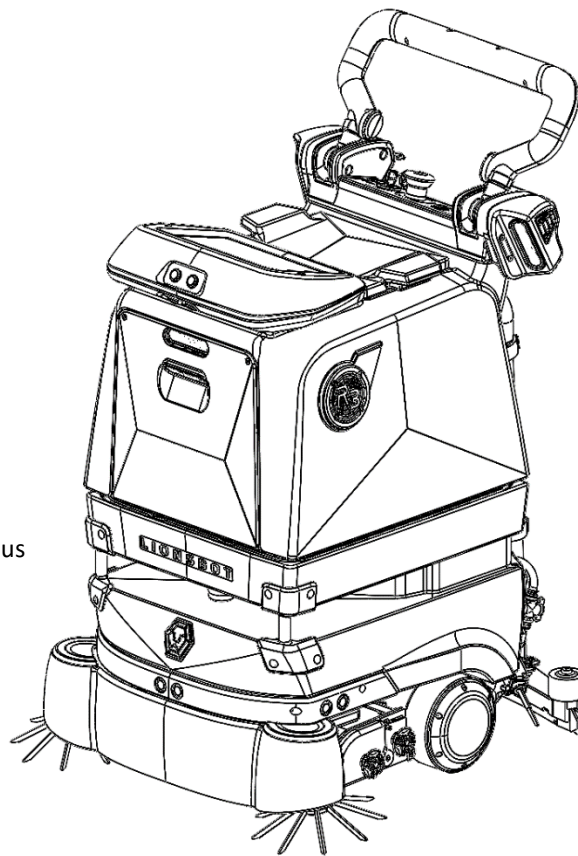


LIONSBOT R3 SCRUB PRO

INSTRUCTIONS FOR USE

INSTRUCTIONS FOR USE

ORIGINAL INSTRUCTIONS



For the latest Manuals and
other language Operator
Manuals, Visit:

www.lionsbot.com/contact-us



WARNING!

The operation of this machine is strictly reserved to trained and qualified operators.

OPERATION MANUAL

Version 1 (11/2023)



ORIGINAL INSTRUCTIONS MANUAL



LIONSBOT

TABLE OF CONTENTS

INTRODUCTION	5
PARTS AND SERVICE.....	5
MODIFICATIONS.....	5
NAME PLATE	5
UNCRATE THE MACHINE.....	5
TRANSPORTING THE MACHINE.....	6
CAUTIONS AND WARNINGS	6
REGULATORY.....	10
KNOW YOUR MACHINE	11
UNDERSTANDING AUTONOMY.....	15
PREPARE THE MACHINE FOR USE	16
RECEIVING AND PREPARING THE R3 SCRUB PRO.....	16
HANDLING THE PACKAGED ROBOT	16
BATTERY.....	16
UNPACKING THE ROBOT	16
INSTALL THE BRUSH	17
INSTALL THE SIDE BRUSHES	18
INSTALL THE DEBRIS TRAY.....	20
INSTALL THE SQUEEGEE	21
FILLING THE CLEAN WATER TANK.....	22
CHECKING THE WATER LEVEL	23
R3 SCRUB PRO TOUCHSCREEN SETUP	24
INITIAL SETUP.....	25
LOGIN WITH LOCAL ACCOUNT (RECOMMENDED)	27
LOGIN WITH LIONSBOT ID (OPTIONAL)	28
LOGIN WITH LIONSCLEAN APP (OPTIONAL).....	29
USER ACCOUNT MANAGEMENT	30
MANAGE MAPS	32
ADD/CREATE NEW MAP.....	32
DELETE MAP	33
MAP EDITOR.....	34
WORK ROBOT	38
IF THE ROBOT IS NOT LOCALIZED.....	38
LOCALIZED ROBOT	39

JustClean™	39
MANUAL CLEAN	43
SETTINGS	44
WIFI	45
MOBILE/4G.....	46
RESET ROBOT	46
REPORTS.....	47
R3 SCRUB PRO APP AND INITIAL SETUP	48
MY ROBOTS	51
APP COMMANDS	54
REPORTS.....	54
FACILITY MAP	55
REPORT A PROBLEM	55
BEFORE R3 SCRUB PRO USE.....	57
TRANSPORTING THE R3 SCRUB PRO OUT OF STORAGE	58
CHECKING THE BATTERY LEVEL.....	58
LOCALIZING THE ROBOT	59
VERIFICATION OF LOCALIZATION.....	60
OPERATION OF THE R3 SCRUB PRO	61
INITIAL CHECK PROCEDURE	61
POINT TO POINT MOVEMENT.....	63
HUMAN ROBOT INTERFACE - OPERATION SIGNALS	64
AFTER USE	67
DRAINING THE WASTE WATER TANK.....	68
CLEANING THE WASTE WATER TANK	69
DRAINING THE CLEAN WATER TANK.....	71
CLEANING THE CLEAN WATER TANK	73
CLEANING/REPLACING THE FLOOR TOOLS	74
CLEANING THE MAIN BRUSH	74
CLEANING THE DEBRIS TRAY.....	74
CLEANING THE SQUEEGEE RUBBER	75
CLEANING THE SQUEEGEE TRAP/HOSE	76
REPLACING THE SIDE BRUSHES.....	77
WIPING DOWN THE R3 SCRUB PRO	78
STORAGE IN COLD CLIMATES.....	78
MAINTENANCE SCHEDULE.....	79

CHANGING THE WATER FILTER	80
REPLACING THE SQUEEGEE RUBBER.....	82
CONSUMABLES LIST:	86
UPDATING THE MAPS	86
CHARGING THE BATTERY	87
MANUAL CHARGE	87
CHARGING WITH DOCKING STATION.....	88
AUTOMATIC DOCKING	89
MANUAL DOCKING	90
POWERING ON/OFF THE R3 SCRUB PRO	92
TROUBLESHOOTING	93
FAULT CODE DISPLAY	94
SPECIFICATIONS	107
SOLUTION FLOW RATE	107
TECHNICAL SPECIFICATIONS (AS INSTALLED AND TESTED ON THE UNIT)	108
GLOSSARY	109
CONTACT INFORMATION	110

INTRODUCTION

This manual will help you get the most out of the LionsBot Scrubber. Read it thoroughly before operating the machine.

NOTE: Bold numbers in parentheses indicate an item illustrated on pages 10 – 13



WARNING!

The operation of this machine is strictly reserved to trained and qualified operators.

This machine is only suitable for commercial use, for example in hotels, schools, factories, shops, offices and rental businesses. The LionsBot R3 Scrub Pro is a battery powered floor cleaning machine.

PARTS AND SERVICE

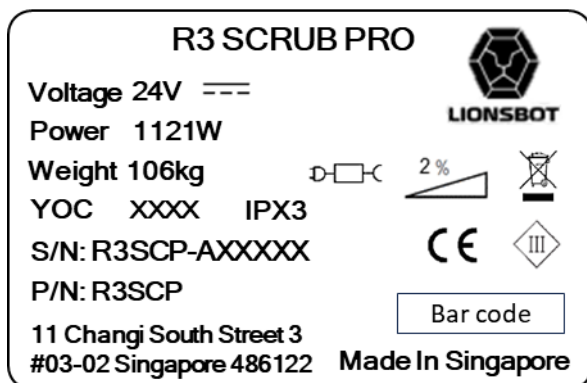
Repairs, when required, should be performed by LionsBot International Pte Ltd or an Authorized Distributor, who employs factory trained service personnel, and maintains an inventory of LionsBot original replacement parts and accessories. Call LionsBot International Pte Ltd for repair parts or service. Please specify the Model and Serial Number when you are enquiring about parts and service.

MODIFICATIONS

Modifications and additions to the cleaning machine which affect capacity and safe operation shall not be performed by the customer or user without prior written approval from LionsBot International Pte Ltd. Unapproved modifications will void the machine warranty and make the customer liable for any resulting accidents.

NAME PLATE

The serial number sticker is located at the rear left of the robot. Please provide this serial number along with any request for assistance/ servicing or spare parts purchase.



The Serial Number is formatted as follows:

1. First Five Alphabets (R3SCP).
2. Next six characters (AXXXXX) encode the factory (A) and sequential number of the product.
3. Part Number (R3SCP) denote the product type.

SERIAL NO. _____

UNCRATE THE MACHINE

When the machine is delivered, carefully inspect the shipping packaging and the machine for damage. If damage is evident, save the shipping carton (if applicable) so that it can be inspected. Contact the LionsBot Customer Service Department immediately to file a freight damage claim.

TRANSPORTING THE MACHINE



CAUTION!

Before transporting the machine on a truck or trailer, make sure the following are carried out

- All tanks are empty
- Robot is correctly placed back in the crate and strapped down



WARNING!

During loading/unloading, the user is at risk of tipping over the robot and subjected to crush hazards. The operator and spotter are responsible for identifying and mitigating loading/ unloading hazards and taking safety precautions.

CAUTIONS AND WARNINGS

SYMBOLS

LionsBot uses the symbols below to signal potentially dangerous conditions. Always read this information carefully and take the necessary steps to protect personnel and property.



CAUTION!

Indicates a situation which, if not avoided, could result in major damage to the equipment.



DANGER!

Indicates an imminent hazardous situation which, if not avoided, could result in serious injury or death.



WARNING!

Indicates a potentially hazardous situation which, if not avoided, could result in injury or major damage to the equipment.



Read all instructions before using.

GENERAL SAFETY INSTRUCTIONS

Specific Cautions and Warnings are included to warn you of the potential danger of machine damage or bodily harm. This machine is for commercial use, for example in hotels, schools, factories, shops and offices other than normal residential housekeeping purposes.



WARNING!

- This machine shall be used only by properly trained, qualified and authorized operators.
- This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge.
- While on ramps or inclines, avoid sudden stops. Avoid abrupt sharp turns. Use low speed down ramps.
- Observe the Gross Vehicle Weight, GVW, of the machine when loading, pushing, lifting or supporting the machine.
- Charge batteries only in well-ventilated areas, away from open flame. Do not smoke while charging the batteries.
- Remove all jewellery when working near electrical components.
- Turn the machine power OFF and disconnect the batteries before servicing electrical components.
- Do not dispense flammable cleaning agents, operate the machine on or near these agents, or operate in areas where flammable liquids exist.
- Do not clean this machine with a pressure washer.
- Only use the brushes provided with the appliance or those specified in the instruction manual. The use of other brushes may impair safety.
- Do not look at the laser beams from the machine. Permanent eye damage could result. Lasers are eye-safe if viewed briefly, such as to determine that they are functioning. Do not look directly into lasers or stare at them without wearing protective laser safety glasses.



CAUTION!

- This machine is not approved for outdoor use.
- This machine is not suitable for picking up hazardous dust.
- Do not use scarifier discs and grinding stones. Use only brushes intended for floor cleaning. Lionsbot will not be held responsible for any damage to floor surfaces caused by using the wrong or improper brushes.
- When operating this machine, ensure that third parties, particularly children, are not endangered.
- Before performing any service function, carefully read all instructions pertaining to that service task.
- After use power the machine off at the power switch, do not leave the machine unattended where it can be accessed by others.
- Power the machine OFF and remove the Key, before changing the brushes, and before opening any access panels.
- Take precautions to prevent hair, jewellery, or loose clothing from becoming caught in moving parts.
- Use caution when moving this machine in below freezing temperature conditions. Any water in the solution, recovery or detergent tanks or in the hose lines could freeze, causing damage to valves, pumps and fittings. Flush with low temperature windshield washer fluid.
- The batteries must be removed from the machine before the machine is scrapped. The disposal of the batteries should be safely done in accordance with your local environmental regulations.
- Do not use on surfaces having a gradient exceeding that marked on the machine.
- All covers are to be positioned as indicated in the instruction manual before using the machine.
- This machine should only be used and stored indoors.
- Do not spray this machine with pressurized water.
- To avoid any damage or injury, only use the original crating to secure the machine during transport.
- Do not operate the machine in an environment exceeding 104°F (40°C).
- Do not operate the machine without the Bumper (3) in place.
- Avoid pushing the machine onto stairways or escalators, into open elevator shafts, or into any area where there is a significant drop in elevation. Serious machine damage may result if it falls down stairs, escalators, or open shafts. The machine cannot climb stairs. Machine is designed for use only on flat surfaces (less than 2 % gradability).
- While pushing the machine manually, to develop navigational maps as part of recording the autonomous plans, it is the Operator's responsibility to avoid contact with obstacles and individuals. The machine will not avoid them in the manual operating mode. There are no autonomous safety functions operating in the manual mode.

CAUTIONS AND WARNINGS SPECIFIC TO 2D MAPPING SENSOR (1)



CAUTION!

CLASS 1 LASER PRODUCT

The 2D Mapping Sensor corresponds to laser class 1 (eye-safe).

The laser beam is not visible to the human eye.

- The use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Do not open the housing (opening the housing will not switch off the laser).
- Pay attention to the laser safety regulations as per IEC 60825-1 (latest version).



WARNING!

Risk Of Potential Equalization

The 2D mapping sensor is designed to be operated in a system with professional grounding of all connected devices and mounting surfaces to the same ground potential. If this condition is not met, potential equalization currents may through along the cable shields, causing the following hazards:

- Dangerous contact voltage on the metal housing
- Malfunction or destruction of the LiDAR
- Heating of the cables with possible spontaneous combustion.

SAVE THIS INSTRUCTIONS

REGULATORY

This product contains radio equipment operating in the frequency bands and with max TX power as indicated below:

Frequency range [MHz]	Max TX pwr [dBm]
880-915 1710-1785	32.33
880-915 1920-1980	23.63
703-733 832-862 880-915 1710-1785 1920-1980 2500-2570	23.8
2401-2483	12.6
2400-2500	18
2402-2480	2.089
860-960	25

KNOW YOUR MACHINE

As you read this manual, you will occasionally run across a bold number or letter in parentheses – for example: **(2)**. These numbers refer to an item shown on these pages unless otherwise noted. Refer back to these pages whenever necessary to pinpoint the location of an item mentioned in the text.

NOTE: Refer to the service manual for detailed explanations of each item illustrated on the next 4 pages.

- | | |
|---|---------------------------------|
| 1. 2D Mapping Sensor | 12. Top-Up Tray Filter |
| 2. Sonar Sensors (6) | 13. Manual Charging Port |
| 3. Bumper (NOT a lifting or tie down point) | 14. Drain Hose Waste Water Tank |
| 4. Side Brushes | 15. Handle Bar Release Lever |
| 5. Main Brush Cover | 16. Handle Bar |
| 6. Debris Tray | 17. Tank Hatch |
| 7. Drain Valve Clean Water Tank (2) | 18. Touch Screen |
| 8. Side Limit Switches (2) | 19. Emergency Stop Switch |
| 9. Squeegee | 20. Key Switch |
| 10. Foot Pedal | 21. Reset Push Switch |
| 11. 3-D Vision Sensors (5) | 22. Battery Power Switch |

NOTE: The numbers in parenthesis in this list indicate the number of the same component that can be found on the machine.

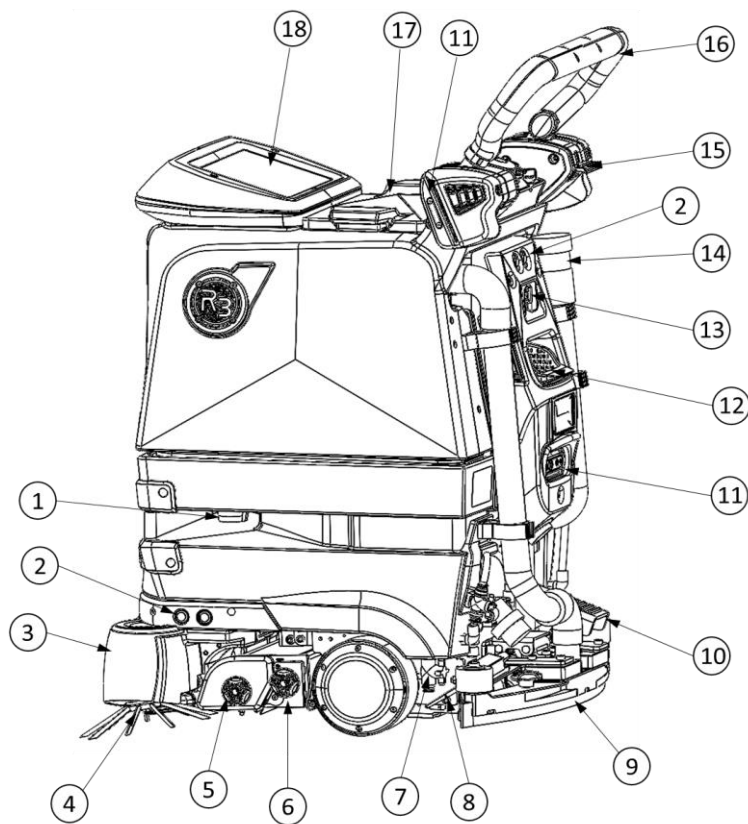


FIGURE 1-1

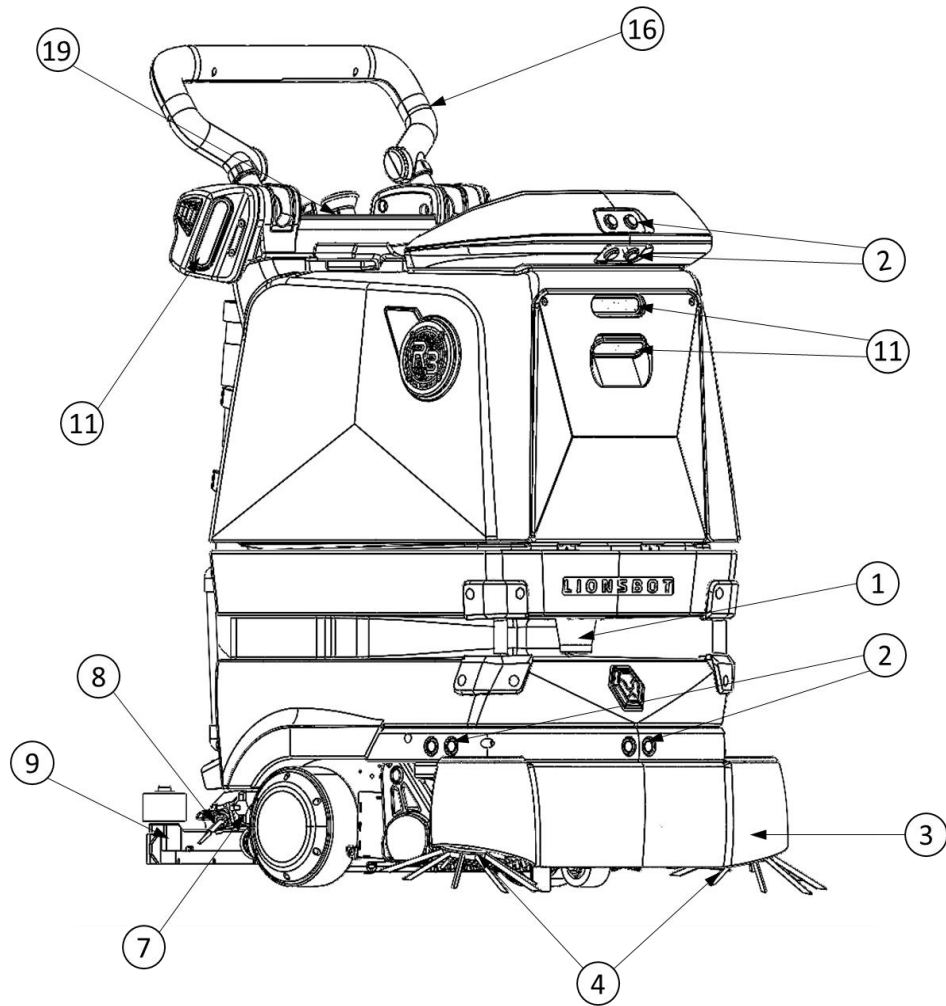
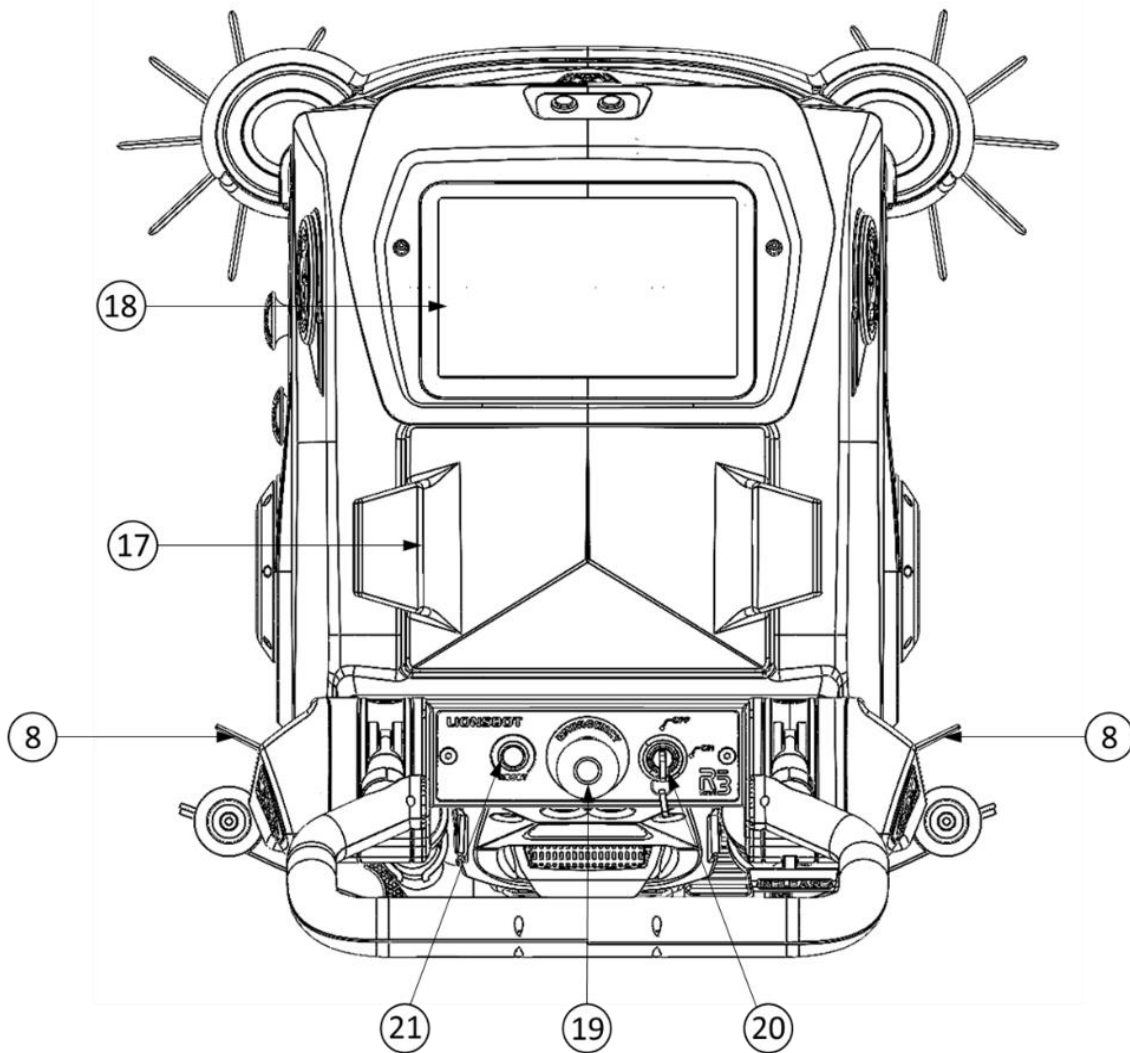
KNOW YOUR MACHINE

FIGURE 1-2

KNOW YOUR MACHINE**FIGURE 1-3**

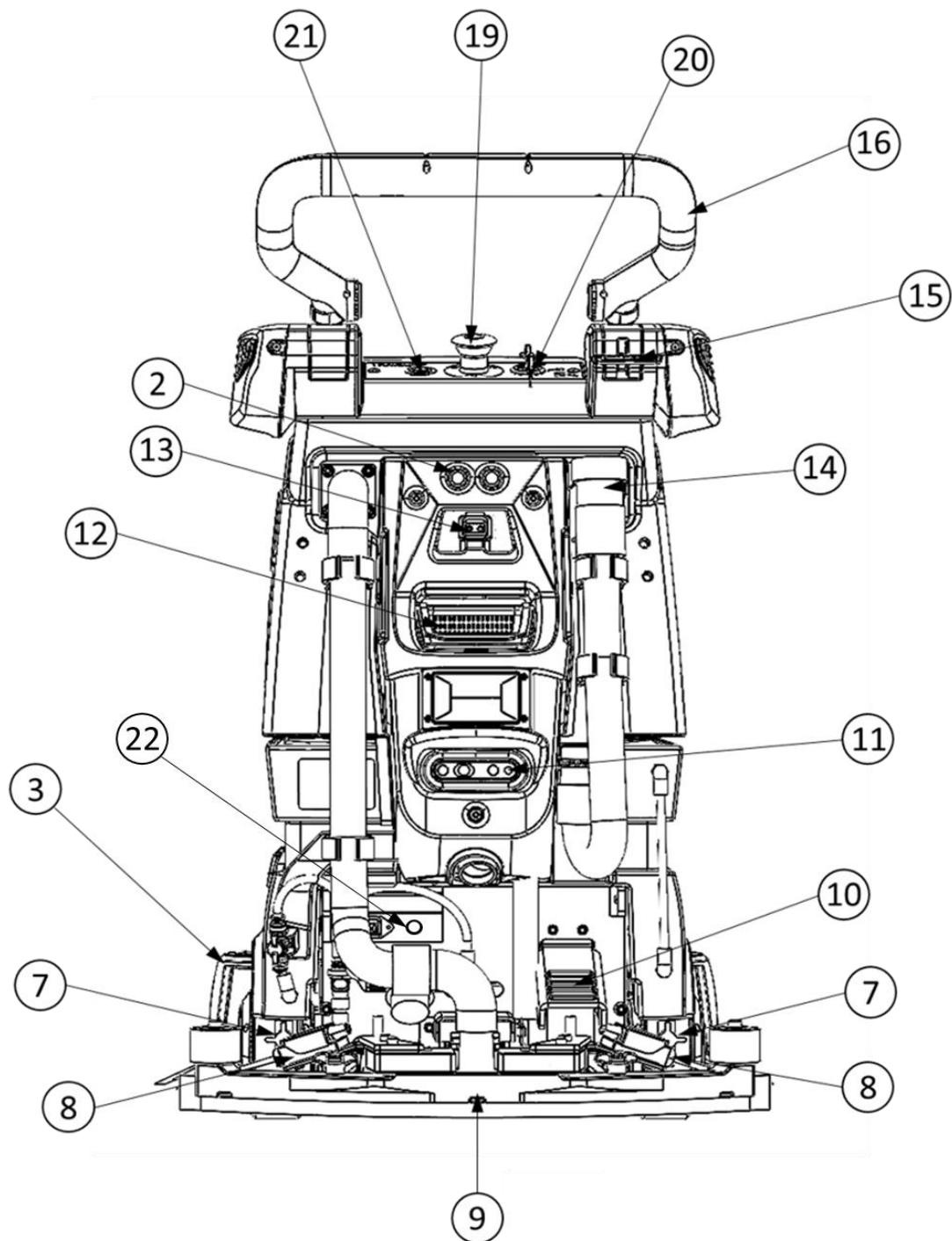
KNOW YOUR MACHINE

FIGURE 1-4

UNDERSTANDING AUTONOMY

The LionsBot R3 Scrub Pro can function autonomously meaning that it functions (operates) on its own, on a plan determined by an operator without further operator involvement. The machine can record an area to clean independently and maneuver actively around certain obstacles.

Components that make up the autonomy system, and their basic function, include the following (shown in Figure 1).

NOTE: Refer to KNOW YOUR MACHINE figures to see the location of all sensors.

