



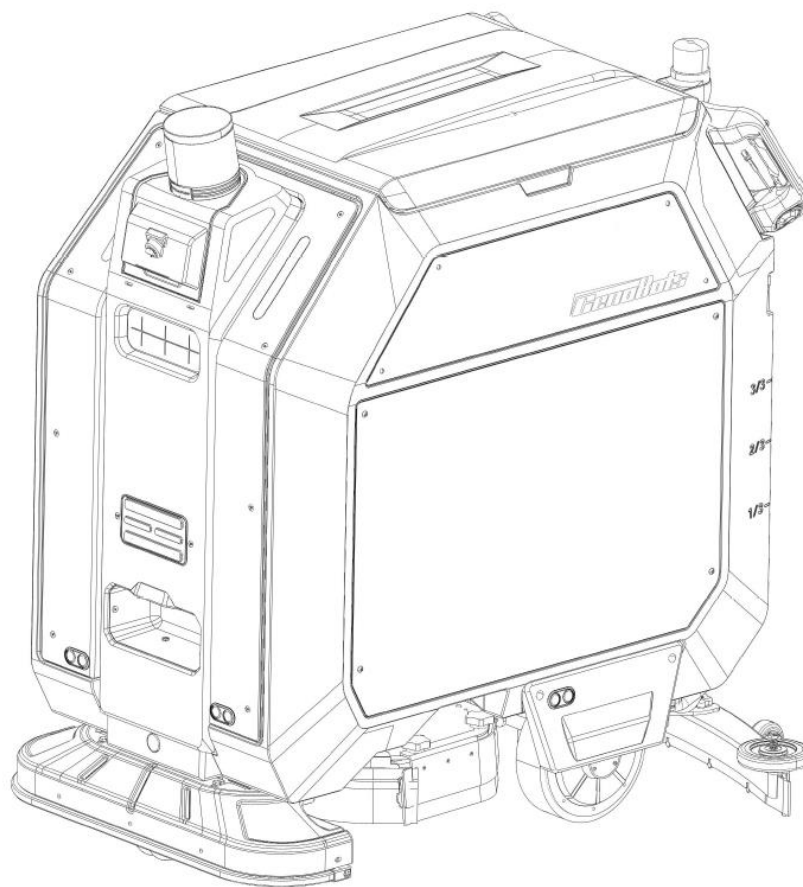
Cleaning like a pro

Autonomous Scrubber Dryer L50



User Manual

Original Instruction



2023.07



www.sparkepos.com/I50

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Introduction

This manual is only intended for end user and provides necessary information for operating the machine. It contains the safety, operations, maintenance and the specifications of the machine.



CAUTION Read all instructions before operating or maintaining this machine.

The machine will provide the optimal service, if:

- Operate the machine properly.
- Maintain the machine regularly according to the maintenance instructions.
- Maintain the machine with manufacturer supplied or equivalent parts.

If you have questions about the instructions and explanations of this manual, please contact CenoBots.

Intended Use

L50 is an automatic drive, LFP battery powered, wide area used, AI-power scrubber dryer robot. This machine is intended for commercial use, for example in hotels, schools, hospitals, shopping mall, offices and rental businesses. It's designed to clean the hard floor (such as tile, wood floor, Concrete, terrazzo, Granite, etc.) in indoor areas.

Environment Protection



Please dispose of packaging materials and used machine components such as



batteries in an environmentally safe way according to your local waste disposal regulations.

Machine Data Label

The model and serial number of the machine are shown on the nameplate which is located at the rear of the machine. This information is needed when ordering repair parts for the machine. Please note the machine model and serial number as below:

Model: _____

Serial Number: _____

Data of Purchase: _____



Uncrate the Machine

⚠CAUTION: Do not move machine from the pallet without the ramp, or it may cause damage to the machine.

When the machine is delivered, please check the packaging and machine carefully for any damage. If there is any damage, report to the carrier immediately. Contact the local dealer or CenoBots directly for missing items.

Safety

Important Safety Instructions

Save These Instructions

There are three levels of hazard intensity identified by signal words -**WARNING** and **CAUTION** and **FOR SAFETY**. The level of hazard intensity is determined by the following definitions:

⚠WARNING: To warn hazards or unsafe practices which could result in severe personal injury or death.

⚠CAUTION: To warn hazards or unsafe practices which could result in minor personal injury or product or property damage.

FOR SAFETY: To identify actions which must be followed for safe operation of equipment.

⚠WARNING: To reduce the electric shock, fire, explosion or injury:

- Always read the manual and before using the machine for the first time.
- Do not use the machine in rooms where explosive or highly combustible substances (e.g., gas, solvents, heating fuel, dust, etc.) are stored or processed.
- Power off the switch and disconnect the charger cord before servicing the machine.
- Never touch the mains plug or socket with wet hands.
- Do not use or store the machine outdoors.

⚠WARNING: This machine is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge.







⚠WARNING: Children should be supervised to ensure that they do not play with the machine.

FOR SAFETY:

1. Do not operate the machine,
 - Unless trained and authorized.
 - Unless the operator manual is read and understood.
 - Under the influence of alcohol or drugs.
 - Outdoors. This machine is for indoor use only.
 - On a slope in the automatic model.
 - While using a cell phone or other types of electronic devices.
 - If not in proper operating condition, including temperature, altitude and the material of the ground. Refer to the specifications.
 - In flammable or explosive areas.
 - In areas with possible falling objects.
 - If the accessories or consumables are not supplied or authorized by Cenozoic Robotics. Using other accessories may impair safety.

2. Before start up the machine:
 - Check machine for fluid leaks.
 - If safety-relevant covers, such as disk brush deck, power supply cords, are damaged, stop the machine and report.
 - Ensure that all covers are positioned in the designated locations as specified in the instructions.
3. When operating the machine
 - Use it as described in this manual.
 - Do not stop on slopes.
 - Pay attention to the local situation, as well as to third persons and children. In the vicinity of blind spots such as doors or curves in particular, it is important to reduce speed.
 - Reduce speed on the inclines and slippery ground.
 - Go slowly on slopes and slippery surfaces.
 - Use care when reversing machine.
 - Do not transport other persons and objects with this machine.
 - Keep children and unauthorized persons away from machine.
 - Do not operate manually the machine on the ramp with a gradient exceeding 10%.
 - Do not run it in auto mode on the slope with a gradient exceeding 2%.
4. After using the machine:
 - In order to prevent unauthorized use of the machine, the power source shall be switched off or locked, for example by removing the key of the main switch or the ignition key.
 - Stop the machine on level ground.
 - Machine that is left unattended should be secured to prevent unintended movement.
5. When maintaining the machine
 - Turn off the machine and remove the key.
 - Stop on the level ground.
 - Do not jack up machine.
 - Do not clean the machine with a pressure washer.
 - Use accessories and consumables supplied or authorized by CenoBots. The use of other accessories may impair safety.
 - Do not dismantle the machine without permission. If you need service, please contact the local distributor.
 - Do not use incompatible battery chargers as this may damage battery packs and potentially cause a fire hazard.
 - Avoid moving parts, do not wear loose clothing or jewelry, and secure long hair.
6. When loading/unloading the machine onto/off truck or trailer:
 - Turn off the machine and remove the key.
 - Drain the water tank before loading.
 - Do not operate the machine on the ramp with a gradient exceeding 10%.
 - Block the machine wheels well.
 - Use tie- down straps to secure machine.

Safety Labels

	Caution: watch your hand to avoid damage.
	Do not step on the place, may cause damage to the machine.
	Do not touch the device.
	This is the Class 1 laser device and it's safe for the eyes.
	Disposal
	Do not throw used machine components to the bin.

Know your Machine

Overview of Appearance

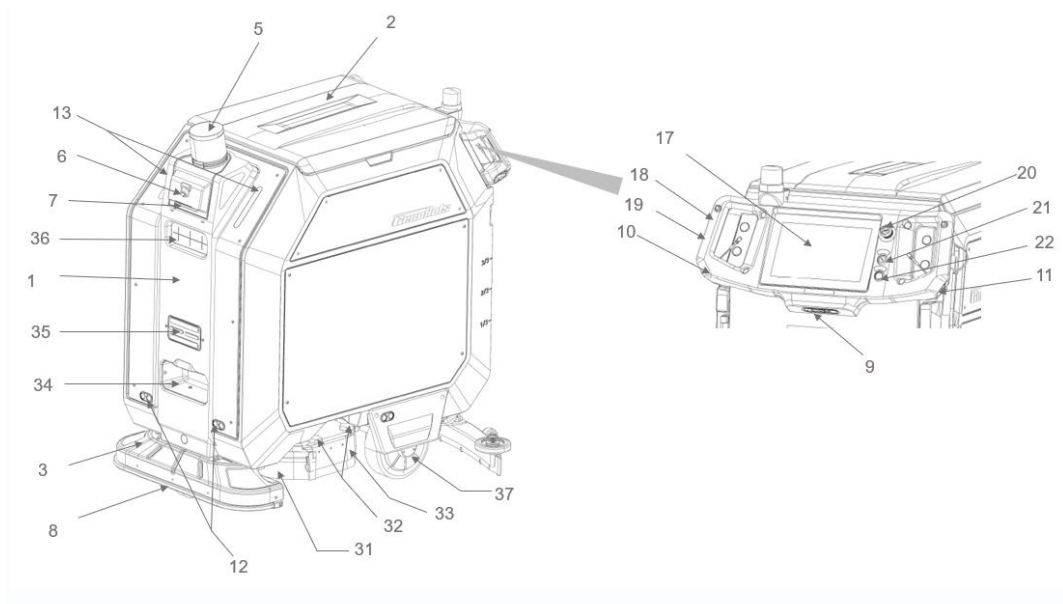


FIG.1

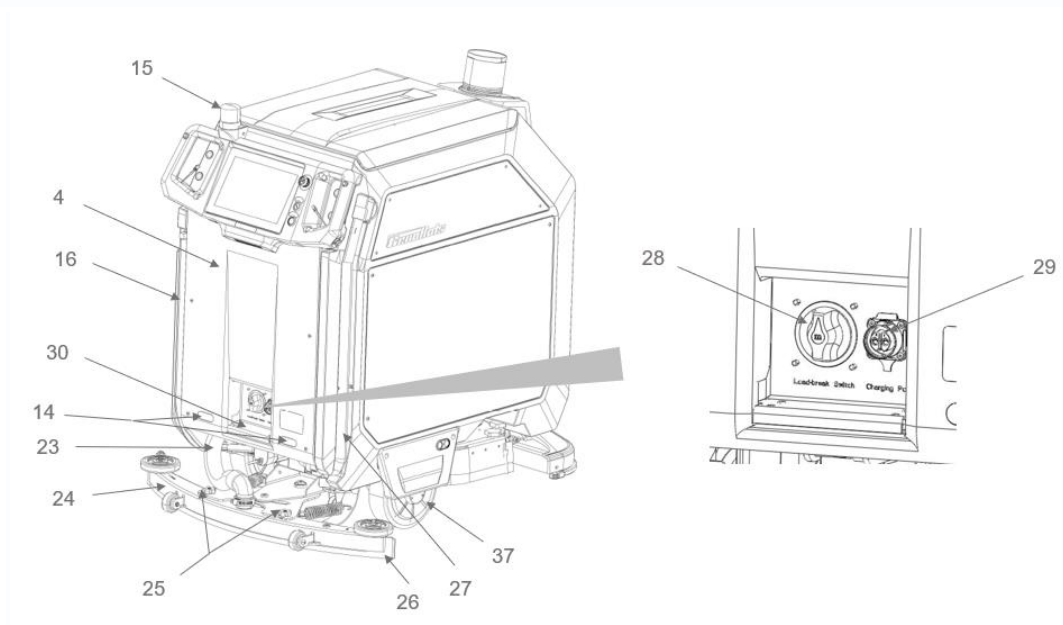


FIG.2

● **Covering parts**

- 1. Front cover
- 2. Recovery tank lid
- 3. Bumper
- 4. Rear cover

● **Sensors**

- 5. 3D LiDAR
- 6. Front camera
- 7. Front depth camera
- 8. Bumper sensor
- 9. Rear depth camera

