



Vacuum 40 Pro

Quick Start Guide

Table of Contents



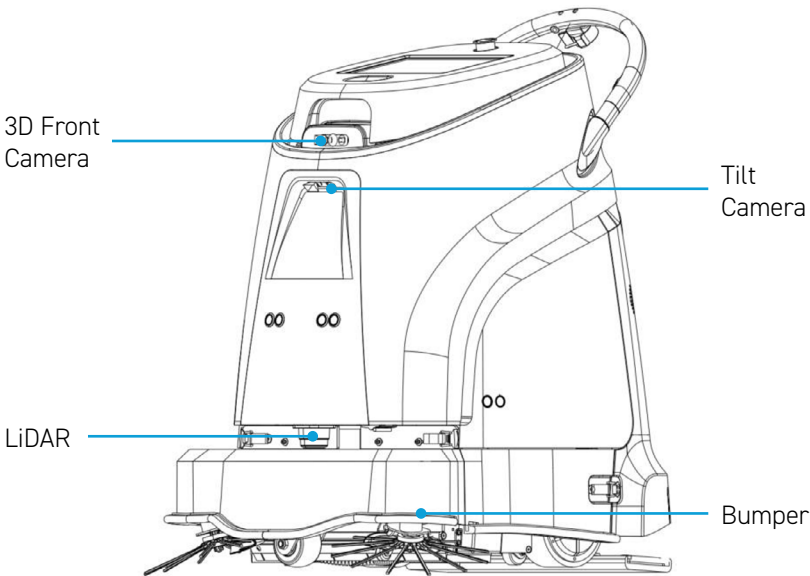
IMPORTANT SAFETY INFORMATION:

For complete safety information, please refer to the Operator's Manual.

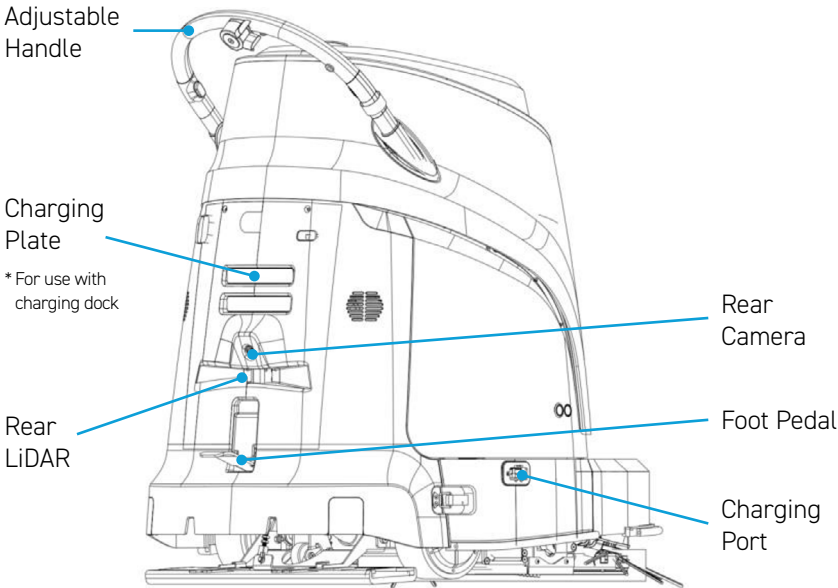
	Important Safety Information	2
1	Machine Overview	4-5
2	Charging Dock Overview	6
3	Charging	7
4	Charging Dock Setup	8
5	Machine Setup	9-13
6	Mapping	14-42
7	Autonomous Operation	43-44
8	Manual Operation	44-46
9	Maintenance	47-50
10	Troubleshooting	51-53
11	How To Order Consumables	54-55

1. Machine Overview

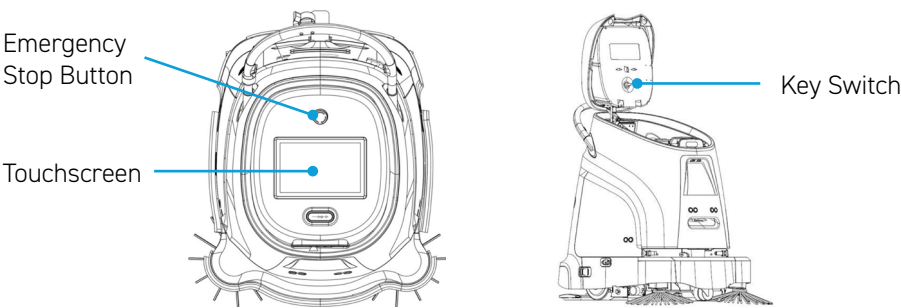
Front View



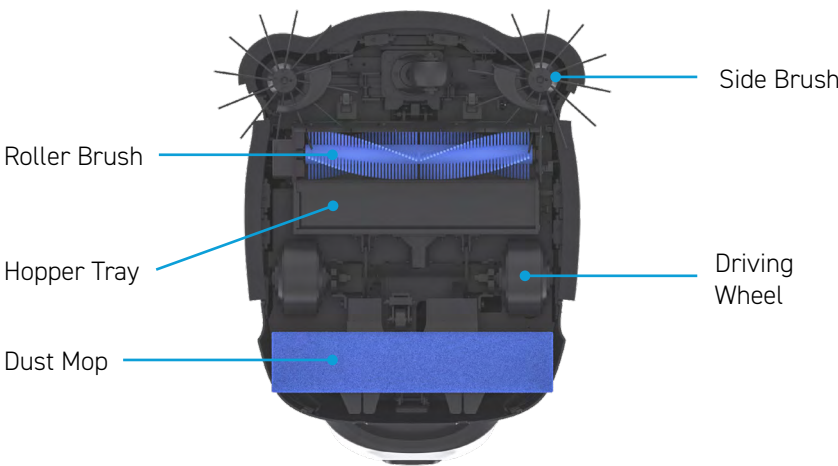
Rear View



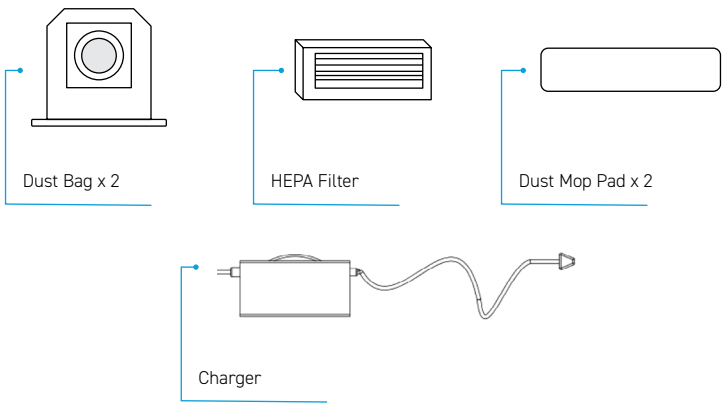
Top View



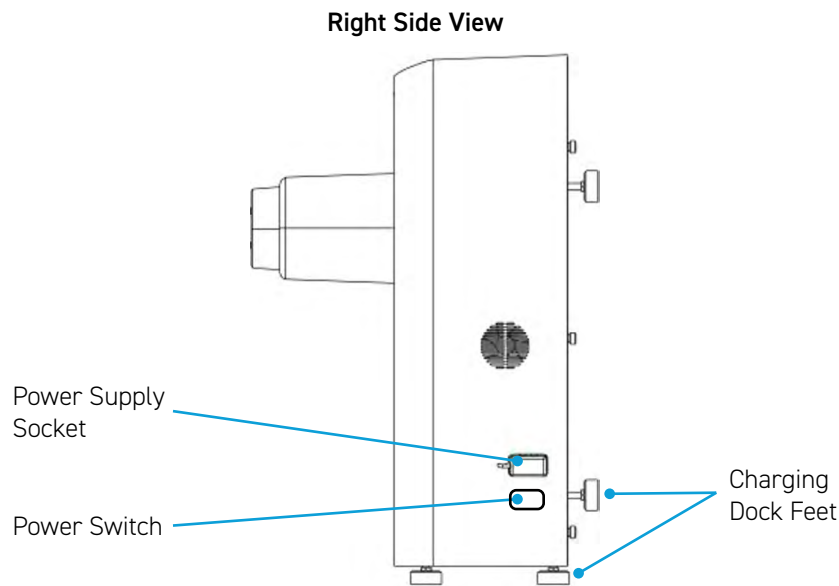
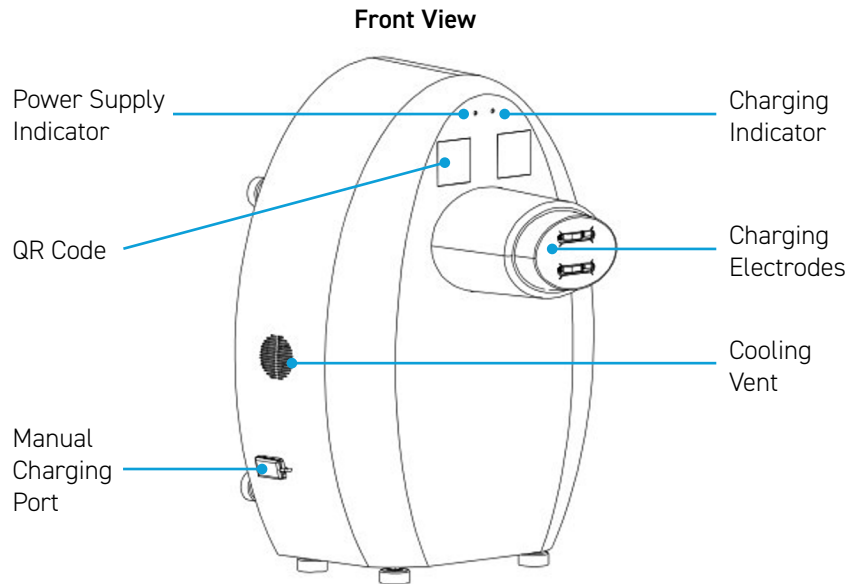
Bottom View



Included With V40



2. Charging Dock Overview



3. Charging



Ensure V40 is fully charged before use:

V40 has a 3-4hour battery life under normal use conditions.

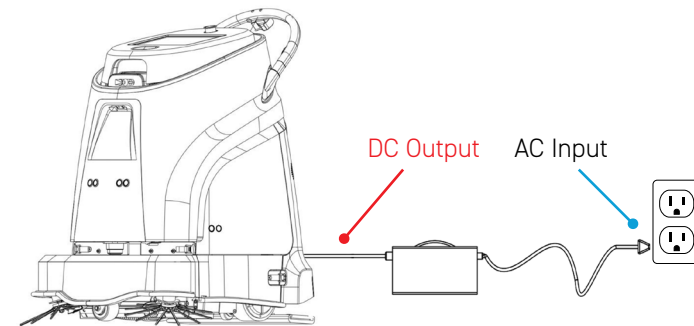
It takes approximately one-two hours to charge the battery to 100% charge.

You must only use the designated charger that came with V40.

The machine should be powered off before and throughout charging.



Do not handle the V40 charger or charging port with wet or damp hands. Charging the V40 should be done in strict accordance with the following instructions to reduce the risk of electrocution.



To begin charging:

1. Plug charger's **DC Output** into V40's charging port.
2. Plug charger's **AC Input** into wall outlet.



Battery is charging =
flashing green



Battery is fully charged =
solid green

When charging is complete:

1. Unplug charger's **AC Input** from wall outlet.
2. Unplug charger's **DC Output** from S50's charging port.

4. Charging Dock Setup (If applicable)



Ideal Location

- ✓ Against a wall with nearby power source.
- ✓ No obstacles within 1.6ft from left or right of dock.
- ✓ No obstacles within 10ft in front of the machine.
- ✓ Must have light for V40 to scan QR code.



