Tissue-Tek VIP® 6 AI

Vacuum Infiltration Processor

Operating Manual

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SAKURA

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1. INTRODUCTION

1.1   Intended Use

The Tissue-Tek VIP® 6 AI Vacuum Infiltration Processor is designed for the purpose of processing human and animal tissue specimens.

The instrument, as part of the histopathology process, is intended to facilitate the in vitro examination of human and animal tissue for morphology changes by a pathologist.

1.2   General Description

The Tissue-Tek VIP 6 AI Vacuum Infiltration Processor is a self-contained, floor-standing, automatic, tissue processor, used to process tissue specimens (Figure 1-A). It holds up to 300 tissue cassettes.

The Tissue-Tek VIP 6 AI has a 10.4-inch color LCD touch screen display for programming ease and process monitoring. It is programmable for up to fifty different tissue processing programs for the automation of fixation, dehydration, clearing, and paraffin infiltration of a variety of human, animal, or plant tissue specimens to be cut using microtomes. The operator can program the instrument to begin processing either immediately or in a delay mode. In delay mode, the operator enters a desired end time of up to 99 days, and the instrument then automatically calculates the program start time.

The Tissue-Tek VIP 6 AI consists of the following major components:

1 **Control Panel** – Comprises the controls and indicators necessary to program and operate the instrument and monitor the instrument during processing.

2 **Retort** – An enclosed, stationary chamber that holds the tissue specimens and in which all processing occurs.

3 **Fume Filter Access Door** – Provides access to the fume control system, which handles the safe disposal of dangerous fumes, and external Fill/Drain ports.

4 **Paraffin Oven** – Maintains molten paraffin at the appropriate temperature for use in the paraffin infiltration steps.

5 **Bulk Reagent System** – Supplies solution to a station where solution levels have become too low during tissue processing. The bulk reagent system is also utilized during the automatic reagent transfer and onboard mixing functions to supply fresh reagent to the appropriate bottles.

6 **Reagent Cabinet** – Holds reagent bottles.

The operator places baskets containing tissue cassettes into the retort. The instrument then sequentially moves processing reagents and molten paraffin into and out of the retort through the use of vacuum and pressure. The heat of the paraffin causes the evaporation of clearing reagent from the paraffin. A degassing feature constantly aspirates air from the oven. This action sends the vapor-laden air through the VIP 6 AI's air filtration system. The closed-system design and air filtration system ensure a sealed, moist environment for tissues and an essentially fume-free environment outside of the processor. Reagent bottles can be filled either manually or through the external drain and fill port.

Figure 1-A

1.3 Safety Instructions

The Tissue-Tek VIP 6 AI Vacuum Infiltration Processor operating manual includes important instructions and information related to the operating safety and maintenance of the instrument. It is important to read the operating manual carefully prior to the operation of the instrument for the first time and to keep the manual with the instrument at all times.

This instrument has been built and tested with the following safety regulations on electrical measuring control, regulating, and laboratory devices:

IEC 61010-2-010:2014
IEC 61010-2-101:2015
CAN/CSA C22.2 No.61010-1 2nd Ed:2008
CAN/CSA C22.2 No.61010-2-010:2004
CAN/CSA C22.2 No.61010-2-101:2004
UL 61010-1 3rd Ed: 2012

In order to ensure safe operation, the operator must always comply with the instructions and warnings contained in the operating manual.

WARNING: THIS SYSTEM USES ORGANIC SOLVENTS WHICH MAY IGNITE WHEN IN CONTACT WITH SOURCE OF FLAME. KEEP ALL INCENDIARY DEVICES AWAY FROM THIS UNIT.

WARNING: BIOHAZARD

CAUTION: Please allow full access to the main power cable as the power supply cable can be used to disconnect the power source in case of emergency.

NOTE: The protective devices installed on both the instrument and accessories may neither be removed nor modified. Only authorized and qualified persons may access and repair the internal components of the instrument.

The safety devices installed in this instrument by the manufacturer only establish the basis for accident prevention. Primary responsibility for accident-free operation lies, above all, with the institution that owns the instrument and, in addition, the designated personnel that operate, service, or repair the instrument.

1.4 Safety Precautions

WARNINGS, CAUTIONS, and NOTES are provided throughout this manual to indicate levels of potential hazards or helpful information as defined below.

WARNING:
INDICATES A POTENTIAL HAZARD IN WHICH FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN SERIOUS INJURY TO THE OPERATOR AND/OR OTHER PERSONNEL.

CAUTION:
Indicates a potential hazard in which failure to follow instructions may result in damage to the VIP and/or other property.

NOTE:
Indicates a reminder or other helpful information.

1.5 Precautions

Do not fill a reagent bottle directly when the instrument is in operation.

If you want to fill a reagent bottle directly or exchange a reagent when the instrument is in operation, be sure to interrupt the operation and abort the run. Ensure that no reagent is left in the retort before filling the target reagent bottle. If a reagent is present in the retort, be sure to drain the retort to return the reagent to its original bottle before filling. Failure to do so will cause the reagent bottle to overflow, resulting in malfunction and/or adverse effect on processing result.

1.5.1 Safety Features

The Tissue-Tek VIP 6 AI Vacuum Infiltration Processor is equipped with several safety features, which help to keep the operator and the instrument safe from harm.

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- The Tissue-Tek VIP 6 AI is designed as a closed-system tissue processor to minimize the release of reagent fumes into the environment. It also contains a fume control system.

- An electric interlock mechanism is provided with the retort lid. When an automatic operation (tissue-processing, retort cleaning, warm water flush, rinsing, or solution exchange) is in progress or when the retort is manually pressurized or vacuumed, the retort lid is electronically locked.

- If the unit is unable to pump a reagent into the retort (e.g., the bottle is empty or not properly connected), the reagent from the next station in the same solution group will be pumped into the retort until the level sensor in the retort is turned on. If the next station cannot be used, new solution is supplied from the external bulk reservoir linked (this is the factory default setting).

- When selected and certain safeguard conditions are met, the solution manager function will allow the instrument to complete a processing run even if a faulty pump-in or pump-out condition occurs.

- Level sensors are provided to ensure positive fluid level sensing during special procedures such as continuous mixing.

- The instrument will stop processing and an alarm will sound whenever there is an error condition. The instrument can also be connected to an external alarm. This alarm will alert personnel in case of an error during the night or weekend when the laboratory is not occupied.

- Two levels of password, administrator and user, can be entered into the software to prevent access to the program settings and processing function by unauthorized personnel.

1.6 Physical Characteristics

1.6.1 Control Panel

The control panel (Figure 1-B) contains the screen display, which the operator uses to communicate with the instrument software. The display screen is a 10.4-inch VGA (Video Graphics Array) TFT color touch screen. All operating functions are controlled through the display screen (e.g.

displays end time, processing steps, and processing methods, etc.).
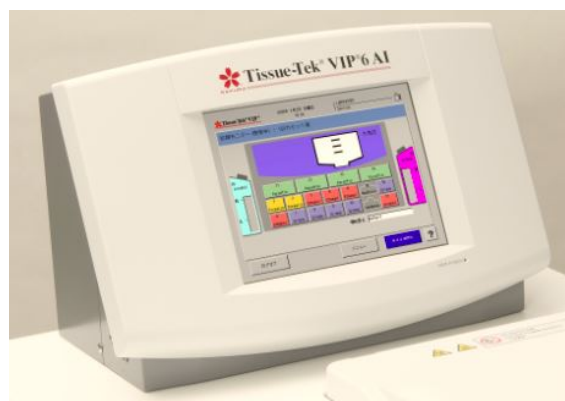
Figure 1-B

1.6.2 Reagent Cabinet

The reagent cabinet (Figure 1-C) holds ten bottles of processing reagents, designated as stations 1 through 10. There are four additional stations: Station 15 is a paraffin waste reservoir used in an automated paraffin transfer procedure. Stations 16 and 17 hold bottles for xylene and alcohol used during the cleaning cycle. The final bottle is a condensation bottle used to collect condensate from the fume condenser system.

Figure 1-C

1.6.3 Retort

The retort (Figure 1-D) is the chamber where tissue processing occurs. One or two baskets, which hold the specimens, are placed into the retort. During processing the retort lid is held securely closed by a latch located on top of the retort. An electronic interlock mechanism is integrated into the retort lid. When an automatic operation (tissue processing, retort cleaning, warm water flush, rinsing, or solution exchange) is in progress or when the retort is manually pressurized or vacuumed, the retort lid is electronically locked. When the automatic operation is finished or suspended or when the manual operation is completed, the system verifies that the pressure in the retort returned to ambient before releasing the retort lid interlock.

Solutions are introduced from the top of the retort and drained from the bottom. Level sensors detect proper solution levels during pump-in.
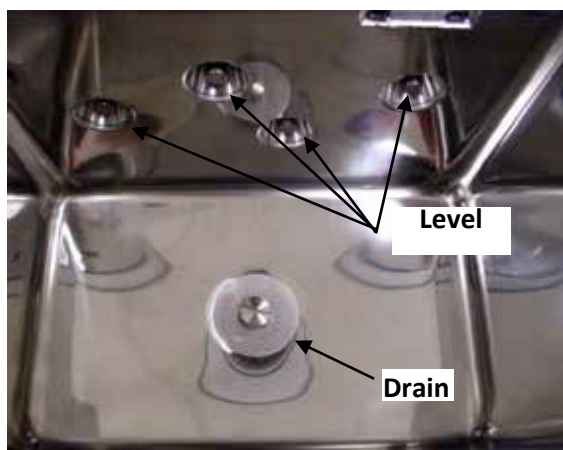
Figure 1-D

1.6.4 Paraffin Oven

The paraffin oven (Figure 1-E) maintains a set temperature to hold molten paraffin at the proper temperature for use in the infiltration step. The oven holds a total of four paraffin reservoirs, 3 small and 1 large. These reservoirs are designated as stations 11 through 14. They are drainable and can be easily removed for refilling. The small reservoirs 11 through 13 hold a maximum of 4.2L of molten paraffin. The large reservoir station 14 holds a maximum of 5.6L of molten

paraffin. Station 14 can replenish stations 11 through 13, if needed.

Figure 1-E

1.6.5 Activated Carbon Cartridges

The activated carbon cartridges (Figure 1-F) are part of an effective fume control system. As air circulates throughout the inside of the instrument, fumes generated by various solutions are captured and extracted by the carbon cartridges. The fume control housing can be accessed through the fume filter access door. It is recommended that the carbon cartridges be replaced monthly.

Figure 1-F

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1.6.6 Leveling Feet/Casters

There are four casters (Figure 1-G) for instrument mobility; positive locks on the front casters hold the instrument securely in place for stationary use.

Figure 1-G
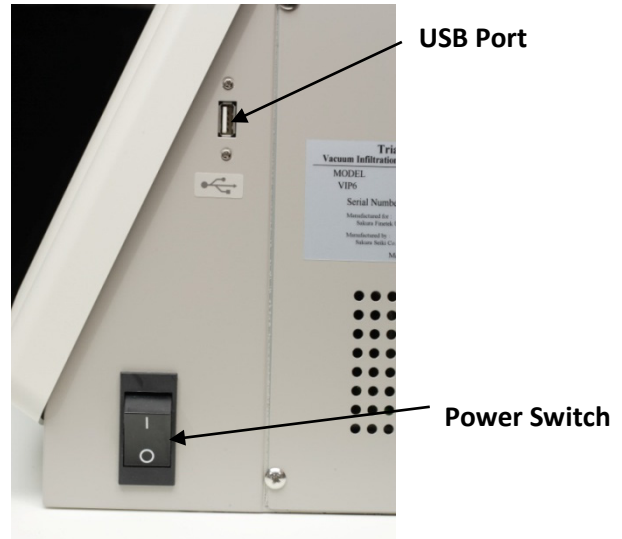
Figure 1-H

1.7 User Interface

1.7.1 Power Switch

The power switch (Figure 1-H) is located on the right side of the control panel below the USB port. The power switch also acts as an emergency stop switch.

1.7.2 USB Port

The USB port (Figure 1-H) is located on the right side of the control panel. Use a USB drive to store programs, solution configurations, solution names, etc. This port should not be used to connect external devices such as a printer or keyboard.

1.7.3 External Interface

The external interface (Figure 1-I) is located on the back of the control panel and includes the following:

- UPS - two signals (power outage signal, low battery signal)
- External Signal Output
- External Alarm Output
- LAN Terminal

Figure 1-I

1.7.4 Power Cord

The power cord input (Figure 1-J) is located on the left rear of the control panel and is used to connect the instrument to a power source. The power cord must be plugged into an appropriately grounded AC electrical outlet.

Figure 1-J

1. INTRODUCTION

1.8   Specifications

Models Covered by this Manual

Product Code   Name/Description
6040   Tissue-Tek VIP® 6 AI Vacuum Infiltration Processor
6041   Tissue-Tek VIP® 6 AI Vacuum Infiltration Processor
6042   Tissue-Tek VIP® 6 AI Vacuum Infiltration Processor

Power Supply Requirements

Rated Voltage and Current:
Model 6040   Single phase, AC 115V ± 10%, 50/60 Hz, 12 Amps
Model 6041   Single phase, AC 100V ± 10%, 50/60 Hz, 12 Amps
Model 6042   Single phase, AC 230V ± 10%, 50/60 Hz, 6 Amps

Dimensions

Centimeters: 61 (W) x 68 (D) x 133 (H)
Inches: 24 (W) x 27 (D) x 52 (H)
Weight: 175 kg (386 lbs.) – Without accessories and reagents

Environmental Requirements

Operating Temperature: 10ºC to 40ºC (50ºF to 104ºF)
Relative Humidity: 30-85% (non-condensing)

Storage Conditions

Storage Temperature: -10ºC to 60ºC (14ºF to 140ºF)
Relative Humidity: 30-95% (non-condensing)

Reservoir Capacity/Fill Volumes

Cassettes: 150 or 300
Cassette Baskets: 1 or 2
Processing Reagent
  Reservoirs: 10
Paraffin Reservoirs
  (Small):   3
Paraffin Reservoirs
  (Large):   1
Cleaning Reagent
  Reservoirs: 2

Condensate Reservoir: 1
Paraffin Waste Reservoir: 1
Bulk Reagent Reservoirs: 2
Capacity: up to 300 Uni-Cassettes®

P/V Cycle

Pressure, ambient, and vacuum cycles are alternated in the retort during processing.
30-180 Seconds Pressure
30-180 Seconds Ambient
30-180 Seconds Vacuum
Vacuum:
Vacuum and ambient cycles are alternated in the retort during processing.
30-180 Seconds Vacuum
30-180 Seconds Ambient

Mixing

There are three different core mixing functions: Pump In and Pump Out, Continuous or off. There are four different mixing options using variations of the core mixing functions. These options include complete mixing, continuous mixing, short mixing, and continuous mixing for defatting. Mixing is user-selectable for each processing station.
Pump In and Pump Out
Agitation by pumping reagent in and completely out of the retort every 12 or 20 minutes.
Continuous
Agitation by moving the fluid level up and down between two level sensors or the bottom of the retort and a level sensor over a certain amount of time.

Pollution Degree

Electrical Safety Standard Pollution degree 2
(IEC 61010-1, 5.4.2d)

Transient Overvoltage

Electrical Safety Standard Category II
(IEC 61010-1, 5.4.2d)

Maximum Level of Sound Pressure

Sound pressure generating   60 dBA or less

1.9   Performance Data

Operator Password

Up to 20 operators (22 characters per name).
Up to 4 administrators (22 characters per name).

Programs/Methods

Up to 50 programs can be stored in memory.
Up to 14 steps can be programmed for each method.

Solution Names

Up to 100 solution names (22 characters per name) can be stored in memory.

Solution Configurations

Up to 5 solution configurations can be stored in memory.

Cleaning Programs

Up to 3 programs can be stored in memory.

Reagent Compatibility

- Complete: 10%-20% Formalin, Tissue-Tek VIP® Fixative, up to 20% NBF, alcoholic formalin, Tissue Fix™, Omnifix®, Pen-Fix™, zinc formalin, Millionigs BF, ethyl alcohol, isopropanol alcohol, methanol, reagent grade alcohol, Xylene, Pro-Par™, toluene, benzene, Ameri-Clear, Histo-Clear, Tissue-Clear, chloroform, Histo-Sol™, Clear-Rite 3™, Hemo-De®, Tissue-Tek VIP® Paraffin, Para-Plast™, Tissue-Prep™, Ameraffin™.

- Partial (off-line fixation, rinse): Zenkers, Bouin's, B-5.

- Incompatible reagents: Bleach, Per-fix™, Helly's, Acetone, Tissue-Dry, 5% or greater acetic acid solution, re-distilled Xylene from cleaning stations, reagents containing more than 0.5% chloride, paraffin substitutes.

1.10 Safety Standards

For Model 6040 -
Complies with:
IEC 61010-2-010:2014
IEC 61010-2-101:2015
CAN/CSA C22.2 No.61010-1 2nd Ed:2008
CAN/CSA C22.2 No.61010-2-010:2004
CAN/CSA C22.2 No.61010-2-101:2004
UL 61010-1 3rd Ed: 2012

For Model 6041 -
Japanese Pharmaceutical Law
Complies with:
Quality Management System:
ISO 13485: 2003
Electrical Safety Standards:
JIS C 1010-1:2014
IEC 61010-2-010:2014
IEC 61010-2-101:2015
EMC standard:
JIS C1806-2-6:2012
Risk Management:
EN ISO 14971:2012

For Model 6042 -
Complies with:
LVD, IVD
EN 61010-2-101:2002
ISO 13485: 2003
EN ISO 14971: 2012
ISO 18113-1: 2009
ISO 18113-3: 2009
EN 61326-2-6: 2006
EN 62304: 2006
EN 62366: 2008

2. INSTALLATION

2.1 General Information

This section provides detailed installation and setup instructions for the Tissue-Tek VIP 6 AI Vacuum Infiltration Processor. The installation steps must be followed correctly to ensure proper operation and service. Read this operating manual carefully before attempting to operate the instrument. Follow all instructions carefully.

The Tissue-Tek VIP 6 AI is a precision instrument and must be handled accordingly. Rough handling or dropping the instrument will disturb or damage internal components. Always handle the instrument with care.

Select a place where sufficient clearance can be provided around the instrument. Ample working space is necessary in front and on top of the instrument.

2.2 Environmental Factors

As with all sensitive electronic instruments, prolonged exposure to excessive humidity and temperature should be avoided. Temperature and humidity should be held relatively constant. The ambient temperature for operating the instrument is 10ºC to 40ºC (50ºF to 104ºF). The ambient operating humidity range is 30-85% relative humidity.

2.3 Unpacking

Unpack the instrument in accordance with the instructions provided with the instrument.

2.3.1 *Unpacking Check List*

Confirm that all accessories are provided with the instrument.

Description & Product Number	Quantity
Operating Manual P/N 0007852-01	1
Warranty Card (located inside the operating manual (USA only)	1
USB Memory P/N A3-60-4499	1
Power Cord P/N A4-01-0542	1
Complete Reagent Bottles P/N 6035	12
Condensation Reservoir P/N A-MO79-U050-00-A	1
Paraffin Reservoir, Large P/N F60-493-00	1
Paraffin Reservoir, Small P/N F60-492-00	3
Fume Filters P/N 6160	2
Cassette Baskets P/N 5265	2
External Drain & Fill Hose P/N F61-061-00	1
Bulk reservoir (right) fill hose P/N F61-059-00	1
Bulk reservoir (left) fill hose P/N F61-060-00	1
Reagent Bottle Labels P/N F60-529-00	1 set
Paraffin Waste Bags P/N 6045	1 case
External Drain and Fill Hose clip P/N D9-80-0115	1
Paraffin Scraper, Large P/N 1550	1
Paraffin Scrapper, Small P/N 6034	1
Paraffin Waste Reservoir w/ Lid P/N F60-499-00	1
Spare Solution Bottle P/N O71-411-00	1
Screen Protection Sheet P/N O70-626-00	1
Basket Transport Tray P/N 7109	1
Anti-Adhesion Sheet P/N D9-80-0119	1
Level Sensor Cleaning Brush P/N 0006875-01	1

2.4 Positioning the Instrument

Locate the instrument in a well-ventilated area, avoiding exposure to corrosive vapors and extreme variations in temperature or humidity. The area should be clean and dust free. Be sure it is near a power source that meets the electrical requirements specified on the rating label located on the right side of the instrument. The power receptacle must be grounded and should be a dedicated line. Avoid proximity to direct sunlight, open windows, ovens, hot plates, open burners, or radiators.

2.4.1 *Positioning the Accessories*

Installing the Activated Carbon Filters

⚠ **CAUTION: Make sure that the instrument is switched off and the power cord is unplugged before beginning.**

1. Open the fume filter access door.
2. Pull out the fume filter drawer.
3. Remove the plastic wrapping from both carbon filters.
4. Place the carbon cartridges side by side in a vertical position in the appropriate location (Figure 2-A).

Figure 2-A

5. Push firmly to close the drawer.

❗ **NOTE:** It is recommended that the carbon filters be replaced monthly.

Installing the Reagent Bottles

1. Insert a bottle coupler and tube into each reagent bottle. (Figure 2-B). Ensure that the open end of the tube faces downward, not upward

Fill Cap   **Bottle Coupler**

Figure 2-B

❗ **NOTE:** The condensation bottle has a dedicated bottle coupler which does not fit with couplers on other bottles for processing and cleaning reagents.

2. Color-coded labels are provided for reagent identification. Affix a label and mark each according to the desired solution type.

3. Open the doors of the reagent cabinet by pushing the magnetic latch located on the upper inside corner of each door (Figure 2-C).

Figure 2-C

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4. Place the bottle in the appropriate position and push it into the rear of the instrument until it snaps in place (Figure 2-D).

Figure 2-D

5. Ensure that the bottle is securely connected by gently pulling it out. It should not budge. If there is any movement, try connecting bottle again.

6. If filled bottles need to be moved to another location, flip the small cap located on the top of the bottle screw cap to remove. Affix the small cap to the connector end of the bottle.

Filling the Reagent Bottles

Bottles can be filled manually or through the external Drain/Fill port.

To fill the bottles manually

Be sure the bottles are placed on a level surface. Remove the bottle cap by turning it counterclockwise. Fill the bottle with the appropriate reagent to the desired solution level. Replace the cap when finished.

To fill the bottles using the external Drain/Fill port

1. Connect the drain/fill hose to the black external Drain/Fill port located behind the fume filter access door. Push gently on the door to get access to the port (Figure 2-E).

2. Insert the other end of the drain/fill hose into a reagent container with at least 5 L of reagent. Make sure the reagent in the container is the same as the one programmed for that station.

Figure 2-E

3. From the Main Menu screen, touch the Log On button (Figure 2-F).
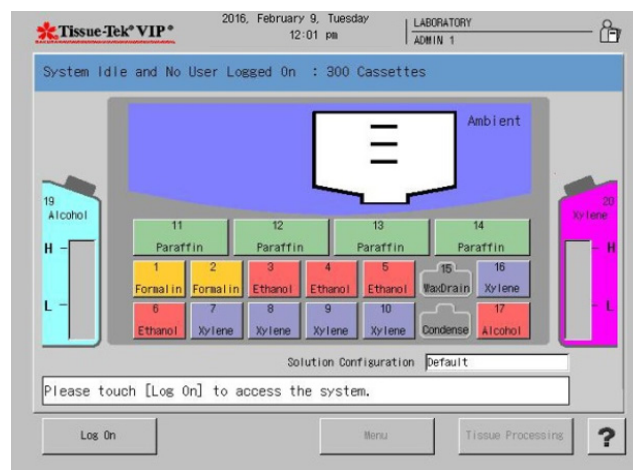
Figure 2-F

4. Enter the default password "100000".

5. Touch the **Menu** button.

6. Touch the **Process Menu** tab.

7. Touch **Exchange Solution** button.

8. Touch the **Single Solution** tab.

9. Touch the solution to be filled.

10. Touch the **External Fill** button.

11. Touch the **View as a List** button to view the solution list and then touch **Exit** to continue.

12. Choose the volume of the solution for the station chosen (150 cassettes, 300 cassettes, or cleaning).

13. Touch **Start** to begin the solution exchange or **Exit** to exit the screen.

    - If desired, the drain/fill port can be rinsed using the Rinse function.

14. Exchange Confirmation:

    - Touch **Yes** if connection is secure.

    - Touch **No** if connection is not secure and then connect the drain/fill hose.

15. Start Confirmation:

    - Touch **Yes** when ready to exchange.

16. Start Notice:

    - Touch **Exit**.

17. End Notice:

    - Touch **Exit**.

Installing the Waste Paraffin Reservoir Liner

1. Insert black Anti-Adhesion sheet into Paraffin Waste reservoir (Figure 2-H).

2. Take one liner out from the package.

3. Spread out the folded liner (Figure 2-H).

Figure 2-G

Figure 2-H

4. Unfold the stiffened portion of the liner (Figure 2-I).

Figure 2-I

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5. Hold both ends and insert the liner into the waste paraffin reservoir (Figure 2-J).

Figure 2-J

6. Fold the edge of the liner along the edge of the waste paraffin reservoir (Figure 2-K).

Figure 2-K

7. Fold both the front and back edges of the stiffened portion of the liner (Figure 2-L).

Figure 2-L

8. Put the lid on the waste paraffin reservoir (Figure 2-M).

Figure 2-M

2.4.2 *Installing the Paraffin Reservoirs*

The default temperature for the paraffin oven is 63°C (145.4°F). If this temperature is not suitable for the paraffin being used, set the appropriate temperature, as described in Section 3.4.4, "Modifying Program Steps". If it is suitable, the paraffin reservoirs can be filled with molten or solid paraffin pellets.

1. Fill to the embossed line with molten or solid paraffin pellets.

2. Touch the **Process Menu** tab.

3. Touch the **Start Paraffin Melt** button.

NOTE: When filling with solid paraffin pellets, it may be necessary to add more paraffin later to reach the fill level.

4. Touch either the **Add Solid Paraffin** or **Add Melted Paraffin** button.

NOTE: If adding solid paraffin to all 4 stations, the instrument requires a 24 hour melting process.

5. Carefully replace each paraffin container into the oven. Ensure they are properly connected by pushing them as far back as possible.

6. Close the oven door.

7. Touch the Start button.

WARNING: USE EXTREME CARE WHEN FILLING THE PARAFFIN CONTAINERS. MOLTEN PARAFFIN IS VERY HOT AND CAN CAUSE SEVERE BURNS.

NOTE: When the instrument is first powered on, it requires 24 hours to completely melt solid paraffin.

2.5 Precautions

There are several precautions that must be observed before operating the instrument:

1. Check the fill level of each reagent bottle to ensure the specified volumes.

2. Check the screw caps of each bottle to ensure tightness. Check each connection to ensure that it is properly seated.

3. Check the paraffin containers for proper fill level. Use only paraffin with the same melting point, not to exceed 70°C (158°F). Ensure that all tanks are properly seated in their connections.

4. Never attempt to open the retort lid if the lock icon is displayed. Open the lid only when the lock icon is not displayed.

NOTE: The pressure and vacuum are released automatically through a safety relief valve when the retort latch is moved to the open position. Wait for the lock icon to disappear before opening the lid.

5. Do not obstruct the ventilation louvers on the top of the control panel. This area must be kept clear to ensure proper ventilation. Also, do not place any liquid containers on top of the control panel; spillage could cause extensive damage to the instrument.

3. CUSTOMIZATION OF SETTINGS

3.1 General Information

The Tissue-Tek VIP 6 AI Vacuum Infiltration Processor allows for the customization of a number of system options and the configuration of certain operating parameters to suit the specific requirements of a given installation. The VIP Menu provides the means of viewing and modifying current system settings.

This section outlines the procedures to perform initial setup of Tissue-Tek VIP 6 AI system settings. Factory default settings for each parameter are listed where applicable.

Perform the following setup procedures prior to initial use of the system. In addition, perform these procedures as needed to reset system settings, add or remove system users, etc.

3.2 Accessing the Menu

NOTE: Login as an Administrator in order to modify system settings and operating parameters.

To access the Menu:

1. From the main system screen, touch the Log On button. The Enter Password dialog box displays.

2. Use the touch keypad to enter the selected password and then touch the Enter button.

   - The default password for the system is set to "100000".

   NOTE: For security reasons, the selected password will display on the screen, as entered, as a series of asterisks.

   - If login is unsuccessful: Re-enter the selected password and then press the Enter button to resubmit login request.
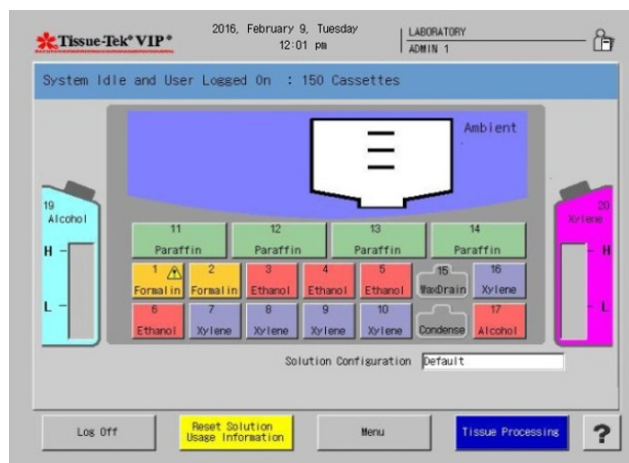   - If login is successful: The Main Menu screen displays (Figure 3-A).

Figure 3-A

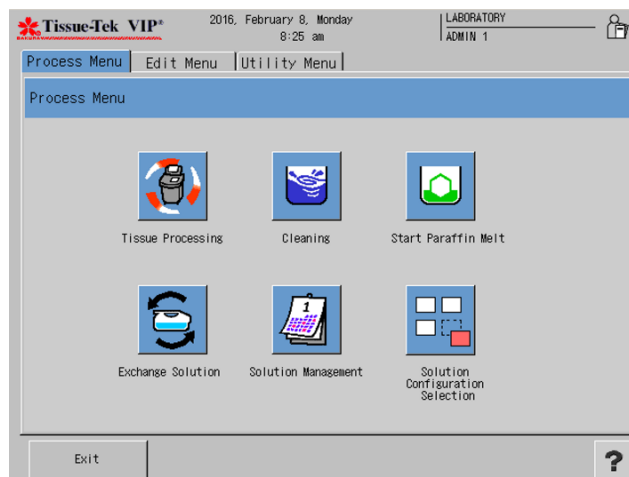3. Touch the **Menu** button to display the main menu (Figure 3-B).

Figure 3-B

The Tissue-Tek VIP 6 AI Menu consists of three tabbed pages that provide access to the following submenus Utility Menu, Edit Menu, and Process Menu. System configuration and setup are performed from these three menus.

