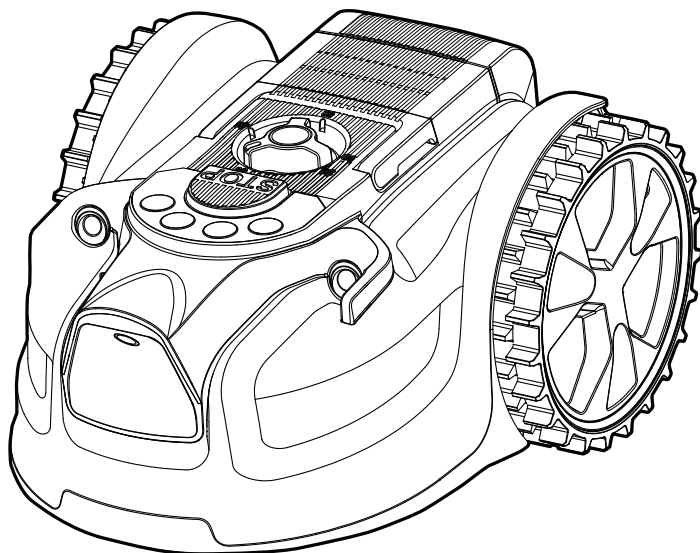


# LawnMaster<sup>®</sup>

## Instruction Manual

16cm MX 24V Lithium-Ion Cordless Robotic Lawnmower VBRM16



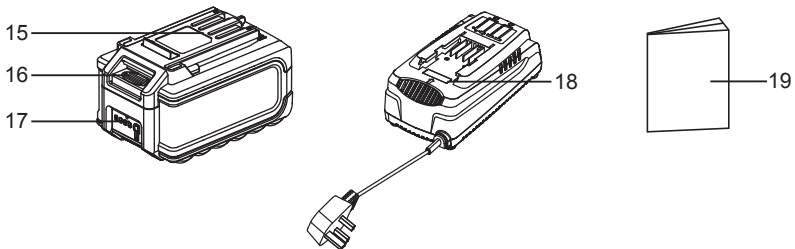
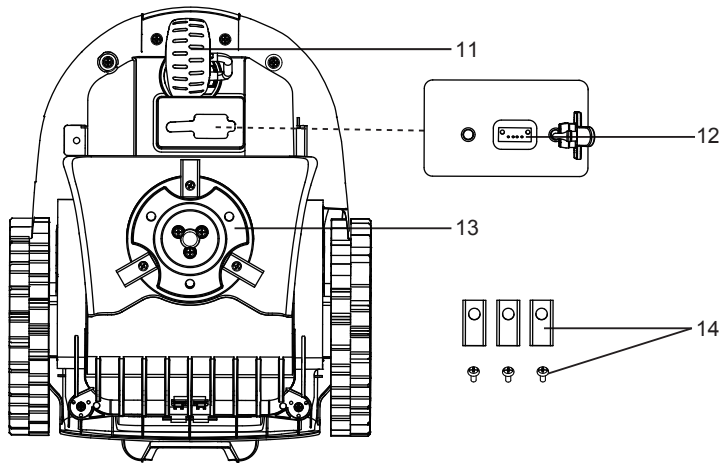
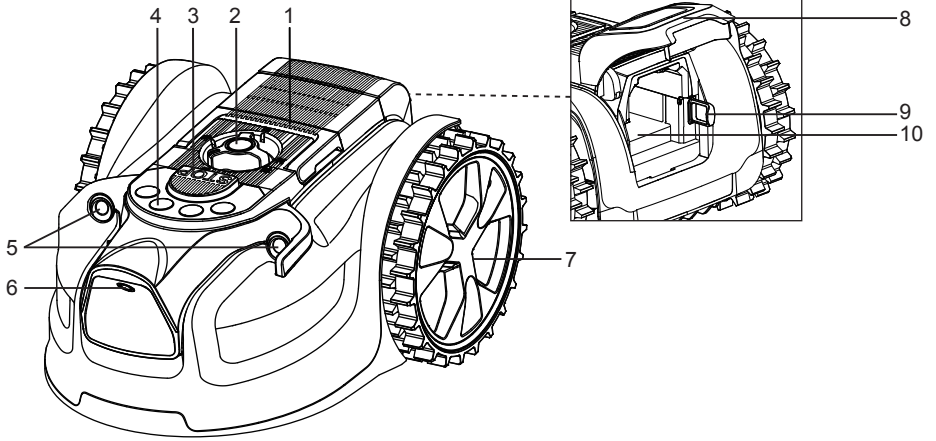
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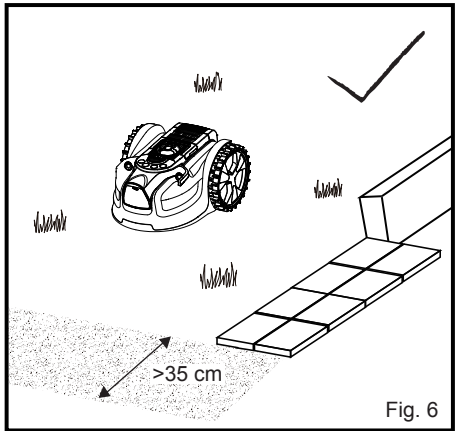
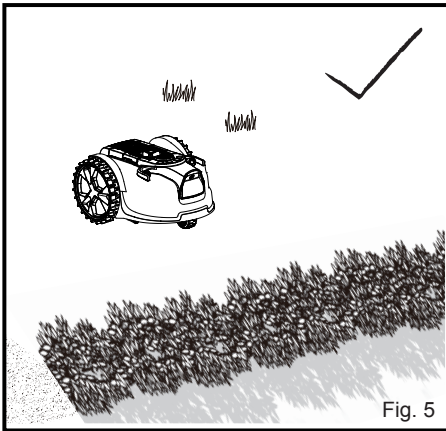
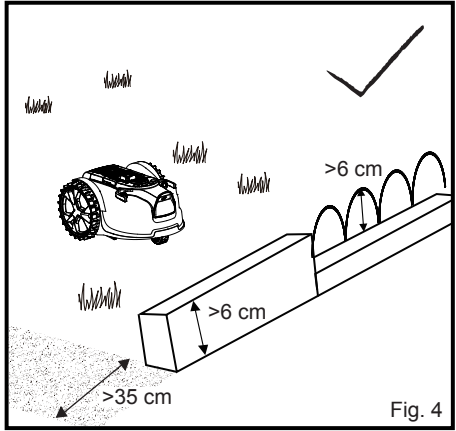
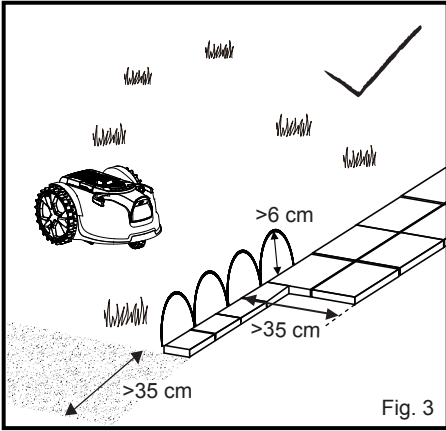
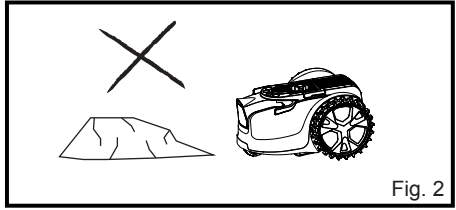
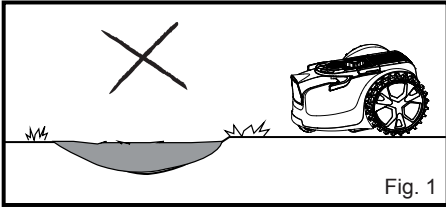
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**WARNING:** Read all safety instructions carefully before assembling and operating this machine. Ensure the machine has been assembled correctly and safely. Keep the instructions safe and pass them on to any subsequent user so that the information is always available.







