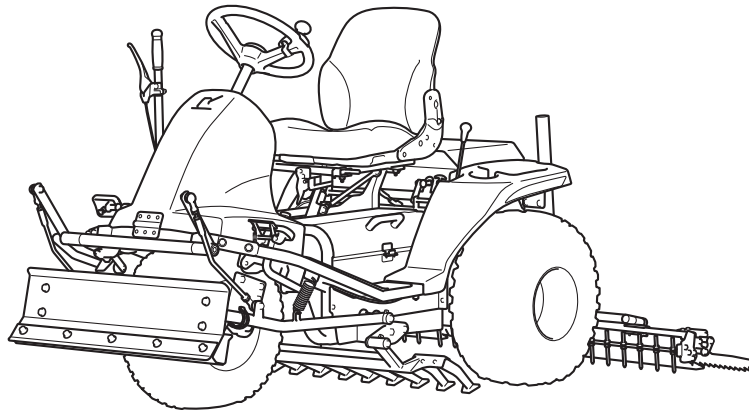


SP160EB

Electric Bunker Rake

Owner's Operating Manual



Serial No. SP160EB : 10416-

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

BARONESS[®]
Quality on Demand

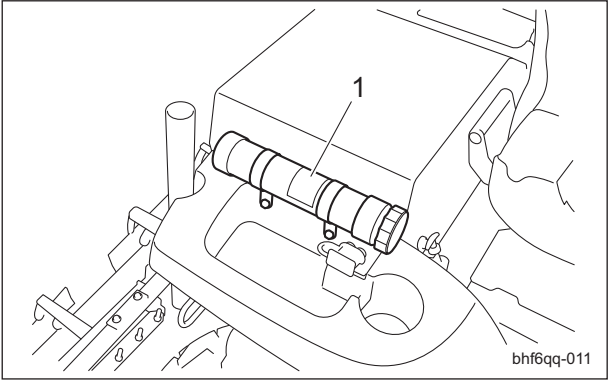
Original Instructions Ver.2.1

Greeting

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 Owner's Operating Manual in the box
on the rear right side of the seat.



Keeping The Owner's Operating Manual_001

1	Box
---	-----

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 should only be performed by a certified specialist.

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





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

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

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

Introduction

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 Battery's Owner's Manual
- The Charger's Owner's Manual

Purpose

This product is intended for leveling bunkers at golf courses.

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

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

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

Safety Page 1-1

Safe Operating Practices Page 1-2

Disposal Page 2-1

Recycle and Waste Disposal Page 2-2

Product Overview Page 3-1

Specifications Page 3-2

Names of Each Section Page 3-3

Regulation Decals Page 3-4

Safety Signs and Instruction Signs Page 3-6

Handling Instructions Page 4-1

Inspections Page 4-2

Tightening Torques Page 4-11

Adjustment before Work Page 4-14

Procedure to Switch On/Off Machine Page 4-16

Safety Mechanisms Page 4-17

Warning Mechanisms Page 4-17

Travel Safety Device Page 4-18

Protection Device (OCR) Page 4-21

Operation Method Page 4-22

Instruments Page 4-29

Move Page 4-32

Operations Page 4-33

Transporting Page 4-36

Storage Page 4-36

Maintenance Page 5-1

Maintenance Precautions Page 5-2

Precautions for Maintenance Page 5-2

Maintenance Schedule Page 5-3

Jacking Up The Machine Page 5-6

Greasing Page 5-7

Maintenance Work Page 5-9

Contents

Safe Operating Practices Page 1-2

Training Page 1-2

Preparation Page 1-2

Operation Page 1-2

Maintenance and Storage Page 1-3

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 English it is the owner's responsibility to explain this manual to them.

3. All operators and mechanics should seek and obtain professional and practical instruction.

The owner is responsible for training the users.

Such instruction should emphasize.

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

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

The main reasons for loss of control are

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

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

Local regulations may restrict the age of the operator.

5. The owner/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. You can find additional safety information where needed throughout this manual.
8. 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, 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. Check that operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.
6. If the brake operation is faulty or the parking brake lever has noticeable play, be sure to adjust or repair them before operating the machine.

Operation

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

2. Before attempting to power up, disengage all attachments, shift into neutral, and engage the parking brake.
Only power up from the operator's position.
3. Remember there is no such thing as a safe slope.
Travel on grass slopes requires particular care.
To guard against overturning:
 - [1] Do not stop or start suddenly when going up or downhill.
 - [2] Engage clutch slowly, always keep machine in gear, especially when traveling downhill.
 - [3] Machine speeds should be kept low on slopes and during tight turns.
 - [4] Stay alert for humps and hollows and other hidden hazards.
 - [5] Never drive the machine on a slope with an angle of gradient that is greater than that specified or in a place where there is a danger of the machine slipping.
4. Never operate the machine with damaged guards, shields, or without safety protective devices in place.
Be sure all interlocks are attached, adjusted and functioning properly.
5. Do the following before leaving the operator's position.
 - [1] Stop on level ground.
 - [2] Change into neutral and set the parking brake.
 - [3] Power down and remove the key.
6. Disengage the drive to attachments, power down, and remove the key in the following conditions.
 - [1] Before making height adjustment unless adjustment can be made from the operator's position.
 - [2] Before checking, cleaning or working the machine.
 - [3] 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.
7. Look behind and down before backing up to be sure of a clear path.
8. Do not carry passengers.

9. Never operate while people, especially children, or pets are nearby.
10. Slow down and use caution when making turns and crossing roads and sidewalks.
11. Do not operate the machine under the influence of alcohol or drugs.
12. 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, power down, and fasten the machine to the truck with a rope or other suitable restraining device that has sufficient strength.
When using a loading ramp, select one with sufficient strength, length, and width and that will not cause the machine to slip.
13. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
14. Do not take your eyes off the road ahead.
Do not operate the machine with no hands.
15. Do not operate the machine when there is the risk of lightning.

Maintenance and Storage

1. Disengage drives on level ground, set parking brake, power down and remove the key.
Wait for all movement to stop before adjusting, cleaning or repairing.
2. To reduce the fire hazard, keep the engine, battery compartment, attachments and drives free of grass, leaves, or excessive grease.
Clean up oil.
3. Do not store indoors where there is a flame or a spark.
4. Never allow untrained personnel to service machine.
5. Appropriately manage and correctly use the tools necessary for servicing or adjusting the machine.
6. Use jack stands to support components when required.
7. Carefully release pressure from components with stored energy.

Safety

8. Disconnect battery before making any repairs.
Disconnect the negative terminal first and the positive last.
Reconnect positive first and negative last.
9. Make sure that parts such as wires are not touching each other and that their covers have not come off.
10. 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.
11. Keep all parts in good working condition and all hardware tightened.
Replace all worn or damaged decals.
12. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.

Recycle and Waste Disposal Page 2-2

About RecyclePage 2-2

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.)

Specifications Page 3-2

SpecificationsPage 3-2

Sound Pressure Level Page 3-3

Sound Power Level Page 3-3

Vibration LevelPage 3-3

Names of Each Section Page 3-3

Regulation DecalsPage 3-4

Positions of Regulation Decals Page 3-4

Description of Regulation Decals Page 3-4

Safety Signs and Instruction Signs Page 3-6

About Safety Signs and Instruction
SignsPage 3-6

Positions of Safety Decals and
Instruction Decals Page 3-6

Description of Safety Decals and
Instruction Decals Page 3-7

Product Overview

Specifications

Specifications

Model			SP160EB	
Dimensions	Total length	with Rake	78.74 in	200 cm
		with Rake and Blade	90.55 in	230 cm
	Total width		74.80 in	190 cm
	Total height		48.82 in	124 cm
Weight	Machine (empty fuel tank)	with Rake	1,082.45 lb	491 kg
	Blade		55.11 lb	25 kg
	Cultivator		41.89 lb	19 kg
	Finishing brush		23.37 lb	10.6 kg
Minimum turning radius			133.46 in	339 cm
Motor	Model		MPUX250-0245FP1	
	Type		AC motor	
	Rated output		2.5 kW (3.40 PS)/2,000 rpm	
	Maximum rpm		2,400 rpm	
Transmission oil capacity			2.0 dm ³ (2.0 L)	
Operating width	Rake		74.80 in	190 cm
	Blade		31.50 in	80 cm
	Cultivator		45.67 in	116 cm
	Finishing brush		76.77 in	195 cm
Drive	Traveling		Mechanical	
	Operating		-	
Speed (HST)			-	
Speed (Mechanical)	Forward	Low	0 - 4.66 mph	0 - 7.5 km/h
		High	0 - 9.32 mph	0 - 15.0 km/h
	Reverse	Low	0 - 1.55 mph	0 - 2.5 km/h
		High	0 - 3.11 mph	0 - 5.0 km/h
Efficiency			-	
Maximum inclination for operation			15 degrees	
Tire size	Front wheel		PD21 × 11.00 - 10	
	Rear wheel		22 × 11.00 - 8	
Tire pneumatic pressure	Front wheel		10.15 psi	70 kPa (0.7 kgf/cm ²)
	Rear wheel		5.80 psi	40 kPa (0.4 kgf/cm ²)
Battery			US Battery US8VGHC XC2 8V x 6	

*The factory default maximum motor rpm is 2,400 rpm.

Product Overview

Sound Pressure Level

Sound Pressure Level

This machine was confirmed to have a continuous A-weighted sound pressure level of 64 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 82 dB by measuring identical machines in accordance with the procedure specified in ISO5395-1:2013.

Vibration Level

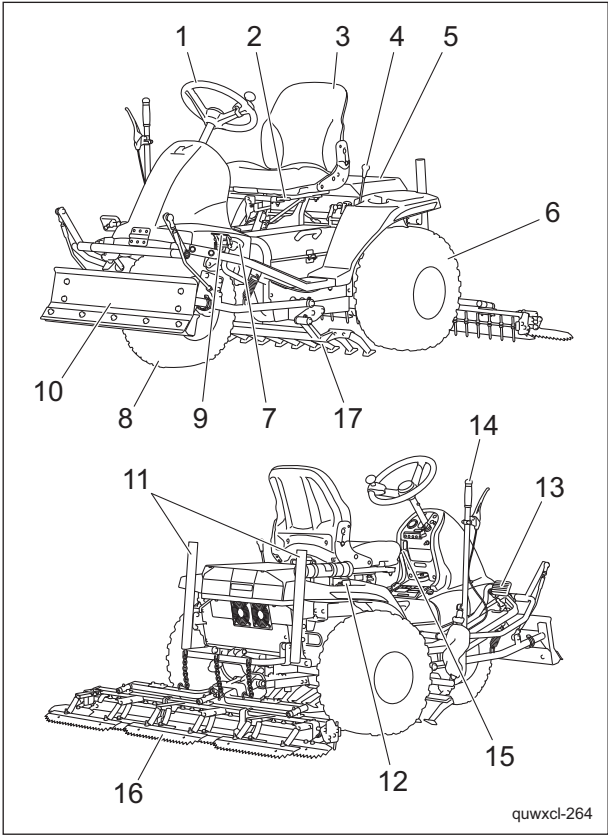
Hand-Arm Vibration

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 = 0.1 m/s²

Whole Body Vibration

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

Names of Each Section

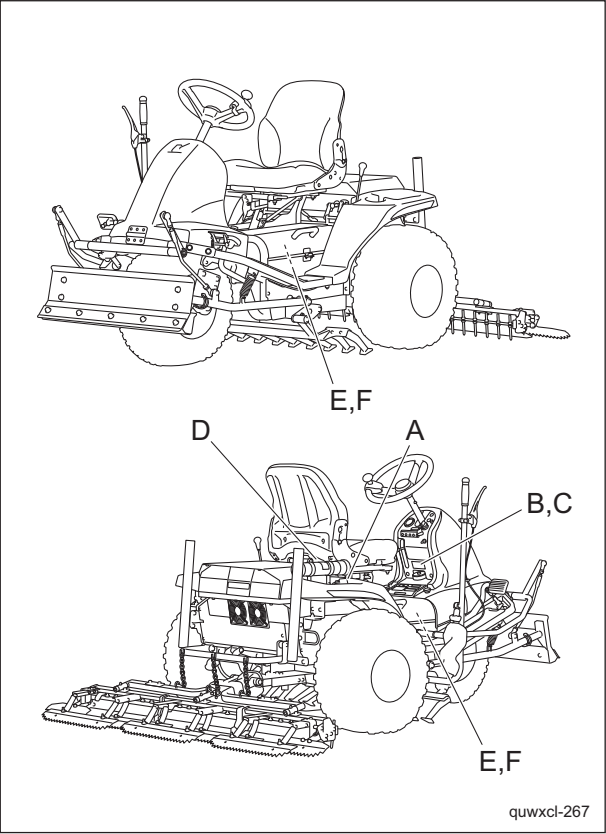


Names of Each Section_001

1	Steering wheel
2	Seat lever
3	Seat
4	Shift lever
5	Driver platform
6	Rear wheel
7	Brake pedal
8	Front wheel
9	Locking pedal
10	Blade (Option)
11	Broom holder
12	Charging connector
13	Traveling pedal
14	Cultivator lever (Option)
15	Blade lever (Option)
16	Rake
17	Cultivator (Option)

Regulation Decals

Positions of Regulation Decals



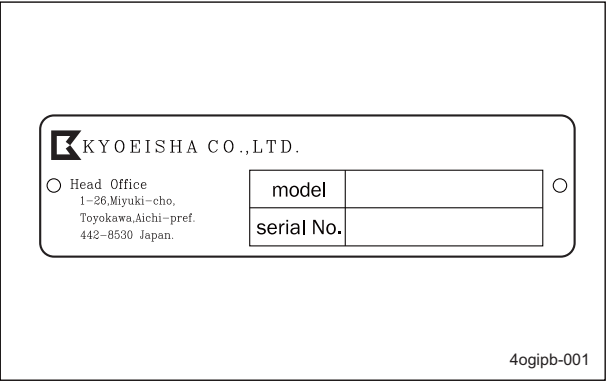
Positions of Regulation Decals_001

A	Serial number plate
B	Specification decal
C	UKCA mark
D	Year of manufacture decal
E	Battery capacity decal
F	Recycle decal

Description of Regulation Decals

Serial Number Plate

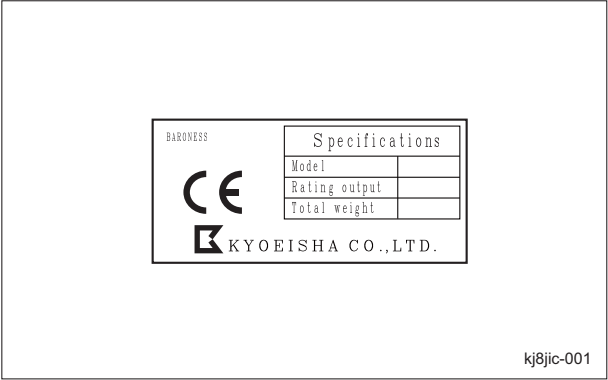
The serial number plate indicates the model and serial number of the machine.



Serial Number Plate_001

Specification Decal

(For Europe)
CE mark indicates that the machine sold in the EU nations complies with the EU requirements.
The Specification decal indicates the CE marking, model , and weight, etc.



Specification Decal_001

UKCA Mark

(For UK)
UKCA mark indicates that the machine sold in the UK complies with the UK requirements.



UKCA Mark_001

Product Overview

Year of Manufacture Decal

(For Europe)

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



Year of Manufacture Decal_001

(For USA)

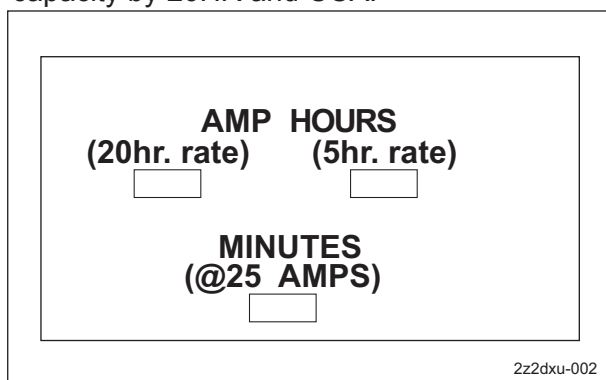


Recycle Decal_002

Battery Capacity Decal

(For Europe)

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

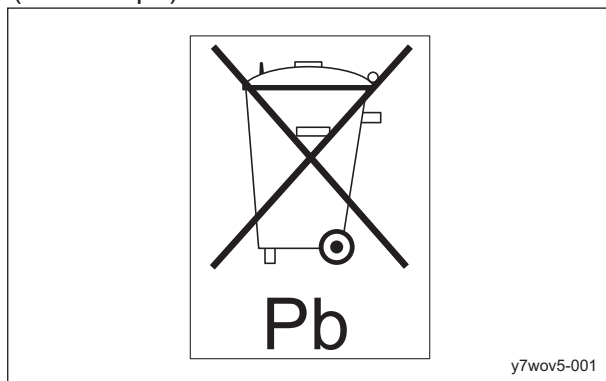


Battery Capacity Decal_001

Recycle Decal

Recycle Decal illustrates Recycle Mark in accordance with local regulation.

(For Europe)



Recycle Decal_001

Safety Signs and Instruction Signs

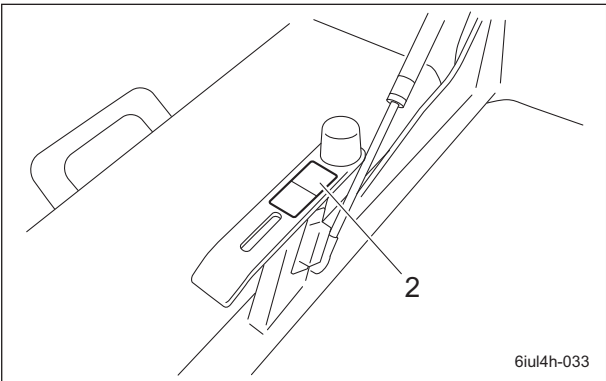
About Safety Signs and Instruction Signs

Important

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

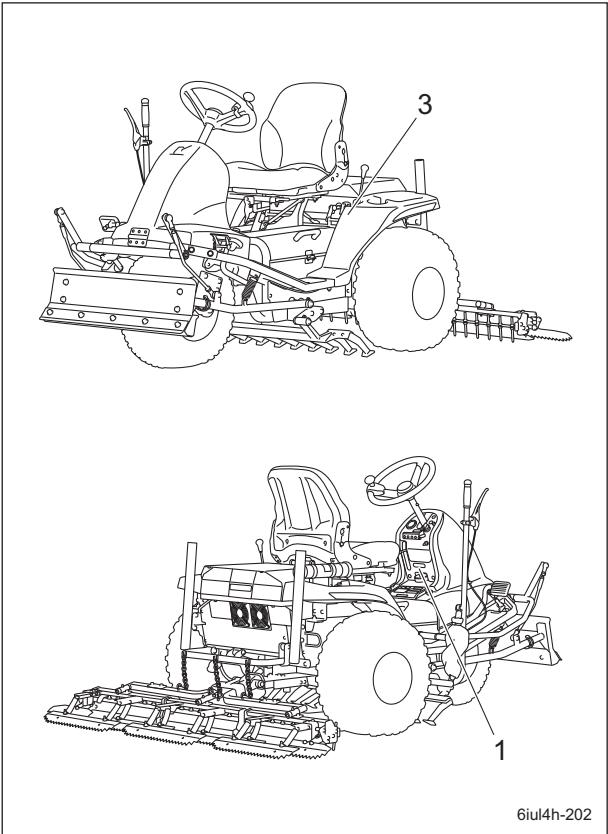
Part numbers for decals that need to be replaced are listed in the parts catalog. Order them from a Baroness dealer or Kyoeshia.

Positions of Safety Decals and Instruction Decals



Positions of Safety Decals and Instruction Decals_002

1	Warning decal
2	Caution to getting pinched decal
3	Speed instruction decal



Positions of Safety Decals and Instruction Decals_001

Product Overview

Description of Safety Decals and Instruction Decals

Warning Decal

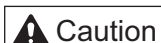
SP160EB0103Z0
DECAL, WARNING

1.



Read the Owner's Operating Manual.

2.



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

3.

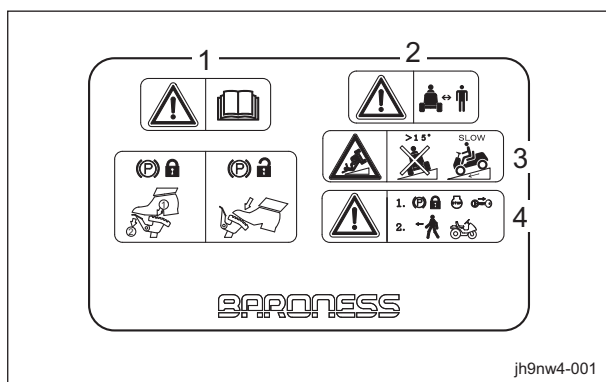


Rollover - Do not work on slopes of 15 degrees or more.
When you descend a slope, drive at low speed.

4.



Apply the parking brake, power down, and then remove the key before leaving the machine.

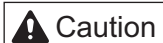


Warning Decal_001

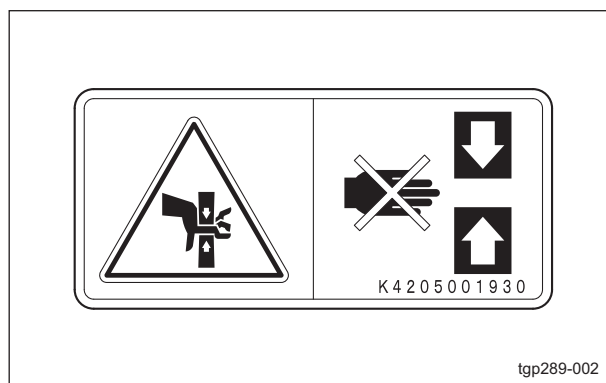
Caution to Getting Pinched Decal

K4205001930

Decal, caution to getting pinched



May pinch - There is a risk of being pinched.



Caution to Getting Pinched Decal_001

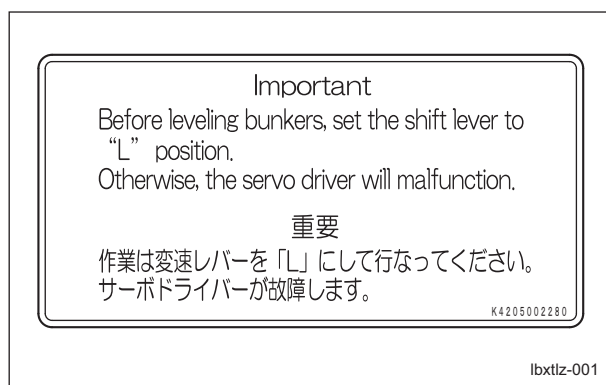
Speed Instruction Decal

K4205002280

Decal, Speed Instruction



Before leveling bunkers, set the shift lever to "L (Low speed)" position.
Otherwise, the servo driver will malfunction.



Speed Instruction Decal_001

Product Overview

Handling Instructions

Inspections	Page 4-2	Description of Operation Decals	Page 4-23
Rake	Page 4-2	Light Switch	Page 4-25
Blade	Page 4-2	Up/Down Switch Lever	Page 4-25
Cultivator	Page 4-3	Shift Lever	Page 4-26
Finishing Brush	Page 4-3	Traveling Pedal	Page 4-26
Battery	Page 4-3	Brake Pedal	Page 4-27
Shift Lever	Page 4-8	Front Cover	Page 4-27
Tire	Page 4-8	Driver Platform	Page 4-28
Brake	Page 4-8	Seat Platform	Page 4-28
Wire	Page 4-9	Battery Cover	Page 4-28
Steering Wheel	Page 4-10	Instruments	Page 4-29
Transmission	Page 4-10	Instruments on The Operation Panel ...	Page 4-29
Cooling Fins	Page 4-10	Battery Remaining Charge Gauge	Page 4-29
Oil Leakage	Page 4-10	Alarm Display Panel	Page 4-30
Tightening Torques	Page 4-11	Move	Page 4-32
Standard Tightening Torques	Page 4-11	Precautions during Travel	Page 4-32
Principal Tightening Torques	Page 4-13	Traveling Procedure	Page 4-32
Adjustment before Work	Page 4-14	Towing The Machine	Page 4-32
Adjustment of Steering Wheel	Page 4-14	Operations	Page 4-33
Adjustment of Seat	Page 4-14	Precautions during Work	Page 4-33
Adjustment of Rake	Page 4-14	Rake	Page 4-34
Adjustment of Blade	Page 4-15	Blade	Page 4-34
Adjustment of Finishing Brush	Page 4-15	Cultivator	Page 4-35
Procedure to Switch On/Off		Finishing Brush	Page 4-35
Machine	Page 4-16	Transporting	Page 4-36
Procedure to Switch On Machine	Page 4-16	Transporting Procedure	Page 4-36
Procedure to Switch Off Machine	Page 4-17	Storage	Page 4-36
Safety Mechanisms	Page 4-17	Before Long-Term Storage	Page 4-36
Warning Mechanisms	Page 4-17		
Travel Safety Device	Page 4-18		
Malfunction Detection	Page 4-19		
Protection Device (OCR)	Page 4-21		
Operation Method	Page 4-22		
Cautions for when You Leave The			
Machine	Page 4-22		
Positions of Operation Decals	Page 4-22		

Handling Instructions


Inspections

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

Rake

Inspection of Rake

Due to frequent use or damage caused during use or transportation, tracks, such as from tires, may remain after use.
Inspect, and if necessary, repair or replace.



