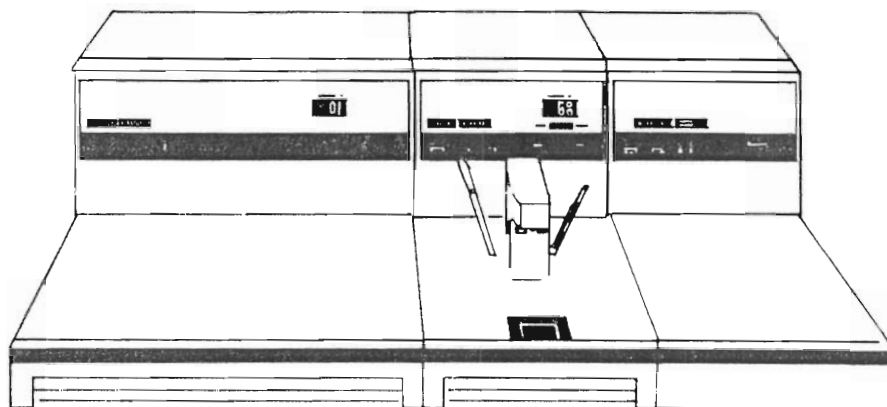


# Operating Manual



## TISSUE-TEK<sup>®</sup> Tissue Embedding Console System

893749

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## OPERATING MANUAL

### **TISSUE-TEK®**

#### TISSUE EMBEDDING CONSOLE SYSTEM

##### **Models:**

- |      |                                  |
|------|----------------------------------|
| 4584 | TEC System 115 VAC/60 Hz         |
| 4585 | Thermal Console 115 VAC/60 Hz    |
| 4586 | Dispensing Console 115 VAC/60 Hz |
| 4587 | Cryo Console 115 VAC/60 Hz       |
|      |                                  |
| 4588 | TEC System 220 VAC/50 Hz         |
| 4589 | Thermal Console 220 VAC/50 Hz    |
| 4590 | Dispensing Console 220 VAC/50 Hz |
| 4591 | Cryo Console 220 VAC/50 Hz       |
|      |                                  |
| 4592 | TEC System 240 VAC/50 Hz         |
| 4593 | Thermal Console 240 VAC/50 Hz    |
| 4594 | Dispensing Console 240 VAC/50 Hz |
| 4595 | Cryo Console 240 VAC/50 Hz       |
|      |                                  |
| 4596 | TEC System 100 VAC/50 Hz         |
| 4597 | Thermal Console 100 VAC/50 Hz    |
| 4598 | Dispensing Console 100 VAC/50 Hz |
| 4599 | Cryo Console 100 VAC/50 Hz       |

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Miles Inc.  
Diagnostics Division  
Elkhart, IN 46515 USA

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## SECTION I

### INTRODUCTION

TISSUE-TEK® Tissue Embedding Console System consists of three modularly designed instruments that allow the operator to exercise the highest skills in the art of embedding tissue specimens in paraffin.

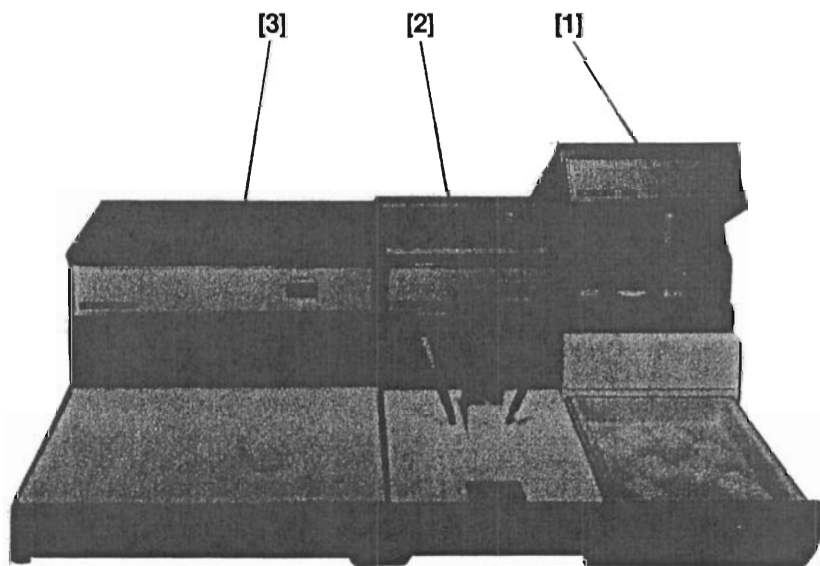
The user may position the individual consoles for either left-to-right or right-to-left work flow, according to preference or natural skills. All three consoles have identical-height working surfaces so that specimens may be easily transferred from one console to the next.

The Tissue Embedding Console System is available as a trio of three consoles — the Thermal Console, the Dispensing Console, and the Cryo Console. Each solid-state Console may be purchased separately, then augmented by companion Consoles as laboratory needs expand.

**The Thermal Console [1]** (See Figure 1-1) stores and warms Base Molds in its Rear Chamber, and holds processed tissue specimens in cassettes awaiting paraffin embedment in the heated Front Chamber.

**The Dispensing Console [2]** includes a heated 2 liter Paraffin Chamber, a heated Orientation Platform, a “cold spot” for chilling the specimen into position on the first paraffin pour, and a Dispenser Island which dispenses paraffin by using finger-touch control or a foot switch.

**The Cryo Console [3]** is composed of a large, refrigerated Chiller Plate on which paraffin-embedded specimens are kept optimally cool and ready for microtome sectioning.



