INSTRUCTION MANUAL





GRASSLAND MOWER RABBIT RMK180





Read this instruction manual carefully before any use of the machine, keep it as a reference. For any question about this manual, please report to your OREC dealer or to the distributor of your country.

OREC CO LTD

548-22 HIYOSHI HIROKAWA-MACHI YAME-GUN JAPAN http://www.orec-jp.com

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INTRODUCTION

About manual

- Read this manual before the use of the machine.
- If you are lending or transferring this machine, be sure to give this manual along with the machine.
- If this manual is lost or damaged, please order directly from the dealer.

Getting started

- ✓ Thank you for purchasing this product.
- ✓ This instruction manual explains the correct handling methods and simple maintenance methods to keep this product in the best condition and to work safely.
- Be sure to read this instruction manual carefully before use, fully understand the safe operation and correct handling methods, and use it for safe and efficient work.
- ✓ After reading, take it out and keep it in a safe place so that you can refer to it at any time. If it is lost or damaged, purchase it from the retailer or download it from the website.

Definitions and Simbols

All along this manual, the words DANGER, WARNING, and CAUTION are used with the "safety/warning" pictogram (triangle with an exclamation mark) in order to indicate a hazard for your safety.

Simbol	Definition		
⚠ DANGER	Indicates danger that causes serious injury or death if the right precaution is not taken.		
⚠ WARNING	Indicates risk that is likely to cause serious injury or death if the right precaution is not taken.		
⚠ CAUTION	CAUTION Indicates risk that might cause injury if the right precaution is not taken or that me cause damage on the product.		
TIP	Indicates usuful hint for operation and maintenance of the product, and to avoid faulty operation.		

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Machine regulations

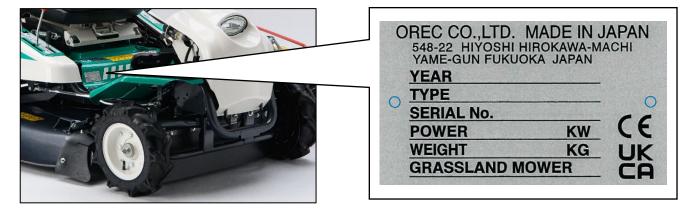
- This product has been developed as a special machine(trunk circumference grass cutter) exclusively for agricultural workers, so please do not use it for any other purpose(rental, etc. where the operator cannot be identified). It may not be covered by the warranty.
- 2) It may not be possible to cut grass such as ivy and vines that grow on the ground.
- 3) This machine has a seating capacity of 1 person. Also, you cannot drive on roads or places used for general traffic(farm roads, forest roads, public squares, etc.).
- 4) Even if you obtain a vehicle number, you cannot drive on public roads.

Important notice

- Please note that due to changes in parts, etc. due to performance/durability improvements and other specification changes, the product specifications you have and the contents of this document may not match in part.
- 2) Please note that copying part or all of the contents of this book without permission is a copyright violation, except in cases stipulated by law.
- 3) This book uses photographs and illustrations to help you understand the explained parts, but parts other than the explained parts may be omitted from the display.
- 4) Only the English version of this maual can be used as a reference, and other languages are the translations.

Warranty/Contract/Disclaimer

- 1) Certificate of conformity and warranty information is mentioned at the end of this manual book. Please be sure to carefully read and understand the warranty terms and conditions.
- 2) If you do not understand even after reading this manual, do not operate the product without permission, but be sure to consult the dealer where you purchased the product (hereinafter referred to as dealer).
- 3) Regular inspections and maintenance are essential to continue using the product safely and efficiently.
- 4) Be sure to request regular inspection and maintenance from your dealer(charges apply) at least once a year as listed in the "MAINTENANCE CHART".
- 5) Breakdowns and accidents caused by failure to perform these inspections and maintenance, use beyond specifications, modification, or failure to follow this manual are not covered by the warranty.
- 6) The supply period of repair parts for this product is 9 years after discontinuation of production. However, even within the supply period, we may consult with you regarding delivery dates, etc. for special parts.
- 7) If you have any questions or concerns regarding services, please contact your dealer. In that case, please refer to the section below to check the product model, serial number, and model name of the installed engine(engraved or affixed to the engine body) and contact the dealer.



Instructions to the dealer

The assembly, the installation and the first application of the machine is under the OREC dealer's responsability.

Read the instruction manual as well as the safety measures. Check that all the before delivery and at delivery check points specified in the following lists have been verified and possibly modified before delivering the machine to its owner.

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CHECK LIST

Working conditions



WARNING

- Do not operate this machine without fully understanding this manual. Also, this product is for one person only. Do not allow people other than the worker or animals to ride on the vehicle.
- As a general rule, it should not be used by anyone other than the owner. If you have no choice but to lend the machine to someone else, explain how to use it, carefully read the instruction manuals for the machine and the engine (relevant products), and fully understand the handling methods and safety points before starting work.
- Do not work if you are unable to operate normally due to overwork, illness, drugs, or other influences.
- Individuals who are pregnant, too young to understand instructions, or untrained, should never operate
- 5) Always wear appropriate clothing; no loose or hanging clothes. Non-slip boots and protective gear are always recommended to prevent injury from rotating parts.
- Use proper protection gear such as non-slip shoes, helmet or winter hat, shin guards, safety glasses, 6) gloves and safety jacket depending on the product.
- This product is not certified for the use in public roads, so please do not drive it on public roads.

Cautions before operation



A DANGER

Exhaust gas may cause gas poisoning. Do not operate or work in areas with insufficient ventilation such as indoors.



WARNING

- Never modify this machine in a way that will impede safe work(cutting covers, installing non-genuine parts, using unspecified belts and oil, removing safety devices, etc.). We cannot be held responsible for any accidents or malfunctions caused by these modifications.
- Please make sure that there are no people, animals, vehicles, equipment, buildings, or other tangible assets nearby. Also, be sure to check the safety of your surroundings, and do not approach dangerous areas such as obstacles in the field, side ditches, and weak road shoulders, or places that require caution.
- Remove stones and other foreign objects in advance. If there are obstacles that cannot be removed, please set up caution signs or safety fences indicating areas where work is prohibited before starting work. Also, in such fields, for safety reasons, mow higher than usual in order to avoid the danger as the blade may chip or foreign objects such as stones may fly off.
- Please remove any rocks, metals, or other objects that could generate sparks when the blade comes into contact with them beforehand. If you cannot remove it, please set up a conspicuous mark so that people do not approach it.
- When mowing dry grass, check and clean the areas around the engine and exhaust pipe, which are subject to high temperatures, once every hour to ensure that no grass debris has accumulated.
- Dry grass can catch fire due to natural combustion or external fire. When mowing dry grass, please appoint a work supervisor other than the worker to constantly monitor the work.
- Please be especially careful when mowing when a dry weather advisory has been issued, and in some cases, 7) avoid mowing.
- 8) To prevent falls, when driving over rivers, cliffs, or steps (road shoulders), please consider the risk of road shoulders collapsing and falling, and drive on sufficiently safe flat ground.
- It is dangerous to use machine when it is dark or when visibility is poor. Do not use it when you cannot fully understand the surrounding situation.



CAUTION

- Avoid using the machine in conditions where it will be exposed to large amounts of water, such as during rainy weather or in puddles.
- 2) Please be aware of other weather conditions, etc., and give due consideration to work decisions and equipment selection.

Inspection/checks before operation



WARNING

Before starting work, be sure to confirm that any repairs found after the previous work have been completed and never begin work until the repairs are complete.

- It is extremely dangerous to operate the machine without safety covers, as well as standard safety devices and related parts. To prevent accidents, be sure to use these parts with them attached. If there is an abnormality, repair it and make sure it is in normal condition before starting work.
- When the work clutch (knife clutch, etc.) is in the "off" position, check to see if the V-belt is firmly stopped. If it is moving at all, stop the engine and adjust the belt holder and wire.
- 4) A falling blade is dangerous. Tighten the knife set bolt and nut firmly. Also, replace the old one with a new
- 5) If there is a cover for blade replacement, it is dangerous to use machine with it open. Be sure to use machine with the cover closed.
- Be sure to check the effectiveness of the parking brake every time. Improper brake adjustment can lead to serious accidents. Please check one or more of the following
 - (1) With the driving clutch lever in the OFF position(Sub change lever in the N position), the parking brake does not move even if two adults push the machine.
 - (2) Tires lock up when driving and suddenly applying brakes.
 - (3) The parking brake is applied on the bridge that hangs over the bed of a truck and it does not move.
- Carefully remove any grass that is clogged around the cooling air inlet, the cylinder, or the area around the exhaust pipe, which gets particularly hot. This may cause engine seizure or fire. Also, be sure to clean not only the outside but also the inside. Also, please clean the inside of the air cleaner and any grass debris accumulated on the HST fan cover (applicable product) at the same time.

No open flames / Refueling

⚠ DANGER

- Fires are strictly prohibited around the machine, including during work and refueling. There is a risk of ignition or burns. Never smoke, bonfire, or use open flames near the machine.
- Please refuel after the engine has stopped and the muffler temperature has cooled down sufficiently.
- If the fuel level is marked with an upper limit mark, please refuel below the mark (even less if using on a slope). If you have added too much fuel, remove it until it is below the mark. Also, be sure to wipe up any
- Do not perform this operation while your body is charged with static electricity. Vaporized gasoline may ignite, leading to burns and fire.

During operation



MARNING

- For your safety, please drive with plenty of time and avoid sudden starts, stops, or sudden turns. 1)
- 2) Please do not work in an awkward position and take a break every 1 to 2 hours depending on your physical
- 3) To prevent people (especially children) and pets from entering the work area (within a 20m radius), please place signs indicating that grass mowing work is in progress, guard ropes, and netting to prevent scattering, and do not allow people (especially children) or pets to come within a 20m radius. If people or pets approach, immediately stop work and stop the engine.
- Do not leave flammable or dangerous objects around while driving. Also, the exhaust muffler becomes hot. If you touch the machine while operating it or immediately after finishing work, you may get burned.
- When working on a slope, please use it when the slope is 15 degree or less(refer to "SLOPE GUIDE"). If you use the machine on a slope of 15 degree or more, there is a risk of the machine falling over or falling and becoming trapped under the machine. Also, if the offset part is on the valley side, the vehicle body is more likely to be dragged toward the valley or fall over. Please work with great care.
- Even if you take sufficient precautions to prevent slipping, do not work in slippery areas. 6)
- While working, do not get distracted by other things and concentrate on driving safely.
- Removing stones and other foreign objects from around the machine while mowing is extremely dangerous. Always remove stones and other foreign objects before mowing.

Operational notes



MARNING

- Be sure to be seated, set the height of cut lever to the "transport" position, and press(or lock) the parking brake pedal before starting the engine.
- Be very careful when turning on slopes, etc. You may lose your balance and fall, causing injury.
- For your safety, do not make any unnecessary operations on the speed lever or clutch lever while on a slope. 3) There is a risk of slipping or falling.
- When driving reverse, make sure there are no people(especially children), animals, or obstacles, and be careful of ground to avoid getting caught between machines or falling off cliffs or steps.

- When working around trees or against walls, be careful not to get your body or hands caught between the machine and the support of a greenhouse, tree branches, iron wire, etc., or to be bruised or pinched by the branches.
- When switching the mowing direction, check the safety in the front and back directions before doing so.
- Before operating the blade clutch, make sure that there are no people(including children) or animals, and be careful about safety.
- 8) The cut grass is discharged from the right side of the machine to the rear, so always position the machine on the right side of the grass to be cut. When mowing in a circular motion, always mow counterclockwise.

Inspection, stopping and cleaning during work



⚠ WARNING

Carefully remove any grass that is clogged around the cooling air inlet, the cylinder, or the area around the exhaust pipe, which gets particularly hot. This may cause engine seizure or fire.

Also, be sure to clean not only the outside but also the inside. Also, clean the inside of the air cleaner and the grass debris that has accumulated on the HST fan cover at the same time.



CAUTION

- When inspecting during work, be sure to stop the engine, wait until all parts have cooled down, and wear durable gloves such as leather gloves to protect your hands and safety goggles.
- When leaving the machine, be sure to stop the engine. Also, be sure to stop on stable, flat ground.
- When stopping the engine, please do the following for the applicable product: 3)
 - (1) Apply the brakes.
 - (2) Remove the key.
 - (3) Close the fuel cock
- Abnormal noises, odors, or heat generation during operation may cause a fire, so stop the engine immediately and have it inspected and repaired.
- If you collide with (get caught in) a foreign object while working, immediately stop the mowing and stop the engine. Also, be sure to check the blade, blade stay, and covers for any chips or bends, and correct or replace them as necessary.
- If you notice any abnormalities during other work, be sure to stop the engine before performing inspection. 6)

Cautions for loading/unloading/transporting



DANGER

- When transporting this machine, be sure to stop the engine and close the fuel cock. Fuel leakage may cause 1) spilled fuel to catch fire.
- Do not tilt the machine more than necessary. Fuel may leak out.



MARNING

- Please use a vehicle suitable for the product for transportation(loading weight, loading platform size, presence of interference).
- Choose a flat and safe location for the transport vehicle, and stop the engine, pull the handbrake, and lock the wheels to prevent it from moving when loading.
- Adjust the height of cut until the blade does not touch the bridge. Also, please do the following:
 - (1) Set the blade clutch to the OFF position.
 - (2) Set the differential lock to the ON position
- Securely install a sturdy bridge that meets the standards on a gentle slope(15 degrees or less), lower the engine speed, load in Forwad mode, and unload in Reverse' at low speed. At that time, please do not perform any operations that change the speed or direction.
- When the machine crosses the border between the bridge and the truck platform, the center of gravity will suddenly change, so be careful.
- When transporting, please securely fix the machine with a strong rope or belt. Also, please drive safely.

Inspection/maintenance

Regular inspections are essential to maintain quality and performance.

The owner is responsible for daily inspections and monthly inspections, and requests for annual inspections to be made to the dealer(charges apply).

Please note that we cannot be held responsible for any accidents or breakdowns caused by neglecting regular inspections.



Failure to follow the instructions below may result in burns, injury, or machine failure.

- In addition to daily inspections and maintenance before and after use, please perform regular inspections and maintenance to keep the product in a safe and comfortable condition.
- 2) Before inspecting, adjusting, or servicing, stop the engine and wait until the muffler and other overheated parts of the transmission case have completely cooled down, then wear durable gloves such as leather gloves and safety goggles, and use the appropriate tools correctly.
- Carry out inspections, adjustments, and maintenance in a wide and bright area with flat, hard ground, always 3) paying attention to the balance of the machine and being careful not to tip it over.
- 4) When lifting this machine for inspection, be sure to take precautions to prevent it from falling.
- If you replace or remove a blade or tire, check that it is securely attached to the designated location and that 5) it is firmly tightened.
- When replacing blades or tires with new ones, please replace the mounting bolts with new ones for safety. 6)
- 7) Damage to the belt or blade cover is dangerous. If you notice an abnormality during work, do not leave it as it is; be sure to stop the work and inspect, and then inspect again after work is complete and make any necessary repairs.
- 8) Be sure to correctly reinstall removed covers in their original positions.
- Never install unspecified attachments or modify the product. 9)
- 10) When a fuel hose becomes old, it can be dangerous and cause fuel leakage. Replace the hose and tightening band with a new one every three years or when it becomes damaged.



CAUTION

Failure to follow the instructions below may result in machine failure.