Caution

Wear gloves when touching a fork prong bar.

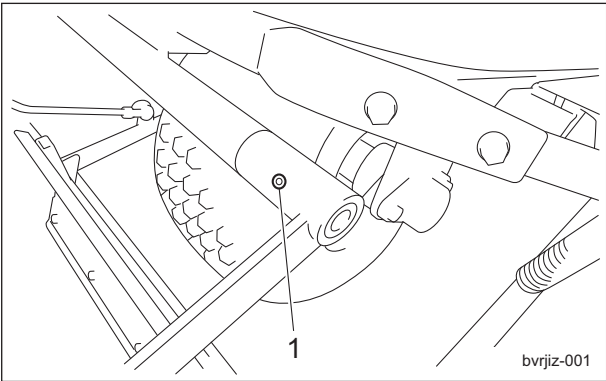
1. Make sure that the rake pipe is not bent.
2. Make sure that the cross-link chain is not twisted or worn.
3. Make sure that the rake shaft is not worn.
4. Make sure that the center shaft of the fulcrum swing fitting is not worn.
5. Make sure that a spring pin is not missing from the rake shaft.
6. Make sure that a hardened flat-head pin on the rake hanging arm is not worn.
7. Make sure that the plate springs are not cracked or bent.
8. Make sure that a spring pin is not missing from the rake fulcrum fitting.
9. Make sure that the rake mounting bracket is not bent.
10. Make sure that the smoother plate is not bent, cracked or unevenly worn.
11. Make sure that the warp board is not bent, cracked or worn.
12. Make sure that the fork prong bar is not bent or worn.

Blade

Inspection of Blade

Note:
Depending on the specifications, this function may not be available.
Due to frequent use or damage caused during use or transportation, it may become difficult to move sand around.
Inspect, and if necessary, repair or replace.

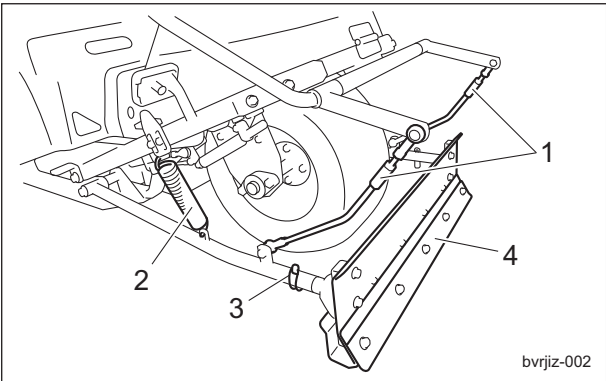
1. Make sure that the spring pin is not missing from the lever arm.



Inspection of Blade_001

1	Spring pin
---	------------

2. Make sure that the connecting shaft is not bent.
3. Make sure that the hook spring is not bent or stretched.
4. Make sure that a delta pin is not missing.
5. Make sure that the small blade is not bent, cracked or worn.



Inspection of Blade_002

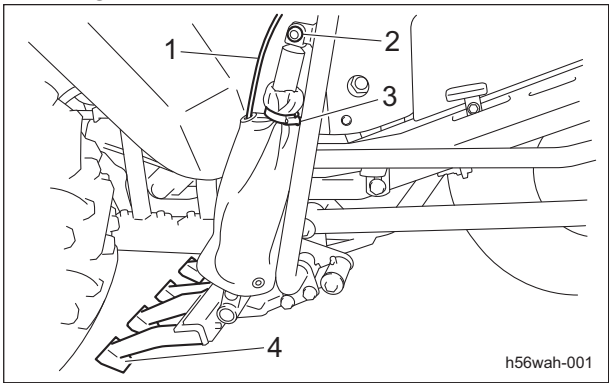
1	Connecting shaft
2	Hook spring
3	Delta pin
4	Small blade

Handling Instructions

Cultivator

Inspection of Cultivator

- Note:
Depending on the specifications, this function may not be available.
Due to frequent use or damage caused during use or transportation, it may become difficult to adjust the sand depth.
Inspect, and if necessary, repair or replace.
1. Make sure that the cultivator wire is not broken.
 2. Make sure that the free lock pin is not missing.
 3. Make sure that the parker clamp is not loose.
 4. Make sure that the trapezoidal cultivator fitting is not worn.



Inspection of Cultivator_001

1	Cultivator wire
2	Free lock pin
3	Parker clamp
4	Trapezoidal cultivator fitting

Finishing Brush

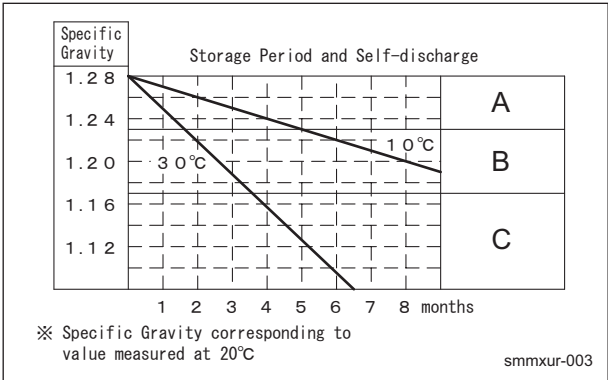
Inspection of Finishing Brush

- Note:
Depending on the specifications, this function may not be available.
Due to frequent use or damage caused during use or transportation, the rake may leave tracks.
Inspect, and if necessary, repair or replace.
1. Make sure that the brush mounting frame is not bent.
 2. Make sure that the brush is not bent or excessively worn.

Battery

Battery Characteristics

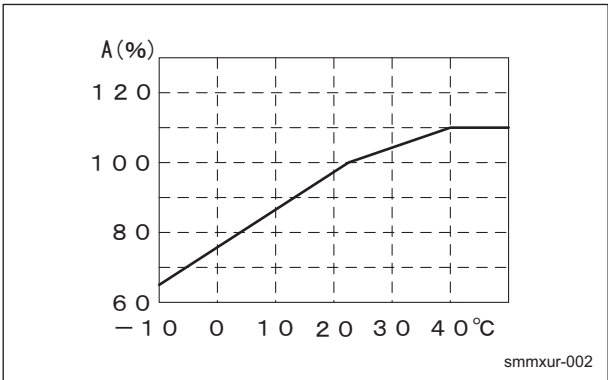
1. Long-term storage of battery
The battery will discharge, even while it is not used. (Self-discharge)
The rate of discharge is affected by ambient temperature.
When storing the battery for an extended period of time, periodically measure the specific weight of the battery fluid, and recharge the battery as necessary.



Battery Characteristics_001

A	No immediate recharging necessary
B	Immediate recharging necessary
C	Immediate recharging necessary (Range where the capacity cannot be fully restored)

2. Variations in battery up-time according to variations in capacity due to temperature.
The battery up-time is affected by temperature and the number of years of use.
The battery capacity is greatly affected by temperature.
Since capacity decreases as the temperature decreases, battery up-time will be reduced.




Battery Characteristics_002


Handling Instructions

A	Capacity
---	----------

Inspection of Battery

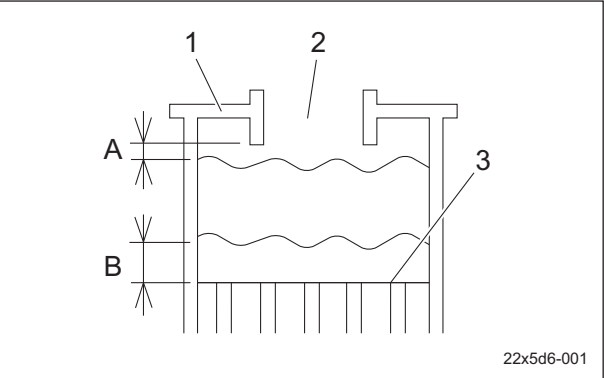
 **Danger**

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

 **Danger**

Do not allow the battery fluid level to become lower than the minimum level.
The battery may explode if it is used or charged while the battery plate is exposed.


Make sure that the battery fluid level is between the (maximum level) and the (minimum level).



Inspection of Battery_001

1	Battery case
2	Purified water filling port
3	Battery plates
A	Maximum level 2 - 5 mm (0.079 - 0.197 in.)
B	Minimum level 10 mm (0.394 in.)


Inspection of Battery Cable

 **Warning**


Loose or corroding terminals may result in an insufficient charge, burnt terminal connectors, or the battery catching fire or exploding.

1. Make sure that there is no abnormality such as corrosion of the terminals and cables.
If there is corrosion in the terminals, brush it off, and then lightly apply grease.
2. Make sure that the terminal nuts are not loose.
If they are loose, firmly tighten the nuts.

Measuring Battery Specific Weight

 **Danger**

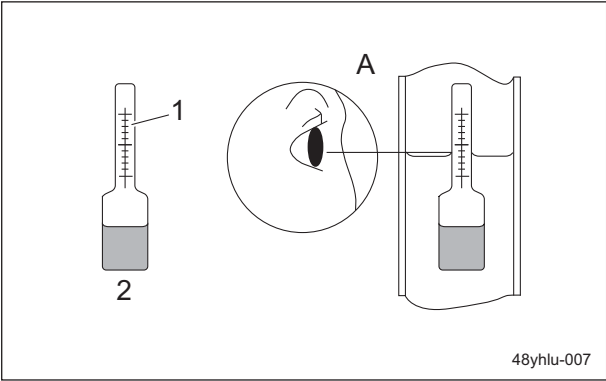
Be careful not to let your skin, eyes or clothes, etc., come into contact with the battery fluid and not to swallow the fluid accidentally.
Should your skin or clothes come into contact with the battery fluid, immediately wash them with water.

 **Danger**

When measuring the specific weight, wear protective garments, safety glasses and gloves, etc.

Measure the specific weight to determine the battery condition.

1. Stand the outside cylinder of the hydrometer vertically, and draw up the battery fluid with the dropper.
2. Make sure that there are no bubbles on the float when it is floating, and then look horizontally at the scale to read the value in contact with the top surface of the fluid.



Measuring Battery Specific Weight_001

1	Scale
2	Float
A	Reading the hydrometer

Note:

1. The specific weight is affected by temperature. Convert the hydrometer reading to the specific weight at 20 °C.
2. Correct specific weight = Hydrometer reading + 0.0007 × (Temperature when measured - 20)
 - The remaining capacity of the battery is approximately 100% when the specific weight is 1.28.

Handling Instructions

- The battery can be considered to have reached the end of its life when there is a variation of 0.05 or more in the specific weight of each cell.
"Battery Characteristics" (Page 4-3)

Supply of Battery Fluid

Danger

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

Danger

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

Danger

Do not allow the battery fluid level to become lower than the minimum level.
The battery may explode if it is used or charged while the battery plate is exposed.

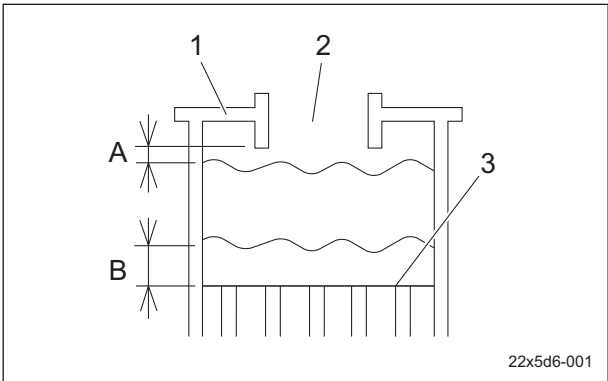
Warning

Do not supply battery fluid above the maximum level.
The battery fluid might overflow and cause the vehicle damage and a fire.

Important

To prevent battery fluid overflow, add purified water after charging.

If the battery fluid level is lower than halfway between the maximum level and minimum level, add purified water up to the maximum level.

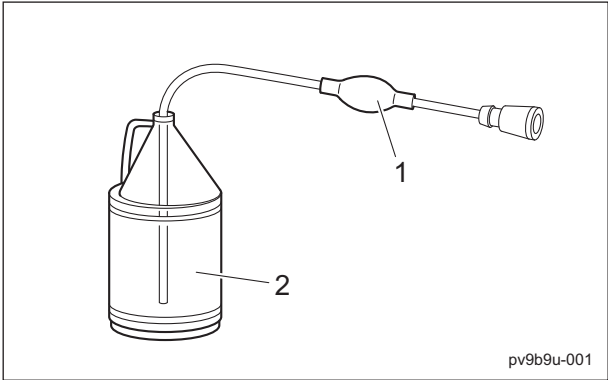


Supply of Battery Fluid_001

1	Battery case
2	Purified water filling port
3	Battery plates
A	Maximum level 2 - 5 mm (0.079 - 0.197 in.)
B	Minimum level 10 mm (0.394 in.)

Combined Supply of Battery Fluid

Note:
Depending on the specifications, this function may not be available.
Using a battery filling system, the battery can be reliably filled in a short period of time.
1. Insert the end of the hose on the hand pump into a container of distilled water.

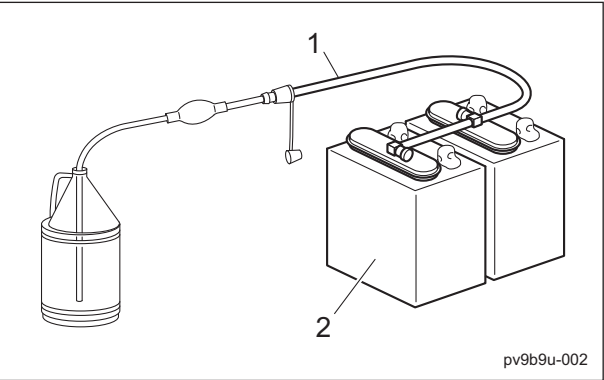


Combined Supply of Battery Fluid_001

1	Hand pump
2	Distilled water

Handling Instructions

2. Connect the other end of the hose on the hand pump to the water supply hose on the battery.



Combined Supply of Battery Fluid_002

1	Water supply hose
2	Battery

3. Squeeze the hand pump to supply distilled water to the battery.
4. When the hand pump becomes hard to squeeze, refilling is finished.
5. Remove the hose of the hand pump and the water supply hose on the battery.

Inspection of Battery Remaining Charge

Important

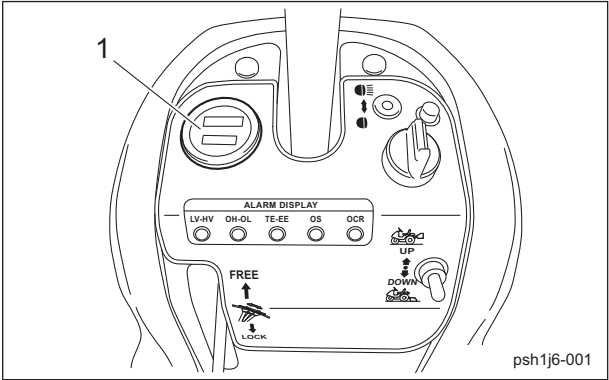
When the second LED indicating lamp from the left of the battery remaining charge gauge lights up, immediately stop operation and recharge the battery.

Important

If a buzzer sounds, indicating an insufficient battery remaining charge, while the second or further LED indicating lamp from the left of the battery remaining charge gauge lights up, the battery may have deteriorated. Replace the battery.
"Replacement of Battery" (Page 5-18)
"Replacement of Battery Cable" (Page 5-18)

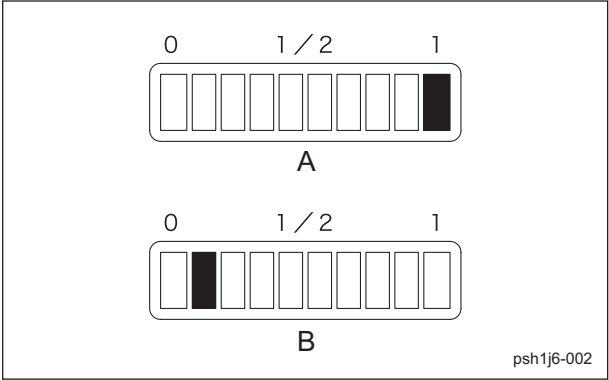
Turn the key switch to the "ON" position. When the battery is fully charged, the LED indicating lamp on the right end lights up and moves to the left as the battery becomes discharged. When the second LED indicating lamp from the left lights up, it is time to recharge the battery.

If you continue to operate the machine in this condition, the battery remaining charge will become insufficient and a buzzer will sound. "Alarm Display Panel" (Page 4-30)
When the second LED indicating lamp from the left lights up, immediately recharge the battery.
"Charging of Battery" (Page 4-7)
* The machine up-time per charge differs greatly depending on the course configuration, number of bunkers and operations performed.



Inspection of Battery Remaining Charge_001

1	Battery remaining charge gauge
---	--------------------------------



Inspection of Battery Remaining Charge_002

A	Fully charged
B	Time to recharge

Handling Instructions

Charging of Battery

⚠ Danger

While charging, explosive gas (hydrogen gas) is generated. Charge batteries in a well-ventilated area, where they will not get wet, for example, from rain.

⚠ Danger

The battery may explode if it is charged while a battery plate is exposed.

⚠ Danger

While charging, do not disconnect or connect the plugs of the charger and not allow a tool to cause a short circuit.
The battery may explode.

Important

Charge the battery with the charger included with the machine.

Important

Leaving the battery discharged will shorten its life.

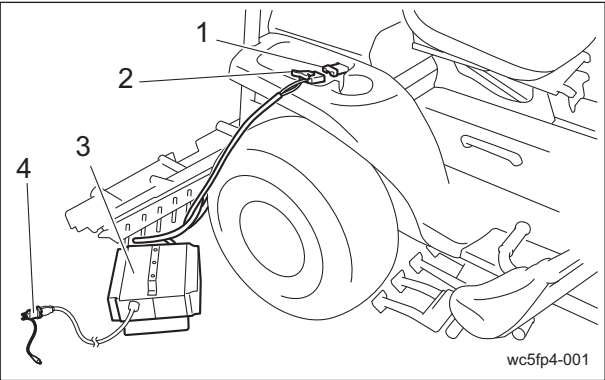
Important

Before driving the machine, make sure that the output plug of the charger is disconnected from the connector on the main vehicle.

Charging procedures

1. Apply the parking brake, and then turn the key switch to the "OFF" position.
2. Open the battery cover.
"Seat Platform" (Page 4-28) "Battery Cover" (Page 4-28)
3. Inspect the battery.
"Inspection of Battery" (Page 4-4)
If the battery plate is exposed, supply battery fluid up to the minimum level.

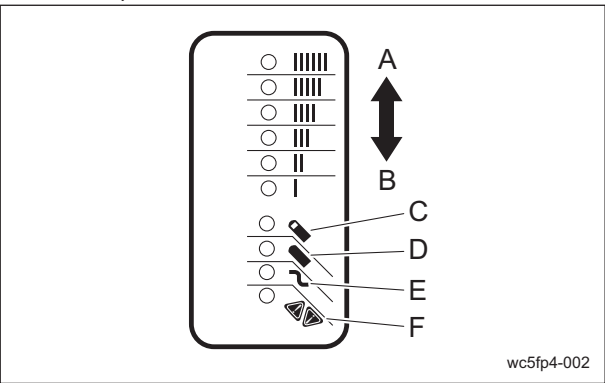
4. Remove the water-proof cap from the connector on the main vehicle, and then plug in the output plug of the charger.



Charging of Battery_001

1	Connector on main vehicle
2	Output plug
3	Charger
4	Input plug

5. Insert the input plug into the power supply outlet (AC85 - 265 V, 45 - 65 Hz).
6. The LEDs will quickly flash from the top to the bottom, and then charging begins after approximately 10 seconds.
7. When charging is finished, the "AC On" LED on the charger flashes (or lights up) and the "100% Charge" LED lights up. (The "AC On" LED flashes when the input voltage is 100 V and lights up when it is 200 V.)



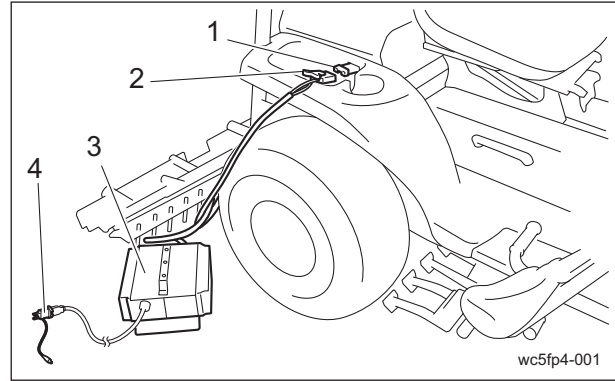
Charging of Battery_002

A	High charging current
B	Low charging current
C	80% Charge
D	100% Charge
E	AC On
F	Fault

8. Disconnect the input plug of the charger from the power supply outlet.

Handling Instructions

- 9. Disconnect the output plug of the charger from the connector on the main vehicle.
- 10. Install the water-proof cap onto the connector on the main vehicle.



Charging of Battery_003

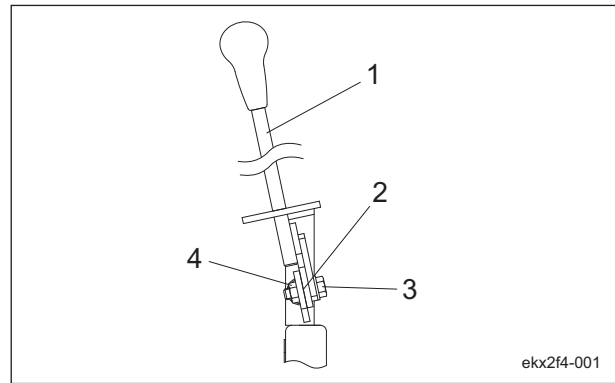
1	Connector on main vehicle
2	Output plug
3	Charger
4	Input plug

Shift Lever

Inspection of Shift Lever Fulcrum

The shift lever fulcrum may begin to rattle due to frequent use and may no longer be able to perform shift operations correctly.

- 1. Make sure that the shift lever fulcrum does not rattle.
- 2. Make sure that there is no wear of the shift lever fulcrum bolt.
- 3. Make sure that the plate of the shift lever fulcrum is not bent.



Inspection of Shift Lever Fulcrum_001

1	Shift lever
2	Shift lever fulcrum
3	Bolt
4	Nut

Tire

Inspection of Tires

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

Tire size	Pneumatic pressure
Front wheel (PD21 x 11.00 - 10)	70 kPa (0.7 kgf/cm ²)
Rear wheel (22 x 11.00 - 8)	40 kPa (0.4 kgf/cm ²)

Brake

Inspection of Brake

While traveling, depress the brake pedal firmly to make sure that the brake is applied effectively.

Inspection of Parking Brake

Important

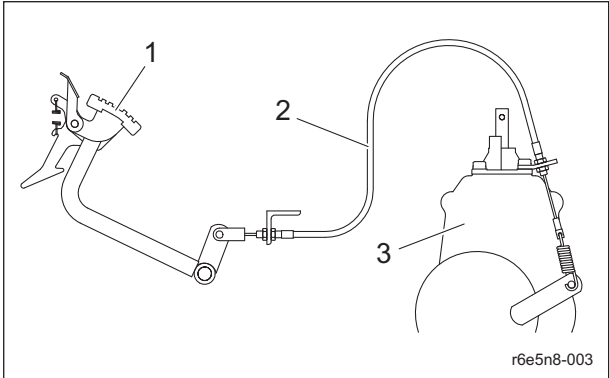
If the operator leaves the seat without applying the parking brake in power-on state, a buzzer will sound. (intermittent tone)
When the parking brake is applied, the buzzer will stop.

- 1. Park the machine on a level surface.
- 2. Switch on the machine.
"Procedure to Switch On Machine" (Page 4-16)
- 3. Set the transmission shift lever to the "Neutral" position.
"Shift Lever" (Page 4-26)
- 4. Check that the parking brake is applied.
- 5. Push the main vehicle back and forth to check that the brake is applied effectively.
- 6. Release the parking brake.
"Brake Pedal" (Page 4-27)

Handling Instructions

Handling Instructions

7. Push the main vehicle back and forth to check that the brake is not dragging.



Inspection of Parking Brake_001

1	Brake pedal
2	Parking brake wire
3	Transmission

Inspection of Travel Safety Device Brake

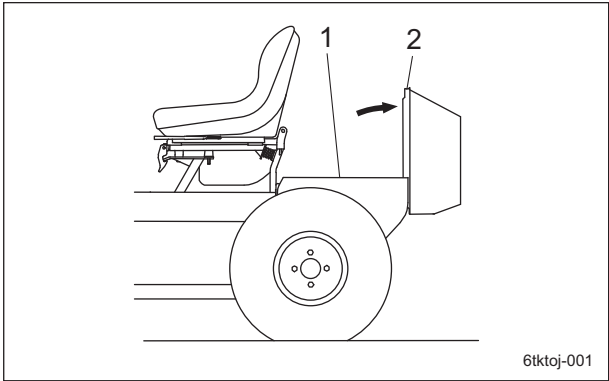
Important

If the operator leaves the seat without applying the parking brake in power-on state, a buzzer will sound. (intermittent tone)
When the parking brake is applied, the buzzer will stop.

