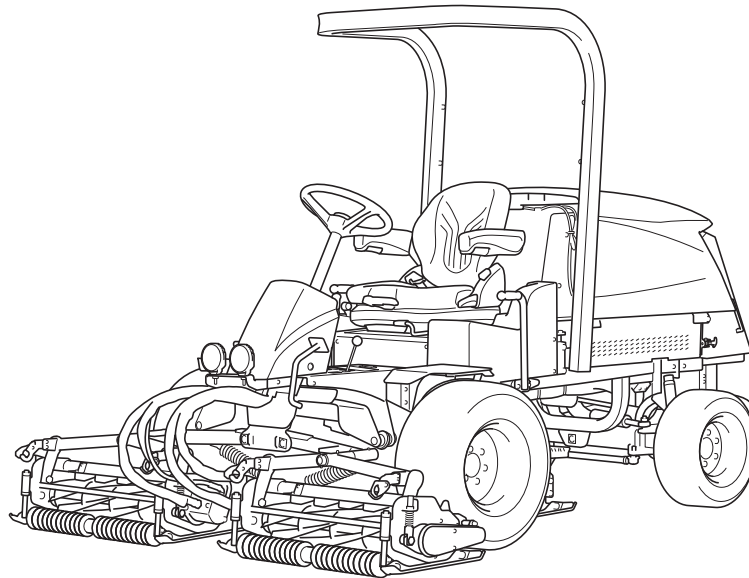


LM351

3-Unit Reel Mower

Owner's Operating Manual



Serial No. LM351: 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.

EU Regulations

(For EU)

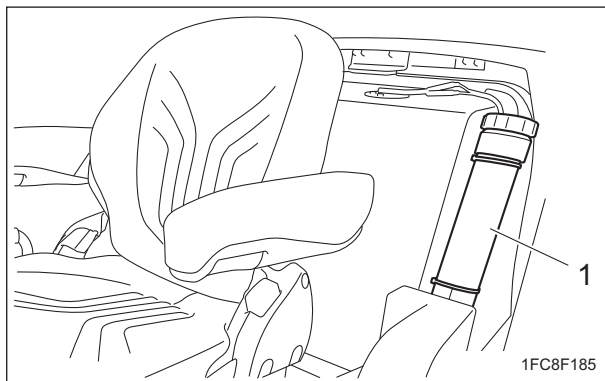
This product complies with all relevant EU Regulations.

For more information, please refer to the 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 left side of the fuel tank.

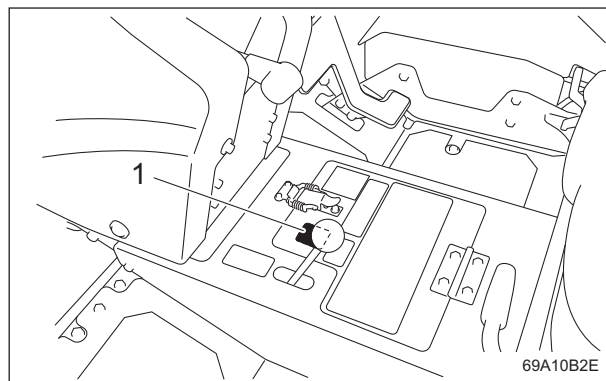


Keeping the Owner's Operating Manual_001

1	Box
---	-----

QR Code

A QR code label is affixed on the machine.



QR Code_001

1	QR code label
---	---------------

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/LM351>



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.


 696cq5-001	Warning symbol
---	----------------

This symbol indicates the articles regarding “Danger,” “Warning,” or “Caution.” Those articles describe important safety precautions and so read them carefully to understand completely before operating the machine.


Failure to adequately follow these safety precautions may cause an accident.

 **Danger**

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

 **Warning**

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

 **Caution**

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

Important

This symbol indicates precautions on the mechanism of the machine.

Precautionary Statement

Caution

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

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

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

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

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

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

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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. If the handlebar has noticeable play, be sure to adjust or repair them before operating the machine.
9. Replace faulty mufflers.
10. On multi-cylinder/multi-reel machines, take care as rotating one cylinder/reel can cause other cylinders/reels to rotate.
6. Keep hands and feet away from the rotating parts.
7. Do not carry passengers.
8. Never operate while people, especially children, or pets are nearby.
9. Only operate in good light, keeping away from holes and hidden hazards.
10. Do not operate the machine when there is the risk of lightning.
11. Do not stop or start suddenly.
12. Look behind and down before backing up to be sure of a clear path.
13. Slow down and use caution when making turns and crossing roads and sidewalks.
14. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
15. Do not take your eyes off the road ahead.
Do not operate the machine with no hands.
16. Remember there is no such thing as a safe slope.
Travel on grass slopes requires particular care.
To guard against overturning, follow these instructions.

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.
- [1] Do not stop or start suddenly when going up or downhill.
- [2] Engage clutch slowly, always keep machine in gear, especially when traveling downhill.
- [3] Machine speeds should be kept low on slopes and during turns.
- [4] Stay alert for humps and hollows and other hidden hazards.
17. Never use the machine on a slope with an angle of gradient that is greater than that specified or in a place where there is a danger of the machine slipping.
18. Use extra care while operating machine with a grass catcher or other attachments.
They can affect the stability of the machine.
19. Disengage drive to the cutting unit(s), when other than operating.
20. Do the following before leaving the operator's position.
 - [1] Stop on level ground.
 - [2] Disengage the all drives.
 - [3] Set the parking brake.
 - [4] Stop the engine.
 - [5] Remove the ignition key.

Safety

21. Stop the engine in the following conditions.
 - [1] Before refuelling.
 - [2] Before removing the grass catcher.
 - [3] Before making height or depth adjustment unless adjustment can be made from the operator's position.
 - [4] Before clearing blockages.
 - [5] Before checking, cleaning or working on the machine.
 - [6] After striking a foreign object or if an abnormal vibration occurs.
Inspect the machine for damage and make repairs before restarting and operating the equipment.
22. Reduce the throttle setting during engine run-out.
23. Do not direct discharge material toward anyone.
Avoid discharging material against a wall or obstruction.
Material may ricochet back toward the operator.
24. Take care when loading or unloading the machine into a trailer or a truck.
Load or unload the machine in a flat and safe place.
Before loading or unloading, set the parking brake on the truck or trailer, stop the engine, and chock the wheels.
When transporting the machine on a truck or a trailer, set the parking brake, stop the engine, and fasten the machine to the truck with a rope or other suitable restraining device that has sufficient strength.
When using a running board, select one with sufficient strength, length, and width and that will not cause the machine to slip.
25. Close the fuel valve before transporting the machine.

Maintenance

1. Never allow untrained personnel to service machine.
2. Implement the following work before adjusting, cleaning or repairing.
 - [1] Stop the machine on level ground.
 - [2] Disengage drive to the cutting unit(s).
 - [3] Lower the cutting unit(s) and/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.

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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About Waste Disposal Page 2-2

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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Product Overview

Specifications

Specifications

Model			LM351			
Name			3-Unit Reel Mower			
Mower unit type	Type		Roller type		Wheel type	
	#1		30 in		←	
	#2 • #3		26 in		←	
Dimensions	Total length		290 cm	114.17 in	298 cm	117.32 in
	Total width	During operation	208 cm	81.89 in	←	←
		During transport	187 cm	73.62 in	←	←
	Total height	ROPS	193 cm	75.98 in	←	←
		Steering wheel	129 cm	50.79 in	←	←
Weight	Machine (empty fuel tank)	with ROPS	1065 kg	2347.92 lb	←	←
	Grass catchers (for one machine)		17 kg	37.48 lb	-	-
Minimum turning radius			494 cm	194.45 in	←	←
Engine	Model		Kubota D1105-E4B		←	
	Type		Vertical water-cooled 4-cycle diesel engine		←	
	Total displacement		1,123 cm³ (1.123 L)	68.52 cu.in.	←	←
	Maximum output		-		-	
	Rated output		18.5 kW (25.2 PS)/3,000 rpm		←	
Fuel tank capacity			Diesel 38.0 dm³ (38.0 L)	Diesel 10.04 U.S.gals	←	←
Fuel consumption			289 g/kW • h (rated output)	213 g/PS • h (rated output)	←	←
Engine oil capacity			3.0 dm³ (3.0 L)	0.79 U.S.gal.	←	←
Coolant volume			6.0 dm³ (6.0 L)	1.59 U.S.gal.	←	←
Hydraulic tank capacity			24.0 dm³ (24.0 L)	6.34 U.S.gal.	←	←
Transmission oil capacity			-		-	
Operating width (Mowing width)			184 cm	72.44 in	←	←
Operating height (Mowing height)			10.0 - 46.0 mm	0.39 - 1.81 in	20.0 - 50.0 mm	0.79 - 1.97 in
Number of Blades			5,7		5	
Drive	Traveling		HST (2WD/4WD selectable)		←	
	Mowing		Hydraulic		←	
Speed (HST)	Forward		0 - 15.5 km/h	0 - 9.63 mph	←	←
	Reverse		0 - 8.0 km/h	0 - 4.97 mph	←	←
Speed (Mechanical)			-		-	

Product Overview

Efficiency		14,720 m ² /h (10.0 km/h x mowing width x 0.8)	3.60 acres/hour (6.21 mph x mowing width x 0.8)	←	←
Maximum inclination for operation		20 degrees		←	
Tire size	Front wheel	23 x 10.50 - 12		←	
	Rear wheel	18 x 8.50 - 10		←	
Tire pneumatic pressure	Front wheel	120 kPa (1.2 kgf/cm ²)	17 psi	←	←
	Rear wheel	120 kPa (1.2 kgf/cm ²)	17 psi	←	←
Battery		75D23L		←	
Engine plug		-		-	

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

Mower Units

Baroness mower unit that can fit this machine is the model marked with a circle in the "Attachable unit" column.

LM351

Model		Attachable unit	Remarks
LH52	22 in	-	
LH62	22 in	-	
LH66	26 in	-	
LS60	30 in	○	
LS62	22 in	-	
LS66	26 in	○	

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 ISO5395-1:2013.

Sound Power Level

Sound Power Level

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

Vibration Level

Hand-Arm Vibration

This machine was confirmed 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.

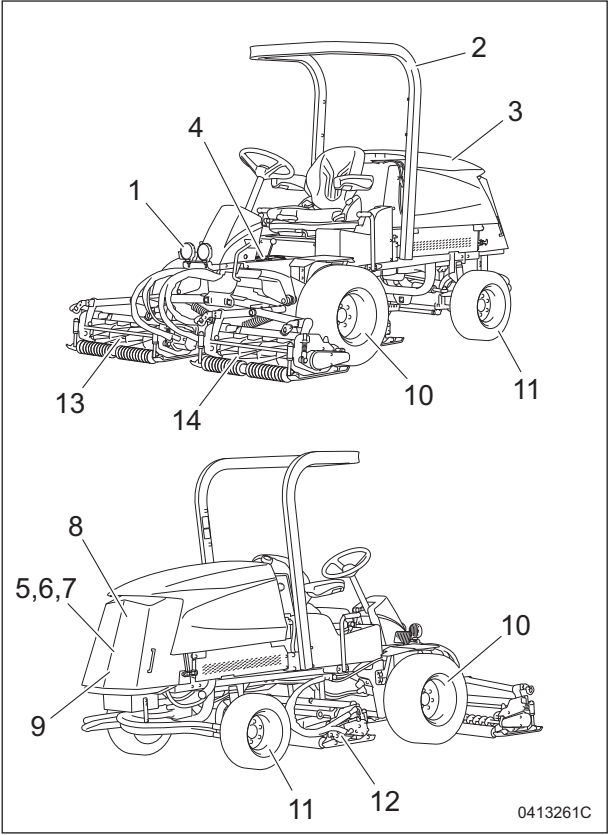
Uncertainty K = 0.1 m/s²

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

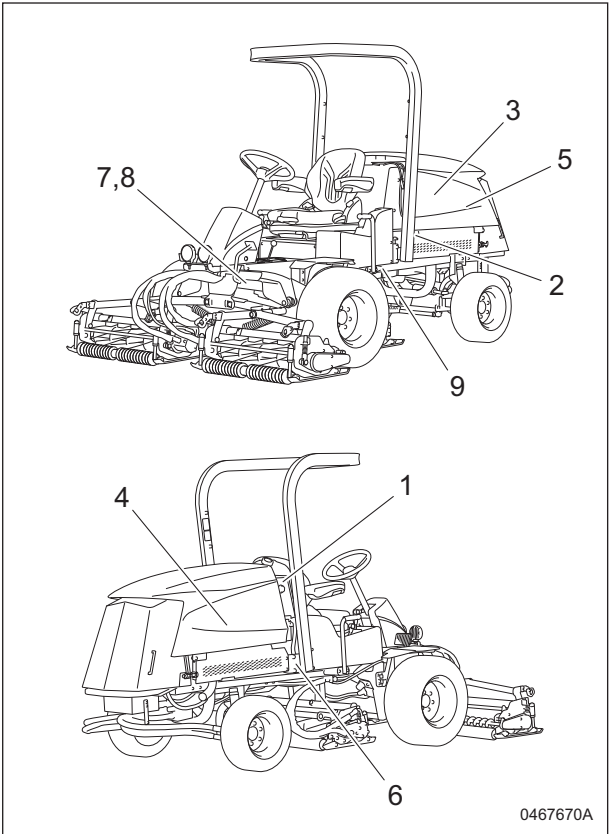
Overall View A



Names of Each Section_001

1	Light
2	ROPS
3	Hood
4	Center cover
5	Radiator cover
6	Radiator
7	Oil cooler
8	Air cleaner
9	Battery
10	Front tire
11	Rear tire
12	Mower unit #1
13	Mower unit #2
14	Mower unit #3

Overall View B

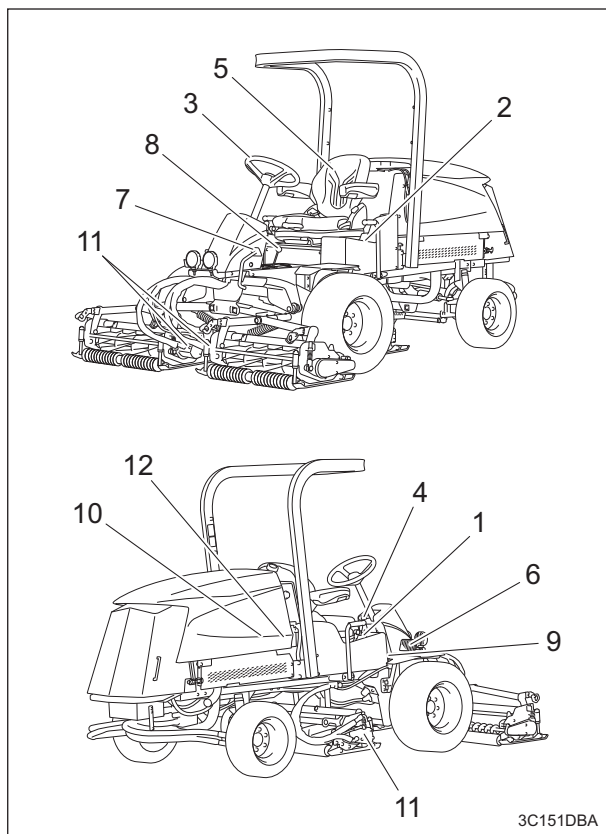


Names of Each Section_002

1	Fuel tank
2	Fuel filter
3	Engine
4	Engine oil filter
5	Reserve tank
6	Water separator
7	Hydraulic tank
8	Hydraulic oil filter (suction filter)
9	Hydraulic oil filter (line filter)

