

LawnMaster®



X5 2000 ROBOTIC MOWER

SAFETY AND OPERATING MANUAL

PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATING THE UNIT

LMRX5



A STEELFORT PRODUCT



PROUDLY
NZ OWNED



TABLE OF CONTENTS

1. X5 OVERVIEW	3
1.1 Introduction	
1.2 Box Contents	
1.3 Parts and Functions	
1.4 Symbols and Decals	
1.5 LawnMaster All-Scenario Positioning	
1.6 Specifications	
2. SAFETY INSTRUCTIONS	8
2.1 General Safety Instructions	
2.2 Safety Instructions for Installation	
2.3 Safety Instructions for Daily Operation	
2.4 Safety Instructions for Maintenance	
2.5 Battery Safety	
3. INSTALLATION	9
3.1 Preparations	
3.2 Install the Charging Station	
3.3 Install the RTK Base Station	
3.4 Charge and Activate the Mower	
3.5 App Connection	
3.6 Set up Work Zone	
3.7 App Settings	
3.8 Notifications	
4. DAILY OPERATION	16
4.1 Display and Control on the Mower	
4.2 Change the Pin Code	
4.3 IoT	
4.4 Obstacle Avoidance	
5. MAINTENANCE	19
5.1 Cleaning	
5.2 Replace Blades	
5.3 Transportation	
5.4 Battery	
5.5 Power Supply	
5.6 Storage	
5.7 Recycling and End-of-life Disposal	
6. FAQ & TROUBLESHOOTING	22
6.1 FAQ	
6.2 Data Privacy	
6.3 Troubleshooting	
7. IMPORTANT INFORMATION	25
7.1 Disclaimers	
7.2 Contact Information	
8. WARRANTY	26

Thank you for purchasing our LawnMaster X5 2000 Robotic Mower, the information contained within this manual will help you to have many years of safe and trouble free use of this LawnMaster product. For all enquiries contact robotics@steelport.co.nz

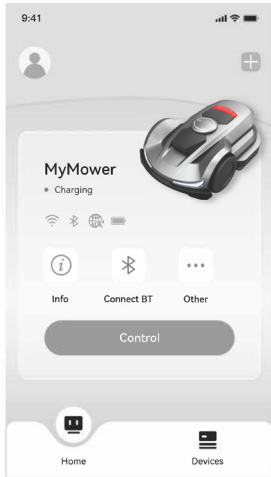
1. X5 OVERVIEW

1.1 INTRODUCTION

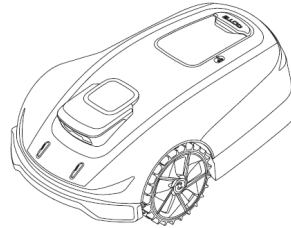
The LawnMaster X5 system includes a robotic lawn mower, a charging station, and an RTK base station. Both the robotic mower and the RTK base station receive satellite signals for positioning. The mower uses advanced centimeter-level RTK, VSLAM, and LawnMaster AIR (Artificial Intelligence Recognition) to generate accurate real-time environmental maps, ensuring precise device location.

Robotic Mower App

The LawnMaster Robotic Mower App is used for configuring and managing the daily operation of the LawnMaster robotic lawn mowers.



1.2 BOX CONTENTS

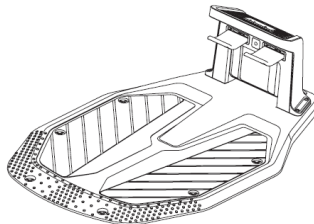


Robotic
Lawn Mower

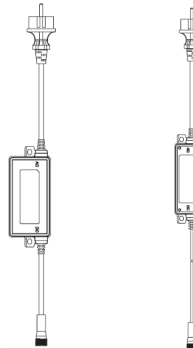
RTK Base
Station



RTK Base
Station Holder



Charging Station
(Extension Cord)



Charger for Charging
Station

Charger for RTK
Base Station



Nails for
RTK Base
Station



Nails for
Charging
Station



Spare
Screws



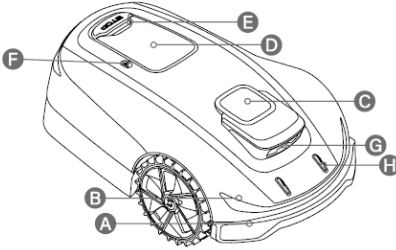
12 Spare
Blades



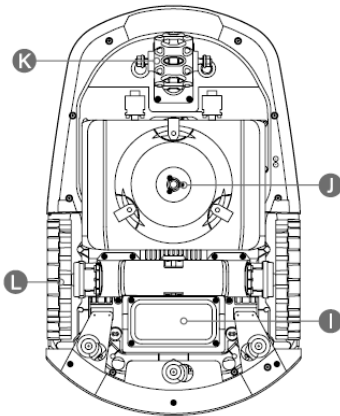
Expansion
Bolts

1.3 PARTS AND FUNCTIONS

Top View



Bottom View



NOTE: Do not immerse the machine in water, as this may damage the components and void the warranty within the specified period.

A - Collision Bumper - When visual positioning is unavailable, the collision bumper ensures the machine continues to operate smoothly.

B - LED Lights - Various LED lights on the mower indicate its operational status through different light patterns.

C - RTK Positioning Antenna - An interactive positioning device that connects the RTK base station, the mower, and satellites.

D - Control Panel - Used to power the machine on or off, initiate commands for operation or return, and more.

E - STOP Button - An emergency stop button to halt the machine immediately in case of an urgent situation.

F - Rain Sensor - The rain sensor detects precipitation, prompting the machine to automatically return to the charging station based on user settings.

G - Binocular Camera - AI-assisted binocular camera that enables the mower to detect and avoid obstacles.

H - Charging Electrodes - The electrodes on the mower connect with the charging station to recharge the battery.

I - Battery Compartment - Houses the machine's battery.

J - Rotating Cutting Plate - Trims the lawn while the machine is in operation.

K - Wheel Hub Motor - Provides precise steering control and power for smooth operation.






L - Drive Wheels - Delivers power for movement with superior off-road capability.







1.4 SYMBOLS AND DECALS

These symbols can be found on the product. Please read them carefully






	WARNING: Read the user instructions before operating the product.
	WARNING: Disable the product before working on or lifting the machine. Never touch the rotating blade
	WARNING: Keep a safe distance from the machine when operating. Keep other persons out of the danger area.
	WARNING: Do not ride on the machine.

SYMBOLS ON CHARGER









	Read the user instructions.
	Sound power level determined by New Zealand outdoor noise standards. Emission details can be found in Technical Data.
	It is not permitted to dispose this product as normal household waste. Ensure that the product is recycled in accordance with local legal requirements.
	Class III
	DC

	Read the user instructions.
T2A 	Replace with fuse in accordance with rating.
T3.15A 	Replace with fuse in accordance with rating.
T5A 	Replace with fuse in accordance with rating.
	Class II Construction.
	It is not permitted to dispose this product as normal household waste. Ensure that the product is recycled in accordance with local legal requirements.

SYMBOLS ON BATTERY PACK

	Read the user instructions.
	Do not discard the battery into fire and do not expose the battery to a heat source.
	Do not immerse the battery into water.
 Li-ion	Recyclable Mark.
	It is not permitted to dispose this product as normal household waste. Ensure that the product is recycled in accordance with local legal requirements.

