

instruction manual

Ride on Mower

Rabbit Mower

RM 9 5 3 · 9 5 3 X

RM 8 8 3 · 8 8 3 X



0343-70500



- Please read carefully and fully understand the important dangerous parts that appear in the text of the instruction manual before using the product.
- When purchasing this product, please receive an explanation from the retailer about how to use it for safety.
- Please keep the instruction manual in a safe place so that you can read it at any time.
- To maintain safety, perform annual inspections according to the regular inspection table on this paper.
- Be sure to use the manufacturer's genuine product for maintenance of this product.

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■ Regarding to the instruction manual.




- Please read this instruction manual carefully before using this machine.
- When lending or transferring this unit, be sure to hand it along with this unit.
- If lost or damaged, please order directly to the dealer shop.

《Introduction》

- ✓ Thank you for purchasing this product.
- ✓ This instruction manual describes the correct handling method and easy maintenance method so that the product can be kept in the best condition at all times for safe operation.
- ✓ Before using the product, be sure to read this instruction manual carefully to fully understand the safe operation work and correct handling method, and use it for safe and efficient work.
- ✓ After reading the manual, keep it in a safe place for future reference so that you can use this product for a long time.

《Definition and symbol mark》

In this manual, the following definitions and symbols are used according to the degree of danger (or the magnitude of the accident). Please fully understand the meanings of the following symbols and follow their contents.

Symbol mark	Definition
 Danger	Indicates what could result in death or serious injury if this Danger sign is not followed.
 Warning	Indicates a hazard that could result in death or serious injury if the warning is not followed.
 Caution	Indicates a risk of injury if the Caution is not followed. It also indicates what can cause damage to the product itself if not followed or corrected.
Reference	This section describes the performance of the product that you should know about operation and maintenance, and items that are easy to make mistakes.

《Regulation of this product》

- 1) This product has been developed as an agricultural machine, so please do not use it for any other purpose (use such as rental that the operator cannot identify).
- 2) Grasses such as ivy and vines that crawl along the ground may not be able to be cut.
- 3) This machine has one passenger capacity. In addition, it is not possible to drive on a road or a place that is used for general traffic (agricultural road, forest road, public plaza, etc.). Even if you get a vehicle number, you cannot drive on public roads.

《Important Notices》

- 1) Please note that the specifications of your product and the contents of this document may not match in some cases due to changes in parts etc. due to performance / durability improvement and other specification changes.
- 2) Please note that copying all or part of the contents of this document without permission is a violation of copyright, unless otherwise required by law.
- 3) In this manual, photographs and illustrations are used so that the explanation part can be understood concretely, but there are cases where the parts other than the explanation part are omitted.

《Warranty / Contract / Disclaimer》

- 1) The warranty period of this product is one year from the time of purchase of a new product, or 50 usage hours (6 months of contract work, or 50 usage hours), whichever comes first.
- 2) It is impossible to predict all precautions. When using the product, it is necessary for the operator to pay attention to safety.
- 3) It is impossible to predict all precautions. When using the product, it is necessary for the worker to pay attention to safety.
- 4) If you do not understand even after reading this manual, do not operate any arbitrary operations, and be sure to consult with the store where you purchased the product.
- 5) Regular inspection and maintenance are indispensable in order to continue to use the product

safely and efficiently. Please make a regular inspection and maintenance. The warranty does not cover failures or accidents resulting from failure to perform these inspections / maintenances, non-compliance with this manual, such as use or modification beyond specifications.

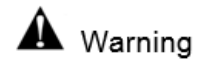
- 6) The supply period (term) of repair parts for this product will be 9 years after the production is discontinued. However, we may contact you regarding the delivery date of special parts even within the supply period.
- 7) If you have any questions or services, please contact your dealer. In that case, please refer to the following section and check "Product model number, serial number, and model name of installed engine" and contact us as well.

"serial number" of this machine



1. Before using ‹Please read carefully for safe use›

1.1 working conditions



Warning

- 1) Please do not use those who cannot understand the contents of this book.
This product is a one-seater. Please do not carry people other than worker.
- 2) When lending a machine to another person, please explain the handling method and instruct them to work after understanding it fully.
- 3) Do not work when normal driving operation cannot be performed due to overwork, illness, drugs or other influences.
- 4) Do not let work to drinking person, pregnant women, children or unskilled workers.
- 5) To avoid getting caught in the rotating part of the machine, wear long sleeve pants and long sleeve outerwear, wear suitable clothing for works.
Tobacco and rolled towels are strictly prohibited
- 6) For each product, please use stable equipment such as safety shoes (boots), helmets (hats) , anti-slip shoes (spikes), eyeglasses, gloves, snake pad for protect your body.
- 7) This product has not been certified by the Road Transport Vehicle Act, so please never drive on public roads. We are not responsible for any accidents or violations caused by driving on the road.

1.2 Before Working

1.2.1 Precautions before work

- 1) Carbon monoxide poisoning may be caused by exhaust gas. Do not operate or work in places such as indoors where ventilation is inadequate.



Danger



Warning

- 1) Never modify this machine to become an impediment to safety work.
‹We are not responsible for any accidents caused by these remodeling or defects.›
- 2) Please make sure there are no tangible assets such as people, animals, vehicles and equipment, buildings, etc. in the surrounding area. Also, please check the safety of surroundings and start work. Do not approach dangerous places such as obstacles, gutters, soft shoulders, etc. in the field with set a marking etc.
- 3) Remove stones and other foreign objects in advance, and if there are obstacles that cannot be removed, install a caution sign or a safety fence that indicates the prohibited area, and then start work. In addition, in such a field, for the safety, work at a higher cutting than usual. It is dangerous because the Blade may be chipped or foreign matter such as stones may scatter.

- 4) Please remove objects such as rocks and metal that may cause sparks due to contact with the rotating blade in advance. If it cannot be difficult removed, make a prominent mark to keep it away.
- 5) When cutting dead grass, clean the engine and exhaust pipe area, which become hot, once an hour, checking for grass debris.
- 6) Dead grass can be ignited by spontaneous combustion or external fire. When cutting dead grass, have a work manager other than the worker and always monitor it.
- 7) Please be special careful when cutting grass in a dryness warning is in issued and do not cutting grass work in some situations.
- 8) When traveling on a river, cliff, or a step (road shoulder) to prevent falling, please run on a sufficiently safe flat place.
- 9) It is dangerous to use it in poor visibility when it is dark. Please do not use when place condition cannot be grasped sufficiently.



Caution

- 1) Do not use this machine in the rain or in a pool of water where it may be exposed to a large amount of water.
- 2) Be aware to other climatic conditions, etc., and pay sufficient attention to work implementation and selection of equipment.

1.2.2 Inspection before work



Warning

- 1) Operation with safety device and safety cover removed is dangerous, please check the normal condition.
- 2) It is very dangerous to operate without the safety devices and related parts that are standard equipment as well as safety covers. To prevent accidents, be sure to use these parts with them attached. If there is any abnormality, repair it and check the normal condition before operating the work.
- 3) When the work clutch (Blade clutch, etc.) is in the "disengaged" position, check that the V-belt is securely stopped. If it is moving even a little, stop the engine, adjust the belt retainer, and adjust the wire.
- 4) The falling off of the Blade is dangerous. Please tighten the set bolt and nut of the Blade securely. Also, please replace the old one with a new one.
- 5) If there is an opening / closing cover for Blade replacement, it is dangerous to use while keeping it open. Be sure to use it in a closed state.
- 6) Always check the effectiveness of the parking brake. Incorrect brake adjustment may cause a serious accident. Please check with one or more of the following.
 - (1) When the Driving clutch lever is in the "off" position (the sub-change shift lever is in the "N" position), the parking brake is applied and when push it with two adults do not move.
 - (2) Tires lock up during sudden braking while driving.

- (3) The parking brake is working on the 2m bridge which hooked it on the bed of a light truck.
- 7) Before starting work, be sure to remove the cooling air intake of the engine, the clogging near the cylinder, especially the high temperature around the exhaust pipe and the debris accumulated on the machine. It may cause engine burn-in or fire.
- Also, clean is not only the outside but also the inside of the air cleaner and the inside of the HST fan cover (applicable product) at the same time.

1.2.3 No fires · Fuel supply



Danger

1) No fire is allowed around the machine, not only during work and refueling.

Do not use cigarettes, bonfires etc., naked flames etc. absolutely near the machine.

2) After stopping the engine, please refuel after the muffler temperature drops sufficiently.

3) For refueling, if there is a fuel level upper limit mark, please do not exceed the mark.

Please remove the Fuel when it is too much to be below the mark.

Also, be sure to wipe spilled fuel.

4) Please do not refueling when the body is charged with static electricity.

There is a possibility of ignition due to vaporize gasoline, there is a big risk of burns and fire.

1.3 During work

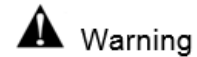
1.3.1 Precautions of while working



Warning

- 1) Please try to driving safely, and do not start suddenly, stop suddenly and do not turn abruptly.
- 2) Please do not work in an unreasonable posture and take a rest within 1-2 hours according to your physical condition.
- 3) To prevent people (especially children) and pets entering the working area (within a radius of 10 m), set a standing tag or guard rope to indicate that the Grass cutting work is processing in inside and do not approach within a radius of 10 m.
When a person or pet approaches, stop work immediately and stop the engine.
- 4) Do not put flammable or dangerous materials around while driving. Also, the exhaust muffler becomes hot. There is a risk of burns if your hands are touched when operating the machine or immediately after finishing work.
- 5) For work on the slope, please use the slope of **20 ° or less.** Please do it in the lateral direction (contour direction) rather than the vertical direction. If the machine is used at an inclination of 20 ° or more, the machine may overturn and become the underlay of the machine.
- 6) Please take precaution to prevent slippage well. But although please do not work in slippery places.

1.3.2 Operational precautions



Warning

- 1) Be sure to sit on the seat, move the cutting height adjustment lever to the "move" position, and depress (or lock) the parking brake pedal to start.
- 2) Beware when turning and other operations on the slope. There is a fear of breaking the balance and falling and injuring.
- 3) On the slope, please do not perform unnecessary operation of shift lever and clutch lever for safety. There is a risk of slipping, falling.
- 4) When backward moving, please be careful that people (especially children) · animals · obstacles are not caught in the machine and fall over due to a step, cliff.
- 5) When working around trees and walls, be careful not to get caught by the body, hands, legs, pillars, tree branches, or wires.
- 6) When changing the cutting work direction, please check the safety in the front and back direction.
- 7) Operate the work (Blade / Rotary) clutch after confirming that there are no people (including Children) or animals, and paying sufficient attention to safety.
- 8) Before doing the Clutch operation (Knife · Rotary), Please confirm that there is no person (Inc. Children) and animals.

1.3.3 Inspection while working · stop · cleaning



Warning

Carefully remove the debris where the intake of cooling air, the clogging near the cylinder and especially the debris accumulated around the exhaust pipe that becomes hot. It may cause an engine seizure or fire.

Also, clean the inside as well as the outside. Also, clean the inside of the air cleaner and the dust accumulated on the HST fan cover at the same time.



Caution

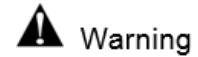
- 1) When checking on during work, please be sure to stop the engine and use gloves to protect your hands, after each part has cooled down.
- 2) when leaving the machine be sure to turn off the Engine. Also, please make sure to park at a stable flat area.
- 3) When stopping the engine, please do the following procedure (for the applicable product).
 - ① Apply brakes. ② Remove the key. ③ Close the fuel cock
- 4) Since abnormal sounds, smells, heat generation during driving may cause fire, stop the engine immediately and check and repair it.
- 5) If a foreign object collides (bites in) during work, immediately stop the work (Mowing, Tilling, etc.) and stop the engine. Be sure to inspect the Blade, Blade stay, Tilling blade and covers for cracks or bends, and correct or replace as necessary.
- 6) If you feel any abnormality other during the work, be sure to stop the engine before checking.

1.4 Notes on loading and unloading



Danger

- 1) Be sure to stop the engine and bring the fuel cock to the "closed" state when transporting this machine. Due to fuel leakage, spilled fuel may catch fire.
- 2) Do not tilt the machine beyond necessity. Fuel leakage may occur.



Warning

- 1) Please use a suitable car according with the Machine for transportation.
(Loading weight, size of loading platform, presence or absence of interference)
- 2) Select a flat and safe place for transportation vehicles, stop the engine so that it does not move when mounted, pull the side brake, and stop the wheel.
- 3) Adjust the height until the knife / claw does not contact the bridge. Also, please do the following for the applicable model. ① Work clutch is in "OFF" position. ② Position the diff-lock to the "ON" position.
- 4) Please make sure to apply a sturdy bridge that meets the standard with a loose slope (15 degrees or less), lower the engine rotation, loading "forward", slowly at low speed in "backward" when unloading.
<At that time, the operation to change speed and direction is dangerous, please do not do. >
- 5) Beware , When the machine crosses the boundary between the bridge and the truck bed, the position of the center of gravity suddenly changed.
- 6) When transporting, please be sure to secure with a tough rope etc. Please also keep safe driving.

1.5 Inspection / maintenance

◎ **Periodic inspection is essential for maintaining quality and performance.**

<Please note , we cannot assume about the responsibility for accidents and breakdown due to neglect of periodic inspection.>



Warning

Failure to observe the contents stated below may cause burns, injury or machine damage.

- 1) Perform daily inspections before and after used, and maintenance, periodically inspect and maintain to ensure that the products are kept safe and comfortable at all times.
- 2) For Inspection, adjustment and maintenance, stop the engine, wear heavy duty gloves after the overheated part of the muffler part and other mission case has completely cooled down, then use the correct tool correctly.
- 3) Inspection, adjustment, maintenance should be carried out in a place where the ground is flat and hard, wide and bright, always keeping in mind the balance of the machine, please be careful not to fall over.
- 4) When checking by lifting the machine, be sure to prevent falling.

- 5) When replacing or installing / removing a knife / blade or tire / crawler, please make sure that it is securely tightened in the specified location or firmly tightened.
- 6) When replacing the knife / blade or tire / crawler with a new one, please replace the mounting bolts together with a new one of the manufacturer genuine products for safety.
- 7) It is dangerous to damage the safety cover of the belt and knife part and the cover for preventing scattering. Please do not leave the part where you feel abnormality during work, always interrupt the work, inspect again, please check again after work, please make necessary repair
- 8) Be sure to install the removed covers correctly in their original positions.
- 9) Please do not set the attachments or modification which are not specified.
- 10) When the fuel pipe becomes old, it becomes a cause of fuel leakage and it is dangerous. Replace it with a new one along with the tightening band each 3 year or when it gets injured.



Caution

Failure to observe the following precautions may damage the machine.

- 1) When washing the machine, please do not spray water on the engine part (electrical parts, near the air cleaner, fuel cap etc.) and warning labels pasting place.
- 2) Check and adjust the clutches, throttle, gear change etc thoroughly.
- 3) For in case of covering please wait for "about 5 minutes or more" after stopping the engine to prevent burns and fire, after checking the cooling condition of muffler and engine body fully.

1.6 Storage



Warning

- 1) For safety, please be sure to close the fuel cock.
- 2) When storing this machine for a long time, please keep it indoors.
- 3) Please remove dust and foreign matter attached to the main body and working part.

1.7 Warning display mark



Warning

- 1) Warning indication marks are carefully selected as important items among important hazards within this item, and are affixed to the main unit.
Please fully understand and be sure to observe it.

Location of warning Label

0215-83100
Sloping caution label 15°

0215-83200
Wear protective equipment

Engine Warning Label

0223-76100
Caution label (L) Z26-5

0329-76200
Caution mark (cover)

0-1488-9280-10

Meaning of caution label

Engine Warning Label

- A. The Owner's manual contains important information on safe operation. Read it before operating engine.**
- B. Exhaust gas contains carbon monoxide, an odorless and deadly poison. Do not run Engine in an enclosed area.**
- C. Gasoline is extremely flammable and explosive. No open flames or other source of ignition.**
- D. Engines can become extremely hot during normal operation. Keep away from hot parts of the engine.**

Work on slopes below
15 degrees

Be sure to use protective
glasses.

Meaning of caution label



Beware of cutting Blade



Be careful of rotating objects
inside the cover.



Stand clear of the machine



Beware of thrown object



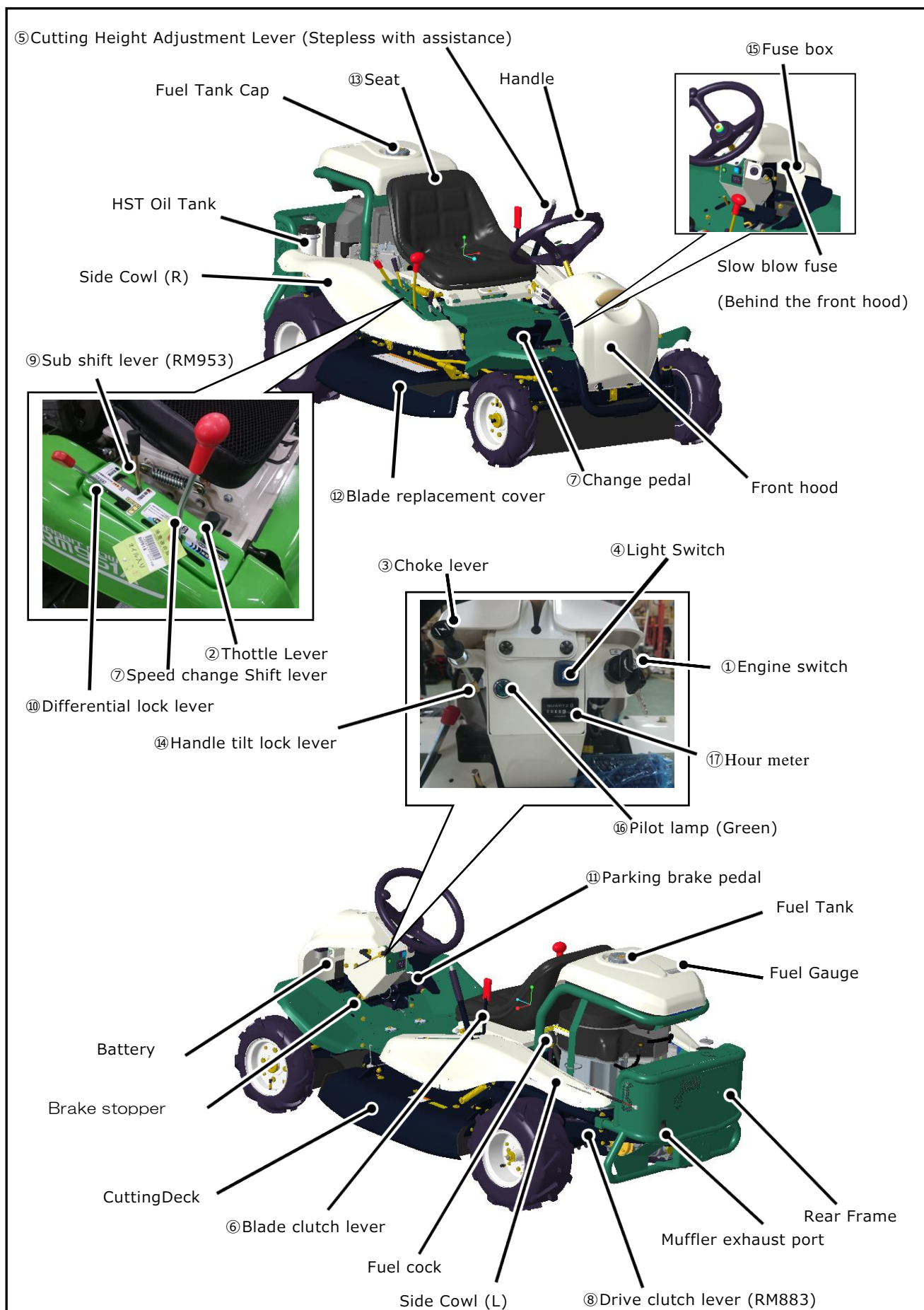
Read Owner' s manual.



