

# User manual



# i-team Professional b.v.

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#### **FASTER:**

The co-botic<sup>™</sup> 45 keeps on cleaning for up to 180 minutes. When the battery is almost empty, the machine can return to its starting point before it runs out of battery. When working with 2 batteries, the machine can operate 24/7. Bonus: it can even be used overnight in dark areas without any trouble.



#### **CLEANER:**

The cleaner can create their own cleaning routes for the co-botic 45 via the co-botic app. Alternatively, the co-botic 45 can program itself to perform the most efficient cleaning job for the desired area. You can use it in all kinds of hard floors rooms, glossy or rough floors. Also, if the path of the co-botic 45 is blocked it will come back later to clean the missed spot.



#### **GREENER:**

The co-botic 45 is programmed to clean as precisely and efficiently as possible. Every bit of energy is used for cleaning - nothing is wasted. While the co-botic 45 only consumes 240W in one hour, alternative robots can consume up to 1000W per hour. Furthermore, it saves as much water as possible while still remaining the i-mop known and proven cleaning performance.



#### SAFER:

Because the co-botic 45 is battery-powered, there are no cables involved. There is also no need for a charging or refill station. This instantly reduces the risk of tripping and falling hazards. Furthermore, the co-botic 45 will leave the cleaned floor immediately dry to reduce slipping hazard. By setting virtual boundaries in the app, the cleaner can rely on the co-botic 45 to stay within the designated areas. Additionally, the automatic cliff detection feature prevents the co-bot from falling off stairs or other elevations...



#### ...and BETTER for everyone!

Combining the i-team co-botic performance with the trained human eye, the co-botic 45 gets the most out of your cleaning operations and needs. The cleaner and the co-bot make a perfect team, and will never miss a spot. They each execute the cleaning they can do best, simultaneously and side-by-side.

Original user manual, written in the English Language

Future Cleaning Technologies B.V.

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Model: co-botic 45

Product code:

Version: v.02

Model year: 2023



### **Preface**

Thank you for choosing the co-botic<sup>™</sup> 45, the heavy-duty auto scrubber that cleans faster, cleaner, safer, greener, and is better for everyone. The co-botic 45 compact design allows you to clean right to any edge, minimizing manual scrubbing. The battery-operated co-botic 45 is equipped with a brush that provides a deep scrub and a great cleaning result. The co-botic 45 significantly reduces the amount of chemicals needed, which leads to a greener result. It also reduces the risk of slippery floors. The co-botic 45 is coated to withstand abrasive chemicals. This means it can be used at facilities like swimming pools.

#### i-link®

You can connect your cleaning equipment to i-link, the cloud-based management system. The co-botic 45 has a small integrated transmitter, already connected to the i-link cloud. This transmitter will send usage information, battery levels, and even the location of the machine to the i-link cloud every day. It's also possible to set rules for notifications (e.g. reminders for maintenance after X hours of use) and to troubleshoot an issue with the machine through your i-partner.

Please read this manual carefully for important information and operating instructions before using the co-botic 45. Save this manual for future reference. This co-botic 45 will provide excellent performance. The best results are obtained when the co-botic 45 is:

- Regularly maintained per the co-botic 45 preventive maintenance instructions in this manual.
- Operated with reasonable care and caution.
- Maintained with manufacturer-supplied parts.

When this manual refers to "the manufacturer", this means Future Cleaning Technologies B.V., an affiliate company of i-team in Eindhoven, The Netherlands. When this manual mentions "the partner", this refers to your local i-team resell and support service partner.

# Purpose of the user manual

The purpose of the user manual is to provide the user with information in such a way that during the lifespan of the co-botic 45, the machine is used correctly, efficiently and safely, even in the event of reasonably foreseeable misuse, as described in section 1.2 of this manual.

The user manual contains instructions regarding:

- personal operator safety;
- intended and non-intended use of the co-botic 45;
- instructions for daily use;
- maintenance instructions;
- storage conditions;
- disposal of the co-botic 45.



These instructions must be considered to avoid risks that could lead to physical and/or material damage.

# **Target audience**

This user manual is intended for operators of the co-botic<sup>TM</sup> 45 and their supervisors, as well as partners and importers.

# Operators of the co-botic 45

The co-botic 45 may only be operated by a person who has correctly read and understood the instructions in this manual or is trained by an experienced operator who has read and understood the instructions in this manual.

# Reading guide

The following symbols and terms are used throughout this manual to alert the reader to safety issues and important information:

<b>Symbol</b>	Term	Explanation
<u>^</u>	WARNING	Indicates a hazardous situation which, if the safety instructions are not followed, can lead to injuries of the operator or bystanders, light and/or moderate damage to the product or the environment.
	CAUTION	Indicates a hazardous situation which, if the safety instructions are not followed, can lead to light and / or moderate damage to the product or the environment.
0	ATTENTION	Indicates a liability situation, where the manufacturer or its partners and affiliates cannot be held accountable for damages caused by noncompliance.
4	BATTERIES	Indicates a battery-operated machine, batteries must be charged according to the instructions in the separate class I battery charger user manual.  Batteries must be disposed of according to your local laws and regulations.
	SLIPPERY SURFACE	Indicates that the machine can cause floors to become slippery. In the workplace, it is advised to place slippery surface signs in these areas.



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## 1 Introduction

The co-botic<sup>™</sup> 45 is a safe, user-friendly machine. This manual helps you to get started and explains the operation and maintenance procedure. You will be pleasantly surprised by the fast and effective use of the battery-operated co-botic 45. The battery used in the co-botic 45 comes from the same family as the ones used in a variety of battery-powered i-team products. The battery must be fully charged before use. Please see the user manual of the class I battery charger for the correct procedure.

This manual is intended for those who work with the co-botic 45 and/or perform daily maintenance. The manual must be read fully before starting to work with the machine. This manual describes the correct method of use, safety measures, maintenance, and transport.

The manufacturer continuously improves all its products based on user experience and feedback. Any deviations between the texts and/or images from the manual and your co-botic 45 can therefore arise from the difference in model, or from possible changes due to continuous development and innovation.

### 1.1 Intended use of the product

The co-botic 45 is a specialized machine for scrubbing hard floor surfaces. It only needs water as a cleaning agent, it doesn't need a water-based scrubbing detergent.

The co-botic 45 offers two cleaning solutions:

- 1. For regular areas such as an office or a store.
- 2. For areas where the floor can become greasy, such as a kitchen floor or the floor of a workshop.

Switching from one solution to the other is a matter of seconds.



Figure 1

The solution can cause floors to become slippery; it is advised to mark the floor of the job site to warn people. (Please note: the wet floor sign is not part of the co-botic 45 system delivery).



## 1.2 Non-intended use of the product



#### WARNING

Non-intended use can have consequences for the safety of operators and bystanders and will void the warranty on the product.

