lines by loader or attachments.
- Do not lift or carry anyone in the bucket or on any other position of loader attachment.
- Inadvertent movement of the loader or attachment could result in serious injury or death from falling or crushing.



CARRYING THE LOAD



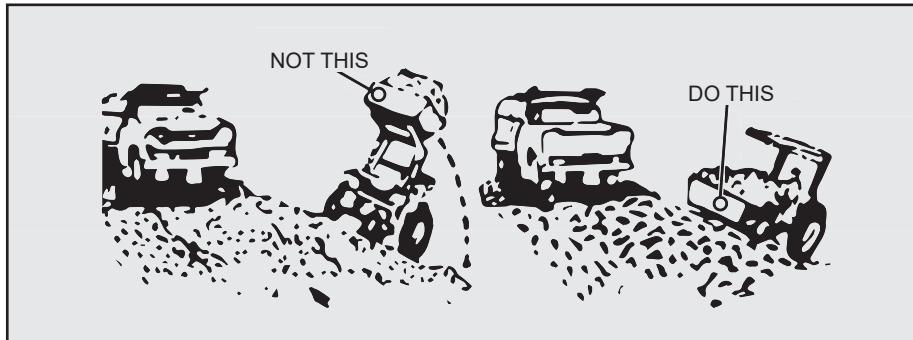
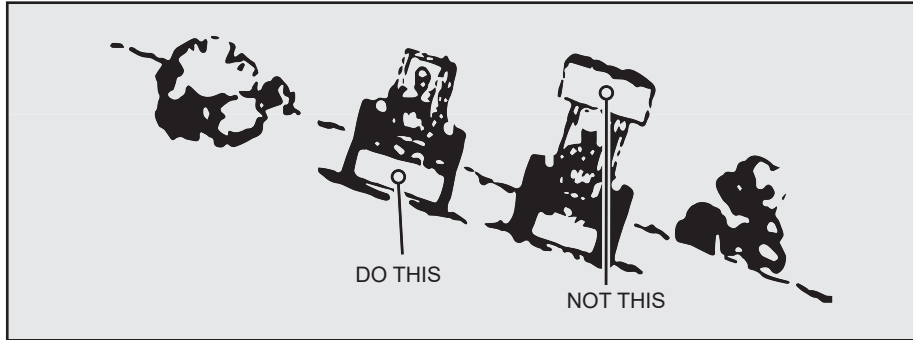
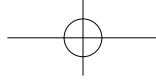
⚠ CAUTION

- Operating the loader on a hillside is dangerous. extreme care is recommended.

⚠ CAUTION

- Make sure material in bucket cannot roll out and down on tractor when bucket is raised to full height.
- Keep clear of overhead obstructions such as trees, limbs or power lines when raising bucket.
- When lifting the load, keep the bucket positioned to avoid spillage.

1. Position the bucket just below the level of the tractor hood for maximum stability and visibility, whether the bucket is loaded or empty.
2. Use extreme caution when operating the loader on a slope, keep the bucket as low as possible, this keeps the bucket and tractor center of gravity low and will provide maximum tractor stability.



When transporting the load, keep the bucket as low as possible to avoid tipping, in case a wheel drops in a rut.

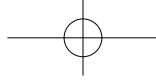
HANDLING LARGE HEAVY OBJECTS

WARNING

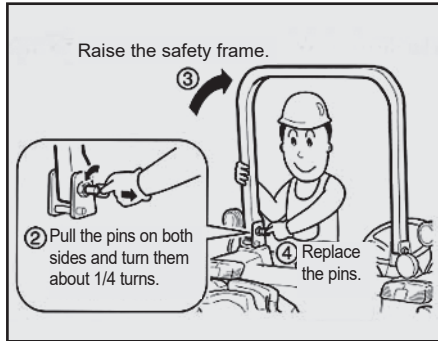
- Do not use front end loaders for handling large, heavy objects such as large, round or rectangular bales, logs and oil drums.
- Handling large heavy objects can be extremely dangerous due to.
 1. Possibility of rolling the tractor over.
 2. Possibility of upending the tractor.
 3. Possibility of the object rolling or sliding down the loader arms onto the operator.

CAUTION

- When transporting the load, keep the bucket as low as possible to resist tipping, in case a wheel drops in a rut. This will avoid tipping and possible injury.



ROPS FOLDING METHOD HOW TO FOLD DOWN THE ROPS



1. Turn the handle to separate the push plate and the ROPS.
 2. Pull the pins on both sides of the tractor and turn them about 1/4 turns to release the lock of the ROPS.
 3. Raise the ROPS a little.
 4. Replace the pin.
 5. Fold down the ROPS, and the pins will lock into place.
- ※ If it is not certain whether the pins are fixed, shake the frame a little bit to fix the pins for sure.

HOW TO STAND UP THE ROPS

1. Pull the pins on both sides of the tractor and turn them about 1/4 turns to release the lock of the ROPS.
 2. Raise the ROPS a little.
 3. Replace the pins.
 4. Stand the ROPS up, and the pins will lock into place.
- ※ If it is not certain whether the pins are fixed, shake the ROPS a little bit to fix the pins for sure.
5. Turn the handle to fix the push plate and the frame.

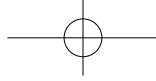
⚠ CAUTION

- Don't fasten your seat belt after folding ROPS.
- When you drive tractor, fold up vertically.
- Fasten your seat belt after folding up ROPS.
- When working with the tractor, don't fold down ROPS.
- Don't change ROPS without authority.
- Before using tractor, check your ROPS support and other parts.
- If there is damage to the ROPS, change ROPS at once.

[Otherwise]

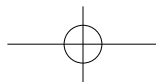
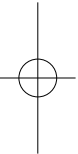
If the tractor rolls over, you could be injured or death may occur.

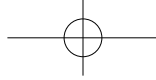
※ ROPS are a very important structure for protection on roll over, always check your ROPS.



MEMO

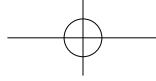
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6. MAINTENANCE

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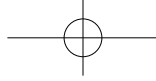


6-2 BAD BOY TRACTOR

MAINTENANCE SCHEDULE CHART

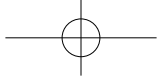
Meanings of symbols=▲: Replace ●: Check ○: Adjust ⊙: Clean

CHECK ITEMS	RUNNING HOURS															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	1YR	2YR
1. Engine oil	⊙					▲				▲						
2. Engine oil filter	⊙					▲					▲					
3. Transmission oil	⊙						▲						▲			
4. Transmission oil filter	⊙						▲						▲			
5. Front axle oil	⊙						▲						▲			
6. Radiator cleaning	At the time the coolant is replaced															
7. Fuel oil filter and element		●		●		●		●		●		●		●		
						▲						▲				
8. Coolant	Check before every work (Replace every year)															
9. Air cleaner element	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		
										▲						
10. Fan and radiator cleaning	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		
11. Battery solution	Replace every two years															
12. Battery (specific gravity)		●		●		●		●		●		●		●		
13. Fuel pipe and connection	●	●	●	●	●	●	●	●	●	●	●	●	●	●		▲
14. Steering wheel hose	●	●	●	●	●	●	●	●	●	●	●	●	●	●		▲
15. Radiator hose				●				●				●				▲



CHECK ITEMS	RUNNING HOURS															1YR	2YR	
	50	100	150	200	250	300	350	400	450	500	550	600	650	700				
16. Hydraulic oil hose		●		●		●		●		●		●		●			▲	
17. Fuel hose		●		●		●		●		●		●		●			▲	
18. Electric cables	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
19. Greasing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
20. Tightening handles		●		●		●		●		●		●		●				
21. Tightening bolts & Nuts	●	●		●		●		●		●		●		●				
22. Cooling fan belt	○	○		○		○		○		○		○		○				
23. Clutch		○		○		○		○		○		○		○				
24. Brake		○		○		○		○		○		○		○				
25. Engine breed pipe	●	●		●		●		●		●		●		●				
26. Engine crankcase cleaning						⊙						⊙						
27. Intake/exhaust gas valves												●						
28. Fuel injection valve												●						
29. Generator motor	●	●				●				●								
30. Hydraulic system	●	●				●				●								

※ Meanings of symbols=▲: Replace ●: Check ○: Adjust ⊙: Clean
 ※ Inspection should be done every 50 hours. If the tractor is not used much, inspect every year.
 ※ Replace parts every two years regardless of running hours.