Before doing maintenance
remove the spark plug.

2. Names and Functions of each part

2.1 Name of each part



2.2 Function of each part



① Engine switch

Insert the key and operate "START", "RUN", and "Stop" of the engine.

② Throttle Lever

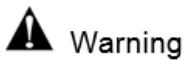
Adjust the engine speed from "Low speed" to "High speed".

③ Choke lever

Used to start the engine in cold weather. If you pull it "closed"  position, "Open" if returned  position. No action required if engine is warm.

④ Light Switch

Press to turn on (ON, light lit), press again to turn off (light off). When the switch is "ON", the switch lights blue.



Warning

This light is for Moving. Never use it for work. There is a risk of collision, falling, etc. because the surrounding situation cannot be grasped. Please drive at low speed when the light is on.

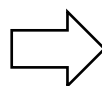
⑤ Cutting Height Adjustment Lever (Stepless with assistance)

This product can be set to any cutting height between 10 and 80 mm. Press the cutting height lock button at the tip of the cutting height adjustment lever with your thumb, adjust it to the desired height and release the lock button to fix the cutting height at that position (see the figure below). As a guide for cutting height during adjustment, align the lever position with the scale label on the right side of the lever. The engine will not start except in the "move" position (maximum pulled up position). The Blade cut height is different when the Blade is rotating and when it is stopped. The scale is the value when the Blade is rotating in the test field. Please refer to it as the cutting height during actual mowing work (It depends on the working environment.)



Caution

Adjust the cutting height by pushing the lock button firmly to the end. If you stop the operation halfway (press halfway), it may cause a malfunction. For safety, be sure to set the cutting height adjustment lever to the "move" position when entering, leaving, or moving backward in the work field.



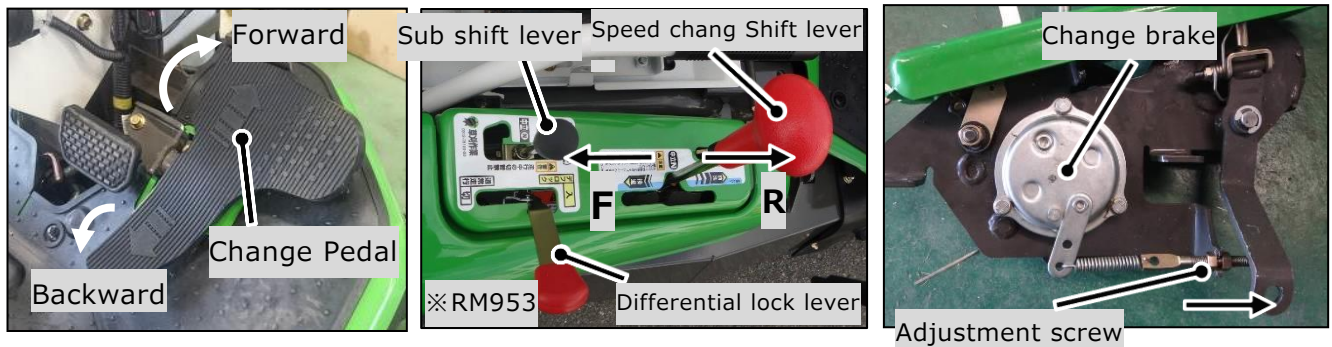
⑥ Blade clutch lever

2. 各部の名称とはたらき

Turns the Blade rotation "ON (rotation)" and "OFF (stop)". The Blade clutch lever cannot be operated when the cutting height adjustment lever is in the "move" position.

⑦ Change pedal · Speed change Shift lever

Used for driving / stopping the machine, Driving direction and speed adjustment. Push the change pedal forward from the neutral position to move forward, and toward the heel to move backward. The speed can be adjusted steplessly depending on the angle of depression. If you do not step on, it will automatically return to neutral.



Reference ;

- 1) If you want to make it harder to return the Speed change shift lever while driving, tighten the change brake adjustment screw (see the upper right photo) to the right (in the direction of the arrow) to brake and make it difficult to return. Please note that it will be need heavy opertation.
- 2) The Speed change pedal works together only when the Speed change shift lever is tilted to the right and placed in the guide groove. Otherwise, the change pedal alone will move.

⑧ Drive clutch lever (Only RM883)

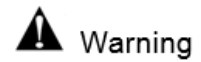
There is a Driving clutch lever at the lower left rear of this Machine.

Normally, use it in the "ON" position. Only when the engine cannot be started, such as when the battery is dead or when moving indoors, setting the "OFF" position makes it easier to push the unit to move it.



⑨ Sub shift lever (Only RM953)

The "high speed" side is for "moving". Please do the mowing work only on the "low speed" side. For safety, work on a sloping ground at 10° or less. For operation, be sure to insert the lever to the cutout part of the gear shift guide at each position. In the "neutral" position, you can push the machine without the engine power.

**Warning**

Sub shift lever operation is should be stopped the machine and insert it in to cutout position. Operation while driving or insufficient gear shifting may cause slipping due to gear loss, which is extremely dangerous. Also, please be sure to take two or more person to push the machine. Be sure to do the mowing work only on the "low speed" side. On the "high speed" side, the speed is high, and there is a delay in the risk avoidance measures in case of an emergency, which is dangerous. (*Product with sub shift lever)

⑩ Differential lock lever

Normally, use this in the "off" position. When working on a gentle slope or on a soft ground, or when one side of the rear wheel is slippery and it is difficult to go straight, or when loading / unloading to / from a truck, set the diff lock lever to the "ON" position to set both sides of the rear wheel tires are directly connected, which improves straightness.

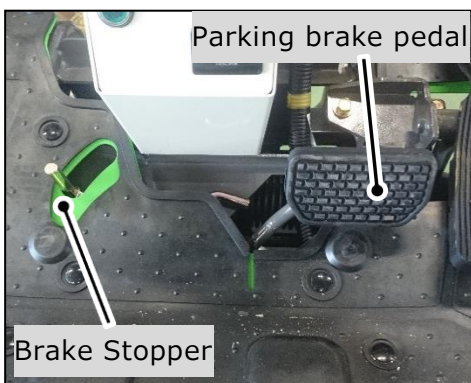
**Caution**

If you use a flat ground, the turning radius will be large, tires will be worn out, and it may cause mission damage.

⑪ Parking brake pedal

In case of an emergency, if you fully depress the pedal, the brake will be applied, then machine will be stopped, and the shift lever will be returned to the "neutral" position. For normal stop operation, always use the change pedal or shift lever to stop. keeping the pedal depressed and lock with the brake stopper, it will be a parking brake. The lock is released when you step

further. The engine cannot start unless the pedal is depressed (locked).

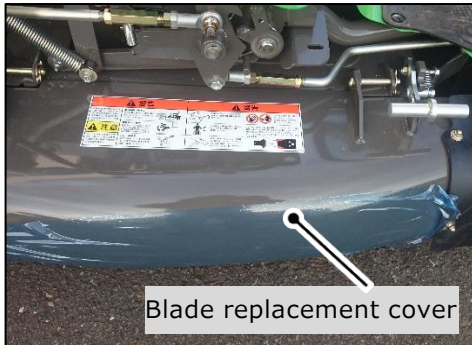
⑫ Blade replacement cover

When inspecting or replacing the Blade, you can fix it with the cover open.

〈5.4.1 Refer to How to open and close the Blade replacement cover.〉

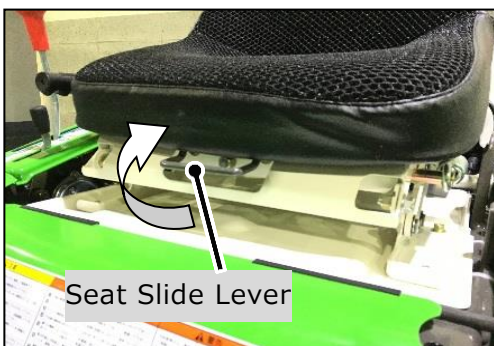
Warning

Be sure to close the Blade replacement cover while working. Mowing work with the cover open is extremely dangerous as it causes increased scattering of foreign matter such as stones. Make sure the cover is closed and locked when except Blade inspected or replaced.



⑬ Seat(Seat slide and Seat suspension functions Equipped.)

Adjust the seat slide front and back by raising the slider lever in front of Seat. The suspension can be adjustable the strength of the spring force according to the weight of the worker using the "suspension adjustment bolt" on the front of the seat in the left photo. Turning it clockwise will make it stronger, and turning it counterclockwise will make it weaker. After starting the engine, the engine will stop for safety if you leave the seat when the cutting height adjustment lever is not in the "move" position and the parking brake pedal is not in the "lock" position (the pilot light will not go out and the engine switch is keep to (RUN) state).

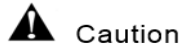


Caution

If the engine stops, immediately turn off the engine switch. Or Re-start the engine.
If the engine is stopping for a while, the battery will run down.

⑭ Handle tilt lock lever

The angle of the handle position can be adjusted according to the physique of the worker. Loosening the lock lever and tighten it at any position to lock it. The lever will be free when pulled up. After deciding the steering wheel angle, you can fix it at the desired position.

**Caution**

Do not operate the handle tilt while driving as it is dangerous.

⑮ Fuse box

Protects the harness and electrical components in case of overcurrent. There are 10A (accessory) and 20A (charge) fuses, and a separate 20A fuse is included as a spare. If the fuse blows, remove the cause and replace it with a spare fuse. also, use the spare fuse only for emergencies and immediately replace it with a regular A (ampere) fuse.

⑯ Pilot lamp (Green)

Illuminates when the engine switch is in the "RUN" position.

⑰ Hour meter

The approximate usage time is measured and displayed. Use it as a guide for maintenance time.

2.3 Direction of definition

The front, back, left, and right of this machine are expressed as seen from the operator sitting on the seat as shown below. "Forward" and "Reverse" in the text are also expressed as seen from the operator.



3 . Inspection before work

● Before starting work, check "1.2 Before Starting Work" and check the following "Before starting work checklist" and Be sure to perform the pre-operation inspection according to "7.1 Periodic inspection table".

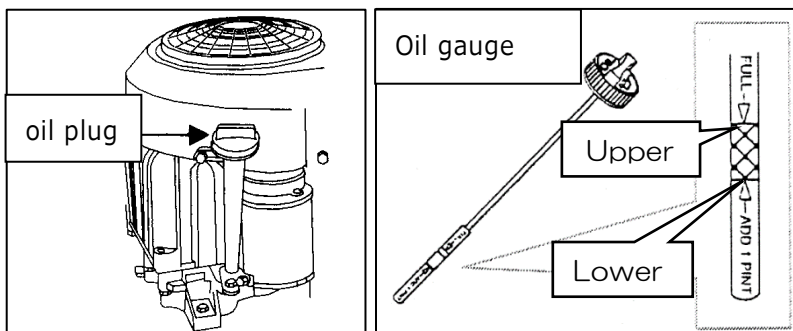
※If you have any questions or problems, please be sure to contact the dealer where you purchased the product.

Pre-operation checklist (summary from regular checklist)		
	Item	Inspection contents
Engine	Engine oil	Check "oil amount and dirt" <Refer to 3.1>
	Air cleaner	Check for "dirt" and clean <5.2.1>
Machine Body	Blade (Knives)	<Refer to 5. Inspection and maintenance>
	Brake (Applicable product)	"1" bolts and nuts are loosened or dropped
	Tire (crawler)	"2" Deformation, wear, interference
	Levers	"3" Smooth movement or Sticking
	Covers	"4" Remove foreign matter such as garbage, grass and straw
	HST oil (Applicable products)	Check "oil amount and dirt"




- 1) Be sure to stop the engine before Checking, Refueling, Adjusting or Servicing.
- 2) When starting the Engine and Checking the operation of the Driving clutch lever etc., Check the safety of each Lever position and the surrounding of machine.
- 3) Make sure you understand the warning markings on the Machine.

3.1 Check engine oil



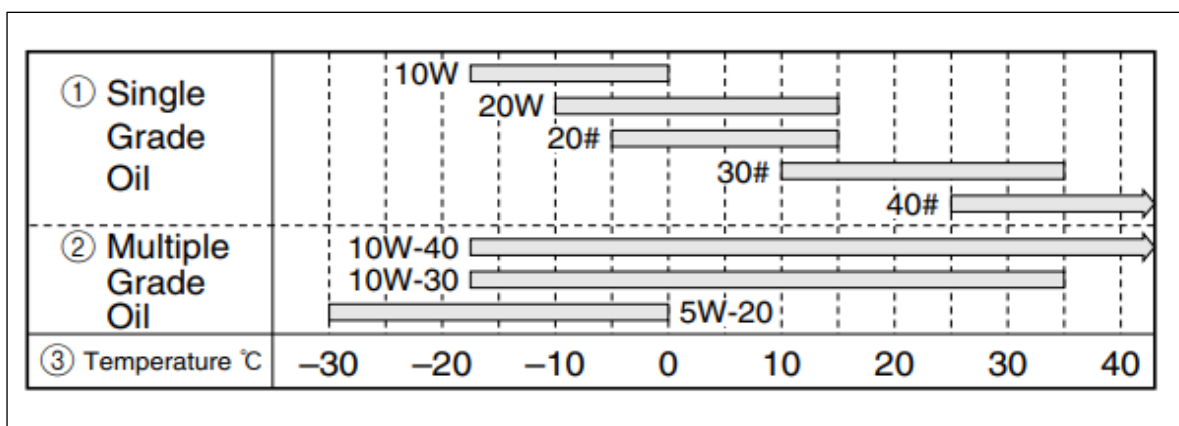
- ① Level the machine and remove the oil gauge.
- ② The tip of the Oil plug is an oil gauge. Wipe the gauge part with a cloth. Place the engine horizontally. Briggs Engine : screw in oil plug. Kawasaki Engine only

insert oil plug without screwing. Check the amount of oil. If there is no oil mark between the upper and lower scale lines, add engine oil so that the oil reaches the upper scale line.

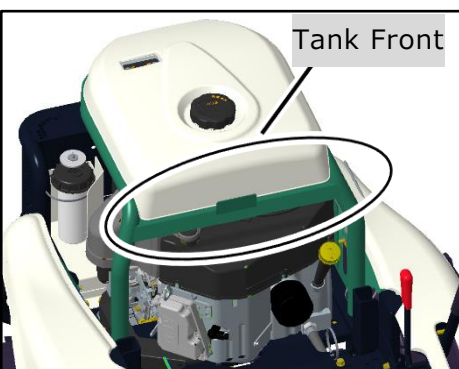
 Caution

- 1) If you want to check the engine oil after the engine is running, wait for "about 5 minutes or more" after stopping the engine, and check the cooling condition of the muffler and the engine itself.
- 2) Be sure to check the engine oil level before starting, as excessive or insufficient engine oil may cause a malfunction.
- 3) The engine oil is of high quality above SF / SG / SH / SJ grade, use "10W-30" oil, and do not use commercially oil additives.
- 4) After replenishing, securely tighten the oil gauge. If tightened loosely, engine oil may leak out.

「Recommended oil」



3.2 Fuel inspection and refueling



- ① Set the horizontal, remove the filler cap and check the amount of fuel from the filler.
- ② Refuel as soon as the fuel gauge approaches the "E" position. (Fuel used: Unleaded regular gasoline)
- ③ Do not put fuel above the middle of the filter.
It may cause fuel leakage on uneven roads and slopes. Leaked fuel will be discharged to the front of the tank. Clean up any spills fuel.
- ④ After refueling, securely tighten the fuel filler cap.
※ Fuel gauge is a guide. Keep the fuel up to the middle of the filter and be careful not to overfill it. If it spills, wipe it clean. Especially when using on sloping ground, use below the bottom of the filter. There is a risk of fuel leaking out due to slope.



Danger

- 1) **Fire is strictly prohibited during work and refueling.** Risk of ignition and burns. Never use a cigarette, bonfire, or open flame near the machine.
- 2) Refueling, after the engine has stopped and the muffler temperature has dropped sufficiently.
- 3) If there is an oil level upper limit mark, refuel below the mark. If you put too much, remove it until it is below the mark. Also, be sure to wipe off any spilled fuel.
- 4) Do not refuel this when your body is charged with static electricity. Vaporized gasoline may cause a fire, which may result in burns or a fire.



Warning

Refuel in a flat, stable, and well-ventilated place.

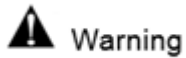
Risk of ignition and burns if gasoline spills.



Caution

- 1) When refueling, make sure that no foreign matter such as dust, grass, rain, or snow gets into the fuel tank. May cause engine malfunction.
- 2) Only use unleaded regular gasoline. It may damage the engine.
- 3) Gasoline will deteriorate naturally. If you do not use it for more than a month, replace it with new gasoline. Also, do not use gasoline stored for a long time in a plastic tank. May cause trouble.

4.Effective Operation of the Machine



Warning

※Be sure to read 「1. Precautions」 before driving.

Read and understand “1.1 Working Cautions”, “1.2 Before Working” and “1.3 Working” carefully before operating and working.

