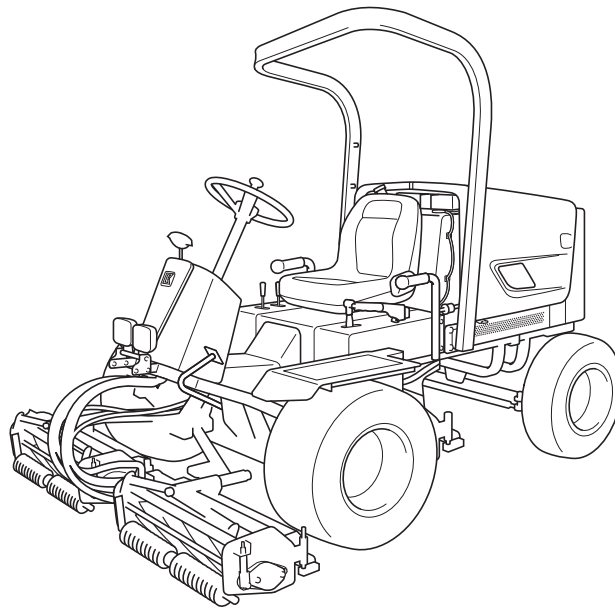


# ***LM281***

3-Unit Reel Mower

## Owner's Operating Manual



Serial No. LM281 : 10275-

"Required reading"  
Read this manual before using the machine.

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**BARONESS**<sup>®</sup>  
Quality on Demand

Original Instructions Ver.1.6

# Regulations

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## California Proposition 65

(For California, USA)

**⚠ WARNING:**

Operating, servicing and maintaining a passenger vehicle or off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle. For more information go to [www.P65Warnings.ca.gov/passenger-vehicle](http://www.P65Warnings.ca.gov/passenger-vehicle).

318yi8-005

California Proposition 65\_001

## California Spark Arrester

(For California, USA)

**⚠ Warning**

Operation of this equipment may create sparks that can start fires around dry vegetation.  
A spark arrester may be required.  
The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

The engine of this machine is not equipped with a spark arrester.

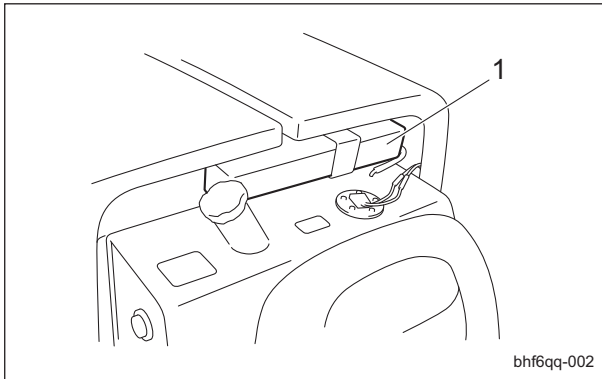
In some areas there are local, state, or federal regulations requiring that a spark arrester be used on the engine of this machine.

The recommended spark arrester for this machine is Part No.49025N Spark Arrester made by Nelson Global Products.

Thank you for purchasing the Baroness product.  
This manual describes the proper handling,  
adjustment, and inspection of your product.  
We hope you will use the product 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.



Keeping The Owner's Operating Manual\_001

1	Box
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# Introduction

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

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

Maintenance service for this machine should be performed by a mechanic with expertise.

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

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

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

Kyoisha Co., Ltd.

## Warning Symbols

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



696cq5-001

Warning symbol

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.

### **Danger**

This symbol indicates that serious injury or death will occur if the warning is ignored.

### **Warning**

This symbol indicates that serious injury or death may occur if the warning is ignored.

### **Caution**

This symbol indicates that injury or damage to property may occur if the warning is ignored.

### **Important**

This symbol indicates precautions on the mechanism of the machine.

## Precautionary Statement

### 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 Kyoeshia.

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

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

- Baroness Owner's Operating Manual
- The Engine's Owner's Manual
- The Battery's Owner's Manual

## Purpose

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

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

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

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

LM281

# Introduction

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<b>Safety</b> .....	<b>Page 1-1</b>
Safe Operating Practices .....	Page 1-2
<b>Disposal</b> .....	<b>Page 2-1</b>
Recycle and Waste Disposal .....	Page 2-2
<b>Product Overview</b> .....	<b>Page 3-1</b>
Specifications .....	Page 3-2
Names of Each Section .....	Page 3-6
Regulation Decals .....	Page 3-6
Safety Signs and Instruction Signs .....	Page 3-10
<b>Handling Instructions</b> .....	<b>Page 4-1</b>
Inspections .....	Page 4-3
Tightening Torques .....	Page 4-14
Adjustment before Work .....	Page 4-18
Procedure to Start/Stop Engine .....	Page 4-22
Operation Method .....	Page 4-24
Instruments .....	Page 4-32
Move .....	Page 4-35
Cutting Work .....	Page 4-37
Transporting .....	Page 4-37
Storage .....	Page 4-37
<b>Maintenance</b> .....	<b>Page 5-1</b>
Maintenance Precautions .....	Page 5-2
Maintenance Schedule .....	Page 5-3
Jacking Up The Machine .....	Page 5-5
Greasing .....	Page 5-6
Lubrication .....	Page 5-10
Maintenance Work .....	Page 5-11

LM281

# Contents

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**Safe Operating Practices ..... Page 1-2**

Training ..... Page 1-2

Preparation ..... Page 1-2

Operation ..... Page 1-3

Maintenance ..... Page 1-4

Storage ..... Page 1-5

# Safety

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

## Danger

This product is designed to ensure safe operation and has been tested and inspected thoroughly before shipment from the factory. The product is equipped with safety devices to prevent accidents.

However, whether the product 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 product may result in injury or death.

Observe the following safety instructions to ensure safe operation.

## Safe Operating Practices

### 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 the language used in this manual, it is the owner's responsibility to explain this material 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/user 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.
7. The ROPS is an integral and effective safety device.  
Do not remove or alter the ROPS.
8. Replace a damaged ROPS.  
Do not repair or alter.
9. You can find additional safety information where needed throughout this manual.
10. Determine the left and right sides of the machine from the normal operating position.

### 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, mask, 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. Keep children out of the operating area and under the watchful care of a responsible adult other than the operator.

## 5. Exercise care in the handling of fuel.

### 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.
6. Check that operator's presence controls, safety switches and shields are attached and functioning properly.  
Do not operate unless they are functioning properly.
  7. If the brake operation is faulty, be sure to adjust or repair them before operating the machine.
  8. If the handlebar has noticeable play, be sure to adjust or repair them before operating the machine.
  9. Replace faulty mufflers.
  10. On multi-cylinder/multi-reel machines, take care as rotating one cylinder/reel can cause other cylinders/reels to rotate.

## Operation

1. Do not operate the machine under the influence of alcohol or drugs.
2. Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
3. Be sure all drives and shift are in neutral and parking brake is engaged before starting engine.  
Only start engine from the operator's position.  
Use seat belts if provided.

4. Do not change the engine governor settings or overspeed the engine.  
Operating the engine at excessive speed may increase the hazard of personal injury.
5. Never operate the machine with damaged guards, shields, or without safety protective devices in place.  
Be sure all interlocks are attached, adjusted properly, and functioning properly.
6. Keep hands and feet away from the rotating parts.
7. Do not carry passengers.
8. Never operate while people, especially children, or pets are nearby.
9. Only operate in good light, keeping away from holes and hidden hazards.
10. Do not operate the machine when there is the risk of lightning.
11. Do not stop or start suddenly.
12. Look behind and down before backing up to be sure of a clear path.
13. Slow down and use caution when making turns and crossing roads and sidewalks.
14. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
15. Do not take your eyes off the road ahead.  
Do not operate the machine with no hands.
16. Remember there is no such thing as a safe slope.  
Travel on grass slopes requires particular care.  
To guard against overturning, follow these instructions.
  - [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 turns.
  - [4] Stay alert for humps and hollows and other hidden hazards.
17. Never use 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.
18. Use extra care while operating machine with a grass catcher or other attachments.  
They can affect the stability of the machine.

# Safety

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19. Disengage drive to the cutting unit(s), when other than operating.
20. Do the following before leaving the operator's position.
  - [1] Stop on level ground.
  - [2] Disengage the all drives.
  - [3] Set the parking brake.
  - [4] Stop the engine.
  - [5] Remove the ignition key.
21. Stop the engine in the following conditions.
  - [1] Before refuelling.
  - [2] Before removing the grass catcher.
  - [3] Before making height or depth adjustment unless adjustment can be made from the operator's position.
  - [4] Before clearing blockages.
  - [5] Before checking, cleaning or working on 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.
22. Reduce the throttle setting during engine run-out.
23. Do not direct discharge material toward anyone.  
Avoid discharging material against a wall or obstruction.  
Material may ricochet back toward the operator.
24. 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 running board, select one with sufficient strength, length, and width and that will not cause the machine to slip.
25. Close the fuel valve before transporting the machine.

## Maintenance

1. Never allow untrained personnel to service machine.
2. Implement the following work before adjusting, cleaning or repairing.
  - [1] Stop the machine on level ground.
  - [2] Disengage drive to the cutting unit(s).
  - [3] Lower the cutting unit(s) and attachment(s) if installed.
  - [4] Set the parking brake.
  - [5] Stop the engine.
  - [6] Remove the ignition key.
  - [7] Wait for all movement to stop.
3. Allow the engine/muffler to cool before checking/maintenance.
4. To reduce the fire hazard, keep hot parts such as the engine and silencer/muffler, battery compartment and fuel storage area free of grass, leaves, or excessive grease.  
Clean up oil or fuel spillage.
5. Appropriately manage and correctly use the tools necessary for servicing or adjusting the machine.
6. Disconnect battery before making any repairs.  
Disconnect the negative terminal first and the positive last.  
Reconnect positive first and negative last.
7. Use jack stands to support components when required.
8. Keep hands and feet away from moving parts.  
If possible, do not make adjustments with the engine running.
9. Make sure that parts such as wires are not touching each other and that their covers have not come off.
10. Keep all parts in good working condition and all hardware tightened.  
Replace all worn or damaged decals.
11. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
12. Carefully release pressure from components with stored energy.
13. Be sure to depressurize the hydraulic system before performing maintenance operations on it such as removing hydraulic equipment.

14. 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.
15. 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.
16. Use care when checking the cylinders/reels and bed knives.  
Wear gloves and use caution when servicing them.
17. Be careful during adjustment of the machine to prevent entrapment of the fingers between moving blades and fixed parts of the machine.
18. On multi-cylinder/multi-reel machines, take care as rotating one cylinder/reel can cause other cylinders/reels to rotate.
19. Check the grass catcher frequently for wear or deterioration.
20. 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.
21. If the fuel tank has to be drained, do this outdoors.
5. If the engine is provided with a shut-off valve, shut off valve while storing or transporting.
6. Do not store fuel near flames.
7. Swallowing engine coolant can cause injury or death; keep out of reach from children and pets.

## Storage

1. When machine is to be parked, stored, or left unattended, lower the cutting unit(s) and attachment(s) if installed unless a positive mechanical lock is provided.
2. Allow the engine to cool before storing in any enclosure.
3. Only cover the machine with a sheet after hot parts have sufficiently cooled down.
4. Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark.



**Recycle and Waste Disposal ..... Page 2-2**

About Recycle .....Page 2-2

About Waste Disposal ..... Page 2-2



# Disposal

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## Recycle and Waste Disposal

### About Recycle

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

It may be required by local laws.

### About 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.)



**Specifications ..... Page 3-2**

Specifications .....Page 3-2

Sound Pressure Level ..... Page 3-5

Sound Power Level ..... Page 3-5

Vibration Level .....Page 3-5

Carbon Dioxide (CO<sub>2</sub>) Emissions

Measurement .....Page 3-5

**Names of Each Section ..... Page 3-6****Regulation Decals .....Page 3-6**

Positions of Regulation Decals ..... Page 3-6

Description of Regulation Decals ..... Page 3-7

**Safety Signs and Instruction Signs ... Page 3-10**

About Safety Signs and Instruction

Signs .....Page 3-10

Positions of Safety Decals and

Instruction Decals ..... Page 3-10

Description of Safety Decals and

Instruction Decals ..... Page 3-11

# Product Overview

## Specifications

### Specifications

Model		LM281 (Roller type)					
Mower Unit #1		30 in		←			
Mower Units #2/#3		26 in		30 in			
Dimensions	Total length		104.33 in	265 cm	←		
	Total width	During operation	79.92 in	203 cm	92.52 in	235 cm	
		During transport	79.92 in	203 cm	82.68 in	210 cm	
	Total height	steering wheel	53.15 in	133 cm	←		
Weight	Machine (empty fuel tank)	with ROPS	2288.36 lb	1,038 kg	2321.43 lb	1,053 kg	
	Grass catcher (for one machine)		33.07 lb	15 kg	-		
Minimum turning radius		109.06 in	277 cm	←			
Engine	Model		Kubota D1105			←	
	Type		Vertical Water-cooled 4-cycle diesel engine			←	
	Total displacement		68.52 cu.in.	1,123 cm <sup>3</sup> (1.123 L)	←		
	Maximum output		18.5 kW (25.2 PS)/3,000 rpm			←	
Fuel tank capacity		Diesel 10.04 U.S.gal.	Diesel 38.0 dm <sup>3</sup> (38.0 L)		←		
Fuel consumption		213 g/PS · h (rated output)	289 g/kW · h (rated output)		←		
Engine oil capacity		0.79 U.S.gal.	3.0 dm <sup>3</sup> (3.0 L)		←		
Coolant volume		1.59 U.S.gal.	6.0 dm <sup>3</sup> (6.0 L)		←		
Hydraulic tank capacity		6.34 U.S.gal.	24.0 dm <sup>3</sup> (24.0 L)		←		
Operating width (Mowing width)		70.87 in	180 cm	83.46 in	212 cm		
Operating height (Mowing height)		0.39 - 2.36 in	10 - 60 mm		←		
Blades		5 or 7			←		
Drive	Traveling		HST Variable Speed (Full-time 4WD)			←	
	Mowing		Hydraulic			←	
Speed (HST)	Forward		0 - 8.95 mph	0 - 14.4 km/h		←	
	Reverse		0 - 5.28 mph	0 - 8.5 km/h		←	
Speed (Mechanical)		-			←		
Efficiency		2.85 acres/hour (4.97 mph x mowing width x 0.8)	11,520 m <sup>2</sup> /h (8.0 km/h x mowing width x 0.8)	3.35 acres/hour (4.97 mph x mowing width x 0.8)	13,568 m <sup>2</sup> /h (8.0 km/h x mowing width x 0.8)		
Maximum inclination for operation		20 degrees			←		

# Product Overview

Tire size	Front wheel	23 x 10.50 - 12 4P		←
	Rear wheel	23 x 8.50 - 12 4P		←
Tire pneumatic pressure	Front wheel	17.40 psi	120 kPa (1.2 kgf/cm <sup>2</sup> )	←
	Rear wheel	21.75 psi	150 kPa (1.5 kgf/cm <sup>2</sup> )	←
Battery		75D23L		←
Engine plug		-		←

\* The factory default maximum engine rpm is 3,100 rpm.

# Product Overview

Model		LM281 (Wheel type)				
Mower Unit #1		30 in		←		
Mower Units #2/#3		26 in		30 in		
Dimensions	Total length		108.66 in	276 cm	←	
	Total width	During operation	79.92 in	203 cm	92.52 in	235 cm
		During transport	79.92 in	203 cm	82.68 in	210 cm
	Total height	steering wheel	53.15 in	133 cm	←	
Weight	Machine (empty fuel tank)	with ROPS	2288.36 lb	1,038 kg	2321.43 lb	1,053 kg
	Grass catcher (for one machine)		-		-	
Minimum turning radius		109.06 in	277 cm	←		
Engine	Model		Kubota D1105		←	
	Type		Vertical Water-cooled 4-cycle diesel engine		←	
	Total displacement		68.52 cu.in.	1,123 cm <sup>3</sup> (1.123 L)	←	
	Maximum output		18.5 kW (25.2 PS)/3,000 rpm		←	
Fuel tank capacity		Diesel 10.04 U.S.gal.	Diesel 38.0 dm <sup>3</sup> (38.0 L)	←		
Fuel consumption		213 g/PS · h (rated output)	289 g/kW · h (rated output)	←		
Engine oil capacity		0.79 U.S.gal.	3.0 dm <sup>3</sup> (3.0 L)	←		
Coolant volume		1.59 U.S.gal.	6.0 dm <sup>3</sup> (6.0 L)	←		
Hydraulic tank capacity		6.34 U.S.gal.	24.0 dm <sup>3</sup> (24.0 L)	←		
Operating width (Mowing width)		70.87 in	180 cm	83.46 in	212 cm	
Operating height (Mowing height)		1.02 - 2.68 in	26 - 68 mm	←		
Blades		5		←		
Drive	Traveling		HST Variable Speed (Full-time 4WD)		←	
	Mowing		Hydraulic		←	
Speed (HST)	Forward		0 - 8.95 mph	0 - 14.4 km/h	←	
	Reverse		0 - 5.28 mph	0 - 8.5 km/h	←	
Speed (Mechanical)		-		-		
Efficiency		2.85 acres/hour (4.97 mph x mowing width x 0.8)	11,520 m <sup>2</sup> /h (8.0 km/h x mowing width x 0.8)	3.3 acres/hour (4.97 mph x mowing width x 0.8)	13,568 m <sup>2</sup> /h (8.0 km/h x mowing width x 0.8)	
Maximum inclination for operation		20 degrees		←		
Tire size	Front wheel		23 x 10.50 - 12 4P		←	
	Rear wheel		23 x 8.50 - 12 4P		←	

Tire pneumatic pressure	Front wheel	17.40 psi	120 kPa (1.2 kgf/cm <sup>2</sup> )	←
	Rear wheel	21.75 psi	150 kPa (1.5 kgf/cm <sup>2</sup> )	←
Battery		75D23L		←
Engine plug		-		←

\* The factory default maximum engine rpm is 3,100 rpm.

### Sound Pressure Level

#### Sound Pressure Level

This machine was confirmed to have a continuous A-weighted sound pressure level of 89dB by measuring identical machines in accordance with the procedure specified in ISO 5395-1:2013.

### Sound Power Level

#### Sound Power Level

This machine was confirmed to have a sound power level of 105dB by measuring identical machines in accordance with the procedure specified in ISO5395-1:2013.

### Vibration Level

#### Hand-Arm Vibration

This machine was confirmed to transmit a vibration level of 3.81 m/s<sup>2</sup> to hands and arms by measuring identical machines in accordance with the procedure specified in ISO 5349-1:2001,ISO 5349-2:2001.

#### Whole Body Vibration

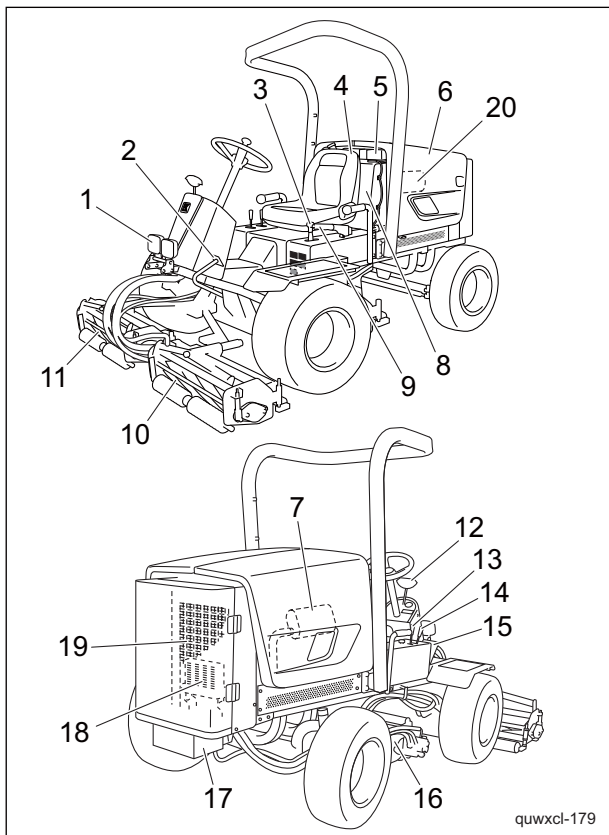
This machine was confirmed to transmit a vibration level of 0.99 m/s<sup>2</sup> to the whole body by measuring identical machines in accordance with the procedure specified in ISO 2631-1:1997,ISO 2631-2:2003.

### Carbon Dioxide (CO<sub>2</sub>) Emissions Measurement

For CO<sub>2</sub> emissions measurement on the engine of this machine, refer to the engine's owner's manual.

# Product Overview

## Names of Each Section

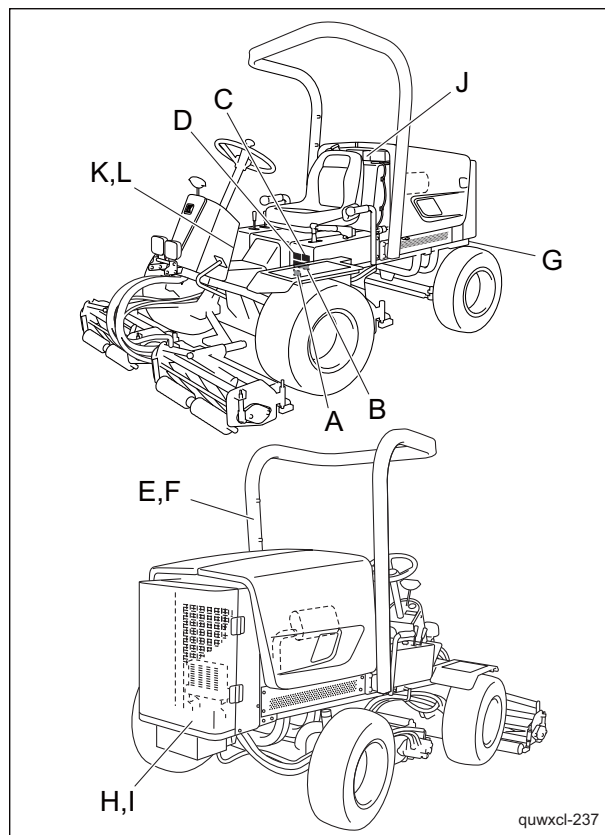


Names of Each Section\_001

1	Headlight
2	Brake pedal
3	Throttle lever
4	Seat
5	Box
6	Hood
7	Muffler
8	Fuel tank
9	Parking brake lever
10	Mower unit #3
11	Mower unit #2
12	Angle meter
13	Reel rotation lever
14	Mower unit up/down lever
15	Traveling pedal
16	Mower unit #1
17	Battery
18	Oil cooler
19	Radiator
20	Air cleaner

## Regulation Decals

### Positions of Regulation Decals



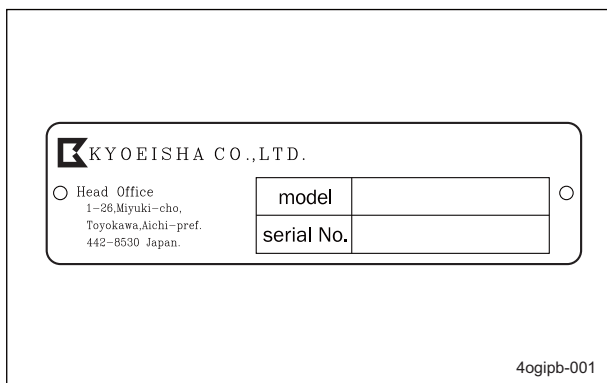
Positions of Regulation Decals\_001

A	Serial number plate
B	Specification decal
C	Noise emission decal
D	Year of manufacture decal
E	ROPS compliance decal
F	ROPS caution decal
G	Battery capacity decal
H	Recycle decal
I	Battery danger decal
J	Indicating diesel fuel decal
K	California proposition 65 decal (riding type)
L	Spark arrester warning decal

## Description of Regulation Decals

### Serial Number Plate

The serial number plate indicates the model and serial number of the machine.



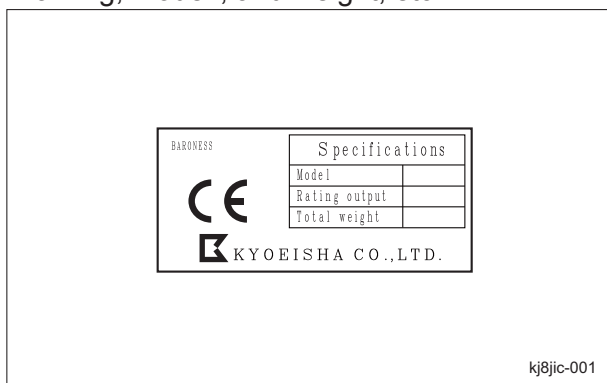
Serial Number Plate\_001

### Specification Decal

(For Europe)

CE mark indicates that the machine sold in the EU nations complies with the EU requirements.

The Specification decal indicates the CE marking, model, and weight, etc.

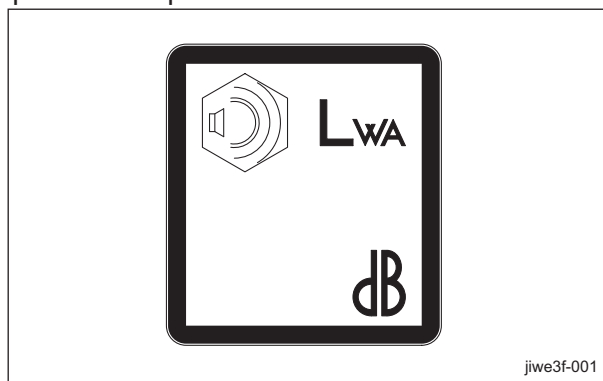


Specification Decal\_001

### Noise Emission Decal

(For Europe)

The noise emission decal indicates the sound power level determined by measuring identical machines in accordance with the procedure specified in the EC directives.

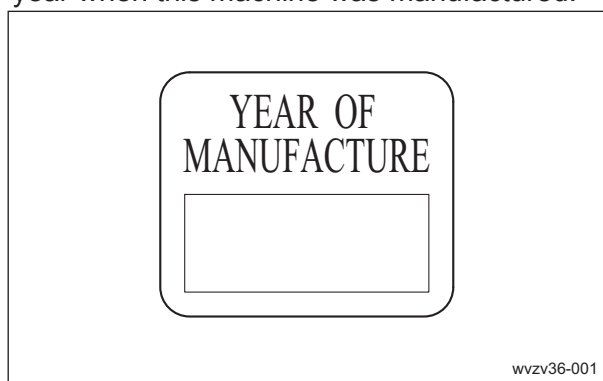


Noise Emission Decal\_001

### Year of Manufacture Decal

(For Europe)

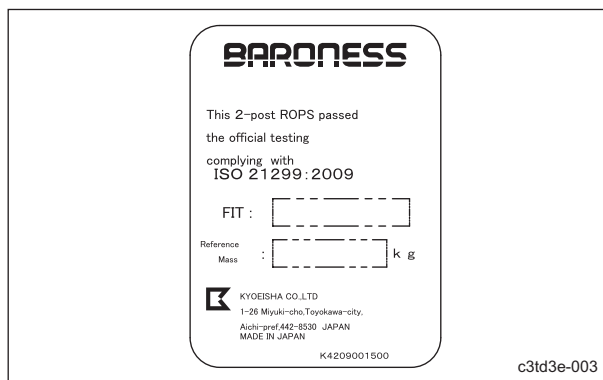
The year of manufacture decal indicates the year when this machine was manufactured.



Year of Manufacture Decal\_001

### ROPS Compliance Decal

The ROPS compliance decal indicates the manufacturer, model, etc., in accordance with International Standard ISO 21299:2009.



ROPS Compliance Decal\_001

# Product Overview

## ROPS Caution Decal

ROPS caution decal describes the following caution messages.

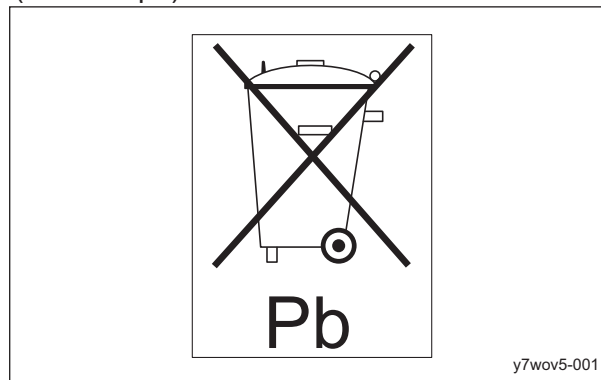
- Replace damaged ROPS.
- Do not repair or revise.



ROPS Caution Decal\_001

## Recycle Decal

Recycle Decal illustrates Recycle Mark in accordance with local regulation.  
(For Europe)

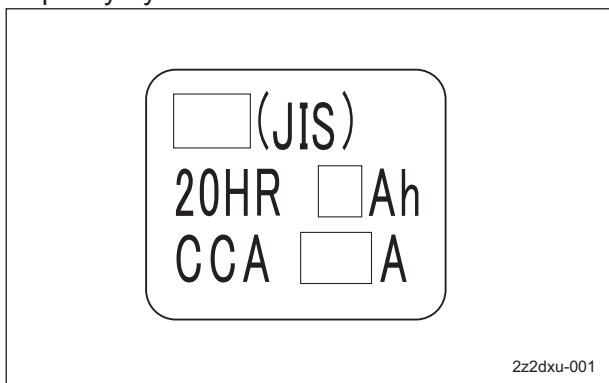


Recycle Decal\_001

## Battery Capacity Decal

(For Europe)

The battery capacity decal indicates the capacity by 20HR and CCA.



Battery Capacity Decal\_001

(For USA)



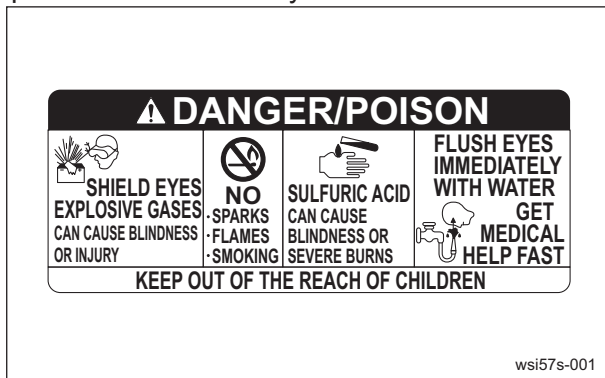
Recycle Decal\_002



## Battery Danger Decal

(For USA)

Battery Danger Decal describes handling precautions for battery.

