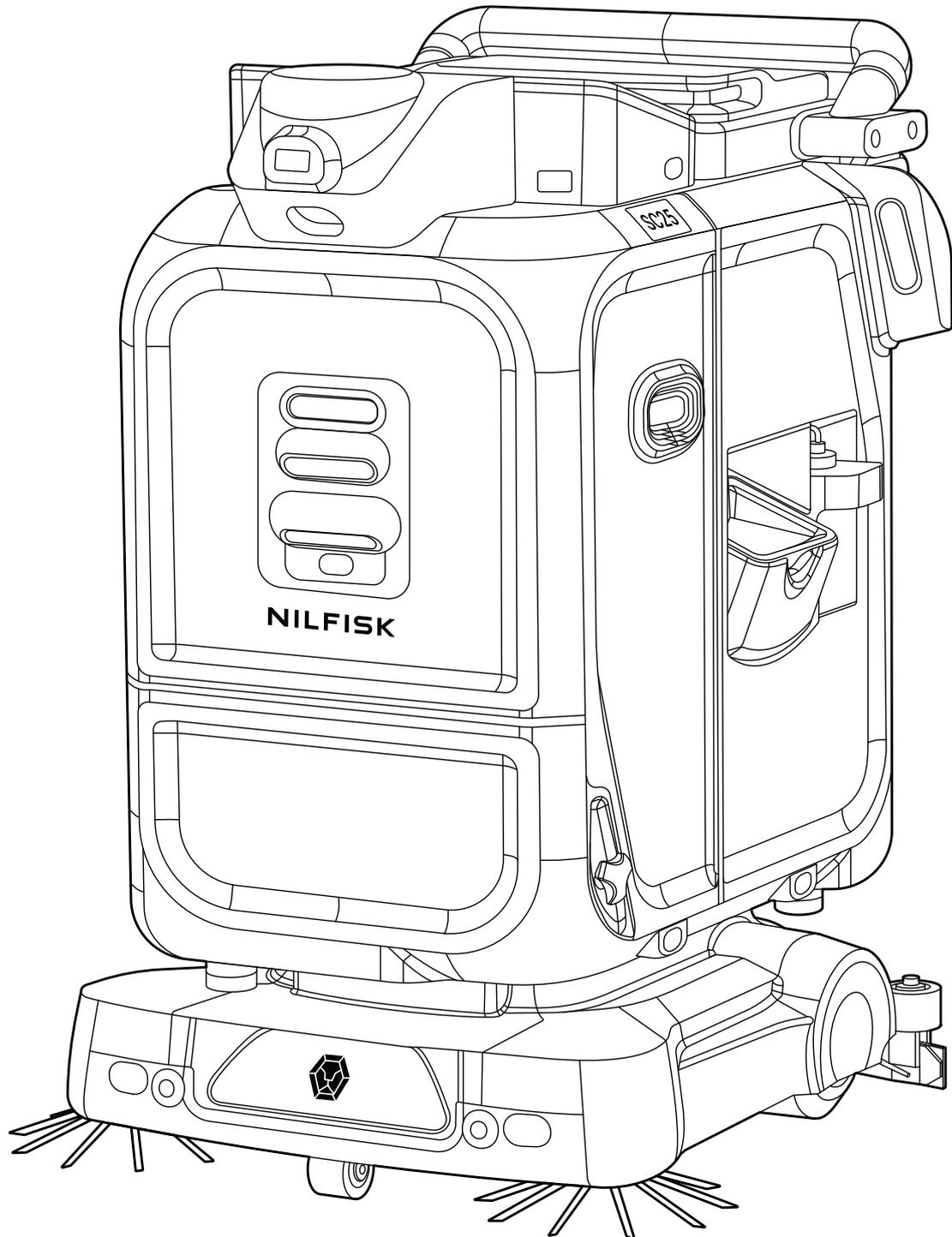


OPERATIONS MANUAL

# SC25



**NILFISK**

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## INTRODUCTION

This manual will help you get the most out of the Nilfisk Autonomous Floor Scrubber. Read it thoroughly before operating the machine. The SC25 is a battery powered floor cleaning machine.

### **WARNING!**

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

## PARTS AND SERVICE

Repairs, when required, should be performed by Nilfisk A/S or an Authorised Distributor, who employs factory trained service personnel, and maintains an inventory of Nilfisk original replacement parts and accessories.

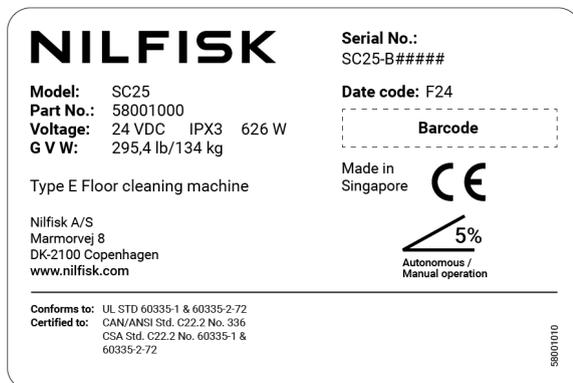
Call Nilfisk A/S for repair parts or service. Please specify the Model and Serial Number when enquiring about parts and service.

## MODIFICATIONS

Modifications and additions to the cleaning machine that affect capacity and safe operation shall not be performed by the customer or user without prior written approval from Nilfisk. 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 machine. Please provide this serial number along with any request for assistance/ servicing or spare parts purchase.



The Serial No. is formatted as follows:

- First four characters (SC25)
- Next six characters (B#####). **B** denotes the factory and sequential number of the product
- Part No. (58001000) denotes the product type
- Date Code denotes the date and year of construction.
  - First character **F** means June
  - Last two characters mean year.

## 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 Nilfisk Customer Service Department immediately to file a freight damage claim.

Refer to the unpacking instruction sheet attached to the shipping packaging to remove the machine from the pallet.

## TRANSPORTING THE MACHINE

### **CAUTION!**

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

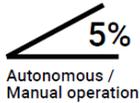
- All tanks are empty

- Machine 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.



## WARNING!

Do not transport machine on slopes exceeding 15% gradeability  
Do not operate machine on slopes exceeding 5% gradeability

## CAUTIONS AND WARNINGS

### SYMBOLS

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



## 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.



## CAUTION!

Indicates a situation which, if not avoided, could result in 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.

**Disclaimer: The warnings and safety instructions in this manual do not encompass every possible condition and situation that may occur. Users are advised to exercise caution and care when installing, maintaining, and operating their robot.**

## **WARNING!**

- The operation of this machine is strictly reserved to trained and qualified operators.
- Operators shall be adequately instructed on the use of these machines
- 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 the machine by spraying water directly on it.
- 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.
- Do not touch or impact the Lidar Sensors or Depth Cameras.



- Do not lift the robot without material handling equipment.



## **CAUTION!**

- This machine is not approved for outdoor use.
- This machine is not suitable for picking up hazardous dust.
- Nilfisk will not be held responsible for any damage to floor surfaces caused by using the wrong or improper brushes.
- Children should be supervised to ensure that they do not play with the machine.
- 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 powering off the machine using 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 or removable 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 is for indoor use only.
- This machine shall be stored indoors only.
- Do not spray this machine with pressurised 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 Lower Front Cover 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 relatively flat surfaces (less than 5 % gradeability).
- 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.
- Machines left unattended shall be secured against unintentional movement.
- Do not use water from water cooling/heating devices in the appliance
- Do not press the buttons using sharp objects such as pins, knives, fingernails, etc.
- Do not place any objects (such as shoes, food waste, animals, human beings etc...) onto the machine
- Do not spray volatile material such as insecticide onto the surface of the machine
- Do not place objects that generate electromagnetic fields near the machine
- 

## BATTERY CHARGING



### **DANGER!**

- Warranty shall be voided if instructions in this manual are not followed.
- Do not allow the battery to fall below 5% before charging the battery
- If the battery charge cable is damaged or broken, it should be replaced by the manufacturer or authorised service personnel or a qualified person in order to prevent hazards.
- Keep sparks, flames and incandescent materials at a safe distance from the batteries.
- Keep the tank hatch closed during the entire battery charging cycle, and only perform the procedure in well-ventilated areas.
- The socket for the battery charger cable must have a prescribed earth connection. Do not modify the polarised plug to fit a non-polarized outlet or extension cord.
- Before charging, check that the electric cable that connects the battery charger to the batteries is not damaged, and if it is damaged do not use it and contact technical assistance. Do not use with a damaged plug or lose power outlet.
- Before charging, check that the charging cable is not being pressed by any appliance or rolled over by the robot.
- The normal temperature range for charging the battery should be within 0°C~45 °C.
- Do not disconnect the battery charger cable from the machine socket when the battery charger is operating. This is necessary to prevent electric arcs forming. To disconnect the battery charger when charging, first disconnect the power cable from the mains socket.
- Do not use extension cords or outlets with inadequate current carrying capacity.

- The robot charger should not share an AC plug point with any other devices. Do not use more than one charger per AC plug.
- Do not charge frozen batteries.
- Do not unplug by pulling on the cord. To unplug, grasp the plug and not the cord.
- Do not replace the battery without contacting an authorised distributor centre.
- Do not expose the battery charger/ docking station to high temperatures or allow moisture/ humidity of any kind to come in contact with the battery charger/ docking station.
- Do not leave the battery to charge unattended/ overnight as a safety precaution for the Lithium-polymer batteries. Unplug the charger after the charging is complete (a typical full charge cycle takes about 2 hours).
- Do not mutilate or incinerate batteries as they will explode at high temperatures.
- Do not attempt to open the battery charger/ docking station. Repairs should only be carried out by a qualified service personnel.
- Unplug the battery charger/ docking station from the outlet when not in use and before servicing.
- Do not charge the robot if it is wet at unintended places.
- Do not use outdoors or on wet surfaces.
- Do not dismantle or puncture the battery.
- Do not drop the battery from any height.



## WARNING!

- Install the battery charger in a location that can be easily accessed by the robot. Away from water, on a flat surface and elevated.
- Do not pull or carry by the cord, use the cord as a handle, close the door on the cord, or pull the cord around sharp edges or corners. Keep the cord away from heated surfaces.
- Never smoke in the machine's vicinity while the batteries are charging.
- Use only a compatible battery charger with purchased batteries.
- The charger surface becomes hot while charging.

## 2-D / 3-D MAPPING SENSOR



## CAUTION!

### CLASS 1 LASER PRODUCT

The 2-D / 3-D Mapping Sensor corresponds to laser class 1 (eye-safe).  
The laser beam is not visible to the human eye.



## WARNING!

### Risk Of Potential Equalization

The 2-D 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 THESE INSTRUCTIONS

# NILFISK

EU / UE / EL / EC / EE / ES / EÚ / AB / EG

## Declaration of Conformity

Prohlášení o shodě  
Konformitätserklärung  
Overensstemmelseserklæring  
Declaración de conformidad  
Vastavusdeklaratsioon  
Déclaration de conformité  
Vaatimustenmukaisuusvakuutus

Декларация за съответствие  
Δήλωση συμμόρφωσης  
Megfelelősségi nyilatkozat  
Izjava o skladnosti  
Dichiarazione di conformità  
Atitikties deklaracija  
Atbilstības deklarācija  
Samsvarserklæring

Conformiteitsverklaring  
Declaração de conformidade  
Deklaracja zgodności  
Declaratie de conformitate  
Försäkran om överensstämmelse  
Vyhlasenie o zhode  
Izjava o skladnosti  
Uygunluk beyanı

**Manufacturer /** Výrobce / Hersteller / Fabrikant / Fabricante / Κατασκευαστής /  
Gyártó / Proizvođač / Fabbicante / Gamintojas / Ražotājs / Produsent /  
Fabrikant / Fabricante / Producent / Producător / Tillverkaren / Výrobca /  
Proizvajalec/ Üretici firma:

**Nilfisk A/S, Marmorvej 8  
DK-2100 Copenhagen Ø, DENMARK**

**Product /** Produkt / Producto, Toode, Produit, Tuote/ Προϊόν  
/ Termék / Proizvod / Prodotto / Produktas / Produkts /  
Artikel / Produtos / Produs / Izdelek / Ürün

**SC25**

**Description /** Popis / Beschreibung / Beskrivelse / Descripción /  
Kirjeldus / La description / Kuvaus / Описание / Περιγραφή / Leirás /  
Opis / Descrizione / Aprašymas / Apraksts / Beschrijving / Descrição /  
Descriere / Beskrivning / Popis / Açıklama

**FC - Autonomous/rider-type Scrubber -  
Battery - Radio enabled  
24V DC, IPX3**

**EN** We, Nilfisk hereby declare under our sole responsibility, that the above-mentioned product(s) is/are in conformity with the following directives and standards.

**BG** Ние, Nilfisk с настоящото декларираме на своя лична отговорност, че посочените по-горе продуктът е в съответствие със следните директиви и стандарти.

**NL** We verklaren Nilfisk hierbij op eigen verantwoordelijkheid, dat het bovengenoemde product voldoet aan de volgende richtlijnen en normen

**CS** My, Nilfisk prohlašujeme na svou výlučnou odpovědnost, že výše uvedený výrobek je ve shodě s následujícími směrnici a normami.

**EL** Εμείς, Nilfisk δηλώνουμε με αποκλειστική μας ευθύνη, ότι το προαναφερόμενο προϊόν συμμορφώνεται με τις ακόλουθες οδηγίες και πρότυπα.

**PT** Nós, a Nilfisk declaramos, sob nossa exclusiva responsabilidade, que o produto acima mencionado está em conformidade com as diretrizes e normas a seguir.

**DE** Wir, Nilfisk erklären in alleiniger Verantwortung, dass das oben genannte Produkt den folgenden Richtlinien und Normen entspricht.

**HU** Mi, Nilfisk kijelentjük, egyedüli felelősséggel, hogy a fent említett termék megfelel az alábbi irányelveknek és szabványoknak

**PL** My, Nilfisk Niniejszym oświadczamy z pełną odpowiedzialnością, że wyżej wymieniony produkt jest zgodny z następującymi dyrektywami i normami..

**DA** Vi, Nilfisk erklærer hermed under eget ansvar at ovennævnte produkt(er) er i overensstemmelse med følgende direktiver og standarder.

**HR** Mi, Nilfisk izjavljujemo pod punom odgovornošću, da gore navedeni proizvod u skladu sa sljedećim direktivama i standardima.

**RO** Noi, Nilfisk Prin prezenta declarăm pe propria răspundere, că produsul mai sus menționat este în conformitate cu următoarele standarde și directive.

**ES** Nosotros, Nilfisk declaramos bajo nuestra única responsabilidad que el producto antes mencionado está en conformidad con las siguientes directivas y normas

**IT** Noi, Nilfisk dichiara sotto la propria responsabilità, che il prodotto di cui sopra è conforme alle seguenti direttive e norme.

**SV** Vi Nilfisk förklarar härmed under eget ansvar att ovan nämnda produkt överensstämmer med följande direktiv och normer.

**ET** Meie, Nilfisk Käesolevaga kinnitame ja kanname ainuisikulist vastutust, et eespool nimetatud toode on kooskõlas järgmistele direktiivide ja

**LT** Mes, „Nilfisk“, prisimdami visišką atsakomybę pareiškiame, kad pirmiau minėtas produktas (-ai) atitinka šias direktyvas ir standartus

**SK** My, Nilfisk prehlasujeme na svoju výlučnú zodpovednosť, že vyššie uvedený výrobok je v zhode s nasledujúcimi smernicami a normami.

**FR** Nilfisk déclare sous notre seule responsabilité que le produit mentionné ci-dessus est conforme aux directives et normes suivantes.

**LV** Mēs, Nilfisk, ar pilnu atbildību apliecinām, ka iepriekšminētais produkts atbilst šādām direktīvām un standartiem

**SL** Mi, Nilfisk izjavljamo s polno odgovornostjo, da je zgoraj omenjeni izdelek v skladu z naslednjimi smernicami in standardi.

**FI** Me, Nilfisk täten vakuutamme omalla vastuulla, että edellä mainittu tuote on yhdenmukainen seuraavien direktiivien ja standardien mukaisesti

**NO** Vi, Nilfisk erklærer herved under eget ansvar, at det ovennevnte produktet er i samsvar med følgende direktiver og standarder

**TR** Nilfisk, burada yer alan tüm sorumluluklarımızı göze, yukarıda belirtilen ürünüň aşağıdaki direktifler ve standartlara uygun olduđunu beyan ederiz.

2006/42/EC

EN 60335-1:2012+A11:2014+A13:2017+A1:2019+A14:2019+A2:2019+A15:2021+A16:2023  
EN 60335-2-72:2012  
EN 63327:2021

EN 61000-3-2:2019+A1:2021, EN 61000-3-3:2013, EN 55032:2015+A11:2020,  
EN 55035:2017+A11:2020, EN 301 489-1 V2.2.3, EN 301 489-3 V2.1.1,  
EN 301 489-17 V3.2.4, EN 301 489-52 V1.2.1

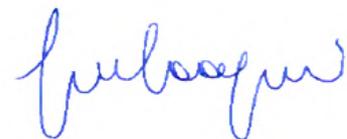
2014/53/EU

EN 62311:2020, EN 300 440 V2.2.1 RX Cat 1, EN 300 328 V2.2.2, EN 301 893 V2.1.1  
EN 303 687 V1.1.1, EN 301 511 V12.5.1, EN 301 908-1 V15.2.1, EN 301 908-13 V13.2.1

Authorized to compile Technical File and signatory:

Sergio Coccapani, Head European FloorCare R&D Center

Aug 1, 2024

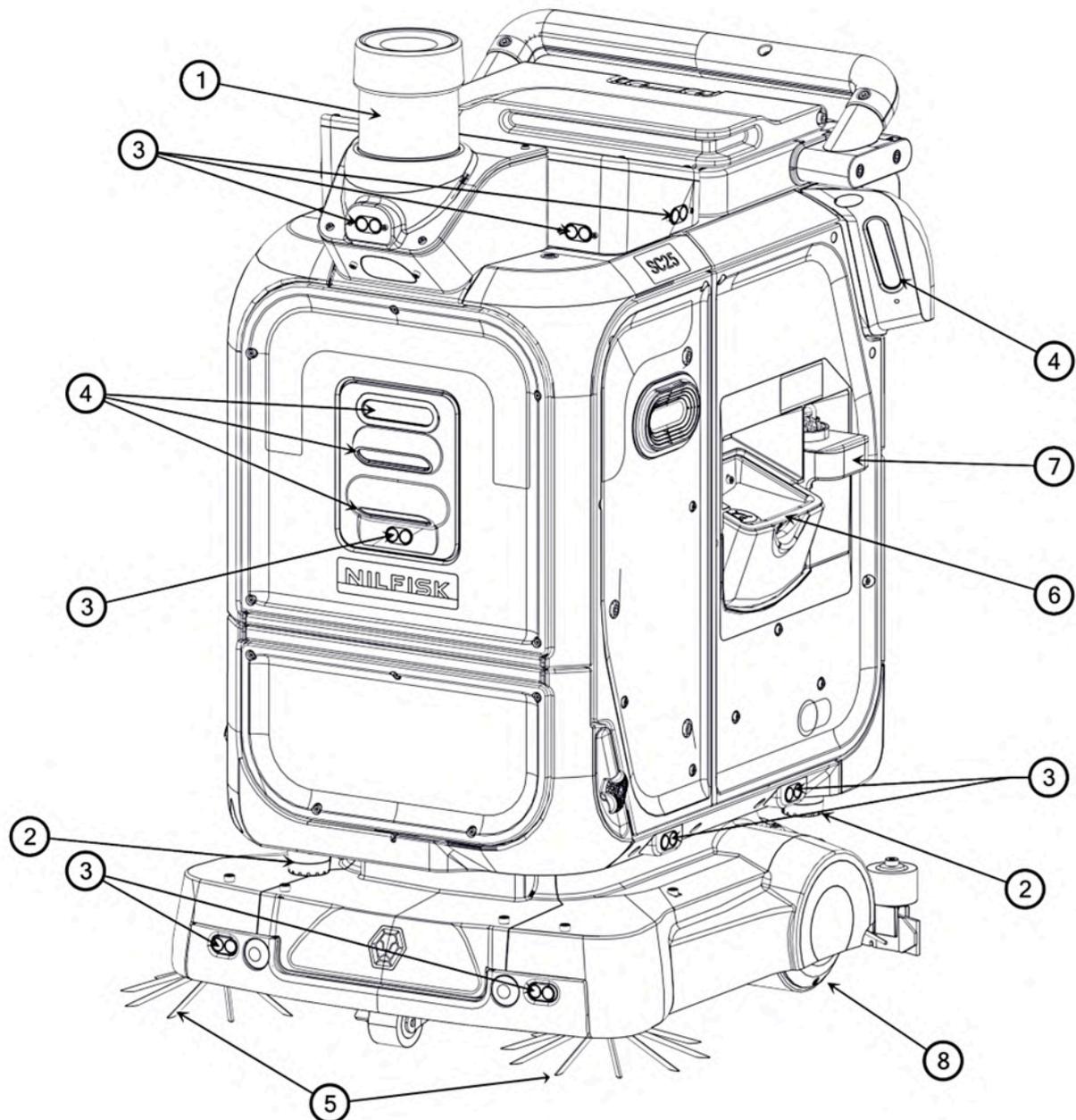


## KNOW YOUR MACHINE

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 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 5 pages.

- |                        |                      |
|------------------------|----------------------|
| 1 3D Lidar             | 5 Side Brushes x2    |
| 2 2D Mapping Sensor x2 | 6 Manual Top-Up Tray |
| 3 Sonar Sensor x15     | 7 Chemical Tank      |
| 4 Depth Camera x5      | 8 Traction Wheel x2  |



**FIGURE 1-1**

## KNOW YOUR MACHINE - CONTINUED

- |    |                  |    |                        |
|----|------------------|----|------------------------|
| 9  | Brush Floor Tool | 13 | Manual charging plug   |
| 10 | Safety Levers x2 | 14 | Manual Drain Hose      |
| 11 | Button latch x2  | 15 | Side Limit Switches x2 |
| 12 | Cooling vent x2  | 16 | Front Cover Knob x2    |

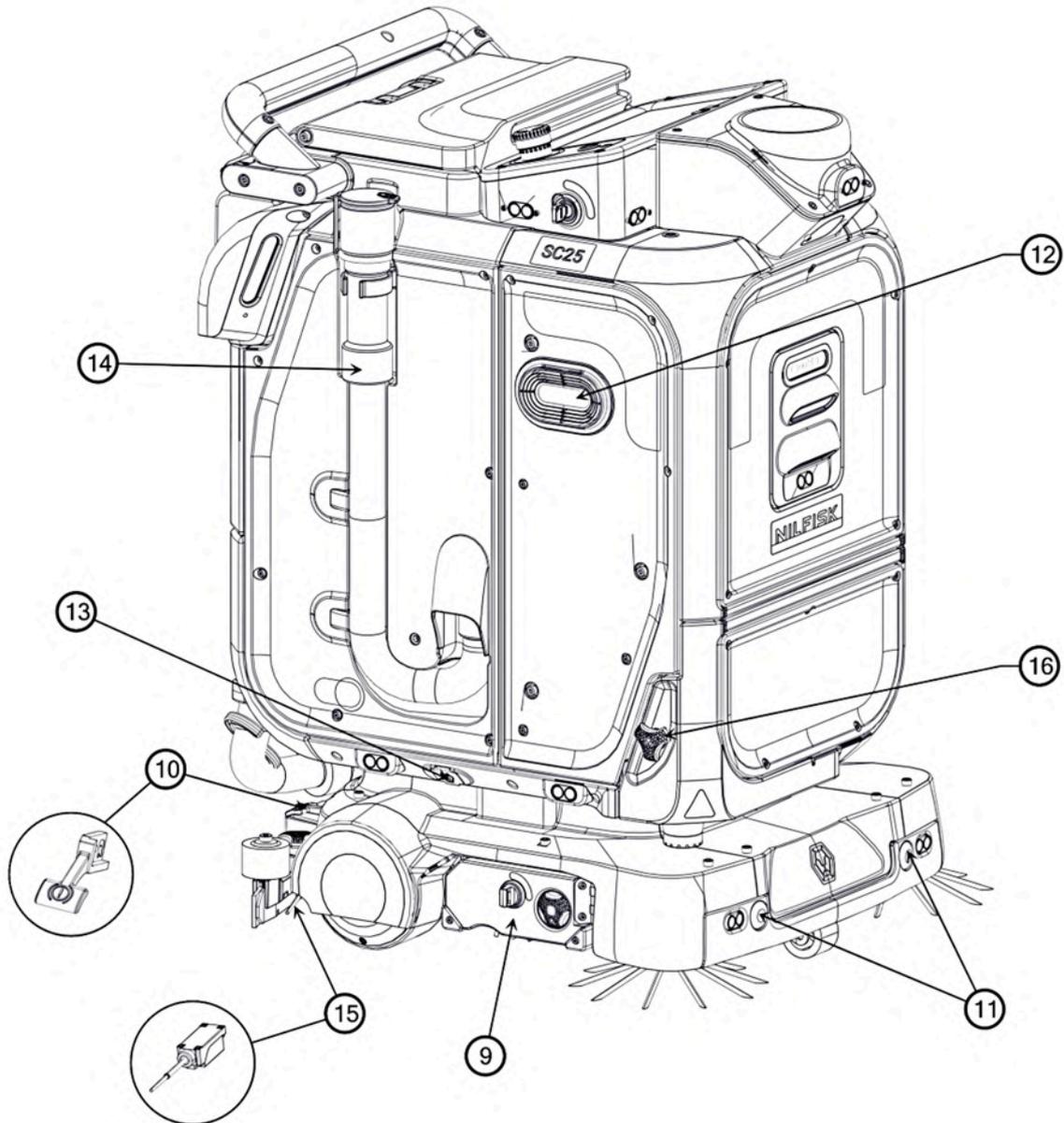


FIGURE 1-2

## KNOW YOUR MACHINE - CONTINUED

- 17 Handle Bar
- 18 Tank Hatch
- 19 Touch Screen

- 20 Emergency Stop Button
- 21 Key Switch
- 22 Wheel Lock/Unlock Button

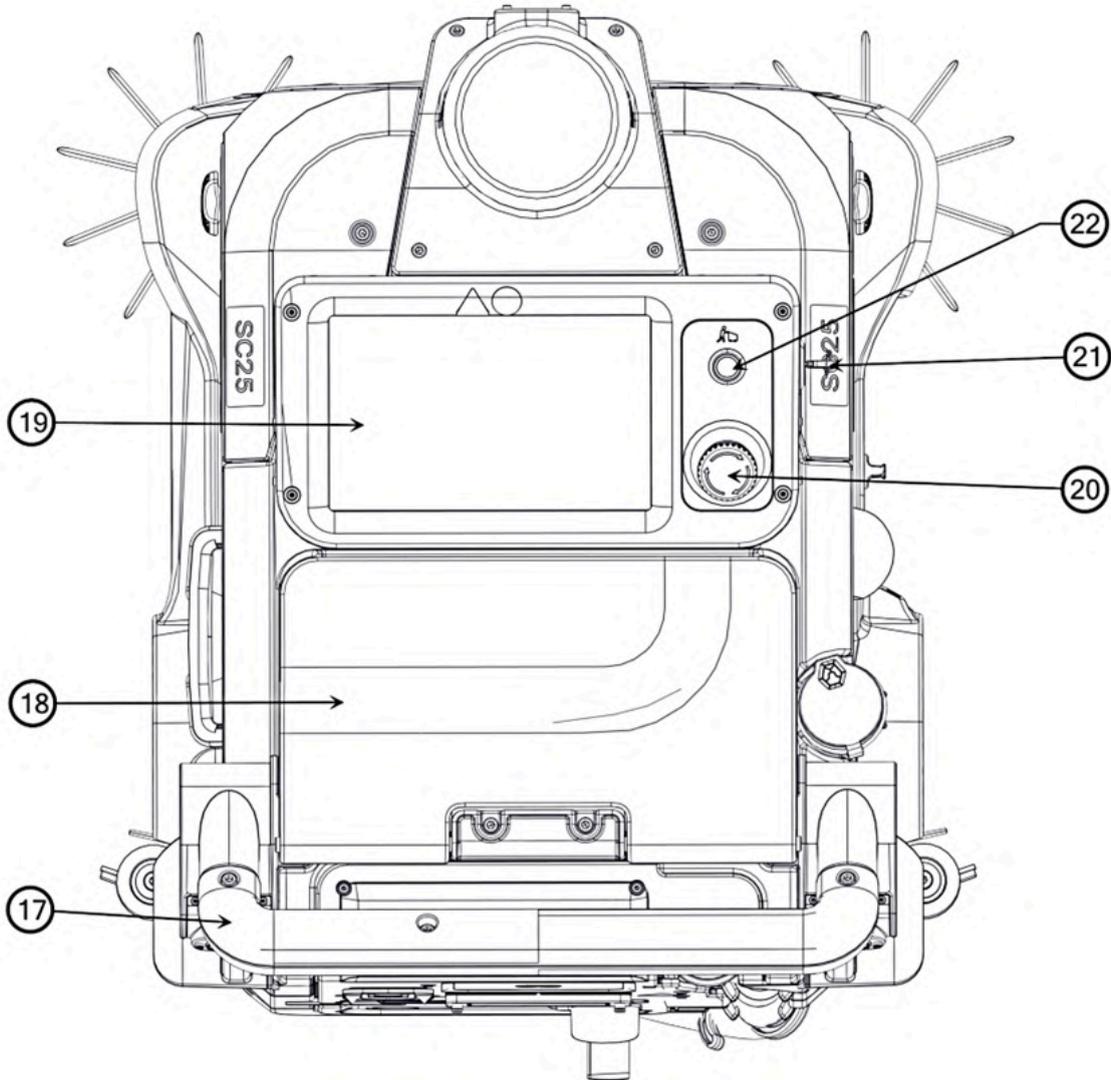


FIGURE 1-3

## KNOW YOUR MACHINE - CONTINUED

- |    |              |    |                   |
|----|--------------|----|-------------------|
| 23 | Battery      | 26 | Left Side Panel   |
| 24 | Water filter | 27 | Lower Front Cover |
| 25 | Debris cage  | 28 | Squeegee          |