3.3 Configuring System Utilities

The Utility Menu is used to configure and setup the Tissue-Tek VIP 6 AI system options.

To access the Utility Menu:

1. Log on.
2. From the Main Menu, touch the **Menu** button and then touch the **Utility Menu** tab to display the Utility Menu (Figure 3-C).
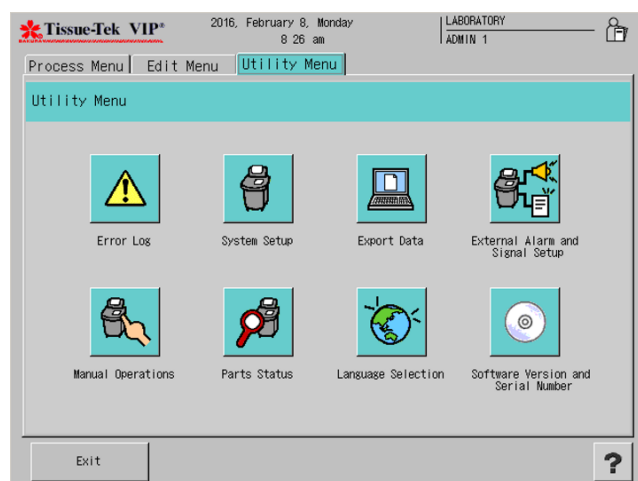
Figure 3-C

The following options are available:

System Setup – allows for the configuration of user-selectable options and operating parameters (see System Setup).

Language Selection – allows the user to select the system display language. Sixteen language options are available.

Export Data – provides options for exporting Tissue-Tek VIP data to a USB port.

External Alarm and Signal Setup – allows the user to set alarms and signals

Manual Operations – allows the user to manually do the following: pump in, pump out, and move rotary valve.

Error Log – allows the user to view the error log.
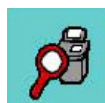
Part Status – allows user to monitor the usage of pump diaphragm, rotary valve o-ring, gate valve o-ring, and retort gasket.

Software Version and Serial Number- displays information for the instrument.

3.3.1 System Setup

The System Setup option from the **Utility Menu** allows the operator to make changes to "user-selectable" and "user-specified" system settings and parameters.

1. From the main menu, touch the Utility Menu tab, and then touch the **System Setup** button.

   - The System Setup screen displays (Figure 3-D).
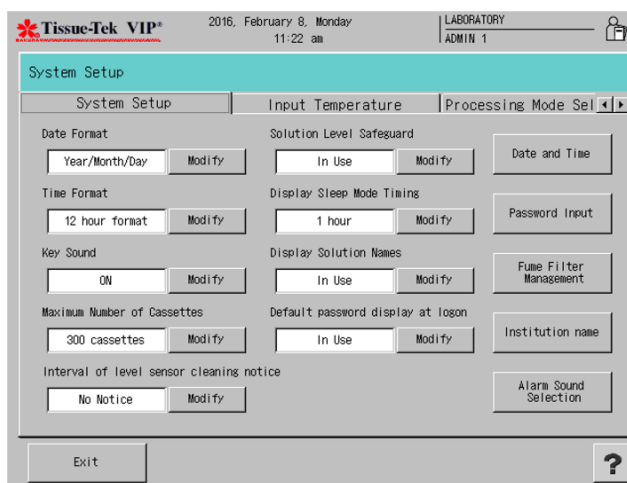
Figure 3-D

The System Setup screen allows users to adjust the date and time, set user passwords and access authorizations, manage fume filters, and change the institution name that appears on each screen.

3. CUSTOMIZATION OF SETTINGS

2. Make changes to the following system settings/parameters, as desired:

Date Format – sets the format for the date display shown at the top of the instrument display screens. Touch the modify button until the desired format displays. Available choices are Year/Month/Day, Month/Day/Year and Day/Month/Year.
The factory default setting is *Month/Day/Year.*

Time Format – sets the format for the time display shown at the top of all instrument display screens. Touch the modify button until the desired format displays. Available choices are 12-hour format and 24 hour format.
The factory default setting is *12-hour format.*

**Key Sound** – sets the sound off or on. If the sound is on, an audible tone is heard each time a key or button is touched on the screen.
The factory default setting is *ON.*

Maximum Number of Cassettes - sets the number of cassettes to be run. Available choices are 300 cassettes or 150 cassettes.
The factory default setting is 300 cassettes.

Solution Level Safeguard – sets the solution level safeguard in use or not in use. The solution level safeguard is in place to guarantee that all cassettes are covered by solution during a run.
The factory default setting is *In Use.*

Display Sleep Mode Timing – sets the length of time before extinguishing the backlight of the display when the system is left unattended. Available options are 15 minutes, 30 minutes, 45 minutes, 1 hour, 2 hours, 3 hours, and 4 hours.
The factory default setting is *1 hour.*

Display Solution Names – sets the solution names to be displayed or not. Available choices are In Use or Not In Use.
The factory default setting is *In Use*.

Changing Date and Time

1. From the System Setup screen, touch the **Date and Time** button (Figure 3-E).
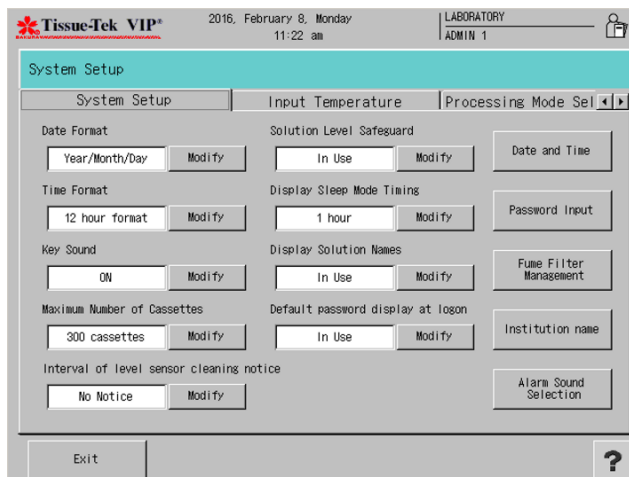
Figure 3-E

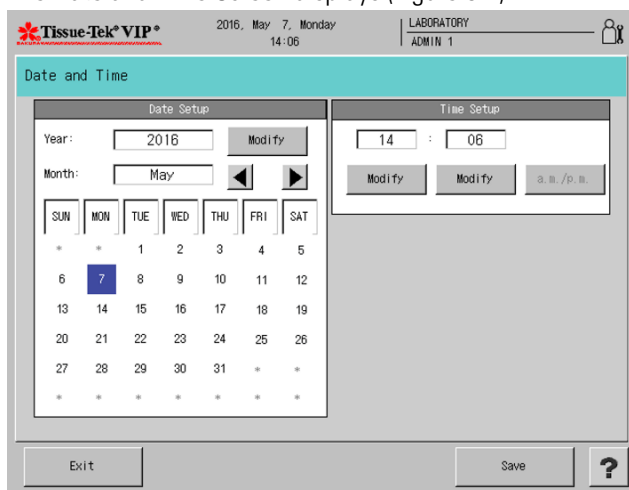The Date and Time Screen displays (Figure 3-F).

Figure 3-F

2. Under Date Setup, touch the **Modify** button to change the Year setting. An input screen displays (Figure 3-G).
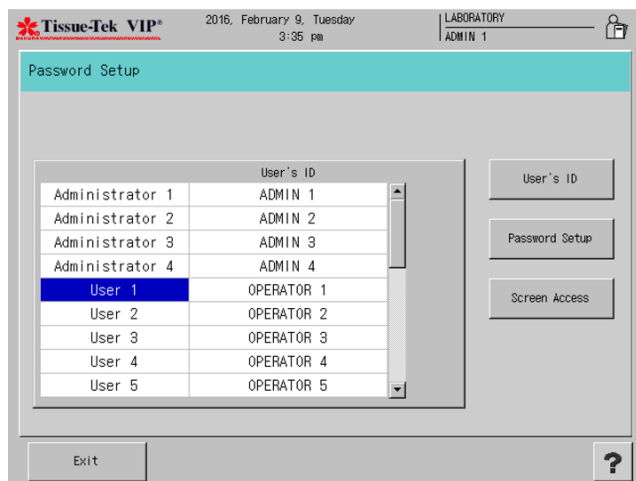
Figure 3-G

- Touch the **Clear** button to clear the year being displayed and then use the keypad to touch the appropriate numbers to represent the current year. If a mistake is made, use the **Clear** button to clear the selection and start over.

- Use the arrows to change the current month.

- Use the touch screen to select the current date.

- Touch **Enter** to save changes or **Cancel** to exit the screen without saving.

3. Under Time Setup, touch the **Modify** button beneath the current hour to modify hour.

4. Touch the **Modify** button beneath the current minutes to modify minutes.

- Touch the **am/pm** button to change from am to pm.

- Touch **Save** and then **Exit** to save settings or

- Touch **Exit** to leave the screen without saving changes.

Setting User Names and Passwords

The system allows for four Administrators and twenty Users.

From the System Setup screen touch the **Password Input** button.

- The Password Setup screen displays (Figure 3-H). This screen allows the operator to create user IDs (user ID is the name that appears on all screens when a given user is logged in) and passwords, grant or deny screen access and modify existing users.

Figure 3-H

To change User ID

1. From the Administrator/User list on the left of the screen, select the user or administrator that a user ID will be created for then touch the **User's ID** button.

- The Create User's ID screen displays (Figure 3-I).

Figure 3-I

2. Touch the **Clear** button to erase the existing name and then use the keypad to enter the new ID.

- Touch the **Save** button to save changes and return to the Password Setup screen or

- Touch **Cancel** to return without saving changes.

3. CUSTOMIZATION OF SETTINGS

To add or change user passwords:

1. From the Administrator/User list on the left of the Password Setup screen, select the user or administrator for whom a password will be added or changed and then touch the **Password Setup** button.

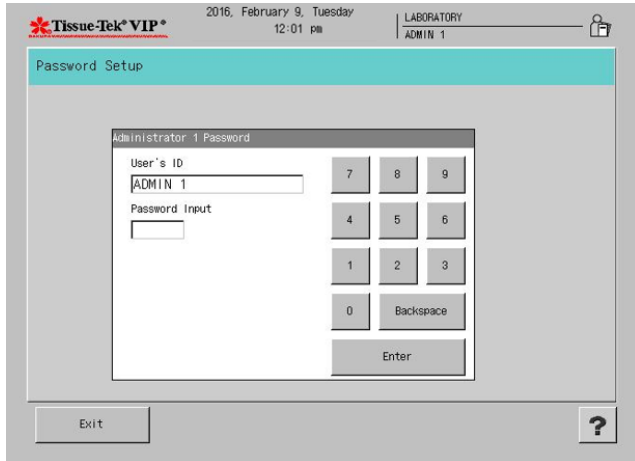   - The Password Setup screen displays (Figure 3-J).

Figure 3-J

2. Use the keypad to enter a numeric password between 1 and 6 digits and then touch the **Enter** button.

   - The Password Confirmation screen displays.

3. Use the keypad to re-enter the new password, then touch **Enter**.

   - Touch **Save** to save the new password and return to the Password Setup screen or

   - Touch **Exit** to return without saving.

To grant screen access:

Users can be allowed or denied access to certain system screens and functions.

From the Administrator/User list on the left of the Password Setup screen, select the user for whom screen access permissions will be changed, then touch the Screen Access button.

   - The Password Setup>Screen Access screen displays (Figure 3-K). This screen displays three tabbed pages: Process, Utility, and Edit. Each tabbed page enables the administrator to grant or deny a user access to specific functions.
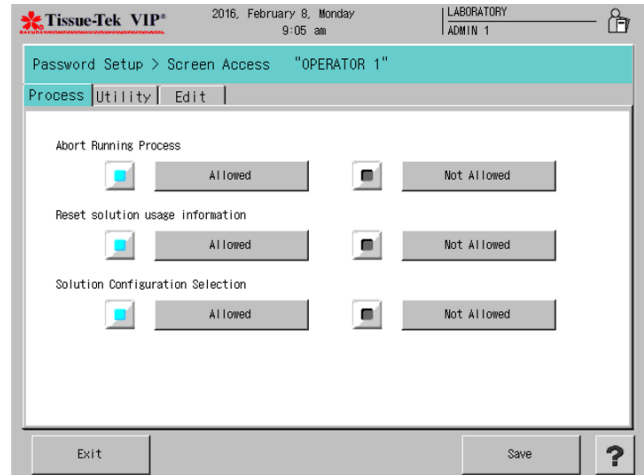
Figure 3-K

Process Tab (Figure 3-K) — sets permissions for Abort Running Process, Reset Solution Usage Information, and Solution Configuration Selection. The default setting for each function is "Allowed". Touch each function as necessary to change permissions from Allowed to Not Allowed. Touch Save to save settings and return to the Password Setup screen or touch Exit to return without saving changes.

Utility Tab (Figure 3-L) — sets permissions for System Setup, Language Selection, External Alarm, and Parts Status. The default setting for each function is "Allowed". Touch each function as necessary to change permissions from Allowed to Not Allowed. Touch Save to save settings and return to the Password Setup screen or touch Exit to return without saving changes.

Figure 3-L

Edit Tab (Figure 3-M) – sets permissions for Edit Solution Configurations, Solution Names, Edit Programs, and Delete Data. The default setting for each function is "Allowed". Touch each function as necessary to change permissions from Allowed to Not Allowed. Touch Save to save settings and return to the Password Setup screen or touch Exit to return without saving changes.
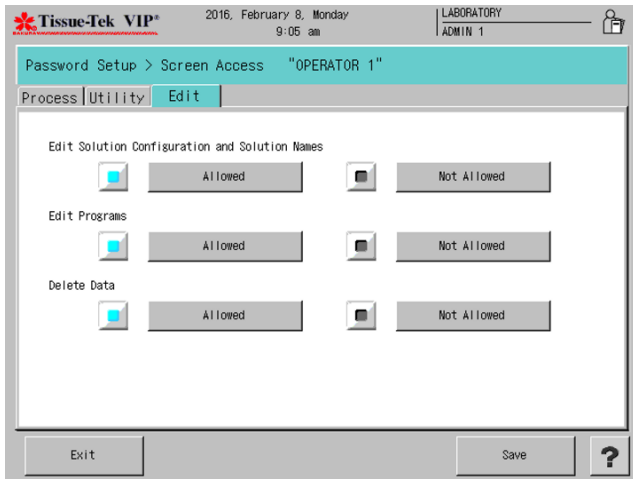
Figure 3-M

Changing Fume Filter Management Settings

From the System Setup screen, touch the **Fume Filter Management** button.

- The Fume Filter Management screen displays (Figure 3-N).
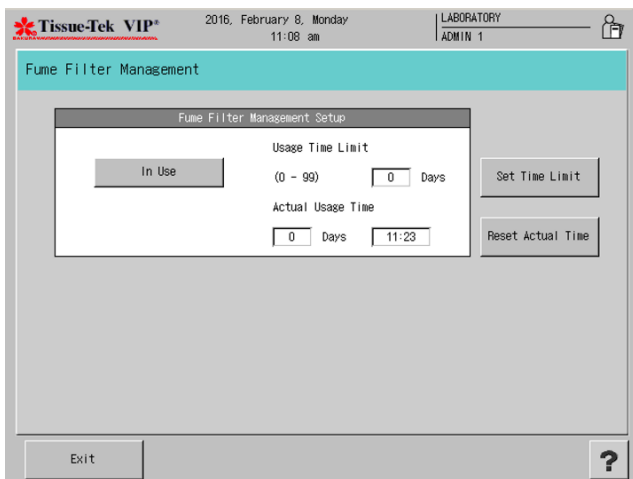
Figure 3-N

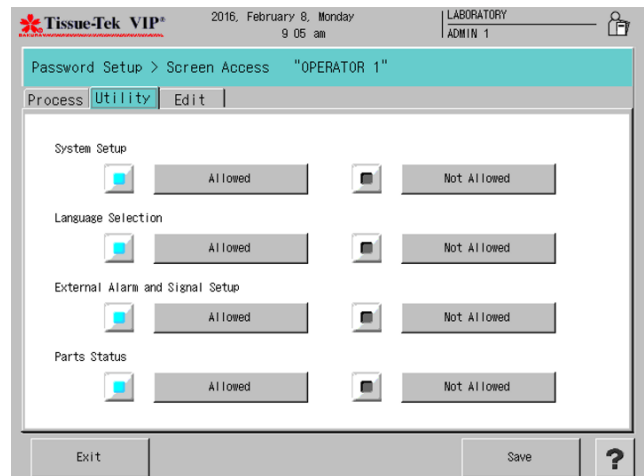Fume Filter Management can be enabled or disabled.

To use fume filter management:

- Toggle the button at the top-left of the screen until it reads **In Use**.

To disable fume filter management

- Toggle the button until it reads **Not in Use**.

To adjust fume filter usage time limit:

1. Touch the **Set Time Limit** button.

- An input dialog box appears (Figure 3-O). The default Usage Time Limit is 40 hours.

Figure 3-O

2. Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting.

- Touch **Enter** to save the new setting and return to the Fume Filter Management Setup screen or

- Touch **Cancel** to return without saving new settings.

To reset actual time

1. To reset the actual usage time for the current filters, touch the **Reset Actual Time** button.

- A confirmation dialog box appears (Figure 3-P).
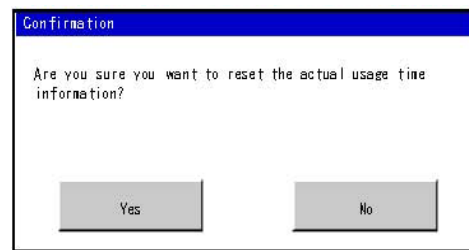
Figure 3-P

3. CUSTOMIZATION OF SETTINGS

2. Touch **Yes** to confirm that actual time is to be reset to 0 or **No** to abort the action.

Creating or Changing Institution Name

The name of the institution that appears on the top of each of the instrument display screens can be modified as follows:

1. From the System Setup screen, touch the **Institution Name** button.

   - The Create Institution Name screen displays (Figure 3-Q).
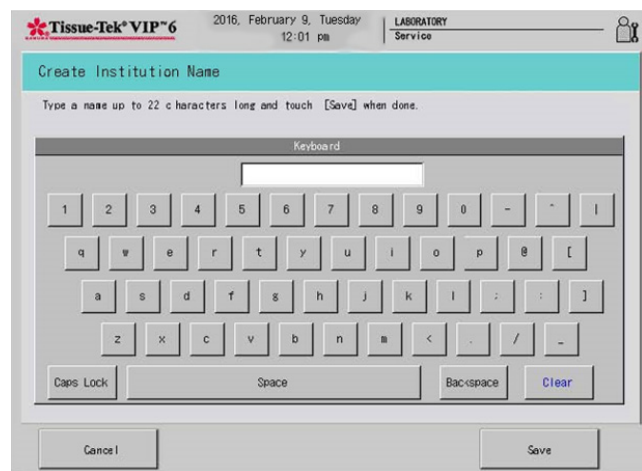
Figure 3-Q

2. Touch **Clear** to clear the current display and then use the touch keypad to enter a new name up to twenty-two characters long.

   - Touch **Save** to save changes and return to the system setup screen or
   - Touch **Cancel** to return without saving changes.

Alarm Sound Selection

1. From the System Setup Screen touch the External Alarm and Signal Setup button.

   - The Alarm sound screen displays (Figure 3-R).
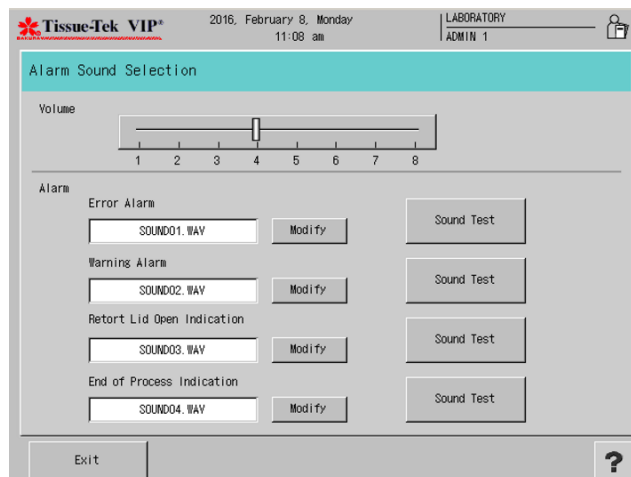
Figure 3-R

2. Touch the Alarm Sound Selection button.

3. Adjust the volume by moving the slider.

4. Choose an alarm type for the following alarms:

   - Error Alarm
   - Warning Alarm
   - Retort Lid Open Indication
   - End of Process Indication

5. Touch Modify.

   - The Select Alarm Sound Screen displays (Figure 3-S).

6. Touch to select an alarm sound.

7. Touch **Exit** to return to the Alarm Sound Selection Window.
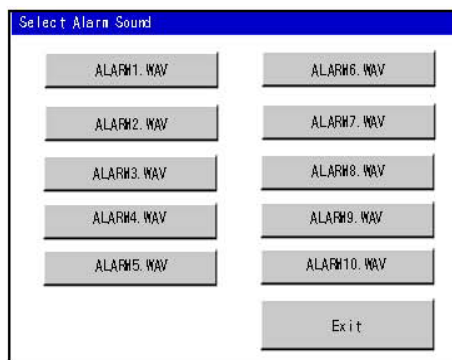
Figure 3-S

8. Touch the Sound Test button to hear each of the alarms.

Input Temperature

The Input Temperature option from the Utility Menu allows a user to make temperature changes to the "user-selectable" and "user-specified" system settings and parameters.

1. From the main menu, touch the Utility Menu tab, and then System Setup, and then touch the **Input Temperature** tab.

    - The Input Temperature Screen displays (Figure 3-T).
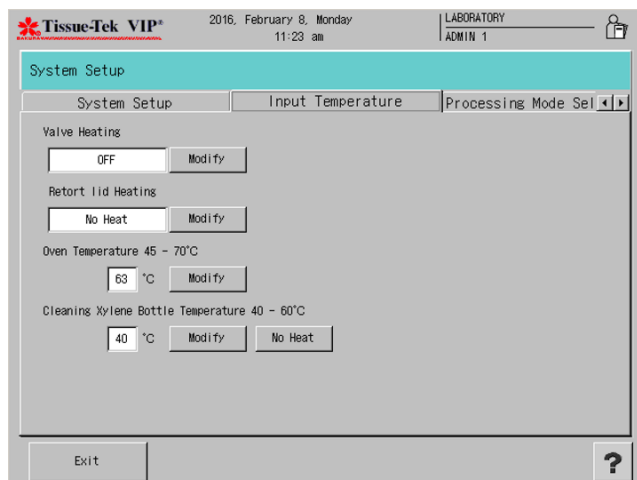
Figure 3-T

The Input Temperature screen allows users to adjust the valve heating, retort lid heating, oven temperature, and clean xylene bottle temperature.

2. Make changes to the following system settings/parameters, as desired:

Valve Heating – sets the rotary and gate valve heat high (70°C), low (40°C), or off. The factory default setting is *OFF*.

Retort Lid Heating – sets the retort lid heating as automatic heating, always on heating, or no heat. The factory default setting is *Always ON Heating*.

Oven Temperature – sets the oven temperature for stations 11-14.

> ⓘ **NOTE:** The oven temperature is independent of the paraffin temperature in a tissue processing program. Sakura recommends programming the oven temperature below or equal to the paraffin temperature in a tissue processing program.

> ⚠ **CAUTION: Oven temperature and paraffin temperature should not vary +/- 5° C. This allows paraffin to cool or heat as needed for processing.**

1. Touch the Modify button next to the Oven Temperature. The Oven Temperature Window Screen displays (Figure 3-U).

Figure 3-U

2. Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting (45-70ºC).

3. Touch **Enter** to save the new setting and return to the Solution Configuration Setup screen or

    - Touch **Cancel** to return without saving new settings.

3. CUSTOMIZATION OF SETTINGS

Cleaning Xylene Bottle Temperature –

1. Touch the **Modify** button next to the Cleaning Xylene Bottle Temperature

   - The Xylene Input Temperature Window Screen displays (Figure 3-V).

Figure 3-V

2. Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting (40-60°C).

3. Touch **Enter** to save the new setting and return to the Solution Configuration Setup screen or

   - Touch **Cancel** to return without saving new settings.

4. Touch the **No Heat** button on the solution configuration setup screen to disable the heating function for cleaning Xylene.

Processing Mode Selection

The Processing Mode Selection option from the Utility Menu allows a user to make changes to the "user-selectable" and "user- specified" system setting and parameter.

1. From the main menu, touch the Utility Menu tab, and then System Setup, and then touch the **Processing Mode Selection** tab.

   - The Processing Mode Selection screen displays (Figure 3-W)
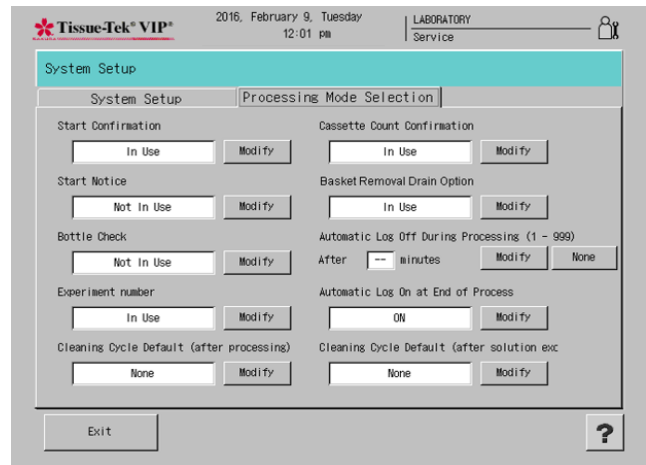
Figure 3-W

The Processing Mode Selection screen allows users to adjust the start confirmation, start notice, bottle check, experiment number, cleaning cycle defaults, cassette count confirmation, basket removal drain option, automatic log off during processing, and automatic log on options.

2. Make changes to the following system setting/parameters, as desired:

Start Confirmation - displays a start confirmation window when a program is started.

   - Touch **Modify** to toggle between In Use or Not In Use.

Start Notice – Notifies the user when a program has been started.

   - Touch **Modify** to toggle between In Use or Not In Use.

Bottle Check – Allows the user to select whether or not to have the instrument check the connections of solution bottles.

   - Touch **Modify** to toggle between In Use or Not In Use.

Experiment Number – Allows a user to enter an experiment number at the start of a tissue processing run.

   - Touch **Modify** to toggle between In Use or Not In Use.

Cleaning Cycle Default (after processing) – Selects a default Cleaning Program.

   - Touch **Modify** to toggle between available cleaning programs or **None** to exit without making changes.

Cassette Count Confirmation – Verifies how many cassettes are being processed in run. This option is only available when the solution control method is set to "cassettes".

- Touch **Modify** to toggle between In Use or Not In Use.

Basket Removal Drain Option – Drains reagents upon completion of a processing program to solution safeguard levels.

- Touch **Modify** to toggle between In Use or Not In Use.

Automatic Log Off During Processing – Enables the system to automatically log off a user during processing within a given time period.

- Touch **Modify** to enter the amount of minutes the system is to wait before logging off a user.
- Enter the number of minutes between 1 and 999.
- Touch **None** to exit without making changes.

Automatic Log On at End of Process – Enable the system to require a user to log on at the end of a processing run.

- Touch **Modify** to toggle between On or Off.

Cleaning Cycle Default (after solution exchange) – Selects a default Cleaning Program.

- Touch **Modify** to toggle between available cleaning programs or **None** to exit without making changes.

Selecting System Language

1. From the main menu, touch the **Utility Menu** tab, and then touch the **Language Selection** button.

- The Language Selection screen displays (Figure 3-X).
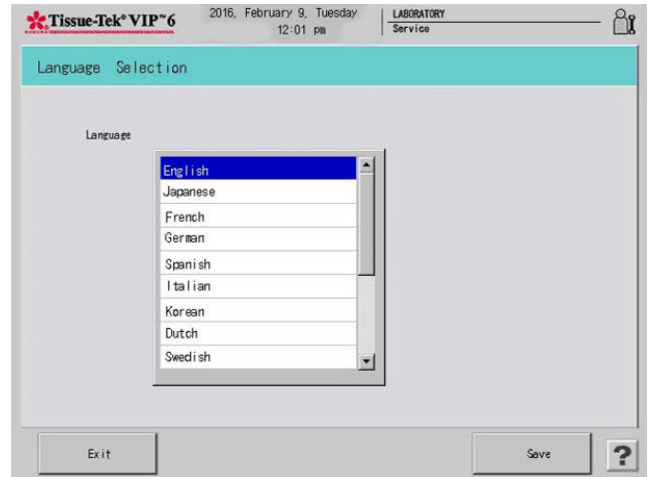
Figure 3-X

2. Use the touch screen to select the language to be used for system display. Options are English (default), Japanese, German, French, Italian, Spanish, Korean, Dutch, Swedish, Finnish, Danish, Russian, Norwegian, Czech, Greek, and Portuguese.

- Touch **Save** to save the selection and return to the Utility menu or
- Touch **Exit** to return without saving changes.

NOTE: If Korean is selected, a special notice appears regarding copyright of the font used (Figure 3-Y). Touch Exit to close the Notice screen.
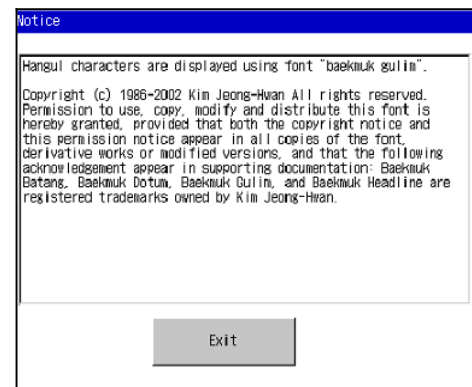
Figure 3-Y

3. CUSTOMIZATION OF SETTINGS

3.3.2 Exporting System Setup Data

Once system setup procedures have been completed, data can be exported to a USB flash drive. It is recommended that data be exported to a USB flash drive so that a record of system setup settings is maintained. This data can be used to recreate system settings in the event of system failure or can be used to set up similar systems.

To Export Data

From the main menu, touch the **Utility Menu** tab and then touch the **Export Data** button.

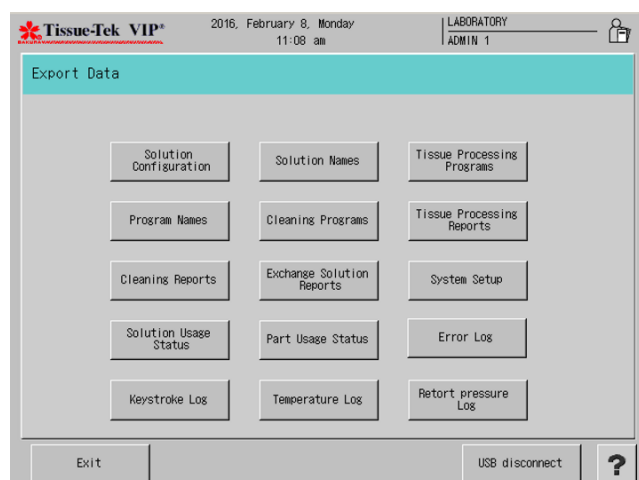- The Export Data screen displays (Figure 3-Z).