The safety device is installed under the driver platform.

Before using the machine, check that the safety device operates correctly.

1. Park the machine on a level surface.
2. Switch on the machine.
3. Lower the rake.
4. Open the driver platform.

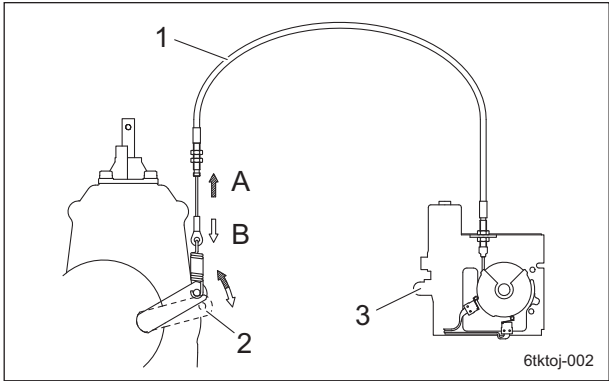


Inspection of Travel Safety Device Brake_001

1	Safety device
2	Driver platform

5. Release the parking brake.

6. Set the transmission shift lever to the "Neutral" position.
7. Check that the safety device brake wire is automatically pulled by activation of the safety device under the driver platform when the key switch is turned to the "OFF" position.
8. Apply the parking brake.
9. Check that the brake is automatically released by activation of the safety device when the key switch is turned to the "ST" position to switch on the machine.



Inspection of Travel Safety Device Brake_002

1	Safety device brake wire
2	Brake lever
3	Safety device
A	Key switch at "OFF" position: Brake wire automatically pulled
B	Key switch at "ON" position: Brake automatically released

10. Slowly turn the key switch back from the "ST" position to the "ON" position.
11. Close the driver platform.
12. Raise the rake.
13. Release the parking brake.
14. Push the main vehicle back and forth to check that the brake is not dragging.
15. Turn the key switch to the "OFF" position.
16. Push the main vehicle back and forth to check that the brake is applied effectively.

Wire

Inspection of Wire

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

Handling Instructions

Steering Wheel

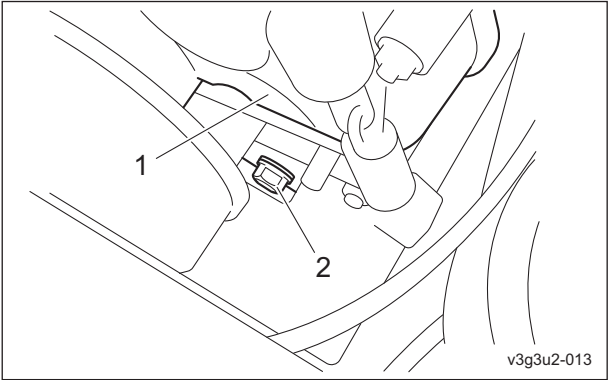
Inspection of Steering Wheel

- 1. Make sure that there is no play in the steering wheel.
- 2. Make sure that the steering wheel can be turned smoothly without abnormal noise, etc.
- 3. Make sure that the steering chain is not overtightened and is not loose.
- 4. Make sure that there are no cracks, damage or abnormal wear in the steering chain.

Transmission

Inspection of Transmission Oil

- 1. Place the machine so that its frame will be level, and then make sure that the transmission oil level is at the oil level plug at any time.
The oil level plug is located on the left side of the transmission.
- 2. Check underneath the machine for oil leakage.



Inspection of Transmission Oil_001

1	Transmission
2	Oil level plug

Supply of Transmission Oil

Important

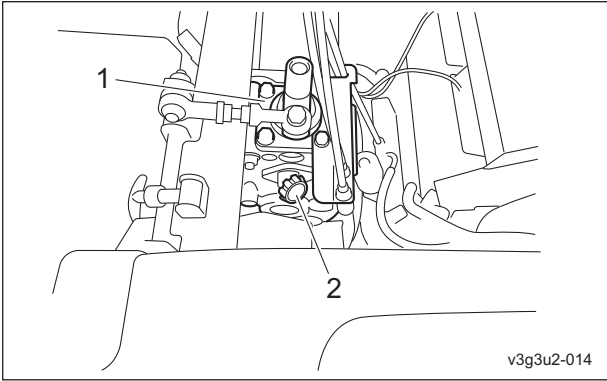
Do not mix different types of transmission oil.

Important

Be sure to pour automobile gear oil that is classified as SAE Viscosity Grade #90 into the transmission.

- 1. Remove the oil filler cap.

- 2. Supply transmission oil through the oil filling port.



Supply of Transmission Oil_001

1	Transmission
	Oil filler cap

- 3. Check the oil level again 10 to 20 minutes after replenishment.
- 4. Check underneath the machine for oil leakage.

Cooling Fins

Inspection of Cooling Fins

- 1. Make sure that there is no damage to the cooling fins.
- 2. Make sure that the cooling fins are not dirty.

Oil Leakage

Inspection of Oil Leakage

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

Tightening Torques

Important

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

Standard Tightening Torques

Bolts and Nuts

Important

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

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

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

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

The table below is for the galvanized or parkerized bolts.

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

Do not use rusty or sand attached "screw."

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

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

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

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


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



Do not use a bolt experienced too much burden.

Using the impact wrench requires the skill.

Do exercise as much as possible for steady tightening.

Handling Instructions

Nominal diameter	General bolt		
	Strength classification 4.8		
	 tib3yb-001		
	N-m	kgf-cm	lb-in
M5	3 - 5	30.59 - 50.99	26.55 - 44.26
M6	7 - 9	71.38 - 91.77	61.96 - 79.66
M8	14 - 19	142.76 - 193.74	123.91 - 168.17
M10	29 - 38	295.71 - 387.49	256.68 - 336.34
M12	52 - 67	530.24 - 683.20	460.25 - 593.02
M14	70 - 94	713.79 - 958.52	619.57 - 831.99
M16	88 - 112	897.34 - 1142.06	778.89 - 991.31
M18	116 - 144	1,182.85 - 1,468.37	1,026.72 - 1,274.54
M20	147 - 183	1,498.96 - 1,866.05	1,301.10 - 1,619.73
M22	295	3,008.12	2,611.05
M24	370	3,772.89	3,274.87
M27	550	5,608.35	4,868.05
M30	740	7,545.78	6,549.74

Nominal diameter	Heat-treated bolt					
	Strength classification 8.8			Strength classification 10.9		
	 tib3yb-002			 tib3yb-003		
	N-m	kgf-cm	lb-in	N-m	kgf-cm	lb-in
M5	5 - 7	50.99 - 71.38	44.26 - 61.96	7 - 10	71.38 - 101.97	61.96 - 88.51
M6	8 - 11	81.58 - 112.17	70.81 - 97.36	14 - 18	142.76 - 183.55	123.91 - 159.32
M8	23 - 29	234.53 - 295.71	203.57 - 256.68	28 - 38	285.52 - 387.49	247.83 - 336.34
M10	45 - 57	458.87 - 581.23	398.30 - 504.51	58 - 76	591.43 - 774.97	513.36 - 672.68
M12	67 - 85	683.20 - 866.75	593.02 - 752.34	104 - 134	1,060.49 - 1,366.40	920.50 - 1186.03
M14	106 - 134	1,080.88 - 1,366.40	938.21 - 1,186.03	140 - 188	1,427.58 - 1,917.04	1,239.14 - 1,663.99
M16	152 - 188	1,549.94 - 1,917.04	1,345.35 - 1,663.99	210 - 260	2,141.37 - 2,651.22	1,858.71 - 2,301.26
M18	200 - 240	2,039.40 - 2,447.28	1,770.20 - 2,124.24	280 - 340	2,855.16 - 3,466.98	2,478.28 - 3,009.34
M20	245 - 295	2,498.27 - 3,008.12	2,168.50 - 2,611.05	370 - 450	3,772.89 - 4,588.65	3,274.87 - 3,982.95
M22	-	-	-	530	5,404.41	4,691.03
M24	-	-	-	670	6,831.99	5,930.17
M27	-	-	-	1,000	10,197.00	8,851.00
M30	-	-	-	1,340	14,628.78	11,860.34

Note:

The same values are applied to "fine screw thread."

Handling Instructions

Principal Tightening Torques

Tightening Torque by Model

SP160EB

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

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

Location		Code	Part name	Tightening torque			Thread locking adhesive
				N-m	kgf-cm	lb-in	
Chain wheel		K0010100202	Bolt, heat-treated M10-20	29 - 38	295.71 - 387.49	256.68 - 336.34	—
Front wheel	Front wheel bracket	K0000100252	Bolt, M10-25	29 - 38	295.71 - 387.49	256.68 - 336.34	—
	Wheel bearing	K0000100352	Bolt, M10-35	29 - 38	295.71 - 387.49	256.68 - 336.34	—
	Wheel	K0011120352	Bolt, heat-treated M12-35P1.5	67 - 85	683.20 - 866.75	593.02 - 752.34	—
	Rhombic flange unit	K0661204010	Rhombic flange unit UCFL204L2	—	—	—	M6 set screw
Rear wheel	Wheel mounting base	K0160000042	20 special nut P1.5	147 - 183	1,498.96 - 1,866.05	1,301.10 - 1,619.73	—
	Wheel	K0011120252	Bolt, heat-treated M12-25P1.5	67 - 85	683.20 - 866.75	593.02 - 752.34	—
Servomotor		K001A080251	Bolt, w/hexagon hole, M8-25	14 - 19	142.76 - 193.74	123.91 - 168.17	—
Electrolytic capacitor		K0000050122	Bolt, M5-12	3	30.59	26.55	—


Note:

The maximum allowable tightening torque for the mounting bolt of the electrolytic capacitor is 3.23 N-m.


Handling Instructions

Adjustment before Work

Adjustment of Steering Wheel

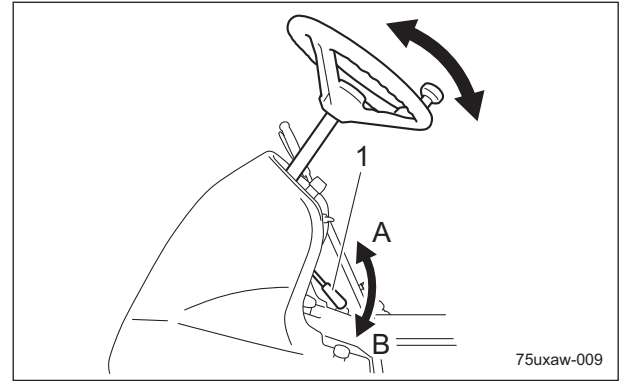
**Warning**

Since it is dangerous, do not adjust while traveling.

**Caution**

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

The steering wheel can be adjusted up or down with the tilt lever. Adjust the position according to the operator's body size. Shift the tilt lever to the "FREE" position, move the steering wheel to the position that suits your work requirements, and then shift the tilt lever to the "LOCK" position to secure it. The tilt lever is located to the left of the driver's seat.

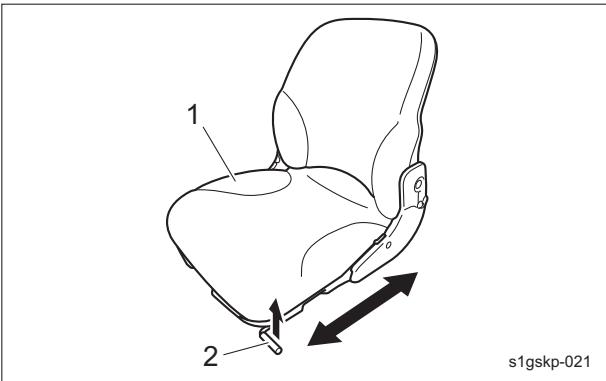


Adjustment of Steering Wheel_001

1	Tilt lever
A	FREE
B	LOCK

Adjustment of Seat

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

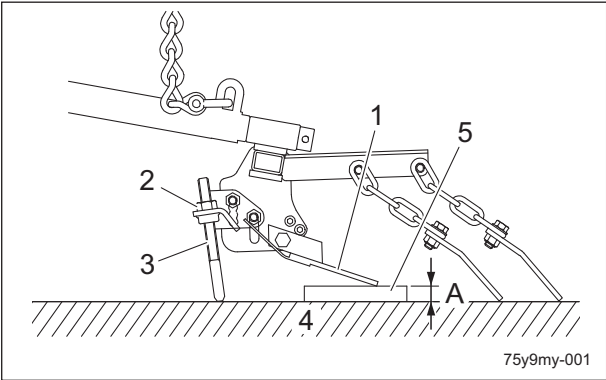


Adjustment of Seat_001

1	Seat
2	Adjuster lever

Adjustment of Rake

1. Adjust the fork prong bar.
The working depth of fork prong bar can be adjusted with the nut.
- [1] On a level surface, lower the rake, and then drive the machine forward about approximately 20 cm (7.87 in).
- [2] Place a wooden board with a thickness of about 15 mm (0.59 in) under the warp board.
- [3] Adjust the fork prong bar to a position where the rake load is applied to the wooden board and the tip of the fork prong bar lightly touches the ground, and then lock it in place with the nut.



Adjustment of Rake_001

1	Warp board
2	Nut
3	Fork prong bar
4	Flat concrete surface
5	Wooden board
A	15 mm (0.59 in)

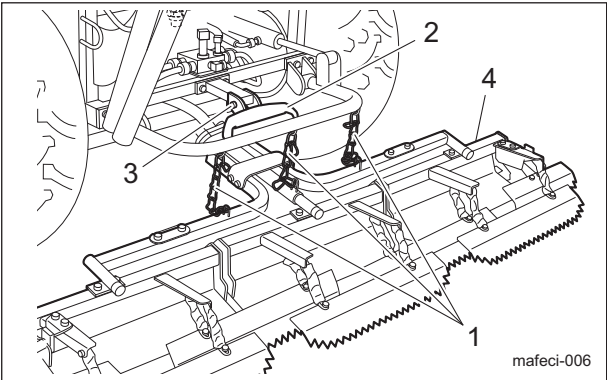
Handling Instructions

2. Adjust the rake height.

The height of raised rake can be adjusted by the link of the cross link chains.

As a standard, 8 links of chain are used.

- [1] Lower the rake on a level surface.
- [2] Loosen the nut.
- [3] Reduce the number of chain link.
- [4] Raise the rake.
- [5] Adjust the rake stopper so that it lightly touches the rake, and then tighten the nut.
- [6] Raise and lower the rake to check that it lightly touches the rake stopper.



Adjustment of Rake_002

1	Cross-link chains
2	Rake stopper
3	Nut
4	Rake

Adjustment of Blade

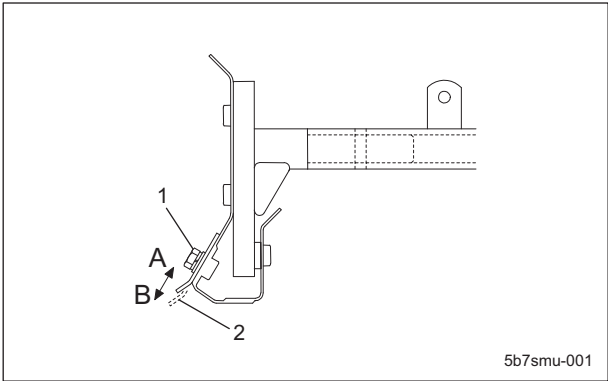
Note:

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

The blade can be adjusted with the bolt.

- 1. Loosen the bolt, and then move the small blade to the desired position.
 - [1] Toward A to take a thin layer from the surface of the sand
 - [2] Toward B to take a thick layer from the surface of the sand

2. Tighten the bolt.



Adjustment of Blade_001

1	Bolt
2	Small blade

Adjustment of Finishing Brush

Note:

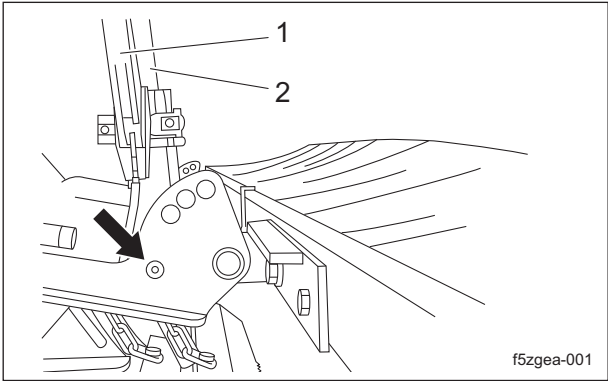
Depending on the specifications, this function may not be available.

The height of the finishing brush can be adjusted by moving the right and left movable arms while gripping the right and left clutch levers.

Return the clutch levers after adjusting the height of the brush on the ground according to the bunker conditions.

The mounting height can be adjusted to one of four levels.

- 1. When traveling, adjust to the lowest position.

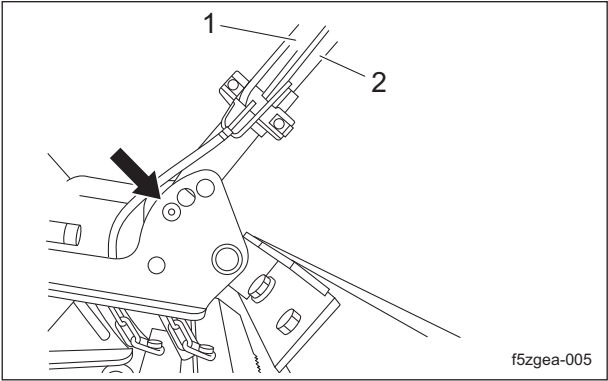


Adjustment of Finishing Brush_001

1	Clutch lever
2	Movable arm

Handling Instructions

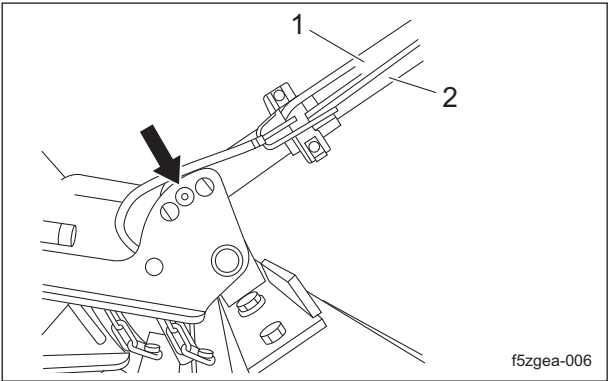
2. When used for light finishing, adjust to the position second from the bottom.



Adjustment of Finishing Brush_002

1	Clutch lever
2	Movable arm

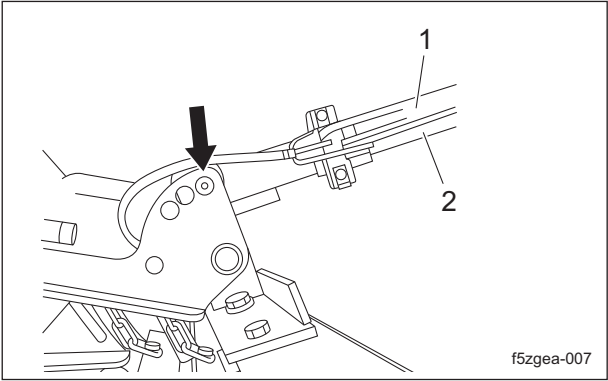
3. When used for normal finishing, adjust to the position third from the bottom.



Adjustment of Finishing Brush_003

1	Clutch lever
2	Movable arm

4. When used for heavy finishing, adjust to the highest position.



Adjustment of Finishing Brush_004

1	Clutch lever
2	Movable arm

Procedure to Switch On/Off Machine

Procedure to Switch On Machine

Warning

The machine may enter a free-run (neutral) state for electrical or mechanical reasons. Depress the brake pedal to stop the machine.

- If the machine entered a free-run state for electrical reasons, the travel safety device will be activated and the brake will be automatically applied. However, depending on the circumstances, the machine may not be stopped. In that case, depress the brake pedal to stop the machine.

These are the cases of free-run state for electrical reasons.

1. When the red LEDs in the alarm display panel light up.
2. When the buzzer notifies.
3. When the machine is switched off.

- If the machine entered a free-run state for mechanical reasons, depress the brake pedal to stop the machine. This is the case of free-run state for mechanical reasons.

1. When the shift lever is set to the "Neutral" position.

Warning

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

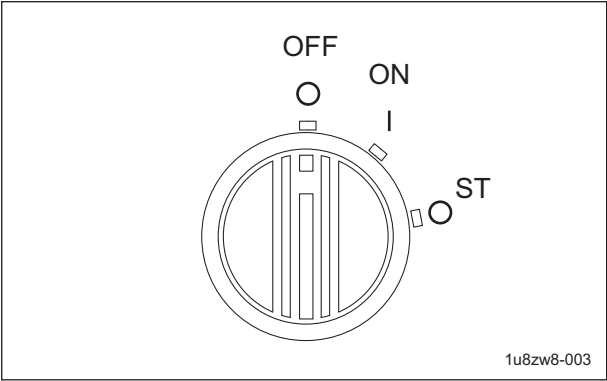
Caution

Make sure that the covers are correctly installed and are not damaged.

1. Sit on the seat.
2. Make sure that the parking brake is applied.
3. Make sure that the traveling pedal is in the neutral position.

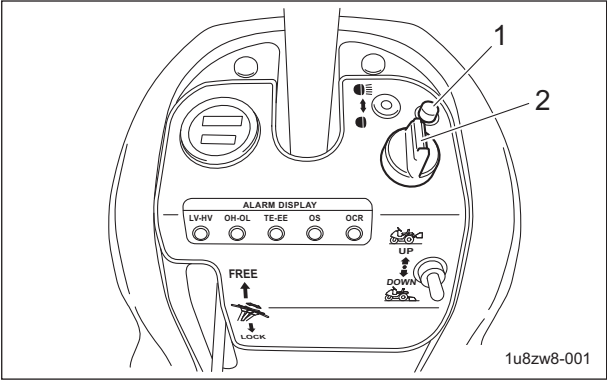
Handling Instructions

4. Turn the key switch to the "ST" position to switch on the machine.



Procedure to Switch On Machine_001

Note:
When the machine is switched on, the buzzer sounds briefly and the red LED lights up.



Procedure to Switch On Machine_002

1	Red LED
2	Key switch

5. Slowly turn the key switch back to the "ON" position.

Procedure to Switch Off Machine

Warning

Make sure that the parking brake is applied before switching off the machine.
The machine may jerk.

Important

If the operator leaves the seat without applying the parking brake in power-on state, a buzzer will sound. (intermittent tone)
When the parking brake is applied, the buzzer will stop.

1. Set the traveling pedal to neutral.

2. Stop the machine on level ground, and then apply the parking brake.
3. Raise the rake.
4. If the blade and cultivator installed, raise them.
5. Turn the key switch to the "OFF" position.

Safety Mechanisms

This machine is equipped with a safety function for switching on the machine.
When switching on the machine, the safety function prevents the machine from being switched on unless all of the following three conditions are met.

- An operator is sitting on the seat.
- The parking brake is applied.
- The traveling pedal is set to the neutral position.

Warning Mechanisms


This machine features a warning mechanism to indicate when the operator leaves the seat without applying the parking brake or when a malfunction is detected in the travel control system.

1. If the operator leaves the seat without applying the parking brake in power-on state, a buzzer will sound. (intermittent tone)
* When the parking brake is applied, the buzzer will stop.
2. If any of the following malfunctions are detected in the travel control system, a buzzer will sound. (continuous tone)

- [1] LV (low voltage)
- [2] HV (high voltage)
- [3] OH (overheating)
- [4] OL (overload)
- [5] TE (transistor error)
- [6] EE (encoder error)
- [7] OS (overspeed)

* Stop the machine, apply the parking brake, and then turn the key switch to the "OFF" position.
When the key switch is turned to the "ON" position after a while, the buzzer will stop.
If the buzzer continues to sound, check which red LED in the alarm display panel is lit.
"Alarm Display Panel" (Page 4-30)

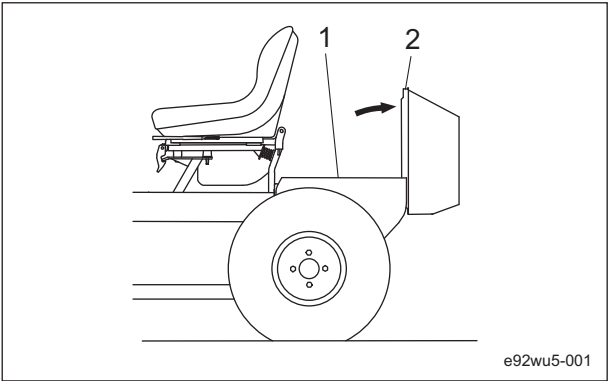
Travel Safety Device

Warning

It may result in an unexpected accident, if the machine enters a free-run state.
For fear that the travel safety device malfunctions and the brake is not automatically applied, immediately depress the brake pedal to stop the machine when the buzzer sounds.
When switching off the machine, make sure that the parking brake is applied.