- 3-D Vision Sensor (11) - provides a three-dimensional image of the area in front, sides and back of the machine.
- 2D Mapping Sensor (1) - provides detection of obstacles in front of and to the sides of the machine.
- Sonar Sensor (2) - located at the back, sides and front of the machine – aides in collision prevention and presence detection in the area of an operating machine.
- Computer software Interface, (not shown). Defines how the autonomous control system interfaces with machine control software and control system.

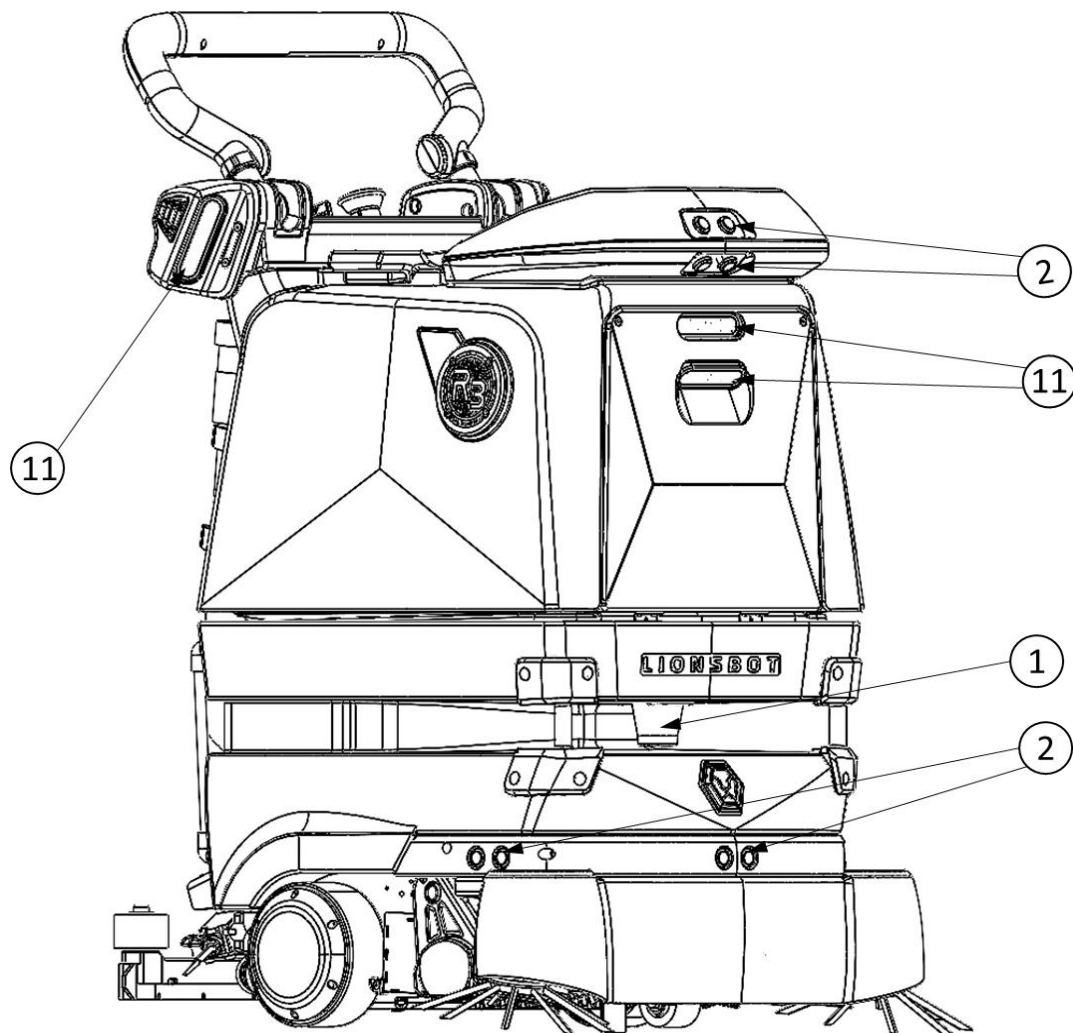


FIGURE 1-5

PREPARE THE MACHINE FOR USE

RECEIVING AND PREPARING THE R3 SCRUB PRO

The R3 SCRUB PRO is shipped with the brushes and squeegee assembly detached from the body. Some accessories are also included to facilitate charging and maintenance operations.

HANDLING THE PACKAGED ROBOT

The robot's overall packaged weight is 95kg.

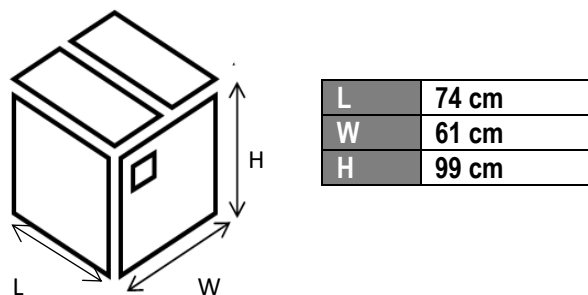


FIGURE 2-1

It is recommended to keep the original crating and packaging components for future transportation needs.

BATTERY

Check that the Battery Power Switch **(22)** is ON (pressed in), if it is not pressed in, press it.

UNPACKING THE ROBOT

1. Open the crate and remove protective packaging material around the robot.
2. Verify the package contents against the Crating Checklist provided inside the crate.
3. Power on the robot by turning ON the key switch **(20)**, press the reset button **(21)**, pull the handle bar up and pull the robot out of the crate in reverse to avoid the risk of tipping.

INSTALL THE BRUSH



CAUTION!

Turn the machine OFF using the key switch (20) and remove the Key, before changing the brush

1. Located on the left of the robot, detach the main brush cover (5) by pulling the knob (Fig. 2-2).



FIGURE 2-2

2. Check the end of the brush with the female alignment and lock feature (Fig. 2 – 3) and slide it into the brush slot.

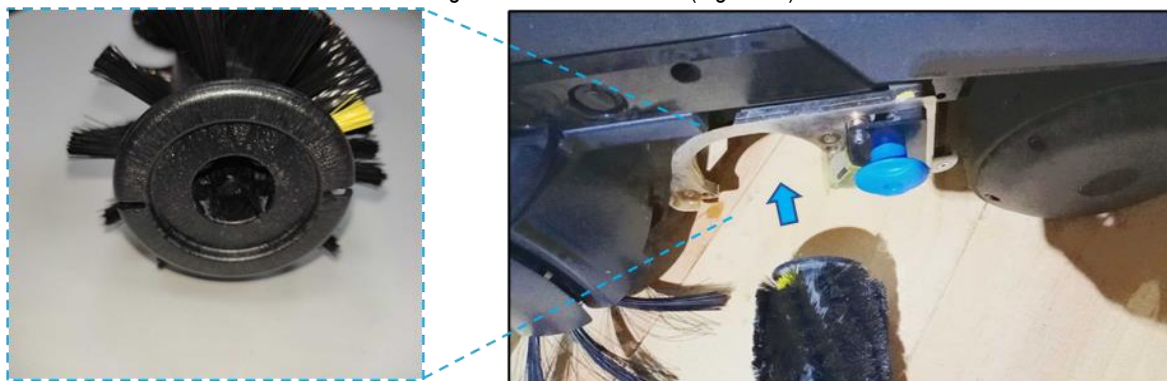


FIGURE 2-3

3. Slide the brush in until the brush alignment feature sits on the male alignment and lock feature (fig. 2 – 4).

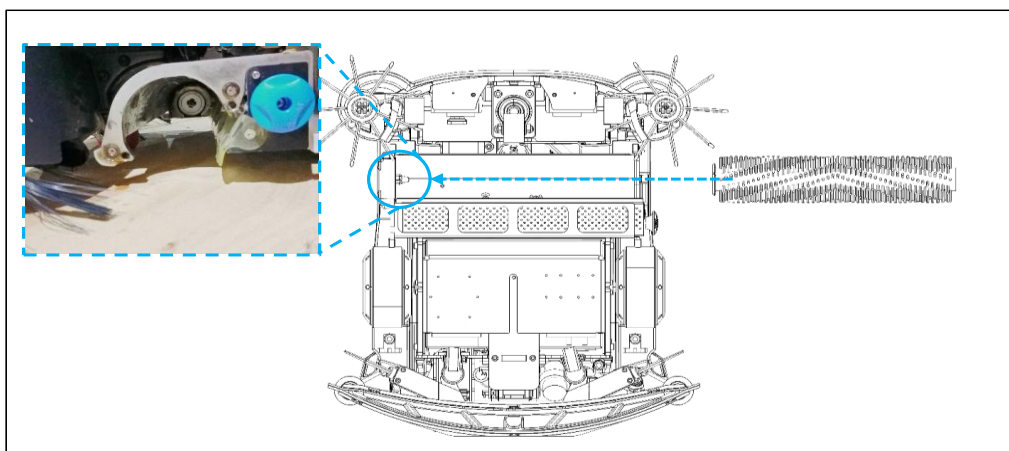


FIGURE 2-4

4. Attached the main brush cover (5) back on (Fig. 2-5). The protrusion on the cover should fit into the slot on the brush. Ensure the cover is flush to the housing.



FIGURE 2-5

INSTALL THE SIDE BRUSHES

1. Remove the bumper cover (Fig. 2-6).
2. Install the new side brushes (Fig. 2-7).
3. Place the bumper cover back in position (Fig. 2-8).



FIGURE 2-6

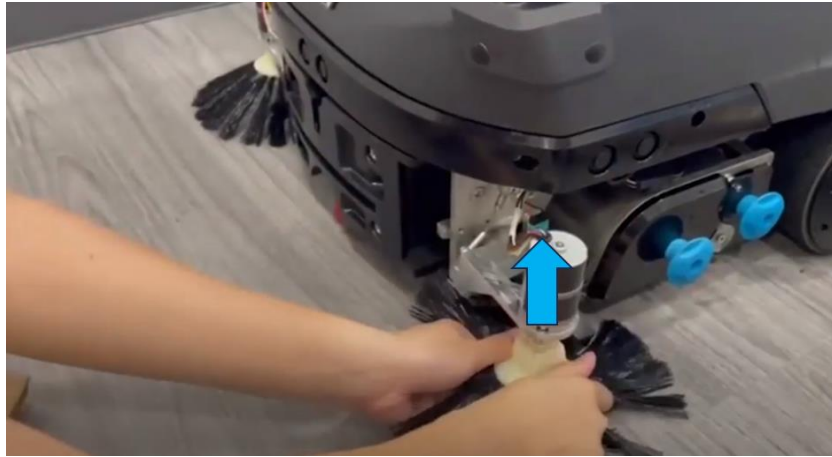


FIGURE 2-7

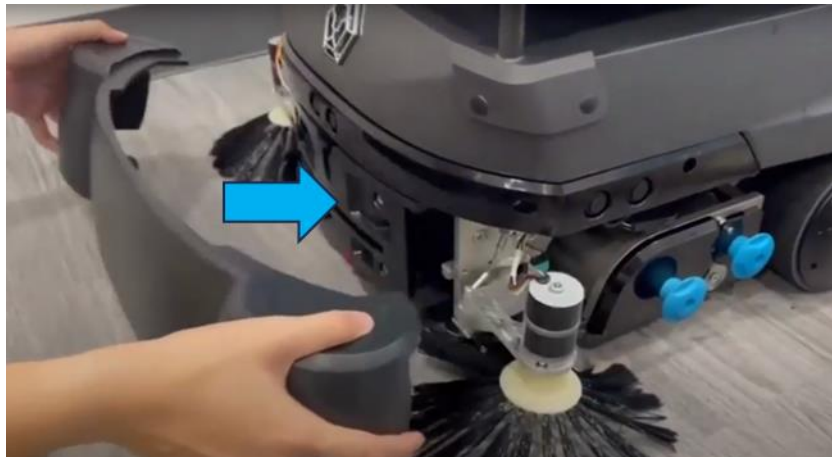


FIGURE 2-8

INSTALL THE DEBRIS TRAY

1. Identify the debris tray **(6)**. (Fig. 2-9)
2. The debris tray slot located on the left of the robot is beside the brush cover.
3. Hold the tray with the knob facing outward, parallel to the floor and slide it inwards. (Fig. 2-10)
4. The magnet at the end of the tray should automatically hold it into place.



FIGURE 2-9



FIGURE 2-10

INSTALL THE SQUEEGEE

1. Align the squeegee housing to the squeegee mount. (Fig. 2-11)
2. Grab the squeegee from the sides and pull it up, it will be secured by magnetic forces. (Fig. 2-12)
3. Attach the hose into the squeegee. (Fig 2-13)

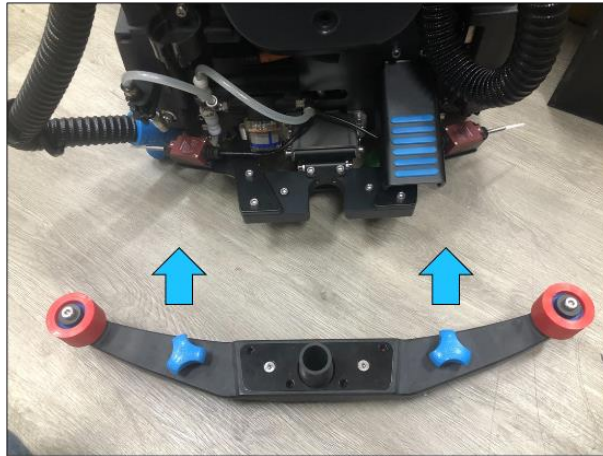


FIGURE 2-11

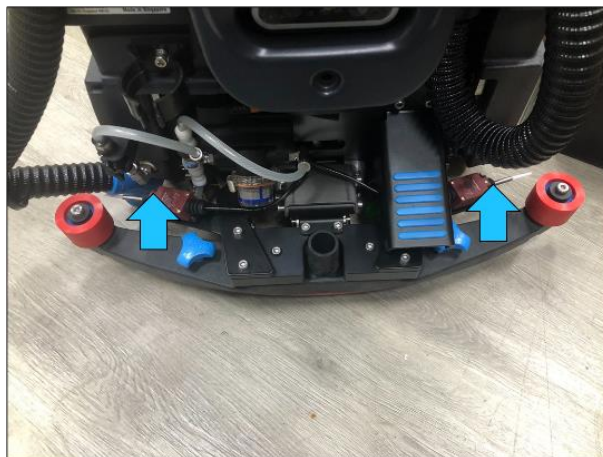


FIGURE 2-12



FIGURE 2-13

FILLING THE CLEAN WATER TANK

If water level is insufficient, bring the robot near a water source to fill the clean water tank

NOTE: The hose and hose clip are not included.

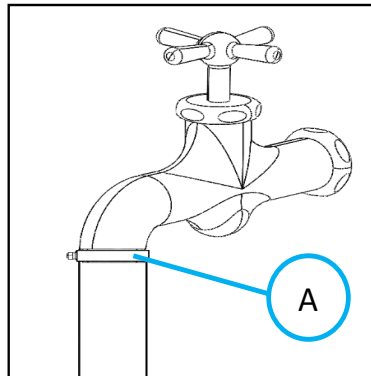


FIGURE 2-14

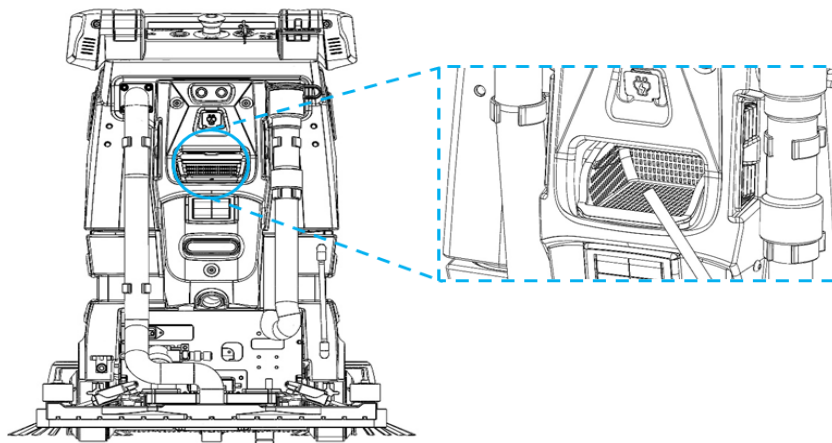


FIGURE 2-15

Follow these steps to refill the clean water tank:

1. Prepare a hose for clean water.
2. Attach the hose inlet to a tap by pushing its rubber end onto the tap and tightening the hose clip (**A**) (Fig.2-14).
3. Insert the other end of the clean water hose into the top up tray filter (**12**). Push a significant length of the tube into the inlet to prevent it from dropping out during filling (Fig 2-15).
4. Turn on the water tap and fill to a sufficient level indicated on the water level tube or on the touchscreen (**18**).
5. Once done filling, turn off the tap and pull the water hose out of the inlet.
6. Alternatively prepare a cleaning solution and pour it into the clean water inlet.

NOTE: Do not fill the clean water tank with more than 21 Liters (5.5 US gallons) of water or permitted solutions.



WARNING!

- Do not top up flammable liquid, alcohol, D Limonene, QAC cleaner, Pine cleaner, Phenolics, Bleach, Acids (pH < 5), Oven or Grill cleaner (pH > 12).
- Do not exceed the recommended concentration of permitted cleaners as specified in their instructions.

CHECKING THE WATER LEVEL

Touchscreen:

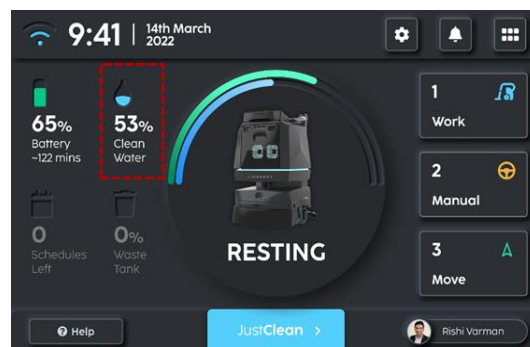


FIGURE 2-16

1. Check the clean water level (Fig. 2-16) on the touch screen attached to the R3 SCRUB PRO.
2. Empty the waste water tank of any water before usage (see '[DRAINING THE WASTE WATER TANK](#)').

Physical:



FIGURE 2-17

1. Check the clean water level (Fig. 2-17) on the water level tube attached to the back of the R3 SCRUB PRO.
- NOTE:** The water level in the tube represents the water level in the tank.

R3 SCRUB PRO TOUCHSCREEN SETUP

The following section describes the setup procedure by using the LCD screen on the R3 SCRUB PRO. The LCD screen uses the LionsTouch app.

The LionsTouch app is used to communicate to and work with the R3 SCRUB PRO. Each R3 SCRUB PRO user is assigned a unique user id and password for use with the app. The user must be logged-in to be able to interface with a R3 SCRUB PRO.

This section provides an overview of the main functions provided by the touch screen user interface, accessible through the Home page, Home Menu and JustClean™, and manual page of the app. More details on using the R3 SCRUB PRO with the available app commands can be found in '[OPERATION OF THE R3 SCRUB PRO](#)'.



FIGURE 3-1(Home page)

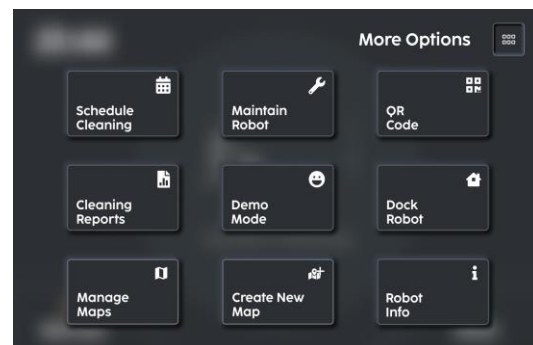


FIGURE 3-2 (Home Menu)

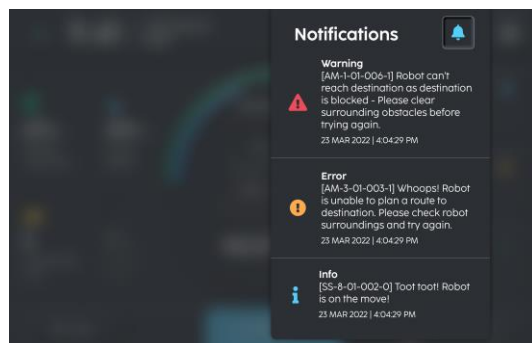


FIGURE 3-3 (Notifications)

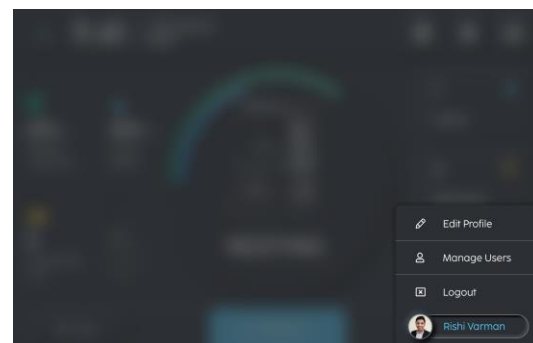


FIGURE 3-4 (User Profile)

INITIAL SETUP

The following section describes the setup procedure by using the LCD screen on the R3 SCRUB PRO.

1. Turn on the R3 SCRUB PRO and note the 'LOADING VIDEO' screen on the LCD (Fig. 3-5).
2. Scroll down and select your language (Fig. 3-6).
3. Read and agree to the Terms of Use and Privacy Policy (Fig. 3-7).
4. Enter your account name (Fig. 3-8).

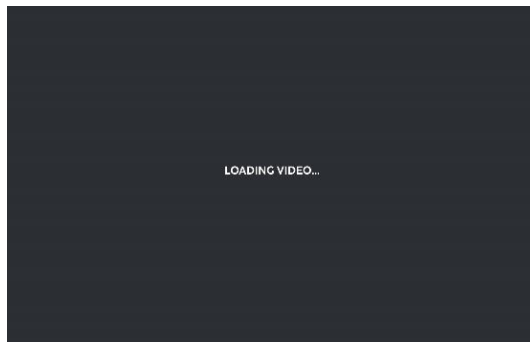


FIGURE 3-5

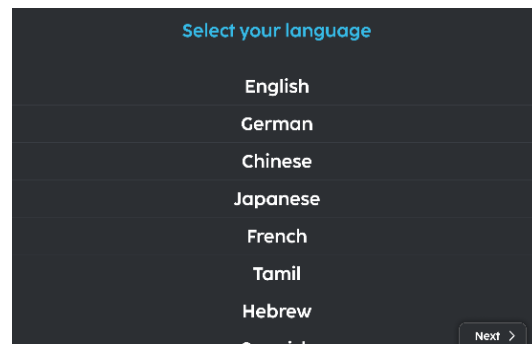


FIGURE 3-6

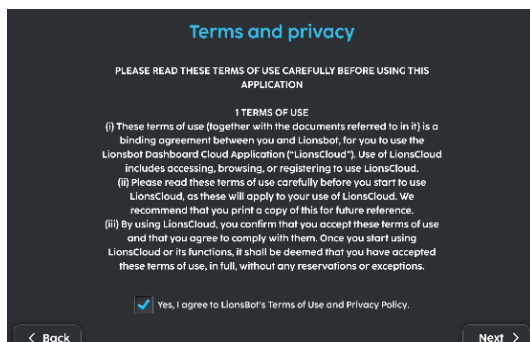


FIGURE 3-7

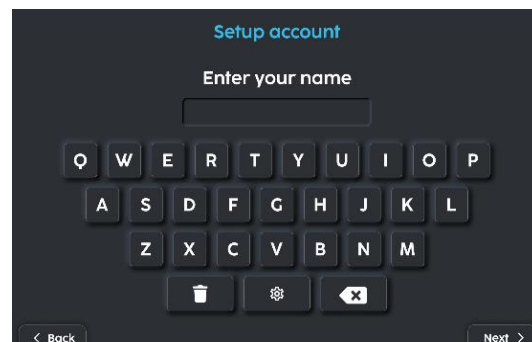


FIGURE 3-8

5. Key in your password (Fig. 3-9).
6. Confirm your password (Fig. 3-10).

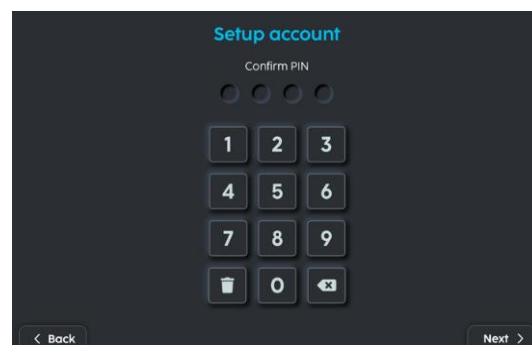
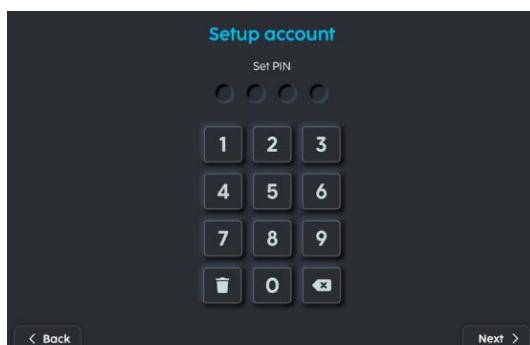


FIGURE 3-9

FIGURE 3-10

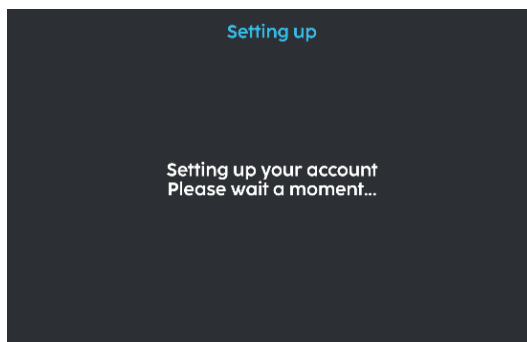


FIGURE 3-11

7. Wait for your account to be setup (Fig. 3-11).
8. Read and acknowledge usage instructions (Fig. 3-12).
9. You may choose to create a map or go direct to the home screen (Fig. 3-13 & 3-14).



FIGURE 3-12

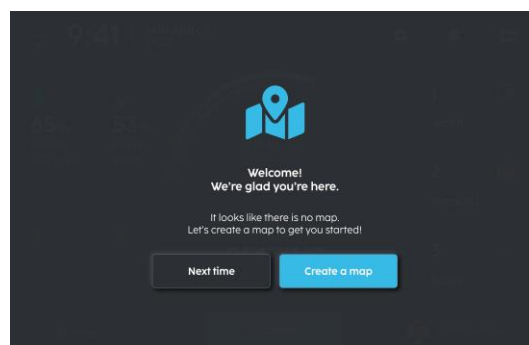


FIGURE 3-13

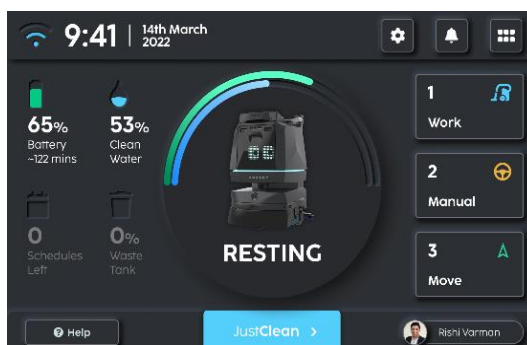


FIGURE 3-14

LOGIN WITH LOCAL ACCOUNT (RECOMMENDED)

The following section describes the local account procedure by using the LCD screen on the R3 SCRUB PRO after initial setup.

1. Select the local account for login (Fig. 3-15).
2. Enter your pin. (Fig. 3-16).
3. If pin is incorrect, try again (Fig. 3-17).
4. View the 'HOME' page.