- DO NOT use the co-botic<sup>™</sup> 45 in areas above a sea level of 2000 m.
- DO NOT use or park this product in a pure-slope place with a slope angle greater than 10°.
- DO NOT use this product in an environment with a temperature higher than 40 °C and lower than 0 °C.
- DO NOT wash or spray the co-botic 45 with water.
- DO NOT place any objects (including children and pets) on the static or moving co-botic 45 body.
- DO NOT use this product to clean
  - o any burning objects (such as burning cigarette butts),
  - o any hard objects,
  - o any sharp objects (such as decoration wastes, glass and nails).
- DO NOT use this product on
  - o soil surfaces.
  - o grasses,
  - o artificial turfs,
  - o carpeted floors.
- DO NOT use this product in case of rough surface conditions, such as uneven ground or ground with large potholes. Bypass these dangerous areas when planning a path.
- DO NOT deploy and use this product in dark and humid environments. Excessive humid environments may cause damage to electronic circuits or electronic components in this product.
- **DO NOT** approach the co-botic 45 suddenly or block the co-botic 45. Prevent both people and pets from doing this to avoid collision and damage.

# 1.3 Lifespan

Each co-botic 45 is guaranteed to operate for at least 2000 hours. The wear on brushes and squeegee heavily depends on the roughness of the surface. These parts need to be checked regularly.

# A

#### **CAUTION**

To ensure proper and safe operation throughout the lifespan of the co-botic 45, the machine must be checked and serviced by an authorized i-team partner every 500 hours.



# 1.4 Modifications

It is not permitted to make modifications to the design of the co-botic  $^{\text{TM}}$  45 without consultation and permission from the manufacturer. Doing so affects the warranty, see section 1.6 of this manual.

# 1.5 Specifications



Figure 2

Cleaning efficiency:	Roller Scrubber/dryer ~ 1500 – 2500 m² (Single Operation Cycle)
Cleaning pressure:	2-6 kg
Clean water tank capacity:	10 L
Recovery tank:	10 L
Battery Life:	~ 2 – 3 hours (1x i-power 20)
Charging time:	~ 2 hours (i-charge 9c)
Sensors:	3D LiDAR (x1)
	2D LiDAR (x1)
	Cliff Detection Sensor (x1)
	Ultrasonic Sensors (x4)
Display screen:	7 inches
Operational speed:	0.8 m/s (adjustable)
Noise level:	68/72/75 dB(A)
Weight:	35 kg
Dimensions (L x W x H):	500 x 504 x 629 mm
Brush speed:	300 – 900 RPM
Others:	Remote control



Auto route planner Co-botic management dashboard Downloadable cleaning reports (pdf file) Modular design on all parts

# 1.6 Warranty

The co-botic 45<sup>™</sup> should be used as intended and described in this manual. Using the co-botic 45 outdoors will void the warranty on the product.

### 1.7 Identification

Each co-botic 45 has a unique serial number:

- Serial number (Figure 3, pos. 1).
- Production year (Figure 3, pos. 2).
- Production month (Figure 3, pos. 3).
- Production day (Figure 3, pos. 4).

Your i-team partner needs this number when you order parts.

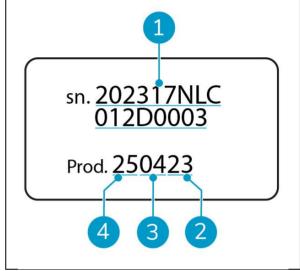


Figure 3

The serial number can be found on the inside of the battery compartment lid (Figure 4, pos. 1).

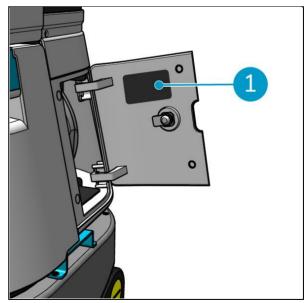


Figure 4



# 2 Description

The co-botic<sup>™</sup> 45 consists of the following parts:

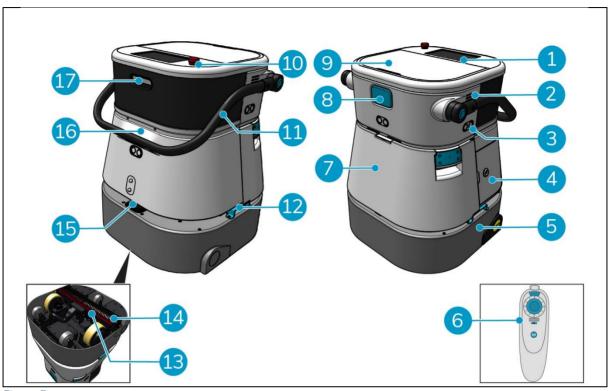


Figure 5

#### Legend

- 1. Display
- 2. Speaker
- 3. Ultrasonic wave radar
- 4. Battery compartment
- 5. co-botic 45 main body
- 6. Remote control
- 7. Clean water tank
- 8. SIM-card slot
- 9. Recovery tank compartment

- 10. Emergency stop
- 11. Handle
- 12. Carrying handle
- 13. Squeegee
- 14. Roller brush
- 15. 2D laser radar
- 16. Cliff detection sensor
- 17. 3D lidar sensor



### 2.1 Remote control

The remote control consists of:

- 1. Antenna
- 2. Joystick
- 3. Power button
- 4. Connect button
- 5. On/Off indicator

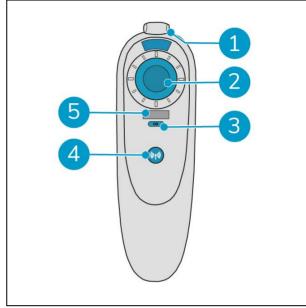


Figure 6

# 2.2 Main menu of the display

The main menu of the display shows the following functions:

- Cleaning task.
   Start cleaning tasks.
- 2. Remote cleaning.
  Allows you to start remote cleaning.
- One-click return.
   Returns the co-botic<sup>™</sup> 45 to the starting position on the selected map.
- More.
   Provides access to other menu's, such as settings and maps.
- 5. Dirty water indicator.
- 6. Clean water indicator.



Figure 7



# 2.3 Main menu of the co-botic 45 app

Explanation of the main menu of the co-botic  $^{\text{TM}}$  45 app.

- 1. Displays the status of the selected co-botic 45.
- 2. Display, start, and create tasks.
- 3. Gives access to additional options, including settings.
- 4. Indicate messages, warnings and notifications.
- 5. Account overview.
- 6. Main menu.
- 7. Place to view/extract cleaning reports from the machines.
- 8. Create and edit maps.
- 9. Switch to or show other devices.



Figure 8



# 3 Safety

Safety comes first. Therefore, please take your time to read and understand these safety instructions. Improper use can cause harm or void the manufacturer's warranty.

## 3.1 General safety instructions

#### 3.1.1 Sweep before scrub

Remove objects from the floor that can be propelled by the rotating brush.

#### 3.1.2 Brush condition

Make sure to check the condition of the brush before use. Change the brush only when the machine is turned off.

#### 3.1.3 Machine orientation

Always keep the main body of the co-botic<sup>TM</sup> 45 in an upright position when inserting water or inserting the battery.

#### 3.1.4 Batteries

Always use the automatic battery charger provided by the manufacturer.

#### **CAUTION**

During normal operation, the 25 V batteries cause no safety hazard on their own. Please adhere to the following safety instructions regarding batteries:

Do not crush, pierce or damage batteries in any way.



- Do not heat or incinerate batteries.
- Do not short-circuit batteries.
- Do not dismantle batteries.
- Keep all batteries dry.
- Only charge between 5 °C $\sim$ 40 °C / 41 °F $\sim$ 104 °F.
- Only use between 5 °C~45 °C / 41 °F~113 °F.

