Installation & Trouble Shooting Guide

Pre-Installation

You have to keep in mind that :

Before the installation :	**Have You cut the yard before the installation, especially the edges?**
	Is there a socket in the widest area ?
	How big is the yard? Is it less than 33,000 square feet (3/4 acre)?
During the installation	**You must put the robot into charge at once.**
	Check the slopes, by trying the robot with the option No Border.
	Secondary areas. The LawnBott manage the main area and two secondary areas.
	You must decide where to install the recharging base - **Widest area** - **Socket** - **Flat area** - **Sprinkler system**
	Check the sprinkler systems .
At the end of the installation	**Adjust the rain sensor**
	Try following the border cable with the blade turned off. • **(To turn the blade off push the (-) key on the control panel.)**
	If a Rapid Return was installed then: **Check if the Rapid Return (arrows) works:** • **Push the Charge key to send the unit to the charging base.**
	Programme the working times of the Robot. (Pay attention to the working times of the sprinklers).
	Set a password.
	Set the blade at the maximum height and lower it after the border cable has been covered.
	Hooked wheels. It would be better not to install them, until the border cable has been absorbed by the ground.

Introduction & Characteristics

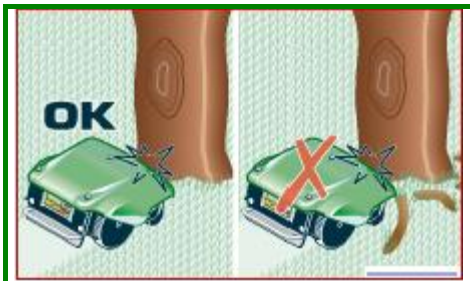
Remember that:

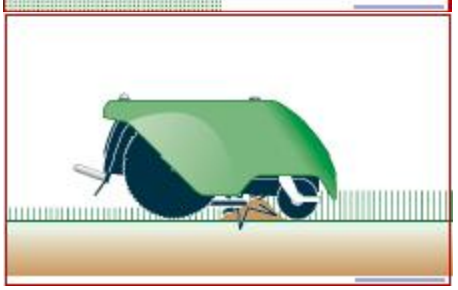
Maximum Coverage: 33,000 square feet.	**Every robot covers a maximum of 33,000 square feet. Do not exaggerate and bear in mind that the most complicated yards with separated areas reduce the square feet covered by the robot.**
Cutting Blade of 12 inches diameter.	**The robot follows the perimeter cable to the center and thus it cuts about 6 in. beyond the perimeter cable. That will be useful for the future.**
Average coverage: 3230 square feet per working hour on the lawn.	**Remember that the robot (if it is programmed) spends half of its time to mow the lawn and half of it in the recharging base. This will be useful during the programming**
Maximum slope: 27°	**This is the maximum slope achieved by the robot. Remember that the main problem is the slope because when the robot reaches the cable it is not able to come back. The solutions to make the robot work for the best are: lithium batteries, wheel spikes and hooked wheels. Before starting the installation we suggest you to test the slopes in your yard. In the user's menu you have to change the option Border "NO", set the robot on a slope, let it feel a bump on the body and test if it will reverse and change directions without slipping .**
Secondary Areas Management.	**The robot manages the main area and two secondary areas as well. The secondary area is a part of the yard connected to the main one by a narrow passage hardly to be reached. Determining if the passage is large or narrow for the robot depends on the primary area dimension.**
Border Accomplishment.	**At the end of the working time or when the robot has to recharge its batteries, it goes back to the base. During this phase the border is mowed. In case we have a yard limited by a small wall, the robot leaves approximately from 2 to 4 inches of not mowed grass. It takes you the same time to make a border with 2 or 4 inches of cable. The only thing which can be done after the installation is to place some small tiles on the edge of the yard which prevent us from the need of cutting on the border**
Rain Sensor	**The robot is provided with this sensor which allows the robot to return to the recharging base when it rains. This is better for the grass.**

