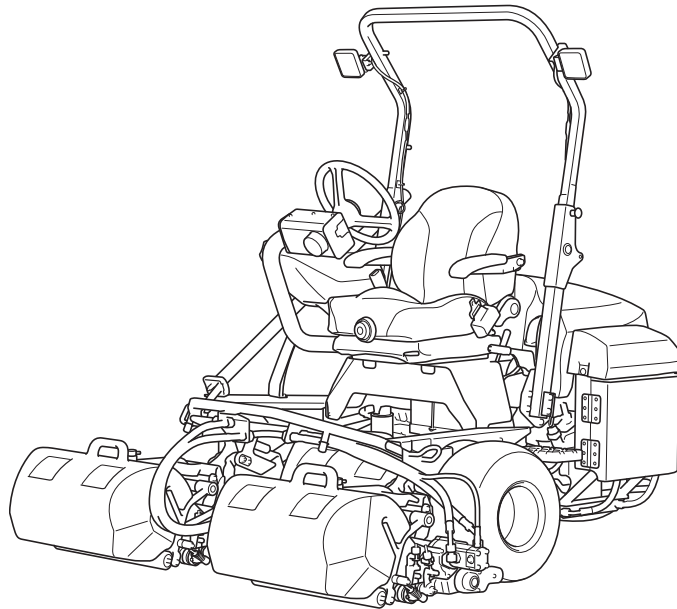


LM311

Riding Greens Mower

Owner's Operating Manual



Serial No. LM311 : 10001-

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

BARONESS[®]
Quality on Demand

Original Instructions Ver.1.0

Regulations

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.

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.

It is a violation of California Public Resource Code Section 4442 or 4443 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire pursuant to Section 4443.

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.49024N Spark Arrester made by Nelson Global Products.

EU Regulations and/or UK Regulations

(For EU/UK)

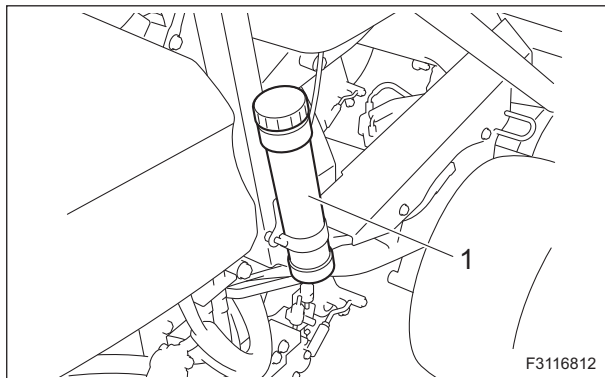
This product complies with all relevant EU Regulations and/or UK Regulations.

For more information, please refer to the respective Declaration of Conformity attached.

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 on the right side of the seat.

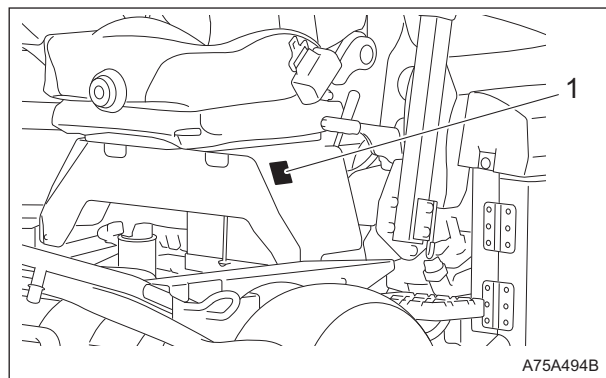


Keeping The Owner's Operating Manual_001

1	Box
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QR Code

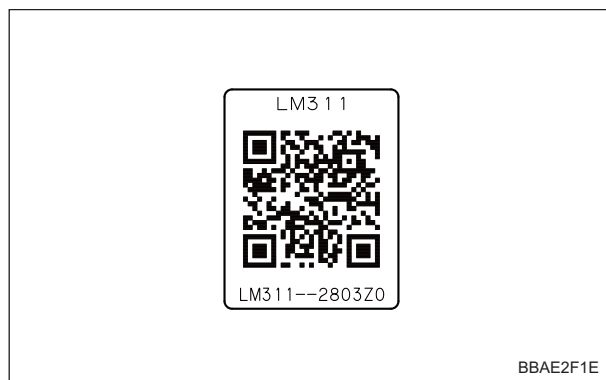
A QR code label is affixed on the machine.



QR Code_001

1	QR code label
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Scan the QR code with your smartphone for easy access to Baroness Manual Reference Service where you can browse Owner's Operating Manual and Parts Catalog.
<https://doc.baroness-international.com/manuals/LM311>



QR Code_002

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 your product, please specify the model and serial number.

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

Kyoeisha Co., Ltd.


Warning Symbols

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


 <small>696cq5-001</small>	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 Kyoisha.

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

For greens/for tees: This product is intended for cutting turf grass at golf courses.

For fields: This product is intended for cutting turf grass on soccer and baseball fields.

Do not use this product in any other way 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.

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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. Replace faulty mufflers.
9. On multi-cylinder/multi-reel machines, take care as rotating one cylinder/reel can cause other cylinders/reels to rotate.
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. Keep a folding ROPS in the raised and locked position and use the seat belt when operating the machine.
17. Lower a folding ROPS temporarily only when absolutely necessary.
Do not wear the seat belt when folded down. There is no rollover protection when a folding ROPS is in the down position.

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.
18. 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.
19. 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.
20. Use extra care while operating machine with a grass catcher or other attachments.
They can affect the stability of the machine.
21. Disengage drive to the cutting unit(s), when other than operating.

Safety

22. 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.
23. 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.
24. Reduce the throttle setting during engine run-out.
25. Do not direct discharge material toward anyone.
Avoid discharging material against a wall or obstruction.
Material may ricochet back toward the operator.
26. 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.
27. Close the fuel valve before transporting the 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/or attachment(s).
 - [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.

Maintenance

1. Never allow untrained personnel to service machine.

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.
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/or attachment(s) 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.
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.

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Disposal

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.)

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Description of Operation Decals Page 3-16

Product Overview

Specifications

Specifications

Model			LM311			
Name			Riding Greens Mower			
Type			for greens		for tees and fields	
Dimensions	Total length		250 cm	98.42 in	←	←
	Total width		191 cm	75.20 in	←	←
	Total height	Steering wheel	140 cm	55.12 in	←	←
		ROPS	195 cm	76.77 in		
Weight	Machine: 2WD (empty fuel tank)	without ROPS, Grass catcher, Groomer	682 kg	1503.6 lb	←	←
	Machine: 3WD (empty fuel tank)	without ROPS, Grass catcher, Groomer	709 kg	1563.1 lb	←	←
	Grass catchers (for one machine)		15 kg	33.07 lb	←	←
	Groomers (for one machine)		10 kg	22.05 lb	←	←
	ROPS + Seatbelt		28 kg	61.73 lb	←	←
	Minimum turning radius		161 cm	63.39 in	←	←
Engine	Model		Kubota D722-E4B		←	
	Type		Vertical water-cooled 4-cycle diesel engine		←	
	Total displacement		719 cm³ (0.719 L)	43.87 cu.in.	←	←
	Maximum output		-		-	
	Rated output		12.4 kW (16.9 PS)/3,000 rpm		←	
Fuel tank capacity			Diesel 20.0 dm³ (20.0 L)	Diesel 5.28 U.S.gals	←	←
Fuel consumption			286 g/kW · h (rated output)	210 g/PS·h (rated output)	←	←
Engine oil capacity			2.8 dm³ (2.8 L)	0.74 U.S.gals	←	←
Coolant volume			3.0 dm³ (3.0 L)	0.79 U.S.gals	←	←
Hydraulic tank capacity			19.2 dm³ (19.2 L)	5.07 US.gals	←	←
Transmission oil capacity			-		←	
Operating width (Mowing width)			157 cm	61.81 in	←	←
Operating height (Mowing height)			1.5 - 18.0 mm	0.059 - 0.709 in	6.0 - 28.0 mm	0.236 - 1.102 in
Number of Blades			9, 11		7	
Drive	Traveling		HST 2WD [3WD (2WD/3WD selectable)]		←	
	Mowing		Hydraulic		←	

Product Overview

Speed (HST)	Forward	0 - 15.0 km/h	0 - 9.32 mph	←	←
	Reverse	0 - 6.0 km/h [2WD selection of 3WD model: 0 - 9.0 km/h]	0 - 3.73 mph [2WD selection of 3WD model: 0 - 5.59 mph]	←	←
Speed (Mechanical)		-		-	
Efficiency		7,536 m ² /h (6.0 km/h x mowing width x 0.8)	1.8 acres/hour (3.73 mph x mowing width x 0.8)	←	←
Maximum inclination for operation		15 degrees		←	
Tire size	Front wheel	Smooth 19 x 10.50-8 4P		←	
	Rear wheel	Smooth 19 x 10.50-8 4P		←	
Tire pneumatic pressure	Front wheel	100 kPa (1.0 kgf/cm ²)	15 psi	←	
	Rear wheel	100 kPa (1.0 kgf/cm ²)	15 psi	←	
Battery		55B24L (BCI GROUP SIZE 51R: Recommended equivalent product EXIDE 51R-60)		←	
Engine plug		-		-	

The factory default maximum engine rpm is 3,000 rpm.

Sound Pressure Level

Sound Pressure Level

This machine was confirmed to have a continuous A-weighted sound pressure level of 88 dB 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 103 dB by measuring identical machines in accordance with the procedure specified in ISO 5395-1:2013.

Vibration Level

Hand-Arm Vibration

This machine was confirmed not to exceed a vibration level of 2.5 m/s² to hands and arms by measuring identical machines in accordance with the procedure specified in ISO 5395-1:2013.
Uncertainty K = 0.4 m/s²

Whole Body Vibration

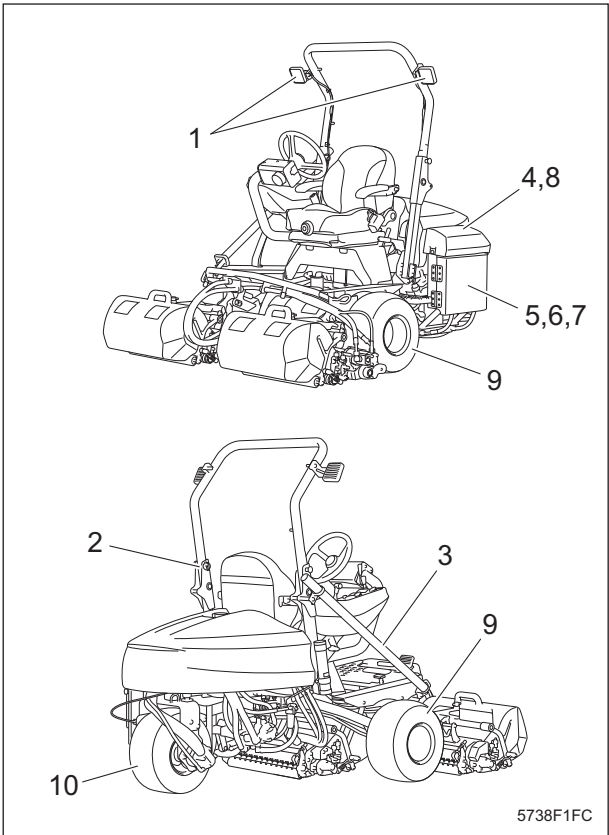
This machine was confirmed not to exceed a vibration level of 0.5 m/s² to the whole body by measuring identical machines in accordance with the procedure specified in ISO 5395-1:2013.
Uncertainty K = 0.2 m/s²

Carbon Dioxide (CO₂) Emissions

For the CO₂ value on the engine of this machine, refer to the engine's owner's manual.

Names of Each Section

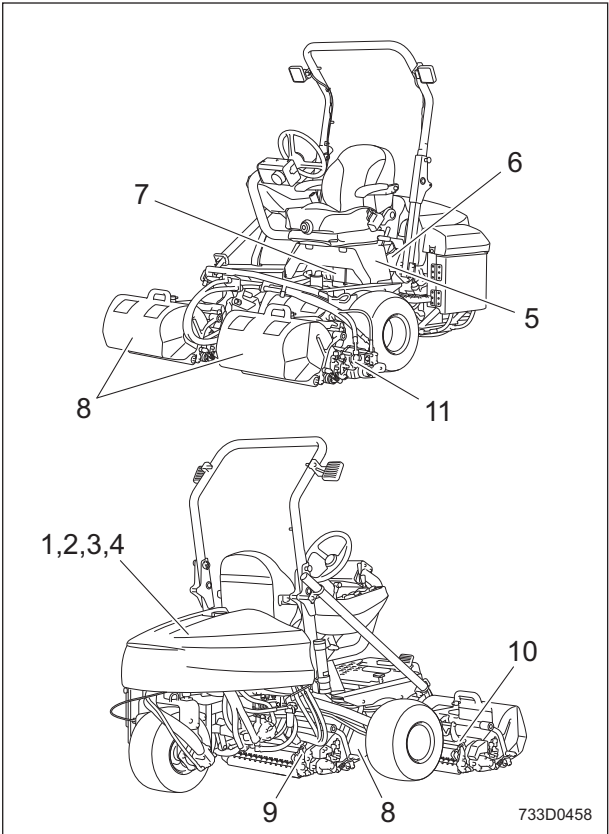
Exterior A



Names of Each Section_001

1	Light
2	Foldable ROPS
3	Swisher holder
4	Side cover
5	Radiator cover
6	Radiator
7	Oil cooler
8	Reserve tank
9	Front tire
10	Rear tire

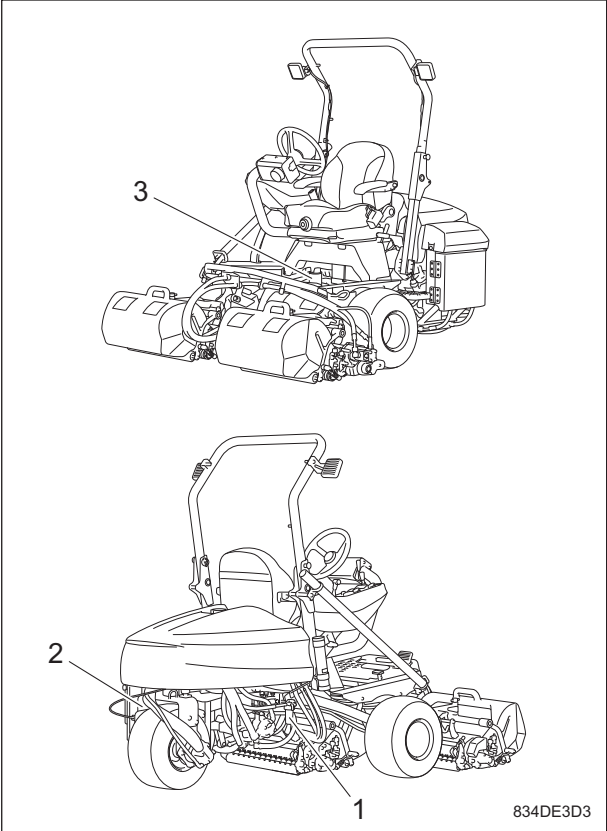
Exterior B



Names of Each Section_002

1	Hood
2	Fuel tank
3	Air cleaner
4	Hydraulic tank
5	Underseat cover
6	Engine
7	Battery
8	Grass catcher
9	Mower unit #1
10	Mower unit #2
11	Mower unit #3

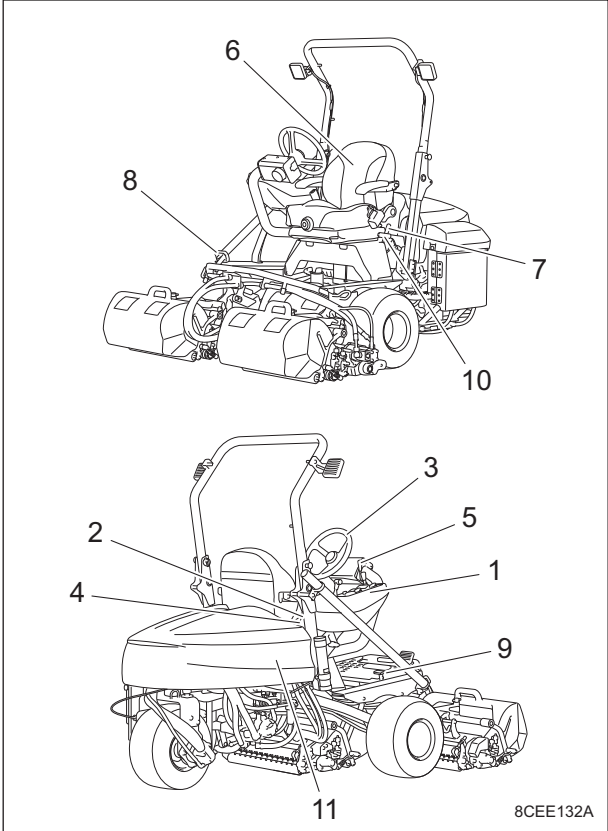
Exterior C



Names of Each Section_003

1	Fuel filter
2	Engine oil filter
3	Hydraulic oil filter

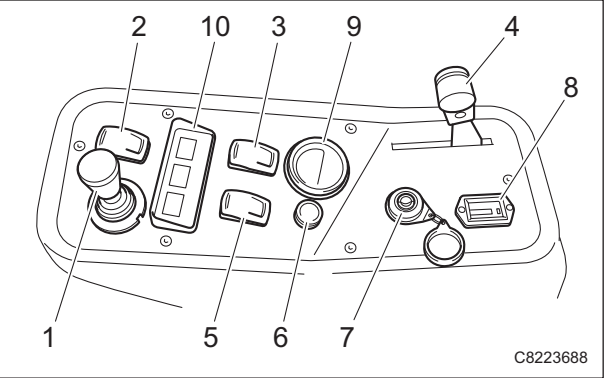
Exterior D



Names of Each Section_004

1	Operation panel
2	USB socket
3	Steering wheel
4	Steering height adjustment lever
5	Steering angle adjustment lever
6	Seat
7	Seat forward tilt angle adjustment lever
8	Forward pedal
9	Backward pedal
10	Parking brake lever
11	Reel rotation changeover switch

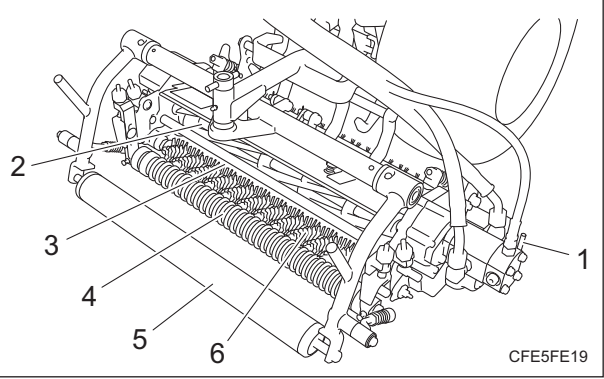
Operation panel



Names of Each Section_005

1	Joystick
2	Reel rotation switch
3	2WD/3WD selector switch
4	Throttle lever
5	Light switch
6	Mower unit up switch
7	Key switch
8	Hour meter
9	Water temperature gauge
10	Pilot Lamps

Mower unit

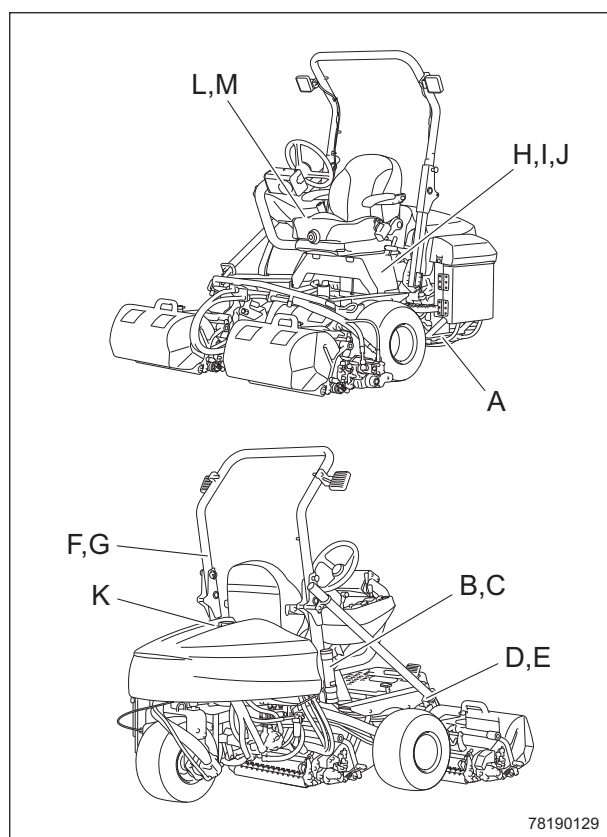


Names of Each Section_006

1	Reel rotation/stop switching lever
2	Reel cutter
3	Bed knife
4	Front roller
5	Grass catcher roller
6	Groomer

Regulation Decals

Positions of Regulation Decals



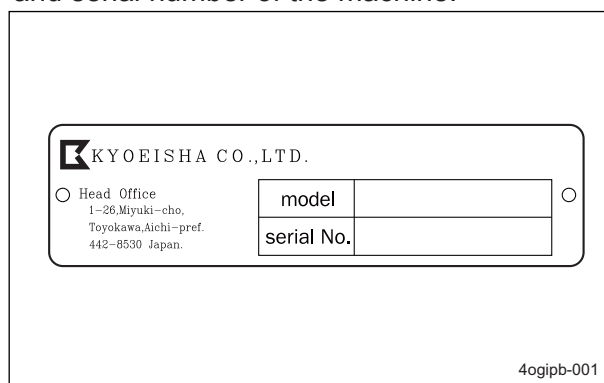
Positions of Regulation Decals_001

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

Description of Regulation Decals

Serial Number Plate

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

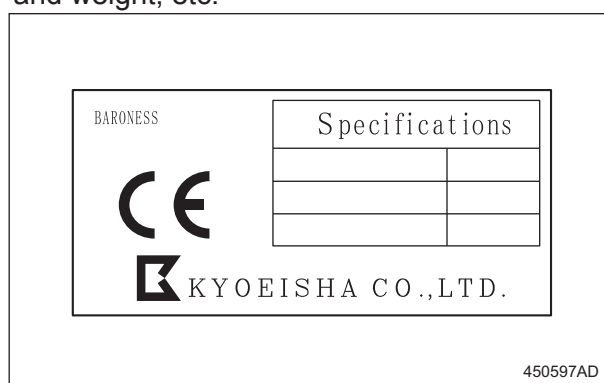


Serial Number Plate_001

Specification Decal

(For EU)

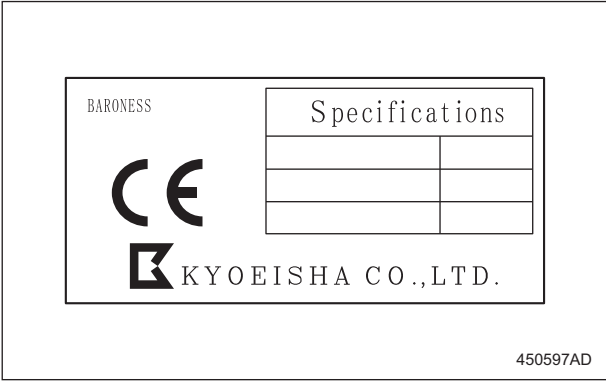
The Specification decal indicates the model and weight, etc.



Specification Decal_001

CE Mark

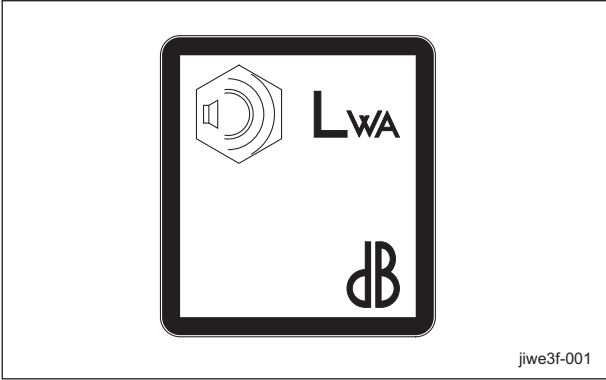
(For EU)
CE mark indicates that the machine sold in the EU nations complies with the EU requirements.



CE Mark_001

Noise Emission Decal

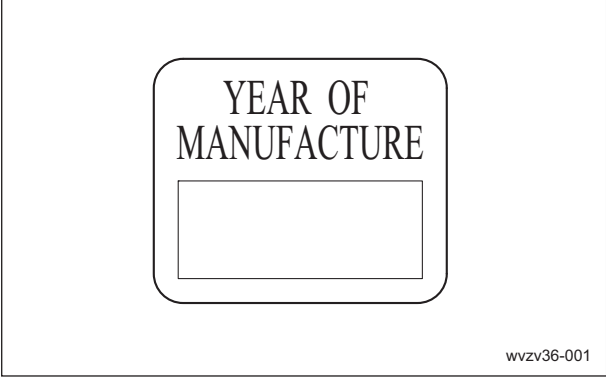
(For EU)
The noise emission decal indicates the sound power level determined by measuring identical machines in accordance with the procedure specified in the regulations of EU or UK.



Noise Emission Decal_001

Year of Manufacture Decal

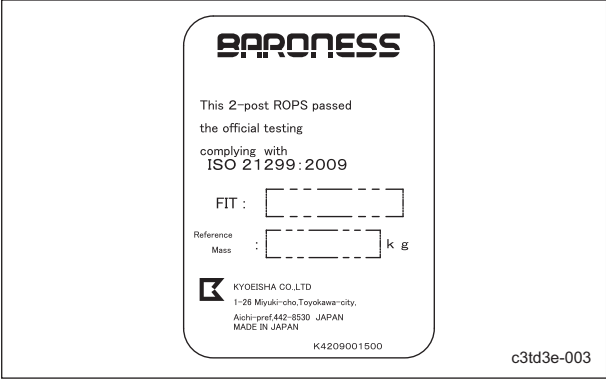
(For EU)
The year of manufacture decal indicates the year when this machine was manufactured.



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.

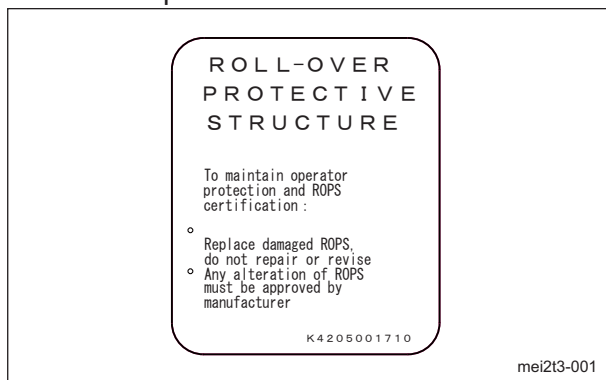


ROPS Compliance Decal_001

ROPS Caution Decal

ROPS caution decal describes the following caution messages.

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

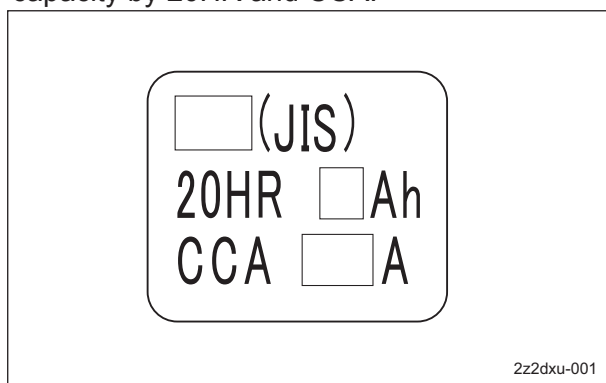


ROPS Caution Decal_001

Battery Capacity Decal

(For EU)

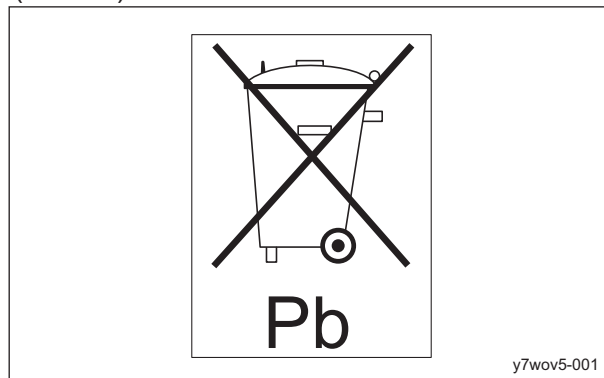
The battery capacity decal indicates the capacity by 20HR and CCA.



Battery Capacity Decal_001

Recycle Decal

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



Recycle Decal_001

(For USA)

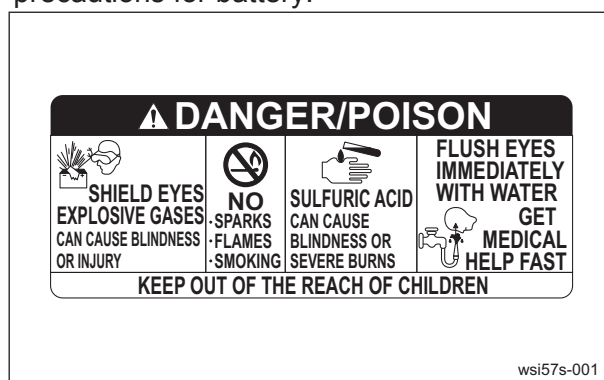


Recycle Decal_002

Battery Danger Decal

(For USA)

Battery Danger Decal describes handling precautions for battery.

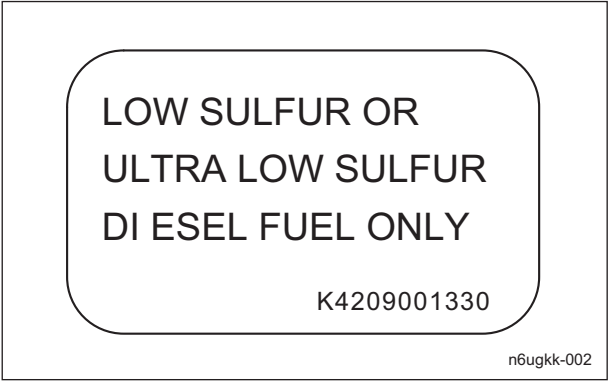


Battery Danger Decal_001

Product Overview

Indicating Diesel Fuel Decal

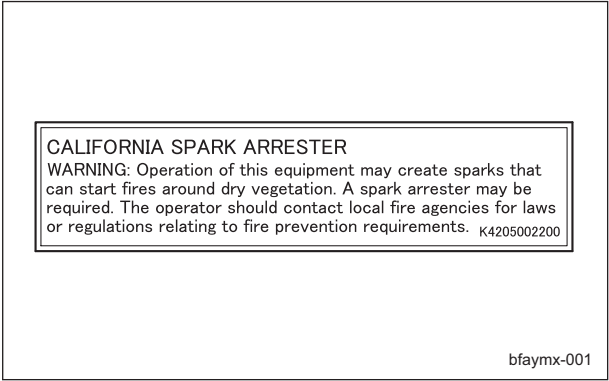
(for USA)
It indicates the fuel to be used.
Use low sulfur or ultra-low sulfur diesel fuel (sulfur-free diesel fuel).



Indicating Diesel Fuel Decal_001

Spark Arrester Warning Decal

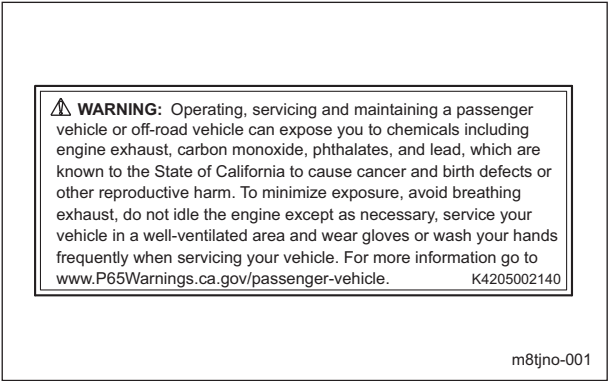
(For the State of California, USA)
Spark arrester warning decal describes the warning messages as required by California Public Resources Code.



Spark Arrester Warning Decal_001

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

Safety Signs and Instruction Signs

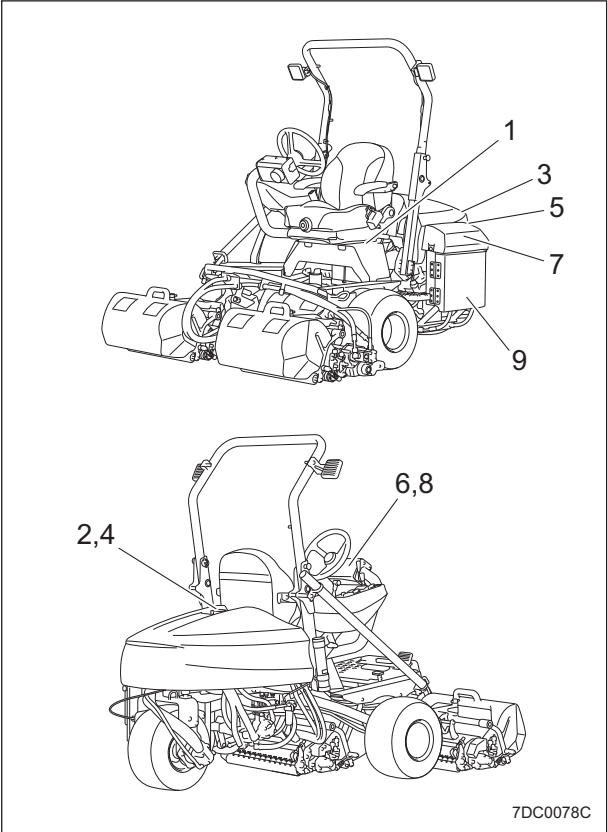
About Safety Signs and Instruction Signs

Important

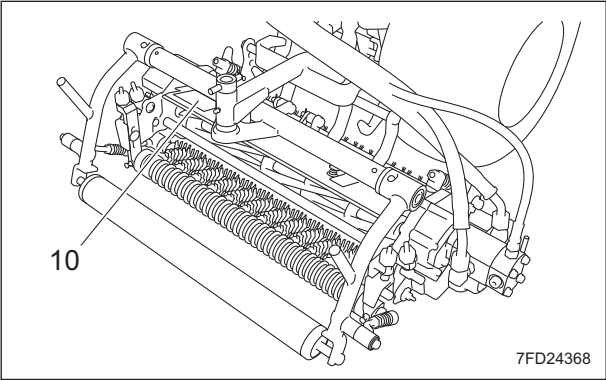
Safety decals and instruction decals are attached to this product. Make sure that they are preserved in their entirety. If they are damaged, become dirty, or peel off, replace them with new ones.

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

Positions of Safety Decals and Instruction Decals



Positions of Safety Decals and Instruction Decals_001



Positions of Safety Decals and Instruction Decals_002

1	Decal for operation 2
2	Fire prohibited decal
3	Hydraulic oil icon
4	Diesel fuel decal
5	Caution for high temperatures decal
6	Caution for slopes (3WD) decal
7	Caution for spouting coolant decal
8	Caution to noise decal
9	Decal on prohibiting high pressure washing
10	Caution to mutilation decal

Decal for Operation 2

LM2400-0918Z0
STICKER, OPERATION 2

Warning

Read the Owner's Operating Manual.



Warning

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



⚠ Caution

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

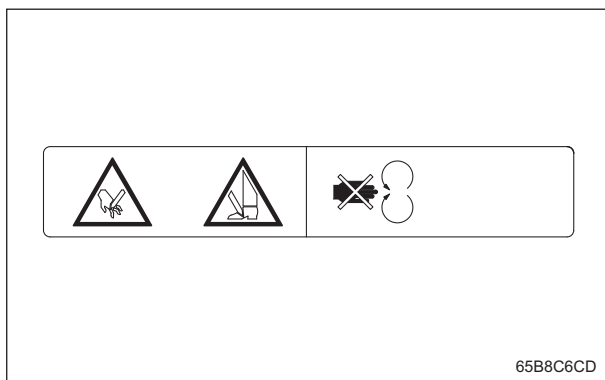


Product Overview

4.

Warning

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



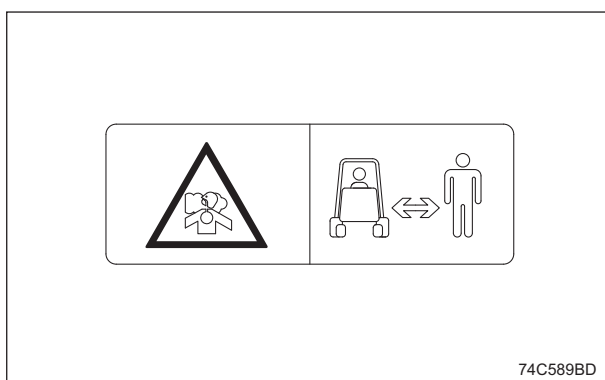
65B8C6CD

Decal for Operation 2_005

5.

Warning

Be careful of exhaust emissions.



74C589BD

Decal for Operation 2_006

6.

• Without ROPS:

Danger

Rollover - Do not work on slopes of 15 degrees or more.

When you descend a slope, lower the mower units and then drive at low speed.

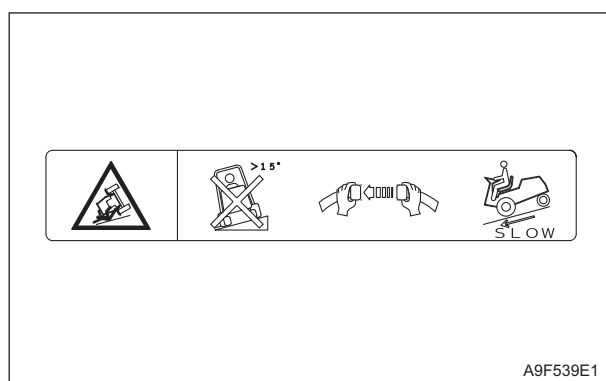
• With ROPS:

Caution

Rollover - Do not work on slopes of 15 degrees or more.

When you descend a slope, lower the mower units and then drive at low speed.

For ROPS equipped machine, fasten your seatbelt.



A9F539E1

Decal for Operation 2_007

Fire Prohibited Decal

K4205001940

Decal, fire prohibited

Warning

Keep away from fire.