# 3.2 Risks during operation

#### 3.2.1 Radio interference

The co-botic 45 is a Class A product which may cause radio interference. If this is the case, the operator may need to take practical steps against interference, such as planning another path or shutting down equipment.

#### 3.2.2 Transparent materials

Although additional sensors have been installed and measures have been taken, glass walls or other highly transparent materials may affect the co-botic 45 sensor function. Therefore, it is recommended to keep the co-botic 45 away from such materials.



#### 3.2.3 Mark the job site

The co-botic<sup>™</sup> 45 is designed to leave a dry floor without slippery patches, no additional drying is required.



#### **WARNING**

In the event of an accident, press the emergency button on top of the co-botic 45. This will prevent the co-botic 45 from causing harm.

# 3.3 Risks after operation

#### 3.3.1 Remove the battery

#### **CAUTION**



Before removing the battery, make sure to turn off the co-botic 45 via the power button inside the battery compartment (see Figure 11, pos. 3). Removing the battery without turning off the co-botic 45 may result in the battery 'sparking' and causing problems with the connectors.

It is best practice to remove the battery after executing any cleaning or maintenance task. Be sure to take the battery out in case of long-term storage.

#### 3.3.2 Careful when storing

Do not store the co-botic 45 on ramps or slopes. Always store the co-botic 45 on a level, hard surface.



# 4 Transport and storage

#### 4.1 General



#### **CAUTION**

Always keep the main body of the co-botic<sup>TM</sup> 45 in the upright position. Make sure the clean water tank and recovery tank are part of the main body during transport.

Before storage or transport, drain the machine. Remove the battery after each use.

# 4.2 Store position

The correct store position is the upright vertical position. When stored, the clean water tank and recovery tank should be installed in the main body.

#### TIP: Dry the tanks

Slightly open both tank caps before storage to allow the tanks to dry.

## 4.3 Transport inside/outside



#### **CAUTION**

The wheels of the co-botic 45 are not designed to roll over dirty surfaces. Sand can cause the wheels to block. Lift the co-botic 45 while moving it from one building to another.



#### **CAUTION**

The co-botic 45 is heavy. Do not try to carry the unit by yourself. You should always use someone's help.

When transporting the co-botic 45 inside:

- 1. Put the co-botic 45 in store position.
- 2. Move the co-botic 45 to its destination using the handle (Figure 9, pos. 1), or the carrying handle on both sides (Figure 9, pos. 2).

When transporting the co-botic 45 outside:

- 1. Put the co-botic 45 in store position.
- 2. Carry the co-botic 45 to its destination, using the carrying handle on both sides (Figure 9, pos. 2).



Figure 9



# 4.4 Transport in a vehicle

The co-botic<sup>™</sup> 45 is a compact machine and fits in the trunk of your car. Before loading the co-botic 45 into your vehicle, make sure that:

- Both tanks are part of the main body.
- Both tanks are empty.
- The battery is removed.

#### Do the following:

1. Put the co-botic 45 in store position, see section 4.2.



#### **CAUTION**

The co-botic 45 is heavy. Do not try to carry the unit by yourself. You should always use someone's help.

- 2. Lift the co-botic 45 into your vehicle using the carrying handles (Figure 9, pos. 2).
- 3. Prevent the co-botic 45 from moving around during transport by using a tension belt or another appropriate restraint.



# 5 Assembly and installation

The co-botic<sup>™</sup> 45 does not require much assembly. Most importantly, you will have to insert a battery.

# 5.1 Unboxing

The co-botic 45 is packed in a single box. The battery and the charger are optional. They can be ordered separately as they can also be used for other i-team products. When ordered with the co-botic 45, they are packed in the same box in a separate compartment.



Figure 10

#### Legend

- 1. Dual battery charger (when ordered)
- 2. Manual dual battery charger
- 3. USB-C to USB-A cable
- 4. Remote control
- 5. Single battery charger (when ordered)
- 6. Battery
- 7. Key (battery compartment lid)
- 8. Squeegee and roller brush holder
- 9. Roller brush
- 10. Squeegee blades holder
- 11. Main body

- 12. Rear squeegee blade, red\*, (standard)
- 13. Front squeegee blade, red\*, (standard)
- 14. Rear squeegee blade, blue\*\*, (optional)
- 15. Front squeegee blade, blue\*\*, (optional)
- 16. Android phone with co-botic app installed
- 17. Charger + cable for android phone
- 18. Clean water tank
- 19. Recovery tank
- 20. This manual
- 21. Extra filter bag
- 22. Power cable (when ordered)
- \* The red squeegee blades (made of Linatex) are used for regular spaces such as an office or a store.
- \*\* The blue squeegee blades (made of Primothane) are mainly used for greasy floor surfaces, such as a kitchen floor or the floor of a workshop.



# 5.2 Assembly

#### **5.2.1** Charging the battery

Charge the battery according to the instructions in the battery charger manual. Make sure the battery is charged regularly.

### 5.2.2 Inserting the battery



### **CAUTION**

Only use i-power® batteries specifically designed for use in the co-botic™ 45.

- 1. Open the battery compartment lid using the supplied key (Figure 11, pos. 1).
- 2. Push the battery in the battery slot (Figure 11, pos. 2). A click indicates that the battery is locked.
- 3. Close and lock the battery compartment lid

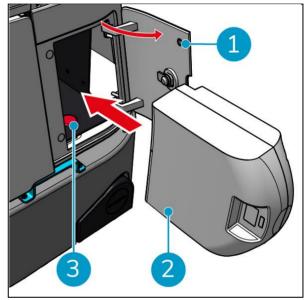


Figure 11

#### **5.2.3 Charging the remote control battery**

To charge the remote control battery, you must use the supplied USB-C to USB-A cable.

To charge the remote control battery, do the following:

- 1. Connect the USB-C connector from the USB-C to USB-A cable to the USB-C port (Figure 12, pos. 1) of the remote control, see Figure 12.
- 2. Connect the USB-A connector to the USB-A port of a power adapter or a laptop.

The battery will be charged.

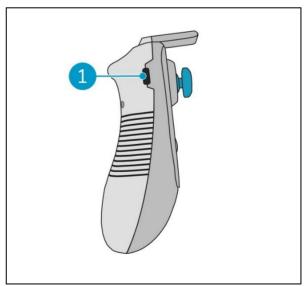


Figure 12



# **6 Operation**

# 6.1 Before you start

Before operating the co-botic<sup>™</sup> 45, make sure that:

- The battery of the co-botic 45 is installed, see section 5.2.2, and fully charged, see the manual of the battery charger;
- The battery of the remote control is fully charged, see section 5.2.3;
- The clean water tank is filled with clean water, see section 6.1.1.
- You have checked the brush and squeegee for wear and tear, see chapter 7.

#### 6.1.1 Filling the clean water tank

1. Push the unlock button (Figure 13, pos. 1) to unlock the clean water tank.

You will hear a clicking sound when unlocking the clean water tank.



Figure 13

Now you can remove the clean water tank from the co-botic 45.

2. Use the blue handles (Figure 14, pos. 2) on both sides of the clean water tank (Figure 14, pos. 3) to further unlock and slide out the clean water tank.



Figure 14

The filling opening is closed by a white rubber cap.

- 3. Gently open the white rubber cap.
- 4. Pull out the black filling hose (Figure 15, pos. 1).
- 5. Completely fill the clean water tank with clean water, see Figure 15.