After charging dock is setup, continue to **mapping**.

1. Place against wall
2. Adjust feet
3. Plug into outlet
4. Flip power switch to "On"

5. Machine Setup

Daily Operation

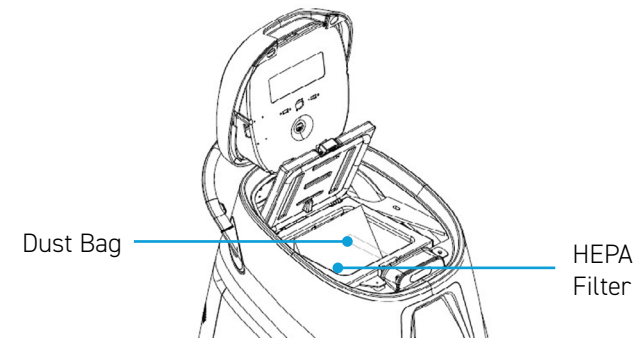
Confirm that the following components are properly installed:



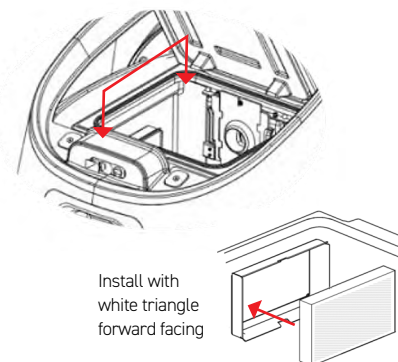
Best Practice

- ✓ Ensure the V40 is powered OFF during setup.
- ✓ Ensure the unit is stationary on leveled ground.
- ✓ Do not leave the unit on unlevelled ground unattended.

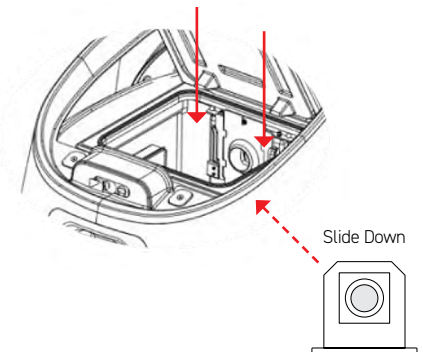
1. Dust Box



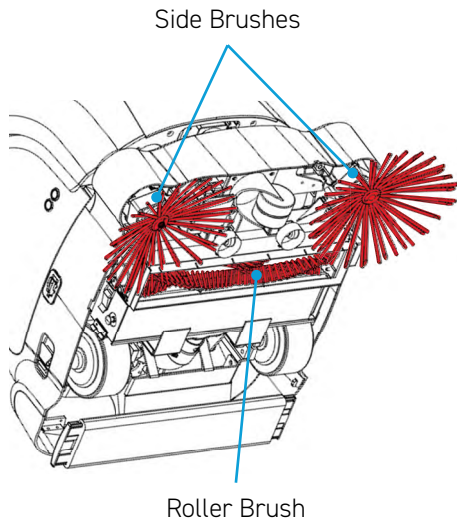
1a. Installing HEPA Filter



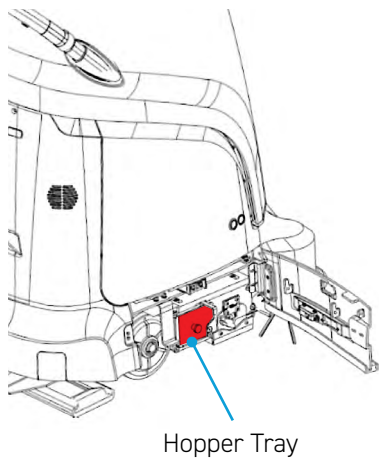
2a. Installing Dust Bag



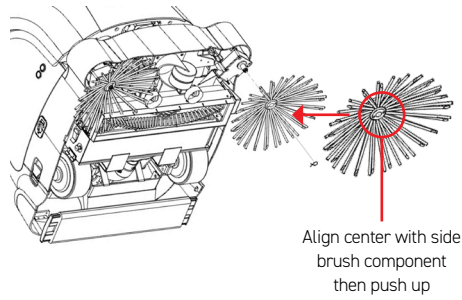
2. Brushes



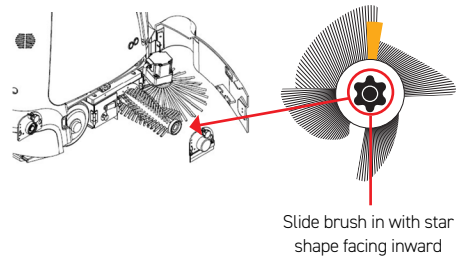
3. Hopper Tray



2a. Installing Side Brushes

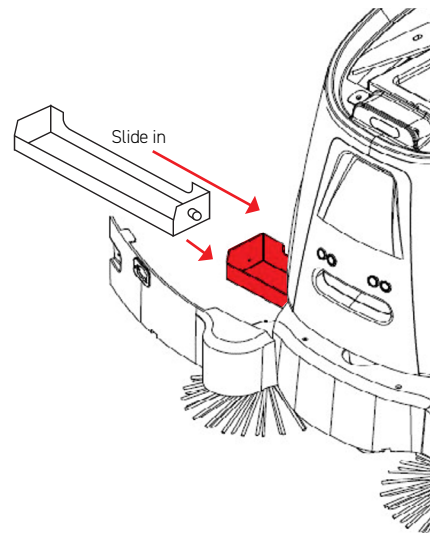


2b. Installing Roller Brush

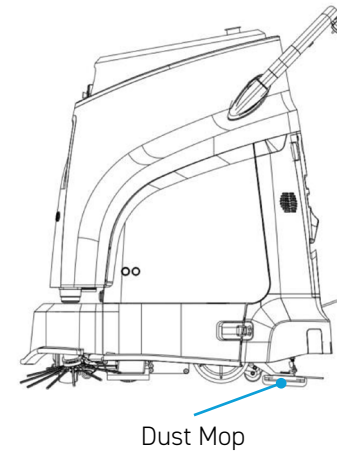


i It may take a few tries to get brush to latch.

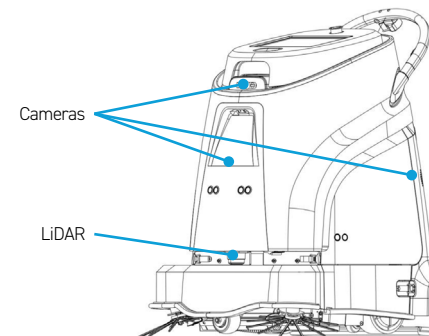
3a. Installing Hopper Tray



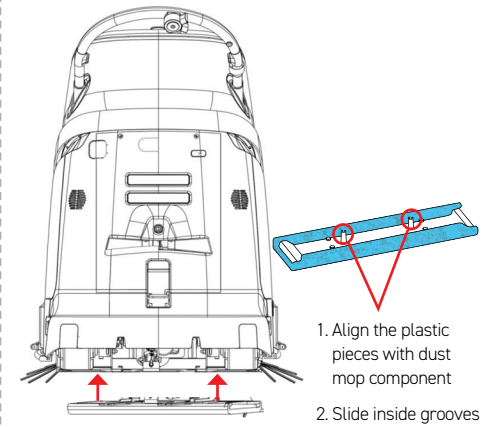
4. Dust Mop



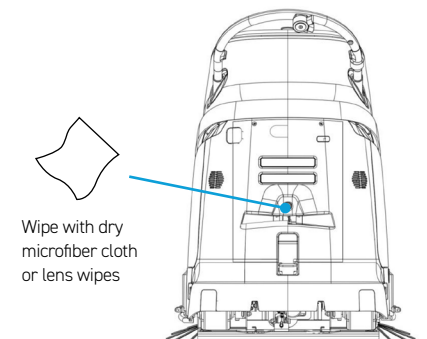
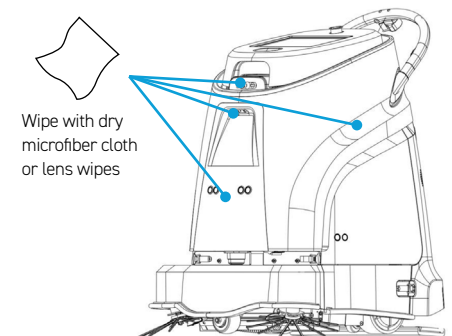
5. Sensors



4a. Installing Dust Mop



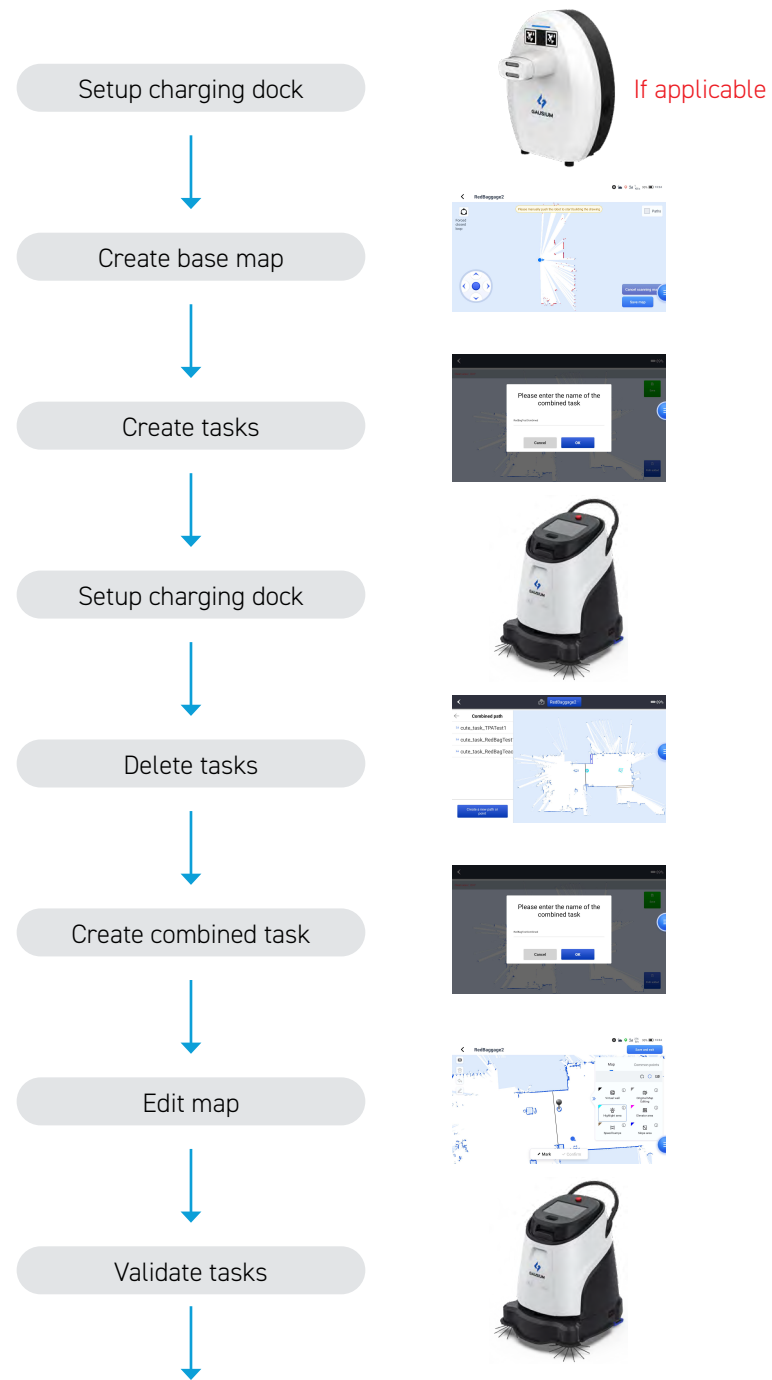
5a. Wipe Sensors



Programming Process



Programming Process

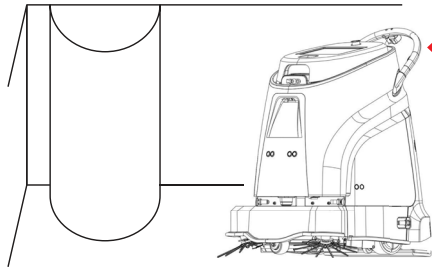


6. Mapping

Creating Map (Admin Only)

Floor plan that is stored on the robot, indicating where walls and obstacles are.
Tasks will be created on top of the base map.

