



SUNJOE 24V-X2-DTS15 Cordless Lawn Scarifier plus Dethatcher User Manual

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Safety Instructions

All Operators Must Read These
Instructions Before Use

Always follow these safety guidelines. Failure to do so may result in serious bodily injury or death.

General Safety WARNINGS!

When using this cordless scarifier + dethatcher, basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury.

Before using the scarifier + dethatcher, take the time to familiarize yourself with the controls, especially how to stop the machine in an emergency. The only individuals who should use the scarifier + dethatcher are those who have a thorough understanding of the instructions and who know how to operate the machine. Children should never be allowed access to the scarifier + dethatcher.

Retain this manual for future reference and reread it at the start of each dethatching session.

General Safety

1. Keep work area clean and well-lit – Cluttered, dark areas invite accidents.
2. Replacement parts – When servicing this unit, use only identical replacement parts.
3. Keep children, bystanders, and pets away – All spectators, including pets, should be kept a safe distance away from the work area.
4. Dress properly – Do not wear loose clothing or jewelry as such articles can get caught in moving parts. Wear a protective covering to contain long hair. Wearing rubber gloves and substantial non-slip footwear is recommended when working outdoors.
5. Prevent unintentional starting – Ensure the switch is in the off-position before inserting battery packs, picking up or carrying the appliance. Carrying the appliance with your finger on the switch or energizing appliance that have the switch on invites accidents.
6. Remove the battery packs from the appliance before making any adjustments, changing accessories, or storing appliance – Such preventive safety measures reduce the risk of starting the appliance accidentally.

7. Do not force the tool – It will perform better with less likelihood of personal or mechanical injury if it is used at the rate for which it is designed.
8. Wear personal protective equipment – When using this tool, wear safety glasses with side shields or goggles to provide necessary eye protection. Wear ear defenders to prevent hearing damage. Use a face or dust mask if the work environment is dusty.
9. Remove the batteries – Disconnect the scarifier + dethatcher from the power supply by removing the batteries when it is not in use, before servicing it, when changing accessories, and when performing any other maintenance task.
10. Store idle tool indoors – When not in use, the scarifier + dethatcher should be stored indoors in a dry and high or locked-up place out of the reach of children.
11. Maintain the scarifier + dethatcher with care – Keep cutting edges sharp and clean for optimal and safest performance. Keep handles dry, clean and free from oil and grease.
12. Use the right tool – Do not use the tool for any job except that for which it is intended.
13. Avoid dangerous environments – Do not use the scarifier + dethatcher in rain, damp, or wet locations.
14. Stay alert – Watch what you are doing. Use common sense. Do not operate the scarifier + dethatcher when you are tired or under the influence of drugs, alcohol, or other medication.
15. Do not overreach – Keep proper footing and balance at all times.
16. Check Damaged Parts – Before further use of the appliance, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other condition that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced. Contact the Snow Joe® + Sun Joe® customer service center at 1-866-SNOWJOE (1-866-766-9563) for assistance.

Electric Safety

WARNING! Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

1. Recharge only with the charger specified by the manufacturer. A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
2. Use appliances only with specifically designated battery packs. Use of any other battery packs may create a risk of injury and fire.
3. When the battery packs are not in use, keep them away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
4. Under abusive conditions, liquid may be ejected from the batteries; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.
5. Do not use a battery pack or appliance that is damaged or modified. Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.
6. Do not expose battery packs or appliance to fire or excessive temperature. Exposure to fire or temperature above 104°F(40.5°C) may cause explosion.
7. Follow all charging instructions and do not charge the battery packs or appliance outside of the temperature

range specified in the instructions. Charging improperly or at temperatures outside of the specified range may damage the battery and increase the risk of fire.

8. Do not modify or attempt to repair the appliance or the battery pack except as indicated in the instructions for use and care.

Service

1. Have servicing performed by a qualified repair person using only identical replacement parts. This will ensure that the safety of the product is maintained.
2. Do not modify or attempt to repair the appliance or the battery packs except as indicated in the instructions for use and care.

IMPORTANT!

Safety Instructions for Walk-Behind Scarifier + Dethatchers

General Operation

- Read, understand and follow all instructions on the machine and in the manual(s) before starting.
- Thoroughly inspect the area where the equipment is to be used and remove all foreign objects.
WARNING! Foreign objects in the work area can be picked up by the scarifier + dethatcher and launched into your eyes, which can result in severe personal injury. In addition to surveying the area and removing foreign objects before beginning work, always wear safety goggles or safety glasses with side shields and, when necessary, a full face shield.
- Use the cordless scarifier + dethatcher only in daylight or good artificial light.
- Do not operate the equipment without wearing adequate outer garments. Wear protective footwear that will improve footing on slippery surfaces.
- Never attempt to make any adjustments while the motor is running.
- Never operate the scarifier + dethatcher in wet grass. Always be sure of your footing; walk, never run, with the machine.
- Do not put hands or feet near or under rotating parts.
- Exercise extreme caution when operating on or crossing gravel drives, walks or roads. Stay alert for hidden hazards or traffic.
- Exercise caution to avoid slipping or falling.
- Stop the motor and remove the batteries when leaving the operating position, before unclogging the tines and when repairing, adjusting, inspecting or performing any other maintenance on the machine.
- Take all necessary precautions when leaving the machine unattended. Stop the motor and remove batteries.
- Before cleaning, repairing or inspecting the unit, shut off the motor, remove the batteries and wait until all moving parts have come to a complete stop.
- Never operate the machine without proper guards, plates or other safety protective devices in place and in proper working order.
- Keep children and pets away.
- Do not overload the machine capacity by attempting to dethatch too deep at too fast a rate.
- Never operate the machine at high transport speeds on hard or slippery surfaces.

- Never allow bystanders near the unit when operating.
- Use only attachments and accessories approved by the manufacturer of the machine.
- Never operate the machine without good visibility or light.
- Be careful when scarifying in hard ground. The tines may catch in the ground and propel the machine forward. If this occurs, let go of the handle bars and the starting lever and do not restrain the machine.
- Use extreme caution when reversing or pulling the machine towards you.
- Stop the tines if the machine has to be tilted for transportation. Do not operate the tines when crossing surfaces other than grass, and when transporting the product to and from the working area.
- Do not tilt the machine when switching on the motor, except if the product has to be tilted for starting. In this case, do not tilt it more than absolutely necessary and lift only the part which is away from the operator.
- Do not start the motor when standing in front of the discharge opening.
- Switch on the motor carefully according to the instructions and keep your feet clear of the rotating tines.
- Never pick up or carry the machine while the motor is running.
- Stop the motor and remove the batteries:
 - before clearing blockages or unclogging the discharge opening;
 - before checking, cleaning or working on the machine;
 - after striking a foreign object. Inspect the machine for damage and make repairs before restarting and operating the machine;
 - if the machine starts to vibrate abnormally (check immediately).
 - whenever you leave the machine.
- Never use the scarifier + dethatcher without the thatch collection bag securely fitted.
- **WARNING!** Beware of sharp tines. Tines continue to rotate after the motor is switched off.

Slope Operation

Slopes are major factors related to slip and fall accidents, which can result in severe injury. Operation on all slopes requires extra caution. If you feel uneasy on a slope, do not dethatch it.

- Dethatch across the face of slopes; never dethatch slopes following an up and down traverse. Exercise extreme caution when changing direction on a slope.
- Watch for holes, ruts, bumps, rocks or other hidden objects. These may cause an unexpected slip or fall.
- Do not dethatch on wet grass or excessively steep slopes. Poor footing could cause a slip and fall accident.
- Do not dethatch near drop offs, ditches or embankments. You could lose your footing or balance.

Children Safety

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the dethatching activity. Never assume that children will remain where you last saw them.

- Keep children out of the dethatching area and under the watchful care of a responsible adult other than the operator.
- Stay alert and turn the dethatcher off if a child enters the area.
- Never let children operate the machine.
- Use extra care when approaching blind corners, shrubs, trees or other objects that may block your view of a child.

Vibration + Noise Reduction

To reduce the impact of noise and vibration emission, limit the time of operation, use low-vibration and low-noise operating modes as well as wear personal protective equipment. Take the following points into account to minimize the vibration and noise exposure risks:

- Only use the product as intended by its design and these instructions.
- Ensure that the product is in good condition and well maintained.
- Use correct application tools for the product and ensure they are in good condition.
- Keep tight grip on the handles/grip surface.
- Maintain this product in accordance with these instructions and keep it well lubricated (where appropriate).
- Plan your work schedule to spread any high vibration tool use across a number of days.

Residual Risks

Even if you are operating this product in accordance with all the safety requirements, potential risks of injury and damage remain. The following dangers can arise in connection with the structure and design of this product:

- Health defects resulting from vibration emission if the product is being used over long periods of time or not adequately managed and properly maintained.
- Injuries and damage to property due to broken application tools or the sudden impact of hidden objects during use.
- Danger of injury and property damage caused by flying objects.

WARNING! This product produces an electromagnetic field during operation! This field may under some circumstances interfere with active or passive medical implants! To reduce the risk of serious or fatal injury, we recommend persons with medical implants to consult their doctor and the medical implant manufacturer before operating this product!

Battery + Charger Safety Instructions

We pay a great deal of attention to the design of every battery pack to ensure that we supply you with batteries that are safe, durable and have a high energy density. The battery cells have a wide range of safety devices. Each individual cell is initially formatted and its electrical characteristic curves are recorded. This data is then used exclusively to be able to assemble the best possible battery packs.

Despite all the safety precautions, caution must always be exercised when handling the batteries. The following points must be obeyed at all times to ensure safe use. Safe use can only be guaranteed if undamaged cells are used. Incorrect handling of the battery pack can cause cell damage.

IMPORTANT! Analyses confirm that incorrect use and poor care of high-performance batteries are the main factors responsible for personal and/or product damage.

WARNING! Use only approved replacement batteries; other batteries may damage the cordless scarifier + dethatcher and cause it to malfunction, which can lead to serious personal injury.

WARNING! Do not use a battery pack or appliance that is damaged or modified. Damaged or modified battery may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.

Do not modify or attempt to repair the appliance or the battery packs except as indicated in the instructions for use and care.

Have your battery packs serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the battery packs is maintained.

CAUTION! To reduce the risk of injury, charge the 24V iON+ lithium-ion battery packs only in the designated 24V

iON+ lithium-ion charger. Other types of chargers present risk of fire, personal injury and damage. Do not wire the battery packs to a power supply plug or car cigarette lighter. Such misuse will permanently disable or damage the battery packs.

