

Tissue-Tek[®] V.I.P.[™]

Ames Division, Miles Laboratories, Inc.
P.O. Box 70, Elkhart, Indiana 46515

Ames
Division
MILES

OPERATING MANUAL

Vacuum Infiltration Processor (Bench and Floor Models)

V.I.P. 1000

4617	100/115 Volt
4621	220/240 Volt

V.I.P. 2000

4618	100/115 Volt
4622	220/240 Volt

V.I.P. 3000

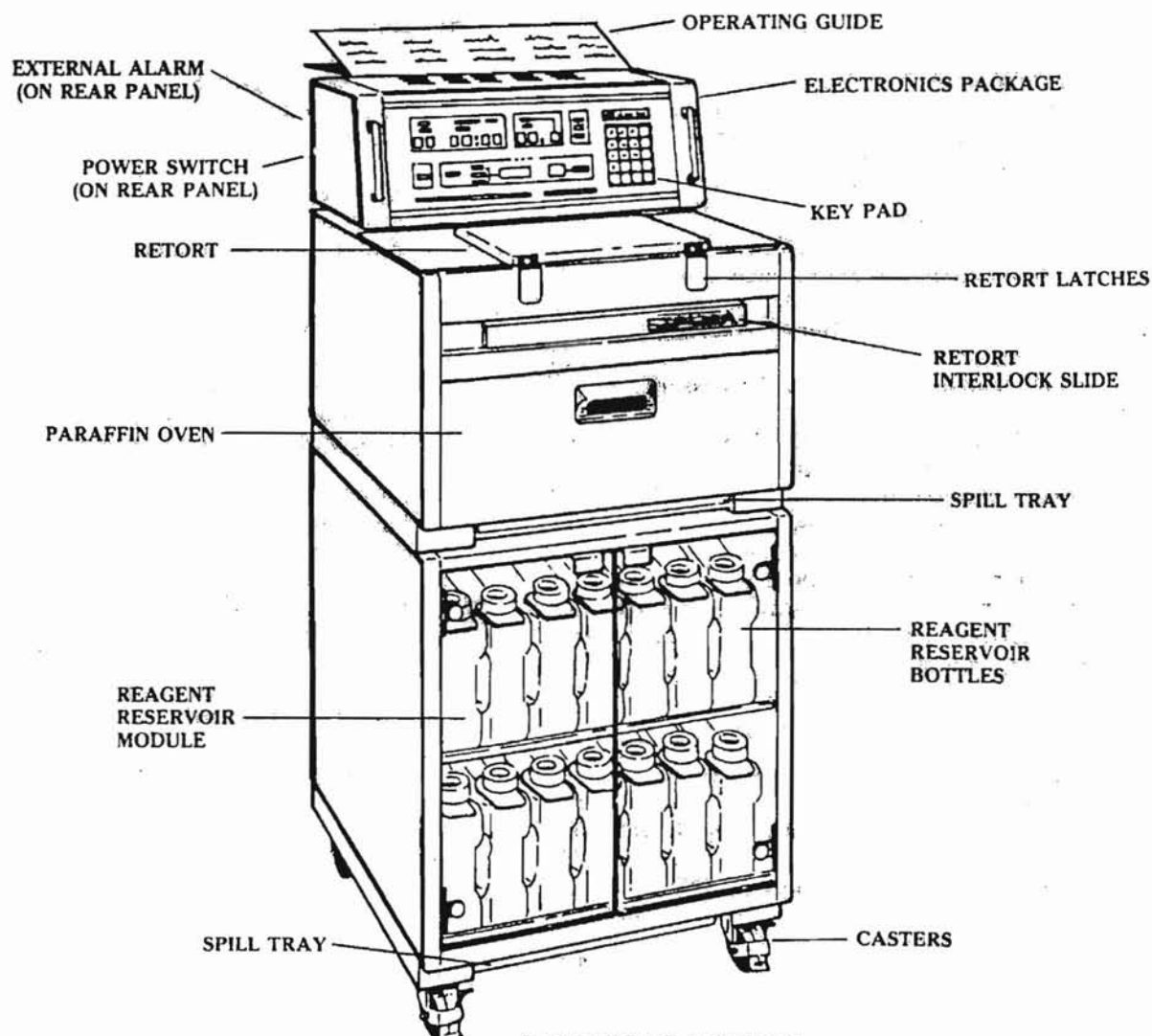
4619	100/115 Volt
4623	220/240 Volt

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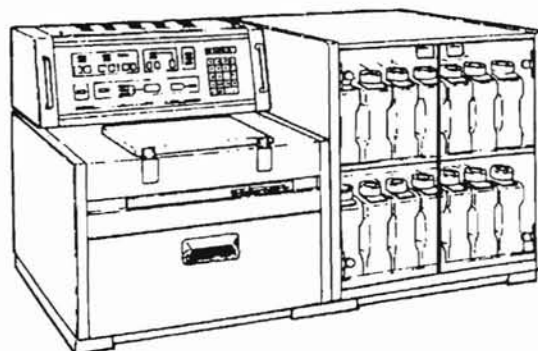
Table of Contents

Section	Page	Section	Page
1 GENERAL INTRODUCTION		4 SYSTEM ALARMS	
Component Identification and Function	1.1	Retort Unlock	4.1
Electronics Package Control Panel	1.2	Fluid Low	4.1
Key Pad Arrangement	1.4	Power Out	4.1
2 INSTALLATION		Standby	4.1
Installation Recommendations	2.1	Diagnose	4.2
Prior to Initial Operation Procedures	2.1	External Warning Connection	4.2
Instrument Capacity Chart	2.1		
Cautions to Observe Before Operating		5 TROUBLESHOOTING GUIDE	
Instrument	2.2	Replacement Parts	5.6
Time Guidelines for Initial Processing	2.3	Retort Lid Gasket Replacement	5.6
3 PROGRAMMING THE INSTRUMENT		Reservoir Cap Gasket Replacement	5.6
Input and Memory Capability	3.1	Activated Carbon Replacement	5.6
Programming Clock	3.1	Memory Battery Replacement	5.6
Programming the Processing Stations	3.2		
Setting the Process End Time	3.3	6 MINOR REPAIRS AND ADJUSTMENTS	
Additional Program Options	3.3	Fuse Replacement	6.1
Procedures Prior to Automatic Operation	3.4	Fuse Rating	6.1
Automatic Operation	3.4		
Cleaning Function	3.5	7 SPECIFICATIONS	
Recommendations for Efficient		Configuration and Size	7.2
Operations	3.5		
Paraffin Replacement	3.6	8 OPERATOR REPLACEABLE PARTS	
Replacement of Fume Control Filter		AND ACCESSORIES	8.1
Materials	3.6		
Placing Specimen Basket into the Retort	3.6	9 PRE-SERVICE CHECKLIST	9.1
Manual Operation	3.6		
Changing the Lowest Limit of Paraffin			
Temperature	3.7		
Cleaning and Inspection			
Recommendations	3.7		

TISSUE-TEK® V.I.P.™ VACUUM INFILTRATION PROCESSOR



VERTICAL MODEL



BENCH MODEL

SECTION 1

GENERAL INTRODUCTION

Description

The Tissue-Tek® V.I.P.™ Vacuum Infiltration Processor represents the state-of-the-art development in automatic tissue processors. Compact and self-contained, the instrument is available in both bench-top and floor model configurations. Completely microprocessor-controlled, the V.I.P. processor provides ten flexible programs for fixing, dehydrating, clearing and paraffin impregnating a wide variety of specimens, which could be human, animal or plant tissue.

The instrument is comprised of four major components: a) the retort, b) the paraffin oven, c) the reagent reservoir module, and d) the electronics package. The V.I.P. instrument processes all specimens in an enclosed chamber called the retort. Processing reagents from the reagent reservoir module and molten paraffin from the paraffin oven are sequentially moved in and out of the oven by means of pressure and vacuum. This system, in conjunction with the fume control filtering and ventilation system, provides an essentially fume-free environment while minimizing the exposure of the specimens to air.

The front panel electronics package contains all the operator controls. Using the easily accessible key pad, the operator may program such options as processing time for each station, reagent heat, the use of alternating Pressure/Vacuum, and end of processing time. Each option has sufficient latitude to encompass the most stringent specimen processing requirements. In addition, a full range of operating status and alarm indicators provides the user with immediate information on the instrument's function or possible operating problems.

Component Identification and Function

ELECTRONICS PACKAGE

Contains microcomputer control panel, and key pad used to control the instrument. See page 1.2 for control panel detail.

SELECT MAGNET -

Provides "key" access to allow operator to program electronics package, to initiate automatic start, and to select manual control.

KEY PAD

Provides "up front" access for program entries, deletions, and alterations. See page 1.4 for key pad detail.

POWER SWITCH

Located at the rear of the electronics package, the power switch provides electrical power to the instrument and illuminates the power indicator on the control panel.

RETORT

This is the specimen processing chamber of the V.I.P. processors. Specimens are placed inside the retort for processing.

RETORT LATCHES

Two adjustable latches hold retort lid securely in the closed position.

RETORT INTERLOCK SLIDE

Functions as a safeguard by preventing access to the retort latches during operation. When slide is in the open position instrument operation halts and retort unlock indicator is illuminated.

OPERATING GUIDE

A condensed description of programming and operating procedures.

REAGENT RESERVOIR BOTTLES

Fourteen graduated polyethylene bottles provide ten stations for processing solutions, two for cleaning reagents and two for fume control.

REAGENT RESERVOIR MODULE

Holds reagent bottles and allows easy access to all of these bottles through tinted swinging glass doors.

SPILL TRAY

Two spill trays catch any drips or spills from the oven or reservoir bottles.

CASTERS

Four easy-roll casters provide instrument mobility. Positive locks on front casters securely hold instrument for stationary use. (Floor Model Only)

PARAFFIN OVEN

Accurately maintains the preset temperature of the interchangeable paraffin containers.