**Note**: When filling the clean water tank, make sure that the tank is lower than the tap point! By doing so:

- The water flows freely in the tank.
- You will prevent water spillage.

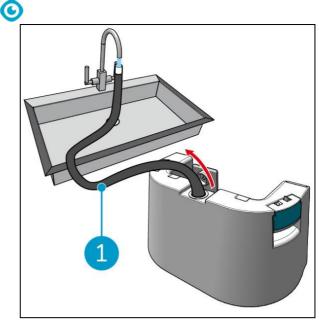


Figure 15

- 6. Push back the black filling hose in the clean water tank.
- 7. Close the white rubber cap.
- 8. Slide the clean water tank back into the co-botic<sup>™</sup> 45 using the blue handles, see Figure 16.

You will hear a clicking sound indicating that the clean water tank is properly locked.



Figure 16

# 6.2 Setting up the co-botic 45

#### 6.2.1 Powering-on and unlocking the co-botic 45

- 1. Press the power button in front of the battery (Figure 11, pos. 3), the co-botic 45 will now power on.
- 2. Enter the 4-digit password on the display to unlock the co-botic 45. The default password is 1234.



#### 6.2.2 Connecting the co-botic 45 to the network

The co-botic  $45^{\text{TM}}$  can be connected to the network via Wi-Fi or via a SIM card. When a SIM card is used to connect to the network, it will connect automatically after inserting the SIM card. Make sure the co-botic 45 is turned off when inserting the SIM card.

Connecting to the network via a SIM card:

- 1. Open the blue rubber cap (Figure 17, pos. 1).
- 2. Remove the cover plate (Figure 17, pos. 2), using an Torx key.
- 3. Insert the SIM card into the SIM card slot (Figure 17, pos. 3).
- 4. Replace the cover plate.
- 5. Close the blue rubber cap.

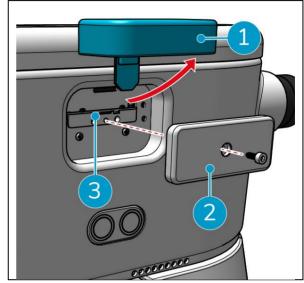


Figure 17

#### Connecting to a Wi-Fi network:

- 1. Turn on and unlock the co-botic 45.
- 2. In the main menu of the display, see section 2.2, select [More].
- 3. Scroll right and select [Settings].
- 4. Scroll down and select [Connected to network].
- 5. Select your network from the list of available networks.
- 6. Enter the network password and select [Connect].

The co-botic 45 is now connected to the Wi-Fi network.

#### **6.2.3** Turning on and connecting the remote control.

The remote control is linked to this specific co-botic 45.

- 1. Press the power button to turn on the remote control
- 2. Press the connect button to connect the remote control to the co-botic 45.

The co-botic 45 ring will start "breathing" blue light, indicating that it is connected to the remote control.



#### 6.2.4 Downloading the co-botic app (optional)

#### **ATTENTION**



The co-botic app comes pre-installed on the android phone that comes with the co-botic  $45^{\text{TM}}$ . Installing the co-botic app on your own phone it optional. If you want multiple machines bound to a single account, please contact your local sales person.

Login credentials for the co-botic app come provided with the co-botic 45.

- 1. Download the co-botic app from the Google Play store by performing a search in the store or by scanning the QR code.
- 2. Log in with your login credentials that come with the co-botic 45.



Figure 18

#### 6.2.5 Selecting the co-botic 45 in the co-botic App

- 1. In the main menu, select [All Devices].
- 2. Find the co-botic 45 you wish to use.
- 3. Select the [three dots] (Figure 19, pos. 1).
- 4. Select [use] (Figure 19, pos. 2).

The co-botic 45 will now appear on top and display the status "current".

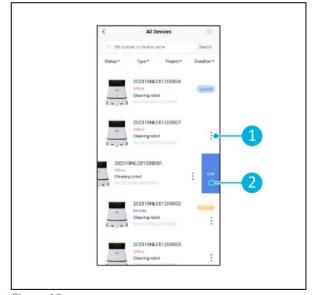


Figure 19



## 6.3 Remote cleaning

Ensure the remote control is connected before starting remote cleaning.

- 1. Select [Remote cleaning] in the main menu of the display.
- 2. Select a cleaning setting.
  [Mute] (Figure 20, pos. 1),
  [Standard] (Figure 20, pos. 2) or
  [Strong] (Figure 20, pos. 3).
- 3. Use the remote control to move the cobotic<sup>™</sup> 45 to the area that requires cleaning.



Figure 20

# 6.4 Creating a map



#### **ATTENTION**

It is recommended to create maps via the co-botic app as you can see what is happening in real-time.

Maps created via the co-botic app are also accessible in the display. Maps created via the display will also be accessible in the co-botic app.

#### 6.4.1 Creating a map via the co-botic app (recommended)

- 1. Select [Maps] in the main menu.
- 2. Select [+] in the bottom right.
- 3. Select [New map].
- 4. Assign a name and floor to the map and select [Next].
- 5. Select [Turn on Remote Controller] and turn on the remote controller (recommended) or [Turn on App controller] to control the co-botic 45 via the app.
- 6. Map the space by moving the co-botic 45 around.
- 7. Select [Finish recording] when the space is sufficiently mapped.

The app will now generate the new map and save it in the [Maps] menu.



#### 6.4.2 Creating a map via the display

- 1. In the main menu of the display, select [More].
- 2. Select [Maps].
- 3. Select [+] in the bottom right.
- 4. Enter the map details and select [Next].
- 5. Turn on and connect the remote control to the co-botic<sup>™</sup> 45, see section 6.2.3.
- 6. Select the [recording icon].
- 7. Select [Turn on Remote Controller] and turn on the remote controller (recommended) or [Turn on App controller] to control the co-botic 45 via the app.
- 8. Map the space by moving the co-botic 45 around.
- 9. Select √ when the space is sufficiently mapped.
- 10. Select [Confirm].

The app will now generate the new map and save it in the Maps menu.

#### 6.4.3 Overview: Map editing menu

In the Maps menu, select the map you wish to edit.

- 1. Task manage. Create and start tasks.
- 2. Incremental mapping. Re-map or expand the current map.
- 3. Set as returning map.
- 4. Switch map. Switch to the current map to use it.
- 5. Areas. Add passable areas, forbidden areas or low speed zones to the map.
- 6. Point position. Change the starting position on the map.
- 7. Edit the name and/or floor of the current map.

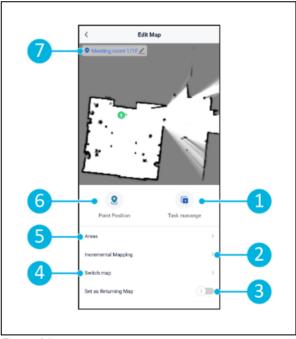


Figure 21



#### 6.4.4 Expanding or re-mapping a map

When expanding or re-mapping an existing map, a new map will be generated and saved in the Maps menu. The newly generated map may take a few seconds to show up in the menu.