- When washing this machine, do not spray water on the engine part (electrical parts, near the air cleaner, fuel cap, etc.) or on the parts where warning labels are affixed.
- Please thoroughly inspect and adjust clutches, throttle, gear changes, etc.
- To prevent burns and fires, wait at least 5 minutes after the engine has stopped before placing covers on the 3) machine, and ensure that the muffler and engine are fully cooled before doing so.

Long-term strage



WARNING

- 1) For safety, be sure to close the fuel cock
- If you want to store this machine for a long time, please store it indoors. 2)
- Remove any dirt, deposits, or foreign objects from the main body or working parts. 3)

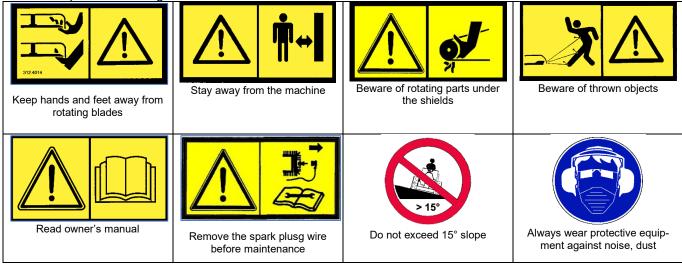
Warning labels



WARNING

- Warning labels are carefully selected from among the important danger items listed in this section as being particularly important, and are affixed to the product. Please be sure to read, fully understand, and follow the instructions before use.
- If the warning label becomes difficult to see, be sure to purchase the same one at the dealer and replace it 2) so that it can be clearly identified at all times.

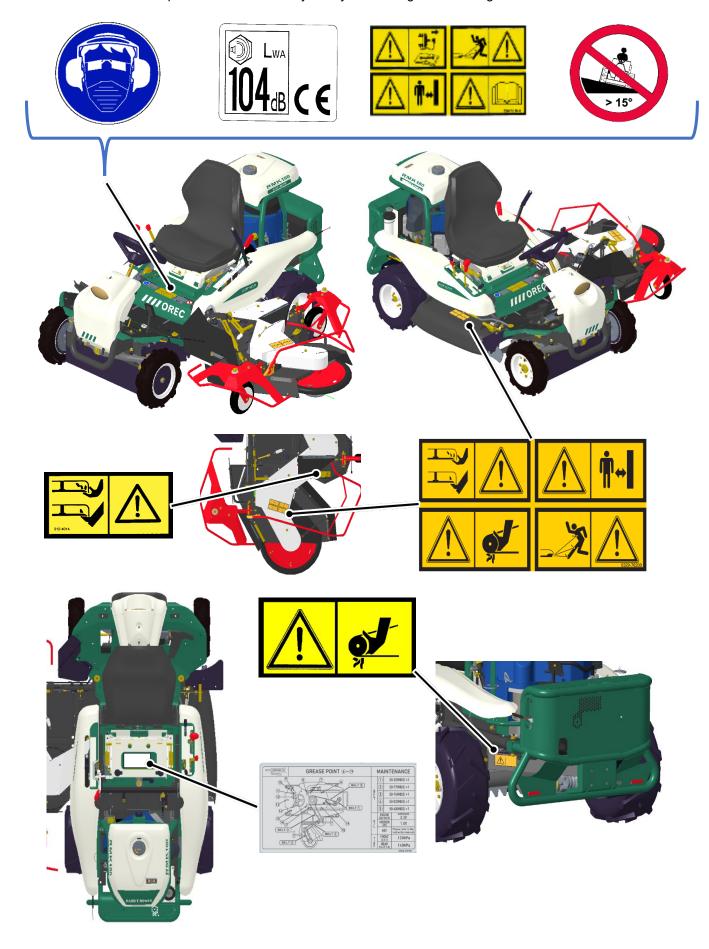
Label description of warning labels:



6

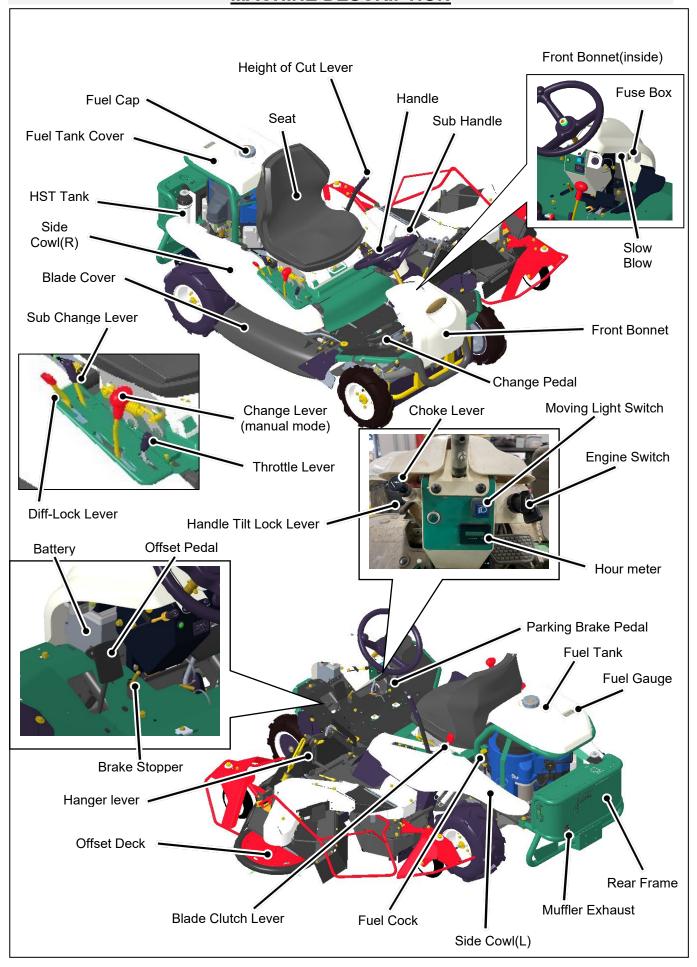
POSITION OF WARNING LABELS

Note their location and replace them immediately if they are damaged or missing.



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MACHINE DESCRIPTION



8

CONTROLS

ENGINE SWITCH

Insert ignition key to select start(\bigcirc), ON(I), and Stop(O).

THROTTLE LEVER

Use throttole lever to adjust engine rpm between MAX and MINI.

CHOKE LEVER

Use choke lever when it is cold to start engine.

Pull to close the choke($|\cdot|$), and push to open($|\cdot|$).

There is no need to use choke lever when engine is warm enough.

MOVING LIGHT SWITCH

Push the light switch to turn on the light. Push it again to turn off the light. Blue light is turned on when it is switched



⚠ WARNING

Use this light only for moving purpose. Never use it for moving work. It may cause collision or tip over due to unclear visibility. Move in low speed when light is switched on.

HEIGHT OF CUT LEVER(ASSISTED, FREE POSITION)

Height of cut is adjustable between 50mm and 100mm.

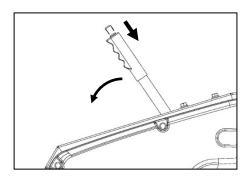
Press the lock bottun, select the height and release the finger from lock bottun. Height of cut is indicated on the label near the lever.

Engine is started only when this lever is in transport position.

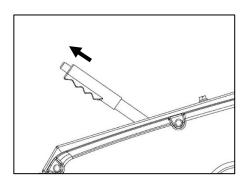


CAUTION

Push the lock botton completely while height of cut lever is adjusted. If not, machine may be damaged. For your safety, select the transport position when machine enter/exit the field and also when going reverse.







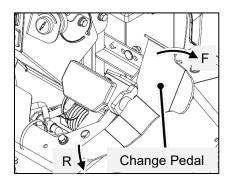
BLADE CLUTCH LEVER

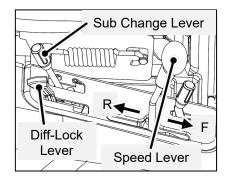
Use the blade clutch lever to switch the blade rotation ON(b) or OFF(b). Blade clutch lever cannot be activated when height of cut lever is in transport position.

CHANGE PEDAL & SPEED LEVER

Use them when driving, stopping, turning, and adjusting the speed.

When change pedal is pushed forward from neutral position, machine moves forward. When it is pushed rearward, machine moves rearward. Pushed angle will adjust the speed. If pedal is not pushed, it will automatically return to neutral position.





TIP:

Only when speed lever is pushed right, change pedal moves linked with the lever. In other case, change pedal moves alone.

SUB CHANGE LEVER

For safety, use only "low speed" for mowing operation.

For moving, it is possible to use "high speed".

For safety, do not mow grass on slope more than 15 degrees. Be sure to shift this lever until the end of guide positioin. In "N(=neutral)" position, it is possible to push the machine with engine stopped.



⚠ WARNING

Be sure to operate the sub change lever only when machine is stopped. Operating this lever while machine is moving or while it is not properly shifted into right position, may lead to lose the malfunctioning of transmission and may cause tip over. Pushing the machine in N position require at least 2 persons. Mow only in low speed. Mowing in high speed may cause accident in case of dangerous situations.

DIFFERENTIAL LOCK LEVER

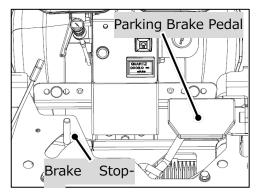
Normally operate the machine with differential lock lever in OFF position. Shift the differential lock lever to ON in case of light slope, soft ground, or when single rear wheel slips too much to go straight. It is also recommended to shift the differential lock lever to ON when machine is loaded/unloaded to/from the track.



CAUTION

Use of differential lock on flat surface will increase the turning radius, then it causes quick wear of tire and damage on transmission. The diff lock should be used in straight line only: never use the diff lock lever when turning. The damage to the transmission will not be covered by the warranty.

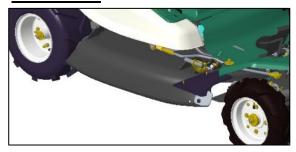
PARKING BRAKE PEDAL



In case of emergency, when parking brake pedal is pressed, brake is activated to stop the machine and speed control lever returns to N position. Normally use the change pedal or speed lever to stop the machine.

While brake pedal is pressed, it is possible to use brake stopper to lock the parking brake. Parking brake is cancelled when brake pedal is further pressed. Engine is started only when parking brake is pressed.

BLADE COVER



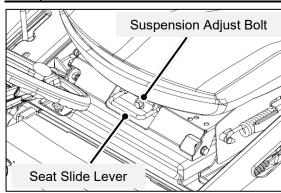
Normally operate the machine with this cover closed.



WARNING

It is very dangerous to cut grass without blade cover because a lot of thrown ojbect is expected. Except blade inspection or maintenance, make sure that blade cover is properly fixed.

SEAT(WITH SEAT SLIDE & SEAT SUSPENSION)



Seat position is adjustable when seat slide lever is pulled up and when seat is moved back and force. Seat suspension is adjustable by changing the spring tension with supension adjust bolt, to follow the weight of operator. Turn clockwise to increase the tension and turn anti-clockwise to decrease the tension. After the engine is started, when operator leave the seat, engine is stopped for safety(engien switch remains "I"), except transport position of height of cut lever and parking brake in lock position.



CAUTION

Switch off the engine switch when engine is stopped. Or start the engine again. If engine is left stopped, battery power may be lowered.

HANDLE TILT LEVER

Handle angle can be adjusted to follow the size of operator.

Loosent the handle tilt lever, adjust the angle then tighten to lock it. Lever is free when it is pulled up.



A CAUTION

Do not operate handle tilt lever while driving.

FUSE BOX

Fuse box protect harness and electrical components in case of over current. It contains 10A(accessory), 20A(charge) and another 20A(spare). When fuse is cut, solve the problem and replace with spare fuse. Spare fuse is only for emergency use, and replace it with genuine fuse.

PILOT LAMP(GREEN)

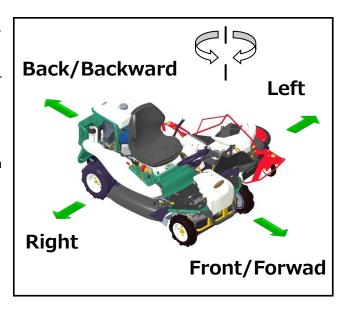
Pilot lamp is turned on when engine swtich is in "I" position.

HOUR METER

Hour meter shows rough hours of use. Refer it for maintenance.

MACHINE DIRECTION

The machine directions are shown in right illustration, from the operator's perspective behind the machine.



INSPECTION BEFORE USE

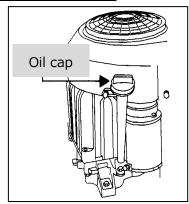
Before each use of machine, refer to table below and realize the inspection.

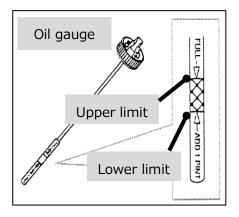
Bololo odoli doc	Before each ase of machine, refer to table below and realize the inspection.						
LIST OF PRE-USE INSPECTION							
	Where to check	Check point					
Engine	Engine oil	Quantity and dirt of oil					
	Air cleaner	Dirt					
Machine	Blade	(1) Looseness or loss of bolt & nut					
	Brake(if equiped)	(2) Deformation, wear or contact					
	Tire	(3) Smooth movement or sticking					
	Lever(s)	(4) Remove dust and grass					
	Cover(s)						
	HST oil(if equipped)	Quantity and dirt of oil					

MARNING

- Always make inspection, re-fueling, adjustment and maintenance only after engine is stopped.
- Make sure about position of each lever and safety around the machine, before to start engine and check the movement of levers.
- Check and read the safety labels on the machine. 3)

ENGINE OIL INSPECTION





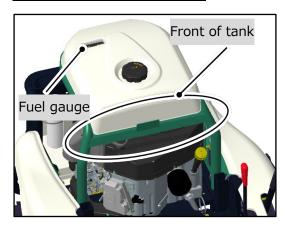
- Place the machine on flat surface and remove the oil gauge. 1)
- Tip of oil cap an oil gauge. Wipe the oil gauge with cloth and insert it to check the oil level. If oil level is not 2) between upper and lower limit, add engine oil until the level comes between upper and lower limit.



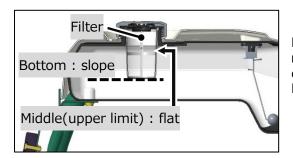
A CAUTION

- In case of checking engine oil after the work, wait more than 5 minutes to cool down the engine. Make sure if muffler and engine is cooled enough.
- Shortage of excess of engine oil cause engine trouble. Check the engine oil before every use. 2)
- Recommended engine oil type is 10W-30. 3)
- After the engine oil is filled up, securely fix the oil gauge. If the fixing is loose, engine oil may leak.

FUEL INSPECTION AND REFUELLING



- Place the machine on flat surface and remove fuel cap. Check the level of fuel through fuel mouth.
- 2) In case fuel gauge is close to "E", it is necessary to refuel.
- Do not put fuel higher than middle level of fuel filter. Otherwise fuel may spill out on uneven ground or on slope. Spilled fuel is drained toward front of fuel tank. Wipe the spilled fuel.
- 4) After refuelling, place the fuel cap and tighten it.



Fuel gauge is only for reference. Do not put fuel higher than middle level of fuel filter, and be careful not to let fuel spill out. In case of slope operation, put less fuel than bottom level of filter. Fuel may spill out depending on angle of slope.

A DANGER

- Never use fire while working with machine or while refueling. It causes catch fire or burn. Smoking and openair-fire is strictly prohibited near the machine.
- Wait until the muffler is cooled enough for refueling.
- Do not add fuel more than upper limit if it is indicated.
- Do not refuel in case your body is charged. It may lead to catch fire.