**TISSUE EMBEDDING CONSOLE SYSTEM**  
**Figure 1-1**

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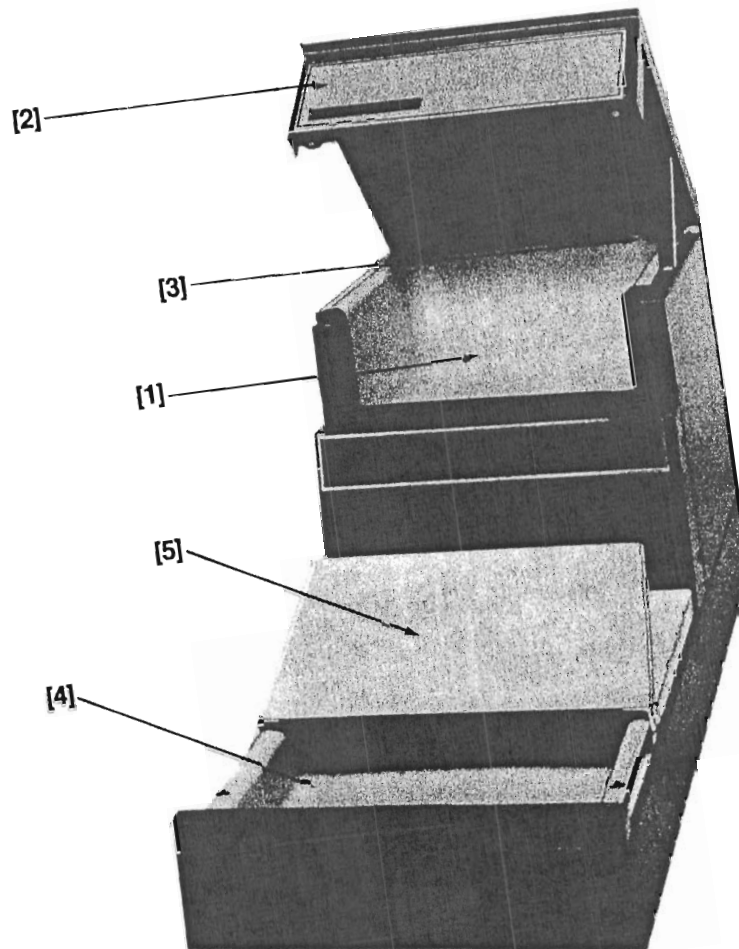
## **OPERATION**

The following steps briefly describe the embedding procedure utilizing the Tissue Embedding Console System. Base Molds and processed tissues in TISSUE-TEK® Cassettes or TISSUE-TEK® UNI-CASSETTE™ Embedding Cassettes awaiting embedding are kept warm and readily accessible in the Thermal Console. Melted paraffin is kept ready in the heated Paraffin Chamber of the Dispensing Console. A cassette containing processed tissue specimen is removed from the holding tray of the Thermal Console and placed on the warmed Orientation Platform of the Dispensing Console. The cover is removed from the cassette. A Base Mold of appropriate size is selected from the Rear Chamber of the Thermal Console and placed on the warmed work surface of the Orientation Platform of the Dispensing Console.

A small amount of melted paraffin is dispensed into the Base Mold. With warmed forceps, the processed tissue is placed in the Base Mold, and precisely oriented. The tissue is fixed into position by moving the Base Mold onto the Cold Spot of the Dispensing Console. The body of the cassette is then placed on the Base Mold and a second dispensing of paraffin is made.

The casting is then moved to the refrigerated Chiller Place of the Cryo Console and chilled until solid. The Base Mold is removed and the tissue block is kept at an optimally cool temperature ready for microtome sectioning.

Each of these instruments will be described in more detail in separate sections which follow. Everyone involved in operating TISSUE-TEK Tissue Embedding Console System should read the following instructions carefully before using this equipment.



**THERMAL CONSOLE**  
**Figure 2-1**

## SECTION II

### TISSUE-TEK® THERMAL CONSOLE

#### PRINCIPLES OF OPERATION

The Thermal Console serves a dual function. First, it will maintain a supply of warm Base Molds to facilitate the embedding procedure. Secondly, the Thermal Console is used to maintain the tissue specimens in their individual cassettes at proper temperature while awaiting embedding.

#### DESCRIPTION

(See Figure 2-1)

Thermal Console is an electrically operated dual compartmented instrument used as an adjunct to the Dispensing Console. Temperature is regulated to properly warm both Rear and Front Chambers.

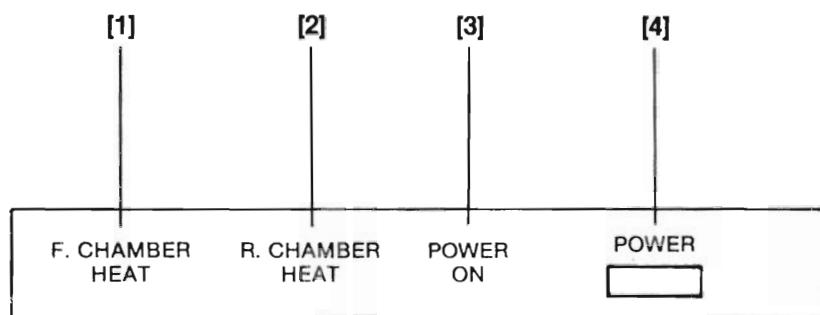
**Rear Chamber** [1] provides a convenient area for the storage of different size Base Molds used to embed tissue specimens. For access to this compartment, **cover** [2] swings up and is supported by a **bar** [3]. In a closed position Base Molds can be conveniently stored in this dust-free compartment.

**Front Chamber** [4] maintains tissue specimens in individual cassettes at the optimum temperature while awaiting embedding. This compartment has a retractable **lid** [5]. During any interruption in work flow, the lid can be closed to maintain cassettes at proper temperature.

**Display Panel** (see Figure 2-2) Indicators illuminate during operation to show "**Front Chamber Heat**" [1], "**Rear Chamber Heat**" [2], and "**Power On**" [3]. The "**Power**" switch [4] is the on-off control.

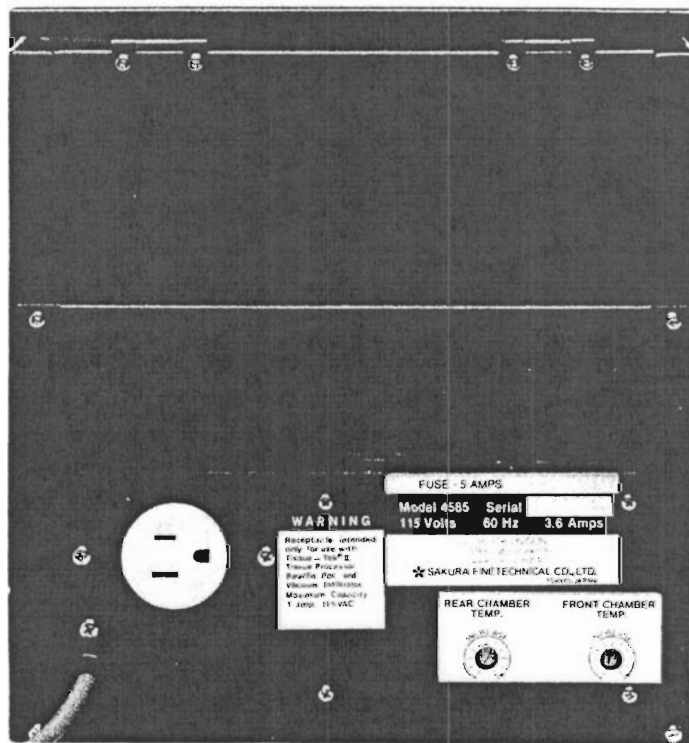
#### INSTALLATION

1. Before removing the Thermal Console from its shipping carton, carefully inspect the carton for damage which may have occurred during transit.