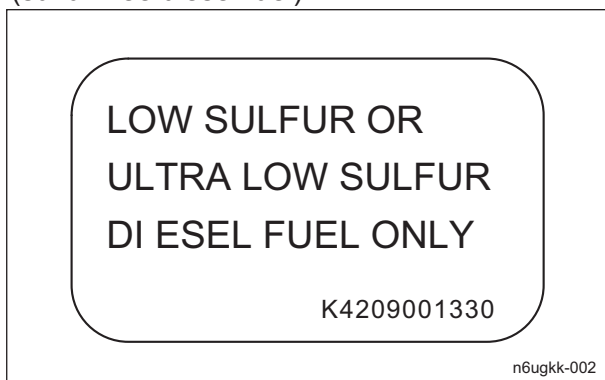


Battery Danger Decal\_001

## Indicating Diesel Fuel Decal

(for USA)

It indicates the fuel to be used. Use low sulfur or ultra-low sulfur diesel fuel (sulfur-free diesel fuel).

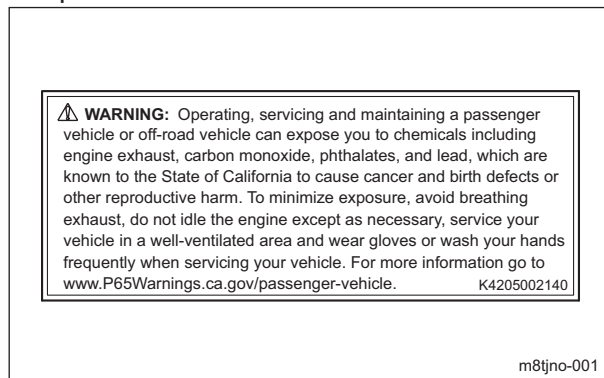


Indicating Diesel Fuel Decal\_001

## California Proposition 65 Decal (Riding Type)

(For the State of California, USA)

California Proposition 65 decal describes the warning messages as required by California Proposition 65.

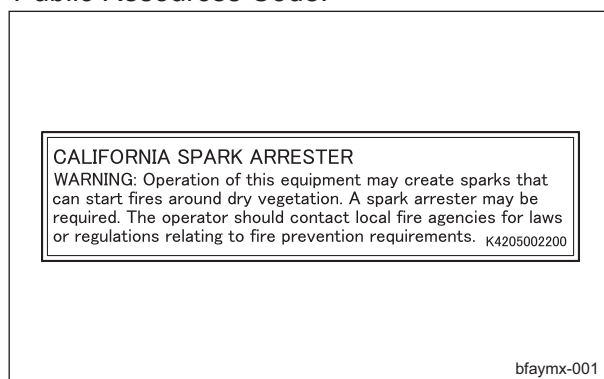


California Proposition 65 Decal (Riding Type)\_001

## Spark Arrester Warning Decal

(For the State of California, USA)

Spark arrester warning decal describes the warning messages as required by California Public Resources Code.



Spark Arrester Warning Decal\_001

# Product Overview

## Safety Signs and Instruction Signs

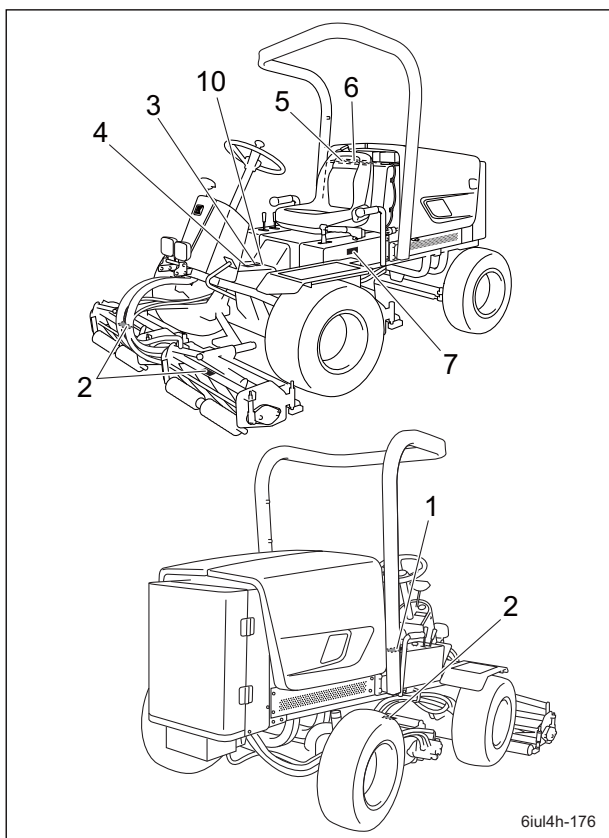
### About Safety Signs and Instruction Signs

**Important**

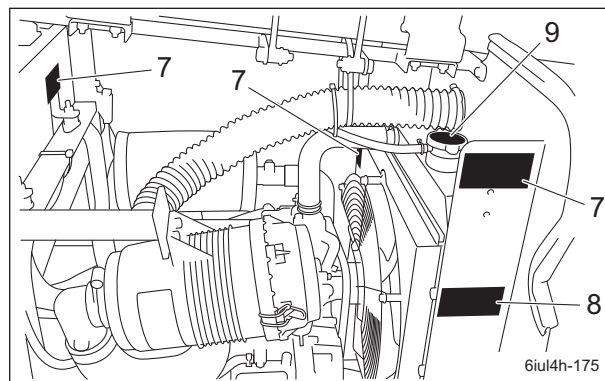
Safety decals and instruction decals are attached to this product. Make sure that they are preserved in their entirety. If they are damaged, become dirty, or peel off, replace them with new ones.

Part numbers for decals that need to be replaced are listed in the parts catalog. Order them from a Baroness dealer or Kyoeshia.

### Positions of Safety Decals and Instruction Decals



Positions of Safety Decals and Instruction Decals\_001



Positions of Safety Decals and Instruction Decals\_002

1	Operating lever decal
2	Caution to mutilation decal
3	DO NOT STEP caution decal
4	Hydraulic oil icon
5	Diesel fuel icon
6	Fire prohibited decal
7	Caution to hot parts decal
8	Caution to rotating object decal
9	Caution for spouting coolant decal
10	Caution to noise decal

## Description of Safety Decals and Instruction Decals

### Operating Lever Decal

LM281--0902Z0  
Decal, operating lever

1.



Read the Owner's Operating Manual.

2.



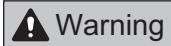
Apply the parking brake, stop the engine, remove the ignition key, and then leave the machine.

3.



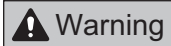
Flying objects - Be sure that people around the machine keep a safe distance away.

4.



May cut your hand or leg - Keep hands and feet away from moving parts.

5.

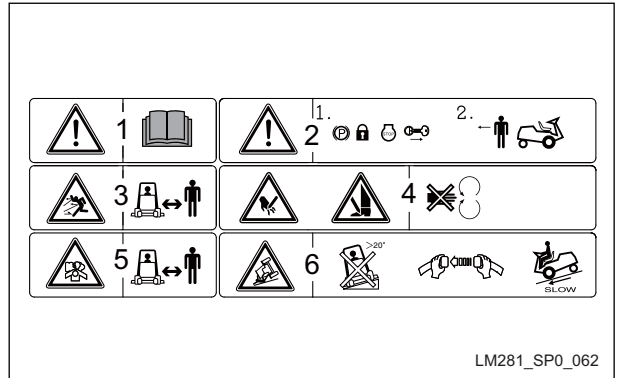


Be careful of exhaust emissions.

6.



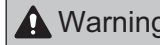
Rollover - Do not work on slopes of 20 degrees or more.  
When you descend a slope, drive at low speed with the mower units lowered.  
Fasten your seatbelt.



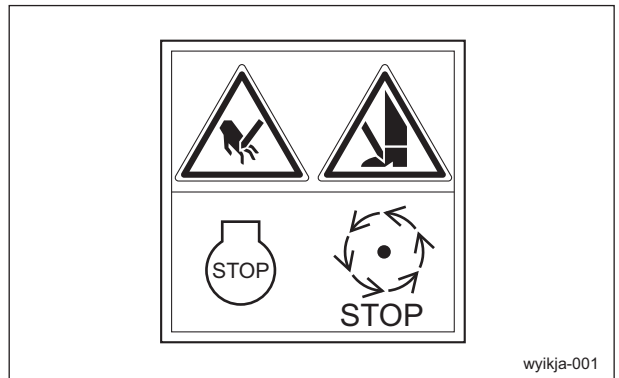
Operating Lever Decal\_001

### Caution to Mutilation Decal

K4205001600  
DECAL, CAUTION TO MUTILATION



May cut your hand or leg - Stop the cutter rotation and engine. Otherwise you may get injured.



Caution to Mutilation Decal\_001

# Product Overview

## DO NOT STEP Caution Decal

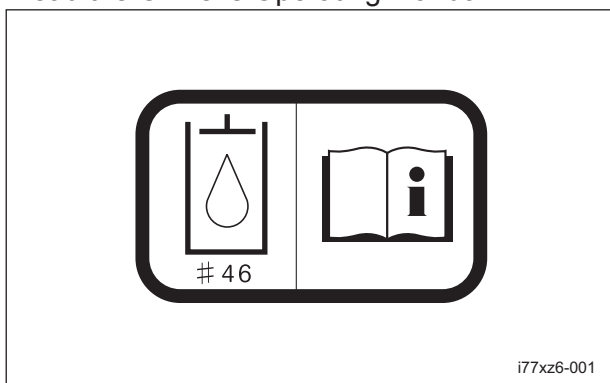
K4209001340  
Decal, caution "DO NOT STEP"



DO NOT STEP Caution Decal\_001

## Hydraulic Oil Icon

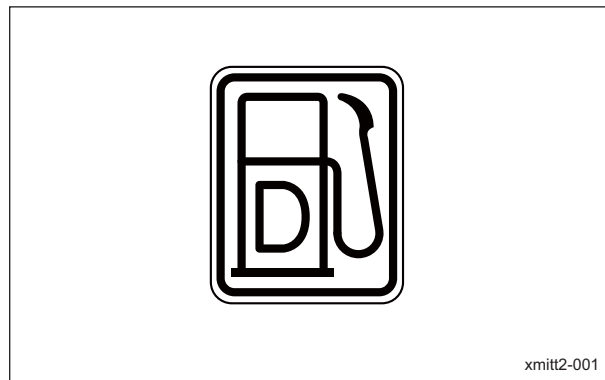
K4209000980  
Hydraulic oil icon  
Read the Owner's Operating Manual.



Hydraulic Oil Icon\_001

## Diesel Fuel Icon

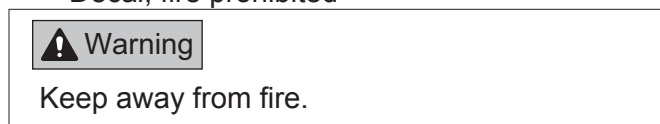
K4209001000  
Diesel fuel icon  
Use diesel fuel.



Diesel Fuel Icon\_001

## Fire Prohibited Decal

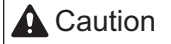
K4205001940  
Decal, fire prohibited



Fire Prohibited Decal\_001

### Caution to Hot Parts Decal

K4205001540  
Decal for caution to hot parts



High temperature - Do not touch. Otherwise, you will get burned.



Caution to Hot Parts Decal\_001

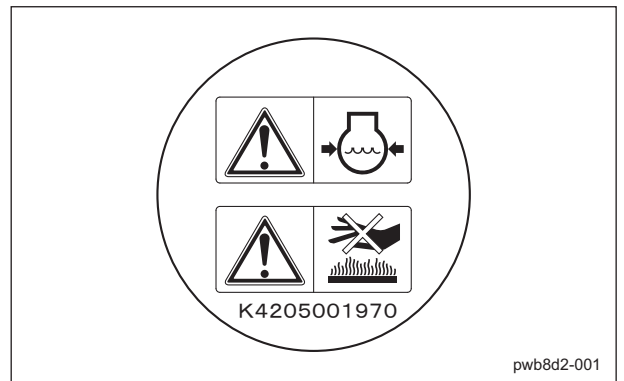
xekv4l-001

### Caution for Spouting Coolant Decal

K4205001970  
Decal, caution for spouting coolant



Caution for spouting coolant - Do not open while hot.  
High temperature - Do not touch. Otherwise, you will get burned.

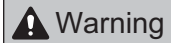


Caution for Spouting Coolant Decal\_001

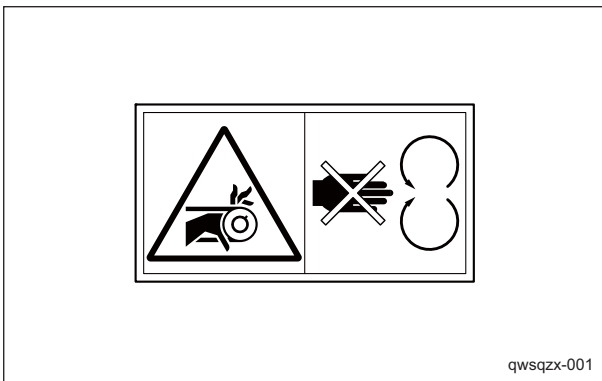
pwb8d2-001

### Caution to Rotating Object Decal

K4205001530  
Decal, caution to rotating object



Watch for rotating parts - Keep your hands away from the belts while the engine is running.



Caution to Rotating Object Decal\_001

qwsqzx-001

### Caution to Noise Decal

K4205002090  
Decal, caution to noise



Caution to Noise Decal\_001

bwu9po-001

# Product Overview

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# Handling Instructions

<b>Inspections</b> .....	<b>Page 4-3</b>	<b>Procedure to Start/Stop Engine</b> .....	<b>Page 4-22</b>
Reel Cutter (Cutting Cylinder) and Bed Knife (Bottom Blade) .....	Page 4-3	Start/Stop of Engine .....	Page 4-22
Cover .....	Page 4-3	Safety Mechanisms .....	Page 4-24
Roller .....	Page 4-3	Warning Mechanisms .....	Page 4-24
CR brush .....	Page 4-4	<b>Operation Method</b> .....	<b>Page 4-24</b>
Scraper .....	Page 4-4	Cautions for when You Leave The Machine .....	Page 4-24
Radiator Cover .....	Page 4-4	Positions of Operation Decals .....	Page 4-24
Radiator .....	Page 4-4	Description of Operation Decals .....	Page 4-25
Coolant .....	Page 4-5	Light Switch .....	Page 4-28
Oil Cooler .....	Page 4-6	Throttle Lever .....	Page 4-28
Hydraulic Oil .....	Page 4-7	Mower Unit Up/Down Lever .....	Page 4-28
Hydraulic Hoses .....	Page 4-8	Stop Valve .....	Page 4-29
Air Cleaner .....	Page 4-9	Reel Rotation Lever .....	Page 4-29
Battery .....	Page 4-9	Reel Rotation Lever Stopper .....	Page 4-29
Electrical Wiring .....	Page 4-10	Reel Rotation/Stop Switching Lever ...	Page 4-30
Tire .....	Page 4-10	Traveling Pedal .....	Page 4-30
Brake .....	Page 4-11	Brake Pedal .....	Page 4-30
Belt .....	Page 4-11	Parking Brake Lever .....	Page 4-31
Wire .....	Page 4-11	Hood .....	Page 4-31
Safety Device .....	Page 4-11	Underseat Cover .....	Page 4-32
Around The Engine .....	Page 4-11	<b>Instruments</b> .....	<b>Page 4-32</b>
Engine Oil .....	Page 4-11	Instruments on The Operation Panel ...	Page 4-32
Fuel .....	Page 4-12	Hour Meter .....	Page 4-32
Fuel Filter .....	Page 4-13	Water Temperature Gauge .....	Page 4-33
Oil Leakage .....	Page 4-13	Fuel Gauge .....	Page 4-33
<b>Tightening Torques</b> .....	<b>Page 4-14</b>	Pilot Lamps .....	Page 4-33
Standard Tightening Torques .....	Page 4-14	Overheat Warning Buzzer .....	Page 4-34
Principal Tightening Torques .....	Page 4-17	Angle Meter .....	Page 4-34
<b>Adjustment before Work</b> .....	<b>Page 4-18</b>	<b>Move</b> .....	<b>Page 4-35</b>
Adjustment of Seat .....	Page 4-18	Traveling Procedure .....	Page 4-35
Adjustment of Blade Engagement .....	Page 4-18	Towing The Machine .....	Page 4-35
Adjustment of Cutting Height .....	Page 4-19	<b>Cutting Work</b> .....	<b>Page 4-37</b>
Adjustment of Cutter Adjustment Spring .....	Page 4-20	Cutting Operation .....	Page 4-37
Adjustment of Lift Arm Spring .....	Page 4-20	<b>Transporting</b> .....	<b>Page 4-37</b>
Adjustment of Reel Cover .....	Page 4-21	Transporting Procedure .....	Page 4-37
Adjustment of CR Brush .....	Page 4-21	<b>Storage</b> .....	<b>Page 4-37</b>
Adjustment of Rear Scraper (Wire Type) .....	Page 4-21		

# Handling Instructions

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Before Long-Term Storage .....Page 4-37



## Inspections

Inspect the machine according to the maintenance schedule so that you will be able to take advantage of its optimum performance for a long period of time.

### Reel Cutter (Cutting Cylinder) and Bed Knife (Bottom Blade)

Inspection of Reel Cutter (Cutting Cylinder) and Bed Knife (Bottom Blade)

#### Caution

Wear gloves when touching edged tools to avoid cutting your hands.

The reel cutter (cutting cylinder) and bed knife (bottom blade) may become dull due to frequent use, objects crushed during mowing, or damage caused during transportation. Inspect the reel cutter (cutting cylinder) and bed knife (bottom blade), and if necessary, adjust the blade engagement, perform back lapping, or sharpen or replace the reel cutter (cutting cylinder) and the bed knife (bottom blade).

1. Check to see whether or not the edge of the reel cutter (cutting cylinder) and the bed knife (bottom blade) are too blunt to cut.
2. Make sure that the reel cutter (cutting cylinder) and the bed knife (bottom blade) are not cracked.
3. Check to see how much the reel cutter (cutting cylinder) and the bed knife (bottom blade) are worn.
4. Make sure that the reel cutter (cutting cylinder) and the bed knife (bottom blade) have not changed color due to heat from grinding.
5. Check to see whether or not the second edge face (relief) remains at the point of reel cutter (cutting cylinder).
6. Make sure that the welding between the reel cutter (cutting cylinder) and the disc has not come off.

## Cover

Inspection of Covers

#### Warning

If you have removed the covers during inspection, be sure to securely install them in their original positions.

If a cover remains removed, the operator may come into contact with rotating parts or belts and foreign objects may fly off, possibly resulting in injuries.

1. Make sure that there is no wear or deterioration of the reel cover and all other covers.
2. Make sure that there is no damage to the reel cover and all other covers.
3. Make sure that there is no interference with moving parts due to deformation of the reel cover and all other covers.
4. Make sure that the reel cover and all other covers are installed in their appropriate positions.

## Roller

Inspection of Rollers

Bearing wear due to frequent use or bearing damage caused by water infiltration may prevent the roller from rotating smoothly. Inspect the roller and, if necessary, replace parts such as oil seals and bearings.

1. Make sure that there is no abrasion nor adhesion of the roller.
2. Make sure that there is no wear of the roller shaft.
3. Make sure that there is no wear nor damage of the oil seal.
4. Make sure that there is no wear nor rust of the bearing.
5. Make sure that there is no play in the roller shaft.

# Handling Instructions

## CR brush

### Inspection of CR Brush

**Note:**

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

Bearing wear due to frequent use or bearing damage caused by water infiltration may prevent the brush from rotating smoothly. Inspect the brush and, if necessary, replace parts such as bearings.

1. Make sure that there is no abrasion nor adhesion of the brush.
2. Make sure that there is no wear of the brush shaft.
3. Make sure that there is no abnormality in the brush.
4. Make sure that there is no play in the fit of the bearing and the housing.
5. Make sure that there is no play in the brush shaft.

## Scraper

### Inspection of Rear Scraper (Wire Type)

**Note:**

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

The operating efficiency may be reduced due to frequent use, objects crushed during operation, or damage during transportation. Inspect the scraper, and replace any parts if necessary.

1. Make sure that there are no breaks nor sagging in the scraper (wire).
2. Make sure that there is no contact between the scraper and roller.

## Radiator Cover

### Inspection of Radiator Cover

1. Make sure that there is no damage to the radiator cover.
2. Make sure that the radiator cover is not contaminated.

## Cleaning of Radiator Cover

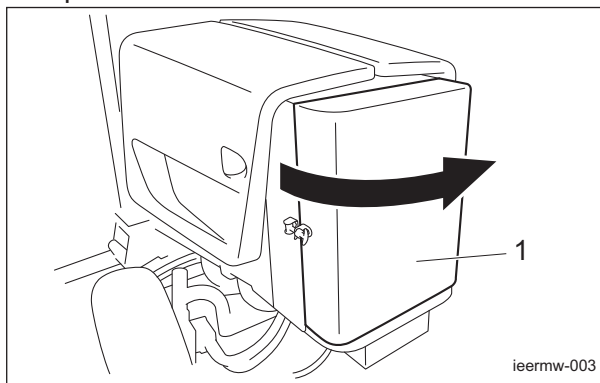
**Important**

An unclean radiator cover may cause overheating or damage to the engine. It may also cause malfunction of the hydraulic system.

If the radiator cover has been contaminated with dust, be sure to clean it.

After operating the machine in a dusty environment, it is important to remove dust from the cover as soon as possible.

1. Open the radiator cover.



Cleaning of Radiator Cover\_001

1	Radiator cover
---	----------------

2. Carefully clean the front and back of the radiator cover with water or compressed air.

## Radiator

### Inspection of Radiator

1. Make sure that there is no damage to the radiator.
2. Make sure that the radiator is not contaminated.

# Handling Instructions

## Cleaning of Radiator

**Important**

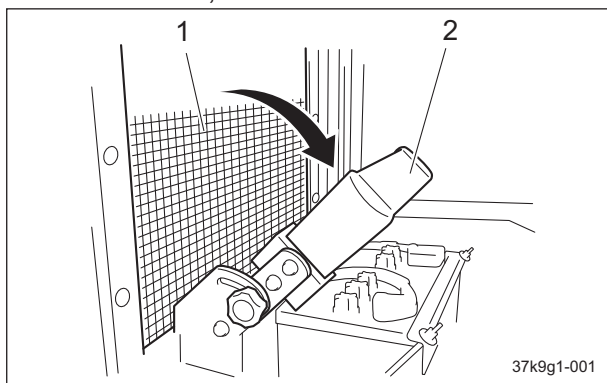
An unclean radiator may cause overheating or damage to the engine. It may also cause malfunction of the hydraulic system.

**Important**

Do not use solid objects, such as a spatula or screwdriver, or high-pressure water to clean the radiator or oil cooler. Otherwise, special fins or tubes may be damaged, possibly resulting in reduced cooling performance or coolant leakage.

If the radiator has been contaminated with dust, be sure to clean it. After operating the machine in a dusty environment, it is important to remove dust as soon as possible.

1. Open the radiator cover.
2. Loosen the knobs on the left and right of the oil cooler, and then tilt the oil cooler.



Cleaning of Radiator\_001

1	Radiator
2	Oil cooler

3. Carefully clean the front and back of the radiator with water or compressed air.

## Coolant

### Inspection of Coolant

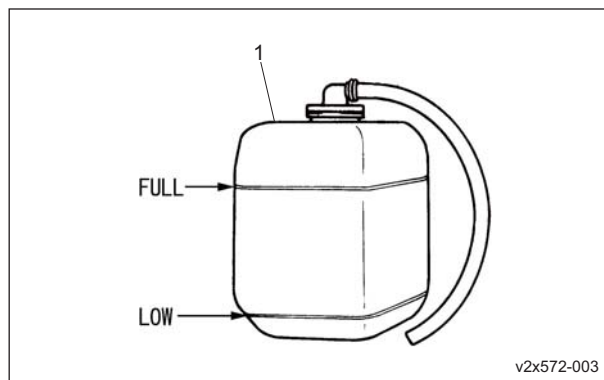
**Caution**

Do not touch the radiator or coolant during engine operation or immediately after the engine has been turned off. Otherwise, you may get burned.

**Caution**

Inspection should take place after the engine has well cooled down.

1. Make sure that the coolant level in the reserve tank is between "FULL" and "LOW".



Inspection of Coolant\_001

1	Reserve tank
---	--------------

# Handling Instructions

## Coolant Supply

### ⚠ Caution

Do not touch the radiator or coolant during engine operation or right after the engine has been turned off. Due to high temperatures, doing so could cause burns.

### ⚠ Caution

Supply coolant after the engine has well cooled down.

### ⚠ Caution

The radiator cap is pressurized. If you remove the radiator cap while the engine is overheated, hot steam will burst out, possibly resulting in burns. Make sure that the water temperature and pressure are reduced, and then grab the cap with a thick cloth and gradually open the cap.

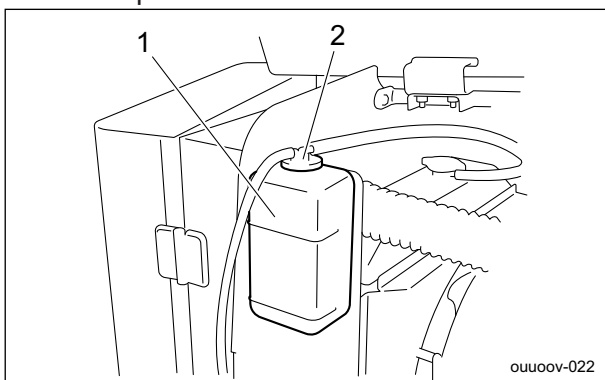
### Important

When you supply coolant, be sure to use clean water, such as tap water.

### Important

Tightly close the radiator cap. If the cap is loose or incorrectly installed, water will leak and the engine will be damaged due to overheating.

1. If the coolant level in the reserve tank is lower than the "LOW" mark, open the reserve tank cap and fill the tank with clean water up to the "FULL" mark.



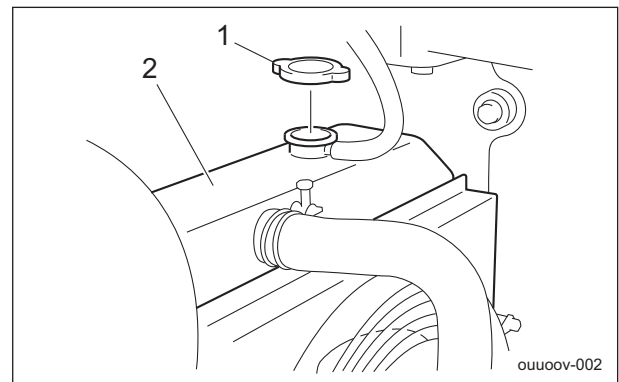
Coolant Supply\_001

1	Reserve tank
2	Reserve tank cap

2. If no coolant is in the reserve tank, follow the steps below to fill the tank with clean water.

[1] Open the radiator cap, and then supply clean water up to the opening.

[2] Open the reserve tank cap, and then supply clean water up to the "FULL" mark.



Coolant Supply\_002

1	Radiator cap
2	Radiator

## Oil Cooler

### Inspection of Oil Cooler

1. Make sure that there is no damage to the oil cooler.
2. Make sure that the oil cooler is not contaminated.

# Handling Instructions

## Cleaning of Oil Cooler

**Caution**

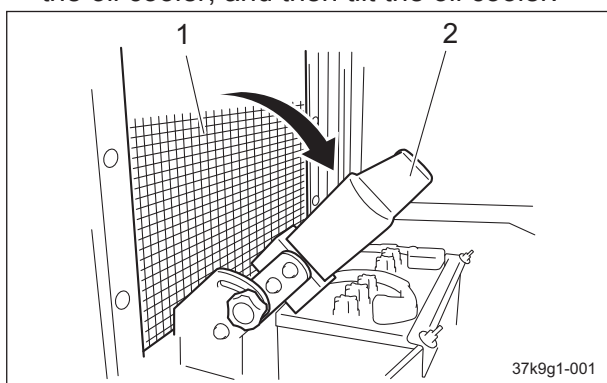
An unclean oil cooler may cause malfunction of the hydraulic system.

**Important**

Do not use solid objects, such as a spatula or screwdriver, or high-pressure water to clean the radiator or oil cooler. Otherwise, special fins or tubes may be damaged, possibly resulting in reduced cooling performance or coolant leakage.

If the oil cooler has been contaminated with dust, be sure to clean it. After operating the machine in a dusty environment, it is important to remove dust as soon as possible.

1. Open the radiator cover.
2. Loosen the knobs on the left and right of the oil cooler, and then tilt the oil cooler.



Cleaning of Oil Cooler\_001

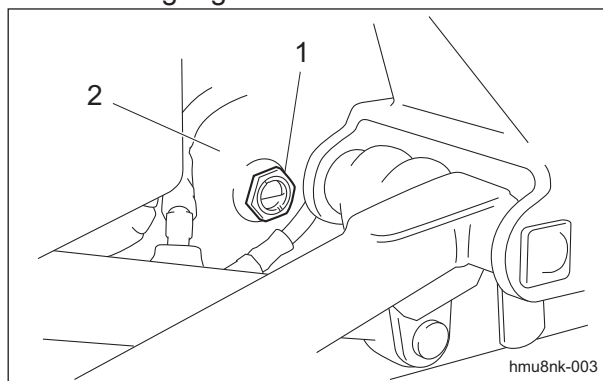
1	Radiator
2	Oil cooler

3. Carefully clean the front and back of the oil cooler with water or compressed air.

## Hydraulic Oil

### Inspection of Hydraulic Oil

1. Raise the mower units and maintain that position on a level surface.
2. Make sure that the oil level is at the middle of the oil gauge.



Inspection of Hydraulic Oil\_001

1	Oil gauge
2	Hydraulic tank

3. Check underneath the machine for oil leakage.

# Handling Instructions

## Hydraulic Oil Supply

### Important

Do not mix different types of oil.

### Important

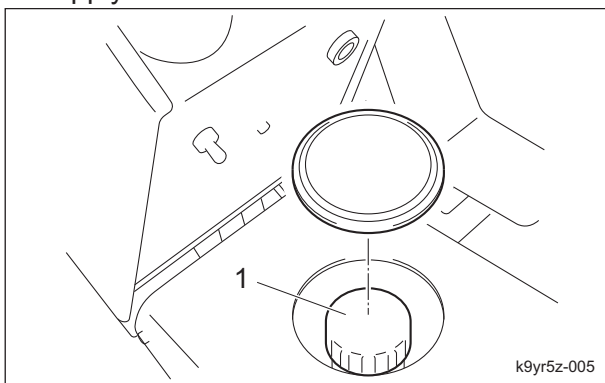
Use Shell Tellus S2M46 (or equivalent) as hydraulic oil.  
In case of an equivalent, consult Characteristics of Hydraulic Oil and use hydraulic oil whose characteristics are superior to those of the specific hydraulic oil. Especially regarding kinematic viscosity and viscosity index, use of hydraulic oil whose figures are less than those of the specified hydraulic oil will cause a malfunction in the hydraulic circuit.