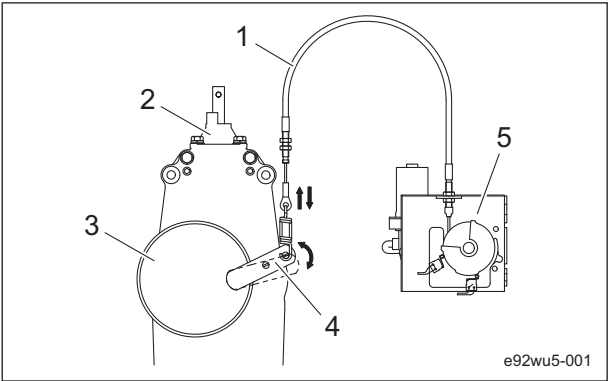
The travel safety device is installed under the driver platform.

1. When the travel safety device is activated, the brake wire is automatically pulled to stop the machine.



Travel Safety Device_001

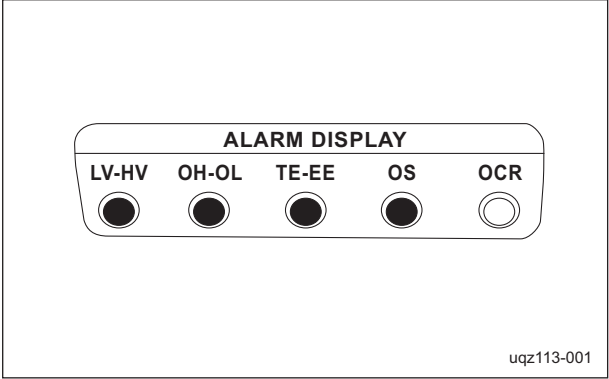
1	Travel safety device
2	Driver platform



Travel Safety Device_002

1	Brake wire
2	Transmission
3	Brake
4	Brake lever
5	Travel safety device

2. The travel safety device is activated when a malfunction is detected in the travel electrical control system and a red LED in the operation panel lights up or when the machine is switched off.



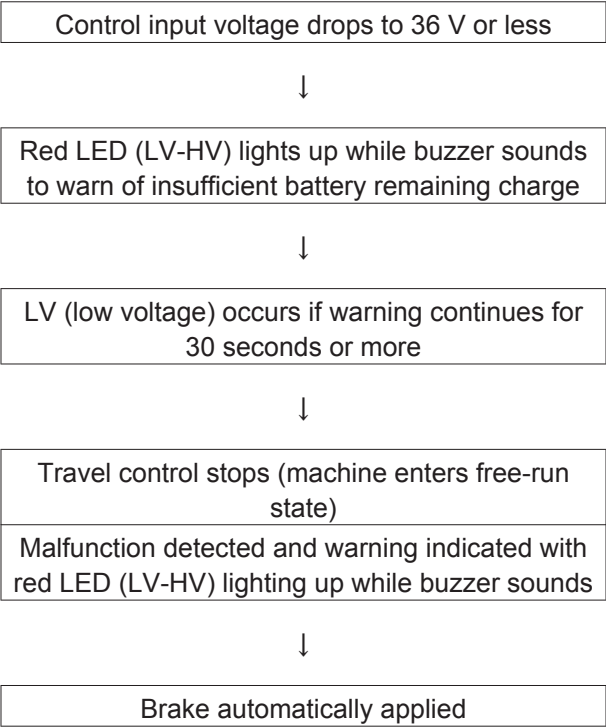
Travel Safety Device_003

Handling Instructions

Malfunction Detection

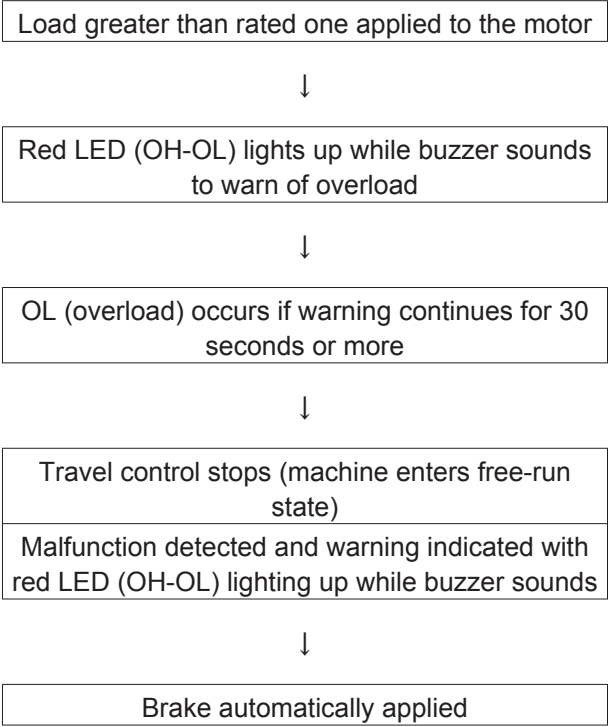
LV

- 1. If the normal control input voltage of 48 V drops to 36 V or less due to the load, a red LED (LV-HV) in the alarm display panel lights up while the buzzer sounds to warn that the battery remaining charge is insufficient.
Immediately recharge the battery.
- 2. If the load is removed and the voltage is restored, the buzzer stops.
The voltage drop due to the load increases if the battery remaining charge has become insufficient.
- 3. A malfunction is detected if the warning continues for 30 seconds or more and, in addition to the red LED (LV-HV) lighting up and the buzzer sounding, the travel safety device automatically applies the brake since the machine enters a free-run state.



OL

- 1. If a load greater than rated one is applied to the motor, the red LED (OH-OL) in the alarm display panel lights up and the buzzer sounds to warn that the load applied to the motor is too large.
Travel at low speed.
- 2. If the load is reduced to no more than rated one, the buzzer stops.
- 3. If the warning continues for 30 seconds or more and a malfunction is detected, in addition to the red LED (OH-OL) lighting up and the buzzer sounding, the travel safety device automatically applies the brake since the machine enters a free-run state.



Key Switch ON

1. In addition to the red LED lighting up and the buzzer sounding to warn of the malfunction, the travel safety device automatically applies the brake since the machine enters a free-run state.

HV (high voltage)/OH (overheating)/TE (transistor error)/EE (encoder error)/OS (overspeed) occurs

Travel control stops (machine enters free-run state)
Malfunction detected and warning indicated with red LED lighting up while buzzer sounds

Brake automatically applied

1. Since the machine enters a free-run state, the travel safety device automatically applies the brake.

Key switch OFF

Machine enters free-run state

Brake automatically applied

1. If no malfunction is detected in the travel electrical control system, the travel safety device automatically releases the brake.
2. If a malfunction is detected, the brake is not automatically released.

Key switch ON

Malfunction confirmation time
(Buzzer sounds briefly)

No malfunction

Malfunction detected

Control begins normally
(Buzzer stops)

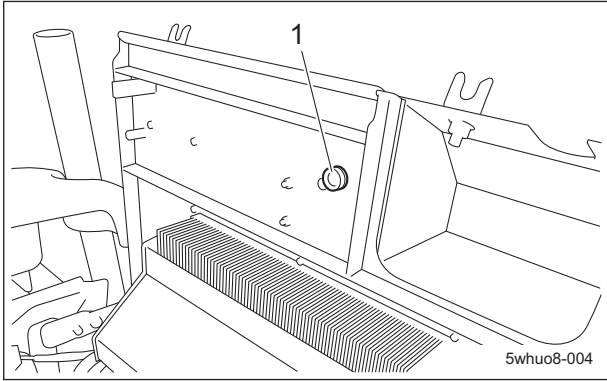
Brake automatically released

Control does not begin
(Buzzer continues
sounding)

Brake not automatically released

Protection Device (OCR)

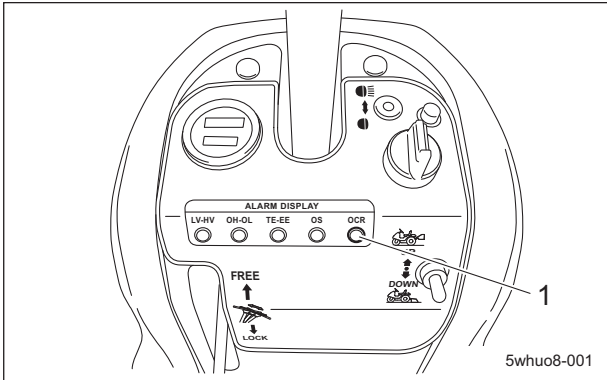
If an overcurrent is fed to the circuits of the safety device, the current is interrupted by the OCR (overcurrent relay) to protect the safety device circuitry.
The OCR is located on the bottom of the driver platform.



Protection Device (OCR)_001

1	OCR
---	-----

1. If the OCR is activated, the machine does not travel, even if the traveling pedal is depressed, and the OCR LED (orange) lights up.



Protection Device (OCR)_002

1	OCR LED
---	---------

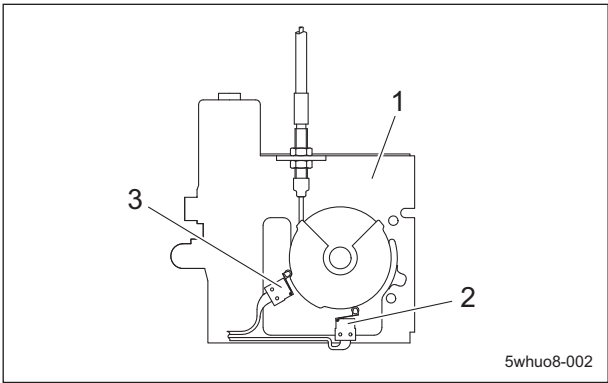
Important

Before performing maintenance on the electrical system, be sure to disconnect the negative terminal of the battery.

2. If the OCR LED lights up, the following troubles may have occurred.

- Inappropriate positions of the limit switches.
- Current surge in the safety device circuit due to a damage.

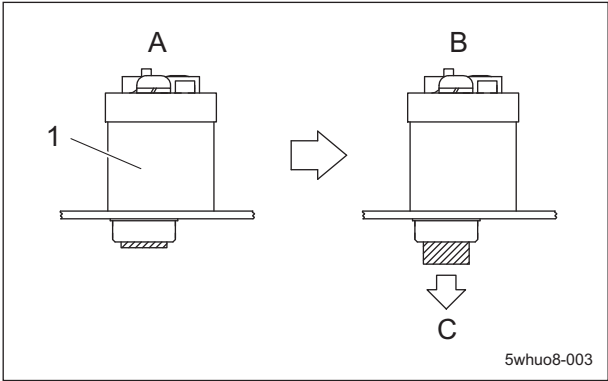
Adjust the limit switches in the safety device and check for the cause such as damage.



Protection Device (OCR)_003

1	Safety device
2	Limit switch B
3	Limit switch A

3. Press the OCR button to reset the safety device and turn off the OCR LED.




Protection Device (OCR)_004


1	OCR
A	Normal
B	OCR activated
C	Button pops out

Operation Method

Cautions for when You Leave The Machine

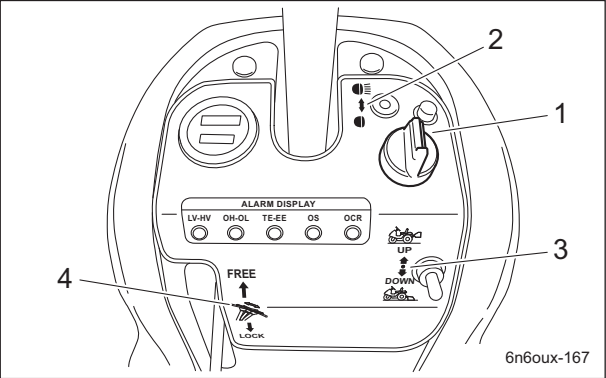
 Caution

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

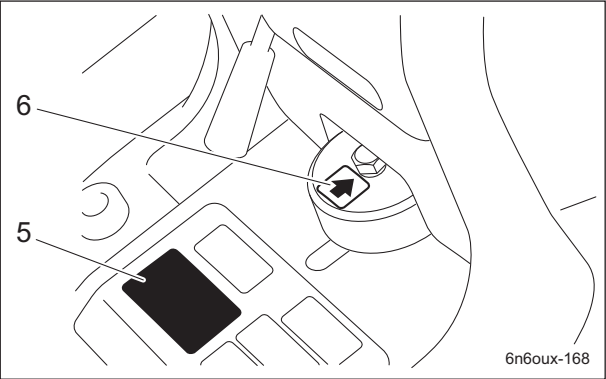
 Caution

Never park the machine on a slope.

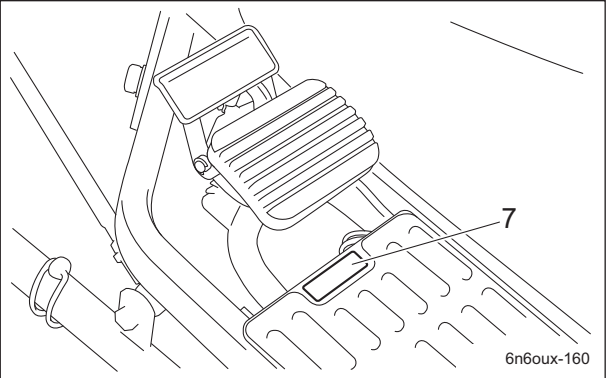
Positions of Operation Decals



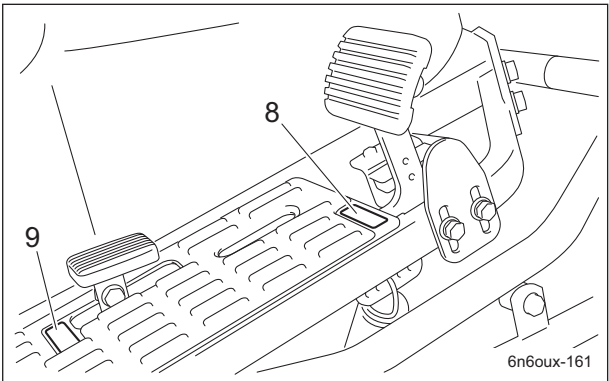
Positions of Operation Decals_001



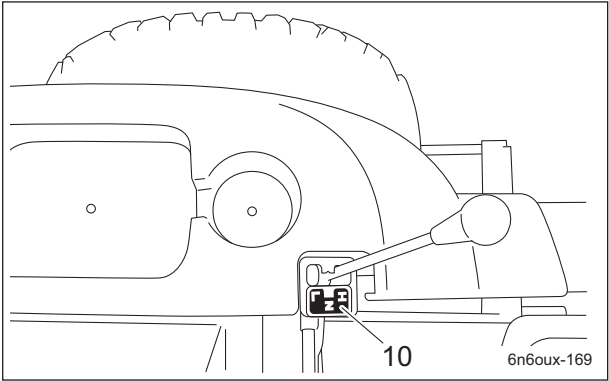
Positions of Operation Decals_002



Positions of Operation Decals_003



Positions of Operation Decals_004



Positions of Operation Decals_005

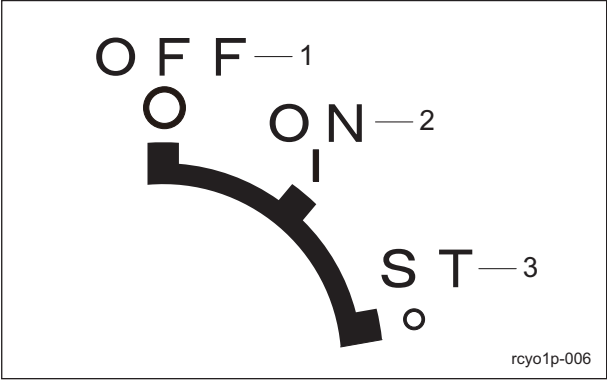
1	Key switch mark
2	Light switch mark
3	Rake up/down mark
4	Tilt steering mark
5	Parking brake mark
6	Front wheel mark
7	BRAKE decal
8	FORWARD decal
9	BACKWARD decal
10	Indicating shift decal

Handling Instructions

Description of Operation Decals

Key Switch Mark

Key switch mark
This indicates the key switch positions.

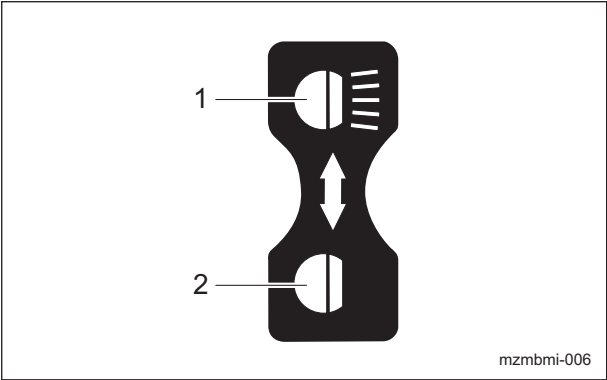


Key Switch Mark_001

1	OFF
2	ON
3	START

Light Switch Mark

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

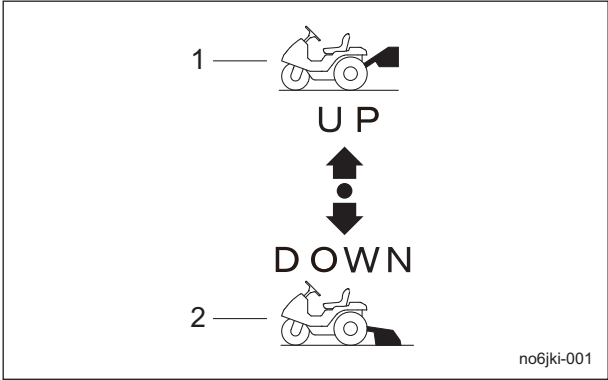


Light Switch Mark_001

1	ON
2	OFF

Rake Up/Down Mark

Rake up/down mark
This indicates up/down of the rake.

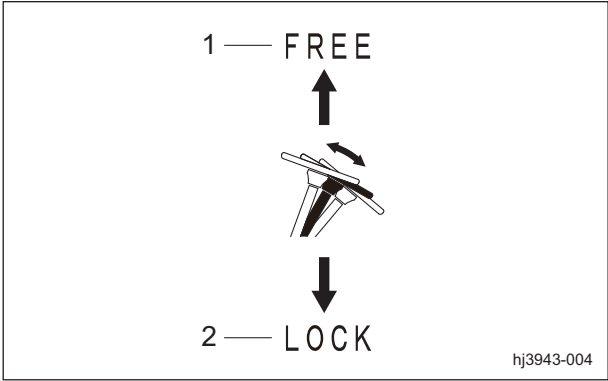


Rake Up/Down Mark_001

1	UP
2	DOWN

Tilt Steering Mark

Tilt steering mark
This indicates the direction of tilt steering and lock/free of the position.



Tilt Steering Mark_001

1	FREE
2	LOCK

Parking Brake Mark

Parking brake mark

This indicates lock/release of the parking brake.

The diagram shows two states of a parking brake. On the left, labeled '1', is the 'Lock' state: a parking brake lever is pulled up, and a lock icon (a circle with 'P' and a padlock) is shown above it. On the right, labeled '2', is the 'Release' state: the parking brake lever is pushed down, and the same lock icon is shown above it. The diagram is labeled 'kgbxi7-004' in the bottom right corner.

Parking Brake Mark_001

1	Lock
2	Release

Front Wheel Mark

K4209001180

DECAL, ARROW POINT

This indicates the front wheel direction.

The diagram shows a large black arrow pointing upwards, enclosed in a rounded square border. The diagram is labeled 'agarj1-001' in the bottom right corner.

Front Wheel Mark_001

BRAKE Decal

K4203001450

Decal, BRAKE

This indicates brake.

The diagram shows a black rectangular box with the word 'BRAKE' in white capital letters. The diagram is labeled '7elqr2-001' in the bottom right corner.

BRAKE Decal_001

FORWARD Decal

K4203001430

Decal, FORWARD

This indicates forward travel.

The diagram shows a black rectangular box with the word 'FORWARD' in white capital letters. The diagram is labeled 'kqca3e-001' in the bottom right corner.

FORWARD Decal_001

Handling Instructions

BACKWARD Decal

K4203001440

Decal, BACKWARD

This indicates backward travel.



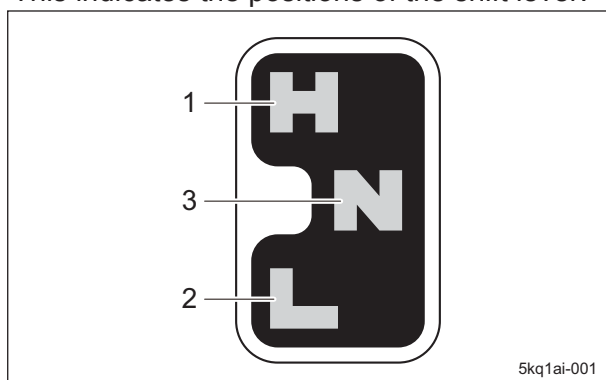
BACKWARD Decal_001

Indicating Shift Decal

SP160E-0131Z0

DECAL, INDICATING SHIFT

This indicates the positions of the shift lever.



Indicating Shift Decal_001

1	High speed
2	Low speed
3	Neutral

Light Switch

Note:

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

Caution

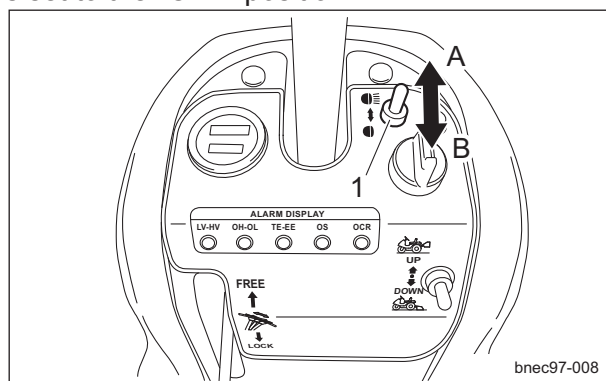
The lights provide auxiliary lighting. Do not operate the machine at night or under poor visibility.

The light switch is located in the operation panel.

When the switch is set to the "ON" position, the lights turn on. When it is set to the "OFF" position, the lights turn off.

Note:

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



Light Switch_001

1	Light switch
A	ON
B	OFF

Up/Down Switch Lever

Important

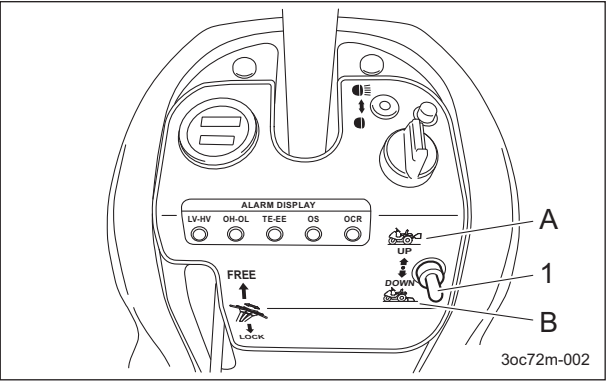
The rake cannot be raised or lowered when the driver platform is open or has not be correctly closed.

The up/down switch lever is on the right side below the steering wheel and is used to operate the rake.

- Shift the up/down switch lever to the "UP" position to raise the rake and automatically stop it at its highest position.
- Shift the up/down switch lever to the "DOWN" position to lower the rake and automatically stop it at its lowest position.

Handling Instructions

- Shift the up/down switch lever to the neutral position to stop the rake.



Up/Down Switch Lever_001

1	Up/down switch lever
A	UP
B	DOWN

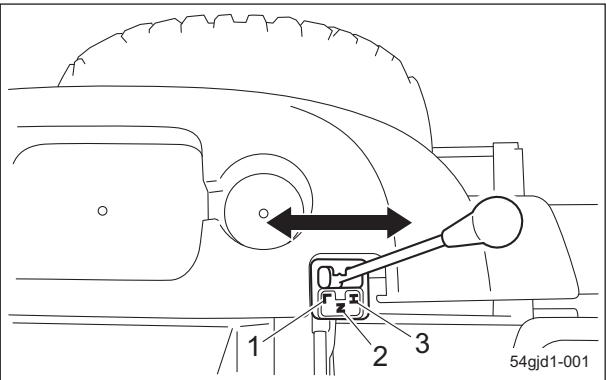
Shift Lever



When moving the shift lever, make sure to stop the machine completely on a level surface.

The shift lever is located to the left of the seat. It can be set to the three levels "Low speed", "Neutral" and "High speed". Set the lever to the position appropriate for traveling or your work requirements.

Low speed (L):	When leveling the bunker When using the blade When using the cultivator When traveling on steep uphill
Neutral (N):	When towing this machine When servicing this machine
High speed (H):	When traveling



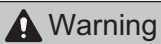
Shift Lever_001

1	Low speed
2	Neutral
3	High speed

Traveling Pedal



Do NOT start to move or stop the machine abruptly. Doing so is very dangerous and may cause damage.



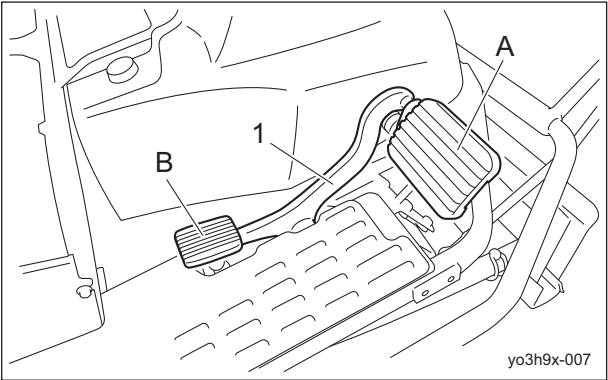
Do not release the parking brake with your foot left on the traveling pedal. The machine may suddenly accelerate.