- Avoid dangerous environments – Do not charge the battery packs in rain, snow or in damp or wet locations. Do not use the battery packs or charger in the presence of explosive atmospheres (gaseous fumes, dust or flammable materials) because sparks may be generated when connecting or disconnecting the battery pack, which could lead to a fire.
- Charge in a well-ventilated area – Do not block the charger vents. Keep them clear to allow for proper ventilation. Do not allow smoking or open flames near a charging battery pack. Vented gases may explode.
NOTE: The safe temperature range for the battery is 41°F –105°F (5°C – 40.5°C). Do not charge the batteries outside in freezing weather; charge it at room temperature.
- Maintain charger cord – When unplugging the charger, pull the plug, not the cord, from the receptacle to reduce the risk of damage to the electrical plug and cord. Never carry the charger by its cord or yank it by the cord to disconnect it from the receptacle. Keep the cord away from heat, oil and sharp edges. Make sure the cord will not be stepped on, tripped over or subjected to damage or stress when the charger is in use. Do not use the charger with a damaged cord or plug. Replace a damaged charger immediately.
- Do not use an extension cord unless it is absolutely necessary – Using the wrong, damaged or improperly wired extension cord poses a risk of fire and electric shock. If an extension cord must be used, plug the charger into a properly wired 16 gauge or larger extension cord with the female plug matching the male plug on the charger. Make sure that the extension cord is in good electrical condition.
- Charger 24VCHRG-DPC is rated for 120 volt AC only – The charger must be plugged into an appropriate receptacle.
- Use only recommended attachments – Use of an attachment not recommended or sold by the battery charger or battery pack manufacturer may result in risk of fire, electric shock or personal injury.
- Unplug charger when not in use – Make sure to disconnect battery pack from unplugged charger.

WARNING! To reduce the risk of electric shock, always unplug the charger before performing any cleaning or maintenance. Do not allow water to flow into the charger. Use a Ground Fault Circuit Interrupter (GFCI) to reduce shock hazards.

- Do not burn or incinerate battery packs – Battery packs may explode, causing personal injury or damage. Toxic fumes and materials are created when the battery pack is burned.
- Do not crush, drop or damage battery packs – Do not use the battery packs or charger if they have sustained a sharp blow, been dropped, run over or have been damaged in any way (i.e. pierced with a nail, hit with a hammer, stepped on, etc.).
- Do not disassemble – Incorrect reassembly may pose a serious risk of electric shock, fire or exposure to toxic battery chemicals. If the batteries or charger are damaged, contact an authorized Snow Joe® + Sun Joe® dealer or call the Snow Joe® + Sun Joe® customer service center at 1- 866-SNOWJOE (1-866-766-9563) for assistance.
- Battery chemicals cause serious burns – Never let a damaged battery pack contact the skin, eyes or mouth. If a damaged battery pack leaks battery chemicals, use rubber or neoprene gloves to safely dispose of it. If skin is exposed to battery fluids, wash the affected area with soap and water and rinse with vinegar. If eyes are exposed to battery chemicals, immediately flush with water for 20 minutes and seek medical attention. Remove and dispose of contaminated clothing.

- Do not short circuit – A battery pack will short circuit if a metal object makes a connection between the positive and negative contacts on the battery pack. Do not place a battery pack near anything that may cause a short circuit, such as paper clips, coins, keys, screws, nails and other metallic objects. A short-circuited battery pack poses a risk of fire and severe personal injury.
- Store your battery packs and charger in a cool, dry place – Do not store the battery packs or charger where temperatures may exceed 105°F (40.5°C), such as in direct sunlight or inside a vehicle or metal building during the summer.

Information about the batteries

1. The battery packs supplied in your cordless scarifier + dethatcher are only partially charged. The battery packs have to be charged completely before you use the tool for the first time.
2. For optimum battery performance, avoid low discharge cycles by charging the battery packs frequently.
3. Store the battery packs in a cool place, ideally at 77°F (25°C) and charged to at least 40%.
4. Lithium-ion batteries are subject to a natural aging process. The battery packs must be replaced at the latest when their capacity falls to just 80% of its capacity when new. Weakened cells in an aged battery pack are no longer capable of meeting the high power requirements needed for the proper operation of your cordless scarifier + dethatcher, and therefore pose a safety risk.
5. Do not throw the battery packs into an open fire as this poses a risk of explosion.
6. Do not ignite the battery packs or expose them to fire.
7. Do not exhaustively discharge the batteries. Exhaustive discharge will damage the battery cells. The most common cause of exhaustive discharge is lengthy storage or non-use of partially discharged battery. Stop working as soon as the performance of the battery fall noticeably or the electronic protection system triggers. Place the battery packs in storage only after they have been fully charged.
8. Protect the batteries and the tool from overloads. Overloads will quickly result in overheating and cell damage inside the battery housing even if this overheating is not apparent externally.
9. Avoid damage and shocks. Immediately replace the batteries that has been dropped from a height of more than one meter or has been exposed to violent shocks, even if the housing of the battery pack appears to be undamaged. The battery cells inside the battery may have suffered serious damage. In such instances, please read the waste disposal information for proper battery disposal.
10. If the battery packs suffer overloading and overheating, the integrated protective cutoff will switch off the equipment for safety reasons.
IMPORTANT! Do not press the switch lever bar any more if the protective cut-off has been activated. This may damage the battery packs.
11. Use only original battery packs. The use of other batteries poses a fire risk and may result in injuries or an explosion.

Information about the charger and the charging process

1. Please check the data marked on the rating plate of the battery charger. Be sure to connect the battery charger to a power supply with the voltage marked on the rating plate. Never connect it to a different mains voltage.
2. Protect the battery charger and its cord from damage. Keep the charger and its cord away from heat, oil and sharp edges. Have damaged cords repaired without delay by a qualified technician at an authorized Snow Joe® + Sun Joe® dealer or call the Snow Joe® + Sun Joe® customer service center at 1-866-SNOWJOE (1-

866-766-9563).

3. Electrical plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with grounded appliances. Unmodified plugs and matching outlets will reduce the risk of electric shock.
4. Keep the battery charger, battery packs and the cordless tool out of the reach of children.
5. Do not use the supplied battery charger to charge other cordless tools.
6. During periods of heavy use, the battery packs will become warm. Allow the battery packs to cool to room temperature before recharging.
7. Do not overcharge the batteries. Do not exceed the maximum charging times. These charging times only apply to discharged batteries. Frequent connection of a charged or partially charged battery pack will result in overcharging and cell damage. Do not leave the batteries connected with the charger for days on end.
8. Never use or charge battery if you suspect that it has been more than 12 months since the last time they were charged. There is a high probability that the battery pack has already suffered dangerous damage (exhaustive discharge).
9. Charging the batteries at a temperature below 41°F (5°C) will cause chemical damage to the cells and may cause a fire.
10. Do not use batteries that have been exposed to heat during the charging process, as the battery cells may have suffered dangerous damage.
11. Do not use the battery if it suffered curvature or deformation during the charging process or exhibit other atypical symptoms (gassing, hissing, cracking, etc.).
12. Never fully discharge the battery packs (maximum recommended depth of discharge is 80%). A complete discharge of the battery pack will lead to premature aging of the battery cells.





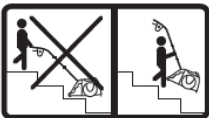
Protection from environmental influences

1. Wear suitable work clothes. Wear safety goggles.
2. Protect your cordless tool and the battery charger from moisture and rain – Moisture and rain can cause dangerous cell damage.
3. Do not use the cordless tool or the battery charger near vapors and flammable liquids.
4. Use the battery charger and cordless tools only in dry conditions and at an ambient temperature of 41°F – 105°F (5°C – 40.5°C).
5. Do not keep the battery charger in places where the temperature is liable to reach over 105°F (40.5°C). In particular, do not leave the battery charger in a car that is parked in the sunshine.
6. Protect batteries from overheating. Overloads, overcharging and exposure to direct sunlight will result in overheating and cell damage. Never charge or work with batteries that have been overheated – replace them immediately, if possible.
7. Store the charger and your cordless tool only in dry locations with an ambient temperature of 41°F – 105°F (5°C – 40.5°C). Store your lithium-ion battery packs in a cool, dry place at a temperature of 77°F (25°C). Protect the battery packs, charger and cordless tool from humidity and direct sunlight. Only place fully charged batteries in storage (charged to at least 40%).
8. Prevent the lithium-ion battery packs from freezing. Battery packs that were stored below 32°F (0°C) for more than 60 minutes must be discarded.
9. When handling the batteries, be wary of electrostatic charge. Electrostatic discharges can damage the electronic protection system and the battery cells. Avoid electrostatic charging and never touch the battery

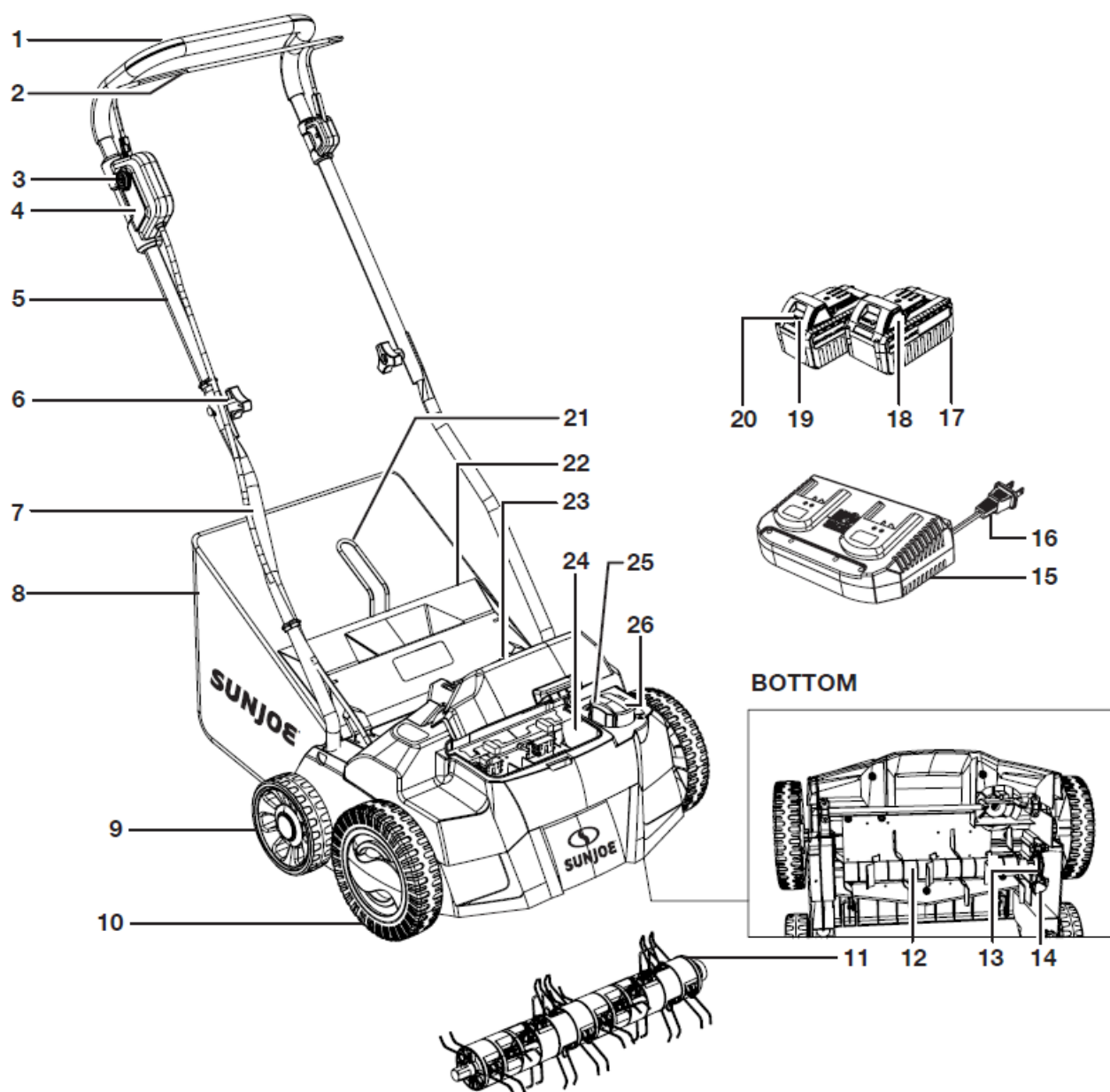
poles.