Know your Machine

10. Left camera
11. Right camera
12. Ultrasonic sensors
- **HMI & Operating parts**
13. Front indicator light
14. Rear indicator light
15. Blinking light (optional)
16. Solution tank level/drain hose
17. Touch screen
18. Handle
19. Power assist button
20. Emergency stop button
21. Key switch
22. Auto/Manual switch button
23. Vacuum hose
24. Squeegee
25. Squeegee Retainer knob
26. Squeegee blade
27. Recovery tank drain hose
28. Load-break switch
29. Manual charging port
30. Pedal
31. Front skirt
32. Side skirt retainer knob
33. Side skirt
34. Auto draining port
35. Auto charging port
36. Auto filling port
37. Drive wheel

Indicator light introduction

Indicator (13 & 14): Indicators are in the front and rear of the machine. They show the working status and the turning direction of the machine.

Indicator Light	Description
Green	Machine is executing the task.
Red	Machine error.
Red flash	The emergency stop button is pressed.
Yellow flash	Machine is turning in the direction of the yellow flash.
White	Machine is idle.

Sensor introduction

- 3D LiDAR (5): CLASS 1 laser. Used for mapping, localization and obstacle avoidance.
- Front camera (6): Used for floor stain detection.
- Front depth camera (7): Used for obstacle avoidance and localization.
- Bumper sensor (8): Used for collision detection.
- Rear depth camera (9): Used for obstacle avoidance, cleaning result checkup, and positioning when docking.
- Left camera (10): Used for obstacle avoidance.
- Right camera (11): Used for obstacle avoidance.
- Ultrasonic sensors (12): Used for obstacle avoidance.

Recovery Tank

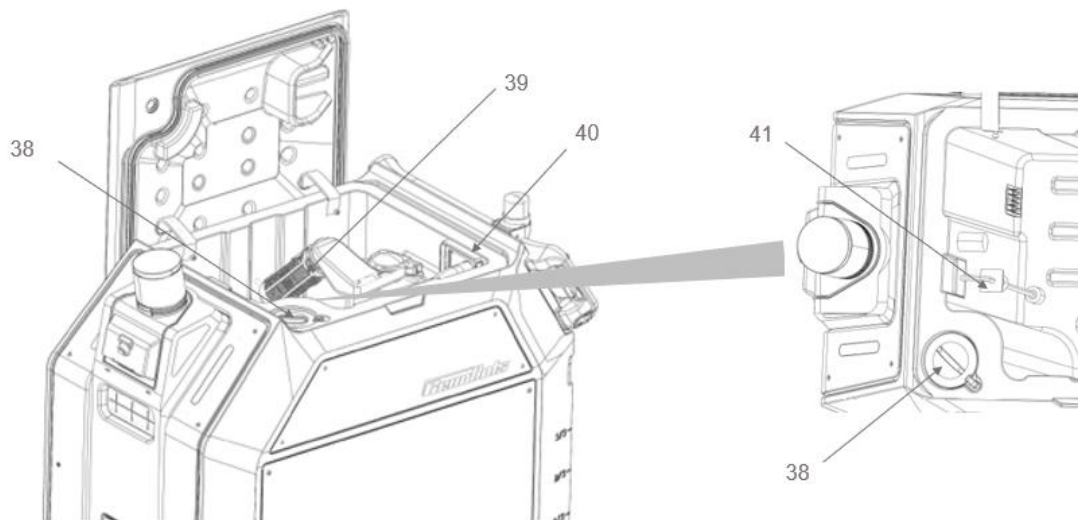


FIG.3

38. Manual water filling port

40. Debris filter bag

39. Recovery tank shutoff float

41. Recovery tank float sensors

Manual water filling port (38): Used for filling the water into solution tank

Recovery tank shutoff float (39): Prevent the waste water from entering the vacuum motor if the float sensor fails.

Debris filter bag (40): Filter debris to prevent clogging of the drain hose.

Recovery tank float sensor (41): Detect the water level in the recovery tank.

This machine is equipped with water recycling system and it is optional as shown in FIG.4. Equipped with this feature, significant water savings have been achieved, aligning with the goals of sustainable development.

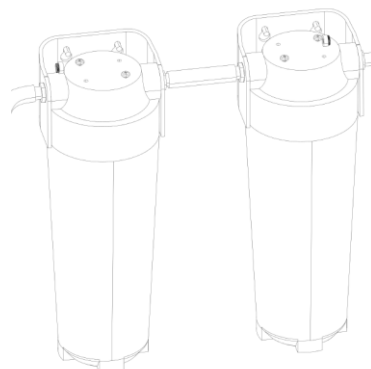


FIG.4

Control Panel

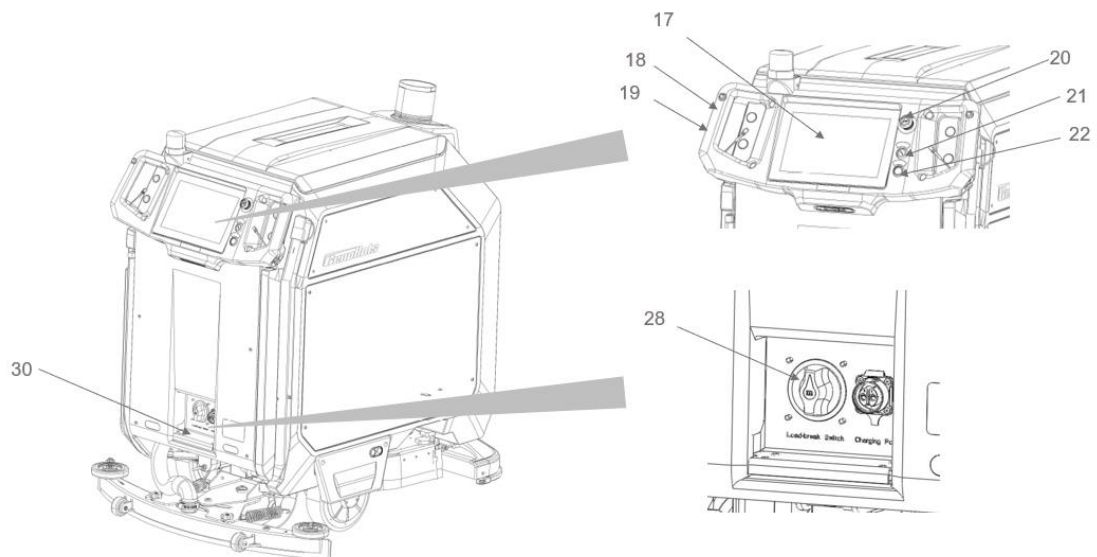


FIG.5

1. TOUCH SCREEN (17)

The User Interface (UI) is an essential component of the machine, consisting of a 10.1-inch touchscreen display located at the top rear. It enables operators to conveniently access features such as machine instructions, cleaning schedules, cleaning reports, and performance monitoring.

Note: The UI interface of the screen may change with software updates. If you have any questions, please contact local dealer or CenoBots for technical support.

Homepage

The homepage is the main page on the monitor. This page can display the task details and some common operations, such as pausing, ending, creating temporary tasks, etc.

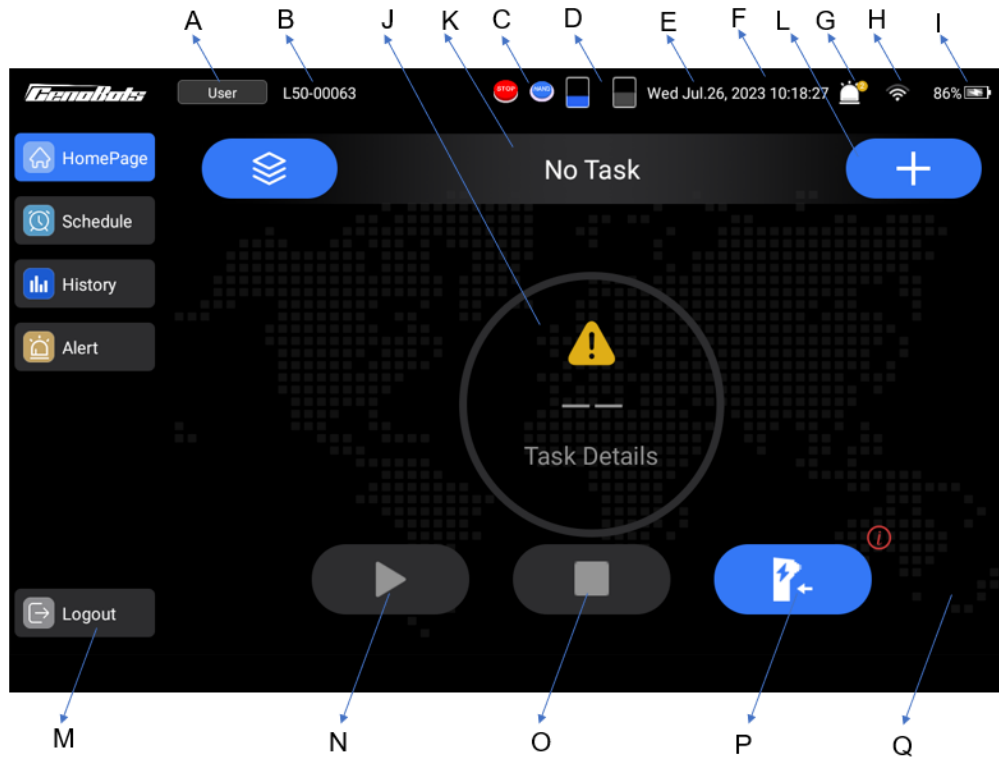


FIG.6

- | | |
|---|--|
| A. Account | J. Task completion rate and task details |
| B. Machine model and ID | K. Cleaning mode and status |
| C. The E-stop status and operation mode | L. Create a temporary task |
| D. The water tanks level | M. Account logout |
| E. Date | N. Task pauses or continues |
| F. Time | O. End task |
| G. Warning notice | P. Return to the docking station |
| H. Network | Q. Select cleaning intensity (Can be selected after the task starts) |
| I. Battery level | |

Notice:

- The emergency stop icon is shown on the screen only after it has been pressed.
- The 'Hand' icon is shown on the screen only in manual mode.

Schedule Page

This page can display and modify the settings of scheduled tasks, as well as the execution status of past tasks.