ADJUSTABLE LEVELING FEET

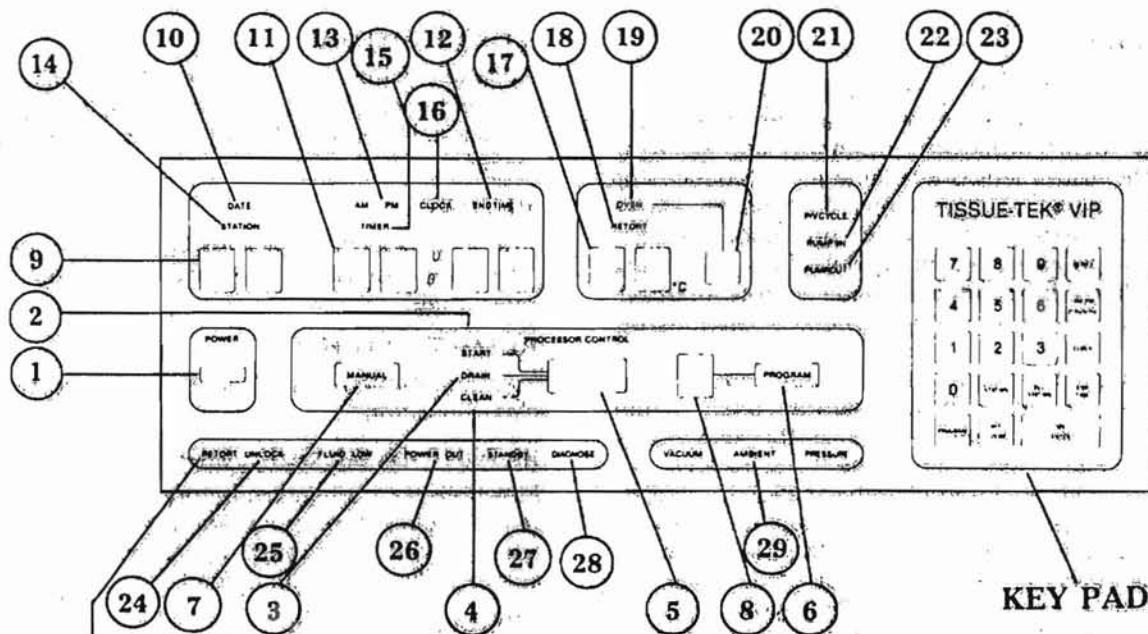
Six adjustable feet are provided to properly level the instrument on bench installation. The feet are provided with a non-skid coating. (Bench Model Only)

EXTERNAL ALARM OUTLET

Located at the rear of the electronics package, this is the receptacle where an external alarm can be connected.

ELECTRONICS PACKAGE

CONTROL PANEL



SYSTEM ALARM INDICATORS

Control Panel

(1) POWER INDICATOR

Illuminates when power switch on rear of electronics package is in ON position and instrument is plugged into proper power source. (Switch must be turned on 24 hours prior to initial instrument use, to allow adequate heating of all paraffin handling components.)

(2) START INDICATOR

Illuminated START indicator signals when instrument is ready for automatic operation. Depressing PROCESSOR CONTROL button (5) momentarily will cause instrument to begin automatic operation with delay mode. Depressing, and holding PROCESSOR CONTROL button (5) until audible signal ends, will cause instrument to begin automatic operation immediately.

(3) DRAIN INDICATOR

Illuminated DRAIN indicator signals that the programmed processing schedule is complete and the specimens are immersed in the last processing reagent. Depressing the PROCESSOR CONTROL button will return that solution to its appropriate reservoir.

(4) CLEAN INDICATOR

Illuminated CLEAN indicator signals that cleaning cycle can be started. Depressing PROCESSOR CONTROL button starts cleaning cycle.

(5) PROCESSOR CONTROL BUTTON

This button allows the operator to:

1. Start automatic operation (with or without delay).
2. Drain last processing reagent from retort to its appropriate reservoir container.
3. Clean the retort.

The Processor Control button is only active when the START (2), DRAIN (3) or CLEAN (4) indicators are illuminated.

(6) PROGRAM SWITCH

Placement of the select magnet over the PROGRAM SWITCH activates the Key Pad and allows the operator to select programs, input programs, end-time, time of day and to make diagnostic determinations.

(7) MANUAL SWITCH

Placement of the select magnet over the MANUAL SWITCH activates the Key Pad and allows the operator to input manual command codes.

(8) PROGRAM NUMBER DISPLAY

This display indicates the number of the automatic program selected for either programming or processing. Ten programs are available, and are numbered 0 through 9.

(9) **DATE AND STATION DISPLAY**

When DATE indicator (10) is illuminated, windows will display the number of days, hours and minutes remaining before the selected program will start (Delay Time). When STATION indicator (14) is illuminated, windows display the current processing station in the automatic cycle.

(10) **DATE INDICATOR**

When DATE indicator is flashing the instrument is requesting that the end day (finish date) of the program be set (i.e.: today is 00, tomorrow 01, the day after tomorrow 02, etc.). After the finish date of the program has been set into the instrument, the day will be shown in the windows, and indicator will be illuminated constantly.

(11) **TIMER, CLOCK AND END TIME DISPLAY**

These four multi-function window displays relate the actual time of day, processing time of each station, delay time and alarm codes to the operator. During a time display the left two windows display hours and the right two windows display minutes.

□ □ : □ □
hours minutes

Alarm codes are displayed as:

□ □ : □ □

(** Two numerals will be displayed depending on error code)

(12) **END TIME INDICATOR**

A flashing END TIME indicator is a request from the instrument that the end time should be entered into the memory. When the end time has been entered, the END TIME indicator will remain illuminated, and the end time will appear in the windows of the END TIME display (11). (Only one END TIME may be entered.)

(13) **CLOCK INDICATOR**

A flashing CLOCK indicator is a request from the instrument that the current time should be entered. Either AM or PM can be selected. When the current time has been entered, it will display in the four windows of CLOCK display (11).

(14) **STATION INDICATOR**

A flashing STATION indicator is a request from the instrument that the number of the station of the selected program should be entered. When the number of the station has been entered via the key pad, the STATION indicator will remain illuminated, and the process station number will appear in the STATION windows. The station number will advance, as the instrument progresses to the next station through process execution, or use of the VERIFY key. At any given moment during automatic operation, the operator can determine the current station in progress by observing the numbers in the STATION windows.

(15) **TIMER INDICATOR**

A flashing TIMER indicator is a request from the instrument that the process time of the station should be entered. When the process time has been entered, the TIMER indicator will remain illuminated.

(16) **COLON**

A flashing COLON indicates that the clock is operating or that the timer is counting down.

(17) **TEMPERATURE DISPLAY OF RETORT OR OVEN**

Retort temperature, in °C, is displayed in windows, when RETORT indicator is illuminated. Depressing temperature display select button (20) will cause oven temperature, in °C, to be displayed in windows, and OVEN indicator to be illuminated. When the temperature display select button is released, the retort temperature will reappear in temperature display windows, and RETORT indicator will illuminate.

(18) **RETORT INDICATOR**

A flashing RETORT indicator signals a request from the instrument that the station processing temperature should be entered. When temperature has been entered, RETORT indicator will remain and requested retort temperature, in °C, will be displayed in RETORT temperature display windows.

(19) **OVEN INDICATOR**

Illuminates while temperature display select button (20) is depressed and oven temperature, in °C, is displayed in temperature display windows (17).

(20) **TEMPERATURE DISPLAY SELECT BUTTON**

Provides option of viewing oven temperature by depressing select button.

(21) **P/V CYCLE INDICATOR**

Flashing P/V cycle indicator signals that P/V cycle can be set. Illuminated P/V cycle indicator signals that P/V cycle is on, and that retort will be subjected to alternating pressure and vacuum.

(22) **PUMP IN INDICATOR**

Illuminated PUMP IN indicator signals that retort is filling. Indicator darkens when essentially all of the fluid has been drawn into retort.

(23) **PUMP OUT INDICATOR**

Illuminated PUMP OUT indicator signals that fluid contents of retort are being evacuated. Indicator darkens when fluid contents are fully evacuated.

(24) **RETORT UNLOCK INDICATOR**

Flashing RETORT UNLOCK indicator signals that retort slide is not in fully-locked position. Suspends instrument operation until flashing indicator is turned off by moving interlock slide fully to the right.

(25) **FLUID LOW INDICATOR**

Flashing FLUID LOW indicator signals that no solution, or an insufficient amount of solution, has been drawn into the retort. Refer to System Alarms section for complete details.

(26) **POWER OUT INDICATOR**

Flashing POWER OUT indicator signals that instrument has experienced a loss of electrical power, but that electrical power has been re-established. Immediately check clock and reset to correct time. Refer to System Alarms section for complete details.

(27) **STANDBY INDICATOR**

Flashing STANDBY indicator signals that instrument is in temporary operational hold, to allow uniform heating of the paraffin handling system. Refer to System Alarms section for complete details.

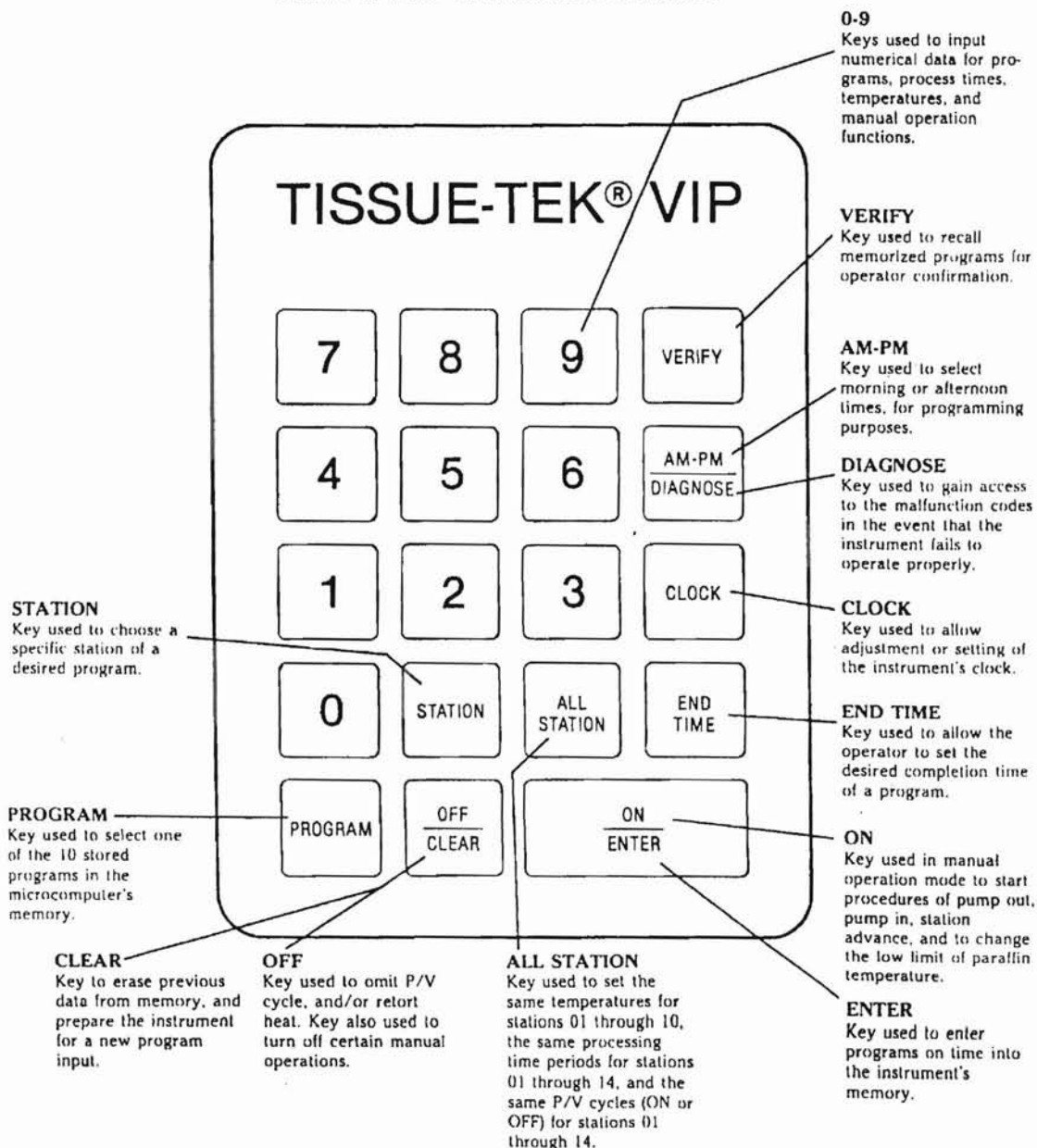
(28) **DIAGNOSE INDICATOR**

Flashing DIAGNOSE indicator signals that a problem, or problems, prevent further instrument operations. Refer to System Alarms section for complete details.