### Note:

#### Characteristics of Hydraulic Oil

Specified Hydraulic Oil		Shell Tellus S2M46
ISO Viscosity Grade		ISO VG46
Density	15 °C (59 °F)	0.873 g/cm <sup>3</sup> (0.0315 lb/in <sup>3</sup> )
API Gravity		30.6
Flash Point (Open Cup)		230 °C (446 °F)
Pour Point		-30 °C (-22 °F)
Kinematic	40 °C (104 °F)	46 mm <sup>2</sup> /s (46 cSt)
Viscosity	100 °C (212 °F)	7 mm <sup>2</sup> /s (7 cSt)
Viscosity Index		109

1. If the oil level is low, open the tank cap and supply oil.



Hydraulic Oil Supply\_001

1	Tank cap
---	----------

2. Tighten the tank cap securely.

3. Start the engine, raise and lower the mower units, and turn the steering wheel left and right.  
Move forward and reverse repeatedly several times.
4. Raise the mower units and maintain that position on a level surface, and then check to see if the oil level is at the middle of the oil gauge. If necessary, supply oil.
5. Check underneath the machine for oil leakage.

## Hydraulic Hoses

### Inspection of Hydraulic Hoses

### Warning

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 personal accidents.

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.

Check the pipes and hoses to make sure that there is no oil leakage, circuit damage, looseness, wear, connector looseness, weather deterioration and chemical deterioration.

Make any necessary repairs before operating the machine.

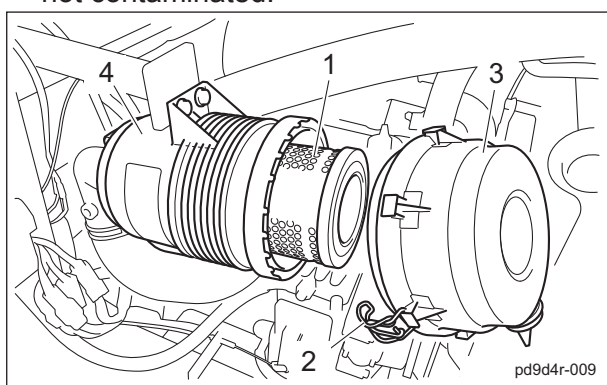
# Handling Instructions

## Air Cleaner

### Inspection of Air Cleaner

The air cleaner is a component that removes dirt from the intake air to prevent wear of the cylinder liners and piston rings so that the engine will always operate smoothly. A contaminated air cleaner element may cause malfunction of the engine.

1. Make sure that there is no damage to the air cleaner.
2. Make sure that the air cleaner element is not contaminated.



Inspection of Air Cleaner\_001

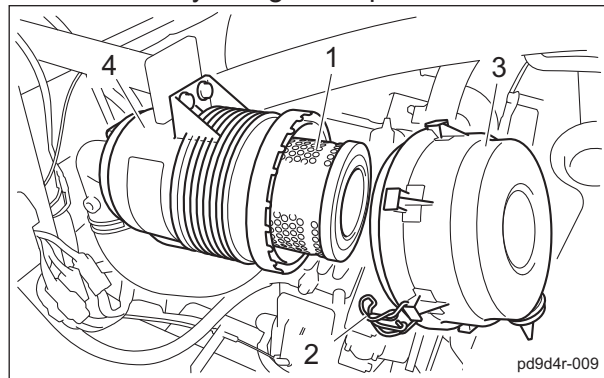
1	Air cleaner element
2	Clip
3	Air cleaner cap
4	Air cleaner body

### Cleaning of Air Cleaner

A contaminated air cleaner element may cause malfunction of the engine. To maximize the life of the engine, clean the air cleaner properly.

1. Follow the steps below to clean the air cleaner.
  - [1] Remove the clips from the two locations, remove the air cleaner cap, and then remove the air cleaner element.
  - [2] While paying close attention not to damage the air cleaner element, tap a solid portion of the air cleaner element or blow compressed air from its inside to remove dust and dirt. If the air cleaner element is extremely contaminated, replace it with a new one.
  - [3] Attach the air cleaner element to the air cleaner body.

- [4] Re-place the air cleaner cap, and then fix it securely using the clips.



Cleaning of Air Cleaner\_001

1	Air cleaner element
2	Clip
3	Air cleaner cap
4	Air cleaner body

## Battery

### Inspection of Battery

#### **! Danger**

Keep fire away while inspecting or charging the battery. The battery may explode.

#### **! Warning**

Do not allow the battery fluid level to become lower than the LOWER LEVEL (minimum fluid level line). The battery may explode if it is used or charged while the battery fluid level is at the LOWER LEVEL (minimum fluid level line).

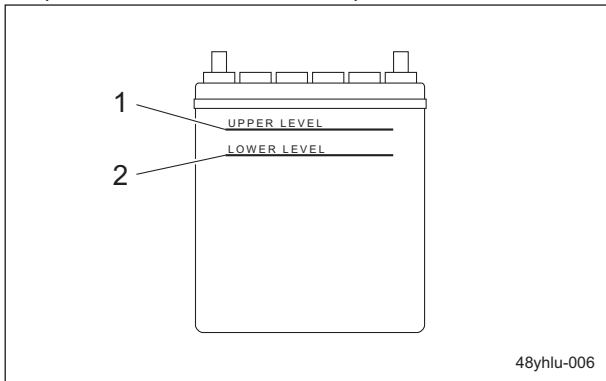
#### **! Caution**

Implement after the engine and muffler etc. have well cooled down. Otherwise you may get burned.

1. Clean the areas around the battery fluid level lines using a cloth dampened with water.

# Handling Instructions

2. Make sure that the battery fluid level is between the UPPER LEVEL (maximum fluid level line) and the LOWER LEVEL (minimum fluid level line).



Inspection of Battery\_001

1	UPPER LEVEL
2	LOWER LEVEL

## Supply of Battery Fluid

**⚠ Danger**

Be careful not to let your skin, eyes or clothes, etc., come into contact with the battery fluid or accidentally swallow the fluid. Should your skin or clothes come into contact with the battery fluid, immediately wash them away with water.

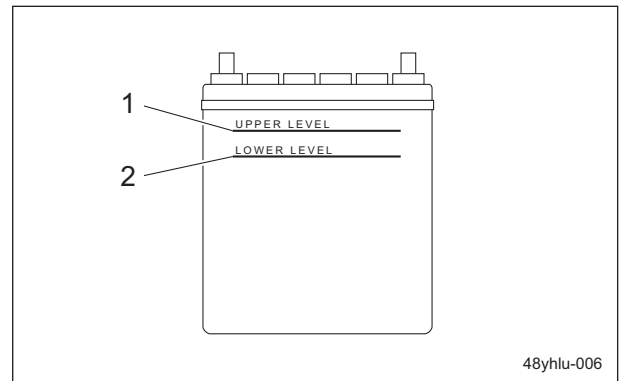
**⚠ Danger**

When you supply battery fluid, wear protective garments and safety glasses, etc.

**⚠ Caution**

Implement after the engine and muffler etc. have well cooled down. Otherwise you may get burned.

1. If the battery fluid level is lower than halfway between the UPPER LEVEL (maximum) line and LOWER LEVEL (minimum) line, add purified water up to the UPPER LEVEL (maximum) line.



Supply of Battery Fluid\_001

1	UPPER LEVEL
2	LOWER LEVEL

## Electrical Wiring

### Inspection of Electrical Wiring

**Important**

Electrical short circuit will cause fire, electrical leakage and malfunction of electrical equipments.

Inspect electrical wiring for poor terminal connections, damaged wiring or terminals, loose connections, weather-related deterioration and chemical-related deterioration.

If necessary, repair before operating the machine.

## Tire

### Inspection of Tires

**⚠ Caution**

Do not allow the air pressure in the tires to exceed the specified maximum.

1. Check the pneumatic pressure of the tires.
2. Make sure that there are no cracks, damage or abnormal wear on the tires.

Tire size	Pneumatic pressure
Front wheel (23 x 10.50 - 12 4P)	120 kPa (1.2 kgf/cm <sup>2</sup> )
Rear wheel (23 x 8.50 - 12 4P)	150 kPa (1.5 kgf/cm <sup>2</sup> )



# Handling Instructions

## Brake

### Inspection of Brake Pedal

1. When depressing the brake pedal fully, make sure that there is appropriate clearance between the floorboard and the pedal or pedal reserve distance.
2. When depressing the brake pedal fully, make sure that the pedal reaction is not spongy and that there is no noise.
3. When depressing the brake pedal during traveling, make sure that the machine stops smoothly and the braking is sufficiently effective.

### Inspection of Parking Brake

1. Make sure that the brake is applied when you pull the parking brake lever.
2. Make sure that the brake is not applied even slightly when you press the push button to release the parking brake lever.

## Belt

### Inspection of Belt

#### Warning

The engine must be stopped when the belt is inspected.

#### Important

A slacking or damaged belt or damaged fan may cause overheating or lack of a battery charge.

1. Press the middle of the belt with your finger to check the belt tension.
2. Make sure that there are no cracks, damage or abnormal wear.

## Wire

### Inspection of Wire

1. Make sure that the wire is not cracked or damaged.
2. If the wire is cracked or damaged, replace it with a new one immediately.

## Safety Device

### Inspection of Safety Device

Make sure that the safety device operates correctly.

"Safety Mechanisms" (Page 4-24)

## Around The Engine

### Inspection of Engine-Associated Parts

1. Check the fuel system parts for loosened or cracked joints and leakage. Replace the parts if necessary.
2. Blow compressed air to clean any grass or flammable materials that may be attached on or around the muffler.

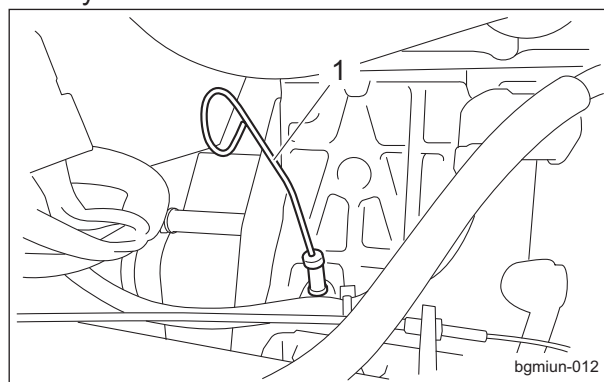
## Engine Oil

### Inspection of Engine Oil

#### Important

Securely tighten the oil level gauge and oil filler cap.

1. Stop the engine, wait for 10 to 20 minutes for the engine to cool down, then check the oil level.
2. Position the machine so that the engine will be level, then insert the oil gauge all the way to check the oil level.

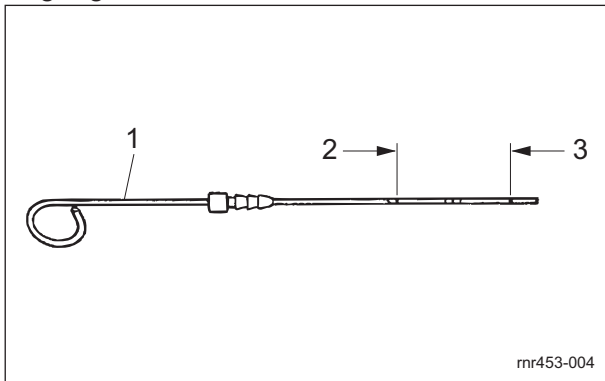


Inspection of Engine Oil\_001

1	Oil gauge
---	-----------

# Handling Instructions

3. The appropriate oil level should be between the upper and lower limit lines on the gauge.



Inspection of Engine Oil\_002

1	Oil gauge
2	Upper limit
3	Lower limit

## Supply of Engine Oil

### Important

Do not supply too much engine oil. Otherwise, the engine may be damaged.

### Important

Do not mix different types of engine oil.

### Important

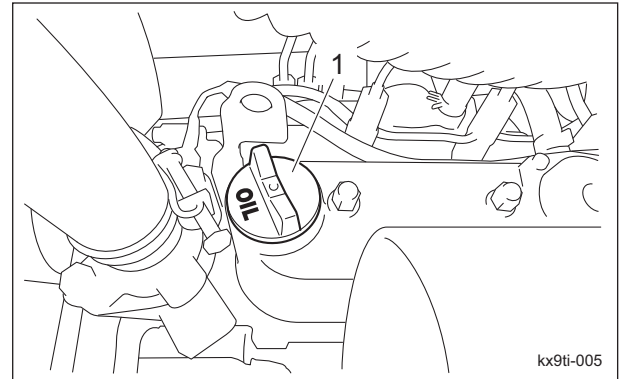
Be sure to use engine oil that is classified as API Service Grade CF or higher, with an SAE Viscosity that is appropriate for the operating environment (ambient temperature).

### Important

Securely tighten the oil level gauge and oil filler cap.

1. Engine oil is supplied through the oil filling port.  
Remove the oil filler cap, and then supply new engine oil until the oil reaches a level in between the upper and lower limit lines on the oil level gauge.

2. Securely install the oil filler cap.



Supply of Engine Oil\_001

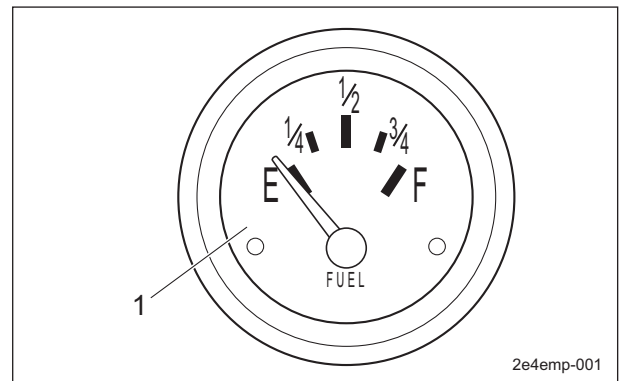
1	Oil filler cap
---	----------------

3. It will take a while for the supplied engine oil to descend into the oil pan.  
Check the oil level again 10 to 20 minutes after supplying the oil.

## Fuel

### Inspection of Fuel Quantity

With the machine on a level surface, observe the fuel gauge in the operation panel to check the fuel level.



Inspection of Fuel Quantity\_001

1	Fuel gauge
---	------------

# Handling Instructions

## Fuel Supply

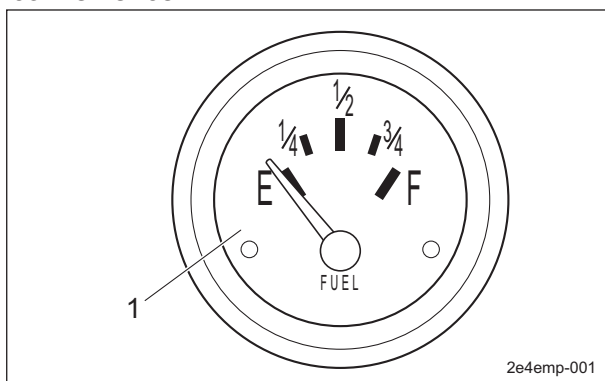
**Warning**

Do not supply fuel above the middle (marked in red) of the fuel gauge.  
If you supply too much fuel, it might overflow from the tank cap when you travel or work on a slope.

**Warning**

Keep fire away while refueling.  
Do not smoke while refueling.

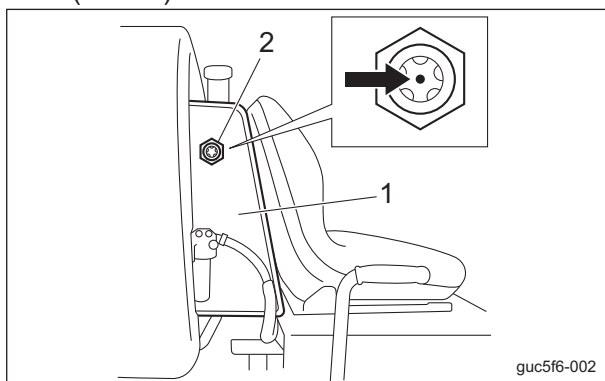
If the fuel gauge located in the operation panel indicates a level close to E (EMPTY), supply fuel (diesel) at your earliest convenience.



Fuel Supply\_001

1	Fuel gauge
---	------------

Refuel up to the middle (marked in red) of the fuel gauge.  
The fuel tank capacity is approximately 38.0 dm<sup>3</sup> (38.0 L).



Fuel Supply\_002

1	Fuel tank
2	Fuel gauge

## Fuel Filter

### Inspection of Fuel Filter

The fuel filter works to remove foreign objects mixed into the fuel.

When the fuel flow becomes insufficient, replace the fuel filter if necessary.

1. Make sure that there is no fuel leakage.
2. Make sure that the fuel filter is not damaged or dirty.

## Oil Leakage

### Inspection of Oil Leakage

**Caution**

When performing maintenance on the hydraulic system, lower the mower units.

After approximately 50 hours of operation, some tightened portions may be loosened and oil and grease may leak.  
Be sure to retighten the parts.  
Check the bottom of the machine for oil and grease leakage.

# Handling Instructions

---

## Tightening Torques

**Important**

Refer to the Tightening Torque table.  
Note that the Baroness product warranty may not apply to defects caused by incorrect or overtorque tightening, etc.

## Standard Tightening Torques

### Bolts and Nuts

**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.

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.

# Handling Instructions

Nominal diameter	General bolt		
	Strength classification 4.8		
	 tib3yb-001		
	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		
	 tib3yb-002			 tib3yb-003		
	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

**Note:**  
The same values are applied to "fine screw thread."

# Handling Instructions

---

## Hydraulic Hose

The tightening torques for union joints and union adaptors with parallel pipe threads (G, PF) are shown in the table below.

A union joint or adaptor will not become loose or leak as long as it is tightened by the specified torque.

If fluid leaks from the sealed portion, do not attempt to tighten the union joint or adaptor forcibly.

Examine whether any foreign matter or scratches are present on the seat surface.

Tightening a union joint or adaptor forcibly could damage the connection of the joints.

When tightening a union joint or adaptor, use a torque wrench where possible and firmly tighten it by an appropriate torque.

Nominal diameter of the hose size	Nominal diameter of the parallel pipe threads (PF)	Tightening torque		
		N-m	kgf-cm	lb-in
6	1/4	24.50	250	221.28
9	3/8	49.03	500	564.91
12	1/2	58.84	600	677.89
15	3/4	117.68	1200	1,355.78
19	3/4	117.68	1200	1,355.78
25	1	137.30	1400	1,581.74
32	1-1/4	166.72	1700	1,920.69
38	1-1/2	205.94	2100	2,372.61
50	2	245.17	2500	2,824.54

## Fittings with Parallel Threads (O-Ring Seal Type)

The tightening torques for fittings with parallel threads (O-ring seal method) are shown in the table below.

Tightening the fitting forcibly with a spanner or other such tool to secure it to a set position could damage the fitting, its washers, and other parts. Be sure to tighten the fitting to the torque appropriate to its size.

Nominal diameter of thread	Tightening torque		
	N-m	kgf-cm	lb-in.
1/4	34.32 - 49.03	350 - 500	309.79 - 442.55
3/8	68.65 - 78.45	700 - 800	619.57 - 708.08
1/2	98.07 - 117.68	1000 - 1200	885.10 - 1,062.12
3/4	147.10 - 176.52	1500 - 1800	1,327.65 - 1,593.18
1	245.17 - 274.59	2500 - 2800	2,212.75 - 2,478.28
1-1/4	294.20	3000	2,655.30
1-1/2	294.20	3000	2,655.30
2	392.27	4000	3,540.40

# Handling Instructions

## Principal Tightening Torques

### Tightening Torque by Model

LM281

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).

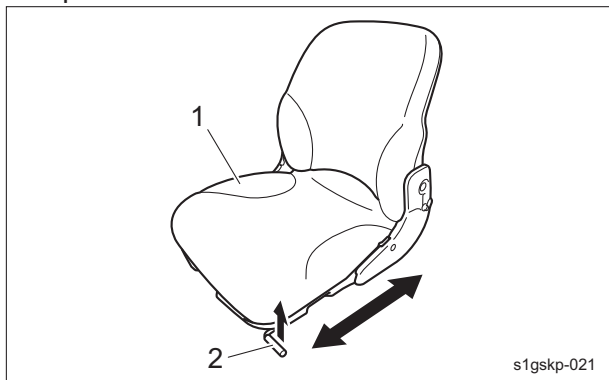
Location		Code	Part name	Tightening torque			Thread locking adhesive
				N-m	kgf-cm	lb-in	
Front wheel	Motor	K0010120602	Bolt, heat-treated M12-60	104 - 134	1,060.49 - 1,366.40	920.50 - 1,186.03	—
	Wheel mounting base	K0160000492	24 special nut P1.5	180 - 200	1,835.46 - 2,039.40	1,593.18 - 1,770.20	○
	Wheel	K0011120302	Bolt, heat-treated M12-30P1.5	67 - 85	683.20 - 866.75	593.02 - 752.34	—
Rear wheel	Wheel mounting base	K0138240002	24 slotted nut high P1.5	180 - 200	1,835.46 - 2,039.40	1,593.18 - 1,770.20	—
	Wheel	K0011120302	Bolt, heat-treated M12-30P1.5	67 - 85	683.20 - 866.75	593.02 - 752.34	—
Tie rod		K1610000020	Tie rod end assy, male(R)	45	458.87	398.30	—
		K1611000020	Tie rod end assy, male(L)	45	458.87	398.30	—
Lever damper		K0144080002	8U nut	—	—	—	○
Engine		K0017100252	Bolt, heat-treated, small, 10-25 P1.25	45 - 57	458.87 - 581.23	398.30 - 504.51	—
	Since it may be difficult to tighten bolts and nuts in the upper front left area of the engine, the strength category should be 4.8 torque. "Standard Tightening Torques" (Page 4-14)						
Coupling		K001A100351	Bolt, 12T, w/hexagon hole, M10-35	60 - 70	611.82 - 713.79	531.06 - 619.57	—
		K0010100352	Bolt, heat-treated M10-35	45 - 76	458.87 - 774.97	398.30 - 672.68	—
		K0010100202	Bolt, heat-treated M10-20	45 - 76	458.87 - 774.97	398.30 - 672.68	—
		K0010080202	Bolt, 11T, heat-treated M8-20	23 - 38	234.53 - 387.49	203.57 - 336.34	—
Bed knife (bottom blade)		K0071001182	Screw, heat-treated flathead M10-16	29 - 38	295.71 - 387.49	256.68 - 336.34	—
ROPS		K0010120402	Bolt, HT M12-40	104 - 134	1,060.49 - 1,366.40	920.50 - 1186.03	—

# Handling Instructions

## Adjustment before Work

### Adjustment of Seat

Use the seat adjustment lever to adjust the seat back and forth.  
 Adjust the position according to the operator's body size.  
 The adjustment lever is located beneath the front part of the seat.



Adjustment of Seat\_001

1	Seat
2	Adjuster lever

### Adjustment of Blade Engagement

**Warning**

Make sure that the parking brake is firmly applied before performing the operation.

**Caution**

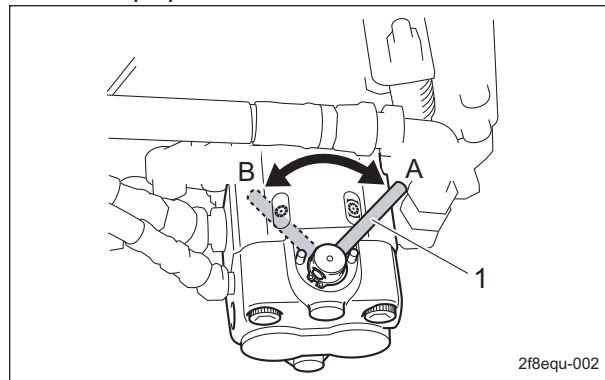
Be sure to perform this operation on your own.

**Caution**

When handling the reel cutter (cutting cylinder) or bed knife (bottom blade), wear gloves to protect your hands. Pay attention not to let the reel cutter (cutting cylinder) catch your gloves. Otherwise, you may injure your hand or fingers.

1. Stop the engine.

2. Set the reel rotation/stop switching lever to the "Stop" position.



Adjustment of Blade Engagement\_001

1	Reel rotation/stop switching lever
A	Rotate
B	Stop

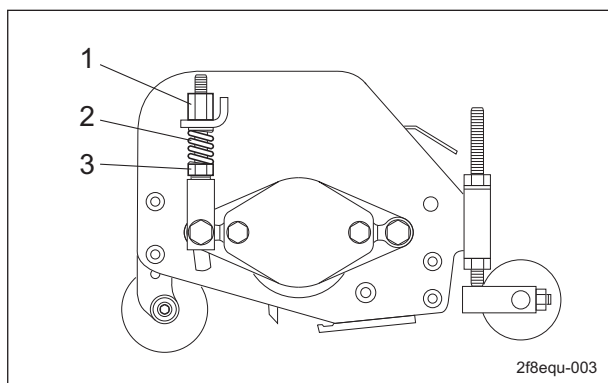
3. With the cutter adjustment nut, adjust the engagement between the reel cutter (cutting cylinder) and the bed knife (bottom blade) so that newspaper (two to three sheets) will be cut by the edge of both blades when the blades in their entirety come slightly into contact with each other.

4. Insert two or three strips of newspaper into the space between the reel cutter (cutting cylinder) and the bed knife (bottom blade) at an angle of 90 degrees. Then, rotate the reel cutter (cutting cylinder) counter-clockwise (when you face the mower unit from the left) to check the sharpness of the blades. Check the sharpness of the entire range (three or four points) of the reel cutter (cutting cylinder).

- If a gap is created between edges: Loosen (rotate counter-clockwise) the cutter adjustment nut to apply more contact pressure between the reel cutter (cutting cylinder) and the bed knife (bottom blade).
- If the reel cutter (cutting cylinder) is too tight to turn: Tighten (rotate clockwise) the cutter adjustment nut to reduce the contact pressure between the reel cutter (cutting cylinder) and the bed knife (bottom blade).
- If the blades still cannot cut well: Perform back lapping of the reel cutter (cutting cylinder).



# Handling Instructions



Adjustment of Blade Engagement\_002

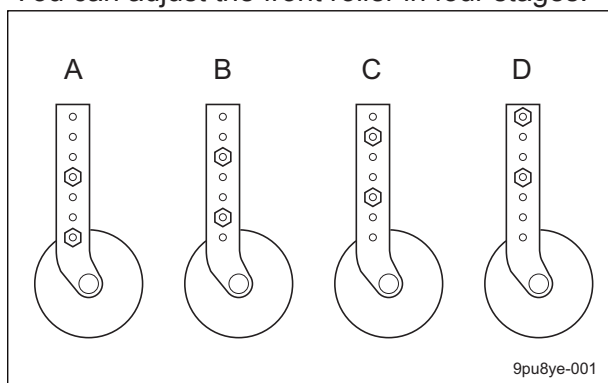
1	Cutter adjustment nut
2	Spring
3	Pipe with cutter adjusting screw

## Adjustment of Cutting Height

### Roller (Roller Type)

Adjust the cutting height to fit your cutting work.

You can adjust the front roller in four stages.



Roller (Roller Type)\_001

A	10.0 - 22.0 mm (0.39- 0.87 in)
B	20.0 - 30.0 mm (0.78- 1.18 in)
C	28.0 - 40.0 mm (1.10- 1.57 in)
D	38.0 - 60.0 mm (1.50- 2.36 in)

Attach the front roller in a position within the range of cutting height that suits your work requirements.

#### 1. To increase cutting height:

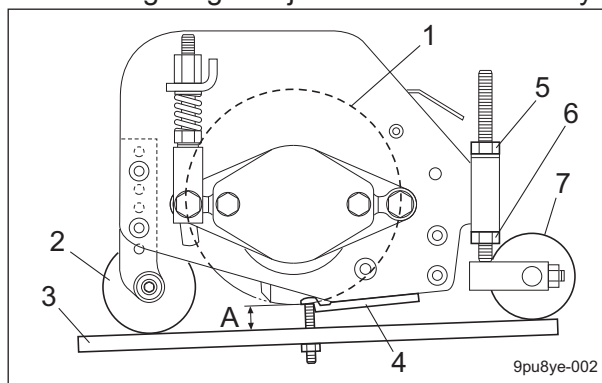
[1] Loosen cutting height adjustment nut A, tighten cutting height adjustment nut B, then lower the rear roller.

[2] Use the cutting height gauge to determine the position, then tighten cutting height adjustment nut A securely.

#### 2. To decrease cutting height:

[1] Loosen cutting height adjustment nut B, tighten cutting height adjustment nut A, then raise the rear roller.

[2] Use the cutting height gauge to determine the position, then tighten cutting height adjustment nut B securely.



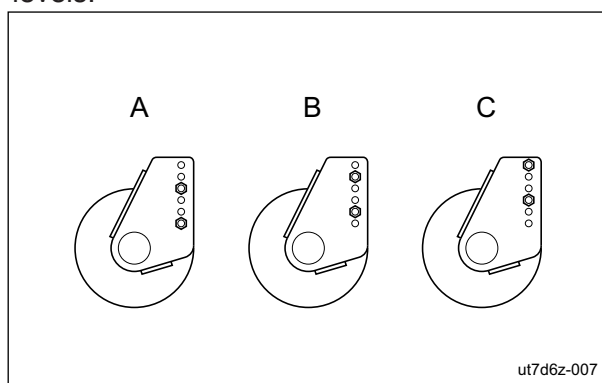
Roller (Roller Type)\_002

1	Reel cutter (cutting cylinder)
2	Front roller
3	Cutting height gauge
4	Bed knife (Bottom blade)
5	Cutting height adjustment nut A
6	Cutting height adjustment nut B
7	Rear roller
A	Cutting height

### Front Wheel Type

Adjust the cutting height to fit your cutting work.

You can adjust the wheel to one of three levels.