Product Overview

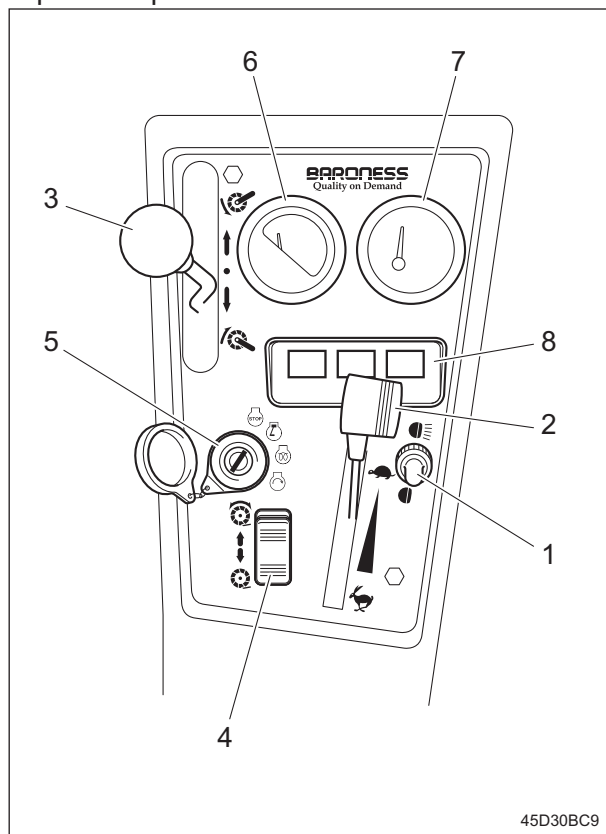
Overall View C



Names of Each Section_003

1	Operation panel
2	USB socket
3	Steering wheel
4	Tilt lever
5	Seat
6	Traveling pedal
7	Brake pedal
8	Parking brake lever
9	Stop valve
10	Reel forward/reverse switch
11	Reel rotation/stop switching lever
12	Hour meter

Operation panel

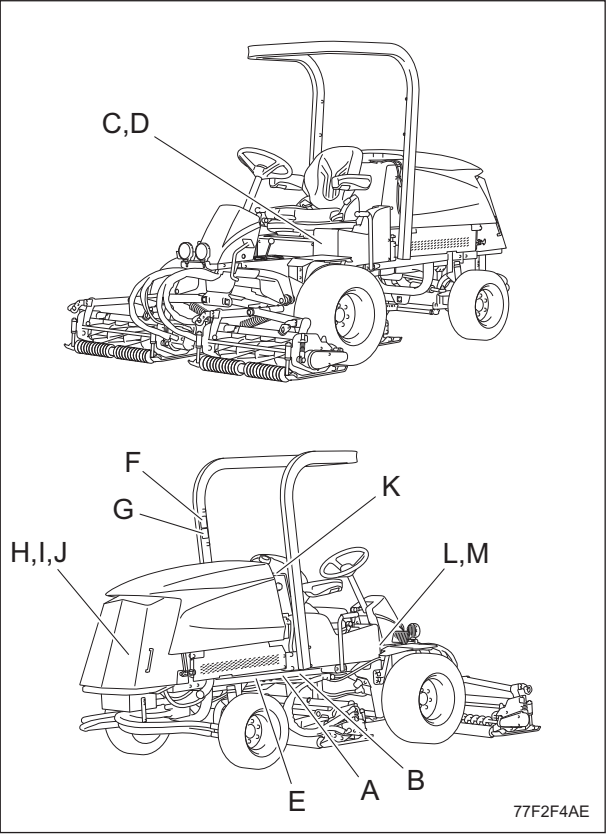


Names of Each Section_004

1	Light switch
2	Throttle lever
3	Mower unit up/down lever
4	Reel rotation switch
5	Key switch
6	Water temperature gauge
7	Fuel gauge
8	Pilot lamp

Regulation Decals

Positions of Regulation Decals



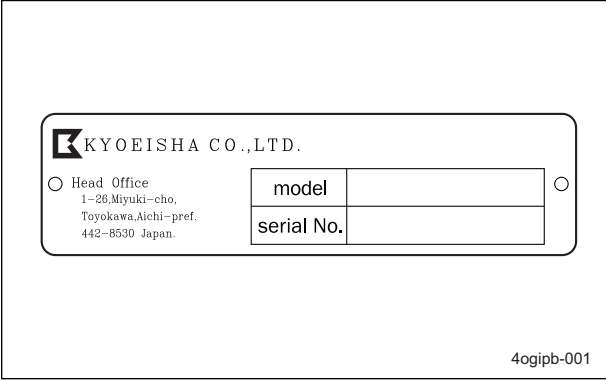
Positions of Regulation Decals_001

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	Diesel instruction decal
L	California Proposition 65 decal (riding type)
M	Spark arrester warning decal

Description of Regulation Decals

Serial Number Plate

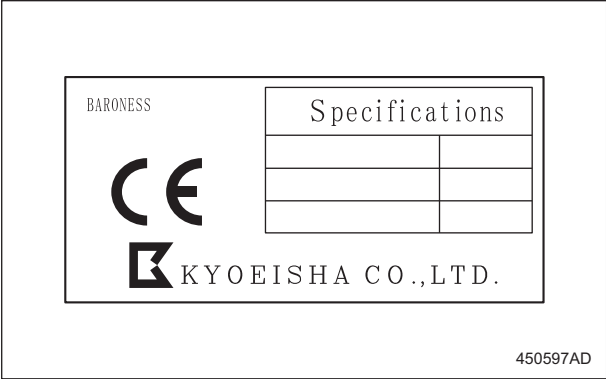
The serial number plate indicates the model and serial number of the machine.



Serial Number Plate_001

Specification Decal

(For EU)
The Specification decal indicates the model and weight, etc.



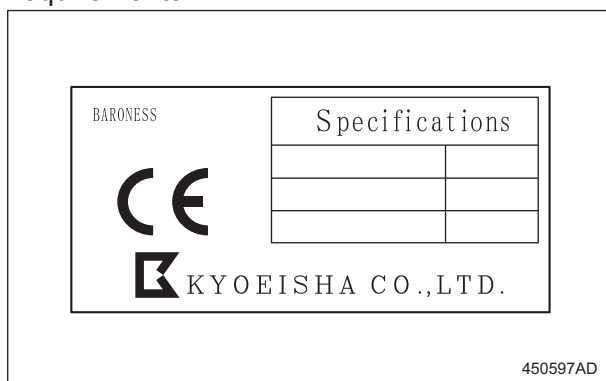
Specification Decal_001

Product Overview

CE Mark

(For EU)

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

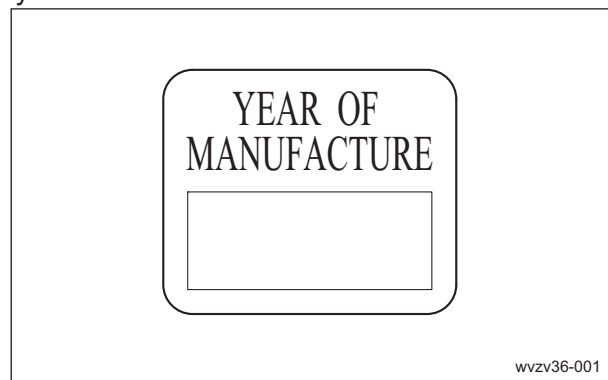


CE Mark_001

Year of Manufacture Decal

(For EU)

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

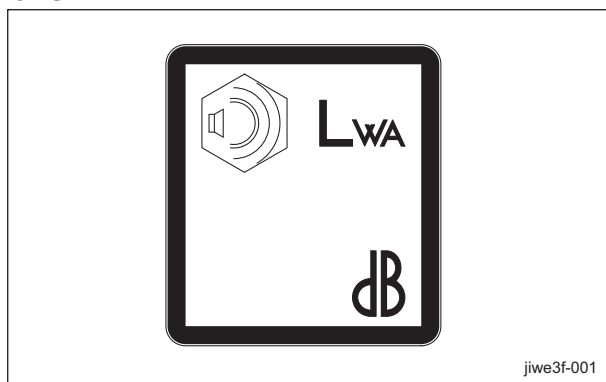


Year of Manufacture Decal_001

Noise Emission Decal

(For EU)

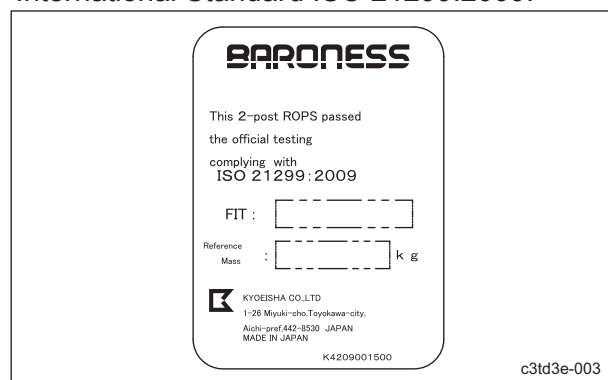
The noise emission decal indicates the sound power level determined by measuring identical machines in accordance with the procedure specified in the regulations of EU or UK.



Noise Emission Decal_001

ROPS Compliance Decal

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

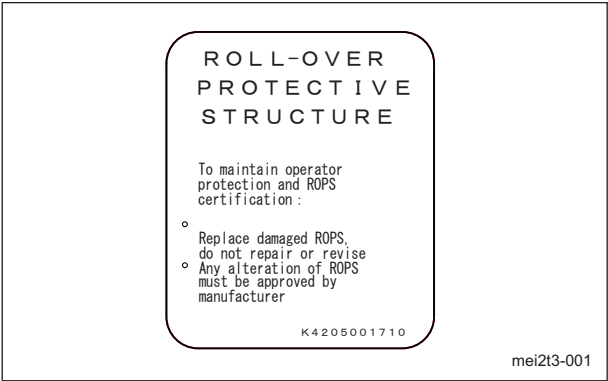


ROPS Compliance Decal_001

ROPS Caution Decal

ROPS caution decal describes the following caution messages.

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

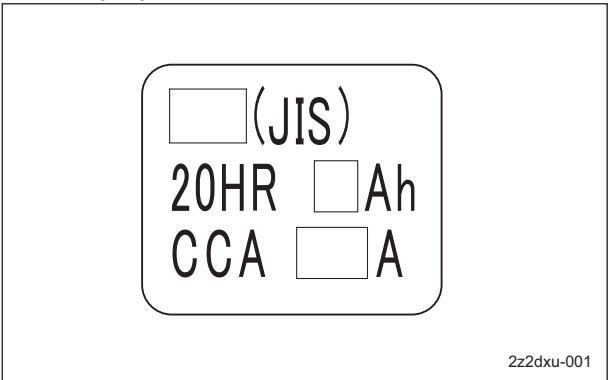


ROPS Caution Decal_001

Battery Capacity Decal

(For EU)

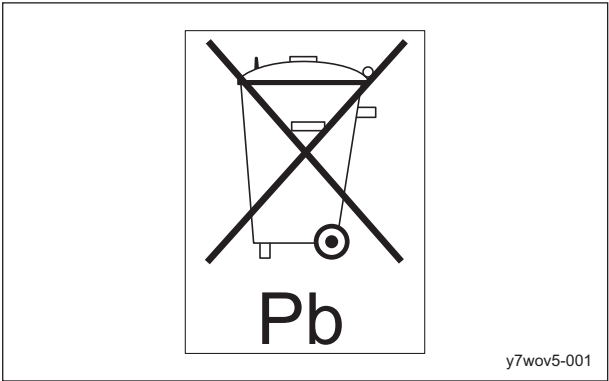
The battery capacity decal indicates the capacity by 20HR and CCA.



Battery Capacity Decal_001

Recycle Decal

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



Recycle Decal_001

(For USA)

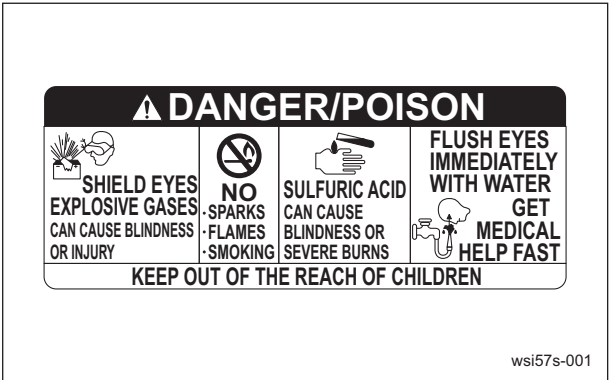


Recycle Decal_002

Battery Danger Decal

(For USA)

Battery Danger Decal describes handling precautions for battery.



Battery Danger Decal_001

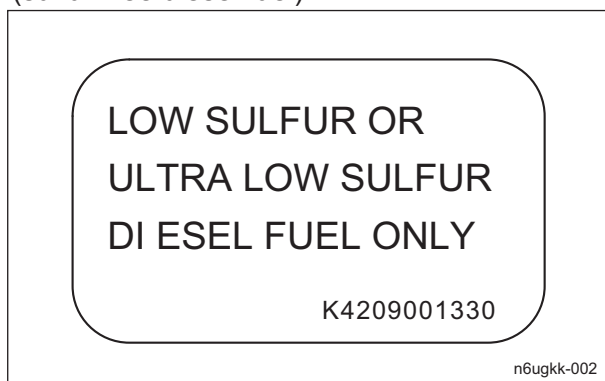
Product Overview

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).

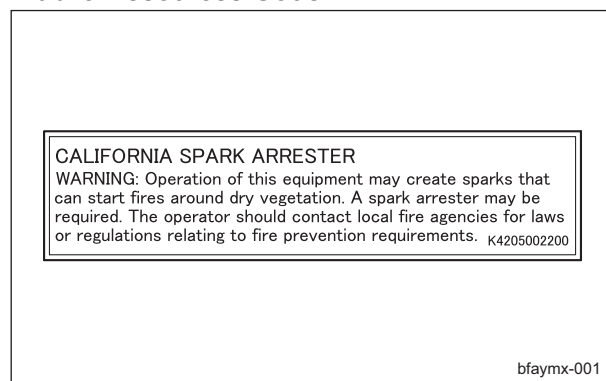


Indicating Diesel Fuel Decal_001

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.