SYMBOLS ON ROBOT SCREEN

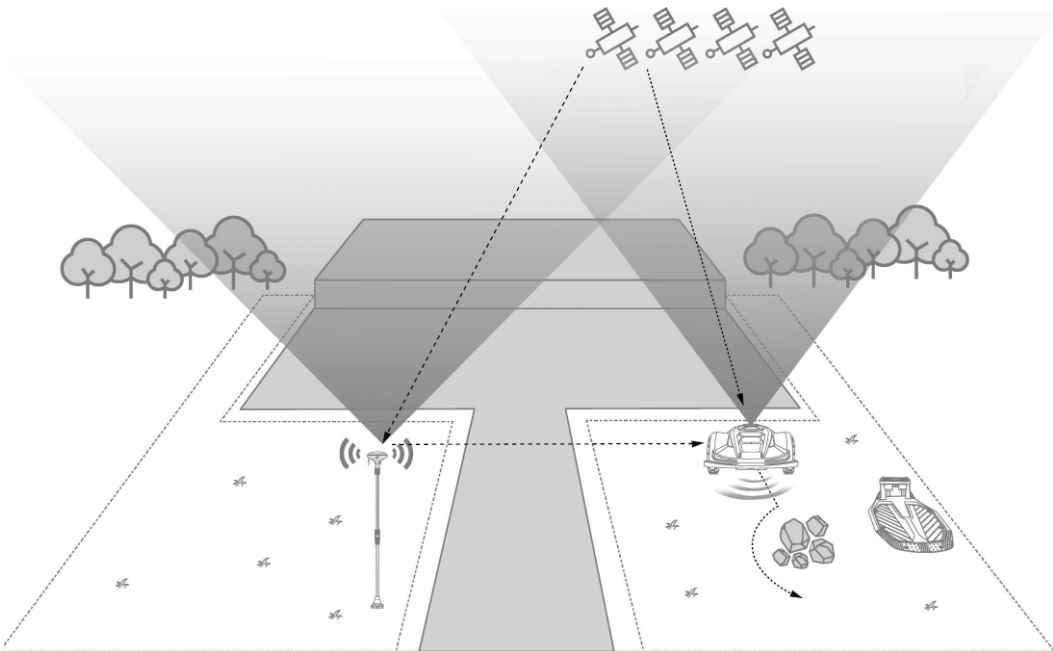
	Power on/off
	Start button
	Home button
	OK button
	Pin code settings
	Time settings
	Bluetooth
	Wi-Fi

1.5 LAWNMASTER ALL-SCENARIO POSITIONING

RTK full-frequency satellite positioning technology helps the mower acquire high-precision location data. Combined with VSLAM technology and LawnMaster AIR (Artificial Intelligence Recognition), the mower can navigate and perform positioning tasks in all scenarios, including complex environments, ensuring high-quality lawn maintenance at all times.

LawnMaster's integration of advanced hardware and intelligent algorithms significantly enhances the mower's ability to recognise its environment, improve positioning accuracy, and boost performance. Acting like a human brain, LawnMaster's advanced algorithms process data from RTK (Real-Time Kinematic), VSLAM (Visual Simultaneous Localisation and Mapping), IMU (Inertial Measurement Unit), and odometers, optimising environmental recognition in various conditions.

LawnMaster RTK technology, by receiving full-frequency satellite signals and conducting real-time positioning, allows users to set virtual boundaries for the mower to operate **without the need for traditional boundary wires**. Within these virtual boundaries, the mower plans highly precise mowing paths, ensuring maximum coverage and efficiency.



1.6 SPECIFICATIONS

TECHNICAL SPECIFICATION	X5-2000
Boundary Wire	Wireless / Boundary Free
Maximum Mowing Area	2000m ²
Cutting Height	20-60mm
Height Adjustment	Adjusted Manually
Cutting Width	22cm / 220mm
Battery Capacity	5 Ah
User Interface	App & Keypad Display
Maximum Slope	30° (60%)
Dimensions	680 x 420 x 275 mm
Net Weight	14.5kg
Sound Power Level LWA	60 dB (A)
Sound Power Uncertainty KWA	3 dB (A)
Sound Pressure Level LpA	52 dB (A)
Sound Power Uncertainties KpA	3 dB (A)

FEATURES	
Wi-Fi / Bluetooth	●
Intelligent Mapping	●
Path Planning	3 Options
VSLAM	●
Super Wi-Fi	●
FOTA	●
Quick Return to Charging Station	●
AWD (all wheel driven) Wheels	3 Wheels
Bump Sensor	●
Multi-Zones	Up to 8
Working Schedule (setted in APP)	Automatic or manual setting via APP
Water Wash	●
Anti-Theft: by GPS + 4G*	○
Google Assistant & Amazon Alexa	●
Pin Code	●
LED Head Lights	●

YES: ● | OPTIONAL: ○

ACCESSORIES

8 x Base Fitting Nails
 1 x Charger
 1 x Power Supply Charger

2. SAFETY AND REGULATIONS

2.1 GENERAL SAFETY INSTRUCTIONS

WARNING

Read all safety warnings, instructions, illustrations, and specifications provided with this product. Failure to follow these instructions may result in electric shock, fire, or serious injury.

This product is not suitable for use by children or individuals with reduced physical, sensory, or mental capabilities, or those lacking experience and knowledge, unless supervised or instructed by a responsible person.



WARNING:

- Keep away from the machine and supervise children at all times.
- Save all warnings and instructions for future reference.

1. Work Area Safety

- Do not use machines in explosive environments with flammable liquids, gases, or dust, as sparks may ignite them.
- Read instructions carefully and familiarise yourself with controls and proper use.
- Do not allow untrained individuals or children to use the machine; local regulations may restrict the operator's age.
- The operator is responsible for accidents or hazards affecting others or their property.

2. Electrical Safety

- Mains plugs must match outlets. Never modify the plug or use earthed charger plugs, as this reduces electric shock risk
- Avoid contact with earthed surfaces like pipes or radiators to prevent shock.
- Do not misuse power cords. Keep them away from heat, oil, sharp edges, or moving parts.
- Use an RCD-protected supply in damp areas to reduce the risk of electric shock.
- Install the perimeter delineation system correctly as per instructions.
- Inspect the area for foreign objects like stones or wires before use.
- Regularly check blades and parts for damage, replacing them in sets to maintain balance.
- On multi-spindle machines, rotating one blade

may cause others to move.

3. Personal Safety

- Only trained individuals should operate the machine, as untrained use is dangerous.
- Stay alert, avoid operating when tired or under the influence of substances.
- Remove keys or wrenches before operating to avoid injury.
- Maintain balance and footing for better control during operation.
- Do not become complacent with frequent use carelessness can cause injury.

4. Machine Use and Care

- Disconnect the plug or remove the battery before adjustments, accessory changes, or storage to prevent accidental starts.
- Regularly maintain the machine, checking for damage or misalignment, and repair before use.
- Use the machine and accessories as instructed, considering conditions and tasks to avoid hazards.
- Never operate the machine with defective guards or without safety devices like deflectors and grass catchers.
- Never operate the machine with defective guards or without safety devices like deflectors or grass catchers in place.
- Keep hands and feet away from rotating parts and stay clear of the discharge opening at all times.
- Never pick up or carry the machine while the motor is running.
- Activate device lock/Set into "LOCK" to the machine; before clearing a blockage; before checking, cleaning or working on the machine.
- Do not leave the machine to operate unattended if you know that there are pets, children or people in the vicinity.

5. Service

- Have your machine serviced by a qualified technician using identical replacement parts to maintain safety.
- Keep all nuts, bolts, and screws tight to ensure safe operation.
- Regularly check the grass catcher for wear or damage.
- Only use the correct type of replacement cutting parts.
- Replace worn or damaged parts for safety.

- Charge batteries using the manufacturer's recommended charger to avoid electric shock, overheating, or leakage
- If electrolyte leakage occurs, flush with water and seek medical help if it contacts eyes.
- Follow the manufacturer's instructions for machine servicing.

6) Battery Tool Use and Care

- Recharge only with the manufacturer-specified charger to avoid fire risk.
- Use power tools only with designated battery packs to prevent injury or fire.
- Keep unused battery packs away from metal objects like coins or screws to avoid short-circuiting and fire.
- If battery liquid leaks, avoid contact and flush with water. Seek medical help if it contacts eyes, as it may cause burns.
- Do not use damaged or modified batteries, as they may cause fire, explosion, or injury.
- Do not expose a battery pack or tool to fire or temperatures above 130°C, as this may cause an explosion.
- Follow all charging instructions and avoid charging the battery pack or tool outside the recommended temperature range. Improper charging or charging outside the specified range can damage the battery and increase fire risk.