(29) **PRESSURE, AMBIENT AND VACUUM INDICATOR**

An illuminated PRESSURE indicator display indicates that the pressure in the retort has reached operating requirements. The AMBIENT display indicates that the retort is at atmospheric pressure. The VACUUM display indicates that the vacuum in the retort has reached operating requirements.

KEY PAD ARRANGEMENT



Key Pad Descriptions

PROGRAM

Key used to select one of the 10 stored programs in the microcomputer's memory.

STATION

Key used to choose a specific station of a desired program.

OFF

Key used to omit P/V cycle, and/or retort heat. Key also used to turn off certain manual operations.

CLEAR

Key to erase previous data from memory, and prepare the instrument for a new program input.

0-9

Keys used to input numerical data for programs, process times, temperatures, and manual operation functions.

VERIFY

Key used to recall memorized programs for operator confirmation.

AM-PM

Key used to select morning or afternoon times, for programming purposes.

DIAGNOSE

Key used to gain access to the malfunction codes in the event that the instrument fails to operate properly.

CLOCK

Key used to allow adjustment or setting of the instrument's clock.

END TIME

Key used to allow the operator to set the desired completion time of a program.

ON

Key used in manual operation mode to start procedures of pump out, pump in, station advance, and to change the low limit of paraffin temperature.

ENTER

Key used to enter programs on time into the instrument's memory.

ALL STATION

Key used to set the same temperatures for stations 01 through 10, the same processing time periods for stations 01 through 14* and the same P/V cycles (ON or OFF) for stations 01 through 14*.

* 13 for VIP-3000

SECTION 2

INSTALLATION

Installation Recommendations

1. Install the instrument in a location away from the direct rays of the sun, and away from any open flame source.
2. Select a location of minimum humidity.
3. Ideally select an area where the surface is level.
4. If the instrument is installed in the horizontal bench configuration, be certain that each leveling foot makes contact with table top. Then, use a spirit level to level the instrument.
5. If the instrument is installed with floor standing vertical configuration, securely lock casters to preclude instrument movement.
6. Install the instrument in a well-ventilated, temperature-regulated area with a maximum temperature range of 10°-35°C (50°-95°F).
7. Proper ventilation is vital to efficient instrument operation. Install in a location with a minimum of 6 inches of clearance above, at each side, and at the rear of the instrument.
8. Install the instrument in an electrical noise-free environment, away from refrigerators, ultrasonic cleaners, and microwave ovens.
9. The OPERATING GUIDE plate should be fixed on the top surface.

CAUTION

Nothing other than the OPERATING GUIDE plate should be placed on the top surface.

Fluids, such as reagents and water, should not be spilled over the top surface, since instrument failures may occur.

CAUTION

Make certain the power switch at the rear of the control box is OFF, before plugging the power cord into the correct electrical source.

Check rear panel labels to determine voltage required.

10. Plug the instrument power cord into a correct, exclusive grounded, electrical power source.
11. Power source must be a clean, noise free, dedicated line for reliable operation.

Prior to Initial Operation

1. Install transparent operating guide holder. Use the two screws provided to attach the operating guide holder to the top of the electronics package. Fill out the program record card, recording types of solution, times, temperature, and whether P/V is used, for each program to be stored in the memory.

2. Turn the power switch on.
Turn the power switch ON, at the rear of the electronics package.

NOTE

The instrument will NOT begin automatic operation until approximately 24 hours have elapsed after power switch is turned on.

3. Turn the memory battery switch ON.
Remove the battery cover at the rear of the electronics package, and push the toggle switch to the "ON" position.

NOTE

Battery life under normal operating condition is about 3 years. During a power lost situation (no external power source) the battery can sustain memory for approximately 1 month.

4. Installation of the two spill trays.
The two spill trays are identical. Install one in the rails directly under the oven, and the other in the rails under the solution reservoir compartment.

CAUTION

The spill trays may contain flammable liquid. Handle with care.

5. Fill ten solution reservoirs.
Remove the ten solution reservoirs from the reservoir compartment. Fill each with solution to the proper graduation (See table A) by removal of the fill cap on the top of the reservoir.

IMPORTANT NOTE

The only reagents that can be used in this instrument are:

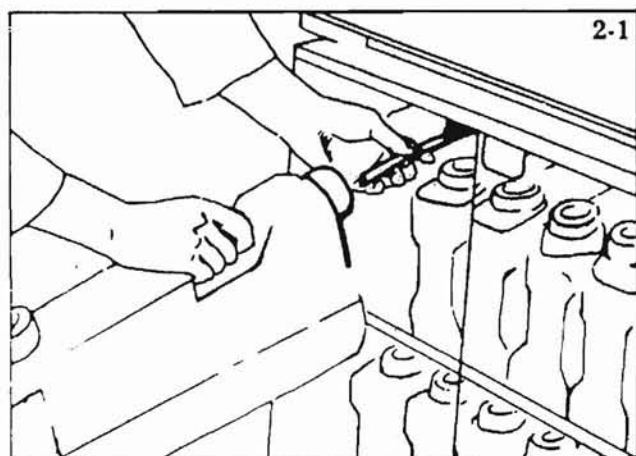
Fixatives	1. Formalin up to 20%
	2. Alcoholic formalin
Dehydrating	1. Ethyl alcohol
Reagent	2. Isopropyl alcohol
Clearing Reagent	1. Xylene
	2. Toluene
	3. Benzene
Infiltrating Reagent	1. Paraffin

TABLE A

CONTAINER	MODEL		
	V.I.P. TM 1000	V.I.P. TM 2000	V.I.P. TM 3000
Retort Capacity*	100	200	300
Solution Volume (liters)	2	2.8	3.8
Paraffin Volume (liters)	2	2.8	3.8
Cleaning Volume (liters)	2	2.8	3.8
Water Filter (liters)	2	2	3
Activated Carbon (Kilograms)	1.0	1.0	1.0

* Approximate capacity using Tissue-Tek® II Process/Embedding Cassettes of Tissue-Tek® III Uni-Cassettes™.

6. Once each reservoir is filled, replace the cap and tighten securely. Care should be utilized to prevent cross threading. Return the reservoir to proper location in the reservoir compartment by inserting the transfer tube through the cap at the rear of the reservoir. Once in place the reservoir bottle should be firmly pushed back against the rear of the reservoir compartment to seal the fume control system of the instrument.

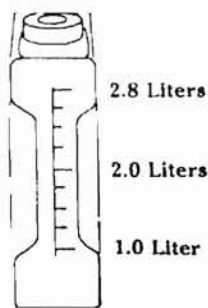


NOTE

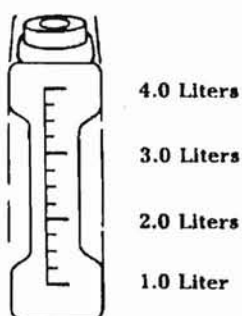
An improperly affixed cap or an improperly inserted tube can affect instrument operation and fume control.

7. Cleaning and fume treatment reservoir. Fill station 15 and 16 bottles and the Water Filter bottle according to data in TABLE A.

VIP 1000/2000



VIP 3000



Bottle graduations are marked with horizontal lines corresponding to volume levels of 1.0 Liter, 2.0 Liters and 2.8 Liters.

NOTE

The bottom of the activated carbon reservoir has a perforated area, to permit the venting to atmosphere of treated air. DO NOT ATTEMPT TO FILL THE ACTIVATED CARBON RESERVOIR WITH A LIQUID.

Using a funnel, pour 1.0 kg of Tissue-Tek® activated carbon (Miles code no. 4663) into the activated carbon reservoir. Shake the reservoir to evenly distribute contents.

NOTE

Finely powdered activated carbon should not be used. Fume control will be adversely affected.

After all reservoirs are filled and properly positioned, carefully close doors of the reservoir compartment.

8. Fill and position paraffin container. Remove the four interchangeable paraffin containers from the oven. Fill each to the proper level as indicated in Table A, with molten paraffin suitable for tissue processing.

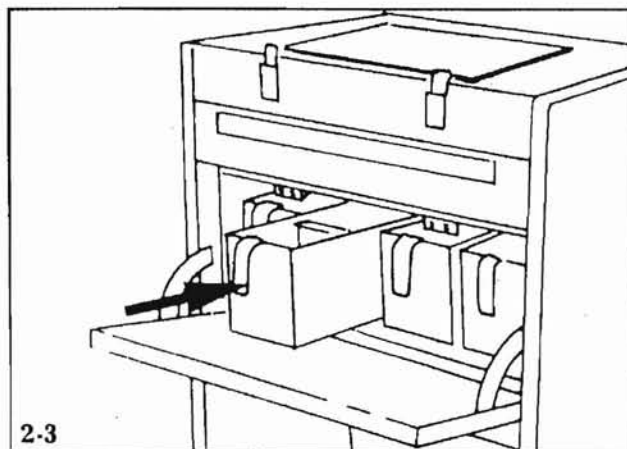
CAUTION

Exercise care when filling paraffin container. Molten paraffin is hot and can cause burns.

CAUTION

Do not overfill paraffin container or use paraffin with a melting point higher than 70°C.

Individually position the containers in the oven, making certain that the connector on the paraffin container mates properly with the transfer tube located at the rear of the oven.



NOTE

VIP-3000 has three paraffin containers

Cautions to Observe before Operating Instrument

1. CHECK the contents level of each reservoir to ensure the specified volume. Overfilling of reservoirs may cause a DIAGNOSE indication, and a subsequent halt in instrument operation.