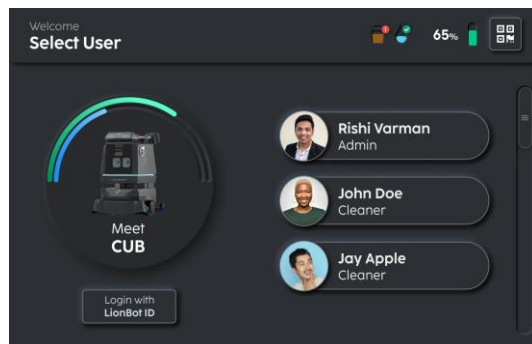


FIGURE 3-15

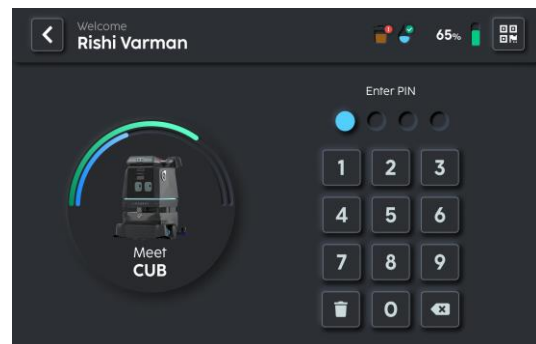


FIGURE 3-16

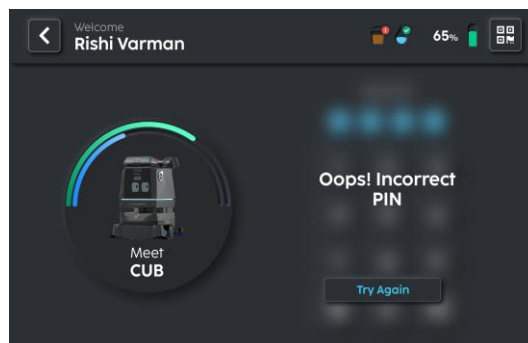


FIGURE 3-17

LOGIN WITH LIONSBOT ID (OPTIONAL)

The following section describes the LionsBot ID login procedure by using the LCD screen on the R3 SCRUB PRO.

1. Tap on the 'LOGIN WITH LIONSBOT ID' button at the bottom of the screen (Fig. 3-18).
2. Key in your User name and password.
3. View the 'HOME' page.

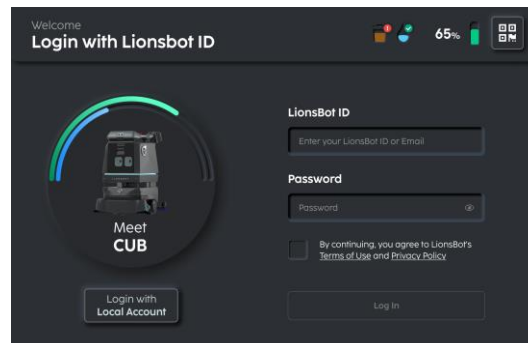


FIGURE 3-18

LOGIN WITH LIONSCLEAN APP (OPTIONAL)

The following section describes the LionsClean V2 app login procedure by using the LCD screen on the R3 SCRUB PRO. You can download the app by searching LionsClean V2 on App Store (<https://apps.apple.com/ae/app/lionsclean-v2/id1623238891>) or Play Store (<https://play.google.com/store/apps/details?id=com.lionsclean.v2>).

1. Tap on the 'QR' button at the top right of the screen (Fig. 3-19).
2. Scan the QR Code on the LCD screen through the app (Fig. 3-20).
3. Enter the OTP into the LionsClean app (Fig 3-21).

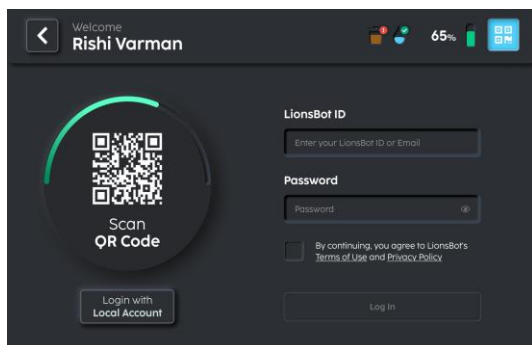


FIGURE 3-19



FIGURE 3-20

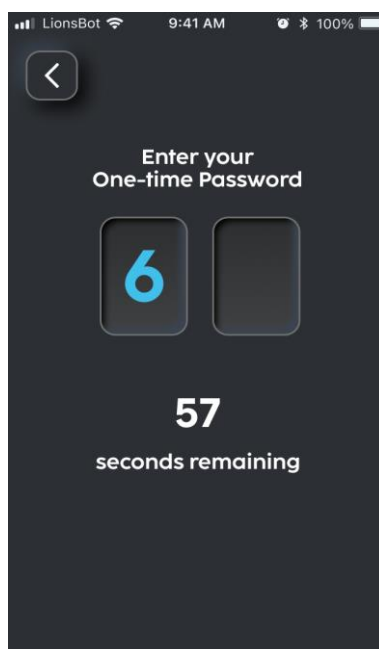


FIGURE 3-21

USER ACCOUNT MANAGEMENT

This section provides instructions for adding/ removing users.

1. From the User menu select 'MANAGE USERS'.
2. On the 'MANAGE USER' screen, select 'ADD USER' (Fig. 3-22, Fig. 3-23).
3. Enter the user's name and role (Fig. 3-24).



FIGURE 3-22

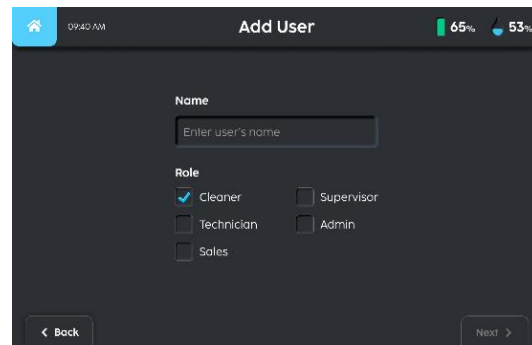


FIGURE 3-23

4. Assign a 4-digit pin to the user (Fig. 3-25).
5. Re Enter 4-digit pin.
6. Confirm User (Fig. 3-26).
7. The user account setup is complete (Fig. 3-27).

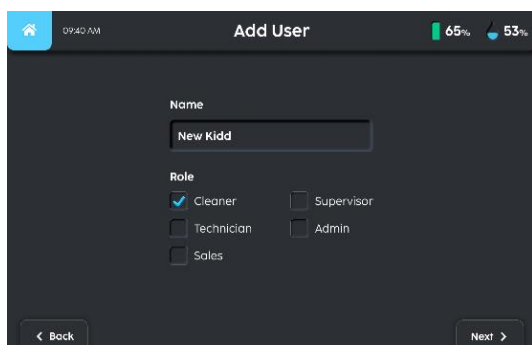


FIGURE 3-24

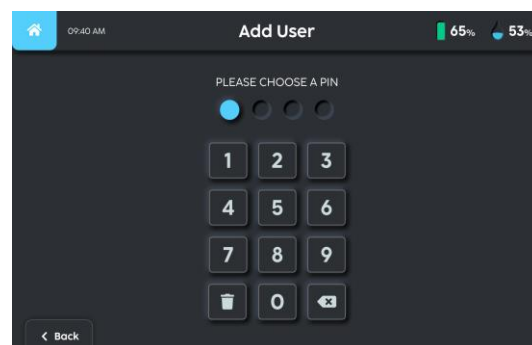


FIGURE 3-25

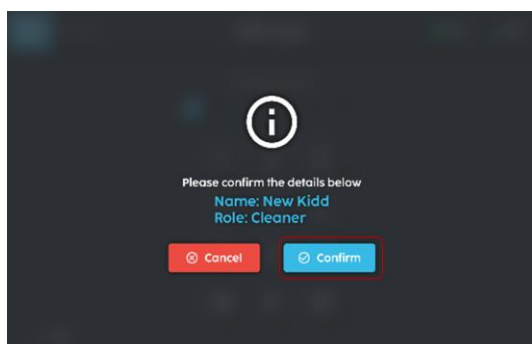


FIGURE 3-26

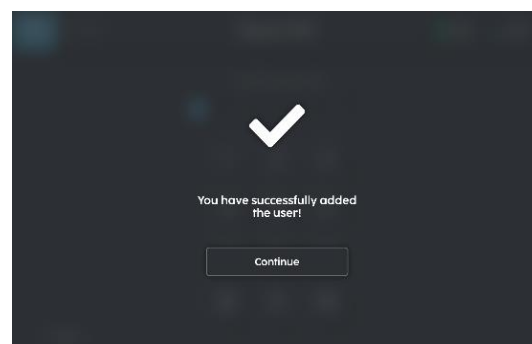


FIGURE 3-27

To delete a user profile

1. Select the user profile.
2. Select 'Delete user' (Fig 3-28).
3. Select 'Delete' (Fig 3-29).
4. User has been successfully deleted (Fig. 3-30).

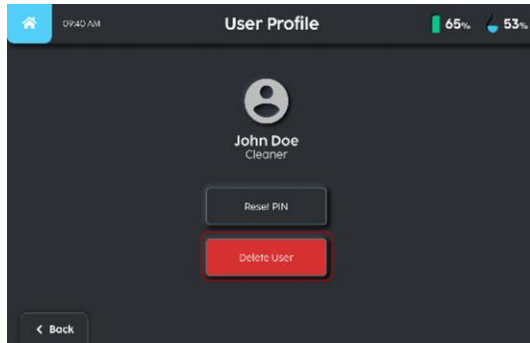


FIGURE 3-28

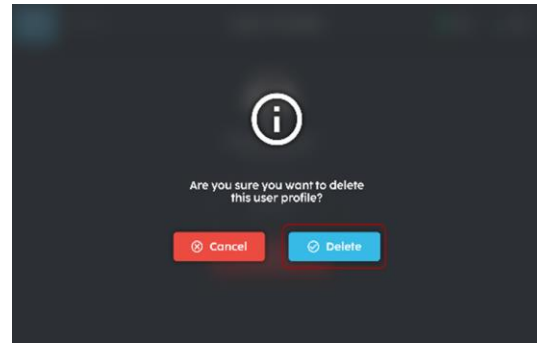


FIGURE 3-29

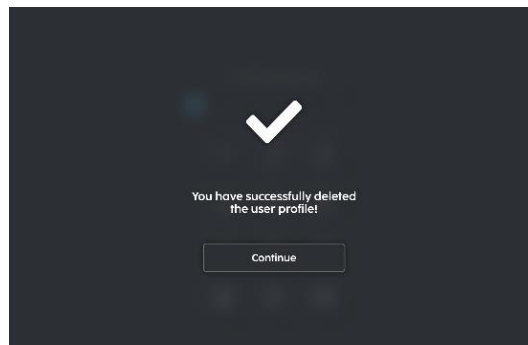


FIGURE 3-30

MANAGE MAPS

The following section instructs the user on how to add, change or delete the mapped environment in which R3 SCRUB PRO is operating.

ADD/CREATE NEW MAP

1. On the 'More Options' page, select 'Manage Maps' (Fig. 4-1).

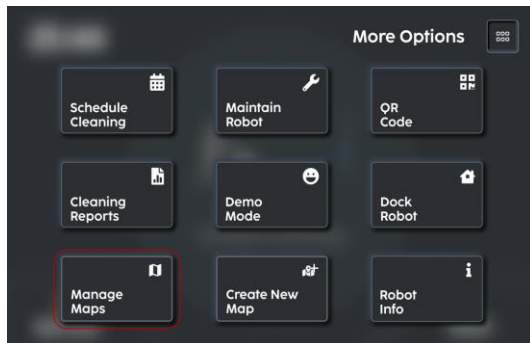


FIGURE 4-1

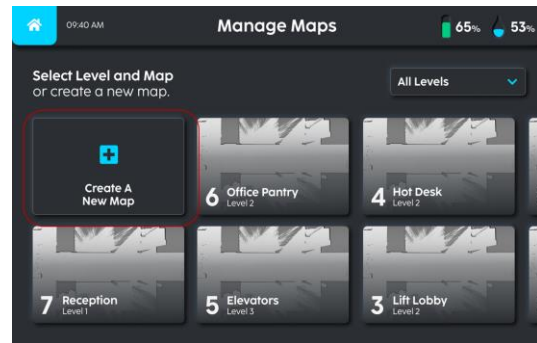


FIGURE 4-2

2. Select 'Create A New Map' (Fig. 4-2).
3. Enter a 'Map Name' and 'Level' of the map, then click 'Start' (Fig. 4-3).
4. Move Robot slowly (Fig. 4). If motion is fast robot will instruct operator to slow down (Fig. 4-5).

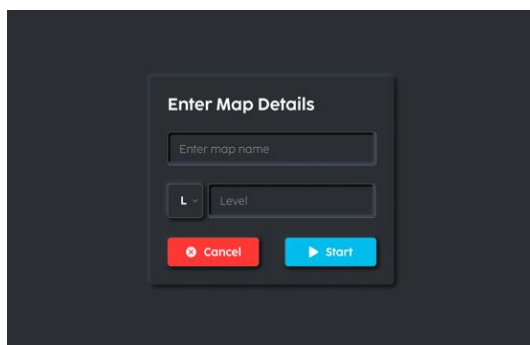


FIGURE 4-3

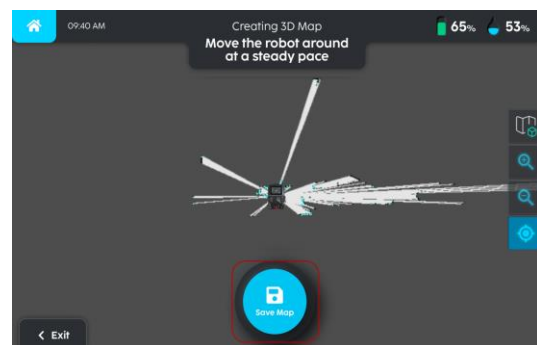


FIGURE 4-4



FIGURE 4-5

5. Once mapping is done, click 'Save Map'.
6. Map is saved successfully (Fig. 4-6).

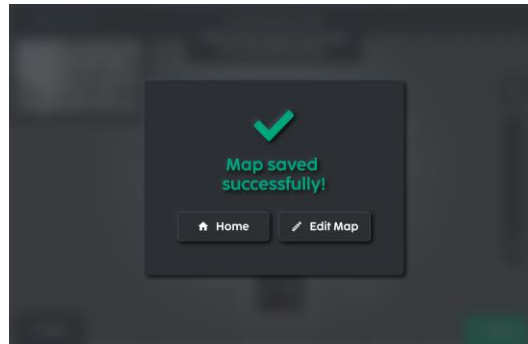


FIGURE 4-6

DELETE MAP

1. Select the map to be deleted (Fig. 4-7).
2. Select delete map (Fig. 4-8).

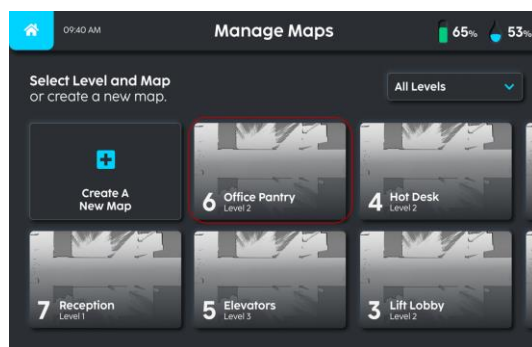


FIGURE 4-7

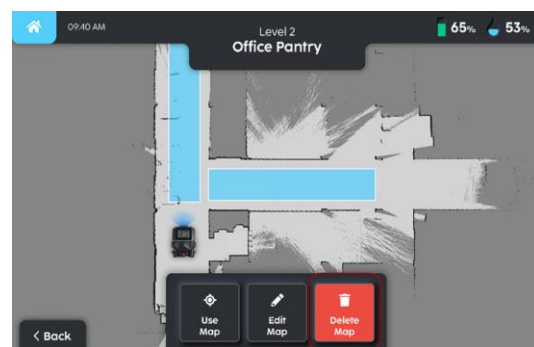


FIGURE 4-8

MAP EDITOR

Map editor allows the operator to add cleaning zones, restricted zones, touch-up map features, add locations, create sections and add home and dock points.

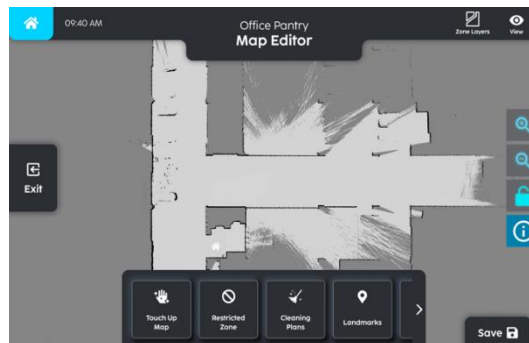


FIGURE 4-9

For more information on map editing contact LionsBot Robot Service Team.

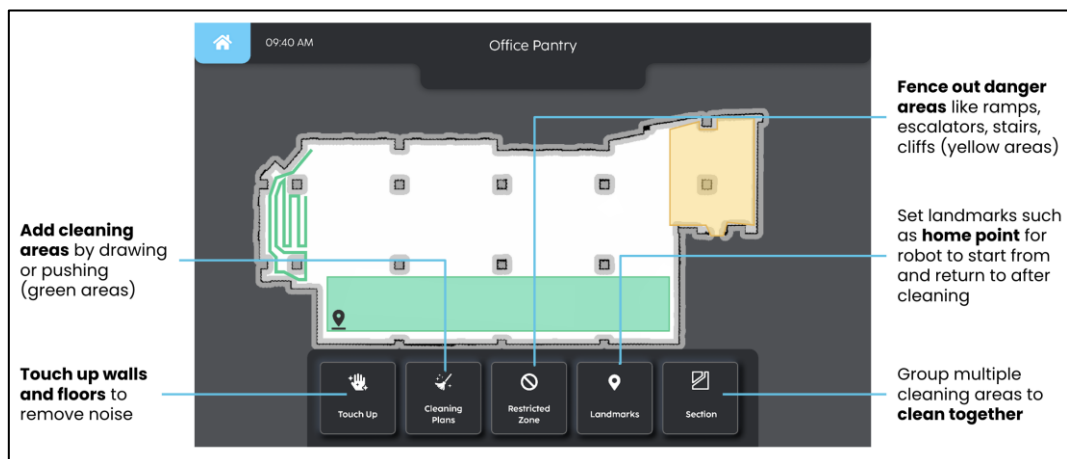


FIGURE 4-10

Fig. 4-10 describes the 5 key functions within Map Editor.

1. Touch Up Map (Fig. 4-11)

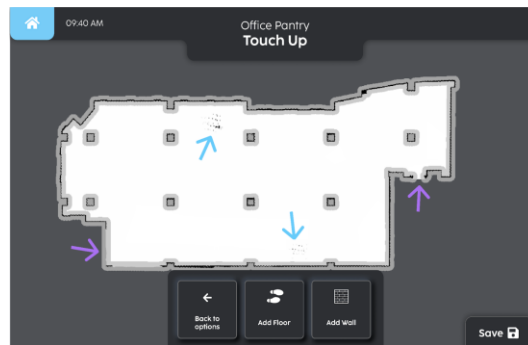


FIGURE 4-11

- a. **Add Floor:** There could be black spots on map areas that are not there in the actual environment. By drawing a floor over, it will paint these areas white and let the robot know there are no obstacles there.
 - b. **Add Walls:** Walls might not line up properly or have gaps during mapping (e.g. if the wall is glass). Drawing the walls will help the robot understand the real world boundaries better.
2. Create Cleaning Plans (Fig. 4-12)

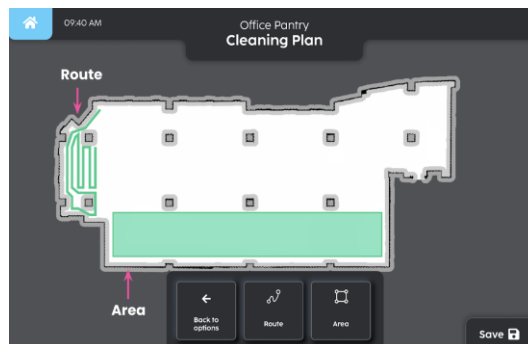


FIGURE 4-12

- a. **Route:** This is used to clean places that are narrow and irregular (e.g. corridor). The robot will clean over specified route.
- b. **Area:** This is used to clean large open areas (e.g. lobby, halls). By drawing a perimeter, the robot will clean everything within.
- c. **4 ways to create route or area**

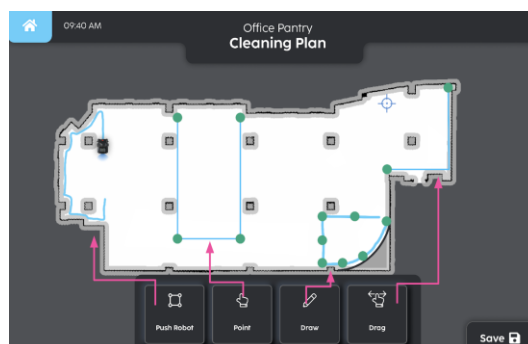


FIGURE 4-13

- i. **Push robot - teach & repeat:** User pushes the robot in the actual environment to create the zone
- ii. **Point:** Click on the map and the lines will join up individual points to form the zone
- iii. **Draw:** Freeform drawing that is good for irregular zones (e.g. curved walls)

- iv. Drag: This is similar to "Point" but more precise. User drags the map to position the crosshair at the desired point. Good for users with big fingers.

3. Create Restricted Zones

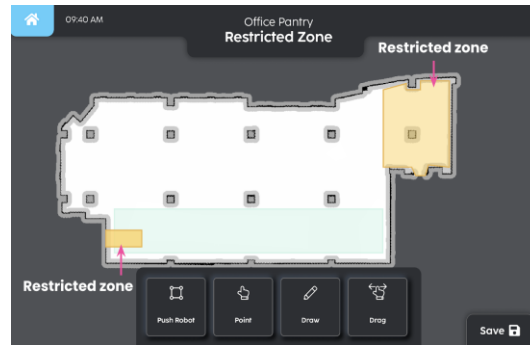


FIGURE 4-14

- a. It is important to create restricted zones for safety!
- b. You can only create restricted zones (no route) and they can be created in the same way as cleaning zones.
- c. Examples of danger zones to mark as restricted include (not exhaustive)
 - i. Slope
 - ii. Stairs / escalator / travelator
 - iii. Cliff / Ledge / Drain
 - iv. Glass doors / walls / plastic curtains
 - v. Loose cables / cable trunking
 - vi. Tactile / uneven floors
 - vii. Carpet
 - viii. Low height obstacles < 10 cm
 - ix. Overhang objects / protruding structures
- d. Restricted zones can be outside of cleaning zones, inside or intersecting. Robots will not be allowed to go there autonomously.



WARNING!

It is important to create restricted zones to ensure the safe operation of the robot.

4. Set Landmarks

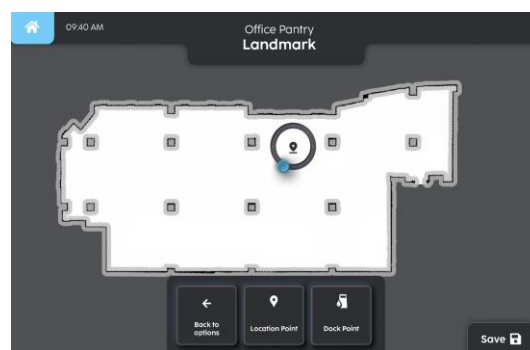


FIGURE 4-15

- a. This is to mark out important points on the map. They can be used for
 - i. Localising robot if the robot is lost
 - ii. Robot to return back home after cleaning job
 - iii. Command the robot to move from one place to another
 - iv. Docking stations
 - b. Place a landmark in 2 steps:
 - i. Click the point on the map
 - ii. Set the direction of the robot when it is at that point.
5. Create Cleaning Sections

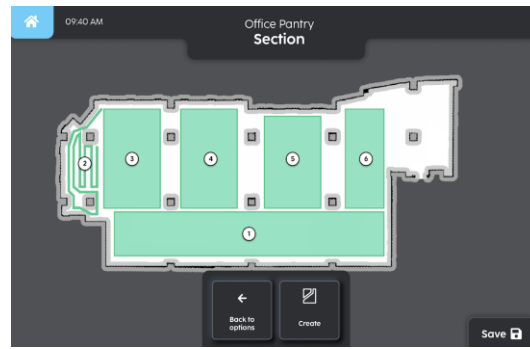


FIGURE 4-16

- a. When you create a Section, you click and chain multiple cleaning route/area together and the robot will clean them back-to-back in the sequence you clicked.
- b. A map can have multiple Sections so users can run different cleaning jobs depending on the time of the day/week.

WORK ROBOT

The 'WORK' function is used to select the cleaning location and set cleaning settings for the location.

NOTE: Ensure the robot is localized before using this function. To select map or localize robot refer to the '[LOCALIZED ROBOT](#)'.

From the home page, select 'WORK' (Fig. 5-1).

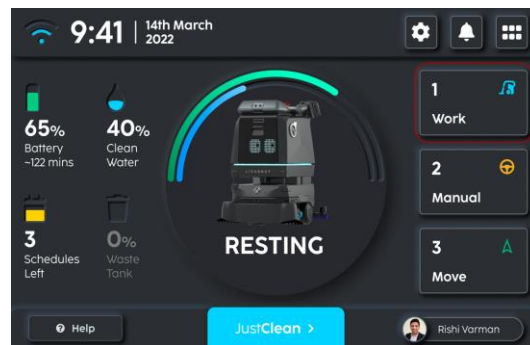


FIGURE 5-1

IF THE ROBOT IS NOT LOCALIZED

1. Set robot's location on the map (Fig. 5-2) and select 'START' (Fig 5-3).
2. Wait for the 'LOOKING AROUND' screen (Fig 5-4).
3. If localizations failed select 'Try Again' (Fig 5-5).

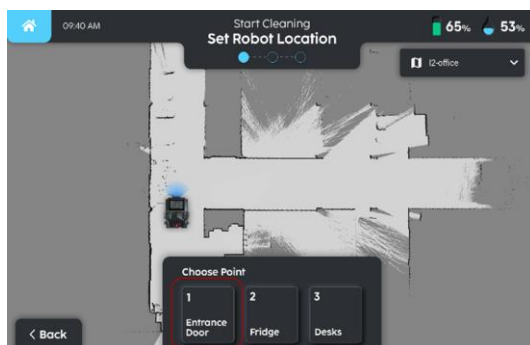


FIGURE 5-2

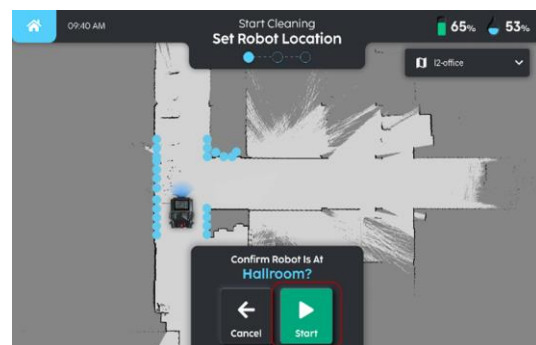


FIGURE 5-3

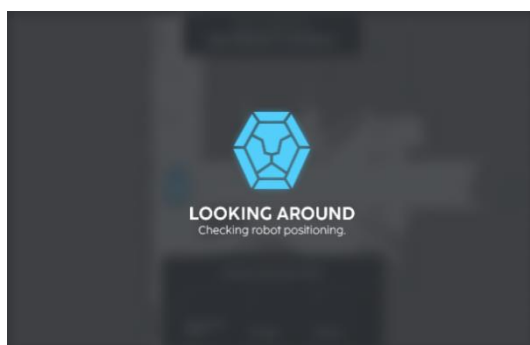


FIGURE 5-4

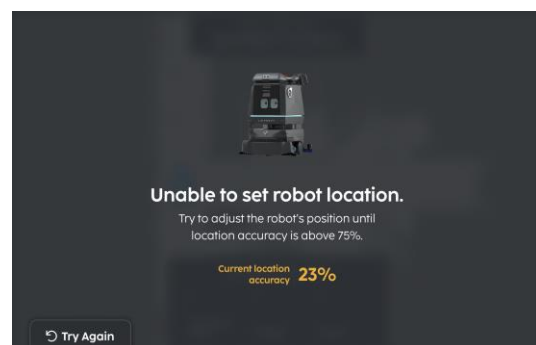


FIGURE 5-5

If localization is not successful go to section '[LOCALIZING THE ROBOT](#)'.