2.2 SAFETY INSTRUCTIONS FOR INSTALLATION

1. Do not install the charging station or accessories near or under combustible materials (within 24"), as malfunction could cause overheating and a fire risk.
2. Keep the power supply at a safe height to avoid contact with water, and never place it on the ground.
3. Do not cover the power supply, as condensation can damage it and increase the risk of electrical shock.
4. Avoid installing the charging station in areas prone to standing water.

2.3 SAFETY INSTRUCTIONS FOR DAILY OPERATION

1. Keep hands and feet away from rotating blades and avoid contact when the product is ON.
2. Use park mode or turn the product OFF when

people, especially children or animals, are in the area.

3. Ensure the lawn is clear of objects like stones, branches, tools, or toys to prevent blade damage.
4. Do not lift or move the product when it is ON.
5. Prevent the product from colliding with people or animals; stop it immediately if someone is in its path.
6. Do not place objects on the product, charging station, or RTK reference station.
7. Do not use the product if the STOP button is faulty.
8. Always turn the product OFF when not in use.
9. Avoid using the product at the same time as a pop-up sprinkler by scheduling them separately.
10. Do not operate the product when there is standing water in the area, such as after heavy rain.

2.4 SAFETY INSTRUCTIONS FOR MAINTENANCE

1. Turn the product OFF before performing any maintenance.
2. Avoid using high-pressure washers or solvents to clean the product.
3. Disconnect the charging station's plug before performing any cleaning or maintenance.

2.5 Battery Safety

Lithium-ion batteries can explode or catch fire if disassembled, short-circuited, exposed to water, fire, or high temperatures. Handle with care, avoid dismantling, and do not subject the battery to electrical or mechanical abuse. Store away from direct sunlight.

3. INSTALLATION

3.1 PREPARATIONS

Prepare the App

To set up successfully, scan the QR code to download the Robotic Mower app. Alternatively, you can find it in the Google Play Store (Android) or the Apple App Store (iOS) by searching for "Robotic Mower."

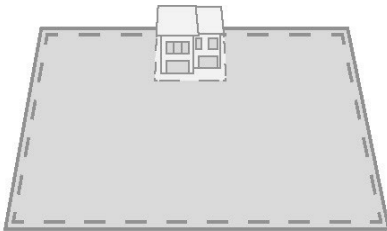
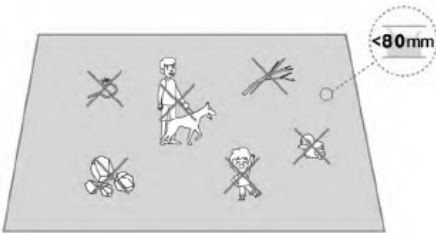
After installing the app, register and log in. Complete the registration before logging in.

NOTE: The app may request access to Bluetooth and Wi-Fi. To ensure proper setup and functionality, it is recommended to grant access to these features.

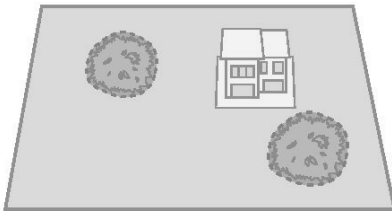
Prepare the Lawn

- Clear away any debris, piles of leaves, toys, wires, stones, or other obstacles.
- To ensure safety, please make sure that children and pets are off the lawn.
- Please cut your lawn to a height of no more than 100mm before using the robotic mower.

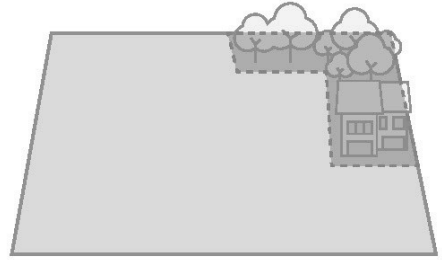
Recommended Lawn Types:



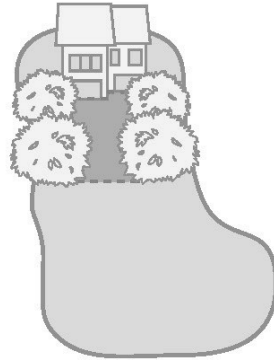
Total lawn size is up to 2000m²



High covers such as tall walls or trees takes <math>< 30\%</math> space on your lawn.

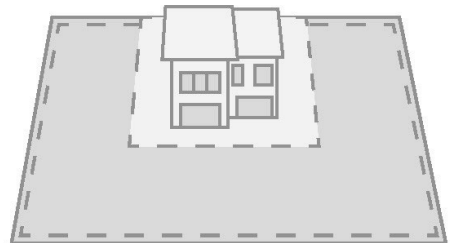


High covers such as tall walls or trees takes <math>< 50\%</math> space on your lawn.

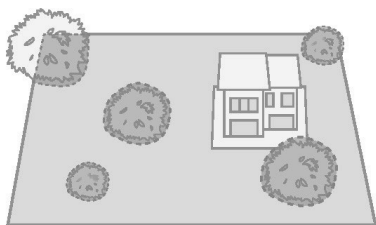


Narrow lane with width <math>< 3\text{m}</math> and length > 5m, and with tall trees & wall on both sides, takes <math>< 30\%</math> space on your lawn.

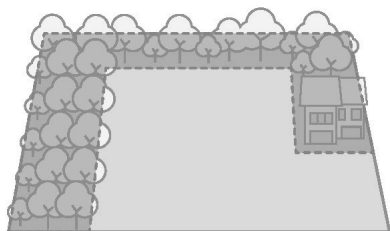
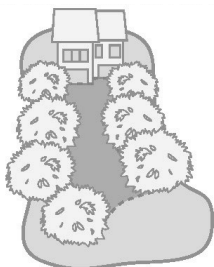
NOT Recommended Lawn Types:



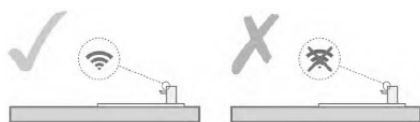
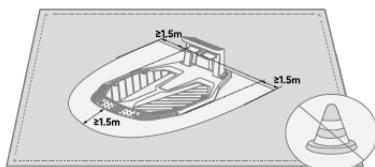
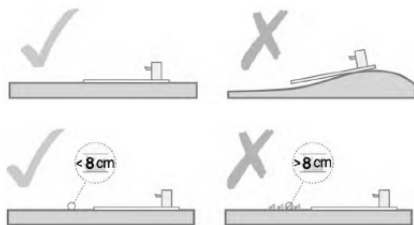
The total lawn size is smaller than 200m²



High covers such as tall walls or trees takes >30% of your lawn space.

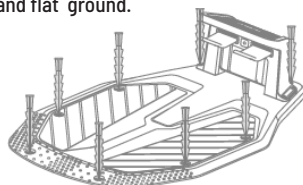


Lawn boundary cover with tall trees/walls takes > 50% space on your lawn.



STEP 2: INSTALL THE CHARGING STATION:

- Nail the charging station on a non-hardened and flat ground.

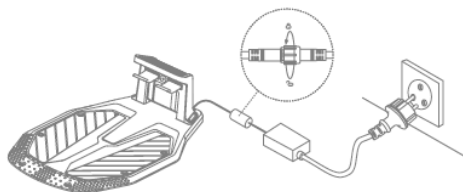


- Connect the power charger and wire to the power supply. If there is a certain distance from the charging station and the power supply, the charging wire needs to be properly fixed to the ground and wall to ensure a safe operation.

