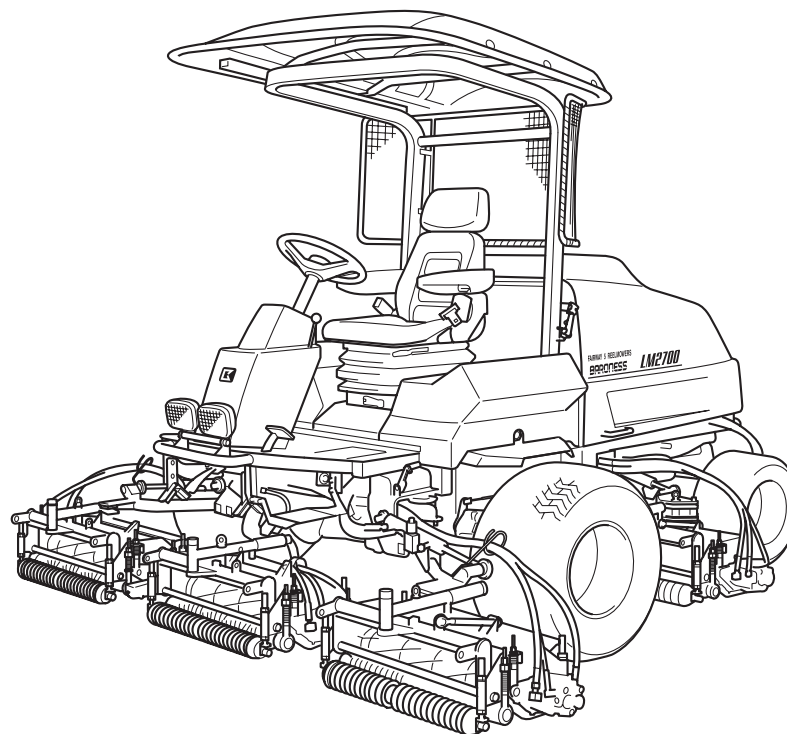


LM2700

5-Unit Reel Mower

Owner's Operating Manual



































"Required reading" Read this manual and the Owner's Manual for the engine before using the machine.




























BARONESS[®]
Quality on Demand

Serial No.11086-

Original Instructions Ver.3.1

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Greeting

Thank you for purchasing the Baroness machine.

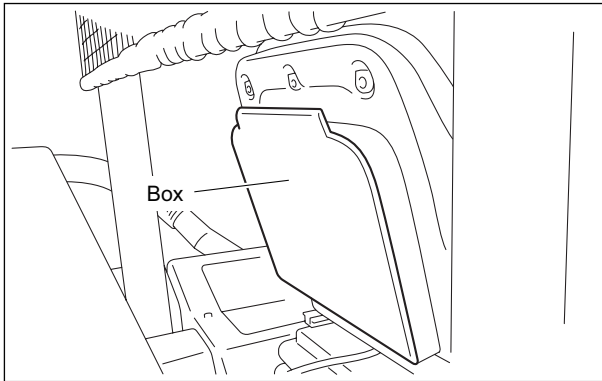
This manual explains proper handling, adjustment, and inspection of your machine.

Prior to use, carefully read this manual to thoroughly understand the contents for safe and correct operation.

We hope you will use the machine safely, and take advantage of its best performance.

Keeping the owner's operating manual

Keep this Manual in the box located in the rear of the seat.



Introduction

Read this manual carefully to ensure that you thoroughly understand how to properly operate and maintain this machine, and to avoid causing injury to yourself or others.

The operator is responsible for operating the machine properly and safely.

Do not perform maintenance on the machine other than that described in this manual.

Be sure to also read the Owner's Manual for the engine, battery, etc.

Maintenance should only be performed by a certified specialist.

If you have any questions concerning maintenance or genuine parts, please contact your local Baroness dealer or Kyoisha.

When making inquiries about this machine, please specify the machine's model designation and serial number.

When loaning or transferring this machine, please also provide this manual together with the machine.

Kyoisha Co., Ltd.

Caution





The information described in this manual is subject to change for improvement without prior notice.

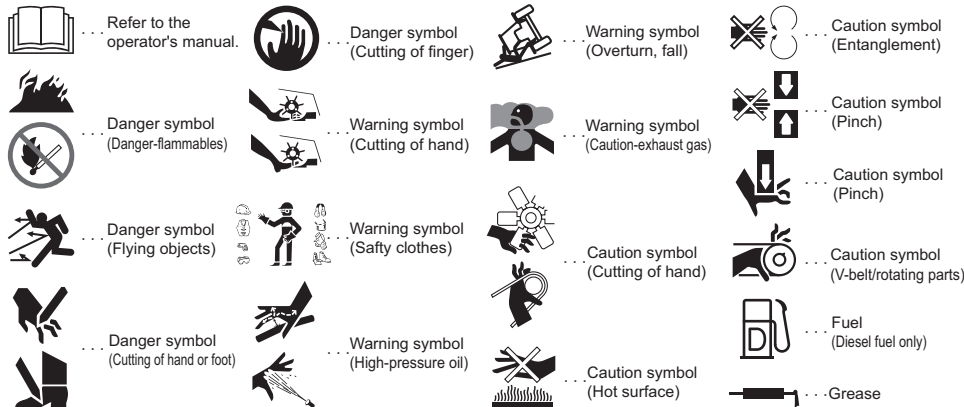
When replacing parts, be sure to use genuine Baroness parts or parts designated by Kyoisha.

Note that the Baroness product warranty may not apply to defects caused by the use of parts from other companies.

Warning symbols

This manual uses the following warning symbols for handling precautions that are important for your safety.

	Warning symbol
<p>This symbol indicates the articles regarding “Danger,” “Warning,” or “Caution.” Those articles describe important safety precautions and so read them carefully to understand completely before operating the machine. Failure to adequately follow these safety precautions may cause an accident.</p>	
<p> Danger</p> <p>This symbol indicates that serious injury or death will occur if the warning is ignored.</p>	
<p> Warning</p> <p>This symbol indicates that serious injury or death may occur if the warning is ignored.</p>	
<p> Caution</p> <p>This symbol indicates that injury or damage to property may occur if the warning is ignored.</p>	
<p>Important</p> <p>This symbol indicates precautions on the mechanism of the machine.</p>	



Purpose

This machine is intended for cutting turf grass at golf courses.


Do not use this machine in any way other than its intended purpose, and do not modify the machine.

Operating this machine for other purposes and modifying it may be very dangerous and may cause damage to the machine.

In addition, this machine is not authorized for operation as a special motor vehicle. Do not operate it on public roads.

Safety

Failure to adequately follow these safety precautions may cause an accident resulting in injury or death.

 **Danger**

This machine is designed to ensure safe operation and has been tested and inspected thoroughly before shipment from the factory.

The machine is equipped with safety devices to prevent accidents.

However, whether the machine demonstrates its original performance level depends on the manner in which it is operated and handled, as well as the manner in which it is managed on a daily basis.

Inappropriate use or management of the machine may result in injury or death.

Observe the following safety instructions to ensure safe operation.

Safe operating practices

The following instructions include the ones from CEN standard EN 836: 1997, ISO standard 5395: 1990, and ANSI B71.4-2004.

Training

1. Read this manual and other training material carefully. Be familiar with the controls, safety signs, and the proper use of the equipment.
2. If the operator or mechanic can not read English it is the owner's responsibility to explain this manual to them.
3. All operators and mechanics should seek and obtain professional and practical instruction.

The owner is responsible for training the users.

Such instruction should emphasize.

[1]The need for care and concentration when working with ride-on machines.

[2]Control of a ride-on machine sliding on a slope will not be regained by the application of the brake.

The main reasons for loss of control are

- Insufficient wheel grip
- Being driven too fast
- Inadequate braking
- The type of machine is unsuitable for its task
- Lack of awareness of the effect of ground conditions, especially slopes
- Incorrect hitching and load distribution

4.Never allow children or people unfamiliar with these instructions to use or service the machine.

Local regulations may restrict the age of the operator.

5.The owner/use can prevent and is responsible for accidents or injuries occurring to themselves, other people, or property.

6.Keep in mind that the owner, operator, and mechanic are responsible for accidents or hazards occurring to other people or their property.

Preparation

1.Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.

2.While operating, always wear substantial footwear, long trousers, hard hat, safety glasses, and ear protection.

Long hair, loose clothing, or jewelry may get tangled in moving parts. Do not operate the equipment when barefoot or wearing open sandals.

3.Inspect the area where the equipment is to be used and remove all objects such as rocks, toys and wire which can be thrown by the machine.

4.Exercise care in the handling of fuel.

Warning

Warning-Fuel is highly flammable. Take the following precautions.

[1]Store fuel in containers specifically designed for this purpose.

[2]Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot.

[3]Refuel outdoors only and do not smoke while refueling.

[4]If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until petrol vapours have dissipated.

[5]Replace all fuel tanks and container caps securely.

5.Check that operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.

6.If the brake operation is faulty or the parking brake lever has noticeable play, be sure to adjust or repair them before operating the machine.

7.Replace faulty mufflers.

8.On multi-cylinder/multi-reel machines take care as rotating one cylinder/reel can cause other cylinder/reels to rotate.

Operation

1.Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.

2.Only operate in good light, keeping away from holes and hidden hazards.

3.Before attempting to start the engine, disengage all attachments, shift into neutral, and engage the parking brake.

Only start engine from the operator's position.

Use seat belts if provided.

4.Remember there is no such thing as a safe slope. Travel on grass slopes requires particular care.

To guard against overturning:

[1]Do not stop or start suddenly when going up or downhill.

[2]Engage clutch slowly, always keep machine in gear, especially when traveling downhill.

[3]Machine speeds should be kept low on slopes and during tight turns.

[4]Stay alert for humps and hollows and other hidden hazards.

[5]Never operate across the face of the slope, unless the machine is designed for this purpose.

[6]Never drive the machine on a slope with an angle of gradient that is greater than that specified or in a place where there is a danger of the machine slipping.

5.Never operate the machine with damaged guards, shields, or without safety protective devices in place.

Be sure all interlocks are attached, adjusted and functioning properly.

6.Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed may increase the hazard of personal injury.

7.Do the following before leaving the operator's position.

[1]Stop on level ground.

[2]Disengage the power take-off and lower the attachments.

[3]Change into neutral and set the parking brake.

[4]Stop the engine and remove the key.

8. Disengage the drive to attachments, stop the engine, and remove the ignition key in the following conditions.

[1] Before refueling.

[2] Before removing the grass catcher/catchers.

[3] Before making height adjustment unless adjustment can be made from the operator's position.

[4] Before cleaning blockages.

[5] Before checking, cleaning, or working the machine.

[6] After striking a foreign object or if an abnormal vibration occurs.

Inspect the machine for damage and make repairs before restarting and operating the equipment.

9. Keep hands and feet away from the cutting units and the rotating parts.

10. Look behind and down before backing up to be sure of a clear path.

11. Do not carry passengers.

12. Never operate while people, especially children, or pets are nearby.

13. Slow down and use caution when making turns and crossing roads and sidewalks.

14. Stop the blades rotating before crossing surfaces other than grass.

15. Disengage drive to attachments when transporting or not in use.

16. When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the machine while in operation.

17. Do not operate the machine under the influence of alcohol or drugs.

18. Take care when loading or unloading the machine into a trailer or a truck. Load or unload the machine in a flat and safe place. Before loading or unloading, set the parking brake on the truck or trailer, stop the engine, and chock the wheels.

When transporting the machine on a truck or a trailer, set the parking brake, stop the engine, and fasten the machine to the truck with a rope or other suitable restraining device that has sufficient strength.

When using a loading ramp, select one with sufficient strength, length, and width and that will not cause the machine to slip.

19. Close the fuel valve before transporting the machine.

20. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

21. Do not take your eyes off the road ahead. Do not operate the machine with no hands.

22. Reduce the throttle setting during engine run-out and, if the engine is provided with a shut-off valve, turn the fuel off at the conclusion of operation.

Maintenance and storage

1. Disengage drives on level ground, lower the attachments, set parking brake, stop engine and remove key from ignition. Wait for all movement to stop before adjusting, cleaning or repairing.

2. When machine is to be parked, stored, or left unattended, lower the cutting units unless a positive mechanical lock is provided.

3. To reduce the fire hazard, keep the engine, silencer/muffler, battery compartment fuel storage area, cutting unit and drives free of grass, leaves, or excessive grease. Clean up oil or fuel spillage.

4. Allow the engine to cool before storing in any enclosure.

5. Only cover the machine with a sheet after hot parts have sufficiently cooled down.

6. Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark.

7. If the engine is provided with a shut-off valve, shut off valve while storing or transporting.

8. Do not store fuel near flames.

9. Never allow untrained personnel to service machine.

10. Allow the engine/muffler to cool before checking/maintenance.

11. Appropriately manage and correctly use the tools necessary for servicing or adjusting the machine.

12. Use jack stands to support components when required.

13. Carefully release pressure from components with stored energy.

14. Be sure to depressurize the hydraulic system before performing maintenance operations on it such as removing hydraulic equipment.

15. Check whether line connectors in the hydraulic system are properly tightened. Before applying hydraulic pressure, check the connections of the hydraulic pressure lines and the condition of the hoses.

16. When checking the hydraulic circuit for pinhole leaks or oil leakage from nozzles, do not use your hands. Use items such as paper or corrugated cardboard to find leakage points. Be extremely careful with high-pressure oil as it may pierce your skin, resulting in an injury.

If fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

17. Disconnect battery before making any repairs. Disconnect the negative terminal first and the positive last.

Reconnect positive first and negative last.

18. Make sure that parts such as wires are not touching each other and that their covers have not come off.

19. Use care when checking the cylinders/reels and bed knives.

[1] Wear gloves and use caution when servicing them.

[2]Be careful during adjustment of the machine to prevent entrapment of the fingers between moving blades and fixed parts of the machine.

20. On multi-cylinder/multi-reel machines take care as rotating one cylinder/reel can cause other cylinder/reels to rotate.
21. Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
22. Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.
23. Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.
24. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
25. Check the grass catcher frequently for wear or deterioration.
26. If the fuel tank has to be drained, do this outdoors.

About Recycle

Recycling battery etc. is recommended for environmental conservation and economical use of resources.

It may be required by local laws.

About the waste disposal

Make sure that waste generated when servicing or repairing the machine is disposed of in accordance with local regulations.

(e.g. waste oil, antifreeze, rubber products, and wires etc.)

Long-term storage



- Please refer to the Engine/Battery operation manuals for details.

1. Clean up dirt, grass and oil spot etc.
2. Inspect and replace the engine oil and air filter element.
3. Refill oil and apply lubricating/greasing to each lubrication part.
4. Empty the fuel tank and keep the mower away from ignition sources when storing the mower indoors where sparks and open flames are used.
5. Set the air pressure in the tires slightly higher than normal.
6. Inspect all bolts, nuts and screws tightened. If loose or missing, tighten or repair them.
7. Repair or replace damaged parts and paint peelings.
8. Store the machine in the place where is dry and prevent exposure to rain.
9. Remove the battery and ignition key from the mower. If you keep the battery installed in the machine, disconnect the ground battery cable (negative side).
10. When storing the machine, lower the cutting units. In case to store the machine with raising the outermost #4 & #5 mowers, be sure to latch them.

1. Precautions for safe operation

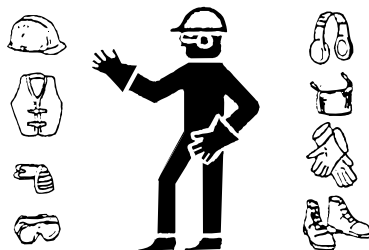
1-1 General precautions

Warning

- **Do not operate the machine under the following conditions!**
 - If you cannot concentrate while operating the machine due to fatigue or illness, or if you are under the influence of medication
 - After drinking alcohol
 - If pregnant
 - If less than 18 years old or untrained person
- * Failure to observe these precautions can cause an unexpected accident.
- **Wear suitable clothes when operating the machine.**

Do not wear a towel around your head or waist, or a scarf around your neck. Wear safety glasses, a helmet, and slip resistant shoes. Use protective gear suitable for the working conditions and do not wear loose-fitting clothes.
- * Failure to observe this precaution may cause you to get caught in the machine or to slip and fall.
- **When lending the machine to others**

Thoroughly explain the operating procedures and instruct them to read the "Operator's manual" before use.
- * Failure to follow this precaution can cause an accident, resulting in severe injury or death, or damage to the machine.



■ **seat and check your surroundings for safety.**

When starting the engine, be sure to be seated in the operator's seat, check the position of the seat, and check your surroundings for safety.

- * Failure to follow this precaution can cause an unexpected accident.
- **Do not drive or operate the machine or work at night.**

Do not drive or operate the machine or work at night or in poor visible condition.
- * Failure to follow this precaution can cause an unexpected accident.
- **Warm the engine up when it is cold.**

When the engine is cold, be sure to warm it up.
- * Failure to follow this precaution may not allow the machine to sufficiently demonstrate its performance capability.

Caution

- **Take precaution with a hot muffler/exhaust pipe.**

Do not touch the muffler/exhaust pipe while operating the machine or just after the engine is turned off since it will be hot.
- * Failure to follow this precaution can cause burns.
- **Do not modify the machine.**

Do not modify the machine.
- * Failure to follow this precaution can cause an accident or injury, or the machine to malfunction.
- **Inspection and maintenance**

Be sure to perform checks and maintenance before and after operating the machine.
- * Failure to follow this precaution can cause an accident or injury, or the machine to malfunction.
- **Performing the periodic checks and maintenance**

Perform the periodic checks and maintenance every year, and maintain each part. Be sure to change the power steering hose every two years and to check the electrical wires every year.
- * Failure to follow this precaution can cause an accident or the machine to malfunction due to improper maintenance.

1-2 Before operating the machine

Warning

- **Do not carry passengers.**

The riding capacity of this machine is one person. Do not carry passengers.
- * Failure to follow this precaution can cause an unexpected accident.
- **When starting the engine, be sure to be seated in the operator's**

Caution

- **Caution of reel mower**
 - Do not insert hand, foot or other things to the rotating part, where dangerous, during operation or maintenance.

- Remove obstacles such as rocks before using machine, they cause the damage of reel cutter and bed knife, and fry apart to invite an accident. In case the obstacles get caught in the reel cutter, switch the engine off, and remove it after stopping the driving unit completely.
- Protective cover and belt cover prevent the risk of operator, when they damaged, replace them and settled in the proper position.

1-3 Inspection and maintenance before and after operating the machine



- **Add oil and refuel when the engine is cold.**
Do not add oil or refuel when the engine is operating or if the engine is hot.
 - * Failure to follow this precaution can cause the fuel to ignite and cause a fire.
- **Fire is strictly prohibited when refueling**
Do not smoke or use open flames when refueling.
 - * Failure to follow this precaution can cause the fuel to ignite and cause a fire.
- **Take precaution with fuel leaks.**
Be sure to check the fuel pipe and see if it is damaged and fuel leaks.
 - * Failure to follow this precaution can cause fuel to ignite and cause a fire.
- **Close the fuel cap and clean up any spilt fuel.**
After refueling, be sure to securely close the fuel cap and thoroughly clean up any spilt fuel.
 - * Failure to follow this precaution can cause a fire.
- **Fire is strictly prohibited when checking the battery**
Fire is strictly prohibited when checking or charging the battery.
 - * Failure to follow this precaution can cause the battery to ignite and explode, which can cause burns.
- **Do not let electrolyte get on your skin.**
Do not let electrolyte get on your skin or on your clothes. If it gets on your skin or clothes, immediately wash the affected area with water.
 - * Failure to follow this precaution can cause burns or damage to your clothes.
- **Install and remove the battery by following the correct procedure.**
To install the battery, connect the positive (+) battery cable first. To remove the battery, disconnect the negative (-) battery cable first.
 - * Failure to follow this precaution can cause a short circuit, which can cause burns and a fire.



- **Do not allow the electrolyte to go below the "LOWER" level mark.**
Check the electrolyte between the "UPPER" and "LOWER" level marks and that it is not below the "LOWER" level marks.
 - * This comment is just for the battery equipped originally. In case the replacement battery is maintenance-free, you do not need to check the level of electrolyte.
 - * Failure to follow this precaution can cause the pole connector in the container to be exposed from the electrolyte if it is below the "LOWER" level mark, which can cause sparks when starting the engine, and the gas in the container to ignite, causing an explosion.
- **Take precaution with high-pressure oil.**
Always check if the hydraulic fittings and hoses are loose or damaged. When disconnecting the fittings and hoses, release the pressure in the hydraulic circuit.
 - * Failure to follow this precaution can cause the high-pressure oil to break through your skin and cause an injury.



