



Robotic Lawn Mower



MODEL # 107330

Operation Manual



This safety alert symbol identifies important safety messages in this manual. Failure to follow this important safety information may result in serious injury or death.

Part # 107860 Rev A



For Service or Questions

Call 1-877-487-8275

720-287-5182

www.redbackpowerusa.com

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FrictionlessWorld

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Important Safety Information



WARNING

WARNING: Read and thoroughly understand all instructions and safety information before assembling or operating the Robot Mower. Failure to do so may cause serious injury. Do not allow anyone to operate this Robot Mower who has not read this manual. As with all power equipment, a Robot Mower can be dangerous if assembled or used improperly. Do not operate this mower if you have doubts or questions concerning safe operation.

Call our customer service department at **720-287-5182**, **1-877-487-8275**, or visit **www.redbackpowerusa.com** if you have any questions or concerns about the safe operation of this equipment.



DANGER

Intended Use

The Robot Mower has been designed for residential lawn mowing up to 1/4 acre in area. It is not suitable for lawns with grades greater than 30°. Do not use the Robot Mower for any purpose other than for which it was designed. Any other use is unauthorized and may result in serious injury.

Personal Protective Equipment

Always remove the security key before lifting, moving or transporting the Robot Mower. When handling the Robot Mower it is important to avoid the blades that are two sided and double edged and therefore extremely sharp. It is recommended to wear safety gloves to make adjustments to the Robot Mower or when changing the blades or blade disc.



Important Safety Information

General Safety

Failure to follow warnings, cautions, assembly and operation instructions in the Operation Manual may result in serious injury.



DANGER

READ THE OPERATION MANUAL BEFORE OPERATION.

- **Do not** permit children to operate this equipment at any time.
- **Do not** permit others that have not read and understood the complete Operation Manual to operate this equipment.
- Keep all people and pets a minimum of 10 feet away from the work area.
- Do not operate the Robot Mower in rain or other wet conditions.
- Use caution when handling the Robot Mower. Blades are extremely sharp.
- The security key should be removed before any adjustments are made.

Docking Station



- Use only the docking station designed for the Robot Mower.
- Do not attempt to modify the Robot Mower or the docking station in any way other than specified by the manufacturer.
- When battery replacement is required, replace only with an original or manufacturer authorized replacement.
- **DO NOT** dispose of the Robot Mower in household waste.
- **DO NOT** dispose of the battery in household waste.
- Ensure correct installation of the boundary wire.
- Make a regular inspection of the Robot Mower's working area and remove stones, branches, toys and other objects that may cause damage to the robot.
- Never place anything on top of the Robot Mower or the docking station.
- Check the blades or wear and replace when necessary.
- Check that bolts, screws and nuts are securely fastened to ensure the optimum operation of the Robot Mower.
- Avoid running the Robot Mower in wet grass. Clean the Robot Mower's wheels and wheel holder carefully of earth, grass and dust to avoid imbalance.

Important Safety Information

Safety Icons

Safety icons are to remind you of important information while you are operating the unit.



Use caution when operating this power equipment.



The Robot Mower has sharp blades. Use caution when operating around other people and pets.



Read and understand the Operation Manual before operating the Robot Mower.



Keep your hands and feet away from the rotating blades. Use extreme caution when lifting and transporting. Wear gloves to handle the blades or blade disc.



The Robot Mower has sharp blades. Use caution when operating, transporting and handling.



Avoid operating in the rain, protect the battery and docking station from wet conditions.



The Robot Mower may throw objects. Keep children, pets and bystanders away from mower when operating.



The Robot Mower can only start when the security key is correctly inserted. Remove this key when performing any maintenance.

Safety Decals

Safety decals on the Robot Mower are to remind you of important information while you are operating the unit. Make sure all decals are attached and in readable condition. Replace missing or defaced decals. Contact Redback USA at 1-877-487-8275 for replacement decals.