3.2 INSTALL THE CHARGING STATION

STEP 1: FIND A GOOD LOCATION:

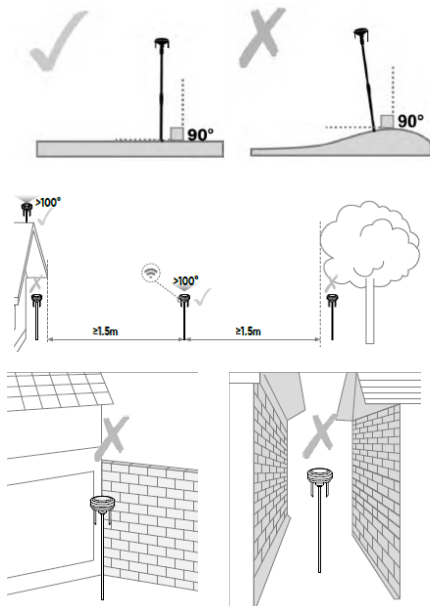
- Install the charging station in an open area with flat ground.
- Ensure no obstacles are within 1.5m in front of the station.
- Keep the 180° mm space in front as clear as possible.
- Grass height in front should be under 10cm for easy mower access.
- Ensure the location has household Wi-Fi coverage.



3.3 INSTALL THE RTK BASE STATION

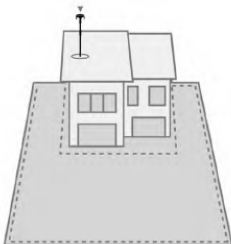
STEP 1: FIND A GOOD LOCATION:

- Ensure the location has household Wi-Fi coverage.
- Place the RTK base station upright and avoid sloped surfaces.
- Install the station in an open area with a clear view of the sky, maintaining at least a 100° signal-receiving angle. The distance between RTK base station and wall or trees need to be greater than 1.5 m.



Recommended location for the RTK base station based on the lawn shapes:

If you have separate lawns or your lawn shapes like the letter "O": "U": we recommend that you install the RTK base station on the roof or the wall.



If full openness on all sides can't be achieved, at least keep the southern sky clear when in the Northern Hemisphere, or the northern sky when in the Southern Hemisphere. Try to keep the east and west sides clear of obstacles.

Installation RTK

- Place the RTK base station in a location with an approachable power source.
- Connect the RTK base station's extension cable and charger.
- Plug the RTK base station into the power source.

STEP 2: CHECK THE SATELLITE SIGNAL



Location Indicator Light

- Solid green: Good satellite signal at this location.
- Solid orange: Weak satellite signal at this location; it is recommended to reinstall the base station in an area with better signal, free from obstructions.
- Solid red: Very weak satellite signal at this location; you must reinstall the base station in an area with a better signal, free from obstructions.

Wi-Fi Indicator Light

- Solid green: Wi-Fi connected and server access established.
- Blinking green: Wi-Fi connecting or not connected to the server
- No green light: Wi-Fi not connected

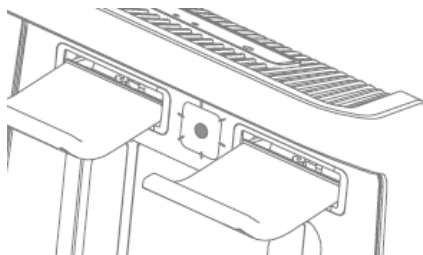
Power Indicator Light

- Solid green: Power abnormality
- Blinking green: Power normal
- No green light: No power

3.4 CHARGE & ACTIVATE THE MOWER

STEP 1: CHARGE THE MOWER:

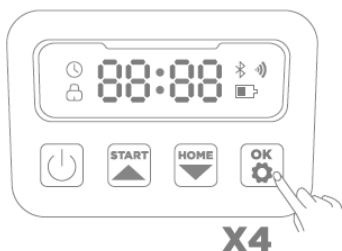
Place the mower into the charging station with the charging electrodes connecting properly. The green light on the charging station flashing indicates normal charging.



STEP 2: ACTIVATE THE MOWER:

Long press the Start and Home button to change the password.

Enter the default password 0000 on the mower and press "OK" to complete the setting process. (see below)



NOTE: If the indicator light remains off even when there is power supplied properly, please contact customer support.

ATTENTION:

- Chargers cannot be dropped on the ground within the virtual boundaries.
- If the charging station is installed within the virtual boundaries, the extension cord of the charging station needs to be nailed to the ground to ensure the proper operation of the mower.

WARNING:

- DO NOT charge if the machine, the charger, the charging station, or the power socket are damaged.
- DO NOT charge the mower when the temperature is above 40°C, or below 5°C. When the temperature limit is exceeded, the battery will not charge.
- Immediately stop charging if an abnormal smell, sound, or light appears.
- Avoid charging near flammable or explosive

materials.

3.5 APP CONNECTION

Ensure that the machine is on the charging station and being charged properly.

Download the Robotic Mower app by scanning the QR code on the machine or from App Store/Google play.

1. Create a new account and sign in. Enable Bluetooth and Wi-Fi on your phone. Scan the mower's SN QR code to add it. Once paired, enter the default password "0000." You can change the password later in the app anytime.
2. Set up your machine's Wi-Fi in the app. Ensure both the machine and your phone are connected to the same Wi-Fi. Enter your home Wi-Fi name and password. If your phone is already connected, the app will auto-fill the Wi-Fi name. Otherwise, you'll need to enter it manually.
3. Connect to the Wi-Fi. Once the connection is successful, the Wi-Fi icon on the robot and APP will light up.
4. Name your robot.

TO USE THE APP

1. Please search and download the Robotic Mower app through the APP store or Play Store.
2. Register and log in to your account.
3. Activate the Bluetooth function on your phone and ensure that it has a network signal.

NOTE: While using the app, you will be prompted to grant access to Bluetooth (iOS and Android), location (iOS and Android), and Wi-Fi (Android).

Please ensure to grant these accesses to ensure the proper functioning of the app.

Robotic Mower app is an important part of LawnMaster, you can use the app to:

1. Bind and activate the mower
2. Create a map (work area)
3. Monitor the status and work progress of the mower, and remotely control its operations such as starting, stopping, or returning to the charging station.
4. View and change mower work settings (Mowing schedule, Cutting height, Map management).
5. View and change mower security/function settings (PIN, Blade Halt, etc.)
6. View/update device firmware version, view network link status.
7. Unbind, change, and add devices.
8. Get help information and after-sales support.

HOMEPAGE

Once mapping is complete, you'll be taken to the Homepage. Here, you can view the work area, check the mower's status, track progress, and remotely control the mower. You can also access Settings and Notifications.

A. BATTERY LEVEL

The battery power icon shows the remain power of the machine. This icon displaying 1 bar indicates that the power is 30% or under, displaying 2 bars indicates that the remain power is between 31-66%, and displaying 3 bars indicates power of 67% and higher.

B. Wi-Fi

The Wi-Fi icon indicates whether the machine connects successfully to the Wi-Fi or not.

C. CONNECTIVITY

The Bluetooth icon indicates whether the machine is connected to Bluetooth successfully or not.

D. MOWER STATUS

Displays the current status of the mower.

E. WI-FI OF RTK BASE STATION

The Wi-Fi icon indicates whether the RTK base station connects successfully to the Wi-Fi or not.

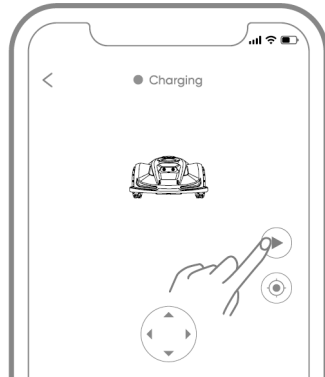
3.6 SET UP WORK ZONE

Following the instructions in the app, complete the mapping remotely.