Before expanding or re-mapping, do the following:

- Ensure the map you wish to edit is selected by selecting [Switch Map] (Figure 21, pos. 4).
- Ensure the co-botic<sup>™</sup> 45 is aware of its position in a map. Do this by selecting [Localization Initiating] (see 6.7.1).
- 1. Select the map you wish to expand or re-map.
- 2. Select [Incremental Mapping] (Figure 21, pos. 2). Ensure the remote control is turned on and connected.
- 3. Select [Start recording].
- 4. Expand or re-map the map using the remote control.
- 5. Select [Finish recording] to finalize the re-mapping process.

#### 6.4.5 Changing the starting point on the map

In the Maps menu, select the map you wish to edit.

- 1. Select the map you wish to edit.
- 2. Select [Point Position].
- 3. Choose one of two options below to change the starting point:
  - a. Use the remote control to move the co-botic<sup>™</sup> 45 to the desired starting point and select [Set Current location] (3). When using set current location, make sure the robot is localized properly, see 6.7.1.
  - b. Drag the starting point (Figure 22, pos. 2) to the desired location on the map and orient it in the desired direction.
- 4. Select √ (Figure 22, pos. 1) to save.

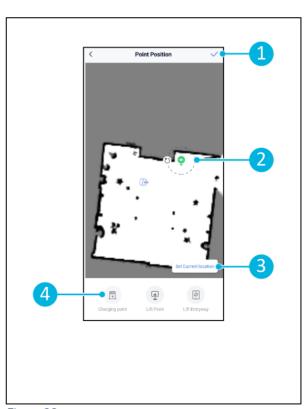


Figure 22



#### 6.4.6 Editing and optimizing a map

Editing and optimizing a map will tell the co-botic  $^{TM}$  45 where it is allowed to drive and/or clean. You do this by adding areas to the map which contain those specific rules.

- 1. Select the map you wish to edit.
- 2. Select [Areas].
- 3. Select one of the following areas to edit the map:
  - a. [Passable area] (Figure 23, pos. 8). Mainly used to erase objects that are not permanently present in the space.
  - b. [Forbidden area](Figure 23, pos. 6). The co-botic45 may **not** drive and clean here.
  - c. [Slope] (Figure 23, pos. 7). The cobotic 45 may drive and clean here, but will limit the driving speed.
- 4. Select the desired shape (Figure 23, pos. 9). Polygon area\*, Rectangle, Circle or Line. Options vary per chosen area.
- 5. Position the shape on the map.
- 6. Select [Finish] (Figure 23, pos. 5) to save the shape.
- 7. Select [✓] to save.

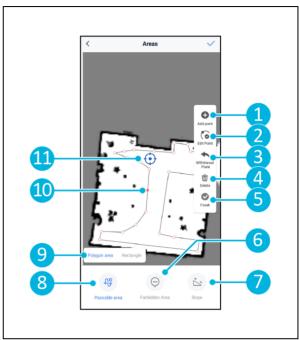


Figure 23

- \*When selecting [Polygon area], use the menu on the right side to finetune the area.
- 8. [Add point] (Figure 23, pos. 1) that will appear on the blue mark (Figure 23, pos. 11).
- 9. Control the map (drag, pinch to zoom) to position the blue mark.
- 10. Select a point (Figure 23, pos. 10) to move it. Selecting it will make it turn orange.
- 11. [Edit point] (Figure 23, pos. 2) to add points beside the selected point or between all existing points if not point is currently selected.
- 12. [Withdraw a point] (Figure 23, pos. 3) to remove the point that was most recently added.
- 13. [Delete] (Figure 23, pos. 4) the selected point or shape.
- 14. [Finish] (Figure 23, pos. 5) to finalize the polygon area.



# 6.5 Creating a cleaning plan

A cleaning plan is created within a map. Ensure the correct map is selected when creating a plan.

### 6.5.1 Creating a basic cleaning plan

- 1. Select [Task manage] in the map editing menu.
- 2. In Task manage, select [+].
- 3. Give the plan a name and select [Area Draw].
- 4. Select [Next].
- 5. Create the Area (Figure 24, pos.1) and (Figure 24, pos. 4) that the co-botic<sup>™</sup> 45 will clean.
- Create, if needed, a Virtual Wall (Figure 24, pos.2) and (Figure 24, pos. 3).
   Note that the co-botic 45 may drive over a virtual wall, but will not clean it.
- 7. Select [✓] to generate and save the plan.

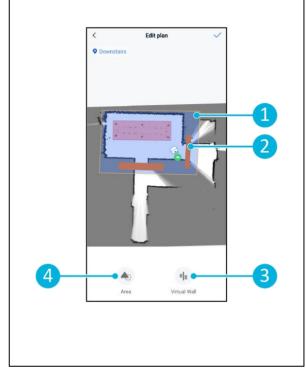


Figure 24

The plan will be saved in the "Task manage" menu and can be started individually.



#### 6.5.2 Creating a cleaning plan manually

- 1. Select [Task manage] in the map editing menu.
- 2. In "Task manage", select [+].
- 3. Give the new plan a name and select [Path Draw].
- 4. Select "Next".
- Create a route by adding "Waypoints".
   The co-botic ™ 45 will clean the area by moving from waypoint to waypoint.
- 6. Create, if needed, a Virtual Wall (Figure 24, pos. 2) and (Figure 24, pos. 3)

**Note**; the co-botic 45 may drive over a virtual wall, but will <u>not</u> clean it.

7. Select [✓] to generate and save the plan.

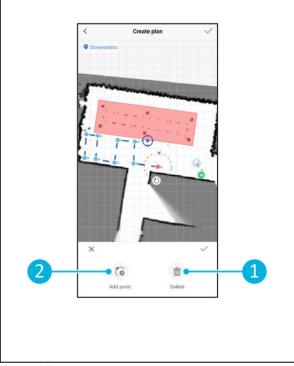


Figure 25

The plan will be saved in the "Task manage" menu and can be started individually.



# 6.6 Creating a cleaning task

A task is a collection of plans that the co-botic<sup>TM</sup> 45 will execute in a specified order. Created tasks are saved in the "Tasks" menu.

- 1. Select [Tasks] in the main menu of the co-botic app.
- 2. Select [New Task].
- 3. Enter the task details (name, executing time, number of executions, schedule and cleaning mode).
- 4. Select [Next].
- 5. Select the map in which you wish to create the task (Figure 26, pos. 1).
- 6. Add the plans (Figure 26, pos. 4) that the co-botic 45 will include in the cleaning task and how many times (Figure 26, pos. 1) the plans are executed.
- 7. Select [Queue order] (Figure 26, pos. 2) to change the order in which the plans are executed within the task.
- 8. Select [Finish] (Figure 26, pos. 5) when the task is fully configured.

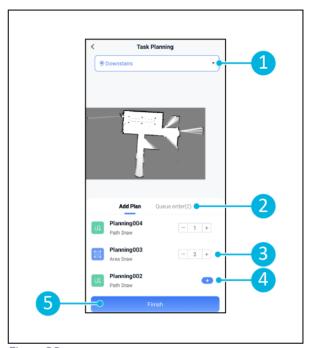


Figure 26

The app will now ask to start the task instantly. Select [Confirm] to start the task now or [Cancel] to start the task at the chosen execution time (see step 3).



## 6.7 Starting a cleaning task

Before starting a cleaning task (manually or automatically), make sure the co-botic  $^{TM}$  45 is aware of its position in a room, see chapter 6.7.1.