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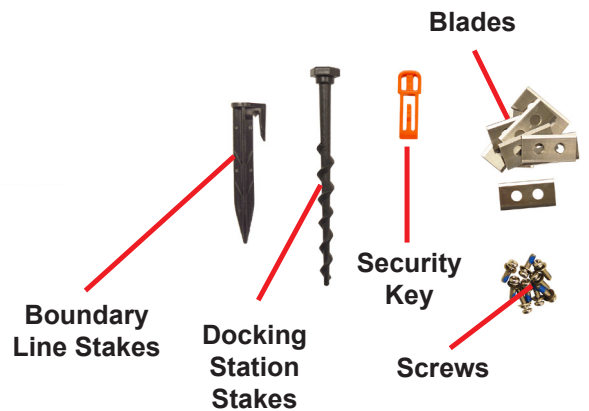


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Overview of Components

Parts List

Item	Quantity
Docking Station	1
Robotic Lawn Mower	1
Blades	9
Blade Retaining Screws	9
AC Lithium Ion Adapter	1
Adapter Cord	1
Docking Station Connection Cord	1
Docking Station Stakes	4
Boundary Line	328 feet
Boundary Line Stakes	100
Security Keys	4



Planning and Laying the Boundary Line

Laying Boundary Lines

In order to make the Robot Mower mow within the desired area – and only that area – you need to mark the area by means of boundary wiring. Remove all foreign objects, rocks, roots, etc. that may interfere with the Robot Mower's operation in the mowing area. Large objects such as trees, swings sets, ponds should be encircled by the boundary line. The boundary wire line needs to be laid out in a continuous line (see Figure 1).