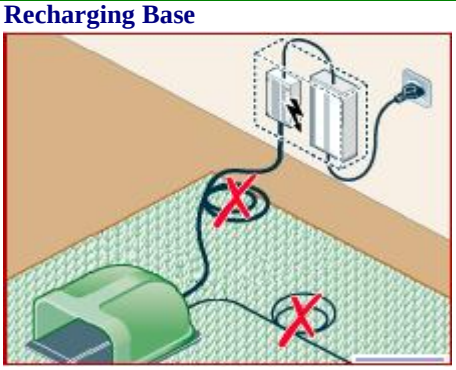
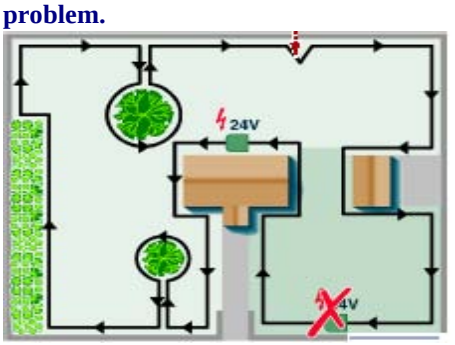
Installation

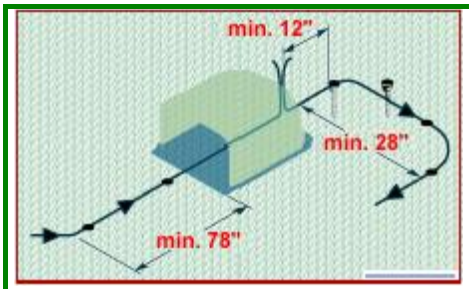
Preliminary Remarks

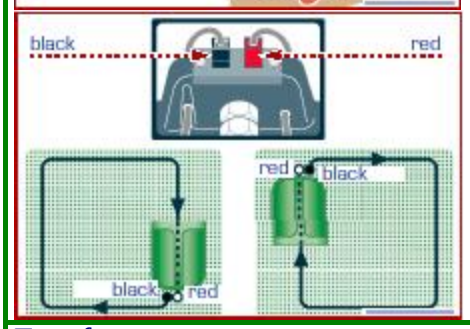
Battery Charging	**Prior to installation charge the unit.**
Arranging the yard	**Keep in mind that proper installation is critical for the unit to operate correctly. The most common problems are ditches, small branches small holes, small toys, stones, or all the objects that the robot cannot recognize as an obstacle and that consequently might pass under the cover and be hit by the blade.**

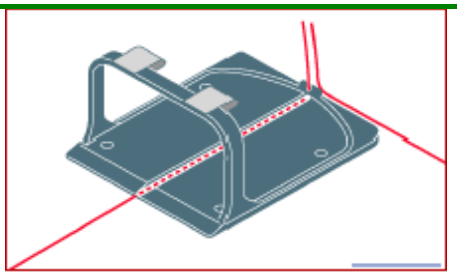




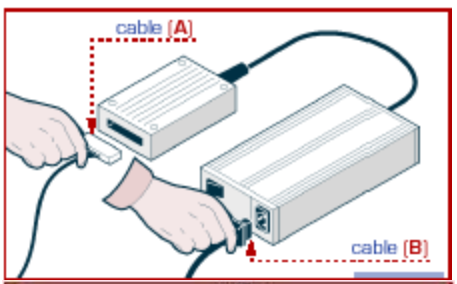
Sprinkler System	**Pay attention to the sprinkler system! It is necessary to understand where the sprinklers are and place the recharging base in a safe part of the yard far from the sprinklers that might wet the back of the robot. The concept is that water must not enter the recharging base.**
Recharging Base 	**This is the most important decision to make. The recharging base must be positioned respecting some rules. The recharging base must be in a place:** - **Firm ground** - **In the biggest area (if there is a big difference of square feet)** - **Not close to a sprinkler.** **The recharging base must be well fixed to the ground and should have a flat and clear path to the recharging base. Clearing away the grass surface or putting the artificial grass mat in front of the recharging base can solve the problem.** 

