Digitally signed by Bolocan Vladimir
Date: 2019.11.14 14:23:09 EET
Reason: MoldSign Signature
Location: Moldova

Operating Manual

Histo-Tek® VP1™

SAKURA

Vacuum Infiltration Processor

Introduction

The Vacuum Infiltration Processor "Histo-Tek® VP1 (hereinafter the “instrument”)" is an instrument that performs automatic processing in an enclosed single processing chamber to run the cycle of fixation, dehydration, defatting and paraffin infiltration of tissue specimens.
This instrument operates using independent systems, so carefully read the sections on operating method, replacement of consumables, maintenance/inspection of each part, etc., to ensure correct use.

Manufactured for:
Sakura Finetek U.S.A., Inc. Torrance, CA 90501
Sakura Finetek Europe B.V., 2048 Alphen aan den Rijn. NL
Sakura Finetek Japan Co., Ltd. Tokyo, Japan 103-0023

Table of Contents

Chapter 2 How to Operate Tissue Processing

Chapter 3 Cleaning

Chapter 4 Solution Exchange

Chapter 5 Program Creation (Editing)

Chapter 6 Application (Customization)

Chapter 7 Maintenance/Inspection

Chapter 8 Troubleshooting

(End)

[d]

1. Safety Precautions

Designate the "Instrument Control Manager"

- **Operation of this instrument requires expert knowledge of the target application, method of use, and so on. Therefore, to use the instrument correctly and safely, designate a "Instrument Control Manager."**
- **When the instrument is delivered, the Instrument Control Manager should receive explanation on the handling of the instrument directly from our sales representative.**

* Before using the instrument, read "Safety Precautions" to ensure the correct use of the instrument.
* The cautionary instructions provided herein are intended to ensure that the instrument will be used safely in a manner preventing operator from injury and property damage. These instructions provide important safety information that must be heeded at all time.
* In this manual, instructions pertaining to different levels of potential hazards are classified as warnings, cautions and notes and indicated under Danger!, Warning!, Caution! and Note, respectively. Each class of instructions is defined below

Danger! pertains to a potential hazard where failure to observe the specified instruction may result in death or serious injury of the operator or other person.

Warning! pertains to a potential hazard where failure to observe the specified instruction may result in a serious injury of the operator or other person.

Caution! pertains to a potential hazard where failure to observe the specified instruction may result in damage to this instrument or other property, or affect the process results.

Note pertains to an item to pay attention to or other useful information.

* The symbols used on the labels attached to the instrument are explained.
The labels bearing one of the following symbols provide particularly important information you must know in order to ensure safety of the operator, improve work efficiency and protect the instrument from damage. Be sure to check these labels and understand the specified instructions before commencing your work


A label bearing this symbol specifies an action that must be taken. Always follow the instruction.


A label bearing this symbol specifies a prohibited item. Always follow the instruction.


A label bearing this symbol indicates that area around them require attention. Improper handling against the instruction may put the operator in danger or damage the instrument. So be sure to check the content of this manual and follow the instruction.


A label bearing this symbol is provided near a high-temperature area. Exercise caution against burns caused by high temperatures.


When this system is used to handle any substance presenting biological hazard, ensure safety by following the relevant regulations and guidelines in your country or region.

1. Safety Precautions

WARNING

- **Read the unpacking instructions carefully before unpacking the instrument.**

This instrument weighs approx. 130 kg. The instrument can be moved with ease on casters, but two or more persons should work together when removing the instrument from the pallet on a slope. When removing the instrument from the pallet this way, indicate so in the shipping document and inspect the cargo for damage. As a rule, the instrument is unpacked/installed by Sakura Finetek or our authorized dealer.

- **Avoid connecting the instrument to a transformer not manufactured by Sakura Finetek.**

When moving the instrument to a region where different voltage is used, contact the Sakura Finetek Technical Support representative or local representative.

- **Those who have experience operating a Sakura Finetek product or products other than this instrument must also read this manual. Also, those who will be operating this instrument should receive training first.**

Sakura Finetek will assume no responsibility for any accident that may result from operating the instrument without reading this manual first.

- **Safety mechanisms installed in this instrument only represent the minimum measures taken to prevent accidents. The responsibility for safe operation of the instrument lies primarily with the owner of the instrument, and persons in charge who operate the instrument.**

- **Do not install the instrument in a place used as a living area.**

If a common area is used, an exhaust system is required. Provide electrostatic discharge protection in the installation location.

- **Install the instrument indoors. Do not place the instrument in a location exposed to direct sunlight, snow or rain.**

This product is specified for indoor use, so do not use it outdoors. Ultraviolet rays and high temperature may damage the instrument. Never use the instrument while exposing it to snow or rain because it may cause electric shock or short-circuit.

- **Do not use the instrument, if damaged, even when operating it is possible.**

Injury or electric shock may result.

- **Should the instrument malfunction, turn off the power and disconnect the power plug from the power outlet. If processing is still in progress, immediately protect the tissues.**

Should malfunction occur, turn off the power and contact the Sakura Finetek Technical Support representative or local representative. Disconnecting the power plug also cuts off the main power supply. When installing the instrument, select a place where the power outlet is not concealed and the power plug can be disconnected any time in case of emergency.

- **Do not disassemble or modify the instrument.**

The instrument may malfunction or cause accident, thus creating a dangerous situation.

1. Safety Precautions

WARNING

- **Confirm that the caps and O-rings of reagent bottles are installed properly. Also check if the connection port (coupler) to the main body is correctly installed.**

If the instrument is operated when the reagent bottle caps, O-rings and coupler are not installed properly, vaporized reagent may leak and catch fire and result in fire. Also, tissue processing may not be completed properly.

- **Securely tighten the caps on reagent bottles and connect the paraffin containers. Also, securely close the paraffin oven door.**

When connecting the reagent bottles and paraffin containers to the instrument, push them all the way in. Tissue processing may not be completed properly. Also, reagent may leak and result in fire.

- **Only the specified reagents can be used with this instrument.**

If any other reagent is used, processing may not be performed properly and fire or failure may result.
Do not use acetone, benzine, toluene or chloroform. Do not use fixing solutions that contain mercury salt, acetic aid or picric acid that corrodes metals.
List of usable reagents: P. 1-19

- **Do not put too much reagent or paraffin.**

Reagent or paraffin may overflow and the processing may be discontinued. Add no more than the specified amount of reagent or paraffin so as not to damage the tissues.

- **If buffered formalin is used, be sure to clean the tubing regularly.**

If the tubing is not cleaned, the circuit may clog and result in failure. Other problems may also occur that will damage the tissues.

- **Do not clean the embedding plates, basket transport trays, etc., using the cleaning program for this instrument.**

Cleaning solution may deteriorate quickly which prevents proper cleaning. Also, clogged tubing or remaining regent may cause fire.

- **Do not forcibly remove the paraffin containers when the instrument is cold.**

The instrument may be damaged.

- **Do not put anything other than paraffin in the paraffin container.**

Fire or failure may occur.

- **Do not move the instrument while reagent or molten paraffin is set in it.**

If the instrument is moved while reagent or molten paraffin is set in it, the reagent may leak or paraffin may overflow. When moving the instrument, remove the paraffin container/reagent bottles first. When moving the instrument, contact the Sakura Finetek Technical Support representative or local representative.

1. Safety Precautions

WARNING

- **Do not wet the instrument.**

If areas other than those instructed by "Daily Inspection and Care" get wet, current leak may occur and cause fire or electric shock.

- **If dews are formed on the instrument, do not turn on the power.**

If the power is turned on while dews are formed on the instrument, current leak may occur and cause fire or electric shock.

- **Do not pour reagent or paraffin directly into the retort.**

If you open the retort lid and directly pour reagent or paraffin into the resort, reagent bottles or paraffin containers may overflow and cause failure or fire. Tissue processing may also be negatively affected.

- **A wrong operation may stop or interrupt the tissue processing. Be careful not to let unauthorized personnel manipulate or tamper with the instrument while operating.**

If the power is turned off by unauthorized personnel, the tissue processing may be interrupted and the tissues may be damaged. Arrange the work environment so that only the operators with expert knowledge can use this instrument. Also consider using external alarms, etc., just in case.

- **Do not let foreign matter goes inside the instrument.**

If water, metal, paper or other foreign matter enters the air inlets (to the fan, etc.), fire, electric shock, injury of the user, instrument failure, etc., may occur. If foreign matter entered the instrument, immediately stop the instrument and contact the Sakura Finetek Technical Support representative or local representative.

- **Do not operate the instrument while wearing metal accessories.**

Conductors (metal pen, accessories, etc.) worn on your body may contact the instrument and cause electric shock.

- **Do not block the intake/exhaust ports and air port around the instrument.**

Do not block the intake/exhaust ports (air inlets) with a wall or object or use the instrument in a poorly ventilated place or with the dustproof covers still attached, because heat will be trapped in the instrument and cause the capacity of the instrument to drop, while fire, accident, failure, etc., may also occur due to abnormal overheating.

- **Periodically check the power cord and power outlet for damage and accumulation of dust.**

Foreign particle and dust accumulating on the power outlet may cause fire. Clean the power outlet periodically.

- **In an environment where low humidity allows static electricity to generate easily, discharge the static electricity from your body before opening a retort lid or touching a reagent bottle.**

Since volatile reagent is used, sparks generated by static electricity may cause fire. Gently touch the retort lock cover to discharge static electricity.

- **Install the instrument away from other electrical equipment.**

If the regent in use contacts a flame, fire may occur.

1. Safety Precautions

WARNING

- **Unplug the power cord from the power outlet and store it while the instrument is not in use. For safety, if the instrument will not be used for an extended period of time, clean each part and store the instrument in a place free from humidity and from dust and foreign matter.**

Using the instrument in a humid place, place exposed to oil smoke or steam, or dusty place, may cause its parts to deteriorate, short-circuit, fire, etc. The installation humidity range is 30 to 85% (non-condensing). If you wish to install the instrument in a special place, consult our authorized dealer or sales office.

- **Do not operate the power plug and switches with a wet hand. When connecting/ removing the power plug, do so by holding the plug.**

Failure to observe these instructions may result in electric shock.

- **Be sure to use the supplied power cord. Also, be sure to use a correct power cord that is suitable for the current capacity of region where the instrument is used.**

If an inappropriate power cord or voltage is used, instrument malfunction due to short-circuit, fire or voltage drop, unexpected accidents or injuries due to electric shock, etc., can occur. The preset voltage cannot be changed by the user.

- **For the power cord, a standard cord specified by local law may have to be used.**

If a power cord not specified by the PSE standard, UL/CSA standard or EC standard is required, contact the Sakura Finetek Technical Support representative or local representative.

- **Be sure to connect the power plug to a power outlet with grounding terminals.**

Connect the power plug to a dedicated power outlet with grounding terminals meeting the requirements for class D (former class 3) grounding. If the power plug is not grounded through proper grounding terminals, fire or electric shock may occur in case current leaks.

- **Do not forcibly bend, pull, twist or bundle the power cord or otherwise damage the power cord.**

Fire or electric shock may occur.

- **Do not overload the outlet and do not use an extension cord.**

Doing so may stop the operation of the instrument due to voltage drop, or fire can occur due to heat generation.

1. Safety Precautions

WARNING

- **Do not move the instrument while operating. Move the instrument after removing all reagent bottles, paraffin containers and other components carrying liquid inside.**

Moving the instrument while operating may cause the reagent or paraffin to leak. Accident or failure may also occur.

- **Do not open the doors while the instrument is operating.**

Always keep the paraffin oven door, reagent bottle rack door, fume control unit door closed and do not open them while the instrument is operating. Fume may leak, injury or environment pollution may occur, of inappropriate processing may result.

- **When starting the tissue processing, make sure the retort lid and retort lock handle are securely closed.**

If the retort lid and retort lock handle are not securely closed, the lock cover may open during processing and the tissues processing may not end properly.

- **Never remove, connect or change reagent bottles or paraffin containers while the instrument is operating. Do not add reagent or paraffin while the instrument is operating.**

The instrument may suffer material damage. Do not remove or set reagent bottles or paraffin containers while the instrument is operating, unless otherwise instructed in this manual. Paraffin may leak and cause burns. Poor reagent bottle connection, reagent leak or failure may also occur.

- **If processing is suspended, the tissues may be damaged depending on the situation. Remember to resume operation.**

Prolonged suspension may damage the tissues. Keep the suspension time to the minimum. If processing is interrupted, remove and protect the tissues in the retort.

- **Use cleaned baskets for tissue processing.**

Failure to do so may cause instrument failure.

- **Do not connect to the USB data port any peripheral device other than an optional USB flash drive. Before connecting a USB flash drive, be sure to run a virus check on the memory device.**

Connecting a peripheral device other than the optional USB flash drive, or unsupported USB flash drive, may cause the software to stop operating properly. Please note that not all USB storage devices have been confirmed to operate with the instrument.

- **Never connect a USB flash memory during tissue processing. Instrument trouble or tissue damage may occur.**

Connect a USB flash drive when the export button is pressed.

- **If the auto pressure test or bottle connection check fails, the tissue processing program cannot be started. Make the necessary corrections.**

1. Safety Precautions

WARNING

- **Connect all reagent bottles, paraffin containers and activated carbon filters.**

Connect all reagent bottles, paraffin containers and activated carbon filters. So that the bottle connection check will complete properly, connect an empty bottle or container to all stations including those not used in tissue processing.

- **Tissue processing will not start until Start is touched. Remember to start processing.**

If tissues are left in the retort without starting tissue processing, the tissues will be damaged. One tissues have been stored in the retort, immediately start tissue processing.

- **If the processing program starts from paraffin, set tissues after paraffin is filled.**

Under the processing program that starts from paraffin, the preheating time before paraffin is filled is longer. Tissues may become dry if set before the fill, so pause the processing after paraffin has been filled and set tissues.

- **After tissue processing has started, confirm that the first reagent is pumped into the retort.**

- **The safety data sheet (hereinafter referred to as "SDS") of each reagent used can be obtained from the supplier/manufacturer of the reagent. You can also download it from the website of the supplier/manufacturer.**

- **Before enabling the automatic transfer function, confirm that the first station for the applicable solution group is empty.**

If the first station contains reagent, empty the station.

- **Clean the bottle rack and spill tray regularly.**

- **The paraffin temperature drops slightly when pumped into the retort, so be sure to set the paraffin processing temperature at least 3°C higher than the melting point of the paraffin used.**

- **Turn off the power before performing cleaning.**

Unless otherwise instructed in this document, always turn off the power and disconnect the power plug before cleaning the instrument. Do not spill liquid inside the instrument while cleaning it. If cleaner is used, follow the safety precautions provided by its manufacturer and safety rules set by each test laboratory.

- **When opening or closing the fume control unit door, paraffin oven door or reagent bottle rack door, do so with caution so as not to pinch your hand or arm.**

Injury may result.

- **When opening or closing the retort lid, retort lock cover, etc., do so with caution so as not to pinch your hand or arm. Close the retort lid slowly.**

Injury may result. Also, reagent may scatter and chemical injury may occur.

1. Safety Precautions

WARNING

- **When cleaning the instrument and cleaning inside of the reagent bottle rack, be careful not to assume an unnatural, semi-crouching posture.**

If you maintain an unnatural, semi-crouching posture, you may hurt your lower back.

- **Do not touch a retort, paraffin oven or paraffin container with bare hands while it is heated.**

Injury or burns may result. Wear protective gears and heat-resistant gloves.

- **Do not place a paraffin container on the paraffin oven door while the door is open.**

The paraffin container may drop, resulting in injury.

- **Secure the instrument with seismic anchorage (optional) to prevent it from moving/falling in case of earthquake.**

Provide fall prevention measure to prevent the instrument from moving should a disaster occur.

- **When opening the retort lid, make sure the "Ambient" indication.**

If the lid is opened while the retort is still under pressure, injury may occur. If the indication does not return to "Ambient," do not forcibly open the retort lid, but contact the Sakura Finetek Technical Support representative or local representative.

- **Do not apply strong impact on the glass doors.**

It may cause shattered glass, resulting in injury.

- **Do not apply excessive force on the display.**

The display may break and cause injury.

- **Do not remove the warning/caution labels.**

Without these labels, the operators cannot be reminded of the necessary warning/cautionary information in the day-to-day handling of the instrument, which may result in unexpected problems.

- **Do not put reagent, etc., on the instrument. Also, do not spill reagent on the painted surfaces, caution/warning labels or touch screen.**

If reagent spills over the instrument, the instrument may fail or sustain damage.

- **Use the activated carbon filters even when the instrument is connected to an external exhaust device.**

The instrument has been designed by assuming that the activated carbon filters will be installed, so abnormality may occur if the filters are not installed. If the instrument is connected to an external exhaust device, the activated carbon filters need not be replaced.

- **Replace the activated carbon filters in the fume control unit periodically.**

The activated carbon filters are provided as a precautionary measure to minimize any harmful vapor that may be released to around the instrument. Expired activated carbon filters cannot maintain exhaust gas at an appropriate level of concentration. Also, the work room must be ventilated.

- **Replace the retort lid gasket periodically.**

Otherwise, the sealing property of the gasket may drop and a fill error may occur.

1. Safety Precautions

WARNING

- **Inspect the instrument every six months.**

Maintain/inspect the instrument periodically so that it operates correctly at all times. For details on periodic inspection, contact our sales representative.

- **When a reagent bottle is carried by hand, reagent may spill if the bottle is tilted. Handle reagent bottles with care.**

- **If the instrument must be moved after installation, contact the Sakura Finetek Technical Support representative or local representative.**

Unexpected accident may occur by moving the instrument, so contact the Sakura Finetek Technical Support representative or local representative.

- **Replace and clean the reagent bottles periodically.**

Once the reagent bottles deteriorate, visibility becomes low and difficult to determine the reagent level clearly. Also, tissues may not be processed properly depending on the reagent volume.

- **Do not open the retort lid during processing unless necessary.**

- **Provide good ventilation around the instrument.**

Some of the reagents used with this instrument are toxic or harmful to the human body. Accordingly, provide good ventilation around the instrument.

- **Install the instrument away from other electrical equipment.**

Electromagnetic waves and vibration generated by this instrument, heat and reagent may affect other systems located nearby.

- **Provide a proper space around the instrument.**

Provide at least 10 cm of clearance around the instrument and make sure the power plug is installed so that it can be accessed at any time.

- **Thoroughly check the installation location before installing the instrument.**

Install this instrument on a flat, non-slippery sturdy floor free from vibration and having a sufficient size. If the installation location is tilted or too small, unexpected accidents may occur.

- **Do not use the instrument in a place subject to too low or high temperatures.**

Use it in a place where the temperature is stable in a range of 10 to 40°C.

- **Paraffin will cool and solidify if a power outage occurs or the power supply is cut off. Once paraffin solidifies, the paraffin container may become no longer removable from the instrument.**

- **The instrument may fail due to lightning or power outage, in which case the processing may be aborted and tissues may be damaged. If the power supply is unstable, use an uninterruptible power supply. Also install an external interface (optional) along with an uninterruptible power supply.**

Lightning may cause the instrument to fail and damage the tissues. If this instrument will be used in a region where lightning damage is a possibility, use an uninterruptible power supply. If lightning has caused an irreparable damage to the instrument, take out the tissues from the retort and protect the tissues. Also, be sure to use an external interface, without which the instrument cannot exchange signals with the uninterruptible power supply and the tissues cannot be protected as a result.

1. Safety Precautions

WARNING

- **Do not perform tissue processing if an extended period of power outage is scheduled. Tissue quality may drop.**

Paraffin will solidify if the power is out for an extended period of time. Also, the tissues may be damaged depending on when the power outage occurs. In this case, use a uninterruptible power supply. If you find that the tissue processing had stopped during processing due to an unexpected power outage lasting for an extended period of time, protect the tissues and immediately contact the Sakura Finetek Technical Support representative or local representative.

- **Install the power cord carefully by making sure the cord will not interfere with the work.**

Failure to do so may result in the operator tripping over the power cord and sustaining injury.

- **Securely connect the power cord and power outlet. If the power cord came off or the power switch was turned off inadvertently, connect the power cord or turn on the power switch without delay.**

If they are loosely connected, heat may be generated at the connected part, voltage drop can occur and the instrument may not operate normally. Furthermore, unexpected accidents or injuries can occur. Also, a power failure may cause the temperature to drop and paraffin to solidify, leading to operational problems. Also, the tissues may be damaged when the power is cut off during processing, depending on when the power is cut off.

- **Handle the power cord with care. Also, be aware of damage caused by mice and other small animals.**

To unplug the power cord from the power outlet, do not pull the cord, but hold the plug and then pull it out. Inspect the power cord periodically. If any damage is found in the exterior of the power cord, stop using it and contact the Sakura Finetek Technical Support representative or local representative.

- **The tissues may be damaged depending on the condition in which the error (trouble) occurred. Immediately resolve the error, protect the tissues, and contact the Sakura Finetek Technical Support representative or local representative.**

Connect an external alarm (optional) to prevent the tissues from being damaged or lost in case the instrument experiences a problem. When introducing an external alarm, contact the Sakura Finetek Technical Support representative or local representative.

- **Do not store cassettes by more than the specified number (up to 300 Uni-Cassette® cassettes). If cassettes not manufactured by Sakura Finetek will be used, confirm beforehand that they will not cause problems in tissue quality.**

Processing more than the specified number of cassettes may damage the tissues. Doing so may also cause the instrument to fail, so be sure to process no more than the specified number of cassettes.

- **When processing fewer than 150 cassettes, use only one basket level.**

When two basket levels are used and there are fewer cassette at the bottom level, the retort may not be filled enough to cover the tissues at the top level and the tissues may be damaged.

- **Process tissues using up to two levels in the supplied basket.**

Tissues cannot be processed using three levels in the supplied basket. If a basket other than the supplied basket is used, tissues may not be processed properly even if only two levels are used.

1. Safety Precautions

WARNING

- **Confirm that the lids of containers (cassettes, etc.) in which tissues have been stored are securely closed. Also, verify beforehand that the lids of containers (cassettes, etc.) will not open during processing with the instrument.**

If low-quality cassettes are used, their lids may open during processing and the tissues may fly out. Select cassettes carefully. Also, thoroughly verify the cassettes being used, to prevent serious trouble. It is recommended that cassettes manufactured by Sakura Finetek be used.

- **Use a type of cassette appropriate for the tissue size. Tissues may not be properly processed depending on the cassette.**

If tissues are too large or thick for the cassette in which they are stored, permeation failure may occur. If the cassette type is not appropriate, tissues (especially micro-tissues) may be lost.

- **Carry baskets with care.**

If a basket drops, the lid may open and the tissues may be lost. Use the supplied basket transport tray when carrying baskets.

- **Be sure to put tissues in containers (cassettes, etc.) and put an ID on each container so that the tissue information can be identified. Also confirm that the combination of each container (cassette, etc.) and tissues is correct.**

When storing tissues in a container (cassette, etc.), write down a short name or comment identifying the tissue information on the container (cassette, etc.). Be sure to do this to prevent serious trouble.

- **Verify beforehand that the letters written or printed on the containers (cassettes, etc.) in which tissues are stored will not be erased or fade during processing. Also verify beforehand that the attached labels will not peel during processing.**

If inks or labels not resistant to the reagent are used, the printed letters may be erased or fade or the labels may peel after processing. The same thing may occur when inks or labels having low resistant to heat or pressure are used. Serious trouble may occur when the printed letters become illegible, so use inks that will remain the tissue information permanently legible or labels that will not peel.

- **Before processing tissues, conduct a test operation to confirm the tissue quality beforehand.**

- **Check the processing program before the operation. If processed with a wrong program, the tissues may be damaged.**

A wrong operation may interrupt the tissue processing or edit the program to a wrong one. If the processing is started with a wrong program, the tissues may be damaged; read this manual carefully and use the instrument correctly.

1. Safety Precautions

WARNING

- **Before cleaning the retort, make sure no tissues are left in the retort.**

- **When the processing is complete, remove the tissues from the retort.**

The tissues may be damaged if they remain in the retort after the processing has completed. Do not leave the tissues for an extended period of time in the retort.

- **Check the reagent and paraffin volumes before commencing the tissue processing.**

The solution volume will decrease through repeated tissue processing, so be sure to add reagent. If tissue processing is performed when any reagent or paraffin is insufficient or not filled to the specified volume, tissues may not be immersed in the reagent, resulting in improper processing of tissues. Also, be careful not to fill too much reagent because it can cause instrument failure. If there is substantially less reagent in any station (the station is empty) although the processing was successful, an error may have occurred during the previous processing. Do not start the next operation, but contact the Sakura Finetek Technical Support representative or local representative.

- **Do not put solid paraffin. Visually confirm that the paraffin has melted.**

Use molten paraffin. If the instrument is operated when the paraffin is not molten, a failure may occur due to clogged tubing, etc. If the melting point of paraffin is set to the preset temperature, the paraffin may not melt completely depending on the environmental temperature.

- **If any reagent of low boiling point (methanol, ethanol, etc.) is to be used for long hours of processing at high concentration, use the P/V [OFF] mode or heating [OFF] mode.**

If kept under reduced pressure for a long period of time, the reagent may decrease in volume and cause the tissues to get dry or shrink.

- **Operating the instrument with an inappropriate temperature setting, time setting (long/short) or P/V setting may damage the tissues. Conduct a verification test beforehand to confirm that tissue samples can be prepared properly. If you have any question regarding tissue processing programs, contact the Sakura Finetek Technical Support representative or local representative.**

- **The O-ring at the paraffin container insertion part must be inspected periodically.**

If the O-ring at the paraffin container insertion part is damaged, paraffin can no longer be filled and the tissues may be damaged. Inspect the O-ring periodically.

- **Assigning a correct solution group is the basis of automatic transfer. If a wrong solution group is assigned, secondary contamination of reagent or tissue processing failure may occur.**

If the reagent on the screen is different from the reagent actually set, the tissue processing will be adversely affected. Exercise due caution when adding or changing reagent.

1. Safety Precautions

WARNING

- **Be sure to write down the reagent name on each reagent bottle and add the reagent indicated on the bottle. Also, set the reagent bottle at the same position as where the reagent name is set/displayed on the screen.**

Processing cannot be performed correctly if a wrong reagent is set in the reagent bottle. Be sure to write down the reagent name on each reagent bottle and add the reagent indicated on the bottle. Also, set the reagent bottle at the same position as where the reagent name is set/displayed on the screen.

- **Change reagent and paraffin periodically.**

Reagent and paraffin deteriorate through repeated tissue processing. Change them periodically to prevent the tissue processing results from negatively affected. Continuing to use the instrument without changing cleaning solution can also cause retort cleaning failure, clogged tubing or other potential failure.

- **Be sure to change cleaning xylene or alcohol that has been used for the specified number of times.**

Otherwise, proper cleaning may not be achieved. Also, clogged tubing may occur or paraffin may remain in the retort.

- **Use dedicated activated carbon filters for the fume control unit.**

Use of inappropriate activated carbon filters may cause explosion of powder dust generated from activated carbon powder.

- **When storing cassettes, etc., be sure to use the supplied basket. Also, be sure to close the basket lid before storing the basket in the retort.**

If the supplied basket is not used, the tissues may not submerge in solution or they may float, and may not be processed properly.

- **Use the specified supplies.**

When replacing supplies, use those specified in this manual. Use of non-specified supplies may result in malfunction or failure

- **Reagent may scatter and attach to your body while working. Be sure to wear protective gears while working.**

In all operations including tissue processing, solution exchange, opening/closing of doors, cleaning and daily maintenance, the reagents used may scatter and attach to your body (eye, mucous membrane, skin, mouth, nose, etc.) or you may inhale their gases. Be sure to wear protective gears (gloves, solution mask, goggles) while working.

- **The allowable concentration limit of each substance in the work environment varies depending on the air temperature, size of the room, additional load, if any, ventilation ratio, etc.**

If danger is suspected, the person responsible for handling the instrument should measure the concentration of the applicable substance in the area and confirm that the allowable limit in the work environment is not exceeded. Follow the standard concentration limits specified by the environmental regulation of the country/region in which the instrument is used.

- **If any reagent harmful to human health attached to your body or entered your mouth, take an appropriate action according to the SDS of the reagent.**

Wear protective gears (mask, gloves, goggles) during work in case anything goes wrong. Use protective gears that are resistant to all reagents on the reagent list.

1. Safety Precautions

WARNING

- **Some surface areas of the instrument become hot during operation. When handling paraffin or removing the basket from the retort, be sure to wear heat-resistant gloves and/or other protective gears.**

The paraffin, paraffin oven, paraffin container and retort are set to high temperatures inside, presenting a burn hazard. Handle them with care.

- **When removing the paraffin container, do so slowly and carefully.**

If the container is moved violently, molten paraffin may spill. Molten paraffin is very hot, so touching it may cause burns. The container handles also become hot, so be sure to wear heat-resistant gloves and operate the handles with care.

- **You may accidentally touch an infectious source and operate the instrument with the contaminated hands. Be sure to wear protective gears when operating the instrument.**

If you have operated the instrument after handling a pathogen, disinfect the instrument properly. The disinfection method varies depending on the type of pathogen, so choose a method appropriate for the pathogen. Also, disinfect/sterilize or otherwise properly treat the protective gears used and then dispose of them as infectious waste. For the disposal method, follow the applicable regulation and guideline specified by each institution, country or region.

- **Keep enough distance when opening the retort lid, especially when the reagent is hot. Also, be careful not to inhale vapor.**

- **Exercise due caution when handling reagents. Follow the relevant regulations and guidelines in your country or region and take proper measures to protect the operator, such as wearing protective gloves, mask and/or safety goggles.**

Some reagents are toxic to the human body. Some reagents are very flammable, combustible, and/or harmful to human body. Use protective gears that are resistant to all reagents on the reagent list.

- **Reagents in the reagent bottles evaporate and diffuse. When storing the reagent bottles outside the instrument, choose a well-ventilated place.**

Even when the caps on the reagent bottles are closed, evaporation of solution cannot be prevented completely. Accordingly, if reagent bottles containing reagent are to be stored outside the instrument, choose a place where ventilation equipment is available (such as inside a draft chamber). Also, be careful not to let the reagent bottles tip over. Follow the applicable regulation specified by each institution, country or region and be careful not to let the concentration of each reagent exceed the standard concentration limit of the applicable substance.

- **Sterilize any potentially infectious waste material or infectious medical waste and then dispose of it according to the applicable regulation or guideline in the country or region.**

1. Safety Precautions

WARNING

- **When this instrument is used to handle any substance presenting biological hazard, ensure safety by following the relevant regulations and guidelines in your country or region. When performing operations that involve any such substance, also wear gloves, mask, safety goggles and/or other protective gears and perform the operations inside a safety cabinet by taking appropriate measures to protect yourself as the operator.**

- **Handling of reagents requires expert knowledge on associated hazards due to their toxicity and volatility, etc.**

Appoint a person responsible for reagents and use reagents under the guidance/supervision of the responsible person.

- **If any additional requirement on accident prevention or environmental preservation is specified in the country/region where this instrument is used, follow the instructions under the applicable law/regulation in addition to the content of this manual to ensure compliance with the requirement in the applicable country/region.**

Chapter 1

Basic Knowledge of Instrument

1. Installation Method

1) Installation of the Instrument

This section provides information on determining a location for, and installing the instrument.
Installation should be performed by qualified service staff working exclusively with the instrument. The instrument must be installed correctly to ensure proper operation and service.
Read this Operating Manual carefully before operating the instrument. Strictly observe all instructions provided in this document.

Caution! **The instrument is a precision instrument and must be handled with care. If the instrument is handled in a rough manner or dropped, its internal components may malfunction or get damaged. Always exercise due care when handling the instrument.**

[1] Flow of installation

● Checking the installation location and transporting the instrument **Details: p. 1-2**
- Checking the installation conditions
- Checking the work area
- Transporting the instrument

▼

● Unpacking and installation check Details: p. 1-4
- Unpacking and installation
- Installation check

▼

● Setup before commencing operation Details: p. 1-13
- Turning on the power

[2] Required tools

Name	Size	Q'ty
Nut screwdriver	10 mm across flats	1
Phillips screwdriver	ISO No. 2	1
Level	-	1
Convex ruler (steel tape measure)	Capable of measuring objects of 2.5 m or larger	1

[3] Installation environment

As is the case with all electronic devices, the instrument should not be installed in places subject to excessive temperature or humidity.
Temperature and humidity should be held at constant levels to achieve the highest degree of operating stability. The ambient operating temperature of this instrument is in a range of +10 to +40°C. Its ambient operating humidity is in a range of 30 to 85% in relative humidity (non-condensing). Also, locate the instrument, with at least 10 cm away from walls, in a well-ventilated place not exposed to corrosive vapor or extremely high/low temperatures or where the instrument will not come in direct contact with air flow. Install the instrument away from direct sunlight and do not install it proximity to open windows, sinks, ovens, open flames, hot plates, radiators, and dry ice baths. The instrument should be installed away from any equipment carrying high voltage or current, such as a large refrigerator or oven. Since the instrument is very heavy, the floor should have sufficient bearing strength. Install the instrument on such floor that has been laid flat and the instrument should be secured with caster lockdown feet. Also install anti-tipover brackets, etc., in case of earthquake. The instrument should be installed near a power supply meeting the power facility requirements (voltage, current) specified in this Operating Manual. Be sure to ground the power outlet and wire the power properly using a dedicated cable.