The traveling pedal is located in the right foot area.

When the forward side is depressed, the machine travels forward. When the reverse side is depressed, the machine travels backward.

The speed changes in accordance with how much the pedal is depressed. When you take your foot off the pedal, the machine stops automatically.

Note:
The machine cannot travel if the parking brake is applied.



Traveling Pedal_001

1	Traveling pedal
A	Forward
B	Backward

Handling Instructions

Brake Pedal

Caution

When leaving the driver's seat, park the machine on a stable, flat surface and be sure to apply the parking brake.

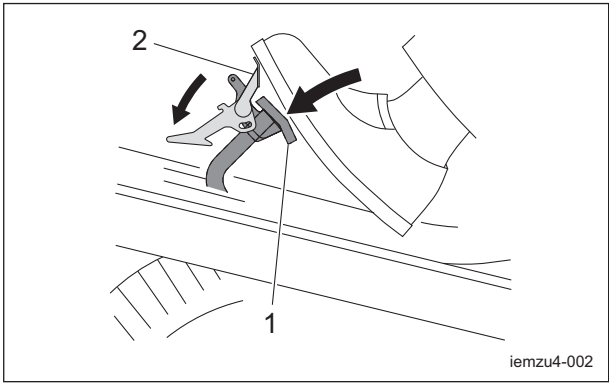
Caution

Do not park on a slope.

Important

To keep stopping on a slope, be sure to apply the parking brake.
Keeping stopping without braking eats electricity of the battery.

The brake pedal is located in the left foot area. To stop the machine, depress the brake pedal all the way firmly.
When parking, firmly depress the brake pedal and lock it with the lock fitting.
To release it, firmly depress the brake pedal and release the lock fitting.



Brake Pedal_001

1	Brake pedal
2	Lock fitting

Front Cover

Caution

Do not open the front cover in strong winds.

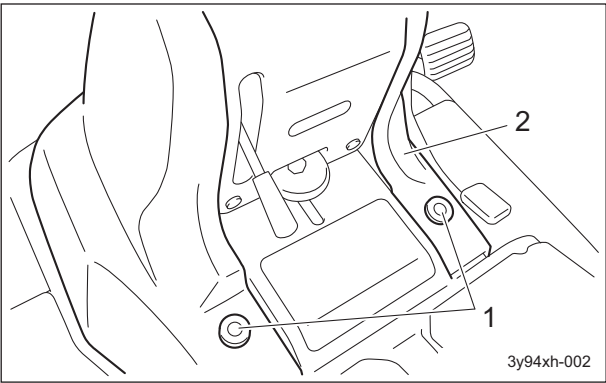
Caution

When closing the front cover, be careful not to pinch your hands.

The front cover is in front of the steering wheel and is opened in order to perform maintenance.

Follow the steps below to open the front cover.

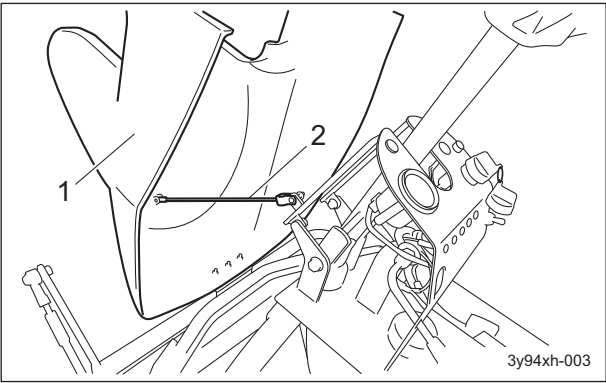
1. Remove the dimple knobs.



Front Cover_001

1	Dimple knobs
2	Front cover

2. Open the front cover, and then tilt it forward until the wire is fully extended.




Front Cover_002


1	Front cover
2	Wire

Handling Instructions

Driver Platform

 Caution

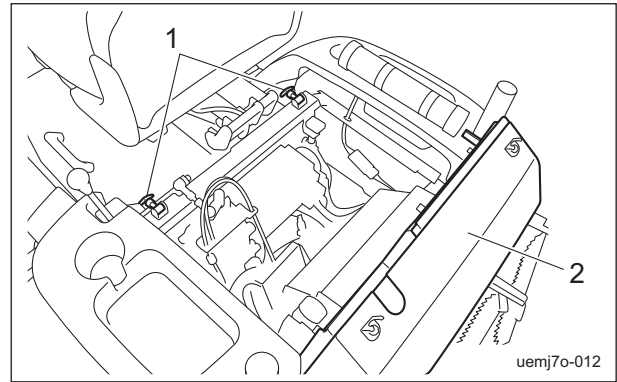
Do not open the driver platform in strong winds.

 Caution

When closing the driver platform, be careful not to pinch your hands.

Follow the steps below to open the driver platform.

- 1. Lower the rake.
- 2. Release the rubber catches, and then fully open the driver platform.



Driver Platform_001


1	Rubber catch
2	Driver platform

- 3. When closing the driver platform, slowly lower it while securely supporting it, and then firmly secure the rubber catches.


Note:

When the driver platform is opened, a safety switch is activated and the rake cannot be raised or lowered.

Seat Platform

 Caution

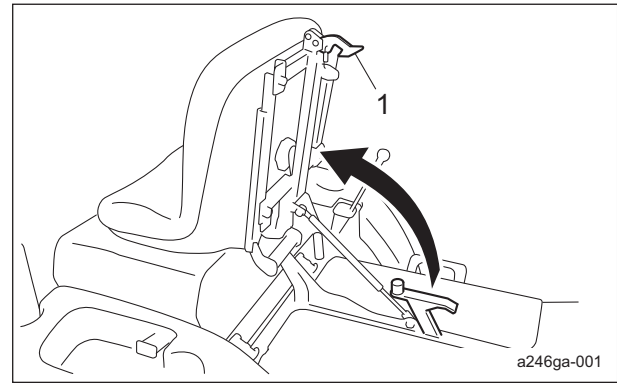
Do not open the seat platform in strong winds.

 Caution

When closing the seat platform, be careful not to pinch your hands.

Follow the steps below to open the seat platform.

- 1. With the seat lever, bring the seat to the frontmost position.
- 2. Lightly press down the seat, and then release the seat platform fastener.
- 3. Open the seat platform.




Seat Platform_001

1	Seat platform fastener
---	------------------------

Battery Cover

 Caution

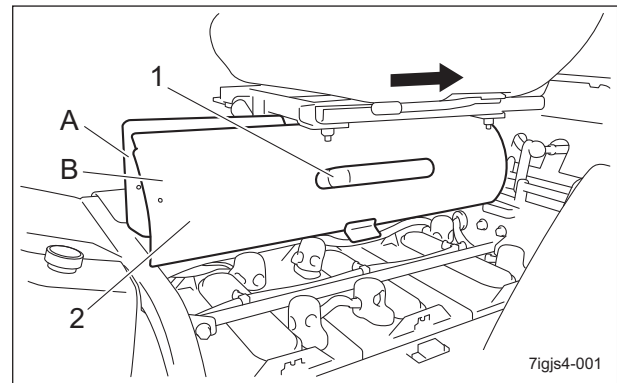
Do not open the battery cover in strong winds.

 Caution

When closing the battery cover, be careful not to pinch your hands.

The battery covers are located on the left and right sides under the seat and are opened in order to recharge the battery and perform maintenance.

- 1. Open the seat platform.
- 2. Grip the handle and pull up the battery cover to attach cover A to the magnet.
- 3. Slide cover B in the direction of the arrow to remove it.



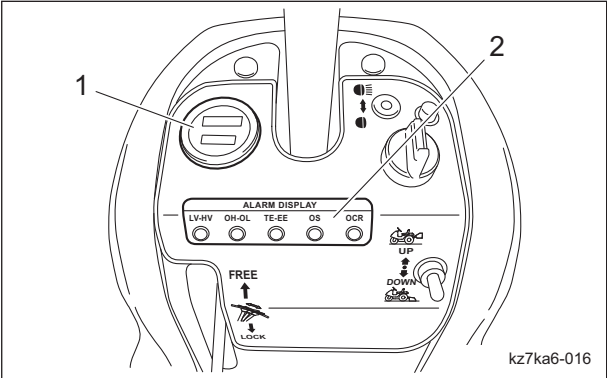
Battery Cover_001

Handling Instructions

1	Handle
2	Battery cover
A	Cover A
B	Cover B

Instruments

Instruments on The Operation Panel



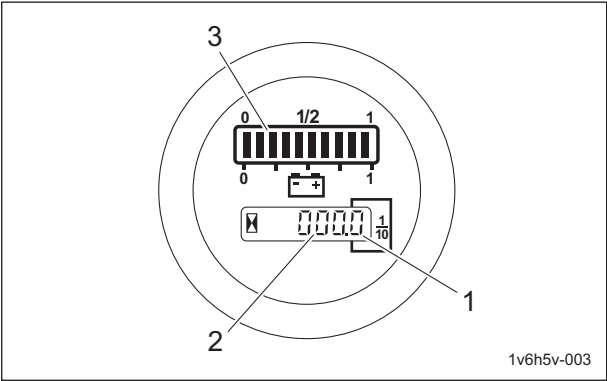
Instruments on The Operation Panel_001

1	Battery remaining charge gauge
2	Alarm display

Battery Remaining Charge Gauge

Battery Remaining Charge

Battery remaining charge is displayed in the upper gauge of the battery remaining charge gauge.



Battery Remaining Charge_001

1	1/10 wheel
2	Hour wheel
3	Battery remaining charge

When the battery is fully charged, the LED indicating lamp on the right end lights up and moves to the left as the battery becomes discharged.

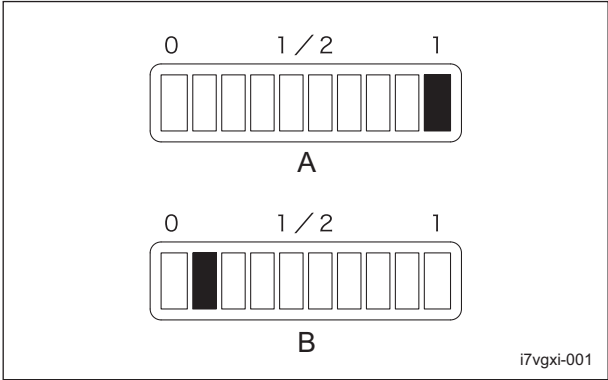
When the second LED indicating lamp from the left lights up, it is time to recharge the battery.

If you continue to operate the machine in this condition, the battery remaining charge will become insufficient and a buzzer will sound. "Alarm Display Panel" (Page 4-30)

When the second LED indicating lamp from the left lights up, immediately recharge the battery.

"Charging of Battery" (Page 4-7)

* The machine up-time per charge differs greatly depending on the course configuration, number of bunkers and operations performed.



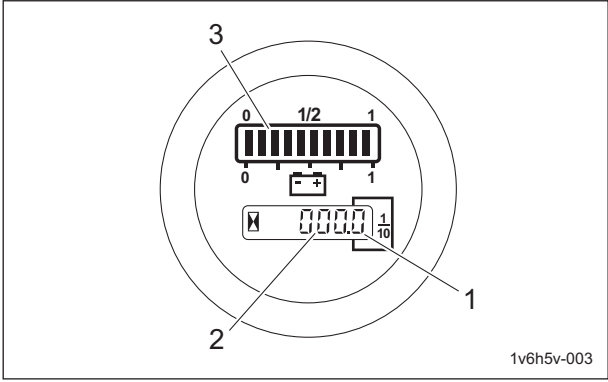
Battery Remaining Charge_002

A	Fully charged
B	Time to recharge

Hour Meter

The accumulated operation time is displayed in the lower gauge of the battery remaining charge gauge in the operation panel.

Every six minutes of operation will increase the number at the first digit by one. Every one hour of operation will increase the number at the next digit by one.



Hour Meter_001

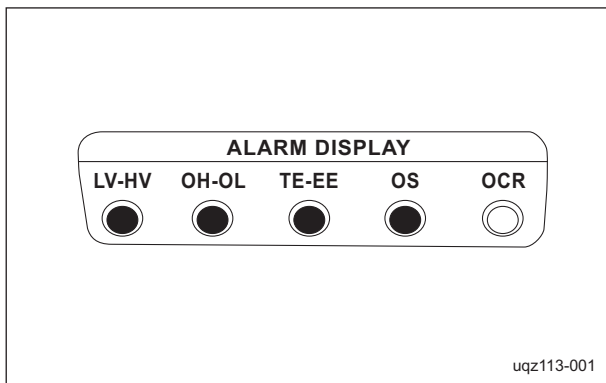
1	1/10 wheel
2	Hour wheel
3	Battery charge remaining

Handling Instructions

Alarm Display Panel

The alarm display panel is located in the operation panel.

Red (orange for OCR) LEDs light up when a malfunction is detected in the travel electrical control system or when the machine is switched off.



Alarm Display Panel_001

Handling Instructions

Code	Name of error	Details of error	Cause	Remedy
LV	Low voltage	<ul style="list-style-type: none"> Control input voltage drops to 36 V or less for 30 seconds 	<ul style="list-style-type: none"> Insufficient battery remaining charge Faulty battery charging End of battery life 	<ul style="list-style-type: none"> Recharge the battery. Check the charger connections. Measure the specific weight of the battery to diagnose it.
HV	High voltage	<ul style="list-style-type: none"> Control input voltage rises to 70 V or more 	<ul style="list-style-type: none"> Machine abruptly stopped while traveling downhill continuously for 2 to 3 minutes or more 	<ul style="list-style-type: none"> Do not stop the machine abruptly while traveling downhill continuously for 2 to 3 minutes or more.
OH	Overheating	<ul style="list-style-type: none"> Temperature of cooling fins for servo drive increases to 80 °C (176 °F) or more Temperature of motor increases to 130 °C (266 °F) or more 	<ul style="list-style-type: none"> Drive cooling fan not rotating Dirty cooling fins Traveling with the brake dragging 	<ul style="list-style-type: none"> Replace the drive cooling fan. Clean the cooling fins. Adjust the brake.
OL	Overload	<ul style="list-style-type: none"> Load greater than rated torque applied to motor 	<ul style="list-style-type: none"> High-load operations using blade or cultivator performed at high speed Traveling at high speed on a steep upward slope Traveling with the brake dragging 	<ul style="list-style-type: none"> Perform high-load operations at low speed. Travel at low speed on a steep upward slope. Adjust the brake.
TE	Transistor error	<ul style="list-style-type: none"> Current greater than specified value fed to transistor Transistor temperature exceeds specified value Transistor control voltage less than specified value 	<ul style="list-style-type: none"> High-load operations using blade or cultivator performed at high speed Traveling at high speed on a steep upward slope Traveling with the brake dragging 	<ul style="list-style-type: none"> Perform high-load operations at low speed. Travel at low speed on a steep upward slope. Adjust the brake.
EE	Encoder error	<ul style="list-style-type: none"> Error occurred in encoder signal from motor 	<ul style="list-style-type: none"> Loose encoder connector Broken or shorted encoder cable 	<ul style="list-style-type: none"> Correctly connect the encoder connector. Replace the encoder cable.
OS	Overspeed	<ul style="list-style-type: none"> Motor rpm exceeds specified value 	<ul style="list-style-type: none"> Traveling at high speed on a steep downward slope after LV occurs 	<ul style="list-style-type: none"> Travel at low speed on a steep downward slope after LV occurs.
OCR	Overcurrent relay	<ul style="list-style-type: none"> Overcurrent fed to circuits of travel safety device 	<ul style="list-style-type: none"> Faulty adjustment of limit switches in travel safety device Damage to limit switches in travel safety device 	<ul style="list-style-type: none"> Adjust the limit switches in the travel safety device. Replace the limit switches in the travel safety device.

Handling Instructions

Move

Precautions during Travel

⚠ Warning

It may result in an unexpected accident if the machine enters a free-run state. For fear that the travel safety device malfunctions and the brake is not automatically applied, immediately depress the brake pedal to stop the machine when the buzzer sounds. When switching off the machine, make sure that the parking brake is applied.

⚠ Warning

When you descend a slope, drive at low speed and avoid abrupt steering.

⚠ Caution

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

⚠ Caution

Before moving the shift lever, make sure to stop the machine completely on a level surface.

Important

Before traveling, make sure that the output plug of the charger is disconnected from the connector on the main vehicle.

Traveling Procedure

1. Switch on the machine.
"Procedure to Switch On Machine" (Page 4-16)
2. Make sure that the rake is raised.
3. Make sure that the blade and cultivator are raised if they installed.
4. Release the parking brake.
5. Set the shift lever to the "Low speed" position or the "High speed" position.
6. Slowly depress the traveling pedal.
7. The machine starts traveling.

8. When you take your foot off the traveling pedal, the machine stops slowly.

Towing The Machine

⚠ Caution

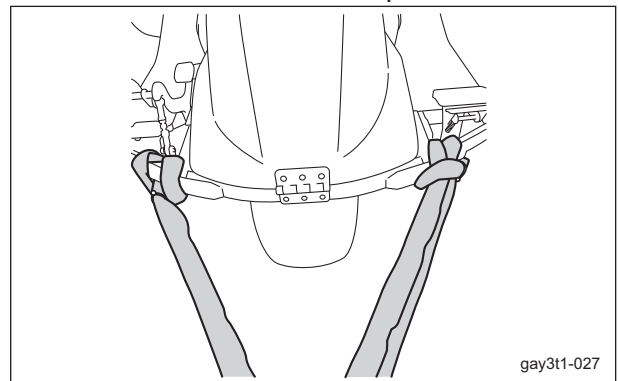
When towing the machine, travel at a speed no more than 3.0 km/h.

⚠ Caution

If the travel safety device brake wire is removed from the hook spring on the transmission brake lever, the brakes will no longer operate and the machine will enter a free-run (neutral) state. After repairs are completed, be sure to attach the travel safety device brake wire to the hook spring.

If the machine does not travel due to activation of the safety device, etc., you can move it by towing or pushing it.

1. Apply the parking brake.
2. Lower the rake.
3. Switch off the machine.
4. Chock the wheels.
5. Secure the machine with ropes.



Towing The Machine_001

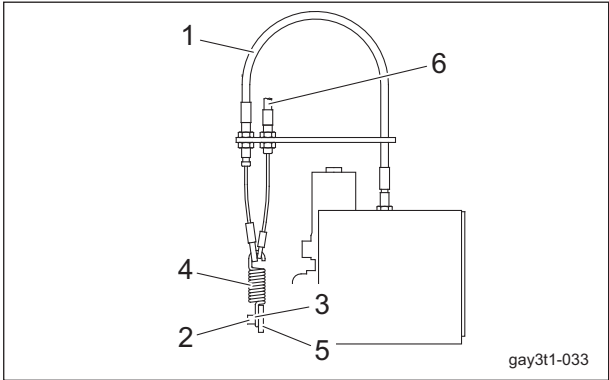
6. Release the parking brake.
7. Open the driver platform.
8. Remove the cotter pin and washer from the transmission brake lever.
9. Remove the hook spring from the transmission brake lever.

Handling Instructions

Important

Do not remove the parking brake wire.

10. Remove only the travel safety device brake wire from the hook spring.



Towing The Machine_002

1	Travel safety device brake wire
2	Cotter pin
3	Washer
4	Hook spring
5	Brake lever
6	Parking brake wire

- 11. Attach the hook spring to the transmission brake lever.
- 12. Attach the cotter pin and washer to the transmission brake lever.
- 13. Close the driver platform.
- 14. Apply the parking brake.
- 15. Switch on the machine.
- 16. Raise the rake.
- 17. Raise the blade and cultivator if installed.
- 18. Switch off the machine.
- 19. Remove the wheel stoppers.
- 20. Set the shift lever to the "Neutral" position.
- 21. Release the parking brake

Warning

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

22. Tow the machine slowly.

Operations

Precautions during Work

Warning

Do not start to move or stop the machine abruptly.

Warning

It may result in an unexpected accident if the machine enters a free-run state. For fear that the travel safety device malfunctions and the brake is not automatically applied, immediately depress the brake pedal to stop the machine when the buzzer sounds. When switching off the machine, make sure that the parking brake is applied.

Caution

Before starting operations, check that the area where the operations are to be performed is safe.

Caution

Do not enter or leave a bunker via a steep slope or extremely uneven ground.

Caution

Before moving the shift lever, make sure to stop the machine completely on a level surface.

Important

Set the shift lever to the "Low speed" position during operations. Otherwise, the servo driver will malfunction.

Important

Do not back up with the rake, cultivator or finishing brush lowered.

Handling Instructions

Rake

Important

Performing operations at high speed may leave undulations on bunker surfaces or tire tracks.

Important

The rake up/down lever cannot be operated when the driver platform is open or has not be correctly closed.

1. Switch on the machine.
"Procedure to Switch On Machine" (Page 4-16)
2. Set the shift lever to the "Low speed" position.
3. Make sure that the rake is raised.
4. Make sure that the blade and cultivator are raised if installed.
5. Release the parking brake.
6. Enter the bunker.
7. Depress the traveling pedal to start traveling.
8. At the bunker area where the operation is to be started, lower the rake.
9. At the bunker area where the operation is to be stopped, raise the rake.
10. Leave the bunker.
11. If tire tracks remain, use the broom to remove them.

Blade

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

Caution

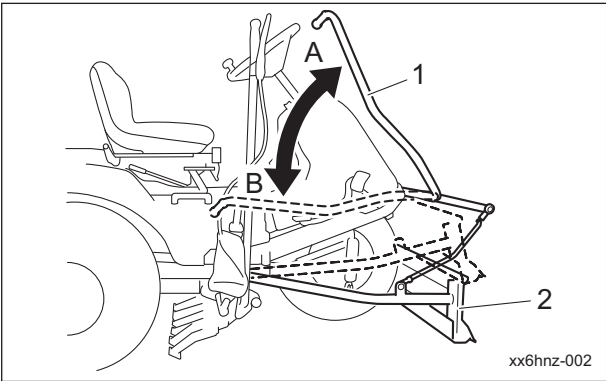
If the blade is raised, do not touch the lifting lever.

Caution

When getting on and off the machine, watch out the blade lever lest you should get your foot caught on it and fall.

1. Switch on the machine.
"Procedure to Switch On Machine" (Page 4-16)

2. Set the shift lever to the "Low speed" position.
3. Make sure that the rake is raised.
4. Make sure that the blade is raised.
5. Make sure that the cultivator is raised if installed.
6. Release the parking brake.
7. Enter the bunker.
8. Depress the traveling pedal to start traveling.
9. At the bunker area where the operation is to be started, repeatedly perform the following operations.
 - Move the blade lever forward to lower the blade, and then hold the blade lever in place while traveling to lift the sand.
 - Move the blade lever toward you to raise the blade.



Blade_002

1	Blade lever
2	Blade
A	Raise blade lever (blade lowered)
B	Lower blade lever (blade raised)

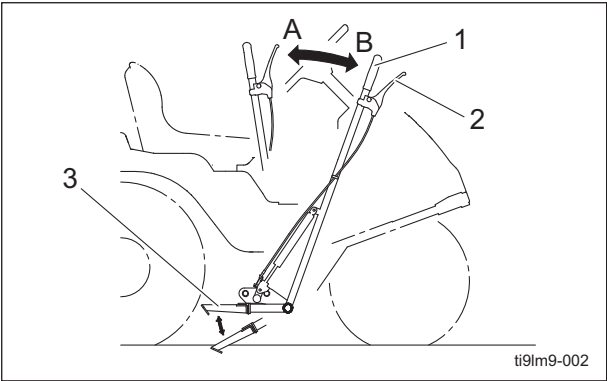
10. At the bunker area where the operation is to be stopped, raise the blade.
11. Leave the bunker.
12. If tire tracks remain, use the broom to remove them.

Handling Instructions

Cultivator

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

1. Switch on the machine.
"Procedure to Switch On Machine" (Page 4-16)
2. Set the shift lever to the "Low speed" position.
3. Make sure that the rake is raised.
4. Make sure that the cultivator is raised.
5. Make sure that the blade is raised if installed.
6. Release the parking brake.
7. Enter the bunker.
8. At the bunker area where the operation is to be started, lower the rake.
9. Depress the traveling pedal to start traveling.
10. At the bunker area where the operation is to be started, squeeze the clutch lever and pull the cultivator lever toward you.
11. After lowering the cultivator board to the desired depth, release the clutch lever, and level with the rake at the same time that the cultivator operation is performed.



Cultivator_002

1	Cultivator lever
2	Clutch lever
3	Cultivator board
A	Pull (lowered)
B	Push (raised)

12. At the bunker area where the operation is to be stopped, raise the cultivator.
13. Raise the rake.
14. Leave the bunker.
15. If tire tracks remain, use the broom to remove them.

Finishing Brush

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

1. Switch on the machine.
"Procedure to Switch On Machine" (Page 4-16)
2. Set the shift lever to the "Low speed" position.
3. Make sure that the rake is raised.
4. Make sure that the blade and cultivator are raised if installed.
5. Enter the bunker.
6. Stop the machine and apply the parking brake.
7. Adjust the height of the brush from the ground according to the bunker conditions.
8. Release the parking brake.
9. Depress the traveling pedal to start traveling.
10. At the bunker area where the operation is to be started, lower the rake.
The finishing brush is lowered at the same time.
11. At the bunker area where the operation is to be stopped, raise the rake.
The finishing brush is raised at the same time.
12. Leave the bunker.
13. If tire tracks remain, use the broom to remove them.