2. CHECK the screw caps of each reservoir to ensure tightness. Make certain that transfer tubes are properly inserted. Assure that all reservoirs are properly seated. Imperfect connections, or an improperly-seated reservoir, can cause a leak in the fume treatment system.
3. CHECK the paraffin containers for proper fill levels. Use only paraffin with the same melting point, not exceeding 70°C. Use molten paraffin only, and DO NOT overfill paraffin containers. Assure that all containers are properly seated. Imperfect connections or an improperly-seated reservoir can cause a FLUID LOW indication and a halt in instrument operation.
4. NEVER open the retort lid if the VACUUM or PRESSURE indicators are illuminated. Only open the retort lid when the AMBIENT indicator is illuminated.
5. NEVER obstruct the ventilation louvres in the top of the control box. This area must be kept clear for proper ventilation.
6. NEVER use an organic solvent to clean instrument exterior areas. The control panel, plastic, and painted parts should be wiped with a cloth moistened with mineral oil.
7. ALWAYS return the select magnet to the place designated, so that all instrument operators will have ready access. (There is a magnet catcher on the bottom of the back side of the operating guide holder.)

Time Guideline for Initial Processing (Routine Hospital Surgical Specimens)

Processing cycles and requirements may vary from institution to institution and only through experience and experimentation will an operator determine the appropriate reagents and time cycles for their laboratory. Therefore, the following is presented only as a guideline for initial processing for routine hospital surgical specimens. Changes in time, reagent, reagent concentration, use of heat or the P/V cycle may be necessary for optimum processing in your laboratory.

Station	Reagent	Time	Heat (°C)	PV Cycle
1	10% Neutral Buffered Formalin	2 hours	40	ON
2	10% Neutral Buffered Formalin	2 hours	40	ON
3	70% Alcohol	30 min.	40	ON
4	80% Alcohol	30 min.	40	ON
5	95% Alcohol	45 min.	40	ON
6	95% Alcohol	45 min.	40	ON
7	100% Alcohol	45 min.	40	ON
8	100% Alcohol	45 min.	40	ON
9	Xylene	45 min.	40	ON
10	Xylene	45 min.	40	ON
11	Paraffin	30 min.	60	ON
12	Paraffin	30 min.	60	ON
13	Paraffin	30 min.	60	ON
14*	Paraffin	30 min.	60	ON

* Station 14 applicable to VIP 1000/2000 units.

SECTION 3

PROGRAMMING THE INSTRUMENT

Input and Memory Capability

The instrument can accept and store ten complete processing programs (0 through 9), with all program inputs being made through the Key Pad. Memory capabilities include the storage of station time periods, report temperatures, pressure/vacuum requirements, and one program end time for all ten programs.

Programming Clock

Function displays will either be flashing or illuminated.

FLASHING—indicates that the instrument is requesting a keyed-in response from the operator.

ILLUMINATED—indicates that the instrument has accepted and memorized the keyed-in command.

1. Set the instrument in the programming mode by placing the select magnet on the PROGRAM switch. The TIMER indicator will begin FLASHING.
2. Press the CLOCK key. The CLOCK indicator will be illuminated and either the AM or PM indicator will flash. If the correct indicator is flashing, press the ENTER key.
3. To change the flashing indicator from AM to PM or vice-versa, press the AM-PM key. The flashing AM/PM indicator will extinguish, and will be illuminated. The CLOCK indicator will be flashing.

NOTE

Time input entries during the period 12:00 through 12:59, either AM or PM, will NOT be accepted by the instrument if keyed-in, in that manner. The instrument will accept 12:00 when keyed-in as 00:00, and 12:59 when keyed-in as 00:59.

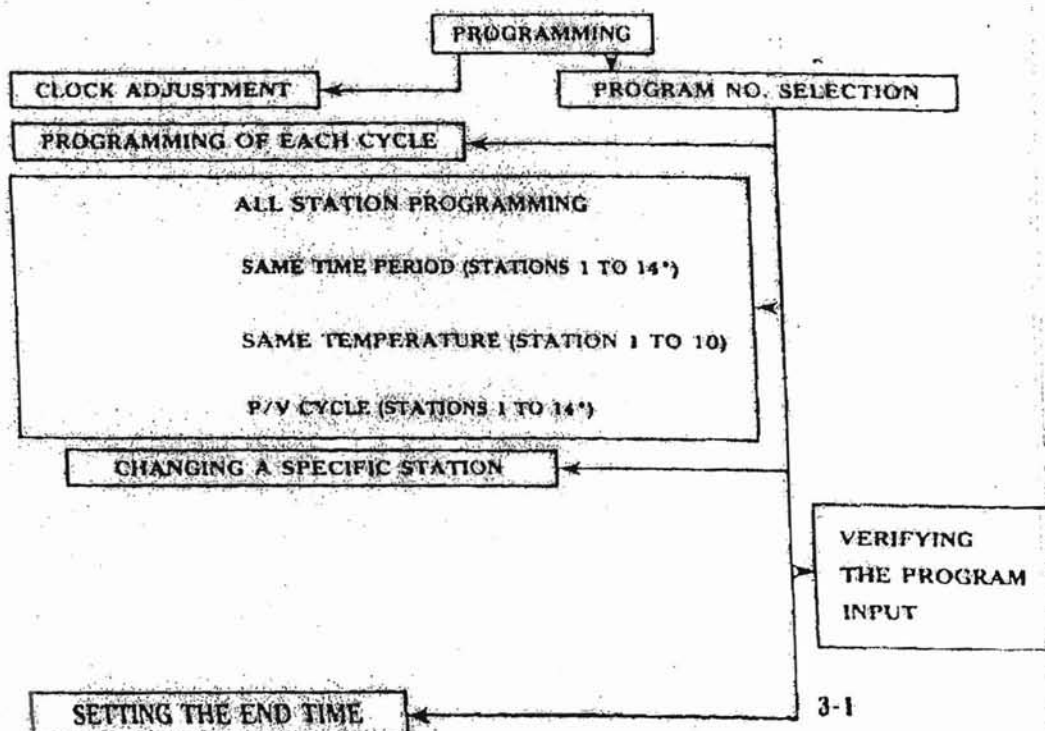
4. Check an accurate time source; then key the current time into the instrument.
5. When the current time is keyed into the instrument, press the ENTER key. The TIMER windows will display the current time lighted, and the colon will flash. The clock has started, and will continue to display the correct time.

NOTE

If the operator attempts to key-in a time in excess of 11 hours and 59 minutes, an audible error code (Beep, Beep) will be heard, and the instrument will refuse to accept the command.

6. Remove the select magnet from the PROGRAM position. The timer is now fully operational. As previously stated, the clock has started, and will continue to display the correct time.

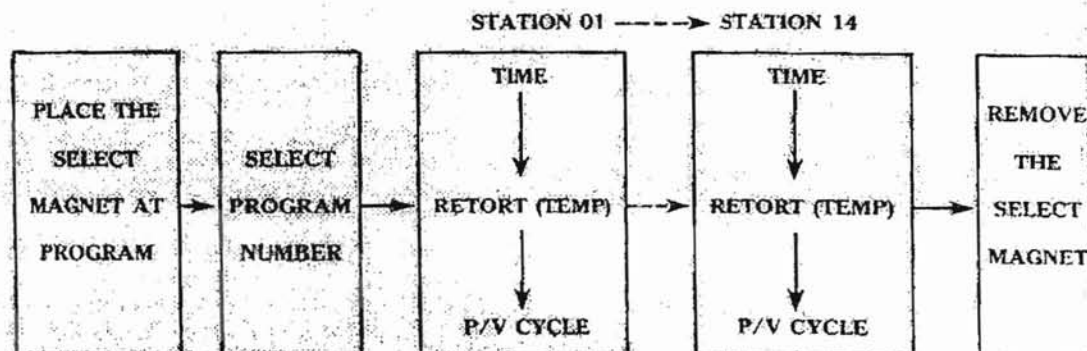
Outline Of Program Input



* Station 14 applicable to VIP 1000/2000 units.

Programming the Processing Stations

Outline of Basic Method



3-2

1. Place the select magnet at the PROGRAM location on front panel.
2. Select the program number by pressing the program key. Remember - 0 is the lowest program number available. Station 01 will appear in the STATION display windows, and TIMER will flash.

NOTE

The maximum time which can be keyed-in for any time parameter is 99 hours, 59 minutes.

3. Key-in the processing time, by sequentially pressing the numeral keys. The numerals, as pressed, will appear in the TIMER window and will advance from right to left as entered. (See Section 1, pages 1.2 and 1.3, for timer display.)

NOTE

If the operator has inadvertently keyed-in misinformation, or wishes to delete a processing station, press the CLEAR key.

Zero time programmed into any station will cause that station to be bypassed with one exception: Zero time in station 1 will not allow station 1 to be bypassed in the delayed start mode.

CAUTION

If paraffin infiltration is required, **DO NOT BYPASS** the last paraffin station.

4. Press ENTER, to have the processing time for station 01 entered into the instrument's memory.

NOTE

- A. Processing temperatures available for stations 01 through 10 are from 35°C to 50°C.
- B. The paraffin stations have a temperature range from 55°C to 70°C. This range, however, can be lowered to 45°C by following the procedure on page 3.7.

- C. If an attempt is made to key-in a temperature which is not within the ranges outlined above, the temperature display will flash, and an audible warning (Beep, Beep) will be heard. Then, simply key-in the proper temperature, according to the temperature range.

5. RETORT indicator will flash. Key-in the processing temperature, by sequentially pressing the numeral keys. The numerals, as pressed, will appear in the RETORT temperature display windows.
6. Press ENTER, to have the retort temperature for station 01 entered into the instrument's memory.

NOTE

If heating is not required, press the CLEAR key.

7. P/V indicator will flash. Enter the P/V cycle by pressing the ENTER key.

NOTE

If P/V cycle is not desired, press the CLEAR key.

8. Pressing the ENTER key or the CLEAR key will cause the computer to advance the instrument to station 02, and 02 will appear in the STATION windows.

You have now completed all of the key-in procedures to completely program station 01 of program 0. Continue keying-in all necessary commands for subsequent processing stations 02 through 10 of program 0.

NOTE

The paraffin stations are preset to a temperature of 60°C. However, the temperature range of 55°C through 70°C is available. If paraffins with a melting temperature down to 45° are being used, refer to page 3.7 for procedures required to lower the paraffin oven's temperature range down to 45°.

9. Program the paraffin stations (stations 11-14) individually, by keying-in the time for each station, the temperature, and the P/V requirements. Press the ENTER key after entering time, temperature, and P/V for each station, so that the commands are entered into the memory.

NOTE

The retort temperature programmed for station 11 will be automatically programmed for the remaining paraffin stations.

10. The input for program 0 is now complete.
11. Verify the program just keyed-in by pressing the VERIFY key. Press the VERIFY key for each station advance. All the information concerning the program will be displayed sequentially for each of the fourteen stations.

NOTE

To input data for programs 1 through 9, follow steps as outlined for program 0, after selecting the desired program number.

Setting the Process END Time

THE INSTRUMENT AUTOMATICALLY CALCULATES THE DELAYED STARTING TIME REQUIRED TO COMPLETE THE PROCESSING PROGRAM AT THE OPERATOR DETERMINED COMPLETION TIME.