Safety Symbols

The following table depicts and describes safety symbols that may appear on this product. Read, understand and follow all instructions on the machine before attempting to assemble and operate.

Symbols	Descriptions	Symbols	Descriptions
	READ THE OPERATOR'S MANUAL(S) – Read, understand , and follow all instructions in the user manual(s) before attempting to assemble and operate.		SAFETY ALERT – Indicates a precaution, a warning, or a danger.
	WARNING! Do not expose the unit to rain or wet conditions.		WEAR EYE AND HEARING PROTECTION – For protection against injury, wear ear defenders and safety goggles.
	Wear protective gloves and non-slip footwear when using the machine and handling debris.		DANGER! Rotating blades – Keep hands and feet away from moving parts.
	Keep bystanders a safe distance away from the work area.		Thrown objects picked up by the rotating tines can cause severe injury.
	Inspect the work area prior to use and remove all objects that could be thrown by the appliance. If a hidden object is discovered while working, stop the engine and remove the object.		Use extreme CAUTION when reversing or pulling the machine towards you.
	Do not push down stairs.		Keep hands and feet away from the rotating parts.
	Indoor use only. Only use battery charger indoors.		

Read the owner's manual and safety instructions carefully before operating the scarifier + dethatcher. Compare the illustration below to the dethatcher in order to familiarize yourself with the location of the various controls and adjustments. Save this manual for future reference and reread it prior to each dethatching session.



1. Soft grip
2. Switch lever bar
3. Safety lock button
4. Switch box
5. Upper handle frame
6. Handle knob + bolt (2)
7. Lower handle bar (2)
8. Thatch collection bag
9. Rear wheels (2)
10. Front wheels (2)
11. Dethatcher cylinder

12. Scarifying cylinder
13. Cylinder lock
14. Lock screw
15. 24V iON+ lithium-ion charger (24VCHRG-DPC)
16. Charger plug
17. 24V iON+ lithium-ion battery (2 x 24VBAT) featuring exclusive EcoSharp® technology
18. Push lock button
19. Push button for battery indicator
20. Battery indicator
21. Thatch collection bag handle
22. Ejector flap
23. Battery compartment cover
24. Battery compartment
25. Knob lock
26. Scarifying/raking depth adjustment knob

Technical Data

- Motor 600 W Brushless
- Battery Voltage Max* 48V D.C. (2 x 24V)
- Battery Capacity 4.0 Ah
- Charger Input 120V AC, 60Hz, 160 W
- Charger Output 26V DC, 2.2A (2 port)
- Charge Time Max 1 hr 50 min
- No Load Speed 3,000 rpm
- Deck Size 15 inch (38 cm)
- Raking Width Max 14.2 inch (36 cm)
- Scarifying Depth† -0.375 inch – 0.2 inch (-9.5 mm – 5 mm)
- Raking Depth† -0.18 inch – 0.4 inch (-4.5 mm – 10 mm)
- Depth Adjustment 5-position
- Thatch Bag Capacity 10.6 gal (40 L)
- Dethatcher Cylinder 24 spring steel raking tines (2 mm thick)
- Scarifier Cylinder 7 slicing blades
- Wheel Size 8 in. (20 cm) front 6 in. (15 cm) rear
- Net Weight 33 lbs (15 kg)

Generates 48 V max with two 24 V lithium-ion batteries. Initial no-load voltage, per fully charged battery, peaks at 24 V. Nominal voltage under typical load is 21.6 V.

† The negative scarifying/raking depth indicates that the tines/blades are raking below the horizon (i.e. penetrating the soil layer).

Unpacking

Carton Contents

- Scarifier + dethatcher
- Handle knob and bolt (2)
- Upper handle frame
- Thatch collection bag
- Cable clip (2)
- Scarifying cylinder (Pre-assembled)
- Dethatcher cylinder
- 24V iON+ lithium-ion batteries (2)
- 24V iON+ lithium-ion battery charger
- Manual and registration card

1. Carefully remove the cordless scarifier + dethatcher and check to see that all of the above items are supplied.
2. Inspect the product carefully to make sure no breakage or damage occurred during shipping. If you find damaged or missing parts, DO NOT return the unit to the store. Please call the Snow Joe® + Sun Joe® customer service center at 1-866-SNOWJOE (1-866-766-9563).

NOTE: Do not discard the shipping carton and packaging material until you are ready to use the cordless scarifier + dethatcher. The packaging is made of recyclable materials. Properly dispose of these materials in accordance with local regulations or save the packaging for long-term product storage.

IMPORTANT! The equipment and packaging material are not toys. Do not let children play with plastic bags, foils, or small parts. These items can be swallowed and pose a suffocation risk!

Battery Pack Operation

The equipment is powered by 2 lithium-ion batteries. The battery packs are completely sealed and maintenance-free.






WARNING! The scarifier + dethatcher can only be powered by both of the batteries together. Use one battery cannot provide sufficient power to the tool. Make sure to use two batteries of the same voltage and the same capacity. Using the tool with batteries of different capacity will cause damage to the batteries.

WARNING! Before first use, the batteries require 1 hr 50 min charge time to be fully charged. When the batteries are at low capacity, recharge for 1 hr 50 min again before resuming operation.

Battery Charge Level Indicator

The battery packs are equipped with a push button for checking the charge level. Simply press the push button to read off the battery charge level from the LEDs of the battery indicator:

- All 3 level monitoring LEDs are lit: Battery charge level is high.
- 2 level monitoring LEDs are lit: Battery charge level is decreasing. Stop work as soon as possible.
- 1 level monitoring LED is lit: Battery is flat. Stop work IMMEDIATELY and charge the battery. Otherwise the battery's service life will be greatly shortened.

	
Lights	Light Indicators
	Charge level button
	The battery is at 30% capacity and requires charging
	The battery is at 60% capacity and requires charging soon
	The battery is at full capacity

NOTE: If the charge level button does not appear to be working, connect to the charger and charge as needed.

NOTE: Immediately after using the battery packs, the charge level button may display a lower charge than it will if checked a few minutes later. The battery cells “recover” some of their charge after resting.

Charger Operation

WARNING! Charge only 24V iON+ lithium-ion battery packs with its compatible 24V iON+ lithium-ion charger. Other types of batteries may cause personal injury and damage.

To reduce the risk of electric shock, do not allow water to flow into the charger’s AC/DC plug.

When to Charge the iON+ 24VBAT

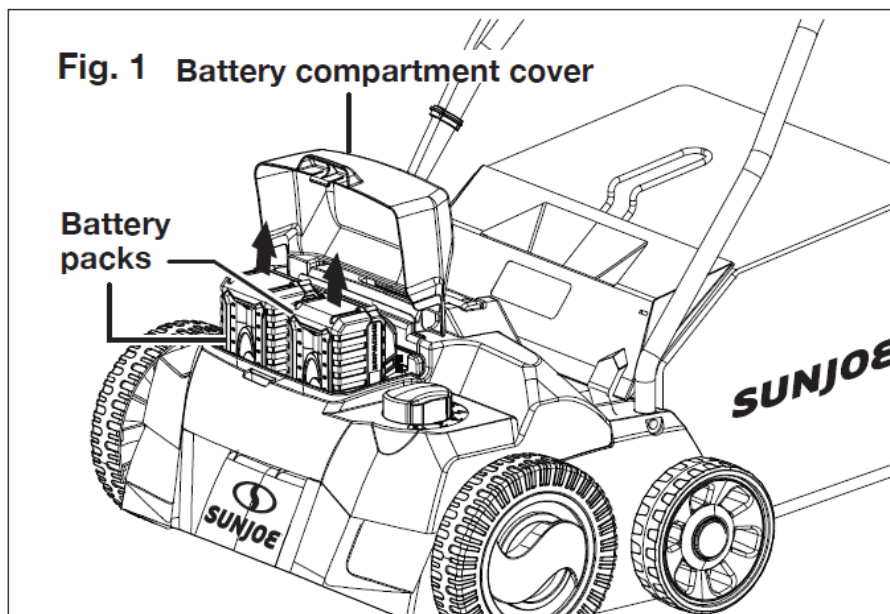
Lithium-iON Batteries

NOTE: The iON+ 24VBAT lithium-iON battery packs do not develop a “memory” when charged after only a partial discharge. Therefore, it is not necessary to run down the battery packs before charging them again.