- Map creation, map editing, path creation, and task creation can **only** be performed under the "admin" login.

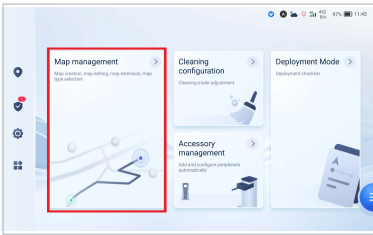


Push V40 to an area that has permanent, distinguishable features

- This includes:** a pillar, a corner or hallway, and/or fixed furniture

Avoid areas with no distinguishable features, floor-to-ceiling glass walls, frequently rearranged furniture, or large amounts of sunlight

2

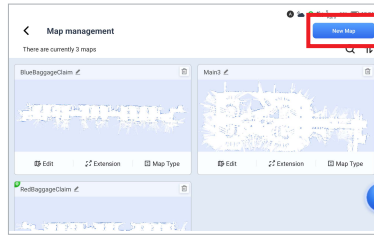


Select "Map Management"

- Note:** Max map size is 30,000 m² (322,917 ft²)

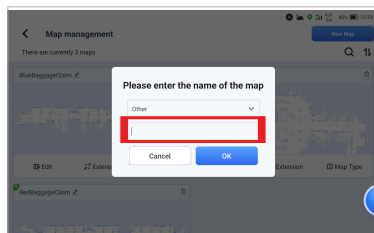
The map name should identify its location in the building i.e., "fourthfloor" or "commonarea"

3a



Select "New Map"

3b

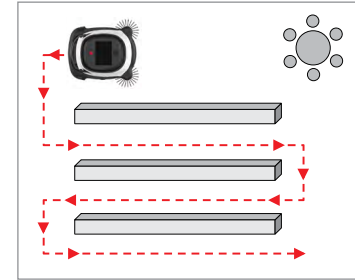


Create map name, then select "OK".
Do not include spaces in the map name.

Best Practices For Mapping V40

Scanning Speed

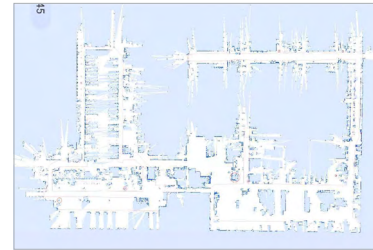
Slowly walk the space and make slow 90° turns.



Do not exceed 20°/s when making turns

Ideal Map

Has fully scanned interior with obstacles and boundaries captured, and free of warping, ghosting, and folding. Note: always map perimeter first then fill in the rest.



Ideal map



Delete and remake

Do not add map extensions or tasks to bad maps

Unscannable Obstacles

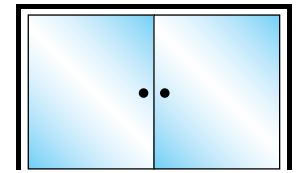
Virtual walls must be placed around objects smaller than 2.5 cm in diameter, less than 6 in off the ground, or transparent.



Table legs and chair legs

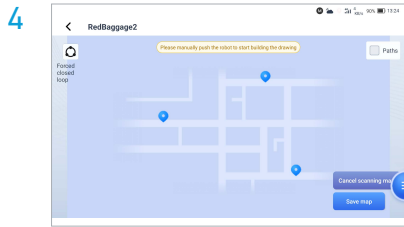


Coat racks

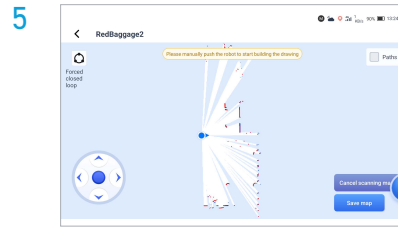


Glass doors or walls

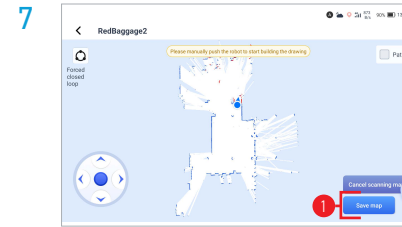
Do not leave unscannable obstacles with no virtual walls



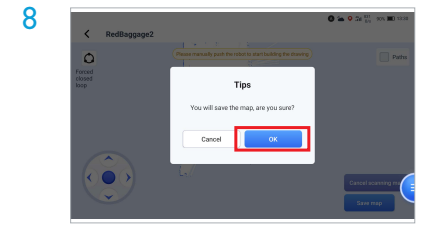
Robot will begin scanning the map when you move it.



Sensors (shown in red), are scanning the environment

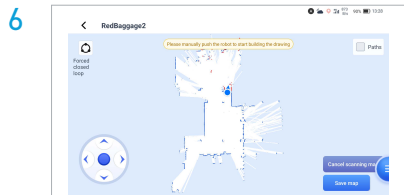


1. Select "Save Map"



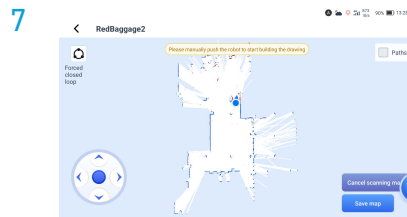
1. A tip window will pop up, asking if you want to save the map.


2. Select "OK"



Map will continue to form as the robot is pushed around perimeter

i Push at a slow steady pace with precise 90° turns.



1. End scanning where scanning began
2. Select  icon
This will force the loop to close.



Review the map for quality and coverage

- ✓ Boundaries and permanent obstacles are outlined with solid, dark blue lines
- ✓ Map interior is fully scanned (indicated by lack of light blue)
- ✓ No visible skipping or rotating parts of map boundaries



i Push at a slow steady pace with precise 90° turns

Map smaller sections at a time if needed

11 Scan the remainder of the space using map extensions

Look Out For

Warping is the bending or twisting of any part of the map

- Happens when V40 is moved too fast during mapping
- Or when too much is mapped at one time

Avoid warping by:

- Moving at a slow steady pace while mapping
- Map small parts at a time using map extensions



Hallways are straight and parallel



Hallways are warped and leaning

Ghosting is when a single object incorrectly appears in multiple locations on a map

- Happens when V40 is pushed too quickly during mapping
- Or when an object or person is moving around

Avoid ghosting by:

- Moving at a slow steady pace while mapping
- Map the entire space including behind accent walls, pillars, tables, etc.



Objects in map should be surrounded by a single, solid blue line

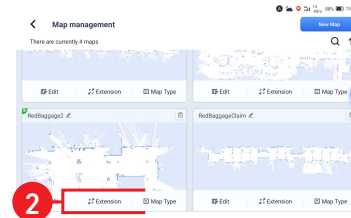


"Double vision" effect

Map Extension feature allows for additions to be added to maps.

When to use: dynamic environments (decorations, rearranged/ furniture removal, remodel, etc.) and for areas that are too big to scan in one map.

1



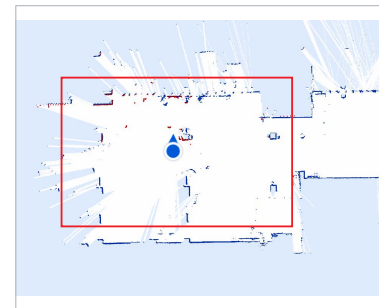
1. Select appropriate map
2. Select "Extension"

3



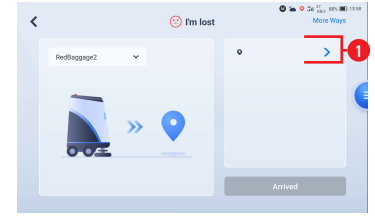
1. Drag the map until the red LiDAR lines align with the blue map surfaces.
2. Press "OK"

5



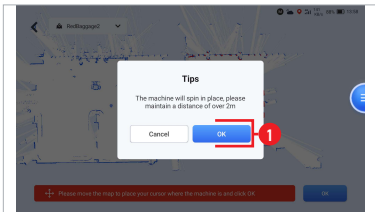
Scan around obstacles inside the perimeter

2



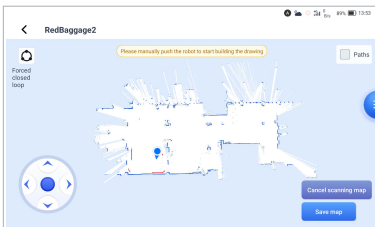
1. Localize if needed
2. Press the ">" to enter the manual localization screen

4



1. The robot may spin in place, ensure there is nothing in the way and press "OK"
2. When the location is successful, press "OK"

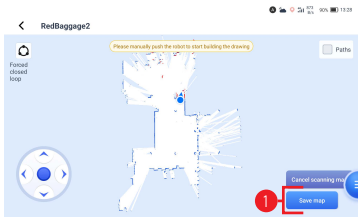
6



Inspect the map for quality and coverage

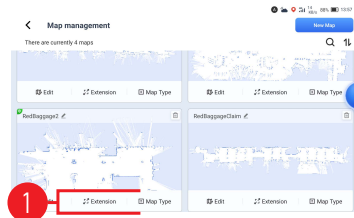
- ✗ No warping
- ✗ No ghosting
- ✗ No overlapping

7



1. Save upon completion

8



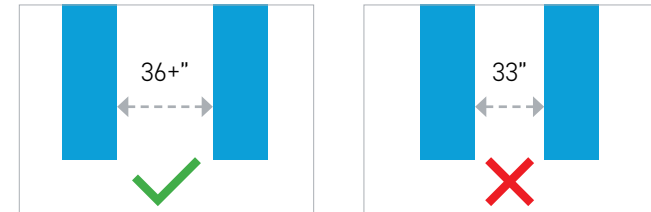
1. Continue expanding the map until entire area is scanned

Best Practices For Creating Paths

Note: Path sizes should not exceed 540 sq ft

When to use autonomous tasks

Operating Width is greater than 34 inches or 3 ft



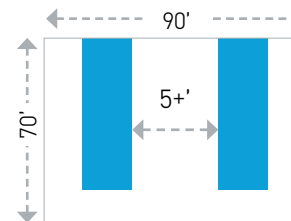
Do not use V40 in autonomous mode if the operating width is smaller than 34 inches

When to use Autocover & Realtime Autocover

Operating width is 4 ft or greater

Use Autocover

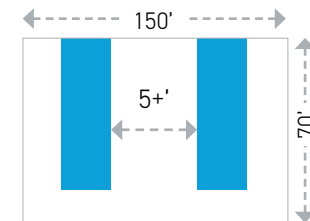
- ✓ Min operating width = 5ft
- ✓ Addressable cleaning area <10,000 sq ft