- **Be sure to check the electrical parts and wires.**
Check if the electrical wires are touching other parts, if the covering is damaged, or if the connector is loose every day before operating the machine.
 - * Failure to follow this precaution can cause a short cut and a fire.
- **Do not fill the tires with air over the specified maximum air pressure.**
When filling the tires with air, do not fill the tires over the specified maximum air pressure.
 - * Failure to follow this precaution can cause the tires to explode and cause an injury.
- **Take sufficient precaution with exhaust gas.**
Do not start the engine in an enclosed area. Start the engine outdoors with sufficient air circulation. If you have to start the engine indoors, make sure there is sufficient ventilation.
 - * Failure to follow this precaution can cause you to be poisoned by the exhaust gas, which can result in death.
- **Be sure to check the parking brake lever.**
Check that the brake operation is not faulty and that the parking brake lever is not remarkably loose nor does it have remarkable play.
 - * Failure to follow this precaution can cause an accident.

■ **Remove debris from the muffler and engine.**

Check that there is no grass, debris, or fuel around the muffler and engine or on the brakes every day before operating the machine.

* Failure to follow this precaution can cause a fire.

■ **Turn the engine off while inspection and maintenance.**

Be sure to turn the engine off while inspection, servicing, repairing, or cleaning the machine.

* Failure to follow this precaution can cause you to be pinned under the machine or a personal injury.

■ **Let overheated parts sufficiently cool down before inspection and maintenance.**

Let the parts that overheat such as the muffler and engine to sufficiently cool down before inspection and maintenance.

* Failure to follow this precaution can cause burns.

■ **Perform inspect and maintenance on a flat and stable place.**

Perform inspect and maintenance on a flat and stable place with no traffic risk, using tire chocks, on which the machine will not overturn or move.

* Failure to follow this precaution can cause the machine to overturn and cause an unexpected accident.

■ **Be sure to install the covers.**

Be sure to install any covers that were removed while inspection and maintenance.

* Failure to follow this precaution can cause you to get caught up in the machine or a personal injury.

■ **Correctly use the proper tools for the job.**

Properly manage and correctly use the proper tools necessary for inspection and maintenance.

* Failure to follow this precaution can cause an accident due to improper maintenance.

1-4 When transporting the machine

Warning



■ **Do not operate quick start and stop on a running board.**

Take sufficient precaution when operating on slopes or running boards.

* Failure to follow this precaution can cause an accident such as fall or overturn.

■ **Use a running board with sufficient strength, length, and width.**

When loading or unloading the machine onto a truck, be sure to turn the engine of the truck off on a flat surface that is safe from traffic, set the parking brake to avoid moving,

and chock the wheels. The running board should be non-skid and bear sufficient strength, length, and width.

* Failure to follow these precautions can cause an accident such as fall or overturn.

■ **When the machine is loading / unloading on the truck.**

When the machine is loading onto a truck, it move forward, when the machine is unloading, it move backward.

* Failure to follow this precaution can cause you to loose your balance and cause an accident such as causing the machine to fall or overturn.

■ **Securely fasten the machine to the truck with a rope.**

When loading the machine onto a truck and moving it, set the parking brake and fasten the machine to the truck with a rope that has sufficient strength.

* Failure to follow this precaution can cause the machine to fall from the deck of the truck and cause an accident.

1-5 When moving and taking the machine on or off a field

Warning



■ **Do not operate the machine on public roads.**

This machine is not authorized as a special motorized vehicle. Do not operate it on public roads.

* Failure to follow this precaution is subject to punishment for violating the traffic laws.

■ **Check your surroundings for safety and slowly accelerate.**

Start the engine after checking your surroundings for safety. Accelerate slowly, do not start quickly.

* Failure to follow this precaution can cause a personal injury.

■ **Take precaution with the shoulder of the road when moving.**

On roads with ditches or on roads where both sides are inclined, take sufficient precaution with the shoulder of the road.

* Failure to follow the precaution can cause the machine to fall.

■ **Do not start, stop, or turn suddenly, or operate at excessive speeds.**

Start and stop slowly. When turning, sufficiently reduce your speed. Also, sufficiently reduce your speed when operating on slopes, bumpy roads, or curves.

* Failure to follow this precaution can cause the machine to overturn or fall, causing damage to the machine.

■ **Use a running board to cross ditches.**

When entering a field, crossing ditches, or traveling over a soft area, be sure to use a

running board. Use non-skid running board bearing sufficient strength, length, and width.

- * Failure to follow this precaution can cause the machine to have an accident by slipping or overturning.



- **Set the parking brake while warming the engine up.**

- * Failure to follow this precaution can cause the machine to move spontaneously and cause an accident.

- **When operating at high speeds do not operate the brake pedal suddenly.**

- * Failure to follow this precaution can cause the machine to overturn or fall.

1-6 When operating the machine



- **Do not substitute weight for people or cargo.**

Do not load people or cargo as a substitute for weight.

- * Failure to follow this precaution can cause an injury.

- **Wear protective gear.**

Be sure to wear safety glasses, a helmet, and slip resistant shoes.

- * Failure to follow this precaution can cause an injury.

- **Do not go or place your feet under the operating machine.**

Do not go or place your feet under the operating machine.

- * Failure to follow this precaution can cause a personal injury when the operating machine is lowered.

- **Before operating, remove obstacles in the field such as rocks, etc.**

- * Failure to follow this precaution can cause an accident or injury, or the machine to malfunction.

- **Do not start, stop, or turn suddenly, or operate at excessive speeds.**

Start and stop slowly. When turning, sufficiently reduce your speed.

- * Failure to follow this precaution can cause the machine to overturn or fall, causing damage to the machine.

- **Operate or work on a slope with extreme care.**

The balance of the machine worsens on slopes and bumps. Be sure to decrease your speed sufficiently and operate and work slowly.

- * Failure to follow this precaution can cause the machine to overturn or fall, causing damage to the machine.

- **Be sure to turn the engine off when inspecting the mower.**

When a malfunction of the reel cutter occurs such as jamming the grass or rocks, be sure to turn the engine off to inspect and make adjustments.

- * Failure to follow this precaution can cause you to get caught up in the machine.

- **Keep away from children.**

Keep away from children and do not operate the machine near them.

- * Failure to follow this precaution can cause a personal injury.

- **Inspect and perform maintenance immediately if unusual vibration occurs.**

If unusual vibration occurs, stop the engine immediately, then inspect the cause and repair it if necessary.

- * Failure to follow this precaution can cause an accident or injury, or the machine to malfunction.

- **Keep bystanders away from grass discharge area.**

Grass, dust, sand and rocks will fly out. In addition, be sure to install the reel cover.

- * Failure to follow this precaution can cause a personal injury.

- **Do not look aside. Do not operate or travel with no hands.**

- * Failure to follow this precaution can cause a personal injury or material damage.

- **When leaving the machine, stop it at level place and stop the engine.**

Stop the machine at flat and stable place, then turn the engine off, set the parking brake, chock the wheel, lower the mower unit, and remove key from ignition switch.

- * Failure to follow this precaution can cause the machine to move spontaneously and cause an accident.

- **Do not carry passengers.**

The riding capacity of this machine is one person. Do not carry passengers.

- * Failure to follow this precaution can cause an unexpected accident.

- **Precautions for operating on slopes**

When operating on a slope, the ground will not be even and there may be bumps and rocks, which can cause the machine to incline suddenly.

Therefore, never operate the machine on a slope of 15 degrees or more, or in areas in which there is danger of it overturning or slipping.

- * Remove holes, rocks, or tree roots (and other illegally thrown objects) and check that these items do not exist before operating the machine on a slope.

- * When operating the machine on a slope, work along the contour line and make turns where the grade of the slope is low.

1-7 After operating the machine and storage



■ Add oil and refuel when the engine is cold.

Do not add oil or refuel when the engine is operating or if the engine is hot.

- * Failure to follow this precaution can cause the fuel to ignite and cause a fire.

■ Do not open the radiator cap when the radiator is hot.

When the radiator has overheated, do not open the radiator cap.

- * Failure to follow this precaution can cause scalding water to shoot out and cause burns.

■ Cover the machine with a sheet after it has sufficiently cooled down.

If covering the machine with a sheet, cover it after the muffler and engine have sufficiently cooled down.

- * Failure to follow this precaution can cause a fire.

■ Install and remove the battery by following the correct procedure.

To install the battery, connect the positive (+) battery cable first. To remove the battery, disconnect the negative (-) battery cable first.

- * Failure to follow this precaution can cause a short circuit, which can cause burns and a fire.



■ Perform inspection and maintenance on a flat and stable place.

Set lower the mower unit and perform inspection and maintenance on a flat and stable place on which the machine will not overturn or move.

- * Failure to follow this precaution can cause the machine to overturn and cause an unexpected accident.

■ Remove debris from the muffler and engine.

Check that there is no grass, debris, or fuel around the muffler and engine and on the brakes every day before operating the machine.

- * Failure to follow this precaution can cause the fuel to ignite and cause a fire.

■ Be sure to inspect the electrical components and wires.

Inspect if the electrical cables are touching other parts, if the cover is disconnected, or if the connector is loose every day before operating the machine.

- * Failure to follow this precaution can cause a fire.

■ Remove the battery and pull out the key when long term storage

Remove the battery and pull out the key when not using the machine and keep in storage for a long time.

■ Take precaution with high pressure hydraulic oil.

Always check if the fittings and hoses are loose or damaged. When disconnecting the joints and hoses, release the pressure in the hydraulic circuit.

- * Failure to follow this precaution can cause the high-pressure hydraulic oil to break through your skin and cause an injury.



■ Turn the engine off while inspecting and maintenance.

Be sure to turn the engine off while checking, servicing, repairing, or cleaning the machine.

- * Failure to follow this precaution can cause you to be pinned under the machine or a personal injury.

■ Be sure to install the covers.

Be sure to install any covers that were removed during inspection and maintenance.

- * Failure to follow this precaution can cause you to get caught up in the machine or a personal injury.

■ Let overheated parts sufficiently cool down before inspection and maintenance.

Let the parts that overheat such as the muffler and engine to sufficiently cool down before checking or performing maintenance.

- * Failure to follow this precaution can cause burns.

- Inspect the rotation speed of engine at the dealer of Baroness to make sure the safety and accuracy of engine.
- Please consult with the dealer of Baroness, when the large scale repair or maintenance get necessary.
- Be sure to use the genuine parts and accessory, in order to use the machine in safe and with best performance. Pay attention that it is possible not to warrant the products when using part and accessory of third party.

2. Specifications

Model		LM2700				
Mower unit type		26in		22in		
Dimensions	Total length		118.11in	300cm	←	
	Total width	During operation	124.41in	316cm	115.35in	293cm
		During transport	89.76in	228cm	←	
	Total height	Roof	86.61in	220cm	←	
		Roof bar	80.31in	204cm	←	
Steering wheel		59.06in	150cm	←		
Weight	Machine (empty fuel tank) with ROPS	3,977.07lb	1,804kg	3,877.87lb	1,759kg	
		Minimum turning radius				110.24in
Engine	Model		Kubota V2203-M		←	
	Type		Vertical water-cooled 4-cycle diesel engine		←	
	Total displacement		134.05cu.in.	2,197cm ³ (2.197L)	←	
	Maximum output		33.0kW(44.9PS)/2,600rpm		←	
Fuel tank capacity		Diesel 12.42U.S.gal.	Diesel 47.0dm ³ (47.0L)	←		
Fuel consumption		184 g/PS · h(rated output)	250 g/kW · h(rated output)	←		
Engine oil capacity		2.56U.S.gal.	9.7dm ³ (9.7 L)	←		
Operating width (Mowing width)		109.06in	277cm	100.00in	254cm	
Operating height (Mowing height)		0.315-1.772in(*1)	8 - 45mm(*1)	←		
Blades		9		←		
Drive	Traveling		HST (2WD/4WD selectable)		←	
	Mowing		Hydraulic		←	
Speed(HST)	Forward	2WD: 0 - 13.67mph	2WD: 0 - 22.0km/h	←		
		4WD: 0 - 8.70mph	4WD: 0 - 14.0km/h	←		
	Reverse	0 - 4.97mph	0 - 8.0km/h	←		
Speed (Mechanical)		-		←		
Efficiency		7.6acres/hour (8.70 mph x mowing width x 0.8)	31,024m ² /h (14.0 km/h x mowing width x 0.8)	7.0acres/hour (8.70 mph x mowing width x 0.8)	28,448m ² /h (14.0 km/h x mowing width x 0.8)	
Maximum inclination for operation		15 degrees		←		
Tire size	Front wheel		26.5×14.00 - 12		←	
	Rear wheel		20×12.00 - 10		←	
Tire pneumatic pressure	Front wheel		21.75psi		150kPa(1.5 kgf/cm ²)	←
	Rear wheel		20.30psi		140kPa(1.4 kgf/cm ²)	←
Battery		105D31R		←		

Maximum engine rpm is set up 2,600 rpm before shipment.

(*1) For 0.394 in (10 mm) or less mowing height, the optional bedknife is required

■ Sound Pressure Level

This machine was confirmed to have a continuous A-weighted sound pressure level of 88dB by measuring identical machines in accordance with the procedure specified in ISO 5395-1:2013.

■ Sound Power Level

This machine was confirmed to have a sound power level of 103dB by measuring identical machines in accordance with the procedure specified in directive 2000/14/EC.

■ Vibration Level

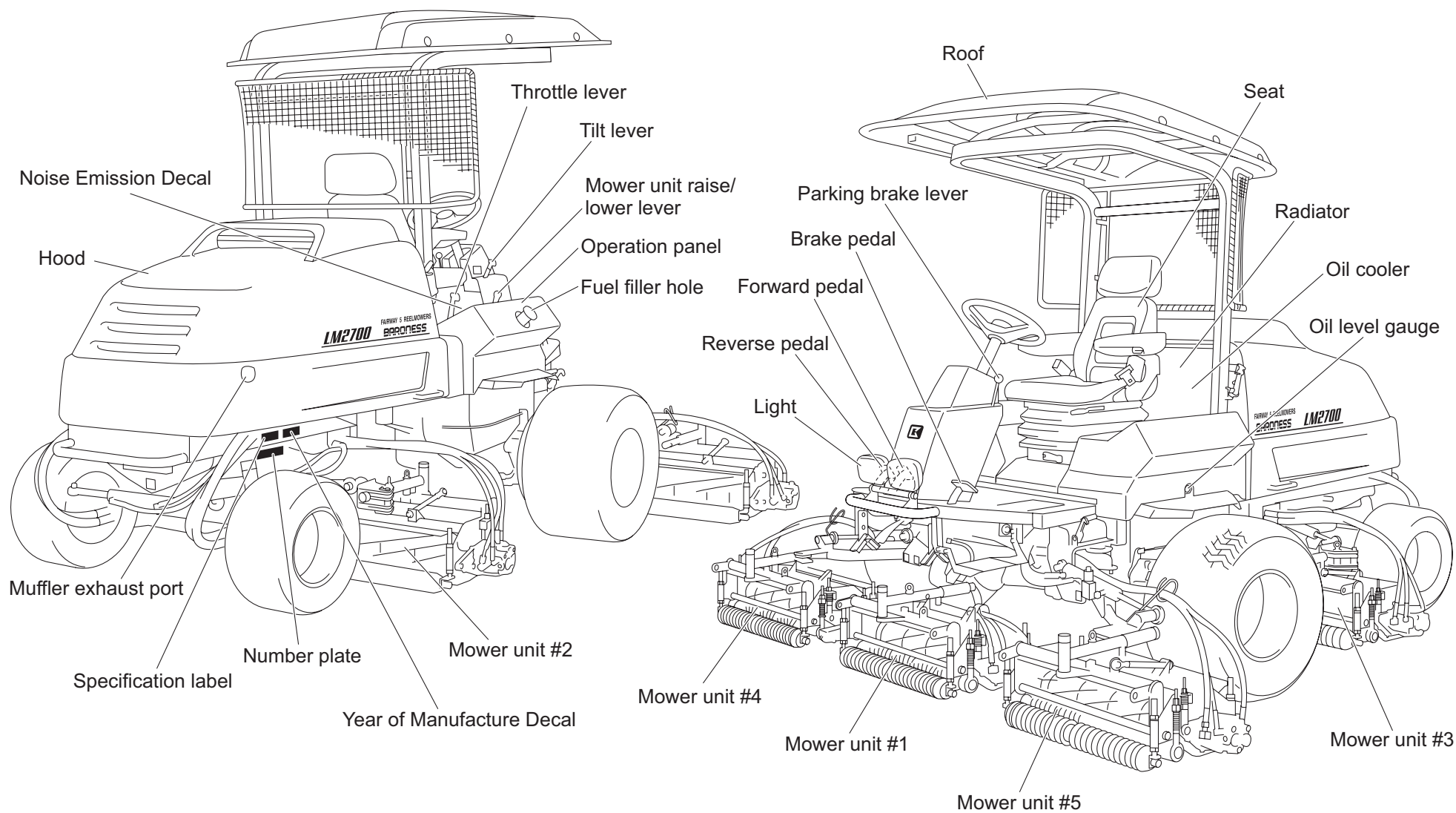
Hand-arm vibration

This machine was confirmed not to exceed a vibration level of 2.5 m/s² to hands and arms by measuring identical machines in accordance with the procedure specified in ISO 5349-1:2001-5349-2:2001.