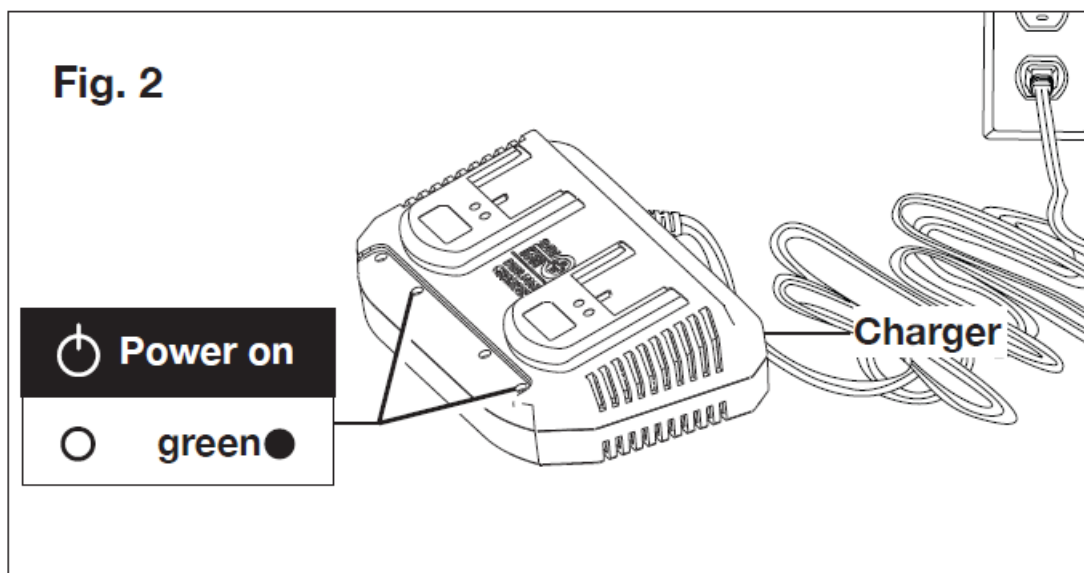
- Use the battery indicator lights to determine when to charge your iON+ 24VBAT lithium-iON battery packs.
- You can “top-off” your battery packs’ charge before starting a big job or after a long day of use.

Charging the Battery

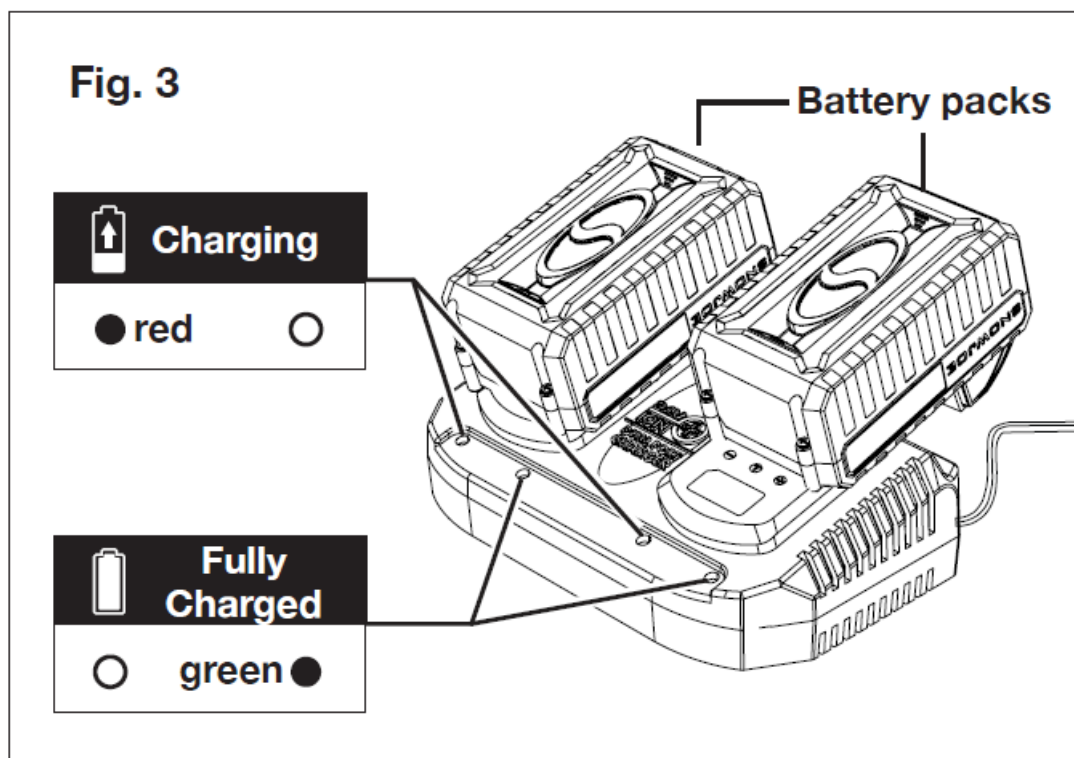
1. Open the battery compartment cover, and push the push lock buttons on the batteries to pull the battery packs out from the battery compartment (Fig. 1).



2. Check that the mains voltage is the same as that marked on the rating plate of the battery charger. Then, insert the charger's plug into the electrical wall outlet. When you plug in the charger, two green lights will illuminate and stay green (Fig. 2).



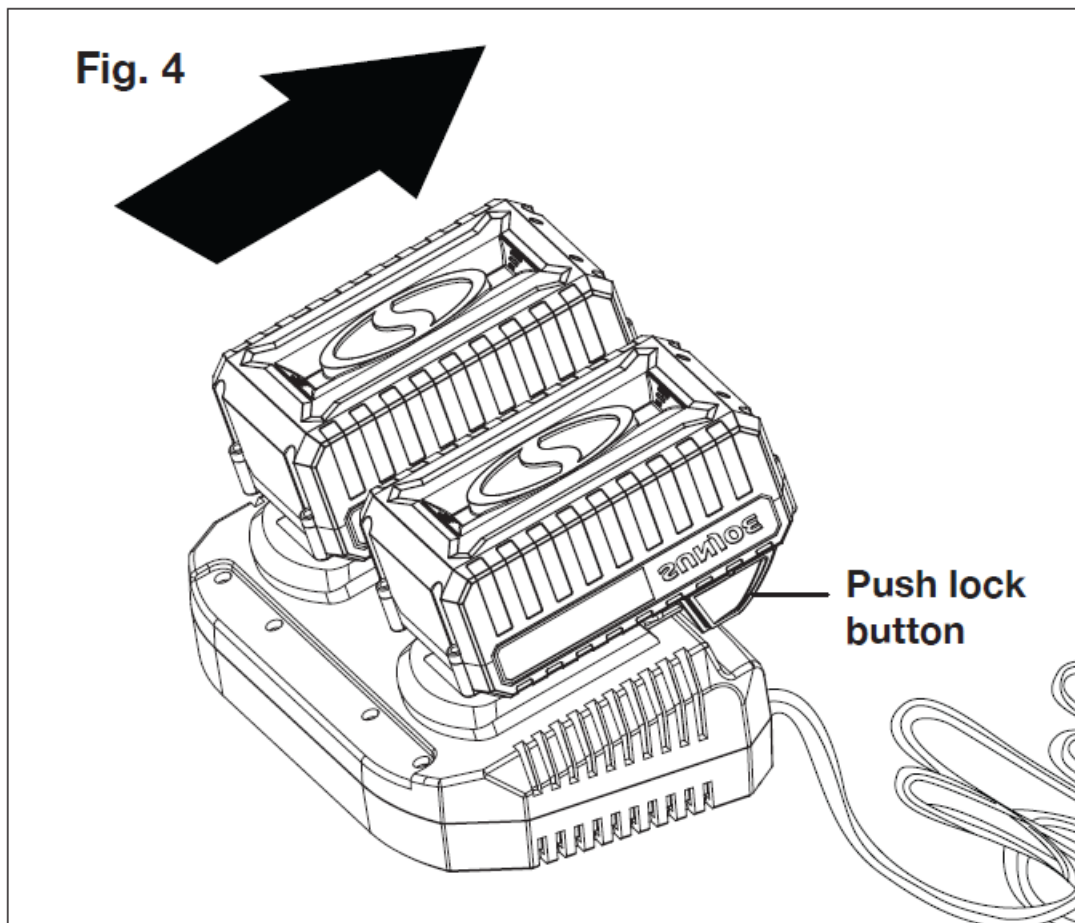
3. Place the battery packs into the charger by sliding the packs to lock them into position. When you insert the batteries into the charger, the two green lights will go off, and the red lights will illuminate to indicate that the batteries are charging (Fig. 3).



4. When the charger lights turn green, the batteries are fully charged (Fig. 3).

NOTE: A fully discharged pack with an internal temperature in the normal range will fully charge in 1 hr 50 min (between 32°F/0°C and 113°F/45°C).

5. If the light indicators do not come on at all, check that the battery packs are fully seated into the bay. Remove the battery packs and reinsert. If the problem persists, contact an authorized Snow Joe® + Sun Joe® dealer or call the Snow Joe® + Sun Joe® customer service center at 1- 866-SNOWJOE (1-866-766-9563) for assistance.
6. When charging is complete, remove the batteries from the charger by pressing the push lock buttons and sliding the batteries backward to unlock them from the charger (Fig. 4).



CAUTION! FIRE HAZARD. When removing the batteries from the charger, be sure to unplug the charger from the outlet first, then remove the batteries from the charger.

WARNING! This charger does not automatically turn off when the batteries are fully charged. Please take care not to leave the batteries in the charger. Switch off or unplug the charger at the mains when charging is complete.

7. Timely recharging of the batteries will help prolong the batteries' life. You must recharge the battery packs when you notice a drop in the equipment's power.

IMPORTANT! Never allow the battery packs to become fully discharged as this will cause irreversible damage to the batteries.

Charging a Hot or Cold Battery Pack

The green indicator lights on the charger base indicates that the battery packs' temperatures are outside the charging range. Once the packs are within the acceptable range, normal charging will take place and the red light will be continuous. Hot or cold battery packs may take longer to charge.