LOCALIZED ROBOT

1. Select the cleaning area and confirm the area (Fig 5-6).
2. Before confirming the zone, operator may adjust its cleaning settings (Fig 5-7).

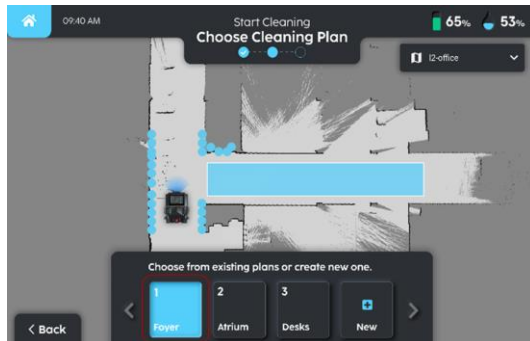


FIGURE 5-6



FIGURE 5-7

3. Place the handle bar down to start cleaning (Fig5-8)
4. The robot shall start the cleaning operation, the operator may pause or stop the cleaning at anytime (Fig 5.9)

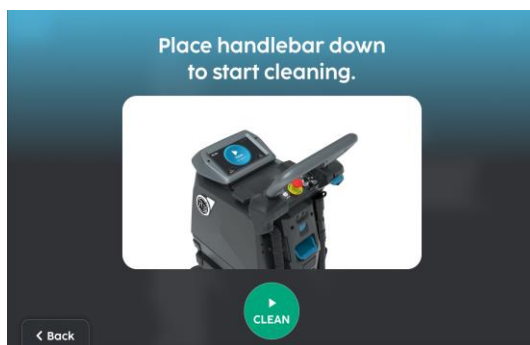


FIGURE 5-8

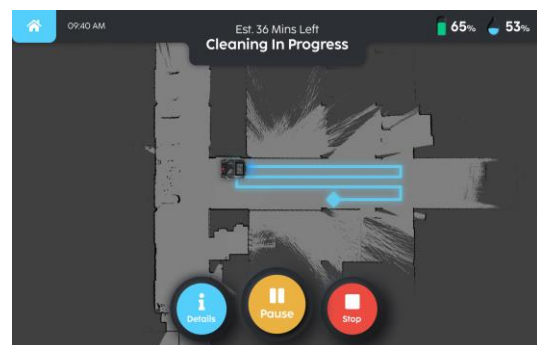


FIGURE 5-9

5. Should there be an interruption in the process the 'Cleaning Unsuccessful' screen will show (Fig 5-10)
6. A cleaning report is generated after a zone is cleaned (Fig 5-11)

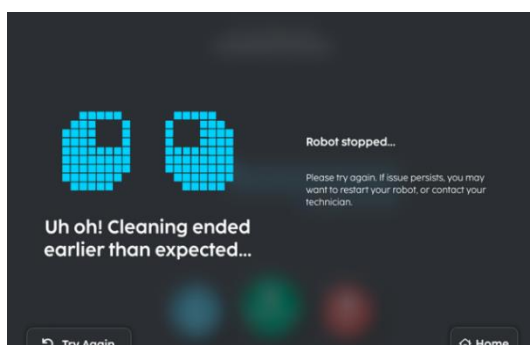


FIGURE 5-10

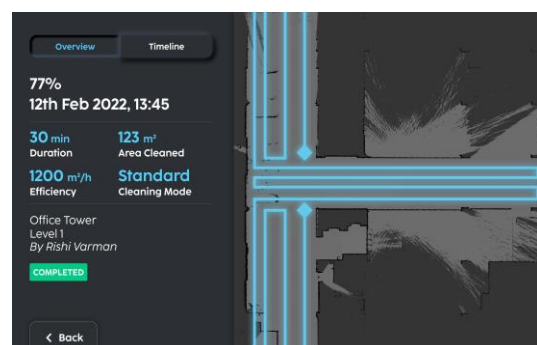


FIGURE 5-11

JustClean™

1. On the 'HOME' screen select 'JustClean™' (Fig. 5-12).
2. Choose between 'PERIMETER MODE' or 'GUIDE & CLEAN'. (Fig. 5-13).

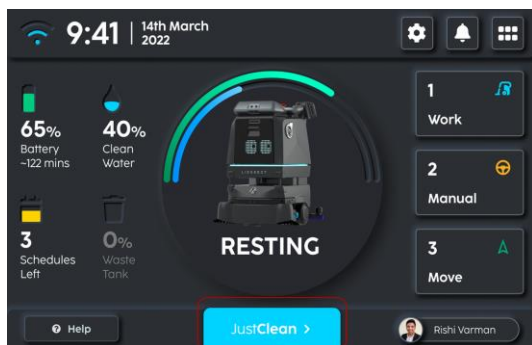


FIGURE 5-12

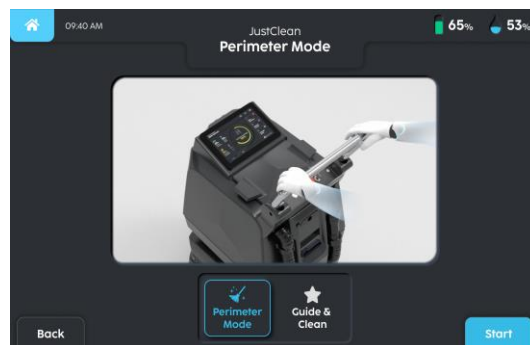


FIGURE 5-13

Perimeter Mode

1. Select 'PERIMETER' and click 'START' (Fig. 5-14).
2. Manually move the robot along the perimeter (Fig. 5-15).
3. Once path is closed, press 'SAVE MAP', and map is saved (Fig. 5-16).

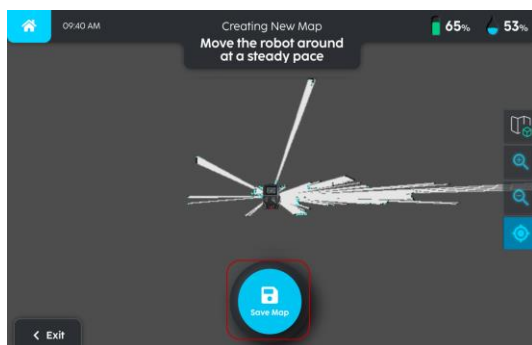


FIGURE 5-14

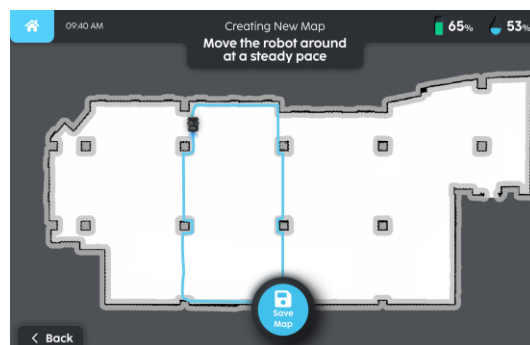


FIGURE 5-15

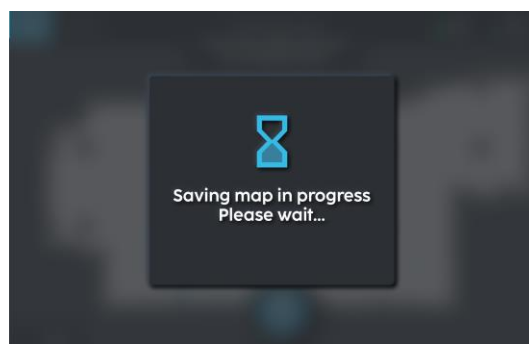


FIGURE 5-16

4. User may adjust cleaning zones or change cleaning setting for map (Fig. 5-17).

5. Place the handle bar down then press 'CLEAN' (Fig. 5-17).
6. Robot shall start cleaning operation (Fig. 5-18 & Fig.5-19).

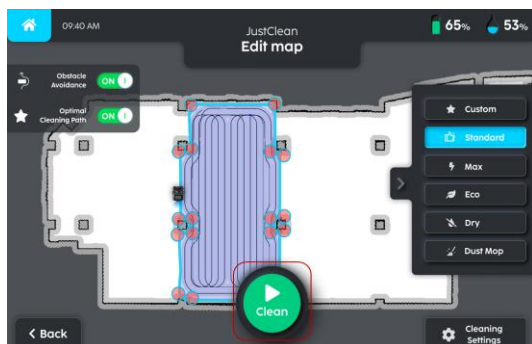


FIGURE 5-17

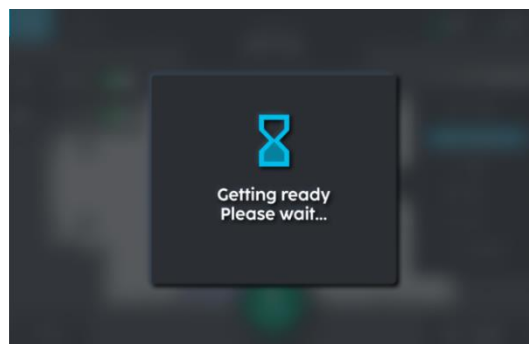


FIGURE 5-18



FIGURE 5-19

Guide and Clean Mode.

1. Select 'GUIDE & CLEAN' and click 'START' (Fig. 5-20).
2. Move robot along the path to be cleaned while keeping the robot's speed steady (Fig. 5-21).
3. Save the map once cleaning area is complete (Fig. 5-22 & 5-23).

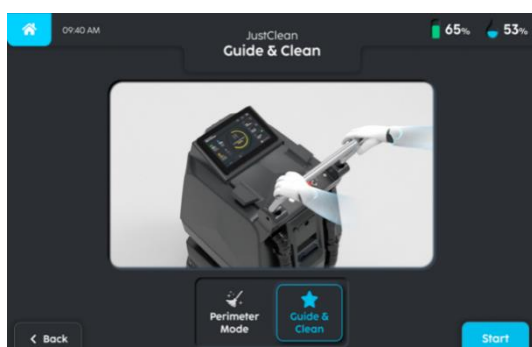


FIGURE 5-20

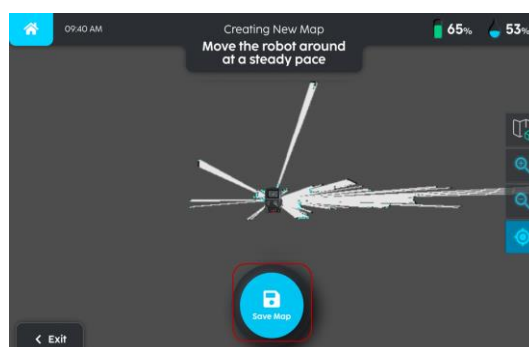


FIGURE 5-21



FIGURE 5-22

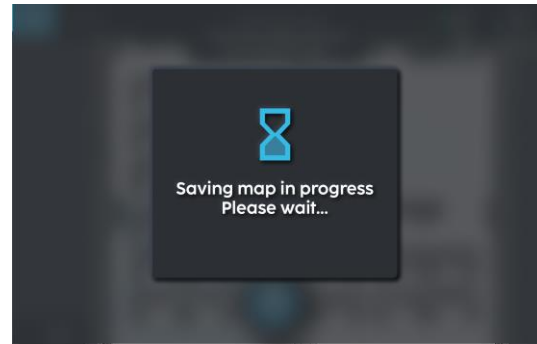


FIGURE 5-23

4. Select cleaning settings and press 'START CLEAN' (Fig. 5-24).
5. Check if handlebar is down. If not, place handlebar in the down position.
6. The robot starts cleaning the path that was defined in step 2 (Fig. 5-25).

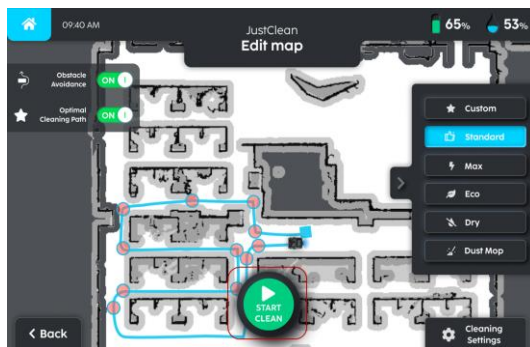


FIGURE 5-24



FIGURE 5-25

Cleaning Report

A cleaning report is generated once cleaning is complete (Fig. 5-26).

Go to the [REPORTS](#) section for more information.

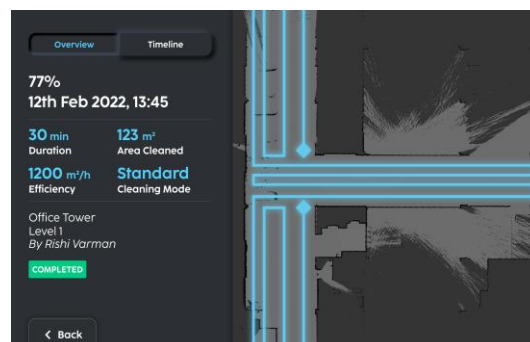


FIGURE 5-26

MANUAL CLEAN



WARNING!

While on ramps or inclines, avoid sudden stops. Avoid abrupt sharp turns. Use low speed down ramps.

The following section instructs the user on how to manual clean on the R3 SCRUB PRO.

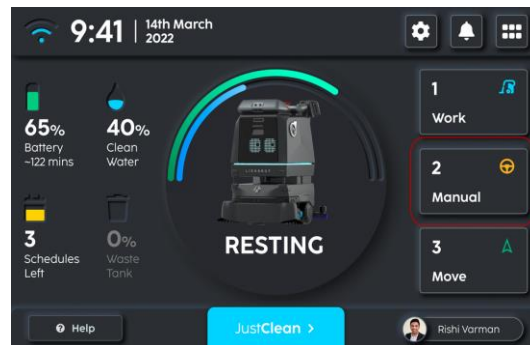


FIGURE 5-27

1. On the Home screen select the 'MANUAL CLEAN' button (Fig. 5-27) and pull up the handle bar (16).
2. Select cleaning presets: 'Custom', 'Standard', 'Max', 'Eco', 'Dry', 'Dustmop' and 'Cleaning Settings'.
3. For 'Custom', the sliders (Fig. 5-28) control the Brush Pressure, Brush Speed, Suction, Squeegee pressure, Spray interval, Side Brush Speed, and Side Brush Pressure. Select your custom settings and select save.
4. After selecting your settings select the 'START CLEANING' button to start cleaning (Fig. 5-29).

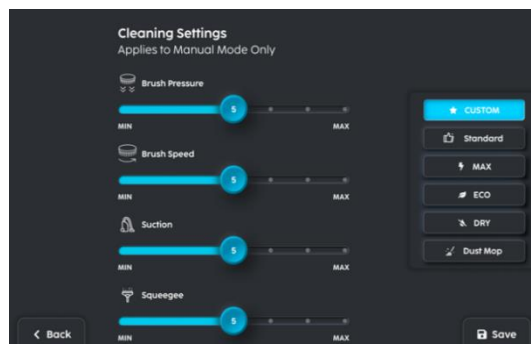


FIGURE 5-28

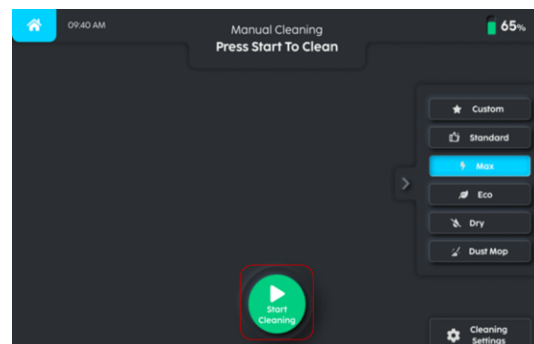


FIGURE 5-29

NOTE: When the touchscreen shows the robot battery is below 5%, the operator should stop cleaning and charge the robot.

SETTINGS

This section instructs the user on changing settings on the LCD screen. The Settings page allows the user to change general settings, language, network and reset robot.

1. On the general settings page the user can adjust screen brightness, sound volume and screen timeout settings (Fig 6-1).
2. The user may change the language by clicking the language tab and scroll through the language window (Fig 6-2).



FIGURE 6-1

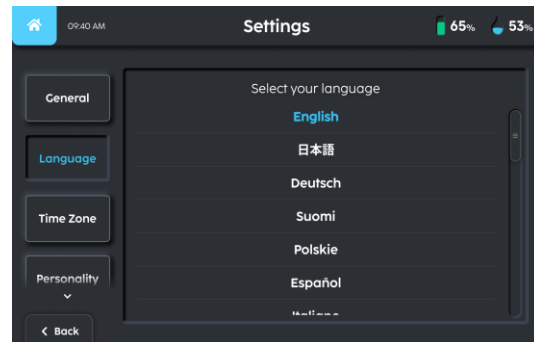


FIGURE 6-2

3. The user may change the operating network by selecting the 'Configure' button (Fig 6-3).
4. Select the network to configure or connect to (Fig 6-4).

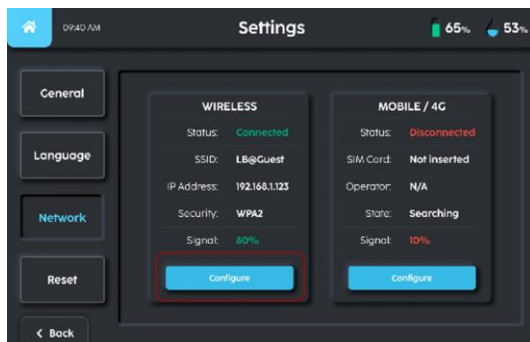


FIGURE 6-3

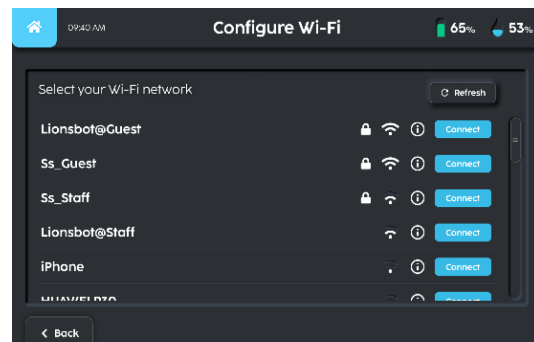


FIGURE 6-4

WIFI

1. Enter the network password (Fig 6-5).

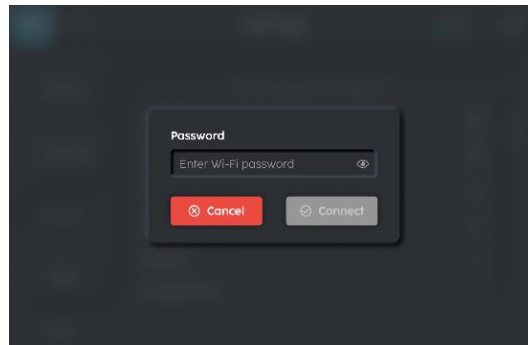


FIGURE 6-5

2. If the connection is successful (Fig 6-6), network change is successful.
3. Should the screen show fail to connect (Fig 6-7), check your network configuration and settings and try again. Otherwise contact your network administrator.

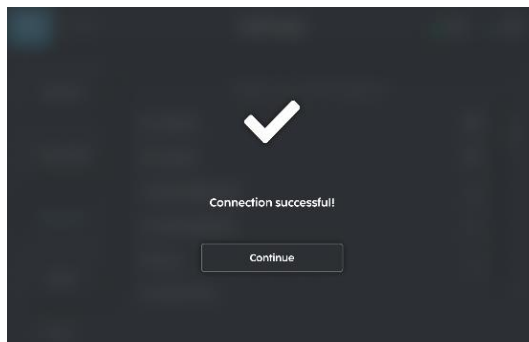


FIGURE 6-6

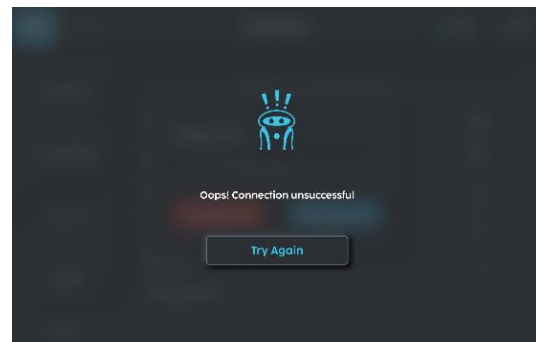


FIGURE 6-7

MOBILE/4G

1. The operator may configure mobile/4G settings (Fig 6-8)
2. A "Configuration saved "successfully" message will pop out (Fig. 6-9).

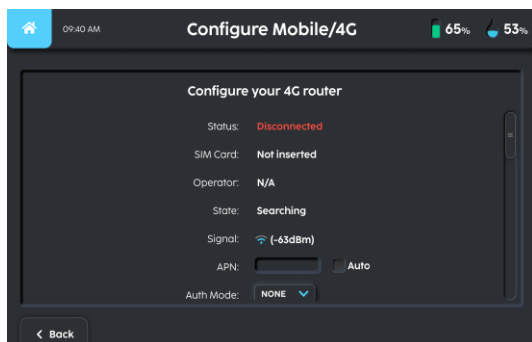


FIGURE 6-8

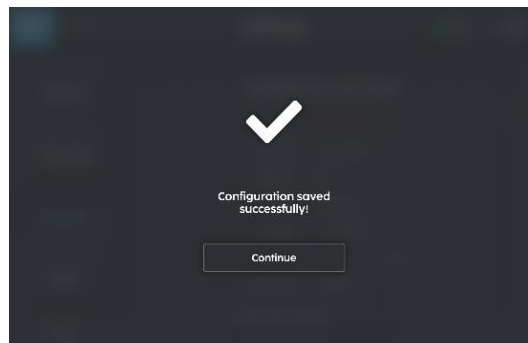


FIGURE 6-9

RESET ROBOT

1. Select 'Reset'(Fig.6-10).
2. Enter PIN(Fig.6-11).
3. If PIN entered is incorrect, select 'Try Again'(Fig.6-12).
4. Select 'Reset' (Fig. 6-13).

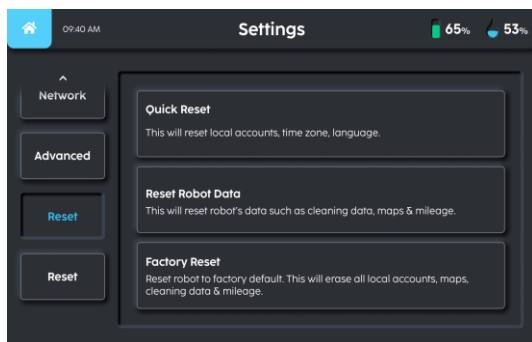


FIGURE 6-10

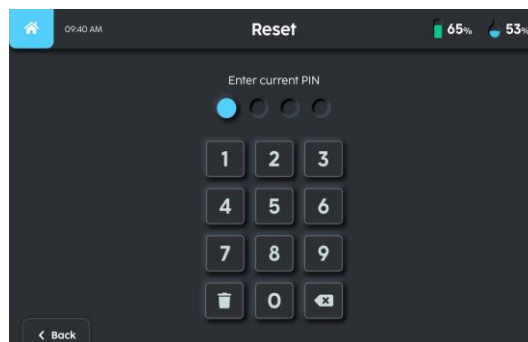


FIGURE 6-11

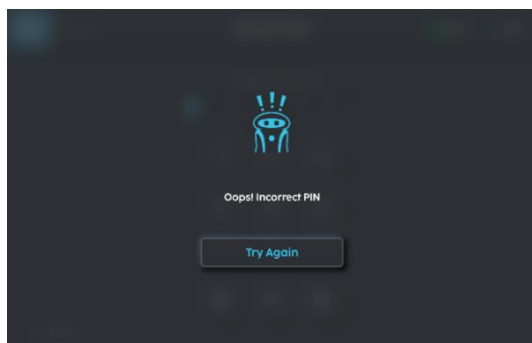


FIGURE 6-12

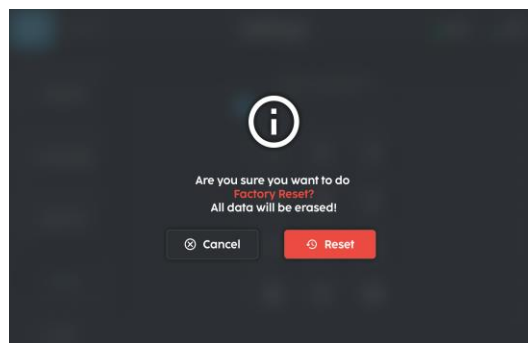


FIGURE 6-13

REPORTS

The following section instructs the user on how to access reports:

1. From the home page click on the more options icon (Fig. 6-14).
2. Select the 'Cleaning Reports', and click on the 'Reports' tab (Fig. 6-15).
3. Select the date of the cleaning report you would like to check (ticks mark out the days with cleaning reports).
4. Select the cleaning report of interest. An overview of the cleaning operation will be shown in the 'Overview' tab (Fig. 6-16).
5. Select the 'Timeline' tab for more details (Fig. 6-17).

One cleaning report is generated after every cleaning operation. A report's basic cleaning data shows time, mapped area, cleaning area covered and obstacles detected.

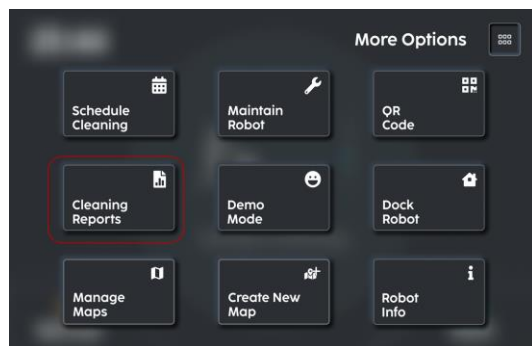


FIGURE 6-14

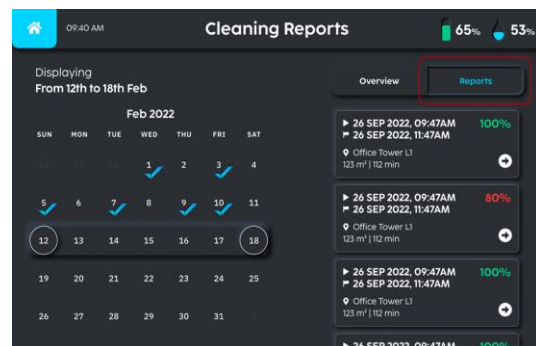


FIGURE 6-15

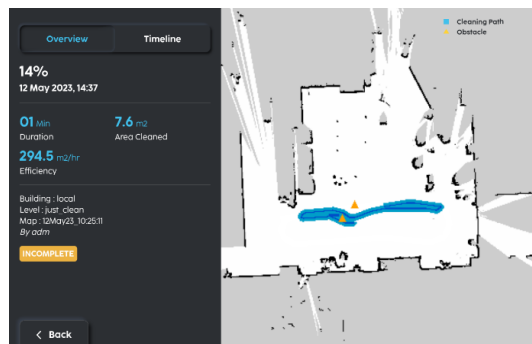


FIGURE 6-16

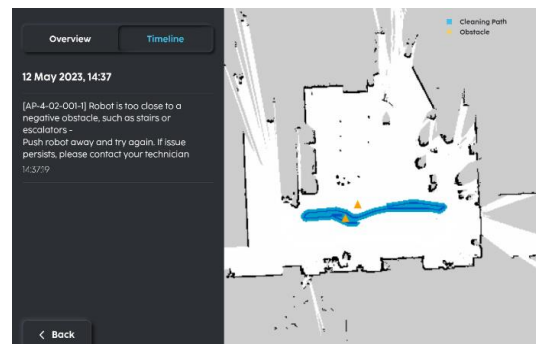


FIGURE 6-17

R3 SCRUB PRO APP AND INITIAL SETUP

The LionsClean app is used to communicate to and work with the robot. Each LionsClean user is assigned a unique user ID and password for use with the app. The user must be logged-in to be able to interface with a LionsBot robot.

This section provides an overview of the main functions provided by the app, accessible through the user info page, robot and facility page, and commands page of the app. More details on using the R3 VAC with the available app commands can be found in [‘OPERATION OF THE R3 SCRUB PRO’](#).

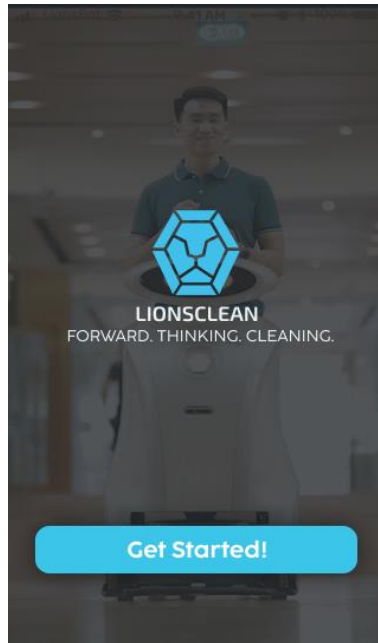


FIGURE 7-1 (Welcome Page)

NEW USER SETUP

Each Robot user is assigned a unique LionsBot ID and password for use with the app. A new user signing in for the first time will be required to update their password.

1. On the login page, enter the provided ID and password (Fig. 7-2).
2. Check that the correct country is selected (Fig. 7-3) before clicking the 'Log in' button.

NOTE: Entering a Wrong ID, Password or Country will result in an unsuccessful login, click 'try again' to return to the login page (Fig. 7-4).

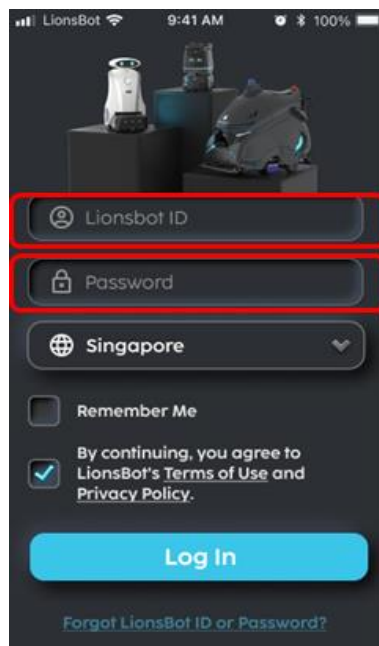


FIGURE 7-2

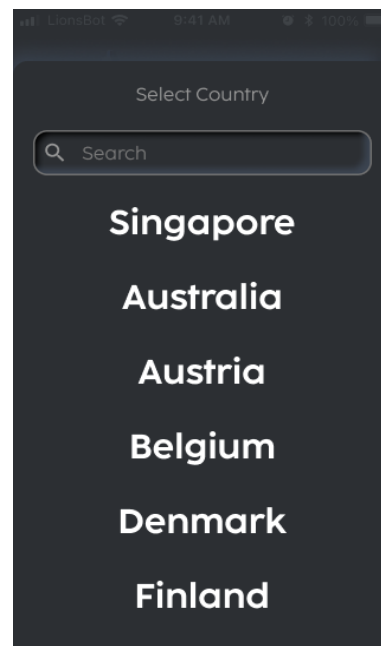


FIGURE 7-3

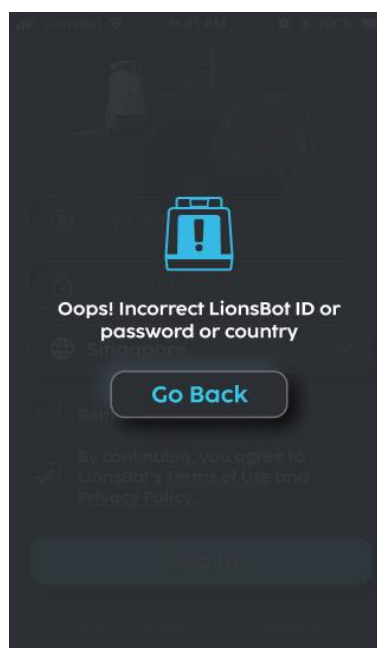


FIGURE 7-4

3. Click on 'Continue' on the update password page (Fig.7-5).
4. Enter a new password (Fig. 7-6). New password must meet the minimum requirements to proceed (Fig. 7-7).
5. Confirm new password (Fig. 7-8).
6. Click on the 'Update' button to update password (Fig. 7-9).

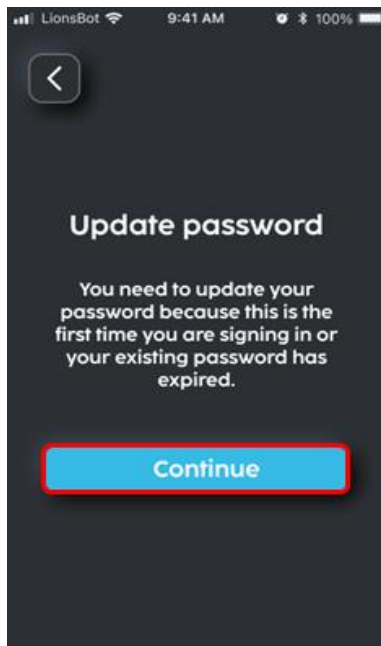


FIGURE 7-5

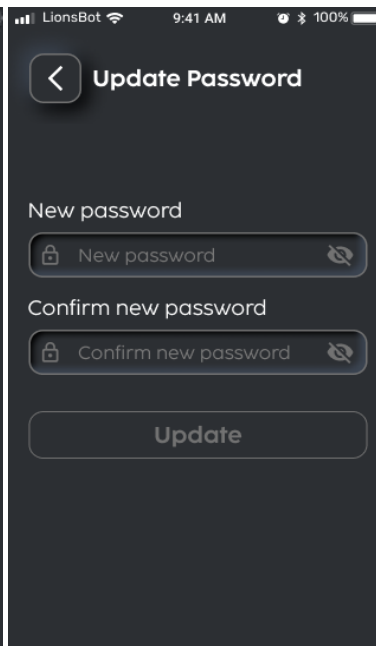


FIGURE 7-6

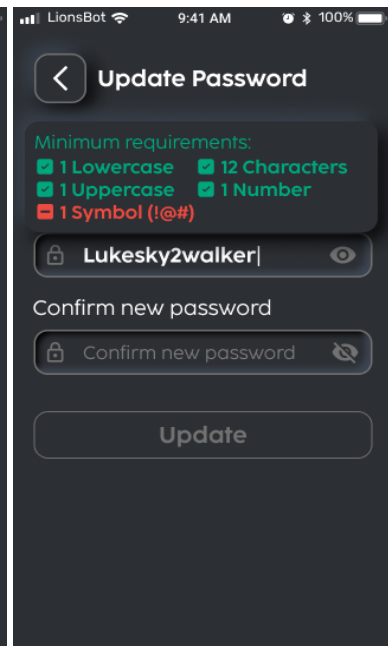


FIGURE 7-7

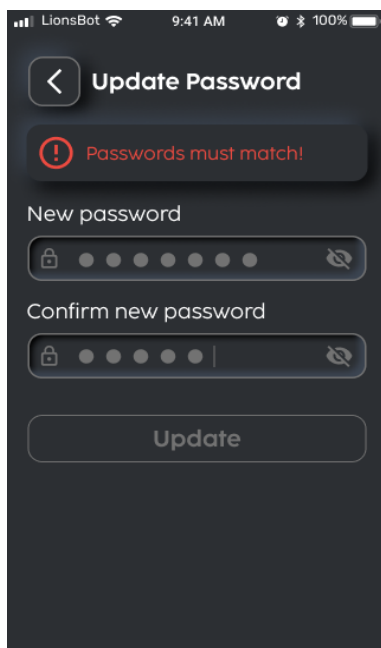


FIGURE 7-8

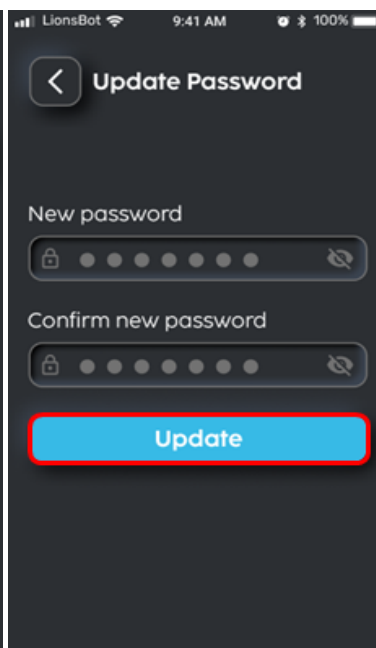


FIGURE 7-9

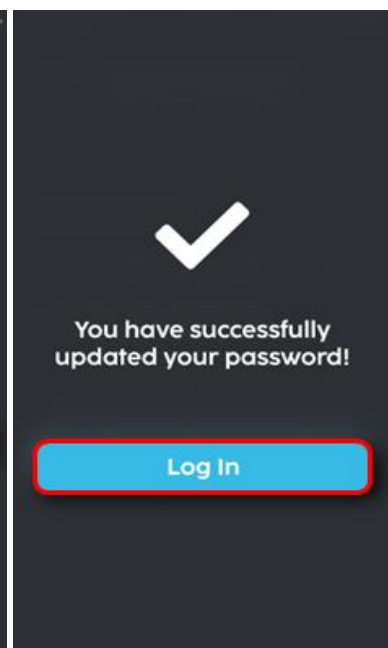


FIGURE 7-10

MY ROBOTS

This is the first page that appears upon user login. The 'My Robots' Page enables the user to view and manage the robots the operator is associated with.

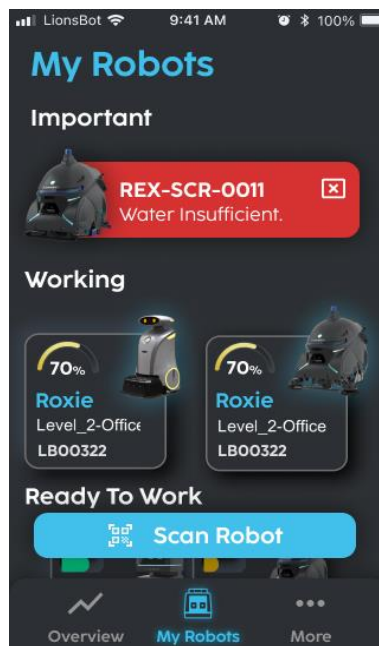


FIGURE 7-11 (My Robot's Page)

To add a new robot,

1. Click on 'Scan Robot' on the My Robots Page (Fig. 7-11).
2. Scan the QR code on the robot (Fig. 7-12). Alternatively click on 'or, Enter Robot ID' to add using robot name or ID (Fig. 7-13).
3. The app will then prompt the user for a one-time password to be entered within 1 minute (Fig. 7-14). This is a 2-digit password that will be displayed on the eyes or touchscreen of the robot. Input this on the app (Fig. 7-15).

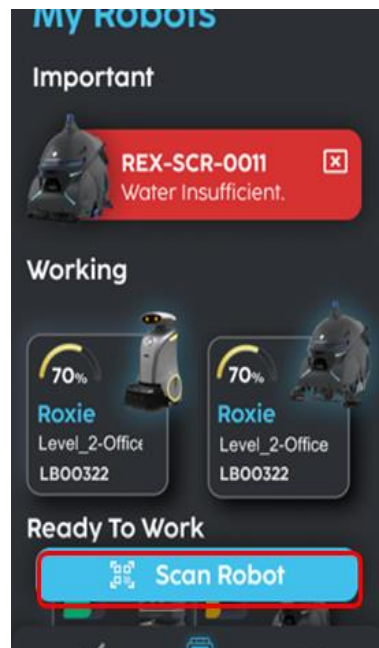


FIGURE 7-12

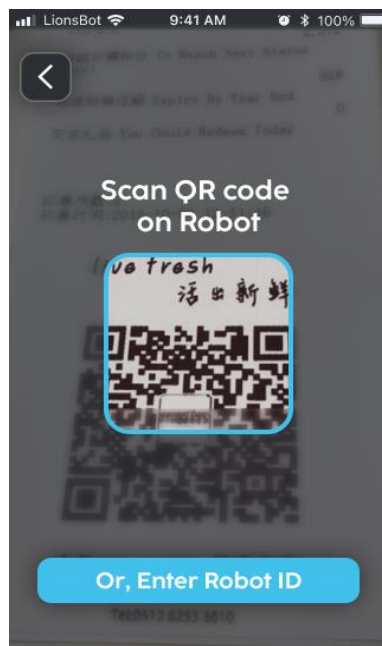


FIGURE 7-13

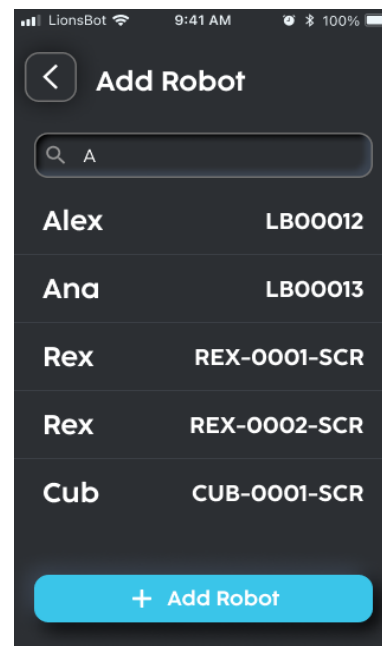


FIGURE 7-14

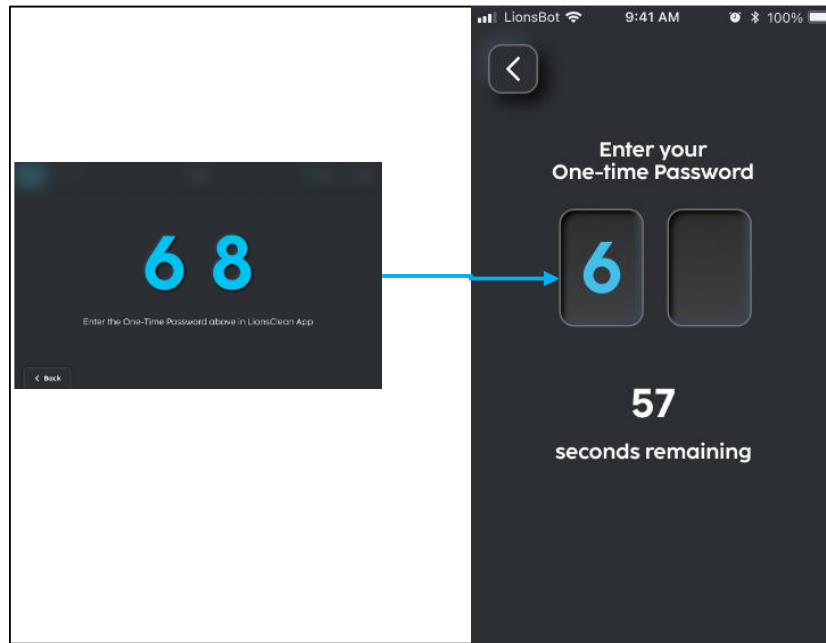


FIGURE 7-15

APP COMMANDS

The app commands (Fig. 7-16 and 7-17) can be accessed by clicking on the respective robot registered on the 'My Robots' Page.

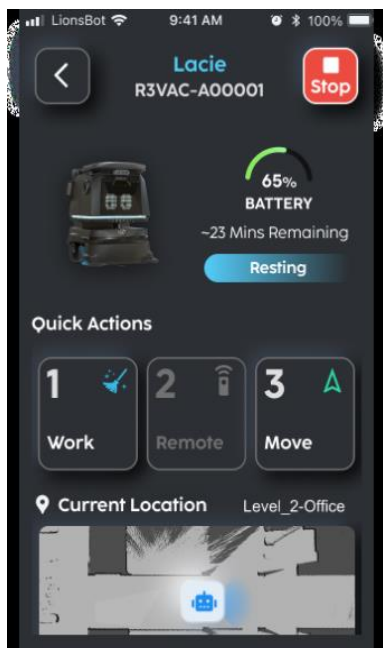


FIGURE 7-16

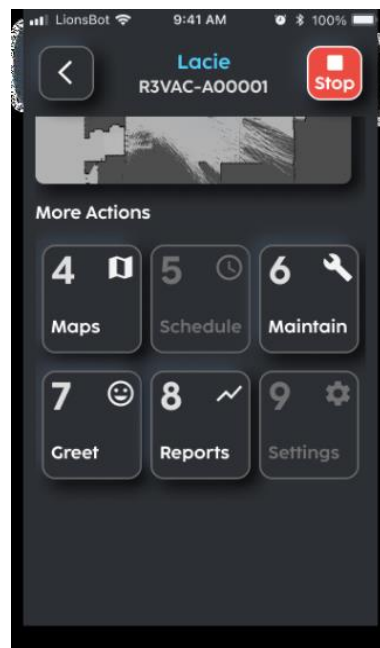


FIGURE 7-17

REPORTS

The reports page gives access to daily reports of the Robot operations and display their cleaning records.

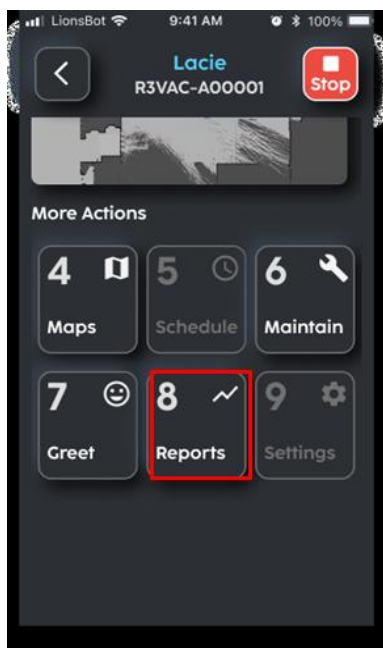


FIGURE 7-18

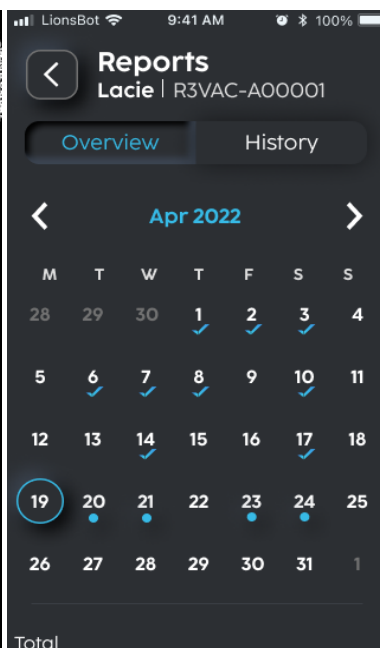


FIGURE 7-19



FIGURE 7-20

FACILITY MAP



CAUTION!

A properly created facility map is key to ensuring that the R3 SCRUB PRO avoids dangerous spots in its navigation/ operation. Maps must be created through an authorized distributor by professionally trained personnel.

The LionsClean app should have a pre-created map for the areas of interest in the facility the R3 SCRUB PRO is working in. This can be accessed using the map option on the Commands page, and is necessary for localization of the R3 SCRUB PRO (see '[LOCALIZING THE ROBOT](#)'). For assistance with creating/ adjusting a map, please contact an authorized distributor.

REPORT A PROBLEM

The Report Problem page can be used to submit a problem with the Robot or LionsClean App.

1. Click on 'Report Problem' (Fig. 7-21).
2. Select the category of the problem encountered.
3. Fill in a description of the problem.

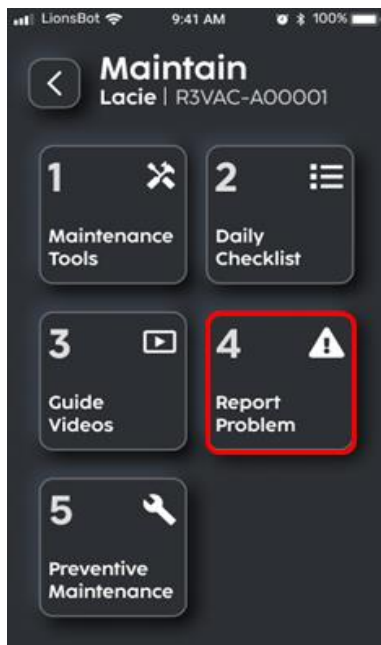


FIGURE 7-21

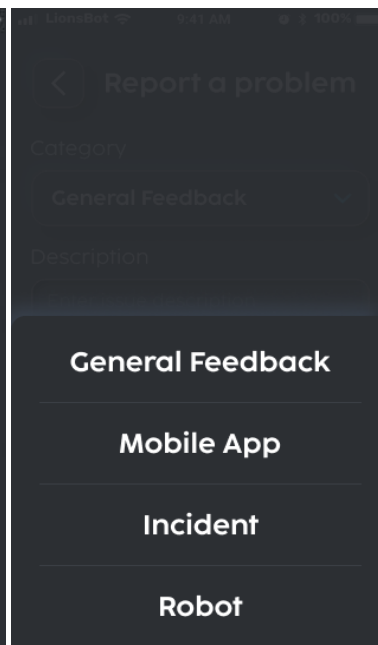


FIGURE 7-22

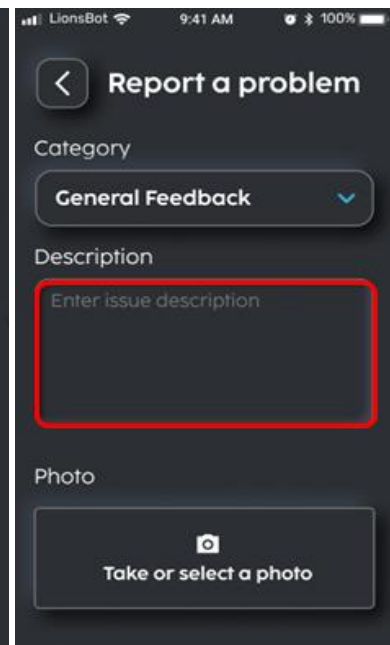


FIGURE 7-23

4. Take or select a photo of the problem (Optional) (Fig. 7-24 and 7-25).

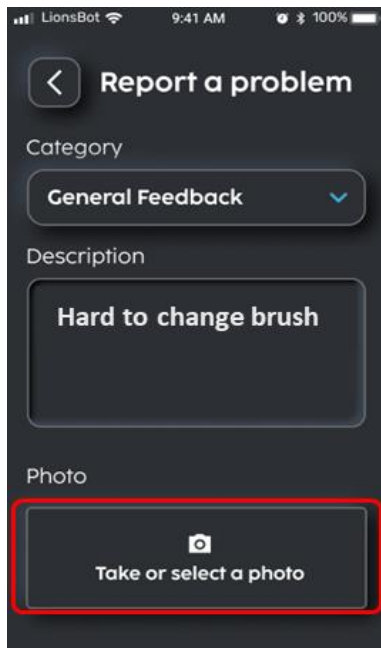


FIGURE 7-24

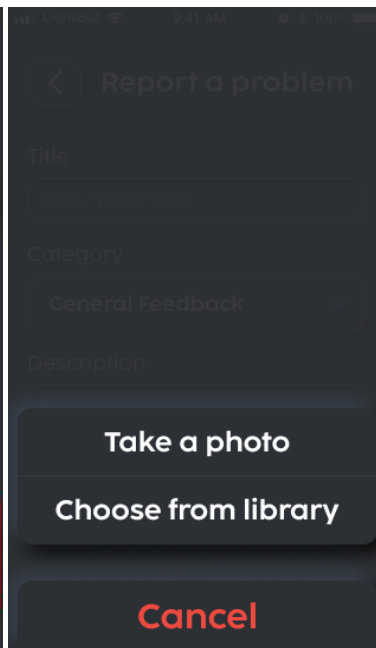


FIGURE 7-25

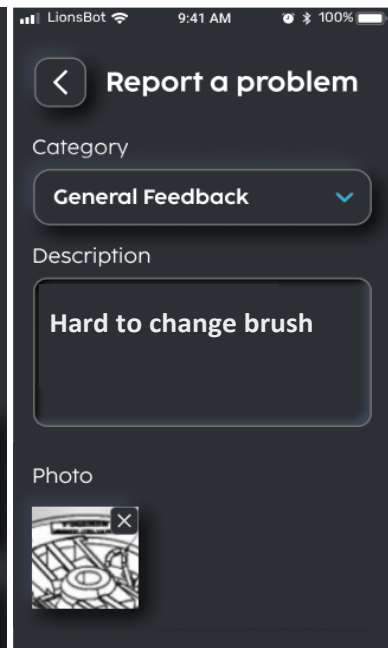


FIGURE 7-26

5. Click 'Submit' to submit the report. Click 'Continue' to return.



FIGURE 7-27

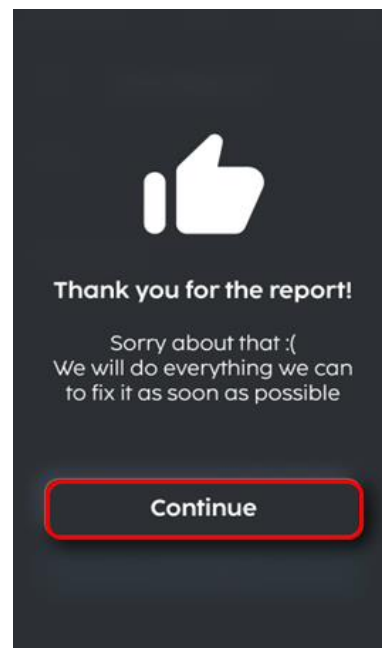


FIGURE 7-28

BEFORE R3 SCRUB PRO USE

Power on the robot as described in the section [“POWERING ON/OFF THE R3 SCRUB PRO”](#) to be able to move and operate it.

Follow this checklist of operations before beginning to clean with the R3 SCRUB PRO:

- I. **Clean Water** level is sufficient. (Refer to ‘FILLING THE CLEAN WATER TANK’)
- II. Battery charge level is sufficient. (Refer to ‘CHARGING THE BATTERY’)
- III. No fluid leaks.
- IV. Safety features and devices are operating.
- V. R3 SCRUB PRO is localized.
- VI. R3 SCRUB PRO can be moved to desired location.
- VII. E-Stop button is released before cleaning.
- VIII. Brushes are mounted securely (dependent on floor type).
- IX. Squeegee is clean of dirt.
- X. Debris cage is empty and correctly placed (See Fig 8-1).
- XI. Waste water tank is empty.
- XII. Handle Bar is Down.



FIGURE 8-1

TRANSPORTING THE R3 SCRUB PRO OUT OF STORAGE

To transport the robot out of storage, pull up the Handle Bar (16) as indicated in (Fig. 8-2).

NOTE: The robot must be turned ON

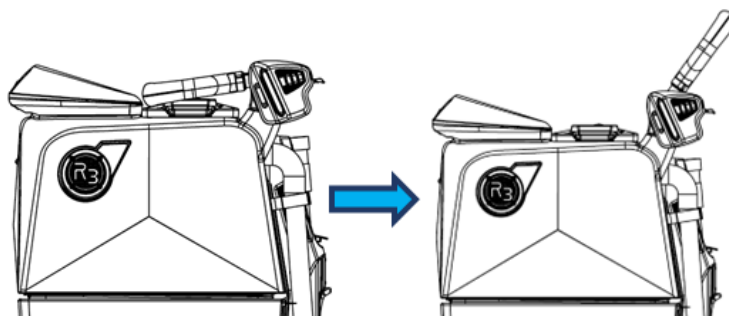


FIGURE 8-2

CHECKING THE BATTERY LEVEL

1. Refer to the 'Home' page on the screen for the robot to check the battery level (Fig. 8-3)



FIGURE 8-3

LOCALIZING THE ROBOT



CAUTION!