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## About This Product

Thank you for choosing the LawnMaster® VBRM16 robotic lawnmower. This mower will independently mow the lawn in a random pattern without the use of a boundary wire and charging station and will operate during daylight hours only. The mower detects grass in order to know where to mow, and is also equipped with ultrasonic sensors which detect higher obstacles such as shrubs and fences. For successful operation, the lawn must be defined with flat borders such as paving, or raised edges. When the mower does not detect grass or encounters an obstacle, it changes route in a random manner and starts mowing again in a new direction. The mower can be moved around to different lawn areas provided that they are defined as described in this instruction manual.

The mower uses a detachable MX 24V battery which is compatible with all products in the LawnMaster® 24V range. It is designed to be used once or twice a week for several hours, and then stored away in a garage or shed until it is needed again. It will mow approximately 100m<sup>2</sup> on a single charge depending on lawn conditions. Excessively long or wet grass may impact performance, it is therefore important to maintain a regular mowing schedule to keep on top of growth and develop a neat lawn finish.












## First Operation

The VBRM16 is designed to detect grass and move into areas it identifies as grass. If it cannot see a clear boundary it will continue to move into areas off the lawn and into plants that it may identify as grass. Trimming the lawn edge with a grass trimmer before use will help define a better lawn edge. During first operation on a new lawn it is important to monitor the robot as it detects edges to see where the boundary definition needs to be improved. Please do read the instructions fully, our instructions have been written to help you to get the best results and also provides useful ideas for temporary boundaries as well as examples of how to define a better lawn edge in all seasons.









**FOR YOUR SAFETY: CAREFULLY READ AND UNDERSTAND ALL INSTRUCTIONS.**

# SYMBOLS

The following warning symbols appear throughout this manual and indicate the appropriate safety measures you should take when operating and maintaining the appliance.

SYMBOL	DESIGNATION/EXPLANATION
	WARNING - The robotic lawnmower can be dangerous if used incorrectly.
	Read instruction manual before operating the machine.
	Keep bystanders away.
	Remove the isolator key before working on or lifting the machine.
	Operate the isolator key before working on or lifting the machine.
	Do not ride on the machine.
	Wait until all moving parts have stopped completely before touching them. The blade may continue to rotate after the machine is switched off, a rotating blade can cause injury.
	Do not wash or immerse the machine in water.
	WARNING! Beware of electric shocks.
	Protection class II (Double insulation)
	Class III machines.

# SYMBOLS

SYMBOL	DESIGNATION/EXPLANATION
	Only recharge battery packs with the supplied charger indoors.
	Fuse
	Electrical appliances must not be disposed of with the domestic waste.
	Batteries contain Lithium-ion. Do not dispose of batteries in household waste.
	Do not dispose of battery packs in rivers or immerse in water.
	Do not dispose of battery packs in fire.
	Do not subject the battery to direct sunlight over long periods and do not leave it on or near a heat source (max. 60°C).
	Recycle electrical waste products in an environmentally safe way where facilities exist.



## WARNING

To avoid serious personal injury, do not attempt to use this product until you read thoroughly and understand completely the instruction manual.

If you do not understand the warnings and instructions in the instruction manual, do not use this product.

## SAFETY INFORMATION

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### IMPORTANT!

READ CAREFULLY BEFORE USE. KEEP FOR FUTURE REFERENCE

#### Training

- Read the instructions carefully. Be familiar with the controls and the proper use of the machine.
- Never allow people unfamiliar with these instructions or children to use the machine. Local regulations may restrict the age of the operator.
- The operator or user is responsible for accidents or hazards occurring to other people or their property.
- The operator or user is responsible for informing neighbours about the risks. Keep a safe distance from the machine when operating.
- If your lawn is open to the street and/or your neighbours, you must be present during the mower's operation to prevent others from accessing your lawn. Alternatively, you must protect/fence your lawn so that others do not access the mower during operation.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.



### WARNING

The robotic lawnmower can be dangerous if used incorrectly.

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## SAFETY INFORMATION

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### WARNING

Never use the robotic lawnmower when people, especially children or pets, are in the cutting area.

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#### Preparation

- Ensure that the lawn area is defined as described in the section Prepare the Mowing Area and Define the Mowing Area.
- Periodically inspect the area where the machine is to be used and remove all stones, sticks, wires, pet toys, and other foreign objects.
- Periodically visually inspect to see that the blades, blade bolts and cutting assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.
- On multi-spindle machines, take care as rotating one blade can cause other blades to rotate.

#### Operation

- Do not leave the machine to operate unattended if you know that there are pets, children or people in the vicinity.
- Never operate the machine with defective guards, or without safety devices, for example deflectors in place.
- Do not put hands or feet near or under rotating parts. Do not touch moving hazardous parts before these have come to a complete stop.
- Never pick up or carry a machine while the motor is running.
- Always remove the isolator key:
  - Before clearing a blockage;



## SAFETY INFORMATION

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- Before checking, cleaning or working on the machine.
- It is not permitted to modify the original design of the mower. All modifications are made at your own risk.
- Avoid using the mower and its peripherals in bad weather conditions especially when there is a risk of lightning.
- Do not use the mower for any purpose other than cutting lawn.
- In the event of accident or breakdown whilst the mower is operating, immediately press the STOP button.
- Do not put anything on top of the mower. Never allow people or animals to sit on the mower.
- Do not use the mower if the On/Off switch does not work.
- Do not use the mower when a sprinkler system is running. Ensure that the mower and the sprinkler system do not operate at the same time. Do not wash the mower with running water and do not immerse it in water. This product is not watertight.
- Always switch off the mower by removing the isolator key when the mower is not in use.
- The robotic lawnmower must never be stored, operated or charged in temperatures below 0°C or above 50°C. This might cause damage to the product or battery.
- Mow only in daylight or in good artificial light. The mower requires good light to correctly identify the lawn area.
- Avoid operating the machine in very long or wet grass.
- Never use the machine in explosive and/or flammable environments.
- Do not operate the machine when barefoot or wearing open sandals. Always wear substantial footwear and long trousers.

## **SAFETY INFORMATION**

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- Always be sure of your footing on slopes.
- Always switch on the motor according to instructions with feet well away from the blade(s).