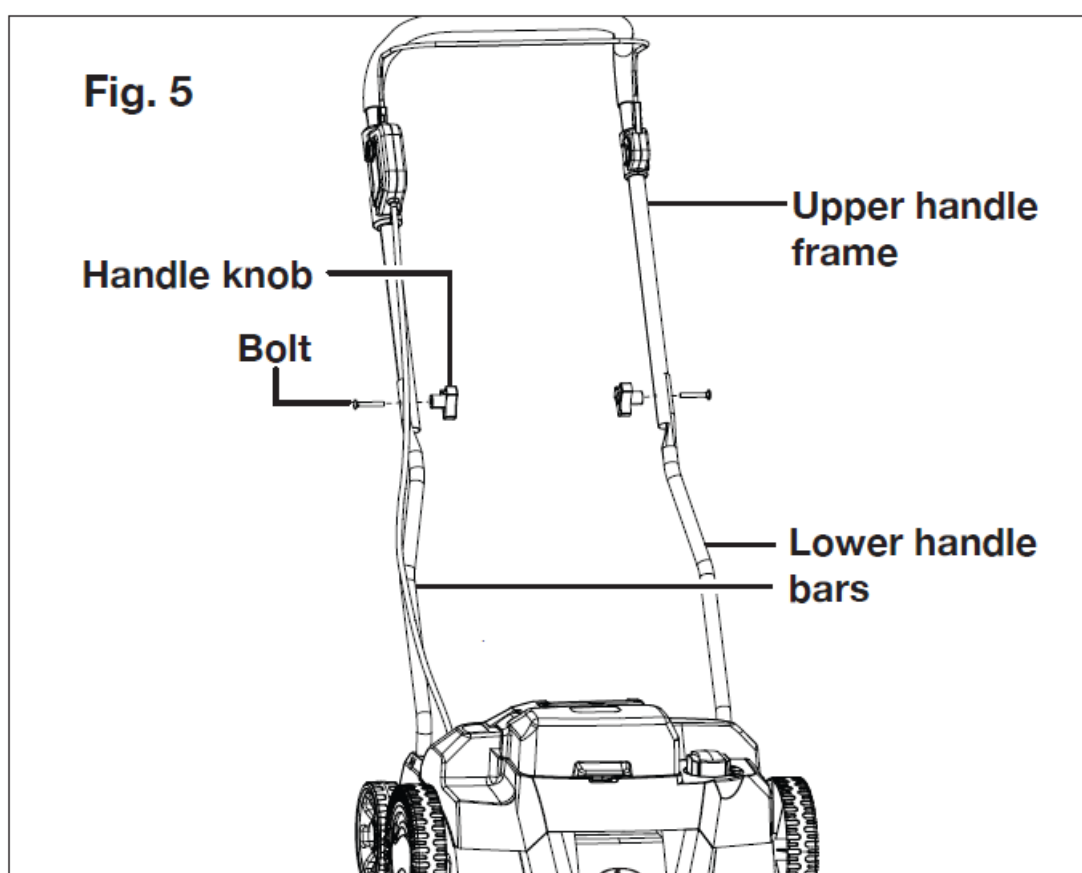
Lithium-Ion Charging Status			
Battery Pack Temperature	Charger Base Indicator Light	Battery Pack Indicator Light	Charging Status
Too hot	Green	Flashing together	Not charging
Normal range	Red	Flashing one by one	Normal charging
Too cold	Green	Flashing together	Not charging

Assembly

WARNING! Do not insert the batteries until assembly is complete. Failure to comply could result in accidental starting and severe personal injury.
Always wear gloves during assembly.

Connecting the Handle

1. Fit the upper handle frame on the lower handle bars, and secure with 2 sets of handle knob and bolt (Fig. 5).



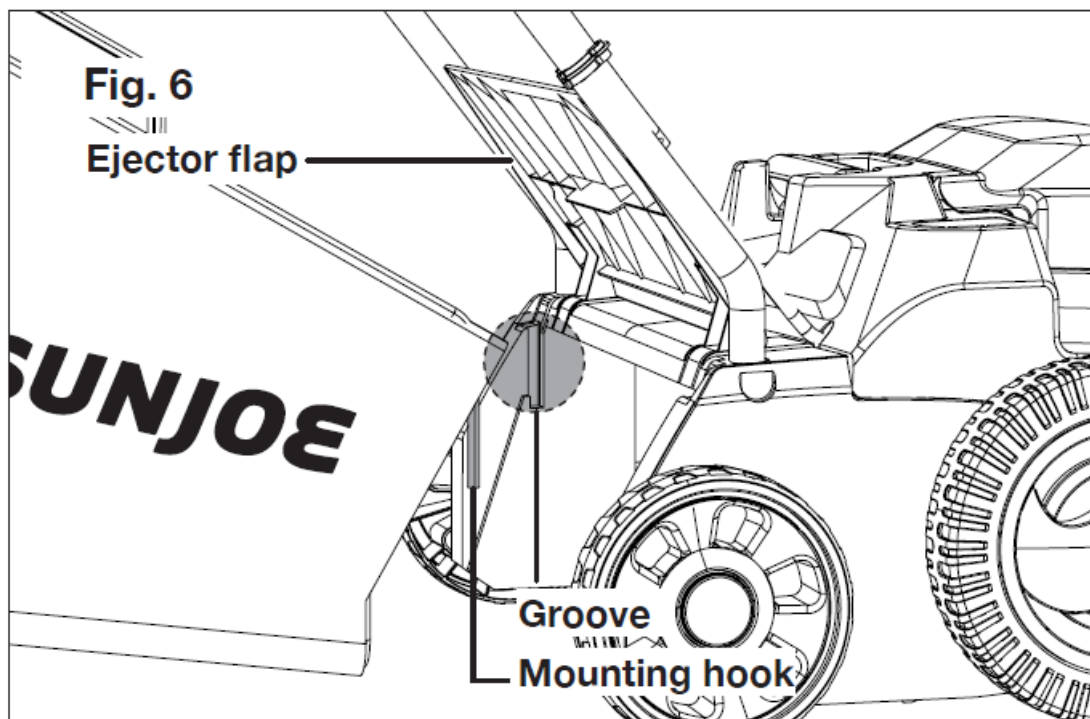
2. Clip the cable clips on the handle, and Insert the cable in the cable clips.

Thatch Collection Bag Assembly

WARNING! Do not attempt to use the product without the thatch collection bag attached. This could pose a danger of flying debris.

WARNING! The product must be switched off and the cutting device must have stopped rotating before you attach or empty the thatch collection bag.

1. Lift the ejector flap, and mount the hooks on both sides of the thatch collection bag on the grooves on both sides inside the housing (Fig. 6).



Removing + Emptying the Thatch

Collection Bag

Empty the thatch collection bag frequently during use. Do not wait until it is completely full. We recommend emptying it when it is half full.

NOTE: A full thatch collection bag will reduce the performance of this product.

1. Lift the thatch ejector flap and pull the thatch collection bag off the mounting hooks to remove it.
2. Empty the bag's contents into a suitable waste receptacle. Mount the bag back into position before resuming work.

Intended Use

1. This scarifier + dethatcher is designated with a 600 watt motor. Depending on the fitted cutting device, this machine is either intended for scarifying and removing thatch from lawns or raking in domestic and hobby gardens.
2. When used as a scarifier, this machine works by scratching through and between the grass with specially adapted prongs that collect and remove any unwanted parts from the lawn while leaving the grass blades intact. At the same time the machine scarifies the ground resulting in a better aeration.

3. When used as a dethatcher the fine needles will scratch the surface of the lawn while simultaneously picking up light debris for better oxygen absorption, airing and drainage.
4. This machine is not to be used in wet weather conditions and may not be used to mow dry, wet or unusually high grass, e.g., pasture grass or for shredding leaves.
5. This machine is intended for private domestic use only, not for any commercial trade use. It must not be used for any purposes other than those described.

Operation

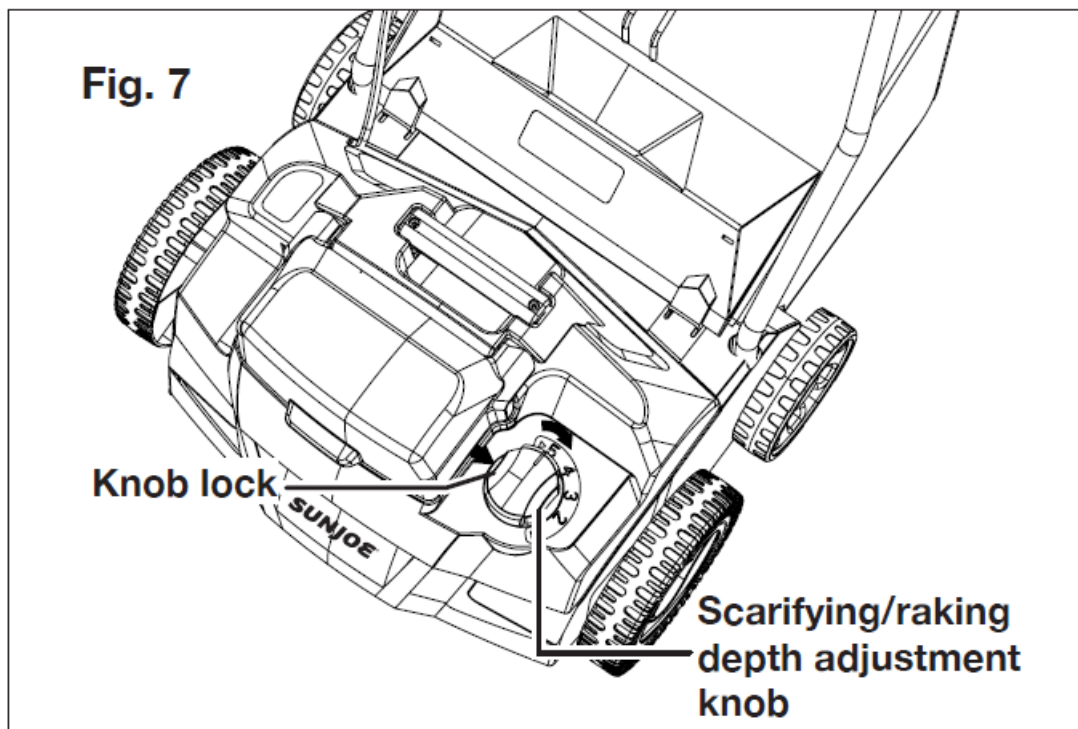
Scarifying/Raking Depth Adjustment

WARNING! Turn off the unit and remove the batteries before adjusting the tine settings.

Adjust the depth according to the needs of your lawn. The most suitable depth depends on the kind of lawn and the actual height of the grass.

The scarifying/raking depth is controlled by one system. Follow the instructions below to adjust the scarifying or raking depth.

1. To adjust the scarifying/raking depth, push inside the knob lock and turn the scarifying/raking depth adjustment knob at the same time. Rotate the knob until the indicator on the knob aligned with the mark around the knob (1/2/3/4/5) (Fig. 7).