Operating width is 5 ft or greater

Use Realtime Autocover

- ✓ Min operating width = 5ft
- ✓ Addressable cleaning area >10,000 sq ft



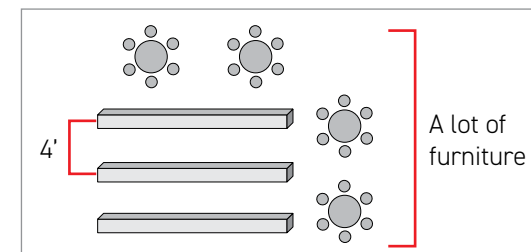
Do not use autocover or Realtime Autocover if operating space is smaller than 5 ft

When to use Teach Mode

Operating width between 5 ft and 3.2 ft, in irregularly shaped areas, or areas with a lot of furniture/ objects

Use Teach Mode

- ✓ Min operating width 5ft – 3.2 ft

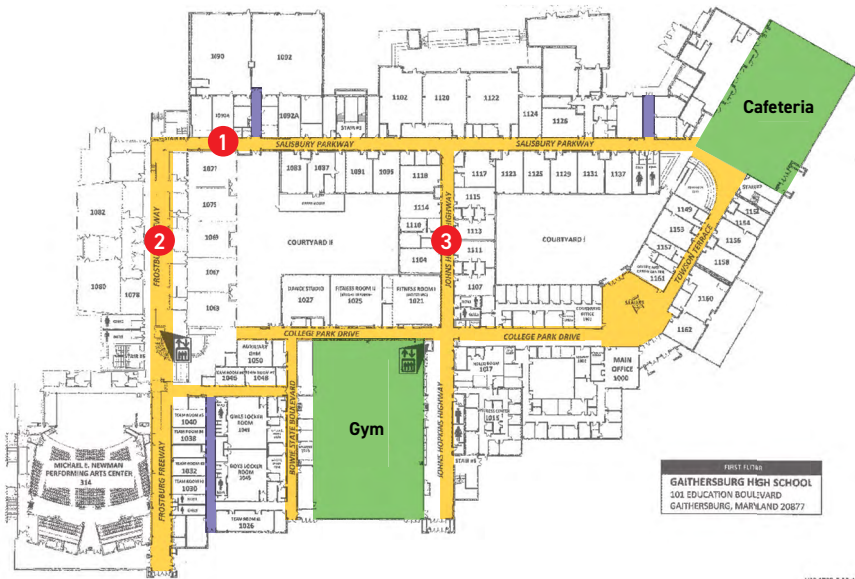


Do not use Teach Mode if operating space is larger than 5 ft

Paths In Practice – School Deployment

Example floor plan with appropriate / best pathing method for each section

- **Teach & Repeat** used for narrow halls
- **Autocover** used for wider halls
- **Realtime Autocover** used for large spaces



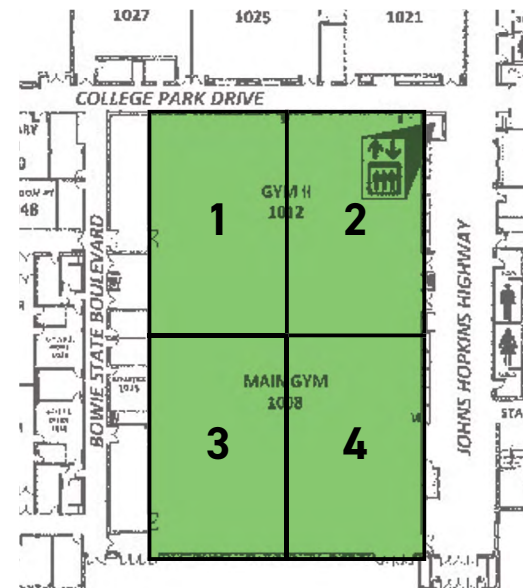
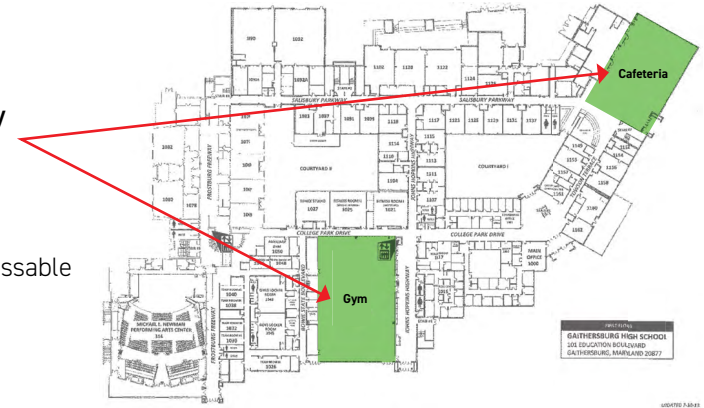
Paths In Practice – School Deployment

■ Where to use **Realtime Autocover**

- Gymnasium
- Cafeteria
- Great halls

Each individual hallway or space has

- ✓ Cleaning width greater than 5ft
- ✓ More than 10k addressable sq ft to be cleaned



Paths must be broken down into small sections.



Path names should identify location. Ex: gym1, gym2, gym3, ect.



All paths will be combined at the end

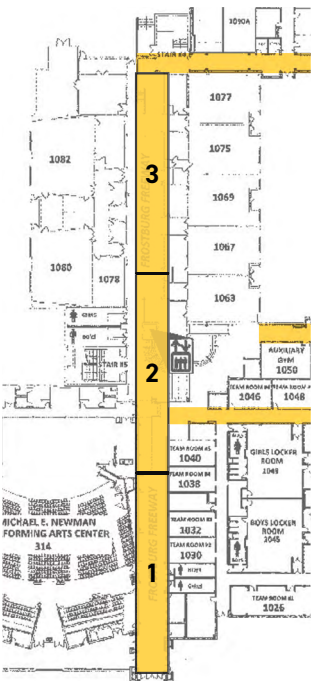
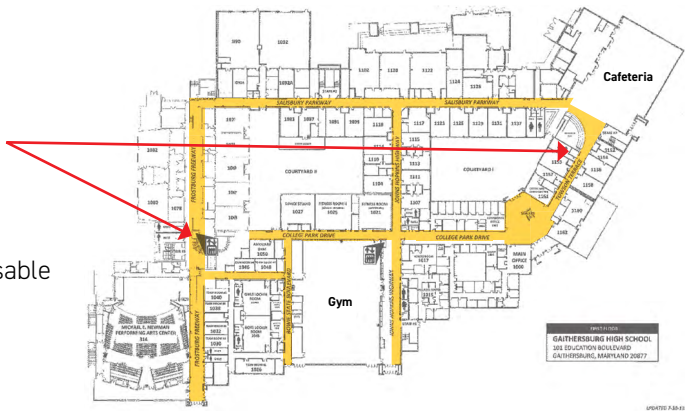
Paths In Practice – School Deployment

Where to use Autocover

- Large hallways
- Common areas
- Lobby
- Conference space

Each individual hallway or space has

- ✓ Cleaning width greater than 5ft
- ✓ Less than 10k addressable sq ft to be cleaned



Paths must be broken down into small sections.



Path names should identify location. Ex: southhall1, southhall2, southhall3, ect.



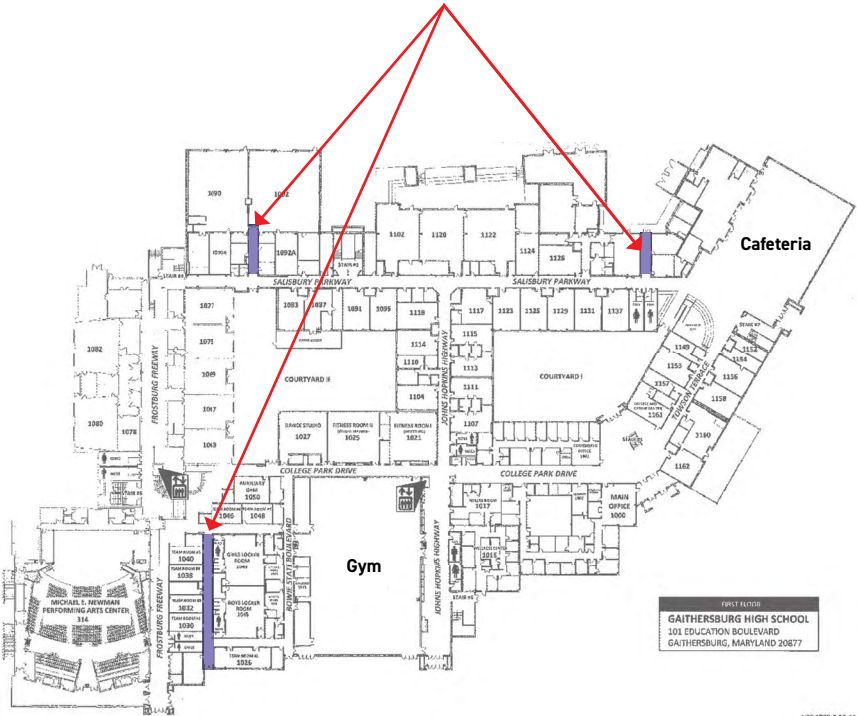
All paths will be combined at the end

Paths In Practice – School Deployment

Where to use Teach & Repeat

- Narrow hallways
- Classrooms
- Auditoriums
- Libraries

Cleaning width < 3 ft

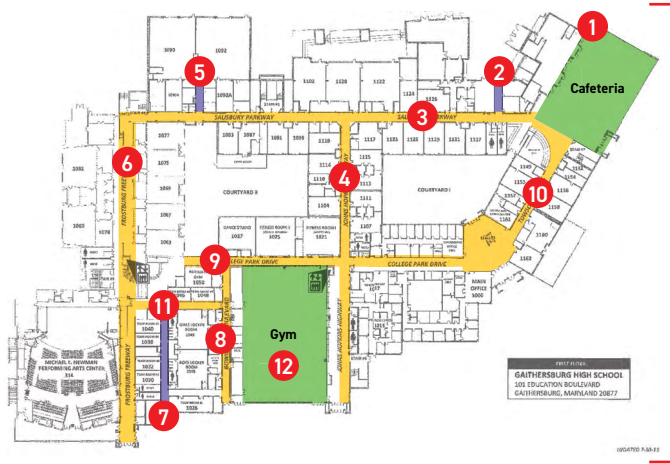


Paths In Practice – School Deployment

Combining Tasks

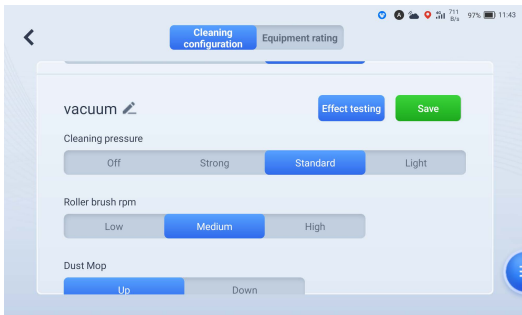
Tasks can be combined:

- In an order the customer wants
- In an order that begins with lowest traffic areas first
- In an order that starts and stops near charging dock



1. Start with cafeteria (closed to students after 3pm)
- 2-11. Traffic slows down (class ends, clubs end, etc.)
12. Last due to frequent use

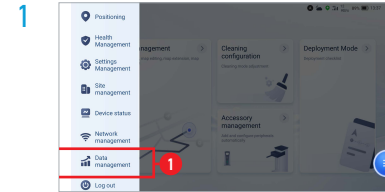
Cleaning Settings



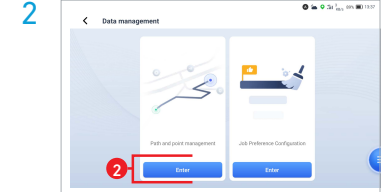
- ✓ Suction level: Standard
- ✓ Cleaning speed: High
- ✓ Side brush/roller brush: High
- ✓ Roller brush speed: Low
- ✓ Dust mop: down

Note: The suggested setting are not shown in this image. All settings should be validated before use.