4.1 How to start and stop the engine

4.1.1 How to start the engine

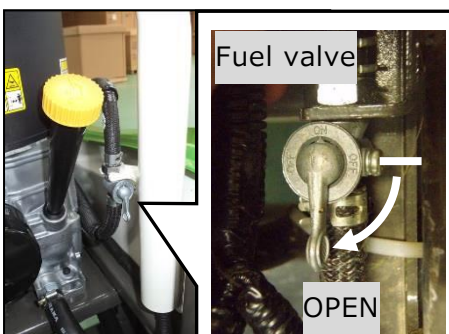


Danger

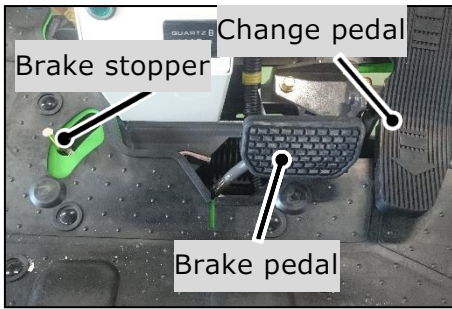
- Do not start the engine in a confined space or a place with insufficient ventilation. Engine exhaust is odorless and contains carbon monoxide which can cause death.
- DO NOT handle gasoline in the presence of lit cigarettes, open flame, or other sources of ignition. Gasoline is an extremely flammable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

Reference;

- Be sure to sit on the seat and start the Engine.
- 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.



- ① Move the fuel valve lever to the “OPEN” position.
- ② Sit on the seat.



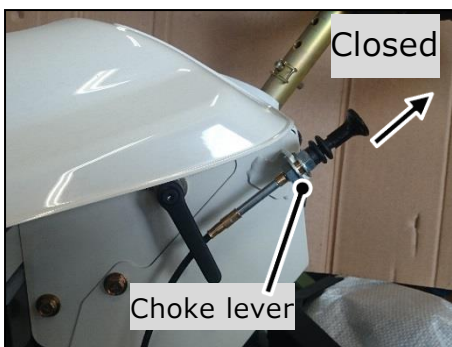
③ Lock the brake stopper while stepping on the brake pedal.
If the shift lever is in a position other than the neutral "N" position, return it to the neutral "N" position.

④ Set the blade clutch lever to the "OFF" position, and the cutting height adjustment lever to the "move" position.



Reference ;

The Blade clutch lever is linked to the cutting height adjustment lever. Move the cutting height adjustment lever to the "move" position and the Blade clutch lever will also return to the "OFF" position.



⑤ After confirming that the shift lever is in the neutral "N" position, pull the Choke lever. (The state where the lever is pulled is the "Closed" position, and the state where the lever is pushed is the "OPEN" position.) (This is not necessary if the engine is warmed-up.)

⑥ Move the throttle lever to the middle position between high speed and low speed.




⑦ Insert the key into the engine switch and continue turning the key from the "RUN" position to the "START" position to start the engine.

⑧ Release the keys as soon as the engine starts.
Automatically returns to the "DRIVE" position.

⑨ After starting the engine, push the choke lever back to the "OPEN" position and return the throttle lever to the "low speed" position and warm up for a while.



 Caution

The starter motor consumes a large electric current, so please avoid continuous use for more than 5 seconds. If it does not start within 5 seconds, return the engine switch to the "stop" position, pause for 10 seconds, or more, and then repeat the same operation.

Do not put the engine switch in the "START" position while the engine is running. It may cause a failure of the starter motor. If the engine is warm enough, start the throttle lever in the "medium speed" position. (It does not necessarily have to be in the choke "CLOSED" position.)

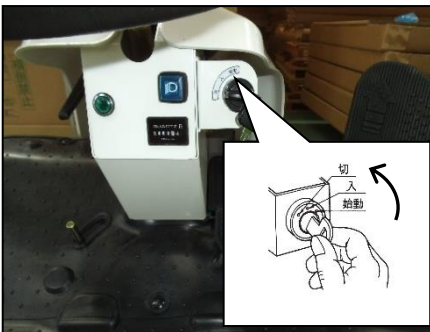
 Warning

For your safety, be sure to "lock" the parking brake pedal with the brake stopper during warm-up operation.

Reference ;

Warming up the engine, it spreads oil throughout the engine and extends the life of the engine.

4.1.2 How to stop the engine



- ① Turn the throttle lever to the low speed position.
- ③ Stop the engine with the key in the "STOP" position.
- ④ Take the ignition key from the engine switch.
- ⑤ At last, turn the fuel valve to the "OFF" position.

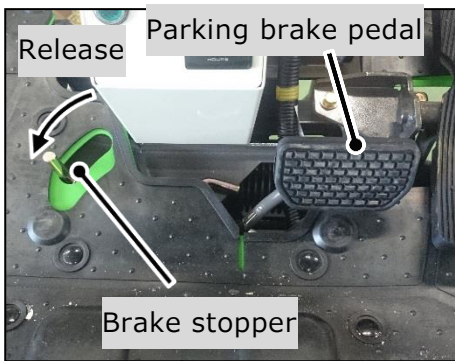
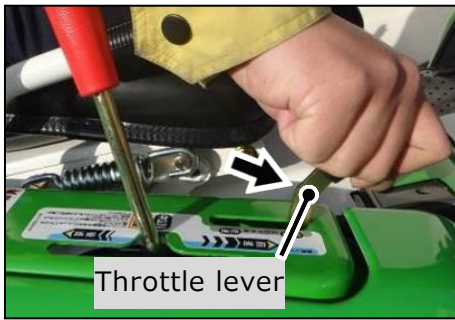
4.2 How to Drive, Change Speed, Turn, Stop(Park)

 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 low 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.

4.2.1 How to Drive



- ① Start the engine (Refer to page 19 for how to start the engine).
- ② Move the throttle lever to the “HIGH” position, and raise the rotation of the engine.
- ③ Press the parking brake pedal deeply and release the brake stopper.
- ④ To move forward, push the shift lever forward. To move in reverse, pull the shift lever back.

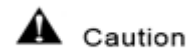


Do not engage the shift lever while the parking brake pedal is “Locked”. It will put wheels that have brakes engaged into drive. This will cause damage due to overuse of the brake and transmission. Please use the shift lever for normal driving stop operations.

Reference ;

The driving speed is continuously variable by shifting the shift lever down. For safety reasons, please start at a slow speed.

4.2.2 How to stop (Park)



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 speeds driving may overload the body and cause injury to the operator due to sudden stopping.



- ① 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.

〈Refer to 4.1.2 How to stop the engine〉
- ④ Press the parking brake pedal, lock with the brake stopper, and park.

**Warning**

Park the machine on a flat surface with no obstructions in the surroundings, and remove the key switch to prevent theft.

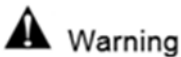
Reference ;

Be sure to use the engine switch to stop the engine.

If you lock the parking brake and move the cutting height adjustment lever to the "MOVE" position, the engine will not stop even if you stand up from the seat, but if you stand up from any other position, the engine will stop for safety. (The pilot lamp does not go off and the engine switch is in the "RUN" state. In this case, leaving it as it is may cause the battery to run down). Be sure to return the parking brake and the cutting height adjustment lever to the moving position, and the key to the "OFF" position.

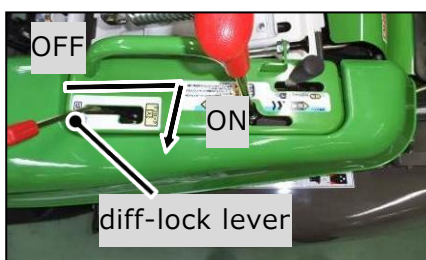
After starting the engine, the engine will not stop if you are sitting on the seat regardless of the positions of the parking brake pedal and the cutting height adjustment lever.

4.2.3 How to use the differential lock lever

**Warning**

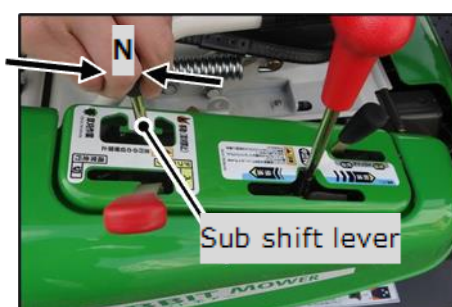
Use the differential lock lever only when loading and unloading the machine, when working on gentle slopes, places where there is soft ground, and when it is difficult to go straight because one of the rear wheels is slipping. Please do not use in other situations.

When operating the machine on a flat area while the differential lock lever is on. It may drag the inner tire, 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
- ② Please always return the differential lock lever to the "OFF" position.


4.2.4 How to move the machine with the engine off



In a flat area, when the drive clutch lever is moved to the "OFF" position (neutral position between Rabbit and Turtle mark), 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.

 Caution

- 1) Always put the drive clutch lever to the "ON" position, except when manually moving the machine.
- 2) For safety, please manually move the machine with 2 people (one driving and one supporting).
- 3) Do not move the Sub-Shift lever to the "N (neutral)" position on sloping ground. It may cause slipping and is very dangerous.

 Warning

Be careful not to touch mufflers and other hot parts when turning the driving clutch lever on.

4.3 How to load and unload

 Danger

- 1) Always stop the engine and keep the fuel cock in the "Closed" state when transporting the machine. Spilled fuel can catch fire.
- 2) Also, do not tilt the machine more than necessary. Fuel may leak out.

 Caution

Ramp Standards;

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

- 1) 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.
- 2) 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 off the ground. Please load and unload at a low speed.
- 3) Please use a truck without a canopy over the bed. When unloading, the operators may collide with the canopy.

- 4) Park the machine on a flat and stable surface, and don't load and unload on a highway.
- 5) Please use a truck that can bear the total weight of the operator and the weight of the machine.
- 6) To prevent accidents, please arrange pre-determined signals with the truck driver, if you work with more than one person.
- 7) Loading and unloading at night is dangerous. If this is unavoidable, choose a location that has adequate lighting.
- 8) Turn off the truck's engine, pull the emergency brake to "ON", and put a wheel chock under the tire.
- 9) The cutting height adjustment lever must be all the way in the up position. There is a risk of falling if the ramp contacts with the knife.
- 10) The differential lock lever must be in the "ON" position. Do not operate the differential lock on the ramp.
- 11) 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.
- 12) Make sure that the tires on either side of the machine are positioned in the center of the ramp.
- 13) Stop the engine on the carrier, turn the fuel valve to the "Closed" position, and remove the ignition key.
- 14) Use a strap that is strong enough to be fixed from the machine and securely to the carrier.

4.3.1 How to load and unload



Cutting height adjustment lever is in "MOVE" position.



Diff lock lever in the "ON" position

- 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.

Reference ;

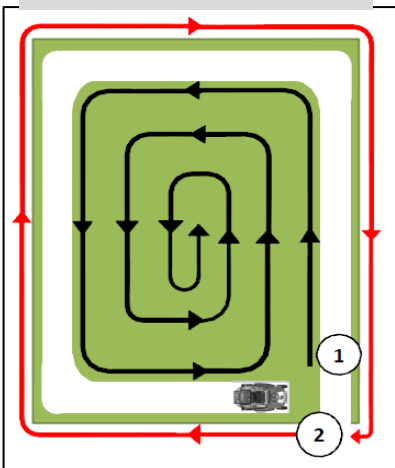
Bridge Standards

Use a bridge that meets the standard and has sufficient strength.

- Length…Length is more than 3.5 times the height of the truck bed.
- Width…Width is fits the wheel width of this machine.
- Strength…Sufficient to withstand the weight of this machine and the total
- A surface treatment to prevent slipping.

4.4 How to cut weeds and brush

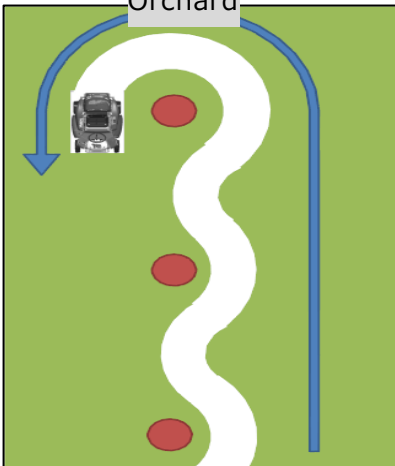
Flat ground (open space)



When mowing on flat ground (open space, etc.)

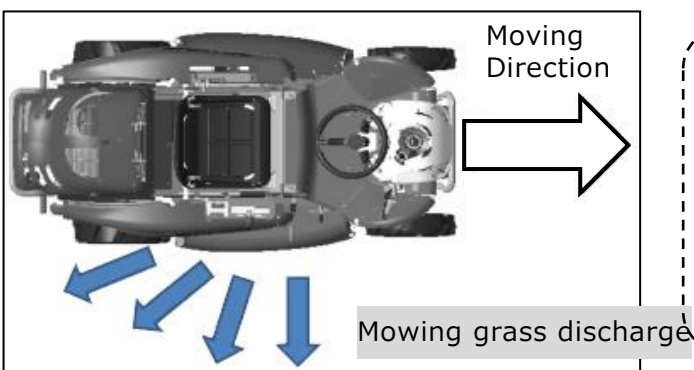
- ① In order to prevent scattering outside the field, leave the one row of the grass outside and mow counterclockwise from outside to inside.
- ② When you have finished ① mowing, mowing the outer grass in a clockwise direction.

Orchard



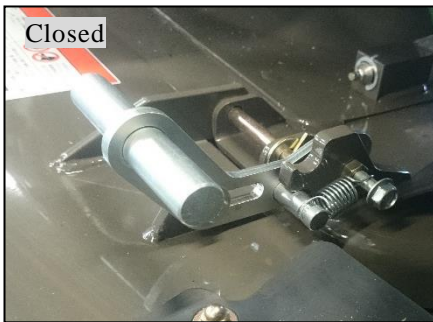
When mowing in an orchard

- ① To mitigate the damage to the trees by scattering, So mowing pass the right side of the trees as much as possible.



Reference ;

If there is a lot of grass, mowing it twice. First, increase the cutting height and mow the grass, then set the lower cutting height and mow again.



- ① Keep the right deck cover closed when mowing grass.
- ② Start the engine.
 〈Refer to 4.1.1 “How to start the engine”〉
- 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 70mm height.
- ⑤ Slowly turn the blade clutch lever to the “ON” position.
- ⑥ Position the cutting height adjustment lever to the desired height.
- ⑦ Refer to 4.2.1 “How to drive”, start the machine, and begin working.
- ⑧ For finishing operations, please reverse the procedure above.
- ⑨ Stop the engine.

〈Refer to 4.1.2 “How to stop the engine”〉

Warning

- 1) If you keep working with grass and other debris accumulated around the engine, it may cause fire or engine seizure. Please remove the accumulated grass debris frequently, especially around the exhaust pipe where the temperature is high. Also, please clean the inside of the engine cover regularly as well as the outside.
- 2) The mowed grass is discharged from the right side of the machine, but foreign objects such as stones, wires, empty cans, etc. may scatter from the entire circumference of the mowing area and cause damage to the surrounding area. If you are near a building or in a field with a lot of foreign objects, remove them before work and mow high or put up a sign indicating that grass cutting is in progress, a guard rope, or a net to prevent scattering to prevent people (especially children) and vehicles from entering

the work area. Keep a distance of at least 15 meters from people and vehicles when working.

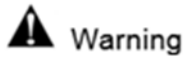
- 3) If mud or dust clogs the cooling section, the engine and HST oil temperature will rise. Please perform maintenance on a regular basis.
- 4) Be careful not to approach obstacles in the field, ditches, muddy areas, slopes (10° or more), uneven ground, or other dangerous places.
- 5) When working on a slope, it is especially dangerous to stand on the upper side (mountain side) of the product. If you slip, you may be caught in the rotating knife and you may be seriously injured.
- 6) Please make sure that the engine and the knife has stopped rotating when removing grass, wire or other foreign objects entangled in the knife.
- 7) Please make sure that the defective part has been repaired before starting work.
- 8) Please inspect the knife and knife stay before operation.

〈Refer to 3. Inspection before work〉

- 9) Always please use the dedicated tool provided to remove and install the knife. If not used, the tightening torque may not be sufficient. There is a risk of the knife flying off due to detachment of the mounting bolt.
- 10) The knife replacement cover can be fixed in the open position, but mowing with the cover open is very dangerous as stones and other foreign objects may scatter. Please make sure that the cover is locked in the closed position before mowing.
- 11) If the machine hits an obstacle during operation, stop the engine immediately and repair any abnormalities. Resuming work without making repairs may result in an unexpected accident.
- 12) The machine may slip when the grass is wet or in the rain. In addition, the grass may get stuck in the mowing deck. It causes engine overload. In such cases, stop work and wait until the grass is dry.
- 13) Never put hands or feet inside the mowing deck during operation, as the knives come to the edge of the cover on both the left and right sides during knife rotation.

〈Refer to the figures below〉





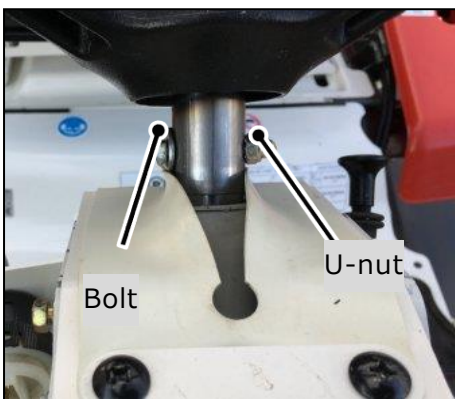
- 1) Operators must wear long-sleeved shirts and long pants with hemmed sleeves, non-slip boots and hats or helmets, dust-proof glasses, and protective gloves.
- 2) Remove foreign objects such as stumps, stone chunks, wire, empty cans, and broken sticks before operation.
- 3) Always use a bridge when going over steps of about 70 mm or more, as high speeds can cause the machine to rollover accident or malfunction. When over a step, be sure to go forward at low speeds and the tires ride into over the step perpendicularly. High-speed overtaking, even over a step of less than 70 mm, is not only a cause of malfunction, but is also very dangerous.
- 4) If the front wheels fall into a hole or ditch, do not turn the steering wheel. After stop the engine, lift the product up to escape. Uncontrolled operation of the steering wheel may cause malfunction of the product.
- 5) Collision of the front wheels with stumps, curbs, etc. while driving or working may cause malfunction.
- 6) When working under branches or on slopes, please work with the utmost care to avoid accidents such as being caught between branches or rollover accidents.
- 7) The knife rotates at high speed, please be careful not to injure yourself.
- 8) Operate the knife clutch lever slowly.
- 9) If the knife clutch lever is suddenly set to the "On" position at the lowest cutting height (around 10mm), a sudden overload will lead to early breakag of the mowing belt.
- 10) When disengaging the knife clutch, be sure to return the knife clutch lever to the "OFF" position, then wait a few seconds (about 5 seconds) before turning the mowing height adjustment lever to the "MOVE" position. Knife rotation may not stop immediately, leading to scattering of stones and other foreign objects.
- 11) Take care to prevent grass, leaves, etc. from accumulating on the engine. Accumulation of these combustible materials may cause fire or malfunction.
- 12) 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.

Reference ;

- 1) 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.
- 2) 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).