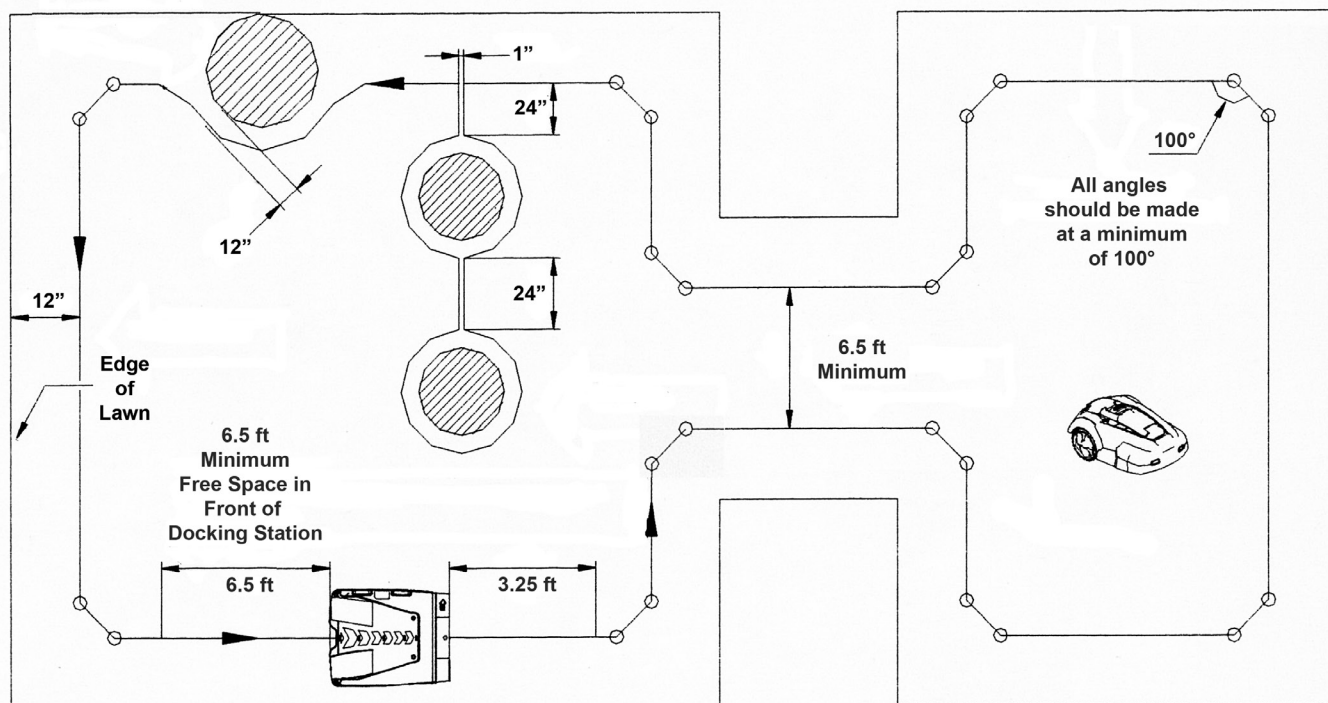


Figure 1

Route the boundary line around objects using a minimum of 100° angles (135° angles are recommended). Keep the line at least 12" from the lawn's edge and from any object (see Figure 1). Keep the boundary line at least 6.5 feet (78") wide at the narrowest part of the lawn. Do not allow the boundary wire to cross itself.

The boundary line should be placed at the root level of the grass (see Figure 2). Secure the boundary line into the ground and anchor with the boundary stakes. Place a stake approximately every 3 feet.

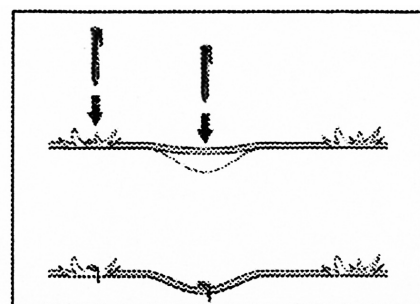


Figure 2

NOTE: The Robot Mower will find it difficult to work on grades greater than 30° . On slopes steeper than 30° the robot's sensor will shut the mower off.

Docking Station Installation

The docking station must be placed on a solid, flat surface. Avoid placing the docking station in a corner of the lawn or in low-lying areas where the docking station or the Robot Mower may be damaged by puddles, or under a high tree due to the risk of lightning.

Note: It is important that the adapter and the electrical plug are always kept dry!

The docking station must have 6.5 feet of free space in front of it so the Robot Mower can return to charge or when mowing is complete (see Figure 3). The docking station must be located on level ground for correct operation.

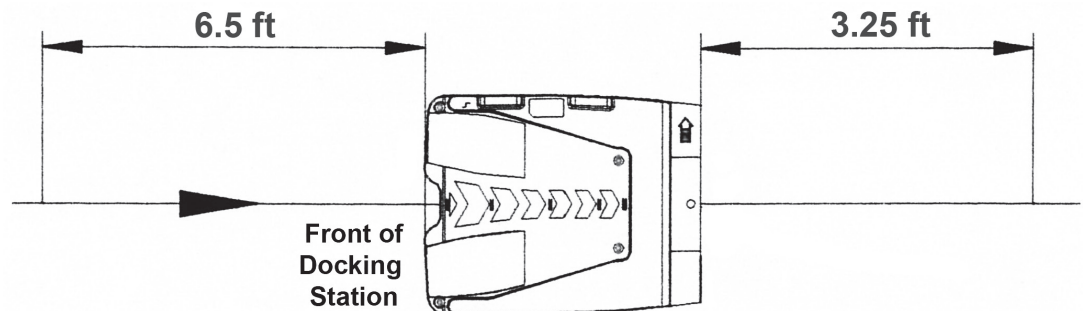


Figure 3

Connecting the Boundary Line to the Docking Station

Strip 1/4" of plastic coating from either end of the boundary wire to ensure a good connection. Remove the terminal cover on the back of the docking station. Insert the boundary line ends into the docking station (see Figure 4). Route the "IN" end of the boundary line beneath the docking station and secure within the plastic brackets on the bottom of the dock. Place the "IN" wire into the red terminal. After laying and securing the boundary line, place the "OUT" end of the boundary wire into the black terminal (see Figure 4). Secure the docking station to the ground with four long ground stakes provided.

