# Operating Instructions

## Brush Rover 4WD

## RM982F

- **Please fully read and understand all the important points in these instructions before operating this machine.**
- **When you purchase this machine, please ask the retailer to explain the Safest way to operate it.**
- **Please keep these operating instructions and the warranty safe so that they may be easily referred to at anytime.**

**OREC America, Inc.**

(To the retailer)

Please inspect this machine before shipping it to the customer, and register for warranty at
www.orecamerica.com/warranty

## Getting Started

Thank you for purchasing this machine. These instructions explain the correct and easy way to always keep this machine in fine working order and how to operate it safely and effectively.

Please read these instructions fully before using this machine in order to understand the safest, most efficient way of operating it, and the correct way to look after it.

Please keep these instructions in a safe place where they can be easily referred to at any time. We hope you will use this machine for many years to come.

Please understand that ongoing improvements in quality and performance, and other possible parts changes may cause the actual machine to vary slightly from what is described in these instructions.

## Machine Regulations

This machine is designed to cut overgrown weeds and brush; it is not a lawn mower. Therefore, it doesn't offer the same quality cut as a finishing mower. This machine is best suited for agricultural areas and is intended mainly for commercial users.

## Definitions and Symbols

In these instructions, the following labels and definitions are used to indicate the level of danger that exists. Please obey the following warnings and have a full understanding of the meaning of the symbols.

| Symbol | Definitions |
|---|---|
| ⚠ DANGER | You will be killed or seriously hurt if you don’t follow instructions. |
| ⚠ WARNING | You can be killed or seriously hurt if you don’t follow instructions. |
| ⚠ CAUTION | You can be hurt if you don’t follow instructions. |
| NOTICE | Displayed when it is important to know about operation and maintenance specific to this machine, or at times when misunderstandings or mistakes are common. |

# Contents

**For Safe Operation....4**
Warning Labels....5
Important safety points....6
**Names of Parts....13**
**Working of Each Part....14**
**How to Assemble the Machine....17**
**Effective Operation of the Machine....19**
Initial inspection before running the machine....19
How to start and stop the engine....20
How to Drive, Change Speed, Turn, Stop (Park)....23
How to load and unload....25
How to adjust the height of the steering wheel....30
**Oil Parts Inspection, Replacement, and Lubrication....30**
Transmission oil lubrication, inspection, and replacement....30
Engine oil inspection, replacement, and lubrication....31
Replacement of oil filter....31
Inspection, Replacement, and lubrication of HST oil....32
**How to Lubricate Each Part....34**
**How to Inspect, Maintain and Adjust Each Part....34**
How to clean the air filter....34
How to inspect and adjust the spark plug....35
How to inspect fuel lines....35
How to clean the fuel filter....36
How to adjust tire pressure....36
How to clean engine coolant....36
How to adjust each cable, belt and rod....37
Precautions in cold climates....40
Long-term storage of the machine....40
**Blade Inspection and Replacement....41**
How to inspect the blades....41
How to replace the blades....42
How to fix the blades....43
**How to maintain and inspect the battery....44**
Rehydration and replenishment of battery fluid....44
The process of removing the battery....44
Auxiliary Charging....45
Installation Procedures....45
**Specifications....46**
**Included Parts and Tools....47**
**Consumable Parts....47**
**Periodic Voluntary Inspection Table....48**
**Parts Supply Term limit....50**
**Limited Warranty....51**
**Warranty Claim Procedure....52**

## For Safe Operation

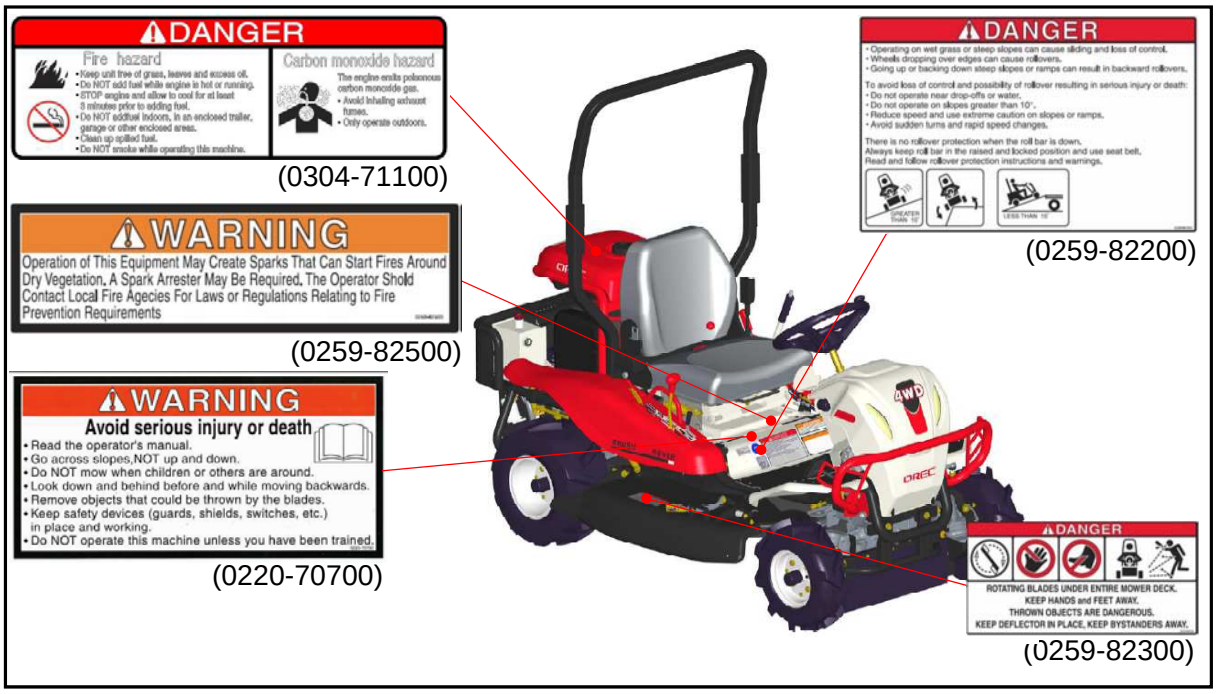
Please read these instructions regarding safety and operation before operating this machine. In order for this machine to operate at its highest capacity, please perform maintenance and inspections as recommended in this manual.

## Warning Labels

The warning labels are attached to the machine to draw attention to potentially serious dangers. Please be sure to fully understand the meanings of the warning labels before operating this machine.

・Always wear safety glasses or goggles and ear protection while operating the machine.

・Keep body parts away from rotating parts.



Position of labels affixed to installed engine will be slightly different.

NOTICE

- **In the case that these warning symbols become difficult to see, please replace them so that they can be easily seen and understood.**

## Important Safety Points

This machine is equipped with a high-powered engine and fast moving blades. Misuse of this machine can result in serious injury or death. Before using this machine, please be sure to read these instructions and understand and obey the following warnings.

### ■ Notes for the operator of this machine

⚠ WARNING

- The operator of this machine should fully read these instructions. You can safely use this machine only after gaining a full understanding of its operation and safety use guidelines.
- Operate this machine only after fully reading and understanding the included engine instructions that are included.
- The operation and maintenance of this machine should only be performed by trained persons.
- Do not allow children, expectant mothers or any untrained person to use this machine as accident and injury can result. Also, please check and observe local laws which may place age limits on the operation of machinery.
- Do not operate if suffering from fatigue, illness or if under the influence of alcohol or drugs. Accidents and injury can result from operation of the machine in these situations.

### ■ When lending this machine to another person

⚠ WARNING

- When lending this machine to another person it is the owner's responsibility that the following conditions are met:
- The owner should explain how to operate the machine and have the new operator fully read these instructions. The owner should then guide the new operator until they have a comprehensive understanding of the machine's operation and safety guidelines. The owner should lend these instructions to the new operator.
- When lending this machine to a person who cannot read English, the owner should take responsibility for fully explaining its safe operation.
- Before lending the machine to another person, the owner holds responsibility for the management of this machine, including checking that all parts are correctly attached and that all functions are working correctly.

### ■ Managing gasoline safely

⚠ DANGER

- Under no circumstances should you handle gasoline in the presence of lit cigarettes, open flame, or other sources of ignition. Gasoline is an extremely flammable liquid and there is a danger of fire and explosions.

### ■ Caution when starting the engine

⚠ DANGER

- Do not run the engine in a place that is poorly ventilated. Engine exhaust is odorless and contains carbon monoxide which can cause death or serious injury.

**⚠ WARNING**

- Store gasoline and oil safely away from sources of flame, and out of the reach of children. Accidents and injury can result.
- Please refuel in a place that is well ventilated. As gasoline is a highly volatile substance, you may become ill if you operate the machine in a poorly ventilated place.
- Do not open the fuel cap while running the engine.
- When refueling, be sure to stop the engine and allow it to cool down. There is a danger of suffering burns.
- When refueling, be sure not to fill the fuel tank over the maximum level. If you do overfill the fuel tank, remove fuel until it sits below the maximum level. Over-fueling can cause fire and other accidents.
- After refueling, securely close the fuel cap and store the machine in a safe place with no sources of ignition. There is a danger of fire.
- If you spill gasoline, move the machine a safe distance away without starting the engine. Starting the machine in close proximity to a fuel spill can result in a fire or other accidents. Use a waste cloth to wipe away the excess gasoline and dispose of the cloth according to local laws and regulations.
- Be sure to change your clothes immediately if they come into contact with gasoline. There is a danger that any gasoline on your clothes could ignite or cause you to feel ill.
- Do not refuel in places such as inside a car or on a truck, as they could move unexpectedly. Refuel after placing your fuel container safely on the ground, away from vehicles. Fuel spills can cause fire and other accidents.
- Do not remove the refueling nozzle from the fuel tank until you have finished refueling. Fuel spills can cause fire and other accidents.
- Do not use a type of gasoline other than that specified. There is a danger of fire and explosions.
- Do not allow highly flammable substances to be near the engine or the path of the exhaust as this can cause a fire.
- Do not touch the engine or muffler, as they become extremely hot during operation and can cause severe burns. Be especially careful when getting on and off the machine.
- Do not allow weeds and leaves to accumulate in the engine or the HST unit. Be especially careful of accumulation in the recoil cover, HST fan cover, air filter, and near the muffler. Overheating and fire can result.
- Before starting the engine, always sit the seat, and make sure the cutting height adjustment lever is all the way up, the brake pedal is engaged (or locked), and the blade clutch is in the [OFF] position.
- After starting the engine with the blade clutch in the [OFF] position, check the V-belt to be absolutely certain that it is not moving. If the V-belt is moving even a little, immediately switch off the engine and adjust the belt guard and the cables. Taking these precautions can avoid injury and accidents.
- Do not modify the engine as this can cause accidents or explosions. Altering this machine in any way will void the warranty. Orec America, Inc. will bear no responsibility for damage or injury caused by alterations or modifications.
- Do not try to alter the position of the engine governor or change the set rotation speeds.

## ■ Caution when loading and unloading

**⚠ WARNING**

- When using a truck to load or unload the machine, use caution and be certain to park on a flat and safe surface. A truck moving suddenly can cause injury and accidents.
- Attach a gently sloping ramp securely to the truck's loading platform and lower the engine speed. Proceed with caution as injury and accidents can be caused by the machine tipping over or running out of control.
- Do not move the drive clutch lever while on a slope, as this may cause accidents or injury.

## ■ Before operating the machine

**⚠ WARNING**

- Do not drive on public roads. Please be aware of the regulations and the dangers of operating this machine near public roads.
- Please be sure to check the effectiveness of the brake each time. Failure to check and adjust the brakes may cause serious accidents or even death. Please check for one or more of the following:

(1) The machine doesn't move if two adults push the machine when the drive clutch lever is [OFF] position and the parking brake is applied.
(2) The tires lock up when the emergency brake is applied while the machine is in use.
(3) The machine doesn't move on a slope when the parking brake is engaged.

- Absolutely do not try to modify this machine (including modification of the protective cover and safety cover) as this can cause injury and accidents. Altering this machine in any way will void the warranty. Orec America, Inc. will bear no responsibility for damage or injury caused by alterations or modifications.
- Do not change or tamper with the safety apparatus. Inspections should be performed periodically to ensure the safety apparatus is working correctly.
- For safety reasons, use the recommended accessories and attachments that are best suited to the ground you are working on and the type of work you are performing.
- This machine is for a **single passenger** only. Do not let other adults, children, or pets ride on the machine. Doing so can cause injury to the other people/pets and damage to the machine.
- Wear suitable clothing when operating this machine. Please wear the following items to protect against injury and reduce the possibility of accidents.

  Long sleeves, long pants  Protective glasses
  Non-slip shoes  Gloves
  Helmet  Ear Protectors

  Cuffs and hems of loose clothing and jewelry can become entangled in the machine. Avoid wearing such items to help prevent injury and accidents. Long hair should be tied up inside a helmet.
- Ensure that no part of your body comes into contact with the moving blades of this machine. There is the possibility of serious injury such as the severing of hands and feet.
- Do not remove any parts of this machine that have been fitted as standard. To prevent accidents, be sure to use all covers and parts in the same state in which they originally came.

- Be sure that there are no people, animals or vehicles close by. Taking these precautions can avoid injury and accidents.
- Before starting the machine, remove any rocks or branches that could be thrown from the machine and cause injury to bystanders or damage to the machine. In fields with rocks and loose branches, please operate the machine with the blade set higher for safety. Locking knives or scattering rocks may cause serious injury.
- When working in a dangerous area, erect markers to prevent you from mistakenly getting too near to obstacles, ditches, soft path edges, slopes steeper than 20°, or uneven ground.
- Display a “MOWING” sign and erect a guard rope to prevent people (especially children) from coming within 100 FEET of the machine. The grass clippings will be discharged from the right rear of this unit. However, objects like debris, stones, wood etc. may come out from all directions of the mowing deck.
- Use this machine during daylight or with sufficient artificial light only. Do not operate this machine at night when poor visibility will not allow you to be fully aware of your surroundings. Not being able to notice dangerous objects and bystanders is a cause of serious injury and accidents.
- Do not use this machine on wet grass. It is easy to slip on wet grass, causing injury and accidents.
- When you identify areas on the machine that are in need of maintenance, please turn off the machine and ensure that the repairs are completed before starting the machine again.
- Always check that the tire mounting bolts are securely tightened. If these are loose, please tighten.
- It is very dangerous if the blade comes off. Please tighten the nuts and bolts of the blade set. If the blade is getting old, replace it with a new one.
- It is very dangerous to operate the machine while the blade replacement cover is open. Make sure it is always closed. The blade replacement cover should only be opened when replacing the blade. It should remain closed at all other times.

## ■ Using the roll-over protection

⚠ WARNING

- To avoid injury or death from roll-over, keep the roll bar in the raised locked position and use the seatbelt.
- Lower the roll bar only when absolutely necessary.
- There is no roll-over protection when the roll bar is in the down position.
  -Do not wear the seat belt when the roll bar is in the down position.
  -Drive slowly and carefully.
  -Raise the roll bar as soon as clearance permits.

## ■ Spark arrester (optional)

⚠ WARNING

- This product is NOT equipped with a spark arrester. In some areas, it is illegal to operate the engine without a spark arrester. Please check local laws and regulations. An optional USDS approved spark arrester is available through your engine service dealer.

