



**GARDENA®**

Operator's manual  
**SILENO (R100Li), smart SILENO  
(R100LiC), SILENO+ (R130Li, R160Li),  
smart SILENO+ (R130LiC, R160LiC)**



EN, English

Read the operator's manual carefully and make sure that you understand the instructions before you use the product.

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# 1 Introduction

## 1.1 Memo

<b>Serial number:</b>	
<b>PIN code:</b>	
<b>Product registration key:</b>	

The Product registration key is a valuable document and must be stored in a safe place. This key is necessary for example to register the product on GARDENA's website or unlock the robotic lawnmower in the event of a lost PIN code. The product registration key is provided in a separate document in the product packaging.

If the robotic lawnmower is stolen, it is important to notify GARDENA of this. Contact your local GARDENA representative and provide the robotic lawnmower's serial number so that it can be registered as stolen in an international database. This is an important step in the robotic lawnmower's theft protection which reduces interest in the buying and selling of stolen robotic lawnmowers.

The product's serial number consists of 9 digits and is shown on the product rating plate and packaging.

[www.gardena.com](http://www.gardena.com)

## 1.2 Product description

Congratulations on your choice of an exceptionally high quality product. To get the best results from your GARDENA robotic lawnmower requires knowledge of how it works. This Operator's Manual contains important information about the robotic lawnmower, how it must be installed and how to use it. As a complement to this Operator's Manual, there are information movies with instructions available on GARDENA's website, [www.gardena.com](http://www.gardena.com).

Keep in mind that the operator is responsible for accidents or hazards occurring to other people or their property.

GARDENA has a policy of continuous product development and reserves the right to modify the design, appearance and function of products without prior notice.

### 1.2.1 Capacity

The robotic lawnmower is recommended for lawn sizes up to maximum capacity listed in the *Technical data on page 52*.

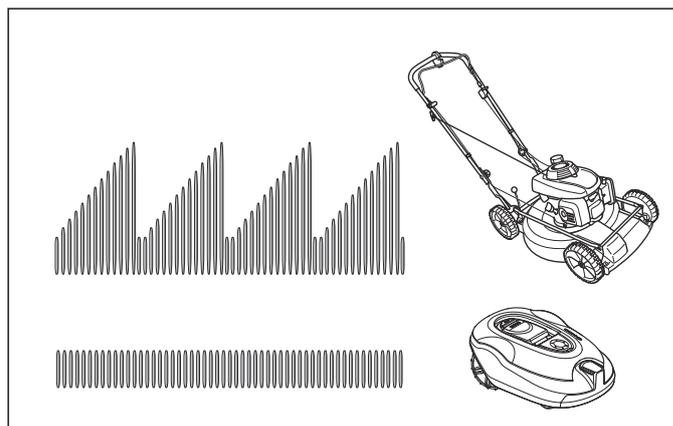
How big an area the robotic lawnmower can keep cut depends primarily on the condition of the blades and the type, growth and moisture of the grass. The shape of the garden is also significant. If the garden mainly consists of open lawn areas, the robotic lawnmower can mow more per hour than if the garden consists of several small lawns separated by trees, flower beds and passages.

A fully charged robotic lawnmower mows for 60 to 80 minutes depending on the status of the battery and lawn. Then the robotic lawnmower will charge for 60 to 70 minutes. The charging time can vary depending on factors like the ambient temperature.

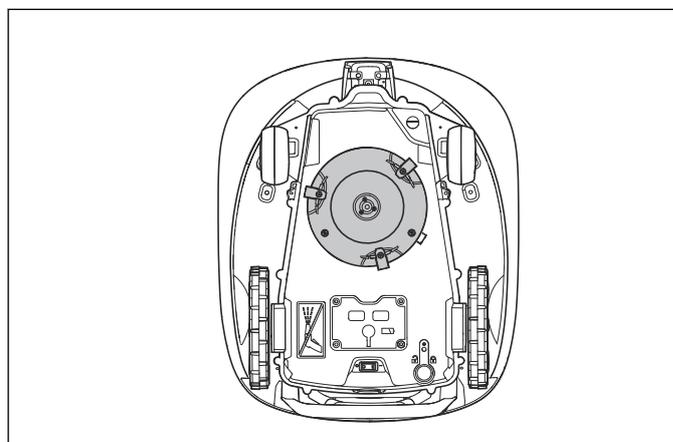
### 1.2.2 Mowing technique

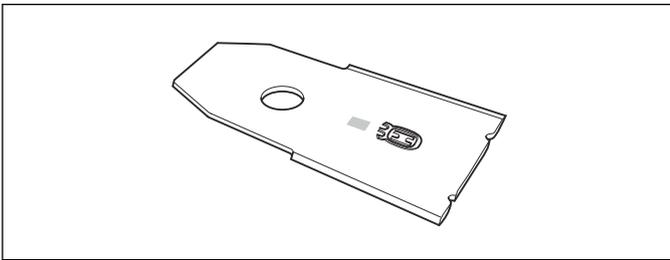
The robotic lawnmower's system is based on an efficient and energy saving principle. Unlike many standard lawnmowers, the robotic lawnmower cuts the grass instead of knocking it off. This frequent cutting technique

improves the grass quality. No collection of grass is required, and small pieces of cut grass will reduce the need of fertilizers. Furthermore, it is emission free, convenient and your lawn will always look well maintained.



It is recommended to let the robotic lawnmower to mainly mow in dry weather to obtain the best possible result. The robotic lawnmower can also mow in the rain, however wet grass easily sticks on the robotic lawnmower and there is a greater risk of slipping on steep slopes.





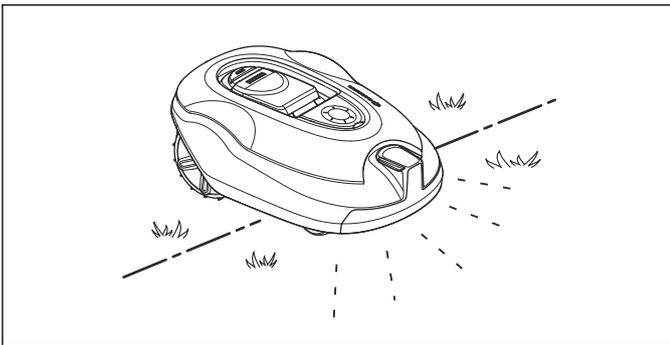
The blades must be in good condition to obtain the best mowing result. In order to keep the blades sharp for as long as possible it is important to keep the lawn free from branches, small stones and other objects.

Replace the blades regularly for the best mowing result. See *Replace the blades on page 40*.

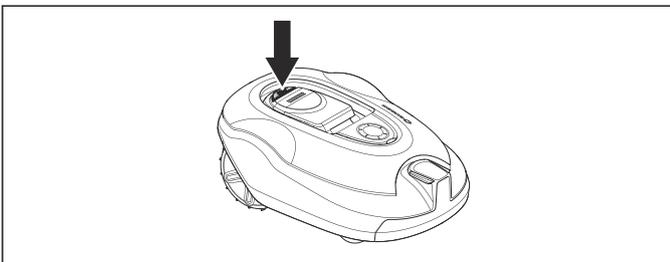
### 1.2.3 Working method

The robotic lawnmower automatically mows the lawn. It continuously alternates between mowing and charging.

When the robotic lawnmower body hits an obstacle or approaches the boundary wire the robotic lawnmower reverses and selects a new direction. Sensors at the front and back will sense when the robotic lawnmower is approaching the boundary wire. The front of the robotic lawnmower always passes the boundary wire by a specific distance before the mower turns around. The distance can be changed to adapt to the installation if required.

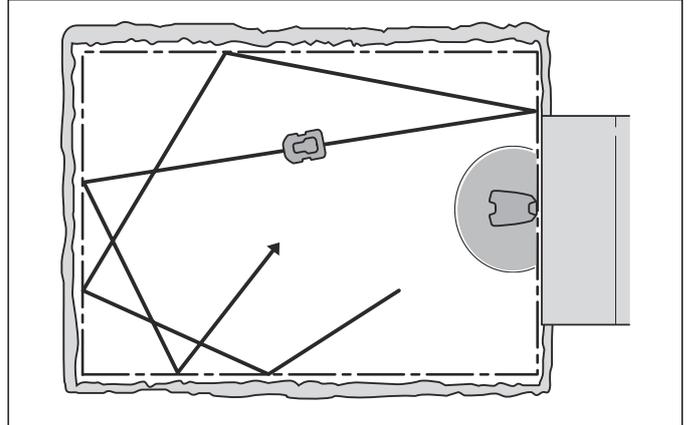


The **STOP** button on the top of the robotic lawnmower is mainly used to stop the robotic lawnmower when it's running. When the **STOP** button is pressed a hatch opens, behind which there is a control panel. The control panel is where you manage all the robotic lawnmower settings. The **STOP** button remains pressed in until the hatch is closed again. This together with the **START** button acts as a start inhibitor.



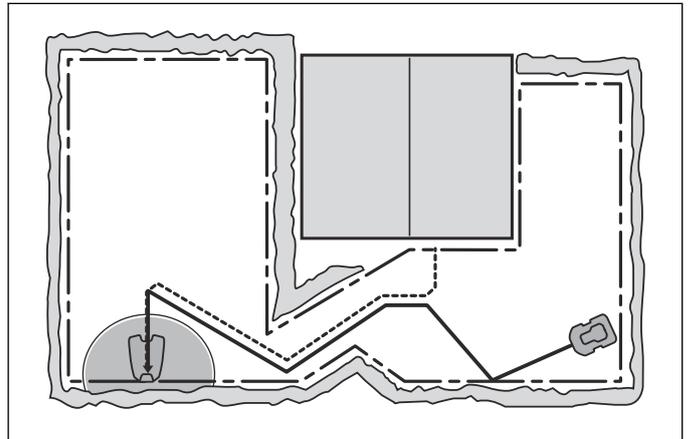
### 1.2.4 Movement pattern

The movement pattern of the robotic lawnmower is random, which means that a movement pattern is never repeated. With this cutting system the lawn is mown evenly without any mowing lines from the robotic lawnmower.

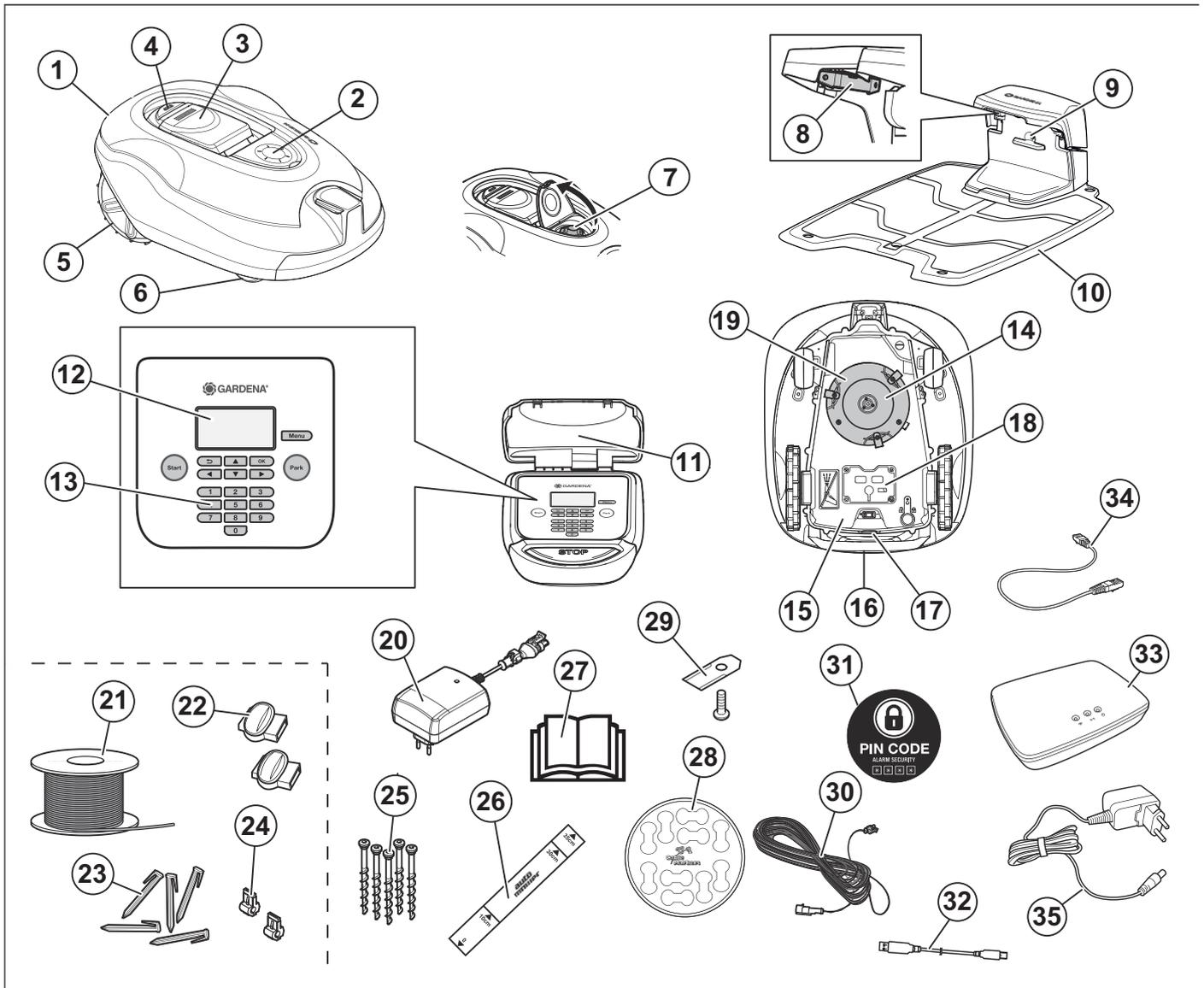


### 1.2.5 Finding the charging station

The robotic lawnmower operates irregularly until it reaches the guide wire. Then it follows the guide wire to the charging station. The guide wire is a wire that is laid from the charging station towards, for instance, a remote part of the working area or through a narrow passage. It is connected with the boundary wire and makes it much easier and faster for the robotic lawnmower to find the charging station.



## 1.3 Product overview



The numbers in the figure represent:

1. Body
2. Hatch to cutting height adjustment
3. Hatch to display and keypad
4. Stop button
5. Rear wheels
6. Front wheels
7. Cutting height adjustment
8. Contact strips
9. LED for operation check of the charging station and boundary wire
10. Charging station
11. Rating plate
12. Display
13. Keypad
14. Cutting system
15. Chassis box with electronics, battery and motors
16. Handle
17. Main switch
18. Battery cover
19. Blade disc
20. Power supply (the appearance of the power supply may differ depending on market)
21. Loop wire for boundary loop and guide wire
22. Couplers for loop wire
23. Pegs
24. Connector for the loop wire
25. Screws for securing the charging station
26. Measurement gauge for help when installing the boundary wire (the measurement gauge is broken loose from the box)
27. Operator's Manual and Quick Guide
28. Cable markers
29. Extra blades
30. Low voltage cable
31. Alarm decal
32. USB cable for Software-Updates
33. Smart Gateway (only for GARDENA, R100LiC, R130LiC and R160LiC)
34. Smart Gateway LAN-cable (only for GARDENA, R100LiC, R130LiC and R160LiC)
35. Smart Gateway Power Supply (only for GARDENA, R100LiC, R130LiC and R160LiC)

## 1.4 Symbols on the product

These symbols can be found on the robotic lawnmower. Study them carefully.



**WARNING:** Read the user instructions before operating the robotic lawnmower.



**WARNING:** Operate the disabling device before working on or lifting the machine.

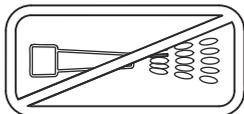
The robotic lawnmower can only start when the main switch is set to 1 and the correct PIN code has been entered. Turn the main switch to 0 before carrying out any inspections and/or maintenance.



**WARNING:** Keep a safe distance from the machine when operating. Keep your hands and feet away from the rotating blades.



**WARNING:** Do not ride on the machine. Never put your hands or feet close to or under the body.



Never use a high-pressure washer or even running water to clean the robotic lawnmower.



Lock function



This product conforms to the applicable EC Directives.



Noise emission to surroundings. The product's emissions are set out in *Technical data on page 52* and on the rating plate.



It is not permitted to dispose this product as normal household waste. Ensure that the product is recycled in accordance with local legal requirements.



The chassis contains components which are sensitive to electrostatic discharge (ESD). The chassis must also be resealed in a professional manner. For these reasons the chassis shall only be opened by authorized service technicians. A broken seal can result in the entire or parts of the guarantee no longer being valid.



The low voltage cable must not be shortened, extended or spliced.

Do not use a trimmer nearby the low voltage cable. Be careful when trimming edges where the cables are placed.

Operate the disabling device before you use or lift the product.

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## 2 Safety

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### 2.1 Safety definitions

Warnings, cautions and notes are used to point out specially important parts of the operator's manual.



**WARNING:** Used if there is a risk of injury or death for the operator or bystanders if the instructions in the manual are not obeyed.



**CAUTION:** Used if there is a risk of damage to the product, other materials or the adjacent area if the instructions in the manual are not obeyed.

**Note:** Used to give more information that is necessary in a given situation.

### 2.2 General safety instructions

The following system is used in the Operator's Manual to make it easier to use:

- Text written in *italics* is a text that is shown on the robotic lawnmower's display or is a reference to another section in the Operator's Manual.
- Text written in **bold** is one of the buttons on the robotic lawnmower's keypad.
- Text written in *UPPERCASE* and *italics* refer to the position of the main switch and the different operating modes available in the robotic lawnmower.

#### 2.2.1 IMPORTANT. READ CAREFULLY BEFORE USE. KEEP FOR FUTURE REFERENCE

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The operator is responsible for accidents or hazards occurring to other people or property.

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.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Local regulations may restrict the age of the operator. Clearing and maintenance shall not be made by children without supervision.

Never connect the power supply to an outlet if plug or cord is damaged. Worn or damaged cord increase the risk of electric shock.

Only charge the battery in the included charging station. Incorrect use may result in electric shock, overheating or leaking of corrosive liquid from the battery. In the event of leakage of electrolyte flush with water/neutralizing agent, seek medical help if it comes in contact with the eyes.

Use only original batteries recommended by the manufacturer. Product safety cannot be guaranteed with other than original batteries. Do not use non-rechargeable batteries.

The appliance must be disconnected from the supply mains when removing the battery.



**WARNING:** The robotic lawnmower can be dangerous if used incorrectly.



**WARNING:** Never use the robotic lawnmower when persons, especially children or pets, are in the cutting area.

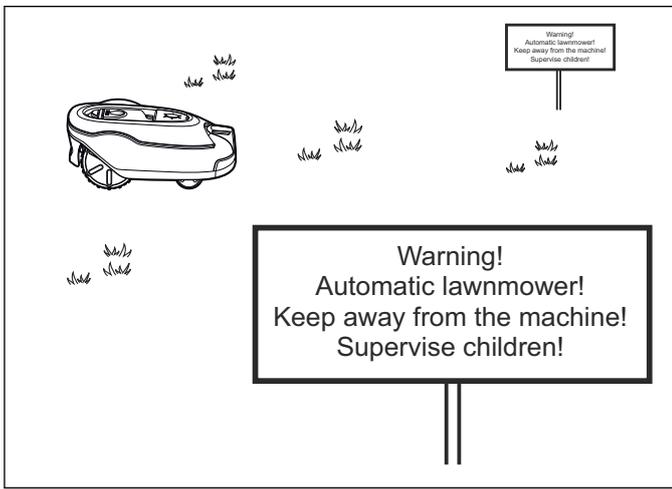


**WARNING:** Keep your hands and feet away from the rotating blades. Never put your hands or feet close to or under the body when the motor is running.

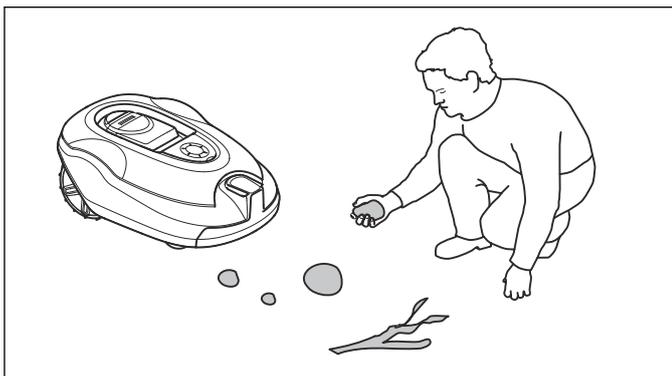
### 2.3 Safety instructions for operation

#### 2.3.1 Use

- This robotic lawnmower is designed to mow grass in open and level ground areas. It may only be used with the equipment recommended by the manufacturer. All other types of use are incorrect. The manufacturer's instructions with regard to operation/maintenance must be followed precisely.
- Warning signs shall be placed around the working area of the robotic lawnmower if it is used in public areas. The signs shall have the following text:  
**Warning! Automatic lawnmower! Keep away from the machine! Supervise children!**



- Use the **PARK** function or switch off the main switch when persons, especially children or pets, are in the cutting area. It is recommended to program the lawnmower for use during hours when the area is free from activity, e.g. at night. See *Timer on page 22*.
- The robotic lawnmower may only be operated, maintained and repaired by persons that are fully conversant with its special characteristics and safety regulations. Please read the Operator's Manual carefully and make sure you understand the instructions before using the robotic lawnmower.
- It is not permitted to modify the original design of the robotic lawnmower. All modifications are made at your own risk.
- Check that there are no stones, branches, tools, toys or other objects on the lawn that can damage the blades. Objects on the lawn can also lead to the robotic lawnmower getting stuck in them and help may be required to remove the object before the mower can continue mowing. Always set the main switch in position 0 before clearing a blockage.



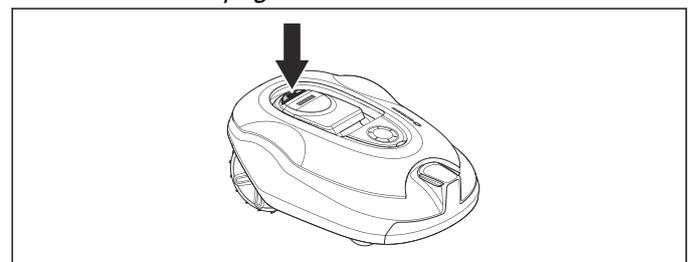
- Start the robotic lawnmower according to the instructions. When the main switch is set to 1; make sure to keep your hands and feet away from the rotating blades. Never put your hands and feet under the robotic lawnmower.
- Never touch moving hazardous parts, such as the blade disc, before it has come to a complete stop.
- Never lift up the robotic lawnmower or carry it around when the main switch is in position 1.
- Do not let persons who do not know how the robotic lawnmower works and behaves use it.

- The robotic lawnmower must never be allowed to collide with persons or other living creatures. If a person or other living creature comes in the lawnmower's way it shall be stopped immediately. See *Stop on page 38*.
- Do not put anything on top of the robotic lawnmower or its charging station.
- Do not allow the robotic lawnmower to be used with a defective guard, blade disc or body. Neither should it be used with defective blades, screws, nuts or cables. Never connect a damaged cable, or touch a damaged cable before it is disconnected from the supply.
- Do not use the robotic lawnmower if the main switch does not work.
- Always switch off the robotic lawnmower using the main switch when the robotic lawnmower is not in use. The robotic lawnmower can only start when the main switch is set to 1 and the correct PIN code has been entered.
- The robotic lawnmower must never be used at the same time as a sprinkler. Use the timer function (see *Timer on page 22*) so the mower and sprinkler never run simultaneously.
- GARDENA does not guarantee full compatibility between the robotic lawnmower and other types of wireless systems such as remote controls, radio transmitters, hearing loops, underground electric animal fencing or similar.
- The built-in alarm is very loud. Be careful, especially if the robotic lawnmower is handled indoors.
- Metal objects in the ground (for example reinforced concrete or anti-mole nets) can result in a stoppage. The metal objects can cause interference with the loop signal which then can lead to a stoppage.
- The robotic lawnmower must never be used in temperatures below 0 °C or above 45 °C. This might cause damage to the product.

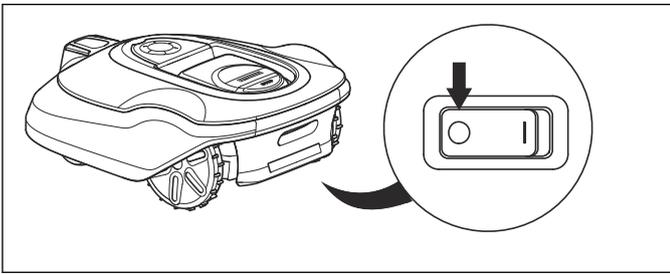
### 2.3.2 How to lift and move the robotic lawnmower

To safely move from or within the working area:

1. Press the **STOP** button to stop the robotic lawnmower. If security is set to the medium or high level (see *Security level on page 25*) the PIN code has to be entered. The PIN code contains four digits and is selected when you start the robotic lawnmower for the first time. See *First start-up and calibration on page 20*.



2. Set the main switch in position 0.



3. Carry the robotic lawnmower by the handle under the robotic lawnmower with the blade disc away from the body.



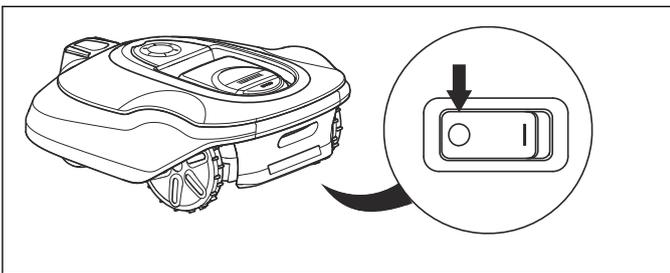
**CAUTION:** Do not lift the robotic lawnmower when it is parked in the charging station. It can damage the charging station and/or the robotic lawnmower. Press **STOP** and pull the robotic lawnmower out of the charging station before lifting it.

### 2.3.3 Maintenance



**WARNING:** When the robotic lawnmower is turned upside down the main switch must always be in the 0 position.

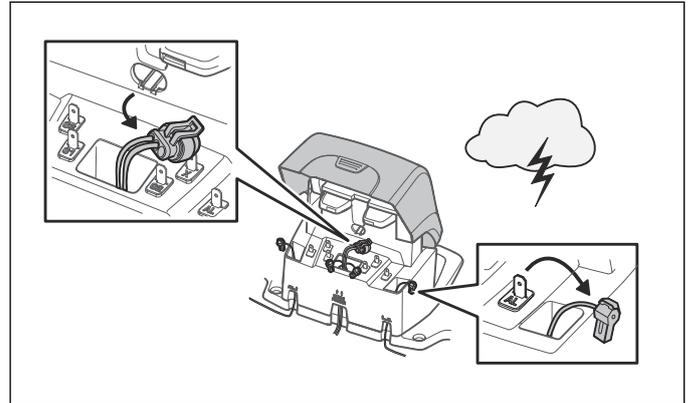
The main switch should be set in the 0 position during all work on the mower's chassis, such as cleaning or replacing the blades.