Front Wheel Type\_001

A	26 - 40 mm (1.02 - 1.57 in)
B	33 - 47 mm (1.30 - 1.85 in)
C	40 - 68 mm (1.57 - 2.68 in)

# Handling Instructions

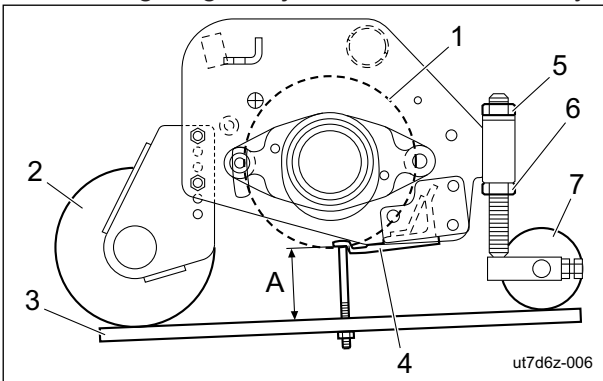
Attach the wheel in a position within the range of cutting height that suits your work requirements.

## 1. To increase cutting height:

- [1] Loosen cutting height adjustment nut A, tighten cutting height adjustment nut B, then lower the rear roller.
- [2] Use the cutting height gauge to determine the position, then tighten cutting height adjustment nut A securely.

## 2. To decrease cutting height:

- [1] Loosen cutting height adjustment nut B, tighten cutting height adjustment nut A, then raise the rear roller.
- [2] Use the cutting height gauge to determine the position, then tighten cutting height adjustment nut B securely.



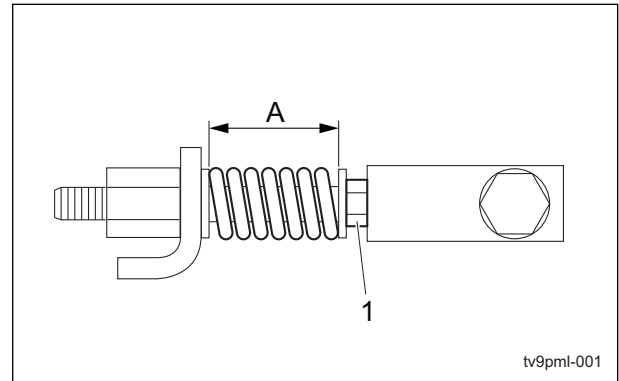
Front Wheel Type\_002

1	Reel cutter (cutting cylinder)
2	Front Wheel
3	Cutting height gauge
4	Bed knife (bottom blade)
5	Cutting height adjustment nut A
6	Cutting height adjustment nut B
7	Rear roller
A	Cutting height

## Adjustment of Cutter Adjustment Spring

If the diameter of the reel cutter (cutting cylinder) becomes smaller, adjust the cutter adjustment spring.

1. Adjust the blade engagement.
2. Loosen the pipe with cutter adjusting screw, and then adjust the length of the spring coil to approximately 40 mm (1.575 in.).



Adjustment of Cutter Adjustment Spring\_001

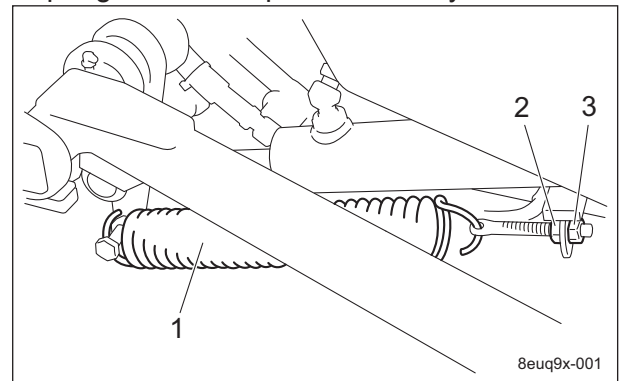
1	Pipe with cutter adjusting screw
A	40 mm (1.575 in.)

## Adjustment of Lift Arm Spring

### Important

Adjust the spring if the front wheels slip on an ascending slope.

1. Raise the mower units.
2. Loosen lock nut A, then tighten lock nut B to adjust the spring.
3. Perform the same procedure for both left and right.  
Make an adjustment so that the lift arm spring will be compressed evenly.



Adjustment of Lift Arm Spring\_001

1	Lift arm spring
2	Lock nut A
3	Lock nut B

# Handling Instructions

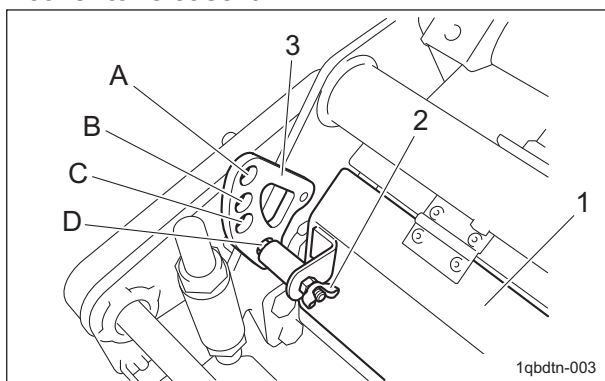
## Adjustment of Reel Cover

Note:

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

The angle of the reel cover can be adjusted.

1. Pull the right and left knobs securing the reel cover to release it.



Adjustment of Reel Cover\_001

1	Reel cover
2	Knob
3	Cover adjustment plate
A	Fully open
B	15 degrees closed
C	30 degrees closed
D	Fully closed

2. Select the hold position of the cover adjustment plate and secure the reel cover.

## Adjustment of CR Brush

Note:

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

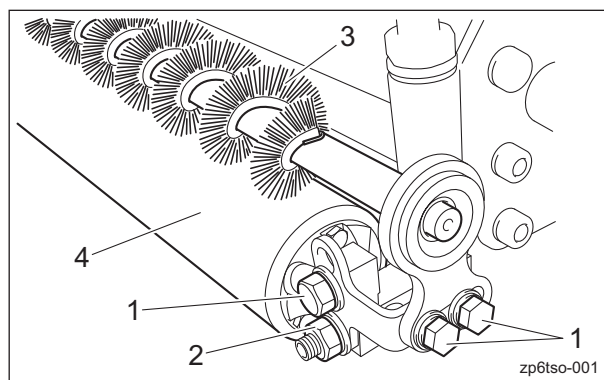
### Important

Pressing the brush against the roller too tightly will 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.



Adjustment of CR Brush\_001

1	Bolts
2	Nuts
3	Brush
4	Rear roller

2. Securely tighten the loosened bolts and nuts as the gap between the brush and rear roller is adjusted to between 0 and 1.0 mm (0 - 0.039 in).

## Adjustment of Rear Scraper (Wire Type)

Note:

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

### Important

Do not place the scraper in contact with the rear roller too tightly. It will cause the scraper break and slack.

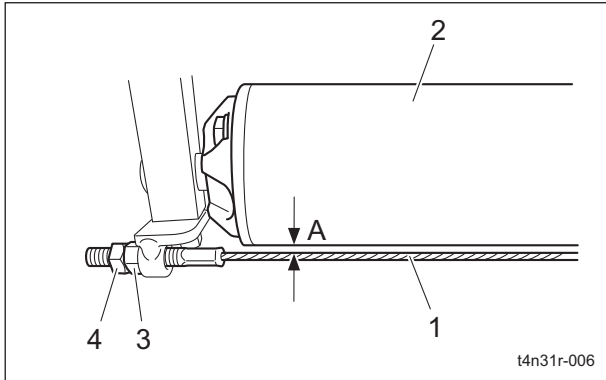
The scraper prevents grass clippings, etc., from attaching to the rear roller.

1. Loosen the left and right lock nuts and nuts of the scraper.
2. Tighten the nuts to stretch the wire.  
The wire position is appropriate when the distance between the scraper and the rear roller is 2.0 to 3.0 mm (0.079 to 0.118 in).

# Handling Instructions

3. Secure the position with the lock nuts.

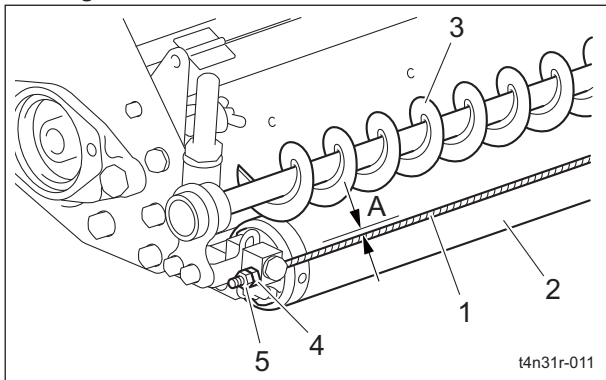
· Wire scraper



Adjustment of Rear Scraper (Wire Type)\_001

1	Scraper
2	Rear roller
3	Nut
4	Lock nut
A	2.0 - 3.0 mm (0.079 - 0.118 in)

· Wire scraper with CR brush installed together



Adjustment of Rear Scraper (Wire Type)\_002

1	Scraper
2	Rear roller
3	CR brush
4	Nut
5	Lock nut
A	2.0 - 3.0 mm (0.079 - 0.118 in)

## Procedure to Start/Stop Engine

### Start/Stop of Engine

#### Procedure to Start Engine

#### ⚠ Caution

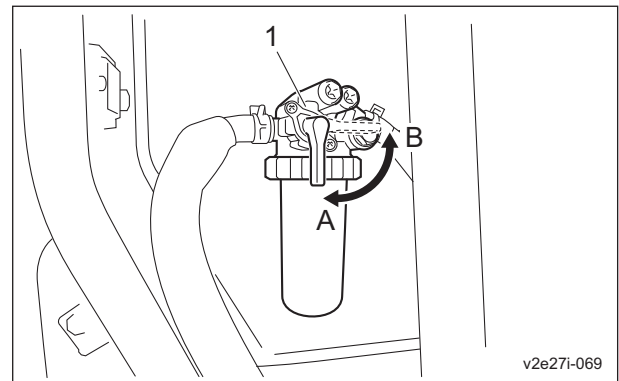
Before starting the engine, make sure that there are no other people or obstacles around the machine.

#### Important

Maximum continuously operable time of the starter is 15 seconds.

If the engine does not start, stop using the battery for 30 to 60 seconds to avoid exhausting the battery.

1. Open the fuel cock of the fuel filter.  
The fuel filter is located in the rear right area of the seat.



Procedure to Start Engine\_001

1	Fuel filter
A	ON (Open)
B	OFF (Close)

2. Sit on the seat.
3. Make sure that you have depressed the brake pedal and applied the parking brake.
4. Make sure that the reel rotation lever is set to the "Stop" position.
5. Make sure that the traveling pedal is in the neutral position.

# Handling Instructions

6. From the low-speed position, move the throttle lever halfway toward the high-speed position.

### Important

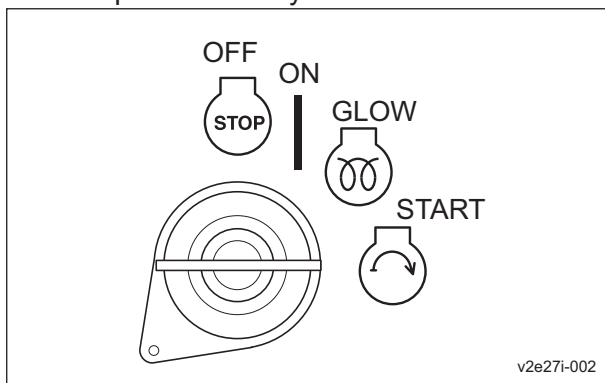
The thermo-start lamp turns off at the specified time. However, the lamp turning off is not related to the glow plug generating heat. If the ignition key is left in the "GLOW" position after the lamp is turned off, the plug will still generate heat. The thermo-start lamp will stay illuminated for five seconds.

7. Switch the ignition key to the "GLOW" position.  
8. Make sure that the glow plug is generating heat and the thermo-start lamp is turned on.

### Important

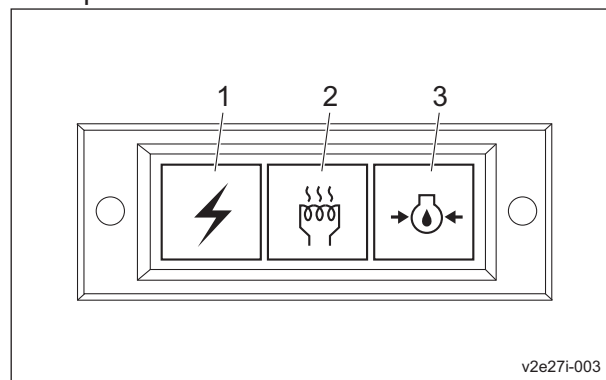
Quickly returning the ignition key from the "START" position to the "ON" position may result in damage to the machine.

9. After the thermo-start lamp turns off, immediately set the ignition key to the "START" position.  
10. When the starter starts rotating and the engine starts, return the ignition key to the "ON" position slowly.



Procedure to Start Engine\_002

11. Make sure that the charge lamp and engine oil pressure lamp turn off. If they do not turn off, stop the engine and inspect the machine.



v2e27i-003

Procedure to Start Engine\_003

1	Charge lamp
2	Thermo-start lamp
3	Oil pressure lamp

12. Move the throttle lever to the low-speed position and let the engine warm up for 1 to 2 minutes.  
13. Gradually move the throttle lever toward the high-speed position.

### Procedure to Stop Engine

- Set the traveling pedal to the neutral position.
- Depress the brake pedal, and then apply the parking brake lever.
- Shift the reel rotation lever to the "Stop" position.
- Raise all mower units, and set the anti-falling stop valve to the "Stop" position.
- Move the throttle lever to the low-speed position and let the engine idle for 1 to 2 minutes.
- Switch the ignition key to the "OFF" position.
- Make sure that the engine has stopped.
- Remove the ignition key.
- Leave the driver's seat.
- Close the fuel cock.  
The fuel cock is located by the side of the fuel tank.

# Handling Instructions

## Safety Mechanisms

This machine features a safety device for starting/stopping the engine.

- As for starting the engine, the safety device prevents the engine from starting unless it meets each of the following four conditions.
  - An operator is sitting on the seat.
  - The parking brake is applied.
  - The reel rotation lever is shifted to the "Stop" position.
  - The traveling pedal is set to the neutral position.
- The safety device will be activated and will stop the engine under any of the following conditions:
  - The operator leaves the seat without applying the parking brake.
  - The operator leaves the seat while the reel cutter (cutting cylinder) is positively rotating.
  - The traveling pedal is moved when the operator leaves the seat while the parking brake is applied.

## Warning Mechanisms

This machine features a warning mechanism for overheating.

- If water temperature inside the engine exceeds 105 °C (221 °F), a buzzer will sound. (intermittent tone)

## Operation Method

### Cautions for when You Leave The Machine

#### ⚠ Caution

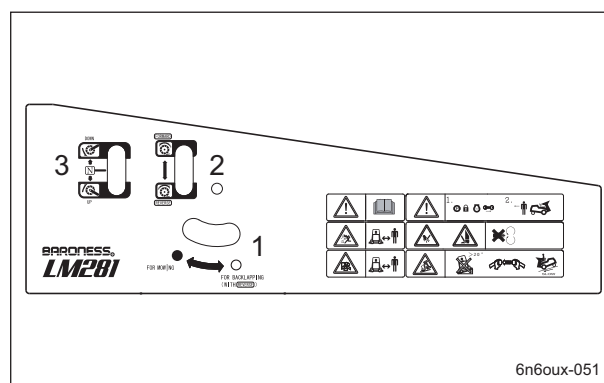
If the brakes are not sufficiently effective, use the wheel stoppers to secure the machine.

#### ⚠ Caution

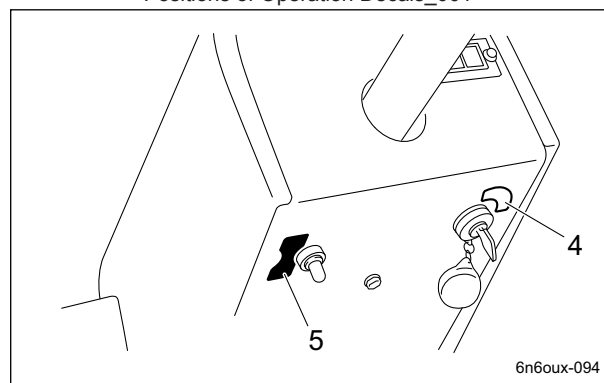
Never park the machine on a slope.

- Park the machine on level ground.
- Apply the parking brake.
- Stop the engine.
- Remove the ignition key.
- Leave the machine.

### Positions of Operation Decals

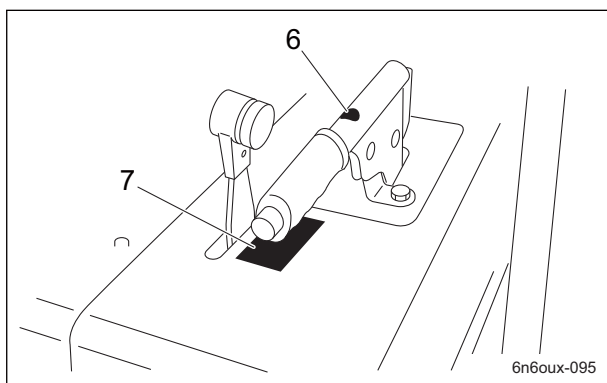


Positions of Operation Decals\_001

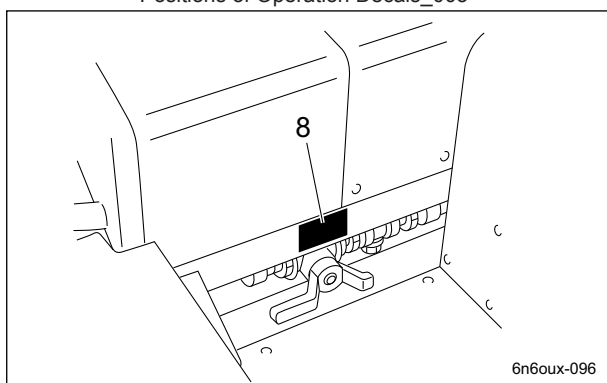


Positions of Operation Decals\_002

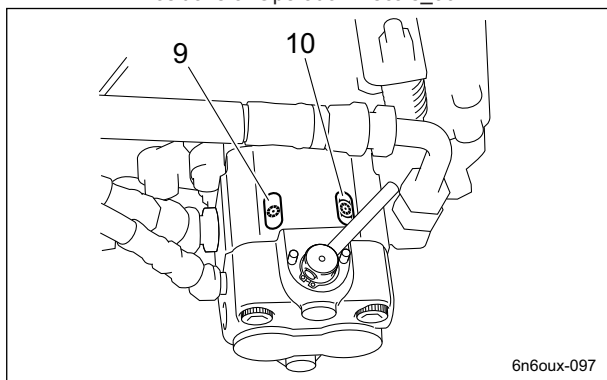
# Handling Instructions



Positions of Operation Decals\_003



Positions of Operation Decals\_004



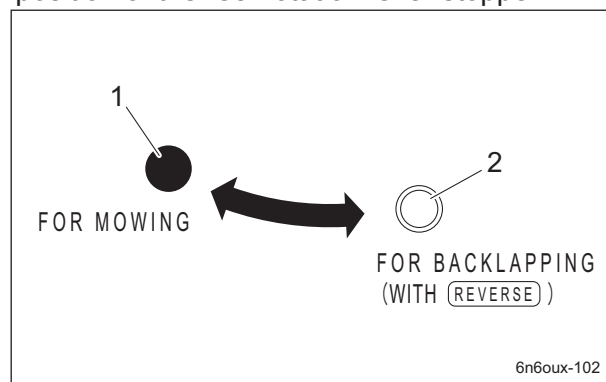
Positions of Operation Decals\_005

1	Reel rotation lever stopper icon
2	Reel rotation icon
3	Mower unit up/down icon
4	Key switch decal
5	Light switch mark
6	Brake mark
7	Engine rotation decal
8	Stop valve operation decal
9	Reel stop decal
10	Reel rotation decal

## Description of Operation Decals

### Reel Rotation Lever Stopper Icon

Reel rotation lever stopper icon  
It illustrates MOWING/BACKLAPPING position of the reel rotation lever stopper.

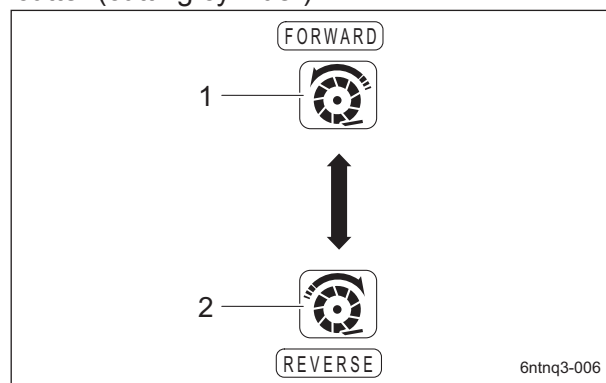


Reel Rotation Lever Stopper Icon\_001

1	FOR MOWING
2	FOR BACKLAPPING

### Reel Rotation Icon

Reel rotation icon  
It illustrates FORWARD (Mowing rotation) / REVERSE (Backlapping rotation) of the reel cutter (cutting cylinder).



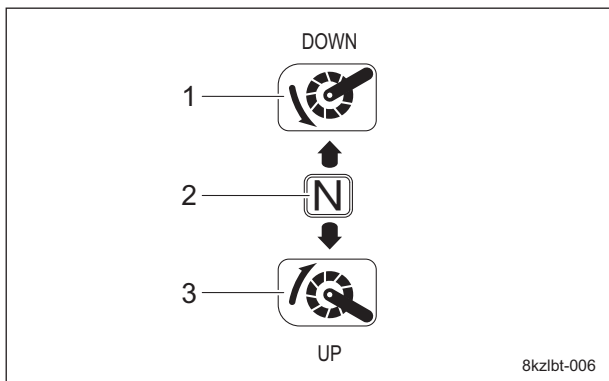
Reel Rotation Icon\_001

1	FORWARD (Mowing rotation)
2	REVERSE (Backlapping rotation)

# Handling Instructions

## Mower Unit Up/Down Icon

Mower unit up/down icon  
It illustrates UP/DOWN of the mower unit.

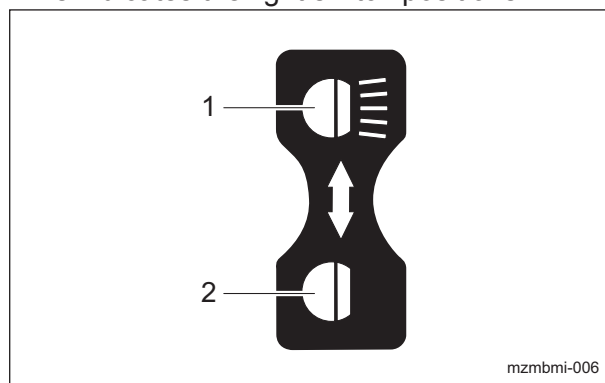


Mower Unit Up/Down Icon\_001

1	DOWN
2	Neutral
3	UP

## Light Switch Mark

Note:  
Depending on the specifications, this function may not be available.  
K4203001410  
STICKER, LIGHT SWITCH  
This indicates the light switch positions.

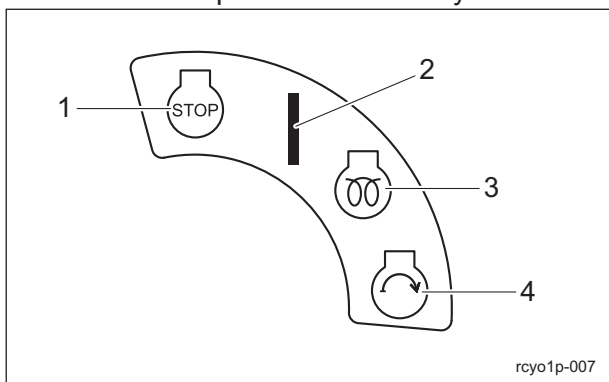


Light Switch Mark\_001

1	ON
2	OFF

## Key Switch Decal

K4209001190  
Key switch decal  
It illustrates the positions of the key switch.

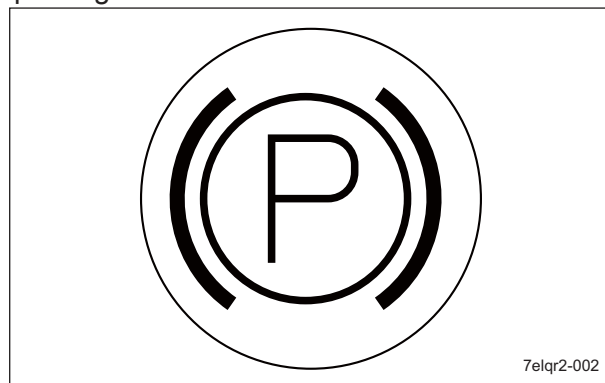


Key Switch Decal\_001

1	OFF
2	ON
3	GLOW
4	START

## Brake Mark

K4209001200  
DECAL, BRAKE  
It illustrates the locking position for the parking brake.



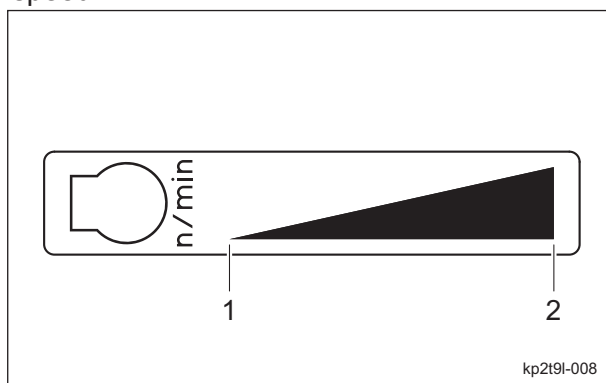
Brake Mark\_001



# Handling Instructions

## Engine Rotation Decal

K4203001220  
 Engine rotation decal  
 It illustrates Low/High of the engine rotation speed.

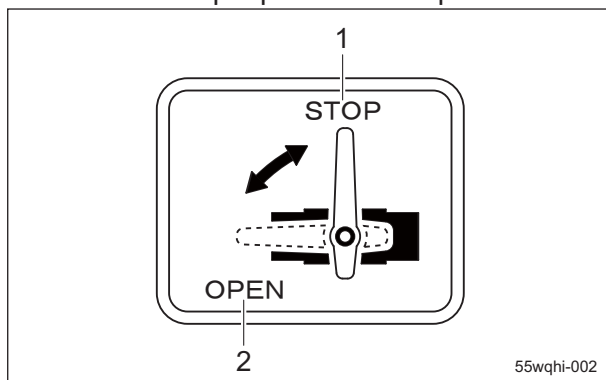


Engine Rotation Decal\_001

1	Low speed
2	High speed

## Stop Valve Operation Decal

K4203001290  
 Stop valve operation decal  
 It illustrates Stop/Open of the stop valve.

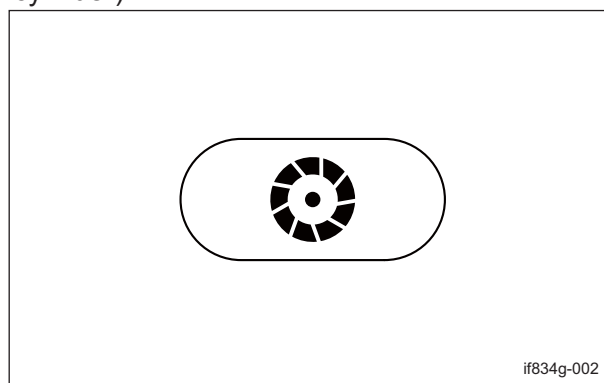


Stop Valve Operation Decal\_001

1	Stop
2	Open

## Reel Stop Decal

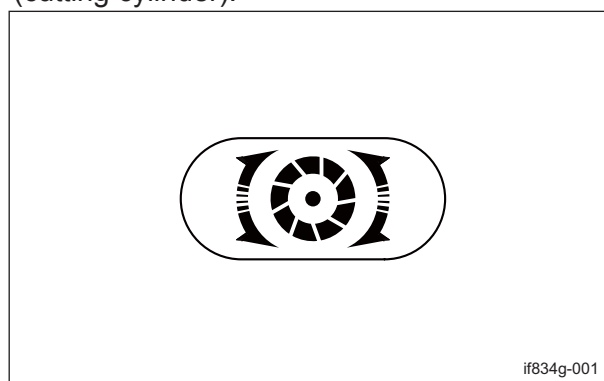
K4203001310  
 Decal, reel stop  
 This indicates stop of the reel cutter (cutting cylinder).



Reel Stop Decal\_001

## Reel Rotation Decal

K4203001300  
 Decal, reel rotation  
 This indicates rotation of the reel cutter (cutting cylinder).



Reel Rotation Decal\_001

# Handling Instructions

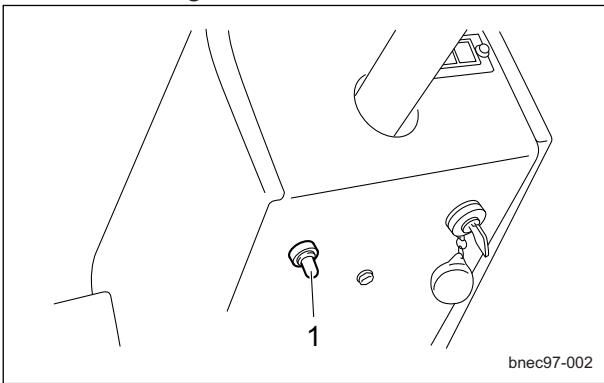
## Light Switch

**Warning**

The lights provide auxiliary lighting. Do not travel or operate the machine at night or under poor visibility.

**Note:**

Depending on the specifications, this function may not be available. The light switch is located below the left side of the meter panel. Flip the switch up to turn on the light, and down to turn off the light.



Light Switch\_001

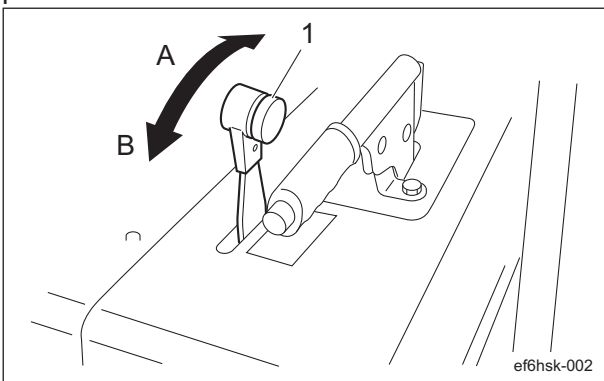
1	Light switch
---	--------------

**Note:**

The lights will not turn on when the ignition key is switched to the "OFF" position.

## Throttle Lever

The throttle lever is located to the left of the driver's seat and enables you to adjust the engine rpm. Moving the throttle lever toward the high-speed position increases the engine rpm and moving it toward the low-speed position decreases the rpm.