Created cleaning tasks will start at the chosen execution times, see chapter 6.6, step 3. Tasks can also be started manually via both the co-botic app and the display, see below.

To start a task manually via the co-botic app:

- 1. Select [Tasks] in the main menu.
- 2. Find the cleaning task in the list of tasks and select [Start].

To start a task manually via the display:

- 1. Select [Cleaning task] in the main menu.
- 2. Find the cleaning task in the list of tasks and select [Start Now].

#### 6.7.1 Position localization

When starting a cleaning task and the co-botic 45 is not at its starting position, select localization initiating.

- 1. Make sure the co-botic 45 is in the map that is currently selected (Figure 21, pos. 4).
- 2. Select [More] in the main menu of the cobotic app.
- 3. Select [Localization initiating] (Figure 27, pos. 1).
- 4. Select [Confirm].

The co-botic 45 will now orient itself in the selected map.

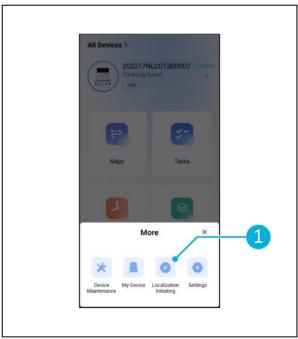


Figure 27



# 6.8 Cleaning



### **CAUTION**

Remove the battery before executing any cleaning or maintenance task.

#### 6.8.1 Removing the battery

- 1. Unlock and open the battery compartment lid (Figure 28, pos. 1) using the supplied key.
- 2. Power-off the co-botic<sup>™</sup> 45 by pressing the on/off button (Figure 28, pos. 3).
- 3. While pressing the yellow slide lock (Figure 28, pos. 2), pull the battery out of the compartment (Figure 29, pos. 4).
- 4. Close and lock the battery compartment lid.

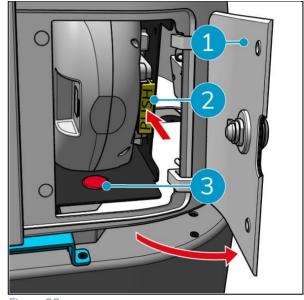


Figure 28

Make sure the battery is charged monthly.

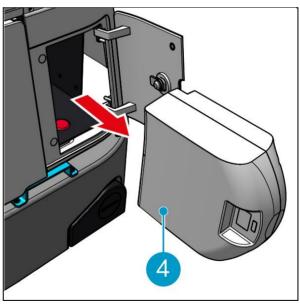


Figure 29



#### 6.8.2 Cleaning the recovery tank, float and filter bag

Clean the recovery tank after each cleaning task or on a daily basis.

- Gently open the lid of the recovery tank compartment (Figure 30, pos. 3) on top of the co-botic™ 45.
- 2. Flip the recovery tank handle (Figure 30, pos. 1) to a vertical position and remove the recovery tank.

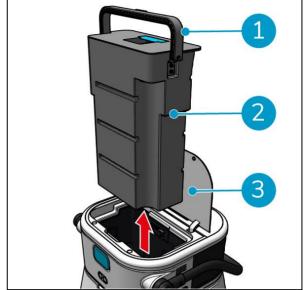


Figure 30

- 3. Remove the lid of the recovery tank (Figure 31, pos. 1).
- 4. Dispose of dirty water from the recovery tank in an appropriate drain.

To clean the recovery tank thoroughly:

- 5. Partially fill the tank with fresh water and hold it in an upright position.
- 6. Swirl the tank repeatedly, thoroughly rinsing all the dirt and debris out from the tank.
- 7. Rinse the tank with clean water.
- 8. Clean the float (Figure 31, pos. 2) and check that it moves freely.



Figure 31

To clean the filter bag, do the following:

- 9. Loosen the filter bag's pull rope (Figure 32, pos. 3).
- 10. Remove the filter bag.
- 11. Clean the filter bag with clean water and dry it. (Or, alternatively, replace it with a new one.)
- 12. Replace the filter bag.
- 13. Tighten the pull rope.
- 14. Replace the recovery tank lid firmly.
- 15. Replace the recovery tank in the opposite direction of the arrow, see Figure 30.
- 16. Close the lid of the recovery tank compartment.

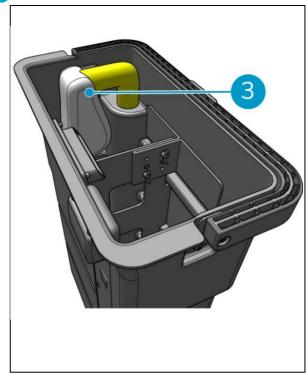


Figure 32

(



#### 6.8.3 Cleaning the roller brush and squeegee blades

Clean the roller brush and squeegee after each cleaning task or on a daily basis.

- 1. Open the lid of the roller brush and squeegee holder compartment (Figure 33, pos. 1).
- 2. Pull the roller brush and squeegee holder out of the compartment (Figure 33, pos. 2), along the top side rail.
- 3. Turn over the roller brush and squeegee holder.
- 4. Check to see if the squeegee blades (Figure 33, pos. 3) are clean and intact.
- 5. Clean the squeegee blades under fresh water, wipe the squeegee blades with a clean, damp cloth. Replace them if necessary, see section 0 for removal instructions.
- 6. Check to see if the roller brush (Figure 33, pos. 4) is clean and intact.
- 7. Remove hair and/or residual dirt from both the roller brush itself and from the roller brush chamber. Clean the brush under fresh water or replace it if necessary, see section 7.6 for removal instructions.

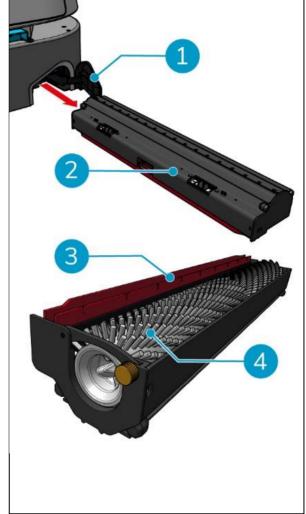


Figure 33

After cleaning the roller brush and squeegee blades:

- 8. Turn over the roller brush and squeegee holder.
- 9. Replace the roller brush and squeegee holder (Figure 34, pos. 2) in the compartment, along the top side rail.
- 10. Close the lid of the roller brush and squeegee holder compartment (Figure 34, pos. 1).

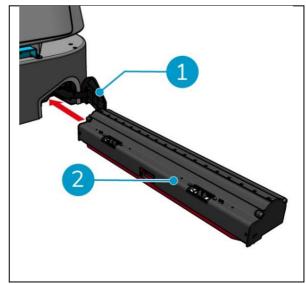


Figure 34



### 7 Maintenance



#### **CAUTION**

Remove the battery before executing any cleaning or maintenance task.



#### **CAUTION**

Always keep the main body of the co-botic<sup>™</sup> 45 in an upright position when taking out or inserting the roller brush and squeegee holder.

### 7.1 Daily maintenance

The following components require daily maintenance:

- The recovery tank, float and filter bag: daily cleaning task, see 6.8.2.
- The roller brush and squeegee: daily cleaning task, see 6.8.3.

### 7.2 Weekly maintenance

Component	Action	
Squeegee	Check the suction port between squeegee and recovery tank for	
	foreign matter like hair and/or other residual dirt. The suction port	
	could become blocked.	
Recovery tank	Check if the bottom of the recovery tank has become dirty, despite	
	rinsing every day.	