**CAUTION:** Never use a high-pressure washer or even running water to clean the robotic lawnmower. Never use solvents for cleaning.

Inspect the robotic lawnmower each week and replace any damaged or worn parts. See *Introduction - maintenance on page 40*.

### 2.3.4 In the event of a thunderstorm



To reduce the risk of damage to electrical components in the robotic lawnmower and its charging station, we recommend that all connections to the charging station are disconnected (power supply, boundary wire and guide wires) if there is a risk of a thunderstorm.

1. Make sure the wires are marked with the supplied markers to simplify reconnecting. The charging station's connections are marked AR, AL and G1.
2. Disconnect all connected wires and the power supply.
3. Connect all the wires and the power supply if there is no longer a risk of thunder. It is important that each wire is connected to the right place.

## 3 Installation

### 3.1 Presentation

This operator's manual covers SILENO and SILENO+ products. Within the SILENO family you find R100Li and R100LiC. Within the SILENO+ family you find R130Li, R130LiC, R160Li and R160LiC. The C in the model designation refers to the GARDENA smart system. This manual will henceforward refer to the model specific names.

GARDENA		
SILENO	R100Li	1000 m <sup>2</sup>
	R100LiC	1000 m <sup>2</sup> , smart system
SILENO+	R130Li	1300 m <sup>2</sup>
	R130LiC	1300 m <sup>2</sup> , smart system
	R160Li	1600 m <sup>2</sup>
	R160LiC	1600 m <sup>2</sup> , smart system

This chapter contains information that is important to be aware of when planning the installation.

Before starting the installation make yourself familiar with what is included in the carton.

GARDENA R100Li/LiC, R130Li/LiC, R160Li/LiC	
Robotic lawnmower	✓
Charging station	✓
Power supply	✓
Loop wire, m	200 / 250 / 250
Low voltage cable	✓
Pegs, pcs	400 / 400 / 400
Connectors, pcs	5 / 5 / 5
Charging station screws, pcs	5 / 5 / 5
Allen key	✓
Measurement gauge	✓
Couplers, pcs	4 / 4 / 4
Operator's manual and Quick guide	✓
Cable markers	✓
Extra blades, pcs	9 / 9 / 9
Alarm decal	✓
USB cable for Software-Updates	✓
GARDENA R100LiC, R130LiC, R160LiC	
Smart Gateway	✓
Smart Gateway LAN-cable	✓

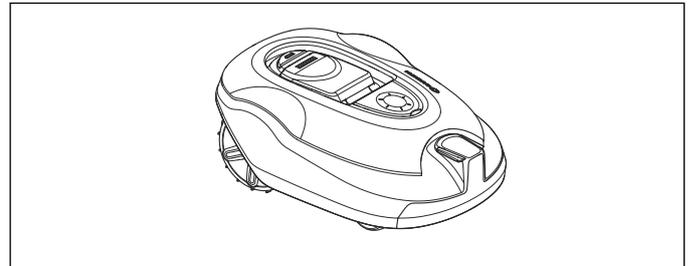
#### GARDENA R100Li/LiC, R130Li/LiC, R160Li/LiC

Smart Gateway power supply	✓
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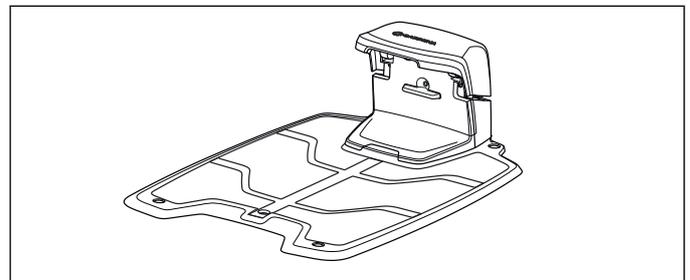
### 3.1.1 Main components for installation

The installation of the robotic lawnmower involves 4 main components:

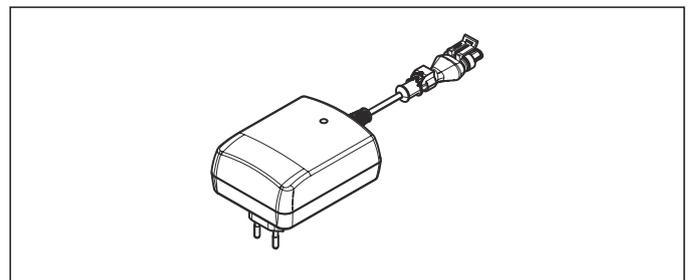
1. A robotic lawnmower that mows the lawn by essentially operating in a random pattern.



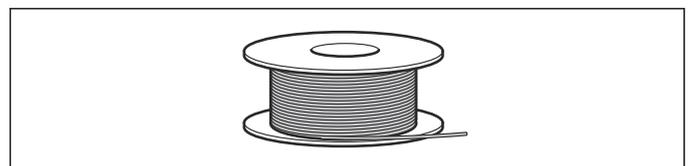
2. A charging station, to where the robotic lawnmower returns when the battery level becomes too low.



3. A power supply, which is connected to the charging station and a 100-240V wall socket. The power supply is connected to the wall socket and to the charging station using a 10 m long low voltage cable. Low voltage cables with 3 m and 20 m length are available as optional accessories. No parts of the power supply must be changed or tampered with. For example the low voltage cable must not be shortened or extended.



4. Loop wire, which is laid around the edges of the lawn and around objects and plants that the robotic lawnmower must not run into. The loop wire is used both as a boundary wire and a guide wire. The maximum permitted length for the boundary loop is 800 m.



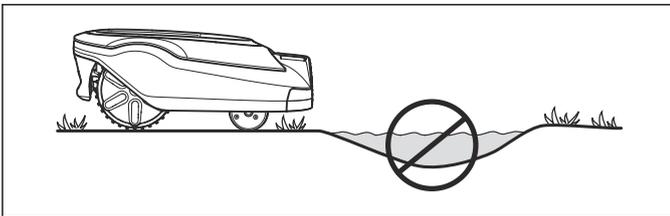
## 3.2 Preparations

Read through this entire chapter before beginning the installation. How the installation is done also affects how well the robotic lawnmower works. It is therefore important to plan the installation carefully.

Planning is simplified if you make a sketch of the working area, including all obstacles. This makes it easier to see the ideal positions for the charging station, the boundary wire and the guide wire. Draw on the sketch where the boundary and guide wires should be routed.

Visit [www.gardena.com](http://www.gardena.com) for further descriptions and tips regarding installation.

1. If the lawn in the working area is longer than 10 cm mow it using a standard lawnmower. Collect the grass.
2. Fill in holes and hollows to stop rainwater forming pools of water. The product may be damaged if it is operated in pools of water. See *Guarantee terms on page 54*.

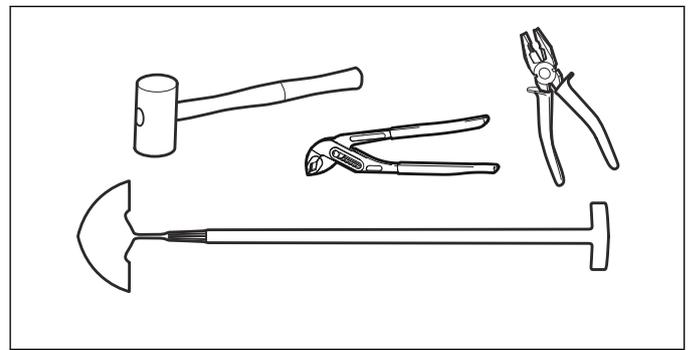


3. Read carefully through all the steps before the installation.
4. Check that all parts for the installation are included. See *Product overview on page 5*.
  - Robotic lawnmower
  - Charging station
  - Loop wire for boundary loop and guide wire
  - Power supply
  - Low voltage cable
  - Pegs
  - Connectors for the loop wire
  - Screws for the charging station
  - Measurement gauge
  - Couplers for the loop wire
  - Cable markers

### 3.2.1 Installation tools

During installation you will also need:

- Hammer/plastic mallet (to simplify putting the pegs in the ground).
- Combination pliers for cutting the boundary wire and pressing the connectors together.
- Polygrip (for pressing the couplers together).
- Edge cutter/straight spade if the boundary wire must be buried.



## 3.3 Charging station

The charging station has 3 functions:

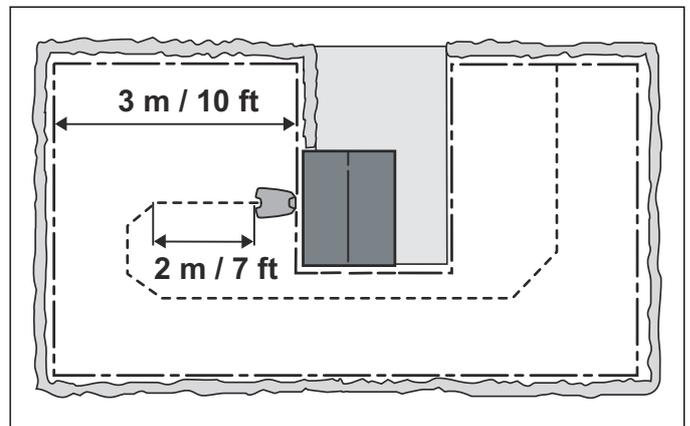
- To send control signals along the boundary wire.
- To send control signals in the guide wire so that the robotic lawnmower can find the charging station.
- To charge the robotic lawnmower battery.

### 3.3.1 Best charging station location

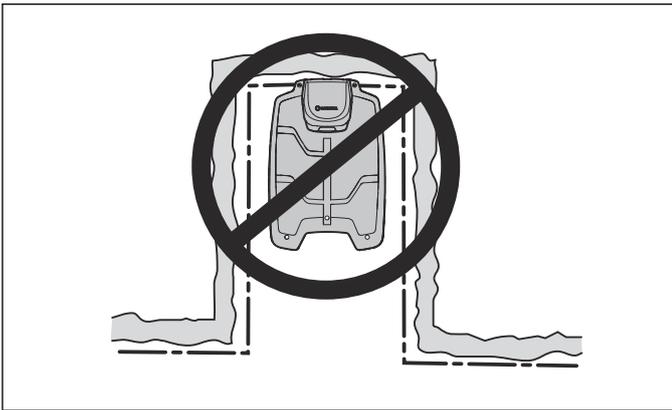
Take the following aspects into consideration when identifying the best location for the charging station:

- Allow minimum 3 m of free space in front of the charging station.
- It must be possible to lay minimum 1.5 m of boundary wire straight out to the right and left of the charging station. Any other location can mean that the robotic lawnmower enters the charging station sideways and will have difficulty docking.
- It must be close to a wall socket. The supplied low voltage cable is 10 m long.
- A level surface free from sharp objects to place the charging station on.
- Protection from water spray for instance from irrigation.
- Protection from direct sunlight.
- Place it in the lower part of a working area that has a major slope.
- Possible requirement to keep the charging station out of sight for outsiders.

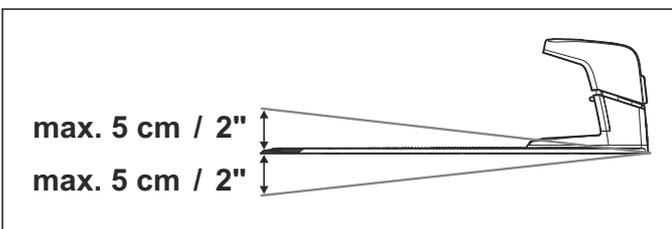
The charging station must be positioned with free space in front of it (minimum 3 m). It should also be centrally placed in the working area to make it easier for the robotic lawnmower to reach all areas in the working area.



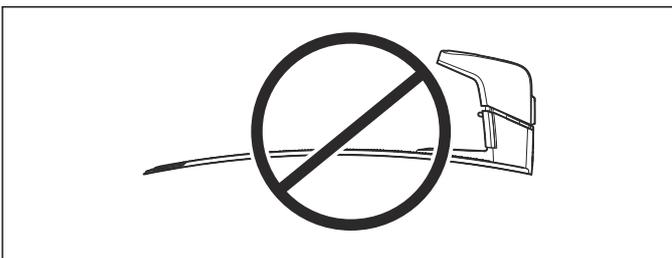
Do not put the charging station in confined spaces or in a corner. This can make it difficult for the robotic mower to find the charging station.



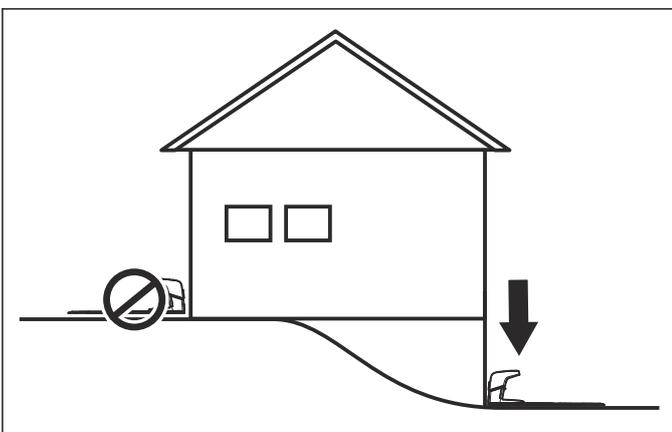
The charging station must be positioned on relatively level ground. The front end of the charging station cannot be positioned higher or lower than the back end according to picture below.



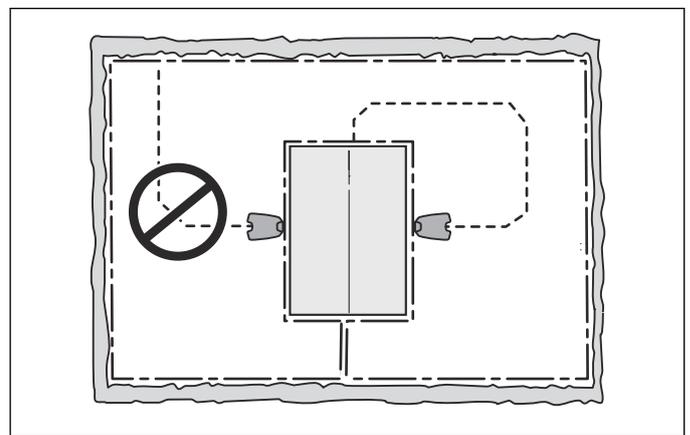
The charging station must not be positioned in a way that can bend its base plate.



If the installation is done in a working area with a steep slope, the charging station should be placed at the bottom of the slope. This makes it easier for the robotic lawnmower to follow the guide wire to the charging station.



The charging station should not be placed on an island as this limits the laying of the guide wire in an optimal way. If the charging station has to be installed on an island, the guide wire also has to be connected to the island. Read more about islands in the *Boundaries within the working area on page 15*.



### 3.3.2 Connecting the power supply

Consider the following when planning where to place the power supply:

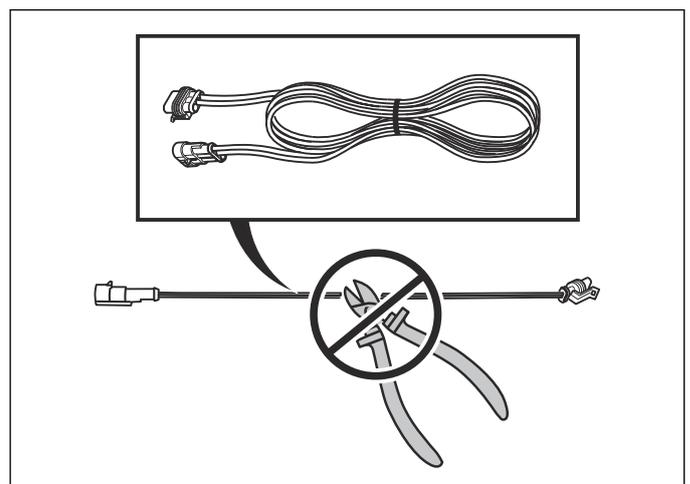
- Close to the charging station
- Protection from rain
- Protection from direct sunlight

The power supply must be placed where it is well ventilated and must be placed under a roof. If the power supply is connected to an electrical socket outdoors, this must be approved for outdoor use. It is recommended to use an earth fault-breaker (RCD) when connecting the power supply to the wall socket.

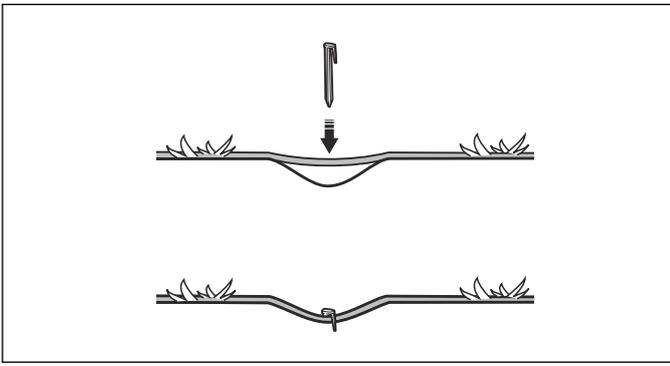


**WARNING:** Applicable to USA/Canada. If power supply is installed outdoors: Risk of Electric Shock. Install only to a covered Class A GFCI receptacle (RCD) that has an enclosure that is weatherproof with the attachment plug cap inserted or removed.

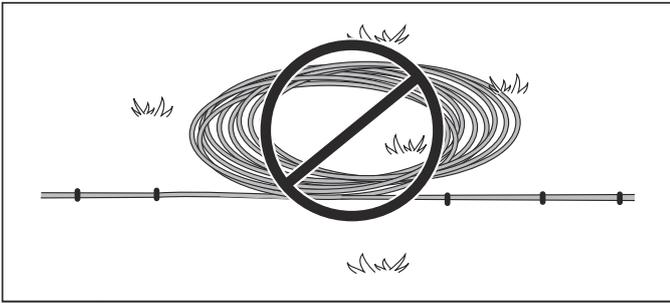
No parts of the power supply must be changed or tampered with. For example the low voltage cable must not be shortened or extended. Low voltage cables with 3 m or 20 m length are available as optional accessories.



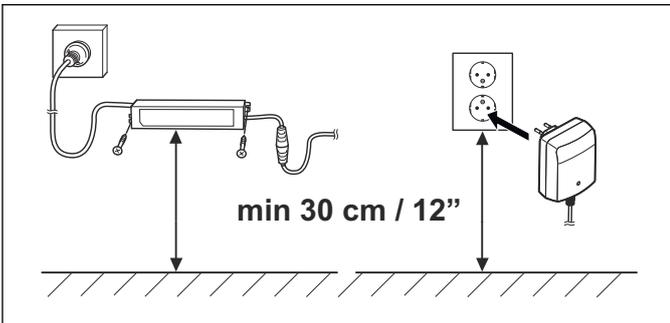
It is possible to let the low voltage cable cross the working area if it is stapled down or buried. The cutting height should be such that the blades can never come in contact with the low voltage cable.



The low voltage cable must never be stored in a coil or under the charging station's base plate as this can interfere with the signals from the charging station.



**WARNING:** Do not under any circumstances mount the power supply at a height where there is a risk it can be submerged in water (minimum 30 cm from the ground). It is not permitted to place the power supply on the ground.



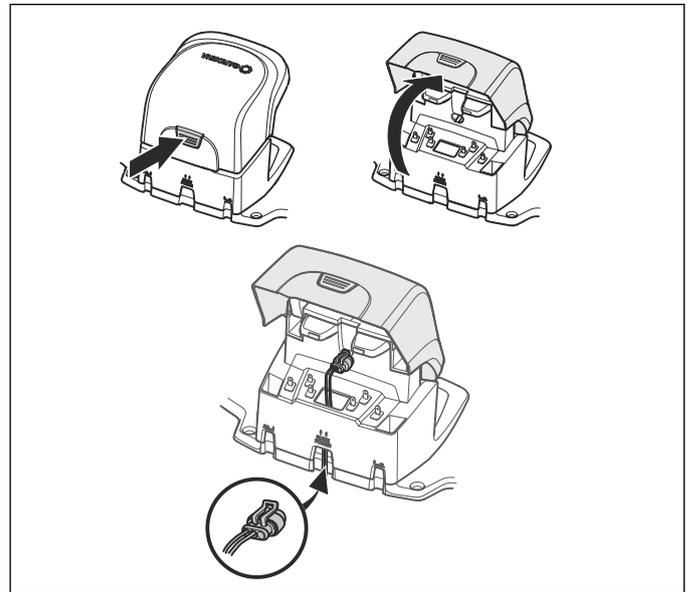
**WARNING:** No parts of the power supply must under any circumstances be changed or tampered with. The low voltage cable must not be shortened or extended.

**WARNING:** Use the plug to disconnect the charging station, for instance before cleaning the charging station or repairing the loop wire.

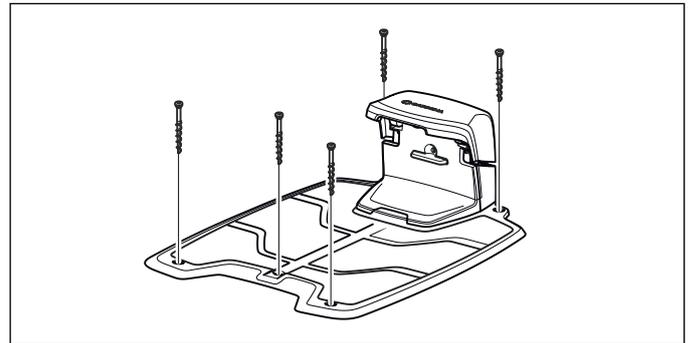
**CAUTION:** Place the low voltage cable and adjust the cutting height so that the blades can never come in contact with it.

### 3.3.3 Installing and connecting the charging station

1. Position the charging station in a suitable spot.
2. Tilt the protective cover on the charging station forward and connect the low voltage cable to the charging station.

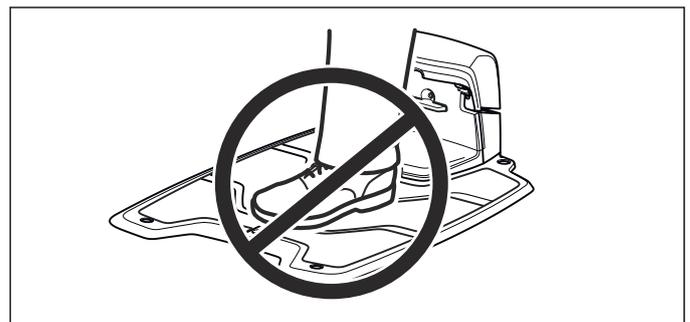


3. Connect the power supply's power cable to a 100-240V wall socket. If the power supply is connected to an electrical socket outdoors, this must be approved for outdoor use. See *Connecting the power supply* on page 12.
4. Attach the charging station to the ground using the supplied screws. Ensure the screws are screwed all the way down in the countersink. If the charging station is placed against a wall, it is best to wait before securing the charging station to the ground until after all the wires have been connected.



**CAUTION:** It is not permitted to make new holes in the charging station's plate. Only the existing holes may be used to secure it to the ground.

**CAUTION:** Do not tread or walk on the charging station's plate.



### 3.4 Charging the battery

When the charging station is connected, it is possible to charge the robotic lawnmower. Set the main switch to position 1.

Place the robotic lawnmower in the charging station while the boundary and guide wires are being laid.

If the battery is flat, it takes around 80 to 100 minutes to fully charge it.



**WARNING:** Only charge the robotic lawnmower using a charging station which is intended for it. Incorrect use may result in electric shock, overheating or leakage of corrosive liquid from the battery. In the event of leakage of electrolyte flush with water and seek medical help if it comes in contact with the eyes etc.

**Note:** The robotic lawnmower cannot be used before the installation is complete.

### 3.5 Boundary wire

The boundary wire can be installed in the following ways:

- Secure the wire to the ground with pegs.

Staple down the boundary wire if you want to make adjustments to the boundary loop during the first few weeks of operation. After a few weeks the grass will have grown over the wire making it no longer visible. Use a hammer/plastic mallet and pegs.

- Bury the wire.

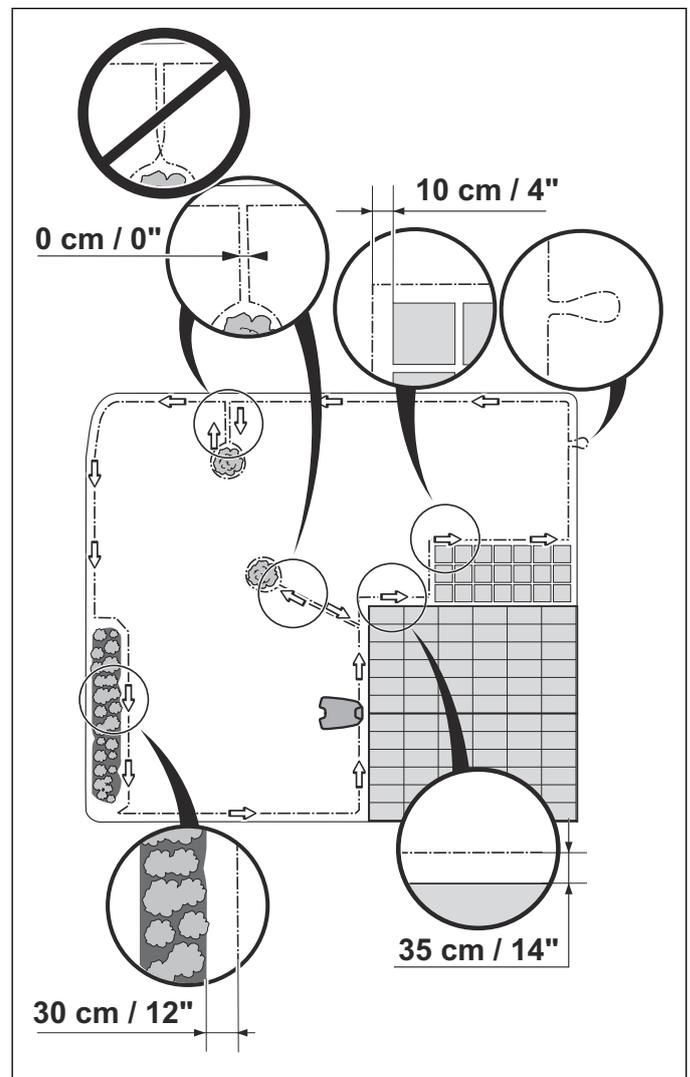
Bury the boundary wire if you want to dethatch or aerate the lawn. If necessary, both methods can be combined so one part of the boundary wire is stapled down and the other is buried. The wire can be buried for instance using an edge cutter or a straight spade. Make sure to lay the boundary wire at least 1 cm and a maximum of 20 cm in the ground.