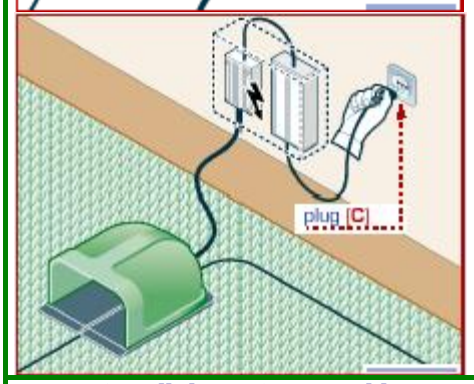






Transformer





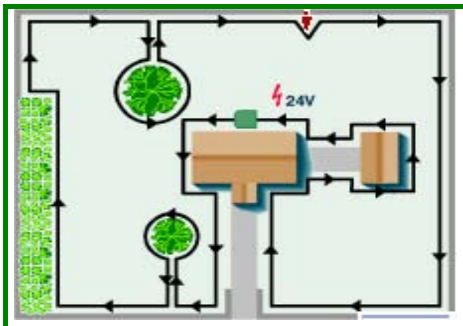
The transformer must be placed according to the following rules:

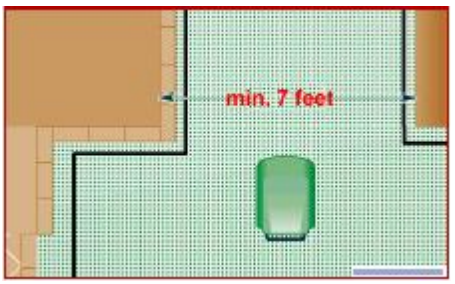
- **Place it in an area protected from water**
- **Better to put it indoors**
- **If it is placed outside, please put it in a Transformer cover and not exposed to the sun.**
- **It must stay outside the yard and not inside it**
- **It must stay at least 10 feet from the recharging base.**
- **The cable connecting the transformer to the recharging base must not be twisted, but it has to be spread so as not to create any magnetic field.**
- **Do not shorten the cable**
- **Do not lengthen the cable**

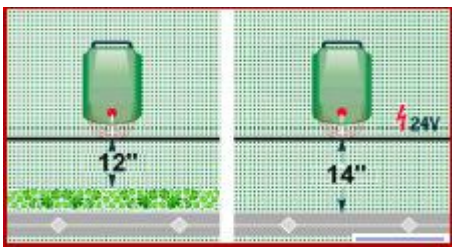
How to install the perimeter cable

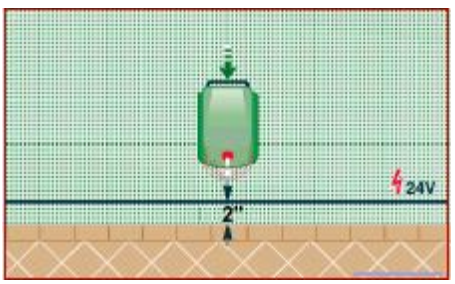
After deciding where to place the recharging base it is possible to install the perimeter cable. To install it, it is necessary to respect some rules:

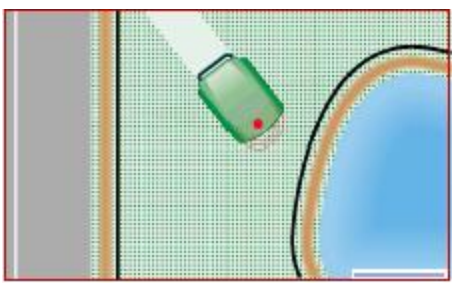
- **We suggest installing the perimeter cable on the ground rather than burying it. After a couple of weeks the ground will soak it up. (The initial few weeks the blade should be at the maximum height, to**







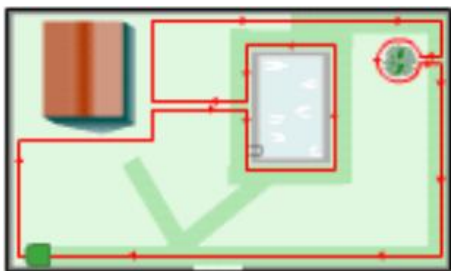


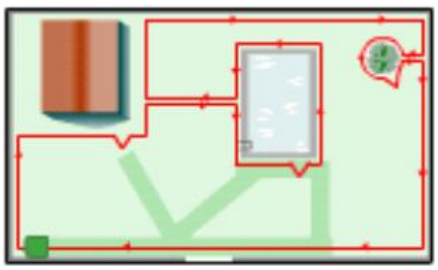


protect the perimeter cable)