Whole Body

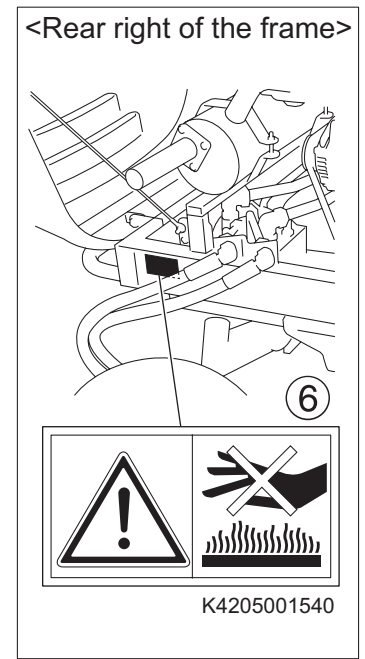
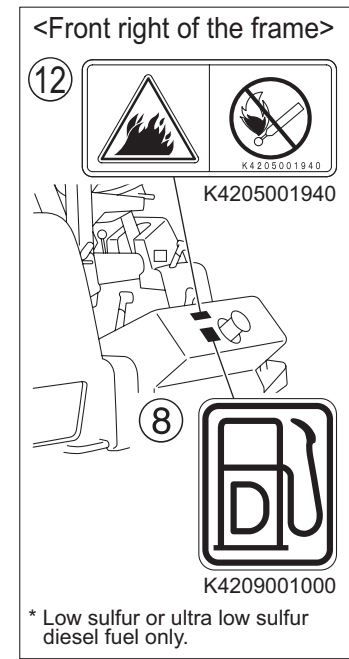
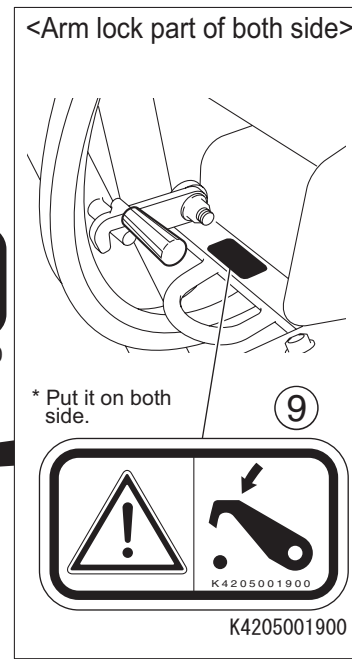
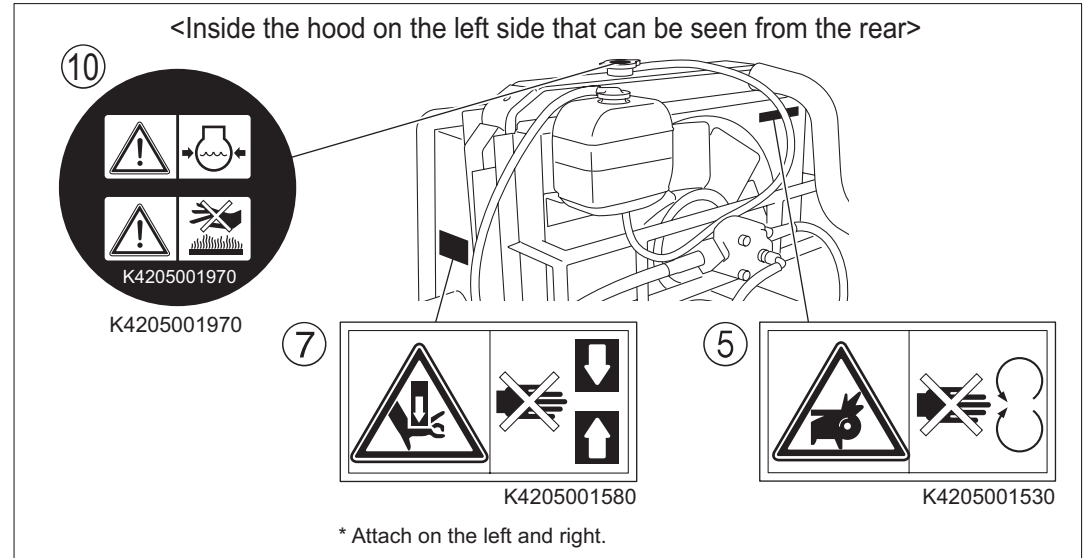
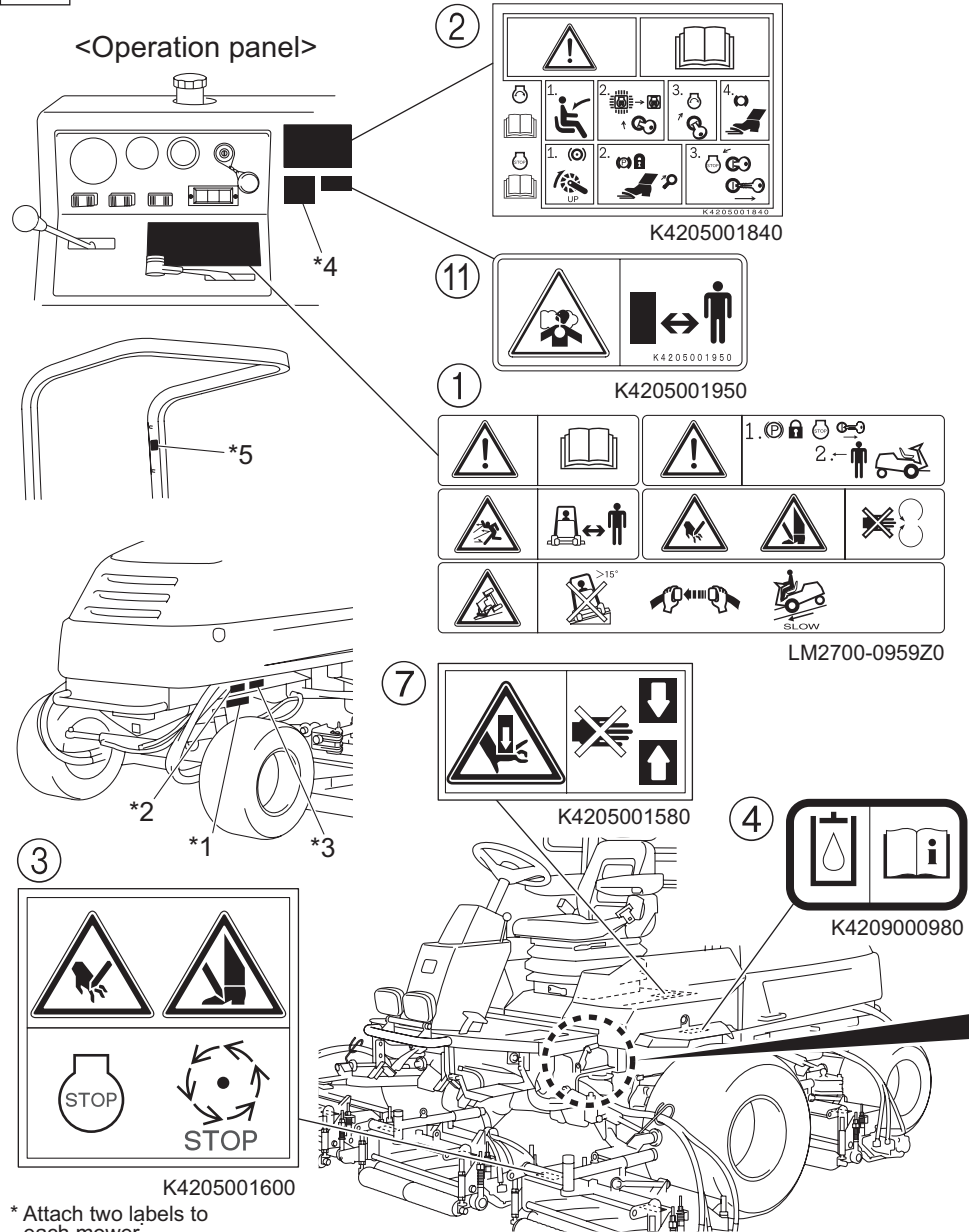
This machine was confirmed to transmit a vibration level of 0.52 m/s² to the whole body by measuring identical machines in accordance with the procedure specified in ISO 2631-1:1997-2631:2003

3. Names of various sections



4. Warning label and operation label

4-1 Attachment locations



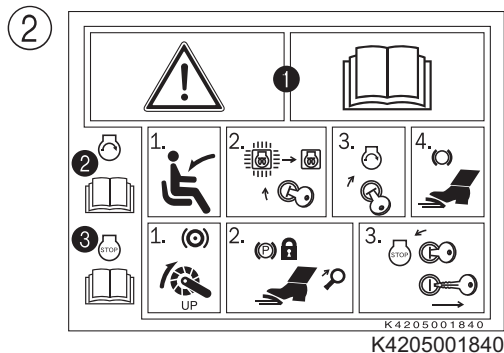
4-2 Description

Attach the warning labels and operation labels in the locations that are close to dangerous parts and in which the labels can be easily seen.
If a label is damaged or peels off, attach a new label to the machine.



- 1 **Warning** : Read the Operator's manual.
 2 **Warning** : Leave the machine after setting the parking brake, turning the engine off, and removing the engine key.
 3 **Danger** : Flying objects - Excluding the operator, keep a safe distance away from the machine.
 4 **Danger** : Cutting hands or feet - Do not put near moving parts.
 5 **Danger** : Overturning - Do not operate the machine on a slope of 15 degrees or more due to danger of overturning.
 When going down a slope, fasten the seat belt and operate the machine at slow speeds.

LM2700-0959Z0




K4205001840



- 1 **Warning** : Read the Operator's manual
 2 Engine starting-up procedure (please read the Operator's manual.)
 ① Take a seat.
 ② Turn the key to the "Glow" position, and wait until the "thermo-start" lamp goes out.
 ③ Turn to the "START" position.
 ④ Step on the brake pedal and release the parking braking.
 3 : Engine stop procedure
 ① Turn off the reel rotation switch and raise the mower.
 ② Apply parking brake system.
 ③ Turn the key to the "STOP" position and remove it.

- 3 **Danger** : Cutting hands or feet
 If you do not stop rotating the mower and the engine is not turned off, there is a risk that you may get injured.
 K4205001600
- 4 : High-pressure oil symbol
 Read the Operator's manual.
 K4209000980
- 5 **Danger** : Cutting of Hand
 Placing your hand near the fan and the belt while the engine is running could result in injury.
 K4205001530
- 6 **Caution** : Hot surface
 Do not touch. It can cause burns.
 K4205001540
- 7 **Caution** : Pinch
 You can get pinched.
 K4205001580
- 8 : Fuel filler port (diesel fuel only)
 Low sulfur or ultra low sulfur diesel fuel only.
 K4209001000
- 9 : Mower lock lever
 When storing the machines with raising #4 & #5 mowers, engage the mower locking lever.
 K4205001900
- 10 : Be careful about blowout of coolant water
 Do not open unless cooled down.
 K4205001970
- 11 **Warning** : Decal, caution to exhaust gas
 Caution for exhaust gas.
 K4205001950
- 12 **Danger** : Decal, keep away from fire
 Keep fire away.
 K4205001940

*1 Number Plate

 KYOEISHA CO.,LTD.		MADE IN JAPAN	
○ Head Office 1-26.Miyuki-cho, Toyokawa,Aichi-pref. 442-8530 Japan.	model		
	serial No.		

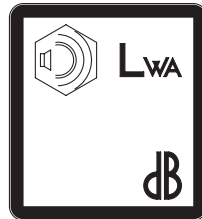
*2 Specification label

BARONESS Ride-on lawnmower   KYOEISHA CO.,LTD.	Specifications	
	Model	
Rating output		
Total weight		


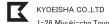
*3 Year of Manufacture decal

YEAR OF MANUFACTURE <div style="border: 1px solid black; width: 80px; height: 30px; margin: 0 auto;"></div>

*4 Noise Emission Decal



*5 ROPS authentication decal

 BARONESS	
This 2-post ROPS passed the official testing complying with ISO 21299:2009	
FIT :	<input style="width: 50px; border: 1px dashed black;" type="text"/>
Reference Mass :	<input style="width: 50px; border: 1px dashed black;" type="text"/> kg
 KYOEISHA CO.,LTD. 1-26 Miyuki-cho,Toyokawa-city, Aichi-pref.442-8530 JAPAN MADE IN JAPAN K4209001500	

5. Inspection before use

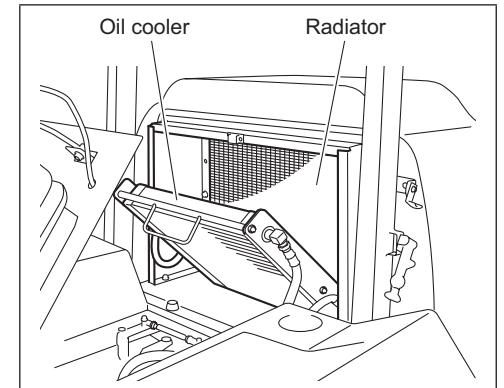
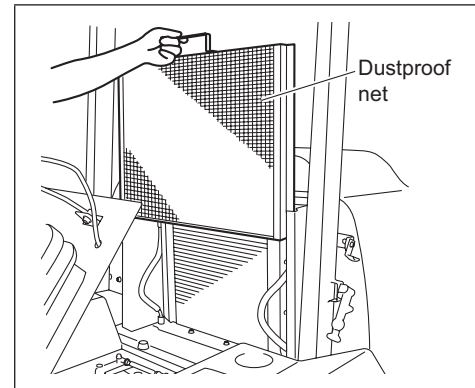


Caution

- Please be sure to check the following matter before putting the engine into operation.

5-1 Cleaning of the radiator and oil cooler

Be sure to clean when the dust has adhered to the radiator, oil cooler, and dustproof net. When you operate it in the dusty place, please try to clean a little early



Caution

- If it does not clean, it will become overheating of the engine and the cause of the seizure. Moreover, it also becomes cause of the damage of the hydraulic equipment.

5-2 Inspection of the radiator and coolant level

Caution

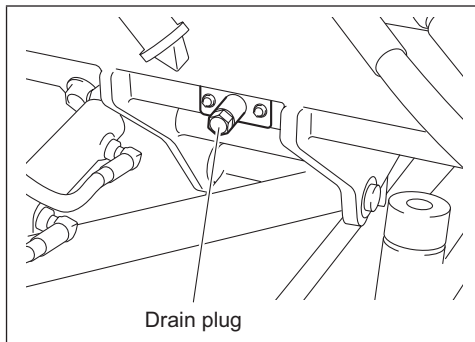
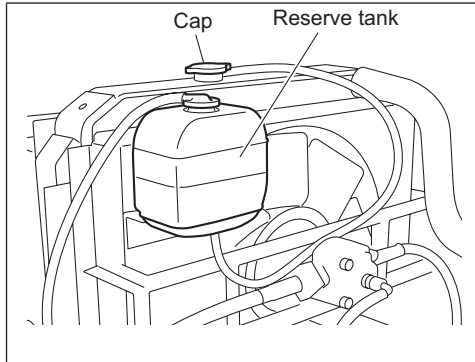


- Perform the inspection when the engine is cold. The radiator cap is the pressure type. If the radiator cap is removed when the engine is high temperature, the steam blows off and it may cause burns. After the water temperature and the pressure falls, apply a thick cloth etc. to the cap. Then turn to the left gradually, and loosen and remove.

- Check that the coolant level of the reserve tank is between "FULL" and "LOW".
- When the coolant is below the line of "LOW", add the coolant from the cap part of the reserve tank to the line of "FULL".

When there is no coolant in the reserve tank, supply it also from the cap part of the radiator to the top.

- Do not open the radiator cap in normal inspection.
- When the coolant level decreases, supply clean water only.
- Please drain the cooling water before winter or mix the long life coolant.
- Perform the drainage by the drain plug in the left side of the machine.



Standard long life coolant (LLC) consistency and the freezing point

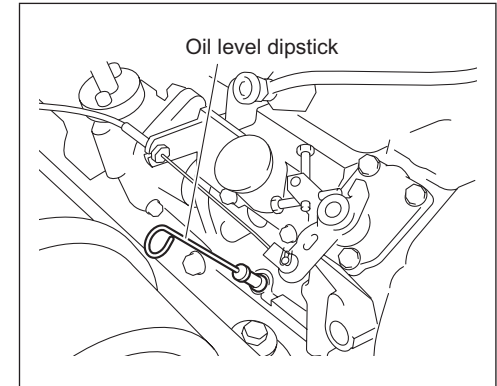
Freezing point	LLC consistency (volume %)
Up to -10 °C	20%
Up to -15 °C	30%
Up to -20 °C	35%
Up to -25 °C	40%

* The radiator coolant capacity of this machine is about 12L. (including the reserve tank)

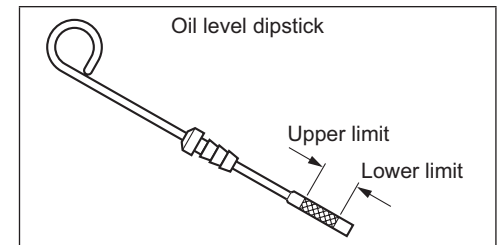
5-3 Inspection and refilling of engine oil



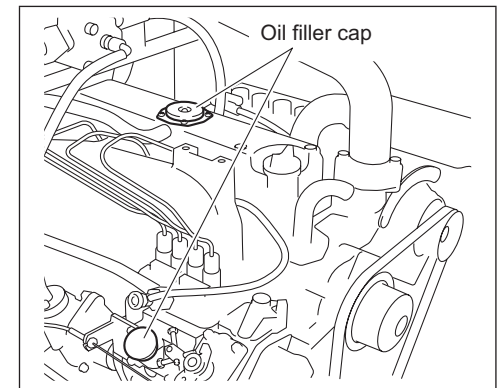
Put the engine on the level surface, and check the level of the oil by the dipstick. It will be the proper quantity, if the oil level is between the upper and lower limit when the dipstick is fully inserted. If the oil level is low, add the engine oil, and if the oil is dirty, exchange the oil. Perform the oil level inspection when the engine is suspended and after 10 to 20 minutes or more past. Please keep in mind that it becomes engine failure and cause of accident if the engine oil added too much.



Perform refilling of the engine oil from the oil filler. It takes some time for the added engine oil to fall in oil pan. Inspect the oil level again in 10 to 20 minutes after adding the engine oil.



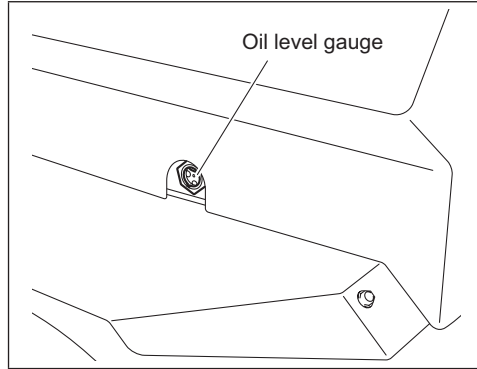
- * Never mix different kind of engine oil.
- * Be sure to use engine oil that is classified as API Service Grade CF or higher, with an SAE Viscosity that is appropriate for the operating environment (ambient temperature).
- * The engine oil capacity is approximately 9.7L



5-4 Inspection of the hydraulic oil

Level the engine and always check whether the hydraulic oil is contained to the center of the oil level gauge. When refilling the hydraulic oil, use the Shell Tellus S2M46 or equivalent type.

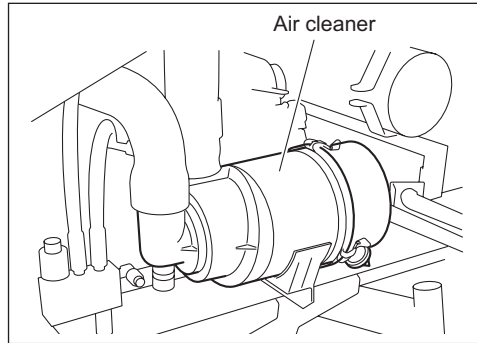
- * Never mix different kind of the hydraulic oil.
- * The tank capacity is approximately 43L.



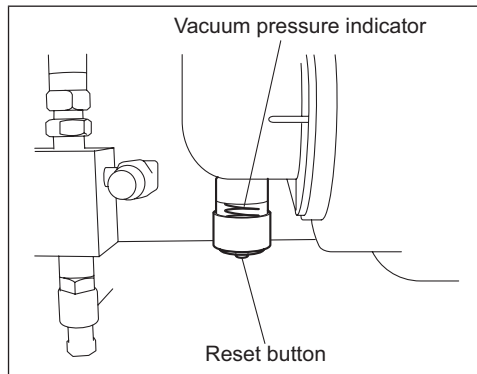
5-5 Cleaning of the air cleaner

Perform the inspection with the vacuum pressure indicator. If the element of the air cleaner becomes dirty, the red ring is visible in the vacuum pressure indicator.

Remove and clean the air cleaner.



If the element of the air cleaner is dirty, it will become the cause of the engine malfunction. When it's dirty, clean it by carefully tapping the element or blowing air from inside so that the element may not be damaged. Attach the element after clean up and push the reset button. Exchange the element of the air cleaner every 200 hours.



5-6 Inspection of the engine and its surroundings



Please refer to "Operating and instruction manual" for engine for handling of the engine.

- 1) The parts of the fuel system should 111 check whether there is neither the crack nor the leak, and replace it with new one if necessary.
- 2) When the grass, the leaf, etc. have jammed to the inside of the muffler, and exhaust pipe or the surroundings, blow out by air.

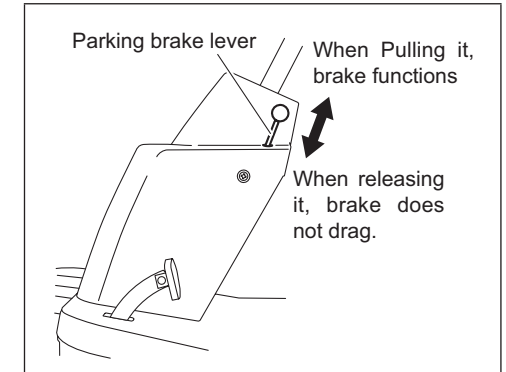
5-7 Inspection of the tires

Inspect the tire pressure, crack, damage, and unusual wear.

Tire pressure	
Front wheel	150kPa (1.5kgf/cm ²)
Rear wheel	140kPa (1.4kgf/cm ²)

5-8 Inspection of brake

- 1) Foot brake
 - Press down the brake pedal to confirm it functions.
 - * When it does not function well, adjust or repair it before operating.
- 2) Parking brake
 - Please check whether the parking brake works during pressing foot brake.
 - Please confirm brake is not dragging, when pressing foot brake and release the parking brake.



