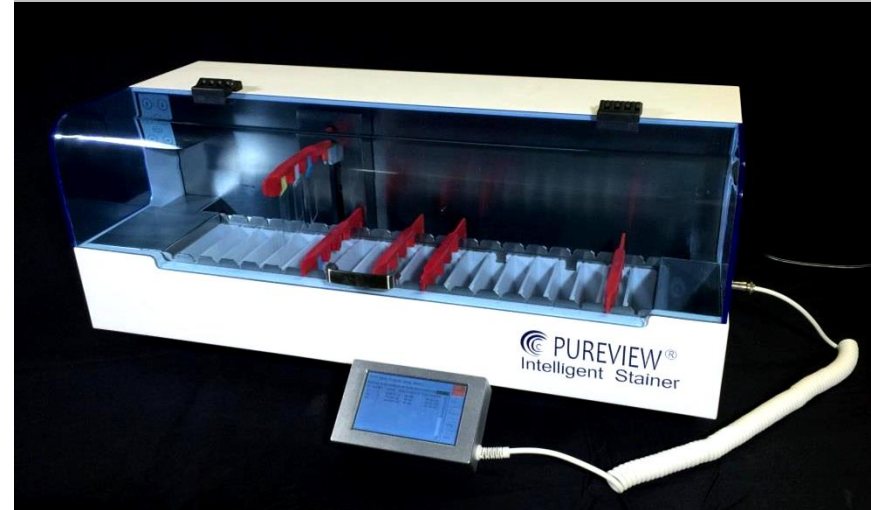# Intelligent Staining System

USER'S GUIDE

Distributed by

4300 EMPEROR BLVD. #400
DURHAM NC 27703
877-846-5393
www.cancerdiagnostics.com

PLEASE READ THE ENTIRE MANUAL BEFORE USING THIS PRODUCT

LIMITED WARRANTY

What your warranty covers:

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

For how long after your purchase:

- One year from the date of purchase at retail.

What we will do:

- Repair or replace your product.

How you get service:

- Locate your proof of purchase > Contact our customer service at 877-846-5393 > We will ship a replacement to you and you will be responsible for shipping the defective unit back at your own expense.

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.

CALIBRATION

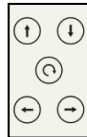**Calibration** of the mechanical arm to make sure it stops at the correct position at each station: although the initial calibrations at the 1st and 20th stations have been done in the manufactory, they might have to be readjusted if the arm is constant jammed.

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;**

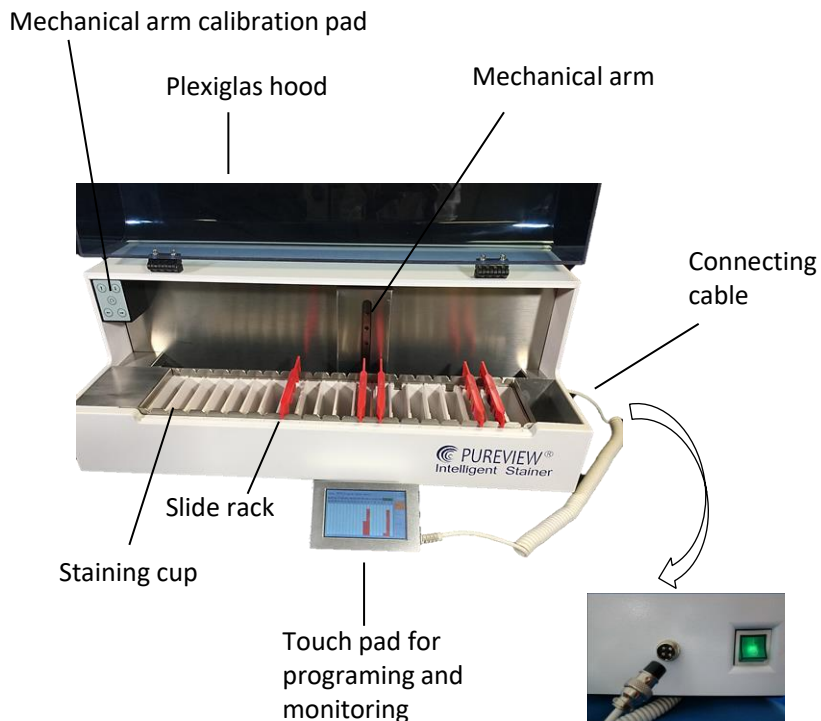- **Unplug the power cord if the unit won't be used soon.**

TABLE OF CONTENTS

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 Pureview intelligent 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

Connecting cable

Slide rack

Staining cup

Touch pad for programing and monitoring

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 senor 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 senor or contact manufactory
The mechanical arm does not move normally or shakes during up/down movements	A defective motor or transmission belt	Contact manufactory

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

PARTS CHECKLIST

Make sure your package includes the following items:

1. Main unit: 1
2. Programming controller/monitor: 1
3. Stylus: 1 with a 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
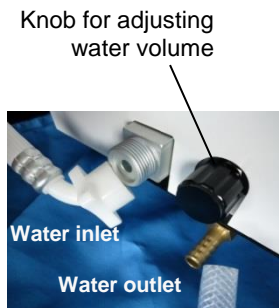10. Water outflow hose: 1
11. Fuse: 2

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

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

Water inlet

Water outlet

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

Example:

To operate the staining protocol (right)

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

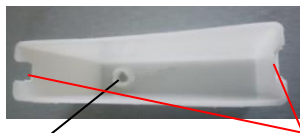| Step	Reagent	Time
1	95% Ethanol	20 s
2	Water rinsing	20 s
3	Hematoxylin	60 s
4	Water rinsing	60 s
5	95% Ethanol	20 s
6	Eosin	10 s
7	95% Ethanol	20 s
8	95% Ethanol	20 s
9	100% Ethanol	20 s
10	100% Ethanol	20 s
11	100% Ethanol	20 s
12	Xylene	20 s

Then

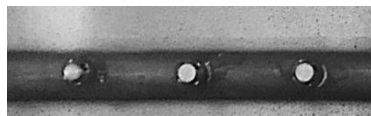| Station	Reagent	Time	Priority	clean	End	Repeated
1	95% Ethanol	00:20				
2	Cleaning	00:20		√		
3	Hematoxylin	01:00	√			
4	Hematoxylin	01:00	√			√
5	Hematoxylin	01:00	√			√
6	Cleaning	00:20		√		
7	Cleaning	00:20		√		
8	Cleaning	00:20		√		
9	95% Ethanol	00:20				
10	Eosin	00:10	√			
11	95% Ethanol	00:20				
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			√	√

Before programing: 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...

Priority --- 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.

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;

   a.

State: to view the solution/time in each cup

View: to view the location/time of each rack

Program(a.): to view/edit the staining protocols

Setup (b.): to set the clock, calibrate the arm or reset the alarm fault after a fault is fixed

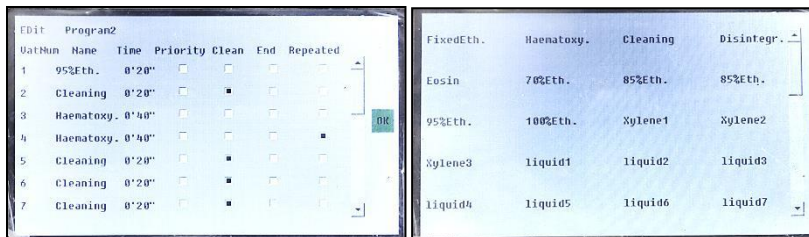**About**(c.): General explanation of beeping sounds

   b.

   c.