Localization errors or navigation errors will happen under the following conditions:

1. LiDAR's surfaces are dirty
2. Sudden loss of power to on-board computer.

The robot needs human assistance to ensure proper localization.

1. Access the map of the facility by clicking the 'Manage Maps' option in the More Options (Fig. 8-4).

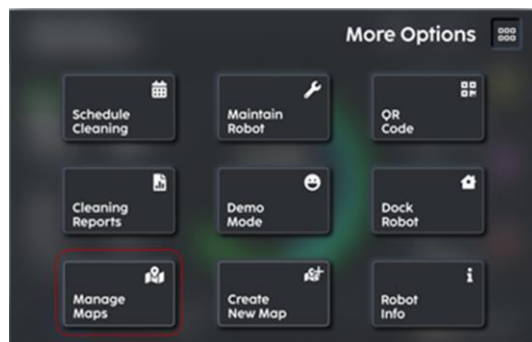


FIGURE 8-4

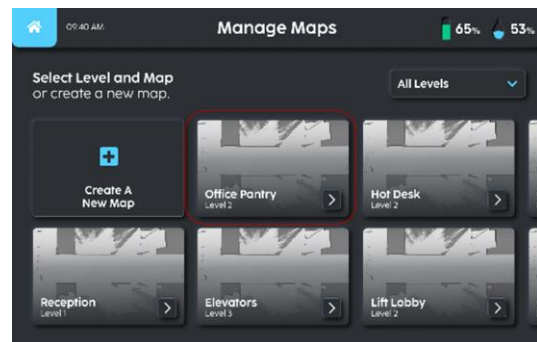


FIGURE 8-5

2. Select the mapped area of operation (Fig 8-5).

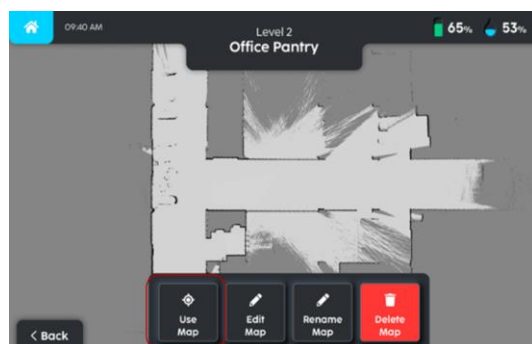


FIGURE 8-6

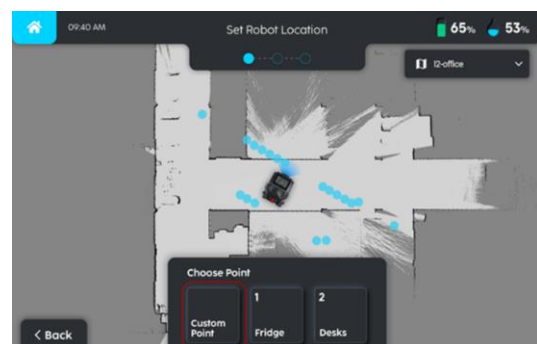


FIGURE 8-7

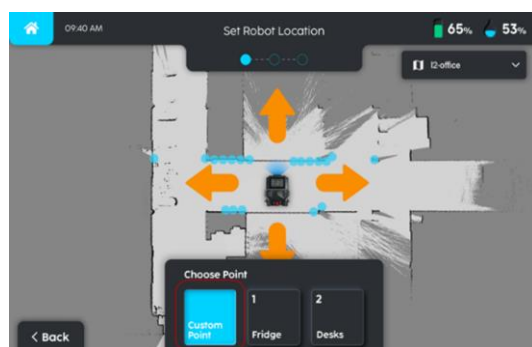


FIGURE 8-8

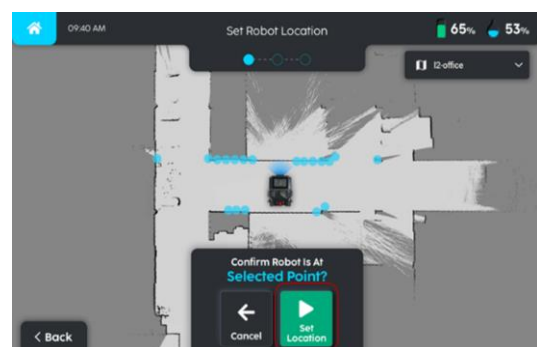


FIGURE 8-9

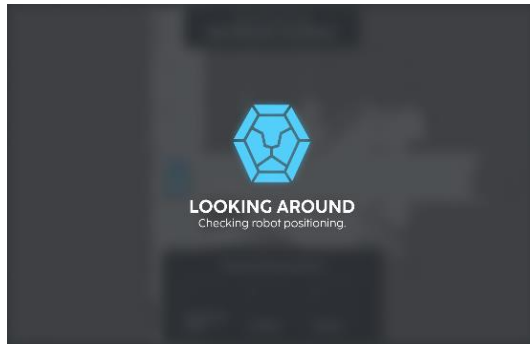


FIGURE 8-10

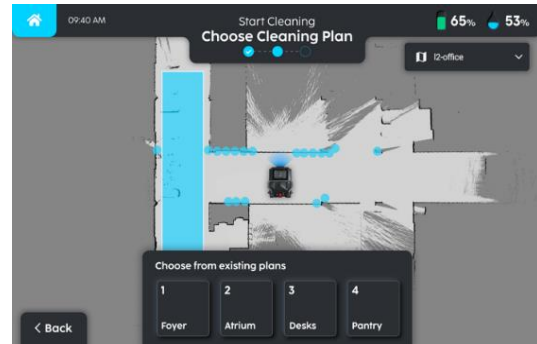


FIGURE 8-11

3. Select the 'Use Map' option to change the map (Fig. 8-6).
4. Once map is changed, the robot's position will be indicated on the map. The points and segments on the map correspond to the robot's vision through the LIDAR (Fig. 8-7).
5. Select either 'Custom Point' or the other Location points saved in the map. Manually move the robot on the touchscreen such that the points and segments match the map (Fig. 8-8).
6. Click on 'Set Location' to confirm robot location (Fig. 8-9).
7. Wait for the robot to check its surroundings (Fig. 8-10).
8. When localization is successful, 'Existing Plans' will appear to allow selection of cleaning plan (Fig. 8-11).

VERIFICATION OF LOCALIZATION

1. With a properly localized robot the LIDAR scan lines (indicated by red points and segments on the map) would closely match map features (displayed as black lines) (as seen in Fig. 8-12). If the R3's scan displayed on the app does not match the map features satisfactorily, the robot can be repositioned slightly to repeat the localization setting.

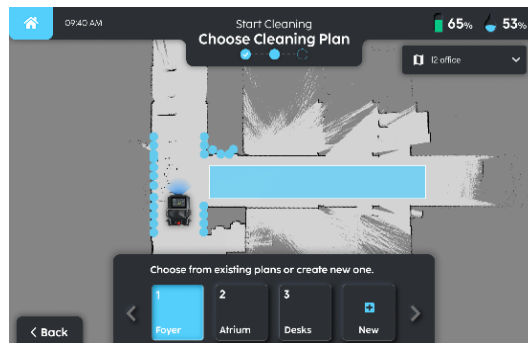


FIGURE 8-12

2. Another indicator of good localization is successful point-to-point motion of the R3 SCRUB PRO. Use the Move



CAUTION!

While pushing the machine manually, to develop navigational maps as part of recording the autonomous plans, it is the Operator's responsibility to avoid contact with obstacles and individuals. The machine will not avoid them in the manual operating mode. There are no autonomous safety functions operating in the manual mode.

command as described in '[POINT TO POINT MOVEMENT](#)' to verify accurate movement to a set location.

OPERATION OF THE R3 SCRUB PRO

The robot can be operated through the LionsClean app or through the touchscreen.

For LionsClean app operations:

Follow the procedure under '[R3 SCRUB PRO APP AND INITIAL SETUP](#)' to get the robot running with LionsClean.

For touchscreen operations:

Follow the procedure under '[R3 SCRUB PRO TOUCHSCREEN SETUP](#)' to get the robot running and to perform localization.

INITIAL CHECK PROCEDURE

Complete the final maintenance checklist below before beginning to work with the R3 SCRUB PRO. This maintenance checklist will also appear as a reminder on the app.

- ✓ Verify the physical E-stop and LED warning light are functioning.



WARNING!

If either the E-stop or bumper are not found to be working as expected, do not proceed to clean with the R3 SCRUB PRO and contact an authorized distributor for assistance.

- ✓ Verify the bumper and LED warning light are functioning.
- ✓ Verify that the obstacle avoidance behaviour is functioning.
- ✓ Check LiDAR surfaces for any dirt.
- ✓ Verify that the tank hatch is closed.
- ✓ Verify that the drain hose is lidded and secured.
- ✓ Verify that the clean water inlet is emptied of excess water.

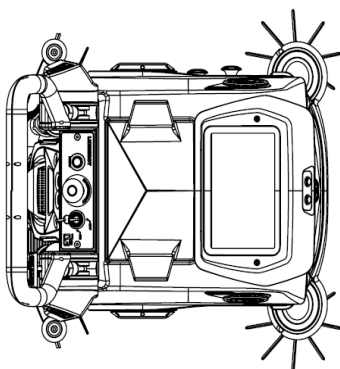


FIGURE 9-1

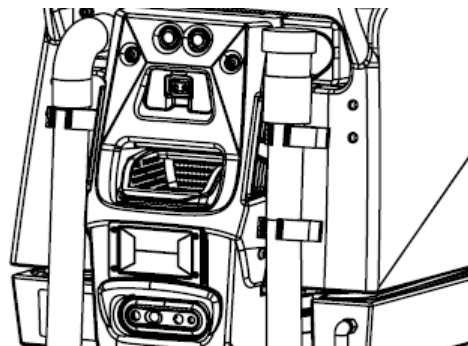


FIGURE 9-2

1. **Verify the physical E-stop function:** After depressing the E-stop, push the robot manually to verify that the brakes have been disengaged and also verify LED lights are flashing red color. Release the E-stop and press the reset button to verify LED lights go back to original color.
2. **Verifying the bumper function:** In autonomous mode, point to point travel mode depress the bumper, to verify that the robot replans the path and also verify LED lights are flashing.
3. **Verify that the obstacle avoidance behaviour is functioning:** Use the autonomous-control function of the LionsClean app with the 'Sensor On' to move the robot towards an obstacle (directly in front or on the sides) and verify that the robot avoids the obstacle.
4. **Verify LiDAR surfaces are clean:** Check visually LiDARs surface for any dirt, dust. Wipe LiDAR surface with a small cloth to clean away if there is any dirt or dust on its.
5. **Verify waste-water hatch is closed:** (Fig. 9-3).

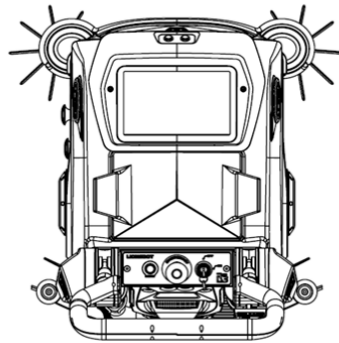


FIGURE 9-3

6. **Verify drain hose is lidded and secured:** Tightly close the drain hose lid (Fig. 9-4.) and rest the hose on the anchor points provided.
7. **Verify clean water inlet is free of water:** (Fig. 9-4).



FIGURE 9-4

POINT TO POINT MOVEMENT

1. Use the 'Move' option (Fig. 9-5) on the 'Home' page to select a point on the map (Fig. 9-6) for the robot to move to from its current location.
2. The Move page allows the user to select a pre-set point to move to from the bottom selection ribbon (ex. 'Hallroom' in Fig. 9-6) or provide a custom location by clicking on the map.
3. Upon confirming the selection (Fig. 9-7), robot will start to move. Pausing / stopping of movement can be done by clicking on either the 'Pause' or 'Stop' button respectively (Fig. 9-8).
4. Should there be obstacles or an interruption in the process a 'UNSUCCESSFUL' page shall show. The operator may either select 'HOME', 'JustClean™' or 'MOVE' functions to adjust the process.
5. Upon completion of the mission the app will display a completion page (Fig. 9-9).

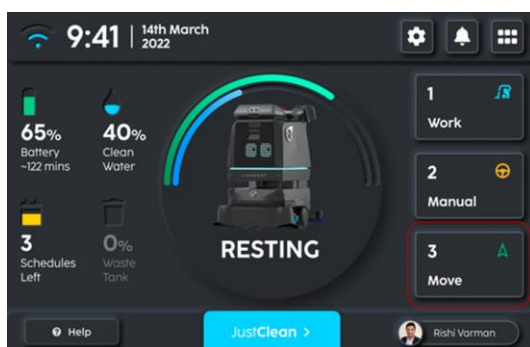


FIGURE 9-5

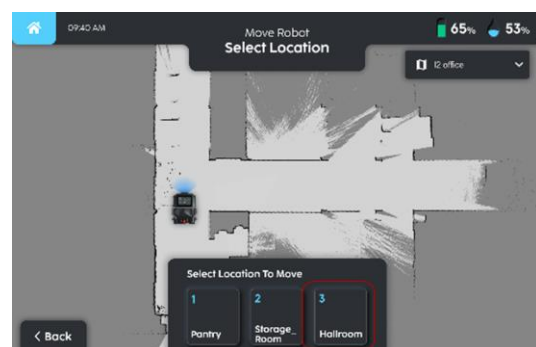


FIGURE 9-6

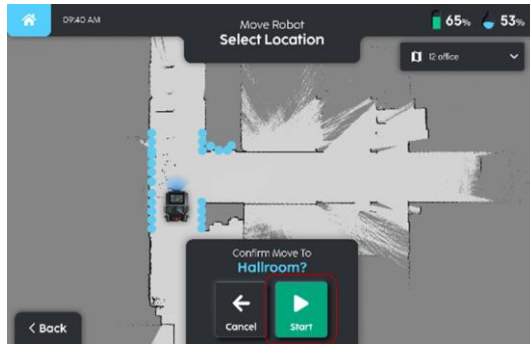


FIGURE 9-7

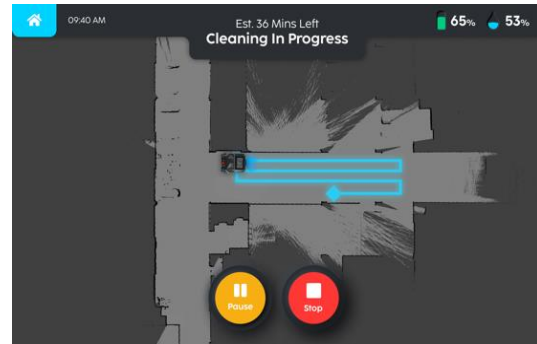


FIGURE 9-8

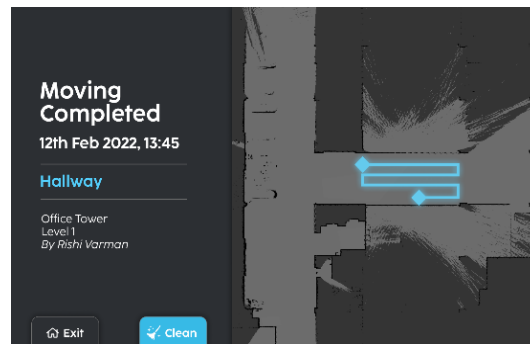


FIGURE 9-9

HUMAN ROBOT INTERFACE - OPERATION SIGNALS

Machine State	LED Panel	Sound	LED Belt
Emergency Stop	Trapped eyes E-Stop Sign Shake Head	None (Only notification sounds allowed)	Red - Fast Pulse
Unsafe Zone	None	None	Amber - Fast Pulse
Low Battery	Tired eyes Tired eyes blink	None (Only notification sounds allowed)	None

Charging	Battery Charging Sleeping Zs	None (Only notification sounds allowed)	Emerald - Slow Pulse
Not localised	Lost Magnifying Glass	None	Purple - Slow Pulse
Turn Right	Moving arrow - right Eyes to arrow - right	Turning Sound	Amber - Fast Pulse
Turn Left	Moving arrow - left Eyes to arrow - left	Turning Sound	Amber - Fast Pulse
Sound Zone	None	Sound zone indication sound - looped	None
Signs of Life - during cleaning	Car Zooming Car Zooming laps R3 cleaning after car Sweating forehead Clock Mopping	Accompanying sound for each animation	None
Signs of Life - idle	Looking around (all directions) Blink (all directions)	Accompanying sound for each animation	None
Mapping	Pirate Eye Patch Map with x on treasure	None	None
Docking	Starts with R3 going into house Continues to R3 jumping / waiting outside house Ends with R3 going into house	Accompanying sound for each animation	None
Undocking	Starts with R3 going out of house Continues to eyes if undocking complete If undocking in progress, loops R3 peeking out of house	Accompanying sound for each animation	None

Clean Tank Empty	Meter dropping low, blinking exclamation mark Water tap draining out, blinking exclamation mark Water tap draining out	Accompanying sound for each animation	None
Dirty Tank Full	Eye bags, sick lines Stinky fumes, shakes head, sick Green water fills up Trash bag falls in water	None	None

AFTER USE

When finished using, its recommended to do these procedures:

Complete this checklist of operations after cleaning with the R3 SCRUB PRO:

- ✓ Stop on a level surface.
- ✓ Drain the waste water tank.
- ✓ Wash the waste water tank.
- ✓ Empty debris cage in the waste water tank.
- ✓ Optional: Drain clean water tank.
- ✓ Remove and clean the squeegee.
- ✓ Move the robot back to storage.
- ✓ Charge the robot.
- ✓ Power off the robot.
- ✓ Wipe down the outer skin of the robot, LiDAR covers and cameras with a dry cloth.

The following sections illustrate these recommended maintenance operations after cleaning with the R3 SCRUB PRO. To begin,

1. Move the R3 SCRUB PRO to a washing area with a tap or other water source.
2. Power off the robot as described in ['POWERING ON/OFF THE R3 SCRUB PRO'](#).

DRAINING THE WASTE WATER TANK

1. If waste water tank has fluid, use the manual drain hose to drain fluid (Fig 10-1).
2. Point hose towards a drain or appointed disposal location, uncap the hose (Fig. 10-1).
3. Once fluid has been drained and tank is empty of fluid, refer to '[CLEANING THE WASTE WATER TANK](#)' section to remove left over debris inside the tank.
4. Once cleaning is complete. Close cap on the manual drain hose.
5. Place drain hose back on the holder.

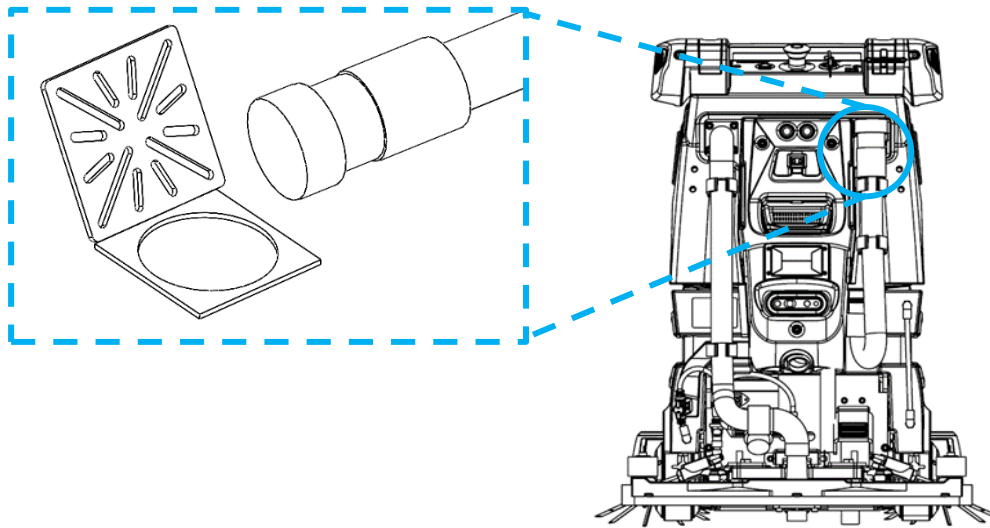


FIGURE 10-1

CLEANING THE WASTE WATER TANK

NOTE: The waste water tank should be cleaned regularly to prevent the build-up of slit, grime, dirt etc.

1. Unmount the manual drain hose from the holding hooks provided **(A)** (Fig. 10-2).
2. Point hose towards a drain or appointed disposal location and uncap the hose **(B)** (Fig. 10-2).

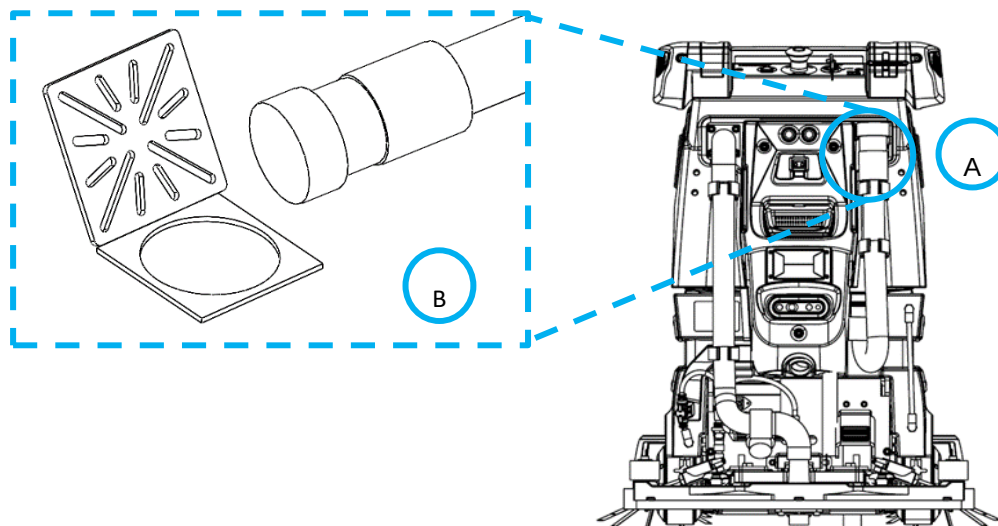


FIGURE 10-2

3. Remove the top hatch (Fig. 10-3) and carefully store it.

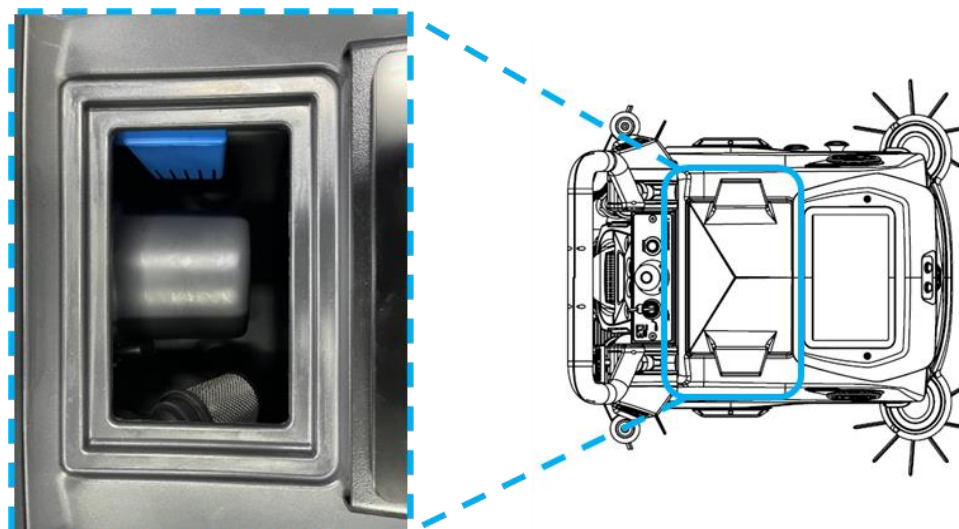


FIGURE 10-3

4. Remove the debris cage (Fig. 10-4), empty and wash if necessary.



FIGURE 10-4

5. Optional: Remove the float ball cage (Fig. 10-5), check for debris and wash if necessary.

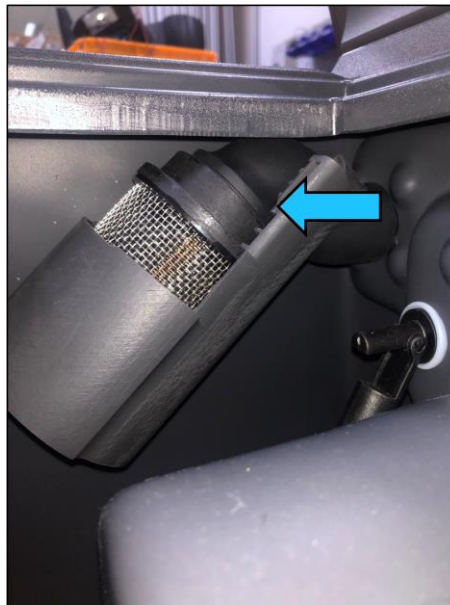


FIGURE 10-5

6. Inspect the waste water tank for debris. Flush it with clean water and use a sponge or scrub to clean grime off the walls.
7. Check for clogging at the drain hose fitting (Fig. 10-6) on the inside of the tank. Clean if necessary.



FIGURE 10-6

8. Replace the float ball cage and debris cage before placing back the hatch.
9. Tightly lid the drain hose and mount it back onto the hooks provided.

DRAINING THE CLEAN WATER TANK

1. Locate the drain valves clean water (7) underneath the robot behind the traction wheels robot (Fig. 10-7).



FIGURE 10-7

2. Open the valve and wait until it finishes (For faster draining open the valve on both sides of the robot) (Fig. 10-8)



FIGURE 10-8

CLEANING THE CLEAN WATER TANK

1. Drain the clean water tank, refer to [‘DRAINING THE CLEAN WATER TANK’](#).
2. Leave the hose pointing at the drain.

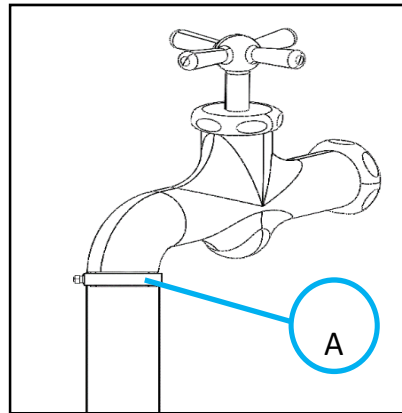


FIGURE 10-9

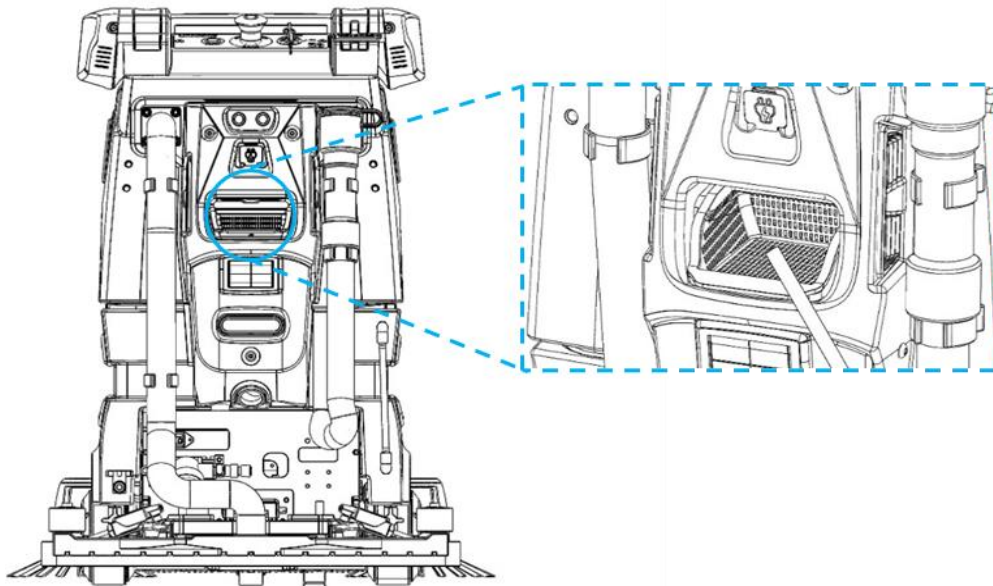


FIGURE 10-10

3. Attach a hose to a tap by pushing its rubber end onto the tap and tightening the hose clip **(A)** (Fig. 10-9)
4. Place the other end of the hose into the clean water inlet and flush the clean water tank by filling it with water (Fig. 10-10).
5. Turn off water supply after flushing.
6. Place the end of the water level tube back into its tube fitting. Pull on the tube to ensure that it is secured properly.