### 7.3 Two-weekly maintenance

Component	Action
2D laser radar	Check the 2D laser radar surface for dirt.
Structured light	Check the structured light camera for dirt.
camera	
Touch display screen	Check the touch display screen for dirt.

### 7.4 Monthly maintenance

Component	Action
Roller brush	Check the roller brush for wear and tear. See section 6.8.3.
Dirty water suction	Check if the dirty water suction pipe in the recovery tank is blocked
pipe	by foreign matter.
Clean water tank	Check if the filter screen between the clean water tank and the
	main body is blocked by foreign matter.



#### 7.5 Squeegee replacement

The squeegee blades have two identical sides. When one of the sides is worn, the squeegee blades can be turned 180 degrees once. When both sides are worn, new squeegee blades must be mounted.

To turn or replace the squeegee blades, follow the next steps.

1. Remove the roller brush and squeegee holder as described in section 6.8.3, step 1 and step 2.

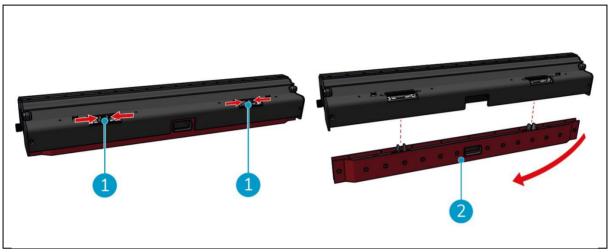


Figure 35

2. Press the plastic pins inwards, as shown in Figure 35, pos. 1. The squeegee blades holder comes off.

The knobs on the squeegee blades holder hold the squeegee blades in place.

3. Gently pull the squeegee blades off the holder.

You can now check the status of the squeegee blades. If one side is worn you can turn the blade and use the other side. Clean the squeegee blades as described in section 6.8.3. and reassemble them. In case the squeegee blades are worn, replace them with a new set.



#### **ATTENTION**

A set of squeegee blades consists of a front and a rear squeegee blade. The rear squeegee blade has a square hole in the center. Be sure to install the rear squeegee blade on the back of the squeegee blades holder.

- 4. Place the front squeegee blade on the holder, align the holes on the knobs and press the squeegee blade into place. Check that all holes are tight over the studs. Do the same for the rear squeegee blade. Be sure to align the square hole of the rear squeegee blade with the square hole of the holder.
- 5. Align the squeegee blades holder with the roller brush and squeegee holder and carefully push the squeegee blades holder in place. You will hear a clicking sound indicating that the holder is properly installed.
- 6. Replace the roller brush and squeegee holder in the co-botic<sup>™</sup> 45 as described in section 6.8.3, step 9 and step 10.



#### 7.6 Roller brush replacement

If the roller brush needed thorough cleaning you can remove the roller brush from the roller brush and squeegee holder. When the roller brush is worn you must replace it with a new one. In both cases, follow the next steps.

1. Remove the roller brush and squeegee holder as described in section 6.8.3, step 1, step 2 and step 3.

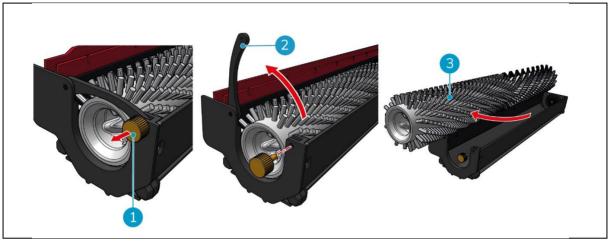


Figure 36

- 2. Remove the screw (Figure 36, pos. 1) by turning it counterclockwise and gently open the lever (Figure 36, pos. 2).
- 3. Remove the roller brush (Figure 36, pos. 3) from the holder for thorough cleaning purposes or replacement with a new one.

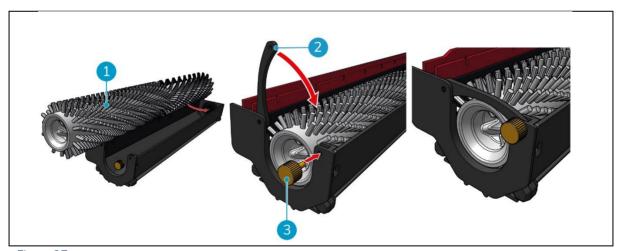


Figure 37

- 4. Replace the roller brush (Figure 37, pos. 1) in the holder. Make sure that the brush rests properly in the holder!
- 5. Close the lever (Figure 37, pos. 2) and tighten the screw (Figure 37, pos. 3) clockwise.
- 6. Replace the roller brush and squeegee holder in the co-botic<sup>™</sup> 45 as described in section 6.8.3, step 8, step 9 and step 10.



### 7.7 Recommended additional cleaning

Clean the exterior of the co-botic<sup>™</sup> 45 weekly with a non-abrasive, non-solvent cleaner or a clean, damp cloth.

### 7.8 Recommend service time

Service must be done by one of our service partners. The first service is recommended after 800 hours. It is recommended to schedule a full service every 500 hours.

### 7.9 Accessories

The co-botic 45 can be equipped with different squeegee blades for different floor surfaces. For more information please contact our sales department, or the partner who provided the co-botic 45.



# 8 Troubleshooting

If any issue might arise when using the co-botic<sup>TM</sup> 45, please read this chapter first. It consists of two sections:

- Section 8.1 describing the most common problems when using the co-botic 45.
- Section 0 describing the fault prompts on the display of the co-botic45.

### 8.1 Problems

Problem	Cause	Solution
App installation	Fail to install	<ol> <li>Update the mobile phone.</li> </ol>
		2. Download the app.
	Fail to log in and register	Check the network of the mobile phone.
Co-botic offline	Co-botic is powered off and/or the app is not connected to the co-	1. Check if the co-botic is on.
	botic	2. Check the network of the mobile phone.
		3. Check the network of the co-botic 45.
Unable to power on/off the co-botic	Power level of the co-botic is low or there is an error in the power	(Re)charge or replace the battery.
	system	2. If this doesn't help: contact customer service (see section 8.3).
Abnormal sounds	Brush is entangled	Clean the brush. If the problem persists, contact customer service (see section 8.3).
	Squeegee is not installed properly	Reinstall the squeegee. If the problem persists, contact customer service (see section 8.3).
Driving errors	Co-botic laser radar and/or structured light camera are dirty	Clean the sensors surfaces with a dust-free cloth. If the problem persists, contact customer service (see section 8.3).
	Drive motor triggers 'over temperature' protection	Pause the task and wait for the drive motor temperature to settle down.

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Co-botic is skidding	Move the co-botic to a place with less water stains on the ground.
Roller brush and squeegee do not lower	Reboot the machine. If the problem persists, contact customer service (see section 8.3).
Roller brush does not rotate	Reboot the machine. If the problem persists, contact customer service (see section 8.3).

# 8.2 Fault problems

Prompt	Solution	
2D/3D laser error	1. If the prompt does not appear frequently, it does not affect normal operation and can be ignored.	
	2. If the prompt appears frequently, it may be caused by a too high laser radar temperature. Power off the co-botic and let it stand still for some period of time.	
	3. If the problem persists, contact customer service (see section 8.3).	
Emergency stop	To reset the co-botic, rotate the emergency stop button to the	
button being pressed	right.	
Mapping failed.	Log out and map again.	
Please map again		
IMU error	1. If the prompt does not appear frequently, it does not affect normal operation and can be ignored.	
	2. If the prompt appears frequently, it may be caused by an IMU drive error. Restart the co-botic.	
Insufficient power	The power level is lower than the low power threshold. Take out the battery to recharge it.	
Please check the 2D laser radar for	If the prompt does not appear frequently, it does not affect normal operation and can be ignored.	
foreign matter	2. If the prompt appears frequently, it may be caused by dirt on the 2D laser radar surface. Wipe the radar surface with a dust-free cloth.	
Please check the structured light	If the prompt does not appear frequently, it does not affect normal operation and can be ignored.	
camera for foreign matter	2. If the prompt appears frequently, it may be caused by dirt on the structured light camera surface. Wipe the surface of the camera with a dust-free cloth.	

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Please check the ultrasonic wave	<ol> <li>If the prompt does not appear frequently, it does not affect normal operation and can be ignored.</li> </ol>	
radar surface for foreign matter	2. If the prompt appears frequently, it may be caused by dirt on the ultrasonic drive surface. Clean the drive surface.	
Please check whether the air inlet	1. The recovery tank cover float blocks the air inlet. Discharge dirty water and put the float back to its original position.	
is blocked by foreign matter	<ol><li>The long dirty water suction pipe of the recovery tank is blocked by foreign matter. Clean up the garbage inside the pipe.</li></ol>	
	<ol> <li>The dirty water suction port at the squeegee is blocked by foreign matter. Clean up the garbage inside the dirty water suction port.</li> </ol>	
Please check whether the clean	1. The handles on the left and the right or at the bottom of the clean water tank are not clamped tightly. Reinstall the tank.	
water tank has been installed correctly	2. The copper column of the clean water tank and the surface of the opposite needles are dirty. Remove any dirt with a cloth.	
Please check whether the drive motor is entangled	1. This is caused by an overload of the drive motor or a sudden brake. Please let the drive motor stand still and wait for it to be operational again.	
with foreign matter (resulting in a too high drive bus voltage)	2. The drive motor is entangled with foreign matter, such as hair. Clean the motor.	
Please check whether the drive	1. The drive motor is in over-temperature. Power it off and let in stand still for a while.	
motor is entangled with foreign matter (resulting in over- temperature)	2. The drive motor is entangled with foreign matter, such as hair. Clean the motor.	
Please check whether the roller brush is entangled with foreign matter	The bearing(s) of the squeegee is (are) entangled with garbage. Use a knife to clean it up.	
Please check whether the recovery	The recovery tank is not installed properly. Remove and reinstall the tank.	
tank has been installed correctly	2. If the elastic needle of the recovery tank or the copper column on the opposite side has foreign matter on it, remove it with a cloth.	
The amount of dirty water is too high.	The amount of dirty water reached the limit level. Remove the recovery tank to discharge dirty water.	



	$oldsymbol{\omega}$
Please discharge it in time	
The amount of water is too low. Please fill water in time	Remove the clean water tank and fill water to at least the middle of the tank.
There are too many obstacles around. Please move the cobotic to a safe area	The co-botic is trapped. Remove the surrounding obstacles or move the co-botic to another place.
There is a communication error. Please restart the device	There is a software error. Restart the co-botic 45.
There is an error with the power connection. Please check whether the battery has been installed correctly or whether the power switch has been turned on	The battery is not installed properly. Reinsert it tightly.
There is a global planning module error. Please restart the device	There is a software error. Restart the co-botic.
There is a lifting error. Please stop working and wait for self-recovery	The lifting motor is malfunctioning. Stop working and wait for the prompt to disappear.
There is a local planning module error. Please restart the device	There is a software error. Restart the co-botic.
There is a mapping system error. Please restart the device	There is a software error. Restart the co-botic.
There is a positioning system error. Please start the device	There is a software error. Restart the co-botic.



# Ultrasonic wave error

- 1. If the prompt does not appear frequently, it does not affect normal operation and can be ignored.
- 2. If the prompt appears frequently, it may be caused by an ultrasonic drive error. Restart the co-botic.

## 8.3 Report a problem via i-link®

- 1. Scan the QR code on the device with a phone or tablet. The i-link QR landing page will open.
- 2. Click "Report a problem" and report the problem.



# 9 Decommissioning and disposal



#### **ATTENTION**

It is the responsibility of the co-botic<sup>™</sup> 45 owner to dispose of the product responsibly.

At the end-of-life the co-botic 45 still contains valuable resources and needs to be disposed of according to your local laws and regulations regarding recycling of electrical equipment.



Before disposal please:

1. Remove the battery for separate disposal, see section 6.8.1.

#### TIP:

Alternatively, keep the battery or batteries for use in another piece of i-team equipment.

- 2. Remove all loose components like brush, tanks and squeegee.
- 3. Dispose all items according to your local laws and regulations.



# **10 Attachments**

10.1 CE Certificate



# 10.2 Specifications



Figure 38

Cleaning efficiency:	Roller Scrubber/dryer ~ 1500 – 2500 m² (Single Operation Cycle)
Cleaning pressure:	2-6 kg
Clean water tank capacity:	10 L
Recovery tank:	10 L
Battery Life:	~ 2 – 3 hours (1x i-power 20)
Charging time:	~ 2 hours (i-charge 9c)
Sensors:	3D LiDAR (x1)
	2D LiDAR (x1)
	Cliff Detection Sensor (x1)
	Ultrasonic Sensors (x4)
Display screen:	7 inches
Operational speed:	0.8 m/s (adjustable)
Noise level:	68/72/75 dB(A)
Weight:	35 kg
Dimensions (L x W x H):	500 x 504 x 629 mm
Brush speed:	300 – 900 RPM
Others:	Remote control
	Auto route planner
	Co-botic management dashboard
	Downloadable cleaning reports (pdf file)
	Modular design on all parts



#### 10.3 The i-Story

It's not just about cleaning machines.

It's about the well-being of people and the planet.

We are stoked about cleaning, thrilled about sustainability and wholeheartedly dedicated to keep on innovating.

We believe effective cleaning is more than just the removal of soil. It means ensuring the health and safety of people, while making the job easier, simpler, more efficient and even fun. It means consistent results all over the world, while protecting the world. And it means creating partnerships to grow our global force for better cleaning. After all, it takes a team. The i-team.

#### Made Blue

By operating our products, your partners, clients and users lower the water footprint whilst contributing positively to the availability of water in the world. For this, we team up with Made Blue. Every day a co-botic<sup>TM</sup> 45 is turned on, Made Blue simultaneously ensures someone else on the planet gets access to clean water. For every liter that the co-botic<sup>TM</sup> 45 uses in operations, the i-team and Made Blue mirror clean drinking water in a developing country. The planet is a beautiful place with over 7 billion people. Humans need water to live, breathe, and enjoy their lives. Worldwide 2,7 billion people suffer from a shortage of drinking water. For 780 million people this situation is permanent, each year 3,5 million people die because of this. That's why Made Blue invests in projects in developing countries. We are a proud partner of Made Blue. Made Blue mirrors the water used by i-team to create clean water in developing countries. 1 liter for 1 liter.





Access to clean water for All.



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