Throttle Lever\_001

1	Throttle lever
A	High speed
B	Low speed

## Mower Unit Up/Down Lever

**Caution**

Before raising or lowering the mower units, make sure that there are no people around the machine.

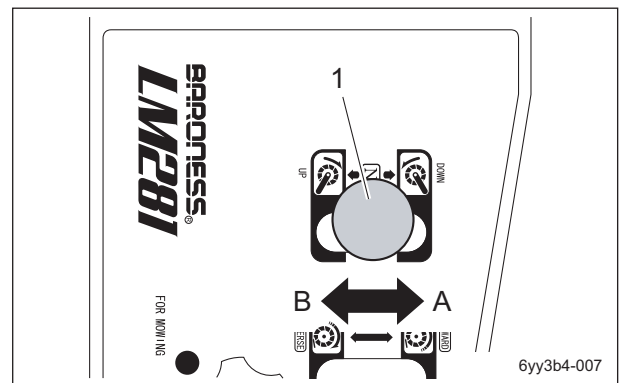
**Caution**

Be careful since shifting the mower unit up/down lever to the "DOWN" position lowers the mower units, even while the engine is stopped.

**Important**

Before operating the mower unit up/down lever, be sure to set the stop valve to the "Open" position.

The mower unit up/down lever is located on the right side of the driver's seat and raises or lowers the mower units. Shift the lever to the "DOWN" position to lower all mower units, and shift it to the "UP" position to raise all mower units.



Mower Unit Up/Down Lever\_001

1	Mower unit up/down lever
A	Down
B	Up

**Note:**

When the mower units are raised, the reels stop rotating, even if the reel rotation lever is set to "FORWARD".

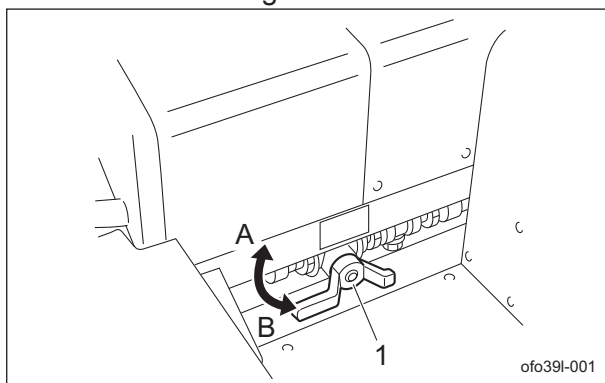
# Handling Instructions

## Stop Valve

**Caution**

When you move the machine, or if you stop the engine with the mower units raised, be sure to set the stop valve to the "Stop" position.

The stop valve is located underneath the right side of the driver's seat. This valve prevents the raised mower units #1, #2 and #3 from falling.



Stop Valve\_001

1	Stop valve
A	Stop
B	Open

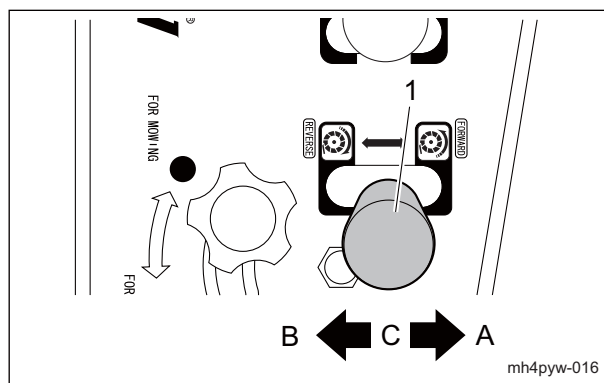
## Reel Rotation Lever

**Caution**

The reel rotation lever must be shifted to the appropriate position just before you start cutting work or back lapping. In all other cases, it must be returned to the "STOP (Neutral)" position.

The reel rotation lever is located on the right side of the driver's seat and operates rotation of the reel cutters (cutting cylinders) of the mower units.

If you shift the reel rotation lever to the "FORWARD" position, the reel cutters (cutting cylinders) on all mower units will rotate for cutting work. If you shift the reel rotation lever to "REVERSE," the reel cutters (cutting cylinders) will rotate for back lapping.



Reel Rotation Lever\_001

1	Reel rotation lever
A	FORWARD (Mowing rotation)
B	REVERSE (Backlapping rotation)
C	STOP (Neutral)

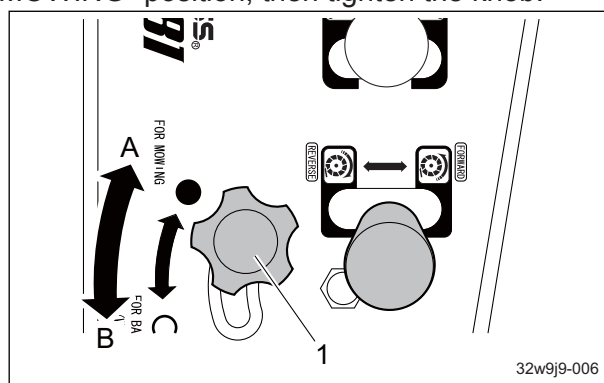
## Reel Rotation Lever Stopper

**Caution**

Before you start cutting work, make sure that the stopper knob is tightened.

The reel rotation lever stopper is located on the right side of the driver's seat. It prevents a false operation of the reel rotation lever.

Except for during back lapping operations, be sure to shift the stopper knob to the "FOR MOWING" position, then tighten the knob.



Reel Rotation Lever Stopper\_001

1	Reel rotation lever stopper
A	FOR MOWING
B	FOR BACKLAPPING

# Handling Instructions

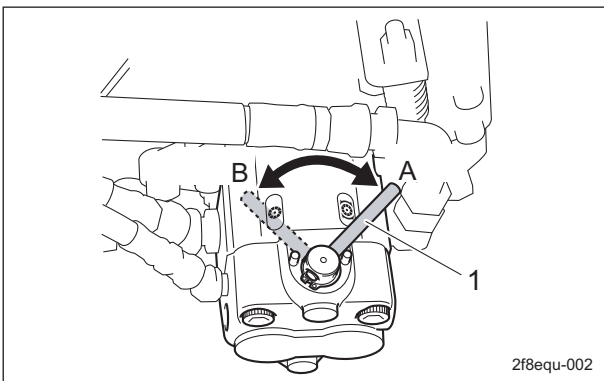
## Reel Rotation/Stop Switching Lever

1	Traveling pedal
A	Forward
B	Backward

**⚠ Caution**

Before operating the reel rotation/stop switching lever, be sure to shift the reel rotation lever to the "Stop" position.

The reel rotation/stop switching lever is located on the reel motor attached to each mower unit. It is used during cutting and back lapping. You must shift only the lever(s) for the mower unit(s) that you plan to use for cutting or back lapping to the "Rotate" position. Leave the lever(s) for other mower units in the "Stop" position.

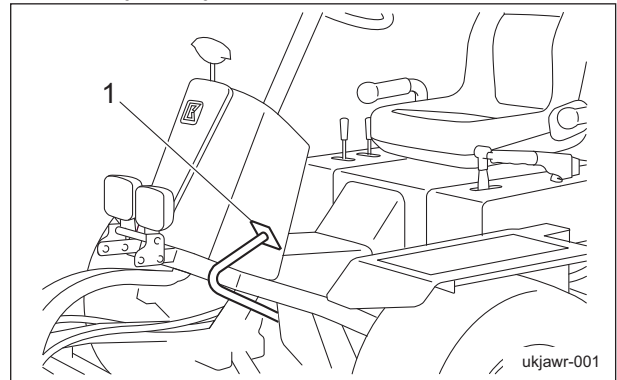


Reel Rotation/Stop Switching Lever\_001

1	Reel rotation/stop switching lever
A	Rotate
B	Stop

## Brake Pedal

The brake pedal is located in the left foot area. To stop the machine, depress the brake pedal all the way firmly.



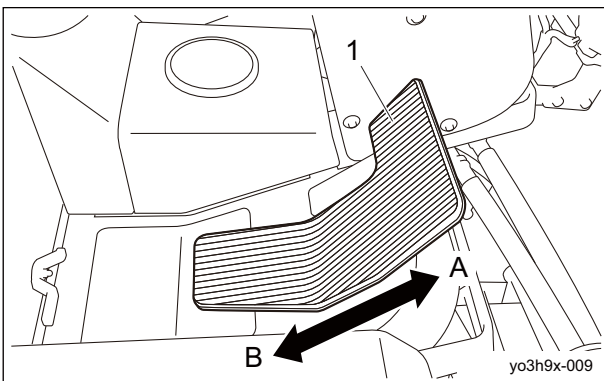
Brake Pedal\_001

1	Brake pedal
---	-------------

## Traveling Pedal

The traveling pedal is located in the right foot area.

When depressed forward, the machine travels forward. When depressed backward, the machine travels in reverse.



Traveling Pedal\_001

# Handling Instructions

## Parking Brake Lever

### ⚠ Caution

Never park the machine on a slope.

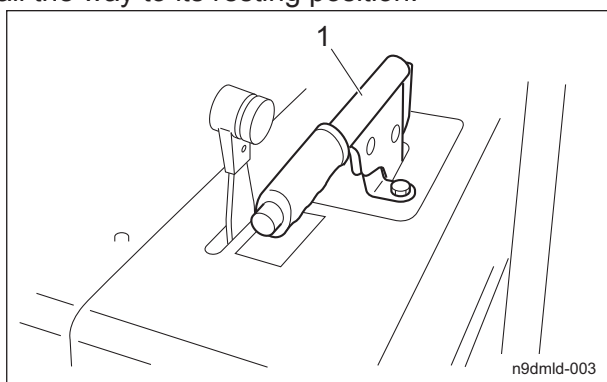
### Important

Be sure to release the parking brake before driving. Otherwise, the brakes or hydraulic system will malfunction.

The parking brake lever is located to the left of the driver's seat.

To park the machine, depress the brake pedal, and pull the parking brake lever completely.

To release the parking brake, press the push button while lowering the parking brake lever all the way to its resting position.



Parking Brake Lever\_001

1	Parking brake lever
---	---------------------

## Hood

### ⚠ Caution

Do not open the hood in strong winds.

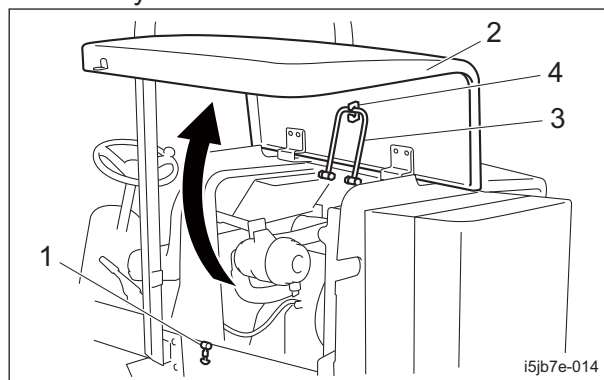
### ⚠ Caution

Be careful not to pinch your fingers when you open or close the hood.

1. Unlock the rubber catch, then lift up the hood.

2. Hook the hood support rod to the latch inside the hood.

Make sure that the hood will not close, then release your hands.

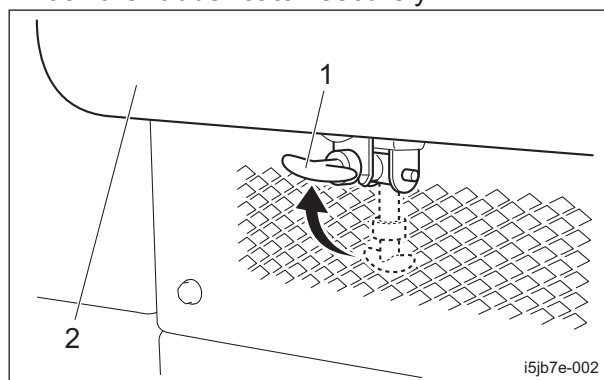


Hood\_001

1	Rubber catch
2	Hood
3	Hood support rod
4	Latch

3. To close the hood, release the hood support rod from the latch, then lower the hood slowly.

4. Lock the rubber catch securely.



Hood\_002

1	Rubber catch
2	Hood

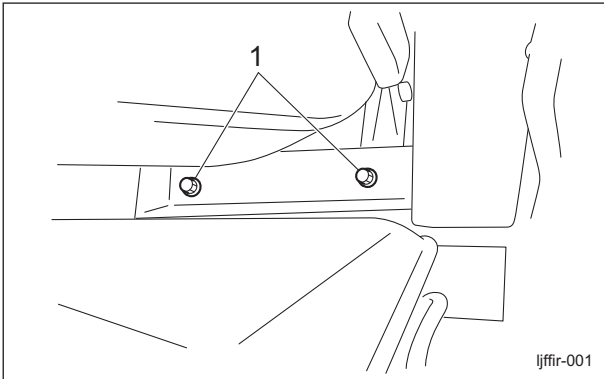
# Handling Instructions

## Underseat Cover

**Caution**

Be careful not to pinch your fingers when you open or close the underseat cover.

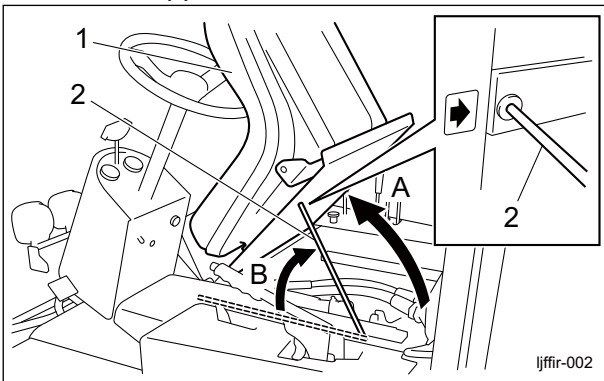
1. Bring the seat to the most front position.
2. Remove two bolts located on the rear of the seat.



Underseat Cover\_001

1	Bolt
---	------

3. Bring the seat to the backmost position.
4. Lift the seat.
5. Securely support the underseat cover with the seat support rod.

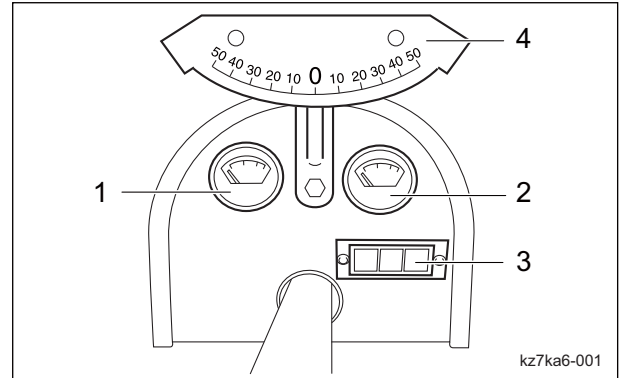


Underseat Cover\_002

1	Seat
2	Seat support rod
A	Step 1
B	Step 2

## Instruments

### Instruments on The Operation Panel



Instruments on The Operation Panel\_001

1	Water temperature gauge
2	Fuel gauge
3	Pilot lamps (charge lamp, thermo-start lamp, oil pressure lamp)
4	Angle meter

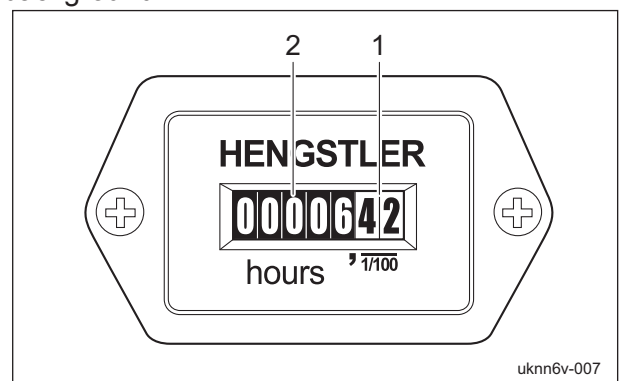
### Hour Meter

The hour meter indicates the accumulated operation time of the engine.

The number in red figures on a white background is incremented every thirty-six seconds.

The number in white figures on a black background is incremented every hour.  
1/100 wheel ... red figures on a white background

Hour wheel ... white figures on a black background



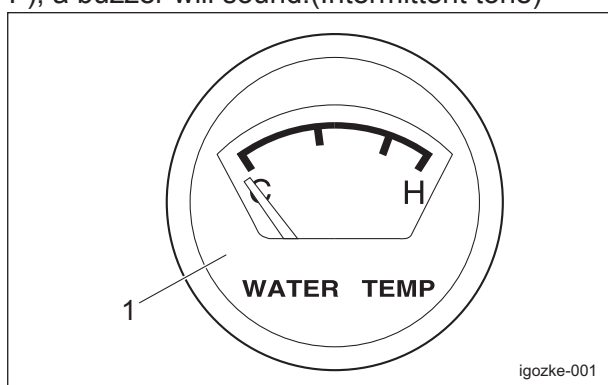
Hour Meter\_001

1	1/100 wheel
2	Hour wheel

# Handling Instructions

## Water Temperature Gauge

The water temperature gauge is located in the operation panel.  
 This instrument indicates the water temperature inside the engine.  
 If the water temperature gauge indicates a level close to "H" during operation, the machine is overheated.  
 Remove the load from the engine, idle the machine for five minutes, stop the engine, and then inspect the machine and perform any necessary maintenance.  
 If the water temperature exceeds 105 °C (221 °F), a buzzer will sound. (Intermittent tone)



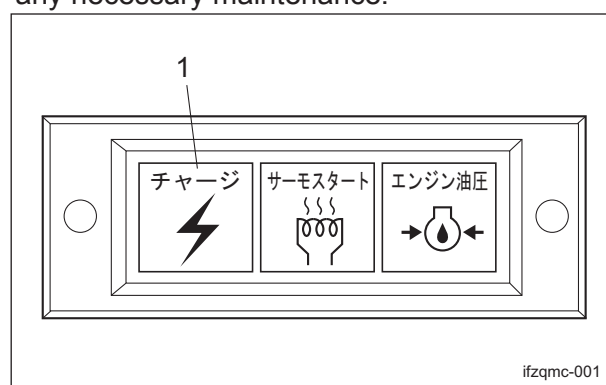
Water Temperature Gauge\_001

1	Water temperature gauge
---	-------------------------

## Pilot Lamps

### Charge Lamp

The charge lamp is the left pilot lamp located in the operation panel.  
 It turns on when the ignition key is set to the "ON" position before the engine starts. It turns off when the engine starts and the alternator starts operating properly.  
 If this lamp illuminates while you are operating the machine, stop the engine immediately, and then inspect the machine and perform any necessary maintenance.

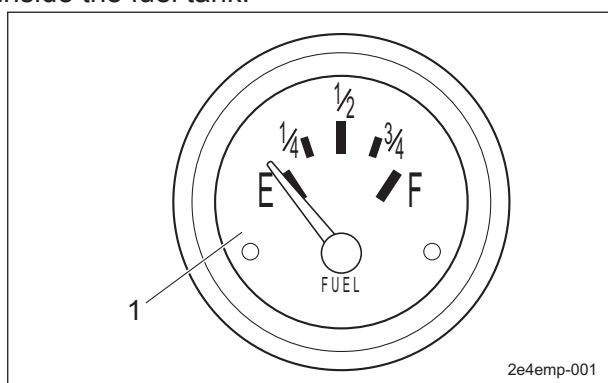


Charge Lamp\_001

1	Charge lamp
---	-------------

## Fuel Gauge

The fuel gauge is located in the operation panel.  
 This instrument indicates the quantity of fuel inside the fuel tank.



Fuel Gauge\_001

1	Fuel gauge
---	------------

# Handling Instructions

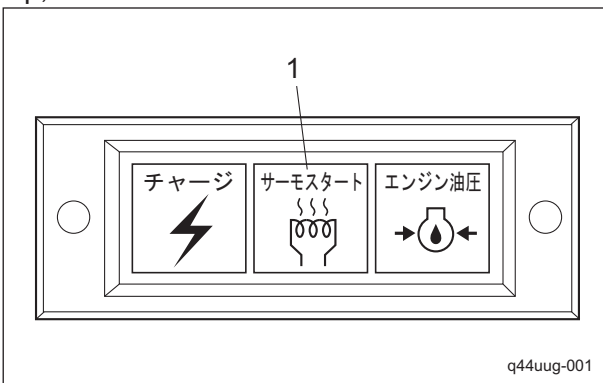
## Thermo-Start Lamp

The thermo-start lamp is the middle pilot lamp located in the operation panel.

When the ignition key is set to the "GLOW" position, it illuminates as the glow plug generates heat.

Illumination of the thermo-start lamp is controlled by the glow lamp timer, and the lamp is turned off after a specified amount of time passes.

The duration of illumination indicates an approximate period of time required for warm-up, and has been fixed at five seconds.



Thermo-Start Lamp\_001

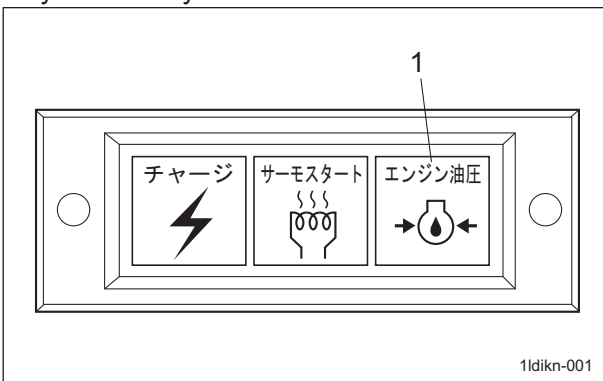
1	Thermo-start lamp
---	-------------------

## Oil Pressure Lamp

The oil pressure lamp is the right pilot lamp located in the operation panel.

It turns on when the ignition key is set to the "ON" position before the engine starts. It turns off when the engine starts and engine oil pressure is generated properly.

If this lamp illuminates while you are operating the machine, stop the engine immediately, and then inspect the machine and perform any necessary maintenance.



Oil Pressure Lamp\_001

1	Oil pressure lamp
---	-------------------

## Overheat Warning Buzzer

If the water temperature inside the engine exceeds 105 °C (221 °F), a buzzer will sound. (intermittent tone)

Remove the load from the engine, idle the machine for five minutes, stop the engine, and then inspect the machine and perform any necessary maintenance.

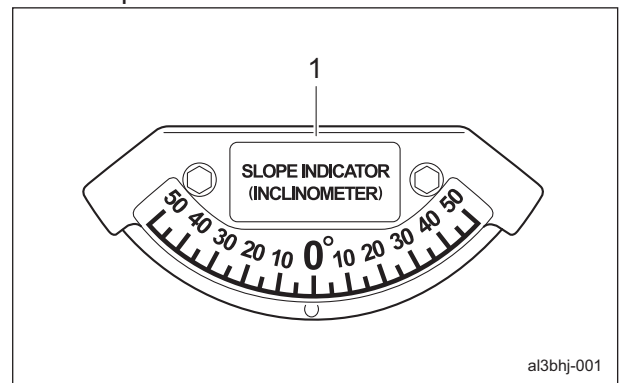
## Angle Meter

Note:

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

The angle meter is located in the operation panel.

This instrument indicates the angle of the machine position.



Angle Meter\_001

1	Angle meter
---	-------------



# Handling Instructions

## Move

### Traveling Procedure

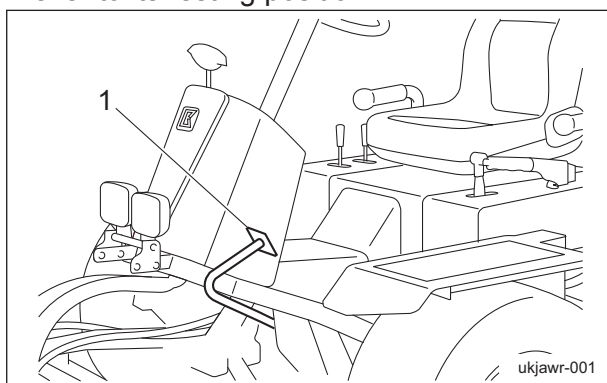
#### ⚠ Caution

Drive the machine at a speed that allows you to stop immediately in an emergency.

#### Important

Do NOT start to move or stop the machine abruptly. It will damage the hydraulic system or result in oil leakage.

1. Start the engine.  
"Procedure to Start Engine" (Page 4-22)
2. Raise all mower units, and set the anti-falling stop valve to the "Stop" position.
3. Depress the brake pedal, and while pressing the push button, return the parking brake lever to its resting position.



Traveling Procedure\_001

1 Brake pedal

4. Slowly depress the traveling pedal.
5. The machine starts traveling.
6. Release the traveling pedal and depress the brake pedal to stop the machine.

### Towing The Machine

If the machine does not travel due to engine trouble, etc., you can move it in the following ways:

#### Important

Do not touch the unload valve except when towing the machine.

#### Important

Do not rotate the needle valve of the unload valve two turns or more.

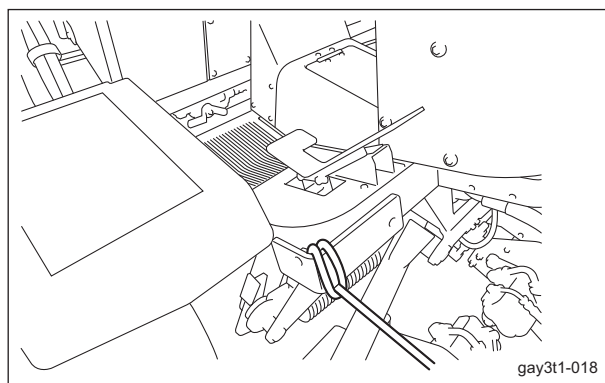
#### Important

Before starting the engine, be sure to close the unload valve.

#### Important

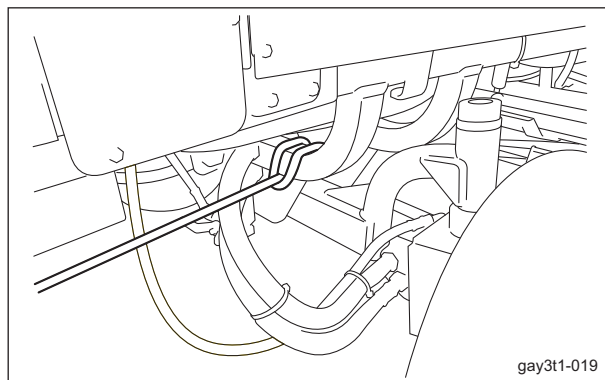
When towing the machine, travel at a speed no more than 3.0 km/h. In addition, do not tow the machine for more than 3 minutes. If the towing speed is too fast or the machine is towed too much, the pump or motor will be damaged.

1. Stop the engine.  
"Procedure to Stop Engine" (Page 4-23)
2. Apply the parking brake.
3. Chock the wheels.
4. Secure the machine with ropes.  
Front side



Towing The Machine\_001

#### Rear side



Towing The Machine\_002

# Handling Instructions

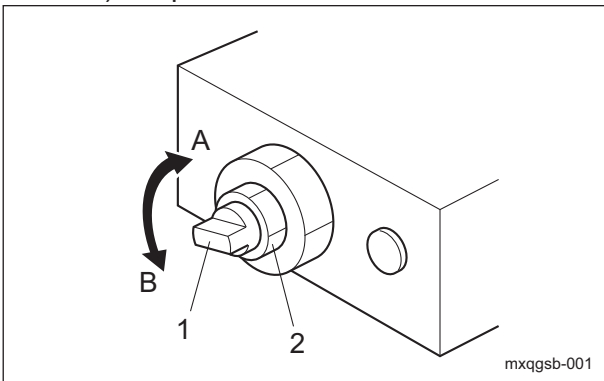
5. Remove the rear center cover.

**Important**

Before towing, be sure to open the unload valves in two locations. Otherwise, the hydraulic equipments will malfunction.

6. Loosen the lock nut.

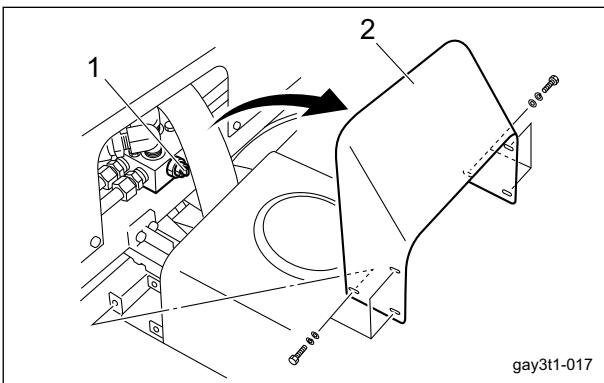
7. Loosen the needle valve (located in the center) to open the unload valve.



Towing The Machine\_003

1	Needle valve
2	Lock nut
A	Tighten
B	Loosen

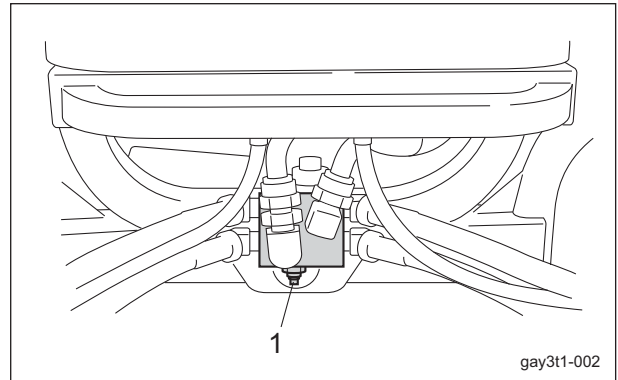
8. Rotate the needle valve of the unload valve under the seat counterclockwise one turn.



Towing The Machine\_004

1	Needle valve
2	Rear center cover

9. Rotate the needle valve of the unload valve on the rear frame counterclockwise one turn.



Towing The Machine\_005

1	Needle valve
---	--------------

10. Install the rear center cover.

11. Remove the wheel stopper.

12. Release the parking brake.

**Warning**

While towing, always keep your foot on the brake pedal and depress the brake pedal at any time to stop.

13. Tow the machine slowly.

# Handling Instructions

## Cutting Work

### Cutting Operation

#### ⚠ Warning

Do NOT start to move or stop the machine abruptly.

#### ⚠ Caution

Cutting work must be performed at an appropriate speed for the site and location. When cutting bumpy surfaces, keep the engine rpm steady, and slow down the cutting speed.

#### ⚠ Caution

Please note that if you stop operating the mower unit up/down lever before the mower units are raised completely, reel rotation may not stop. Reel rotation will be turned on or off based on the sensor-detected position of the mower units.

#### ⚠ Caution

Stop the engine before installing or removing the grass catcher.