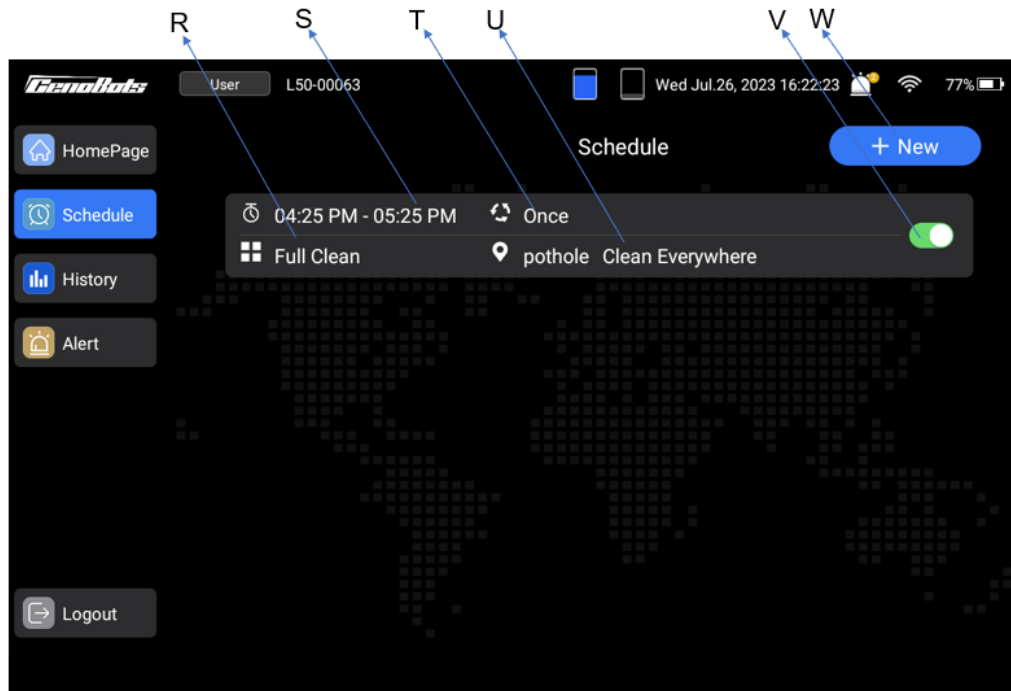


FIG.7

- R. Cleaning mode of the task
- S. Start and end time of the task
- T. Number of cleaning repetitions
- U. The location of the map
- V. Task execution button
- W. Create new scheduled tasks

History Page

The "History" page shows the past cleaning task reports.

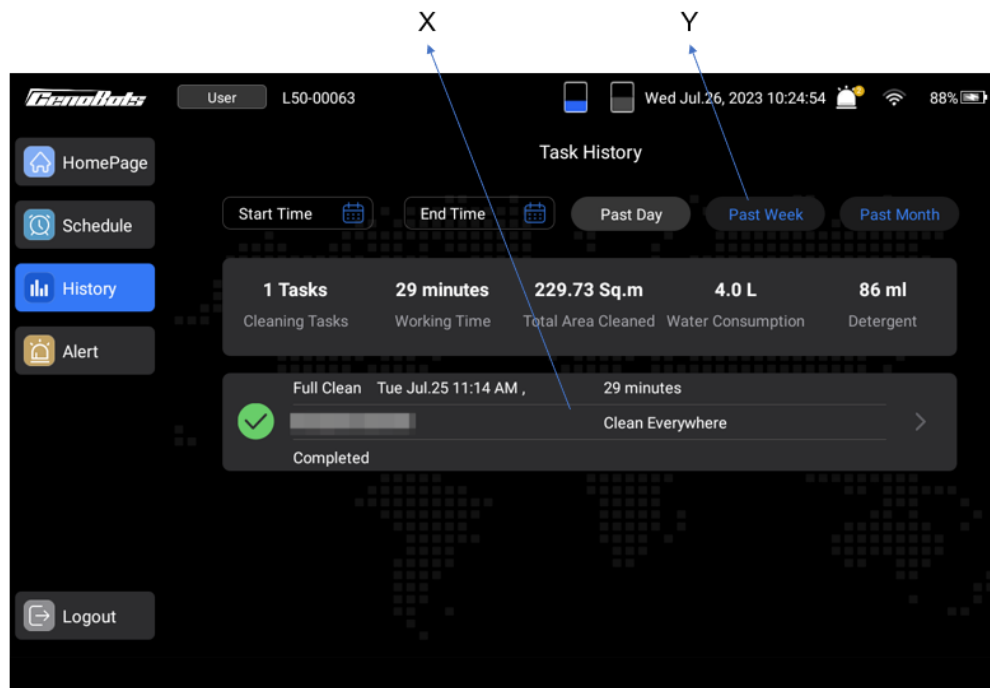


FIG.8

X. Cleaning mode of the task

Y. Task time selectio

Alert Pag

This page displays the details of the alert, and the “Clear” button is for clearing the errors.

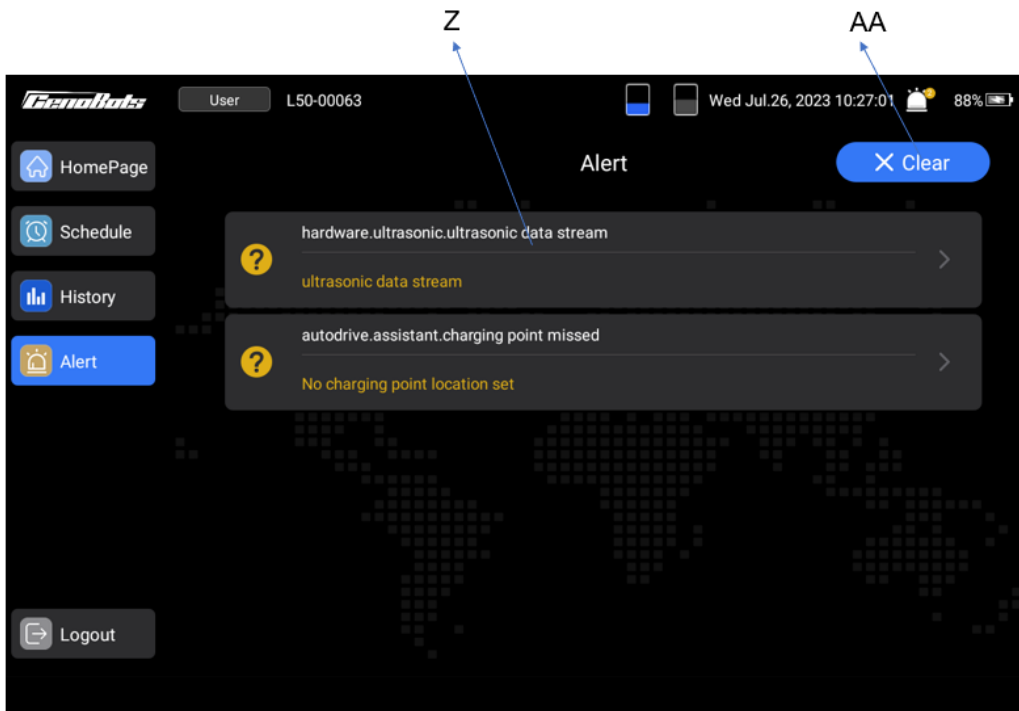


FIG.9

Z. Area of showing the alert code

AA. Clear errors

2. HANDLE (18)

The handle is located at the rear top of the machine, and is used for manually pushing the machine.

⚠ CAUTION: If the machine is in auto mode or the emergency stop button is pressed, do not push the machine forcefully to avoid the possibility of machine damage.

3. POWER ASSIST BUTTONS (19)

This machine is equipped with two assist buttons. When the operator presses buttons in the manual mode, the robot gains the power to move. It enables the operator to easily control the machine and effectively clean the floor.

When both buttons are pressed, the machine will move forward or backward (the direction can be select on the touch screen). Depressing a single button will initiate a turning motion for the machine.

Notice: The power assist feature is only effective in manual mode.

4. EMERGENCY STOP BUTTON (20)

The emergency stop button which is yellow-backgrounded and red is located on the rear top of the machine. It is used for emergency stop of the machine. Upon pressing it, the machine will initiate the stop function, causing the drive wheel and brush motor to cease operation. If the emergency stop button is pressed while the machine is performing a cleaning task, the vacuum motor will briefly run before coming to a stop to minimize residual water on the floor.

When the emergency stop button is pressed, the 'STOP' icon will be displayed on the screen. To release the emergency stop button, rotate it clockwise.

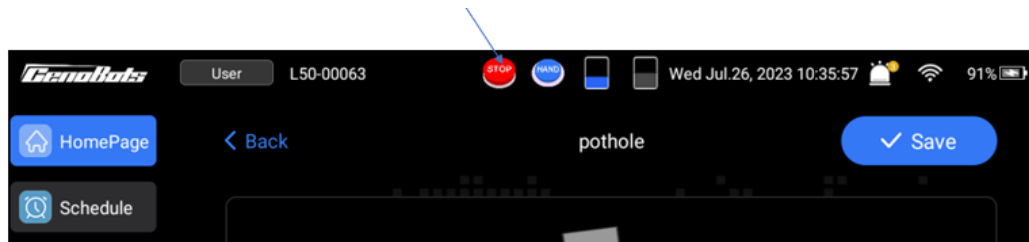


FIG.10

⚠ CAUTION: If the machine is in auto mode or the emergency stop button is pressed, do not push the machine forcefully to avoid the possibility of machine damage.

5. KEY SWITCH (21)

The key switch that controls the power of the machine is located at the rear top of the machine. When the switch is turned to the “ON” position, the machine will power on (make sure the load-break switch is also in the “ON” position). When the switch is turned to the “OFF” position, the machine will power off after a delay of about 30 seconds.

Notice: After the operator leaves the machine, please remove the key and keep it in a safe place to avoid loss.

6. AUTO/MANUAL SWITCH BUTTON (22)

This machine has two operating modes:

- **Autonomous Mode:** The autonomous mode is used to automatically scrub the floor. The machine will perform tasks at scheduled times and can also be called upon to perform temporary cleaning tasks by setting up temporary tasks.
- **Manual Operation Mode:** The operator can manually operator this machine to scrub the floor in this mode.

These modes can be switched by pressing the A/M button. If the button displays a blue light or the 'HAND' icon is displayed on the touch screen, it indicates that the machine is in the manual mode.

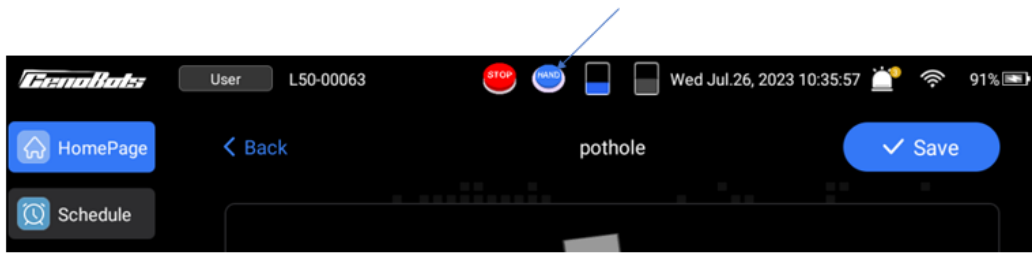


FIG.11

7. PEDAL (30)

When pushing the machine, it is easier to cross the obstacle or the step by stepping on the pedal.