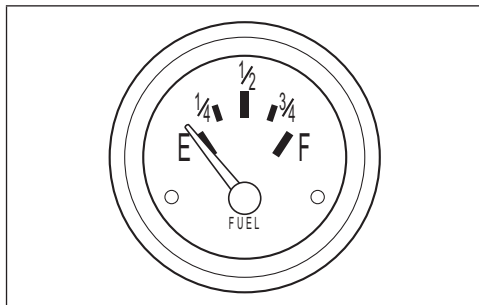
5-9 Supply of fuel

Stay the machine on the level.

Fuel gauge approaches E (Empty), supply fuel (diesel) immediately.

Over-supply of the fuel is possible to cause the overflow of fuel from the fuel cap, when operating the machine on the slope.

- * Use the low sulfur or ultra low sulfur diesel fuel
- * Capacity of Fuel tank is about 47ℓ.



Danger



- Be sure to keep the following precaution, because the fuel is highly flammable. (Put any naked flame and cigarette off.) Keep fire away when supplying the fuel.
- Before supplying the fuel, stop the engine and cool it down enough.
- To prevent a fire, keep the machine clean and free of dust, grease and oil.
- Clean up any spilled fuel.
- Don't oversupply the fuel. It may cause the fire, if the fuel overflow from the fuel tank.
- Use diesel fuel only. Don't supply gasoline.

5-10 Inspection of battery



Refer to the Battery's instruction manual.

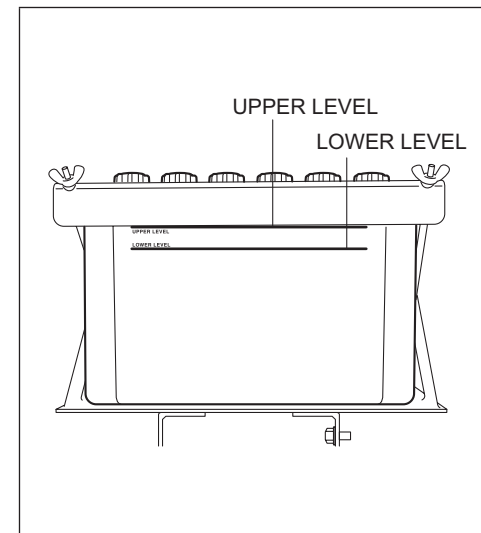
The machine exported from Japan mounts the battery of refillable type. (FX105D31R)

Inspect and maintenance the battery periodically.

Check the electrolyte level between "UPPER LEVEL" (maximum level line) and "LOWER LEVEL" (minimum level line).

When the electrolyte level is falling below to half between "UPPER LEVEL" and "LOWER LEVEL", add the refining water to "UPPER LEVEL" immediately.

The replacement battery (EXIDE 27-60), Baroness recommends to use, is maintenance-free. It may cause injury and accident to refill water in force. Be sure not to maintenance it.



Danger



- Do not drink electrolyte and avoid contact with skin, eyes or clothing. Wear protective glasses and protective clothes.
- Charging battery, battery generate explosive hydrogen gas as battery electrolyte contains sulfuric acid which is deadly poison and causes severe burns.
- Never smoke near the battery and keep sparks and flames away from it.
- When removing the battery, remove the negative (-) cable first, and positive (+) cable last. Install the battery, assemble the positive (+) cable first and negative (-) cable last.
- When you connect the battery cables, connect the positive and negative side correctly. When you mistake, the battery and the electrical equipment may be damaged. (The red-color cable is the positive side.)
- If a dry cloth is used to clean the battery, the static electricity may occur and there is danger of fire or explosion.

6. Fastening of each portion

Important

A number of bolts are used in each part of this machine. be sure to re-tighten the bolts and nuts, because they may be loosened at the earlier stage of the use.

6-1 Tightening torque

As to the bolts and nuts without any special instruction, tighten them in appropriate tightening torque with proper tool.

Too much tightening may cause the looseness or damage of the screw.

The strength of tightening is determined by types of screws, strength, the friction of thread face or base face and others.

The table below is for the galvanized or parkerized bolts.

In case that the strength of internal thread is weak, it is not applied.

Do not use rusty or sand attached "screw."

Otherwise, it may cause insufficient tightening even if you apply the specified tightening torque.

The friction of the screw face becomes higher and the tightening torque is canceled out by the friction, therefore sufficient tightening cannot be applied.

If "screw" is wet by water or oil, do not tighten it with normal tightening torque.


If the screw is wet, the torque coefficient will get smaller and it may result in too much tightening.

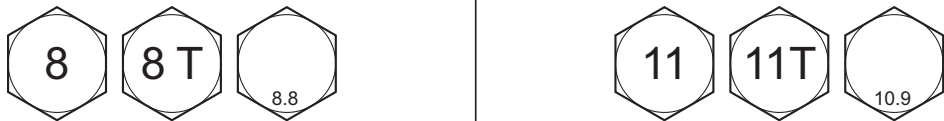
Too much tightening may cause looseness by the screw stretched or result in damage.

Do not use a bolt experienced too much burden.

Using the impact wrench requires the skill.

Do exercise as much as possible for steady tightening.

Nominal diameter	General bolt		
	Strength classification 4.8		
			
	N-m	kgf-cm	lb-in
M5	3 - 5	30.59 - 50.99	26.55 - 44.26
M6	7 - 9	71.38 - 91.77	61.96 - 79.66
M8	14 - 19	142.76 - 193.74	123.91 - 168.17
M10	29 - 38	295.71 - 387.49	256.68 - 336.34
M12	52 - 67	530.24 - 683.20	460.25 - 593.02
M14	70 - 94	713.79 - 958.52	619.57 - 831.99
M16	88 - 112	897.34 - 1142.06	778.89 - 991.31
M18	116 - 144	1,182.85 - 1,468.37	1,026.72 - 1,274.54
M20	147 - 183	1,498.96 - 1,866.05	1,301.10 - 1,619.73
M22	295	3,008.12	2,611.05
M24	370	3,772.89	3,274.87
M27	550	5,608.35	4,868.05
M30	740	7,545.78	6,549.74

Nominal diameter	Heat-treated bolt					
	Strength classification 8.8			Strength classification 10.9		
						
	N-m	kgf-cm	lb-in	N-m	kgf-cm	lb-in
M5	5 - 7	50.99 - 71.38	44.26 - 61.96	7 - 10	71.38 - 101.97	61.96 - 88.51
M6	8 - 11	81.58 - 112.17	70.81 - 97.36	14 - 18	142.76 - 183.55	123.91 - 159.32
M8	23 - 29	234.53 - 295.71	203.57 - 256.68	28 - 38	285.52 - 387.49	247.83 - 336.34
M10	45 - 57	458.87 - 581.23	398.30 - 504.51	58 - 76	591.43 - 774.97	513.36 - 672.68
M12	67 - 85	683.20 - 866.75	593.02 - 752.34	104 - 134	1,060.49 - 1,366.40	920.50 - 1186.03
M14	106 - 134	1,080.88 - 1,366.40	938.21 - 1,186.03	140 - 188	1,427.58 - 1,917.04	1,239.14 - 1,663.99
M16	152 - 188	1,549.94 - 1,917.04	1,345.35 - 1,663.99	210 - 260	2,141.37 - 2,651.22	1,858.71 - 2,301.26
M18	200 - 240	2,039.40 - 2,447.28	1,770.20 - 2,124.24	280 - 340	2,855.16 - 3,466.98	2,478.28 - 3,009.34
M20	245 - 295	2,498.27 - 3,008.12	2,168.50 - 2,611.05	370 - 450	3,772.89 - 4,588.65	3,274.87 - 3,982.95
M22	-	-	-	530	5,404.41	4,691.03
M24	-	-	-	670	6,831.99	5,930.17
M27	-	-	-	1,000	10,197.00	8,851.00
M30	-	-	-	1,340	14,628.78	11,860.34

6-2 Tightening torque by model

LM2700

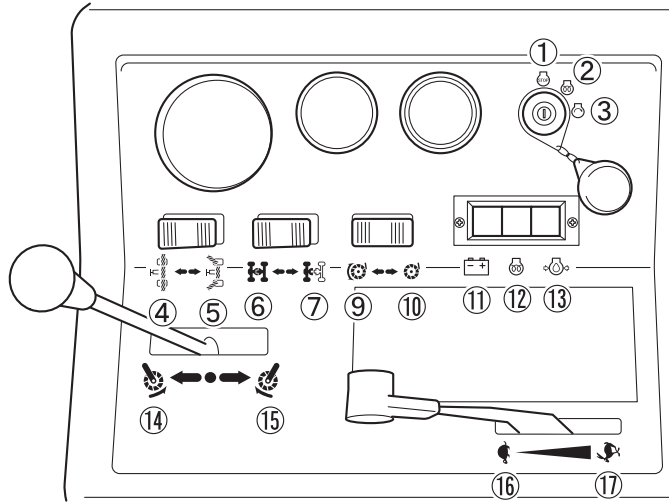
Tighten the following bolts and nuts at the torque specified in the table.

For thread locking adhesive, apply a middle strength thread locker (ThreeBond 1322 or equivalent anaerobic sealant).

Location		Code	Part name	Tightening torque			Thread locking adhesive
				N-m	kgf-cm	lb-in	
Front wheel	Motor housing	K0014160402	Bolt, heat-treated M16-40P1.5	152 - 188	1549.94 - 1917.04	1345.35 - 1663.99	—
	Motor	K0013140502	Bolt, heat-treated M14-50	100	1019.7	885.1	—
	Wheel mounting base	1•1/4-18UNF	Slotted nut (Hydraulic motor)	400 - 430	4078.80 - 4384.71	3540.40 - 3805.93	—
	Disc brake	K001A080401	Bolt, 13T W/HEX. HOLE, M8-40	28 - 38	285.52 - 387.49	247.83 - 336.34	—
	Wheel	K0014120652	Bolt, heat-treated M12-65P1.5	67 - 85	683.20 - 833.75	593.02 - 752.34	—
	Front axle	K0015200702	Bolt, heat-treated M20-70P1.5	370 - 450	3772.89 - 4588.65	3274.87 - 3982.95	—
Rear wheel	Motor housing	K0138240002	24 slotted nut high P1.5	180 - 200	1835.46 - 2039.40	1593.18 - 1770.20	—
	Motor	K0014120652	Bolt, heat-treated M12-65P1.5	67 - 85	683.20 - 866.75	593.02 - 752.34	—
Brake ass'y		K1720000190 (accessories)	Bolt, heat-treated M12P1.75	150 ± 15	1529.55 ± 152.96	1327.65 ± 132.77	○
Engine area D	engine bracket	K0012120352	Bolt, heat-treated M12-35P1.25	67 - 134	683.20 - 1366.40	593.02 - 1186.03	—
		K0011100302	Bolt, heat-treated M10-30P1.25	45 - 76	458.87 - 774.97	398.30 - 672.68	—
	engine mount	K0013121102	Bolt, heat-treated M12-110	67 - 134	683.20 - 1366.40	593.02 - 1186.03	—
	Joint	K001A100401	Bolt, 13T W/HEX. HOLE, M10-40	80	815.76	708.08	—
		K0010140302	Bolt, heat-treated M14-30	106 - 188	1080.88 - 1917.04	938.21 - 1663.99	—
		K0010100402	Bolt, heat-treated M10-40	45 - 76	458.87 - 774.97	398.30 - 672.68	○
Rear wheel	Kingpin stopper	K0010120502	Bolt, heat-treated M12-50	52 - 67	530.24 - 683.20	460.25 - 593.02	—
	Tie rod end	K1610000020	Slotted nut of tie rod end RH	45	458.87	398.3	—
		K1611000020	Slotted nut of tie rod end LH	45	458.87	398.3	—
Piston pump		K0010120502	Bolt, heat-treated M12-50	67 - 134	683.20 - 1366.40	593.02 - 1186.03	—
Bed knife (bottom blade)		K0071000092	Screw, ht flat head M10-20	29 - 38	295.71 - 387.49	256.68 - 336.34	—
Mower rotating fitting		K0011100302	Bolt, heat-treated M10-30P1.25	29 - 38	295.71 - 387.49	256.68 - 336.34	—
Pedal stopper		K0010100702	Bolt, heat-treated M10-70	29 - 38	295.71 - 387.49	256.68 - 336.34	—
Gear pump flange (Piston pump)	K001A080601		Bolt, 13T W/HEX. HOLE, M8-60	24.5	249.83	216.85	—
	K001A080251		Bolt, 13T W/HEX. HOLE, M8-25	24.5	249.83	216.85	—
Gear pump flange (Engine)		K001A080251	Bolt, 13T W/HEX. HOLE, M8-25	24.5	249.83	216.85	—
Gear motor flange		K001A060301	Bolt, 13T W/HEX. HOLE, M6-30	10.8	110.13	95.59	—
Diff-lock valve		K001A100151	Bolt, 13T W/HEX. HOLE, M10-15	29 - 38	295.71 - 387.49	256.68 - 336.34	—

7. Operation method of each part

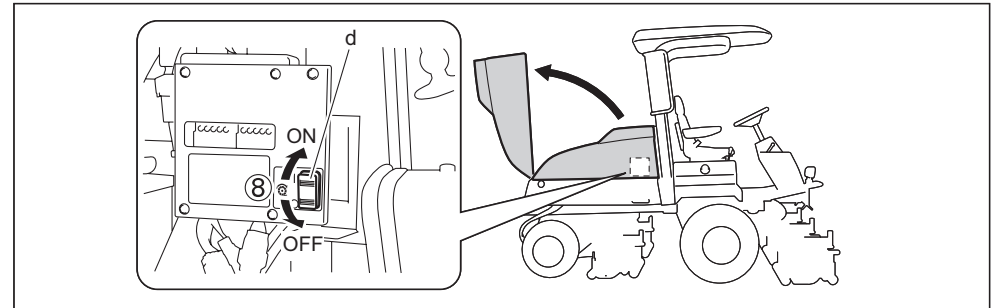
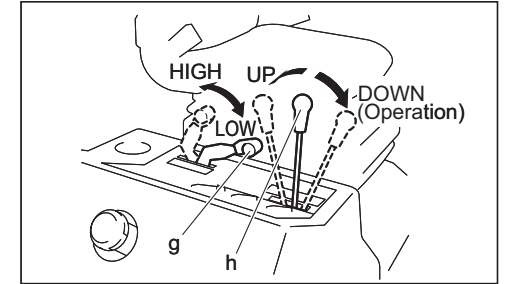
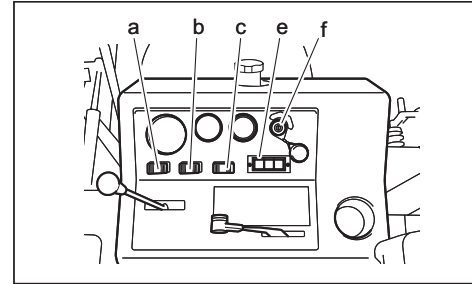
Explanation of operation panel



No.	Decal	Description	No.	Decal	Description	No.	Decal	Description
①		Stop	⑦		2WD	⑬		HP of engine
②		Glow	⑧		Backlapping	⑭		Lowering mowers
③		Start	⑨		Reel rotating	⑮		Raising mowers
④		Mowing	⑩		Reel stop	⑯		Low speed
⑤		Travelling	⑪		Charging battery	⑰		High speed
⑥		4WD	⑫		Thermo start			

Switch and levers on the operation panel

- a. Travelling –Mowing changeover switch
- b. 2WD-4WD changeover switch
- c. Reel rotating switch
- d. Reel reverse rotation switch
- e. Pilot lamp
- f. Key switch
- g. Throttle lever
- h. Mower unit raise/lower lever



7-1 About the mechanical operation

Caution

Check whether the operation state of each part is good, and the brake disc, tires, steering, and mower do not have abnormalities in particular before operating the engine. In any cases, operate the engine by the speed that can carry out the urgency stop. Locate and remove all debris, in the operating area before using equipment.

7-2 Before starting engine

Warning



- Inspect the area where the equipment will be used.
- Inspect whether there are no damages and the cover/guard are securely fastened in place.
- Never operate the engine without proper ventilation.

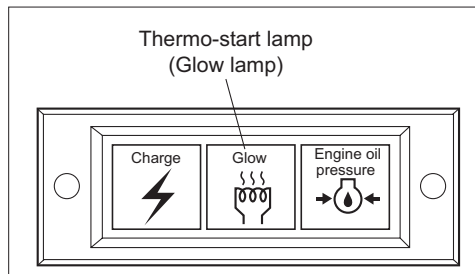
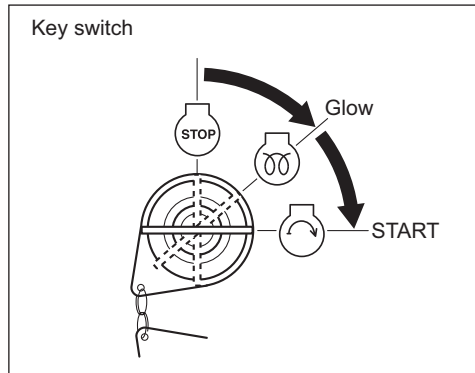
7-3 Starting and stopping the engine

Caution

- Pay attention if you put the key switch ON position, when the engine stops and mowing units raise/lower lever is DOWN position, then the mowing units would lower

• Starting procedure

- 1) Sit on the seat, and adjust seat arrangement for safety.
- 2) Hold brake pedal down, pull parking brake lever up until it engages.
- 3) Make the reel rotary switch into the "OFF" position.
- 4) Pull the throttle lever a little to the upward.
- 5) When the ignition key is turned to the "GLOW" position, the thermo-start lamp (glow lamp) will turn on.
- 6) Fully turn the ignition key to rightward promptly when the thermo-start lamp (glow lamp) turns off, the starter will operate and the engine will start. Release it as soon as engine starts.



Caution

- Quickly returning the ignition key from the "START" position to the "Glow" position may result in damage to the machine.

- 7) Ensure that the charge lamp and the engine oil pressure lamp turns off.

When they do not turn off, stop the engine and perform the inspection and repair.

Caution

- Do not step on the shift pedal. Safety device prevents the engine from starting.
- Do not touch the V-Belt, the Pulley, etc. during the engine rotation.
- Operation of the starter is a maximum of 15 seconds. When the engine still does not start, to prevent battery wastage restart should be made 30 to 60 seconds after.



• Stopping procedure

- 1) Hold the brake pedal down, pull the parking brake lever up until it engages.
- 2) Make the reel rotary switch into the "OFF" position.
- 3) Return the throttle lever to the "LOW" position.
- 4) The engine will stop, when the ignition key turns to "STOP" position.

7-4 About the safety device

This machine is equipped with the safety device to starting/stopping of the engine as interlock system.

To start the Engine

- 1) Operator sits on the seat.
- 2) Parking brake is engaged.
- 3) The reel rotation switch is "OFF" position.
- 4) The forward/backward pedals are in Neutral position.

To drive and travel

- 1) Operator sits on the seat.
 - 2) Travelling-Mowing changeover switch is "Travelling" position.
 - 3) Release the parking brake.
 - 4) Pedal the forward or backward pedal.
- * Engine will stop in the following case.

- Pedal the travelling pedals, when engaging parking brake and without sitting on the seat.
- Release the parking brake without sitting on the seat.
- Put the reel-rotation switch on, when engaging parking brake and without sitting on the seat.

When mowing

- 1) Operator sits on the seat.
 - 2) Travelling-Mowing changeover switch is "Mowing" position.
 - 3) Reel rotation switch is "ON" position.
- * When operator leaves the seat, engine will stop:
Confirm the reel rotation switch is "OFF" position.

To leave the seat with the engine running

- 1) Engage the Parking brake.
 - 2) Reel rotation switch is "OFF" position.
 - 3) Travelling pedals are Neutral position.
- * If the operator leaves the seat, the engine does not stop. But the interlock system will stop the engine unless all the above conditions are satisfied.

Backlapping Maintenance (inverse rotation of reel cutter)

- 1) Travelling-Mowing changeover switch is "Mowing" position.
 - 2) Lower all the mower unit to the ground.
 - 3) Stop the engine.
 - 4) Open the hood and reel reverse rotation switch to "ON" position.
 - 5) Operator sits on the seat.
 - 6) Engage the parking brake.
 - 7) Reel rotation switch is "OFF" position.
 - 8) Travelling pedals are "Neutral" position.
 - 9) Start engine.
 - 10) Reel rotation switch is "ON" position.
- * If the operation of reel forward-backward switch and reel rotation switch are placed in the wrong order, the engine will stop.