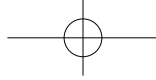
6-4 BAD BOY TRACTOR

FUEL, OIL AND COOLANT CHART

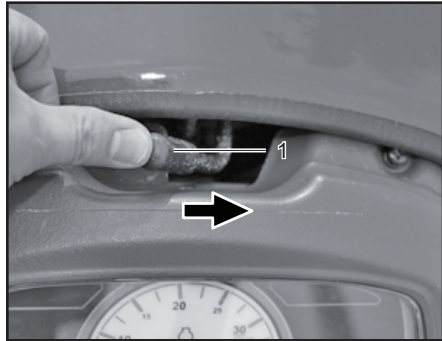
NO	ITEM	TYPE	1022H
1	Fuel	Diesel (Summer : S, Winter : W)	6.6 gal (25 L)
2	Engine oil	SAE 15W-40	0.48 gal (1.8 L)
3	Coolant	Antifreeze	0.9 gal (3.5 L)
4	Transmission fluid	Tractor Hydraulic Fluids - API GL-4 Grade - ISO VG 32	3.57 gal (13.5 L)
5	Front axle oil	Gear Oils - API GL-4 Grade - SAE 80W/90	0.66 gal (2.5 L)

⊕ IMPORTANT

• Above listed fuel, oil and coolant table is only for initial filling, and may be reduced at the time of replace.



OPENING COVERS



(1) Hood Lock Lever

1. Slide the hook to the side. Then, the hood opens with a clicking sound.
2. Lift the hood with hands. Then, the hood is automatically opened and fixed by its damper.

INSPECTION ITEMS

To prevent any possible failure, some items should be checked daily.

Make sure to perform inspection before driving.

► Inspection items

Inspect each part in the following order:

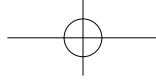
- ① Check the items that were faulty yesterday.
- ② Go around the tractor and check:
 - Lamps for proper illumination and damage
 - Tires for inflation pressure, crack, damage and wear
 - Rotating parts for loose bolts and nuts
 - Transmission fluid level
 - Implement attachment status
- ③ Open the hood and check:
 - Engine oil level
 - Coolant level
 - Fan belt for looseness and damage

- ④ Sit on the driver's seat, turn the main switch to the "ON" position and check:

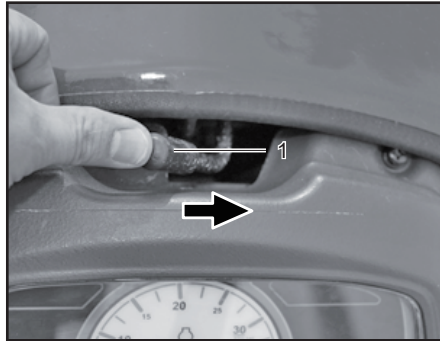
- Fuel gauge for proper operation
- Fuel level
- Engine oil and charge warning lamps for blinking operation
- Turn signal lamp
- Horn operation
- Brake pedal free play

- ⑤ Start the engine, drive the tractor slowly and check:

- Emission color
- Brake pedal operation
- One brake pedal operation
- Steering wheel for heaviness and vibration
- Coolant gauge operation
- Hydraulic operation of 3-point link



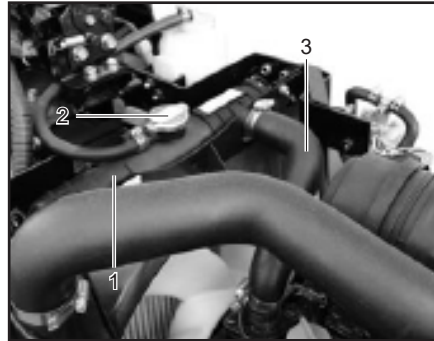
OPENING COVERS



(1) Hood Lock Lever

1. Slide the hook to the side. Then, the hood opens with a clicking sound.
2. Lift the hood with hands. Then, the hood is automatically opened and fixed by its damper.

INSPECTING AND CHANGING COOLANT ENGINE COOLANT INSPECTION AND CHANGE



(1) Radiator
(2) Inlet
(3) Check Hoses

(1) Inspection

Open the radiator cap and check that the radiator is filled with cool-ant up to its filler inlet. If the coolant amount is insufficient, add more coolant.

WARNING

- Do not open the cap when the engine is hot. Otherwise, hot steam can burn you seriously. Wait until the engine is sufficiently cooled down.

(2) Antifreeze

If coolant freezes, the engine can be damaged.

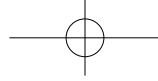
- Clean the radiator thoroughly before adding antifreeze.
- The mixture ratio of antifreeze is different by manufacturers and temperature. Refer to the manufacturer's manual.
- Mix antifreeze with water sufficiently before adding it.
- Adding antifreeze

If evaporated - Add water for the reduced amount.

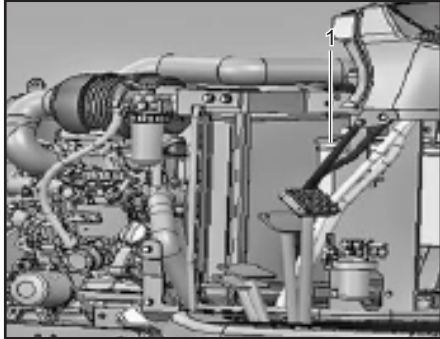
If leaked - Add mixture of antifreeze and water with the same mixture ratio.

CAUTION

- If engine coolant gets on your skin, it can irritate the skin and cause a skin condition. Make sure to clean your skin with soap and water or hand cleaner thoroughly.



CLEANING RADIATOR AND RADIATOR GRILLES



(1) Radiator Grill

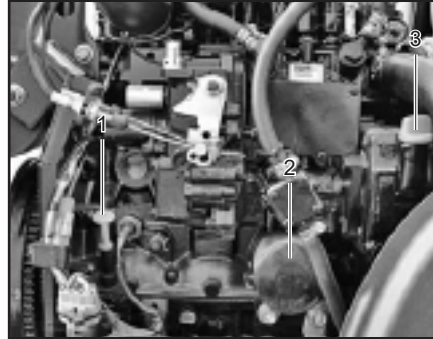
When working in a grassy field or working at night, the radiator or condenser grille may be clogged by grass, straws or bugs, reducing cooling performance.