⚠ WARNING

Work with fuel only on a flat surface well ventilated.



A CAUTION

- 1) Do not let dust or grass to come inside the fuel tank. It leads to engine trouble.
- 2) Use only lead-free regular gasoline. Otherwise, engine might be damaged.
- 3) Gasoline degrades by time. In case of non-use for more than 1 month, replace gasoline to new one. Also, do not use gasoline stored in polyethylene tank.

OPERATION



WARNING

Remember to read the instruction before the use to understand the operation and work of this product.

HOW TO SET NYLON CORD



DANGER

Before to set/replace the nylon cord, always make sure that engine is switched off, the blade clutch is disengaged and the ignition keys removed.

Insert the nylon cord (4 pieces) into the bracket. Adjust the length of nylon cord. It is possible to insert the nylon cord only in one direction. If the nylon cord length is not correct, remove the nylon cord from the bracket and insert it again. Always position the jaggy surface in horizontal level



DANGER

If the jaggy surface is not in horizontal level, the nylon cord can come out during the mowing operation, and it will cause serious injury for people around the machine.

HOW TO REPLACE NYLON CORD

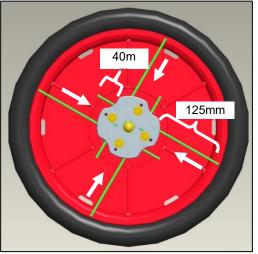
When moving performance goes down, it is time to replace nylon cord. Stop the engine to disengage the blade clutch. Then pull the nylon cord to inner direction to remove it. Then set the new nylon cord.

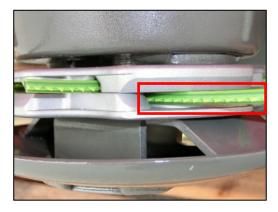


WARNING

Do not pull the nylon cord to outer direction. It can damage the holder spring. In case of using nylon cord in bundle, cut the nylon cord in length of 255mm.







STARTING THE ENGINE

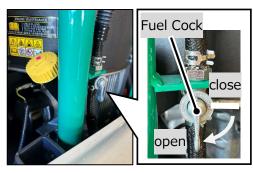


DANGER

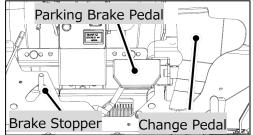
Before to start engine, make sure position of each levers and safety around the machine. Do not start or idle the engine in a closed room. If engine is started in a closed room, the air is polluted by exhaust gas and may lead to gas poisoning. The machine is equipped with gasoline engine, which may catch fire in case of smoking and openair-fire. Refrain from doing such dangerous things around the machine.

TIP:

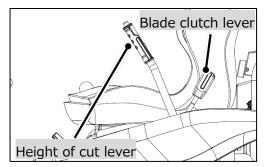
- 1) Make sure to be seated.
- 2) Make sure to press the parking brake pedal(=locked) to start engine. If brake pedal is not pressed, safety switch works and engine cannot be started.
- Make sure that height of cut lever is in tranport position. In other position, engine cannot be started.
- Make sure that above $1) \sim 3$) procedure is respected when starting the engine. 4)



- 1) Open the fuel cock
- 2) Stay on the seat.



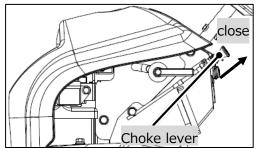
3) Press the parking brake pedal and lock the brake stopper. If speed lever is not in N position, shift it to N position.



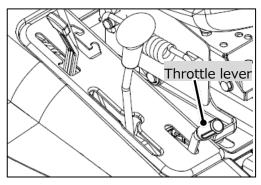
Adjust the height of cut lever to top(=transport position).

TIP:

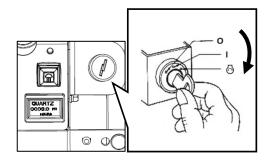
Blade clutch lever is linked with height of cut lever. When height of cut lever is in transport position, blade clutch lever also returns to OFF position.



4) Make sure that speed lever is in N position, then pull the choke lever(pull to close, push to open) if engine is not warm enough.



5) Move the throttle lever to intermediate position between MAX and MINI(upper position is MAX and lower position is MINI).



- 6) Insert the ingition key to engine switch, then turn the key from "I" position to "O" to start engine.

 7) When engine is started, leave hand from the key. Key
- automatically turns back to "I" position.
- 8) After engine is started, push back the choke lever to "| † | " position, then move the throttole lever to MINI to warm the engine for about 5 minutes.



For your safety, make sure to keep parking brake pedal "locked" by brake stopper, while warming the engine.



CAUTION

When starting the engine, do not keep ingnition key more than 5 seconds at "O" position because big amount of electricity runs into cell motor.

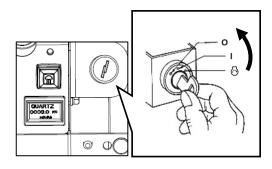
If engine cannot be started within 5 seconds, turn the key to "O" and wait more than 10 seconds, then try again.

While engine is running, do not turn the key to "O" position. This may lead to trouble of cell motor. If engine is warm enough, start the engine with throttle lever at intermediate position.

TIP:

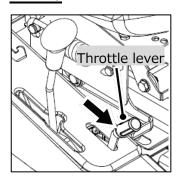
Warming up the engine can circurate the oil inside the engine, and it is better for engine lifetspan.

STOPPING THE ENGINE



- 1) Move the throttle lever to MINI.
- 2) After 2-3 seconds at MINI position, turn the key to "O" position to stop engine.
- Remove key from engine switch.
- Close the fuel cock.

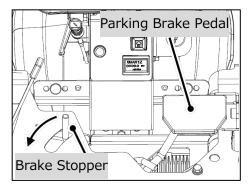
DRIVING



1) Start the engine.

4)

2) Move the throttle lever to MAX to increase the engine rpm.



- Press the parking brake pedal to unlock the brake stopper. 3)
 - Slowly shift the speed control lever forward and start drving.

CAUTION

Do not change speed while parking brake pedal is locked. Driving the machine with parking brake locked will bring overload on brake and transmission and cause the breakdown.

Driving speed is adjusted following the tilt angle of speed lever(or change pedal). Speed lever returns to N position when foot leaves the change pedal. For your safety, start driving in low speed.

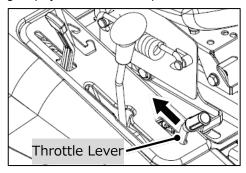
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STOPPING(PARKING)



A CAUTION

In case parking brake pedal is pressed while driving, speed lever quickly comes back to N position and machine stops. Normally use speed lever or change pedal to stop the machine. Especially in high speed, sudden stop may give physical shock on operator and overload on machine body.



- Place the speed lever or change pedal to N position and stop the 1) machine.
- 2) Move the throttle lever to MINI and decrease engine rpm.
- 3) After 2-3 seconds at MINI position, turn the key to "O" position to stop engine.
- Press the parking brake pedal, and lock it with brake stopper.



CAUTION

Machine should be parked on a flat and spacious area, without obstables around the machine. If there is need to park on slope, make sure to use car stopper. Remove key to avoid theft.

Be sure to use engine switch to stop the engine. In case parking brake pedal is locked and height of cut lever is in transport position, engine does not stop when opetator leave the seat. However, if the pedal and lever is in other position, engine stops when operator leave the seat(pilot lamp remains ON and engine switch is in I position). If the machine is left in such status, battery will get empty. Remember to lock the parking brake pedal, return the height of cut lever to transport position and turn the key to O position.

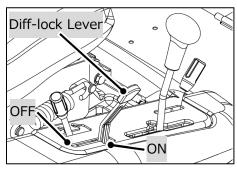
After engine is started, engine does not stop if operator is seated regardless of parking brake and height of cut lever positions.

DIFFERENTIAL LOCK LEVER CONTROL



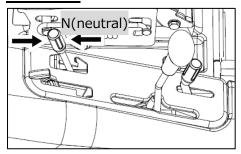
CAUTION

It is recommended to activate differential lock in condition like loading/unloading, slope operation and soft ground where either of rear wheel can slip and machine loses traction to go straight forward. In other conditions, basically keep the differential lock lever to OFF position. In case differential lock is activated on flat ground to make a turn, machine require bigger turning radius and it leads to wear of tire. It also leads to overload of machine(especially on gearbox) and cause malfunction.



- Normally operate the machine with differential lock lever in OFF position. In case of wet ground or steep slope, move the differential lock lever to ON and lock it.
- After the machine get out of wet place or steep slope, move back the lever to OFF position.

PUSH MODE



On a flat ground, it is possible to push machine without engine power when driving clutch lever is in OFF position. This is called "PUSH MODE" and it is recommended in case of engine trouble.



⚠ WARNING

- Except the use in PUSH MODE, alwayd place the sub change lever to " " " or " ..."
- 2) For safety, PUSH MODE is recommende for two person or more.
- 3) On the slope, do not place the sub change lever to N position, because it may cause slipping accident.

LOADING/UNLOADING/TRANSPORTING



⚠ DANGER

Stop the engine and close the fuel cock while transporting this machine. Otherwise, fuel may leak and may cause fire accident.

Do not lean the machine more than necessary, because fuel may spill over.

⚠ WARNING

- 1) Always use the bridge for loading/unloading. In case of loading/unloading by hook, there is a risk of falling and is very dangerous. Never use hook for loading/unloading.
- Do not stop on the bridge. If the machine balance is heavier in the back, front of the machine may be lifted up when driving is started again. Load/unload the machine only in slow speed.
- 3) Choose a flat and stable place for loading/unloading, and avoid public road for loading/unloading.
- 4) Choose appropriate truck which is strong enough against total weight of driver and machine.
- 5) Do not load/unload during night. In case it is necessary, do it in a place with enough lights for the work.
- 6) When loading/unloading, stop the engine of the truck, activate the parking brake, and lock the tires by wheel stoppers.
- 7) Place the height of cut lever to transport position during loading/unloading. Otherwise blade may touch the bridge and it may cause tipping over.
- 8) Keep the differential lock lever to ON, and do not move it on the bridge.
- 9) Make sure that bridge is securely hooked on the truck.
- 10) Pay attention to let right and left wheels to be on the center line of each bridge.
- 11) On the truck, keep the engine off and fuel cock closed, and remove the key. Fix the machine with rope/belt which is strong enough.

LOADING/UNLOADING

- Move forward for loading and move backward for unloading. 1)
- Use the bridge certified in safety. 2)
- Place differential lock lever to ON, height od cut lever in transport 3) position, and do not place into other positions.
- 4) Keep throttle lever in the intermediate position between HIGH and LOW.

TIP:

Recommended bridge: Use only certified bridge, which is strong enough.

to be more than 3.5 times longer than height of truck platform. Length:

Width: to be suitable for width of this machine.

Strength: to be strong enoguh against total weight of machine and operator.

HOW TO LIFT UP AND SHIFT DOWN THE OFFSET DECK



⚠ WARNING

- Before to lift up and shift down the offset deck, stop the engine and lock the parking brake pedal.
- Never engage the blade clutch while driving with offset deck lifted up and locked.

It is very dangerous because the blade might be rotating with the offset deck open.

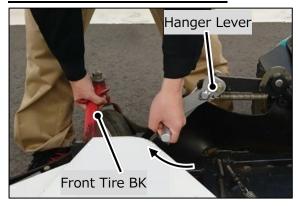
And never engage the blade when lifting up offset deck because it cause belt dropping or belt cutting. Never mow only using the center blade the offset hanger lever is lifted up.



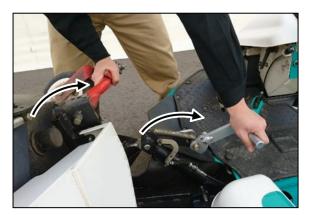
CAUTION

- Lifting up and shifting down the offset deck from the seat may damage the lower back of operator. Get out of machine in a flat place and make the lifting.
- 2) Offset deck is very heavy and strong power is required for lifting. Follow the instruction to avoid problem on the back.
- Do not engage the blade clutch while offset deck is lifted up. It might cause damage to the belts. In this 3) status, also do not mow grass with center deck.

HOW TO LIFT UP THE OFFSET DECK.

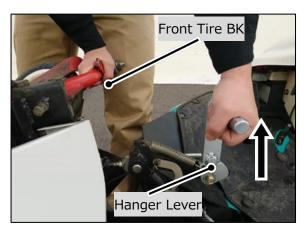


- 1) Stop the engine and keep the parking brake pedal locked.
- 2) Shift the height of cut lever to transport position, get off the machine, and take position to face the offset deck.
- 3) Grip the hanger lever and move it toward the offset(normally this lever is inner position by the spring).
- 4) Grip the front tire BK with right hand.

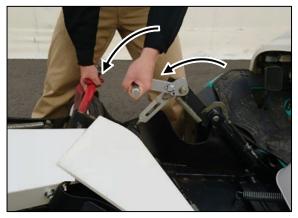


5) Keep right hand to raise the offset deck and turn the hanger lever toward the machine(inner side).

HOW TO SHIFT DOWN THE OFFSET DECK



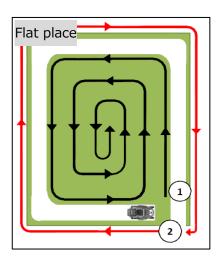
- 1) Stop the engine and keep the parking brake pedal locked.
- 2) Shift the height of cut lever to transport position, get off the machine, and take position to face the offset deck. Then grip the hanger lever with left hand, and grip the front tire BK with right hand.
- 3) Pull up the hanger lever towards the top, then lock will be released.



4) Hold the front tire BK and move down the offset deck slowly so that offset does not drop down suddenly. In this moment, pay attention to hold the front tire BK because offset deck is very heavy.

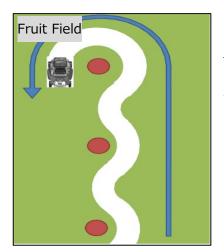
OREC RMK180 19

TECHNIQUE FOR MOWING



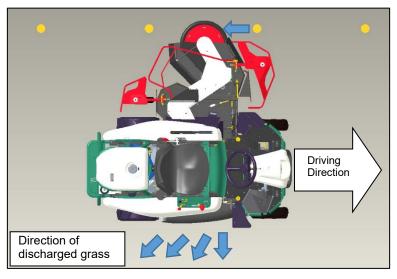
Mowing in flat place

- 1) In order to avoid thrown object from the mowing area, leave outer 1 line not cut, then start mowing in anti-clockwise.
- 2) After that, mow the rest of 1 line clockwise.



Mowing in fruit field

In order to avoid the damage to trees as much as possible, mow right side of trees.



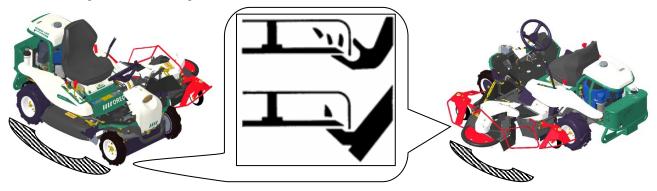
TIP:

In case of too much grass, mow in 2 times. First, mow grass in high position. Then later mow in low position.

- Always keep the right blade cover closed while mowing. And always keep offset deck shifted down for mowing.
- 2) Start the engine.
- 3) Move the throttle lever to MAX to increase engine rpm.
- 4) Move the height of cut lever to approx. 100cm(refer to position label).
- 5) Then engage the blade clutch slowly.
- 6) Adjust the height of cut again to desired position.
- 7) Start driving.
- 8) Take reverse procedure to finish mowing.
- 9) Stop the engine.