Creating Paths (**Admin Only**) - Paths are the routes V40 will take while executing tasks



1. From the Navi home screen choose "Data Management"

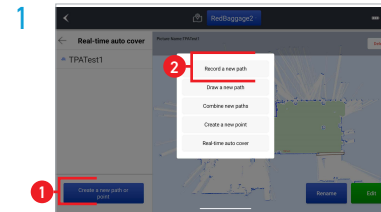


2. In the next screen choose "Enter" under Path and Point Management.

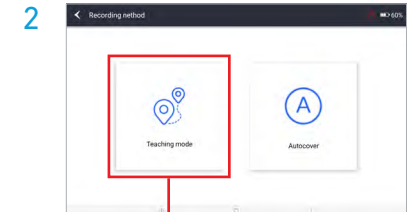


Best Practice

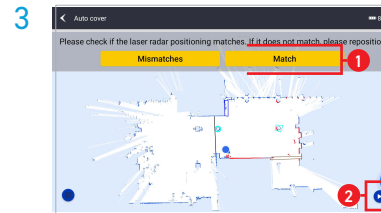
- ✓ Use Teach Mode when mapping less than 5,000 sq ft
- ✓ Operating width between 40-36 inches
- ✓ Where to use: small aisles, small hallways, small rooms with lots of furniture



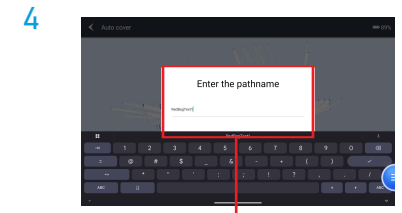
1. Select "Create a new path or point"
2. Select "Record a new path"



Select "Teaching Mode"



1. Select "Match" if lasers are aligned
2. Select




Enter a path name then "OK"

Do not include spaces in the map name

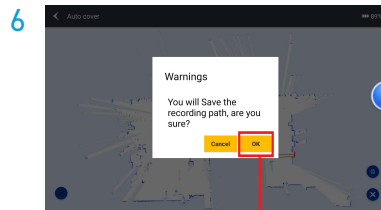


Note: The path name should identify where the path is programmed i.e., "southhallway" or "lobby"

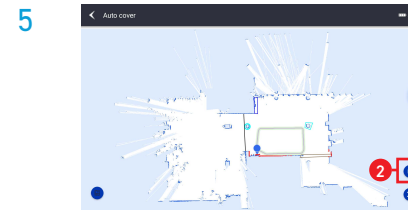



1. Walk the path to be cleaned
2. Select 

Teach Mode allows the user to teach the path V40 will take to clean, and the robot will repeat. Note: V40 will miss 100% of areas not covered during path creation

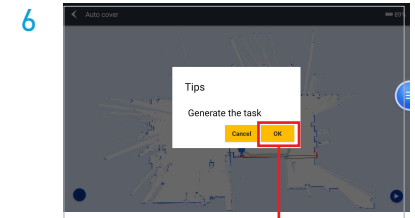



- Select "Confirm"
- *There will be gaps in the map where noise is visible*

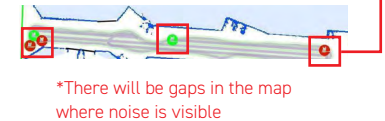


1. Walk the perimeter of the area being cleaned
2. Select 

Autocover feature allows V40 to generate cleaning tasks autonomously, through boundary mapping. V40 will clean the interior in a Zamboni pattern after it is taught the perimeter



- Select "Confirm"
-  **Delete and remake path if multiple start and end points are populated**



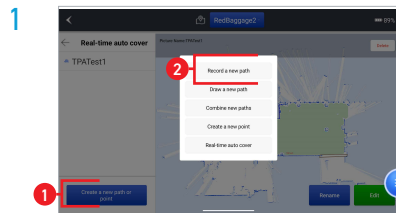
Best Practice

- ✓ Use Autocover when mapping less than 10,000 sq ft
- ✓ Operating width greater than 4 ft
- ✓ Where to use: medium sized aisles, medium sized hallways, medium sized rooms with limited furniture

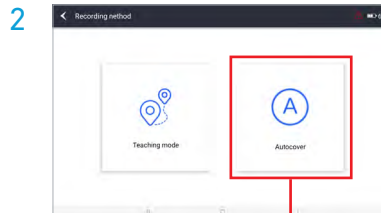


Best Practice

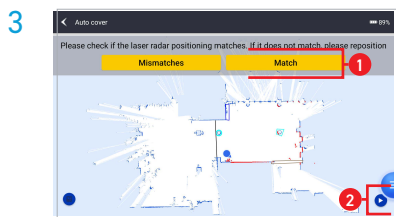
- ✓ Use Autocover when mapping more than 10,000 sq ft
- ✓ Operating width greater than 5 ft
- ✓ Where to use: large aisles, large hallways, large rooms with limited furniture




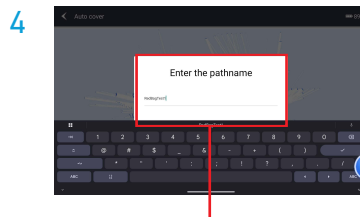
1. Select "+ New path or point"
2. Select "Record new path"



- Select "Autocover"



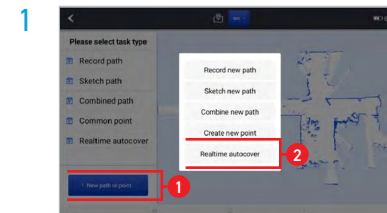
1. Select "Match" if lasers are aligned
2. Select 



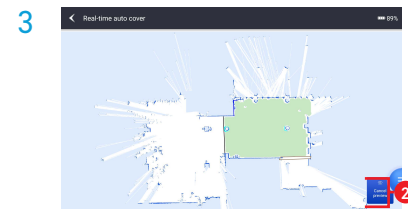
- Enter a path name then "OK"
- Do not include spaces in the map name*



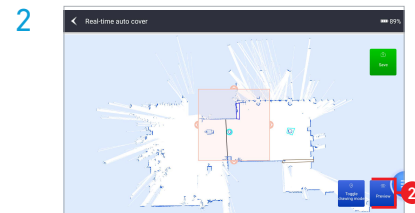
Note: The path name should identify where the path is programmed i.e., "southhallway" or "lobby"




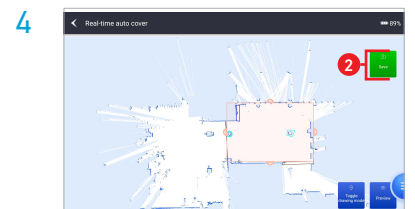
1. Select "+ New path or point"
2. Select "Realtime Autocover"



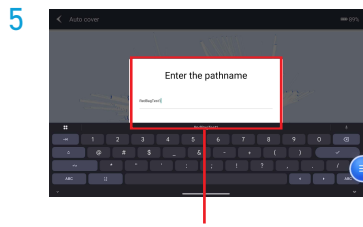
1. Confirm that only the desired area will be covered.
2. Hit "Cancel Preview"



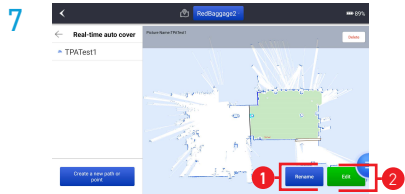
1. Use the arrows  to select the area to be cleaned
2. Tap "Preview" to preview the area.



1. Select "Save" to save the path



Enter a path name then "OK"
Do not include spaces in the map name



1. Select "Rename" to rename the path.
2. Select "Edit" to make changes to the existing path

Note: The path name should identify where the path is programmed i.e., "southhallway" or "lobby"

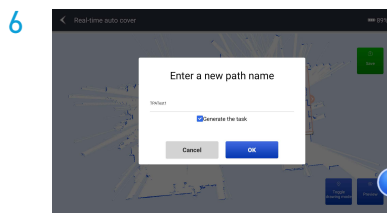
New point allows user to assign navigation, initialization, or charging points

Navigation Point

When the time comes, add navigation point to combo task

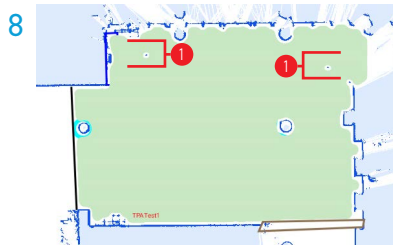
When to use:

- To drive over a section that shouldn't be cleaned to get to a section that should be cleaned
- Direct V40 to stop (upon task completion) at a different location

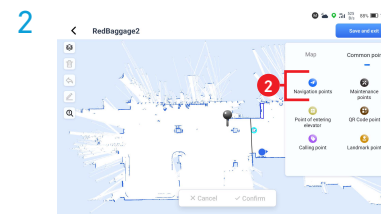


Check "Generate the Task" to create a task

i Reduce path size if paths aren't filled in correctly



1. There will be gaps in the map where noise hasn't been removed

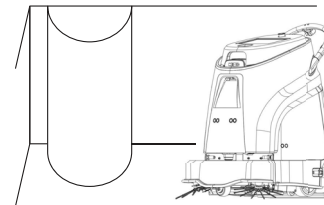


1. Rotate the screen or move V40 to the location V40 should navigate to
2. Select "Navigation points"

Initialization Point

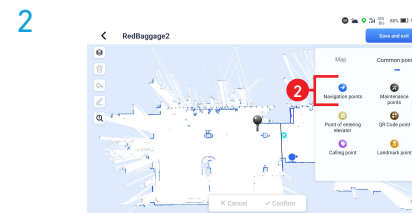
Enables V40 to determine its location within a given map

- 1 Push to an area with permanent, distinguishable features

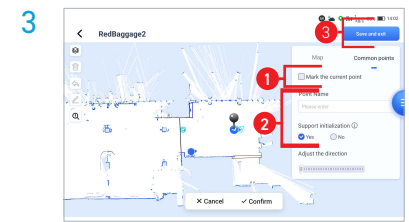


- ✓ Pillar
- ✓ Corner or hallway
- ✓ Fixed furniture

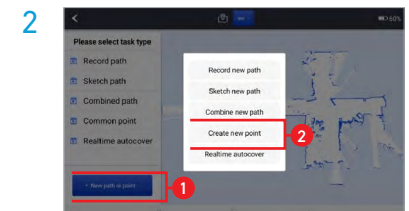
⚠ Avoid areas with no distinguishable features, floor-to-ceiling glass walls, frequently rearranged furniture, or large amounts of sunlight



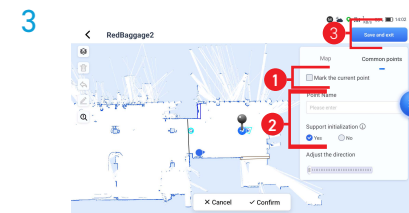
1. Rotate the screen or move V40 to a location with unique, permanent features.
2. Select "Navigation points"



1. To create the point where the robot is, select "Mark the current point"
2. Name the point and set "Support Initialization" to "No"
3. Select "Save and Exit"



1. Select "+ New path or point"
2. Select "Create new point"



1. To create the point where the robot is, select "Mark the current point"
2. Name the point and set "Support Initialization" to "Yes"
3. Select "Save and Exit"

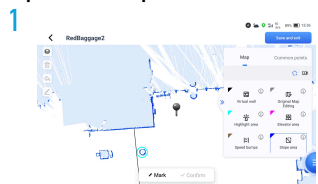
Ramps

Validated only for use with:

- V40
- HW v3.7 and 3.7.3
(units from initial POs x150)
- SW v3-22-4 DDP

Note: this is for autonomous travel up and down ramps ONLY. Autonomous vacuuming tasks should NOT include cleaning ramp areas (suction only is ok, we just want to avoid any slipping risk).