Figure 3-Z

To export solution configuration(s):

1. From the Export Data screen, touch the **Solution Configuration** button.
   - A Solution Configuration List displays.
2. Touch to select the solution configuration to be exported and then touch the **Export Data** button.
   - To export all configurations, touch the **All Data** button and then touch the **Export Data** button.
3. An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export program names

1. From the Export Data screen, touch the **Program Name** button.

2. An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export or view cleaning reports

1. From the Export Data screen, touch the **Cleaning Report** button.
   - A Report List displays.
   - Select the report to be viewed or exported.
2. Touch **Vie**w Run History to view the run history for the clean retort, warm water flush, or the rinse cycle.
   - Only one cleaning report can be viewed at a time.
3. Touch the **Export Data** button.
   - To export all programs, touch the **All Data** button and then touch the **Export Data** button.
4. An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export solution usage status

From the Export Data screen, touch the **Solution Usage Status** button.

- An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export or view tissue processing reports

1. From the Export Data screen, touch the **Tissue Processing Reports** button.
   - A Report List displays.
   - Select the report to be viewed or exported.
2. Touch **View Run History** to view the run history of a tissue processing run.
   - Only one tissue processing run can be viewed at a time.
3. Touch the **Export Data** button.
   - To export all programs, touch the **All Data** button and then touch the **Export Data** button.
4. An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export solution names

1. From the Export Data screen, touch the **Solution Names** button.

2. An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export cleaning programs

From the Export Data screen, touch the **Cleaning Programs** button.

- An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export or view exchange solution reports

1. From the Export Data screen, touch the **Exchange Solution Report** button.

- A Report List displays.

- Select the report to be viewed or exported.

2. Touch **View Run History** to view the run history of a solution exchange process.

- Only one solution exchange process can be viewed at a time.

3. Touch the **Export Data** button.

- To export all programs, touch the **All Data** button and then touch the **Export Data** button

4. An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export parts usage status

From the Export Data screen, touch the **Parts Usage Status** button.

- An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export a system setup data

From the Export Data screen, touch the S**ystem Setup** button.

- An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To export an Error Log

From the Export Data screen, touch the **Error Log** button.

- An export confirmation dialog box displays, touch the **Exit** button to return to the Export Data screen.

To remove the USB flash memory

Once the data has been placed on the USB drive:

1. Touch the **USB disconnect** button before removing the USB drive.

2. Touch the **Exit** button to return to the Menu screen.

3.3.3 External Alarm and Signal Setup

The External Alarm and Signal Setup allows the user to set system errors to output externally as an alarm. When an error listed in the external alarm trigger list takes place, the system outputs an external alarm.

1. From the main menu, touch the **Utility Menu** tab, and then touch the **External Alarm and Signal Setup** button.

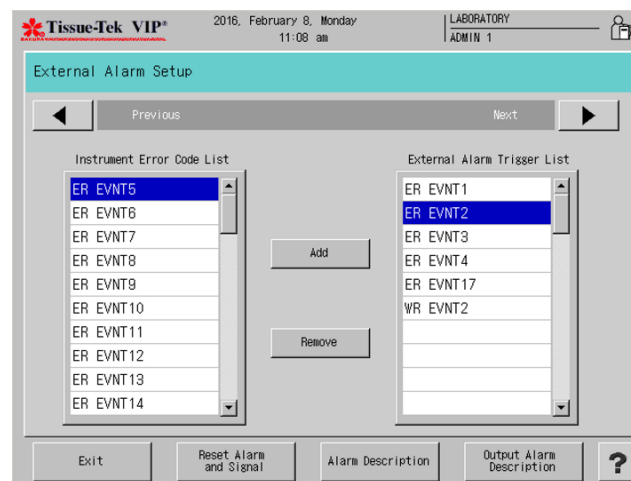- The External alarm and Signal Setup screen displays (Figure 3-AA).

Figure 3-AA

2. Touch a desired error code in the instrument error code list.

3. Touch **Add** to add the error code external alarm trigger list.

4. Touch **Remove** to remove the error code from the external alarm trigger list.

5. Touch **Reset Alarm and Signal** to reset trigger list.

3. CUSTOMIZATION OF SETTINGS

6. Touch **Signal Description or Output Signal Description** to view the descriptions of the external alarm and signals (Figure-BB).
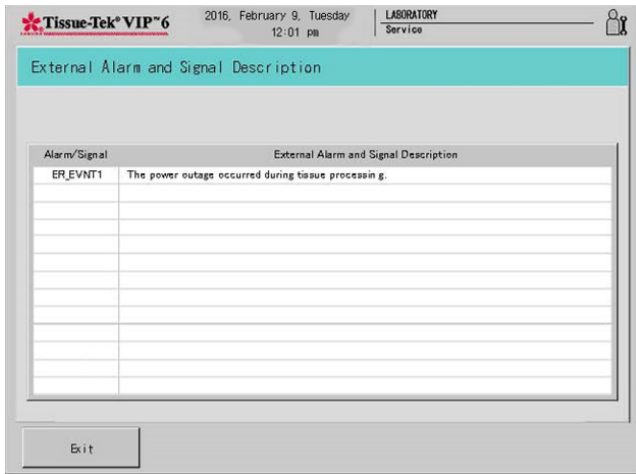

Figure 3-BB

External Alarm

The external alarm hardware is located in the back panel, behind the LCD Touch Screen (Figure 3-CC). The maximum load allowed for each output is 30VDC, 1A.
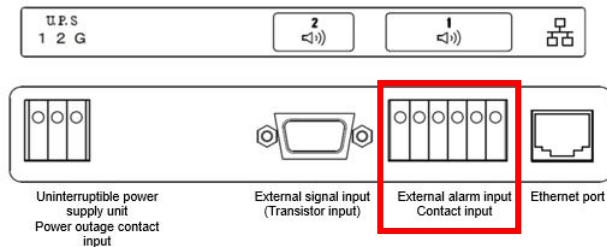

Figure 3-CC

Error & Warning Event Output

Error & Warning Event Outputs are determined by a non-latching relay in conjunction with the External Alarm Trigger List configured in the External Alarm setup screen. If an event in the External Alarm Trigger Lists is triggered or if the power is turned off, the relay will switch to T5 immediately.

Tissue Processing Output

Tissue Processing Output is determined by a double-winding latching relay in conjunction with the Tissue Processing screen. The relay is always in T2 until the Tissue Processing screen displays, then it switches to T3 (Figure 3-FF). If power is lost during tissue processing, the relay will stay in the T3 position until power is restored and tissue processing is complete.
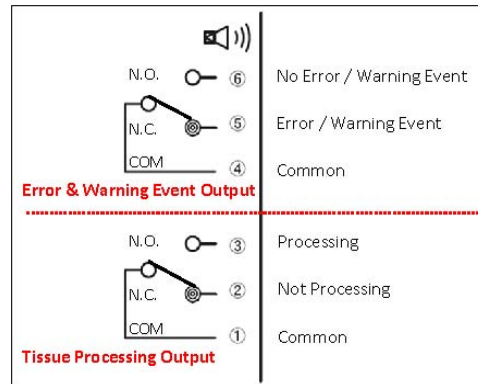

Figure 3-DD

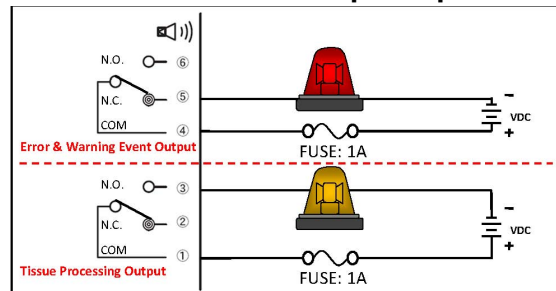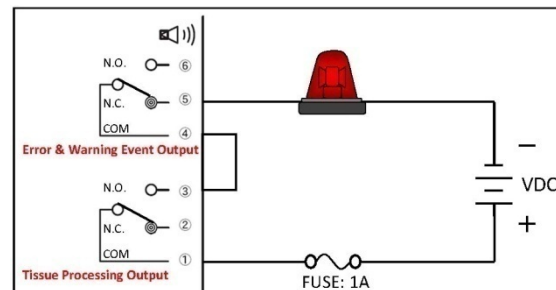**External Alarm terminal Setup Examples:**

Figure 3-EE

Figure 3-FF

3.3.4 Manual Operations

The Manual Operations feature allows the user to manually perform functions normally done automatically. It is not used during normal operation of the instrument; however, manual operation may sometimes be necessary. Three functions can be achieved through the Manual Operations Mode:

- Change Station-Moves the rotary valve to any station selected by the user.

- Fill Retort-Pumps a reagent into the retort.

- Drain Retort-Pumps a reagent out of the retort.

1. From the main menu, touch the **Utility Menu** tab, and then touch the **Manual Operations** button
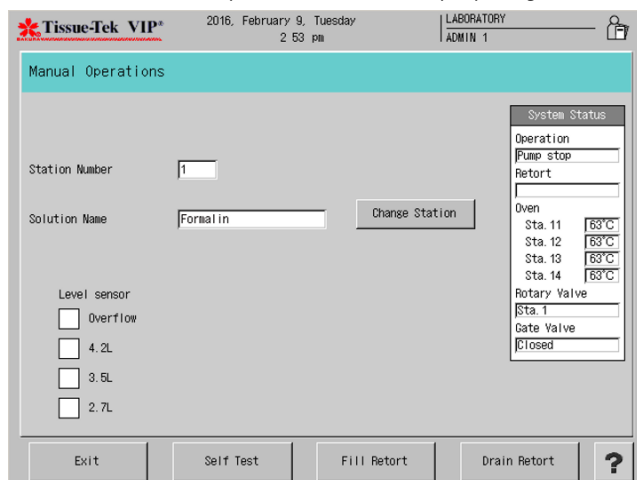
   - A Manual Operations screen displays (Figure 3-GG).

Figure 3-GG

2. Touch the **Change Station** button.

   - A Change Station screen displays.

3. Touch the desired station button and touch **Start**.

   - To cancel the operation, touch **Cancel**.

4. Touch the **Fill Retort** button to fill the retort in the station desired.

5. Touch the **Drain Retort** button to drain the retort back into the desired reagent bottle.

The function chosen begins immediately, either pumping the reagent into the retort from the station number displayed, pumping the reagent out of the retort in the station displayed, or moving the rotary valve to the next station.

The System Status Area is located on the right side of the screen and contains data such as operation, retort status,

oven temperature, rotary valve position and temperature, and gate valve status and temperature.

When the operation is complete, another operation can be selected by touching the appropriate key or repeat the Change Station operation. To abort the operation, touch the **Exit** button.

> **NOTE:** If a Fill Retort function was performed (reagent was pumped into the retort) a Drain Retort function must be performed before a Change Station operation or exit is allowed.

> **NOTE:** If any of the stations 11-14 (paraffin stations) is pumped into the retort, a clean cycle will be required before any automatic functions are allowed.

6. Touch **Exit** to return to the Main Menu screen.

3.3.5 Software Version and Serial Number

The Software Version and Serial Number feature allows the user to access the software version and serial number of the instrument.

From the main menu, touch the **Utility Menu** tab, and then touch the **Software Version and Serial Number** button.

- Software version and serial number window displays.

3. CUSTOMIZATION OF SETTINGS

3.3.6 Error Log

This function allows the user to view the error log.

1. From the Utility Menu, touch the **Error Log** button.

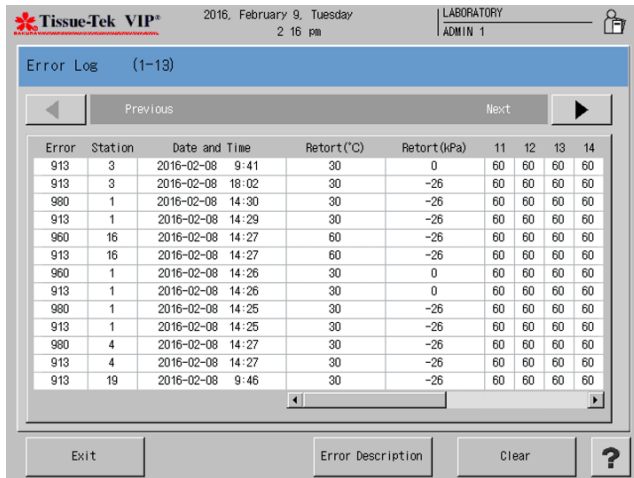   - The Error Log screen displays (Figure 3-HH).

Figure 3-HH

Touch the right/left arrow button to toggle between pages in the error log.

2. Touch **Clear** to clear all errors listed.

   A confirmation dialog box displays.

   - Touch **Yes** to confirm deletion or No to cancel.

   - Touch **Exit** to return to the Process Menu.

3.4 Customizing System Operating Parameters

The Edit Menu provides access to several options that allow the user to configure the system operating definitions, settings, and programs that should be established prior to system use.

To access the Edit Menu:

1. Log on.

2. From the Main Menu, touch the **Menu** button and then touch the **Edit Menu** tab to display the Edit Menu (Figure 3-II).
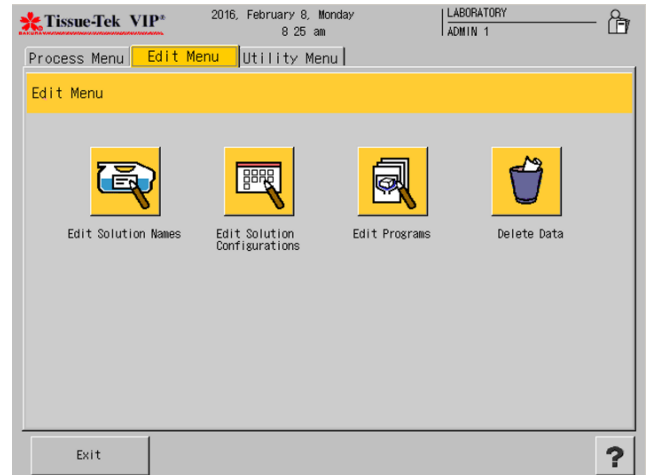

Figure 3-II

The following options are available from the Edit Menu.

Edit Solution Names – allows the user to modify the name of the solution.

Edit Solution Configurations – provides a means to add or edit solution configurations.

Edit Programs – allows the user to add or edit existing programs for routine operation.

Delete Data – Allows the user to delete unwanted information (solution names, programs and solution configurations) from the system.
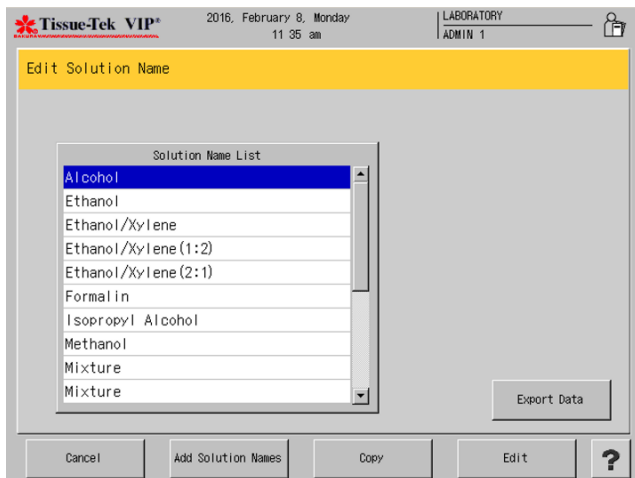
3.4.1 Creating or Changing Solution Names

The Edit Solution Name option from the Edit Menu tab lets the user add, edit, copy, or export solution names. The system stores up to 100 solution names.

To add a new solution name:

1. From the main menu, touch the **Edit Menu** tab, and then touch **Edit Solution Name** button.
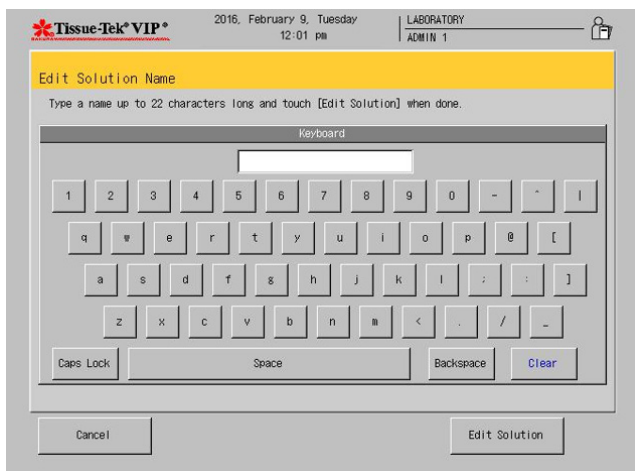
- The Edit Solution Name screen appears (Figure 3-JJ).

Figure 3-JJ

2. Touch Add Solution Names.
   - The Create Solution Name screen displays (Figure 3-KK).

Figure 3-KK

3. Use the touch keyboard to enter a new solution name up to twenty-two characters long.
4. Touch **Edit Solution** to save the new solution name and return to the Edit Menu or
   - Touch **Cancel** to return to the Edit Menu without saving the new name.

- The Create Abbreviated Solution Name screen displays (Figure 3-LL).

Figure 3-LL

5. Use the touch keyboard to enter an abbreviated name for the new solution up to eight characters long. This name is used for on-screen display.
6. Touch **Edit Abbreviated Solution** to save the abbreviated solution name and return to the Edit Menu or
   - Touch **Cancel** to return to the Edit Solution Name Menu without saving the new name.

NOTE: the defatting solution is managed under the special solution names and can be prepared only when they are assigned to the station configuration. The special solution names and abbreviations are:

Ethanol/Xylene (2:1) Abbrv: E/X (2:1)

Ethanol/Xylene (1:2) Abbrv: E/X (1:2)

Ethanol/Xylene Abbrv: Etha/Xy

Mixture Abbrv: Mixture

3. CUSTOMIZATION OF SETTINGS

To edit solution name:

1. From the main menu, touch the **Edit Menu** tab, and then touch **Edit Solution Name**.

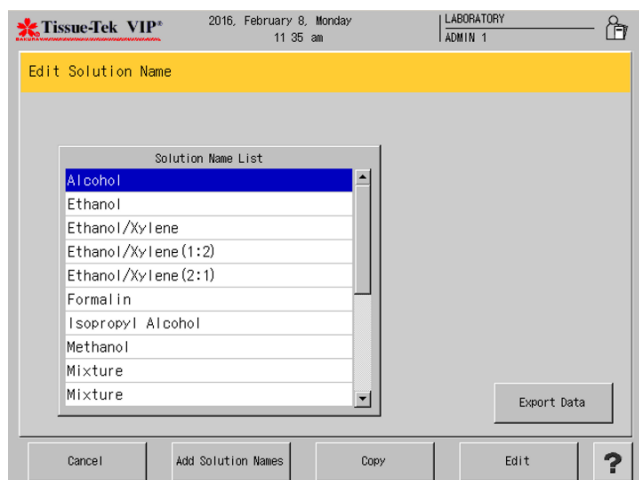   - The Edit Solution Name screen appears (Figure 3-MM).

Figure 3-MM

2. On the Solution Name List, touch to highlight the solution name to be edited, and then touch the **Edit** button.

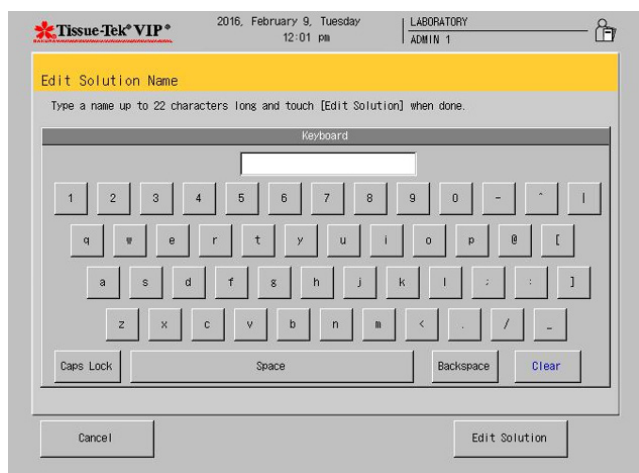   - The Edit Solution Name screen displays (Figure 3-NN).

Figure 3-NN

3. Use the touch keyboard to modify the solution name using up to twenty-two characters.

4. Touch **Edit Solution** to save the solution name and return to the Edit Menu or

   - Touch **Cancel** to return without saving the new name.

   - The Create Abbreviated Solution Name screen displays (Figure 3-OO).

Figure 3-OO

5. Use the touch keyboard to enter an abbreviated name for the new solution up to eight characters long. This name is use for on-screen display.

6. Touch **Edit Abbreviated Solution** to save the abbreviated solution name and return to the Edit Menu or

   - Touch **Cancel** to return without saving the new name.

3.4.2 Creating or Changing Solution Configurations

The Edit Solution Configuration option from the Edit Menu tab provides the means to add or edit solution configurations. The system can store up to 5 solution configurations.

To add or edit a solution configuration:

1. From the Edit Menu, touch the **Edit Solution Configuration** button.

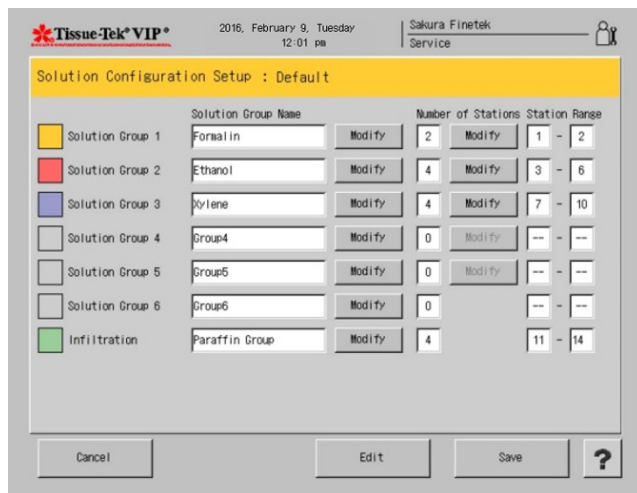   - The Solution Configuration Setup screen displays (Figure 3-PP).

Figure 3-PP

2. Touch the **Modify** button next to the Solution Group to modify the solution group name of Group 1.
   - The Create Solution Group Name Screen displays (Figure 3-QQ).

Figure 3-QQ

3. Use the touch keyboard to modify the solution name using up to twenty-two characters.

4. Touch **Edit Solution Group** to save the solution name and return to the Solution Configuration Setup screen or
   - Touch Cancel to return without saving the new name.
   - The Create Abbreviated Solution Name screen displays.

5. Use the touch keyboard to enter an abbreviated name for the new solution up to eight characters long. This name is used for on-screen display.

6. Touch **Edit Soluti**on Group to save the abbreviated solution name and return to the Solution Configuration Setup screen or
   - Touch **Cancel** to return without saving the new name.

7. Touch the **Modify** button next to the Number of Stations to modify the number of stations for the solution group.

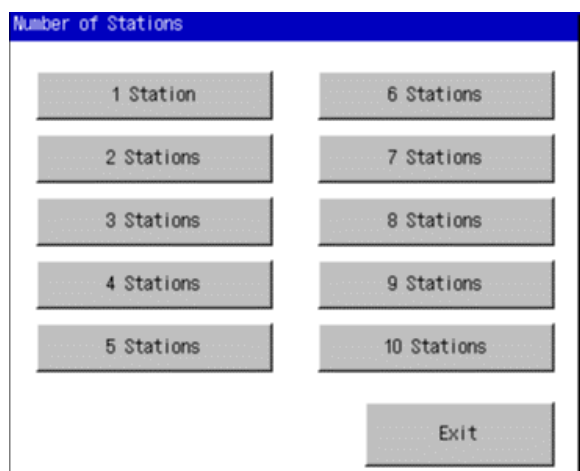- The Number of Stations screen displays (Figure 3-RR).

Figure 3-RR

7. Touch the button for the appropriate number of stations in selected solution group.

   - Touch **Exit** to return without saving the selection.

Assigning Solution Names

1. Touch the **Edit** button located on the bottom of the Solution Configuration Setup Screen.

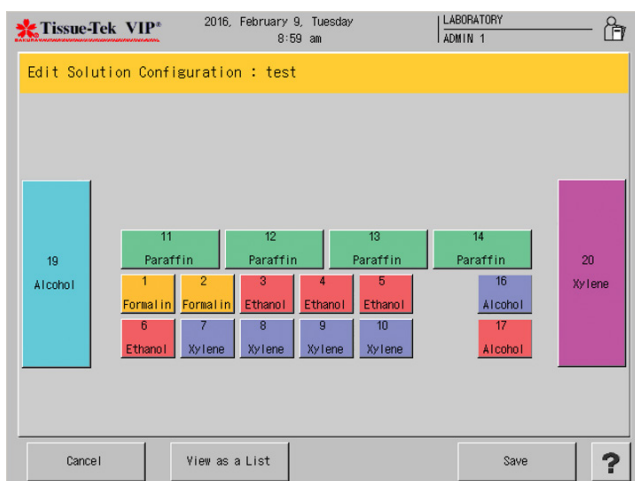   - The Edit Solution Configuration Screen displays (Figure 3-SS).

Figure 3-SS

2. Touch a station button to assign solution names.

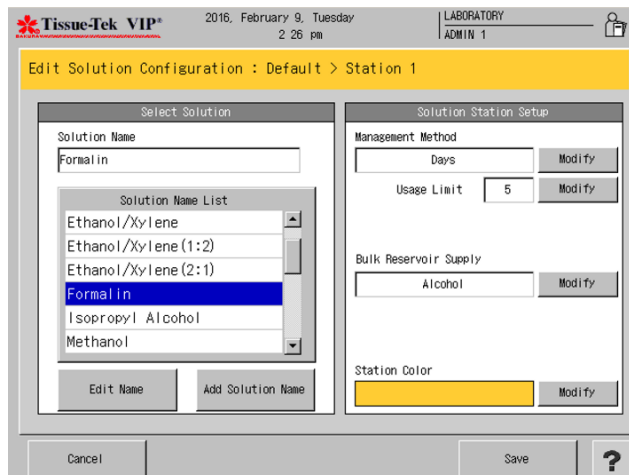   - The Edit Solution Configuration>Solution Station Screen displays (Figure 3-TT).

Figure 3-TT

3. Set the following parameters for the solution configuration:

   Solution Name: Select a solution name from the solution name list. Touch the Edit Name button to edit the solution name. Touch the Add Solution Name button to add a solution name.

   Solution Management Method: Select a solution management method for the chosen station.

   NOTE: The control method is selectable only when editing stations 1-14, 16, and 17.

   To change the method, touch the Modify button until the desired method appears.

   Runs – solution is managed by the number of runs performed.

   Days – solution is managed by the number of days.

   Cassettes – solution is managed by the number of cassettes processed.

   None

   Usage Limit Field: Touch the Modify button to modify the usage limit.

- The Input Usage Limit window displays (Figure 3-UU).

Figure 3-UU

- Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting (Runs: 1-99, Days: 1-99, and Cassettes: 1-9999).
- Touch **Enter** to save the new setting and return to the Edit Solution Configuration Setup screen or
- Touch **Cancel** to return without saving new settings.

NOTE: The Usage Limit Field is only editable when a management method is chosen.

Bulk Reservoir Supply: Select a bulk solution reservoir supply if a link is desired between either one of the two bulk solution reservoirs and the chosen station. To link the bulk solution reservoir to the chosen station, open the drop-down menu and touch desired bulk solution reservoir (Bulk Tank (19), Bulk Tank (20), None).

NOTE: When the bulk solution reservoir is in use, the solution level for that reservoir is displayed in the same color selected for the solution group.

Station Color Button: Select a station color by touching the Modify button. Touch the button to switch between 8 colors (Beige, Cyan, Dark Red, Gray, Green, Magenta, Navy Blue, and Orange).

- Touch **Save** to return to the Edit Solution Configuration Screen.
- Touch **Exit** to return to the Edit Solution Configuration Screen without saving.
- Touch **View as a List** to view the solution configuration as a list (Figure 3-VV).
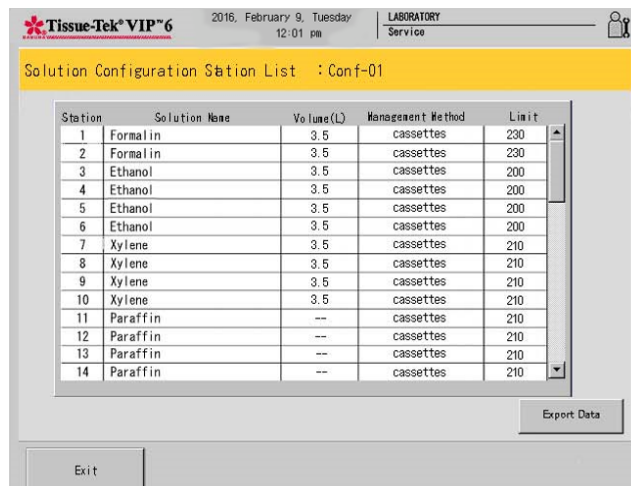
Figure 3-VV

- Touch **Export Data** to export data (see Exporting System Setup Data-Section 3).
- Touch **Exit** to return to the Edit Solution Configuration Screen.

3.4.3 Programming the Tissue-Tek VIP

Programs are used to instruct the Tissue-Tek VIP. Programs can be added, copied, and exported. Up to 50 programs can be stored on the system.

3. CUSTOMIZATION OF SETTINGS

Adding New Programs

1. From the Edit Menu, touch the Edit Program button.
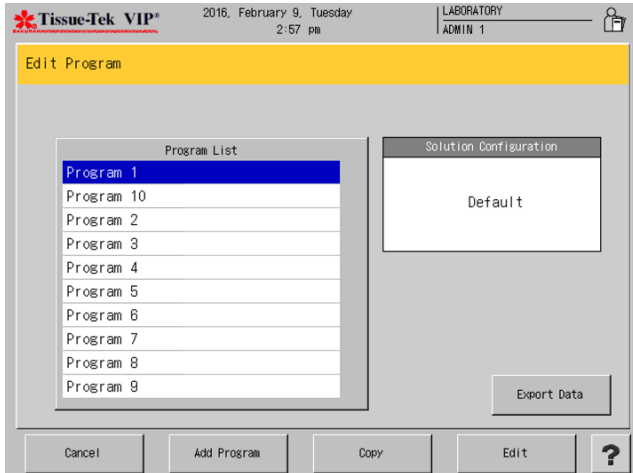   - The Select Program screen displays (Figure 3-WW).