⚠ WARNING

- 1) Regularly clean the grass around the engine and muffler, because it may cause fire or overheat. It is also good to clearn inside of engine bonnet.
- 2) It is possible to get damaged by thrown object such as stone, wire, can and so on. Pay attention to remove them before mowing. Also keep neighbors away from the machine.
- Mud and dust near the cooling system may raise oil temperature in the engine and in the HST unit. Regularly clearn the mud and dust away.
- Do not approach dangerous places like obstacle, ditch, soft roadside, slope(more than 15 degrees), or uneven grounds(refer to "SLOPE GUIDE"). Do not mow toward building, river, cliff and person for the purpose to avoid fall or collision accident.
- When mowing on slope, do not stand up in the mountain side, because there is risk of slliping down into the mowing deck. It may lead to serious injury.
- In case of removing grass or wire from the blade, make sure to stop engine first and check if blade is completely stopped.
- Before to start mowing, make sure that defective part in previous work is already repaired.
- For your safety, inspect blades and blade stay.
- 9) For replacing the blades, use the tools dedicated the replacement. Otherwise, tighting torque may not be sufficient enough to hold the blades in place.
- 10) This machine is specially designed to cut grass around the tree. Do not use it in a field with stone or uneven field to avoid thrown object. Check the field condition prior to the mowing work.
- 11) Make sure that blade cover is closed while mowing.
- 12) In case of hitting obstacle during mowing, stop the engine and repair if necessary. If mowing is started without proper repair, it may lead to accident.
- 13) There is risk of slipping when grass is wet or it is rainy day. And grass may be stuck inside the mowing deck, leaving the engine overworked. In such case, stop the work and wait until grass get dry.
- 14) Do not kick the grass into mowing deck because blade is rotating inside of blade cover. Do not use hand or foot to let grass into mowing deck.





CAUTION

- 1) Wear protective cloth, boots, hat/helmet, protective grasses and gloves.
- 2) Check the field in advance, and remove stone, stamp, wire or cans away.
- 3) Use a bridge against the gap of more than 70mm. Crossing the gap in high speed may lead to tipping over or machine damage. Cross the gap only in low speed.
- In case front wheel stuck into the hole or ditch, do not try to turn the steering wheel. Stop the engine and move up the machine to get away.
- Hitting the stamp and curbs by front wheel while driving may lead to malfunction of machine.
- Pay attention to avoid accident to be pinched between tree and machine.
- 7) Pay attention to the blade that is rotating in high speed.
- 8) Pay attention to activate the blade clutch lever slowly.
- 9) Do not start mowing in lowest cutting height, because it may cause quick wear of blade belt.
- 10) When mowing is finished, move the blade clutch lever to OFF position, wait 2-3 seconds then move the height of cut lever to transport position. This is to avoid thrown object before blade stops.
- 11) Do not let grass or leaves to stay around the engine. They may catch fire or lead to malfunction.
- 12) In case of too much grass to cut or in case engine frequestly stops, slow down the speed or mow twice in high and low popsition.

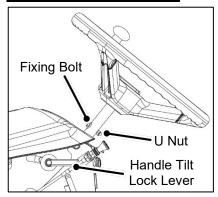
TIP:

- 1) When this machine is used for the first time, use it in a field without stone, and mow straight slightly overlapped.
- Cut grass is discharged from right side toward back of the machine. Take RH position when mowing around tree, pole and walls.

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- 3) Offset deck is closed when hitting the obstacles. It is useful to adjust the mowing distance depending on trees. Pay attention to drive slowly(less than 2km/h) to reduce shocks against surface of trees. Also pay attention not to hit young trees because offset deck can push them and cut.
- 4) It is recommended to hit tree/pole at 10cm right from the left end of offset deck.
- 5) On this machine, the center of gravity is in left side. Pay attention when working on slope.
- 6) In case height of cut lever is moved back to transport position, blade clutch lever also returns back. However, this way of use is not recommended because it may damage the lifespan of blade belt.
- Blade clutch cannot be activated when heigh of cut lever is in transport position.
- Basically use speed lever to stop the machine. In case of emergency situation, machine stops when parking brake pedal is pressed. At same time, speed lever goes back to N position.
- Remember to remove key and keep it when operator leave the machine.

HANDLE/SEAT ADJUSTMENT



It is possible to adjust the handle in 3 position(up/down) and tilted(back and force). And it is possible to adjust the seat slide back and force.

Seat position(back and force)

Pull up the lever and select the seat position suitable for operator.

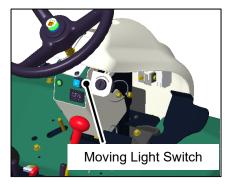
Handle position(up and down)

Loosen the bolt, adjust the handle position, and fix it with bolt and U nut.

Handle position(back and force)

Loosen the handle tilt lock lever, adjust the handle position, and fix it again.

MOVING LIGHT OPERATION





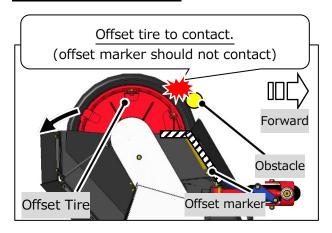
⚠ WARNING

This light is only for moving purpose. Do not use it for work. Drive in low speed specially early in the morning or late in the evening. In case it is too dark to recognize the surrounding, do not move or mow because it may cause collision, tip over or death/injury.

Moving light switch is located right side under the handle. Push to switch on, and push again to swith off.

The switch lights up blue while it is switched on.

OFFSET DECK OPEN/CLOSE



When offset deck contacts the obstacles, it automatically closes at distance depending on contact.

To mow along the obstacles, it is possible to mow straight letting the offset deck contacting the obstacles.

It is recommended to use the offset marker to adjust the distance from obstacles. Pay attention to let only offset tire to contact the obstacle and do not let other part to contact the obstacle.

OFFSET DECK OPEN/CLOSE BY PEDAL



Pushing offset pedal by left foot enables to manually open/close the offset deck. Offset deck is open when foot leaves the pedal.

Foot operation is recommended when it is necessary to open/close the offset without use of offset tire.

CAUTION

- 1) Keep enough distance from obstacle because it is not easy to get familiar to the distance when offest deck is
- 2) Make sure if there is nobody between machine and offset deck, when offset deck is operated.
- In case of mowing around the tree with offset tire in action, do not drive faster than 2.0km/h, because contacting point may be broken. In order to protect the obstacle, use the offset marker and let only offset tire
- Pay attention not to place offset wing on the hill part to be lifted up, because blade belt may slip. When blade belt slips with offset wing lifted up, disengage the blade clutch lever.

TIP:

- Open/close the offset deck only when offset deck is shifted down. 1)
- 2) Offset wing can mow up to 10 degee from main cutting deck. It is conveninet for mowing around the tree, which is slightly hilly. Pay special attention for risk of thrown ojbect while offset wing is lifted up.

MAINTENANCE OPERATIONS TO BE CARRIED OUT BY THE USER

OIL INSPECTION, REPLACEMENT AND LUBRICATION

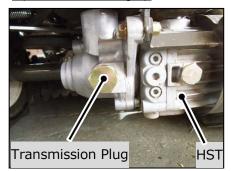
A CAUTION

- Refer the hour meter on the control panel, to know the period for inspection, replacement and filling up the
- 2) Oil is filled up when it is shipped from factory. Before the first use of this machine, make sure if oil level is OK.
- Regularly replace the oil in order to keep the machine in best condition.
- Before to inpsect/replace the oil, place the machine on flat and spacious area. Stop the engine to leave the machine to be cooled down for more than 5 minutes to be able to touch by hand.
 - In case maintenance is started just after engine is stopped, -Engine is still too hot and it may cause burn.
 - -Correct oil volume is not indicated just after engine is stopped, becaseu oil still remain in each part of machine
- 5) For safety, remove the key during the maintenance operation.

Please properly dispose of the waste oil after replacing it according to the regulations of your local government.

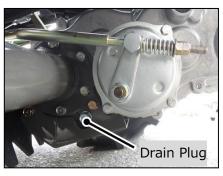
TRANSMISSION (GEAR) OIL INSPECTION AND REPLACEMENT

Inpsection and filling up



It is possible to inspect the oil by removing the transmission plug behind the transmission. If oil reach the lowest level of the plug, proper volume is filled.

Replacement



- Oil should be replaced at first 20 hours, and later at each 100 hours or every year whichever comes first. Prepare oil container and remove the drain plug located in left side of transmission case.
- Replacement guideline

First: at 20 hours

at each 100 hours or 1 year whichever comes first Later:



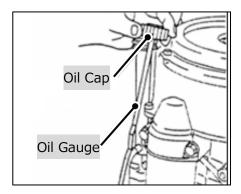
Place the drain plug in original position. Remove the transmission plug and then put transmission oil.

Recommended oil: "SAE 90 "or "API GL-5".

Oil quantity: 1.00L.

ENGINE OIL INSPECTION AND REPLACEMENT

Inpsection and filling up



- Use the oil gauge to inspect the volume and quality of engine oil 1) prior to every use.
- 2) Maintain the engine oil to be on maximum level on the indicator.

Replacement



Replacement guideline

First: at 8 hours

Later: at each 100 hours or 1 year whichever comes first

In case of use in very hard or hot condition, it is recommended to replace the engine oil earlier at 50 hours and to replace oil filter at 100 hours.



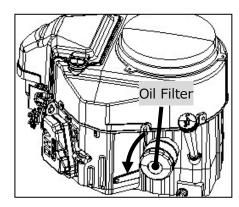
- Prepare oil container and loosen the oil cap. Then remove the drain plug located in left rear side of engine. Oil is drained smoothly when oil cap is loosened.
- 2) When the oil is completely drained, place the drain plug and fix it. Then remove the oil cap.
- Put 1 liter of engine oil and run the engine for 30 seconds in low engine rpm. Stop the engine and wait for 30 seconds, then add oil up to FULL level.
- 4) After the engine oil is filled, make sure that oil cap is securely fixed.



CAUTION

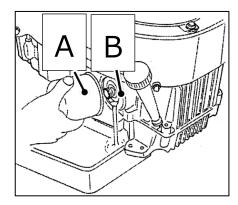
Excessive quantity of engine oil can be cause of engine trouble. In case of excessive oil, drain the oil to reach appropriate quantity.

OIL FILTER REPLACEMENT



After the engine oil is drained, follow the instruction below to replace the oil filter.

- 1) Turn the oil filter A counterclockwise and remove it.
- 2) In order to avoid twisting, place new engine oil by finger around the gasket(O ring) of new filter.
- Turn the filter clockwise and screw it until the gasket touches part 3) B. And screw it in 3/4 rotation.
- Put the requested amount of oil from oil cap. 4)
- 5) Check the oil volume by level gauge, and securely tighten the oil сар.



- Run the engine for 2 minutes in low rpm, to check the leaking of oil around the filter.
- 7) Stop the engine and check the oil volume again. Add oil in case of deficiency.

CAUTION

Do not use tool to fit oil filter, and fit it by hand.

Replace the oil filter one time against two replacement of engine oil, or replace oil filter every year.

HST OIL INSPECTION AND REPLACEMENT

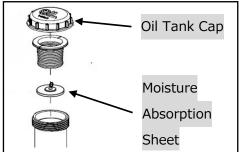


CAUTION

HST oil is clean in the beginning, however, after the hours of operation dust inside the HST unit is accumulated and oil gets dirty, causing problem for smooth work of HST unit. For the safe and comfortable use of machine, regularly replace the HST oil. Especially in the hard condition, first replacement is recommened in less than 20 hours. Otherwise, metal powder inside the HST unit will choke the oil filter and cause trouble in driving(especially reverse driving).

Inpsection and filling up





Check HST oil tank and level of oil. If the level is not in between the UP and LOW, open the oil cap and add oil as needed.

Moisture adsorption sheet is placed inside the HST oil tank, in order to avoid HST trouble and also to adsorp the water caused by condensation.

Replacement

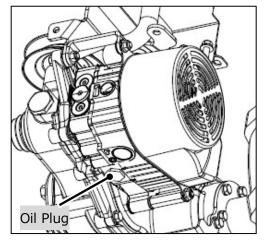


CAUTION

In case of HST oil replacement, wait until HST oil tank and HST unit is cooled down.

They are still very hot just after the engine is stopped, and it may lead to burn.

HST oil is also called as hydraulic oil, which transmits the engine rotation into to driving. It also helps to lubrication, anti-rust effect, and cooling down. However, if oil is not properly maintained, it gives problem for driving. Always use recommended oil for replacement and adding.



- 1) Prepare oil container. Loosen the HST oil tank cap, and remove the oil plug(Hexagonal, M22) located in under the HST unit.
- 2) When the oil is completely drained, place the oil plug and fix it. Then remove the HST oil tank cap.
- 3) Put 500ml of HST oil and also relace the moisture adsorption sheet at same time.
- 4) After the HST oil is filled, make sure that HT oil tank cap is securely fixed.

TIP:

HST oil replacement

First: at 20 hours Later: at each 200 hours or 1 year whichever comes first

References: (The color of HST oil)

Color	Smell	Condition	To do
Clean and no changing color.	Good	No foreign object	Continue using
Clean, but there are some black points.	Good	Some foreign object	Filter oil
Milky white	Good	Some water.	Change oil
Black	Bad	Oxidated and degrade.	Change oil

Recommended oil: "VG46" or "SAE10W30".

Oil quantity: 500 ml.

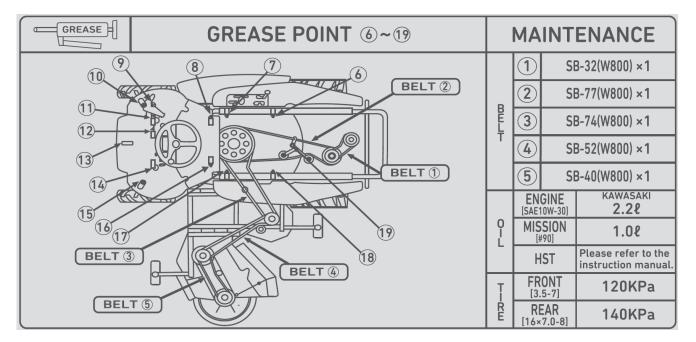
VG46 oil is used when it is shipped from factory. Refill the same type of oil. Never mix different type of oil.

GREASE LUBRICATION



A CAUTION

Refer to position of grease nipple in the figure here below, and grease up at every 30 hours of use. In other part of machine, lubricate with engine oil(#30). If grease is not properly lubricated, it leads to poor movement of machine and cause damages. Grease nipple is located in each axle part. Use grease gun to lubricate.

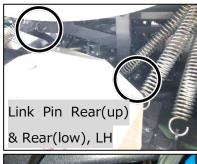
















AIR CLEANER

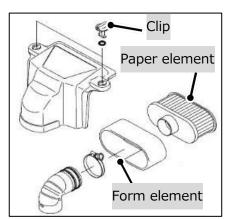


WARNING

- In case machine works with air cleaner and recoil starter both choked with grass or dust, it leads to lack of power and loss of fuel. It may also lead to fire accident caused by heated exhaust gas. Regularly check them and clean if necessary.
- Do not operate the machine with air cleaner removed. Dust will come inside the engine and cause engine trouble and extraordinary wear.