Make sure the machine is powered on and successfully connected to Wi-Fi and Bluetooth

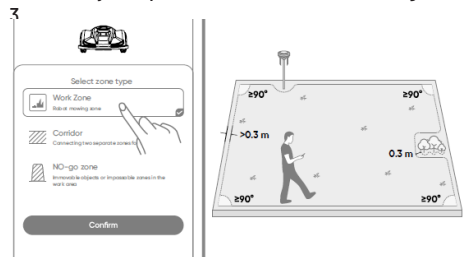
signals. A proper work zone, the charging station and the RTK base station are necessary for a complete map creation. The charging station can be put in the work zone or near the work zone that is connected to it with a transport path. Click the "Start mapping". The mower will automatically exit the charging station and move 1.5 m ahead, without the need for manual intervention.

Click the "▶" button to start remote mapping.



MAP OUT THE BOUNDARY AND CREATE MAP

1. Find a proper starting point along the edge of your lawn and place the mower 0.3 m away from the edge.
2. Walk along the edge while creating the map. Always keep 0.3 m in distance from the edge.

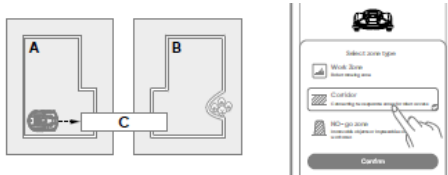


13. Remotely control your machine to go around the borders of the lawn. Make sure that the dotted path displayed on the App forms a closed shape.
14. D. Click the "■" button to finish remote control. Click "Confirm" to generate the map.

CREATE THE CORRIDOR

Zone A/B: Work zone is an area where the robotic mower can operate and cut grass automatically. A work zone is specified by virtual boundaries created by user.

Zone C: Corridor is a specified path created by user between two work zones for the machine to go through. The machine can operate automatically in this path but does not cut grass.

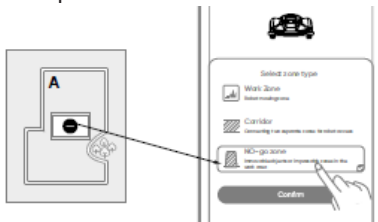


You can control the machine to go through the path between 2 work zones to create the transport path or you can control the machine to go through the corridor after creating the first work zone and later creating the second one.

You need to specify the starting point and the ending point in the map for the corridor no matter which method you choose to create it.

CREATE NO-GO ZONES

1. A. Click the “No-go zone” icon to enter the map building panel and create a no-go zone for the map.

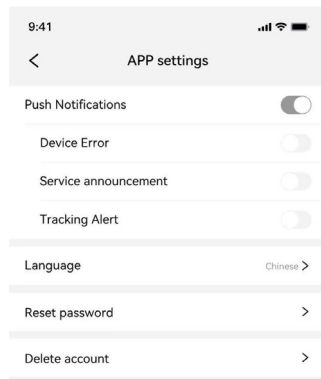


No-go zones can be created for areas where the product is not allowed to operate. A no-go zone is specified by virtual boundaries.

The lawnmower will automatically avoid obstacles, such as large rocks or tree trunks. In case of items that need extra protection or areas that you don't want the machine to enter, you can set up no-go zones.

3.7 APP SETTINGS

You can browse and adjust the X app-related settings on this page.



LANGUAGE

You can set the language as you need it. The app currently supports 12 languages.

HELP AND SUPPORT

You can view the latest User Manual, FAQ and contact of after-sales service here.

ABOUT

You can view the Terms of Use and Privacy Policy here.

LOG OUT

You can log out of your account here, and your data will not be deleted after logging out.

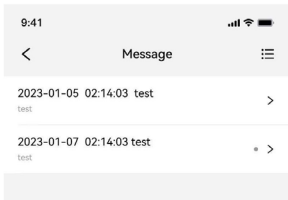
3.9 NOTIFICATIONS

SYSTEM NOTIFICATIONS

Latest news and updates from the LawnMaster team.

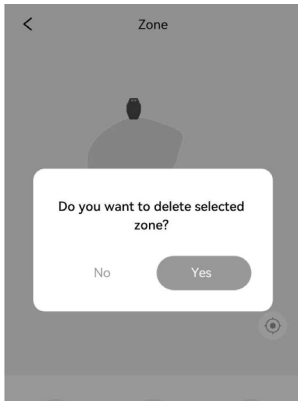
DEVICE NOTIFICATIONS

The mower will send notifications for events like work status updates (e.g., mowing completed), blade replacement, unexpected behavior, or abnormal positioning.



POP-UP MESSAGES

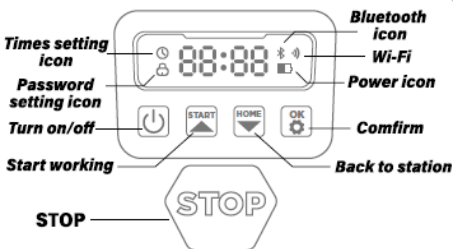
Pop-up messages appear in the centre of the screen. For example, an error code message appears if an error has occurred.



4. DAILY OPERATION

4.1 DISPLAY & CONTROL ON THE MOWER

DISPLAY



POWER ICON:

The battery power icon shows the remaining power of the machine. One bar indicates that power is 30% or less, two bars indicate power between 31-66%, and three bars indicate power of 67% or more.

WI-FI ICON:

The Wi-Fi icon shows whether the machine is successfully connected to Wi-Fi.

BLUETOOTH ICON:

The Bluetooth icon indicates whether the machine is successfully connected to Bluetooth.

TIME SETTING ICON:

The time setting icon shows that the machine is in time setting mode.

PASSWORD SETTING ICON:

The lock icon lighting up indicates that you need to enter or change the machine's password.

DASHBOARD DISPLAY:

The dashboard displays the different states and modes the machine is in:

- **Idle:** The machine is in standby mode, with no tasks currently being executed.
- **Running Light:** The machine is in working mode, and the disk is rotating at high speed. Please keep away from it.

BASIC CONTROL

TURN ON:

Press and hold the power button for 2 seconds.

TURN OFF:

Press and hold the power button for 3 seconds.

The mower cannot be turned off while in the charging station. When the mower is turned off, "bye" will be displayed on the dashboard before the screen turns off.

START WORKING/TURN ON:

Press START button and then OK. Back to station/ Turn off :Press HOME button and then OK.

STOP MOWER OPERATION:

Press STOP.

RESTART THE MOWER:

Press and hold the power button for 10s to turn off the machine, then turn it on again or directly push the machine into the charging station and connect it to the charging electrodes on the station.

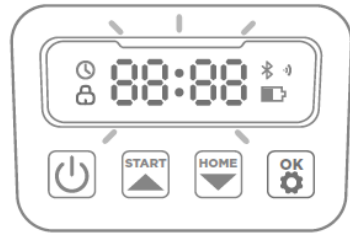
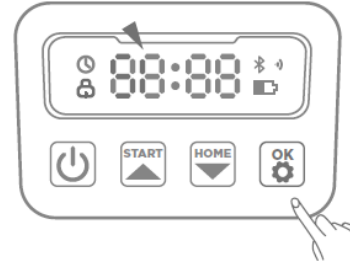
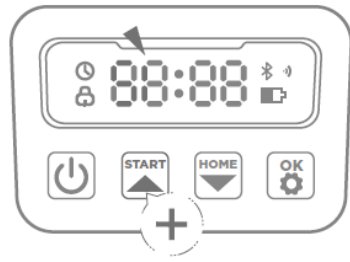
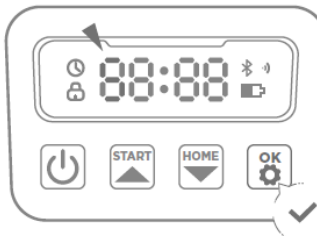
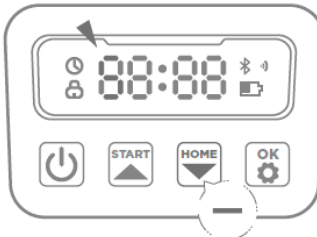
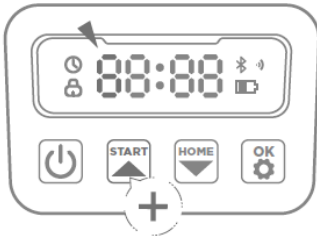
NOTE: If the mower is in lock status, you must enter the PIN code before manually operating the mower.