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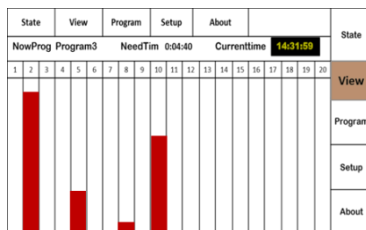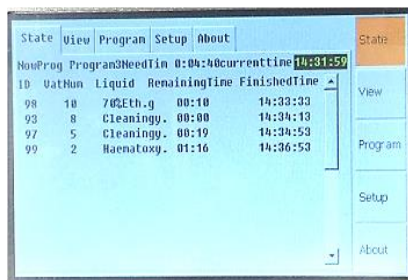
6. The program can be edited by click "Edit" to enter the editing page (the protocol cannot be edited during running), click the reagent name to make changes by choosing the desired one from the reagent list, click the time to set up new immersion time, check "Priority", "Clean", "End", and "Repeated"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

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

8. 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

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

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

IMPORTANT

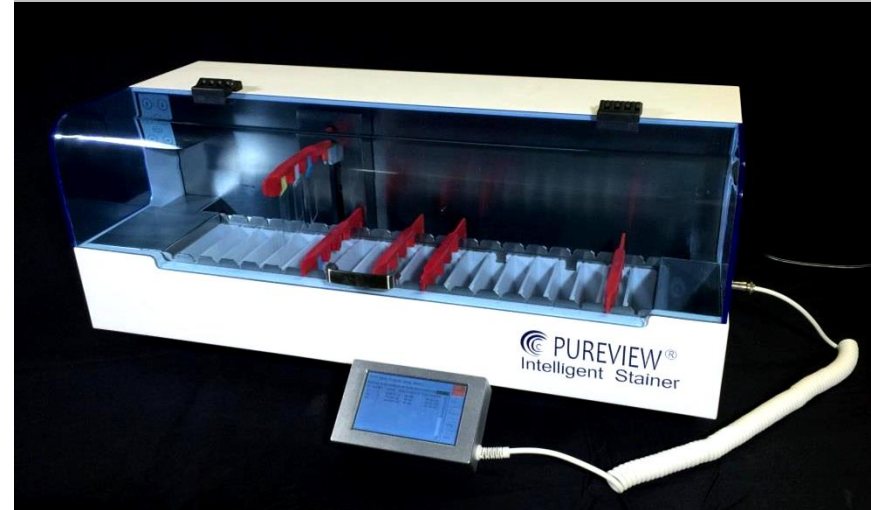❑ Don't add the reagents while the unit is running;

❑ 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

Intelligent Staining System

PUREVIEW®
Intelligent Stainer

USER'S GUIDE

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CANCER
DIAGNOSTICS, INC.

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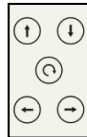
CALIBRATION

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;**

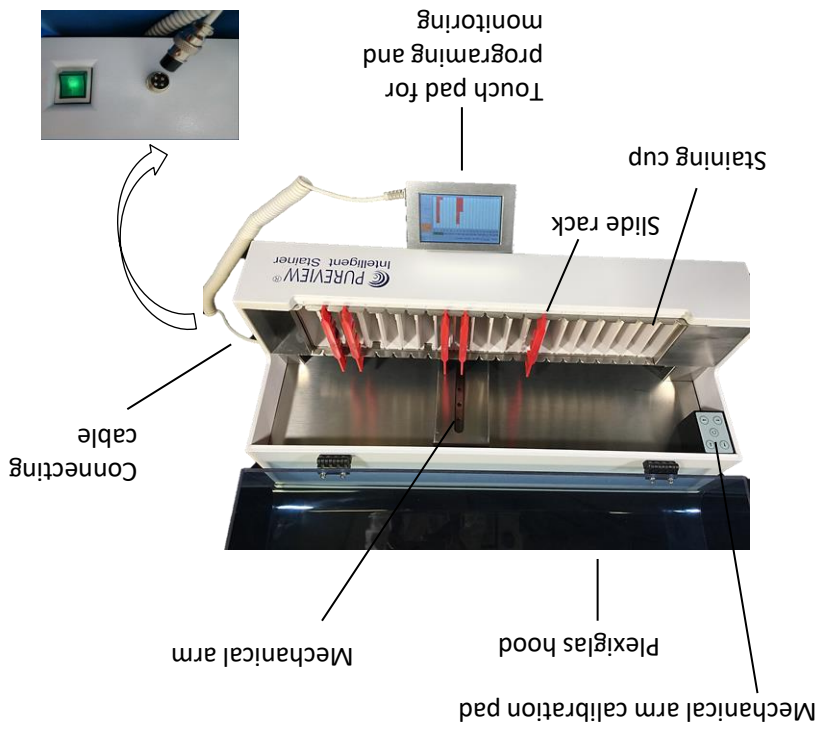- **Unplug the power cord if the unit won't be used soon.**