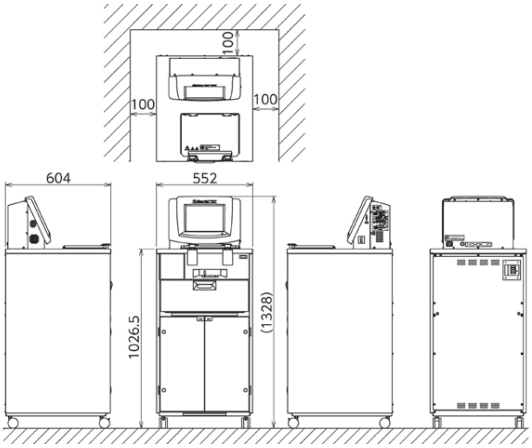
warning! **If the instrument is used in a non-ventilated place, serious health risks may occur to the human body.**

1. Installation Method

2) Checking the Installation Conditions

■ **Checking the installation location**
Confirm beforehand that the location is flat, strong and meets the dimensions of installation location (installation space) shown in the figure on the right. Also confirm that no space is left at the rear of the instrument which will be used for people to pass through frequently (recommended). Confirm that no foreign objects that may block the air outlets of the instrument (such as hanging towels, etc.) are present in and around the installation location.

■ **Checking the facility-side power supply**
Confirm that the facility-side power supply conforms to the requirements.



Note **The instrument can support the power supplies listed below using the selector switches. Switching of the voltage setting should only be performed by qualified service staff working exclusively with the instrument.**

Facility requirements

• Single-phase 100 VAC ± 10%	50/60 Hz: 15 A or more	With grounding terminal
• Single-phase 15 VAC ± 10%	50/60 Hz: 15 A or more	With grounding terminal
• Single-phase 220 VAC ~ 240 VAC ± 10%	50/60 Hz: 10 A or more	With grounding terminal

Warning! **If the above facility requirements are not satisfied (such as when the power supply used is 200 VAC), the instrument must not be used.**
If the instrument generates abnormality, the breaker on the facility side may actuate and other equipment may be affected; accordingly, connect each instrument to a dedicated power outlet (including a dedicated breaker on the facility side).

• Specification of the power cord supplied with the instrument

Type of power cord	Applicable standard	Length
For 100/115 VAC	UL/CSA, PSE approved product	Approx. 2 m
For 220 VAC to 240 VAC	Cord: CENELEC HD, VDE approved Plug: EN, IEC, VDE Connector: EN, VDE approved	Approx. 2 m

Warning! **If the instrument is used in a region where the applicable standard above is not met, provide a different power cord conforming to the standard in the location of use.**

• About grounding
Confirm with the person responsible for the facility that the power outlet to be used is grounded (100 Ω or less).

■ **Confirming a ventilation system, local exhaust system or exhaust port on the facility side**
Although the volumes of volatile solution gases released from the instrument vary depending on the solutions and processing programs used and the environmental temperature, volumes of gases released per unit time are provided below for reference. Based on these values and the volumetric size of the installation location, check if the ventilation rate is sufficient to meet the requirements at the installation location pertaining to the concentrations of substances in the work environment. If ventilation facility is not available, connect the optional duct connection adapter and exhaust duct hose set to the exhaust port of the instrument so as to release the exhaust gases to the outdoors, or otherwise confirm that the instrument can be operated in such a way that the concentrations of volatile solution gases in the work environment meet the standards at the installation location.

Note **Maximum volumes of gases released per unit time (reference)**
Formaldehyde: 10.40×10^{-6} (m^3/hr)
Ethanol: 1.02×10^{-2} (m^3/hr)
Xylene: 4.05×10^{-4} (m^3/hr)

Caution! **The volumes of volatile solution gases released from the instrument vary depending on the solutions and environment.**

1. Installation Method

3) Checking the Work Area

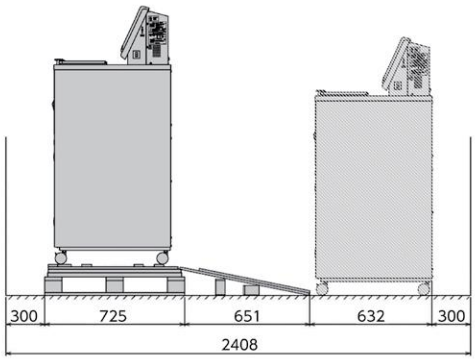
The dimensions and weight of the instrument in packed state are as follows.
Check them beforehand so that sufficient space and safety can be ensured when "transporting, unpacking and installing" the instrument.

"Dimensions and weight in packed state"
W: Approx. 680 mm
H: Approx. 1520 mm
D: Approx. 755 mm
Weight: Approx. 160 kg

"Instrument dimensions and weight"
W: Approx. 522 mm
H: Approx. 1328 mm
D: Approx. 604 mm
Weight: Approx. 130 kg

■ **Working envelope when unloading the instrument from the pallet**

A slope is provided for unloading the instrument from the pallet for unpacking, so use the figure on the right as reference to ensure the length of the slope and enough space to maneuver the unloaded instrument.



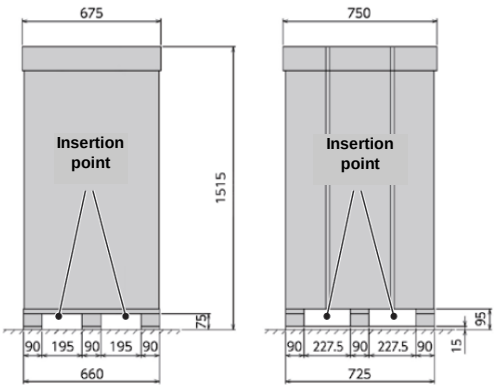
4) Transporting the Instrument

Caution! **To prevent the instrument from getting damaged due to vibration, impact, etc., during transport, perform the work described in "Removing the securing members inside the instrument" on P. 1-5 at the installation location.**
When pushing the instrument to move it, be careful not to let the exterior panels deform. (Push the corners of the exterior panels of the instrument, including the top plate.)
Two persons should work together to keep the instrument from tipping over. When transporting the instrument, place thin iron sheets, etc., to eliminate height gaps on the floor so that the instrument will not receive impact.
When transporting the instrument on a slope, remember that, because the instrument is heavy, stopping the instrument will not be easy once it began accelerating.

■ **Transporting the instrument to the work area**

• **Transporting on a forklift or pallet truck**

When transporting the instrument on a forklift or pallet truck, do so when the instrument is still packed, and insert the fork into the location of the pallet carrying the packed instrument as shown in the figure on the right. Refer to the palletizing size in the figure on the right and check the dimensions of the forklift truck or pallet truck beforehand.



■ **Transporting the instrument to the installation location**

[1] Unload the packed instrument from the pallet. (Refer to **p. 1-4** for a detailed procedure.)
[2] Press the four corners of the instrument by hand to transport the instrument.

1. Installation Method

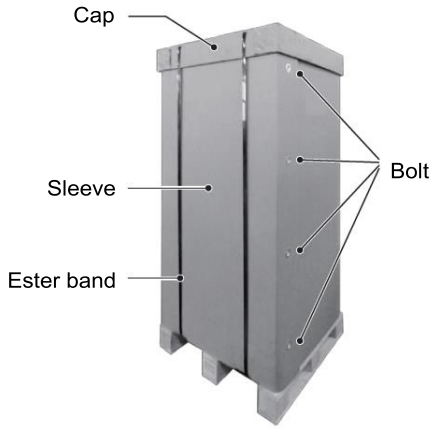
5) Unpacking Procedure

How to remove the instrument from the packing box that has been carried in, and remove the protective materials, is explained.
To perform each work safely and correctly, be sure to follow the procedure specified herein.

Warning! **Two or more persons should always work together to unpack the instrument.**
When lifting the instrument, bend your knees fully or otherwise assume a natural posture.
When moving the instrument, do not let it tilt by 15° or more. The instrument may tip over or cause accident.

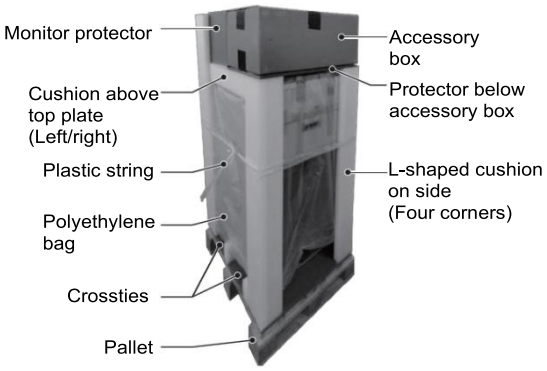
[1] Unpacking the instrument

1. Cut the two bands with a cutting knife, etc. and remove the cap.
2. Remove the sleeve fixing bolts (4 pcs) and take out the sleeves.

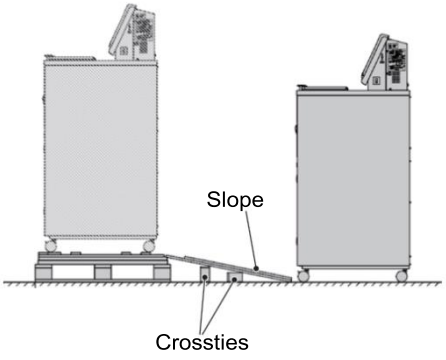


State with cap removed

3. Remove the accessory box, protectors below the accessory box, and monitor protectors.
4. Untie the plastic strings and remove the L-shaped cushions at the four corners and the cushions (left/right) above the top plate.
5. Remove the polyethylene bags.
6. Lift the instrument on each side at a time and remove the two crossties supporting the instrument.
7. Insert crossties underneath the slope and unload the instrument from the pallet.



Caution! **Exercise caution that, if the casters are locked, the instrument may tip over.**



[2] Removing the fixing members inside the instrument

Remove the cushion materials and fixing members inside the instrument. Refer to the explanation of how to open the door and retort lid.

■ **Removing the tape**

Remove the tape fixing each part.

■ **Retort**

Slide the retort lock lever to the right, disengage the hook, and open the retort lid. Remove the paper sandwiched between the flange and retort lid.

■ **Paraffin oven**

Open the paraffin oven door and remove the cushion materials.

■ **Reagent bottle rack**

Open the Reagent bottle rack door and remove the two cushion materials.

■ **Reagent bottle**

There is a blue part at the connection port (coupler) on the instrument side. Push this part all the way into the instrument, and remove the Reagent bottle.
Remove the plastic bag and connect the Reagent bottle in the original position.

1. Installation Method

[3] How to operate the retort lid

To operate the retort lid, operate the hook that locks the retort lid and the retort lock lever that covers the hook.

Caution! **Be careful not to pinch your hand.**

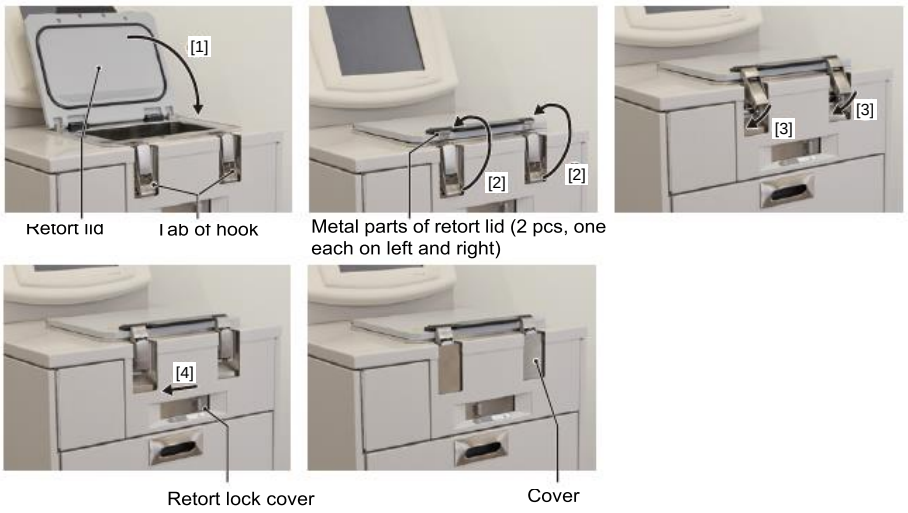
■ **Unlocking and opening the retort lid**

1. Slide the retort lock lever to the right [1].
   The cover on the hook also moves to the right to make the hook accessible.
2. Flip up the hook [2] and remove it from the retort lid [3], and the hook will be unlocked.
3. Lift the retort lid to open the lid [4].

■ **Closing and locking the retort lid**

1. Close the retort lid [1].
2. Engage the tab of the hook with the metal part on the retort lid toward you [2], flip down the entire hook [3], and lock the retort lid. The retort lid is locked at two locations, so lock both locations.
   Check to see if the retort lid can be opened.
3. Slide the retort lock lever to the left [4].
   The cover on the hook moves to the left. The hook is covered and the retort lid can no longer be unlocked.
   If the cover catches or bumps against the hook, the hook is not locked completely. Repeat 2.

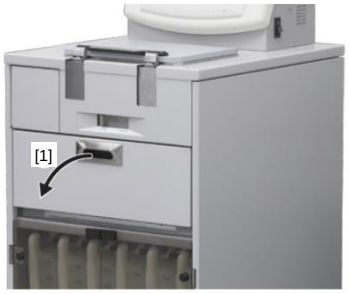
Caution! **Be careful not to pinch your hand. When sliding the retort cover, also be careful not to pinch your finger around the hook or cover.**



[4] How to operate the fume control unit door

Press the bottom of the door with a finger and quickly release the finger, and you will hear a click sound and the door will be unlocked [1] and open [2].
To close the door, push it in until you hear a click sound.

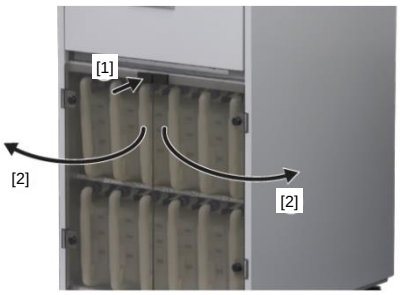
Caution! **Be careful not to pinch your hand.**
If the door is not closed correctly, processing cannot be performed properly.



[5] How to operate the paraffin oven door

Hold the handle and tilt it toward you to open the door [1].
To close the door, raise the handle toward the back.

Caution! **Be careful not to pinch your hand.**
If the door does not open, it may be stuck due to paraffin.
Forcibly opening the door may cause a breakdown.



[6] How to operate the Reagent bottle rack door

This is a double door.
Press the top of the door (center of the instrument), and you will hear a click sound and the door will open slightly toward you [1].
The door is fixed with magnets, so pull it toward you to open [2].
To close the door, push it in until you hear a click sound. The door is fixed with magnets.

Caution! **Be careful not to pinch your hand.**
Opening/closing the door with a strong force may damage the door. Operate it gently.

1. Installation Method

6) Switching the Power-supply Voltage Setting

Caution! **This instrument supports multiple voltages, but the setting on the instrument side must be switched according to the power-supply voltage.**
If the instrument is used without switching the voltage setting, not only the instrument will break down, but the user may also be exposed to danger; accordingly, contact local representative or the Sakura Finetek Technical Support when the instrument is installed and schedule an appointment to switch the voltage setting according to the voltage on the facility side.
The factory setting is 230 V (220 to 240 V).

7) Checking the Accessories

Confirm that all of the accessories are present (refer to the table below) and the instrument and accessories are free from damage.
If the instrument is damaged or any of the accessories is short or damaged, contact your nearest Sakura Finetek dealer.

Name of part	Q'ty	Remarks
Basket with handle (150 cassette size)	2	Basket set (with dedicated lid)
Basket transport tray	1	
Activated carbon filter	1 box	Containing 2 units
Divider for fume control unit	1	
Spill tray (for paraffin oven)	1	* Wide
Spill tray (for Reagent bottle rack)	1	* Narrow
Paraffin scraper, Large	1	
Reagent bottle label set	12	10 for processing/2 for cleaning
Color coding labels	2	1 sheet consists of 6 colors x 4 cuts
Power cord (for 100 VAC/115 VAC)	1	
Power cord (for 220 ~ 240 VAC)	1	
Paraffin container	4	Housed in the instrument
Reagent bottle set (with plug/bottle cap)	12	Housed in the instrument
Screen protection sheet	1	Already attached to the screen
Operating Manual	1	

1. Installation Method

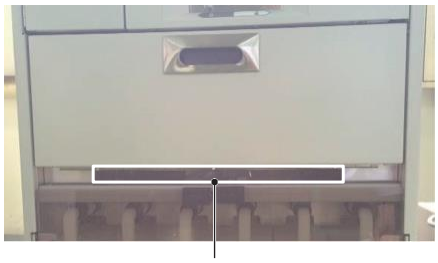
8) Checking the Installation (Securing the Instrument)

1. Confirm that the location where the instrument will be installed is flat and sufficiently strong.
2. Move the instrument to the installation location and lower the stoppers of the front casters of the instrument to secure the instrument.
   If enough space is left for people to pass through at the rear of the instrument, the users may touch the power cord or hook it with their foot and accidentally cut off the power; accordingly, select a location where no unnecessary large space will be left at the back of the instrument.

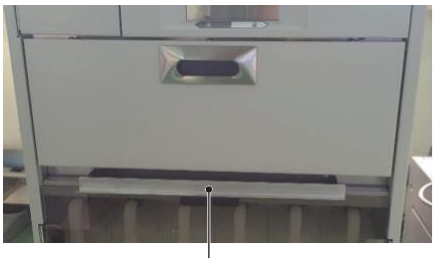
9) Installation Check (Installing the Accessories)

[1] Installing the spill tray (for paraffin oven)

Put the spill tray in the space below the paraffin oven and push it all the way in, as shown in the figure below.



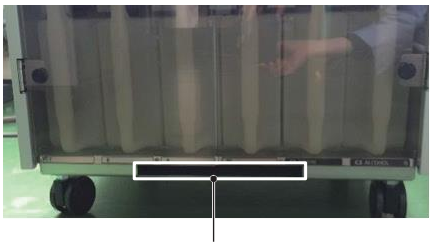
Space for spill tray



Spill tray

[2] Installing the spill tray (for Reagent bottle rack)

Put the spill tray in the space below the Reagent bottle and push it all the way in, as shown in the figure below.



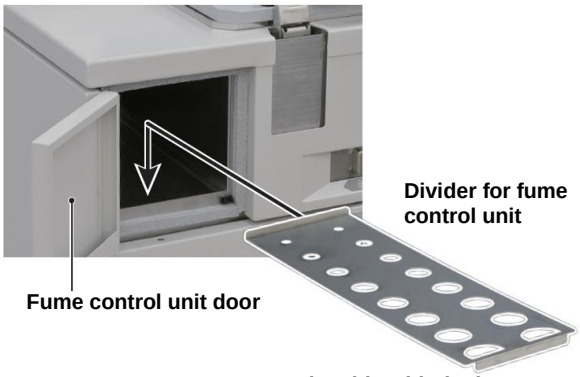
Space for spill tray

Spill tray

1. Installation Method

[3] Installing the Divider for fume control unit and activated carbon filters

Warning! **The fume control unit reduces the amount of organic solvent released from the instrument. To make sure fume is adsorbed and treated properly, replace the activated carbon filters in the fume control unit periodically.**
So that the gases generated during tissue processing are filtered properly, keep the activated carbon filters always installed.



1. Open the fume control unit door. Push in the bottom of the door to unlock and open the door.
2. Put the Divider for fume control unit into the instrument.
   Set the unit so that the side with the larger hole comes to the front. Make sure the front of the unit is inside the instrument. If the front side is only resting at the entrance, fume cannot be treated properly.
3. Install the activated carbon filters to the instrument.
   Two activated carbon filters constitute one set.
   Fume cannot be treated properly if only one filter is set.
4. Close the fume control unit door. Push in the door until you hear a click sound, to lock the door.

✕ **The front of the base is resting at the entrance: Wrong setting**

○ **The front of the base is inside the instrument: Correct setting**

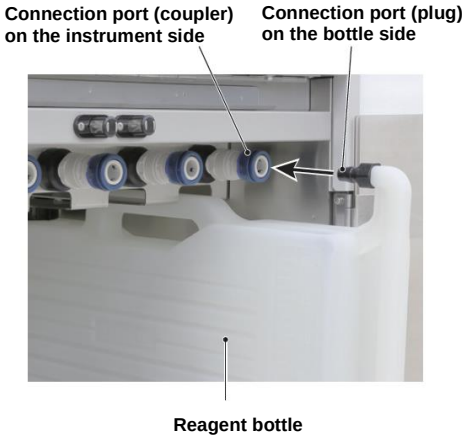
1. Installation Method

[4] How to set the Reagent bottle

How to set the Reagent bottle is explained.

■ Installing the Reagent bottle

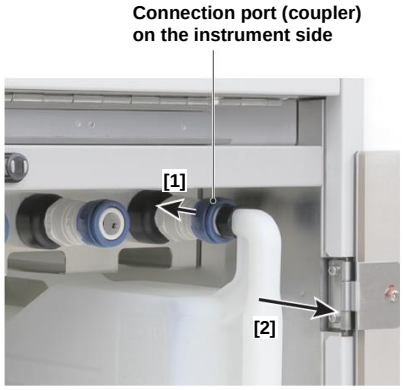
1. Open the Reagent bottle rack door. Push in the top of the door to open the door.
2. Connect the Reagent bottle to the blue connection port (coupler) on the instrument side above the Reagent bottle rack, and insert the bottle until you hear a click. Pull the Reagent bottle gently and confirm that it does not come off.
3. Close the Reagent bottle rack door.



Caution! **Connect an empty bottle or container to all stations including those not used in tissue processing.**

■ Removing the Reagent bottle

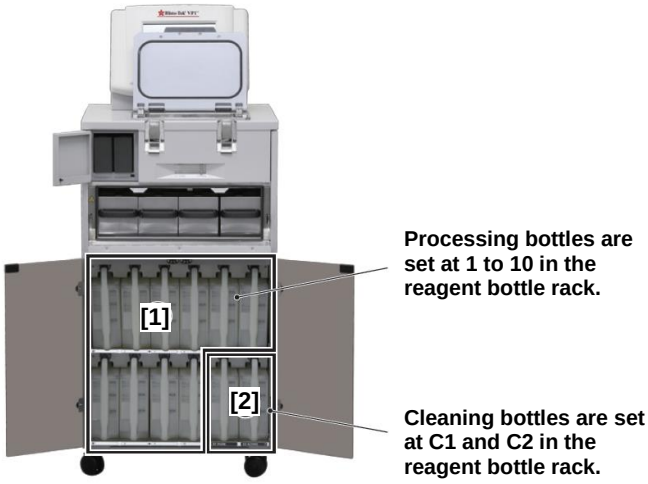
1. Open the Reagent bottle rack door. Push in the top of the door to open the door.
2. Push the blue part at the connection port (coupler) on the instrument side toward the back of the instrument [1], and the coupler will be unlocked and you can now access the Reagent bottle.
   Pull out the bottle horizontally [2].
3. Close the Reagent bottle rack door.



Note **Refer to p. 2-3 for the solution level.**

■ Where to set the bottles

Processing bottles and cleaning bottles are set in the specified locations. Do not set them in wrong locations.
Set a processing bottle at the location indicated by [1] in the figure below.
Set a cleaning bottle at the location indicated by [2] in the figure below.

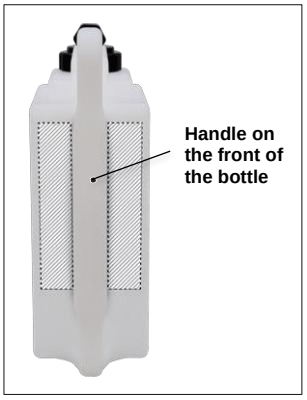


1. Installation Method

[5] How to attach labels

■ **How to attach processing labels and cleaning labels**

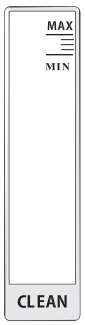
Processing/cleaning labels provide important information for checking the solution level **(p. 2-3)**, so attach them correctly. Find a concaved part with flat surface where the handle is on the front face of the bottle. Attach a label there. Flat surface is found on the left and right of the handle. Attach a label on one side. When attaching the label, make sure it perfectly fits the concave and runs vertically to the bottle. If the label deviates from the concave or is attached at an angle, the solution level can no longer be checked properly.



Label attaching position (dotted line)

Example of attached labels

Processing label

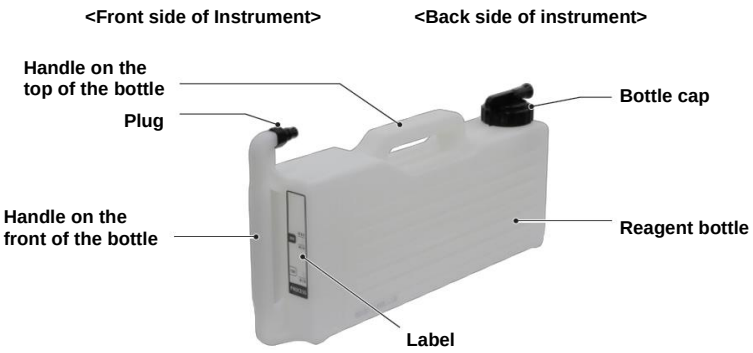


Cleaning label

■ **How to attach color labels**

Labels in six colors (total eight labels) are provided to identify individual solutions. Write down the solution names on the labels and attach them on the front face of the Reagent bottles.

Note **Do not attach the color labels around the bottle caps or plugs where they peel off easily or the scale is not clearly visible.**
Make sure the color labels correspond to the color settings of the solution configuration.



1. Installation Method

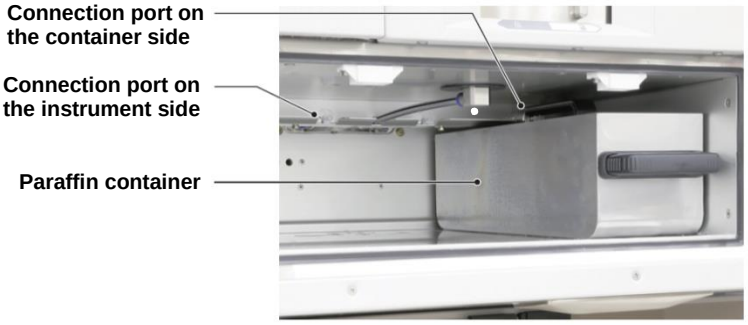
[6] How to set the paraffin container

How to set the paraffin container is explained.

Warning! **Exercise caution against burns because the paraffin oven and paraffin may be hot.**

■ **Installing the paraffin container**

1. Open the paraffin oven door.
2. Push the paraffin container all the way into the paraffin oven.
3. Close the paraffin oven door.



■ **Removing the paraffin container**

1. Open the paraffin oven door.
2. While applying slight force, gently and slowly pull out the paraffin container horizontally.
3. Close the paraffin oven door.

Note **For the paraffin volume, refer to p. 2-3.**

10) Turning on the Power

1. Confirm that input voltage has been set according to the installation environment.
2. Connect the power cord to the inlet on the instrument and power outlet on the facility side.

Caution! **Use a power cable appropriate for the power-supply voltage.**
Be sure to connect the power cord to a power outlet with grounding terminals.

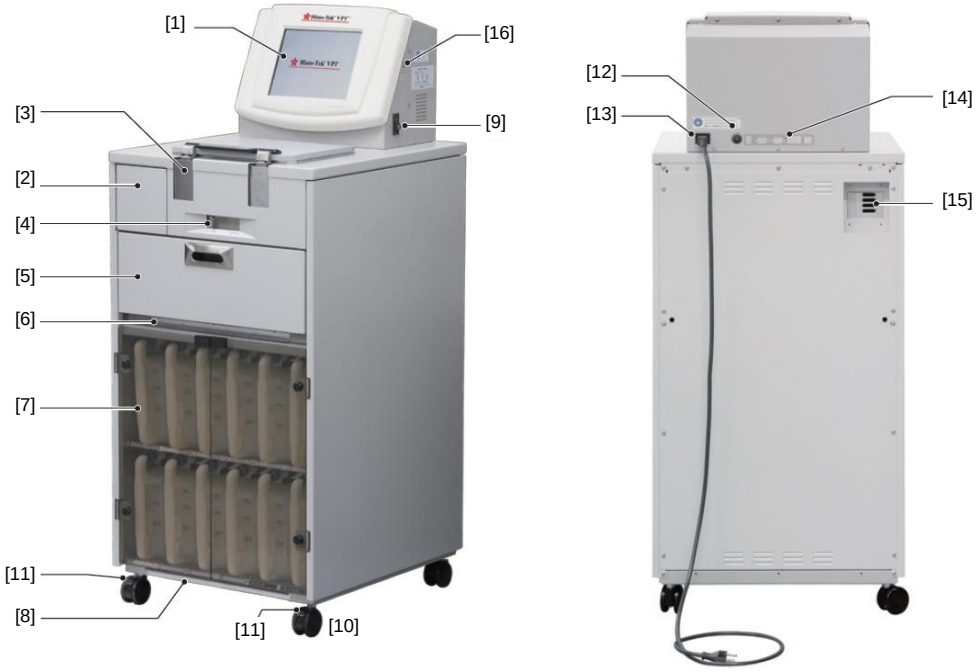
3. Turn on the power switch on the right side face of the instrument monitor to start the instrument.
   Set up the instrument as necessary.

2. Explanation of the Instrument

1) Overview of the Instrument

- This instrument automatically performs in a single processing retort a series of tissue processing steps including fixation, dehydration, defatting and paraffin infiltration, to prepare pathological samples for histological studies and tests conducted in the fields of pathology, anatomy, clinical pathology, etc.
- Up to 300 Tissue-Tek Uni-cassettes <standard> containing specimens can be processed in a single cycle.
- Up to 10 tissue processing programs can be registered/managed.
- With the delayed start function, you can set the instrument to wait and start tissue processing so that it will be finished at the specified date and time.
- With the automatic transfer function, you can let the instrument transfer reagents automatically instead of operators performing transfers manually.
- The bottle connection check function lets you check the connection of Reagent bottles with ease.
- The warm water flush function allows for cleaning of the retort and tubing circuit with warm water in a single operation.

3. Name of Each Part



[1] Monitor screen (screen)
The icons used for program entry and operation and the tissue processing status are displayed.

[2] Fume control unit door
Open this door when replacing the activated carbon filters.

[3] Retort lock cover
This cover is for the hook that locks the retort lit. Slide the lever to the left/right to open/close the cover.

[4] Retort lock lever
This lever is used to cover the hook that locks the retort lid, so that it cannot be operated inadvertently. The lever slides to the left/right, and when it is at the left position, the hook is covered. Tissue processing is possible only when the lever is at the left position.

[5] Paraffin oven door
Open this door to access the paraffin container.

[6] Spill tray (for paraffin oven)
This tray receives the paraffin that has leaked into the paraffin oven.

[7] Reagent bottle rack door
Open this door to access the rack in which Reagent bottles are stored.

[8] Spill tray (for Reagent bottle rack)
This tray receives the solution that has leaked into the Reagent bottle rack.

[9] Main power supply (Circuit protector 1)
Turn ON/OFF the power to the instrument.

[10] Caster
These casters are used for moving the instrument.

[11] Safety stoppers
Caster stopper.

[12] Circuit protector 2
Overcurrent is protected when the supply voltage is 220 to 240 V.