### **Maintenance and storage**

- Keep all nuts, bolts, and screws tight to be sure the machine is in safe working condition.
- Replace worn or damaged parts for safety.
- Ensure that only replacement blades of the right type are used.
- In the event of a battery leakage of electrolyte flush with water/neutralizing agent, seek medical help if it comes into contact with the eyes, etc.
- Servicing of the machine should be according to manufacturers' instructions.
- In case of abnormal vibrations, stop the mower, remove the isolator key and the battery pack and check for any damage of the blade. Replace a worn or damaged blade to preserve balance. If the vibration continues, contact the aftersales helpline.
- Use heavy gloves when inspecting or servicing blades.
- Cleaning and maintenance must not be performed by unsupervised children.
- Do not use the mower when the cutting blade is damaged. Replace the cutting blade.
- Use only original equipment and accessories. It is not permitted to modify the original design of the mower. All modifications are made at your own risk.

# SAFETY INFORMATION

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## Transportation

Within the working area:

- Press the STOP button to stop the mower. Use both hands to carry the mower at the front and rear sections under the mower. Carry the mower with the blade disc away from the body.

Long distances:

- When transporting your mower over long distances, press the STOP button and remove the isolator key and the battery pack.
- **IMPORTANT!** It is recommended to keep the original packaging to avoid damage during transportation over long distances.

## Battery Safety Information

- 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. Incorrect use may result in electric shock, overheating or leakage of corrosive liquid from the battery.
- Do not place appliances or their batteries near fire or heat sources. Continuous intense sunlight, fire or other heat sources may cause an increased danger of explosion.
- Do not crush, drop or damage the battery pack. Do not use a battery pack or charger that has been dropped or received a sharp blow. A damaged battery is subject to explosion. Properly dispose of a dropped or damaged battery immediately.

## SAFETY INFORMATION

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- Batteries can explode in the presence of a source of ignition, such as a pilot light.
- To reduce the risk of serious personal injury, never use any cordless product in the presence of an open flame. An exploded battery can propel debris and chemicals. If exposed, flush with water immediately.
- Do not charge battery in a damp or wet location. Following this rule will reduce the risk of electric shock.
- For best results, your battery tool should be charged in a location where the temperature is more than 4°C but less than 40°C.
- Under extreme usage or temperature conditions, battery leakage may occur. If liquid comes in contact with your skin, wash immediately with soap and water. If liquid gets into your eyes, flush them with clean water for at least 10 minutes, then seek immediate medical attention.
- When the battery pack is not in use, keep it 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 sparks, burns, or a fire.
- Do not open up the battery and avoid mechanical damage to the battery. Risk of short circuit and fumes may be emitted. Ensure fresh air and seek medical assistance in the event of discomfort.
- Always remove battery pack before storing the device. When battery becomes fully charged, unplug the charger from the power supply and remove the battery pack from the charger.

## **SAFETY INFORMATION**

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- Keep battery pack dry, clean, and free from oil and grease. Always use a dry cloth when cleaning. Never use brake fluids, gasoline, petroleum-based products, or any solvents to clean battery pack.

### **Charger Safety Information**

- Ensure the battery pack is charged indoors only, in a dry, cool and well-ventilated environment.
- Do not use non-rechargeable batteries!
- Do not operate the charger with a damaged cord or plug, which could cause shorting and electric shock. If damaged, immediately discontinue use. Replace the charger with the identical unit as listed in the Product Specifications in this manual. If the power cord for this equipment is damaged, it must be replaced by the manufacturer, a customer service agent of the same or a fully qualified person in order to prevent hazards.
- The plug of the charger must match the outlet. Never modify the plug in any way. Unmodified plugs and matching outlets will reduce the risk of electric shock.
- Allow a hot battery to cool before charging.
- Before each use, check the charger, cable and plug. Do not use a defective charger and do not disassemble the charger. Incorrect reassembly may result in the risk of fire, electric shock or electrocution.
- Protect the charger against moisture and wet conditions. There is a danger of electric shock.
- Operate the charger only with the appropriate original batteries. Charging other batteries may result in injuries and risk of fire.

## SAFETY INFORMATION

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- Keep the cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- Do not use a charger that has been dropped or received a sharp blow.
- The mains input voltage indicated on the charger rating plate must correspond to the mains voltage of the power source.
- Never touch the mains plug with wet hands.

### Product End of Use

- The mower and its accessories should be recycled correctly at the end of their life to prevent waste electrical and electronic equipment from ending up in landfill sites, and to protect and improve the quality of the environment.
- Do not dispose of the mower or any other of its parts as unsorted municipal waste - they should be collected separately.
- Do not dispose of the battery pack in a fire, and do not place used batteries in your household waste.
- Dispose of batteries in accordance with the local regulations where they will be recycled in an environmentally friendly manner.

## IN THE BOX (Refer to Page 2)

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1. Carry Handle
2. Cutting Height Adjustment Knob
3. STOP Button
4. Control Panel
5. Ultrasonic Object Sensors
6. Grass Detection Camera
7. Rear Wheel
8. Battery Compartment Cover
9. Isolator Key
10. Battery Compartment
11. Front wheel
12. USB Port (Covered by Rubber Cap)
13. Blade Disc
14. Blade and Screw (x6, 3 Pre-installed on Blade Disc)
15. Battery Pack
16. Battery Release Button
17. Battery Power Indicator
18. Battery Charger
19. Instruction Manual

# ASSEMBLY

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## Preparation

- The lawnmower is supplied fully assembled.
- Carefully remove all contents from the product packaging.
- The battery is supplied in a partially charged state. Place the battery on the supplied charger and allow the battery to fully charge before first use.

## Prepare the Mowing Area (See Figs. 1-2)

### Lawn Surface

- The lawn surface should be as uniform as possible. Bare patches and leaves can disrupt the operation of the mower. Clear leaves at regular intervals and repair dead patches with grass seed.
- Inspect the lawn for holes or hollows. Fill them with topsoil to prevent rainwater from forming pools of water on the lawn and to prevent mower from becoming stuck. The mower may be damaged if it is operated in pools of water (Fig. 1).
- If there are stones on the lawn that may damage the mower, they should be removed or excluded from the working area (Fig. 2).

**NOTE:** This mower is not designed to cut excessively long or overgrown and neglected areas. For best performance mow or trim grass down to 60mm before use. Do not allow grass to grow excessively long between uses.

## Define the Mowing Area (See Figs. 3-12)

Lawn edges must be clearly defined by flat edging or raised barriers in order for this mower to function properly.

- Visual boundaries need to look different from grass, therefore changes in colour and texture are very effective.
- Physical boundaries help stop the mower when a visual boundary is not possible.
- Temporary physical boundaries can be used while the lawn boundary definition is improved.

The robotic mower is equipped with the following devices which allow it to detect the edges and know where to mow:

- The grass detection camera: for recognizing changes in surface type, e.g., from grass to paving.
- Two ultrasonic object sensors: for detecting the obstacles higher than 6 cm. They are turned on by default setting and will sense plants, shrubs and other obstacles in and around the edges of the lawn. For a consistent cut, long grass must be cut down before mowing, or the ultrasonic sensors must be turned off.