Conditions and functions of the interlock system.

	Seat	Parking Brake	Reel Reverse Rotation Switch	Reel Rotating Switch	Travelling Pedals	Travelling-Mowing Changeover Switch
To start the engine	ON	ON	-	OFF	Neutral	-
To travel	ON	OFF	-	-	ON (F or R)	Travelling Position
To operate	ON	OFF	-	ON	-	Mowing Position
To leave the seat with the engine running	-	ON	-	OFF	Neutral	-
Maintenance of backlapping (The reel cutter rotates reversely)	-	ON	ON	ON	Neutral	Mowing Position

7-5 Cautions when leaving the machine    

Caution

- 1) Stop the machine in level place and engage the parking brake.
- 2) Make the reel rotary switch into the "STOP" position, and lower the mower unit to the ground.
- 3) Stop the engine.
- 4) Remove the ignition key.
- 5) When effectiveness of the brake is not good, park the machine using wheel stoppers.

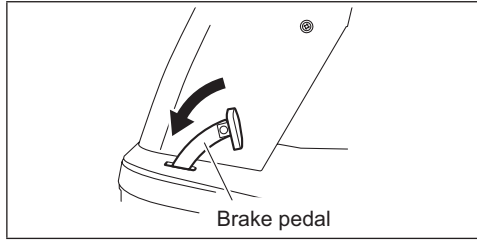
Caution

- Do not park on the slopes.

7-6 Brake pedal

As you press the brake pedal, brake functions.

- * When it does not function well, adjust or repair it before operating.

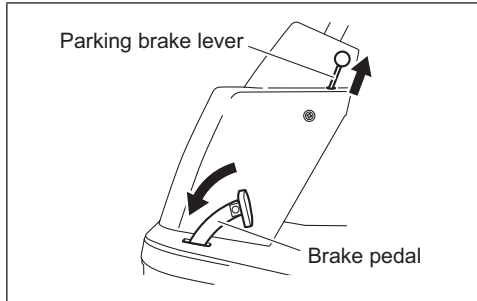


7-7 Parking brake lever (P)

The parking brake lever is on the center housing left side.

Hold the brake pedal down and pull the parking brake lever up for engaging the parking brake.

Press the brake pedal down again for releasing the parking brake.

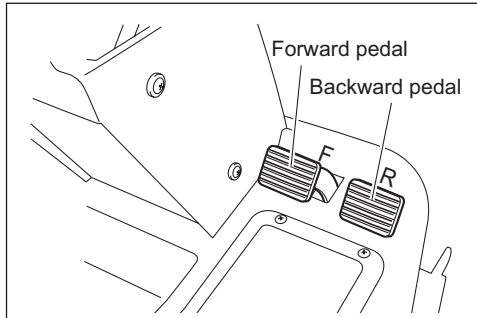


Caution

- Be sure to run after releasing the parking brake. Otherwise, the brake disc and the hydraulic equipment are damaged.
- Do not park the machine on the slope.

7-8 Forward/backward pedal

Two pedals system is adopted. To move forward, press the inside pedal down. To move backward, press the outside pedal down. If the pedal is returned, the machine will stop automatically.



Warning

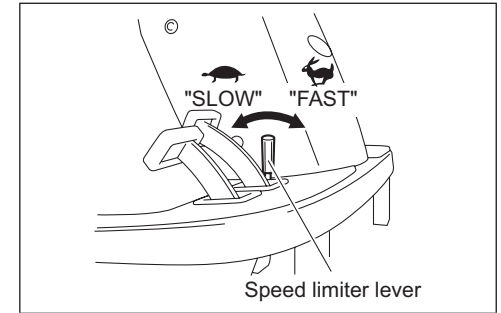
- The travelling in the public road is not permitted by law.

Caution

- When the machine travels high speed, it does not stop immediately even if you release the travelling pedals. Please apply the brake pedals as necessary.

7-9 Speed limiter lever

It is a shift lever, which restricts the forward pedal step in amount. The step in amount decreases if it turns to the "SLOW" side.

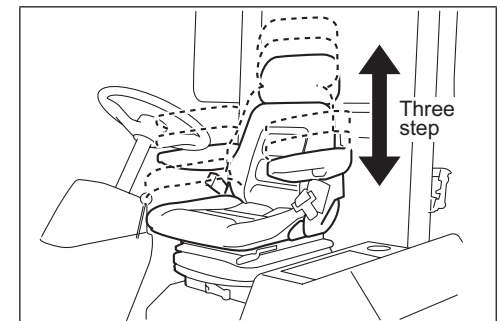
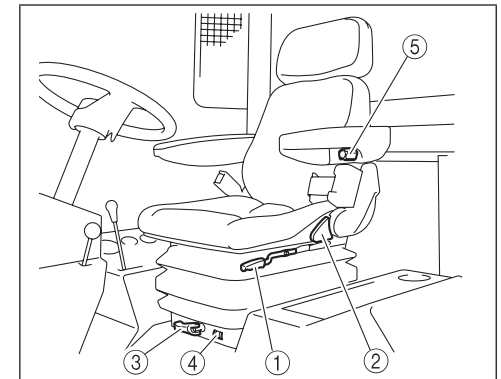


Caution

- Be sure to make set to "SLOW" position when travelling by two-wheel-drive. If make set to "FAST" position, it becomes too fast when the pedal is fully pressed in.

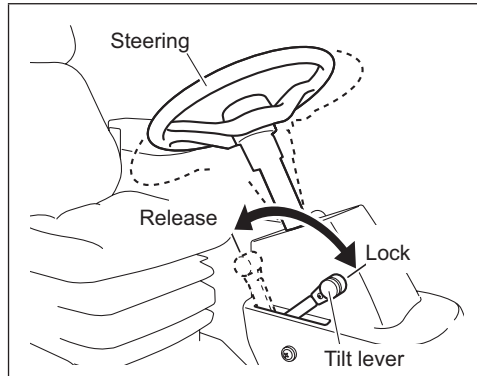
7-10 Adjustment of seat

- The seat can be adjusted forward and backward by the seat lever (1).
- Angle adjustment of the reclining backrest can be performed by the lever (2).
- Hardness of the seat suspension can be adjusted by turning the handle (3) Check and adjust with the scale 4. (50~130kgf)
- Angle setting of the armrest can be performed by turning the knob (5).
- The height of the seat can adjust to the three steps by lifting the whole seat..



7-11 Tilt steering

Pull lever up to release steering column.
Tilt column up or down to position desired. Push lever back to lock steering column in place.

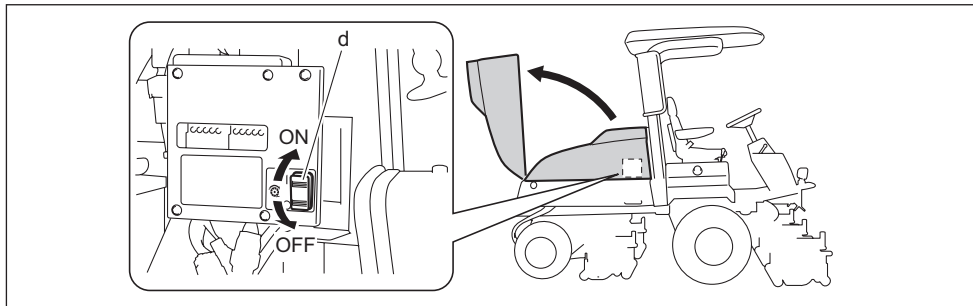
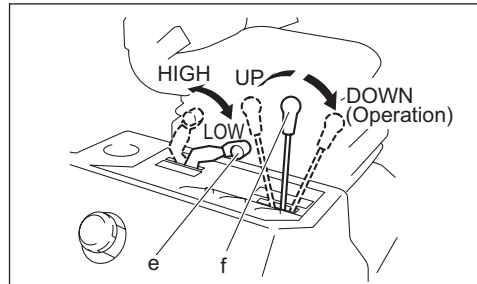
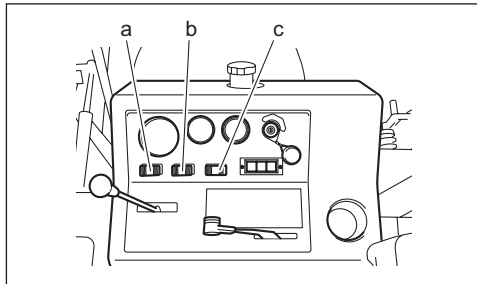


Caution

- Never adjust steering while machine is moving.
To prevent serious accidents, ensure tilt steering lever is fastened during operation.

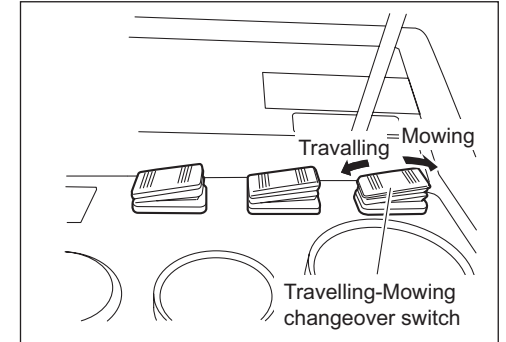
7-12 Switches, levers on the operation panel

- a. Travelling-Mowing changeover switch
- b. 2WD - 4WD changeover switch
- c. Reel rotary switch
- d. Reel reverse rotation switch
- e. Throttle lever
- f. Mower unit raise/lower lever



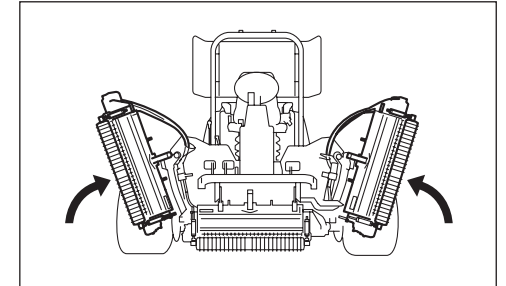
7-13 Travelling-mowing changeover switch

When it is set to UP, the position of mower unit #4 & #5 can be changed.

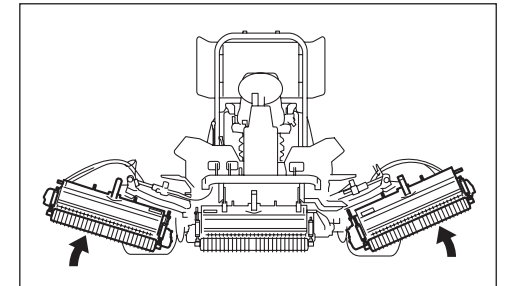


Select "Travelling"

Press switch to the "Travelling" position, #4 & #5 mower units raise to top. Press switch to the "Operating" position, #4 & #5 mower units raise up to middle.

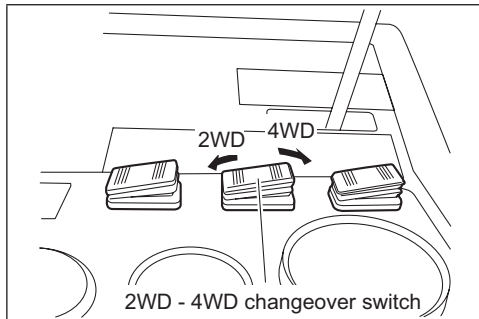


Select "Mowing"



7-14 2WD - 4WD changeover switch

It is the switch that chooses two-wheeldrive (front wheel) travelling or four-wheel drive travelling. If it moves to the "2WD" position it will become the two-wheeldrive, and if it moves to the "4WD" position, it will become the four-wheel drive.



Caution

- When you move under the operation and by the sloping ground, be sure to choose the four-wheel drive.
- Operate the machine in consideration of the state of the roads and the ground, such as the slant and the undulation.
- To prevent the damage of hydraulic equipments, be sure to stop the machine and flip a switch.



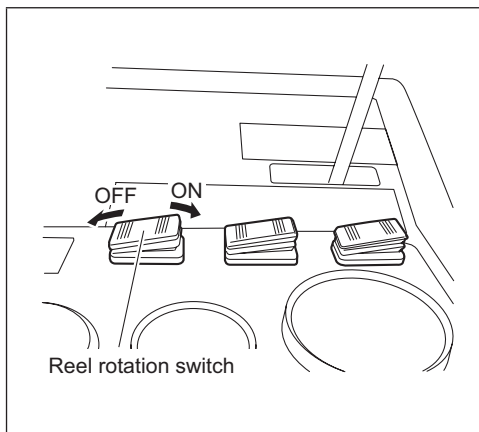
7-15 Reel rotation switch

This is the rocker switch to rotate or stop the reel rotation. Press the switch to "ON(Rotation)" position, reel start to rotate. Press the switch to "OFF(Stop)" position, reel stop rotating.

Before operating reel rotating switch, confirm whether the reel reverse rotation switch is ON or not.

* In case the reel reverse rotation switch is OFF, the engine will stop, when the operator leaves the seat.

In case the reel reverse rotation switch is ON, the engine won't stop, even though the operator leaves the seat.



Caution

- When the mower unit is in the UP position, the reels do not rotate.
- Inspect the area where the machine will be used.

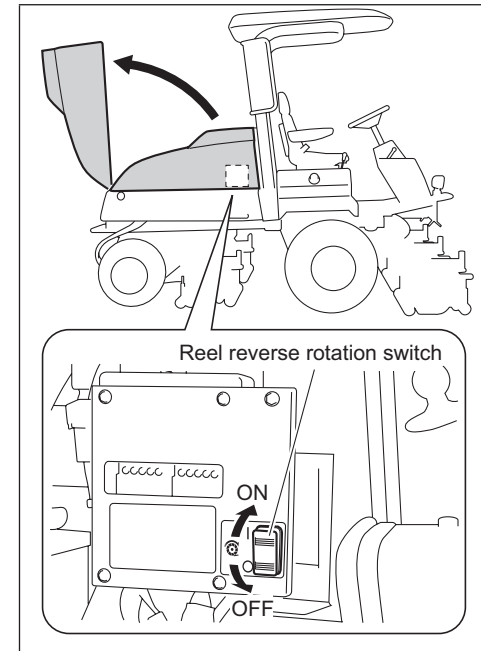


7-16 Reel reverse rotation switch

Locates inside the hood.

It is the rocker switch that exchange the rotation direction of the reel. To rotate the reels inverse (backlapping), press the switch to the "ON" position.

* Engine does not stop, even though the operator leaves the seat.

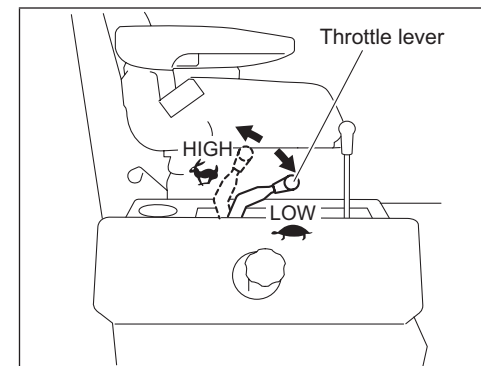


Caution

- When not operating the reel rotation switch, the reels do not rotate.
- Never switch "ON" and "OFF" while the reel rotating, otherwise hydraulic equipment may be damaged.

7-17 Throttle lever

If the throttle lever is pulling up to the top (HIGH), the engine speed becomes high, and if the throttle lever is lowering to the bottom (LOW), the engine speed becomes low.

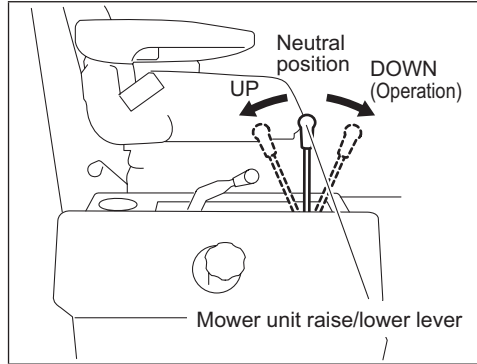


7-18 Mower unit raise/lower lever

It is the shifter lever that raises or lowers the mower unit.

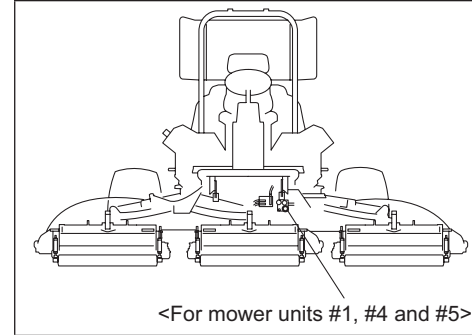
If the shifter lever is moved to the "UP" position, the mower unit will go up, and if it is moved to the "DOWN" position, the mower unit will descend.

At the time of the mowing, move the shift lever to the "DOWN" position. If it is shifted to the neutral position, the cylinder is fixed and it cannot respond to the undulation.

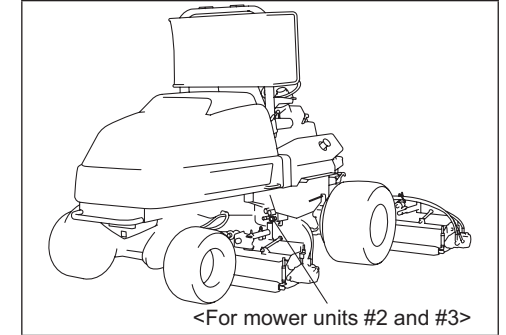


7-20 Reel rotation adjusting valve

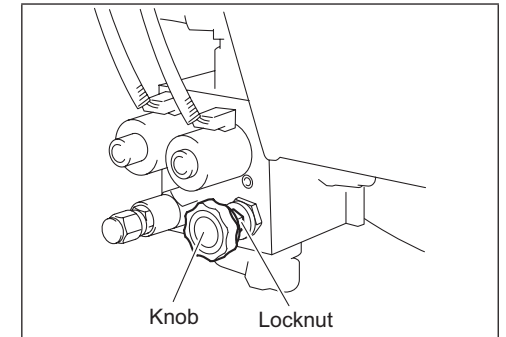
<For mower units #1, #4 and #5>



<For mower units #2 and #3>



It is the valve that adjusts the rotation speed of the reel cutter. Loosen the locknut and turn in the knob, the rotation speed will become slow.



Caution

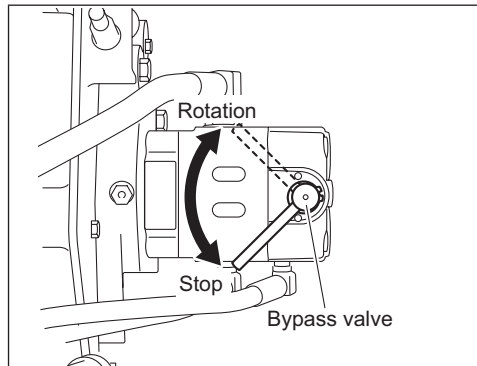
- Inspect the area where the machine will be used.
- Pay attention if you put the key switch ON position, when the engine stops and mowing units raise/lower lever is DOWN position, then the mowing units would lower



7-19 Bypass valve

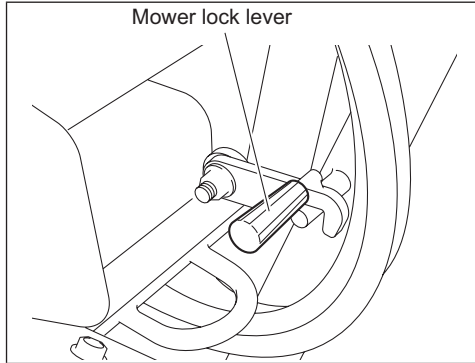
It is located on the hydraulic motor of each mower unit.

The hydraulic motor will become free if the shift lever is shifted to the stop position.



7-21 Mower lock lever (latch)

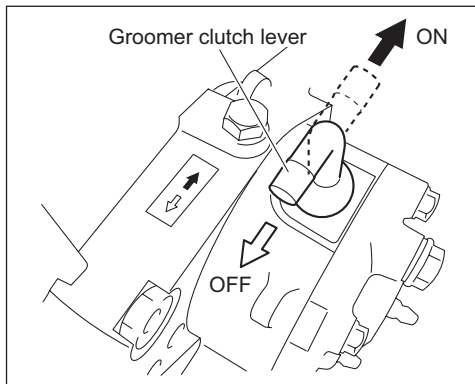
Hang the mower lock lever, when you transfer the machine or store the machine with the mower unit #4 and #5 are raised.