In this case, clean the grille. If dust is stuck between the fan and tube, flush the area with clean water.

NOTE

- Do not clean the radiator fin with water jet. It can deform the fin.

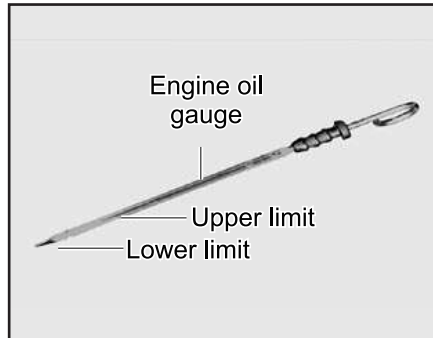
CHECKING AND CHANGING ENGINE OIL

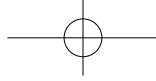


(1) Engine Oil Gauge
(2) Engine Oil Cartridge
(3) Engine Oil Filler

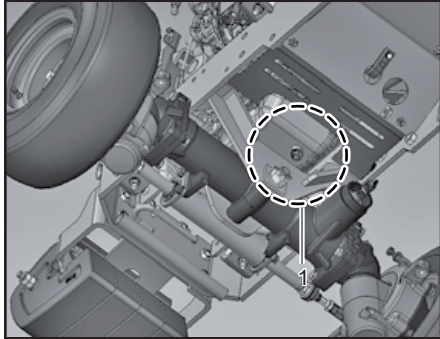
(1) Inspection

- ① Pull out the dipstick, wipe its tip and insert it again. Then, pull it out and check that the oil level is between the upper and lower limits.
- ② If insufficient, add oil.





6-8 BAD BOY TRACTOR



(1) Engine Oil Drain

(2) Changing

- Unscrew the drain plug on the lower section of the engine to drain contaminated engine oil. Since hot oil flows out of the engine first, be careful not to get burnt.
- After draining oil, tighten the engine oil drain plug.
- Add the specified amount of the specified engine oil through the filler hole.

NOTE

- Do not add engine oil over the upper limit level.
- Check the engine oil before starting the engine or at least in 5 minutes after the engine is stopped.
- When trying to use new oil from a different manufacturer or oil with different viscosity, drain used oil completely before adding new oil.

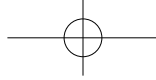
⚠ CAUTION

- If engine oil gets on your skin, it can irritate the skin and cause a skin condition. Make sure to clean your skin with soap and water or hand cleaner thoroughly.
- Make sure to cool down the engine sufficiently before draining oil. Oil is very hot and can cause a burn if changing oil right after the engine is stopped.

(3) Oil specification

Diesel engine oil:

(API : CD/CF The tractor is shipped from the factory with 15W40)



TRANSMISSION FLUID

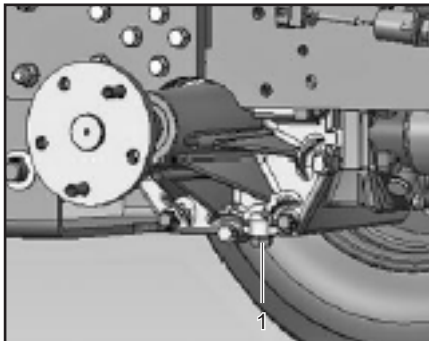
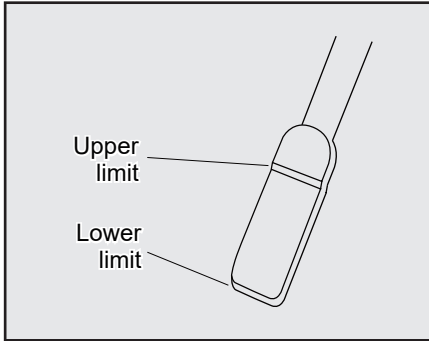


(1) Transmission Fluid Filler Hole

(1) Inspection

Perform inspection with the engine stopped.

- ① Check the transmission fluid level through the sight glass to see if the level is between the upper and lower limits.
- ② If insufficient, add oil.

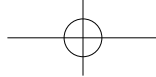


(1) Drain Plug

(2) Changing

Perform inspection with the engine stopped.

- ① Unscrew the drain plug on the lower section of the transmission to drain contaminated transmission fluid. Since hot fluid flows out of the engine first, be careful not to get burnt.
- ② After draining fluid, tighten the transmission fluid drain plug.
- ③ Add the specified amount of the specified transmission fluid through the filler hole



6-10 BAD BOY TRACTOR

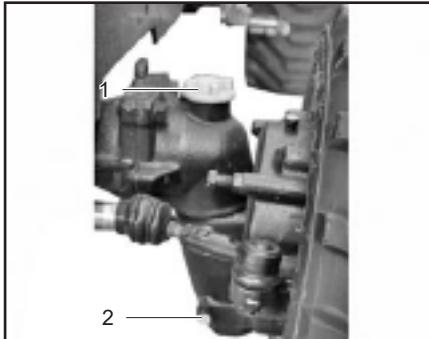
FRONT AXLE OIL

NOTE

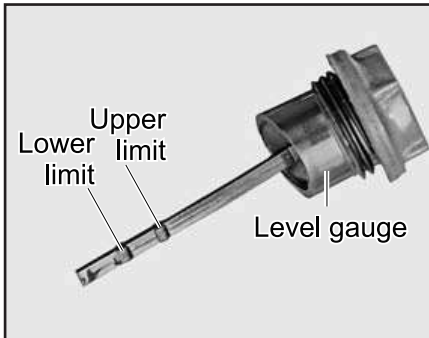
- Do not add fluid over the upper limit level.
- Check the fluid before starting the engine or at least in 5 minutes after the engine is stopped.
- When trying to use new fluid from a different manufacturer or fluid with different viscosity, drain used fluid completely before adding new fluid.

CAUTION

- If transmission fluid gets on your skin, it can irritate the skin and cause a skin condition. Make sure to clean your skin with soap and water or hand cleaner thoroughly.



(1) Front Axle Oil Filler
(2) Front Axle Oil Drain Plug

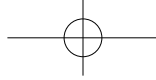


(1) Inspection

- ① Pull out the dipstick, wipe its tip and insert it again. Then, pull it out and check that the oil level is between the upper and lower limits.
 - ② If insufficient, add oil.
- ※ There is one front axle oil drain hole on each side of the front axle.

(2) Changing

- ① Unscrew the drain plugs on the bottom of the axle and left/right final cases to drain engine oil. Since hot fluid flows out of the engine first, be careful not to get burnt.
- ② After draining oil, tighten the oil drain plug.
- ③ Add the specified amount of the specified oil through the filler hole.



REPLACING FILTER AND CARTRIDGE TRANSMISSION

NOTE

- Do not add front axle oil over the upper limit level.
- Check the front axle oil before starting the engine or at least in 5 minutes after the engine is stopped.
- When trying to use new oil from a different manufacturer or oil with different viscosity, drain used oil completely before adding new oil.

⚠ CAUTION

- If oil gets on your skin, it can irritate the skin and cause a skin condition. Make sure to clean your skin with soap and water or hand cleaner thoroughly.
- Make sure to cool down the engine sufficiently before draining oil. Oil is very hot and can cause a burn if changing oil right after the engine is stopped.