#### 3.5.1 Plan where to lay the boundary wire

The boundary wire must be laid so that:

- The wire forms a loop around the working area. Use original boundary wire. It is specially designed to resist dampness from the soil.
- The robotic lawnmower is never more than 35 cm from the wire at any point in the working area.
- The wire is no more than 800 m long.
- About 20 cm of extra wire is available to which the guide wire will be connected later. See *Laying the boundary wire on page 17*.

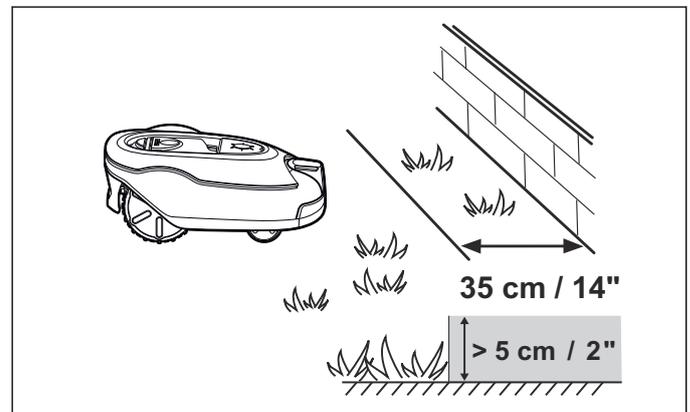
The illustration below shows how the boundary wire must be laid around the working area and around obstacles. Use the supplied measurement gauge to obtain the correct distance. See *Product overview on page 5*.



#### 3.5.2 Working area boundaries

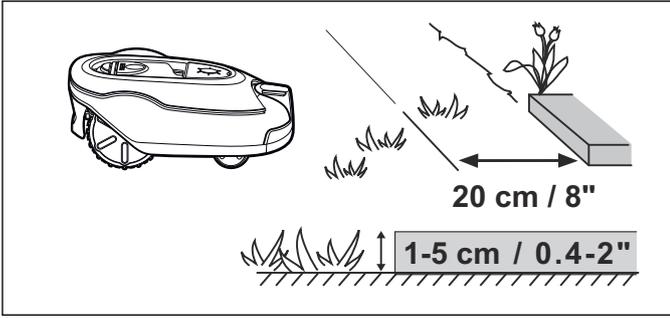
Depending on what the working area is adjacent to, the boundary wire must be laid at different distances from obstacles.

If a high obstacle (5 cm or more), for example a wall or fence, borders the working area, the boundary wire should be laid 35 cm from the obstacle. This will prevent the robotic lawnmower from colliding with the obstacle and reduce body wear. About 20 cm of the lawn around the fixed obstacle will not be mown.

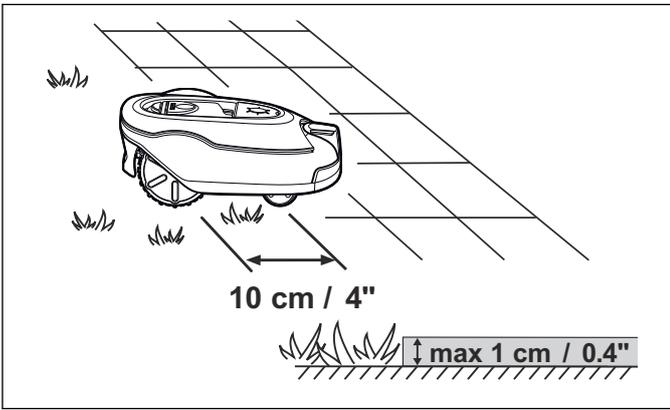


If the working area borders a small ditch, a flower bed or a small elevation, for example a low kerbstone (1-5 cm), the boundary wire should be laid 30 cm inside the working area. This prevents the wheels from driving into the ditch or up onto the kerbstone which might be lead

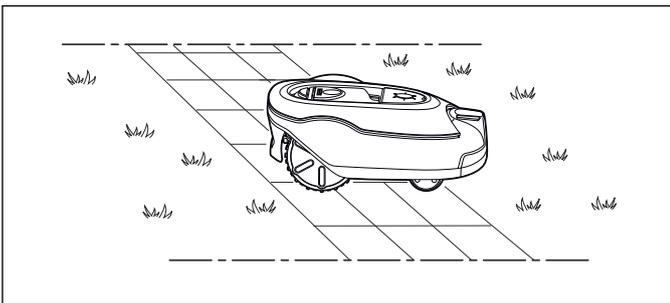
to excessive wear on the robotic lawnmower. About 15 cm of the lawn along the ditch/kerbstone will not be mown.



If the working area borders on a paving stone path or similar that is level with the lawn (+/- 1 cm), it is possible to allow the robotic lawnmower to run a little over the path. The boundary wire should then be laid 10 cm from the edge of the path. All the grass along the side of the paving stone path will be cut.



When the working area is divided by a paving stone path that is level with the lawn, it is possible to allow the robotic lawnmower to run over the path. It can be an advantage to lay the boundary wire under the paving stones. The boundary wire can also be laid in the joint between the paving stones. Ensure that the tiles are in level with the lawn to avoid excessive wear on the robotic lawnmower.

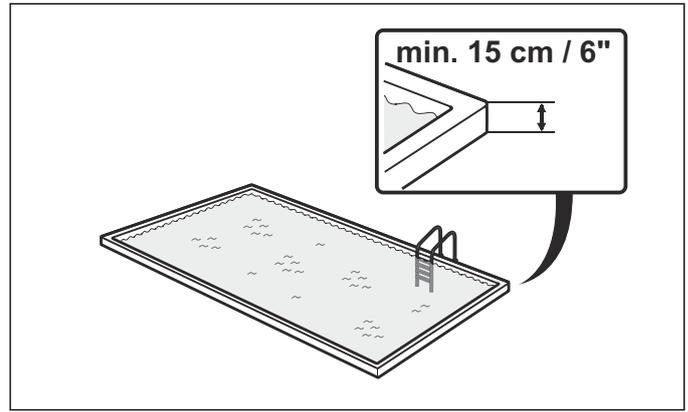


**CAUTION:** The robotic lawnmower must never run over gravel, mulch or similar material which can damage the blades.



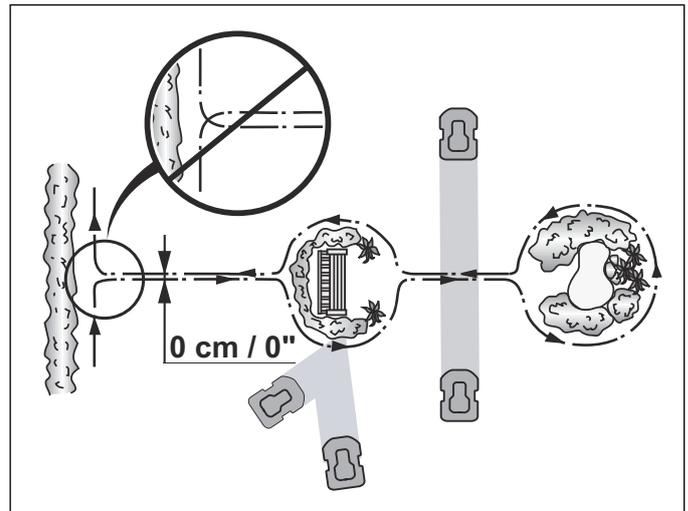
**CAUTION:** If the working area is adjacent to water bodies, slopes, precipices or a public road, the boundary wire must be supplemented with an edging or the like. It must then be at least 15 cm in height. This will prevent the

robotic lawnmower from ending up outside the working area under any circumstance.



### 3.5.3 Boundaries within the working area

Use the boundary wire to isolate areas inside the working area by creating islands around obstacles which cannot withstand a collision, for example flowerbeds, bushes and fountains. Lay the wire up to and around the area to be isolated, and then return it back along the same route. If pegs are used, the wire should be laid under the same pegs on the return route. When the boundary wires to and from the island are laid close together, the robotic lawnmower can drive over the wire.

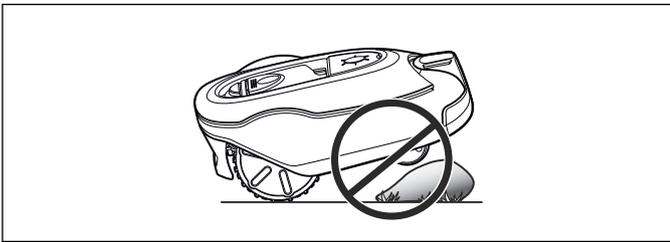


**CAUTION:** The boundary wire may not be crossed on its way to and from an island.

Obstacles that can withstand a collision, for example, trees or bushes taller than 15 cm, do not need to be isolated with the boundary wire. The robotic lawnmower will turn around when it collides with this type of obstacle.

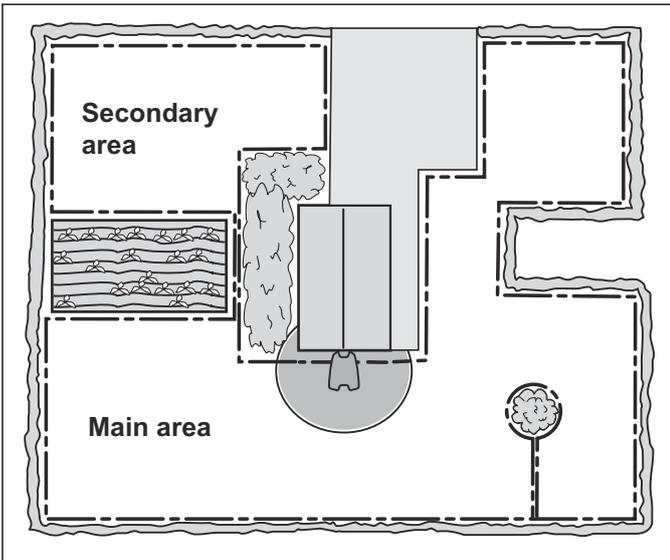
However, to achieve careful and silent operation, it is recommended to isolate all fixed objects in and around the working area.

Obstacles that slope slightly, for example stones or large trees with raised roots, must be isolated or removed. Otherwise the robotic lawnmower can slide up onto this kind of obstacle causing the blades to be damaged.



### 3.5.3.1 Secondary areas

If the working area consists of two areas which the robotic lawnmower has difficulty travelling between, it is recommended to set up a secondary area. Instances of this are 40% slopes or a passage that is narrower than 60 cm. Lay the boundary wire then around the secondary area so that it forms an island outside of the main area. The robotic lawnmower must be moved manually between the main and secondary area when the lawn in the secondary area has to be cut.



The *Secondary area* operating mode must be used as the robotic lawnmower cannot travel on its own from the secondary area to the charging station. See *Operating mode - Start on page 37*. In this mode, the robotic lawnmower will never look for the charging station but will mow until the battery runs out. When the battery is flat, the robotic lawnmower will stop and the *Needs manual charging* message will appear in the display. Place the robotic lawnmower in the charging station to charge the battery. If the main area has to be cut straight after charging, the **START** button must be pressed and the *Main area* selected before closing the hatch.

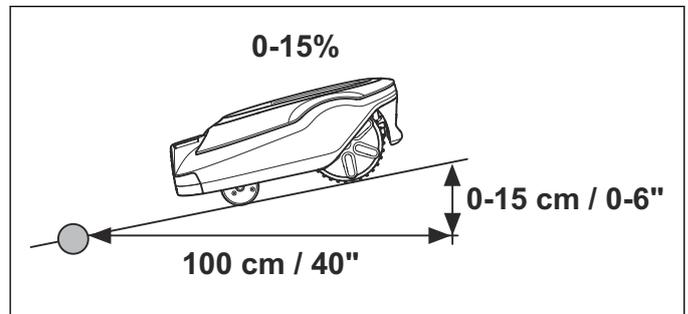
### 3.5.3.2 Passages when mowing

Long and narrow passages and areas narrower than 1.5 - 2 m should be avoided. It is then a risk that the robotic lawnmower travels around in the passage or area for a period of time. The lawn will then look flattened.

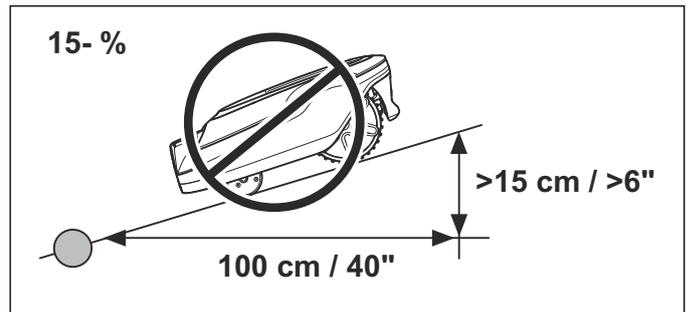
### 3.5.3.3 Slopes

The robotic lawnmower can operate in slopes. The maximum gradient is defined as percentage units (%) and is calculated as difference in elevation in centimetres for every metre.

The boundary wire can be laid across a slope that slants less than 15%.



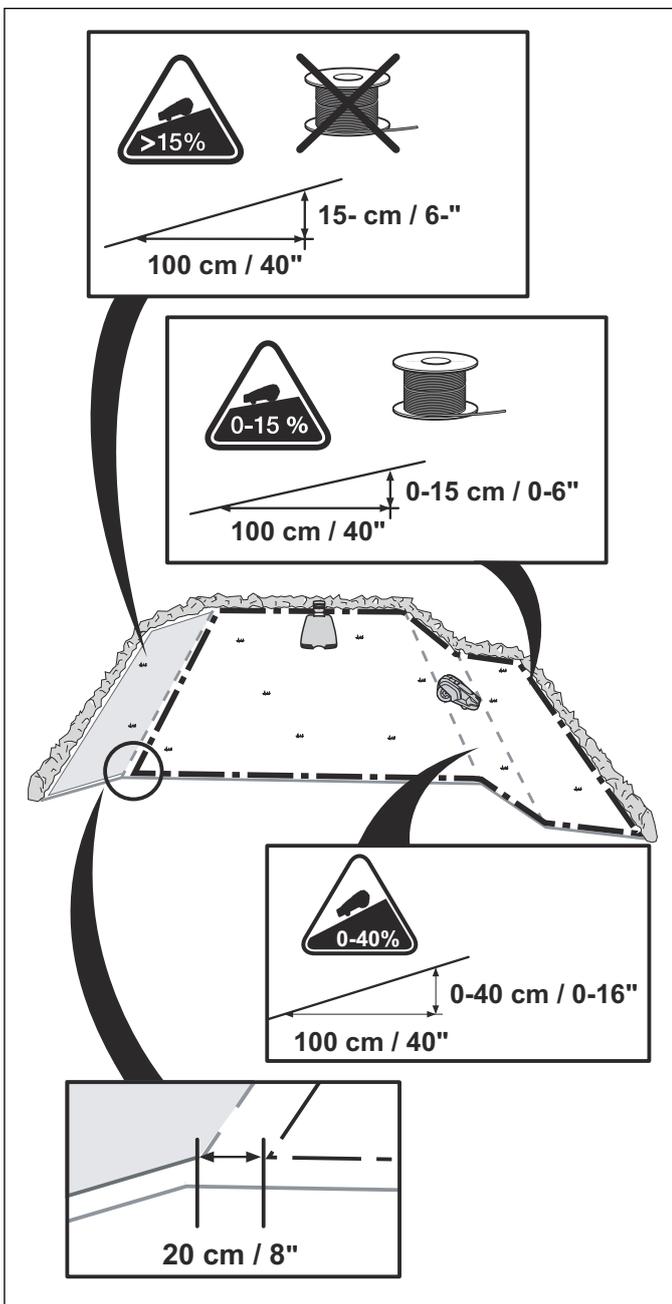
The boundary wire should not be laid across a slope that is steeper than 15%. There is a risk that the robotic lawnmower will find it difficult to turn there. The robotic lawnmower will then stop and the *Outside working area* fault message is displayed. The risk is at its greatest in damp weather conditions, as the wheels can slip on the wet grass.



However, the boundary wire can be laid across a slope steeper than 15% if there is an obstacle that the robotic lawnmower is allowed to collide with, for example, a fence or a dense hedge.

Inside the working area the robotic lawnmower can mow areas which slope up to 40%. Areas that slope more must be isolated with the boundary wire.

When a part of the working area's outer edge slopes more than 15%, the boundary wire must be laid about 20 cm in on the flat ground before the beginning of the slope.



### 3.5.4 Laying the boundary wire

If you intend to staple down the boundary wire:

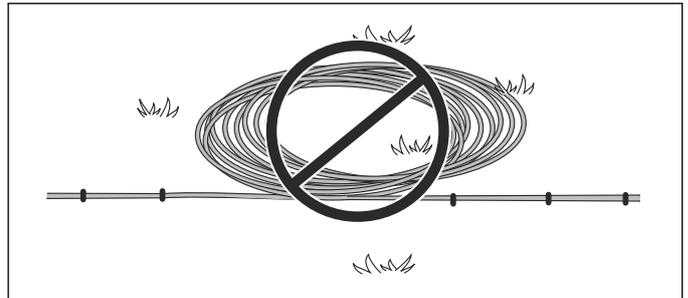
- Cut the grass very low with a standard lawnmower or a trimmer where the wire is to be laid. It will then be easier to lay the wire close to the ground and the risk of the robotic lawnmower cutting the wire or damaging the insulation of the wire is reduced.
- Make sure to lay the boundary wire close to the ground and secure the pegs close together. The cable must lie close to the ground so as not to be cut before the grass roots have grown over it. Mowing the grass too low right after the installation can damage the wire insulation. Damage to the insulation may not cause disruptions until several weeks or months later. To avoid this, always select the maximum cutting height the first weeks after installation and then lower the height one step at a time every second week until the desired cutting height has been reached.

- Use a hammer to knock the pegs into the ground. Exercise care when knocking the pegs and make sure the wire is not under strain. Avoid sharp bends.

If the boundary wire is to be buried:

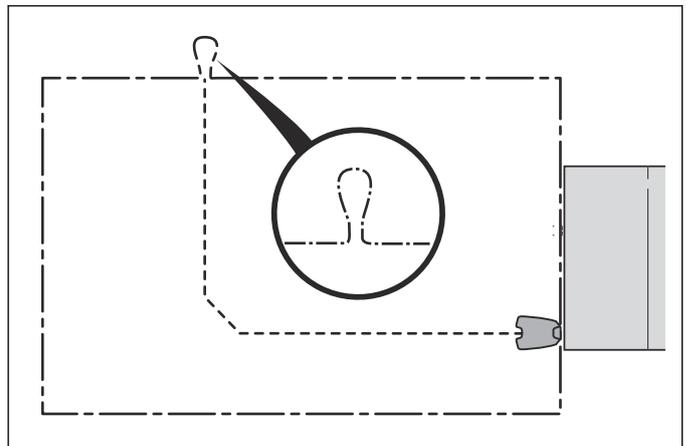
- Make sure to lay the boundary wire at a minimum of 1 cm and a maximum of 20 cm in the ground. The wire can be buried for instance using an edge cutter or a straight spade.

**Note:** Extra wire must not be placed in coils outside the boundary wire. This can disrupt the robotic lawnmower.



#### 3.5.4.1 Eyelet for connecting the guide wire

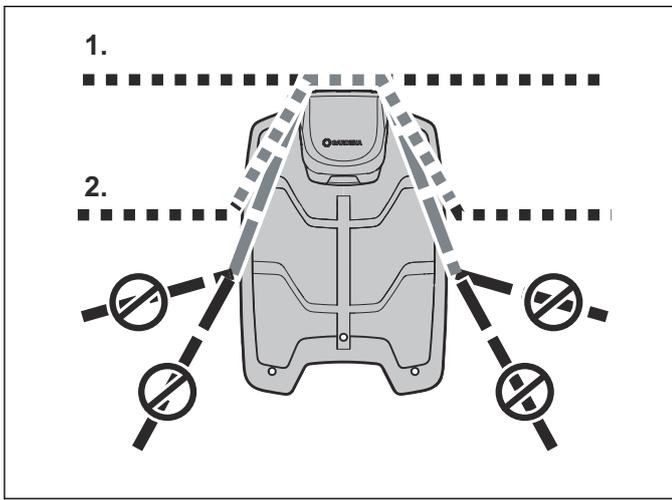
To facilitate the connection of the guide wire to the boundary wire, it is recommended to create an eyelet with about 20 cm of extra boundary wire at the point where the guide wire will later be connected. It is a good idea to plan where the guide wire will be placed before laying out the boundary wire. See *Laying the boundary wire* on page 17.



#### 3.5.4.2 Laying the boundary wire in towards the charging station

On its way toward the charging station, the boundary wire can be laid completely outside the charging station (see option 1 in the figure). If there is a need to partly locate the charging station outside the working area, it is also possible to lay the wire under the charging station plate (see option 2 in the figure).

However most of the charging station must not be placed outside the working area as the robotic lawnmower can then find it difficult to find the charging station (see figure).



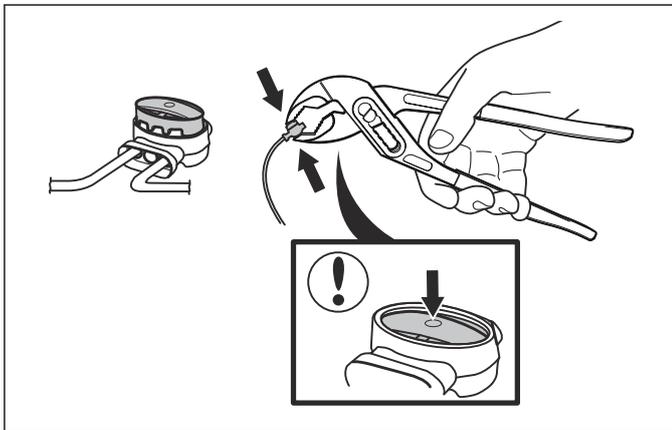
### 3.5.4.3 Splicing the boundary wire



**CAUTION:** Twinned cables, or a screw terminal block that is insulated with insulation tape are not satisfactory splices. Soil moisture will cause the wire to oxidise and after a time result in a broken circuit.

Use an original coupler if the boundary wire is not long enough and needs to be spliced. It is waterproof and gives a reliable electrical connection.

Insert both wire ends in the coupler. Check that the wires are fully inserted into the coupler so that the ends are visible through the transparent area on the other side of the coupler. Now press down the button on top of the coupler fully. Use a polygrip to completely press down the button on the coupler.



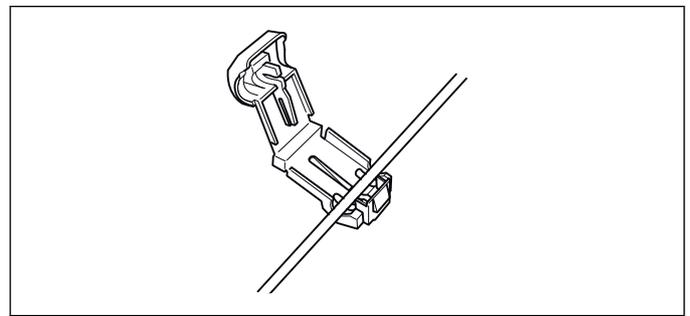
### 3.6 Connecting the boundary wire



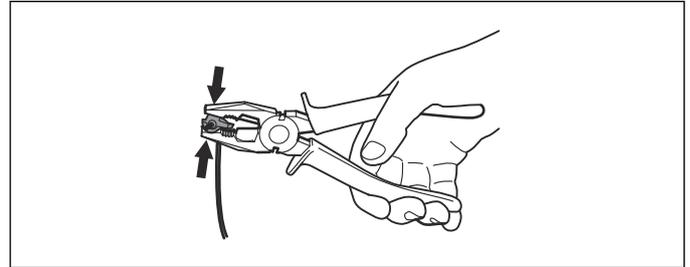
**CAUTION:** The boundary wire must not be crossed when connecting it to the charging station. The right hand wire end must be connected to the right hand pin on the charging station and the left hand wire end to the left pin.

Connect the boundary wire to the charging station:

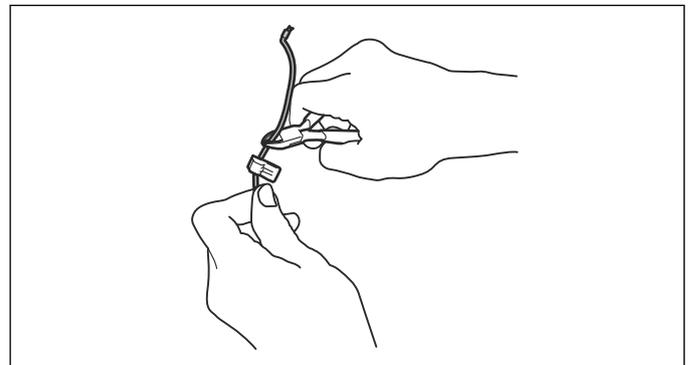
1. Open the connector and place the wire in the connector grip.



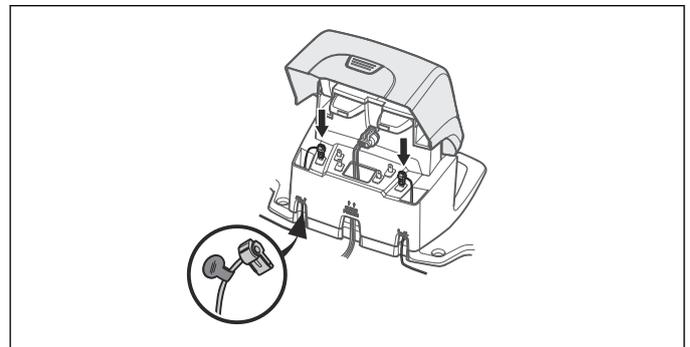
2. Press the connectors together using a pair of pliers. Press until you hear a click.