- 3) For safety reasons, if the mowing height adjustment lever is returned to the "move" position, the knife clutch lever will also return to the "off" position in conjunction with it, but if this method is continued, the sudden impact on the mowing belt will significantly shorten its life. Except in an emergency, please refer to 4.4 "How to operate the mowing machine".
- 4) The knife clutch lever cannot be operated with the mowing height adjustment lever in the "move" position.
- 5) Use the gearshift lever (change pedal) for normal stopping operation. In an emergency, depressing the parking brake pedal will bring the product to an emergency stop. At the same time, the gearshift lever (change pedal) returns to the neutral "N" position.
- 6) Whenever leaving the unit, the engine must be stopped and the key must be removed from the unit and kept by the owner.

4.5 How to adjust the height of the steering wheel and the seat



position

- The handle can be adjusted in three stages up and down also can be adjust front and rear (tilt). The seat can be slid forward and backward.

① Seat position

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

〈Refer to 2.2 Function of each part〉

② Handle Up & Down

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

③ Handle tilt

The front and rear (tilt) position of the handle can be adjusted forward and backward.

〈Refer to 2.2 Function of each part〉

4.6 How to use the moving light



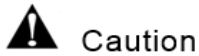
This light is intended as a mobility aid. Do not use it as a working light. Please drive at low speed especially when moving early in the morning or at dusk. Do not move or mow grass in an environment where the surrounding conditions are difficult to grasp, as it is dangerous to collide, fall, or rollover, which may result in death or injury.



The light switch is located on the right side under the handle. Push it to the "ON" position and push it again to the "OFF" position. When "ON" position is selected, the switch lights up blue.

5. Inspection / maintenance / adjustment

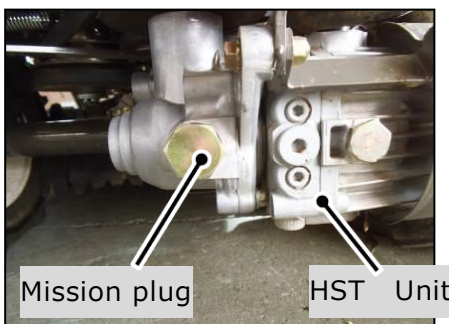
5.1 Oil inspection / replacement / lubrication



Caution

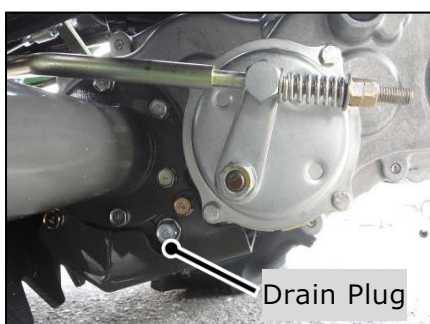
- 1) Refer to the hour meter display on this product's for guidelines on inspection, replacement, and lubrication of oil in each part.
- 2) Oil is filled in the machine at the time of shipment, but before using this machine for the first time, check again that the specified amount of oil is in the place before using.
- 3) Regular oil changes are necessary to ensure the machine is always in best condition.
- 4) When inspecting or replacing each part, be sure to place it on a flat and wide area to warm up the engine, stop it, and wait for the temperature of each part to drop (about 5 minutes).
 - …If you work immediately after stopping the engine.…”
 - ※Engine parts are extremely hot and there is a risk of burns.
 - ※Immediately after the engine is stopped, oil remains in the engine and various parts of the transmission, and the exact amount of oil is not indicated.
- 5) For your safety, remove the key and keep it with the owner until the work is finished.

5.1.1 Inspection and replacement of mission oil



◎ Inspection / supply… strictly observe the amount of oil

- ① For inspection, please confirm by removing the Mission plug at the rear of the mission case. If the mission oil can be visually confirmed through the Mission plug port (up to the full lubrication port), the prescribed amount of mission oil is contained.

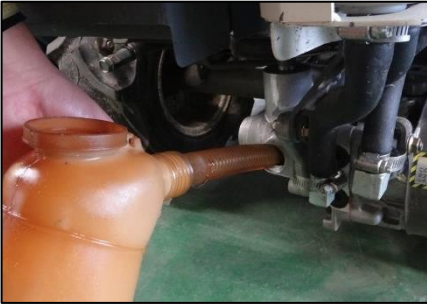


◎ Exchanging…

- ② For Exchange, prepare a suitable container to receive the oil, remove the drain plug (oil drain plug) on the lower left side of the mission case, after **20 hours** used for the first time and **100 hours each** after that.

Guidelines for Exchange

First time: 20 hours, second time and thereafter: every 100 hours

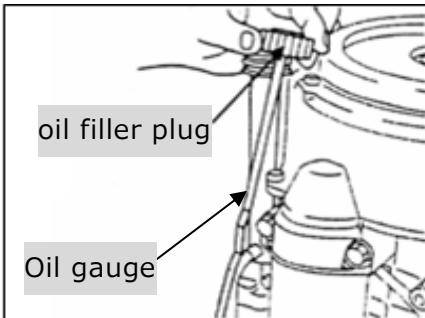


- ① For lubrication, attach the drain plug (oil drain plug), remove the mission plug at the rear of the mission case, and add 1.0 liter of mission oil (# 90).

After lubrication, be sure to tighten the mission plug to prevent oil leakage. Be careful, not to overtighten the mission plug. After the gasket (O-ring) contacts the mounting surface, tighten it further by 3/4 turn.

5.1.2 Engine Oil check and change

◎ Inspection / supply



- ① Before starting work, check the quality and quantity of engine oil daily with the oil gauge attached to the oil filler plug. <See 3.1 Engine check>

- ② Always add engine oil to the upper limit of the level gauge.

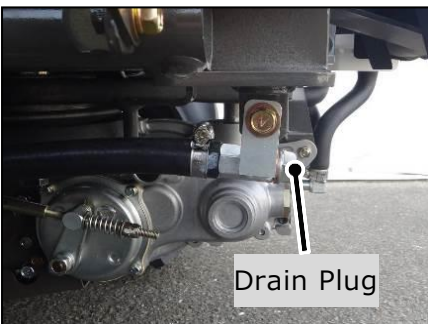
<Reference, quality and quantity of oil used: 3.1

Check engine oil <6.1 Refer to specifications>

- ※ The first time is 5 hours, after that each 50 hours replace it, or every season, whichever comes first.

However, continuous work under severe working conditions or high temperature environment

It is recommended to replace the engine oil (about 25 hours) and the oil filter (about 50 hours) early before the above time is reached.



- ① Prepare a suitable container to receive the oil, loosen the oil filler plug, and then remove the drain plug (oil drain plug) on the left rear side of the engine using the tool M12 (Oil can be discharged smoothly by loosening the oil filler plug.)

- ② After draining the oil, firmly tighten the drain plug as before and remove the oil filler plug.

- ③ First, **add 1 liter** of oil and run at low speed for about 30 seconds. Stop the engine and wait for about **30 seconds**, then slowly add oil to the "FULL" position on the level gauge.

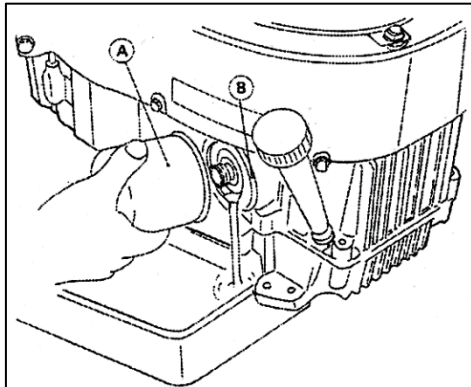
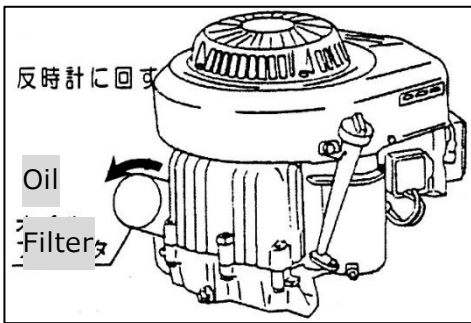
<Reference: Engine oil amount: 6.1 Specification Sheet.>

- ④ Tighten the oil plug firmly so that the oil does not ooze after the engine oil has been added.



Excessive addition of engine oil may cause engine failure. If you put too much, pull it out and keep the proper amount.

5.1.3 Oil filter replacement



After draining the engine oil, replace the oil filter according to the following procedure.

- ① Remove filter A by turning it counterclockwise.
- ② To prevent twisting, lightly apply new engine oil to the gasket (O-ring) of the new filter with your fingertips.
- ③ Turn the filter clockwise and screw it in until the gasket begins to contact mounting surface B. Then screw it in 3/4 turns.
- ④ Add new specified oil from the oil filler port.
- ⑤ After checking the amount of oil on the level cage, securely tighten the oil filler plug.
- ⑥ After running the engine at low speed for about 2 minutes, check the oil filter mounting surface for oil ooze.
- ⑦ Stop the engine, check the oil level again, and if it is

insufficient, add it.



Caution

Replace the oil filter by hand without using a tool.

Replace the oil filter once every two engine oil changes or every season.

5.1.4 HST oil check and change

◎ Inspection / supply



Check the amount of oil in the HST oil tank from outside. If it is not between the upper and lower limits of the level gauge, open the oil tank cap and add HST oil to the upper limit. Also, the Moisture adsorption sheet is put in the tank to adsorb moisture when dew condensation occurs inside the tank in order to prevent the cause of HST malfunction.

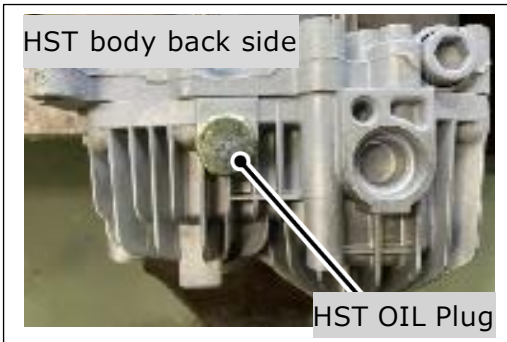


Caution

When changing the HST oil, make sure that the HST tank and HST body have cooled sufficiently before starting work.

Immediately after the engine is stopped, the temperature is high and there is a risk of burns.

◎ Exchange



Even if the HST oil is initially clean, But foreign matter will settle in the unit and the oil will deteriorate over a long period using time, which will hinder the smooth operation of the HST. Change the HST oil regularly to keep your work safe and comfortable.

The total amount of oil is about 500 ml, and the water adsorption sheet (inside the HST tank) should be changed at the same time as the oil is changed. The oil drain plug has a hexagonal head of 22 mm.

Reference ;

1) HST oil is also called hydraulic oil and plays an important role in changing the rotation of the engine to drive. In addition, it also has the effects of lubrication, rust prevention, cooling, etc., but if it is not managed properly, it may cause troubles such as Driving system troubles. Use the specified dedicated oil for adding and replenishment.

2) HST oil change guideline.

First time: 30 hours of use After: once a year or every 200 hours of use,

whichever is shorter

(How to judge HST oil visually)

Appearance	Smell	Status	Measures
Clear and no color change	Good	Good	Use as it is
Clear and has small black	Good	Foreign matter is mixed	Use after filtering
It changes to milky white	Good	Water is mixed	Change oil
Discolored to black	Stench	Oxidized /	Change oil

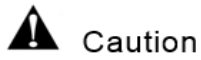
Caution

- 1) At the time of product shipment, wear resistant hydraulic fluid equivalent to VG46 has been added.
- 2) Please consult your dealer when replacing the HST oil. Replacement requires special tools and maintenance skills.

HST designated oil: ISO viscosity grade VG46.

(e.g. mobil oil DTE-25 , Shell oil tellus 46 , Esso Unipower SQ46.)

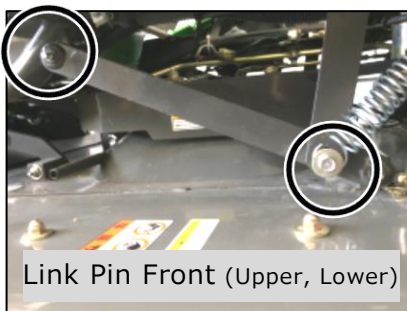
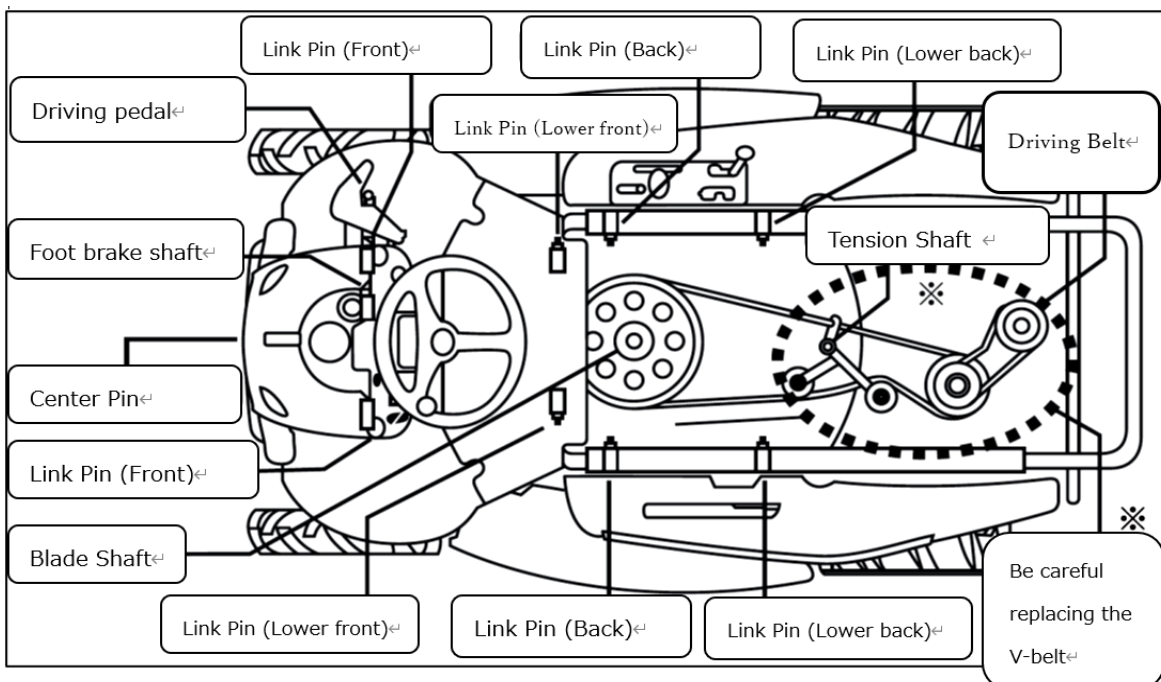
5.1.5 lubrication for each part



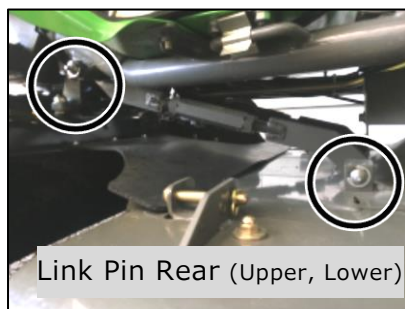
Caution

- 1) Grease about every 30 hours, add engine oil (# 30) to other moving parts as needed. Neglecting to lubricate the grease may cause damage due to poor lubrication. Lubricate with reference to the grease nipple in the figure below.
Recommended grease consistency number: No. 2
- 2) A grease nipple is provided on each shaft. You can inject grease with a grease gun, but if you do not have it, please ask to your dealer shop.

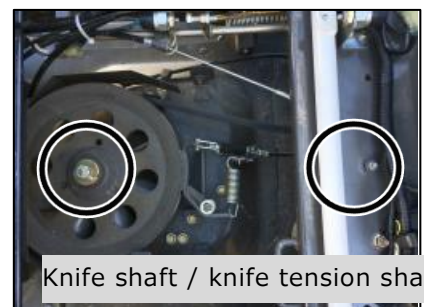
Grease nipple position



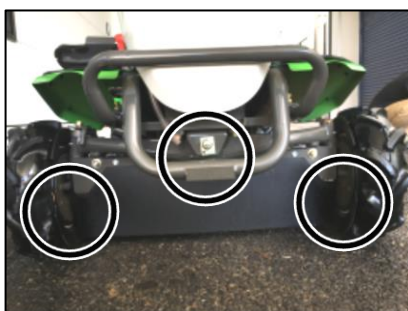
Link Pin Front (Upper, Lower)



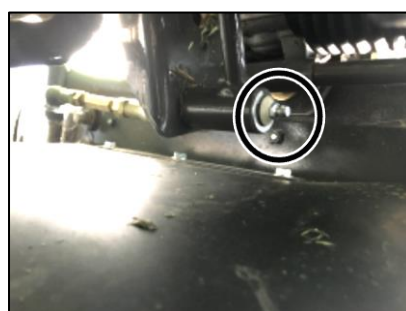
Link Pin Rear (Upper, Lower)



Knife shaft / knife tension shaft



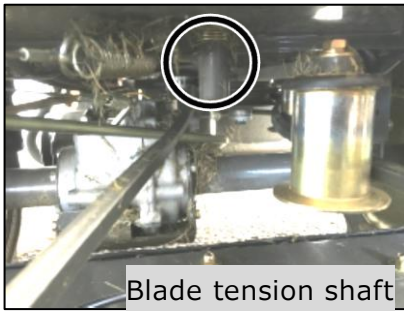
King Pin · Center Pin



Brake Pedal shaft



Drive Pedal shaft



5.2 Engine related part cleaning, inspection and adjustment

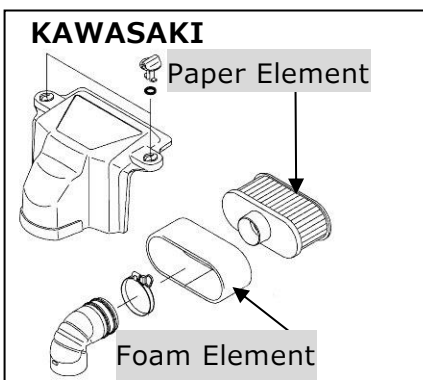
5.2.1 Cleaning the air cleaner

Warning

- 1) If the air cleaner / recoil starter is clogged with grass debris, etc and continues to work, not only will the output be insufficient and fuel consumption will increase, but the exhaust gas temperature will rise, then causing a fire, which is extremely dangerous. Be sure to inspect and clean regularly.
- 2) Do not start the engine without the air cleaner.
Dust may be sucked into the engine, causing engine malfunction and abnormal wear.

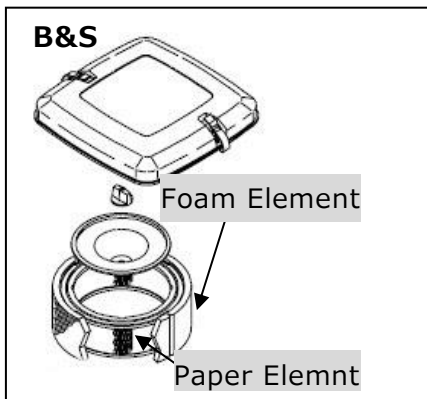


- ① Use the maintenance tool to remove the air cleaner cover.