The ultrasonic sensors can be turned off when the lawn to be mowed is clear of obstacles. In this case, hedges, walls, or other similar barriers in the lawn can be used as the border of the working area.



# ASSEMBLY

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When the robotic mower detects that there is no grass or encounters an obstacle, it changes route in a random manner and starts mowing again in a new direction. To allow the robotic mower to move freely inside the lawn, the lawn must be properly checked and adjusted so that the robotic mower has enough space for recognizing when there is no grass. Carefully follow instructions listed as below for types of borders/protections that can/cannot be used for defining the working area.

## Paving

The lawn requires a paved or wooden edge of at least 35 cm wide for it to stop safely and change direction.

Paving or wooden edge less than 35 cm wide must be widened, or can be used in conjunction with a barrier. See Raised Barrier section below (Fig. 3).

## Raised barrier

With the ultrasonic sensors on, a perimeter barrier at a height above 6 cm can be used to define the border of the working area.

If an existing barrier is shorter than 6 cm, replace or raise the barrier or add additional paving (Fig. 4).

## Hedging

With the ultrasonic sensors on, hedges can be used to define working area (Fig. 5).

**NOTE:** Foliage is usually recognized as grass by the robotic mower. Therefore, ultrasonic sensors must be always kept on when using hedges as the border of the working area.

## Fine gravel

If fine gravel or small stones are used to border the lawn, make sure the width of the border is more than 35 cm wide and has clear edges (Fig. 6).

**NOTE:** Never use gravel, stones or similar materials with irregular edges for defining the working area (Fig. 7). Failure to provide clear edges will result in the mower leaving the mowing area and blade damage.

## Physical Bump Barriers

A border that physically obstructs the movement of the mower can also be used. This boundary could be lower than 6 cm so undetectable by the ultrasonic object sensors, and also narrower than 35 cm. When the robot meets this physical barrier, it will bump off, reverse and turn. This type of boundary may suit your lawn in some areas.

## Temporary Physical Bump Barriers

During first use, while lawn patches are being seeded or with seasonal lawn flowers, it may be desirable to use a temporary method to protect or define the lawn area for the robot to cut. In this

# ASSEMBLY

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case, garden canes are particularly effective and do not detract from the look of the lawn. In spring, you can protect flower bulbs in the lawn from the mower by sinking short canes vertically into the lawn around the area spaced at 20 cm. The mower will be physically prevented from entering any protected areas.

## Obstacles in the mowing area

With the ultrasonic sensors on, objects which do not impede the robotic mower's normal functioning, such as trees (without raised roots), vertical poles, etc., do not require excluding from the mowing area (Fig. 8).

When objects, such as exposed tree roots, exposed wires, irrigation systems, etc., are present on the surface of the lawn, it is required to protect these objects with paving, walls or barriers to prevent the damage to them and to the robotic mower (Fig. 9).

The working area cannot be defined by holes or ditches. Ensure that there are no objects such as toys, work tools, small stones, branches, or sprinklers, etc., on the lawn or protruding from the ground which could impede the mower or cause damage to the blade (Fig. 10).

**NOTE:** Avoid leaves accumulating on the lawn, as they may not be detected correctly by the robotic mower. Remove leaves at regular intervals.

## Slopes

The robotic mower has the ability to safely climb slopes of 35%, and areas that are steeper than this should be excluded (Fig. 11).

To calculate the slope of your lawn, see Fig. 11. The slope would be:

$$\frac{35\text{cm (Elevation)}}{100\text{cm (Length)}} = 35\% \text{ (slope)}$$

## Pools and ponds

If there is a pool or pond in the mowing area, create appropriate borders to protect it.

- Raised barriers higher than 20 cm.
- Flat edging (paving, gravel or wooden boards wider than 70 cm).

The illustration shows a correctly defined working area for the correct functioning of the mower (Fig. 12).

**It is very important to make visual boundaries around ponds wide and obvious for the mower. Pond plants and algae could be interpreted as grass. Physical boundaries around ponds are highly recommended and will prevent any accidental water damage to your mower which is not covered by the manufacturers guarantee.**

# ASSEMBLY

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## Install/Remove the Battery Pack (See Figs. 13-15)

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### WARNING

If any parts are broken or missing, do not attempt to attach the battery pack to the robotic mower or operate the robotic mower until the broken or missing parts are replaced. Failure to do so could result in serious injury.

Ensure the isolator key is not fitted before installing the battery.

---

#### To install the battery pack:

- Lift the battery compartment cover.
- Align the support rails located within the battery compartment with the guides in the battery pack, and then insert the battery pack into the compartment (Fig. 13).
- Push the battery pack until you hear a “click”.
- Insert the isolator key into the keyholes located near the battery compartment (Fig. 14).

**NOTE:** The isolator key only fits into the keyholes in one direction. Do not force it.

- Close the battery compartment cover.

**NOTE:** Make sure that battery pack firmly snaps into place and is secured to the mower before starting operation.

#### To remove the battery pack:

- Stop the mower. Lift the battery compartment cover and remove the isolator key.
- Press the release button on the battery pack, grasp the battery pack firmly and pull out of the battery compartment (Fig. 15).
- Close the battery compartment cover.

# OPERATION

## Control Panel (See Fig. 16)

### ① START/ON

Long press for 3 seconds to power on the mower. Press after selecting the Auto Mow or the Spot Cutting Button to start mowing.

### ② Battery Indicator

Battery Indicator	Status
Green, Continuous	Sufficient power for mowing/ ready for mowing.
Red, Continuous	Recharge required.
Red, Flashing	The temperature of battery pack is abnormal, or the electric core fault.

### ③ Auto Mow Button

Long press 2 seconds to select random auto cutting mode followed by START/ON.

### ④ Error Indicator

Error Indicator	Status
Off	The mower is in normal operation.
Yellow, Continuous	The lift sensor is activated. / The obstruction sensor is activated. / The mower is tilted. / The rear wheels are lifted (slipping) due to an obstacle. / The mower has fallen over. / STOP button is pressed. / The mower cannot see grass.
Red, Continuous	Sensor error. / Motor fault. / Operation system error.

### ⑤ Spot Cutting Button

Long press 2 seconds to select spot cutting mode followed by START/ON.

### ⑥ Ultrasonic Indicator

Ultrasonic Indicator	Status
Green, Continuous	The ultrasonic function is on.
Off	The ultrasonic function is turned off.
Yellow, Flashing	The mower has a communication issue with camera.

### ⑦ Ultrasonic On/Off Button

Single press to turn off/turn on the ultrasonic function.

# OPERATION

---

## Switching On/Off

- To switch on, press the START/ON Button for 3 seconds. The battery indicator, error indicator, ultrasonic indicator will flash consecutively. The camera system will take approximately 15 seconds to start up.



**NOTE:** Please wait while the mower starts up, attempting to start the mower in this time will cause an error warning and the start-up process will need to be repeated.

- The mower is ready to mow when the battery indicator is illuminated green continuously and the mower beeps.
- To switch off the mower, lift the battery compartment cover and remove the isolator key.

## Starting/Stopping the Mower

---



## WARNING

Read the safety instructions carefully before you start your robotic lawnmower.