3. Cut off any surplus boundary wire. Cut 1-2 cm above each connector.



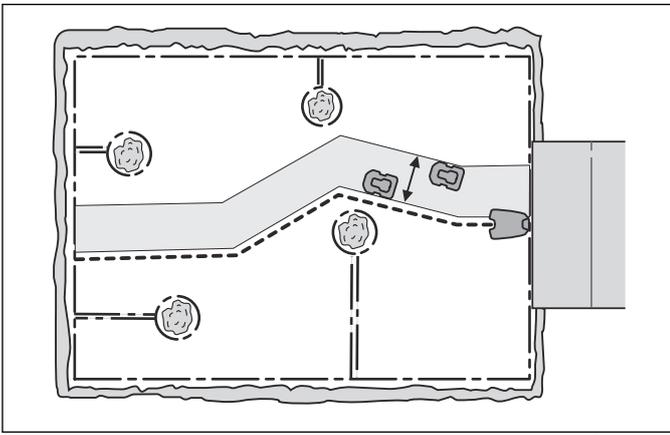
4. Tilt the protective cover on the charging station forward and run the wire ends up each channel at the rear of the charging station. Press the connector onto the metal pins, marked AL (left) and AR (right), on the charging station.
5. Mark the wires with the accompanying cable markers. This makes it easier to connect the wires correctly when for instance the charging station has been stored indoors for the winter.



### 3.7 Installation of the guide wire

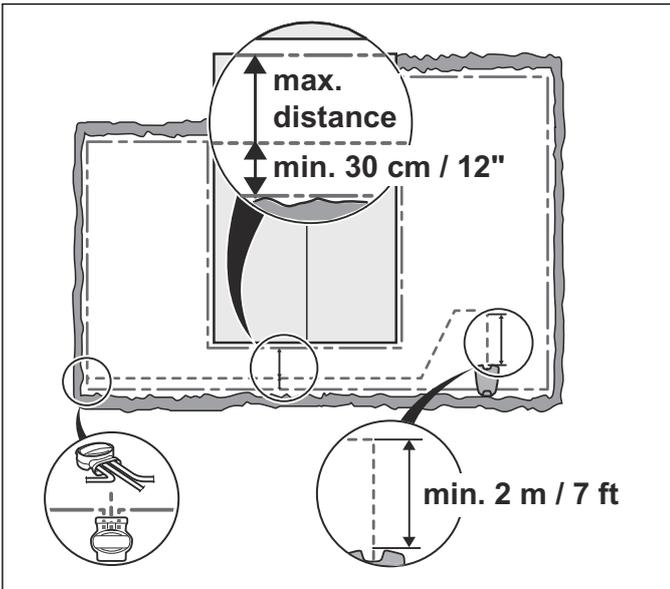
The guide wire is used by the robotic lawnmower to find its way back to the charging station but also to guide the robotic lawnmower to remote areas of the garden.

The same cable roll is used for both the boundary and guide wires. The guide wire, as the boundary wire, can be stapled to or buried in the ground.



The robotic lawnmower runs at varying distances from the guide wire to reduce the risk of tracks forming. The area beside the wire which the robotic lawnmower then uses is called the Corridor. The wider the corridor allowed by the installation, the less the risk of tracks forming.

The robotic lawnmower always runs to the left of the guide wire as seen facing the charging station. Thus the corridor is to the left of the guide wire. When installing, it is therefore important to create as much free space as possible to the left of the guide wire, as seen facing the charging station.



The guide wire, as the boundary wire, can be stapled to or buried in the ground.



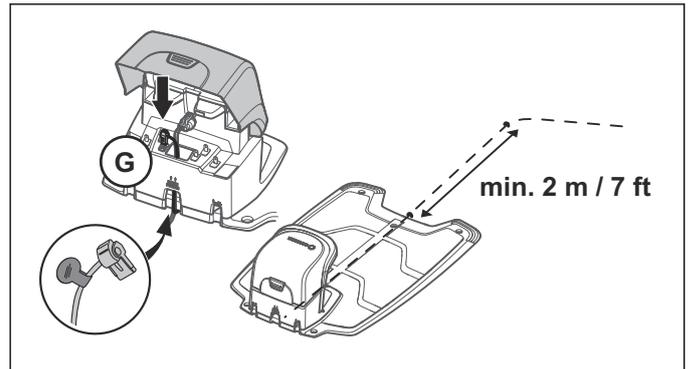
**CAUTION:** Make as much space as possible to the left of the guide wire (as seen facing the charging station). Also, it is not allowed to lay the guide wire closer than 30 cm from the boundary wire.

### 3.7.1 Laying and connecting the guide wire

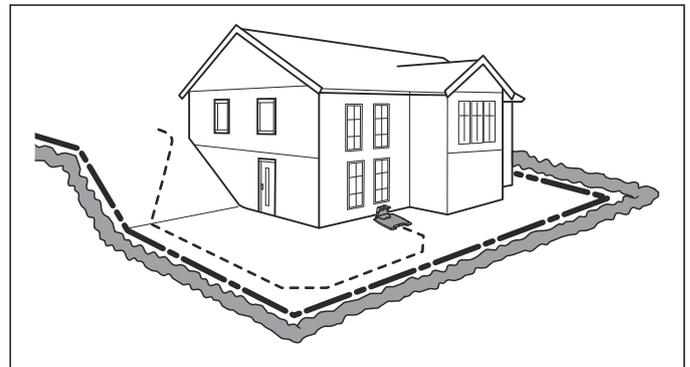
1. Before laying and connecting the guide wire, it is important to considerate the length of the guide wire, especially in large or complex installations. If the guide wire is longer than 400 m the robotic lawnmower can have difficulty following it. The current in the guide wire always goes to the left at

the connection from the guide wire to the boundary loop.

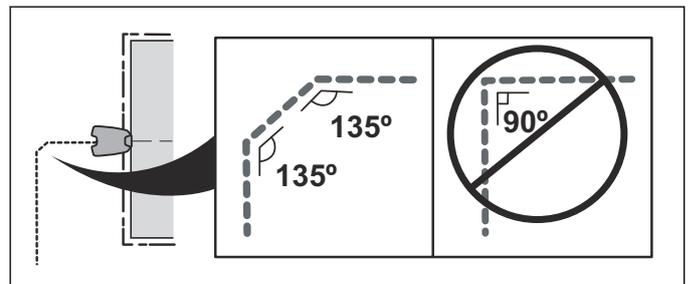
2. Tilt the top cover on the charging station forward and run the guide wire through one of two channels marked GUIDE leading to the guide connection.
3. Fit a connector to the guide wire in the same way as for the boundary wire in *Connecting the boundary wire on page 18*. Connect it to the contact pin on the charging station that is labelled G1.
4. Mark the wires with the accompanying cable markers. This makes it easier to reconnect the wires correctly when for instance the charging station has been stored indoors for the winter.
5. Run the guide wire through the slot under the charging plate and then at least 2 m straight out from the front edge of the plate.



If the guide wire has to be installed on a steep slope, it is an advantage to lay the wire at an angle to the slope. This makes it easier for the robotic lawnmower to follow the guide wire on the slope.

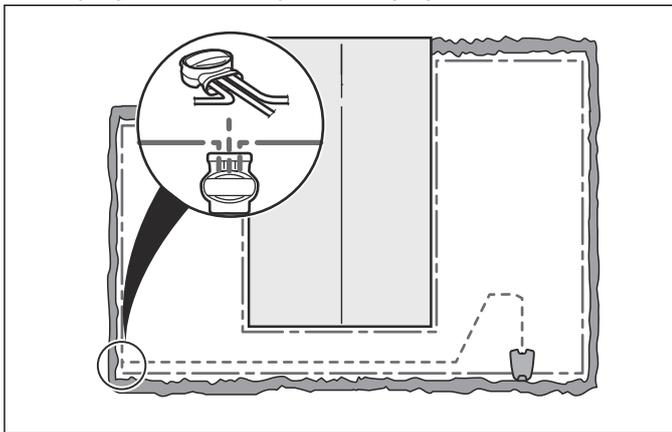


Avoid laying the wire at sharp angles. This can make it difficult for the robotic lawnmower to follow the guide wire.

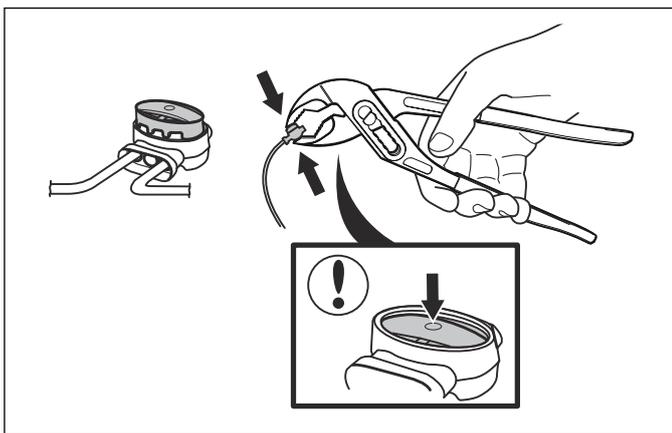


6. Run the guide wire to the point on the boundary loop where the guide wire is to be connected.
7. Cut the boundary wire using for instance a pair of wire cutters. Connecting the guide wire is made easier if an eyelet has been made on the boundary

wire as outlined in the previous description. See *Laying the boundary wire on page 17*.



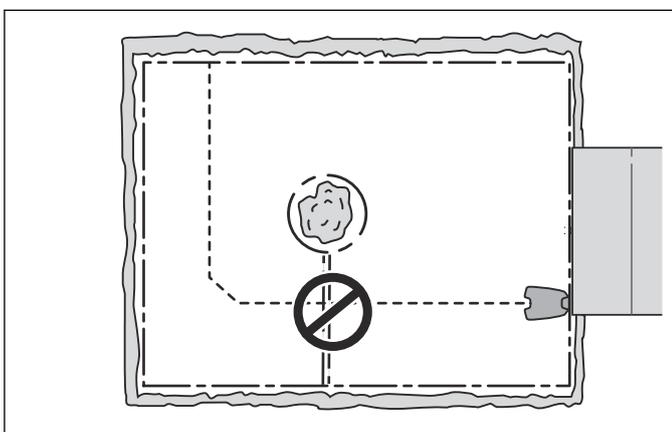
8. Connect the guide wire to the boundary wire using a coupler:
  - a) Insert the boundary wire and guide wire in the coupler. Check that the wires are fully inserted into the coupler so that the ends are visible through the transparent area on the other side of the coupler.
  - b) Use a polygrip to completely compress the button on the coupler. It does not matter which holes are used to connect each wire.



9. Staple down or bury the splice in the lawn.

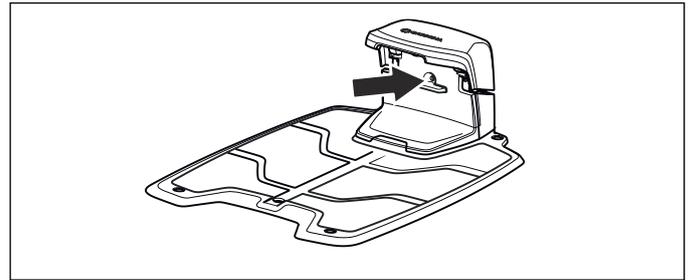


**CAUTION:** The guide wire may not cross the boundary wire, for instance a boundary wire that is laid out to an island.



### 3.8 Checking the installation

Check the loop signal by inspecting the indicator lamp on the charging station.



See *Indicator lamp in the charging station on page 47* if the lamp does not indicate a solid or flashing green light.

### 3.9 First start-up and calibration

When the main switch is set to position *1* for the first time, a start-up sequence in the robotic lawnmower's menu must be carried out as well as an automatic calibration of the guide signal.

1. Open the hatch by pressing the **STOP** button.
2. Set the main switch to position *1*.

A start-up sequence begins when the robotic lawnmower is started for the first time. The following is requested:

- Language.
- Country
- Date
- Time
- Selection and confirmation of personal PIN code. All combinations except 0000 are permitted.

**Note:** Use the *MEMO* page at the beginning of the manual to make a note of the PIN code.

3. Place the robotic lawnmower in the charging station and press **START**. The robotic lawnmower will now begin to calibrate the guide wire.

Press **START** and close the hatch. The calibration is performed by the robotic lawnmower backing out of the charging station and running a calibration process in front of the charging station. When this is completed, mowing can begin.

### 3.10 Control panel

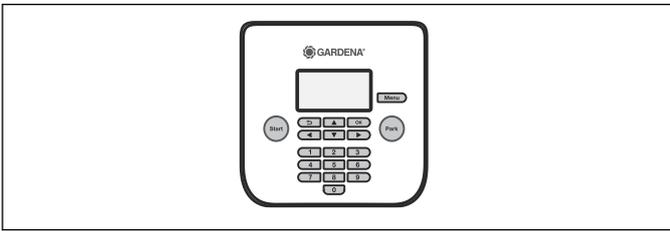
#### 3.10.1 Instruction - Control panel

All commands and settings for the robotic lawnmower are made via the control panel. All functions are accessed via a number of menus.

The control panel consists of a display and a keypad. All information is shown on the display and all input is done using the buttons.

#### 3.10.2 Keypad

The keypad consists of 6 groups of buttons:



- The **START** button is used to activate the robotic lawnmower. This is normally the last button to be pressed before closing the hatch.
- The **BACK** and **OK** buttons are used to navigate in the menu. The **OK** button is also used to confirm settings.
- The **arrow keys** are used to navigate in the menu but also to make selections in certain setting options.
- The **MENU** button is used to go to the main menu.
- The **PARK** button is used to send the robotic lawnmower to the charging station.
- The **number keys** are used to enter settings, for example PIN code, time or exit direction.

### 3.10.3 Display

When the **STOP** button has been pressed and the hatch is opened, the display is showing the following information:



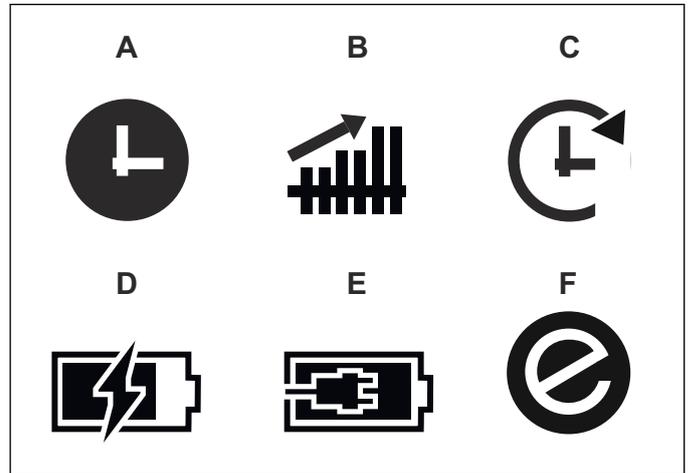
- Operating information, e.g. *MOWING*, *PARKED* or *TIMER*. If the stop button is pressed when the robotic lawnmower is running, what it did just before it was stopped e.g. *MOWING* or *SEARCHING* is displayed. The text *READY* is displayed if the robotic lawnmower is not in any specific operating mode, e.g. if the main switch has just been turned on.
- Date and clock show the current time:

### 3.10.4 Symbols shown on the display

The black clock symbol (A) indicates when the mower is not allowed to mow due to a timer setting. If the mower is not allowed to mow due to Sensor control, symbol (B) is shown (not applicable for R100Li and R100LiC). If the operation mode Override timer is chosen, symbol (C) is shown.

The battery status shows the remaining battery charge. If the robotic lawnmower is loading, a flash is also shown over the battery symbol (D). If the robotic lawnmower is placed in the charging station without charging, (E) is shown.

The ECO symbol (F) is displayed if the robotic lawnmower is set in *ECO mode*.



### 3.10.5 Submenus

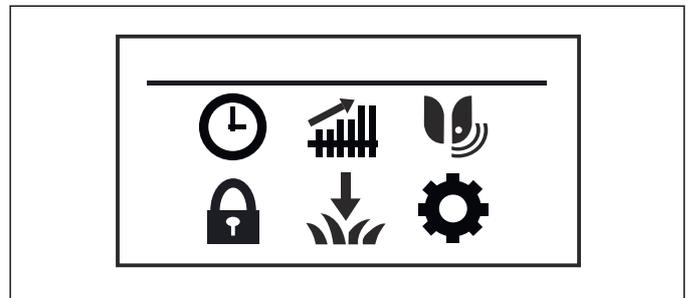
There are a number of submenus under each option. You can access all the functions to set the robotic lawnmower settings via the submenus.

Certain submenus contain options that are ticked off to the left. This means that these options are selected. Check or uncheck the box by pressing **OK**.

### 3.11 Menu structure

The main menu offers the following options:

- *Timer*
- *SensorControl* (only for R130Li, R130LiC, R160Li and R160LiC)
- *Smart system* (only for R100LiC, R130LiC and R160LiC)
- *Security*
- *Installation*
- *Settings*



#### 3.11.1 Main menu



##### *Timer*

The timer function is an ideal tool to control which periods the robotic lawnmower should not mow, for example when the children are playing in the garden. See *Timer on page 22*



### SensorControl

Only for R130Li, R130LiC, R160Li and R160LiC

This function allows the robotic lawnmower to automatically adjust its mowing times based on how quick the lawn grows. When the weather is good for grass growth, the robotic lawnmower mowes more often and when the grass growth is slower the robotic lawnmower will automatically spend less time on the lawn. See *SensorControl on page 24*.



### Smart system

Only for R100LiC, R130LiC and R160LiC R130Li

GARDENA smart system enables wireless interaction between the mower and other devices in GARDENA smart system, such as Water Controls and Sensors. From this menu you can include or exclude your robotic mower and check your wireless connection status to smart system. See *Smart System on page 24*.



### Security

In this menu, settings relating to security and the connection between the robotic lawnmower and the charging station can be made. There are 3 security levels to choose from: *Low, Medium, High*. See *Security on page 25*.



### Installation

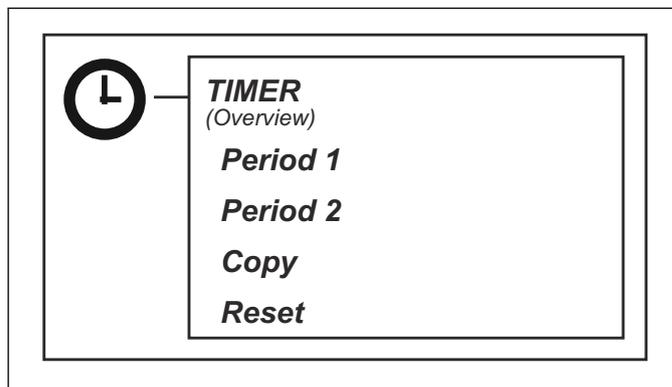
This menu function is used to customize the installation. For many working areas there is no need to alter the factory settings, but depending on the lawn complexity the mowing result can be improved by making manual settings. See *Installation on page 26*.



### Settings

This selection allows you to make changes to the general robotic lawnmower settings such as date and time. See *Settings on page 29*.

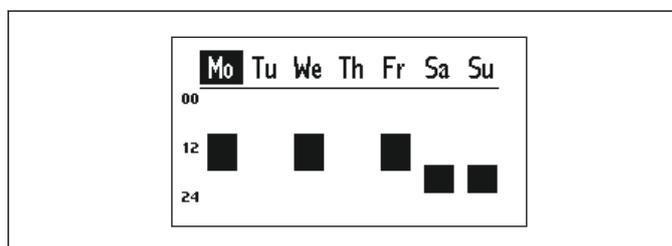
## 3.12 Timer



The lawn should not be cut too often to obtain the best mowing result. When the robotic lawnmower is allowed to mow too much, the lawn may appear flattened. Besides, the robotic lawnmower is subjected to unnecessary wear. If the working area is less than the robotic lawnmower's area capacity, the quality of the grass can be further improved if it is cut every other day instead of a few hours every day. In addition, the grass benefits from resting completely during at least a three-day period once a month.

The timer function is also an ideal way to control which periods the robotic lawnmower should not mow, for example, when the children are playing in the garden.

The operating hours and days can be seen in an overview on the robotic lawnmower's display. Active mowing per day is illustrated by a black bar. The rest of the time, the robotic lawnmower is parked in the charging station.



The factory timer setting is inactive, which means that the robotic lawnmower will operate around the clock 7 days a week. This is normally a suitable setting for a working area corresponding to the maximum capacity, see *Technical data on page 52*.

If the working area is less than maximum capacity then the timer should be used to minimize wear on grass and lawnmower. When setting the timer, calculate that the robotic lawnmower mows about the number of square meters per hour and day listed in table Work capacity. See *To set the timer on page 38*.

The table below provides suggestions for different timer settings depending on the size of the lawn. The times should be seen as indicative. They may need to be adjusted to suit the garden and for example grass quality and growth during the season. Use the table as follows:

- Find a work area that closest matches the size of the lawn.
- Select an appropriate amount of work days (for some work areas 7 days may be needed).

- Work hours per day shows how many hours a day the robotic lawnmower will be allowed to work for the selected amount of work days.
- Suggested time interval shows a time interval that corresponds to the required work hours per day.

It is possible to configure 2 work periods a day. There can be unique work periods in each day, but it is also possible to copy the current day's work period to all the other days.

### 3.12.1 Timer suggestions GARDENA R100Li, R100LiC

Work area	Work days per week	Work hours per day	Suggestion of time interval
250 m <sup>2</sup>	5	6	07:00 - 13:00
	7	4.5	07:00 - 11:30
500 m <sup>2</sup>	5	12	07:00 - 19:00
	7	8.5	07:00 - 15:30
750 m <sup>2</sup>	5	17	07:00 - 24:00
	7	13	07:00 - 20:00
1000 m <sup>2</sup>	7	17	07:00 - 24:00

### 3.12.2 Timer suggestions GARDENA R130Li, R130LiC

Work area	Work days per week	Work hours per day	Suggestion of time interval
250 m <sup>2</sup>	5	5.5	07:00 - 12:30
	7	4	07:00 - 11:00
500 m <sup>2</sup>	5	10.5	07:00 - 17:30
	7	7.5	07:00 - 14:30
750 m <sup>2</sup>	5	15.5	07:00 - 22:30
	7	11	07:00 - 18:00
1000 m <sup>2</sup>	7	15	07:00 - 22:00
1300 m <sup>2</sup>	7	19	05:00 - 24:00

### 3.12.3 Timer suggestions GARDENA R160Li, R160LiC

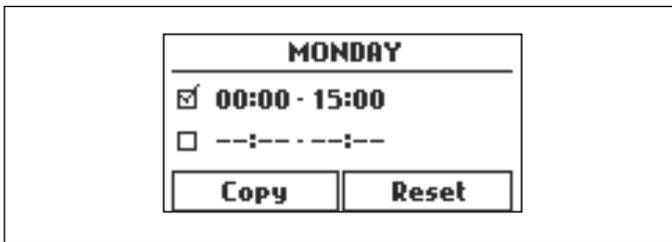
Work area	Work days per week	Work hours per day	Suggestion of time interval
250 m <sup>2</sup>	5	5	07:00 - 12:00
	7	3.5	07:00 - 10:30
500 m <sup>2</sup>	5	10	07:00 - 17:00
	7	7	07:00 - 14:00
750 m <sup>2</sup>	5	15	07:00 - 22:00
	7	11	07:00 - 18:00
1000 m <sup>2</sup>	5	20	04:00 - 24:00
	7	14.5	07:00 - 21:30
1250 m <sup>2</sup>	7	18	06:00 - 24:00
1600 m <sup>2</sup>	7	23	01:00 - 24:00

### 3.12.4 Edit day

First select the day to edit from the Overview screen using the left/right **arrow keys** followed by **OK**.

2 time intervals per day can be entered. To enter an interval for *Period 1*, first make sure that the check box next to *Period 1* is checked. To check/uncheck select the check box and press **OK**. Enter the time using the numeric keypad.

*Period 2* is entered the same way as *Period 1*. Two intervals can be useful for enabling the lawn for other activities during certain hours, for example by entering *Period 1*: 00:00- 15:00 and *Period 2*: 21:00-24:00. The mower will then be parked in the charging station between 15:00 and 21:00.

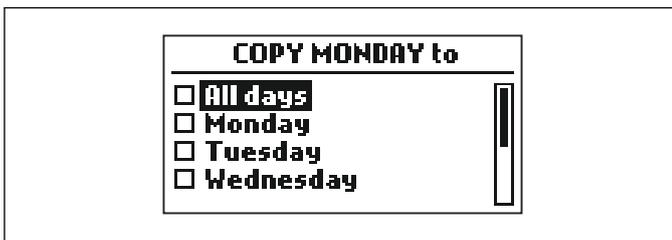


To disable mowing a whole day, uncheck both periods.

### 3.12.5 Copy

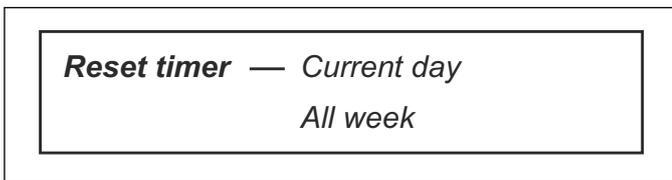
Use this function to copy the current day settings to other days.

Mark *Copy* by using **arrow keys** and press **OK**. Then use the up and down **arrow keys** to move the cursor between days. The times will be copied to the days that are marked with **OK**.



### 3.12.6 Reset

This function resets the timer to the factory setting, where the robotic lawnmower is allowed to operate 24 hours a day every day.



#### 3.12.6.1 Current day

This resets the day that is selected in the tab system.

The factory setting is that the robotic lawnmower is allowed to operate 24 hours a day.

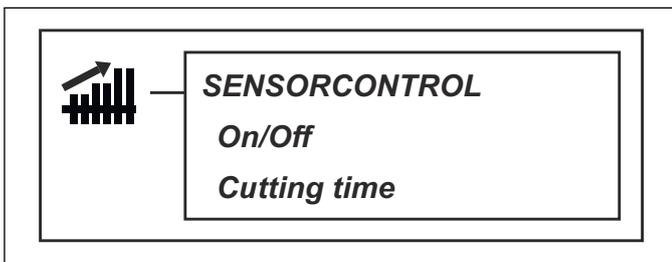
#### 3.12.6.2 All week

This resets all days in the week.

The factory setting is that the robotic lawnmower is allowed to operate 24 hours a day every day.

## 3.13 SensorControl

Only for R130Li, R130LiC, R160Li and R160LiC



This function allows the robotic lawnmower to automatically adjust its mowing times based on how quickly the lawn grows. When the weather is good for grass growth, the robotic lawnmower mowes more often and when the grass growth is slower the robotic

lawnmower will automatically spend less time on the lawn. The first mowing cycle of the day will however always be completed. After that, SensorControl will decide whether to continue or not.