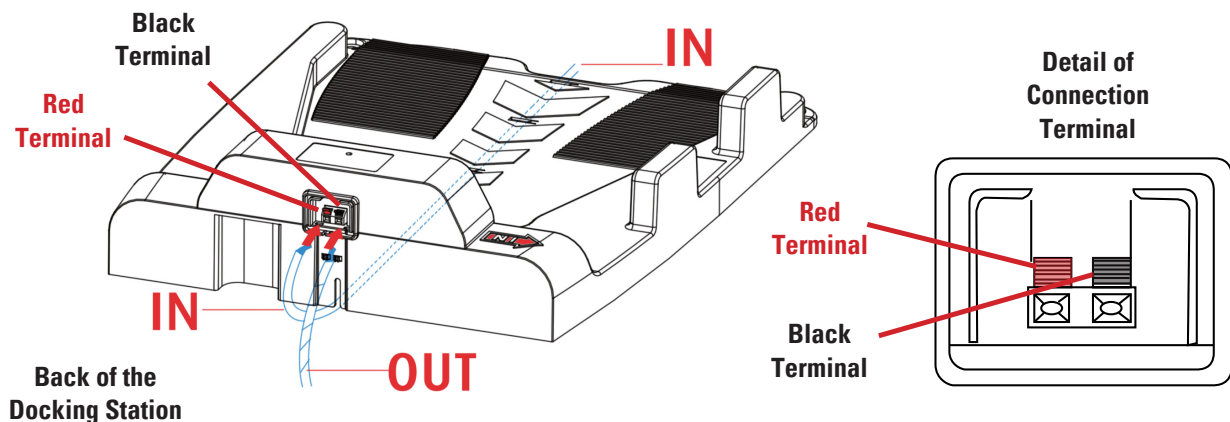


Figure 4



Testing the Docking Station

Charging The Robot Mower

1. Attach the AC adapter cord to the AC adapter.
2. Attach the docking station connection cord to the AC adapter and to the docking station.
3. Place the Robot Mower in the docking station for charging ensuring that the contacts on the Robot Mower engage the charging arms on the docking station on both sides.

Testing the Docking Station

1. Plug the adapter into an AC power outlet. The green LED should light up.
2. Disconnect the boundary wire from the red terminal and the green LED should blink and an alarm sounds.
3. Reconnect the boundary line into the red terminal and the green LED lights continually which indicates that the dock is connected correctly and ready to charge the Robot Mower.
4. Place the Robot Mower into the docking station making sure the front of the mower is in contact with the charging arms on the dock. Allow the mower to charge for 2 - 3 hours before use.

Preparation for Use

1. Remove all obstacles in the mowing area before starting the Robot Mower.
2. If the grass is taller than 2-3/8" high (60mm) it is recommended that you mow the lawn first with a traditional lawn mower or set the Robot Mower at its highest cutting position.

Notes on Operation

1. The Robot Mower will sense the presence of rain and return to the docking station following a course along the boundary line.
2. The Robot Mower will sense a battery power decline when there is 20% or less capacity and will automatically return to the docking station to recharge its battery.
3. Low temperature may effect the operating time.
4. Bumper sensors on the robot mower will cause it to change direction when it encounters an obstacle.
5. Blades stop rotating in 3 seconds when the mower senses an incline greater than 30°, the mower is lifted or in the presence of rain.