- ② Remove the foam and paper elements, being careful not to let dust or debris enter the vaporizer side.
- ③ Clean the foam element with a detergent and wring it well before drying.
- ④ Tap the cartridge (paper element) or blow air from the inside to remove dust and dirt.

- ⑤ Wipe off any dirt inside the hose with a waste cloth and reassemble.

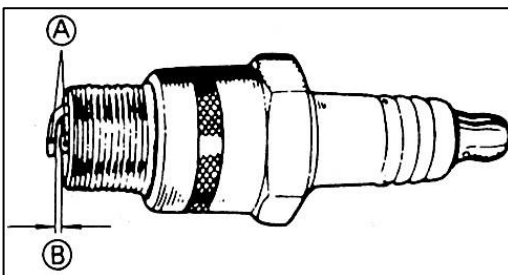


Cleaning and replacing the air cleaner		
	Cleaning	Replacing
Foam Element	Before every time	Every 100
Paper Element	Before every time	Every 100

Reference ;

- 1) If the paper element is extremely dirty, replace it with a new one, or wash it with soapy water and wash it with water, and dry it thoroughly. Do not pull or tumble the foam element when cleaning. The element is easily torn.
- 2) Be careful when Tapping the paper element please do not make a damage the filter paper.
- 3) When drying, blowing the hot air may damage the adhesive part of the paper element. Dry with low warm air or let it natural dry.
- 4) Be sure to clean it frequently when using it in dusty work environment.

5.2.2 Checking and adjusting the spark plug



- ① Remove the spark plug with a plug wrench, if there is carbon on the electrode part "A", remove it with a wire brush, and if it is wet, wipe it off.
- ② If the central pottery is cracked or if the electrodes are worn, replace the spark plug with a new one.
- ③ Adjust the electrode gap "B" of the spark plug to 0.7

to 0.8 mm.

Reference ;

- 1) Engine is used V-type 2 cylinder. Check and replace the two plugs at the same time, and do not clean or replace only one side. It may cause engine malfunction.
- 2) When tightening, first lightly screw in with a hand and then use a plug wrench (until the gasket touches the bearing surface).

Please note that if you tighten it with a plug wrench from the beginning, the threads may be destroyed.



Danger

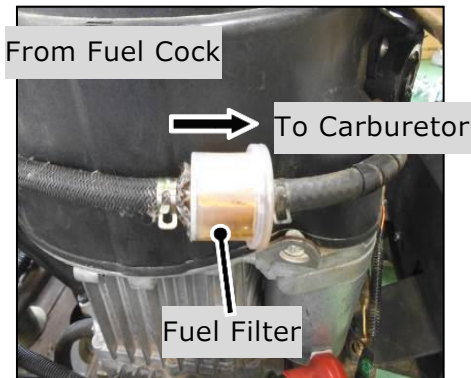
Do not test the spark plug ignition near the cylinder plug hole. It is dangerous to catch fire.

5.2.3 Check the fuel pipe



Danger

This product uses gasoline as a fuel, which may cause fire, if fuel leakage or smoking or bonfire near the machine.



- ① Rubber products such as fuel hoses will deteriorate even if they are not used.
- ② Replace with a new tightening band every 3 years or when damaged.
- ③ Always check for loose or damaged hoses or tightening bands.
- ④ When replacing, be careful not to let dust get inside the hose.

5.2.4 Check the fuel filter

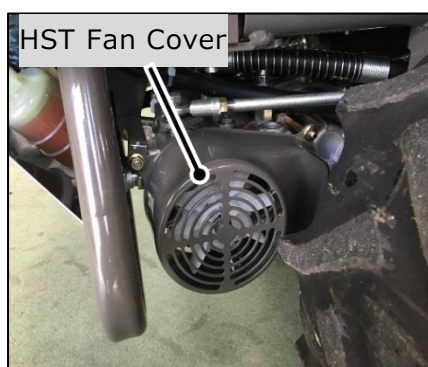
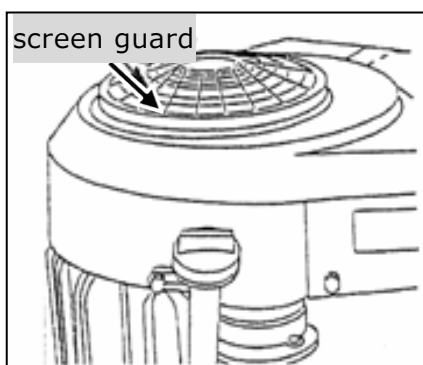
The fuel filter cannot be disassembled and cleaned, so replace it each season or as soon as necessary. Be careful of the insertion direction when replacing.

5.2.5 How to clean the engine cooling system



Warning

- 1) Remove each part after the engine has cooled down, and after cleaning, do not start the engine without installing all parts.
- 2) Continuing to work with grass debris accumulated in the engine cooling system is not only causes overheating, but also causes an increase in engine temperature, which may cause a fire.
- 3) Keep your hands away from the rotating screen. There is a risk of injury.
On models with the Briggs engine, the screen guard rotates with the engine.
- 4) Before each use, remove foreign matter such as mud and grass debris accumulated on the screen guard.

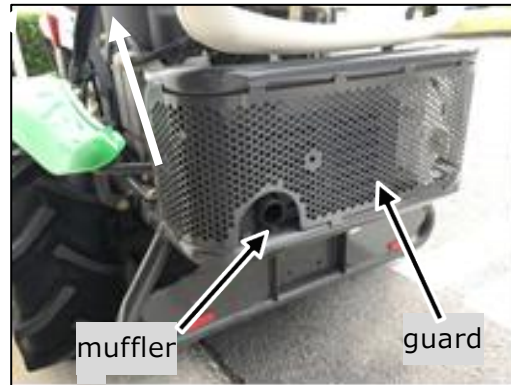


- ① Before each use, remove foreign matter such as mud and grass debris accumulated on the screen guard and the upper part of the engine bonnet. When air is blown, it is easier

to discharge grass dust, debris, etc. by standing up the sheet. (Do not use water such as a high-pressure washer as it may cause engine malfunction.)

- ② At the same time, remove grass etc. accumulated on the inside and outside of the HST fan cover. If you continue to use it as it is, the HST oil temperature will rise and the original performance of HST will not be achieved.
- ③ After finishing the work, be sure to replace the covers removed for cleaning.

5.2.6 How to clean the engine exhaust system



- ① Remove foreign matter such as mud and grass dust around the engine exhaust pipe by blowing air.
- ② Remove the debris that has adhered to the mesh guard, etc. at the rear of the vehicle (muffler)

Warning

- 1) Remove each part after the engine has cooled down, and after cleaning, do not start the engine without installing all parts.
- 2) Continuing to work with debris accumulated in the engine exhaust system not only causes overheating, but also a rise in engine temperature, which can cause a fire.
- 3) Before each use, remove foreign matter such as mud and grass debris accumulated on the exhaust cover and muffler cover.

5.3 Product Inspection and adjustment.

Caution

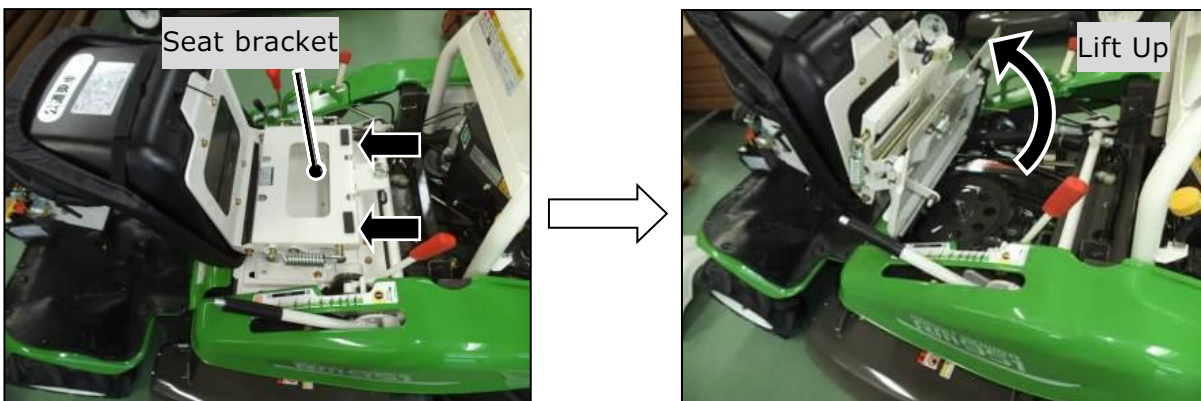
- 1) When inspecting, servicing, or adjusting work for each part of this product, Set this machine on a flat surface with no obstacles around it, always stop the engine, remove the key, and wait for each part of the engine to cool before starting work.
- 2) Make sure that each control lever operates properly. (At the beginning of each work)
- 3) The wire/ belt will stretch initially, so readjust it after a few hours of operation.
- 4) The wire / belt is a consumable item. If it is abnormal, replace it with a new one.
- 5) Move the machine for a while and check for abnormal noise and overheating.

- 6) Make sure that the bolts and nuts in each part are not loosened and come off, and tighten them securely.
- 7) Be sure to reattach the covers removed for adjustment.
- 8) Please avoid excessive work for the first 2 to 3 hours in order to fully familiarize each part.
- 9) Be sure to perform maintenance after work and regular inspections also.
- 10) Look around the machine and check each part for oil leaks.
 - If you can confirm an oil leak, please contact your dealer shop.
 - Continued use with oil leakage is dangerous and may cause damage to the machine.

5.3.1 Wire / belt adjustment for each part

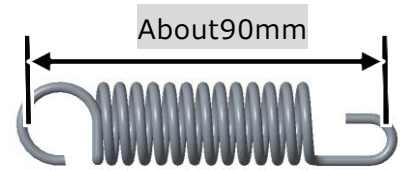
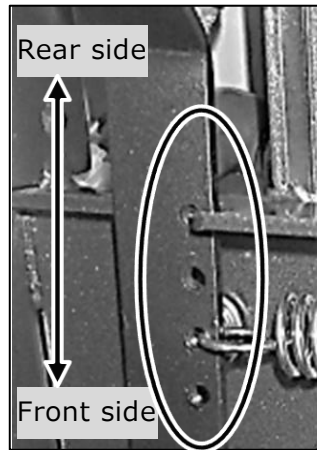
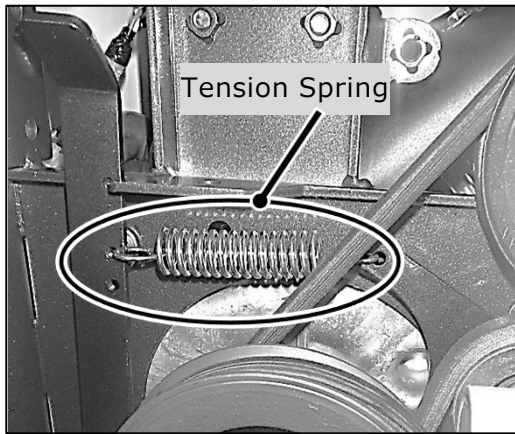
⚠ Caution

- 1) Before adjusting the belt /wire /rod, be sure to stop the engine on a wide flat surface, remove the key, set the parking brake, and check the safety sufficiently.
- 2) To adjust the belt and Blade brake, open the seat bracket with your hand and pull it up, and make sure the seat is upright. (If you lift it, it will be fixed in that position.)
- 3) Ask your dealer to replace the blade belt and drive belt. Special tools and techniques are required to replace the belt.

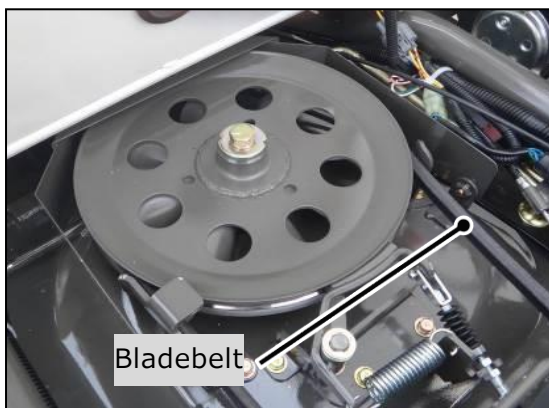


① Drive belt adjustment (bottom of engine)

The Driving belt is always in tension. If the belt slips while Driving, refer to the photo below. Adjust the tension of the belt by changing the position of the tension spring. Normally, the tension spring is hooked to the third hole from the rear side. When tensioning, hang it on the second hole from the rear side. As a guide, the spring extension is 90 mm when the belt is stretched normally (the free length of the spring is 80 mm).

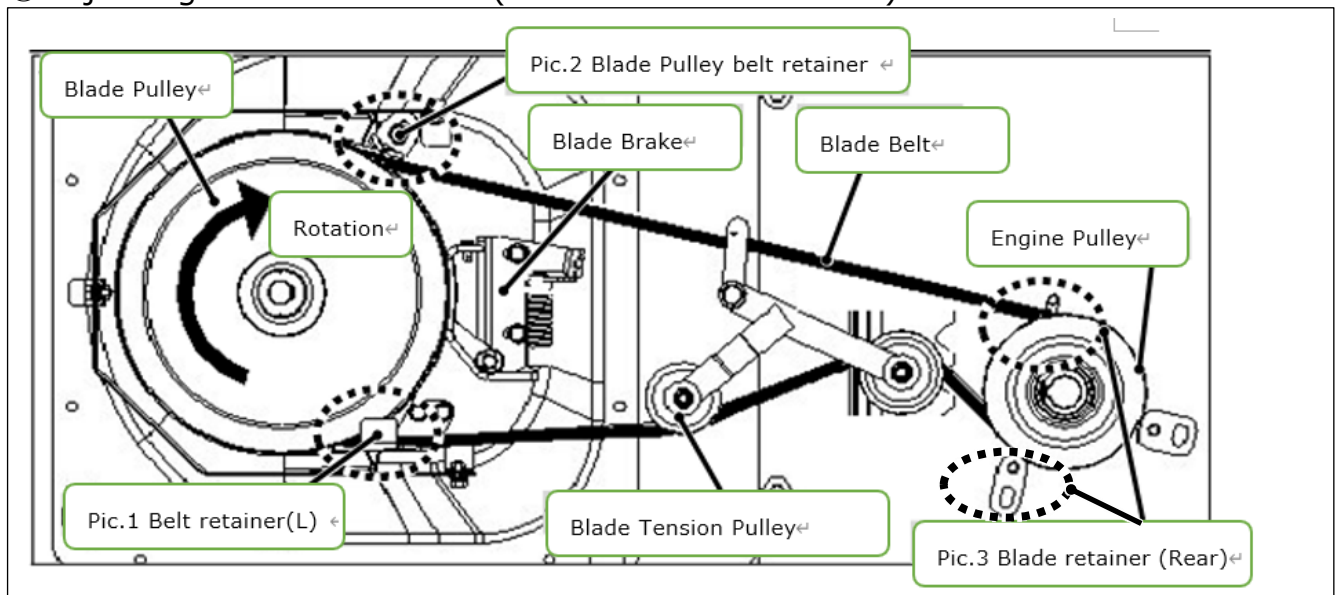


② Blade belt adjustment (under seat bracket)

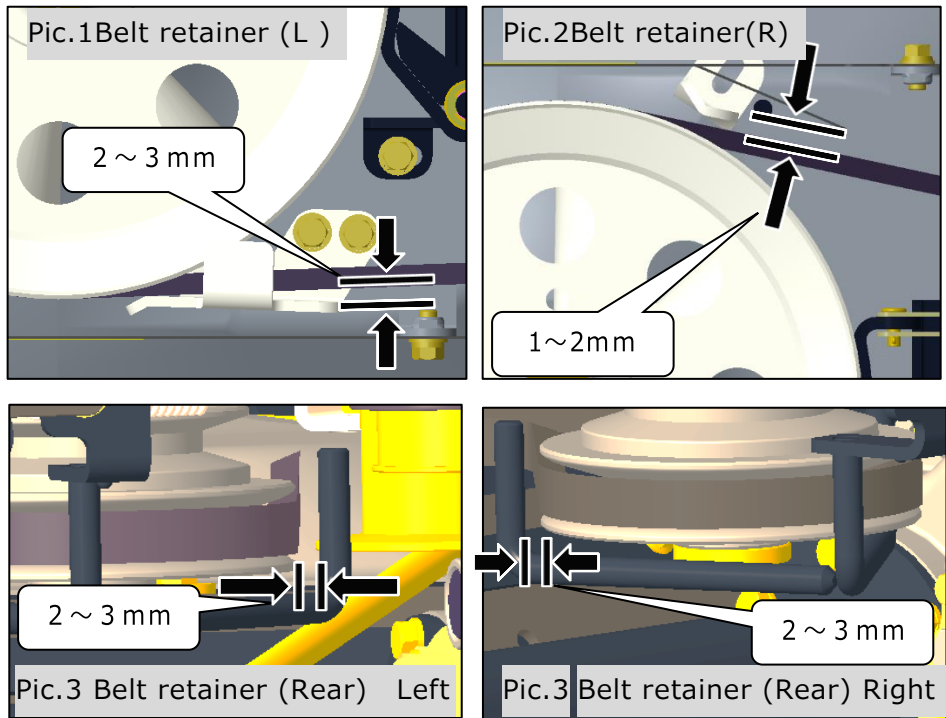


Visually inspect the belt for damage. If it is cracked or worn, replace it with a new one.

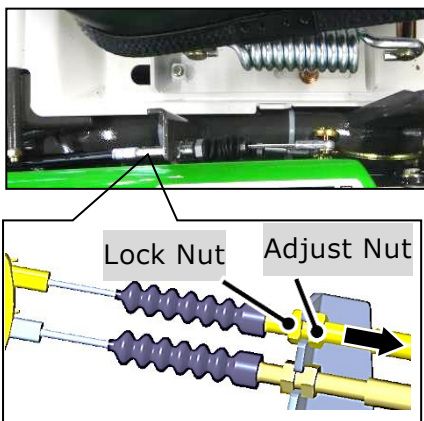
③ Adjusting the belt retainer (under the seat bracket)



- ① Set the cutting height adjustment lever to the position of about 30 mm.
- ② Move the Blade clutch lever to the "on" position.
- ③ Adjust the clearance between each belt retainer with reference to the following.

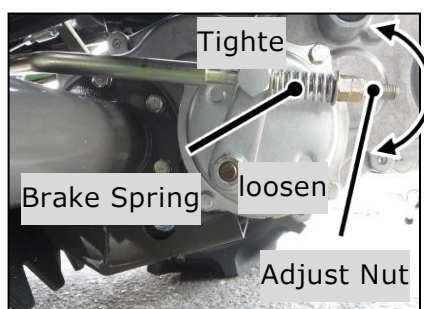


④ Blade brake adjustment



- ① The Blade will stop in about 5 seconds when the Blade clutch lever is in the "off" position. If it does not stop, move the brake wire adjustment nut in the direction of the arrow to adjust. (Brake drag can cause damage to this product.) After adjustment, securely fix with the lock nut.
- ② If it cannot be adjusted, the brake shoes are worn. Please ask your dealer for replacement.