Handling Instructions

Transporting

Transporting Procedure

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

When unloading, drive the machine forward.

Loading :

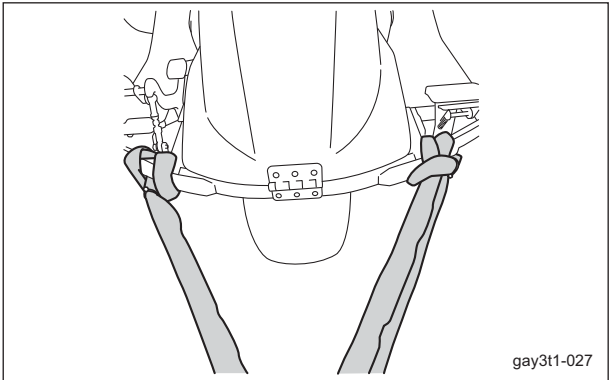
1. Apply the machine parking brake.
2. Lower all the attachments.
3. Switch off the machine.
4. Be sure to fasten the machine with ropes, etc.

Note :

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

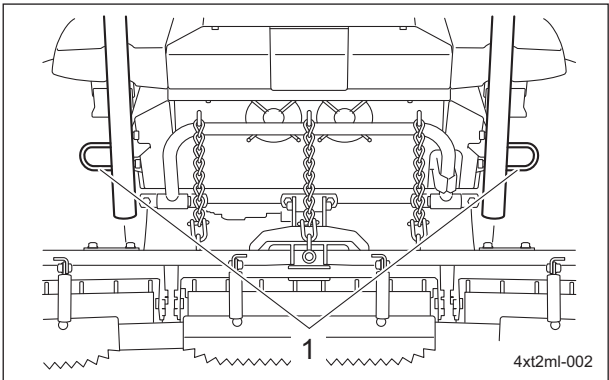
Use the right and left tow hooks for rear part of the machine.

Front part of machine



Transporting Procedure_001

Rear part of machine



Transporting Procedure_002

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

Unloading :

1. Release roping.
2. Switch on the machine.
3. Raise all the attachments.
4. Release the machine parking brake.


Storage

Before Long-Term Storage

- Completely remove dirt, grass clippings, debris, oil stains, etc.
- Store the machine in a well-ventilated area, where it will not be exposed to rain, dust or direct sunlight.
- Supply oil and apply grease to appropriate parts.
- Disconnect the negative battery wires.
- Recharge the battery every three months so it will not discharge excessively.

Maintenance Precautions	Page 5-2
Precautions for Maintenance	Page 5-2
Maintenance Schedule	Page 5-3
Adjusted Values	Page 5-5
Jacking Up The Machine	Page 5-6
About Jacking Up The Machine	Page 5-6
Jack-Up Points	Page 5-6
Greasing	Page 5-7
About Greasing	Page 5-7
Greasing Points	Page 5-7
Maintenance Work	Page 5-9
Cleaning of Battery	Page 5-9
Cleaning of Cooling Fins	Page 5-9
Cleaning inside The Driver Platform	Page 5-10
Change of Fork Prong Bar	Page 5-11
Change of Smoother Plate	Page 5-11
Change of Small Blade	Page 5-11
Change of The Cultivator Fitting	Page 5-12
Change of Finishing Brush	Page 5-12
Removing/Installing Tires	Page 5-13
Adjustment of Steering Chain	Page 5-14
Adjustment of Traveling Pedal	Page 5-14
Adjustment of Shift Lever Fulcrum	Page 5-15
Adjustment of Brake	Page 5-15
Replacement of Battery	Page 5-18
Replacement of Battery Cable	Page 5-19
Change of Brake Wire	Page 5-20
Change of Transmission Oil	Page 5-21
Change of Fuse	Page 5-22

Maintenance Precautions

 **Caution**

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

Important

Use tools appropriate for each maintenance operation.

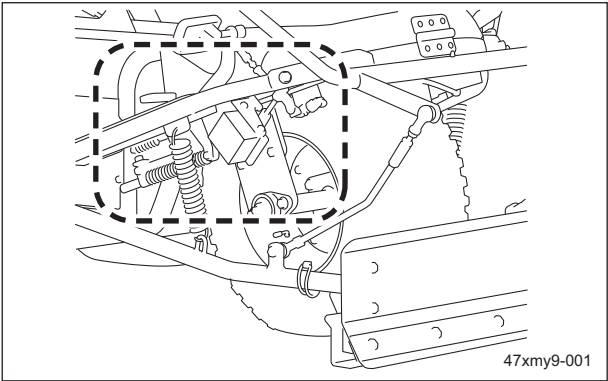
Important

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

Precautions for Maintenance

This machine employs precision electric devices.
For maintenance, exercise care in the following points.

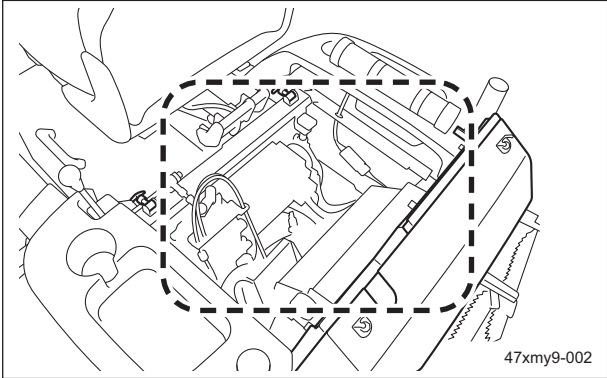
- 1. Do not use high-pressure washing with fluid such as water in the traveling pedal area.



Precautions for Maintenance_001

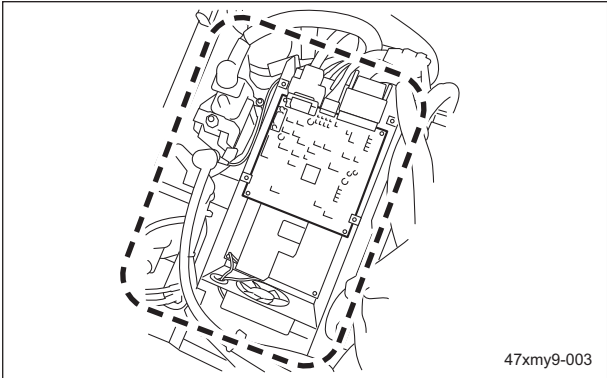
- 2. Do not use fluid such as water and high-pressure air to clean the electric devices behind the seat.

Clean them with low-pressure air or a dry cloth each time after using the machine.
Inside the driver platform



Precautions for Maintenance_002

Inside the servo driver



Precautions for Maintenance_003

Maintenance Schedule

SP160EB

Follow the maintenance schedule below.

○ . . . Inspect, adjust, supply, clean

● . . . Replace (first time)

△ . . . Replace

Maintenance Item		Before Work	After Work	Every Week	Every 25 hrs.	Every 50 hrs.	Every 100 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1000 hrs.	Every 1500 hrs.	Every 3000 hrs.	Every month	Every year	Every 2 years	Every 4 years	When Required	Remarks
*1	Check looseness and corrosion of battery terminals	○																			
*1	Check battery fluid level and supply			○																	
	Check battery remaining charge (remaining charge gauge)	○																			
	Check battery cable			○																	
	Check tire pressures and condition	○																			
	Check parking brake	○																			
	Check travel safety device brake	○																			
	Check wire	○																			
	Check shift lever fulcrum	○																			
	Check steering chain tension	○																			
	Check crack, damage or abnormal wear in the steering chain	○																			
	Check transmission oil level																			○	When oil leak found
	Check oil leak	○																			
	Check damaged parts	○																			
	Check tightening bolts and nuts	○																			
	Check light illumination	○																			
	Check interlock system safety function	○																			

Maintenance

Maintenance Item		Before Work	After Work	Every Week	Every 25 hrs.	Every 50 hrs.	Every 100 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1000 hrs.	Every 1500 hrs.	Every 3000 hrs.	Every month	Every year	Every 2 years	Every 4 years	When Required	Remarks
	Check steering wheel motion	○																			
	Check rake	○																			
	Check blade	○																			
	Check cultivator	○																			
	Check finishing brush	○																			
	Adjust seat position	○																			
	Adjust steering handle angle	○																			
	Adjust fork prong bar	○																			
	Adjust small blade	○																			
	Adjust brush position	○																			
*1	Clean exterior of battery		○																		
	Clean machine exterior		○																		
	Check and clean cooling fan		○																		
	Clean rake		○																		
	Clean blade		○																		
	Clean cultivator		○																		
	Check electrical wiring condition (Damage, defacement and joint looseness)																○				
	Check looseness of wheel mounting bolt					○	○														50 hours first check, every 100 hours thereafter
	Measure battery specific weight				○																
	Clean driver platform inside							○													
	Grease and lubricate all moving parts					○															
	Adjust shift lever fulcrum																○				
	Replace transmission oil					●		△													
	Replace battery																	△			

Maintenance

Maintenance Item		Before Work	After Work	Every Week	Every 25 hrs.	Every 50 hrs.	Every 100 hrs.	Every 200 hrs.	Every 250 hrs.	Every 400 hrs.	Every 500 hrs.	Every 800 hrs.	Every 1000 hrs.	Every 1500 hrs.	Every 3000 hrs.	Every month	Every year	Every 2 years	Every 4 years	When Required	Remarks
	Replace battery cable																			△	
	Replace brake wire																			△	
	Replace tire																			△	
	Replace fork prong bar																			△	
	Replace smoother plate																			△	
	Replace small blade																			△	
	Replace cultivator fitting																			△	
	Replace finishing brush																			△	

- *1: Refer to the Battery's Owner's Manual.
- The values for consumables are not guaranteed.

Adjusted Values

Steering chain		Approximately 5 mm (0.20 in.)	Steering chain slack
Rake	Fork depth (standard)	15 mm (0.59 in.)	
Blade	Arm stopper	23 mm (0.91 in.)	
	Raised height	200 mm (7.87 in.)	
	Exposed length of screw shaft from spherical joint	65 mm (2.56 in.)	
	Exposed length of threaded end of connecting shaft	20 mm (0.79 in.)	
	Installation depth of spherical joint	15 mm (0.59 in.)	

Jacking Up The Machine

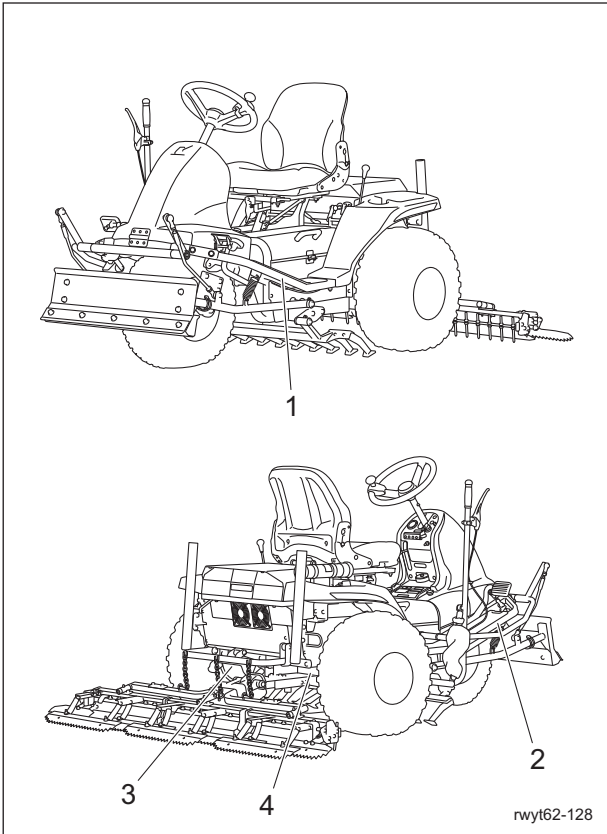
About Jacking Up The Machine

⚠ Warning

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

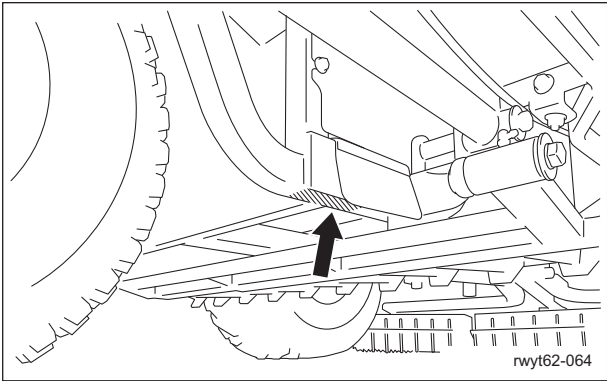
Use the jack-up points identified in this manual when jacking up the machine. Only place a jack under the jack-up points specified. Placing a jack at any other point could result in damage to the frame or other parts.

Jack-Up Points

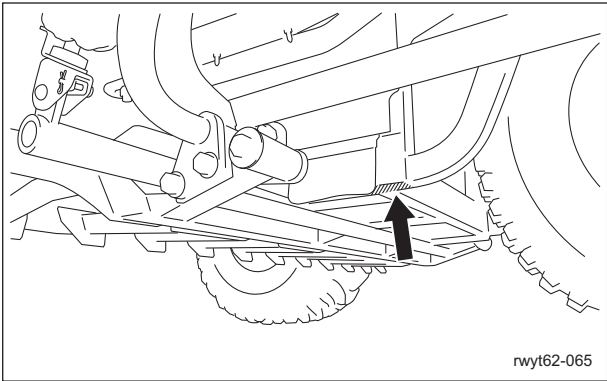


	Jack-up Points
1	Front left frame
2	Front right frame
3	Rear left frame
4	Rear right frame

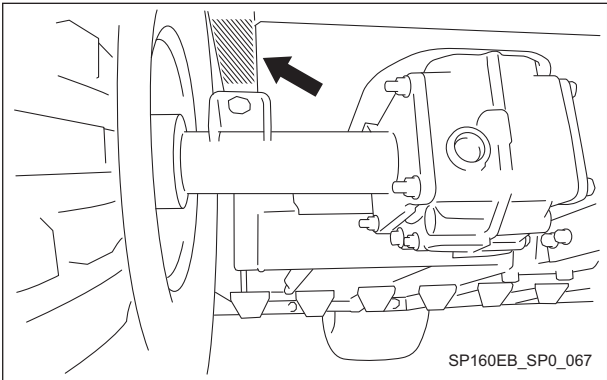
1. Front left frame



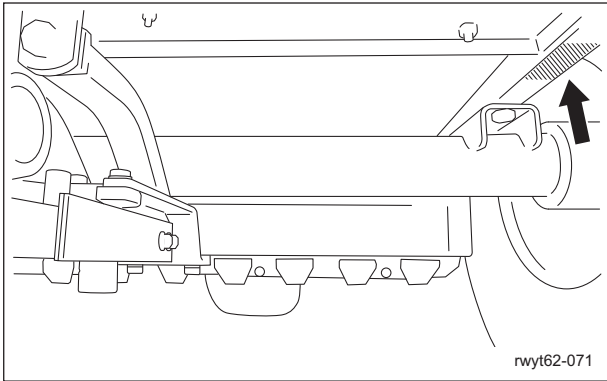
2. Front right frame



3. Rear left frame



4. Rear right frame



Jack-Up Points_005

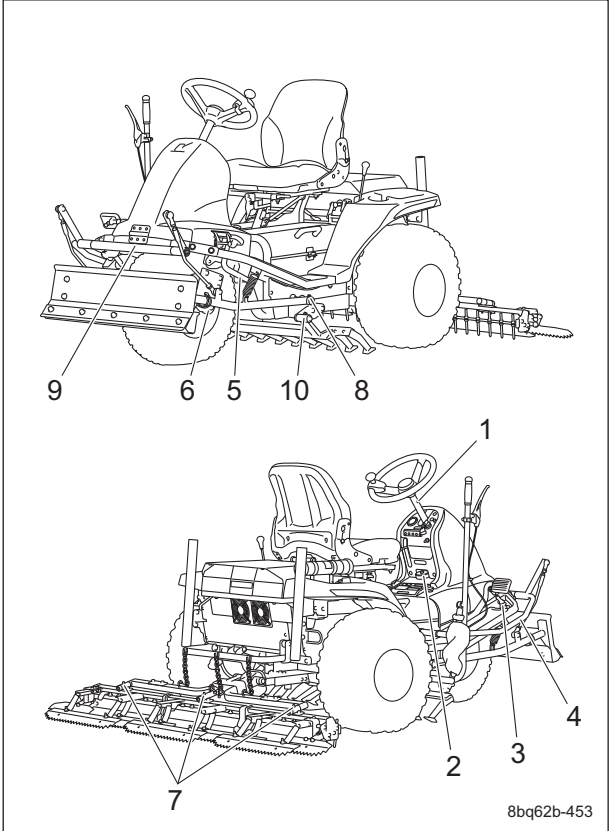
Greasing

About Greasing

Since there may be adhesion or damage due to lack of grease on moving parts, they must be greased.
Add urea-based No. 2 grease in accordance with the Maintenance Schedule.
Other locations where the specified grease or lubricant is used are indicated in "Greasing Points".
Add grease using the specified grease or lubricant.

Greasing Points

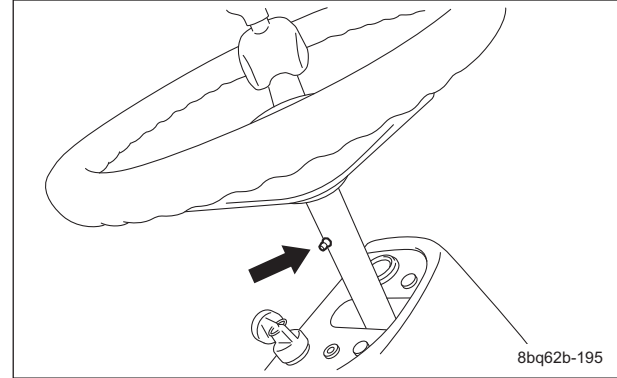
Grease nipples are installed in the following locations.
Add grease every 50 hours of operation.



Greasing Points_001

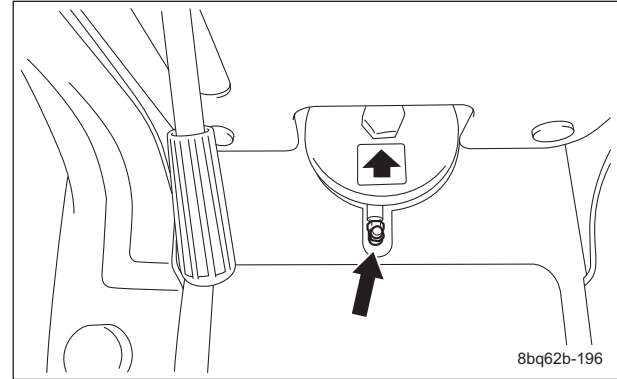
	Location	No. of Greasing Points
1	Steering wheel frame	1
2	Front wheel pivot	1
3	Traveling pedal fulcrum	1
4	Neutral lever fulcrum	1
5	Brake pedal fulcrum	1
6	Front wheel shaft rhombic flange unit	2
7	Rake frame fulcrum	3
8	Blade lever fulcrum	2
9	Blade arm fulcrum	1
10	Cultivator lever fulcrum	2

1. Steering wheel frame



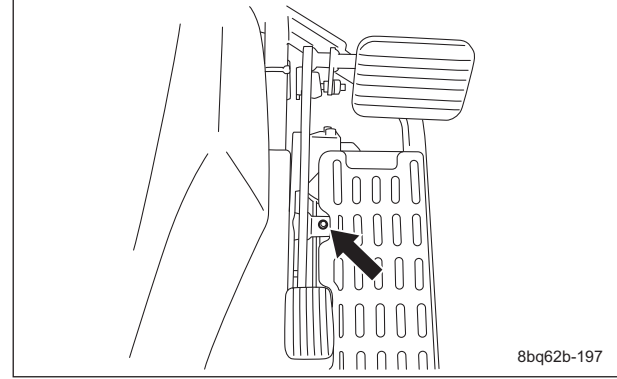
Greasing Points_002

2. Front wheel pivot



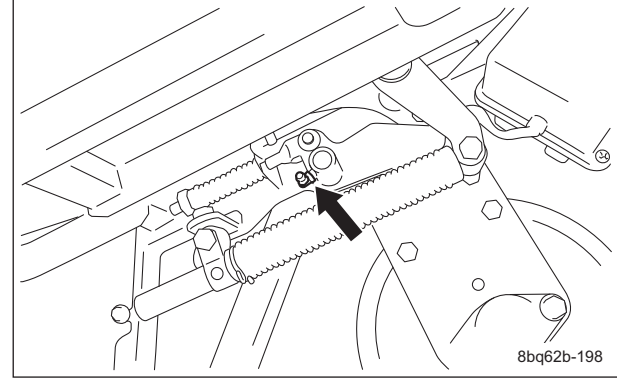
Greasing Points_003

3. Traveling pedal fulcrum



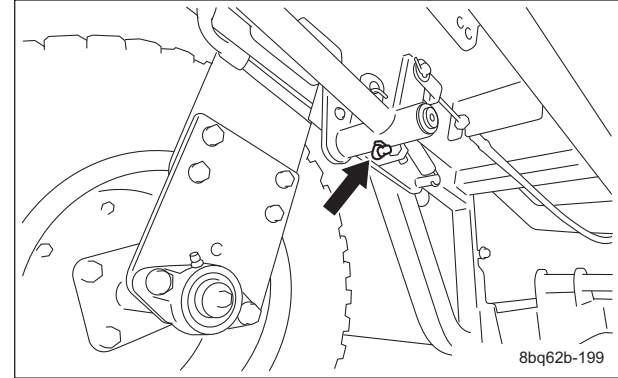
Greasing Points_004

4. Neutral lever fulcrum



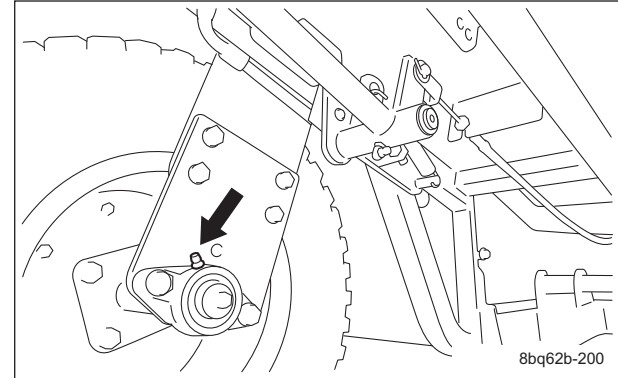
Greasing Points_005

5. Brake pedal fulcrum



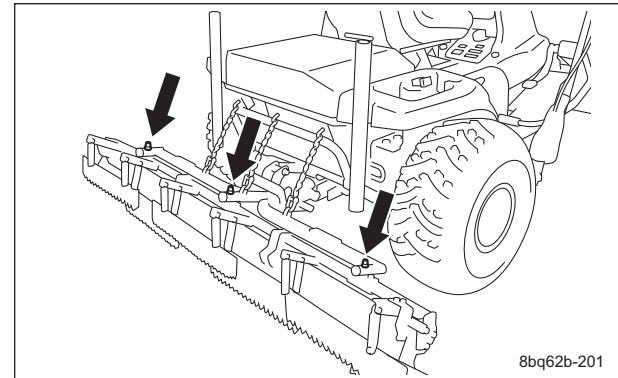
Greasing Points_006

6. Front wheel shaft rhombic flange unit
There is one point each on the left and right.



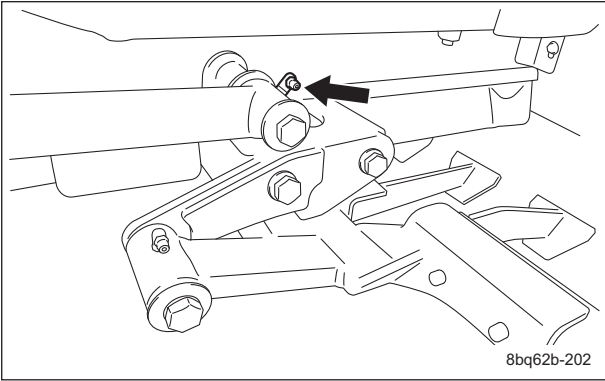
Greasing Points_007

7. Rake frame fulcrum
There is one greasing point on each rake frame fulcrum.



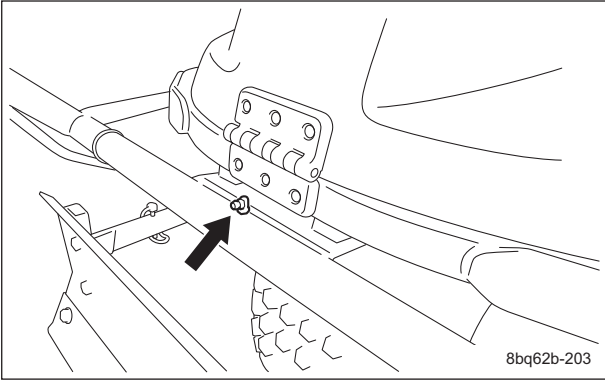
Greasing Points_008

8. Blade lever fulcrum
There is one point each on the left and right.



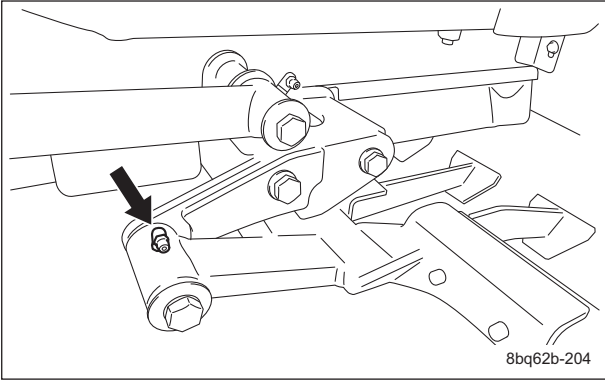
Greasing Points_009

9. Blade arm fulcrum



Greasing Points_010

10. Cultivator lever fulcrum
There is one point each on the left and right.



Greasing Points_011

Maintenance Work

Cleaning of Battery

Danger

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.