7-22 Groomer clutch lever (option)

It is the operating lever that makes the groomer "ON" or "OFF".

When you do not operate the groomer, be sure to shift it to "OFF" position.



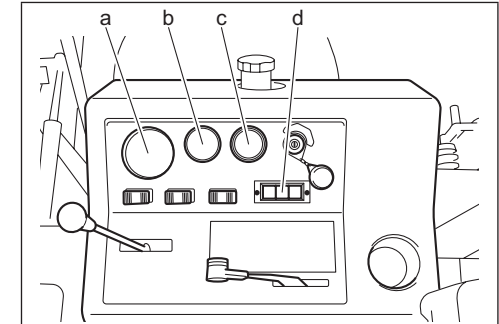
Caution

- Do not lift up the groomer clutch lever. Otherwise the lever may be pulled up and the inner switch ball may drop inside the groomer case.

8. Measuring instrument

8-1 Instruments of operation panel

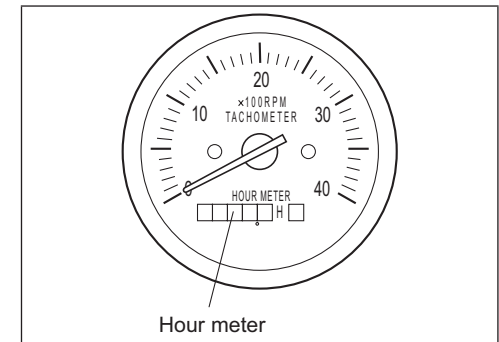
- a. Tachometer & hour meter
- b. Water temperature gauge
- c. Fuel level gauge
- d. Pilot lamp
 - Charge lamp
 - Glow lamp
 - Oil pressure lamp (Engine oil pressure lamp)



8-2 Tachometer & hour meter

Indicate the engine speed and total operating hour.

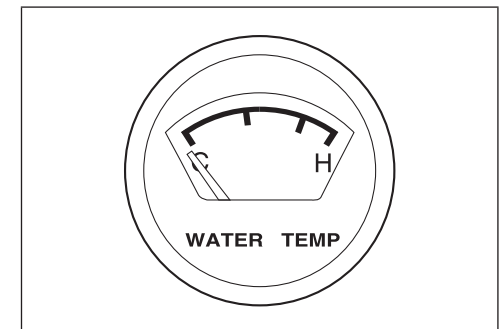
Carry out the periodic inspection and maintenance, and repair based on the operating hour.



8-3 Water temperature gauge

When the water temperature gauge rises to near "H" during the operation, it is in the overheating state. Stop the engine and carry out the maintenance and repair, after making the engine no-load and operating for 5 minutes in idling.

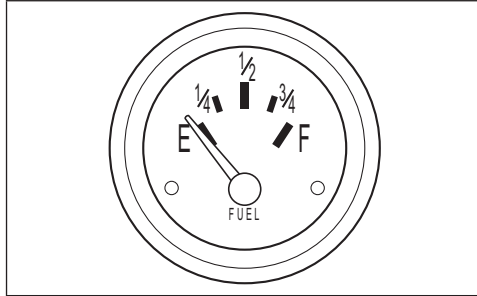
- If the water temperature raise above 115°C, the warning alarm (discontinuous sounds) will sound.



8-4 Fuel gauge

It indicates current fuel level. If the fuel gauge approaches E(Empty), supply fuel (diesel) immediately.

* The capacity of the fuel tank is approximately 47 Liters.



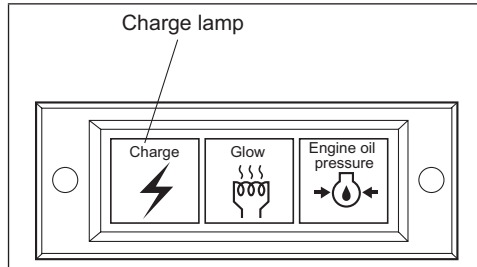
Danger

Don't oversupply the fuel. It may cause the fire, if the fuel overflow from the fuel tank. Use diesel oil only. Be sure not to use gasoline.



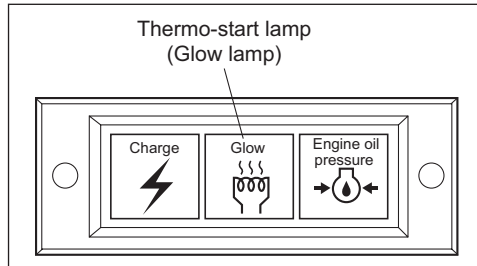
8-5 Charge lamp

The lamp turns on when the ignition switch is in the "ON" position. After the engine starts, and the light will turn off if it charges normal. When the lamp is turned on during operation, stop the engine immediately and inspect, do maintenance and repair.



8-6 Thermo-start lamp (glow lamp)

Refer to 7-3 "Starting and stopping the engine".

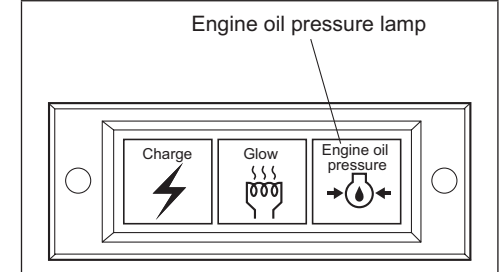


8-7 Oil pressure lamp (engine oil pressure lamp)

The lamp turns on when the ignition switch is in the "ON" position.

After the engine starts, the light will be turned off, if the oil begins to circulate and it becomes the normal pressure.

When the lamp is turned on during operation, stop the engine immediately and carry out the maintenance and repair.



9. Mowing operation

- 1) Open the hood and reel-reverse-rotation switch to "OFF". (Refer to [7-16](#))
 - 2) Start the engine.
 - 3) Pull up the throttle lever and set engine speed to MAX (2,600rpm). (Refer to [7-17](#))
 - 4) Set the Travelling-Mowing changeover switch to the "Mowing" position. (Refer to [7-13](#))
 - 5) Set the 2WD - 4WD changeover switch to the "4WD" position. (Refer to [7-14](#))
 - 6) Release the Mower lock lever. (Refer to [7-21](#))
 - 7) Move the mower unit raise/lower lever to the "DOWN" position, and ensure lower the mower unit to the ground. (Refer to [7-18](#))
 - 8) Move reel rotation switch to the "Rotation" position, and rotate the reel. (Refer to [7-15](#))
 - 9) Hold the Forward pedal down and begin the operation.
- * Respond to the raising or lowering of the mower unit, the reel will rotate or stop automatically.

Caution

- Be sure to operate by the speed that suited the working condition.
- The machine detects the position of the reel unit and decides "ON" or "OFF" the reel rotation. Keep in mind that the reel rotation may not stop if the mower unit is not fully raised by operating the mower unit raise/lower lever.

10. Transportation

When loading machine on the truck, travel forward and when load it off, travel backward.
Roof should be removed from the machine before the transportation

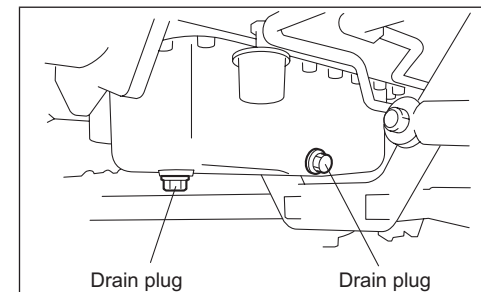
11. Inspection and maintenance of each section (main unit)

11-1 Change of engine oil



Refer to the engine's instruction manual for handling of the engine.

- 1) Change the oil after the first 50 hours operation, and change it for every 100 hours operation from the next.
- 2) Remove drain plug on the oil pan. If it carries out while the engine is warm, the oil can be drained completely.



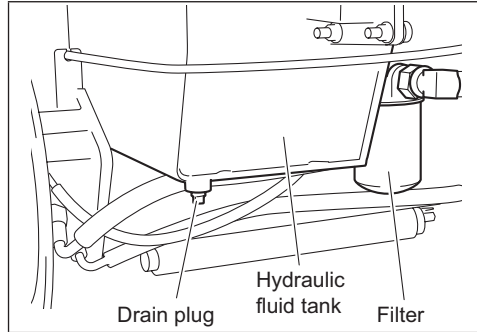
Caution



- Be sure to use engine oil that is classified as API Service Grade CF or higher, with an SAE Viscosity that is appropriate for the operating environment (ambient temperature).
- The engine oil is high temperature immediately after the operation. Change it after waiting for a while so that you may not be burned, when removing the drain plug.

11-2 Change of hydraulic oil

- 1) Change the hydraulic oil after the first 100-hour operation, and change it in the shorter period between the one year and 500-hours operation from the next.
 - 2) Always replace the hydraulic filter when changing oil.
 - 3) Remove the drain plug on the bottom of the hydraulic oil tank, and drain the hydraulic oil.
 - 4) Drain and replace the hydraulic oil if you notice the presence of water or foam in the oil (emulsifying), or contamination (lack of transparency).
 - 5) Use the Shell Tellus S2M46 or equivalent products for the hydraulic oil.
- * The capacity of the hydraulic oil tank is approximately 43Liters.



Caution



- The hydraulic oil is high temperature immediately after the operation. Change it after waiting for a while so that you may not be burned, when removing the drain plug.
- * Do not overfill

11-3 Inspection of oil leak



All of fittings for hydraulic hose, pump, cylinder etc. may loose after 50 hours operation. The fittings should be securely fastened.

- * The level sensor is attached to the hydraulic fluid tank.
If the amount of hydraulic oil decreases about 2Liters, the warning alarm (discontinuous sounds) will sound.

11-4 Greasing

Since there may be adhesion or damage due to lack of grease on moving parts, they must be greased.

Add urea-based No. 2 grease in accordance with the Maintenance Schedule.

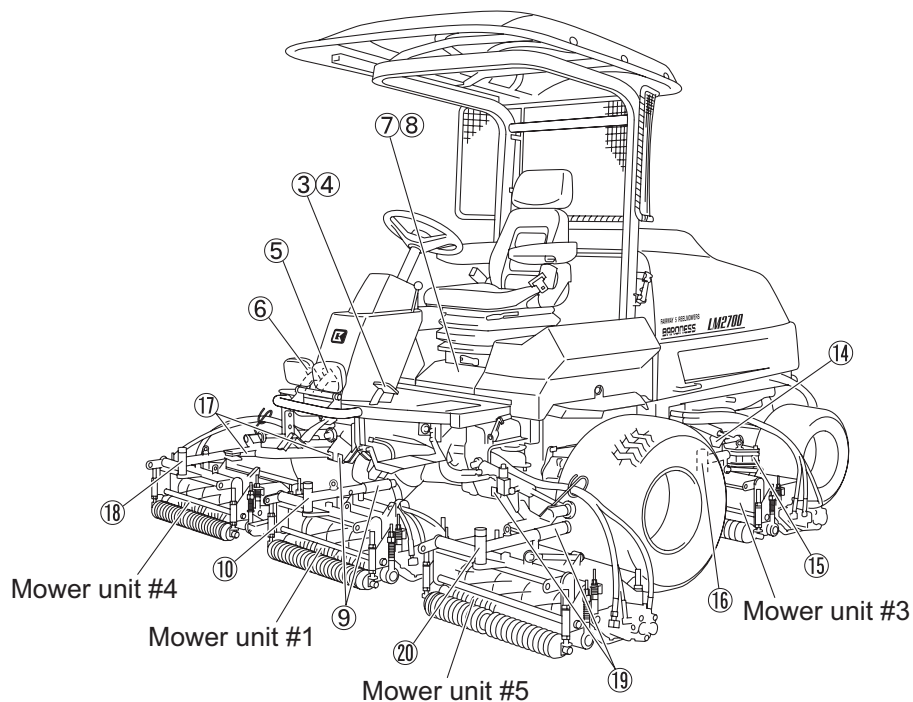
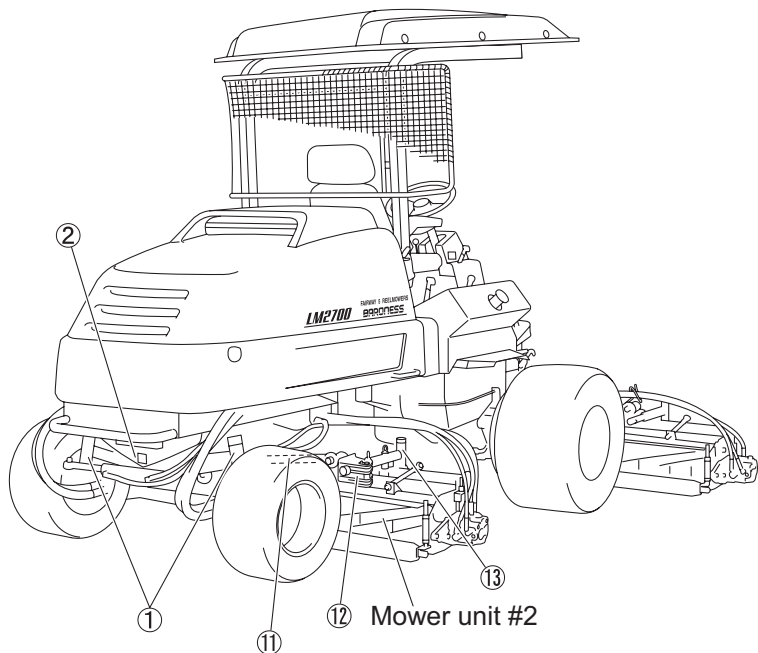
Other locations where the specified grease or lubricant is used are indicated in "Greasing Points".

Add grease using the specified grease or lubricant.

Carry out the greasing up to the following grease nipples every 50 hours.

Rear wheel parts			⑩	#1 mower joint fitting	1 place
①	Kingpin	2 places	⑪	#2 lift arm	1 place
②	Pivot	1 place	⑫	#2 rotation fitting	1 place
Pedal parts			⑬	#2 mower joint fitting	1 place
③	Brake pedal	1 place	⑭	#3 lift arm	1 place
④	Brake fitting	1 place	⑮	#3 rotation fitting	1 place
⑤	Forward pedal	1 place	⑯	#3 mower joint fitting	1 place
⑥	Backward pedal	1 place	⑰	#4 lift arm	2 places
⑦	Pump idle lever	1 place	⑱	#4 mower joint fitting	1 place
⑧	Pump neutral lever	1 place	⑲	#5 lift arm	2 places
Lift arm parts			⑳	#5 mower joint fitting	1 place
⑨	#1 lift arm	2 places			

Greasing Points



11-5 Replacement of fuses



Warning

- When performing maintenance on the electrical system, be sure to remove the negative battery wire.



Caution

- If a fuse blows, a short may have occurred within the electrical circuit. Check for the cause, such as faulty terminal connections, damaged wiring or terminals, or incorrect wiring.

1) Fuse box.

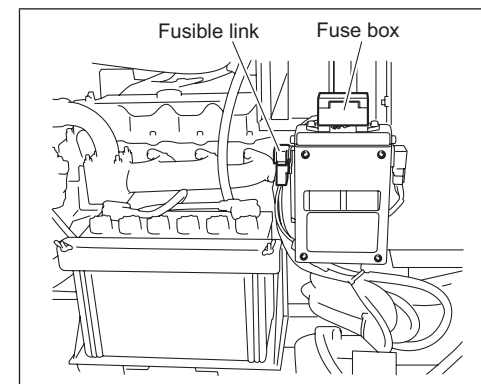
The spare fuse and the replacement tool are attached in the fuse box.

Replace with the fuses of the requirement rated capacity.

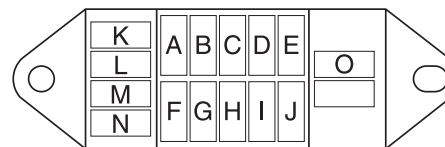
The fuses are mini-fuse for automobiles.

2) Fusible link

The fuse rated capacity of the fusible link is 50A.



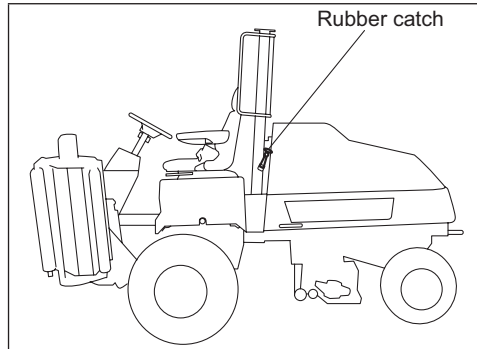
Fuse box



A	5A	Timer
B	5A	Glow lamp
C	5A	Tachometer, fuel gauge, water temperature gauge, charge lamp, oil pressure (engine oil pressure) lamp, Water temperature warning alarm, Hydraulic oil warning alarm
D	15A	Relay box 1
E	15A	Relay box 2, differential lock
F	-	
G	5A	Timer
H	5A	Alternator
I	5A	Fuel pump, cooling-fan valve safety relay, stop solenoid
J	5A	Relay (starter)
K	5A	Spare fuse
L	5A	
M	15A	
N	15A	
O	Fuse replacement tool	

11-6 Opening and closing the engine hood

Disconnect the rubber catch in right and left, and pull up the engine hood upwards until the wire stretches to the limit. When you close the engine hood, lower it slowly.



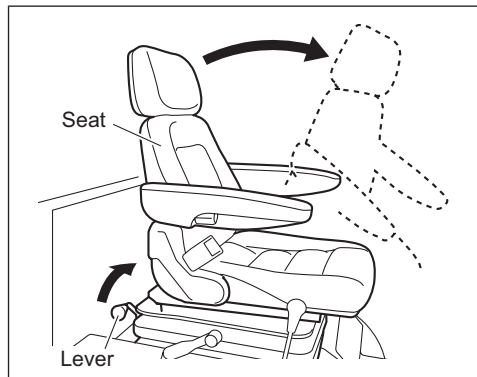
Caution

- When you close the engine hood, be careful not to pinch your hand.
- Do not open the engine hood at the windy place.



11-7 Opening and closing the seat undercover

Raise the tilt steering column to the upper position first, and then move the seat to the rear end position. Pull up the lever behind the seat to release the lock, and then raise the seat and open the undercover. To close the undercover, lower it slowly.



Caution

- When you close the undercover, be careful not to pinch your hand.



11-8 Adjustment of brake

Danger

- Make sure that the brake wire is not cracked or damaged.

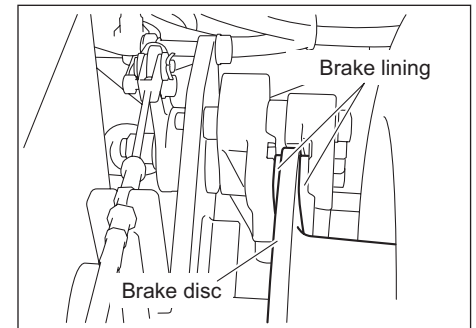
Important

- If the brake is not sufficiently effective due to a wider clearance gap between the brake disc and the brake lining, adjust the clearance.
- The wire is used for fine adjustments.

Important

- Adjust the brake with the brake lining.

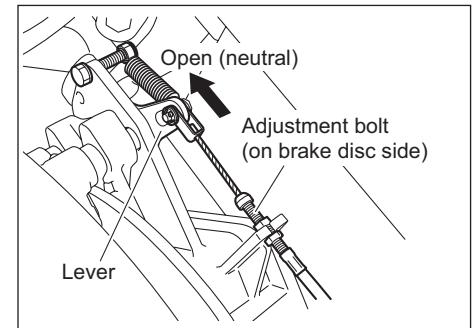
The brake lining wear limit is 3.0 mm (0.12 in).



Caution

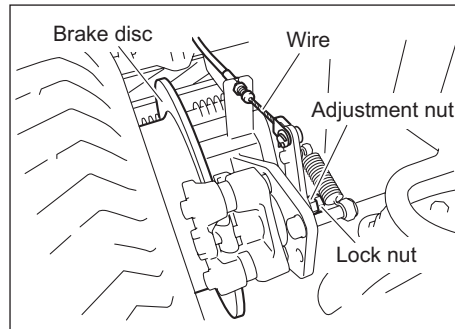
- Make sure that the lever is maintained in the open position (neutral).