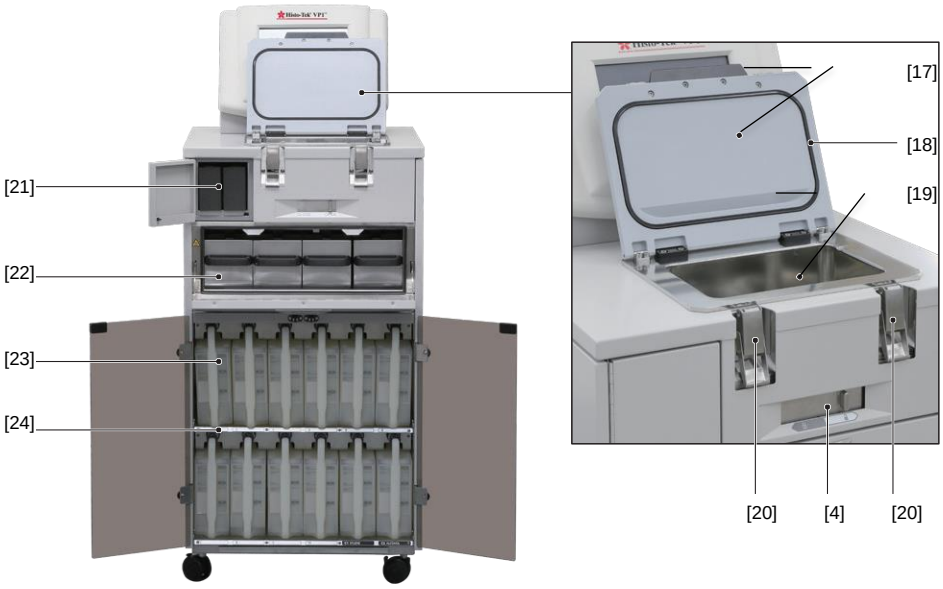
[13] Inlet
Connect the power cord.

[14] External interface unit (optional)
Normally this opening is plugged. Use it to connect an optional UPS (uninterruptible power supply) or external alarm.

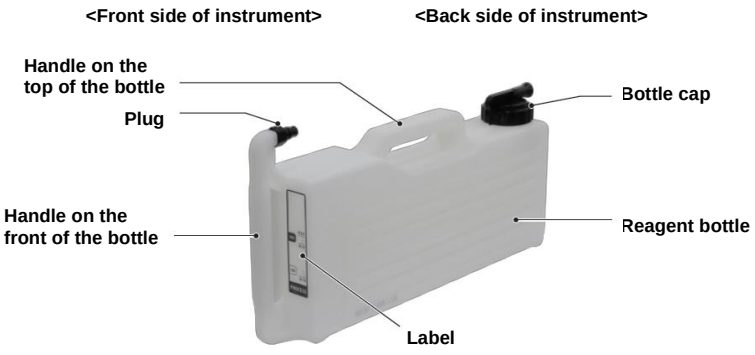
[15] Exhaust port
Air treated in the fume control unit is released from here. By installing an optional exhaust duct and using an exhaust duct hose, an external exhaust duct can be connected.

[16] USB data port
You can connect an optional USB flash drive and output data to it in text format.

3. Name of Each Part

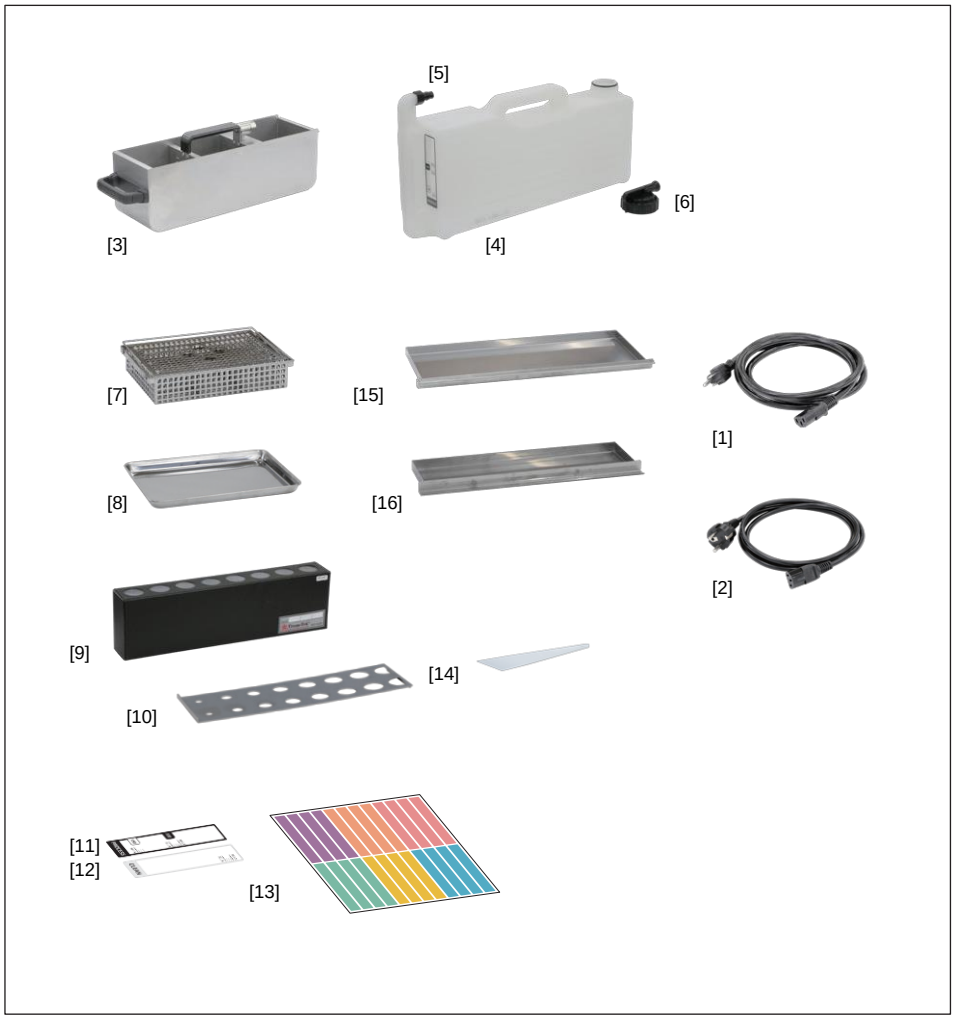


[17] Retort lid
This lid is used to seal the retort. Open it to access the retort.
[18] Retort seal
[19] Retort
A station used for processing.
[20] Hook
This metal part locks the retort lid.
[21] Fume control unit (activated carbon filter)
This unit adsorbs the gases evaporating from solutions.
[22] Paraffin container
Molten paraffin used for tissue processing is put in this container.
[23] Reagent bottle
Solution used for tissue processing is put in this bottle. See below for the name of each Reagent bottle.



[24] Reagent bottle rack
Reagent bottles are stored in this rack.

4. Standard Accessories/Options



4. Standard Accessories/Options

■ Standard accessories

	Item	Part number	Q'ty
[1]	Power Cord (100/115 VAC)	A4-01-0518	1 each
[2]	Power Cord (220-240 VAC)	A4-01-0534	1 each
[3]	Paraffin Container	F60-907-00	4 each
	Complete Reagent bottle	1705	12 each
[4]	Reagent bottle		
[5]	Plug		
[6]	Bottle Cap		
[7]	Basket with Handel (150 cassette size)	1706	2 each
[8]	Basket Transport Tray	7109	1 each
[9]	Activated carbon filter , 2/case	6160	1 set
[10]	Divider for Fume Control Unit	O77-156-00	1 each
[11]	Reagent bottle label (for Processing)	O77-182-00	10 sheets
[12]	Reagent bottle label (for Cleaning)	O77-183-00	2 sheets
[13]	Color Coding Label (6 Colors x 4 Pieces/sheet)	O77-184-00	2 sheets
[14]	Paraffin scraper , Large	1550	1 each
[15]	Spill Tray for Paraffin Oven	O77-165-00	1 each
[16]	Spill Tray for Reagent bottle Rack	O77-168-00	1 each
	Screen Protection Sheet (already attached to the screen)	O70-626-00	1 sheet
	Operating Manual		1 each

■ Options

	Item	Part number	Q'ty
	Duct Connection Adapter (38 or 75mm OD)	F60-532-00	1 set
	Seismic Anchorage	F60-929-00	1 set
	Special Divider, for Cassette Support	F60-041-00	1 each
	Duct Hose Set (38 mm OD)	6506	1 each
	Duct Hose Set (75 mm OD)	6507	1 each
	External Interface Unit (UPS, external alarm, LAN)	F60-930-00	1 set
	USB Flash Drive	00000-2945	1 each

5. Basic Knowledge

1) Specification

General name		Vacuum Infiltration Processor
Brand name		Histo-Tek VP1
Model		VP1
Product code		1700
Manufacturing license number		20B2X00014000031
Instrument dimensions		Approx. 552 (W) x 604 (D) x 1,328 (H) mm (excluding projections) * Height to retort: Approx. 1,033 mm
Instrument mass		Approx. 130 kg
Model		Floor model
Power supply voltage		100 VAC 50/60 Hz 115 VAC 50/60 Hz 220 to 240 VAC 50/60 Hz
Power consumption		1200 VA
Number of cassettes processed		Up to 300 cassettes (Tissue-Tek Uni-Cassette <Standard>) 1 station
Applicable reagents		• Formalin solution (including buffered formalin) • Tissue-Tek U-fix • Methanol • Ethanol • Isoproyl alcohol • Xylene • Tissue-Tek Tissue-Clear • Paraffin • Water **Caution! Do not use fixing solutions that contain mercury salt, acetic aid or picric acid that corrodes metals.** **Dispose of reagent properly according to the applicable regulation in your country or region.** **Do not use chloroform or toluene.** **For any other chemical, contact the Sakura Finetek Technical Support or local representative.**
Usage of reagent		Processing solution volume; 3.2 to 3.5 L when processing 300 cassettes Retort cleaning solution volume: 4.5 to 4.8 L
Fume treatment		Activated carbon filters, condenser
Mixing method		Pump-in and pump-out
Display		10.4 inch color LCD, touch screen
Operating environment	Required facility	100 VAC ±10%, 50/60 Hz: More than 15 A, with grounding terminal 115 VAC ±10%, 50/60 Hz: More than 15 A, with grounding terminal 220~240 VAC ±10%, 50/60 Hz: More than 10 A, with grounding terminal
	Operating environment	Ambient temperature +10 to * 40°C Relative humidity 30 to 85% (non-condensing)
	Storage environment	Ambient temperature -10 to +60°ºC Relative humidity 30 to 90% (non-condensing)
Applicable standards and regulations		cETL Certification * Duplicate standards not listed below) UL61010-1-12 IVD Directive * Duplicate standards not listed below IEC61010-2-010:2014 Ed. 3 IEC61010-2-101:2015 Ed. 2 EN ISO14971:2012 EN61326-2-6:2013 EN62304:2006 EN62366:2008 Pharmaceutical and Medical Device Act * Duplicate standards not listed below ISO13485:2003 ISO14971:2007 JIS C 1010-1:2014 JIS C 1806-2-6:2012 Protection from Vibration and Drop JIS Z 0200 : 1999 (Level 1) JIS Z 0232 : 2004 (Standard of Truck Transportation)
Protection against electric shock		Class I Pollution Degree 2
Installation category		II

Caution! **This product is specified for indoor use, so do not use it outdoors.**

Note **The equipment specifications are subject to change without notice.**

2) Input Method

When operating this instrument, characters and numeric values need to be entered on the touch screen. To enter characters and numerical values, the touch keyboard and ten-key keypad are used.

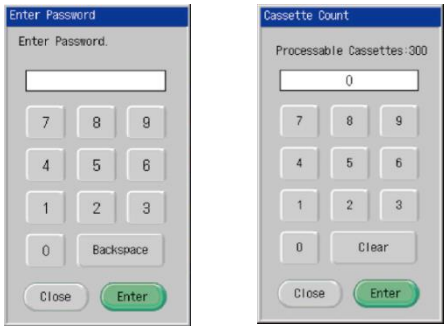
[1] Using the touch keyboard

The keyboard screen is displayed to create and save names such as a program name.
After the keyboard screen appears, touching a character key as it is will display a lower-case character in the entry field. To enter an upper-case character, touch the Caps Lock key located at the lower left corner of the keyboard.
To delete characters from the entry field, touch the Backspace key or the Clear key in the lower right of the keyboard. The Backspace key deletes the currently displayed characters one by one. The Clear key clears them at a time.
To save the current display, touch **Save**. To cancel the operation, touch **Cancel**.

Touch keyboard

[2] Using the ten-key keypad

The ten-key keypad window is displayed to enter time and numeric values.
To delete characters from the entry field, touch the Backspace key or the Clear key in the lower right of the keyboard. The Backspace key deletes the currently displayed characters one by one. The Clear key clears them at a time.
To save the current display, touch **Enter**. To cancel the operation, touch **Close** or **EXIT**.



Ten-key keypad

3) Log On/Log Off Function and Password Function

Since the instrument operates with nobody standing by for hours, an unauthorized person may operate the instrument without the operator noticing. To prevent such a situation, the instrument has the log on/log off function. The operator enters the preset password to log on and operate the system.
Two types of passwords are available: "Manager passwords" that provide higher-level access to all operations, and "User passwords" that provide access only to the operations permitted to the applicable user.

[1] Default passwords

The default passwords are as follows: Four manager passwords and 20 user passwords are registered.

User ID	User Name	Password
Manager: 1 to 4	ADMIN 1 to 4	100000, 200000, 300000, 400000
User: 1 to 20	OPERATOR: 1 to 20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Note **To prevent unauthorized persons from operating the instrument, it is recommended that the default passwords be changed.**
To change the default passwords, touch System Setup on the maintenance menu screen, and touch Password to access the Password screen (p. 6-6). On the Password screen you can change the user name and password.

[2] List of operations permitted to managers and users

"Managers" and "users" can perform different operations on this instrument.

Tab	Details	Manager (ADMIN)	User (OPERATOR)
Tissue Processing	Select Program	○	○
	Tissue Processing	○	○
	Temporarily edit the program on the start confirmation screen	○	x
	Temporarily edit the program during tissue processing	○	x
Utility	Edit Solution Names	○	x
	Edit Solution Configuration	○	x
	Edit Program	○	x
	Manual Operation	○	○
	Clean Retort	○	○
	System Setup	○	x
	Select Language	○	x
Solution Management	Automatic Transfer	○	○
	Warm Water Flush	○	○
	Export Data	○	○
	Clear Usage Status	○	○
History	Process Report	○	○
	Event Log	○	○
	Error Log	○	○
	Parts Usage (Confirm)	○	○
	Parts Usage (Clear)	○*	x
	Software Version	○	○

* Usage status can be cleared only for two items--retort lid gaskets and activated carbon filters.
Usage statuses of pump diaphragms and rotary valves cannot be cleared.

4) Mixing During Tissue Processing

This instrument provides the total mixing function where the total volume of reagent in the retort is pumping out/in.

■ Total mixing

There are two total mixing actions: Mixing at 12-minute intervals (Mix: Fast) and mixing at 20-minute intervals (Mix: Slow). To perform total mixing at 12-minute intervals, the remaining processing time at the station must be at least 13 minutes. To perform total mixing at 20-minute intervals, the remaining processing time at the station must be at least 21 minutes. Total mixing cannot be performed if there is not enough processing time remaining at the station.

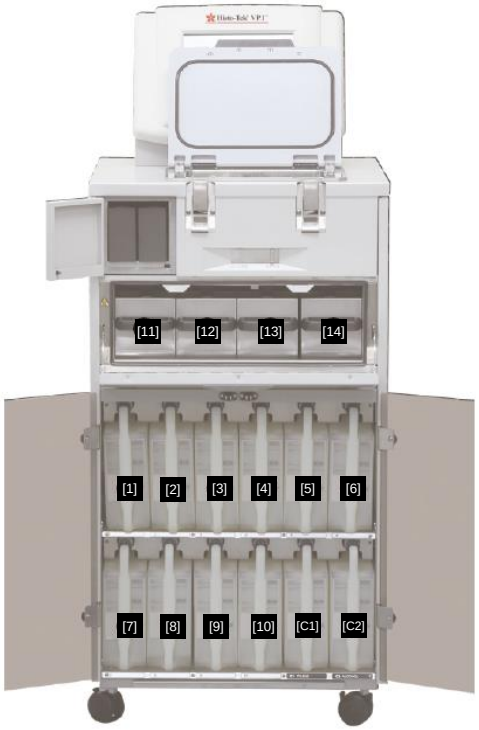
5) Automatic Transfer

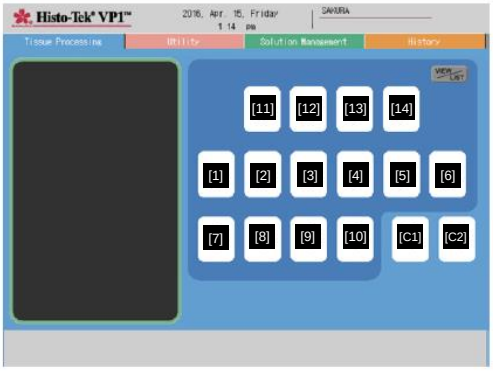
This instrument allows for solution exchange of processing solution at Sta.1 to Sta. 10 based on automatic transfer. Select the stations subject to automatic transfer, for each solution group set in the solution configuration information. Refer to **p. 4-1** for details.

Note **Automatic transfer cannot be performed during tissue processing.**

6) Solution Station and Solution Group

This paragraph provides explanation about the station number and intended use of each station.
Sta. 1 to Sta. 14 are used for the tissue processing. Among the retort cleaning stations, Sta. C1 is used exclusively for cleaning xylene and Sta. C2 is used exclusively for cleaning alcohol.
This instrument manages the solutions in Sta. 1 to Sta. 14 based on solution groups. The paraffin stations (Sta. 11 to Sta. 14) are automatically registered as "Paraffin Group." Up to six solution groups can be set. The user can set desired solution groups for Sta. 1 to Sta. 10 according to the actual state of tissue processing. A solution group is defined as a group of stations of consecutive station numbers.



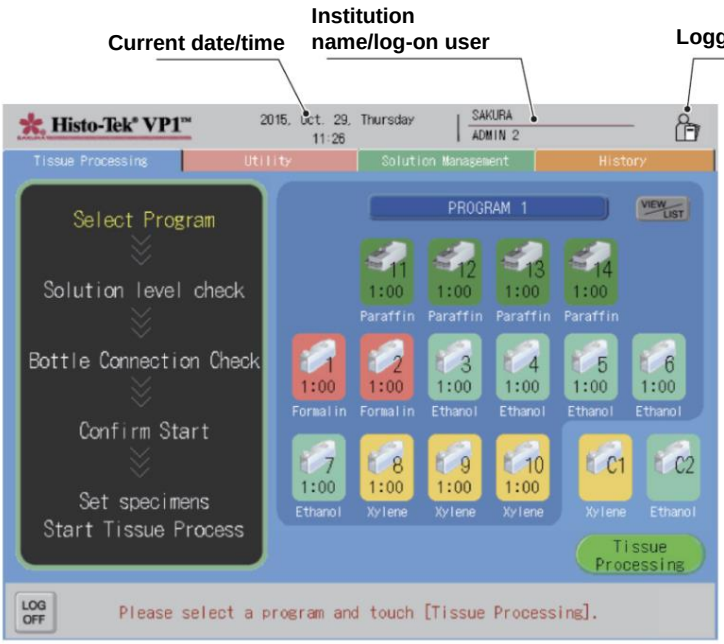


Station number		Use	Screen display
[1]	1	Solution for tissue processing	Solution name
[2]	2	Solution for tissue processing	Solution name
[3]	3	Solution for tissue processing	Solution name
[4]	4	Solution for tissue processing	Solution name
[5]	5	Solution for tissue processing	Solution name
[6]	6	Solution for tissue processing	Solution name
[7]	7	Solution for tissue processing	Solution name
[8]	8	Solution for tissue processing	Solution name
[9]	9	Solution for tissue processing	Solution name
[19]	10	Solution for tissue processing	Solution name
[11]	11	Paraffin for tissue processing	Solution name
[12]	12	Paraffin for tissue processing	Solution name
[13]	13	Paraffin for tissue processing	Solution name
[14]	14	Paraffin for tissue processing	Solution name
[C1]	C1	Xylene for cleaning	C1
[C2]	C2	Alcohol for cleaning	C2

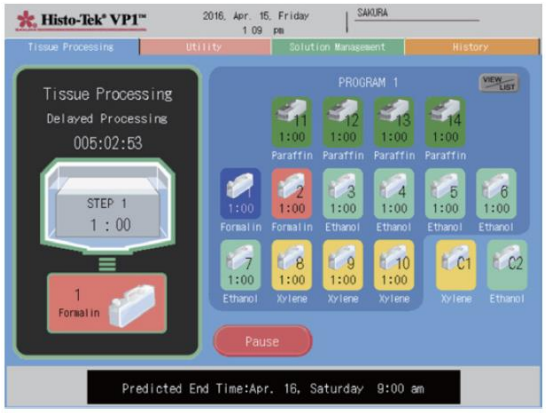
7) Explanation of Screens

The screen consists of the header, menu tab, main screen and footer.

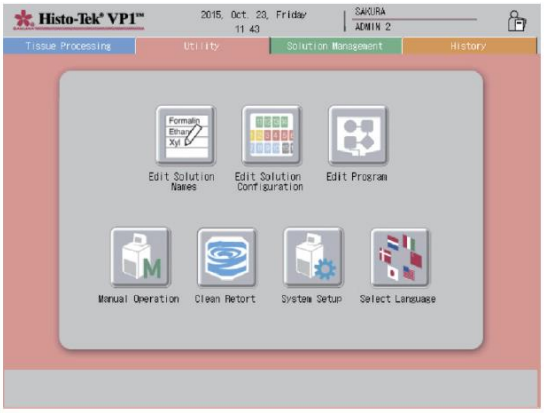
Standby Screen



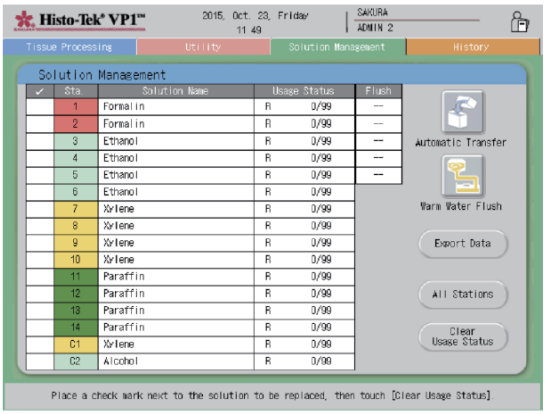
Tissue Processing Screen (Delayed Processing Screen)



Utility Screen



Solution Management Screen



History Screen

5. Basic Knowledge

[1] Header

The screen header shows the current date & time, institution name, name of the currently logged on user, and icon indicating the authority of the logged on user (manager/user).
If no user is currently logged on, this field remains blank.

This icon is shown when a user is logged on as manager.

This icon is shown when the user is logged on as user.

[2] Menu tab

You can use the displayed menu tabs to move to the Tissue Processing, Utility, Solution Management and History screens.

[3] Main screen

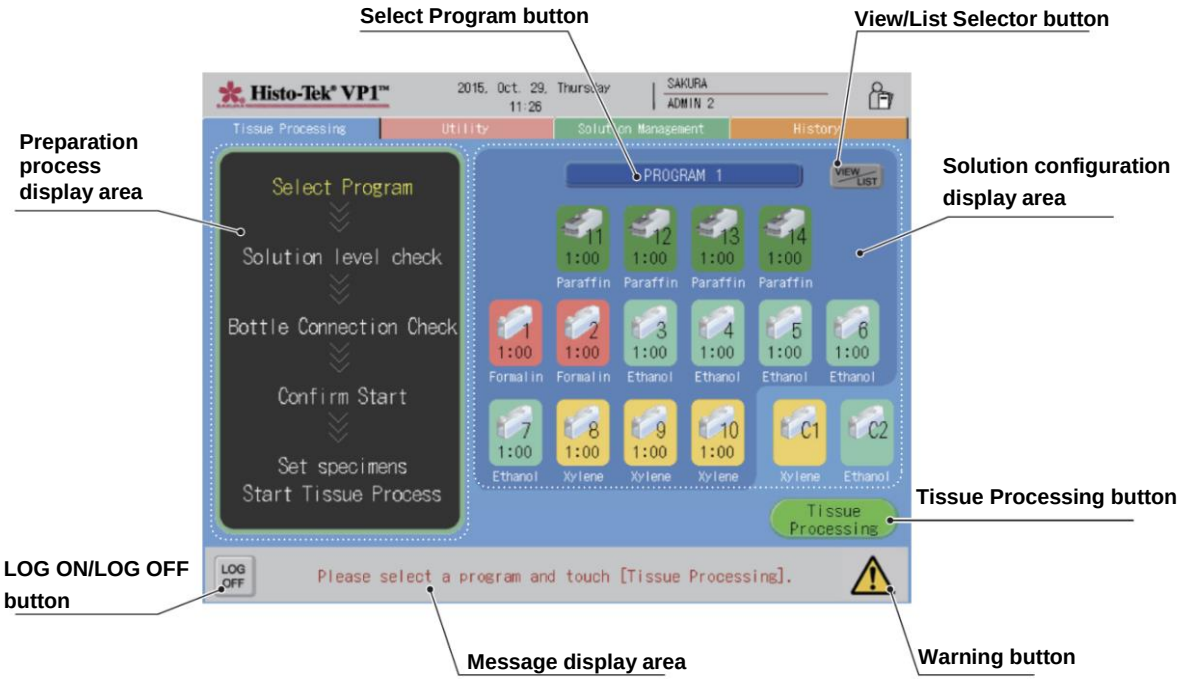
Each tab on the main screen shows different information and buttons.

[4] Screen footer

The L**OG ON/LOG OFF** button, a message regarding the next operation, the **Caution** button are shown in the footer area of the screen.

8) Explanation of the Standby Screen

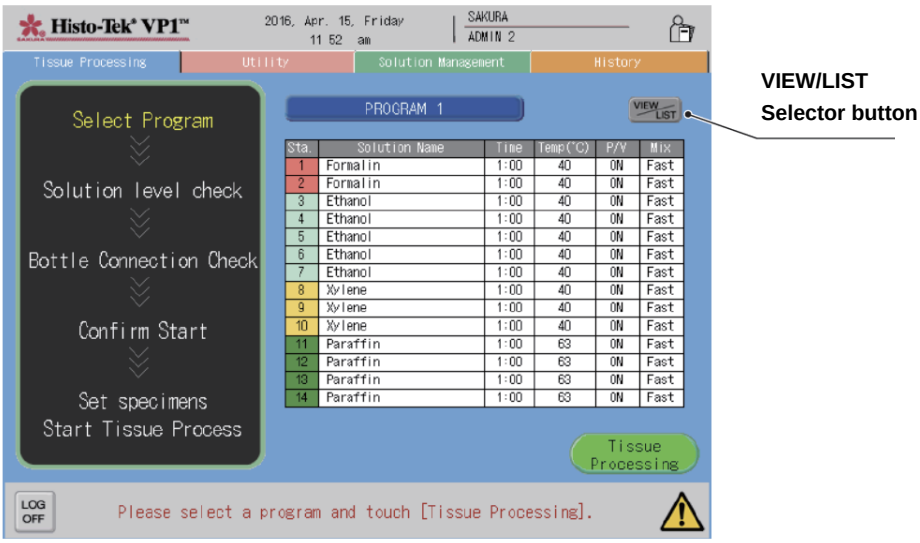
This screen is used to prepare for start of tissue processing.
Follow the sequence in the preparation process display area and information in the message display area.



● **Preparation process display area**
Processes needed to start tissue processing are displayed.
The current item is shown in yellow.

● **Select Program button**
The name of the program in use is displayed.
This is a button, so when changing the program, touch the program name and select a different program.

● **VIEW/LIST Selector button**
Use this button to change the solution configuration display mode to list. Touching the button again changes the mode back to station.

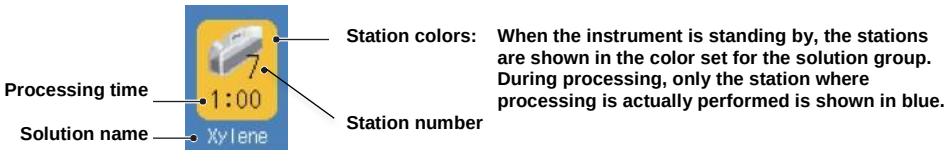


5. Basic Knowledge

● **Solution configuration display area**
A solution configuration diagram of the program currently selected is displayed. The solution configuration diagram consists of the stations listed below. Refer to **p. 1-22** for their positions, etc.

- **Reagent stations (Station numbers 1 ~ 10)**
- **Paraffin stations (Station numbers 11 ~ 14)**
- **Cleaning Xylen station (Station number C1)**
- **Cleaning alcohol station (Station number C2)**

The station number, processing time and solution name are shown at each station. Each station is shown in the color preregistered for the solution group.



A caution icon is displayed depending on the condition of each station.

	Normal icon	Caution icon	
		Icon status	Type of caution
Solution		 Darker color	Due for exchange
Cleaning solution		 Darker color	Due for exchange
Paraffin		 Darker color	Due for exchange
		 Blinking	Paraffin is not molten.

● **Tissue Processing button**
Select a program and touch this button, and the instrument will proceed to the solution level check process.

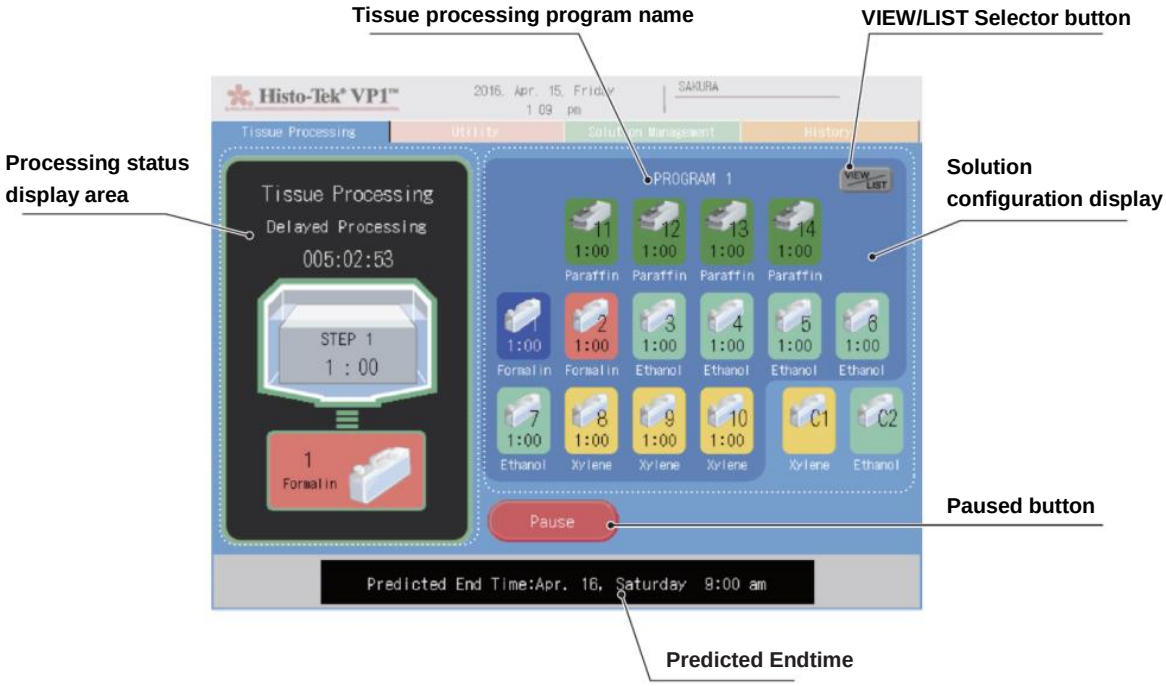
● **Message display area**
Information of the next operation is displayed.

● **LOG ON/LOG OFF button**
Touch **LOG ON** and enter the password, the screen will accept operation inputs. When the instrument is logged off, none of the buttons except for **LOG ON** can be touched. Once the password is entered, the button changes to the **LOG OFF**.

● **Caution button**
Touch this button, when it is displayed, and cautionary information regarding an event currently in progress or present, or a message urging solution change, etc., will be displayed.

9) Explanation of Tissue Processing

This screen is displayed while tissue processing is performed.

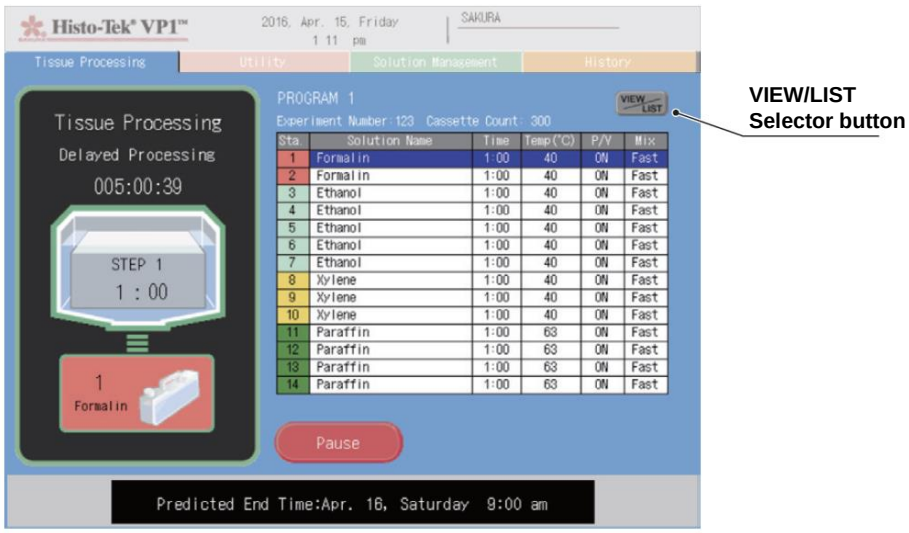


- **Processing status display area**
  The status of tissue processing is displayed. The illustration of the retort shows the current process number and processing time. The current station number and solution name are shown below the retort.