Figure 5-WW

2. To add from the Edit Program screen, touch the **Add Program** button.
   - The Create Program Name screen displays (Figure 3-XX).

Figure 3-XX

3. Use the touch keyboard to enter or modify the program name using up to twenty-two characters.

- Touch **Edit Program** to save the program name and return to the Edit Menu or
- Touch **Cancel** to return without saving the new name.

4. Create program steps, see paragraph Modifying Program Steps below.

3.4.4 Modifying Program Steps

Program steps are modified using the Edit Program "Program Name" screen.

This screen displays immediately after a new program is added or can be accessed as follows:

1. From the Edit Menu, touch the **Edit Program** button.
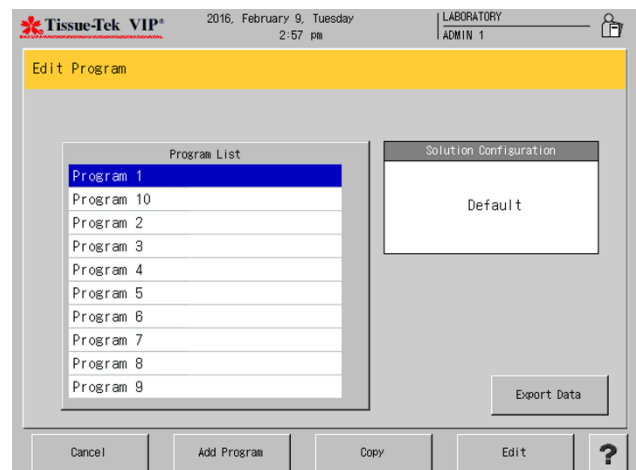   - The Edit Program screen displays (Figure 3-YY).

Figure 3-YY

2. From the Program List, select to highlight the program to be modified.

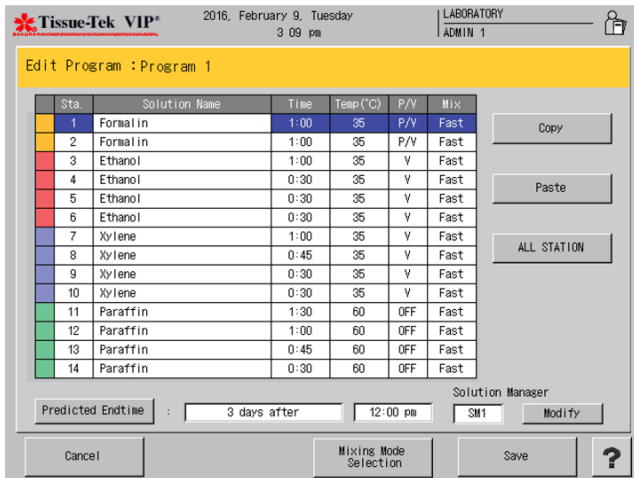- The Edit Program "Program Name" screen displays (Figure 3-ZZ).

Figure 3-ZZ

Setting Process Time

🛈 **NOTE:** At least one step must have a programmed process time.

1. Touch the Time field for the step to be modified (Figure 3-AAA).

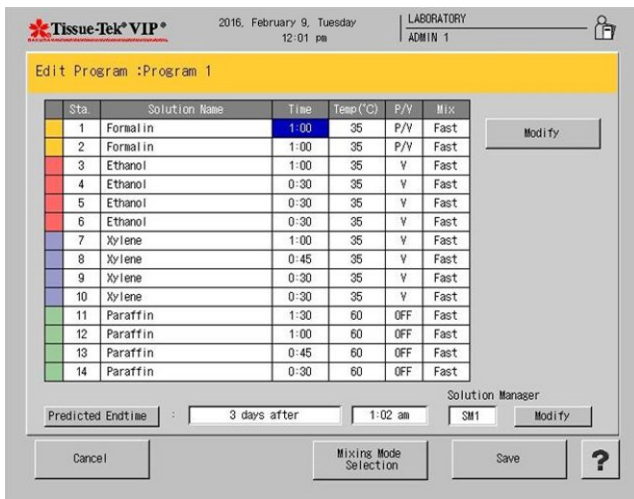🛈 **NOTE:** If the wrong step was selected touch the correct step.

Figure 3-AAA

2. Touch the **Modify** button.

- The Input Time dialog box displays (Figure 3-BBB).

Figure 3-BBB

3. Use the touch keypad to select hours and minutes and adjust accordingly.

- Touch **Enter** to save the settings.
- Touch **Clear** to erase the settings.
- Touch **Cancel** to exit without saving.

Setting Temperature

1. Touch to highlight the temperature field in the step to be modified (Figure 3-CCC).

🛈 **NOTE:** The temperature cannot be set for chloroform stations. The **Modify** and **No Heat** buttons are disabled for chloroform stations.
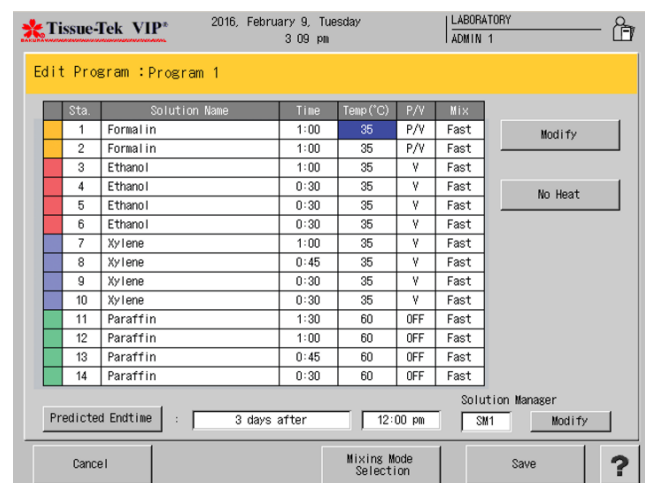

Figure 3-CCC

3. CUSTOMIZATION OF SETTINGS

2. Touch the **Modify** button to modify the temperature (Figure 3-DDD) or the No Heat button for no temperature in that station.

Figure 3-DDD

3. Use the touch keypad to enter the desired temperature.

   - Touch **Enter** to save the settings.
   - Touch **Clear** to erase the settings.
   - Touch **Cancel** to exit without saving.

Setting P/V Function

Use of vacuum and pressure during tissue processing will speed up the rate of penetration by processing reagents.

P/V refers to a changing atmosphere within the retort. Pressure (P/V) adds additional atmosphere to the retort while vacuum (V) removes atmosphere from the retort.

P/V valves can be customized between 0 – 180 seconds for P/V and 30-180 seconds for V.

NOTE: P/V cannot be set for chloroform stations. The P/V cycle buttons are disabled for chloroform stations.

NOTE: If chloroform is used in the last station before paraffin, P/V cannot be selected for the first paraffin station.

NOTE: P/V and V can be selected as Standard (-70kPa), Middle (-37kPa) and Pump-in (-27kPa).

Processing with a solvent of low boiling point (methanol, ethanol, etc.) for long hours at high concentration using high P/V may cause the solution volume to decrease, and the tissues may dry up/shrink as a result.

The following options are selectable in the P/V cycle field.

OFF – neither the P/V cycle nor the V cycle is performed.

P/V – the default P/V cycle is performed.

P/V1 – the user-defined P/V cycle is performed.

P/V2 – the user-defined P/V cycle is performed.

P/V3 – the user-defined P/V cycle is performed.

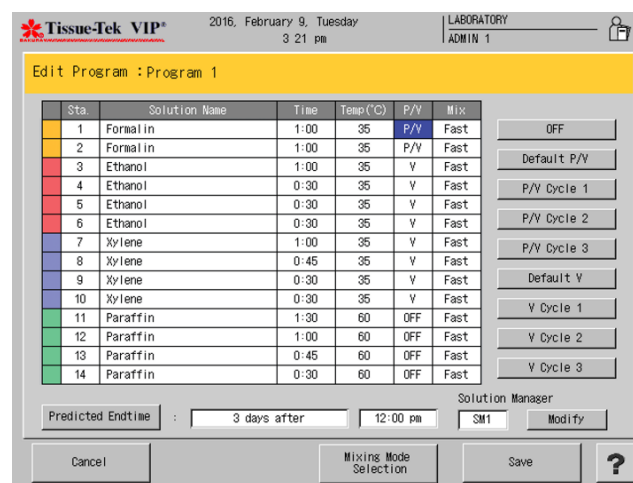**V** – the default V cycle is performed.

V1 – the user-defined V cycle is performed.

V2 – the user-defined V cycle is performed.

V3 – the user-defined V cycle is performed.

The default P/V cycle is 90 seconds (pressure), 30 seconds (ambient), and 90 seconds (vacuum). The default V cycle is 90 seconds (vacuum) and 30 seconds (ambient).

1. Touch the P/V field for the step to be modified (Figure 3-EEE).

Figure 3-EEE

2. Select one of the following settings:

   - Off, Default P/V, P/V Cycle 1, P/V Cycle 2, P/V Cycle 3, Default V, V Cycle 1, V Cycle 2, V Cycle 3.
   - Touch **Cancel** to exit without saving.
   - Touch **Save** to save and exit.

Setting Mix Mode

Mixing Mode allows users to customize the number of agitations, amount of vacuum, and amount of pressure applied during processing.

NOTE: OFF, Fast, and Slow are the only mixing options available for chloroform stations.

NOTE: If chloroform is used in the last station before paraffin, the only mixing options available for the first paraffin are OFF, Fast, and Slow.

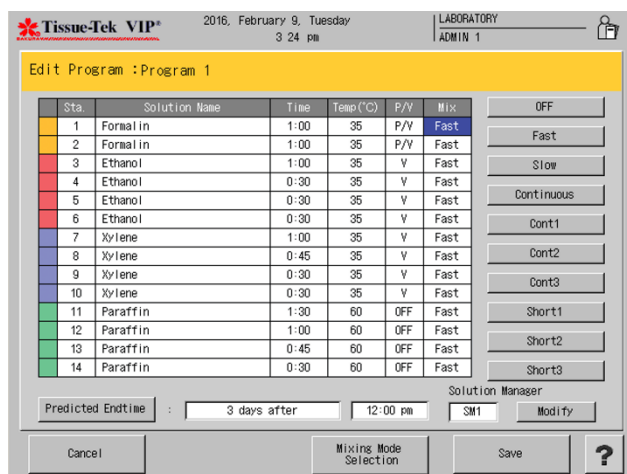1. Touch the Mix field in the step to be modified (Figure 3-FFF).

Figure 3-FFF

2. Select one of the following settings:

OFF – the mixing is not performed

Fast – complete drain and fill at 12-minute intervals

Slow – complete drain and fill at 20-minute intervals

Continuous – partial drain and fill for 10 minutes followed by complete mixing at 12 minute intervals

Cont 1 – partial drain and fill from the bottom of the retort to a level sensor providing continuous mixing for defatting at 1-minute intervals.

Cont 2 – partial drain and fill from the bottom of the retort to a level sensor providing continuous mixing for defatting at 5-minute intervals.

Cont 3 – partial drain and fill from the bottom of the retort to a level sensor providing continuous mixing for defatting at 12-minute intervals.

NOTE: To set Cont1, Cont2 or Cont3, set Solution Manager to SM1 or SM2. If Solution Manager has been turned off, it is automatically switched to SM1. Also note that Cont1, Cont2 and Cont3 cannot be set for Stations 11 to 14.

Short 1 – partial drain and fill #1 at user-defined intervals (every 3 to every 10 minutes)

Short 2 – partial drain and fill #2 at user-defined intervals (every 3 to every 10 minutes)

Short 3 – partial drain and fill #3 at user-defined intervals (every 3 to every 10 minutes)

- Touch **Cancel** to exit without saving.
- Touch **Save** to save and exit.

Mixing Mode Selection

The Mixing Mode Selection allows the user to change the mixing mode selection and the pressure and vacuum settings for a program.

1. Touch the **Modify** button next to Short 1, Short 2, or Short 3.

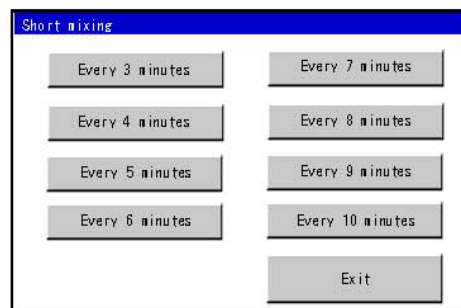   - The Short Mixing Window displays (Figure 3-GGG).

Figure 3-GGG

2. Touch to choose between Every 3 minutes, Every 4 minutes, Every 5 minutes, Every 6 minutes, Every 7 minutes, Every 8 minutes, Every 9 minutes, and Every 10 minutes.

   - Touch **Exit** to close window and exit back to Mixing Mode Selection.

3. Touch the field under the Pressure, Ambient, or Vacuum.

4. Touch the **Modify** button to modify the time.

3. CUSTOMIZATION OF SETTINGS

- The Detailed Setting Window is displayed (Figure 3-HHH):

Figure 3-HHH

5. Use the touch keypad to enter the time. The setting is 30 - 180 seconds.

- Touch **Enter** to save the settings.
- Touch **Clear** to erase the settings.
- Touch **Cancel** to exit without saving.

3.4.5 To Modify the Predicted End Time

1. Touch the Predicted End Time button

- The Predicted End Time Screen displays (Figure 3-III):

Figure 3-III

- Touch the **Today** button if the program end time is scheduled to end today.
- Touch the **Tomorrow** button if the program end time is scheduled to end tomorrow.
- Touch the **Day After Tomorrow** button if the program end time is scheduled for the day after tomorrow.
- Touch the **Modify** (3-99) button if the program end time is scheduled for more than 3 days up to 99 days.
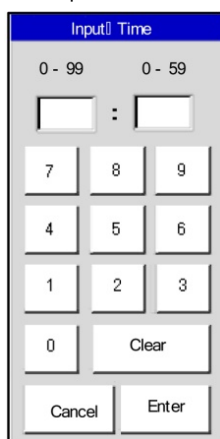- The Input Date Window is displayed (Figure 3-JJJ):

Figure 3-JJJ

2. Use the touch keypad to enter the number of days.

- Touch **Enter** to save the settings.
- Touch **Clear** to erase the settings.
- Touch **Cancel** to exit without saving.

3. Touch the **Modify** button under the hour field to modify the time at which the processing time will be completed.

- The Input Hour Window is displayed (Figure 3-KKK):

Input Date

3 - 99

7	8	9
4	5	6
1	2	3
0	Clear	
Cancel	Enter	

Figure 3-KKK

4. Use the touch keypad to enter the hour. The settings are 1-12 in the 12-hour format and 0-23 in the 24-hour format.

- Touch **Enter** to save the settings.
- Touch **Clear** to erase the settings.
- Touch **Cancel** to exit without saving.

5. Touch the **Modify** button under the minutes field to modify the time at which processing will be completed.

- The Input Date Minutes is displayed (Figure 3-LLL).

Input Time

0 - 99   0 - 59

[   ] : [   ]

7	8	9
4	5	6
1	2	3
0	Clear	
Cancel	Enter	

Figure 3-LLL

6. Use the touch keypad to enter the minutes. The setting is 0-59.

- Touch **Enter** to save the settings.
- Touch **Clear** to erase the settings.

- Touch **Cancel** to exit without saving.
7. Touch the AM/PM button to select either "am" or "pm". When the 24-hour format is used, this button is not displayed.

- Touch **Save** to save the predicted end time settings.
- Touch **Cancel** to exit without saving.

3.4.6 Copying Existing Programs

Existing programs can be used as a template to create a new program. When a program is copied, program steps and settings are duplicated to create a new program.

1. From the Edit Menu, touch the **Edit Program** button.

- The Edit Program screen displays.

2. From the Program List, select to highlight the program to be copied and then touch the **Copy** button.

- The Copy Program screen displays.

3. Select to highlight the program to copy the information to or touch **Add Program** to add a new program to the list.

Solution Manager

The system performs "automatic solution replenishment" to supply a new solution to a station where the system detected a shortage of solution during tissue processing or when retort cleaning is in progress.

This function is valid when the solution level safeguard setting is "In Use" in the system setup. The automatic solution supply operation may be performed during tissue processing, retort cleaning or rinsing. Two types of solution management are available:

Solution Manager 1

Low Fluid – When the system detects a shortage during the pump-in phase during processing or cleaning, solution is supplied from the next station in the same group until the solution safeguard level sensor (2.7L for 150 cassettes/3.5L for 300 cassettes) is activated. If the next station cannot be used, new solution is supplied from the linked bulk reservoir.

NOTE: For the retort cleaning, this function supplies a solution from the bulk solution reservoir linked to the retort until the upper limit level sensor (4.2L) is turned on. If the bulk solution reservoir is

3. CUSTOMIZATION OF SETTINGS

not linked, the solution manager feature is not operated during the retort cleaning.

Substitute Processing – When the system detects an empty bottle or is unable to pump-in during the pump-in phase during processing, the solution from the previous station of the same group is substituted. If there is not a previous station, the solution in the next station is used. This option is only available during tissue processing.

> ⚠️ **CAUTION:** Once substitute processing has been performed at least twice for the same solution group, the processing ends at the last solution after the tissues are protected.

Solution Manager 2

Low Fluid – When the system detects a shortage during the pump-in phase during processing or cleaning, solution is supplied up to the solution safeguard level (2.7L for 150 cassettes/3.5L for 300 cassettes) from the linked bulk reservoir. If a bulk tank reservoir is not available, the solution is supplied from the next station within the same solution group.

Substitute Processing – When the system detects an empty bottle or is unable to pump-in during the pump-in phase during processing, the solution from the previous station of the same group is substituted. If there is not a previous station, the solution in the next station is used. This option is only available during tissue processing.

> ⚠️ **CAUTION:** Once substitute processing has been performed at least twice for the same solution group, the processing ends at the last solution after the tissues are protected.

Touch the **Modify** button to select a desired setting for the Solution Manager function.

- The settings are SM1, SM2, or OFF.

3.4.7 Deleting Data

Solution names, solution configurations, programs, tissue processing reports, cleaning reports, and exchange solution reports can be deleted from the system.

> ⓘ **NOTE:** *** in the check column indicates that it is in use.

From the Edit Menu, touch the **Delete Data** button.

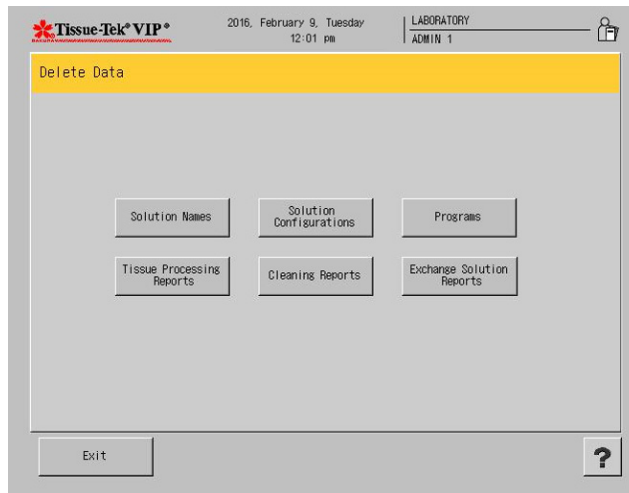- The Delete Data screen displays (Figure 3-MMM).

Figure 3-MMM

To delete a solution configuration:

1. From the Delete Data screen, touch **Solution Configuration**.
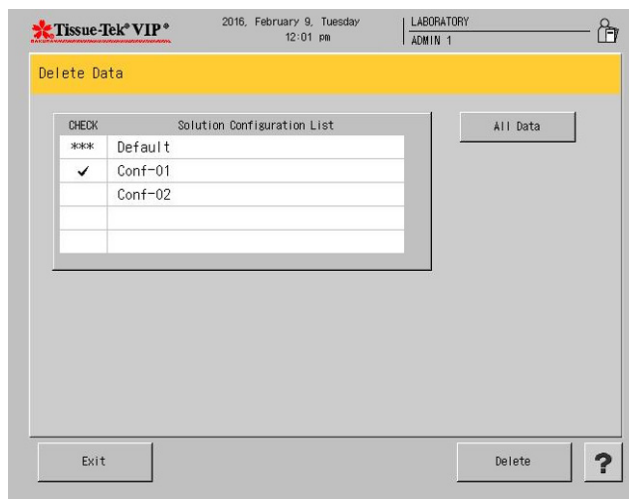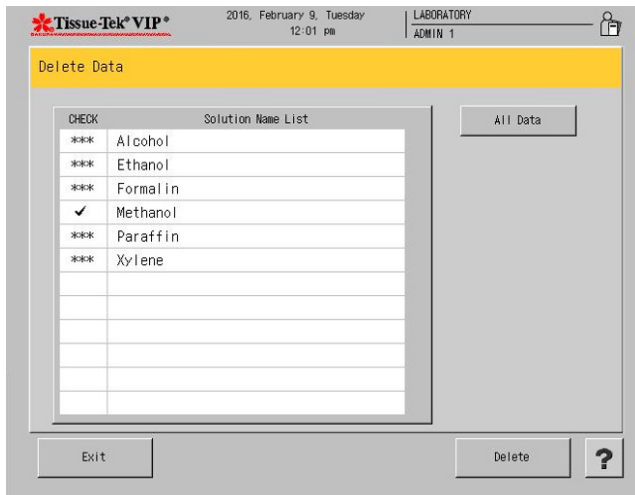
   - A Deletion Procedure screen displays (Figure 3-NNN).

Figure 3-NNN

2. From the Solution Configuration List, select the configuration to be deleted, or touch the **All Data.** Touch **Delete** to delete the solution configurations.

   - A Confirmation dialog box displays (Figure 3-OOO).
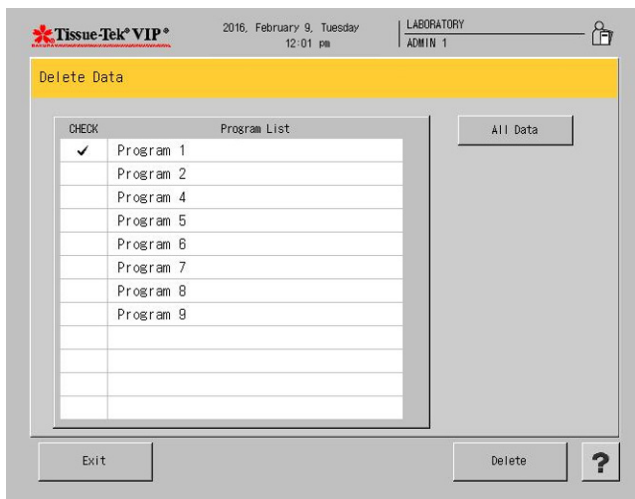
Figure 3-OOO

3. Touch **Yes** to confirm deletion or **No** to cancel the delete procedure.

To delete a preset program:

1. From the Delete Data screen, touch **Program**.

   • A Deletion Procedure screen displays.

2. From the Program List, select the program to be deleted, or touch the **All Data** button. Touch **Delete** to delete all programs.

   • A Confirmation dialog box displays (Figure 3-PPP).

Figure 3-PPP

3. Touch **Yes** to confirm deletion or **No** to cancel the delete procedure.

To delete tissue processing reports:

1. From the Delete Data screen, touch T**issue Processing Reports**.

2. From the list, select the report to be deleted, or touch the **All Data** button. Touch **Delete** to delete all programs.

   • A Confirmation dialog box displays.

3. Touch **Yes** to confirm deletion or **No** to cancel the delete procedure.

To delete cleaning reports:

1. From the Delete Data screen, touch **Cleaning Reports**.

2. From the list, select the report to be deleted, or touch the **All Data** button. Touch **Delete** to delete all reports.

   • A Confirmation dialog box displays.

3. Touch **Yes** to confirm deletion or **No** to cancel the delete procedure.

To delete exchange solution reports:

1. From the Delete Data screen, touch **Exchange Solution Reports**.

2. From the List, select the report to be deleted, or touch the **All Data** button. Touch **Delete** to delete all reports.

   • A Confirmation dialog box displays.

3. Touch **Yes** to confirm deletion or **No** to cancel the delete procedure.

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3.5 Process Menu

The following options are available from the Process Menu.

Cleaning – allows the user to access all cleaning operations.

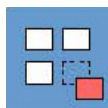**Exchange Solution** – allows the user to access the solution exchange operations.

Tissue Processing – allows the user to set up the automatic operation mode.

Start Paraffin Melt – begins the paraffin melting process.

Exchange Solutions Calendar – allows the user to view the calendar for scheduling the solution exchange.

Solution Configuration Selection – allows the user to select solution configuration.

3.5.1 Cleaning

This option allows the user to access the cleaning operations: Clean Retort, Warm Water Flush, and Rinse Cycle.

Clean Retort: Removes paraffin from the retort and inside tubing of the instrument by rinsing with Xylene and alcohol.

Warm Water Flush: Removes precipitates created by the combination of alcohol and NBF by flushing the tubing, rotary and gate valves with warm water.

Rinse: A rinse removes residual Xylene from the retort and tubing by flushing the instrument with cleaning alcohol from Station #17 or an external alcohol source connected to the fill/drain port.

To edit clean retort settings

1. From the Process Menu, touch the **Cleaning** button.

- The Cleaning screen displays (Figure 3-QQQ).
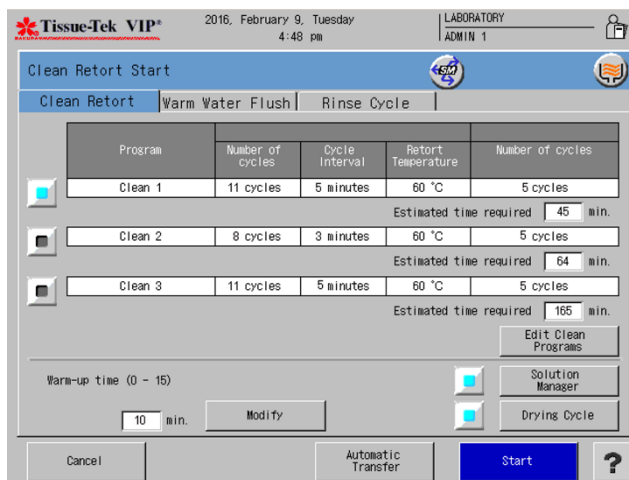

Figure 3-QQQ

2. Select a Program and touch **Edit Clean Programs**.
   - Touch **Edit Clean Program** to edit each clean program.
3. Touch the **Number of Cycles** field under Xylene and touch **Modify**.
   - The Input Cycles Window displays (Figure 3-RRR).

Figure 3-RRR

4. Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting 1-15.
   - Touch **Enter** to save the new setting and return to the Clean Retort screen or

- Touch **Cancel** to return without saving new settings.

5. Touch the **Cycle Interval** field under Xylene and touch **Modify**.

- The Input Time Window displays (Figure 3-SSS).
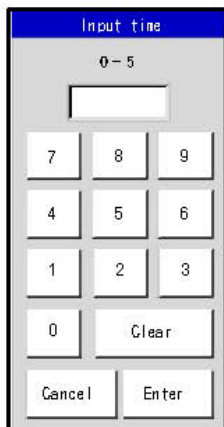
Figure 3-SSS

6. Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting 0-5.

- Touch **Enter** to save the new setting and return to the Clean Retort screen or

- Touch **Cancel** to return without saving new settings.

7. Highlight the field under **Retort Temperature** under Xylene and touch **Modify**.

- The Input Temperature Window displays (Figure 3-TTT).

Figure 3-TTT

8. Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting (45-60ºC) (Figure 3-UUU).

Figure 3-UUU

- Touch **Enter** to save the new setting and return to the Clean Retort screen or

- Touch **Cancel** to return without saving new settings.

9. Touch the **Number of Cycles** field under alcohol and touch **Modify**.

- The Input Cycles Window displays.

10. Touch **Clear** to clear the current setting and then use the touch keypad to enter the new setting 1-15.

- Touch **Enter** to save the new setting and return to the Clean Retort screen or

- Touch **Cancel** to return without saving new settings.

11. Touch **Modify** to toggle between In Use and Not In Use to activate or deactivate the Dechloroform cycle.

12. Repeat steps to set all clean cycle programs.

13. Touch **Save** once completed.

Warm Water Flush Tab

The first five reagent stations can be rinsed with warm water. The warm water flush is dependent on the solution configuration. A user can select all or certain reagent stations to perform a warm water flush.

3. CUSTOMIZATION OF SETTINGS

! **NOTE:** Warm water must be placed in the reagent container prior to starting a warm water flush.

1. Station names and numbers for each station, #1 through #5, are displayed. Touch to select the station(s) to perform the warm water flush.

   - The lamp icon illuminates for the selected station(s).

2. Touch the **Drying Cycle** button to activate the drying cycle following the warm water flush cycle.

   - The drying cycle icon displays in the upper right of the screen.

3. Touch **Start** to begin the warm water flush.

Rinse Cycle Tab

The Rinse Cycle rinses the retort and tubing with cleaning alcohol after a solution exchange.

The Drain/Fill Port Rinse, rinses the retort and tubing with cleaning alcohol connected to an external solution container.

1. Touch to select the Rinse or Drain/Fill Port rinse button.

   - The lamp icon illuminates when selected.

2. Touch the **Drying Cycle** button to activate the drying cycle following the rinse cycle.

   - The drying cycle icon displays in the upper right of the screen.

3. Touch **Start** to begin the rinse cycle.

3.5.2 Exchange Solution

Reagents gradually become diluted and deteriorate after repeated use. To keep reagent purity consistent users may wish to "rotate" the reagents by discarding the first reagent of a particular group or set then transfer the remaining reagents to the beginning of the cycle to be the first used reagent of the particular group. The reagent bottle which held the discarded reagent should be cleaned and/or rinsed with clean reagent. Refill the reagent bottle with fresh reagent and place it at the end of the group.

The freshest reagent of a group will always be the final reagent to complete that particular chemical exposure to or infiltration of the specimens.

This process can be performed manually by physically changing the bottle locations, or it can be done automatically by the instrument through the Exchange Solution screen. The

Automatic Transfer feature allows reagents to be rotated automatically during a processing run or on request.

If a specific count was entered during Solution Configuration, the software will automatically notify the operator when it is time to exchange solutions.

There are six tabs available under Solution Exchange:

Group Exchange – exchanges solutions in all stations of a designated solution group.

Single Solution – exchanges a solution in a single designated station.

Automatic Transfer – allows solutions to be rotated among stations of the same solution group.

! **NOTE:** There are two types of automatic transfer, Automatic Transfer during processing and Independent Automatic Transfer.

Paraffin Drain – drains paraffin from a designated paraffin station to the waste paraffin drain container.