Operation

Mowing

1. Lift the rear cover on top of the mower and adjust the cutting height with the height adjustment dial. Close the cover before starting.
2. Lift the front cover to access the control panel and insert the security key into the security key slot (see Figure 5). Close the cover.
3. Insert the security key and press the Power Switch to turn mower on.
4. Select the mow area size by pressing one of the three area buttons. 1/16 acre (~2,750 ft²) requires 4 hours operating time, 1/8 acre (~5,500 ft²) requires 8 hours operating time, or 1/4 acre (~11,000 ft²) requires 12 hours operating time.
5. Press the Start button. The timer begins when the Start button is depressed. The cutting cycle will repeat in 24 hour intervals. Remove the security key after starting to prevent any alterations in the programmed cycle. The Robot Mower will start by cutting along the boundary wire.
6. The second time the robot runs from the docking station, it will mow randomly in straight lines until there is 20% left of the battery, then return to the docking station to recharge. After one hour of charging the robot will resume cutting until working a total number of hours corresponding to the size of lawn selected. Then it returns to the docking station to wait for the next timed cycle.



Figure 5

NOTE: You can stop the Robot Mower at any time by pressing the red STOP bar on top of the mower (see Figure 6). Press the HOME button to send the robot mower back to the charging station.

7. To restart the Robot Mower after it has automatically shut down the mower must be within 6-1/2 feet of the boundary wire and you must reselect the mow area size and press the Start button. If the robot is restarted when in the docking station a new timing cycle will begin.

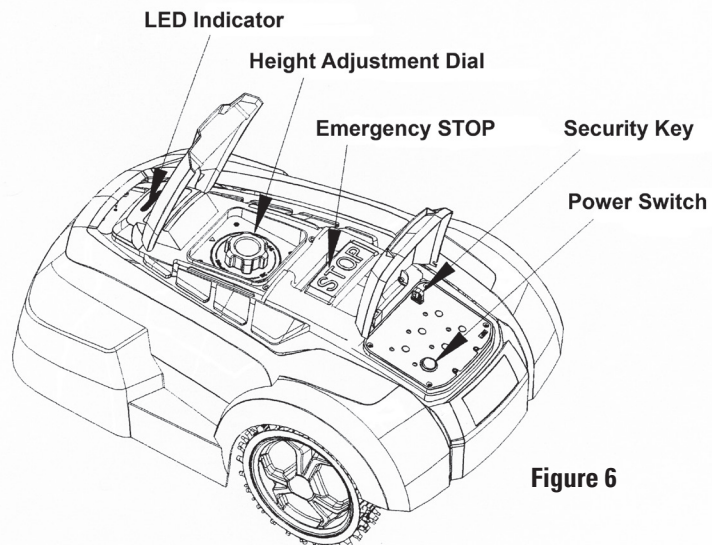


Figure 6

Sensors

Obstacle/Contact Sensor

When the Robot Mower meets an obstacle, it will reverse and change direction to avoid the obstacle. If it does not find a new path within 3 seconds, the cutting motor stops. If it does not find a new path within 10 seconds, the robot will shut down and it will require a manual restart to start again.

Rain Sensor

In case of heavy rain, the Robot Mower will automatically return to the docking station. It will automatically start working the next day at the time originally started.

Lift Sensor

This sensor is placed close to the wheels and measures the gravity of the wheels. If the Robot Mower is lifted manually or if both wheels run into a hole, the robot will shut down and must be restarted manually.

Tilt Sensor

A 6-axle sensor is integrated in the Robot Mower to measure the tilt angle in all directions. If the tilt angle exceeds 30° , the cutting motor will stop immediately but continue driving (see Figure 7). If the angle decreases to less than 30° within 10 seconds, the cutting motor will restart automatically. If, however, the angle does not decrease within 10 seconds the mower will shut down and will require a manual restart.