Caution! **The solution level in the illustration is not accurate. It may vary from the actual level.**

- **Tissue processing program name**
  The name of the program being processed is shown.

- **VIEW/LIST Selector button**
  Use this button to change the solution configuration display mode to list. Touching the button again changes the mode back to station.

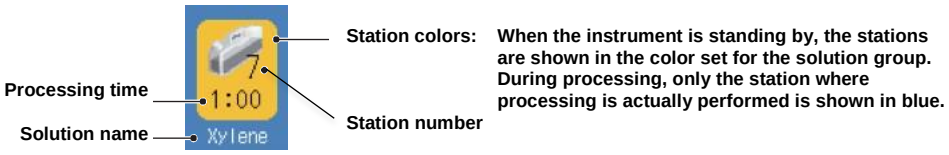


● **Solution configuration display area**

A solution configuration diagram of the program currently selected is displayed. The solution configuration diagram consists of the stations listed below. Refer to **p. 1-22** for their positions, etc.

- **Reagent stations (Station numbers 1 ~ 10)**
- **Paraffin stations (Station numbers 11 ~ 14)**
- **Cleaning Xylene station (Station number C1)**
- **Cleaning alcohol station (Station number C2)**

The station number, processing time and solution name are shown at each station. Each station is shown in the color preregistered for the solution group.



A caution icon is displayed depending on the condition of each station.

	Normal icon	Caution icon	
		Icon status	Type of warning
Solution		 Darker color	Due for exchange
Cleaning solution		 Darker color	Due for exchange
Paraffin		 Darker color	Due for exchange
		 Blinking	Paraffin is not molten.

● **Pause button**

Touching **Pause** pauses the processing.

Touching **Pause** not only stops the tissue processing, but it also resumes the tissue processing, allows for temporary program edit and paraffin melt check, and aborts the tissue processing. When **Pause** is touched while the instrument is waiting for delayed start, you can also start the processing immediately or change the end time. Pausing the processing causes the predicted endtime to be delayed by the duration of pause, so the processing may no longer end by the previously predicted end time. Refer to **p. 2-15** for details.

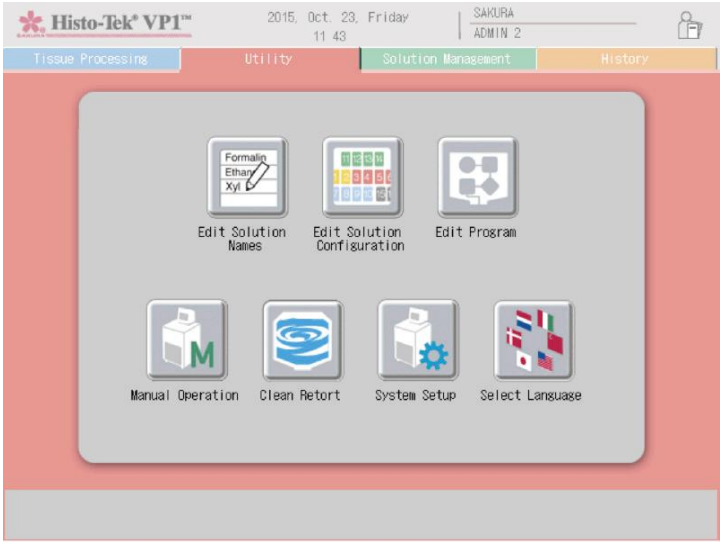
● **Predicted Endtime**

The date/time the tissue processing is predicted to end is displayed.

10) Utility Screen

On the Utility screen, you can select Edit Solution Names, Edit Solution Configurations, Edit Program, System Setup, Manual Operations, Retort Cleaning and Select Language to perform the respective operations.

Note **These operations cannot be performed if the tissue processing is currently in progress.**



● **Edit Solution Names (p. 5-2)**
Select this icon to register new solution names, edit or delete solution names, and export solution name lists.

● **Edit Solution Configuration (p. 5-3)**
Select this icon to edit the solution configuration.
You can set solution groups as well as how to manage the use limits on reagent and paraffin.
You can also set when to perform warm water flush.

● **Edit Program (p. 5-6)**
Select this icon to edit and export tissue processing programs.

● **Manual Operation (p. 6-8)**
Select this icon to move through, and fill/drain, stations.

● **Clean Retort (p. 3-1)**
Select this icon to clean the retort.

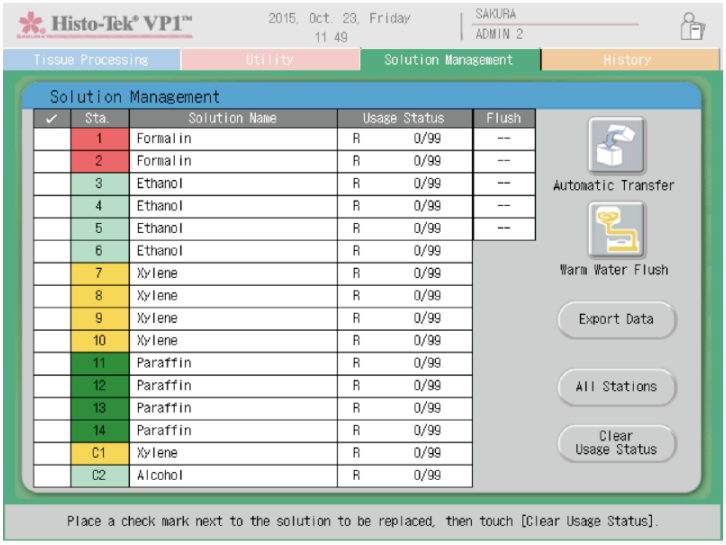
● **System Setup (p. 6-5)**
Select this icon to set date/time, passwords, alarm sounds, institution names, whether or not to enter test numbers, time until the backlight turns off, and filter days management.

● **Select Language (p. 6-9)**
Select this icon to select a language.

11) Solution Management Screen

The Solution Management screen lets you manage the usage statuses of reagent and paraffin and when to perform warm water flush.

Note **These operations cannot be performed if the tissue processing is currently in progress.**



● **Automatic Transfer (p. 4-1)**
Select this icon to allow for solution exchange at Sta. 1 to Sat. 10 based on automatic transfer.

● **Warm Water Flush (p. 3-2)**
Select this icon to perform warm water flush of Sta. 1 to Sta. 5.

● **Export Data**
Touch this button to export the solution usage status.

Caution! **Connect the USB flash drive after touching the Export Data button.**

Note **Use an optional USB flash drive.**

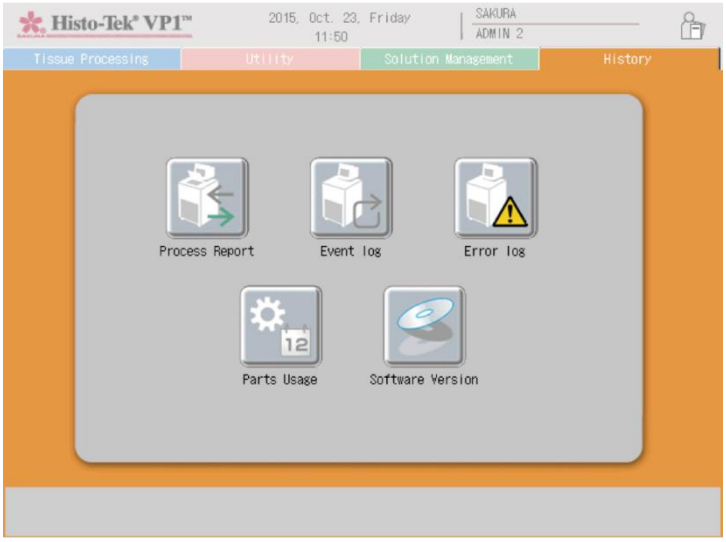
● **All Stations**
Touch this button to select or clear all stations.

● **Clear Usage Status (p. 4-2)**
Touch this button to clear selected station usage status.

12) History Screen

In the History screen, "Process Report," Event log," Error log," "Parts Usage" and "Software Version" can be confirmed.

Note **You can view the History screen even during tissue processing.**



● **Process Report (p. 6-1)**
Select this icon to confirm the process report.

● **Event log (p. 6-3)**
Select this icon to confirm the event log.

● **Error log (p. 6-3)**
Select this icon to confirm the error log.

● **Parts Usage (p. 6-4)**
Select this icon to confirm the parts usage.

● **Software Version (p. 6-4)**
Select this icon to show the version of the software.

Chapter 2

How to Operate Tissue Processing

1. Operating Procedure

1) Basic Operations

This chapter explains a series of operating procedures.
For details on related operation items, refer to the pages explaining the applicable items.

Caution! **Remember to start processing. If processing is not started, the specimens may be damaged.**

[1] Operation flow

The basic operation flow is shown below by assuming normal use of the instrument.

● Log ON **Details: p. 2-2**

- Log on the system.

▼

● Prepare solutions and paraffin **Details: p. 2-3**

- Set solutions and paraffin.

▼

● Prepare for processing **Details: p. 2-5**

- Select the tissue processing program.
- Prepare tissue processing (solution level check, bottle connection check, start check).

▼

● Run the process **Details: p. 2-9**

- Set the specimens.
- Start tissue processing.
- Monitor tissue processing (delayed start/immediate start).

▼

● End the process **Details: p. 2-13**

- Remove the specimens.
- Drain paraffin.
- Clean the retort.

▼

● Log OFF **Details: p. 2-2**

- Log off the system.

Note **Once the tissue processing is started, the instrument automatically logs off. The instrument must be logged off when removing the specimens**

1. Operating Procedure

2) Logging On the System

To start processing operation, a user must have "logged on" to the instrument. Only one user can "log on" to the instrument at a given time.

1. Touch **LOG ON** located in the bottom left-hand corner of the screen. The Password screen will appear. If other user is currently logged on, the **LOG OFF** button is shown in the bottom left-hand corner of the screen, with the name of the logged-on user and an applicable icon shown at the top of the screen. Other user cannot log on to the instrument until the current user logs off.
2. Use the ten-key keypad to enter a password in the password entry field. Refer to **p.1-20** for information on how to enter from the ten-key keypad.

The default passwords are shown below. Refer to **p. 1-21** for the differences between manager passwords and user passwords.

User ID	User Name	Password
Manager: 1 to 4	ADMIN 1 to 4	100000, 200000, 300000, 400000
User: 1 to 20	OPERATOR: 1 to 20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

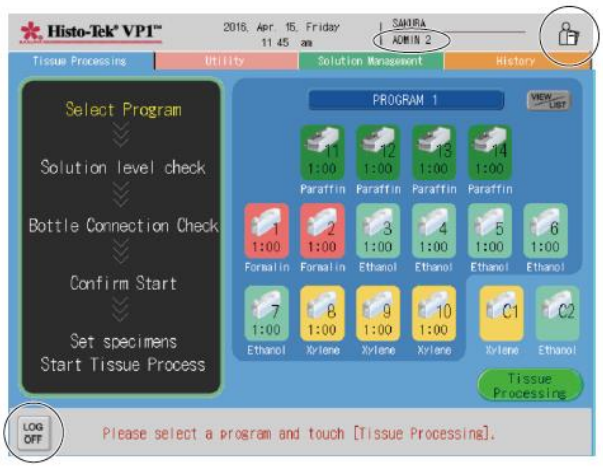
To cancel the log on process, touch **Cancel**. The password entry screen will close and the previous screen will appear again.

3. Enter the password and touch **Enter**. When the correct password is entered, the name of the logged-on user appears at the top of the screen. A wrong password is not accepted.

[1] Logging off the instrument

Touch **LOG OFF** located in the bottom left-hand corner of the screen. The name of the user who was logged on before will disappear, along with the icon, from the top right-hand corner of the screen. This shows the user has logged off.

LOG ON Status

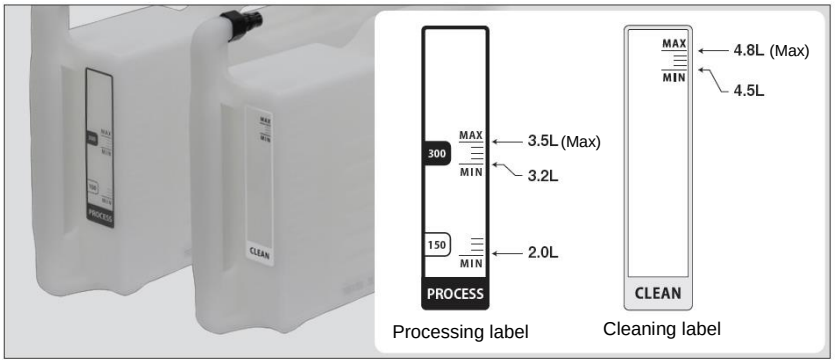


LOG OFF Status

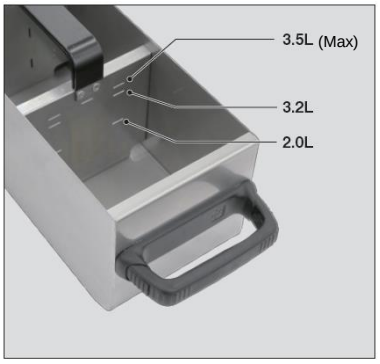
1. Operating Procedure

3) Preparing Solutions and Paraffin

The preparation to be performed before processing is started is explained.
Add the required volumes of solutions and paraffin to the applicable levels on the scale. Refer to the figure below for the scale levels.



<Reagent bottle and Cleaning Bottle>



<Paraffin Container>

The required volumes of solutions and paraffin vary depending on the settings for mixing method and retort capacity. Refer to the figure below for the required volumes.

	150 cassettes	300 cassettes
Solution, paraffin	2.0 L ~ 3.5 L	3.2 L ~ 3.5 L
Cleaning	4.5 L ~ 4.8 L	

Caution! **4.5 to 4.8 L is required for cleaning.**
Do not add solutions/paraffin to above the MAX level. Operation may be affected.

1. Operating Procedure

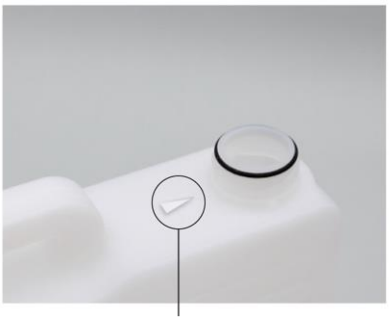
[1] Setting solution

Caution! **Work on a flat table.**
Exercise due caution when handling solutions. Follow the relevant regulations and guidelines in your country or region and take proper measures to protect the operator, such as wearing gloves, mask and/or safety goggles.

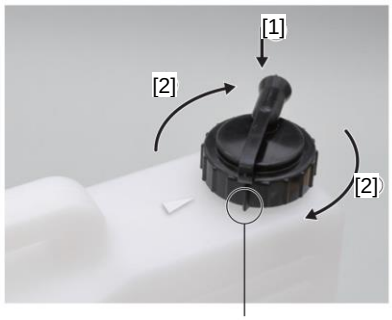
1. Remove the reagent bottle.
2. Remove the bottle cap by turning it counterclockwise.
3. Add solution to the level on the scale corresponding to the required volume. Refer to the table below for the volumes.

	150 cassettes	300 cassettes
Solution, paraffin	2.0 L ~ 3.5 L	3.2 L ~ 3.5 L
Cleaning	4.5 L ~ 4.8 L	

4. Install the bottle cap.
   Install the bottle cap on the reagent bottle [1], and tighten the cap clockwise while the cap is lightly pressed down from the top [2]. Make sure the △mark on the reagent bottle side aligns with the most pointed part along the circumference of the bottle cap. When the bottle cap is installed correctly, the connection port of the bottle cap faces outward.
5. Install the reagent bottle.



The △mark on the reagent bottle side



Pointed part of the bottle cap

Set the bottle cap so that the △ mark aligns with the pointed part of the bottle cap.

Caution! Make sure that the gap between the cap and the solution reservoir is 0 – 1mm and is also parallel in position between the cap and the solution reservoir when the cap is placed.
If the cap is not installed horizontally, it may cause a fluid leak from the cap when drained.

[2] Setting paraffin

Add paraffin to the level on the scale corresponding to the required volume. Refer to the table below for the volumes.

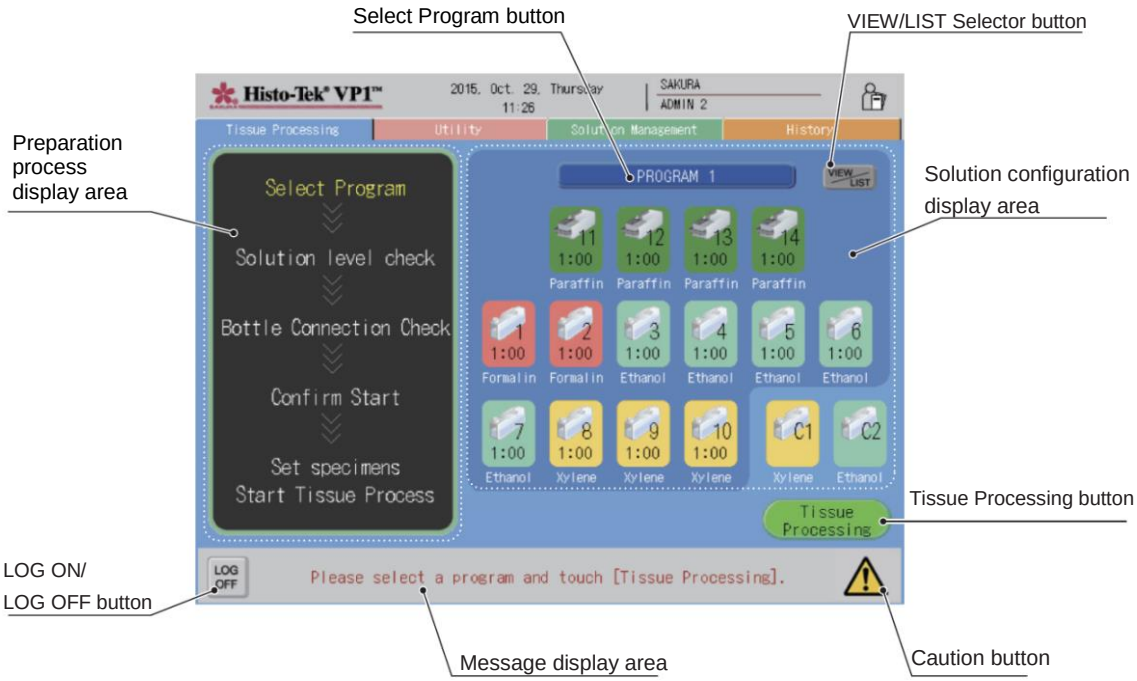
	150 cassettes	300 cassettes
Paraffin	2.0 L ~ 3.5 L	3.2 L ~ 3.5 L

Caution! **Work on a flat table.**
Add molten paraffin.

1. Operating Procedure

4) Preparing for Processing

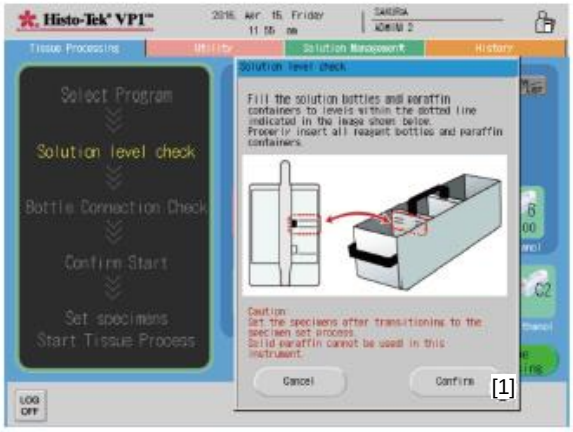
The standby screen is where you perform preparations to start tissue processing.
Follow the messages in the preparation process display area on the left side of the screen to prepare for processing.



[1] Selecting the tissue processing program

Select the program to be used for tissue processing.

1. Touching **Select Program** [1] displays the problem list window [2].
2. Select a program to be used for the tissue processing and touch **Enter** [3].
   To confirm the details of the program, touch **VIEW/LIST Selector** [4].
3. Next, touch **Tissue Processing** [5] to move to the solution level check process.



[2] Checking the performing solution level

Check the levels of solutions and paraffin.

1. Touch **Tissue Processing** on the standby screen, and a message urging you to add the specified volume of each solution will appear.
2. Adjust the level according to the message.
3. Touch **Confirm** [1], and the instrument will perform the bottle connection check.

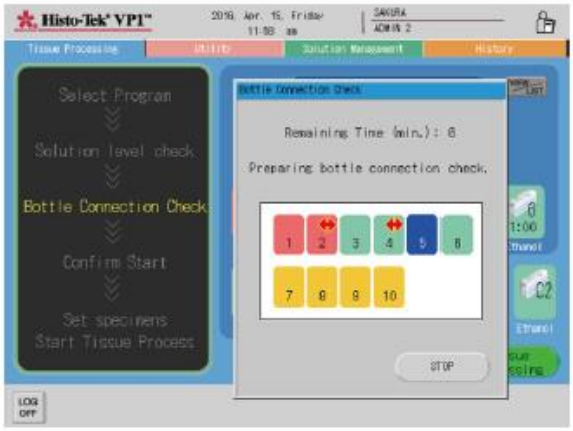
Caution! **Check the levels and usage statuses of solutions and paraffin before each processing.**
If a reagent bottle or paraffin container was removed to adjust the level, push in the bottle/container all the way.
This instrument cannot handle solid paraffin, so be sure to use molten paraffin.
Do not set specimens because there will be an automatic check process.
When the solution levels in the reagent bottles were checked after the processing, some bottles contained a lot more solution or full and other bottles were empty. Contact the Sakura Finetek Technical Support representative or local representative.

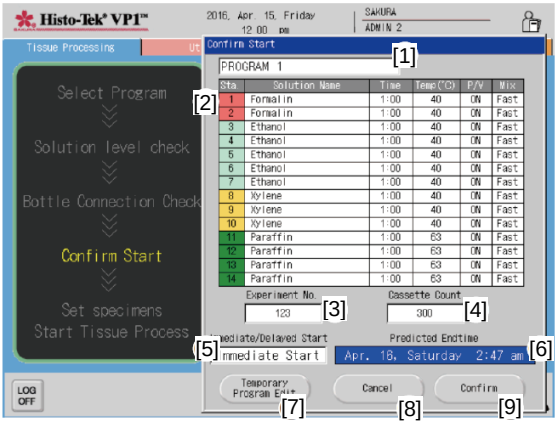
Note **If the program only uses paraffin stations, automatic check is not performed and the Confirm Start window appears.**

[3] Checking the performing bottle connection

Touching **Confirm** [1] will start automatic check.
If the automatic bottle connection check was successful, a window to confirm start of tissue processing appears.
The air circuits and bottle connections are also checked automatically for abnormality.

Caution! **If any unconnected bottle is detected, a red ◀▶ icon appears on the applicable station and a warning window opens. ◀▶ Securely connect the indicated bottle and resume the operation. Here, the instrument only checks the bottle with ◀▶ mark again.**





[4] Confirming the start

Check the predicted endtime and program details. If the entry of experiment numbers is set on or "Cassettes" is selected for solution usage management, also enter the experiment number and cassette count to be processed.

Note **If the entry of experiment numbers is not set or an item other than "Cassettes" is selected for solution usage management, the entry fields for experiment number and cassette count do not appear.**

- **Performing tissue processing**
  Touch **Confirm** [9], and the instrument will display the Set specimens window and proceed to the next process.

- **Not performing tissue processing**
  Touch **Cancel** [8]. When "Abort processing?" message window appears, touch **Yes**.

- **Changing to another program**
  To change the program itself, touch the program display area [1]. When the Select Program window appears, select a desired program.

  Note **If a program that uses only paraffin stations was selected at the beginning, it cannot be changed to other program. To modify the program, use the temporary program edit function.**

- **Modifying temporary program**
  To modify the program temporarily, touch **Temporary Program Edit** [7]. Refer to **p. 2-8** for details.

  Note **Modifications made under this function are temporary and effective only for the current run of tissue processing. To use the modified program in future processing, refer to "Program Creation (Editing)" (p. 5-1).**

- **Entering an experiment number**
  Touch the Experiment No. display field [3], and when the Experiment Number Window appears, enter the number.
  Up to 8 characters can be entered.

- **Entering a cassette count**
  Touch the Cassette Count display field [4], and when the Cassette Count window appears, enter the cassette count to be processed in this run.
  Up to 300 cassettes can be entered.

- **Changing the starting method**
  Touch the Immediate/Delayed Start display field [5], and a selection window will appear.

  Note **Immediate Start: Start tissue processing immediately.**
  Delayed Start: Start tissue processing according to the predicted endtime.

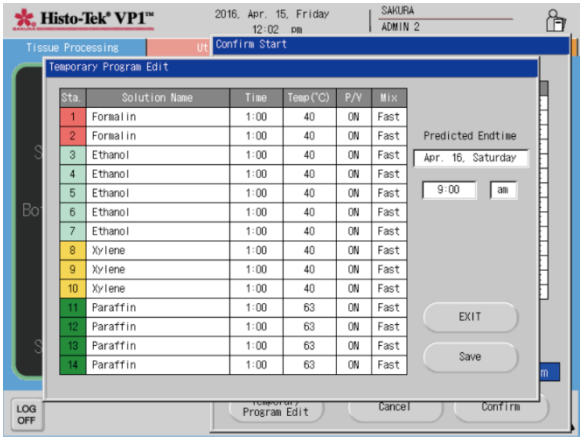
- **Changing the predicted endtime [6]**
  Set the starting method to "Delayed Start." Touch **Temporary Program Edit** [7]. Refer to **p. 2-8** for details.

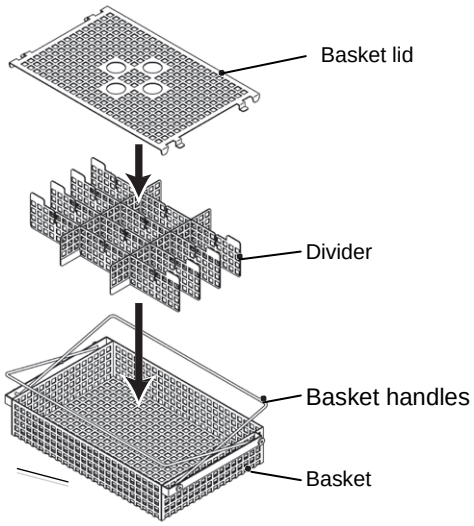
[5] Editing a program temporarily

Touch **Temporary Program Edit**. The Temporary Program Edit window opens, where you can modify the details of the selected program temporarily.
Refer to **p.5-7** for information on how to edit.

Note **Modifications made under this function are temporary and effective only for the current run of tissue processing. To use the modified program in future processing, refer to "Program Creation (Editing)" (p. 5-1).**

Note **Temporary program edit is not permitted if you have logged in with a non-administrator password.**





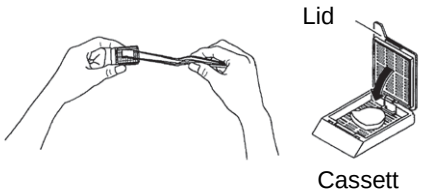
<Basket Assembly Drawing>

5) Running the Process

[1] Assembling basket and setting specimens

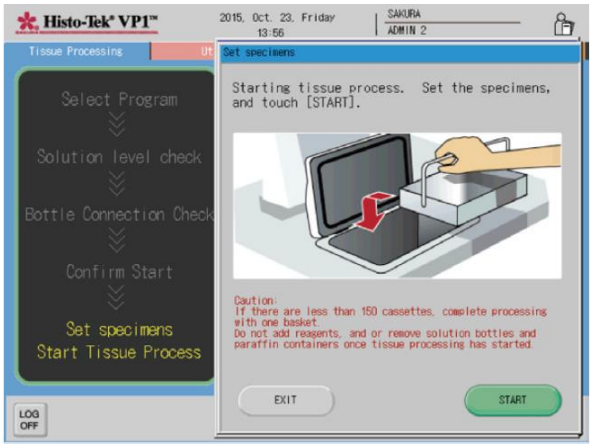
Prepare the supplied basket to be used in processing.

1. Attach dividers into the basket.
2. Put the tissue slices into the cassette, put the cassette lid on, and put the cassette in the basket.



4. Attach the lid on the basket.
5. Hold the basket handles and set the basket in the retort.

Caution! **Once the basket has been set in the retort, collapse the handles.**



[2] Setting the basket and starting tissue processing

Touching **Confirm** in the Confirm Start window displays a message window of the set specimens.

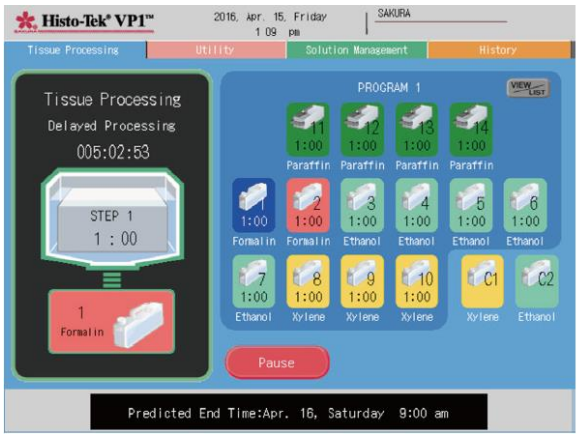
1. Slide the retort lock lever to the right and unlock the hook locking that retort lid.
2. Open the retort lid.
3. Hold the handles of the basket containing the specimens, and set the basket in the retort.
4. Close the retort lid and lock the retort lid with the hook.
5. Slide the retort lock lever to the left and touch **START** to start processing. If tissue processing will not be performed or if you want to check the program details again, touch **EXIT**. The Confirm Start window appears again.

Caution! **An unusual setting, such as setting one cassette on the first basket and one cassette on the second basket, may result in the top of the specimens set on the upper basket not submerged in the solution. If there are fewer than 150 cassettes, use only one basket.**
If tissue processing does not start 30 seconds after this window opened, a warning buzzer will sound and the message "Starting tissue process. Set the specimens, and touch START" blinks. Thereafter, the warning buzzer will sound intermittently at 5-second intervals until START is touched.
Once the START button input is accepted and processing starts, you are automatically logged off.
Under the processing program that starts from paraffin, the preheating time before paraffin is filled is longer. Specimens may become dry if set before the fill, so pause the processing after paraffin has been filled and set specimens.

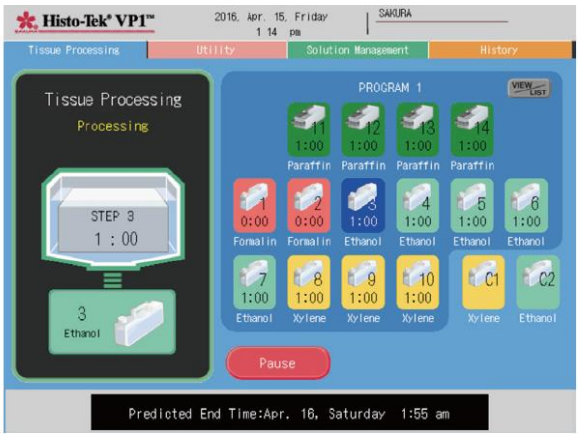
1. Operating Procedure

[3] Monitoring tissue processing

Touching **START** in the window to confirm start of tissue processing starts tissue processing.
If "Immediate Start" is selected as the tissue processing starting method, the Tissue Processing screen appears.
If "Delayed Start" is selected, the instrument will stand by until it is time to start processing.



Delayed Processing Screen

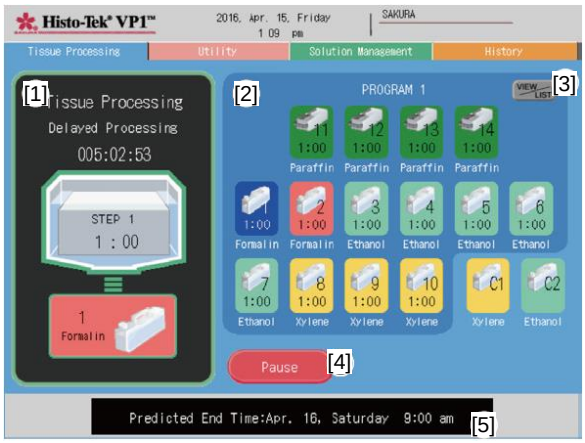


Tissue Processing Screen

Caution! **Check the solution levels before starting the operation.**
During tissue processing, make sure the paraffin oven door is securely closed. If the door is open, paraffin is not filled/drained to ensure safety.
The solution levels in the illustration are not accurate. They may differ from the actual solution levels.

