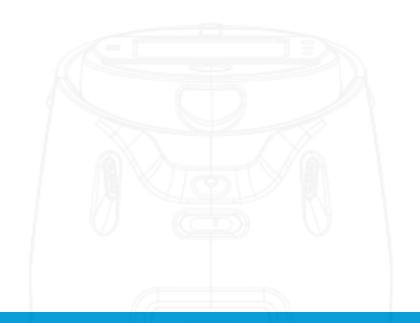




Scrubber 50 Pro Quick Start Guide





IMPORTANT SAFETY INFORMATION:

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



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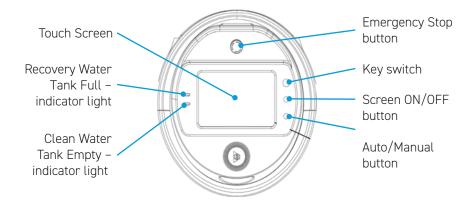
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1. Machine Overview









Dashboard Breakdown



Emergency Stop Button

To stop robot immediately after pressing it.



Key Switch

Turn robot on/off



Screen ON / OFF

Turn screen on/off



Manual / Auto

Locks/unlocks the robot's wheels



Touch Screen

User interface



Sewage Indicator

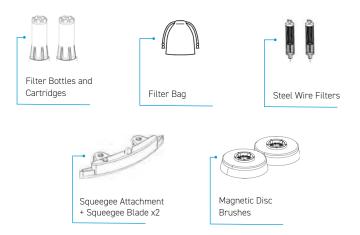
Indicates when the recovery tank is full



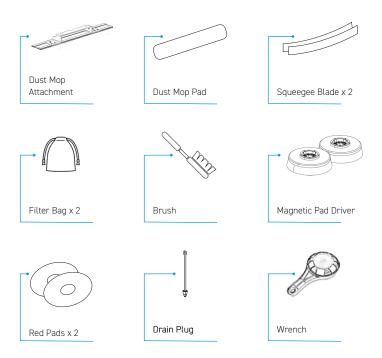
Clean Water Indicator

Indicates when the clean water tank is empty

Included Inside S50



Supplied Accessories (in box)



2. Charging



Ensure the Scrubber is fully charged before use:

The S50 has a 3-hour battery life under normal use conditions.

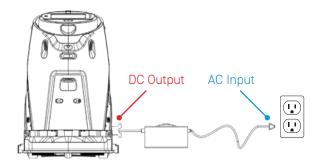
It takes approximately one-two hours to charge the battery.

You must only use the designated charger that came with the S50.

The machine should be powered off before and throughout charging.

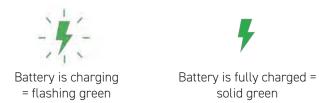


Do not handle the S50 charger or charging port with wet or damp hands. Charging the S50 should be done in strict accordance with the following instructions to reduce the risk of electrocution.



To begin charging:

- 1. Plug charger's **DC Output** into S50's charging port.
- 2. Plug charger's AC Input into wall outlet.



When charging is complete:

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

3. Machine Setup

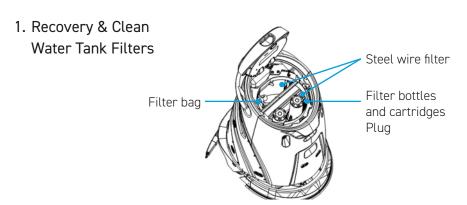
Daily Operation

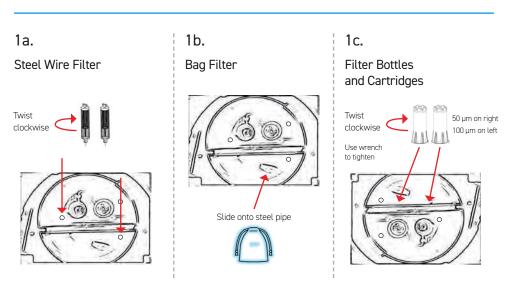
Confirm that the following components are properly installed:



Best Practice

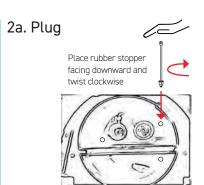
- ✓ Ensure the S50 is powered OFF during setup.
- ✓ Ensure the unit is stationary on leveled ground.
- ✓ Do not leave the unit on unleveled ground unattended.





2. Clean Water Tank Drain Plug

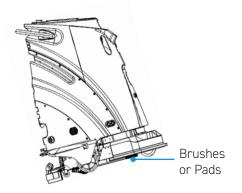




2b. Filling Clean Water Tank

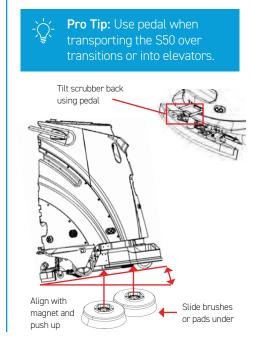


3. Magnetic Disc Brushes or Pads

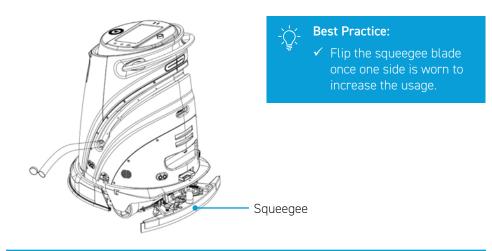




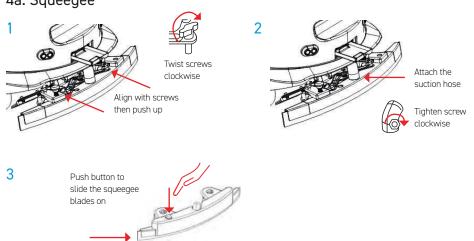
3a. Brushes or Pads



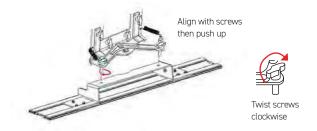
4. Squeegee or Dust Mop



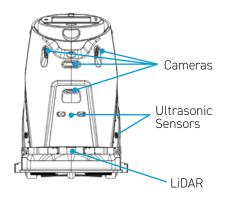








5. Wipe Sensors



5a. Wipe Sensors



4. Mapping



The S50 is intended for commercial use and performs optimally on hard, even surfaces. It can operate autonomously on slopes of up to 8° .

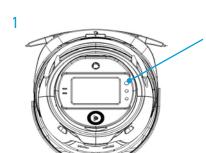
The highest cleaning efficiency is 12,000 $\mathrm{ft^2/hr}$.

Creating the Base Map (Admin Only)

A base map is the electronic floor plan that the robot associates with cleaning tasks. Autonomous cleaning tasks cannot be created without a base map.



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



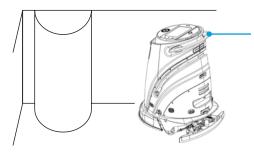
Using the key, turn the scrubber on and wait 30 seconds.

Under the user "admin", enter password 314159.

2



Select "Complete" to bypass the prompt



Using the handle, move the S50 to a position in the area that has permanent, distinguishable features.

(i)

Permanent, distinguishable features include: a pillar, a corner or hallway, and/or furniture that is fixed.

This spot will become the unit's "Origin".

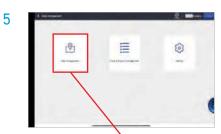


Areas that contain no distinguishable features, floorto-ceiling glass walls, frequently rearranged furniture, or large amounts of sunlight should be avoided.

4



Select the menu icon >>>> then "Data Management"



Select "Map management"

6



Select "+ Scan new map", then press "Start"

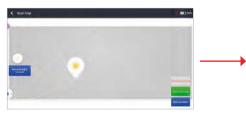


Create a name for the map, then select "OK"

Do not include spaces in the map name



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



Push the scrubber around the perimeter of the space



Push at a slow, steady pace and make precise 90° turns.

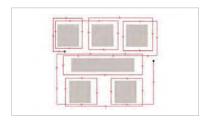


Sensors (shown in red) are scanning the environment



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

9



Be sure to walk around permanent obstacles that the LiDAR cannot scan through



Once the entire room has been scanned, select "Save scan map"



Review the map for quality and coverage

12



No missing areas Permanent obstacles must be captured



If needed, remap the space using the steps above.