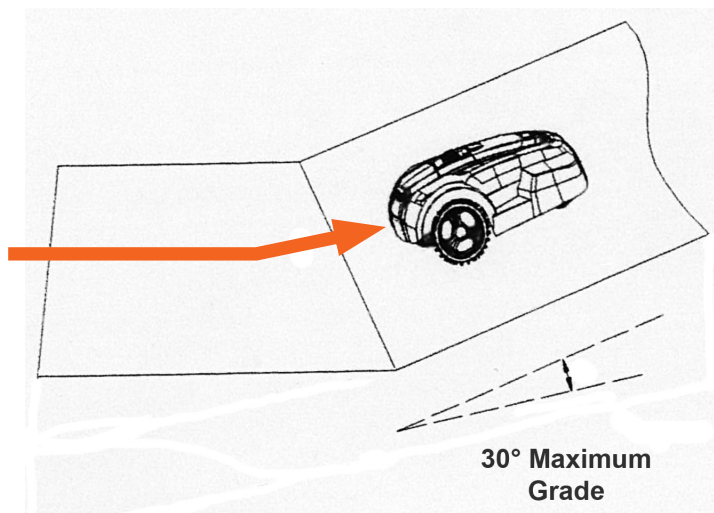


Figure 7

Maintenance and Storage

Cleaning the Robot Mower

Lift the front and rear covers and remove any collected debris, grass clippings and dust using a soft brush, vacuum or damp cloth. Repeat for the bottom side of the robot using care when handling the blade disc and blades. It is important to keep the blades free from accumulated grass clippings to ensure proper operation of the robot mower. Ensure all retaining screws are secure.

Clean and brush the contacts on the robot mower and the docking station charging arms with steel wool or emery paper.

Cleaning the Docking Station

Remove dirt, grass and other debris from the docking station base plate on a regular basis.

Blade Replacement

The Robot Mower blades are accessible when you turn the mower upside down (see Figure 8). Blades have two edges and two sides. The blades can be turned over one time before replacing. Blade replacement is indicated when grass shows prominent white edges after cutting or the mower makes excessive vibration noise. Turn all three blades over or replace all three blades by unscrewing the three retaining screws.

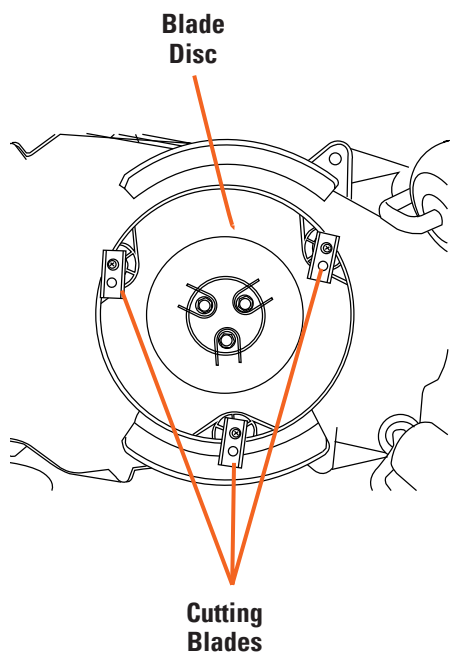


Figure 8



**Blades are extremely sharp and will cut even when dull.
Use caution when replacing.
Wear gloves to protect hands from cuts.**

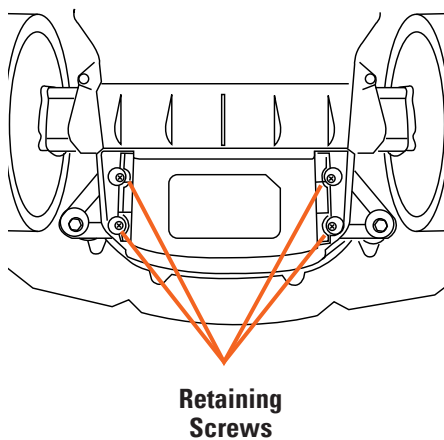


Figure 9

Battery Replacement

The Robot Mower battery can be accessed by removing the four retaining screws on the battery compartment cover on the bottom of the Robot mower (see Figure 9). Always replace with a manufacturer's authorized replacement.