CLEANING/REPLACING THE FLOOR TOOLS

Refer to below for instructions on cleaning the floor tools.

CLEANING THE MAIN BRUSH

Keeping the brushes clean enables better cleaning of the floor and a longer lifespan of the brush gearmotors. Brushes are advised to be replaced every month or as needed to get better cleaning performance. To detach the brushes for cleaning, follow these steps:

NOTE: Inspect the brush bristles for wear/ abrasion resulting in shortening. As a rule of thumb, replace the brushes when the cleaning bristles (white) have been worn down by half a centimetre, or monthly/ as needed.

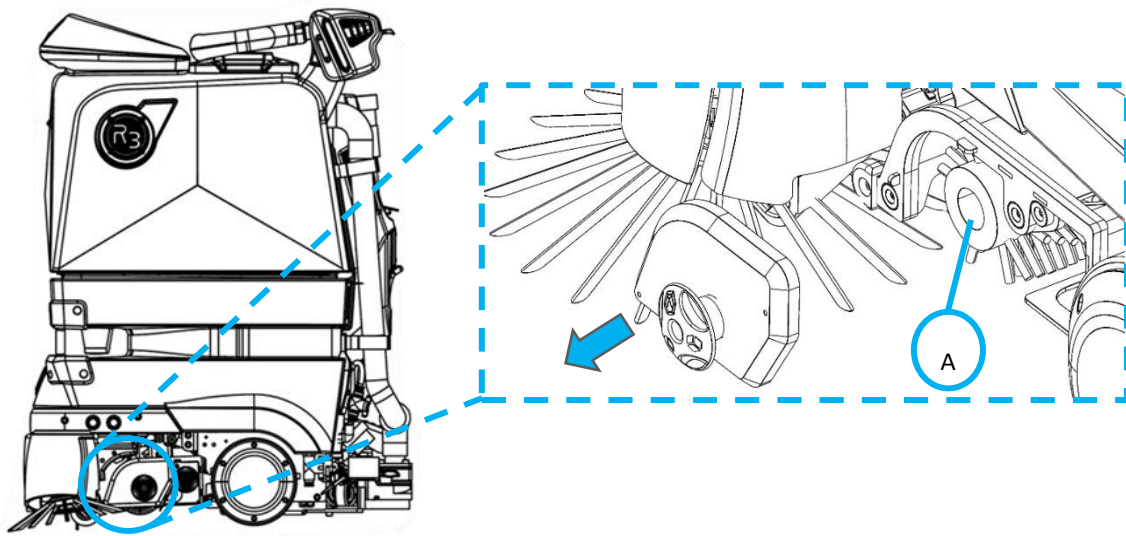


FIGURE 10-11

1. Pull the brush cover knob to release it from the magnetic catch **(A)** (Fig. 10-11).
2. Pull out the brush (Fig. 10-11) and clean under a stream of running water to remove impurities from the bristles.
3. Check the wear status of the bristles and replace the brush if necessary.
4. Upon checking and cleaning the brushes, re-assemble them onto their clutches as described in the ['INSTALL THE BRUSH'](#) section.

CLEANING THE DEBRIS TRAY

Keeping the debris tray clean regularly enables better collection of debris during cleaning. To detach the debris tray from the robot for cleaning, follow these steps:

NOTE: Inspect the debris tray for wear/cracks resulting in holes. As a rule of thumb, replace the debris tray once there are cracks on the tray.



FIGURE 10-12

1. Pull the debris tray knob to release it from the magnetic catch (Fig. 10-12).
2. Empty the tray and clean under a stream of running water to remove impurities.
3. Inspect the tray for cracks and replace as necessary.
4. Re-assemble it onto the machine by returning it back into the debris tray slot.

CLEANING THE SQUEEGEE RUBBER

Keeping the squeegee clean enables better drying of the floor and a longer lifespan of the rubber blades. To separate the squeegee cartridge from the robot for cleaning, follow these steps:

NOTE: Inspect the squeegee rubber for wear resulting in shortened height/ tearing. Replace monthly or as needed.



FIGURE 10-13



FIGURE 10-14

1. Remove the hose and push down on the squeegee assembly (Fig. 10-13 & 10-14).
2. Clean the rubber blades under a stream of running water or with a damp cloth to remove impurities.
3. Inspect the rubber blades for wear and tear and replace as necessary before reassembling. Refer to ['REPLACING THE SQUEEGEE RUBBER'](#) section to replace the rubber blades.
4. Re-assemble the squeegee cartridge onto the mount.

CLEANING THE SQUEEGEE TRAP/HOSE

NOTE: Detach the squeegee hose to inspect the squeegee hose/ squeegee trap for obstruction, and clear the choke as necessary.

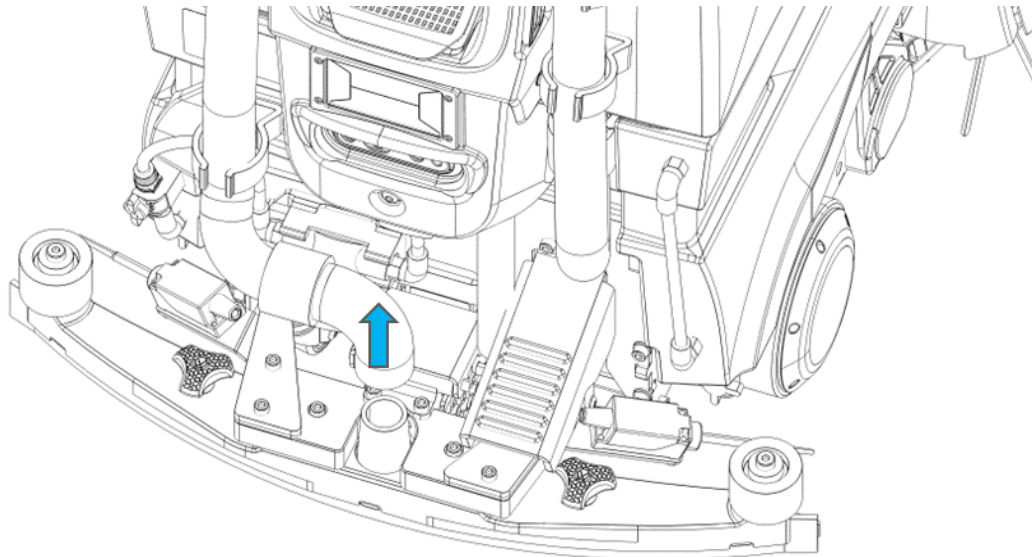


FIGURE 10-15

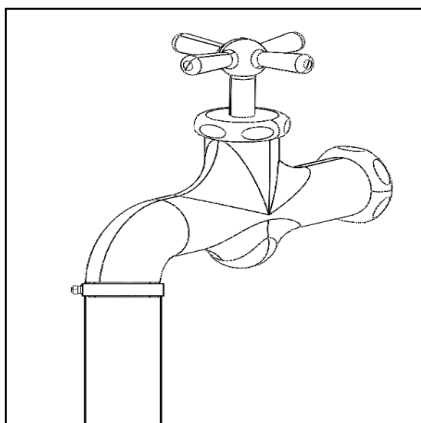


FIGURE 10-16

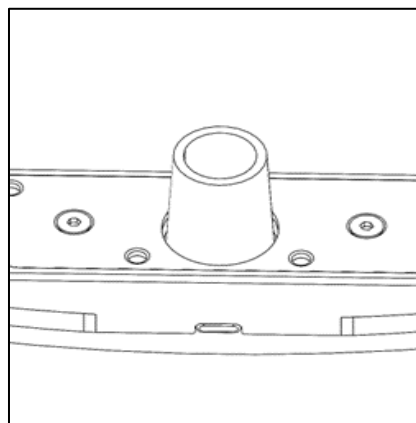


FIGURE 10-17

1. Remove the vacuum hose (Fig. 10-15), keeping a cloth handy in case of dirty water spillage.
2. Inspect the squeegee hose for debris and clean as necessary.
3. Prepare a hose. Attach the hose to a water supply main (Fig. 10-16).
4. Using the hose, clean the trap (Fig. 10-17) under a stream of running water. check that the trap is free of debris after cleaning.
5. Reattach the squeegee hose onto the trap.

REPLACING THE SIDE BRUSHES

1. Remove the bumper cover (Fig. 10-18).
2. Remove the side brush (Fig. 10-19).
3. Place the new side brush (Fig. 10-20).
4. Place the bumper cover back in position (Fig. 10-21).



FIGURE 10-18

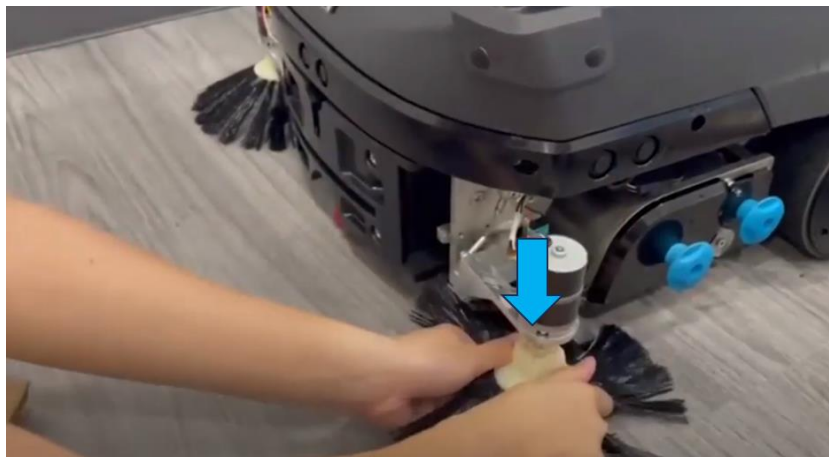


FIGURE 10-19

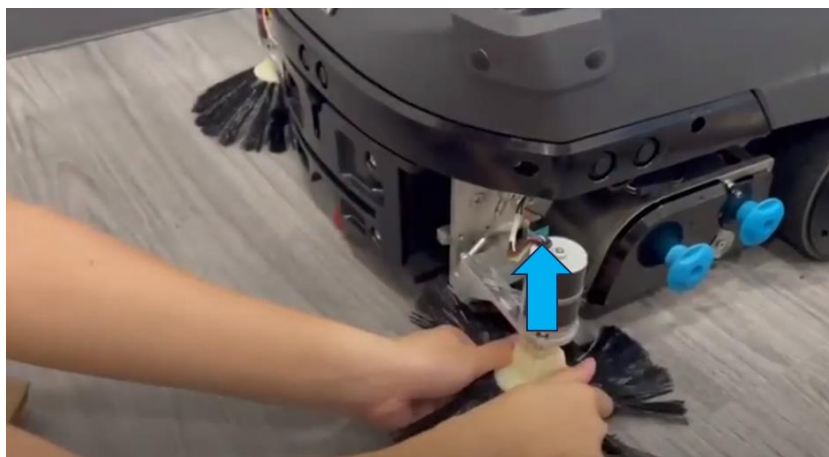


FIGURE 10-20

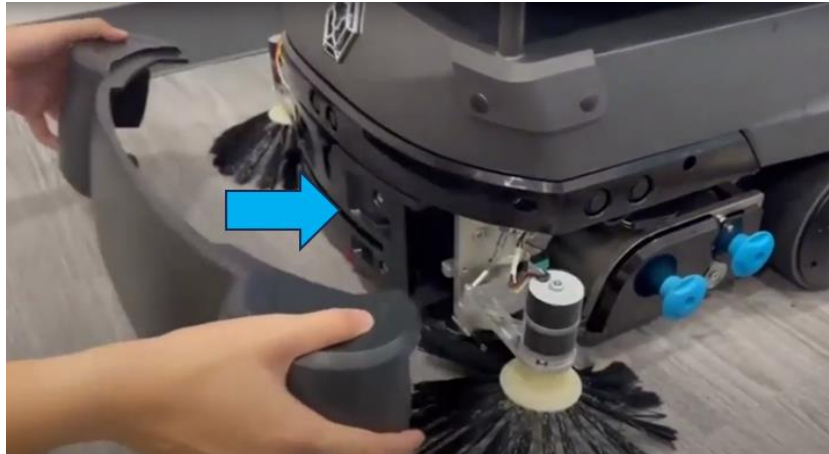


FIGURE 10-21

WIPING DOWN THE R3 SCRUB PRO

1. Ensure that the robot is powered off.
2. Wipe down the outer skin of the robot using water (no harsh chemicals) and cloth.
3. Do not hose down or water spray the robot.

STORAGE IN COLD CLIMATES

Where robot is used in environments where frosting may occur, the robot clean water tank, waste water tank and hoses shall be emptied of fluid, to avoid cracking, bursting, and clogging of hoses caused by freezing. The robot shall be stored in a dry and warm place.

MAINTENANCE SCHEDULE

RECOMMENDED MAINTENANCE SCHEDULE

OPERATION	AFTER EACH USE	DAILY	WEEKLY	1-3 MONTHS	3-6 MONTHS
Drain waste water tank					
Rinse squeegee					
Cleaning brushes					
Empty Debris Tray					
Wipe down robot					
Drain and Rinse waste water tank					
Charge Robot					
Fill up clean water tank					
Rinse squeegee hose					
Clean Debris Cage					
Empty Topup Tray Filter					
Clean Sensors					
Check Waste Water Discharge Hose (Manual Drain Hose) for Chokage					
Replace brushes					
Clean or Replace Clean Water Filter					
Clean or Replace the Debris Tray Hopper Rubber					
Replacing Squeegee Rubber					
Check Castor and Main Traction Wheel					(1)

(1) Preventive Maintenance: If any defects or damages are observed please contact the nearest LionsBot Authorized Distributor.

CHANGING THE WATER FILTER



CAUTION!

1. Switch off the robot before performing any form of periodic maintenance.
2. For filling of the clean water tank, ensure that the water pressure is between 40 to 45 psi (tap water from normal commercial buildings is at 40 to 45 psi).
3. If any water leakage is seen from the water tank or tubing, contact the authorized distributor immediately.

1. Close the clean water tank valve (Fig. 11-1, 11-2, & 11-3).

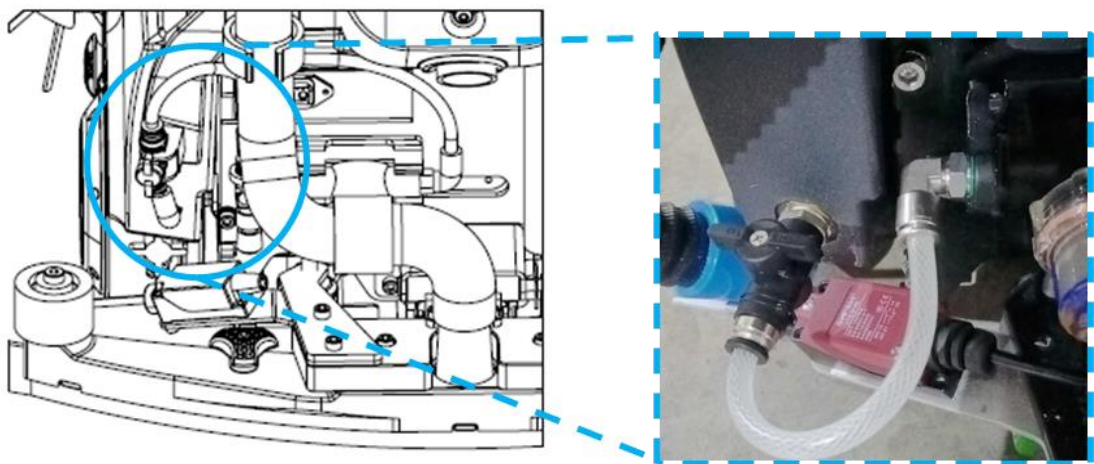


FIGURE 11-1



FIGURE 11-2 (valve open)



FIGURE 11-3 (valve closed)

2. Unscrew the water filter (Fig 11-4).

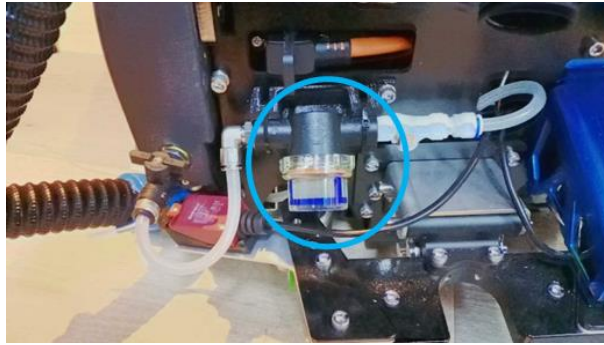


FIGURE 11-4

3. Throw away the old filter and replace with a new filter (Fig. 11-5).



FIGURE 11-5

4. Screw on the new filter and open the clean water valve (Fig. 11-6).



FIGURE 11-6

REPLACING THE SQUEEGEE RUBBER

The R3 SCRUB PRO squeegee assembly is equipped with a set of squeegee rubber generally found in floor cleaning tools. The flat and smooth surface of the rubber ensure that excess water is pushed into the vacuum hose, keeping the floor dry after cleaning. Long period of use could result in shortening of the rubber. To replace use the following instructions:

1. Pull down the hose of the squeegee and move it aside (Fig. 11-7).



FIGURE 11-7

2. Remove the hose and push down on the squeegee assembly (Fig. 11-8).



FIGURE 11-8

3. Place assembly on a flat surface (Fig. 11-9).

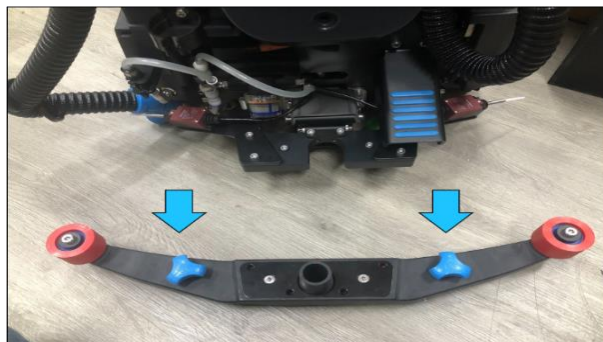


FIGURE 11-9

3. Unfasten the 2 knobs on the squeegee assembly (Fig. 11-10).

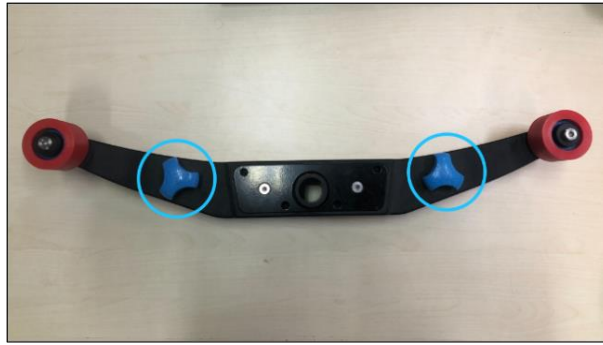


FIGURE 11-10

4. Remove the squeegee housing from the rubber cartridge (Fig 11-11 & Fig 11-12).



FIGURE 11-11



FIGURE 11-12

5. Remove the rubber blades (Fig. 11-13).



FIGURE 11-13

6. Attach new rubber blades to the front and back of the rubber cartridge, aligning the rubber slots with the protrusions provided (Fig. 11-14, 11-15, 11-16 & 11-17).

NOTE: Front rubber has the edges angled.

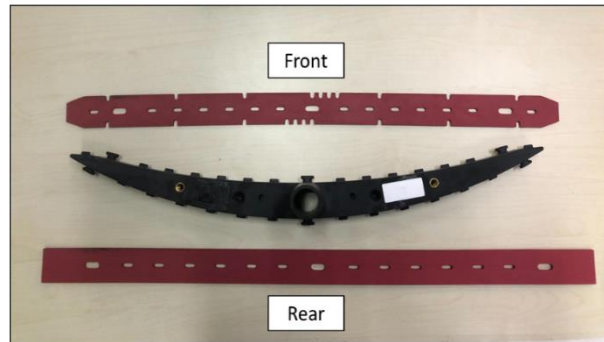


FIGURE 11-14

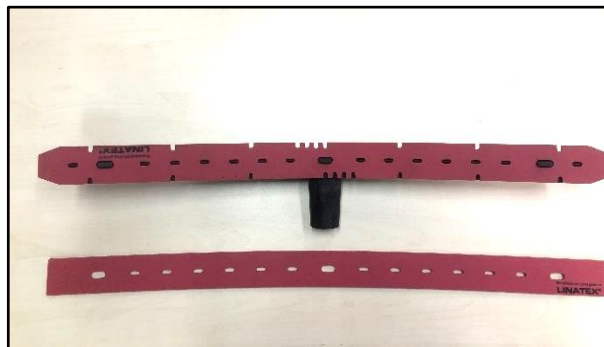


FIGURE 11-15

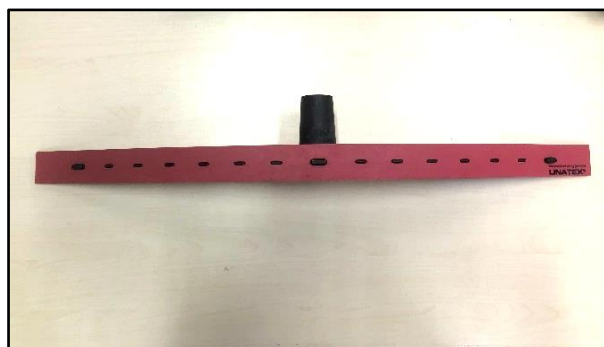


FIGURE 11-16



FIGURE 11-17

7. Align the rubber cartridge the squeegee housing and put it in (Fig. 11-18)



FIGURE 11-18

8. Screw on the 2 knobs back on the squeegee (Fig. 11-19 & 11-20).

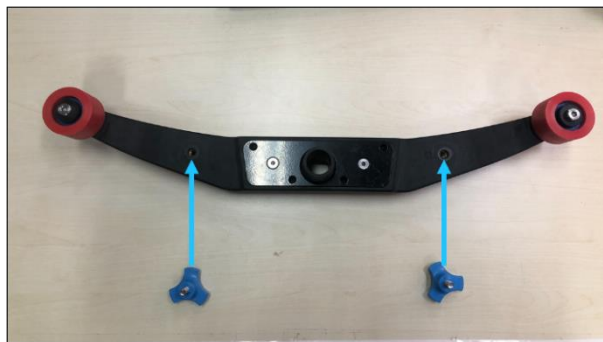


FIGURE 11-19



FIGURE 11-20

CONSUMABLES LIST:

Replacement Floor Tools and parts can be purchased as consumables and order codes are listed below:

CODE	QTY	NOTES
SPT-00016	10	Pair of Blue Squeegee rubber (Primothane)
SPT-00017	10	Pair of Red Squeegee Rubber (Linatex)
SPT-00018	1	Pair of Red Squeegee Rubber (Linatex)
	1	Pair of Blue Squeegee rubber (Primothane)
SPT-00019	1	Debris Tray Rubber Flap
SPT-00020	1	Waste Water Discharge Hose
SPT-00021	1	Squeegee Suction Hose
SPT-00022	1	Soft Brush (Blue)
SPT-00023	1	Standard Brush (Black)
SPT-00024	1	Hard Brush (Grey)
SPT-00025	1	Microfiber Roller Brush (Orange)
SPT-00026	1	MagicTag™ (Used on Walls)
SPT-00028	5	Pack MagicTag™ Box, R3 Scrub Pro – Charging Station
SPT-00029	5	Pack MagicTag™ Box, R3 Scrub Pro – Refuel Station
SPT-00031	10	Side Brush
SPT-00032	1	Standard Brush (Black)
	1	Pair of Red Squeegee Rubber (Linatex)
	1	Debris Tray Rubber Flap
	2	Side Brush

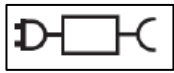
UPDATING THE MAPS

If there are permanent changes (for examples: obstacles, decorations) to the cleaning regions that may affect the robot's operation using the facility maps, the maps need to be updated immediately. Contact an authorized distributor to confirm and test a new map for operation.

CHARGING THE BATTERY

NOTE: Robot does not come with on-board charger. Please use the charger provided by the authorized distributor to charge the batteries on the robot.

NOTE: Before first use, Users are advised to charge the battery to 100%.



This symbol on the nameplate informs the user to use the robot only with the supported battery charger (Model No: WTL2420PMGFAHLY01 /GPSC-3024-LB-01)



CAUTION!

1. Only use the battery charger provided by an authorized distributor.
2. The robot charger should not share an AC plug point with any other devices.
3. Refer to disposal information for robot disposal and battery.
4. If the battery is not charging or the charger surface becomes hot while charging contact the authorized distributor immediately. The actions following these must be carried out by qualified personnel.



WARNING!

Charge batteries in a well-ventilated area.

NOTE: A typical full charge cycle takes about 2 hours 30 minutes.

1. Charge the battery daily after usage to prevent over-drainage of the battery.
2. The Battery Management System (BMS) will prevent over-drainage of the battery by stopping any cleaning command when the battery percentage is below 5%.

MANUAL CHARGE

1. Lift the cover on the manual charging port (Fig. 12-1 & 12-2).



FIGURE 12-1



FIGURE 12-2

2. Insert the battery charger plug (Fig. 12-3 or Fig. 12-4) into the charging port.



FIGURE 12-3



FIGURE 12-4

3. Plug a battery charger into 240V / 110 V AC mains.
4. Grab the charger cable and plug it into the charger port. The cable should fit snugly; it requires some force to be inserted.
5. Turn the charger on. When charging, the battery charger displays a flashing RED light. A typical full charge cycle takes about 2.5h.
6. When charging is finished, the battery charger will display static GREEN light. Then, turn off the charger.

NOTE: The charging system is isolated from the robot (Fig 12-5).



FIGURE 12-5

CHARGING WITH DOCKING STATION

NOTE: Docking Station needs to be registered on the robot map for automated charging feature to work. For setup instruction refer to the R3 Scrub Pro Refuel Station/ R3 Scrub Pro Charge Only Station Operation Manuals.

NOTE: Robot handle bar needs to be in the down position and localized.

1. To charge robot with a docking station select 'More Options' on the Home Page.
2. Select 'Dock Robot' (Fig. 12-6).
3. Select the means of docking robot via Automatic or Manual Mode (Fig. 12-7).

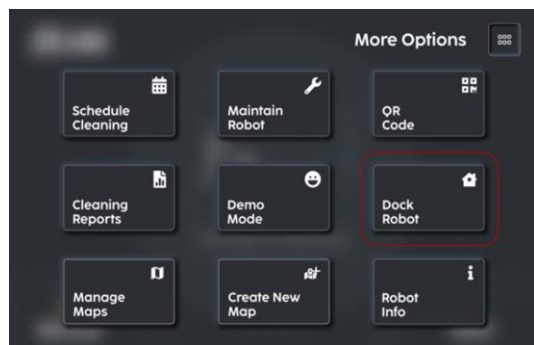


FIGURE 12-6

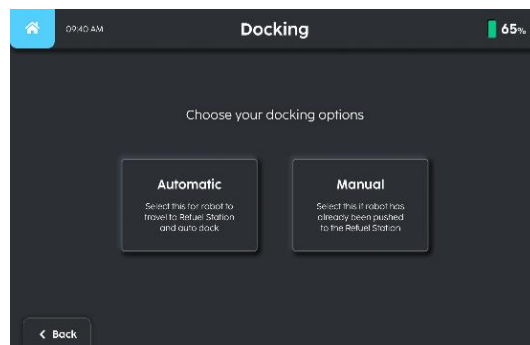


FIGURE 12-7

AUTOMATIC DOCKING

1. If robot is not localized, select a point closest to the robot to initiate localization process (Fig. 12-8).
2. Once Robot is localized select the docking station for docking (Fig. 12-9).