⑤ Parking brake adjustment

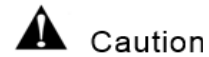


- ① The parking brake is located on the left rear side of the mission and should be adjusted with the brake rod which is connected to it.
- ② The adjustment is made with the adjustment nut at the rear of the brake rod so that the rear wheel "locks" when the parking brake pedal is fully depressed (when the pedal is locked). Turn the adjustment nut clockwise to tighten it and it will begin to operate quickly, and loosen it to slow it down.

Warning

1) Not only performance maintenance, but also regular inspection of the braking surface is essential to maintain safety. In the case of the riding type, a serious accident may occur. Therefore, please ask the store where you purchased the product at least once a year to inspect it according to the annual inspection table.

- 2) After adjustment, make sure the parking brake pedal is "locked" and the sub gear shift lever is in the "neutral" position. and the machine dose not move back and forth when pushed it, or it dose not move on slopes.

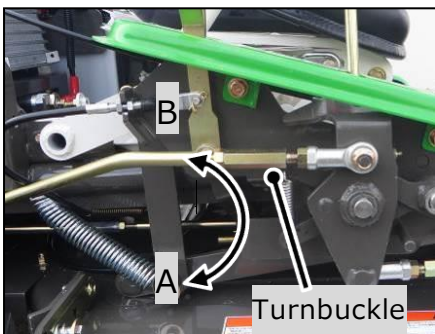


Caution

Please ask your dealer for the following work.

- 1) The brake will also wear out. If the above method cannot be adjusted, the brake shoes may be worn. For safety, please replace it regularly when the usage time does not exceed 100 hours. When replacing, also replace the U nut and cotter pin at the same time.
- 2) Adjust the play of the brake spring is about 2 to 4 mm, and after adjusting, securely tighten the lock nut.
- 3) The Driving and Blade belt will also be consumed. If it is abnormal, replace it with a new one. First adjustment is 10 hours and then every 50 hours thereafter.

⑥ Adjusting the Speed shift lever (change pedal)

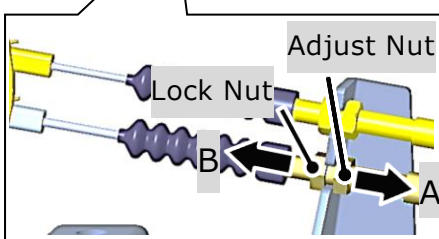


- ① Move the Speed shift lever to the neutral "N" position.
- ② Adjust by turning the turnbuckle connected to the shift lever.
- ③ When moving a little in the forward direction.
...Turn the turnbuckle in direction A.
- ④ When moving a little in the reverse direction.
...Turn the turnbuckle in the B direction.

Reference ;

Adjustment of the speed shift lever (change pedal) is not necessary except when disassembling the mission etc. Adjust if the position of the shift lever is not aligned with the guide display.

⑦ Blade clutch wire adjustment



Adjust with the adjustment nut of the Blade clutch wire, referring to the photo on the left.

- ① When the knife belt tension is weak.
...Adjust nut in direction B...
- ② When the Blade belt is tight.
...Adjust nut in direction A...

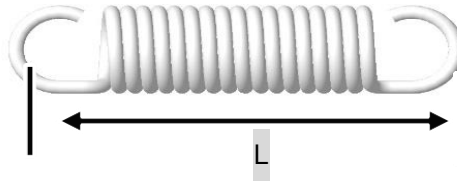
Spring extension

- ① At the highest cutting height, approximately
L=125 mm(RM953) , 120mm(RM883)

- ③ The lowest cutting height is about
L=135 mm(RM953) , 130mm(RM883)

Highest cutting height : About L=125mm ~120mm

Lowest Cutting height. : About L=135mm~130mm



① ⑧Diff-lock wire adjustment.



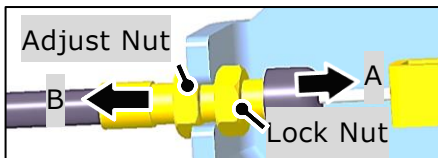
Refer to the photo on the left, adjust with the adjustment nut of the diff-lock wire, and check if it operates properly after the adjustment.

- ① If the differential lock is not work.

…Adjust nut move to direction A…

- ② If the differential lock is not released.

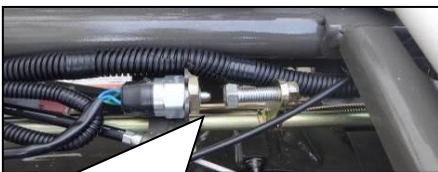
…Adjust nut move to direction B…



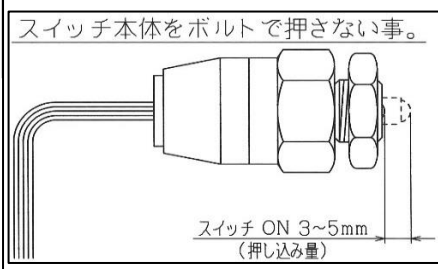
Reference ;

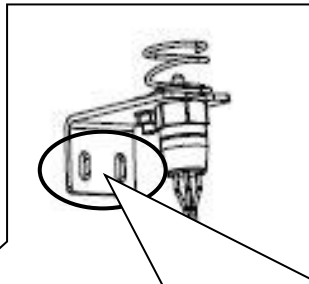
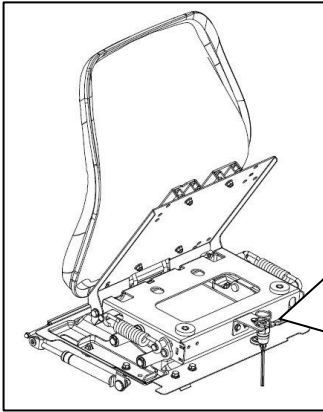
Adjust the play at the lever base is about 1 to 3 mm when the differential lock lever is in the "OFF" position (released). Be sure to securely tighten the lock nut after each adjustment.

⑨Safety switch adjustment.

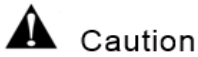


- ① Safety switches are located on the right side under the seat bracket, the base of the cutting height adjustment lever, and the bottom of the seat total three position.
- ② After adjusting the safety switch, tighten the lock nut and return the seat to its original position.
- ③ Check the operation of the tip of the safety switch, and if the movement is slow, apply a thin layer of grease spray to the switch operating section. If it does not improve, replace the safety switch.





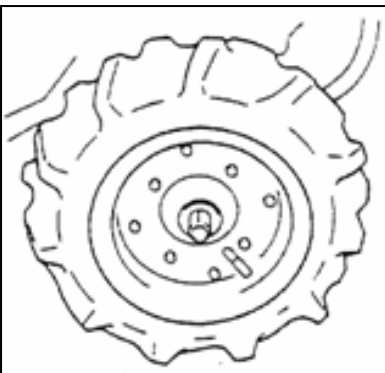
Individually adjusted with the long hole of the seat switch stay.



Caution

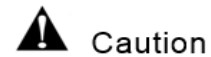
- 1) If the engine does not start even though you are sitting on the seat and the cutting height adjustment lever is set to "move" and the parking brake pedal is also locked, adjust the safety switch. The safety switch operates when the tip of the switch is pushed in the range of 3.0 to 5.0 mm, and if the tip of the switch is pushed outside the range, the engine will not start. Adjust the safety switch with reference to the above figure, as the switch itself may be damaged if it is pushed too far.
- 2) The safety switch under the seat may not be pushed in normally depending on the usage conditions. In that case, adjust it individually using the long hole of the sheet switch stay.

5.3.2 Tire Air pressure Adjustment.



- ① Check the tire pressure of the front and rear wheels according to the table below.

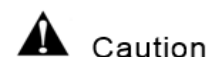
	Tire Size	Air pressure (k P a)
Front Wheel	3.50-7	1 2 0
Rear Wheel	16x7.00-8	1 4 0



Caution

If the air pressure of the left and right tires is not even, the steering wheel may shake during work.

5.3.3 Front tire inspection



Caution

If dirt or grass gets in from a small gap and leaving it for a long time may damage the wheel of the tire, the oil seal of the front wheel, or the bearing.

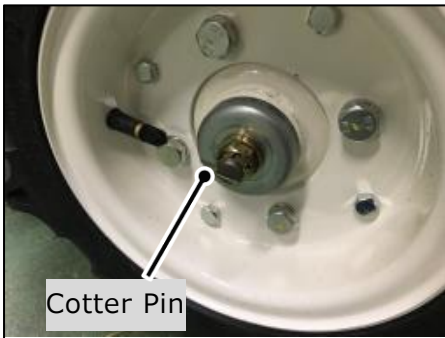


front wheel rubber cover

The front wheel rubber cover prevents the grass from rolling up and dust from entering, but you should remove the front wheel on a regular basis for inspection and cleaning.



Please refer to the picture on the left and lift the front with a jack. Please lift on a flat surface place with the parking brake applied.



Cotter Pin

- ② Remove the wheel cap, cotter pin, and nut, and remove the tire. When assembling after inspection and cleaning, do not reuse the split pins and use new ones. Tighten the nut by aligning the hole position for passing the cotter pin.



King Pin

- ③ Clean the inside of the tire wheel. Grease and lubricate the axle when assembling.

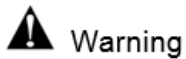
5.4 Inspection, replacement and installation of Blade.

■ For your safety, please inspect the knife and knife stay before work. ■



Warning

- 1) Since a sharp Blade is used in this machine, be sure to use the "Blade replacement tool" supplied with the product when attaching or detaching the Blade for inspection and replacement, never touch the knife directly with your bare hands using gloves. There is a risk of injury.
- 2) Please specify all parts necessary for Blade replacement including Blade stay as genuine products from the manufacturer.



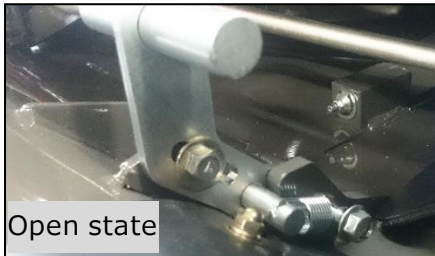
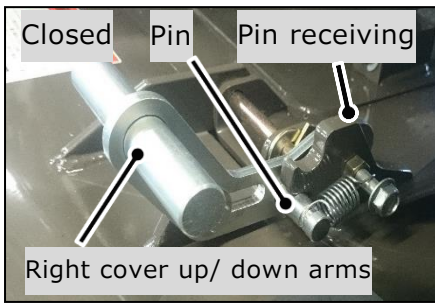
The warranty does not cover failures or accidents caused by using non-genuine products.

- 3) If the Blade hits the root of a curbstone or tree during the work and is impacted, the work is immediately stopped, and the Blade and Blade stay are checked for bends, defects, and wear, and if necessary, please replace them. Before starting work, make sure that the parts to be repaired during the previous work have been properly adjusted.
- 4) If the Blade and Blade stay are wearing, cracks, bends, defects, etc., the Blade suddenly breaks and fly out during work, resulting in serious injury or injury to the worker or others nearby.
- 5) The Blade stay will be consumed as well as the Blade. Even if you do not see any bending or wear, replace it every 100 hours or every 2 years, whichever comes first.
- 6) Blade rotates at high speed. If the Blade is chipped or broken even a little, it will cause vibration. Not only is it dangerous to continue working while vibrating, but it can also cause cracks and cracks in various parts of the product, significantly shortening the life of the product.
- 7) Replacing the Blade stay requires special tools and maintenance skills. For replacing work, please ask your dealer. At the same time, the cap nut and Blade stay set bolt must be replaced.
- 8) When replacing the Front and Back of the blade, be sure to replace the Blade setting bolt when replacing the blade, and at the same time replace the other parts including the Blade set bolt (hard lock nut, nut guard, knife collar) at the same time, never substitute other bolts and nuts.
- 9) Replace two blades at the same time. Replacing only one side and mixing old and new blades may cause abnormal vibration.



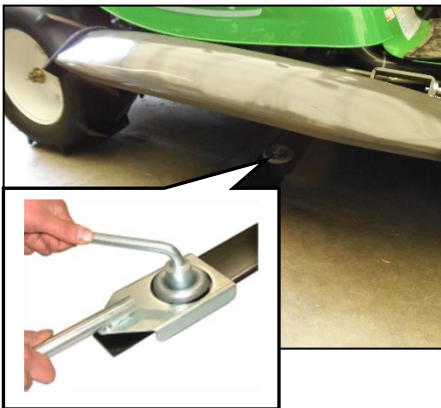
- 1) Blade replacement work must be done by a person with suitable tools and maintenance skills.
- 2) The cap nut will also wear. When polishing up the Blade, also replace the cap nut at the same time and never substitute another nut.

5.4.1 How to open and close the Blade replacement cover.



- ① Stop the engine and remove the key from the engine switch. (4.1.2 Refer to How to stop the engine)
- ② Set the cutting height to the middle position using the cutting height adjustment lever.
- ③ Pull the right cover up/down arm outward and pull up the cover.
- ④ The cover can be opened and fixed it by inserting the pin of the right cover up/down arms into the notch on the upper side of the pin receiver.
- ⑤ To close the cover, pull the upper and lower arms of the right cover outward, lower the cover, and then insert the pin into the lower cutout.

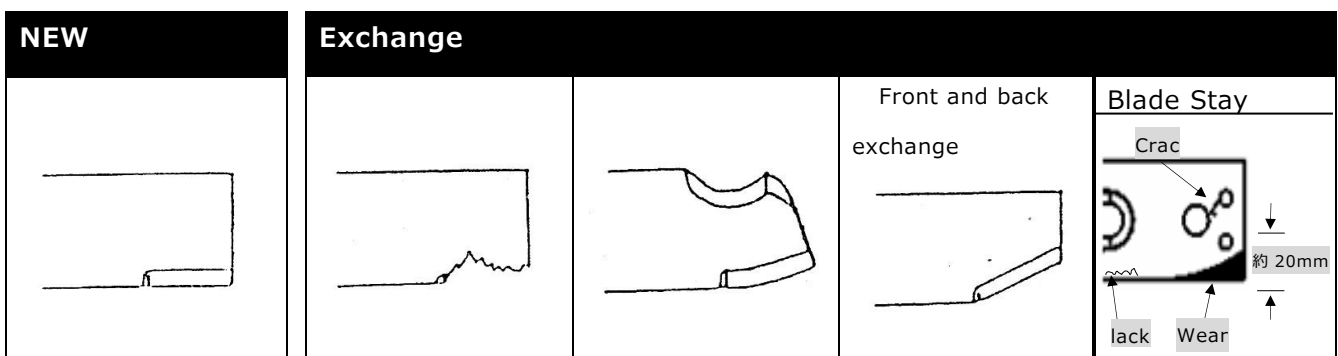
5.4.2 Check and Replace Blade



- ① Stop the engine and remove the key from the engine switch.
- ② Set the cutting height to the middle position with the cutting height adjustment lever.
- ③ Fully open the Blade replacement side cover and fix it.
- ④ Check the installation state of the Blade and Blade stay.
- ⑤ Inspect the Blade and Blade stay for cracks, bends and wear.


※ If it is in an abnormal state as shown below, change the

Blade. The front and back of the blade stay cannot be replaced. Replace all.



Reference;

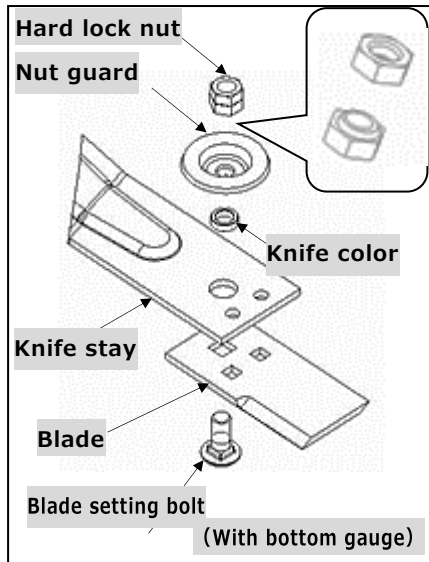
- 1) If you use it in a place containing dry soil or sand, check the Blade frequently because the Blade will wear quickly.
- 2) We recommend that you purchase a set of spare Blades in advance and keep them at hand.


Warning

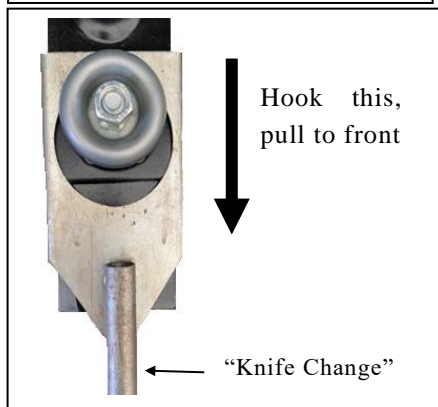
If the Blade is not installed properly, the Blade may suddenly break and come off during work, resulting in serious injury or injury to the worker or others nearby.

If not replaced, the Blade may scatter during work due to wear, deformation, damage, etc.

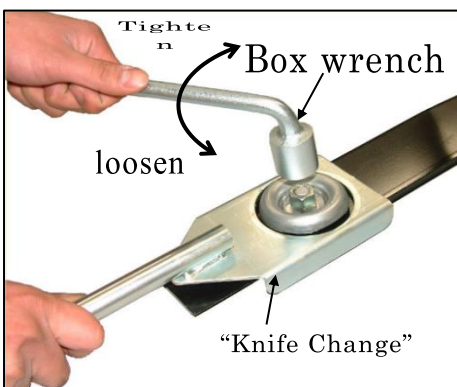
5.4.3 How to replace the Blade



If you need to replace the Blade (both front and back), refer to the following to attach and detach the Blade.



① First, hang the **"knife change"** over the knife stay and Blade to secure the Blade. At this time, pull the "knife change" toward you and hook it on the Nut guard as shown in the figure on the left.



② Use 22 box wrench to remove only the upper locknut, and then remove the lower nut in the same way.

When replacing the front and back, replace the Blade set bolts, and when replacing the knife, replace other parts including the Blade mounting bolts at the same time.

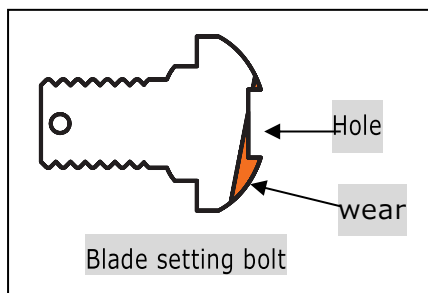
③ After replacing with a new Blade, be sure to tighten the hard locknuts one by one in the order of lower side and upper side.

The hard locknut is divided into two parts, and the upper part of the Lower nut has a protrusion, which is slightly thinner than the Upper nut.

There is a recess on the bottom of the Upper nut, and there is a "HARD-LOCK" stamp on the top surface.

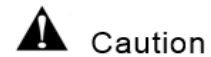
Reference:

- 1) The tightening torque for the hard lock nut is "800 kgf·cm" (78.4 N·m). As a guide, use a 30 cm long box wrench (size 22) and tighten it with a force of about 32 kgf or more.
- 2) A torque wrench is required to check the tightening torque. We recommend that you check the tightening force of the above torque at a dealer in advance.
- 3) If you use it in a place containing dry soil or sand, check the Blade frequently because the Blade will wear quickly.
- 4) We recommend that you have a spare Blades and a set of necessary parts for installation beforehand.
- 5) Be careful not to lose the knife collar when changing Blades.
- 6) If the gauge (recess) on the back of the Blade setting bolt is worn, replace it.



5.5 Long-term storage

5.5.1 Preparation for long-term storage



Long-term storage with fuel left in the fuel tank or carburetor may cause problems such as poor starting or reduced output.

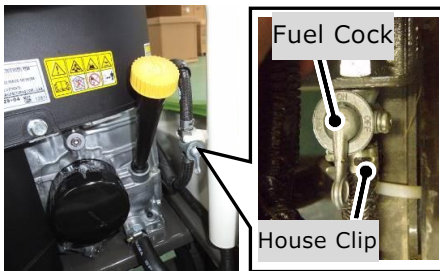


- 1) Since this product uses gasoline as fuel, it is dangerous to ignite for leak fuel, or smoke or bonfire near the product.
- 2) For storage, place the machine horizontally on a flat, well-ventilated place.
- 3) Wait for the engine and muffler to cool after stopping the engine (about 5 minutes or more) before draining gasoline from the fuel tank and covering the machine.
- 3) For safety, please remove the key and store it as the administrator of this product.
- 4) Do not store the removed fuel in a plastic tank or use the oxidized fuel that has been stored for more than 3 months as it may cause troubles.
- 5) Reinstall the removed hoses, clips, and drain bolts.

Reference;

Storage in cold regions

- 1) In winter, after use, be sure to remove dirt and foreign matter from the machine and park it on a flat, concrete, or hard, dry road surface. The adhered matter may freeze and cause a malfunction.
- 2) On Flat terrain, do not "lock" the parking brake pedal, use "wheel stops" to prevent the brake shoe from sticking.
- 3) If it freezes and becomes inoperable, do not try to force it, but melt the frozen part with hot water or wait until the freeze has thawed. (Please note that we are not responsible for any damage caused by forcibly moving it.)



(ア) When the machine is not used for more than 30 days, for prevent starting failure or malfunction due to fuel deterioration. First, remove the fuel in the fuel tank to the container with a pump etc., start the engine with the remaining fuel, and run it until it stops.

- ② Turn the engine switch key to "OFF" and close the fuel cock. (OFF).
- ③ Clean the engine and the outer surface of the machine.
(Please keep the removed parts as they were before installation.)
- ④ Change the engine oil.
- ⑤ Thoroughly clean each part. Especially, clean the grass and dust accumulated near the rotating screen, exhaust system, air cleaner, muffler, HST fan cover, carburetor, and belt cover by air blowing.
Remove the rust and apply rust preventive paint to the rusted areas.
- ⑥ Lubricate each lubrication point.
- ⑦ Apply the parking brake and store the unit on flat place with roof in a well-ventilated and dry place.
- ⑧ Before putting a cover on the machine, make sure that the muffler and other parts of the engine have cooled down. During storage, check the tire pressure regularly and inflate if necessary.

Reference ;

- 1) If you start the work with grass and dust accumulated, the engine will overheat due to clogging with grass chips, which may cause burns or a fire.
- 2) The blade cover debris can be easily washed away before it dries by washing it with water pressurized with a hose. At this time, be careful to cover the electrical components of the engine, the carburetor, the air cleaner, and the muffler exhaust port with a cover to prevent water from splashing. It may cause engine start failure

6. Note

6.1 Specifications (reference values)

Name		Rabbit Mower			
Type		RM953・953X		RM883・883X	
L×W×H (mm)		1895×1040×870		1895×990×870	
Cutting Width (mm)		950		880	
Weight (kg)		285		280	
Cutting Height (mm)		1 0 ~ 7 0 (Stepless with assistance)			
Knife (Pcs)		Free Knife × 2 & Knife stay × 1			
Belt (Pcs)	Drive	W800 SB 32× 1			
	Cutting	W800 SB 78× 1			
Tire Size (Pcs)	Front	3.50-7(φ350)× 2、Tube Tire			
	Rear	16×7.00-8(φ450)× 2、Tube Tire			
Differential lock		Equipped			
Handle		Round handle with sub handle (Up and down 3 steps, front and back adjustable)			
Transmission		HST continuously variable transmission			
Mission Oil amount (L)		1.0(# 90)			
HST Oil amount (L)		0.5(VG46)			
Brake		Mission brake・(Parking Brake)			
Speed (km/h)	Forward	Sub Change [Low] 0~6.7 / [Hi] 0~10.0		0~10.0	
	Backward	Sub Change [Low] 0~4.7 / [Hi] 0~7.0		0~7.0	
Battery		3 0 A - 1 9 L			
E N G I N E	Name	KAWASAKI	Briggs & Stratton	KAWASAKI	Briggs & Stratton
	Type	FS541V-	356777-0143-B5	FS481V-CG80	305777-0153-B5
	Displacement(cc)	603	580	603	580
	OIL (L)	2.0(Incl. oil filter)	1.7(Incl. oil filter)	2.0(Incl. oil filter)	1.7(Incl. oil filter)
	Starting method	Electric starter			
	Spark plug (2 pcs)	NGK-BPR 4 ES (KAWASAKI) / CHAMPION-RC12TC(B&S)			
	Fuel Tank (L)	12			

※This specification is subject to change without notice for improvement.

6.2 Tool bag / bundled items details

Name of Item	Size	Q'ty	Remarks
User's manual		1	This Book
Double-ended wrench	10×12	1	
"	14×17	1	
L-Type wrench	22mm	1	
safety goggles	0328-76100	1	
Setting Bolt	M 1 4用	2	For replacing the knife
Knife change tool	"	1	Knife replacement tool
Maintenance tool		1	Air cleaner cover removal tool *

〈※See 5.2.1 Cleaning the air cleaner〉

6.3 Consumables details

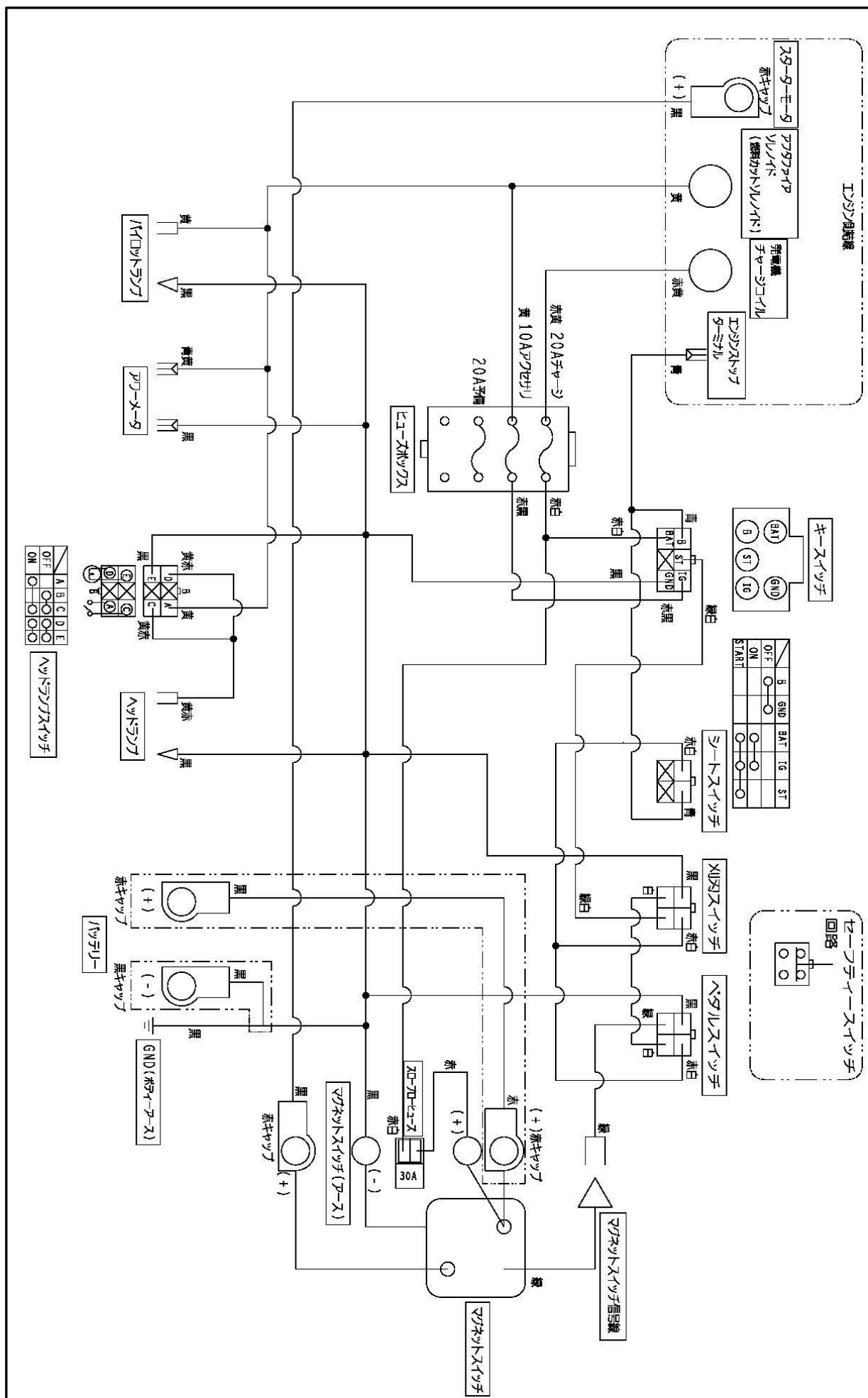
Parts Name	Parts No	Qty/Unit	Remarks
Knife	0244-89100	2	
Knife Stay	80-1493-817-10	1	For only RM883・883X
Knife Stay	0207-50500	1	For only RM953・953X
Knife & Setting Bolt Set	0244-78010	1	Knifex 2、Setting Boltx 4、Nut guard x 2 Hard lock Nutx 2、Collarx 2
Setting Bolt Set	0244-78210	2	Setting Bolt set x 2、Nut Guard x 1、Hard Lock Nut x 1
Knife Change tool	0244-52400	1	Knife replacement tool
Knife collar	80-1483-818-00	2	
Knife Setting Bolt	0207-50200	2	M14×32
Hard lock NutM14	0244-74600	2	Specal Duble Nut 1set
Nut guard	0244-51800	2	For M14
Cap Nut	83-1483-175-00	1	Fine nut、M20 メック付
Spring washer	89-1750-200002	1	Φ20
Knife stay Setting Bolt	83-1483-129-00	2	8T/M12×30/メック付
Spring washer	89-1750-120002	2	Φ12
Battery (30A-19L)	80-1792-976-00	1	
V Belt (Drive)	89-6123-003202	1	SB-32 W800
V Belt (Cutting)	89-6123-007802	1	SB-78 W800
Tire tube (3.50-7)	80-1711-404-00	2	Front wheel tube
Tire tube (16×7.00-8)	80-1751-404-00	2	Rear wheel tube
Knife clutch wire	0322-75110	1	

6. 附表

Parts Name	Parts No	Qty/Unit	Remarks
Brake shoe set (PA-7)	0244-88100	1	
Knife brake wire	0322-75210	1	
Diff lock wire	0244-72410	1	
Choke wire	0341-71100	1	KAWASAKI , B&S
Throttle wire (K)	0322-75400	1	KAWASAKI
Throttle wire (B&S)	0322-75600	1	B&S
Oil filter	88-49065-7007	1	KAWASAKI (Oil element)
Oil filter	88-842921	1	B&S (Oil element)
Form element	88-11013-7046	1	Kawasaki (Air cleaner Sponge)
Form element ト	88-692520	1	B&S (Air cleaner ,Sponge)
Paper element	88-11013-7049	1	Kawasaki (Air cleaner, Cartridge)
Paper element	88-692519	1	B&S (Paper filter for Air Cleaner)
Fuel Filter	88-49019-0031	1	Kawasaki (Fuel filter)
Fuel Filter	88-691035	1	B&S (Fuel Filter)
Moisture adsorption sheet	0322-71600	1	Inside of HST tank
Fuel hose L600	0322-70400	1	Fuel tank--fuel cock
Fuel hose L270	0322-70500	1	Fuel cock--fuel filter
Fuel hose L185	88-92192-7172	1	Kawasaki (Fuel filter-fuel pump)
Fuel hose L375	88-92192-7185	1	Kawasaki(Fuel pump ~ carburetor)
Fuel hose L150	88-92192-7148	1	Kawasaki (fuel pump-rocker case)
Fuel hose	88-791766	1	B&S length approx. 380 mm *
Fuel hose	88-791745	1	B&S length approx. 584 mm *
Fuel hose	88-791801	1	B&S L-shaped, L approx. 186 mm *
Fuel hose	88-842447	1	B&S L-shaped, approximately 222 mm *
HST Oil 1.0L	0244-79000	1	Super Hydro 46
ヘッドライト	0322-71300	1	バルブ H3(12V55W)

※Cut the B&S fuel hose to the desired length before use.

6.4 Electrical circuit diagram



7. check list

7.1 Periodic inspection table

★ Failure to perform inspection or maintenance may result in an accident or malfunction. Please perform inspection by referring to this "Periodic inspection table" so that normal functions can be exerted and always in a safe state.

★ Make annual inspection a year, monthly inspection a month, and start-up inspection every time before work.

item		Inspection items	Items to check	Check	S	M	Y
Braking device	Brake	Parking brake effectiveness	Is there no drag, or is it not lose?	Brake shoe	○	○	○
		Brake rod Joint	Is there deformation or backlash?	Rod	○	○	○
				Joint	○	○	○
		U Nut, W Nut	Is it loose or missing?	U Nut, W Nut	○	○	○
	Split pin	Is it missing?	Split pin	○	○	○	
Cutting device	Cover	Cover condition	No bends, cracks or corrosion. Is the flapper rubber attached properly?	cover	○	○	○
				flapper		○	○
	Rotating part	Blade & Stay (Knife) and installation	Is there any warp or wear? Is the bolt / nut loose, worn, or dropped?	Blade	○	○	○
				Blade stay	○	○	○
	Blade brake	Braking effect (Stop within 5 seconds)	Brake	○	○	○	
Engine	Main body	Acceleration, exhaust, choke operating status.	Acceleration is smooth, exhaust color and odor are normal, and choke operation is smooth?	Acceleration		○	○
				Exhaustion		○	○
				Chock	○	○	○
		Muffler, Battery	Setting is loose or not corroded Is the state of charge of the battery good?	Muffler		○	○
	Battery				○	○	
	Engine body	Is the engine mounted loose and cracked?	Mounting		○	○	
	Air Cleaner	Is it dirty, clogged, torn or scratched?	Air Cleaner	○	○	○	
	Oil	Engine oil, oil filter	Check for quantity, quality, leakage, and foreign matter. Is replacement time appropriate? 【Engine oil: 5H for the first time, change every 50H thereafter, and every 100H filter】	OIL	○	○	○
				Filter	○	○	○
	Oil line	Fuel tube, Filter	Check for fuel leaks, deterioration, deformation, or clogging	Tube		○	○
				Filter		○	○
	Ignition system	Spark plug	Is there any crack in the insulator or carbon accumulation?	Plug		○	○
		High-voltage cord, plug cap	Is there deterioration, cracks, or cracks in the cap?	Cord		○	○
	Cooling	Engine housing	Is there any accumulation of grass debris in the housing?	Inside Cover		○	○
Wiring	Harness	Is it loose or damaged?	Harness		○	○	
Transmission system	Belt	Drive, Blade Belt	Check for tension, cracks, damage, and significant dirt.	Drive	○	○	○
				Blade	○	○	○
	Deceleration	Mission oil	Quantity, quality, oil leakage, foreign matter (water, air) mixing 【Mission oil: 20H for the first time. After that, exchange at 100H】	M-OIL		○	○
Hydraulic	HST Oil (Applicable products)	Quantity, quality, oil leakage, foreign matter (water, air) mixing 【HST oil (equivalent to VG46): First time "Refer to each instruction manual". After that, 200H or exchange once a year. (Replace the HST oil filter at the same time)】	H-OIL	○	○	○	
movable part	Movable state of levers, wires, etc.	Is the operation smooth? Check for sticking or rust.	Diff-lock	○	○	○	
			Cutting part	○	○	○	
			Sub Change	○	○	○	
Speed change	Shift lever	Operation, N position is proper, lose or loose	Lever	○	○	○	
Driving part	Tire (Crawler)	Is the air pressure proper and is there no damage or uneven wear?	Tire	○	○	○	
	Setting state	Check the bolts and nuts for looseness and dropped out.	setting	○	○	○	
Handle	Installation state	Check the bolts and nuts for looseness and dropped out.	Handle	○	○	○	
Instrument	Hour meter (Applicable products)	Is the display time applicable and is the operating status appropriate?	Hour meter			○	
Label	Warning label and nameplate	Adhesion is proper (peeling), damage, dirt	Label			○	

7.2 Engine malfunction and how to deal with it

If the engine is not in good condition, check it according to the table below and take appropriate action.

phenomenon	Cause	treatment
Starter does not run	Not press the parking brake pedal	Depress the pedal and lock with the stopper
	Cutting height lever is not in "move"	Cutting height lever set to "moving" position
	Not sitting on the seat.	Sit on the seat and start
	Poorly adjusted safety switch	Adjust the switch range to 2 to 8 mm
	Battery over discharge	Charge with normal current
	Disconnection of battery cord	Connect the cord
	Disconnection of coupler wiring	Connecting
	Fuse blown	Replace the fuse (30A)
	Harness cut or short	Harness replacement
Poor charging	Defective charge coil	Replace charge coil
	Fuse blown	Replace the fuse (charge: 20A)
	Regulator failure	Replace regulator
	Battery life	Replace battery
Difficult to start	Throttle lever is not "low speed" position	Move the throttle lever to "low speed" position
	Choke lever is not in the "start" or "closed" position.	Pull and close the choke lever when the engine is cooled.
	Fuel does not flow	Inspect the fuel tank to remove any impurities or moisture that may have settled
		Fuel cock to the "open" (ON) position.
	Fuel filter plugging	Replace fuel filter
	Air or water is mixed in the fuel line system	Remove foreign matter, inspect the tightening band, and if damaged, replace with a new one.
	Oil viscosity is high and engine rotation is heavy in cold weather	Use different oil depending on temperature
	Ignition coil or Unit IS defective.	*Replace the ignition coil or unit
	Spark plug malfunction	Check the gap between the spark plug electrodes
		Replace with a new spark plug
	Battery is discharge	Remove the battery when not in use, store it in a fully charged room indoors, and install it when using
	Poor fuel quality	Replace with new good fuel
Lack of fuel	Refuel	
output is insufficient	Lack of fuel	Refuel
	Clogged air cleaner	Clean the element
	Poor fuel quality	Replace with good fuel
	The Choke is not completely open	Fully return the choke lever to the "open"
	The cooling system is clogged	Clean around the screen guard
In case of sudden stop	Lack of fuel	Refuel
	Fuel cock closed	Fuel cock to the "open" (ON) position
Exhaust color is abnormally black	Poor fuel quality	Replace with good fuel
	Clogged air cleaner	Clean the element
Black color Exhaust came out and output decreased	Clogged air cleaner element	Clean the element
	Chock is not completely open	Fully return the choke lever to the "open" position
Blue-white exhaust gas	Too much engine oil	Adjust to the specified amount of oil
	Cylinder/piston ring wear	* Replace ring
Engine rotation is not stable	Choke is not completely open	Choke lever move to completely "open" position
	Poor fuel quality	Replace with good fuel
EG Stop after a while	Defective ignition coil	* Replace ignition coil
	Fuel filter is clogged	Clean the fuel filter
Exhaust gas pungent odor	Poor fuel quality	Replace with good fuel

7.3 Self-diagnosis table

If any of the following problems occur, refer to the instruction manual and take appropriate action.