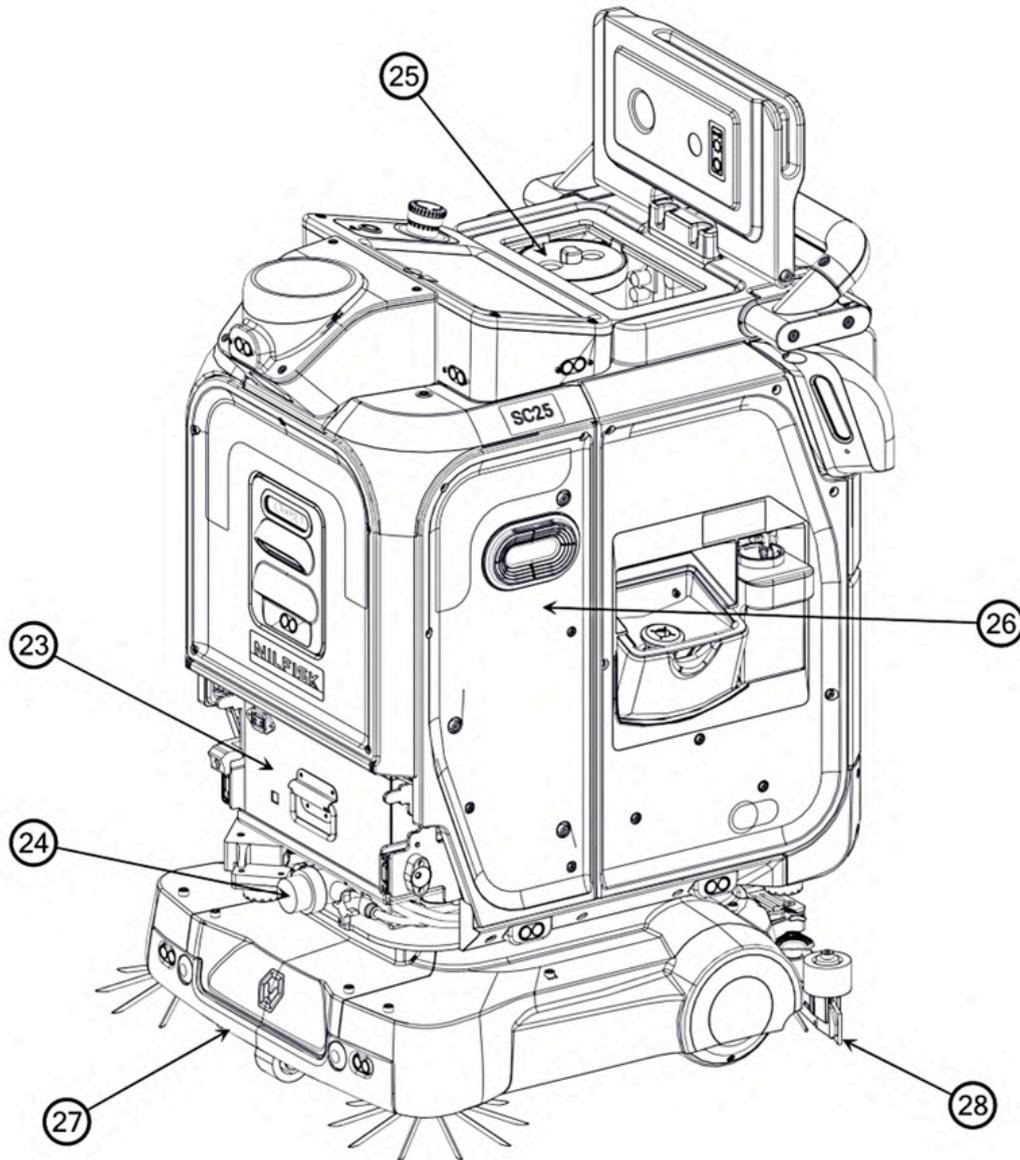
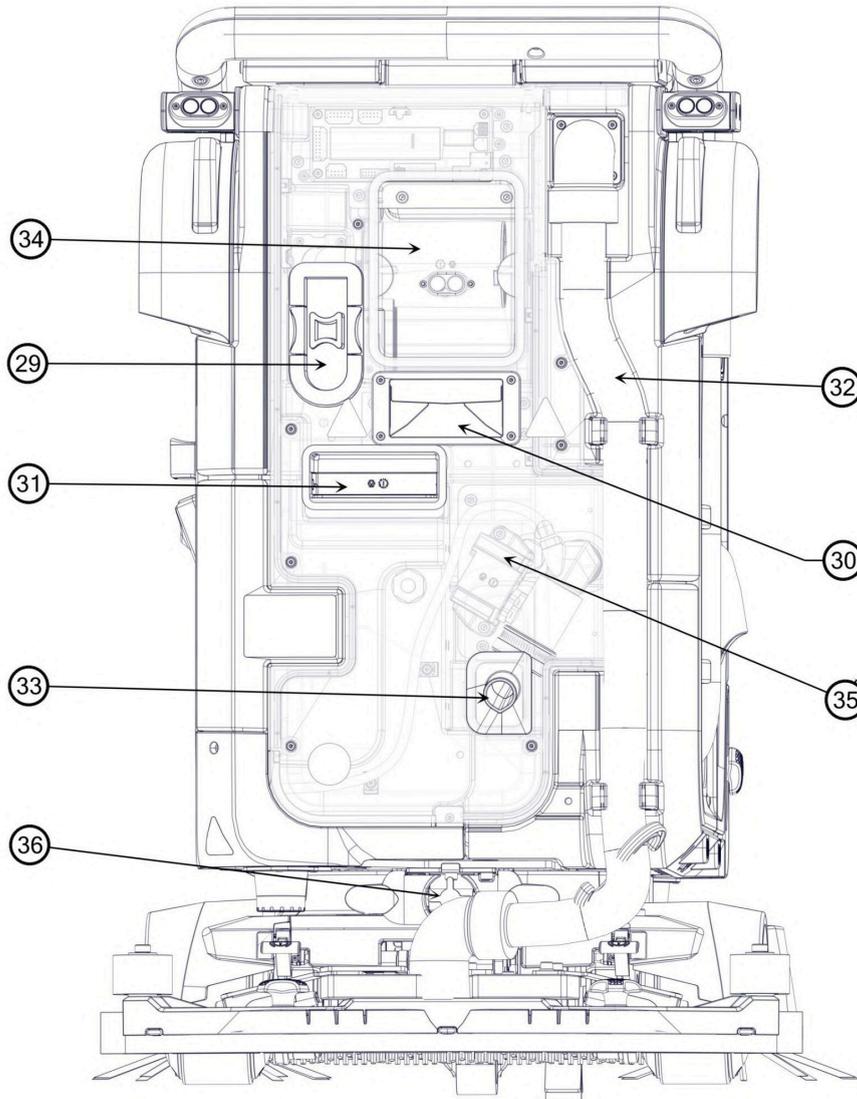


FIGURE 1-4

**KNOW YOUR MACHINE - CONTINUED**

- |    |                  |    |                        |
|----|------------------|----|------------------------|
| 29 | HEPA Filter      | 33 | Docking Drain Hose     |
| 30 | Charging Port    | 34 | Vacuum Motor Assembly  |
| 31 | Rear Top-Up Tray | 35 | Docking Ball Valve     |
| 32 | Squeegee Hose    | 36 | Clean Water Tank Valve |

**FIGURE 1-5**

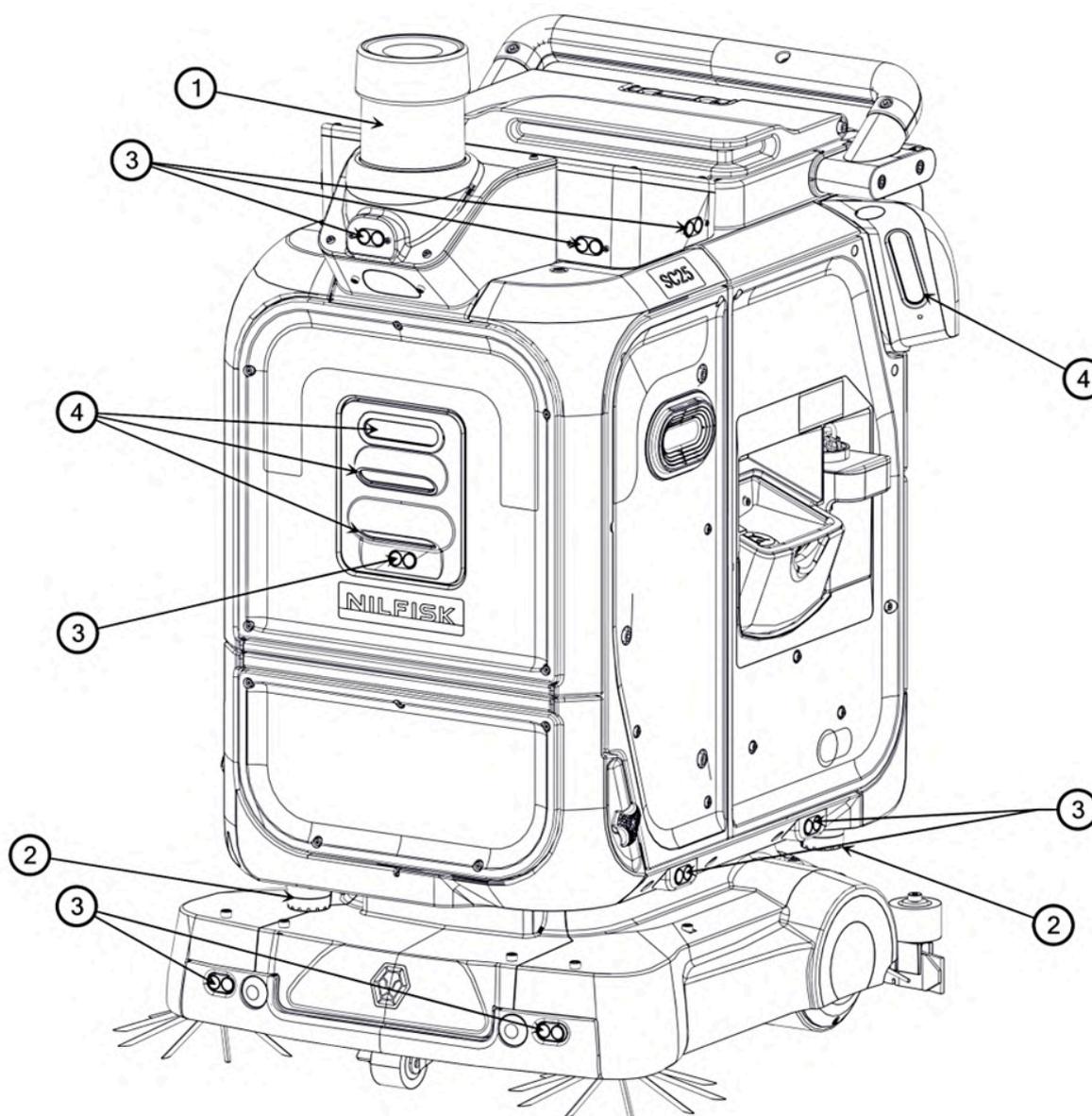
## UNDERSTANDING AUTONOMY

The SC25 can function autonomously on a plan determined by an operator without further operator involvement. The machine can record an area to clean independently and manoeuvre actively around certain obstacles.

Components that make up the Autonomy system, and their basic function, include the following (shown in Fig. 1-6).

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

- 2D LiDAR Sensors **(1)** - provides detection of obstacles and surroundings in front, back and to the sides of the machine.
- Depth Camera **(8)** - provides a three-dimensional depth point cloud of the area in front and to the sides of the machine.
- Sonar Sensor **(2)** - located at the front, back and sides of the machine – aids in collision prevention and presence detection around the machine.
- Computer Software Interface, (not shown). Defines how the autonomous control system interfaces with machine control software and control system.



**FIGURE 1-6**

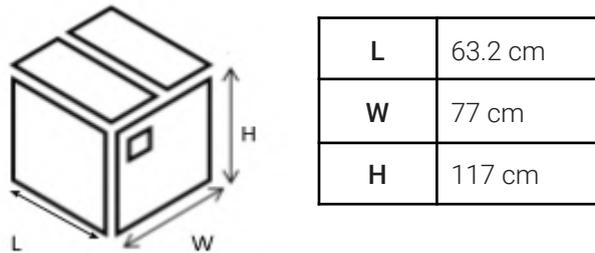
## PREPARE THE MACHINE FOR USE

### RECEIVING AND PREPARING THE SC25

The SC25 is shipped with the brushes and squeegee assembly attached. Some accessories are also included to facilitate charging and maintenance operations.

### HANDLING THE PACKAGED MACHINE

The machine's unladen weight, i.e. with battery and no water, is approximately 110.8kg. Total freight weight is approximately 150 kg.



**FIGURE 2-1**

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

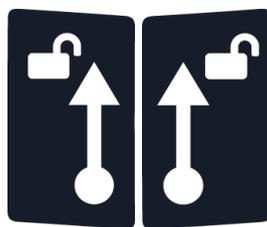
### BATTERY

Check that the Battery Power Switch **(23)** is ON (pressed in), if it is not pressed in, press it.

1. Open the front panel knobs **(11)**.
2. Ensure that the Battery Power Switch is On (pressed in) to turn on the battery.
3. Ensure that all the dip switches on the battery are located in the down position.

### UNPACKING THE MACHINE

1. Open the crate and remove protective packaging material around the machine.
2. Power on the machine by turning ON the key switch **(21)**
3. Press the wheel unlock button **(22)**, and pull the machine out of the crate in reverse to avoid the risk of tipping.
4. If the machine cannot be powered on, disengage the safety levers by raising both up **(10)**.



**FIGURE 2-2**

### WHEEL UNLOCK

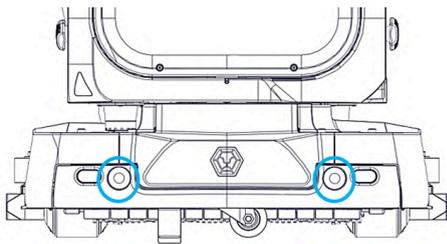
1. Wheel can be unlocked by pressing on the Wheel Unlock button **(22)**.
2. No light indicates that the button is disabled as the machine is controlling the wheels.
3. Blue light from the button indicates that the wheels are locked and can be toggled.



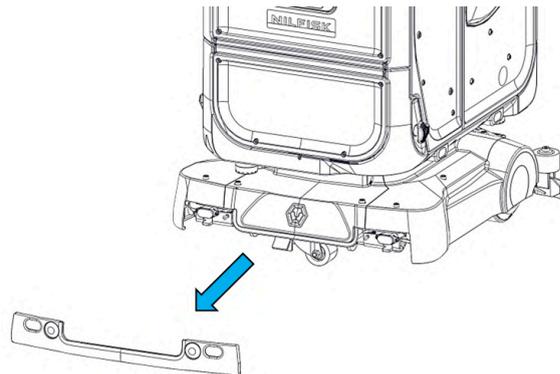
3. Green light indicates that the wheels are unlocked and the machine is free to move.
4. When the wheels are unlocked, the wheel will auto-lock after 30 seconds of being stationary.

## INSTALL SIDE BRUSHES

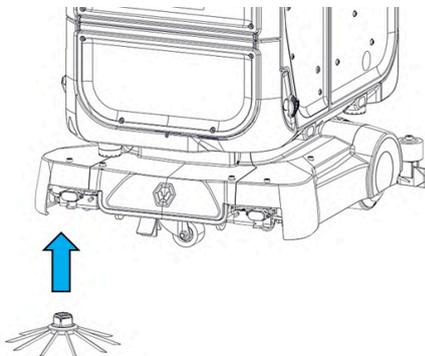
1. Press the 2 buttons (**Fig. 2-3**) fully to remove the Lower Front Cover (**27**) (**Fig. 2-4**).
2. Align the core with the internal metal mating part and then push the core of a new side brush upwards to lock, a click sound can be heard (**Fig. 2-5**).
3. Do the same for the other side brush.
4. Secure the cover by pushing the cover firmly back such that the 2 mating metal rods locks with the buttons, if it does not go in, depress the 2 buttons and try again (**Fig. 2-6**).



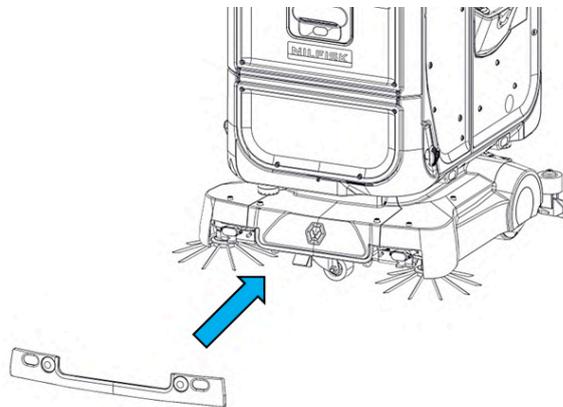
**FIGURE 2-3**



**FIGURE 2-4**



**FIGURE 2-5**



**FIGURE 2-6**

## SC25 TOUCHSCREEN SETUP

The following section describes the setup procedure by using the Touchscreen (19) on the SC25. The touchscreen is used to operate the machine. Each SC25 user is assigned a unique “User ID” and PIN for use with the touchscreen. The user must be logged-in to be able to operate the SC25.

### INITIAL SETUP

The following section describes the setup procedure of the touchscreen on the SC25.

1. Turn on the SC25 and wait for the touchscreen to startup (Fig. 3-1).
2. Select your preferred language (Fig. 3-2).
3. Read and agree to the Terms of Use and Privacy Policy (Fig. 3-3).
4. Create an account name (Fig. 3-4).
5. Create a new PIN (Fig. 3-5).
6. Confirm your new PIN (Fig. 3-6).



FIGURE 3-1



FIGURE 3-2

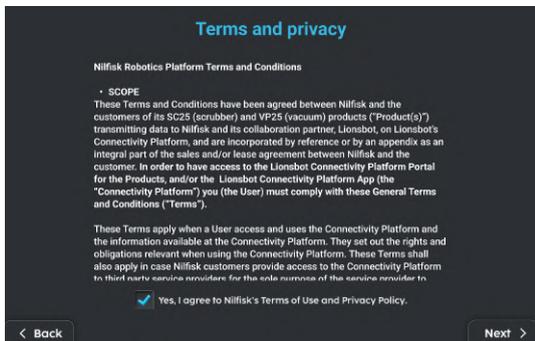


FIGURE 3-3

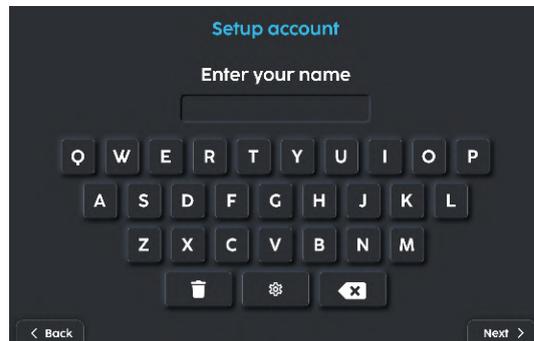


FIGURE 3-4

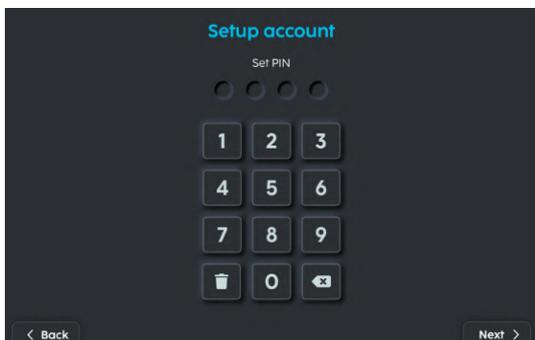


FIGURE 3-5

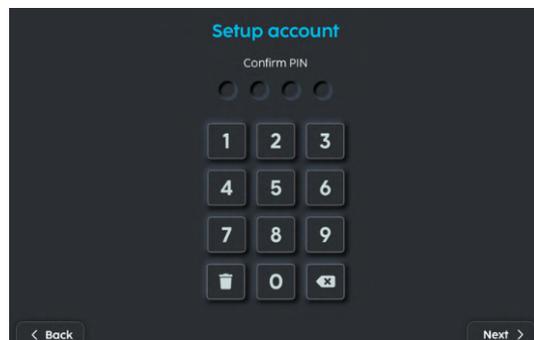


FIGURE 3-6

7. Wait for your account to be set up (**Fig. 3-7**).
8. Read and acknowledge proper usage instructions (**Fig. 3-8**).
9. Choose between Magic mode and Pro mode (**Fig. 3-9**). Select Magic mode for a simpler Home page and to use with MagicTag. Select Pro mode to access advanced features if you are a trained professional.

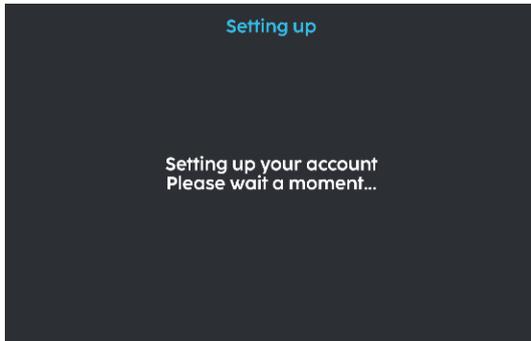


FIGURE 3-7



FIGURE 3-8



FIGURE 3-9

## LOGIN

The following section describes the account procedure by using the touchscreen on the SC25 after initial setup.

1. Select the account to login (**Fig. 3-10**).
2. Enter your PIN (**Fig. 3-11**).
3. Once the PIN is verified, you will be brought to the Home Page for the selected mode (Pro mode/Magic mode).



FIGURE 3-10



FIGURE 3-11

## USER ACCOUNT MANAGEMENT

This section provides instructions for adding/removing users.

1. For Pro mode, select 'MANAGE USERS' from the Home Page
2. For Magic mode, select "USERS" from Settings
3. On the 'MANAGE USER'/'USERS' screen, select 'ADD USER' (Fig. 3-12, Fig. 3-13).
4. Enter the user's name and role (Fig. 3-14).
5. Assign a 4-digit pin to the user (Fig. 3-15).
6. Re-enter 4-digit pin.
7. Confirm User (Fig. 3-16).
8. The user account setup is complete (Fig. 3-17).



FIGURE 3-12

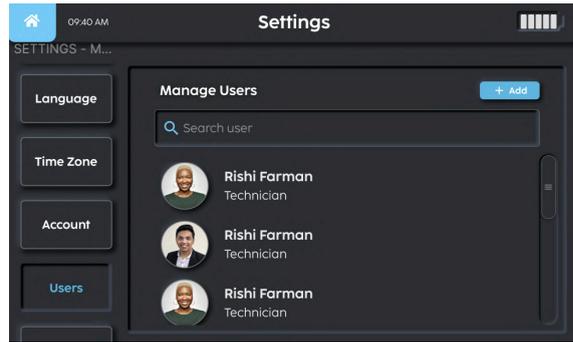


FIGURE 3-13

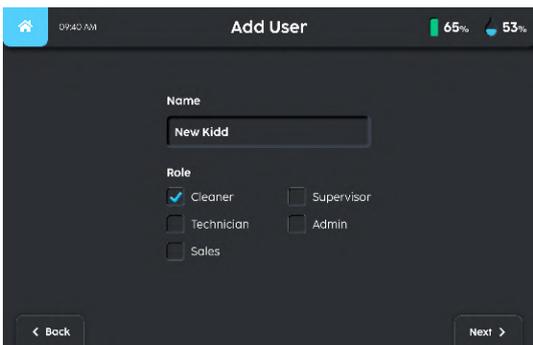


FIGURE 3-14

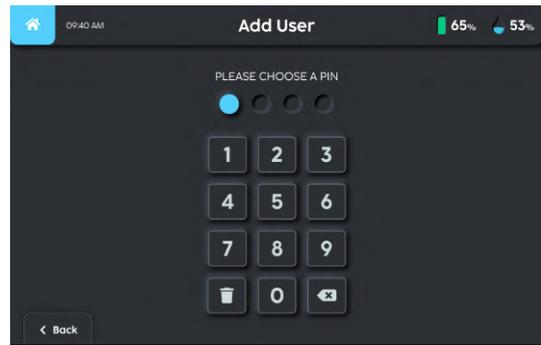


FIGURE 3-15

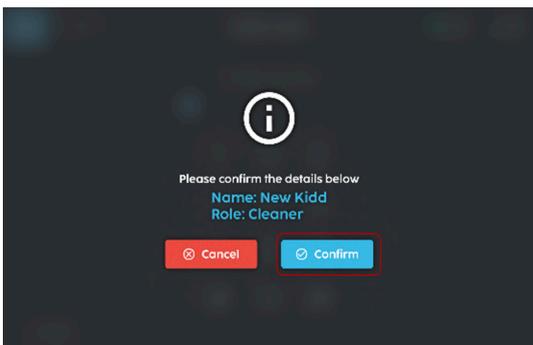


FIGURE 3-16

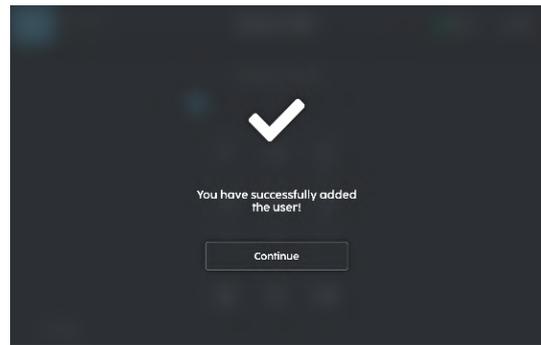


FIGURE 3-17

To delete a user profile

1. Select the user profile.
2. Select 'Delete user' (**Fig. 3-18**).
3. Select 'Delete' (**Fig. 3-19**).
4. User has been successfully deleted (**Fig. 3-20**).