**Spark arrestor (Briggs & Stratton) item code: 88-794945**

## ■ Caution during operation

**⚠ WARNING**

- For safety reasons, do not make sudden starts/stops or sharp turns.
- During operation, blades, chains and belts are hidden by a cover, be sure to keep hands and feet well away. Touching these parts can cause serious injury such as the severing of limbs.
- Do not operate the machine with the side cover raised. There is a danger of injury and damage from rocks and other debris being thrown from the blades.
- This machine is designed to minimize flying debris but there is the possibility of flying debris coming out of the cutting structure. For this reason, do not work under the assumption that debris cannot fly out and hit people and property.
- During operation, the rotating blades come right to the edge of the blade cover. Under no circumstances should you put your hands inside the cover to try to clear weeds, etc. Taking necessary precautions in regard to the blade can avoid injury.
- Before removing entangled weeds or other foreign objects, be sure to stop the engine, let it cool and then remove the spark plug cord. Check that the blades have stopped moving before carefully removing any entangled material.
- Remove accumulations of weeds or leaves from the cooling fan, the exhaust pipe and the muffler to help prevent engine trouble and possible fire.
- Be sure that there are no people, animals or vehicles close by. When operating this machine, always maintain a distance of **over 100 FEET** between you and bystanders. If people or animals come near, release the blade clutch and switch off the engine. Taking precautions can avoid injury and accidents.
- Take care to move and turn the machine gently. Stop the blades when not cutting weeds or brush. Taking such precautions can avoid injury and accidents.
- If you notice any unusual noises, odors, heat or vibrations during the operation of this machine, switch off the engine immediately, remove the spark plug cord and ensure that all movable parts have completely stopped. Have the machine inspected for damage and obstructions, and have any damaged parts repaired before using.
- Watch for holes in the ground and protruding tree roots. Also watch for obstructions that could be hidden in long weeds or brush. Operating the machine on rough ground may cause you to lose your grip on the handle, causing injury and accidents.
- Be careful when approaching blind corners, bushes, and trees which block your line of sight. Such obstructions can keep children and animals hidden from the view.
- Do not operate this machine near rivers and drop-offs, people and buildings. Accidents can be caused by falls and collisions
- When moving the machine backwards, check that there are no people or obstacles behind you. When reversing, there is a danger of being trapped between the machine and a wall or falling from drop-offs.
- Do not leave the machine unattended with the engine running. When you leave the machine, always stop the engine and lock the parking brake pedal and unplug the ignition. After operating, keep the fuel valve closed.

**⚠ CAUTION**

- If you do hit something when operating the machine, switch off the engine immediately. Confirm that the blades have stopped moving and then check them for

damage such as bending and twisting.
- Check all areas of the machine for damage and have parts repaired or replaced if necessary.

## ■ Using the machine on slopes

⚠ WARNING

- When operating on slopes, serious accidents can be happened if you slip and the machine rolls over. Be especially careful when working in such areas and stop operating the machine immediately if you feel there is any danger at all.
- Do not operate the machine on slopes of more than **20°.**
- Maintain a constant speed on the slope and refrain from unnecessary gear shifting as there is a risk of falling and slipping.
- There is a risk of collapse and falling from the shoulder when driving on the shoulder between a flat area and a sloped area. Operate the machine on flat safe ground.
- Do not change directions on a slope. The machine could roll over, causing injury and accidents.
- Do not operate the machine on wet slopes. It is easy to slip on wet grass and suffer injury and accidents.
- Watch for holes in the ground and protruding tree roots. Also watch for obstructions that could be hidden in long weeds and brush. You can lose control of the steering wheel, causing injury and accidents.
- When operating on slopes, do not leave the machine with its clutch off or the speed change lever in neutral. The machine could run out of control, causing injury and accidents.

## ■ Children

⚠ WARNING

- When operating this machine, be particularly aware of children. Children are often interested in mowers and may be drawn to you. As children may not be concentrating on their surroundings, tragic accidents can occur if you take your eyes off of them. Please be keenly aware of the following points:
- Do not allow children to come into the area where you are working. Make sure that young children are securely in the care of an adult other than the operator.
- Switch off the engine immediately if children enter the area where you are working.
- Do not allow children to operate the machine. Check and obey local laws which may place age limits on the operation of machinery.
- Be careful when approaching blind corners, bushes, and trees which block your line of sight. Such obstructions can hide children from view.

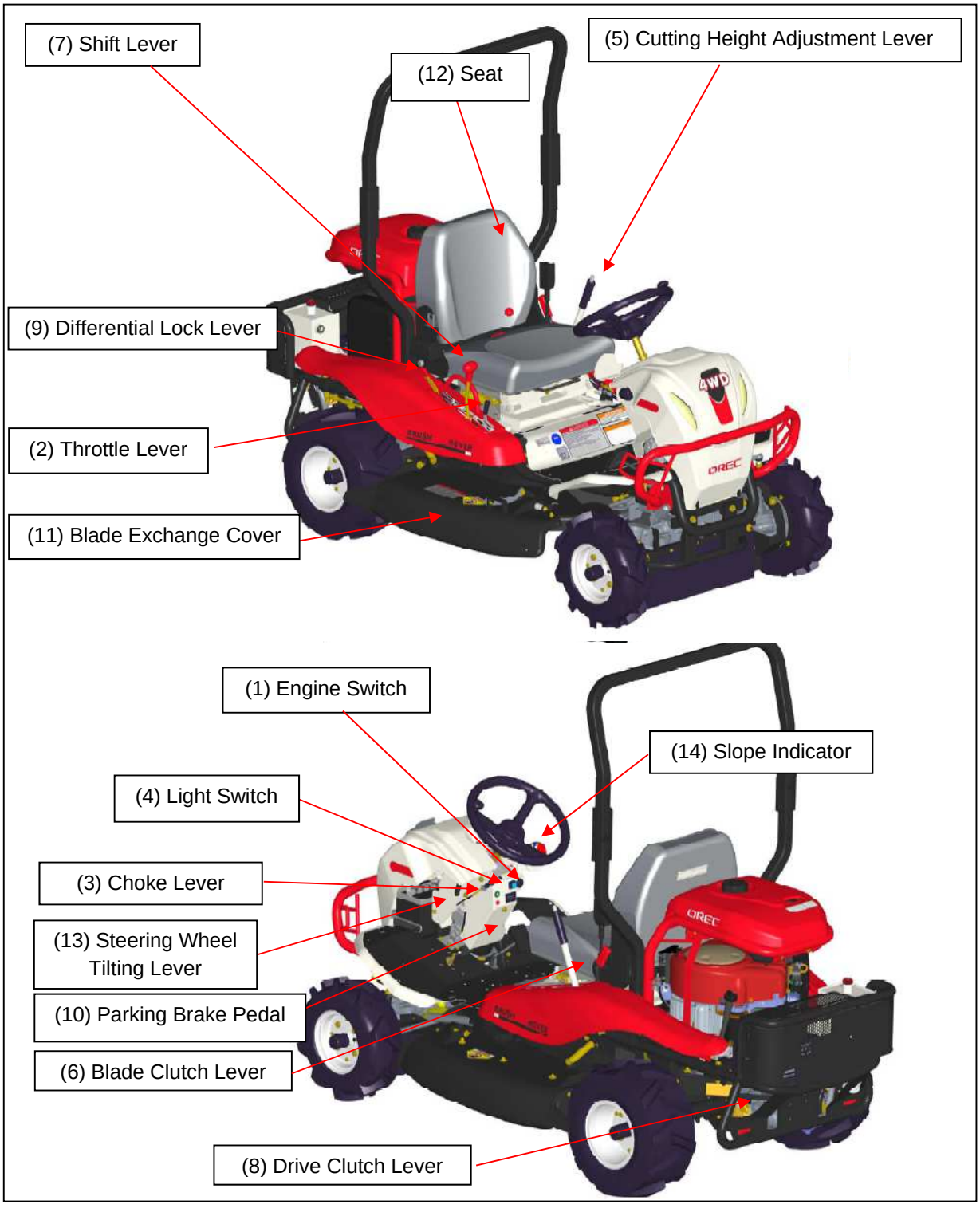
## ■ Maintenance

**⚠ WARNING**

- Be sure to switch off the engine and remove the spark plug cord before performing any inspection, adjustment or maintenance on this machine.
- When performing inspection, adjustment or maintenance, use appropriate tools in order to work as safely as possible.
- Regular inspections are essential to maintain the quality and performance of the machine. Be sure to conduct beginning, monthly, and annual inspections. Orec America is not responsible for accidents or damage resulting from failure to perform regular maintenance and inspections.
- This machine is equipped with extremely sharp blades. When inspecting or handling the machine, do not directly touch the blades. Exercise caution by wearing gloves and wrapping the blades in cloth. If you notice any abnormalities in the blades, do not try to repair them, but have them replaced. Taking this precaution can avoid injury and accidents.
- Damage to the belt cover, blade cover, or flying debris prevention cover, could cause injury or accidents. Be sure to have any damaged parts replaced before using the machine again.
  If there is something wrong with the machine during the operation, stop working to check immediately, and check again after work, and make any necessary repairs.
- Be sure to check that the covers of rotating parts are refitted correctly in their original positions after being removed. Poorly fitted covers could open during operation and cause serious injury.
- Check that all nuts and bolts are securely tightened.
- Perform comprehensive inspection and adjustment of parts such as the drive clutch, blade clutch, brake, throttle, and gear change.
- When rubber fuel lines become old, they can split and dangerous fuel leaks can occur. Change rubber parts immediately if they split, or every 3 years regardless of damage. At this time, also change the fastening bands for the new parts.
- Be sure to check that the bolts in the wheels and blades are tightly fastened. Make sure that the detachable cover used for changing the blades is closed before operating the machine.
- When replacing the blades, also replace the attached nuts and bolts as there is a possibility of accidents caused by worn or damaged parts. Never substitute nuts and bolts with those that are not recommended.
- Remove fuel when storing or transporting the machine. Accidents and damage can be caused by fuel spills or fuel that has expired.
- When storing the machine, place it on a flat surface away from sources of flame. Taking precautions can avoid accidents and damage.
- Before storing the machine, remove foreign material such as weeds and leaves. Clean away any oil spills or fragments stained with oil.
- Make sure that the engine and muffler have completely cooled down (at least 5 minutes) before inspection and maintenance, or before putting on the storage cover.
- For safety reasons, replace the parking brake shoe and the entire blade brake before they reach 100 hours of use.

Depending on operating conditions, there may be occasions when incidents arise which are not covered by the warnings in this manual. The operator should always use common sense and put safety first when using this machine.

**Names of Parts:**



## Working of Each Part:

**(1) Engine Switch**
Insert for the key, and operates [START], [RUN], and [OFF].

**(2) Throttle Lever**
Adjusts the engine speed by [LOW] - [HIGH].

**(3) Choke Lever**
Used to start the engine during cold weather. [CLOSE] position by pulling, and [OPEN] position by putting back. This operation is not necessary when the engine is warm.

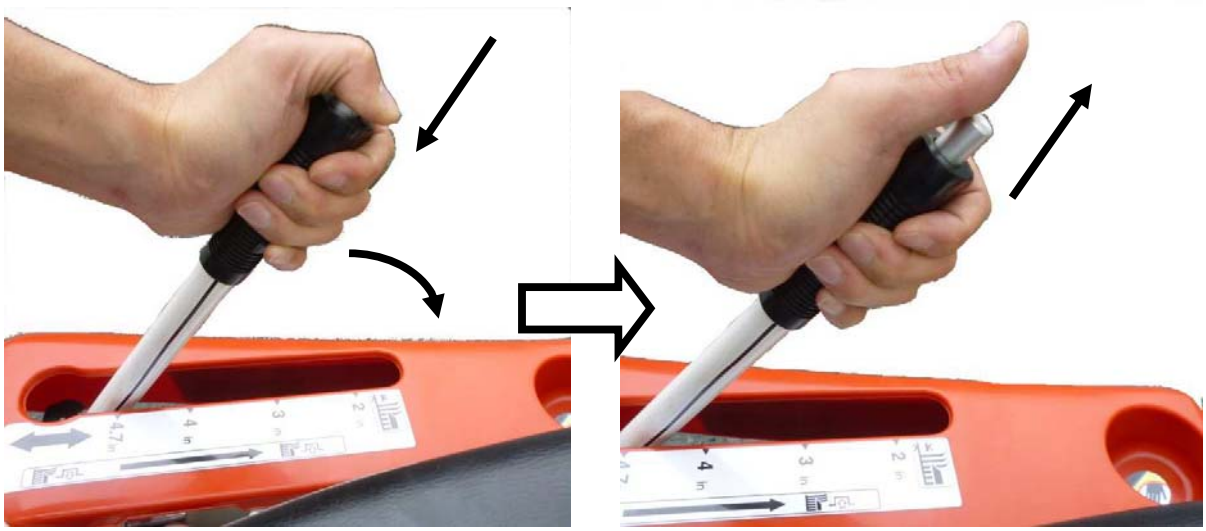
**(4) Light Switch**
Pressing the switch once: [ON]; and pressing the switch again: [OFF]. The switch turns blue when the light is [ON].

**⚠ WARNING**

- This light is for driving only. Do not use it for operation. It may cause a risk of falling if the operator suddenly enters dangerous surroundings. Drive at a slow speed when the light is turned on.

**(5) Cutting Height Adjustment Lever**
This machine can be set to any height between 2" (50mm) and 4.7" (120mm). Press the cutting height lock button with your thumb at the tip of the adjustment lever. Move the lever to the height of your choice and release the button to set the height. Use the label on the right of the position lever as a guide when adjusting the cutting height (shown in 1inch increments).

◇◇***When the cutting height adjustment lever is NOT all the way up, the engine will not start***◇◇



The height of the knife blade when the knife is rotating is different than when the knife has stopped (the knife is lifted because of high speed centrifugal force). The scale is the number of knife rotations. Please be aware of the actual cutting height as you work.

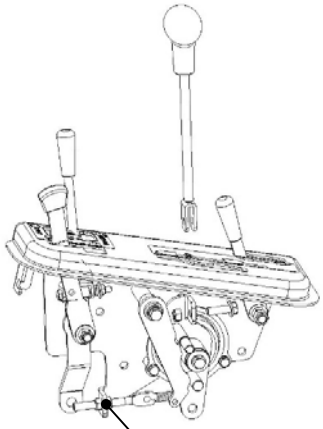
**⚠ CAUTION**

For safety reasons, please be sure that the cutting height adjustment lever is all the way up when driving but not mowing, when you leave the vehicle, and when driving in reverse.

**(6) Blade Clutch Lever:**

Operates by turning the power transmission [ON] / [OFF].

◇◇***The blade clutch lever cannot be operated when the cutting height adjustment lever is all the way in the up position.*** ◇◇




**(7) Shift Lever:**

Use this lever for driving, stopping operations, and adjusting the direction and speed of travel. Moving the shift lever from the [Neutral / N] position to forward will put the machine in [Forward / F], and moving it backwards will put it in [Reverse /R]. You can increase or decrease the speed by moving the lever further forward or backward. Using the adjustment screw allows you to keep the lever engaged with minimum pressure.

**(8) Drive Clutch Lever:**

The drive clutch lever engages and disengages the transmission. <u>Always operate the machine with the drive clutch lever ON.</u> When you need to move the machine with engine OFF, move the lever to the OFF position. It enables you to move the machine manually.