The following operations are permitted during delayed processing and tissue processing.

Delayed Processing	Pauses the instrument, and immediately start tissue processing.
	Pauses the instrument, and abort tissue processing.
	Pauses the instrument, and change the current program.
	Pauses the instrument, and resume tissue processing (delayed start).
	Pauses the instrument, and check if paraffin has melted.
Tissue Processing	Pauses the instrument, and resume tissue processing.
	Pauses the instrument, and abort tissue processing.
	Pauses the instrument, and change the current program.
	Pauses the instrument, and check if paraffin has melted.



■ **Delayed Processing screen**

This screen appears when "Delayed Start" is selected as the tissue processing starting method.

[1] Processing status display area

The status of tissue processing is displayed.
During delayed processing, the time to start is displayed.
The illustration of the retort shows the step number and processing time of the current processing.
The station number and solution name of the current processing are shown below the retort.

[2] Solution configuration diagram

A solution configuration diagram for the current program is displayed.
The station number, processing time and solution name are shown at each station.
Each station is shown in the color preregistered for the solution group. The station where processing is currently performed is shown in blue.

[3] View/List Selector button

Use this button to change the station configuration display mode to list. Touching this button again to change the mode back to station.

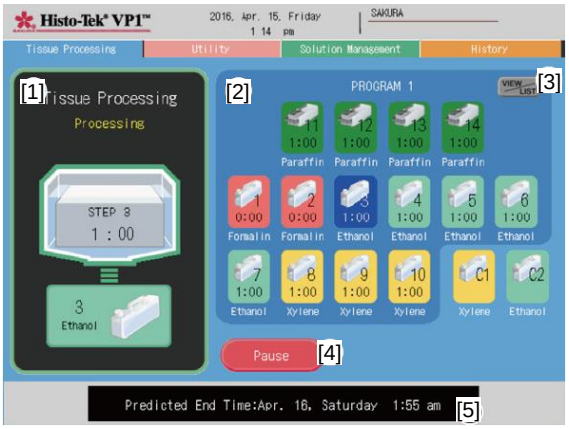
[4] Pause button

Touch this button to pause the instrument.

Note **Touching the button displays the Enter Password window.**
Enter a password within 30 seconds; if not, the Enter Password window will close.
You can pause the instrument once the password has been accepted.

[5] Predicted Endtime field

The date/time the tissue processing is predicted to end is shown.



■ **Tissue Processing screen**

This screen appears when "Immediate Start" is selected as the tissue processing starting method, or the starting time arrives in the case of delayed start.

[1] Processing status display area

The status of tissue processing is displayed.
The illustration of the retort shows the step number at which the instrument is standing by, and the remaining processing time.
The station number at which the instrument is standing by, and the solution name are displayed beneath the retort.

[2] Solution configuration diagram

A solution configuration diagram for the current program is displayed. The station number, processing time and solution name are shown at each station.
Each station is shown in the color preregistered for the solution group. The station where processing is currently performed is shown in blue.

[3] View/List Selector button

Use this button to change the station configuration display mode to list. Touching this button again to change the mode back to station.

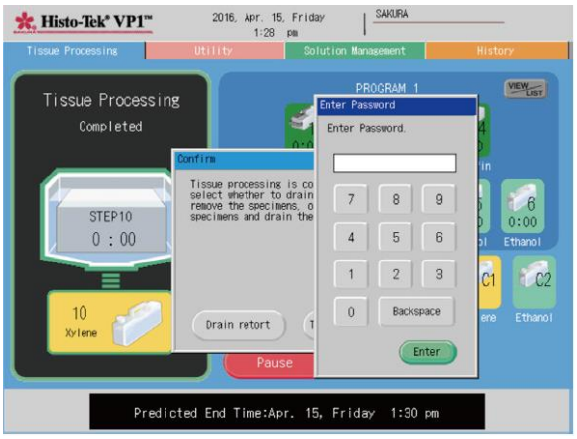
[4] Pause button

Touch this button to pause the instrument.

Note **Touching the button displays the Enter Password window.**
Enter a password within 30 seconds; if not, the Enter Password window will close.
You can pause the instrument once the password has been accepted.

[5] Predicted Endtime field

The date/time the tissue processing is predicted to end is shown.



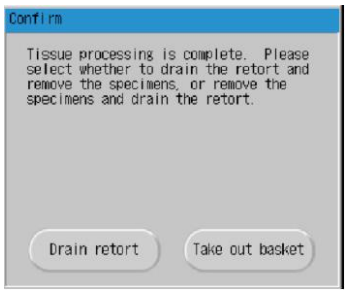
6) Ending Tissue Processing

When all steps in the tissue processing program end, the Tissue Processing completed window appears.
Since you as the operator are currently logged off, log on first and then remove the specimens and drain the paraffin from the retort.
When finished, proceed to retort cleaning.

Note **If the backlight is off, it turns on automatically.**

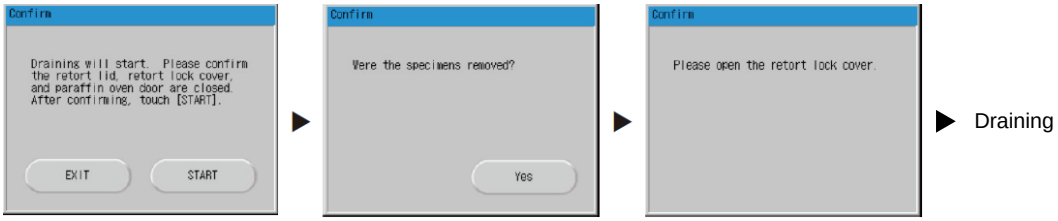
[1] Removing the specimens and draining the paraffin

Once the password is accepted in the Tissue Processing completed window, this window appears. Remove the specimens and drain the paraffin from the retort according to the message. You can perform the two operations in any order.



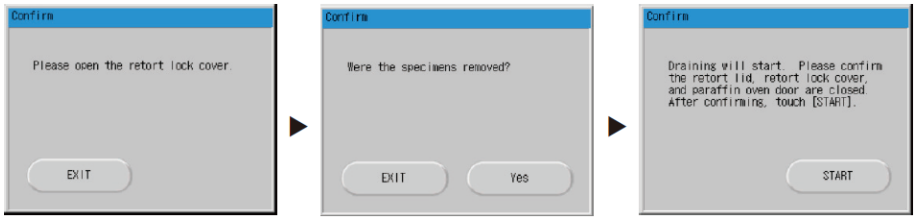
■ **Removing the specimens**

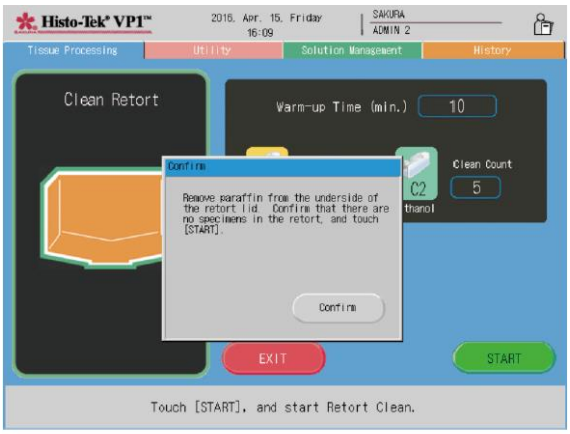
1. Touch **Take out basket**.
2. Follow the messages to open the retort lock cover, remove the specimens from the retort, and touch **Yes**. Close the retort lid and close the retort lock cover, and touch **START** to drain retort.
3. When draining is complete, the retort cleaning start screen appears.

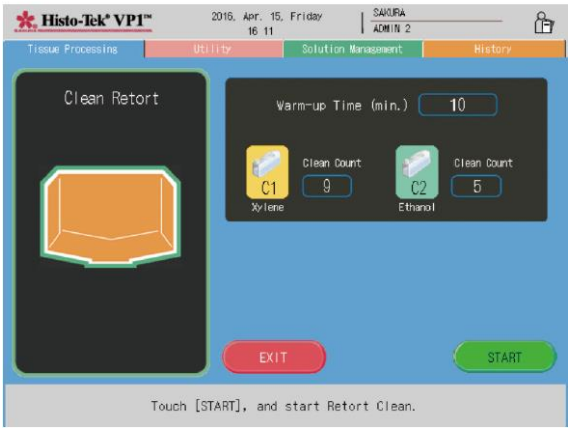


■ **Draining retort first**

1. Touch **Drain retort**.
2. When draining is complete, follow the message to open the retort lock cover.
3. Remove the specimens from the retort and click **Yes** to open the Clean Retort screen. The retort cleaning start screen appears.





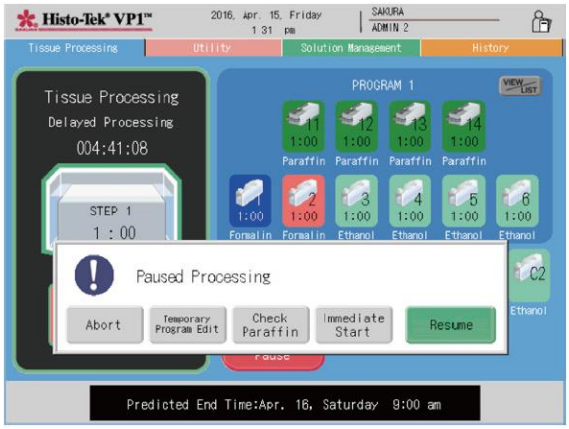


[2] Cleaning the retort

Once the tissue processing ends, and the specimens are removed and retort is drained, the retort cleaning start screen appears.
Touch **Confirm** according to the message.
Touching **START** starts retort cleaning.
The retort is warmed up to 70°C for 10 minutes. Thereafter, clean retort nine times with Sta. C1 (cleaning xylene), and clean retort five time with Sta. C2 (cleaning alcohol). At the end, the retort is dried. When finished, the completion window appears.

Note **The same applies when Clean Retort is selected on the Utility screen.**

Caution! **Confirm that no specimens are left in the retort. Before performing retort cleaning, use the supplied paraffin scraper to carefully remove the deposits from the retort lid and areas around the retort, and wipe off the scraped deposits using paper towels, etc. Be careful not to damage the edges of the retort lid gaskets with the paraffin scraper. Use paper towels, etc., to wipe off deposits on the retort lid gaskets.**
If retort cleaning is not performed within 10 minutes after switching to this screen, a window with the waning message "Start Clean Retort" appears.
Touching EXIT takes you back to the standby screen, but if paraffin has been filled in the retort, tissue processing, warm water flush and automatic transfer cannot be performed unless the retort is cleaned. When the retort cleaning is complete, clean the retort lid, interior walls of the retort and areas around the retort.



7) Pausing, Aborting

Touching **Pause** pauses the processing.
Touching **Pause** not only stops the tissue processing, but it also resumes the tissue processing, allows you to temporarily edit the program or perform paraffin melt check, and aborts the tissue processing. If **Pause** is touched during delayed processing, you can also perform immediate start or change the predicted endtime. Pausing the tissue processing causes the predicted endtime to be delayed by the paused time, so the processing may no longer end by the end time previously predicted.

[1] Operations permitted during pause

■ **Performing immediate start during delayed processing**
Touch **Immediate Start**. Processing starts at the loading station and the Tissue Processing screen appears.

Note **If tissue processing is already in progress, this button is not displayed.**

■ **Editing the program temporarily**
Touch **Temporary Program Edit**. When the Edit Program window opens, edit the program. Only the processing times, temperatures, PV cycles and Mix cycles in the current and subsequent steps can be edited. These changes are effective only in the current run of processing.

Note **If the instrument was logged in with a user password, this button is not displayed during pause. Even when the instrument was logged in with a manager password, the Temporary Program Edit button is not displayed during filling or protecting specimens.**
All items can be edited during delayed processing.
If the current step has less than 1 minute remaining, this step cannot be edited.
If the current station has 0 minute remaining, not all processing times of the subsequent processes can be changed to 0.
If the current station is not the last solution station and has 0 minute remaining, not all processing times of the subsequent solution stations can be changed to 0.

■ **Performing paraffin melt check**
Touch **Check Paraffin**. If the instrument judges the paraffin may be molten, it displays a screen with the message, "Please open the paraffin oven door. Is the paraffin in stations 11-14 completely melted?"
Open the paraffin oven door, and if the paraffin is molten in all of Sta. 11 to Sta. 14, touch **Yes**. If not, touch **No**.

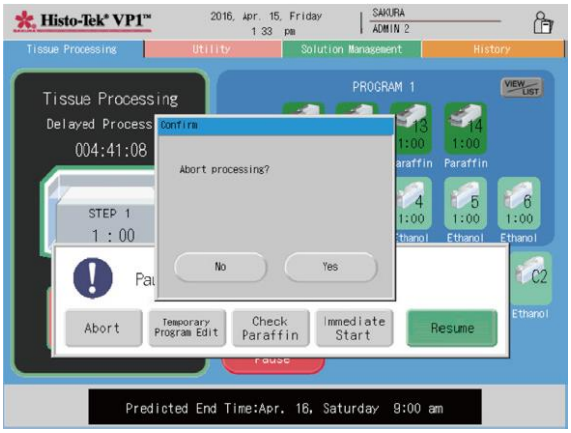
Caution! **If Yes is touched in the paraffin melt check operation even when the paraffin is not molten, an instrument failure may result. Before touching Yes, be sure to confirm that the paraffin has melted.**

Note **If the paraffin has been filled in the retort, the message, "Please open the retort lid and paraffin oven door. Is the paraffin in the retort and stations 11-14 completely melted?" appears. When you open both the paraffin oven door and retort lock cover to check the paraffin in the retort and Sta. 11 to Sta. 14, Yes button appears.**
If the instrument judges the paraffin is not yet molten, the message, "Paraffin has not melted." will remain even when Check Paraffin is touched.
If the instrument judges the paraffin is molten, Check Paraffin is not displayed.

■ **Resuming tissue processing**
Touching **Resume** returns you to the Delayed Processing screen if the instrument was in the delayed processing mode, or to the Tissue Processing screen if it was performing tissue processing.

■ **Aborting tissue processing**
Touching **Abort** displays the Confirm window.

Caution! **If no password is entered on the password entry screen for 30 seconds, the previous screen will appear again. If the retort lock cover is open, a warning window will appear and a buzzer will sound continuously. During pause, a buzzer will sound at 10-second intervals.**



■ **Aborting tissue processing**
Touch **Abort** in the Paused Processing window.
Touch **Yes**, and the retort will be drained and you can proceed to remove the specimens and clean the retort.
Remove the specimens and drain the paraffin from the retort according to the message.

Caution! **If the retort lock cover is open at the start of draining, the warning message, "Close Retort Lock Cover" appears.**
If the paraffin oven door is open at the start of draining, the warning message, "Close Paraffin Oven Door" appears.

Chapter 3

Cleaning

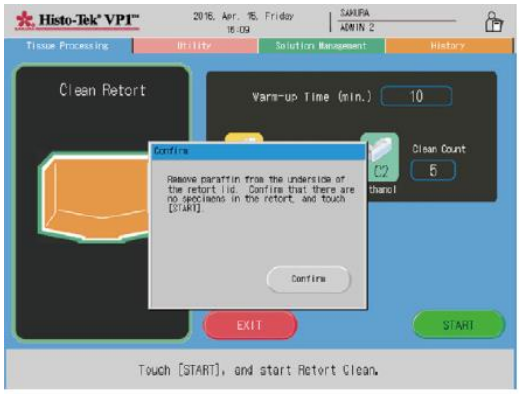
1. Cleaning

1) Type of Cleaning Operations

There are two types of cleaning operations: Retort cleaning where the interior of the retort and tubing are cleaned with cleaning xylene and cleaning alcohol to clear attached paraffin, and warm water flush where precipitate build-up formed in the interior of tubing when neutral buffered formalin is used are cleaned with warm water.

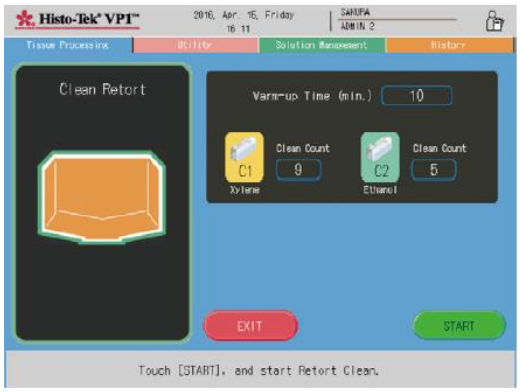
2) Starting Retort Cleaning

Retort cleaning is performed in one of two ways: Perform retort cleaning at when the tissue processing ends (or is aborted), or select Clean Retort on the Utility screen.
The cleaning details are the same.

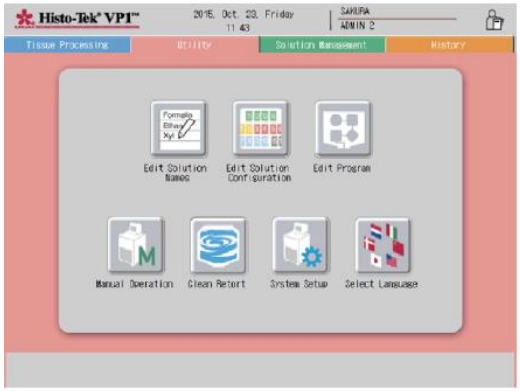


■ **Retort cleaning when the tissue processing ends (or is aborted)**
Once the tissue processing ends, the specimens are removed and the retort is drained, the retort cleaning start screen appears. After confirming the message, touch **Confirm**.
Touching **START** starts retort cleaning. The retort is warmed up to 70°C for 10 minutes. Thereafter, clean retort nine times with Sta. C1 (cleaning xylene), and clean five times with Sta. C2 (cleaning alcohol). At the end, the retort is dried. When finished, the completion window appears.

Note **The same applies when Clean Retort is selected on the Utility screen.**



Caution! **If retort cleaning is not performed within 10 minutes after switching to this screen, a window with the waning message "Start Clean Retort" appears.**
Touching EXIT takes you back to the standby screen, but if paraffin has been filled in the retort, tissue processing, warm water flush and automatic transfer cannot be performed unless the retort is cleaned.

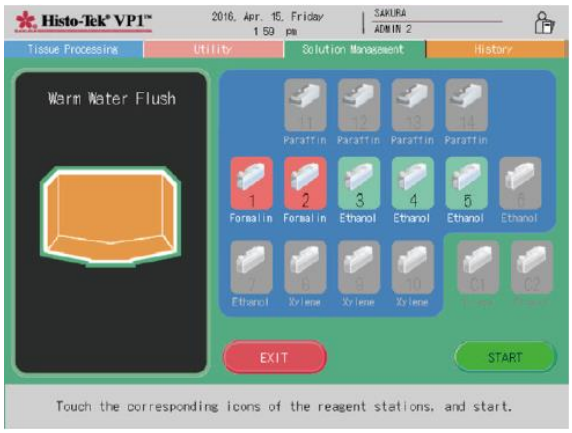


■ **Retort cleaning from the Utility screen**
Touch the Utility tab to display the Utility screen.
Touch the Clean Retort icon.
Touching **START** starts retort cleaning.

Note **Details are the same as with the retort cleaning performed when the tissue processing ends (or is aborted).**

Caution! **Confirm that no specimens are left in the retort. Remove the paraffin deposits on the back of the retort lid. If retort cleaning is not performed within 10 minutes after switching to this screen, a window with the waning message "Start Clean Retort" appears.**
Touching EXIT takes you back to the standby screen, but if paraffin has been filled in the retort, tissue processing, warm water flush and automatic transfer cannot be performed unless the retort is cleaned.
When the retort cleaning is complete, clean the retort lid, interior walls of the retort and areas around the retort.

1. Cleaning



3) Starting Warm Water Flush

Warm water flush is performed to wash away with warm water the precipitate build-up that forms in the tubing when buffered formalin is used.
Warm water flush is performed only for Sta. 1 to Sta. 5.
Each station is flushed for 2 cycles, where each cycle consists of fill and drain.

1. Touch the Warm Water Flush icon in the Solution Management screen.
2. Select the station to perform warm water flush for, from Sta. 1 to Sta. 5.
   The selected station blinks.
   If this station is managed for warm water flush and warm water flush has been performed for the station by the preset number of times or more, a different target station is selected when this screen is displayed.
3. Touching **START** displays the Confirm Start window.
4. Confirm that a reagent bottle containing warm water is set and then and touch **START**, and warm water flush will start.
   For warm water flush, use 3 to 4 liters of warm water whose temperature is 40 to 60°C for each station.
5. When a station has been flushed but there is other station selected for flushing, a message window appears.
   Remove the reagent bottle that contained warm water from the flushed station, put warm water in the bottle for the next station to be flushed, and touch **START** to start flushing the next station.
6. When all selected stations have been flushed with warm water, the completion window appears.
   Touching **EXIT** will display the warm water flush start screen.

Caution! **When the warm water flush is complete, remove the reagent bottles that contained warm water, and set the reagent bottles for processing.**

Note **It is recommended that warm water flush be performed at least once every week.**
Empty the reagent bottles of the stations that need to be flushed, and put warm water instead.
Examples of stations that need to be flushed
- **"Buffered formalin" station, and first two "dehydration alcohol" stations that follow**
- **First two dehydration alcohol stations, if buffered formalin fixation is performed outside the instrument**

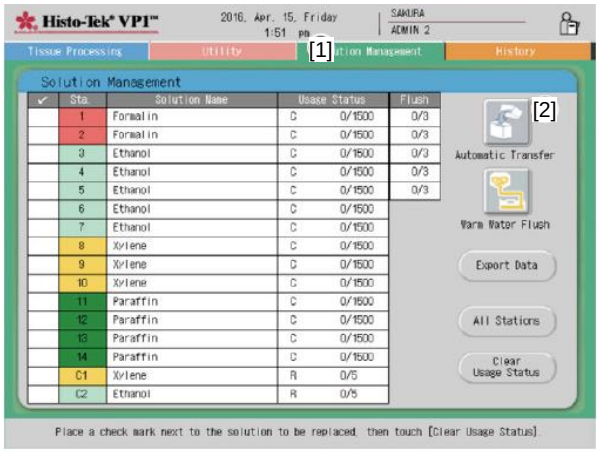
Chapter 4

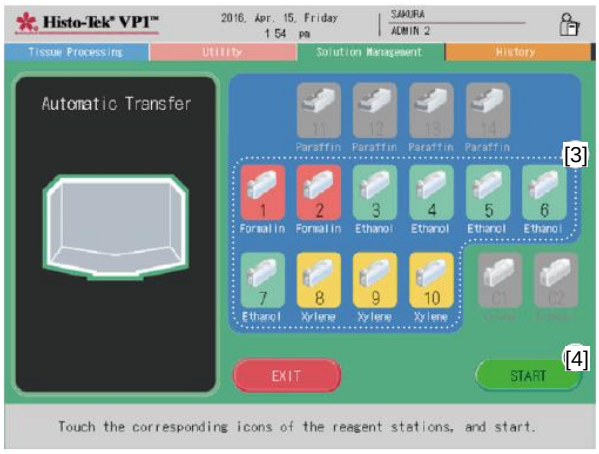
Solution Exchange

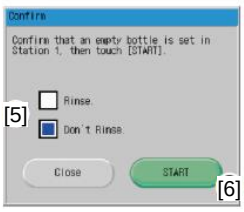
1. Solution Exchange

1) Automatic Transfer

This instrument allows for solution exchange of processing solution at Sta.1 to Sta. 10 based on automatic transfer. Select the stations to perform automatic transfer for, in each solution group set in the solution configuration information.





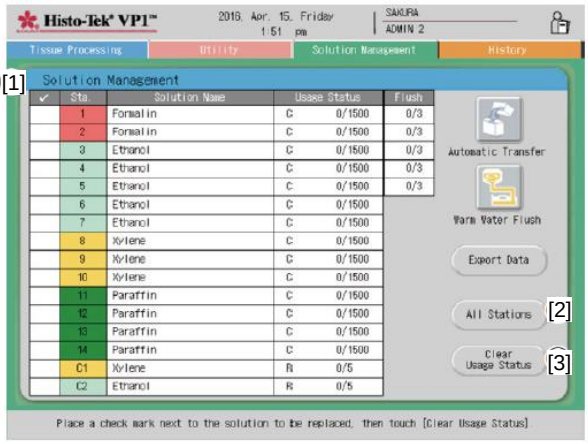


[1] Starting the automatic transfer

1. Touch the Solution Management tab [1] to move to the Solution Management screen.
2. Touch the Automatic Transfer icon [2]. The automatic transfer start screen appears.
3. Select the solution group to perform automatic transfer for.
   Select the solution group to perform automatic transfer for, by touching one of Sta. 1 to Sta. 10 in that group in the solution configuration diagram [3]. The stations belonging to the same solution group as the touched station blink. Similarly, to select another solution group, touch any of the stations in that solution group. The stations in the newly selected solution group blink and the stations that were blinking before return to steady illumination.
4. Select a solution group and touch **START** [4].
   The Confirm window appears.
5. Select whether to perform rinsing after automatic transfer [5].
   To perform rinsing, select the Rinse (C2) check box. To not perform rinsing, select the Don't Rinse check box. When Rinse is selected, the instrument will move to Sta. C2 (cleaning alcohol) and fill and drain it once, following the automatic transfer at the last station.
6. Set an empty bottle in the station specified by the message (loading station), and touch **START** [6].
   Automatic transfer will start.
7. When the automatic transfer is complete, add new solution manually to the station specified by the message (last station).

Caution! **Multiple solution groups cannot be specified.**
A solution group to which only one station belongs cannot be specified.
In the selected solution group, the station of the smallest station number is decided as the loading station, and the station of the largest station number is decided as the last station.

1. Solution Exchange



2) Resetting Solution Usage Information

You can manage the solution usage statuses of Sta. 1 to Sta. 10, paraffin usage statuses of Sta. 11 to Sta. 14, cleaning xylene usage status of Sta. C1, cleaning alcohol usage status of Sta. C2, and when to perform warm water flush.

Note **Solution exchange timings of Sta. 1 to Sta. C2 are managed according to the management method set on the Edit Solution Configuration screen. When an exchange timing arrives, the applicable station icon turns black on the standby screen.**
Warm water flush is performed according to the flush count set on the Edit Solution Configuration screen. When tissue processing has been performed for the preset number of times or more, warm water flush is performed.

[1] Solution usage status display field

Check field	Add a "✓" mark if you want to reset the solution usage status to 0.
Sta. field	The station number is shown. The station color set on the Edit Solution Configuration screen becomes the background color.
Solution Name field	The solution name set on the Edit Solution Configuration screen is shown.
Usage Status field	The setting for solution usage management (R: Runs, D: Days, C: Cassettes, --: NONE) and "usage count/limit value" are shown.
Flush field	"Actual number of runs tissue processing was performed/Limit value" is shown. If usage status is not managed, "--" is shown.

[2] All Stations button
Touching this button will select all stations. Touching it again deselects the stations.

[3] Clear Usage Status button
Touching this button clears the usage statuses of the station whose check field is selected.

[1] Clearing the usage data

1. Touch the check field corresponding to the name of the solution whose usage data you want to clear, and "✓" appears. If the set count has been reached, "✓" appears automatically.
2. Touching **Clear Usage Status** [3] displays the Confirm window. Touch **Yes**, and the usage statues of the station with "✓" will be cleared to 0.

Note **To clear the "✓" mark touch the "✓" mark.**

Chapter 5

Program Creation (Editing)

1. Program Creation (Editing)

1) Flow of Editing a Program

This chapter explains the flow of editing a program.
For details on related operation items, refer to the pages explaining the applicable items.

● Editing Solution Names **Details: p. 5-2**

- Check if the names of the solutions used for processing already exist, and add (create new) solution names if necessary.

▼

● Editing Solution Configuration **Details: p. 5-3**

- Set various items (station color, scope of stations, solution group name, usage management, limits, flush counts) on the Edit Solution Configuration screen.

▼

● Editing Tissue Processing Program **Details: p. 5-6**

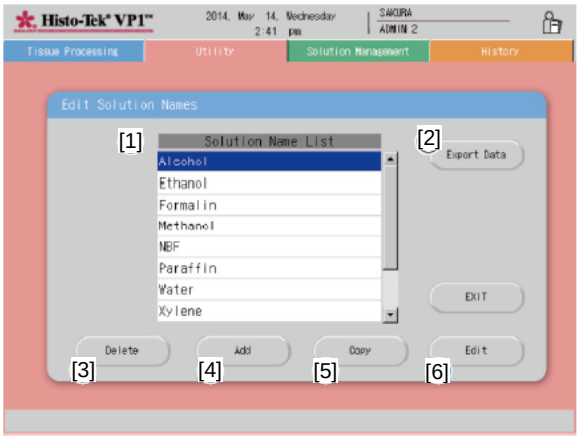
- Select a program and enter a program name (change the name).
- Touch **Edit** and set various items (processing times, temperatures, PV, Mix, endtime).

2. Edit Menu Screen

1) Editing Solution Names

Up to 100 solution names can be stored in the instrument memory. Solution names can be added (create new), copied, edited and deleted in the Edit Solution Names screen.

Caution! **Names of the solutions currently used for the station configuration cannot be changed.**



[1] Solution Name List
A list of solution names currently stored in the instrument memory is displayed.

[2] Export Data button
Use this button to export the solution names in a list format. Touching this button will display the Export Data screen.

[3] Delete button
Use this button to delete the solution name.

[4] Add button
Use this button to store a new solution name. Up to 100 solution names can be stored. If 100 solution names are already stored in memory, no new solution name can be added. In this case, delete unwanted solution names to make space.

[5] Copy button
Use this button to copy the solution name.

[6] Edit button
Use this button to edit the solution name.

[1] Storing a new solution name

1. Touch **Add** [4].
2. Solution name entry screen appears. Use the touch keyboard to enter a desired solution name up to 22 characters. For how to use the touch keyboard, refer to **p. 1-20**. Take note that the new solution name cannot be stored if the same solution name already exists.
3. Touch **Save**. The screen is switched to the Edit Solution Names screen, and the new solution name is listed in the solution name list.

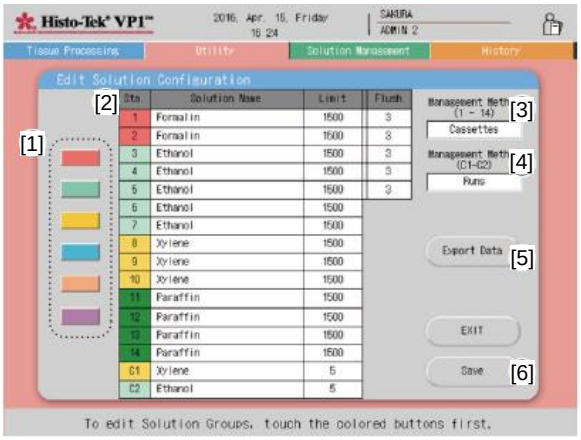
[2] Copying or editing an existing solution name

1. Select a solution name to be copied from the solution name list and touch **Copy** [5]. If you want to edit, select a solution name to be edited from the solution name list and touch **Edit** [6].
2. The solution name entry screen appears where the selected solution name is already shown. Using the touch keyboard, edit a desired solution name up to 22 characters. For how to use the touch keyboard, refer to **p. 1-20**. Take note that the edited solution name cannot be stored if the same solution name already exists.
3. When the editing is complete, touch **Save**. The screen is switched to the Edit Solution Names screen, and the edited solution name is listed in the solution name list.

2) Edit Solution Configuration

On the Utility tab screen, touch the Edit Solution Configuration icon to open the Edit Solution Configuration screen.
A solution group can be set for Sta. 1 to Sta. 10 on the Edit Solution Configuration screen. Up to six solution groups can be set. Sta. 11 to Sta. 14 are fixed as a paraffin group. Sta. C1 and Sta. C2 are fixed as a cleaning solution group.

Note **The solution configuration cannot be edited during automatic operation (tissue processing, each cleaning operation or solution exchange).**



[1] Solution group color icon buttons
A solution group can be set by touching a color button.