The operator has the option of determining the process end time. This allows the opportunity of running a complete processing program during the night, and having the program conclude at a predetermined completion time the following morning. It is important to realize that the program you selected MUST have the ability to complete all processing stations before the time selected as a process end time. That is, the V.I.P. processor cannot complete a fourteen-hour process program if the set completion time is less than fourteen hours later than the actual START time. The V.I.P. processor will not accept this data input and an alarm will sound.

To program the process end time:

1. Place select magnet over program switch.
2. Press the END TIME key. The END TIME indicator and the AM or PM indicator will be illuminated, and the DATE indicator will be flashing.
3. Press the desired end time data (day) on the keypad.

NOTE

Date 00 is today
Date 01 is tomorrow
Date 02 is the day after tomorrow
Date 03 is 3 days from today
Date 04 is 4 days from today
Date 99 is 99 days from today

The desired date will appear in the Date display window.

4. Press the ENTER key to place the date into the V.I.P. processor's memory. The DATE indicator will illuminate and either the AM or PM indicator

will be flashing. If the desired AM or PM indicator is flashing for the desired end time, press the ENTER key. If the wrong indicator is flashing it may be changed by pressing the AM/PM key on the keypad.

Pressing the ENTER key or the AM/PM key will cause the indicator to illuminate and the END TIME indicator to flash.

5. The flashing END TIME indicator signals that the desired end time, hours and minutes, may be entered by the digital keys on the keypad. Hours should be entered first followed by minutes. Once the proper time has been entered press the ENTER key. The instrument will automatically calculate the delay time in days, hours and minutes and display the delay time in the date and time windows.

NOTE

It is always a good practice to look at the windows to verify that the appropriate end time has been displayed.

6. Press the ENTER key. The AM indicator and the END TIME indicator will extinguish. Check the TIMER and STATION windows, and note that the delay time in days, hours and minutes will be indicated.
7. If the process end time is incorrect, then **E n : d** will flash in the TIMER display. The total processing time for the program being used should be compared to the available processing time determined by the end time chosen.
8. Choose the proper end time and repeat steps 2 through 6.

Additional Program Options

The operator has the option of entering processing time, temperature and the use of the P/V cycle for each individual station as previously described in the Instrument Programming portion of this manual. There are, however, other options for entering this data into the instrument's memory which may reduce the time required for programming.

These options include:

Selecting the same processing time for all stations, 1 through 14.*

Selecting the same temperature for stations 1 through 10.

Selecting P/V cycle for all stations.

Selecting a specific station of a program.

To select the same processing time for all stations:

1. Place select magnet over program switch. The TIMER indicator begins to flash.
2. Press the ALL STATION key. AL will appear in the STATION windows.
3. Key-in the length of time desired; then press the ENTER key.

* Station 14 applicable to VIP 1000/2000 units.

To select the same temperature for stations 1 through 10 with the RETORT indicator flashing:

1. Press the ALL STATION key. AL will appear in the STATION windows.
2. Key-in the desired temperature then press the ENTER key.

To select P/V cycle for all stations with the P/V cycle indicator flashing:

1. Press the ALL STATION key. AL will appear in the station windows.
2. Press the ENTER key.

To select a specific station of a program:

The operator may select any of the stations from a program to display in the station windows for entries, deletions and alterations.

1. Press STATION key.
2. Key in desired station - 01, 02...etc.
3. Press the ENTER key.

Procedures Prior to Automatic Operation

1. Check the clock for current time.
2. Place the select magnet at the PROGRAM position.
3. Press the PROGRAM key for the program desired. Observe the STATION and TIMER windows. The STATION windows will indicate 01 and, simultaneously, the processing time for station 01 will appear in the TIMER windows, and the retort temperature in station 01, if programmed, will appear in the retort temperature windows and if programmed, the P/V indicator will illuminate. Press the VERIFY key to display each subsequent station. The instrument will advance through all stations, and sequentially display all programmed information.
4. Make certain that no alarm indicators at the lower left of the control panel are illuminated. If illuminated, an instrument malfunction has been detected. The malfunction must be corrected before the processing procedure can be started.
5. Make certain that the paraffin in all four containers is melted. The use of molten paraffin to refill the paraffin containers is highly recommended.
6. Make certain that all reservoirs contain the proper solutions, and that all solutions are at their proper levels.
7. Make certain that there is no solution in the retort. If solution remains, the DRAIN indicator will be illuminated. Correct the condition by pressing the PROCESSOR CONTROL button to drain the retort.

CAUTION

The retort may contain flammable liquids. Keep open flames and ignition sources away.

Automatic Operation

1. Place select magnet at the PROGRAM position; then remove magnet. The START indicator, to the left of the PROCESSOR CONTROL button,

will illuminate. Press the PROCESSOR CONTROL button to start operation.

NOTE

Pressing, then releasing, the PROCESSOR CONTROL button will start instrument function in a delay mode. Pressing and holding the PROCESSOR CONTROL button until the audible (Bee---p) stops will start instrument function in the instantaneous mode.

If the delay start mode is selected, reagent from station 01 will be drawn into the retort and the number of days and hours until start of processing will be indicated at the display windows and the count down will start.

If the immediate start mode is selected, reagent from the first station with programmed time will be drawn into the retort and the STATION display window will indicate the station number and the programmed time for that station will appear in the TIMER display window and will begin to count down.

NOTE

The processing cycle can be interrupted by moving the retort interlock slide to the left. Moving the retort interlock slide to the right will reinstate the processing function.

NOTE

Do not unlock the retort slide during PUMP IN or PUMP OUT cycles.

2. If you wish to change the program during processing follow this procedure:

During delay (DATE and TIMER illuminated):

- a. Place the select magnet at the PROGRAM position
- b. Reprogram the instrument. See page 3.1 for programming procedures
- c. Remove the select magnet; START illuminates.
- d. Press the PROCESSOR CONTROL button.

During processing (STATION and TIMER illuminated):

- a. Stop operation by moving the retort interlock slide to the left.
- b. Place the select magnet at the PROGRAM position.
- c. Reprogram the instrument. See page 3.1 for programming procedures.
- d. Remove the select magnet.
- e. Move the retort interlock slide to the right.

3. If you wish to exit a processing cycle after the automatic operation has started follow this procedure:

- a. Move the retort interlock slide to the left.
- b. Attach the select magnet to the MANUAL position and move the retort interlock slide to the right.
- c. Remove the select magnet.

- d. If the retort is filled with fluid, DRAIN will illuminate; press the processor control button to drain the retort.

NOTE

If the program is exited in Station 1 during the delay or processing mode, a DRAIN indicator *will not* be given. The fluid in the retort may be returned to the Station 1 solution container by using a manual pump-out (see Section 3.6).

4. When the processing program has ended, the last station will remain illuminated in the STATION windows, and 00:00 will be flashing in the timer windows. The DRAIN indicator to the left of the PROCESSING CONTROL button, will be illuminated. In addition, an audible (Bee—p) will sound for 30 seconds.
5. Press the PROCESSOR CONTROL button. The DRAIN indicator, to the left of the PROCESSOR CONTROL button will be illuminated, and the paraffin in the retort will be pumped out.
6. When the DRAIN cycle is completed, the DRAIN indicator will extinguish and the CLEAN indicator will illuminate.
7. Slide the retort interlock to the left. Release both retort latches, and open the retort lid. Use the carrier handle to remove all specimen baskets from the retort.
8. Close the retort lid. Secure both retort latches; then move the retort interlock slide to the right.
9. Open the retort lid and use the plastic scraper to remove any paraffin adhering to the retort lid. The scraper, carrier handle and specimen baskets may be cleaned at this time, by placing them into the retort.

NOTE

Place at least one specimen basket and lid into the retort during the clean cycle.

10. Close the retort lid, latch both retort latches, and slide the retort interlock to the right.
11. Press the PROCESSOR CONTROL button to have the clean cycle begin.

The Cleaning Function

Once the cleaning function has begun, the instrument requires no additional operator attention. It is valuable, however, for the operator to have knowledge of the various stages of the cleaning function.

At cleaning stage 1, the STATION windows will indicate CL, and the digits 10 will appear in the minutes windows of the timer. The retort will be subjected to a temperature of 65°C for a ten minute period to permit any paraffin adhering to the retort wall to melt. Then, the instrument will pump out any remaining fluid to the proper container.

At cleaning stage 2, the STATION windows will indicate 15, and the TIMER windows will indicate C-09. The RETORT indicator will be illuminated. PUMP IN

and PUMP OUT will be repeated nine times. Each time the instrument completes a PUMP IN/PUMP OUT cycle, the last digit in the TIMER window will decrease by one. When all nine cycles are completed, the instrument will advance to station 16.

At cleaning stage 3, the STATION windows will indicate 16, and the TIMER windows will indicate C-05. PUMP IN and PUMP OUT will be repeated five times. Each time the instrument completes a PUMP IN/PUMP OUT cycle, the last digit in the TIMER window will decrease by one. When all five cycles in stage 3 are completed, the cleaning function is over.

Upon completion of the cleaning cycle an audible alarm will sound, and the windows of the TIMER will display the current time.

NOTE

If one or more of the paraffin stations are used, then the Clean Function *cannot be eliminated by the operator*.

If all of the paraffin stations are bypassed, then the Clean indicator will still illuminate. The Clean Function can be eliminated by moving the retort interlock slide to the left, applying the select magnet to MANUAL, moving the retort interlock slide to the right, and removing the magnet.

Recommendations for Efficient Instrument Operation

Specimen Orientation

Proper placement of tissue specimens into the specimen basket is vital to acceptable tissue processing. Carelessness, or improper tissue placement, can result in inadequate solution penetration and in solution cross-contamination. Carefully follow tissue placement procedures for optimum processing results.

If cassettes are used:

1. Use the vertical dividers in the specimen basket.
2. Specimen tissues must be sized to allow sufficient clearance between specimen and cassette interior, so that solution flow routes are not disrupted.
3. Cassettes should be placed standing vertically on the long side (as opposed to lying flat) in the basket.
4. Cover the baskets with basket lids, even if only one layer of baskets is utilized.

NOTE

If dividers are in position, basket capacity is approximately 50 and 100 cassettes respectively for the small and large baskets. With dividers removed, basket capacity increases slightly.

Solution Replenishment and Rotation

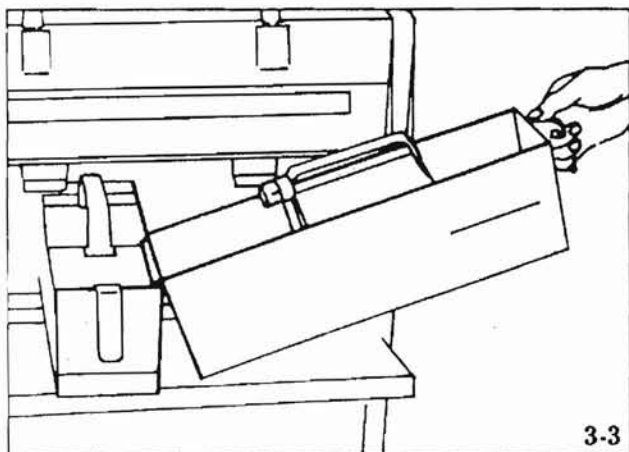
The replacement and rotation of reagents will vary from laboratory to laboratory and the volume of processing in your laboratory will best indicate the replenishment cycle.