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



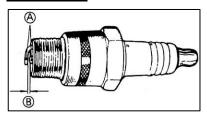
- Remove form element and paper element. Pay attention not to let the dusts to go into the carburetor.
- Wash the form element with detergent, squeeze and dry it. 3)
- 4) Clean the cartridge(paper element) by hitting, or by blowing air from inside to take the dust away.
- Wipe inside the hose and put it in original position. 5)

Cleaning and replacement of air cleaner				
Cleaning Replacement				
Form element	Before every use	At each 100 hours		
Paper element	Before every use	At each 100 hours		

TIP:

- In case paper element is too dirty, replace it or shake with liquid soap then dry it. When shaking, do not pull it strongly to avoid damage of element.
- 2) When hitting paper element, pay attention not to damage the paper.
- When drying, paper element may be damaged if it is blown by hot air. Blow with light warm air or take natural drying.
- In case of use in dusty condition, pay attention to clean more frequently than above recommendation. 4)

IGNITION PLUG



- Use plug wrench to remove the ignition plug. If the carbon is covering the 1) terminal A, use wire brush to remove it. Wipe it if it is wet.
- Replace the ignition plug in case crack is found on the central ceramic part or terminal is damaged.
- Adjust the gap of terminal B to be between 0.7mm and 0.8mm. 3)

TIP:

- 1) Engine used on this machine is v-twin 2 cylinders. Inspect or replace two plugs at same time. Do not inspect or replace only single plug. It can be cause of engine failure.
- Tighten the plug first by hand, then use the plug wrench. If plug wrench is used from beginning, screw thread may be damaged.



⚠ DANGER

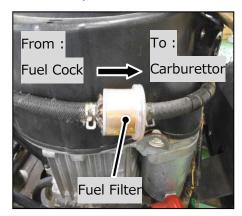
Do not test the ignition plug near the cylinder's plug hole. It can lead to fire.

FUEL HOSE



⚠ DANGER

The fuel of this product is gasoline. It is dangerous if fuel leaks during operation. Smoking or making fire near the machine may lead to catch fire and dangerous.





CAUTION

- Fuel hose and rubber items degrade even if machine is not used. 1)
- Remember to replace them together with clips every 3 year of 2) when they are damaged.
- Before evey use, check if fuel hose or fixing band are damaged or loosened.
- Pay attention not to let dust to go into the hose.

FUEL FILTER INSPECTION

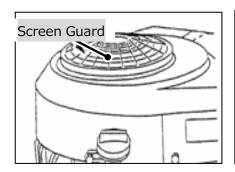
It is not possible to disassemble or clean the fuel filter. Replace it every season or when it is necessary. Pay attention to direction to insert the filter. For more information, contact your nearest dealer.

ENGINE COOLING SYSTEM



WARNING

- Disassemble each parts after engine is well cooled. After clleaning, do not start engine before all parts are assembled in original position.
- Using the machine with engine cooling system covered by grass leads to cause of overheat. Engine 2) temperature may rise up and cause fire accident.
- Do not place hand over the rotating screen. It leads to injury.
- Remove the mad and grass on the screen guard before every use. 4)

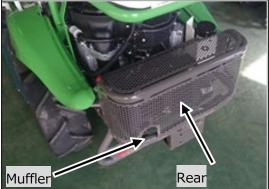




- It is recommended to move up the seat to blow the air to remove grass and dust. Use of high pressure washer is not recommended which may cause engine trouble by water.
- Also remove grass inside and outside the HST fan cover. If not, HST oil can be heated up and HST 2) performance cannot be as good as expected.
- 3) After cleaning, place the coverv in original position.

ENGINE EXHAUST SYSTEM CLEANING





- 1) Remove dust and grass around engine exhaust pipe by air blow.
- 2) Remove grass from the mesh of rear frame and mullfer.

MARNING

- 1) Disassemble each parts after engine is well cooled. After clleaning, do not start engine before all parts are assembled in original position.
- Using the machine with engine exhaust system covered by grass leads to cause of overheat. Engine temperature may rise up and cause fire accident.
- Remove the mad and grass from exhaust pipe and muffler cover before every use.

MACHINE INSPECTION AND ADJUSTMENT



CAUTION

- 1) Place the machine on flat and spacious area without obstacles before to realize inspection, maintenance and adjustment. Do not forget to stop engine and remove key. Wait until engine is cool enough to start the work.
- 2) Check if all levers work properly(before every use).
- 3) Wire and belt get loose after the first period. Adjust them at every 2-3 hours.
- Wire and belt are consumable goods. Replace them in case of abnormal condition.
- 5) Operate the machine for short time, and check if abnormal noise or temperature is found or not.
- 6) Check if each bolt and nut are properly fixed and in place. Tighten them if needed.
- In case covers are removed for adjustment, place them in original position. 7)
- Do not overwork during the first 2-3 hours in order to make each part in good condition.
- Remember to realize maintenance after each use regular inspection.
- 10) Check the machine thoroughly to see if there is no oil leak in each part.
 - -If there is oil leak, contact your nearest dealer.
 - -To continue using with oil leak is dangerous and may lead to damage of machine.

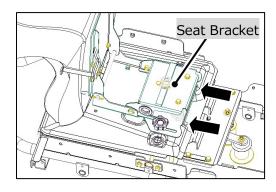
WIRE AND BELT ADJUSTMENT



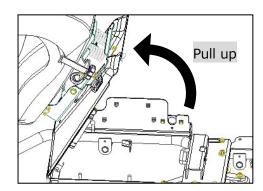
A CAUTION

Before to adjust belt, wire and rod, place the machine in a flat and spacious area and stop engine. To ensure safety, lock the parking brake and remove key.

- Before to adjust the belt and blade brake, grip the points marked in arrow and pull them up to open the seat 1) bracket upward. Seat remains fixed when seat bracket is maximum open.
- Remove the side covers to adjust wire and rod. 2)
- Contact your nearest dealer to replace driving belt and blade belt.



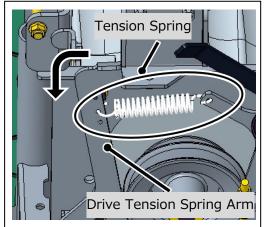


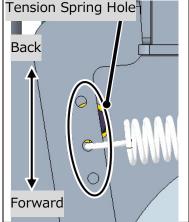


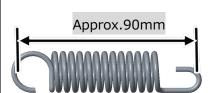
DRIVING BELT ADJUSTMENT (UNDER THE ENGINE)

Driving belt is always tensioned. In case this belt slips while driving, adjust the tension by changing the tension spring position. Normally tension spring is in second hole from rear side. In case tension needs to be stronger, place the spring in first hole from rear side.

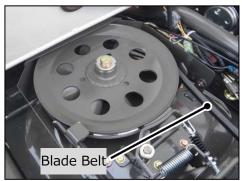
Normally, length of tension spring is about 90mm(free length of spring is 80mm).





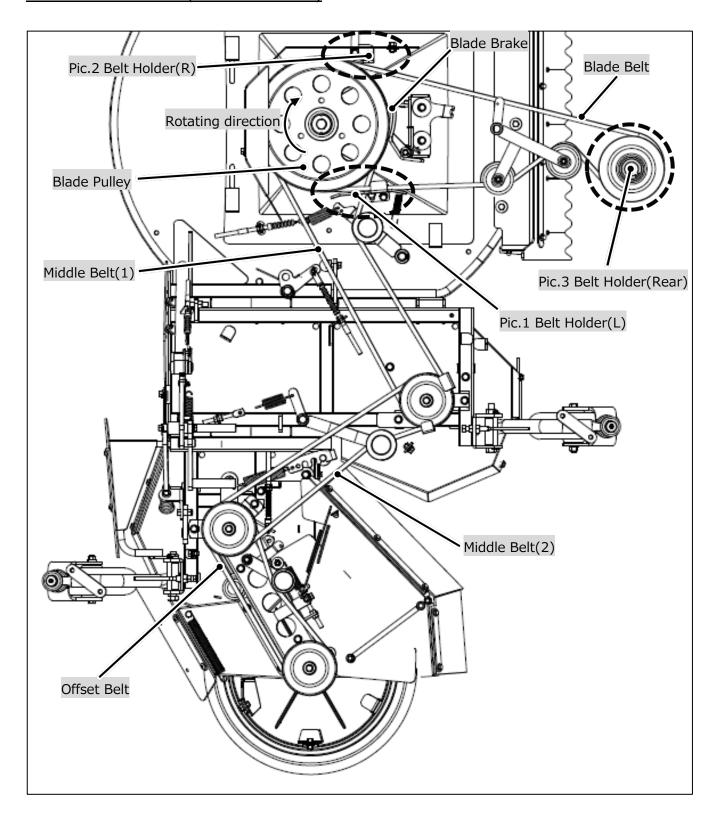


BLADE BELT ADJUSTMENT (UNDER SEAT BRACKET)



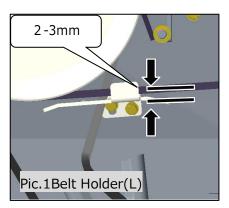
Visually inspect the damage on blade belt. If there is crack of wear, replace the belt to new one.

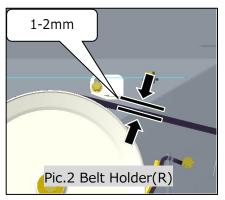
BLADE HOLDER ADJUSTMENT (UNDER SEAT BRACKET)

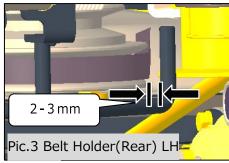


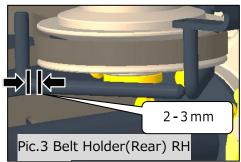
- 1) Shift the height of cut lever approx. 30mm position.
- 2) Move the blade clutch lever to ON.
- 3) Adjust the gap of each belt holders, referring the following pictures.

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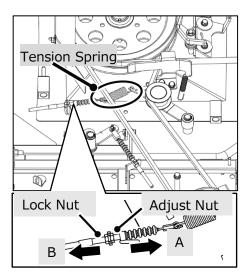








MIDDLE BELT AND OFFSET BELT ADJUSTMENT



Refer to figure(left) and adjust the nut. After adjustment, securely tighten with lock nut.

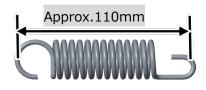
Adjustment of middle belt(1)

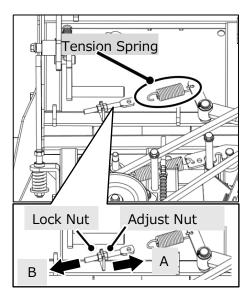
If tension is not enough:

-Adjust the nut toward A.

-Adjust the nut toward B.

Normally, length of tension spring is about 110mm.

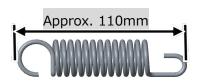


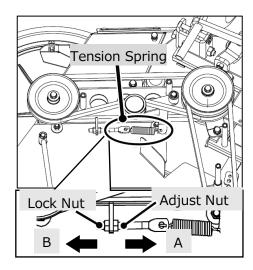


■ Adjustment of middle belt(2)

If tension is not enough : -Adjust the nut toward A.
If tension is too much : -Adjust the nut toward B.

Normally, length of tension spring is about 110mm.





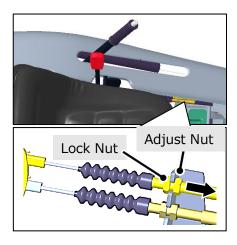
Adjustment of Offset belt

If tension is not enough: -Adjust the nut toward A. If tension is too much: -Adjust the nut toward B.

Normally, length of tension spring is about 90mm.

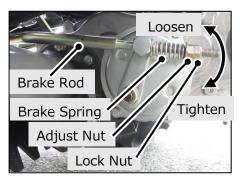


BLADE BRAKE ADJUSTMENT



- Blade stops in 5 seconds when the brake clutch lever is moved to OFF position. If not, loosen the lock nut and adjust it by moving the adjust nut of brake wire in direction of arrow. Wrong adjustment may lead to machine trouble. After the adjustment, securely tighten the lock nut.
- If it is not possible to make adjustment, brake shoe may be worn 2) out. Contact your dealer for inspection and replacement.

PARKING BRAKE ADJUSTMENT



- Parking brake is located in rear left side of transmission. Parking brake can be adjusted by adjust nut of brake rod. For adjustment, loosen the lock nut so that rear wheel is locked when parking brake pedal is fully pressed(=when pedal is locked by stopper). Then move the adjust nut in direction of arrow.
- 2) After adjustment, securely tighten with lock nut.

A WARNING

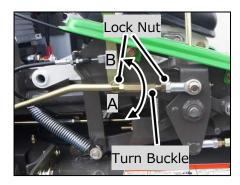
- Regular inspection is recommended not only for keeping the performance, but also for keeping the safety. In order to avoid serious accident on ride-on type machine, follow the maintenance chart to inspect at every use and every month, and ask your dealer to inspect at least once a year.
- After the adjustment, lock the parking brake pedal and place sub change lever at N position, and push the machine forward/backward to make sure if machine does not start moving.
- After the adjustment, unlock the parking brake pedal and check if brake is smooth or not. If brake is not smooth enough, brake shoe can be worn out quickly and it leads to serious accident like loss of machine control.

CAUTION

Contact your dealer for following service.

- 1) Brake is a consumable part. If parking brake cannot be adjusted as per this instruction, it is possible that brake shoe is worn out. For safety, replace the brake show in less than 100 hours of use.
- 2) Driving belt and blade belt are consumable parts. If something is wrong, replace to new one. Make adjustment at first 10 hours and later at each 50 hours of use.

SPEED LEVER ADJUSTMENT



- 1) Move the speed lever to N position.
- 2) Loosen the lock nut on turn buckle linked with speed lever, then turn it to adjust.

If machine slightly moves forward : -Move the turn buckle toward A.

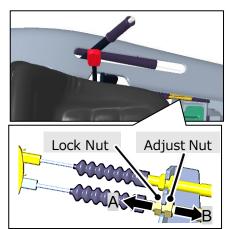
If machine slightly moves backward : -Move the turn buckle toward B.

3) After this adjustment, securely tighten the lock nut.

TIP:

Speed lever(and change pedal) adjustment is necessary only when transmission is disassembled. In case speed lever position does not match to label indication, make this adjustment.

BLADE CLUTCH WIRE ADJUSTMENT



Lower the height of cut lever and also place the blade clutch lever to ON position.

Refer to figure(left), loosen the lock nut of blade clutch wire and adjust with adjust nut.

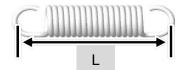
If blade belt is not tensioned enough : -Move the adjust nut toward B. If blade belt is tensioned too much : -Move the adjust nut toward A.

After the adjustment, securely tighten the lock nut.

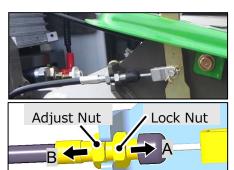
TIP:

Length of spring:

-Cutting height at maximum : L = about 115mm -Cutting height at lowest : L = about 120mm



DIFFERENTIAL LOCK WIRE ADJUSTMENT



Refer to figure(left), loosen the lock nut of differential lock wire and adjust with adjust nut. After this adjustment, make sure if it works properly.

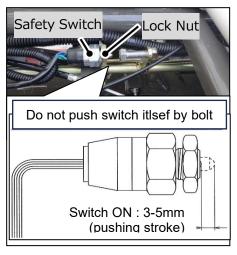
If differential lock is not activated : -Move the adjust nut toward A.

If differential lock is not cancelled : -Move the adjust nut toward B.