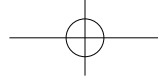
(1) HST Filter

the sealing surface, turn it approx. 2/3 turns further with a wrench.

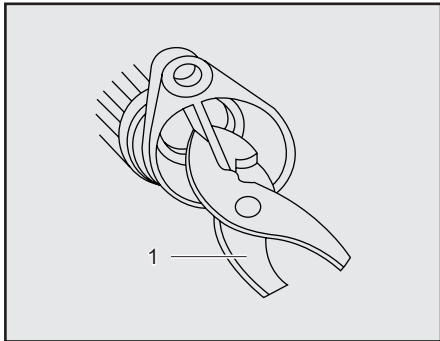
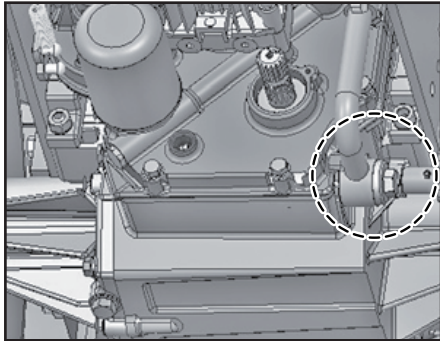
- ④ Add hydraulic oil to the specified level.
- ⑤ Check the oil level with the dipstick again. If still insufficient, add more.

▶ REPLACING TRANSMISSION FLUID FILTER CARTRIDGE

- ① The HST oil filter is located under the floor.
- ② Remove the hydraulic oil filter element by turning it counterclockwise with a wrench.
- ③ Apply a thin film of oil to the O-ring of a new cartridge and install the new cartridge by tightening it with a hand. When its packing touches



6-12 BAD BOY TRACTOR

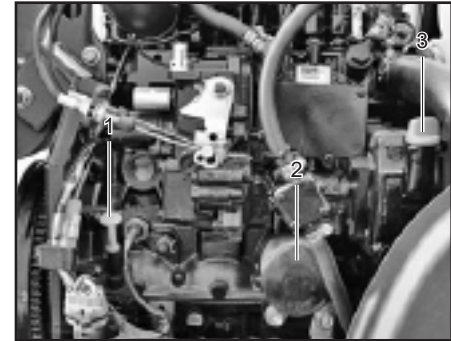


(1) Pliers

► TRANSMISSION STRAINER CLEANING

- ① When changing transmission fluid, clean with diesel fuel.
- ② Unscrew the filter body support bolt from the right lower section of the rear transmission case and gently pull the filter with pliers to remove it.

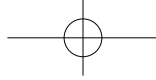
ENGINE OIL



- (1) Engine Oil Gauge
- (2) Engine Oil Cartridge
- (3) Engine Oil Filler

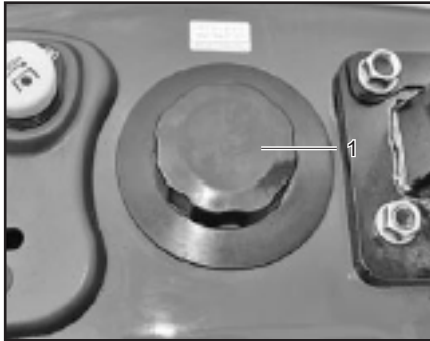
► REPLACING ENGINE OIL FILTER CARTRIDGE

- ① Remove the engine oil filter cartridge by turning it counterclock-wise with a filter wrench.
- ② Apply a thin film of oil to the O-ring of a new cartridge and install the new cartridge by tightening it with a hand. When its packing touches the sealing surface, turn it approx. 2/3 turns further with a wrench.



FUEL SYSTEM

- ③ Add engine oil to the specified level.
- ④ Run the engine for approx. 5 minutes and check for proper operation through the engine oil warning lamp. Then, stop the engine.
(This warning lamp should be turned off while the engine is running.)
- ⑤ Check the oil level with the dipstick again. If still insufficient, add more.



(1) Fuel Tank Cap



(1) Bleeding Screw

Use only low sulfur or ultra low sulfur diesel fuel.

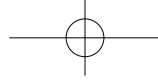
NOTE

- If foreign materials, such as dust and sand, or water are mixed in fuel, it can deteriorate the performance of the fuel injection pump. Make sure to add quality fuel through the strainer.

► How to bleed fuel system

It is necessary to bleed the system under the following conditions.

- The engine is stopped due to the empty fuel tank.
 - The filter or pipe is removed.
- ① Unscrew the bleeding screw.
 - ② Start the engine.
 - ③ When clean fuel flows out of the bleeding screw, tighten the screw.
 - ④ Repeat the procedure if the system is not bled completely.



6-14 BAD BOY TRACTOR

CHECKING AND CLEANING AIR CLEANER

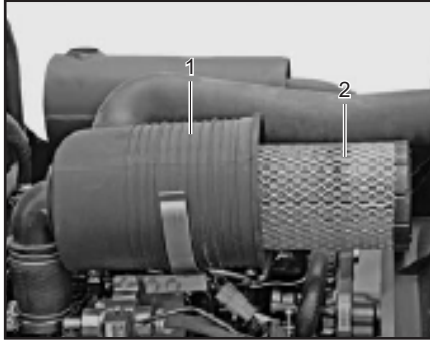
► Fuel filter cleaning and element replacing

This filter is to remove foreign material and water from fuel.

- ① Set the fuel filter cock to the 'OFF' position.
- ② Loosen the ring screw on top of the cap to remove the cap. Then,
- ③ Flush the element with diesel fuel to remove any foreign material from it.
- ④ If the element is severely contaminated, replace it with a new one.

NOTE

- Clean or replace the fuel filter every 100 hours of operation.



(1) Air Cleaner Body
(2) Element

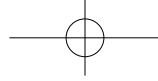
Check and clean the air cleaner according to the following instructions:

► VACUUM VALVE CLEANING

Pull out the valve with a hand and remove dust from its inside. If it is dirty or watery, wipe it with a dry rag thoroughly before fitting it again.

<Cautions for inspection and service of air cleaner>

- (1) Use the standard element and filter and do not apply oil on them.
- (2) Remove any dust in the cover thoroughly.
- (3) Install it firmly so that dust does not enter below the cover.
- (4) Never drive with the element and filter removed.



GREASING

► AIR CLEANER CLEANING

Blow compressed air from the inside toward the outside of the element. Keep proper distance between the air nozzle and element.

► AIR CLEANER REPLACING

After cleaning the element 5 times or if it is damaged, replace it with a new one.

NOTE

- Do not hit the element with a rock or concrete during its cleaning.
- Make sure to install the element firmly.
- Tighten each part of the air cleaner securely to block dust completely.

► GREASING POINTS

For general greasing points, refer to the fuel, oil and fluid specification chart.

However, add grease before work if the tractor is to be used in a wet field.

► GREASING BRAKE ARM

Remove the rubber caps on the floor and dash panel to access to the grease nipple.

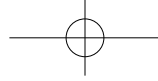
Add grease with the supplied grease gun.

CHECKING HOSES

Rubber parts, such as the fuel hose and radiator hose, are aged by time even when the tractor is not in use. Therefore, such parts should be replaced with their tightening bands every 2 years or when they are damaged.

WARNING

- If any fuel hose is damaged, fuel leaks and it can catch fire. Make sure to check the fuel hose and take a necessary action.