8. LOAD-BREAK SWITCH (28)

When servicing (by the trained personnel) or storing the machine, please turn the switch to 'OFF' position.

Docking Station

There are two types of docking stations: the charging station, which only has the auto charging feature for the machine, and the workstation, which has additional features such as auto water filling, auto detergent filling, and auto water draining. By being equipped with these features, human intervention has been greatly reduced, resulting in increased efficiency of the machine.

The docking stations are optional.

Charing Station

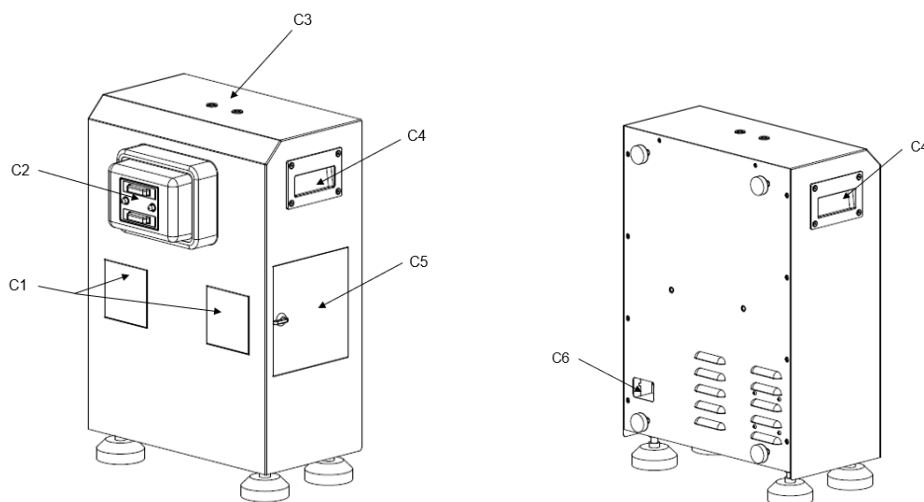


FIG.12

- | | | | |
|----|--------------------|----|---------------------------------|
| C1 | QR code | C4 | Handle |
| C2 | Auto charging port | C5 | Left door |
| C3 | Indicator light | C6 | Power switch and cord connector |

Workstation

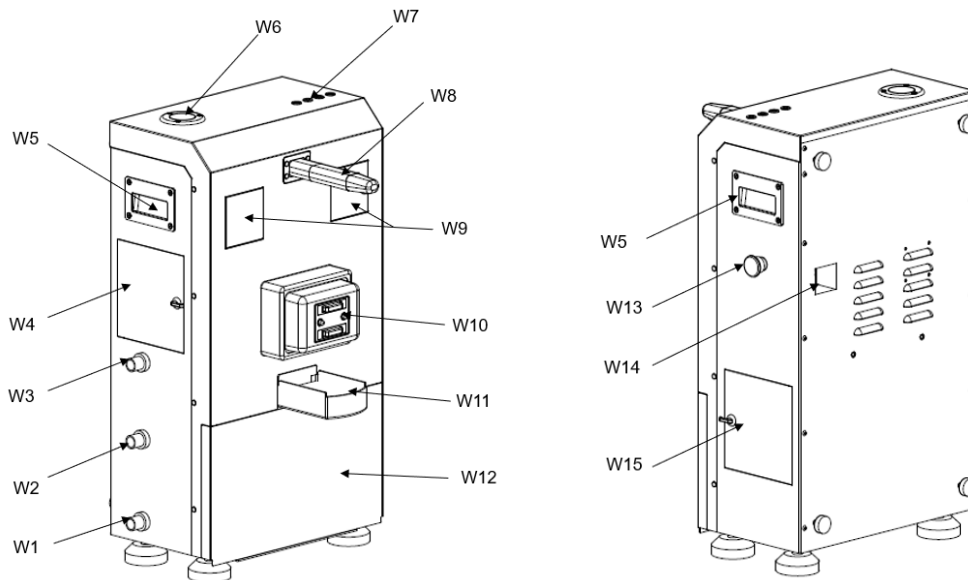


FIG.13

- | | | | |
|----|-----------------------------------|-----|---------------------------------|
| W1 | Water outlet 1 | W9 | QR code |
| W2 | Water outlet 2 | W10 | Auto charging port |
| W3 | Water inlet | W11 | Auto water draining port |
| W4 | Right door | W12 | Front cover |
| W5 | Handle | W13 | Emergency stop button |
| W6 | Detergent tank | W14 | Power switch and cord connector |
| W7 | Indicator light | W15 | Left door |
| W8 | Auto water/detergent filling port | | |

Special Instructions

- Station water tank: Used for buffering waste water when draining.
- Left door: Air switch is located behind the door.
- Right door: Nozzle and manual valves are behind the door.
- Front cover: Station recovery tank cover.
- Emergency stop button: Used for immediate termination of all tasks. If pressed, all the tasks are stopped and need to be released by turning it clockwise.

Operation

The main purpose of this chapter is to provide the necessary operating instructions for the operators.

Note: The UI interface of the screen may change with software updates. If you have any questions, please contact local dealer or CenoBots for technical support.

Starting Machine

Turn the machine power on by turning the key switch to 'ON' position. The load-break switch must be in the 'ON' position, or machine cannot be turned on.

Notice: After 7 days of storage, the battery will enter a dormant state automatically, and the machine can't be turned on using the key switch. Please use the charger to activate the battery.

When the machine is turned on and the UI is fully loaded, the login page will be presented first on the touch screen. There are two types of accounts on the login page: 'User' and 'Admin'. The 'User' account is for normal users to perform basic operations such as starting cleaning tasks, setting cleaning schedules, and viewing the cleaning report, among others. The 'Admin' account is for advanced operations such as map scanning, managing configurations, and adjusting cleaning parameters, among others.

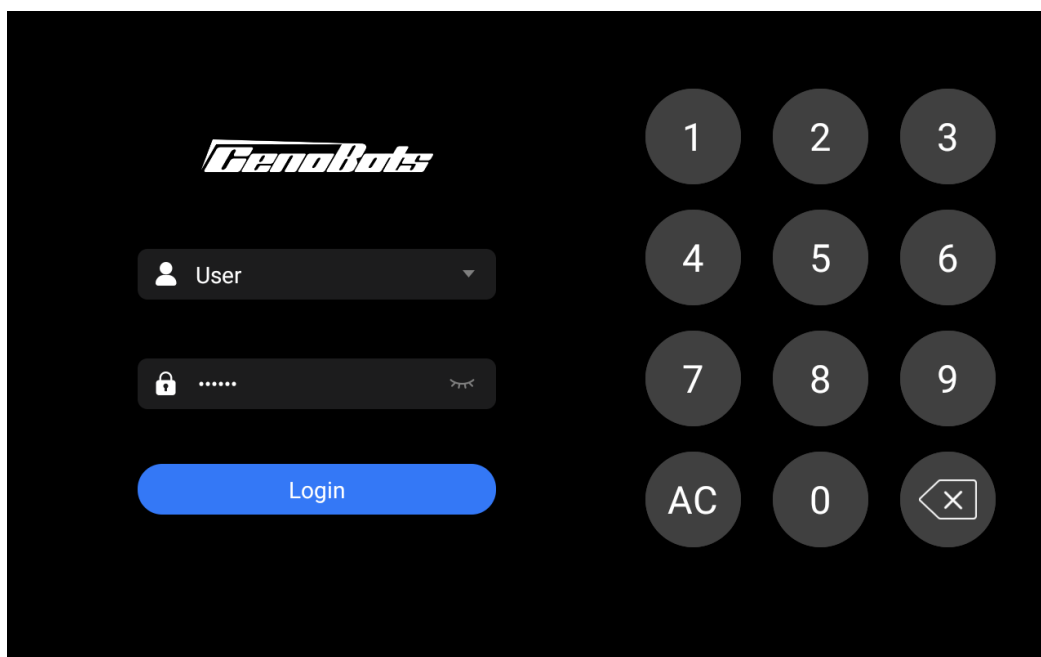


FIG.14

Selecting the Map

After login, select the right map and tap **'Confirm'** to enter the next step.

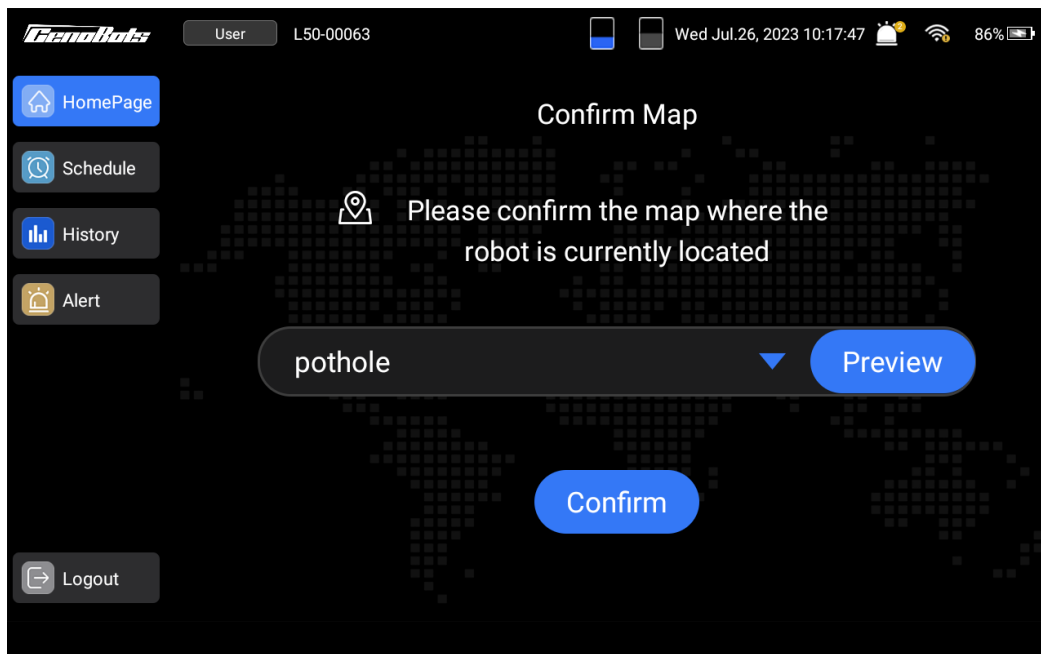


FIG.15

Setting Scheduled Cleaning Tasks

1. Tap the **'Schedule'** button on the left side of the screen interface.
2. Tap the **'+New'** button on the top right.
3. Set the starting time, ending time, cleaning dates, cleaning mode, and select the map.
4. Save the settings.