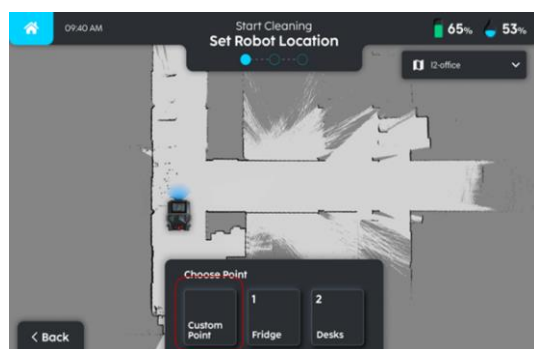


FIGURE 12-8

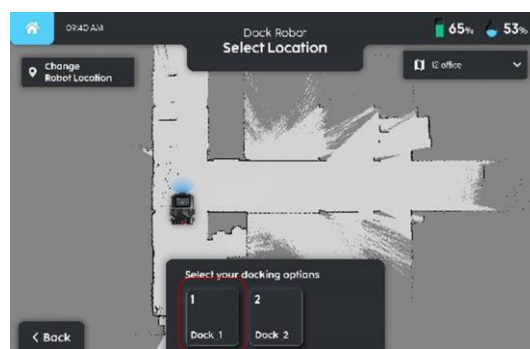


FIGURE 12-9

3. Press 'Start' (Fig. 12-10). If the handlebar is not yet down, place it down as prompted (Fig. 12-11) and docking will begin (Fig. 12-12).

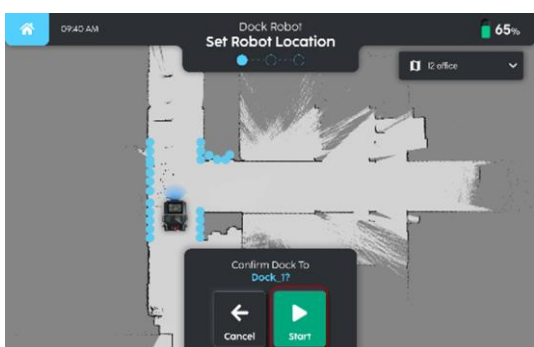


FIGURE 12-10

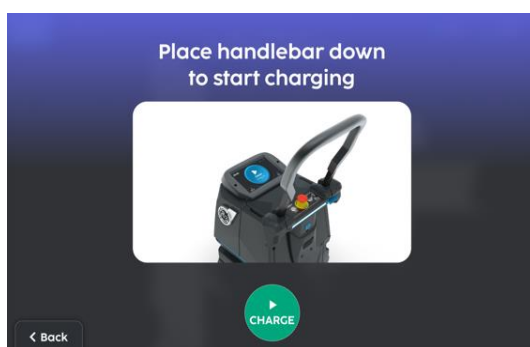


FIGURE 12-11

4. Once the Docking process is completed the screen will turn green to reflect battery charge status (Fig. 12-13).

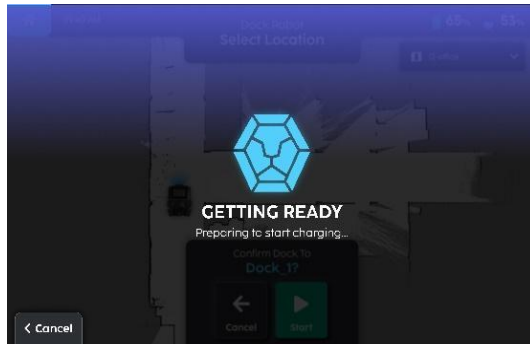


FIGURE 12-12

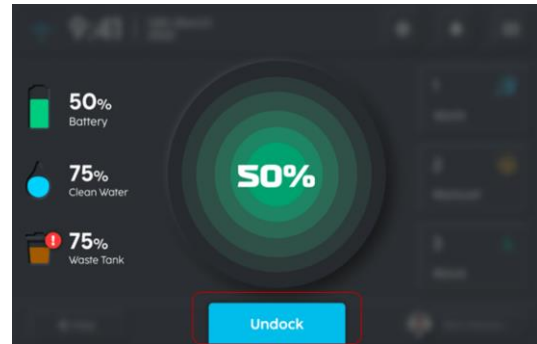


FIGURE 12-13

5. To undock the robot from the station, select the blue 'Undock' button (Fig. 12-13 and 12-14).
6. The robot touchscreen will return to the 'Home' page once undocking is complete (Fig. 12-15).



FIGURE 12-14

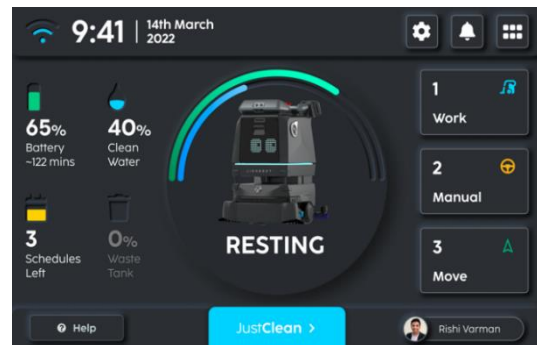


FIGURE 12-15

MANUAL DOCKING

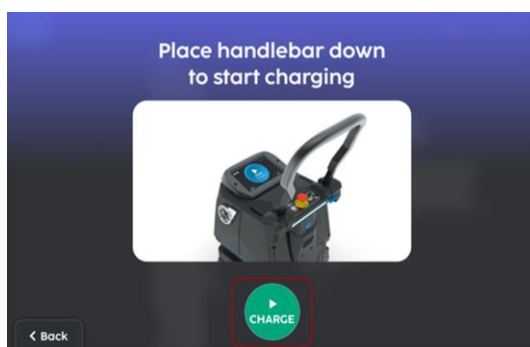


FIGURE 12-16

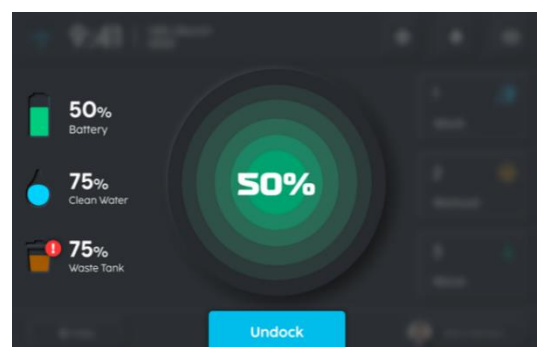


FIGURE 12-17



FIGURE 12-18



FIGURE 12-19

1. With the handle bar in the up position, push the robot to the docking station.
2. Ensure docking station charging contacts are aligned to the robot charging contacts.
3. On the touch screen select 'Dock Robot' (Fig. 12-6).
4. Select the means of docking robot as 'Manual Mode' (Fig. 12-7).
5. A loading screen is displayed followed by a prompt to place handle bar down (Fig. 12-16).
6. Robot starts charging (Fig. 12-17).
7. To undock the robot from the station, select the blue 'Undock' (Fig. 12-17 and 12-18).
8. The robot touchscreen will return to the 'Home' page once undocking is complete (Fig. 12-19).

POWERING ON/OFF THE R3 SCRUB PRO

NOTE: This power switch is cutting off positive power line from battery to rest of the circuits when power switch is at off position.

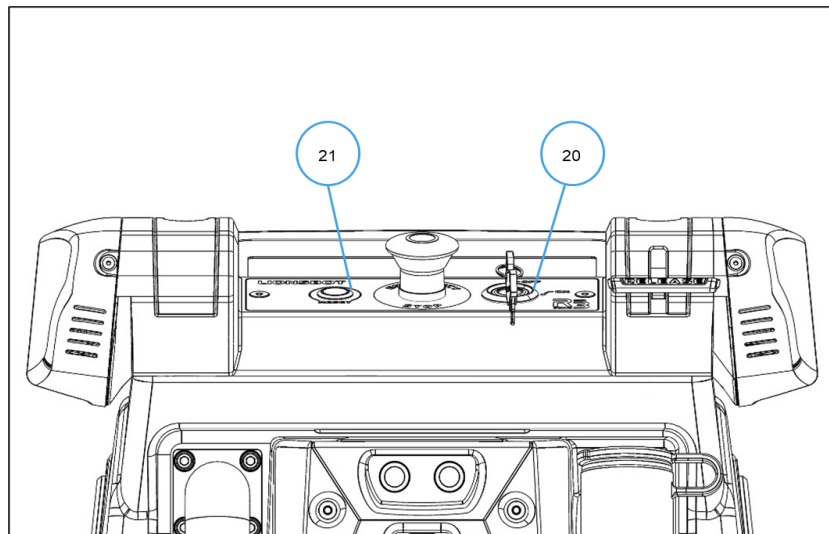


FIGURE 13-1

To power on:

1. Insert Key **(20)** into switch as shown (Fig. 13 -1).
2. Turn the key switch to the 'ON' position.
3. The operator may remove the key from the switch.
4. Push the RESET button **(21)** (Fig. 13 – 1) to the left of start panel; the robot LEDs will turn blue, and a 'start -up' sound will be heard indicating startup.

To power off:

1. Turn the key switch to the 'OFF' position

TROUBLESHOOTING

The table below lists some useful troubleshooting tips for simple issues that may arise with the robot. If preliminary troubleshooting is unsuccessful, please contact an authorized distributor for assistance.

PROBLEM	POSSIBLE CAUSE	SOLUTION
THE ROBOT DOES NOT START	The battery is out of charge	Perform a complete recharge cycle and attempt restarting the robot.
THE ROBOT DOES NOT MOVE	The E-Stop is triggered, indicated by red blinking lights	Release the E-stop and press the reset button, then wait 30s.
	The safety Bumper is mounted incorrectly, indicated by amber blinking lights	Remove and reassemble bumper.
THE ROBOT DOES NOT CLEAN WELL	Brush pressure is not suitable for the floor type	Consult an authorized distributor for help with adjusting brush pressure.
	The brushes are worn out	Replace with new brushes
THE SQUEEGEE LEAVES A TRACE OF WATER LEFT BEHIND	Vacuum has not started upon power on	Restart the robot and check if vacuum starts correctly
	Squeegee has not lowered upon power on	Restart the robot and check if squeegee lowers correctly
	The vacuum unit is obstructed	Make sure the squeegee trap is free of obstructions
		Make sure the vacuum tube is free of obstructions
		Make sure the squeegee hose is clear; flush if necessary
	The squeegee rubber blades are worn	Replace with new squeegee blades
THE ROBOT MOTION IS OFF THE LOCATION SET BY THE 'MOVE' COMMAND	There is an error in localization	Repeat the localization procedure, making sure the robot LIDAR scans match map features well
USER CANNOT LOGIN TO APP	Mismatched user id and password	Check the user id – password combination. Password is case sensitive. Contact an authorized distributor if necessary
CAN'T ADD ROBOT TO APP	Either the robot or app phone cannot connect to the internet	Check the network connection on both the robot and phone
CANNOT LOCALIZE ROBOT/ NAVIGATION ERRORS DURING OPERATION	Wrong map settings or robots' sensor not working	Check map and confirm the choice of the right map and place. Check LIDAR scans match map features well; clean LIDARs if necessary.

FAULT CODE DISPLAY

Fault Code	Description
AE-1-02-002-4	Robot is disconnected from the lift server.
AE-1-02-011-0	The lift assigned to the robot is occupied.
AE-3-02-007-1	Robot was blocked while entering the lift.
AE-3-02-008-1	Unable to find the lift door during entry.
AE-3-02-009-0	Lift door closed while robot was attempting lift entry.
AE-3-02-010-1	Robot is blocked while turning to the door in lift.
AE-3-02-012-1	Robot was unable to enter the lift.
AE-3-02-013-1	Robot was blocked when exiting the lift.
AE-3-02-014-1	Unable to find the lift door during exit.
AE-4-02-004-3	The assigned lift is moving to an unexpected destination.
AE-4-02-015-0	Lift door closed while robot was attempting lift exit.
AE-4-02-016-1	Robot was unable to exit the lift.
AE-4-03-001-1	Robot stuck while traversing the gantry.
AE-5-02-001-4	Robot failed to receive a valid lift assignment.
AE-5-02-003-3	Lift navigation failed.

AE-5-02-005-1	Robot is stuck in the lift.
AE-5-02-006-1	The provided lift lobby does not exist in the map data.
AE-5-03-000-4	Robot failed to receive a valid response when requesting gantry access.
AF-1-00-000-0	Robot is executing a reverse recovery
AF-5-01-002-0	Dangerous Slope!
AF-5-01-003-1	The mission has been rejected because the robot is at a critical tilt angle
AF-5-01-004-1	Mission terminated: robot is at a critical tilt angle
AF-8-00-001-1	Robot is reversing while cleaning tools are down
AF-8-01-001-0	Slope detected
AL-1-00-001-1	Command request rejected because localisation has not been carried out. Please localise
AL-3-00-004-1	Robot's localization pose has been detected to be bad
AL-3-00-005-1	Robot is unable to move because the robot lose localization.
AL-5-00-003-1	Robot has entered into a unknown area of the map. Localisation state will now be set to false. Please re-localise the robot to continue using
AM-1-00-000-1	No home poi detected from the loaded map info
AM-1-00-001-1	Robot is unable to navigate to home POI

AM-1-01-008-0	Robot is executing an on-spot turn recovery
AM-1-02-000-1	Restricted Zone detected
AM-1-02-001-1	Mission terminated: robot went into a restricted zone
AM-2-01-004-1	Unable to find a path because the requested destination is too near
AM-3-01-001-1	Robot is stuck for a long time. Please clear the obstacle around the robot
AM-3-01-002-1	Mission terminated: robot went away from the designated path
AM-3-01-003-1	Unable to find a path to the destination
AM-3-01-005-1	The mission has been terminated after being blocked too many times during the turning sequence
AM-3-01-006-1	The mission is terminated before reaching the goal because the requested destination is blocked
AM-3-01-007-1	Robot is unable to replan the path
AM-3-01-009-1	Robot is unable to move to the goal from its current position
AM-3-01-010-1	Mission terminate due to robot abandoning cleaning path
AM-3-01-015-1	The goal is unreachable from the robots position, not connected by Gantries
AM-4-02-002-1	The mission has been rejected because the robot is inside a restricted zone
AM-5-03-000-9	The mission has been rejected because the robot failed to retrieve the provided destination map

AM-5-03-001-9	The mission has been rejected because the provided lobby does not exist in either the current map or the destination map
AP-1-02-000-1	The mission has been rejected because the robot is in vicinity to a negative obstacle
AP-2-01-000-1	Obstacle detected during movement
AP-3-01-001-1	Robot is unable to move to the start point because it is occupied by/too near to an obstacles
AP-4-02-001-1	Mission terminate: robot is in vicinity to a negative obstacle
AP-4-03-000-2	The mission has been rejected because the sonar diagnostics in in error state.
AP-4-03-001-2	The mission has been terminated because the sonar diagnostics in in error state.
AP-4-04-000-1	The mission has been rejected because the perception diagnostics is in error state
AP-4-04-001-1	The mission has been terminated because the perception diagnostics is in error state.
AP-4-06-001-9	Integrated monitoring unit error
AP-4-06-004-9	Mission request rejected: Integrated monitoring unit error
AP-4-06-005-9	Mission terminated: Integrated monitoring unit error
AP-5-05-000-9	System Error (LIDAR Failure)!
AP-5-06-000-9	System Error (Imu Failure)!

AS-4-00-000-2	The mission has been rejected because the system status is in an error state
AS-4-00-001-2	The mission has been terminated because the system status is in an error state
AS-4-00-002-3	Robot is unable to move because the system status is in error state.
HA-1-00-000-1	The mission has been rejected because the handlebar hall sensor has been triggered, stow the handlebar properly
HA-3-00-002-1	Robot is unable to move because the handlebar is not stowed properly
HA-4-00-001-1	The mission has been terminated because the handlebar hall sensor has been triggered, stow the handlebar properly
HB-2-05-000-1	The mission has been rejected because the rfid board is detected to be missing.
HB-2-05-002-1	The mission has been rejected because the rfid module is detected to be missing.
HB-2-07-000-9	The mission has been rejected because the rinse board is detected to be missing.
HB-3-05-001-1	The mission has been terminated because the rfid board is detected to be missing.
HB-3-05-003-1	The mission has been terminated because the rfid module is detected to be missing.
HB-3-06-000-9	The mission has been rejected because ECU is detected to be missing: loose connection, or not connected at all
HB-3-07-001-9	The mission has been terminated because the rinse board is detected to be missing.

HB-4-06-001-9	The mission has been terminated because ECU is detected to be missing: loose connection, or not connected at all
HC-2-01-003-1	The mission has been rejected because the rear floortool is detected to be missing.
HC-2-08-002-1	The mission has been rejected because the vacuum pressure is too low.
HC-2-08-004-1	The mission has been rejected because the vacuum pressure is too high.
HC-2-10-000-1	The mission has been rejected because the floortool is detected to be missing.
HC-2-11-000-1	The mission has been rejected because the multiple rear floortools are detected.
HC-2-11-002-1	The mission has been rejected because unknown rear floortool is detected.
HC-3-00-000-9	The floortool failed to reach the commanded position
HC-3-01-000-1	Mission request rejected: floortool is still lowered
HC-3-01-002-2	The mission has been rejected because the cleaning tools are in an error state
HC-3-01-004-1	The mission has been terminated because the rear floortool is detected to be missing.
HC-3-01-005-9	The squeegee encoder is unresponsive - Please check if encoder wire is unplugged or motor is jammed
HC-3-01-006-1	The squeegee upper limit switch was not triggered when homing

HC-3-01-007-1	The squeegee lower limit switch was not triggered when lowering
HC-3-01-008-2	The squeegee failed to reach the commanded position
HC-3-01-009-1	Squeegee calibration failed - Squeegee not hitting limit switch or cable is not connected properly
HC-3-02-000-1	Robot is unable to move because the side limit switches are triggered.
HC-3-02-001-1	The floortool limit switch was not triggered during calibration or when homing. Check if something is stuck between floortool and robot body, or the limit switch wire is unplugged
HC-3-06-001-1	Mission request rejected: clean tank is empty
HC-3-06-002-1	Mission request rejected: recovery tank is full
HC-3-06-003-1	Clean tank empty
HC-3-06-004-1	Recovery tank full
HC-3-08-003-1	The mission has been terminated because the vacuum pressure is too low.
HC-3-08-005-1	The mission has been terminated because the vacuum pressure is too high.
HC-3-09-000-1	The mission has been rejected because the dust bag is not connected
HC-3-09-001-1	The mission has been terminated because the dust bag is not connected

HC-3-10-001-1	The mission has been terminated because the floortool is detected to be missing.
HC-3-10-006-1	The side brush home limit switch was not triggered when homing
HC-3-10-008-1	Side brush calibration failed - Side brush not hitting limit switch or cable is not connected properly
HC-3-11-001-1	The mission has been terminated because the multiple rear floortools are detected.
HC-3-11-003-1	The mission has been terminated because unknown rear floortool is detected.
HC-3-11-004-1	Floortool calibration failed - Floortool not hitting limit switch or cable is not connected properly
HC-4-00-001-9	The floortool direction cable is unplugged
HC-4-01-001-2	The mission has been terminated because the cleaning tools are in an error state
HC-4-07-001-1	Drain interrupted
HC-4-08-001-1	Mission terminated as vacuum motor failed
HC-4-08-006-1	The vacuum motor has gone into overcurrent state
HC-4-08-007-9	The vacuum motor has gone into undercurrent state
HC-4-10-002-1	The main brush motor has gone into overcurrent state
HC-4-10-003-9	The main brush motor has gone into undercurrent state

HC-4-10-004-9	The side brush motor has gone into undercurrent state
HC-4-10-005-9	The side brush encoder is unresponsive - Please check if encoder wire is unplugged or motor is jammed
HC-4-10-007-2	The side brush failed to reach the commanded position
HC-4-12-000-9	The rinsing pump has gone into overcurrent state
HC-4-12-001-9	The rinsing pump has gone into undercurrent state
HC-5-08-000-9	Vacuum Failure!
HC-8-06-000-0	Clean water tank full
HC-8-07-000-0	Drain completed
HD-3-00-001-1	Docking terminated because the dock cannot be located (LiDAR cannot detect V-profile, Camera cannot find QR code).
HD-3-00-002-1	Docking terminated because the dock been blocked for too long. Please remove obstacle to start charging!
HD-3-00-005-1	Failed to start the wireless charger. Verify charging point!
HD-3-00-006-1	Docking terminated because it was unable to find the dock during docking recovery
HD-3-00-007-1	Docking terminated because it was blocked during docking recovery
HD-3-00-008-1	Docking terminated because robot failed to connect to zigbee of the docking station
HD-3-00-012-9	Docking station cooling fan faulty.

HD-3-00-017-1	Docking station is already paired to another device.
HD-3-01-001-1	Robot is stuck for a long time. Please clear the obstacles around the robot
HD-3-01-002-1	Robot failed to undock
HD-3-02-003-9	Ball valve is unable to open properly
HD-3-02-004-9	Ball valve is unable to close properly
HD-4-00-003-3	Failed to dock after several retries. Robot could not see V-Profile or QR code!
HD-4-00-009-1	Robot did not make good contact with the docking station.
HD-4-00-013-3	Docking station charger is overheating.
HD-4-00-014-3	Docking station charging contacts are overheating.
HD-4-01-004-1	Someone's trying to undock the robot forcibly. Please check the robot
HD-4-02-001-9	The mission has been rejected because the robot ball valve is open
HD-4-02-002-9	The mission has been terminated because the robot ball valve is open
HD-5-00-015-9	Docking station inlet flow sensor is in error state.
HD-5-00-016-9	Docking station drain reservoir float switch has been triggered.
HD-5-02-000-9	Docking station ball valve is clogged.

HD-5-02-005-1	Unable to empty dirty tank due to ball valve clogged
HD-8-00-000-0	Docking success
HD-8-00-004-0	Docking charging started
HD-8-00-018-0	Docking started
HD-8-00-019-0	Docking realigned
HD-8-01-000-0	Undocking success
HD-8-01-003-0	Undocking started
HP-1-02-000-1	Battery is low
HP-1-02-007-1	Battery voltage low
HP-1-02-008-1	Battery level critical. 0% battery, please send to charge
HP-1-03-003-1	Mission request rejected: battery is charging
HP-2-02-003-1	Mission request rejected: battery level is too low
HP-3-02-004-1	Mission request rejected: battery voltage is too low
HP-3-02-005-1	Mission terminated: battery level is too low
HP-3-03-001-1	Dock was charging but unexpectedly stop charging
HP-5-02-006-1	Mission terminated: battery voltage is too low. Please contact your technician
HP-5-04-000-9	Unable to turn on robot contactor due to voltage error

HP-8-03-000-0	Charging completed
HP-8-03-004-0	Charging started
HP-8-03-005-0	Charging stopped
HS-2-00-002-1	Mission request rejected: estop is triggered
HS-2-01-002-1	Mission request rejected: bumper is triggered
HS-3-00-000-1	E-stop triggered
HS-3-01-000-0	Bumper triggered
HS-3-01-006-1	Robot is unable to move because the bumper is not attached properly.
HS-4-00-003-1	Mission terminated: estop is triggered
HS-4-01-003-0	Mission terminated: bumper is triggered
HS-4-01-004-1	The mission has been rejected because the bumper hall sensor has been triggered, likely not connected properly
HS-4-01-005-1	The mission has been terminated because the bumper hall sensor has been triggered, likely not connected properly
HS-4-04-002-9	Mission request rejected: heartbeat failed
HS-4-04-003-9	Mission terminated: heartbeat failed
HS-4-05-000-2	Power supply triggered
HS-4-05-003-9	The mission has been terminated because the system status is in an error state

HS-5-05-002-9	the mission has been rejected because the IPS is in an error state
HS-8-00-001-0	E-stop released
HS-8-05-001-0	Power supply recovered
HT-3-00-000-9	The floortool encoder is unresponsive - Please check if encoder wire is unplugged or motor is jammed
HT-3-00-001-9	The fresh water pump encoder is unresponsive
HT-3-00-002-9	The chemical pump encoder is unresponsive
HT-3-02-001-1	The mission has been rejected because the robot's motor is in an error state
HT-4-02-002-2	Robot's motor has entered into an error state. To solve this issue, please reset the drivers using the estop.
HT-4-02-003-3	Robot is unable to move because the motors are too hot.
HT-5-02-000-1	System Error (Driver Motor Failure)!
SS-0-01-000-0	Mission success
SS-8-01-002-0	P2P started
SS-8-01-003-0	Cleaning started

SPECIFICATIONS

SOLUTION FLOW RATE

Flow Rates at Full Speed	
Autonomous Mode	0.42 L/min
Manual Mode	0.42 L/min

TECHNICAL SPECIFICATIONS (AS INSTALLED AND TESTED ON THE UNIT)

Model		R3 Scrub Pro
Voltage, Batteries	V	24
Battery Capacity (max)	Ah	40
Protection Grade		IPX3
Sound Pressure Level IEC 60335-2-72: 2002 Amend. 1:2005, ISO 11203, ISO 3744	dB(A)/20μPa	68
Sound Pressure level - KpA (IEC 60335-2-72, ISO 11203) Uncertainty	dB(A)	68
Gross Vehicle Weight*	kg	106
Transportation Weight**	kg	85.5
Maximum Gradeability – Manual Transport		2% (1.15°)
Maximum Gradeability – Manual Cleaning		2% (1.15°)
Maximum Gradeability - Autonomous		2% (1.15°)
Machine Length	cm	65.33
Machine Height (Handle bar)	cm	99
Machine Height (Cover)	cm	82.7
Machine Width	cm	56
Machine Width with Squeegee	cm	59.5
Minimum Aisle Turn Width - Manual	cm	90
Clean Water Tank Capacity	L	21
Waste Water Tank Capacity	L	21
Robot Speed – Autonomous (Fwd. Maximum)	m/s	1
Battery Compartment Size (approximate)		
Height (maximum)	cm	16
Width (maximum)	cm	18.8
Length (maximum)	cm	28
Main brush size		
Main Brush Diameter – (Quantity of 1)	cm	8
Main Brush Speed	RPM	1200
Main Brush Width (scrubbing path)	cm	36.6
Side brush size		
Side Brush Diameter – (Quantity of 1)	cm	20
Side Brush Speed	RPM	100
Side Brush Width (scrubbing path)	cm	20

*Gross Vehicle Weight: Standard machine without options, full clean water tank and empty waste water tank, with scrub brushes, batteries installed.

**Transportation Weight: Standard machine without options, empty clean water tank and waste water tanks, with batteries installed.

GLOSSARY

<u>Glossary of terms</u>	
Term	Description
JustClean™	Name of an operating method of an autonomous floor cleaning robot. JustClean™ method described in the manual is easy to operate, by anyone, without needing an appreciation of robotics, with minimal actions required to setup and use the robot.
MagicTag™	A beacon for activating an autonomous robot to conduct location specific actions

CONTACT INFORMATION

Original Equipment Manufacturer for R3 SCRUB PRO:

LionsBot International Pte Ltd

**Kranji Green, 28 Kranji Loop,
#03-05/06 Singapore 739571**

Email: hello@lionsbot.com

T: +65 6595 4565 | DID: +65 6595 4552