Reservoir Fill – supplies a new solution to a designated bulk solution reservoir.

Defatting Solution – automatically fill an empty solution bottle from the bulk reservoirs to prepare a mixed solution.

Setting up Exchange Solutions:

Reagents

This option allows the user to access the solution exchange operations.

1. From the Process Menu, touch the Exchange Solution button.

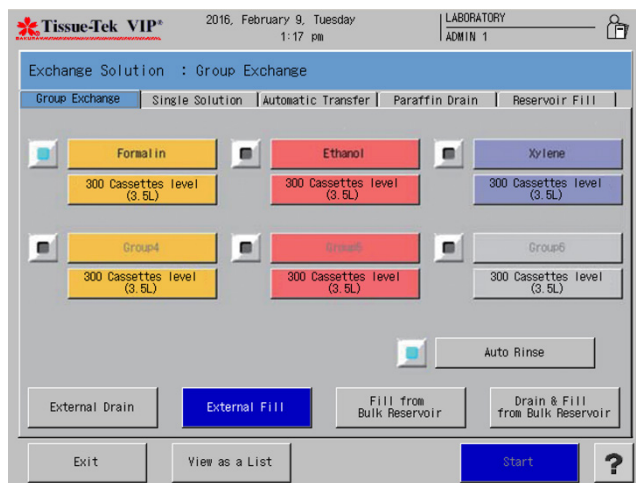   - The Exchange Solution screen displays (Figure 3-VVV).

Figure 3-VVV

2. Touch to select one of six tabs: Group Exchange, Single Solution, Automatic Transfer, Paraffin Drain, Reservoir Fill, and Defatting Solution.

To perform a group exchange:

3. Under the Group Exchange Tab, touch a solution group to be exchanged.

4. Select the desired type of exchange: External Drain, External Fill, Fill from Bulk Reservoir, and Drain & Fill from Bulk Reservoir.

   NOTE: Fill from Bulk Reservoir and Drain & Fill from Bulk Reservoir are not available for the solution groups where the bulk reservoir supply has not been selected.

5. Touch the **View as a List** button to view the stations as a list.

   - The Solution List screen displays (Figure 3-WWW).

Figure 3-WWW

6. Touch **Exit** to return the process menu.

7. Touch **Start** to begin the process.

   - The Exchange Start Confirmation Window displays (Figure 3-XXX).
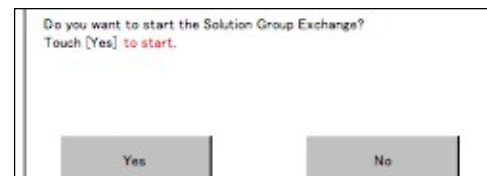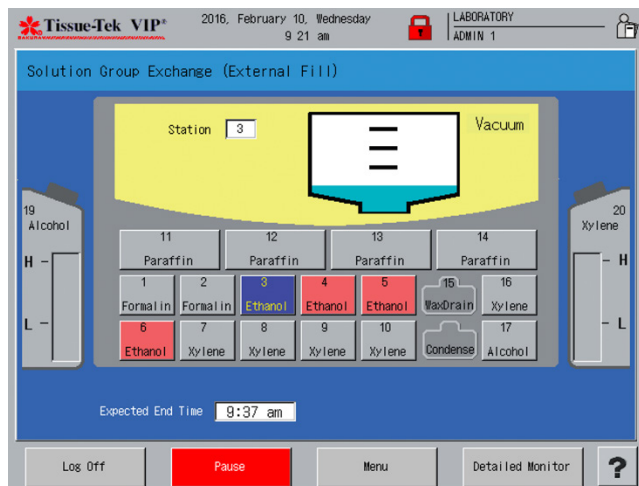

Figure 3-XXX

8. Touch **Yes** to start the Solution Group Exchange.

9. Touch **No** to return back to the Exchange Solution Screen.

   - The Exchange Solution Overview Monitor Screen displays (Figure 3-YYY).

3. CUSTOMIZATION OF SETTINGS

Figure 3-YYY

Solution Group Exchange Detailed Monitor

The Solution Group Exchange Detailed Monitor allows users to view the Solution Exchange Status, Set Volume field, Station Number Field, Overview Monitor button, Pause button, menu button, Log off button, and help button.

1. Touch **Menu** to display the Process Menu Screen.

2. Touch **Detailed Monitor** to view the Solution Group Exchange Detailed Monitor Screen (Figure 3-ZZZ).
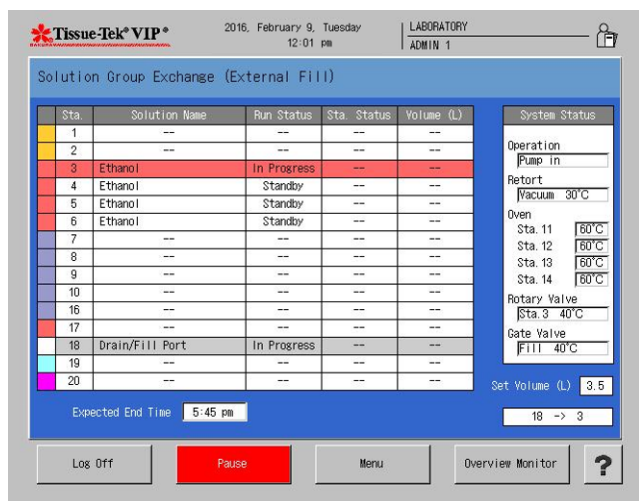
Figure 3-ZZZ

System status area - the current status of the system is displayed in this area.

Solution Exchange Status area: - the current status of the station in progress is displayed:

- **Station color** - indicates the station color selected for that station.
- **Station number** - indicates the station number of that station.
- **Solution name** - indicates the solution name assigned to that station.
- **Run status** - indicates the status of the solution exchange action at that station (Standby, In Progress, Completed, Hold, Aborted, or Not Supplied).
- **Station Status** - Indicates the status of the solution in that station (Full, Sufficient, Low, —*, or Empty).
- **Volume (L)** - indicates the solution volume of the level of any of level sensors that the solution reached in the retort before draining to that station.

Overview Monitor: Touch this button to return to the Exchange Solution Overview Monitor (Group Exchange) screen.

Menu: Touch this button to display the Process Menu Screen.

Pause: Touch the pause button to pause the solution group exchange.

---

* Instrument does not know how much reagent is in the station.

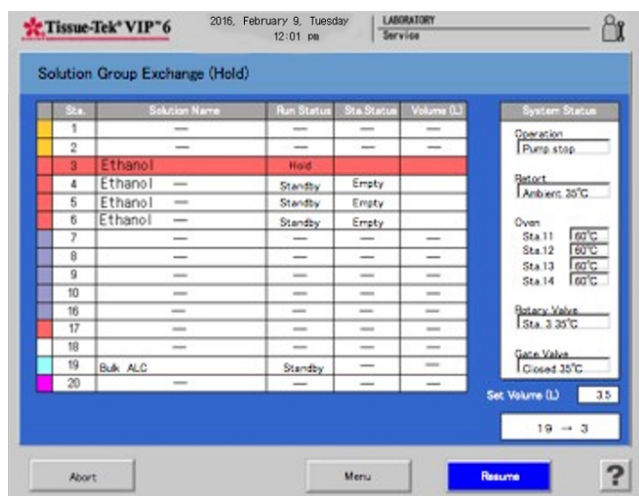- The Exchange Hold (Solution Group Exchange) screen is displayed (Figure 3-AAAA).

Figure 3-AAAA

3. Touch **Resume** to resume the Solution group exchange.

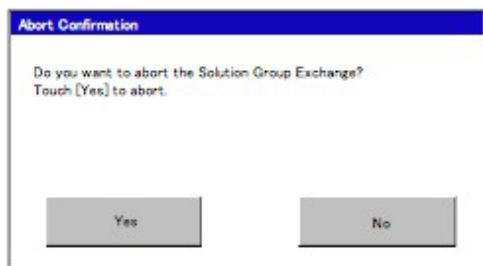4. Touch **Abort** to abort the process (Figure 3-BBBB).

Figure 3-BBBB

- Touch **Yes** to abort.
- Touch **No** to disregard request.

To perform a single solution exchange:

1. Under the Single Solution Tab, touch the **solution** to be exchanged.

2. Touch the **Solution Level** button below the selected solution to choose the correct solution level (150 cassettes (2.7 L), 300 cassettes (3.5 L), Cleaning Level (4.2 L)).

3. Select the desired type of exchange: External Drain, External Fill, Fill from Bulk Reservoir, and Drain & Fill from Bulk Reservoir.

> **!** **NOTE:** Fill from Bulk Reservoir and Drain & Fill from Bulk Reservoir are not available for the solution groups where the bulk reservoir supply has not been selected.

4. Touch Exit to return to the process menu.

To perform an independent automatic transfer:

Independent automatic transfer can rotate up to four different groups of solution, including paraffin, during one solution exchange operation. When using this function, it does not matter whether or not the stations of a particular solution group to be rotated are linked to the bulk solution reservoir. For a solution group which is not linked to the bulk solution reservoir, the automatic transfer is completed after emptying the solution bottle at the last station of that solution group. In this case, the last station needs to be filled with a new solution manually or by using the *Fill* function of the solution exchange feature.

The independent automatic transfer allows the operator to designate the solution volume to be rotated. When a solution in the source station is more than the solution volume designated for the destination station, only the designated solution volume is rotated to the destination station. When the source station is not full enough to supply the designated volume to the destination station, a solution is rotated first from the source station and then from the next station in order to fill the destination station. When the source station is the last station of the solution group, an appropriate amount of solution is supplied from the bulk reservoir.

1. Touch the solution group button to select the group to automatically rotate.

> **!** **NOTE:** The first station of the group must be emptied prior to the start of operation.

> **!** **NOTE:** If paraffin is being rotated, the paraffin waste reservoir must be emptied prior to operation.

2. Touch the **Level** button below the station group to choose the correct solution level (150 cassette level (2.7 L), 300 cassette level (3.5 L), or cleaning level (4.2 L).

3. Touch **View** as List to view as a list.

4. Touch **Start** to begin the process.

5. Touch **Exit** to return to the process menu.

3. CUSTOMIZATION OF SETTINGS

To perform a Paraffin Drain:

1. Touch **Station** button to select the paraffin station to drain.

   ⚠ **WARNING: EMPTY PARAFFIN WASTE RESERVOIR AND REPLACE THE PARAFFIN WASTE INSERT (SEE SECTION 2 FOR INSTRUCTIONS).**

2. Touch **View as a List** to view as a list.

3. Touch **Start** to begin the process.

4. Touch **Exit** to return to the process menu.

To perform a Reservoir Fill:

1. Select the bulk reservoir to fill.

2. Connect external tube to the appropriate bulk reservoir external fill port.

3. Touch **View as a list** to view as a list.

4. Touch **Start** to begin the process.

5. Touch **Exit** to return to the process menu.

To create a Defatting Solution:

Defatting solution is used in the defatting step. Perform the "Defatting solution" operation under the solution exchange function, and you can automatically fill an empty solution bottle from the bulk reservoirs to prepare a mixed solution (Figure 3-CCCC).

The solution name "Ethanol/Xylene (2:1)" indicates a defatting solution whose mixing ratio is fixed to "alcohol 2 : xylene 1" (alcohol 2.7 L : xylene 1.5 L). Similarly, the solution name "Ethanol/Xylene (1:2)" indicates a defatting solution whose mixing ratio is fixed to "alcohol 1 : xylene 2" (alcohol 1.5 L : xylene 2.7 L).

🛇 **NOTE:** The mixing ratio 2:1 or 1:2 is a rough figure and not an accurate mixing ratio. In a mixed solution group, those stations that are recognized as containing a defatting solution are not subject to automatic transfer

🛇 **NOTE:** A mixed solution is not automatically prepared and supplied for automatic transfer (normally performed for solution groups only) or during tissue processing, but it is supplied only from other stations or from the linked bulk reservoir, which means that the mixing ratio is subject to change. A mixed solution is also excluded from the scope of exchange solution functions targeting

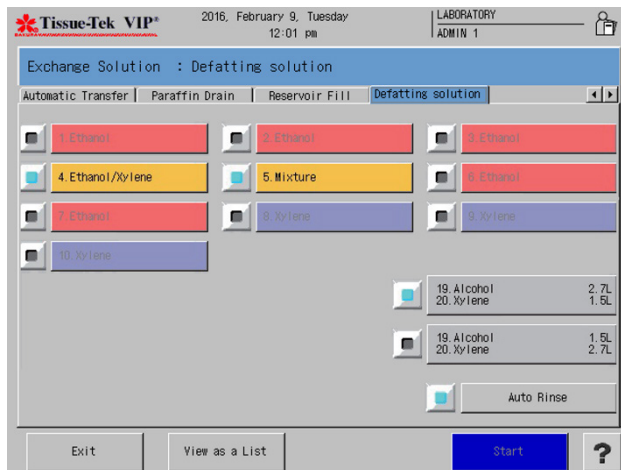solution groups (external drain, external fill, fill from bulk reservoir).

Figure 3-CCCC

1. Select the designated station to fill with the mixed reagent.

2. Use the fill quantity selection buttons to select the appropriate quantity of solution to be filled from bulk reservoir (Station 19) and bulk reservoir (Station 20).

⚠ **CAUTION: Both of the bulk reservoirs require that solution is filled to the Low level or above. The bulk reservoirs cannot be selected if the solution level is below Low. With the bulk reservoir for 2.7-L fill, up to three stations can be selected if the bulk reservoir contains solution to the High level. Confirm that the station configuration includes one of the special solution names for defatting solutions. If not, a mixed solution cannot be prepared.**

3. Confirm that the designated solution bottle is empty.

4. Touch **Start** to begin the process.

⚠ **CAUTION: If the conditions are not met, a cautionary message appears inside the box on the screen (Figure 3-DDDD). If the solution bottle is not empty, pump out the solution from the retort and then end the preparation of defatting solution.**
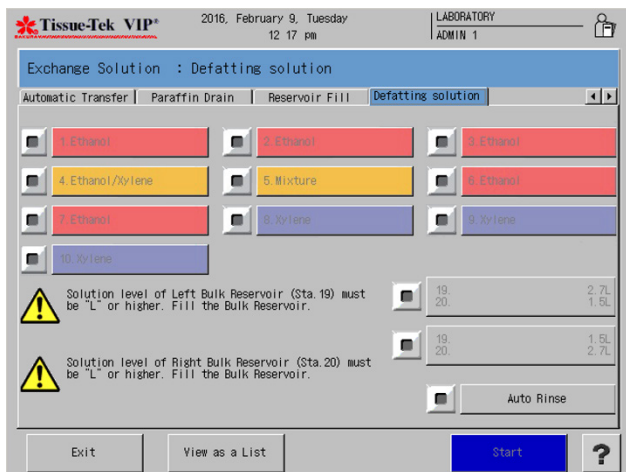
Figure 3-DDDD

5. Touch **Exit** to return to the process menu.

Defatting Solution Preparation Overview and Detailed Monitor

The progress for the preparation of the mixed reagent station is shown on the Defatting Solution Preparation Overview monitor screen (Figure 3-EEEE). The monitor shows the solution number of the applicable solution station, retort status, and solution configuration. Also, you can switch to the Defatting Solution Preparation Detail monitor screen by touching the Detailed Monitor button. Touch Overview Monitor to switch to the overview monitor.
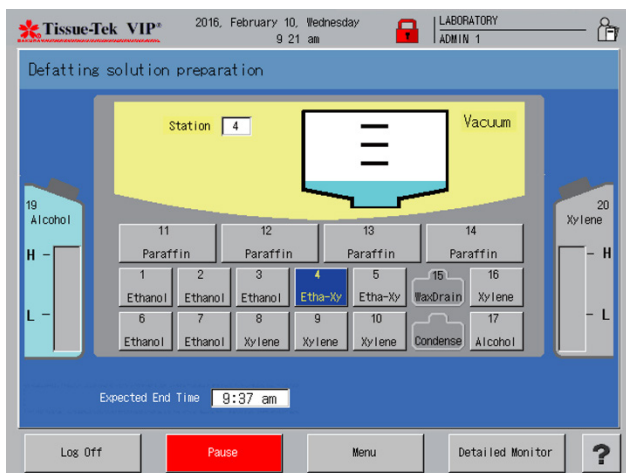
Figure 3-EEEE

1. Touch **Menu** to display the Process Menu Screen.
1. Touch **Detailed Monitor** to view the Defatting Solution Preparation Detailed Monitor Screen (Figure 3-FFFF).
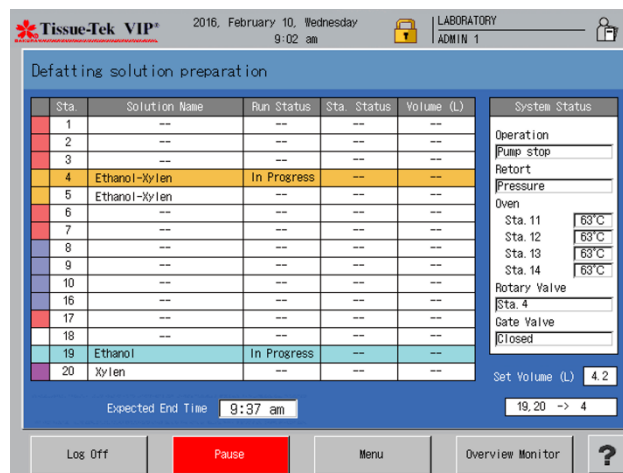
Figure 3-FFFF

System status area - the current status of the system is displayed in this area.

Defatting solution preparation status area: the current status of the station in progress is displayed:

- **Station color** - indicates the station color selected for that station.
- **Station number** - indicates the station number of that station.
- **Solution name** - indicates the solution name assigned to that station.
- **Run status** - indicates the status of the solution exchange action at that station (Standby, In Progress, Completed, Hold, Aborted, or Not Supplied).
- **Station Status** - Indicates the status of the solution in that station (Full, Sufficient, Low, —*, or Empty).

* Instrument does not know how much reagent is in the station.

3. CUSTOMIZATION OF SETTINGS

- **Volume (L)** - indicates the solution volume of the level of any of level sensors that the solution reached in the retort before draining to that station.

Overview Monitor: touch this button to return to the Defatting Solution Preparation overview screen.

Menu: touch this button to display the Process Menu Screen.

Pause: touch the pause button to pause the solution group exchange.

3.5.3 Reset Solution Usage Information

This function allows users to reset the solution stations that have reached their usage limit.

1. From the Process Menu, touch the **Solution Management** button.

2. Touch the **Reset Solution Usage Information** button.

   - The Reset Solution Usage Information screen displays (Figure 3-GGGG).
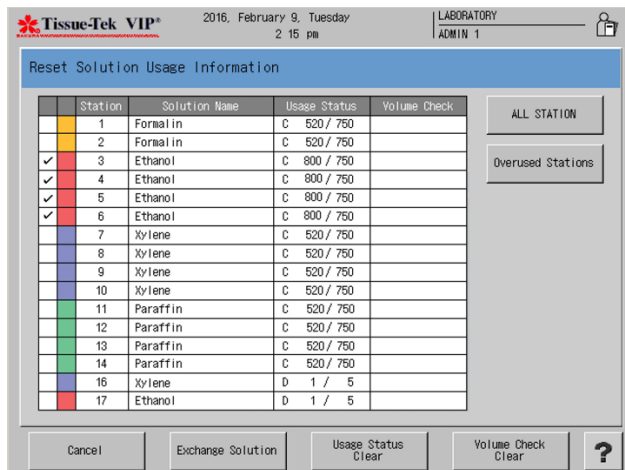
Figure 3-GGGG

- Select a specific station by touching the station number.
- Select the stations that have reached their usage limit, by touching **Overused Stations**.
- To select all stations, touch A**ll Stations**.

3. Once the station(s) have been selected, touch Clear to reset the solution usage.

- A confirmation dialog box appears. Touch **Yes** to reset the solution usage information.

4. Touch **Exchange Solution** to display the solution exchange start screen.

5. Touch **Volume Check Clear** to clear the volume check results in the volume check column.

6. Touch **Cancel** to return to the Process Menu.

Wax Drain Clear

> **NOTE:** When the paraffin waste reservoir is full, an indicator light illuminates to notify users.

Touch the **Wax Drain Clear** button to reset the paraffin waste reservoir to empty. The wax drain usage clear confirmation screen displays (Figure 3-HHHH).
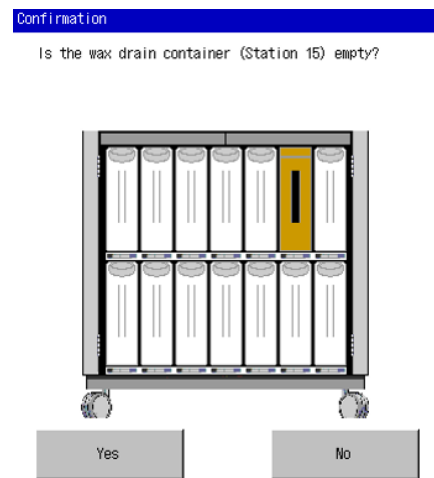
Figure 3-HHHH

> **NOTE:** The usage clear confirmation screen can also be displayed by removing and re-inserting the paraffin waste reservoir.

- Touch **Yes** if the paraffin waste reservoir is empty.
- Touch **No** if there is paraffin still in the reservoir.

Volume Check Reset

Touch the **Volume Check Reset** button to clear the volume check results empty or low in the Volume Check column.

Exchange Solution

Touch the **Exchange Solution** button to perform the solution exchange operation.

3.5.4 Exchange Solutions Calendar

To view the Exchange Solution Calendar

Touch the **Solution Management** button on the Process Menu.

- The Exchange Solution calendar screen displays (Figure 3-IIII).

Green filled days represent the next scheduled solution exchange.

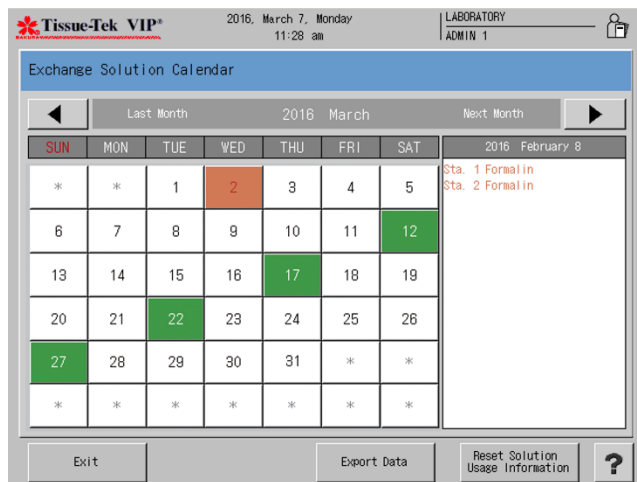**Orange** filled days represent the days solutions have been exchanged.

Figure 3-IIII

The current month is displayed use the left/right arrow buttons to toggle between months.

- Touch any **green** or **orange** filled day to view detailed information regarding the solution exchange or the scheduled exchange. A list of stations and solutions to be exchanged for that day is displayed on the right.

- The Calendar can display the past 3 months of exchange history and the upcoming 12 months of scheduled exchanges.

- Touch the **Export Data** button to export Solution exchange activities for the past 3 months to a USB stick.

- Touch **Exit** to return to the Process Menu screen.

3.5.5 Solution Configuration Selection

Solution configuration selection is used to select the solution configuration to be used on the Tissue-Tek VIP. Up to 5 configurations can be saved on the system.

1. Touch the Solution **Configuration Selection** button on the Process Menu.

- The Solution Configuration Selection screen displays (Figure 3-JJJJ).
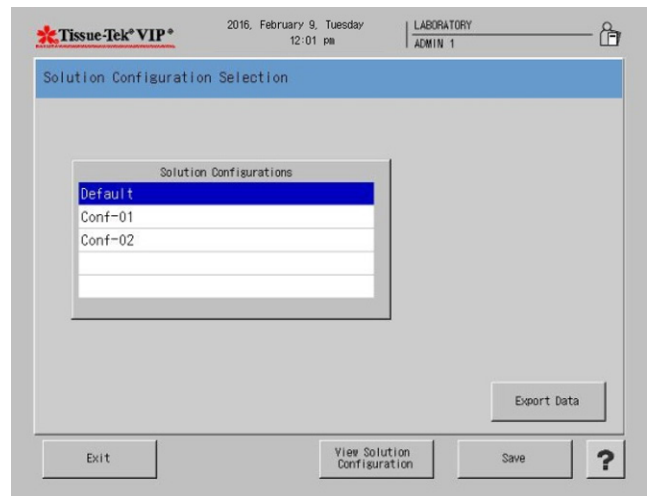
Figure 3-JJJJ

2. Select the configuration to be viewed by touching configuration.

3. Touch the **View Solution Configuration** button.

- The view solution configuration screen displays (Figure 3-KKKK).
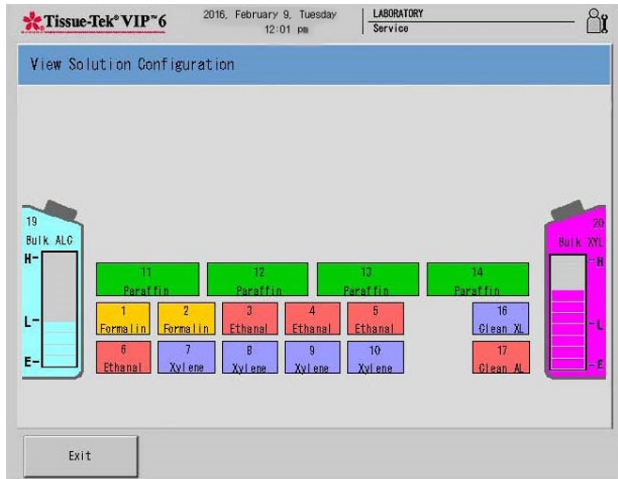
3. CUSTOMIZATION OF SETTINGS

Figure 3-KKKK

- Touch **Exit** to return back to the solution configuration selection screen.
- Touch **Save** to save the selected solution configuration.
- Touch **Export Data** to export the solution configuration data.
- Touch **Exit** to return to the process menu screen.

3.5.6 Paraffin Melt Process

There are three paraffin states: Solid, Melting, and Molten. The VIP 6 AI is designed to assess which paraffin state it is in and evaluate how much heating is required to get to the Molten state. The oven is heated to 70°C during the melting process. After initial setup, solid paraffin can only be added to station 14. The melting process requires 9 hours to complete.

Molten Paraffin Notification Procedure

The paraffin melt process can be stopped by a user if the paraffin becomes molten before the duration period ends.

1. Open the oven door for 5 seconds then close it.

2. Touch the **Yes** button to confirm the paraffin is completely melted.

3. Touch the **Exit** button to close the Melted Paraffin Confirmation window.

Start Paraffin Melt

The Start Paraffin Melt button starts the paraffin melting process.

> **NOTE:** When solid paraffin is added to station 14 on the VIP 6 AI, it is necessary to perform this step.

1. From the Process Menu, touch the **Start Paraffin Melt** button.

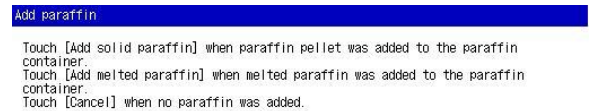   - The start paraffin melt screen displays (Figure 3-LLLL).
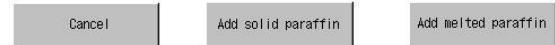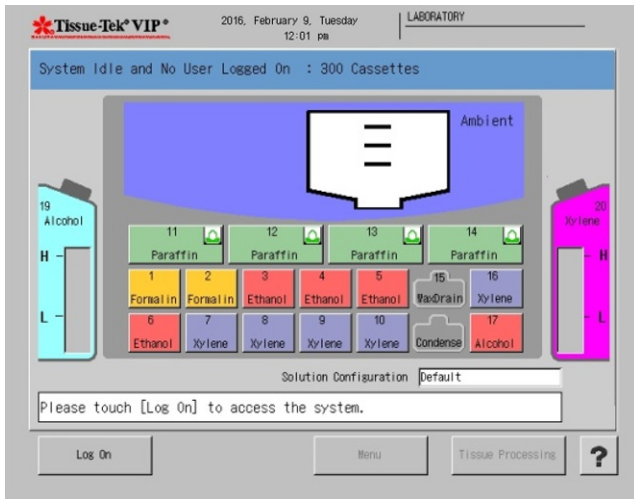

Figure 3-LLLL

2. Select Add solid paraffin or Add melted paraffin.

3. Touch the **Start** button.

- A notice window displays notifying users of the predicted end time.
- Touch **Cancel** to return to the Process Menu.

NOTE: When the VIP 6 AI is in a melting state a paraffin icon displays on the paraffin station that is in a melting state (Figure 3-MMMM).

Figure 3-MMMM

4. OPERATING INSTRUCTIONS

4.1 Initial Setup

Ensure that the initial setup procedures have been performed in accordance with the requirements of Section 3, Customization of Settings, prior to operating the Tissue-Tek VIP 6 AI.

Once the instrument software has been customized for requirements of the laboratory, the Tissue-Tek VIP 6 AI Vacuum Infiltration Processor is ready for use in routine processing. The instrument is designed to be powered on at all times, as this maintains the oven temperature to prevent solidification of the paraffin. This section provides the steps to follow for each processing run.

4.2 Accessing the Start Tissue Processing Screen

The Process Monitor Screen (Figure 4-A) is displayed when the system is ready for operation. It allows for log on and to monitor any processes currently running.
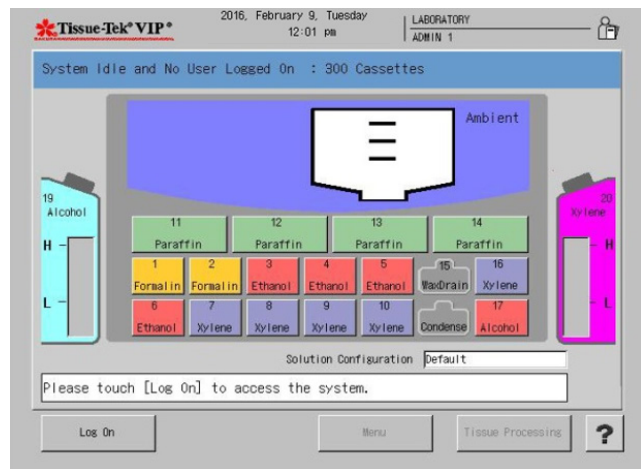
Figure 4-A

ⓘ **NOTE:** The operator must login as an Administrator in order to modify system settings and operating parameters.

To Log On:

1. From the main (Process Monitor) screen, touch the **Log On** button. The Enter Password dialog box displays.

2. Use the touch keypad to enter selected password, and then touch the **Enter** button.

   - The default password is set to "100000".