- 1) For each wheel, fully tighten the adjustment bolt on the brake disc side.



- 2) Reduce the clearance by loosening the lock nut, then tightening the adjustment nut.

Tighten the adjustment nut until the brake lining contacts the friction surface of the disc.

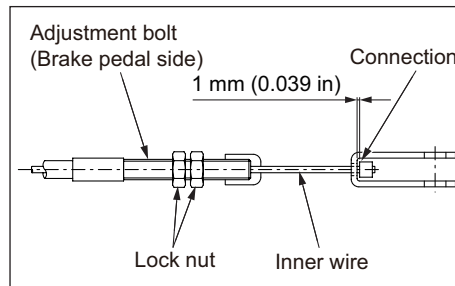


Danger

- Too narrow clearance gap between the brake disc and brake lining may cause heat generation and fire.

- 3) Loosen the adjustment nut to adjust the clearance gap between the brake disc and brake lining to about 0.2 mm (0.0079 in).
- 4) Securely place the jack beneath the jack-up point of the front left/right frame area, and then raise it until both tires lift off the ground.
- 5) Check that the disc rotates freely.
- 6) Fully tighten the lock nut while holding the adjustment nut in place.
- 7) With the brake pedal released, obtain a play of 1.0 mm (0.039 in) at the connection of the pedal and inner wire.
- 8) Use a wrench to loosen the lock nut and tighten it after making the adjustment with the adjustment bolt.
- 9) Drive, and then check the following. Make sure that heat is not generated in the brake area.

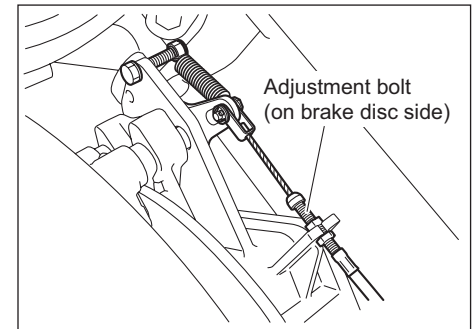
Make sure that the left and right brakes are equally effective.



Danger

- It would be extremely dangerous and may result in an unexpected accident if the left and right brakes are not equally effective.

- 10) If the left and right brakes are not equally effective, make fine adjustments with the adjustment bolt on the brake disc side.



<Break-in of Brakes>

If the brake shoes or brake pads are worn, replace them with new ones.

Immediately after replacement, drive to break in the brakes if the effectiveness of the brakes is low.

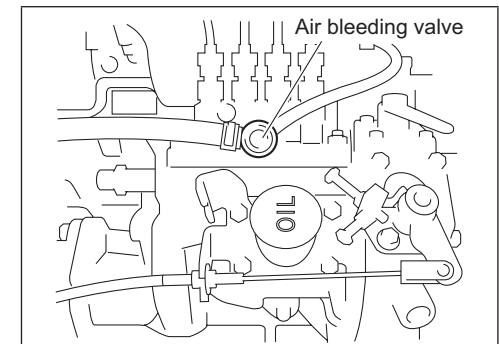
While driving, lightly operate the brakes to break in the contact areas.

11-9 Air-bleeding from fuel

Since this machine has equipped the automatic air bleeder, the air-bleeding operation is unnecessary.

- * Always use the air-bleeding valve with the fully open position.

If it is used in the closed position, it will become the cause of the engine stop.



11-10 Jacking up the machine

Warning

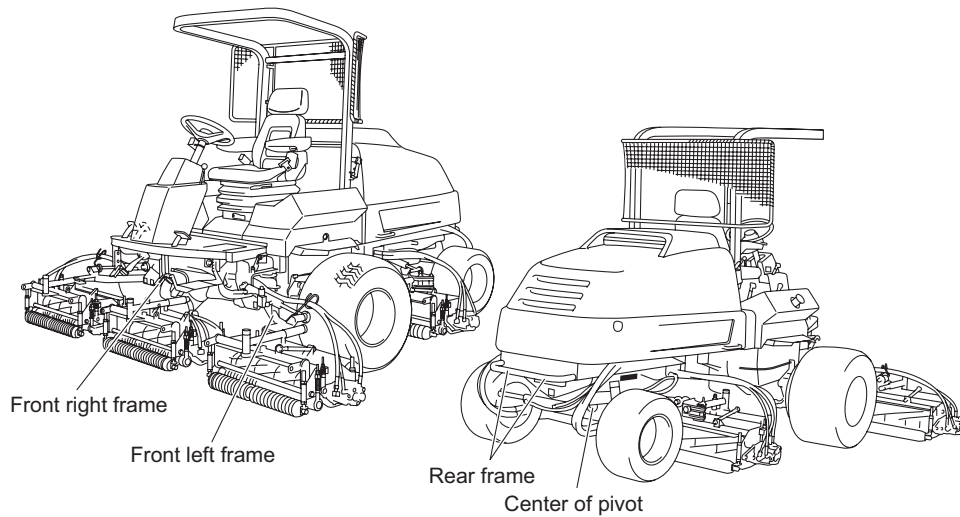
- When replacing a tire or beginning any other maintenance or repairs, be sure to chock the wheels to prevent the machine from moving.
- Before jacking up the machine, park it on a hard, flat surface such as a concrete floor and remove any obstacles that could prevent you from performing the work safely.
- When necessary, use an appropriate chain block, hoist, or jack.
- Support the machine securely with jack stands or appropriate blocks.
- Failure to do so may cause the machine to move or fall, resulting in injury or death.

Use the jack-up points identified in this manual when jacking up the machine.

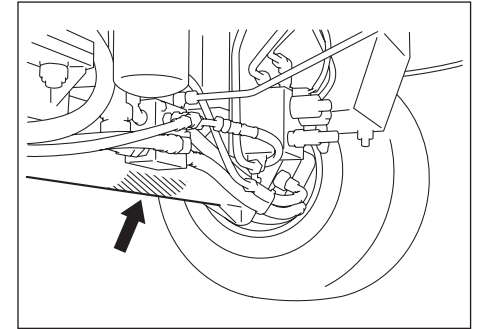
Only place a jack under the jack-up points specified.

Placing a jack at any other point could result in damage to the frame or other parts.

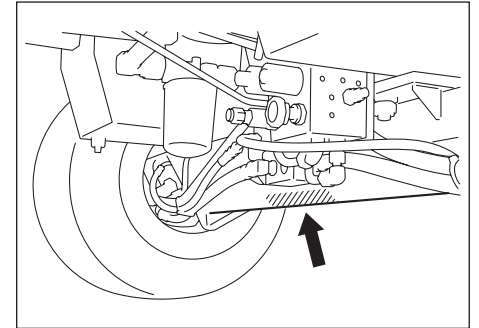
Jack-up Points



1) Front right frame



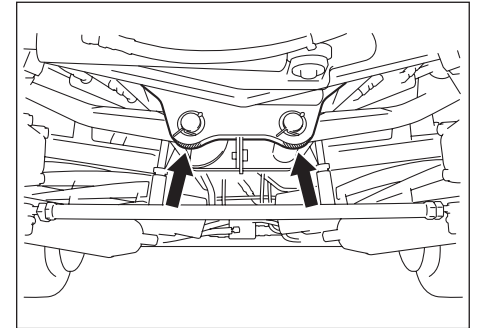
2) Front left frame



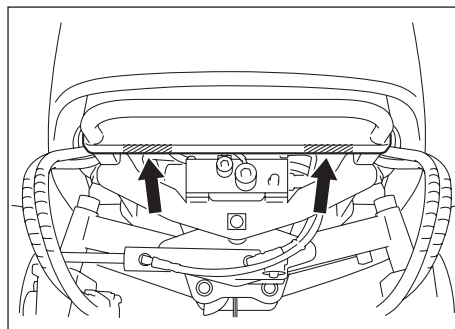
3) Center of pivot

Caution

- The jack-up point of the center of the pivot is not the center of the machine. Securely place the jack onto the jack-up point, and perform the operations with care.



4) Rear frame



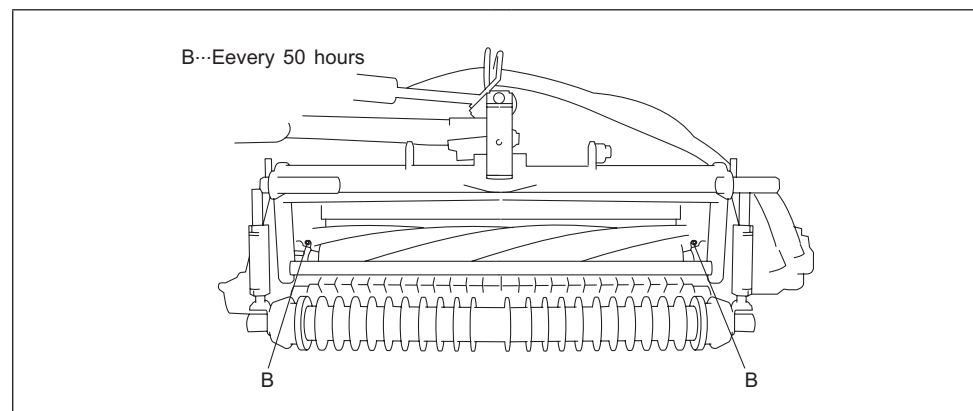
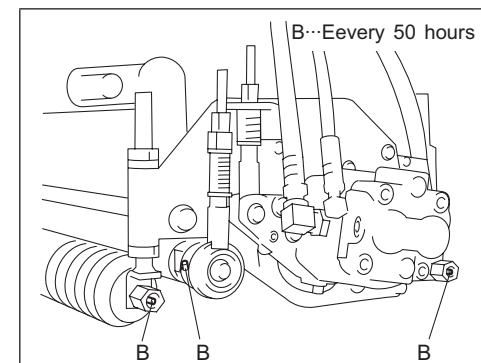
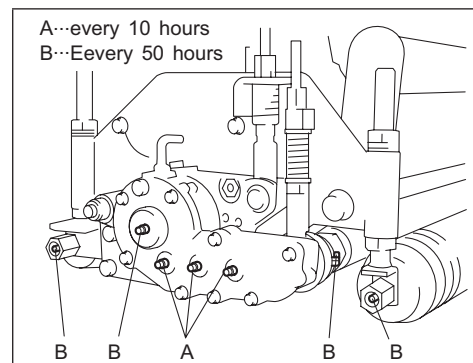
12. Inspection and maintenance of each section (mower)

12-1 Greasing

Carry out the greasing up periodically to each part grease fitting.

The parts greasing up every 10 hours is using the needle bearing. Be careful of the lubrication interval.

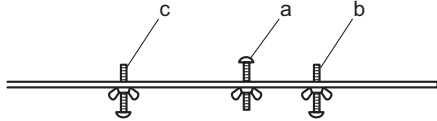
Carry out about 1g (1 to 2 times with manual-type small grease gun) grease up for each part with the grease (Excelite EP No. 2) respectively.



12-2 Cutting height adjustment

- To avoid personal injury and damage by the cutting edges wear grooves and handle the reel and bedknife with extreme care.

1) Set the supplied cutting height gauge bar.

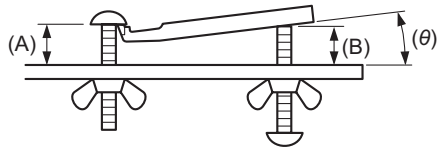


- Small adjusting screw for the cutting height setting
- Small adjusting screw for the bed knife angle adjustment
- Small adjusting screw for the Groomer adjustment

(1) Set the "a" screw to desired cutting height.

(2) Set the included angle of the bed knife with the screw of "b" by referring to the following table.

Example: When the angle of the bed knife is 5 degrees and 15mm of cutting height, use 12mm.



Bed knife angle (θ)	Value of (B)
7°	Cutting height of (A) - 0.6mm
6°	Cutting height of (A) - 1.8mm
5°	Cutting height of (A) - 3.0mm
4°	Cutting height of (A) - 4.2mm
3°	Cutting height of (A) - 5.4mm
2°	Cutting height of (A) - 6.6mm
1°	Cutting height of (A) - 7.8mm

* Set the bed knife angle as the basis of 5 degrees, and change it depending on the situation.

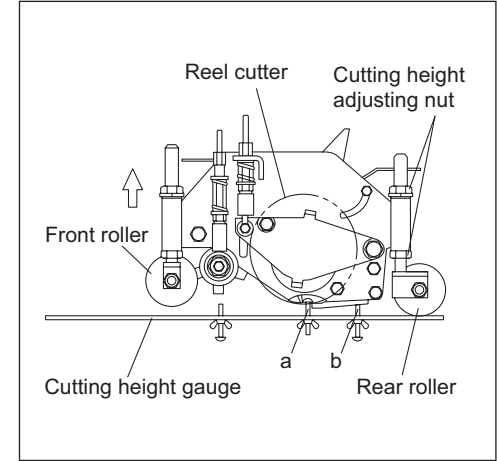
2) Adjust the height of the rear roller.

(1) As shown in the figure, apply the screw "a" and "b" on the cutting height gauge to the bed knife, and adjust the rear roller. (Decide the position of the bed knife angle.)

(2) Loosen the cutting height adjusting nut first, and then adjust the rear roller according to the cutting height gauge.

(3) At this time, to avoid incorrect adjustment, do not touch the Front Roller on cutting height gauge surface.

(4) Tighten the cutting height adjusting nut securely after completing the setting.

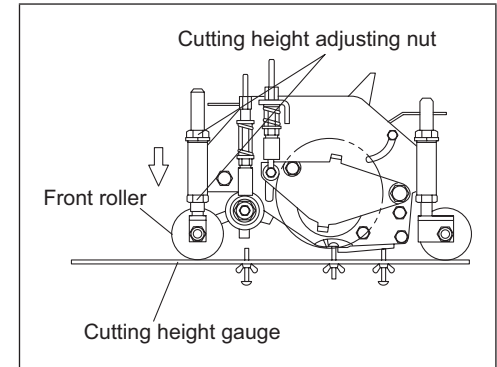


3) Adjust the height of the front roller.

(1) Loosen the cutting height adjusting nut for the front roller first, and lower the front roller down to the cutting height gauge.

(2) Tighten the cutting height adjusting nut securely after completing the setting.

4) Repeat steps 2) - (2), (3), (4) and 3) - (1), (2) on opposite end. Complete adjustment to one end before adjusting opposite end.



12-3 Adjusting the blades

* Proper reel-to-bedknife adjustment is critical.

Caution

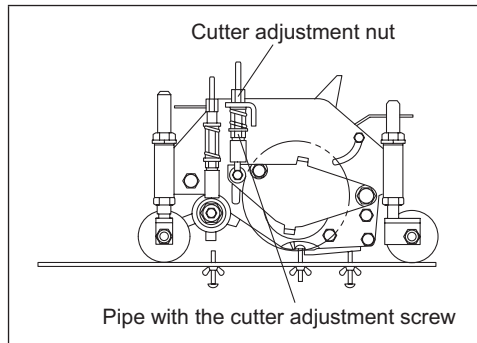
- When you adjust reel-to-bedknife, stop the engine and remove the ignition key.



- 1) Set Bypass valve on hydraulic motor to "Stop" position then reel cylinder will free rotate. (Refer to [7-19](#))
- 2) Inspect the reel blade and bedknife to ensure properly engaged. When the reel blade is properly adjusted to the bedknife, the reel cylinder will spin freely and you should be able to cut two sheets of newspaper, along the full length of the reel blade.

If the cutter adjustment nut is loosened, contact between the reel and bedknife become hard, and contact will become weak if it is tightened.

- 3) If no newspaper cutting due to wear or damage is evident, the cutting edges should be corrected by the backlapping process.
- 4) If the reel cutter is worn out and the diameter becomes small, the tension of the spring will become weak. Loosen the pipe with the cutter adjustment screw, and adjust the tension of the spring.



Danger



- Both the reel cylinder and bed knife are the cutting tools. When you handle with them, be careful of injury.
- When you try cutting the newspaper, be careful not to pinch your fingertip, which turns the reel cutter.
- Before doing this work, be sure to apply the parking brake firmly.
- Do not carry out in two-person operation.

12-4 Backlapping

Danger



- Both the reel cylinder and bed knife are the cutting tools. When you handle with them, be careful of injury.
- When you try cutting the newspaper, be careful not to pinch your fingertip, which turns the reel cutter.
- Before doing this work, be sure to apply the parking brake firmly.
- Do not carry out in two-person operation.
- When maintain it, avoid to get exhaust gas directly.
- Pay attention to the rotating part.

Caution

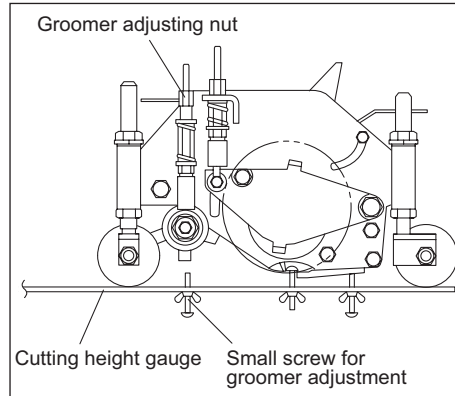
- When you wash the abrasive, be careful not to pour water to the Electrical equipment and the switches.
If they become wet, it may cause unexpected accident.

- 1) Inspect whether the newspaper can cleanly cut across the full length of reel.
- 2) Set the bypass valve lever of the hydraulic motor into the "Rotation" position on the backlapping mower unit. Set bypass valve lever of the hydraulic motor into "Stop" position on the mower unit, which does not carry out backlapping.
- 3) Lower all the mowing unit to the ground, then stop the engine.
- 4) Open the hood and reel-reverse-rotation switch to "ON". (Refer to [7-16](#))
- 5) Sit on the seat, engage the parking brake, start the engine and then adjust rotation of engine to low speed.
- 6) Set the reel rotation switch into the "Rotation" position, and carry out the backlapping rotation of the reel blade. (Refer to [7-15](#))
- 7) Adjust reel rotation adjusting valve to the desired speed. (Refer to [7-20](#))
- 8) Apply Gel Compound (Baroness genuine abrasive) or backlapping compound with brush to the part where a newspaper was cut. (Never apply backlapping compound to the part where was not cut well.) Use backlapping compound which is a mixture of oil and emery (#150 - #200) at rate of 1:3 to 4.
- 9) Rotate the reel cutter for a while, if there is no longer contact sound, stop the rotation, and then stop the engine.
- 10) Check full length of the reel cutter whether there are the parts that cut off the newspaper well, and the parts that don't cut the newspaper. Repeat the above steps and at the same time, make a slight adjustment on the reel unit there is a uniform clearance along full length of the cutting edges.
- 11) Finally apply backlapping compound to full length on the edge of each blade of the reel cutter, and carry out final backlapping.
- 12) When finished, stop the engine and carefully and thoroughly clean off the remaining backlapping compound.

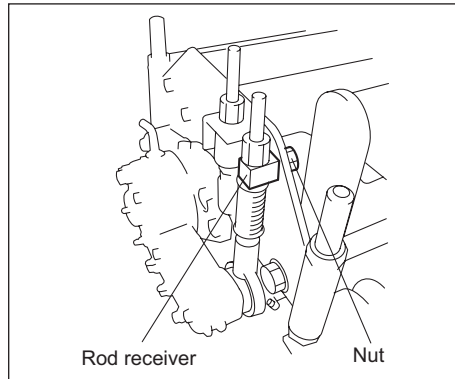
13) Set the reel-reverse-rotation switch to "OFF" and return the reel rotation adjusting valve to the original position.

12-5 Adjustment of the groomer (option)

1) Set the small adjusting screw for groomer adjustment on the cutting height gauge to the specified height. (Refer to 12-2)



- 2) Loosen the rod receiver nut, and lower the whole groomer unit to the bottom of the long hole.
- 3) Tighten the rod receiver nut, and adjust the height of the groomer with the adjusting nut for the groomer.
- 4) When you do not use the groomer, raise the whole groomer unit to the top of the long hole.