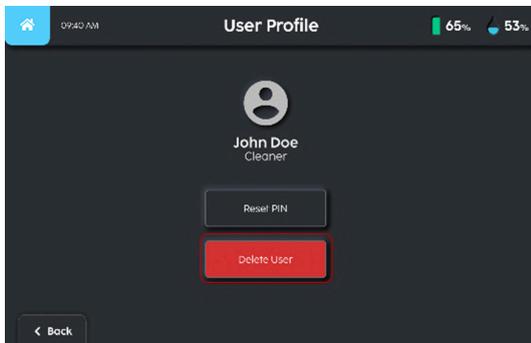


FIGURE 3-18

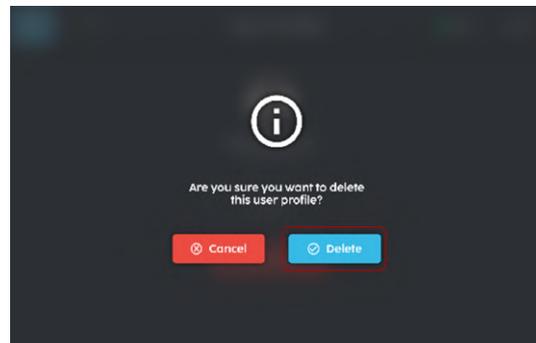


FIGURE 3-19

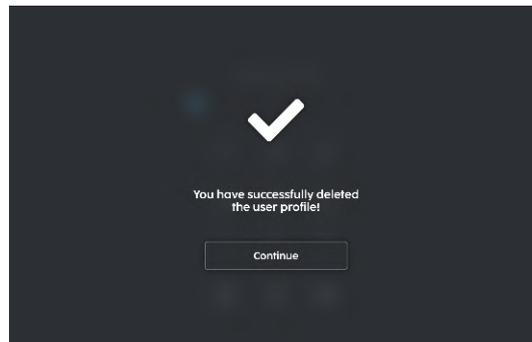


FIGURE 3-20

## ADD/CREATE NEW MAP

### PRO MODE

1. Select the "Options" menu on the top right corner.
2. Select "Create New Map" (**Fig. 4-1**).
3. There is another option to create a new map within "Manage Maps" (**Fig. 4-2**).

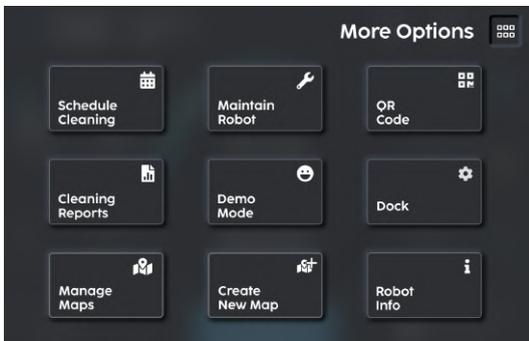


FIGURE 4-1

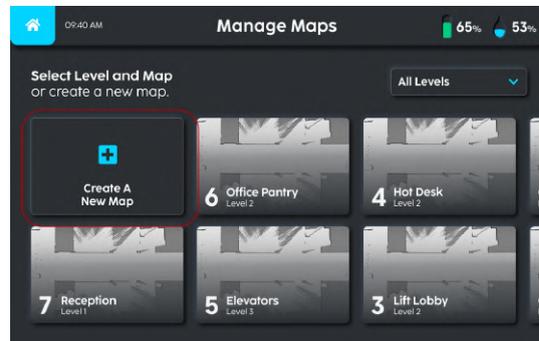


FIGURE 4-2

4. Enter a name and level for the map. then click
5. Proceed to 'Start' mapping (**Fig. 4-3**).
6. Push the machine slowly to create a good quality map (**Fig. 4-4**).
7. If the machine is pushed too quickly, a warning display will appear on the touchscreen (**Fig. 4-5**).
8. Once the area is sufficiently mapped, proceed to 'Save Map' (**Fig. 4-4**).
9. A pop-up will notify when the map has been saved successfully (**Fig. 4-6**).

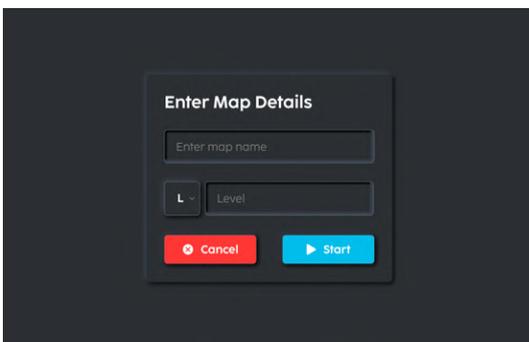


FIGURE 4-3

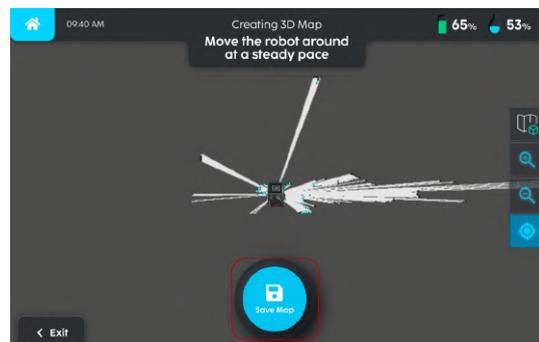


FIGURE 4-4



FIGURE 4-5

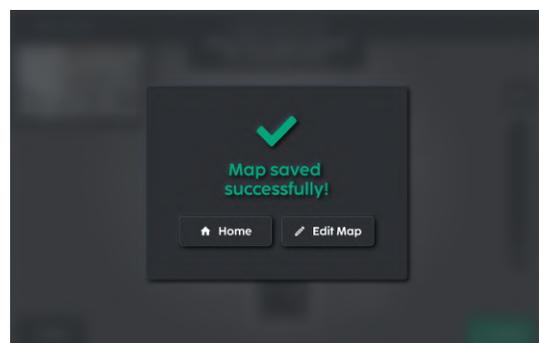
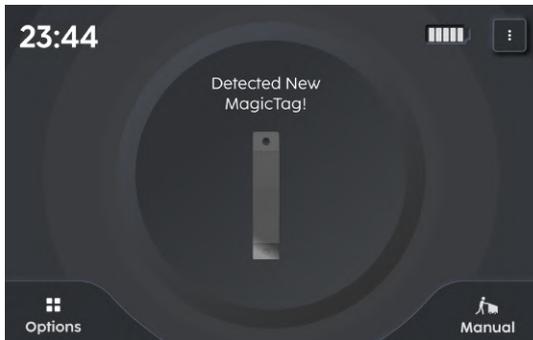


FIGURE 4-6

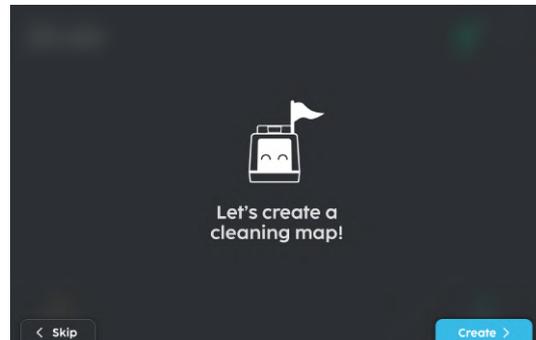
## MAGIC MODE

For magic mode, if there is a MagicTag or a docking station near the machine, it will be detected automatically (**Fig. 4-7**). The touchscreen will prompt to create a new map if it has not been set up. (**Fig. 4-8**).

**NOTE:** For instructions on how to set up a docking station, please refer to SC25 Docking Station User Manual.

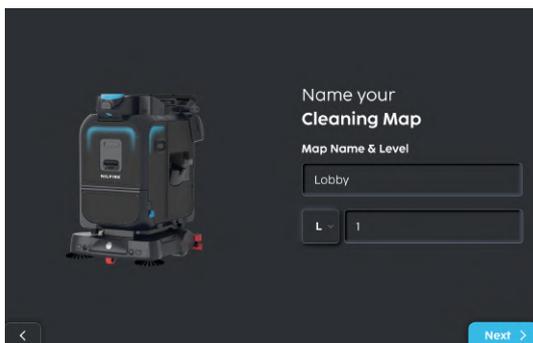


**FIGURE 4-7**



**FIGURE 4-8**

1. Press 'Create' (**Fig. 4-8**), or 'Skip' if you would like to set it up later.
2. Enter the name and level of the map, then click 'Next' (**Fig. 4-9**).
3. Follow through the guided steps found on the touchscreen.
4. During the pairing process (**Fig. 4-10**) between the machine and MagicTag, ensure that only 1 MagicTag is within ~30cm of the machine.



**FIGURE 4-9**



**FIGURE 4-10**

5. Once the MagicTag is detected (**Fig. 4-11**), verify that the ID (9-XXXXX) on the touchscreen matches that on the MagicTag. Choose a well-lit plain wall to place the MagicTag (**Fig. 4-12**).
6. Avoid black, glass, reflective and metal surfaces.
7. Ensure that the place that you choose has direct access to the cleaning area, as the machine is required to return to this location.

**NOTE:** Do not paste the MagicTag on the wall at this point yet.

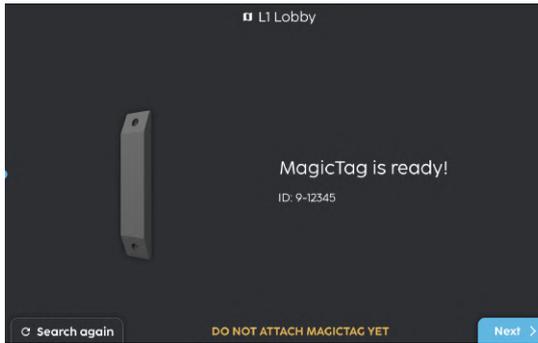


FIGURE 4-11

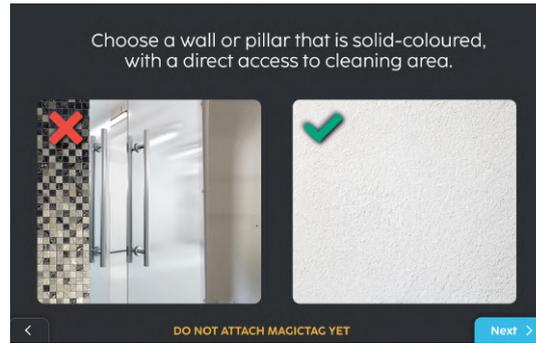


FIGURE 4-12

8. After choosing the location, press 'Next' (**Fig. 4-12**). Push the machine to face the wall at the chosen location. Ensure that the machine is ~30 cm from the wall.
9. The touchscreen will show a live camera feed (**Fig. 4-13**)
10. Paste the MagicTag on the surface within the camera frame.
11. Wait for the MagicTag to be scanned. Once successful, a green box around the camera frame, and the 'Next' button will light up in blue (**Fig. 4-14**).



FIGURE 4-13



FIGURE 4-14

12. Once the MagicTag is saved as the machine's home (**Fig. 4-15**), follow the on-screen instructions to continue.
13. To create a cleaning area, select route or boundary (**Fig. 4-16**). Route is useful when cleaning areas with big obstacles, and the boundary is useful in cleaning large areas. Press 'Start' after selecting the mode of adding cleaning areas.



FIGURE 4-15

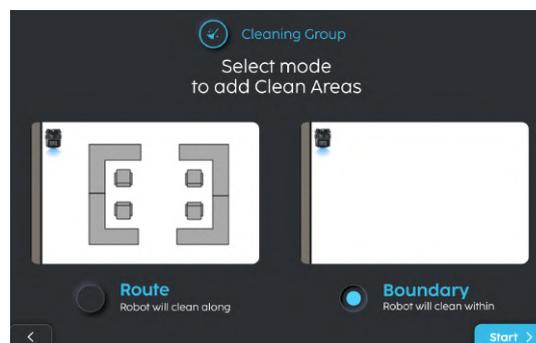


FIGURE 4-16

14. Push the robot to the area where the cleaning will take place, press 'Start' to begin creating the cleaning area (**Fig. 4-17**).
15. While creating the cleaning area, switching between boundary and route is allowed (**Fig. 4-18**).
16. When satisfied, press "Stop" (**Fig. 4-18**).

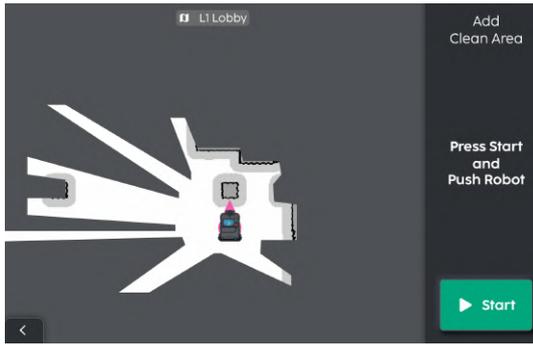


FIGURE 4-17

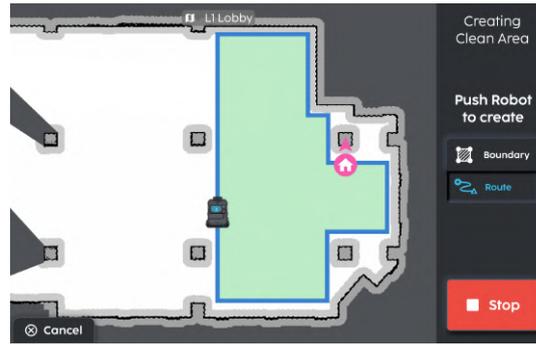


FIGURE 4-18

17. Select the preferred cleaning mode from the dropdown menu (Fig. 4-19) (Fig. 4-20).
18. If required, select "Add Area" to create an additional cleaning area.

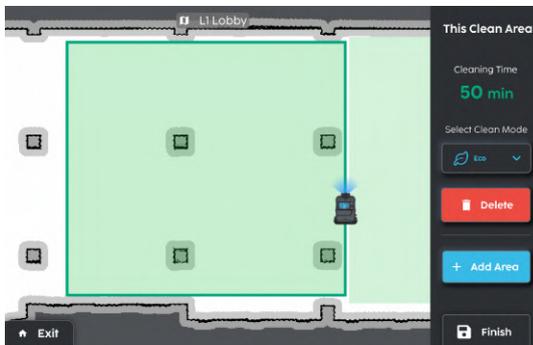


FIGURE 4-19



FIGURE 4-20

19. When all the cleaning area has been completed, follow the on-screen instructions and push the machine back to the machine's home (where the MagicTag is placed).
20. Mark out areas that should be restricted from the machine on the map. Click on the categories of the restricted areas provided on screen (Fig. 4-21). Refer to section **MAP EDITOR** for more information
21. When the setup is complete, press 'Clean' to start cleaning (Fig. 4-22).



FIGURE 4-21



FIGURE 4-22

# MANAGE MAPS

The following section instructs the user on how to add, change or delete the mapped environment in SC25.

## DELETE MAP

1. Select the map to be deleted (**Fig. 5-1**).
2. Select "Delete Map" (**Fig. 5-2**).

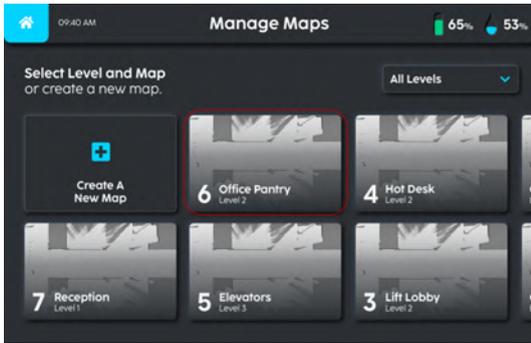


FIGURE 5-1

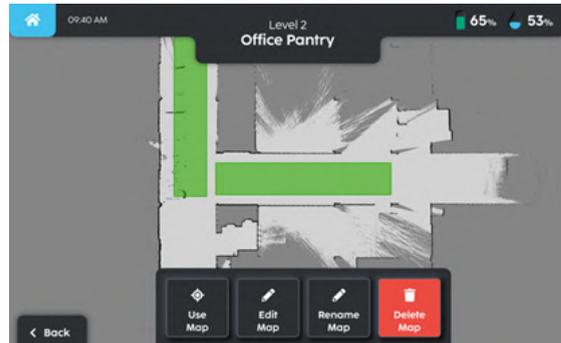


FIGURE 5-2

## MAP EDITOR

Map Editor allows the operator to touch-up map features, add cleaning zones, restricted zones, add locations, create sections, and add home and dock points. Five key functions are described within Map Editor (**Fig. 5-3**).

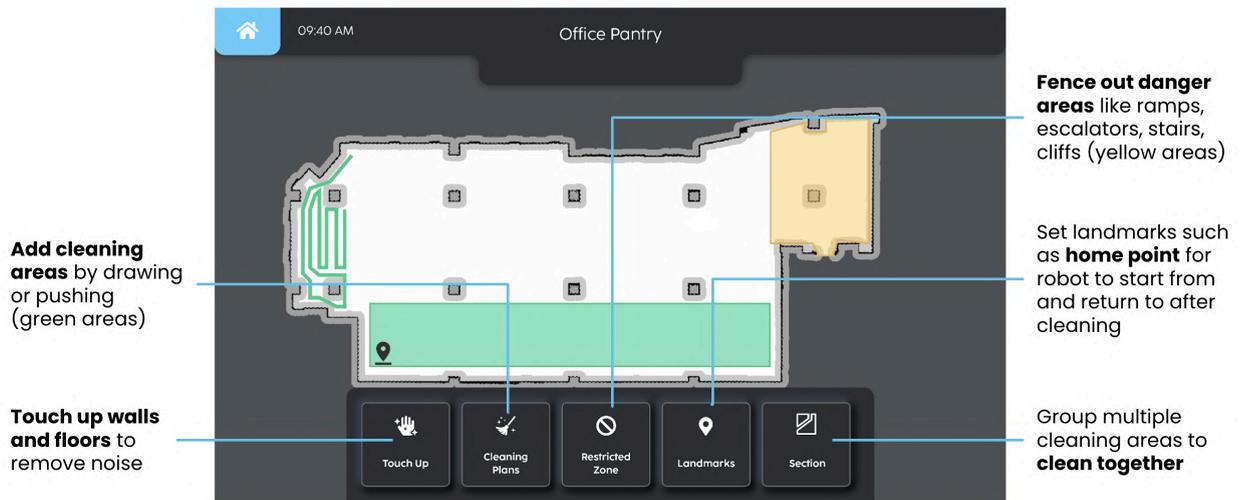


FIGURE 5-3

## TOUCH UP MAP



FIGURE 5-4

1. **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 machine know there are no obstacles there.
2. **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 machine understand the real-world boundaries better.

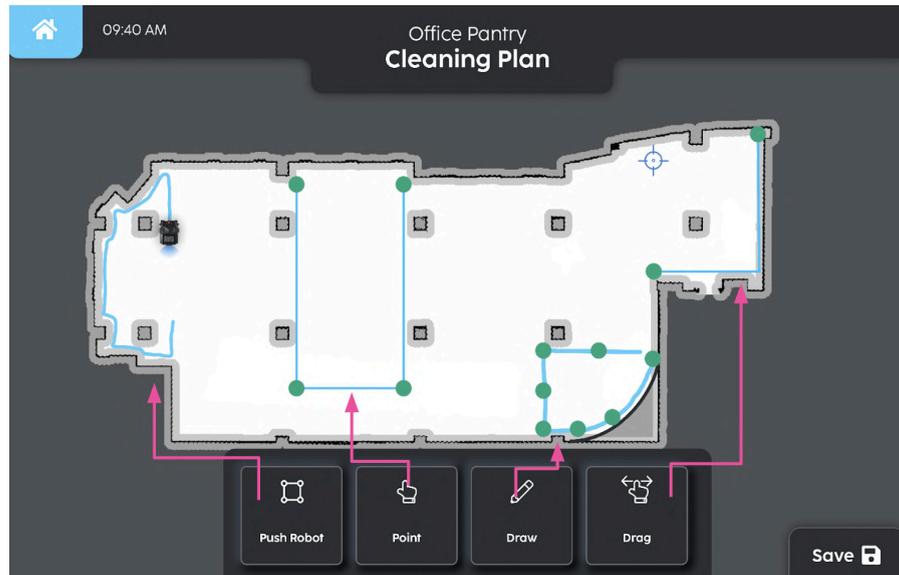
## CLEANING PLANS



FIGURE 5-5

1. **Route:** This is used to clean places that are narrow and irregular (e.g. corridor). The machine will clean over the specified route.

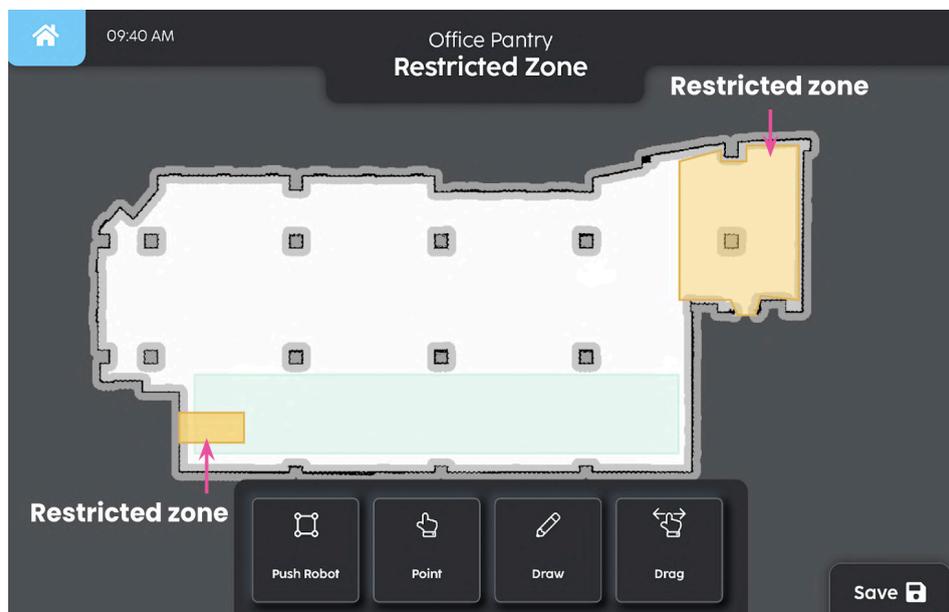
2. **Area:** This is used to clean large open areas (e.g. lobby, halls). By drawing a perimeter, the machine will clean everything within.
3. There are 4 ways to create route or area (**Fig.5-6**)



**FIGURE 5-6**

- a. **Push Robot:** User pushes the machine in the actual environment to create the zone
- b. **Point:** Click on the map and the lines will join up individual points to form the zone
- c. **Draw:** Freeform drawing that is good for irregular zones (e.g. curved walls)
- d. **Drag:** This is similar to "Point" but more precisely. User drags the map to position the crosshair at the desired point. Good for users with big fingers.

## RESTRICTED ZONES



**FIGURE 5-7**

1. It is important to create restricted zones for safety (**Fig. 5-7**)!
2. You can only create restricted zones (no route) and they can be created in the same way as cleaning zones.
3. Examples of danger zones to mark as restricted include (not exhaustive)

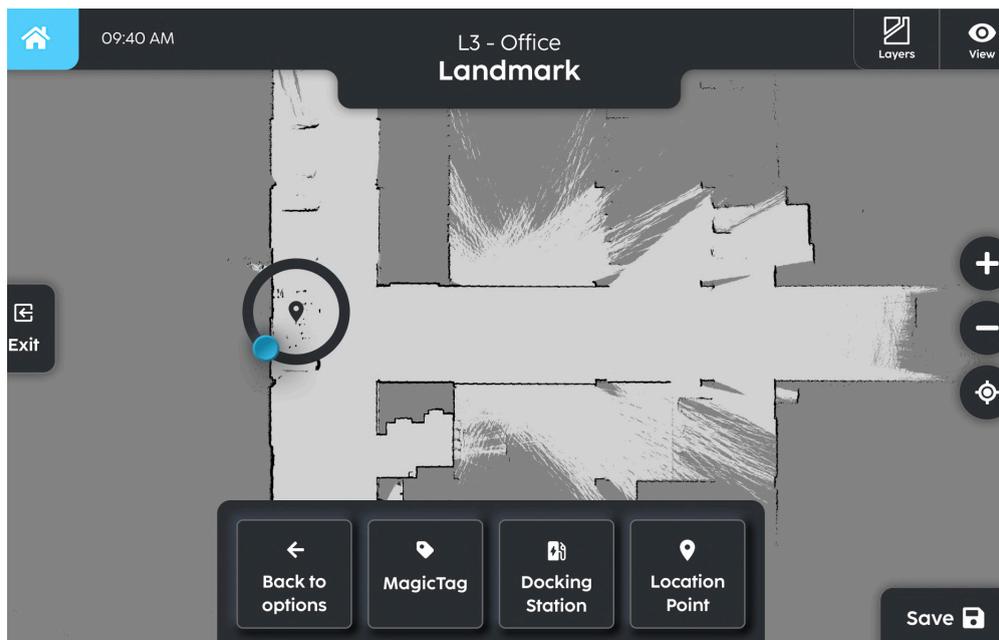
- a. Slope
  - b. Stairs / escalator / travelator
  - c. Cliff / Ledge / Drain
  - d. Glass doors / walls / plastic curtains
  - e. Loose cables / cable trunking
  - f. Tactile / uneven floors
  - g. Carpet
  - h. Low height obstacles < 5 cm
  - i. Overhang objects / protruding structures
4. Restricted zones can be outside of cleaning zones, inside or intersecting. Machines will not be allowed to go there autonomously.



## WARNING!

It is important to create restricted zones to ensure the safe operation of the machine. Even though the machine is equipped with a variety of safety sensors, it may not be able to avoid certain types of obstacles that are dangerous to the machine. Restricted zones ensure the safety of the machine and the environment as mentioned above in *Examples of danger zones to mark as restricted*.

