

StonyLab[®]

Spin Coater

Operation Manual

(Please read the instruction carefully before you use the machine)

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1. Safety Information

NOTE: Before installing, operating, maintaining, or servicing this product, carefully read and fully understand this manual.

Only after becoming familiar with the equipment, relevant safety information, and all precautions should the product be put into operation.

Only qualified personnel with appropriate training and operational knowledge are permitted to use this equipment. Improper operation or maintenance may result in serious personal injury.

● Environmental Safety Precautions

-  No hazardous activities are permitted in the area where the equipment is installed or operated. Operation in explosive or potentially explosive environments is strictly prohibited.
-  Wear appropriate personal protective equipment (PPE) when necessary, such as work clothing, safety goggles, and protective gloves.
-  Operate the equipment in a well-ventilated environment, such as a fume hood or ventilated enclosure. Otherwise, volatile solvents may pose risks to personnel and damage the equipment.
-  To prevent electric leakage or electric shock, ensure the equipment is properly grounded. The power cord must be connected to a correctly grounded power outlet.
-  Keep the equipment away from electromagnetic or other radiation sources, as these may adversely affect operation and damage electrical components.

● Operational Safety Precautions

-  Operators must be familiar with the equipment and this instruction manual. Any operation that may endanger personnel or damage the equipment is strictly prohibited.
-  During operation, do not touch, grasp, or forcibly move rotating shafts or sample trays, as this may cause personal injury or equipment damage.
-  While the motor is running, do not open the top cover. Samples or substrates may be ejected unexpectedly, posing a risk of injury.

● Installation Safety Precautions

-  Do not place the equipment on an unstable surface to avoid tipping or vibration-related hazards.
-  Do not locate the equipment near heat sources, under direct sunlight, or in areas with poor heat dissipation. Radiant heat may adversely affect

performance.



A safety clearance of at least 11.81 inch around the equipment should be designated as a restricted area to prevent exposure to hazardous substances or direct injury.

- **Regulatory Information**



Please dispose of or recycle packaging materials, including cartons and protective cushioning, in an environmentally responsible manner.



Do not dispose of this product or its accessories with household or commercial waste. Contact your local authorities for information on proper disposal methods.



Batteries contained in this product must not be disposed of with household waste. Please use your local battery recycling system for proper disposal and recycling.

2. Overview

2.1 Product Specifications

The SL003139 series spin coater is a benchtop laboratory spin coating system designed with advanced engineering concepts and a precision motion control system, enabling high-accuracy and high-uniformity coating performance. Its compact design makes it suitable for installation in glove boxes, fume hoods, and other controlled environments. The system can store up to 5 programs, each consisting of up to 5 steps. Operating parameters such as rotational speed and spin time are displayed in real time.

Item	Specification
Model	SL003139 Series
Maximum Speed	9,999 RPM
Speed Resolution	1 RPM
Maximum Spin Time	3,000 s
Spin Time Resolution	1 s
Maximum Acceleration	9,999 RPM/s
Substrate Size Range	Fragments smaller than 0.39 inch up to standard 4 inch wafers
Dimensions (W x D x H)	8.26 x 10.43 x 8.46 inch
Weight	6 kg

Item	Specification
Power Input	100-120 V, Single-phase, 200 W (110V)
	200-230 V, Single-phase, 200 W (220V)
Vacuum Supply Requirement	0.06-0.09 MPa; minimum vacuum flow rate ≥ 15 L/min
Vacuum Tubing	Rear panel outlet, 0.23 inch OD
Fuse	2A (installed)

2.2 Product Components



Figure 2-1: Front view of SL003139

①	Knob
②	Transparent Spin Bowl Lid
③	Removable Spin Bowl
④	Power Button
⑤	LCD Display
⑥	Control Panel