Phenomenon	Cause	Treatment
The grass is not discharge well	The grass is wet.	Work after the grass has dried.
	The grass is long.	Increase the cutting height and cut twice.
	The cutting height is low.	Increase the cutting height.
	The engine speed is low.	Set to the maximum speed.
	Working speed is fast.	Reduce working speed.
There is left uncut part.	Working speed is fast.	Reduce working speed.
	The engine speed is low.	Set to maximum RPM.
	Worn or damaged Blade.	Replace with a new Blade.
	Accumulation of grass debris in the Blade cover.	Clean the inside of the Blade cover.
	The grass is long.	Mowing twice.
Mow the grass in the falling direction	Change the mowing pattern (mowing direction).	
Soil cutting occurred.	The cutting height is low.	Increase the cutting height.
	The turning speed is fast.	Reduce the turning speed.
	The terrain has undulations.	Change the mowing pattern (mowing direction).
	There are many undulations on the terrain.	Increase the cutting height.
	Bending of the blade.	Replace with a new Blade.
Belt slips.	Belt tension is low.	Adjust the belt tension.
	There is a foreign object inside the Blade	Clean inside the Blade cover.
	Accumulation of grass on pulley.	Clean the pulley.
	Belt wear out.	Replace with a new belt.
Blade does not stop within 5 seconds	Wear of Blade brake shoes	Replace Blade brake
	Misaligned Blade brake	Adjust Blade brake
Vibration is large.	The Blade is out of balance	Fix the Blade (Both side Blade)
	damage of the Blade	Replace with new blade or fix it
	Accumulate of grass on knife neck	Clean the inside of the knife neck guard
	Knife shaft is bent	Replace knife shaft
	Damaged knife belt	Replace with a new belt
	Bending the knife stay	Replace knife stay
A mixture of old and new Blades	Do not mix old and new blades	
Mowing workload is large	Low engine speed	Increase engine speed
	Work speed is fast	Slow down workspeed
	Wrapping grass around the knife	Clean the knife shaft
	Long grass	Increase the cutting height and cut twice
	Low cutting height	Increase the cutting height
Tire slips and does not go straight	The diff lock is in the "off" position	Set the diff lock to the "on" position
	The field is weak	Stop working until the field is dry
Not stop the shift lever in the "N" position	The neutral "N" position of the shift lever is misaligned	Adjust the neutral "N" position with the turnbuckle of the shift lever
Reduced climbing power	Insufficient tension on the driving belt	Tension or replace driving belt
	Lack of HST oil, deterioration, mixing of air/water	HST oil replenishment, replacement, air bleeding
The unit does not move even if the change pedal is operated	Lack of HST oil	Replenishing HST oil
	HST hose disconnection and tear	Attach hose, replace damaged product.
	Parking brake is not released	Release the parking brake
	Driving clutch lever is in the "off" position	Driving clutch lever move in "ON" position
Parking brake is not effective	Brake shoe wear	Brake shoe replacement
	Oil comes in the brake drum	cleaning and replacing the oil seal
	Water comes in the brake drum	Turn on/off the brake and dry the inside of the drum.
	Tire wear	Replace tires

7.4 Battery maintenance/inspection

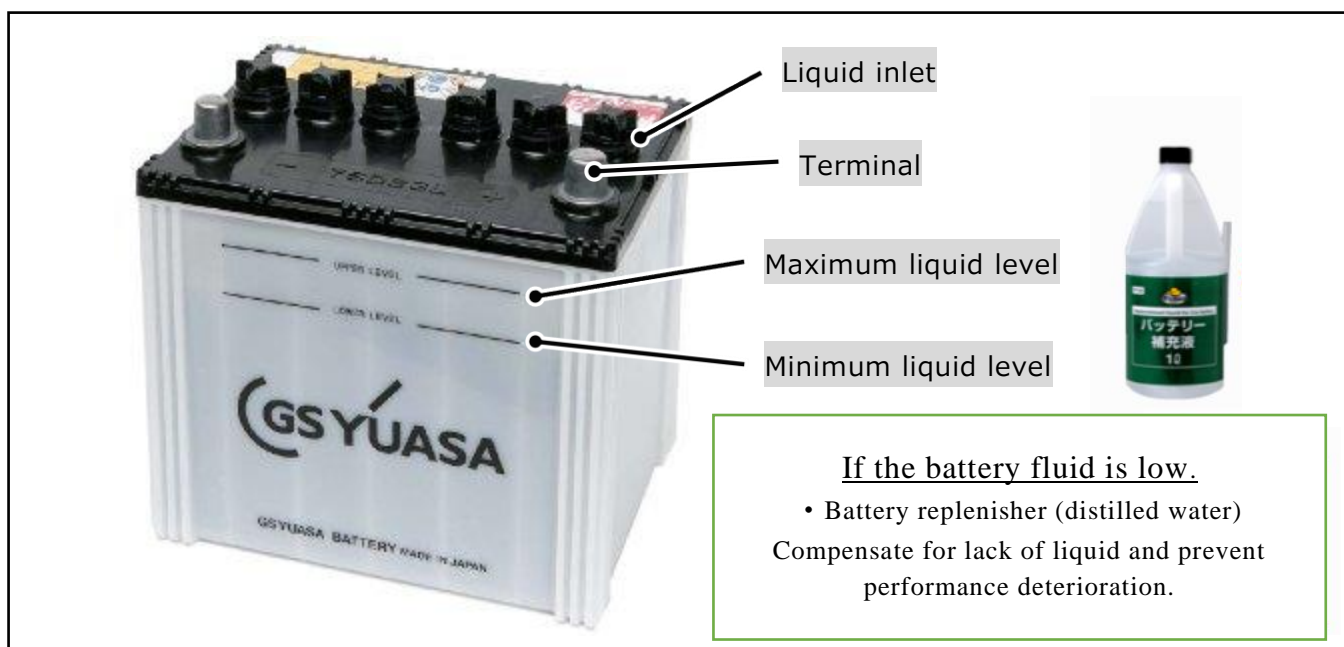
Improper handling of the battery can shorten the battery life or cause a serious accident.

Please use with the correct handling method to the full effect.

Warning

- 1) Be aware of short circuits, sparks, and fire when handling the battery.
- 2) Combustible hydrogen gas is generated from the battery. Do not generate fire (matches, lighters, cigarettes, sparks from welders or grinders, sparks on terminals, etc.) near the battery as this may cause a fire or explosion.
- 3) Do not touch the battery with a charged body or clean it with a dry cloth. It may cause a fire explosion due to static electricity.
- 4) Battery fluid is dilute sulfuric acid. Be aware when you touch the eyes and skin as it may be injured. If an accident occurs, act according to [7.4.5 Electrolyte Solution Procedures for Accidents](#).
- 5) Be sure to remove the battery from the unit when charging. It may damage the electrical components or damage the wiring. Fast charging is not a suitable method for supplementary charging. Fast charge is only for emergencies, and for other cases, strictly follow normal charge.

7.4.1 How to replenish the battery fluid



Check the height of the electrolyte in the daily before using. Check the height of the electrolyte once a month even when not in use. If the liquid level drops below half between UPPER and LOWER, add purified water (distilled water) to the UPPER level.



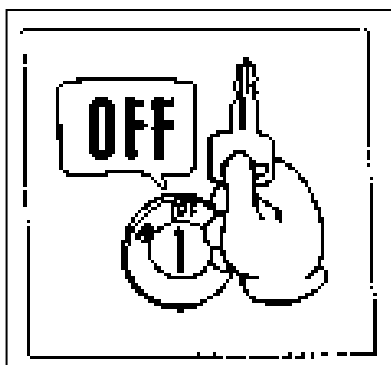
Warning

- 1) The battery electrolyte must not have the below "LOWER" level. It may cause short life, heat generation and explosion.
- 2) Only put purified water into the battery. (Do not replenish with dilute sulfuric acid.) If impurities are put in, it may cause heat generation, ignition, and generation of toxic gas.
- 3) If too much purified water (distilled water) is put in, the electrolyte may spill and cause metal corrosion. Do not fill more than UPPER (maximum liquid level). If you should spill the battery fluid, be sure to wash it with water.
- 4) After replenishing water, install the inlet port plug firmly so that no liquid leaks.

7.4.2 How to auxiliary charge.

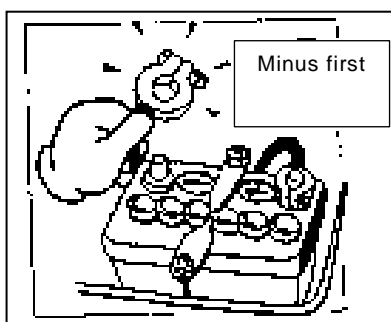
If the engine does not start even if the battery level is controlled, or if the rotation of the starter motor is lower and weaker than usual, the battery was discharged. Follow the procedure below

for charging for 5 to 10 hours.



• Battery removal procedure

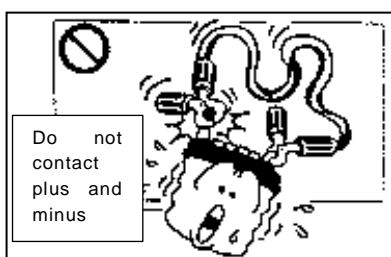
- ① Stop the engine of this product and remove the key.
- ② Make a note of the battery installation status (terminal polarity position).
- ③ Loosen the bolt on the "-" (minus) terminal of the unit and disconnect the cable terminal from the "-" (minus) terminal of the battery.
- ④ Then, loosen the bolt of the "+" (plus) cable terminal and disconnect the cable from the battery "+" (plus) terminal.
- ⑤ Loosen the battery mounting bracket and remove the battery horizontally. Handle the battery carefully as it is a heavy item.



• auxiliary charge ※An optional charger is required.

〈7.4.5 Reference, Battery charging time〉

- ① Before using the charger, make sure that the power is turned off. If it is connected to the battery while it is ON, a spark will be generated, which may cause ignition or explosion.
- ② Connect the + (plus) side of the charger to the + (plus) side of the battery, and the—(minus) side of the charger to the—(minus) side of the battery. Incorrect connection may cause electric circuit failure or wiring damage.
- ③ Take out all 6 liquid inlet cap.





- ④ For supplementary charging, keep the normal charging electrical current and charging time. It may cause liquid leakage, ignition, or explosion.
- ⑤ After completing the charging, attach the 6 liquid inlet cap firmly as before.

Do not use quick charge, as it is not suitable for recovering a battery that has been left for a long time. If it is unavoidable that you want to perform rapid charging, use a charging current that is less than or equal to the rated battery capacity.

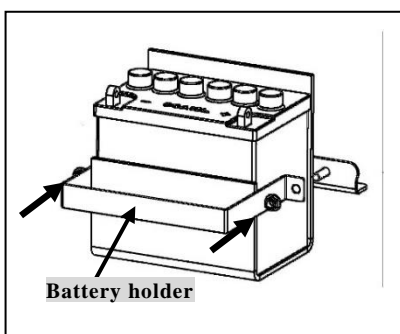


Caution

- 1) To use the charger with boost function, follow the charger instruction manual. If handled improperly, it may cause the battery to explode or damage the product and equipment.
- 2) Charge the battery in a well-ventilated area, and keep it away from fire. It may cause ignition or explosion.

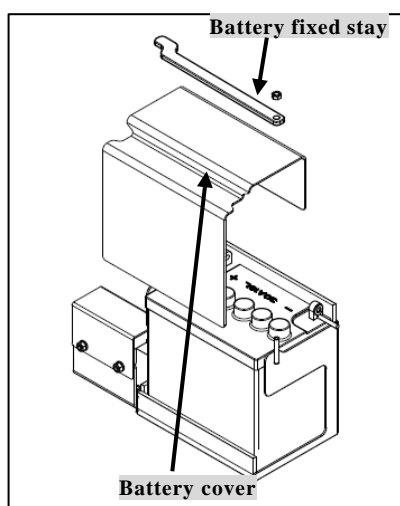
Guidelines for charging completion (must satisfy the following conditions)

①	The specific gravity of the electrolyte has been kept constant at 1.270/20°C or higher for 1 hour or longer.
②	The terminal voltage is 15 V or higher and keeps a constant value for 1 hour or longer.
③	Gas is actively generated from each cell.
④	The scheduled charging time has been reached.



• Battery installation procedure.

- ① Check that there are no foreign objects on the battery mounting base, put them on the mounting base so that the terminals polarity of the removed battery are in the same position, and there is no rattling in the battery holder (applicable model only) or battery fixing stay (applicable model only). fix it firmly.
- ② Attach the + (plus) cable terminal on the unit to the battery + (plus) terminal, and tighten the bolts securely so that there is no looseness.
- ③ Next, attach the machine-side (minus) cable terminal to the battery (minus) terminal, and tighten the bolts securely so that there is no looseness.
- ④ It is effective for rust prevention to apply a thin layer of grease to the metal parts of the cable terminals to prevent rust. If the cable terminals are corroded, clean them with a wire brush or fine sandpaper.



・ Start

Start the engine when it is installed in the machine. The start operation should be within 5 seconds, and if it does not start at one time, pause for 10 seconds, or more and then start again. However, if the operation does not start even after performing this operation, the battery life may be suspected. Check the battery and starting circuit.

7.4.3 Battery life

During use, the battery gradually loses its capacity and reaches the end of its life. If the performance does not recover even with supplementary charging, it has reached the end of its life. ・ The life is shortened by the following factors.

- 1) High temperature (environmental temperature)
- 2) Frequency of use (too little or too much is affected)
- 3) Insufficient charging (insufficient supply due to generator failure, etc.)
- 4) Severe use (usual use in cold regions, insufficient charge, etc.)
- 5) Inadequate maintenance (when the battery goes up due to failure to check the liquid level of the battery or water supply, contact failure due to loose terminals, forgetting to turn off the engine switch, etc.)
- 6) Excessive charging (regulator failure, overcharging without finishing charging even after completion time)

・ The following signs occur at the end of life.

- 1) The rotation noise of the starter motor is lower and weaker than usual.
- 2) The amount of electrolyte in the battery decreases quickly.




When any of these signs appear, pay attention to the above and perform supplementary charging. If the sign does not disappear after supplementary charging, it is recommended that you replace the battery as it has reached the end of battery life.

7.4.4 Battery failure and how to deal with it

phenomenon	Cause	treatment	Prevention method
Starter does not turn	Neglected to charge	Charging for a long time with normal charging	Do not use the battery forcibly and charge it early.
	Poor contact of terminal	Thoroughly wash and tighten the terminal	Clean the terminal, tighten tightly and apply grease
	Battery life	Battery replacement	
The starter doesn't run fast. The top of the electrode plate is white when viewed from the inlet hole	Incomplete charging	Charging for a long time with normal charging	Fully charge before use
	Insufficient electrolyte	Recharge by adding distilled water	Regularly check the liquid volume
	Battery overuse (over discharge)	Charging for a long time with normal charging	Do not use the battery forcibly and charge it early.
Can't charge even if charged	Battery life	Battery replacement	3 0 A – 1 9 L
	Fuse blown	Fuse replacement	2 0 A
Corrosion of the terminals is severe and the terminals become hot	Poor contact of terminal	Wash the terminal well and tighten it	Clean the terminal and tighten it firmly and apply grease.
	Dirty terminal		
Electrolyte decreases quickly	The battery case is cracked	Battery replacement	Secure the installation
	Charge voltage is too high	Charger replacement	
	Battery life	Battery replacement	

※If you have any questions, please contact the dealer where you purchased the product.

7.4.5 Treatment method in case of accident with electrolyte

degree of Danger	Accident type	Treatment method
	In case of eye contact	Immediately wash your eyes with a large amount of clean water, and then immediately seek medical treatment from a doctor (ophthalmologist).
	If swallowed	Immediately repeat gargle with drinking water, drink a large amount of fresh water, and seek medical treatment immediately.
	When it adheres to skin or clothes	Immediately rinse with plenty of water, then rinse thoroughly with soap.
	When it adheres to vehicle body.	Immediately wipe off with a waste cloth, then rinse with water.
	When spill it on the floor or the ground.	Sprinkle with sodium bicarbonate (sodium bicarbonate), etc. until no bubbles appear, then rinse with plenty of water.

7.4.6 Estimated battery charging time

A fast-charged battery will discharge quickly. Please follow the charging time below for the battery and fast charge only in an emergency. (Electric current 3 A ~ 4 A)

Specific gravity (20 °C)	charging time (Hour)
1,240 以上	4~5
1,200~1,240	6~7
1,160~1,200	8~9
1,120~1,160	10~12
1,120 以下	15 以上

Specific gravity (20 °C)	Discharged electricity (%)	Residual electricity (%)
1,280(1,260)	0	100
1,230(1,210)	25	75
1,180(1,160)	50	50
1,130(1,110)	75	25
1,080(1,060)	100	0


Caution

- 1) If the temperature of the liquid during charging rises above 45°C (feeling hot to the touch with the palm of the hand), reduce the liquid temperature by halve the current value cahrging or suspend charging, and then charge the battery.