For optimal SensorControl performance, it is recommended to only deselect the times when the robotic lawnmower must not operate. All other time should be made available for the SensorControl. Manual timer settings always have priority over SensorControl so the robotic lawnmower will not be allowed to mow more than the timer settings.

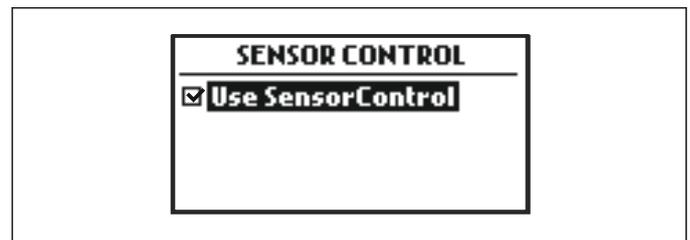
When the SensorControl is activated, the robotic lawnmower needs time to decide what the optimal mowing time is for the working area in question. For this reason it can take a couple of days of calibration before the mowing results are optimal.

Please, note that SensorControl is reset if the mower has been shut down for more than 50 hours or if a *Reset of all user setting* is done. SensorControl is not affected if a reset of timer setting is done.

When the SensorControl is activated, it is very important to regularly check that the blade disc is clean and that the blades are in good condition. Any grass twisted around the blade disc shaft or blunt blades can affect how the SensorControl functions.

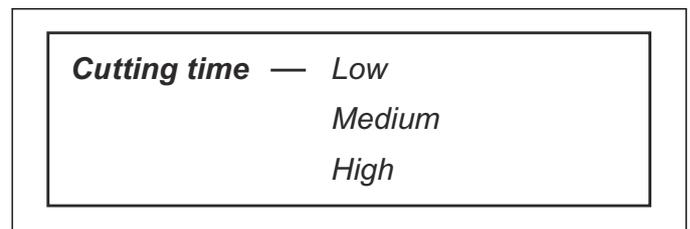
### 3.13.1 SensorControl On/Off

To activate SensorControl: check the box by pressing **OK**.



### 3.13.2 Cutting time

There are 3 cutting levels to choose from.



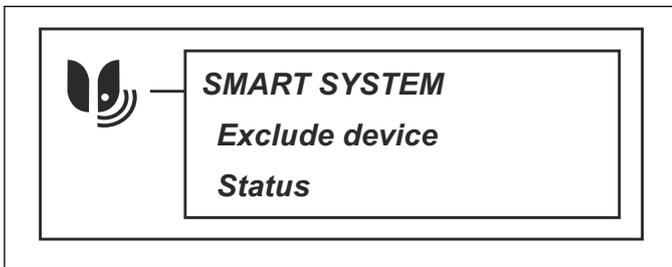
If the mowing results are not optimal when using the SensorControl, Cutting time settings may need adjusting.

#### 3.13.2.1 To adjust the cutting time

1. Place the cursor by *Cutting time* and press **OK**.
2. Use the right and left **arrow keys** to increase or decrease the cutting time in 3 preset intervals.

## 3.14 Smart System

Only for R100LiC, R130LiC and R160LiC



The GARDENA smart system makes wireless interaction between your smart robotic lawnmower and other GARDENA smart system devices, such as smart Water Control and smart Sensor possible. In this Options Menu, you can:

- enable your smart robotic lawnmower to include with or exclude from the GARDENA smart system App.
- check the status of the wireless connection to the smart system.

**Note:** The inclusion sequence might take several minutes. Once the inclusion has succeeded you will automatically return to the mower start screen. If the inclusion by any reason fails, try again.

### 3.14.1 Disabled menus

As long as the smart robotic lawnmower is part of the smart system, some menus will be disabled so that the settings of the smart system will not be affected. You can still see all of the settings but these can only be changed with the GARDENA smart system App. The following settings will be blocked in the menu selection of the smart robotic lawnmower:

- Timer
- Time & Date
- Language variations
- Country

### 3.14.2 Installation

Make sure that the smart robotic lawnmower is fully installed before you include it into the GARDENA smart system app. See *Installation on page 10*. It is important to plan the installation carefully.

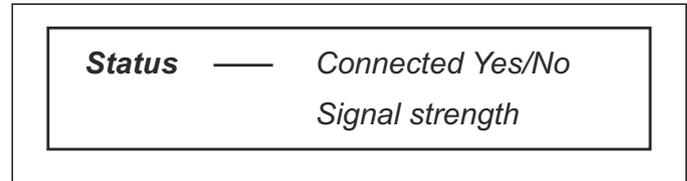
### 3.14.3 Include device

In order to include your smart robotic lawnmower into the GARDENA smart system App, select the option *Activate Inclusion Mode* in the menu selection of the smart robotic lawnmower. This will create the wireless connection between the robotic lawnmower and the GARDENA smart system App. Only if you first activate the integration module of the smart robotic lawnmower will it be shown in the App.

### 3.14.4 Integration in the App

Carry out this step only after the installation has been completed. For the integration, a smart gateway connected to the internet is needed. The inclusion of all GARDENA smart devices takes place over the App. In addition, follow the instructions in the App. The cost-free GARDENA smart system App can be downloaded from the Apple App Store or the Google Play Store.

### 3.14.5 Status

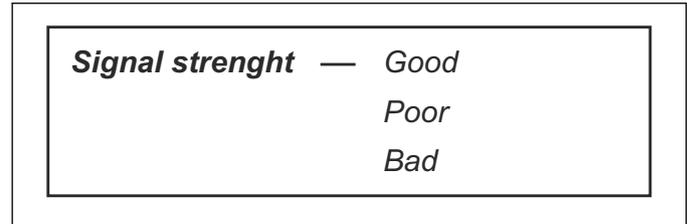


As soon as the robotic mower is connected to smart system Gateway, you can check the connection status from this menu.

#### 3.14.5.1 Connected Yes/No

The status is either connected or not connected.

#### 3.14.5.2 Signal strenght



The signal quality between the robotic mower and the Gateway can be either *Good*, *Poor* or *Bad*. The robotic mower charging station should preferably be placed on a garden location with *Signal strenght - Good*, for best smart system performance.

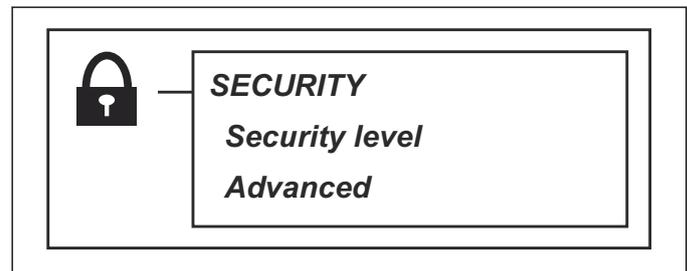
### 3.14.6 Exclude device

To remove the wireless connection between the robotic mower and smart system, select the Exclude device option in the mower menu. If you agree to exclude the device, there will be no more communication between the robotic mower and other smart system devices.

**Note:** The robotic mower must be manually deleted from the list of products in the smart system application.

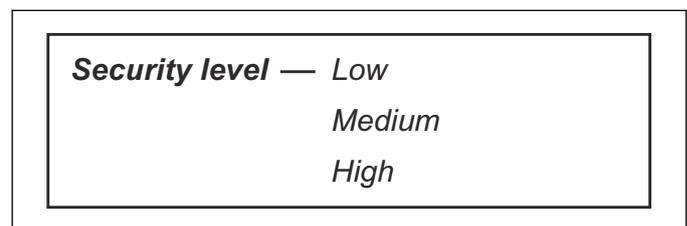
## 3.15 Security

Through this selection, settings relating to security and the connection between the robotic lawnmower and the charging station can be made.



### 3.15.1 Security level

There are 3 security levels to choose from.



*Low* and *Medium* security prohibits access to the robotic lawnmower if the PIN code is unknown. *High* security also includes a warning that beeps if the correct PIN code is not entered after a designated time period.

If the wrong PIN code is entered 5 times in succession the robotic lawnmower is blocked for a time. The blockage time is extended for every new incorrect attempt.

Function	Low	Medium	High
Time lock	X	X	X
PIN request		X	X
Alarm			X

### 3.15.1.1 Time lock

This function means that the robotic lawnmower cannot be started after 30 days without first entering the correct PIN code. When the 30 days has passed the robotic lawnmower will continue to mow as normal, but the *Enter PIN code* message appears when the hatch is opened. Enter your code again and press **OK**.

### 3.15.1.2 PIN request

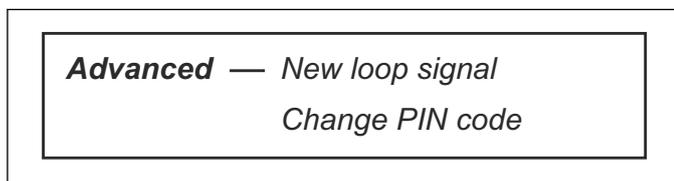
This function means that the robotic lawnmower requests a PIN code when the main switch is set to 1 and each time the hatch is opened. The correct PIN code must be entered to use the robotic lawnmower.

If the wrong PIN code is entered 5 times in succession the robotic lawnmower is blocked for a time. The blockage time is extended for every new incorrect attempt.

### 3.15.1.3 Alarm

This function means that an alarm sounds if the PIN code is not entered within 10 seconds after the **STOP** button has been pressed or the robotic lawnmower has been lifted up for any reason. A ticking noise indicates that the PIN code must be entered to prevent triggering the alarm. The alarm can be turned off at any time by entering the correct PIN code.

### 3.15.2 Advanced



#### 3.15.2.1 New loop signal

The loop signal is randomly selected to create a unique link between the robotic lawnmower and the charging station. In rare cases, there may be a need to generate a new signal, for instance if two adjacent installations have a very similar signal.

1. Place the robotic lawnmower in the charging station.
2. Select *New loop signal* in the menu.
3. Press **OK** and await confirmation that the loop signal has been generated. This normally takes about 10 seconds.

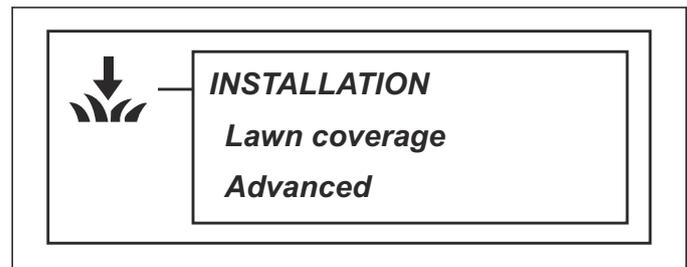
### 3.15.2.2 Change PIN code

Enter the new PIN code and press **OK**. Confirm by entering the same code again and pressing **OK**. When the PIN code is changed, the message *PIN code changed* appears in the display.

Make a note of the new PIN code on the designated line in Memo. See *Introduction on page 3*.

## 3.16 Installation

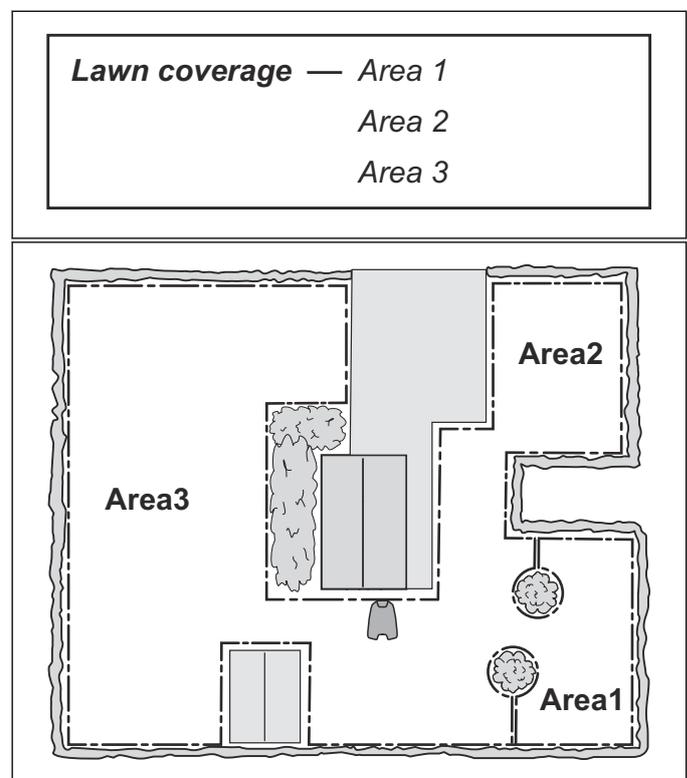
For many working areas there is no need to change the factory settings but sometimes, depending on the lawn complexity, the mowing result can be improved by making manual settings.



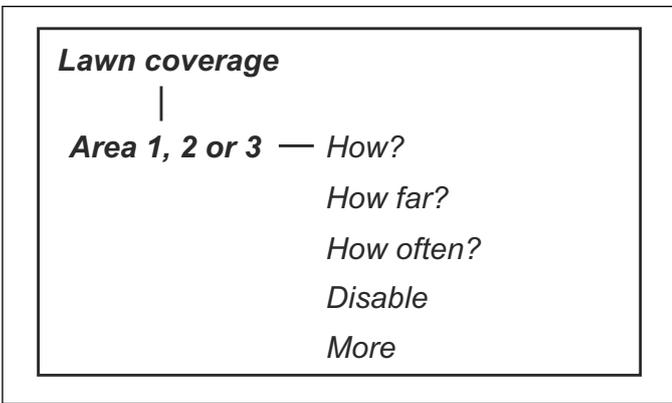
### 3.16.1 Lawn coverage

This menu function is used to steer the robotic lawnmower to remote parts of a working area. In complex gardens with for instance many areas which are joined by narrow passages, the mowing result can be much improved by changing settings.

Up to 3 remote areas can be set. Select an area using the left and right **arrow keys** followed by **OK**.



A number of unique selections are required to allow the robotic lawnmower to reach the remote area.



The factory settings allow the robotic lawnmower to follow the guide wire 300 m in 20% of the times it leaves the charging station. If the guide wire in reality is less than 300 m the robotic lawnmower will follow it to the point where the guide wire is connected to the boundary wire.

### 3.16.1.1 Area 1, 2 or 3 > How?

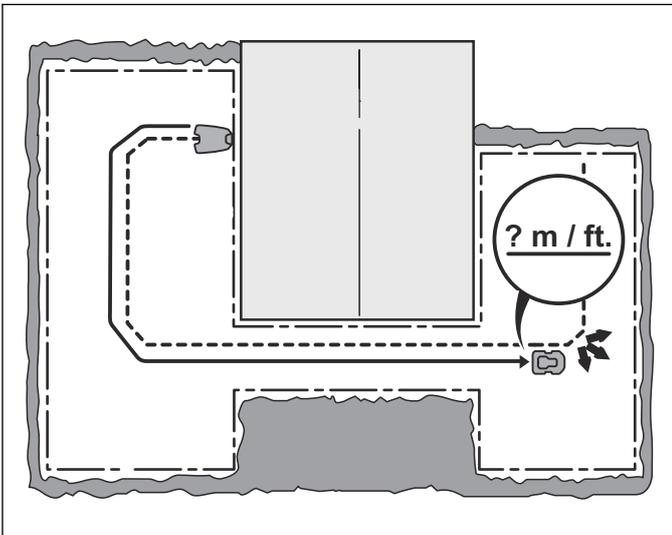
The robotic lawnmower uses the Guide to reach Area 1, 2 or 3. If all areas will be used it is therefore important to consider the optimal placement of the charging station. The Guide needs to pass all areas but at the same time not exceed maximum length of guide wire.

### 3.16.1.2 Area 1, 2 or 3 > How far?

Enter the distance in metres along the current wire from the charging station to the remote area where the robotic lawnmower begins mowing.

Use the right and left **arrow keys** to alternate between the different options.

Tip! Use the *Test* function (*Area 1, 2 or 3 > More > Test*) to determine how far it is to the remote area. The distance, stated in metres, will be shown in the lawnmower display when **STOP** has been pressed. See *How to measure the distance to a remote area on page 28*. The measured distance shown in the display can be saved directly to the selected remote area. Any current value will be overridden by the new measured distance.



### 3.16.1.3 Area 1, 2 or 3 > How often?

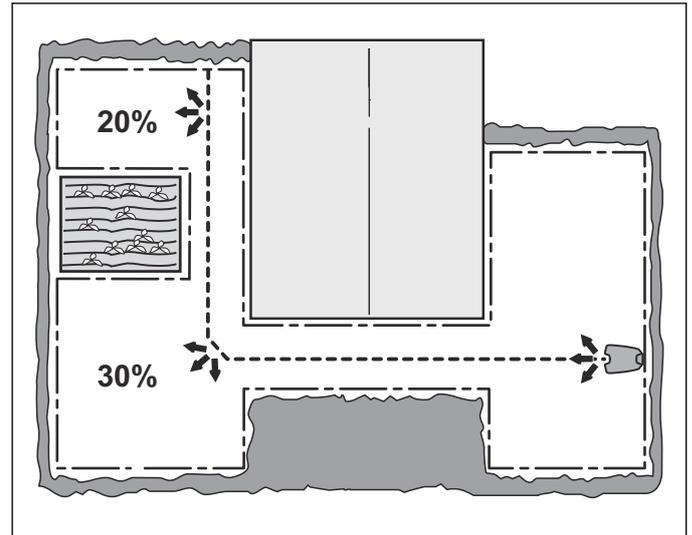
How often the robotic lawnmower must be steered to the remote area is selected as a proportion of the total

number of times it leaves the charging station. At all other times, the robotic lawnmower starts to mow at the charging station.

Select the percentage that corresponds to the size of the remote area relative to the total working area. If the remote area is for instance half of the total working area, 50% must be selected. A lower figure must be specified if the remote area is smaller. If more areas are used, take into account that the total figure cannot exceed 100%.

Compare with the examples in *Yard layout examples on page 33*.

Use the **number keys** to specify share as a percentage.



### 3.16.1.4 Area 1, 2 or 3 > Disable

Each area can be disabled and enabled without having to reenter the settings. Select *Disable* and press **OK**.

### 3.16.1.5 Area 1, 2 or 3 > More > Test

Testing selected settings can be seen as a natural part of the installation.

Using the *Test* function, the robotic lawnmower travels the farthest distance from the guide wire allowed by the selected corridor width.

### 3.16.1.6 Test: Area 1, 2 or 3

To test the selected settings:

1. Place the robotic lawnmower in the charging station.
2. Use the down and the right/left **arrow keys** to select the area to be tested from the *Lawn coverage overview* screen. Press **OK**.
3. Select *More* and press **OK**.
4. Select *Test* and press **OK**.
5. Press **START** and close the hatch.
6. The robotic lawnmower will now leave the charging station and begin following the guide wire toward the remote area. Check that the robotic lawnmower can follow the guide wire all along the required distance.
7. The test is approved when the robotic lawnmower can follow the guide wire to the required starting point without any problem.

### 3.16.1.7 How to measure the distance to a remote area

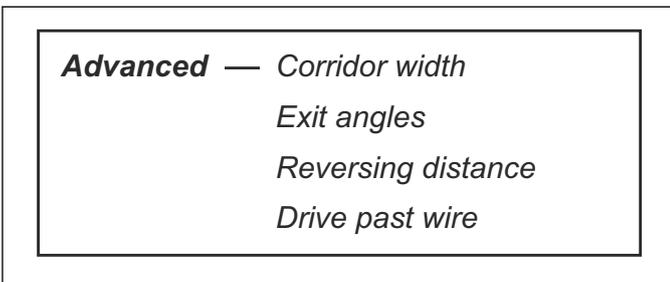
1. Park the robotic lawnmower in the charging station.
2. In the *Area 1, 2 or 3 > How far?* menu function, enter a distance which beyond any doubt exceeds the real figure. The maximum distance that can be entered is 500 metres.
3. Select *Area 1, 2 or 3 > More > Test* and press **OK**.
4. Press **START** and close the hatch.
5. Press **STOP** at the required position. The distance is now shown in the display. This figure can now be saved in *Area 1, 2 or 3 > How far?*

### 3.16.1.8 Area 1, 2 or 3 > More > Reset

An individual area setting can be reset to the factory setting using this function. To reset an area setting, select *Area 1, 2 or 3 > More > Reset* using the left right arrow keys followed by **OK**.

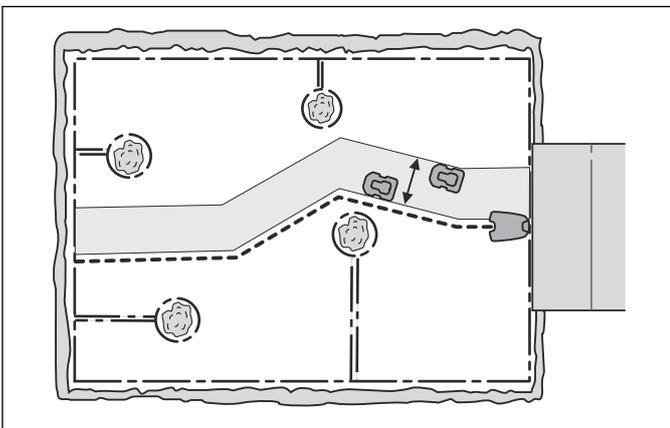
### 3.16.2 Advanced

Under the *Advanced* heading, there are more settings relating to the behaviour of the robotic lawnmower. The settings in this menu are only required if additional control of the lawnmower is needed e.g. in complex gardens. The factory settings are selected in a way that should suit most working areas.



#### 3.16.2.1 Corridor width

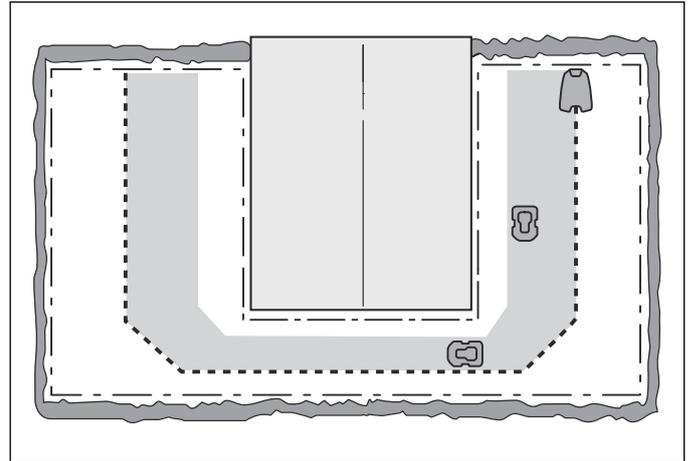
The corridor width is a measure of how far from the guide wire/boundary wire the robotic lawnmower is allowed to travel when it follows this to and from the charging station. The area beside the wire which the robotic lawnmower then uses is called the Corridor.



The aim of operating at varying distances from the wire is to reduce the risk of tracks forming. Therefore it is recommended to select the widest corridor possible allowed by the size of the working area.

The robotic lawnmower adjusts the corridor width according to the size of the working area when following along a guide wire. The inbuilt automatic mechanism

allows the robotic lawnmower to vary the distance from the wire depending on where in the working area it is located. It automatically makes the corridor narrower in narrow passages for instance.



The factory settings can be used for many working areas, i.e. the robotic lawnmower itself can use the inbuilt functions to operate in the widest possible corridor. In more complex gardens e.g. where the guide wire is placed close to obstacles which cannot be isolated using the boundary loop, operational safety can be improved by carrying out some of the manual settings outlined below.

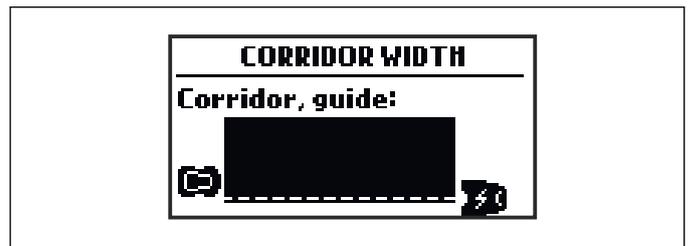
#### 3.16.2.2 Corridor width > Guide

The guide corridor width is adjusted automatically. Only in rare occasions manual settings need to be entered. The guide corridor width can be set between 0 and 9.

If value 0 is specified, the robotic lawnmower will straddle the guide wire meaning it runs right over the middle of the guide wire.

Use the **arrow keys** to specify the required value.

The factory setting is 9.



#### 3.16.2.3 Exit angles

Normally the robotic lawnmower leaves the charging station in a direction within the 90°-270° exit sector. By changing the exit angles, it makes it easier for the robotic lawnmower to reach the largest working area if the charging station is placed in a passage.



### 3.16.2.4 Exit angles > Sectors

The robotic lawnmower can be set for 1 or 2 exit sectors. If the charging station is placed in a passage, 2 exit angles, for instance 70° - 110° and 250° - 290°, can be used.

When 2 exit angles are used, there is a need to also specify how often the robotic lawnmower must leave the charging station in *Sector 1*. This is done using the *Proportion* function by initially specifying a percentage.

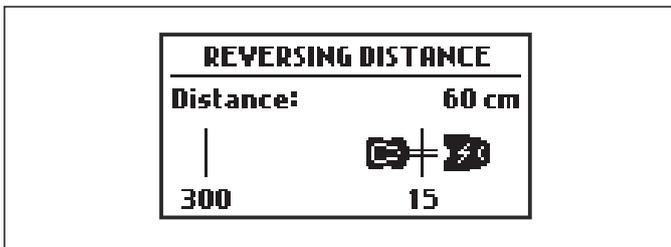
For instance the percentage of 75 % means that the robotic lawnmower leaves the charging station in *Sector 1* on 75% of the times and 25% of the times in *Sector 2*.

Use the **number keys** to specify the required angles in degrees for the sectors and proportion as a percentage.

### 3.16.2.5 Reversing distance

This functions allows you to control how far the robotic lawnmower has to reverse out from the charging station before it starts mowing. This is a useful function for instance if the charging station is placed way in under a veranda or in another limited space area.

Use the **number keys** to specify the required reverse distance in centimetres. The factory setting is 60 cm.

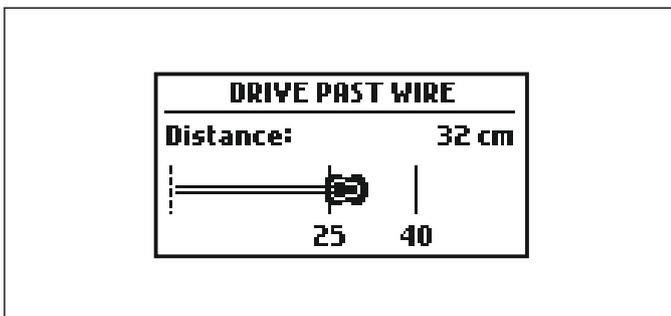


### 3.16.2.6 Drive past wire

The front of the robotic lawnmower always passes the boundary wire by a specific distance before the mower turns around. The default distance is 32 cm, but this can be changed if required. A figure between 25 and 40 can be selected.