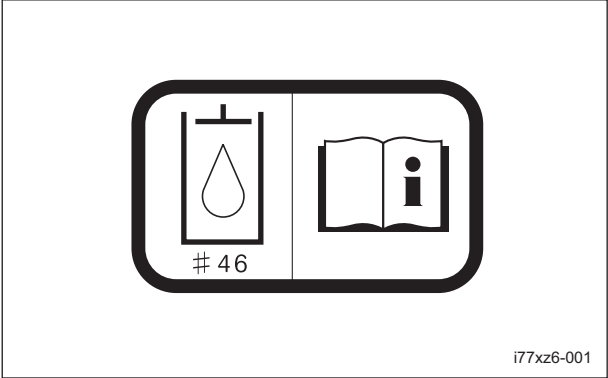


r653fo-001

Fire Prohibited Decal_001

Hydraulic Oil Icon

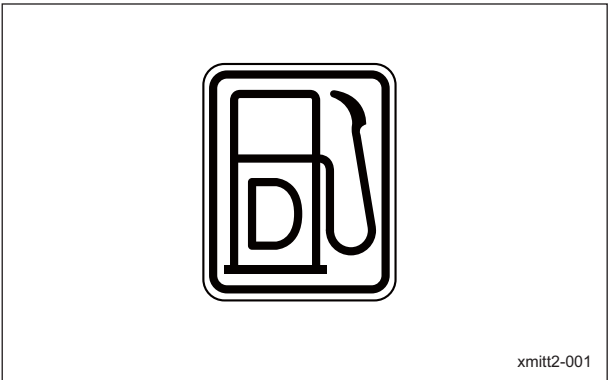
K4209000980
Hydraulic oil icon
Read the Owner's Operating Manual.



Hydraulic Oil Icon_001

Diesel Fuel Decal

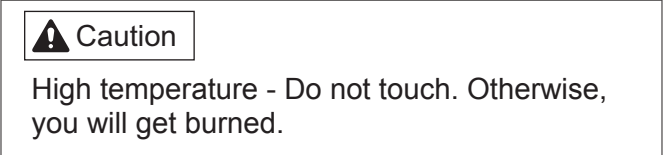
K4209001460
Decal, diesel fuel
Use diesel fuel.



Diesel Fuel Decal_001

Caution for High Temperatures Decal

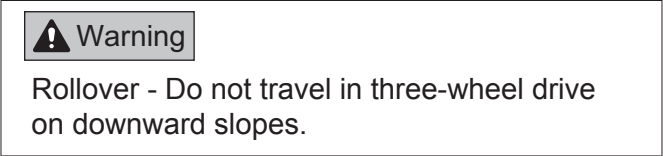
K4205001920
Decal, caution for high temperatures



Caution for High Temperatures Decal_001

Caution for Slopes (3WD) Decal

K4205002400
DECAL, CAUTION SLOPE 3WD
(3WD spec model only)



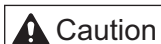
Caution for Slopes (3WD) Decal_001

Product Overview

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.



pwb8d2-001

Caution for Spouting Coolant Decal_001

Caution to Noise Decal

K4205002090

Decal, caution to noise



bwu9po-001

Caution to Noise Decal_001

Decal on Prohibiting High Pressure Washing

K4205002390

Decal, prohibition of high pressure washing
Do not wash with high pressure.



7C94402B

Decal on Prohibiting High Pressure Washing_001

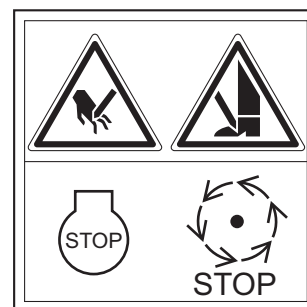
Caution to Mutilation Decal

K4205001600

DECAL, CAUTION TO MUTILATION



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

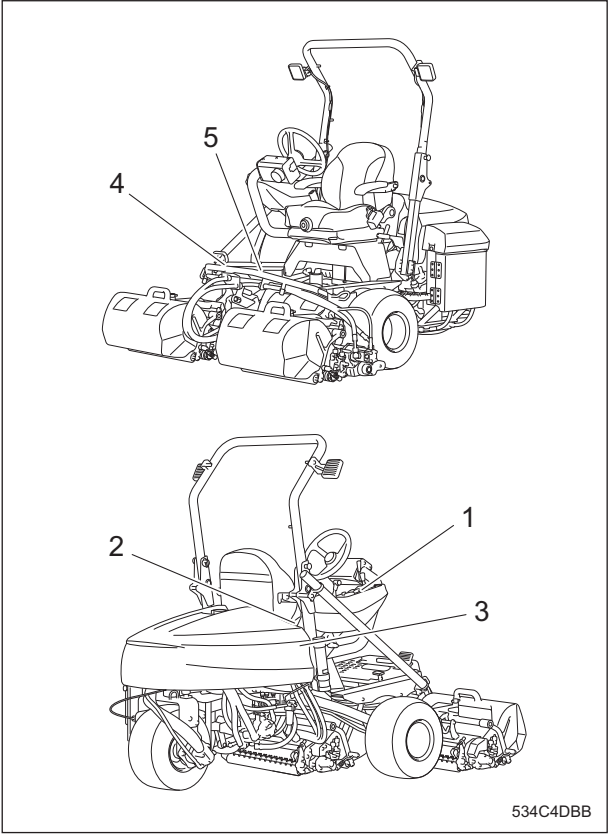


wyikja-001

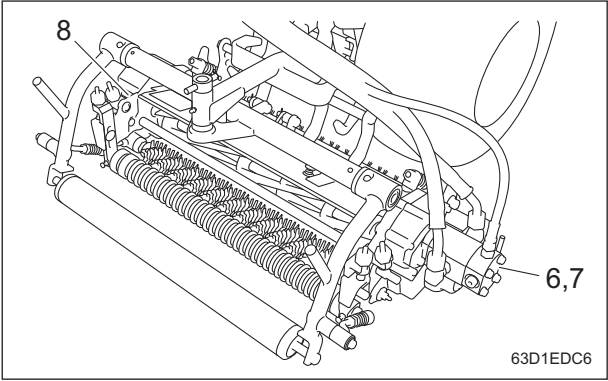
Caution to Mutilation Decal_001

Operation Decals

Positions of Operation Decals



Positions of Operation Decals_001



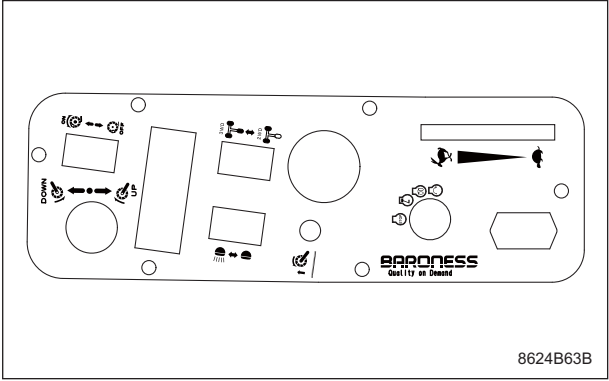
Positions of Operation Decals_002

1	Operation decal
2	Decal of indicating reel rotation
3	Lapping switch decal
4	FORWARD decal
5	BACKWARD decal
6	Reel rotation decal
7	Reel stop decal
8	Groomer indication mark

Description of Operation Decals

Operation Decal

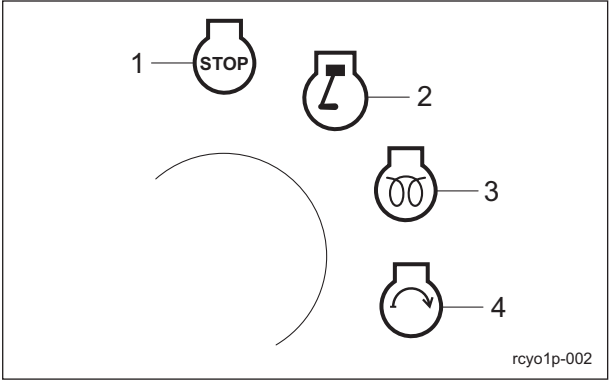
LM311--0508Z0
STICKER, OPERATION



Operation Decal_001

■Key Switch Mark

Key switch mark
This indicates the key switch positions.



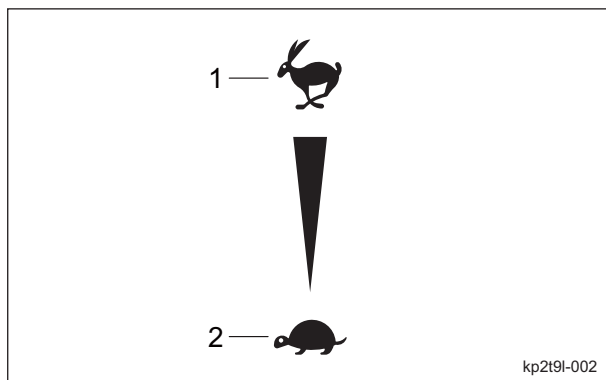
Key Switch Mark_001

1	OFF
2	ON
3	GLOW
4	START

■Engine Rotation Decal

Engine rotation decal

This indicates high/low speed of the engine rotation.



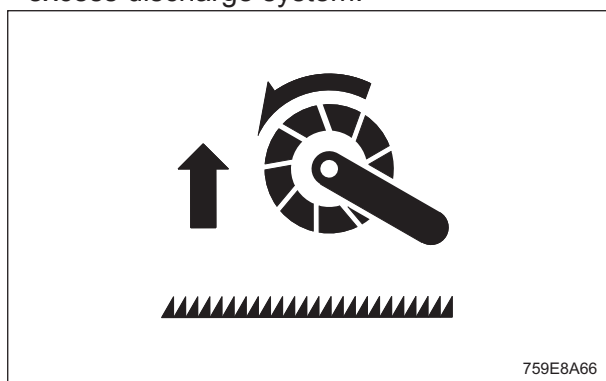
Engine Rotation Decal_001

1	High speed
2	Low speed

■Mower Unit Up-Switch (with Reel Excess Discharge System) Mark

Mower unit up-switch (with reel excess discharge system) mark

This indicates mower unit up-switch and reel excess discharge system.

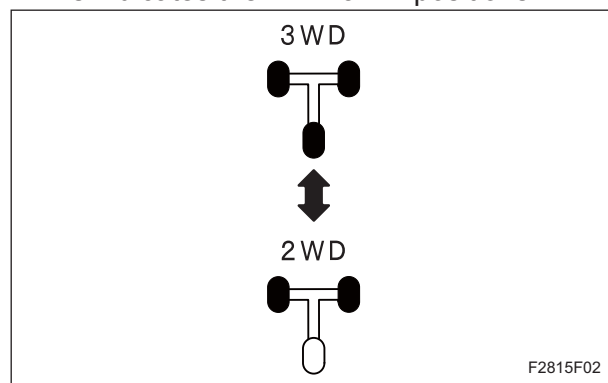


Mower Unit Up-Switch (with Reel Excess Discharge System)
Mark_001

■2WD - 3WD Selector Lever Decal

2WD - 3WD selector lever decal

This indicates the 2WD/3WD positions.



2WD - 3WD Selector Lever Decal_001

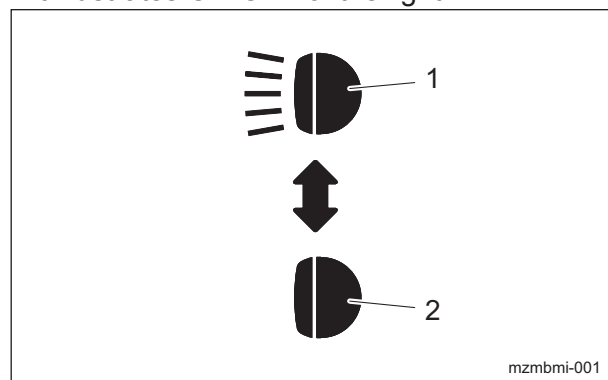
■Light Switch Mark

Note:

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

Light switch mark

It illustrates ON/OFF of the light.

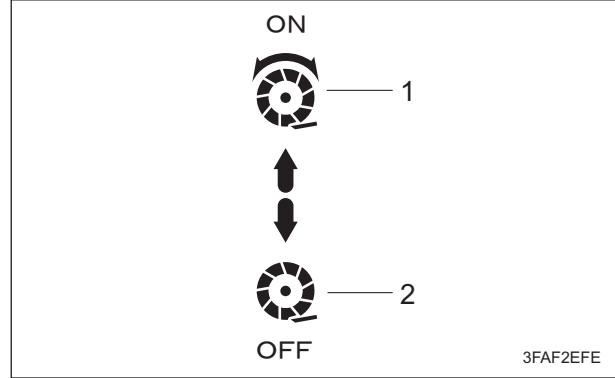


Light Switch Mark_001

1	ON
2	OFF

■Reel Rotation Mark

Reel rotation mark
It illustrates Rotation/Stop of the reel cutter (cutting cylinder).

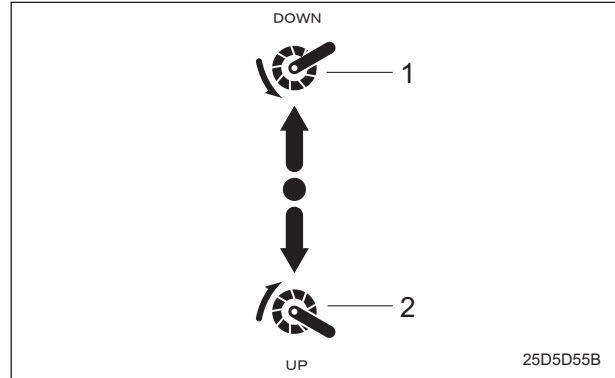


Reel Rotation Mark_001

1	Rotation
2	Stop

■Mower Unit Up/Down Mark

Mower unit up/down mark
This indicates the Up/Down positions of the mower unit.



Mower Unit Up/Down Mark_001

1	Down
2	Up

Decal of Indicating Reel Rotation

LM311--0510Z0
DECAL, INDICATING REEL ROTATION
It lists the dial settings for corresponding reel rotation speeds.

- TURNS: rotation number of the dial's counterclockwise rotation started from the state where the dial is fully tightened clockwise
- POS: dial decal number pointed by the indicating screw
- REEL SPEED: rotation speed of the reel cutter
- "0" on the dial indicates the state where the dial is fully tightened clockwise.
- ★ is only used for backlapping.
Engine rpm is 1,500 rpm (low speed).

URNS	POS	REEL SPEED
1	1	★150
2	4	1,400
	6	1,600
	8	1,800
3	3	2,000
	7	2,200

FOR 0 (STARTING POS) ,TURN CW TO MAX POS
★ONLY REEL RAPPING, ENGINE SPEED IS 1500RPM (LOW).

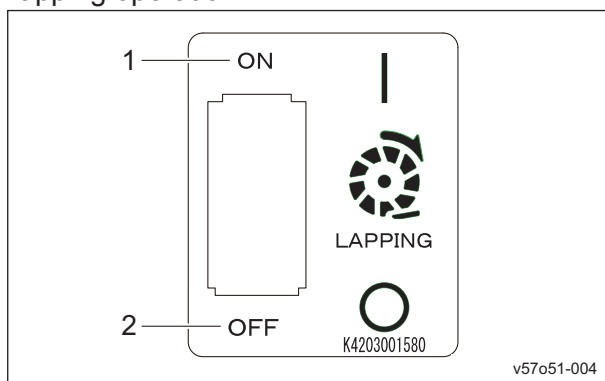
Decal of Indicating Reel Rotation_001

Lapping Switch Decal

K4203001580

Decal, lapping switch

This indicates ON/OFF switching of back lapping operation.



Lapping Switch Decal_001

1	Reverse rotation (back lapping rotation)
2	Normal rotation (cutting rotation)

FORWARD Decal

K4203001430

Decal, FORWARD

This indicates forward travel.



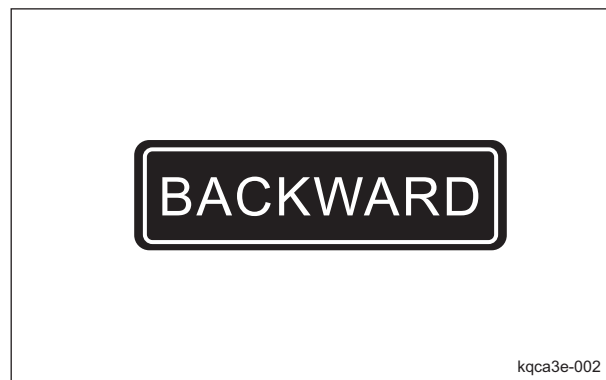
FORWARD Decal_001

BACKWARD Decal

K4203001440

Decal, BACKWARD

This indicates backward travel.



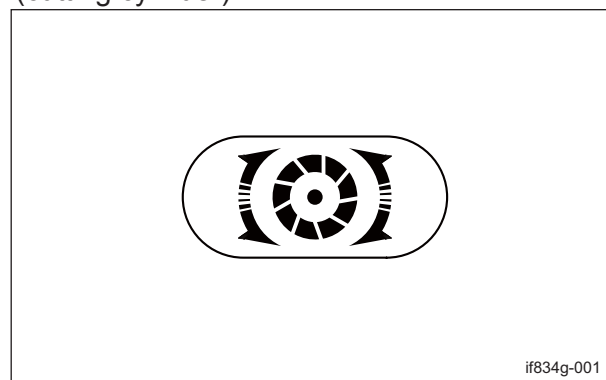
BACKWARD Decal_001

Reel Rotation Decal

K4203001300

Decal, reel rotation

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



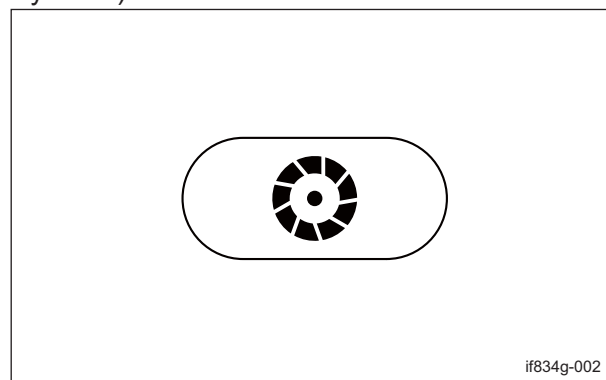
Reel Rotation Decal_001

Reel Stop Decal

K4203001310

Decal, reel stop

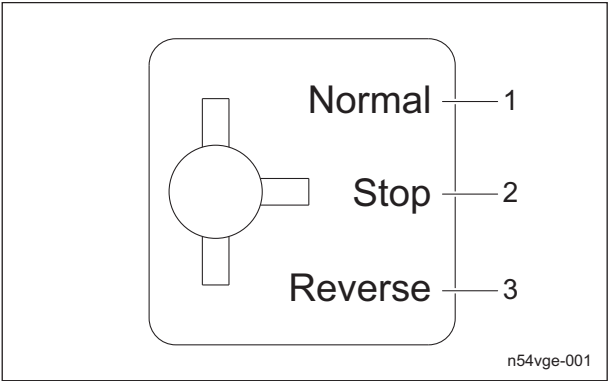
This indicates stop of the reel cutter (cutting cylinder).



Reel Stop Decal_001

Groomer Indication Mark

Note:
Depending on the specifications, this function
may not be available.
K4203001120
DECAL, GROOMER INDICATION
It illustrates the changeover of rotational
direction of the groomer.



Groomer Indication Mark_001

1	Normal rotation
2	Stop
3	Reverse rotation

Description of Functions

Joystick	Page 4-2
Reel Rotation Switch	Page 4-2
2WD/3WD Selector Switch	Page 4-3
Throttle Lever	Page 4-3
Light Switch	Page 4-3
Mower Unit Up Switch	Page 4-4
Key Switch	Page 4-4
USB Socket	Page 4-5
Steering Height Adjustment Lever	Page 4-5
Steering Angle Adjustment Lever	Page 4-5
Seat Forward Tilt Angle Adjustment Lever	Page 4-6
Traveling Pedal	Page 4-6
Parking Brake Lever	Page 4-6
Reel Forward/Reverse Switch	Page 4-7
Reel Rotation/Stop Switching Lever	Page 4-7
Groomer Clutch Lever	Page 4-8
Swisher Holder	Page 4-8
Instruments on The Operation	
Panel	Page 4-8
Hour Meter	Page 4-9
Water Temperature Gauge	Page 4-9
Pilot Lamps	Page 4-9
Fuel Gauge	Page 4-10
Safety Mechanisms	Page 4-10
Warning Mechanisms	Page 4-11
Warning Buzzer	Page 4-11

Joystick

Important

Even if the reel rotation switch is set to the "Rotation" position, when the mower units are raised, the reel cutters (cutting cylinders) stop rotating.

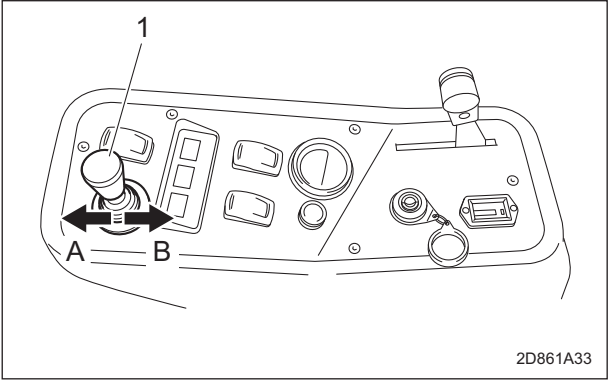
Important

Operation of the joystick cannot raise the mower units to the highest position. When traveling, keep pressing the up switch to raise the mower units to the highest position.

The Up/Down speed of the mower unit is affected by the engine rotation speed. When the engine rotation is at low speed, the Up/Down speed is at low as well.

1. Tilt the joystick to the "Down" position to lower the mower units.

2. Tilt the joystick to the "Up" position to raise the mower units.



Joystick_001

1	Joystick
A	Down
B	Up

Reel Rotation Switch

Warning

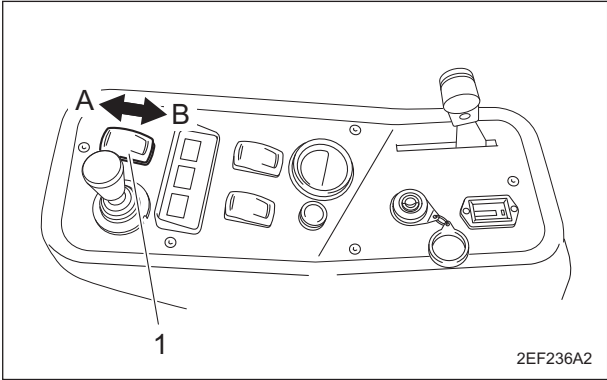
The reel cutter rotates while holding down the up switch when the reel rotation switch is set to the "Rotation" position. Set the reel rotation switch to the "Stop" position except during mowing or backlapping and using reel excess discharge system.

1. When the reel rotation switch is set to the "Rotation" position, the reel cutters will rotate. When the reel rotation switch is set to the "Rotation" position, the reel cutters will rotate or stop in sync with the up and down motion of the mower units.

[1] When the mower units are lowered, the sensor detects it to allow the reel cutters to rotate.

[2] When the mower units are raised, the sensor detects it not to allow the reel cutters to rotate even if the reel rotation switch is set to the "Rotation" position.

2. When the reel rotation switch is set to the "Stop" position, the reel cutters will stop rotating.



2EF236A2

Reel Rotation Switch_001

1	Reel rotation switch
A	Rotation
B	Stop

Description of Functions

2WD/3WD Selector Switch

⚠ Caution

In case of 2WD/3WD model, travel in 2WD mode on steep downward slopes, wet road surface or downward slopes of wet lawn since traveling there in 3WD mode is dangerous. Otherwise, the rear tire going into a skid may cause loss of traveling control.

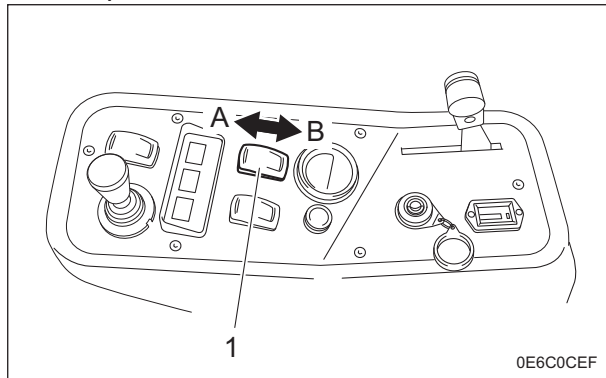
Important

Do not switch between 2WD and 3WD before the machine stops completely. Otherwise, the hydraulic system will malfunction.

Note:

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

1. Flip the 2WD/3WD selector switch to the "2WD" position to select 2WD mode.
2. Flip the 2WD/3WD selector switch to the "3WD" position to select 3WD mode.



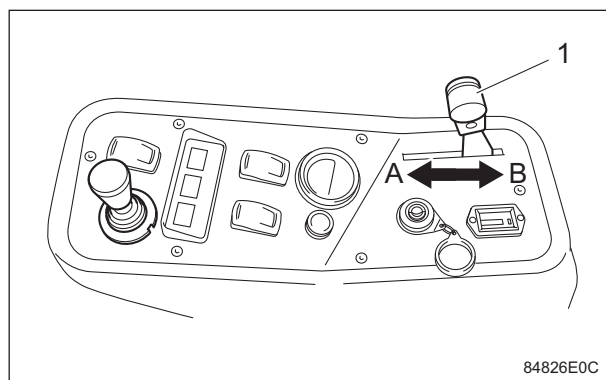
2WD/3WD Selector Switch_001

1	2WD/3WD selector switch
A	3WD
B	2WD

Throttle Lever

The throttle lever enables you to adjust the engine rpm.

1. Shift the throttle lever to the "High speed" position to increase the engine rpm.
2. Shift the throttle lever to the "Low speed" position to reduce the engine rpm.



Throttle Lever_001

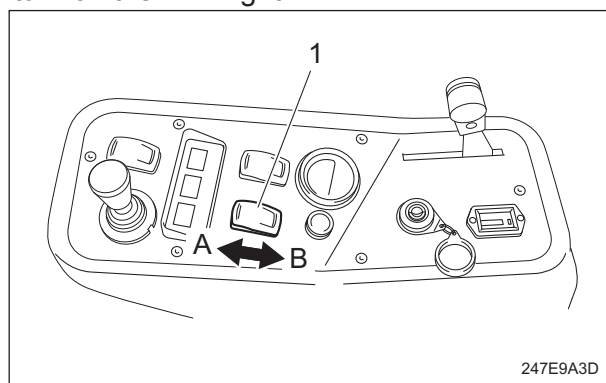
1	Throttle lever
A	High speed
B	Low speed

Light Switch

⚠ Caution

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

1. Flip the light switch to the "ON" position to turn on the LED light.
2. Flip the light switch to the "OFF" position to turn off the LED light.



Light Switch_001

1	Light switch
A	ON
B	OFF

Description of Functions

Mower Unit Up Switch

Warning

The reel cutter rotates while holding down the mower unit up switch when the reel rotation switch is set to the "Rotation" position. Set the reel rotation switch to the "Stop" position except during mowing or backlapping and using reel excess discharge system.

Warning

The reel cutter rotates when using reel excess discharge system. Keep hands and feet away from moving parts.

Caution

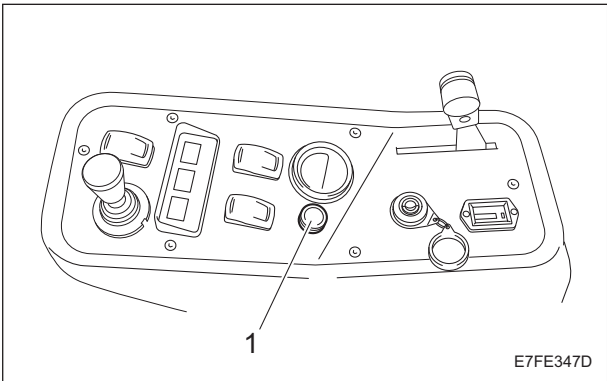
Before using reel excess discharge system, make sure that there are no people around the machine.

Important

The reel cutter keeps rotating even if the mower unit raised to the highest position while holding down the mower unit up switch.

The mower unit up switch have the following two functions.

1. Mower unit up function
The mower unit up function is to raise the mower unit to the highest position when the height of the mower unit is not sufficient for traveling, etc.
Set the reel rotation switch to the "Stop" position and keep pressing the mower unit up switch to operate the magnetic valve to raise the mower unit to the highest position.
2. Reel excess discharge function
Reel excess discharge system is the function to remove clippings inside the reel cutter by rotating the reel cutter with the up switch on the condition that the mower unit raised and the reel rotation switch set to the "Rotation" position.
With this function, falling of lumps of clippings can be prevented during mowing operation and the time of washing the vehicle can be shortened.

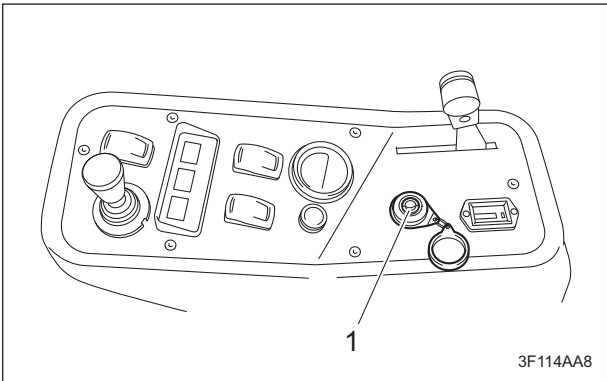


Mower Unit Up Switch_001

1	Mower unit up switch
---	----------------------

Key Switch

The key switch is a lock for inserting the ignition key. This is used to start, run or stop the engine by turning the ignition key to change the key switch position.



Key Switch_001

1	Key switch
---	------------

Description of Functions

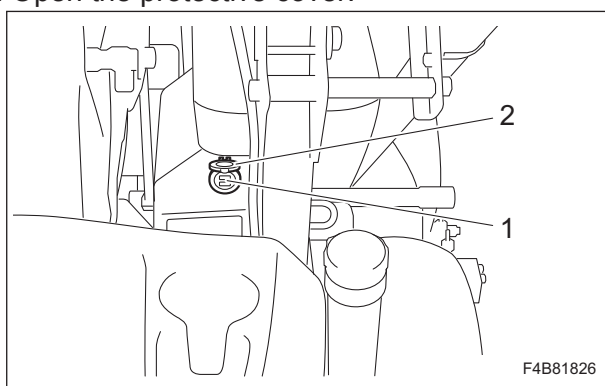
USB Socket

Important

Do not use the USB socket in rainy weather to avoid malfunction of devices.

Use the USB socket to charge or power USB devices such as smartphones. When the ignition key set to the "ON" position, it is energized and the blue indicator lights above the USB ports.

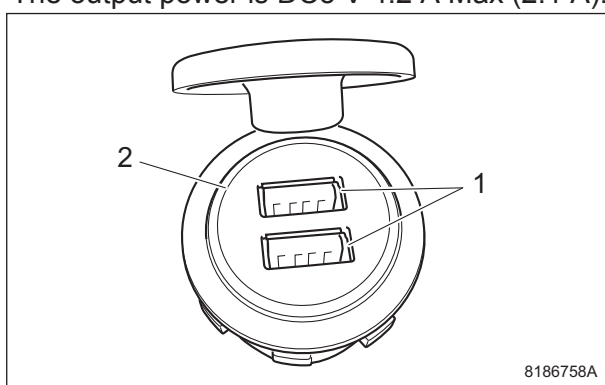
1. Set the ignition key to the "ON" position.
2. Open the protective cover.



USB Socket_001

1	USB port
2	Protective cover

3. Select a port according to the device connectivity.
The output power is DC5 V 4.2 A Max (2.1 A).



USB Socket_002

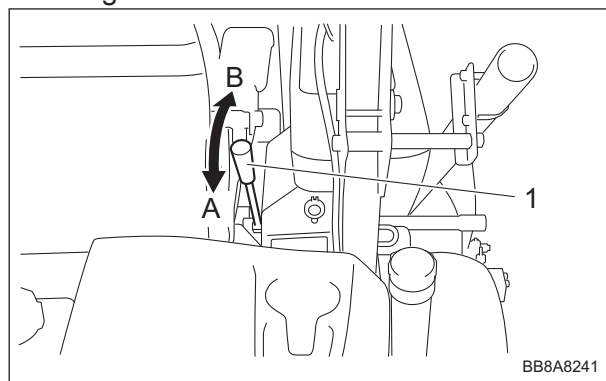
1	2.1 A
2	Indicator

4. Insert the device USB plug into the port.
The blue indicator lights when applying current.
5. Close the protective cover after use.

Steering Height Adjustment Lever

The position of the steering arm can be adjusted with the steering height adjustment lever.

1. Tilt the steering height adjustment lever to the "Release" position to release the lock and adjust the position of the steering arm.
2. Tilt the steering height adjustment lever to the "Lock" position to lock the position of the steering arm.



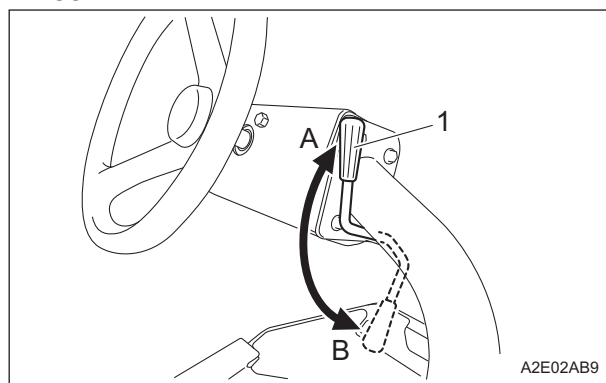
Steering Height Adjustment Lever_001

1	Steering height adjustment lever
A	Lock
B	Release

Steering Angle Adjustment Lever

The angle of the steering wheel can be adjusted with the steering angle adjustment lever.

1. Pull the steering angle adjustment lever to release the lock and adjust the angle of the steering wheel.
2. Push the steering angle adjustment lever forward to lock the angle of the steering wheel.



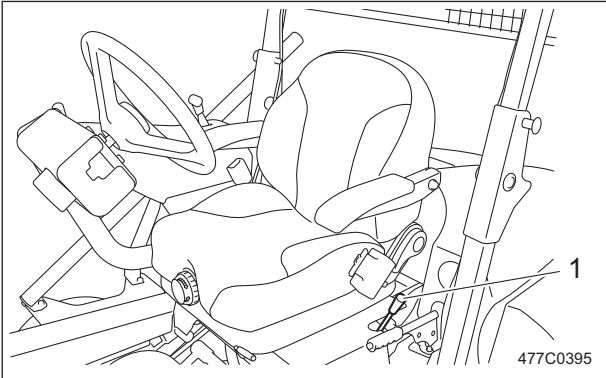
Steering Angle Adjustment Lever_001

1	Steering angle adjustment lever
A	Lock
B	Release

Description of Functions

Seat Forward Tilt Angle Adjustment Lever

Tilt the seat forward tilt angle adjustment lever and adjust the forward tilt angle of the seat to three levels.
Tilt the lever and release it where the seat is locked.



Seat Forward Tilt Angle Adjustment Lever_001

1	Seat forward tilt angle adjustment lever
---	--

Traveling Pedal

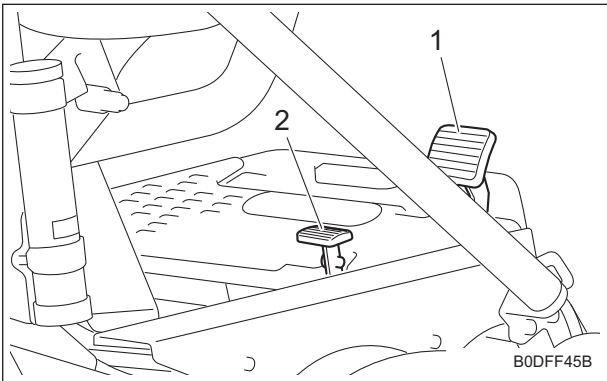
Caution

When the machine is traveling at a high speed, it will not stop immediately after you take your foot off the traveling pedal.

Important

While the mower units lowered, the working speed is limited by the pedal stopper.

The traveling pedals control forward and reverse operation of the machine.
When the forward pedal (front side) is depressed, the machine travels forward. When the reverse pedal (rear side) is depressed, the machine travels backward.
The speed changes in accordance with how much the pedal is depressed.
When you take your foot off the pedal, the machine stops automatically.



Traveling Pedal_001

1	Forward pedal
2	Reverse pedal

Parking Brake Lever

Caution

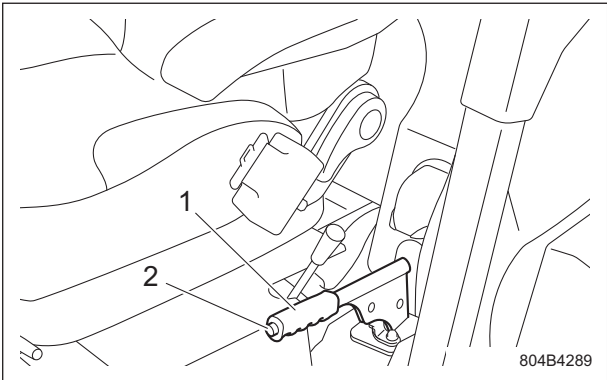
Never park the machine on a slope.

Important

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

For parking the machine, use the parking brake lever.

- 1. Applying the parking brake
Pull the parking brake lever completely.
- 2. Releasing the parking brake
Lower the parking brake lever completely with pushing the push-button.



Parking Brake Lever_001

1	Parking brake lever
2	Push button

Description of Functions

Reel Forward/Reverse Switch

Important

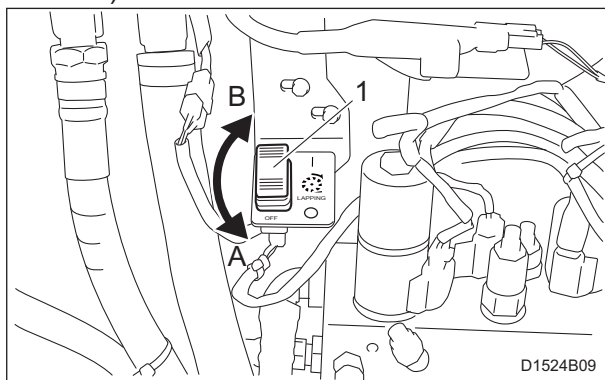
Do not switch between "Forward" and "Reverse" while the reel cutter (cutting cylinder) is rotating. Otherwise, the hydraulic system will malfunction.

Important

If the reel rotation switch is not set to the "Rotation" position, the reel cutter (cutting cylinder) will not rotate.

Change over the rotation direction of the reel cutters by using the reel forward/reverse switch.

1. When the reel forward/reverse switch is set to the "OFF" position, the reel cutters of all mower units rotate for cutting work (forward rotation).
2. When the reel forward/reverse switch is set to the "ON" position, the reel cutters of all mower units rotate for back lapping work (reverse rotation).



Reel Forward/Reverse Switch_001

1	Reel forward/reverse switch
A	OFF (Forward)
B	ON (Reverse)

Reel Rotation/Stop Switching Lever

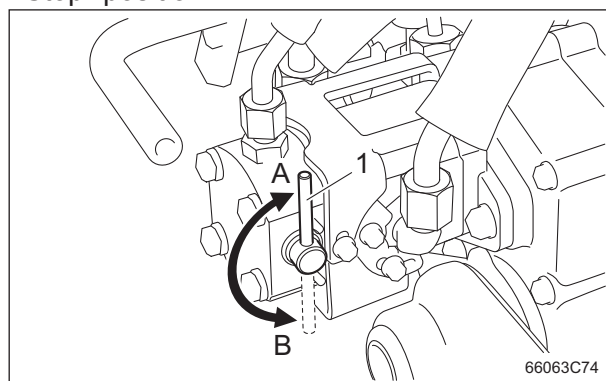
Caution

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

The reel rotation/stop switching lever is located on the reel motor attached to each mower unit. For cutting work, shift the levers of all the mower units to the "Rotation" position.

For back lapping, shift only the lever of the mower unit to back lap to the "Rotation" position and shift the levers of the other mower units to the "Stop" position.

1. The reel cutter rotates when the reel rotation/stop switching lever is shifted to the "Rotation" position.
2. The reel cutter does not rotate when the reel rotation/stop switching lever is shifted to the "Stop" position.



Reel Rotation/Stop Switching Lever_001

1	Reel rotation/stop switching lever
A	Rotation
B	Stop

Description of Functions

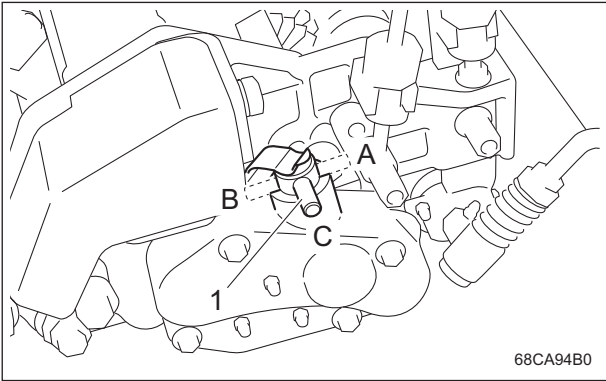
Groomer Clutch Lever

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

Caution

Shift the lever for setting to the arbitrary position while the engine is stopped.

The groomer clutch lever has three changeover positions.
When the lever is set to the "Normal " position, the groomer rotates in the same direction as the reel cutter (cutting cylinder).
When the lever is set to the "Reverse " position, the groomer rotates in the opposite direction as the reel cutter (cutting cylinder).
When the lever is set to the "Stop" position, the groomer does not rotate.



Groomer Clutch Lever_001

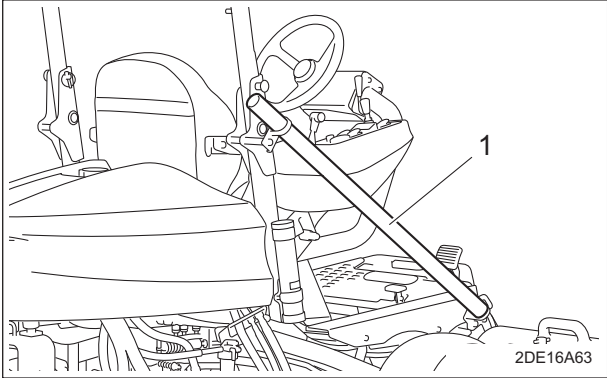
1	Groomer clutch lever
A	Normal
B	Reverse
C	Stop

Swisher Holder

Caution

Be careful not to hit your eyes with swisher pole when it is in the swisher holder.

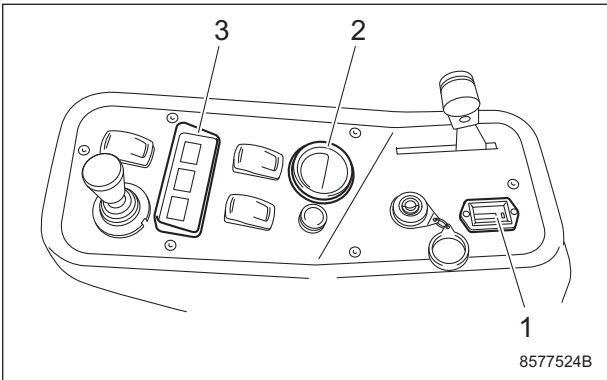
Swisher pole can be stored in this holder for transport.



Swisher Holder_001

1	Swisher holder
---	----------------

Instruments on The Operation Panel



Instruments on The Operation Panel_001

1	Hour meter
2	Water temperature gauge
3	Pilot lamp

Description of Functions

Hour Meter

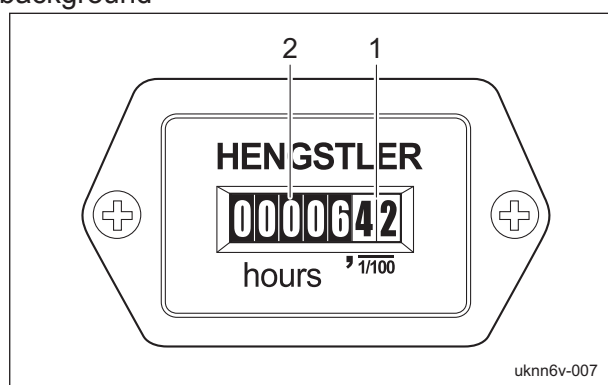
The hour meter indicates the accumulated operation time of the engine.

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

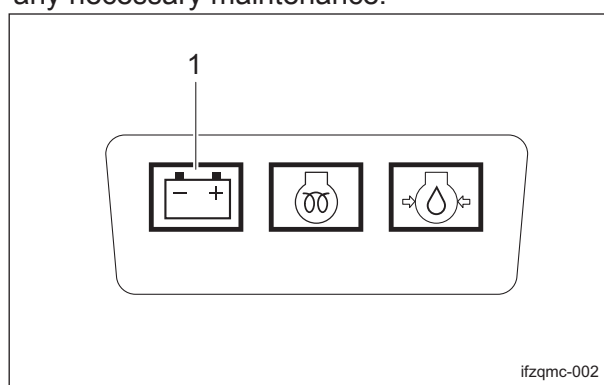
Pilot Lamps

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

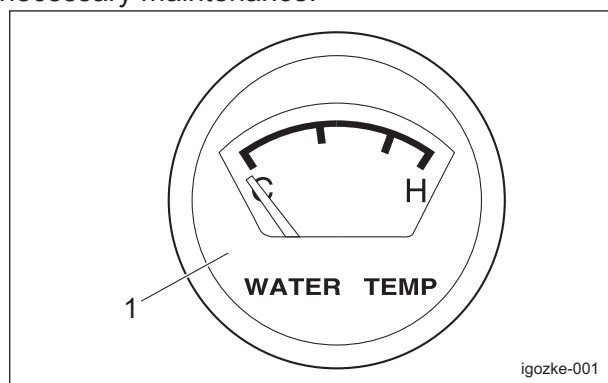
1	Charge lamp
---	-------------

Water Temperature Gauge

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.



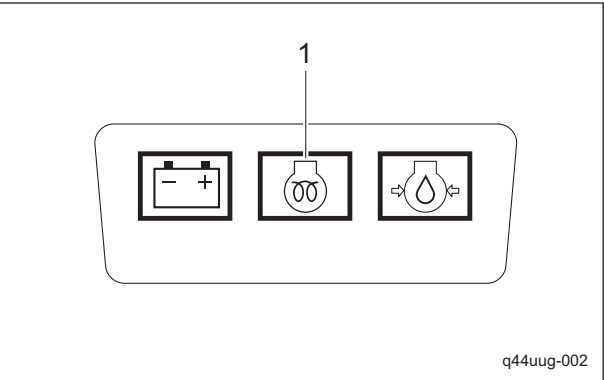
Water Temperature Gauge_001

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

Description of Functions

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.

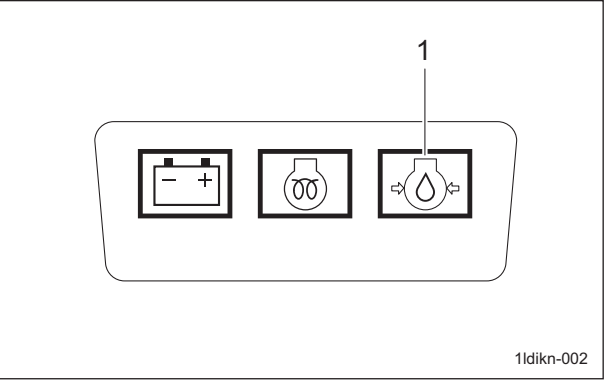


Thermo-Start Lamp_001

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.

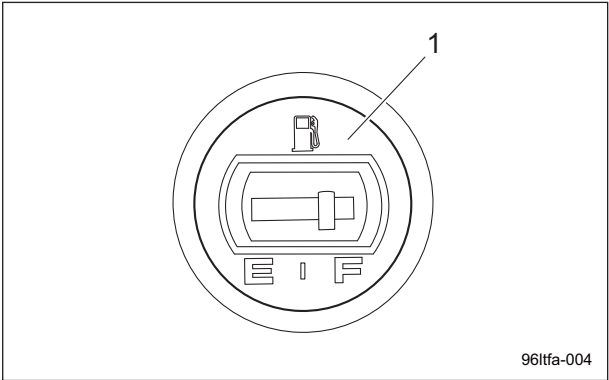


Oil Pressure Lamp_001

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

Fuel Gauge

The fuel gauge is located on the fuel tank. This instrument indicates the quantity of fuel inside the fuel tank.



Fuel Gauge_001

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

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 switch is set to the "Stop" position.
 - The traveling pedal is set to the neutral position.
- When the operator leaves the seat with the parking brake not applied and the engine running, the safety device will be activated and will stop the engine.
- When the operator leaves the seat with the parking brake applied and the engine running, the safety device will be activated and will stop the engine under any of the following conditions:
 - The traveling pedal is not set to the neutral position. (The operator has depressed the traveling pedal.)
 - Reel rotation switch is set to the "Rotation" position.
However, when the reel forward/reverse switch is set to the "On (Reverse)" position, engine will not stop.

Warning Mechanisms

Warning Buzzer

1. Overheat warning buzzer
When the water temperature inside the engine exceeds 115 degrees Celsius (239 °F), the buzzer sounds. (intermittent tone)
When the buzzer sounds, stop the engine immediately, inspect the machine and perform any necessary maintenance.
2. Hydraulic oil level warning buzzer
When the oil level in the hydraulic tank decreases by approximately 1.3 dm³ (1.3 L) from the specified level, the buzzer sounds. (intermittent tone)
When the buzzer sounds, stop the engine immediately, inspect the machine and perform any necessary maintenance.
3. Warning buzzer for traveling with brake applied
When the traveling pedal is depressed while the parking brake is applied, the buzzer sounds. (intermittent tone)
Release the parking brake when the buzzer sounds.

Description of Functions

Operations Before ServicePage 5-2

Opening and Closing of Hood Page 5-2

Opening and Closing of Underseat
Cover Page 5-2Opening and Closing of Radiator
Cover Page 5-3

Opening and Closing of Side Cover Page 5-3

Inspection Before UsePage 5-4

EnginePage 5-4

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Adjustment before Work Page 5-11

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Mower UnitPage 5-12

Mounting/DismountingPage 5-13

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Cutting Work Page 5-15

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Mower UnitPage 5-20

Handling Instructions


Operations Before Service

The following sections describe the preparatory works required before performing the services including inspection, adjustment, cleaning, maintenance and repair.

Opening and Closing of Hood

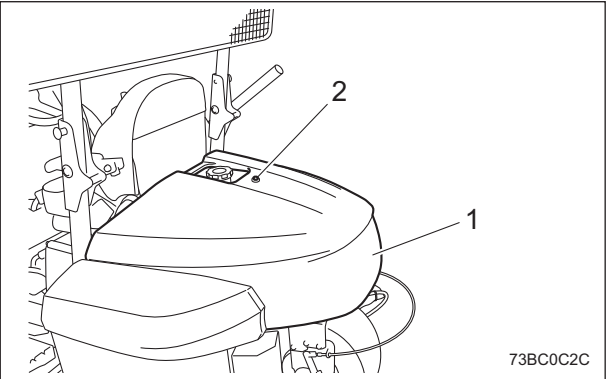
 **Caution**

Do not open the hood in strong winds.

 **Caution**

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

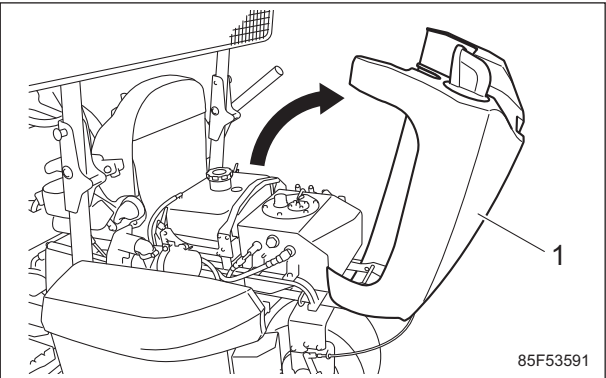
1. Procedure to open the hood:
- [1] Remove the bolt.



Opening and Closing of Hood_001

1	Hood
2	Bolt

- [2] Lift up the hood.
- [3] Check the hood will not close, and release your hands.




Opening and Closing of Hood_002

1	Hood
---	------


2. Procedure to close the hood:
- [1] Close the hood slowly.

- [2] Press the hood lightly and lock it with the bolt.

Opening and Closing of Underseat Cover

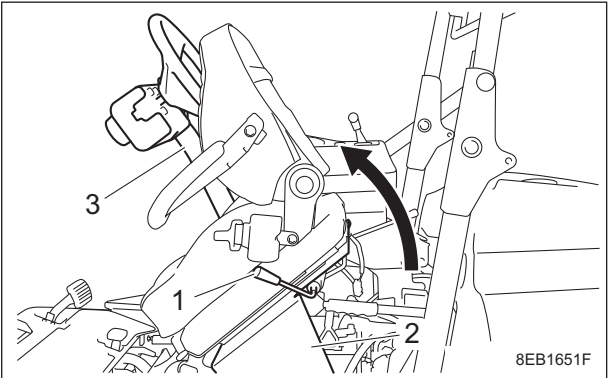
 **Caution**

Do not open the underseat cover in strong winds.

 **Caution**

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

1. Procedure to open the underseat cover:
- [1] Remove the grass catcher from the mower unit #1.
- [2] Adjust the steering wheel arm to the lowest position.
- [3] Tilt the seat forward tilt angle adjustment lever and lift up the underseat cover together with the seat.



Opening and Closing of Underseat Cover_001

1	Seat forward tilt angle adjustment lever
2	Underseat cover
3	Steering wheel arm

2. Procedure to close the underseat cover:
- [1] Close the underseat cover slowly.
- [2] Fix the underseat cover securely with the seat forward tilt angle adjustment lever.

Handling Instructions

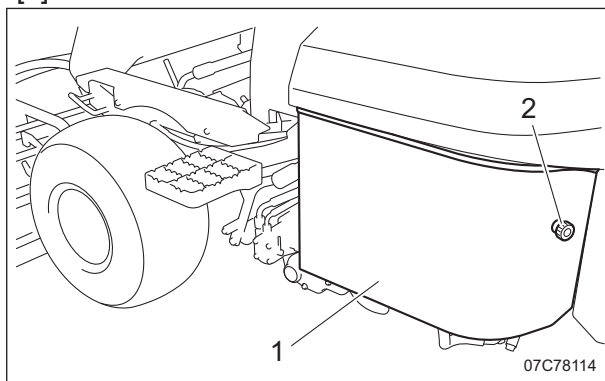
Opening and Closing of Radiator Cover

Important

Do not open or close the radiator cover while the side cover is open.

1. Procedure to open the radiator cover:

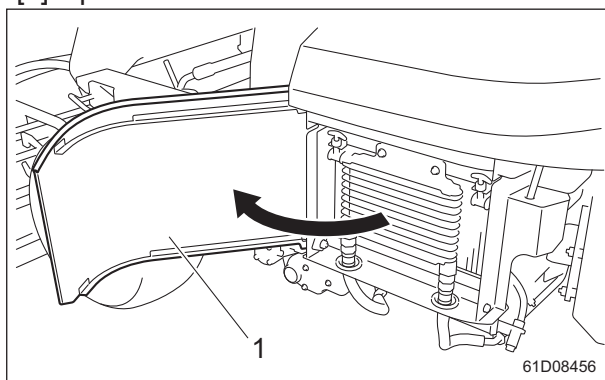
- [1] Loosen the cover fix knob.



Opening and Closing of Radiator Cover_001

1	Radiator cover
2	Cover fix knob

- [2] Open the radiator cover to the left.



Opening and Closing of Radiator Cover_002

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

2. Procedure to close the radiator cover:

- [1] Close the radiator cover slowly.
[2] Tighten the cover fix knob.

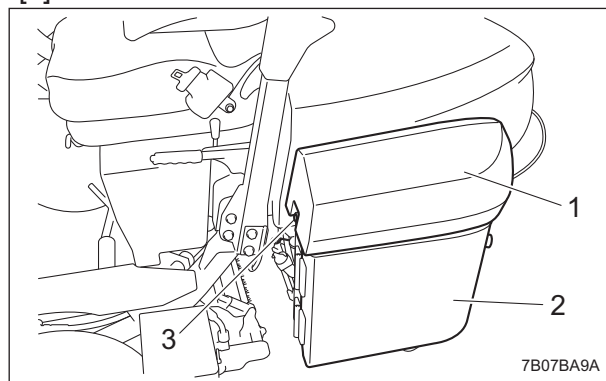
Opening and Closing of Side Cover

Important

Open or close the side cover while the radiator cover is closed.

1. Procedure to open the side cover:

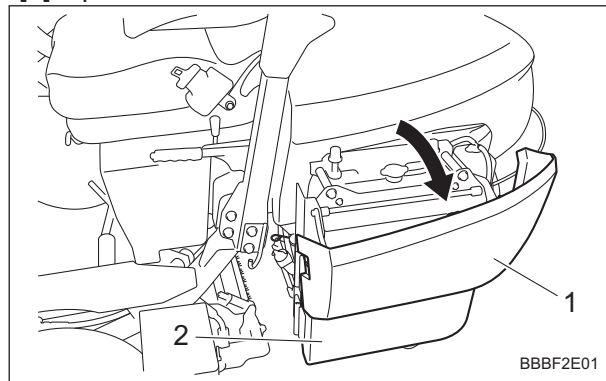
- [1] Remove the cover fix screw.



Opening and Closing of Side Cover_001

1	Side cover
2	Radiator cover
3	Cover fix screw

- [2] Open the side cover.



Opening and Closing of Side Cover_002

1	Side cover
2	Radiator cover

2. Procedure to close the side cover:

- [1] Close the side cover.
[2] Tighten the cover fix screw to fix the side cover.

Handling Instructions

Inspection Before Use

The purpose of the machine inspection is to:

- Prevent accidents
- Prevent damage to the machine
- Maintain machine performance

Detecting machine malfunctions early helps prevent unexpected problems from occurring. If you detect any abnormalities with the machine, immediately perform maintenance or repairs.

Engine

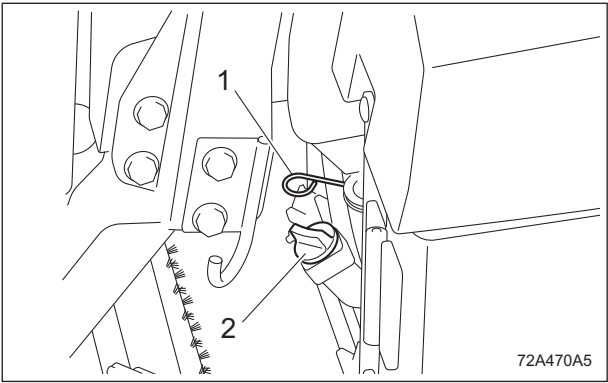
Inspection of Engine Oil

Important

Securely tighten the oil level gauge and oil filler cap.

Check the contamination of oil and engine oil level to inspect the engine oil. Inspect the engine oil level 10 to 20 minutes after stopping the engine.

1. Place the machine to set the engine on the level.
2. Stop the engine.
3. Pull out the oil level gauge.

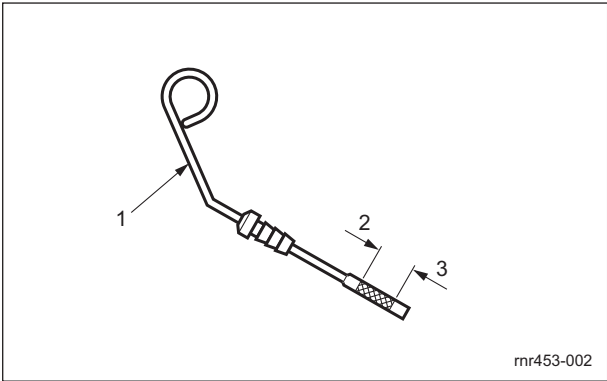


Inspection of Engine Oil_001

1	Oil level gauge
2	Oil filler cap

4. Wipe the oil off the oil level gauge cleanly with papers or cloths.
5. After wiping the oil off the oil level gauge, check the remains of contamination.
6. Return the oil level gauge to its original position, insert tightly, and pulling out again.

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

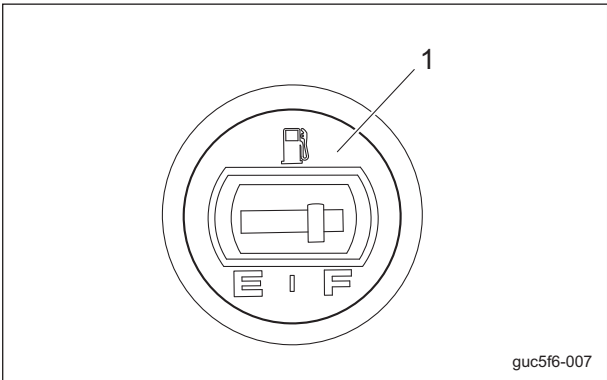


Inspection of Engine Oil_002

1	Oil level gauge
2	Upper limit
3	Lower limit

Inspection of Fuel Quantity

With the machine on a level surface, observe the fuel gauge on the fuel tank to check the fuel level.



Inspection of Fuel Quantity_001

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

Handling Instructions

Fuel Supply

Warning

Supply fuel before starting the engine.
Do not remove the tank cap or supply fuel while the engine is running or when the engine is hot.
When opening the tank cap, wait at least 1 minute after stopping the engine, and slowly open the cap to release the pressure in the tank.
Opening the tank cap suddenly may cause fuel to burst out.

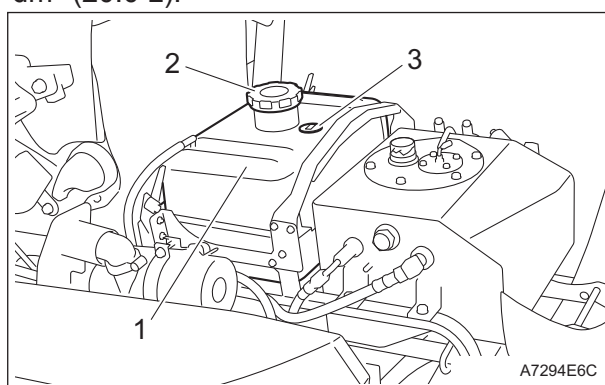
Warning

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

Warning

Do not supply fuel above F (FULL) level of the fuel gauge.
If you supply too much fuel, fuel may overflow from the fuel cap when you travel or work on a slope.

When the fuel gauge on the fuel tank indicates a level close to E (EMPTY), supply fuel (diesel) as soon as possible.
The fuel tank capacity is approximately 20.0 dm³ (20.0 L).



Fuel Supply_001

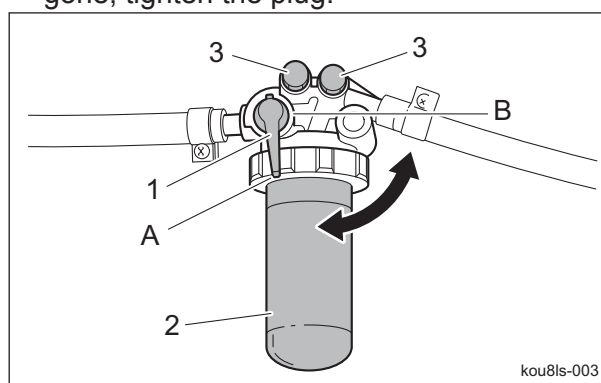
1	Fuel tank
2	Tank cap
3	Fuel gauge

Air Bleeding of Fuel System

Important

Be sure to tighten the air-bleeding plug except when air bleeding.
Otherwise, it may cause the engine stop.

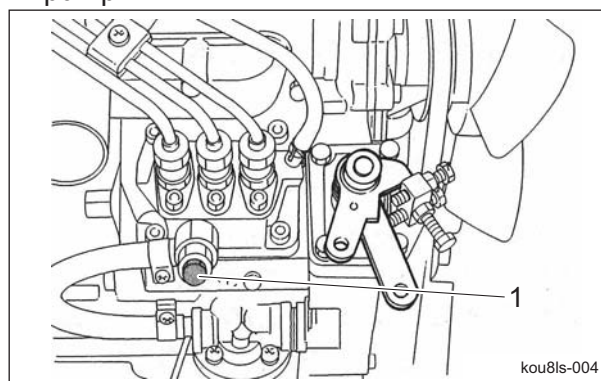
1. Fill up the fuel tank with fuel and open the fuel cock.
2. Loosen the air-bleeding plug of the fuel filter 2 to 3 turns.
3. If air bubble of the fuel from the plug has gone, tighten the plug.



Air Bleeding of Fuel System_001

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

4. Loosen the air-bleeding plug of the injection pump.



Air Bleeding of Fuel System_002

1	Air-bleeding plug
---	-------------------

5. Sit on the operator's seat.
6. Make sure that the parking brake is applied.
7. Turn the reel rotation switch to the "STOP" side.

Handling Instructions

- 8. Make sure that the traveling pedal is neutral.
- 9. Set the ignition key to "START" position.

Important

In the case that there are still air bubbles in the fuel from air-bleeding plug even after 15 seconds or more pass after setting the ignition key to "START", pause for 30 seconds or more and then repeat the same steps.

- 10. If the starter rotates and air bubble of the fuel from the air-bleeding plug has gone, return the ignition key slowly to "OFF" position and tighten the plug.

Inspection of Fuel Filter

- 1. Make sure that there is no fuel leakage.
- 2. Make sure that the filter is not damaged.
- 3. Make sure that the filter is not contaminated.

Inspection of Coolant

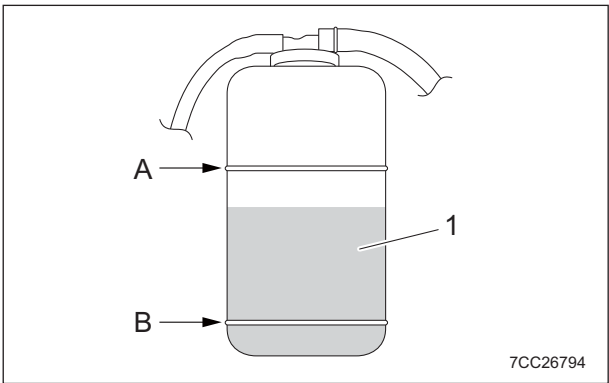
Caution

Do not touch the radiator or coolant during engine operation or right after the engine has been turned off. Otherwise, you may get burned due to high temperatures.

Caution

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

Make sure that the coolant level in the reserve tank is between "FULL" and "LOW." When the coolant level is lower than the "LOW" mark, fill the tank with clean water.

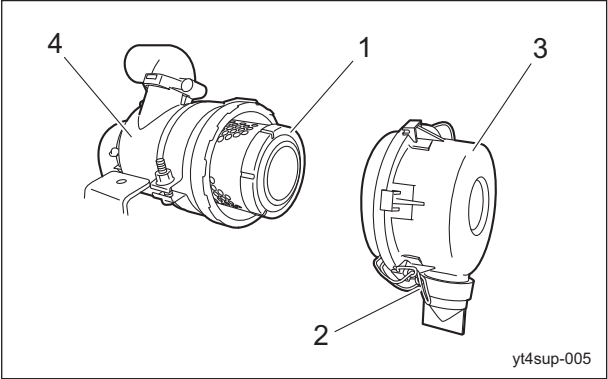


Inspection of Coolant_001

1	Reserve tank
2	FULL
3	LOW

Inspection of Air Cleaner

- 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

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.

Inspection of Radiator

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

Inspection of Engine-Associated Parts

Caution

Perform operations after the engine and other parts have sufficiently cooled. Otherwise, you may suffer burns.

- 1. Check for damages and dirt.
- 2. Check the mount for looseness and cracks.
- 3. Check for liquid leakage.
- 4. Check on and around the muffler for grass clippings and flammable materials.

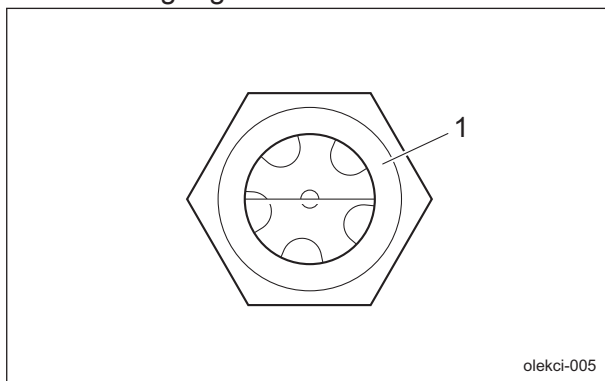
Handling Instructions

Main Vehicle

Inspection of Hydraulic Oil

The oil gauge is on the side of the hydraulic tank.

1. Lower 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
---	-----------

3. Check underneath the machine for oil leakage.

Inspection of Tires

1. Check the tires are not cracked, damaged or worn away abnormally.
2. Check the pneumatic pressure of the tires.
(For green/For field/For teeing ground)

	Tire size	Pneumatic pressure	
Front wheel	Smooth 19 x 10.50-8 4P	100 kPa (1.0 kgf/cm ²)	15 psi
Rear wheel	Smooth 19 x 10.50-8 4P	100 kPa (1.0 kgf/cm ²)	15 psi

Inspection of Battery

⚠ Danger

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

⚠ Warning

Do not clean the battery with a dry cloth. Cleaning the battery with a dry cloth may cause it to catch fire or explode due to static electricity.

⚠ Caution

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

Important

Be sure to stop the engine before inspecting or charging the battery.

Battery inspection items are described below.

1. Inspecting the exterior

Visually inspect the exterior of the battery, and check that there are no cracks, splits, missing sections, or abnormal deformation in the battery case, and that there is no electrolyte leaking.
If abnormalities are found, immediately replace the battery.

2. Cleaning the exterior

Use a wet cloth for cleaning.
Inspect the vent plugs or vent holes on the side of the battery, and if they are blocked by dirt wash them with water to remove the blockage.

Continuing to use the battery with the vent holes blocked may cause the battery to rupture from increased internal pressure due to gases generated inside the battery.

3. Inspecting the mounting bracket

Inspect whether the battery is secured firmly with the mounting bracket.
If the bracket is loose, tighten the mounting bracket nuts until the battery is secured firmly.

An improperly mounted battery may cause damage to the battery case or electrolyte leaks due to the battery moving with vibrations while traveling.

Handling Instructions

4. Inspecting the cable terminals

If the connection between the battery terminals and vehicle's cable terminals are loose, tighten the nuts until the cable terminals are secured firmly. Insufficiently tightened terminals may result in poor battery charging, damage to the terminals due to poor contacts, or an explosion. If the terminals are corroded, rub them clean with a wire brush or fine grit sandpaper, and lightly apply anti-rust grease.

5. Inspecting the electrolyte level and refilling

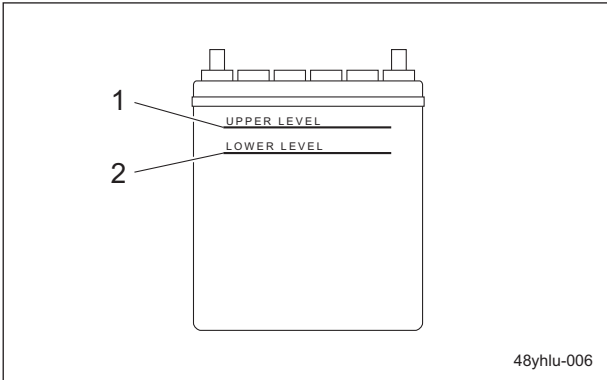
Warning

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).

Warning

When refilling, do not fill purified water above the UPPER LEVEL line. Doing so may result in electrolyte leaks.

Clean the areas around the battery fluid level lines using a cloth damped with water to check the electrolyte level from the side of the battery. Make sure that the battery fluid level is between the UPPER LEVEL (maximum fluid level line) and the LOWER LEVEL (minimum fluid level line). Refill with purified water up to the UPPER LEVEL line if the level is lower than halfway between the UPPER LEVEL and LOWER LEVEL lines.



Inspection of Battery_001

1	UPPER LEVEL line
2	LOWER LEVEL line

Inspection of Oil Cooler for Hydraulic Oil

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

Inspection of Covers

Warning

If you have removed the cover during inspection, make sure that you replace it in the original position securely. If the cover remains removed, the operator may come in contact with the rotating objects or belt, or foreign objects may fly off, possibly resulting in injuries.

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

Inspection of Wire

- 1. Make sure that the wire is not cracked or damaged.
- 2. Make sure that the wire is not worn.
- 3. Make sure that the wire is not crushed.
- 4. Make sure that the wire is not bent.
- 5. Make sure that the wire is not corroded or rusted.

Inspection of Traveling Pedal

- 1. Make sure that there is no play in the pedal.
- 2. Make sure that the pedal moves smoothly.
- 3. Make sure that there is no abnormal sound when the pedal is depressed.
- 4. Make sure that the pedal does not touch the floorboard when the pedal is depressed.

Handling Instructions

Inspection of Brake Lever

1. Check the brake lever moves smoothly.
 - [1] Pull the brake lever.
 - [2] Press the push button and release the brake lever.
2. Check there is no abnormal sound when the brake lever is moved.
3. Check the brake is applied when you pull the brake lever.

Inspection of Steering Wheel

1. Make sure that there is no play in the steering wheel.
2. Make sure that the steering wheel turns smoothly when it is turned.
3. Make sure that there is no abnormal sound when the steering wheel is turned.
4. Make sure that the machine movement is synchronized with the steering action of the steering wheel.

Inspection of Jointboot

1. Check the jointboot is not cracked.
2. Check the jointboot is not damaged.

Inspection of Ball Proof Net

1. Check the ball proof net is not deteriorated.
2. Check there is no damage nor deformation of the ball proof net.

Inspection of Light

1. Check the lights are not damaged.
2. Check the lights turn on/off.
 - [1] Switch the ignition key to the "ON" position.
 - [2] Set the light switch to the "ON" position.
 - [3] Check the lights have turned on.
 - [4] Set the light switch to the "OFF" position.
 - [5] Check the lights have turned off.
 - [6] Switch the ignition key to the "OFF" position.

Inspection of Hour Meter

1. Check the hour meter is not damaged.
2. Check the hour meter operates correctly.
 - [1] Switch the ignition key to the "ON" position.
 - [2] Check the displayed number increases correctly.

- [3] Switch the ignition key to the "OFF" position.

Inspection of Water Temperature Gauge

1. Check the water temperature is not damaged.
2. Check the water temperature operates correctly.
 - [1] Switch the ignition key to the "ON" position.
 - [2] Check the water temperature needle swings.
 - [3] Switch the ignition key to the "OFF" position.

Inspection of Pilot Lamps

1. Check the pilot lamps are clean.
2. Check the pilot lamps are not damaged.

Inspection of Safety Device

Make sure that the safety device operates correctly.
 "Safety Mechanisms" (Page 4-10)
 Repair the machine before operation whenever there is any abnormality.

Inspection of Bolts and Nuts

Important

The bolts and nuts may be loosened at the earlier stage of the use.
 Be sure to retighten or replace before operating the machine whenever there is any abnormality.

1. Check the bolts and nuts for looseness and coming off.
2. Check the bolts and nuts for cracks and damages.
3. Check the bolts and nuts for rust.
4. Check around the bolts and nuts for traces of rust fluid.
5. Check for unequal bolt length.
6. Check the bolts and nuts for stripped threads and abrasion.

Handling Instructions

Inspection of Liquid Leakage

Important

After approximately 50 hours of operation, some tightened portions may be loosened and liquid such as oil may leak. Be sure to retighten the parts.

Important

Repair the machine before operation if liquid leakage found. Ignoring leakage will cause further trouble.

1. Check the bottom of the machine for leakage of liquid such as oil, water, fuel, etc.
2. Locate the leakage and identify the type of liquid.

Inspection of Grass Catcher

1. Make sure that there is no wear or deterioration of the grass catcher.
2. Make sure that there is no damage to the grass catcher.
3. Make sure that there is no interference to moving parts due to deformation of the grass catcher.

Mower Unit

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

⚠ Caution

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

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.

Inspection of Rollers

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.

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.

Handling Instructions

Inspection of Groomer

Note:

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

⚠ Caution

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

1. Make sure that the vertical blades are not cracked.
2. Check how much the vertical blades are worn.
3. Make sure that the shaft is not worn nor bent.
4. Make sure that there is no wear nor rust of the bearing.
5. Make sure that there is no play in the groomer shaft.

Adjustment before Work

Main Vehicle

Adjustment of Seat Position

⚠ Warning

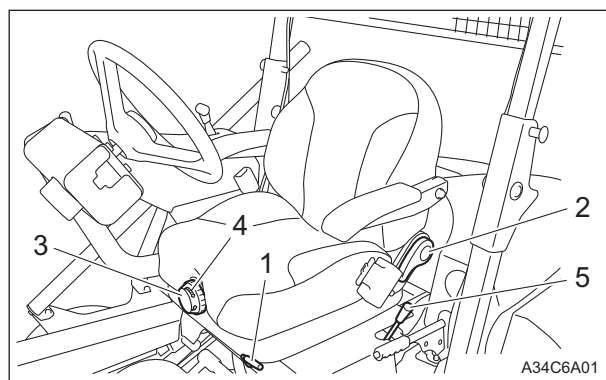
Do not adjust seat position while traveling.

Important

After adjustment of the seat, check the backrest does not interfere with the hood while the operator is seated.

Adjust the position to fit the operator.

1. Use the seat forward/backward adjustment lever to adjust the seat back and forth.
2. Use the seat angle adjustment lever to adjust the angle of the backrest.
3. Use the suspension adjustment dial to adjust the firmness of the seat suspension.
4. The seat can be adjusted to one of three levels by pulling up the seat forward tilt angle adjustment lever.



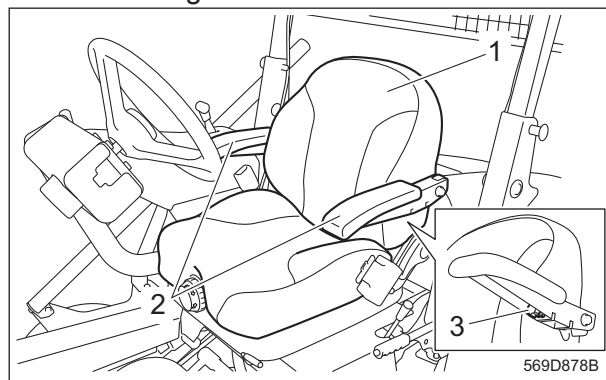
Adjustment of Seat Position_001

1	Seat forward/backward adjustment lever
2	Seat angle adjustment lever
3	Suspension adjustment dial
4	Suspension adjustment scale
5	Seat forward tilt angle adjustment lever

Adjustment of Armrest Position

Adjust the armrest position to fit the operator.

1. The armrest angle can be adjusted by turning the armrest adjustment knob on the right and left of the armrest.
2. Armrest can be raised when mounting/dismounting.




Adjustment of Armrest Position_001


1	Seat
2	Armrest
3	Armrest adjustment knob

Handling Instructions


Adjustment of Steering Wheel Position

 **Warning**

Do not adjust the steering wheel position while traveling.

 **Caution**

Make sure that the steering wheel position is securely locked.
It may result in an unexpected accident if it becomes loose while traveling.

 **Caution**

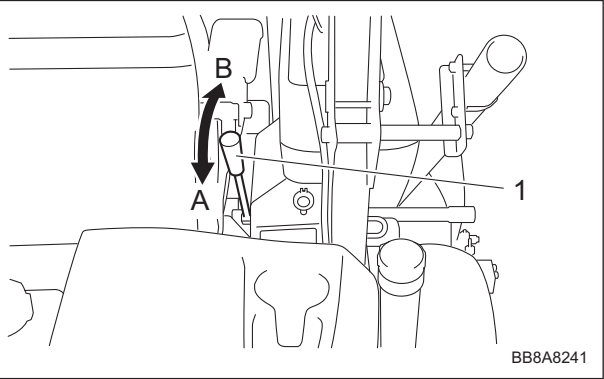
Be careful not to pinch your hands when operating the height adjustment lever.

Adjust the steering wheel position to fit the operator.

1. Steering arm position

The steering arm can be adjusted up or down.

- [1] Set the steering height adjustment lever to "Release" position to release the lock.
- [2] Adjust the steering arm position.
- [3] Set the steering height adjustment lever to "Lock" position to lock the steering arm position.



Adjustment of Steering Wheel Position_001

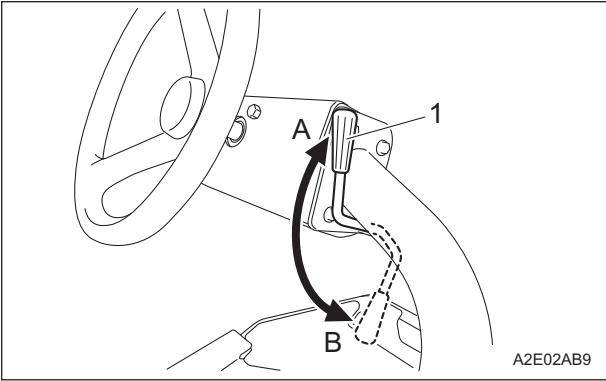
1	Steering height adjustment lever
A	Lock
B	Release

2. Steering angle

The steering angle can be adjusted.

- [1] Pull the steering angle adjustment lever to release the lock.
- [2] Adjust the steering angle.

- [3] Push the steering angle adjustment lever forward to lock the steering angle.




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Adjustment of Steering Wheel Position_002

1	Steering angle adjustment lever
A	Lock
B	Release

Mower Unit

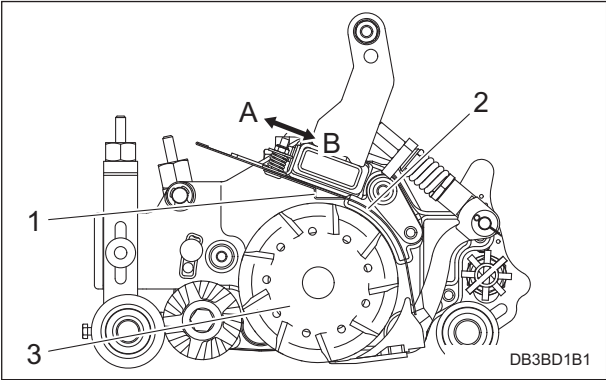
Adjusting Wind Rectifying Plate

 **Warning**

Be sure to stop the engine before adjusting the wind rectifying plate.

The wind rectifying plate is attached to the reel cover of the mower unit and is for rectifying the scattering clippings.

- 1. If the reel cutter (cutting cylinder) rotates at high speed or if the grass is dry, move it close to the reel cutter (cutting cylinder).
- 2. If the reel cutter (cutting cylinder) rotates at low speed or if the grass is wet, move it away from the reel cutter (cutting cylinder).



DB3BD1B1

Adjusting Wind Rectifying Plate_001

Handling Instructions

1	Wind rectifying plate
2	Reel cover
3	Reel cutter (Cutting cylinder)
A	Reel cutter (cutting cylinder) rotates at low speed
B	Reel cutter (cutting cylinder) rotates at high speed

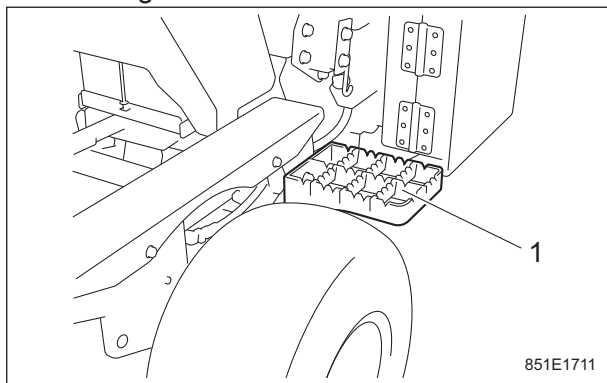
Mounting/Dismounting

Mounting/Dismounting Procedure

Caution

Be careful not to hit your head with light when mounting/dismounting.

This machine is equipped with a step for mounting/dismounting.
Place your foot on the step when mounting and dismounting the machine.



Mounting/Dismounting Procedure_001

1 Step

Start/Stop of Engine

Procedure to Start Engine

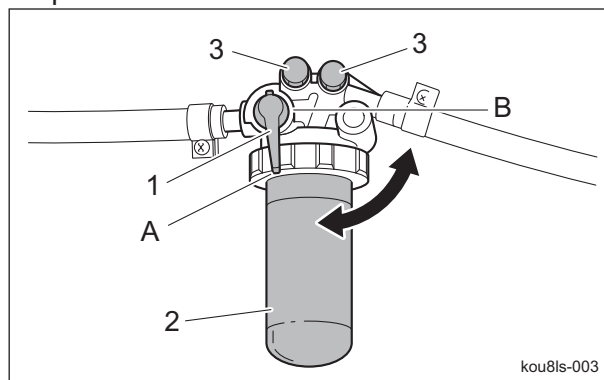
Caution

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

Important

Starter operation must take 15 seconds or less.
When the engine does not start, stop using the battery for 30 to 60 seconds to avoid exhausting the battery.

1. Open the fuel cock.



Procedure to Start Engine_001

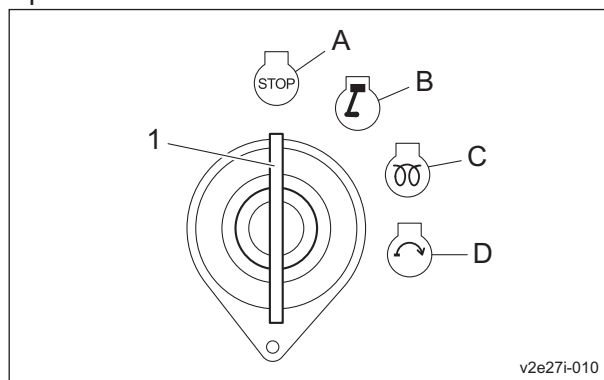
1	Fuel cock
2	Fuel filter
3	Air-bleed plug
A	ON (open)
B	OFF (close)

- Sit on the seat.
- Make sure that the parking brake is applied.
- Set the reel rotation switch to the "Stop" position.
- Make sure that the traveling pedal is in the neutral position.
- Shift the throttle lever halfway from the "Low speed" to 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. When the ignition key is left in the "GLOW" position after the lamp is turned off, the plug will still generate heat.
The lamp will stay illuminated for 5 seconds.

7. Switch the ignition key to the "GLOW" position.

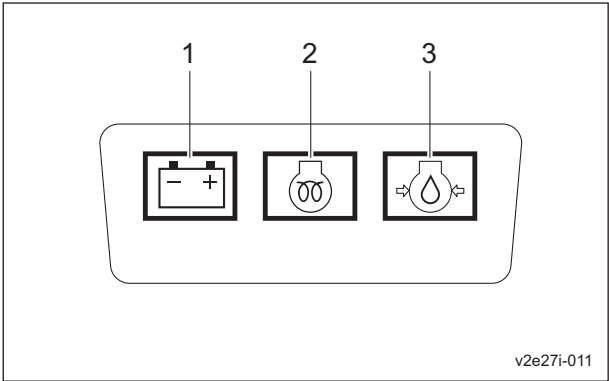


Procedure to Start Engine_002

Handling Instructions

1	Ignition key
A	OFF
B	ON
C	GLOW
D	START

8. Make sure that the glow plug is generating heat and the thermo-start lamp is turned on.



Procedure to Start Engine_003

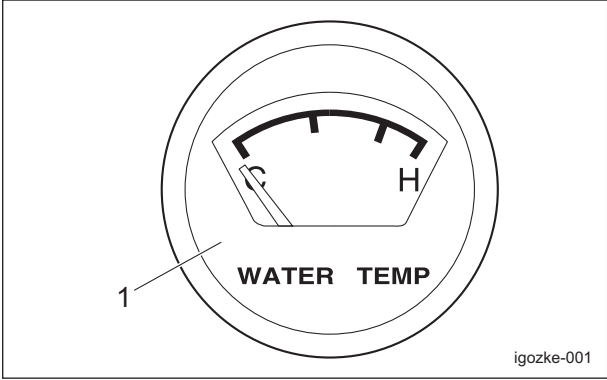
1	Charge lamp
2	Thermo-start lamp
3	Oil pressure lamp

Important

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

- 9. After the thermo-start lamp turned off, immediately set the ignition key to the "START" position.
- 10. When the starter starts rotating and the engine starts, slowly return the ignition key to the "ON" position.
- 11. Check that the charge lamp and the engine oil pressure lamp turn off. When they do not turn off, stop the engine and inspect the machine.

12. Shift the throttle lever to the "Low speed" position, warm up the engine so that the needle points above "C" on the water temperature gauge.



Procedure to Start Engine_004

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

Procedure to Stop Engine

- 1. Set the traveling pedal to the neutral position.
- 2. Apply the parking brake.
- 3. Set the reel rotation switch to the "Stop" position.
- 4. Shift the throttle lever to the "Low speed" position, and warm up the engine for 1-2 minutes.
- 5. Lower all the mower units completely.
- 6. Switch the ignition key to the "OFF" position.
- 7. Check the engine has stopped.

Parking and Stopping

Leaving 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.

- 1. Park the machine on level ground.
- 2. Apply the parking brake.
- 3. Stop the engine.
- 4. Remove the ignition key.
- 5. Step off the machine.
- 6. Close the fuel cock.

Handling Instructions

Move

Traveling Procedure

Warning

Set the reel rotation switch to the "Stop" position except during mowing or backlapping and using reel excess discharge system.

Caution

Under any circumstances drive the machine at such a speed that you can stop it immediately for emergencies.

Caution

In case of 2WD/3WD model, travel in 2WD mode since it is dangerous to travel on steep downward slopes, wet road surface or downward slopes of wet lawn in 3WD mode. Rear tire going into a skid may cause loss of traveling control.

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 5-13)
2. Gradually move the throttle lever to the "High speed" position.
3. Raise all mower units.
4. While pressing the push button, lower the parking brake lever.
5. Slowly depress the traveling pedal.
6. The machine starts traveling.
7. The machine stops slowly when the traveling pedal released.

Cutting Work

Cutting Work

Caution

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

Caution

In case of 2WD/3WD model, travel in 2WD mode since it is dangerous to travel on steep downward slopes, wet road surface or downward slopes of wet lawn in 3WD mode. Rear tire going into a skid may cause loss of traveling control.

Caution

Be sure to install the grass catchers. Otherwise, flying objects from the mower units may hit your feet.

Important

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

1. Install the grass catchers.
2. Shift all the reel rotation/stop switching lever to "Rotation" position.
3. Shift all the groomer clutch lever to "Rotation" position.
4. Start the engine.
"Procedure to Start Engine" (Page 5-13)
5. Raise all mower units.
6. While pressing the push button, lower the parking brake lever.
7. Shift the throttle lever to the "High speed" position to run the engine at the maximum speed.
8. Set the reel rotation switch to the "Rotation" position.
9. Start the work following the procedure below.
[1] Depress the traveling pedal.

Handling Instructions

[2] Tilt the joystick to the "Down" position when the mower unit reaches the collar of the green.

[3] Lower the mower units to start rotating the reel cutters (cutting cylinders).

Note:

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

10. Set the reel rotation switch to the "Stop" position after the cutting work completed.

Reel Excess Discharge System

Warning

The reel cutter rotates while holding down the mower unit up-switch when the reel rotation switch is set to the "Rotation" position. Set the reel rotation switch to the "Stop" position except during mowing, backlapping or using the reel excess discharge system.

Warning

The reel cutter rotates when using the reel excess discharge system. Keep hands and feet away from moving parts.

Caution

Before using the reel excess discharge system, make sure that there are no people around the machine.

Important

The reel cutter keeps rotating even if the mower unit is raised to the highest position while holding down the mower unit up-switch.

1. Preventing lumps of clippings from falling onto the green.
Use the reel excess discharge system to remove the clippings inside the reel cutter while operating mowing or when discarding clippings.
 - [1] Stop the engine.
 - [2] Brush the clippings gathered on the bracket.
At the time the clippings come inside of the reel cutter.
 - [3] Install the grass catchers.
 - [4] Sit on the seat.

[5] Start the engine.

[6] Raise all mower units.

[7] Shift the throttle lever to the "High Speed" position.

[8] Set the reel rotation switch to the "Rotation" position.

[9] Hold down the mower unit up-switch for about a second.

While holding down the mower unit up-switch, the reel cutter rotates as the mower unit rising to remove the clippings inside the reel cutter.

[10] Set the reel rotation switch to the "Stop" position after the operation completed.

[11] Stop the engine.

2. Vehicle wash

When washing the vehicle after mowing operation, the clippings can be removed by using the reel excess discharge system.

[1] Stop the engine.

[2] Set the reel positive/reverse rotation switch to the "Reverse rotation" position.

[3] Sit on the seat.

[4] Start the engine.

[5] Raise all mower units.

[6] Shift the throttle lever to the "High Speed" position.

[7] Set the reel rotation switch to the "Rotation" position.

[8] Stand on the right side of the machine and hold down the up switch for about 2 - 3 seconds.

While holding down the mower unit up-switch, the reel cutter rotates as the mower unit rising to remove the clippings inside the reel cutter.

[9] Set the reel rotation switch to the "Stop" position after the operation completed.

[10] Stop the engine.

Handling Instructions

Removing/Installing Grass Catcher

⚠ Caution

Stop the engine before removing / installing the grass catcher.

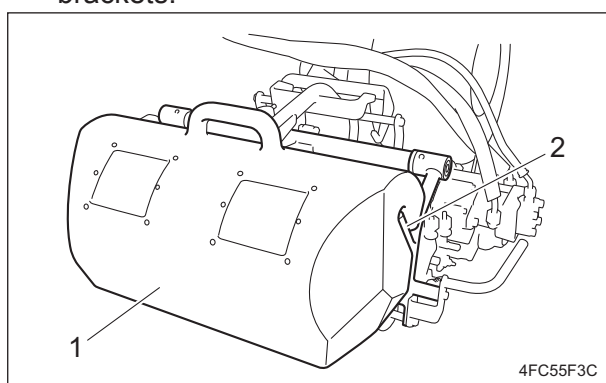
1. Set the reel rotation switch to the "Stop" position.
2. Lower the mower units.
3. Apply the parking brake.
4. Stop the engine.
5. Remove/install the grass catcher.

[1] Removing the grass catcher

Lift up the grass catcher, and remove the grass catcher from the mounting brackets on the left and right sides of the grass catcher.

[2] Installing the grass catcher

Install the grass catcher into the mounting brackets.



Removing/Installing Grass Catcher_001

1	Grass catcher
2	Mounting bracket

Transporting

Transporting Procedure

Important

Be sure to use cables strong enough to secure the machine.

When loading the machine onto a truck or a trailer for transport, follow the steps below.

1. Loading the machine

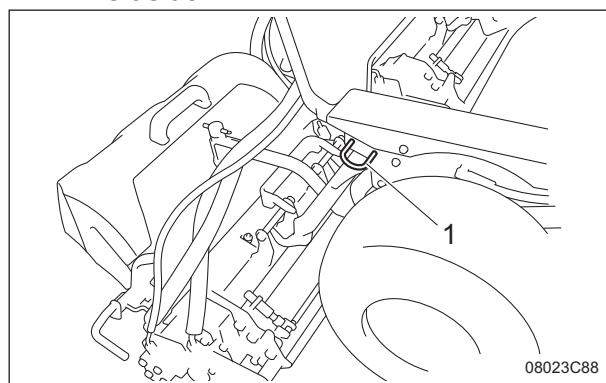
- [1] Start the engine.
- [2] Travel forward slowly to load the machine onto a truck or a trailer.
- [3] Stop the engine.

[4] Fasten the machine with ropes.

For fastening the machine with ropes, use the following positions.

- Front part of the machine: Use tow hooks on the right and left side of the frame.

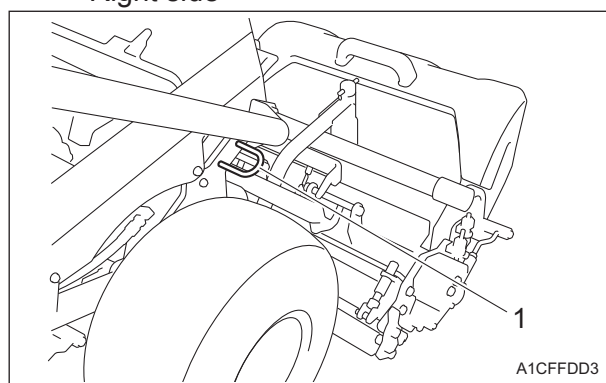
Left side



Transporting Procedure_001

1	Tow hook
---	----------

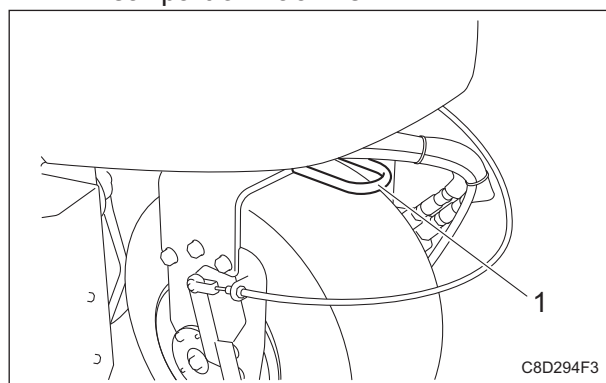
Right side



Transporting Procedure_002

1	Tow hook
---	----------

- Rear part of machine:



Transporting Procedure_003

1	Tow hook
---	----------

2. Unloading the machine

- [1] Remove the ropes fastening the machine.

Handling Instructions

- [2] Start the engine.
- [3] Raise the mower units.
- [4] Travel backward slowly to unload the machine from the truck or trailer.

Cleaning After Use

The purpose of the machine cleaning is to:

- Prevent accidents
- Prevent damage to the machine
- Maintain machine performance

Properly clean the machine to maintain its functionality and performance.
If you detect any abnormalities with the machine, immediately perform maintenance or repairs.

Engine

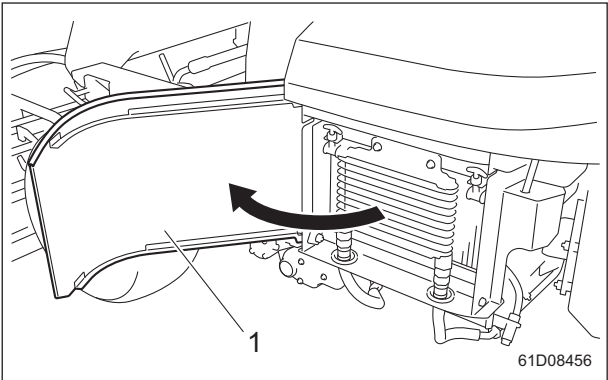
Cleaning of Radiator Cover

Important

An unclean radiator cover causes the engine overheating.
It also causes malfunction of the hydraulic system.

If the radiator cover is contaminated with dust, be sure to clean it.
Especially after operating the machine in a dusty environment, be sure to remove dust from the radiator 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.

Cleaning of Radiator

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.

Important

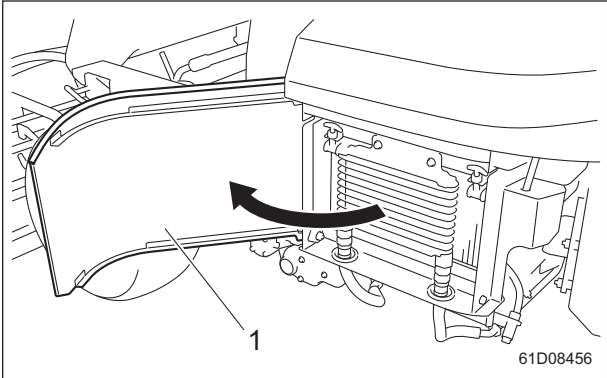
An unclean radiator cover causes the engine overheating.
It also causes malfunction of the hydraulic system.

Important

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

If the radiator is contaminated with dust, be sure to clean it.
Especially after operating the machine in a dusty environment, be sure to remove dust from the radiator as soon as possible.

1. Open the radiator cover.

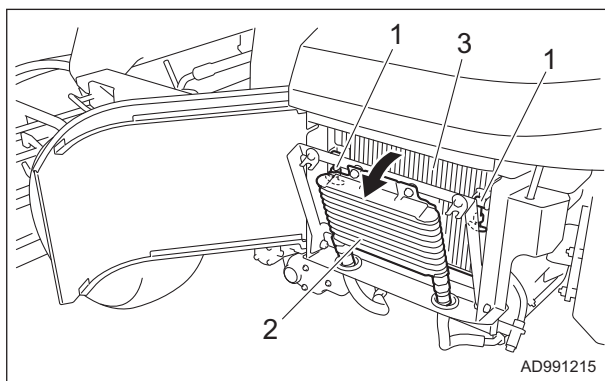


Cleaning of Radiator_001

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

Handling Instructions

2. Unlock the rubber catches on the left and right of the oil cooler, and then tilt the oil cooler.



Cleaning of Radiator_002

1	Rubber catches
2	Oil cooler
3	Radiator

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

Cleaning Engine-Associated Parts

⚠ Caution

Perform operations after the engine and other parts have sufficiently cooled. Otherwise, you may suffer burns.

1. Clean clippings and remove dirt.
2. Blow compressed air to clean any grass or flammable materials that may be attached on or around the muffler.

Main Vehicle

Cleaning of Oil Cooler

⚠ Caution

Clean after the hydraulic system has sufficiently cooled. Otherwise, you may get burned.

Important

An unclean oil cooler causes malfunction of the hydraulic system.

Important

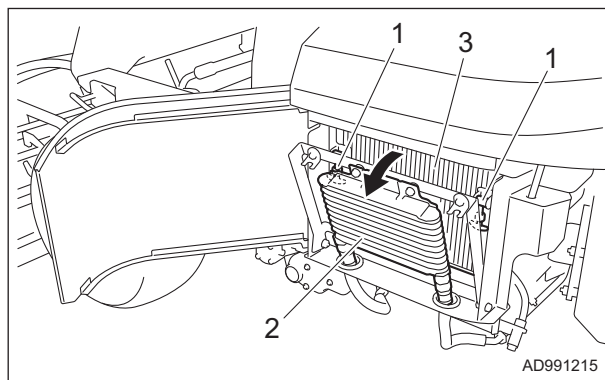
Do not use solid objects, such as a spatula or screwdriver, or high-pressure water to clean the radiator and oil cooler.

Otherwise, special fins or tubes may be damaged, possibly resulting in reduced cooling performance or coolant leakage.

If the oil cooler is contaminated with dust, be sure to clean it.

Especially after operating the machine in a dusty environment, be sure to remove dust from the oil cooler as soon as possible.

1. Open the radiator cover.
2. Unlock the rubber catches on the left and right of the oil cooler, and then tilt the oil cooler.



Cleaning of Oil Cooler_001

1	Rubber catches
2	Oil cooler
3	Radiator

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

Handling Instructions

Mower Unit

Cleaning of Mower Unit

Important

While cleaning, do not allow water on the sealed parts of the reel shaft. (Avoid high-pressure water cleaning.)

Otherwise, it may cause damage to the machine.

Be sure to clean the mower unit after use.

1. Stop the engine.
2. Carefully clean the front and back of the mower unit with water or compressed air.
3. Remove any grass wrapped around the reel cutter (cutting cylinder).

Tightening Torques Page 6-2

Standard Tightening Torques Page 6-2

Principal Tightening Torques Page 6-5

Maintenance Schedule Page 6-9

Appended Table

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.

Appended Table

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

Appended Table

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."

Appended Table

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 (G, 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

Appended Table

Principal Tightening Torques

Tightening Torque by Model

LM311

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 frame		K0010080202	Bolt, HT M8-20	23 - 38	234.53 - 387.49	203.57 - 336.34	-
Engine coupling	Joint	K0010080152	Bolt, HT M8-15	23 - 38	234.53 - 387.49	203.57 - 336.34	-
		K0010080252	Bolt, HT M8-25	23 - 38	234.53 - 387.49	203.57 - 336.34	-
	Pump joint	K001A100351	Bolt, 13T W/Hex hole M10-35	60 - 70	611.82 - 713.79	531.06 - 619.57	-
Diesel engine	Engine bracket	K0011100252	Bolt, HT P1.25 M10-25	45 - 57	1835.46 - 2039.40	1593.18 - 1770.20	-
	Wire mounting bracket	K0011100302	Bolt, HT P1.25 M10-30	45 - 57	1835.46 - 2039.40	1593.18 - 1770.20	-
	Muffler mounting bracket	K0011100302	Bolt, HT P1.25 M10-30	45 - 57	1835.46 - 2039.40	1593.18 - 1770.20	-
	Flywheel joint	K0010080202	Bolt, HT M8-20	23 - 38	234.53 - 387.49	203.57 - 336.34	-
	Electric components for engine	-	Starter B terminal (M8)	5.9 - 11.7	60.16 - 119.30	52.22 - 103.56	-
		-	Alternator B terminal (M6)	5.9 - 9.8	60.16 - 99.93	52.22 - 86.74	-
		-	Glow plug connection terminal nut (M4)	1.0 - 1.8	10.20 - 18.35	8.85 - 15.93	-
Front wheel	Motor	K0000120452	Bolt, M12-45	52 - 67	530.24 - 683.20	460.25 - 593.02	-
	Wheel	K0014120502	Bolt, HT P1.5 M12-50	110	1121.69	973.61	-
	Wheel mounting base	K0138240002	Nut, high slotted P1.5 M24	180 - 200	1835.46 - 2039.40	1593.18 - 1770.20	-
3WD rear wheel	Motor	K0000120502	Bolt, M12-50	52 - 67	530.24 - 683.20	460.25 - 593.02	-
	Wheel	K0014121102	Bolt, HT P1.5 M12-110	110	1121.69	973.61	-
	Wheel mounting base	K0138240002	Nut, high slotted P1.5 M24	180 - 200	1835.46 - 2039.40	1593.18 - 1770.20	-

Appended Table

Location		Code	Part name	Tightening torque			Thread locking adhesive
				N-m	kgf-cm	lb-in	
3WD rear wheel	Brake Assy	K0010080252	Bolt, HT M8-25	14 - 19	142.76 - 193.74	123.91 - 168.17	-
	Brake drum	K0010100302	Bolt, HT M10-30	45 - 57	1835.46 - 2039.40	1593.18 - 1770.20	-
2WD rear wheel	Wheel	K0010120302	Bolt, HT P1.75 M12-30	67 - 85	683.20 -	683.20 -	
	Brake drum	K0010100302	Bolt, HT M10-30	45 - 57	1835.46 - 2039.40	1593.18 - 1770.20	-
Mower unit	Reel shaft	LM315GB2101Z0	Gear, 20-teeth	2.5	25.49	22.13	-
	Bed knife (Bottom blade)	K0071000222	Screw, HT + flat head M6-12	7 - 9	71.38 - 91.77	61.96 - 79.66	-
	Groomer reel	K0160000602	Nut, special P1 M17 W/M4	5 - 10	50.99 - 101.97	44.26 - 88.51	-
	Front roller	K6083000042	Pin, stepped M15-19	29 - 38	295.71 - 387.49	256.68 - 336.34	-
		K0071000152	Bolt, left-handed thread	29 - 38	295.71 - 387.49	256.68 - 336.34	-
		LM315GA1835Z0	Bolt, sus mounting mower (LH)	20	203.94	177.02	-
		LM315GA1836Z0	Bolt, sus mounting mower (RH)	20	203.94	177.02	-
	Groomer mounting	K6084000192	Screw	18	183.55	159.32	-
	CR brush	LM315GC7603Z2	Pulley, reel shaft	-	-	-	○
ROPS pillar right/left		K0010120402	Bolt, HT M12-40	104 - 134	1,060.49 - 1,366.40	920.5 - 1,186.3	-
Steering wheel		K0105160002	Nut, P1.5 M16-3	88	897.34	778.89	-
Proximity switch NO V-in		K0100050002	Nut, M5	2.5	25.49	22.13	-

Appended Table

Daily Check List

- . . . Inspect, adjust, supply, clean (first time)
- . . . Inspect, adjust, supply, clean
- . . . Replace (first time)
- △ . . . Replace

Maintenance Item			Before Work	After Work	Remarks
Engine	*1	Check engine oil	○		
	*1	Check fuel	○		
		Check fuel filter	○		
	*1	Check coolant	○		
	*1	Check air cleaner	○		
		Check radiator cover	○		
		Check radiator	○		
		Check engine area	○		
		Clean radiator cover		○	
	*1	Clean radiator		○	
		Clean engine area		○	
Main vehicle		Check hydraulic oil	○		
		Check tire	○		
	*2	Check battery	○		
		Check oil cooler	○		
		Check cover	○		
		Check wire	○		
		Check traveling pedal	○		
		Check brake lever	○		
		Check brake	○		
		Check joint boot	○		
		Check oil or water leaks	○		
		Check ball proof net	○		
		Check machine exterior	○		
		Check bolts and nuts	○		
		Check hour meter	○		
		Check water temperature gauge	○		
		Check pilot lamp	○		
		Check interlock system	○		
		Check steering wheel	○		
		Check light	○		
		Check grass catcher	○		
		Clean oil cooler		○	
		Clean machine exterior		○	

Appended Table

Maintenance Item			Before Work	After Work	Remarks
Mower unit		Check reel cutter and bed knife	○		
		Check cover	○		
		Check groomer	○		
		Check mower unit appearance	○		
		Check bolts and nuts	○		
		Adjust air adjusting plate	○		
		Clean mower unit		○	

- *1: Refer to the Engine's Owner's Manual.
- *2: Refer to the Battery's Owner's Manual.

Appended Table

Maintenance Schedule

LM311

- . . . Inspect, adjust, supply, clean (first time)
- . . . Inspect, adjust, supply, clean
- ▲ . . . Replace (first time)
- △ . . . Replace

Maintenance Item			Before Work	After Work	Every Week	Every 8 hrs.	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 450 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1500 hrs.	Every 3000 hrs.	every month	every 6 month	Every year	Every 2 years	Every 4 years	When Required	Remarks
Engine	*3	Open air cleaner evacuator valve to remove dust		○	○																			Open valve every week or daily in dusty conditions
	*2.*3	Check fuel hoses and clamp bands					○																	
	*2.*3	Clean air cleaner element						○																Air cleaner should be cleaned more often in dusty conditions than in normal conditions
	*3							○																
	*3	Check of fan belt tightness						○																
	*2.*3									○														
	*3	Check radiator hoses and clamp bands								○									○					Check every 200 hours or every 6 month whichever

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 8 hrs.	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 450 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1500 hrs.	Every 3000 hrs.	every month	every 6 month	Every year	Every 2 years	Every 4 years	When Required	Remarks
Engine	*3	Check radiator hoses and clamp bands								○									○					comes earlier
	*1.*3	Clean fuel tank interior												○										
	*1.*3	Clean water jacket (radiator interior)												○										
	*1.*3	Check valve clearance													○									
	*1.*2.*3	Check of fuel injection nozzle injection pressure														○								
	*1.*2.*3	Check of injection pump															○							
	*3	Change engine oil					▲	△													△			Initial 50 hours, thereafter every 200 hours or every year whichever comes earlier
	*3	Replace engine oil filter cartridge					▲	△													△			Initial 50 hours, thereafter every 200 hours or every year whichever

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 8 hrs.	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 450 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1500 hrs.	Every 3000 hrs.	every month	every 6 month	Every year	Every 2 years	Every 4 years	When Required	Remarks
Engine	*3	Replace engine oil filter cartridge					▲		△											△				comes earlier
	*2.*3	Replace fuel filter cartridge										△												
	*3	Replace fan belt												△							△			Replace every 500 hours or 2 years whichever comes earlier
	*2.*3	Replace air cleaner element																		△				Replace every 6 cleanings or every year whichever comes earlier
	*3	Change radiator coolant (L.L.C.)																			△			
	*3	Replace radiator hoses and clamp bands																				△		
	*1.*2.*3	Replace fuel hoses and clamp bands																				△		
	*1.*2.*3	Replace intake air line (air cleaner hose) and clamp bands																				△		

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 8 hrs.	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 450 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1500 hrs.	Every 3000 hrs.	every month	every 6 month	Every year	Every 2 years	Every 4 years	When Required	Remarks
Main vehicle		Check hydraulic hose (Moving part)	○																					
		Check electrical wiring					●	○																
		Check wheel mounting bolts					●	○																
		Check hydraulic hose (Fixed part) condition						○										○						Check every 100 hours or every month whichever comes earlier
		Grease and lubricate					○																	
		Grease hydraulic motor shaft of the mower unit								○														
		Replace hydraulic oil						●						○										
		Replace hydraulic suction filter						●						○										
		Replace hydraulic line filter						●						○										
	*4	Replace battery																			△			
	*1	Replace hydraulic hoses																			△			

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 8 hrs.	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 450 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1500 hrs.	Every 3000 hrs.	every month	every 6 month	Every year	Every 2 years	Every 4 years	When Required	Remarks
Main vehicle	*1	(Moving part)																			△			
	*1.*5	Replace hydraulic hoses (Moving part) relating to steering																			△			
	*1	Replace hydraulic hoses (Fixed part)																				△		
	*1	Replace brake cables																					△	
	*1	Replace traveling cable																					△	
		Replace throttle wire																					△	
	*1	Replace brake shoe																					△	
Mower unit		Check blade engagement	○																					
		Check cutting height	○																					
		Check groomer height	○																					
		Grease				○	○																	Maintenance schedules differ according to greasing points
		Clean and grease cam bush of the bed knife											○							○				Every 500 hours or every

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 8 hrs.	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 450 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1500 hrs.	Every 3000 hrs.	every month	every 6 month	Every year	Every 2 years	Every 4 years	When Required	Remarks	
Mower unit		Clean and grease cam bush of the bed knife												O						O					year whichever comes earlier, and when replacing a bedknife additionally
		Backlap																					O		
		Engage blade																					O		
		Adjust cutting height																					O		
		Adjust groomer																					O		
		Adjust the position of the mower hook pipe																					O		
		Adjust mower towing rod																					O		
		Adjust cutter adjustment spring																					O		
		Adjust cam																					O		
		Grind reel cutter																					O		
		Replace bearing in the gear case																			Δ				
		Replace bearing of the front and rear rollers																			Δ				

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 8 hrs.	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 450 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1500 hrs.	Every 3000 hrs.	every month	every 6 month	Every year	Every 2 years	Every 4 years	When Required	Remarks
Mower unit		Replace oil seal in the gear case																		△				
		Replace oil seal of the front and rear rollers																		△				
		Replace grease in the gear case																		△				

- *1: Consult your local Baroness Dealer or local KUBOTA Dealer for this service.
- The items above (*2 marked) are registered as emission related critical parts by KUBOTA in the U.S. EPA nonroad emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction. Please see the Engine's Warranty Statement in detail.
- *3: Refer to the Engine's Owner's Manual.
- *4: Refer to the Battery's Owner's Manual.
- *5: Be sure to replace hydraulic hoses for steering cylinder and hydraulic hoses for hydraulic motor of wheel relating to steering every two years.
- The values for consumables are not guaranteed.

Appended Table

BARONESS[®]
Q u a l i t y o n D e m a n d

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