******The drive clutch lever is located at left rear side of the machine.

**(9) Differential Lock Lever:**

Normally use the lever in the [OFF] position. To keep the rear wheels from slipping on soft and/or sloping ground, or when loading and unloading from trucks or trailers, turn the differential lock lever to the [ON] position on both rear tires to increase the turn radius. **<u>However, engaging the differential lock on flat land will increase the turn radius too much, and could cause damage to the tires or the transmission.</u>**

**(10) Parking Brake Pedal:**

If you fully depress the pedal in an emergency situation, the machine will stop and the shift lever will go back to the [NEUTRAL / N] position. Please always be sure to shift using the shift lever. If you lock with the brake stopper while engaging the pedal, the emergency lock will become engaged. If you depress the pedal deeper, the lock will be released.

◇◇***If the brake pedal is not fully depressed, the engine will not start.*** ◇◇

**(11) Blade Exchange Cover:**

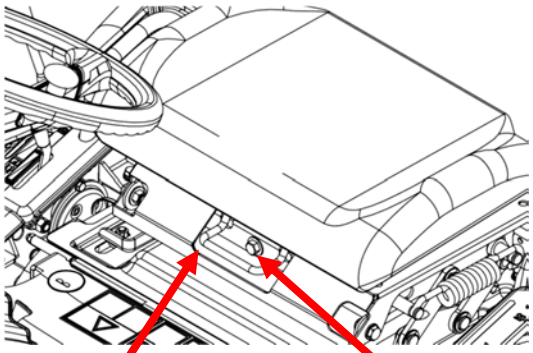
Used only for inspecting or changing the blade. At all other times please keep the cover closed.

**⚠ WARNING**

**Make sure the cover is closed during operation.** If the cover is open during operation, stones or other objects may be thrown and cause serious injury.

**(12) Seat (Seat Suspension and Seat Slide Functions):**

For safety reasons, always be seated when the engine is on. The seat position can be adjusted by the seat slide adjuster.
The seat suspension can be adjusted by the strength of the spring force of the suspension adjustment bolt. Tightening the bolt makes stronger and loosening the bolt makes weaker.




***◇◇After the engine has started it will be stopped for safety reasons, if the operator leaves the seat, if the cutting height adjustment lever is down, or the parking brake is not engaged◇◇***

**(13) Steering Wheel Tilting Lever:**

Loosen this lever when you need to adjust the steering wheel angle for suitable position. Once you set the angle, please make sure that the lever is tightened enough. Do not change the angle of steering during operation.

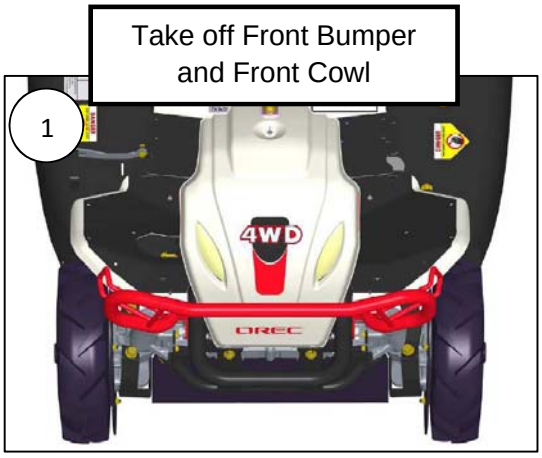
**(14) Slope Indicator:**

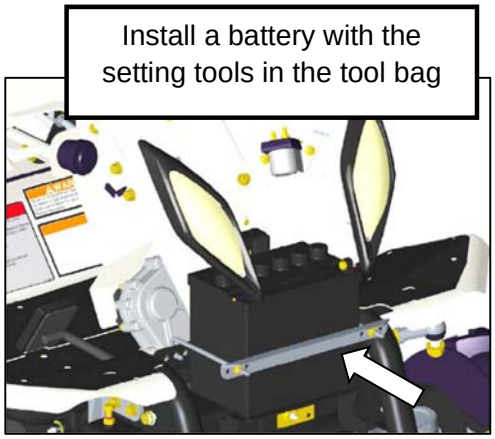
This indicator shows an angle of a slope. Do not operate the machine on slopes of more than 20°.

## How to Assemble the Machine:

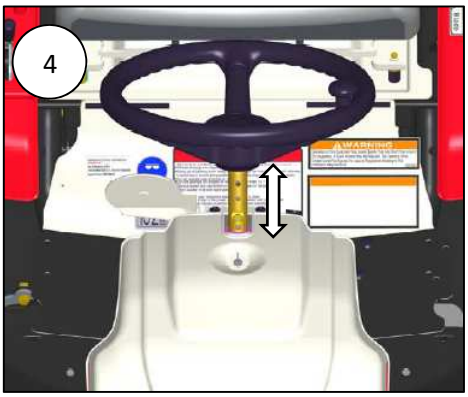
***◇◇This machine does NOT include a battery due to importing regulation. Please purchase a new battery (U1R) and install it with fixing tools in the tool bag. (12V, 270CCA or greater recommended) ◇◇***

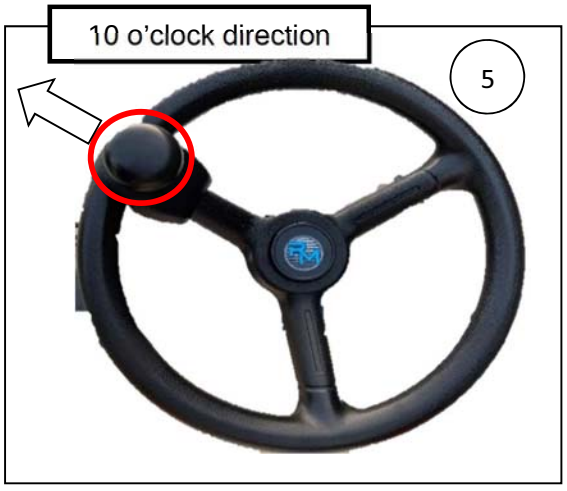
1) Take off the front cowl and front bumper.
2) Install a battery and connect cables to positive (+) first, then negative (-).
3) Put the front cowl on, then place the front bumper.



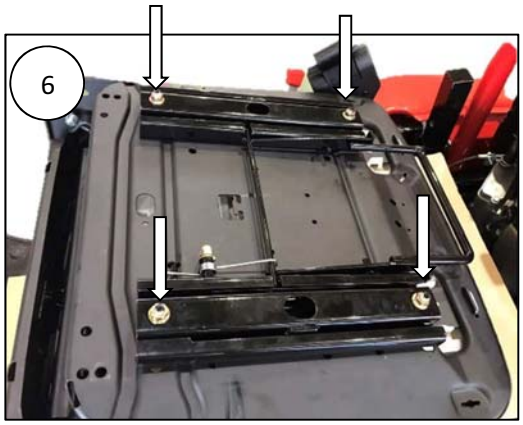



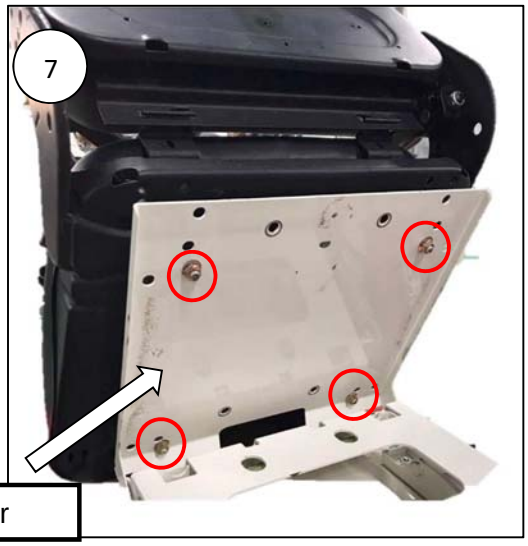

4) Install the steering wheel at the suitable height.
5) Set the steering knob in the 10 o'clock direction.



6) Take off the nuts from seat slide guide.
7) Set the seat on the seat receiver at the proper hole.
Fix the seat with the nuts at the proper position.



## Effective Operation of the Machine:

**Initial inspection before running the machine ( Please refer to the engine use manual )**

In order to operate in safety and comfort, please refer to the [ Periodic voluntary inspection table ] on page 43. Please have any defective parts repaired immediately, or before operating the machine again.

**How to start and stop the engine:**

***Please always use the recommended engine oil, HST oil and gear oil and that they are full before use.***

**⚠ DANGER**

- Do not start the engine in a confined space or a place with insufficient ventilation. Engine exhaust is odorless and contains carbon monoxide which can cause death.
- **DO NOT** handle gasoline in the presence of lit cigarettes, open flame, or other sources of ignition. Gasoline is an extremely flammable liquid and there is a danger of fires and explosions.

**⚠ WARNING**

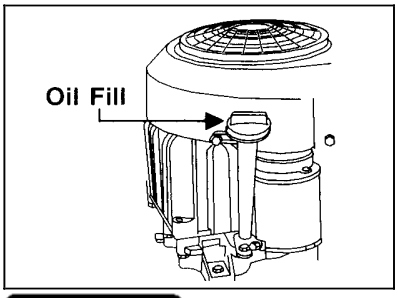
- Ensure that the blade clutch is in the [OFF] position, the speed change lever is in the [N] position, and the brake is [ON], before starting the engine.

**NOTICE**

- The engine must be stopped by the ignition switch.
- The parking brake is in the [LOCK] position, and the cutting height adjustment lever is in the [MOVE] position, the engine does not stop even if you stand up from the seat. However, if you stand from the seat at other positions, the engine will be stopped for safety reasons. In this case, it causes wear on the battery if you leave it like this (because the engine oil warning light and the pilot light are turned on). Therefore, the parking brake and the cutting height adjustment lever will go back to the starting position; the ignition is back to [OFF] position.
- After starting the engine, if you sit on the seat properly, the engine does not stop no matter where the cutting height adjustment lever and parking brake pedal are positioned.

**⚠ CAUTION**

- Make sure the engine has cooled down before checking the oil as there is a danger of burns.
- Be sure to sit on the seat before starting the engine.
- Make sure the parking brake pedal is engaged before starting the engine. The engine will not start if the pedal is only partially engaged and the safety switch is activated.
- Make sure that the cutting height adjustment lever is all the way in the up position at all times. If the cutting height lever is in another position, the engine will not start, as the safety switch has been activated.



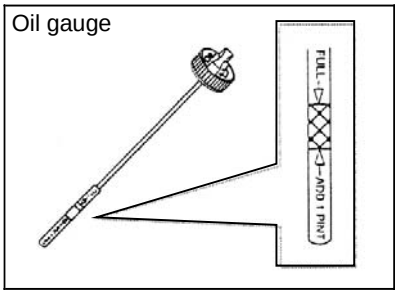

■How To Start the Engine:

(1) Check the oil level.

Wipe the oil gauge with a cloth, insert again and check the oil level. If the oil does not reach between the upper level and lower level, refill with the recommended oil to bring the oil to the upper level (oil consumption will be reduced slightly).

**⚠ WARNING**

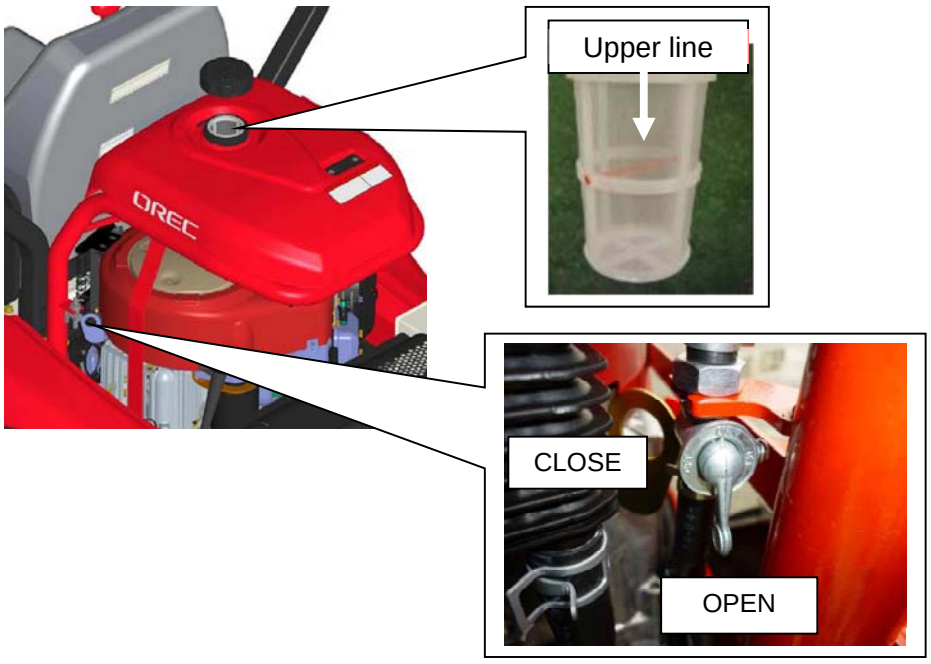
- Refuel oil in a place with good ventilation after stopping the engine.
- After the engine and muffler have cooled down, remove static electricity by touching the metal part of the machine.
- Please be careful not to spill fuel. If the fuel is spilled, please wipe it clean.
  For use on slopes please be aware that fuel, even at or just below max fill level, may spill out when placed at an angle.




**⚠ CAUTION**

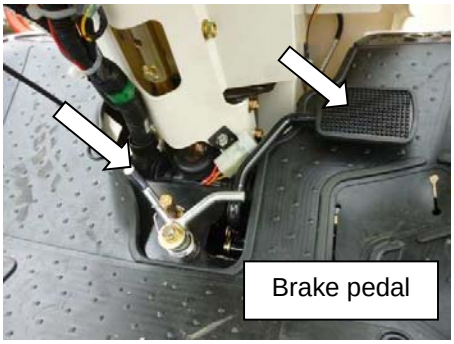
- Place the engine on a flat surface. For the Briggs Stratton Engine, check the engine oil level by screwing the lubrication plug, and for the Kawasaki Engine, check the engine oil level by simply inserting and reinserting the lubrication plug.
- Please use good clean, good quality oil; SF/SG/SH/SJ level or higher, such as [10W-30] engine oil. Do not use commercial additives.

(2) Check the fuel level. (Fuel tank total capacity is 3.2 US gallons (12 liters)). Refill with unleaded regular gasoline.




- When the fuel gauge is close to the [E] position, please refuel as soon as possible.

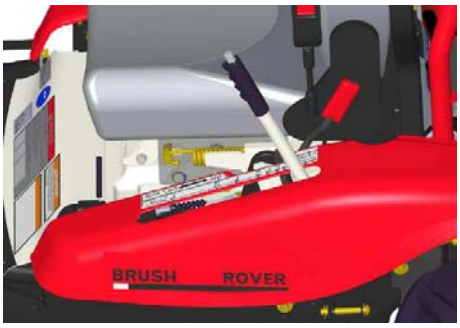
- Do not fill the fuel above the upper line of the filter. It leads to dangerous fuel leaks on slopes or uneven road surfaces. Leaked fuel is discharged through the drain hose to the bottom. However, please wipe the spilled fuel clean.
- After refueling, please tighten the fuel cap.
- Move the fuel valve lever to the [OPEN] position.




Lock the brake stopper while stepping on the brake pedal. If the shift lever is below the neutral [N] position, it will return to the neutral [N] position.