## LANDMARKS

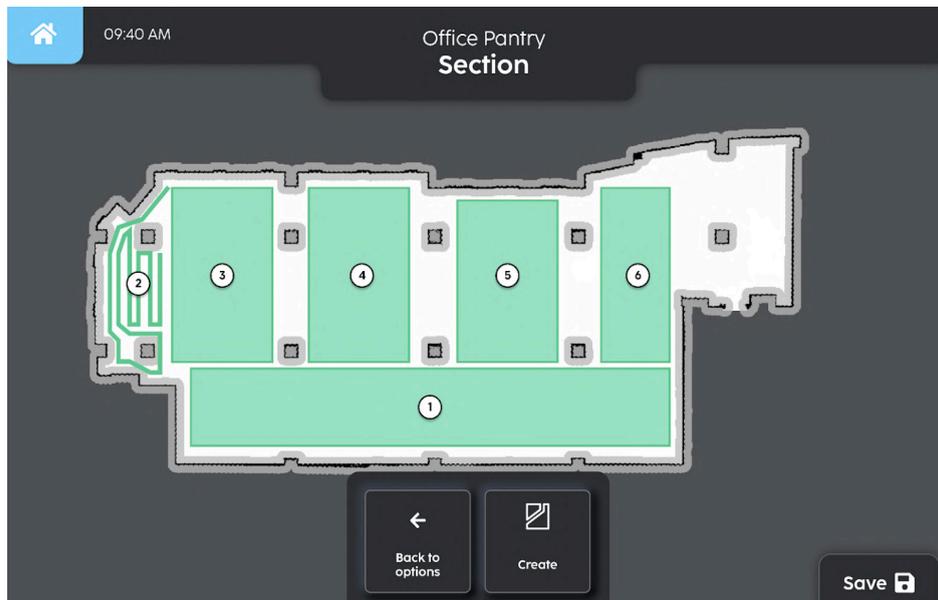


**FIGURE 5-8**

1. This is to mark out important points on the map. It can be used for
  - a. Localising machine if it is lost
  - b. Machine to return home after cleaning job
  - c. Command the machine to move from one place to another
  - d. MagicTags
  - e. Docking stations
2. Place a landmark in 2 steps:
  - a. Click the point on the map
  - b. Set the direction of the machine when it is at that point.
3. To set up a landmark using a MagicTag, refer to **ADD/CREATE NEW MAP's** Magic Mode.

4. To set up a landmark using a docking station, refer to SC25 Docking Station User Manual.
5. When a landmark is set up using a MagicTag or docking station, this will become the machine's home point.
6. There can only be one MagicTag/Docking station per map.
7. The same MagicTag/Docking station cannot be used on 2 different maps.

## SECTIONS



**FIGURE 5-9**

1. When you create a Section, you click and chain multiple cleaning routes/areas together and the machine will clean it in the sequence you clicked.
2. A map can have multiple Sections so users can run different cleaning plans depending on the time of the day/week.

**NOTE:** For more information on map editing contact Nilfisk Service Team.

## WORK ROBOT

### PRO MODE

The 'WORK' function is used to select the cleaning location and set cleaning settings for the location. From the home page, select 'WORK' (Fig. 6-1).



FIGURE 6-1

If the machine is not localised:

1. Set the machine's location on the map (Fig. 6-2) and select 'START' (Fig. 6-3).
2. Wait for the machine to scan its surroundings and confirm the position (Fig. 6-4).
3. If localisation fails, check that you are at the correct spot and select 'Try Again' (Fig. 6-5).

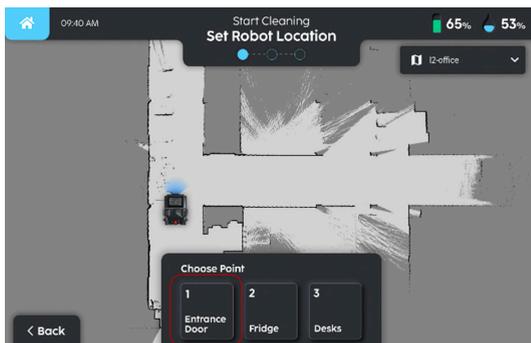


FIGURE 6-2

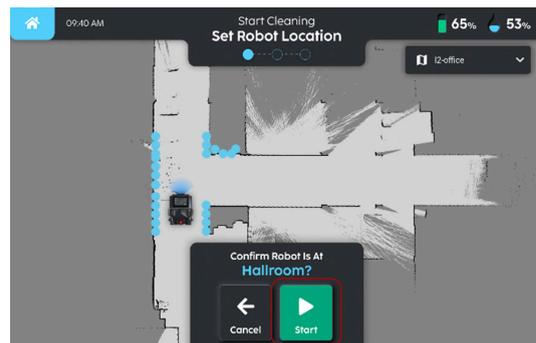


FIGURE 6-3

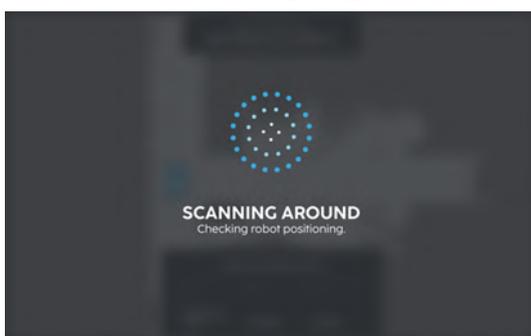


FIGURE 6-4

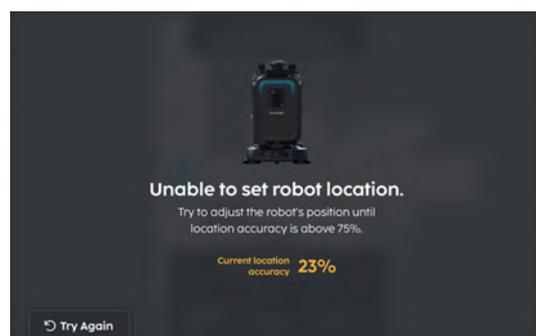


FIGURE 6-5

If machine is already localised:

1. Select the cleaning area and confirm the area (Fig. 6-6).
2. Before confirming the zone, you can adjust the cleaning settings (Fig. 6-7).

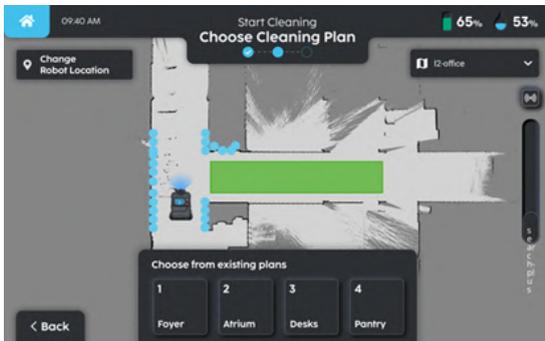


FIGURE 6-6



FIGURE 6-7

3. Once you click start, the machine will start the cleaning operation, you may pause or stop the cleaning at any time (Fig. 6-8).
4. If there are any issues during cleaning, the 'Cleaning Unsuccessful' screen will show (Fig. 6-9).
5. A cleaning report is generated after the cleaning mission is completed (Fig. 6-10).



FIGURE 6-8

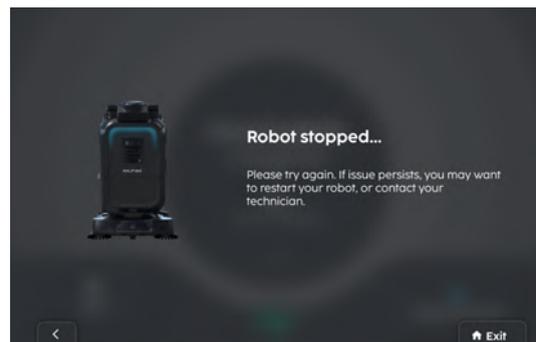


FIGURE 6-9

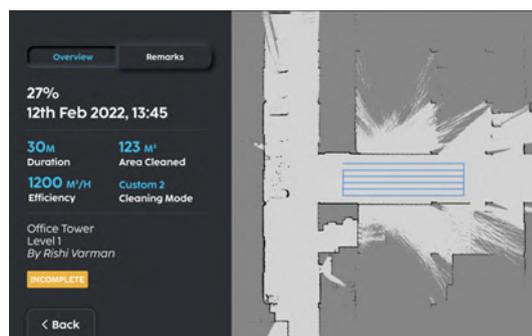


FIGURE 6-10

## MAGIC MODE

1. On the Home Page (**Fig. 6-11**), push the machine near the MagicTag (~30cm), so that the machine is facing it.
2. After the machine detects the MagicTag (**Fig. 6-12**), ensure that the MagicTag is within the camera frame on the touchscreen for it to be scanned (**Fig. 6-13**).
3. When MagicTag is successfully scanned, there will be a countdown of 10 seconds (**Fig. 6-14**) before the cleaning begins.
4. While the machine is cleaning (**Fig. 6-15**), the user can 'Pause' or 'Stop' the machine..
5. When cleaning is completed (**Fig. 6-16**), click on 'Robot Care' to watch the daily maintenance steps.



FIGURE 6-11



FIGURE 6-12



FIGURE 6-13

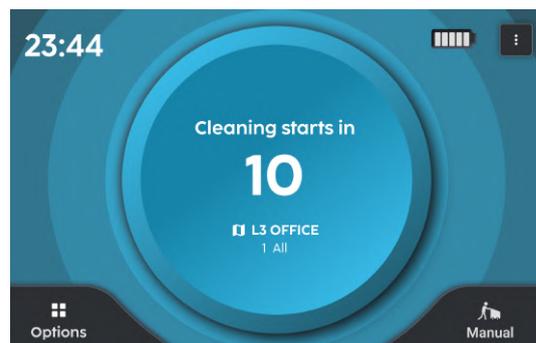


FIGURE 6-14

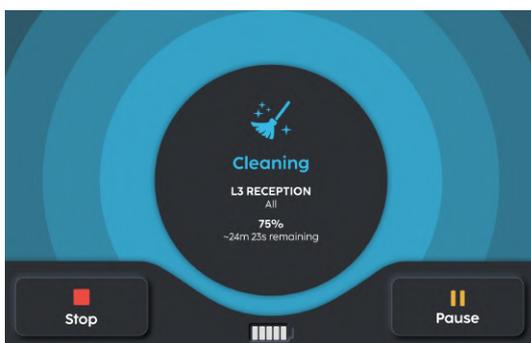


FIGURE 6-15

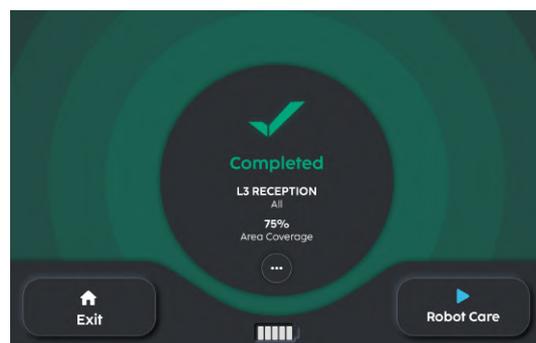


FIGURE 6-16

## JustClean™

JustClean™ is a quick way to demo cleaning for very simple, wide open, obstacle-free environments that only require a single cleaning zone.

1. On the Home Page for Pro Mode, select 'JustClean™' (**Fig. 6-17**).
2. Choose between 'Perimeter Mode' or 'Guide & Clean.'
  - a. Perimeter Mode - Push the machine along the perimeter of the cleaning space and it will clean everything within the perimeter (**Fig. 6-18**).
  - b. Guide & Clean Mode - Push the machine along the path to be cleaned and it will only clean that path (**Fig. 6-19**).
3. Once you are done, click 'Save Map' (**Fig. 6-20**).
4. Press 'Clean' and the machine will start the cleaning operation (**Fig. 6-21**).

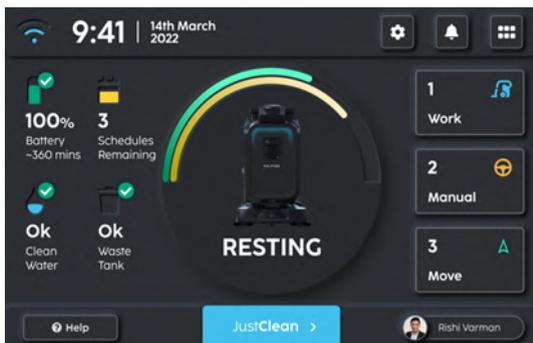


FIGURE 6-17

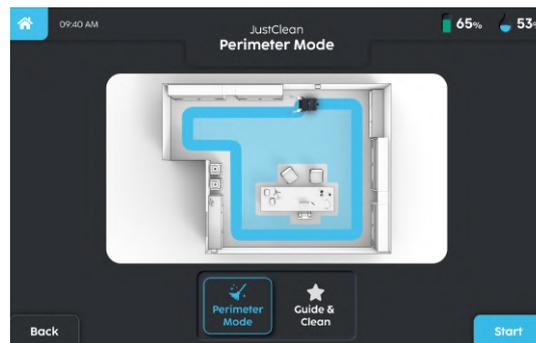


FIGURE 6-18



FIGURE 6-19

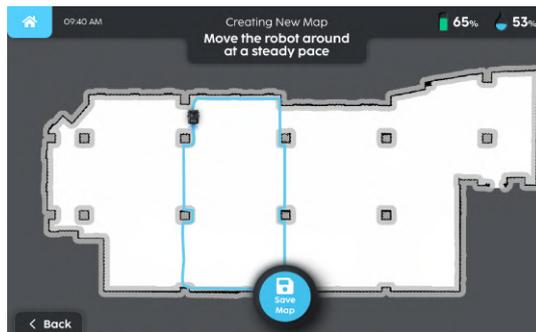


FIGURE 6-20

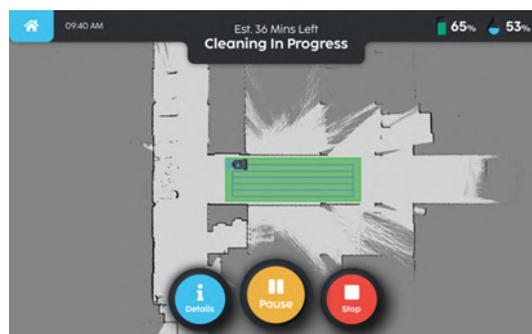


FIGURE 6-21

## MANUAL CLEAN

### WARNING!

- While on ramps or inclined, avoid sudden stops. Avoid abrupt sharp turns. Push slowly when going down ramps.
- Avoid leaving the machine unattended in Manual Mode without operator presence.
- Avoid pressing the Manual or Wheel unlock button while the machine is on a slope, first press the manual button while on level ground, then push it onto the slope if needed.

The following section instructs the user on how to use SC25 for manual cleaning.



FIGURE 6-22

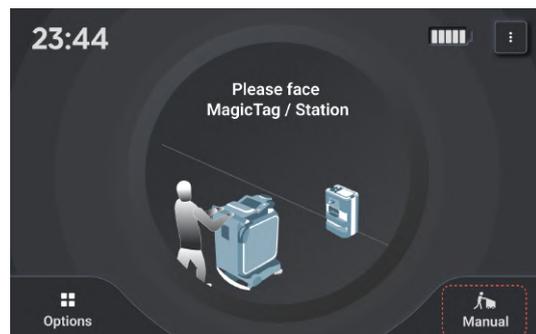


FIGURE 6-23

1. For Pro mode, select the 'MANUAL' button (**Fig. 6-22**) on the Pro mode home screen.
2. For Magic mode, select the 'Manual' button on the Magic mode home screen (**Fig. 6-23**)
3. Select cleaning presets: 'Custom,' 'Standard,' 'Max,' 'Eco' and 'Dry'.
4. For 'Custom,' the sliders (**Fig. 6-24**) control the Brush Pressure, Brush Speed, Suction, Squeegee Pressure, Spray interval, Chemical Concentration, Side Brush Speed, and Side Brush Pressure. Select your custom settings and select save.
5. After selecting your settings select the 'Start' button to start cleaning (**Fig. 6-25**).



FIGURE 6-24

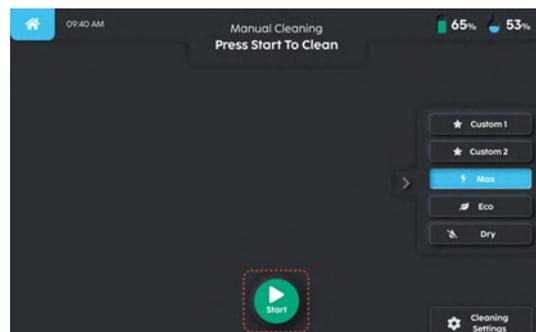


FIGURE 6-25

**NOTE:** When the display shows the machine's battery is below 5%, the operator should stop cleaning and charge the machine. Draining the machine's battery too much may cause damage to the battery or significantly shorten the lifetime of the battery.

## SCHEDULE CLEANING

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

1. From the Home Page click on More Options
2. Select the 'Schedule Cleaning' (Fig. 6-26).

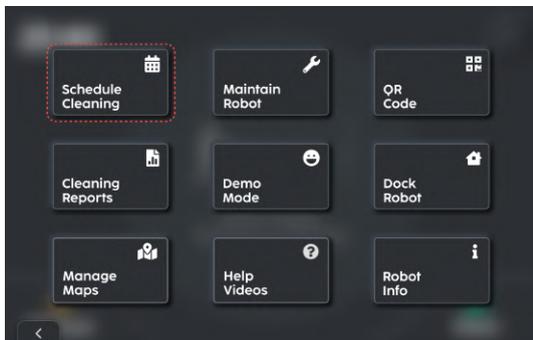


FIGURE 6-26

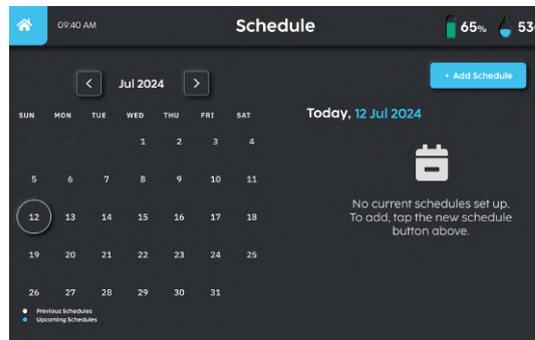


FIGURE 6-27

## ADD SCHEDULE

1. Click 'Add Schedule' to start adding the schedule (Fig. 6-27).
2. Click click 'Select Map' to choose a map to clean for this schedule (Fig. 6-28). Note that SC25 needs to have a map to create a cleaning schedule. To create a map, refer to '[ADD/CREATE NEW MAP](#)'.
3. Next, click 'Select Section' to choose a section to clean in this map for this schedule. At least one section is required for the schedule to be created. To create a section, refer to '5. Create Section' in '[MAP EDITOR](#)'.
4. Next, click 'Select Return Point' to choose a point that SC25 should return to when cleaning has been completed. To create a point, refer to '4. Landmarks' in '[MAP EDITOR](#)'.
5. Next, click 'Start Time' to select the time that the schedule should start. Once the time is selected, the estimated time that the scheduled cleaning will finish will be displayed under 'End Time(Est.)'.
6. To set up recurring cleaning, select on the days under 'Repeats'.

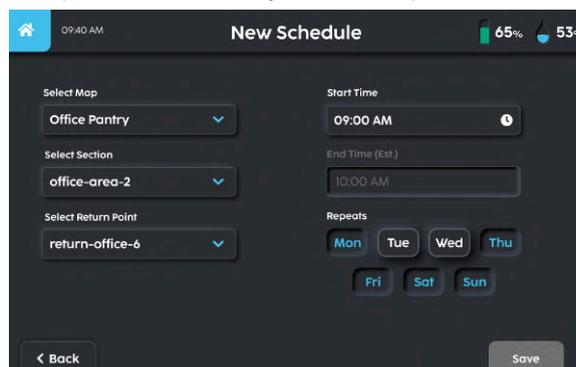


FIGURE 6-28

## SCHEDULE ALERTS

- 15 minutes before the start of a scheduled cleaning, SC25 will conduct some checks to ensure that it is ready to clean.
  - Localised to the map it is scheduled to clean
  - Sufficient battery level
  - Resting or docked
  - Sensors are working
  - Has sufficient water
  - Waste water tank is not full
  - Brush door is closed
  - Squeegee is attached
- If the machine is ready to clean, it will show a tick and the location of the schedule (**Fig. 6-29**).
- If the machine is not ready to clean, the checks will be displayed and the user should take action to ensure that the requirements are met (**Fig. 6-30**).

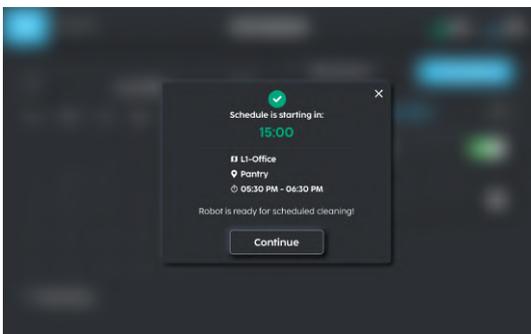


FIGURE 6-29

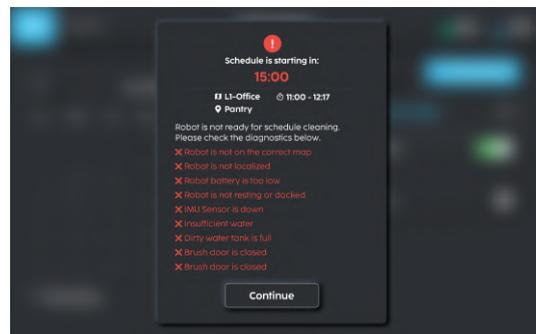
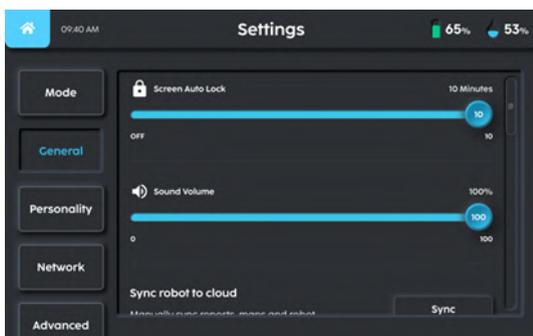


FIGURE 6-30

## SETTINGS

This section illustrates the available settings on the touchscreen. The Settings page allows the user to change general settings, language, network and reset robot.

1. Under the general settings page, the user can adjust screen brightness, sound volume and screen timeout settings (**Fig. 7-1**).
2. The user may change the language by clicking the language tab and scroll through the language window (**Fig. 7-2**).

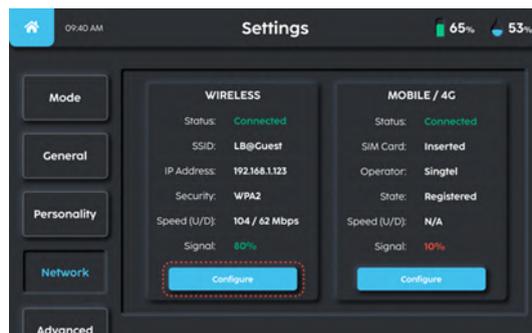


**FIGURE 7-1**



**FIGURE 7-2**

3. The user may select which device to configure the 'Configure' button (**Fig. 7-3**).



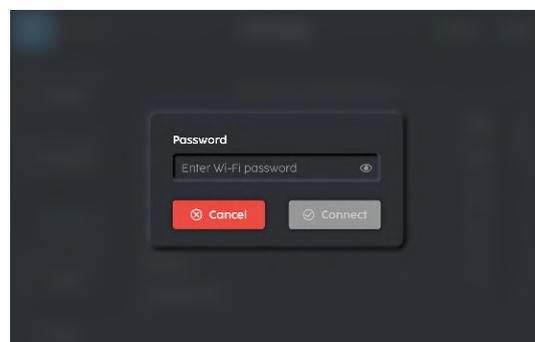
**FIGURE 7-3**

## WIFI

1. If the user selects to configure the wireless network (**Fig. 7-4**).
2. Enter the network password (**Fig 7-5**).



**FIGURE 7-4**



**FIGURE 7-5**

3. If the connection is successful (**Fig. 7-6**), network configuration is successful.

- Should the user fail to connect to configure the wireless network (**Fig. 7-7**), do check the network configuration settings. Otherwise contact the network administrator.

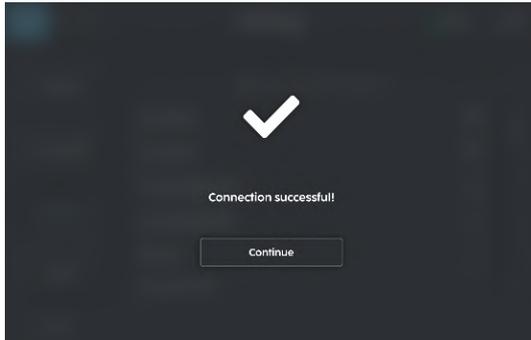


FIGURE 7-6

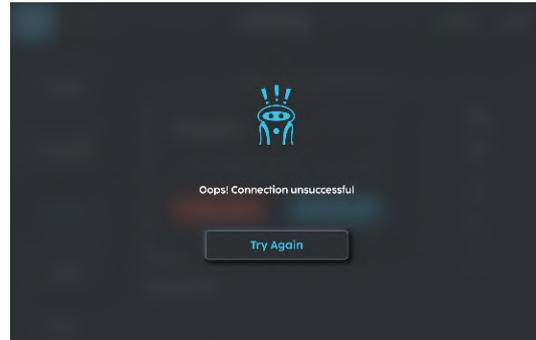


FIGURE 7-7

## MOBILE/4G

- The user may configure mobile/4G settings (**Fig. 7-8**).
- If SIM card is not inserted, please refer to **INSERTING SIM CARD (page 41)**.
- Make the necessary configuration changes and "Save" the configuration (**Fig. 7-9**).

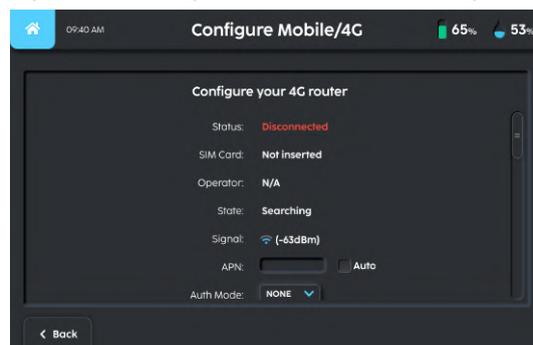


FIGURE 7-8

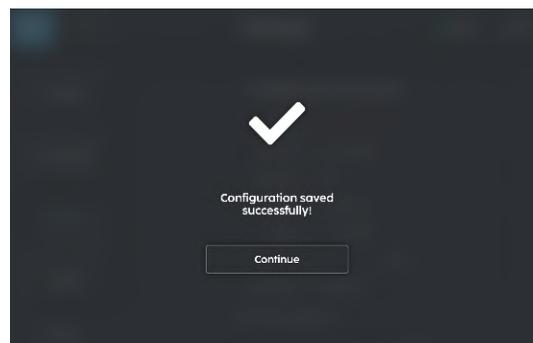


FIGURE 7-9

## INSERTING SIM CARD

- Remove the Left Side Panel (**26**) and locate the router in the machine (**Fig. 7-10**).
- When the router is located, using a small pin, push into the SIM card level beside the SIM tray. The SIM card tray will pop up (**Fig. 7-11**).
- Insert the SIM card onto the tray and slide the tray back into the router.

