



SAKURA

Tissue-Tek[®] DRS[™] 2000

Automatic Slide Stainer

**Operating
Manual**

IMPORTANT NOTICE

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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Manufactured for:
Sakura Finetechnical Co., Ltd., Tokyo, 103, Japan
Sakura Finetek U.S.A., Inc., Torrance, CA 90501 USA
Sakura Finetek Europe B.V., Zoeterwoude, Netherlands
Made in U.S.A.

TABLE OF CONTENTS

<i>Section</i>	<i>Page</i>
DRS 2000 DISPLAY FLOWCHART	vi
GLOSSARY OF TERMS.....	vii
1 INTRODUCTION	
1.1 General Information	1
1.2 General Description.....	2
1.3 Physical Characteristics.....	2
(1) Instrument	2
(2) Control Panel	5
1.4 Warning and Caution Labels.....	6
1.5 Start Up Accessories.....	10
1.6 Specifications	13
2 INSTALLATION	
2.1 Environmental Factors	15
2.2 Unpacking	15
2.3 Instrument Setup.....	17
(1) Selection of Installation Location	17
(2) Internal Packing, Leveling, and Tray Placement.....	18
(3) Connection of the Drain Hose	20
(4) Connection of the Water Supply Hose.....	21
(5) Connection of the Power Cord.....	22
(6) Installation of the Activated Carbon Filter	23
(7) Hose Connection Checks	23
(8) Placement of the Solution and Wash Reservoirs	24

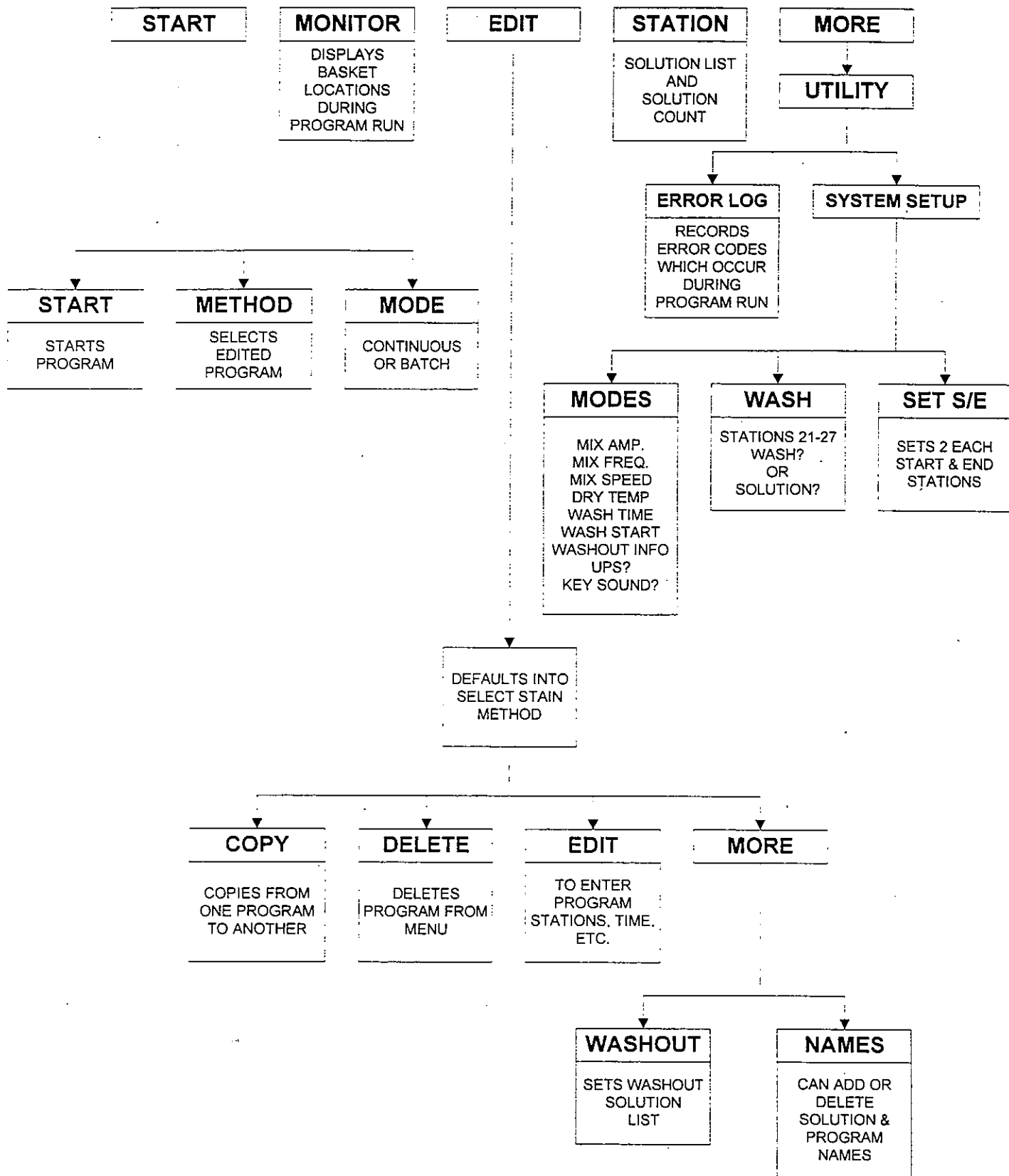
INTRODUCTION

<i>Section</i>	<i>Page</i>
3 OPERATING PROCEDURES	
3.1 Main Menu Screen	27
3.2 Description of Solution Configuration and Staining Program	29
(1) Flowchart of Programming Staining Methods.....	29
(2) Necessary Conditions to Process different Staining Programs at the Same Time	31
3.3 Creation and Editing of a Staining Program	33
(1) Creating or Editing a Staining Program.....	33
(2) Copying an Existing Staining Program	40
(3) Deleting a Staining Program.....	42
(4) Adding a Solution Name and a Staining Method Name.....	43
(5) Deleting a Solution Name and a Staining Method Name	45
3.4 Modifying the Solution Configuration.....	48
3.5 Enhanced Wash Solution List	50
3.6 The Solution Usage Counters.....	52
3.7 Corrective Procedures for Error Messages following a Start Command..	53
3.8 Utility Functions.....	56
(1) Starting a Staining Program from an Intermediate Step	56
(2) Reviewing the Error Record	58
(3) Converting a Wash Station to/from a Solution Station.....	59
(4) Setting up the Start and End Stations.....	62
(5) Changing the Set Up Parameters	65
3.9 Routine Operation	70
(1) Starting a Process.....	70
(2) Monitoring a Process	75
(3) Adding Baskets	76
(4) When Start and End Stations are Full.....	77
(5) Verifying the Time Left for a Staining Program in Process	78
(6) Interrupting and Canceling a Process.....	80
(7) End of a Process.....	83

INTRODUCTION

<i>Section</i>	<i>Page</i>
4	EXTERNAL CONNECTION TERMINALS AND OPTIONS
4.1	External Connection Terminals..... 87
	(1) Connection to an Uninterruptible Power Supply Unit..... 87
	(2) Connection to an External Alarm Device 88
4.2	Options 90
	(1) Duct Connection Adapter 90
	(2) Large Solution Reservoir Lids..... 90
5	TROUBLESHOOTING
5.1	Before Calling for Instrument Service 91
5.2	Error Conditions and Corrective Actions..... 94
6	CARE OF THE INSTRUMENT
6.1	General Maintenance..... 101
	(1) Solution Reservoirs and Slide Basket..... 101
	(2) Reservoir Tray 102
	(3) Water Supply Strainer..... 105
	(4) Drying Station..... 107
	(5) Replacement of Activated Carbon Filter 108
6.2	Accessories and Replacement Parts 110
	APPENDIX 1 List of Software Menus (DSP)..... i
	APPENDIX 2 List of Dialog Boxes and Messages (MES) xiii
	INDEX xxiii
	SOLUTION CONFIGURATION WORKSHEETS
	PROGRAM RECORD WORKSHEET

DRS 2000 DISPLAY FLOWCHART



GLOSSARY OF TERMS

Basket set	A group of up to two slide baskets linked by a basket adapter. The basket set is moved by the robotic arm according to the instructions found in the selected staining program.
Batch operation	An operation mode that does not allow another process run to start before the previous process run is finished.
Continuous operation	An operation mode which allows multiple basket sets to be processed at the same time.
Cursor	A portion of the display that is in the reverse video mode (highlighted). If required it can be moved in up to four directions with the arrow keys.
Enhanced Wash	A procedure performed by the instrument to avoid excess staining when a high concentration solution is used in the previous step. To enhance (optimize) the wash cycle, the robotic arm first immerses the basket set completely in the reservoir and then removes it completely.
Method	A staining program.
Mix	Up/down movements of a basket set in a reservoir. (Agitation).
Process	A staining program.
Process run	A staining program.
Slide	Glass specimen slide.
Solution station	A solution reservoir or a wash reservoir position in the instrument.

3

3

3

INTRODUCTION

1.1 General Information

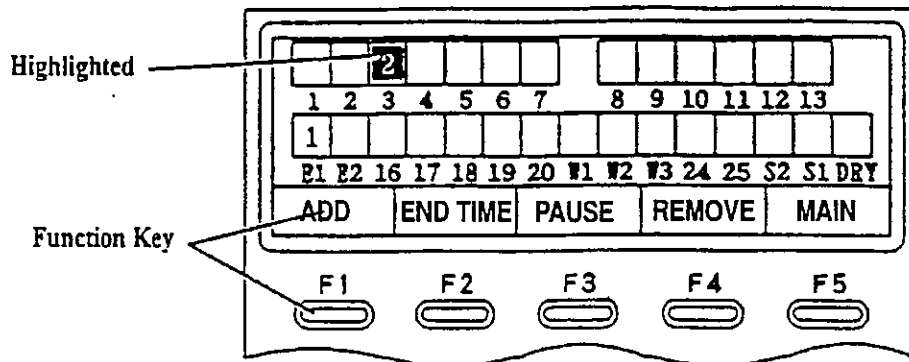
When reading this operating manual, you should follow the important instructions listed below. As part of those instructions this manual uses the words “WARNING” and “CAUTION” to indicate levels of potential hazards.

WARNING Indicates a hazard which, if not avoided, could result in serious injury to personnel.

CAUTION Indicates a hazard which, if not avoided, could result in damage to the instrument or other property.

NOTE Is a reminder or lists helpful information.

Display



On the control panel display, each function visible can be performed by pushing the corresponding function key below the function. For example, on this display [ADD] can be performed by pushing the (F1) key.

For a complete list of all Software Menus (DSP**), and Dialog Boxes and Messages (MES**), refer to Appendixes 1 and 2.

INTRODUCTION

1.2 General Description

- The Tissue-Tek® DRS™ 2000 Histology/Cytology Slide Stainer automatically performs the staining of paraffin-embedded specimens, frozen specimens, and cellular specimens which are affixed on glass slides.
- Up to 20 slides can be loaded in each basket.
- The basket adapter holds two slide baskets. The instrument can handle up to 11 basket sets. (Workload dependent).

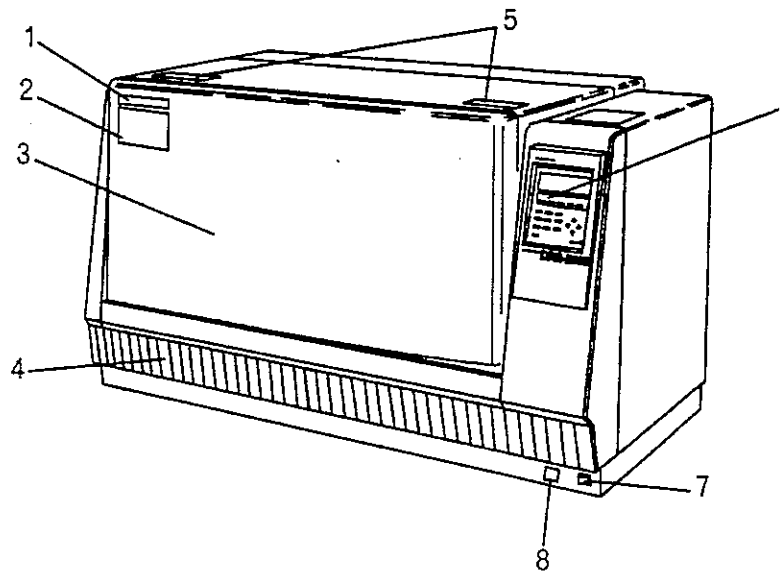
1.3 Physical Characteristics

(1) Instrument

A detailed description of the labels (1) through (10) can be found in Section 1.4 "Warning and Caution Labels."

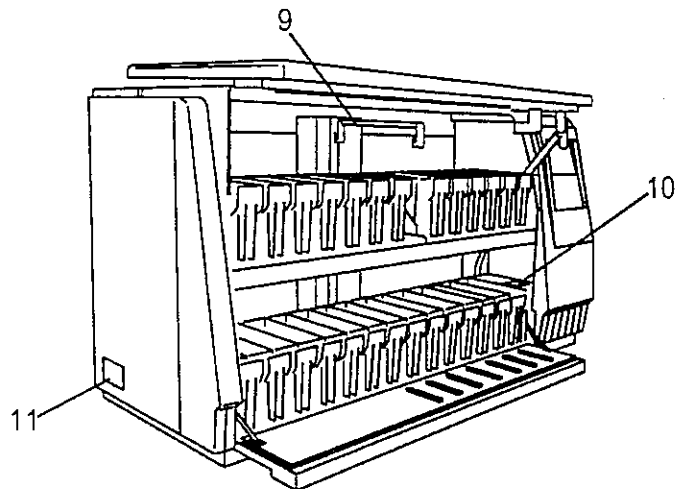
Front of the instrument

1. Label (6): Robotic Arm
2. Label (9): Operation of the Cover and Door
3. Cover/Hood
4. Door
5. Label (4): Cover Operation Caution
6. Control Panel
7. Power Switch
8. Label (7): Brightness Adjustment



Inside view of the instrument

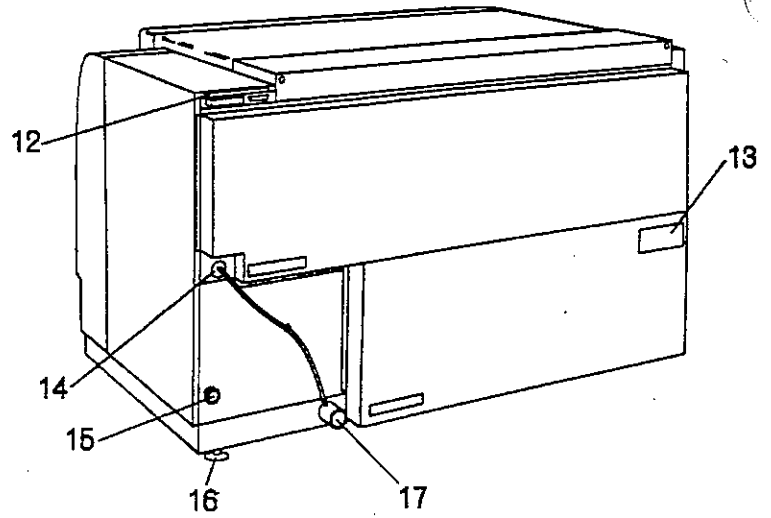
9. Robotic Arm
10. Label (1): Drying Station Warning
11. Label (8): Serial Number



INTRODUCTION

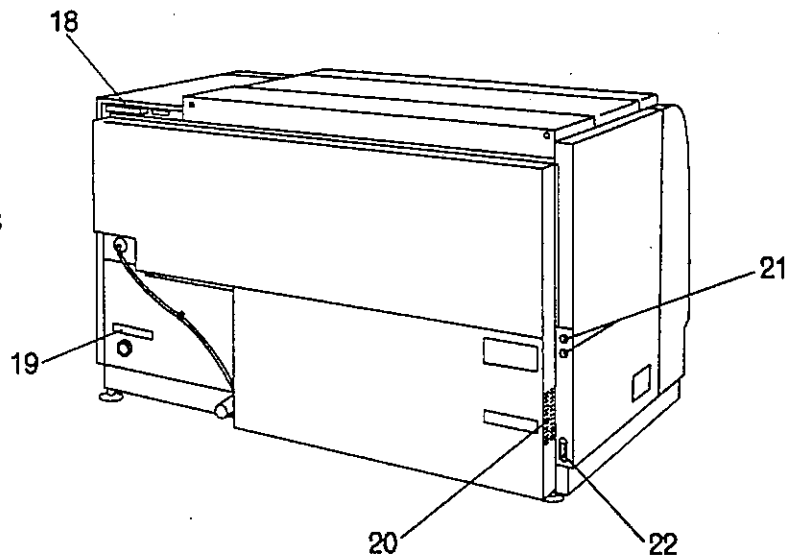
Rear of the instrument (Right View)

- 12. Label (3): Interfaces
- 13. Label (5): Fuses
- 14. Water Supply Strainer
- 15. Water Supply Port
- 16. Level Adjustment
- 17. Drain Port



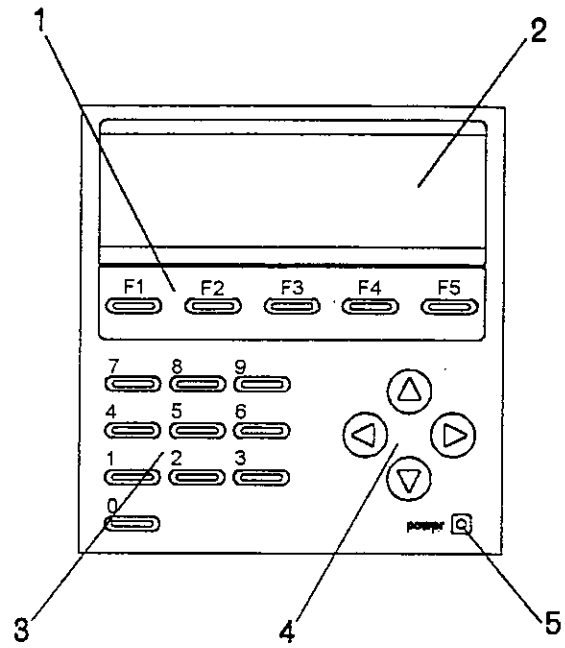
Rear of the instrument (Left View)

- 18. External Connection Terminals
(Refer to Chapter 4 "External
Connection Terminals and Options.")
- 19. Label (2): Water Supply Specifications
- 20. Exhaust Port
- 21. Fuses (8A, 250V)
- 22. Power Connection



(2) Control Panel

1. Function Keys (F1 ~ F5)
2. Display Screen
3. Ten Numeric Keys (0 ~ 9)
4. Arrow Keys
5. Power ON Indicator




INTRODUCTION


1.4 Warning and Caution Labels


The warning and caution labels of this instrument are shown below.


For label locations, refer to Section 1.3 (1) "Instrument."

If the warning and caution labels come off or become illegible, contact Sakura or your local distributor.



Label (1)		HOT SURFACES SURFACES BRÛLANTES
-----------	---	------------------------------------

Label (2)	 CAUTION ATTENTION	WATER SUPPLY MAXIMUM WORKING PRESSURE 0.833 Mpa. (8.5 kgf/cm ²) ALIMENTATION D'EAU LA PRESSION NE DOIT PAS EXCÉDER 0.833 Mpa. (8.5 kgf/cm ²)
-----------	---	---


Label (3)	<u>U. P. S.</u> <u>EXT. ALARM</u>  SERIAL PORT
	1 2 3 4 5

Label (4)	 CAUTION ATTENTION	Be careful not to catch your finger when opening or closing the cover. Faire attention de ne pas vous coincer les doigts lors de l'ouverture et de la fermeture du couvercle.
-----------	---	--

Label (5)

 WARNING	
For continued protection against risk of fire, replace only with same types of glass tube fuses.	
115VAC, 110-120VAC: Glass Tube Fuse (normal-blow) 8A/250V 2 pcs.	
220-240VAC: Glass Tube Fuse (time-lag) T5A/250V 2 pcs.	
[Disconnect equipment from supply before replacing.]	
 AVERTISSEMENT	
Pour une protection continue contre les risques d'incendie, n'utiliser que des fusibles de remplacement de même type.	
115VAC, 110-120VAC: Fusible de verre (Normal) 8A/250V x 2	
220-240VAC: Fusible de verre (Retardement) T5A/250V x 2	
[Débrancher l'appareil avant d'effectuer le remplacement.]	