## WARNING

Keep your hands and feet away from the rotating blades. Never put your hands or feet close to or under the mower when the motor is running.



## WARNING

Never use the robotic lawnmower when people, especially children, or pets, are in the cutting area.

---

- Make sure the fully charged battery pack and the isolator key are installed into the robotic lawnmower properly.
- Put the robotic lawnmower in the defined mowing area.
- Press the START/ON Button for 3 seconds. The battery indicator, error indicator, ultrasonic indicator will flash consecutively. The camera system will take approximately 15 seconds to start up. The mower is ready to mow when the battery indicator is illuminated green continuously and the mower beeps.
- Select the desired cutting mode by pressing the Auto Mow Button or Spot Cutting Button for 2 seconds, then press the START/ON Button to start mowing.
- To stop the mower during operation, press the STOP button.
- To turn off the mower, lift the battery compartment cover and remove the isolator key.



**NOTE:** If the mower is stuck or has been stopped for more than 20-25 minutes, it will automatically go into Stand By (power off). To turn on the mower again, follow the instructions above.

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# OPERATION

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## Cutting Modes

### Auto Cutting

In Auto cutting mode, the robotic mower will mow the lawn in a random pattern.

After the robotic mower is powered on, press the Auto Mow Button for 2 seconds. Then press the START/ON Button. After 5 seconds of continuous running, you will hear beeps to indicate the blades have started to spin.

The robotic lawnmower will automatically search for a suitable working area. If the robotic mower does not find grass within 5 seconds, it will change direction and start running again in a new direction. The blades will not spin until the mower can run continuously for at least 5 seconds.

### Spot Cutting

In spot cutting mode, the robotic mower will mow in a spiral outwards from where it is placed on the lawn. This is best used to tidy up any areas that may not have been mowed during a random mowing session.

After the robotic mower is powered on, press the Spot Cutting Button for 2 seconds. Then press the START/ON Button. The mower will first move forward about 10 to 20 cm, then start spot cutting covering approximately 2 square metres. After the spot cut is finished, the robotic mower will start to mow in a random pattern automatically.

If the area to be mowed is too narrow for the robotic mower to carry out the spot cut, after continuous searching, the mower will mow in a random pattern automatically.

**NOTE:** Spot cutting is also a great feature to use before random mowing to systematically and efficiently cut the main areas of the lawn, by doing this it reduces the amount of random cutting time needed to complete the lawn. You also get a better lawn finish.

## Setting the Cutting Height (See Fig. 17)

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# WARNING

Do not make any adjustment to the lawn mower without first stopping the motor. Keep your feet away from the blade disc when adjusting its height.

---

The cutting height of the mower can be adjusted from MIN (20 mm) to MAX (60 mm) (Fig. 17). During the first weeks of mowing, always select the higher cutting height (40 mm). After this, the cutting height can be lowered step by step every week until the desired cutting height has been reached.

- Press the STOP button to stop the robotic lawnmower.
- Turn the cutting height adjustment knob to set the cutting height.
  - Turn clockwise to raise the cutting height.
  - Turn anti-clockwise to lower the cutting height.

# OPERATION

- For the first cut each season, a higher cutting setting should be selected. **USING A CUTTING HEIGHT THAT IS TOO LOW IN LONGER GRASS WILL USE MORE POWER AND REDUCE BATTERY RUN TIME.**
- Before you begin to mow, check to ensure that the blade is not blunt and that none of the fasteners are damaged. To prevent any imbalance, replace blunt and/or damaged blades. To carry out this check, first switch off the mower by removing the isolator key.

## Battery Pack Operation

### ■ Battery Charging



## WARNING

Use only with 24LFC12 battery charger approved by the manufacturer.

The battery charger supplied is specifically designed for the lithium-ion battery used in this garden appliance and may cause risk of fire if used with a non-compatible battery pack.

Check the power voltage! Battery chargers operate on 220-240V AC.

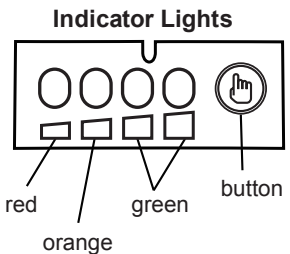
Ensure the battery is charged between 4°C and 40°C. This ensures an optimum battery service life.

Protect the battery from heat, from continuous exposure to sun and keep away from radiation or other heat sources. Do not leave the battery in the mower in direct sunlight over long periods. The battery is supplied partially charged. To ensure full capacity of the battery, charge the battery before using your appliance for the first time. The lithium-ion battery can be charged at any time without reducing its service life. Interrupting the charging procedure does not affect the battery.

### ■ Battery LED Indicators

The battery is equipped with a charge-level indicator panel which indicates its charge condition. This charge-level indicator panel consists of 4 LEDs on the battery. Press and hold the charge indicator button on the battery to actuate the charge level indicator. The charge level indicator LEDs go out after releasing the button. The battery charge level can be checked either when the battery is fitted on the mower/charger or removed from the mower/charger.

LED Indicators on Battery (Continuous lighting)	Battery Capacity
4 LEDs (inc 2 green)	Fully charged
3 LEDs (inc 1 green)	≥ 50%
2 LEDs (orange & red)	≥25%
1 LED (red only)	< 25%. Recharge required.



# OPERATION

## Charger Operation (See Fig. 18)



# WARNING

Use only with the following battery approved by the manufacturer: 24LB4005, 24LB4005-C, 24LB2004, 24LB2004-C.




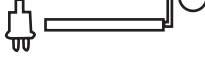



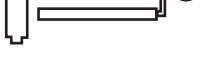
If any part of the charger is missing or damaged, do not operate it! Replace the charger with a new one. Failure to pay attention to this warning could result in possible serious injury.

Check the voltage! The voltage must comply with the information on the rating label.

- Align the slot of the battery pack with the rail on the charger. Slide the battery onto the rail until the battery pack secures into place (Fig. 18).
- Connect the charger to the power supply.
- Allow sufficient charging time (see Technical Data), and then disconnect the charger from the power supply.
- Press the release button on the battery pack and remove it from the charger.

**NOTE:** It is normal for the battery pack and the charger to become warm (but not hot) during charging process. If the battery does not charge properly, check to make sure the electrical outlet is operational. Always charge the battery before storage!

The indicator lights on the charger show the charging status:

Symbol	Indicator Lights	Status
		Red, flashing Charging paused, see instructions below.
		Red, continuous Connected to power supply (Standby)
		Green, flashing Charging
		Green, continuous Fully charged

The intelligent charger measures the charge level of the battery pack and charges the battery accordingly with the required current and voltage, based on battery temperature and voltage, this ensures maximum battery life. Charge the battery fully before storage.

A flashing red LED light on the charger indicates that the battery temperature is not within the



## OPERATION

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charging temperature range of 4°C - 40°C. As soon as the permitted temperature is reached, the battery charger will automatically switch to charging.

If the temperature range is correct and flashing red LED light continues, then remove and reinstall the battery pack. If the LED status repeats a second time, try to charge another identical battery.

If the battery charges normally, dispose of the defective battery pack (see Recycling and Disposal section).