#### Important

Do NOT start to move or stop the machine abruptly. It will damage the hydraulic system or result in oil leakage.

1. Shift the reel rotation/stop switching levers of all mower units to the "Rotate" position.
2. Start the engine.  
"Procedure to Start Engine" (Page 4-22)
3. Raise all mower units, and set the anti-falling stop valve to the "Stop" position.
4. Depress the brake pedal, and while pressing the push button, return the parking brake lever to its resting position.
5. Right before starting cutting work, set the anti-falling stop valve to the "Open" position.
6. Increase the engine speed to the maximum rpm by moving the throttle lever toward the high-speed position.

7. Shift the mower unit up/down lever to the "DOWN" position to lower the mower units.
8. Shift the reel rotation lever to "FORWARD" to rotate the reel cutters (cutting cylinders) for all mower units in cutting motion.
9. Depress the traveling pedal to start cutting work.

Note:

During the work, the reel cutters (cutting cylinders) will rotate or stop in sync with the up and down motion of the mower units.

## Transporting

### Transporting Procedure

When loading this machine into a trailer or a truck to transport it, drive the machine in reverse. When unloading, drive the machine forward.

If the roof is installed on the machine, remove it.

The roof may be damaged by wind pressure.

## Storage

### Before Long-Term Storage

1. Cleaning
  - Remove dirt, grass clippings, oil stains etc. completely from the main vehicle and engine.
2. Replacing oil
  - Inspect and replace the engine oil, hydraulic oil and element.
3. Greasing and lubricating
  - Supply oil and apply grease to appropriate parts.
4. Battery
  - Remove the negative battery wire.
5. Fuel
  - Remove the fuel from the fuel tank.
6. Tire pneumatic pressure
  - Set the tire air pressure slightly higher than normal, and then place the machine on a board to avoid humidity.
7. Mower units
  - When storing this machine, lower all the mower units unless a positive mechanical lock is provided.
8. Storage location
  - Cover the machine and store it in a dry place where it will not be exposed to rain.

# Handling Instructions

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<b>Maintenance Precautions .....</b>	<b>Page 5-2</b>
<b>Maintenance Schedule .....</b>	<b>Page 5-3</b>
Adjusted Values .....	Page 5-4
<b>Jacking Up The Machine .....</b>	<b>Page 5-5</b>
About Jacking Up The Machine .....	Page 5-5
Jack-Up Points .....	Page 5-5
<b>Greasing .....</b>	<b>Page 5-6</b>
About Greasing .....	Page 5-6
Greasing Points .....	Page 5-6
<b>Lubrication .....</b>	<b>Page 5-10</b>
About Lubrication .....	Page 5-10
Lubricating Points .....	Page 5-10
<b>Maintenance Work .....</b>	<b>Page 5-11</b>
Back Lapping .....	Page 5-11
Sharpening of Reel Cutter (Cutting Cylinder) .....	Page 5-13
Replacement of Reel Cutter (Cutting Cylinder) .....	Page 5-14
Replacement of Bed Knife (Bottom Blade) .....	Page 5-15
Removing/Installing Tires .....	Page 5-15
Adjustment of Belt Tension .....	Page 5-16
Adjustment of Parking Brake .....	Page 5-16
Adjustment of Brake .....	Page 5-17
Adjusting The Neutral Position of The Piston Pump .....	Page 5-17
Change of Coolant .....	Page 5-18
Change of Hydraulic Oil .....	Page 5-20
Change of Hydraulic Oil Filter .....	Page 5-21
Change of Air Cleaner .....	Page 5-22
Change of Engine Oil .....	Page 5-22
Change of Engine Oil Filter .....	Page 5-23
Change of Fuel Filter Element .....	Page 5-23
Change of Constant Velocity Joint .....	Page 5-24
Change of Fuse .....	Page 5-25

# Maintenance

---

## Maintenance Precautions

### Warning

The chapter "Maintenance" in this manual describes practical measures which should be performed by a mechanic with expertise. The owner should instruct the mechanic with expertise to perform maintenance service for this machine.

### Caution

First, learn well the maintenance operations you plan to perform.

### Important

Use tools appropriate for each maintenance operation.

### Important

For the safe and best performance of your machine, use Baroness genuine parts for replacement and accessories. Please note that our product warranty may be void if you use non-genuine parts for replacement or accessories.

Maintain the machine according to the maintenance schedule so that you will be able to take advantage of its optimum performance for a long period of time.

## Maintenance Schedule

LM281/283/285

Follow the maintenance schedule below.

○ . . . Inspect, adjust, supply, clean

● . . . Replace (first time)

△ . . . Replace

Maintenance item		Before work	After work	Every 8 hrs.	Every 10 hrs.	Every 50 hrs.	Every 100 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 500 hrs.	Every year	Every 2 years	Every 4 years	Remarks
Engine	Tightening the parts	○													
	Fuel	○													
	Engine oil	○		●		△									8 hrs (first time)
	Engine oil filter	○				●	△								50 hrs (first time)
	Radiator	○													
	Oil cooler	○													
	Coolant	○												△	
	Fan belt	○											△		
	Battery	○												△	
	Battery fluid	○													
	Cleaning the exterior		○												
Main vehicle	Tightening the parts	○													
	Tightening the wheel mounting bolt					○	○								50 hours first check, every 100 hours thereafter
	Interlock system	○													
	Electrical wiring											○			
	Reel cutter (Cutting cylinder)	○													Refer to "Inspection of Reel Cutter (Cutting Cylinder) and Bed Knife (Bottom Blade)"
	Bedknife (Bottom blade)	○													Refer to "Inspection of Reel Cutter (Cutting Cylinder) and Bed Knife (Bottom Blade)"
	Operating height (Mowing height)	○													
	Blade engagement	○													
	Greasing, oiling					○									
Grease mower unit hydraulic motor shafts								○							

# Maintenance

Maintenance item		Before work	After work	Every 8 hrs.	Every 10 hrs.	Every 50 hrs.	Every 100 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 500 hrs.	Every year	Every 2 years	Every 4 years	Remarks
Main vehicle	Tire	○													Refer to "Inspection of Tires"
	Brake	○													Refer to "Inspection of Brake"
	Brake wire	○						△							Refer to "Inspection of Wire"
	Throttle wire	○						△							Refer to "Inspection of Wire"
	Reel cover	○													
	Oil leakage	○													
	Hydraulic oil	○					●				△				100 hrs (first time)
	Hydraulic oil filter						●				△				100 hrs (first time)
	Hydraulic hose (moving part)	○											△		
	Hydraulic hoses (Moving part) relating to steering												△		
	Hydraulic hose (fixed part)	○												△	
	Air cleaner	○							△				△		
	Electromagnetic pump filter	○							△						
	Fuel strainer							○					△		
	Fuel pipe	○													
Cleaning the exterior		○													

For the maintenance schedule of the items unlisted above, refer to the Engine's Owner's Manual. The values for consumables are not guaranteed.

Be sure to replace hydraulic hoses for steering cylinder and hydraulic hoses for hydraulic motor of wheel relating to steering every two years.

## Adjusted Values

Cutter adjustment spring	40.0 mm (1.575 in)	Length of spring coil
--------------------------	--------------------	-----------------------



## Jacking Up The Machine

### About 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.

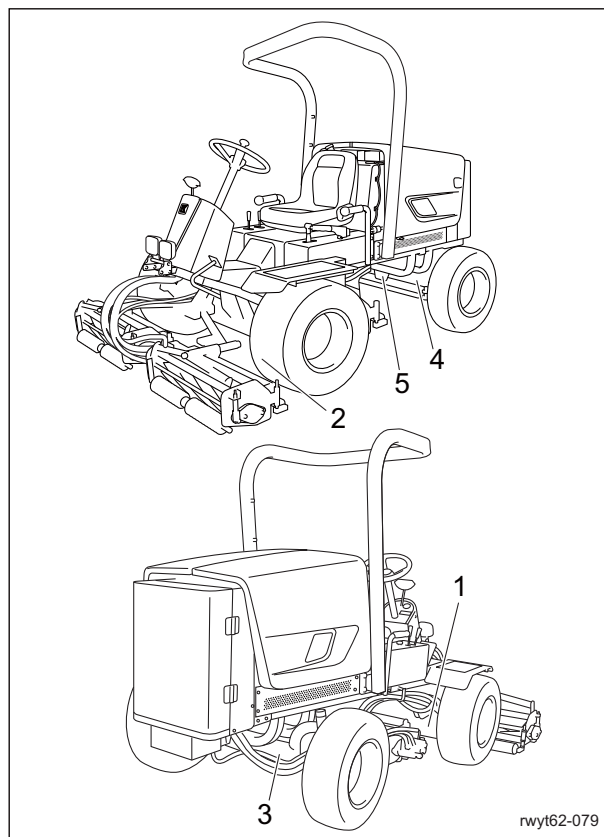
**Important**

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

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

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

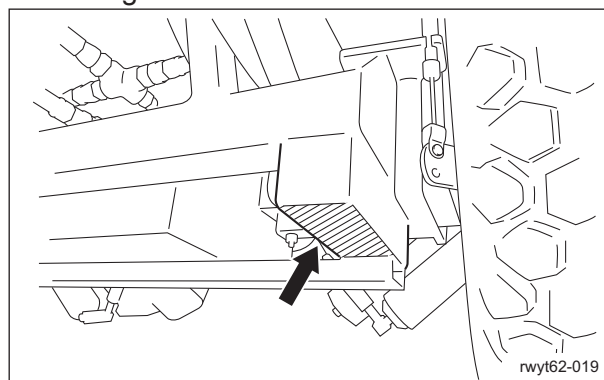
### Jack-Up Points



Jack-Up Points\_001

1	Front right frame
2	Front left frame
3	Rear right pivot
4	Rear left pivot
5	Rear center frame

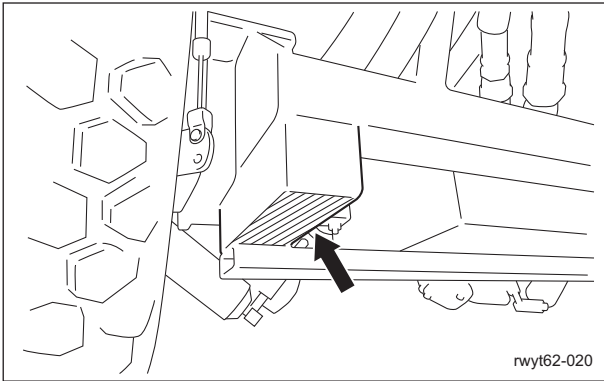
#### 1. Front right frame



Jack-Up Points\_002

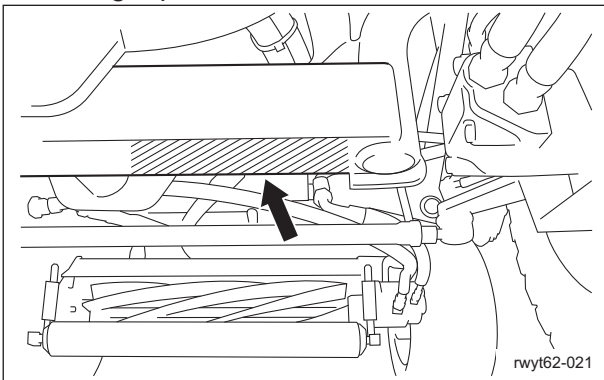
# Maintenance

## 2. Front left frame



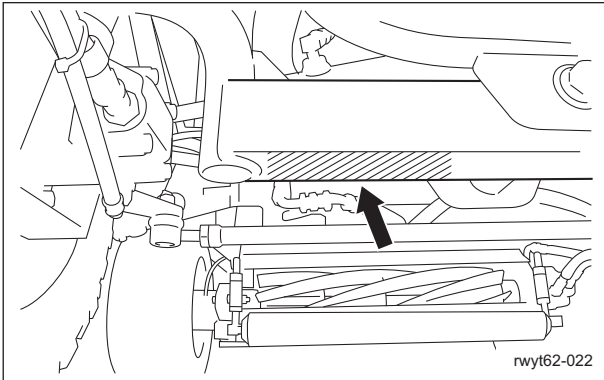
Jack-Up Points\_003

## 3. Rear right pivot



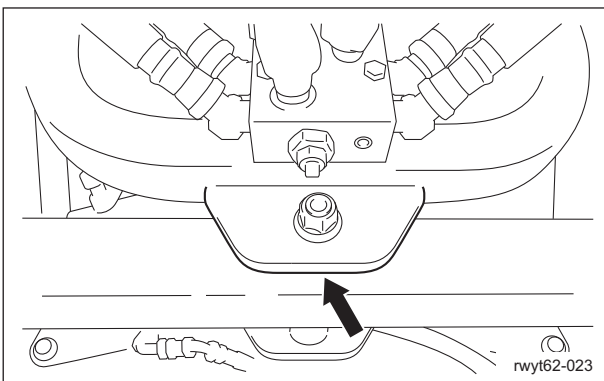
Jack-Up Points\_004

## 4. Rear left pivot



Jack-Up Points\_005

## 5. Rear center frame



Jack-Up Points\_006

## Greasing

### About 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".

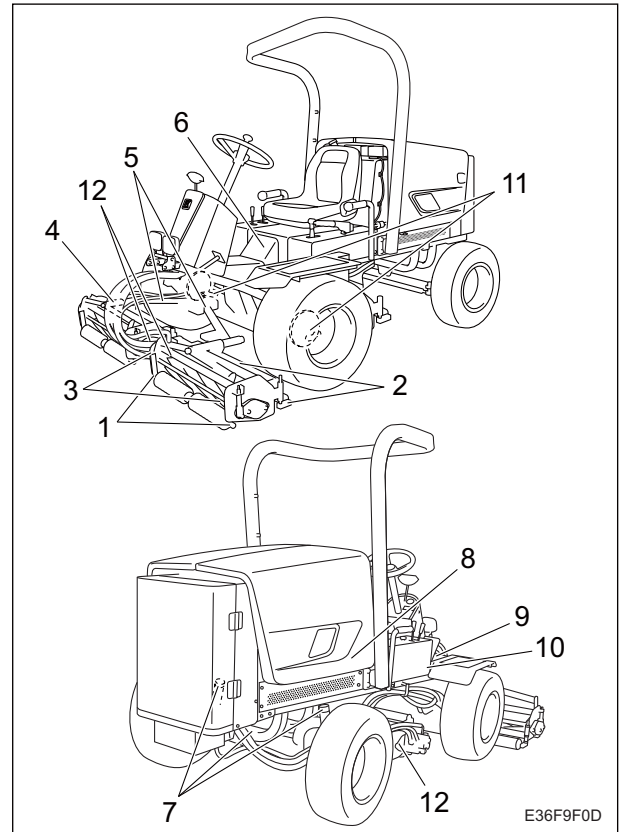
Add grease using the specified grease or lubricant.

### Greasing Points

Grease nipples are installed in the following locations.

Add grease every 50 hours of operation.

If specified locations, periods and grease are additionally described below, follow the instructions.



Greasing Points\_001

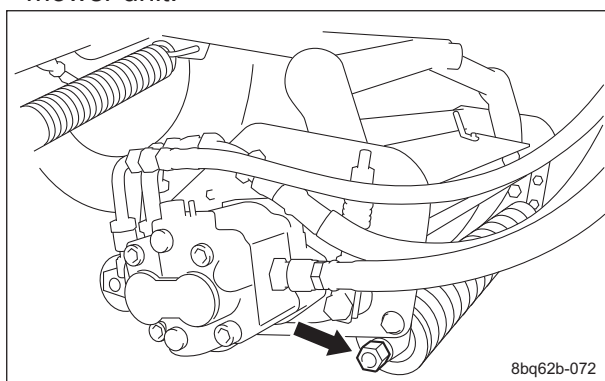
	Location	No. of greasing points
1	Front roller	6
2	Rear roller	6
3	Housing	6
4	Mower frame fulcrum	3
5	Lift arm fulcrum	3
6	Idle lever fulcrum	1
7	Pivot	3
8	Piston pump	2
9	Traveling pedal fulcrum	1
10	Traveling pedal shaft fulcrum	1
11	Brake lever shaft	2
12	Reel motor shaft	3

### 1. Front roller

#### Note:

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

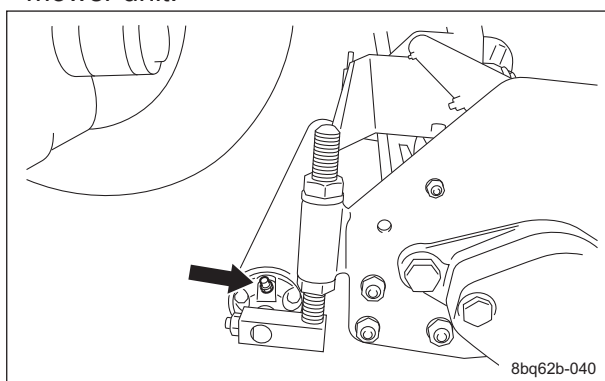
There is one greasing point each on the left and right sides of the front roller of each mower unit.



Greasing Points\_002

### 2. Rear roller

There is one greasing point each on the left and right sides of the rear roller of each mower unit.

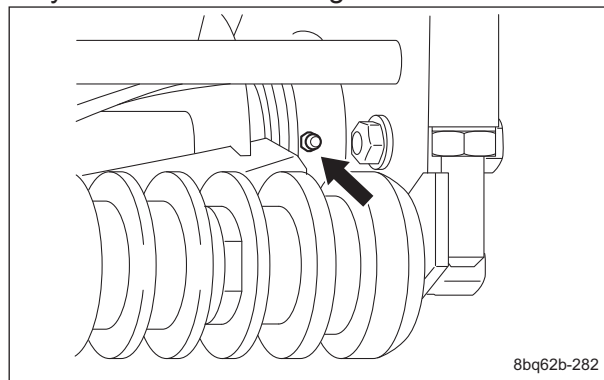


Greasing Points\_003

### 3. Housing

There is one greasing point each on the left and right housings of each mower unit.

#### Hydraulic motor housing



Greasing Points\_004

#### Important

Always use a hand operated grease gun and only add a maximum of 2 pumps of grease every 50 hours.

Using a power assisted grease gun should be avoided.

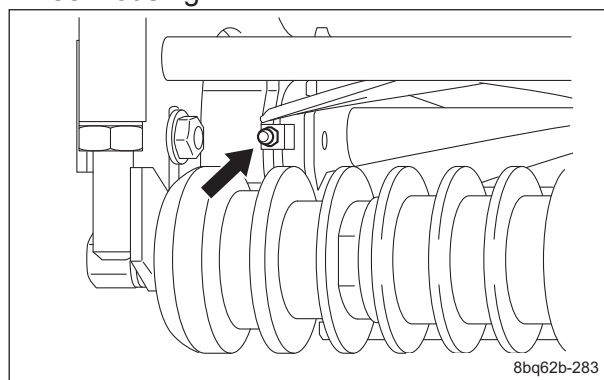
The grease capacity inside the reel housing on the CR brush mount side is approximately 25 g (0.05 lb).

If you repeat greasing by 2 g (0.004 lb) twelve times for 600 hours of operation, the grease amount inside the housing will almost reach its full capacity.

In case that the grease exceeds its capacity, the brush frame will project outward.

Therefore, remove the brush frame and discard the grease inside the reel housing when it reaches the capacity.

#### Reel housing

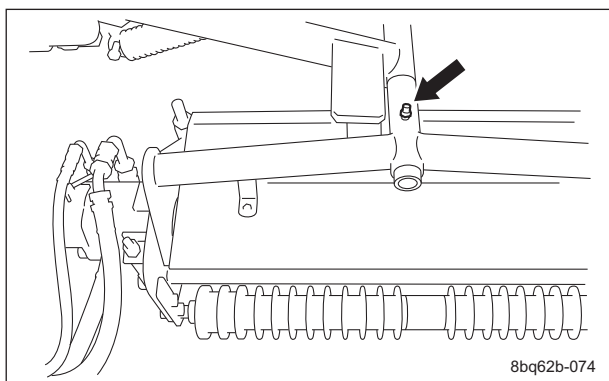


Greasing Points\_005

# Maintenance

## 4. Mower frame fulcrum

There is one greasing point on the mower frame fulcrum of each mower unit.

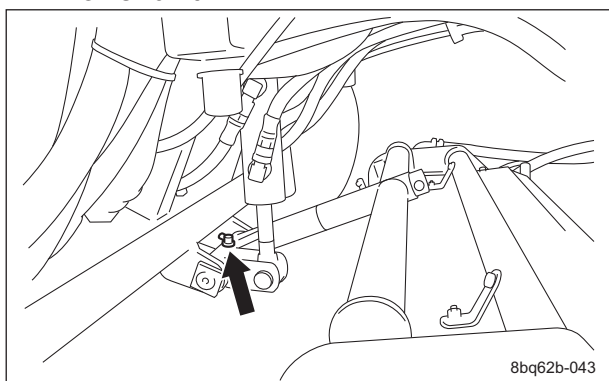


Greasing Points\_006

## 5. Lift arm fulcrum

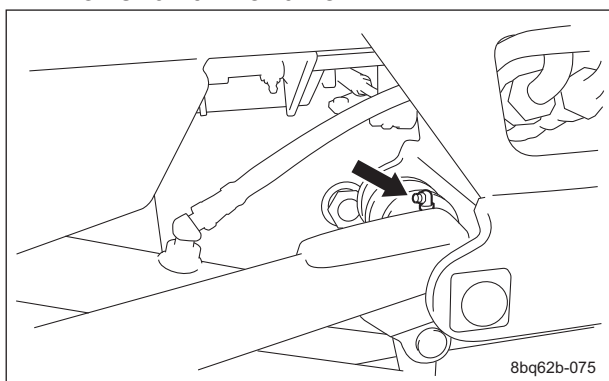
There is one greasing point on the lift arm fulcrum of each mower unit.

Mower unit #1



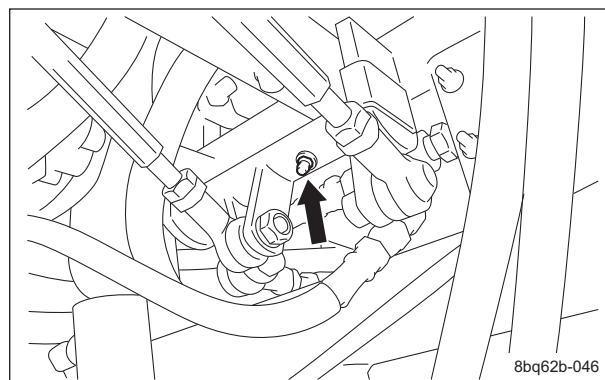
Greasing Points\_007

Mower unit #2 and #3



Greasing Points\_008

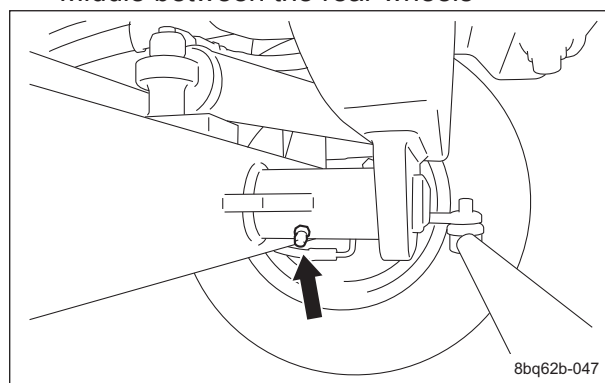
## 6. Idle lever fulcrum



Greasing Points\_009

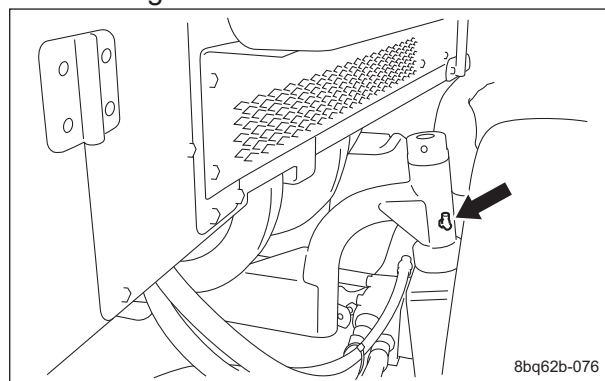
## 7. Pivot

Jack up the machine and apply grease.  
Middle between the rear wheels



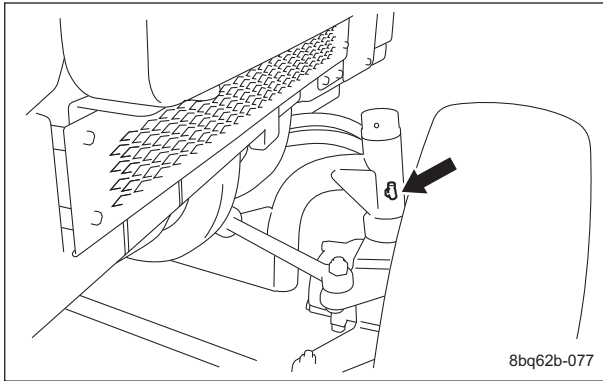
Greasing Points\_010

Rear right wheel



Greasing Points\_011

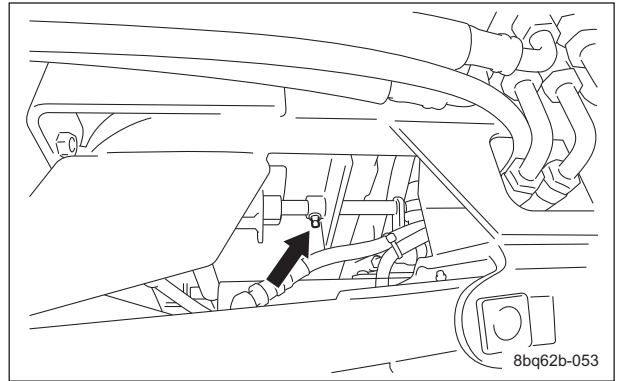
### Rear left wheel



8bq62b-077

Greasing Points\_012

### 10. Traveling pedal shaft fulcrum

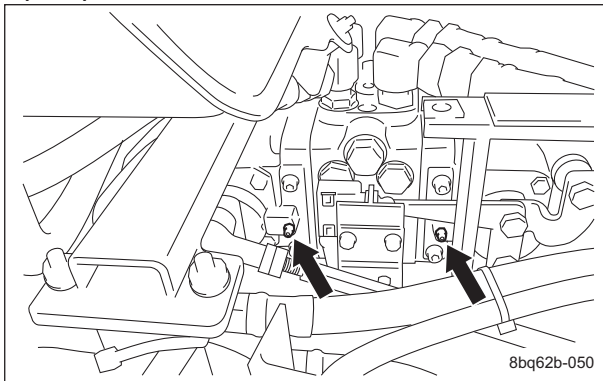


8bq62b-053

Greasing Points\_015

### 8. Piston pump

There are two greasing points on the piston pump.

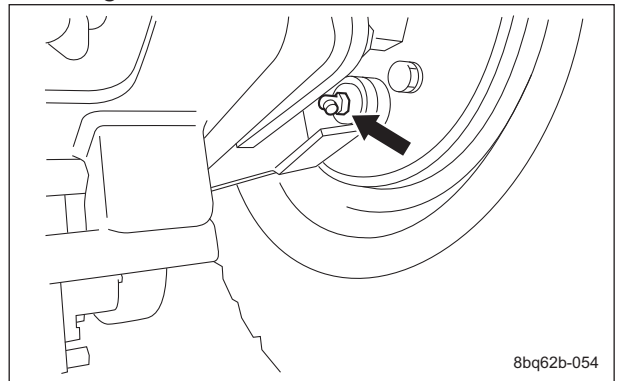


8bq62b-050

Greasing Points\_013

### 11. Brake lever shaft

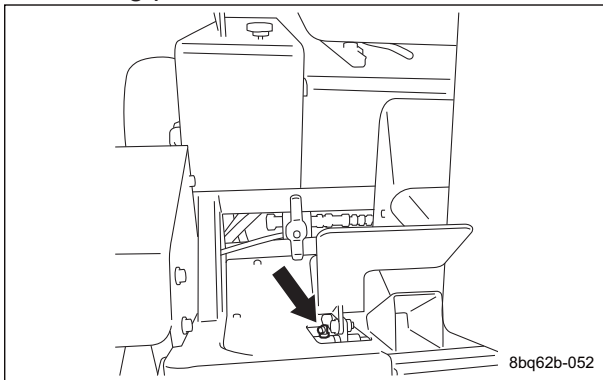
There is one greasing point each on the left and right brake lever shafts.



8bq62b-054

Greasing Points\_016

### 9. Traveling pedal fulcrum

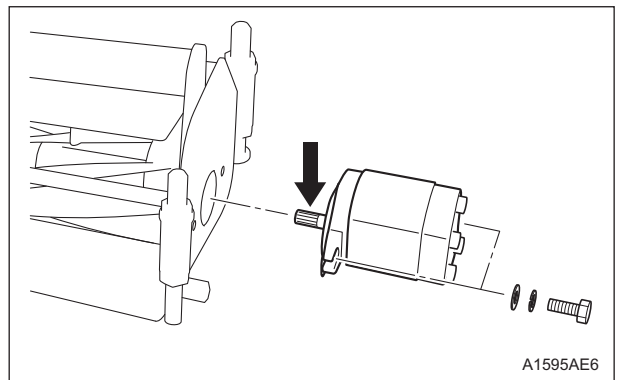


8bq62b-052

Greasing Points\_014

### 12. Reel motor shaft

Apply 2 g (0.004 lb) of MORI SPEED GREASE NO.2 to the reel mower shaft mounted on each mower unit every 250 hours.



A1595AE6

Greasing Points\_017

# Maintenance

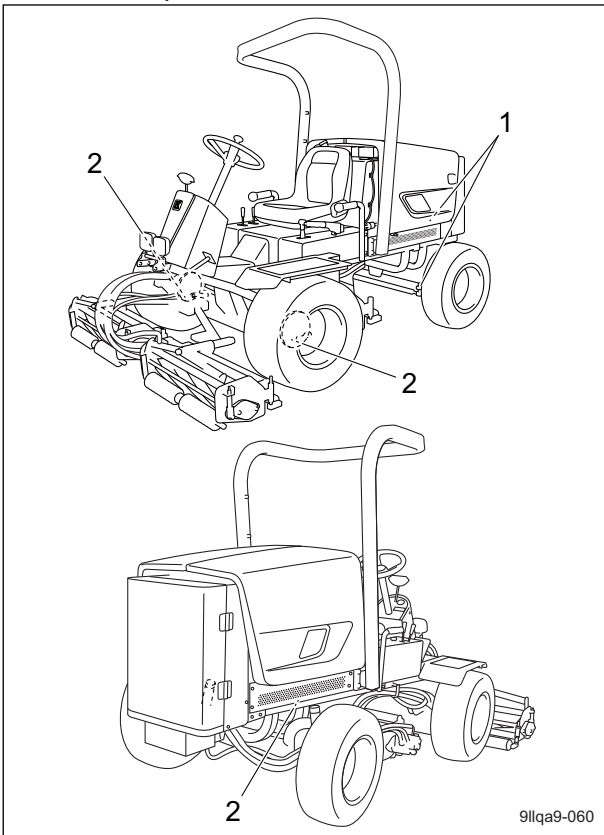
## Lubrication

### About Lubrication

It is necessary to lubricate moving parts so that they will not become stuck or damaged. The locations where lubricant is used are indicated in "Lubricating Points". Apply the lubricant.