Label (6)

 CAUTION ATTENTION	Avoid touching robotic arm while in motion.
	Éviter tout contact avec le bras robotique lorsqu'il est en mouvement.

Label (7)




INTRODUCTION

Label (8)

Tissue-Tek® DRS™

Model: DRS 2000A-D1 For *in vitro*
Product Code 4929 diagnostic use
AC 115 Volts 60 Hz 5.0 Amps
Serial No. **4929**

 Manufactured by TIYODA MFG. U.S.A., INC. for:
SAKURA FINETEK U.S.A., INC
Torrance, CA 90501

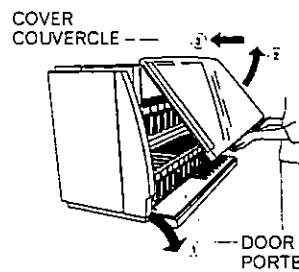
Label (9)

HOW TO OPEN THE COVER

- ① Lightly push the door to open.
- ② Open the cover by lifting it toward you.
CAUTION: Do not lift the closed cover right upward to open.
- ③ Push back the cover all the way.
(When closing, follow the steps in reverse order)

POUR OUVRIR LE COUVERCLE

- ① Appuyer légèrement sur la porte pour l'ouvrir.
- ② Ouvrir le couvercle en le soulevant vers soi
ATTENTION: Ne pas soulever le couvercle verticalement pour l'ouvrir.
- ③ Repousser le couvercle complètement.
(Pour le fermer, inverser la procédure)

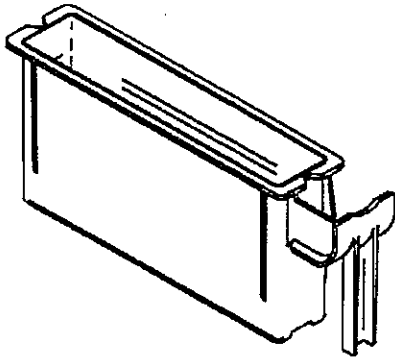


INTRODUCTION

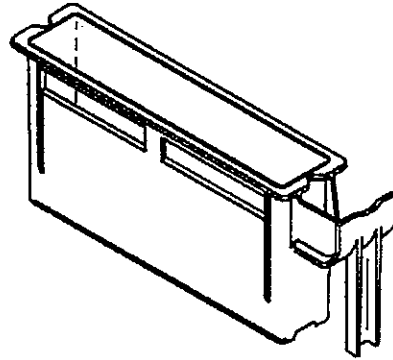
1.5 Start Up Accessories

The following accessories are included with this instrument. Quantities are listed. Confirm that there are no missing items. The product codes are in parenthesis. If any of these items are missing, contact your Customer Support Representative.

- Solution reservoir (4974)..... 26



- Wash reservoir (4975)..... 5



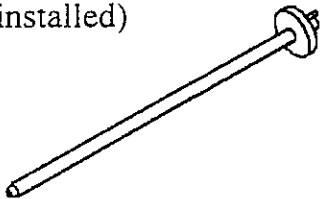
- Wash Reservoir grommets (4985)..... 10 (5 installed)



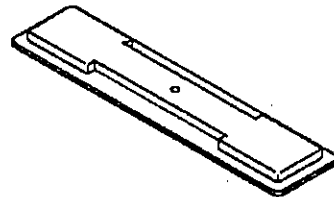
- Wash station plug (4979)..... 3 (2 installed)



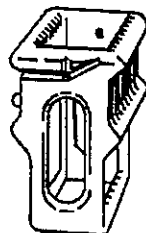
- Wash nozzle 5 (3 installed)



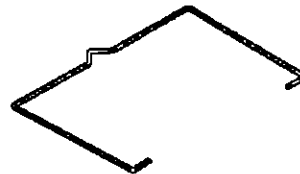
- Reservoir lid (4976) 26



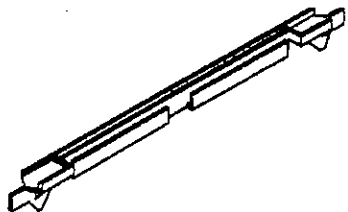
- Slide basket...6 (4768)



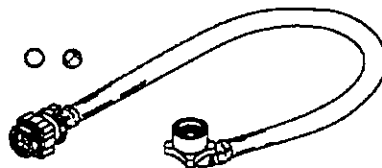
- Basket hook (4977)..... 6



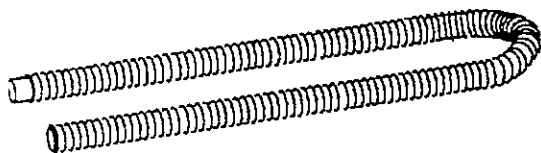
- Basket adapter (4978)..... 3



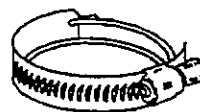
- Water supply hose set (2208)..... 1
(3 items: drain hose, washer/filter, and washer)



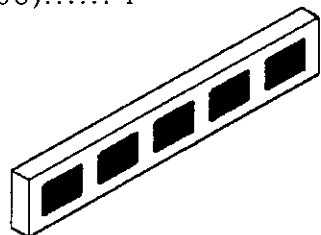
- Drain hose (4981)..... 1



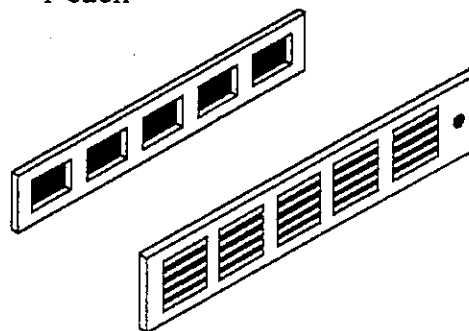
- Drain hose clamp 1



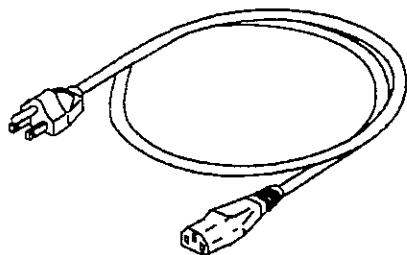
- Activated carbon cartridge filter (2008)..... 1



- Filter Gasket and Metal Cover
1 each

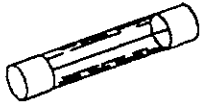


- Power cord 1



INTRODUCTION

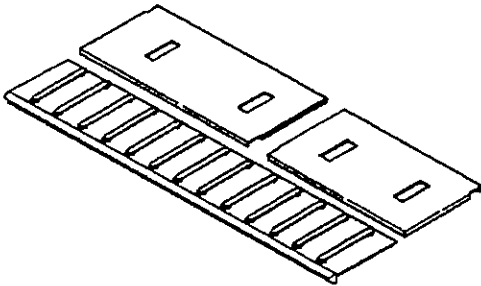
- Fuse (8A/250V) 2



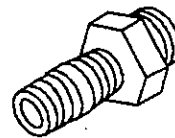
- Carry handle attachment plug4



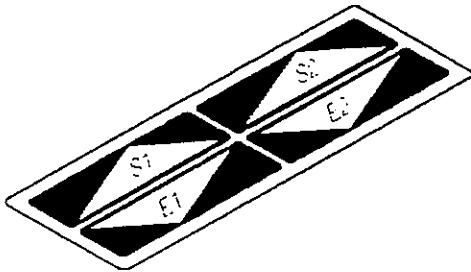
- Reservoir Tray1 set



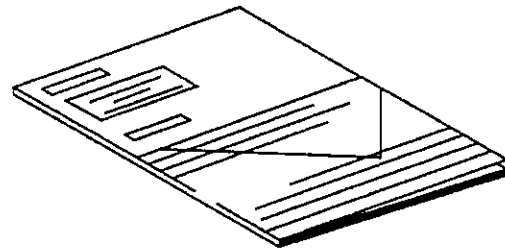
- Water Supply Port Fitting 1 set



- Start/End station labels.... 1 set



- Operating manual 1



If there is any visible shipping damage to any item, immediately file a complaint with the carrier. Then notify your nearest Tissue-Tek instrument distributor, or call Sakura directly.

1.6 Specifications

Power Required 115 VAC, 5.0 A, 60 Hz

Insulation

Class: Class I Instrument Type B (JIS T1001)
Class I (IEC1010-1)

Coordination: Installation Category II Pollution Level 2 (IEC1010-1)

Dimensions

Height: 660 mm(26 in)

Depth: 490 mm(19 in)

Width: 1150 mm(45 in)

Weight 101 kgs(223 lbs)

Operational Environment

Temperature: 10 to 40°C (50 to 104°F)

Humidity: 30 to 85% RH (noncondensing)

Atmospheric Pressure: 70 to 106 kPa (10.15 to 15.37 psi)

Storage Environment

Temperature: -20 to 65°C (-4 to 149°F)

Humidity: 20 to 90% RH (noncondensing)

Atmospheric Pressure: 50 to 106 kPa (7.25 to 15.37 psi)

INTRODUCTION

Capacity

- Batch operation: Up to 40 glass slides in two baskets
(2 baskets = 1 basket set)
- Continuous operation: Up to 11 basket sets can be loaded (up to 440 slides)
- Programs/Methods: Up to 20 different staining programs can be stored
in memory. Up to 50 steps can be programmed for
each program
- Solution names: Up to 100 different solution names can be stored
in memory (including factory-set solution names)

Staining

- Program names: Up to 50 different staining names can be stored in
memory (including factory-set staining names)

Facilities

Water Supply

- Tap water
- Water pressure:
- Dynamic pressure: 0.098 to 0.441 MPa
(approx. 1.0 to 4.5 kgf/cm²)
 - Max.static pressure: 0.833 MPa. (8.5kgf/cm²)
- Water temperature: Less than 30°C(86°F)
[not freezing]

Drain type

- Method: gravity drain
- Capacity: More than 15 liters (3.96 gal) per minute

Safety Standards

- UL 3101-1, 1st ed.
CAN/CSA-C22.2 No.1010-1-92
EN 61010-1:93 + A1:92 + A2:95

INSTALLATION

2.1 Environmental Factors

The following environmental factors must be met before installation of the Tissue-Tek® DRS™ 2000 Automatic Slide Stainer:

- There is no fire hazard in the vicinity.
- The instrument location is well ventilated.
- The instrument location is away from the direct rays of the sun.
- The instrument location is dust-free.
- The instrument location is vibration-free.
- Do not to spill any liquid on or around the instrument.
- The instrument should be located near a drain and water supply facilities.
- The instrument location is away from any equipment that operates at a high-voltage or a high-current.
- The instrument location should be relatively constant in temperature and humidity.
- The instrument location must meet the operational environment conditions specified in Section 4.6 "Specifications."

2.2 Unpacking

Tools Required:

Blade cutter or scissors

14 mm ratchet wrench or open end wrench

17 mm ratchet wrench or open end wrench

24 mm ratchet wrench or open end wrench

CAUTION: The instrument is heavy and large; therefore, it is strongly recommended that it always be lifted and transported by two people, one on each side.

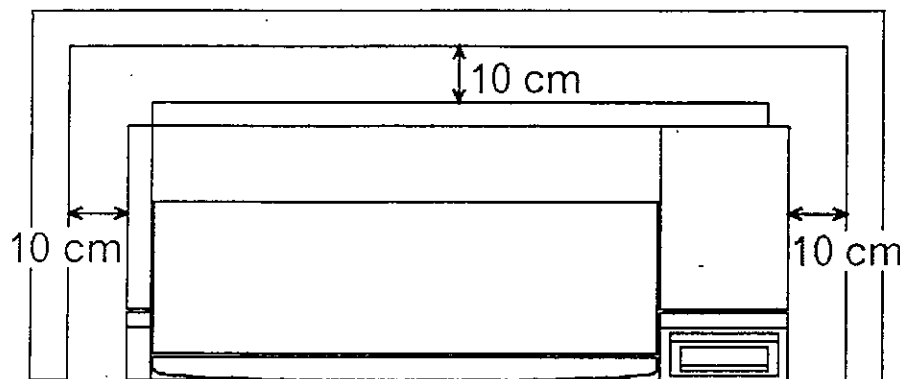
INSTALLATION

1. Cut the black band with scissors or a blade cutter.
2. Use the 14 mm wrench to remove the 8 nuts and bolts.
3. Remove the four boards from around the box.
4. Lift the box off the instrument.
5. Put the accessory box aside.
6. Remove the four 24 mm bolts that connect to the iron braces on the pallet.
(Do not unbolt the two iron braces from the wooden pallets, instead unbolt the instrument from the iron braces).
7. If carry handles are available, use the handles to move the instrument to the desired location for setup.
8. If carry handles are unavailable, remove the 17 mm bolts from the iron braces.
9. One person should stand on each side of the instrument and lift it to the desired location for setup.
10. Remove the plastic and shrink wrap from around the instrument.

2.3 Instrument Setup

(1) Selection of Installation Location

1. Select the location where appropriate space can be provided around the instrument as shown in the following diagram (top view).



A minimum of 10 cm (approximately 4 in) should be provided around the instrument. Easy access to the front of the instrument as well as enough clearance on top of the instrument should be provided.

2. The table or bench space where the instrument will be installed should be capable of holding at least 120 kgs of weight.
3. Carefully lift and place the instrument in the designated location.
4. After the instrument is installed, locate the four carry handle holes on each side of the instrument and screw the accessory attachment plugs into the holes.

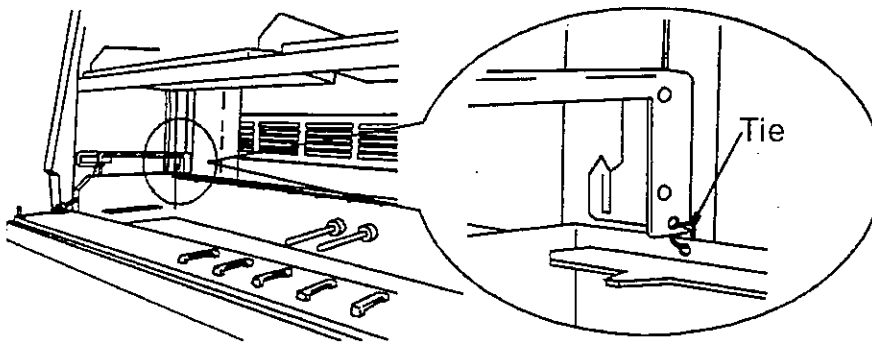
NOTE: The carry handles can be obtained by contacting Sakura if the instrument needs to be moved frequently.

INSTALLATION

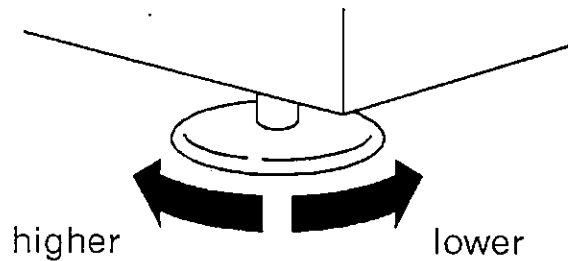
(2) Internal Packing Removal, Leveling, and Tray Placement

1. Remove the fastening material from the cover and lower door. Remove the three pieces of packing material from the left side, directly below, and on the right side of the robotic arm.

2. Cut off the tie fastening the robotic arm using a wire cutter.



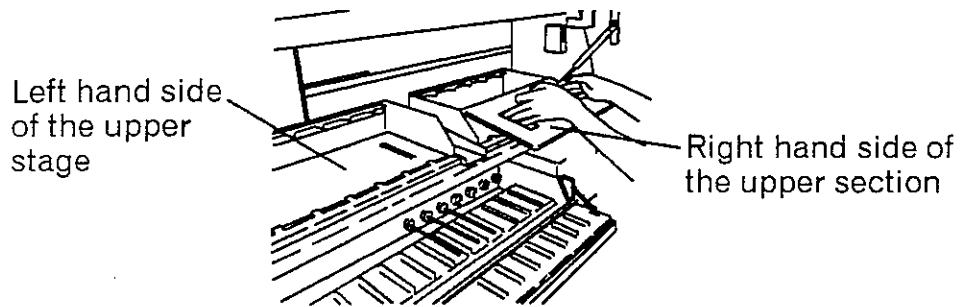
3. By turning the height adjustment feet, level the instrument to the desired height. To facilitate adjustment of feet, slightly lift up one side of the instrument.



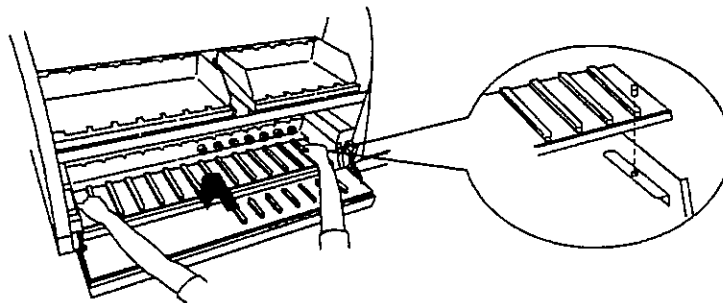
4. Place the reservoir trays onto the lower section and the left and right hand upper sections

NOTE: Remove the blue transparent film from the surface of each reservoir tray set before use.

5. For upper left and right trays: insert them so that bent edges are facing down.



6. For the lower tray: insert below the wash nozzles with the black plastic arrows facing toward you. Guide pins on the underside of the tray must fit into holes on brackets.



INSTALLATION

(3) Connection of the Drain Hose

CAUTION: After installing the drain hose, make sure water drains out properly. If the drain hose is not installed correctly, water may overflow inside the instrument.

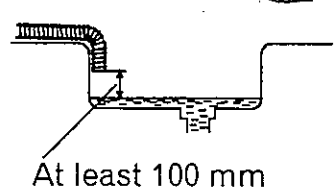
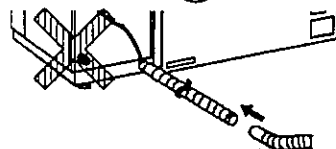
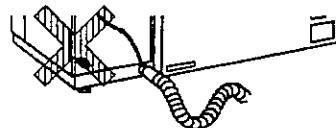
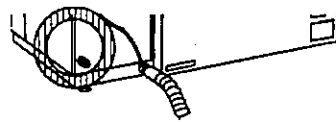
1. Thread the drain hose into the drain hose clamp. (Clamp may already be attached.)
2. Connect the end of drain hose with the clamp onto the drain port of the instrument.
3. Tighten the clamp screw using a (+) Phillips screwdriver.
4. Route the other end of the drain hose to a floor drain or to a sink drain which is able to drain water at the rate of 15 liters (approximately 4 gallons) per minute. (Secure the drain hose so that it does not come off from the sink drain or the floor drain.)

Make sure the drain hose is lower than the instrument drain port.

The drain hose should be straight. Do not allow it to twist or loop.

Do not extend the drain hose by coupling it with another hose.

Keep the end of the drain hose 100 mm (3.94 in) or higher from the water surface in the floor drain or sink drain.



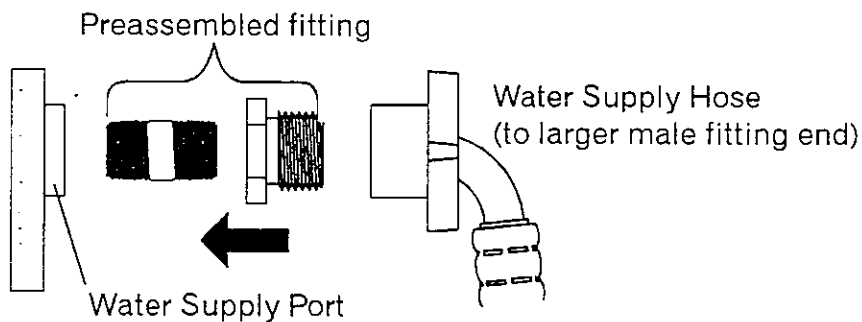
(4) Connection of the Water Supply Hose

The following requirements must be met:

- Water supply pressure Dynamic pressure = 0.098 to 0.441 MPa (approx. 1.0 to 4.5 kgf/cm²)
Max. static pressure = 0.833 MPa (8.5 kgf/cm²)
- Temperature Less than 30°C (86° F). [not freezing]
- Faucet Standard faucet with outer diameter range of 12 mm (.47 in) to 17 mm (.67 in). [Do not connect to other types of faucets including chemical faucets and foam faucets, etc.]