Caution! **There are buttons of six colors, corresponding to the color labels attached to the reagent bottles. To prevent putting solutions in wrong bottles, make sure the solution group colors match the color labels attached to the reagent bottles.**

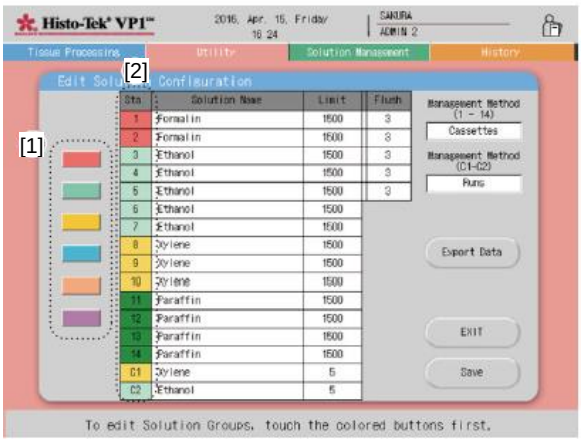
[2] Solution configuration display field
The solution configuration is displayed.
You can change the "Solution name," "Limit value" and "Flush count" by touching the respective fields.

[3] Usage management (Sta. 1 - Sta. 14) display field
The usage management method for Sta. 1 to Sta. 14 is displayed. A desired usage management method can be set from among "Days," "Runs," "Cassettes" and "NONE," by touching the display field.

[4] Usage management (C1 - C2) display field
The usage management method for C1 and C2 is displayed. A desired usage management method can be set from among "Days," "Runs," and "NONE," by touching the display field.

[5] Export Data button
Use this button to export the solution configuration.

[6] Save button
Use this button to save the settings.



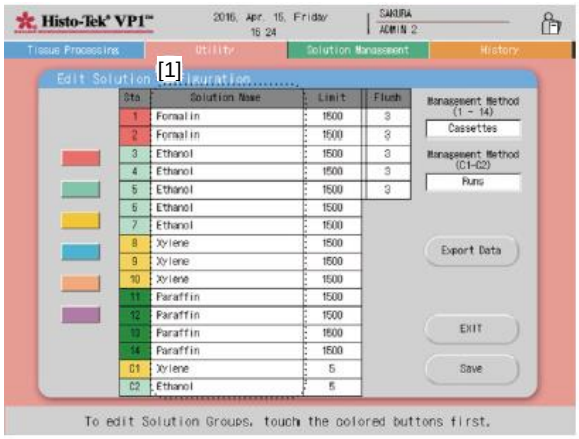
[1] Setting a solution group

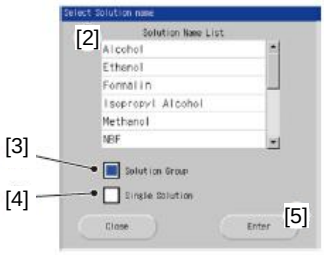
1. Among the "Solution group color icon" buttons [1], touch the button of the color you want to set.
2. In the "Sta." column [2] in the solution configuration display field, touch the first station number of the solution group you want to set. Next, touch the last station number, and a solution group will be set.
   To set a solution group that includes only one station, touch the same station number twice.
3. To set another solution group, repeat the operations in 1 and 2.
   Touching **Save** saves the settings, after which the Utility screen will be displayed.

Caution! **A solution group that includes stations between Sta. 1 and Sta. 10 can be set. C1 and C2 can be set to the same color as the color of a solution group that includes stations between Sta. 1 and Sta. 10, but C1 and C2 will not belong to the same solution group because they constitute an independent cleaning solution group.**
The solution group is determined by the background color of the station number, not by the solution name. Check if the background color of the station number matches the solution name.

Note **Only the EXIT button and Export Data button can be operated while a solution group is being set.**
An explanation window appears every time Save is touched.

2. Edit Menu Screen

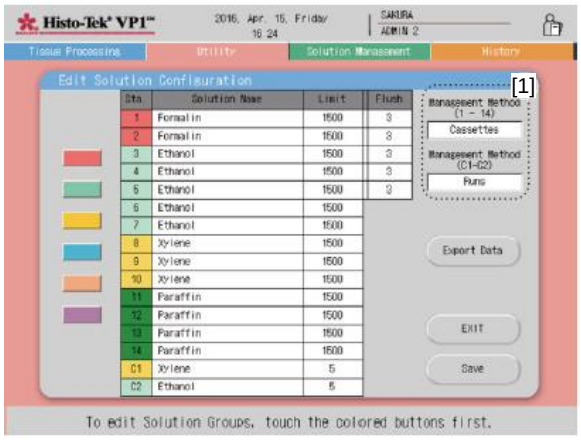




[2] Setting a solution name

1. Touch a desired solution name in the "Solution Name" field [1] in the solution configuration display field.
2. The Select Solution Name window appears.
3. Select from the "Solution Name List" [2].
   If "Solution Group" [3] is selected, touching **Enter** [5] changes the solution names in all solutions of a solution group.
   If "Single Solution" [4] is selected, touching **Enter** [5] changes a solution name in the single station that was selected by operator only.
   Touching **Save** saves the settings, after which the Utility screen will be displayed.

Note **This function is applicable to all stations from Sta. 1 to Sta. C2.**

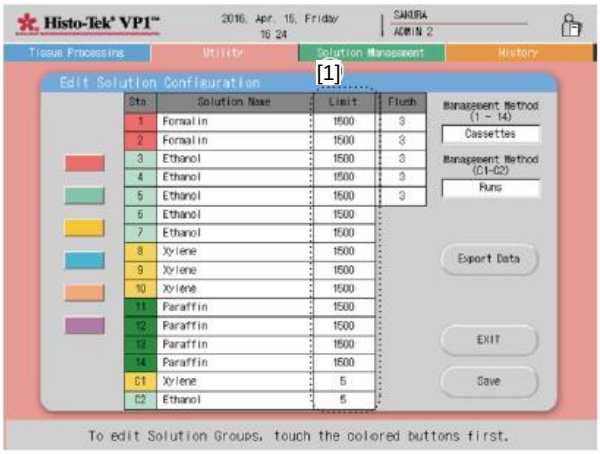


[3] Setting a management method of the solution

Solution usage is managed separately for Sta. 1 to Sta. 14, and for C1 and C2. When the settings are complete, touch **Save**. This will save the settings, after which the Utility screen will be displayed.

- **Setting the management method for Sta. 1 to Sta. 14**
  Touch the Management Method (1-14) display area, and select a desired method from the pop-up menu. If the management method is changed, the values in the Limit column are reset to the default value for the management method newly selected.
  Selectable options: Days, Runs, Cassettes, NONE

- **Setting the management method for Sta. C1, Sta. C2:**
  Touch the Management Method (C1 - C2) display area, and select a desired method from the pop-up menu. If the management method is changed, the values in the Limit column are reset to the default value for the management method newly selected.
  Selectable options: Days, Runs, NONE

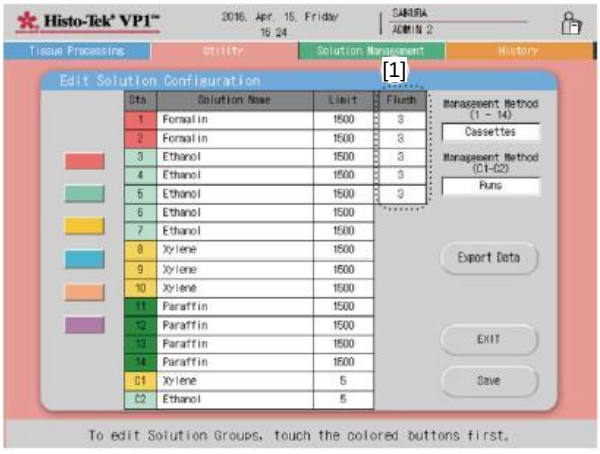


[4] Setting a usage limit for solution

Touch the area where the solution usage limit is displayed [1], and an input limit window will be displayed. Enter a value according to the selected management method.
Touching **Save** saves the settings, after which the Utility screen will be displayed.

Days	Manage the solution exchange frequency in days (1 to 99 days). Factory default setting: 5
Runs	Manage the solution exchange frequency in runs (1 to 99 runs). Factory default setting: 5
Cassettes	Manage the solution exchange frequency in cassettes (1 to 9999 cassettes). Factory default setting: 1500

Caution! **Using solutions more often may affect the specimens quality. Using cleaning solutions more often may cause cleaning problems or instrument failures.**



[5] Setting when to perform warm water flush

If reagents such as buffered formalin are used, precipitates are generated and may clog the tubing. Accordingly, warm water flush is performed regularly and when to perform warm water flush is managed.
Touch the setting area [1] in the Flush field displays a value entry window, so enter a warm water flush frequency.
Touching **Save** saves the settings, after which the Utility screen will be displayed.

--	Not Managed (Factory default setting)
1 to 5	If the number of runs reaches the specified number of times, a message urging warm water flush appears.

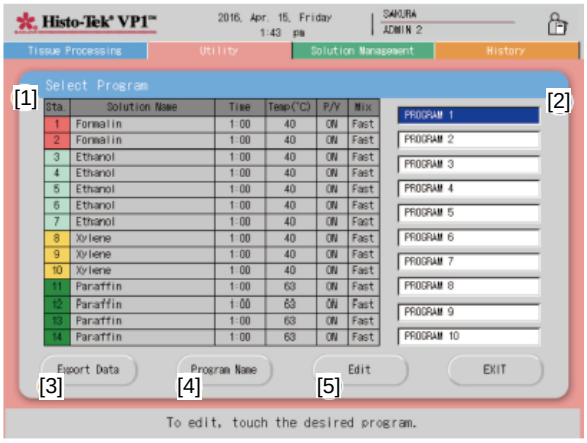
Caution! **Increasing the number of tissue processing before warm water flush is performed may cause cleaning problems or instrument failures.**

Note **The message appears before the retort cleaning completion window and the tissue processing preparation step.**
Refer to p. 3-2 for information on how to perform warm water flush.

2. Edit Menu Screen

3) Editing Tissue Processing Programs

On the Utility tab screen, touch the Edit Programs icon to open the Select Program screen.
On the Select Program screen, you can change the name of the selected program or select a program you want to edit.



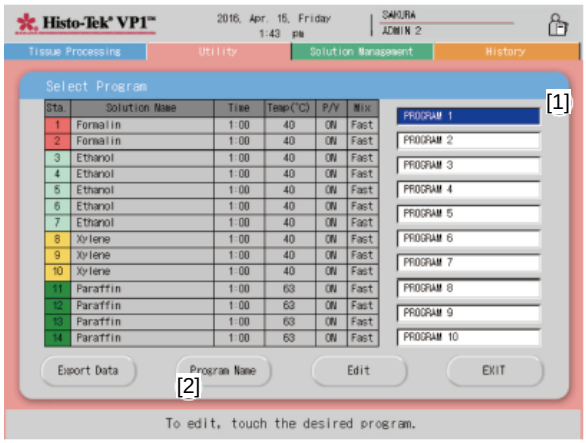
[1] Program details display field
The details of the selected program are displayed.

[2] Program list
The registered programs are displayed.

[3] Export Data button
Use this button to export the program details.

[4] Program Name button
Use this button to change the program name.

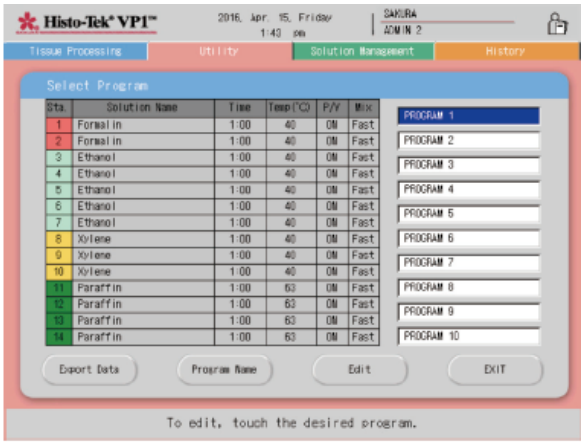
[5] Edit button
Use this button to edit the program details.

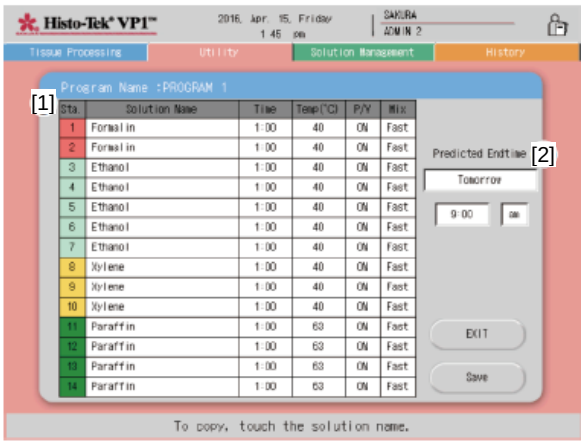


[1] Changing a program name

1. Select from the program list [1] the program whose name you want to change.
2. Touch **Program Name** [2].
   When the program name entry window appears, enter a name. Up to 22 characters can be entered.
3. Touching **Save** saves the settings, after which the Select Program screen will be displayed again.

2. Edit Menu Screen





[2] Editing a program

On the Utility tab screen, touch the Edit Programs icon to open the Select Program screen.
Select the program you want to edit, and touch **Edit**.
The Edit Program screen appears. On the Edit Program screen, "Time," "Temp," "P/V," "Mix" and "Predicted Endtime" can be set. You can also set these items individually or for each station.

Note **If the program currently used is selected, a confirmation message appears.**
The program cannot be saved with all stations set to "0" processing time.
If the processing time of a station for which P/V or temperature is set is "10 hours or more," a warning window appears. Check the following precaution.

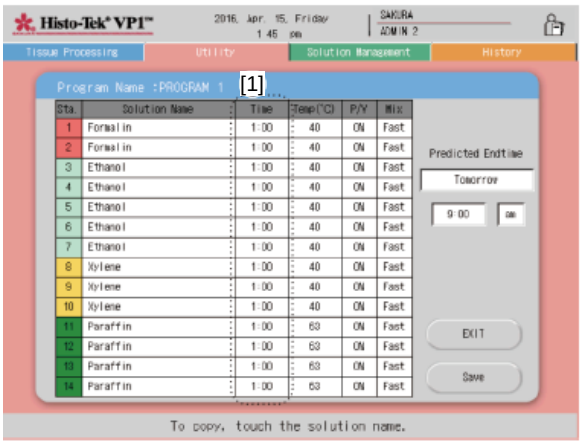
Caution! **Very volatile solutions evaporate easily when the pressure is reduced, so avoid setting the P/V to "ON" for these solutions. Errors and tissue processing failures may occur.**

[1] Program details display field

Program details are displayed.
By touching the "Sta." or "Solution Name" field, you can copy the settings of "Time," "Temp," "P/V," "Mix" and "Predicted Endtime" for the selected station, to all other stations.
You can touch the "Time," "Temp (°C)," "P/V" and "Mix" fields to set these items individually.

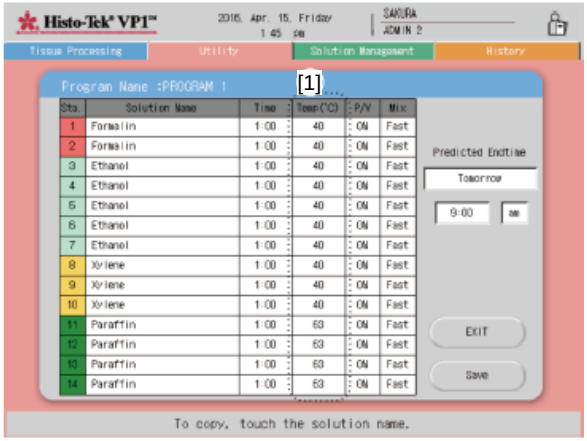
[2] Predicted Endtime field

You can set a predicted endtime.



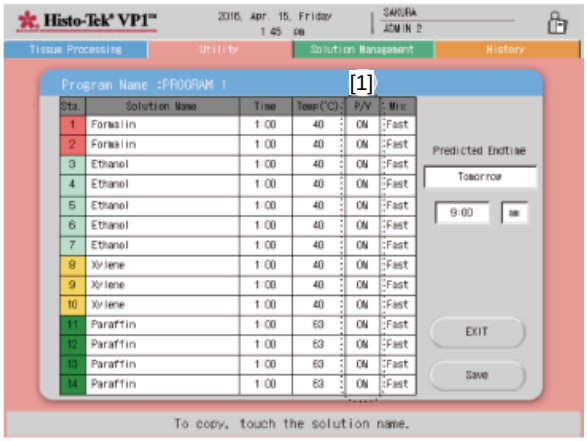
[3] Editing the program processing time

In the program details display field, touch **Time** [1] for the station you want to edit, and a value entry window will appear.
Enter a value in a range of 0:00 to 99:59.
Touching **Enter** saves the settings, after which the previous screen will be displayed again.



[4] Editing the program input temperature

In the program details display field, touch **Temp (°C)** [1] for the station you want to edit, and a value entry window appears.
Enter a value in a range of 35 to 50, or no heating, for Sta. 1 to Sta. 10.
For Sta. 11 to Sta. 14, enter a value in a range of 45 to 70.
Touching **Enter** saves the settings, after which the previous screen will be displayed again.

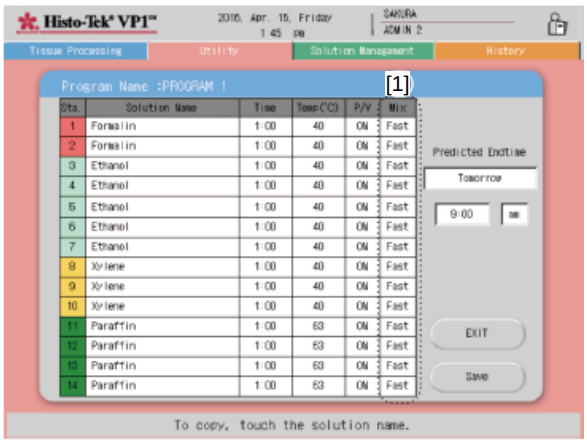


[5] Editing the program P/V

In the program details display field, touch **P/V** [1] for the station you want to edit, and a window appears.
Select ON or OFF.

ON	Pressurization of 90 seconds, atmospheric pressurization of 30 seconds, vacuuming of 90 seconds and atmospheric pressurization of 30 seconds are repeated.
OFF	P/V will not be performed.

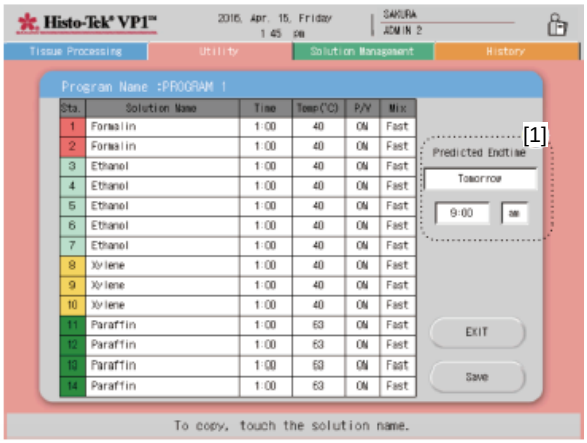
Caution! **Very volatile solutions evaporate easily when the pressure is reduced, so avoid setting the P/V to "ON" for these solutions. Errors and tissue processing failures may occur.**



[6] Editing the program Mix

In the program details display field, touch **Mix** [1] for the station you want to edit, and a window appears.
Select "OFF," "Slow" or "Fast."

OFF	Mixing will not be performed.
Slow	Pumping out/in will be repeated at 20-minute intervals.
Fast	Pumping out/in will be repeated at 12-minute intervals.

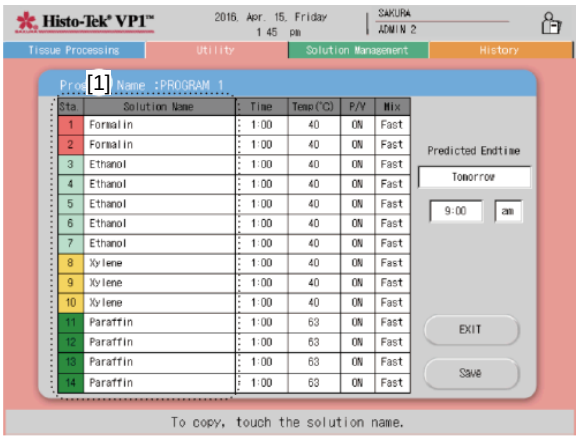


[7] Editing the program predicted endtime

Touch each display field of "Predicted Endtime" [1], and an entry window will be displayed.
Enter a predicted endtime.

Note **You can select the current day or any of the following nine days.**
"am" or "pm" can be selected for the predicted endtime only when the 12-hour display mode was selected on the System Setup screen.

2. Edit Menu Screen



[8] Copying the settings to all stations

By touching each display field in [1], you can copy all of the settings of "Time," "Temp," "P/V" and "Mix" for the selected station, to all other stations at a time.

1. Touch the station number or solution name of the station whose settings you want to copy.
   The "Time," "Temp," "P/V" and "Mix" fields of the selected station will turn blue and a confirmation window will appear.
2. Touch **All Stations**, and the settings of the selected station will be copied to all other stations. Note that the temperature setting will not be copied from a solution station to a paraffin station, or from a paraffin station to a solution station.

Chapter 6

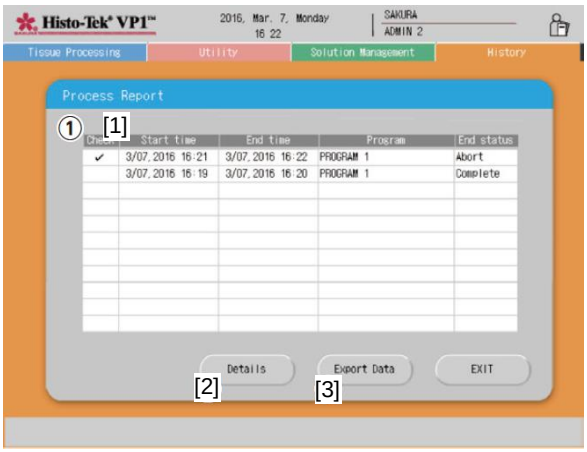
Other Operations

1. Other Operations

1) Process Report Screen

On the History tab screen, touch the Process Report icon to display the Process Report screen.
On the Process Report screen, you can check and output the tissue processing history.

Note **If there are 12 or more results, a slide bar appears on the right side of the End status display field. You can move the slide bar to show more results.**
Up to 30 results are displayed, starting from the latest one. If 30 results are already saved, the oldest result will be deleted the next time a new result is added.



[1] Process report display field

Check field	Add a "✓" mark if you want to check the details of, or output, the process report.
Start time field	Date/time the tissue processing started.
End time field	Date/time the tissue processing ended.
Program field	Name of the program used for the tissue processing.
End status field	Result of tissue processing.

[2] Details button

Touch this button to display the details of the processing result whose Check field is selected.
Touch the Check field of the tissue processing whose details you want to display, to add a check mark.
Touching **Details** will display the Details window. If two or more check marks are added, the details of the latest result will be displayed.

[3] Export Data button

Touch this button to export the processing result whose Check field is selected.
Touch the Check field of the tissue processing whose details you want to output, to add a check mark.
Touching **Export Data** outputs the details of the tissue processing result to the USB flash drive. If two or more check marks are added, the details of all selected results will be output.

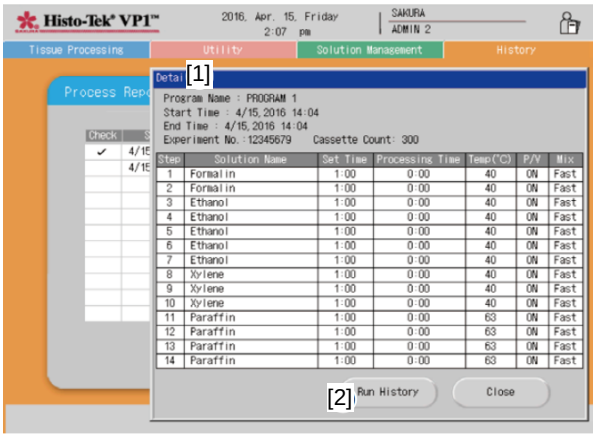
Caution! **Please connect the USB flash drive after touching the Export Data button.**

Note **Use an optional USB flash drive.**

1. Other Operations

[1] Checking the details of tissue processing results

On the Process Report screen, touch the Check field of a tissue processing result and then touch **Details**, and the details of the selected tissue processing result will be displayed. Moreover, touching **Run History** will display the run history.



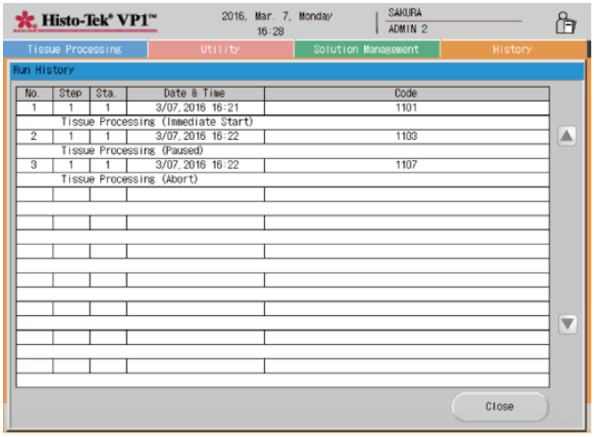
[1] Result details display field

The program name, start time, end time, experiment number, cassette count, and tissue processing by step, are displayed.

Caution! **"Solution Name," "Set Time," "Temp," "P/V" and "Mix" reflect the settings under the processing program. Note that changes made by temporarily editing the program have been reflected.**
If the experiment number setting is turned off on the System Setup screen, "--" is shown in the experiment number field.
If the solution management method is not set to "Cassettes" or it is set to "Cassettes" but the entered value is "0" on the Edit Solution Configuration screen, "--" is shown in the cassette count field.

[2] Run History button

Use this button to show the operation details.



[2] Confirming the run history of the tissue processing report

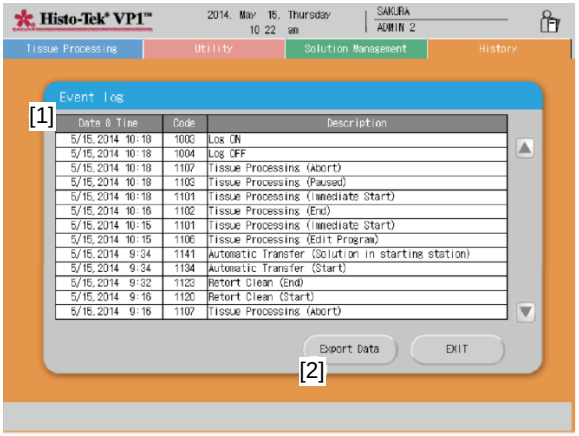
Touch **Run History** on the process report details screen displays the run history.

Note **Touch ▼ on the right to display the next page.**
Touch ▲ to move to the previous page.
Up to 30 results are displayed, starting from the latest one. If 30 results are already saved, the oldest result will be deleted the next time a new result is added.

2) Event Log Screen

On the History tab screen, touch the Event log icon to open the Event log screen.
On the event log screen, you can check or output the event details.

Note **Touch ▼ on the right to display the next page. Touch ▲ to move to the previous page. Up to 100 events are displayed, starting from the latest one. If 100 events are already saved, the oldest result will be deleted the next time a new result is added.**



[1] Event log display field

Date & Time field	Date/time the event occurred.
Code field	Code corresponding to the nature of the event.
Description field	Description of the event.

[2] Export Data button

Use this button to output the details of the event log to the UBS flash memory.

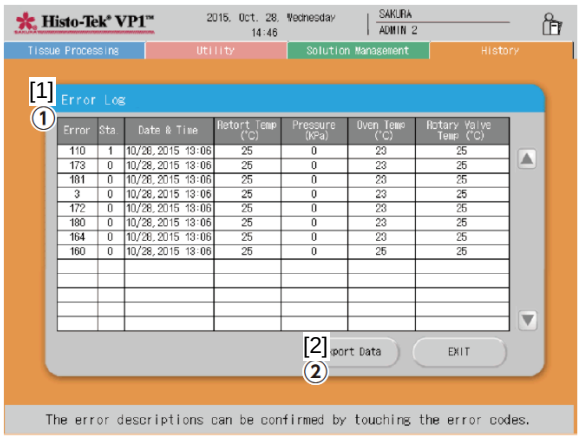
Caution! **Connect the USB flash drive after touching the Export Data button.**

Note **Use an optional USB flash drive.**

3) Error Log Screen

On the History tab screen, touch the Error Log icon to open the Error Log screen.
On the Error Log screen, you can check or output the error details.

Note **Touch ▼ on the right to display the next page. Touch ▲ to move to the previous page. Up to 100 errors are displayed, starting from the latest one. If 100 errors are already saved, the oldest result will be deleted the next time a new error is added.**



[1] Error log display field

Error field	The error number is shown. Touching the error number displays the details of the error for 10 seconds.
Sta. field	Station number when the error occurred.
Date & Time field	Date/time the error occurred.
Retort Temp (°C) field	Retort temperature when the error occurred.
Pressure (KPa) field	Retort pressure when the error occurred.
Oven Temp (°C) field	Paraffin oven temperature when the error occurred.
Rotary Valve Temp (°C) field	Rotary valve temperature when the error occurred.

[2] Export Data button

Use this button to output the details of the details of the error log to the UBS flash memory.

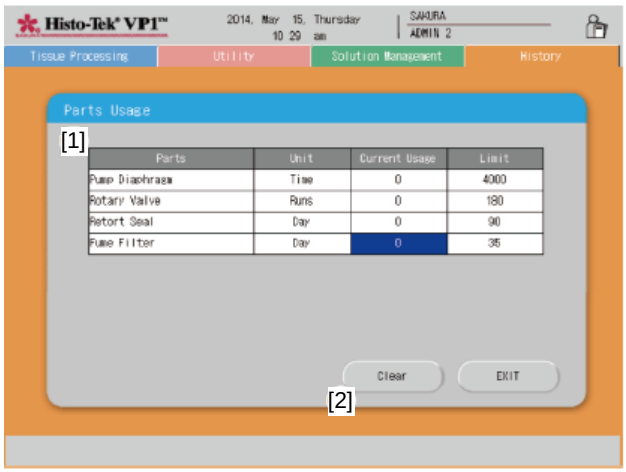
Caution! **Connect the USB flash drive after touching the Export Data button.**

Note **Use an optional USB flash drive.**

1. Other Operations

4) Parts Usage Screen

Touching the Parts Usage icon on the History tab screen displays the Parts Usage screen.
On the Parts Usage screen, you can check or output the usage statuses of parts. If the Current Usage value exceeds the Limit value, it means the part must be replaced.



[1] Parts usage display field

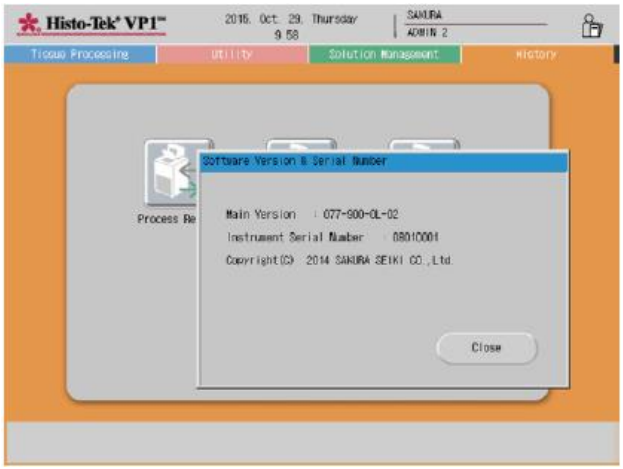
Parts field	The name of a part is displayed.
Unit field	The unit in which the part is managed is displayed. • **Pump diaphragm** Time (Operating hours of the pump) • **Rotary valve maintenance** Runs (Counted up every time tissue processing is performed) • **Retort seal** Days (Counted up every time the date changes) • **Activated carbon filter** Days (Counted up every time the date changes)
Current Usage field	The status of usage is shown based on the Unit field.
Limit field	The preset limit is shown.

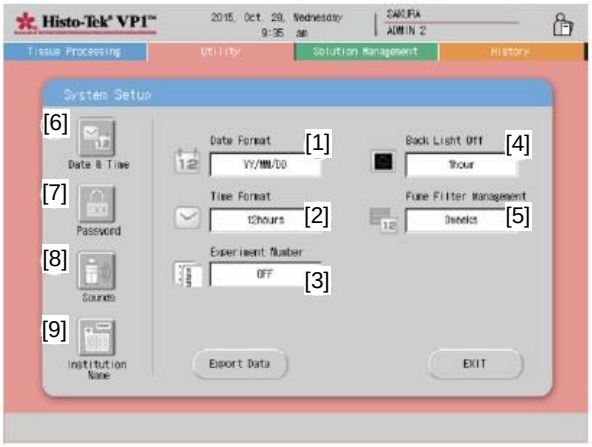
[2] Clear button

Touch and select the Current Usage field of the part whose usage data you want to clear, and then touch **Clear** to clear the usage data.
Usage data can be cleared only for the retort seal and activated carbon filters.
If the replacement timing is passed, ⚠ appears in the bottom right-hand corner of the standby screen.
Touch ⚠, and clear the usage data on the main screen after checking the details. Should you encounter any situation you cannot handle, Contact the Sakura Finetek Technical Support representative or local representative.