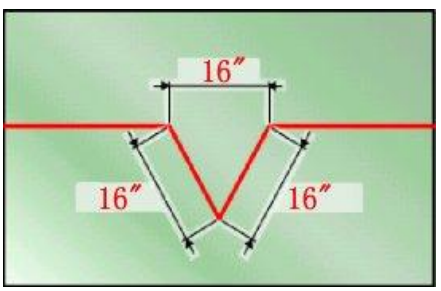
- **Start from the rear part of the recharging base and connect to the black connector.**
- **Work in a clockwise direction**
- **Remember the Rapid returns to the base or "Arrows"**
- **When there is a flowerbed the installation has to be made counter clockwise around the flowerbed. If you make a mistake, the robot feels the flowerbed before reaching the cable.**
- **If there are two flowerbeds close each other, you pass from one to another.**
- **Pay attention to the following distances:**
  - **Wall 12 inches**
  - **Hedge 14 inches**
  - **Swimming pool, Hole, 16 inches**
- **Leave 6-7 feet of straight perimeter cable in front of the recharging base.**
- **The excess cable must not be left as a mass.**
- **Every connection must be made with proper material like the 3M (Temflex 2155 Rubber SplicingTape).**
- **On corners curve the cable instead of making 90 degree angles especially on slopes.**
- **At the end of the installation it is necessary to connect the going in of the cable to the red connector.**

Rapid Return "Arrows"





Measures to make arrows.



The rapid return or "Arrow", is a perimeter cable symbol recognized by the robot in order to come back quickly to the recharging base. There are many advantages:

- **The robot returns to the recharging base quickly and there is a low consumption of batteries.**
- **The robot returns quickly to the recharging base and resumes quickly mowing the lawn again.**

In the first picture there is the way without arrows, in the second one there is the way with arrows. As it can be seen the route made by the robot is shorter. The arrow must be made as in the second picture.

An arrow is often put shortly after the recharging base because if the robot fails the return to the base, it returns quickly to recharge itself again. Remember that the robot recognizes only three arrows.

IMPORTANT!!!!!. Never make an arrow preventing the robot from entering the recharging base otherwise it will never return to the base.

Explanation Led of the transmitter:
Flashing Green /Yellow : Border Ok.
Solid Green : Interrupted or not connected border
Flashing red : Too short border
Switched off Led : Not corrected Battery Charger, Faulty fuse of the transmitter, Faulty Transmitter

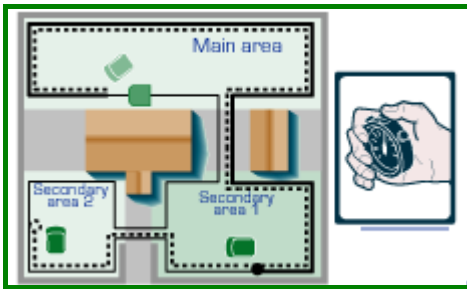
Explanation of the Led of the Battery Charger:
Solid Green : Working Battery charger
Solid red : Working Battery Charger with batteries in fast charge.
Off : Switched off or faulty Battery Charger.

Secondary Area

The secondary area is a part of the yard connected to the main yard by a narrow passage that is hard to be reached by chance. Determining if the passage is big or small for the robot depends on the primary area dimension. The secondary area must be naturally at the same level of the primary area (without stairs).

The robot can manage two secondary areas (the primary and two secondary areas)
The minimum passage is 28 inches from cable to cable. So the passage that we need is 5 feet. It is better to increase the distance if the passage is very long. On the contrary, if the passage is short we can decrease the distance.

During the programming it is necessary to select after how many times the robot must go to the secondary area after mowing in the primary area. Please program time necessary to reach that secondary area.