Storage

Disconnect the docking station from the AC power adapter. Remove the ends of the boundary wire from the docking station. Turn the power switch off on the Robot Mower to protect the battery. Store the Robot Mower, docking station and AC adapter and cords in a dry frost free area. Cover the ends of the boundary wire with electrical tape. To help preserve the life of the battery, check the charge status of the battery and recharge the battery in the docking station at regular intervals.



Troubleshooting

Testing the Docking Station

Symptom	Cause	Action
Robot doesn't leave docking station.	Security key is not engaged.	Manual start requires security key.
	Battery is not charged.	Allow robot to charge until LED indicator displays constant green.
	Docking station not installed correctly.	IN arrow on docking station should point to inside of working area.
	Boundary wire not installed correctly.	Wire end routed under docking station should be connected to the RED terminal.
Robot's initial tracking is incorrect.	Boundary wire not installed correctly.	Adjust boundary wire so robot follows desired path.
	Interference from underground power source.	Reroute boundary wire around obstacle source.
Robot does not reconnect to charging blades on return to docking station.	Docking station is not level.	Reinstall docking station on flat level surface.

First Robot Mower Use

Symptom	Cause	Action
Robot stops with red LED flashing.	Slope is greater than 30°, tilt sensor engages.	Reroute boundary wire to avoid slope.
	Robot cannot detect signal in boundary wire.	Ensure wire is connecting to docking station terminals.
		Check for break in boundary wire and splice ends together.
	Lift sensor activated.	Ensure wheels are not obstructed or in unlevel spot in mowing area.
Robot stops with green LED flashing.	Robot not programmed correctly.	Place robot back in docking station and restart.
Robot stops with no LED displaying.	Battery is out of power.	Replace robot in docking station and allow to charge 2 - 3 hours.

Troubleshooting

First Robot Mower Use

Symptom	Cause	Action
Robot leaves boundary area or stops beyond boundary line.	Wheels are obstructed.	Remove debris from mowing area and/or clean robot's wheels.
	Grass is wet and/or slope is too close to boundary edge.	Reroute boundary wire to avoid slope. Do not operate in wet conditions.

Normal Robot Mower Use

Symptom	Cause	Action
Excessive vibration and noise.	Cutting system unbalanced; blades are dull.	Turn power off and reverse or replace all three blades.
	Blade disc is damaged.	Replace blade disc.
	Disc retaining screws loose.	Tighten screws securely.
Working time between charges decreases.	Charging contacts are dirty.	Clean charging contacts on the robot and the docking station. Brush lightly with steel wool.
	Battery capacity diminished.	Replace battery.
Robot does not leave docking station after rain sensor is activated.	Rain sensor is still activated.	Dry and clean metal contacts. Then restart robot mower.



Warranty and Specifications

IMPORTANT NOTICE

We, the manufacturer, reserve the right to change the product and/or specifications in this manual without notification. The manual is for information usage only and the pictures and drawings depicted herein are for reference only.

Warranty Repair and Service

Do not return this product to the store for warranty issues or repair. Call our customer service department at **720-287-5182**, **1-877-487-8275**, or visit www.redbackpowerusa.com for the location of the nearest service center.

Record the information below for future reference.

Model No. _____

Serial No. _____

Date of Purchase _____

Place of Purchase _____

SKU/Part No.	107330
Lithium Battery Voltage	28V
Lithium Battery Capacity	4Ah
Motor Type	Brushless
Blade Speed	2900 rpm
Cutter Type	3 Blades
Cutting Width	9.5 inches
Cutting Height	1 - 3 inches
Mowing Areas	1/16 acre (~2,750 ft ²) 1/8 acre (~5,500 ft ²) 1/4 acre (~11,000 ft ²)
Maximum Climb Angle	30°
Maximum Walking Speed	1.64 ft/sec
Standard Wire Length	330 ft
Optional Wire Length	1,640 ft
Warranty	2 Years Limited/1 Year Limited on Battery



Redback products are distributed by



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