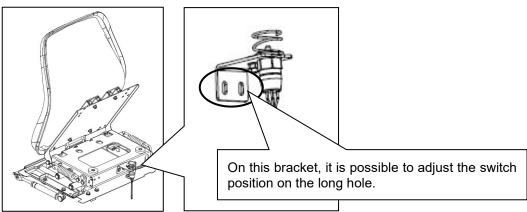
After this adjustment, securely tighten the lock nut.

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SAFETY SWITCH ADJUSTMENT



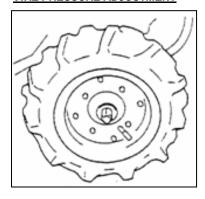
- There are 3 safety switches. They are located right side under the seat bracket, bottom of height of cut lever and under the seat.
- Check if safety switch is activated when they are pushed between 3.0-5.0mm. If not, make adjustment by tightening the lock nut. Place back the seat in position.
- Check the movement of safety switch and slightly spray the grease if switch end is not working smoothly. If switch movement is not improved, replace to new one.



CAUTION

- Take a seat, shift the height of cut lever to transport position, and lock the parking brake pedal, then start the engine. If engine is not started, make adjustment of safety switch. Engine is not started in case switches are excessively pressed or not pressed enough. Especially in case of excessive pressing, switch may be broken. Make adjustment refering the manual.
- Switch under the seat may not be pressed properly depending on field conditions. In such case, adjust the switch position with the hole on seat switch stay.

TIRE PRESSURE ADJUSTMENT



Refer to table below to check the pressure of tires.

	Tire size	Pressure(kPa)
Front wheel	3.50-7	120
Rear wheel	16x7.00-8	140



CAUTION

Pay attention to equal the pressure of R & L tires. If not, handle control may be lost during operation.

FRONT TIRE INSPECTION



A CAUTION

Do not forget to remove the soil or grass which comes into tires. If they remain around the tire for a long time, tire wheel, oil seal or bearing on the front wheel may be damaged.

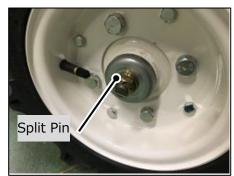


Regularly check the front wheel rubber cover to see if cut grass or rabbish is contained. Clean this part if needed.



Use a jack and lift up the front of machine.

Do it in a flat place and lock the parking brake.



Remove the wheel cap, split pin, nut, then remove the tire.

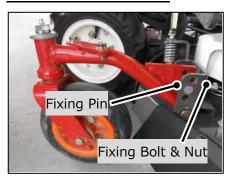
In case inspection or cleaning is realized, do not reuse the split pin and replace to new one.

Make sure about hole position and tighten the nut with split pin.



Clean inside of tire wheel. Before to assemble this part, do not forget to grease up and lubricate the king pin shaft. .

OFFSET HEIGHT ADJUSTMENT

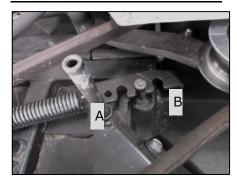


Height of offset can be adjusted in 3 position(High, Middle, Low).

Loosen the fixing bolt & nut, remove the fixing pin. If fixing pin is in upper hole, offset height goes down. If fixing pin is in lower hole, offset height goes up.

After the adjsutment, fix them securely with fixing bolt & nut.

OFFSET RETURN SPRING ADJUSTMENT



Offset return spring can be adjusted in 3 steps.

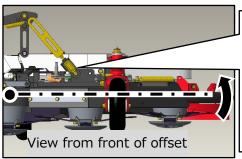
Remove the belt cover B.

Return spring gets stronger if spring hook plate is placed toward A(for-

And return spring gets weaker if spring hook place is placed toward B(backward).

Use hole in front and adjust carefully.

OFFSET INCLINATION ADJUSTMENT





Overall inclination of offset can be adjusted with U Nut in the illustration left.

Adjust the angle in case offset get inclination after years of use.

When U Nut is rotated in tightening direction, overall offset goes up.



After years of use, offset angle goes down. In this case, it is possible that main rotary blades and offset blades hit each other. In order to avoid this problem, tighten the U Nut until each blade don't hit each other.

BLADE INSPECTION, REPLACEMENT AND SETTING

For safety, inspect the blades and blade stay before the use.



WARNING

- This machine is equipped with sharp blades. Wear protective glove and use dedicated blade change tool for blade inspection and replacement, and never tough the blades by hand. It may cause injury. Place the blade change tool at the end of blade.
- For blade replacement, use only genuine parts recommended by manufacturer. Manufacturer is not responsible for the trouble and accident with non-genuine parts, and it is not covered by warranty.
- In case of impact caused by hitting the stone block or stumps, stop the use and check if blade or blade stay is bent, cracked or damaged. Replace them if necessary. Before each use, make sure if damaged parts in previous use are properly repaired or adjusted.
- To continue operation without repairing the wear, bending and loss of blade and blade stay can cause the blade to be thrown away during use. And it leads to serious accident like injury of bystanders.
- Blade stay is consumable part as well as blade. Even without bending or wear, replace the blade stay at least 5) each 100 hours of use or 2 years whichever comes first.
- Blades rotate in very high speed. Even with small lack of part or small bend, it leads to big vibration. To continue operation with big vibration is dangerous and can be cause of clack on each part of machine. Machine's service life may be much shorter in this case.
- Blade stay replacement require special tool and maintenance skill. Ask your dealer for the service. It is also necessary to replace the bag nut and blade stay setting bolt.
- On changing the blade upside down, remember to replace also the blade setting bolt. On replacing the blades, remember to replace also the blade setting bolt, hard lock nut, nut guard and blade collar. Do not substitute with another bolt and nut.
- Blades must be replaced at full set at same time. Replacing only the particular blade may cause vibration.

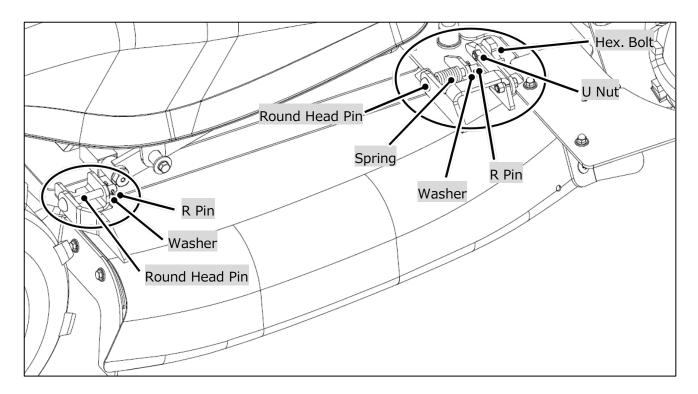


Ask skilled person with proper tool skill to replace the blades.

BLADE COVER REMOVAL

Remove the right blade cover in following step.

- 1) Stop the engine and remove the key from switch.
- 2) From rear side of blade cover, remove R pin, washer and round head pin.
- 3) From front side of blade cover, remove R pin, washer, spring and round head pin. And then remove Hex. bolt and U Nut.
- 4) Pull the right blade cover until it is removed.

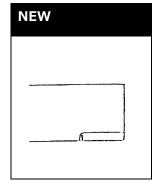


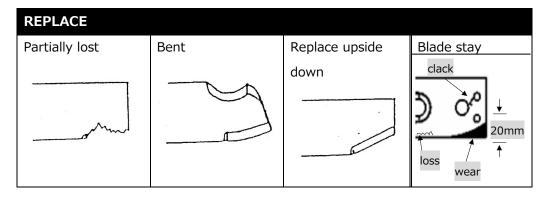
BLADE INSPECTION AND REPLACEMENT



- 1) Stop the engine and remove the key from switch.
- 2) Lower the height of cut lever.
- 3) Remove the right blade cover.
- 4) Check the blade and blade stay setting.
- 5) Check the clack, bend and wear of blade and blade stay.

In case blades are in following condition, change the blades between up and down or replace them to new one. Blade stay cannot be changed upside down. Replace blade stay to new one.





MARNING

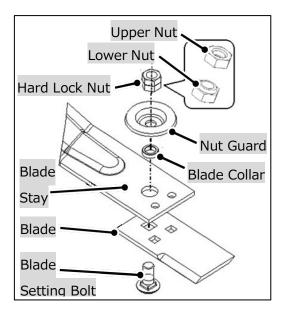
If blades are not fixed properly, it is possible that blades are thrown to bystanders while mowing and cause serious injury. Refer to following insruction to securely fix the blades.

In case of no replacement, it is possible that blade is thrown away due to wear, deformation and damage while mowing.

TIP:

- 1) When the machine is used in a place with sand or dry soil, blades can wear in shorter time. Check them frequently.
- 2) It is recommended to stock the spare blades to prepare for replacement.

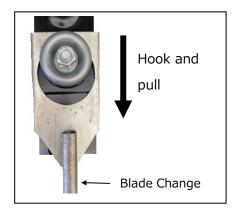
BLADE REPLACEMENT

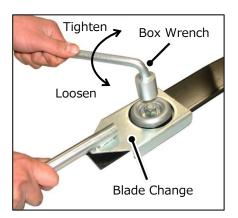


If blades need to be turned over of replaced, remove the blades following the insruction below.

Do not forget to use blade change tool for tightening/loosening the hard lock nut.

- 1) Place the blade change onto the blade and blade stay in order to fix the blade. Refer to photo below, to hook the blade change on the nut guard and pull it.
- 2) Use box wrench to loosen upper hard lock nut, then lower hard lock nut. In case of turning over the blade, also replace the blade setting bolt. In case of blade replacement, also replace the blade setting bolt and other parts at same time.
- 3) After the blade replacement(or turning over), tighten the lower hard lock nut, then upper hard lock nut.



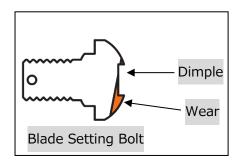


TIP:

- 1) Tightening torque of hard lock nut is 78.4Nm.
- 2) Use torque wrench to make sure the tightening torque. It is recommended to check the tightening power in advance at dealer shop.
- 3) In case of use on dry soil or on sandy place, blades are worn out faster. So it is recommended to check the blade frequently.
- 4) It is recommened to purchase spare blades and concerned parts and keep in stock for unexpected demand.

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- 5) Do not lose blade collar when blades are replaced.
- 6) In case wear is recognized on the blade setting bolt, replace the bolt to new one.

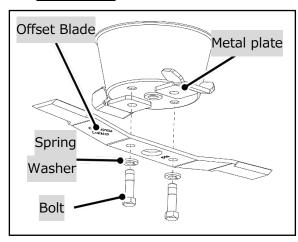


OFFSET BLADE REPLACEMENT

■ NYLON CORD

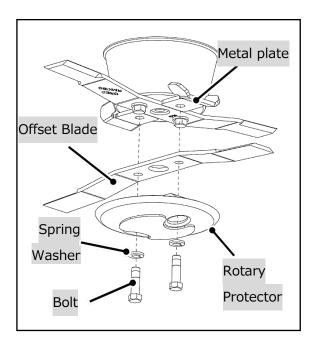
See page of "How to replace nylon cord" in chapter of "OPERATION".

■ METAL BLADE



- 1) Refer to illustration left and use box wrench and offset blade replacing tool to remove 4 bolts from the holes on rotary protector, which are fixing bar blades.
- 2) Refer to illustration left and fix the offset blade upwards with the bolts. At this moment, use the holes without metal plate welded on knife neck guard.

Tightening torque is 54Nm.



3) Refer to illustration left and fix the offset blade downwards with the bolts on the rotary protector. At this moment, use the holes with metal plate welded on knife neck guard.

Tightening torque is 54Nm.

TIP:

When offset height is adjusted properly, it is possible to reduce the wear of offset blades, wear of rotary protector and thrown objects.

STRAGE PREPARATION



DANGER

1) This product works with gasoline. Fuel leak, smoking near the machine, and making fire may lead to fire accident.

- Service the machine in place with sufficient ventilation and store the machine on solid and flat place.
- Wait more than 5 minutes after engine is stopped and muffler is cooled down, to drain the gasoline from fuel tank or place the cover on the machine.
- 4) Make sure if there is no flammable item around the machine when running the engine to finish the remaining gasoline. Provide sufficient ventilation.

⚠ WARNING

Do not service the machine with grass or dust remaining on the machine. They might choke the engine and cause engine overheat.

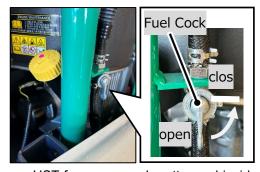
CAUTION

- Storing the machine with fuel remaining in the fuel tank or in the carburetor may cause engine starting trouble or loss of power.
- For safety, remove the key and keep it at owner.
- Use of drained fuel in polyethylene tank or use of gasoline kept for more than 3 months may cause engine trouble. Do not use such fuel.
- Place the hose, clip or drain bolt in original position if they are removed for service.
- In case of cleaning the machine with pressure water, pay attention to avoid putting water on electric parts, carburetor, air cleaner and muffler. Otherwise, it can cause engine starting trouble.

TIP:

It is easy to remove grass inside the blade cover, if they are washed with pressure water before grass get dry. -Storing in cold region-

- During winter, clean the machine and remove mud and obstacles after the use. Park the machine on flat and dry surface. Otherwise, they might be frozen on the machine and cause machine trouble.
- In case machine is parked on flat surface, do not lock the parking brake pedal, and use tire stopper to avoid sticking of brake shoe.
- In case machine is frozen and it is impossible to drive, do not attempt driving and put hot water on frozen 3) part and wait until it melts.



- 1) In case machine is not used for more than 30 days, drain the fuel from the fuel tank and run the engine to finish the remaining fuel until engine stops. This is to avoid engine starting problem by fuel in bad quality.
- 2) Turn the engine switch to OFF, and turn the fuel cock to "close" position.
- Clean around the engine and machine surface. 3)
- 4) Replace the engine oil.
- 5) Clean each part of machine. Use compressed air to blow especially the rotating screen, exhaust system, air cleaner, muffler,

HST fan cover, carburettor and inside the belt cover to blow the grass and dust away. If there is rusty part, remove the rust and apply anti-rust paint.

- 6) Lubricate each part of machine with grease and oil.
- 7) Lock the parking brake pedal and leave machine in a dry place with sufficient ventilation under the roof.
- 8) Wait until engine and muffler are sufficiently cooled before to place the cover on the machine. During storage period, regularly check the tire pressure and add pressure if needed.

NOTICE FOR NEXT USE



CAUTION

- 1) Use fresh fuel.
- Execute pre-use inspection. 2)
- Make sure if each control levers work properly(before every use).
- Make sure if all bolts and nuts are not loose and in place. 4)
- 5) Operate the machine for short time, and check if abnormal sound and abnormal temperature are found or
- For warming up each part of machine, operate the machine lightly for first 2-3 hours.