Map edit required:



Select "Mark" to start the selection



Select "Connect points to" to make the corner.

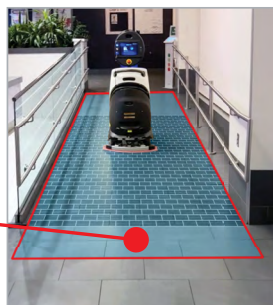
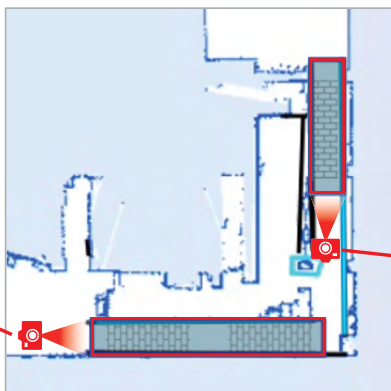
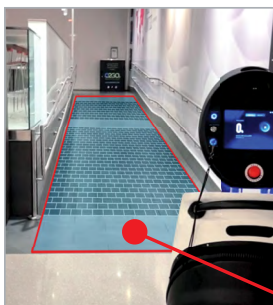


Drag the screen to draw the first edge



Continue until the area is fully covered. Select "Confirm" when done

 = actual ramp



Must extend slope mark at least 2 feet beyond both ends of all ramps...

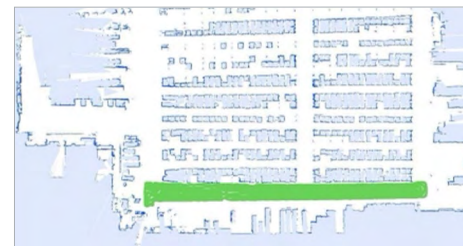
Task Validation

Goals

- ✓ Ensure V40 cleans desired area well
- ✓ Ensure V40 cleans entire addressable area
- ✓ Ensure V40 doesn't exhibit unusual behavior

V40 Should:

- ✓ Complete tasks at a 95% rate or better



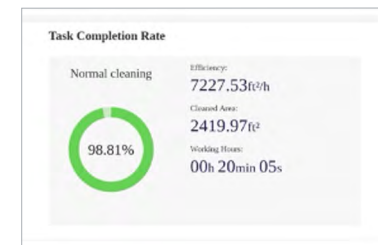
V40 Should Not:

- ✗ Have task completion rate below 90%



Objectives

- ☐ Observe V40 executing task
- ☐ Note any issue
- ☐ Act accordingly



Remedies:

- ☐ Reprogram task using teach & repeat
- ☐ Remove obstacles
- ☐ Restart V40 (if S50 stopped mid task with no obstacles and ample space to clean)

Task Validation

Unusual Behavior

V40 Should:

- ✓ Clean with no interruptions

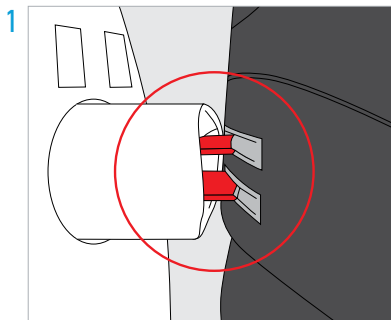
V40 Should Not:

- ✗ Studder or stop for false obstacles
- ✗ Drive in circles around virtual walls
- ✗ Hit obstacle
- ✗ Complete a task without cleaning (except when programmed to do so)

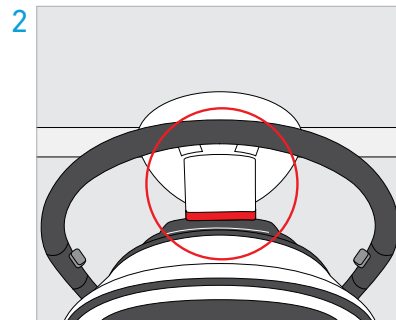
Remedies:

- ☐ Restart V40
- ☐ Reprogram task using teach & repeat
- ☐ Edit base map

Note: When using the charging dock, make sure the V40 electrodes are in direct contact with the charger



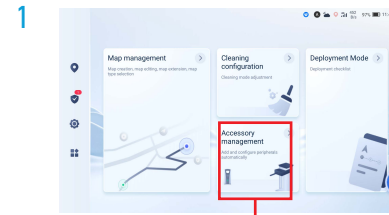
Align V40 with electrodes



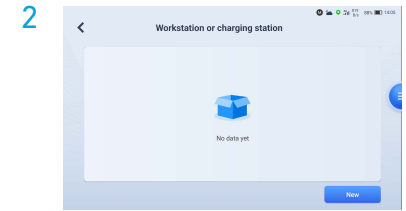
Connect V40 with electrodes

Charging Dock Setup (If applicable)

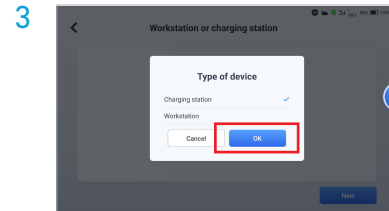
Enable charging dock to be localization point



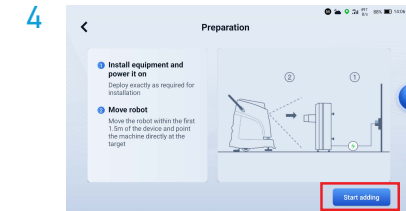
1. In the Navi app, select "Accessory Management"



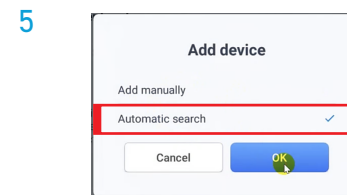
To create a new charging station point, select "New"



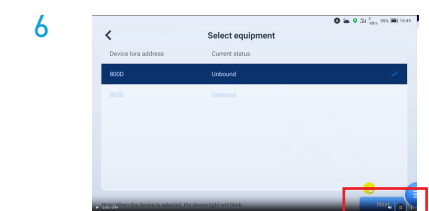
Choose the type of device and hit "OK"



Point the front of the robot at the charging station
Select the "Start Adding" button

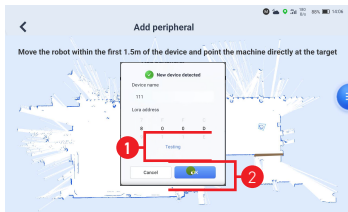


A window will pop up, select "Automatic search" and click "OK"



The robot will scan for a device. When it finds it, note the Lora address and hit "Next"

7



1. Select "Test". When the robot finds the charger, the "OK" box will turn blue.
2. Enter the name of the point and hit "OK"

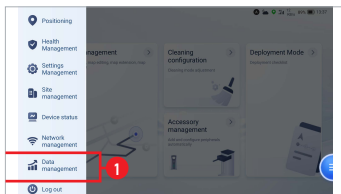
8



You will now see the new charging point in the list of accessories

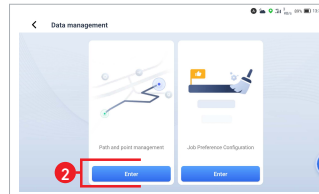
Upon validating every task, be sure to delete the tasks from the **Combined Path** screen. Doing so will declutter the task execution screen.

1



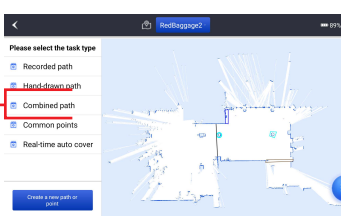
1. From the Navi home screen choose "Data Management"

2



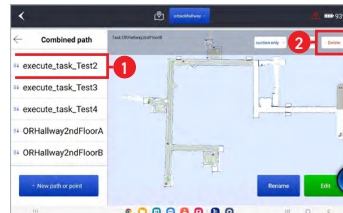
2. In the next screen choose "Enter" under Path and Point Management.

3



1. Select "Combined Tasks"

3



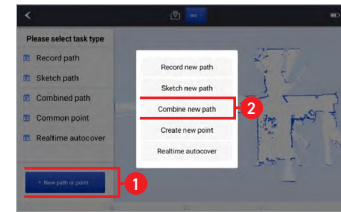
1. **Only** select tasks that begin with "execute_task_"
2. Select "Delete"
3. Repeat steps until all tasks have been deleted

Combined Path allows the user to combine tasks to be executed consecutively.



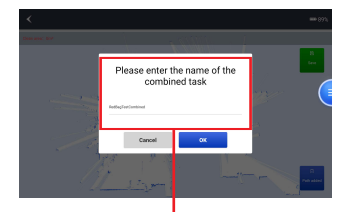
Continue editing map upon completing this step

1



1. Select "+ New path or point"
2. Select "Combine new path"

2



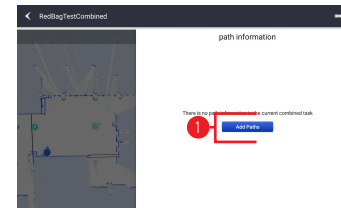
Enter a path name then "OK"

Do not include spaces in the map name



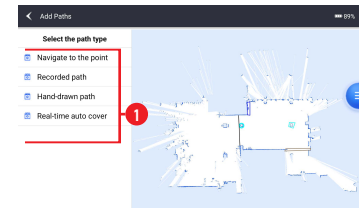
Note: The path name should identify where the path is programmed i.e., "southhallway" or "lobby"

3



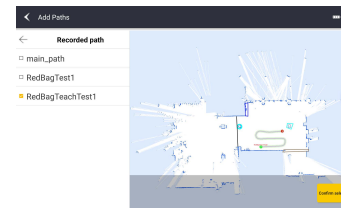
1. Select "Add Paths"

4



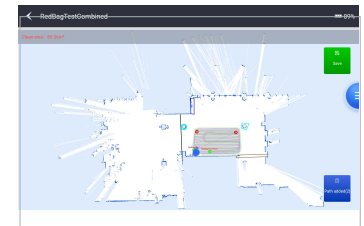
1. Select type of path to add to the combined task

5



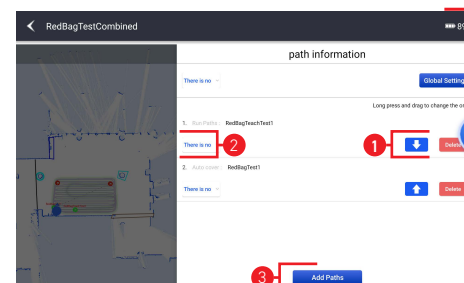
1. Check the paths you would like to add.
2. Hit "Confirm Selection"

6



1. To add more paths, or change the execution order, select "Path Added"

5



1. Use the up and down arrows to change the order
2. The "There is no" drop down list will set the default cleaning method for the path.
3. Hit "add paths" to add more paths to the task.

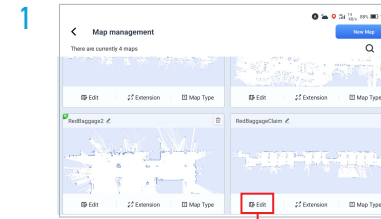
Map Editing (Admin Only)

The map editor has a total of 13 edit functions but not all are applicable to every location. The functions designated as "required in all maps" **must** be used where applicable to ensure the safety and proper functionality of the robot.