**THERMAL CONSOLE  
DISPLAY PANEL**  
Figure 2-2

2. After removing the Console from its carton, inspect it carefully for damage. Should any be noted, immediately notify the distributor from whom the equipment was purchased.  
**NOTE:** Be sure to fill out the warranty registration card located in the front of this manual and return it promptly to Miles Inc., Diagnostics Division.
3. Place the Thermal Console on a stable level surface with ventilation space behind and over the Console for proper air circulation.
4. Plug the Console into an electrical outlet. The line cord is equipped with a standard 3 prong grounded plug.  
**NOTE:** Be sure that the electrical outlet supplies the proper voltage. Refer to the rating label on rear side of the Console to determine proper voltage rating of the instrument.
5. Press the Rocker Switch marked "Power." The following indicators will be illuminated:
  - "Front Chamber"
  - "Rear Chamber"
  - "Power On"The "Power" switch should be left "on" continuously.
6. Allow the temperature to stabilize for at least one hour.
7. For your convenience, a mercury thermometer is included with this Console. Carefully unwrap thermometer and place in Front Chamber Tray.
8. After unit has come to operating temperature, approximately half an inch of liquid paraffin may be poured into the tray in Front Chamber. This paraffin should be changed daily to prevent accumulation of debris.



**THERMAL CONSOLE**  
**REAR VIEW**  
 Figure 2-3

### **OPERATING INSTRUCTIONS**

1. Place cassettes from the tissue processor into the heated tray located in the Front Chamber of the Thermal Console.
2. A Divider is supplied to separate stacks of different size base molds. The Divider can be placed in the Rear Chamber either front-to-back or left-to-right at operator's discretion.
3. Place ample supply of stainless steel Base Molds into the heated Rear Chamber.

**NOTE:** The temperature in each Chamber is factory-set to 62°C at ambient temperature of 25°C. The mercury thermometer should be used to measure compartment temperatures.

### **SPECIFICATIONS (115 VAC $\pm$ 10%, 60Hz)**

**Power consumption (max):** Approx. 280W (3.6 Amps)

#### **Possible temperature setting range**

for Front and Rear Chamber: 50-70°C

**Over-temperature protector:** Thermal fuses with fusing temperature of 110°C are provided at the reverse sides of the bottom plates of Front and Rear Chambers.

**Ambient operating temperature:** 10°C to 40°C

**Fuse:** One, 5 Amp

**Dimensions:** H 26cm (10 1/4"), W 23cm (9"), D 53cm (21")

**Weight:** 8.2 kg (18 lbs.)

## **MAINTENANCE**

Each component of the Thermal Console is tested and inspected before it leaves the factory. Proper use and periodic cleaning are necessary to maintain this equipment and assure efficient function.

### **DAILY CLEANING**

Allow equipment to cool before cleaning the outside surfaces. Spilled paraffin on the painted surfaces should be allowed to cool for easy removal.

The unit can be cleaned with xylene-dampened cloth. Excessive use of xylene on the painted surfaces should be avoided.

**CAUTION:** Xylene is a flammable liquid. Be sure equipment is cooled and electrical switches are in the "off" position before using xylene to clean the unit.

Dry equipment with soft, clean cloth.

### **PERIODIC CLEANING**

Clean under and around the unit to remove any lint, dust or debris that may have accumulated.

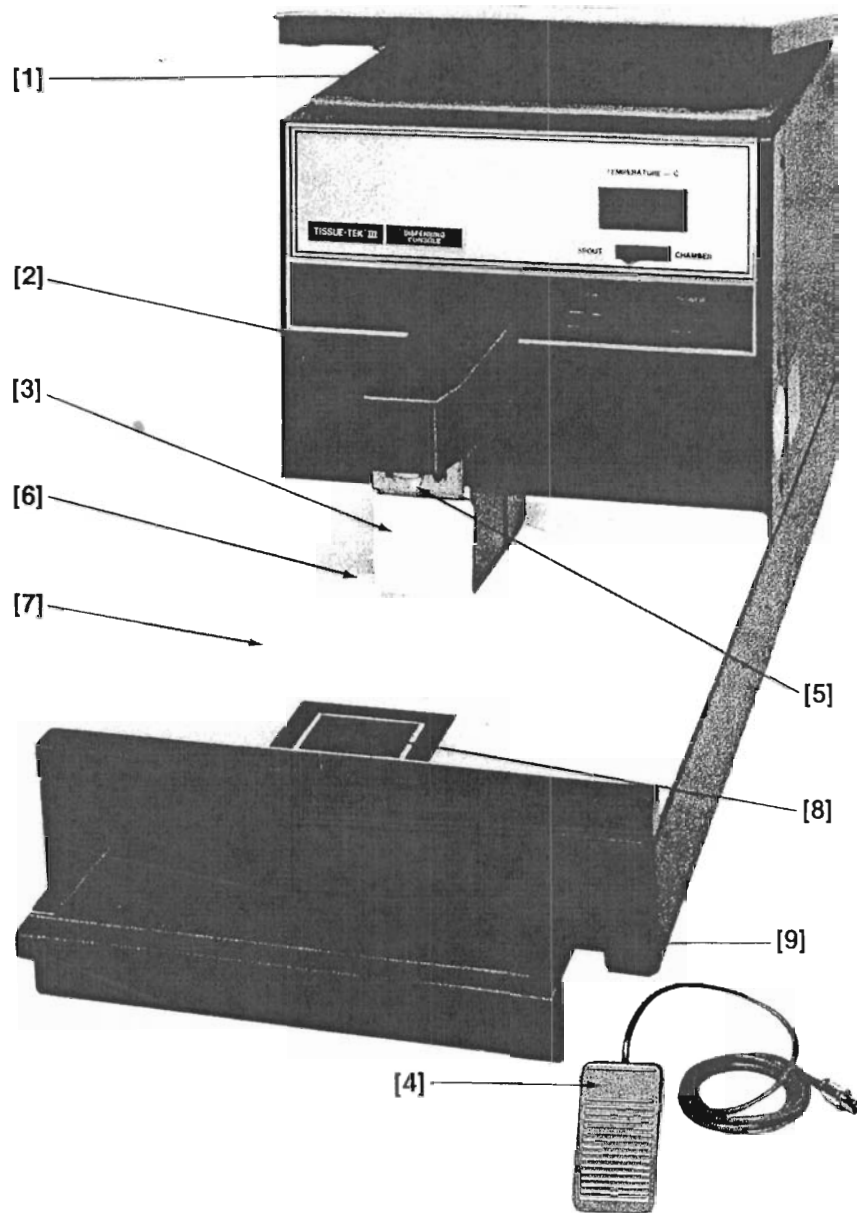
### **THERMOSTAT ADJUSTMENT**

Thermostats are adjustable from 50°C to 70°C. Controls are located on rear of Console (see Figure 2-3). To increase temperature, adjust setting clockwise; to decrease, turn counterclockwise.