SPECIFICATIONS

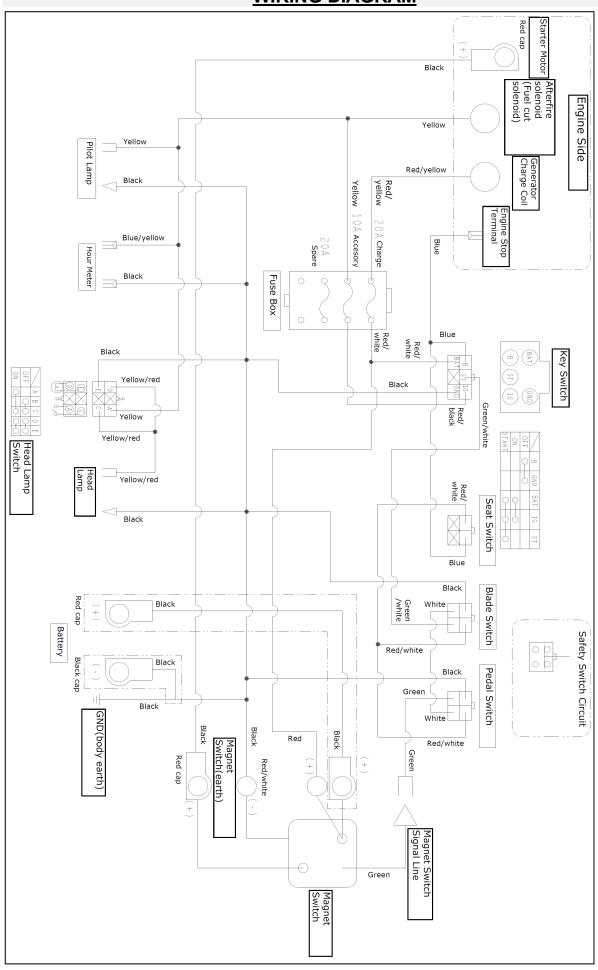
	RMK180		
	1895 x 1880	x 1000mm	
	1620-1770mm		
	355	ikg	
	50-100mm(free p	osition, assisted)	
Front	3.50-7(dia 350		
Rear	16x7.00-8(dia 40	00) x 2, tube tire	
	HST varia	ble speed	
	2 step(LOV	V – HIGH)	
	Forward	Reverse	
LOW	0-6.7	0-4.7	
HIGH	0-10.0	0-7.0	
Main body	Free blade x 2 8	k blade stay x 1	
	Bar bla	·	
Offset(nylon)	Nylon co	ord x 4	
Driving	W800 SI		
	W800 SB77 x 1, W800 SB74 x 1		
Cutting	W800 SB52 x 1, W800 SB40 x 1		
Differential Lock		pped	
	Circular handlebar with sub handle assy		
UP-DOWN	3 positions		
Forward-Reverse	Manually a	adjustable	
Gear oil	1.0	L()	
Hydro oil	0.5L(\	/G46)	
	Equipped with	n drum brake	
	Equip	oped	
	Equip	oped	
	Adjustable in 6 position(F-	R), suspension equipped	
	30A19L		
Brand	KAWA	SAKI	
Model	FS691V-EG80		
Output	17.2kW		
Displacement	726	occ C	
Engine oil volume	2.2L(includi	ng oil filter)	
0	Starter Motor		
Start up method	Starter	Motor	
	LOW HIGH Main body Offset(metal) Offset(nylon) Driving Cutting UP-DOWN Forward-Reverse Gear oil Hydro oil Brand Model Output Displacement Engine oil volume	1620-17 355	

Specifications may be changed without notice for improvement.

TIGHTENING TORQUES (Nm)

Diameter		Ma	arks on the screw he	ad	
of the screw(mm)	4 or without mark	7	8	9	11
3	0,3 to 0,5				
4	0,8 to 1,0				
5	2,5 to 3,4	5,4 to 6,4	6,4 to 7,4	6,4 to 7,4	8,8 to 9,8
6	4,9 to 6,9	9,8 to 11,8	11,8 to 13,7	11,8 to 13,7	14,7 to 16,7
8	11,8 to 16,7	24,5 to 29,4	29,4 to 34,3	34,3 to 36,2	36,3 to 41,2
10	20,6 to 29,4	39,2 to 44,1	49 to 53,9	49 to 53,9	72,6 to 82,4
12	44,1 to 53,9	83,4 to 93,2	93,2 to 107,9	93,2 to 107,9	122,6 to 137,3
14	63,7 to 78,5	117,7 to 132,4	132,4 to 147,1	147,1 to 166,7	205,9 to 225,6
16	88,3 to 107,9	152 to 171,6	176,5 to 196,1	215,8 to 245,2	313,8 to 343,2
18	117,7 to 137,3	205,9 to 235,4	245,2 to 274,6	313,8 to 343,2	441,3 to 470,7
20	147,1 to 166,71	235,4 to 274,6	313,8 to 353	441,3 to 480,5	617,8 to 657,1
22	176,5 to 205,9	421,7 to 451,1	539,4 to 578,6	608 to 647,2	843,4 to 882,6
24	235,4 to 264,8	539,4 to 568,8	706,1 to 745,3	784,5 to 823,8	1098,4 to 1137,6

WIRING DIAGRAM



MAINTENANCE CHART

Lack of inspection or maintenance leads to accident or trouble of machine. In order to ensure the good performance and safe condition of machine, make inspection referring the table below. About the frequency of maintenance, refer the indication D(daily), M(monthly), and Y(yearly).

1	eference	Where to check	Charlengint	12			
	D		Check point	Parts	D	М	Υ
Brakes	Brake	Effect of parking brake	Scratch or weakness	Brake shoe	0	0	0
(es		Brake rod joint	Deformation or rattle	Rod	0	0	0
-				Joint	0	0	0
		U nut	Looseness or loss	U nut	0	0	0
		W nut		W nut	0	0	0
		Split pin	Loss or damage	Split pin	0	0	0
C	Cover	Condition of cover	Bend, clack or corrosion.	Cover	0	0	0
Cutting part			Setting of flapper rubber.	Flapper		0	0
ing	Rotating	Blade, blade stay	Curve or wear	Blade	0	0	0
βg	part	and setting		Blade stay	0	0	0
Ħ			Looseness, wear, and loss of bolt and nut	Bolt / nut	0	0	0
		Offset deck	Wear or crack	Offset tire	0	0	0
			Open/close movement problem	Offset pedal	0	0	0
			Deformation or breakage	Return spring	0	0	0
		Blade brake	Performance of brake	Brake	0	0	0
			(to stop in 5 seconds)		0	0	0
ш	Engine	Accelaration,	Smoothness of accelataion, color of			0	0
Engine	body	exhaust, choke	exhaust gas, smell, smoothness of	Exhaust		0	0
ne			clogging	Choke	0	0	0
		Muffler, battery	Setting looseness, corrosion, charging	Muffler	0	0	0
			status of battery	Battery	0	0	0
		Engine body	Engine setting looseness or clack	Setting		0	0
		Air cleaner	Dirt, choke, damage	Air cleaner	0	0	0
[Oil	Engine oil	Quantity, quality, leak or mixing of	Oil	0	0	0
		Oil filter	obstacle, replacing period	Filter	0	0	0
			, later at every 100h, Filter : at every 100h				1
	Fuel	Fuel hose, filter	Leak, deformation, and clogging	Fuel route	0	0	0
	Ingition	Spark plug	Clack on insulator, carbon between terminal	Plug		0	0
		High voltage cord, plug cap	Degradation, clack and split on cap	Cord		0	0
	Cooling	Engine housing	Grass remain inside the housing or not	Inside cover	0	0	0
	Wire	Harness	Looseness or damage	Harness		0	0
T	Belt	Driving belt	Tension, clack, damage or dirt	Driving	0	0	0
ī ar		Blade belt	_	Blade	0	0	0
Trans-mission	Trans- mission,	Transmission oil	Quantity, quality, leak mixing of obstacle(water, air)	Transmission oil	0	0	0
SSi	HST	Transmission oil : fi	rst 20h and later each 100h				
on		HST oil	Quantity, quality, leak mixing of obstacle(water, air)	HST oil	0	0	0
		HST oil(VG46): Firs	st 20h and later each 200h including replacer	nent of oil filter.			
Mov	ing part	Movement of lever	Movement is smooth or not.	Diff-lock	0	0	0
		and wire		Blade	0	0	0
				Sub change	0	0	0
Spe		Speed lever	Proper movement, N position, and looseness	Lever	0	0	0
	ing part	Tire	Proper air pressure, damage or wear	Tire	0	0	0
	Setting		Looseness, wear, and loss of bolt and nut	Setting	0	0	0
Han			Looseness, wear, and loss of bolt and nut	Handle	0	0	0
Mete		Hour meter	Indication of correct hour, proper displaying	Hour meter	-	-	0
Labe	el	Warning label/plate	Attachment of label, damage or dirt	Label			0

ENGINE TROUBLESHOOTING

In case of engine trouble, refer to table below and take proper countermeasure.

Problem	Cause	Solution
Starter does not	Parking brake is not pressed.	Press parking brake pedal and lock it.
work	Height of cut lever is not in transport position.	Move the lever to transport position.
	Operator is not seated.	Stay on the seat.
	Safety switch is not adjusted properly	Adjsut the switch within 3-5mm allowance.
	Battey is empty.	Charge the battery.
	Battery cord is not connected.	Connect the battery.
	Coupler wiring is not connected.	Connet the wiring.
	Fuse is not good.	Replace the slow blow fuse(30A).
	Harness is cut or damaged	Replace the harness.
Battery is not	Charge coil is not good.	Repalce the charge coil.
charged	Fuse is broken.	Replace the fuse(charge : 20A)
•	Regulator is not good.	Replace the regulator.
	Battery is out of life.	Replace the battery.
Engine cannot	Throttle lever is not in MINI position.	Move the throttle lever in MINI position.
be started	Choke lever is not in "start" or "close" position.	Tighten the choke lever when engine is cooled.
	Fuel does not run.	Check the fuel tank and remove the sinking stuff and water.
		Place the fuel cock to "open".
	Fuel filter is clogged.	Replace the fuel filter.
	Air or water is mixed in fuel running	Remove the stuff, check the hose band, and replace
	system.	if necessary.
	Oil is stickly in cold weather and engine rotation is not smooth.	Select proper oil depending on weather.
	Ingintion coil or unit is not good.	Replace ignition coil or unit.
	Spark plug is not good.	Check the gap between terminal and adjust.
		Replace the spark plug.
	Battery is empty.	Disconnect the battery when machine is not in use. Keep battery fully charged and put it on machine
	Earl world by the t	before use.
	Fuel quality is bad.	Replace to good quality fuel.
D	Fuel is not enoguh.	Add the fuel.
Power is poor	Fuel is not enough.	Add the fuel.
	Air cleaner is clogged.	Clean the element.
	Fuel quality is bad.	Replace the fuel to new.
	Choke is not fully open.	Push down the choke lever completely to open it.
Engine stone	Cooling system is clogged.	Clearn around th screen guard. Add the fuel.
Engine stops	Fuel is not enough. Fuel cock is closed.	Open the fuel cock.
Exhaust gos is	Fuel quality is bad.	Replace to good quality fuel.
Exhaust gas is too black	Air cleaner is clogged.	Clean the element.
Black smoke	Air cleaner is clogged. Air cleaner element is clogged.	Clean the element.
comes out and	Choke is not fully open.	Push down the choke lever completely to open it.
power is lost	, .	, , ,
Blue-white	Engine oil is too much.	Reduce the engine oil to required level.
smoke comes out from muffler	Cylinder and piston ring is are worn	Replace the ring.
Engine rpm is	Choke is not fully open.	Push down the choke lever completely to open it.
not stable	Fuel quality is bad.	Replace to good quality fuel.
Engine stops	Ignition coil is not good.	Replace the ignition coil.
later	Fuel filter is clogged.	Replace the fuel filter.
Exhast gas badly smells	Fuel quality is bad.	Replace to good quality fuel.

BREAKDOWNS AND SOLUTIONS

Problem	Cause	Solution
	Grass is wet.	Wait until grass get dry.
	Grass is tall.	Mow higher and cut twice.
Cut grass is not dis-	Cutting height is too low.	Raise the cutting height.
charged well.	Engine power is too low.	Increase the power to the max.
	Mowing speed is too fast.	Decrease the speed.
	Mowing speed is too fast.	Decrease the speed.
	Engine power is too low.	Increase the power to the max.
	Blade is worn out or broken.	Replace the blade with a new one.
Grass is not fully cut	Some grass is stuck inside of	Clean up and take out grass inside of the
	rotary cover.	cover.
	Grass is tall.	Mow with higher cutting height first.
	Cutting height is too low.	Raise the cutting height.
	Turning speed is too fast.	Turn slowly.
	The ground is wavy-shaped.	Change the direction of mowing.
Cut into the ground	The ground is bumpy and has many	-
	ups and downs.	Raise the cutting height.
	Blade stay is bent or deformed.	Replace the blade to new one.
	Belt tension is not enough.	Adjust the belt tension.
	Obstacle remains inside blade cover	Clean inside the blade cover.
Blade slips	Grass remains on pulley	Clean the pulley.
	Belt is worn.	Replace the belt.
Blade does not stop in	Blade brake shoe is worn.	Replace the brake shoe.
5 seconds	Blade brake is poorly adjusted.	Adjust the blade brake.
J 3600Hu3	Blades are poorly balanced.	Replace all blades.
	Blade is damaged.	Replace the blade to new one.
	Grass remains around knife neck	Treplace the blade to flew one.
There is big vibration	guard	Clean around the knife neck guard.
	Blade shaft is bent.	Replace the blade shaft.
	Blade belt is broken.	Replace the belt to new one.
	Blade stay is bent.	Replace the blade stay.
	Engine power is too low.	Increase the power to the max.
	Mowing speed is too fast.	Decrease the speed.
Mowing workload is	Some grass is stuck on/around blade	Clean up the blade.
heavy	shaft.	Clean up the blade.
	Grass is tall.	Mow with higher cutting height first.
	Cutting height is too low.	Raise cutting height.
Tires are slipping.	Differential lock is OFF.	Move the differential lock lever to ON.
Thes are slipping.	Ground is soft.	Wait until the ground get dry.
Machine does not stop with speed lever in N position	N position is not properly adjusted.	Adjust the turn buckle to modify N position.
Poor power to drive the	Driving belt is not well tensioned.	Give more tension on the driving belt or replace the belt.
slope	HST oil is in short, degraded or air/water is mixed.	Add or replace the HST oil or remove the air.
Offset return action is	Return spring is deformed or broken	Replace the return spring
slow	Bearing is damaged	Replace the bearing
	HST oil is not enough.	Add HST oil.
Machine does not	HST hose is getting off or broken	Set the HST hose or replace it if it is damaged
move by change pedal	Parking brake is still locked	Unlock the parking brake
operation	Driving clutch lever is in OFF position.	Move the driving clutch lever to ON position.
	Brake shoe is worn.	Replace the brake shoe.
Parking brake does not	Oil is coming into brake drum.	Remove the oil and replace the oil seal.
work well	Water is coming into brake drum.	Press and release the brake and dry inside.
WOIN WOII	Tire is worn.	Replace the tire.
	or do not understand any points, please	

If you have any questions or do not understand any points, please contact your dealer.

BATTERY

BATTERY MAINTENANCE/INSPECTION

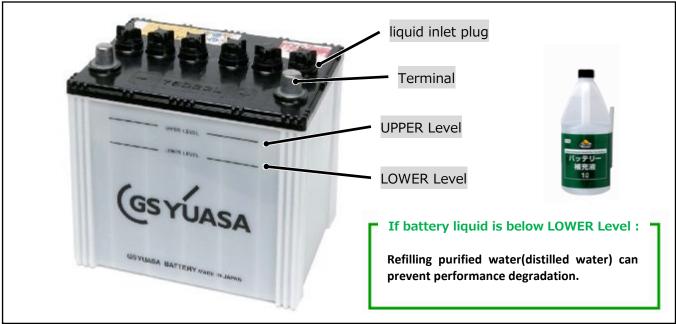
Inappropriate use of battery can cause lifespan decrease of battery or serious accident. Lean right use of battery for its full performance.