	
Closed secondary area 	**The secondary area is a part of the yard separated from the primary area but connected to it with the going in and out of cable.** **The robot must be carried to the closed area by hand and it must be taken again to the primary area to recharge its batteries.** **These solutions do not fit big yards because the management is difficult.** **In fact the robot can not be well and the mulching effect is not well achieved because there will be days in which the customer can not move the machine from one area to the other or may forget it.** **To program the machine for closed areas it is necessary to turn it on when it is inside the closed area, wait for PAUSE and then press - +. The display will show "external" and from this moment on the robot knows that it is in a closed area and that when it finishes working it must not look for the recharging base but has to stop.** **ATTENTION. The robot must be in its working hours and days to start to work.**
Installation without perimeter	**It's possible to make the robot work even without a border. We do not suggest this option. It is normally used for small gardens situated near the main area and completely enclosed by fences (even the flowerbeds).**

Programming

Programming and Other

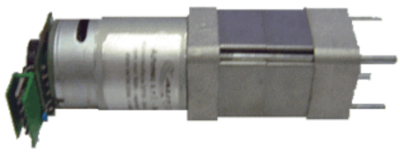
Explanation of the keys	**"ON" : To start the robot** **"OFF ": To turn off the robot.** **"PAUSE": To put the robot in Pause mode or to resume working.** **"CHARGE": To make the robot come out while is in the recharging base. To make it go to the recharging base while is working.** **"-": To change the values during the programming. To turn the blade off while the robot is working.** **"+ ": To change the value during the programming. To turn the blade on while the robot is working.** **"ENTER": To confirm the choice during the programming. To make the spiral while the robot is working.**
Programming Menu	**It is necessary to put the robot in the PAUSE mode and then press the ENTER key to enter the programming menu. The following menu allows to change the values with the "+" and "-" keys and to confirm them with the" ENTER" key. With the programming menu you can plan :** - **Language: The language through which it is possible to show the user's menu and all the robot error messages.** - **Date: It is important that it is correct; otherwise the robot works in wrong days.**

	- **Hour: It is important to make the robot work in the right working hours.** - **Working days: For every working day it is possible to show with "1" if the robot must work and with "0" if it must not. The robot must work every day or every other day to take advantage of the mulching effect.** - **Working hours 1 :** - **Working hours 2: It is possible to plan two working hours to make the robot come out. Always remember that to charge the batteries the robot needs from 2 1/2 to 3 hours. So between the working time 1 and the working time 2 there will be the necessity of this break.** - **Secondary area 1_cycles: It allows to plan after how many cycles of the primary area the secondary area must be mowed.** - **Secondary area 1_Time: This is the time necessary for the robot to reach the secondary area following the cable from the recharging base in a clockwise direction. It is better to measure the time when the robot is in the middle of the secondary area. The robot travels about 66 linear feet a minute according to a rough estimate.** - **Secondary area 2: This is like the preceding option but for the area number 2.** - **Perimeter. It is possible to make the robot work without perimeter. Moreover, with the option x2, x3, it is possible to delay the no signal recognition if there is too much iron, in other words if the signal is weak or confused.** - **Spiral. The Professional model is equipped with the random spiral function. The Evolution and Deluxe models are equipped with the smart spiral and random spiral. The robot makes the smart spiral function only when it senses tall grass.** - **Self-programming. The Evolution is the only robotic mower with Adaptive Programming Technology. Its learning computer actually reprograms itself to adapt to the cutting requirements of your yard. This not only conserves battery life and lengthens the durability of the electric motors it also contributes to a healthier looking lawn.** - **Password. It is possible to select a password, to prevent unauthorized use.** - **Remote Control. The radio-frequency (RF) remote control must have a connection between the robot and the remote control. To synchronize the remote with the robot, you have to select "Set Up" under the remote control menu. Then you have to pres the "left" and "right" key at the same time within 10 seconds. The robot will give a sound to indicate that the connection is made.** - **Change your password. It is possible to select a password which is required to disable the alarm, or every time you want to turn on the robot (If you selected the option "start-up password")** - **Start-up password. This option lets you define the use of your password. If you select "Yes" Every time you switch the robot on a password will be required. If you select "No" then you only need a password to disable the alarm, and NOT to start up the robot.**
Programming example of the secondary area.	**Secondary areas** - **Secondary area 1 (Cycles) : 02** - **Secondary area 1 (Time the robot needs to follow the cable to reach the secondary area) : 05** **The robot will go to the secondary area following the cable in a clockwise direction for 05 minutes every two cycles in the main area.**

