

User Manual

Compact Shaking Hot Water Bath

Model : SWB10D240

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English



www.ratek.com.au

60 Wadhurst Dve, Boronia, Victoria 3155, Australia - P: +613 9887 2161 - F: +613 9887 2163 - E: sales@ratek.com.au

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Errors and omissions excepted.

Thank you

Thank you for purchasing a Ratek product.

This User Manual will assist you in the correct installation and operation of the SWB10D Water Bath, as well as explain the safety requirements for its use.

Important: Please read the contents of this User Manual before unpacking and operating the product.

Unpacking and Checking

Once you have read these instructions in full and understand the installation and safety requirements including those for unpacking the carton, please carefully open the packing and slowly remove the product. Carefully inspect the condition of the product to ensure it has not been damaged in transit. Any damage should be reported immediately to the responsible carrier. If the product is damaged in any way, re-pack the product into the supplied packaging and notify the responsible carrier immediately.

Important: Do not operate the equipment if it has been damaged in any way. Any failures resulting through the use of a damaged product will not be covered by the product warranty.

Carton Contents

Ensure that you have received all items outlined below before proceeding. If you have not received all components in the supplied carton, please re-pack the carton and notify a Ratek Service representative immediately. Contact details are provided in the section of this User Manual titled "Ratek Service Contact Information"

- **Ratek SWB10D Water Bath**
- **Mains power input lead**
- **Plastic storage cover**
- **User Manual**

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Intended Use

This water bath is intended for the purpose of heating water only, whilst providing agitation via a submerged moving cradle. The operator may load a suitable article onto the cradle for the purpose of controlled temperature application and agitation of the article. The water bath is intended for use with tap water or filtered water only.

The water bath is **not** intended for use with any other medium. The water bath is **not** intended to provide direct-contact between the medium (water) and an unprotected medical, food, biological or medico- techno item. In all cases the item should be enclosed in a suitable vessel as described below.

Suitable Articles For Use With This Water Bath

- Plastic or glass laboratory test tubes that are sealed, waterproof and rated to withstand the intended temperature.
- Plastic or stainless steel laboratory test tube racks that are rated to withstand the intended temperature.
- *An example of a suitable article would be a sealed plastic laboratory centrifuge tube filled with blood.*

Unsuitable Articles For Use With This Water Bath

- Any item where the article is not waterproof or may result in its contents coming into contact with the water bath medium (water).
- Items weighing more than 1 kilogram.
- *An example of an unsuitable article would be an exposed piece of animal or plant matter.*

Suitable Environments For The Water Bath

The water bath is intended for use in a clean laboratory environment only where adequate ventilation, a good power supply and provisions for routine cleaning are available. The water bath should not be used outdoors or in dirty, dusty, humid or windy environments. The acceptable operating conditions are outlined further in this User Manual.

General Operation

- The water bath is filled with water following the safety guidelines contained within this User Manual.
- The water bath is plugged into an appropriate power source. It is powered by an alternating current power supply with protective earth and with the appropriate receptacle, rated voltage and frequency for the country of its intended use. Further details on power requirements are outlined in this User Manual.
- A suitable article (as defined above) is placed on the shaking platform.
- The water bath is operated via a front panel interface consisting of heating on/off switch, cradle oscillation on/off switch, heating temperature up/down controls and cradle oscillation speed control knob. These controls allow the operator to set a required water temperature and cradle oscillation speed.
- The water bath should be operated strictly in accordance with the Operating Procedures outlined further in this User Manual.

Operator Responsibility - Safety Considerations

When operated in strict accordance with this User Manual, plus routine cleaning and maintenance being carried out, the product shall provide safe operation for the operator. The operator should be aware of the following before installing and operating the product :

Conditions of Operation

***Note:** The term “operator” referred to in this User Manual is the primary person who has been tasked to install, maintain and train in the usage of this equipment. Other personnel shall be referred to as “Users”.

- The operator shall be aware that the protection provided by the equipment may be impaired if the equipment is used with accessories not provided or recommended by the manufacturer, is modified in any way or is used in a manner not specified by the manufacturer.
- The operator is responsible for ensuring all users of the product are qualified to do so, and are well versed in common safety concepts. The product should only be operated by an adult who has read and understood this User Manual provided in the appropriate language in its entirety.
- Any user must be informed by the responsible operator of any potential hazards that may arise through the use of this equipment in the course of their work, including any local environmental hazards not related directly to the water bath. They should also be able to demonstrate that they understand any preventative safety measures in operation prior to operating the equipment.