### **PRESERVICE CHECK LIST**

If the Thermal Console should fail to function properly, check the following and fill in the necessary information. This information will help identify the probable cause of the instrument failure, enabling your Miles Instrument Service Representative to determine the proper corrective action.

|                                                                 | Yes | No |
|-----------------------------------------------------------------|-----|----|
| 1. Is electrical connection complete?                           |     |    |
| 2. Is the display panel switch "on?"                            |     |    |
| 3. Is the "Power On" indicator illuminated?                     |     |    |
| 4. Are fuses on rear of the unit functional?                    |     |    |
| 5. Have thermal controls been accidentally readjusted downward? |     |    |
| 6. Is Rear Chamber heating?                                     |     |    |
| 7. Is the Rear Chamber indicator illuminated?                   |     |    |
| 8. Is Front Chamber heating?                                    |     |    |
| 9. Is the Front Chamber indicator illuminated?                  |     |    |



DISPENSING CONSOLE  
U.S. Patent No. 3319289  
Figure 3-1

## SECTION III

### TISSUE-TEK® DISPENSING CONSOLE

#### PRINCIPLES OF OPERATION

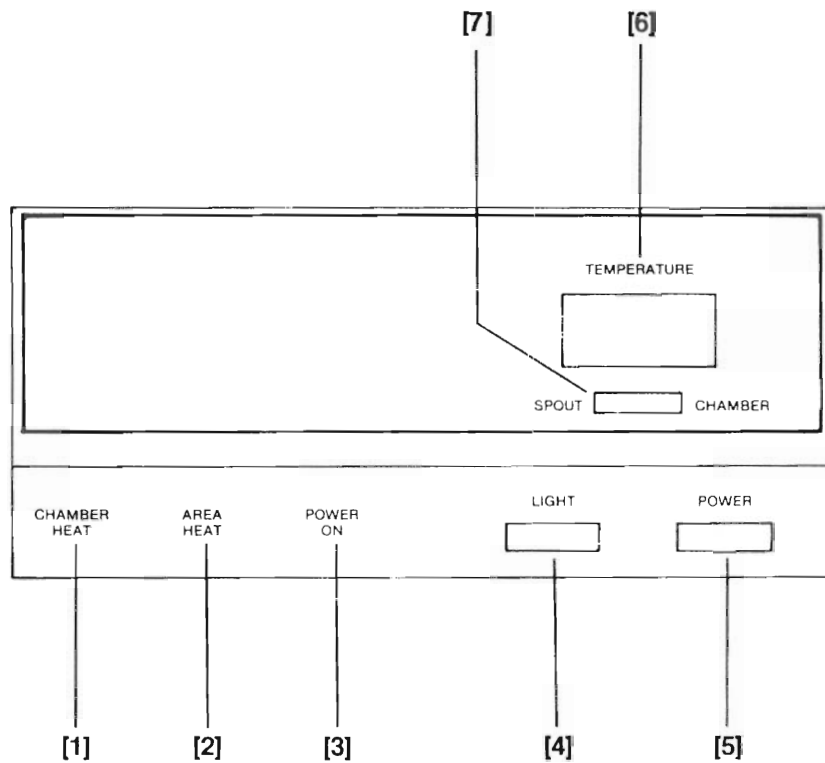
The Dispensing Console combines a heated Paraffin Chamber, a heated Orientation Platform with a "Cold Spot" for chilling the specimen into position on the first paraffin pour, and a Dispenser Island from which paraffin is dispensed by activating finger-touch control or foot switch.

#### DESCRIPTION

Dispensing Console, an electrically operated instrument used to heat and dispense paraffin, is the work station for this System. The other two Consoles can be positioned on either side of this main unit for best work flow and flexibility. Whether right-handed or left-handed, operators can position Consoles to work with their natural abilities rather than opposing them. All three Consoles have identical working surface heights, allowing operators to smoothly move from the Dispensing Console to the other two Consoles.

The following features are incorporated in the Dispensing Console (See Figure 3-1).

**Paraffin Chamber** [1], which holds 2 liters of melted paraffin, is located to the rear and elevated above the Orientation Platform. As paraffin flows from the Chamber, it is filtered through a fine mesh screen to collect any debris. To clean, see MAINTENANCE. Temperature is factory set at 62°C (See OPERATING INSTRUCTIONS to adjust temperature). Paraffin is dispensed from the **Dispenser Island** [2] located in the center of the Orientation Platform. Paraffin flow is activated by using either **Touch Plate** [3] or **Foot Switch** [4]. See OPERATING INSTRUCTIONS to adjust temperature and/or rate of flow. **Work Light** [5] illuminates Orientation Platform making specimen positioning easier and more accurate. Three **Forceps Wells** [6] are located on each side of Dispenser Island to keep multiple types of forceps easily accessible. **Large Orientation Platform** [7] has a nylon working surface which is heated to assure that paraffin does not solidify in preliminary phase of embedding. The **Cold Spot** [8] located at the front of the Orientation Platform is independently chilled at 15°C by a separate thermoelectric control. This allows operator to rapidly chill paraffin and precisely orient specimen. A series of parallel grooves are located on both sides of the Cold Spot, and a groove extends around the perimeter of the Orientation Platform. Excess paraffin is channeled along these grooves through the special holes and finally drains into **Waste Drawer** [9] located below