If the flashing red light continues after installing the second battery (ensure the battery temperature is normal), the charger may be defective. Replace with a new one.

After continuous or repeated charging cycles without interruption, the charger may warm up. This is normal and does not indicate a technical defect of the battery charger.

# MAINTENANCE

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## WARNING

Always switch the product off, remove the isolator key and the battery pack and let the product cool down before performing inspection, maintenance and cleaning work.



## WARNING

If a part becomes worn or damaged, use manufacturers recommended replacement parts. Use of any other parts may create a hazard or cause product damage.



## WARNING

Do not use any attachments or accessories not recommended by the manufacturer of this product. The use of attachments or accessories not recommended can result in serious personal injury.

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### General Maintenance

- Keep all safety devices and the motor housing free of dirt and dust. Avoid using solvents when cleaning plastic parts. Most plastics are susceptible to damage from various types of commercial solvents and may be damaged by their use. Use clean, dry cloths to remove dirt, dust, oil, grease, etc.
- Periodically check all nuts and bolts for proper tightness to ensure safe operation of the mower.
- Remove any buildup of grass and leaves on or around the mower. Wipe the mower clean with a dry cloth occasionally. Do not use water.

### Replacing the Mower Blades (See Fig. 19)

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## WARNING

Always wear protective, heavy gloves when performing blade maintenance. Failure to heed this warning could result in serious personal injury.



## WARNING

Before performing any maintenance, make sure the isolator key and the battery have been removed. Failure to heed this warning could result in serious personal injury.

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Always check to see if the blades are in good condition. If the blades are blunt, damaged or showing signs of imbalance, they must be replaced. Only use recommended replacement blades. Make certain ALL 3 blades and screws are replaced at the same time to keep a balanced cutting system. Visit [www.cleva-europe.com](http://www.cleva-europe.com) for information on where to purchase additional blades.

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# MAINTENANCE

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## To replace the blades

- Press the STOP button and allow the blade to come to a complete stop.
- Lift the battery compartment cover. Remove the isolator key and the battery.
- Slowly turn the mower over. Place it on a soft and clean surface.
- Use a suitable tool (e.g., a screwdriver) to insert into one of three holes in the blade disc to fix it in place. This ensures the blade disc is not turning when replacing the blades to avoid personal injury.
- Wear protective gloves and remove all three screws and blades with a screwdriver (Fig. 19).
- Secure the new blades with new screws.
- Make sure all blades can spin freely.

## Cleaning the Underside

It is recommended to check and clean the underside of the robotic mower regularly.

- Press the STOP button and allow the blade to come to a complete stop.
- Lift the battery compartment cover. Remove the isolator key and the battery.
- Slowly turn the mower over. Place it on a soft and clean surface.
- Use a soft brush or damp cloth to remove dirt, dust, oil, grease, etc. from the underside of the mower.

**IMPORTANT:** Do not wash the mower with running water.

- Wear safety gloves to clean the blade disc, the chassis, and the front and rear wheels thoroughly with a soft brush or damp cloth. Remove any lodged debris around them.
- Make sure the blade disc can rotate freely and all blades can spin freely.

## Storing the Mower (See Fig. 20)

It is recommended to store the mower indoors between uses.

- Before storing your mower, remove the isolator key and the battery pack.
- Clean the mower thoroughly.
- Use the carry handle to carry the mower. Carry the mower with the blade disc away from the body (Fig. 20).
- Store the mower indoors in a clean, dry place out of the reach of children.

**IMPORTANT:** Protect the underside of mower from standing water. NEVER store the mower upside down outdoors.

## Battery and Charger Maintenance

- Keep the battery and charger clean and clear of debris. Do not allow foreign material into the recessed cavity or on the contacts. Wipe with a dry cloth. Do not use solvents, water, or place in wet conditions.
- Always unplug the charger when there is no battery pack in it.
- Check that the charger and battery contacts have not been shorted by debris or foreign material. Always store away from metal objects which could create a connection with the terminals.

## MAINTENANCE

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- Always remove the battery when storing the mower and keep in a cool dry place out of direct sunlight.
- Store the battery only within a temperature range between 0°C and 25°C and do not subject or store the battery pack in direct sunlight.
- It is recommended to store the lithium-ion battery pack in a 30%-50% charged condition.
- It is recommended to fully charge the lithium-ion battery pack after every six months of storage.

### Updating the Software (See Fig. 21)

The software of the mower can be updated if necessary.

**NOTE:** Make sure the USB flash drive works normally and the robotic mower is switched on by pressing the START/ON button for 3 seconds before updating.

**NOTE:** Make sure the battery indicator is green and the mower has sufficient power for updating the software.

- Download the robotic mower's latest software from our support website onto a blank USB flash drive device.
- Stop the mower and remove the isolator key.
- Turn the mower upside-down. Wear protective gloves and open the USB port rubber cap to reveal the USB port (Fig. 21).
- Insert the isolator key. Press the START/ON Button for 3 seconds, and wait for 15 seconds until the robotic mower is powered on completely indicated by a green battery light and beep. Insert the USB flash drive into the USB port, then you will hear four beeps. The software is updating when all three indicators are flashing.
- After finishing the updating of the software, you will hear continuous beeping and the battery indicator will be green continuous.
- Remove the USB Flash drive. Replace the USB port rubber cap. To complete the software update, restart the machine by removing and reinserting the isolator key.

# TROUBLESHOOTING



## WARNING

Only perform the steps described within these instructions! All further inspection, maintenance and repair work must be performed by a qualified specialist.

Gloves and appropriate protective clothing must be worn when performing these instructions.

Always turn off the mower before making any adjustment. For the latest information on where to purchase parts please visit [www.cleva-europe.com](http://www.cleva-europe.com).

PROBLEM	POSSIBLE CAUSE	SOLUTION
The robotic lawnmower is stuck during mowing.	Grass or other debris is wrapped around the wheels.	Check wheels and remove the grass or objects.
	Grass or other debris is wrapped around the blade disc.	Check the blade disc and remove the grass or objects (always wear gardening gloves).
	The blade disc lies in a pool of water.	Move the robotic lawnmower and prevent the collection of water in the working area.
	The robotic lawnmower has got caught in something.	Free the mower and remove the obstacle.
	The robotic lawnmower is stuck behind a number of obstacles.	Check if there are any obstacles which make it hard for the robotic lawnmower to move on from this location. Remove the obstacles.
	The mower is stuck in an uneven dip or hollow in the lawn.	Ensure that dips and holes in the lawn are leveled with topsoil and over-seeded with grass seed.
	The lift sensor has been activated as the mower has become trapped.	Free the mower.
The robotic lawnmower fails to start.	The isolator key is not installed correctly/fully.	Install the isolator key correctly.
	The battery is not installed correctly.	Ensure the battery is correctly installed.
	The battery is not fully charged.	Charge the battery.
	Possible clogging.	Remove the isolator key and battery. Check underneath the mower and clear as necessary (always wear gardening gloves).