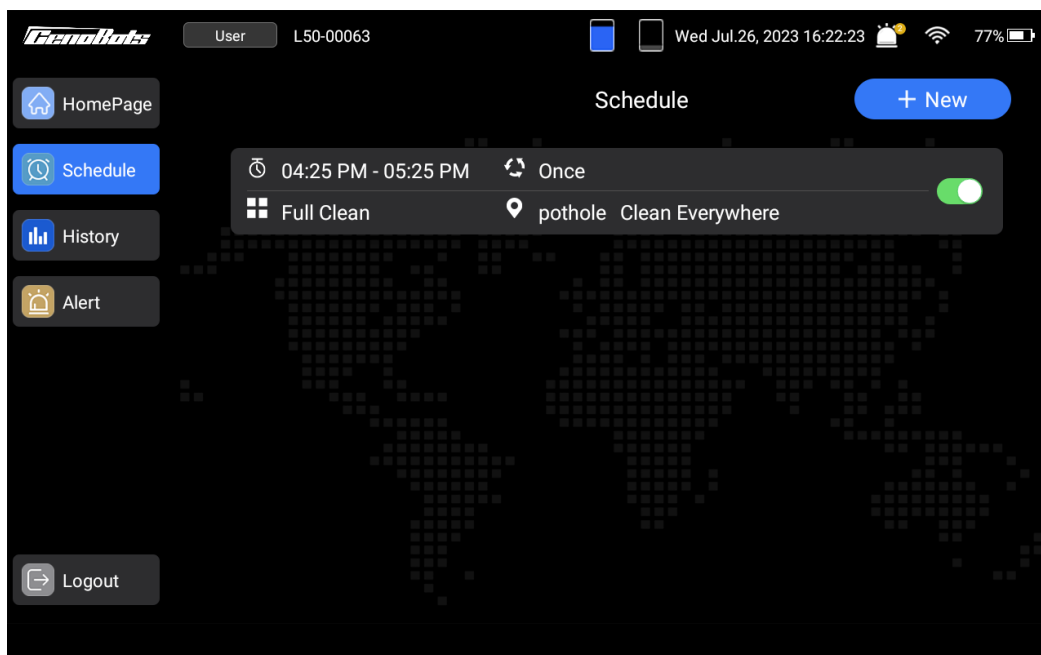


FIG.16

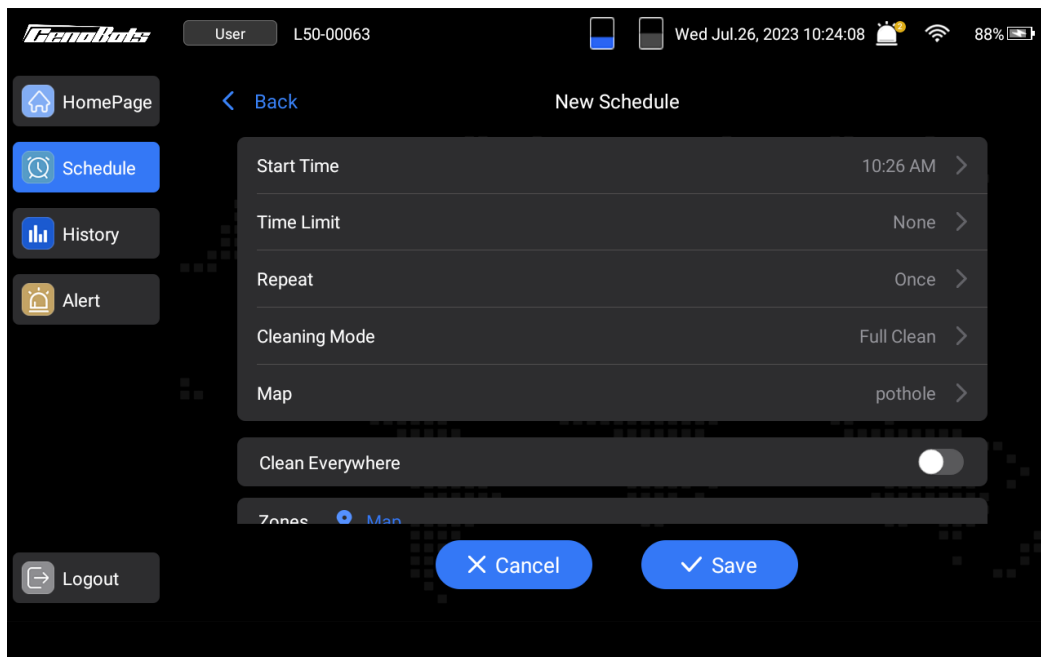


FIG.17

- Start Time: The task will be triggered to start at the designated 'Start time'.
- Time Limit: Task will end after the selected time.
- Repeat: The machine will do the cleaning repeatedly on the selected dates.
- Clean Mode: There are multiple options available for selecting different levels of cleaning intensity.
- Clean Everywhere: If the button is disabled, the machine will only clean the selected areas. If the button is enabled, the machine will clean the entire map area.

Starting a Temporary Cleaning Task

1. Tap '+ New' button on the homepage to create a temporary task.
2. Select the ending time, cleaning mode, map and cleaning areas.
3. Tap the 'Start' button to begin the task.

Custom: Customization will only be valid once and will not be saved.

Notice: The explanations for the 'Limited time', 'Clean Mode', 'Map' and 'Clean Everywhere' can be found in the chapter titled 'Setting scheduled Cleaning Tasks'.

Notice: The cleaning area can be selected from the saved area or customized by tapping 'Custom'.

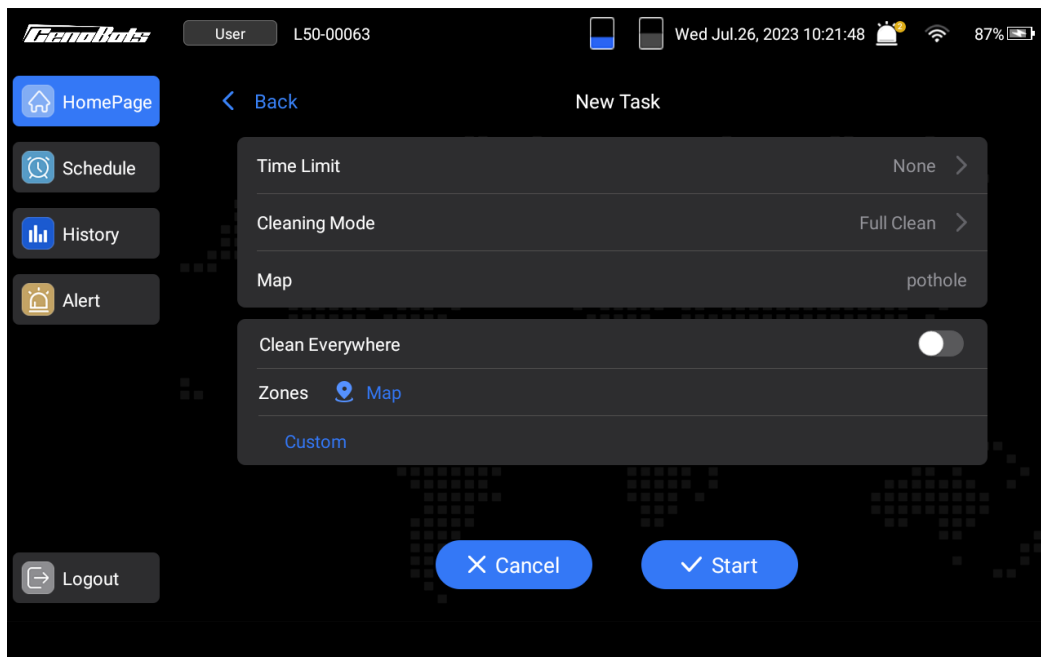


FIG.18

Checking the Alert

If there is a numerical display on the 'Warning notice light' (G) on the homepage, it means that the machine has warnings or errors.

1. Tap the '**Alert**' on the home page.
2. Check the warnings or errors. Follow the provided tips or refer to the '**Troubleshooting**' chapter.
3. Tap the '**Clear**' button in the right top position. If the machine still fails to function properly, contact the dealer or CenoBots directly.

Notice: Errors will cause the machine to stop, while warnings will not.

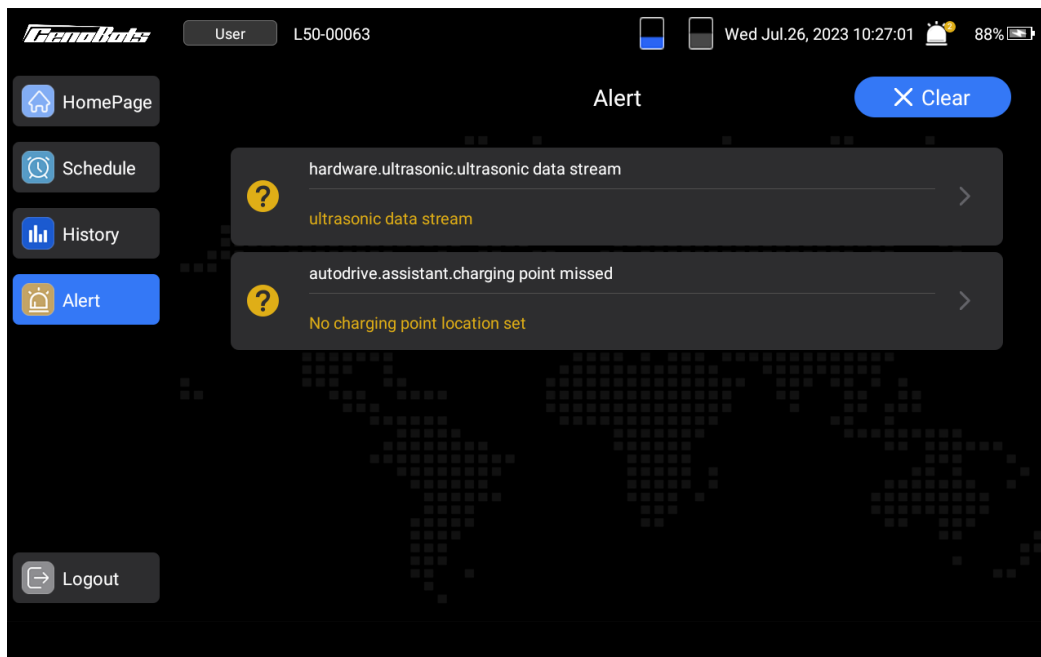


FIG.19

Stopping the Machine

There are several ways to stop the machine.

1. Press the emergency stop button

Upon pressing it, the machine will initiate the stop function, causing the drive wheel and brush motor to cease operation. If the emergency stop button is pressed while the machine is performing a cleaning task, the vacuum motor will briefly run before coming to a stop in order to minimize residual water on the floor.

2. Pause the task

When the machine is executing a task, tap pause task icon on the homepage to pause it, and the machine will stop in place. After tapping resume task icon, the task will resume.

3. End the task

When the machine is executing a task, tap the end task icon on the Homepage to end the task. Then the machine will return to the docking station automatically.

4. Go home

Tap the 'Go home' icon, and the machine will end the task and return to the docking station. For safety: Do not stop the machine on the slope for more than 30 minutes.