   ⓘ **NOTE:** For security reasons, selected password will display on the screen, as entered, as a series of asterisks.

   - If login is *unsuccessful*: Re-enter selected password and then press the **Enter** button to resubmit the login request.

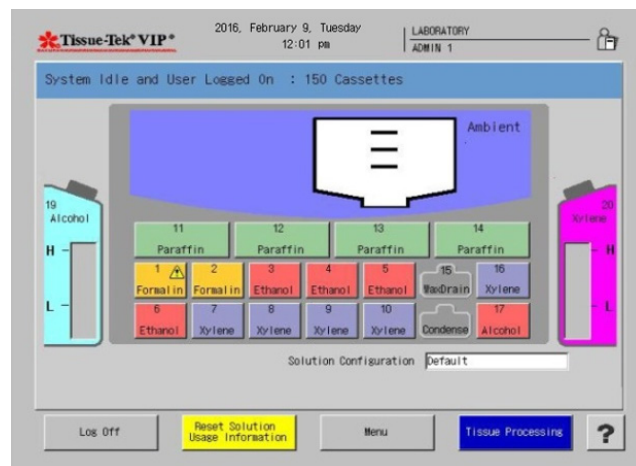   - If login is *successful*: The Process Monitor screen displays (Figure 4-B).

Figure 4-B

3. Touch the **Tissue Processing** button to access the Start Tissue Processing screen (Figure 4-C).

   ⓘ **NOTE:** If multiple solution configurations have been set up, make certain to first select the corresponding solution configuration in the Process Menu tab in the main menu, otherwise the program list will have "***" to the left of each program name that does not correspond to the solution configuration displayed and will not respond to the touch screen command.
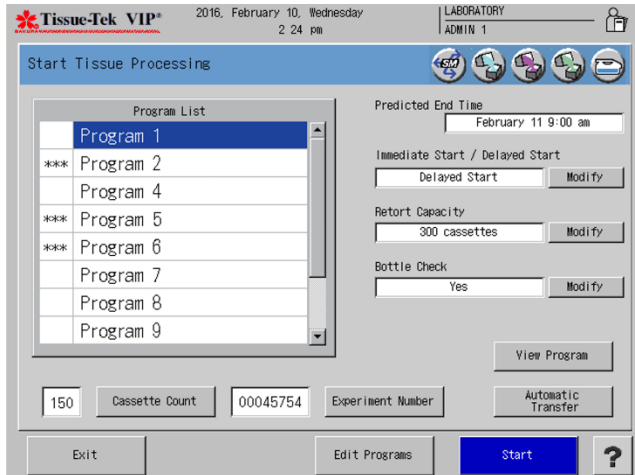
Figure 4-C

4.3 Understanding the Start Tissue Processing Screen

The **Program List** is a list of executable processing programs. When the screen appears, the program that was run last will be highlighted by default.

The **Icons** located in the title bar are as indicated:

 Indicates the Solution Manager has been set to ON for the selected program.

 Indicates Auto Transfer is on for the dehydration group.

 Indicates Auto Transfer is on for the clearing group.

 Indicates the Auto Transfer is on for the infiltration group.

 Indicates the bottle connection check has been set to **Yes**.

End Time - displays the predicted end date and time designated for the selected program. The end date and time will vary depending on the start mode that is selected. The end time can only be edited in the Edit Program field.

Start Mode - allows the user to choose to start processing in the **Immediate** or **Delayed Start** modes.

- Touch **Modify** to choose either Immediate or Delayed Start.

Retort Capacity - allows the user to temporarily change the preset system workload for a processing run.

- Touch **Modify** to choose either 150 Cassettes or 300 Cassettes. If the number of cassettes is changed from 150 to 300, a confirmation window appears to request whether or not to permit the change.

Bottle Check - allows the user to select whether or not to have the instrument check the connection of solution bottles.

- Touch the **Modify** button to select either Yes or No.

Cassette Count - is used to enter the number of cassettes to be processed.

Experiment Number - is used to enter a desired experiment number. This button is only displayed when the "Experiment Number" is set to "In Use" in the Processing Mode Selection screen.

Automatic Transfer - is used to select whether or not to perform the Auto Transfer during processing. Touching this button will display the View Program screen.

Start - is used to start the selected program.

Edit Programs - is used to edit a processing program.

- Touch this button to display the Select Program screen.

View Program - is used to view the contents of the selected program.

- Touch this button to display the View Program screen.

Exit - is used to end the operation and return to the Main log in screen.

? (Help) - is used to display the help screen showing operating information and instructions.

4. OPERATING INSTRUCTIONS

To adjust cassette count:

- Touch the **Cassette Count** button. The Input Cassette Count screen is displayed (Figure 4-D).
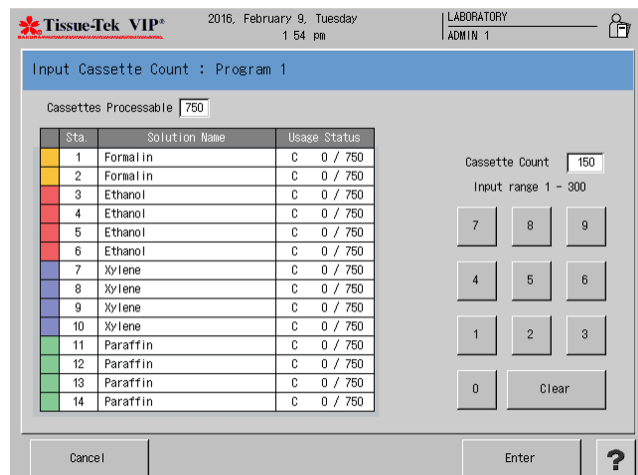

Figure 4-D

Station Color indicates the color selected for that specific reagent group.

Station Number indicates the station number of that station.

Solution Name indicates the name of a solution assigned to that station.

Usage Status indicates the preset solution management method (C=Cassettes) and the current usage status of a solution in that station (Actual usage/Usage limit).

Use the touch keypad to enter the cassette count. The input range is 1-150 or 1-300 depending on the selected retort capacity.

- Touch **Enter**.
- Touch **Clear** to erase the settings.
- Touch **Cancel** to exit without saving.

To adjust the experiment number:

The Experiment Number field is used to display a reference number associated with the tissue samples.

> **NOTE:** This option is available *only if* "Experiment Number" has been set to "In Use" under the "Processing Mode" in System Setup under Utility.

1. Touch the Input Experiment Number button.

- The Experiment Number screen is displayed (Figure 4-E).
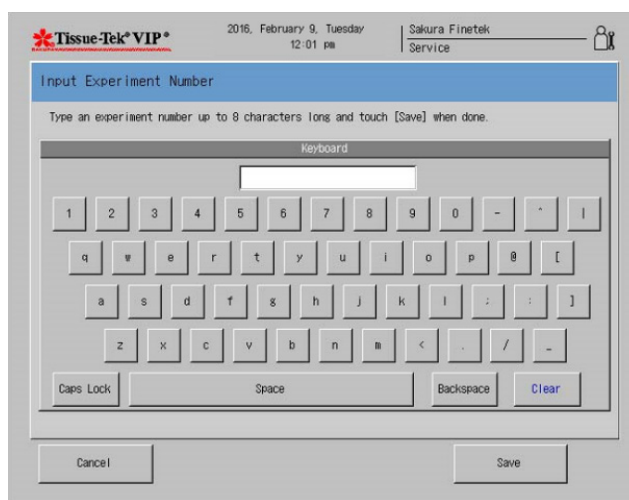
Figure 4-E

2. Use the touch keyboard to enter the experiment number using up to eight characters.

- Touch **Save** to save the experiment number and return to the Processing Menu or
- Touch **Cancel** to return without saving the experiment number.

To view program information:

The **View Program** button is used to display the *View Program screen* that allows a user to view details of the currently selected program.

Touch the **View Program** button.

- The View Program screen is displayed (Figure 4-F). The screen includes the following details:
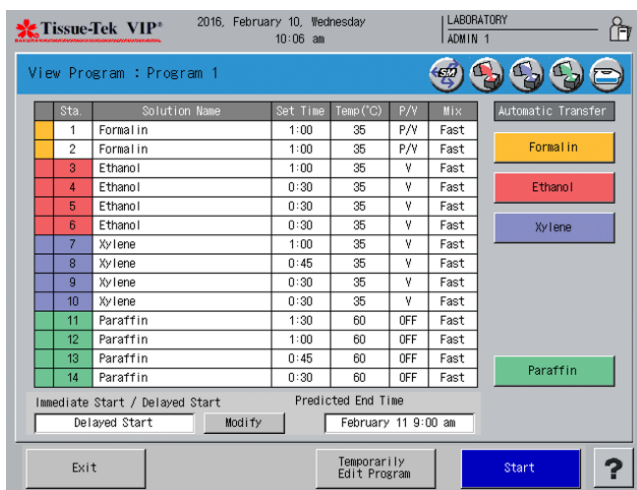

Figure 4-F

Station Color - indicates the color selected for that station.

Station Number - indicates the station number of that station.

Solution Name - indicates the name of a solution assigned to that station.

Set Time - indicates a processing time preprogrammed for that station.

Temperature: - indicates the preset retort temperature for the selected station.

P/V - indicates the preset P/V setting for the selected station.

Mix - indicates the preset mixing settings for the selected station.

Exit - closes current screen.

Temporarily Edit Program: any changes made to the program here will apply only to this particular run. Following completion of the run, the program will revert to its original settings.

NOTE: The Ethanol and Xylene bulk reagent buttons display *only if* Automatic Transfer has been selected.

Automatic solution transfer:

Automatic transfer during processing can rotate up to seven different solution groups including paraffin during a processing run. To operate this function, solution supply must come from the bulk reservoirs which should contain a sufficient amount of solution. New solution is supplied from the bulk solution reservoir to the last station of a particular solution group.

If the Solution Manager is activated, the solution group designated for automatic transfer is discontinued.

Solution and paraffin rotations occur differently when using Automatic transfer.

Solution rotation - automatic Transfer can be selected for multiple groups of reagents however, no waste solution station is available. When this function is selected, the VIP requires the first reagent bottle of a specific group to be emptied before processing can be started. During processing, the VIP draws reagent from the next full reagent bottle of a specific group into the retort for processing then drains into the empty bottle. The process continues until it reaches the last station of the group, which is now empty. At this point reagent is drawn from the linked bulk reservoir.

Paraffin rotation - During processing, paraffin from the first paraffin station is used to process the run then pumped out into the waste paraffin container. Paraffin in the subsequent stations is rotated. Following the completion of the run, paraffin in station 14 needs to be replenished by a user.

1. Touch the **Automatic Transfer** button.

   - The View Program screen is displayed.

2. Touch the solution group button to select the group to automatically rotate.

   NOTE: The first station of the solution group must be emptied prior to the start of operation.

   NOTE: If paraffin is being rotated, the paraffin waste reservoir must be emptied prior to operation.

   - An icon appears in the top right of the screen to indicate which solution groups are set for automatic transfer.

4. OPERATING INSTRUCTIONS

4.4 Tissue Processing

4.4.1 Preparation

Ensure that the retort is drained and the Clean Cycle has been run if paraffin was pumped into the retort during the previous run see *Cleaning* below. These steps must be performed before the instrument will allow a new processing run to be performed.

1. Prepare the specimens for processing as follows: Properly fill and close the Tissue-Tek Cassettes, ensuring that there is a sufficient ratio between the size of the specimen and the volume of the cassettes.

2. Place the divider into the sample basket, and then load the cassettes with the slanted end up. Cover the basket with the basket lid. Fill the other baskets if applicable.

3. Open the retort by moving the retort handle located on the top of the retort to the right. Place the basket(s) into the retort, rotating the handles so they lay flat against the retort sides. Close and lock the retort lid, and then turn the latch by turning the handle to the left until a click is heard. Make sure the message "Retort Lid Unlocked" has disappeared from the display.

4. Tissue-Tek® Paraform® Sectionable Cassettes can be processed in the VIP using Tissue-Tek AutoTEC® magazines, product code 7005. The retort can accommodate 8 magazines. Each magazine holds 32 Paraform cassettes. Two rows of four magazines can be placed in the retort. Place the magazines inside the retort with the cover facing up. After loading the magazines, close and lock the retort lid by turning the handle to the left until a click is heard. Make sure the message "Retort Lid Unlocked" has disappeared from the display.

4.4.2 Routine Operation

From the Start Tissue Processing screen, touch the **Start** button.

*   The Start Tissue Processing Confirmation screen displays (Figure 4-G).
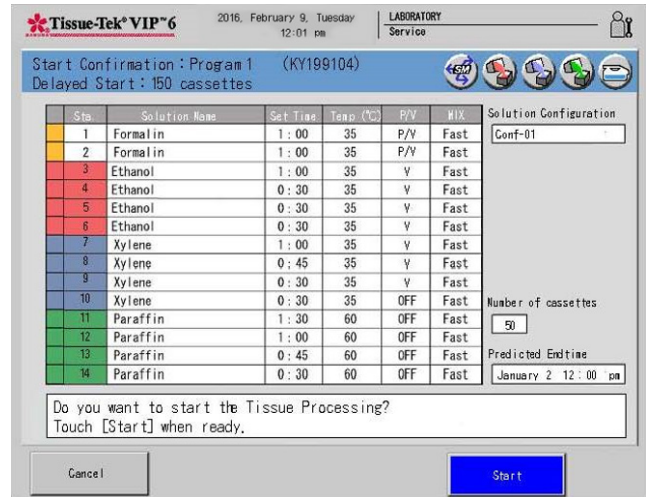
Figure 4-G

*   Touch the **Start** button to start a processing run.
*   Touch **Cancel** to return to the Start Tissue Processing screen.

If "Immediate Start" was selected, the Tissue Processing Screen will appear. The current time will be displayed as the "Start Time" and the predicted "End Time" will be calculated and displayed and processing will begin immediately.

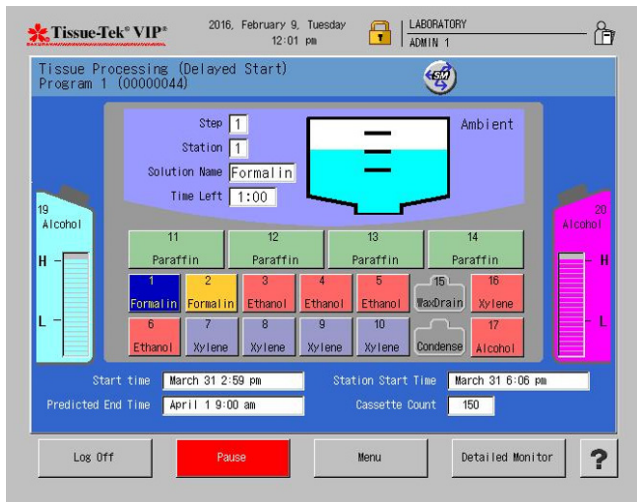*   The Tissue Processing Detailed screen displays (Figure 4-H).
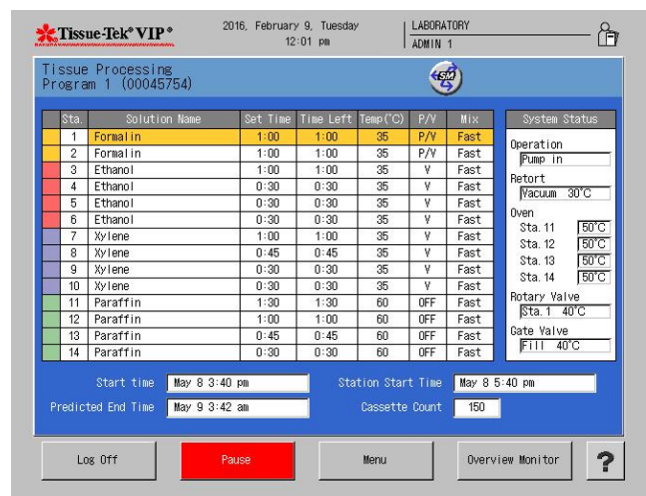
Figure 4-H

The Tissue Processing Detailed Screen displays the current status of the system.

- Touch **Overview Monitor** to return to the Tissue Processing Overview screen.

If "Delayed Start" was selected, the "Delayed Start Overview" screen will display (Figure 4-I).

Figure 4-I

The "Delayed Start" Screen displays the following information:

Lock Icon - indicates the retort is locked.

Start Time - indicates the date and time tissue processing was started.

Station Start Time - calculates the predicted date and start time of tissue processing, following the delayed countdown.

Predicted End Time - indicates the predicted date and time that processing will finish.

Cassette Count - indicates the number of cassettes entered at the start of processing.

- Touch the **Pause** button to interrupt the delayed start.

- Touch the **Menu** button to view the Process Menu screen.

- Touch **Log Off** to log off of the system.

- Touch the **Detailed Monitor** button to view the "Tissue Processing Delayed Start Detailed" screen (Figure 4-J).
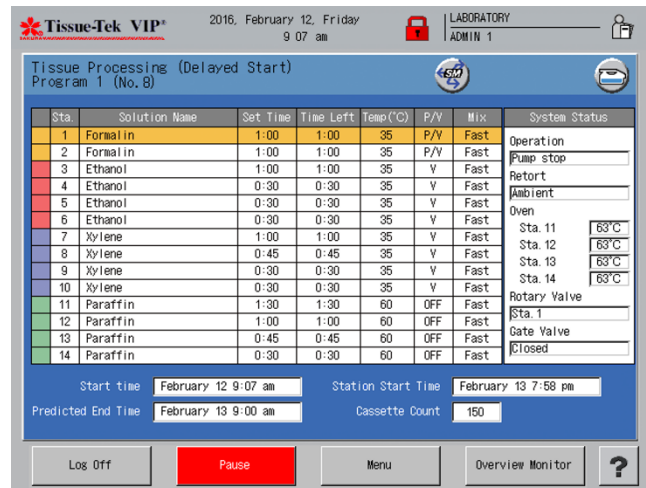
Figure 4-J

The Tissue Processing Delayed Start Detailed screen displays the current status of the system.

- Touch **Overview Monitor** to return to the Tissue Processing Overview screen.

4.4.3 Adding Cassettes

After a "Delayed Start" has been initiated cassettes can be added to a processing run.

> **NOTE:** If solution manager is set to count the number of cassettes processed, update the cassette count when adding or removing cassettes from a processing run.

1. From the Delayed Start Overview screen touch the **Pause** button.

   - The lock icon disappears and an alarm sounds while in a paused state.

2. Open the retort lid and add cassettes to basket.

3. Close and lock retort lid.

4. Touch the Menu button.

5. Touch the Update Cassettes icon.

- The Modify Cassette Count Screen displays (Figure 4-K)
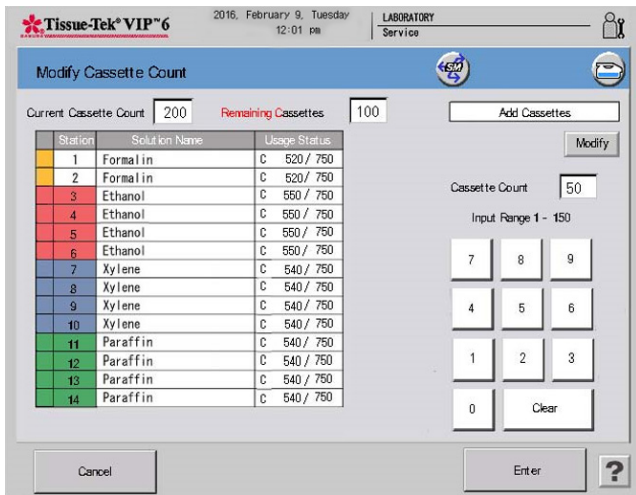
Figure 4-K

The Modify Cassette Count screen displays the following information:

Current Cassette Count - indicates the number of cassettes originally entered at the start of the processing run.

Remaining Cassettes – indicates how many more cassettes can be added to this processing run.

Modify - used to modify the number of cassettes originally entered. Toggle between Add Cassettes, Remove Cassettes, or Update Cassettes.

- Add Cassettes – calculates the number of cassettes added with the original total.

- Update Cassettes - user updates the entire total of cassettes to be processed.

- Remove Cassettes – subtracts the amount of cassettes being removed from the original total.

Cassette Count – using the keypad indicate how many cassettes are being added or removed from the processing run or if the entire cassette total has been updated.

1. Touch the **Modify** button to select either Add Cassettes, Update Cassettes or Remove Cassettes

2. Use the keypad to enter the amount of cassettes being added, updated, or removed.

3. Touch the **Enter** button to save.

4. Touch the **Resume** button to continue processing.

> ⊘ **NOTE:** If the solution manager is not set to count cassettes, then only follow steps 1-3 then touch **Resume** to continue processing.

When tissue processing is completed a Notice window displays.

- Touch the **Exit** button.

- The Tissue Processing End screen displays (Figure 4-L).
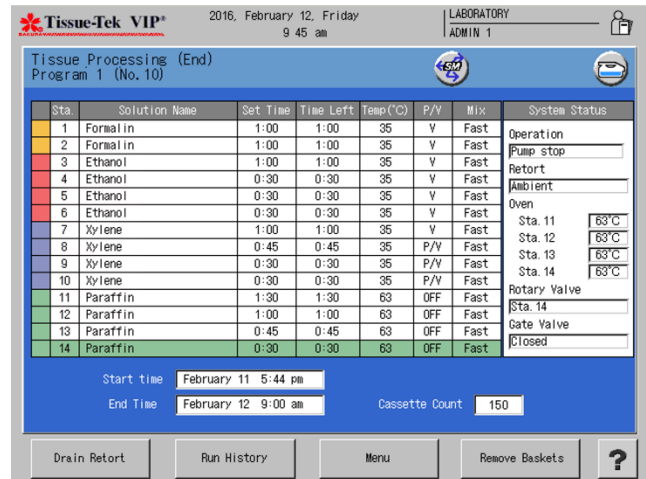
Figure 4-L

The Tissue Processing End screen displays the current status of the system.

- Touch the **Remove Baskets** button. The Basket Removal confirmation screen displays.

- Touch **Yes** if all of the baskets have been removed from the retort. The retort is automatically drained.

- Touch **No** if there are baskets still in the retort.

- A Drain Retort confirmation window displays.

- Touch **Abort** to abort. A second Drain Retort Abort Confirmation Window opens.

- Touch **Yes** to abort or **No** to continue with the retort drain.

- After a retort drain has completed an alarm sound to notify users.

- Touch **Menu** to open the Process Menu screen.

4.4.4 Removing AutoTEC Magazines

When removing the magazines from the retort, to prevent misalignment or dislodging of cassettes, gently grasp the magazines from the top and rotate to an upright position with correct side up, as show below (Figure 4-M).

Figure 4-M

4.5 Cleaning

After a processing run the Clean Cycle Start Screen displays (Figure 4-N). The Clean Cycle Start Screen consists of three tabs, Clean Retort, Warm Water Flush and Rinse Cycle. When a program is selected the lamp icon illuminates.
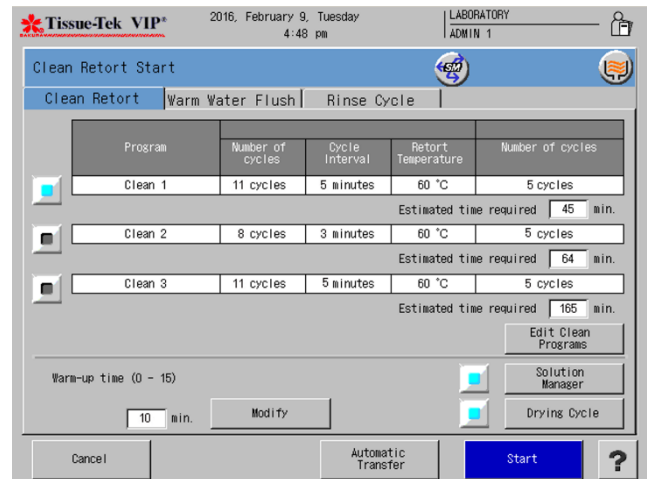
Figure 4-N

4.5.1 The Clean Retort Tab

On the Clean Retort Tab information pertaining to the clean cycle is displayed.

- Touch the **Edit Clean Programs** button to edit the current cleaning program.

- Touch the **Modify** button to change the Dechloroform cycle to In Use or Not In Use.

- Touch the **Modify** button to change the warm-up time. The setting is 0-15 minutes.

- Touch the **Solution Manager** button to enable or disable the solution manager function. If the solution manager is enabled the lamp icon is illuminated and the solution manager icon is displayed in the upper right of the screen.

- Touch the **Drying Cycle** button to enable or disable the drying function. If the drying cycle is enabled the lamp icon is illuminated and the drying cycle icon is displayed in the upper right of the screen.

4. OPERATING INSTRUCTIONS

To Start the Cleaning Cycle

1. Touch **Start** to begin the selected clean cycle.

   - The Clean Start Confirmation Screen displays.

2. Touch **Yes** to start.

   - The Clean Start Notice Window displays.
   - Touch **No** to return to Clean Cycle Start Screen.

3. Touch the **Exit** button to close the Start Notice Window.

   - The Clean Retort Overview Monitor Screen displays (Figure 4-O).
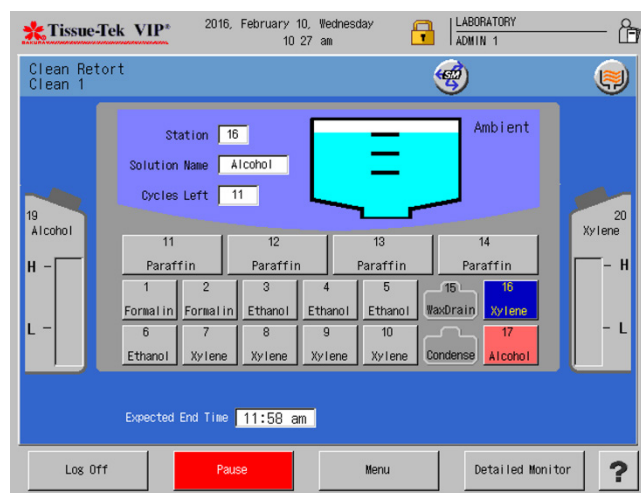
Figure 4-O

4. Touch Log off to log out of the system. When the system is in the log off condition, the **Log On** button will display.

Clean Retort Detailed Monitor

The Clean Retort Detailed Monitor allows users to view the system status, cleaning status, remaining warm-up time and expected end time of a clean cycle.

1. Touch **Menu** to display the Process Menu Screen.

2. Touch **Detailed Monitor** to switch the display to the Clean Retort Detailed Monitor Screen (Figure 4-P).
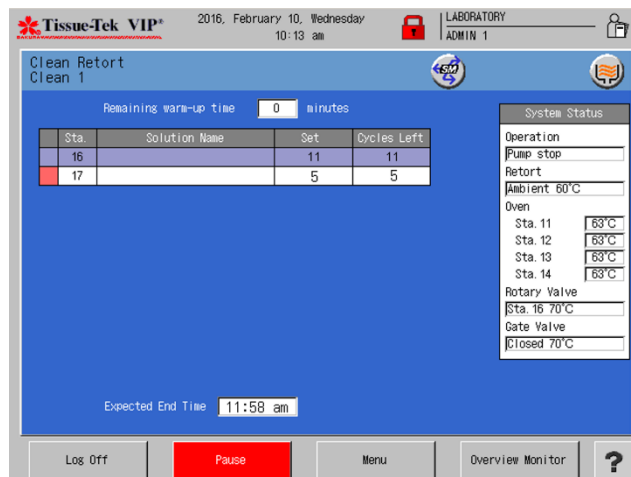
Figure 4-P

The Clean Retort Detailed Monitor displays the following information:

System status area - The current status of the system is displayed in this area.

Cleaning status area - The current status of the cleaning in progress is displayed.

Station color - indicates the station color selected for that station.

Station number - indicates the station number of that station.

Solution name - indicates the solution name assigned to that station.

Set - indicates the preset number of cleaning cycles.

Cycles Left - indicates the remaining number of cleaning cycles.

Remaining Warm-up Time - The remaining warm-up time is displayed.

Expected End Time - This field indicates the estimated time the retort cleaning is completed.

Overview Monitor - Touch this button to return to the Clean Retort Overview Monitor screen.

Pause - Touch the pause button to pause the clean cycle.

- The Clean Retort Hold screen is displayed (Figure 4-Q).
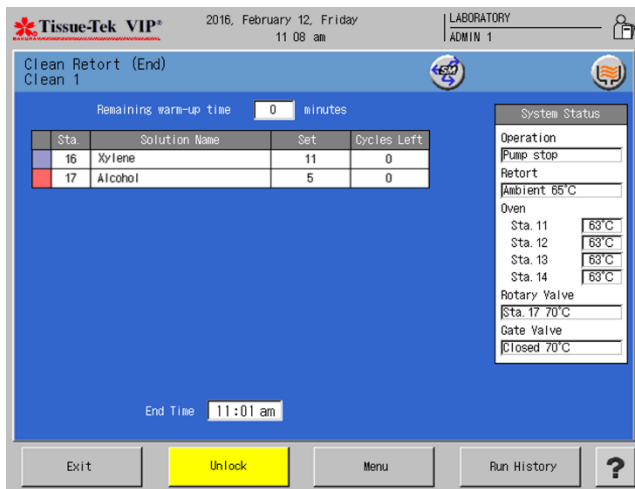
Figure 4-Q

- Touch **Resume** to resume the clean cycle.
- Touch **Abort** to abort the clean cycle. The Clean Abort Confirmation Window displays (Figure 4-R).
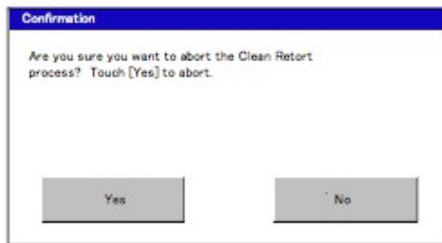
Figure 4-R

- Touch **Yes** to abort.
- Touch **No** to return to the clean retort hold screen.