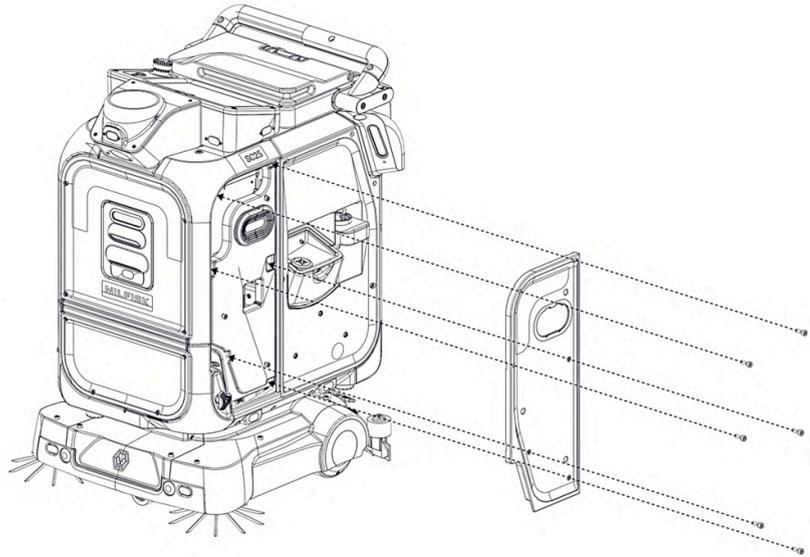


FIGURE 7-10

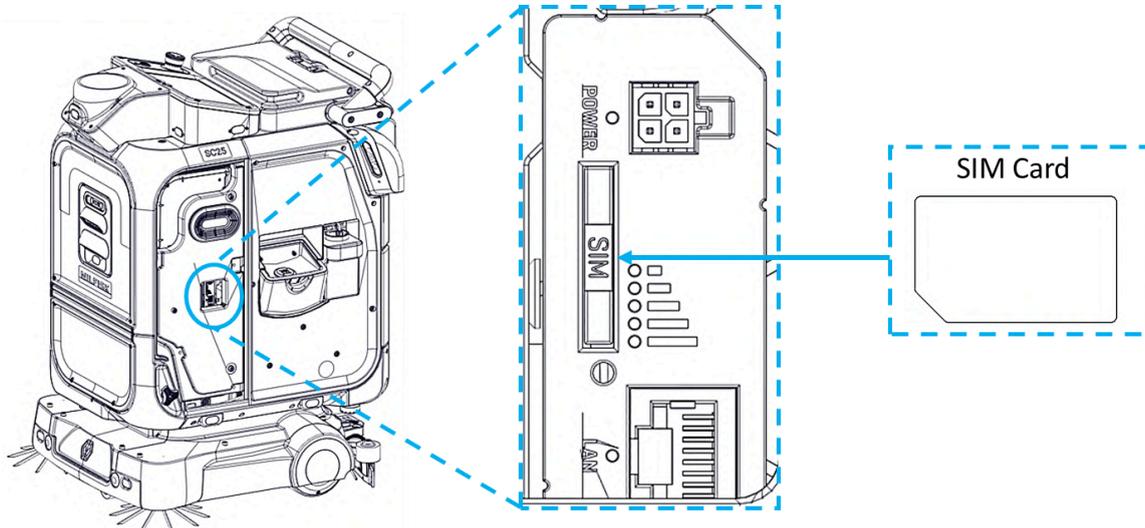


FIGURE 7-11

### RESET MACHINE

1. There are multiple different types of Reset functions.
2. Select the correct Reset function necessary (**Fig. 7-12**).
3. Once selected, enter the account PIN and reset (**Fig. 7-13**) (**Fig.7-14**).

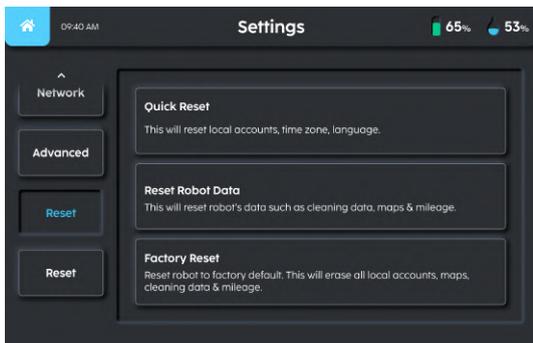


FIGURE 7-12

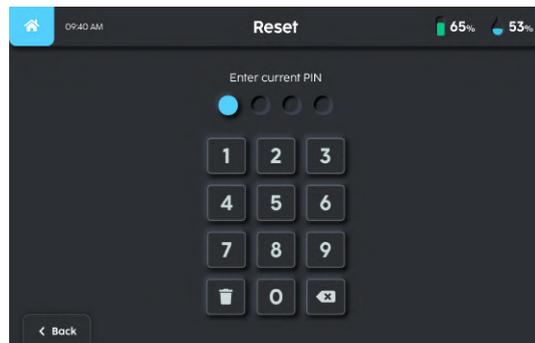


FIGURE 7-13

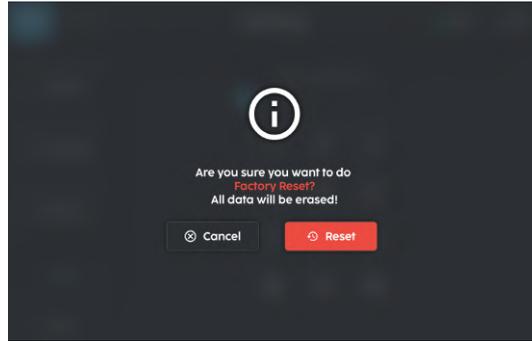


FIGURE 7-14

## REPORTS

A cleaning report is generated for every cleaning mission that the machine is sent for. The following section instructs the user on how to access reports:

1. Select 'More Options' on the top right corner of the touchscreen.
2. Select the 'Cleaning Report' button (Fig. 7-15).
3. Choose the range of dates and select the 'Reports' tab to get a list of individual cleaning reports cards (Fig. 7-16).
4. Tap on an individual cleaning report to see the details of that cleaning mission (Fig. 7-17).
5. A 'Timeline' tab will appear if there are any issues that the machine encountered during the mission (Fig. 7-18).

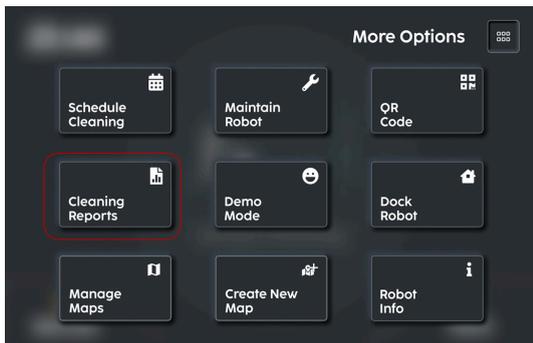


FIGURE 7-15

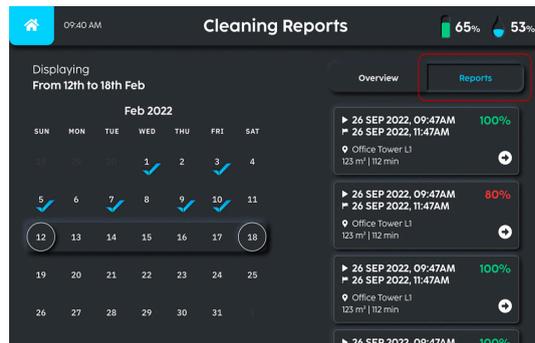


FIGURE 7-16

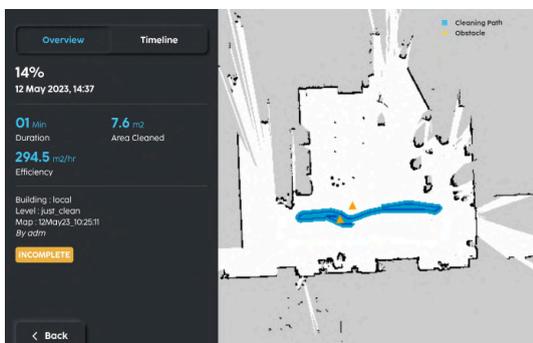


FIGURE 7-17

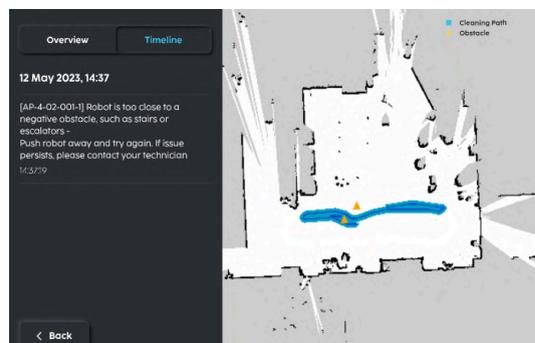


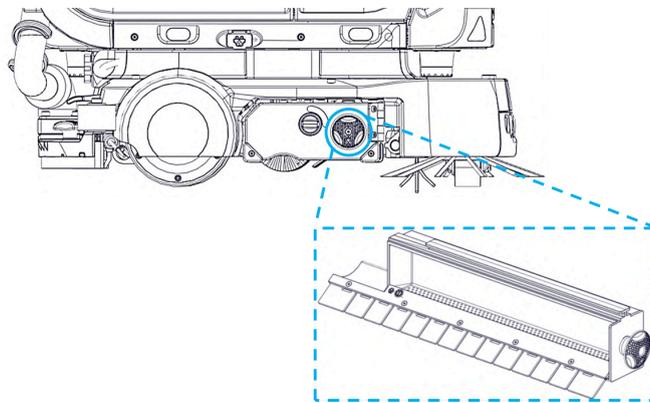
FIGURE 7-18

## BEFORE SC25 USE

Power on the machine as described in the section **POWERING ON/OFF THE SC25** to be able to move and operate it.

Follow this checklist of operations before beginning to clean with the machine:

1. Ensure that the clean water level is sufficient. Refer to **FILLING THE CLEAN WATER TANK**
2. Ensure that battery level is sufficient. Refer to **CHARGING THE BATTERY**
3. Ensure no fluid leaks after the robot is filled with water.
4. Ensure that the waste water tank is empty.
5. Ensure that the squeegee is clean of dirt.
6. Ensure squeegee blades are mounted properly with no kinks or tears.
7. Ensure that the debris tray is emptied and installed correctly in the brush deck (**Fig. 8.1**).
8. Ensure that the debris cage is emptied and installed correctly in the waste water tank (**25**).
9. Ensure that the brushes are mounted securely.
10. Ensure that the Tank Hatch (**18**) is closed.
11. Ensure that the manual drain hose's (**14**) lid is closed and secured.



**FIGURE 8-1**

## TRANSPORTING THE SC25 OUT OF STORAGE

1. Power on the machine by turning the Key Switch (**21**).
2. After the machine is on, press the Wheel Lock/Unlock button (**22**).
3. If the machine cannot be powered on, locate the Safety Levers and lift it up (**10**).

## CHECKING THE BATTERY LEVEL

1. Navigate to the Home Page on the touchscreen.
2. The battery level will indicate the current battery level of the machine (**Fig. 8-2**).



## FIGURE 8-2

### LOCALIZING THE MACHINE

# ⚠ CAUTION!

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

1. LiDAR's surfaces are dirty.
2. System failure.

The machine requires human assistance to ensure proper localization.

1. Navigate to "Manage Maps" under "More Options" on the touchscreen (**Fig. 8-3**).
2. Select the map that the machine will be operating on (**Fig. 8-4**) and click **Use Map** button (**Fig. 8-5**).



FIGURE 8-3

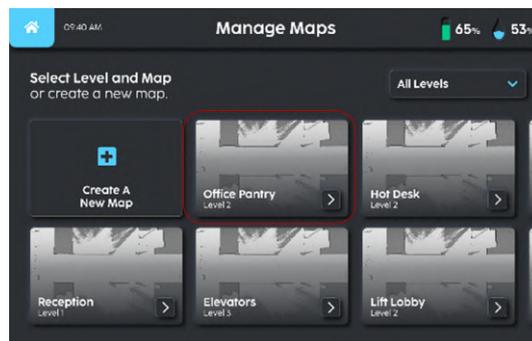


FIGURE 8-4

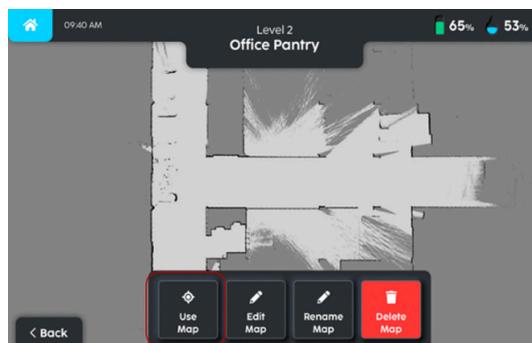


FIGURE 8-5

3. Once the machine has changed to the selected map. Proceed to localise the machine by selecting a **Custom Point** on the map or a predefined localisation point (required to manually move the machine to the predefined location) (**Fig.8-6**).
4. If using **Custom Point**, the operator is required to select a point of the map that the machine is currently positioned in (**Fig. 8-7**). Use the LiDAR points to ensure that the machine is properly positioned.
5. When satisfied, proceed to localise the machine with the **Set Location** button (**Fig. 8-8**).
6. When the machine has been localised, the machine is ready to be used (**Fig. 8-9**).

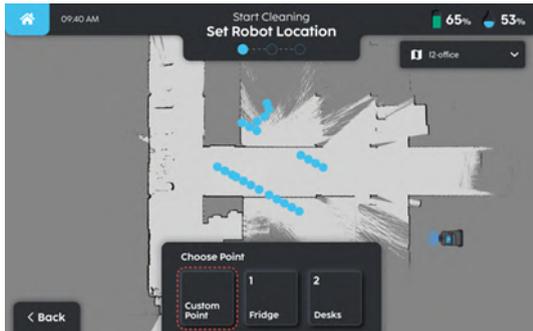


FIGURE 8-6

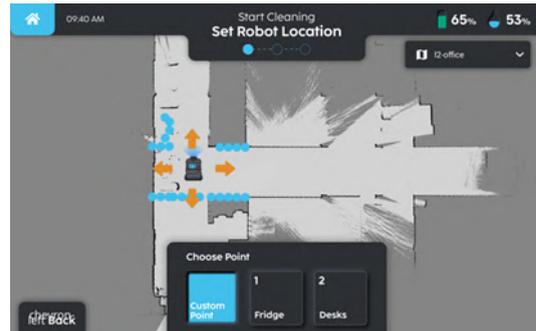


FIGURE 8-7

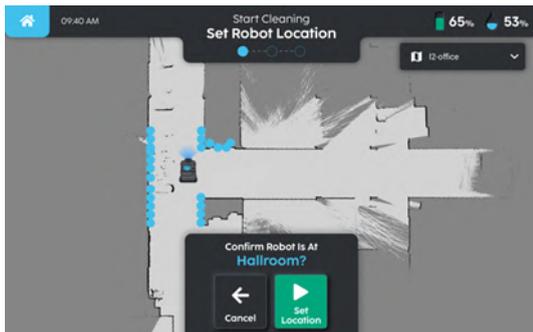


FIGURE 8-8

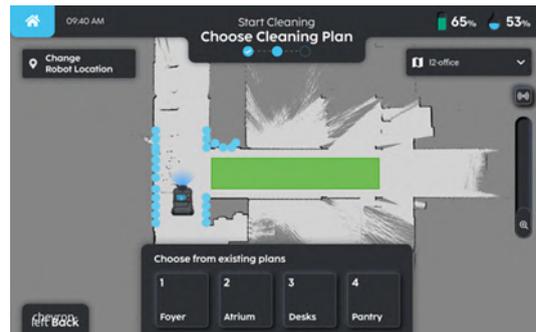


FIGURE 8-9

## VERIFICATION OF LOCALIZATION

1. To determine that the machine is localised properly, the LiDAR points (blue colour) will overlap the walls on the map (black lines) (**Fig. 8-10**).
2. If the LiDAR points do not match, the operator can repeat the localisation by following **LOCALIZING THE MACHINE** section.

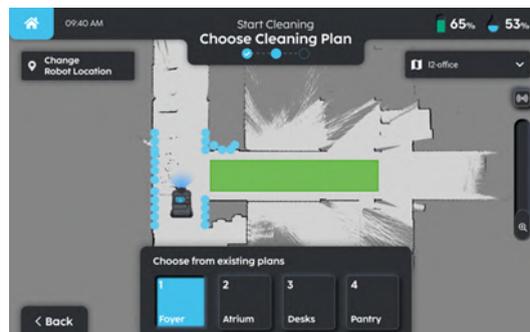


FIGURE 8-10

## FILLING THE CLEAN WATER TANK

1. Use the preferred method of filling up the tank via Manual Top-Up Tray (6) (**Fig. 8-11**).
2. Fill up Chemical Tank (7) if necessary (**Fig. 8-11**).

**NOTE:** Clean Water Tank has a capacity of 22 litres (5.8 US gallons). Avoid overfilling.

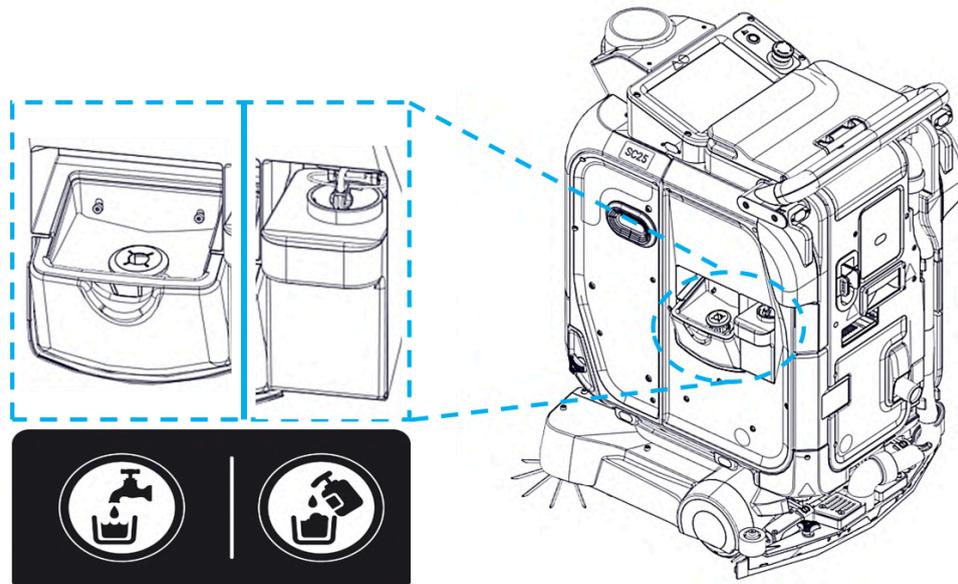


FIGURE 8-11

## FILLING THE CHEMICAL TANK



1. Prepare the chemical to put into the machine's chemical tank.
2. While standing beside the machine, pull the chemical tank upwards to remove it (held by magnet).
3. Remove the chemical tank straw in the chemical tank carefully.
4. Refill the chemical tank with a funnel.
5. Slot back the chemical tank straw in the chemical tank.
6. Place the chemical tank back into the machine, the magnet at the bottom of the chemical tank should automatically hold it into place.



## WARNING!

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

## OPERATION OF THE SC25

The machine can be operated through the touchscreen. Follow the procedure under **SC25 Touchscreen Setup** if necessary.



**WARNING!**

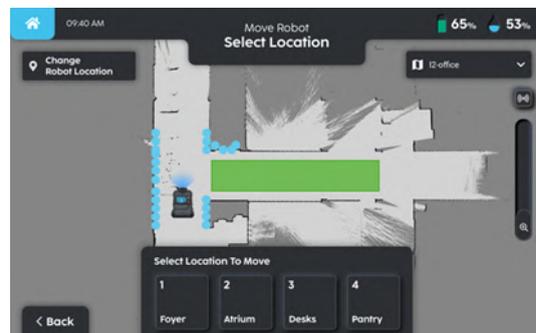
Do not operate the machine on gradients exceeding threshold. (Refer to marking on the machine)

### POINT TO POINT NAVIGATION

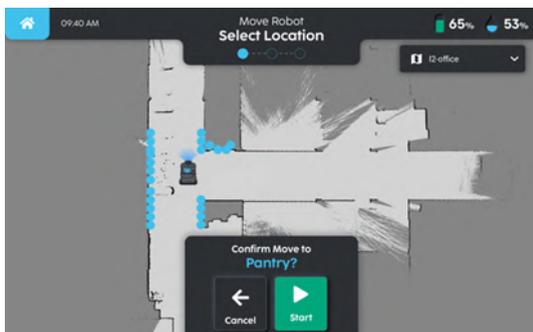
1. Select 'Move' option (**Fig. 9-1**). The Move page allows the user to select a preset point to move to from the bottom selection ribbon (ex. 'Hall room' in **Fig. 9-2**) or provide a custom location by clicking on the map.
2. Upon confirming the selection (**Fig. 9-3**), the machine will start to move. Pausing / Stopping of movement can be done by clicking on either the 'Pause' or 'Stop' button respectively (**Fig. 9-4**).
3. 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.
4. Upon completion of the mission the touchscreen will display a completion page (**Fig. 9-5**).



**FIGURE 9-1**



**FIGURE 9-2**



**FIGURE 9-3**



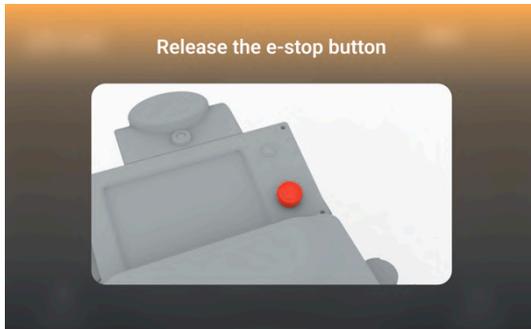
**FIGURE 9-4**



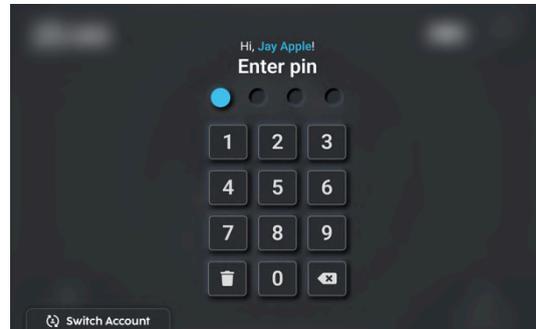
**FIGURE 9-5**

## EMERGENCY STOP PRESSED

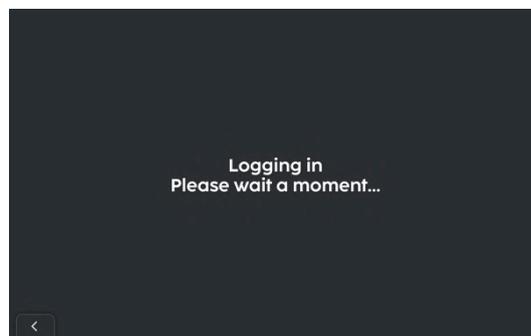
1. When the e-stop button is pressed, a yellow overlay will appear on the touchscreen (**Fig. 9-6**).
2. Once the e-stop button is released, enter the PIN for the account that is logged in (**Fig. 9-7**).
3. If there are more than 1 account, there is an option to switch between accounts.
4. The machine will reset when the correct PIN has been entered (**Fig. 9-8**).



**FIGURE 9-6**



**FIGURE 9-7**



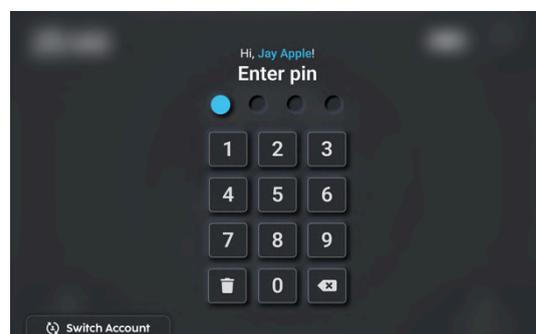
**FIGURE 9-8**

## SAFETY LEVER

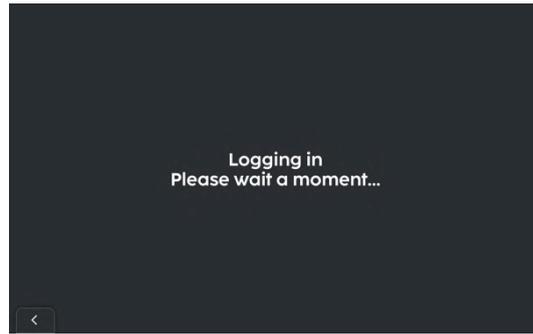
1. When at least one of the safety levers has been engaged (lifted up), an overlay will appear on the touchscreen. It will illustrate how to disengage it (**Fig. 9-9**).
2. Once it is disengaged, enter the PIN for the account that is logged in (**Fig. 9-10**).
3. If there are more than 1 account, there is an option to switch between accounts.
4. Robot will reset when the correct PIN has been entered (**Fig. 9-11**).



**FIGURE 9-9**



**FIGURE 9-10**



**FIGURE 9-11**

## AFTER USE

When finished using, it is recommended to maintain the machine. Follow this checklist:

- Ensure the machine is on a level surface
- Clean the side brushes
- Clean the main brush and debris tray
- Drain and clean the waste water tank
- Empty debris cage in the waste water tank
- Rinse squeegee & squeegee hose
- Drain clean water tank (optional)
- Charge the machine
- Power off the machine, remove the key
- Wipe down the outer skin of the machine, LiDAR covers and cameras with a dry and clean cloth.
- Clean sensors with a dry and clean microfibre cloth
- Check that the safety levers are engaged

The following sections illustrate these recommended maintenance operations after cleaning with the SC25. To begin:

1. Move the machine to an area with a tap or other water source.
2. Power off the machine as described in **POWERING ON/OFF THE SC25**.

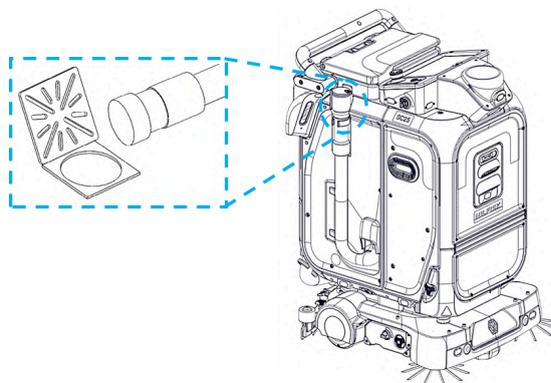
## DRAINING THE WASTE WATER TANK

### CAUTION!

When uncapping the hose, make sure that the outlet of the hose is pointing away from any electric appliances in the vicinity, because the water flows out from the drain hose at high speeds. Uncap the hose slowly so as to avoid water flowing in an unpredictable manner.

Follow the following steps on draining the waste water tank

1. If the waste water tank has fluid, use the Manual Drain Hose (**14**) 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 the tank is empty of fluid, refer to **CLEANING THE WASTE WATER TANK** section to remove leftover debris inside the tank.
4. Once cleaning is complete. Close cap on the manual drain hose.
5. Place the 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 (14) from the holding hooks provided (Fig. 10-2 (A)).
2. Point hose towards a drain or appointed disposal location and uncap the hose (Fig. 10-2 (B)).