Paraffin Replacement

CAUTION

Oven and paraffin containers are hot! Exercise extreme care.

Paraffin containers are to be removed from the oven for filling. The use of molten paraffin is strongly recommended. Carefully observe the fill line, and do NOT overfill. When transferring paraffin from one paraffin container to another, hook the lip of the pouring container over the edge of the recipient container. Pour molten paraffin slowly and carefully.



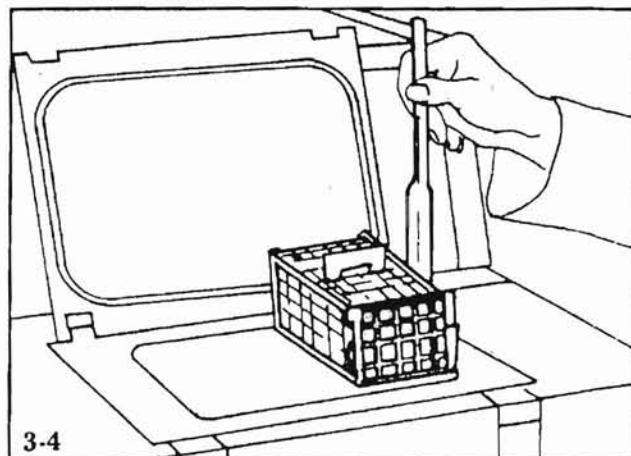
Replacement of Fume Control Filter Materials

The water in the water reservoir absorbs formalin and alcohol vapors in the exhaust fumes. Change the water daily to maintain efficient fume control.

The activated carbon in the activated carbon reservoir absorbs the remaining xylene and alcohol vapors present in the exhaust fumes. To maintain a high level of fume control, change the activated carbon after every five processing runs.

Placing Specimen Baskets Into the Retort

1. Refer to page 3.5 for details on proper methods of placing specimens in the basket.
2. Use the carrier handle to place baskets into the retort. Retort capacity is a total of two baskets (total capacity of 100 cassettes) for the V.I.P.™ 1000, two baskets (total capacity of 200 cassettes) for the V.I.P.™ 2000 and four baskets (total capacity of 300 cassettes) for the V.I.P.™ 3000.
3. Close the retort lid, and secure both retort latches. If latches require adjustment, they must be unlatched, and then either turned clockwise to



achieve a tighter retort lid seal, or turned counter-clockwise to slightly reduce the latching force required.

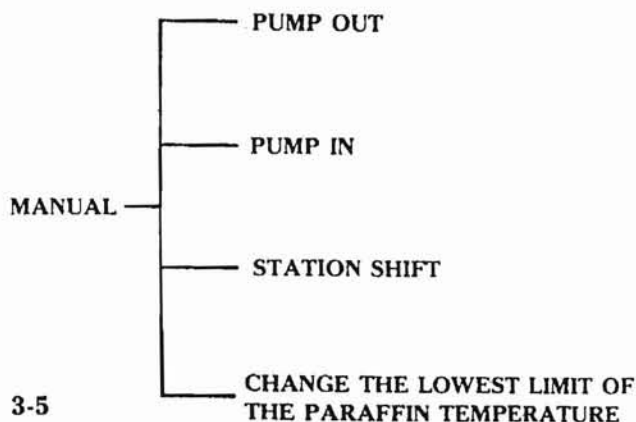
CAUTION

If latches are excessively loose proper sealing of retort lid will be defeated, and instrument may stop processing.

4. When the retort latches are securely latched, move the retort interlock slide to the right to securely lock the retort lid and extinguish the RETORT UNLOCK indicator.
5. If no indicators at the lower left of the control panel are illuminated, the instrument is prepared to accept processing commands. If any indicator is illuminated refer to page 4.1, "System Alarms".

Manual Operation

Occasions may arise when the instrument will require manual command inputs. The instrument will respond to the following manual commands:



NOTE

The select magnet must be positioned at the MANUAL position before attempting any of these manual command inputs.

Position the select magnet at the MANUAL position. The magnet MUST remain at this position during the entire operation in the manual mode.

NOTE

The STATION INDICATOR on the control panel indicates the actual station location.

Pump Out

This procedure is used to empty the retort by pumping the solution out of the retort and into the reservoir.

1. Place the select magnet at the manual position.
2. Key-in the command 01.
3. Press the ON key.

The pressure will increase and pump out will occur, and automatically be terminated.

Pump In

This procedure is used to transfer solution from a reservoir to the retort:

1. Place the select magnet at the MANUAL position.
2. Key-in the command 02.
3. Press the ON key.

The vacuum will increase and pump in will take place, and automatically terminate.

If the STATION, MANUAL code, and RETORT temperature displays flash and an audible (Beep) is heard, the manual pump in command is rejected, because the internal memory has determined that the last fluid transfer command was a pump in. Some fluid may remain in the retort; consequently, a manual pump out must be done before a manual pump in will be accepted.

Station Shift

This procedure is used to advance a station to the next higher station. If solution remains in the retort, a station shift command will be rejected by the instrument. In such a case, use the PUMP OUT command. If paraffin remains in the retort at the last paraffin station, the instrument will again reject a station shift command. Use the PUMP OUT command. The instrument will accept a station shift command under all other circumstances.

1. Place the select magnet at the MANUAL position.
2. Key-in the command 03.
3. Press the ON key.

NOTE

If any one of the paraffin stations is pumped in, a clean cycle will be required before a station shift will be accepted.

Changing the Lowest Limit of the Paraffin Temperature

Standard selectable temperatures for paraffin processing range from 55°C to 70°C. If paraffins with a lower melting point are to be used, the lower limit of the paraffin temperature range must be changed. The follow-

ing procedure will allow you to program the lower limit of the paraffin oven to a temperature as low as 45°C.

1. Place the select magnet at the MANUAL position.
2. Key-in the command 00.
3. Press the ENTER key. Note that the TIMER display windows will indicate $\boxed{L}\boxed{O}:\boxed{U}\boxed{N}$, the RETORT indicator will be illuminated, and the windows under the RETORT indicator will display the present programmed retort temperature.
4. Key-in the desired retort temperature.

NOTE

The instrument will NOT accept a keyed-in command for a temperature lower than 45°C.

5. Press the ENTER key to have the new temperature entered into the memory.

NOTE

Paraffin processing temperatures are selected for the retort. The oven temperature will be held at a temperature 3°C higher than the average retort temperature programmed for the paraffin stations.

Cleaning and Inspection Recommendations

1. DAILY clean the control panel, plastic and painted areas by wiping with a clean cloth moistened with mineral oil.
2. DAILY clean the inside of the reservoir storage compartment by wiping with a clean cloth.
3. DAILY clean the retort lid gasket by wiping with a clean cloth. After cleaning, inspect the gasket carefully for cracks, signs of deterioration, splitting, or tearing which could cause leaks. See Replacement Methods section for retort lid gasket replacement.
4. DAILY remove both spill trays; clean them thoroughly by wiping with a clean cloth. Remove any paraffin accumulations with a scraper, before wiping with a clean cloth.

CAUTION

The spill trays may contain flammable liquid. Handle with care.

5. DAILY remove the inlet/outlet filter in the retort floor. Clean thoroughly with a cloth moistened with xylene before reinstalling.

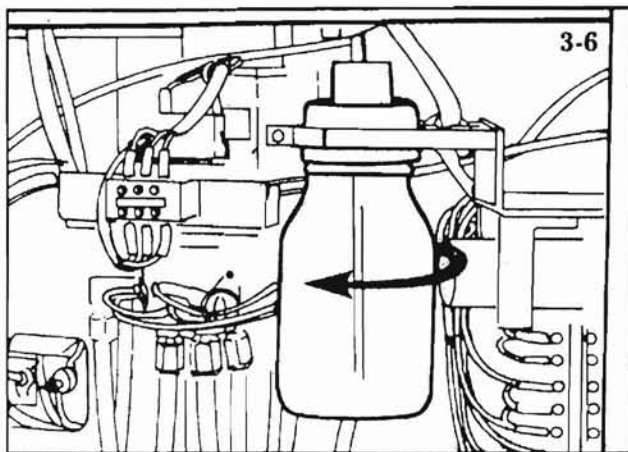
RETORT
INLET/OUTLET
FILTER

6. DAILY, dispose of the water in the water reservoir, then refill to proper level with tap water.
7. AFTER THE PROCESSING PORTION OF EACH CYCLE, clean the retort. Use the plastic scraper to remove all paraffin from the sides and lid of the retort, before setting the instrument into the clean cycle.

8. PERIODICALLY carefully inspect the overflow bottle located at the rear of the instrument by observing the bottle through the screen. If contaminants are present, thoroughly clean the bottle and overflow tube, then rinse with xylene. Be certain to screw bottle in securely, to ensure tight seal. If a tight seal is not achieved instrument malfunctions may occur.

CAUTION

Overflow bottle must be screwed in securely to achieve proper seal.



9. PERIODICALLY carefully inspect all reservoir caps and cap gaskets. Inspect caps for cracks and worn threads. Inspect cap gaskets for cracks and deterioration. An initial indication of a cap or gasket problem will be the loss of bubbling in the water reservoir during fluid transfer functions. See Replacement Methods section for reservoir gasket replacement.

SECTION 4

SYSTEM ALARMS

Description

Safety and alarm devices are incorporated into the instrument to preserve the integrity of the tissue being processed. Instrument malfunctions are divided into two categories; those which can be corrected by the instrument operator, and those which cannot. Instrument malfunctions will be manifested by an illuminated indicator in the lower left portion of the control panel.

Operator-corrected malfunctions include: **RETORT UNLOCK, FLUID LOW, POWER OUT, and STANDBY.** Malfunctions associated with the **DIAGNOSE** indicator may require a service representative.

RETORT UNLOCK

This indicator will be illuminated when the retort interlock is in the unlocked position (fully left), or has not been moved completely to the locked (fully right) position. The instrument will not operate unless the retort interlock is in the locked (fully right) position.

If the Retort Interlock Slide is unlocked during PV, the pump will remain off for 15 seconds after the slide is locked. During this 15 second period the retort will remain at ambient pressure.

FLUID LOW

This indicator will be illuminated when fluid in a reservoir, or paraffin in a paraffin container, is insufficient for automatic transfer. Additionally, this indicator can be illuminated if a transfer tube is out of a reservoir, if a reservoir is not setting squarely on its base, or if a paraffin container has a defective O-ring seal.