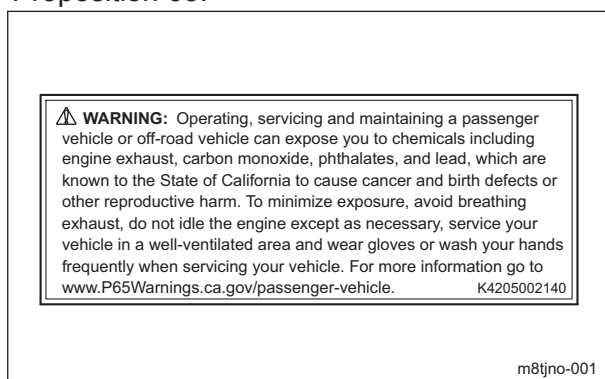


Spark Arrester Warning Decal_001

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

Product Overview

Safety Signs and Instruction Signs

About Safety Signs and Instruction Signs

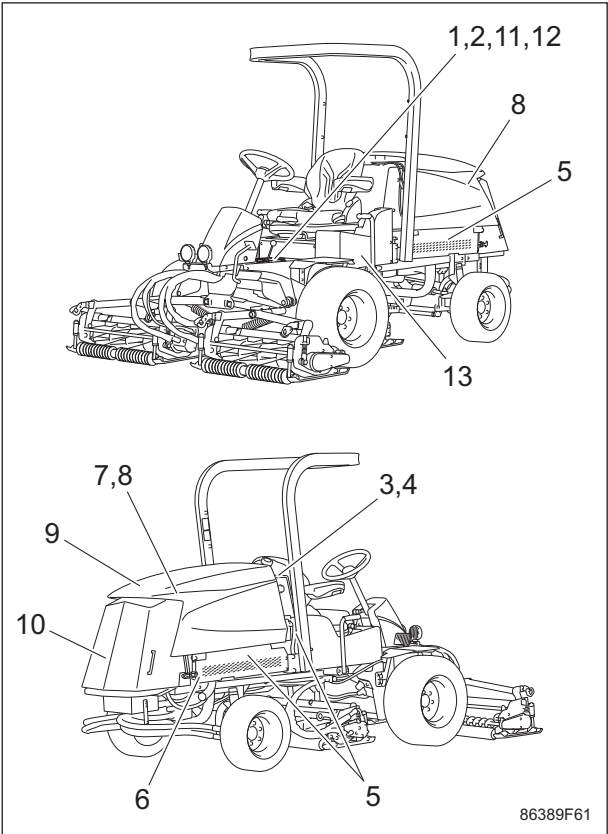
Important

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

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

Positions of Safety Decals and Instruction Decals

1	Operation decal 2
2	Hydraulic oil icon
3	Diesel fuel icon
4	Fire prohibited decal
5	Caution to getting pinched decal
6	Caution to hot parts decal
7	Caution to hot parts decal
8	Caution to rotating object decal
9	Caution for spouting coolant decal
10	Decal on prohibiting high-pressure washing
11	DO NOT STEP caution decal
12	Caution to noise decal
13	Decal on indicating tire pressure



Positions of Safety Decals and Instruction Decals_001

Description of Safety Decals and Instruction Decals

Decal for Operation 2

Decal for operation 2
LM2400-0918Z0

1.



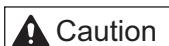
Read the Owner's Operating Manual.

2.



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

3.



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

4.



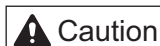
May cut your hand or leg - Keep hands and feet away from moving parts.

5.

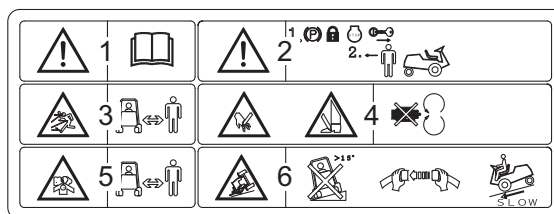


Be careful of exhaust emissions.

6.



Rollover - Do not work on slopes of 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.



myljsv-001

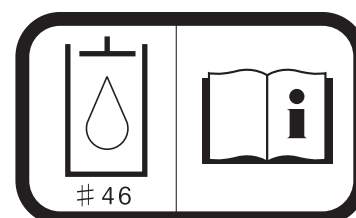
Decal for Operation 2_001

Hydraulic Oil Icon

K4209000980

Hydraulic oil icon

Read the Owner's Operating Manual.

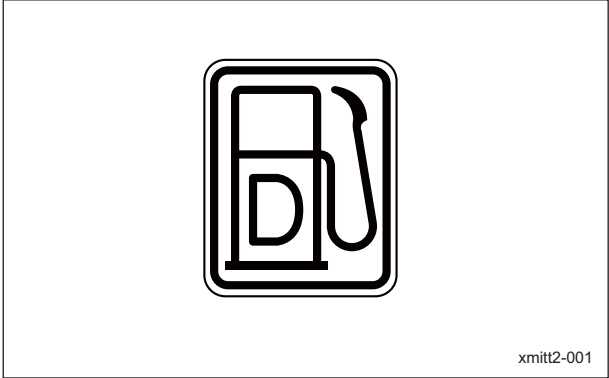


i77xz6-001

Hydraulic Oil Icon_001

Diesel Fuel Icon

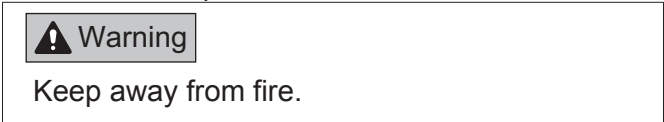
K4209001000
Diesel fuel icon
Use diesel fuel.



Diesel Fuel Icon_001

Fire Prohibited Decal

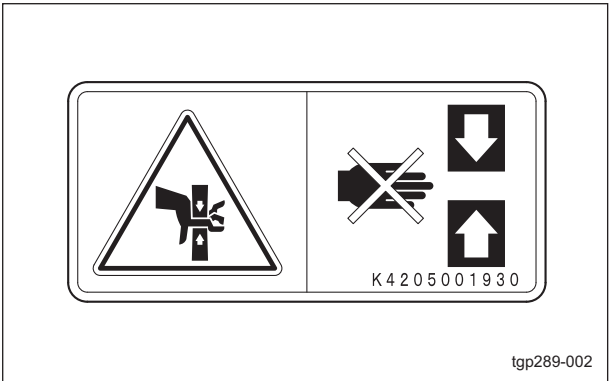
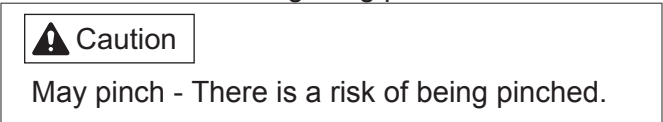
K4205001940
Decal, fire prohibited



Fire Prohibited Decal_001

Caution to Getting Pinched Decal

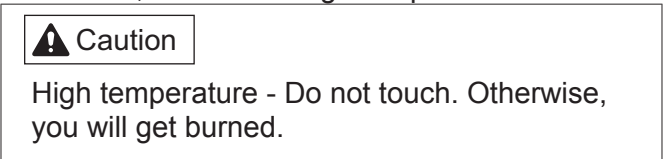
K4205001930
Decal, caution to getting pinched



Caution to Getting Pinched Decal_001

Caution for High Temperatures Decal

K4205001920
Decal, caution for high temperatures

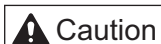


Caution for High Temperatures Decal_001

Caution to Hot Parts Decal

K4205001540

Decal for caution to hot parts



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



xekv4l-001

Caution to Hot Parts Decal_001

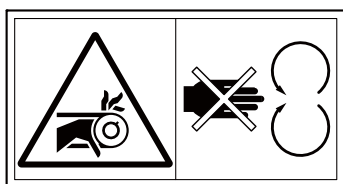
Caution to Rotating Object Decal

K4205001530

Decal, caution to rotating object



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



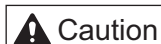
qwsqzx-001

Caution to Rotating Object Decal_001

Caution for Spouting Coolant Decal

K4205001970

Decal, caution for spouting coolant



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



pwb8d2-001

Caution for Spouting Coolant 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

DO NOT STEP Caution Decal

K4209001340

Decal, caution "DO NOT STEP"

 Caution

Do not step.



DO NOT STEP

K 4 2 0 9 0 0 1 3 4 0

tg45gw-001

DO NOT STEP Caution Decal_001

Caution to Noise Decal

K4205001330

DECAL, CAUTION TO NOISE



bwu9po-001

Caution to Noise Decal_001

Decal on Indicating Tire Pressure

LM351--0925Z0

Decal, indicating tire pressure

This indicates tire pressure of this machine.

タイヤ空気圧 Tire pneumatic pressure			
前 輪	Front wheel	後 輪	Rear wheel
120kPa (17psi)		120kPa (17psi)	
Tire size	Front wheel	23×10. 50-12	
	Rear wheel	18× 8. 50-10	

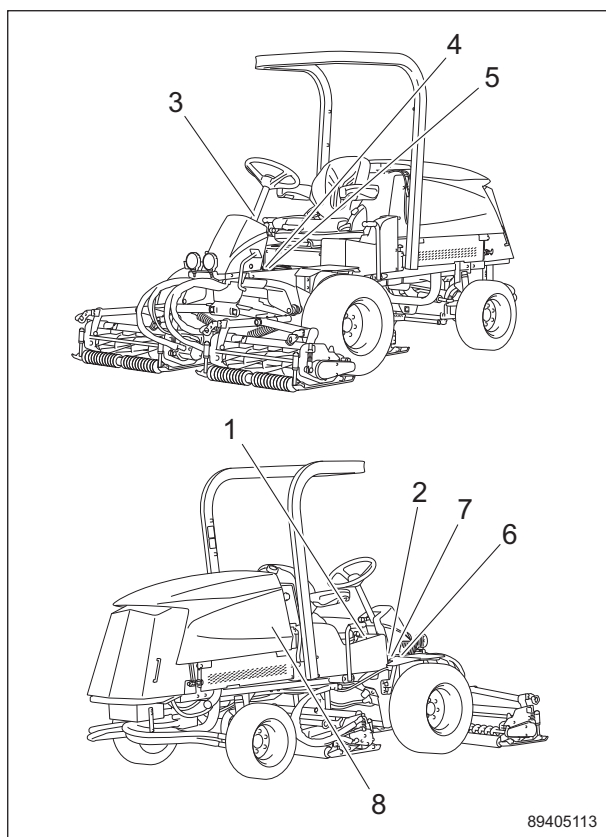
LM351--0925Z0

90749373

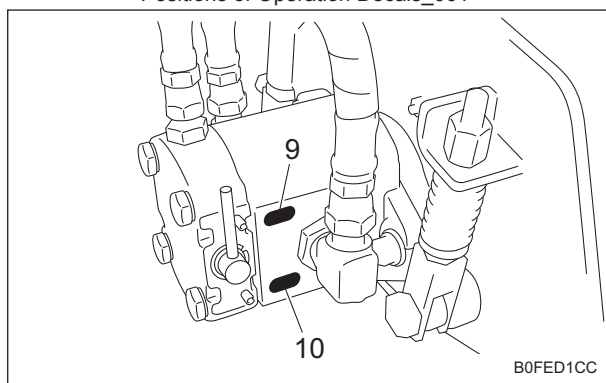
Decal on Indicating Tire Pressure_001

Operation Decals

Positions of Operation Decals



Positions of Operation Decals_001



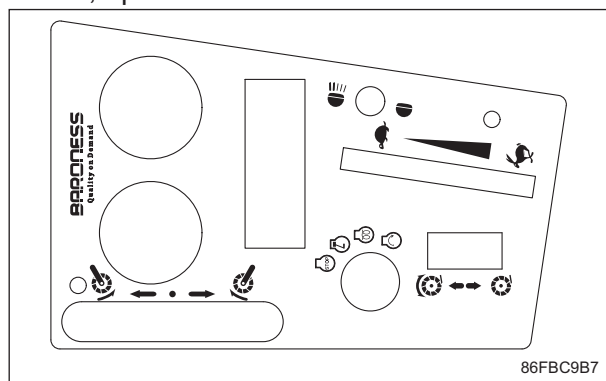
Positions of Operation Decals_002

1	Operation decal
2	Stop valve operation decal
3	Tilt steering decal
4	Parking brake decal
5	BRAKE decal
6	FORWARD decal
7	BACKWARD decal
8	Lapping switch decal
9	Reel rotation decal
10	Reel stop decal

Description of Operation Decals

Operation Decal

LM351--0924Z0
Decal, operation

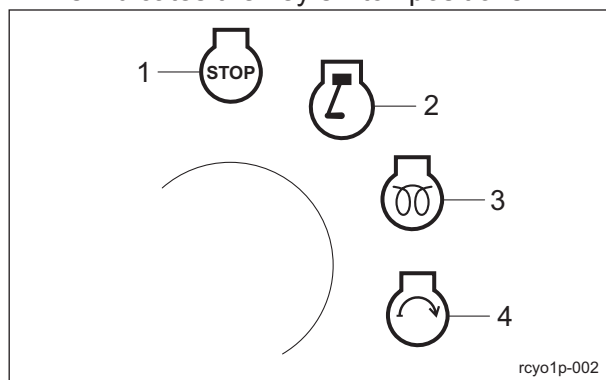


Operation Decal_001

■Key Switch Mark

Key switch mark

This indicates the key switch positions.

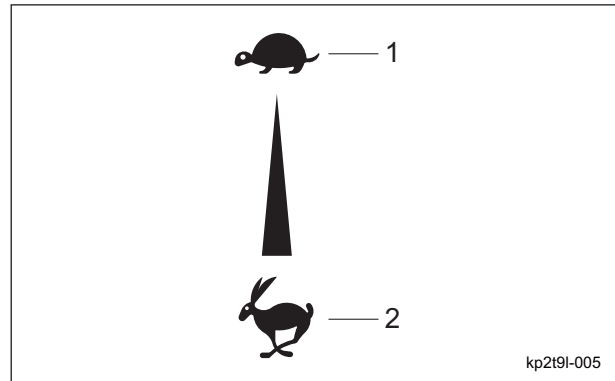


Key Switch Mark_001

1	OFF
2	ON
3	GLOW
4	START

■Engine Rotation Mark

Engine rotation mark
This indicates high/low speed of the engine rotation.

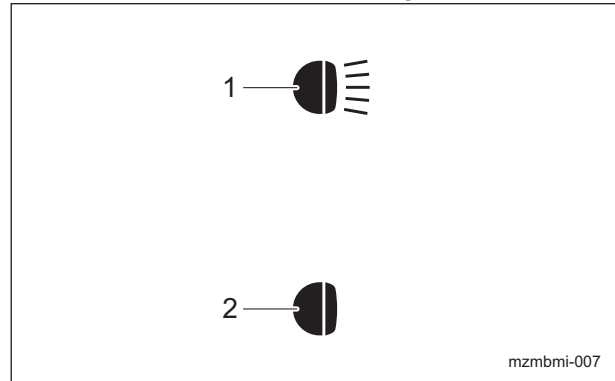


Engine Rotation Mark_001

1	Low speed
2	High speed

■Light Switch Mark

Note:
Depending on the specifications, this function may not be available.
Light switch mark
It illustrates ON/OFF of the light.