## TROUBLESHOOTING

	The grass is too long.	Set a higher cutting height.
	The battery is defective.	Replace the battery.
	Defective START/ON Button.	Contact the After Sales Helpline.
The robotic lawnmower runs outside working area.	Incorrect barriers are used for defining the working area.	Check the borders/barriers for correct setting for defining the working area. Make improvements or temporary barriers if necessary. Refer to the Define the Mowing Area on page 16-18.
	The ultrasonic sensors are turned off.	Turn on the ultrasonic sensors.
	The working area is steeper than 35%.	Delimit the area that is steeper than 35%.
The robotic lawnmower is upside down.	The robotic lawnmower is leaning too much or has turned over.	Turn the robotic lawnmower the right way up and rectify the reason for it getting turned over.
Unknown problem with control or function.	Temporary electronic or software related issue in the mower.	Remove and re-insert the isolator key. Restart the mower. Download and install the latest software update. If the problem remains, contact the After Sales Helpline.
The robotic lawnmower runs on the lawn, but the blade disc does not rotate.	The robotic lawnmower searches for correct working area.	This is normal. The mower needs to work in a suitably wide area. The blade disc does not rotate while it is searching for the proper working area automatically.
The robotic lawnmower vibrates.	Cutting blades are damaged.	Replace the blades. Refer to Replacing the Mower Blade section on page 26-27. Visit <a href="http://www.cleva-europe.com">www.cleva-europe.com</a> for info on where to buy blades.
	Too many blades in the same position lead to imbalance in the cutting system.	Check that only one blade is fitted at each screw and that blades are not stuck.
	Different versions (thickness) of blades are used.	Check if the blades are of different versions (thickness).
	The blade screw is loose.	Tighten the blade screws.

# TROUBLESHOOTING

Grass is being cut unevenly.	Working area is too big.	Adjust the borders/protections to decrease the size of the mowing area. Recharge the battery to mow the area twice or purchase an additional battery to increase the size of the cut area.
	Blades are dull.	Replace all the blades and screws. Refer to Replacing the Mower Blade section on page 26-27. Visit <a href="http://www.cleva-europe.com">www.cleva-europe.com</a> for info on where to buy blades.
	Height of cut is too low, or the grass is too high.	Increase the height of cut.
	There is grass wrapped around the blade disc.	Check underneath the mower and clear as necessary (always wear gardening gloves).
Area of cut (battery duration) is not large enough.	Height of cut is too low, or the grass is too high.	Increase the height of cut.
	The grass is wet or damp.	Wait until the grass is dry.
	The grass is dense.	Increase the height of cut and cut more frequently.
	The battery is not fully charged.	Charge the battery.
	The lawn area is too large.	Recharge the battery and mow again or purchase an additional battery for extended mowing of larger areas.
The cutting blade is not rotating while the mower is switched on.	The cutting blade is obstructed.	Remove the isolator key and the battery pack. Clear obstruction (always wear gardening gloves).
	The blade screw is loose.	Tighten the blade screws.
Error indicator is yellow continuous.	The lift sensor is activated for 10 seconds.	Remove and re-insert the isolator key. Check the working area for obstacles taller than 10 cm and remove them. Restart the mower.
	The obstruction sensor has tripped 10 times within one minute.	Remove and re-insert the isolator key. Remove any obstacles. Check whether the grass is too tall. If necessary, mow the grass to below 60 mm with a conventional lawn mower. Restart the mower.

# TROUBLESHOOTING

Error indicator is yellow continuous.	The robotic lawnmower has been tilted for a prolonged time in one direction.	Remove and re-insert the isolator key. Remove any obstacles. Restart the mower.
	The rear wheels have been lifted due to an obstacle.	
	The mower has fallen over.	
	STOP button is pressed.	Remove and re-insert the isolator key. Restart the mower.
	The robotic lawnmower cannot see grass.	Move the robotic lawnmower to the lawn and restart it.
Error indicator is red continuous.	Sensor error.	Remove and re-insert the isolator key. Restart the mower. If the problem remains, contact the After Sales Helpline.
	Overcurrent in the motor or motor fault.	Remove and re-insert the isolator key. Check for and remove any obstacles around the rear wheels and the blade disc. Increase the cutting height. Check whether the grass is too tall. If necessary, mow the grass to below 60 mm with a conventional lawn mower. Restart the mower. If the problem remains, contact the After Sales Helpline.
	Operation system error.	Remove and re-insert the isolator key. Restart the mower. If the problem remains, contact the After Sales Helpline.
Ultrasonic indicator is yellow flashing.	The mower has a communication issue with camera.	It is too dark for camera to work. Operate the mower during daylight hours only. Remove and re-insert the isolator key. Restart the mower.
The battery indicator is red flashing.	The temperature of battery pack is abnormal.	Allow the machine to cool down to reach a normal temperature. Then restart the mower. If the problem remains, contact the After Sales Helpline.
	Electric core fault. (The error indicator is red continuous at the same time.)	Remove and re-insert the isolator key. Restart the mower. If the problem remains, contact the After Sales Helpline.



# TROUBLESHOOTING

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No charging procedure possible.	The battery contacts are contaminated.	Clean the battery contacts (e.g. by inserting and removing the battery several times) or replace the battery.
	Socket outlet, fuse, mains cable or battery charger are defective.	Check the mains voltage and fuse. If necessary, contact the After Sales Helpline.
	The battery has a fault.	Replace the battery.
The charge control LEDs do not light up after inserting the mains plug into the socket.	Mains plug of the battery charger is not plugged in properly.	Insert mains plug fully into the socket outlet.
	Socket outlet, mains cable or battery charger are defective.	Check the mains voltage and if necessary, contact the After Sales Helpline.
	Plug Fuse Blown.	Check and replace fuse in the plug.

# TECHNICAL DATA

## DIMENSIONS

Length	42.5 cm
Width	35 cm
Height	22 cm
Weight (Without 4.0Ah Battery)	5.9 kg

## MOWING

Voltage	24 V ---
No Load Speed	3500 /min
Cutting System	3 Pivoting Cutting Blades
Cutting Width	16 cm
Cutting Height Adjustment	20-60mm (5 Positions)
Power Consumption during Cutting	40 W±20 %
Maximum Slope for Cutting Area	35%
Working Capacity (Depending on Product Specification)	< 100 m <sup>2</sup>
Average Mowing Time (2 cm Dry cut)	180 min
IP-Classification	IPX4

## CHARGER

Model No.	24LFC12
Charger Input	200-240V~50/60Hz 110W
Charger Output	24V --- 4.0A
Charging Period (Battery Fully Discharged)	60min (For 24LB4005-C)
Weight of Charger	0.5kg
Insulation Protection of Charger	<input type="checkbox"/>

## BATTERY

Model No.	24LB4005-C
Rated Voltage of Battery	24V ---
Capacity of Battery	4.0Ah
Battery Type	Lithium-Ion
Weight of Battery	0.7kg

## TECHNICAL DATA

### NOISE EMISSIONS MEASURED IN THE ENVIRONMENT AS SOUND POWER

Sound Power Level ( $L_{WA}$ ) Measured	64 dB(A)
Noise Emissions Uncertainties $K_{WA}$	3 dB(A)
Sound Power Level ( $L_{WA}$ ) Guaranteed	68 dB(A)
Sound Pressure Level ( $L_{PA}$ ) at the Operator's Ear	57 dB(A)

The noise emission declarations conforms to EN 50636-2-107:2015

Noise emissions in the environment measured as sound power ( $L_{WA}$ ) in conformity with EC directive 2000/14/EC. The guaranteed sound power level includes variation in production as well as variation from the test code with 1-3 dB(A).