	MMAMMAMMAMMA **M=Main Area (Primary Area)** **A=Secondary Area 1** **Another example** - **Secondary area 1 (Cycles) : 02** - **Secondary area 1 (Time the robot needs to follow the cable) : 5** - **Secondary area 2 (Cycles) : 01** - **Secondary area 2 (Time the robot needs to follow the cable) : 12** **The area will be organized with this frequency** **MBMABMBMABMBMABMBM** **M=Main Area (Primary Area)** **A=Secondary Area 1** **B=Secondary Area 2** **IMPORTANT !!!. Remember that:** - **When there are secondary areas, increase the working times of the robot.** **Don't exaggerate with the number of cycles. We suggest not to set more than 3 cycles, otherwise the robot passes with a low frequency of time in the yard.**
Service Menu	**The service menu is selected by pressing CHARGE + -.** **The most important passages are :** - **Statistics: All the robot errors are stored.** - **Test Motor: To test motors.** - **Test Signal : It verifies the signal** - **Motor Type: To select the type of motor.** - **Battery Type: To select the lithium or lead type.**

Errors showed by the robot

Errors list

E01 – E02 Motor error 	**The damage can be in :** - **Motor** - **Encoder** - **Mother board drive**
E03 Blade motor error	**The damage can be in :** - **After hitting a stone** - **Burned motor** - **Magnetic Disk** - **Encoder** - **Bearing** - **Mother board relay**
High grass	- **Really high grass** - **Material that blocks the shaft** - **Blocked bearing** - **Faulty motor** - **Encoder**
No signal **Sync Error**	- **Faulty transformer** - **Transformer over heating** - **Broken cable** - **Detached coil in the robot** - **Broken receiver** **Transmitter led meanings** **Flashing Green/Yellow : Perimeter Ok.** **Solid Green : The perimeter is interrupted or is not connected.** **Solid Yellow : Initial reset of about 5 seconds.** **Flashing Red : Too short perimeter.** **Solid Red : Broken Transmitter.** **Led out : Battery Charger not connected, faulty fuse of the transmitter, Broken transmitter.** **Tests to be made** **-Take off the battery charger for 5 minutes and try again.** **-Test a minimum of 35 feet of new cable to eliminate any splicing in the cable installed in the yard.** **The "Sync Error" indicates that the sinusoidal receiver is not recognized. Any of the following could be a reason:** - **The sinusoidal receiver is not correctly inserted.** - **Broken F1 fuse in the mother board.** - **Faulty mother board.**
Lead batteries. Reference values	**When the display shows "battery" …….** - **2200 The mother board turns off.** - **2300 It turns off the blade.**

	- 2350 It goes to the recharging base. - 2740 Tension of stabilization. It is the recharging value of the battery. During the recharge the battery reaches about 2940 and then it goes down again to 2740.
Lithium Batteries. Reference values.	**When the display shows "battery ……. L"** - 2200 the mother board turns off. - 2440 It turns off the blade. - 2490 It goes to the recharging base. - 2880-2950 Tension of stabilization. It is the recharging value of the battery. During the recharge the battery reaches about 2990 and then goes down again to 2880.
Coil	**Check if there is water in the compartment.**
Receiver	**Check if it has been properly inserted.**
Blocked	**When the robot does not sense the cable or a shock for about 5 minutes, it tries to turn 90° for 3 times and then it stops showing the message "blocked". Generally, it happens when the robot is stuck in a hole or if the wheels are loose.**
Out of perimeter.	**Possibile causes:** - The transformer over heats. In this case, move the transmitter and install the recharging base in a cool place. - Too much slope. The solutions are: the lithium battery and spiked wheels or hooked wheels. - Troubles with wheel motors (Encoder).
Entrance errors in the recharging base	**Check:** - Make sure there is a clear and flat path to the recharging base. - Contacts of micro switch. - Check the contact plates on the recharging base.
Robot stopping	**Check :** - Bad fuse contacts. - Mother board with faulty relay. - "Off" key may be shorted out.