1. Clean up the dirt and dust on the upper side of battery with a cloth damped with water, or wash off with water.
2. If there is corrosion or dirt on the terminals, wash off with water or hot water and then apply a thin coating of grease.

Cleaning of Cooling Fins

Important

Do not allow water to come into contact with electrical components during cleaning. It will cause malfunction of the machine.

Important

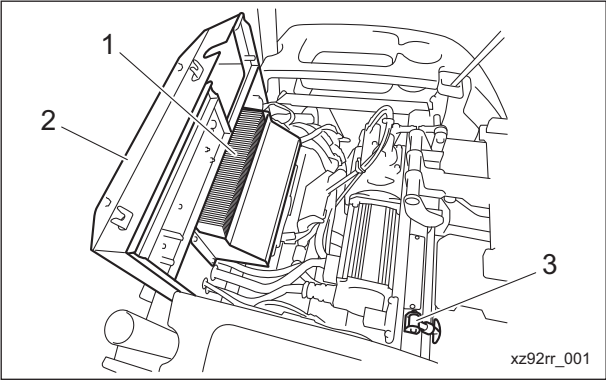
Unclean cooling fins will cause overheating or malfunction to the servo driver or motor.

Important

Do not use fluid such as water and high-pressure air to clean the cooling fins. Also, do not use solid objects such as a spatula or screwdriver. Clean them with low-pressure air. Otherwise, the fins may be damaged, possibly resulting in reduced cooling performance.

If the cooling fins have been contaminated with dust, be sure to clean them. Especially after operating the machine in a dusty environment, it is important to remove dust as soon as possible.

1. Open the driver platform.
2. Carefully clean the cooling fins with low-pressure compressed air.



Cleaning of Cooling Fins_001

1	Cooling fins
2	Driver platform
3	Rubber catch

3. Close the driver platform, and then firmly secure the rubber catch.

Cleaning inside The Driver Platform

Important

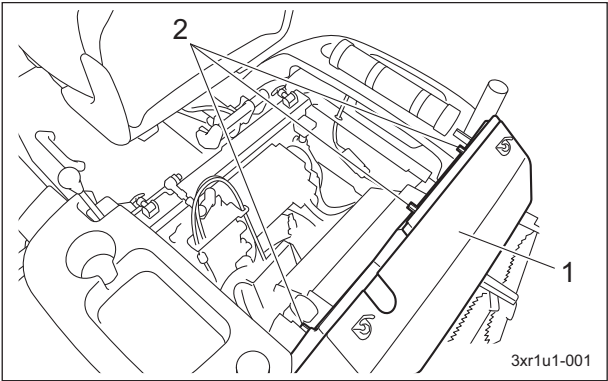
Do not allow water to come into contact with electrical components during cleaning. It will cause malfunction of the machine.

Important

Do not use fluid such as water and high-pressure air for cleaning inside the driver platform. Do not use a wet cloth nor high-pressure air. It will cause malfunction of the machine.

Be sure to remove dust attached inside the driver platform. Especially after operating the machine in a dusty environment, it is important to remove dust as soon as possible.

1. Follow the steps below to remove the driver cover.
- [1] Open the driver platform.
- [2] Remove the long nuts A.

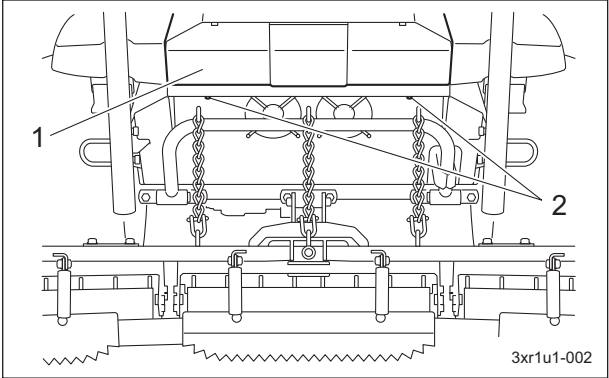


Cleaning inside The Driver Platform_001

1	Driver cover
2	Long nut A

- [3] Close the driver platform.
- [4] Remove the long nuts B.

- [5] Remove the driver cover.

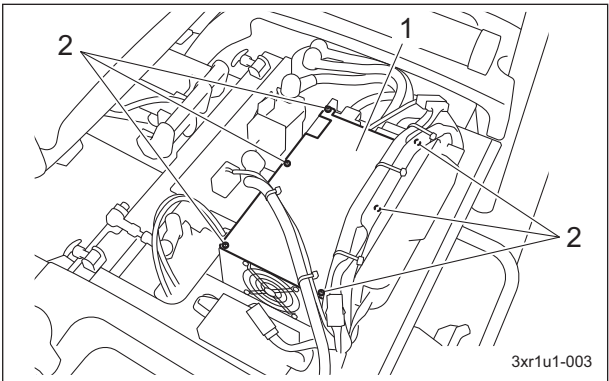


Cleaning inside The Driver Platform_002

1	Driver cover
2	Long nut B

2. Clean the inside of the driver platform with low-pressure air.
3. Follow the steps below to remove the servo driver cover.

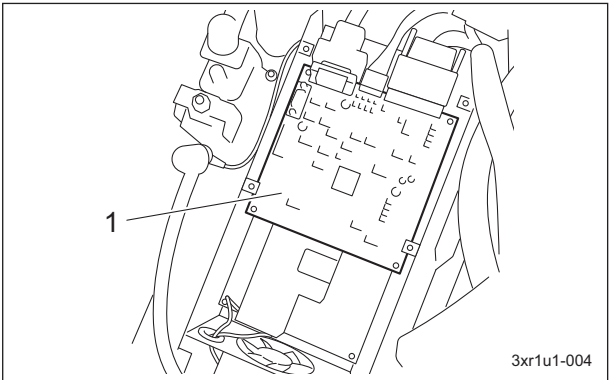
- [1] Remove the screws.
- [2] Remove the servo driver cover.



Cleaning inside The Driver Platform_003

1	Servo driver cover
2	Screw

4. If sandy dust accumulates on the circuit board inside the servo driver, remove it carefully with low-pressure air.



Cleaning inside The Driver Platform_004

1	Circuit board
---	---------------

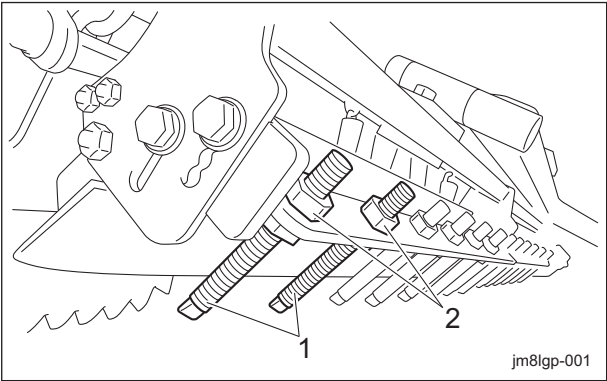
Change of Fork Prong Bar

 **Caution**

Wear gloves when touching a fork prong bar.

When wear of the fork prong bar results in no margin for tightening the nut on the fork prong bar, replace the fork prong bar.

- 1. Loosen the nut, and then replace the fork prong bar.



Change of Fork Prong Bar_001

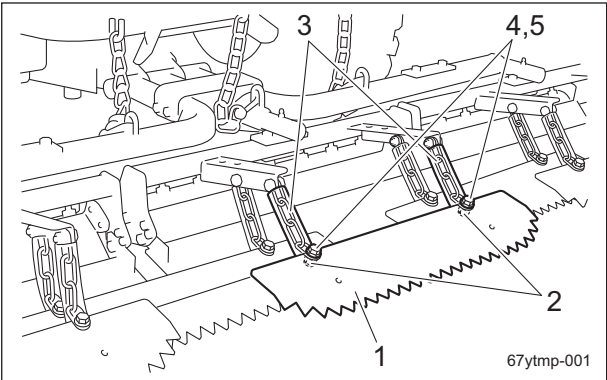
1	Fork prong bar
2	Nut

- 2. Adjust the fork prong bar.
"Adjustment of Rake" (Page 4-14)
- 3. Tighten the nut.

Change of Smoother Plate

Replace the smoother plates if smoothing ability decreased due to the plates wear.

- 1. Remove the nuts with friction ring, bolts and washers.



Change of Smoother Plate_001

1	Smoother plate
2	Nut with friction ring
3	Chain
4	Bolt
5	Washer

- 2. Replace the smoother plates.
- 3. Install the bolts, washers and nuts with friction ring.

Important

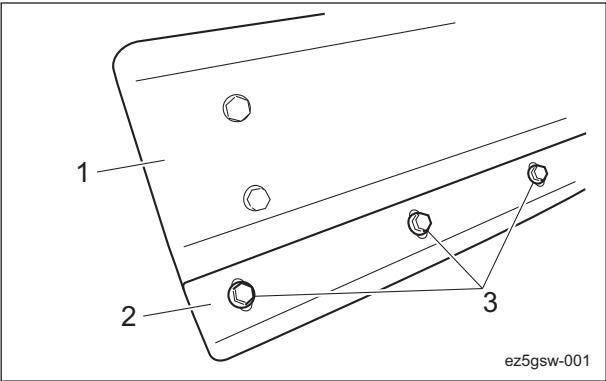
If the chain completely fixed with the nuts with friction ring, the smoother plates cannot level out very well.

- 4. Tighten the nuts with friction ring so that the chain can move.

Change of Small Blade

Note:
Depending on the specifications, this function may not be available.
When wear of the small blade causes a reduction in the amount of sand that is lifted up, replace the small blade.

- 1. Loosen the bolts installing the small blade, and then replace the small blade.




Change of Small Blade_001

1	Blade
2	Small blade
3	Bolt

- 2. Adjust the small blade.
"Adjustment of Blade" (Page 4-15)
- 3. Tighten the bolts.

Change of The Cultivator Fitting

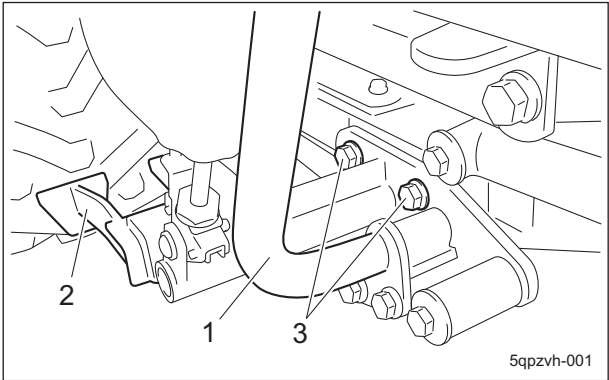
Note:
Depending on the specifications, this function may not be available.

 **Caution**

When removing the cultivator, be careful not to pinch your hands.

When wear of the trapezoidal cultivator fitting disables unhardening the sand, replace the trapezoidal cultivator fitting.

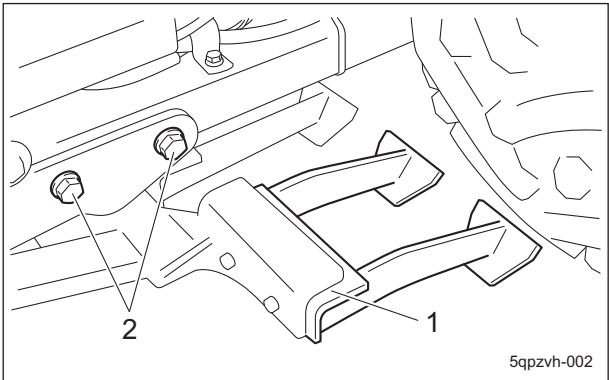
1. Remove the bolts at the bottom of the machine on the right side.



Change of The Cultivator Fitting_001

1	Lever pipe
2	Trapezoidal cultivator fitting
3	Bolt

2. Remove the bolts at the bottom of the machine on the left side.

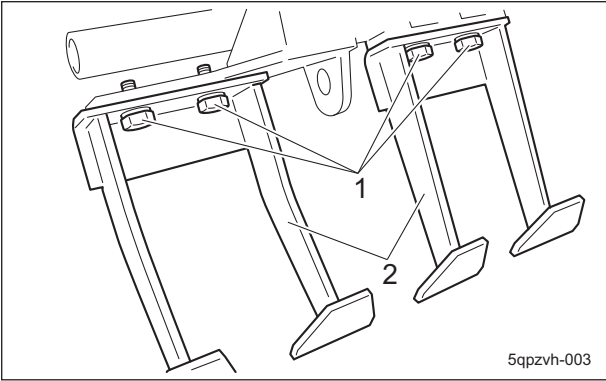


Change of The Cultivator Fitting_002

1	Cultivator
2	Bolt

3. Pull out the cultivator from the bottom of the machine.


4. Remove the bolts, and then replace the trapezoidal cultivator fittings.



Change of The Cultivator Fitting_003

1	Bolt
2	Trapezoidal cultivator fitting

5. Tighten the bolts for the trapezoidal cultivator fitting.


 **Caution**

When installing the cultivator, pay attention to its falling.

6. Install the cultivator to the machine with bolts.

Change of Finishing Brush

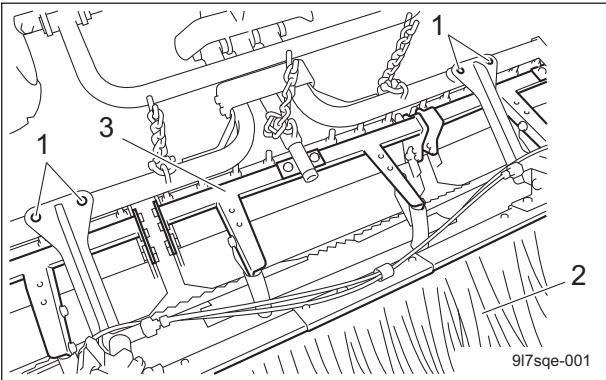
Note:
Depending on the specifications, this function may not be available.

 **Caution**

Be careful since the finishing brush is heavy.

When wear of the finishing brush results in rake tracks remaining, replace the finishing brush.

1. Remove the bolts from the rake, and then remove the finishing brush.



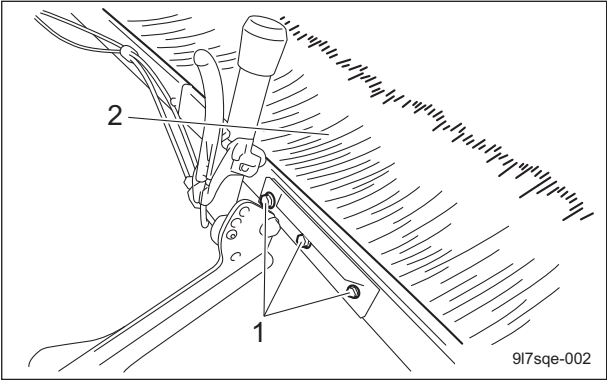
Change of Finishing Brush_001

1	Bolt
2	Finishing brush
3	Rake

Caution

Place the finishing brush on level surface.

2. Remove the bolts, and then replace the finishing brush.



Change of Finishing Brush_002

1	Bolt
2	Finishing brush

3. Tighten the bolts.

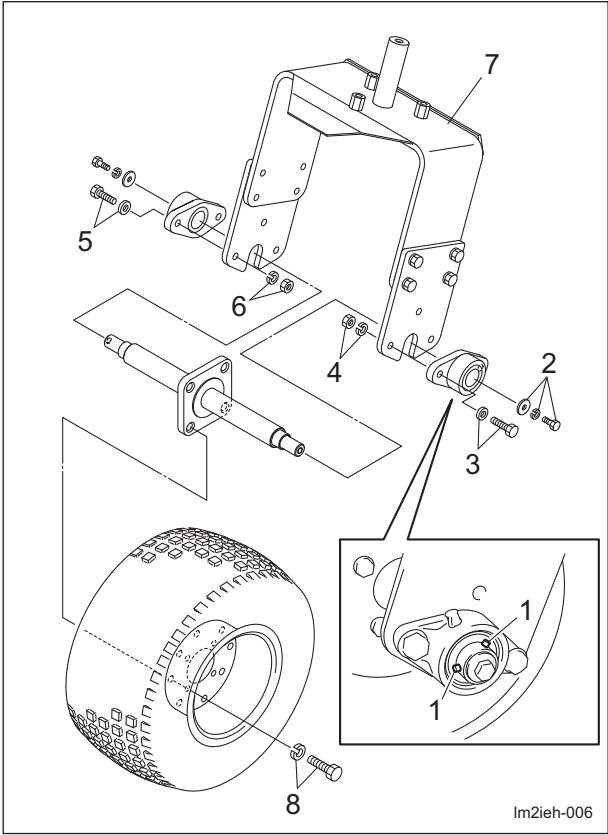
Removing/Installing Tires

Front Tire

Follow the steps below to remove the front tire.

1. Securely place the jack beneath the jack-up points of the front left/right frame area, and then raise it until the tire lifts off the ground. "Jack-Up Points" (Page 5-6)
2. Follow the steps below to remove the tire.
 - [1] Loosen the lock bolts for the left rhombic flange unit.
 - [2] Remove bolt A.
 - [3] Remove bolt B and nut B, and then remove the left rhombic flange unit.
 - [4] Remove bolt C and nut C, and then remove the right rhombic flange unit.
 - [5] Remove the front wheel arm.

- [6] Remove the wheel mounting bolt, and then remove the tire.



Front Tire_001

1	Lock bolt
2	Bolt A
3	Bolt B
4	Nut B
5	Bolt C
6	Nut C
7	Front wheel arm
8	Wheel mounting bolt

Important

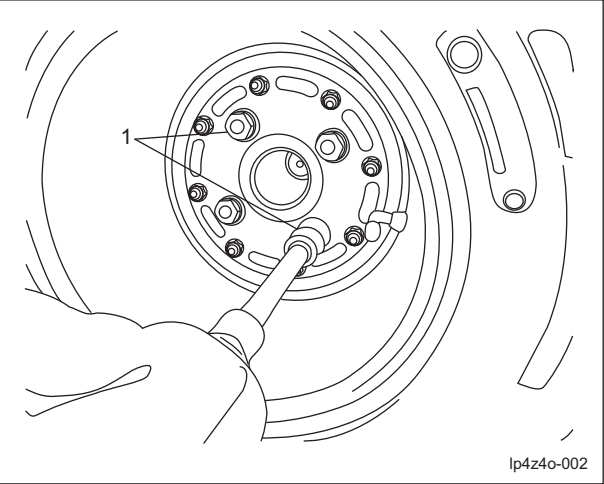
Tighten the bolts in the tightening order (diagonally).

For installing the front tires, reverse the removing procedure.

Rear Tires

Follow the steps below to remove the rear tires:

1. Loosen the bolts.



Rear Tires_001

1	Bolt
---	------

2. Securely place the jack beneath the jack-up point of the rear left/right frame area, and then raise it until the tire lifts off the ground. "Jack-Up Points" (Page 5-6)
3. Remove the bolts.
4. Remove the tire from the wheel mounting seat.

Important

Tighten the bolts in the tightening order (crosswise).

For installing the rear tires, reverse the removing procedure.

Adjustment of Steering Chain

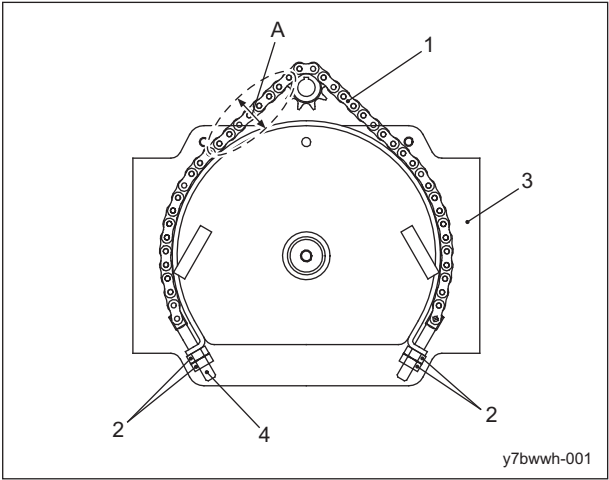
Excessive play with a loose steering chain may stretch the chain further while you may feel a heavy steering wheel with an excessively tight chain and the chain and wheel may wear prematurely.

Important

Make sure that the steering chain has the specified amount of slack.

1. Open the front cover.

2. With the nuts on each end of the steering chain, adjust the chain tension so that there is approximately 5 mm (0.20 in) of slack.



Adjustment of Steering Chain_001

1	Steering chain
2	Nut
3	Front wheel arm
4	Adjustment screw
A	5 mm (0.20 in)

3. After making adjustments, firmly secure the nuts.

Adjustment of Traveling Pedal

Important

Do not adjust the traveling pedal. Traveling at 15.0 km/h or more will damage the machine.

The traveling pedal is set a factory default forward speed of 15.0 km/h and reverse speed of 5.0 km/h.

Adjustment of Shift Lever Fulcrum

The shift lever fulcrum may begin to rattle due to frequent use and may no longer be able to perform shift operations correctly.
Follow the steps below to adjust the shift lever fulcrum.

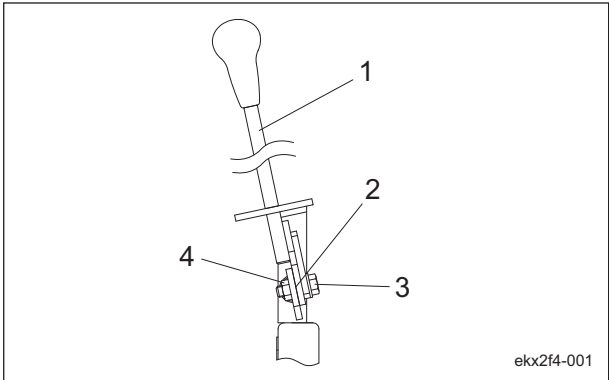
Important

Before adjusting the shift lever fulcrum, be sure to set the key switch to the "OFF" position.

Important

When adjusting the shift lever fulcrum, make sure that shift lever operation remains smooth.

- 1. Loosen the nut.



Adjustment of Shift Lever Fulcrum_001

1	Shift lever
2	Shift lever fulcrum
3	Bolt
4	Nut

- 2. Tighten the bolt until the shift lever fulcrum does not rattle.
- 3. Tighten the nut to secure the bolt.

Adjustment of Brake

Caution

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

Caution

Perform the adjustment with the machine switched off.

Important

If the brake is not sufficiently effective, adjust the brake wire.

Adjust the brake by tightening the brake wire adjustment bolt.

Adjustment of Parking Brake Wire

Important

Adjust the play of the brake lever so that it is as small as possible and the brakes do not drag when the lever is released.

When the parking brake wire is stretched, the play of the brake pedal may become large, the braking effectiveness may become worse and the brake pedal may unexpectedly lock. If the brake is not sufficiently effective when the brake pedal is depressed, adjust the parking brake wire.

- 1. Park the machine on a level surface.
- 2. Release the parking brake.
- 3. Loosen the travel safety device brake wire.
- 4. Adjust the parking brake by tightening the adjustment bolt on the transmission side.

[1] Loosen the lock nut B.

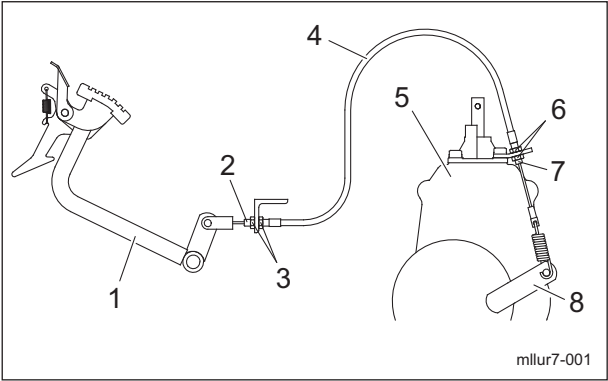
[2] Adjust the parking brake wire with the adjustment bolt B.

- If the brake lever play is too large, the braking power will be decreased and the brake pedal will be soft.
- If the brake lever play is too small, the braking power will be increased and the brake pedal will be hard.

[3] Firmly secure the adjustment bolt B with the lock nut B.