6-16 BAD BOY TRACTOR

CHECKING ELECTRIC SYSTEM BATTERY

DANGER

- When charging the battery after removing it from the tractor, it produces hydrogen gas, presenting a fire risk. Charge the battery only in a well-ventilated area.
- The battery produces highly flammable hydrogen gas which can explode. Keep flammable items and spark away from the battery.
- The battery electrolyte is sulfuric acid so can burn your skin and eyes. Be careful not to spill any.
- If the battery electrolyte gets on your eyes, skin, clothes or object, rinse it with water thoroughly. If you swallowed it, drink a lot of water. Also, get medical attention immediately if acid contacts your eye or is swallowed.

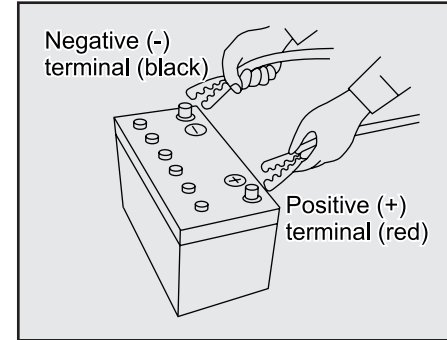


► Checking

- ① Checking battery charging level
 - If the battery is not used for over two weeks, it may become hard to start the engine. Charge the battery in this case.
- ② If the battery terminal is corroded, it cannot deliver current. If it is corroded or contaminated, wipe it with sandpaper or a brush.

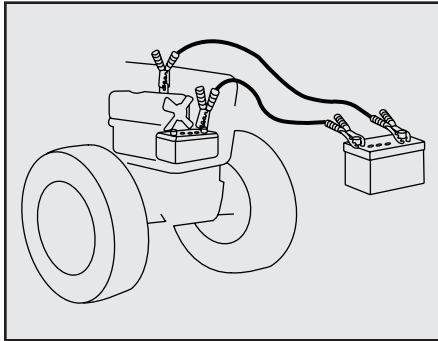
Battery Specification

12V 45AH (20HR)



► Charging

- ① Turn the ignition switch to the "OFF" position and remove the battery from the tractor.
- ② Charge the battery in a well-ventilated area.
- ③ Charge the battery with the normal procedures and avoid quick charging.
- ④ Turn the charger switch OFF and connect the cables to the negative and positive battery terminals correctly.
- ⑤ When using a charger, its charging current should be below 10 A.



► JUMP START

- ① Turn off all electric devices.
- ② Connect the positive terminal of the normal battery to the positive terminal of the discharged battery with the jump cable.
- ③ Connect the negative terminal of the normal battery to the engine body of the tractor for the discharged battery with the jump cable.
- ④ Firstly, start the engine of the vehicle with the normal battery. Then, start the engine of the tractor with the discharged battery.

- ⑤ After the engine is started, disconnect the negative cable first. Then, disconnect the positive cable.
- ⑥ Charge the discharged battery for approx. 30 minutes after the engine is started.

⚠ WARNING

- **Make sure to connect the positive terminal first and connect the negative terminal to the engine body of the tractor with the discharged battery.**

ELECTRIC WIRING

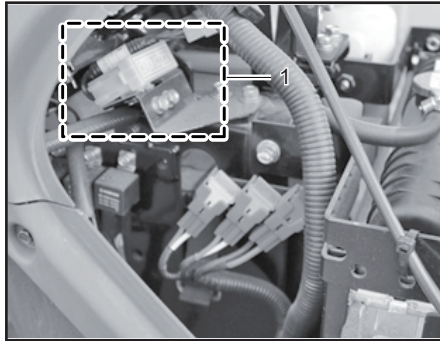
► Checking

- (1) Loose wiring terminals can cause contact failure and damaged wiring can lead to performance deterioration of electric devices, short circuit and fire. Replace or repair aged and damaged wirings.
- (2) If wiring sheath is peeled off, wrap wiring with insulating tape.
- (3) If fasteners or bands to fix wirings are damaged, fix wirings with clamps.
- (4) Have wiring checked by your workshop once a year regularly to avoid fire.



6-18 BAD BOY TRACTOR

FUSE



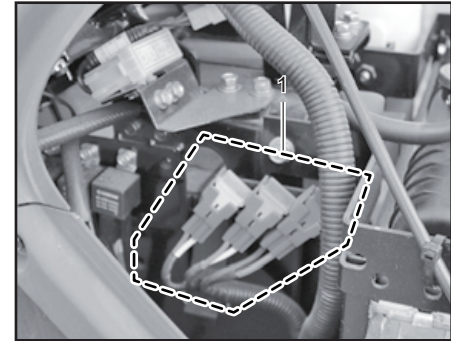
(1) Fuse box

(1) Body fuse box

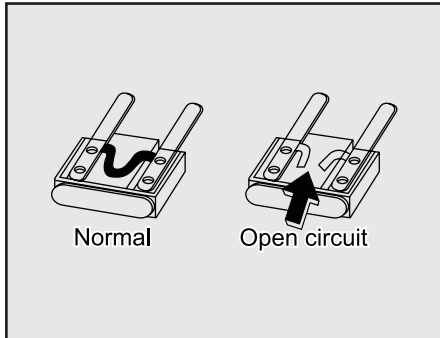
Fuses are installed in this tractor to prevent any possible accident in case of wiring circuit malfunction.

If the electric system is malfunctioning during driving, check for any blown fuse.

- ① Remove the cover of the fuse box.
- ② Remove the blown fuse.
- ③ Fit a new fuse with the same capacity.
- ④ The function and capacity of each fuse are indicated on the cover of the fuse box.

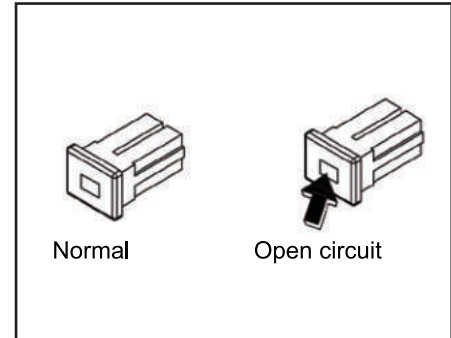


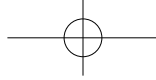
(1) High-capacity Fuse



WARNING

- If using fuses other than the specified, wirings can be over-heated, leading to a fire. Never use a fuse with different capacity. Also, never use a steel wire or foil instead of a fuse.





LAMP BULB

(2) High-capacity fuse

This tractor is equipped with three fuses for wiring.

These fuses are blown to cut current to the electric circuit in order to protect wiring. Find the cause for blown fuses and replace them with the specified genuine parts.

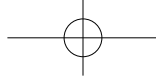
<Inspection>

Check the fuse through the transparent window to see if it is blown.

If a lamp does not come on by operating the corresponding switch:

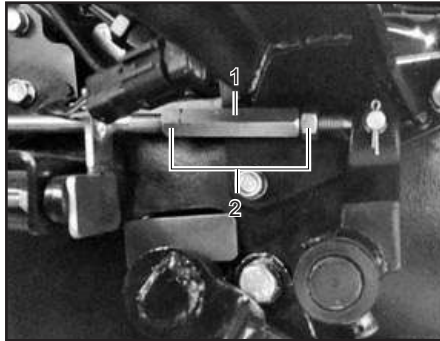
- ① Check the corresponding fuse.
- ② If the fuse is intact, remove the bulb socket from the lamp.
- ③ Remove the bulb from the socket and check for blown filament.
- ④ If the filament is blown, replace the bulb with a new bulb with the same capacity.

Bulb	Specifications
Headlamp	12V H8 35W
Turn signal lamp(Left)	12V 21W
Turn signal lamp(Right)	12V 21W
Position lamp	12V 21W

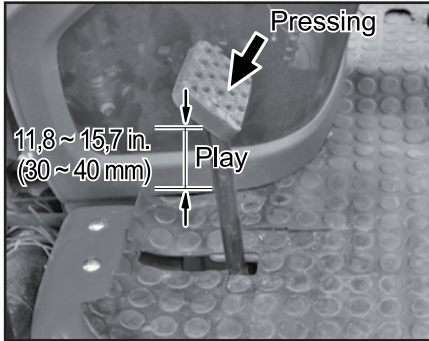


6-20 BAD BOY TRACTOR

CHECK AND ADJUST EACH PART BRAKE PEDAL



(1) Turn Buckle (2) Lock Nut



The brake pedal's play increases as it is used for an extended period of time. If its play is excessive, adjust it.

<Adjustment>

- ① Unscrew the lock nut and turn the adjusting nut to adjust the play(left and right).
- ② Turning it counterclockwise increases the play while turning it clockwise decreases the play.
- ③ After adjustment, tighten the lock nut firmly.

► Brake pedal play

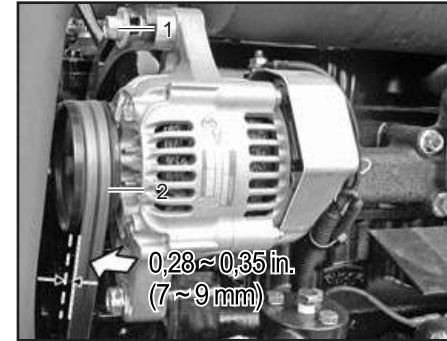
Depress the pedal lightly with a hand to check its play.

DIVISION	SPECIFIED VALUE
Play	11.8 ~ 15.7 in. (30 ~ 40 mm)

⚠ WARNING

- After adjustment, confirm the operating state.

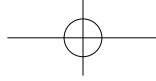
FAN BELT



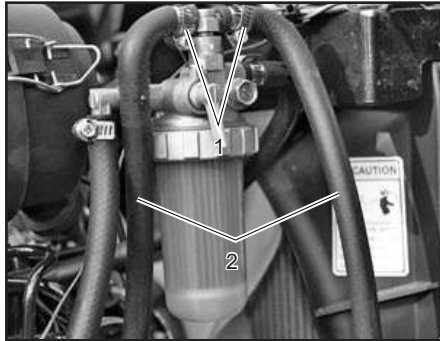
(1) Mounting Bolt (2) Fan Belt

Check and adjust the fan belt's tension periodically.

- ① Unscrew the alternator mounting bolt slightly and move the alternator to adjust the tension.
- ② Check the belt's tension. Press the middle of the belt with 13.2 ~ 15.4 lb (6 ~ 7 kg) of force. It is okay when the belt is deflected for 0.28 ~ 0.35 in. (7 ~ 9 mm).



MAIN FUEL FILTER

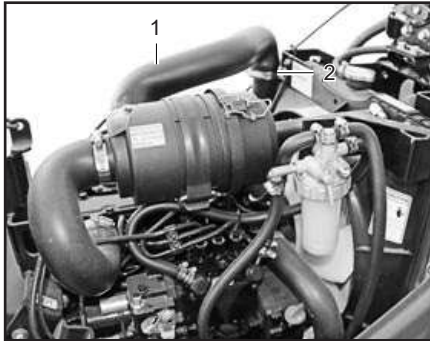


(1) Clamp (2) Fuel Hose

Check the fuel hose as follows :

- ① Stop the engine. After the engine is sufficiently cooled down, open the hood.
- ② Check if the fuel hose is damaged or leaks. Replace it if necessary.
- ③ Tighten the clamp.

AIR CLEANER HOSE

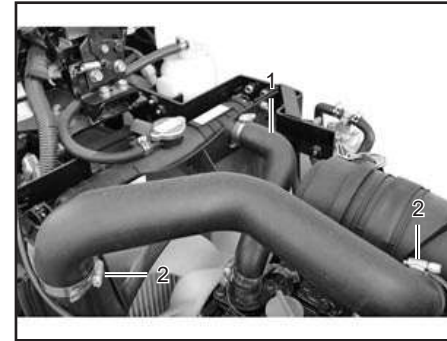


(1) Air Cleaner Hose (2) Clamp

Check the air cleaner hose as follows:

- ① Stop the engine. After the engine is sufficiently cooled down, open the hood.
- ② Check if the air cleaner hose is damaged or leaks. Replace it if necessary.
- ③ Tighten the clamp.

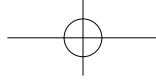
RADIATOR HOSE



(1) Radiator Hose (2) Clamp

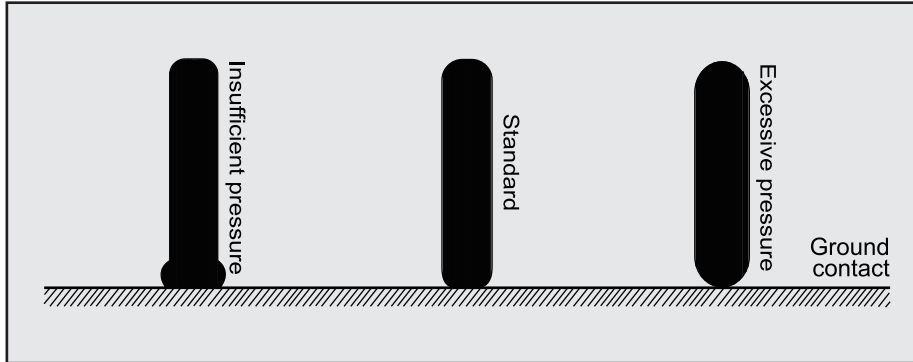
Check the air cleaner hose as follows:

- ① Stop the engine. After the engine is sufficiently cooled down, open the hood.
- ② Check if the air cleaner hose is damaged or leaks. Replace it if necessary.
- ③ Tighten the clamp.



6-22 BAD BOY TRACTOR

TIRE INFLATION PRESSURE

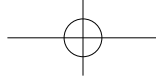


WARNING

- Make sure to keep the specified inflation pressure of the tires to avoid an accident or even death due to tire's rupture.

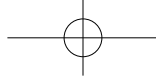
Check if the inflation pressure of the front and rear tires is correct. If not, adjust it to the specification.

Item	Tire	Standard	Pressure (kg/cm ²) / psi
		Specifications	
	Industrial Front	BAR F 18x8.5-10	1.5 / 21
	Industrial Rear	BAR R 26x12.00-12	1.4 / 20
	Turf Front TURF F	18x8.5-10	1.5 / 21
	Turf Rear TURF R	26x12.00-12	1.4 / 20



7. TROUBLESHOOTING

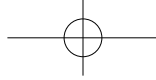
TROUBLESHOOTING - ENGINE7-2
TROUBLESHOOTING - CLUTCH AND BRAKE.....7-5
TROUBLESHOOTING - HYDRAULIC SYSTEM.....7-6
TROUBLESHOOTING - ELECTRICAL SYSTEM7-7



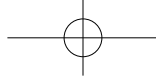
7-2 BRANSON TRACTOR

TROUBLESHOOTING - ENGINE

Symptom	Inspection item	Action
1. The starter motor does not start when the ignition switch is turned to "START".	• Is the clutch depressed?	• Depress the clutch pedal fully and turn the ignition switch to the "START" position.
	• Is the battery discharged?	• Charge the battery.
	• Is the battery terminal loosened or corroded?	• Clean and tighten the terminals.
	• Is the main fuse blown out?	• Replace the fuse.
	• Is the ignition switch broken?	• Contact the dealer for repair or replacement.
	• Is the starter motor damaged?	• Contact the dealer for repair or replacement.
2. The starter motor runs, but the engine does not start.	• Is the fuel tank empty?	• Fill up the fuel tank and bleed the system.
	• Is the fuel mixed with air?	• Bleed the fuel system.
3. The engine revolution is irregular.	• Is air mixed in the fuel system?	• Bleed the fuel system.
	• Is water mixed in the fuel?	• Drain water and replace fuel.
	• Is the injection nozzle clogged?	• Contact the dealer for repair or replacement.
	• Is the fuel filter clogged?	• Clean or replace it.

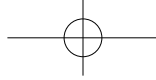


Symptom	Inspection item	Action
4. The engine is over-heated.	• Is the coolant level low?	• Refill the coolant.
	• Is the fan belt loosened or damaged?	• Adjust the belt tension or replace it.
	• Is the radiator fin clogged?	• Clean it.
	• Is the engine oil level low?	• Refill the engine oil.
	• Is the engine running under overload?	• Reduce the load.
5. The engine power is too weak.	• Is the air cleaner clogged?	• Inspect the air cleaner and replace the element.
	• Is the nozzle damaged?	• Contact the dealer for repair.
	• Is the compression force weak?	• Contact the dealer for repair.
	• Is the valve clearance adjusted properly?	• Contact the dealer for repair.
	• Is the injection timing incorrect?	• Contact the dealer for repair.

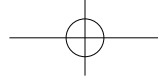


7-4 BRANSON TRACTOR

Symptom	Inspection item	Action
6. The coolant warning lamp is turned "ON" during operation.	<ul style="list-style-type: none">Is the coolant level in the reservoir tank low?	<ul style="list-style-type: none">Refill the coolant.
7. The engine oil pressure lamp is turned "ON" during operation.	<ul style="list-style-type: none">Is the engine oil level low?	<ul style="list-style-type: none">Refill the engine oil up to required level.
	<ul style="list-style-type: none">Is the viscosity of the engine oil low?	<ul style="list-style-type: none">Replace the engine oil with proper viscosity.
	<ul style="list-style-type: none">Is the pressure switch defective?	<ul style="list-style-type: none">Replace the switch.
	<ul style="list-style-type: none">Is the oil pump defective?	<ul style="list-style-type: none">Contact the dealer for repair.
8. The battery charge warning lamp is turned "ON" during operation.	<ul style="list-style-type: none">Is the alternator defective?	<ul style="list-style-type: none">Contact the dealer for repair.
	<ul style="list-style-type: none">Is the fan belt loosened or damaged?	<ul style="list-style-type: none">Adjust the fan belt tension or replace it.

**TROUBLESHOOTING - CLUTCH AND BRAKE**

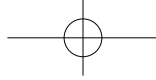
Symptom	Inspection item	Action
1. The clutch slips or does not be disengaged.	<ul style="list-style-type: none">• Is the free play of clutch pedal proper?	<ul style="list-style-type: none">• Adjust the free play of the pedals.
2. The brake does not work or works only on one side.	<ul style="list-style-type: none">• Is the free play of the brake pedals proper?	<ul style="list-style-type: none">• Adjust the free play of the pedals.
3. The brake pedal does not return to its original position properly and it makes a noise.	<ul style="list-style-type: none">• Is the brake pedal return spring damaged?	<ul style="list-style-type: none">• Replace the spring.
	<ul style="list-style-type: none">• Is each sliding part well greased?	<ul style="list-style-type: none">• Remove the rust and apply grease.



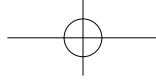
7-6 BRANSON TRACTOR

TROUBLESHOOTING - HYDRAULIC SYSTEM

Symptom	Inspection item	Action
1. The implement does not be lifted.	• Is the hydraulic flow control dial in the close position?	• Adjust the hydraulic flow control dial.
	• Is the transmission oil level low?	• Refill the transmission oil.
	• Is the air taken in the fluid suction system?	• Tighten the filter or connection parts. Replace the pipe or O-ring if damaged.
	• Is the oil filter clogged?	• Clean or replace it.
	• Is the Selective control valve lever in the detent position?	• Put the Selective control valve lever in the neutral position.
	• Is the hydraulic pump defective?	• Contact the dealer for repair.
	• Is the cylinder damaged?	• Contact the dealer for repair.
2. The implement does not be lowered.	• Is the hydraulic flow control dial in the close position?	• Adjust the hydraulic flow control dial.
	• Is the position control lever on the lowest position?	• Move the position control lever.
	• The implement cannot be lowered even though the position control lever is placed in the lowest position.	• Contact the dealer for repair.

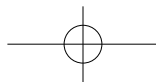
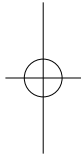
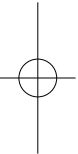
**TROUBLESHOOTING - ELECTRIC SYSTEM**

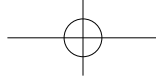
Symptom	Inspection item	Action
1. The headlamp does not turn "ON".	• Is the bulb blown?	• Replace the bulb.
	• Is the fuse blown?	• Replace the fuse.
	• Is the cable connector separated from the socket?	• Inspect it.
	• Is the contact in a poor condition?	• Inspect and clean the grounding and terminals.
2. The turn signal lamp does not come "ON".	• Is the bulb blown?	• Replace the bulb.
	• Is the fuse blown?	• Replace the fuse.
	• Is the cable connector separated from the socket?	• Inspect it.
	• Is the contact in a poor condition?	• Inspect and clean the grounding and terminals.
3. The other lamp does not turn "ON".	• Is the bulb blown?	• Replace the bulb.
	• Is the fuse blown?	• Replace the fuse.
	• Is the cable in a poor contact?	• Inspect the cable and secure the contact.
	• Is the switch defective?	• Replace the switch.



MEMO

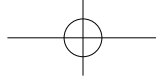
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8. STORAGE AND DISPOSAL

DAILY STORAGE	8-2
LONG-TERM STORAGE	8-3
OPERATING TRACTOR AFTER LONG-TERM STORAGE	8-6
USAGE AND DISPOSAL.....	8-7



8-2 BRANSON TRACTOR

DAILY STORAGE



After work, clean the tractor and dry the moisture and supply grease into each grease nipple.

Avoid water on electrical parts whenever possible, as it will cause equipment breakdown.

1. Store the tractor after cleaning it. Especially, clean it thoroughly after harrowing or working in a wet field.
2. Be sure to lower the implement.
3. Store it indoors if possible. If it should be kept outside, cover it.

CAUTION

- Unless the battery is removed from the vehicle, make sure to disconnect the negative(-) battery cable. The wiring can be gnawed by rodents, leading to a fire.