The default code is 0000, and can be changed via the Robotic Mower app.

4.2 CHANGE THE PIN CODE

If the mower is in lock status, enter the PIN code before manually operating the mower. The default code can be changed via the Robotic Mower app.

1. Long press "START" and "HOME" buttons for 3 seconds.
2. When PIN1 is displayed, and after "0--" appears, input the old password.
3. When PIN2 is displayed, and after "0--" appears, input the new password. Press "OK" to confirm.



NOTE:

If the pin code is input wrong, the display will show "ERR".

4.3 IoT

The X5 is an Internet of Things (IoT) device. Connect the mower to the Internet via cellular network or your Wi-Fi network, enabling the following functionalities:

1. Firmware Updates Over-The-Air (OTA), keep your mower updated to the latest features.
2. Enables remote control through the network: start mowing, stop mowing, return to charging station, set mowing schedule, set cutting height and other functions.
3. Remotely monitor the mowing progress and mower location.
4. Report error code and mower status through the network.

Wi-Fi

X5 uses Wi-Fi to connect to a network. See Wi-Fi Setting for more details.

NOTE:

- X5 only supports 2.4GHz Wi-Fi network.
- If you are using an iOS device, the mower can only connect to the Wi-Fi that your mobile device is connected to. Please follow the instructions in the app. Connect your mobile device to the Wi-Fi first, then connect the mower to the same Wi-Fi. There are no such requirements for Android devices.

FIRMWARE UPDATES

We will continue to update the mower's firmware. If there is a new version of the firmware, you will receive a pop-up notification in the app. It is recommended that you update as soon as the latest firmware is available.

When updating the firmware, the conditions below need to be met:

- The machine is on the charging station.
- The network is connected.
- The battery power is more than 30 %.
- There is no mowing plan in an hour.

In the process of updating, the ambient light on the mower will flash blue. You can see the update progress on your app. After the update is completed, the ambient light of the mower will turn green.



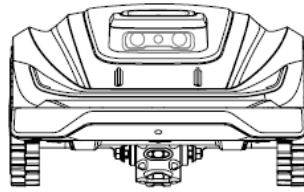
WARNING:

DO NOT move the mower during the update process.

4.3 OBSTACLE AVOIDANCE

BINOCULAR CAMERA

Binocular camera is part of the standard equipment of X5. They are designed for visual boundary detection, prior obstacle avoidance and visual recognition of QR codes during the charging process, making the mower more intelligent.



NOTE:

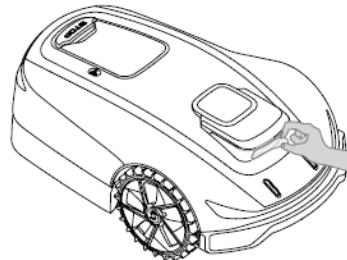
- Working in pitch-black environments can affect the machine's ability to recognise obstacles accurately and quickly to avoid them. It is therefore recommended that you do not operate the machine at night.
- If there are too many obstacles in your lawn, consider setting up no-go zones around them or removing some of the obstacles to improve the machine's efficiency.

VISION AI SYSTEM

Equipped with a 3D binocular camera, LawnMaster's Vision AI and deep-learning system excels at detecting its surroundings and avoiding obstacles with ease. Powered by proprietary deep-learning algorithms, it continuously improves its understanding of garden environments through ongoing data collection.

BUMPER SENSOR

Sensors are built into the X5 to detect obstacles. When the bumper makes contact with an object, it triggers the sensor, prompting the mower to reverse and navigate around the obstruction.



NOTE:

Your X5 is able to avoid objects after bumping into them. However, it is recommended to remove excess clutter before mowing.

5. MAINTENANCE

Experience superior mowing results and prolong your mower's lifespan with regular maintenance. Weekly inspections and upkeep by an adult are essential for optimal performance. Ensure your safety by following these guidelines: avoid maintenance while wearing open sandals or going barefoot, and always wear long trousers and work shoes during servicing. Promptly replace any damaged or worn parts to ensure smooth operation.

IMPORTANT:

Only authorised service technicians may open and reseal the chassis compartment located behind the bumper. Performing your own servicing may void the Limited Warranty.

NOTICE: INSURANCE

Your insurance policies may not cover accidents involving this product. Contact your insurance provider or agent to check if coverage is available.

5.1 CLEANING

Use a gentle brush or cloth to clean the exterior, avoiding corrosive solvents like alcohol, petrol, or acetone, as they can damage the mower's aesthetics and internal components. Regularly check and clean the charging station to prevent debris or mud buildup, ensuring all connecting parts of the charging station, extension cable, and power supply are unobstructed for optimal performance.

A. CHASSIS AND BLADE DISC

To clean the chassis and blade disc, use a brush or water hose. Avoid high-pressure washers, as they can cause damage. Ensure the blade disc rotates smoothly and that the blades pivot freely.

CAUTION: High-pressure water can leak into seals and damage electronic and mechanical parts.

B. WHEELS

Grass on the wheels can hinder the mower's performance on slopes. Remove mud or debris to maintain a good grip. Clean the drive wheels (rear wheels) with a brush to ensure the tread is effective.

C. RAIN SENSOR

Check the rain sensor monthly to ensure it's clear of mud, grass, or other debris. Wash it off or clean

it with a soft brush, and dry the sensor area after cleaning to prevent false triggering.



WARNING:

- Make sure the mower is powered off before cleaning.
- The mower needs to be turned off while it is upside down.

5.2 REPLACE BLADES

For optimal mowing performance and safety, it's recommended to replace the mower's screws and blades every 1-2 months with frequent use. For a safe cutting system, change all blades and their screws simultaneously. Refer to the section "Specification - Accessories" for compatible parts.

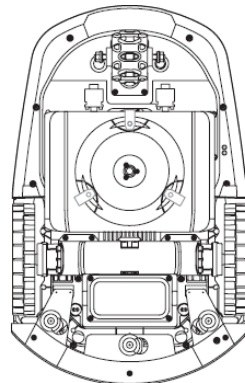


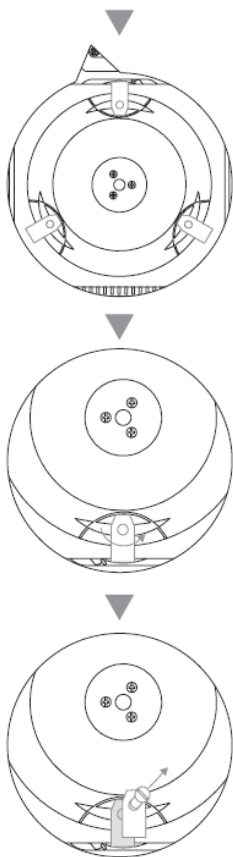
WARNING:

- When inspecting or servicing the blade, wear thick gloves.
- We strongly advise using the correct screws and original blades.
- DO NOT reuse the screws. Serious injury may result from doing this.

HOW TO REPLACE BLADES

1. Turn off the mower.
2. Set the mower upside-down on a spotless, soft surface to prevent scratches.
3. Use a cross-tip screwdriver to loosen the screws.
4. Remove the screws and blades.
5. Fasten the new blades and screws (Torque: 1.0+0.2N.m). Make sure the blades can pivot freely.





NOTE:

1. Replace the screws with a standard torque of 7.0+0.2N.m. Incorrect torque may lead to avoidable issues.
2. Ensure the mower is turned off and inspect the blades for proper application. Any abnormal noise or shaking should be investigated.