5) Software Version

On the History tab screen, touch the Software Version icon to open the Software Version screen.
The software version and serial number of the instrument will be displayed.





6) System Setup

On the Utility tab screen, touch the System Setup icon to open the System Setup screen.
On the System Setup screen, "Date Format," Time Format, "Experiment Number," "Back Light Off" and "Activated carbon filter Management" can be set.
You can also move to the "Date & Time," "Password," "Sound" or "Institution Name" window.

[1] Date Format button
Use this button to set the date display format. Touch the date format display area, and when the pop-up menu is displayed, select a desired option.
Options: "YY/MM/DD," MM/DD/YY" and "DD/MM/YY"

[2] Time Format button
Use this button to set the time display format. Touch the time format display area, and when the pop-up menu is displayed, select a desired option.
Options: "12 hours" and "24 hours"

[3] Experiment Number button
Set whether or not to enter experiment numbers. Touch the experiment number entry display area, and when the pop-up menu is displayed, select a desired option.
Options: "ON" and "OFF"
Selecting "ON" lets you enter an experiment number at the start of tissue processing.
Experiment numbers cannot be entered if "OFF" is selected.

[4] Back Light Off button
Use this button to set the time until the backlight turns off. Touch the backlight display area, and when the pop-up menu is displayed, select a desired option. Options: "Always ON," "15 minutes," "30 minutes," "45 minutes," "1 hour," "2 hours," "3 hours" and "4 hours"
The backlight will turn off when the time set here elapses after the last screen operation.

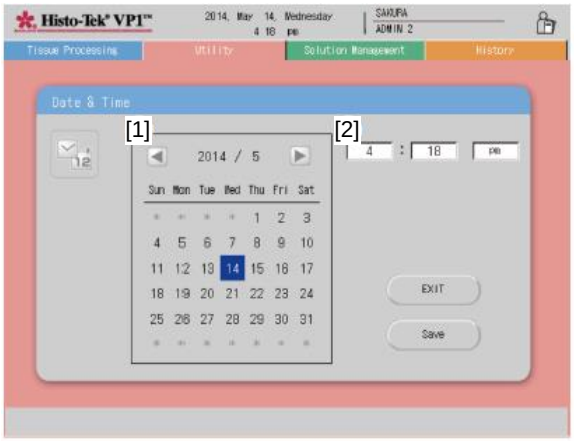
[5] Activated carbon filter Management button
Use this button to manage the filter.
Touch the activated carbon filter management display area, and when the pop-up menu is displayed, select a desired option.
Options: "2 weeks," "3 weeks," "4 weeks," "5 weeks," "6 weeks," "7 weeks," "8 weeks" and "No Use"

[6] Date & Time button
Use this button to move to the screen for setting date/time.

[7] Password button
Use this button to move to the screen for setting passwords and user names.

[8] Sounds button
Use this button to move to the screen for setting alarm sounds.

[9] Institution Name button
Use this button to move to the screen for setting institution names.



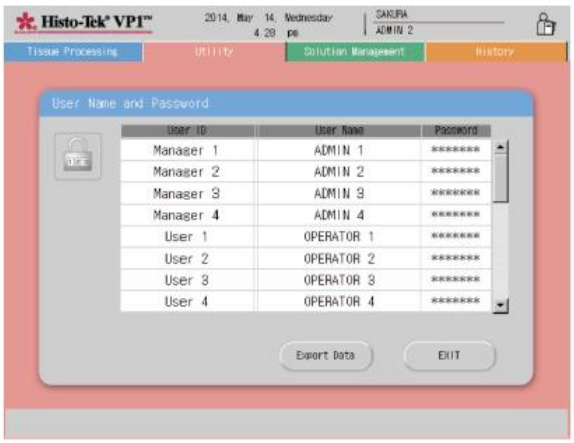
[1] Setting the Date & Time

On the Date & Time screen, date and time are set.

- **Setting the year/month**
  Set the year/month by touching the ◀/▶ on the left and right sides of the year/month display area [1].

- **Setting the day**
  Set the day by touching the applicable day on the calendar in the year/month display area [1].

- **Setting the time**
  Touching the hours or minutes display area [2] displays an entry window.
  If the 12-hour display is selected, also change am/pm.
  To change am/pm, touch the display area and select am or pm in the pop-up menu.



[2] Setting the user name and password

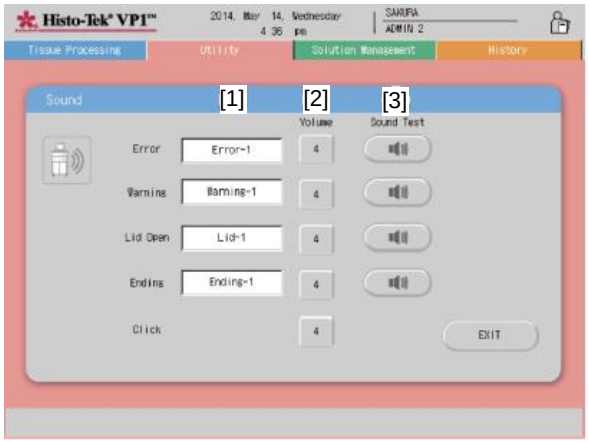
On the User Name and Password screen, you can set four manager names and corresponding passwords, and 20 user names and corresponding passwords.

- **Changing a user name**
  Touch the user name you want to change, and when the user name entry window appears, enter a name.
  Up to 22 characters can be entered.

- **Changing a password**
  Touch the password field you want to change, and when the password entry window appears, enter a password.
  A password can be set using one to six characters.
  When the password is entered again for confirmation, the password is confirmed.

Note **Two types of passwords are available: "manager passwords" that provide higher-level access to all operations, and "user passwords" that provide access only to the operations permitted to the applicable user.**
Refer to the table on p. 1-21 for information on how to set the default password.
Refer to table on p. 1-21 for the different list of operations permitted to managers and users.

1. Other Operations



[3] Setting the alarm sound

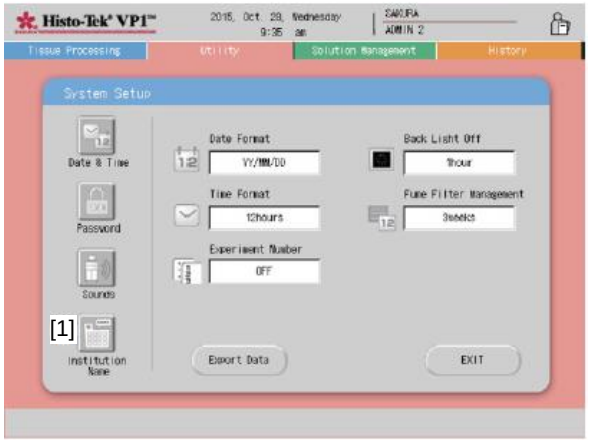
On the Sound screen, you can change the types of "Error," "Warning," "Lid Open" "Ending" and "Click" sounds and adjust the volume. Select a desired sound from six different patterns. The volume can be changed only for the "Click."

- **Changing the sound type**
  The same method applies to all sounds. Touch the display area [1], and the pop-up menu will be displayed.
  Select a desired sound from six patterns.

- **Performing the sound test**
  Touch **Sound Test** [3] for the sound test, and the sound will be played.

- **Changing the volume**
  You can set the volume to eight different levels by touching **Volume** [2].
  The initial value is 4. The volume increases by one level every time the button is touched.
  When the button is touched at the eighth level, the volume decreases to the first level.

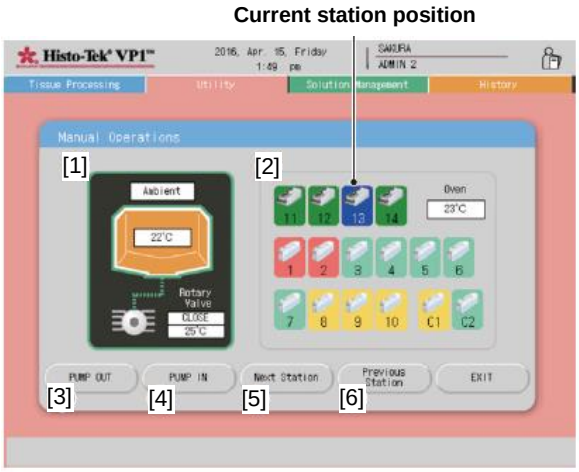
- **Ending the sound setting**
  Touch **EXIT** to return to the System Setup screen.



[4] Setting an institution name

Touching the Institution Name icon on the System Setup setup screen displays the institution name entry window. An institution can consist of up to 22 characters.

Note **If no institution name is set, nothing is displayed in the institution name display area.**



7） Manual Operations Screen

On the Utility tab screen, touch the Manual Operations icon to display the Manual Operations screen. On the Manual Operations screen, you can fill, drain and move through stations.

[1] Retort/instrument status display field
The retort status and instrument status are displayed.

[2] Solution configuration display field
The current solution configuration and paraffin oven temperature are displayed. The current station position is shown with a blue background.

[3] PUMP OUT button
Touch this button to drain the solution in the retort to the current station position.

[4] PUMP IN button
Touch this button to fill the solution at the current station position to the retort.

[5] Next Station button
Touching this button moves the current station to the next station.

[6] Previous Station button
Touching this button moves the current station to the previous station.

[1] Draining the retort

Touching **PUMP OUT** [3] will display the confirmation window.
Touch **START** to start draining the retort to the current station.

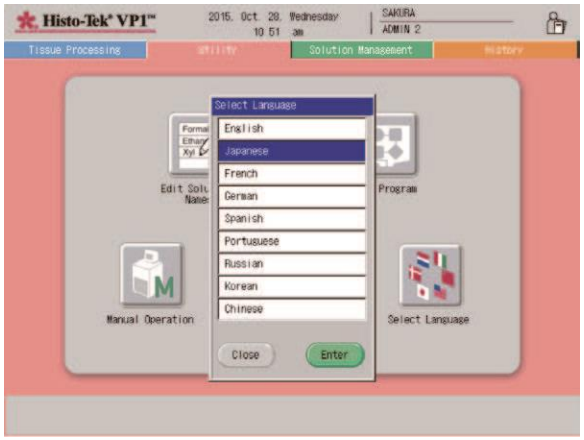
[2] Filling the retort

Touching **PUMP IN** [4] will display the Confirm window.
Touch **START** to start filling the retort from the current station.

[3] Changing station

Touch **Next Station** [5] or **Previous Station** [6]. A message window appears and the instrument starts moving through the stations.

Caution! **Be sure to drain the retort.**
If the current station is Sta. 11, 12, 13, 14 or C1 and the rotary valve temperature is not heated to 62°C or more, wait for the rotary valve temperature to rise.
If the current station is Sta. 11, 12, 13 or 14 and the instrument recognizes that the paraffin is not yet molten, wait until the instrument recognizes that the paraffin is molten, before draining the retort.
If the current station is Sta. 11, 12, 13 or 14 and the retort temperature does not reach 3°C < the preset temperature of the selected tissue processing program, wait for the retort temperature to rise, before draining the retort.
Close the retort lock cover before performing any of these operations.
Close the paraffin oven door before performing any of these operations.
When the current station is C1 or C2, touch Next Station or Previous Station, and if the inside of the retort is dirty with paraffin, clean the retort.
When the current station is Sta. 11, 12, 13 or 14, touch Next Station or Previous Station, and if the inside of the retort is dirty with paraffin and the rotary valve temperature is less than 62°C. wait for the rotary valve temperature to rise.



8) Select Language

On the Utility tab screen, touch the Select Language icon to open the Select Language window.
You can select one of the following nine languages.

- English
- Japanese
- French
- German
- Spanish
- Portuguese
- Russian
- Korean
- Chinese

Chapter 7

Maintenance and Inspection

1. Daily Care, Inspection and Cleaning

This chapter explains how to maintain the system. So that the system operates properly, it must be maintained correctly. Before performing maintenance, read this chapter carefully and follow the specified procedures.

1) Periodic Maintenance

To maintain this system in a usable condition, it must be maintained correctly and periodically. The table below summarizes the recommended periodic maintenance items and their recommended frequencies. Those items whose recommended frequency is "On condition" should be checked visually or via function check whenever necessary. (Depending on the condition in which the system is used, some periodic maintenance actions may be required more frequently than recommended.)

Maintenance task	Frequency
Clean the paraffin oven.	On condition
Clean the reagent bottles.	On condition
Cleaning the reagent bottle rack.	On condition
Clean the paraffin containers.	On condition
Clean the LCD protection sheet.	On condition
Clean the retort lid.	Every processing
Clean the retort.	Every week
Clean the exterior panels and top cover of the instrument.	Every week
Clean the paraffin oven and reagent bottle spill tray.	Every month
Replace the activated carbon filter.	Every month
Replace the retort lid gasket.	Once every six months

2) Periodic Replacement

In addition to the periodic maintenance performed by the user, some of the key system and parts must be inspected and replaced periodically. The recommended periodic inspection/replacement tasks are summarized in the table below, together with the recommended frequencies.
The following replacement tasks must be performed by the service personnel. Contact our Customer Service Department or our local representative.

Replacement task	Frequency
Replace the air pump diaphragm.	On condition at periodic inspection
Replace O-rings in the rotary valve.	On condition at periodic inspection

3) Recommendation of Warm Water Flush to Users of Neutral Buffered Formalin

Warm water flush is performed to wash away with warm water the precipitate build-up that forms in the tubing when fixing agent with buffered agent (neutral buffered formalin) is used. Precipitate build-ups between the respective stations and the retort are removed. (Warm water flush: **p. 3-2**)

1. Daily Care, Inspection and Cleaning

4) Cleaning of the Paraffin Oven and Spill Tray

If the paraffin oven became dirty, clean it according to the method specified below.

Warning! **The paraffin oven and paraffin may be hot, so be careful not to burn yourself.**

1. Open the paraffin oven door.
2. Hold the handle on each paraffin container and pull out the container slowly and horizontally with a slight force.
3. When all paraffin containers have been removed, use a paraffin scraper, etc., to remove the paraffin and dirt attached to the interior of the paraffin oven, interior wall of the paraffin oven door hinges, etc.
4. Use a cloth or paper towel to wipe dry the interior of the paraffin oven, inside wall of the paraffin oven door, hinges, etc.
5. Draw out the spill tray and remove the deposits of paraffin and dirt using a paraffin scraper, etc.
   Wipe dry using a cloth or paper towel.
6. Return the spill tray in its original position. Also return the paraffin container in its original position, and close the paraffin oven door.

Caution! **If the paraffin deposits are not cleaned, the door becomes unable to open.**

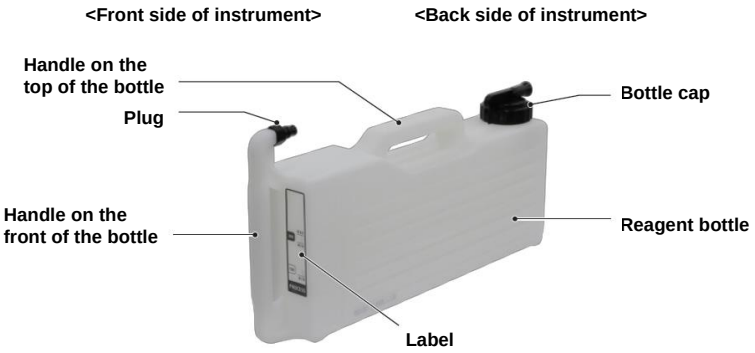
5) Cleaning of the Reagent bottle Rack and Spill Tray

If the reagent bottle rack became dirty, clean it according to the method specified below.

1. Open the reagent bottle rack door.
2. When all reagent bottles have been removed, use a paper towel to wipe the interior of the reagent bottle rack beginning from the top.
   If necessary, use a paraffin scraper, etc., to remove the attached dirt, etc.
3. Draw out the spill tray. Use a cloth or paper towel to wipe off collected solution, if any. If necessary, use a paraffin scraper, etc., to remove the attached dirt, etc.
4. Return the spill tray in its original position. Also return the reagent bottles in their original positions, and close the reagent bottle rack door.

6) Cleaning of the Reagent bottles

Check the reagent bottles for dirt periodically. Also clean each reagent bottle at the time of solution exchange.



1. Open the door for the reagent bottle rack and remove the reagent bottle to be cleaned.
   Locate the blue part at the connection port (coupler) on the instrument side and push this part toward the back of the instrument to unlock and remove the reagent bottle.
2. Turn the bottle cap, discard the solution, and put the bottle cap back in position.
   Refer to **p. 7-3** for information on removing and installing the bottle cap.
3. Fill the reagent bottle with warm water of 50 to 60°C in which liquid neutral detergent has been dissolved, attach the plug and bottle cap, and shake the bottle well.
4. Remove the bottle cap and discard the detergent in the reagent bottle, and then put warm water not hotter than 60°C to rinse the bottle.
5. Remove the plug and bottle cap and dry the reagent bottle, plug and bottle cap.
6. Install the plug and bottle cap on the reagent bottle.
7. Return the reagent bottle in its original position, and close the reagent bottle rack door.

Caution! **Rinse the bottle thoroughly to remove all detergent before use. If detergent remains, the tissue processing may be impaired.**
When cleaning the reagent bottle, do not use a brush or any other tool that may scratch the surface of the bottle. The chemical resistant surface treatment of the reagent bottle may lose its intended effect.

1] Removing and installing a bottle cap

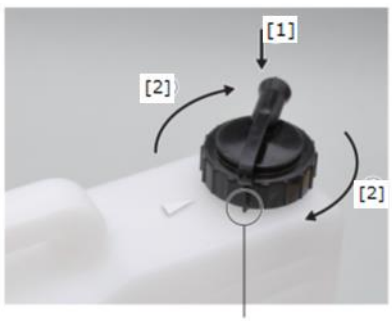
■ **Removing the bottle cap**

Turn the bottle cap counterclockwise to remove the cap.

■ **Installing the bottle cap**

Install the bottle cap on the reagent bottle [1], and tighten the cap clockwise while the cap is lightly pressed down from the top [2]. Make sure the △ mark on the reagent bottle aligns with the most pointed part along the circumference of the bottle cap. When the bottle cap is installed correctly, the connection port of the bottle cap faces outward.

The △mark on the solution bottle side



Pointed part of the bottle cap

Set the bottle cap so that the △ mark aligns with the pointed part of the bottle cap.

Caution! Make sure that the gap between the cap and the solution reservoir is 0 – 1mm and is also parallel in position between the cap and the solution reservoir when the cap is placed.
If the cap is not installed horizontally, it may cause a fluid leak from the cap when drained.

1. Daily Care, Inspection and Cleaning

7) Cleaning of Exterior Panels

Protect the exterior panels from attachment of dust and dirt. In general, dust attached to the exterior panels can be removed only by wiping with a clean cloth wrung tightly after moistened with water.
To clean the front surface of the monitor screen, wipe with 10% diluted ethanol solution and then let the surface dry naturally.
Wipe the reagent bottle rack door using glass cleaner and a soft cloth. If paraffin is attached, wipe it off with a cloth moistened with Tissue Clear (or xylene).

Caution! **Unless otherwise specified in this manual, never use solvent of any kind for cleaning, etc.**

[1] Cleaning of the screen protection sheet

If the protection sheet is dirty, remove the sheet and rinse it with water. Replace the protection sheet if badly scratched, etc.

8) Cleaning of Paraffin Containers

Clean the paraffin containers as necessary.

Warning! **The paraffin oven and paraffin may be hot, so be careful not to burn yourself.**

1. Open the door for the paraffin oven and remove the paraffin container to be cleaned.
2. Empty the paraffin container.
3. Use a paper towel to wipe the interior and exterior of the paraffin container. Use a paraffin scraper to clean, if necessary.
4. Return the paraffin container to its original position and close the door for the paraffin oven.

9) Cleaning of the Retort

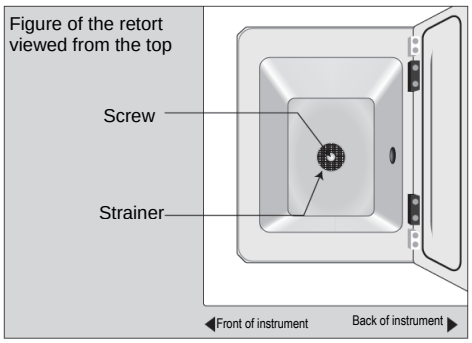
Clean the retort as necessary.

Caution! **If buffered formalin is used, white precipitates may deposit in the retort. In this case, clean the interior walls of the retort using a cloth moistened with cold or warm water. Thereafter, wipe dry the walls with alcohol and let them dry.**

1. Open the retort lid. If the retort is hot, wait until it becomes cool.
2. Wear gloves and wipe the interior surface of the retort, lid gasket and gasket-contacting surface using a cloth moistened with Tissue Clear (or a small amount of xylene).
3. Check the retort lid gasket for scratches. The gasket with scratch marks must be replaced.
4. Remove the strainer installed at the bottom of the retort.
   To remove the strainer, turn the screw counterclockwise.
   Clean the strainer using a brush or toothbrush.

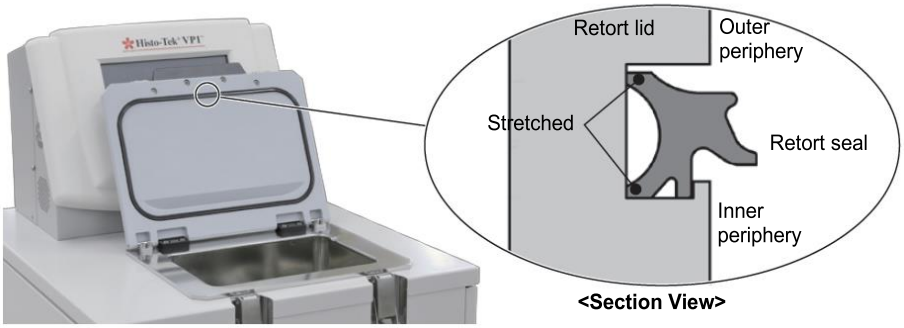
Caution! **Prevent foreign matters from getting in the strainer when removing from the retort.**

5. Attach the strainer back to its original place and tighten the screw.

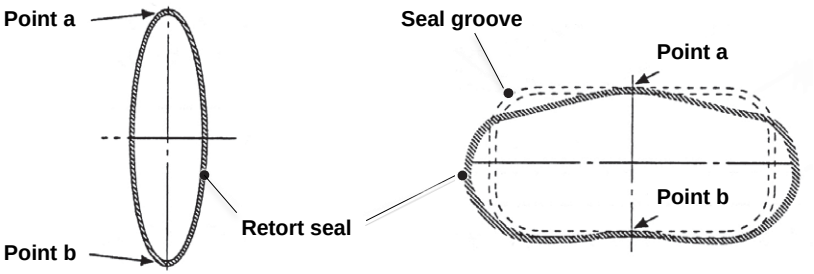


10) Replacement of the Retort Seal

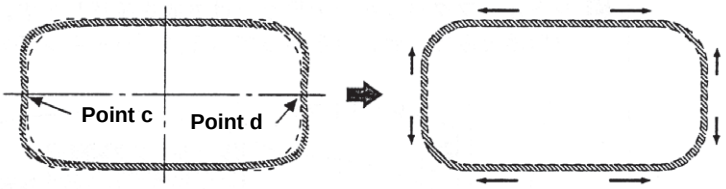
Replace the retort seal periodically. If the retort is not sealed properly, pressure may not rise or other problems may occur.



1. Open the retort lid and pull out the worn retort seal.
2. Clean the seal groove using a cloth or paper towel. If paraffin or other foreign matter is attached, use a paraffin scraper as necessary.
3. Prepare the new retort seal. First, check the installation direction. The wider side should be facing the back of the groove in a side view of the retort seal.
4. Determine the positions of **a** and **b** by making sure the right and left are even, and then push the seal at **a** and **b** into the seal groove. Push in the inner side first.
   Next, insert the seal at **c** and **d** into the groove by making sure the top and bottom are even, and then push in the rest toward the corners.



5. Trace the surface of the retort seal with a finger and push in any part that is not inserted properly.



Chapter 8
Troubleshooting

1. Troubleshooting

1) Instrument Conditions and Remedial Actions

The troubleshooting chart below lists problems that may occur during system operation. Probable causes and remedial actions are described for each problem. Use this information to identify the instrument condition and resolve the problem. If the problem cannot be resolved or the applicable condition is not listed, contact the Sakura Finetek Technical Support representative or local representative.

*** If an unexpected problem occurred and is difficult to solve, turn off the power immediately. Thereafter, contact the Sakura Finetek Technical Support representative or local representative.**

Instrument condition	Probable cause	Action
The power is not supplied even when the power switch is turned on. The power indicator on the display does not illuminate.	Facility-side power supply error.	Check that the power supply condition on the facility side is normal.
	Poor power cord connection, abnormal power cord.	Visually check the power cord for abnormality (disconnection, poor connection, etc.). If the cord is connected poorly, connect it securely.
	Abnormal power inlet.	Contact the Sakura Finetek Technical Support representative or local representative.
	Abnormal switching power supply, CPU board or peripheral wiring.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty power indicator board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Forgot to turn on circuit protector 2.	Contact the Sakura Finetek Technical Support representative or local representative.
After the power switch is turned on, the switch (hereinafter circuit protector 1) trips.	Mis-match of the trip current of the circuit protector 1.	Contact the Sakura Finetek Technical Support representative or local representative.
	Short-circuited power input part.	Contact the Sakura Finetek Technical Support representative or local representative.
	Short-circuited switching power supply.	Contact the Sakura Finetek Technical Support representative or local representative.
	Short-circuited retort heater or transformer.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty circuit protector 1.	Contact the Sakura Finetek Technical Support representative or local representative.
The circuit protector 2 trips.	Mis-match of the trip current of the circuit protector 2.	Contact the Sakura Finetek Technical Support representative or local representative.
	Defective setting of the circuit protector selector switch.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty circuit protector 2.	Contact the Sakura Finetek Technical Support representative or local representative.
When a metal part of the instrument is touched, tingling sensation is felt.	The power input ground is not connected.	Confirm that the grounding wire is connected.
	Current leaking from the power input part.	Contact the Sakura Finetek Technical Support representative or local representative.
	Current is leaking from the voltage selector board, heater driver board or heater unit.	Contact the Sakura Finetek Technical Support representative or local representative.
The screen remains dark while the power indicator is on after the power is turned on.	Power is not supplied to the LCD.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty LCD relay cable.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty LCD relay board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty LCD.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Instrument condition	Probable cause	Action
When the power is turned on, the screen remains white.	Improper connection of the FFC cable or disconnected FFC cable.	Contact the Sakura Finetek Technical Support representative or local representative.
	Disconnected LCD cable (34-pin cable).	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty LCD.	Contact the Sakura Finetek Technical Support representative or local representative.
The program does not load after the power is turned ON.	Corrupted control software file.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Abnormal backup area value.	Contact the Sakura Finetek Technical Support representative or local representative.
The clock displayed at the top of the screen no longer keeps the correct time.	Faulty battery unit.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
When an effective button is touched on the displayed screen, the button does not react. Or, the input position is off.	Touch detection position is offset.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty LCD relay board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty touch panel.	Contact the Sakura Finetek Technical Support representative or local representative.
The LCD suddenly flickers or colors become misaligned.	Poor FFC cable connection.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty LCD relay board.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty LCD.	Contact the Sakura Finetek Technical Support representative or local representative.
Sound is not output.	Sound volume is small.	Check the instrument setting.
	Faulty speaker and poor connector connection.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
"Close the paraffin oven door" appears and tissue processing cannot be started.	The paraffin oven door remains open.	Close the paraffin oven door.
	The paraffin oven door sensor LS2 installation position adjustment is improper.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty paraffin oven door sensor LS2.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
The message "Close retort lock cover" appears at the start or resumption of tissue processing and tissue processing cannot be started.	The retort lock cover remains open.	Close the retort lock cover.
	Close-side stop position of the retort lock cover is bad.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty retort lock cover close detection sensor or relay cable.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
"Safety valve abnormal" is displayed.	The safety valve adjustment value has shifted.	Contact the Sakura Finetek Technical Support representative or local representative.
	The seal (O-ring) in the safety valve is stuck.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Instrument condition	Probable cause	Action
Stored instrument setup data was initialized.	The control file storing the setup data is lost or corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
	The CF card in the instrument is corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
Stored password setting data was initialized.	The control file storing the setup data is lost or corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
	The CF card in the instrument is corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
Stored solution name was initialized.	The control file storing the solution name data is lost or corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
	The CF card in the instrument is corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
Stored solution configuration data was initialized.	The control file storing the solution configuration data is lost or corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
	The CF card in the instrument is corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
Stored tissue processing program data was initialized.	The control file storing the tissue processing program data is lost or corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
	The CF card in the instrument is corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
Past error logs are no longer displayed.	Memory backup area in which error log data is stored is damaged or initialized.	Contact the Sakura Finetek Technical Support representative or local representative.
	Memory cannot be backed up due to low memory backup battery voltage.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
Past event logs are no longer displayed.	Memory backup area in which event log data is stored is damaged or initialized.	Contact the Sakura Finetek Technical Support representative or local representative.
	Memory cannot be backed up due to low memory backup battery voltage.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
Past tissue processing reports are no longer displayed.	Memory backup area in which event log data is stored is damaged or initialized.	Contact the Sakura Finetek Technical Support representative or local representative.
	Memory cannot be backed up due to low memory backup battery voltage.	Contact the Sakura Finetek Technical Support representative or local representative.
	Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Instrument condition	Probable cause	Action
The specified alarm sound is no longer output.	The WAV file storing the alarm sound data is lost or corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
	The CF card in the instrument is corrupted.	Contact the Sakura Finetek Technical Support representative or local representative.
Loose retort lid hinge.	Lid-hinge fixing bolt is loose.	Contact the Sakura Finetek Technical Support representative or local representative.
When the retort lid is locked, the hook fastening force is too weak or the left and right fastening forces are different.	Retort seal is damaged.	The fastening force is felt weak due to the retort seal has deformed. Replace with replaced the retort seal with a new one.
	Hook mounting part is loose.	The fastening force is felt tight because paraffin or other foreign matter is attached to the retort seal contact surface. Remove the foreign matter. Note that the retort seal may have been damaged by foreign matter, in which case replace the retort seal.
	Hook installation position is inappropriate.	Contact the Sakura Finetek Technical Support representative or local representative.
When the retort lid is locked, the hook fastening force is strong or the left and right fastening forces are different.	Foreign matter is on retort seal contact surface.	Contact the Sakura Finetek Technical Support representative or local representative.
	Retort seal is not properly fitted in the groove.	If the retort seal is not properly fitted in the groove of the lid, the locking force is felt tight. The retort seal needs to be re-attached.
	Retort seal was replaced with a new one.	In this case, fit the retort seal properly in the groove.
	Hook installation position is inappropriate.	Contact the Sakura Finetek Technical Support representative or local representative.
Fume still leaks from the retort lid even after the lid is closed and locked.	Retort flange or retort seal is dirty, or foreign matter is entrapped.	Remove dust and dirt from the flange contacting the retort seal and clean it using xylene, etc. Clean the retort seal side in the same manner.
	Scratched or deformed retort seal, causing leakage.	Check that there is no scratch, etc. on the retort seal. If scratched, replace the retort seal. If no major scratch is found, remove the retort seal once, and then change the position, and install it again. If the fume still leaks, replace the retort seal with a new one.
	The retort lid tightening force is insufficient.	Contact the Sakura Finetek Technical Support representative or local representative.
The reagent bottle has expanded and no longer fits the rack.	Expanded reagent bottle.	The reagent bottle expands due to reagent. (Temperature and number of years of use are also factors.) If the reagent bottle has expanded to the usage limit, replace it with a new one.
Reagent leaks from the reagent bottle.	Loose reagent bottle cap.	If the reagent is leaking from the cap installation part, remove the cap once, and then tighten it securely. At this time, check that there is a clearance of approx. 0.5 mm between the cap and bottle and that the cap is installed horizontally.
	Poor O-ring on reagent bottle side.	Contact the Sakura Finetek Technical Support representative or local representative.
	Deformed/burred O-ring groove on reagent bottle cap side.	Contact the Sakura Finetek Technical Support representative or local representative.
	Loose plug.	Contact the Sakura Finetek Technical Support representative or local representative.
	Poor O-ring on plug side.	Contact the Sakura Finetek Technical Support representative or local representative.
	Deformed/burred O-ring groove on reagent bottle plug side.	Contact the Sakura Finetek Technical Support representative or local representative.
Some reagent bottles are full/empty after the processing.	Places of the reagent bottles were swapped during processing.	Contact the Sakura Finetek Technical Support representative or local representative.
	Reagent was added to empty reagent bottle during processing.	Contact the Sakura Finetek Technical Support representative or local representative.
	Reagent was directly added to the retort during or at the start of processing.	Contact the Sakura Finetek Technical Support representative or local representative.
	Some kind of instrument abnormality occurred.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Instrument condition	Probable cause	Action
There is solution smell around the instrument during processing.	No activated carbon filter is set.	Check that a activated carbon filter is set in the fume control unit. If there is no activated carbon filter, set a filter.
	The activated carbon filter is set without unpacking it.	If it is set without unpacking, the fume control cannot be performed. Check that the filter is unpacked.
	Poor activated carbon filter setting.	Confirm that the activated carbon filter has been inserted all the way in correctly. If the filter is not inserted all the way in or the activated carbon base is not set correctly, make correction **(p. 1-10).**
	Service life of the activated carbon filter has reached.	Check the date of the activated carbon filter was last replaced. If the replacement timing is overdue, replace it with a new activated carbon filter.
	The exhaust fan stopped.	Refer to Error No. 90 for details.
	The inlet port in the instrument was blocked.	Confirm the inlet ports on the instrument side (at the top back of the top level and bottom level of the bottle rack, and at the back of the paraffin oven) for attachment of foreign matter. If there is any foreign matter, remove it.
	Fume control unit door is remaining open, or door gasket has deteriorated.	Check that the fume control unit door remained open. If no problem is found, gently press the gasket installed at the door and check that it has elasticity. If no elasticity is felt, the gasket has deteriorated. Remove the old gasket and attach a new gasket.
	The exhaust outlet port is blocked.	Confirm that the exhaust outlet port is not blocked by other instrument, appliance, wall, etc. If it is blocked, provide a greater clearance.
	When connecting the exhaust duct, it is not connected correctly.	Confirm that the exhaust duct is firmly fitted into the duct connection adapter. If the duct is loose, tighten with a hose clamp, etc.
	When connecting an exhaust duct, the duct connection path is too long.	Check the length of the exhaust duct. The ∅38 duct will generate a large pressure loss if its length becomes 5 m or more, in which case the exhaust air flow will drop. Change the ducting so that the length can be kept within 5 m. Route the exhaust hose in the manner that it makes a loose curve.
	Exhaust duct crushed while connecting.	Check that the exhaust duct is not pinched by other instrument or equipment and crushed.
	The exhaust system on the facility side is not operating.	Whether or not the exhaust duct is connected to an exhaust system on the facility side, check that the exhaust system on the facility side is operating.
	There is a disconnected reagent bottle.	Given the structure of the reagent bottle connection circuit, fume leaks from the coupler of an unconnected bottle. If some solution stations are not used under the processing program, be sure to connect the bottles because bottles must necessarily be connected.
Reagent odor leaks from the instrument not operating.	The retort lid is open or not locked.	Check the state of the retort lid. If the lid is not closed, close and lock the lid.
	The paraffin oven door is open.	Check the state of the paraffin oven door. If open, close the door.
	Reagent bottles are not set.	All reagent bottles need to be installed whether or not the instrument is operating. Reagent odor may leak from the coupler of a detached bottle.
	Service life of the activated carbon filter has reached.	Reagent released from the activated carbon filter may smell. Check the date the activated carbon filter was last replaced and if the filter is overdue for replacement, replace it with a new activated carbon filter.