Sound pressure noise uncertainties  $K_{PA}$ , 2-4 dB (A)

## RECYCLING AND DISPOSAL



This marking indicates that this product should not be disposed with other household wastes. The machine must be delivered in rigid packaging to avoid damage during transportation. The packaging and the machine itself are manufactured from recyclable materials and should be disposed of accordingly.



This appliance contains Lithium-ion battery. Do not dispose of batteries in household waste, fire or water. Dispose of batteries in accordance with the local regulations where they will be recycled in an environmentally friendly manner.

Li-ion





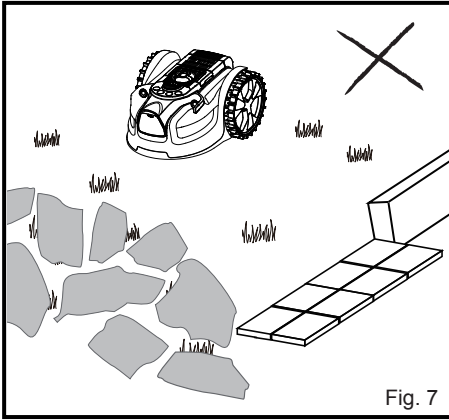


Fig. 7

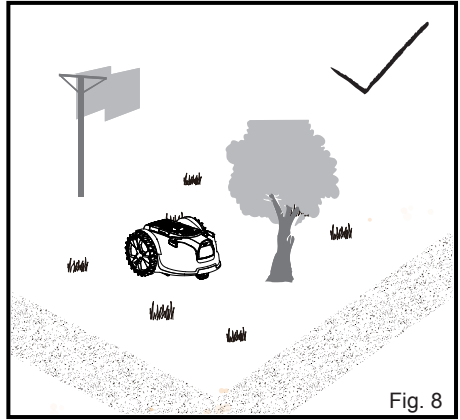


Fig. 8

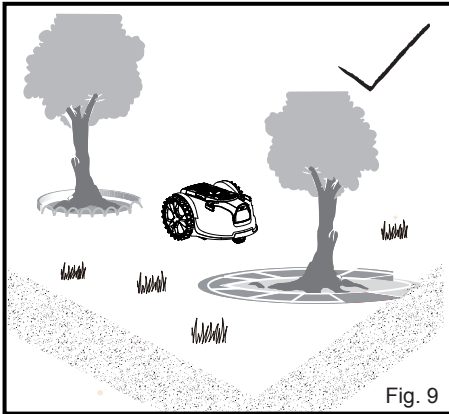


Fig. 9

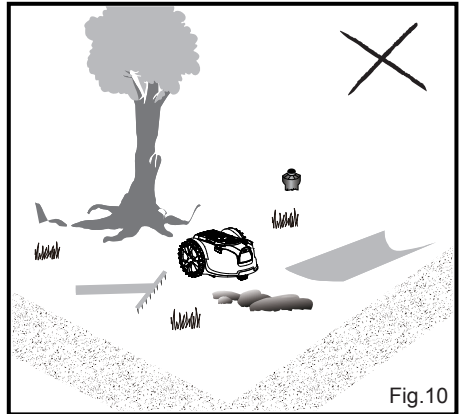


Fig. 10

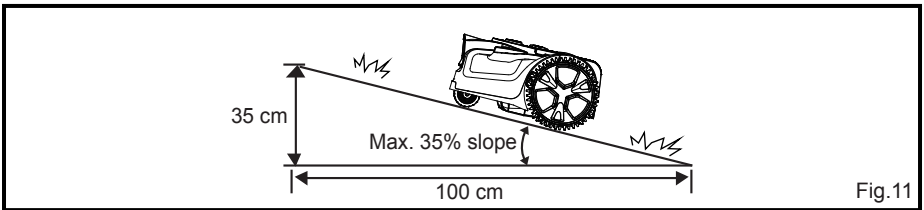


Fig. 11

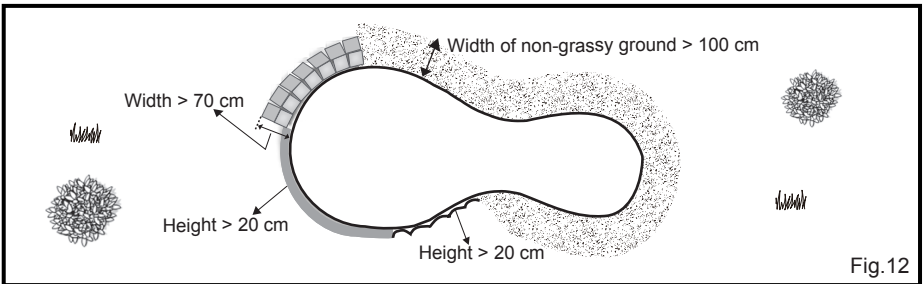
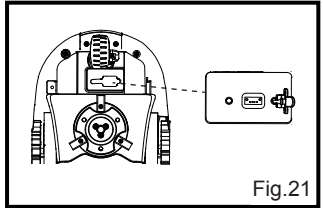
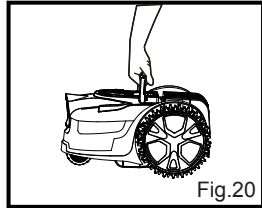
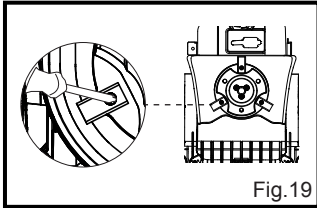
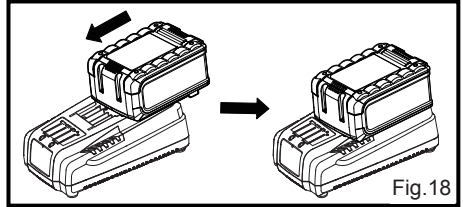
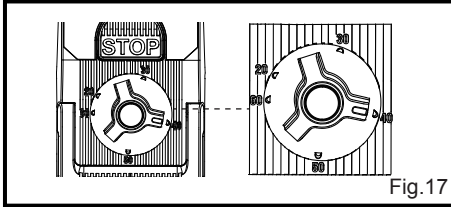
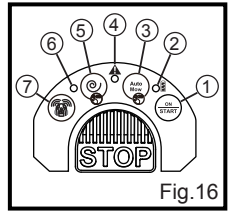
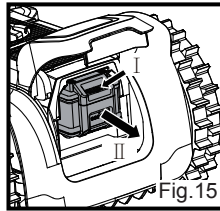
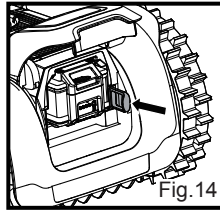
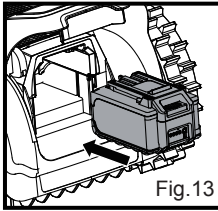


Fig. 12



VBRM16  
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