Figure 2-2: Rear view of SL003139

①	Power Socket
②	Vacuum Connector

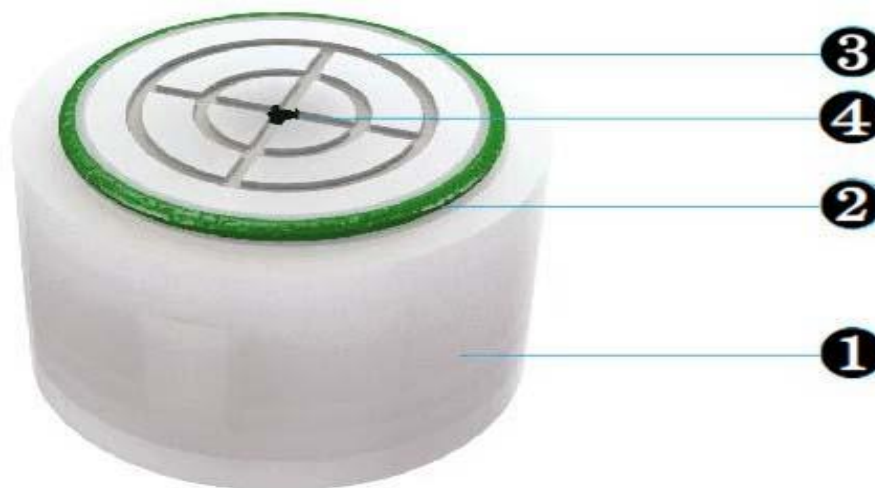


Figure 2-3: Standard Stage Plate of Model SL003139

①	Spin Chuck
②	O-Ring
③	Vacuum Groove
④	Center Opening

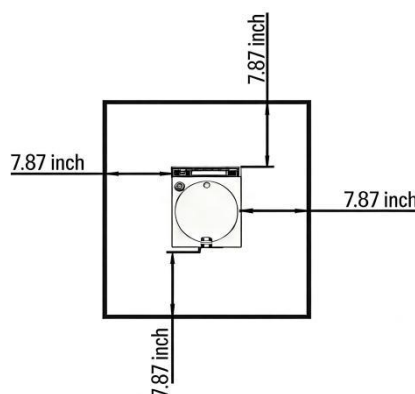
NOTE:

- Do not block the central exhaust port, as this may cause substrates to be ejected.
- Ensure the sample chuck surface is free of residual coating solution, as this may affect substrate adhesion.

3. Installation Instructions

- **Selection of Installation Location**

- (1) The installation site should be a flat, stable, spacious, and well-ventilated surface. Failure to do so may adversely affect the spin coating performance.
- (2) When processing solutions containing volatile or toxic solvents, the equipment must be placed inside a well-ventilated fume hood.
- (3) The installation site should be kept away from direct sunlight, cold/heat sources, and high humidity.
- (4) Do not install the equipment near the edge of a workbench to prevent it from sliding off due to vibrations during operation. A safety clearance of 7.87 inch should be maintained around the equipment as an operational hazard zone.



- **Power Connection**

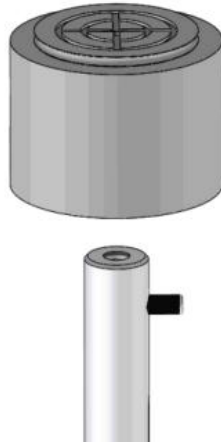
Connect one end of the power cord to the power inlet located on the rear of the equipment, and the other end to a properly grounded power outlet.

- **Vacuum Connection**

The vacuum pump is required for operating the vacuum spin chuck. Use the supplied vacuum hose (0.15 inch inner diameter, 0.23 inch outer diameter) to connect the spin coater to the vacuum pump. Before connecting the vacuum pump to the spin coater, ensure that the pump is functioning properly.