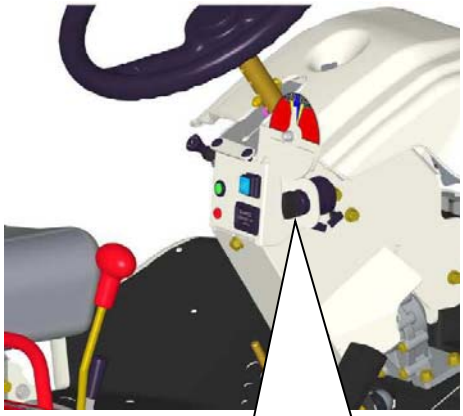
Confirm the blade clutch lever is in the [OFF] position, and the cutting height adjustment lever is pulled back all the way up. The blade clutch lever is connected to the cutting height adjustment lever only when the cutting height adjustment lever is all the way in the up position. The blade clutch lever will be moved back to the [OFF] position if the cutting height adjustment lever is all the way up.

- After confirming that the shift lever is in the neutral [N] position, pull the choke lever.
- Place the throttle lever in the intermediate position; between [LOW] and [HIGH].

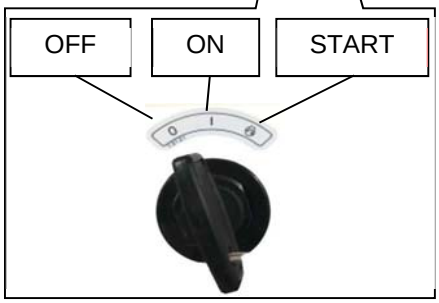



**NOTICE**

If the engine has been warmed up, this operation is not needed.



- Insert the key to the engine switch; the engine will be started by turning the key from the [DRIVE] position to the [START] position.
- Release your hand from the ignition immediately after the engine starts. It returns to the [DRIVE] position automatically.



**⚠ CAUTION**

- Please avoid the continuous use of the engine switch for **more than 5 seconds** as the starter motor consumes high electrical voltage.
- If the machine does not start within 5 seconds, put the ignition back to the [STOP] position, and repeat the same task again with a 10 second pause.
- Please do not place the ignition to the [START] position during the engine rotation. It may cause cell motor damage.
- If the engine is already warm, place the throttle lever to the [HIGH] position. There is no need to place the choke in the [CLOSE] position.

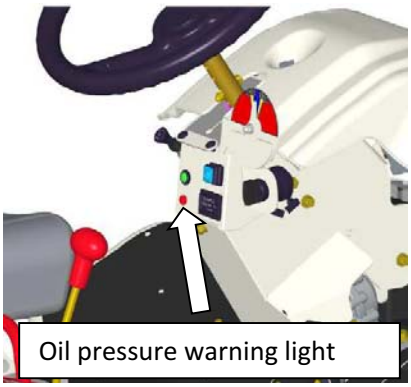
After starting the engine, return the throttle lever to the [LOW] position and warm-up the engine for approximately 5 minutes. Push back the choke lever to the [OPEN] position, and warm-up the engine.

**NOTICE**

By warming up the machine first, oil is spread to each engine part, which helps to extend the engine life.

**⚠ WARNING**

- The brake pedal has to be [LOCKED (PARKING)] by the break stopper during warm-up. An unlocked brake pedal poses a risk of injury due to sudden movement of the machine.



Oil pressure warning light

**⚠ CAUTION**

- This machine is equipped with an oil pressure warning light. During the engine rotation the light will turn red when the pressure of the engine oil is dangerously reduced. If the light turns on while driving, please take the following actions:
  (1) Immediately park in a safe place, stop the engine and check the engine oil level and condition (viscosity and contamination).
  (2) If the light turns on and the engine oil has not decreased or is still on after oil is added, please contact your dealer. There is a risk of engine damage if used continuously.

**NOTICE**

Reasons why the Engine Oil Pressure Warning Light turns on:

- The engine oil has been reduced for some reasons and it cannot maintain the proper amount of hydraulic pressure
- The viscosity of engine oil is reduced, it cannot maintain proper amount of hydraulic pressure. (Please refer to “Oiled Parts Inspection, Replacement, and Lubrication” on page 25

■How to Stop the Engine:

(1) Turn the throttle lever to the [LOW] position.

(2) Push the ignition to the [OFF] position to allow the engine to stop.

(3) Take the ignition key from the engine switch.
(4) At last, turn the fuel valve to the [CLOSED (OFF)] position.

■ **How to Drive, Change Speed, Turn, Stop (Park):**

**⚠ WARNING**

- Do not allow any untrained people (non-owners) to use this machine; it may cause an accident or injury.
- Confirm that working conditions are safe before proceeding to drive the machine. Practice driving on a flat area at a slow speed until you are used to the product and the features. If you drive at high speeds right away, it may cause you to lose control of the machine.

Turn the [HIGH] position when moving, and turn the [LOW] position if pulling the machine out from a slippery area.

- Operate the auxiliary shift lever after stopping. Operation with the shift is dangerous, and it may cause transmission trouble.
- The driving speed is continuously variable by shifting the shift lever down. For safety reasons, please start at a slow speed.

■How to Drive:
(1) Move the drive clutch lever to the ON position.
(2) Start the engine (Refer to page 19 for how to start the engine).
(3) Move the throttle lever to the [HIGH] position, and raise the rotation of the engine.

Drive clutch lever

(4) Press the parking brake pedal deeply and release the brake stopper.

**⚠ CAUTION**

- Do not engage the shift lever while the parking brake pedal is [LOCKED]. It will put wheels that have brakes engaged into drive. This will cause damage due to overuse of the brake and transmission. Please use the shift lever for normal driving stop operations.

(5) To move forward, push the shift lever forward. To move in reverse, pull the shift lever back.

■How to Stop:

If you step into the parking brake, the machine stops while shift lever is in the neutral [N] position. Engaging the parking brake pedal during high speed driving may overload the body and cause injury to the operator due to sudden stopping.

(1) Stop driving.
Operate the shift lever to reverse direction of driving, and return them back to the neutral [N] position slowly.

(2) Turn the throttle lever to the [LOW] position to decrease engine rotation.
(3) Stop the engine.

**NOTICE**

Except when in the Neutral position, the auxiliary shift lever is always [LOW] position or [HIGH] position.

(4) Press the parking brake pedal, lock with the brake stopper, and park.

**⚠ CAUTION**

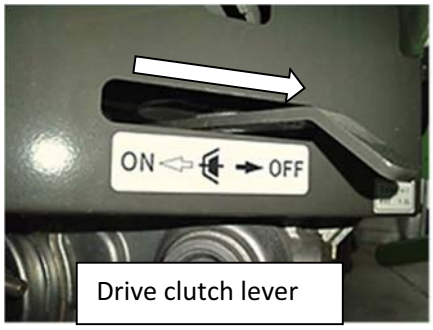
Please park the machine on a flat and large place where there are no obstacles, and remove the ignition to prevent theft.

■How to use the differential lock lever:

**⚠ CAUTION**

- Use the differential lock lever only when loading and unloading the machine, when working on gentle slopes, places where there is soft ground, and when it is difficult to go straight because one of the rear wheels is slipping. Please do not use in other situations.
- **When operating the machine on a flat area while the differential lock lever is on, it may drag the inner tire during turning, increase the turn rotation, decrease air pressure in the tire, and cause strain on many parts. These factors may cause damage to the machine**.

(1) Always put in the [OFF] position.
Turn the differential lock lever to the [ON] position only when necessary, such as driving on a steep slope or muddy road. Please make sure that the lever is fully locked into the notch.
(2) Please always return the differential lock lever to the [OFF] position.



Drive clutch lever

■How to move the machine with the engine off

**It is very dangerous to operate on a slope.**
In a flat area, when the drive clutch lever is moved to the [ OFF ] position, it is possible to manually move the machine without turning on the engine. Use this method when there is a need to move the machine.

**⚠ WARNING**

- Always put the drive clutch lever to the [ ON ] position, except when manually moving the machine.
- For safety, please manually move the machine with 2 people (one driving and one supporting).

■How to load and unload:

NOTICE

**Ramp Standards**:
Make sure that your ramp is comprised of materials strong enough to conform to the following standards.

- Length: 3.5 times longer than the truck's loading bed is high. (Less than 15 ° tilt angle of the bridge)
- Width: At least as wide as the wheel span of the machine
- Strength: Sufficiently strong enough to take the total weight of the machine and the operator combined.
- Surface: Use a ramp with a non-slip surface.
- Do not stop in the middle of the ramp. Especially when restarting the machine upon loading, there is a danger of the machine's front tires lifting up off the ground. Please load and unload at a low speed.
- Please use a truck without a canopy over the bed. When unloading, the operators may collide with the canopy.
- Park the machine on a flat and stable surface, and don't load and unload on a highway.
- Please use a truck that can bear the total weight of the diver and the weight of the machine.
- To prevent accidents, please arrange pre-determined signals with the truck driver, if you work with more than one person.
- Loading and unloading at night is dangerous. If this is unavoidable, choose a location that has adequate lighting. If it is hard to see the position between the ramp and the tire there is a danger of falling.
- Turn off the truck's engine, pull the emergency brake to "on," and put a wheel chock under the tire.
- The cutting height adjustment lever must be all the way in the up position. There is a risk of falling if the ramp makes contact with the knife.
- The differential lock lever must be in the [ ON ] position. Do not operate the differential lock on the ramp.
- Attach the ramp's hook so that there are no obstructions where it attaches to the truck's loading bed. Also make sure that the ramp is securely attached.
- Make sure that the tires on either side of the machine are positioned in the center of the ramp.
- Stop the engine on the carrier, turn the fuel valve to the [ CLOSED ] position, and remove the ignition key.
- Use a strap that is strong enough to be fixed from the machine and securely to the carrier.

(1) Load in forward and unload in reverse.
(2) Attach a ramp which conforms to the standards below.
(3) Put the differential lock lever in the [ ON ] position and the cutting height adjustment lever in the [ MOVE ] position. Do not use any other positions.
(4) Put the throttle lever in the intermediate position between [ HI ] and [ LOW ]. Always put the drive clutch lever in the [ ON ] position.

**How to cut weeds and brush:**

**⚠ WARNING**

- It may cause a fire or engine seizure while you work around the engine deposits and grass clippings. Frequently remove accumulated grass which is around high temperature exhaust pipes. Also, please regularly clean inside the engine cover as well as the outside.
- Grass clippings are discharged from the right of the machine's knife replacement cover. However, pebbles, wires, and cans will be discharged from a cutting unit and can cause damage to the surrounding area. Near buildings or in an area where there are many foreign objects, use a high blade position, and don't let other adults, children, or vehicles enter the work area. Remove objects, prior to operation. Also please put a warning sign or a guard rope in the area, and do not allow foreign objects or people within a radius of 10 meters of the machine.
- Please do not drive close to a dangerous place, such as an obstacle, ditch, soft shoulder, slope ( 20 ° inclination angle limit ), or uneven ground. To prevent falls and collisions, do not work near buildings, rivers, drop-offs, or people.
- While working on a slope, standing on the top ( outside ) of the machine is dangerous. If your feet slip, they may get caught up in a rotating blade, and this may cause serious injury.
- After turning off the engine and making sure that the rotation of the blade has stopped, remove any grass, or foreign material which may be on the blade.
- For safety, please inspect the blade condition before you start working. ( Refer to page 41 )
- If there is damage, do not use the machine until it has been repaired to ensure safe operation.
- When working with a worn blade, please be sure to use the special tool supplied. If you don't use it, sufficient torque cannot be obtained, therefore there is a risk of loss due to stretching of the blade belt.

**⚠ CAUTION**

- Please be sure to wear a long-sleeved jacket, long trousers, rubber non-slip boots, hat or helmet, and protective glasses while you are working.
- Before you start working, please remove stumps, rocks, wire, debris, sticks, and other foreign objects from the work area.
- Use the ramp if crossing over a depression of approximately 3" ( 70mm ) or more. Crossing over at a high speed may cause accidents or damage.
- If the front wheel falls into a hole or groove, stop the engine and lift the machine to escape. Do not rotate the steering wheel unnecessarily as it may cause damage.
- A front wheel colliding with stumps or a curb can cause accidents.
- When you work under branches or slopes, please be careful of getting caught between branches and falling from the machine.

NOTICE

- When you use the machine for the first time, please choose a flat surface with no foreign objects such as stones, and cut straight and slowly so that you become familiar with its operation.
- Grass clippings are discharged from the right rear of the machine. As obstacles on the right may cause damage, please position trees, pillars, walls, and other obstacles on the left side of the machine ( turn to the left if the cut is circular ).

(1) Put the replacement blade cover on the right side of the machine down to the bottom; tighten firmly with a wrench so that it does not become loose during operation.

⚠ WARNING

Do not operate while the replacement blade cover is open. Scattering stones and other foreign objects mixed with cut grass can cause injury and damage.

(2) Start the engine.
Refer to “How to start the engine” ( page 19 )

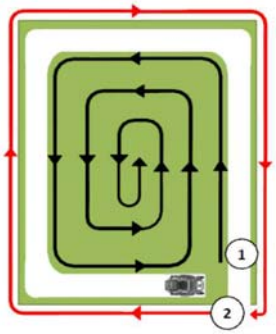
(3) Turn the throttle lever to the [ HI ] position and let it increase the rotation of the engine.

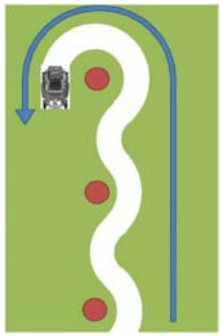
(4) Adjust the cutting height adjustment lever to approximately 4”( 100mm ) height. Refer to the alignment lever on the scale display.
Refer to “Working of each part” ( page 14 )

(5) Slowly turn the blade clutch lever to the [ ON ] position.
****Please note that the blade rotates at a high speed. ****
****Please operate the blade clutch lever action slowly. ****

(6) Position the cutting height adjustment lever to the desired height.
Refer to “Working of each part” ( page 14 )
****<u>If the blade clutch lever is suddenly turned to the [ ON ] position at the lowest cutting height position (2” and around), it may cause breakage of the cutting belt.</u> ****

(7) Refer to “How to drive” ( page 23 ), start the machine, and begin working.



(8) For finishing operations, please reverse the procedure above.

**⚠ CAUTION**

When you turn the blade clutch, first, return the blade clutch lever to the [ OFF ] position, wait for about 5 seconds, and then turn the cutting height adjustment lever to the [ MOVE ] position.