4.5.2 Warm Water Flush Tab

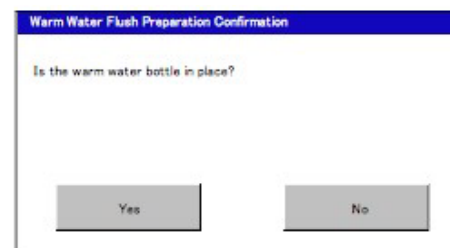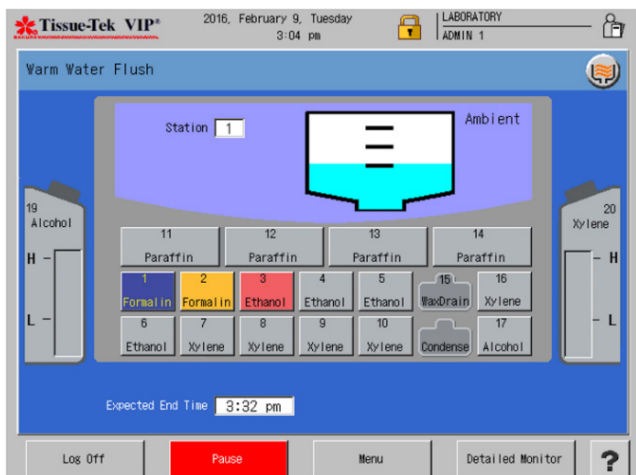The Warm Water Flush Tab (Figure 4-S) displays the solution name and station numbers of the reagents where a warm water flush can performed.
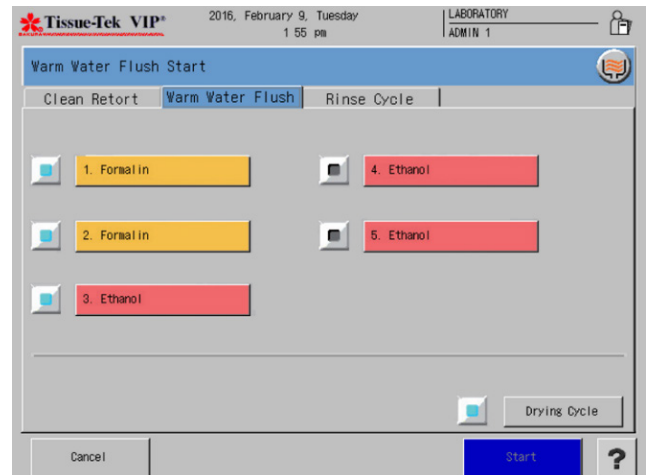
Figure 4-S

1. Touch the station chosen to perform the warm water flush. The lamp icon will illuminate.
2. Touch the **Drying Cycle** button to enable or disable the drying cycle. If the drying cycle is enabled the lamp icon is illuminated and the drying cycle icon is displayed in the upper right of the screen.

To start the warm water flush:

1. Under the Warm Water Tab, touch to select one of the listed stations.
   - The Warm Water Flush Start Screen displays.
2. Place warm water in the selected stations.
3. Touch the **Drying Cycle** button if drying is desired upon completion.
4. Touch the **Start** button to start the warm water flush.
   - The Warm Water Flush Preparation Confirmation screen displays (Figure 4-T).

Figure 4-T

4. OPERATING INSTRUCTIONS

5. Touch the **Yes** button when warm water bottle(s) are in place. The Warm Water Flush Confirmation Screen Displays.

   - Touch **No** to exit back to the Cleaning Menu without starting the warm water flush.

6. Touch the **Yes** button when ready to start. The Warm Water Flush Start Notice displays.

   - Touch **No** to exit back to the Warm Water Flush window.

   - Touch **Exit** to close the window.

   - The Warm Water Flush Overview Monitor Screen displays (Figure 4-U).

Figure 4-U

7. Touch **Log off** to log out of the system. When the system is in the log off condition, the Log On button will display.

Warm Water Flush Detailed Monitor

The Warm Water Flush Detailed Monitor allows users to view the system status, cleaning status, remaining warm-up time, and expected end time for a warm water flush.

1. Touch **Menu** to display the Process Menu Screen.

2. Touch **Detailed Monitor** to switch the display to the Warm Water Flush Detailed Monitor Screen. The following information is displayed (Figure 4-V).
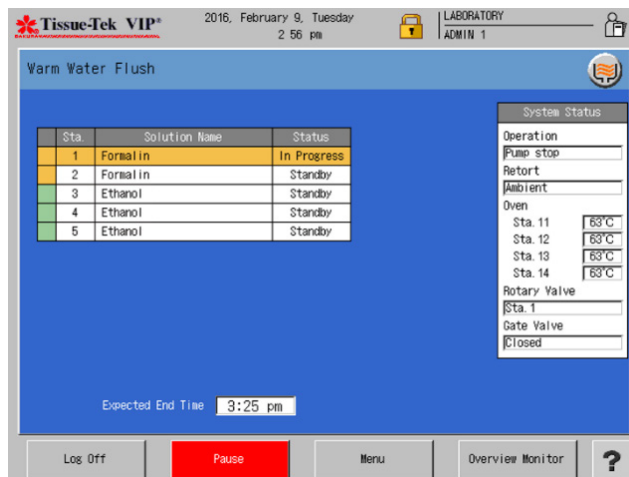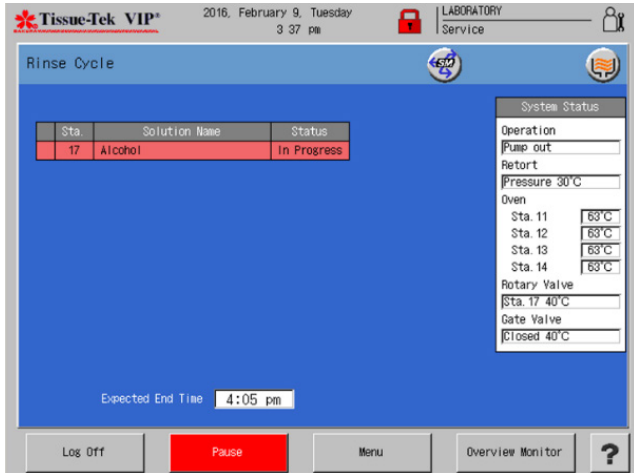

Figure 4-V

System status area - The current status of the system is displayed in this area.

Cleaning status area - The current status of the cleaning in progress is displayed:

Station color - indicates the station color selected for that station.

Station number - indicates the station number of that station.

Status - indicates the status of the warm water flush at that station (standby or in progress or Hold or Completed).

Overview Monitor:

Touch this button to return to the Warm Water Flush Overview Monitor screen.

Pause:

Touch the **Pause** button to pause the warm water flush.

   - The Warm Water Flush screen is displayed (Figure 4-W).
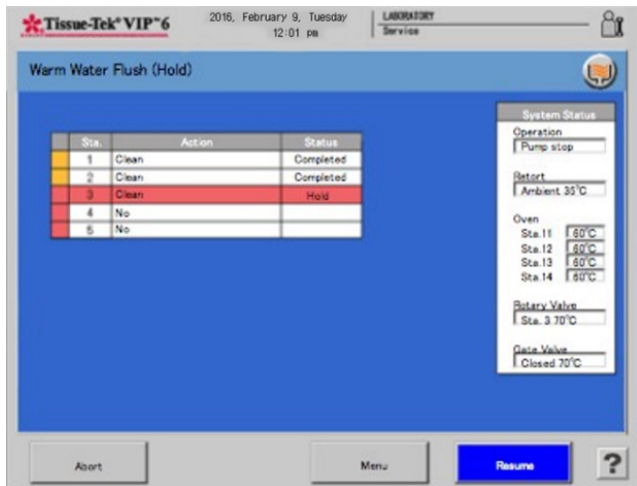
Figure 4-W

- Touch **Resume** to resume the warm water flush.
- Touch **Abort** to abort the warm water flush.

4.5.3 Rinse Cycle Tab

The Rinse Cycle tab (Figure 4-X) allows the user to rinse the retort and tubing with alcohol after completion of a solution exchange.
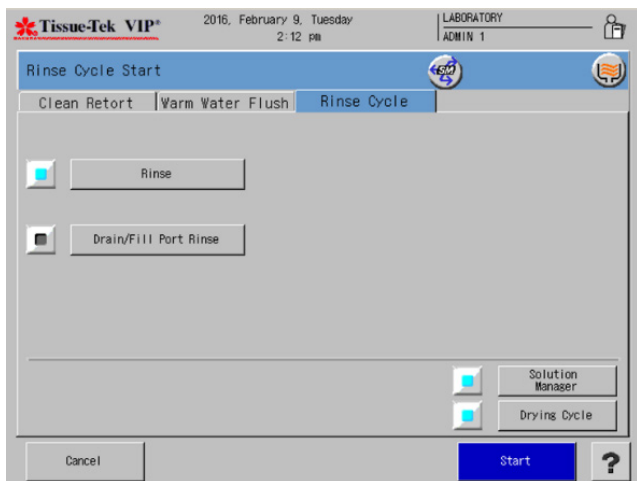
Figure 4-X

1. Touch the **Rinse** button to rinse the retort and tubing with alcohol from station #17.

- Touch Solution Manager to activate the Solution Manger during the rinse. Once the Solution Manger is selected the lamp icon illuminates and the Solution Manger icon displays.

2. Touch **Drain/Fill Port Rinse** if using alcohol from an external container to rinse the retort and lines after a solution exchange.

3. Touch **Drying Cycle** to perform a drying process following the cleaning.

4. Touch **Start** to begin the process.

> **NOTE:** If Drain/Fill Port Rinse is selected, a Drain/Fill connection confirmation window will display select yes or no.

- A Start Confirmation window displays, select yes or no.

- The Start Notice Window displays. Touch **Exit** to exit.

- The Rinse cycle Overview Monitor Screen displays (Figure 4-Y).

- Touch **Cancel** to exit to the process menu.
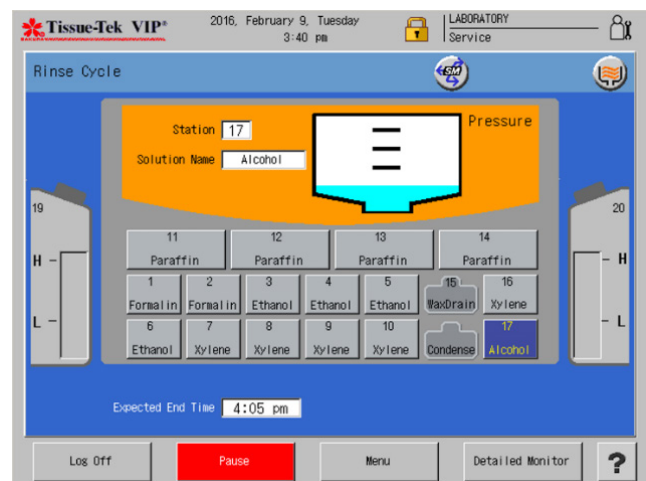
Figure 4-Y

5. Touch **Log off** to log out of the system. When the system is in the log off condition, the Log On button will display.

4. OPERATING INSTRUCTIONS

Rinse Cycle Detailed Monitor

The Rinse Cycle Detailed Monitor allows users to view the system status, cleaning status, and expected end time for a rinse cycle.

1. Touch **Menu** to display the Process Menu Screen.

2. Touch **Detailed Monitor** to switch the display to the Rinse Cycle Detailed Monitor Screen. The following information is displayed (Figure 4-Z).

Figure 4-Z

System status area - The current status of the system is displayed in this area.

Cleaning status area - The current status of the cleaning in progress is displayed.

Station color - indicates the station color selected for that station.

Station number - indicates the station number of that station.

Solution name - indicates the solution name assigned to that station.

Status - indicates the status of the rinse cycle (Standby or In Progress or Hold or Completed).

Overview Monitor:

Touch this button to return to the Rinse Cycle Overview Monitor screen.

Pause:

Touch the **Pause** button to pause the rinse cycle.

- The Rinse Cycle Hold screen displays (Figure 4-AA).
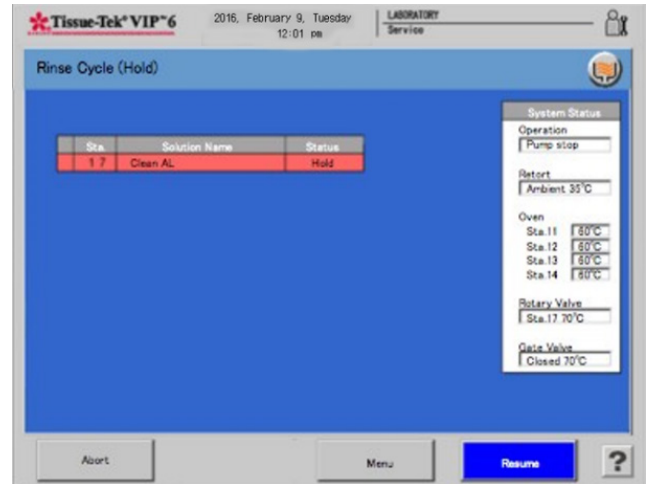
Figure 4-AA

- Touch **Resume** to resume the rinse cycle.
- Touch **Abort** to abort the rinse cycle.
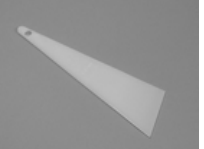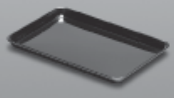
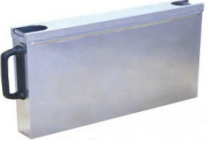# 5. CONSUMABLES AND ACCESSORIES
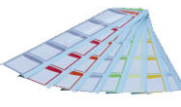
5.1 Consumable Materials

Product Code	Description	
4170-01, white 4120-01, aqua 4157-01, blue 4119-01, gold 4156-01, green 4118-01, lime 4117-01, orange 4155-01, pink 4135-01, red 4153-01, tan 4154-01, yellow 4180-01, gray	Tissue-Tek® Uni-Cassette® 12 colors available	
6160	Fume Filter (2/pk)	
6045	Paraffin Waste Bags	

5.2 Accessories

Product Code	Description	
1550	Paraffin Scraper, Large	
6034	Paraffin Scraper, Small	
7109	Basket Transport Tray	
5265	Cassette Baskets with Dividers and Handles	
7005	AutoTEC 32 –Cassette Magazines	

Product Code	Description	
7093	AutoTEC a120 20–Cassette Magazines	

Product Code	Description	
F60-500-00	Reagent Bottle	
A-MO79-U050-00-A	Condensation Bottle	
F60-529-00	Reagent Bottle labels	
F60-492-00	Paraffin Reservoir, small	
F60-493-00	Paraffin Reservoir, large	
F60-499-00	Paraffin Waste Reservoir	
0006875-01	Level Sensor Cleaning Brush	
6033	Uninterruptible Power Supply (UPS)	
6163	Screen Protection Sheet	
A3-60-4304	USB Memory	
0007852-01	Operating Manual	
F61-061-00	External Drain/Fill Port Hose	
F61-059-00	Bulk reservoir (right) fill port hose	
F61-060-00	Bulk reservoir (left) fill port hose	

Where to Call to Order Consumables and Accessories

If located within the United States, contact the Order Management Department of Sakura Finetek USA, Inc., by calling toll-free: 1-800-725-8723. Alternately, or in countries other than the United States, contact the nearest authorized Sakura distributor.

6. CARE OF THE INSTRUMENT

6.1 General Maintenance

This section provides information on how to care for and maintain the Tissue-Tek VIP 6 AI. The instrument must be maintained correctly to ensure proper operation.

Read this section carefully before attempting to perform maintenance. Follow all instructions carefully.

6.1.1 Daily Maintenance

Retort

⚠ **WARNING: MAY CONTAIN BIO-HAZARDOUS WASTE. DISPOSE OF CONTENTS IN ACCORDANCE WITH LOCAL REGULATIONS.**

1. Clean the inside of the retort lid, the lid gasket, the rim, and all surfaces and the retort by wiping with a clean cloth. If xylene is used for any reason, always remove residual xylene by following up with a cloth moistened with alcohol. After cleaning, inspect the gasket carefully for cracks, splitting, tearing, or other signs of deterioration that could cause leaks. Replace the gasket if necessary.

2. Clean the outlet filter on the bottom of the retort, as follows:
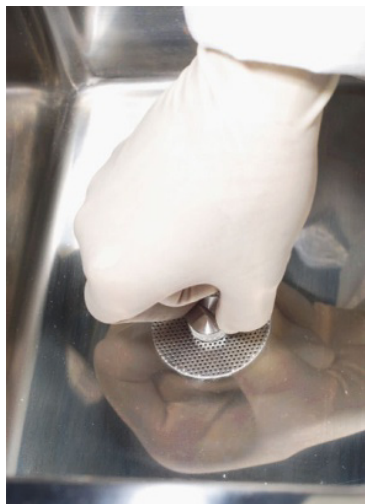

Figure 6-A

Grasp the screw and turn counterclockwise, then remove it from the retort.

a. Remove any debris, then rinse thoroughly under running tap water.

b. Reinstall the filter.

Exterior Surfaces

Keep the exterior of the cabinet free of dust and clutter. Generally, wiping with a clean cloth moistened with water is all that is needed to keep the cabinet dust free. Do not use solvents to clean the exterior, especially the control panel. To disinfect the touch panel screen, spray 70%-80% alcohol onto a soft cloth and gently wipe the screen. Do not spray any liquid directly onto the screen. The acrylic doors may be cleaned with a glass cleaner and soft cloth.

6.1.2 Weekly Maintenance

Reagent Maintenance

Reagents may be exchanged/rotated manually or by using the Automatic Transfer (see Section 3). Replace or rotate processing reagents as determined by laboratory validation.

1. If manually replacing reagents, empty each bottle, rinse with compatible reagent and refill with the appropriate volume of fresh reagent.

2. If manually rotating reagents, empty the first bottle of each reagent group, then move remaining reagent(s) back one to the previous station.

Warm Water Flush-Internal Line Maintenance

1. The purpose of the Warm Water Flush is to dissolve chemicals (usually pH buffer salts) in the VIP that precipitate out of solution when Neutral Buffered Formalin (NBF) comes into contact with subsequent alcohols. Precipitation volume depends largely upon the concentration of alcohol following the NBF. Since the buffer salts require water to remain in solution, warm water is placed in the bottles where the precipitate may accumulate, usually the formalin and first two alcohol stations. During this "Flush" cycle, the water is drawn from each bottle to the retort and then returned to the same bottle.

Exception to Warm Water Flush Maintenance is made when Tissue-Tek VIP® Fixative is used. Because it is a non-precipitating buffered fixative, the internal line maintenance is unnecessary.

2. To perform the Warm Water Flush:

   a. Rinse, then fill formalin and first two alcohol bottles with clean warm water.

   b. Install into their appropriate stations.

> **⊕ NOTE:** Stations 1 through 5 can be selected for a warm water flush procedure.

From the Process Menu, touch the Cleaning icon then the Warm Water Flush Tab. (see "*Warm Water Flush*" in Section 4).

When the Warm Water Flush has completed, empty the water from those bottles and refill with appropriate fresh reagent. Return the bottles to their individual stations, ensuring a secure connection.

Clean Cycle Reagents

The Clean Cycle Reagents accumulate paraffin and xylene with each use. The amount of contamination can be controlled by wiping the retort of any excess paraffin prior to initiating the clean cycle. These reagents should never become "sludgy" or extremely viscous that would pose an internal clogging risk. If a xylene substitute is used or additional items are added to the Clean Cycle process, these reagents may require more frequent replacement.

It is recommended to replace these reagents after every five uses.

Remove the bottles to discard the waste reagent. Refill with fresh reagent of determined volume and reinstall bottles into designated stations, ensuring a secure connection.

Cleaning of the Ultrasonic Level Sensors

> ⚠ **CAUTION: If the ultrasonic level sensors provided in the retort get dirty with foreign substance, they may be unable to work properly, causing instrument malfunction.**

It is recommended to clean the level sensors <u>weekly</u> using the level sensor cleaning brush (P/N 0006875-01), according to the following procedure, to ensure their proper operation.
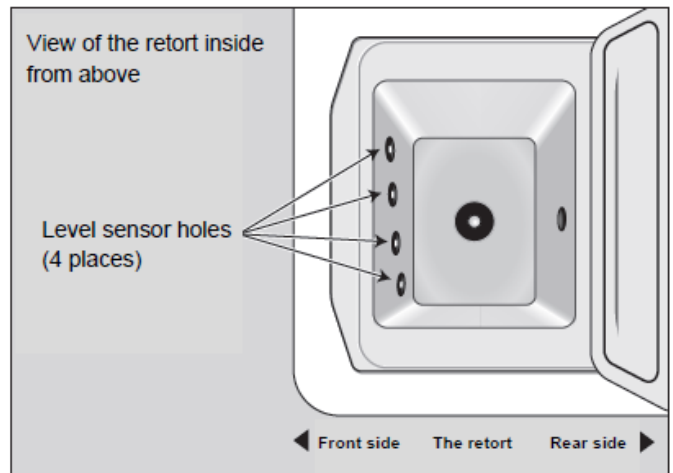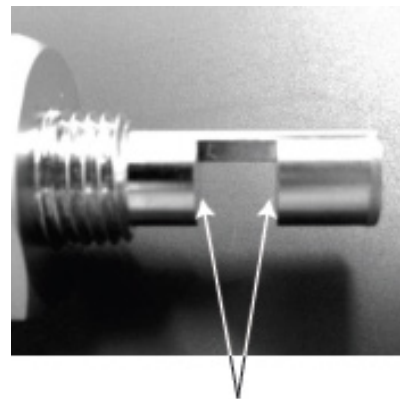

Figure 6-B

Level sensor probe

Clean these sensor faces

Figure 6-C

6. CARE OF THE INSTRUMENT

1. Open the retort lid. If the retort is hot, wait until it cools down.

2. Moisten the tip of the level sensor cleaning brush with alcohol.

Figure 6-D

3. Hold the brush with the tip downward. Insert the tip into the underside of the sensor probe as shown in the photo below.

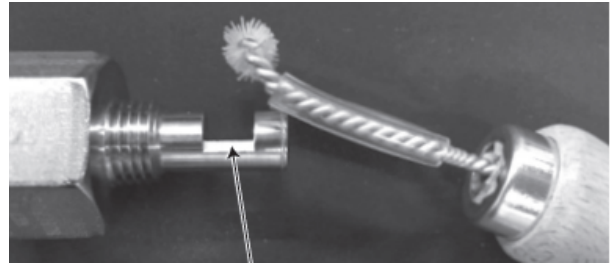   **NOTE:** The level sensors are located on the front wall of the retort.

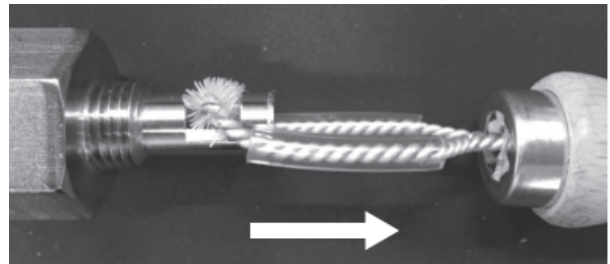

Figure 6-E

Insert the brush into the sensor hole

Figure 6-F

4. Turn the brush 90 degrees to the right or left to place the brush tip into the groove of the sensor probe as shown in the photo below. If the brush is caught when you pull it out gently, the brush tip is set in the groove of the sensor probe.
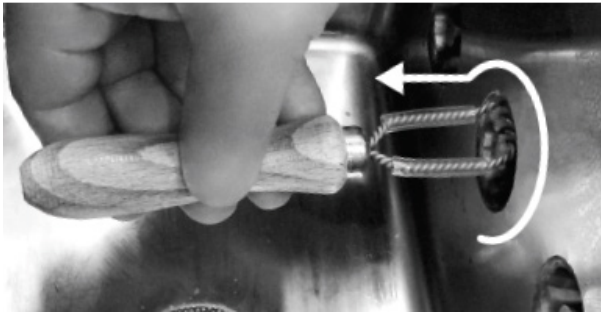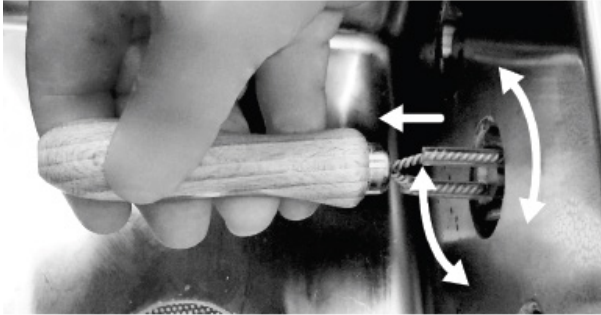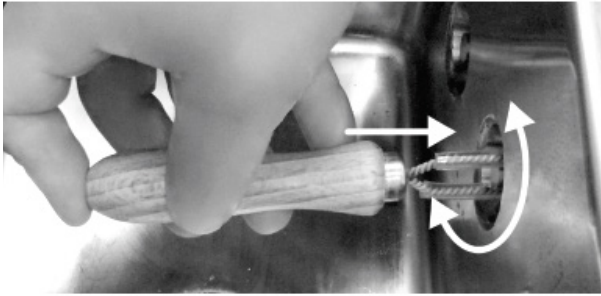

Groove of the sensor probe

Figure 6-G

The brush is caught when pulled out

Figure 6-H

5. While pushing the brush tip against the far face of the groove, move the brush to the right and left in small motions about 10 times.

6. Place the brush tip back in the groove as shown in Step 4.

7. Pull the brush a little toward you to make the brush tip contact with the near face of the groove. Move the brush to the right and left in small motions about 10 times.

NOTE: If you turn the brush vigorously, it may slide out of the sensor hole. In that case, insert the brush tip into the groove of the sensor probe again.

8. Pull the brush tip back. While turning the brush, draw it out of the sensor hole.

9. After the level sensors have been cleaned, access the Process Menu and touch the Cleaning icon. Touch the Rinse Cycle tab and select the Rinse to rinse the retort and tubing.

Figure 6-I

6. CARE OF THE INSTRUMENT

6.1.3 Monthly Maintenance

Retort Level Sensor Cleaning

The retort contains 4 level sensors which ensure proper fluid levels within the retort. To ensure the sensors function properly they must be cleaned on a monthly basis.

Clean the level sensors as followed

1. Open the retort

2. Place the level senor cleaning brush inside the sensor and gently scrub. Ensure all sides of the sensor are clean of debris.

Figure 6-J

3. Repeat step two on each remaining sensor.

4. Clean the inside of the retort by wiping with a clean cloth.

Fume Control System Filter Replacement

⚠ **WARNING: AN ACTIVATED CARBON FILTER MUST BE INSTALLED IN THE INSTRUMENT AS ALL TIMES TO ENSURE PROPER FILTERING OF FUMES GENERATED DURING PROCESSING.**

The fume control system serves to reduce formalin and Xylene fumes generated by the instrument to acceptable levels. To ensure proper filtering and fume control, replace the activated carbon filters monthly.

To replace the fume control system activated carbon filter:

1. Open the Fume Control Access Door.

2. Pull out the Fume Control access drawer.

Figure 6-K

4 Remove the fume filters from the instrument.

5 Install new fume filter in the instrument.

6 Push the Fume Filter Drawer back into the instrument.

Figure 6-L

7 Close the Fume Control Access Door.

8 Discard used filters according to local regulatory regulations.

6.1.4 Periodic Maintenance

Condensation Bottle

The condensation bottle works in conjunction with the fume condenser system and activated carbon filters. To ensure proper filtering and fume control, empty the condensation bottle as needed.

1. Visually check the fluid levels of the Condensation Bottle.

2. Empty the condensation bottle when the fluid reaches the **MAX Condensate Level** or is about ¼ full.

3. Dispose of the fluid, per local laws and regulations for hazardous material.

4. Replace the **EMPTY** condensation bottle in the instrument.

Bottle Connectors

Carefully inspect all bottle connectors for cracks and worn threads. Inspect the bottle connection fitting for cracks and deterioration. An initial indication of a connection problem will be a failure of the bottle connection check. Replace bottles that are cracked or deteriorated (see Section 8, "Service and Replacement Parts").

Disinfection

The instrument can be disinfected, if necessary, by the following procedure:

1. Spray or wipe a thick coating of 70-85% ethanol or isopropanol onto the walls and base of the retort and the inside of the retort lid. Do not use absolute (100%) alcohol, as this is a less effective disinfectant than is a concentration of 70-85%.

    NOTE The use of sodium hypochlorite (i.e., bleach) is *NOT* recommended, since any residue in the retort can contaminate the reagents and tissues.

2. Allow the alcohol to air dry before closing the retort lid.

6.1.5 Yearly Maintenance

Sakura recommends scheduling an appointment for preventative maintenance once a year.

The preventative maintenance should be performed by a Sakura representative or a qualified service technician.

7. TROUBLESHOOTING

7.1   General Information

The following Troubleshooting Chart contains general problems that could occur during operation of the Tissue-Tek VIP 6 AI instrument. Probable causes and recommended remedies are included for each problem listed, to aid in diagnosis and correction. If additional assistance is required concerning a Tissue-Tek VIP 6 AI instrument problem, or if a problem cannot be corrected or is beyond the scope of this manual, contact the Sakura Finetek Technical Support Representative for information or assistance.

7.2   Monitored Errors

Certain components, operating parameters and system conditions are monitored while the system is powered on, and during operation, to ensure the instrument is in operational condition. When a monitored component or parameter falls outside the established limits or operating criteria, an alarm sounds continuously until the error is cleared, and an error number or warning message is shown on the Tissue-Tek VIP screen. To cancel (turn off) the alarm, press the **EXIT** button on the warning message or the Alarm Off button. The Alarm Off stops the alarm from sounding but leaves the error message window open.. Each error that results in the display of an error number generates an entry in the system Error Log. The Error Log stores the 100 most recent errors, arranged by date, and provides a description of each error (see "*Error Log*" for details).

7.3   Retort Fill Error

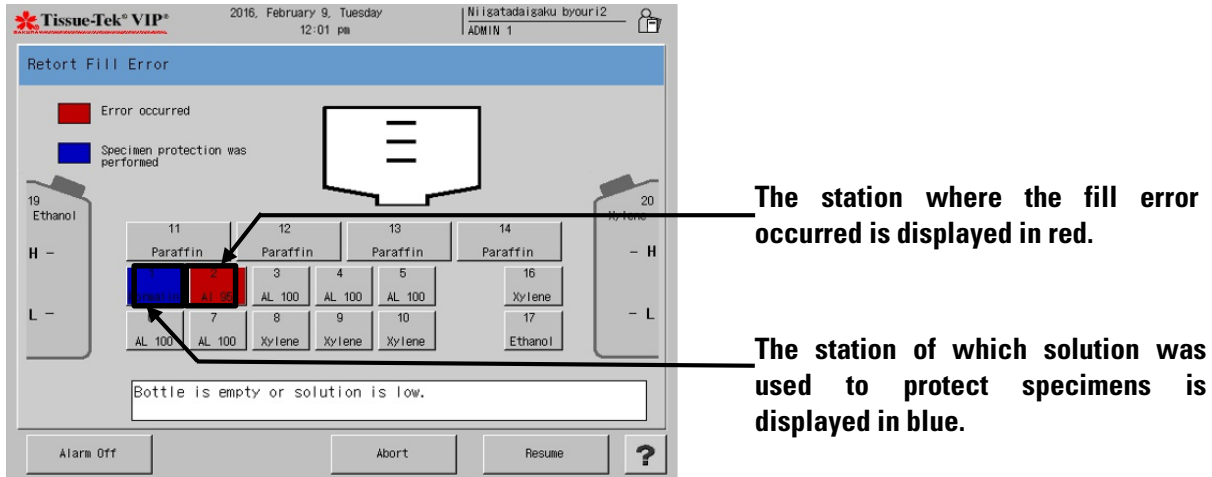### If Retort Fill Error screen appears with displaying only the station where the fill error occurred

If the system detects a low fluid situation in the pump-in phase during the processing, a processing run is interrupted and the Retort Fill Error screen appears with displaying "Bottle is empty or solution is low" in the message box.