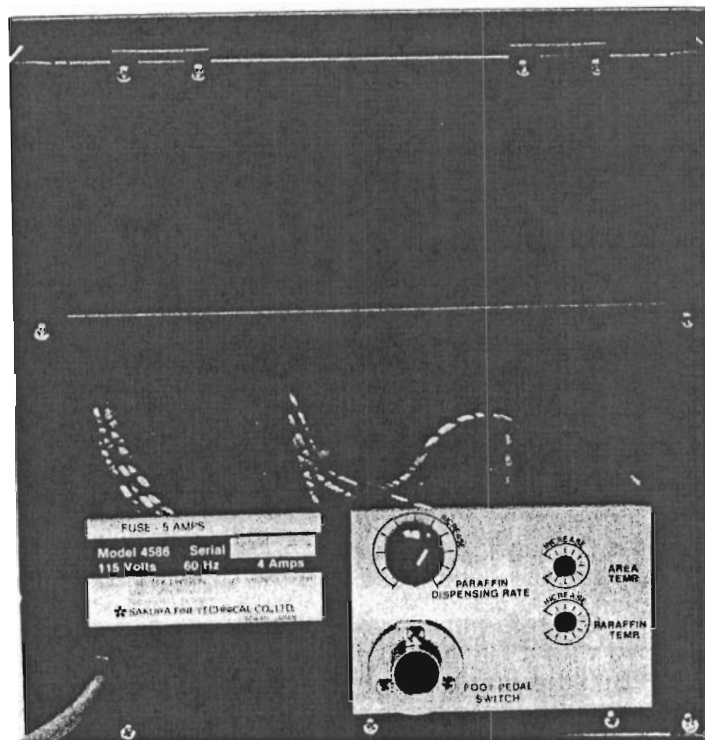


DISPENSING CONSOLE  
DISPLAY PANEL  
Figure 3-2

Orientation Platform. A squeegee is provided for use in keeping Orientation Platform clean. Display Panel (See Figure 3-2) Indicators illuminate when the following are operational: "**Chamber Heat**" [1] — heaters are "on" to keep paraffin chamber at proper temperature; "**Area Heat**" [2] — orientation platform heaters are functional to assure proper temperature and "**Power On**" [3]. The "**Light**" Switch [4] is an on-off switch which activates the light on the front of the Dispenser Island. The "**Power**" Switch [5] is the on-off control for this Console. The exact temperature of paraffin is shown by the **Temperature Display** [6] on the upper portion of the Display Panel. The **Display Switch** [7] directly below the Temperature Display is used to monitor temperature within the Paraffin Chamber or as it is dispensed through the Dispenser Island Spout.

### INSTALLATION

1. Before removing the Dispensing Console from its shipping carton, carefully inspect the carton for damage which may have occurred during transit
2. After removing the Console from its carton, inspect it carefully for damage. Should any damage be noted, immediately notify the distributor from whom the equipment was purchased.  
**NOTE:** Be sure to fill out the warranty registration card located in front of this manual and return it promptly to Miles Inc., Diagnostics Division.
3. Place the Dispensing Console on a stable, level surface with ventilation space behind and over the Console for proper air circulation.
4. Plug the Console into an electrical outlet. The line cord is equipped with a standard 3 prong grounded plug.  
**NOTE:** Be sure that the electrical outlet supplies the proper voltage. Refer to the rating label on rear side of the Console to determine proper voltage rating of the instrument.
5. Press the Rocker Switch marked "Power." The following indicators will be illuminated:  
    "Power On"  
    "Area Heat"  
    "Chamber Heat"  
    The "Power" switch should be left "on" continuously to assure an adequate supply of melted paraffin.
6. To prolong bulb life, turn the Work Light "off" when not in use.



DISPENSING CONSOLE  
REAR VIEW  
Figure 3-3

7. Immediately place **clean** paraffin into the Paraffin Chamber. Be careful not to overfill. Close the hinged cover.
8. Pour liquid paraffin in each forceps well approximately 1/4 full. Place forceps in any of the six wells provided on either side of the Dispenser Island
9. Allow the temperature to stabilize for at least one hour.
10. After one hour monitor the temperature display on the front panel. (Make sure Temperature Display Switch is pressed to display temperature of the Paraffin Chamber.)  
**NOTE:** The temperature is factory-set to maintain an operating temperature of approximately 62°C at an ambient temperature of 25°C. For information to adjust temperature see MAINTENANCE.
11. Check level of melted paraffin. Add more if necessary.

#### **OPERATING PRECAUTIONS (Hazards)**

Never attempt to move the equipment with molten paraffin in the Paraffin Chamber. Always empty paraffin before relocating the instrument, or unplug the unit and allow paraffin to solidify. Do not attempt to dispense paraffin without adequate paraffin level in Chamber or with cover open.

#### **OPERATING INSTRUCTIONS**

Before beginning procedures, make sure Dispensing Console has been prepared for operation as described in this section.

1. Check amount of paraffin in Chamber.
2. Check temperature of paraffin in Chamber and at Dispenser Island Spout.  
**NOTE:** To adjust temperature see MAINTENANCE.
3. Dispense desired amount of paraffin using either touch control or foot pedal. See Section V for description of tissue embedding procedures.
4. Rate of paraffin flow can be adjusted by control on rear of Console. To increase flow of paraffin adjust setting clockwise; to decrease flow, turn counterclockwise.

#### **SPECIFICATIONS (115VAC $\pm$ 10%, 60 Hz.)**

**Power consumption** (max): Approx. 400 W (4 Amps)

**Possible temperature setting range:** 50 to 70°C for Paraffin Chamber and Orientation Platform.

**Paraffin flow-control range:** Approx. 1.3 to 6.5g/sec.

**Over-temperature protector:** Thermal fuses with fusing temperature of 110°C are provided at the reverse sides of the Paraffin Chamber Bottom Plate and Hot Plate.

**Ambient operating temperature:** 10°C to 40°C

**Fuse:** One, 5 Amp

**Dimensions:** H 26cm (10 $\frac{1}{4}$ " ), W 23cm (9" ), D 53cm (21" )

**Weight:** 13.2 kg (30 lbs.)

#### **MAINTENANCE**

Every component of the Dispensing Console is tested and inspected before it leaves the factory. Proper use and periodic cleaning are necessary to maintain this equipment and assure efficient function.

#### **DAILY CLEANING**

Allow equipment to cool before cleaning the outside surfaces. Spilled paraffin on the painted surfaces should be allowed to cool for easy removal.

The unit can be cleaned with a xylene-dampened cloth. Excessive use of xylene on the painted surfaces should be avoided. Remove paraffin from Waste Drawer.

**CAUTION:** Xylene is a flammable liquid. Be sure equipment is cooled and electrical switches are in the "off" position before using xylene to clean the unit.

Dry equipment with soft, clean cloth.