1. Troubleshooting

Instrument condition	Probable cause	Action
Paraffin overflowed.	Too much paraffin was filled to the paraffin container.	If paraffin is added to above the top graduation in the paraffin container, it may overflow as reagent is brought in, etc. It is necessary to always confirm that paraffin is not above the upper limit of the graduation before the start of processing.
	Specimens and cassettes, etc., whose brought in amount is large were processed.	This problem may occur when a lot of specimens are processed under conditions where more reagent is brought in, such as when biopsy sheets, sponges or mesh cassettes are used. It is necessary to come up with ideas to minimize the amount of reagent brought in, or reduce the processing quantity.
	Specimens are cold and the paraffin processing time is short.	At Sta. 11 paraffin, processing is started in the condition where the load such as specimens and baskets are cold, so paraffin may solidify around the load. If the processing at that station ends in the condition where the paraffin is still solid, a large amount of solid paraffin may be brought into the next station. If the load is large or the reagent temperature in Sta. 10 is low, sufficient processing time must be ensured at the first paraffin station.
	The paraffin container was refilled while paraffin was still in the retort.	This problem occurs, for example, when paraffin is added to the paraffin container at the last station while paraffin is still in the retort after the end of tissue processing.
	Places of the containers were swapped during processing.	This problem occurs when an empty container after fill is swapped with a container with solution.
Remedial action when paraffin leaks outside from the paraffin oven		If paraffin overflowed from the spill tray and attached to the interior or door of the bottle rack, remove all bottles and scrape off paraffin deposits attached in each area using a paraffin scraper, and then wipe off any remaining paraffin using xylene, etc. Paraffin should be attached to the top coupler unit, so remove the coupler unit and remove the paraffin deposits. Scrape off the paraffin attached to the reagent bottle using a paraffin scraper, and then wipe off any remaining paraffin using xylene, etc.
Paraffin hardened in the paraffin oven.	The ambient operating temperature is too low.	Paraffin sometimes solidifies when the operating temperature of the instrument drops to 10°C or below. Do not install the instrument in a place where the operating temperature may drop to 10°C or below.
	The preset processing temperature is too low for the paraffin melting point.	Since the melting point of paraffin varies, presetting the paraffin oven temperature to the melting point may cause the paraffin to solidify. (Set the paraffin oven temperature automatically from the preset processing temperature). Make sure the preset processing temperature is at least 3°C higher than the melting point.
	A power outage occurred.	If power outage occurs, paraffin may solidify while the power is out. Check to see if power outage occurred. If the paraffin solidified due to power outage, it is necessary to wait until it melts.
	Solid paraffin was added.	If solid paraffin is added to the paraffin container, temperature of the entire oven may drop to cause paraffin solidification in the container. Wait until it melts.
	Paraffin oven door was kept open.	If the paraffin oven door is kept open, the temperature inside the oven drops and paraffin may solidify. Do not keep the door open unless necessary.
	Activated carbon filter is not installed.	If the activated carbon filter is not set, exhaust from the oven increases and more outside air is suctioned accordingly, so the temperature inside the oven drops. As a result, paraffin may solidify. In this case, set the activated carbon filter.
The front side gets dirty with paraffin.	Paraffin spilled when the paraffin container was inserted/removed.	When inserting/removing the paraffin container, do so slowly to prevent spilling of paraffin. Wipe off spilled paraffin immediately.
	Paraffin spilled in the instrument when the paraffin container was refilled or moved.	When adding molten paraffin to the paraffin container, opening the paraffin oven door and drawing out the container may dirty the instrument if paraffin spills. To keep the instrument from getting dirty, add paraffin or perform any other work involving paraffin outside the instrument.
	Too much paraffin in the paraffin container, causing overflow.	If the paraffin container has too much paraffin, it may flow out of the container during pumping-out.

1. Troubleshooting

Instrument condition	Probable cause	Action
Each door does not move smoothly.	Foreign matter was entered into the moving part of the door hinge, moving part was deformed and damaged.	Check the operating part of the door hinge for pinching of foreign matter or deformed/damaged hinge. If abnormality is found, remove the foreign matter or replace the damaged part.
	Deformed and damaged paraffin oven door support.	If the door supports on the left and right sides of the paraffin oven door are deformed, the door may contact the slits in the exterior panels when opened/closed. If the deformation is significant, remove the door and correct the deformation so that the slit will not be contacted, or replace the door.
Door does not open.	Damaged catches of the fume control unit door or reagent bottle rack door.	The catches on the fume control unit door and reagent bottle rack door are of the push-open type. If these catches are damaged, the door may not open even when pushed. Also, the door may not be closed to the normal position. In this case, replace the damaged catch.
	Paraffin oven door getting stuck due to paraffin.	If the paraffin oven door does not open, the door may have been closed while dirty with paraffin and gotten stuck due to paraffin deposits. Check to see if paraffin is deposited, and if paraffin is deposited, remove it and then clean the surface with xylene, etc.
	Entry of foreign matter	Foreign matter may be trapped somewhere under a moving part. Check the instrument from the interior side and remove the foreign matter.
Door does not close.	Inappropriately positioned or damaged paraffin oven door magnet catch.	If the installation position of the magnet catch is changed or the catch is deformed and damaged, the door may not close fully. Check the condition of the magnet catch and make adjustment. Replace the magnet catch if damaged, etc.
	Detached paraffin oven door gasket.	The paraffin oven door gasket is of the insertion type. Accordingly, opening the door when the gasket is stuck may cause the gasket to come off and prevent the door from closing. In this case, clean the gasket and insert it all the way into the groove.
	Foreign matter on the catch receiving part.	Foreign matter may attach to the catches on each door or the catch contacting surfaces of the door and prevent the door from closing to the normal position. In this case, remove the foreign matter.
	Damaged catches of the fume control unit door or reagent bottle rack door.	The catches on the fume control unit door and reagent bottle rack door are of the push-open type. If these catches are damaged, the door may not open even when pushed. Also, the door may not be closed to the normal position. In this case, replace the damaged catch.
External alarms are not output. (When the optional "external interface unit" is used.)	External alarms were not communicated due to an external wiring or connection equipment error.	Contact the Sakura Finetek Technical Support representative or local representative.
	External alarms are not output due to an interface board relay error.	Contact the Sakura Finetek Technical Support representative or local representative.
	The connection harness is broken.	Contact the Sakura Finetek Technical Support representative or local representative.
	External alarms are not output due to a CPU board error.	Contact the Sakura Finetek Technical Support representative or local representative.
Rust generated.	Strong corrosive solution was used.	If very corrosive solution is used, the retort, etc., may rust. Use only the permitted solutions. If you have any new solution you want to use, contact the Sakura Finetek Technical Support representative or local representative to see if it can be used.
Noise from the instrument became louder.	Rotating noise of the rotary valve.	Contact the Sakura Finetek Technical Support representative or local representative.
	Abnormal noise from the air pump.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Instrument condition	Probable cause	Action
Smoke came from the instrument.	The primary power line was overheated and smoke was generated from the vinyl wire.	Turn off the power immediately. Contact the Sakura Finetek Technical Support representative or local representative.
	Smoke was generated due to an abnormal printed circuit board.	Turn off the power immediately. Contact the Sakura Finetek Technical Support representative or local representative.
	Smoke was generated due to an abnormal heater.	Turn off the power immediately. Contact the Sakura Finetek Technical Support representative or local representative.
Solution/water was spilled inside the instrument.		Turn off the power immediately. Contact the Sakura Finetek Technical Support representative or local representative.
USB flash drive is not recognized or the output cannot be made.	USB flash drive is not connected.	Make sure that the instrument recognizes USB flash drive certified as an option after USB flash drive is connected to the instrument and then, the output button is pressed.
	USB flash drive that is not accepted by the instrument was connected.	
	USB flash drive was connected in an incorrect timing.	
	USB flash drive is defective.	Use a new USB flash drive. Use the USB flash drive certified as an option.
	CPU board is defective.	Contact the Sakura Finetek Technical Support representative or local representative.
	USB cable is defective.	
When USB flash drive was inserted into the instrument, the control program was restarted.	USB flash drive that is not accepted by the instrument was connected.	Under a condition that the instrument power is turned off, insert USB flash drive certified as option into the instrument and turn the power on. Make sure that the instrument recognizes USB flash drive correctly.

2) Error Codes Displayed during System Operation

The troubleshooting chart below lists problems that may occur during system operation.
Probable causes and remedial actions are described for each problem. Use this information to identify the instrument condition and resolve the problem. If the problem cannot be resolved or the applicable condition is not listed, contact the Sakura Finetek Technical Support representative or local representative. The number in the table indicates the applicable error number.

*** If an unexpected problem occurred and the condition cannot be rectified easily, turn off the power immediately. Thereafter, contact the Sakura Finetek Technical Support representative or local representative.**

Error number	Message	Probable cause	Action
003	Power was returned after a power outage.	A power outage occurred due to abnormal power supply from the facility.	Wait for the power to be restored.
		The power switch was turned off.	The instrument is not abnormal.
		The power cord came off from the power outlet.	Provide a dedicated power outlet to prevent inadvertent pull-out of the cord, or implement measures to prevent the power cord from getting caught by a leg, etc.
		Power cord and power system component or internal wiring contact is poor or disconnected.	Contact the Sakura Finetek Technical Support representative or local representative.
004	Abnormal ambient pressure level	Tubing is clogged.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty pressure sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
005	Abnormal retort pressure level	Faulty pressure sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
010	Retort overflow	More than the specified amount of tissue was processed.	If paraffin overflows, however, the trap circuit and trap bottle must be cleaned. Contact the Sakura Finetek Technical Support representative or local representative.
		More than the specified amount of solution was added to the reagent bottle/paraffin container.	If paraffin overflows, however, the trap circuit and trap bottle must be cleaned. Contact the Sakura Finetek Technical Support representative or local representative.
		The station was changed and solution was filled when the retort was not completely drained.	If paraffin overflows, however, the trap circuit and trap bottle must be cleaned. Contact the Sakura Finetek Technical Support representative or local representative.
		The error occurred during filling from the C2 bottle.	Contact the Sakura Finetek Technical Support representative or local representative.
		Liquid or mist collected in the trap bottle.	When easy-to-vaporize reagent is used, condensate liquid, etc., may collect in the trap bottle during the course of repeated pump-in/pump-out operations and P/V cycles and the overflow sensor may actuate. Contact the Sakura Finetek Technical Support representative or local representative.
		Inappropriately adjusted overflow sensor (position adjustment, sensitivity adjustment).	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty overflow sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Error number	Message	Probable cause	Action
011	Pump-in was not completed within 3 minutes.	The reagent bottle or flow tube is clogged by solid matter (paraffin, precipitated salt).	Contact the Sakura Finetek Technical Support representative or local representative.
		Clogged tubing in the air circuit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Detached bottle (coupler).	Do not remove the bottle once processing is started.
		The solenoid valve SV2 is always ON.	Contact the Sakura Finetek Technical Support representative or local representative.
012	Pump-in was not completed after 2 attempts.	The reagent bottle or flow tube is clogged by solid matter (paraffin, precipitated salt).	Contact the Sakura Finetek Technical Support representative or local representative.
		Clogged tubing in the air circuit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Detached bottle (coupler).	Do not remove the bottle once processing is started.
		The solenoid valve SV2 is always ON.	Contact the Sakura Finetek Technical Support representative or local representative.
013	Cannot create a vacuum in the retort.	The retort lid is not locked.	Lock the retort lid.
		Detached or damaged retort lid gasket, or not sealing due to entrapment of foreign matter.	Check the retort seal and reinstall or replace it as necessary. If there is any foreign matter got stuck, remove it.
		Deformed retort lid gasket, or not sealing due to improperly adjusted hook.	Check the retort seal and reinstall or replace it as necessary. If the problem persists, contact the Sakura Finetek Technical Support representative or local representative.
		The lead valve or diaphragm of the air pump is damaged.	Contact the Sakura Finetek Technical Support representative or local representative.
		The trap bottle is loose or trap bottle cap is damaged.	Contact the Sakura Finetek Technical Support representative or local representative.
		Damaged air tubing/fitting or loose fitting.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty solenoid valve SV3 or SV2.	Contact the Sakura Finetek Technical Support representative or local representative.
014	Fluid low. (Empty)	Reagent in the applicable reagent bottle, or paraffin in the paraffin container, is insufficient or empty.	Reagent in the pumping-in target reagent bottle, or paraffin in the paraffin container, is insufficient. If the reagent is low, add an appropriate amount of reagent. In the case of the paraffin station, check if the paraffin is molten.
		Leaking solution circuit tubing.	Contact the Sakura Finetek Technical Support representative or local representative.
		Abnormality is occurred in the air circuit and retort seal, etc.	Contact the Sakura Finetek Technical Support representative or local representative.
020	Retort pressure did not reach the set value within one minute after the rotary valve closed.	The retort lid cannot be sealed due to entrapment of foreign matter, or is not locked.	If there is any foreign matter got stuck, remove it. Or, lock the lid.
		Damaged lead valve or diaphragm of the air pump.	Contact the Sakura Finetek Technical Support representative or local representative.
		Leak in the air circuit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty solenoid valve SV3 or SV1.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty pressure sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Leak from the rotary valve.	Contact the Sakura Finetek Technical Support representative or local representative.

Error number	Message	Probable cause	Action
021	Retort pressure did not reach the set value after 3 attempts.	The retort lid is not locked, or not sealing due to entrapment of foreign matter	If there is any foreign matter got stuck, remove it. Or, lock the lid.
		Damaged lead valve or diaphragm of the air pump.	Contact the Sakura Finetek Technical Support representative or local representative.
		Leak in the air circuit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty solenoid valve SV3 or SV1.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty pressure sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Leak from the rotary valve.	Contact the Sakura Finetek Technical Support representative or local representative.
022	Pump-out was not completed within 3 minutes after the rotary valve opened.	The reagent bottle or flow tube is clogged by solid matter (paraffin, precipitated salt).	Contact the Sakura Finetek Technical Support representative or local representative.
		Clogged tubing in the air circuit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Detached reagent bottle (coupler).	Do not remove the bottle once processing is started.
023	Pump-out was not completed after 3 attempts.	The reagent bottle or flow tube is clogged by solid matter (paraffin, precipitated salt).	Contact the Sakura Finetek Technical Support representative or local representative.
		Clogged tubing in the air circuit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Detached reagent bottle (coupler).	Do not remove the bottle once processing is started.
024	The bottle is not connected or the tubing is clogged.	The reagent bottle or flow tube is clogged by solid matter (paraffin, precipitated salt).	Contact the Sakura Finetek Technical Support representative or local representative.
		Clogged tubing in the air circuit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Detached reagent bottle (coupler).	Do not remove the bottle once processing is started.
031	Oven temperature sensor error.	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Faulty temperature sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
032	Rotary valve temperature sensor error.	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Faulty temperature sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
033	Retort temperature sensor error.	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Faulty temperature sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
035	Failure of oven temperature control (temperature too low).	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Solid paraffin was introduced.	Turn off the power once, and then turn it back on.
		Heater or wiring to the heater was disconnected.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Error number	Message	Probable cause	Action
037	Failure of rotary valve temperature control (temperature too low).	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Heater or wiring to the heater was disconnected.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
039	Failure of retort temperature control (temperature too low).	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Heater or wiring to the heater was disconnected.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty SSR.	Contact the Sakura Finetek Technical Support representative or local representative.
040	Rotary valve positioning sensor error.	Faulty rotary valve position detection board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
041	The rotary valve failed to rotate properly.	Mis-stepped motor due to sticking of the rotary disk.	Contact the Sakura Finetek Technical Support representative or local representative.
		Disconnected motor circuit or faulty motor unit.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty rotary valve position detection board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
042	Retrying rotary valve operation.	Mis-stepped motor due to temporarily sticked rotary disk	Contact the Sakura Finetek Technical Support representative or local representative.
070	Air pump error.	Faulty air pump.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
080	Oven valve thermal fuse open.	Poor and peeled temperature sensor installation position or faulty temperature sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
081	Rotary valve thermal fuse open.	Poorly fixed temperature sensor and faulty sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
082	Retort thermal fuse open.	Poorly fixed temperature sensor and faulty sensor.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty SSR.	Contact the Sakura Finetek Technical Support representative or local representative.

Error number	Message	Probable cause	Action
084	Retort heating time-out.	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Heater or wiring to the heater was disconnected.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty SSR.	Contact the Sakura Finetek Technical Support representative or local representative.
085	Rotary valve heating time-out.	Effect of environmental temperature.	Let the instrument stand for a while at an operable temperature and then turn on the power.
		Heater or wiring to the heater was disconnected.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
086	Oven temperature exceeded 80°C.	Hot molten paraffin, etc., was introduced to the oven.	Do not put hot molten paraffin.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
087	Rotary valve temperature exceeded 80°C.	Hot liquid was introduced into the instrument.	Do not put hot liquid.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty heater driver board.	Contact the Sakura Finetek Technical Support representative or local representative.
088	Retort temperature exceeded 85°C.	Introduction of hot reagent and warm water.	Do not put hot liquid.
		Power restoration under special condition.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty SSR.	Contact the Sakura Finetek Technical Support representative or local representative.
090	Exhaust fan alarm.	Faulty fume fan or disconnected relay cable.	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
091	Cooling fan alarm.	Faulty cooling fan or disconnected relay cable	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
101	CF card not found.	CF is removed or half removed. Faulty CF	Contact the Sakura Finetek Technical Support representative or local representative.
		Faulty CPU board.	Contact the Sakura Finetek Technical Support representative or local representative.
110	Low battery.	Consumed battery.	Contact the Sakura Finetek Technical Support representative or local representative.

1. Troubleshooting

Error number	Message	Probable cause	Action
120 ~ 145	File system error.	No available space in the CF card.	Contact the Sakura Finetek Technical Support representative or local representative.
		Damaged CF card file or file format error.	Contact the Sakura Finetek Technical Support representative or local representative.
		A specified CF card is not used.	Contact the Sakura Finetek Technical Support representative or local representative.
150	WAV file read failure.	The CF file system is damaged and the specified file cannot be found.	Contact the Sakura Finetek Technical Support representative or local representative.
151	Sound file formatting error.	The CF file system is damaged and the file format is different from the one specified.	Contact the Sakura Finetek Technical Support representative or local representative.
160 ~ 199	File write error. File read error.	The specified file is not found in the CF card.	Contact the Sakura Finetek Technical Support representative or local representative.
		File in the CF card or USB flash drive is damaged, file format error, or write-protected file.	Contact the Sakura Finetek Technical Support representative or local representative.
		A specified CF card is not used.	Contact the Sakura Finetek Technical Support representative or local representative.
200	USB flash drive not found.	Removed in the middle. Or, the USB flash drive failed.	Do not remove the USB flash drive while it is being accessed. If the USB flash drive is faulty, replace it with a new one.
210 ~ 213	An error occurred while software update is in progress.	There is no software to be updated in the USB flash drive.	Contact the Sakura Finetek Technical Support representative or local representative.
		File in the CF card is damaged, file format error, or write-protected file.	Contact the Sakura Finetek Technical Support representative or local representative.
		A specified CF card is not used.	Contact the Sakura Finetek Technical Support representative or local representative.
250	A power outage has occurred. Processing has been aborted due to the possibility of the specimens drying.	Power outage continued for 8 minutes or longer.	Use an uninterruptible power supply (UPS).

3) Power Outage Recovery during Auto Operation

If the power is restored following an outage that occurred during auto operation, the processing resumes automatically. Note that if the power is turned off during processing, the instrument recognizes it as a power outage. The paraffin oven is not heated while the power is out. Accordingly, once the power is restored the instrument stops the processing and stands by for the time needed to melt the paraffin that has solidified due to the drop in temperature during the power outage. The processing will be stopped for a sufficient time that has been set to make sure the paraffin melts even under undesirable environmental conditions, which means that sometimes the processing may not start when the paraffin is molten. In this case, visually check the molten state of paraffin in the paraffin oven, and if it is considered molten, perform the paraffin melt check operation manually to start the processing. The same applies when the temperature dropped or a power outage occurred when paraffin was in the retort. Refer to the table blow for the stand-by times required for melting paraffin.

■ Stand-by Times Required for Melting the Paraffin in the Paraffin Oven

Stand-by Times after Drops in Paraffin Oven Temperature

Paraffin oven temperature	Stand-by time
Dropped by no more than 8°C from the preset temperature	0 minute
Dropped by no more than 10°C from the preset temperature	2 hours and 20 minutes
Dropped by no more than 12°C from the preset temperature	3 hours and 10 minutes
Dropped by no more than 14°C from the preset temperature	3 hours and 55 minutes
Dropped by no more than 16°C from the preset temperature	4 hours and 55 minutes
Dropped by no more than 18°C from the preset temperature	5 hours and 30 minutes
Dropped by no more than 19°C from the preset temperature	5 hours and 35 minutes
Dropped by more than 19°C from the preset temperature	12 hours and 30 minutes

Power Outage Durations and Stand-by Times

Power outage duration	Stand-by time
Within 30 minutes	0 minute
Within 1 hour	2 hours and 20 minutes
Within 2 hours	4 hours and 10 minutes
Within 5 hours	6 hours and 00 minute
Over 5 hours	12 hours and 30 minutes

■ Stand-by Times Required for Melting the Paraffin in the Retort

Stand-by Times after Drops in Retort Temperature

Retort temperature	Stand-by time
Dropped by no more than 3°C from the preset temperature	0 minute
Dropped by no more than 5°C from the preset temperature	2 hours and 30 minutes
Dropped by no more than 7°C from the preset temperature	2 hours and 55 minutes
Dropped by no more than 9°C from the preset temperature	3 hours and 15 minutes
Dropped by no more than 11°C from the preset temperature	3 hours and 35 minutes
Dropped by no more than 13°C from the preset temperature	4 hours and 00 minutes
Dropped by no more than 15°C from the preset temperature	4 hours and 30 minutes
Dropped by no more than 17°C from the preset temperature	5 hours and 10 minutes
Dropped by no more than 19°C from the preset temperature	5 hours and 40 minutes
Dropped by no more than 19°C from the preset temperature	11 hours and 00 minutes

Power Outage Durations and Stand-by Times

Power outage duration	Stand-by time
Within 7 minutes	0 minute
Within 30 minutes	2 hours and 30 minutes
Within 1 hour	3 hours and 00 minute
Within 2 hours	3 hours and 30 minutes
Within 5 hours	4 hours and 30 minute
Over 5 hours	11 hours and 00 minute

Caution! **The stand-by time varies depending on the work environment and various other factors.**

[1] Paraffin Melt check operation

1. Touch blinking above the paraffin station (Sta. 11 to Sta. 14) icons.
2. Check Paraffin window appears.
3. Open the paraffin oven door. In horizontal direction slowly draw out the paraffin container and confirm that the paraffin is molten in all of Sta. 11 to Sta. 14.
4. If the paraffin is molten, touch **Yes** in the Check Paraffin window that appears when the paraffin oven door is opened.

Note **If not, touch No. Melting will continue.**

5. The icon turns off and the instrument switches the paraffin state to molten.

1. Troubleshooting

4) Service Life

Service life: 8 years after manufacture/shipment

Condition: The instrument shall be used by observing the handling precautions specified in the Operating Manual or documents attached thereto, and inspected daily and maintained regularly according to the instructions for maintenance/inspection.
The key components listed below and replacement parts mentioned in the maintenance/inspection instructions shall be replaced as necessary according to the inspection results.
The table below lists the key components that are supplied as maintenance parts.

Key component name	Service life in years
Moving parts	8 years
Retort seal	6 months
Various boards	5 years
LCD	5 years
Power supply unit	5 years
Various detection sensors	5 years
Rotary valve	8 years
Air pump (excluding diaphragm)	8 years
Solenoid valve	8 years
Pressure safety valve	8 years
Heater	8 years

* The above service life of the instrument and service lives of key components in years are not guaranteed; instead, they are average periods calculated on the assumption that the aforementioned condition is met, and vary depending on the environment and method in/by which the instrument is used, etc.

5) Transportation

If the instrument is transported because it must be relocated or due to a problem, etc., disinfect/sterilize the instrument according to the instructions provided in the Operating Manual, and pack the instrument.
Pack the instrument by following the unpacking method **(p. 1-1)** in reverse.

2. Explanation of Terms and Index

Term (in alphabetical order)	Explanation	Reference page
Mix	The reagent in the retort is mixed with repeated pumped out/in.	**P. 5-8**
P/V	The retort is pressurized and vacuumed repeatedly.	**P. 5-8**
UPS	A spare power supply that supplies the power from the instrument to operate the battery in the event of power outage or other power failure.	**P. 1-18**
Warm-up Time	The retort is preheated for this time before cleaning.	**P. 3-1**
Warm Water Flush	Warm Water Flush is to wash away the precipitate build-up that forms in the tubing when neutral buffered formalin is used.	**P. 3-2**
Runs	A management method that can be set for managing solutions. A desired value between 1 and 99 can be set.	**P. 5-5**
Export Data	"Station configurations, solution name lists, tissue processing programs, retort cleaning programs, program name lists, tissue processing results, cleaning results, solution exchange results, instrument settings, solution usage statuses, parts usage statuses and error logs" are exported to the USB flash drive connected to the instrument.	
Cassettes	A management method that can be set for managing solutions. A desired number of cassettes can be set between 1 and 9,999.	**P. 5-5**
Activated carbon filter	This filter is used to adsorb gases generating inside the instrument.	**P. 1-10**
Drying Process	The interior of the retort is dried.	
Manager Password	A password needed to use the instrument in day-to-day operations.	**P. 1-21**
Management Method	A method by which to manage solution exchange. Four methods are available: "Runs/Days/Cassettes/NONE." Note that "Cassettes" cannot be set for cleaning solution stations.	**P. 5-5**
Specimen Protection	Operation to pump-in reagent to the retort when the instrument stops during tissue processing, to protect the specimens being processed from becoming dry.	
Experiment No.	Number assigned to identify each tissue processing.	**P. 2-7**
Automatic Transfer	Solution is automatically transferred to the subsequent solution stations one by one, within the same solution group.	**P. 4-1**
Endtime	Date/time the tissue processing ended.	**P. 6-3**
Predicted Endtime	Date/time the tissue processing is predicted to end. A predicted endtime is specified when a program is created or edited.	**P. 5-8**
Reset Solution Usage Information	To clear solution usage information.	**P. 4-2**
Cleaning	The following types of cleaning are performed: ・ Use xylene or alcohol to clean the retort of deposits of paraffin or solution. ・ Use warm water to flush the tubing of the instrument of precipitate build-ups. (Warm Water Flush)	**P. 3-1**
Total Mixing	The entire volume of solution in the retort is pumped out/in.	**P. 1-21**
Solution Configuration Setting	To set the details of each solution group.	**P. 5-3**
Immediate Start	To start tissue processing immediately.	**P. 2-7**
Delayed Start	A function to start tissue processing according to the predicted endtime.	**P. 2-7**
Delayed Processing	The instrument waits and starts tissue processing so that it will end at the predicted endtime.	**P. 2-10**
Days	A management method that can be set for managing solutions. A desired value between 1 and 99 days can be set.	**P. 5-5**
PUMP OUT	To drain solution from a retort to a solution station.	
PUMP IN	To fill solution from a solution station to a retort.	
User Password	A password used when permitted operations on the instrument are to be limited.	**P. 1-21**
Retort	A station where tissue processing is performed.	**P. 1-16**
Rotary Valve	A part that switches the path connecting a retort and each solution station.	
Log OFF	To disable screen operations.	**P. 1-21** **P. 1-24**
Log ON	To enable screen operations by entering a password.	**P. 1-21** **P. 1-24**

3. Certificate of Decontamination (Sample)

If you are returning any used medical device to Sakura Finetek Japan, please provide the following information to help prevent contamination of other devices, etc., or living environment at our facility and the workers who will be working on/handling your device. Fill out this Certificate of Decontamination and return it with the device. If the device is not accompanied by this certificate, we will not unpack or repair the instrument. If the returned medical device is deemed hazardous by Sakura Finetek, we will return the device to you immediately. The cost of shipment will be borne by you.

- Date: _____

- Institution name: _____

- Equipment information
  [Instrument name] [Model] [Serial number]

- Please answer the following questions regarding the usage status. (Circle where applicable. Use the Remarks field, if necessary.)

Question	Answer		Remarks
1. Has this device been used at a hospital where legally designated communicable diseases are treated?	Yes	No	
2. Has this device been used in a ward where patients of legally designated communicable diseases are staying?	Yes	No	
3. Has this device been used in a room where pathological work on infectious diseases is conducted?	Yes	No	
4. Has this device been used in a room where testing of infectious diseases is conducted?	Yes	No	
5. Has this device been used in a room where articles used in connection with infectious diseases are disposed of?	Yes	No	
6. Has this device been used in a room where research on special viruses is conducted?	Yes	No	
7. Has this device been used in a room where articles used in connection with special viruses are disposed of?	Yes	No	

- Please answer questions regarding disinfection.
  Whenever possible, please return the device after cleaning/disinfecting it using general disinfectant, primarily in areas that likely came in contact with tissues, operators, etc.
  Examples of general disinfectants: Disinfecting alcohol, 70% isopropanol, biguanide alcohol, benzalkonium chloride, Chlorhexidine

  1. Date of disinfection

  2. Method of disinfection

- Remarks