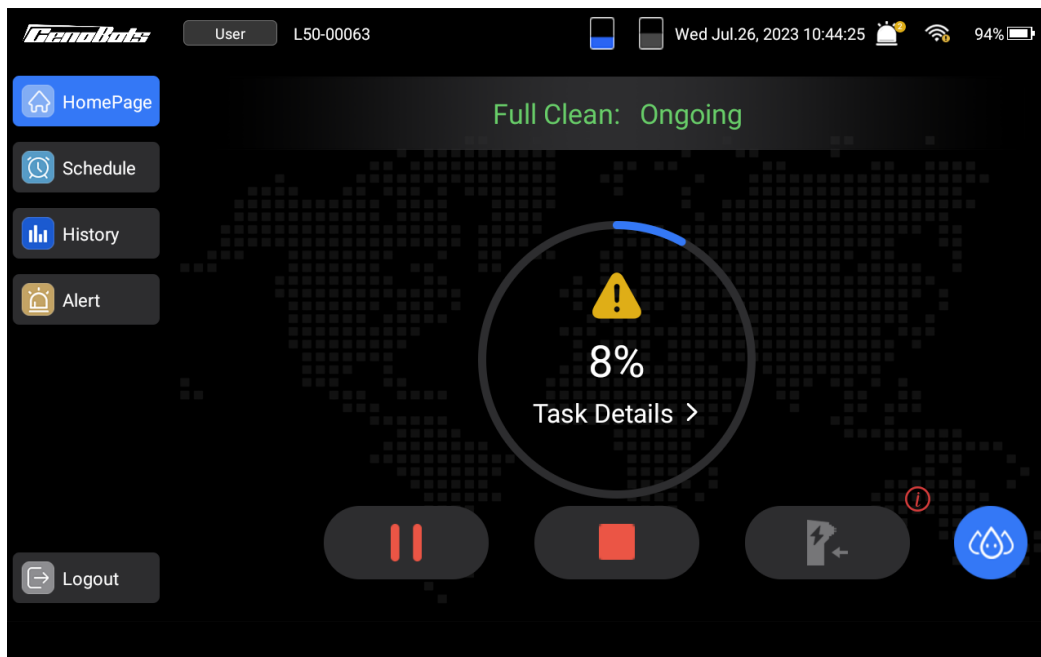


FIG.20

Turning off Machine

Turn off the machine using the key switch. After turning the key switch off, the brushes and squeegee will lift to the raised position if they are in the low position. Then, the machine will power off in a few seconds.

⚠ CAUTION: Do not turn off the machine by directly turning the load-break switch to “OFF” position to avoid possibility of the data loss or damage to the machine.

For safety: Before turning off the machine, stop the machine on the level ground.

Operating the Machine Manually

For safety: Do not operate the machine on the slope that exceeds 10%.

When machine needs to be operated or moved manually, there are two ways it can be operated.

1. Switch to the manual mode

To activate the manual mode of the machine, press the A/M button on the control panel when machine is idle or when the emergency stop button has been pressed. If the A/M button illuminates with a blue light, it indicates that the machine is now in manual mode and can be operated.

Notice: If the emergency stop button is pressed, the machine can't be operated, even in manual mode.

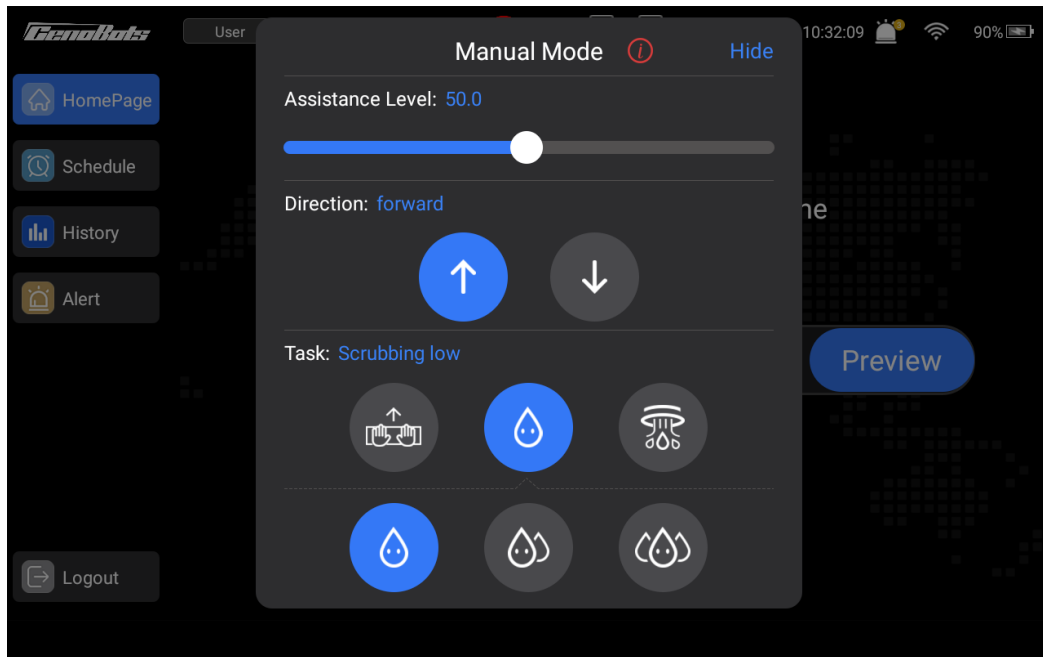


FIG.21

The instructions of the 'Manual Mode' page are below:

Assistance level: The assist power can be adjusted by sliding to the right to increase and sliding to the left to decrease. The power assistance feature is only effective after pressing the power assist button.

Direction: Tap the left icon, the direction of power assist will be forward and press the assist button, the machine will move forward. Tap the right icon, the direction of power assist will be backward and press the assist button, the machine will move backward.

Task:

- Walking: In this mode, the machine will not perform any cleaning. The squeegee and the brush are in the raised position.
- Scrubbing: The flow of the solution and vacuum power can be selected in this mode.
- Vacuum: The machine performs the vacuuming task and the brushes are in the raised position.

Hide:

This page can be hidden by tapping the 'Hide' and can be resumed by tapping the 'HAND' icon as shown in FIG.22.



FIG.22

2. Turn off the machine.

⚠CAUTION: If the machine is in auto mode or the emergency stop button is pressed, do not push the machine forcefully to avoid the possibility of machine damage.

Note: When operating the machine manually, it is easier to cross the obstacle or the step by stepping on the pedal.

Mobile App

This App can be installed on the mobile devices (ISO&Android). The user can view information and status of the machine, including battery level, current and scheduled tasks, historical reports, and more. Additionally, the app allows users to remotely schedule and send tasks, such as initiating a temporary cleaning task for the machine.

Please search 'CenoBots' in the App store. If there are any issues with downloading the app, please contact Cenobots for technical support.

Transportation

⚠CAUTION: Be aware of the weight of the machine during the transportation.

The following steps should be taken when loading or unloading for transportation:

1. Turn off the machine.
2. Make sure the scrub head and squeegee are in the raised position before loading or unloading.
3. Drain and rinse recovery tank and solution tank.
4. Use a ramp to push the machine onto the pallet.
5. Place blocks between the front and rear wheels to prevent the machine from moving during transport.
6. Use packing straps to secure the machine, and place some soft materials like sponge between the machine and packing straps to avoid scratching the surface of the machine.
7. Do not lay the machine flat when loading or unloading.

⚠CAUTION: Do not use forklift directly to pick up the machine, or use lifting rope to lift the machine. Do not use the handle of the machine as a fixed point.

For safety: Make sure the ramp can support the weight of the machine.

For safety: Do not operate the machine on the ramp with a gradient exceeding 10%.

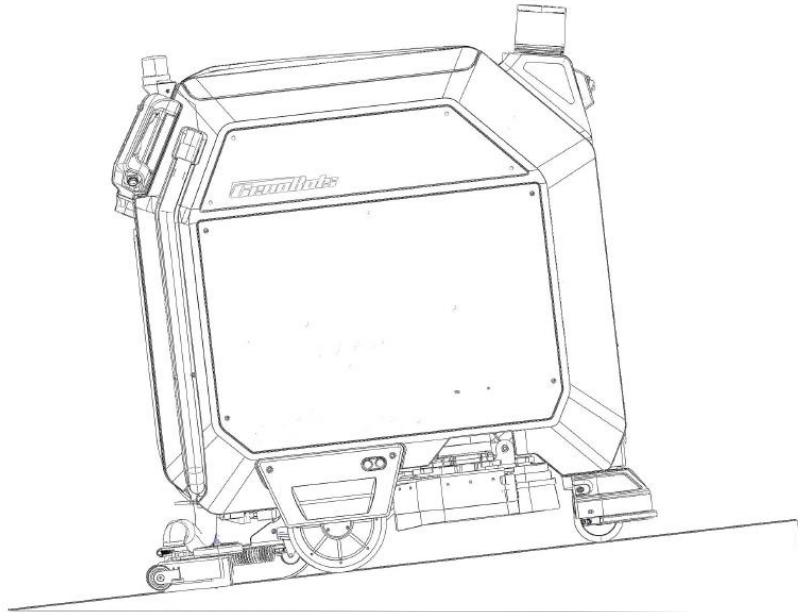


FIG.23

Storage

⚠ **CAUTION:** Be aware of the weight of the machine during the storage.

The following steps should be taken when storing the machine.

1. Store the machine in the dry area indoors and out of direct sunlight under the following temperature conditions:

Min. storage temperature	-10°C
Max. storage temperature	40°C

2. Completely drain and rinse recovery tank and solution tank.
3. Make sure the scrub head and squeegee are in the raised position before storing.
4. Turn off the key switch before storing the machine.
5. Stop the machine on the level ground and block the wheels well.
6. Store the machine with a state of charge (SOC) of over 80% and check it bimonthly to ensure the battery SOC doesn't fall below 20%.

Notice: The battery will enter a dormant state automatically after 7 days of storage and the machine can't be turned on using the key switch. Please use the manual charger to activate the battery.

Maintenance

The machine needs to be maintained regularly to keep the best of the performance and the service life.

⚠CAUTION: When updating the software, make sure the battery level is more than 30% and do not shut down the machine as it may cause damage to the system.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

For safety: Before maintaining the machine, read the user manual and understand fully.

For safety: When maintaining the machine, wear suitable gloves.

Maintenance Schedule

Interval	Parts	Procedure	Person Resp.
Daily	Recovery tank	Drain, rinse, clean float shut-off screen.	Operator
	Debris filter bag	Clean	Operator
	Squeegee	Clean, check for damage and wear	Operator
	Side skirt	Clean, check for damage and wear	Operator
	Front skirt	Clean	Operator
	Disk brushes	Check for damage and wear	Operator
	Pad	Check, flid or replace	Operator
	Workstation recovery tank (If equipped)	Clean, rinse	Operator
	Covers	Clean the machine covers	Operator
Weekly	Battery*	Charge	Operator
	LiDAR	Clean	Operator
	Cameras	Clean	Operator
Monthly	Front skirt	Check for damage and wear	Operator
	Solution tank filter	Clean	Operator
	Solution tank	Rinse	Operator
	Recovery tank lid seal	Check for wear	Operator
	Recycling system filters*	Replace	Operator
Yearly	Vacuum motor	Replace	Trained Personnel
	Brush motor	Check, replace	Trained Personnel

Battery*: if the machine is not equipped with workstation or charging station, the battery needs to be charged to 100% at least once a week.

Recycling system filters*: It is optional, and the maintenance interval may vary depending on the type of the floor.