#### **PERIODIC CLEANING**

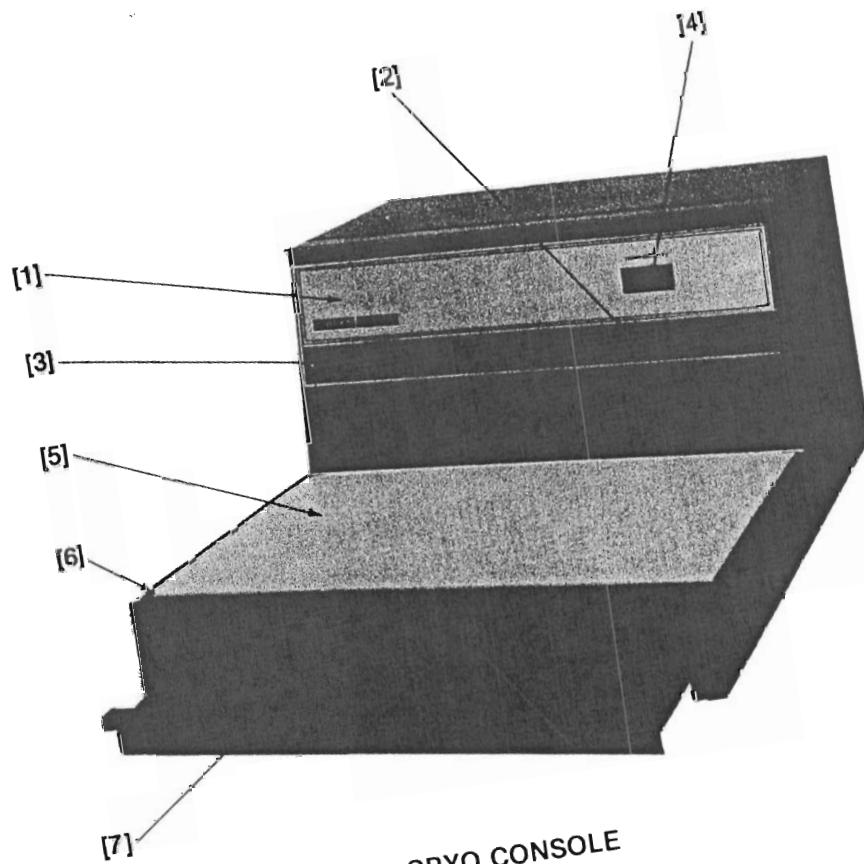
Periodically remove all paraffin from the Paraffin Chamber and thoroughly clean the inside. First depress the touch plate dispenser control and allow the liquid paraffin to run into a container. Turn the power switch to the "off" position. Wipe the walls of the Paraffin Chamber with a clean, lint-free xylene-dampened cloth. Do not place liquid xylene in the Paraffin Chamber as this may cause internal damage to the dispensing mechanism. Remove filter and inspect for debris. To clean, soak filter in xylene and if necessary use a stiff nylon brush to remove minute particles.

Periodic cleaning of forceps wells is recommended to prevent cross contamination. Sponge out paraffin in each well using a cotton swab or similar device.

### **PRESERVICE CHECK LIST**

If the Dispensing Console should fail to function properly, check the following and fill in the necessary information. This information will help identify the probable cause of the instrument failure, enabling your Miles Instrument Service Representative to determine the proper corrective action.

|                                                                                  | Yes                      | No                       |
|----------------------------------------------------------------------------------|--------------------------|--------------------------|
| 1. Is electrical connection complete?                                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are fuses on rear of the unit functional?                                     | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Is the Power Switch "on?"                                                     | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Is "Power On" indicator illuminated?                                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Is Paraffin Chamber heating?                                                  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Is Temperature Display functional?                                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Is the Orientation Platform warm?                                             | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Is the Cold Spot on the Orientation Platform cold?                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Does the unit dispense paraffin when touch plate or foot switch is activated? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Is "Chamber Heat" indicator functional?                                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Is "Area Heat" indicator functional?                                         | <input type="checkbox"/> | <input type="checkbox"/> |



CRYO CONSOLE  
Figure 4-1

## SECTION IV

### TISSUE-TEK® CRYO CONSOLE

#### PRINCIPLES OF OPERATION

The Cryo Console consists of a large, refrigerated Chiller Plate on which paraffin-embedded specimens are kept optimally cool and ready for microtome sectioning. The Console is pre-set to maintain an operating temperature of approximately  $-5^{\circ}\text{C}$  at an ambient temperature of  $25^{\circ}\text{C}$ .

#### DESCRIPTION

(See Figure 4-1)

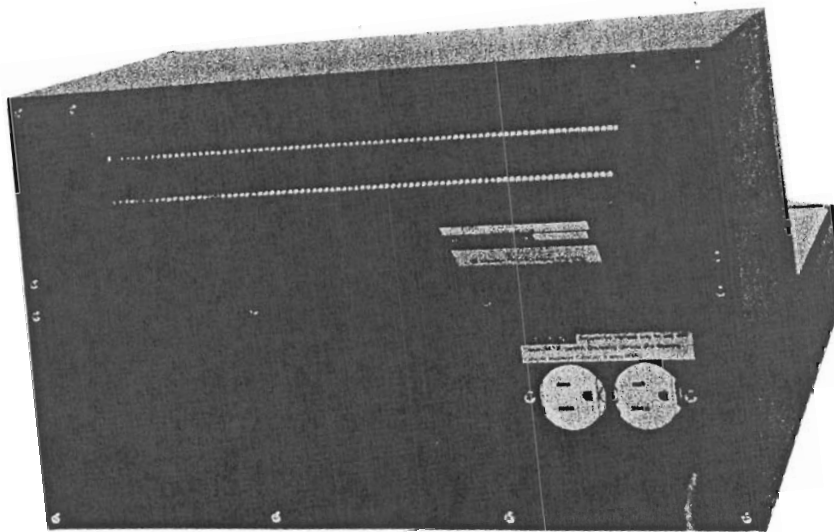
The **Display Panel** [1] consists of three components: a **Power Switch** [2] which turns Console "on" or "off"; **Power Indicator** [3], that illuminates when the power is "on"; and a **Temperature Display** [4] which indicates the temperature of the Chiller Plate. The low-temperature **Chiller Plate** [5] provides optimum solidification of the liquid paraffin in the Base Mold and continues to cool the embedded specimen prior to sectioning. This large, freon-refrigerated Chiller Plate handles up to 50 embedded specimens using **TISSUE-TEK®** Cassette Systems. After Cryo Console has been turned off, moisture collects in **Grooved Channels** [6] along the edge and flows into the **Drain Drawer** [7] located beneath the Chiller Plate.

#### INSTALLATION

1. Before removing the Cryo Console from its shipping carton, carefully inspect the carton for damage which may have occurred during transit.
2. After removing the Console from its carton, inspect it carefully for damage. Should any be noted, immediately notify the distributor from whom the equipment was purchased.

**NOTE:** Be sure to fill out the warranty registration card located in the front of this manual and return it promptly to Miles Inc., Diagnostics Division.

3. Place the Cryo Console on a stable, level surface with ventilation space behind and over the Console for proper air circulation. The exhaust deflector directs warm air generated by the unit up and away from the Console. The deflector allows placement of the Console directly against a flat vertical surface, such as the back countertop or a wall.



CRYO CONSOLE  
REAR VIEW  
Figure 4-2

4. Plug the Console into an electrical outlet. The line cord is equipped with a standard 3 prong grounded plug.

**NOTE:** Be sure that the electrical outlet supplies the proper voltage. Refer to the rating label on rear side of the Console to determine proper voltage rating of the instrument.

5. Press the Rocker Switch marked "Power." The "Power On" indicator will be illuminated.
6. Allow the temperature to stabilize for at least 15 minutes.

### **OPERATING INSTRUCTIONS**

After the  $-5^{\circ}\text{C}$  operating temperature has been reached, usually within 15 minutes, Console is ready to use.

The "Power" switch should be turned "off" when Console is not in use. Drain Drawer will collect water from the plate and the collecting groove bordering the plate.