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" <u>must</u> 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 an area; barriers for where the robot can drive.	Stairs Escalator Doors (automatic) Areas exposed to large amounts of sunlight Glass flooring Any areas that should be blocked off	
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.	Add highlighted areas every 50 sq ft.	The same
Original map Required 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	7

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.	• Glass walls	2 . 0
Temporary booth area	Allows the robot to maneuver around temporary obstacles in its path. The S50 will clean that area once the obstacle is removed.	Around displays, signage, or stands	
Carpet area	The robot will avoid the area with carpet if there is room around it. If there is no room, the S50 will pause cleaning to drive over area.	Any areas where there is carpet	1:05
Temporary carpet zones	The robot will scan the designated floor area for the presence of carpet. If carpet is detected, the S50 will pause cleaning to drive over it. If there is no carpet, the S50 will clean as usual.	Floor mats	
Slope zones	The S50 will slow down while ascending and descending slopes.	Ramps or sloped floors	- They



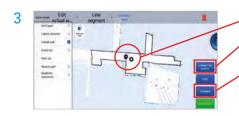
To begin editing the map, select "Edit"







3. Press "Add new point" to drop pin.



- 1. Drag the pointer over to cover the other side of the area being edited.
- 2. Select "Connect the points" and another pin will be dropped.
- Continue these steps until the entire area being edited is encased. Then select "Complete" to execute the editing function.

Creating Paths (Admin Only)

Paths are the routes the S50 will take while executing tasks. Paths must be created before the S50 can perform tasks. There are six ways to create cleaning paths but only four will be utilized: Autocover, Realtime autocover, Record new path, and Combine new path.



Return to the "Data Management" menu screen by pressing the white arrow



Select "Path and point management" to begin creating tasks

Autocover allows the S50 to generate cleaning routes through boundary mapping. The S50 will clean the interior in a Zamboni pattern after it is taught the perimeter.



Best Practice

- ✓ Use Autocover when mapping less than 10,000 addressable square feet
- ✓ Individual Autocover paths should not exceed 540 ft²
- ✓ Combine Autocover paths to cover addressable cleaning square footage

2. Select

✓ Do not use Autocover in hallways or narrow spaces with a width less than 60 inches



Select "+ New path or point" >>> then select "Record new path"



Select "Autocover"



1. Select "Match" if the lasers align with the map.



Enter a name for the path then press "Confirm"

Do not include spaces in the map name



 Begin creating (walking) a perimeter of an area to be cleaned.



The path will be autogenerated



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

Realtime Autocover feature allows the S50 to generate cleaning tasks autonomously based on parameters set by the user.



Best Practice

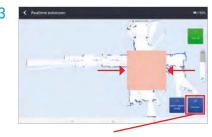
- ✓ Use Realtime Autocover when mapping more than 10,000 addressable square feet
- ✓ Realtime Autocover paths should cover a max of 540 ft²
- ✓ Create multiple Autocover paths to cover addressable cleaning square footage
- ✓ Minimum of 60 inches needed to safely execute its own programmed cleaning paths



Select "+ New path or point"



Select "Realtime autocover"



2. Click the preview icon to view the path the S50 will take.





Select "Cancel preview" to return to the previous screen



When ready to save, select "Save all"

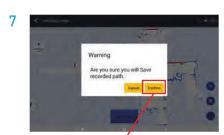


Enter a name for the task then press "Confirm"

Do not include spaces in the map name



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



Select "Confirm" and the task will be saved



You will be returned here upon successful saving

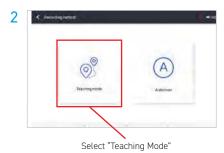
Teach Mode allows the user to teach the path the robot should take during scrubbing and the robot repeats.



Teach mode should be used in hallways or narrow spaces with a width less than 60 inches.



Select "+New path or point" >>> then select "Record new path"





1. Select "Match" if the lasers align with the map.



Save the path . Then enter the path name and press confirm Do not include spaces in the map name



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



1. Begin teaching (walking) the path to be cleaned.



Select "Confirm" when prompted to save the path

 \widehat{i} The S50 will copy the path you record.



The recorded path will be saved here

Combined Path allows the user to combine tasks that were created separately (realtime autocover, teach mode, sketch path, etc.), to be executed consecutively.



Select "+ New path or point", then "Combine new path"



Select the type of path(s) you want combined



Enter a name for the task then press "Confirm"

Do not include spaces in the map name



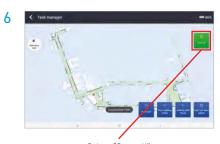
Select "Add task"



Pro Tip: The path name should identify where the path is programmed i.e., "secondfloorhall" or "fifthfloorcombined".



Select the tasks to combined, then press "Select"



Select "Save all"



To add a different type of path (record, sketch, etc), select the back arrow next to "Realtime autocover" and follow the steps listed above.