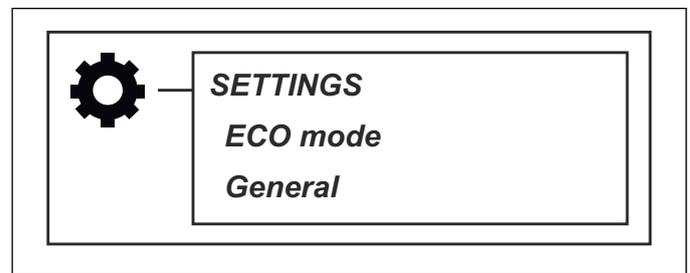
Note that the distance given is only an approximate value and should be regarded as a guide. In reality, the actual distance the robotic mower passes the boundary wire can vary.

Specify the number of centimetres you want the robotic lawnmower to pass the boundary wire and press **OK**.



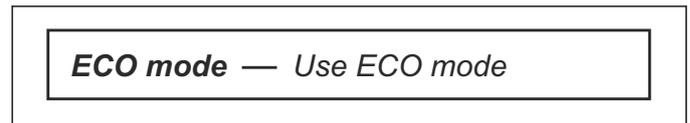
## 3.17 Settings

This selection allows you to carry out changes to the robotic lawnmower's general settings.



### 3.17.1 ECO mode

This function automatically turns off the signal in the boundary loop, the guide wires and the charging station when the robotic lawnmower is not mowing, i.e. when the lawnmower is charging or is not allowed to mow due to timer settings.



*ECO mode* is suitable to use where there is other wireless equipment not compatible with the robotic lawnmower e.g. certain hearing loops or garage doors.

When *ECO mode* is activated, the indicator lamp in the charging station flashes green. *ECO mode* means that the robotic lawnmower can only be started in the charging station and not out in the working area.

In *ECO mode*, it is very important to always press the **STOP** button before removing the robotic lawnmower from the charging station. It is otherwise not possible to start the robotic lawnmower. If the lawnmower has been removed by mistake without first pressing the **STOP** button, the lawnmower must be placed back in the charging station and the **STOP** button pressed. Only then can the robotic lawnmower be started inside the working area.

Select *ECO mode* and press **OK** to activate *ECO mode*.

**Note:** Always press the **STOP** button before removing the robotic lawnmower from the charging station. In *ECO mode* the robotic lawnmower otherwise can not be started inside the working area.

### 3.17.2 General

Set language and time or reset user settings to factory default.



#### 3.17.2.1 Time & Date

This function allows you to set current time and date and required formats.

**Time & Date** — *Set time*

*Set date*

*Time format*

*Date format*

- **Set time:** Enter the correct time and press **OK** to exit.
- **Set date:** Enter correct date and press **OK** to exit.
- **Time format:** Place the cursor at the required time format: 12h 24h. Press **OK** to exit.
- **Date format:** Place the cursor at the required date format:

YYYY-MM-DD (year-month-day)

MM-DD-YYYY (month-day-year)

DD-MM-YYYY (day-month-year)

Exit by pressing **OK**.

### 3.17.2.2 Language

Set language with this function.

To select language: Place the cursor at the required language and press **OK**.

### 3.17.2.3 Country

With this function you can select in what country the robotic lawnmower will work.

Place the cursor at the required country and press **OK**.

### 3.17.2.4 Reset all user settings

This function allows you to reset the robotic lawnmower to the factory default settings.

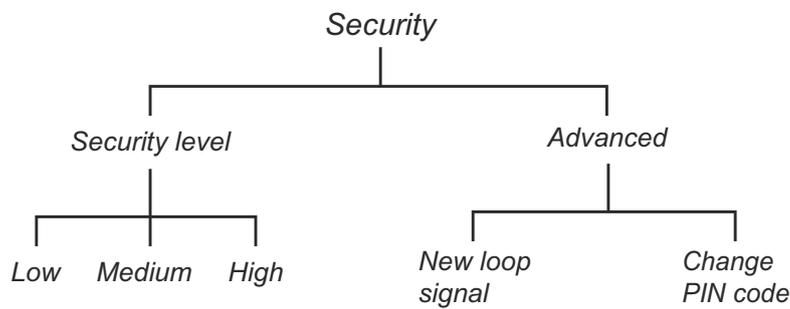
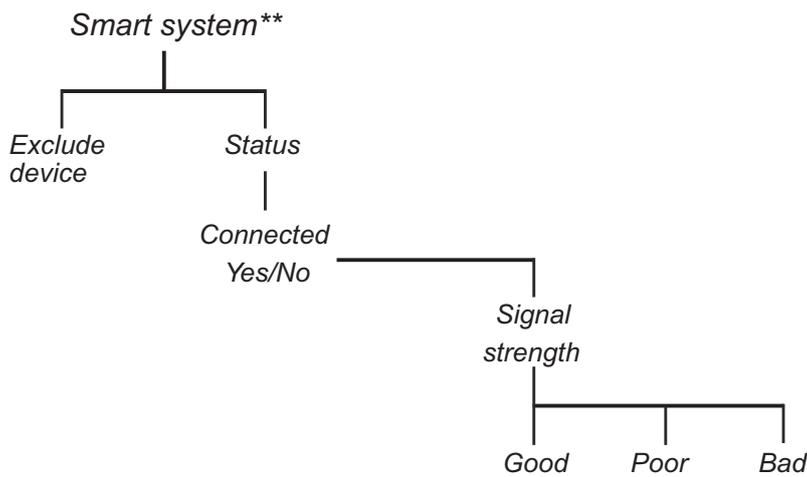
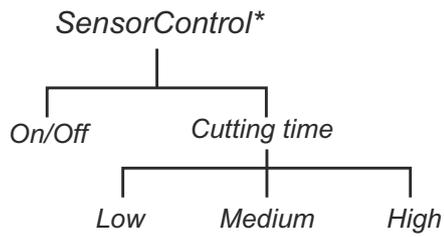
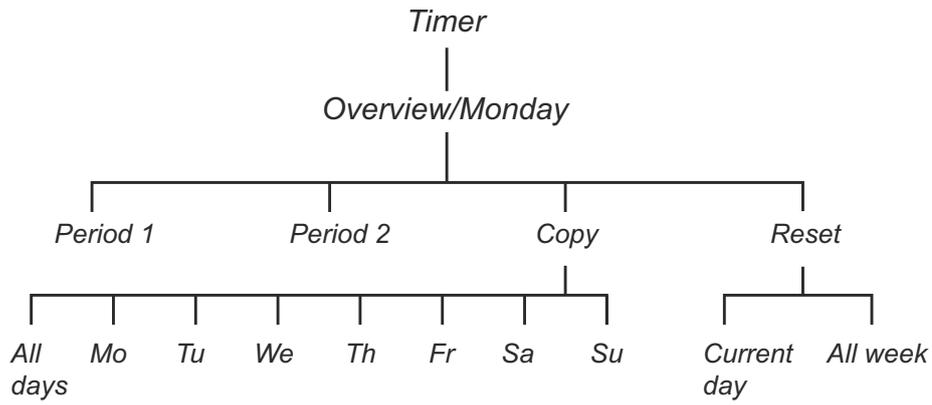
The following settings are however not altered:

- Security level
  - PIN code
  - Loop signal
  - Date & Time
  - Language
  - Country
1. Select *Reset all user settings* in the menu and press **OK**.
  2. Confirm by pressing **OK**.

### 3.17.2.5 About

The *About* menu displays information about the robotic lawnmower's serial number and different software versions.

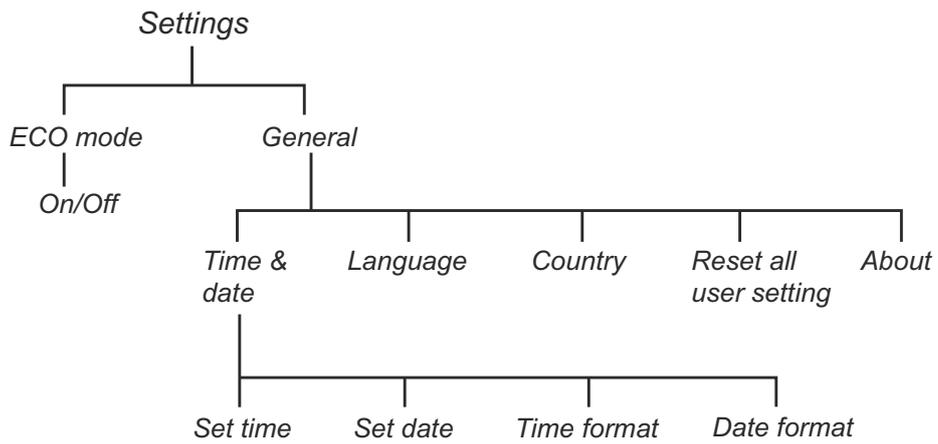
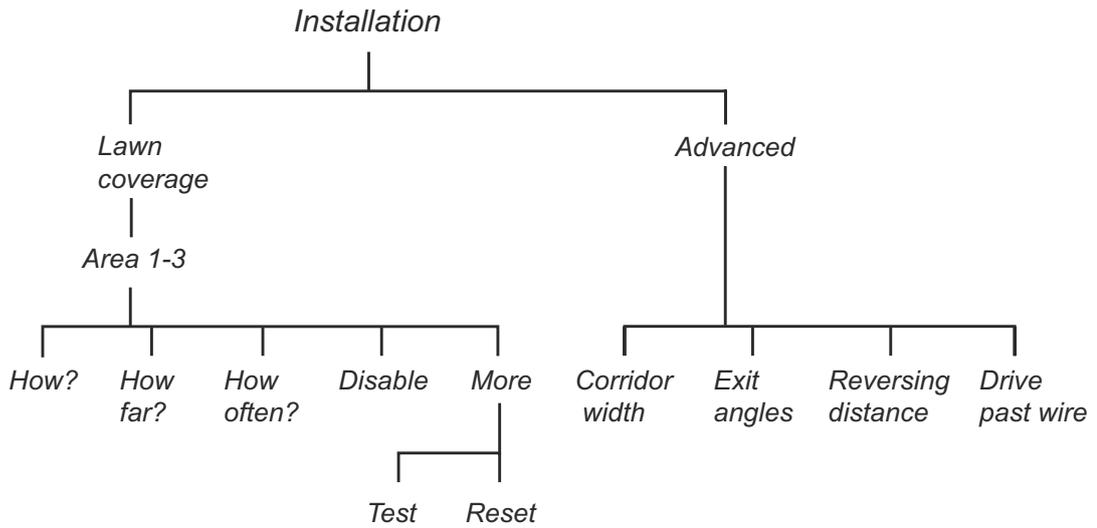
### 3.18 Menu structure overview



\* GARDENA R130Li, R130LiC, R160Li, R160LiC

\*\* GARDENA R100LiC, R130LiC, R160LiC

### 3.19 Menu structure overview



### 3.20 Yard layout examples

The robotic mower's behaviour is controlled to a certain extent by what settings are made. Adapting the robotic lawnmower's settings according to the shape of the lawn makes it easier for the robotic lawnmower to frequently reach all parts and therefore achieve a perfect mowing result.

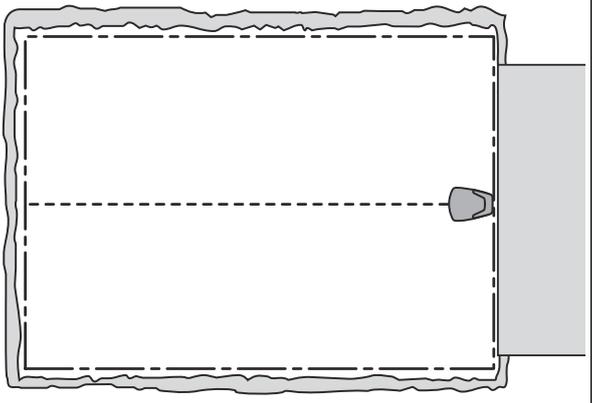
Different layouts require different settings. The following pages outline a number of layout examples with installation proposals and settings.

The recommended timer settings in the following examples are applicable to R100Li, R100LiC unless otherwise stated.

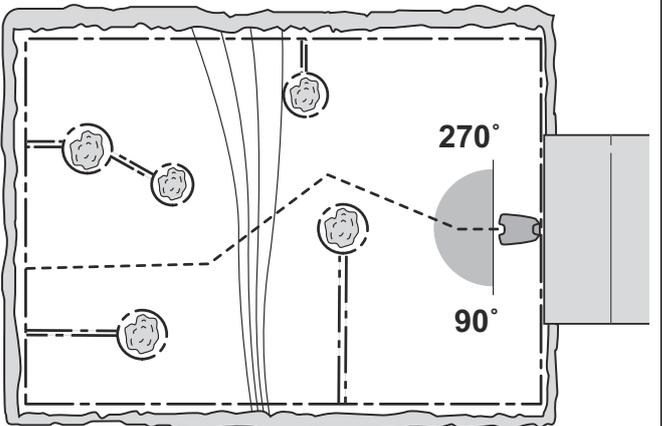
There is more installation help on [www.gardena.com](http://www.gardena.com). Select country, then enter the supportpages for more information and videos.

**Note:** The default settings for the robotic lawnmower have been chosen to work in as many different gardens as possible. The settings only need to be adjusted when special installation conditions exist.

#### 3.20.1 Open and level area

<b>Area</b>	<b>150 m<sup>2</sup></b>	
<b>Timer</b>	R100Li, R100LiC 08:00 - 14:00, Monday, Wednesday, Friday	
	R130Li, R130LiC, R160Li, R160LiC 08:00 - 13:00, Monday, Wednesday, Friday	
<b>Lawn coverage</b>	Factory setting	
<b>Remarks</b>	The timer should be used to prevent the grass looking trampled since the area is less than the maximum capacity of the robotic lawnmower.	

#### 3.20.2 A number of islands and a 35% slope

<b>Area</b>	<b>500 m<sup>2</sup></b>	
<b>Timer</b>	R100Li, R100LiC 08:00 - 18:30, Monday to Sunday	
	R130Li, R130LiC, R160Li, R160LiC 08:00 - 16:30, Monday to Sunday	
<b>Lawn coverage</b>	Factory setting	
<b>Remarks</b>	Place the charging station in the lower part of the working area. Lay the guide wire at an angle over the steep slope. Make sure guide wire is laid according to recommendations in <i>Laying and connecting the guide wire</i> on page 19	

### 3.20.3 L-shaped garden with a couple of islands and the charging station installed in the narrow area

<b>Area</b>	800 m <sup>2</sup>	
<b>Timer</b>	R100Li, R100LiC 07:00 - 24:00, Monday to Sunday	
	R130Li, R130LiC, R160Li, R160LiC 08:00 - 22:00, Monday to Sunday	
<b>Lawn coverage</b>	Area 1: <i>How?</i> Guide <i>How far?</i> X m <i>How often?</i> 60%	
<b>Remarks</b>	The <i>Lawn coverage</i> (How often?) for <i>Guide</i> must be specified as a value corresponding to the largest part of the working area as most of the working area can easily be reached by the robotic lawnmower following the guide wire out from the charging station. Make sure guide wire is laid according to recommendations in <i>Laying and connecting the guide wire</i> on page 19.	

### 3.20.4 U-shaped garden linked with a narrow passage

<b>Area</b>	1 000 m <sup>2</sup>	
<b>Timer</b>	R100Li, R100LiC 06:00 - 24:00, Monday to Sunday	
	R130Li, R130LiC, R160Li, R160LiC 07:00 - 24:00, Monday to Saturday	
<b>Lawn coverage</b>	Area 1: <i>How?</i> Guide <i>How far?</i> X m <i>How often?</i> 40%	
<b>Remarks</b>	The guide wire must be placed along the narrow passage to ensure that the robotic lawnmower can with ease locate the charging station from the left hand side of the working area. 60% is selected for <i>Lawn coverage</i> , <i>How often?</i> as the left hand area is nearly half of the total area. Make sure guide wire is laid according to recommendations in <i>Laying and connecting the guide wire</i> on page 19.	

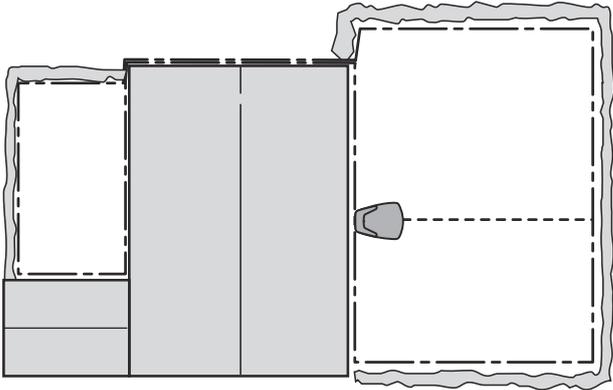
### 3.20.5 Unsymmetrical working area with a narrow passage and a number of islands

<b>Area</b>	<b>800 m<sup>2</sup></b>	
<b>Timer</b>	R100Li, R100LiC 07:00 - 24:00, Monday to Saturday	
	R130Li, R130LiC, R160Li, R160LiC 08:00 - 22:00, Monday to Saturday	
<b>Lawn coverage</b>	Factory setting	
<b>Remarks</b>	The guide wire must be placed along the narrow passage to ensure that the robotic lawnmower can with ease locate the charging station from the right hand side of the working area. As the right hand area is only a small part of the working area, the <i>Lawn coverage</i> factory settings can be used. Make sure guide wire is laid according to recommendations in <i>Laying and connecting the guide wire</i> on page 19.	

### 3.20.6 3 areas linked with two narrow passages

<b>Area</b>	<b>800 m<sup>2</sup></b>		
<b>Timer:</b>	R100Li, R100LiC: 07:00 - 24:00, Monday to Saturday		
	R130Li, R130LiC, R160Li, R160LiC: 08:00 - 22:00, Monday to Saturday		
<b>Lawn coverage</b>	Area 1: <i>How?</i> Guide <i>How far?</i> X m <i>How often?</i> 25 %	Area 2: <i>How?</i> Guide <i>How far?</i> X m <i>How often?</i> 25 %	
<b>Remarks</b>	As the working area contains three areas linked by two narrow passages, <i>Lawn coverage</i> must be used to create several areas to obtain an even mowing result across the entire working area. Make sure guide wire is laid according to recommendations in <i>Laying and connecting the guide wire</i> on page 19.		

### 3.20.7 A secondary area

<b>Area</b>	<b>500 + 100 m<sup>2</sup></b>	 A schematic diagram showing a central grey rectangular area. To its left is a smaller grey rectangle. To its right is a larger white rectangle with a dashed border, representing a secondary area cut. A small grey shape is positioned on the right side of the dashed rectangle, connected to the central area by a horizontal dashed line.
<i>Timer</i>	R100Li, R100LiC: 08:00 - 20:30, Monday, Tuesday, Thursday, Friday, Saturday	
	R130Li, R130LiC, R160Li, R160LiC: 08:00 - 18:30, Monday, Tuesday, Thursday, Friday, Saturday	
<i>Lawn coverage</i>	Factory setting	
<i>Remarks</i>	The secondary area is cut using the <i>Secondary area</i> mode on Wednesday and Sunday.	

# 4 Operation

## 4.1 Main switch



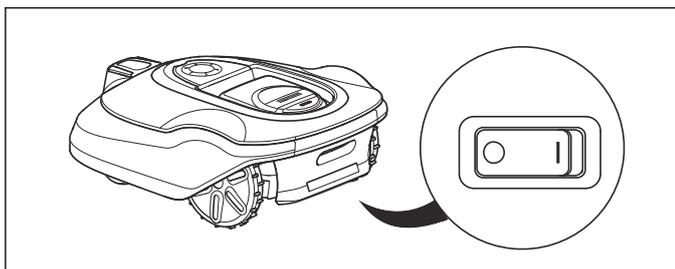
**WARNING:** Read the safety instructions carefully before you start your robotic lawnmower.



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



**WARNING:** Never use the robotic lawnmower when persons, especially children, or pets, are in the cutting area.

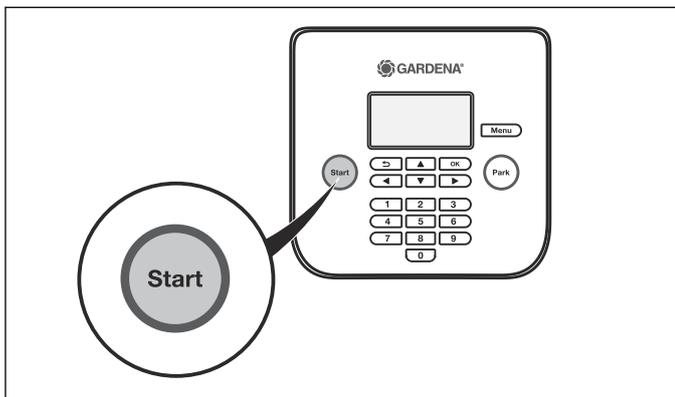


- Set the main switch in the *1* position to start the robotic lawnmower.
- Set the main switch in the *0* position when the robotic lawnmower is not in use or if any work, inspection or maintenance is being carried out.

When the main switch is set in the *0* position the motors on the robotic lawnmower cannot start.

## 4.2 Start

1. Press the **STOP** button to open the hatch.
2. Set the main switch to position *1*.
3. Enter the PIN code.
4. Press the **START** button.



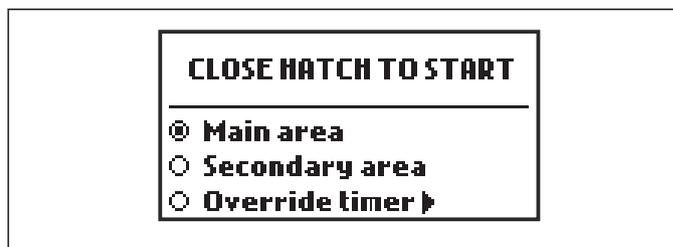
5. Select the desired operating mode. See *Operating mode - Start* on page 37.
6. Close the hatch within 10 seconds.  
If the robotic lawnmower is parked in the charging station, it will only leave the charging station when the battery is fully charged and if the timer is set to allow the mower to operate.

**Note:** Always press the **START** button before closing the hatch to start the robotic lawnmower.

## 4.3 Operating mode - Start

When the **START** button has been pressed the following operation selections can be selected.

- Main area
- Secondary area
- Override timer



### 4.3.1 Main area

*Main area* is the standard operating mode where the robotic lawnmower mows and charges automatically.

### 4.3.2 Secondary area

When mowing secondary areas *Secondary area* setting must be used. Selecting *Secondary area* will cause the robotic lawnmower to mow until the battery is empty.

If the robotic lawnmower charges in the *Secondary area* mode, it will fully charge, drive out about 50 cm and then stop. This indicates that it is charged and ready to start mowing.

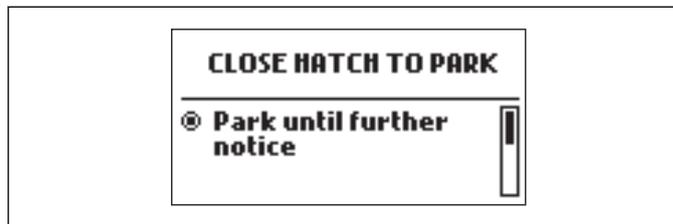
If the main working area has to be cut after charging, it is appropriate to switch the operation selection to *Main area* before placing the robotic lawnmower in the charging station.

### 4.3.3 Override timer

Any timer settings can be temporarily overridden by selecting *Override timer*. It is possible to override the timer for 24 h or 3 days.

## 4.4 Operating mode Park

When the **PARK** button is pressed the following operation selections can be chosen.



### 4.4.1 Park until further notice

The robotic lawnmower stays in the charging station until another operating mode is selected by pressing the **START** button.

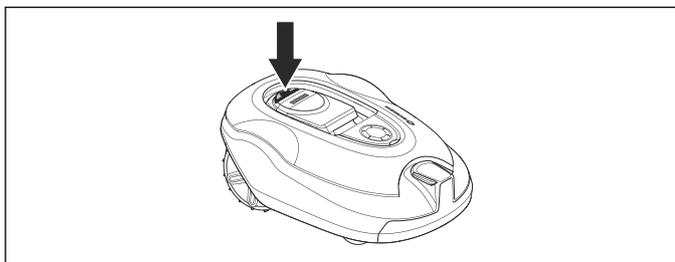
#### 4.4.2 Start with next timer

The robotic lawnmower stays in the charging station until the next Timer setting permits operation. This operation selection is suitable if one wishes to cancel an ongoing mowing cycle and allow the robotic lawnmower to stay in the charging station until the next day.

#### 4.5 Stop

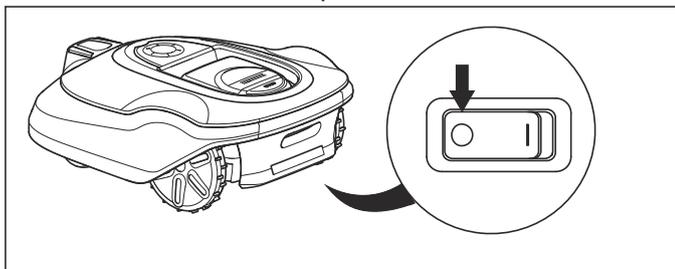
1. Press the **STOP** button.

The robotic lawnmower stops, the blade motor stops and the hatch opens.



#### 4.6 Switch off

1. Press the **STOP** button.
2. Set the main switch to position 0.



Always switch the robotic lawnmower off using the main switch if it requires maintenance or if the robotic lawnmower must be moved outside the working area.

#### 4.7 Timer and Standby

Use the timer function (see *Timer on page 22*) to avoid a duntrodden lawn.

##### 4.7.1 Standby

The robotic lawnmower has an inbuilt standby period according to the Standby time table. The standby period provides for instance a good opportunity to water or play games on the lawn.

Model	Standby time, hours per day
R100Li, R100LiC	min. 7
R130Li, R130LiC	min. 5
R160Li, R160LiC	min. 1

##### 4.7.2 To set the timer

When setting the timer, calculate that the robotic lawnmower mows about the amount of the number of square meters per hour and day listed in table Work capacity.

Model	Work capacity, m <sup>2</sup> per hour and day
R100Li, R100LiC	About 59
R130Li, R130LiC	About 68
R160Li, R160LiC	About 70

If the working area is for example 800 m<sup>2</sup> in size, the robotic lawnmower must operate for:

Model	Hours per day
R100Li, R100LiC	14
R130Li, R130LiC	12
R160Li, R160LiC	11

The times are approximate and depend for instance on grass quality, blade sharpness and battery age.