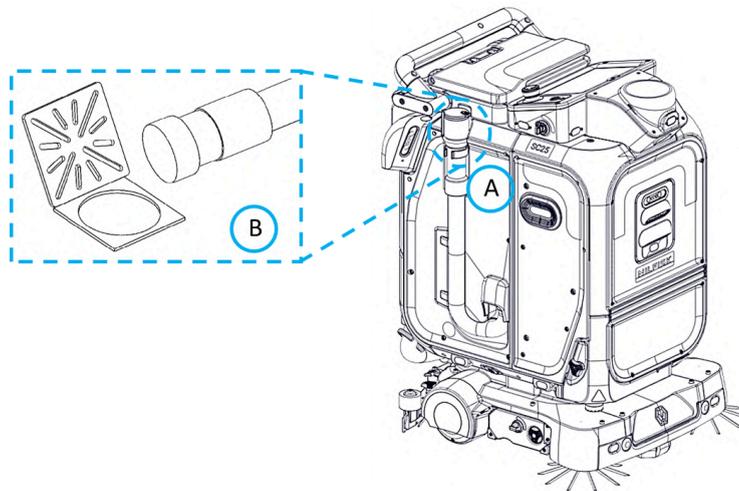


FIGURE 10-2

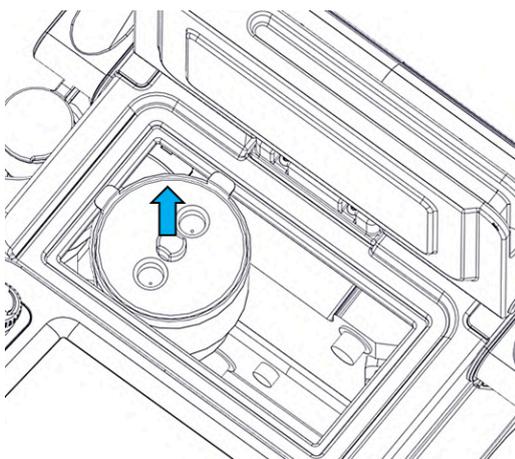


FIGURE 10-3

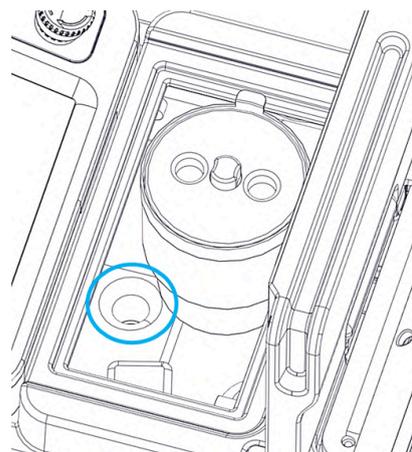


FIGURE 10-4

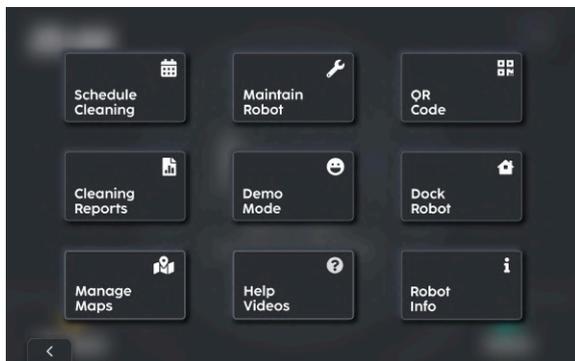
3. Remove the debris cage in the waste water tank (Fig. 10-3), empty and wash if necessary.
4. Inspect the waste water tank for debris. Flush it with clean water and use a sponge or scrub to clean grime off the walls.
5. Check for clogging at the drain hose fitting (Fig. 10-4) on the inside of the tank. Clean if necessary.
6. Replace the debris cage before placing back the hatch.
7. Close the lid tightly on the drain hose and mount it back onto the hooks provided.

## CAUTION!

1. When cleaning the waste water tank, do take note of the float switches inside, make sure not to damage the float switches with any sort of cleaning appliance or equipment.
2. Do not spray water down the pipe leading to the vacuum motor (snorkel).

### DRAINING THE CLEAN WATER TANK

1. Click "More Options" and select "Maintain Robot" (**Fig. 10-5**).
2. Click "Tools" (**Fig. 10-6**).
3. Click the "Drain" button under the "Drain Water Tank" option.
4. Ensure that the waste water hose is pointing to a drain, and open the hose cap.
5. Click on "Proceed" to start draining the clean water tank.



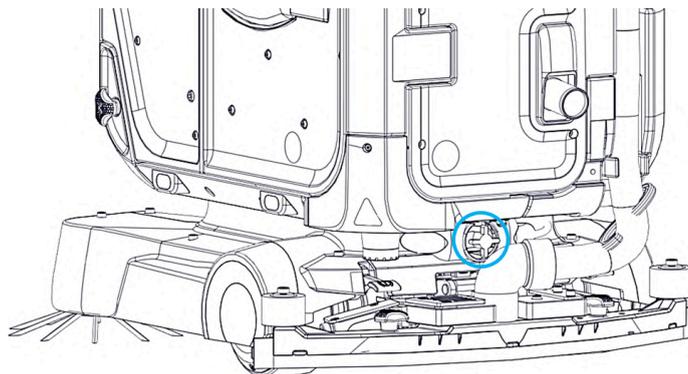
**FIGURE 10-5**



**FIGURE 10-6**

**NOTE:** If this feature is not available or the machine is not able to power on, move the machine manually and position the machine over or near a drain. Open the valve and wait until it finishes draining (**Fig. 10-7**).

**CAUTION:** Always close the valve after the machine has fully drained. Never leave the valve opened.



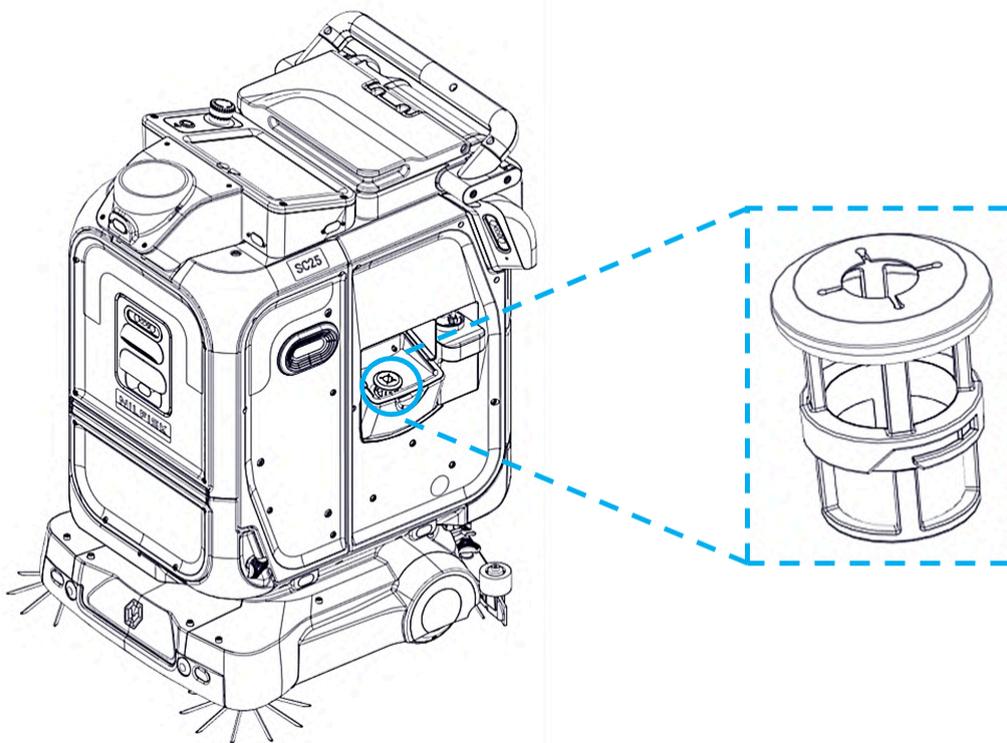
**FIGURE 10-7**

## FILLING UP THE CLEAN WATER TANK

1. Refer to **FILLING THE CLEAN WATER TANK (BEFORE SC25 USE)**.

## CLEANING THE MANUAL TOP-UP TRAY WATER FILTER

1. Unscrew the water filter from the top up tray (**Fig 10-8**).
2. Screw on the new filter until a “click” is heard or felt.



**FIGURE 10-8**

## CLEANING/REPLACING THE FLOOR TOOLS

Refer to below for instructions on cleaning the floor tools.

### REPLACING THE MAIN BRUSH

#### **CAUTION!**

Turn the machine OFF using the key switch **(21)** and remove the key, before changing the brush.

1. Located on the right side of the machine, twist the knob anti-clockwise to open the brush door (**Fig. 10-9**).
2. The main brush slot is located on the left side within the brush door.
3. Check the end of the brush with the female alignment and lock feature, then slide the brush into the brush slot (**Fig. 10-10**) (**Fig. 10-11**).
4. Close the brush door while supporting the brush with one hand to ensure that the female part of the brush sits on the male alignment and lock feature of the brush door.
5. Once the door is closed, secure it by twisting the knob clockwise.

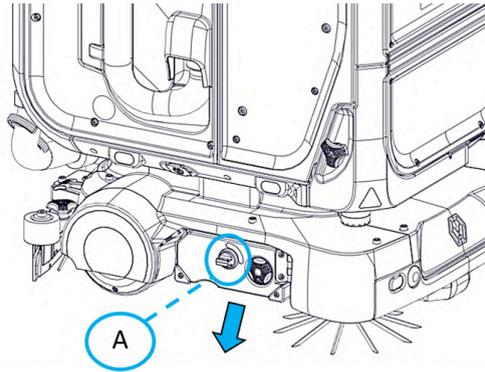


FIGURE 10-9

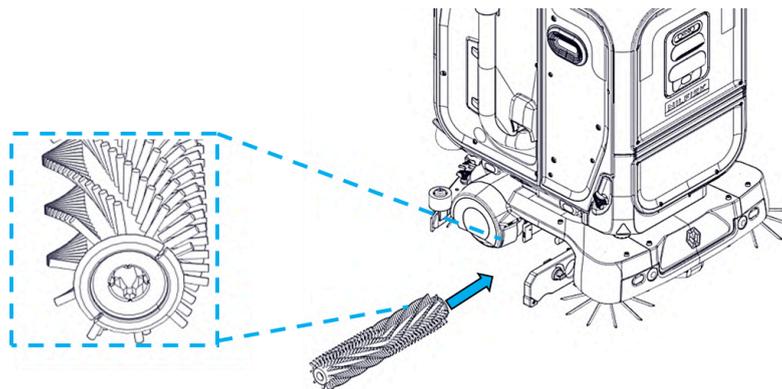


FIGURE 10-10

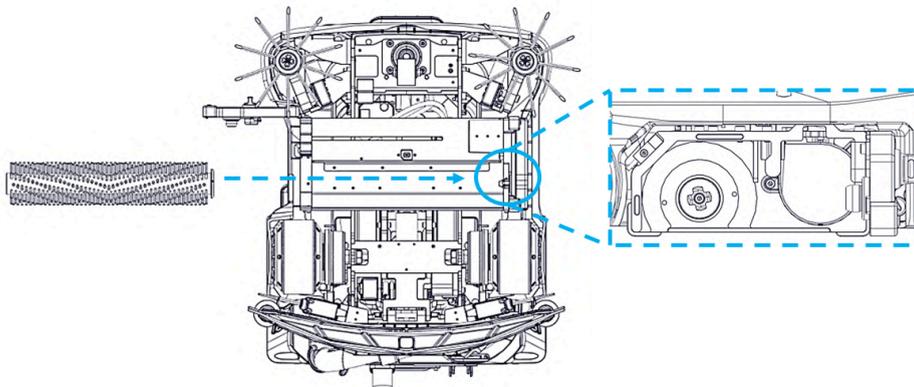


FIGURE 10-11

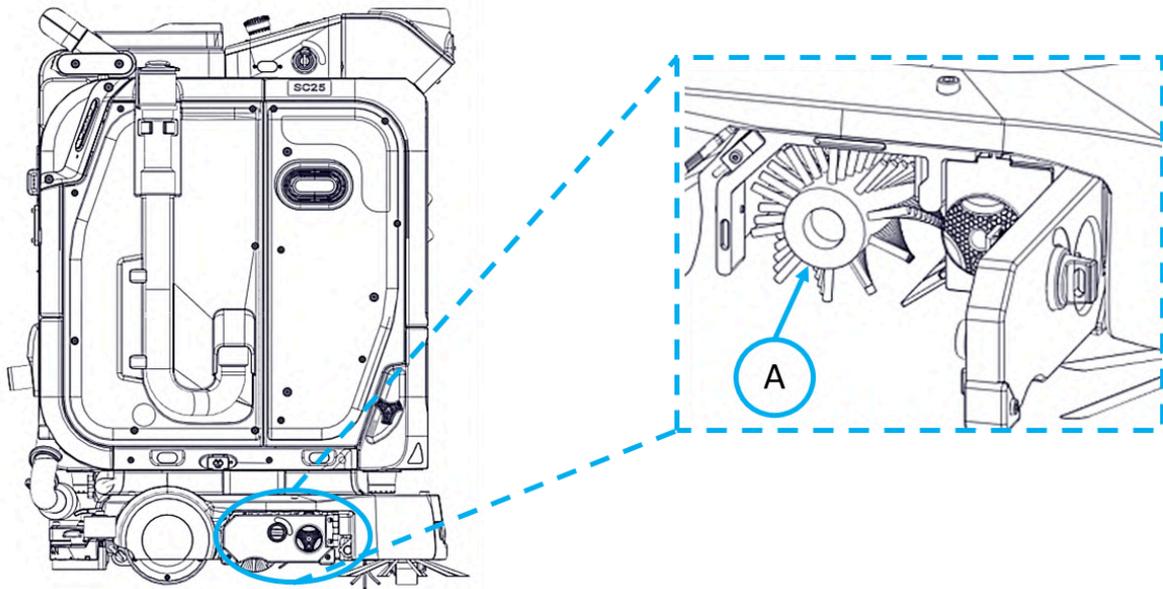
### CLEANING THE MAIN BRUSH

Keeping the brushes clean enables better cleaning of the floor and a longer lifespan of the brush floortool. Brushes are advised to be replaced every month or as needed to ensure best cleaning performance.

To detach the brushes for cleaning, follow these steps:

1. Located on the right of the machine, open the latch by turning the latch anti-clockwise to open the brush door.
2. Pull out the brush (**Fig. 10-12 (A)**) 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, reassemble them onto their clutches as described in the **REPLACING THE MAIN BRUSH** section.



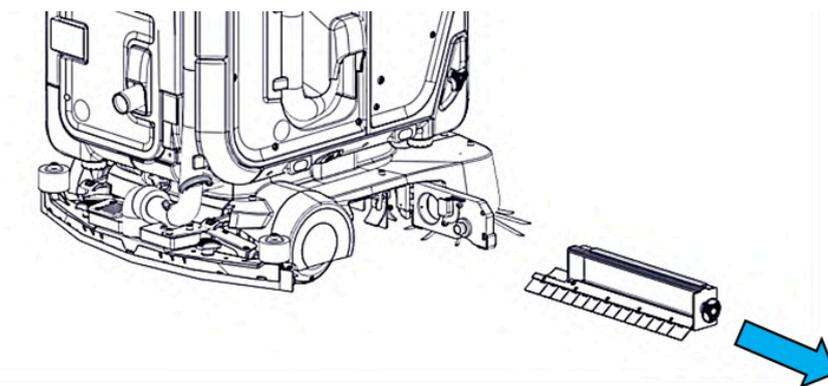
**FIGURE 10-12**

**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 to the length of the yellow bristle on the brush.

### CLEANING THE DEBRIS TRAY

Keeping the debris tray clean regularly enables better collection of debris during cleaning. To detach the debris tray from the machine 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 10-13**

1. Located on the right of the machine, twist the knob anti-clockwise, open the latch to open the brush door (**Fig. 10-13**).
2. The debris tray slot is located on the right side within the brush door.
3. Pull out the tray to empty it and clean under a stream of running water to remove impurities.
4. Inspect the tray for cracks and replace as necessary.

5. Reassemble it onto the machine by returning it back into the debris tray slot.
6. Once the brush door is closed, secure it by twisting the knob clockwise.

## CLEANING OF BRUSH DECK

**NOTE:** Push the robot to an area where the floor is easy to clean as cleaning of the brush deck will dirty the floor.

1. Open the brush deck door.
2. Remove the debris tray and main brush.
3. Use the manual cleaning brush to clean (**Fig. 10-14**) the underside of the brush deck (**Fig. 10-15**).
4. Put back the debris tray and main brush.
5. Close brush deck door.
6. Move the machine away from the debris.
7. Sweep up the debris.

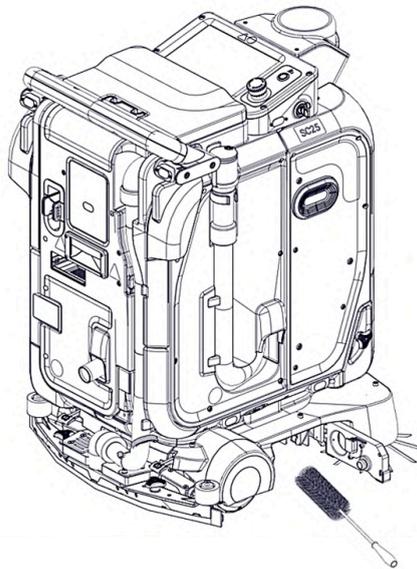


FIGURE 10-14

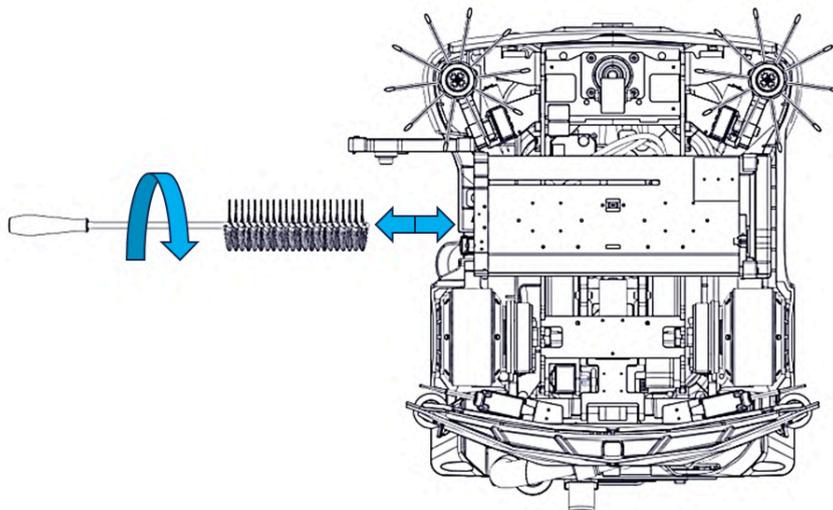
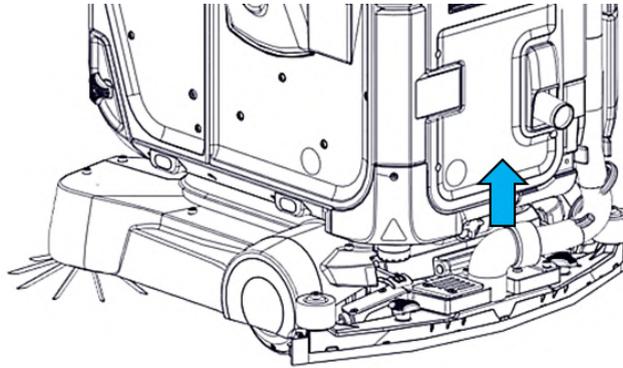


FIGURE 10-15

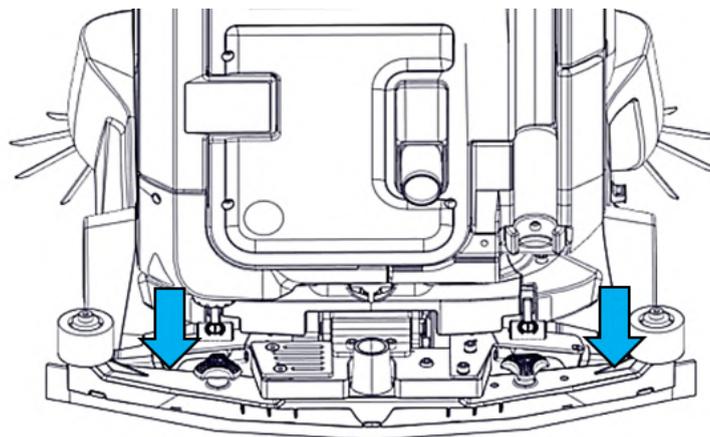
## CLEANING THE SQUEEGEE RUBBER

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

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:



**FIGURE 10-16**

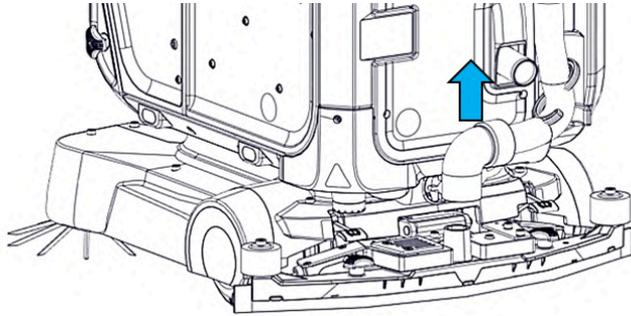


**FIGURE 10-17**

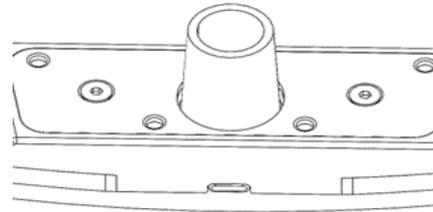
1. Remove the hose and push down on the squeegee assembly (**Fig. 10-16**) (**Fig. 10-17**).
2. Clean the rubber blades under a stream of running water or with a damp cloth to remove impurities.
3. Inspect the rubber blades for wear and tear and replace as necessary before reassembling. Refer to **REPLACING THE SQUEEGEE RUBBER** section to replace the rubber blades.
4. Reassemble 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 10-18**

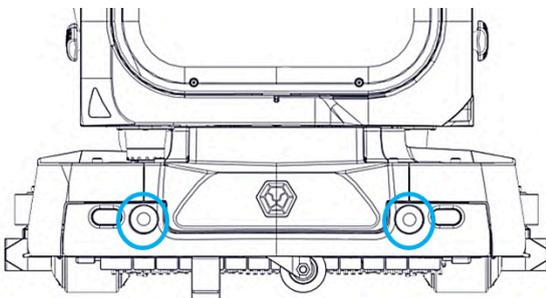


**FIGURE 10-19**

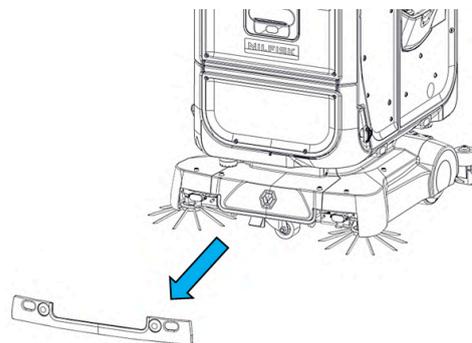
1. Remove the squeegee hose (**Fig. 10-18**), keeping a cloth handy in case of dirty water spillage.
2. Inspect the squeegee hose for debris and clean as necessary.
3. Clean the hose (**Fig. 10-19**) under a stream of running water. Check that the hose is free of debris after cleaning.
4. Reattach the squeegee hose to the machine.

## REPLACING THE SIDE BRUSHES

1. Press the 2 buttons fully to remove the lower front cover (**Fig. 10-20**) (**Fig. 10-21**).
2. Remove the old side brush by pressing firmly down on the core of the side brush (**Fig. 10-22**).
3. Align the core with the internal metal mating part on the robot, and then push the core of a new side brush upwards to lock, a click sound can be heard (**Fig. 10-23**).
4. Do the same for the other side brush.
5. Replace the cover by pushing the cover firmly back such that the 2 mating metal rods lock into the buttons (**Fig. 10-24**).
6. (if it does not go in, depress the 2 buttons and try again)



**FIGURE 10-20**



**FIGURE 10-21**

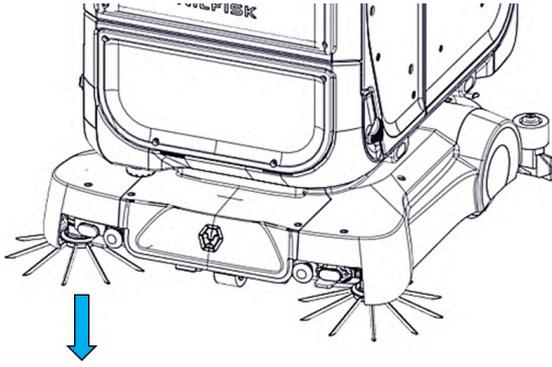


FIGURE 10-22

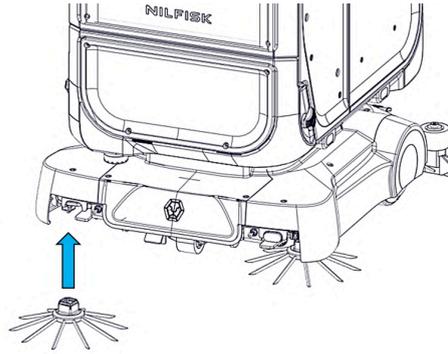


FIGURE 10-23

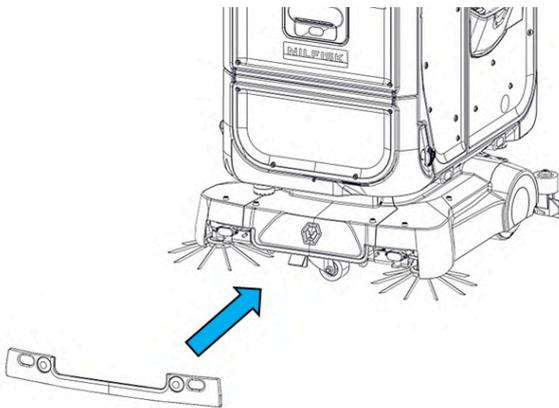


FIGURE 10-24

### CHANGING THE HEPA FILTER

1. Pull out the HEPA filter holder (29) (Fig. 10-25).
2. Remove the filter from the holder (Fig. 10-27).
3. Replace the filter in the holder.
4. Push the holder into the slot (Fig. 10-26).

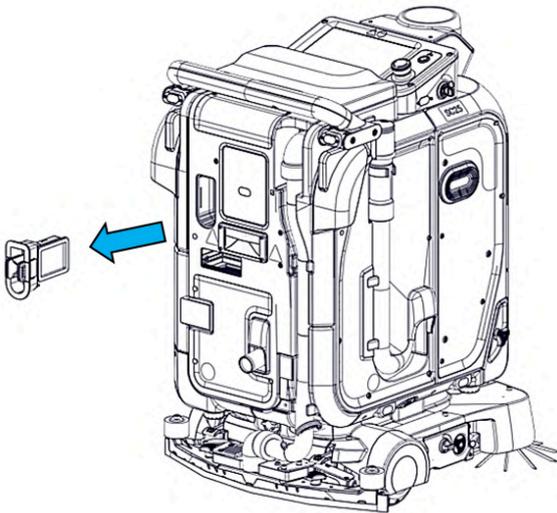


FIGURE 10-25

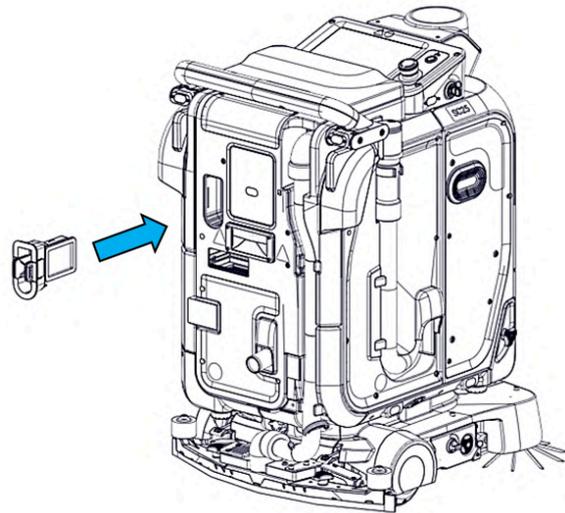
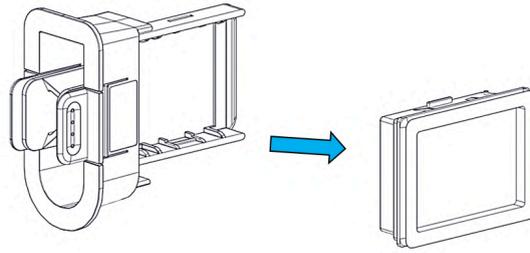


FIGURE 10-26

**FIGURE 10-27**

## WIPING DOWN THE SC25

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

## STORAGE IN COLD CLIMATES

Where a machine is used in environments where frosting may occur, the machine 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 machine shall be stored in a dry and warm place indoors.