WARNING

- 1) When handling batteries, be careful of short circuits, sparks and fire.
- Batteries generate flammable hydrogen gas. Do not bring or generate any flames (matches, lighters, cigarettes, sparks from welding machines, grinders, etc., sparks from terminals, etc.) near the battery as this may cause ignition and explosion.
- Do not touch the battery with a charged body or clean it with a dry cloth. Static electricity may cause ignition and explosion.
- Battery fluid is dilute sulfuric acid. Be careful if it comes into contact with your eyes or skin as it will damage those areas. If an accident occurs, please follow the procedure for handling accidents using electrolyte.
- When charging, be sure to remove the battery from the machine. Doing so may damage electrical equipment or wiring. However, quick charging is not suitable as a supplementary charging method. Please use quick charging only in emergency and use normal charging in other cases.

REFILLING BATTERY FLUID



Check the electrolyte level during the daily start-up inspection. Even when not in use, check the electrolyte level once a month. If the liquid level has fallen to less than half the level between UPPER (highest liquid level) and LOWER (lowest liquid level), refill purified water(distilled water) to the UPPER level.

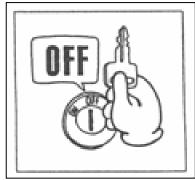


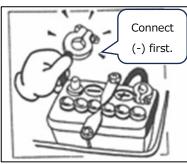
WARNING

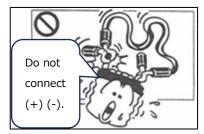
- Do not let the electrolyte in the battery drop below LOWER (lowest liquid level). It may cause short life, heat generation and explosion.
- Do not put anything other than purified water into the battery(do not refill dilute sulfuric acid). If impurities are added, it may cause heat generation, ignition, or generation of toxic gas.
- If you add too much purified water (distilled water), the electrolyte may spill and corrode the metal. Do not add more than UPPER (highest liquid level). If you spill battery fluid, be sure to wash it with water.
- After refilling the water, be sure to securely attach the liquid inlet plug to prevent liquid leakage.

RECHARGE BATTERY

If the engine does not start even after controlling the battery level, or if the starter motor rotation is lower than usual and weak, the battery is discharged, so follow the steps below to recharge the battery for 5 to 10 hours.









Battery removal procedure

- 1) Stop the engine of machine and remove the key switch.
- 2) Record the battery installation status (terminal polarity position).
- 3) Loosen the bolt on the negative cable terminal on the machine side, and remove the cable terminal from the battery's negative terminal.
- 4) Then loosen the bolt on the positive cable terminal and disconnect the cable from the battery positive terminal.
- 5) Loosen the battery mounting bracket and remove the battery in a horizontal position. Battery is heavy, so handle it with care.

Recharge battery(charger is not included).

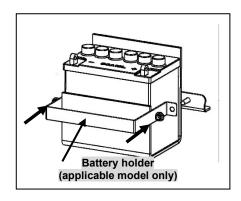
- 1) Make sure the power is turned off before using the charger. If the battery is connected to the ON state, a spark will be generated, which may cause fire or explosion.
- 2) Connect the positive side of the charger to the positive side of the battery, and the negative side of the charger to the negative side of the battery. Incorrect connection may cause electrical circuit failure or wiring burnout.
- Remove all 6 liquid inlet plugs.
- 4) For recharging, respect the normal charging current and charging time. If not, it may cause liquid leakage, ignition, or explosion.
- 5) After completing recharging, firmly attach the 6 liquid inlet plugs to their original positions. Do not use quick charging as it is not suitable for recharging a battery that has been left unused for a long time. If rapid charging is unavoidable, use a charging current that is less than or equal to the battery's rated capacity.

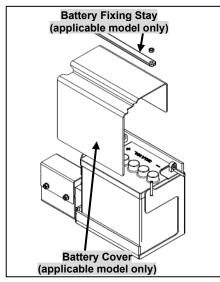
A CAUTION

- 1) When using a charger with a boost (starting aid) function, follow the instruction manual of the charger. Incorrect handling may cause the battery to explode or damage the machine.
- 2) Charge in a well-ventilated area and keep away from fire. Otherwise it may cause ignition or explosion.

Guideline to finish recharging(satisfy the following conditions)

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





Battery installation procedure

- 1) Make sure that there are no foreign objects on the battery mounting base, place the removed battery on the mounting base so that the terminal polarity is in the same position, and make sure there is no wobbling with the battery holder (applicable models only) or battery fixing stay (applicable models only). Please fix it firmly as shown.
- 2) Attach the positive cable terminal on the machine side to the battery positive terminal, and tighten the bolts firmly so that they do not come loose.
- 3) Next, attach the negative cable terminal on the machine side to the battery negative terminal, and tighten the bolt firmly so that it does not come loose.
- 4) Applying a thin layer of grease to the metal part of the cable terminal is effective for preventing rust. If the cable terminals are corroded, clean them with a wire brush, fine sandpaper, etc.

Starting

Once installation is complete, start the engine. Note that the starting operation should be within 5 seconds, and if it does not start the first time, wait for at least 10 seconds and try again. However, if the engine does not start even after performing this operation, the battery may be at the end of its lifespan, so check the battery, starting circuit, etc.

BATTERY LIFESPAN

During use, a battery gradually loses its capacity and reaches the end of its service life. Items whose performance does not recover even after recharging are at the end of their service life.

- Lifespan is reduced by the following factors。
 - 1) High temperature (environmental temperature)
 - 2) Frequency of use (too little or too much use will affect lifespan)
 - 3) Insufficient charging (lack of supply due to generator failure, etc.)
 - 4) Harsh use (frequent use in cold regions, use with insufficient charging, etc.)
 - 5) Inadequate maintenance (if the battery goes dead due to neglecting to check the battery liquid level or refilling water, poor contact due to loose terminals, forgetting to turn off the engine switch, etc.)
 - 6) Excessive charging (failure of the regulator, excessive charging without stopping charging even after the completion point)
- At the end of life, the following symptoms may occur:.
 - 1) The rotation sound of the starter motor is lower than usual and weak.
 - 2) Battery electrolyte drains quickly

If any of these symptoms appear, perform recharging while paying attention to the above.

If the symptoms persist even after supplementary charging, the battery has reached the end of its lifespan and we recommend replacing it.

■ Follow the regulations of each local government regarding the disposal of unnecessary batteries.

BATTERY TROUBLESHOOTING

Problem	Cause	Solution	Prevention method	
	Battery is not charged	Charge for a long time with	Don't overuse the battery,	
	Battery is not charged	normal charging	and charge it early	
Starter doesn't turn	Poor terminal contact	Wash the terminal	Clean the terminal, tighten	
	Foor terminal contact	thoroughly and tighten it	it firmly, and apply grease.	
	Battery is end of lifespan	Replace the battery		
The starter does not turn	Battery is not charged	Charge for a long time with	Fully charge before use	
The starter does not turn	sufficiently	normal charging	Fully charge before use	
rigorously. When viewed from the liquid inlet, the top	Look of algoritative	Refill with distilled water	Check the fluid level	
of the electrode plate is	Lack of electrolyte	and recharge	regularly	
white	The battery was overused	Charge for a long time with	Don't force the battery and	
Wille	(over discharged)	normal charging	charge it early	
Cannot be charged even	Battery is end of lifespan	Replace the battery	30A-19L	
after charging	fuse is blown	Replace the fuse	20A	
The terminals are severely	Poor terminal contact	Wash the terminal section	Clean the terminal, tighten	
The terminals are severely corroded and become hot	Fooi terrilliai contact	thoroughly and tighten it	it firmly, and apply grease	
corroded and become not	Dirt on the terminal section			
	There is a crack in the	Poplace the battery	Make sure the installation	
Electrolyte decreases	battery case	Replace the battery	is secure	
quickly	Charging voltage too high	Replace the charger		
	Battery is end of lifespan	Replace the battery		

^{*} If you have any questions or do not understand any points, please contact your dealer.

TREATMENT METHOD IN CASE OF ACCIDENTS CAUSED BY ELECTROLYTE

Type of risk	Type of accident	Treatment method
	If it gets in your eyes	Immediately wash your eyes with plenty of clean water, then
⚠ DANGER		seek treatment from a doctor (ophthalmologist) immediately.
DANGER	If ingested or swallowed	Immediately gargle with drinking water repeatedly, drink plenty
		of clean water, and immediately seek medical treatment.
⚠ WARNING	If it gets on your skin or	Rinse immediately with plenty of water and then thoroughly with
WARNING	clothes	soap.
_	If it adheres to the vehicle	Immediately wipe it off with a cloth, then rinse with water.
⚠ CAUTION	If spilled on the floor or	Spray bicarbonate of soda (baking soda), etc. until no bubbles
	ground	appear, then rinse with plenty of water.

TREATMENT METHOD IN CASE OF ACCIDENTS CAUSED BY ELECTROLYTE

Conversely, a rapidly charged battery will discharge quickly.

Follow the charging time below and use quick charging only in emergencies(current: 3A to 4A).

specific gravity value(20 degrees)	Charge time(hour)
1,240 or more	4~5
1,200~1,240	6~7
1,160~1,200	8~9
1,120~1,160	10~12
1,120 or less	more than 15

specific gravity value(20 degrees)	Discharge amount of electricity(%)	Remaining electricity amount(%)
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



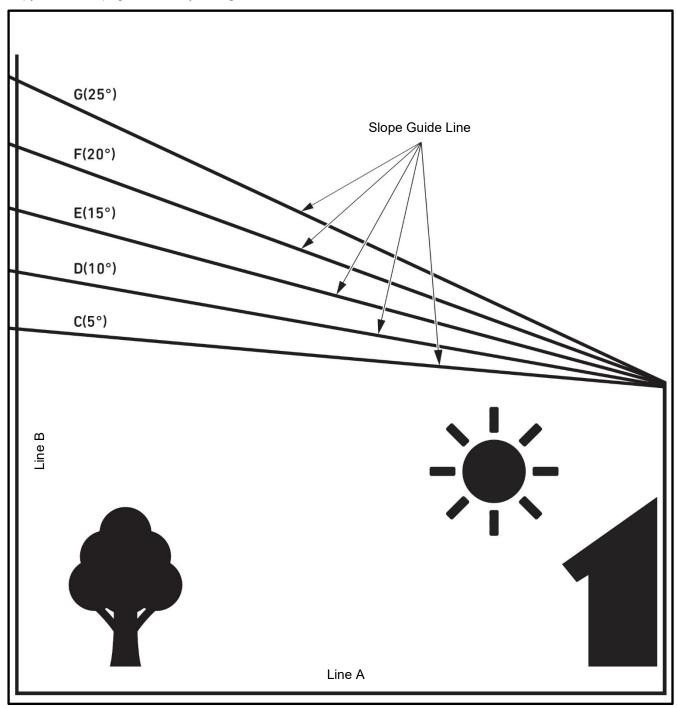
A CAUTION

If the temperature of the liquid during charging exceeds 45 degrees(it feels hot when you touch it with the palm of your hand), reduce the current value by half or pause charging for a while to lower the liquid temperature before charging.

SLOPE GUIDE

The maximum slope angle you can safely operate the machine on is 15 degrees. Use this slope guide to determine the degree of slope before operating. Do not operate the machine on a slope greater than 15 degrees.

Copy or cut this page and always bring it with machine.



- 1) Hold this paper in front of you. Make sure line A is horizontal.
- 2) Align line B to a vertical surface such as a pole, tree, building, etc.
- 3)
- Fold the paper along the slanted guideline (C, D, E, F or G).

 Align the nearest slope guideline to the slope of the ground. This allows you to accurately estimate the slope of the ground to be mown.

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LIMITED WARRANTY

Each new product manufactured by OREC is guaranteed under the cope of the following terms. The warranty applies to defective parts due to defect in assembling and construction or/and in material imputable to us. It is valid for following period for normal use of the machine:

Professional use: 1 year Private use: 2 years

It does not apply to engines manufactured by other companies that also guarantee their materials and whose guarantee is supplied with the machine.

Warranty does not apply to consumable parts, such as blade(including blade bolt), belt, flapper, tire, oil filter and brake pad. In case of professional use to submit warranty, it is mandatory to attach the invoice from the dealer.

- 1. This guarantee is limited to the sole replacement of the defective parts for one year(in professional use) or for two years(in private use) commencing with the purchasing date of the machine. The guarantee is limited to the parts that are previously shown to and acknowledged by OREC.
- 2. User is requested to claim his dealer within 30 days from the date of trouble.
- 3. Each part concerned by a guarantee claim must be returned to OREC's in order to be inspected, repaired or replaced. The part(s) must be returned with freight prepaid and must be accompanied with a proof of the purchase(i.e. dealer's invoice). The part(s) must be packed with the greatest of care to ensure their protection. 3° The machine must not have been worn out, repaired or maintained by anyone without OREC's previous authorization. The machine must not have been damaged in a road accident, roughly handled or improperly used.

This guarantee does not compel OREC or its dealer to reimburse the labour costs or the carriage costs to the repairer.

NO OTHER GUARANTEE SHALL BE APPLIED TO THIS MACHINE EXCEPT THE LEGAL GUARANTEE. OREC SHALL NOT BE LIABLE FOR ANY DAMAGE OR COST INVOLVED BY THE MACHINE, FOR EXAMPLE:

- HIRING COSTS
- TURNOVER LOSSES
- WORK DONE BY A REPLACING MACHINE

OREC DOES NOT TAKE ON ANY OTHER OBLIGATION AND DOES NOT AUTHORIZE ANYBODY TO TAKE ON ANY OTHER OBLIGATION THAN THOSE MENTIONED IN THE 3 PARAGRAPHS ABOVE.

To know the name of your dealer, contact our importer in following web site.

https://technogreen-international.com/our-distributor/

<u>NOTES</u>

EC CONFORMITY DECLARATION

Business name and full address of the manufacturer: OREC CO LTD 548-22 HIYOSHI HIROKAWA-MACHI YAME-GUN FUKUOKA JAPAN owner of the technical documents: S.A.T. sarl – 88, rue d'Evrieu 38110 LA BATIE MONTGASCON France Designation: Ride-on brush cutter Mark: **OREC** Model: **RMK180** Serial Identification: see below Engine: - Manufacturer : Kawasaki - Model: FS691V - Power: 17.2kW Width of cut: 1620-1770 mm Conforms to directives: 2000/14/EC, 2006/42/EC, 2014/30/UE Conformity assesment: 2006/42/EC Annex VIII Measured acoustic power level: 102,2 dB(A) Granted acoustic power level: 103 dB(A) 2000/14/ÉC Annex VIII Conformity assesment: Notified body n°0088: Lloyd's Register Quality Assurance 71 Fenchurch street London EC3S 4BS UK Acoustic pressure level at operator's ears : 92,8 dB(A) Harmonized standards used: EN 12733:2018, EN ISO 14982-2009, EN ISO 3744-2010, EN ISO 3746-2010, EN1032-2003+A1-2008, EN ISO 20643:2008+A1:2012 made at: Fukuoka, 10 January 2024 Signed: Haruhiko Imamura Function: Managing director MEASUREMENT OF VIBRATIONS Mark: OREC Model: RMK180 Engine: FS691V Pick up location Awp Right side 60° from the axle of the steering wheel 1,61 m/s² Left side 60° from the axle of the steering wheel 1,51 m/s² On the operator's seat 1,46 m/s² SERIAL NO.

OREC RMK180 55

MODEL