Two electrical outlets on rear of this Console can be used to connect Dispensing Console and Thermal Console. (See Figure 4-2)

### **SPECIFICATIONS (115VAC $\pm$ 10%, 60Hz)**

**Power consumption:** Approx. 230W (10 Amps)

#### **Compressor motor protector:**

The compressor motor is equipped with an integral auto resettable overload protector.

**Ambient operating temperature:**  $10^{\circ}\text{C}$  to  $40^{\circ}\text{C}$

**Fuse:** One 10 Amp SLO – BLO

**Dimensions:** H 26cm ( $10\frac{1}{4}$ " ), W 40cm ( $15\frac{3}{4}$ " ), D 58cm (23") with air duct.

**Weight:** 24.7 kg (55 lbs.)

**Chiller Plate area:** 1,013 sq. cm (157 sq. in)

## MAINTENANCE

Every component of the Cryo Console is tested and inspected before it leaves the factory. Proper use and periodic cleaning is necessary to maintain this equipment and assure efficient function.

### DAILY CLEANING

Allow equipment to come to ambient temperature before cleaning the outside surfaces.

Any paraffin on the painted surfaces should be allowed to cool for easy removal.

The unit can be cleaned with xylene-dampened cloth. Excessive use of xylene on the painted surfaces should be avoided.

**CAUTION:** Xylene is a flammable liquid. Be sure equipment is cooled and electrical switches are in the "off" position before using xylene to clean the unit.

Empty Drain Drawer.

Dry equipment with soft, clean cloth.

### PERIODIC CLEANING

Clean under and around the unit, including the rear air vent, to remove any lint and dust that may have accumulated.

### PRESERVICE CHECK LIST

If the Dispensing Console should fail to function properly, check the following and fill in the necessary information. This information will help identify the probable cause of the instrument failure, enabling your Miles Instrument Service Representative to determine the proper corrective action.

|                                                            | Yes                      | No                       |
|------------------------------------------------------------|--------------------------|--------------------------|
| 1. Is electrical connection complete?                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are fuses on rear of the unit functional?               | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Is the power switch "on?"                               | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Does the Chiller Plate cool?                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Is the temperature display functional?                  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Indicate display temperature after 15 minute operation. | <input type="text"/> °C  |                          |

## SECTION V

### PROCESS/EMBEDDING PROCEDURES

Before beginning procedures, make sure the Tissue Embedding Console System has been prepared for operation as described in this manual. (See INSTALLATION INSTRUCTIONS provided for each Console.) Then proceed with the processing/embedding process.

**NOTE:** While the following instructions refer to the use of TISSUE-TEK® UNI-CASSETTE™ Embedding Cassettes, other embedding techniques and molding accessories can be utilized with the TISSUE-TEK® Tissue Embedding Console System.

#### PROCESSING

For the convenience of users, suggested procedures for processing utilizing the Tissue Tek System is provided. Specimen processing begins with gross tissue dissection by the pathologist to select exact area of the specimen to be submitted for microscopic examination.

1. A positive specimen identification number is applied to the slanted textured front writing surface of the UNI-CASSETTE Embedding Cassette using a TISSUE-TEK® Marking Pencil. This identification number will remain with the specimen throughout the entire procedure and will be the permanent accession number during storage. Additional information (special stains, number of sections, etc.) can be recorded on textured side writing surfaces.
2. The tissue specimen is placed into the body of the UNI-CASSETTE Embedding Cassette. The attached plastic lid is closed. Front and rear locking latches must be engaged to assure a secure closure during processing.
3. Assembled UNI-CASSETTE Embedding Cassettes are placed in a process basket and processed on an automatic tissue processing instrument.
4. After processing, UNI-CASSETTE Embedding Cassettes are removed from the tissue processor and placed in the tray in the heated front chamber of the TISSUE-TEK® Thermal Console.

## **EMBEDDING**

1. UNI-CASSETTE Embedding Cassette is removed from the Thermal Console with warmed forceps and placed on the heated Orientation Platform of the Dispensing Console. After removing the UNI-CASSETTE lid, an appropriate Base Mold is selected. The deep portion of the Base Mold is partially filled with molten paraffin by exerting gentle pressure either against the touch plate located on the Dispenser Island or by activating the foot switch.

**NOTE:** It is extremely important that the temperature of the UNI-CASSETTE Embedding Cassette, the Orientation Platform and the embedding paraffin be nearly equal to assure a melted paraffin interface during all phases of embedding. The heated working surface will maintain the cassettes and tissue at the proper temperature for fusion during the second phase of the tissue embedding process.

2. After partial filling, the Base Mold is positioned on the warmed area beneath the spout and tissue specimen is positioned in the center of the embedding mold. A gentle downward pressure of the forceps or a tamper is used to press the tissue specimen against the inner Base Mold surface.
3. The Base Mold is moved from the heated Orientation Platform to the cold spot. Prompt cooling of the Base Mold retains the tissue specimen in the proper position. This movement from hot to cold is the point of maximum precision in the TISSUE TEK System. Thus, it is practical to rapidly position even minute tissue fragments into precise orientation.

**CAUTION:** Never allow paraffin to completely solidify during this procedure. Only a thin film should be allowed to form on the bottom of the Base Mold surface.

4. The UNI-CASSETTE base is removed from the Orientation Platform surface and placed on top of the Base Mold. The temperature of the cassette and the molten surface of the paraffin will allow an immediate bond to take place.

With the UNI-CASSETTE Embedding Cassette positioned firmly on top of the Base Mold, additional paraffin is dispensed. Care should be taken not to over-fill the UNI-CASSETTE/Base Mold. It is only necessary to fill the UNI-CASSETTE one-half of the depth of the cavity in order to assure permanent stability of the paraffin block. This technique of volume adjustment will make the difference between a clean casting and a casting with excess paraffin.

5. UNI-CASSETTE/Base Mold is placed on the Chiller Plate of the Cryo Console. The refrigerated surface will usually maintain a light frost coverage, depending on ambient humidity, enhancing heat exchange between the warmed Base Mold and the refrigerated plate.
6. After a few minutes of cooling, the precisely embedded specimen block can be released from the stainless steel Base Mold.

**NOTE:** It should not be necessary to force blocks from the Base Mold. If cast block does not easily release from the Base Mold, this may indicate that Base Mold surfaces need a thorough cleaning.

7. Embedded specimen blocks may be stored on the refrigerated surface of the Cryo Console to maintain optimum temperature until ready for sectioning.

## SECTION VI

### ACCESSORIES/PARTS/SERVICE

#### ACCESSORY ITEMS

An extensive line of TISSUE-TEK® equipment and accessory components has been designed to provide the most efficient method for processing, embedding and storing tissue specimens. This is a complete system consisting of processing equipment, embedding equipment, Cassettes, Base Molds, Chuck Adapter and Filing Cabinet. A brief description of these items follows; more complete information is available in TISSUE-TEK® Systems Catalog.