Machine Maintenance

Recovery Tank Maintenance

The recovery tank is located beneath the recovery tank lid, positioned at the top of the machine. For the sake of environmental protection, it is recommended to clean the recovery tank after each use to prevent the development of unpleasant odors.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

1. Move the machine to a location where water can be drained.
2. Drain the recovery tank using the recovery tank drain hose.
3. Remove the recovery tank lid.
4. Remove the debris filter bag, empty and clean it.
5. Rinse the tank, float sensor and the float shut-off screen.
6. Clean the tank lid using a damp cloth.
7. Check the tank seal for damage or wear monthly, which is located on the bottom of the recovery tank lid.
8. Install the debris filter bag back into the machine.
9. Put the tank lid onto the machine.

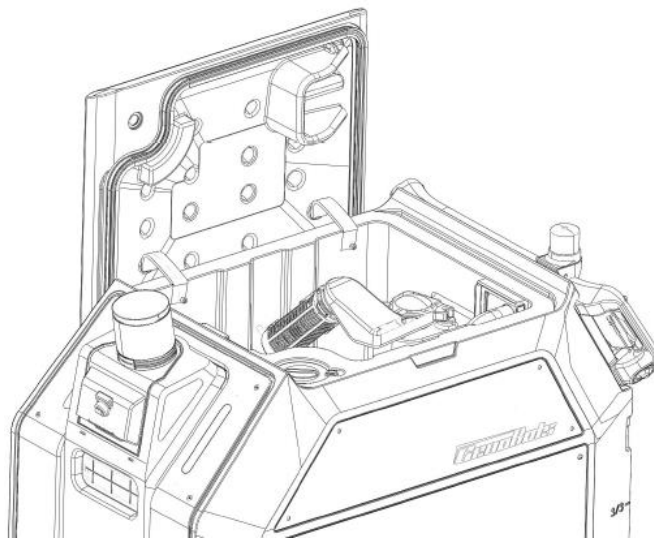


FIG.24

Water Recycling System Maintenance

The recycling system filters are located in the recovery tank. The filter element can be replaced when the maintenance time is reached or when the filtering effect is unsatisfactory.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

Note: This system is optional.

For maintaining the filters, the following steps should be taken:

1. Drain out the recovery tank using the recovery tank drain hose.
2. Remove the recovery tank lid. These two filters are in the recovery tank.
3. Remove the filters using the tool which is located above the filter system as shown in FIG .25.
4. Replace the filter elements
5. Reinstall the filter.

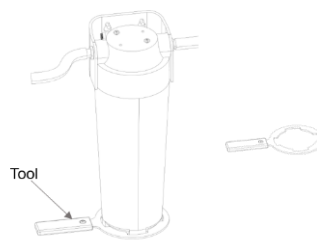


FIG.25

Squeegee Maintenance

The squeegee is located at the bottom rear of the machine.

For keeping the best cleaning performance, please clean the blade daily. If squeegee leaves narrow streaks or water, the blades may be dirty or damaged. Remove the squeegee and inspect the blades, rinse them using clean water if they are dirty. Replace or reverse the blades if they are damaged, worn or wavy.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

1. Remove the squeegee from the machine.
To remove the squeegee, the steps should be followed as below:
 - 1) Ensure that the squeegee is in the raised position.
 - 2) Loosen the squeegee retainer knobs.
 - 3) Hold the squeegee and pull it backwards.
2. Clean the squeegee for the daily maintenance
 - 1) Rinse the squeegee with clean water and dry it using a cloth.
 - 2) Reinstall the squeegee onto the machine.
3. Replace or reverse the blades if necessary. The operation is as shown in Fig.26.
 - 1) Push and hold the buckle with thumb, then pull the blade from the squeegee.
 - 2) Slip the new or reversing blade into the squeegee, while pushing and holding the buckle.
 - 3) Reinstall the squeegee onto the machine.

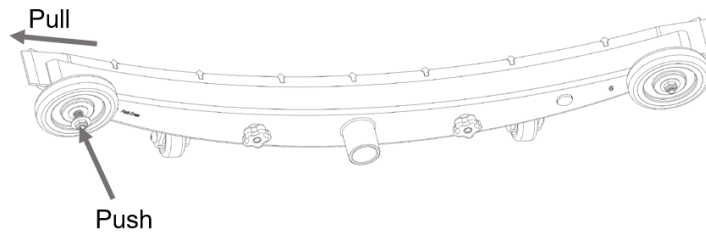


FIG.26

Skirt Maintenance

There are two different type skirts, one is the side skirt and the other is front skirt.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

Side Skirt Maintenance

There are two side skirts on the machine, located on the left and right sides of scrub head.

Skirt Blade Replacement or Reverse

1. Remove the side skirt from the machine.
To remove the side skirts, the steps should be followed as below:
 - 1) Make sure the scrub head is in the raised position.
 - 2) Loosen the side skirt retainer knobs.
 - 3) Take them from the scrub head.
2. Remove the blade from the skirt.
 - 1) Release the retainer knob.
 - 2) Pull the blade from the skirt.
3. Reverse or replace a new blade and slide it onto the skirt.
4. Reinstall the skirt into the machine. Make sure it is securely in place before resuming the operation of the machine.

Front Skirt Maintenance

The skirt is located in front of the disk scrub heads. Please check the damage or wear monthly. Ensure that the skirt maintains a clearance of 0-2mm from the floor when the scrub head is lowered.

Skirt Cleaning

1. Remove the front skirt from the machine.
To remove the front skirt, follow the steps below:
 - 1) Ensure that the scrub head is in the raised position.
 - 2) Loosen the front skirt retainer knobs, as shown in FIG.27.

- 3) Remove the skirt from the scrub head.
2. Clean the skirt using a brush and rinse with fresh water.
3. Reinstall the skirt into the machine. Make sure it is securely in place before resuming the operation of the machine.

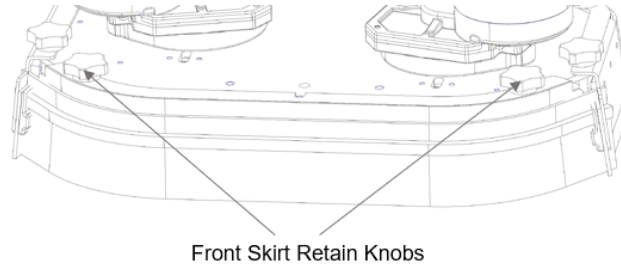


FIG.27

Notice: To clean the bristles properly, it is essential to brush in the direction of the bristles, as shown by the arrows in FIG.28.



FIG.28

Skirt Replacement

1. Remove the front skirt from the machine.
To remove the front skirt, follow the steps below:
 - 1) Ensure the scrub head is in the raised position.
 - 2) Loosen the front skirt retainer knobs, as shown in Fig.27.
 - 3) Remove the skirt from the scrub head.
2. Reinstall a new skirt into the machine. Make sure it is securely in place before resuming the operation of the machine.

Brush/Pad Maintenance

This machine is equipped with two brushes or two cleaning pads and they are located at the bottom of the machine. Please check the brushes daily for any tangled material, such as hair or wire, as well as for any damage or wear.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

1. Ensure the scrub head is in the raised position.
2. Remove the side skirts from the scrub head.

To remove the side skirts, the steps should be followed as the section '**Skirt Maintenance**'.

3. Hold the brush/pad driver with hand and apply downward force to make it drop off as shown in FIG.29.

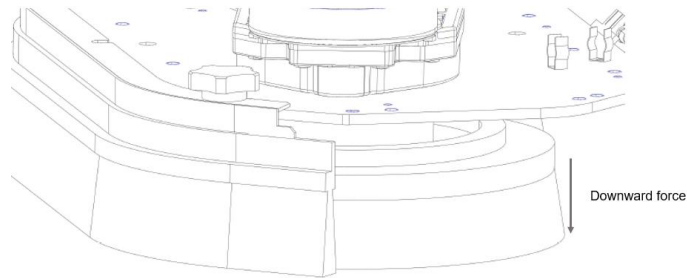


FIG.29

4. Clean any debris buildup from hub connection area.
5. Replace the pads when they no longer clean effectively. Replace the brushes when they no longer clean effectively or the bristles have worn down to the yellow indicator as shown in FIG.30.

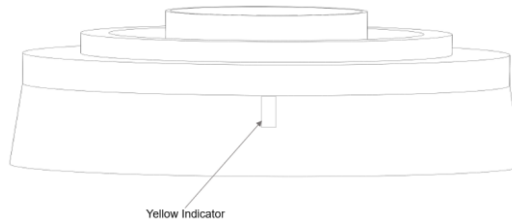


FIG.30

Note: Replace brushes or pads in sets, or it can't clean the floor effectively.

6. Install the brushes or pads into the scrub head. The brush and scrub head are connected magnetically. If they cannot align during installation, gently rotate the brush until it enters the slot.
7. Reinstall the side skirts. Make sure they are securely in place before resuming the operation of the machine.

Solution Tank Maintenance

The solution tank is recommended to be cleaned monthly to remove scale build-up caused by the solution.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

1. Move the machine to a location where water can be drained.
2. Drain solution tank using the solution tank level/drain hose.
3. Rinse the solution tank with clean water.
 - 1) Open the recovery tank top lid
 - 2) Open the solution tank cap as shown in FIG.31.
 - 3) Rinse the solution tank

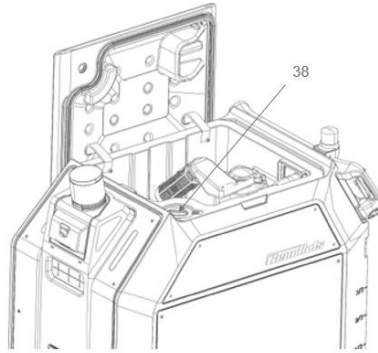


FIG.31

4. Remove the solution tank filters by rotating the filter bowl counterclockwise. The filters are shown in FIG.32.
5. Clean the filters.
6. Reinstall the filters after cleaning.

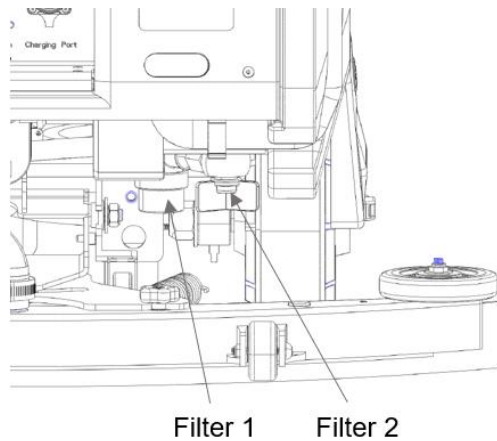


FIG.32

Notice: Make sure the solution tank is drained out before removing filters.

Cleaning the Sensors

Use the dry microfibre cloth to clean the LiDAR and cameras regularly to avoid false detection.

The solution tank is recommended to be cleaned monthly to remove scale build-up caused by the solution.

Sensor items:

- 1) 3D LiDAR (5)
- 2) Front camera (6)
- 3) Front depth camera (7)
- 4) Rear depth camera (9)
- 5) Left camera (10)
- 6) Right camera (11)
- 7) Ultrasonic sensors (12)

Software Updates

The software can be updated by the user in the 'Admin' account. The update access can be found in Admin > Device > Device Info.