If the FLUID LOW indicator illuminates during automatic operation, solution from the preceding reservoir is drawn into the retort, to prevent the specimens from drying out (except for stations 1, 11, 12, 13, 14). Additionally, an audible warning is sounded. After the fluid low situation is corrected, move the retort interlock to the left, and then fully to the right. The START indicator will illuminate. Press the PROCESSOR CONTROL button to reinstate the automatic processing operation.

If the FLUID LOW indicator illuminates while the instrument is in station 1, resolve the situation; then follow the Automatic Operation procedures as outlined on pages 44-47.

If the FLUID LOW indicator illuminates during manual PUMP IN, the audible (Beep, Beep) will immediately sound. Resolve the fluid low situation; move the retort interlock to the left, then fully to the right. Then, continue with manual instrument operation.

If the FLUID LOW indicator illuminates during the CLEAN cycle, the audible (Beep, Beep) will immediately sound. Resolve the fluid low situation; move the retort interlock to the left, then fully to the right. The CLEAN indicator, to the left of the PROCESSOR CONTROL button will be illuminated. Press the PROCESSOR CONTROL button to have the CLEAN cycle continue.

POWER OUT

This indicator will illuminate to inform the operator that a loss of power occurred. The indicator flashes when power is restored. Regardless of the cause for a POWER OUT indication, the program in progress remains memorized. When power is returned, the instrument will continue with the program in progress. The processing time in the station will begin to count down at the time memorized when the power out occurred. Since the actual time clock will halt during the total period of the power interruption, the clock will require resetting after the processing and cleaning functions are completed. Power out indicator is erased when the retort interlock slide is moved to the left and to the right. If a power failure occurs during the P/V cycle, the pump will stop and restart 15 seconds after the power is reapplied.

STANDBY

This indicator will be illuminated if the temperature of the paraffin oven or retort drops below the prescribed limit. Remember – always use melted paraffin when replenishing paraffin supply in paraffin containers. Adding solidified paraffin may result in a suspension of instrument operation until the paraffin melts, and the oven temperature rises to the programmed level. The chart below indicates instrument operation delay periods, contingent on oven or retort temperature discrepancies.

TABLE 1 (Station 11 through 14)

Retort Temperature	Waiting Period
more than 5°C lower than the preset temperature	1 hour
more than 7°C lower than the preset temperature	1.5 hours
more than 9°C lower than the preset temperature	2.5 hours
more than 11°C lower than the preset temperature	3.5 hours
more than 13°C lower than the preset temperature	4.5 hours
more than 15°C lower than the preset temperature	5.5 hours
more than 17°C lower than the preset temperature	24 hours

TABLE 2 (Station 1 through 10, 15 and 16)

Paraffin Oven Temperature	Waiting Period
more than 13°C lower than the preset temperature	20 minutes
more than 15°C lower than the preset temperature	1.5 hours
more than 17°C lower than the preset temperature	2.5 hours
more than 19°C lower than the preset temperature	3.5 hours
more than 21°C lower than the preset temperature	4.5 hours
more than 23°C lower than the preset temperature	24 hours

DIAGNOSE

The illumination of this indicator signals a problem which may require the attention of an authorized instrument repairman. The instrument operator, however, plays an important role in the diagnose process. The operator can determine the coded responses for the problems. At the time a phone call is placed to request a service representative, these coded problem responses should be relayed to the service representative. Sometimes problems can be resolved over the phone, relying on the service representative's expertise. Additionally, providing the service representative with the coded responses by phone can help ensure that the correct repair parts will be brought along when the service representative arrives.

If the DIAGNOSE indicator illuminates, follow this procedure:

1. Place the select magnet at the PROGRAM position.
2. Press the DIAGNOSE key. A response will appear in the TIMER windows. RECORD THIS MESSAGE. Press the DIAGNOSE key again. If the windows indicate 00, there is only one problem. If a response different from the first appears, record this message also. Continue this procedure until 00 appears in the windows. Then relay ALL of the problem to the service representative, and include the information required in the Preservice Check List (See Page 9.1).

External Warning Connection

This instrument is equipped with an electrically-isolated relay that can be used to activate an external indicator/alarm if one or more of the System Alarm Indicators is actuated. A time delay of 5 minutes before the external alarm is actuated is provided to allow normal operator access to the retort for normal operational procedures.

NOTE

The external alarm is actuated immediately if a POWER OUT occurs.

Your Ames Sales Representative or an authorized Ames Instrument Service Representative should be contacted regarding the proper use of the connections which are provided.

SECTION 5

TROUBLESHOOTING GUIDE

General

The following Troubleshooting Guide has been prepared to assist the operator in easily resolving some of the problems which may occur during operation of the V.I.P.[™] processor. Note that the chart delineates the Problem, the Probable Cause, and the Possible Remedy. Some of the problems can easily be attended to by the V.I.P. operator. Other problems or causes, including problems listed below, will require service by trained service personnel. Refer problems to your authorized Ames Customer Service Communications Representative by calling toll free 1-800-323-6063 (continental U.S. only).

TROUBLESHOOTING GUIDE

Problem	Probable Cause	Possible Remedy
Front panel indicators are not illuminated when power switch (circuit breaker) is turned ON.	1. Power cord not plugged in. 2. Internal fuse burned out. 3. Instrument electrical failure.	1. Plug cord into proper 3-prong, grounded electrical outlet. Refer to rating label on rear of V.I.P. for proper voltage requirements. 2. Contact your authorized Ames Instrument Service Rep. 3. Contact your authorized Ames Instrument Service Rep.
Retort or oven does not hold proper temperature.	1. Instrument not warmed up sufficiently. 2. Oven temperature protectors fused. 3. Instrument electrical failure.	1. Permit instrument to warm up for 24 hours before use. 2. Contact your authorized Ames Instrument Service Rep. 3. Contact your authorized Ames Instrument Service Rep.
Pump will neither fill, nor empty, retort in manual instrument mode.	1. Retort lid not properly locked. 2. Retort over flow jar not installed securely. 3. Obstruction in air line from retort to overflow jar. 4. Instrument mechanical or electrical failure. 5. Retort filter screen clogged.	1. Open retort and inspect gasket. Check manual latches for proper latching function. NOTE: Air line and overflow jar should be cleaned only by trained personnel qualified to perform service on the system. 2. Check overflow jar for seal. Retighten, if necessary. 3. Remove overflow jar. Use flexible wire to remove foreign matter from air line. Clean jar and air line with solvent. Make certain that air line is connected properly, and that overflow jar is installed securely. 4. Contact your authorized Ames Instrument Service Rep. 5. Remove screen (see Cleaning Recommendations section). Clean thoroughly with xylene before reinstalling filter.

TROUBLESHOOTING GUIDE

Problem	Probable Cause	Possible Remedy
RETORT UNLOCK indicator flashing.	1. Retort interlock slide not moved fully to the right. 2. Instrument electrical failure.	1. Move retort interlock slide fully to right, to locked position. 2. Contact your authorized Ames Instrument Service Rep.
FLUID LOW indicator flashing.	1. No fluid in station 1. Alarm will sound. 2. No fluid in a station (station 2 through 10). 3. Paraffin container improperly installed, or an empty paraffin container. 4. No fluid in stations 15 or 16. 5. FLUID LOW indicator flashing during manual pump in.	1. Properly fill reservoir. Attach, then remove select magnet from PROGRAM switch. Press PROCESSOR CONTROL button. 2. Properly fill reservoir. Move retort interlock to left, then fully to right. START indicator will be lighted. Press PROCESSOR CONTROL button. 3. Properly install paraffin container to proper level. Follow retort interlock and PROCESSOR CONTROL button procedures as outlined in (2) above. 4. Properly fill reservoir. Move retort interlock to left, then fully to right. Clean indicator will be lighted. Press indicator PROCESSOR CONTROL button. 5. Properly fill reservoir. Move retort interlock to left, then fully to right. Continue with manual mode operation.
POWER OUT indicator flashing.	1. Power failure or instrument temporarily unplugged.	1. Determine cause of power failure, or reason that instrument is unplugged. Take preventive measure to prevent recurrences.
STANDBY indicator flashing.	1. Paraffin oven temperature lower than programmed value. 2. Instrument electrical failure.	1. Permit instrument to warm up for sufficient length of time (see System Alarms section). 2. Contact your authorized Ames Instrument Service Rep.

TROUBLESHOOTING GUIDE

Problem	Probable Cause	Possible Remedy
DIAGNOSE indicator flashing.	1. Internal mechanical, or electrical problem. 2. Error code of 10 indicated after touching overflow sensor on overflow bottle.	1. Obtain error codes by following procedure as outlined in Systems Alarms section. Then, contact your authorized Ames Instrument Service Rep. 2. Inspect system for indication of possible overflow. Clean instrument, if overflow has occurred. After cleaning overflow, or if there has been no overflow, move retort interlock to left, then fully to right.
Absence of air bubbling in water reservoir during instrument pressure mode.	1. Caps on reservoirs not properly installed 2. Reservoirs improperly seated. 3. Instrument mechanical, or electrical problem.	1. Inspect all fill caps and gaskets. Replace worn gaskets (see Replacement Parts section). Securely tighten all caps. 2. Reseat all reservoirs by firmly positioning them in the reservoir module. 3. Contact your authorized Ames Instrument Service Rep.
Higher than normal fume level at breathing height.	1. Activated carbon filter saturated. 2. Water in fume filtration reservoir saturated. 3. Leaks in reservoir caps, or reservoirs improperly seated.	1. Replace saturated activated carbon with new activated carbon (see Replacement Parts section). 2. Replace saturated water with clean tap water. 3. See remedies listed for "Absence of air bubbling" problem.
Dot points appear in front panel numerical display windows.	1. Battery switch at rear of instrument not turned on. 2. Battery voltage low.	1. Remove battery compartment cover at rear of instrument. Turn switch ON; then replace cover. 2. Contact your authorized Ames Instrument Service Rep.
Automatic or instantaneous processing does not begin.	1. STANDBY indicator flashing. 2. Instrument electrical failure.	1. Permit instrument to warm up for sufficient length of time (see System Alarms section). 2. Contact your authorized Ames Instrument Service Rep.