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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 cup direction or does not make any left/right movements after moving down	A defective position sensor at the first cup	Gently clean the senor 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 senor or contact manufactory
The mechanical arm does not move normally or shakes during up/down movements	A defective motor or transmission belt	Contact manufactory

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INTRODUCTION

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The Pureview intelligent 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.

Figure labels: Touch pad for programming and monitoring; Staining cup; Slide rack; Connecting cable; Mechanical arm; Plexiglas hood; Mechanical arm calibration pad

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

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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

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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

PARTS CHECKLIST

Make sure your package includes the following items:

1. Main unit: 1
2. Programming controller/monitor: 1
3. Stylus: 1 with a 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;
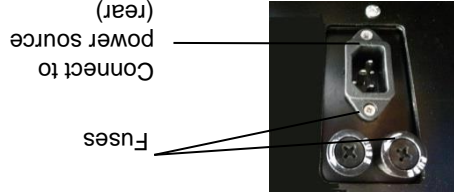
4. connect the unit to a power source(Fig. C).

A. Connect to the water source and drainage (side)

Water outlet

Water inlet

Knob for adjusting water volume

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

---

HOW TO PROGRAM (continue)

Example:

To operate the staining protocol (right)

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

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
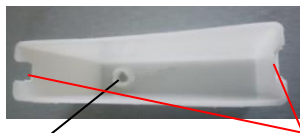
4. The extra stations can be used for storage

Then

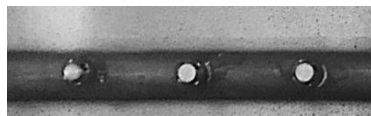| Station	Reagent	Time	Priority	clean	End	Repeated
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3	Hematoxylin	01:00	√			√
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5	Hematoxylin	01:00	√			√
6	Cleaning	00:20		√		
7	Cleaning	00:20		√		
8	Cleaning	00:20		√		
9	95% Ethanol	00:20				
10	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			√	√

Before programing: 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...

Priority --- 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.

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;

   a.

   State: to view the solution/time in each cup

   View: to view the location/time of each rack

   Program(a.): to view/edit the staining protocols

   Setup (b.): to set the clock, calibrate the arm or reset the alarm fault after a fault is fixed
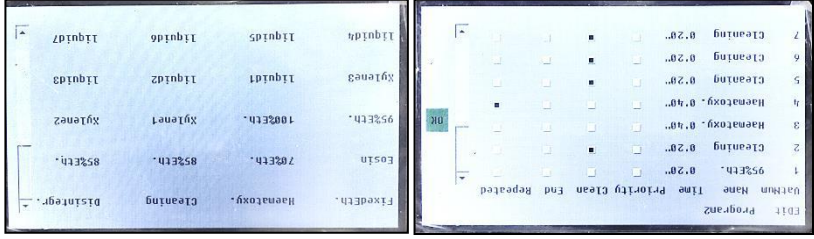
   About(c.): General explanation of beeping sounds

   b.

   c.

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;

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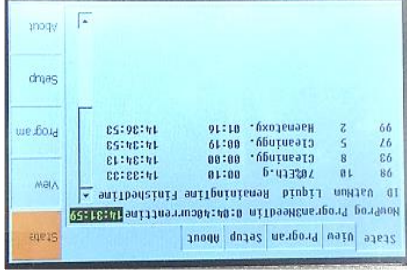
OPERATING INSTRUCTIONS (continue)

6. 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")

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

8. 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

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

10. The unit will give an 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

X