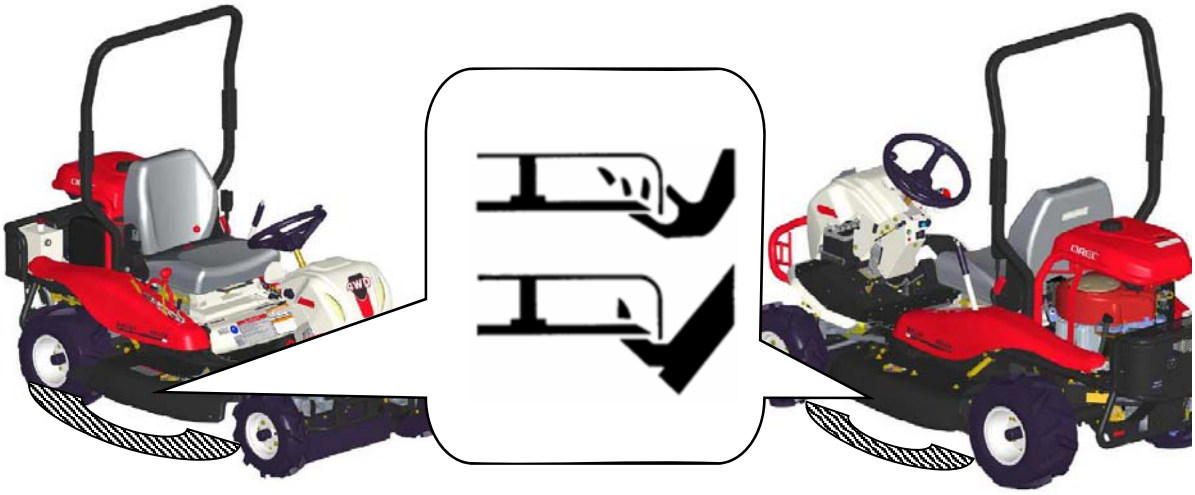
(9) Stop the engine.
Refer to “How to stop the engine” ( page 22 )

**NOTICE**

- When working on a gentle slope, make sure that the engine plug always faces upward.
  Cutting with the engine plug down may cause the engine oil to burn, and the engine may emit white smoke.
- It is possible to move the cutting height lever in order to disengage the blade lever, but you should only do this in an emergency. If you do this often, the blade belt gets sudden shock and becomes damaged. For non-emergencies, refer to above ( #8 ) operation.
- It is not possible to operate the blade clutch lever when the cutting height adjustment lever is all the way in the up position.
- Normal stopping is performed by the shift lever. If the parking brake pedal is engaged in an emergency situation, the machine will stop suddenly. At the same time, the shift lever will return to the neutral [ N ] position.
- When you finish working, stop the engine and remove the key.

**⚠ WARNING**

- While working, if you hit an obstacle, stop the engine immediately and if there is damage to the machine, please repair immediately. If you avoid repairing the machine, it can cause injury or accident.
- When the grass is wet, or when it rains, the machine may slip and this is dangerous. In addition, cut grass will get stuck inside the blade cover, and it can lead to engine damage. In this case, stop working, and wait until the grass is dry. Working in rainy weather is very dangerous.
- The blade comes to the inside of the cover (both left and right sides) during the blade rotation. Therefore, during this procedure, do not put your hands or feet in the blade

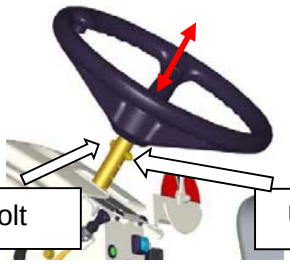


**⚠ CAUTION**

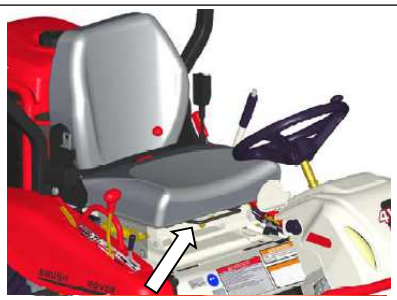
- Do not put grass or leaves into the engine. The accumulation of these combustible materials may cause fire or damage of the machine.
- If the machine stalls out frequently because of the amount of grass, slow down the speed, or raise the cutting height and cut several times.

## How to adjust the height of the steering wheel and the seat position:

The steering wheel can be adjusted to 3 levels, and the seat can be adjusted to slide back and forth.




Please adjust the U-nuts and bolts which secure the handle shaft.



Seat Slide Lever

Grab the seat slide lever, then adjust the seat for the suitable position.

## Oil Parts Inspection, Replacement, and Lubrication:

**⚠ CAUTION**

- Please refer to the hour meter display on the meter panel to determine the proper time to check the oil parts, replace, or lubricate as recommended.
- When this machine is shipped, it is lubricated with oil; however, before operating the machine, make sure that it is lubricated with the described oil, in the described parts, and in the described quantities.
  -To always operate this machine in good condition, perform oil changes as recommended.
  - When performing inspection, replacement, or lubrication of oiled parts, place the machine on a flat, open surface. Switch on the engine and warm it up to confirm it is working properly. Then switch off the engine, allow it to cool down and remove the spark plug cord.
- After switching off, please wait at least 5 minutes for all parts to cool down sufficiently before touching the machine. Immediately after the engine has stopped, the body will be very hot and can cause burns if touched.
- After switching off the engine, oil will still be in the engine and transmission so the quantity of oil remaining will not be exactly displayed.
- For safety reasons, remove the key when not working.

**After changing oil, please dispose of waste oil appropriately. **

**Transmission oil inspection, lubrication, and replacement**

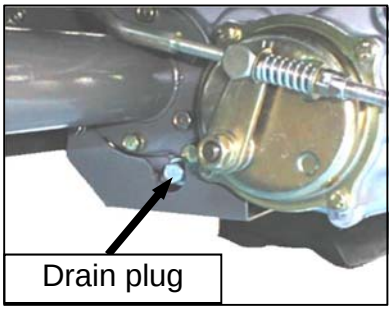
**Inspection**

Remove the oil inlet plug from the rear part of the transmission case on the transmission, and check the oil.

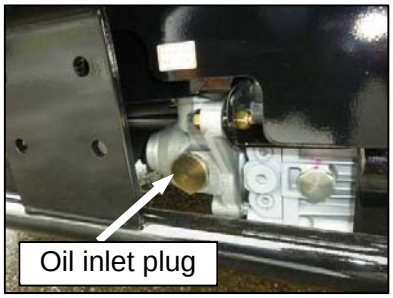
**Replacement**

Prepare a suitable container for discarded oil. Replace oil after the **first 20 hours** of operation and roughly **every 100 hours** thereafter by removing the drain plug from the bottom right side of the transmission.

**Lubrication**



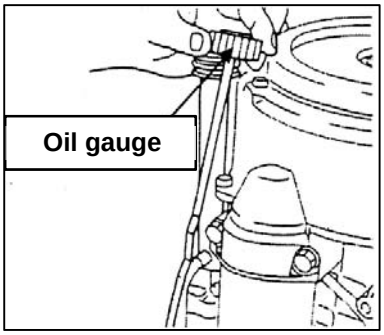

After draining, reattach the drain plug and remove the inlet plug from the rear side of the transmission, and fill with 1.1 quarts ( 1.0 liter ) of transmission oil ( #90 ) by pouring through the oil inlet.




- After putting in the oil, be sure to properly reattach the oil inlet plug to avoid any leakages.

**Engine oil inspection, replacement, and lubrication**

**Inspection**




- Use the oil inlet plug with its attached level gauge to check the quality and quantity of the engine oil. Perform this inspection before every use or after every 8 hours of operation.
  Refer to “How to start the engine” (page 19).
- Make sure that the engine oil is always at the maximum level on the level gauge.

**⚠ CAUTION**

- Replace engine oil after the **first 5 hours** of operation and roughly **every 50 hours** thereafter, or replace as a guide for each season, whichever comes first.
- However, if severe stress is placed on the machine such as using the machine for many hours continuously under a hot environment, we recommend changing the engine oil sooner ( approx. **25 hours** ) and the oil filter ( approx. **50 hours** ).

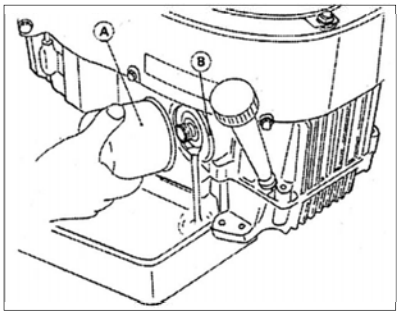
**Replacement / Lubrication:**

(1) Prepare a suitable container for discarded oil. After loosening the oil inlet plug, remove the drain plug from the rear left side of the engine with the tool **M17**. The oil can be discharged smoothly by the loss of pressure that is applied by loosening the oil inlet plug.

(2) After oil is discharged, tighten the drain plug securely, and remove the oil inlet plug.
(3) Lubricate with 1.1 quarts ( 1.0 liter ) of oil, and drive slowly for about 30 seconds. Stop the engine, wait for about 30 seconds, and fill the oil to the [ FULL ] position slowly. For oil quantity, please refer to Specifications on page 46.
(4) After filling with engine oil, securely reattach the oil inlet plug so that oil does not leak.

**Replacement of Oil Filter**

After draining the engine oil, replace the oil filter according to the following directions:




(1) Turn the filter (A) counterclockwise and remove it.
(2) To prevent twisting, apply new engine oil thinly with your fingertips to a section of the new filter gasket (O-ring).
(3) Turn the filter clockwise until the gasket touches the mounting surface (B), and turn it ¾ of a full rotation.
(4) Lubricate with new regulation oil through the oil inlet.
After checking the oil level with the oil gauge, please tighten the oil filter plug.
Refer to “How to start the engine” (page19).
(5) After operating the engine at low speed for about 2 minutes, check for any oil leaking from the oil filter mounting surface.
(6) Stop the engine, recheck the oil level, and add oil if necessary.

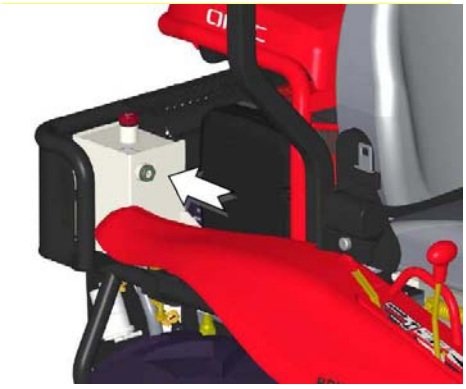
**⚠ CAUTION**

- Replace the oil filter by hand to prevent over tightening.
- Replace the oil filter **once every two engine oil replacements,** or every season.

**Inspection, Replacement, and Lubrication of HST oil**

NOTICE

HST oil is also known as hydraulic fluid, and it has an important role in converting engine power to the drive. It works as a lubricant—preventing rust-- and as a coolant. However, insufficient or improper maintenance may cause driving problems. Always use proper HST oil to replenish or replace the HST oil.



**Inspection and lubrication**

Visually check the HST oil level through inspection hole on the HST oil tank. If you cannot see the oil level through it, open the oil tank cap, and add HST oil to the inspection hole.

**⚠ CAUTION**

The HST oil tank can be very hot right after engine turned off. When you change or add the oil, please be careful and wait until engine cooled down.

**Replacement**

Although HST oil is clean at first, its quality deteriorates with age and it can become detrimental to smooth operations if not replaced regularly.

In order to keep working safely and comfortably, please change HST oil regularly. Not only should you change the oil, but also do flash washing on the inside with washing oil several times beforehand, because the HST oil may be mixed with aged oil, sediment, and water in the unit and oil tank.

(1) Place the oil drain pan under the HST unit.
(2) Loosen the oil drain bolt at the bottom of the HST unit with a 3/8in wrench. Then drain the oil.
(3) Tighten the drain bolt. Refill slowly with 5.2qts. ( 5 liters ) of HST oil ( ISO VG 46 hydraulic oil ). Do not spill.
(4) Idle the engine for one minute to remove air bubbles.
(5) Drive the machine back and forth, so that the HST unit is operating and removing air bubbles. If the air bubbles remain in the HST unit, the machine will vibrate and will not move smoothly. Repeat this step until the machine moves smoothly.
(6) The HST oil level may change after the air bubbles are gone. Always keep the oil level as you can see it through the inspection hole on the tank.

**⚠ CAUTION**

- **DO NOT** get water in the HST unit, as water can cause permanent damage to the HST.
- **DO NOT** mix different types of oil. Doing so may damage the machine.
- Engine oil and hydraulic oil are both pollutants to the environment. Dispose of used oil at a certified recycling center or according to your state and local regulations.
- This product is shipped from the factory pre-filled with ISO VG 46 hydraulic ( HST ) oil.

NOTICE

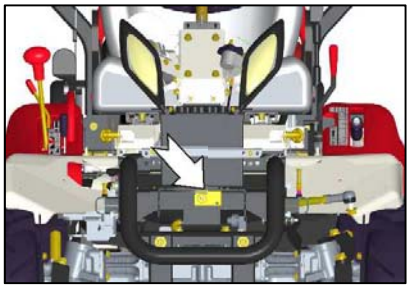
●First: **Upon 30 hours** of use ● After: Once a year or **every 200 hours** of use

How to determine the HST oil by sight

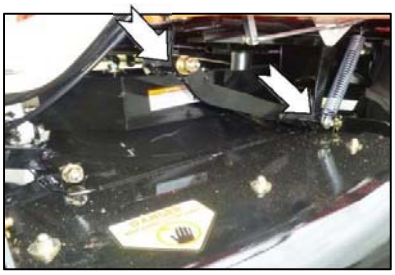
| **Appearance** | **Odor** | **Condition** | **Measures** |
|---|---|---|---|
| Clear, no color change | Normal | Good | Continue using |
| Clear, there are small black spots. | Normal | Mixed with foreign substance | Filter oil |
| The color has changed to milky white. | Normal | Contaminated with water | Change oil |
| The color has changed to black. | Unpleasant, noxious | Oxidized and aging | Change oil |

**How to Lubricate Each Part:**

Be sure to lubricate each part with grease or lubricating oil ( #30 ) for every 30 hours of use. If you neglect lubrication and allow oil to run out, machine operation will become sluggish and the machine could be damaged.



Center pin (grease)



Link fulcrums (8)

Parking brake pedal

**How to Inspect, Maintain and Adjust Each Part:**

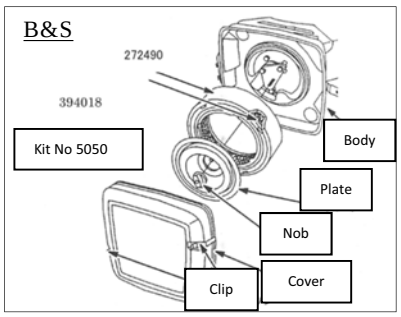
**How to clean the air filter**

**⚠ WARNING**

If you continue to use the machine with the air filter and recoil starter clogged with weeds, etc., exhaust temperature will increase and could ignite the fuel, resulting in a fire. Be sure to periodically clean these parts.

**⚠ CAUTION**

Do not start the engine with the air filter removed. Dirt and dust will be sucked into the engine, causing engine trouble and abnormal wear and tear.




(1) Release the wing nut and the air cleaner cover.
(2) Remove the foam and paper elements. (Be careful not to put dust or debris into the carburetor.)
(3) Wash the foam element with a pH neutral detergent. After washing, be sure to squeeze out all the water and allow it to dry.
(4) When cleaning the cartridge (paper elements), tap lightly or blow dust and debris from the inside of the filter.
(5) Wipe dust and debris from the inside of the case and reassemble back to its original position.

**NOTICE**

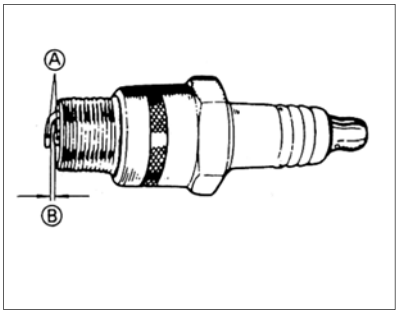
- If the paper element is very dirty, replace with a new paper, or wash with liquid soap, rinse well and allow it to dry.
- When cleaning, do not pull or crumple the foam element. This causes damage.
- When you tap the paper element, be careful not to damage the paper.
- Do not rub the paper with a brush.
- When drying, do not put hot air in to the paper element. It may cause damage to the glue. Dry at a low temperature, or let air dry.

| Time for Cleaning and Replacement of Air Cleaner | | | | |
|---|---|---|---|---|
| Foam Element | Cleaning | Every operation | Replacement | Every 100 Hours |
| Paper Element | Cleaning | Every operation | Replacement | Every 100 Hours |

**⚠ CAUTION**

Take care to clean the filter more frequently when operating in an environment with a lot of dust or grime.

## How to inspect and adjust the spark plug




(1) Remove the spark plug with a plug wrench and clean away any carbon deposits on the electrode (A) with a wire brush and wipe away any moisture if present.
(2) Replace the spark plug with a new one if the ceramic part has cracked or the electrode has suffered extensive wear and tear.
(3) Adjust the spark plug electrode clearance (B) to 0.028”-0.031” (0.7-0.8 mm).

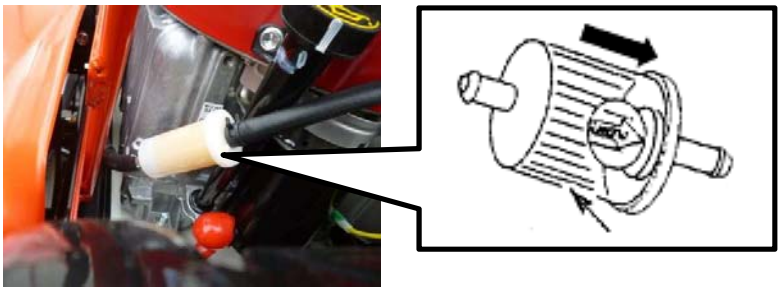
**NOTICE**

- The equipped engine is the V type 2-cylinder. Check and change the two plugs at the same time. Do not clean or replace only one plug as this causes engine trouble.
- Tighten by hand first, and then use a plug wrench. If you use a plug wrench at the beginning, it may destroy the screw thread. (Refer to the product number of the spark plug, page 46)

## How to inspect fuel lines

**⚠ WARNING**

- When cleaning the fuel valve, be absolutely sure not to be in the presence of lit cigarettes, open flame, or other sources of ignition. These can cause fire and explosions.
- The rubber parts of the fuel line will deteriorate even if you do not use the machine.
- Change the attaching bands and fuel line parts every 3 years or immediately if they have split.
- Always take care that the fuel lines and fastening bands do not become loose or split.
- When changing the fuel lines, take care that there is no dust or dirt inside.



**How to clean the fuel filter:**

Replace the fuel lines every season or as necessary. They cannot be dismantled or cleaned. Please be careful of the direction of insertion when changing fuel lines. For more information, please contact your dealer.

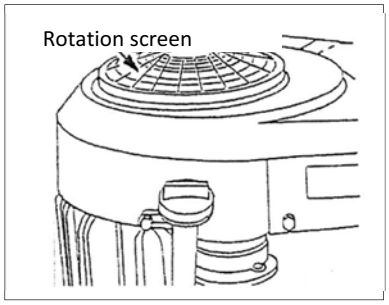
**How to adjust tire pressure:**

Check the tire pressure of the front and rear wheels according to the following table.

- If the tire pressure is not equal on each side, the machine may veer to one side.

| | Tire size | Pressure |
|---|---|---|
| Front wheel | 4.00-7 | 17.5 psi (120 kPa) |
| Rear wheel | 17 x 8.00-8 | 23.2 psi (160 kPa) |

**How to clean engine coolant:**




(1) Remove mud or grass from the rotation screen and the top of the engine cover before each use.
(2) Open the fastener key that holds the engine cover, ho the cover up, and release the air inside.
(3) After operation, please keep the cover and the key fastener in place, as they are removed only for cleaning.

- For opening the zipper, please refer to the following “How to adjust each belt, wires, and rods”.
- When releasing air, it is easier to discharge grass and dust when you hold up the engine cover and seat. (Please avoid using high pressure water washer. It may cause engine trouble.)
- At the same time, remove the grass that is piled on the edges of the HST fan cover. If you keep using without removing grass, the HST oil temperature rises, so that the HST will not operate at its optimum performance level.

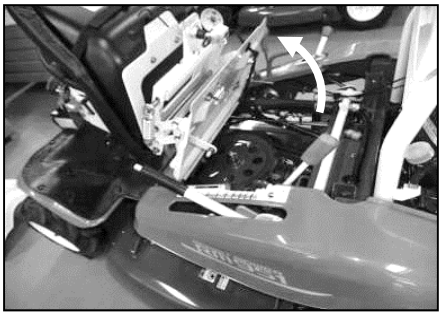
**⚠ CAUTION**

- Remove each part after the engine has cooled down. After cleaning, do not start the engine until each part is installed.
- If you keep working while grass is piled on the engine cooling system, it can cause overheating, but also the engine temperature will increase and may cause a fire.
- The rotating screen rotates with the engine. Please stay away from the rotating screen. It may cause injury.

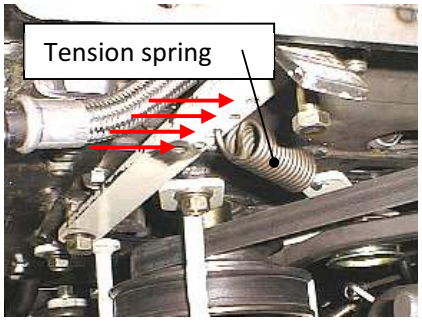
**How to adjust each cable, belt and rod:**

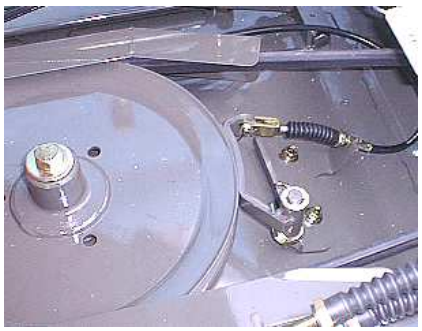
**⚠ CAUTION**

- When adjusting each type of cable, belt and rod, place the machine on a flat area. Remove the ignition and apply the parking brake. Make sure you take sufficient safety precautions.
- For adjustment of the belt and blade brake, unzip the brackets that secure the seat, make sure the seat is in the upright position. (When you lift the seat, it will be fixed in place.)



***◇◇Please ask your dealer for replacement of the drive belt and the blade belt. Replacement of these belts requires special tools and techniques. ◇◇***



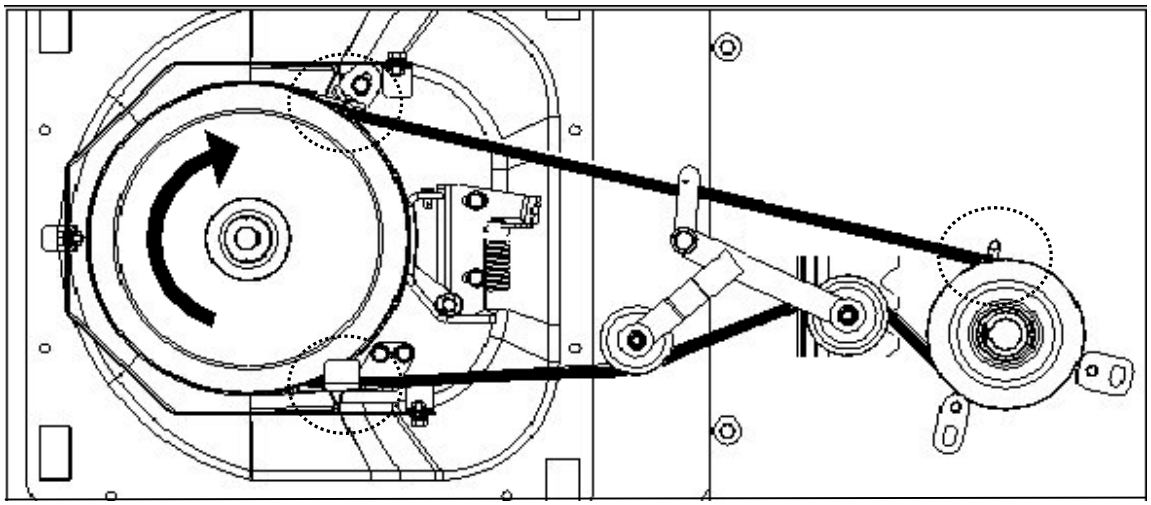
■ Adjustment of the drive belt:
- Drive belt should always be taut.

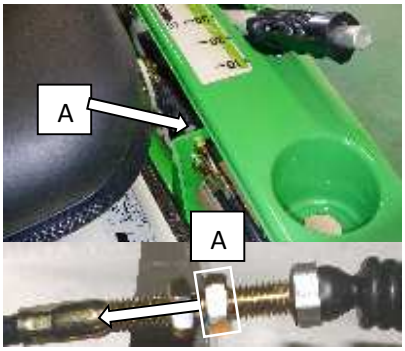
If the drive belt slips while driving, change the position of the tension spring, and adjust the strength of the belt tension. Refer to the picture on the left.

■ Adjustment of the blade belt (located under the seat bracket):
- Please visually inspect the belt for any damage.

If there are cracks or abrasions on the belt, replace with a new one.
Refer to “Size of the belt”, page 46

■ Adjustment of the belt holder:
1. Set the cutting height adjustment lever position to about 4” (100mm).
2. Turn the blade clutch lever to the [ON] position.
3. Adjust the clearance between each belt holder. Refer to the following.






■Adjustment of the blade brake:

- When turning the blade clutch lever to the [ OFF ] position, the blade will stop within about 5 seconds.
- If it doesn't stop, move the adjusting nut of the brake cable to the A-direction.

- After adjusting, secure the blade brake with a lock nut. If you cannot adjust, the brake pad is already worn. Please ask your dealer for a replacement.

**⚠ WARNING**

- Routine brake inspections are important not only for performance but for safety as well. Please ask your dealer at least once a year to inspect the machine using the annual inspection table.
- After adjusting, turn the parking brake pedal to the [ LOCKED ] position. Make sure that the machine doesn't move when you push it back and forth or does not move on a slope while the drive clutch lever is in the [ OFF ] position.

■ Adjustment of the parking brake:

1. The parking brake is located on the left rear of the transmission; please adjust the brake rod that is connected to it.
2. When you step on the parking brake pedal, adjust the rear wheel to the [ LOCKED ] position by adjusting the rear brake rod's nut.
3. If you turn the adjusting nut clockwise, the brake will tighten; if you turn it counterclockwise the brake will loosen.

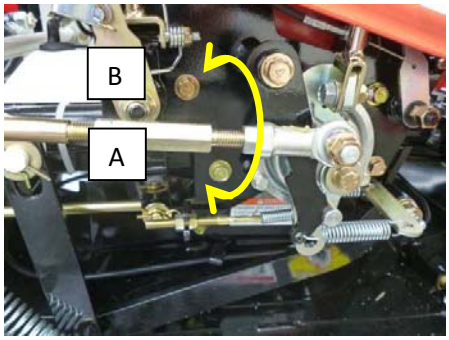
(Please ask your dealer if charges apply to the following operations.)

**⚠ CAUTION**

- The brakes are consumable parts. Adjusting the parking brake as described above, may shorten the life of the brake shoe so please keep this in mind. In addition, <u>for your safety, replace brake pads **within 100 hours** of use. When replacing the U-nuts (epoxy), please also replace the cotter pin.</u>
- Adjust the tip of the parking brake about 15-20mm. After adjusting, tighten the lock nut. The first adjustment should be made within **10 hours**, and **every 50 hours** thereafter.
- The drive belt and blade are also consumable parts. If they are cracked or worn, please replace with new ones.
- After adjusting, tighten the drive belt and blade belt with the lock nut.

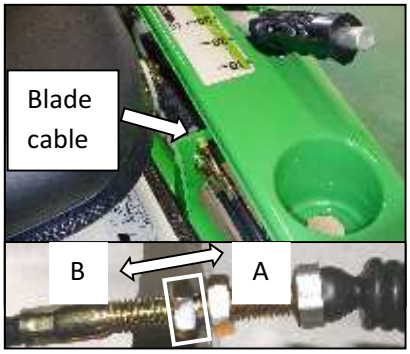
■ Adjustment of the shift lever:

- Adjusting the shift lever is not required except when disassembling the transmission.
- Adjust the shift lever only when the position of the shift lever is off of the guide indicator.




1. Turn the shift lever to the [ NEUTRAL ] position.
2. Adjust by turning the turnbuckle which is connected the shift lever.
   - When tilting in the forward direction ---Turn the turnbuckle to A-direction.
   - When tilting in the backward direction ---Turn the turnbuckle to B-direction

■ Adjustment of the blade clutch cable:
Adjust the blade clutch cable with the adjustment nut shown on the left.




- If the tension of the blade belt is weak, ---Turn the adjusting nut to B-direction.
- If the tension of the blade belt is strong, ---Turn the adjusting nut to A-direction.

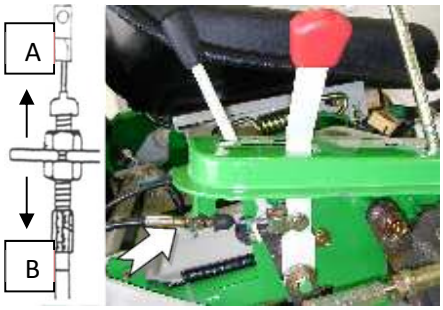
■ Adjustment of the differential lock cable:
Refer to the picture at left, adjust the adjusting nut of the differential lock cable, and after adjusting, make sure it works well.

- If differential lock does not engage

--- Turn the adjusting nut in the A-direction.

- If the differential lock does not release

--- Turn the adjusting nut in the B-direction.

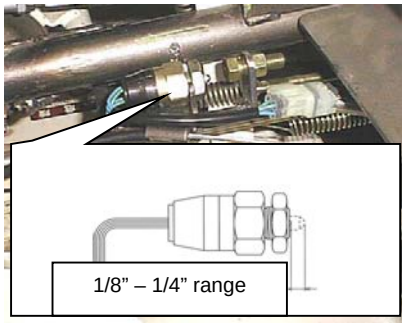


NOTICE

If the differential lock lever is in the [ OFF ] ( [ RELEASE ] position, adjust the base of the lever to 1/16” -1/8” distance. After adjusting, tighten the lock nut securely.

■ Adjustment of the safety switch:

⚠ CAUTION




- If the engine doesn’t start, even if the cutting height adjustment lever is all the way up position, and the parking brake pedal is locked, please adjust the safety switch in the following ways:
This switch is operated when the switch tip is in the 1/8” – 1/4” range.
- When the switch tip is pushed outside this range, the engine does not start.
- If you push the switch tip too much, it may cause damage to the switch itself. Refer to the picture at left.

- The safety switch is located **under the right seat bracket**, at t**he base of cutting height adjustment lever**, and **under the seat.**
- After adjusting the safety switch, tighten the lock nut, put the seat back to the original position, and tighten the knob bolt.

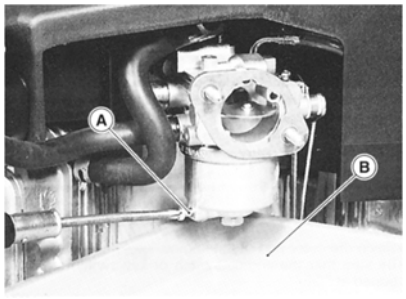
**Precautions in cold climates:**

- In the winter time, be sure to remove any mud and debris from the machine, and park it on a concrete or other hard surface. Material stuck to the machine can freeze and cause damage.
- If it is on a flat area, without putting the parking brake in [ LOCK ], use wheel blocks to prevent the adhesion of the brake shoe.
- If you are unable to drive the machine due to freezing, do not force the machine to move but put hot water on the affected frozen parts and wait for the ice to melt. Use caution, as you will bear responsibility for damage caused by pushing the machine beyond its limits.

**Long-term storage of the machine:**

⚠ WARNING

- Do not handle gasoline in the presence of lit cigarettes, open flame, or other sources of ignition. Gasoline is an extremely flammable liquid and there is a danger of fire and explosions.
- Store the machine in a place with good ventilation, and keep it horizontally in a firm and flat space.
- When removing the fuel in the fuel tank, wait until the engine and muffler have cooled down (approx. 5 minutes). For safety, remove the ignition key.
- Do not keep fuel which has been taken out of the plastic fuel tank, and do not use fuel which is more than 3 months old.
- Put the removed hose, clips, and drain plug in the normal position.




1. If the machine will not be used for more than 30 days, to avoid failure or malfunction during operation, remove the fuel from the fuel filler opening to a container by a hand pump. Slide the hose clip from the fuel valve on the fuel tank side, and drain the remaining fuel into the container. Then, loosen the drain plug-A with a screwdriver, and discharge the fuel from the carburetor to the container. Transfer all the fuel to the containers, and keep them in a safe area.
2. Clean the outside of the engine and machine, and put the removed parts back to the normal position.
3. Replace the engine oil. Refer to “Replacement of the engine oil” page 31.
4. Clean each part. Especially, the recoil starter, air cleaner, muffler, HST fan cover, near the vaporizer and inside of the belt cover, clean and remove all grass.
   If you start to work while grass and dust are piled up, the engine will heat up, and it may cause burning and fire.

If you use a pressurized water hose, the glass in the blade cover can be relatively easy to clean before the grass dries out.
At this time, please cover the engine’s electrical parts, vaporizer, air cleaner, and muffler outlet to protect them from water. Doing so can avoid engine failure.

5. Grease and lubricate each lubricated part.
6. Engage the parking brake, and keep the machine flat in a dry and well-ventilated covered area.
7. When you cover the machine, please wait until the muffler and each engine part have cooled down. During storage, check the tire pressure regularly and add air if necessary.

## Blade Inspection and Replacement:

In order to work as safely as possible, perform an inspection of the blades before you start.

**How to inspect the blades:**

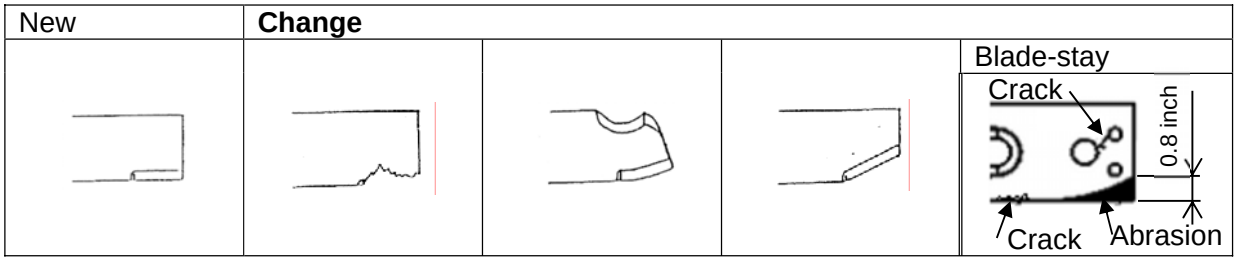
1. Stop the engine and remove the key from the engine switch. Refer to “How to stop the engine,” page 18.
2. Use the cutting height adjustment lever to raise the blades to the middle position.
3. Open the side covers of the blade replacement, and fix it.
4. Check the condition of blades and blade installation status.
5. Check the blades for cracks, bends or abrasions.

If the blade condition is as shown blow, replace the outer blades, or change with new ones.

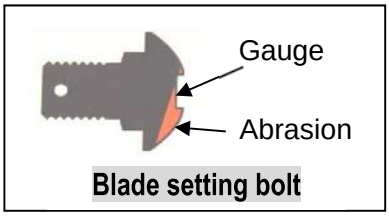
**⚠ DANGER**

- Like blades, the blade stay is a consumable part. Even if you do not see a bend or an abrasion, exchange the blades every **100 hours** of use or every two years, whichever comes first.
- More frequent inspection of the blades is necessary if using the machine on areas including dry earth and sand which cause faster wear and tear of the blades.
- We recommend purchasing a spare set of the blades in advance and keeping them close at hand.
- Please ask your dealer to do the replacement (charges apply). The nut and bolt kit and the knife-stay mounting bolt are needed to replace the blades.
- When replacing the outer blades, also replace the mounting bolts; when replacing the blades, replace the mounting bolts and other components (hard lock nut, nut guard, and blade color) at the same time. Do not substitute nuts and bolts from other manufacturers.
- Two blades (outer blades) must be replaced and exchanged at the same time. Do not use old and new blades together as this will result in abnormal vibrations.

**⚠ DANGER**



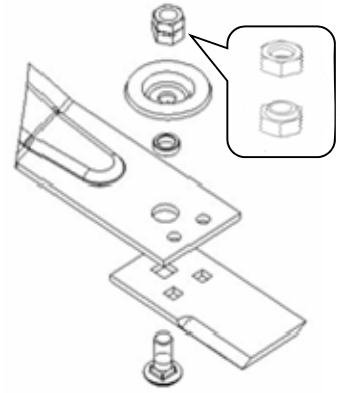

Replace blade setting bolt when abrasion reaches the limit of gauge.



Blade changer

**NOTICE**

- If a blade breaks or flies off due to improper mounting of the blade, serious injury may occur.



**How to replace the blades:**

If you need to replace the blades (outer blades), refer to the following instructions:

1. Always use a blade changer as shown above, remove the blade by loosening the hard lock nut. Remove the top of the lock nut by using a size 22 box wrench at first, and then remove the lower nut.
2. When flipping the blades, always replace the mounting bolt and when replacing the blades replace the other components as well. If you do not replace them, the blade may get warped, damaged or cracked, and scatter debris during operation.
3. After replacing with a new blade, tighten the hard lock nut one by one from the bottom up in order to ensure uniform tightening.

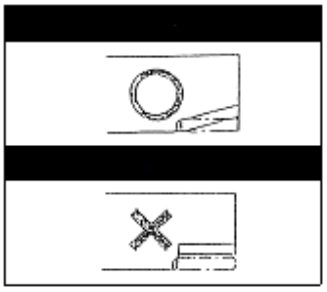
NOTICE

- Tightening torque of hard lock nut is “800kgf・cm” (78.4N・m).
- As a rule, tighten force of approx. 70.5lb (32kg) or more with a 30cm box wrench (size 22).
- For increasing torque, a torque wrench is needed. It is recommended that you check with the dealer in advance to how much force or tightening the torque needs.
- More frequent inspection of the blades is necessary if using the machine on areas including dry earth and sand which cause faster wear and tear of the blades.
- We recommend purchasing a spare set of blades in advance and keeping them close at hand.
- When replacing the blades, be careful not to lose the blade ring collar.

◇◇**You will know *it is time to replace the blade(s) if the gauge (hollow) at the back of the blade mounting bolt is worn.*** ◇◇

**How to fix the blades:**

Please be aware that, once repaired, blades will not perform as when unit was initially purchased.



1. Sharpen the blade as follows:
   - When you polish the blade, hold the blade firmly.
   - If the blade is sharpened parallel to the original blade, it will cause damage.
     Please sharpen as shown at left
   - To keep the balance of the blades, sharpen each blade uniformly
2. Keep a flat surface of approx. 0.015” ~ 0.024” (0.4~0.6mm) on the cutting edge. If the blade is sharpened like a razor blade, it will wear out and become blunt quickly.

NOTICE

- When polishing with a grinder, apply water and avoid raising the temperature of the blade, and polish gradually.
- If the blade temperature is too high, the blade will retain heat and wear down sooner.

⚠ WARNING

- Do not work in places where there are hazards such as flammable fuel and batteries.
- When using a grinder, always wear a hat, thick gloves, and security glasses. Always fix the entire blade, not just certain sections. ( Partial fix is prohibited! )
- If both blades are not balanced, it causes abnormal vibration, and the machine may be damaged.

## How to maintain and inspect the battery:

Proper handling of the battery will lead to maximum performance. Mishandling of the battery may result in reduced battery life or a serious accident.

**Rehydration and replenishment of battery fluid:**

■ How to rehydrate:
Check the electrolyte level each day before operation. Even if not used, check the electrolyte level once a month. If the fluid level drops more than halfway between upper and lower level indicators replenish with **distilled water** to the upper level indicator.

**⚠ WARNING**

- Electrolyte level cannot be below the lower level. It causes short battery life, overheating, and explosion.
- Do not use non-purified water. Do not replenish sulfuric acid. If you add impurities, it may cause heat, inflammation, or toxic gas.
- If you add too much purified water (distilled water), the electrolyte spills and causes the metals to corrode. Do not use purified water at or above the upper level indicator. If battery fluid spills, be sure to wash with water.
- After rehydration, install the vent plug firmly to prevent leaks.

■ How to replenish:
If the engine does not start (even with enough battery fluid), or the rotation of the cell motor is weaker than usual, this means the battery is dead or dying. Recharge for between 5 and 10 hours as follows:

**⚠ WARNING**

- When handling the battery, please beware of fire, sparks and short circuits.
- The battery generates flammable hydrogen gas. Do not expose the battery to fire sources (match, lighter, cigarette, and welder sparks, grinder or terminal part) as it may cause explosions
- Do not touch the battery with charged objects, and do not clean the battery with a dry cloth.
  It may cause an explosion due to static electricity.
- Battery fluid is diluted sulfuric acid. Avoid contact with skin or eyes.
- While charging, remove the battery from the unit. Charging the battery while it is in the unit may damage the electrical components and wiring.

**In addition, fast charging is not recommended. Unless it is a quick charge in an emergency, please follow the instructions for normal charging.**

**The process of removing the battery**

1) Stop the engine and remove the ignition key.
2) Please keep track of the battery status ( pin polarity ).
3) Loosen the bolt on the – ( negative ) cable terminal, remove the cable terminal from the – ( negative ) terminal of the battery.
4) Then, loosen the bolt on the + ( positive ) cable terminal, remove the cable terminal from the + ( positive ) terminal.
5) Loosen the battery mounting equipment; remove the battery, keeping it in a horizontal position.

**Auxiliary Charging** Refer to “Approximate Battery Charge Time.” Charger sold separately.

1) Before using the charger, make sure the power is off. If the power is on and the battery is connected, a spark will occur and may cause an ignition or explosion.
   - When using a charger with a boost function, please follow the instructions of the charger. Mishandling can cause the battery to explode and damage the equipment.
   - Charge the battery in a well-ventilated area, and do not expose to fire as it may cause an ignition or explosion.
2) Connect + of charger to + of battery, and also connect – of charger to – of battery. Incorrect connection may cause electrical failures and burned wiring.
3) Remove all six vent plugs.
4) For auxiliary charging, observe the normal charge current and charge time. Not doing so may cause liquid leaks, ignitions or explosions.

**⚠ CAUTION**

- Fast charging is not appropriate for charging a battery which has been dead for a long time. If fast charging is necessary, make sure to charge less than the current rated capacity of the battery.

5) After auxiliary charging, return the 6 vent plugs to their original locations.

■Estimation of the auxiliary charge completion (meet the following conditions):

| | |
|---|---|
| 1 | Electrolyte specific gravity is over 1.270 / 68 °F (20 °C) and continues for more than one hour at a constant level. |
| 2 | Terminal voltage is over 15V and continues for more than one hour at a constant level. |
| 3 | The gas is generated from each cell. |
| 4 | The charging time is reached. |

**Installation Procedures:**

1) Make sure there are no foreign objects on the mounted battery unit. Place the new battery in with the mounts corresponding to the cables. Fasten the battery with the mounting bracket.
2) Connect the + cable terminal to the + battery terminal*, and tighten the bolt firmly.
3) Then, connect the – cable terminal to the – battery terminal, and tighten the bolt firmly.
4) Greasing the inner sections of the cable terminal’s metal parts will help prevent rust.
   *If the cable terminal is corroded, clean it with a wire brush or sand paper.

- Starting:

After installing the battery unit in the machine, start the engine. Engine should start within 5 seconds, if it does not start, wait for more than 10 seconds and try it again. If it still does not start, the battery life may be low; please check the starting circuit and battery.

- Battery Life:

While the battery is in use, its capacity decreases gradually, and it will eventually run out.
If the battery does not re-charge when you do an auxiliary charge, replace with a new battery

- A battery’s life is shortened by the following factors:
  - High temperature
  - Frequent use ( it is affected by either to little or too much use ).

- Insufficient charging ( the use of too many accessories can cause shortage due to the failure of the generator ).
- Harsh use ( high frequency of use in cold weather or use after insufficient charging ).
- Insufficient maintenance including: insufficient battery fluid level inspection and rehydration, connection failure due to loosening of the terminal parts, uplifting of the battery due to leaving the engine on when charging.
- Overcharging caused by regulator failure. Continuing to charge after the charge is complete.

■ At the end of battery's life, the following signs occur:

- The rotation noise of the starter motor is lower and weaker than usual.
- Fast decrease of the electrolytes of the battery.

When these signs appear, please do the auxiliary charging. If it still does not work well, please replace the battery. Please follow local laws and regulations for disposing of old batteries.

**Battery Type ---U1R type, 12V 270CCA or greater**

## Specifications* (Reference Values):

| | | |
|---|---|---|
| Name | | **Brush Rover 4WD** |
| Model | | RM982F |
| Length x Width x Front Height (in) without ROPS | | 79.1x42.1 x43.3 ( 2010 x 1070 x 1100 mm ) |
| Cutting Width (in) | | 38.3 ( 975mm ) |
| Weight (lbs.) | | 815 ( 370kg ) |
| Cutting Height (in) | | 3.1 – 6.0 (80 – 150 mm ) |
| Blade (quantity) | | Flail Blade x 2 & Blade Stay x1 |
| Belt | Drive | SB32 W800 x 1 |
| | Blade | SB80 W800 x 1 |
| Tire Size | Front | 4.00 – 7 x 2, Tube Tire |
| | Rear | 17 x 8.00 – 8 x 2, Tube Tire |
| Differential Lock | | Yes |
| Handlebars | | Circular handlebars with a Steering knob |
| Transmission | | HST Variable Speed |
| Transmission Oil (quarts) | | 1.1 (1.0L) (#90) |
| Brakes | | Equipped with drum brake |
| Speed (mph) | Forward | 0 – 6.2 |
| | Reverse | 0 – 4.9 |
| Battery | | 12V 270CCA |
| Engine | Name | Briggs & Stratton |
| | Model | Vanguard 358777 |
| | Exhaust Vol. (cc) | 627 |
| | Engine Oil Vol.(quarts) | 1.8 (1.7L) |
| | Max. Output | 15.7kW/3,600rpm |
| | Start Up Method | Starter motor |
| | Spark Plug | Champion-RC12YC |
| | Fuel Tank Vol.(Gallons) | 3.2 (12L) |

*Changes may be made to improve the specification without prior notice.

## Included Parts and Tools:

| No. | Part Name | Standard / Size | Quantity | Note |
|---|---|---|---|---|
| 1. | Instruction Manual | | 1 | |
| 2. | Double-Ended Wrench | 10 x 12 | 1 | |
| 3. | Double-Ended Wrench | 14 x 17 | 1 | |
| 4. | L-Shape Wrench | 22mm | 1 | L-Shape Box |
| 5. | Goggles | Anti-fog Type | 1 | Protective Equipment |
| 6. | Blade Set Bolts | M-14 | 2 | When flipping the blades |
| 7. | Blade Changer | | 1 | Blade Change tool |
| | | | | |

## Consumable Parts:

| No. | Part Name | Part Code | Quantity | Note |
|---|---|---|---|---|
| 1. | Blade | 80-1483-821-00 | 2 | |
| 2. | Blade Stay | 0244-51200 | 1 | |
| 3. | Attaching bolt Set | 0244-78210 | 2 | |
| 4. | Blade Changer | 0244-52400 | 1 | Blade Change tool |
| 5. | Blade Collar | 80-1483-818-00 | 2 | |
| 6. | Nut Guard | | 2 | *Sold as set 0244-78210 |
| 7. | Cap Nut | 83-1483-175-00 | 1 | Center Spindle |
| 8. | Spring Washer | 89-1750-200002 | 1 | Center Spindle |
| 9. | Blade Stay Mounting Bolt | 0244-51600 | 2 | |
| 10. | Spring Washer | 89-1750-140002 | 2 | |
| 11. | V-Belt (Driving) | 89-6123-003202 | 1 | SB-32 W800 |
| 12. | V-Belt (Cutting) | 89-6123-008002 | 1 | SB-80 W800 |
| 13. | Blade Clutch Cable | 0322-75110 | 1 | |
| 14. | Brake Shoe Set (PA-7) | 0244-88100 | 1 | |
| 15. | Blade Brake Cable | 0322-75210 | 1 | |
| 16. | Differential Lock Cable | 0244-72410 | 1 | |
| 17. | Throttle Cable | 0322-75600 | 1 | |
| 18. | Choke Wire (B&S) | 0348-70200 | 1 | |
| 19. | Oil Filter | 842921 | 1 | |
| 20. | Pre-Cleaner Filter (Circle) | 692520 | 1 | |
| 21. | Air Cartridge Filter | 692519 | 1 | |
| 22. | Fuel Filter | 691035 | 1 | |
| 23 | Tube(4.00-7) | 80-1711-404-00 | 2 | Front tire |
| 24 | Tube(17×8.00-8) | 0244-78300 | 2 | Rear tire |
| | | | | |
| | | | | |
| | | | | |

## Periodic Voluntary Inspection Table:

Neglecting inspection and maintenance is a cause of accidents and damage. To always keep the machine functioning correctly, perform inspection according to the following table
Perform annual and monthly inspections; and starting checks each time you use the machine.

D:Daily M:Monthly Y:Yearly

| Item | | Inspection Content | | Inspection Freq. | | |
|---|---|---|---|---|---|---|
| | | | | D | M | Y |
| Engine | Engine (Main Body) | Condition at startup, abnormal noise | Machine starts up easily. | ✓ | ✓ | ✓ |
| | | Power and acceleration state | Power increases gradually and smoothly. | ✓ | ✓ | ✓ |
| | | State of exhaust and gas leaking | Exhaust color, smell, and sound are normal. | ✓ | ✓ | ✓ |
| | | Air filter damage, loosening, cleanliness | No damage, loosening, nor noticeably dirty. | ✓ | ✓ | ✓ |
| | | Loosening of the attachment of cylinder head and manifolds | Gas leak, cracking, noticeable corrosion. (Tightened to the correct torque, not loose) | | | ✓ |
| | | Valve tappet clearance | Clearance looks straight. | | | ✓ |
| | | Compressive pressure | Compressive pressure looks straight. | | | ✓ |
| | | Engine base cracking or deformity, loosening of nuts and bolts | The engine base is not cracked or deformed and the nuts and bolts are not loose. | ✓ | ✓ | ✓ |
| | Engine Lubrication | Quantity, cleanliness | Oil quantity is suitable, not dirty or mixed with any water or metals. | ✓ | ✓ | ✓ |
| | | Oil leakage | Oil seal and gasket are not leaking oil. | ✓ | ✓ | ✓ |
| | Engine Fuel | Fuel leakage | Fuel is not leaking. | ✓ | ✓ | ✓ |
| | | Fuel filter blockage | Not noticeably dirty, deformed or clogged. | | ✓ | ✓ |
| | | Fuel quantity / quality | There is fuel in the engine, and it is of good quality. | ✓ | ✓ | ✓ |
| | Engine Electrics | Loosening or damage to electrical wire connections | Harness connections are suitable, not loose or damaged. | | ✓ | ✓ |
| | Engine Purity | Dirtying of air filter element | Air filter elements is not dirty | ✓ | ✓ | ✓ |
| | | Element breakage | Element is not torn or worn out. | ✓ | ✓ | ✓ |
| | Engine Cooling | Weeds etc. clogged in the recoil cover | Recoil cover is not clogged with debris. | ✓ | ✓ | ✓ |
| | | Accumulation of weeds in the muffler | There is no accumulation of weeds around the muffler. | ✓ | ✓ | ✓ |
| Transm | Belt | Loosening | There is suitable tension on the belt. | ✓ | ✓ | ✓ |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Damage, cleanliness | Cracked, damaged, noticeably dirty. | | ✓ | ✓ |
| | Transmission | Abnormal noise, strange heat/movement | There are no abnormalities, strange noises or heat, when running the machine. | | ✓ | ✓ |
| | | Oil quantity, cleanliness | There is a suitable quantity of oil and it is not dirty. | | | ✓ |
| | | Oil leakage | Oil seal, packing parts are not leaking oil. | ✓ | ✓ | ✓ |
| Brake Device | Brake | Parking brake working condition | The brake works well, there is no dragging. | ✓ | ✓ | ✓ |
| | | Give | There is suitable give of the parking brake pedal. | ✓ | ✓ | ✓ |
| | | Damage of rod and wire, loosening, cracking, missing split pin | There is no damage, loosening, or cracking. | ✓ | ✓ | ✓ |
| Body | Body | Cracking or deformed nuts and bolts are loose or have fallen off | The frame is not cracked or deformed. There is no loosening and missing of bolts / nuts. | | ✓ | ✓ |
| | Cover | Cracking, deformity, corrosion | The cover is not cracked, deformed, or corroded. | | | ✓ |
| | Moving Parts | Condition of levers and wires | It is a smooth operation, There is enough oil. | ✓ | ✓ | ✓ |
| Gear | Gearshift | Operation condition | There are no abnormalities when operating. | ✓ | ✓ | ✓ |
| | | Loosening, grinding noise | The lever mounting position is correct. | ✓ | ✓ | ✓ |
| Drive | Tires (Wheels) | Air pressure and tread depth | Standard values are observed. | ✓ | ✓ | ✓ |
| | | Cracking, damage, wear and tear | No cracks, damage or wear and tear. | ✓ | ✓ | ✓ |
| | | Metal, stones, etc. stuck in the tires | There is no debris in the tires. | ✓ | ✓ | ✓ |
| | | Loose or missing nuts and bolts | Nuts and bolts are not loose or missing. | ✓ | ✓ | ✓ |
| | | Rattling, strange noise | Mounted parts do not rattle and are not missing | | ✓ | ✓ |
| Cutting | Blade and Stay | Deformity, cracking, wear and tear of the blade and stay | Blade is not worn out, missing, or warped. | ✓ | ✓ | ✓ |
| | | Mounting condition of the blade | Nuts and bolts are not loose, worn out or missing. | ✓ | ✓ | ✓ |
| | | Blade brake | Blade brake works well (stops within 5 seconds). | ✓ | ✓ | ✓ |
| Safety | Labels* | Damage/unreadable | Warning labels and nameplate are attached and not damaged. | | ✓ | ✓ |
| | Reflective plate | Damage, missing | There are no missing parts. | | ✓ | ✓ |

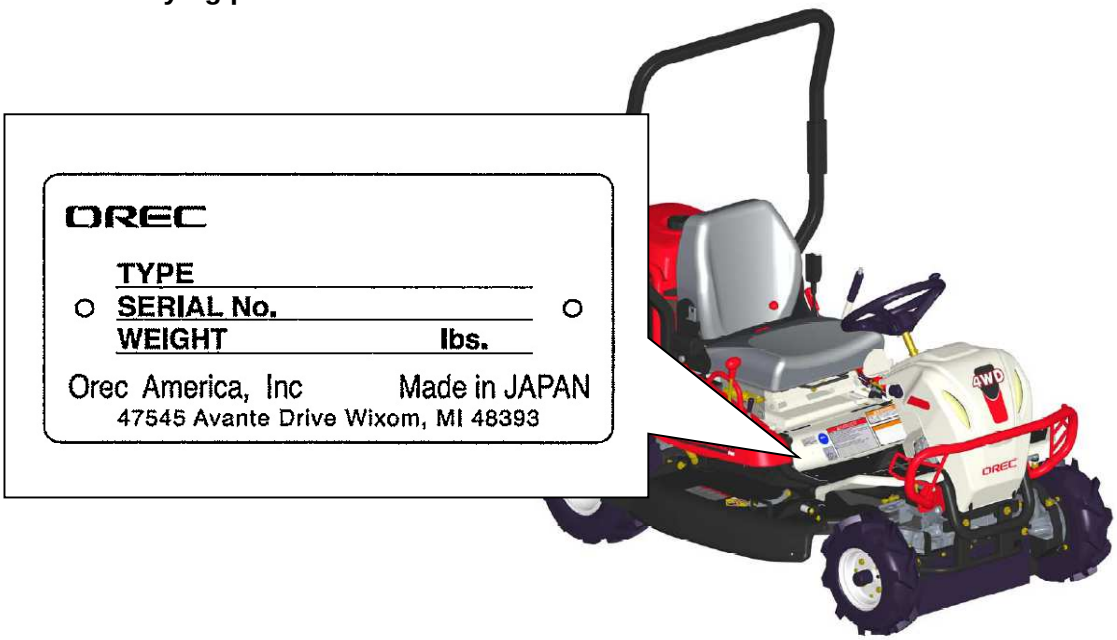
*For new labels, please consult with your local retailer (charges apply).

## Parts Supply Term Limit:

The supply term (period) during which replacement parts will be supplied is nine **(9)** years from the time the last OREC product is produced. However, even during the supply period, it may be necessary to consult with OREC when seeking to purchase specific parts. If you have a request for replacement parts after this period has passed, please consult with OREC for availability and prices.

If you have any questions, please talk to staff at the point of purchase or at our head office. At that time, please inform us of your machine's model type, serial number, and engine type.

**Position of identifying plate：**



## Limited Warranty:

## Terms and Conditions

- Orec America, Inc. provides a limited warranty of two (2) years for residential users, one (1) year for commercial users, and one (1) year for rental companies, of its products against defects in workmanship and materials when said products are put to ordinary and normal use. The terms and conditions of the limited warranty are as set forth herein.
- The second year of the residential warranty shall cover only parts and NOT service
- Crawlers are guaranteed for one hundred eighty (180) days after initial purchase. This warranty covers defects in materials or workmanship only, and does not include damage to crawlers from normal use and other external factors.
- The warranty shall commence from the date of purchase. This warranty is available only to the original purchaser, and is not transferable.
- OREC reserves the right to inspect covered machines and parts in order to determine the validity of warranty claims
- For the purposes of the above warranties “ordinary and normal use” does not include misuse, accidents, or damage due to inadequate maintenance.
- Under this warranty, the responsibility of Orec America is limited to replacement or repair of defective parts at Orec America, or at an authorized Orec dealer.
- Routine maintenance and adjustments, as defined by the manufacturer’s owners’ manuals, are the responsibility of the user and are not covered by the warranty.
- Degradation or deterioration of the product due to everyday use are excluded from the warranty
- Expendable components including but not limited to such as belts, blades, filters, spark plugs, bags, wheels hoses, cables, wires, brake pads and flappers, are excluded from the warranty. This warranty does NOT cover tire replacement or repair caused by punctures from outside objects, such as nails, thorns, stumps or glass.
- During the warranty period, the warranty holder is responsible for equipment transportation charges, and transportation expenses needed to process the claim will not be reimbursed.

- **The following are excluded from the warranty:**
  - ・Repairs necessary due to inappropriate use or abuse including, but not limited to, damage caused by towing objects or over-speeding the engine.
  - ・Paint peeling or rust that occur through exposure to the elements or through everyday use shall not be covered by the warranty.
  - ・Repairs necessary because of operator negligence, including but not limited to, electrical and mechanical damage caused by improper storage, failure to use the proper grade and amount of engine oil, failure to keep the mowing deck clear of flammable debris, or the failure to maintain the equipment according to the instructions contained in the owner’s manual.
  - ・Repairs necessary because of accidents.
  - ・Engine (fuel system) cleaning or repairs caused by fuel determined to be contaminated or oxidized (stale). In general, fuel should be used within thirty (30) days of its purchase date.
  - ・Claims made after expiration of the warranty.
  - ・Claims that are NOT specifically covered by warranty.
- Repairs, maintenance and/or modifications performed by unauthorized persons or dealers,

as well as the use of unauthorized parts or accessories will lead to the immediate forfeiture of the warranty

- Under NO circumstances shall Orec America be liable for damages or expenses of any kind resulting from inappropriate use of its products.
- Orec America shall NOT be responsible for incidental or consequential costs or damages resulting from defects in its machinery. Such excluded costs and damages may include : 1) Labor 2) Lost sales 3) Cost of replacement parts.
- This warranty shall apply only to models sold within the United States and purchased from authorized dealers.

**Note**: to request warranty service, please contact an authorized Orec dealer or refer to your owner's manual for the proper procedure

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE. SOME STATES DO NOT ALLOWTHE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

## Warranty Registration

**Register your info within 30 days of purchase at http://www.orecamerica.com/warranty**

## Warranty Claim Procedure

Should this Orec product fail due to a defect in materials and/or workmanship, the owner should use the following procedure to make a warranty claim:

1) The owner must take the machine to the dealer from whom they purchased the machine or to an authorized Orec America dealer.
2) The owner must present the warranty registration sheet or the invoice or receipt received at time of purchase.
3) The warranty claim will be taken and verified by the Orec Dealer or distributor service manager and submitted to an Orec distributor. The dealer or distributors service manager will make a report and submit it to Orec America for consideration of Warranty.
4) Orec will research the claim and may request that parts be returned for further examination. Orec will report their decision to the distributor service manager or dealer from whom the claim was received.
5) In the event that OREC approves the claim, parts will be exchanged free of charge and repairs performed by the dealer.
6) The decision by the Quality/Service department to approve or reject a warranty is final and binding

**Note**: to process a warranty claim, it is necessary to include the model name and serial number which are printed on the Orec Serial Plate