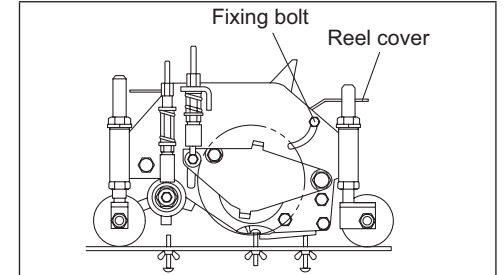


Caution

- Always use the cutting height gauge, and adjust it so that right and left sides become parallel. The bearings may be damaged if it is not used.
- Set the groomer height more than 5mm from the ground. If it is used by less than it, the groomer axis, bearing, and gear, etc. may be damaged.

12-6 Adjustment of the reel cover

- Loosen the fixing bolts on the right and left sides of the reel cover, and adjust the angle of the reel cover.
- When you use the optional grass catcher, set the reel cover housing in the most closed position.



12-7 Adjustment of CR brush (option)

Depending on the specifications, this function may not be available.

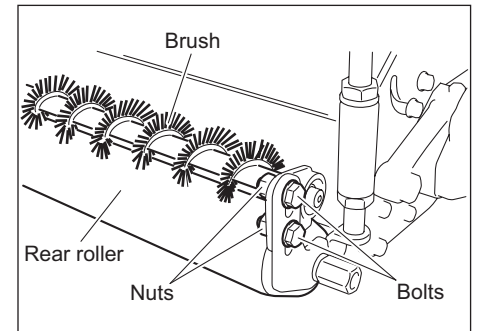
Caution

- Pressing the brush against the roller too tightly could cause the belt to slip or break.

Important

- CR brush prevents clippings etc. from adherence to the rear roller owing to rotating brush.

1) Loosen the bolts and nuts attached to the both ends of CR brush.

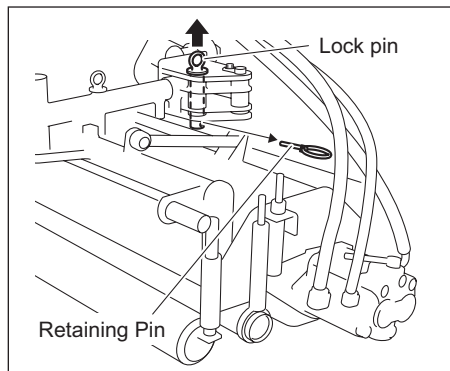


2) Securely tighten the bolts and nuts loosened in step 1 as the gap between the brush and rear roller is adjusted to between 0 and 1 mm.

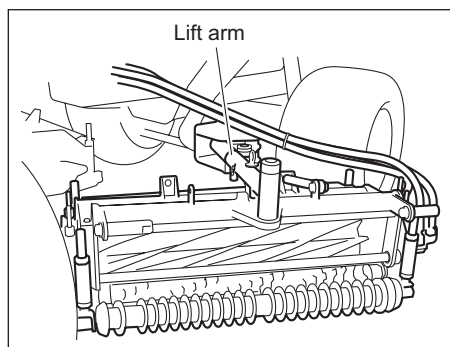
12-8 Turning the #2 and #3 mower units

It is easily maintainable, to turn the #2 and #3 mower unit turn to outside of the main body.

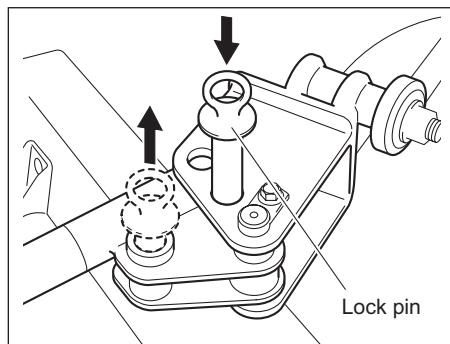
- 1) Lower the mower unit, and remove the Retaining pin, and then pull out the Lock pin.



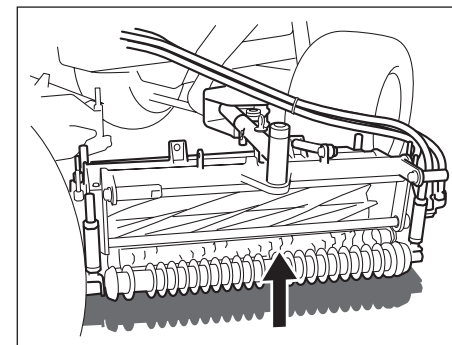
- 2) Turn the mower unit to outside of the main body.



- 3) After turning, install the lock pin over the hole to retain the mower in the maintenance position.



- 4) Raise the mower unit.



- 5) Return the mower unit to the original state in the reverse procedure after the maintenance.

⚠ Caution



- Replace all the bearings, oil seals for mower unit every year.
- The hydraulics motor housing with the hydraulic motor is filled up with the lubricating grease (PYRONOC No. CC0). Check and supply grease every 200 hours.

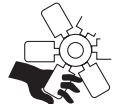
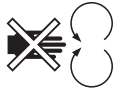
⚠ Danger

- Both the reel cutter and bed knife are the cutting tools. When you handle with them, be careful of injury.

13. Cautions for maintenance

Caution

13-1 Cautions for maintenance



- Read this manual carefully and have full knowledge of the maintenance procedure.
- Stay the machine on a flat, clean and dried place.
- Never lubricate or maintenance when the machine is in motion.
- Keep hands, feet away from drive/moving parts.
For the maintenance of drive/moving parts, be sure to exercise caution lest hands and feet should be caught up.
- Disengage all the drives, operate each control and release pressure.
- Use correct/appropriate parts in good condition.
- Repair or replace worn or damaged parts immediately.
- Do not modify any mechanical equipments/parts. Use Baronesse genuine parts required for maintenance for safety.
- Clean up grass and debris, oil/grease or fuel spillage.
- Make sure to disconnect the negative (-) battery cable before maintaining the electric circuit.
- When you maintain with the machine raised, carry out the safe support securely.
- Please dispose in accordance with the local law about disposal of waste oil and unnecessary replacement parts.

Warning

13-2 Prevention of the damage caused by high-pressure oil



- When high pressure oil is injected to the skin, get seriously injured.
- Eliminate the pressure before removing the high-pressure line, hose and coupling.
- When maintain the hydraulic part, lower the mowers in advance.
- Check all the joint fastenings before operating the machine.
- Use the paper or cardboard for the test of oil leak. If hydraulic oil is injected into the skin, be sure to have medical treatment by doctor within 2 to 3 hours.

13-3 Maintenance schedule

Use the required tools suitable for the purpose of the maintenance.

	Maintenance	Before use	Every 50hrs	Every 100hrs	Every 200hrs	Every 500hrs	Every year
Engine	Inspection of engine oil	○					
	Change of engine oil		○ (Initial operation)	○			
	Replacement of oil filter		○ (Initial operation)	○			
	Cleaning of radiator and oil cooler	○					
	Inspection of coolant	○					
	Inspection and cleaning of air filter	○					
	Replacement of air filter element					○	
	Inspection of fan belt	○					
	Inspection of battery electrolyte	○					
Replacement of fuel filter						○	
Main body	Inspection of tires	○					
	Inspection of fuel	○					
	Inspection of hydraulic hose	○					
	Inspection of hydraulic oil	○					
	Replacement of hydraulic oil			○ (Initial operation)		○	
	Replacement of oil filter			○ (Initial operation)		○	
	Inspection of brake	○					
	Inspection of electrical wires						○
	Oil leakage of each part	○					
	Inspection of slack or damage on each part	○					
	Grease up (main unit and mower) (Refer to 11-4 12-1)		○ (partially every 10hrs)				
	Inspection of grease in the hydraulic motor housing					○	
Contact condition of the blades on reel cutter.	○						
Remove adhesion of cutting grass, etc.	○						

* Replace the hydraulic hoses for steering every 2 years.

<Specifications for periodic maintenance>

Engine oil capacity	MAX: 9.7 L MIN: 7 L	Higher than the API service classification CD class
Coolant capacity	Total capacity 12 L	Including 1 L in reserve tank
Tire pressure (standard tire)	Front tire 150 kPa (1.5kgf/cm ²)	
	Rear tire 140 kPa (1.4kgf/cm ²)	
Fuel tank capacity	Approximately 47 L	Diesel fuel
Oil tank capacity	Approximately 43 L	Use the Shell Tellus S2M46 equivalent

<Wear parts lists for the engine, hydraulic system>

For engine

Parts name	Code No.
Oil filter element	PF16414-3243-4
Air filter element	PFR1401-4227-0
Fan belt	PF17112-9701-0
Fuel filter cartridge	PF15221-4317-0
Battery	K3600000180
Throttle wire	K1110168020

For hydraulics system

Parts name	Code No.
Oil pressure filter cartridge	K3410000030
Air filter element	K3413000040

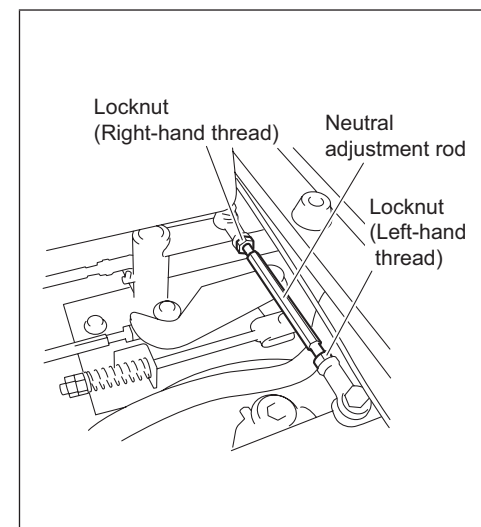
14. Adjustment of the other functions

14-1 Adjustment of the neutral position of piston pump

Caution

- Be care not to touch the rotating tires.

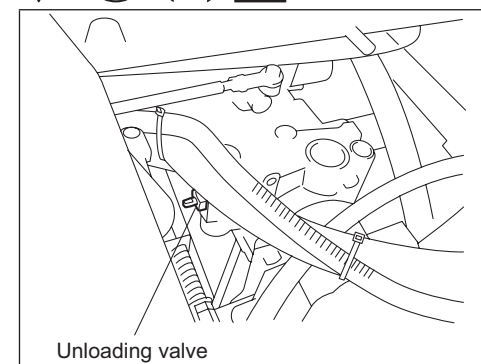
- 1) Jack up the machine and put on a stable stand, and float the front and rear wheels.
- 2) Raise the seat upwards.
- 3) Start the engine and run at high speed, and put the 2WD-4WD changeover switch into "2WD".
- 4) When the front wheel rotates in the forward direction, loosen the locknut and turn in the direction that reduces the length of the neutral adjustment rod. When rotating in the backward direction, turn in the direction that extends the length of the neutral adjustment rod. Find the position at which the front wheel stops and tighten the locknut.



14-2 Traction when the machine is unable to travel



- 1) When the engine is running, stop the engine.
- 2) Apply the parking braking and attach a wheel stopper.
- 3) Set the 2WD-4WD changeover switch into "2WD".
- 4) Raise the seat upward.
- 5) Turn 90 degrees of the unloading valve beside the hydraulic pump.



Caution

- When you tow, drive carefully at a low speed.
- When you put the engine into operation next time, be sure to start after returning the unloading valve.

EU Declaration of Conformity**Product Identification**

Product: Lawnmower
Make: BARONNESS
Type: LM2700
Version(s): Not Applicable
Starting Serial No.: 10656
Measured Sound Power Level: LWA 100.75 dB
Guaranteed Sound Power Level: LWA 103 dB
Manufacturer: Kyoeshia Co., Ltd.
Address: 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Conforms to the following Directives
2006/42/EC Machinery (MD)
2014/30/EU Electromagnetic compatibility (EMC)
2000/14/EC Noise emissions from outdoor equipment

We has been designed and manufactured using the following specifications
ISO 12100 : 2010 (2006/42/EC)
ISO 5395-1 : 2013 (2006/42/EC)
ISO 5395-3 : 2013 (2006/42/EC)
ISO 14982 : 1998 (2014/30/EU)

Technical Documentation
Keeper's Name: Kyoeshia Co., Ltd.
Keeper's Address: 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan
Compiler of the technical file (2006/42/EC)
Name: Kyoeshia U.K.Ltd.
Address: Unit 5 Hatch Industrial Park Grewell Road, Basingstoke Hampshire RG24 7NG, the United Kingdom

Conformity assessment procedures
Internal production control : Module A (2006/42/EC)
EC-type examination : Module B (2014/30/EU)
Internal control of production with assessment of technical documentation and periodical checking (2000/14/EC)
Involved Notified Body (2000/14/EC)
Name : SNCH
Address : 11, Route de Sandweiler 5230 Sandweiler Luxembourg
Certificate / Report No. : SNCH*2000/14*2005/88*1355*03/TC.LM2700-03

Place : Japan
Date : 3 February 2016 (3 / 02 / 2016)

Signature: 
Name : Kimiya Kareko
Position : Quality Dept. Manager

(F)

Déclaration de conformité UE**Identification du produit**

Produit : Tondeuse à gazon
Fabricant : BARONNESS
Type : LM2700
Version(s) : Non applicable
Numéro de série de début : 10656
Niveau de puissance acoustique mesuré: LWA 100.75 dB
Niveau de puissance acoustique garanti : LWA 103 dB
Fabricant : Kyoeshia Co., Ltd.
Adresse : 1-26, Miyuki-cho, Toyokawa, préfecture d'Aichi, Japon
Nom :
Conforme aux directives suivantes :
2006/42/CE Machine (MD)
2014/30/UE Compatibilité électromagnétique (CEM)
2000/14/CE Emissions sonores de l'équipement de plein air
Conception et fabrication en respect des spécifications suivantes :
ISO 12100 : 2010 (2006/42/CE)
ISO 5395-1 : 2013 (2006/42/CE)
ISO 5395-3 : 2013 (2006/42/CE)
ISO 14982 : 1998 (2014/30/UE)

Fiche technique
Marque : Kyoeshia Co., Ltd.
Adresse de la marque : 1-26, Miyuki-cho, Toyokawa, préfecture d'Aichi, Japon
Compilateur de la fiche technique (2006/42/CE)
Nom : Kyoeshia U.K. Ltd.
Adresse : Unit 5 Hatch Industrial Park Greywell Road, Basingstoke Hampshire RG24 7NG, Royaume-Uni

Procédures d'évaluation de la conformité
Contrôle de production interne : module A (2006/42/CE)
Examen de type CE : module B (2014/30/UE)
Contrôle interne de la production avec évaluation de la fiche technique et vérification périodique (2000/14/CE)
Organisme notifié impliqué (2000/14/CE)
Nom : SNCH
Adresse : 11, Route de Sandweiler 5230 Sandweiler, Luxembourg
N° de certificat/rapport : SNCH*2000/14*2005/88*1355*03/TC.LM2700-03

Declaración de conformidad de la UE

(es)

Identificación del producto

Producto:	Cortacésped
Marca:	BARONESS
Tipo:	LM2700
Versión:	No aplicable
N.º de serie inicial:	10656
Nivel de potencia sonora medido:	LWA 100,75 dB
Nivel de potencia sonora garantizado:	LWA 103 dB
Fabricante	Kyoelsha Co., Ltd. 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japón

Cumple las siguientes Directivas

2006/42/CE	Maquinaria (MD)
2014/30/UE	Compatibilidad electromagnética (EMC)
2000/14/CE	Emissiones sonoras de máquinas de uso al aire libre

Se ha diseñado y fabricado utilizando las siguientes especificaciones

ISO 12100 : 2010 (2006/42/CE)
ISO 5395-1 : 2013 (2006/42/CE)
ISO 5395-3 : 2013 (2006/42/CE)
ISO 14982 : 1998 (2014/30/UE)

Documentación técnica

Nombre del responsable:	Kyoelsha Co., Ltd.
Dirección del responsable:	1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japón
Compilador del archivo técnico	(2006/42/CE)
Nombre:	Kyoelsha U.K. Ltd. Unit 5 Hatch Industrial Park Greywell Road, Basingstoke Hampshire RG24 7NG, Reino Unido

Procedimientos de evaluación de conformidad

Control de fabricación interno: Módulo A (2006/42/CE)

Examen de tipo CE: Módulo B (2014/30/UE)

Control interno de fabricación con evaluación de documentación técnica y comprobaciones periódicas (2000/14/CE)

Organismo notificado implicado (2000/14/CE)

Nombre:	SNCH
Dirección:	11, Route de Sandweiler 5230 Sandweiler, Luxemburgo
Certificado/Informe n.º:	SNCH*2000/14*2005/88**1355*03/TCLM2700-03

EU-Konformitätserklärung

(de)

Produktbeschreibung

Produkt:	Rasenmäher
Marke:	BARONESS
Modell:	LM2700
Version(en):	Nicht zutreffend
Startseriennummer:	10656
Gemessener Schallleistungspegel:	LWA 100,75 dB
Garantierter Schallleistungspegel:	LWA 103 dB
Hersteller	Kyoelsha Co., Ltd. 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Entspricht den folgenden Richtlinien

2006/42/EG	Maschinenrichtlinie
2014/30/EU	Elektromagnetische Verträglichkeit (EMV)
2000/14/EG	Geräteemission von im Freien betriebenen Geräten

Unter Anwendung der folgenden Bestimmungen entwickelt und hergestellt

ISO 12100 : 2010 (2006/42/EG)
ISO 5395-1 : 2013 (2006/42/EG)
ISO 5395-3 : 2013 (2006/42/EG)
ISO 14982 : 1998 (2014/30/EU)

Technische Dokumentation

Name des Halters	Kyoelsha Co., Ltd.
Adresse des Halters	1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Technische Unterlagen erstellt von (2006/42/EG)

Name:	Kyoelsha U.K.Ltd.
Adresse:	Unit 5 Hatch Industrial Park Greywell Road, Basingstoke Hampshire RG24 7NG, Großbritannien

Konformitätsbewertungsverfahren

Interne Produktionskontrolle : Modul A (2006/42/EG)

EG-Baunustprüfung : Modul B (2014/30/EU)

Interne Produktionskontrolle mit Bewertung der technischen Unterlagen und regelmäßiger Überprüfung (2000/14/EG)

Beteiligte benannte Stelle (2000/14/EG)

Name:	SNCH
Adresse :	11, Route de Sandweiler 5230 Sandweiler, Luxemburg
Beschreibung/Bericht Nr. :	SNCH*2000/14*2005/88**1355*03/TCLM2700-03

EU-försäkrans om överensstämmelse

Produktidentifikation

Produkt :	Gräsklippare
Marke:	BARONESS
Typ:	LM2700
Version(er) :	Ej aktuell
Serienummer startar på:	10656
Uppmätt ljudeffektnivå:	LWA 100,75 dB
Garanterad ljudeffektnivå:	LWA 103 dB
Tillverkare	Kyoisha Co., Ltd.
Adress:	1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Uppfyller följande direktiv

2006/42/EG	Maskindirektivet
2014/30/EU	Elektromagnetisk kompatibilitet (EMC)
2000/14/EG	Bulleremission från utomhusutrustning

Följande kravspecifikationer har följts vid konstruktion och tillverkning

ISO 12100 : 2010 (2006/42/EG)
ISO 5395-1 : 2013 (2006/42/EG)
ISO 5395-3 : 2013 (2006/42/EG)
ISO 14982 : 1998 (2014/30/EU)

Teknisk dokumentation

Innehavarens namn:
Innehavarens adress:

Kyoisha Co., Ltd.
1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Den tekniska filen(2006/42/EG) har tagits fram av

Namn:

Kyoisha UK Ltd.

Adress:

Unit 5 Hatch Industrial Park Grewell Road, Basingstoke Hampshire RG24 7NG, Storbritannien

Förfarande för bedömning av överensstämmelse

Intern produktionskontroll: Modul A (2006/42/EG)

EG-typprovning: Modul B (2014/30/EU)

Intern kontroll av produktion med fastställd av teknisk dokumentation och periodiska kontroller (2000/14/EG)

Anmält organ (2000/14/EG)

Namn:

SNCH

Adress:

11, Route de Sandweiler 5230 Sandweiler Luxembourg

Certifikatnummer/rapportnummer:

SNCH*2000/14*2009/88*1355*03/TC/LM2700-03

MEMO

BARONESS[®]

Quality on Demand

 **KYOEISHA CO., LTD.**

Head Office 1-26, Miyuki-cho, Toyokawa, Tel : (0533)84-1390
Aichi-Pref. 442-8530 Japan. Fax : (0533)89-3623