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## ***Flotation Work Station***

Catalog # FWS-120, FWS-220

### **Operator's Manual**

Version 1.5, Jun 2006

*Be certain to read this manual thoroughly  
before proceeding with unpacking and installation.*

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## TABLE OF CONTENTS

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<b>Topic</b>	<b>Page</b>
Warranty card	Insert A
Introduction	1
Overview and specifications	2
Instructions	4
Precautions and maintenance	6
Error codes	7
Regulatory Compliance	8
Contact information	9

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## INTRODUCTION

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Congratulations on your purchase of a TBS<sup>®</sup> Flotation Work Station (FWS). This system offers you the most full-featured flotation instrument available, and includes a drying block for your slides and a histo-orientator for quick removal of folds from your paraffin sections. This second-generation instrument has been developed using the same proven critical components that made the original system so reliable; however, several new enhancements have been made. Display readability has been improved through the use of 14-segment LED displays (allowing for the proper display of alphabetical characters). The heart of the system is built using a 6-layer FR-4 printed circuit board which exhibits improved electrical emissions interference control. The high-power control module has been separated from the controller to conform to regulatory safety standards.

Each part of your system (the bath, dryer, and histo-orientator) is independently temperature-controlled for optimum performance with the embedding media you are using. The latest in heater technology, flat silicone-encased elements assure rapid response time and even heat distribution throughout the heating blocks. Solid state, flat membrane switches in the faceplate afford a long life for the control panel and a degree of safety unparalleled with older technologies.

Using microprocessor technology, water temperature can be closely controlled to +/- 1°C. By simply pressing the appropriate key, digital readouts of the actual temperature of the bath, dryer, or histo-orientator can be monitored. A new and improved water bath temperature sensor uses durable hinged rotation and a magnetic position detection system for high reliability and resistance to wear and tear.

The histo-bath has a tough, non-heat conductive, chemical- and scratch-resistant plastic kydex (UL approved) housing that will not discolor. With routine care, this instrument will give you many years of service.

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## OVERVIEW AND SPECIFICATIONS

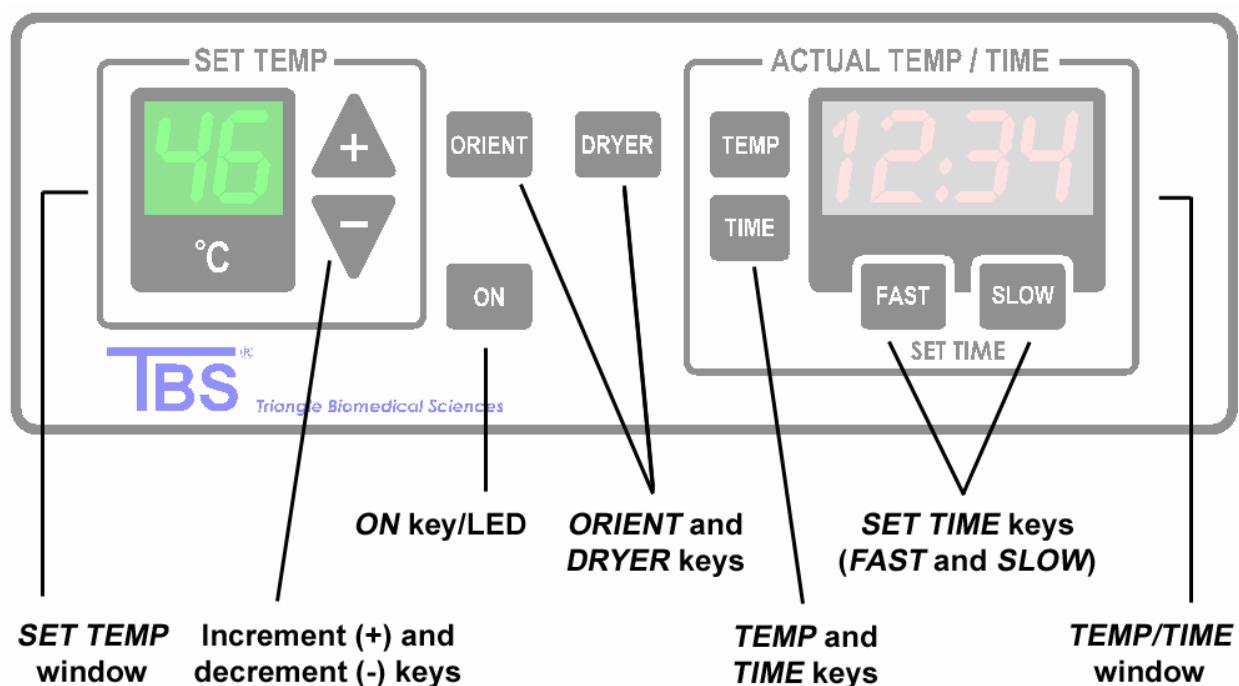
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### TBS<sup>®</sup> Flotation Work Station (FWS)



## FWS Control Panel



## Specifications

<b>Dimensions</b>	Height 5.25" (133.35mm) Width 14" (355.6mm) Depth 18" (457.2mm)
<b>Voltage</b>	120V AC ± 10% 50/60Hz single phase
<b>Current</b>	3.75 amps
<b>Power</b>	450 watts
<b>Default temperature setting</b>	Bath 42°C Orientator 42°C Dryer 55°C
<b>Maximum temperature</b>	60°C
<b>Heat output</b>	1646 BTU/hr (typical)
<b>Weight</b>	Unit 10.35 lbs (4.695 kg) Shipping 15 lbs (6.804 kg)

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## INSTRUCTIONS

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1. Remove the equipment from the shipping carton carefully. Save the shipping carton and all packing material until proper operation of the equipment is confirmed. Immediately notify the carrier if there is any visible damage to the carton or its contents. Failure to do so may limit your ability to obtain compensation for damage.
2. Fill the glass dish with water to the desired level. **NOTE:** To ensure sensor accuracy, a minimum of 1" of water should cover the probe. The addition of warm water will decrease the time required for the bath to reach desired temperature settings.