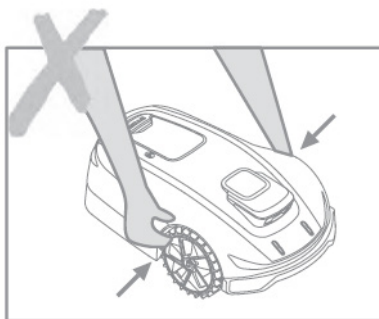
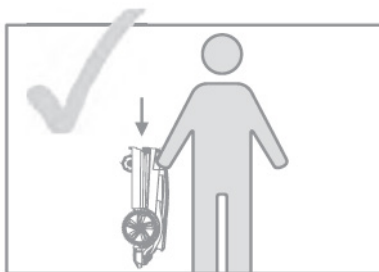
5.3 TRANSPORTATION

To ensure the mower's safety during long-distance transportation, use the original packaging. Before lifting, moving, or transporting the product, ensure it is switched off. Handle with care and avoid excessive force, such as throwing or applying heavy pressure. Never pick up or carry the mower while the motor is running.

HOW TO MOVE OR LIFT PROPERLY

Carry the mower by the handle, with the blade disc

facing away from your body.



5.4 BATTERY

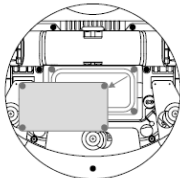
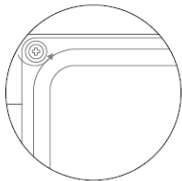
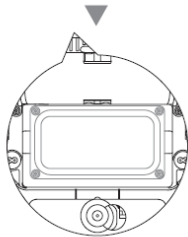
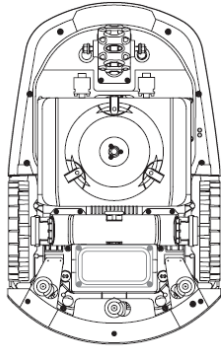
- Before storing, fully charge the battery to prevent overdischarge and harm to the electrical parts.
- The Limited Warranty will not protect against overdischarge battery damage.
- DO NOT charge the battery pack in air temperatures below 5°C, or above 40°C.
- Longer life and better performance can be obtained if the battery pack is charged when the air temperature is between 18°C and 25°C.
- Battery pack gives its best performance when it is operated at normal room temperature (20 °C + 5 °C).

NOTE:

The battery life depends on how often the product is used and the total working hours. When the operation time is significantly shorter than usual per full charge or the lawn is not well-cut, consider replacing the battery.

HOW TO REPLACE THE BATTERY

1. Turn the mower off.
2. Place the mower upside down on a spotless, soft surface.
3. Loosen the 4 screws holding the battery compartment in place with a cross-tip screwdriver.
4. Disconnect the plug.
5. Take out the battery pack and replace it with the new one.



WARNING:

- Use only the original battery pack or one of the same model specified by LawnMaster. Each mower contains one battery pack.
- The battery capacity for specific models is either 5000 mAh or 10000 mAh.
- Do not use non-rechargeable batteries. Only use the provided detachable supply unit for recharging.
- Avoid breaking or disassembling the battery casing. Keep metal objects away to prevent short circuits, and avoid heat sources, fire, and direct sunlight.
- For battery and electrical waste disposal, contact your point of sale or local waste management office.
- The battery compartment should only be opened if a new battery is needed.
- The battery pack contains electrolytes. If leakage contacts skin, wash immediately with soap and water. If it gets in your eyes, flush with water for at least 15 minutes and seek medical help.

5.5 POWER SUPPLY

DISCONNECT THE POWER SUPPLY:

- Before clearing a blockage;
- Before checking, cleaning or working on the machine.
- After striking a foreign object to inspect the machine for damage.
- Regularly examine the cord, plug, enclosure and other parts. If any damage or signs of aging are found, stop using immediately.

**WARNING:**

- NEVER use a damaged power supply. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or qualified individuals. If the extension cable is faulty, replace it with the 10-meter cable approved by LawnMaster.
- NEVER touch an extension cable or damaged cord until it is unplugged from the power source, as a damaged cord may expose electrical components.
- The power supply should not be used with any other device or battery, as this increases the risk of electrical shock, fire, or injury. Using anything other than original batteries voids product safety.
- DO NOT charge if the battery is leaking.
- Keep the extension cable away from moving parts to prevent damage, which could lead to contact with live components.

RECOMMENDATION Connect the mower and/or its peripherals only to a supply circuit protected by a residual current device (RCD) with a tripping current of not more than 30 mA

5.6 STORAGE

- Ensure the mower is fully charged and turned off before storing to prevent over-discharge, which can cause permanent damage.
- Store indoors in a dry, cool place. Exposure to sunlight and extreme temperatures can accelerate component aging and permanently damage the battery.
- Keep chemicals and heat sources (stoves, radiators, etc.) away from the mower, charging station, and power supply.
- Store the power supply in a well-ventilated area, protected from moisture.

**WARNING:**

- Unplug the power supply from the power socket if a thunderstorm is predicted. Cut off all wires and cables that are attached to the charging station. When there is no longer a chance of thunder, reconnect.

WINTER STORAGE.**THE MOWER:**

Clean the mower thoroughly before storage. Check the components subject to wear such as the blades. Repair or replace them if they are in poor condition. Store the mower in a dry and frost-free place, while standing on all wheels, preferably in the original packaging.

THE CHARGING STATION:

Disconnect from the charging station and unplug the power supply from the power outlet. Keep the charging station out of direct sunlight and bring it inside.

5.7 RECYCLING & END-OF-LIFE DISPOSAL

This product is NOT household waste. Get in touch with your municipality, point of sale, or domestic waste service for information on recycling.

**WARNING:**

- This product should not be disposed of in a landfill, burned, or combined with regular household trash. It is possible for danger or severe harm to result from the electrical components.

6. FAQ AND TROUBLESHOOTING**6.1 FAQ*****Does my garden need to have complete Wi-Fi coverage?**

If possible, try to ensure complete Wi-Fi coverage in the garden. If complete coverage is not possible, at least ensure that there is WiFi coverage near the base station and the charging station. Ensuring WiFi coverage around charging stations is essential for robot to perform OTA updates while charging. Similarly, WiFi coverage near base station ensures that the base station can undergo OTA updates, and also allows robot to upload and receive certain information. *Note that when binding the base station, it is essential to ensure that the machine is connected to the internet.

During mapping, what is the maximum distance between Bluetooth and the machine?

During mapping, the machine connects to the smartphone via Bluetooth. Please ensure that you stay within a distance of no more than 3 ft from the machine during mapping.

After pressing the stop button on the machine, how can I restart it?

For safety reasons, when the machine is in stop mode, to restart, press "start+ok" or "home+ok" on the screen.

Meaning of Standard, Stealth, and Custom Modes in Cutting Patterns:

Standard Mode: The machine follows the same trajectory during each operation, efficiently planning mowing paths in an orderly linear fashion. This results in visible vertical stripes on the lawn.

Stealth Mode: In contrast to the standard mode, the machine still performs linear cutting but avoids the same trajectory every time. After several mowing cycles, the vertical stripes on the lawn disappear, leaving no visible traces of the machine's operation.

Custom Mode: The machine operates in a user-defined direction after leaving the charging station. After a few cutting cycles, the lawn will show the customized pattern set by the user.

Can the Machine Cut the Borders?

After completing overall mowing, the machine will perform one additional border cutting.

How Do I Know if the Robot/Base Station Software Needs an Update?

You will receive notifications in the app if there are new software updates.

Can I Upgrade the Machine Using a USB Flash Drive?

Currently not allowed or recommended.

Do I Need to Bring the RTK Base Station Indoors in Winter?

No.

How Should I Store the Machine in Winter?