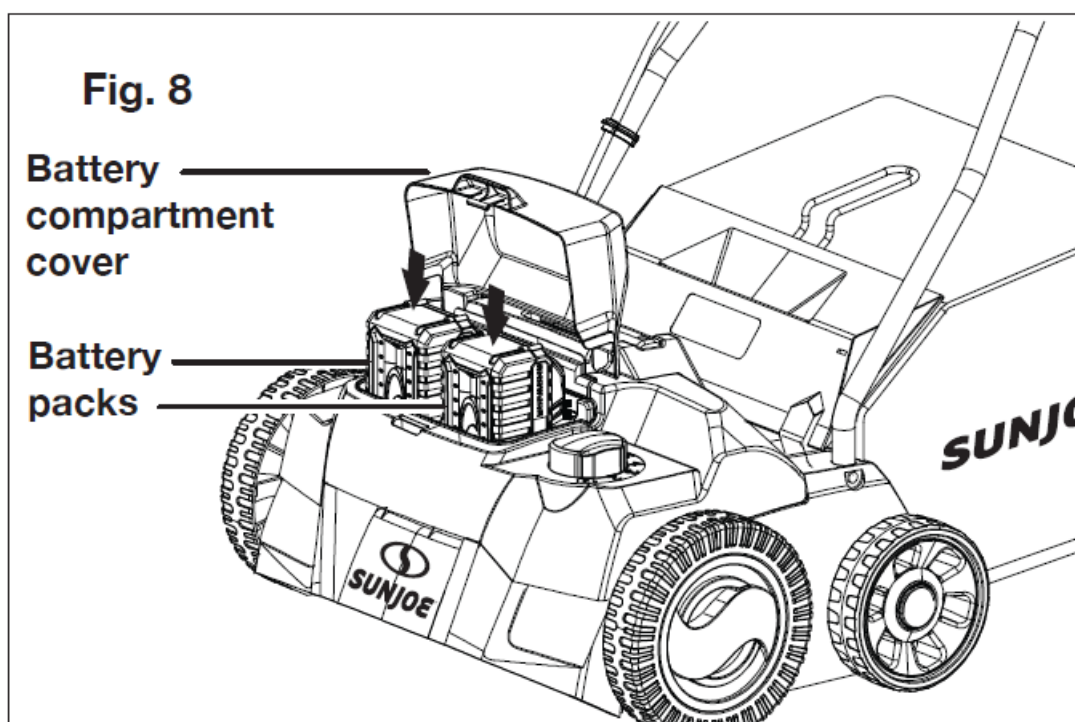
2. This scarifier + dethatcher is equipped with 5 scarifying/raking depths. When assembled with different cylinder, each setting indicates different depth. Check the table below for details about each setting.

Position	Scarifying Depth	Raking Depth
1	5 mm	10 mm
2	-0.5 mm	4.5 mm
3	-6 mm	-1 mm
4	-8.5 mm	-3.5 mm
5	-9.5 mm	-4.5 mm

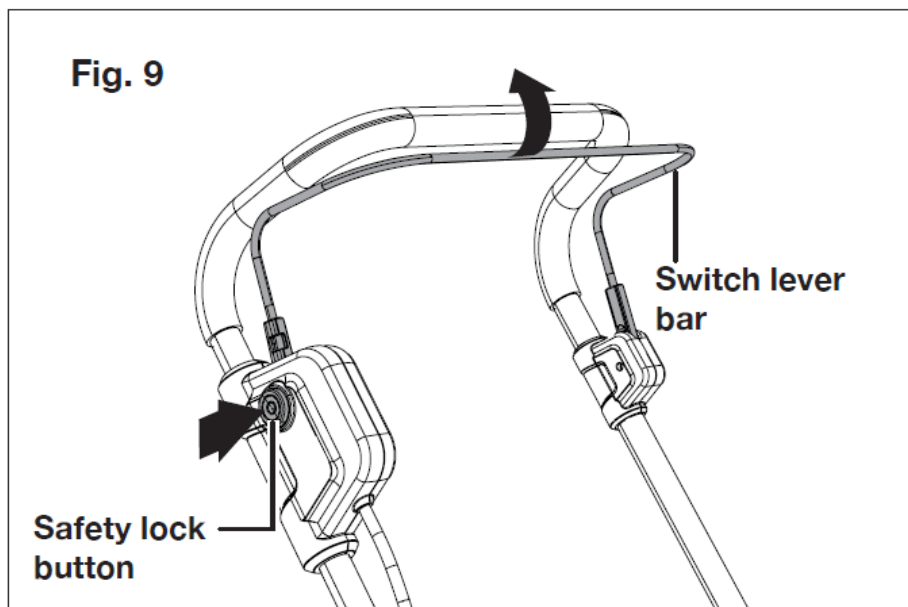
Starting + Stopping

WARNING! Before switching on the lawn scarifier + dethatcher, make sure that it is not in contact with any foreign objects. Keep your feet and hands a safe distance away from the rotating tines and the ejector opening. Failure to comply with these warnings can result in severe personal injury.

1. Flip the battery compartment cover up, insert both the batteries in until they click into place (Fig. 8). Close the battery compartment cover.



2. To start, press and hold the safety lock button while pulling the switch lever bar toward you. Once the machine powers on, release the safety lock button and proceed with operation (Fig. 9).
3. To stop the lawn scarifier + dethatcher, release the switch lever bar.



WARNING! The tine cylinder continues to run for a brief period after the unit has been switched off. Do not tilt or carry the unit while the motor is still running and do not touch the cylinder while it is still rotating. Failure to comply could result in severe personal injury.

Overload Protection

The overload protection will be activated in the following circumstances:

1. A build up of scarified material around the cutting device.
2. If the material scarified is larger than the motor capacity.
3. Where there is too much resistance against the cutting device.

When the circuit breaker has been activated, switch off the product and remove the batteries. Let the product cool down for 5 minutes and eliminate the cause before using the product again.

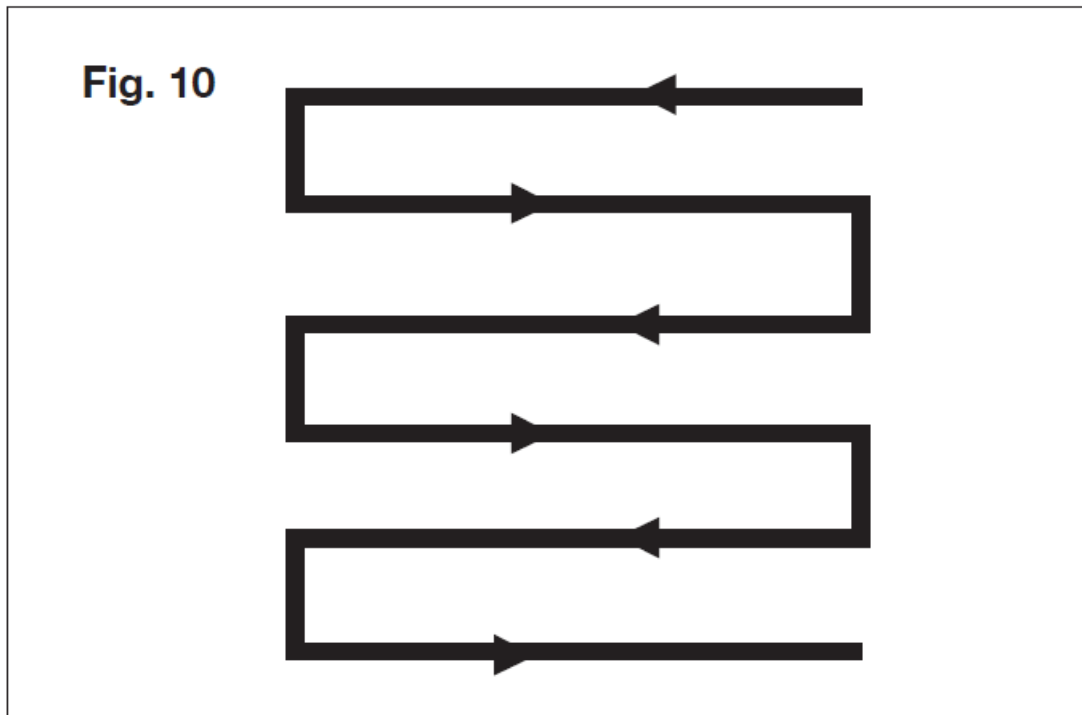
General Operation

WARNING! If the product strikes a foreign object, switch the product off, remove the batteries and let it cool down. Inspect the product thoroughly for damage. Have any damage repaired before restarting.

WARNING! Extensive vibration of the product during operation is an indication of damage. The product should be promptly inspected and repaired.

- Check the machine, and accessories for damage before each use. Do not use the machine if it is damaged or shows wear.
- Double check that accessories are properly fixed.
- Push the machine forward by its handle. Keep the handle dry to ensure safe support.
- Ensure that the air vents are always unobstructed and clear. Clean them if necessary with a soft brush. Blocked air vents may lead to overheating and damage the product.
- Switch the machine off immediately if you are disturbed while working by other people entering the working area. Always let the machine come to complete stop.
- Do not overwork yourself. Take regular breaks to ensure you can concentrate on the work and have full control over the machine.

- Mow the lawn before working and fertilize afterwards.
- Make sure that the lawn is clear of stones, sticks, wire, or other objects that could damage the machine or its motor.
- Select the suitable scarifying/raking depth for the actual grass height.
- Do not work with this machine on a wet lawn because it tends to stick to the underbody of the machine, preventing the proper discharge of collected material, and it could also cause you to slip and fall.
- Slowly push the machine forward. Move the machine at appropriate speed. Do not move it too fast to prevent the discharge from getting blocked and engine from useless overloading.
- Work in slight overlapping rows. The most effective pattern for scarifying/raking lawns is straight lines along one of the sides. This will keep the rows even and ensures that all the lawn is scarified/raked without missing any spots (Fig. 10).



- Circle around flower beds. When reaching a flower bed in the middle of the lawn, make a row or two around the circumference of the bed.
- Pay special attention when changing direction.

Scarifying

Consider the weather when scarifying. Scarify the lawn with an increased depth setting during spring time between April and May as the lawn is better able to recover during this season. During a wet summer scarify again in late summer with a decreased depth setting. Do not scarify during periods of hot weather condition.

Raking

In order for a healthy lawn to develop in the spring, it is necessary for greater amounts of air to penetrate the area around the roots of the grass. We recommend aerating the lawn every 4 – 6 weeks depending on the state of your lawn.

Maintenance

WARNING! Before carrying out any repairs or servicing work, you must ensure that the batteries have been removed from the compartment. Repairs and maintenance work other than described within this instruction manual should be performed only by qualified specialist!

Service + Storage

To ensure long and reliable service, carry out the following maintenance regularly. Servicing and cleaning work on the machine and the removal of the guards may only be carried out after the motor has been switched off and the batteries been removed from the compartment.

- Keep all nuts, bolts and screws tight to be sure the product is in a safe working condition.
- Allow the product to cool before storing in any enclosure.
- Check the thatch collection bag frequently for wear or deterioration.
- Examine the product regularly and replace worn or damaged parts for safety.
- Check that covers and guards are undamaged and correctly fitted. Carry out necessary maintenance or repairs before using the machine.
- If the device should happen to fail despite the care taken in manufacturing and testing, repair should be carried out by an authorized repair facility.
- Do not clean the machine while it is running.
- Ensure that all the fastening elements (screws, nuts, etc.) are tight at all times so that you can safely work with the machine.
- Check the machine frequently for signs of wear. Replace worn or damaged parts.
- Store your machine in a dry place. To ensure a long service life all screws and bolts should be cleaned and then oiled.
- Clean the machine with a brush or cloth. Do not use any solvents or water to remove dirt.
- The components that are subject to most wear are the scarifying cylinder and the raking cylinder. You should therefore check the condition of the cylinders and the mounting at regular intervals.
 - If the cylinders are worn or blunt they must be replaced immediately.
 - If the machine starts to suffer from excessive vibrations, this means that the cutting device has not been balanced correctly or has suffered deformation due to impacts. In this case it must be repaired or replaced.