1. Before attaching the hose, place the plain washer in the curved end of the water supply hose and place the screen washer (screen first) in the straight end of the water supply hose.

2. Connect the preassembled water supply part fitting to the instrument and then screw the female side of the water supply hose into the larger male portion of the preassembled fitting.



INSTALLATION

CAUTION: The water supply and drain must meet the requirements of Section 1.6 “Specifications.” High water supply pressure may cause spillage as the hose may become disconnected or may leak. In addition, not enough drain capacity may cause water to overflow inside the instrument.

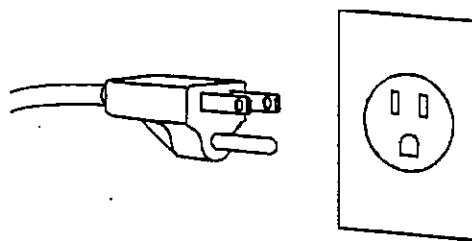
CAUTION: When installing the water supply hose, make sure it is securely connected to the instrument and the faucet. Failure to do so may allow the water pressure to loosen the connection and cause spillage.

(5) Connection of the Power Cord

1. Make sure that the “O” side of the power switch is pressed.

2. Insert the power cord into the power supply port of the instrument.

3. Insert the power plug into a properly grounded receptacle (Three prongs).



**WARNING: THE POWER RECEPTACLE MUST BE GROUNDED.
NONGROUNDED RECEPTACLES MAY CAUSE A FIRE OR
AN ELECTRIC SHOCK.**

(6) Installation of the Activated Carbon Filter

To install the activated carbon filter into the instrument, follow these steps.

1. Open the lower door first and then the cover.
2. Make sure the path is clear and then move the robotic arm to the right hand end of the instrument.
3. Unpack the activated carbon filter.
4. Place the filter gasket first and then the filter into the filter housing.
5. Hang the left end of the filter cover on the filter housing hook.
6. Lock the filter cover by pressing on the cover button.
7. Close the instrument cover first and then the lower door.

(7) Hose Connection Checks

1. Open the water supply valve or faucet.
2. Check if water leaks from the connected portions of the water supply hose.

NOTE: If water leaks, close the faucet or the valve, and verify the connections again.

3. Turn on instrument power by pressing on the “ | ” side of the power switch.

INSTALLATION

4. Make up a test program which only consists of one wash step and run that program.

5. While the program is running, check if water leaks from the connection between the drain hose and the instrument.


NOTE: If water leaks, close the faucet or valve, and verify the drain hose connection once again.

6. Turn off instrument power by pressing on the "O" side of the power switch.

7. Close the faucet or valve.

(8) Placement of the Solution and Wash Reservoirs

This section describes how and where to place the solution reservoirs and the wash reservoirs using the Main Menu screen (DSP1).

 Tissue-Tek[®] DRS 2000				
START	MONITOR	EDIT	STATION	MORE

Main Menu Screen (DSP1)

NOTE: Use the brightness adjustment dial to bring the display brightness to the desired level.

1. Press the [Station] key.

The display changes to the Solution Configuration and Usage Count screen (DSP20). The entire screen can be viewed using the up and down arrow keys.

NOTE: To modify the solution configuration and to add or delete a solution name into or from the instrument memory, follow the instructions given in Section 3.4 "Modifying the Solution Configuration" and in Section 3.3 (4) "Adding a Solution Name and a Staining Method Name".

ASSIGN SOLUTIONS TO STATIONS				
STATION	SOLUTION	COUNT		
1	Xylene	0		
2	Xylene	0		
3	Xylene	0		
ASSIGN	COUNT 0	ALL 0		EXIT

Solution Configuration and Usage Count Screen (DSP20)

NOTE: To facilitate solution placement, write down the information on the solution configuration list form included in the back of this manual.

NOTE: The numbers in the [COUNT] field indicate the number of times a given solution has been used. Refer to Section 3.6 "Solution Usage Counters."

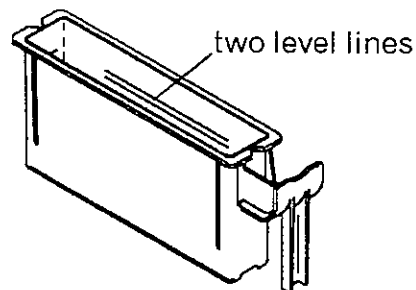
2. Open the door first and then the cover.

3. Install each solution reservoir filled with the appropriate solution according to the solution configuration list.

NOTE: Place an appropriate volume of solution into each solution reservoir according to the two level lines molded inside the reservoir.

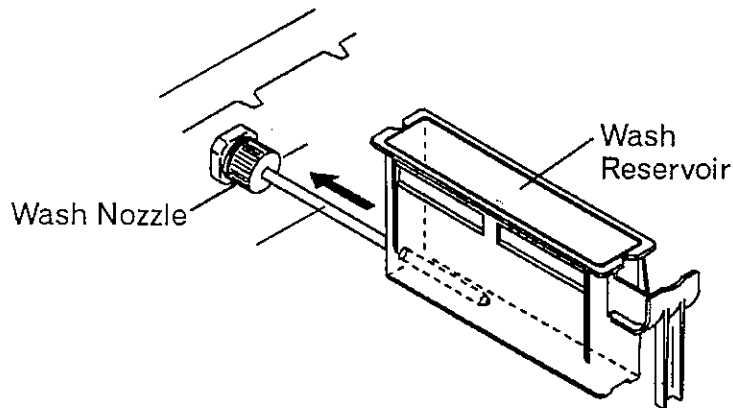
Upper line: 650 milliliters (the minimum volume of solution needed for one basket with only one glass slide).

Lower line: 620 milliliters (the minimum volume of solution needed for two baskets with a maximum 40 glass slides).



INSTALLATION

4. To install a wash reservoir in a wash position, align the tip of the wash nozzle with the circular orifice of the wash reservoir and gently push on the reservoir until it comes to a stop. (The wash positions are displayed as [Tap Water] in the program.)



5. Close the cover first and then close the door.

6. Press the [EXIT] key after all solution and wash reservoirs are installed in the instrument.

The display will return to the Main Menu screen (DSP1).


OPERATING PROCEDURES


3.1 Main Menu Screen

The Main Menu screen is the central screen from which all set up, programming and utility functions can be accessed. The following explain all the functions of that Main Menu and how to access it from power off.

1. From the Main Menu screen (DSP1), press the [Edit] key.

The Main Menu screen will appear. There are two groups of functions in the Main Menu. Pressing the [More] key allows the operator to access both groups.

 Tissue-Tek[®] DRS 2000				
START	MONITOR	EDIT	STATION	MORE
Main Menu Screen (DSP1) FIRST GROUP				

 Tissue-Tek[®] DRS 2000				
UTILITY				MORE
Main Menu Screen (DSP1) SECOND GROUP				

[First Group]

START: Accesses the Start Process screen (DSP3).

MONITOR: Accesses the Process Monitor screen (DSP4). If the instrument is not in process, this key is not active.

EDIT: Accesses the Staining Method List screen (DSP7). Through this screen, names can be added/deleted, methods can be programmed, and solutions can be set for the Enhanced Wash feature.

OPERATING PROCEDURES

STATION: Accesses the Solution Configuration and Usage Count screen (DSP20). In this screen, you can verify or modify the solution configurations, and verify or reset the solution usage counters.

MORE: Accesses the second group of functions.

[Second Group]

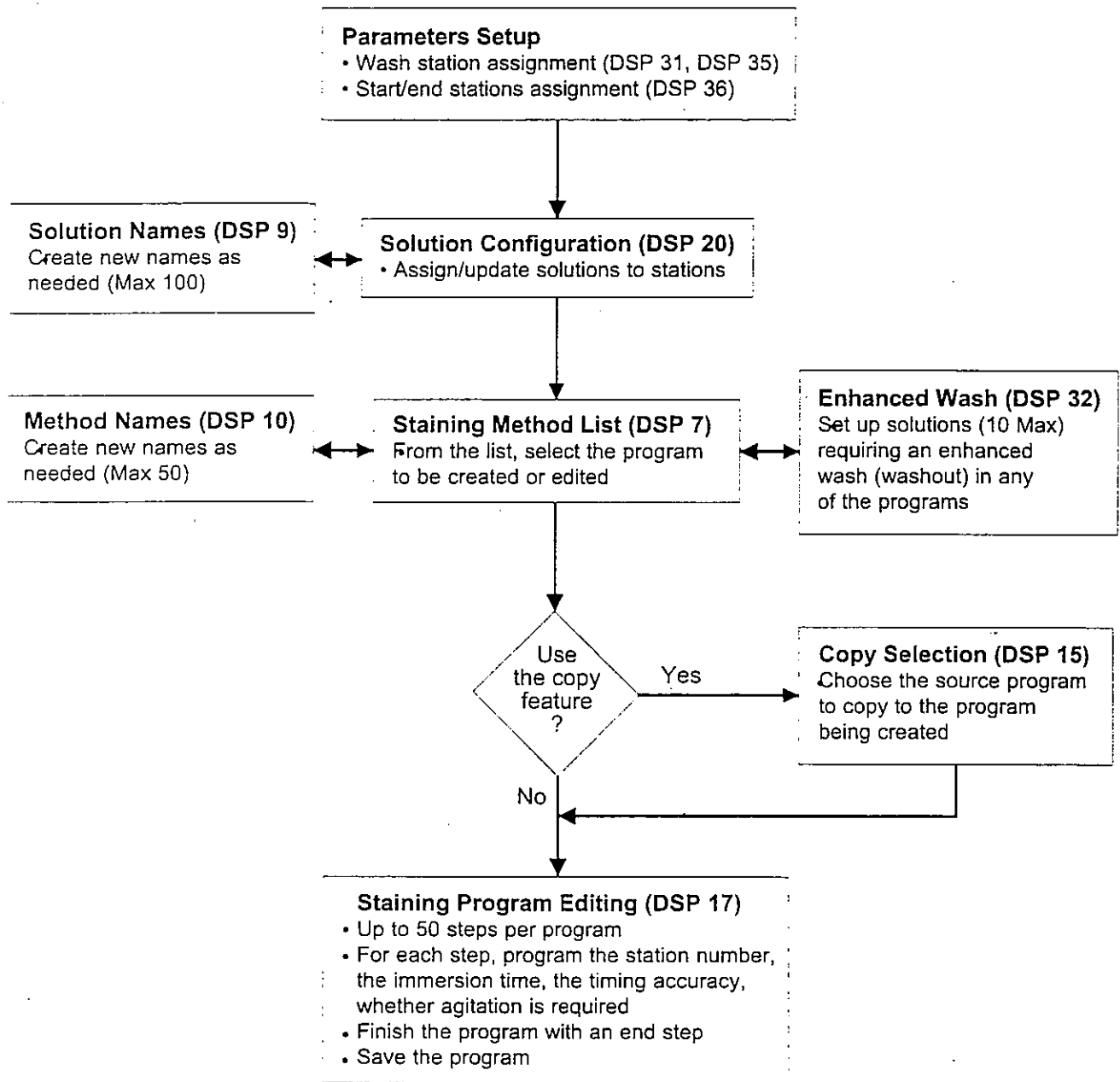
UTILITY: Accesses the Utility Function Selection screen (DSP23) where the instrument default parameters can be changed and the error records can be checked.

MORE: Returns to the first group of functions.

3.2 Description of Solution Configuration and Staining Program

(1) Flowchart of Programming Staining Methods

The following flowchart shows the options available when creating a program.



OPERATING PROCEDURES

- A solution list must first be configured before programming a staining method.
- Up to 20 staining programs can be set up. If the solution configurations are different from one program to the next, the solution configuration must be changed accordingly before programming the staining method.
- When a given staining program is selected to be run, the solution list is automatically updated (if different) to display the solution configuration originally used when that staining method was programmed.
- Different staining programs can be run concurrently if their solution configurations are compatible.

(2) Necessary Conditions to Process different Staining Programs at the Same Time

The following are examples of a solution configuration and its associated staining programs.

Solution Configuration

Solutio No.	End Station	End Station	Sol. A	Sol. B	Sol. C	Tap Water	Tap Water	Sol. D	Start Station	Start Station
Station No.	16 (E1)	17 (E2)	18	19	20	21 (W1)	22 (W2)	23	24 (S1)	25 (S2)

<u>Program A</u>		
STP	STA	SOLUTION
1	S*	Start Station
2	18	Solution A
3	19	Solution B
4	W*	Tap Water
5	20	Solution C
6	E*	End Station

<u>Program B</u>		
STP	STA	SOLUTION
1	S*	Start Station
2	18	Solution A
3	19	Solution B
4	W*	Tap Water
5	23	Solution D
6	E*	End Station

Programs A and B are compatible with the solution configuration and can be processed at the same time.

<u>Program C</u>		
STP	STA	SOLUTION
1	S*	Start Station
2	18	Solution D
3	19	Solution B
4	W*	Tap Water
5	20	Solution C
6	E*	End Station

<u>Program D</u>		
STP	STA	SOLUTION
1	S*	Start Station
2	17	Solution D
3	18	Solution A
4	W*	Tap Water
5	23	Solution D
6	E*	End Station

Programs C and D cannot be processed at the same time without changing the solution configuration.

- Programs A and B can be processed without modifications because their solution names and station numbers are compatible with the same solution configuration. The compatibility with the same solution configuration allows different staining programs to be continuously processed.

OPERATING PROCEDURES

- In Program C, the solution name at Step 2 (Solution D) is inconsistent with the solution name in the solution configuration (Solution A). This staining program cannot be processed at the same time without changing the solution configuration. If the operator tries to start it, the Inconsistent Solution Configuration screen (DSP26) will be displayed. Refer to Section 3.7 (1) "Starting a Staining Method with a different Solution Configuration" for a more detailed explanation of this situation.
- Because Station #17 is set as an End Station (E2) in the solution configuration list and not as a solution station as indicated at Step 2 of Program D, this staining program cannot be processed at the same time without changing the solution configuration. If the operator tries to start Program D, the display will show the dialog box (MES33) to alert the operator of the inconsistency. Similarly, if any solution station in a staining program conflicts with a Start Station or a Wash Station in the solution configuration, that staining program cannot be processed at the same time. Refer to Section 3.7 (1) "Starting a Staining Method with a different Solution Configuration" for a more detailed explanation of this situation.

3.3 Creation and Editing of a Staining Program

(1) Creating or Editing a Staining Program

This section provides a general procedure on how to program methods and a detailed description of the Staining Program Editing screen.

A. General Procedure

Before creating or editing a staining program, verify that the solution list has been configured properly. To verify the current solution configuration, follow the instructions given in Section 2.3 (8) "Placement of the Solution and Wash Reservoirs."

1. In the Main Menu screen (DSP1), press the [Edit] key.

The Staining Method List screen (DSP7) will appear. Methods showing an asterisk ** have already been programmed and can be run. Methods without an asterisk ** are empty (no steps programmed).

SELECT STAIN METHOD.				
Alcian B. PAS				
*Alcian blue				
Giemsa				
*H&E (SAKURA)				
COPY	DELETE	EDIT	EXIT	MORE

Staining Method List Screen (DSP7)

2. Move the cursor to the desired staining program by using the up and down arrow keys.

3. Press the [Edit] key.

OPERATING PROCEDURES

The Staining Program Editing screen (DSP17) is displayed. The following is an example of a program that has already been set up. If an empty program is selected, the cursor would be positioned at Step 2 because Step 1 is automatically assigned as a start station. The remaining steps would be blank.

STP	STA	SOLUTION	TIME	MIX	
8	10	E-Alc	∞ 00'30"	+	
9	11	Xylene	● 02'00"	+	
10	12	Xylene	▲ 03'00"	+	
11	13	Distilled Water	∞ 02'00"	+	
12	E*	End Station	- - - -"		
EXACT		MIX+	WASH	END	MORE

Staining Program Editing Screen (DSP17)

4. Start at Step 2 or move the cursor to the desired step by using the arrow keys.

With each step, the cursor can be moved to the following fields:
[STA (station)], [SOLUTION], and [TIME].

5. Create or edit by using the ten numeric keys and the function keys.

NOTE: To facilitate the management of staining programs and solutions, it is useful to write down the data in the template sheets provided in the back of this manual before programming the instrument.

6. Press the [Save] key after all data has been input. (If the [Save] key is not in the currently displayed group of function keys, press the [More] key to access it.)

The dialog box (MES10) will be displayed requesting the confirmation of the save command.

SAVE THE FOLLOWING STAIN METHOD ?				
HE (SAKURA)				
NO				YES

Save Command Confirmation Dialog Box (MES10)

7. Save the edited program by pressing the [Yes] key.

The display return to the Staining Method List screen (DSP7).

8. Press the [Exit] key.

The display will return to the Main Menu screen (DSP1).

OPERATING PROCEDURES

B. Structure and Description of the Staining Program Editing Screen

The following is the structure of the Staining Program Editing Screen and a description of each function key. To enter the Staining Program Editing screen, refer to Section 3.3 (1) A.

Stp	Sta	Solution	Time	Mix
8	10	E-Alc	∞ 00'30"	+
9	11	Xylene	● 02'00"	+
10	12	Xylene	▲ 03'00"	+
11	13	Distilled Water	∞ 02'00"	+
12	E*	End Station	- - ' - - -"	

EXACT ●	MIX+	WASH	END	MORE
---------	------	------	-----	------

INSERT	DELETE ●	EXIT	SAVE	MORE
--------	----------	------	------	------

DRY		EXIT ●	SAVE	MORE
-----	--	--------	------	------

First Group
Second Group
Third Group

Staining Program Editing Screen (DSP17)

There are five columns of information in the Staining Program Editing screen.

STP: This column shows the step numbers in a staining program. These numbers are automatically assigned sequentially by the instrument.

STA: Based on the solution configuration, the user makes data entry of the station position for each step using the number keys (stations 1 to 27) and the function keys (WASH station, END station, DRY station).

NOTE: Each Station position corresponds to a specific solution as set in Section 2.3 (8) "Placement of the Solutions and Wash Reservoirs." If the user needs to use a solution not listed in the Solution Configuration refer to Section 3.4 "Modifying the Solution Configuration".

SOLUTION: Solution names programmed in the Solution Configuration and Usage Counter screen (DSP20) are automatically displayed when the corresponding station (STA) numbers are keyed in.

TIME: The length of time to process each step is keyed in by using the number keys. This column is indicated in minutes and seconds. The marks before the "minute" field indicate the timing accuracy and are controlled by the [EXACT] key as described below.

NOTE: A minimum process time must be input. If a time of 00'00" is input, that step will be ignored. Any time between 00'00" and 00'09" will have the same effect: the basket set will be immersed and immediately taken out of the reservoir.

NOTE: Any mix time programmed is inclusive of the entire process time.

NOTE: In the continuous operation mode, the instrument will adjust the process time for each basket set to avoid timing conflicts between them. The instrument will follow the user's instructions about how much a given immersion time can be extended.

MIX: This column indicates whether or not the mixing movement will take place for that step. This function is controlled by the [Mix+] key as described below.

OPERATING PROCEDURES

The function keys are divided into three groups. The [More] key allows the operator to access each group.

First Group of Keys

[Exact] This key sets whether or not it is possible to extend the process time for that step. Each time the key is pressed, the mark next to the "minute" field in the [TIME] column is changed from; [●], to [▲], then to [∞], and then loops back to [●].

[●] means that the processing time for that step will be performed exactly as programmed.

[▲] means that the processing time for that step can be extended to some degree. (No more than 20% longer than the programmed time).

[∞] means that the processing time can be extended indefinitely.

[Mix ÷] This key sets whether or not agitation will take place. Pressing the key adds or removes a plus [+] sign in the [Mix] column.

[+] indicates that agitation will be performed during that step.

[] indicates no agitation.

[Wash] This key sets the highlighted step as a wash step (W*) using tap water. The instrument automatically selects which wash station it will use.

[End] This key sets the step at the cursor position as an End Station step (E*). All following steps are deleted. The instrument automatically selects which end station it will use if the instrument is configured as a two End station instrument. To be valid, a program must have an End Step programmed.

[More] Accesses the second group of function keys.

Second Group of Keys

- [Insert] A blank line will be inserted at the cursor position.
- [Delete] The step at the cursor position will be deleted.
- [Exit] This key cancels editing without saving the data into memory. The dialog box (MES21) will be displayed to confirm the cancellation.
- [Save] The edited staining program will be saved. Pressing the key will shift the display to the dialog box (MES10) to confirm the command.
- [More] Accesses the third group of function keys.

Third Group of Keys

- [Dry] This key sets the step at the cursor position as a drying station (D*).
- [Exit] Same as with the second group.
- [Save] Same as with the second group.
- [More] Accesses the first group of function keys.

1092

OPERATING PROCEDURES

(2) Copying an Existing Staining Program

To accelerate data entry, it is often useful to first copy an existing program and then edit only the required steps.

1. If needed, create a new staining method name to which the source program will be copied. Refer to Section 3.3 (4) "Adding a Solution Name and a Staining Method Name."

2. From the Main Menu screen (DSP1), press the [Edit] key.

The Staining Method List screen (DSP7) will appear.

3. Move the cursor to highlight the staining program to be copied by using the up and down arrow keys. Only the programs showing an asterisk (*) can be copied.

4. Press the [Copy] key.

The Copy Selection screen (DSP15) is displayed.

SELECT STAIN METHOD TO COPY TO			
Source : HE (SAKURA)			
Copy to : Giemsa			
HE-1			
Papanicolou			
ENTER			EXIT

Copy Selection Screen (DSP15)

5. By using the up and down arrow keys, move the cursor to highlight the method to be copied to.

6. Press the [Enter] key.

The Copy Confirmation screen (DSP16) is displayed.

VERIFY COPY			
From : HE (SAKURA)			
To : HE-1			
ENTER			EXIT

Copy Confirmation Screen (DSP16)

7. Press the [Enter] key.

The display will return to the Staining Method List screen (DSP7) and an asterisk (*) mark will appear next to the name of the created program.

8. Edit the copied staining program to create a new staining program. Refer to Section 3.3 (1) "Creating or Editing a Staining Program."

OPERATING PROCEDURES

(3) Deleting a Staining Program

The following procedure will delete all the steps in the selected staining program.

1. From the Main Menu screen (DSP1), press the [Edit] key.

The Staining Method List screen (DSP7) will appear.

2. Move the cursor to highlight the staining program to be deleted. Only programs with an asterisk (*) mark can be deleted.

3. Press the [Delete] key.

The dialog box (MES5) is displayed to confirm the deletion.

DELETE THE FOLLOWING STAIN METHOD ?			
Alcian Blue			
YES			NO

Deletion Confirmation Dialog Box (MES5)

4. Press the [Yes] key to confirm or the [No] key to stop the procedure.

The display will return to the Staining Method List screen (DSP7) and the asterisk (*) mark next to the name of the deleted program will be gone.

5. Press the [Exit] key.

The display will return to the Main Menu screen (DSP1).

(4) Adding a Solution Name and a Staining Method Name

Follow this procedure to add a new solution or staining method name.

1. From the Main Menu screen (DSP1), press the [Edit] key.

The Stain Method List screen (DSP7) is displayed.

2. Press the [More] key to access the second group of functions. Then, press the [Names] key.

The Name Creation screen (DSP8) is displayed.

ADD OR DELETE SOLUTION OR METHOD NAMES				
SOLN+	METHOD+	DELETE		EXIT

Name Creation Screen (DSP8)

3. Press the [Soln+] or [Method+] key depending on which names have to be created.

The Solution Name Creation screen (DSP9) or the Staining Method Name Creation screen (DSP10) will be displayed.

ADD NEW SOLUTION NAME				
Solution Name ? Hem _____				Name Cursor
a b c d e f g h i j k l m n o p q r s t u v w x y z				
0 1 2 3 4 5 6 7 8 9 ! " # \$ % & ' () * + , - . / : ;				
< = > ? @ [\] ^ _ { }				Character Cursor
ENTER	BACK SPC	SHIFT	SAVE	EXIT

Solution Name Creation Screen (DSP9)

OPERATING PROCEDURES

4. Select each character by moving the character cursor using the arrow keys.
To use the character at the cursor, press the [Enter] key.
Two other functions are also available:
 [Backspc] key to delete the character highlighted by the name cursor
 [Shift] key to convert the character highlighted by the name cursor to either upper or lower case.

NOTE: To enter a blank space, position the cursor to the left of the letter "A" and press [ENTER].

5. Press the [Save] key after all characters are input.

The new solution or staining method names are saved into memory and disappear from the display.

6. Press the [Exit] key after all names have been created.

The display returns to the Name Creation screen (DSP8).

7. Press the [Exit] key twice.

The display return to the Staining Method List screen (DSP7).

8. Press the [More] key to access the first group of functions and then press the [Exit] key.

The display returns to the Main Menu screen (DSP1).

(5) Deleting a Solution Name and a Staining Method Name

Unwanted solution and staining method names can be deleted by following this procedure. Factory-set names cannot be deleted.

1. From the Main Menu screen (DSP1), press the [Edit] key.

The Staining Method List screen (DSP7) is displayed.

2. Press the [More] key to access the second group of functions. Then, press the [Names] key.

The Name Creation screen (DSP8) is displayed.

3. Press the [Delete] key.

The Delete Name Selection screen (DSP38) is displayed.

DELETE SOLUTION OR METHOD NAME

SOLN -	METHOD -			EXIT
--------	----------	--	--	------

Delete Name Selection Screen (DSP38)

4. Press the [Soln-] or the [Method-] key according to which names have to be deleted.

The Solution Name Deletion screen (DSP11) or the Staining Method Deletion screen (DSP13) will be displayed. These displays will show only solution or staining method names which are not currently used in the solution configuration and the staining programs.

OPERATING PROCEDURES

DELETE SOLUTION NAME			
Aaaaaaa			
Bbbbbbb			
Ccccccc			
Ddddddd			
DELETE			EXIT

Solution Name Deletion Screen (DSP11)

5. Move the cursor to highlight the name to be deleted by using the up and down arrow keys.

6. Press the [Delete] key.

The dialog box (MES8) will appear to confirm the deletion.

DELETE THE FOLLOWING NAME ?			
Bbbbbbb			
YES			NO

Deletion Confirmation Dialog Box (MES8)

7. Press the [Yes] key to delete the name or the [No] key to stop the procedure.

The display will return to either the Solution Name Deletion screen (DSP11) or the Staining Method Deletion screen (DSP13).

If none of the names can be deleted, the display will change to the Delete Name Selection Screen (DSP38). Go to step 9.

8. Press the [Exit] key after all names have been deleted.

The display returns to the Delete Name Selection screen (DSP38).

9. Press the [Exit] key.

The display returns to the Name Creation screen (DSP8).

10. Press the [Exit] key.

The display return to the Staining Method List screen (DSP7).

11. Press the [More] key to access the first group of functions and then press the [Exit] key.

The display returns to the Main Menu screen (DSP1).

OPERATING PROCEDURES

3.4 Modifying the Solution Configuration

Before programming a new staining method the solution configuration may need to be changed to be compatible with the steps in the program. The following instructions will assist you in modifying a solution configuration, such as adding a new solution or changing a solution station position.

NOTE: A new solution name can be added to the solution configuration. However, if the name does not exist, it must be created. To add a name, refer to Section 3.3 (4) "Adding a Solution Name and a Staining Method Name."

1. From the Main Menu screen (DSP1), press the [Station] key.

The Solution Configuration and Usage Count screen will appear.

ASSIGN SOLUTIONS TO STATIONS				
STATION	SOLUTION	COUNT		
1	Xylene	12		
2	Xylene	12		
3	Xylene	12		
ASSIGN	COUNT 0	ALL 0		EXIT

Solution Configuration and Usage Count Screen (DSP20)

2. Open the lower door to access the lower section. To access the upper section, open the door first and then the cover.

3. Move the cursor to the desired station number by using the up and down arrow keys.

4. Press the [Assign] key.

The Solution Name Selection screen (DSP22) is displayed, and the solution list window appears.

ASSIGN SOLUTION			SOLUTION LIST
STATION	SOLUTION		
1	Xylene	10000	Acet. Acid/Water
2	Xylene	500	Alcian Blue
3	Xylene		Ammonia/E-Alc
			Distilled Water
SELECT	UP	DOWN	EXIT

Solution Name Selection Screen (DSP22)

5. Move the cursor to the solution you want to use by using the up and down arrow keys.

6. Press the [Select] key to replace the previous solution name with the new one.

The display returns to the Solution Configuration and Usage Count screen (DSP20). The new solution name will appear and the usage count for that solution will be reset to "0." For a description about how to use the Usage Count, refer to Section 3.6 "The Solution Usage Counters."

7. If applicable, discard the solution in the station where the solution name was changed. Then place the new solution in the proper station. (When replacing a solution, it is recommended to use a fresh one.)

8. Repeat steps 3 through 7 for each one of the stations that needs to be changed.

9. After all solution names have been changed, close the lower door. If the cover is open, close the cover first and then the lower door.

10. Press the [Exit] key.

The display returns to the Main Menu screen (DSP1).

OPERATING PROCEDURES

3.5 Enhanced Wash Solution List

A. Description of the Enhanced Wash feature

The “Enhanced Wash” feature of the TISSUE-TEK® DRS™ 2000 Stainer is used to avoid excess staining when using high concentration solutions such as Hematoxylin 3G. If a solution is designated as requiring the “Enhanced Wash” feature, the instrument will enhance (optimize) the step that immediately follows. That step that follows can be any station, not just a Wash Station. To enhance (optimize) the wash procedure, the robotic arm first completely immerses the basket set in the reservoir and then takes it out completely. This procedure can be repeated up to ten times as defined by the Enhanced Wash Frequency parameter. Refer to Section 3.8 (5) “Changing the Set Up Parameters” to change the value of that parameter.

B. Assigning solutions for the Enhanced Wash feature

To assign the “Enhanced Wash” feature to a solution, follow this procedure:

1. From the Main Menu screen (DSP1), press the [Edit] key.

The display shifts to the Staining Method List screen (DSP7).

2. Press the [More] key to access the second group of functions. Then, press the [Washout] key.

The Enhanced Wash Set Up screen (DSP32) will appear.

ENHANCED WASH SOLUTION NAME SET UP			
1. Hematoxylin (3G)			
2. Hematoxylin (M)			
3. None			
4. None			
ENTER	DELETE		EXIT

Enhanced Wash Set Up Screen (DSP32)

3. Move the cursor to the desired line by using the up and down arrow keys.

NOTE: To remove a solution from the Enhanced Wash list, move the cursor to the desired line (a solution name to be removed) and press the [Delete] key. The solution name will be replaced by [None].

4. Press the [Select] key.

The Enhanced Wash Selection screen (DSP33) will appear.

ENHANCED WASH SOLUTION NAME SET UP		SOLUTION LIST	
1.	Hematoxylin (3G)	HC1/E-Alc	
2.	Hematoxylin (M)	Hematoxylin	
3.	None	Hematoxylin (3G)	
4.	None	Hematoxylin (M)	
SELECT	UP	DOWN	EXIT

Enhanced Wash Selection Screen (DSP33)

5. Move the cursor to the desired solution name using the ↑ and ↓ arrow keys.

6. Press the [Select] key. To cancel the procedure, press the [Exit] key.

The display returns to the Enhanced Wash Set Up screen (DSP32).

7. Press the [Exit] key.

The display returns to the Staining Method List screen (DSP7).

8. Press the [More] key to access the first group of functions. Then, press the [Exit] key.

The display will return to the Main Menu screen (DSP1).

NOTE: The “Enhanced Wash” feature is automatically incorporated in the staining program when one of the solutions listed in the Enhanced Wash List is selected.

OPERATING PROCEDURES

3.6 The Solution Usage Counters

To help in managing the solution replacement intervals, each solution station possesses a usage counter that is incremented by one each time that station is used. To use that feature, follow these instructions.

1. Press the [Station] key from the Main Menu screen (DSP1).

The Solution Configuration and Usage Count screen (DSP20) will appear. The numbers in the "Count" column indicate how many times a solution has been used. To view all stations, scroll the screen using the up and down arrow keys.

ASSIGN SOLUTIONS TO STATIONS				
STATION	SOLUTION	COUNT		
1	Xylene	12		
2	Xylene	12		
3	Xylene	12		
ASSIGN	COUNT 0	ALL 0		EXIT

Solution Configuration and Usage Count Screen (DSP20)

2. Press the [Count 0] key for each station whose solution has been exchanged.

The number in the "Count" column for that station is reset to "0."

NOTE: Press the [All 0] key when all usage counters need to be reset to "0."

3. After the counters are verified, press the [Exit] key.

The display returns to the Main Menu screen (DSP1).

3.7 Corrective Procedures for Error Messages following a Start Command

This section provides some corrective procedures for error messages which may be displayed when the [Start] key is pressed in the Start Process screen (DSP3).

(1) Starting a Staining Method with a different Solution Configuration

A. The instrument is not running a program.

If the Staining Method selected has a Solution Configuration incompatible with the previously run Staining Program the following screen will appear:

SOLUTION POSITION LIST IS INCOMPATIBLE. DO YOU WANT TO START THE STAIN PROCESS ?			
YES	STATION		NO

Incompatible Solution Configuration Warning Screen (DSP26)

- To cancel the process.

1. Press the [No] key.

The display will return to the Process Start screen (DSP3).

- To start the process immediately without verifying the Solution Configuration.

1. Press the [Yes] key. The solution configuration for this new staining method is automatically entered into the Solution Configuration List.

- To verify that the solution reservoirs have the proper solutions.

1. Press the [Station] key.

The Solution Configuration List Changing screen (DSP27) is displayed. This solution list is the solution list required for the current staining method selected.

OPERATING PROCEDURES

NEW SOLUTION POSITION LIST			
STATION	SOLUTION	COUNT	
1	Xylene	12	
2	Xylene	12	
3	Xylene	12	
			EXIT

Solution Configuration List Changing Screen (DSP27)

2. Use the ↑ and ↓ Arrow keys to verify that each reservoir in the instrument contains the correct solution as shown in this list.
3. When all the reservoirs have been verified or changed, press [EXIT]. The Inconsistent Solution Configuration Alarm Screen (DSP26) appears.
4. Press the [Yes] key.

The staining process will start.

B. The instrument is running a program in the Continuous Mode.

In the continuous operation mode, and while the instrument is running, if the operator tries to start a staining program with a different solution configuration, the following dialog box (MES29) will be displayed.

CANNOT START. SOLUTION POSITION LIST IS WRONG.			
			EXIT

Dialog Box (MES29)

In order to start this staining program, the operator must wait until all current runs are completed or aborted.

When the [Exit] key is pressed, the display returns to the Process Start screen (DSP3).

C. Inconsistent System Configuration

If the selected staining method was programmed using a different system configuration for either the Start, End, or Wash stations, the following message will appear.

CURRENT START STATION IS USED AS A SOLUTION STATION IN THIS METHOD.			
			EXIT

Dialog Box (MES33)*

* The [Start Station] message may be replaced with [End Station] or [Wash Station].

In order to start this staining program, all current runs must be completed or aborted and the basic system configuration must be modified. To modify the Start, End, and Wash stations arrangement refer to Section 3.8 "Utility Functions."

When the [Exit] key is pressed, the display returns to the Process Start screen (DSP3).

(2) Invalid Staining Program

For the following conditions, the dialog box (MES30) will appear. These staining programs must be modified in order to run them.

- All process times are set as "00'00".
- For unknown reasons, all the data was destroyed and only the first step remains.

INVALID PROGRAM. PLEASE CHECK THE PROGRAM CONTENT.			
			EXIT

Dialog Box (MES30)

When [Exit] is pressed, the display returns to the Process Start screen (DSP3).

OPERATING PROCEDURES

3.8 Utility Functions

(1) Starting a Staining Program from an Intermediate Step (Batch Mode only)

This section describes how to start a staining program from an intermediate step when the instrument is run in the Batch Mode.

1. From the Main Menu screen (DSP1), press the [Start] key.

The Process Start screen (DSP3) is displayed.

RUN#1 METHOD: H&E (SAKURA)		START		
PLACE THE BASKETS FOR THE 1 st				
RUN AT S1 AND PRESS START.		MODE: CONTINUOUS		
START	METHOD	MODE		EXIT

Process Start Screen (DSP3)

2. If the selected mode is continuous, press the [Mode] key.

NOTE: The Mode can be changed only when the instrument is not in operation.

The [Continuous] indication will be changed to [Batch], and the function keys will shift to the second group of functions.

RUN#1 METHOD: HE (SAKURA)		START		
PLACE THE BASKETS FOR THE 1 st				
RUN AT S1 AND PRESS START.		MODE: BATCH		
START	METHOD	MODE	STEP	EXIT

Process Start Screen (DSP3)

3. Press the [Step] key.

The Start Step Set Up screen (DSP12) is displayed.

4. Move the cursor to the desired step using the up and down arrow keys.

STP	STA	SOLUTION	TIME	MIX
8	10	E-Alc	∞ 00'30"	+
9	11	Xylene	● 02'00"	+
10	12	Xylene	▲ 03'00"	+
11	13	Distilled Water	∞ 02'00"	+
12	E*	End Station	-----"	
START				EXIT

Start Step Set Up Screen (DSP12)

5. Open the lower door. If the station position for that step is in the upper section, open the lower door first and then the cover.

6. Take out the solution reservoir from the station that is highlighted in the screen.

7. Place the basket set into the reservoir.

8. Put the solution reservoir back in the appropriate station position.

9. Close the lower door. If the cover is open, close it first.

10. Press the [Start] key.

The (MES 39) Display will appear.

11. Press CONFIRM to continue.

PLEASE PLACE THE BASKETS AT XX

CONFIRM

MES 39

"XX" represents a station number.

OPERATING PROCEDURES

The Process Monitor screen (DSP4) will appear and the staining program will start from the selected step.

1 2 3 4 5 6 7							8 9 10 11 12 13							
E1	E2	16	17	18	19	20	W1	W2	W3	24	25	S2	S1	DRY
ADD			END TIME				PAUSE			REMOVE			MAIN	

Process Monitor Screen (DSP4)

(2) Reviewing the Error Record

The last twenty error logs can be reviewed using the following instructions.

1. From the Main Menu screen (DSP1), press the [More] key to access the second group of functions and then press the [Utility] key.

The Utility Function Selection screen (DSP23) is displayed.

UTILITY FUNCTIONS AND SYSTEM SET UP.				
ERRLOG	SETUP			EXIT

Utility Function Selection Screen (DSP23)

2. Press the [Errlog] key.

The Error Log Screen (DSP25) is displayed.

ERROR CODE: Error code number
 DESCRIPTION: Symptom of error

ERROR CODE LOG	
CODE	DESCRIPTION
4	BATTERY LOW
30	SENSOR OPEN
34	DRY FAN STOP
	EXIT

Error Log Screen (DSP25)

3. Review the error log by using the up and down arrow keys to scroll through the file.

4. Press the [Exit] key.

NOTE: Powering off the unit will erase all error codes in error code log.

The display returns to the Utility Function Selection screen (DSP23)

5. Press the [Exit] key.

The display returns to the Main Menu screen (DSP1).

(3) Converting a Wash Station to/from a Solution Station

The following procedure is used to convert an existing wash station to a solution station, or an existing solution station to a wash station (positions 21 to 27 only). When such a conversion is made, the staining programs currently stored in memory must be verified for compatibility.

1. From the Main Menu screen (DSP1), press the [More] key to access the second group of functions and then press the [Utility] key.

The Utility Function Selection screen (DSP23) is displayed.

2. Press the [SETUP] key.

OPERATING PROCEDURES

The System Setup Selection screen (DSP30) is displayed.

INSTRUMENT SETUP			
MODE	WASH	SET S/E	EXIT

System Setup Selection Screen (DSP30)

3. Press the [Wash] key.

The Wash/Solution Station Conversion screen (DSP35) is displayed. By default the W4 and W5 stations have been converted to solution stations.

STATION TO BE CONVERTED			
W1 : wash	W4 : wash → Solution		
W2 : wash	W5 : wash → Solution		
W3 : wash			
SOLN	WASH		EXIT

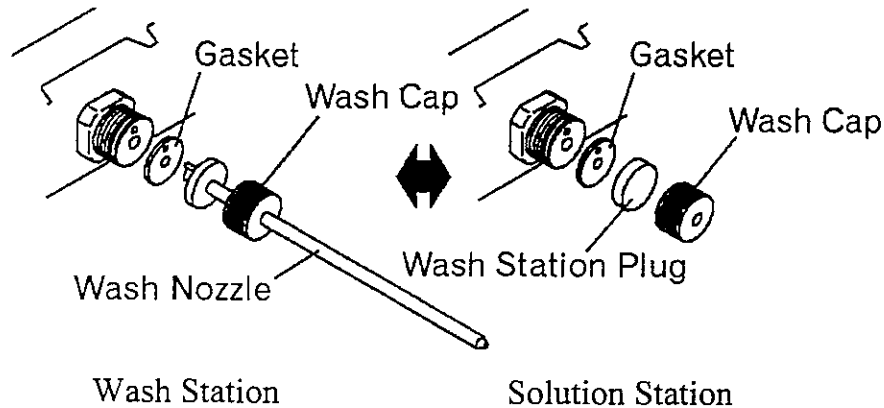
Wash/Solution Station Conversion Screen (DSP35)

4. Move the cursor to the station to be converted by using the arrow keys.
5. Press the [Soln] key to convert a wash station to a solution station, or press the [Wash] key to convert a solution station to a wash station.

A wash station is converted into a solution station when “→ Solution” appears next to “wash”. A minimum of two wash stations must be kept.

6. Open the lower door first and then the cover.
7. Take out the reservoir from the converted station position.

8. To transform a wash station to a solution station, remove the wash cap (knurled ring) and then replace the wash nozzle with a wash station plug. Then secure the plug and the gasket in place using the wash cap. To transform a solution station to a Wash station, follow the procedure in reverse order; replace the plug and wash cap with a wash nozzle. Positions 21 to 27 only can be converted back and forth.



9. Place the solution reservoir into the converted station position. When using it as a wash station, replace it with a wash reservoir.

10. Press the [Exit] key.

The Dialog Box (MES37) will be displayed to confirm the change.

11. Press the [Yes] key.

The display returns to the System Setup Selection screen (DSP30).

12. Press the [Exit] key.

The display returns to the Utility Function Selection screen (DSP23).

13. Press the [Exit] key.

The display returns to the Main Menu screen (DSP1).

OPERATING PROCEDURES

(4) Setting up the Start and End Stations

Up to two Start and two End Stations can be defined. At least one Start and one End Station must be defined. When the positions for Start and End Stations are changed, the existing staining programs must be verified for compatibility.

1. From the Main Menu screen (DSP1), press the [More] key to access the second group of functions and then press the [Utility] key.

The Utility Function Selection screen (DSP23) is displayed.

2. Press the [Setup] key.

The System Setup Selection screen (DSP30) is displayed.

3. Press the [Set S/E] key.

The Start/End Station Setup screen (DSP36) is displayed.

SELECT START/END STATIONS				
START STA. S1 : 27				
S2 : 26				
END STA. E1 : 14				
E2 : 15				
SELECT	CLEAR		EXIT	SAVE

Start/End Station Set Up Screen (DSP36)

4. Move the cursor to one of [S1], [S2], [E1] and [E2] by using the up and down arrow keys.

5. Press the [Select] key.

The Start/End Station Selection screen (DSP36-1) will appear.

SELECT START/END STATIONS				
	START STA. S1 :	27		16
		S2 :	26	17
	END STA. E1 :	14		18
		E2 :	15	19
SELECT				EXIT

Start/End Station Selection Screen (DSP36-1)

6. Move the cursor to the desired station number by using the up and down key.

NOTE: Wash stations cannot be set up as Start or End Stations. (Wash stations are not displayed as a selection.)

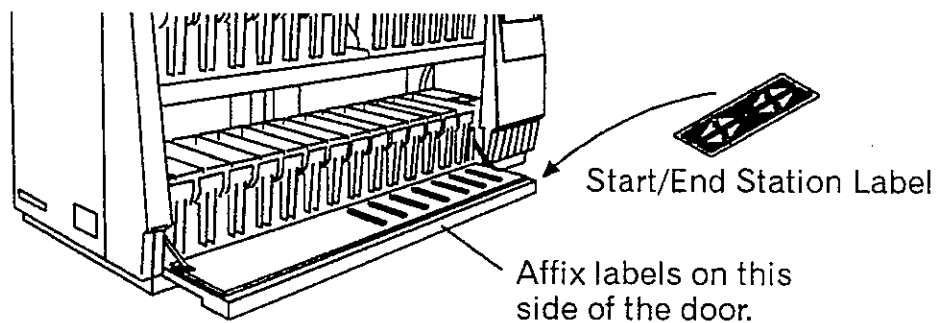
7. Press the [Select] key.

The selected number is stored into memory. The display returns to the Start/End Station Set Up screen (DSP36).

NOTE: To disable the second start (S2) or End (E2) stations, press the [Clear] key. The indication will change to [None].

8. After all settings have been completed, open the lower door first and the cover.

9. Affix start/end station labels (S1, S2, E1, E2) on the outer front surface of the open door according to their respective positions.



OPERATING PROCEDURES

10. After confirming that the label positions correspond to the settings on the display, press the [Save] key.

The Dialog Box (MES37) will be displayed to confirm the change.

11. Press the [Yes] key.

The change is stored in memory, and the display returns to the System Setup Selection screen (DSP30).

12. Press the [Exit] key.

The display returns to the Utility Function Selection screen (DSP23).

13. Press the [Exit] key.

The display returns to the Main Menu screen (DSP1).

(5) Changing the Set Up Parameters

This section informs the user about the default parameters and how to modify them if required.

A. Default Parameters

The following is a description of each of the parameters in the Default Parameter screen (DSP31).

SYSTEM SETUP				
MIX AMPLITUDE	25	MM		
MIX FREQUENCY	3	TIMES		
MIX SPEED	3			
SELECT				EXIT

System Setup screen (DSP31)

Other parameters accessible by scrolling down:

DRYER TEMPERATURE SET	65°C
WATER WASH CYCLE TIME	1 MIN. 00 SEC.
WASH START STATION	21
ENHANCED WASH FREQUENCY	3 TIMES
ENHANCED WASH SPEED	5
UPS CONNECT	NO
KEY SOUND	YES
PRINTER BOX CONNECT	NO

- **Mix Amplitude** : The travel distance of the robotic arm during the up or down portion of the mixing cycle. The default value is [25 mm].
Allowable range 10 / 15 / 20 / 25 / 30 mm
- **Mix Frequency** : The number of times the robotic arm moves up and down during each mixing cycle. The default value is [3 times].
Allowable range 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 times

OPERATING PROCEDURES

- **Mix Speed :** The speed at which one mixing cycle takes place. The default value is [3]. A setting of 1 is the slowest, 5 is the fastest.
Allowable range 1 / 2 / 3 / 4 / 5
 - **Dryer**
Temperature Set : The temperature of the drying station. Use the numerical keys to input the value. The default value is [65°C].
Allowable range 30°C to 65°C in 1°C increments
 - **Water Wash**
Cycle Time: The length of time the water flows to the Wash Stations once a basket set has left a Wash Station. Use the numerical keys to input the time. The default value is [1 min. 00 sec.].
Allowable range: 30 seconds to 1 minute 30 seconds in 1 second increments
 - **Wash Start**
Station: Up to five successive stations can be assigned as Wash Station from position No. 21 to position No. 27. The location of the first Wash Station in the series can be changed. When the [Select] key is pressed, the Dialog Box (MES16) will be displayed to confirm the change. When a change is made, all staining programs must be verified for compatibility. The start default value is [21].
Allowable range 21 / 22 / 23
- NOTE:** If a Start or an End Station is set in at any of these five successive stations, the allowable range may be reduced as a wash station cannot be a Start or an End Station.
- **Enhanced Wash**
Frequency: The number of times the robotic arm moves up and down during each Enhanced Wash cycle. The default value is [3 times].
Allowable range 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 times

- **Enhanced Wash**

Speed: The speed at which one Enhanced Wash cycle takes place. The default value is [3]. 1 is the slowest; 5 is the fastest.

Allowable range 1 / 2 / 3 / 4 / 5

- **UPS Connect:** This indicates whether or not an Uninterrupted Power Supply unit (UPS) is connected to the instrument. The default value is [No].

Allowable range Yes / No

NOTE: When a UPS unit is not connected to the instrument, the [UPS Connect] parameter needs to be set as [No]. If set as [Yes], the instrument will revert to a power outage situation. For proper connections, refer to Section 4.1 (1) "Connection to an Uninterruptible Power Supply Unit".

- **Key Sound:** The operator can select between silent keypad operation or an audible signal whenever a key is pressed. The default value is [Yes].

Allowable range Yes (audible signal) / No (no sound)

- **Printer Box**

Connect: The default value is [No]. Used for testing during manufacturing only.

B. General Procedure

To change the default parameters, follow this procedure.

1. From the Main Menu screen (DSP1), press the [More] key to access the second group of functions and then press the [Utility] key.

The Utility Function Selection screen (DSP23) is displayed.

2. Press the [Setup] key.

OPERATING PROCEDURES

The System Setup Selection screen (DSP30) is displayed.

3. Press the [Modes] key.

The System Setup screen (DSP31) is displayed.

SYSTEM SETUP				
MIX AMPLITUDE	25	MM		
MIX FREQUENCY	3	TIMES		
MIX SPEED	3			
SELECT				EXIT

System Setup Screen (DSP31)

4. Move the cursor to the parameter to be changed by using the ↑ and ↓ arrow keys.

5. Press the [Select] key.

The System Setup screen (DSP31-1) is displayed.

SYSTEM SETUP				
MIX AMPLITUDE	25	MM	10	
MIX FREQUENCY	3	TIMES	15	
MIX SPEED	3		20	
			25	
ENTER				EXIT

System Setup Screen (DSP31-1)

6. Move the cursor to the desired default parameter value by using the up and down arrow keys. For the [Dryer Temperature Set] and [Water Wash Cycle Time], input the desired numbers using the numerical keys.

7. Press the [Enter] key.

The display returns to the System Setup screen (DSP31).

8. After all parameter changes have been made, press the [Exit] key.

The dialog box (MES38) will be displayed to confirm the changes.

DO YOU WANT TO SAVE SYSTEM SETUP ?			
NO			YES

Dialog Box (MES38)

9. Press the [YES] key. To cancel the procedure, press the [No] key.

NOTE: The changes are stored into memory.

The display returns to the System Set Up Selection screen (DSP30).

10. Press the [Exit] key.

The display returns to the Utility Function Selection screen (DSP23).

11. Press the [Exit] key.

The display returns to the Main Menu screen (DSP1)

OPERATING PROCEDURES

3.9 Routine Operation

This section describes the basic procedures necessary to operate the instrument. In this section, the preprogrammed staining program and station arrangement are given as an example. To program a staining method or to edit an existing program, refer to Section 3.1 "Main Menu Screen".

(1) Starting a Process

- | |
|--|
| 1. Before applying power to the instrument, verify the following: <ul style="list-style-type: none">• The water supply hose and drain hose are securely connected.• The robotic arm is free to move.• The cover and lower door are closed. |
|--|

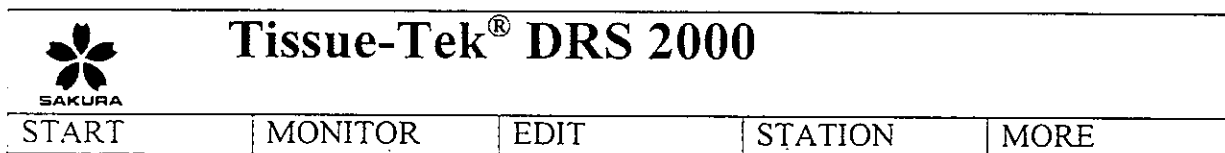
WARNING: PLACE THE INSTRUMENT IN A WELL VENTILATED AREA.

CAUTION: Check that the water supply hose and the drain hose are not crimped or kinked and that their connections are secure.

2. Open the water supply faucet.

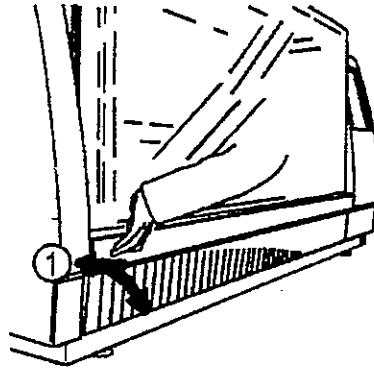
3. Turn on the power by pressing on the " " side of the power switch.

The Main Menu screen (DSP1) will appear.

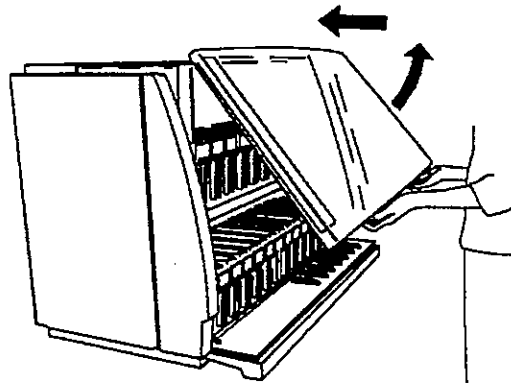


Main Menu screen (DSP1)

4. Open the door by pushing on the left-hand side [PUSH] area.



5. Open the cover with both hands by pulling it toward you while lifting it up, and then by pushing away from you. (Do not lift the closed cover directly upward to open.)

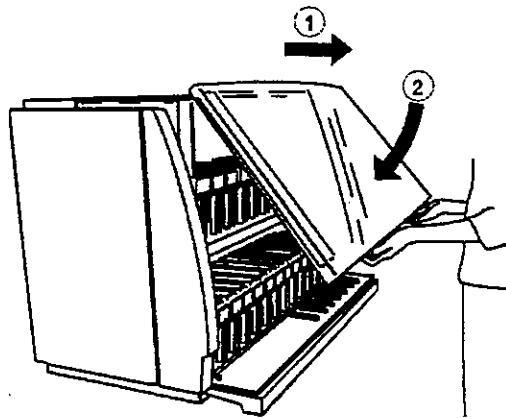


6. Verify that the solutions, and the solution and wash reservoirs are set properly. (If the reservoir lids are in place, remove them.)

If not correct, carry out the placement procedures for solutions, and solution and wash reservoir as described in Section 2.3 (8) "Placement of the Solution and Wash Reservoirs."

OPERATING PROCEDURES

7. Close the cover with both hands by pulling it toward you and then pulling down.



8. Press the [Start] key.

The Start Process screen (DSP3) will appear.

RUN#1 METHOD: H&E (SAKURA)		START		
PLACE THE BASKETS FOR THE 1 st				
RUN AT S1 AND PRESS START.		MODE: CONTINUOUS		
START	METHOD	MODE		EXIT

Start Process Screen (DSP3)

10. Press the [MODE] key to select either Continuous or Batch mode. Batch mode cannot be selected when the instrument is in process.

NOTE: The Run Number will start to increment from 1 following Power On.

11. If there is no method indicated or if a different method is to be run, press the [Method] key.

NOTE: To modify a staining program, follow the instructions given in Section 3.3 (1) "Creating or Editing a Staining Program."

The Staining Program Selection screen (DSP2) will appear.

SELECT METHOD H&E (SAKURA)				
HE (SAKURA)				
SELECT				EXIT

Staining Program Selection Screen (DSP2)

12. Move the cursor to the desired staining program by using the up and down arrow keys.

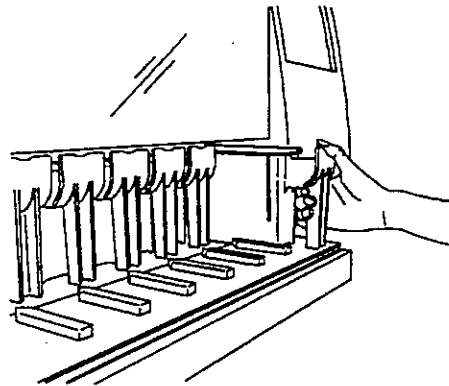
13. Press the [SELECT] key.

The highlighted staining program is selected and the display will automatically return to the Start Process screen (DSP3). In the following example, the staining program [H&E (SAKURA)] has been selected as the Process Run # 1.

RUN#1 METHOD: H&E (SAKURA)			START	
PLACE THE BASKETS FOR THE 1 st				
RUN AT S1 AND PRESS START. MODE: CONTINUOUS				
START	METHOD	MODE		EXIT

Start Process Screen (DSP3)

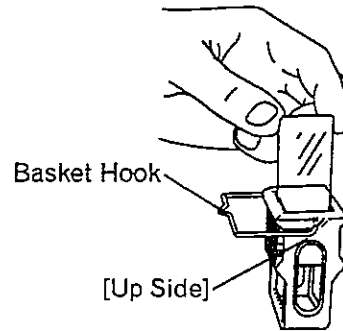
12. Remove the solution reservoir set in the Start Station (S1).



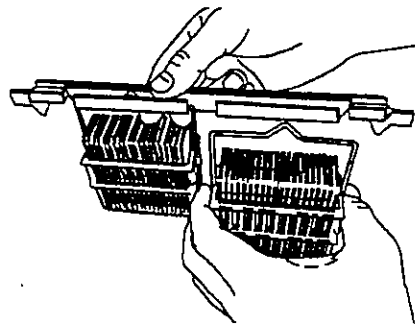
OPERATING PROCEDURES

NOTE: By default Start Station (S1) is set as station #27 and Start Station (S2) is set as station #26. To modify this arrangement, follow the instructions in section 3.8 (4) "Setting up the Start and End Stations."

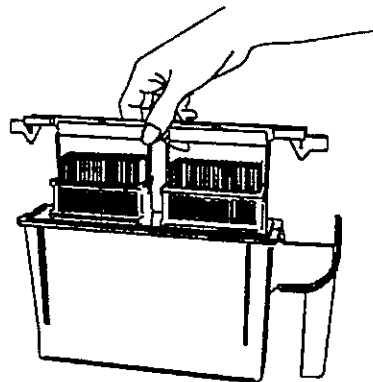
13. Bring down the basket hook and put slides into the basket with the frosted ends up and the specimen side facing the "UP SIDE" marking of the basket.



14. Slide the basket hook into the basket adapter as shown. Up to two baskets can be attached, forming a basket set. Make sure you firmly snap the basket hook into the basket adapter.

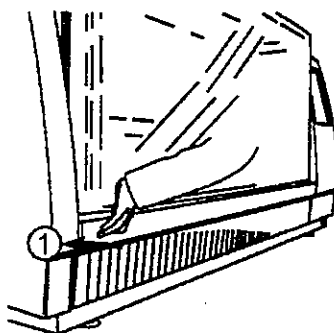


15. Place the basket set into the solution reservoir taken out from the Start Station (S1).



16. Return the solution reservoir with its basket set to the Start Station (S1).

17. Close the lower door.

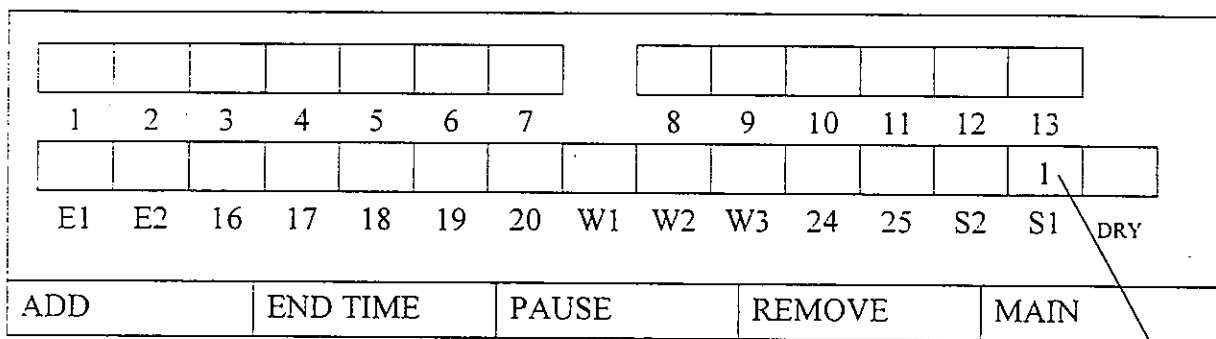


18. Press the [Start] key.

The staining process will then start.

(2) Monitoring a Process

During the staining process, the Process Monitor screen (DSP4) is displayed.



Process Monitor Screen (DSP4)

Run #

Each basket set is moved according to the staining program that was selected. As the basket set is moved, the associated process number will change its position on the Process Monitor screen. Depending on the instrument set up, the Process Monitor screen will differ from the above example.

CAUTION: Do not open the cover except when necessary.

OPERATING PROCEDURES

(3) Adding baskets

This section describes how to add more basket sets during processing. When adding a new basket set, do it as quickly as possible since the robotic arm may stop and the staining in process may possibly be affected.

NOTE: When adding more basket sets the [CONTINUOUS] indication must be displayed at the bottom right side of the Start Process screen (DSP3). This indicates that the instrument is currently in the continuous operation mode which allows the operator to add more basket sets as other ones are processed. In the Batch mode, the operator can load a basket set in the empty Start Station (S1). It will not be processed, however, until the previous run is completed.

1. Prepare a basket set to be added.

2. Press the [Add] key in the Process Monitor screen (DSP4).

The Start Process screen (DSP3) will appear. Unless a key is pressed within 30 seconds, the display automatically returns to the Process Monitor screen (DSP4) and the Start command is ignored.

RUN#2 METHOD: H&E (SAKURA)			START	
PLACE THE BASKETS FOR THE 2 nd				
RUN AT S1 AND PRESS START.				
			MODE: CONTINUOUS	
START	METHOD	MODE		EXIT

Start Process Screen (DSP3)

The Continuous mode must be on to add baskets.

3. Open the door.

4. Take out the solution reservoir from one of the Start Stations (S1 or S2) which is highlighted on the screen.

5. Place the basket set into the reservoir.

6. Put the solution reservoir back in the appropriate Start Station (S1 or S2).

7. Close the door.

8. Press the [Start] key.

The instrument will resume operation and the display will return to the Process Monitor screen (DSP4). The process run number of the added basket set will appear on the screen.

(4) When the Start and End Stations are Full

A. When the Start Stations are Full

1. If both start stations are full and the operator tries to add another basket, the following message will appear:

START STATION FULL.
PLEASE WAIT UNTIL CLEAR.

				EXIT
--	--	--	--	------

2. Press EXIT and the Process Monitor screen will appear. Wait until a start station is empty, then press the [Add] key.

B. When the End Stations are Full

If both END stations are full and another program has ended, the following screen will appear:

OPERATING PROCEDURES

THE STAIN PROCESS SUSPENDED.
REMOVE THE BASKETS LEFT
IN THE END STATION.

EXIT

1. Press EXIT and the Process Monitor Screen (DSP4) will appear

2. Remove baskets from both END Stations.

NOTE: Any process which has empty stations remaining in its program will continue to run.

(5) Verifying the Time Left for a Staining Program in Process

While a staining program is in process, the operator can get an estimate of the time left for that program by following this procedure.

1. In the Process Monitor screen (DSP4), press the [End Time] key.

The Estimated Time Left screen (DSP5) will appear. Use the up and down arrow keys to view all the runs.

RUN: Process run number (for each program being run).

TIME LEFT: Estimated time remaining to complete the process in hours, minutes and seconds.

STP: The actual staining step for that program.

STA: The reservoir position at that step.

TIME LEFT: Time remaining to complete that step.

TIME REMAINING TO END				
RUN	TIME LEFT	STP	STA	TIME LEFT
1	0:00:00	5	E1	0:00:00
2	0:45:00	10	2	0:01:18
3	0:01:15	22	3	0:02:30
UPDATE				EXIT

Estimated Time Left Screen (DSP5)

NOTE: The clock is not a real time clock. To update the times left, press the [Update] key.

2. Press the [Exit] key.

The display will return to the Process Monitor screen (DSP4).

OPERATING PROCEDURES

(6) Interrupting and Canceling a Process

During process interruption, the robotic arm will not move. If multiple staining programs are in process, keep the interruption as short as possible to avoid affecting staining quality.

1. In the Process Monitor screen (DSP4), press the [Pause] key.

The dialog box "PLEASE WAIT" (MES23) will appear. As soon as the robotic arm has stopped, the Process Cancellation screen (DSP6) will be displayed.

5							1							
1	2	3	4	5	6	7	8	9	10	11	12	13		
		2	4				3							
E1	E2	16	17	18	19	20	W1	W2	W3	24	25	S2	S1	DRY
ABORT			STATUS							EXIT				

Process Cancellation Screen (DSP6)

2. Position the cursor to highlight the process number to cancel by using the right and left arrow keys.
3. Press the [Status] key to obtain a status report of that process run.

The following dialog box (MES15) will be displayed.

STATUS : RUN # 4			
METHOD : H&E (SAKURA)			
TIME LEFT : 01:30:00			
			EXIT

Process Status Dialog Box (MES15)

METHOD: Staining method name

TIME LEFT: Time left to complete the process in hours, minutes and seconds (If the selected staining process has already been finished, [00:00:00] will be displayed.)

4. Verify whether the displayed process should be cancelled.

5. Press the [Exit] key.

The display returns to the Process Cancellation screen (DSP6).

NOTE: If this is not the process to cancel or to select another process number, use the arrow keys to highlight the desired number, and then verify again its process status.

6. To cancel the process, press the [Abort] key.

The dialog box (MES1) is displayed to confirm the cancellation.

DISCONTINUE THE FOLLOWING RUN ?			
RUN	STA	STAIN METHOD	
4	17	H&E (SAKURA)	
YES			NO

Cancellation Confirmation Dialog Box (MES1)

7. Press the [Yes] key to confirm the Abort command

One of the dialog boxes (MES40), "Please open the door" or "Please open the hood and the door," is displayed.

8. Open the door. (If the basket set for that process is in the upper section, open the cover as well.)

OPERATING PROCEDURES

The Basket Removal Confirmation screen (DSP40) will appear.

	5									1				
1	2	3	4	5	6	7		8	9	10	11	12	13	
		2	4				3							
E1	E2	16	17	18	19	20	W1	W2	W3	24	25	S2	S1	DRY
														CONFIRM

Basket Removal Confirmation Screen (DSP40)

9. Take out the solution reservoir from the position indicated on the screen.

10. Take out the basket set from the solution reservoir

11. Return the solution reservoir to its position in the instrument.

12. Confirm that the cursor highlights the reservoir position from which the basket set was taken out.

13. Press the [CONFIRM] key.

The display returns to the Process Cancellation screen (DSP6). If there are no other basket sets in process, the display returns to the Main Menu screen (DSP1).

14. Press the [Exit] key.

One of the dialog boxes (MES2), "Please close the door" or "Please close the hood and the door", will appear.

15. Close the door. (If the cover is open, close it first.)

The display returns to the Process Monitor screen (DSP4) and the instrument resumes operation.

(7) End of a Process

When a staining process is completed, the following dialog box (MES26) is displayed and an audible tone is triggered. When the Process Dialog Box (MES26) appears, press the [EXIT] key or wait 30 seconds for the Process Monitor screen to appear.

THE STAIN PROCESS ENDED. PLEASE REMOVE THE BASKETS FROM E1.				
				EXIT

Process End Dialog Box (MES26)

1	2	3	4	5	6	7	8	9	10	11	12	13			
1															
E1	E2	16	17	18	19	20	W1	W2	W3	24	25	S2	S1	DRY	
ADD		END TIME		PAUSE		REMOVE		MAIN							

Process Monitor Screen (DSP4)

In the Process Monitor screen (DSP4), the End Station (E1) or (E2) and the [Remove] key are highlighted.

NOTE: Station 14 is set as End Station (E1) and Station 15 is set as End Station (E2) by default. To modify this arrangement, follow the instructions in Section 3.7 (4) "Setting up the Start and End Stations."

1. Press the [Remove] key.

The following dialog box (MES40) will appear. If multiple staining programs are in process, remove the processed basket set as quickly as possible since the robotic arm may stop and the other staining processes may possibly be affected.

OPERATING PROCEDURES

PLEASE OPEN THE DOOR.				

Open Door Dialog Box (MES40)

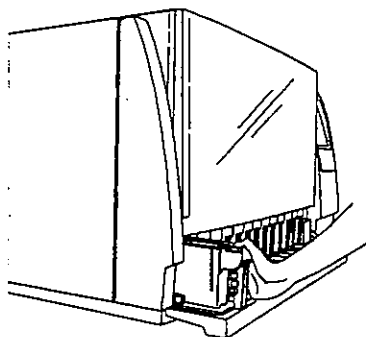
2. Open the door.

The Basket Removal Confirmation screen (DSP40) will appear.

1	2	3	4	5	6	7	8	9	10	11	12	13		
1														
E1	E2	16	17	18	19	20	W1	W2	W3	24	25	S2	S1	DRY
													CONFIRM	

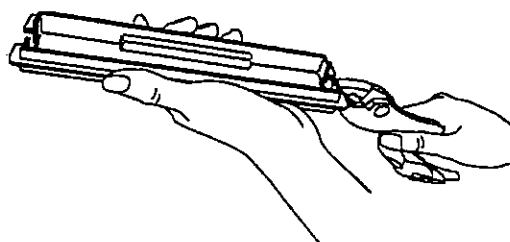
Basket Removal Confirmation Screen (DSP40)

3. Remove the solution reservoir from the End Station (E1) or (E2).



4. Take the basket set out of the solution reservoir.

NOTE: Once the run is completed and, if the basket set needs to be kept in a solution reservoir, it is recommended to cap the reservoir with a lid. Because of the basket adapter, the lid must be modified. Use a pair of pliers to pry away both ends of the lid as shown.



5. Return the emptied solution reservoir to the End Station (E1) or (E2).

6. Press the [CONFIRM] key in the Basket Removal Confirmation screen (DSP40).

The display returns to the Main Menu screen (DSP1). If other basket sets are still in process in the continuous operation mode, the message "PLEASE CLOSE THE DOOR" (MES2) will be displayed.

7. Close the door.

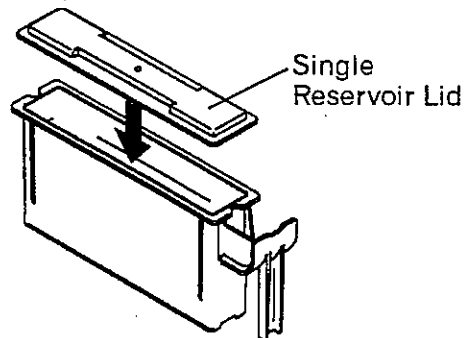
If other staining programs are in process, the display returns to the Process Monitor screen (DSP4).

If all the runs have been completed, follow these steps.

8. Open the door first and then the cover.

OPERATING PROCEDURES

9. Put a lid on each solution reservoir, or use the optional 6- or 7- reservoir lids.



CAUTION: Cover the solution reservoirs with a lid when the instrument is not in use.

10. Close the cover first and then the door.

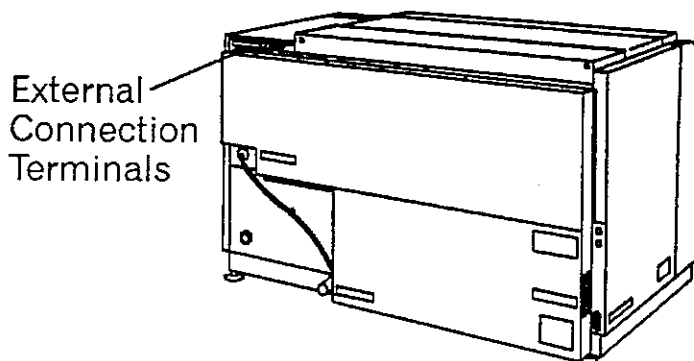
11. Turn off the power by pressing on the “|” side of the power switch.

12. Close the water supply faucet.

CAUTION: Close water supply faucet when the instrument is not in use.

4.1 External Connection Terminals

The following describes the connection to an Uninterruptible Power Supply unit and the connection to an external alarm device. (Not supplied with the instrument).



Location of the External Connection Terminals
(power failure and external alarm terminal strip)

(1) Connection to an Uninterruptible Power Supply Unit

This section provides the description of the Uninterruptible Power Supply unit (UPS) and how to connect it to the instrument.

Power Failure Operation Mode

When the instrument detects a power failure signal coming from the UPS, it operates as follows:

- The instrument will continue normal operation for 5 minutes after receipt of the power failure signal. However, the heater of the drying station will be disabled.
- If power is restored within five minutes, the instrument will continue normal operation. The drying station will then be operational again.
- If the power failure continues over 5 minutes, the instrument will stop operation while all the basket sets are immersed in their reservoirs.

EXTERNAL CONNECTION TERMINALS AND OPTIONS

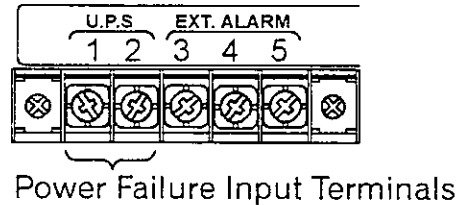
UPS Specifications

The UPS should have the following specifications.

- Back-up capacity: 200VA, more than 10 minutes
- Power failure
output terminal: Non-voltage relay, or open collector transistor
During power on: Continuous signal
During power failure: Open connection

How to connect the UPS

1. Connect the power failure input terminals of the instrument to the output terminals of the UPS using a biaxial cable (20AWG, approx. 3 meters in length).
2. Plug the instrument power cord into the power output receptacle of the UPS.
3. Turn on the instrument power switch, and then change the [UPS Connect] default in the System Setup screen (DSP31) from [No] to [Yes]. Refer to Section 3.7 (5) "Changing the Set Up Parameters."



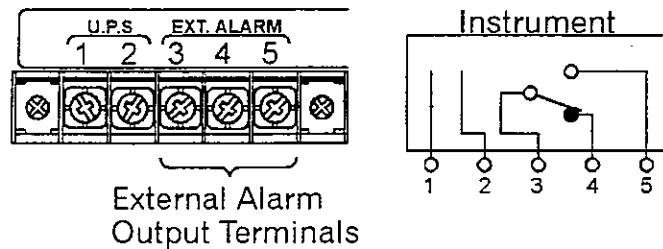
(2) Connection to an External Alarm Device

If an operational error occurs, the instrument sends an alarm signal to an external alarm device through the external alarm output terminals.

The external alarm device connected to these terminals must be able to meet the following specifications.

Specifications

- The external alarm device must have its own power source.
- Rated voltage: 30 Vrms., less than 60VDC (24VDC is recommended.)
- Rated current: More than 10mA, less than 1A
- Connecting cable: Biaxial cable, approx. 10 meters in length, 20AWG
- Output terminal structure: Non-voltage relay (C contact)



The instrument can transmit the following error signals to the external alarm device.

ERROR No. 1	[SYSTEM ERROR]
ERROR No. 2	[POWER FAILURE]
ERROR No. 3, 5 or 6	[MEMORY ERROR]
ERROR No. 10	[HOOD OPEN ERROR]
ERROR No. 11 to No. 14	[ROBOTIC ARM MALFUNCTION REFER TO THE MANUAL]

NOTE: For Error Details refer to Section 5.2 "Error Conditions and Corrective Actions".

Status of output terminal circuit:

Terminal	Normal Condition	Error Output Conditions
3 - 4	Connected	Open
3 - 5	Open	Connected

TROUBLESHOOTING

Problem	Probable Cause	Remedy
Process does not start. (Robotic arm does not move.)	Cover and/or lower door is open or not properly closed.	Close the cover and the lower door completely.
	Error message [Power Out Signal] is displayed:	If the UPS is connected, power failure has occurred. Process start is not allowed until power is restored.
		If the UPS is not connected, the [UPS Connect] default is set as [Yes]. Change it to [No]. [Section 3.7 (5)]
Robotic arm suddenly stopped and an alarm sounded.	Robotic arm hit an obstacle.	Remove the obstacle.
	Solution reservoirs are not properly installed.	Level solution reservoirs in proper position.
Solution leaks from the instrument.	The drain hose is occluded or bent.	Remove any bends or kinks in the hose.
	The drain hose is higher than the drain port of the instrument. The drain hose makes a twist or a loop.	Place the hose lower than the drain port, and hold it straight.
	Water supply strainer becomes loose.	Tighten the water supply strainer. If solution still leaks, the strainer may have a defective gasket. Contact the Sakura Customer Support Department or the distributor.

Problem	Probable Cause	Remedy
Wash reservoir does not have enough water.	Defective rubber grommet.	Replace the grommet. (Product code 4985)
	The water faucet is closed.	Open the water faucet.
Water flow is not sufficient.	Low water supply pressure.	Check the water supply pressure. 0.098 to 0.441 Mpa (1.0 to 4.5 kgf/cm ²) is required for adequate water supply pressure (dynamic pressure).
	Clogged screen filter in supply Hose.	Clean filter screen.

TROUBLESHOOTING

5.2 Error Conditions and Corrective Actions

If an error is detected by the instrument, the error message is displayed on the screen and saved in the instrument error log (DSP25).

- ERROR No. 1

SYSTEM ERROR				ERROR No. 1

Cause:

A control error has occurred.

Instrument Response:

The instrument will immediately stop operation.

Corrective Action:

Turn off instrument power. Call and inform the Sakura Customer Support Department or the distributor .

- ERROR No. 2

POWER FAILURE				ERROR No. 2
RESUME				EXIT

Cause:

The power supply was shut down due to a power failure or the power cord was disconnected.

Instrument Response:

- When power is restored, the robotic arm will move to its home position and the operation will stop.

Corrective Action:

Follow these steps.

1. If power failed for only a short period of time, the operator can decide to continue the staining process at the point where the interruption occurred.

To continue the process where the instrument was interrupted:

2. Press the [Resume] key.

The staining process will resume.

To cancel the process :

3. Press the [Exit] key.

The All Basket Removal Confirmation screen (DSP43) will appear.

4. Remove all the basket sets from the instrument.

5. Press the [Confirm] key.

The robotic arm moves to the center of the instrument and the Main Menu screen (DSP1) is displayed.

- ERROR No. 3 (or 5 or 6)

MEMORY ERROR				ERROR No. 3

Cause:

The instrument memory has been corrupted. Instrument Response: The instrument will immediately stop operation. Any of Error codes 3, 5, or 6 will appear in the upper right hand corner of the display according to the cause of the memory malfunctions.

TROUBLESHOOTING

Corrective Action:

Service is required. Call and inform the Sakura Customer Support Department or the distributor.

- ERROR No. 4

BATTERY LOW				ERROR No. 4
				EXIT

Cause:

The voltage of the memory back-up battery is low.

Corrective Action:

The battery will need to be changed. Call Sakura Customer Support or the distributor. Although the instrument will continue operation, failure to replace the battery may induce a memory loss when the instrument is turned off or when power failure occurs. Pressing the [Exit] key will allow operation to resume.

- ERROR No. 10

HOOD OPEN ERROR				ERROR No. 10
RESUME				EXIT

Cause:

The cover has been opened during operation.

Instrument Response:

The instrument will immediately stop.

Corrective Action:

Follow these steps.

1. Close the cover first and then the lower door.
2. Press the [Resume] key.

The staining process will resume.

If the same error message occurs again,

3.	Press the [Exit] key.
----	-----------------------

The All Basket Removal Confirmation screen (DSP43) will appear.

4.	Remove all the basket sets from the instrument.
----	---

5.	Press the [EXIT] key.
----	-----------------------

The robotic arm moves to the center of the instrument and the Main Menu screen (DSP1) is displayed.

6.	Call and inform the Sakura Customer Support Department or the distributor. (The cover open/closed detection mechanism may possibly be at fault.)
----	---

- ERROR No. 11 to 15

ERROR No. 11			
ROBOTIC ARM MALFUNCTION REFER TO MANUAL			
RESUME			EXIT

Cause:

The robotic arm does not operate as expected.

Instrument Response:

The instrument will immediately stop. An error code from Code 11 to 15 will appear in the upper right hand corner of the display according to which sensor has detected a failure.

Corrective Action:

Follow the steps below.

TROUBLESHOOTING

1.	Open the lower door (and the cover, if needed). Look inside the instrument for an obstacle to the robotic arm movement. If any, remove it.
----	--

2.	Close the lower door. (If the cover is open, close it first.) Press the [Resume] key.
----	---

After the instrument performs the recovery operation, the staining process will resume.

If the same error message occurs again,

3.	Press the [Exit] key.
----	-----------------------

The All Basket Removal Confirmation screen (DSP43) will appear.

4.	Remove all the basket sets from the instrument.
----	---

5.	Press the [EXIT] key.
----	-----------------------

The robotic arm moves to the center of the instrument and the Main Menu screen (DSP1) is displayed.

6.	Call and inform the Sakura Customer Support Department or the distributor. (The driving mechanism or the position detection mechanism of the robotic arm may possibly be at fault.)
----	---

- ERROR No. 20 PAUSE

This is defined as an operation error although it has been initiated by an operator's intervention. The instrument will record it in the Error Log screen (DSP25).

-
- ERROR No. 30 SENSOR OPEN
 - ERROR No. 31 SENSOR SHORT
 - ERROR No. 32 TEMPERATURE LOW
 - ERROR No. 33 TEMPERATURE HIGH

Cause:

Code 30 = The thermal sensor for the drying station does not function.

Code 31 = The thermal sensor for the drying station is short-circuited.

Code 32 = The drying station cannot reach the set temperature.

Code 33 = The drying station temperature has exceeded the set value.

Instrument Response:

The instrument will operate normally except that no heat will be applied to the drying station.

Corrective Action:

Perform drying station cleaning (refer to Section 6 (4)). If problem persists call and inform the Sakura Customer Support Department or the distributor.

- ERROR No. 34 DRY FAN STOP

Cause :

The drying station fan has stopped operating.

Instrument Response:

The instrument will operate normally except that no heat will be applied to the drying station.

Corrective Action:

Repair will be required. Call and inform the Sakura Customer Support Department or the distributor.

- ERROR No. 50 FUME FAN STOP

Cause:

The ventilation fan has stopped.

Instrument Response:

The instrument will continue operation except that the fan will not run.

Corrective Action:

Since there is no ventilation inside the instrument, service is required. Call the Sakura Customer Support Department or the distributor.

TROUBLESHOOTING

- POWER OUT SIGNAL

Cause :

If a UPS is connected, the instrument has received a power failure signal from it.

Instrument Response:

The instrument will continue operation for five minutes since the UPS supplies back-up power (however, no heat will be supplied to the drying station). If the power failure lasts for over five minutes, the instrument will stop.

Corrective Action:

If the UPS is connected, wait until the power is restored.

If the UPS is not connected, the [UPS Connect] parameter needs to be changed to [No] in the Default Parameter screen (DSP31). Refer to Section 3.7 (5) "Changing the Set Up Parameters."

NOTE: For connections to the UPS, refer to Refer to Section 4.1 (1) "Connection to the Uninterrupted Power Supply Unit."

CARE OF THE INSTRUMENT

This chapter provides detailed instructions for cleaning the instrument for replacing instrument components.

6.1 General Maintenance

To keep the instrument free of malfunctions, perform periodic maintenance and, if necessary, replace components as instructed below.

WARNING: TURN THE POWER SWITCH OFF WHENEVER SERVICING THE INSTRUMENT UNLESS INSTRUCTED OTHERWISE IN THE MANUAL. INJURY MAY OCCUR IF THE INSTRUMENT IS SERVICED WITH POWER ON.

(1) Solution Reservoirs and Slide Baskets

Wash the solution reservoirs and the slide baskets with tap water or a mild detergent. If you have difficulty in removing stains and residue from dried up reagents, soak first in a commercially available chemical cleaning detergent or bleach solution and then rinse with a mild detergent and water.

NOTE: Do not wait before cleaning. The longer the wait, the more difficult the cleaning procedure will be. Clean each time staining is completed. Always use the same reservoir for a given solution to avoid contamination.

CARE OF THE INSTRUMENT

(2) Reservoir Tray

The reservoir trays should be cleaned once a month.

1. Turn power off by pressing the "O" side of the power switch.

NOTE: If the robotic arm is interfering with the cleaning procedure gently move the robotic arm out of the way. (Power off only).

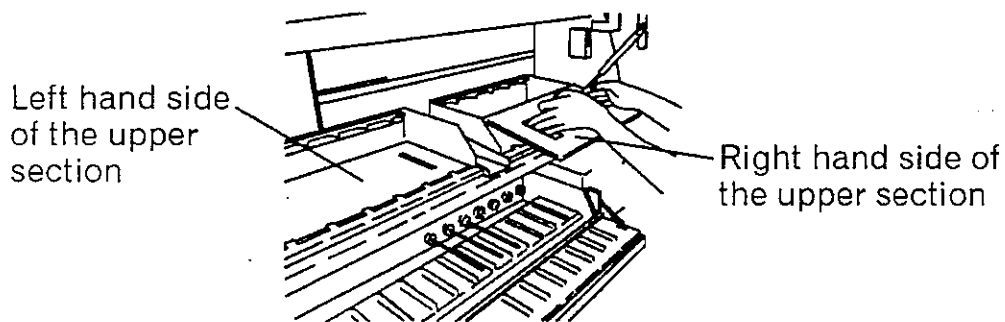
2. Open the lower door first and then the cover.

3. Remove all the solution reservoirs from the instrument.

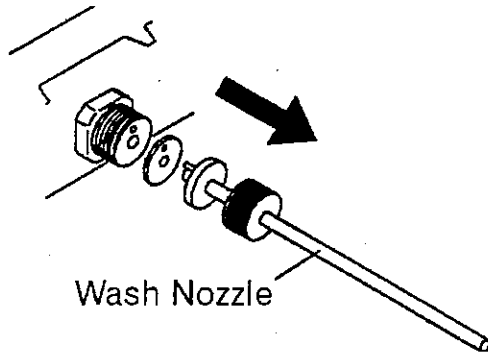
NOTE: Be sure to label the reservoirs in order to put them back in their original positions once the cleaning procedure is done.

4. Pull each wash reservoir gently toward you to drain out the water in the reservoir, and then remove all reservoirs from the lower section.

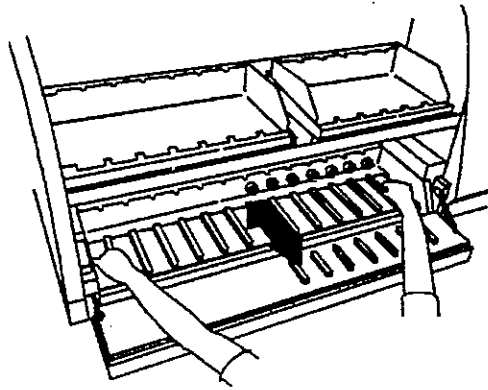
5. Remove the left and right reservoir trays from the upper section.



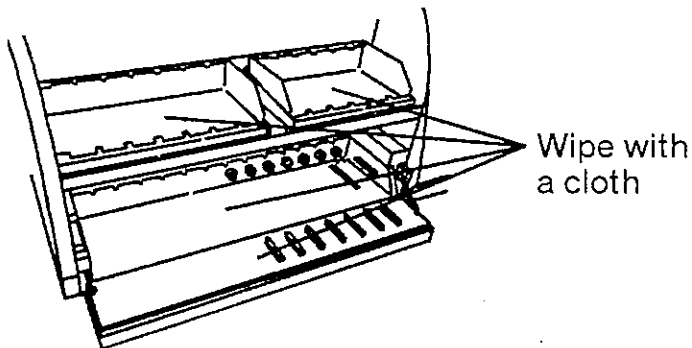
6. Remove all wash nozzles and gaskets.



7. Remove the reservoir tray from the lower section.

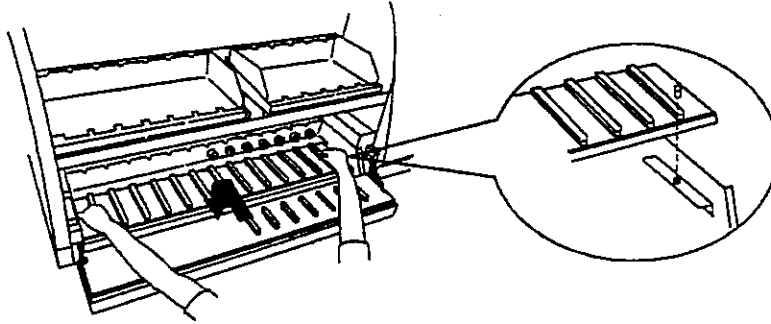


8. Clean the reservoir trays and the inside of upper and lower compartments by wiping with a clean wet cloth.



CARE OF THE INSTRUMENT

9. Reinstall the reservoir trays in both compartments. For the lower section tray, make sure the holes are aligned with the guiding pins.



10. Attach all wash nozzles and gaskets to their original positions.

11. Return the solution reservoirs and the wash reservoirs to their original positions.

12. Close the cover first and then the lower door.

(3) Water Supply Strainer

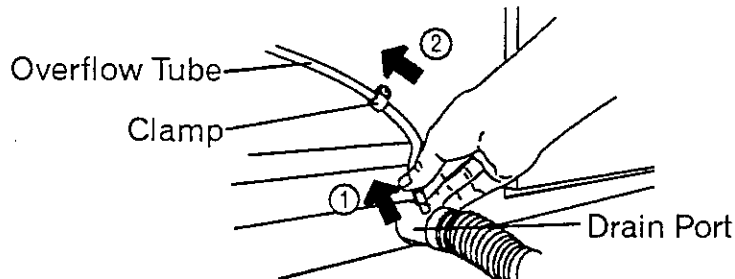
The water supply strainer should be cleaned once a month. You will need a tooth brush and a wrench to perform this procedure.

1. Close the water faucet.

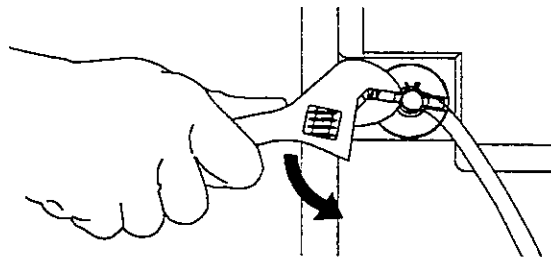
CAUTION: Close the water faucet when cleaning the strainer. Failure to close it before attempting to clean the strainer may cause spillage.

2. Turn power off by pressing the "O" side of the power switch.

3. Disconnect the overflow tube from the drain port and pull it through the clamp.

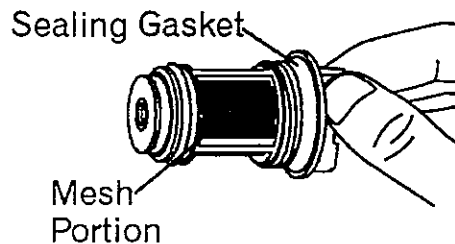


4. Using a wrench if necessary, remove the strainer by turning counter-clockwise. Apply a cloth to avoid water spilling from the strainer.



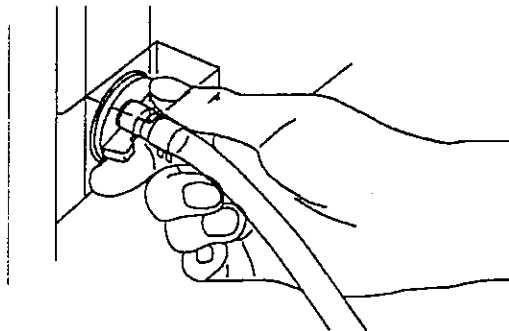
CARE OF THE INSTRUMENT

5. Wash the mesh portion of the strainer in water using a tooth brush to dislodge particles.



NOTE: For a more thorough cleaning, use an ultrasonic bath if available.

6. Attach the strainer by turning clockwise. Tighten it by hand only.



7. Thread the overflow tube into the clamp and connect to the drain port.

8. Open the water faucet.

9. Verify for leaks.

NOTE: If there is a water leak at the strainer connection, tighten using a wrench. If the leak is still present, contact the Sakura Customer Support Department or the distributor as the sealing gasket may be damaged.

(4) Drying Station

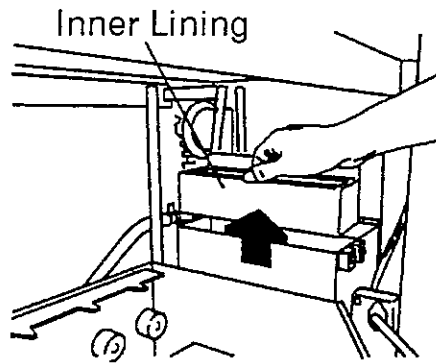
The drying station should be cleaned weekly or more often as needed.

1. Turn power off by pressing the "O" side of the power switch.

2. Open the lower door first and the cover.

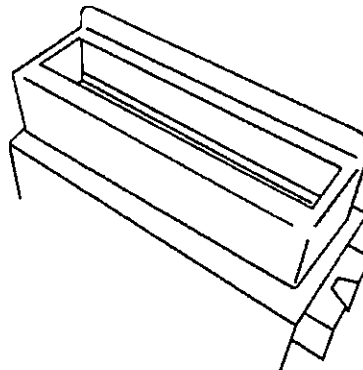
3. Wait until the temperature of the drying station has reached a comfortable level.

4. Take out the inner lining of the drying station.



5. Remove the residue from the inner lining by washing with water. Let it dry.

6. Once dried, return the inner lining to the drying station. Verify that the raised portion of the liner is facing the right hand side of the compartment.



CARE OF THE INSTRUMENT

(5) Replacement of the Activated Carbon Filter

Sakura suggest changing the activated carbon filter monthly or sooner if fume monitoring reveals elevated reagent vapors.

Sakura also suggests putting the filter in place even if there is an internal duct system.

To replace the activated carbon filter, follow the instructions below. Use product code 2008 to reorder.

1. Turn power off by pressing the "O" side of the power switch.

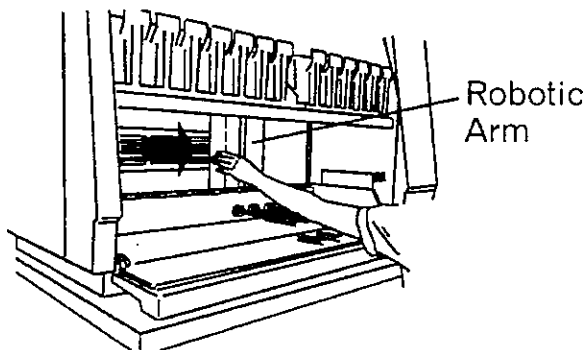
2. Open the lower door first and then the cover.

3. Remove all the solution reservoirs in the lower section.

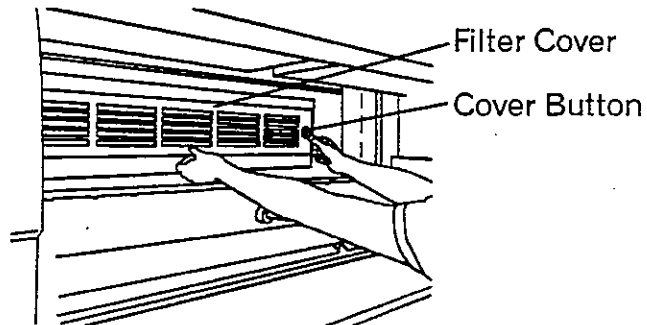
NOTE: Label the reservoirs in order to put them back in their original positions.

4. Pull each wash reservoir gently toward you to drain out water in the reservoir, and then remove all wash reservoirs.

5. Move the robotic arm by hand to the right end of the instrument with enough care to prevent it hitting on the solution reservoirs in the upper section.



6. Release the filter cover by pressing on the cover button while holding the filter cover with the other hand.

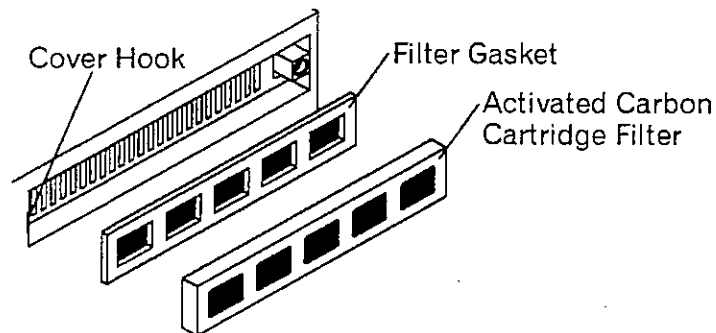


7. Slide the filter cover towards the left end and pull it out.

8. Remove the activated carbon filter from the instrument.

9. Unpack the new activated carbon filter.

10. Reinstall the filter gasket and then install the new filter.



11. Hang the left end of the filter cover on the cover hook of the instrument.

12. Lock the filter cover by pressing on the cover button.

13. Return all reservoirs to their original positions.

14. Close the cover first and then the lower door.

CARE OF THE INSTRUMENT

6.2 Accessories and Replacement Parts

Please use the following product codes to order replacement accessories. Replacement of the battery should be done by a qualified service technician only.


CAUTION: When replacing parts, only use the recommended parts. The use of noncompatible parts may cause instrument malfunction.

ACCESSORIES		
Description	Product Code	Quantity
Solution Reservoir	4974	Each
Wash Reservoir	4975	Each
Wash Reservoir Grommet	4985	Each
Reservoir Lid	4976	Each
Basket Adapter	4978	Each
Basket Hook	4977	Each
Slide Basket	4768	10/case
Activated Carbon Filter	2008	2/case
Wash Station Plug	4979	Each
Water Supply Hose	2208	Each
Drain Hose	4981	Each
Six- Reservoir Lid	4986	Each
Seven- Reservoir Lid	4981	Each

QUALIFIED SERVICE TECHNICIAN REPLACEMENT PARTS		
Description	Product Code	Quantity
Battery Unit	F51-074-00	Each

LIST OF SOFTWARE MENUS (DSP)

DSP 1 Main Menu Screen

 Tissue-Tek[®] DRS 2000				
START	MONITOR	EDIT	STATION	MORE
UTILITY				MORE

DSP 2 Staining Program Selection Screen

SELECT METHOD H&E (SAKURA) H&E (SAKURA)				
ENTER				MAIN

DSP 3 Start Process Screen

RUN#1 METHOD: H&E (SAKURA)			START	
PLACE THE BASKETS FOR THE 1 st				
RUN AT S1 AND PRESS START.			MODE: CONTINUOUS	
START	METHOD	MODE		EXIT
START	METHOD	MODE	STEP	EXIT

DSP 4 Process Monitor Screen

[] [] [] [] [] [] []							[] [] [] [] [] [] []							
1	2	3	4	5	6	7	8	9	10	11	12	13		
[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	1	[]	
E1	E2	16	17	18	19	20	W1	W2	W3	24	25	S2	S1	DRY
ADD			END TIME			PAUSE			REMOVE			MAIN		

- [DRY] is illuminating when the drying station is in use.

LIST OF SOFTWARE MENUS (DSP)

DSP 5 Estimated Time Left Screen

TIME REMAINING TO END				
RUN	TIME LEFT	STP	STA	TIME
1	0:00:00	5	E1	0:00:31
2	0:45:00	10	2	0:01:18
3	0:01:15	22	3	0:02:30
UPDATE				EXIT

DSP 6 Process Cancellation Screen

[] 5 [] [] [] [] [] []							[] [] [] 1 [] [] [] []							
1	2	3	4	5	6	7	8	9	10	11	12	13		
[] []		2	4	[] []		3	[] [] [] [] [] [] []							
E1	E2	16	17	18	19	20	W1	W2	W3	24	25	S2	S1	DRY
ABORT			STATUS								EXIT			

- [DRY] is illuminating when the drying station is in use.

DSP 7 Staining Method List Screen

SELECT STAIN METHOD				
Alcian B. PAS				
*Alcian blue				
Giemsa				
*H&E (SAKURA)				
COPY		DELETE		EDIT
EXIT		MORE		
WASHOUT		NAMES		MORE

DSP 8 Name Creation and Screen

ADD OR DELETE SOLUTION OR METHOD NAMES			
SOLN+		METHOD+	
DELETE		EXIT	

DSP 9 Solution Name Creation Screen

ADD NEW SOLUTION NAME				
Solution Name ? Hem				
a b c d e f g h i j k l m n o p q r s t u v w x y z				
0 1 2 3 4 5 6 7 8 9 ! " # \$ % & ' () * + , - . / : ;				
< = > ? @ [\] ^ _ { }				
ENTER	BACK SPC	SHIFT	SAVE	EXIT

DSP 10 Staining Method Name Creation Screen

ADD NEW METHOD NAME				
Stain Method Name ? Elas				
a b c d e f g h i j k l m n o p q r s t u v w x y z				
0 1 2 3 4 5 6 7 8 9 ! " # \$ % & ' () * + , - . / : ;				
< = > ? @ [\] ^ _ { }				
ENTER	BACK SPC	SHIFT	SAVE	EXIT

DSP 11 Solution Name Deletion Screen

DELETE SOLUTION NAME				
Aaaaaaa				
Bbbbbbb				
Ccccccc				
Ddddddd				
DELETE				EXIT

DSP 12 Start Step Set Up Screen

STP	STA	SOLUTION	TIME	MIX
8	10	E-Alc	∞ 00'30"	+
9	11	Xylene	● 02'00"	+
10	12	Xylene	▲ 03'00"	+
11	13	Distilled Water	∞ 02'00"	+
12	E*	End Station	---'---"	
START				EXIT

LIST OF SOFTWARE MENUS (DSP)

DSP 13 Staining Method Deletion Screen

DELETE METHOD NAME				
Alcian B.PAS				
Alcian Blue				
Giemsa				
H&E				
DELETE				EXIT

DSP 14 NONE

DSP 15 Copy Selection Screen

SELECT STAIN METHOD TO COPY TO				
Source : H&E (SAKURA)				
Copy to : Giemsa				
H&E-1				
Papanicolou				
ENTER				EXIT

DSP 16 Copy Confirmation Screen

VERIFY COPY				
From : H&E (SAKURA)				
To : HE-1				
ENTER				EXIT

DSP 17 Staining Program Editing Screen

STP	STA	SOLUTION	TIME	MIX
8	10	E-Alc	∞ 00'30"	+
9	11	Xylene	● 02'00"	+
10	12	Xylene	▲ 03'00"	+
11	13	Distilled Water	∞ 02'00"	+
12	E*	End Station	--'--"	

EXACT	MIX+	WASH	END	MORE
-------	------	------	-----	------

INSERT	DELETE	EXIT	SAVE	MORE
--------	--------	------	------	------

DRYER		EXIT	SAVE	MORE
-------	--	------	------	------

DSP 18 NONE

DSP 19 NONE

DSP 20 Solution Configuration and Usage Count Screen

ASSIGN SOLUTIONS TO STATIONS		
STATION	SOLUTION	COUNT
1	Xylene	12
2	Xylene	12
3	Xylene	12

ASSIGN	COUNT 0	ALL 0	EXIT
--------	---------	-------	------

DSP 21 NONE

LIST OF SOFTWARE MENUS (DSP)

DSP 22 Solution Name Selection Screen

ASSIGN SOLUTION				
STATION	SOLUTION	Acet. Acid/Water Alcian Blue Ammonia/E-Alc Distilled Water		
1	Xylene			
2	Xylene			
3	Xylene			
ENTER	UP	DOWN		EXIT

DSP 23 Utility Function Selection Screen

UTILITY FUNCTIONS AND SYSTEM SETUP.				
ERRLOG	SET UP			EXIT

DSP 24 NONE

DSP 25 Error Log Screen

ERROR CODE LOG				
CODE	DESCRIPTION			
4	BATTERY LOW			
30	SENSOR OPEN			
34	DRY FAN STOP			
				EXIT

DSP 26 Incompatible Solution Configuration Warning Screen

SOLUTION POSITION LIST IS INCOMPATIBLE. DO YOU WANT TO START THE STAIN PROCESS ?				
YES	STATION			NO

DSP 27 Solution Configuration List Changing Screen

NEW SOLUTION POSITION LIST			
STATION	SOLUTION	COUNT	
1	Xylene	12	
2	Xylene	12	
3	Xylene	12	
			EXIT

DSP 28 NONE

DSP 29 NONE

DSP 30 System Set Up Selection Screen

INSTRUMENT SETUP			
MODES	WASH	SET S/E	EXIT

DSP-31 System Setup Screen

LIST OF SOFTWARE MENUS (DSP)

SYSTEM SETUP				
MIX AMPLITUDE	25 MM			
MIX FREQUENCY	3 TIMES			
MIX SPEED	3			
SELECT				EXIT

Other parameters accessible by scrolling down:

DRYER TEMPERATURE SET	65°C
WATER WASH CYCLE TIME	1 MIN. 00 SEC.
WASH START STATION	21
ENHANCED WASH FREQUENCY	3 TIMES
ENHANCED WASH SPEED	5
UPS CONNECT	NO
KEY SOUND	YES
PRINTER BOX CONNECT	NO

DSP 31-1 Parameter Selection Screen

DEFAULT PARAMETERS				
MIX AMPLITUDE	25 MM			10 15 20 25
MIX FREQUENCY	3 TIMES			
MIX SPEED	3			
ENTER				EXIT

WASHOUT SOLUTION NAME SET UP				
	1. Hematoxylin (3G)			
	2. Hematoxylin (M)			
	3. None			
	4. None			
ENTER	UP	DOWN		EXIT

DSP 32 Enhanced Wash Set Up Screen

DSP 33 Enhanced Wash Selection Screen

WASHOUT SOLUTION NAME SET UP				
	5.	Hematoxylin (3G)	HC1/E-Alc SOLUTION LIST	
	6.	Hematoxylin (M)	Hematoxylin	
	7.	None	Hematoxylin (3G)	
	8.	None	Hematoxylin (M)	
ENTER	UP	DOWN		EXIT

DSP 34 NONE

DSP 35 Wash/Solution Station Conversion Screen

STATION TO BE CONVERTED				
W1 : wash		W4 : wash Solution		
W2 : wash		W5 : wash Solution		
W3 : wash				
SOLN	WASH			EXIT

DSP 36 Start / End Station Set Up Screen

SELECT START/END STATIONS				
	START STA.	S1 : 27		
		S2 : 26		
	END STA.	E1 : 14		
		E2 : 15		
SELECT	CLEAR		EXIT	SAVE

LIST OF SOFTWARE MENUS (DSP)

DSP 36-1 Start / End Station Selection Screen

SELECT START/END STATIONS								
START STA. S1 : 27		<table border="1"> <tr><td>16</td></tr> <tr><td>17</td></tr> <tr><td>18</td></tr> <tr><td>19</td></tr> </table>			16	17	18	19
16								
17								
18								
19								
S2 : 26								
END STA. E1 : 14								
E2 : 15								
SELECT				EXIT				

DSP 37 NONE

DSP 38 Delete Name Selection Screen

DELETE SOLUTION OR METHOD NAME				
SOLN	METHOD			EXIT

DSP 40 Basket Removal Confirmation Screen

<table border="1"> <tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> </table>							5							1	2	3	4	5	6	7	<table border="1"> <tr><td></td><td></td><td></td><td>1</td><td></td><td></td><td></td></tr> <tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td></td></tr> </table>										1				8	9	10	11	12	13	
5																																									
1	2	3	4	5	6	7																																			
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8	9	10	11	12	13																																				
<table border="1"> <tr><td></td><td>2</td><td>4</td><td></td><td></td><td></td><td>3</td></tr> <tr><td>E1</td><td>E2</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> </table>								2	4				3	E1	E2	16	17	18	19	20	<table border="1"> <tr><td>W1</td><td>W2</td><td>W3</td><td>24</td><td>25</td><td>S2</td><td>S1</td><td>DRY</td></tr> </table>							W1	W2	W3	24	25	S2	S1	DRY						
	2	4				3																																			
E1	E2	16	17	18	19	20																																			
W1	W2	W3	24	25	S2	S1	DRY																																		
								CONFIRM																																	

DSP 41 Error Display Screen

COVER OPEN				ERROR No. XX
RESUME				EXIT

“ XX “ represents an error code number.

Other error messages are:

ROBOTIC ARM DOES NOT WORK NORMALLY
REFER TO THE MANUAL

POWER FAILURE

DSP 42 Error Display Screen

MEMORY ERROR				ERROR No. XX

“ XX “ represents an error code number.

Another error message is:

SYSTEM ERROR

LIST OF SOFTWARE MENUS (DSP)

DSP 43 All Basket Removal Confirmation Screen

REMOVE ALL BASKETS FROM RESERVOIR.				
				EXIT

DSP 44 Error Display Screen

BATTERY LOW				ERROR No. XX
				EXIT

“ XX ” represents an error code number.

Other error messages are:

LIST OF DIALOG BOXES AND MESSAGES (MES)

MES 1

DISCONTINUE THE FOLLOWING RUN ?														
<table border="1"> <thead> <tr> <th>RUN</th> <th>STA</th> <th colspan="3">STAIN METHOD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">17</td> <td colspan="3" style="text-align: center;">H&E (SAKURA)</td> </tr> </tbody> </table>					RUN	STA	STAIN METHOD			4	17	H&E (SAKURA)		
RUN	STA	STAIN METHOD												
4	17	H&E (SAKURA)												
YES				NO										

MES 2

PLEASE CLOSE THE DOOR				

Another message is:

PLEASE CLOSE THE HOOD AND THE DOOR.

MES 3

MEMORY FULL				
				EXIT

LIST OF DIALOG BOXES AND MESSAGES (MES)

MES 4

PROGRAM CONTENT EMPTY, CANNOT BE COPIED.			
			EXIT

MES 5

DELETE THE FOLLOWING STAIN METHOD ?			
Alcian Blue			
YES			NO

MES 6

STAIN PROGRAM IN PROCESS CANNOT EDIT.			
			EXIT

Another message is:

STAIN PROGRAM IN PROCESS CANNOT CLEAR.

MES 7

SIMILAR NAME ALREADY EXISTS. DO YOU WANT TO ADD TO THE LIST ?				
YES				NO

MES 8

DELETE THE FOLLOWING NAME ? Bbbbbbb				
YES				NO

MES 9 NONE

MES 10

SAVE THE FOLLOWING STAIN METHOD ? HE (SAKURA M)				
NO				YES

LIST OF DIALOG BOXES AND MESSAGES (MES)

MES 11

INVALID PROGRAM. VERIFY PROGRAM CONTENT ?				
NO				YES

MES 12

FUNCTION INVALID. STAINING IN PROCESS.				
				EXIT

MES 14 NONE

MES 15

STATUS : RUN # 4				
METHOD: H&E (SAKURA)				
TIME LEFT: 01:30:00				
				EXIT

MES 16

THE SOLUTION POSITION LIST IS CHANGED. DO YOU WANT TO CHANGE WASH STATION ?				
YES				NO

MES 17

START STATION FULL, PLEASE WAIT UNTIL CLEAR.				
				EXIT

MES 18 NONE

MES 19 NONE

MES 20 NONE

MES 21

DO YOU DISCONTINUE PROGRAM EDITING ?				
NO				YES

LIST OF DIALOG BOXES AND MESSAGES (MES)

MES 22

MAXIMUM CAPACITY REACHED. PLEASE WAIT BEFORE ADDING THE BASKETS.				
				EXIT

MES 23

PLEASE WAIT				

MES 24

FOR RECOVERING.				

MES 25

ARE THE BASKETS ON ROBOTIC ARM ?				
YES				NO

MES 26

THE STAIN PROCESS ENDED. PLEASE REMOVE THE BASKET FROM XX				
				EXIT

“ XX “ represents a station number.

MES 27

CANNOT START CONTINUOUS MODE. END STATION IS NOT IN THIS METHOD.				
				EXIT

MES 28

THE STAIN PROCESS SUSPENDED. REMOVE THE BASKETS WHICH PROCESS ENDED.				
				EXIT

LIST OF DIALOG BOXES AND MESSAGES (MES)

MES 29

CANNOT START. SOLUTION POSITION LIST IS WRONG.				
				EXIT

MES 30

INVALID PROGRAM. PLEASE CHECK THE PROGRAM CONTENT.				
				EXIT

MES 31 NONE

MES 32 NONE

MES 33

CURRENT START STATION IS USED AS A SOLUTION IN THIS METHOD.				
				EXIT

“Start Station” may be replaced with “End Station” or “Wash Station.”

MES 34

PLEASE CLOSE THE HOOD.				

MES 35 NONE

MES 36 NONE

MES 37

THE SOLUTION POSITION LIST HAS BEEN CHANGED. DO YOU WANT TO SAVE THE CHANGE ?				
NO				YES

MES 38

DO YOU WANT TO SAVE SYSTEM SETUP?				
NO				YES

LIST OF DIALOG BOXES AND MESSAGES (MES)

MES 39

PLEASE PLACE THE BASKETS AT XX				
				CONFIRM

“XX” represents a station number.

MES 40

PLEASE OPEN THE DOOR.				

Other messages are:

PLEASE OPEN THE DOOR AND THE HOOD.

PLEASE OPEN THE HOOD.

INDEX

- Abort, 80,81
- Accessories, 10, 110
- Activated carbon filter, 23, 108, 109
- Adding a Solution Name, 43
- Adding baskets, 76
- Basket adapter, 11
- Basket hook, 10, 74
- Basket Removal Confirmation screen, 82, 84, 85
- Basket set, 50, 57, 66, 74, 75, 76, 77, 81, 82, 83, 84, 85
- Brightness adjustment, 3, 91
- Canceling a Process, 80
- CAUTION**, 1, 2, 3, 6, 7, 16, 20, 21, 22, 70, 75, 86, 105, 110
- Changing the Set Up Parameters, 50
- Clock, 79
- Control panel, 3, 5
- Conversion, 59, 60
- Converting a Wash Station, 59
- Copying an Existing Staining Program, 40
- Counters, 49, 52
- Cover, 3, 48, 57, 60, 63, 70, 71, 72, 75, 81, 82, 85, 86
- Creating or Editing a Staining Program, 33
- Default Parameters, 28
- Delete, 33, 36, 38, 39, 42, 43, 44, 46, 50, 51,
- Delete Name Selection screen, 45, 46
- Deleting a Solution Name, 45
- Deleting a Staining Program, 42
- Dialog box, 42, 46
- Dimensions, 13
- Door, 3, 57, 60, 63, 70, 71, 75, 76, 77, 81, 82, 84, 85
- Drain hose, 11, 20, 21, 24
- Drain hose clamp, 11
- Drain port, 4
- Drying Station, 107
- Duct Connection Adapter, 90
- EDIT, 50, 70
- End of a Process, 83
- End station, 31, 32, 34, 36, 38, 55, 57, 62, 63, 66, 74, 77, 78, 83, 84, 85
- Enhanced wash, 50, 51, 65, 66, 67, 69, 70
- Enhanced Wash Set Up screen, 50, 51
- Environmental Factors, 15
- Error Conditions, 94
- Error log, 58, 59
- Error Messages, 53
- Error Record, 58
- Error signals, 89
- Estimated Time Left screen, 78, 79
- Exhaust port, 4
- External alarm device, 88, 89
- External Connection Terminals, 87
- Factory-set names, 45
- Faucet, 21, 22, 23, 24
- Filter, 108, 109
- Filter gasket, 11, 23
- Flowchart of Programming Staining Methods, 29
- Flowcharts, vi, 29
- Function keys, 5, 56
- Fuse, 4, 12

INDEX

- Hose, 19, 20, 21, 22, 23, 24, 70
- Instrument Service, 91
- Interfaces, 4
- Interrupting, 80
- Level Adjustment, 4
- Leveling, 18
- Main Menu screen, 33, 35, 40, 42, 43, 44, 45, 47, 48, 49, 50, 51, 52, 53, 56, 58, 59, 61, 62, 64, 67, 69, 70, 82, 85
- Maintenance, 101
- MIX, 57, 65, 66, 68
- MONITOR, 27, 70
- MORE, 28, 50, 51, 58, 59, 62, 67, 70
- Name Creation screen, 43, 44, 45, 47
- NOTE, 1, 18, 19, 24, 25, 26, 35, 36, 37, 44, 48, 51, 52, 56, 59, 63, 66, 67, 69, 72, 74, 75, 76, 77, 76, 78, 79, 81, 83, 85, 90, 100, 102, 106, 107, 109
- Options, 90
- Output terminal circuit, 89
- Parameter screen, 65
- Parameters, 28, 50, 65, 67
- Power Connection, 4
- Power cord, 11, 22
- Power failure, 87, 88
- POWER OUT SIGNAL, 100
- Power switch, 3, 22, 23, 24
- Process Cancellation screen, 80, 81, 82
- Process Monitor screen, 58, 75, 76, 77, 78, 79, 80, 81, 82, 83, 85
- Program, 58, 59
- Replacement accessories, 110
- Replacement Parts, 110
- Reservoir Lids, 10, 90
- Reservoir Tray, 12, 102
- Reservoir trays, 19
- Robotic arm, 3, 50, 65, 66, 70, 76, 80, 83
- Run Number, 72, 77, 78
- Save Command Confirmation Dialog Box, 35
- Serial Number, 8
- Setting up Start and End Stations, 62
- Setup, 17
- Slide basket, 2, 10, 101
- SOLUTION, 37
- Solution configuration, 48, 49, 52, 53, 54, 55
- Solution list, 49, 50, 53
- Solution reservoir, 10, 24, 26, 57, 61, 71, 74, 75, 76, 77, 82, 84, 85, 86
- Solutions, 25
- Specifications, 13-14, 15, 22
- STA, 36
- Staining Method List screen, 50, 51,
- Staining program, 51, 53, 55, 56, 58, 59, 62, 70, 72, 73, 75, 78, 80, 83
- Staining Program Editing screen, 33, 34, 36,
- START, 27
- Start Process screen, 27
- Start Station, 31, 32, 34
- STATION, 28
- Status report, 80
- STP, 36
- Strainer, 105, 106, 107
- System Set Up Selection screen, 69
- TIME, 37
- Troubleshooting Chart, 91
- Uninterrupted Power Supply(UPS), 87, 88
- UTILITY, 28

Utility Function Selection screen, 58, 59,
61, 62, 64, 67, 69

WARNING, 1, 4, 6, 7, 23, 70, 101

Wash reservoir, 10, 24, 26

Water supply hose, 21, 22, 24

Water supply hose set, 11

Water Supply Port, 4

Water Supply Strainer, 4, 105

Water supply valve, 24

C

C

C

PROGRAM RECORD WORKSHEET

Tissue-Tek® DRS™ 2000

Program: _____

Step	Station	Solution	Time	Accuracy	Mix	Enhanced Wash
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						

1

2

3

PROGRAM RECORD WORKSHEET

Tissue-Tek® DRS™ 2000

Program: _____

Step	Station	Solution	Time	Accuracy	Mix	Enhanced Wash
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

3

3

3

3

3

3