**NOTE:** Never leave a dry dish in the bath area with the heater on. If the water level is below the sensor, the controller will stop heating the water bath.

3. Place the dish into the histo-bath, ensuring that the dish is seated properly in the recessed area of the heating tray.
4. Plug the histo-bath into a properly grounded 120V AC outlet (or 220V for the FWS-220 model).

**NOTE:** If your unit was shipped outside of the U.S., check the label on the rear of the instrument for the electrical requirements.

Immediately upon plugging the unit in, the *SET TEMP* and *TEMP/TIME* windows will display **8888** for approximately 4 seconds. The unit will then display **PASS** or **FAIL** in the *TEMP/TIME* window for 4 seconds. If **PASS** appears, **06:00** will appear in the red LED window and flash until set, while the *SET TEMP* window will display the factory preset temperature of **42°C**.

**NOTE:** If **FAIL** appears in the *TEMP/TIME* window, the *SET TEMP* LED will be blank and the beeper will continue to sound. Press any switch to discontinue the beeping. Although the water bath may appear to function normally, the **FAIL** message indicates that the software has found a problem with the unit, and the unit should be returned for service. Phone our customer service department immediately for further instructions.

5. Push the temperature probe down into the water. Make sure that there is enough water to cover at least 1" of the sensor. The temperature probe is connected to a safety cut-off switch which is monitored by the temperature control system. The probe should be lowered into position where it will touch the top surface of the instrument enclosure. The LED will light up and beep, indicating that the microprocessor is controlling the bath temperature.

**NOTE:** The fluorescent lamp will light up immediately upon pressing the *ON LED* for optimum section viewing.

6. You may now set the clock by pressing the *SET TIME FAST* or *SET TIME SLOW* keys. Press the *TEMP* key to the left of the *TEMP/TIME* display if you prefer continuous monitoring of the bath temperature.
7. To increase or decrease the preset bath temperature, press and hold the increment (up arrow) key or the decrement (down arrow) key until desired temperature is displayed in the *SET TEMP* window. Maximum operating temperature is **60°C**.
8. The 2x2-inch histo-orientator block is factory preset to **55°C**. The heater is initiated when the *ON LED* is pressed and cannot be turned off independently. To adjust the orientator temperature, press and hold the *ORIENT* key while pressing the up or down arrows. The maximum temperature is **65°C**. The actual temperature of the heater can then be monitored by pressing the *ORIENT* key.

A quick touch to the 2x2-inch plate at **55°C** will smooth out most tissue wrinkles. It is also useful at the cryostat to warm slides for better tissue attachment.

9. The 2x5-inch dryer block is factory preset to **42°C**.<sup>1</sup> The heater is initiated when the *ON LED* is pressed and cannot be turned off independently. To adjust the dryer temperature, press and hold the *DRYER* key while pressing the up and down arrows. The maximum temperature is **65°C**. The actual temperature of the heater can be monitored by pressing the *DRYER* key at any time during operation.<sup>2</sup>

<sup>1</sup> **42°C** has been designated as a general mid-range temperature, based on general usage statistics compiled from a broad user base.

<sup>2</sup> The *TEMP/TIME* display will default to reading the bath temperature immediately upon release of the *ORIENT* or *DRYER* keys.

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## PRECAUTIONS AND MAINTENANCE

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- For your safety and the safety of those working near you, never place a dry glass dish in the bath well when the histo-bath is on. The glass dish will become very hot and could cause burns if touched.
- Always immerse the temperature probe in the water bath while the unit is in operation, as the sensor that regulates the water temperature is located in the end of the probe. Be certain that at least one inch of the probe is underwater. The *ON* LED will flash if the probe is not seated properly in the glass dish, indicating that the heater is *not* initiated.
- It is not necessary to unplug the histo-bath when it is not being used, as this will cause any user-defined time clock and bath temperature set points to be lost. The bath, however, *should* be turned off before departing for the day.
- To replace the lamp, first unplug the unit and remove the glass bowl. After removing the screws connecting the housing to the base of the unit, remove the housing from the base to expose the lamp and the associated bracket. The bulb can be easily pulled from its socket and replaced with a new one.
- To order replacement bulbs, please refer to the TBS catalog number *RFL-9W*. These high-intensity fluorescent bulbs are sold in packs of two.

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## ERROR CODES

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An error condition exists when the beeper sounds an alarm and the *SET TIME* LED display flashes an error code. The error code indicates one of the specific problems as described below:

<b>Error code</b>	<b>Problem</b>
E0	General system failure
E1	Bath temperature over 70°C
E2	Orientator temperature over 70°C
E3	Dryer temperature over 70°C
E4	No increase detected in bath temperature with bath heater ON
E5	No increase detected in orientator temperature
E6	No increase detected in dryer temperature

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## REGULATORY COMPLIANCE

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The **FWS-120/220** has been tested by a registered independent body to rigorous international quality and safety standards, and has been found to be in compliance with the following regulations and specifications:

	<b>UL</b> 61010A
	<b>CSA</b> 1010-1
	<b>CE</b> EN/IEC EN61010-1, Safety EN61000-3-2, Harmonic Distortion EN55011, Emissions EN61326, Immunity EN61000-3-3, Voltage Fluctuation/Flicker

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## CONTACT INFORMATION

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