## MAINTENANCE SCHEDULE

This is the recommended maintenance schedule

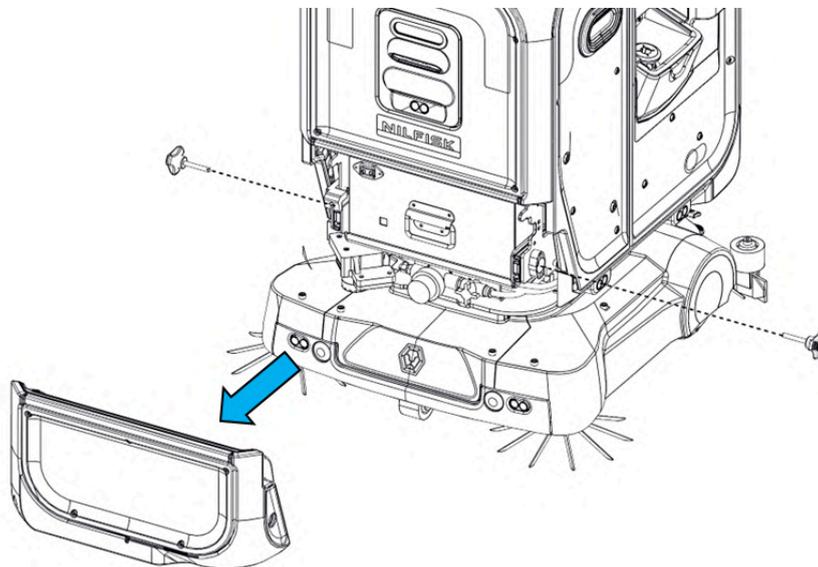
| Operation  | Daily | Weekly | 1-3 Months |
|--|-------|--------|------------|
| Drain Waste Water Tank   | ✓     |        |            |
| Rinse Squeegee   | ✓     |        |            |
| Clean Main and Side Brushes  | ✓     |        |            |
| Empty Debris Tray  | ✓     |        |            |
| Wipe Down Machine  | ✓     |        |            |
| Drain And Rinse Waste Water Tank                                   | ✓     |        |            |
| Charge Machine   | ✓     |        |            |
| Fill Up Clean Water Tank   | ✓     |        |            |
| Rinse Squeegee Hose  | ✓     |        |            |
| Clean Debris Cage  | ✓     |        |            |
| Clean Brush Deck   |       | ✓      |            |
| Replace or Clean Side Top-Up Filter                                |       | ✓      |            |
| Clean Sensors  |       | ✓      |            |
| Check Waste Water Discharge Hose<br>(Manual Drain Hose) For Chokes |       | ✓      |            |
| Replace Brushes  |       |        | ✓          |
| Clean or Replace Clean Water Filter                                |       |        | ✓          |
| Clean or Replace HEPA Filter                                       |       |        | ✓          |
| Clean or Replace the Debris Tray<br>Rubber                         |       |        | ✓          |
| Replace Squeegee Rubber  |       |        | ✓          |
| Clean Castor and Main Traction<br>Wheel                            |       |        | (1)        |

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

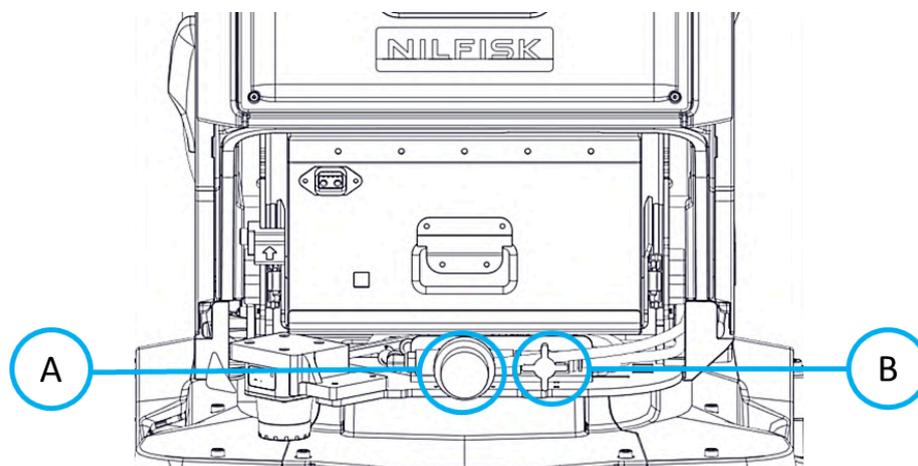
## CHANGING/CLEANING THE WATER FILTER

### CAUTION!

- Water may drip down from the water filter when unscrewing the water filter even with the clean water tank valve closed. This is normal, however, do not place any object prone to water damage directly underneath the water filter during this process.
  - Recommend placing a dry cloth directly underneath the water filter to absorb any residual water that drips.
1. Switch off the machine before performing any form of periodic maintenance.
  2. If any water leakage is seen from the water tank or tubing, contact the authorised distributor immediately.
  3. Remove the bottom front cover by unscrewing the 2 blue knobs until it can be removed as shown **(Fig.11-1)**.
  4. Close the clean water tank valve **(Fig. 10-2 (B))**.



**FIGURE 11-1**



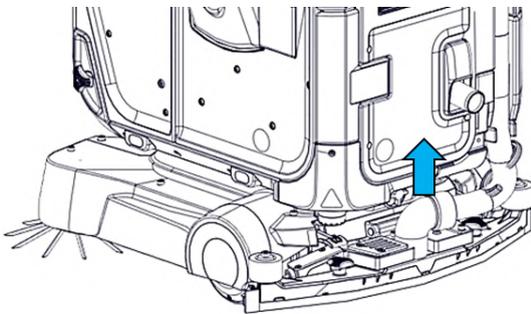
**FIGURE 11-2**

5. Unscrew the water filter cap (**Fig. 11-2 (A)**).
6. Remove the water filter mesh from the cap.
7. Clean any debris stuck onto the water filter mesh with a small brush under running water. OR replace the filter water filter mesh with a new one.
8. Insert the water filter mesh back into the cap and press firmly
9. Screw the water filter cap back onto the water filter firmly
10. Open the clean water tank valve.
11. Install the front cover.

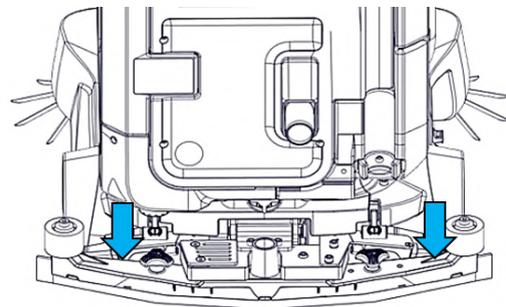
## REPLACING THE SQUEEGEE RUBBER

The SC25 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 periods of use could result in shortening of the rubber. To replace use the following instructions:

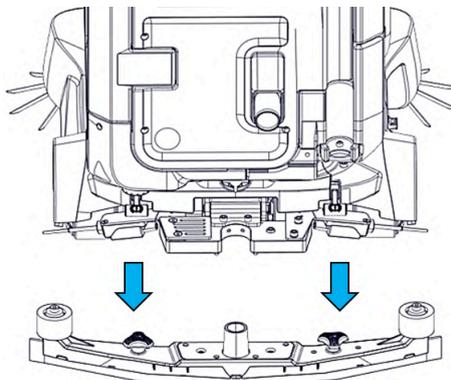
1. Pull up the hose of the squeegee and move it aside (**Fig. 11-3**).



**FIGURE 11-3**



**FIGURE 11-4**



**FIGURE 11-5**

2. Remove the hose and push down on the squeegee assembly (**Fig. 11-4**).
3. Place assembly on a flat surface (**Fig. 11-5**).
4. Unfasten the 2 knobs on the squeegee assembly (**Fig. 11-6**) (**Fig. 11-7**).



FIGURE 11-6



FIGURE 11-7



FIGURE 11-8



FIGURE 11-9

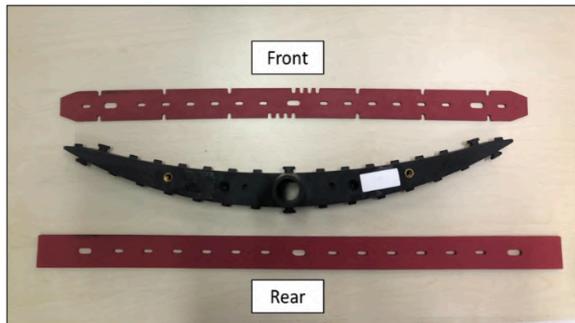


FIGURE 11-10

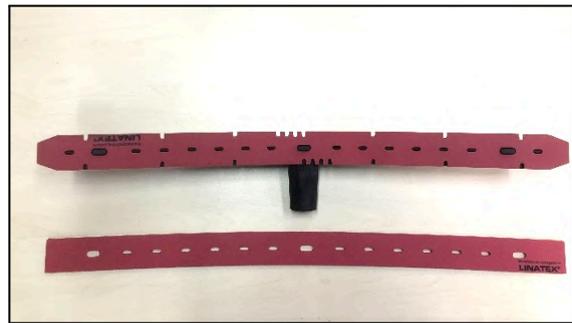


FIGURE 11-11

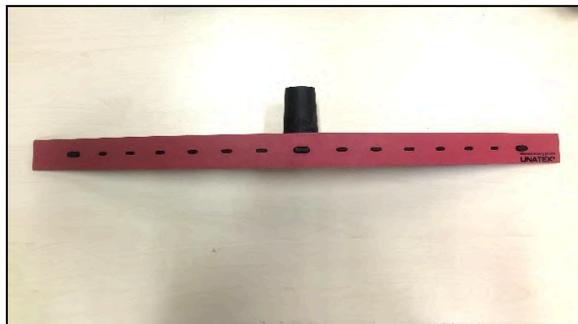


FIGURE 11-12



FIGURE 11-13

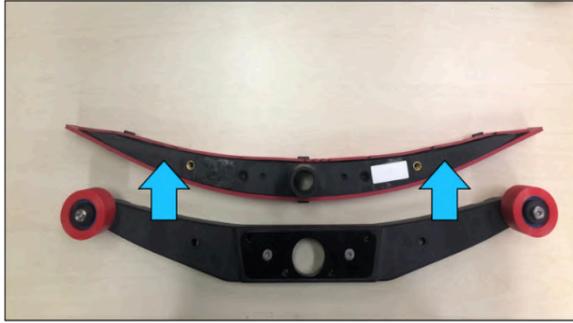


FIGURE 11-14

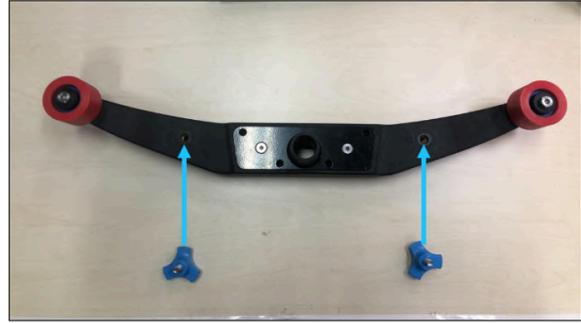


FIGURE 11-15



FIGURE 11-16

5. Remove the squeegee housing from the rubber cartridge (**Fig. 11-8**).
  6. Remove the rubber blades (**Fig. 11-9**).
  7. Attach new rubber blades to the front and back of the rubber cartridge, aligning the rubber slots with the protrusions provided (**Fig. 11-10**)(**Fig. 11-11**)(**Fig. 11-12**)(**Fig. 11-13**).
- NOTE:** Front rubber has the edges angled.
8. Align the rubber cartridge to the squeegee housing and put it in (**Fig. 11-14**).
  9. Screw on the 2 knobs back on the squeegee (**Fig. 11-15**) (**Fig. 11-16**).

## MAINTAINING THE CLEAN WATER INLET WATER FILTER

1. Remove the bottom front cover by unscrewing the 2 blue knobs until it can be removed as shown (**Fig. 11-17**).
2. Close the clean water tank valve (**Fig. 11-18 (B)**).
3. Unscrew the water filter (**Fig 11-18 (A)**), clean it and screw on.
4. Install the front cover back.

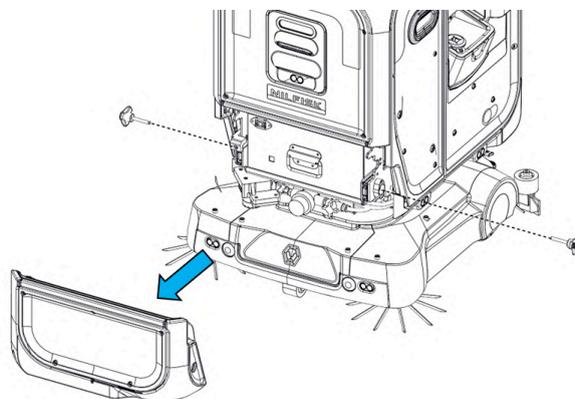


FIGURE 11-17

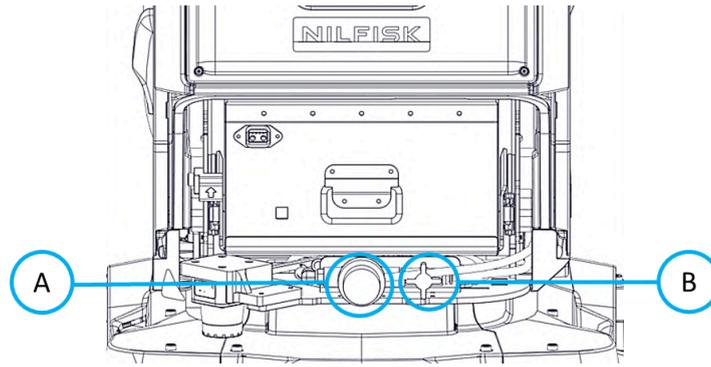


FIGURE 11-18

## CONSUMABLES LIST

Replacement of floortool and parts can be purchased as consumables and order codes are listed below:

| Code         | Quantity | Notes  |
|--------------|----------|--|
| SQG-0018-C0  | 1        | Front Squeegee Rubber (Polyurethane)                             |
| SQG-0019-C0  | 1        | Rear Squeegee Rubber (Polyurethane)                              |
| SQG-0020-C0  | 1        | Front Squeegee Rubber (Natural Rubber)                           |
| SQG-0021-C0  | 1        | Rear Squeegee Rubber (Natural Rubber)                            |
| BRS-0040-A0  | 1        | Side Brush OD 210mm  |
| RBR-0081-A0  | 1        | Debris Tray rubber flap  |
| BRS-0044-A0  | 1        | Blue Bristle Brush - Soft, 381.5mm, Cylindrical Brush, 0.15mm    |
| SPT-00055    | 1        | Black Bristle Brush - Medium, 381.5mm, Cylindrical Brush, 0.2mm  |
| BRS-0042-A0  | 1        | Grey Bristle Brush - Hard, 381.5mm, Cylindrical Brush, 500# Grit |
| PDT-0033-C1  | 1        | MagicTag™ (wall mounted)   |
| HOS-0060-A0  | 1        | Manual Drain hose  |
| HOS-0061-A0  | 1        | Squeegee hose  |
| SPT-00061    | 1        | HEPA filter assembly   |
| FLT-0015-C0  | 1        | Clean water filter (mesh only)                                   |
| ASM-00413-01 | 1        | Manual Top-Up tray filter/ Side Top-up Tray Filter ASM           |

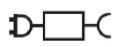
## UPDATING THE MAPS

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

## CHARGING THE BATTERY

**NOTE:** Machine does not come with an on-board charger. Please use the charger provided by the authorised distributor to charge the batteries on the machine.

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



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



## WARNING!

- Only use the battery charger provided by an authorised distributor.
- The machine charger should not share an AC plug point with any other devices.
- Refer to **DISPOSAL** information for machine disposal and battery.
- Normal temperature range for charging the battery is 0°C - 45°C.
- If the battery is not charging or the charger surface becomes hot while charging, contact the authorised distributor immediately. The actions following these must be carried out by qualified personnel.
- Charge batteries in a well-ventilated area.

**NOTE:** A typical full charge cycle of an empty battery takes approximately 2 hours 30 minutes

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

## MANUAL CHARGE

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

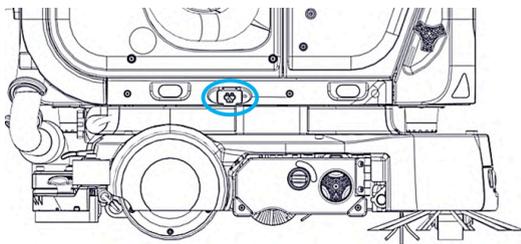


FIGURE 12-1

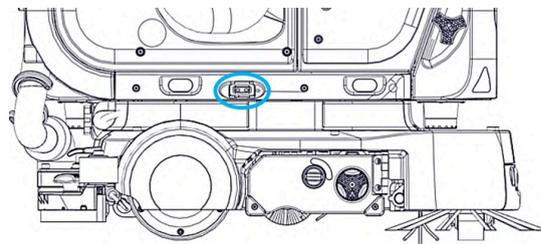


FIGURE 12-2

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

**NOTE:** Never leave the rubber cover open. Always push the rubber cover back into the manual charging port for ingress protection after fully charging the robot.

**FIGURE 12-3**

3. Connect the battery charger into 240V / 110 V AC mains.
4. Plug the charger cable into the charging port. 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.

## CHARGING WITH DOCKING STATION

**NOTE:** The Docking Station needs to be registered on the machine map for autonomous charging to work. For setup instruction refer to the SC25 Docking Station User Manual.

**NOTE:** Machine needs to be localised.



## CAUTION!

- Even though the machine can operate autonomously with the docking station, the docking station does not remove the safety precautions that should be taken as mentioned in CHARGING THE BATTERY while charging the machine.
  - Do not charge the machine through the manual charging port while the machine is already charging at the docking station. The battery will not be charged faster.
1. To charge the machine with a docking station select 'More Options' on the Home Page.
  2. Select 'Dock Robot' (**Fig. 12-4**).
  3. Select the preferred method of docking the machine via Automatic or Manual Mode (**Fig. 12-5**).

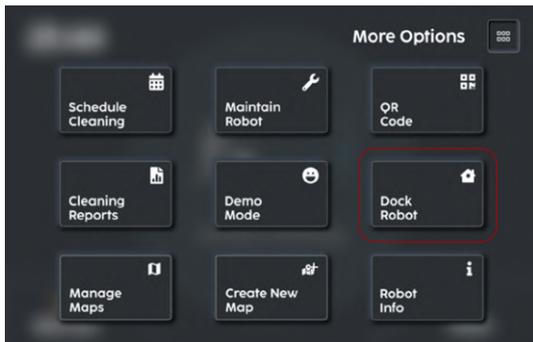


FIGURE 12-4



FIGURE 12-5

## AUTOMATIC DOCKING

1. Ensure that the machine is localised. Refer to **LOCALIZING THE MACHINE** under **BEFORE SC25 USE** section.
2. Once the machine is localised, select the docking station for the machine to dock to (**Fig. 12-6**).
3. Press 'Start' and the machine will begin to dock (**Fig. 12-7**).

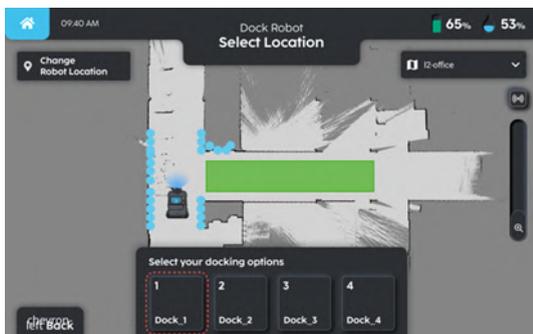


FIGURE 12-6

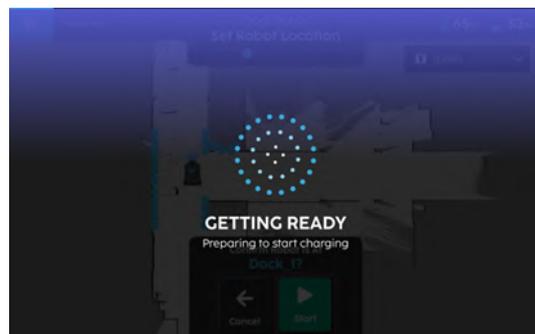


FIGURE 12-7

4. When the machine has docked, the touchscreen will turn green and reflect 'Starting Up' (**Fig. 12-8**). This indicates that the machine has docked. However, the machine may reattempt docking if the machine fails to start charging.
5. When the machine is able to start charging, the touchscreen will reflect the battery charge status (**Fig. 12-9**).

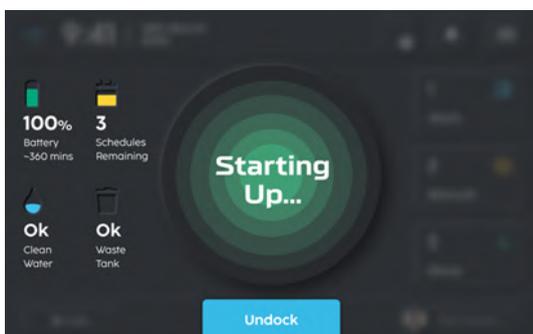


FIGURE 12-8

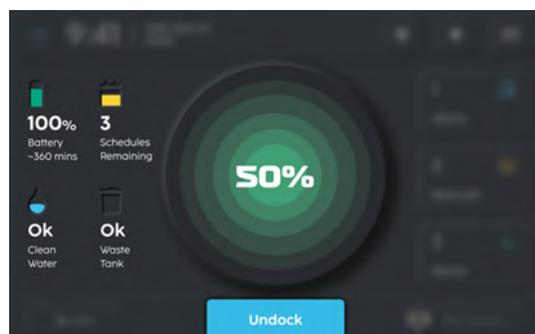


FIGURE 12-9

## MANUAL DOCKING

1. Push the machine **into** a docking station.
2. Ensure that the docking station chargin contacts are aligned to the machine's charging contacts.

3. On the touchscreen, select 'Dock Robot' (**Fig. 12-4**).
4. Select the 'Manual' option to dock the machine (**Fig. 12-5**).
5. The touchscreen will turn green and reflect 'Starting Up' (**Fig. 12-8**). This indicates that the machine has docked. However, the machine may reattempt docking if the machine fails to start charging.
6. When the machine is able to start charging, the touchscreen will reflect the battery charge status (**Fig. 12-9**).

## UNDOCKING

1. To undock the machine from the station, select the blue 'Undock' button (**Fig. 12-9**).
2. The machine will proceed to undock (**Fig. 12-10**).
3. The touchscreen will return to the 'Home' page once undocking is complete (**Fig. 12-11**).



FIGURE 12-10



FIGURE 12-11

## POWERING ON/OFF THE SC25

**NOTE:** This power switch cuts off the positive power line from the battery to the rest of the circuits when the power switch is in the off position.

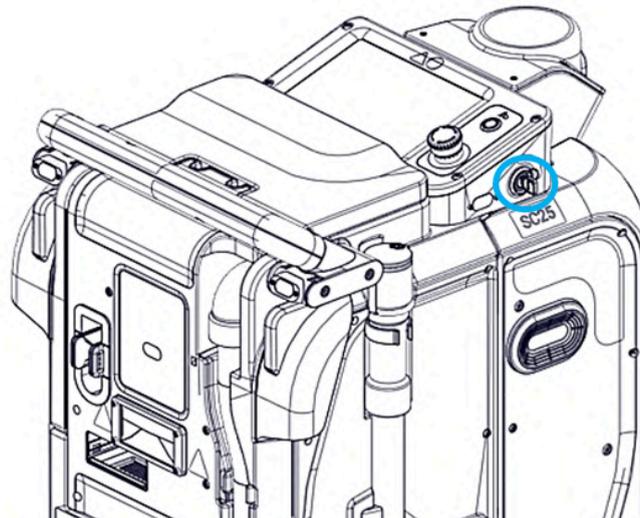


FIGURE 13-1

To power on:

1. Insert key into Key Switch (**21**) 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. Wait for the 'start -up' sound to be played to indicate startup

**NOTE:** Do not leave the key inserted into the machine when the operator is not present, or when the machine is moving autonomously.

To power off:

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

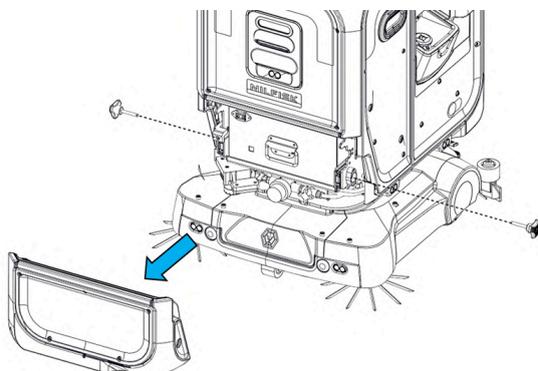
## BATTERY REMOVAL AND REPLACEMENT

### WARNING!

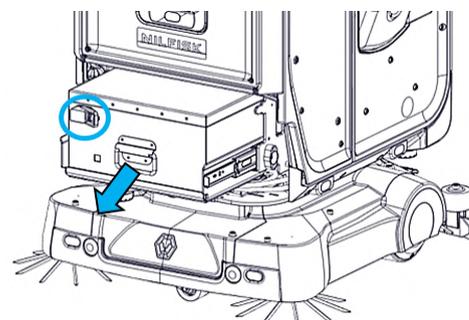
1. Only use batteries provided by authorised dealers and distributors.
2. In the event of battery damage, not limited to smoke, leakage, thermal runaway or fault, contact your authorised distributor for instructions for battery disposal.
3. In the event of a fire, use a CO2 or ABC dry chemical fire extinguisher to put out the fire.

The SC25 uses a 40AH 24V Lithium Iron Phosphate battery that is located on the front of the machine. Follow the instructions to remove or replace the battery.