TROUBLESHOOTING GUIDE

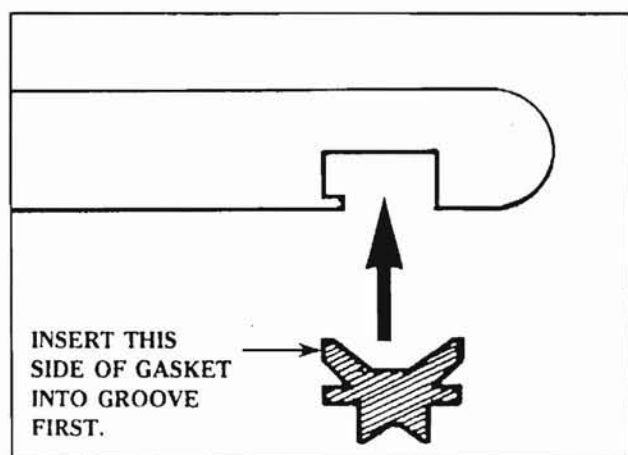
Problem	Probable Cause	Possible Remedy
Instrument goes into delayed start mode, although instantaneous start was requested.	1. PROCESSOR CONTROL button was not depressed for sufficient length of time.	1. Cancel program. Manually pump out station 1. START indicator will light. Restart program by holding PROCESSOR CONTROL button depressed until audible stops.
Instrument starts in instantaneous mode, although delayed start was requested.	1. PROCESSOR CONTROL button was depressed for too long a period of time.	1. Cancel program. Manually pump out station 1. START indicator will be lighted. Restart program by depressing, then quickly releasing the PROCESSOR CONTROL button.
CLOCK time is incorrect.	1. A power failure has (had) taken place, or the instrument was (is) unplugged.	1. Reset clock to correct time (see Programming the Instrument section).
Normal station selection cannot be accomplished.	1. STANDBY indicator is lighted. 2. DIAGNOSE indicator is lighted.	1. Permit instrument to warm up for sufficient length of time (see System Alarms section). 2. Obtain error codes by following procedures as outlined in System Alarms section. Then, contact your authorized Ames Instrument Service Rep.
Instrument will not accept attempts to program paraffin processing temperature between 45°C and 55°C.	1. The lower limit of the standard paraffin processing range is set too high.	1. Reprogram the lower limit of the paraffin processing temperature range (see Manual Operation section).

Replacement Parts

Certain parts which come into contact with reagents, notably gaskets, have a limited useful life. The changing of these gaskets, and the activated carbon in the activated carbon reservoir, are normally among the responsibilities of the instrument operator. The gaskets include: (1) gasket for the retort lid; and (2) gaskets for the caps of the solution and activated carbon reservoirs.

Retort Lid Gasket Replacement

1. Remove the gasket from the groove, then discard.
2. Clean the groove in the retort lid with a cloth moistened with alcohol or xylene.
3. Carefully inspect the retort lid groove for any signs of damage. If any are noted, suspend instrument use and immediately notify the instrument distributor.
4. If the retort lid groove is defect-free, install a new gasket firmly into the groove as shown in the illustration.



5-1

Reservoir Cap Gasket Replacement

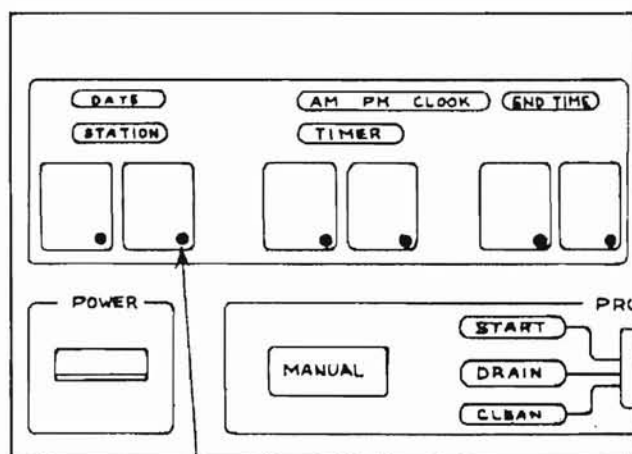
1. Remove the old gasket from reservoir cap; then discard.
2. Carefully clean the grooves inside the cap with a cloth moistened with alcohol or xylene.
3. Press a new gasket firmly into the cap until the gasket is fully seated.

Activated Carbon Replacement

1. Remove the activated carbon reservoir from the reservoir compartment, and properly dispose of the used activated carbon.
2. Use a funnel, then pour 1 kg of fresh Tissue-Tek® activated carbon (Miles code no. 4663) into the reservoir. Shake to evenly distribute the activated carbon.
3. Make certain the reservoir screw caps are securely tightened, the transfer tube properly inserted, and the reservoir firmly positioned in the reservoir compartment.

Memory Battery Replacement

It is important for the instrument operator to be aware of the need for a replacement memory battery. Under a no power lost condition, battery life is about three years. Under a continuous power lost condition, battery life can be as long as one month. Need for a replacement battery will be signaled by the illumination of all dot points in the lower right corners of the station and timer display windows (see illustration).



5-2

SECTION 6

MINOR REPAIRS AND ADJUSTMENTS

Fuse Replacement

Protection against high-level instrument electrical problem is provided by a combined circuit breaker and ground current interrupter. An internal fuse is used to protect the power supply and microprocessor controller. The rear panel of the control box must be removed to gain access to this fuse.

Spare fuses have been provided as part of the accessory package for this instrument. If instrument troubleshooting indicates a fuse problem, contact your authorized Ames Instrument Service Representative.

CAUTION

Turn circuit breaker power switch OFF at rear of instrument, and remove the power cord from the electrical receptacle BEFORE removing the access panel to inspect fuse.

Fuse Rating

100 Volt (3 ampere) Type: 3AG.

SECTION 7

SPECIFICATIONS

	VIP-1000/2000	VIP 3000
PROCESS STATIONS		
Solution	10	10
Paraffin	4	3
CLEANING RESERVOIRS	1 xylene, 1 alcohol	1 xylene, 1 alcohol
FUME CONTROL RESERVOIRS	1 water, 1 activated carbon	1 water, 1 activated carbon
TIMER CAPABILITIES		
Processing	0 minutes through 99 hours, 59 minutes	0 minutes through 99 hours, 59 minutes
Delay time	99 days, 11 hours, 59 minutes (maximum)	99 days, 11 hours, 59 minutes (maximum)
TEMPERATURE CAPABILITIES		
Retort solutions	35°C through 50°C	35°C through 50°C
Paraffin	45°C through 70°C	45°C through 70°C
Paraffin oven	48°C through 73°C	48°C through 73°C
TEMPERATURE DISPLAY, DIGITAL	0°C through 99°C	0°C through 99°C
FLUID TRANSFER PRESSURES		
Pump in	250 mmHg (nominal)	250 mmHg (nominal)
Pump out	0.35 kg/cm ² (nominal)	0.35 kg/cm ² (nominal)
RETORT P/V CYCLES		
Pressure	0.35 kg/cm ² (nominal)	0.35 kg/cm ² (nominal)
Vacuum	500 mmHg	500 mmHg
FLUID AGITATION	Pump in and pump out every 20 minutes during processing times greater than 40 minutes	Pump in and pump out every 20 minutes during processing times greater than 40 minutes
P/V CYCLE		
Ambient	30 seconds	30 seconds
Pressure	90 seconds	90 seconds
Ambient	30 seconds	30 seconds
Vacuum	90 seconds	90 seconds
CONTROLLER	Microprocessor based (Z-80)	Microprocessor based (Z-80)
PROGRAM MEMORIES AVAILABLE	10	10
SYSTEM ALARM INDICATORS	RETORT UNLOCK FLUID LOW POWER OUT STANDBY DIAGNOSE	RETORT UNLOCK FLUID LOW POWER OUT STANDBY DIAGNOSE
POWER SOURCE	115VAC, 1380VA, 50/60Hz	115VAC, 1340VA, 50/60Hz
LINE VOLTAGE TOLERANCE	±10%	±10%

Configuration and Sizes

V.I.P.™ MODEL	1000	2000	3000
VERTICAL CONFIGURATION			
Depth (inches)	24	24	24
Width (inches)	20	20	20
Height* (inches)	48	48	50
Weight (pounds)	242	242	264
BENCH CONFIGURATION			
Depth (inches)	24	24	24
Width (inches)	40	40	40
Height* (inches)	23	23	25
Weight (pounds)	242	242	264

* NOTE: Installation of Operating Guide raises instrument height by 5 inches.

Ambient operating temperature	+10°C to +35°C
Maximum operating altitude	8000 Feet
External alarm provision	Electrically isolated relay contacts. Five (5) minute delay before activation.

SECTION 8

OPERATOR-REPLACEABLE PARTS AND ACCESSORIES

Normal daily use of the V.I.P. processor will result in parts wear, and the deterioration of certain instrument components. Closely following the cleaning and inspection routines will periodically indicate the need for the replacement of these worn components. The following parts and accessories can easily be replaced by the instrument operator.

Component Description	Part Number
Activated Carbon (Miles Code No. 4663)	*
Basket, Specimen (VIP-1000)** (capacity-50/basket)	84617133
Basket, Speciman (VIP-2000)** (capacity-100/basket)	84617174
Cap, Reservoir (Front)	84617142
Cap, Reservoir (Rear)	84617115
Card, Program	84617144
Carrier, Basket	84617145
Filter, Screen	84617102
Gasket, Retort (VIP-1000)	84617045
Gasket, Retort (VIP-2000/3000)	84617148
Gasket, Solution Reservoir	84617114
Lid, Basket (VIP-1000)**	84617130
Lid, Basket (VIP-2000)**	84617171
Magnet, Activation	84617092
Partition, Basket (VIP-1000)**	84617131
Partition, Basket (VIP-2000)**	84617173
Reservoir, Activated Carbon (VIP-1000/VIP-2000)	84617176
Reservoir, Activated Carbon (VIP-3000)	84617208
Reservoir, Solution (VIP-1000/VIP-2000)	84617116
Reservoir, Solution (VIP-3000)	84617207
Scraper, Plastic	84617146
Tag, Reservoir	84617135

* Contact your authorized Tissue-Tek Products distributor for this product.

** These components are used in the VIP-3000.

The above replacement parts and accessories are available directly from Ames Instrument Service, Ames Division, Miles Laboratories, Inc., P.O. Box 2004, Mishawaka, Indiana 46544.

SECTION 9

PRESERVICE CHECK LIST

1. Instrument Serial Number _____
2. Installation Date _____
3. Is instrument properly connected to a live, grounded AC electrical outlet as defined by instrument labeling?
YES _____ NO _____
4. Do oven and retort temperatures regulate properly?
YES _____ NO _____
Oven Temperature _____ °C
Retort temperature _____ °C
5. Which station number is illuminated? _____
6. What time is indicated in the timer display windows? _____:_____
7. Which Retort Function is illuminated?
PUMP IN _____ PUMP OUT _____
PUMP CYCLE _____ NONE _____
8. Is there fluid in the retort? YES _____ NO _____
If Yes, how much? _____
9. Are any alarm indicators illuminated?
YES _____ NO _____
If Yes, which? _____
10. Which error codes are stored in the memory?

11. Does pump operate? YES _____ NO _____
12. Does front panel pressure indicator display proper pressure indication? YES _____ NO _____
13. What is level of vacuum and/or pressure on pressure gauge? (visible through rear panel on right side of instrument)
Pressure: _____ kg/cm² _____
Vacuum: _____ mmHg _____
14. Is clock display accurate? YES _____ NO _____