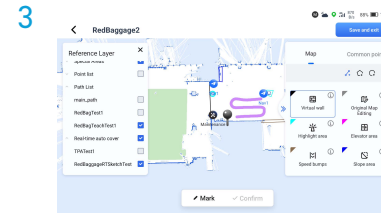
Required In All Maps

Edit mode	What does this feature do?	Where should it be used?	
Virtual Wall Edit Required in all maps	Prohibits the robot from driving through or closely around undesired area; barriers for where the robot can drive. Virtual walls should be placed at least 3 feet away from fall-risk areas (stairwells, escalators, elevators, etc.)	<ul style="list-style-type: none"> Stairs Escalator entrance/exits Elevator entrances Doors (automatic) Areas exposed to strong sunlight Glass flooring Restricted areas 	
Highlighted area Required in all maps	Beacons for the robot to recognize while executing tasks. The highlighted area must be a permanent obstacle that doesn't change in appearance or have the space around it changed.	Pillars, fixed furniture (ex. help desk, bench screwed into floor), unique corner of a room Add highlighted areas every 50 sq ft.	
Original map Recommended in all maps	Clear area: an eraser used to remove unwanted or inaccurate obstacles from the base map.	Should be used when non-permanent obstacles or people are scanned into the site map	

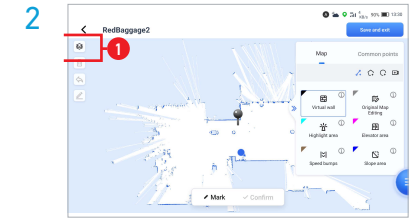
Edit mode	What does this feature do?	Where should it be used?	
Glass Wall	Filters the noise refracted from the sensors scanning through glass walls. Will reduce risk of accidents.	<ul style="list-style-type: none"> Glass walls 	
Temporary booth area	Allows the robot to maneuver around temporary obstacles in its path. The vacuum will clean that area once the obstacle is removed.	<ul style="list-style-type: none"> Around displays, signage, or stands AVOID USING - NOT TESTED 	
Carpet area	The robot will avoid the area with carpet if there is room around it if there is no room, the vacuum will pause cleaning to drive over area	<ul style="list-style-type: none"> Any areas where there is carpet VIRTUAL WALLS AROUND CARPETED AREA RECOMMENDED INSTEAD 	
Slope mark	This effectively tells the vacuum that it should expect a change in horizontal orientation, and that it's safe to proceed. This will also cause the vacuum to reduce its speed while ascending and descending down slopes.	<ul style="list-style-type: none"> Ramps or sloped floors 	
Custom Area	Works in conjunction with slope mark and allows vacuum to safely ascend and descend ramps or slopes	<ul style="list-style-type: none"> Ramps or slopes 	



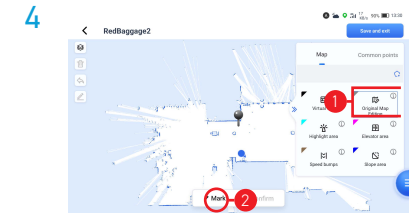
Select "Edit"



1. Check or uncheck the layers / paths you'd like to see.
2. Check Autocover and Realtime Autocover for gaps.



1. Select "Reference layer"



1. To clean noise, select "Original Map Editing"
2. Select "Mark" to start the line.



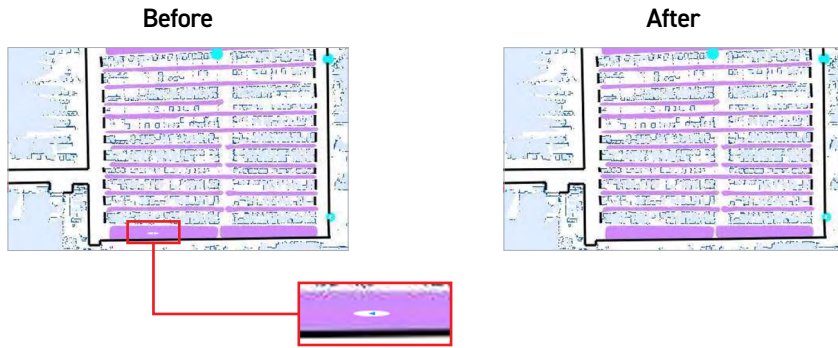
1. Drag the screen to draw the first edge.
2. Select "Connect points to" to create a corner.
3. Repeat these steps until the noise is contained
4. When finished, select "Confirm"



To erase the "noise" choose "Clear area."

To restore area to it's unmapped state, select "Restore unknown area."

Paths should populate where noise was erased



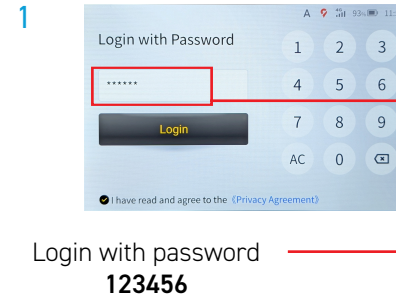
Refresh the task if tasks aren't populated immediately

7. Autonomous Operation

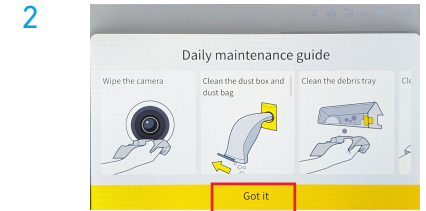
Tasks can be executed under "admin" or "user" login.

"User" Login

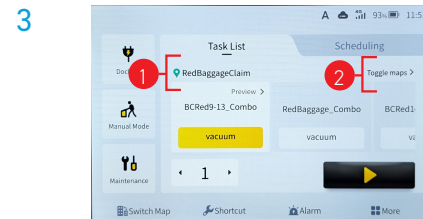
i "User" can only access : task execution, task report, manual operation, health status, and network settings



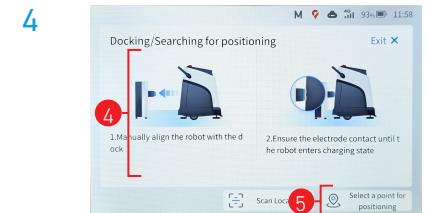
Login with password
123456



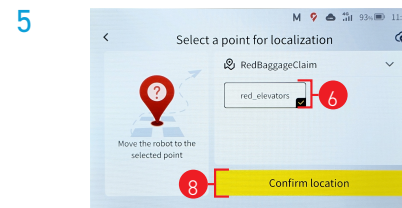
Perform daily maintenance, scroll to see all reminders. Hit "Got It" when complete.



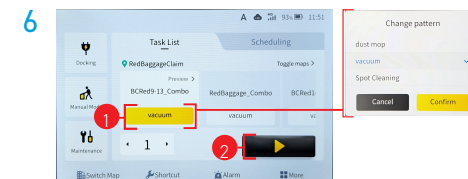
1. Check the map
2. Select "Toggle maps" to change the map.
3. The robot may be "lost"



4. To localize V40, move it to the dock, if possible.
5. If there is no dock, tap "Select a point for positioning"

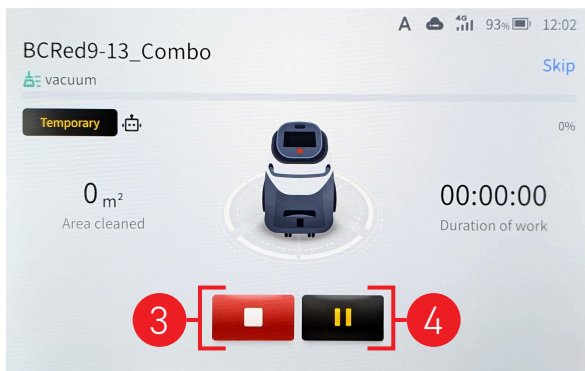


6. Select a localization point.
7. Move the robot to that point.
8. Select "Confirm Location"



1. Select the cleaning mode
2. Hit the "Play" Button to begin

7



3. Press "Stop" to cancel the route.

4. Hit the "Pause" Button to temporarily stop the route.

5. While paused, you can return to the main screen change the cleaning settings

6. Hit "Pause" again to restart the task.

8. Manual Operation

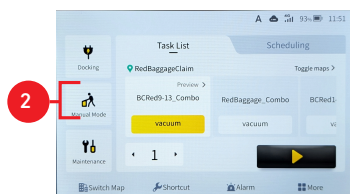
V40 can be used manually to clean tight spaces or spot vacuum

1



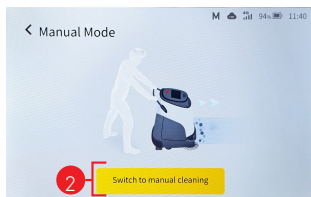
Push to location

2



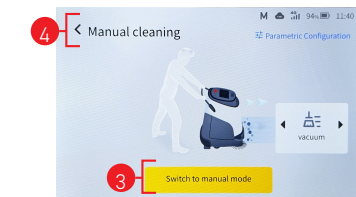
1. Press "Manual Mode"

3



2. The robot can now be pushed. To clean manually, select "Switch to manual cleaning."

4



3. Select cleaning mode, then begin pushing the robot to clean.

4. When finished, return to the main screen.

Emergency Stop Button

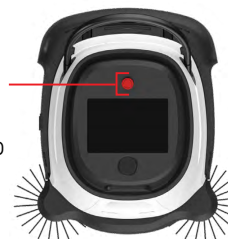
Press the emergency stop button to immediately stop the unit

i Should be used in case of emergencies or accident prevention



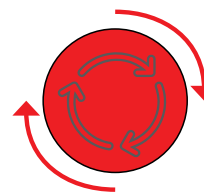
To move the unit after pressing the e-stop button

1. Push the **emergency stop** button to immediately stop the machine



2. When the emergency stop button is pressed, an alert will pop up on the screen.

3. Twist clockwise

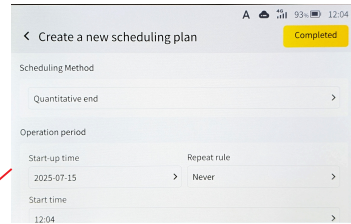


4. The wheels will unlock, then the unit can safely be moved

i Don't try to move the unit immediately after pressing the e-stop button to prevent harm to oneself or the robot

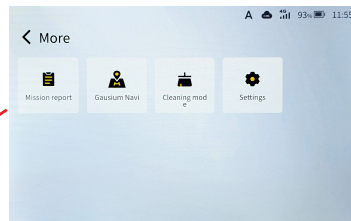
Note: Owner should take reasonable steps to warn individuals of use of the machine on the premises as necessary or required by law.

Scheduling

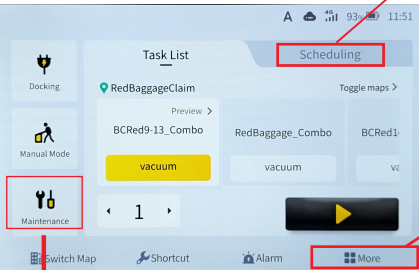


Errors or warnings notification log

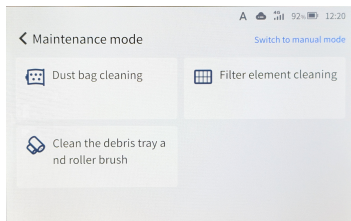
More



Used for reports, cleaning settings and admin functions



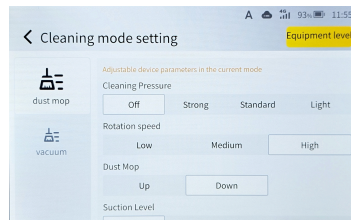
Maintenance Mode



Opens a page that gives instructions and prompts for regular maintenance.

Failure to comply with required robot maintenance, including consumable replacement based on usage, may result in robot repair or swap not being covered by warranty.