⚠CAUTION: When updating the software, ensure that the battery level is above 30%. Do not shut down the machine during the update process, as it may cause damage to the system.

For safety: Before maintaining or leaving the machine, stop on the level ground and turn off the machine.

Note: The machine cannot be operated or moved while updating the software.

Battery

Charging Battery

For safety: Before charging or leaving the machine, stop on the level ground.

There are two ways to charge the battery:

1. Use the charging station/workstation to charge automatically, and the machine must be turned on.
2. Use the manual charger. When charging machine manually, the following steps should be taken:
 - 1) Before charging the battery, turn off the machine using the key switch.
 - 2) Connect output plug of the charger to the charging port of the machine.
 - 3) Connect the input plug of the charger to the AC power source as shown in FIG.33.
 - 4) If the charger's indicator shows a red or yellow flashing light, it means the battery is charging.
 - 5) When the battery is fully charged (the indicator shows a green light), unplug both the AC input and DC output plugs.

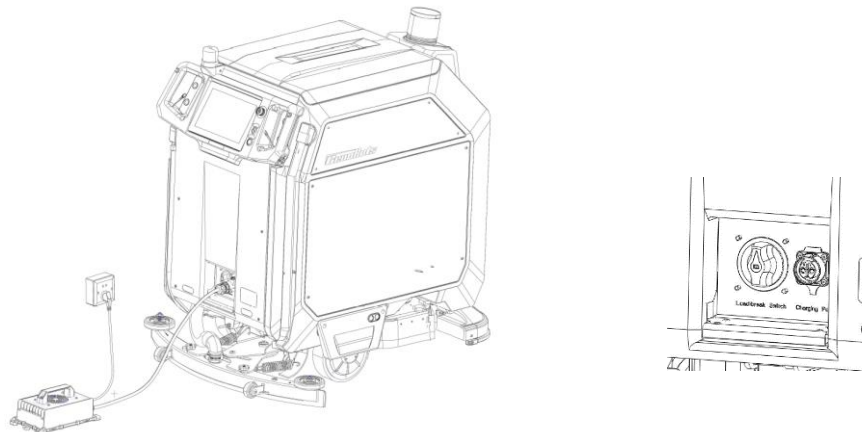


FIG.33

Notice: Steps 2 and 3 should not be switched, as it may cause electrical damage.

Battery Maintenance Precaution

WARNING: Do not disassemble or replace the battery without permission of the manufacturer.

For safety: Before charging or leaving the machine, stop on the level ground.

- Do not short circuit the battery, including the machine's charging port.
- Do not crush or drop the battery.
- Do not puncture the battery.
- Do not vibrate the battery.
- Do not expose the battery to flames or high-temperature environments exceeding 45°C.
- Do not expose the battery to water or any other liquids.
- Do not expose to sunlight, especially during charging.
- Do not install with other battery types or brands.
- Do not use other charger types or brands.
- Dispose of the battery safely according to local regulations.
- Charge and store battery under the following conditions:

Min. charge temperature	0°C/32°F
Max. charge temperature	45°C/113°F
Min. storage temperature	-10°C/14°F
Max. storage temperature	45°C/113°F

The best storage temperature is 15°C/59°F ~25°C/77°F .

Workstation Maintenance

Filling the detergent

The workstation has the feature of auto-filling detergent for the machine. the detergent should be filled into the detergent tank regularly.

To fill the detergent into the tank, the following steps should be taken:

- 1) Release the tank cap.
- 2) Fill the detergent.
- 3) Wipe off the detergent, if any remains on the surface of the station.
- 4) Cover the cap.

Notice: Please fill the low or no foam detergent to make the water pick-up more effective.

Cleaning the water tank

The water tank is located behind the front cover(W12). Remove the cover and use the nozzle to clean it.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Machine can't be turned on by the key switch	Load-break switch in the 'OFF' position	Turn the load-break switch to 'ON' position
	The battery enters a dormant state	Use the charger to activate the battery
	Battery is out of power	Charge the battery using a charger to activate it
	Battery failure.	Contact local dealer or CenoBots for technical support
	Key switch failure	Contact local dealer or CenoBots for technical support
	Control board failure	Contact local dealer or CenoBots for technical support
Initialization failure	Choose a wrong map	Choose the right map
	Significant changes in the surrounding environment or being surrounded by the crowd during initialization	Move the machine and leave the crowd
	Machine is outside the map areas	Move the machine to the map areas
The machine doesn't execute the tasks	The battery is too low	Charge the battery
	Emergency stop button is pressed	Release the emergency stop button
	Machine is in the manual mode	Switch to the auto mode
Machine stopped moving	Machine error	Check the detail of the error on the screen or the mobile app and follow the steps according to the guide
	Battery is out of power	Charge the battery
	The emergency stop is pressed	Release the emergency stop
	Machine is switched to the manual mode	Switch to the auto mode
The machine can't be charged	The switch of docking station is turned to the 'OFF' position	Turn the switch to the 'ON' position
	The air circuit breaker of the docking is turned to 'OFF' position	Turn the air circuit breaker to the 'ON' position
	The docking station has been moved	Move the charging station to the original position
	The docking station or charger didn't get connected to the AC power	Connect the cord to the outlet

Maintenance

	Charger is damaged	Contact local dealer to replace the charger
	Battery failure	Contact local dealer or CenoBots for technical support
Poor water pick-up	Squeegee blade is damaged or worn	Replace or reverse the blade
	Recovery tank drain hose leak	Secure hose cap or replace
	Vacuum hose clogged	Clean the hose
	Debris caught in squeegee	Clean the squeegee
	Damaged the vacuum hose	Replace the vacuum hose
	Defective seals on recovery tank lid	Replace the seal
	The recovery tank is full due to the failure of the sensor	Contact local dealer or CenoBots for technical support
	Excessive foam buildup	Use the low or no foam detergent or add defoamer to the recovery tanks
Poor scrubbing performance	The brushes or pads were worn or damaged	Replace the brushes or pads
	Machine is moving too fast	Slow down the machine
	Using wrong brush or pad	Use the right brush or pad
	Not enough solution	Increase the solution flow

Specifications

1. L50 Specifications

DIMENSIONS	
Length	1030 mm 40.6 in
Width	580 mm 22.8 in
Height (main body)	1045 mm 41.1 in
Weight	220 Kg 485 lbs
GVW	275 Kg 606 lbs
Cleaning Width	510 mm 20 in
Squeegee Width	800 mm 31.5 in
CLEANING	
Max. Theoretical Productivity (regular cleaning)	2570 m ² /hr 27663 ft ² /hr
Brush Pressure	25 Kg
Disk Brush Speed	220 RPM
Solution Tank Capacity	55 L 14.5 gal
Recovery Tank Capacity	55 L 14.5 gal
MOVEMENT	
Max. Speed	1.4 m/s 3.13 mph
Min. Distance from Wall	<50 mm 2 in
Min. Passable Width	900 mm 35.4 in
Gradeability	10% (The machine is not recommended for running on slopes in automatic mode, and it can be operated manually on slopes ≤10%.)
POWER	
Battery Type	Lithium Iron Phosphate
Battery Capacity	120 Ah
Rated Voltage	24 VDC
Charging Time	4 hours
Max. Runtime	6 hours
SENSING	3D LiDAR, 3D Depth Camera, Ultrasonic Sensor, Bumper Sensor
SOUND PRESSURE LEVEL	At least as 67 dB (A)
VIBRATION AT THE HANDLE	< 2.5 m/s ²

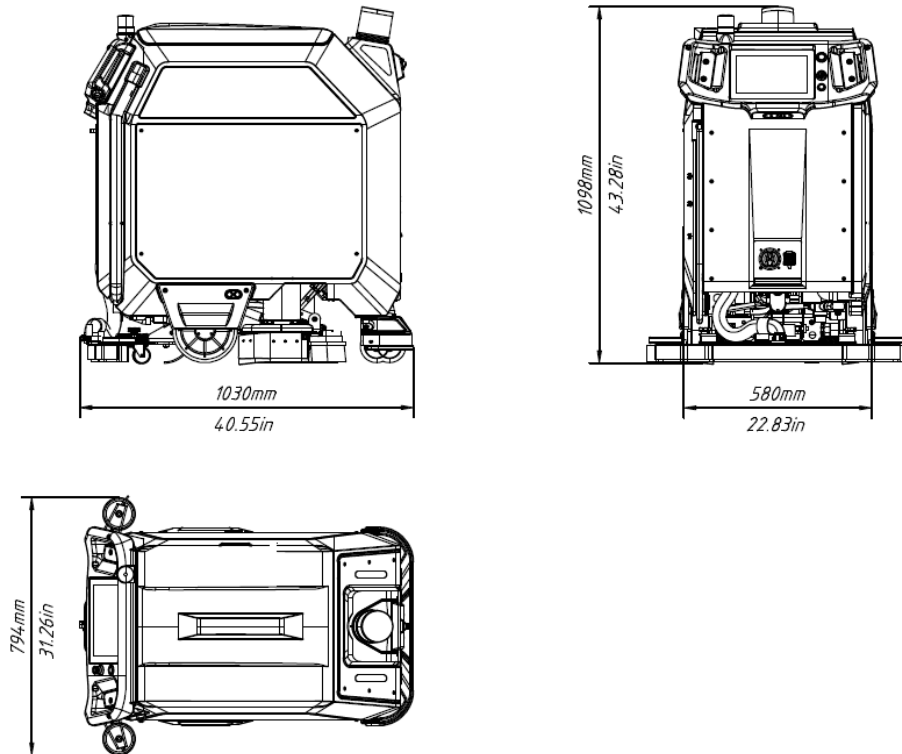
2. Charging station

Dimensions (main body L*W*H)	420*225*620 mm 16.5*8.9*24.4 in
Weight	27 Kg 60 lbs
Input voltage	100-240 V a.c
Max. power	1000 W 1.34 hp
Output voltage	24 VDC
Output current	30 A

3. Workstation

Dimensions (main body L*W*H)	460*270*860 mm 18.1*10.6*33.9 in
Weight	45 Kg 99 lbs
Input voltage	100-240 V a.c
Max. power	1000 W 1.34 hp
Output voltage	24 VDC
Output current	30 A

Machine Dimensions



Declaration of Conformity

This Declaration of conformity is issued under the sole responsibility of the manufacturer:

Product name: Autonomous Scrubber Dryer
Model number: L50

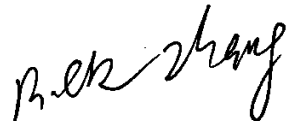
The object of the declaration described above is in conformity with Directives:

2006/42/EC Machinery Directive
2014/30/EU Radio Equipment Directive
2014/53/EU Electromagnetic Compatibility

The following harmonized standards were applied:

EN 60335-2-72:2012
EN 60335-1:2012+A11:2014+A13:2017 +A1:2019+ A14:2019+ A2:2019 + A15:2021
EN 62233:2008
EN IEC 61000-6-2: 2019
EN IEC 61000-6-4: 2019
EN 301 489-1 V2.2.3
EN 301 489-52 V1.2.1
EN 301 908-1 V15.1.1
EN 301 908-13 V13.1.1
EN IEC 62311: 2020

Signed for and behalf of the manufacturer:



Rick Zhang, Chief Product Manager
July 31,2023