### Lubricating Points

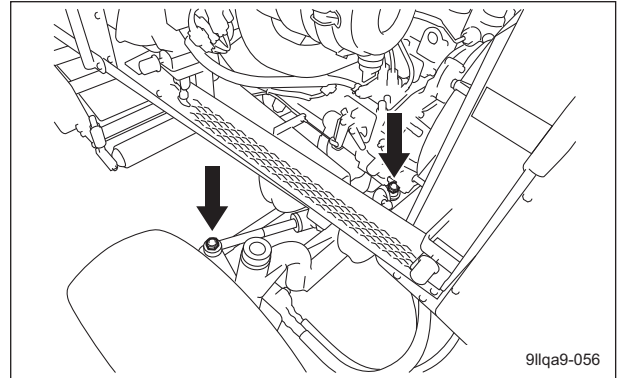
Apply lubricant at the following locations every 50 hours of operation.



Lubricating Points\_001

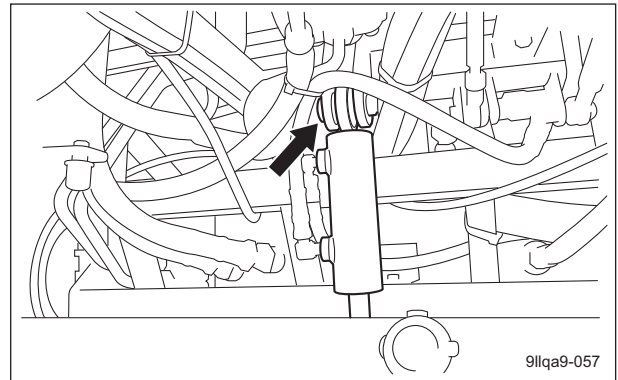
	Location	No. of lubricating points
1	Steering cylinder spherical bearing	2
2	Mower up/down cylinder spherical bearing	3

1. Steering cylinder spherical bearing  
There are two points.



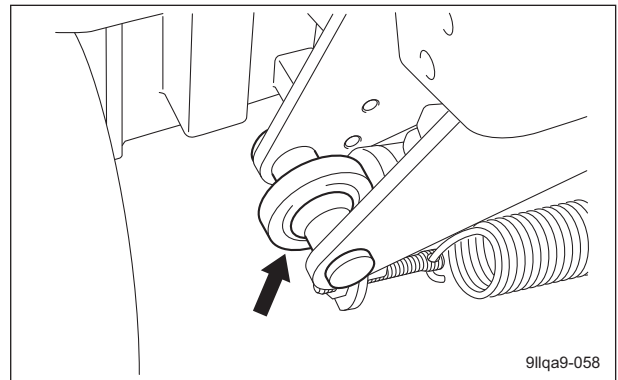
Lubricating Points\_002

2. Mower up/down cylinder spherical bearing  
There is one point each on the mower up/down cylinders.  
Mower unit #1



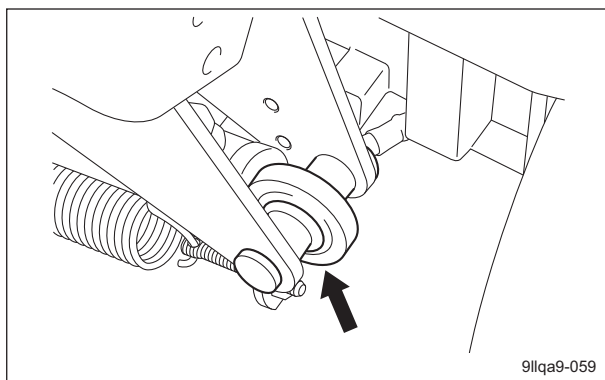
Lubricating Points\_003

- Mower unit #2



Lubricating Points\_004

Mower unit #3



Lubricating Points\_005

## Maintenance Work

### Back Lapping

Back lapping is work similar to sharpening a cooking knife. If the edges of the reel cutter (cutting cylinder) and the bed knife (bottom blade) become blunt and make cutting difficult, both the reel cutter (cutting cylinder) and the bed knife (bottom blade) should be simultaneously sharpened by reversing the reel cutter (cutting cylinder) with an abrasive paste applied.

However, back lapping is a temporary measure and would not restore the sharpness completely.

If the edges of the reel cutter (cutting cylinder) and the bed knife (bottom blade) become blunt and make cutting difficult, follow the steps below to perform back lapping.

#### Warning

During back lapping, the reel cutter (cutting cylinder) rotates. Keep hands and feet away from moving parts.

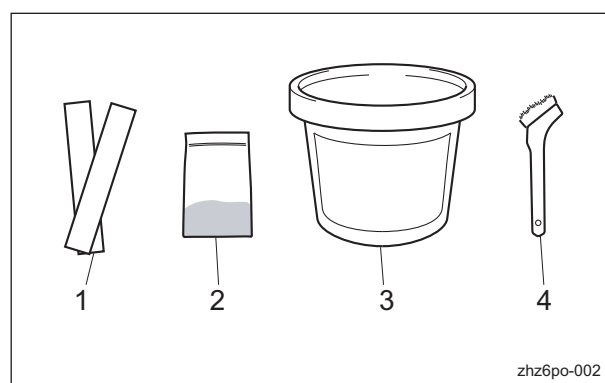
#### Caution

Be careful not to inhale exhaust gas during back lapping.

#### Caution

Do not perform back lapping with any other persons.

1. Have the following items ready: Strips of newspaper, Abrasive [Back lapping powder mixed with oil; or gel compound (Baroness genuine abrasive)], Brush.



Back Lapping\_001

1	Newspaper
2	Back lapping powder
3	Gel compound
4	Brush

#### Note:

The mixing ratio for the abrasive, in volume, is one part back lapping powder (#150 - #200) to three or four parts oil.

#### Caution

When handling the reel cutter (cutting cylinder) or bed knife (bottom blade), wear gloves to protect your hands. Pay attention not to let the reel cutter (cutting cylinder) catch your gloves. Otherwise, you may injure your hand or fingers.

#### Caution

Before adjusting the blade engagement, be sure to set the reel rotation/stop switching lever for the reel motor (attached to the mower unit) to the "Stop" position.

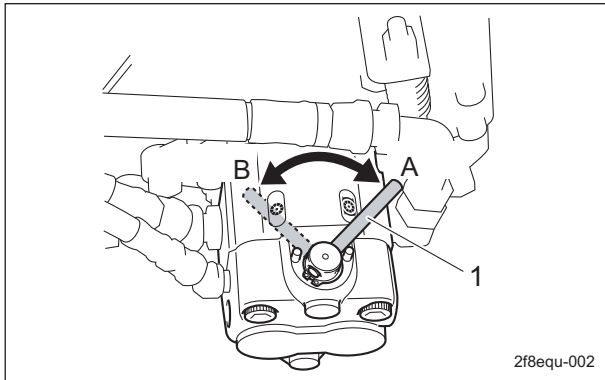
#### Important

For checking the sharpness of the blade, adjust the blade engagement after cutting grass.

2. Raise all the mower units.
3. Stop the engine.

# Maintenance

4. Shift the reel rotation/stop switching lever to the "Stop" position.



Back Lapping\_002

1	Reel rotation/stop switching lever
A	Rotate
B	Stop

5. Insert two or three strips of newspaper into the space between the reel cutter (cutting cylinder) and the bed knife (bottom blade) at an angle of 90 degrees. Then, rotate the reel cutter (cutting cylinder) counter-clockwise (when you face the mower unit from the left) by hand to check the sharpness of the blades.
6. Check the sharpness at entire range (three or four points) of the reel cutter (cutting cylinder).
7. Using a piece of chalk, mark locations on the blade that are sharp.
8. Shift only the reel rotation/stop switching levers of the hydraulic motors in the mower units to be used for back lapping to the "Rotate" position.  
Shift the levers to the "Stop" position for the mower units for which you will not perform back lapping.
9. Start the engine.
10. Lower all the mower units to the ground.
11. Loosen the knob of the reel rotation lever stopper, shift the stopper all the way to the "FOR BACKLAPPING" position, and then tighten the knob.
12. Drive the engine at a low rpm.
- Important**

If you shift the reel rotation lever to the "REVERSE" position while the knob of the reel rotation lever stopper is not completely shifted to the "FOR BACKLAPPING" position, the safety device will be activated and will stop the engine.
13. Shift the reel rotation lever to the "REVERSE" position to rotate the reel cutter (cutting cylinder) for back lapping.
14. Adjust the rotation speed of reel cutter (cutting cylinder) with the reel rotation/stop switching lever.
15. Apply the abrasive evenly with the brush on the top side of reel cutter (cutting cylinder) where the newspaper was cut well or of chalk-marked locations.  
(Never apply to blunt areas.)
16. Idle the machine for a while, and when contact noise is no longer heard, return the reel rotation lever to the "STOP (Neutral)" position to stop reel cutter (cutting cylinder).
17. Raise all the mower units.
18. Stop the engine.
19. Wash off or wipe off with cloth etc. the abrasive from the reel cutter (cutting cylinder), then check it for sharpness.
20. Repeat steps 4. to 19. until the entire range (three or four points) of the reel cutter (cutting cylinder) will be uniformly sharpened.
21. Lower all the mower units.
22. Finally, apply abrasive to the entire blade width of the reel cutter (cutting cylinder) and perform final back lapping.
23. Stop the rotation of the reel cutter (cutting cylinder), stop the engine, and then carefully and thoroughly wash off any remaining abrasive.
24. Loosen the knob of the reel rotation lever stopper, shift the stopper all the way to the "FOR MOWING" position, and then tighten the knob.
25. Shift the reel rotation/stop switching lever to the "Stop" position.
26. While checking the blade for sharpness, adjust blade engagement.



## Sharpening of Reel Cutter (Cutting Cylinder)

The sharpening of the reel cutter (cutting cylinder) consists in maintaining its roundness and creating a relief (second edge face). This work should be performed if the sharpness cannot be restored, even after back lapping, or if the relief (second edge face) has worn away.

Sharpen the reel cutter (cutting cylinder) when the sharpness cannot be restored, even after back lapping, or when the relief (second edge face) has worn away, there is full contact or back lapping takes too much time.

In addition, if the reel cutter (cutting cylinder) becomes worn and its shape conical, perform cylindrical grinding to return it to a cylindrical shape.

For sharpening the reel cutter (cutting cylinder), contact your dealer or Baroness unless you have a grinding machine.

### ⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

### ⚠ Caution

Wear gloves when touching edged tools to avoid cutting your hands.

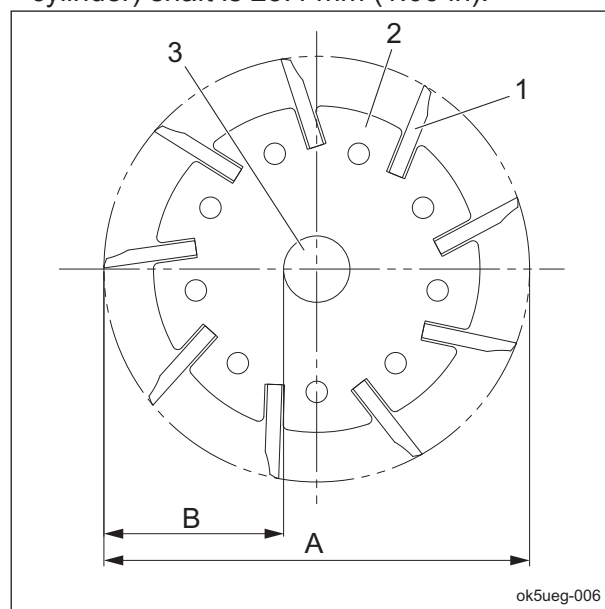
The criteria for sharpening the reel cutter (cutting cylinder) are described below. However, these criteria are only a reference and do not guarantee performance of a reel cutter (cutting cylinder).

1. If the outer diameter of the reel cutter (cutting cylinder) after sharpening is more than the usage limit, the reel cutter (cutting cylinder) can be sharpened.

New		Usage limit	
Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)	Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)
163 mm (6.42 in)	68.8 mm (2.71 in)	143 mm (5.63 in)	58.8 mm (2.31 in)

### Note:

The outer diameter of the reel cutter (cutting cylinder) shaft is 25.4 mm (1.00 in).



Sharpening of Reel Cutter (Cutting Cylinder)\_001

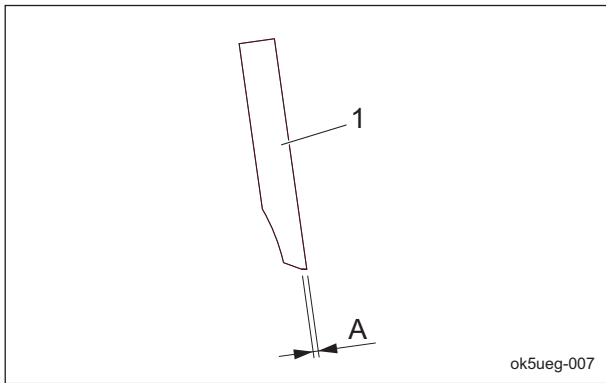
1	Reel cutter (cutting cylinder) blade
2	Reel cutter (cutting cylinder) disc
3	Reel cutter (cutting cylinder) shaft
A	Outer diameter of reel cutter (cutting cylinder)
B	Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft

# Maintenance

2. Sharpening is necessary when the reel cutter (cutting cylinder) reaches a condition described below.

[1] When the sharpening width (length of contacting surface of bed knife (bottom blade)) for the outer diameter of the reel cutter (cutting cylinder) is greater than the usage limit.

Outer diameter of reel cutter (cutting cylinder) (new part)	Usage limit of sharpening width for outer diameter of reel cutter (cutting cylinder)
163 mm (6.42 in)	3.0 mm (0.12 in) (factory-recommended)



Sharpening of Reel Cutter (Cutting Cylinder)\_002

1	Reel cutter (cutting cylinder) blade
A	Sharpening width for outer diameter of reel cutter (cutting cylinder)

[2] When the edges become blunt or the blade edge cannot be formed with back lapping

[3] When the reel cutter (cutting cylinder) becomes worn and its shape conical, or when blade engagement adjustment cannot be performed

## Replacement of Reel Cutter (Cutting Cylinder)

### ⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

### ⚠ Caution

Wear gloves when touching edged tools to avoid cutting your hands.

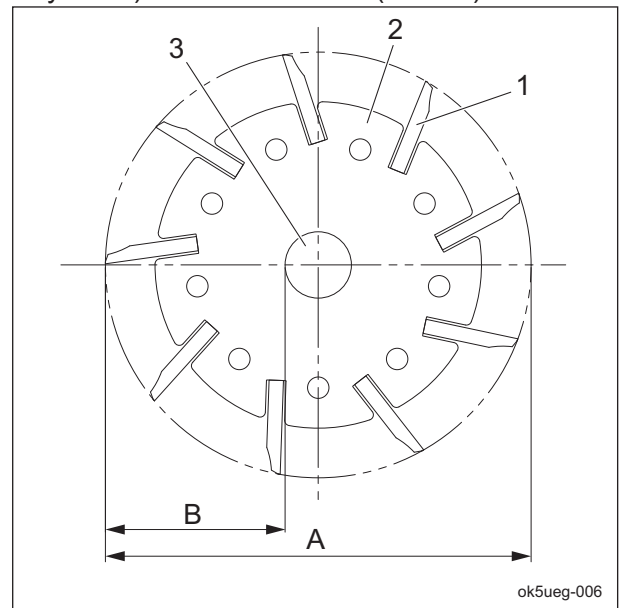
The criteria for replacing the reel cutter (cutting cylinder) are described below. However, these criteria are only a reference and do not guarantee performance like that of a new reel cutter (cutting cylinder).

1. When the outer diameter of the reel cutter (cutting cylinder) is less than the usage limit

New		Usage limit	
Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)	Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)
163 mm (6.42 in)	68.8 mm (2.71 in)	143 mm (5.63 in)	58.8 mm (2.31 in)

### Note:

The outer diameter of the reel cutter (cutting cylinder) shaft is 25.4 mm (1.00 in).



Replacement of Reel Cutter (Cutting Cylinder)\_001

1	Reel cutter (cutting cylinder) blade
2	Reel cutter (cutting cylinder) disc
3	Reel cutter (cutting cylinder) shaft
A	Outer diameter of reel cutter (cutting cylinder)
B	Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft

## Replacement of Bed Knife (Bottom Blade)

**⚠ Caution**

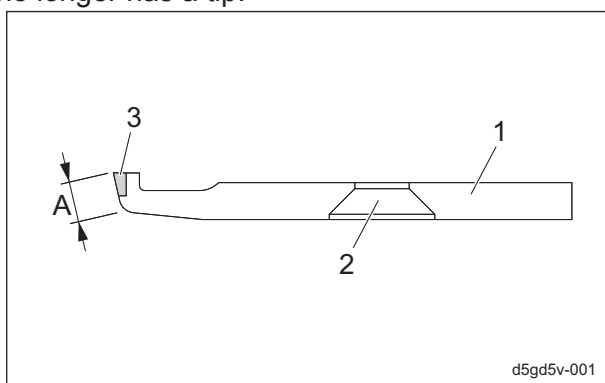
Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

**⚠ Caution**

Wear gloves when touching edged tools to avoid cutting your hands.

The criteria for replacing the bed knife (bottom blade) are described below.

1. When the reel cutter (cutting cylinder) is ground
2. When the reel cutter (cutting cylinder) is replaced
3. When the bed knife (bottom blade) is worn High-speed-steel-tipped blade  
Replace the bed knife (bottom blade) before it no longer has a tip.



Replacement of Bed Knife (Bottom Blade)\_001

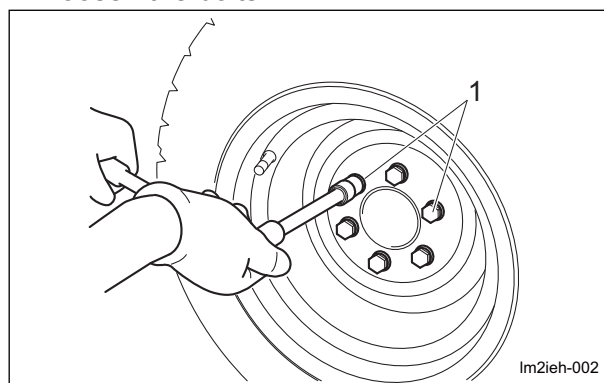
1	Bed knife (bottom blade)
2	Mounting hole
3	Tip
A	Front face

## Removing/Installing Tires

### Front Tires

Follow the steps below to remove the front tires:

1. Loosen the bolts.



Front Tires\_001

1	Heat-treated bolt
---	-------------------

2. Securely place the jack beneath the jack-up point of the front left/right frame area, and then raise it until the tire lifts off the ground. "Jack-Up Points" (Page 5-5)
3. Remove the bolts.
4. Remove the tire from the wheel mounting seat.

**Important**

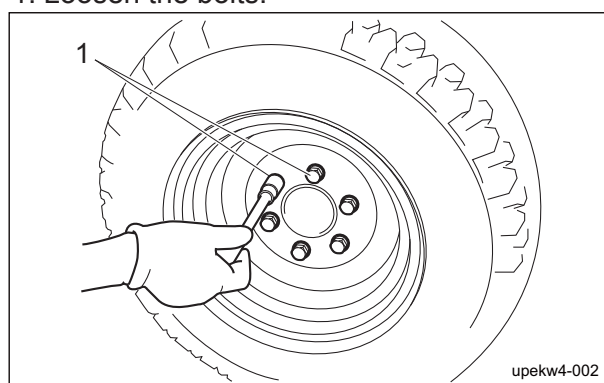
Tighten the bolts in the tightening order (diagonally).

For installing the front tires, reverse the removing procedure.

### Rear Tire

Follow the steps below to remove the rear tires:

1. Loosen the bolts.



Rear Tire\_001

# Maintenance

1 Heat-treated bolt

- Securely place the jack beneath the jack-up point of the rear frame area, and then raise it until the tire lifts off the ground.  
"Jack-Up Points" (Page 5-5)
- Remove the bolts.
- Remove the tire from the wheel mounting seat.

### Important

Tighten the bolts in the tightening order (diagonally).

For installing the rear tires, reverse the removing procedure.

## Adjustment of Belt Tension

### Warning

Be sure to stop the engine before adjusting the belts.

### Important

Before making sure of belt tension, rotate the belt several times.

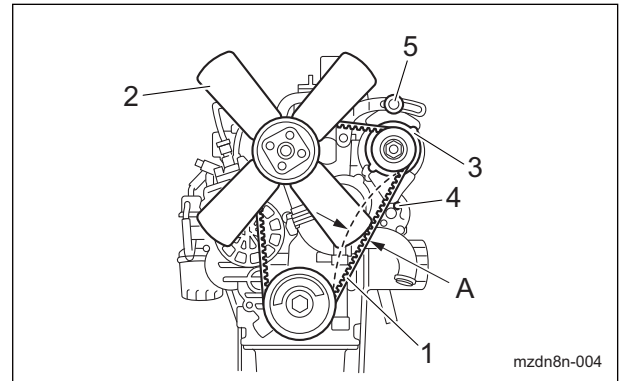
If the belt becomes slack due to frequent use, it may jump or slip.

In addition, if it is overtightened, it may wear prematurely.

If necessary, adjust it, and always check the belt for appropriate tension.

### Fan Belt

- Press the middle of the belt with your finger to check the belt tension.  
The belt tension is appropriate when the belt slacks by approximately 10.0 mm (0.39 in) when you apply a force of 98 N (10 kgf) to the belt at the middle point between the pulleys.
- If the belt tension is incorrect, loosen bolt A and bolt B (securing the alternator), and then move the alternator to adjust the tension.



Fan Belt\_001

1	Fan Belt
2	Blade
3	Alternator
4	Bolt A
5	Bolt B
A	10 mm (0.39 in)

## Adjustment of Parking Brake

### Caution

If the brake wire is cut, the machine will be unable to stop.

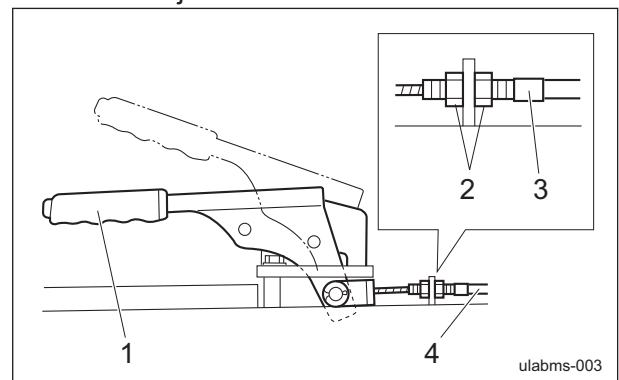
If the brake wire is cracked or damaged, replace it with a new one immediately.

### Important

Make sure that the brake is effective on slopes and that it is not applied any longer when you release it.

Adjust the parking brake system whenever there is any abnormality.

Adjust the parking brake by tightening the brake wire adjustment bolt.



Adjustment of Parking Brake\_001

1	Parking brake lever
2	Lock nut
3	Adjustment bolt
4	Brake wire

## Adjustment of Brake

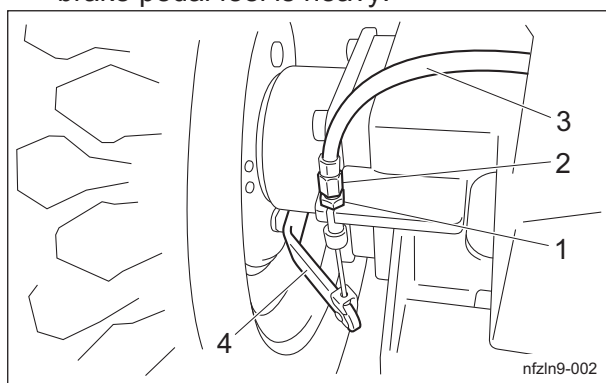
### ⚠ Caution

If the brake wire is cut, the machine will be unable to stop.  
If the brake wire is cracked or damaged, replace it with a new one immediately.  
If the brake is not sufficiently effective, adjust the brake wire.

### Important

Adjust to reduce the play in the brake lever as much as possible so that the brake does not drag when the lever is released.

- Adjust the brake by tightening the brake wire adjustment bolt.
  - If there is too much play in the brake lever, the braking power is reduced and the brake pedal feel is light.
  - If there is too little play in the brake lever, the braking power is increased and the brake pedal feel is heavy.



Adjustment of Brake\_001

1	Lock nut
2	Adjustment bolt
3	Brake wire
4	Brake lever

- Start the engine and drive to 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.

### ⚠ Caution

It may result in an unexpected accident if the left and right brakes are not equally effective.

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

### 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.

## Adjusting The Neutral Position of The Piston Pump

### ⚠ Caution

Make sure not to touch rotating tires.

### ⚠ Caution

When adjusting the neutral position, pay close attention to abrupt start of the machine.  
Place the jacks beneath the jack-up points, and then lift the machine until all the tires get off the ground.

If the machine moves forward or backward while the traveling pedals are released, they are not set to the neutral position.

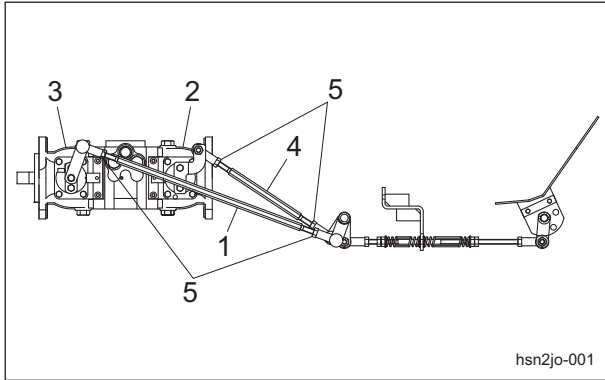
Follow the steps below to make adjustments.

- Stop the engine.
- Place the jacks beneath the jack-up points, and then lift the machine off the ground.  
Use stable jack stands, and raise the machine until the tires lift off the ground.  
"Jack-Up Points" (Page 5-5)
- Start the engine, and rev it up to the maximum rpm.

# Maintenance

## 4. Adjust the neutral position.

- [1] If the front tires rotate forward, loosen the lock nuts, then turn the front wheel rod to shorten it.
- [2] If the front tires rotate in reverse, loosen the lock nuts, then turn the front wheel rod to extend it.



Adjusting The Neutral Position of The Piston Pump\_001

1	Rear wheel rod
2	Front wheel pump
3	Rear wheel pump
4	Front wheel rod
5	Lock nut

5. Find the position where the front wheels stop, and then tighten the lock nuts.
6. Follow the same steps to adjust the rear wheels.

## Change of Coolant

### ⚠ Caution

Do not touch the radiator or coolant during engine operation or immediately after the engine has been turned off. Otherwise, you may get burned.

### ⚠ Caution

Change coolant after the engine has well cooled down.

### ⚠ Caution

The radiator cap is pressurized. If you remove the radiator cap while the engine is overheated, hot steam will burst out, possibly resulting in burns. Make sure that the water temperature and pressure are reduced, and then grab the cap with a thick cloth and gradually open the cap.

### Important

When changing the coolant, be sure to drain it into a container and discard it in accordance with local laws and regulations.

### Important

When changing the coolant, be sure to mix clean water (soft water) and antifreeze (long-life coolant), and then pour it into the radiator and reserve tank.

### Important

Tightly close the radiator cap. If the cap is loose or incorrectly installed, water will leak and the engine will be damaged due to overheating.

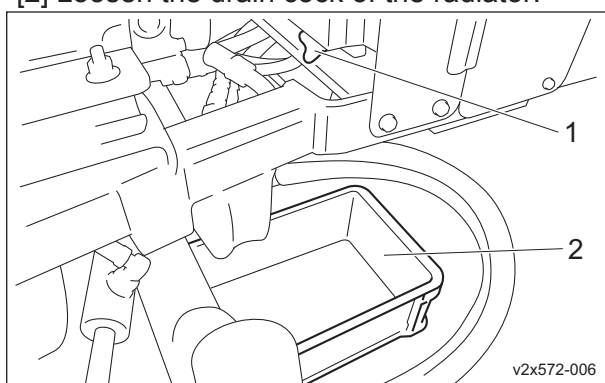
When mixing antifreeze and clean water (soft water), refer to "Relationship between concentration of long-life coolant (LLC) and freezing temperature" below for the mixing ratio.

Relationship between concentration of long-life coolant (LLC) and freezing temperature

Freezing temperature	LLC concentration (volume %)
Down to -10 °C (14 °F)	20 %
Down to -15 °C (5 °F)	30 %
Down to -20 °C (-4 °F)	35 %
Down to -25 °C (-13 °F)	40 %

1. Stop the engine, and then allow the radiator to cool.
2. Open the hood.
3. Follow the steps below to drain the coolant.
  - [1] Position a container to drain the coolant into.

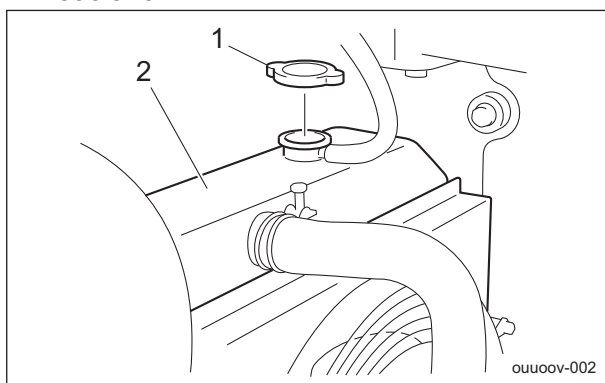
[2] Loosen the drain cock of the radiator.