- **Chuck Installation**

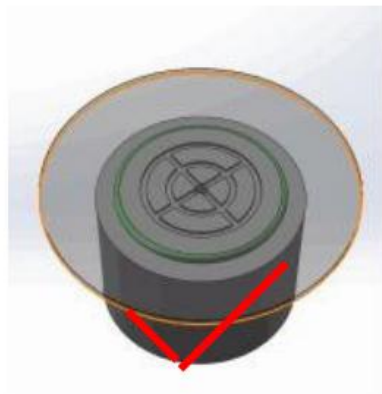
Refer to Chapter 7: Maintenance and Care for instructions on installing or replacing the chuck. After installation, ensure there is no gap between the chuck and the shaft, and the surface of the chuck is level without tilt.



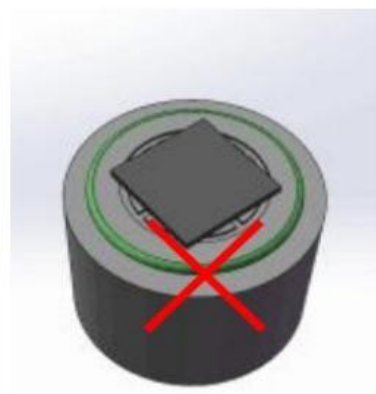
- **Loading Substrates/Wafers**

Place the substrate on the center of the spin chuck. The substrate may be wafers, glass slides, or any suitable small flat pieces.

NOTE: The substrate must be larger than and fully cover the surface of the sample chuck. Using a substrate smaller than the chuck may cause the coating solution to flow into the device's vacuum lines, potentially clogging or corroding internal tubing.



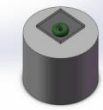
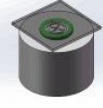
Right



Wrong

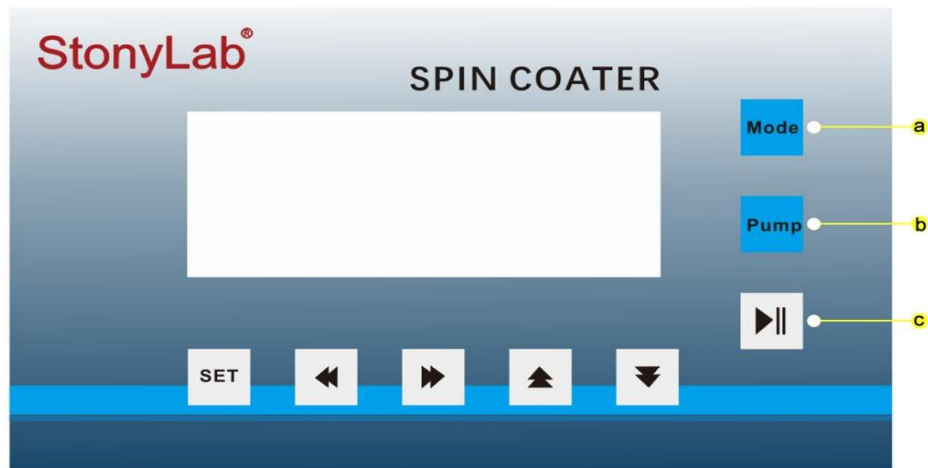
NOTE: The substrate must be placed precisely at the center of the sample chuck. Otherwise, during high-speed rotation, the substrate or fragments may be ejected, posing a risk of injury to personnel and damage to the equipment.

- **Selection of Rotary Chucks**

Substrate sizes	Recommended spin chucks	
Fragments	3/16 inch standard spin chuck	
Small Square Glass (1.18 x 1.18 inch)	Small standard chuck with vacuum surface less than the substrate or custom-made spin chuck	
		
Small Rectangle Glass Slides	Custom-made spin chuck	
2 inch wafer	1 inch standard spin chuck	
3 inch and above wafer	2 inch standard spin chuck	

4. Instrument Description

4.1 Control Panel and Indicator Lights

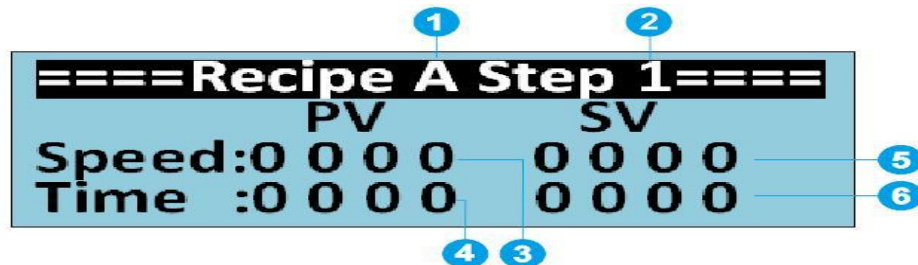


Light	Description
	Light is on when in standard mode
	Light is on when vacuum valve is open
	Light is on when a process is running

Key	Description
	Press to switch mode; press and hold for 3 seconds to enter the current system configuration UI
	To connect or dis-connect the vacuum source
	To start or stop the spinning
	To decrease the number or switch to the next step
	To increase the number or switch to the previous step
	Move the cursor to the right or switch to the next recipe
	Move the cursor to the left or switch to the previous recipe
	Press and hold to edit the recipe; press to edit the next step

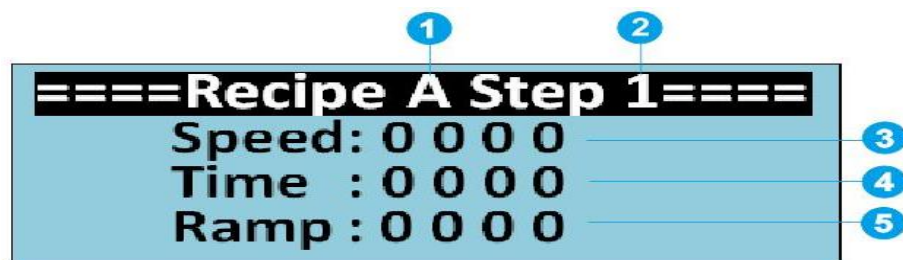
4.2 Display Interface and Operating Modes

4.2.1 Standard mode - Working Screen



No.	Description
1	Recipe name (from A to E)
2	Step number (1-5)
3	Real time spin speed (RPM)
4	Remaining time (s)
5	Set spin speed (RPM)
6	Set spin time (s)

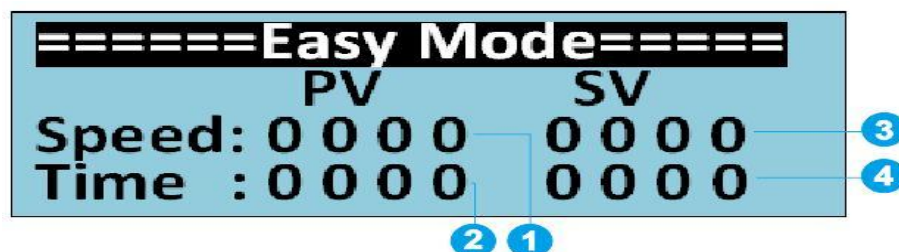
4.2.2 Standard mode - Edit Recipe Screen



No.	Description
1	Recipe name (from A to E)
2	Step number (1-5)
3	Set spin speed (RPM)
4	Set spin time (s)

No.	Description
5	Set ramp speed (RPM/s)

4.2.3 Easy Mode - Working Screen



No.	Description
1	Real time spin speed (RPM)
2	Remaining time (s)
3	Set spin speed (RPM)
4	Set spin time (s)

4.2.4 Easy Mode - Edit Recipe Screen



No.	Description
1	Set spin speed (RPM)
2	Set spin time (s)
3	Set ramp speed (RPM/s)

5. Setup Instructions

5.1 Vacuum valve on/off control

5.1.1 Automatic Vacuum

The SL003139 spin coater has an electronic vacuum valve to control the vacuum applied to the substrate. The vacuum valve automatically shut off the vacuum whenever the spin coater is not spinning so the user can load and unload the substrate from the spin chuck. When a recipe is starting to run, the spin coater open the valve automatically and apply the external vacuum to the substrate during the high speed spinning.

5.1.2 Manual Vacuum

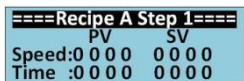
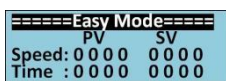
If necessary, the user can manually switch the vacuum valve to test the external vacuum.

- (1) Switch to the working screen in either Easy mode or Standard Mode.
- (2) Press  to open the vacuum valve. At this point, the user can check whether the vacuum is normal by covering the small hole in the center of the specimen stage with a finger, or by loading a sample. If the sample adheres tightly to the specimen stage and is difficult to move, this indicates that the vacuum is normal.
- (3) Press  again to shut off the vacuum valve. When the equipment is in operation, for user safety, the vacuum line cannot be manually shut off.

NOTE: During vacuum state switching, a clicking sound from the vacuum valve may be heard. This sound indicates normal switching operation.

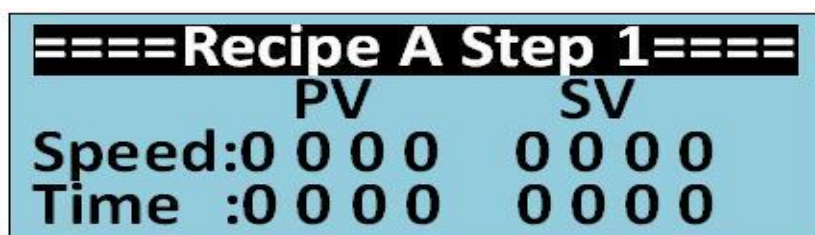
5.2 Easy Mode Vs Standard Mode

The SL003139 spin coater system has two user modes: Easy Mode for experienced user to quickly test a process or new material; Standard Mode for standard multi-step spin coating process.

	Standard Mode	Easy Mode
Screen		
Spin Steps	5 Steps	1 Step
Saved Recipes	Yes (5 Recipe)	Yes (Only last process)
Scenario	Standard Spin coating	Quick Test
Edit Spin Speed	Yes	Yes
Edit Spin Time	Yes	Yes
Edit Ramp Rate	Yes	Yes
Mult-Step	Yes	No
Auto Vacuum Valve	Yes	Yes

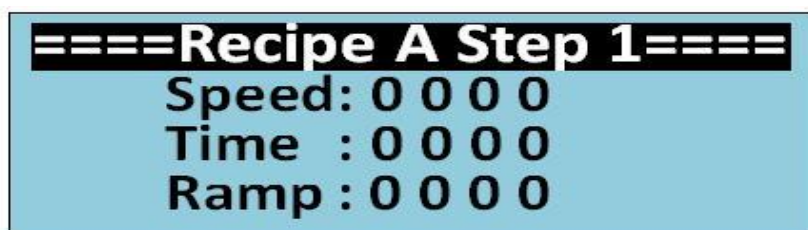
5.3 Edit Recipe in Standard Mode

(1) Press the  to switch to the Standard Mode if needed.



(2) Press  and/or  to select from the five recipe. The SL003139 spin coater saves five user recipes named with letter A, B, C, D and E respectively.

(3) Press and hold  for 3 seconds to enter the editing screen in Standard Mode. The LCD will initially display Step 1 first.



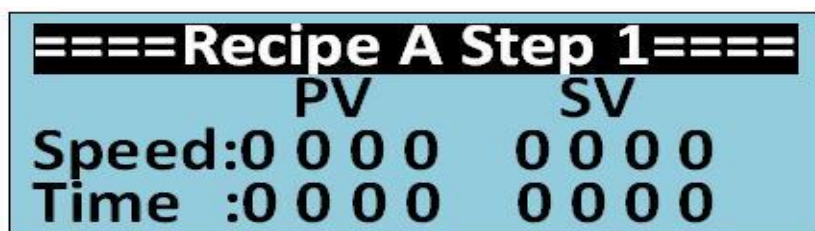
(4) The user needs to set the spin speed, spin time and ramp rate for the step. Press and/or to move the cursor. Press and/or buttons to adjust the value at the cursor.

(5) Press to switch to the next step when finished.

(6) Press and hold for 3 seconds to save the recipe and return to the Working Screen in Standard Mode.

5.4 Run Recipe in Standard Mode

(1) Press to switch to the Standard Mode if needed.



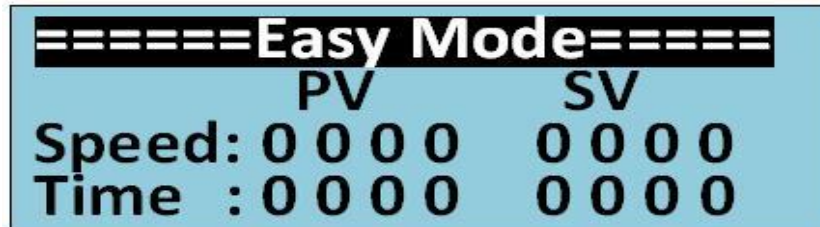
(2) Press and/or to select from the five recipe. The SL003139 spin coater saves five user recipes named with letter A, B, C, D and E respectively.

(3) Press to start the selected recipe. SL003139 spin coater will open the vacuum valve first so the substrate can be held to the spin chuck for spinning. The spin process will start from the first step in the selected recipe.

(4) When all the steps are finished, SL003139 spin coater will stop the spinning at the system deceleration rate. Once the spin is stopped, the system will shut off the vacuum valve automatically so the user can unload the substrate. The system deceleration rate can be modified in the system configuration (See System Configuration - Deceleration Rate).

5.5 Edit Recipe in Easy Mode

(1) Press  to switch to Easy Mode if needed.



(2) Press and hold  for 3 seconds to enter the editing screen in Easy Mode.



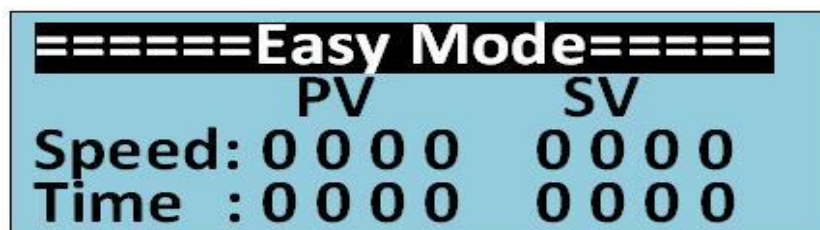
(3) The user needs to set the spin speed, spin time and ramp rate. Press 

and/or  to move the cursor. Press  and/or  to change the number under the cursor.

(4) Press and hold  for 3 seconds to save the recipe and return to the Working Screen in Easy Mode.

5.6 Run Recipe in Easy Mode

(1) Press  to switch to Easy Mode if needed.



(2) Press  to start the selected recipe. SL003139 spin coater will open the vacuum valve first so the substrate can be held to the spin chuck for spinning.

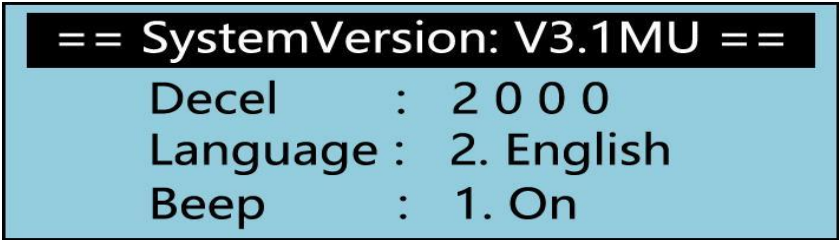
(3) After the remaining time changes to zero, SL003139 spin coater will stop spinning at the system deceleration rate. Once the spin is stopped, the system will shut off the vacuum valve automatically so the user can unload the substrate. The

system deceleration rate can be modified in the system configuration (See System Configuration - Deceleration Rate).

6. Change System Settings

6.1 Language Settings

- (1) Press and hold  for 3 seconds to enter the System UI, Press and hold  for 3 seconds to enter the System Configuration.

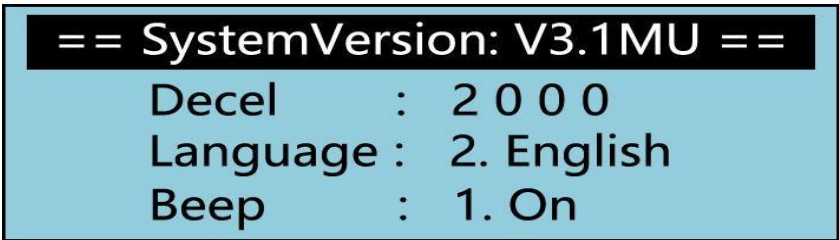


```
== SystemVersion: V3.1MU ==
Decel      : 2 0 0 0
Language   : 2. English
Beep       : 1. On
```

- (2) Use  and  buttons to move the cursor to Language.
- (3) Use the  or  button to switch the display language.
- (4) Press and hold  button for 3 seconds to save the settings and exit System Configuration. Press  button to return to Easy Mode.

6.2 System Deceleration Rate

- (1) Press and hold  for 3 seconds to enter the System UI, Press and hold  for 3 seconds to enter the System Configuration.



```
== SystemVersion: V3.1MU ==
Decel      : 2 0 0 0
Language   : 2. English
Beep       : 1. On
```

- (2) Use  and  to move the cursor to number after Decel.

(3) Use  and/or  to change the number under the cursor.

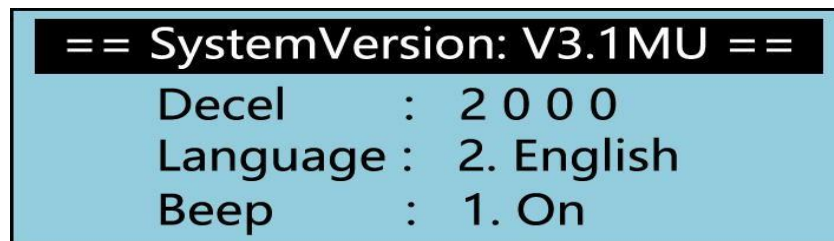
Press and hold  button for 3 seconds to save the settings and exit System

Configuration. Press  button to return to Easy Mode.

NOTE: The system deceleration rate must not exceed 3000 RPM/s. Excessive deceleration may cause the substrate to detach from the spin chuck.

6.3 Beep Settings

(1) Press and hold  for 3 seconds to enter the System UI, Press and hold  for 3 seconds to enter the System Configuration.



(2) Use  and  to move the cursor to the number after Beep.

(3) Use  or  to switch the beep on/off.

(4) Press and hold  button for 3 seconds to save the settings and exit System

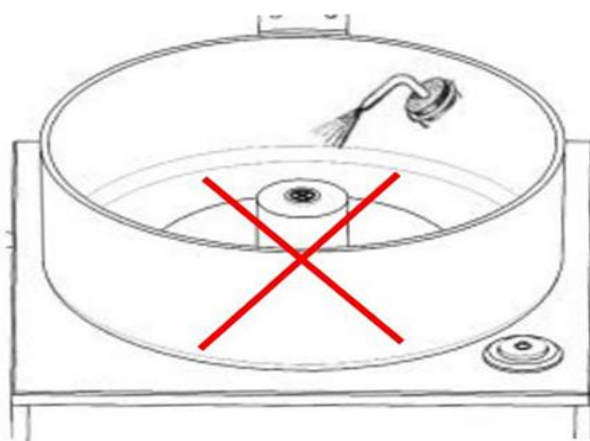
Configuration. Press  button to return to Easy Mode.

7. Maintenance and Care

7.1 Daily Cleaning

Immediately after applying coating material, use laboratory cleaning wipes to remove any residue from the spin bowl. If necessary, use a small amount of acetone to clean the spin bowl only. Do not use household liquid detergents.

NOTE: Do not spray liquids or cleaning agents toward the spin chuck, as this may damage the spin motor or the internal vacuum valve.



7.2 Change the Spin Bowl

The SL003139 spin coater has a removable spin bowl for easy cleaning. In addition, the user can also purchase a new spin bowl and replace the old one that is damaged.

- (1) Turn off the spin coater and unplug the power cord.
- (2) Remove the spin chuck from the spindle.
- (3) Use laboratory cleaning wipes to remove any remaining liquid inside the spin bowl.
- (4) Hold the spin bowl on its side and pull it off the spin coater.
- (5) If the spin bowl needs to be cleaned, the spin bowl lid and hinge can be removed from the spin bowl.
- (6) After cleaning, put the spin bowl back to the top of the spin coater. Make sure it is secured and can not be moved easily.

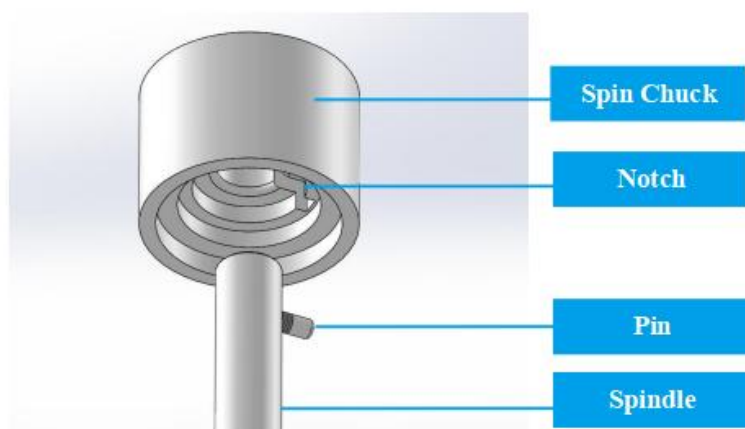
7.3 Change Fuse

- (1) Turn off the spin coater and unplug the power cord.
- (2) Open the fuse holder, which is located on the back of the spin coater. Remove the fuse from the fuse holder.
- (3) Insert a new fuse into the fuse holder.
- (4) Put the fuse holder back onto the spin coater.



7.4 Change Spin Chuck

- (1) Turn off the external vacuum pump.
- (2) Pull the spin chuck upward and remove it from the spindle.
- (3) If necessary, clean the spindle with laboratory wipes. Apply a small amount of Teflon lubricating grease on the spindle.
- (4) Align the new spin chuck's notch to the spindle pin and install it onto the spindle.
- (5) Push the spin chuck all the way down toward the spindle and make sure there is no gap between the top of the spindle and the spin chuck.



8. Trouble shooting

Issues	How to fix
Can not power on	Power cord is not plugged → Plug the power cord to the spin coater
	Fuse is blown → Change new fuse
	Power button is broken → Replace the power button
Can not spin	Spin speed and time are not set correctly → Set spin speed, time and ramp rate
Substrate flying off	Vacuum pump is not connected or turned on → Connect to the vacuum pump and turn on it
	Substrate is smaller than the spin chuck surface → Change to a smaller spin chuck
	Spin chuck is not installed securely → Push spin chuck down along the spindle
	Vacuum valve is broken → Replace with a new vacuum valve
	Vacuum tubing is blocked → Contact the service
Vibrating or Noisy	Table surface is not flat or stable → Select a flat and stable surface for spin coater
	Internal mechanic issue → Contact the service

9. Quality Assurance

Warranty is effective from the date of purchase and is non-transferable.

For more details about the warranty, please refer to the link below:
stonylab.com/pages/warranty

For any inquiries or assistance, feel free to contact us:

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Email: support@stonylab.com

Phone: 631-406-6080

Website: stonylab.com

This instruction manual is subject to change without prior notice.