#### TISSUE-TEK® Tissue Processor

This is an instrument which automatically processes tissue specimens through a calculated cycle of fixation, dehydration, clearing and infiltration. The operation of the Tissue Processor is controlled by a Timing Disk with movable Time Stops for selection of intervals during the processing time. Tissue specimens are transported in two wire mesh baskets through a series of ten beakers containing the reagents and are then immersed in two heated Paraffin Pots for final replacement of clearing agents in the tissue by paraffin. The Timing Disk regulates the movement of the wire mesh baskets attached to a dome-shaped upper structure which rises, rotates and descends in sequence from one beaker to the next. At the same time, the baskets are continually oscillating back and forth for agitation of the tissue in the reagents and in the Paraffin Pot for the preselected time. Several safety features have been incorporated into the design including a Paraffin Safety Stop, Automatic Rotation Stop at the end of the cycle, and Manual Hood Control Lever. If necessary to postpone the start of operation, processing can be delayed up to 72 hours. This processor can handle up to 100 specimens at one time using TISSUE-TEK® Cassettes or TISSUE-TEK® UNI-CASSETTE™ Embedding Cassettes.

**TISSUE-TEK® Vacuum Infiltration Processor (VIP)**

The VIP is designed to process and safeguard up to 300 tissues simultaneously. The illuminated VIP control panel indicates the precise status of the instrument and the processing procedures. The hazards of moving specimens are completely eliminated, because the VIP brings the reagents to the specimen. Tissues remain isolated in individual cassettes in the Retort (Processing Chamber) as reagent after reagent fills the chamber by vacuum and then returns to its own storage reservoir under regulated pressure. The VIP has four principal modules; the Electronics Package, the Retort Chamber, the Paraffin Oven and the Reagent Reservoir Rack. Each module is complete and easily removable for servicing. The control panel displays: reagent station currently in use, delay time (up to 99 hours, 54 minutes) processing time, retort status (pump in, pressure/vacuum or pump out), temperature (retort or paraffin oven), and various warning indicators. The processing cycle is controlled through a pre-programmed card. All pre-programmed fixation, dehydration, clearing and paraffin impregnation steps occur within the Retort. The Paraffin Oven holds two 3.8 liter sealed reservoirs. The Reagent Reservoir Rack holds ten reagent reservoirs, a reservoir for xylene flush, and a reservoir for carbon filter. The unique air handling system in the VIP isolates specimens from ambient air and keeps unpleasant, potentially dangerous solvent fumes out of the working environment.

**TISSUE-TEK® UNI-CASSETTE™ Embedding Cassette**

UNI-CASSETTE Embedding Cassette has an attached lid which easily snaps off after processing. The slotted design insures thorough and rapid exchange of processing fluids. Three specially textured writing surfaces provide ample space for complete permanent identification. Available in white, yellow, pink, green and blue.

**TISSUE-TEK® Biopsy Cassette**

Similar to UNI-CASSETTE Embedding Cassette except that it is designed with 1mm pores instead of slots. This eliminates the need to wrap most biopsy specimens and greatly reduces the risk of specimen loss. Distinctive gray color makes it easy to locate the specimen after processing.

**TISSUE-TEK® Mega Cassette**

Designed similar to UNI-CASSETTE Embedding Cassette, but depth has been increased to accommodate large specimens such as bone, eyes, teeth, etc. In white only. Used with Mega Base Mold.

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#### **TISSUE-TEK® Base Molds**

Long lasting — stainless steel base molds are precision shaped to form a notched, easy-to-separate paraffin ribbon. Fins extend on all four sides to prevent tipping and provide a gripping surface for easy, precise handling. Stainless steel construction quickly transfers heat or cold to paraffin, spreading temperatures evenly and allowing uniform cooling during solidification. In five sizes for use with UNI-CASSETTE and Biopsy Cassette. Deep Base Mold available for use with Mega Cassette.

#### **TISSUE-TEK® Microtome Chuck Adapter**

Securely holds embedded blocks in place on any standard Microtome and insures proper positioning during sectioning procedures. A lever bar on the top portion of the Chuck Adapter locks embedded block in place parallel to the cutting edge of the Microtome Blade. Proper tension for fine and gross adjustments can be made by adjusting the knob on the top of the Chuck Adapter.

#### **TISSUE-TEK® Cassette Organizer**

Provides a convenient method for handling, numbering and storing Cassettes, UNI-CASSETTE Embedding Cassettes and Mega Cassettes prior to the preparation of tissue sections. Contains three Dispensers in which Cassettes are placed to simplify numbering.

#### **TISSUE-TEK® Filing Cabinets**

Designed to store embedded blocks in an orderly, numerical sequence for easy retrieval. Data sheets are affixed to each drawer to record contents and simplify filing. The cabinet frame and drawers are manufactured from a sturdy plastic which is functional, yet lightweight. Ridges or stacking legs are molded to the bottom of each cabinet to permit stacking cabinets on top of one another. Each cabinet contains six drawers and will accommodate approximately 250 Cassettes per drawer.

## REPLACEMENT PARTS

The following parts are available through certified distributors:

### THERMAL CONSOLE

|          |               |
|----------|---------------|
| 84585001 | Sliding Cover |
| 84585002 | Fuse, 5 Amp   |
| 84585003 | Divider       |
| 84585004 | Thermometer   |
| 84585005 | Tray          |
| 84585006 | Dust Cover    |

### DISPENSING CONSOLE

|          |                              |
|----------|------------------------------|
| 84586001 | Waste Drawer                 |
| 84586002 | Rear Cover, Dispenser Island |
| 84586003 | Lamp Work                    |
| 84586004 | Lamp Cover                   |
| 84586005 | Fuse, 5 Amp                  |
| 84586006 | Switch, Foot                 |
| 84586007 | Filter, Paraffin             |
| 84586008 | Tamper, Large                |
| 84586009 | Tamper, Small                |
| 84586010 | Dust Cover                   |
| 84586011 | Squeegee                     |

### CRYO CONSOLE

|          |                      |
|----------|----------------------|
| 84587001 | Drain Drawer         |
| 84587002 | Fuse, 10 Amp SLO-BLO |
| 84587003 | Dust Cover           |

## SERVICE

For service on the TISSUE TEK® Tissue Embedding Console System, contact your nearest authorized Miles Inc., Diagnostics Division Customer Service or Miles Instrument Service Representative. In the United States, contact the Customer Service Communications Department of Miles Inc., Diagnostics Division by calling toll free 1-800-348-8100. In countries other than the United States, contact the nearest Miles instrument distributor for service information.