Change of Coolant\_001

1	Radiator drain cock
2	Container

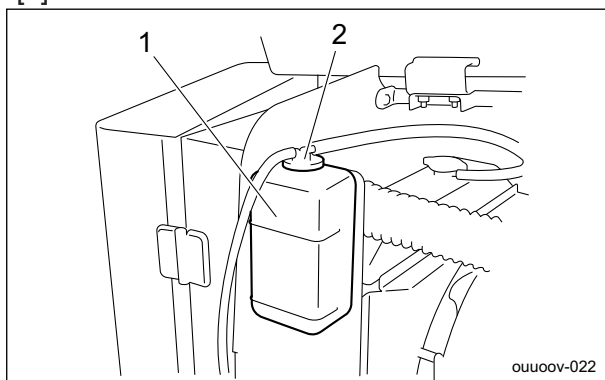
[3] Remove the radiator cap and drain the coolant.



Change of Coolant\_002

1	Radiator cap
2	Radiator

[4] Remove the reserve tank.



Change of Coolant\_003

1	Reserve tank
2	Reserve tank cap

[5] Open the reserve tank cap, and then drain the coolant.

4. Install the reserve tank.

5. Clean the radiator with clean water (soft water) to remove any debris or rust.

6. Drain all water from the radiator.

7. Follow the steps below to fill with coolant.  
The coolant quantity, including the reserve tank, is 6.0 dm<sup>3</sup> (6.0 L).

[1] Install the drain plug.

[2] Supply clean water (soft water) and antifreeze into the radiator up to the radiator cap opening.

[3] Close the radiator cap.

[4] Supply clean water (soft water) and antifreeze into the reserve tank up to the "FULL" mark.

[5] Close the reserve tank cap.

8. Start the engine, and then idle for several minutes to bleed air from the system.

9. Stop the engine, and then allow the radiator to cool.

10. Check if the coolant level in the reserve tank is between "FULL" and "LOW", and then supply coolant if necessary.

11. Close the hood.

# Maintenance

## Change of Hydraulic Oil

### ⚠ Caution

Be careful with hot oil, which could cause burns if it contacts your skin.

### Important

When you change the hydraulic oil, be sure to drain it into a bowl and discard it in accordance with local laws and regulations.

### Important

If the oil emulsifies or if it becomes even slightly less transparent, change the oil immediately.

### Important

Use Shell Tellus S2M46 (or equivalent) as hydraulic oil.  
In case of an equivalent, consult Characteristics of Hydraulic Oil and use hydraulic oil whose characteristics are superior to those of the specific hydraulic oil. Especially regarding kinematic viscosity and viscosity index, use of hydraulic oil whose figures are less than those of the specified hydraulic oil will cause a malfunction in the hydraulic circuit.

### Note:

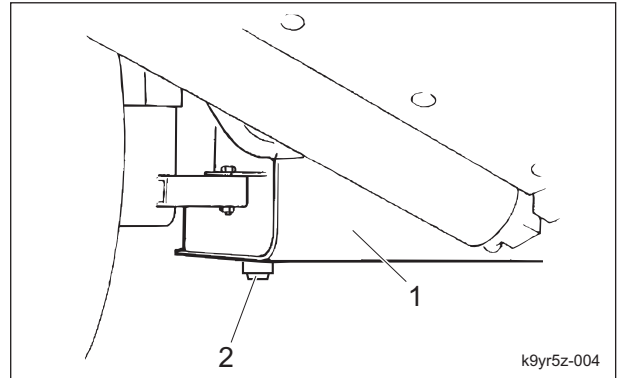
#### Characteristics of Hydraulic Oil

Specified Hydraulic Oil		Shell Tellus S2M46
ISO Viscosity Grade		ISO VG46
Density	15 °C (59 °F)	0.873 g/cm <sup>3</sup> (0.0315 lb/in <sup>3</sup> )
API Gravity		30.6
Flash Point (Open Cup)		230 °C (446 °F)
Pour Point		-30 °C (-22 °F)
Kinematic	40 °C (104 °F)	46 mm <sup>2</sup> /s (46 cSt)
Viscosity	100 °C (212 °F)	7 mm <sup>2</sup> /s (7 cSt)
Viscosity Index		109

- Follow the steps below to remove the old oil.
  - Start and run the engine to warm up the oil.
  - On a level surface, lower the mower units, and then stop the engine.

- Remove the drain plug of the hydraulic tank, and then drain the old oil into a container.

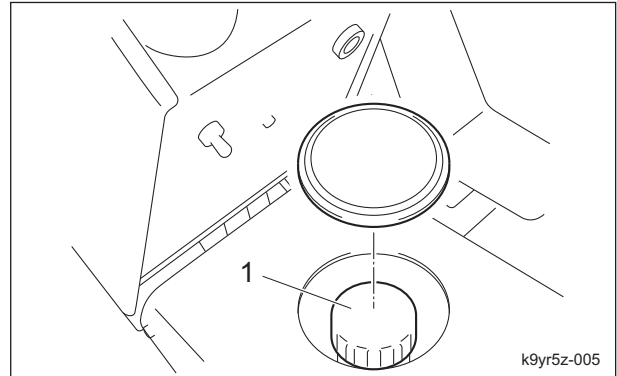
- Wind new sealing tape on the drain plug, and then attach it to the hydraulic tank.



Change of Hydraulic Oil\_001

1	Hydraulic tank
2	Drain plug

- Open the tank cap, and then pour new oil from the fill port until the oil level reaches the middle of the oil gauge on the hydraulic tank. The hydraulic tank capacity is approximately 24.0 dm<sup>3</sup> (24.0 L).



Change of Hydraulic Oil\_002

1	Tank cap
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- Tighten the tank cap securely.
- Start the engine, raise and lower the mower units, and turn the steering wheel left and right. Move forward and reverse repeatedly several times.
- Raise the mower units and maintain that position on a level surface, and then check to see if the oil level is at the middle of the oil gauge. If necessary, supply oil.
- Check underneath the machine for oil leakage.



## Change of Hydraulic Oil Filter

### Change of Hydraulic Oil Line Filter

#### ⚠ Caution

Be careful with hot oil, which could cause burns if it contacts your skin.

#### Important

When replacing the hydraulic oil filter, be sure to drain the oil into a container and discard it in accordance with local laws and regulations.

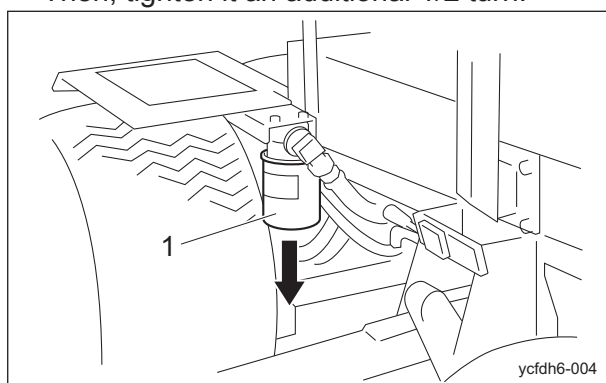
#### Important

If the hydraulic oil emulsifies or if it becomes even slightly less transparent, change the oil immediately.

#### Important

Use Shell Tellus S2M46 (or equivalent) as hydraulic oil.

1. On a level surface, lower the mower units, and then stop the engine.
2. Remove the old filter cartridge.
3. Lightly coat the packing of the new filter cartridge with hydraulic oil, and then install the cartridge.
4. Firmly tighten the filter cartridge by hand so that the packing contacts the mounting surface.  
Then, tighten it an additional 1/2 turn.



Change of Hydraulic Oil Line Filter\_001

1 Cartridge filter

5. Supply hydraulic oil until it reaches the specified level.  
"Hydraulic Oil Supply" (Page 4-8)

6. Start the engine, and then after the hydraulic oil has warmed up, stop the engine.
7. Check underneath the machine for hydraulic oil leakage.

### Change of Hydraulic Suction Filter

#### ⚠ Caution

Be careful with hot oil, which could cause burns if it contacts your skin.

#### Important

When replacing the hydraulic oil filter, be sure to drain the oil into a container and discard it in accordance with local laws and regulations.

#### Important

If the hydraulic oil emulsifies or if it becomes even slightly less transparent, change the oil immediately.

#### Important

Use Shell Tellus S2M46 (or equivalent) as hydraulic oil.

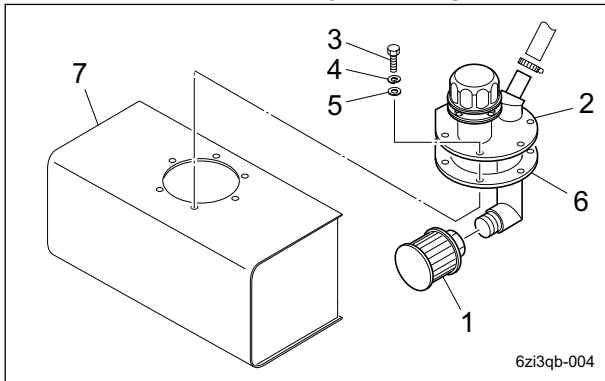
#### Important

Replace the intake port packing with a new one.

1. On a level surface, lower the mower units, and then stop the engine.
2. Remove the center cover.
3. Remove bolts, spring washers and washers, and then remove the intake hose joint fitting.
4. Remove the old suction filter and intake port packing.
5. Remove all of the old liquid gasket from the hydraulic tank.
6. Remove all of the old liquid gasket and the intake port packing from the intake hose joint fitting.
7. Wash and clean the intake hose joint fitting.
8. Apply liquid gasket to the new intake port packing and then install it to the intake hose joint fitting.

# Maintenance

9. Install the new suction filter to the intake hose joint fitting.
10. Install the intake hose joint fitting.



Change of Hydraulic Suction Filter\_001

1	Suction filter
2	Intake hose joint fitting
3	Bolt
4	Spring washer
5	Washer
6	Intake port packing
7	Hydraulic tank

11. Install the center cover.
12. Supply hydraulic oil until it reaches the specified level.  
"Hydraulic Oil Supply" (Page 4-8)
13. Start the engine and stop it after hydraulic oil warmed.
14. Check underneath the machine for hydraulic oil leakage.

## Change of Air Cleaner

A contaminated air cleaner element may cause malfunction of the engine.

To maximize the life of the engine, replace the air cleaner element at the appropriate times.

1. The timing for replacing the air cleaner element is described below.
  - [1] Replace the air cleaner element in accordance with the Maintenance Schedule.
  - [2] If it is significantly contaminated, replace it, even if the hours of operation do not exceed the specified time.
2. Replace the air cleaner element by following the same steps as for cleaning the air cleaner.  
"Cleaning of Air Cleaner" (Page 4-9)

## Change of Engine Oil

### ⚠ Caution

Be careful with hot oil, which could cause burns if it contacts your skin.

### Important

When you change the engine oil, be sure to drain it into a bowl and discard it in accordance with local laws and regulations.

### Important

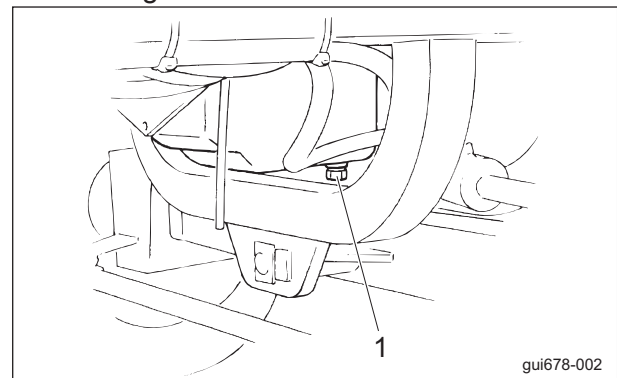
Be sure to use engine oil that is classified as API Service Grade CF or higher, with an SAE Viscosity that is appropriate for the operating environment (ambient temperature).

### Important

Securely tighten the oil level gauge and oil filler cap.

Change the engine oil more frequently if the engine oil is contaminated, and especially if you use the machine in dusty areas or operate the engine at high loads or in high temperatures.

1. Follow the steps below to remove the old engine oil.
  - [1] Start and run the engine to warm up the engine oil.
  - [2] Stop the engine on a level place.
  - [3] Remove the drain plug and then drain the old engine oil into a container.



Change of Engine Oil\_001

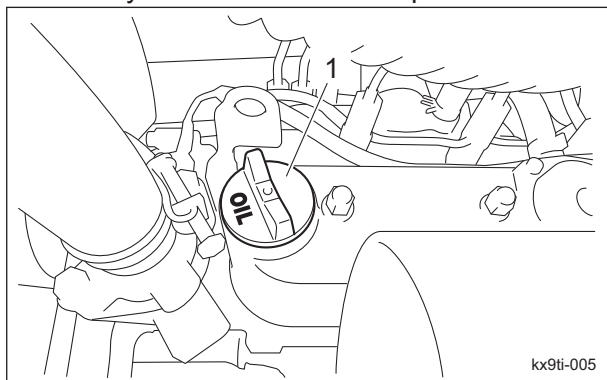
1	Drain plug
---	------------

- [4] Re-place the drain plug.

- Remove the oil filler cap, and then supply new engine oil until the oil reaches a level in between the upper and lower limit lines on the oil level gauge.

Engine oil quantity is approximately 3.0 dm<sup>3</sup> (3.0 L).

- Securely install the oil filler cap.



Change of Engine Oil\_002

1	Oil filler cap
---	----------------

- It will take a while for the supplied engine oil to descend into the oil pan. Check the oil level again 10 to 20 minutes after supplying the oil.
- Check underneath the machine for oil leakage.

### Change of Engine Oil Filter

#### ⚠ Caution

Be careful with hot oil, which could cause burns if it contacts your skin.

#### Important

When replacing the engine oil filter, be sure to drain the engine oil into a container and discard it in accordance with local laws and regulations.

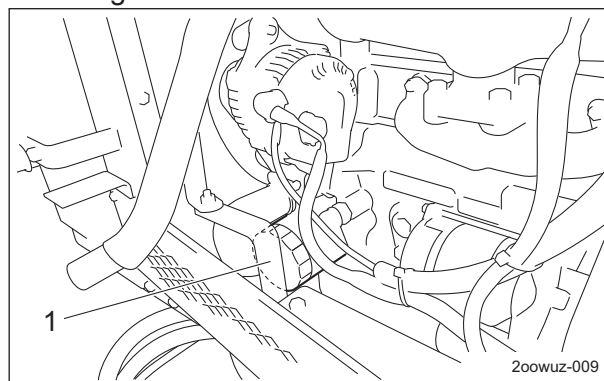
#### Important

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).

#### Important

Securely tighten the oil level gauge and oil filler cap.

- With the filter wrench, remove the old filter cartridge.



Change of Engine Oil Filter\_001

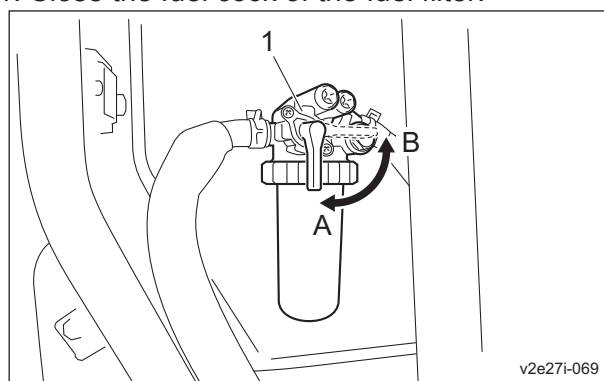
1	Filter cartridge
---	------------------

- Lightly coat the packing of the new filter cartridge with engine oil.
- Hand-tighten the filter cartridge until the packing contacts the sealing surface, and then firmly hand-tighten (without using a filter wrench).
- Supply engine oil until it reaches the specified level.  
"Supply of Engine Oil" (Page 4-12)
- Start the engine, and then stop it after 10 to 20 minutes.
- Make sure that there is no oil leakage at the sealing surface of the filter cartridge.
- Check the engine oil level.  
If it is low, supply engine oil until it reaches the specified level.

### Change of Fuel Filter Element

If dust or dirt accumulates in the fuel filter, the fuel flow will become insufficient. Replace the fuel filter at the appropriate times. The fuel filter is in the rear right area of the seat.

- Close the fuel cock of the fuel filter.

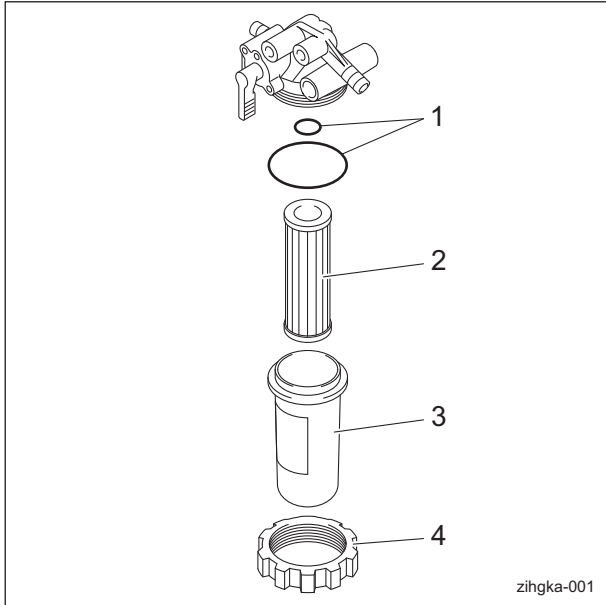


Change of Fuel Filter Element\_001

# Maintenance

1	Fuel filter
A	ON (open)
B	OFF (close)

2. Remove the ring nut, and then remove the cup.



Change of Fuel Filter Element\_002

1	O-ring
2	Element
3	Cup
4	Ring nut

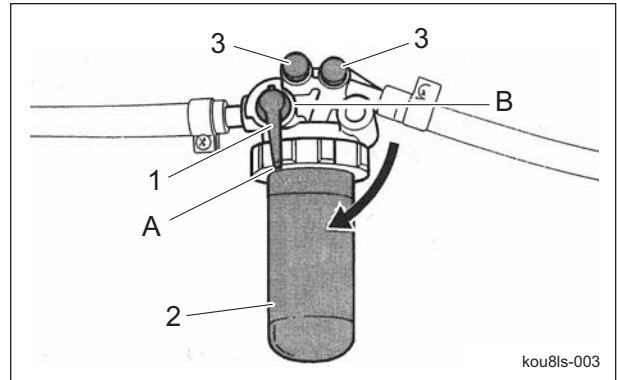
3. Clean the inside of the filter cup with diesel fuel.

**Important**

During installation, prevent contamination with dirt or dust. If the fuel is contaminated with dirt or dust etc., the fuel injection pump and injection nozzle will become worn.

4. Install a new fuel filter element, and then correctly install all parts in their original positions.

5. Fill up the fuel tank with fuel, and then open the fuel cock.



Change of Fuel Filter Element\_003

1	Fuel cock
2	Fuel filter
3	Air-bleeding plug
A	ON (open)
B	OFF (close)

Note:

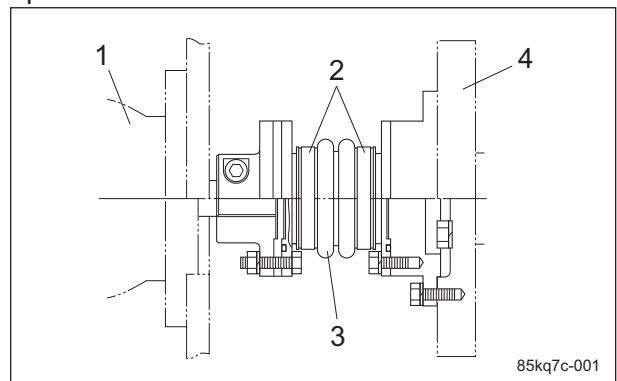
Air bleeding is not required since it occurs automatically.

## Change of Constant Velocity Joint

**Important**

Do not use any other grease than the grease for the NTN constant velocity joint.

If grease leaks from the joint, attaching portion and boot band attaching portion, replace the boot and O-ring etc. You cannot reuse the boot band. Be sure to replace it with a new one.



Change of Constant Velocity Joint\_001

1	Hydraulic pump
2	Boot band
3	Boot
4	Engine

## Change of Fuse

**Important**

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

**Important**

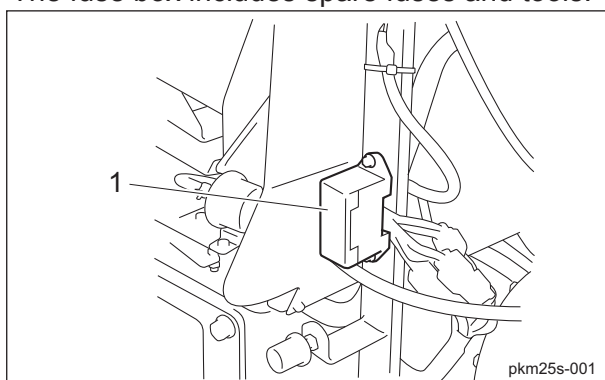
If a fuse blows, a short may have occurred within the electrical circuit. Check for the cause, such as faulty terminal connections, damaged wiring or terminals, or incorrect wiring.

**Important**

For fuse replacement, clean the fuse mounting area with use of compressed air before mounting the fuse.

## Fuse Box

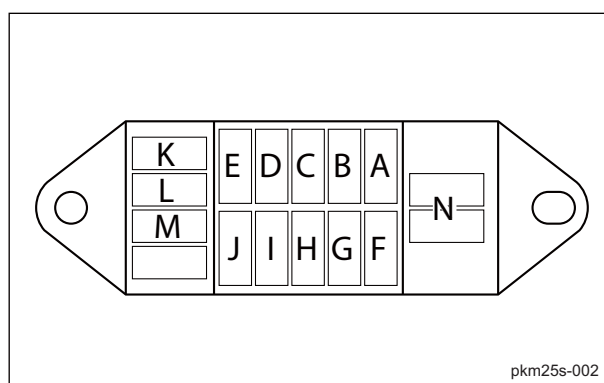
The fuse box includes spare fuses and tools.



Fuse Box\_001

1	Fuse box
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The machine uses a mini fuse for automobiles. Replace an old fuse with a new fuse of the specified capacity.



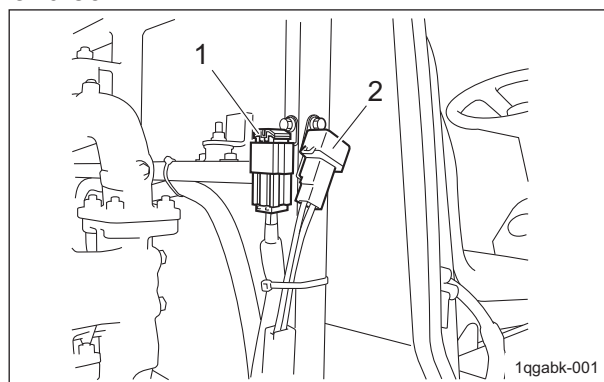
pkm25s-002

Fuse Box\_002

A	5 A	Proximity sensor, reel rotation stop solenoid	
B		Charge lamp, oil pressure lamp (engine oil pressure lamp), water temperature gauge, buzzer, hour meter, fuel gauge	
C		Fuel pump	
D		Glow lamp (thermo-start lamp)	
E		Glow lamp timer	
F		Starter relay	
G		Engine stop solenoid	
H		Alternator (IG)	
I		Glow lamp timer	
J		15 A	Lights
K			Spares (5 A x 2, 15 A x 1)
L			
M			
N		Tool	

## Fusible Link

Fuse capacities of the fusible links are 30 A and 50 A.



1qgabk-001

Fusible Link\_001

1	Fusible link (50 A)
2	Fusible link (30 A)

# Maintenance

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**EU Declaration of Conformity**

## Product Identification

Product : Lawnmower  
Brand-Name : BARONESS  
Type : LM281  
Version(s) : Not Applicable  
Starting Serial No. : **10207**  
Measured Sound Power Level : LWA 103.74 dB  
Guaranteed Sound Power Level : LWA 105 dB  
Manufacturer Name : Kyoisha 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 have been designed and manufactured under 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)

## Keeper of Technical Documentation

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

## Compiler of the technical file (2006/42/EC)

Name : Friedrich E. Barthels Nachf. Glockzin KG (GmbH & Co.)  
Address : Gerhard-Falk-Str. 1 21035 Hamburg Germany

## 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 / Technical Documentation No. : SNCH\*2000/14\*2005/88\*2755\*02/TCLM281-02

Place : Japan  
Date : 6 January 2021 (6 / 01 / 2021)

Signature :   
Name : Akio Hayashi  
Position : Quality Dept. Director

(fr)

**Déclaration de conformité UE**

## Identification du produit

Produit : Tondeuse à gazon  
Fabriquant : BARONESS  
Type : LM281  
Version(s) : Non applicable  
Numéro de série de début : **10207**  
Niveau de puissance acoustique mesuré : LwA 103.74 dB  
Niveau de puissance acoustique garanti : LwA 105 dB  
Fabricant Nom : Kyoisha Co., Ltd.  
Adresse : 1-26, Miyuki-cho, Toyokawa, préfecture d'Aichi, Japon

## Conforme aux directives suivantes :

2006/42/CE Machine (MD)  
2014/30/UE Compatibilité électromagnétique (CEM)  
2000/14/CE Émissions 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 : Kyoisha Co., Ltd.  
Adresse de la marque : 1-26, Miyuki-cho, Toyokawa, préfecture d'Aichi, Japon

## Compilateur de la fiche technique (2006/42/CE)

Nom : Friedrich E. Barthels Nachf. Glockzin KG (GmbH & Co.)  
Adresse : Gerhard-Falk-Str. 1 21035 Hambourg Allemagne

## 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/Documentation technique : SNCH\*2000/14\*2005/88\*2755\*02/TCLM281-02

## Declaración de conformidad de la UE

### Identificación del producto

Producto: Cortacésped  
 Marca: BARONESS  
 Tipo: LM281  
 Versión: No aplicable  
 N.º de serie inicial: **10207**  
 Nivel de potencia sonora medido: LWA 103.74 dB  
 Nivel de potencia sonora garantizado: LWA 105 dB  
 Fabricante Nombre: Kyoeshia Co., Ltd.  
 Dirección: 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 Emisiones 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: Kyoeshia Co., Ltd.  
 Dirección del responsable: 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japón

### Compilador del archivo técnico (2006/42/CE)

Nombre: Friedrich E. Barthels Nachf. Glockzin KG (GmbH & Co.)  
 Dirección: Gerhard-Falk-Str. 1 21035 Hamburgo Alemania

### 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/Documentación técnica n.º: SNCH\*2000/14\*2005/88\*2755\*02/TCLM281-02

## EU-Konformitätserklärung

### Produktbeschreibung

Produkt: Aufsitzrasenmäher  
 Marke: BARONESS  
 Modell: LM281  
 Version(en): Nicht zutreffend  
 Startseriennummer: **10207**  
 Gemessener Schalleistungspegel: LWA 103.74 dB  
 Garantierter Schalleistungspegel: LWA 105 dB  
 Hersteller Name: Kyoeshia Co., Ltd.  
 Adresse: 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 Geräuschemission 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: Kyoeshia Co., Ltd.  
 Adresse des Halters: 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

### Technische Unterlagen erstellt von (2006/42/EG)

Name: Friedrich E. Barthels Nachf. Glockzin KG (GmbH & Co.)  
 Adresse: Gerhard-Falk-Str. 1 21035 Hamburg Deutschland

### Konformitätsbewertungsverfahren

Interne Produktionskontrolle : Modul A (2006/42/EG)  
 EG-Baumusterprüfung : 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  
 Bescheinigung/Technische Dokumentation Nr. : SNCH\*2000/14\*2005/88\*2755\*02/TCLM281-02



## EU-försäkran om överensstämmelse

### Produktidentifikation

Produkt : Gräsklippare  
 Märke : BARONESS  
 Typ : LM281  
 Version(er) : Ej aktuellt  
 Serienummer startar på : **10207**  
 Uppmätt ljudeffektnivå : LWA 103.74 dB  
 Garanterad ljudeffektnivå : LWA 105 dB  
 Tillverkare Namn : 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 : Kyoisha Co., Ltd.  
 Innehavarens adress : 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

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

Namn : Friedrich E. Barthels Nachf. Glockzin KG (GmbH & Co.)  
 Adress : Gerhard-Falk-Str. 1 21035 Hamburg Tyskland

### Förfarande för bedömning av överensstämmelse

Intern produktionskontroll: Modul A (2006/42/EG)  
 EG-typprovning: Modul B (2014/30/EU)  
 Intern kontroll av produktion med fastställande av teknisk dokumentation och periodiska kontroller (2000/14/EG)

### Anmält organ (2000/14/EG)

Namn : SNCH  
 Adress : 11, Route de Sandweiler 5230 Sandweiler Luxembourg  
 Certifikat/Teknisk dokumentation nummer : SNCH\*2000/14\*2005/88\*2755\*02/TCLM281-02

## EU-overensstemmelseserklæring

### Produktidentificering

Produkt : Plæneklipper  
 Mærkenavn : BARONESS  
 Type : LM281  
 Version(er) : Ikke anvendelig  
 Startende serienr. : **10207**  
 Målt lydeffektniveau : LWA 103.74 dB  
 Garanteret lydeffektniveau : LWA 105 dB  
 Producent Navn : Kyoisha Co., Ltd.  
 Adresse : 1-26 Miyuki-cho, Toyokawa, Aichi-præf., Japan

### Er i overensstemmelse med følgende direktiver

2006/42/EF Maskineri (MD)  
 2014/30/EU Elektromagnetisk kompatibilitet (EMC)  
 2000/14/EF Støjemissioner fra udendørs udstyr

### Vi har designet og produceret under følgende specifikationer

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

### Indehaver af teknisk dokumentation

Navn : Kyoisha Co., Ltd.  
 Adresse : 1-26 Miyuki-cho, Toyokawa, Aichi-præf., Japan

### Kompilator af den tekniske fil (2006/42/EF)

Navn : Friedrich E. Barthels Nachf. Glockzin KG (GmbH & Co.)  
 Adresse : Gerhard-Falk-Str. 1 21035 Hamburg Tyskland

### Procedurer for overensstemmelsesvurdering

Intern produktionskontrol : Modul A (2006/42/EF)  
 EF-typeafprøvning : Modul B (2014/30/EU)  
 Intern fabriktionskontrol med vurdering af teknisk dokumentation og periodisk kontrol (2000/14/EF)

### Berørt bemyndiget organ (2000/14/EF)

Navn : SNCH  
 Adresse : 11, Route de Sandweiler 5230 Sandweiler Luxembourg  
 Certifikat : SNCH\*2000/14\*2005/88\*2755\*02/TCLM281-02

**BARONESS**<sup>®</sup>  
Quality on Demand

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Aichi-pref, 442-8530 JAPAN Fax:+81-533-84-1220