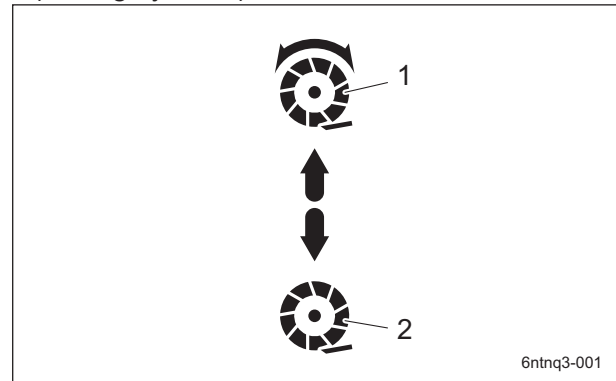


Light Switch Mark_001

1	ON
2	OFF

■Reel Rotation Mark

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

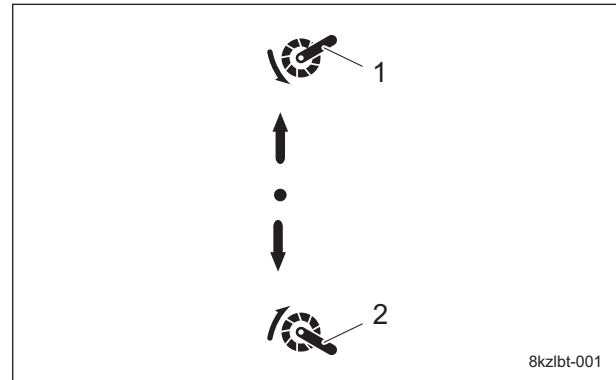


Reel Rotation Mark_001

1	Rotation
2	Stop

■Mower Unit Up/Down Decal

Decal, mower unit up/down
This indicates the Up/Down positions of the mower unit.



Mower Unit Up/Down Decal_001

1	Down
2	Up

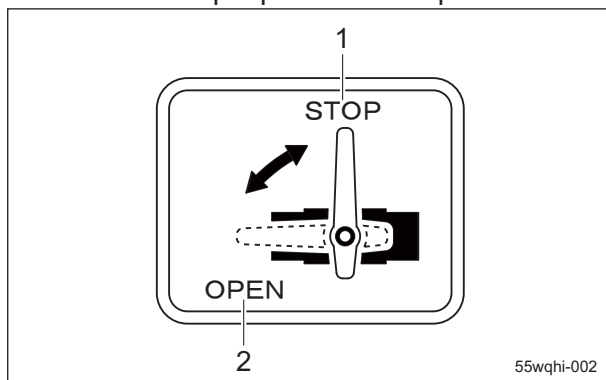
Product Overview

Stop Valve Operation Decal

K4203001290

Stop valve operation decal

It illustrates Stop/Open of the stop valve.



Stop Valve Operation Decal_001

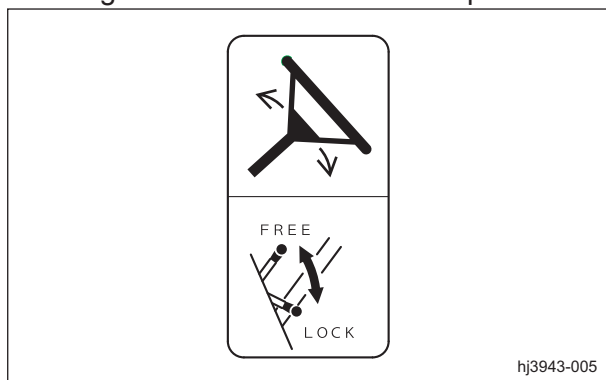
1	Stop
2	Open

Tilt Steering Decal

K4203001560

Decal, tilt steering

This illustrates the tilt directions of the steering wheel and the locked/free positions.



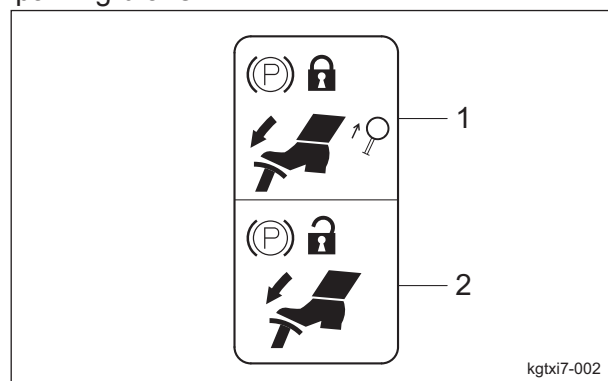
Tilt Steering Decal_001

Parking Brake Decal

K4203001340

Parking brake decal

This shows how to lock and release the parking brake.



Parking Brake Decal_001

1	Lock
2	Release

BRAKE Decal

K4203001450

Decal, BRAKE

This indicates brake.



BRAKE Decal_001

FORWARD Decal

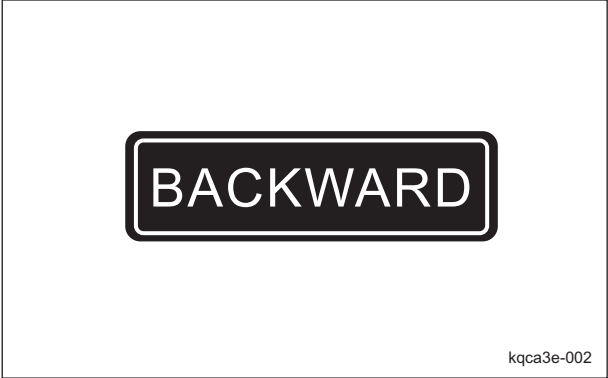
K4203001430
Decal, FORWARD
This indicates forward travel.



FORWARD Decal_001

BACKWARD Decal

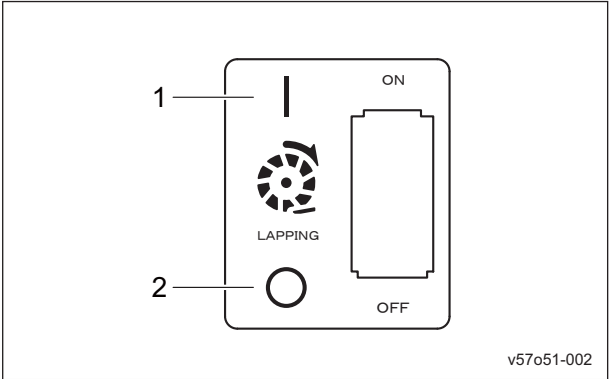
K4203001440
Decal, BACKWARD
This indicates backward travel.



BACKWARD Decal_001

Lapping switch decal

LM331--0556Z0
Lapping switch decal
This indicates the ON/OFF positions for back lapping.

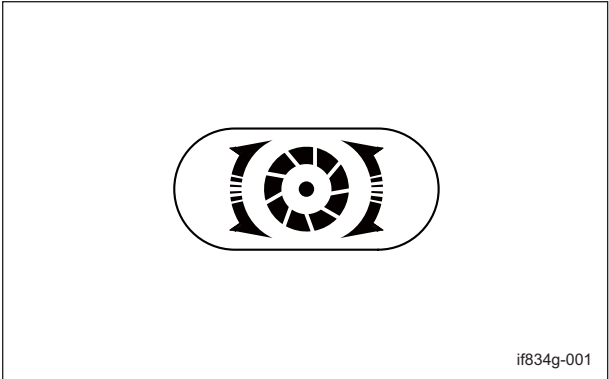


Lapping switch decal_001

1	ON (back lapping rotation)
2	OFF (mowing rotation)

Reel Rotation Decal

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



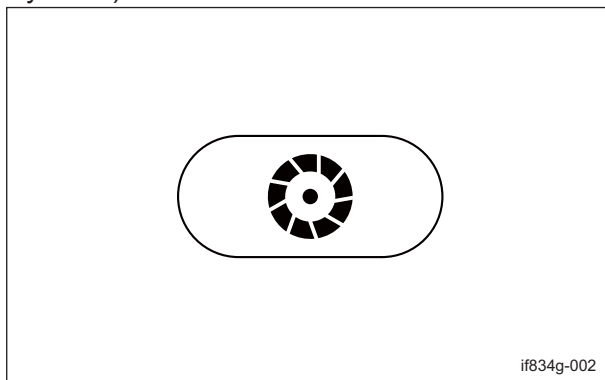
Reel Rotation Decal_001

Reel Stop Decal

K4203001310

Decal, reel stop

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



Reel Stop Decal_001

Product Overview

Description of Functions

Light Switch	Page 4-2
Throttle Lever	Page 4-2
Mower Unit Up/Down Lever	Page 4-2
Reel Rotation Switch	Page 4-3
Stop Valve	Page 4-3
Reel Forward/Reverse Switch	Page 4-4
Key Switch	Page 4-4
USB Socket	Page 4-4
Tilt Lever	Page 4-5
Traveling Pedal	Page 4-5
Pedal Stopper	Page 4-5
Brake Pedal	Page 4-6
Parking Brake Lever	Page 4-6
Reel Rotation/Stop Switching Lever	Page 4-6
Instruments on the Operation Panel	Page 4-7
Water Temperature Gauge	Page 4-7
Fuel Gauge	Page 4-7
Pilot Lamps	Page 4-8
Hour Meter	Page 4-9
Safety Device	Page 4-9
Interlock System	Page 4-9
Warning Mechanisms	Page 4-9
Warning Buzzer	Page 4-9

Description of Functions

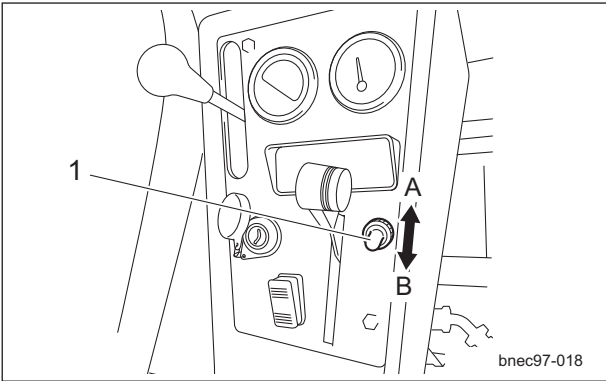
Light Switch

Caution

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

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

Note:
The lights do not turn on when the ignition key is set to the "OFF" position.



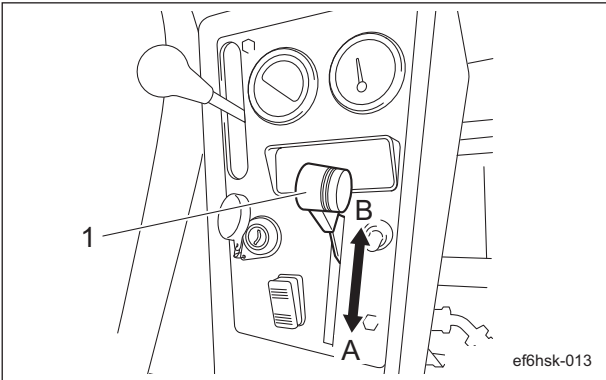
Light Switch_001

1	Light switch
A	ON
B	OFF

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

Mower Unit Up/Down Lever

Caution

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

Caution

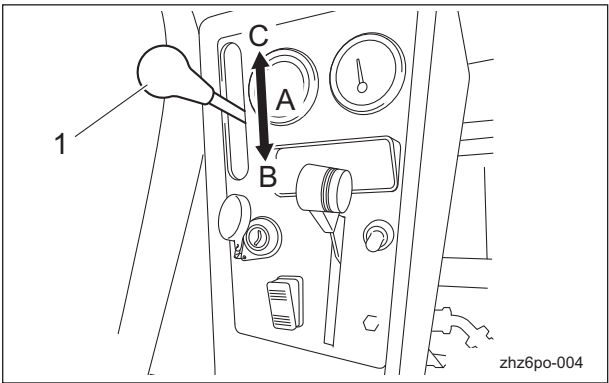
Be careful since shifting the mower unit up/down lever to the "DOWN" position lowers the mower units, even while the engine is stopped.

Important

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

The mower unit up/down lever raises or lowers the mower units.

- 1. Shift the lever to the "DOWN" position to lower all the mower units.
- 2. Shift the lever to the "UP" position to raise all the mower units.



Mower Unit Up/Down Lever_001

1	Mower unit up/down lever
A	Neutral
B	Up
C	Down

Description of Functions

Note:

Shifting mower unit up/down lever to the neutral position or raising the mower units stops the reel cutter (cutting cylinder) rotating even when the reel rotation switch is set to the "Rotate" position.

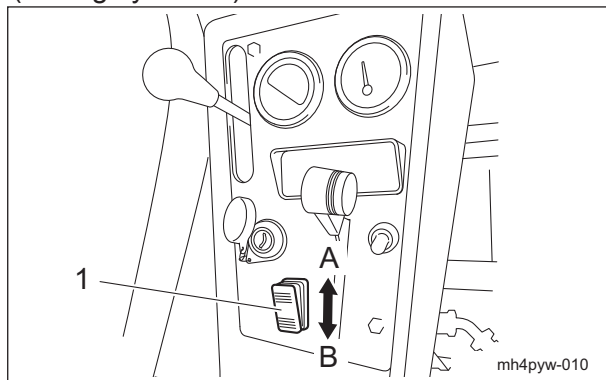
Reel Rotation Switch

⚠ Caution

The reel rotation switch must be set to the "Rotate" position just before you start cutting work.
It must be set to the "Stop" position except when cutting work.

The reel rotation switch operates rotation of the reel cutters (cutting cylinders) of the mower units.

1. Set the reel rotation switch to the "Rotate" position to rotate the reel cutters (cutting cylinders).
2. Set the reel rotation switch to the "Stop" position to stop rotating the reel cutters (cutting cylinders).



Reel Rotation Switch_001

1	Reel rotation switch
A	Rotate
B	Stop

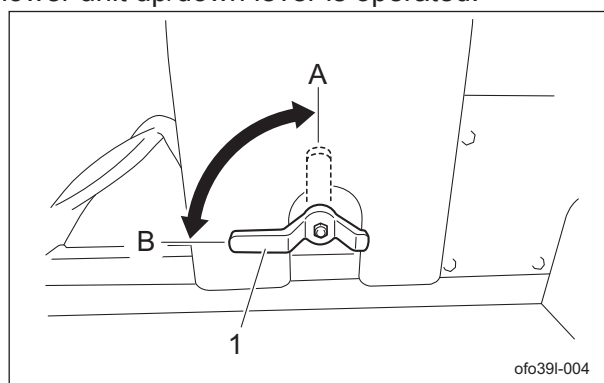
Stop valve prevents all raised mower units from falling.

Setting the stop valve to the "Stop" position while the mower units raised keeps the mower units in the raised position.

Setting the stop valve to the "Stop" position while the mower units lowered keeps the mower units in the lowered position.