The station where the fill error occurred is displayed in red and the station of which solution was used to protect specimens is displayed in blue.

When this error screen appears, add an appropriate amount of solution to the bottle at the troubled station (shown in red) and touch the Resume button in the Retort Fill Error screen to restart the processing run.

At that time, do NOT add the solution to the bottle at the station used for specimen protection (shown in blue).

The station where the fill error occurred is displayed in red.

The station of which solution was used to protect specimens is displayed in blue.

Figure 7-A

If the Retort Fill Error screen appears with displaying only the station where the fill error occurred

If the system detects a low fluid situation in the pump-in phase during the processing, a processing run is interrupted and the Retort Fill Error screen appears with displaying "Bottle is empty or solution is low" in the message box.

When only the troubled station (shown in red) is displayed, the processing run is interrupted with the solution of the troubled station remaining in the retort.

Follow the instructions below to solve the problem.

The station where the fill error occurred is displayed in red.
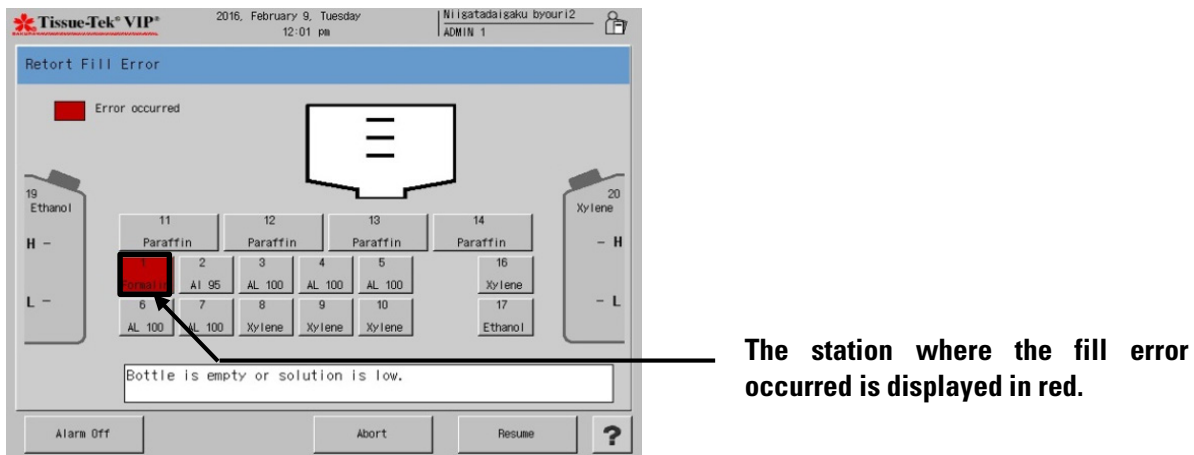
Figure 7-B

⚠ **CAUTION: A solution may be present in the retort when this fill error occurred.**

7. TROUBLESHOOTING

1. Touch the Alarm Off button (1) and then the Abort button (2) in the Retort Fill Error screen.
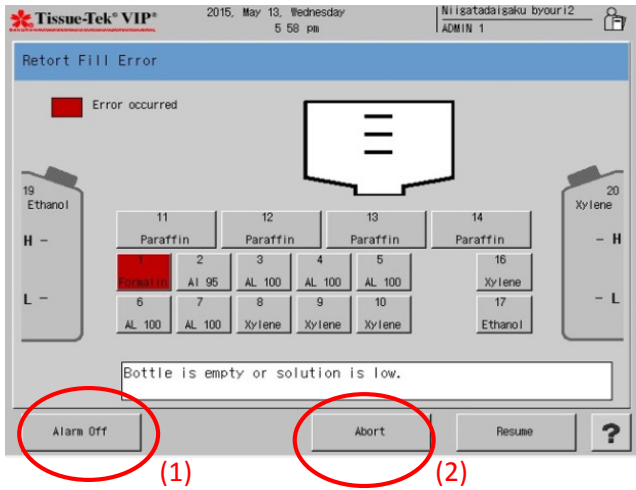
Figure 7-C

2. The password request window is displayed. Enter an appropriate password to abort the processing run.
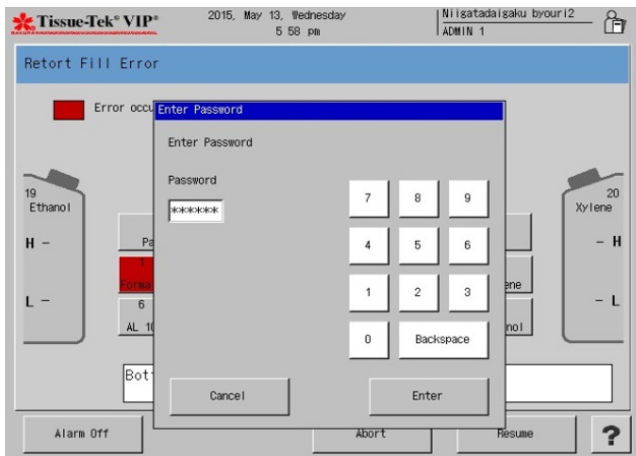
Figure 7-D

3. Once the password is accepted, the processing run is aborted and the Tissue Processing End with Error screen is displayed.
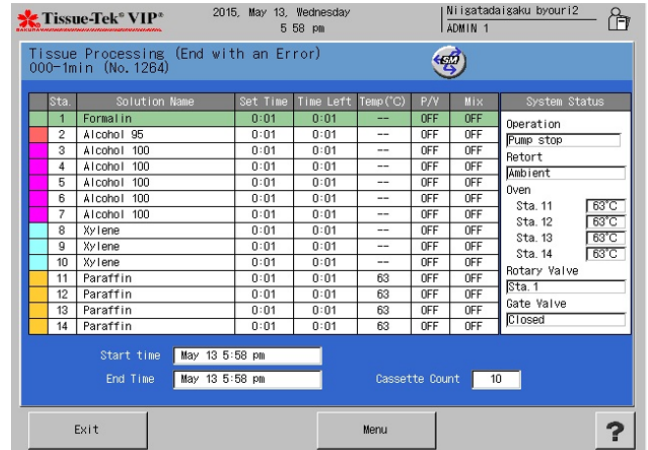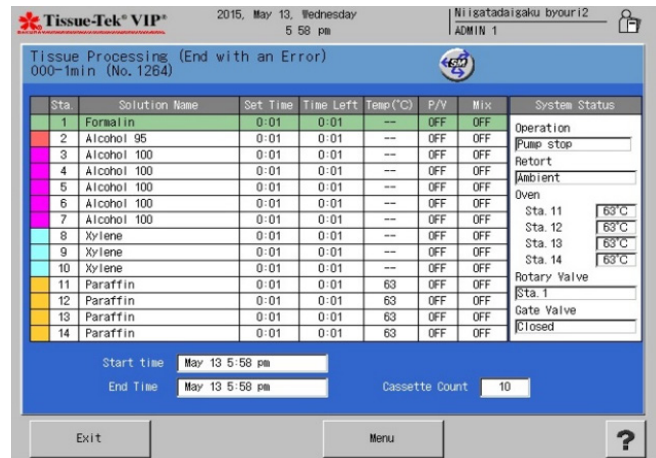

Figure 7-E

4. Touch the Exit button.

Figure 7-F

5. The System Idle and User Logged On screen is displayed. Touch the Menu button.
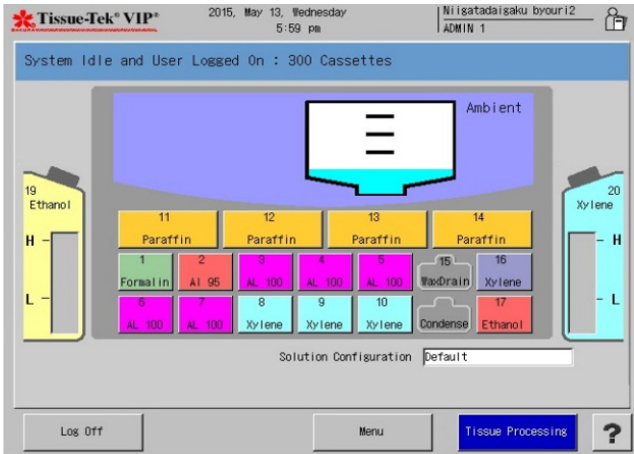
Figure 7-G

6. The Process Menu screen is displayed. Touch the Utility Menu tab.
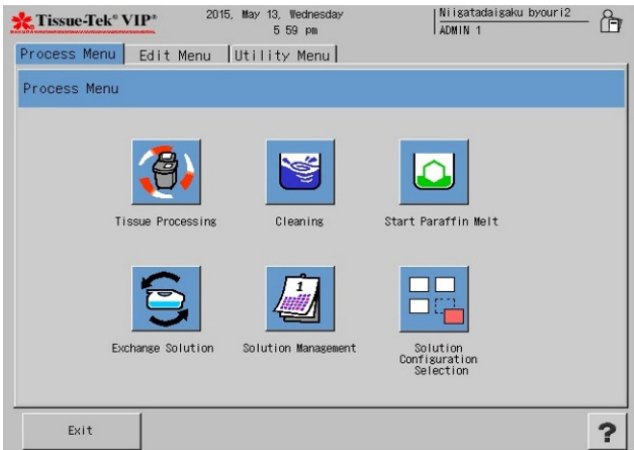
Figure 7-H

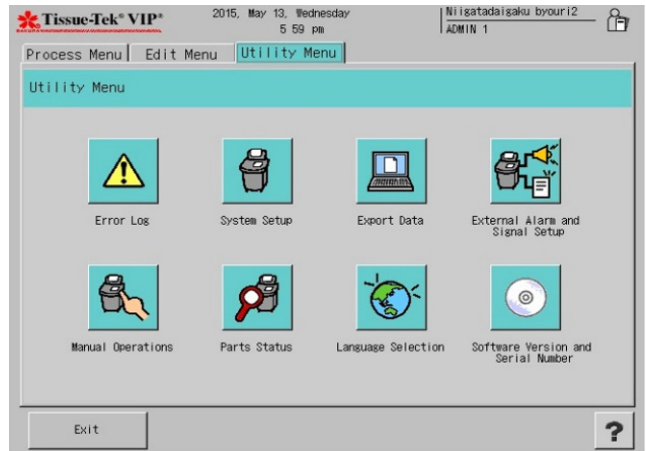7. Touch the Manual Operations icon in the Utility Menu.

Figure 7-I

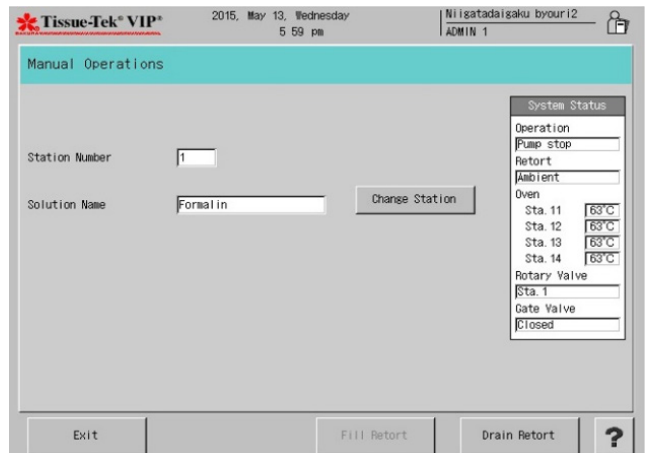8. Touch the Drain Retort button in the Manual Operations screen.

Figure 7-J

7. TROUBLESHOOTING

9. After the retort drain is completed, open the retort lid and confirm that no solution is left in the retort.

   If it is not possible to add the solution or restart the processing soon, remove the specimens from the retort. Be sure to preserve them in an appropriate solution to avoid drying.

   If there is any concern about the situation, contact the nearest authorized Sakura distributor or representative for assistance.

Confirm that no solution is left in the retort.

Figure 7-K

10. Check the solution bottle at the troubled station to see if it is filled with the appropriate amount of solution (normally, filled up to the specified solution level that assures the solution level during the processing). Add the solution as necessary.

NOTE: When the retort fill error was generated even though the bottle is properly filled, the system may have some sort of trouble.

Please contact the Sakura Finetek Technical Support Representative for information or assistance.

Check the solution volume in the solution bottle.

Figure 7-L

11. After the solution has been added, access the Process Menu screen and touch the Tissue Processing icon. In the Start Tissue Processing screen, touch the Start button to start the processing again.

7. TROUBLESHOOTING

TROUBLESHOOTING CHART

Problem	Probable Cause	Remedy
Power indicator is not illuminated.	– Line cord is not plugged. Power failure. – Main power switch is off.	– Make sure power is available at the power source. Make sure the line cord is properly connected to the electrical power source. – Turn the main power switch ON.
LCD Screen does not display when power is on.	Display backlight is off.	Touch the screen to turn on the backlight.
Buttons are displayed or do not respond to touch.	– The user is logged off. – A user does not have rights to perform administrator duties. – The retort contains solution.	– Log on to the system. – An administrator must log on to perform certain duties. – Perform a manual pump-out.
Characters cannot be entered from the onscreen keyboard.	The permitted number of characters is exceeded.	Touch the backspace button or clear button and re-enter characters.
Alarm sound does not turn off.	The system detected an error that has not been addressed by the user.	Touch the Alarm Off button to stop the alarm. Check for errors.
Pump-in does not complete after 6 minutes.	– The solution bottle is detached. – External hose was not connected to the drain/fill port if reagent supply is coming from an external source. – Tubing is clogged.	– Reconnect the solution bottle. – Properly close the retort lid. – Connect the hose to the fill/drain port. – Contact Sakura Technical Support.
Low solution was detected during pump-in.	The solution bottle or paraffin container did not contain solution or paraffin.	Add at least the specified volume of solution or paraffin to the reagent bottle or paraffin container.
Solution did not reach the level sensors.	There was not enough solution in the reagent bottles or paraffin container.	Add at least the specified volume of solution or paraffin to the reagent bottle or paraffin container.
Pump-out does not complete after 6 minutes	– The solution bottle is detached. – External hose was not connected to the drain/fill port if reagent supply is coming from an external source.	– Reconnect the solution bottle. – Connect the hose to the fill/drain port. – Contact Sakura Technical Support.
Unable to establish pressure or vacuum inside the retort.	– Retort latch is not secured. – Retort gasket is leaking. – A line connection or union is loose.	– Close the retort lid properly ensuring the handle is in the closed position. – Check the retort gasket if the gasket appears cracked or worn, replace the gasket. Contact Sakura Technical Support.
The temperature of paraffin station 11-14 reached 80°C or above.	Paraffin heated to 80°C or above was placed in station 11-14.	Wait for stations 11-14 temperatures to come down. Do not place paraffin (or other substance) heated to 80°C or above in station 11-14.

7. TROUBLESHOOTING

ERROR CODES

Error Code	Message	Possible Causes	Action
3	Power Failure	The system power was turned on.	Since recovery of power cannot be recognized, when the power is turned on "Error 3" is registered as error information. This is not a problem.
		The power cable was disconnected.	Provide a dedicated power outlet to prevent inadvertent pull-out of the cable, or implement measures to prevent the power cable from getting caught by a leg, etc.
		The power-supply facility is lacking capacity.	Connect to a power-supply facility of 15 A or more.
7	Power outage	The power was cut off during tissue processing or retort cleaning (the power switch was turned off or power outage occurred), and subsequently the power has been restored.	Recovery of power is recognized, so when the power is turned on "Error 7" is registered as error information. This is not a problem.
10	The retort overflowed during pump-in.	The solution level reached the overflow sensor during supply to the retort.	Contact the dealer.
11	Pump-in was not complete within 6 minutes.	The solution bottle is detached.	Reconnect the solution bottle.
		Line is clogged.	Contact Sakura Technical Support.
		Hose was not connected to the drain/fill port when an attempt was made to supply from the external container connected to the drain/fill port (station 18).	Connect a hose to the drain/fill port.
		Paraffin melt check was performed when paraffin was not yet molten, and consequently paraffin was pumped in. Accordingly, the pipe was clogged.	Before performing paraffin melt check, confirm that paraffin is fully molten. Confirm that paraffin is molten, and then try pumping in paraffin via manual operation. Clogging of the pipe may be resolved.
		The preset temperature of the paraffin oven is low relative to the paraffin in use, and therefore solid paraffin pellets were pumped in as a result, the pipe was clogged.	Set a higher paraffin oven temperature. After confirming that paraffin is molten, try pumping in paraffin via manual operation. Clogging of the pipe may be resolved.
		Highly viscous solution was used.	If any solution not specified in "Usable Solutions" is to be used, consult the dealer.
		Other than the above	Contact the dealer.
12	Pump-in was not completed after 3 attempts. (6 minutes each.)	Check the cause and action for Error 11.	

Error Code	Message	Possible Causes	Action
13	Retort pressure could not be decreased.	The retort lid handle was in the locked position while the retort lid was open.	Move the retort lid handle to the unlocked position, then close the retort lid. Move the handle back to the locked position.
		The retort lid gasket is leaking.	Check the retort lid gasket. If the gasket is installed in reverse or partially projecting, install the gasket correctly. If the gasket is damaged or significantly worn (collapsed), replace it with a new one. Normally, the retort lid gasket should be replaced every six months.
		Other than the above	Contact the dealer.
14	Low (empty) solution was detected during pump-in	The solution bottle or paraffin container did not contain solution or paraffin.	Ensure that no reagent or paraffin is left in the retort before adding at least the specified volume of reagent or paraffin to the reagent bottle or paraffin container. If a reagent or paraffin is present in the retort, be sure to return the reagent or paraffin to its original reagent bottle or paraffin container before addition of reagent or paraffin. For more details, refer to "Retort Fill Error" at the beginning of Section 7.
		Other than the above	Contact the dealer.
16	Pump-in failure during or after second pump-in cycle.	Check the cause and action for Error 11.	
17	Solution did not reach the level sensor at the assurance position after pump-in	Solution did not reach the level sensor at the safeguard level during tissue processing when the system was set to assure solution level.	Ensure that no reagent or paraffin is left in the retort before adding at least the specified volume of reagent or paraffin to the reagent bottle or paraffin container at the station where the error occurred. If a reagent or paraffin is present in the retort, be sure to return the reagent or paraffin to its original reagent bottle or paraffin container before addition of reagent or paraffin. For more details, refer to "Retort Fill Error" at the beginning of Section 7.
20	Retort pressure did not reach the set valve within one minute after the gate valve closed.	Check the cause and action for Error 13.	
21	Retort pressure did not reach the set valve after 3 attempts. (1 minute each after the gate is closed.)	Check the cause and action for Error 13.	
22	Pump-out was not completed within 6 minutes, after the gate valve opened.	The solution bottle is detached.	Reconnect the solution bottle.
		Line is clogged.	Contact Sakura Technical Support.
		Hose was not connected to the drain/fill port when an attempt was made to drain to the external container connected to the drain/fill port (station 18).	Connect a hose to the drain/fill port.

7. TROUBLESHOOTING

Error Code	Message	Possible Causes	Action
		Highly viscous solution was used.	If any solution not specified in "Usable Solutions" is to be used, consult the dealer.
		Other than the above	Contact the dealer.
23	Pump-out was not completed after 2 attempts. (6 minutes each.)	Check the cause and action for Error 22.	
111	Failure of paraffin station 11 temperature control.	Addition was not touched on the operation screen with solid paraffin in station 11.	Wait for the station 11 temperature to rise or put molten paraffin.
112	Failure of paraffin station 12 temperature control.	Addition was not touched on the operation screen with solid paraffin in station 12.	Wait for the station 12 temperature to rise or put molten paraffin.
113	Failure of paraffin station 13 temperature control.	Addition was not touched on the operation screen with solid paraffin in station 13.	Wait for the station 13 temperature to rise or put molten paraffin.
114	Failure of paraffin station 14 temperature control.	Addition was not touched on the operation screen with solid paraffin in station 14.	Wait for the station 14 temperature to rise or put molten paraffin.
131	Paraffin station 11 exceeded 80°C.	Paraffin (or other substance) heated to 80°C or above was placed in station 11.	Wait for the station 11 temperature to come down. Do not place paraffin (or other substance) heated to 80°C or above in station 11.
132	Paraffin station 12 exceeded 80°C.	Paraffin (or other substance) heated to 80°C or above was placed in station 12.	Wait for the station 12 temperature to come down. Do not place paraffin (or other substance) heated to 80°C or above in station 12.
133	Paraffin station 13 exceeded 80°C.	Paraffin (or other substance) heated to 80°C or above was placed in station 13.	Wait for the station 13 temperature to come down. Do not place paraffin (or other substance) heated to 80°C or above in station 13.
134	Paraffin station 14 exceeded 80°C.	Paraffin (or other substance) heated to 80°C or above was placed in station 14.	Wait for the station 14 temperature to come down. Do not place paraffin (or other substance) heated to 80°C or above in station 14.
210	Pump-in was not completed in time, but solution has reached the safeguard level.	Paraffin melt check was performed when paraffin was not yet molten, and consequently paraffin was pumped in. Accordingly, the pipe was clogged.	Before performing paraffin melt check, confirm that paraffin is fully molten. Confirm that paraffin is molten, and then try pumping in paraffin via manual operation. Clogging of the pipe may be resolved.
		The preset temperature of the paraffin oven is low relative to the paraffin in use, and therefore solid paraffin pellets were pumped in. as a result, the pipe was clogged.	Set a higher paraffin oven temperature. After confirming that paraffin is molten, try pumping in paraffin via manual operation. Clogging of the pipe may be resolved.

Error Code	Message	Possible Causes	Action
		Highly viscous solution was used.	If any solution not specified in "Usable Solutions" is to be used, consult the dealer.
241	Solution filling to the left bulk reservoir (station 19) was not completed within 6 minutes.	Hose is not connected to the fill port used for supplying to the left bulk reservoir (station 19).	Connect a hose to the fill port used for supplying to the left bulk reservoir (station 19).
		Highly viscous solution was used.	If any solution not specified in "Usable Solutions" is to be used, consult the dealer.
		Other than the above	Contact the dealer.
244	Low solution volume in the external container during the solution filling to the left bulk reservoir (Sta.19).	The external solution container became empty during supply, before the solution level reached the "Full" position sensor in the bulk reservoir.	Replace the external solution container with one containing solution.
251	Solution filling to the right bulk reservoir (Sta. 20) was not completed within 6 minutes.	Hose is not connected to the drain/fill port used for supplying to the right bulk reservoir (station 20).	Connect a hose to the drain/fill port used for supplying to the right bulk reservoir (station 20).
		Highly viscous solution was used.	If any solution not specified in "Usable Solutions" is to be used, consult the dealer.
		Other than the above	Contact the dealer.
801	File not found in the USB flash memory.	Data export was attempted without connecting the USB flash memory.	Connect the USB flash memory supplied with the system.
		Data was exported when the connected USB flash memory was already storing the maximum number of files.	Delete unnecessary files in the USB flash memory or connect a different USB flash memory.
		Data was exported by connecting a USB flash memory formatted by a file system other than FAT.	Connect a FAT-formatted USB flash memory.
		A USB flash memory other than the one supplied with the system was connected.	Connect the USB flash memory supplied with the system.
804	USB flash memory not found.	No USB flash memory is connected to the system.	Connect the USB flash memory supplied with the system.
		A USB flash memory other than the one supplied with the system was connected.	Connect the USB flash memory supplied with the system.
806	Improper USB flash memory removal procedure.	The user removed the USB flash memory without following the correct removal procedure.	Remove the USB flash memory according to the correct removal procedure.

8. SERVICE AND REPLACEMENT PARTS

8.1 Service Information

8.1.1 When a Problem Occurs

When a problem occurs during operation of the Tissue-Tek VIP 6 AI Vacuum Infiltration Processor, refer to Section 7, Troubleshooting, to determine the most likely cause of the malfunction and to obtain recommended corrective actions. (Avoid problems by carefully following the proper operation and maintenance procedures described in this manual). If the problem cannot be solved and an instrument failure is apparent, our Technical Support Department is available to assist.

Before calling for instrument service, please have model number, installation date, and warranty period ready for our Technical Support Department Representative. For convenience and for reference, record this information in the blanks below.

Product Code _____
Serial Number _____
Installation Date _____
Warranty Period _____

8.1.2 Where to Call for Service

If located within the United States, contact the Technical Support Department of Sakura Finetek USA, Inc. by calling toll free:

(800) 725-8723, Option 2

In countries other than the United States, contact the nearest authorized Sakura instrument distributor or representative for service information and assistance.

8.2 Replacement Accessory Items

Product Number	Description
1520	Retort Gasket
1550	Paraffin Scraper, large
5265	Cassette Baskets

8.3 Replacement Parts

Product Number	Description
6034	Paraffin Scraper, small
6035	Reagent Bottle, complete
6036	Reagent Bottle Labels
6045	Paraffin Waste Bag (12/cs)
6160	Fume Filters (2)
7109	Basket Transport Tray
A3-60-4499	USB Memory
F61-061-00	External Drain & Fill Hose
F61-059-00	Bulk reservoir (right) fill hose
F61-060-00	Bulk reservoir (left) fill hose
F60-499-00	Paraffin Waste Reservoir
F60-493-00	Paraffin Reservoir, large
F60-492-00	Paraffin Reservoir, small
D9-80-0115	Solution Exchange Hose Clip
0007852-01	Operating Manual
070-626-00	Control Panel Protection Sheet
B3-12-3024	Retort Gasket

8.3.1 Where to Order

In the United States, the above replacement accessory items and replacement parts may be ordered directly from:

Customer Service
Sakura Finetek USA, Inc.
1750 W. 214th Street
Torrance, CA 90501

By calling toll free:
1-800-725-8723, Option 1

Outside of the United States, contact the nearest authorized Tissue-Tek instrument dealer.

8.4   Tissue-Tek VIP 6 AI Preservice Checklist

For reference, record the following information:

Product Code:_____

Serial Number: _____

Installation Date: _____

Has Section, 7, Troubleshooting been reviewed?	☐ Yes	☐ No
When the power is turned ON, does the screen show an appropriate display?	☐ Yes	☐ No
If NO, is the unit plugged into a live AC electrical outlet?	☐ Yes	☐ No
Are all reagent bottles securely connected to the quick-release connectors?	☐ Yes	☐ No
Are all reagent bottles filled to their proper levels?	☐ Yes	☐ No
Are any warnings being displayed?	☐ Yes	☐ No
If so, have they all been corrected and cleared?	☐ Yes	☐ No

If unable to clear a warning, what does it say? _____

Are any errors listed in the "Error Information" screen?	☐ Yes	☐ No

If so, please list the information from that screen"

Do the oven and retort temperatures regulate properly?	☐ Yes	☐ No

Oven Temp: _____°C
Retort Temp: _____°C

Is an "Operation" being displayed? If YES which?	☐ Yes	☐ No

Pump In ☐ Pump Out ☐ Move Station☐

Does the "Retort" display show an operation? If YES which?	☐ Yes	☐ No

Vacuum ☐ Ambient ☐ Pressure☐

Is there fluid in the retort?	☐ Yes	☐ No

If YES, how much?   _____

⚠ **CAUTION: Do not attempt to open the retort if the display shows either "Vacuum" or "Pressure."**

Does the pump operate?	☐ Yes	☐ No

What is the level of vacuum and/or pressure?

Pressure:_____kg/cm2
Vacuum:_____cmHg

Are the time and date being displayed?	☐ Yes	☐ No

9.   EXAMPLE PROCESSING

9.1   Sample Programs

Following are two examples of programs, one for a routine overnight run and the other for a rush or biopsy run. Example reagents and concentrates are shown also. The programs are intended to be used as a guide only; modify them to satisfy the individual needs of your laboratory. Following the example programs are several pages on which you can write your own individual programs.

ROUTINE OVERNIGHT RUN

Station No.	Solution	Conc.	Time (hr:min)	Set Temp.	P/V	Mix
1	Neutral Buffered Formalin	10%	2:00	40°	P/V	Slow
2	Neutral Buffered Formalin	10%	2:00	40°	P/V	Slow
3	Ethanol	65%	0:30	40°	P/V	Slow
4	Ethanol	80%	0:30	40°	P/V	Slow
5	Ethanol	95%	0:45	40°	P/V	Slow
6	Ethanol	95%	0:45	40°	P/V	Slow
7	Ethanol	100%	0:45	40°	P/V	Slow
8	Ethanol	100%	0:45	40°	P/V	Slow
9	Xylene	100%	0:45	40°	P/V	Slow
10	Xylene	100%	0:30	40°	P/V	Slow
11	VIP Paraffin		0:30	58°	P/V	Slow
12	VIP Paraffin		0:30	58°	P/V	Slow
13	VIP Paraffin		0:30	58°	P/V	Slow
14	VIP Paraffin		0:30	58°	P/V	Slow

Total Processing Time: 12.7 Hours

ROUTINE OVERNIGHT RUN

Station No.	Solution	Conc.	Time (hr:min)	Set Temp.	P/V	Mix
1	Neutral Buffered Formalin	10%	0:30	40°	P/V	Cont
2	Neutral Buffered Formalin	10%	0:30	40°	P/V	Cont
3	Ethanol	65%	0:10	40°	P/V	Cont
4	Ethanol	80%	0:10	40°	P/V	Cont
5	Ethanol	95%	0:10	40°	P/V	Cont
6	Ethanol	95%	0:15	40°	P/V	Cont
7	Ethanol	100%	0:15	40°	P/V	Cont
8	Ethanol	100%	0:15	40°	P/V	Cont
9	Xylene	100%	0:15	-	P/V	Cont
10	Xylene	100%	0:15	-	P/V	Cont
11	VIP Paraffin		0:15	58°	P/V	Cont
12	VIP Paraffin		0:15	58°	P/V	Cont
13	VIP Paraffin		0:15	58°	P/V	Cont
14	VIP Paraffin		0:15	58°	P/V	Cont

Total Processing Time: 5 Hours

9. EXAMPLE PROCESSING (USED AS A GUIDE ONLY)

PROGRAM

Station No.	Solution	Conc.	Time (hr:min)	Set Temp.	P/V	Mix
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Total Processing Time:

PROGRAM

Station No.	Solution	Conc.	Time (hr:min)	Set Temp.	P/V	Mix
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Total Processing Time: