



Rankin Basics Automated Linear Slide Stainer

STN65

User Manual

PLEASE READ THE ENTIRE MANUAL BEFORE USING THIS PRODUCT

TABLE OF CONTENTS

SECTION	PAGE
INTRODUCTION	1
PACKING LIST / SPECIFICATIONS	2
ASSEMBLY AND INSTALLATION	3
OPERATING INSTRUCTIONS	4
HOW TO PROGRAM	8
TIPS FOR USE OF DEVICE	10
TROUBLESHOOTING	11
CALIBRATION, MAINTENANCE, & STORAGE	12
LIMITED WARRANTY	13

INTRODUCTION

This mini automated slide stainer (benchtop-unit) is designed for simultaneous routine staining of multiple slide racks. It features a liquid crystal touch screen to monitor the staining process continuously.

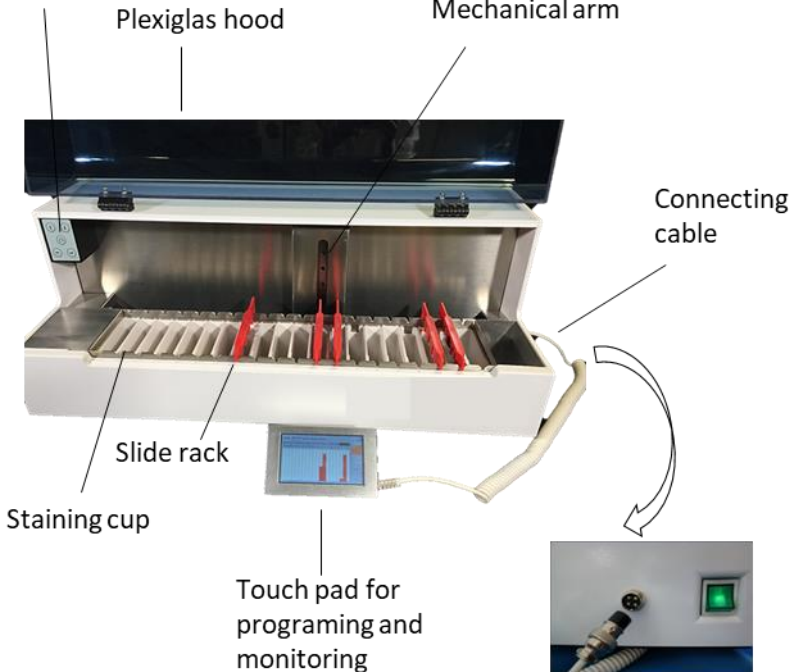
The Rankin Basics linear stainer is the perfect instrument for routine staining in a Mohs lab. It also meets the requirements for special, user-specified staining protocols for special stains.

The user can load slide racks continuously, achieving efficiency and high throughput staining.

Mechanical arm calibration pad

Plexiglas hood

Mechanical arm



PARTS CHECKLIST

Make sure your package includes the following items:

1. Main unit: 1
2. Programming controller/monitor: 1
3. Stylus: 1 with an adhesive pad
4. Slide racks: five 6-slide racks plus two 3-slide racks
5. Staining cups: 25
6. Controller/monitor-connecting cord: 1
7. Power cord: 1
8. Ventilation duct: 1
9. Water inflow hose: 1
10. Water outflow hose: 1
11. Fuse: 2

SPECIFICATIONS

20 stations with cup vol. 135ml

Programmable for up to 10 programs

Immersion time at each station: 0 ~ 59m 59s

6 slides per rack; multiple slide racks simultaneously depending on programs, load frequency and instrument configuration

Real-time alert when an error occurs; use "Setup"/"faultreset" to clear codes

Dimensions: H300mm*L705mm*D280mm(H12"L28"D11")

Weight : ~20kg (44 lbs)

Power: 100w; AC110V

Class I Medical Electrical Equipment

Special connector for ventilation duct

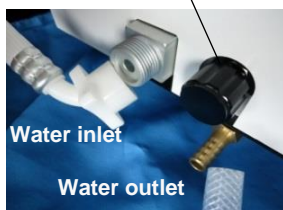
ASSEMBLY AND INSTALLATION

This product requires only simple assembly and installation:

1. connect the unit to a water-flow source and sink via the water hoses provided (Fig. A) ;
2. connect the unit to a ventilation mechanism via the duct provided (Fig. B) or place the unit under a fume hood;
3. connect the portable controller to the main unit using the connecting cable provided;
4. connect the unit to a power source(Fig. C).

A.

Knob for adjusting water volume



Connect to the water source and drainage (side)

B. Connect to the ventilating duct (rear)



(unnecessary if the unit is operated in a ventilation fume hood)

C.



Fuses

Connect to power source (rear)

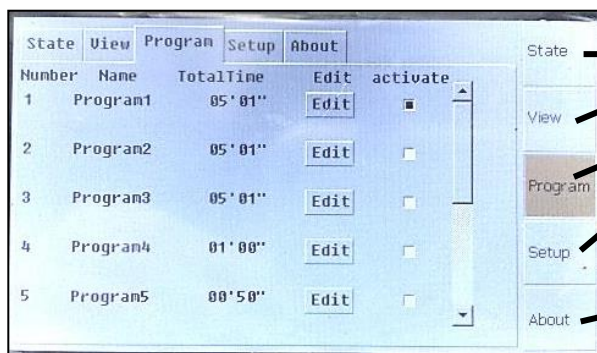
IMPORTANT

1. Avoid areas of excessive dust, moisture and low/high temperature.
2. Make sure the unit is placed on an evenly horizontal benchtop surface and the water must be drained well.
3. Make sure that the power source is grounded, and the power cord and plug are not damaged.
4. Calibrate the mechanical arm if necessary (See Page 12 "Calibration")
5. Water will NOT flow for rinsing unless a slide rack occupies a water station

OPERATING INSTRUCTIONS

Procedures

1. Calibrate the position of mechanical arm at each station before first use if necessary (see Page 12 "Calibration").
2. Carefully fill up the staining cups with their corresponding reagents, then place them into the unit and push them down until a click sound is heard.
3. Turn on the water valve and adjust the water flow to the desired speed (a slide rack must occupy water station for flow to begin).
4. Turn on the unit using the main power switch on the back of the main body – Green light indicates power-on (See Tip 1 for easy start if no change of program needs to be made from last use).
5. The controller/monitor screen displays the main menu;
6. Programing: 10 protocols can be pre-stored in the unit, and you can either activate or edit any existing protocol for staining.
7. If no new program is input or chosen, the unit will be trigged to run following the last auto-saved program (activated program) once a slide rack is placed into any staining cup.



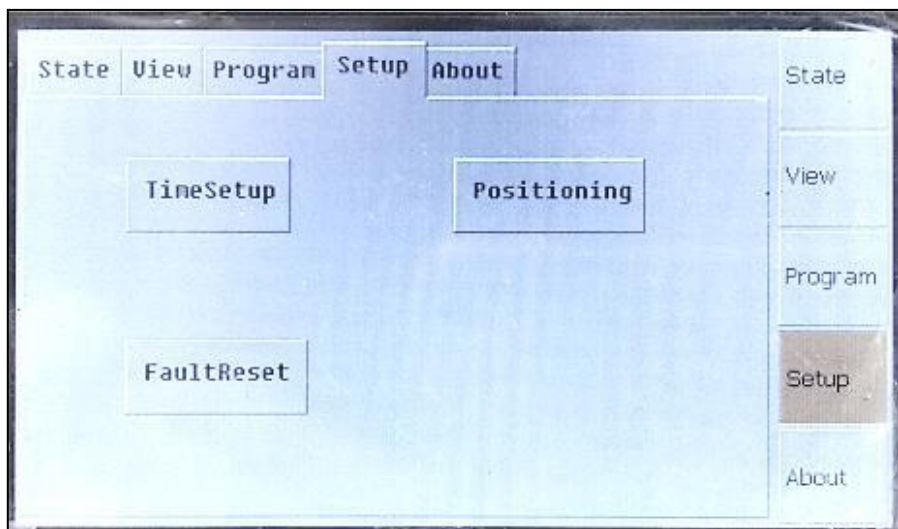
Number	Name	TotalTime	Edit	activate
1	Program1	05' 01"	Edit	<input checked="" type="checkbox"/>
2	Program2	05' 01"	Edit	<input type="checkbox"/>
3	Program3	05' 01"	Edit	<input type="checkbox"/>
4	Program4	01' 00"	Edit	<input type="checkbox"/>
5	Program5	00' 50"	Edit	<input type="checkbox"/>

- State:** to view the solution/time in each cup
- View:** to view the location/time of each rack
- Program:** to view/edit the staining protocols
- Setup:** to set the clock, calibrate the arm or reset the alarm fault after a fault is fixed
- About:** General explanation of beeping sounds

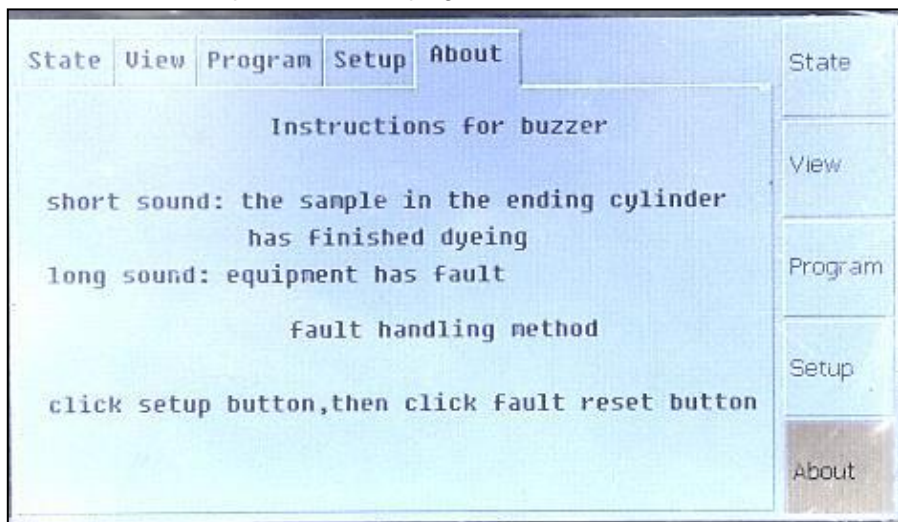
OPERATING INSTRUCTIONS

Procedures

Setup: to set the clock, calibrate the arm or reset the alarm



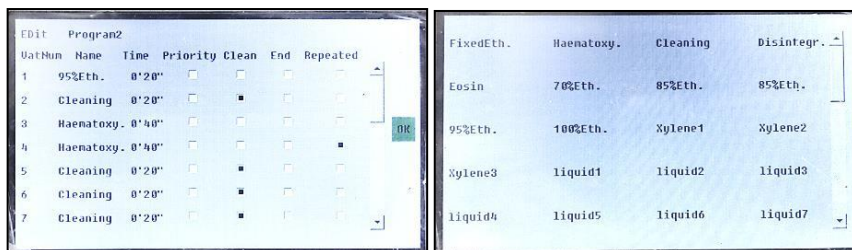
About: General explanation of beeping sounds



(Continue to learn more about the how to edit a program)

OPERATING INSTRUCTIONS (continued)

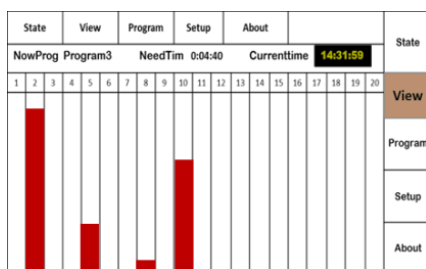
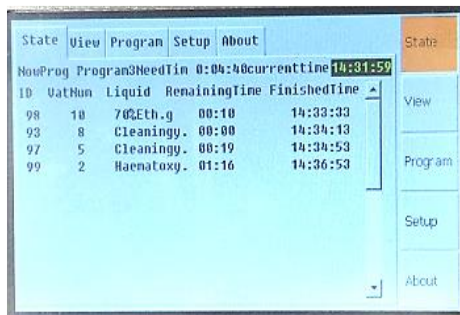
The program can be edited by click **"Edit"** to enter the editing page (the protocol cannot be edited during running), click the reagent name to make changes by choosing the desired one from the reagent list, click the time to set up new immersion time, check **"Priority"**, **"Clean"**, **"End"**, and **"Repeated"** accordingly, and at last click **"OK"** to confirm and save the program (see Page 8 "How to Program")



The Plexiglas hood can be closed for safety during operation and minimizing liquid evaporation after use.

During staining, touch **"State"** or **"View"** to display your desired information.

"Nowprog" – the staining protocol that is currently running
"Needtim" – the time required to finish the chosen staining protocol
"Currenttime" – the current local time



Note: The height of the red bar indicates the countdown stay time in the corresponding cup

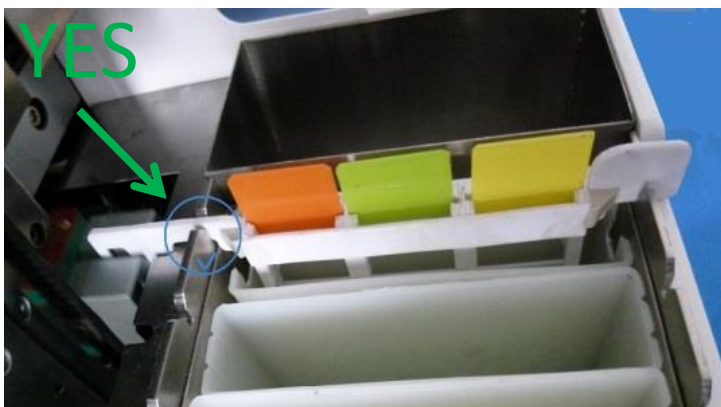
Up to 5-6 racks can be processed simultaneously depending on the length of protocol.

The unit will give a short-beeping alert when the staining procedure of a rack is finished, and the beeping will continue until the rack is picked up.

OPERATING INSTRUCTIONS (continue)

IMPORTANT

- Don't add the reagents while the unit is running;
- Don't allow the liquid to spill over into the inside of the unit, which might damage the unit;
- Ensure that the water can flow in and out smoothly; the unit will beep to alert user if the outflowing is clogged;
- The inflow volume cannot be larger than the outflow volume;
- The water-outflowing hose must be placed on a level lower than the water outlet of the unit to prevent the water from running back into the unit;
- The rack has to be dropped precisely into the groove at the station to initiate the staining or calibration step



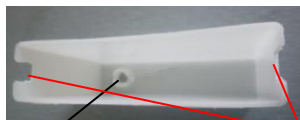
The position sensor on the bottom of the groove won't be activated



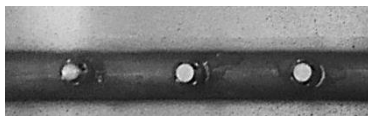
HOW TO PROGRAM

Before programming: Decide the stations that will be used as water-rinsing stations and decide the reagent for each station.

Note: Except for Stations 18-20, any other station can be used for water rinsing by pressing the water-inflowing hole of the cup onto the water mouth of the unit; please secure the connection with the attached rubber ring.



Use a small punch to remove plug to allow water inflowing from the bottom of the cup



Break tabs on both ends to allow water outflowing from the top of the cup

Water-inflowing valve at each station

Touch screen to program:

TOUCH "Edit" on the "Program" page to start editing the corresponding program.

REAGENT (chosen from the list) and times (00:00 - 59m59s) can all be set individually for each of 20 stations by click the corresponding reagent name or time;

IF a reagent is not listed, use open Liquids 1, 2, or 3...

Edit	Program2	VatNum	Name	Time	Priority	Clean	End	Repeated
1	952Eth.	0'20"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2	Cleaning	0'20"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3	Haenatoxy.	0'40"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4	Haenatoxy.	0'40"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5	Cleaning	0'20"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6	Cleaning	0'20"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7	Cleaning	0'20"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Optimal: indicates that the rack in this cup will be picked up and moved to the next step first if multiple racks need to be picked up at the same time.

Clean: indicates that this station is set for water rinsing and the water-inflowing valve on the bottom of the cup will open when a rack is dropped into the cup ("Clean" must be checked for all cleaning stations; otherwise, the water valve won't open)

End: indicates that this station is set for the last staining step and the unit will beep once the staining at this station is finished.

Repeated: indicates that this station is a replicate of the previous one and the rack will be dropped at this station if the previous one is occupied to avoid potential long waiting time.

HOW TO PROGRAM (continue)

Example:

To operate the staining protocol →

Programming

1. Use Stations 2, 6, 7, and 8 for water rinsing.
2. Set replicates for hematoxylin to avoid longer waiting time.
3. Avoid excessive immersion of slides in hematoxylin or eosin.
4. The extra stations can be used for storage .

Then

Step	Reagent	Time
1	95% Ethanol	20 s
2	Water rinsing	20 s
3	Hematoxylin	60 s
4	Water rinsing	60 s
5	95% Ethanol	20 s
6	Eosin	10 s
7	95% Ethanol	20 s
8	95% Ethanol	20 s
9	100% Ethanol	20 s
10	100% Ethanol	20 s
11	100% Ethanol	20 s
12	Xylene	20 s

Station	Reagent	Time	Priority	clean	End	Repeated
1	95% Ethanol	00:20				
2	Cleaning	00:20		√		
3	Hematoxylin	01:00	√			
4	Hematoxylin	01:00	√			√
5	Hematoxylin	01:00	√			√
6	Cleaning	00:20		√		
7	Cleaning	00:20		√		
8	Cleaning	00:20		√		
9	95% Ethanol	00:20				
10	Eosin	00:10	√			
11	95% Ethanol	00:20				
12	95% Ethanol	00:20				
13	100% Ethanol	00:20				
14	100% Ethanol	00:20				
15	100% Ethanol	00:20				
16	Xylene	00:20				
17	Xylene	00:01			√	
18	Xylene	00:01			√	√
19	Xylene	00:01			√	√
20	Xylene	00:01			√	√

TIPS FOR USE OF DEVICE

The tips below help you use this device more efficiently and safely:

Tip 1

Easy start ---- The unit starts to run the staining process once a slide rack is placed into the first-step staining cup

Tip 2

When the controller pad is not connected or defective ---- To minimize the possibility of staining disruption, the unit continues to run following the last auto-saved program

Tip 3

Flexible access ---- The staining process of a slide rack is automatically operated starting from any step depending on the station where the slide rack is dropped

Tip 4

The mechanical arm will automatically pick up the rack at the expiring cup and move it into the next step, and appropriate setting of “Priority” and “Repeated” of stations can prevent excessive immersion and avoid potential long waiting time, thus shortening the overall operation time

Tip 5

Increasing storage capacity: The extra stations at the end can all be set as the “End” step with the ones after the first one checked as “Repeated” for slide storage

Tip 6

After power Loss: The unit will continue to run from the current position after a power loss and all timers, however, will be reset to initially programmed values

TROUBLESHOOTING

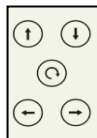
Defect	Possible cause	Solution
Very little water enters the unit	A blocked inlet line	Un-clog the inlet line
No water enters the unit, with long beeping noise	A clogged outlet line or excessively high outlet line pressure	Unclog the outlet line
No water enters the unit, no beeping noise	A defective inlet valve	Change the valve
When the unit starts, the mechanical arm moves towards a wrong direction or does not make any left/right movements after moving down	A defective position sensor at the first cup	Gently clean the sensor or contact manufactory
The staining status of a cup does not appear on the screen during operation	A defective position sensor of this cup	Gently clean the sensor or contact manufactory
The mechanical arm does not move normally or shakes during up/down movements	A defective motor or transmission belt	Contact manufactory








CALIBRATION

Calibration of the mechanical arm to make sure it stops at the correct position at each station: although the initial calibrations at the 1st and 20th stations have been done in the manufactory, they might have to be readjusted if the arm is constant jammed.

1. Tap 'Setup' in the main menu;
2. Tap 'Positioning';
3. Enter password '54321' and place a slide rack in Station 1 to start the calibration;
4. Adjust to ensure the correct position of the arm, and then move the arm to the lowest position ;
5. Tap "OK' and place a slide rack in Station 20 to start the calibration of Station 20;
6. Repeat Step 5 and tap "OK" to return to the main menu.

Or, you can use the calibration pad attached to the unit to calibrate the mechanical arm:



1. Press  for 5 s to activate the calibration mode and the arm moves to Station 1;
2. Drop a slide rack to Station 1, and then press     to adjust the position of the arm so that it can pick up the slide rack smoothly;
3. Press  to confirm and the arm will move to Station 20 for calibration; repeat Step 2 and press  to finish the calibration.

MAINTENANCE AND STORAGE

- Do not operate or store the unit in a moist and/or excessively low/high-temperature environment or near flammable or explosive materials;
- Clean the surface using dry and soft cloth after each use;
- Unplug the power cord if the unit won't be used soon.

LIMITED WARRANTY

What your warranty covers:

- Defects in materials or workmanship that occur under normal use and care.

For how long after your purchase:

- Two years from the date of purchase at retail.

What we will do:

- Repair or replace your product.

How you get service:

- Locate your serial number and model > contact our customer service at support@rankinbiomed.com to open a service ticket.

What your warranty does not cover:

- Damage from misuse or neglect
- Products purchased from non-authorized retailers, dealers or resellers

Limitation of Warranty:

- The warranty stated above is the only warranty applicable to this product. All other warranties, expressor implied (including all implied warranties of merchantability or fitness for a particular purpose) are hereby disclaimed.
- Repair or replacement as provided under this warranty is the exclusive remedy of the consumer. The manufacturer shall not be liable for incidental or consequential damages resulting from the use of this product or arising out of any breach of any expressor implied warranty on this product. Any implied warranty of merchantability or fitness for a particular purpose on this product is limited to the applicable warranty period set forth above.

Manufactured for:



Rankin Biomedical Corporation
Holly, MI
United States