Cleaning Mode



Set levels for cleaning modes

9. Maintenance & Best Practices



Best Practice

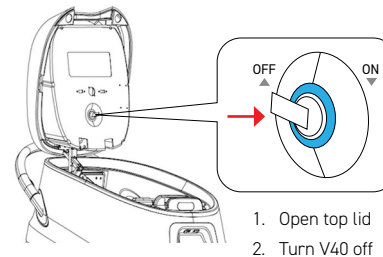
- ✓ Ensure the V40 is OFF while performing maintenance tasks
- ✓ Perform these maintenance tasks after every use
- ✓ Ensure V40 is left on leveled ground when wheels are not locked

After Use

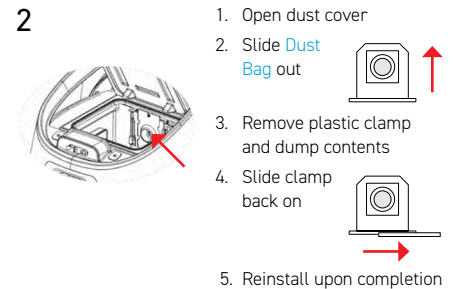


Wear gloves and a mask while performing these tasks

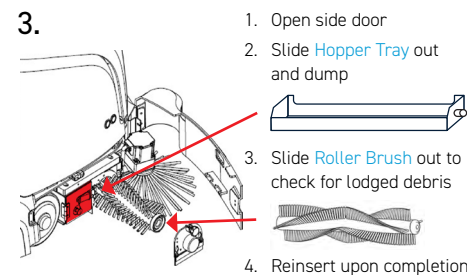
1.



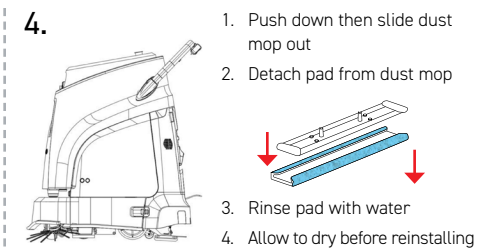
2.



3.

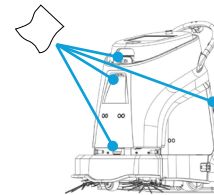


4.



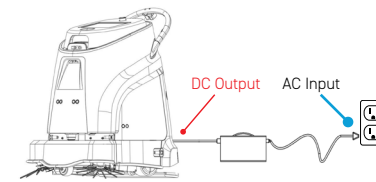
5.

Wipe front and rear sensors with dry microfiber cloth

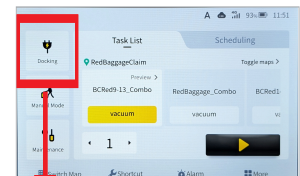


6.

Plug in to charge or



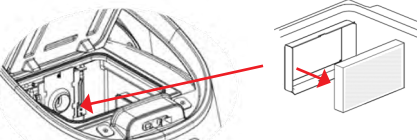
Send back to charging station:




1. Press "Docking"
2. Localize robot if needed.
3. Robot will travel and dock automatically if there is a dock available.

Weekly

1. Remove HEPA filter



2. Clean filter with soft bristled brush



3. Reinstall upon completion

 Wear gloves and a mask while performing these tasks

2


1. Snake suction hose to dislodge debris



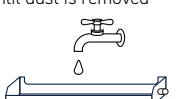
2. Wipe dust box with damp towel

3.

1. Remove hopper tray




2. Rinse with warm water until dust is removed



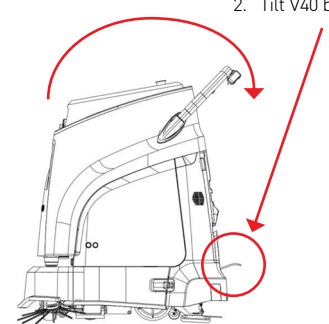
3. Allow to dry before reinserting

4.

 With help from another person

1. Extend the foot pedal

2. Tilt V40 backward


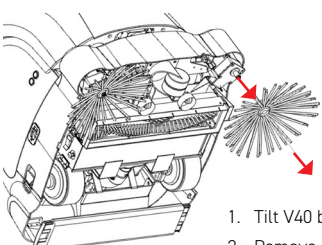


5.

1. Tilt V40 backward

2. Remove side brushes and roller brush

3. Use scissors to carefully cut hair from brushes



6.

Front Wheel

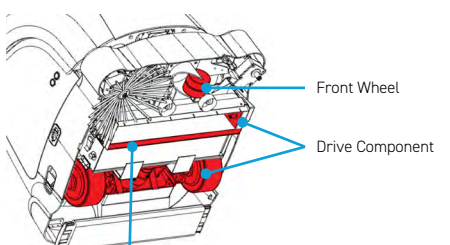
Drive Component

Dust Strip


1. Remove hair from front wheel

2. Remove hair from drive component

3. Wipe Dust trip with damp towel



Best Practices For Cleaning Settings

 Incorrect cleaning settings will impact cleaning effectiveness

High Pile Carpet



Low Pile Carpet



Suction Level	Standard
Cleaning Speed	High
Side brush/roller brush	High
Roller Brush Speed	Low
Dust Mop	Up

Suction Level	Standard
Cleaning Speed	High
Side brush/roller brush	High
Roller Brush Speed	Low
Dust Mop	Up

Do not use the dust mop on carpet

Hard Surfaces

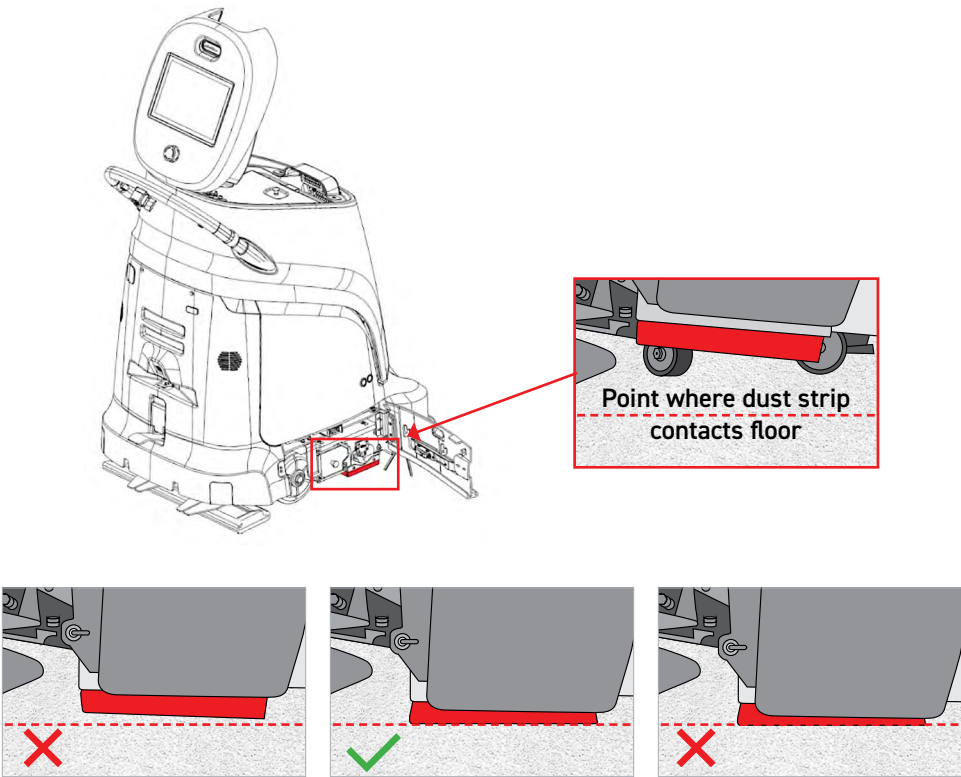


Suction Level	Standard
Cleaning Speed	High
Side brush/roller brush	High
Roller Brush Speed	Low
Dust Mop	Down

Best Practices For Brush Height

Ideal Brush Height

Dust strip should be paralleled to the floor



- Gap between dust strip and floor**

 - ✗ Roller brush bristles unable to penetrate carpet fibers
 - ✗ Dust/debris directed toward vacuum by side brushes not caught by dust strip
- Just right**
- Too close to the floor**

 - ✗ Unnecessary pressure from roller brush may damage floor or machine
 - ✗ Dragging dust strip may cause tearing

10. Troubleshooting

Contact Support once the following actions have been taken with no resolution.

Problem	Possible Cause	Solution
V40 will not turn on	The air switch is off	Flip the air switch on.
	The battery is dead	Charge the battery.
	The key switch is not turned on	Turn on the key switch and wait ~30 seconds for the unit to power on.
V40 will not charge	The wall outlet is powered off or unable to supply power	Connect the charger to a different wall outlet to determine if this is the problem.
	The charger is damaged and cannot charge	The circular indicator light should be solid blue when plugged into the wall outlet, the lightning bolt should be solid orange when plugged into the machine, and the green light should be flashing. If this is not the case, please contact SBRA support.
	The AC input cord is insufficiently connected to the charging box	Ensure the AC input cord is properly connected to the charging box. Refer to page 7 of this Guide for instructions.
	The battery is damaged and cannot be charged normally	If the charger appears to function normally but the battery percentage level does not increase with the extension of the charging time, the battery itself is likely damaged or abnormal. In this case, please contact SBRA support.
Frozen display screen	A glitch in the software	Turn V40 off then back on. Report the occurrence to SBRA.
V40 not localizing	Incorrect map was selected	Select the correct map.
	Not at the correct origin point	Move the vacuum to the correct origin point.
	Surroundings around the origin point have changed	Ensure the space is identical to how it was when the space was first mapped with the vacuum.
V40 not executing tasks	The vacuum is lost	Ensure V40 is at the correct location and localize the robot using the respective map.
	The task was saved incorrectly	The task was saved incorrectly causing the robot to not know where it is or not be able to execute the task. Delete the task and remake it.
	There are obstacles blocking the vacuum's path	Remove the obstacles from the V40's path.

11. How To Order Consumables

Consumables can be ordered through <https://us-store.softbankrobotics.com/>

Annual replacements calculation: $(\text{weekly hourly use} \times 52) / \text{lifespan}$
 $(20 \times 52) \div 150 = 7$

Biannual replacements calculation: $((\text{weekly hourly use} \times 52) / 2) / \text{lifespan}$
 $((20 \times 52) \div 2) \div 150 = 3.5$

Usage Level	Consumable	Lifespan (Hours)	Biannual Replacements	Annual Replacements
Low 2-3x Weekly (4 Hours)	Side Brush	300	1	2
	Roller Brush	300	1	2
	Dust Bag	300	1	2
	HEPA Filter	500	1	1
	Dust Mop Pads	150	2	4
Medium 4-5x Weekly (4 Hours)	Side Brush	300	2	4
	Roller Brush	300	2	4
	Dust Bag	300	2	4
	HEPA Filter	500	1	2
	Dust Mop Pads	150	3.5	7
High Daily (6+ Hours)	Side Brush	300	3.5	7
	Roller Brush	300	3.5	7
	Dust Bag	300	3.5	7
	HEPA Filter	500	2	4
	Dust Mop Pads	150	7	15

* Lifespans vary based on location

Replacing Consumables

If a desired clean isn't being achieved, ensure the consumables are in good condition. Maximize performance by replacing consumables regularly

Side Brushes

Lifespan: 300h*

Replace when bristles are frayed or missing

New



Time to Replace



Roller Brush

Lifespan: 300h*

Replace when black or blue bristles are same height as orange bristle



Pad

Lifespan: 150h*

Replace when color has completely darkened



Dust Bag

Lifespan: 300h*

Replace when the bag is discolored or torn



HEPA Filter

Lifespan: 500h*

Replace when the filters have darkened in color



* Lifespans vary by site



SoftBank Robotics Support

Phone [1-844-737-7371](tel:1-844-737-7371)

Email us-support@softbankrobotics.com

Live support [7am - 9pm EST, Monday - Friday](#)



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