1. Remove the bottom front cover by unscrewing the 2 Front Cover Knob **(16)** until it can be removed as shown **(Fig. 14-1)**.
2. Disconnect the battery plug from the battery by pulling the handle on the battery plug. One may have to pull firmly **(Fig. 14-2)**.
3. Lift the battery tray latch and at the same time, pull the battery handle towards the front of the machine, the battery tray will slide out **(Fig. 14-2)**.
4. Lift the battery out from the machine using the battery handle.
5. Take a new battery by the battery handle and lift it onto the battery tray.
6. Orient the battery such that the battery handle faces the front of the machine and is laid flat down onto the battery tray
7. Lift the battery tray latch and at the same time, push the battery into the machine.
8. Connect the battery plug to the battery, and push the battery handle to either side of the battery, ensuring that it is not sticking out
9. Place the bottom front cover back onto the machine, and screw in the knobs from both sides



**FIGURE 14-1**



**FIGURE 14-2**

## HUMAN MACHINE INTERFACE - OPERATION SIGNALS

| Machine State  | Sound                                      | Machine LED |
|----------------|--|-------------|
| Emergency Stop | None<br>(Only notification sounds allowed) | Red         |
| Charging       | None<br>(Only notification sounds allowed) | Emerald     |
| Not localised  | None                                       | Purple      |
| Turn Right     | Turning Sound                              | Amber       |
| Turn Left      | Turning Sound                              | Amber       |
| Sound Zone     | Sound zone indication sound – looped       | None        |
| Mapping        | None                                       | Purple      |
| Unsafe Zone    | None                                       | Amber       |

## TROUBLESHOOTING

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

| Problem  | Possible Cause  | Solution  |
|--|---|---|
| The machine does not power on                    | The battery is out of charge                              | Perform a complete recharge cycle and attempt restarting the machine.     |
| The machine does not move                        | The E-stop is triggered, indicated by red blinking lights | Release the E-stop, wait 30s.   |
| The machine does not clean well                  | Brush pressure is not suitable for the floor type         | Consult an authorised distributor for help with adjusting brush pressure. |
|  | The main brush or side 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 machine and check if vacuum starts correctly                  |
|  | Squeegee has not lowered upon power on                    | Restart the machine and check if squeegee lowers correctly                |
|  | The vacuum unit is obstructed                             | Make sure the squeegee trap is free of obstructions                       |

|  |   |  |
|--|---|--|
|  |   | Make sure the squeegee hose is free of obstructions                                  |
|  |   | Make sure the vacuum tube is free of obstructions                                    |
|  | The squeegee rubber blades are worn out | Replace with new squeegee blades   |
| The machine does not reach the the intended location | There is error in localisation          | Repeat the localisation process, making sure the LiDAR points match up with the wall |
| Unable to localise the machine                       | Wrong map                               | Ensure that the machine is located on the correct map                                |

## FAULT CODE DISPLAY

| <b>Fault Code</b> | <b>Technical Description</b>    | <b>Message Displayed On Touchscreen</b>   |
|-------------------|---------------------------------|---|
| HP-02-1101-2-1    | BATTERY_LEVEL_LOW               | Battery low - Charge robot  |
| HC-06-2106-4-1    | CLEAN_TANK_EMPTY_REJECT         | Clean water tank empty - Fill up clean water  |
| HC-06-2107-4-1    | RECOVERY_TANK_FULL_REJECT       | Waste water tank full - Empty out dirty water   |
| HC-06-2108-4-1    | CLEAN_TANK_EMPTY_TERMINATE      | Clean water tank empty - Fill up clean water to resume cleaning                       |
| HC-06-2109-4-1    | RECOVERY_TANK_FULL_TERMINATE    | Waste water tank full - Empty out waste water to resume cleaning                      |
| HS-00-2202-4-1    | ESTOP_TRIGGERED                 | E-stop triggered, release e-stop and press reset                                      |
| HS-00-2204-1-0    | ESTOP_RELEASED                  | E-stop released!  |
| AF-01-2208-1-0    | SLOPE_DETECTED                  | Robot is on a slope - Brakes are engaged  |
| AM-02-2210-2-1    | RZONE_DETECTED                  | Move robot out of restricted zone   |
| HS-05-2211-5-2    | IPS_TRIGGERED                   | Power issue detected - Restart robot and try again                                    |
| HS-05-2212-1-0    | IPS_RECOVERED                   | Power restored!   |
| AL-00-2304-2-1    | LOCALISATION_NOT_DONE           | Robot is lost - Localise robot  |
| HD-00-2402-4-1    | DOCK_NOT_FOUND                  | Docking station not found - Check that docking station is in its original position    |
| HD-00-2403-4-1    | DOCKING_BLOCKED                 | Path is blocked - Remove any obstacles around docking station                         |
| HD-00-2404-5-3    | DOCKING_FAILED                  | Unable to dock - Check that docking station is placed correctly                       |
| HD-01-2408-4-1    | UNDOCKING_BLOCKED               | Path is blocked - Remove any obstacles in robot's path or press E-stop to reset robot |
| HD-00-2410-4-1    | DOCKING_RECOVERY_DOCK_NOT_FOUND | Docking station not found - Check that docking station is in its original position    |
| HD-00-2411-4-1    | DOCKING_RECOVERY_BLOCKED        | Docking is blocked - Remove any obstacles around docking station                      |
| HD-00-2412-4-1    | DOCK_CONNECTION_FAILED          | Unable to connect to Refuel Station - Ensure it is switched on                        |
| HD-00-2520-5-1    | DOCK_LIMIT_SWITCH_NOT_TRIGGERED | Robot is not docked properly - Push robot further into Refuel Station                 |

|                |                                 |   |
|----------------|---------------------------------|---|
| HD-00-2523-4-9 | DOCK_COOLING_FAN_FAULT          | Unable to charge at dock - Let Refuel Station cool down and try again   |
| HD-00-2526-6-9 | DOCK_FLOW_SENSOR_ERROR          | Unable to top up clean water - Restart Refuel Station and try again   |
| HD-02-2527-6-9 | DOCK_BALL_VALVE_CLOGGED         | Unable to top up clean water - Restart Refuel Station and try again   |
| HC-03-2528-6-9 | DOCK_FLOAT_SWITCH_TRIGGERED     | Unable to drain dirty water - Check for chokage at Refuel Station or along drainage   |
| HD-00-2529-4-1 | DOCK_BUSY                       | Selected Refuel Station is occupied by another Robot - Choose another Refuel Station  |
| HP-03-2530-4-1 | DOCK_CHARGING_UNEXPECTEDLY_STOP |   |
| HP-03-2531-4-1 | DOCK_UNABLE_TO_CHARGE           | Unable to charge at dock - Check if docking station is switched on  |
| HS-00-3003-3-1 | ESTOP_TRIGGERED_REJECT          | E-stop triggered - Release E-stop if pressed  |
| HP-02-3005-3-1 | BATTERY_LEVEL_LOW_REJECT        | Battery is very low - Charge robot  |
| HP-02-3006-4-1 | BATTERY_VOLTAGE_LOW_REJECT      | Battery is critically low - Charge robot now  |
| HP-03-3007-2-1 | BATTERY_CHARGING_REJECT         | Unplug manual charger before using robot  |
| HC-11-3009-4-1 | FLOOR_TOOL_LOWERED_REJECT       | Wait for cleaning tools to be lowered   |
| HS-00-3010-5-1 | ESTOP_TRIGGERED_TERMINATE       | E-stop triggered - Release E-stop if pressed  |
| HP-02-3012-4-1 | BATTERY_LEVEL_LOW_TERMINATE     | Battery is very low - Charge robot now  |
| HP-02-3013-6-1 | BATTERY_VOLTAGE_LOW_TERMINATE   | Battery is critically low - Charge robot now  |
| AM-02-3014-2-1 | INSIDE_RZONE_TERMINATE          | Inside a restricted zone - Push robot away and try again  |
| AM-01-3015-4-1 | ROBOT_STUCK                     | Path is blocked - Clear surrounding obstacles   |
| AM-01-3016-4-1 | ROBOT_AWAY_FROM_PATH            | Robot deviated from designated path - Push robot back to localisation point and try again. If issue persists, please call for assistance. |
| AP-06-3017-5-9 | IMU_ERROR                       | Issue with IMU detected - Please call for assistance.   |
| HT-02-3019-4-1 | MOTOR_ERROR_REJECT              | Motor issue detected - Press E-stop to reset and try again  |

|                |                             |  |
|----------------|-----------------------------|--|
| AF-01-3021-6-1 | EXTREME_TILT_REJECT         | Slope is too steep - Push robot away from slope and try again                              |
| AF-01-3022-6-1 | EXTREME_TILT_TERMINATE      | Slope is too steep - Push robot away from slope and try again                              |
| AM-02-3023-5-1 | RZONE_REJECT                | Inside a restricted zone - Push robot away and try again                                   |
| AP-02-3024-2-1 | NEGATIVE_OBSTACLE_REJECT    | Too close to a negative obstacle, such as stairs or ledges - Push robot away and try again |
| HS-05-3026-6-9 | IPS_ERROR_REJECT            | Power issue detected - Restart robot and try again   |
| HS-05-3027-5-9 | IPS_ERROR_TERMINATE         | Power issue detected - Restart robot and try again   |
| AS-00-3028-5-2 | SYSTEM_STATUS_ERROR_REJECT  | System issue detected - Restart robot and try again  |
| AL-00-3030-6-1 | UNKNOWN_AREA                | Robot is a little lost - Push back to home and localise again                              |
| AL-00-3040-4-1 | BAD_LOCALIZATION_DETECTED   | Robot is a little lost - Push back to home and localise again                              |
| HT-02-3050-5-2 | MOTOR_ERROR_STATE           | Motor issue detected -<br>Press E-stop to reset or restart robot                           |
| HD-02-3076-5-9 | BALL_VALVE_OPEN_REJECT      | Robot ball valve is open - Restart robot and try again                                     |
| HD-02-3077-5-9 | BALL_VALVE_OPEN_TERMINATE   | Robot ball valve is open - Restart robot and try again                                     |
| AP-03-3078-5-2 | SONAR_DIAGNOSTICS_REJECT    | Sonar issue detected - Restart robot and try again   |
| AP-03-3079-5-2 | SONAR_DIAGNOSTICS_TERMINATE | Sonar issue detected - Restart robot and try again   |
| AP-06-3080-5-9 | IMU_ERROR_REJECT            | IMU issue - Restart robot and try again  |
| AP-06-3081-5-9 | IMU_ERROR_TERMINATE         | IMU issue - Restart robot and try again  |
| AM-01-3101-4-1 | UNABLE_TO_PLAN_PATH         | Path is blocked - Clear surrounding obstacles  |
| AM-01-3102-3-1 | DESTINATION_TOO_NEAR        | Destination too near - Try another destination   |
| AM-01-3111-4-1 | TURNING_BLOCKED_TERMINATE   | Path is blocked - Clear surrounding obstacles  |
| AM-01-3112-4-1 | DESTINATION_BLOCKED         | Destination is blocked - Clear surrounding obstacles                                       |

|                |                                   |  |
|----------------|-----------------------------------|--|
| AM-01-3123-4-1 | KINEMATICALLY_INFEASIBLE          | Path is blocked - Clear surrounding obstacles  |
| HT-02-3132-5-3 | MOTORS_TOO_HOT                    | Unable to move - Wait a few minutes for motors to cool down before retrying              |
| HC-02-3134-4-1 | SIDE_LIMIT_SWITCH_TRIGGERED       | Side limit switch triggered - Clear surrounding obstacles before trying again            |
| AS-00-3135-5-3 | SYSTEM_STATUS_PAUSE               | System status issue - Robot is resolving   |
| AL-00-3136-4-1 | LOST_LOCALIZATION_ERROR           | Robot is a little lost - Push back to home and localise again                            |
| AM-01-3210-4-1 | CLEANING_PATH_ABANDONED           | Too many obstacles - Clear surrounding obstacles and try again                           |
| AP-01-3220-4-1 | CLEANING_START_BLOCKED            | Start point is blocked - Clear surrounding obstacles                                     |
| HC-13-3240-5-2 | CLEANING_TOOLS_ERROR_TERMINATE    | Issue with cleaning tools - Restart robot and try again                                  |
| HC-13-3241-4-2 | CLEANING_TOOLS_ERROR_REJECT       | Issue with cleaning tools - Restart robot and try again                                  |
| HC-11-3250-3-1 | REAR_FLOOR TOOL_MISSING_REJECT    | Rear floortool not detected - Check that rear floortool is attached properly             |
| HC-11-3251-4-1 | REAR_FLOOR TOOL_MISSING_TERMINATE | Rear floortool not detected - Check that rear floortool is attached properly             |
| HB-06-3262-4-9 | ECU_MISSING_REJECT                | ECU not detected - Call for assistance   |
| HB-06-3263-5-9 | ECU_MISSING_TERMINATE             | ECU not detected - Call for assistance   |
| HC-08-3701-5-1 | VACUUM_OVERCURRENT                | Vacuum motor in overcurrent state - Unclog vacuum hose and try again                     |
| HC-08-3702-5-9 | VACUUM_UNDERCURRENT               | Vacuum motor in undercurrent state - Unclog vacuum hose and try again                    |
| HC-10-3711-5-1 | MAIN_BRUSH_OVERCURRENT            | Main brush motor in overcurrent state - Check if main brush is stuck before trying again |
| HC-10-3712-5-9 | MAIN_BRUSH_UNDERCURRENT           | Main brush motor in undercurrent state - Wait a while before trying again                |
| HT-00-3722-4-9 | FLOOR TOOL_ENCODER_ERROR          | Floortool encoder unresponsive - Check if floortool motor is stuck                       |
| HC-00-3723-4-9 | FLOOR TOOL_POSITION_ERROR         | Floortool not lowered properly - Check if something is stuck between floortool and floor |

|                |  |   |
|----------------|--|---|
| HC-10-3731-5-9 | SIDE_BRUSH_UNDERCURRENT                | Side brush motor is in undercurrent state -<br>Restart robot and try again                                    |
| HC-10-3732-5-9 | SIDE_BRUSH_ENCODER_ERROR               | Side brush encoder unresponsive -<br>Check if side brush motor is stuck                                       |
| HC-10-3733-4-1 | SIDE_BRUSH_HOME_LIMIT_SWITC<br>H_ERROR | Side brush not raised to correct height -<br>Check if something is stuck between side<br>brush and robot body |
| HC-01-3741-4-9 | SQUEEGEE_ENCODER_ERROR                 | Squeegee encoder unresponsive -<br>Check if squeegee motor is stuck   |
| HC-01-3742-4-1 | SQUEEGEE_UPPER_LIMIT_SWICH<br>ERROR    | Squeegee not raised to correct height -<br>Check if something is stuck between<br>squeegee and robot body     |
| HC-01-3743-4-1 | SQUEEGEE_LOWER_LIMIT_SWITC<br>H_ERROR  | Squeegee not lowered properly - Check if<br>something is stuck between squeegee and<br>floor                  |
| HT-00-3751-4-9 | WATER_PUMP_ENCODER_ERROR               | Clean water pump encoder is unresponsive<br>-<br>Restart robot and try again                                  |
| HT-00-3761-4-9 | CHEMICAL_PUMP_ENCODER_ERR<br>OR        | Chemical pump encoder is unresponsive -<br>Restart robot and try again  |
| HD-02-3803-4-9 | BALL_VALVE_OPEN_ERROR                  | Unable to open robot ball valve properly -<br>Call for assistance   |
| HD-02-3804-4-9 | BALL_VALVE_CLOSE_ERROR                 | Unable to close robot ball valve properly -<br>Call for assistance  |
| HP-04-3805-6-9 | ROBOT_CONTACTOR_VOLTAGE_E<br>RROR      | Unable to charge due to voltage error -<br>Reconnect to power supply and try again                            |
| HP-03-4005-1-0 | CHARGING_STARTED                       | Charging started!   |
| HP-03-4006-1-0 | CHARGING_STOPPED                       | Charging stopped  |
| HP-02-4008-2-1 | BATTERY_VOLTAGE_LOW                    | Battery is really, really low - Charge robot<br>now   |
| HP-02-4009-2-1 | BATTERY_LEVEL_CRITICAL                 | Robot will shut down soon due to no battery<br>- Charge robot now   |
| HP-02-4010-6-1 | BATTERY_VOLTAGE_CRITICAL               | Robot will enter low power mode soon -<br>Charge robot now  |
| SS-01-4101-1-0 | P2P_STARTED                            | Robot is on the way   |
| AM-03-3031-5-2 | START_MAPPING_FAILED                   | Unable to start mapping - Restart robot and<br>try again  |
| AM-03-3032-5-2 | STOP_MAPPING_FAILED                    | Unable to stop mapping - Restart robot and<br>try again   |

|                |  |  |
|----------------|--|--|
| HD-00-2413-5-1 | DOCK_CONNECTION_LOST                   | Disconnected from refuel station - Ensure that refuel station is switched on and try again |
| AP-03-3137-2-0 | SONAR_DIAGNOSTICS_PAUSE                | Sonar issue detected - Robot is resolving the issue  |
| AP-00-3138-2-0 | PERCEPTION_DIAGNOSTICS_PAUSE           | Perception issue detected - Robot is resolving the issue                                   |
| HC-10-3713-4-9 | MAIN_BRUSH_COMMUNICATION_ERROR         | Main brush motor driver is unresponsive - Call for assistance                              |
| HC-10-3714-5-1 | MAIN_BRUSH_STALL                       | Main brush motor stalled - Check if anything is stuck in the floortool                     |
| HD-02-3807-4-9 | THREE_WAY_BALL_VALVE_OPEN_ERROR        | Unable to open robot ball valve properly - Call for assistance                             |
| HD-02-3808-4-9 | THREE_WAY_BALL_VALVE_CLOSE_ERROR       | Unable to close robot ball valve properly - Call for assistance                            |
| HD-02-3809-4-9 | ROBOT_THREE_WAY_BALL_VALVE_DRAIN_ERROR | Clean water is not draining into Dirty Water Tank - Call for assistance                    |
| HD-02-3810-4-1 | DIRTY_TANK_DRAIN_ERROR                 | Open Drain hose cap and Dirty water tank hatch to check for clogging                       |
| HC-13-3140-5-1 | FLOORTOOLDOOR_DETACHED_PAUSE           | Floortool Door is open - Close Floortool door to resume cleaning                           |
| HC-13-3264-5-1 | FLOORTOOLDOOR_DETACHED_REJECT          | Floortool Door is open - Close Floortool door to resume cleaning                           |
| HC-11-3139-5-1 | REAR_FLOORTOOL_MISSING_PAUSE           | Rear floortool not detected - Check that rear floortool is attached properly               |
| WT-00-2240-1-0 | CLEAN_STOP_LOCAL                       | Cleaning stopped by user via Touchscreen   |
| WA-11-2241-1-0 | CLEAN_STOP_APP                         | Cleaning stopped by user using Mobile App  |
| WD-00-2242-1-0 | CLEAN_STOP_REMOTE                      | Cleaning stopped by remote support   |
| WT-00-2250-1-0 | CLEAN_PAUSE_LOCAL                      | Cleaning paused by user via Touchscreen  |
| WA-11-2251-1-0 | CLEAN_PAUSE_APP                        | Cleaning paused by user using Mobile App   |
| WD-00-2252-1-0 | CLEAN_PAUSE_REMOTE                     | Cleaning paused by remote support  |
| WT-00-2260-1-0 | CLEAN_RESUME_LOCAL                     | Cleaning resumed by user via Touchscreen   |
| WA-11-2261-1-0 | CLEAN_RESUME_APP                       | Cleaning resumed by user using Mobile App  |
| WD-00-2262-1-0 | CLEAN_RESUME_REMOTE                    | Cleaning resumed by remote support   |
| SS-01-2270-2-1 | SCHEDULE_NOT_READY                     | Robot is unable to start cleaning schedule in 15 minutes - Please check robot              |

|                |  |  |
|----------------|--|--|
| SS-01-2271-5-1 | SCHEDULE_START_FAILED                          | Robot did not go on scheduled cleaning - Please check robot                    |
| WD-02-6200-2-9 | CLOUD_DEACTIVATED_TERMINATE                    | Robot has been deactivated - Contact distributor for more info.                |
| WD-02-6201-2-1 | ROBOT_UNACTIVATION_TIMEOUT                     | Cleaning time limit has expired - Robot activation required.                   |
| WD-02-6202-2-1 | ROBOT_SUSPENDED_TERMINATE                      | Robot activation status could not be determined - Network connection required. |
| HI-01-0100-5-1 | HARDWARE_FAULT_ENCOUNTERED                     | Internal hardware fault - Restart robot and try again                          |
| HT-02-0104-5-1 | MOTOR_SYSTEM_STATUS_WATCHDOG_TIMEOUT           | Motor issue detected - Restart robot and try again                             |
| AP-04-0106-5-1 | FRONT_STRAIGHT_DEPTH_CAMERA_FRAME_STUCK        | Front straight camera issue detected - Restart robot and try again             |
| AP-04-0107-5-1 | FRONT_STRAIGHT_DEPTH_CAMERA_FRAME_EMPTY        | Front straight camera issue detected - Restart robot and try again             |
| AP-04-0108-5-1 | FRONT_STRAIGHT_DEPTH_CAMERA_WATCHDOG_TIMEOUT   | Front straight camera issue detected - Restart robot and try again             |
| AP-04-0111-5-1 | FRONT_TILTED_DEPTH_CAMERA_FRAME_STUCK          | Front top tilted camera issue detected - Restart robot and try again           |
| AP-04-0112-5-1 | FRONT_TILTED_DEPTH_CAMERA_FRAME_EMPTY          | Front top tilted camera issue detected - Restart robot and try again           |
| AP-04-0113-5-1 | FRONT_TILTED_DEPTH_CAMERA_WATCHDOG_TIMEOUT     | Front top tilted camera issue detected - Restart robot and try again           |
| AP-04-0116-5-1 | REDUNDANT_TILTED_DEPTH_CAMERA_FRAME_STUCK      | Front bottom tilted camera issue detected - Restart robot and try again        |
| AP-04-0117-5-1 | REDUNDANT_TILTED_DEPTH_CAMERA_FRAME_EMPTY      | Front bottom tilted camera issue detected - Restart robot and try again        |
| AP-04-0118-5-1 | REDUNDANT_TILTED_DEPTH_CAMERA_WATCHDOG_TIMEOUT | Front bottom tilted camera issue detected - Restart robot and try again        |
| AP-04-0121-5-1 | LEFT_DEPTH_CAMERA_FRAME_STUCK                  | Left camera issue detected - Restart robot and try again                       |
| AP-04-0122-5-1 | LEFT_DEPTH_CAMERA_FRAME_EMPTY                  | Left camera issue detected - Restart robot and try again                       |
| AP-04-0123-5-1 | LEFT_DEPTH_CAMERA_WATCHDOG_TIMEOUT             | Left camera issue detected - Restart robot and try again                       |
| AP-04-0126-5-1 | RIGHT_DEPTH_CAMERA_FRAME_STUCK                 | Right camera issue detected - Restart robot and try again                      |

|                |  |  |
|----------------|--|--|
| AP-04-0127-5-1 | RIGHT_DEPTH_CAMERA_FRAME_EMPTY                 | Right camera issue detected - Restart robot and try again                                  |
| AP-04-0128-5-1 | RIGHT_DEPTH_CAMERA_WATCHDOG_TIMEOUT            | Right camera issue detected - Restart robot and try again                                  |
| AP-04-0131-5-1 | REAR_DEPTH_CAMERA_FRAME_STUCK                  | Rear camera issue detected - Restart robot and try again                                   |
| AP-04-0132-5-1 | REAR_DEPTH_CAMERA_FRAME_EMPTY                  | Rear camera issue detected - Restart robot and try again                                   |
| AP-04-0133-5-1 | REAR_DEPTH_CAMERA_WATCHDOG_TIMEOUT             | Rear camera issue detected - Restart robot and try again                                   |
| AP-05-0140-5-1 | FRONT_2D_LIDAR_POINTS_EMPTY                    | Front LIDAR issue detected - Restart robot and try again                                   |
| AP-05-0141-5-1 | FRONT_2D_LIDAR_WATCHDOG_TIMEOUT                | Front LIDAR issue detected - Restart robot and try again                                   |
| AP-05-0145-5-1 | REAR_2D_LIDAR_POINTS_EMPTY                     | Rear LIDAR issue detected - Restart robot and try again                                    |
| AP-05-0146-5-1 | REAR_2D_LIDAR_WATCHDOG_TIMEOUT                 | Rear LIDAR issue detected - Restart robot and try again                                    |
| AP-02-0200-5-1 | DROP_OFF_DETECTED                              | Too close to a negative obstacle, such as stairs or ledges - Push robot away and try again |
| AP-08-0300-5-1 | CONTACT_ZONE_FAULT                             | Too close to an obstacle - Push robot away and try again                                   |
| HS-04-0400-5-1 | AUTONOMY_CONTROLLER_HEARTBEAT_WATCHDOG_TIMEOUT | Autonomy controller issue detected - Restart robot and try again                           |
| AP-02-0401-5-1 | DROP_OFF_FALSE_NEGATIVE_FAULT                  | Too close to a negative obstacle, such as stairs or ledges - Push robot away and try again |
| AP-08-0402-5-1 | CONTACT_ZONE_FALSE_NEGATIVE_FAULT              | Too close to an obstacle - Push robot away and try again                                   |
| HT-07-0500-5-1 | MANUAL_BRAKE_RELEASED                          | Safety lever disengaged - Push down safety lever   |
| HC-06-2110-1-1 | CHEMICAL_TANK_EMPTY                            | Chemical tank is empty - Pause robot to refill tank  |
| HB-06-3266-2-0 | ECU_BOARD_MISSING_PAUSE                        | ECU not detected - Robot is resolving  |

## TECHNICAL SPECIFICATIONS\*

| Model   | Units                | SC25         |
|---|----------------------|--------------|
| Battery Voltage   | V                    | 24           |
| Battery Capacity (max)  | Ah                   | 40           |
| Protection Grade  | -                    | IPX3         |
| Sound Pressure Level<br>IEC 60335-2-72: 2002 Amend. 1:2005, ISO 11203, ISO 3744 | dB(A)/20 $\mu$<br>Pa | 64-70        |
| Gross Vehicle Weight **   | kg                   | 134.1        |
| Transportation Weight ***   | kg                   | 110.8        |
| Maximum Gradeability - Manual Transport   | %                    | 15% (8.53°)  |
| Maximum Gradeability - Manual Cleaning  | %                    | 5% (2.86°)   |
| Maximum Gradeability - Autonomous   | %                    | 5% (2.86°)   |
| Machine Length  | cm                   | 72.2         |
| Machine Width with Squeegee and Side Brushes                                    | cm                   | 65.4         |
| Machine Height (with 3D LiDAR)  | cm                   | 91.1 (102.0) |
| Minimum Aisle Turn Width - Manual   | cm                   | 86.5         |
| Minimum Aisle Turn Width - Autonomous   | cm                   | 121          |
| Clean Water Tank Capacity   | L                    | 22           |
| Waste Water Tank Capacity   | L                    | 25           |
| Chemical Tank Capacity  | L                    | 0.6          |
| Machine Speed - Autonomous  | m/s                  | 1            |
| <b>Main Brush Size</b>  |                      |              |
| Main Brush Diameter   | cm                   | 8            |
| Main Brush Speed  | RPM                  | <1200        |
| Main Brush Width (Scrubbing path)   | cm                   | 36.6         |
| <b>Side Brush Size</b>  |                      |              |
| Side Brush Diameter - (Quantity of 1 / Scrubbing Path)                          | cm                   | 21           |
| Side Brush Speed  | RPM                  | 68           |

\* The design and specifications are subject to change without notice for quality improvement purposes. The measurements stated here may differ slightly from the actual measurements depending on the measuring method.

\*\* Gross Vehicle Weight: Standard machine without options, full clean water tank, full chemical tank, full debris tray (sand density: 1600 kg/m<sup>3</sup>) 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

| Glossary of terms |  |
|-------------------|--|
| Term              | Description  |
| <b>JustClean™</b> | Name of an operating method of an autonomous floor cleaning machine. 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 machine. |
| <b>MagicTag™</b>  | A beacon for activating an autonomous machine to conduct location specific actions   |

## DISPOSAL

1. The battery shall be removed from the appliance before it is scrapped;
2. The appliance shall be disconnected from the supply mains (docking station or charger) when removing the battery;
3. The battery shall be disposed of safely as per national regulations.

## FUNCTIONAL EARTH



The appliances are incorporated with the functional Earth symbol shown above for Earth connection for functional purposes only.

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