Maintenance

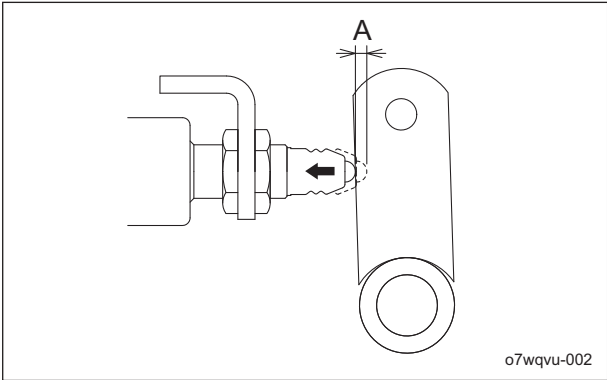
Note:
If adjustment with the adjustment bolt on the transmission side is not completed, adjust by tightening the adjustment bolt on the pedal side.



Adjustment of Parking Brake Wire_001

1	Brake pedal
2	Adjustment bolt A
3	Lock nut A
4	Parking brake wire
5	Transmission
6	Lock nut B
7	Adjustment bolt B
8	Brake lever

2. Adjust the parking brake switch position so that the switch stroke is 6.0 mm (0.24 in.) or less when the brake pedal is locked.



Adjustment of Parking Brake Switch_002

A	6.0 mm (0.24 in.) or less
---	---------------------------

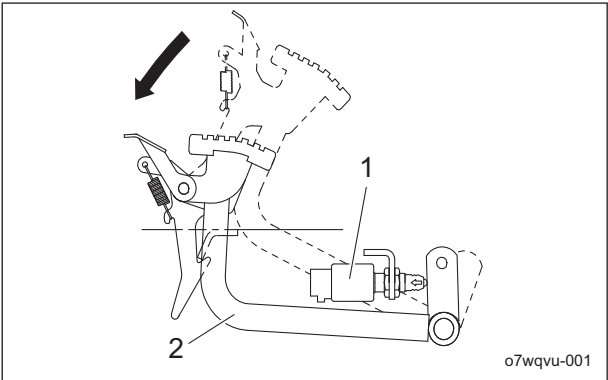
Note:
The following occur when the parking brake switch is pressed.

- The machine does not travel, even if the traveling pedal is depressed.
- The buzzer will not sound when the operator leaves the seat.

5. Inspect the parking brake.
"Inspection of Parking Brake" (Page 4-8)

Adjustment of Parking Brake Switch

1. Adjust the parking brake switch position so that the switch is pressed to produce a clicking sound when the brake pedal is locked.



Adjustment of Parking Brake Switch_001

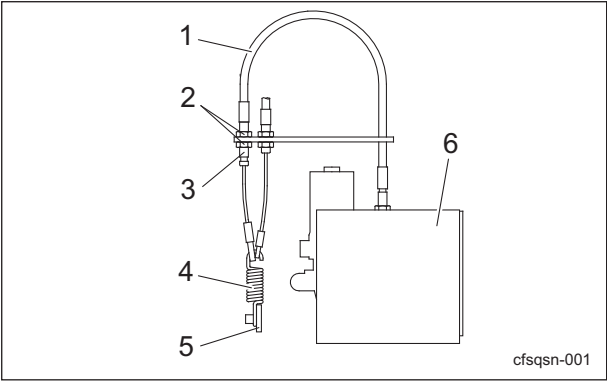
1	Parking brake switch
2	Brake pedal

Adjustment of Travel Safety Device Brake

Important

Before adjusting the travel safety device brake, complete the adjustment of the parking brake.

- 1. Park the machine on a level surface.
- 2. Release the parking brake.
- 3. Loosen the lock nut.
- 4. Adjust the travel safety device brake wire with the adjustment bolt.
Adjust the travel safety device brake wire so that its play is as small as possible and the brakes do not drag when the brake is released.
- 5. Firmly tighten the lock nut.



Adjustment of Travel Safety Device Brake_001

1	Travel safety device brake wire
2	Lock nut
3	Adjustment bolt
4	Hook spring
5	Brake lever
6	Safety device

- 6. Inspect the travel safety device brake.
"Inspection of Travel Safety Device Brake"
(Page 4-9)

Maintenance

Replacement of Battery

When replacing the battery, observe the following precautions.

Danger

Keep away from fire while replacing the battery.
The battery may explode.
Perform the operation in a well-ventilated area, where parts will not get wet, for example, from rain.

Danger

Do not short-circuit the battery.
The battery will short-circuit not only if the positive and negative terminals come into contact with a metal tool but also if the positive terminal comes into contact with any metal part (for example, the main vehicle).

Danger

When the battery terminals are connected to the vehicle's cable terminals, securely tighten the nuts.
Inadequate tightening may result in a fire or explosion.

Warning

When connecting the vehicle's cable terminals to the battery, do not reverse the connections to the positive and negative terminals.
Firmly secure the battery with the mounting bracket.
Inadequate securing may result in battery damage, leaking fluid or a fire or explosion.

Warning

Do not modify the battery terminals.
Do not obstruct the battery's vent plug or side exhaust holes with the connected cables, etc.
Do not connect electrical devices directly to the battery.

Caution

Do not allow flexible polyvinyl chloride etc. including plasticizers to come into contact with the battery.
Position the battery so that it is level while being handled, and install it level in the mounting bracket.
If terminal covers and heat shield plates are installed on the battery, install them in their original positions after replacing the battery.

Caution

The battery is a heavy weight.
Exercise care in leakage and injury due to overturn or drop during moving, unpacking, removal and installation.

Important

Select a battery with terminals (positive and negative) at the same positions.
Forcing connections to a battery with terminals at different positions will damage the cables.

Important

When placing the battery in the machine, never carry it by its terminals.
This will cause faulty terminal connections due to deformed terminals or fluid leakage from around the terminals.

Important

Use a replacement battery of the same size as the original one.

Important

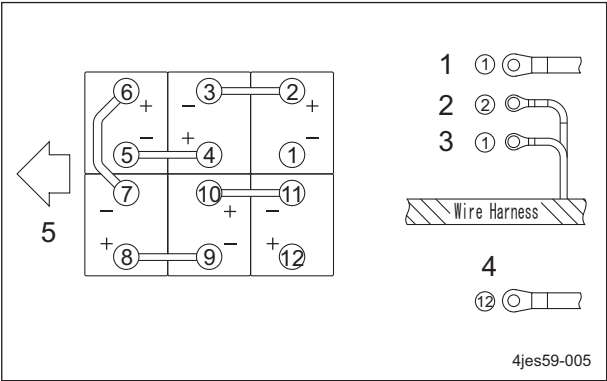
When replacing the battery, be sure to replace it with a new one.

Important

Be careful with the used battery since it may retain power.

Follow the steps below to replace the battery.
1. Switch off the machine and remove the key.

2. Disconnect the battery cable.
Refer to the figure and disconnect the battery cable in the appropriate order.
Disconnect the wires in order, from (negative) terminal ① to terminal ⑫.
3. Use the included battery handle to replace the battery.
4. For installing the battery, reverse the removing procedure.



Replacement of Battery_001

1	Negative wire (black)
2	Positive wire (red/green)
3	Negative wire (black)
4	Positive wire (red)
5	Front

Replacement of Battery Cable

When replacing the battery cable, observe the following precautions.

! Danger

Keep away from fire while replacing the battery cable.
The battery may explode.
Perform the operation in a well-ventilated area, where parts will not get wet, for example, from rain.

! Danger

Do not short-circuit the battery.
The battery will short-circuit not only if the positive and negative terminals come into contact with a metal tool but also if the positive terminal comes into contact with any metal part (for example, the main vehicle).

! Danger

When the battery terminals are connected to the vehicle's cable terminals, securely tighten the nuts.
Inadequate tightening may result in a fire or explosion.

! Warning

When connecting the vehicle's cable terminals to the battery, do not reverse the connections to the positive and negative terminals.

! Warning

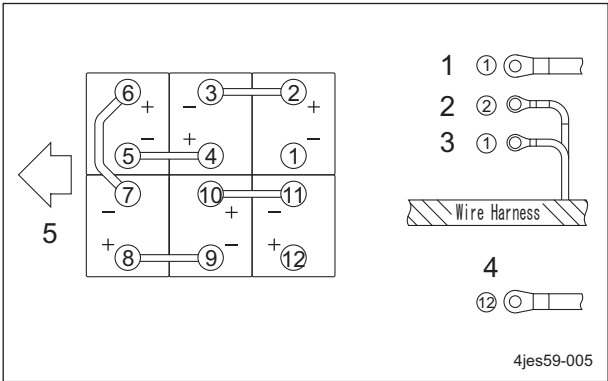
Do not obstruct the battery's vent plug or side exhaust holes with the connected cables, etc.

! Caution

If terminal covers and heat shield plates are installed on the battery, install them in their original positions after replacing the battery.

Follow the steps below to replace the battery cable.


1. Switch off the machine and remove the key.
2. Disconnect the battery cable.
Refer to the figure and disconnect the battery cable in the appropriate order.
Disconnect the wires in order, from (negative) terminal ① to terminal ⑫.
3. For installing the battery cable, reverse the removing procedure.



Replacement of Battery Cable_001

1	Negative wire (black)
2	Positive wire (red/green)
3	Negative wire (black)
4	Positive wire (red)
5	Front

Change of Brake Wire

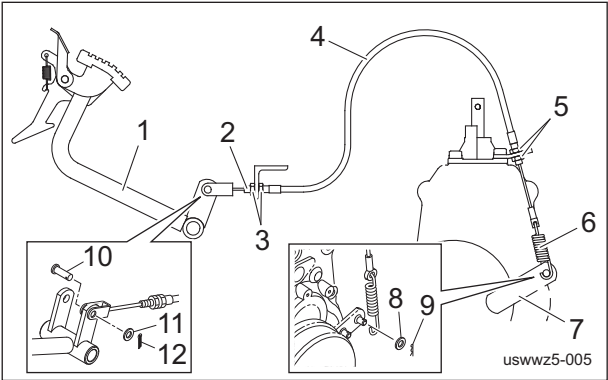
 **Caution**

If there are cracks, damage or other defects in the brake wire, replace it immediately.

Important

The brake wire of travel safety device is unexchangeable.
Replace a whole travel safety device brake Assy.

1. Apply the parking brake.
2. Lower the rake.
3. Switch off the machine.
4. Chock the wheels.
5. Release the parking brake.
6. Open the driver platform.
7. Remove the cotter pin and washer from the brake lever.

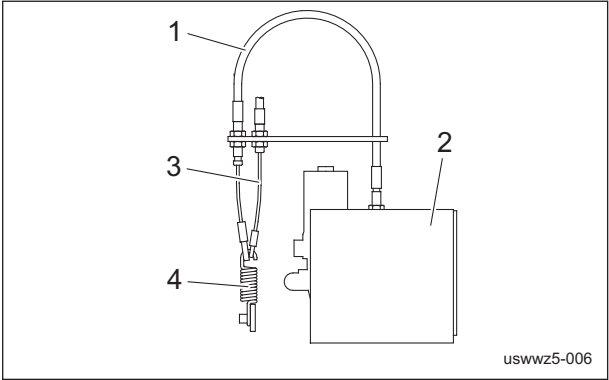


Change of Brake Wire_001

1	Brake pedal
2	Adjustment bolt A
3	Lock nut A
4	Parking brake wire
5	Lock nut B
6	Hook spring
7	Brake lever
8	Washer
9	Cotter pin
10	Pin
11	Washer
12	Cotter pin

8. Remove the hook spring from the brake lever.
- Important**

Do not remove the brake wire of travel safety device.
9. Remove only the parking brake wire from the hook spring.



Change of Brake Wire_002

1	Travel safety device brake wire
2	Safety device
3	Parking brake wire
4	Hook spring

10. Remove the cotter pin and washer, and then pull out the pin.
11. Loosen the lock nut A and lock nut B.
12. Remove the parking brake wire.
13. Install a new parking brake wire.
14. Tighten the lock nut A at the level where the longest thread part of the adjustment bolt A projects toward the brake pedal.
15. Attach the parking brake wire to the hook spring.
16. Attach the hook spring to the brake lever.
17. Attach the washer and cotter pin to the brake lever.
18. Adjust the parking brake.

Change of Transmission Oil

⚠ Caution

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

Important

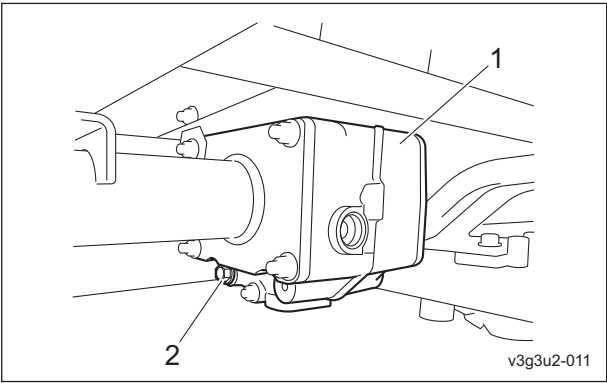
When you change the transmission oil, be sure to drain it into a bowl and discard it in accordance with regional laws and regulations.

Important

Be sure to pour automobile gear oil that is classified as SAE Viscosity Grade #90 into the transmission.

Change the transmission oil in accordance with the Maintenance Schedule.

- 1. Move the machine onto a level surface, and then switch off the machine.
"Procedure to Switch Off Machine" (Page 4-17)
- 2. Remove the drain plug while the transmission oil is warm, and then drain the oil into a container.
- 3. Install the drain plug in the transmission.

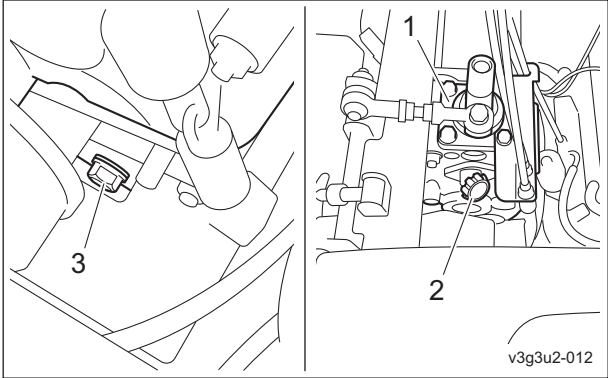


Change of Transmission Oil_001

1	Transmission
2	Drain plug

- 4. Remove the oil filler cap and oil level plug.
- 5. Supply new transmission oil through the oil filling port.
Transmission oil quantity is 2.0 dm³(2.0 L).
"Supply of Transmission Oil" (Page 4-10)
- 6. Make sure that the transmission oil level is filled up to the tip of the oil level opening.
"Inspection of Transmission Oil" (Page 4-10)

- 7. Install the oil filler cap and oil level plug.



Change of Transmission Oil_002

1	Transmission
2	Oil filler cap
3	Oil level plug

- 8. Check underneath the machine for oil leakage.

Change of Fuse

Important

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

Important

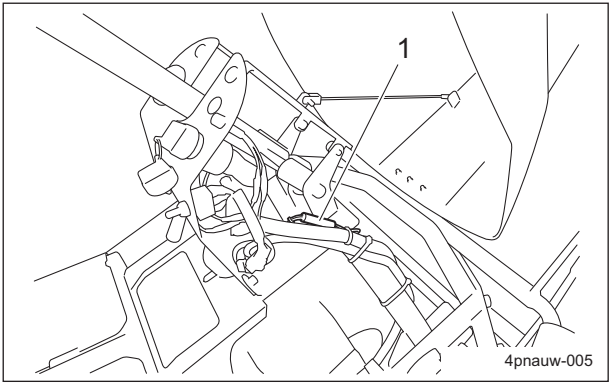
If a fuse blows, a short may have occurred within the electrical circuit. Check for the cause, such as faulty terminal connections, damaged wiring or terminals, or incorrect wiring.

Important

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

Fuses

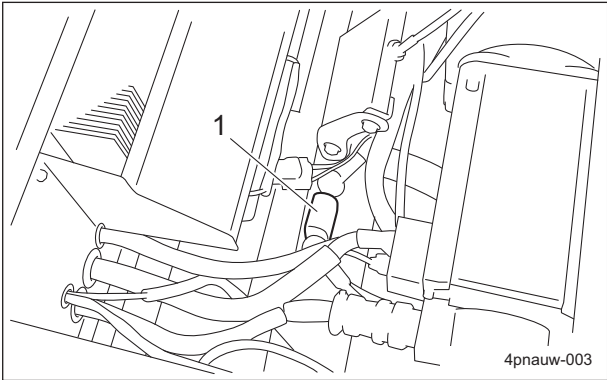
1. The fuse holder is located inside the front cover.
Glass fuse (30 A)



Fuses_001

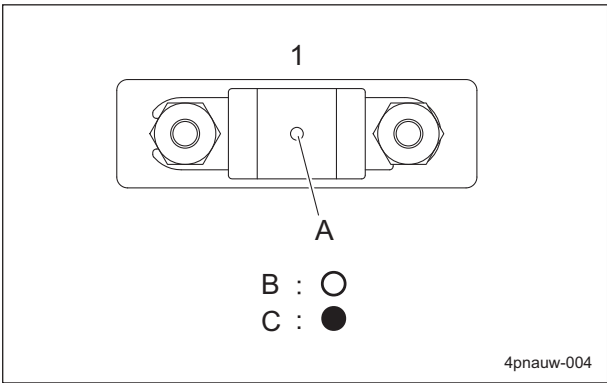
1	Fuse holder
---	-------------

2. Open the driver platform to access the fuse.
Check the blown fuse indicator.
BF fuse (325 A)



Fuses_002

1	BF fuse
---	---------



Fuses_003

1	BF fuse
A	Blown fuse indicator
B	Before fuse is blown
C	After fuse is blown

EU Declaration of Conformity

Product Identification

Product : Electric bunker rake
Brand-Name : BARONESS
Type : SP160EB
Version(s) : Not Applicable
Starting Serial No. : 10412

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

Conforms to the following Directives

2006/42/EC Machinery (MD)
2014/30/EU Electromagnetic compatibility (EMC)

We have been designed and manufactured under the following specifications

ISO 12100 : 2010 (2006/42/EC)
ISO 5395-1 : 2013 (2006/42/EC)
ISO 5395-3 : 2013 (2006/42/EC)
EN 61000-6-2:2005 (2014/30/EU)
EN 61000-6-3:2007 (2014/30/EU)

Keeper of Technical Documentation

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

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

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

Conformity assessment procedures

Internal production control : Module A (2006/42/EC)
EC-type examination : Module B (2014/30/EU)

Place : Japan
Date : 21 December 2020 (21 / 12 / 2020)

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

(fr)

Déclaration de conformité UE

Identification du produit

Produit : Râteau pour fosses électrique
Fabriquant : BARONESS
Type : SP160EB
Version(s) : Non applicable
Numéro de série de début : 10412

Fabricant Nom : Kyoisha Co., Ltd.
Adresse : 1-26, Miyuki-cho, Toyokawa, préfecture d'Aichi, Japon

Conforme aux directives suivantes :

2006/42/CE Machine (MD)
2014/30/UE Compatibilité électromagnétique (CEM)

Conception et fabrication en respect des spécifications suivantes :

ISO 12100 : 2010 (2006/42/CE)
ISO 5395-1 : 2013 (2006/42/CE)
ISO 5395-3 : 2013 (2006/42/CE)
EN 61000-6-2:2005 (2014/30/UE)
EN 61000-6-3:2007 (2014/30/UE)

Fiche technique

Marque : Kyoisha Co., Ltd.
Adresse de la marque : 1-26, Miyuki-cho, Toyokawa, préfecture d'Aichi, Japon

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

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

Procédures d'évaluation de la conformité

Contrôle de production interne : module A (2006/42/CE)
Examen de type CE : module B (2014/30/UE)

Declaración de conformidad de la UE

Identificación del producto

Producto: Rastrillo para búnker electric
 Marca: BARONESS
 Tipo: SP160EB
 Versión: No aplicable
 N.º de serie inicial: **10412**

Fabricante Nombre: Kyoeisha Co., Ltd.
 Dirección: 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japón

Cumple las siguientes Directivas

2006/42/CE Maquinaria (MD)
 2014/30/UE Compatibilidad electromagnética (EMC)

Se ha diseñado y fabricado utilizando las siguientes especificaciones

ISO 12100 : 2010 (2006/42/CE)
 ISO 5395-1 : 2013 (2006/42/CE)
 ISO 5395-3 : 2013 (2006/42/CE)
 EN 61000-6-2:2005 (2014/30/UE)
 EN 61000-6-3:2007 (2014/30/UE)

Documentación técnica

Nombre del responsable: Kyoeisha Co., Ltd.
 Dirección del responsable: 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japón

Compilador del archivo técnico (2006/42/CE)

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

Procedimientos de evaluación de conformidad

Control de fabricación interno: Módulo A (2006/42/CE)
 Examen de tipo CE: Módulo B (2014/30/UE)

EU-Konformitätserklärung

Produktbeschreibung

Produkt: Elektrischer Bunkerharke
 Marke: BARONESS
 Modell: SP160EB
 Version(en): Nicht zutreffend
 Startseriennummer: **10412**

Hersteller Name: Kyoeisha Co., Ltd.
 Adresse: 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Entspricht den folgenden Richtlinien

2006/42/EG Maschinenrichtlinie
 2014/30/EU Elektromagnetische Verträglichkeit (EMV)

Unter Anwendung der folgenden Bestimmungen entwickelt und hergestellt

ISO 12100 : 2010 (2006/42/EG)
 ISO 5395-1 : 2013 (2006/42/EG)
 ISO 5395-3 : 2013 (2006/42/EG)
 EN 61000-6-2:2005 (2014/30/EU)
 EN 61000-6-3:2007 (2014/30/EU)

Technische Dokumentation

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

Technische Unterlagen erstellt von (2006/42/EG)

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

Konformitätsbewertungsverfahren

Interne Produktionskontrolle : Modul A (2006/42/EG)
 EG-Baumusterprüfung : Modul B (2014/30/EU)

EU-försäkran om överensstämmelse

Produktidentifikation

Produkt :	Elektrisk Bunkerkratta
Märke:	BARONESS
Typ:	SP160EB
Version(er):	Ej aktuellt
Serienummer startar på:	10412

Tillverkare	Namn:	Kyoeisha Co., Ltd.
	Adress:	1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Uppfyller följande direktiv

2006/42/EG	Maskindirektivet
2014/30/EU	Elektromagnetisk kompatibilitet (EMC)

Följande kravspecifikationer har följts vid konstruktion och tillverkning

ISO 12100 : 2010 (2006/42/EG)
 ISO 5395-1 : 2013 (2006/42/EG)
 ISO 5395-3 : 2013 (2006/42/EG)
 EN 61000-6-2:2005 (2014/30/EU)
 EN 61000-6-3:2007 (2014/30/EU)

Teknisk dokumentation

Innehavarens namn:	Kyoeisha Co., Ltd.
Innehavarens adress:	1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

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

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

Förfarande för bedömning av överensstämmelse

Intern produktionskontroll: Modul A (2006/42/EG)
 EG-typprovning: Modul B (2014/30/EU)

EU-overensstemmelseserklæring

Produktidentificering

Produkt :	Elektrisk bunkerrive
Mærkenavn:	BARONESS
Type:	SP160EB
Version(er):	Ikke anvendelig
Startende serienr.:	10412

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

Er i overensstemmelse med følgende direktiver

2006/42/EF	Maskineri (MD)
2014/30/EU	Elektromagnetisk kompatibilitet (EMC)

Vi har designet og produceret under følgende specifikationer

ISO 12100 : 2010 (2006/42/EF)
 ISO 5395-1 : 2013 (2006/42/EF)
 ISO 5395-3 : 2013 (2006/42/EF)
 EN 61000-6-2:2005 (2014/30/EU)
 EN 61000-6-3:2007 (2014/30/EU)

Indehaver af teknisk dokumentation

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

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

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

Procedurer for overensstemmelsesvurdering

Intern produktionskontrol : Modul A (2006/42/EF)
 EF-typeafprøvning : Modul B (2014/30/EU)

UK Declaration of Conformity

Product Identification

Product :	Electric Bunker Rake
Brand-Name :	BARONESS
Type :	SP160EB
Starting Serial No. :	10416
Manufacturer	Name : Kyoeisha Co., Ltd.
	Address : 1-26 Miyuki-cho, Toyokawa, Aichi-pref., Japan

Conforms to the following Directives

Supply of Machinery (Safety) Regulations 2008 (SMD2008)
Electromagnetic Compatibility Regulations 2016 (EMC2016)
Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 (Noise2001)

We have been designed and manufactured under the following specifications

ISO 12100 : 2010 (SMD2008)
ISO 5395-1 : 2013 (SMD2008)
ISO 5395-3 : 2013 (SMD2008)
EN 61000-6-2:2005 (EMC2016)
EN 61000-6-3:2007 (EMC2016)

Keeper of Technical Documentation

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

Compiler of the technical file

Name:	Kyoeisha U.K.Ltd.
Address:	Unit 5 Hatch Industrial Park Grewell Road, Basingstoke Hampshire RG24 7NG, the United Kingdom

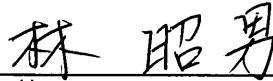
Conformity assessment procedures

Internal production control : Module A (SMD2008)
EC-type examination : Module B (EMC2016)

Place : Japan
Date : 1 February 2021 (1 / 2 / 2021)

Signature :

Name : Akio Hayashi
Position : Quality Dept. Director



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

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