It is recommended to store the machine indoors during winter. Before storage, ensure the machine is fully charged and turned off.

Can I Wash the Machine with Water?

Ensure all screws are tightly secured before cleaning the machine. Use a regular water hose for cleaning; avoid using a high-pressure water gun to prevent potential damage.

How Often Should I Replace the Blades?

For lawns that haven't been serviced by the robotic lawnmower before and have longer grass, consider replacing the blades every 1-2 months.

In the case of continuous use for lawns where the grass length remains consistently controlled, the blades are expected to last for an extended period due to the maintained grass height.

What if I Forget the Machine Password?

If the machine is bound to the app, reset the password within the app. If not bound, contact customer service to reset the password.

What Happens if I Enter the Wrong Password Continuously?

After 10 consecutive wrong password attempts, the screen will display "LOCK." Keep the machine powered on and wait for 15 minutes to enter the password again.

6.2 DATA PRIVACY

Processing of personal data within X5

Who and why?

When you register for and use LawnMaster's X5, we (as the controller) will process your personal data for the following purposes:

1. **Provide Connection to X5:** We will process Connect to X5: To connect you or offer this service (contract basis).
2. **Improve Products:** To enhance our products and services (legitimate interest).
3. **Enable Connectivity:** To link X5 with third-party apps/devices (contract basis).
4. **Keep You Informed:** To share updates about your X5 (legitimate interest).
5. **Support:** To help with setup or issues (contract basis).

If you have given your consent, we may also process your personal data for the following purposes:

- To send you customised advertisements and newsletters about our products and services.
- To send you customer surveys and analyse your input as detailed in such communications.

Your data will be processed for as long as required to fulfill these purposes, but never longer than allowed by applicable laws.

What personal data do we process?

We may process the following personal data:

Personal Details:

First and last name, nationality, language preferences.

Contact Details:

Email address, postal address.

Account Information:

Account age, password, account number.

X5 Intelligent Mapping Data:

Area names of maps, GPS coordinates.

GPS Position/Location Data:

Location data of the lawn mower.

Other X5 Data: Mower name, pairing names, actions triggered through partner integrations.

Device Information:

Details related to the device used.

Use of Location Data

Some of our services require us to determine the location of your mower (e.g., weather display). When you share your mower's location with us, this data is stored as part of your profile and may be sent to third parties in pseudonymised form to provide the relevant services (e.g., parking the mower in case of heavy rain).

LawnMaster Intelligent Mapping and its related services (e.g., generating a lawn map, live position tracking) rely on the mower sending us its geographic coordinates. This data is stored as part of your profile and used to deliver services, troubleshoot issues, and, after anonymisation, for further technology development. LawnMaster Intelligent Mapping uses a third-party provider, Google, to display the map data.

6.3 TROUBLESHOOTING

POSSIBLE REASONS FOR THE MACHINE STOPPING IN THE FIELD:

1. The machine is stuck in a pit. Remove it and clean the wheels to prevent mud buildup.
2. Poor RTK signal. Ensure the area is open; if not, designate it as a restricted zone.
3. Failed return to charging station.
4. Failed outbound positioning. Confirm the base station meets requirements.

REASONS FOR AUTOMATIC RETURN:

1. Low battery power.
2. Completion of mowing.
3. Obstacles or poor signal preventing completion.

GPS Position/Location Data:

Location data of the lawn mower.

Other X5 Data: Mower name, pairing names, actions triggered through partner integrations.

Device Information:

Details related to the device used.

Use of Location Data

Some of our services require us to determine the location of your mower (e.g., weather display). When you share your mower's location with us, this data is stored as part of your profile and may be sent to third parties in pseudonymised form to provide the relevant services (e.g., parking the mower in case of heavy rain).

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REASONS FOR FAILED MACHINE RETURN:

1. Ensure the QR code on the charging station is correctly placed and unobstructed.
2. Check for obstacles within 5 ft of the charging station.
3. Ensure no strong light sources affect the QR code.
4. Changing the charging or base station position may require a new mapping.

REASONS FOR GOING OUT OF BOUNDS:

1. Poor boundary signal. Ensure no obstructions above the boundary.
2. Virtual boundary is too close; maintain a minimum of 6 inches from the actual boundary.
3. Clean the wheels if covered with mud or grass.

MACHINE STILL WORKING DURING RAIN/RAIN SENSOR TRIGGERING IN DRY CONDITIONS:

1. Confirm the rain sensor status in the app.
2. Check if the rain sensor is blocked or clean.

BLADE OBSTRUCTION:

1. Clean debris from the cutting blade.
2. For long grass, use a regular lawnmower to cut it to the allowed length.

CUTTING GUIDELINES:

1. Cut no more than half of the total length each time.
2. Avoid cutting in rainy weather to maintain quality; set a rain delay of at least 4 hours.

MACHINE NOT FOLLOWING THE SCHEDULE:

1. Verify machine time settings.
2. Check if the rain sensor is triggered.
3. Ensure there is power supply.
4. Confirm the schedule was saved correctly.
5. The machine may be performing a temporary task.

MACHINE POSITIONING FAILURE:

1. Ensure all four lights on the base station are green.
2. Check if the base station is correctly placed.
3. Ensure no obstacles are present in front of the charging station.
4. After checks, place the machine back in the charging station and restart if needed.

7. IMPORTANT INFORMATION

7.1 DISCLAIMERS

We provide after-sale services, excluding:

- Crashes or damage from non-manufacturing factors, including user errors.
- Damage from unauthorised modifications, disassembly, or improper use not following official instructions.
- Damage from improper installation or operation not according to official instructions.
- Damage by a non-authorized service provider.
- Damage caused by unauthorized modification of circuits and/or mismatch or misuse of the battery and charger.
- Damage caused by users who do not follow instructions and manual recommendations.
- Damage caused by operation in bad lawn conditions (i.e., large areas of puddles when restricted areas are not properly set, locations with abundance of stones covering lawn surface, etc.).

- Damage caused by operating the product in environments with electromagnetic interference, including mining areas or proximity to radio transmission towers, high-voltage wires, substations, etc.
- Damage caused by operating the product in environments suffering from interference from other wireless devices, such as transmitters, video downlinks, Wi-Fi signals, etc.
- Damage caused by reliability or compatibility issues when using unauthorized third-party parts.
- Damage caused by operating the unit with a low-charged or defective battery.
- Damage caused by unpredictable factors such as car collisions, wild animal attacks, floods, etc. This content is subject to change without prior notice.

7.2 CONTACT INFORMATION

For any inquiries, assistance, or support regarding your LawnMaster Outdoor Power Equipment, please feel free to reach out to us using the following contact details:

Steelfort Customer Services 06 350 1350
robotics@steelfort.co.nz

Mailing Address
500 Rangitikei Street
Private Bag 11045
Palmerston North
New Zealand

Our dedicated customer support team is ready to assist you with any questions or concerns you may have. Thank you for choosing LawnMaster we're here to help!

8. WARRANTY

Subject to the following conditions, this unit is covered by a comprehensive two-year warranty.

The unit is designed for domestic purposes only, issues and faults due to commercial use may not be covered by warranty. The warranty covers all manufacturing faults but excludes normal wear and tear, misuse, neglect, accidental damage or defects arising from failure to comply with instructions as outlined in this owners manual. Only genuine spare parts can be used for repairs and this must be carried out by an authorised LawnMaster Services Dealer to maintain warranty.

Warranty does not cover the cost of transportation of any part(s) but does cover the labour/parts cost incurred in repairing or replacing any defective part(s) consequential or special damages and / or expenses resulting from any defect.

If the unit requires further repairs or services please visit www.lawnmaster.co.nz to find your local LawnMaster dealer.

For all other enquiries contact **Steelfort Customer Services 06 350 1350 - robotics@steelfort.co.nz**

LawnMaster®

FIND US



www.lawnmaster.co.nz



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