Select "Confirm"



The recorded path will be saved here

5. Autonomous Operation

Once tasks have been programmed onto the scrubber, they can be executed under the "admin" login or "user" login.









site map).



Tasks can be paused or stopped while the S50 is cleaning

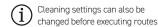


To change the cleaning settings, pause the S50 and select "Cleaning setting"



2. Select the back arrow in the upper left corner to return.







2. Then select "Cleaning configuration".

Manual Operation

The S50 can be used manually to clean areas that the machine cannot reach autonomously, or to clean up spills and messes as needed throughout the day.



Emergency Stop Button

Press the emergency stop button to immediately stop the unit.





To move the unit after pressing the e-stop button:

Release the e-stop button by twisting it clockwise



2



Pause the task on the display screen (\$50 will resume its task once the e-stop button is released)

3 Hold the manual/auto button for 3 seconds



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





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 customers of use of the machine on the premises as necessary or required by law.

Other Features

#

Health Status



Errors or warnings notification log





Daily use log: select "Details" to view

Device Status



Consumables check for brushes or pads, squeegee, and filters



Increase/ decrease volume

Select task

SERRIN A

For questions or support, contact us-support@softbankrobotics.com

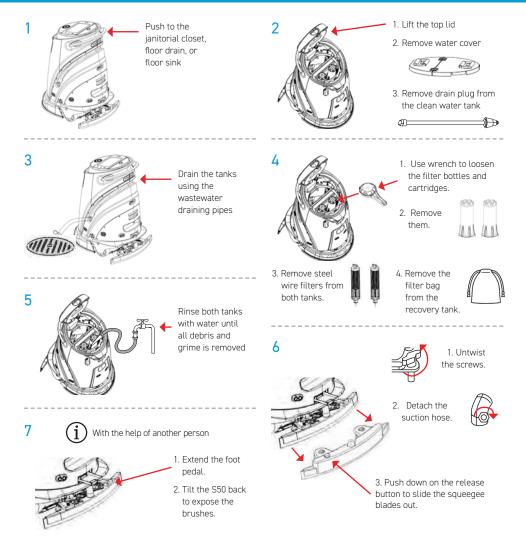
Select "Reset" once

7. Maintenance and Troubleshooting

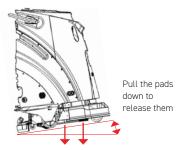


Best Practice

- ✓ Ensure the S50 is OFF while performing maintenance tasks
- ✓ Perform these maintenance tasks after every use
- ✓ Leave the squeegee, pads or brushes, filters, and drain plug removed from the S50 after cleaning to allow these items to dry
- \checkmark Leave the top lid open and water tank cover off to allow the tanks to dry

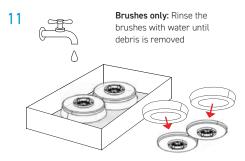


8



9 Using your hands, gently rinse the filters until all debris is removed

Using a cloth or sponge, wash the squeegee blades to remove all grime and debris



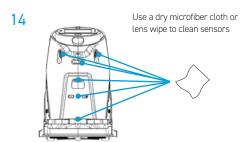
Pads only: Remove the pads from the driver and rinse them until debris is removed

12 Allow filters, filter bottles, brushes/pads, and squeegee blades to air dry until next use



Leave the top lid open with the water tank cover removed to allow the tanks to dry





S50 Troubleshooting

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

Problem	Possible Cause	Solution
False obstacle detection	The sensors are dirty	Wipe the sensors with a dry microfiber cloth.
	Uneven or porous floors	Contact SBRA support.
Recycling process is not occurring	The cartridge filters are dirty	Clean the cartridge filters with soapy water to remove scum or grime.
	The recovery tank never reached 60% capacity	Increase the water spray level or add a gallon of water to the recovery tank. This will trigger the recycling process.
	Recycling process is disabled	Swipe down top menu on robot's display, then de-select "filter off".
Scrubber not suctioning	The squeegee mount is not set down	Under "Cleaning settings", ensure the Squeegee/dust mop is set to "Down".
	Suction level is "Off"	Increase suction in "Cleaning Configuration" settings to level other than "Off".
	The water suction hose is not properly connected	Confirm the water suction hose is properly connected to both the squeegee attachment (machine back) and inside the recovery tank.
	The water suction hose inhaled an object that is causing a blockage	Detach the suction hose from the squeegee attachment and recovery tank. Rinse out and remove any objects that became stuck in the hose, then reattach to the machine.
	The recovery tank is full, or no clean water is in the clean water tank and the scrubber cannot continue cleaning	Drain the recovery tank and fill the clean water tank with clean water or solution.
	There is solid residue adhered to the squeegee blade, or the squeegee blade is severely damaged and worn, affecting the ability to gather water	Clean the squeegee blade, adjust the structural shape, or use a new squeegee blade.