Battery + Charger Off-Season Storage

1. Do not expose your battery packs or charger to water, rain or allow them to get wet. This could permanently damage the charger and the battery packs. Do not use oil or solvents to clean or lubricate your battery packs as the plastic casing can become brittle and crack, causing a serious risk of injury.
2. Store the battery packs and charger at room temperature away from moisture. Do not store in damp locations where corrosion of terminals may occur. As with other battery pack types, permanent capacity loss can result if the pack is stored for long periods of time at high temperatures (over 120°F/49°C).
3. 24V iON+ lithium-ion battery packs maintain their charge during storage longer than other battery pack types. As a general practice, it is best to unplug the battery charger and remove the battery packs when they are not in use.

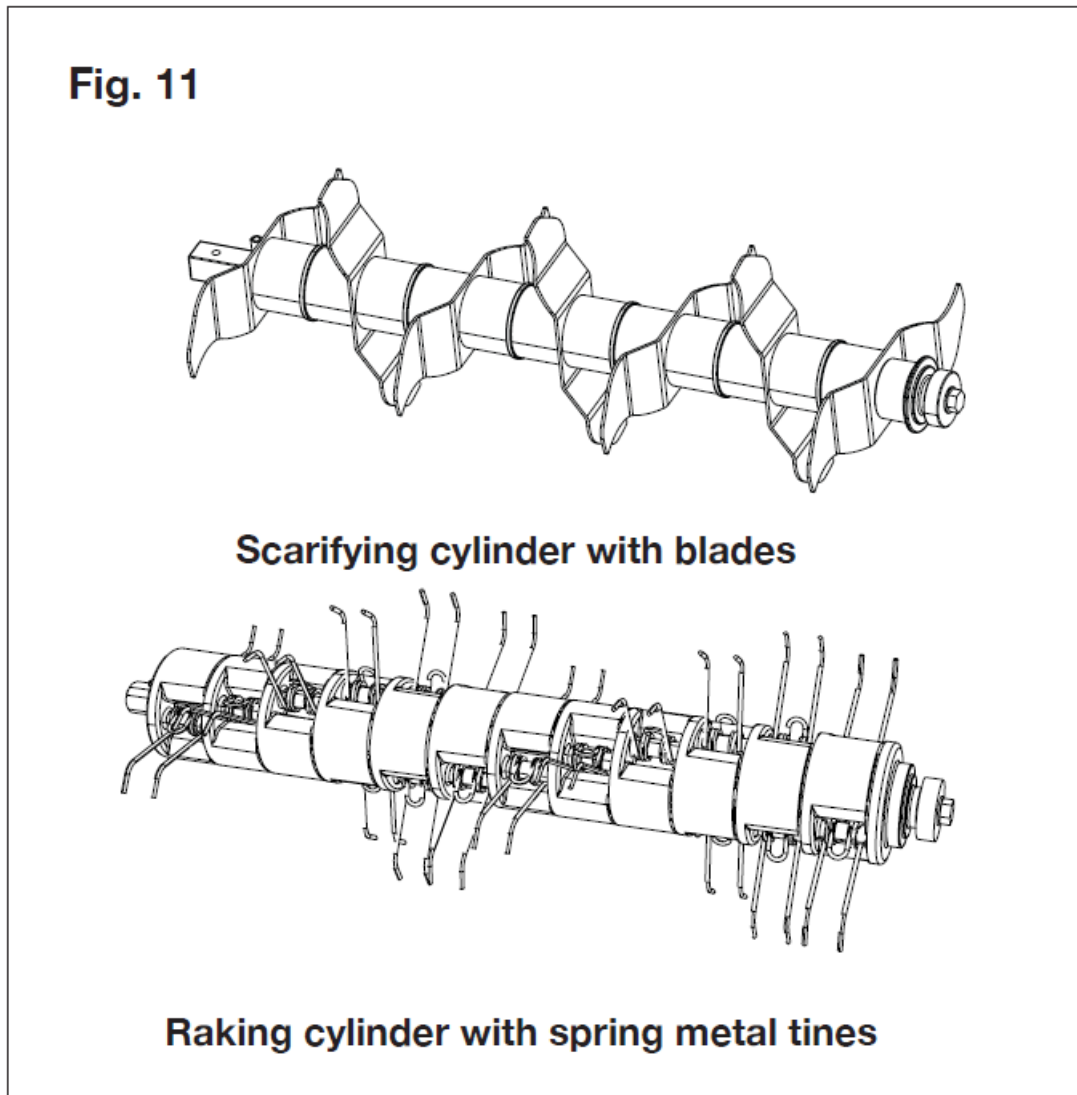
Recharge the battery packs every 6 months to 50% capacity (2 lights on) during off-season storage to maintain optimal battery performance

Replacing/Changing Cutting Device

WARNING! Always switch the machine off, remove the batteries and let it cool down before changing/replacing the cutting device.

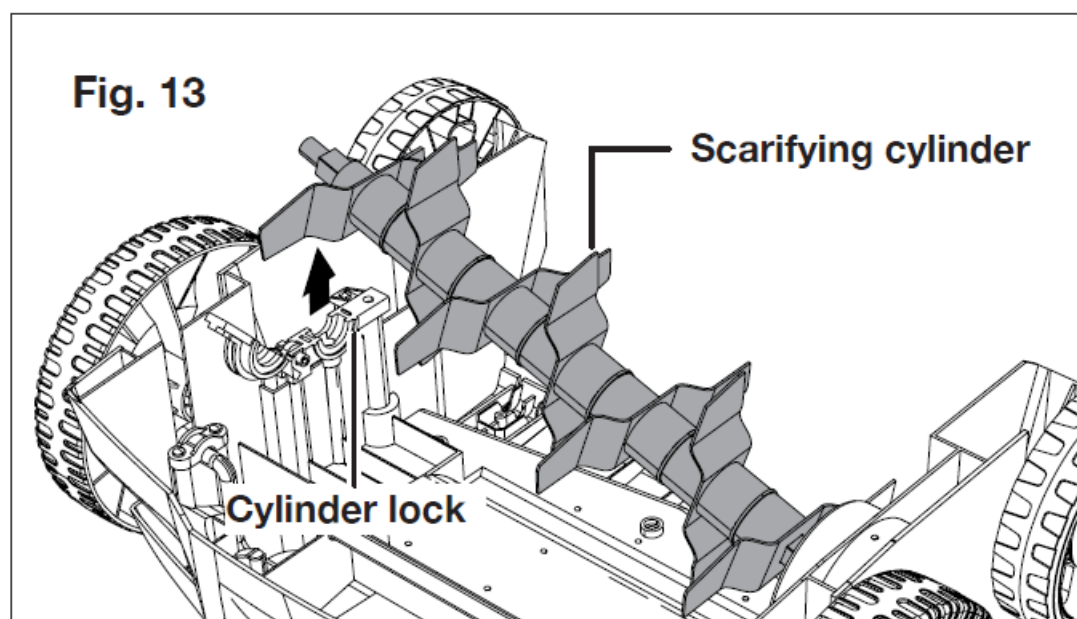
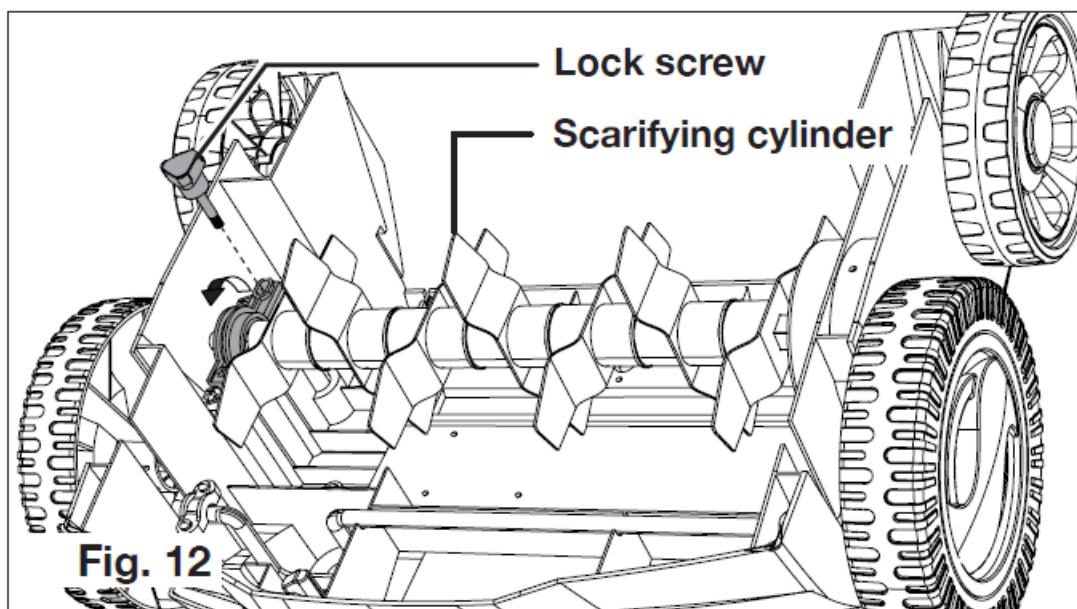
- Cutting devices are very sharp and become hot during use. Handle them carefully.
- Wear safety gloves when handling cutting devices in order to avoid injuries like burns and cuts.
- Make sure all bolts are completely tightened before operating the machine. Don't operate the machine if any bolts are missing, loose, or damaged.

The product has two functions, scarifying and raking. The scarifying cylinder is pre-assembled on the machine. The raking cylinder is included in the supply box. The cylinder can be changed according to the application (Fig. 11).