Note:

When the stop valve is set to the "Stop" position, mower units will not be raised or lowered even if mower unit up/down lever is operated.



Stop Valve_001

1	Stop valve
A	Stop
B	Open

Stop Valve

⚠ Caution

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

Description of Functions

Reel Forward/Reverse Switch

Important

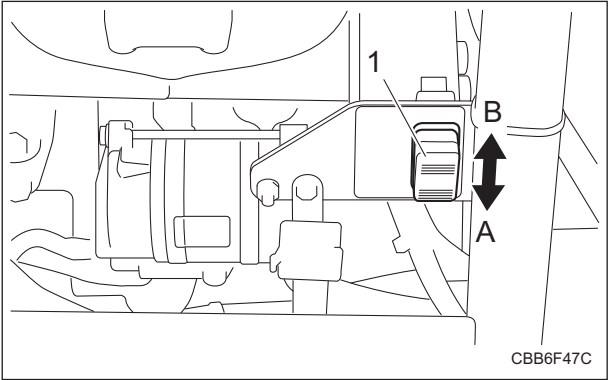
Do not switch the reel forward/reverse switch to the "ON" or "OFF" position while the reel cutter (cutting cylinder) is rotating. Otherwise, the hydraulic system will malfunction.

Important

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

The reel forward/reverse switch switches the rotation direction of the reel cutter (cutting cylinder).

- 1. When the reel forward/reverse switch is set to the "OFF (Forward)" 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 (reverse rotation).

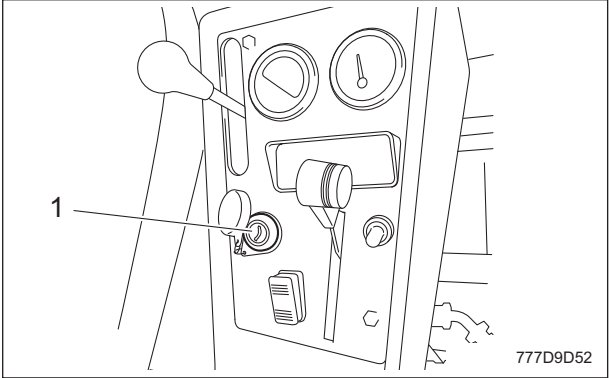


Reel Forward/Reverse Switch_001

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

Key Switch

The key switch is a lock for inserting the ignition key. This is used for starting, running or stopping the engine by turning the ignition key to change the key switch position.



Key Switch_001

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

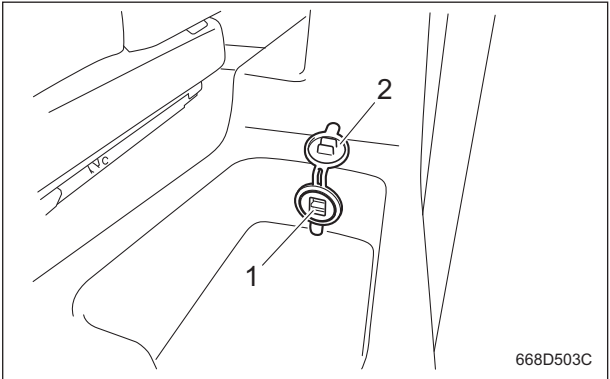
USB Socket

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 is 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.

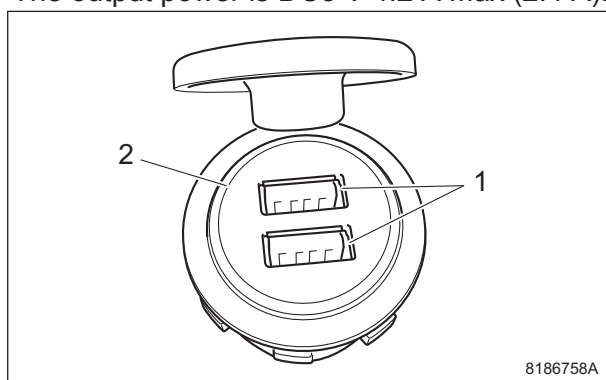


USB Socket_001

1	USB port
2	Protective cover

Description of Functions

3. Select a USB port according to the device connectivity.
The output power is DC5 V 4.2 A Max (2.4 A).



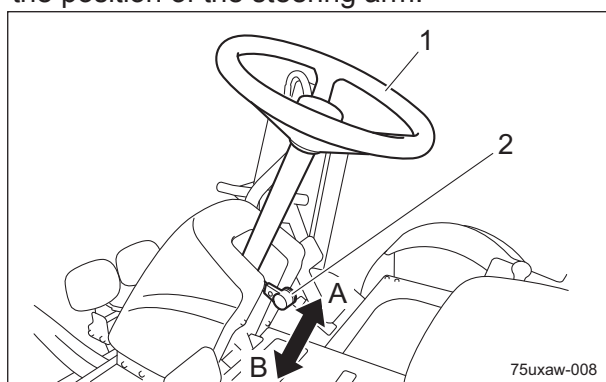
USB Socket_002

1	2.1 A
2	Indicator

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

Tilt Lever

1. Shift the tilt lever to the "Release" position to release the lock and adjust the position of the steering arm.
2. Shift the tilt lever to the "Lock" position to lock the position of the steering arm.



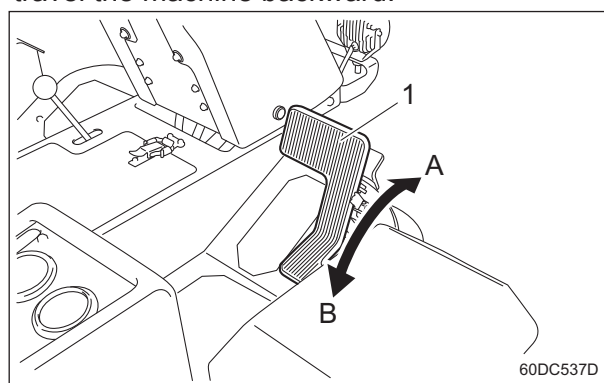
Tilt Lever_001

1	Steering wheel
2	Tilt lever
A	FREE (released)
B	LOCK (locked)

Traveling Pedal

The traveling pedal controls forward and backward operation of the machine.

1. Depress the forward pedal (front side) to travel the machine forward.
2. Depress the backward pedal (rear side) to travel the machine backward.

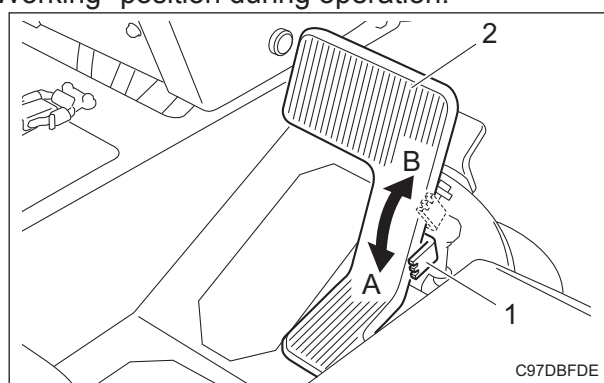


Traveling Pedal_001

1	Traveling pedal
A	Forward
B	Backward

Pedal Stopper

Pedal stopper changes the amount of "Forward" side of traveling pedal can be depressed. Be sure to set the pedal stopper to the "Working" position during operation.



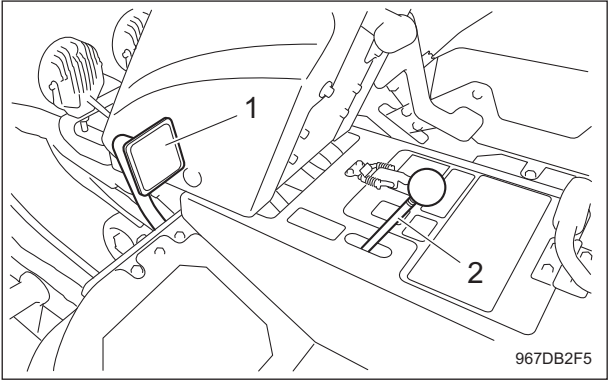
Pedal Stopper_001

1	Pedal stopper
2	Traveling pedal
A	Working
B	Traveling

Description of Functions

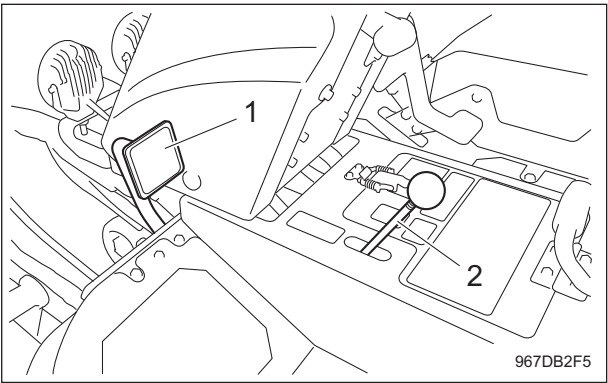
Brake Pedal

The brake pedal is used for stopping the machine.
To stop the machine, depress the brake pedal firmly.



Brake Pedal_001

1	Brake pedal
2	Parking brake lever



Parking Brake Lever_001

1	Brake pedal
2	Parking brake lever

Parking Brake Lever

Caution

Do not park the machine on a slope.

Important

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

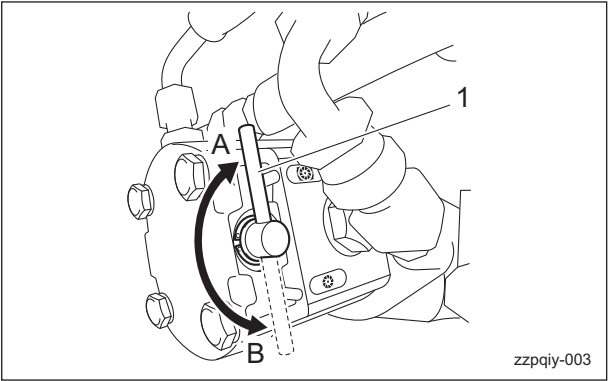
The brake must be applied to lock the brake pedal with the parking brake lever.

1. Applying the parking brake:
- [1] Depress the brake pedal firmly, and pull up the parking brake lever to the top.
 - [2] Make sure the brake pedal is locked, and then take your foot off the pedal.
2. Releasing the parking brake:
- Depress the brake pedal again, and release the lock of the brake pedal.

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. It is used during cutting and back lapping. Shift the lever(s) to the "Rotation" position only for the mower unit(s) to be used for cutting or back lapping. Leave the lever(s) for other mower units in the "Stop" position.

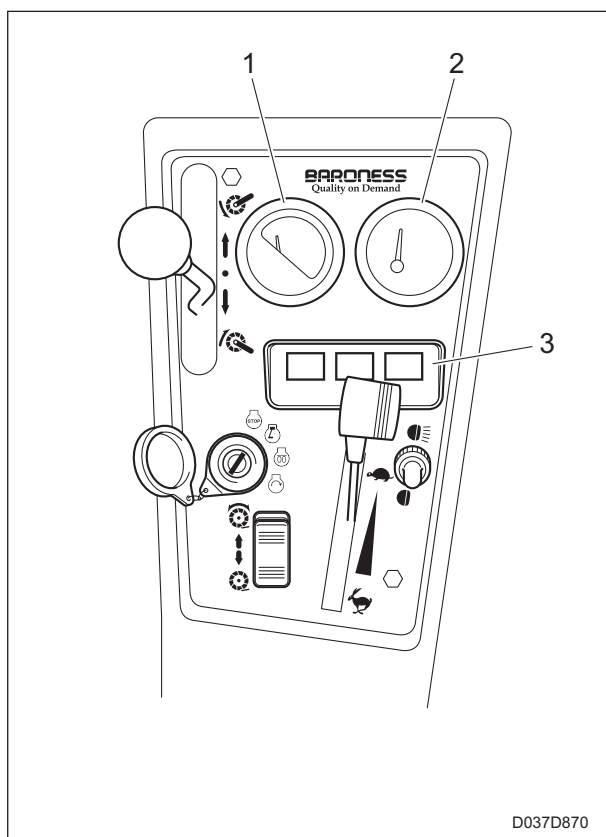


Reel Rotation/Stop Switching Lever_001

1	Reel rotation/stop switching lever
A	Rotation
B	Stop

Description of Functions

Instruments on the Operation Panel



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Instruments on the Operation Panel_001

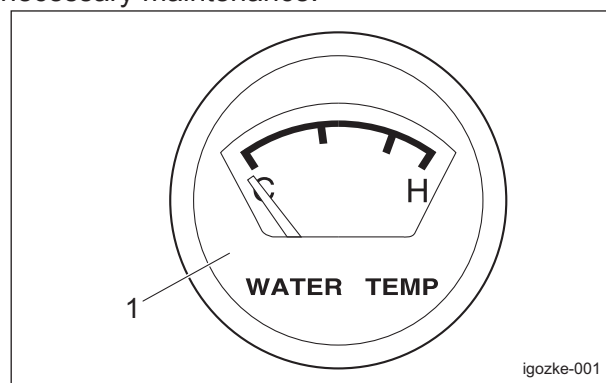
1	Water temperature gauge
2	Fuel gauge
3	Pilot lamps (charge lamp, thermo-start lamp, oil pressure lamp)

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.



igozke-001

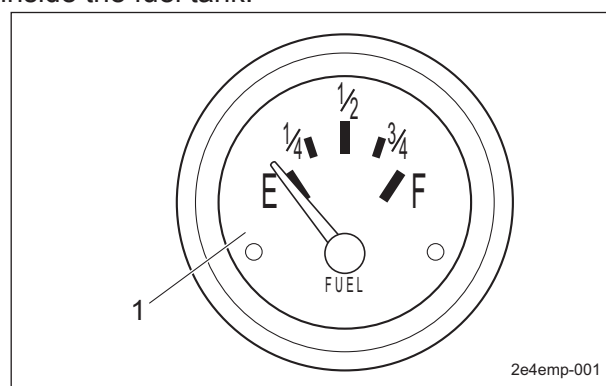
Water Temperature Gauge_001

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

Fuel Gauge

The fuel gauge is located in the operation panel.

This instrument indicates the quantity of fuel inside the fuel tank.



2e4emp-001

Fuel Gauge_001

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

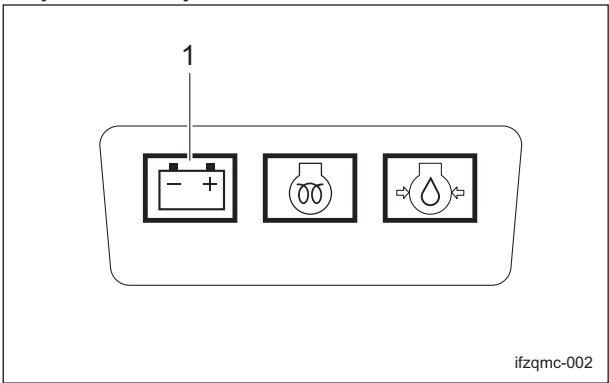
Pilot Lamps

Charge Lamp

The charge lamp is the left pilot lamp located in the operation panel.

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

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



Charge Lamp_001

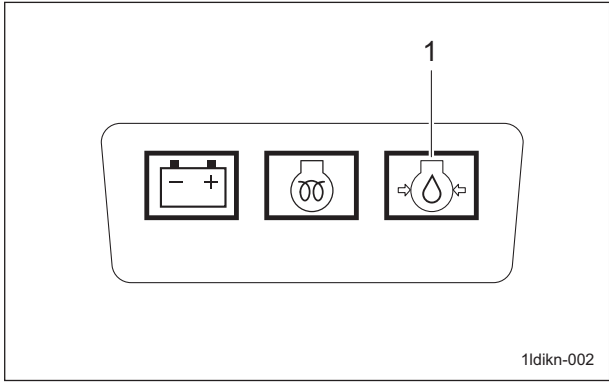
1	Charge lamp
---	-------------

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
---	-------------------

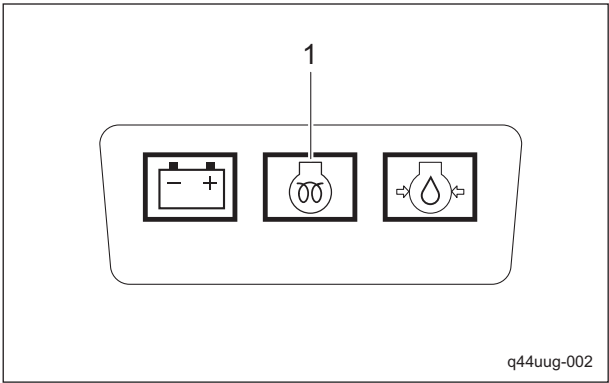
Thermo-Start Lamp

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

Description of Functions

Hour Meter

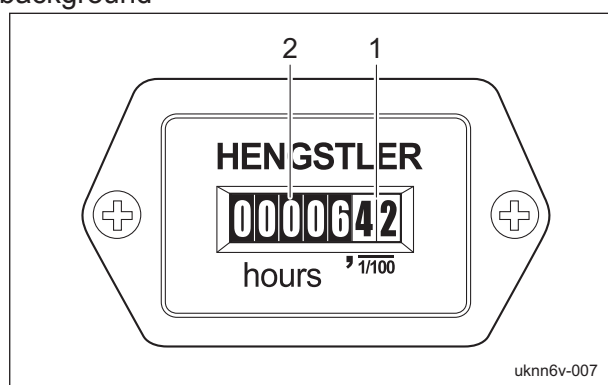
The hour meter indicates the accumulated operation time of the engine.

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

Safety Device

Interlock System

This machine features an interlock system 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 "OFF" position.
 - The traveling pedal is set to the neutral position.
- In the event 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.)

- The reel rotation switch is set to the "Rotate" position.
However, when the reel forward/reverse switch is set to the "ON" position (reverse rotation), the engine does not stop.

Warning Mechanisms

Warning Buzzer

- Overheat Warning Buzzer**
When the water temperature inside the engine exceeds 105 °C (221 °F), the buzzer sounds. (intermittent tone)
If the water temperature gauge indicates a level above the "H" when the buzzer sounds, the engine is overheated.
5 minutes after idling the engine with no load, stop the engine and inspect the machine and perform any necessary maintenance.
- Hydraulic Oil Level Warning Buzzer**
When the oil level in the hydraulic tank decreases from the specified level by approximately 2.8 dm³ (2.8 L), the buzzer sounds. (intermittent tone)
If the water temperature gauge indicates a level below the "H" when the buzzer sounds, hydraulic oil level has decreased.
Stop the engine immediately, and then inspect the machine and perform any necessary maintenance.

Description of Functions

Operations Before ServicePage 5-2

Opening and Closing of Hood Page 5-2

Opening and Closing of Radiator

Cover Page 5-2

Opening and Closing of Underseat

Cover Page 5-3

Opening and Closing of Center

Cover Page 5-3

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Adjustment before Work Page 5-10

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Mounting/DismountingPage 5-11

Mounting/Dismounting Procedure Page 5-11

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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

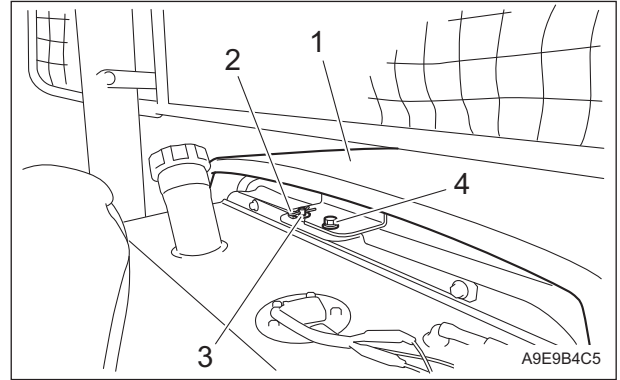
 Caution

Do not open the hood in strong winds.

 Caution

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

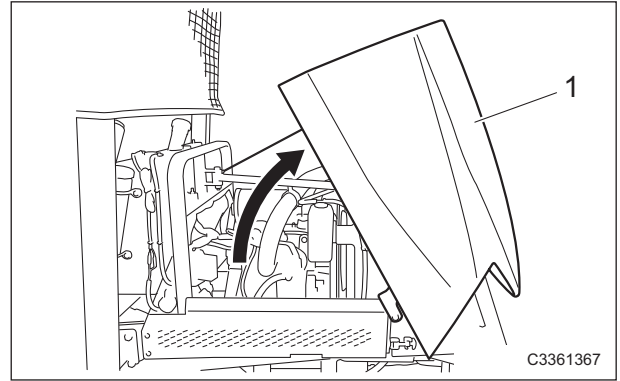
1. Procedure to open the hood:
- [1] Remove the snap pin, then the washer.
 - [2] Remove the bolt.



Opening and Closing of Hood_001

1	Hood
2	Snap pin
3	Washer
4	Bolt

- [3] Lift up the hood.
- [4] Make sure that the hood will not close, and then remove 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.
 - [3] Install the washer, and inset the snap pin.

Opening and Closing of Radiator Cover

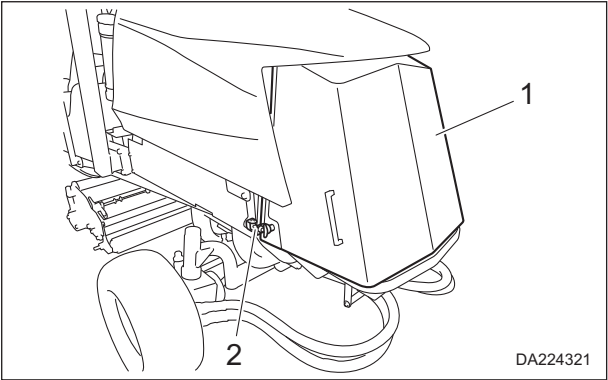
 Caution

Do not open the radiator cover in strong winds.

 Caution

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

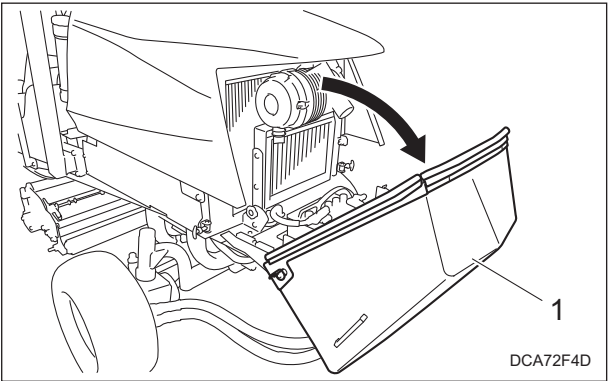
1. Procedure to open the radiator cover:
- [1] Unlock the rubber catch on the right and left side.



Opening and Closing of Radiator Cover_001

1	Radiator cover
2	Rubber catch

- [2] Pull the radiator cover to the back to open it.



Opening and Closing of Radiator Cover_002

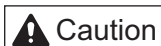
1	Radiator cover
---	----------------

Handling Instructions

2. Procedure to close the radiator cover:

- [1] Close the radiator cover slowly.
- [2] Lock the rubber catch on the right and left side securely.

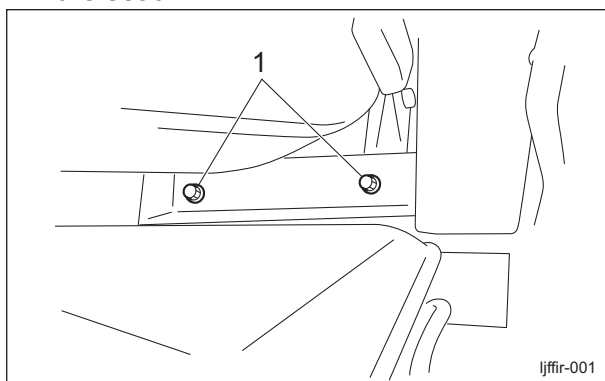
Opening and Closing of Underseat Cover



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

1. Opening procedure

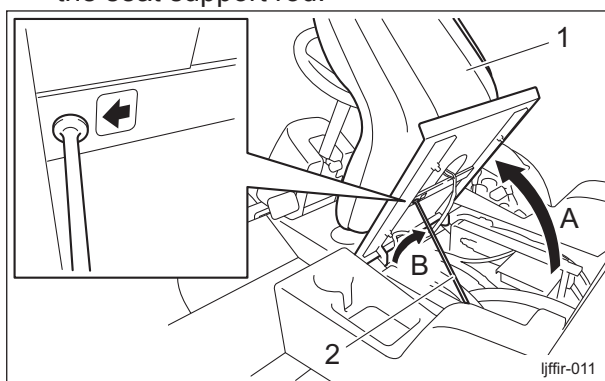
- [1] Bring the seat to the most front position.
- [2] Remove two bolts located on the rear of the seat.



Opening and Closing of Underseat Cover_001

1	Bolt
---	------

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



Opening and Closing of Underseat Cover_002

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

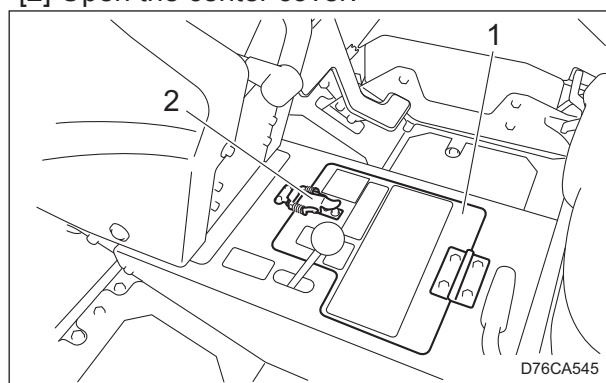
2. Closing procedure

- [1] Remove the seat support rod with the seat held with a hand.
- [2] Lower the seat slowly to close the underseat cover.
- [3] Bring the seat to the frontmost position.
- [4] Install two bolts on the rear of the seat.

Opening and Closing of Center Cover

1. Procedure to open the center cover:

- [1] Release the catch clip.
- [2] Open the center cover.



Opening and Closing of Center Cover_001

1	Center cover
2	Catch clip

2. Procedure to close the center cover:

- [1] Close the center cover.
- [2] Fasten the catch clip securely.

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

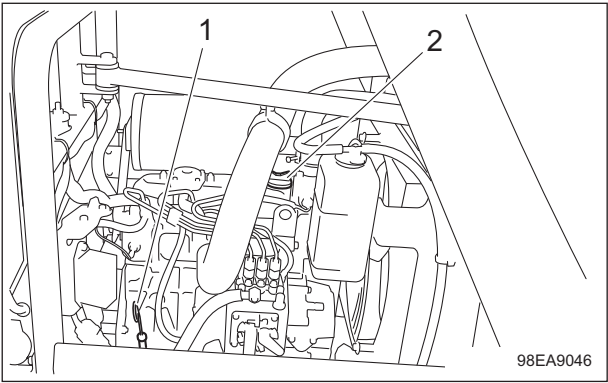
Inspection of Engine Oil

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.

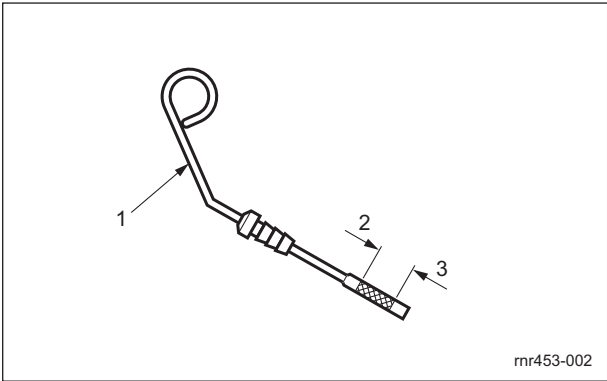


Inspection of Engine Oil_001

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.

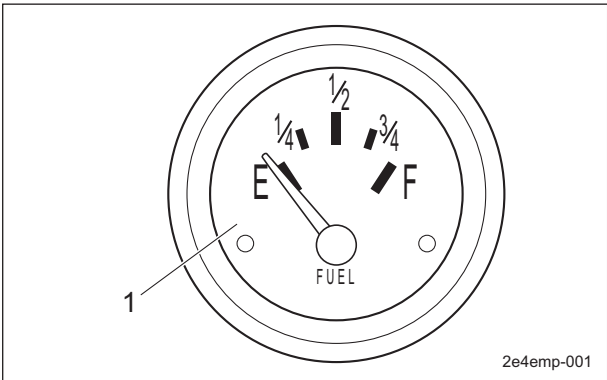


Inspection of Engine Oil_002

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 in the operation panel to check the fuel level.



Inspection of Fuel Quantity_001

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

Handling Instructions

Fuel Supply

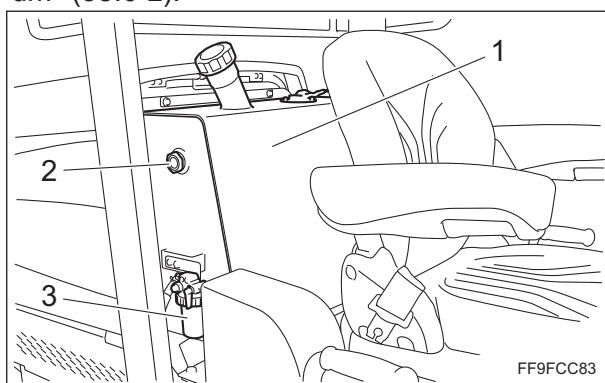
Warning

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

Warning

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

If the fuel gauge located in the operation panel indicates the level close to E (EMPTY), supply fuel (diesel) as soon as possible. Refuel up to the middle (marked in red) of the fuel gauge.
The fuel tank capacity is approximately 38.0 dm³ (38.0 L).



Fuel Supply_001

1	Fuel tank
2	Fuel gauge
3	Fuel strainer

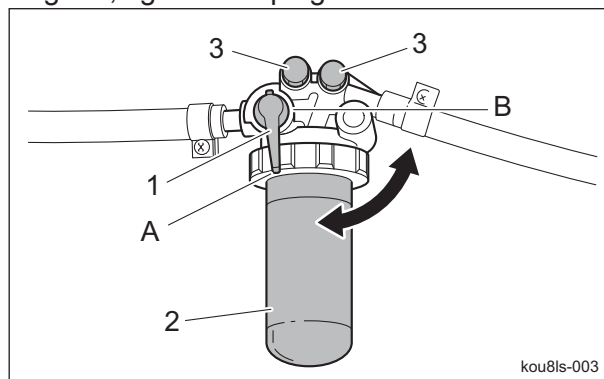
Air Bleeding of Fuel System

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.

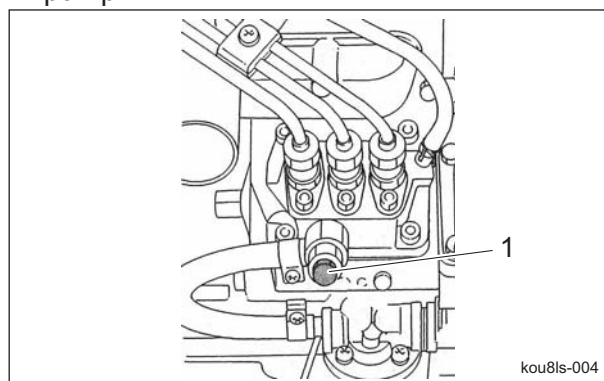
3. If air bubble of the fuel from the plug has gone, tighten the plug.



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. Set the reel rotation switch to the "STOP" position.
8. Make sure that the traveling pedal is in the neutral position.
9. Set the ignition key to the "START" position.

Handling Instructions

Important

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

- 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

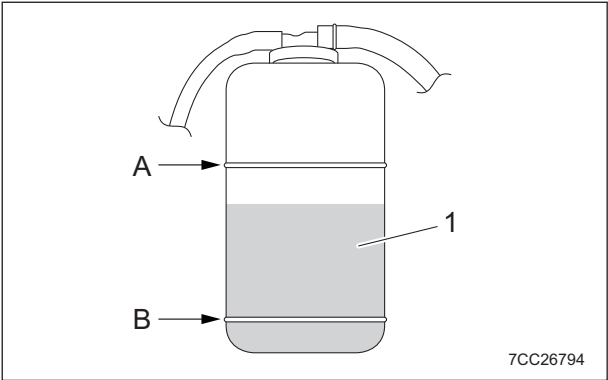
Caution

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.

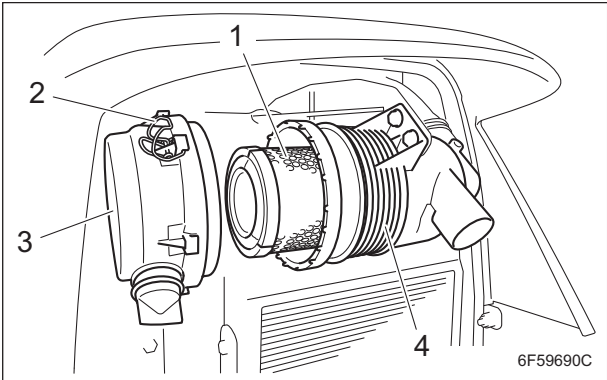


Inspection of Coolant_001

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.

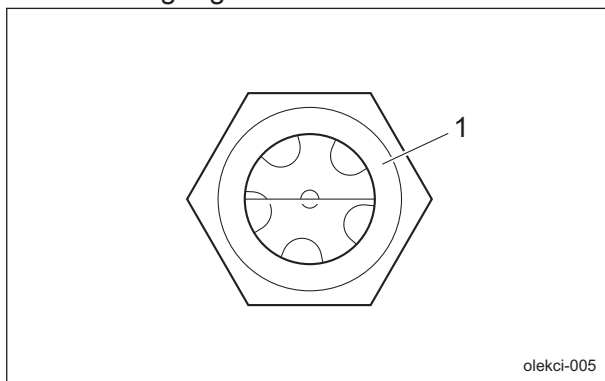
Handling Instructions

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.



olekci-005

Inspection of Hydraulic Oil_001

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

3. Check underneath the machine for oil leakage.

Inspection of Tires

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

	Tire size	Pneumatic pressure	
Front wheel	23 x 10.50 - 12	120 kPa (1.2 kgf/cm ²)	17 psi
Rear wheel	18 x 8.50 - 10	120 kPa (1.2 kgf/cm ²)	17 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.
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.

Handling Instructions

5. Inspecting the electrolyte level and refilling

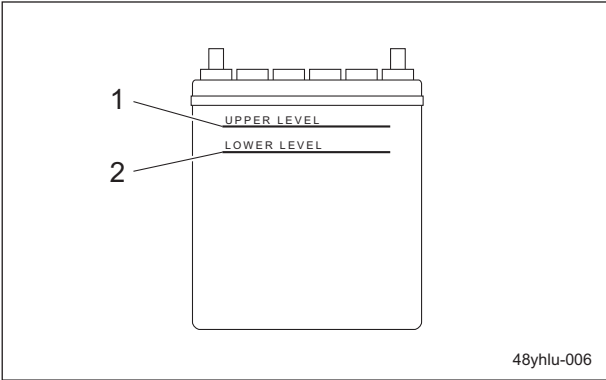
Warning

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

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 Brake 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.

Inspection of Parking Brake Lever

1. Make sure that the brake pedal is locked after depressing the brake pedal completely and pulling the parking brake lever completely.
2. Make sure that the brake pedal is released after depressing the brake pedal again.

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.

Handling Instructions

Inspection of Pedal Stopper

1. Make sure that the pedal stopper fulcrum does not rattle.
2. Make sure that the stopper bolt is tightened with fixing nut.
3. When the pedal stopper is used, make sure that the pedal stopper touches the floorboard when the pedal is depressed.

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 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 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.

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 Fuel Gauge

1. Check the fuel gauge is not damaged.
2. Check the fuel gauge operates correctly.
 - [1] Switch the ignition key to the "ON" position.
 - [2] Check the fuel gauge 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 Interlock System

Make sure that the interlock system operates correctly.
(Refer to "Interlock System")
Repair the machine before operation whenever there is any abnormality.

Handling Instructions

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. Check the direction of tires when the steering wheel is turned.
 - [1] Start the engine.
 - [2] Make sure that the rear tire turns left when the steering wheel is turned right.
 - [3] Make sure that the rear tire turns right when the steering wheel is turned left.
 - [4] Stop the engine.

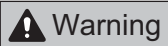
Inspection of Light

- 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.

Adjustment before Work

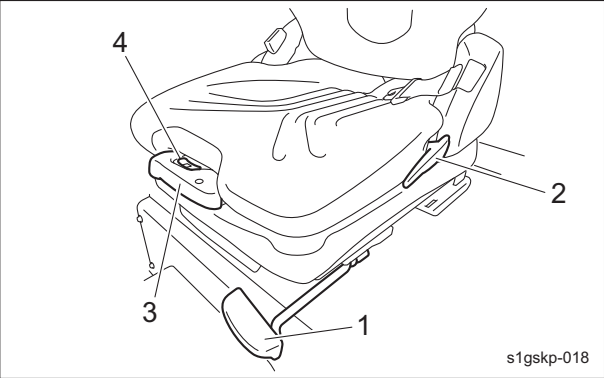
Main Vehicle

Adjustment of Seat Position

**Warning**
Do not adjust while traveling since it is dangerous.

- Adjust the position to fit the operator.
- 1. Use the forward/backward adjustment lever to adjust the seat back and forth.
 - 2. Use the backrest tilt adjustment lever to adjust the angle of the backrest.

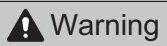
- 3. Pull out the suspension adjustment handle and move it up or down to adjust the firmness of the seat suspension. Observe the suspension adjustment scale while making adjustments. [50 - 160 kg (110.2 - 352.7 lb)]




Adjustment of Seat Position_001

1	Forward/backward adjustment lever
2	Angle adjustment lever
3	Suspension adjustment handle
4	Suspension adjustment scale

Adjustment of Steering Wheel Position

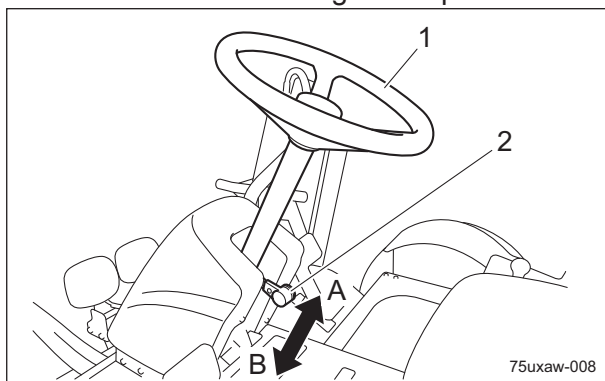
**Warning**
Since it is dangerous, do not adjust the steering wheel while traveling.

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

- The steering wheel position can be adjusted up or down to according to the operator's body size.
- 1. Shift the tilt lever to the "FREE" position.
 - 2. Adjust the steering wheel position.

Handling Instructions

3. Shift the tilt lever to the "LOCK" position and secure the steering wheel position.



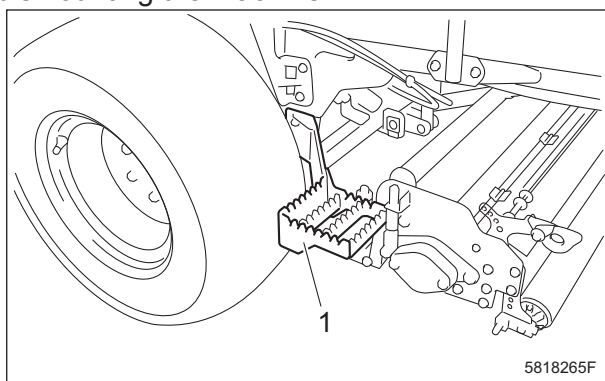
Adjustment of Steering Wheel Position_001

1	Steering wheel
2	Tilt lever
A	FREE (released)
B	LOCK (locked)

Mounting/Dismounting

Mounting/Dismounting Procedure

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

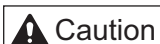


Mounting/Dismounting Procedure_001

1	Step
---	------

Start/Stop of Engine

Procedure to Start Engine



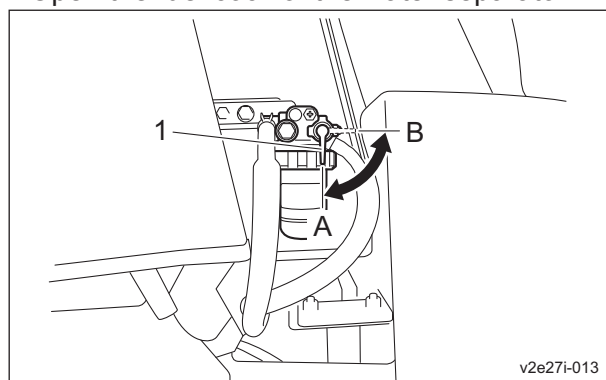
Caution
Before starting the engine, make sure that there are no other people or obstacles around the machine.

Important

Starter operation must take 15 seconds or less.

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

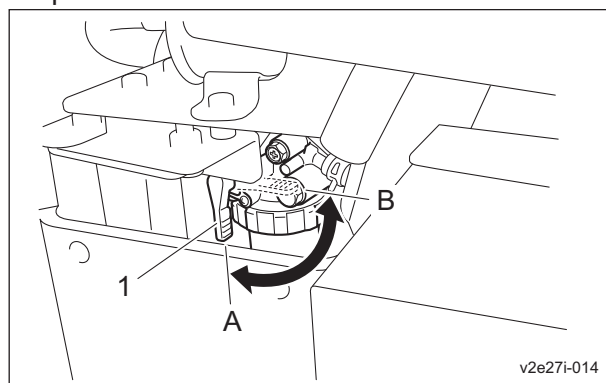
1. Open the fuel cock of the water separator.



Procedure to Start Engine_001

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

2. Open the fuel cock of the fuel filter.



Procedure to Start Engine_002

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

- Sit on the seat.
- Depress the brake pedal and make sure that the parking brake is applied.
- Make sure that the reel rotation switch is set to the "Stop" position.
- Make sure that the mower unit up/down lever is set to the "Neutral" position.
- Make sure that the traveling pedal is in the neutral position.

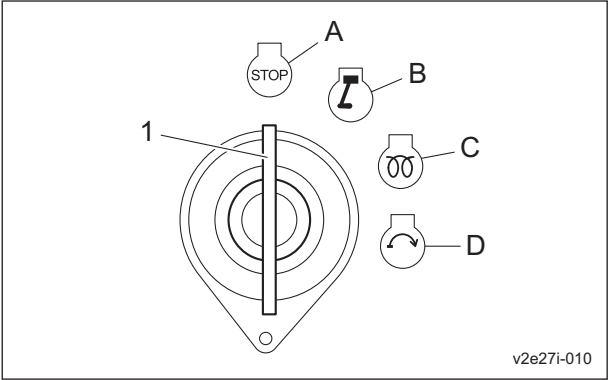
Handling Instructions

8. Move the throttle lever halfway from the "Low speed" position toward the "High speed" position.

Important

The thermo-start lamp turns off at the specified time. However, the lamp turning off is not related to the glow plug generating heat. If the ignition key is left in the "GLOW" position after the lamp is turned off, the plug will still generate heat. The thermo-start lamp will stay illuminated for 5 seconds.

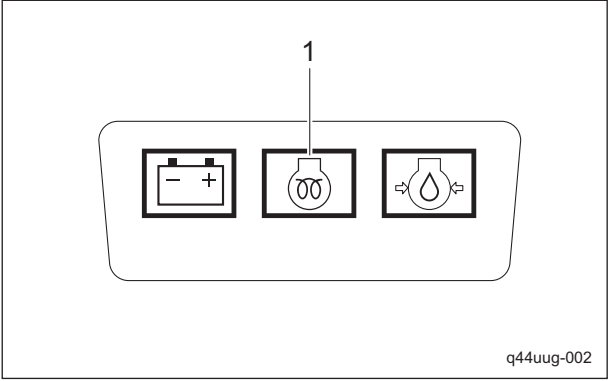
9. Switch the ignition key to the "GLOW" position.



Procedure to Start Engine_003

1	Ignition key
A	OFF
B	ON
C	GLOW
D	START

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



Procedure to Start Engine_004

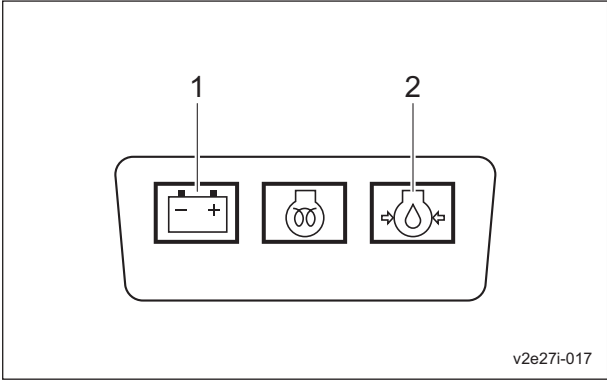
1	Thermo-start lamp
---	-------------------

11. After the thermo-start lamp turns off, immediately set the ignition key to the "START" position.

Important

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

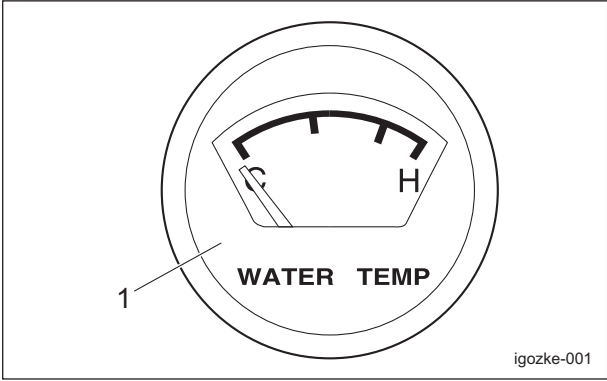
12. When the starter starts rotating and the engine starts, return the ignition key to the "ON" position slowly.
13. Make sure that the charge lamp and oil pressure lamp turn off. If they do not turn off, stop the engine and inspect the machine.



Procedure to Start Engine_005

1	Charge lamp
2	Oil pressure lamp

14. Move the throttle lever to the "Low speed" position, and then warm up the engine so that the needle points above "C" on the water temperature gauge.



Procedure to Start Engine_006

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

Handling Instructions

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. Raise all the mower units.
5. Set the anti-falling stop valve to the "STOP" position.
6. Shift the throttle lever to the "Low speed" position, and then idle the machine for 1 - 2 minutes.
7. Switch the ignition key to the "OFF" position.
8. Make sure that 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. Install the rubber cap to the key switch.
6. Leave the driver's seat.
7. Close the fuel cock of the fuel filter.
8. Close the fuel cock of the water separator.

Move

Traveling Procedure

Caution

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

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.
(Refer to "Procedure to Start Engine")
2. Make sure that all the mower units are raised.
3. Make sure that the anti-falling stop valve is set to the "Stop" position.
4. Gradually shift the throttle lever to the "High speed" position.
5. Release the parking brake.
6. Slowly depress the traveling pedal.
7. The machine starts traveling.
8. Release the traveling pedal and depress the brake pedal to stop the machine.

Handling Instructions

Cutting Work

Cutting Operation

⚠ Caution

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

Important

Perform cutting work with the mower unit up/down lever shifted to the "DOWN" position. Reel rotation will be turned off when the mower unit up/down lever shifted to the "NEUTRAL" or "UP" position.

Important

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

1. Shift the reel rotation/stop switching levers of all mower units to the "Rotate" position.
2. Set the pedal stopper to the "Working" position.
3. Start the engine.
(Refer to "Procedure to Start Engine")
4. Shift the throttle lever to the "High speed" position, and rev up the engine to MAX.
5. Release the parking brake.
6. Right before starting cutting work, set the anti-falling stop valve to the "Open" position.
7. Lower the mower units.
8. Set the reel rotation switch to the "Rotate" position to rotate the reel cutters (cutting cylinders) for all mower units.
9. Depress the traveling pedal to start cutting work.

Transporting

Transporting Procedure

Important

If the roof is installed on the machine, remove it. Otherwise, the roof may be damaged by wind pressure.

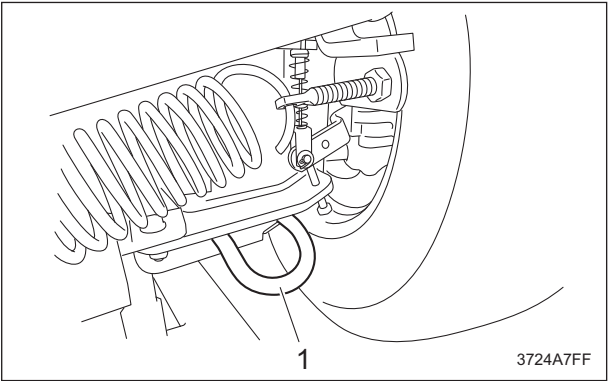
Important

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] Remove the roof. (If the roof is installed on the machine)
 - [2] Start the engine.
 - [3] Travel slowly to load the machine onto a truck or a trailer.
 - [4] Stop the engine.
 - [5] Raise all the mower units.
 - [6] 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

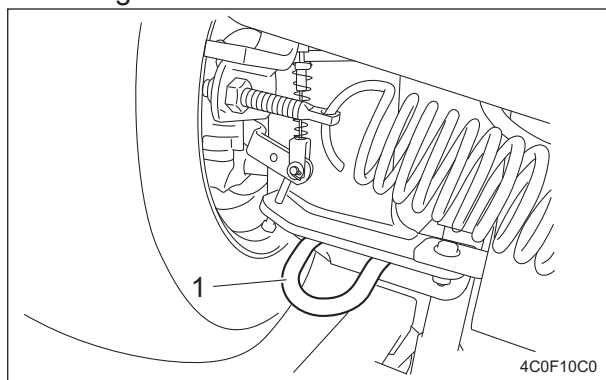


Transporting Procedure_001

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

Handling Instructions

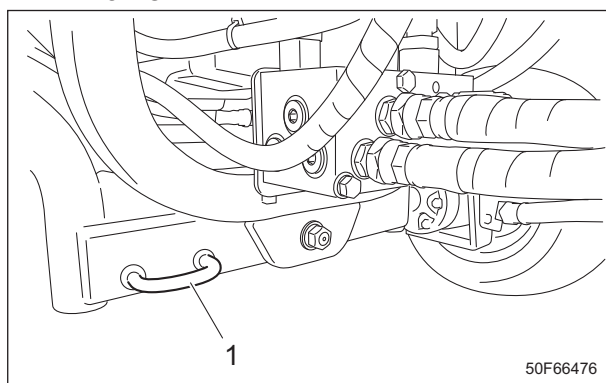
Right side



Transporting Procedure_002

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

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



Transporting Procedure_003

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

2. Unloading the machine

- [1] Remove the ropes fastening the machine.
- [2] Start the engine.
- [3] Raise all the mower units.
- [4] Travel 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 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.

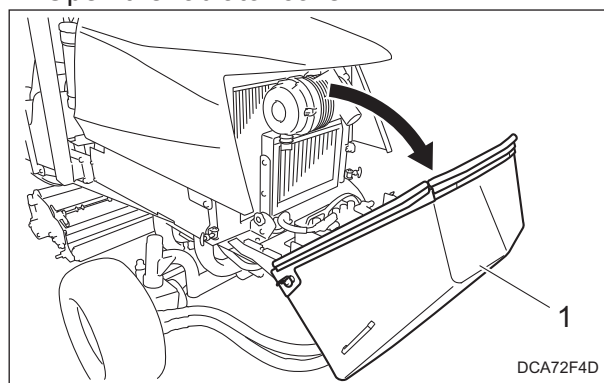
Cleaning of Radiator Cover

Important

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

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

Handling Instructions


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.

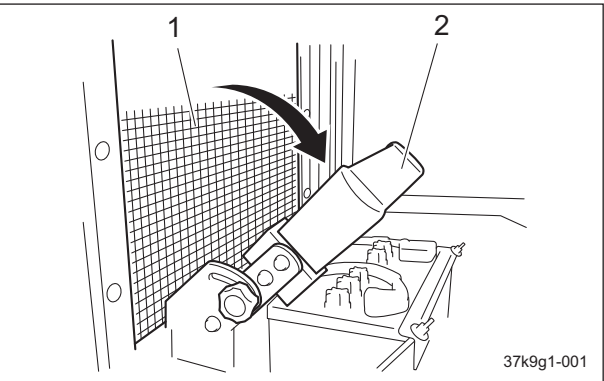
 **Important**

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

 **Important**

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

- If the radiator has been contaminated with dust, be sure to clean it.
After operating the machine in a dusty environment, it is important to remove dust as soon as possible.
1. Open the radiator cover.
 2. Loosen the knobs on the left and right of the oil cooler, and then tilt the oil cooler.




Cleaning of Radiator_001

1	Radiator
2	Oil cooler


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

Main Vehicle


Cleaning of Oil Cooler

 **Caution**

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

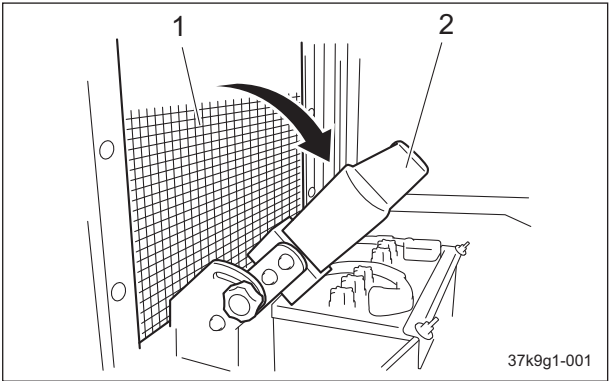
 **Caution**

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

 **Important**

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

- If the oil cooler has been contaminated with dust, be sure to clean it.
After operating the machine in a dusty environment, it is important to remove dust as soon as possible.
1. Open the radiator cover.
 2. Loosen the knobs on the left and right of the oil cooler, and then tilt the oil cooler.



Cleaning of Oil Cooler_001

1	Radiator
2	Oil cooler

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

Appended Table

Tightening Torques Page 6-2

 Standard Tightening Torques Page 6-2

 Principal Tightening Torques Page 6-5

Daily Check List Page 6-7

Maintenance Schedule Page 6-8

Appended Table

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

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

LM351

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

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

Location		Code	Part name	Tightening torque			Thread locking adhesive
				N-m	kgf-cm	lb-in	
Front wheel	Motor	K0010120902	Bolt, heat-treated M12-90	104 - 134	1,060.49 - 1,366.40	920.50 - 1,186.03	-
	Wheel mounting base	-	Slotted nut attached to hydraulic motor 1-20UNEF	280 - 300	2,855.16 - 3,059.10	2,478.28 - 2,655.30	-
	Wheel	K0011120352	Bolt, heat-treated M12-35P1.5	110	1121.69	973.61	-
Rear wheel	Motor	K0013120702	Bolt, heat-treated M12-70	104 - 134	1,060.49 - 1,366.40	920.50 - 1,186.03	-
	Wheel mounting base	-	Slotted nut attached to hydraulic motor 1-20UNEF	280 - 300	2,855.16 - 3,059.10	2,478.28 - 2,655.30	-
	Wheel	K0011120352	Bolt, heat-treated M12-35P1.5	110	1121.69	973.61	-
Tie rod		(K1610000020)	Slotted nut (Tie rod end right Assy)	45	158.87	98.3	-
		(K1611000020)	Slotted nut (Tie rod end left Assy)	45	158.87	98.3	-
Kingpin stopper		K0000100252	Bolt, M10-25	29 - 38	295.71 - 387.49	256.68 - 336.34	-
Universal joint		K001A100401	Bolt, w/ hexagon hole, M10-40	62 - 72	632.21 - 734.18	548.76 - 637.27	○
		K0011100252	Bolt, heat-treated M10-25P1.25	58 - 76	591.43 - 774.97	513.36 - 672.68	-
Engine		K0017100252	Bolt, small, heat-treated M10-25P1.25	45 - 57	458.87 - 581.23	398.30 - 504.51	-
Electric components for engine		-	Starter B terminal (M8)	5.9 - 11.7	60.16 - 119.30	52.22 - 103.56	-

Appended Table

Location	Code	Part name	Tightening torque			Thread locking adhesive
			N-m	kgf-cm	lb-in	
Electric components for engine	-	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	-
Terminal relay	K3680000030	M3.5 Screw (accessories)	0.78 - 1.18	7.95 - 12.03	6.90 - 10.44	-
Cross-valve	K0013101252	Bolt, heat-treated M10-125	29 - 38	295.71 - 387.49	256.68 - 336.34	-
Brake pedal bracket	K0013080701	Bolt, HT M8-70	28 - 38	285.52 - 387.49	247.83 - 336.34	○
Proximity switch NO V-in	K0000050202	Bolt, M5-20	2.5	25.49	22.13	-
	K0100050002	Nut, M5	2.5	25.49	22.13	-
Proximity switch NC V-in	K0000050202	Bolt, M5-20	2.5	25.49	22.13	-
ROPS	K0010120402	Bolt, heat-treated M12-40	104 - 134	1,060.49 - 1,366.40	920.50 - 1,186.03	-
Piston pump	K0013140502	Bolt, HT M14-50	140 - 188	1,427.58 - 1,917.04	1,239.14 - 1,663.99	-

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 brake pedal	○	
		Check parking brake lever	○	
		Check traveling pedal	○	
		Check pedal stopper		
		Check oil or water leaks	○	
		Check machine exterior	○	
		Check bolts and nuts	○	
		Check hour meter	○	
		Check water temperature gauge	○	
		Check fuel gauge	○	
		Check pilot lamp	○	
		Check interlock system	○	
		Check steering wheel	○	
		Check lighting	○	
		Clean oil cooler		○
		Clean machine exterior		○

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

Appended Table

Maintenance Schedule

● . . . Inspect, adjust, supply, clean (first time)

○ . . . Inspect, adjust, supply, clean

▲ . . . Replace (first time)

△ . . . Replace

Maintenance Item			Before Work	After Work	Every Week	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 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				○																
		Clean fuel filter					○															
		Check water separator					○															
		Draining of water separator					○															
	*2.*3	Clean air cleaner element					○															Air cleaner should be cleaned more often in dusty conditions than in normal conditions
	*3	Check of fan belt tightness					○															
	*2.*3	Check intake air line (air cleaner hose)							○													
	*3	Check radiator hoses and clamp bands							○								○					Check every 200 hours or every 6 month whichever comes earlier

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 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		Clean of water separator									○											
	*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 comes earlier
		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

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 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	*2.*3	Replace air cleaner element																△				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																	△			
Main vehicle		Check hydraulic hose (Moving part)	○																			
		Grease and lubricate				○																
		Check electrical wiring				●	○															
		Check wheel mounting bolts				●	○															
		Check hydraulic hose (Fixed part) condition					○									○						Check every 100 hours or every month whichever comes earlier
		Grease hydraulic motor shaft							○													

Appended Table

Maintenance Item			Before Work	After Work	Every Week	Every 50 hrs.	Every 100 hrs.	Every 150 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 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		of the mower unit								○												
		Adjust lift arm spring																			○	
		Replace hydraulic oil					●					○										
		Replace hydraulic suction filter					●					○										
		Replace hydraulic line filter					●					○										
	*4	Replace battery																	△			
	*1	Replace hydraulic hoses (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 pads																			△	

• *1: Consult your local Baroness Dealer or local KUBOTA Dealer for this service.

Appended Table

- 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.

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

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