Poor cleaning	The brushes or pads have not been cleaned for a long time and are contaminated with a lot of dust and dirt	Remove the brushes or pads and rinse with water until all debris is removed, then reinstall them on the S50. Note: both sides of pads can be used to maximize cleaning quality and lifespan.	
	The brush or pads are severely worn, and the cleaning performance is poor	Replace the brushes with new ones of the same specification.	
	The type of brush or pad being used does not apply for the floor type	Please refer to the Pad Guide, and select a brush or cleaning pad most suitable for the floor material.	
	The floors are heavily soiled with large solid waste that the scrubber cannot clean	Pick up the solid waste on the floor before cleaning, then repeat the cleaning several times to ensure the best cleaning effect.	
	Brush speed is too slow	Increase brush speed and assess changes to cleaning quality.	
	Cleaning speed is too fast	Reduce cleaning speed—using the "Low" cleaning speed is always recommended for optimal cleaning.	
	Brush height is incompatible with floor type	Adjust brush height to increase or decrease pad pressure being applied to the floor.	
	Wrong cleaning solution is being used	Adjust the amount or type of cleaning solution being added to the clean water tank.	
	Water spray level is off or too low	Turn on or increase water spray level.	
Scrubber won't	The air switch is off	Flip the air switch on.	
turron	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.	
Scrubber won't 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, and the lightning bolt should be solid orange when plugged into the machine. If this is not the case, please contact SBRA support.	
	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.	
	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.	

Water not being sprayed	The clean water tank is empty	Fill the clean water tank.
being sprayed	The water spray level is turned off	Under Cleaning settings, ensure the water spray level is not set to "Off".
	The water spray line is blocked	Fill the clean water tank with warm water and set the water spray level to "High" in "Cleaning settings". Use the S50 in manual mode for 3-5 minutes to allow the water to be sprayed through the lines.
Frozen display screen	A glitch in the software	Turn the S50 off then back on. Report the occurrence to SBRA.
Scrubber not executing tasks	The scrubber is lost	Ensure the S50 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 scrubber's path	Remove the obstacles from the S50's path.
Scrubber not localizing	Incorrect map was selected	Select the correct map.
	Not at the correct origin point	Move the scrubber 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 scrubber.
Unclear or double created map	The scrubber was being moved too quickly during the map creation	Please move the scrubber at a slow and steady pace during map creation.
	The sensors are dirty or blocked by obstacles	Clean the sensors with a dry microfiber cloth. Remove any obstacles from the camera's view.
	The environment is complicated, or there are high-transparency materials such as glass walls	During mapping, if it is found that there are high-transparency materials in the surrounding environment, please draw a virtual wall in time to control the map boundary.

8. How To Order Consumables

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

Annual replacements calculation: (weekly hourly use * 52)/ lifespan

 $(20 \times 52) \div 150 = 7$

Biannual replacements calculation: ((weekly hourly use * 52)/2)/ lifespan

 $((20 \times 52) \div 2) \div 150 = 3.5$

Usage Level	Consumable	Lifespan (Hours)	Biannual Replacements	Annual Replacements
Low	Filter Cartridges	150	2	4
2-3x Weekly (4 Hours)	Filter Bag	100	3	6
	Steel Wire Filter	1000	>1	1
	Squeegee Blades	300	1	2
	Pads	150	2	4
	Disc Brushes	300	1	2
Medium	Filter Cartridges	150	3.5	7
4-5x Weekly (4 Hours)	Filter Bag	100	5	10
	Steel Wire Filter	1000	>1	1
	Squeegee Blades	300	2	4
	Pads	150	3.5	7
	Disc Brushes	300	2	4
High	Filter Cartridges	150	7.5	15
Daily (6+ Hours)	Filter Bag	100	11	22
	Steel Wire Filter	1000	1	2
	Squeegee Blades	300	3.5	7
	Pads	150	7.5	15
	Disc Brushes	300	3.5	7



SoftBank Robotics Support

Phone 1-844-737-7371

Email us-support@softbankrobotics.com

Live support 7am - 9pm EST, Monday - Friday