4. Remove the battery from the tractor in winter and store it indoors for easy starting.
5. Add anti-freeze to the tractor in winter season in order to prevent the radiator from freezing.
6. Remove the ignition key and store it separately.

DANGER

- When covering the tractor, make sure that the engine or the muffler has fully cooled down.

[Otherwise]

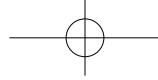
There is a risk of fire.

CAUTION

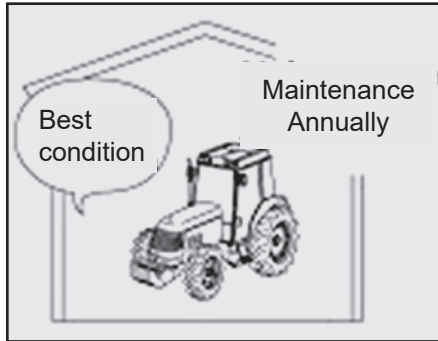
- When carrying out checking, maintenance, or repair, make sure to turn off the engine.

[Otherwise]

There is a risk that you may be entangled in the tractor or get injured.

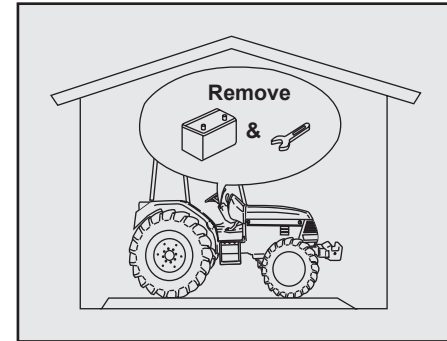


LONG-TERM STORAGE



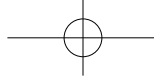
If you carry out maintenance during the off season, you can ensure optimum condition of the tractor as well as safe and comfortable working conditions during the busy season. Also, in order to secure the safety of each part of the tractor and to prevent an accident that may occur due to poor maintenance, arrange with your authorized dealer for periodic maintenance once a year.

In particular, we recommend that the electrical cables and the rubber hoses, such as fuel hose, steering hoses and radiator hoses, be replaced every two years.



If the tractor is not used for a long time, store it in the following manner.

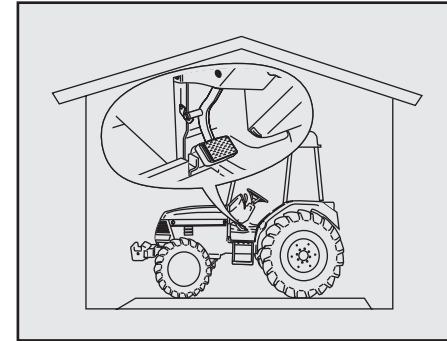
1. For long storage, put the ignition switch to "OFF".
2. Select a dry and well-drained place for storage. Remove detach the weight & implement or put it down onto the ground.
3. Fill up the fuel tank. Empty space in the fuel tank will produce dew-



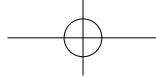
8-4 BRANSON TRACTOR

drops that will produce condensation that will be the cause of rust formation. And lock the fuel cock to "C". (Closed)

4. Disconnect the battery completely and store it away from the tractor in a well-ventilated, dry, dark place if possible. When the battery is attached to the tractor, make sure to connect the (+) terminal first.
5. Change the engine oil and run the engine to circulate oil throughout all the engine parts for about 5 minutes.
6. Drain the coolant from the radiator. After draining the coolant, attach a tag of "No coolant, do not start" to the steering wheel. If there is anti-freeze in the cooling system, it is not necessary to drain it.
7. Check the bolts and nuts for looseness, and tighten if necessary.
8. Add oil, fluid and fuel to each part according to the maintenance chart.
9. Apply a slight coat of grease or oil onto the tractor parts where is easy to be rust such as bare metal surface.
10. Inflate the tires to a pressure a little higher than usual.
11. Place chocks behind and in front of the rear wheels.
12. Store it in a dry indoor place to avoid rain or snow and cover the body.



13. Keep the clutch pedal in a depressed position to avoid rust on the clutch.
14. Put all controls into the neutral position.

**⊕ IMPORTANT**

- When cleaning the tractor, be sure to stop the engine. Allow sufficient time for the engine to cool before washing.
- Cover the tractor after the muffler and engine have cooled down completely.

⚠ WARNING

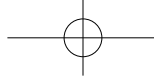
- Carry out maintenance on a flat and safe place where the tractor will not fall or move and there is no traffic danger. Also, block the front tires to prevent moving of the tractor. Otherwise, there is a risk of accident, such as overturning of the tractor.

⚠ WARNING

- Carry out checking and maintenance for each part every year.
- In particular, replace the fuel hoses and the steering hoses every two years. Otherwise, there is a risk of accident or machinery breakdown due to poor maintenance.
- When carrying out checking or maintenance, make sure to stop the engine.
- Replace the covers that have been defected for checking or maintenance.
- Carry out checking or maintenance after heated parts, such as muffler, engine or transmission, have fully cooled down. Otherwise, there is a risk of getting burnt.

⚠ CAUTION

- To avoid a personal injury,
- Never clean the tractor body while the engine is running.
 - Never run the engine in an enclosed area without proper ventilation system in order to prevent poisoning by exhaust gas.
 - When storing the tractor, remove the key from the switch and store it separately in order to prevent an unauthorized person from operating the tractor and being injured.



8-6 BRANSON TRACTOR

OPERATING TRACTOR AFTER LONG-TERM STORAGE

Keep the following instructions when operating the tractor after its long-term storage.

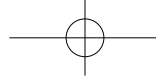
1. Perform the inspection procedures before operation.
2. Check the tire air pressure and inflate the tires if it is low.
3. Install a fully charged battery. Check that the battery is fully charged before installing it.
4. Check the fan belt tension.
5. Check all fluid levels. (Engine oil, transmission/hydraulic oil, and engine coolant)
6. Remove grease from the exposed cylinder rod.
7. Apply grease to the lubrication points.
8. Remove the cover from the exhaust pipe.
9. Get onto the tractor and start the engine. To prolong the life and to enhance the performance of the engine, idle the engine for about 30 minutes before starting work.

10. Start the engine, release the parking brake, and check the brake condition by depressing the brake pedal. Adjust the free play of the brake pedals if necessary.
11. Check if the instrument panel and all parts operate correctly while running the engine for a few minutes.
12. Drive the tractor outside and check if it is operating properly. Park the tractor outside and idle the engine for at least 5 minutes. Stop the engine and visually inspect the tractor. Check if there is leakage.
13. Stop the engine and check for leakage. Repair any part as required.



WARNING

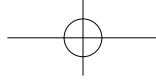
- **When operating the tractor in an enclosed area, ventilate the area to release exhaust gas to the outside. Exhaust gas is colorless and not visible, but is harmful.**



USAGE AND DISPOSAL

It is recommended to keep the following to protect the environment:

1. Overload on the machine shortens the product life and increases the harmful exhaust gas which causes air pollution due to the incomplete combustion.
2. When changing the fluid (engine oil, transmission/hydraulic oil, and engine coolant) by yourself, be careful not to spill it and dispose used oil and coolant properly according to the applicable regulations. Otherwise, it can pollute the ground and water.



MEMO

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