**WARNING:** Use the timer to avoid mowing when there are usually children, pets and anything else that could be damaged by the rotating blades on the lawn.

The factory settings for the timer allow the robotic lawnmower to operate around the clock 7 days a week. However, the robotic lawnmower will not operate during the built-in standby period.

##### 4.7.3 Example 1

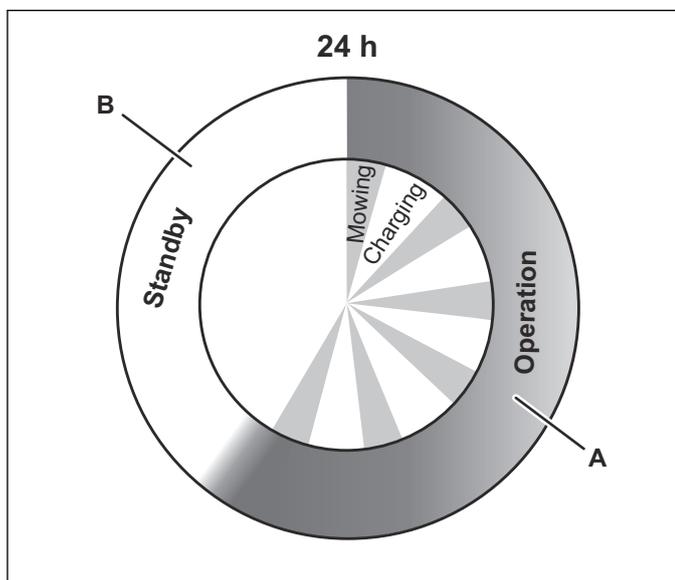
The times used in this example are applicable to GARDENA R130Li, R130LiC, but the principle is the same for the other models.

Timer setting, Period 1: 00:00 - 22:00.

Active period (A): 00:00 - 19:00.

The factory setting ensures that the robotic lawnmower begins cutting the lawn at 00.00. However the mower is parked in standby mode in the charging station from 19:00 and rests until it starts cutting again at 00:00.

If the timer setting is divided into 2 work periods, the standby period can be divided into a number of periods. The minimum standby period time must however be according to the Standby time table.



#### GARDENA R130Li, R130LiC

Operation, A = max. hours	19
Charging/Standby, B = min. hours	5

#### 4.7.4 Example 2

The times used in this example are applicable to GARDENA R130Li, R130LiC, but the principle is the same for the other models.

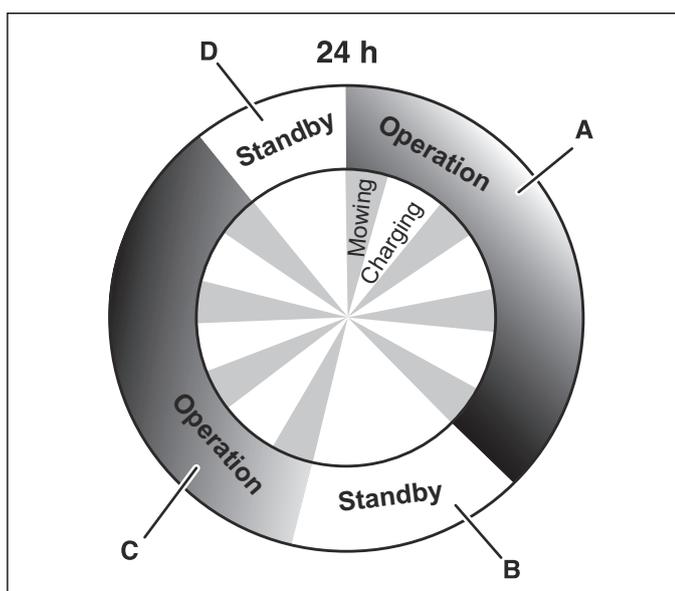
Timer setting Period 1 (A): 00:00 - 18:00.

Timer setting Period 2 (C): 20:00 - 23:00.

Active period (A): 00:00 - 16:00

Active period (C): 20:00 - 21:00.

The robotic lawnmower will operate between 00:00 and 18:00. It will begin again at 20:00 but stops running at 21:00 due to standby mode until it starts again at 00:00.



#### GARDENA R130Li, R130LiC

Operation, A + C = max. hours	19
Charging/Standby, B + D = min. hours	5

## 4.8 Charge a flat battery

When the GARDENA robotic lawnmower is new or has been stored for a long period, the battery will be flat and needs to be charged before starting.



**WARNING:** Only charge the robotic lawnmower using a charging station which is intended for it. Incorrect use may result in electric shock, overheating or leakage of corrosive liquid from the battery.

In the event of leakage of electrolyte flush with water and seek medical help if it comes in contact with the eyes etc.

1. Set the main switch to position 1.
2. Place the robotic lawnmower in the charging station. Open the hatch and slide the robotic lawnmower in as far as possible to ensure proper contact between the robotic lawnmower and the charging station. See contact and charging strips in *Product overview on page 5*
3. The display shows a message that charging is in progress.

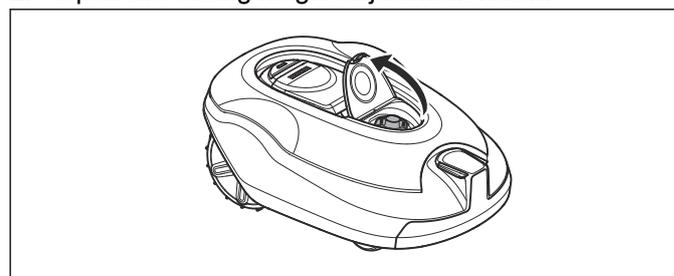
## 4.9 Adjust the cutting height

The cutting height can be varied from MIN (2 cm) to MAX (6 cm).

If the grass is long, let the robotic lawnmower to start mowing at the MAX cutting height. Once the grass is shorter, you can gradually lower the cutting height.

### 4.9.1 To adjust the cutting height

1. Press the **STOP** button to stop the robotic lawnmower.
2. Open the cutting height adjustment hatch.



3. Turn the knob to the required position.
  - Turn clockwise to increase the cutting height.
  - Turn counter-clockwise to decrease the cutting height.
4. Close the hatch.



**CAUTION:** During the first week after a new installation, the cutting height must be set to MAX to avoid damaging the loop wire. After this, the cutting height can be lowered step by step every week until the desired cutting height has been reached.

# 5 Maintenance

## 5.1 Introduction - maintenance

For better operating reliability and longer service life: check and clean the robotic lawnmower regularly and replace worn parts if necessary. All maintenance and servicing must be done according to GARDENA's instructions. See *Guarantee terms on page 54*.

When the robotic lawnmower is first used, the blade disc and blades should be inspected once a week. If the amount of wear during this period has been low, the inspection interval can be increased.

It is important that the blade disc rotates easily. The edges of the blades should not be damaged. The lifetime of the blades varies immensely and depends for instance on:

- Operating time and size of the working area.
- Type of grass and seasonal growth.
- Soil, sand and use of fertilizers.
- The presence of objects such as cones, windfalls, toys, tools, stones, roots and the like.

The normal life is 3 to 6 weeks when used under favorable conditions. See *Replace the blades on page 40* on how to replace the blades.



**WARNING:** Wear protective gloves.

**Note:** Working with blunt blades gives a poorer mowing result. The grass is not cut cleanly and more energy is needed resulting in the robotic lawnmower not mowing such a large area.

## 5.2 Clean the robotic lawnmower

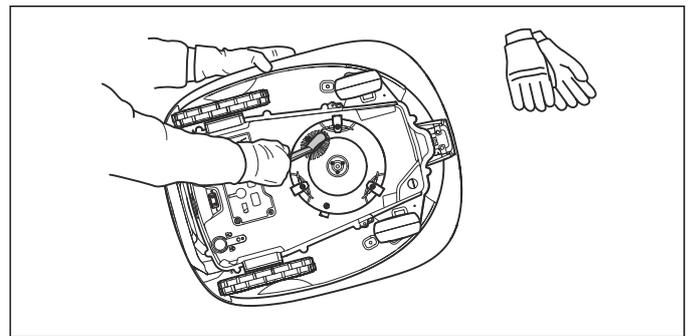
It is important to keep the robotic lawnmower clean. A mower with large amounts of grass stuck to it will not cope as well with slopes. It is recommended to clean using a brush.



**CAUTION:** Never use a high-pressure washer or even running water to clean the robotic lawnmower. Never use solvents for cleaning.

### 5.2.1 Chassis and blade disc

1. Set the main switch to position 0.
2. Lift the robotic lawnmower onto its side.
3. Clean the blade disc and chassis using for example a dish brush. At the same time, check that the blade disc rotates freely in relation to the foot guard. Also, check that the blades are intact and can pivot freely. If long grass or other objects find their way in, these may impede the blade disc. Even a slight braking effect leads to a higher consumption of energy and at worst will prevent the robotic lawnmower from being able to mow a large lawn.



### 5.2.2 Chassis

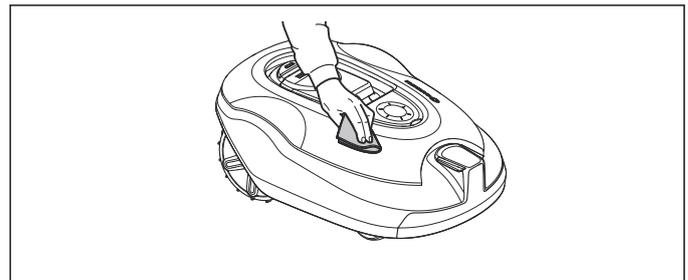
Clean the underside of the chassis. Brush or wipe with a damp cloth.

### 5.2.3 Wheels

Clean around the front wheels and rear wheel as well as the rear wheel bracket. Grass on the wheels can impact on how the lawnmower works in slopes.

### 5.2.4 Body

Use a damp, soft sponge or cloth to clean the body. If the body is very dirty it may be necessary to use a soap solution or washing-up liquid.



### 5.2.5 Charging station

Clean the charging station regularly from grass, leaves, twigs and other objects that may impede docking.

## 5.3 Replace the blades

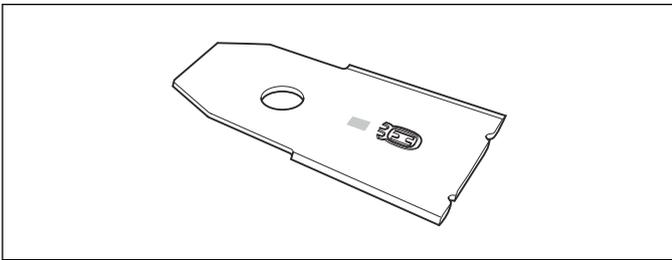


**WARNING:** Always use blades and screws of the right type. GARDENA can only guarantee safety when using original blades. Only replacing the blades and reusing the screw can result in a screw wearing during mowing and shearing. The blades can then be propelled from under the body and cause serious injury.

Replace worn or damaged parts for safety reasons. Even if the blades are intact, they should be replaced on a regular basis for the best mowing result and low energy usage.

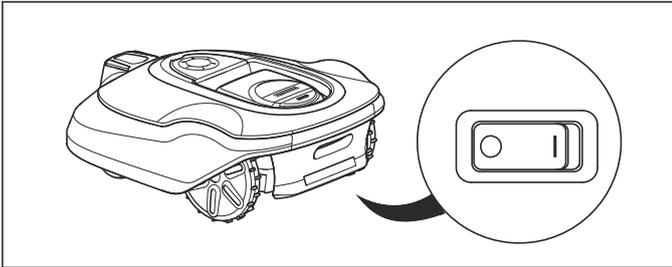
There are 3 blades on the robotic lawnmower, which are screwed into the blade disc. All 3 blades and screws must be replaced at the same time to obtain a balanced cutting system.

Use GARDENA original blades embossed with the crowned H-mark logotype, see *Guarantee terms on page 54*.

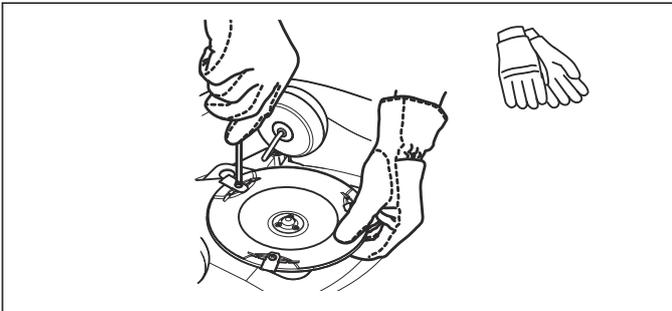


### 5.3.1 To replace the blades

1. Set the main switch to position 0.



2. Turn the robotic lawnmower upside down. Place the robotic lawnmower on a soft and clean surface to avoid scratching the body and the hatch.
3. Remove the 3 screws. Use a straight slot or cross-tip screwdriver.

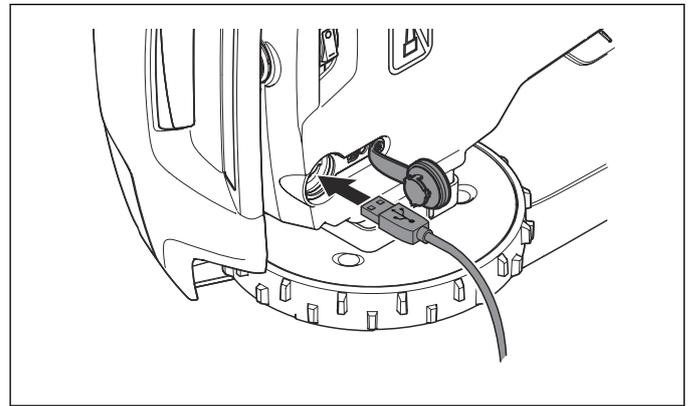


4. Remove each blade and screw.
5. Fasten new blades and screws.
6. Check that the blades can pivot freely.

### 5.4 Software update

If service is done by a local GARDENA representative then available software updates are downloaded to the robotic lawnmower by the service technician. However, owners of GARDENA robotic lawnmowers can download regular software updates from the GARDENA website and install them on their robotic lawnmowers. Registered users will be notified of this by email. To download new software, the robotic lawnmower is connected to a computer using the accompanying USB cable.

1. Connect the USB cable between your computer and the robotic lawnmower.
  - a) Remove the service outlet plug on the bottom of the mower. The service outlet is located beside the main switch.
  - b) Connect the USB cable to the computer's USB ports.
  - c) Connect the USB cable to the robotic lawnmower service outlet. The USB cable can only be connected in one way.



2. Set the main switch to position 1 and place the mower standing on all wheels.
3. Follow the software update instructions from your received email.
4. When the mower programming is completed disconnect the USB cable and fit the service outlet plug. If the seal on the service outlet plug is visibly damaged, the entire plug must be replaced. Make sure the plug is locked completely.

### 5.5 Battery

The battery is maintenance-free, but has a limited service life of 2 to 4 years.

Battery service life is dependent on the length of the season and how many hours a day the robotic lawnmower is used. A long season or many hours of use per day means that the battery must be replaced more regularly.



**WARNING:** Only charge the robotic lawnmower using a charging station which is intended for it. Incorrect use may result in electric shock, overheating or leakage of corrosive liquid from the battery. In the event of leakage of electrolyte flush with water and seek medical help if it comes in contact with the eyes etc.



**CAUTION:** The battery must be charged fully before winter storage. If the battery is not fully charged it can be damaged and in certain cases be rendered useless.

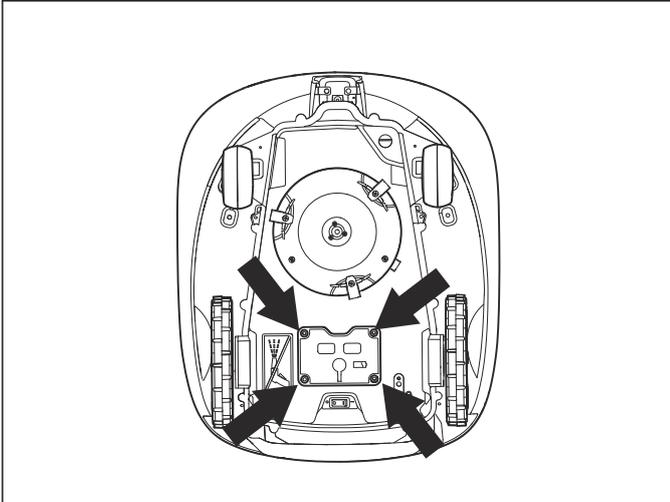
If the operating times for the robotic lawnmower are shorter than normal between charges, this indicates that the battery is getting old and eventually needs replacing. The battery is fine as long as the robotic lawnmower maintains a well-cut lawn.

#### 5.5.1 Replacing battery



**WARNING:** Use only original batteries recommended by the manufacturer. Product safety cannot be guaranteed with other batteries. Do not use non-rechargeable batteries. The appliance must be disconnected from the supply mains when removing the battery.

1. Set the main switch to position 0.
2. Turn the robotic lawnmower upside down. Place the robotic lawnmower on a soft and clean surface to avoid scratching the body and the display cover.
3. Clean around the battery cover.
4. Unscrew the four screws to the battery cover (Torx 20) and remove the battery cover.



5. Carefully lift out the battery and release the connectors. NOTE! Do not pull the cables. Hold the connectors and release the latch.
6. Connect a new original battery by pressing the connectors together until it locks.
7. Place the battery with the sticker "This side down" downwards in the battery opening.
8. Fit the battery cover without clamping the cables. If the seal on the battery cover is visibly damaged, the entire battery cover must be replaced.
9. Carefully cross-tighten the four screws for the battery cover (Torx 20).

## 5.6 Winter service

Take your robotic lawnmower to a local GARDENA representative for service prior to winter storage. Regular winter service will maintain the robotic lawnmower in good condition and create the best conditions for a new season without any disruptions.

Service usually includes the following:

- Thorough cleaning of the body, the chassis, the blade disc and all other moving parts.
- Testing of the mower's function and components.
- Checking and if required replacement of wear items such as blades and bearings.
- Testing the mower's battery capacity as well as a recommendation to replace battery if necessary.
- If necessary the local GARDENA representative can also update the robotic lawnmower with new software, including new features where applicable.

# 6 Troubleshooting

## 6.1 Introduction - troubleshooting

In this chapter, a number of messages are listed which may be shown in the display if there is a malfunction. There is a proposal as to the cause and steps to take for each message. This chapter also presents some symptoms that can guide you if the robotic lawnmower does not work as expected. More suggestions for steps to take in the event of malfunction or symptoms can be found on [www.gardena.com](http://www.gardena.com).

## 6.2 Fault messages

Below a number of fault messages are listed which may be shown in the display of the robotic lawnmower. Contact your local GARDENA representative if the same message appears often.

Message	Cause	Action
<i>Wheel motor blocked, left</i>	Grass or other object has wrapped around the drive wheel.	Check the drive wheel and remove the grass or other object.
<i>Wheel motor blocked, right</i>	Grass or other object has wrapped around the drive wheel.	Check the drive wheel and remove the grass or other object.
<i>Cutting system blocked</i>	Grass or other object has wrapped around the blade disc.	Check the drive wheel and remove the grass or other object.
	The blade disc lies in a pool of water.	Move the robotic lawnmower and prevent the collection of water in the working area.
<i>No loop signal</i>	The power supply is not connected.	Check the wall socket connection and whether an earth-fault breaker has tripped or not. Check that the low voltage cable is connected to the charging station.
	The low voltage cable is damaged or not connected.	Check that the low voltage cable is not damaged. Check that it is also properly connected to the charging station and to the power supply.
	The boundary wire is not connected to the charging station.	Check that the boundary wire connectors are fitted properly to the charging station. Replace connectors if damaged. See <i>Connecting the boundary wire on page 18</i> .
	Boundary wire broken.	Find out where the break is. Replace the damaged section of the loop with a new loop wire and splice using an original coupler. See <i>Find breaks in the loop wire on page 48</i> .
	<i>ECO mode</i> is activated and the robotic lawnmower has attempted to start outside the charging station.	Place the robotic lawnmower in the charging station, press the <b>START</b> button and close the hatch. See <i>Settings on page 29</i> .
	The boundary wire is crossed on its way to and from an island.	Check that the boundary wire is laid according to instructions, e.g. in the right direction around the island. See <i>Installation on page 26</i> .
	The connection between the robotic lawnmower and the charging station has been broken.	Place the robotic lawnmower in the charging station and generate a new loop signal, see <i>New loop signal on page 26</i> .
	Disturbances from metal objects (fences, reinforcement steel) or buried cables close by.	Try moving the boundary wire.
<i>Trapped</i>	The robotic lawnmower has got caught in something.	Free the robotic lawnmower and rectify the reason for it becoming trapped.
	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.

Message	Cause	Action
<i>Outside working area</i>	The boundary wire connections to the charging station are crossed.	Check that the boundary wire is connected correctly.
	The boundary wire is too close to the edge of the working area.	Check that the boundary wire has been laid according to the instructions. See <i>Installation on page 26</i> .
	The working area slopes too much by the boundary loop.	
	The boundary wire is laid in the wrong direction around an island.	
	Disturbances from metal objects (fences, reinforcement steel) or buried cables close by.	Try moving the boundary wire.
	The robotic lawnmower finds it hard to distinguish the signal from another robotic lawnmower installation close by.	Place the robotic lawnmower in the charging station and generate a new loop signal, see <i>New loop signal on page 26</i> .
<i>Empty battery</i>	The robotic lawnmower cannot find the charging station.	Check that the charging station and the guide wire are installed in accordance with the instructions. See <i>Installation of the guide wire on page 18</i> .
	The guide wire is broken or not connected.	Find out where the break is and rectify it.
	The battery is spent.	Replace the battery. See <i>Battery on page 41</i> .
	The charging station's antenna is defective.	Check if the indicator lamp in the charging station flashes red. See <i>Indicator lamp in the charging station on page 47</i> .
<i>Wrong PIN code</i>	Wrong PIN code has been entered. Five attempts are permitted, and the keypad is then blocked for five minutes.	Enter the correct PIN code. Contact your local GARDENA representative if you forget the PIN code.
<i>No drive</i>	The robotic lawnmower has got caught in something.	Free the robotic lawnmower and rectify the reason for the lack of drive. If it is due to wet grass, wait until the lawn has dried before using the robotic lawnmower.
	The working area includes a steep slope.	Maximum guaranteed slope is 40%. Steeper slopes should be isolated. See <i>Slopes on page 16</i> .
	The guide wire is not laid at an angle on a slope.	If the guide wire is laid on a slope, it must be laid at an angle across the slope. See <i>Installation of the guide wire on page 18</i> .
<i>Wheel motor overloaded, right</i>	The robotic lawnmower has got caught in something.	Free the robotic lawnmower and rectify the reason for the lack of drive. If it is due to wet grass, wait until the lawn has dried before using the robotic lawnmower.
<i>Wheel motor overloaded, left</i>		
<i>Charging station blocked</i>	The contact between the charging strips and contact strips may be poor and the robotic lawnmower has made a number of attempts to charge.	Put the robotic lawnmower in the charging station and check that the charging strips and contact strips make good contact.
	An object is obstructing the robotic lawnmower.	Remove the object.
	The charging station is tilted or bent.	Confirm that the charging station is placed on a fully flat and horizontal ground. The charging station must not be tilted or bent.

Message	Cause	Action
<i>Stuck in charging station</i>	There is an object in the way of the robotic lawnmower preventing it from leaving the charging station.	Remove the object.
<i>Upside down</i>	The robotic lawnmower is leaning too much or has turned over.	Turn the robotic lawnmower the right way up.
<i>Needs manual charging</i>	The robotic lawnmower is set to the <i>Secondary area</i> operating mode.	Place the robotic lawnmower in the charging station. This behaviour is normal and no action is required.
<i>Next start hh:mm</i>	The timer setting prevents the robotic lawnmower from operating.	Change the timer settings. See <i>Timer on page 22</i> .
	The rest period is in progress. The robotic lawnmower has an inbuilt standby period according to the Standby time table.	This behaviour is normal and no action is required. See <i>Timer and Standby on page 38</i> .
	The clock on the robotic lawnmower is not correct.	Set the time. See <i>Time &amp; Date on page 29</i> .
<i>The day's mowing is complete</i>	The rest period is in progress. The robotic lawnmower has an inbuilt standby period according to the Standby time table.	This behaviour is normal and no action is required. See <i>Timer and Standby on page 38</i> .
<i>Lifted</i>	The lift sensor has been activated as the mower has become trapped.	Free the mower
<i>Collision sensor problem, front/rear</i>	Mower body can not move freely around its chassis.	Check that the mower body can move freely around its chassis. If the problem remains, the message requires action by authorized service technician.
<i>Wheel drive problem, right/left</i>	Grass or other object is wrapped around the drive wheel.	Clean the wheels and around the wheels.
<i>Alarm! Mower switched off</i>	The alarm was activated because the mower was switched OFF.	Adjust the mower security level in the <i>Security</i> menu, see <i>Security on page 25</i> .
<i>Alarm! Mower stopped</i>	The alarm was activated because the mower was stopped.	
<i>Alarm! Mower lifted</i>	The alarm was activated because the mower was lifted.	
<i>Alarm! Mower tilted</i>	The alarm was activated because the mower was tilted.	
<i>Electronic problem</i>	Temporary electronic or software related issue in the mower.	Restart the mower.
<i>Loop sensor problem, front/rear</i>		If the problem remains, the message requires action by authorized service technician.
<i>Charging system problem</i>		
<i>Tilt sensor problem</i>		
<i>Temporary problem</i>		
<i>Temporary battery problem</i>	Temporary battery or software related issue in the mower.	Restart the mower.
<i>Battery problem</i>		Disconnect and reconnect the battery. If the problem remains, the message requires action by authorized service technician.
<i>Charging current too high</i>	Wrong or faulty power supply unit.	Restart the mower. If the problem remains, the message requires action by authorized service technician.

Message	Cause	Action
<i>Connectivity problem</i>	Potential problem on the connectivity circuit board in the mower.	Restart the mower. If the problem remains, the message requires action by authorized service technician.
<i>Connectivity settings restored</i>	The connectivity settings was restored due to a fault.	Please check and change the settings if needed.
<i>Poor signal quality</i>	The connectivity circuit board in the mower is assembled upside down, or the mower itself is tilted or upside down.	Verify the mower is not upside down or tilted. If not, the message requires action by authorized service technician.

### 6.3 Information messages

Below a number of information messages are listed which may be shown in the display of the robotic lawnmower. Contact your local GARDENA representative if the same message appears often.

Message	Cause	Action
<i>Low battery</i>	The robotic lawnmower cannot find the charging station.	Check that the charging station and the guide wire are installed in accordance with the instructions. See <i>Installing and connecting the charging station on page 13</i> .
	The guide wire is broken or not connected.	Find out where the break is and rectify it.
	The battery is spent.	Replace the battery. See <i>Battery on page 41</i> .
	The charging station's antenna is defective.	Check if the indicator lamp in the charging station flashes red. See <i>Indicator lamp in the charging station on page 47</i> .
<i>Settings restored</i>	Confirmation that a <i>Reset all user settings</i> has been carried out.	This is normal. No action required.
<i>Guide not found</i>	The guide wire is not connected to the charging station.	Check that the guide wire's connector is tightly connected to the charging station. See <i>Installation of the guide wire on page 18</i> .
	Break in the guide wire.	Find out where the break is. Replace the damaged section of the guide wire with a new loop wire and splice using an original coupler.
	The guide wire is not connected to the boundary loop.	Check that the guide wire is connected correctly to the boundary loop. See <i>Laying and connecting the guide wire on page 19</i> .
<i>Guide calibration failed</i>	The robotic lawnmower has failed to calibrate the guide wire.	Check that the guide wires are installed according to the instructions, See <i>Installation of the guide wire on page 18</i> .
<i>Guide calibration accomplished</i>	The robotic lawnmower has succeeded to calibrate the guide wire.	No action required.
<i>Difficult finding home</i>	The robotic lawnmower has been following the boundary wire several laps without finding the charging station.	The installation has not been done correctly. See <i>Boundary wire on page 14</i> .
		Wrong corridor width setting on boundary wire. See <i>Boundary wire on page 14</i> .
		The mower was started on a Secondary area with the Main area setting.
<i>Mowing limited by SensorControl</i>	The mowing time is limited by the SensorControl function. The SensorControl automatically adapts mowing time to the lawn growth rate.	This behavior is normal and no action is required, unless the lawn looks uncut. Then increase the intensity level of the SensorControl, or temporarily switch it off.

## 6.4 Indicator lamp in the charging station

For a fully functional installation, the indicator lamp in the charging station must emit a solid or flashing green light. If something else appears, follow the troubleshooting guide below.

There is more help on [www.gardena.com](http://www.gardena.com). If you still need help, please contact your local GARDENA representative.

Light	Cause	Action
<i>Solid green light</i>	Good signals	No action required
<i>Green flashing light</i>	The signals are good and <i>ECO mode</i> is activated.	No action required. For more information on <i>ECO mode</i> , see <i>Settings on page 29</i> .
<i>Blue flashing light</i>	The boundary loop is not connected to the charging station.	Check that the boundary wire connectors are fitted properly to the charging station. See <i>Connecting the boundary wire on page 18</i> .
	Break in the boundary loop.	Find out where the break is. Replace the damaged section of the loop with a new loop wire and splice using an original coupler.
<i>Red flashing light</i>	Interruption in the charging station's antenna.	Contact your local GARDENA representative.
<i>Solid red light</i>	Fault in the circuit board or incorrect power supply in the charging station. The fault should be rectified by an authorized service technician.	Contact your local GARDENA representative.

## 6.5 Symptoms

If your robotic lawnmower does not work as expected, follow the symptoms guide below.

There is a FAQ (Frequently Asked Questions) on [www.gardena.com](http://www.gardena.com) which provides more detailed answers to a number of standard questions. Contact your local GARDENA representative if you still cannot find the reason for the fault.

Symptoms	Cause	Action
The robotic lawnmower has difficulty docking.	The boundary wire is not laid in a long straight line that is far enough out from the charging station.	Check that the charging station has been installed according to the instructions in <i>Laying the boundary wire in towards the charging station on page 17</i>
	The guide wire is not inserted in the slot under the charging station.	It is absolutely critical for operation that the guide wire is perfectly straight and is in the correct position under the charging station. Therefore make sure that the guide wire is always in its slot in the charging station. See <i>Laying and connecting the guide wire on page 19</i> .
	The charging station is on a slope.	Place the charging station on a surface that is entirely level. See <i>Best charging station location on page 11</i> .
The robotic lawnmower runs at the wrong time	The robotic lawnmower clock needs to be set.	Set the clock. See <i>Time &amp; Date on page 29</i> .
	The start and stop times for mowing are incorrect.	Reset the start time and stop time settings for mowing. See <i>Timer on page 22</i> .
The robotic lawnmower vibrates.	Damaged blades lead to imbalance in the cutting system.	Inspect the blades and screws and replace them if necessary. See <i>To replace the blades on page 41</i> .
	Too many blades in the same position lead to imbalance in the cutting system.	Check that only one blade is fitted at each screw.
	Different versions (thickness) of GARDENA blades are used.	Check if the blades are of different versions.

Symptoms	Cause	Action
The robotic lawnmower runs, but the blade disc does not rotate.	The robotic lawnmower searches for the charging station.	No action. The blade disc does not rotate when the robotic lawnmower is searching for the charging station.
The robotic lawnmower mows for shorter periods than usual between charges.	Grass or other foreign object blocks the blade disc.	Remove and clean the blade disc. See <i>Clean the robotic lawnmower on page 40</i> .
	The battery is spent.	Replace the battery. See <i>Battery on page 41</i> .
Both the mowing and charging times are shorter than usual.	The battery is spent.	Replace the battery. See <i>Battery on page 41</i> .
The robotic lawnmower is parked for hours in the charging station.	The robotic lawnmower has an inbuilt standby period according to the Standby time table. See <i>Standby on page 38</i> .	No action.
	The hatch has been closed without the <b>START</b> button first being pressed.	Open the hatch, press the <b>START</b> button and then close the hatch.
Uneven mowing results.	The robotic lawnmower works too few hours per day.	Increase the mowing time. See <i>Timer on page 22</i> .
		Not applicable for R100Li, R100LiC. SensorControl senses that the lawn has been mowed more than it actually has. Increase the intensity level in the SensorControl. If this does not help, turn off the SensorControl.
	The <i>How often?</i> setting is incorrect in relation to the layout of the working area.	Check that the correct <i>How often?</i> value is selected.
	The shape of the working area requires the use of <i>Area 1-3</i> for the robotic lawnmower to find its way to all remote areas.	Use <i>Area 1-3</i> to steer the robotic lawnmower to a remote area. See <i>Lawn coverage on page 26</i> .
	Working area too large.	Try limiting the working area or extending the working time. See <i>Timer on page 22</i> .
	Dull blades.	Replace all the blades. See <i>To replace the blades on page 41</i> .
	Long grass in relation to the set cutting height.	Increase the cutting height and then successively lower.
	Accumulation of grass by the blade disc or around the motor shaft.	Check that the blade disc rotates freely and easily. If not, screw off the blade disc and remove grass and foreign objects. See <i>Clean the robotic lawnmower on page 40</i> .

## 6.6 Find breaks in the loop wire

Breaks in the loop wire are usually the result of unintentional physical damage to the wire such as when gardening with a shovel. In countries with ground frost, also sharp stones that move in the ground can damage the wire. Breaks can also be due to the wire being stretched excessively during installation.

Mowing the grass too low right after the installation can damage wire insulation. Damage to the insulation may not cause disruptions until several weeks or months later. To avoid this, always select the maximum cutting height the first weeks after installation and then lower the height one step at a time every second week until the desired cutting height has been reached.

A defective splicing of the loop wire can also lead to disruptions several weeks after the splice was done. A

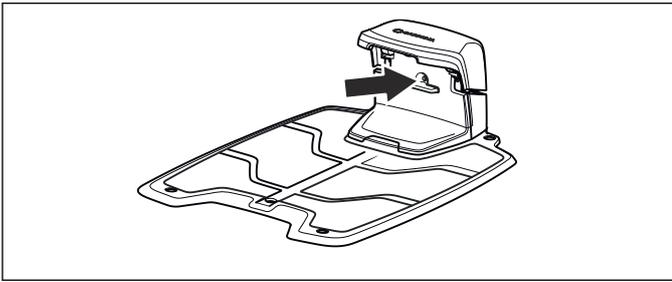
faulty splice can, for example, be the result of the original coupler not being pressed together hard enough with a pair of pliers, or that a coupler of lower quality than the original coupler has been used. Please first check all known splices before further troubleshooting is done.

A wire break can be located by gradually halving the distance of the loop where the break may have occurred until there is only a very short section of the wire left.

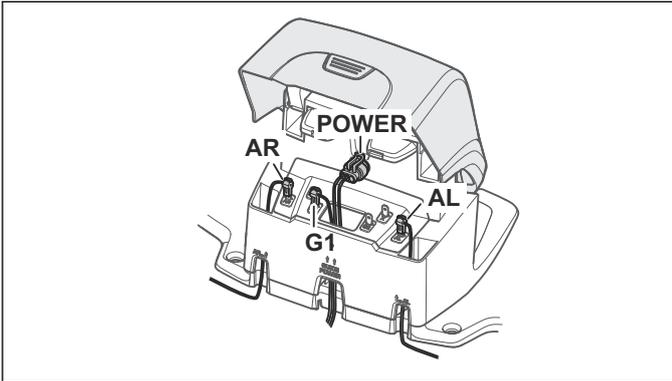
The following method does not work if *ECO mode* is activated. Make sure first that *ECO mode* is turned off. See *ECO mode on page 29*.

1. Check that the indicator lamp in the charging station flashes blue, which indicates a break in the

boundary loop. See *Indicator lamp in the charging station on page 47*.



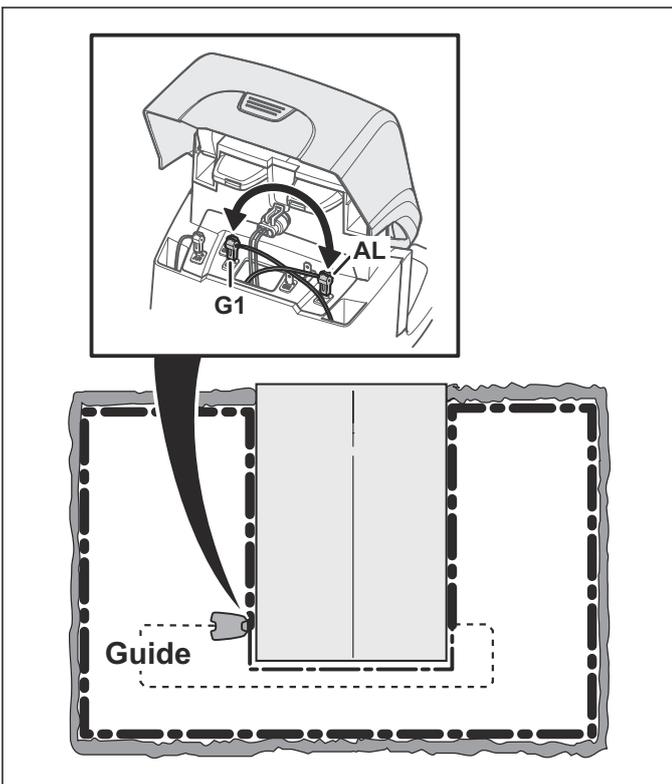
2. Check that the boundary wire connections to the charging station are properly connected and not damaged. Check that the indicator lamp in the charging station is still flashing blue.



3. Switch the connections between the guide wire and the boundary wire in the charging station.

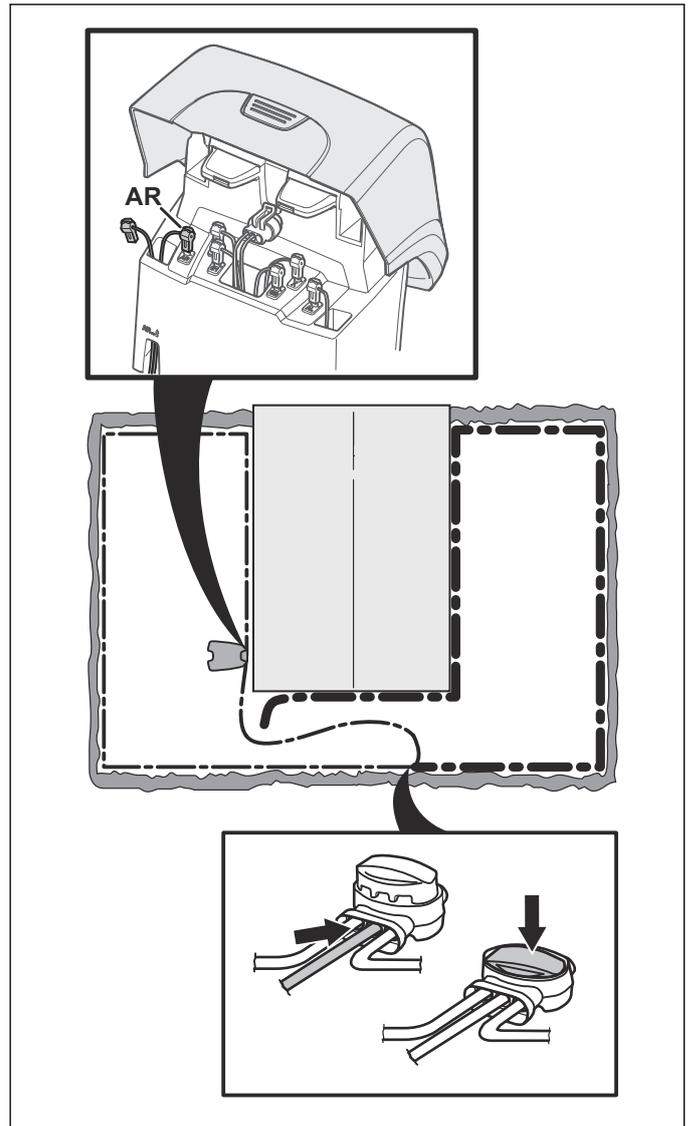
Start by switching connection AL and G1.

If the indicator lamp is lit with a solid green light, then the break is somewhere on the boundary wire between AL and the point where the guide wire is connected to the boundary wire (thick black line in the illustration).

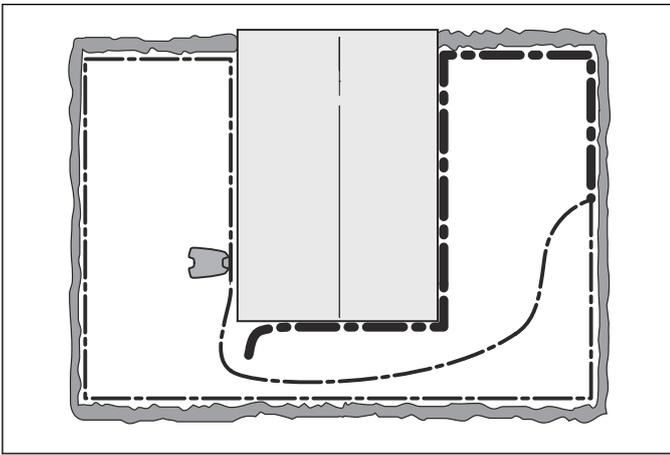


To rectify the fault you will need boundary wire, connector(s) and coupler(s):

- a) If the suspected boundary wire is short then it is easiest to exchange all of the boundary wire between AL and the point where the guide wire is connected to the boundary wire (thick black line).
- b) If the suspected boundary wire is long (thick black line) then do as follows: Put AL and G1 back to their original positions. Then disconnect AR. Connect a new loop wire to AR. Connect the other end of this new loop wire at the middle of the suspected wire section.

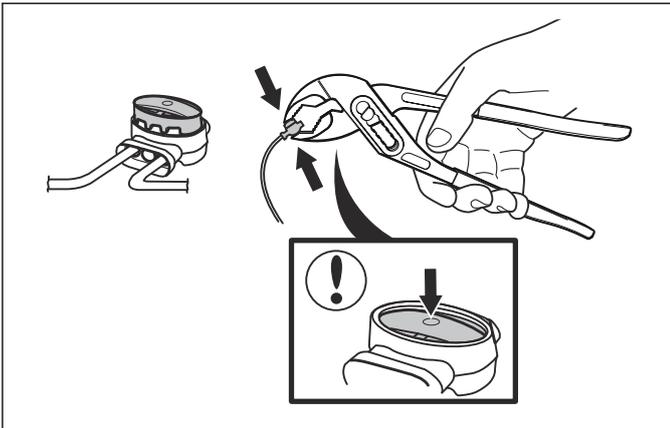


If the indicator lamp now is green, then the break is somewhere in the wire between the disconnected end to the point where the new wire is connected (thick black line below). In that case, move the connection for the new wire closer to the disconnected end (roughly at the middle of the suspected wire section) and check again if the indicator lamp is green.



Continue until only a very short section of the wire remains which is the difference between a solid green light and a flashing blue light. Then follow instruction in step 5 below.

4. If indicator lamp still flashes blue in step 3 above: Put AL and G1 back in their original positions. Then switch AR and G1. If indicator lamp now is lit with a solid green light then disconnect AL and connect a new boundary wire to AL. Connect the other end of this new wire at the middle of the suspected wire section. Follow the same approach as in 3 a) and 3b) above.
5. When the break is found, the damaged section must be replaced with a new wire. Always use original couplers.



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# 7 Transportation, storage and disposal

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## 7.1 Transportation

The contained lithium-ion-batteries are subject to the Dangerous Goods Legislation requirements. For commercial transports e.g. by third parties or forwarding agents, special requirement on packaging and labeling must be observed. Consult an expert for hazardous material for preparation of the item being shipped. Please also observe possibly more detailed national regulations.

Tape off open contacts and pack up the battery in such a manner that it cannot move around in the packaging. Always secure the product when transporting it.

## 7.2 Winter storage

### 7.2.1 The robotic lawnmower

The robotic lawnmower must be cleaned carefully before putting it away for the winter. See *Clean the robotic lawnmower on page 40*.

To guarantee battery functionality and service life, it is important to charge the robotic lawnmower before storing it away for the winter. Place the robotic lawnmower in the charging station with the hatch open until the battery icon in the display shows that the battery is fully charged. Then set the main switch to 0.

Check the condition of wear items such as blades and bearings in the rear wheel. Rectify if necessary to make sure the robotic lawnmower is in good condition prior to next season.

Store the robotic lawnmower standing on all wheels and place it in a dry, frost-free environment, preferably in the mower's original packaging. You can also hang the robotic lawnmower on a GARDENA original wall hanger. Contact your local GARDENA representative for more information about available wall hangers.



**CAUTION:** The battery must be charged fully before winter storage. If the battery is not fully charged it can be damaged and in certain cases be rendered useless.

### 7.2.2 The charging station

Store the charging station and power supply indoors. The boundary wire and the guide wire can be left in the ground.

1. Disconnect the charging station power supply.
2. Release the connector lock and pull the connector out.
3. Disconnect the boundary and guide wire contacts from the charging station.

The ends of the wires should be protected from damp by putting them in a container with grease for instance.



**CAUTION:** If it is not possible to store the charging station indoors, the charging station

must be connected to the mains, the boundary wire and the guide wires the entire winter.

## 7.3 After winter storage

Check if cleaning is needed, particularly the charging strips on both the robotic lawnmower and the charging station. If the charging strips appear to be burnt or coated, clean them using a fine grade emery cloth. Check also that the robotic lawnmower's time and date are correct.

## 7.4 Environmental information



The symbol on the GARDENA robotic lawnmower indicates that this product cannot be treated as domestic waste. It should instead be left at a suitable recycling centre to recycle its electronic components and batteries. The battery must be removed from the product before it is scrapped.

By ensuring that this product is taken care of correctly, you can help to counteract the potential negative impact on the environment and people that can otherwise result through incorrect waste management of this product.

For more detailed information about recycling this product, contact your municipality, your domestic waste service or the shop from where you purchased the product.

## 7.5 Removal of battery for recycling

For removal the battery from the robotic lawnmower see *Replacing battery on page 41*.

## 8 Technical data

### 8.1 Technical data

Data	R100Li, R100LiC	R130Li, R130LiC	R160Li, R160LiC
Model series	SILENO, smart SILENO	SILENO+, smart SILENO+	SILENO+, smart SILENO+
<b>Dimensions</b>			
Length, cm	63	63	63
Width, cm	51	51	51
Height, cm	25	25	25
Weight, kg	9.8	9.8	9.8
<b>Electrical system</b>			
Battery, Lithium-Ion 18 V/2.1 Ah Art.No	584 85 28-01, 584 85 28-02		
Power supply, V/28 V DC	100-240	100-240	100-240
Low voltage cable length, m	10	10	10
Mean energy con- sumption at maxi- mum use	7.3 kWh/month in a 1000 m <sup>2</sup> working area	8.2 kWh/month in a 1300 m <sup>2</sup> working area	10 kWh/month in a 1600 m <sup>2</sup> working area
Charge current, A DC	1.3	1.3	1.3
Average mowing time, min	65	65	65
Average charging time, min	60	60	60
Operating Frequen- cy Band, Hz	300-80000	300-80000	300-80000
Maximum Radio-fre- quency power, mW @60m <sup>1</sup>	<25	<25	<25
<b>Noise emissions measured in the environment as sound power<sup>2</sup></b>			
Measured sound power noise level, dB (A)	58	58	58
Noise emissions un- certainties K <sub>WA</sub> , dB (A)	2	2	2
Guaranteed sound power noise level, dB (A)	60	60	60
Sound pressure noise level at the op- erator's ear, dB (A) <sup>3</sup>	47	47	47

<sup>1</sup> Maximum active output power to antennas in the frequency band in which the radio equipment operates.

<sup>2</sup> Noise emissions in the environment measured as sound power (L<sub>WA</sub>) in conformity with EC directive 2000/14/EC. The noise emission declarations conforms to EN 50636-2-107:2015. The guaranteed sound power level includes variation in production as well as variation from the test code with 1-3 dB(A).

<sup>3</sup> Sound pressure noise uncertainties K<sub>pA</sub>, 2-4 dB (A)

Data	R100Li, R100LiC	R130Li, R130LiC	R160Li, R160LiC
<b>Mowing</b>			
Cutting system	3 pivoted cutting blades		
Blade motor speed, rpm	2300	2300	2300
Power consumption during cutting, W +/- 20 %	25	25	25
Cutting height, cm	2-6	2-6	2-6
Cutting width, cm	22	22	22
Narrowest possible passage, cm	60	60	60
Maximum angle for cutting area, %	35	35	35
Maximum angle for boundary wire, %	15	15	15
Maximum length boundary wire, m	800	800	800
Maximum length guide wire, m	400	400	400
Working capacity, m <sup>2</sup> +/- 20%	1000	1300	1600
<b>IP-classification</b>			
Robotic lawnmower	IPX4	IPX4	IPX4
Charging station	IPX1	IPX1	IPX1
Transformer	IPX4	IPX4	IPX4

Internal SRD (short range device)	R100Li,	R100LiC	R130Li,	R130LiC	R160Li,	R160LiC
Operating frequency band, MHz	-	863-870	-	863-870	-	863-870
Maximum radio-frequency power, mW	-	25	-	25	-	25
Free field radio range, approx. m	-	100	-	100	-	100

Husqvarna AB does not guarantee full compatibility between the robotic lawnmower and other types of wireless systems such as remote controls, radio transmitters, hearing loops, underground electric animal fencing or similar.

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## 9 Warranty

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### 9.1 Guarantee terms

GARDENA guarantees this product's functionality for a period of two years (from date of purchase). The guarantee covers serious faults relating to materials or manufacturing faults. Within the guarantee period, we will replace the product or repair it at no charge if the following terms are met:

- The robotic lawnmower and the charging station may only be used in compliance with the instructions in this Operator's Manual. This manufacturer's guarantee does not have an effect on the user's existing warranty claims against the dealer/seller.
- Users or non-authorized third parties must not attempt to repair the product.

Examples of faults which are not included in the guarantee:

- Damage caused by water seepage from underneath the robotic lawnmower. This damage is normally caused by cleaning or irrigation systems or holes/hollows in the working area when pools of water are formed when it rains.
- Damage caused by lightning.
- Damage caused by improper battery storage or battery handling.
- Damage caused by using a battery that is not a GARDENA original battery.
- Damage caused by not using GARDENA original spare parts and accessories, such as blades and installation material.
- Damage to the loop wire.
- Damage caused by non-authorized changing or tampering with the product or its power supply.

The blades are seen as disposable and are not covered by the guarantee.

If an error occurs with your GARDENA robotic lawnmower, please contact your local GARDENA representative for further instructions. Please have the receipt and the robotic lawnmower's serial number at hand when contacting your local GARDENA representative.

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# 10 EC Declaration of Conformity

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## 10.1 EC Declaration of Conformity

Husqvarna AB, SE-561 82 Huskvarna, Sweden, tel: +46-36-146500, declares that the Robotic lawnmowers **R100Li, R130Li, R160Li, R100LiC, R130LiC and R160LiC** with serial numbers dating 2017 week 37 and onwards (the year and week is clearly stated on the rating plate, followed by the serial number), comply with the requirements of the COUNCIL'S DIRECTIVE:

- Directive "relating to machinery" **2006/42/EC**.
  - Particular requirements for robotic battery powered electrical lawnmowers **EN 50636-2-107: 2015**
  - Electromagnetic fields **EN 62233: 2008**.
- Directive on "restriction of use of certain hazardous substances" **2011/65/EU**.
- Directive "relating to noise emissions from outdoor equipment" **2000/14/EC**. See also *Technical data on page 52* for information regarding noise emissions and the cutting width.

The notified body 0404, SMP Svensk Maskinprovning AB, Box 7035, SE-750 07 Uppsala, Sweden, has issued a report regarding the assessment of conformity according to annex VI to the Council's Directive of May 8, 2000 "relating to noise emissions into the environment" 2000/14/EC. The certificate is numbered: 01/901/259 for GARDENA R100Li, R100LiC, R130Li and R130LiC. Certificate numbered for GARDENA R160Li and R160 LiC.

- Directive "relating to radio equipment" **2014/53/EU**. The following standards have been applied:

- **Final Draft 303 447 v1.1.1 (2017-06)**

Electromagnetic compatibility:

- **ETSI EN 301 489-1 v 2.2.0**

For R100LiC, R130LiC and R160LiC equipped with **Smart System** module also:

- **EN 301 489-3 v1.6.1**
- **EN 301 489-3 v1.9.2**
- **EN 300 220-1 v2.4.1**
- **EN 300 220-2 v2.4.1**



Huskvarna 2017-09-01

Lars Roos

Global R&D Director, Electric category

(Authorized representative for Husqvarna AB and responsible for technical documentation.)



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Original instructions

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