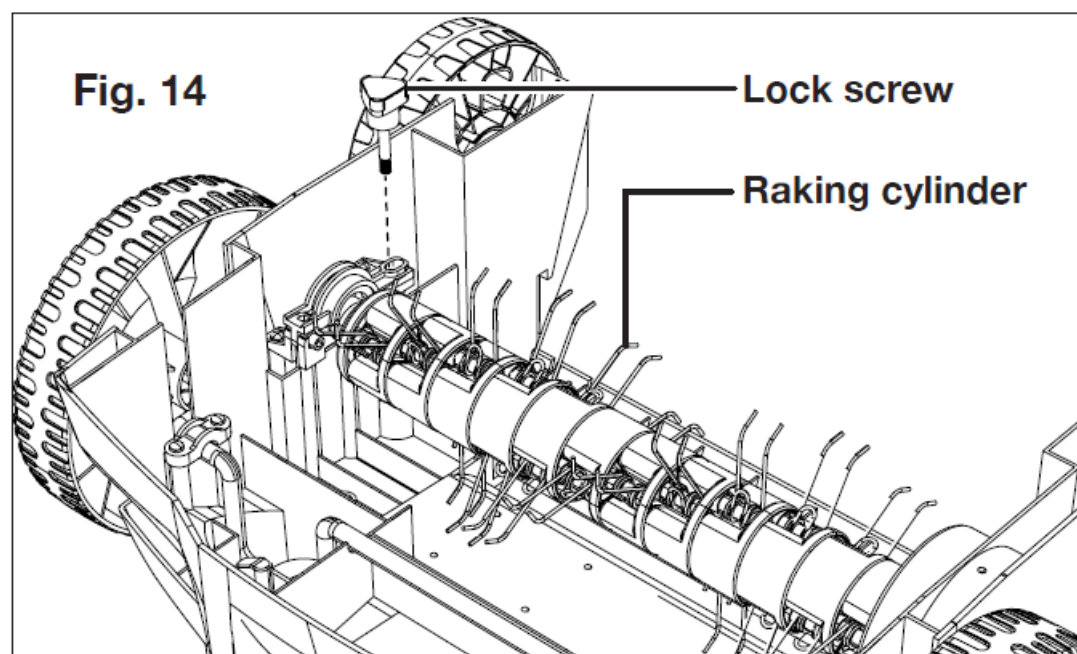
WARNING! Before performing any maintenance, always remove the batteries and wait until the tine cylinder comes to a complete stop. Wear protective gloves when handling the tines.

1. Remove the thatch collection bag.
2. Place the machine upside down on a flat stable surface to access the underbody.
3. Remove the lock screw and open the lock used to secure the scarifying cylinder. Lift the scarifying cylinder up to remove it from the housing (Figs. 12 – 13).



4. Insert the raking cylinder and press it into the holder.

Refasten the lock and fix the assembly with the lock screw (Fig. 14).



5. Turn the lawn scarifier + dethatcher back on its wheels.

Attach the thatch collection back and resume operation.

NOTE: If you have any questions, please call the Snow Joe® + Sun Joe® customer service center at 1-866-SNOWJOE (1-866-766-9563) for assistance.

After Use

1. Switch the machine off, remove the batteries and let it cool down.
2. Check, clean and store the machine as described previously.

Thatch Collection Bag

1. Inspect the thatch collection bag before each use. Do not use it if you find any damage.
2. Clean the thatch collection bag after operation. Let the thatch collection bag dry thoroughly before storing to avoid mildew.

Transportation

1. Switch the product off and remove the batteries before transporting it anywhere.
2. Adjust the scarifying/raking depth to the transportation stage (refer to "SCARIFYING/RAKING DEPTH ADJUSTMENT" on page 12).
3. Always transport the product by its handle.
4. Protect the product from any heavy impact or strong vibrations which may occur during transportation in vehicles.
5. Secure the product to prevent it from slipping or falling over.

Battery Caution + Disposal

Always dispose of your battery packs according to federal, state, and local regulations. Contact a recycling agency in your area for recycling locations.

CAUTION! Even discharged battery packs contain some energy. Before disposing, use electrical tape to cover the terminals to prevent the battery pack from shorting, which could cause a fire or explosion.

WARNING! To reduce the risk of injury or explosion, never burn or incinerate a battery pack even if it is damaged, dead, or completely discharged. When burned, toxic fumes and materials are emitted into the surrounding atmosphere.

1. Batteries vary according to device. Consult your manual for specific information.
2. Install only new batteries of the same type in your product (where applicable).
3. Failure to insert batteries in the correct polarity, as indicated in the battery compartment or manual, may shorten the life of the batteries or cause batteries to leak.
4. Do not mix old and new batteries.
5. Do not mix Alkaline, Standard (Carbon-Zinc), or Rechargeable (Nickel Cadmium, Nickel Metal Hydride, or Lithium-Ion) batteries.
6. Do not dispose of batteries in fire.
7. Batteries should be recycled or disposed of as per state and local guidelines.

Service and Support

If your 24V-X2-DTS15 cordless scarifier + dethatcher requires service or maintenance, please call 1-866-SNOWJOE (1-866-766-9563) for assistance.

Model and Serial Numbers

When contacting the company, reordering parts or arranging service from an authorized dealer, you will need to provide the model and serial numbers, which can be found on the decal located on the housing of the unit. Copy these numbers into the space provided below.

Record the following numbers from the housing or handle of your new product:																								
															Model #:									
2	4	V	-	X	2	-	D	T	S	1	5													
															Serial #:									

24VCHRG-DPC

Federal Communications Commission (FCC)

WARNING! Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Class B device:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Troubleshooting

WARNING! Only perform the steps described within these instructions!

All further inspection, maintenance and repair work must be performed by an authorized service center or a similarly qualified specialist if you cannot solve the problem yourself!

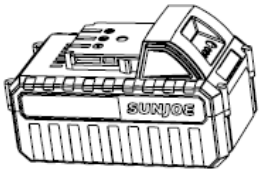
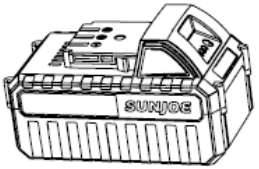

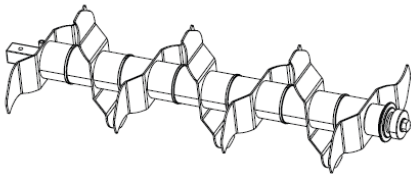
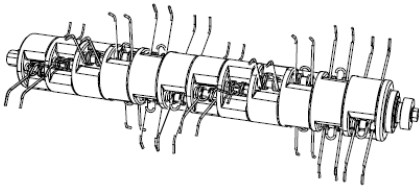
Suspected malfunctions, disturbances or damages are often due to causes that the user can fix themselves.

Follow the below troubleshooting guidelines when checking the unit. In most cases, the problem can be resolved quickly and the dethatcher can be restored to proper working order.

Problem	Possible Cause	Solution
Motor does not start	a) Batteries are not inserted properly b) Batteries are flat c) Other electrical defect to the product d) Safety lock button is not pressed	a) Reinsert the batteries b) Charge the batteries c) Contact an authorized service agent d) Press safety lock button first, then the start/stop lever
Product does not reach full power	a) Batteries are almost flat b) Air vents are blocked	a) Charge the batteries b) Clean the air vents
Unsatisfying result	a) Cutting device worn b) Scarified material exceeds capacity c) Scarifying depth is incorrect	a) Replace the tine cylinder (see page 15) b) Only scarify materials according to capacity of the product c) Adjust depth

Optional Accessories

WARNING! ALWAYS use only authorized Snow Joe® + Sun Joe® replacement parts and accessories. NEVER use replacement parts or accessories that are not intended for use with this cordless scarifier + dethatcher. Contact Snow Joe® + Sun Joe® if you are unsure whether it is safe to use a particular replacement part or accessory with your cordless scarifier + dethatcher. The use of any other attachment or accessory can be dangerous and could cause injury or mechanical damage.

Accessories	Item	Model
1 	24V iON+ 4.0 Ah Lithium-Ion Battery	24VBAT
2 	24V iON+ 5.0 Ah Lithium-Ion Battery	24VBAT-XR
3 	24V iON+ Lithium-Ion Battery Quick Charger	24VCHRG-QC
4 	Replacement Scarifier Cylinder	24V-X2-DTS15-SCRF
5 	Replacement Raking Cylinder	24V-X2-DTS15-RAK

NOTE: Accessories are subject to change without any obligation on the part of Snow Joe® + Sun Joe® to provide notice of such changes. Accessories can be ordered online at sunjoe.com or via phone by contacting the Snow Joe® + Sun Joe® customer service center at 1-866-SNOWJOE (1-866-766-9563).

SNOW JOE® + SUN JOE® CUSTOMER PROMISE

ABOVE ALL ELSE, Snow Joe, LLC (“Snow Joe”) is dedicated to you, our customer. We strive to make your experience as pleasant as possible. Unfortunately, there are times when a Snow Joe®, Sun Joe®, or Aqua Joe® product (“Product”) does not work or breaks under normal operating conditions. We think it’s important that you

know what you can expect from us. That's why we have a Limited Warranty ("Warranty") for our Products.

OUR WARRANTY:

Snow Joe warrants new, genuine, powered and non-powered Products to be free from defects in material or workmanship when used for ordinary household use for a period of two years from the date of purchase by the original, end-user purchaser when purchased from Snow Joe or from one of Snow Joe's authorized sellers with proof of purchase. Because Snow Joe is unable to control the quality of its Products sold by unauthorized sellers, unless otherwise prohibited by law, this Warranty does not cover Products purchased from unauthorized sellers. If your Product does not work or there's an issue with a specific part that is covered by the terms of this Warranty, Snow Joe will elect to either (1) send you a free replacement part, (2) replace the Product with a new or comparable product at no charge, or (3) repair the Product. How cool is that!

This Warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

PRODUCT REGISTRATION:

Snow Joe strongly encourages you to register your Product. You can register online at snowjoe.com/register, or by printing and mailing in a registration card available online from our website, or calling our Customer Service Department at 1-866-SNOWJOE (1-866-766-9563), or by e-mailing us at help@snowjoe.com. Failure to register your Product will not diminish your warranty rights. However, registering your Product will allow Snow Joe to better serve you with any of your customer service needs.

WHO CAN SEEK LIMITED WARRANTY COVERAGE:

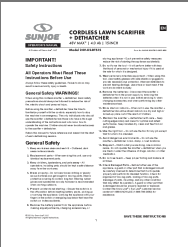
This Warranty is extended by Snow Joe to the original purchaser and original owner of the Product.

WHAT IS NOT COVERED?

This Warranty does not apply if the Product has been used commercially or for non-household or rental applications. This Warranty also does not apply if the Product was purchased from an unauthorized seller. This Warranty also does not cover cosmetic changes that do not affect performance. Wearing parts like belts, augers, chains and tines are not covered under this Warranty, and can be purchased at snowjoe.com or by calling 1-866-SNOWJOE (1-866-766-9563).

snowjoe.com

Documents / Resources

	<p>SUNJOE 24V-X2-DTS15 Cordless Lawn Scarifier plus Dethatcher [pdf] User Manual 24V-X2-DTS15 Cordless Lawn Scarifier plus Dethatcher, 24V-X2-DTS15, Cordless Lawn Dethatcher, Cordless Lawn Scarifier, Scarifier plus Dethatcher, Dethatcher, Scarifier</p>
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References

- [🔗 Cordless + Electric Snow, Lawn and Garden Outdoor Tools | Snow Joe® | Sun Joe® | Aqua Joe®](#)
- [🔗 Register Your Product | Product Registration For Your Snow Joe®, Sun Joe®, Aqua Joe®](#)
- [🔗 Cordless + Electric Snow, Lawn and Garden Outdoor Tools | Snow Joe® | Sun Joe® | Aqua Joe®](#)