- The operator shall agree to accept responsibility for the use of the equipment in accordance with this User Manual, and be fully aware that the equipment is designed for commercial use.
- It is assumed that the user and operator have had experience in a commercial environment, and had appropriate training in how to perform their work safely in accordance with any local operational health and safety regulations. The operator and all users should be well versed in local emergency procedures as per the workplace safety regulations in effect.
- Avoid any direct impact with any surface of the equipment, including the casing, cover panel and most importantly the control panel.
- **Important:** Do not use any sharp or pointed metal objects anywhere near the equipment, in particular the control panel.
- Avoid using the equipment near any other vibrating equipment or source of excessive vibration.
- Ensure the equipment is cleaned and maintained in accordance with this User Manual.
- Ensure that all original safety warning labels are in an adequate, legible condition and are firmly affixed to the equipment before using the product.
- Plug the equipment directly into a wall power outlet. Do not plug the equipment into a multi-socket adapter of any kind.
- The equipment is intended for operation in a controlled electromagnetic environment. Avoid the use of transmitting devices (e.g. cellular or mobile telephones) near the equipment whilst operating. A minimum distance of 2 Metres from the product is recommended for any transmitting device.
- The equipment must only be installed and operated in well ventilated areas. The unit is not intended for use in explosive atmospheres, in confined spaces or inside any other piece of laboratory equipment such as humidity cabinets or incubators.
- The allowed operating environment must be between 5° Celsius and 40° Celsius ambient air temperature. Be aware that the ambient air temperature will limit the minimum controllable water temperature. The ambient air temperature must be at least 5° Celsius lower than the desired controllable water temperature.
- The maximum allowed relative humidity of the operating environment is 80%.
- The equipment should not be stored in direct sunlight, near chemicals, or other contaminants.
- If any of these safety recommendations cannot be achieved or the equipment has been damaged in any way, the equipment should not be installed or operated.
- **Important :** If you have any concerns or questions relating to operator or user safety, please contact the appropriate Ratek Service department before installing and operating the unit. Contact details are provided in this User Manual.




Safety Labels And Markings

The equipment is provided with safety caution labels. An explanation of each caution label is provided below. It is the responsibility of the operator and user to fully understand the meaning of these warning labels prior to operating the equipment.

Very Important: Particular care should be taken when working near the heating element in the bottom of the water bath. At all times the shaking platform MUST REMAIN FITTED to the water bath whilst in operation to avoid possible burns or scalds from the heating element plate. The shaking platform MUST NOT BE REMOVED AT ANY POINT.

The operator or user must also take extreme care when the bath is working at temperatures above 50° C as steam will be present and can cause scalding.

Caution Labels	Definition
 <p>CAUTION Keep away from moving parts</p> <p>Colours: Black on a yellow background</p>	<p>The water bath has a shaking cradle which should not be touched whilst it is moving. Keep all body parts away from the moving cradle whilst in operation. Always stop the cradle using the front panel speed control before working with the contents of the bath.</p> <p>This label is fitted by the manufacturer and must not be removed under any circumstances.</p>
 <p>CAUTION Hazardous voltages inside, do not remove covers</p> <p>Colours: Black on a yellow background</p>	<p>The water bath is powered by an alternating current power supply sufficient to cause harm if contact with the electrical supply is made. Under no circumstances should any part of the equipment be opened, unscrewed, loosened or disassembled whilst power is applied to the unit. Only authorized service agents are permitted to remove covers.</p> <p>This label is fitted by the manufacturer and must not be removed under any circumstances.</p>

 <p>CAUTION Do not operate switches with wet hands</p>	<p>The water bath is powered by an alternating current power supply sufficient to cause harm if contact with the electrical supply is made. Under no circumstances should the user operate any part of the control panel with moist, damp or wet hands.</p>
<p>Colours: Black on a yellow background</p>	<p>This label is fitted by the manufacturer and must not be removed under any circumstances.</p>
 <p>CAUTION High temperatures present can cause burns</p>	<p>The water bath is designed for heating water to temperatures that can cause burns or scalding. Use extreme caution when working near hot water to avoid injury. Under no circumstances should the heating element be touched whilst in operation.</p>
<p>Colours: Black on a yellow background</p>	<p>This label is fitted by the manufacturer and must not be removed under any circumstances.</p>
 <p>CAUTION Always empty water tank from this end</p>	<p>The water bath is powered by an alternating current power supply sufficient to cause harm if contact with the electrical supply is made. When emptying the water tank, the water bath should be disconnected from the alternating current mains power supply, the water allowed to cool to ambient air temperature and emptied by allowing the water to flow from the end of the water tank furthest from the main control panel.</p>
<p>Colours: Black on a yellow background</p>	<p>This label is fitted by the manufacturer and must not be removed under any circumstances.</p>

Operating Procedures

You must take the time to familiarize yourself completely with the following operating procedures before installing or operating the water bath in order to achieve the best performance and maximum attainable user safety.

Identification of Controls & Functions

Throughout this User Manual, the numerical element representing a control or component of the water bath will be used to identify it. The figure below indicates all key controls and components of the water bath with their corresponding numerical element labeled.

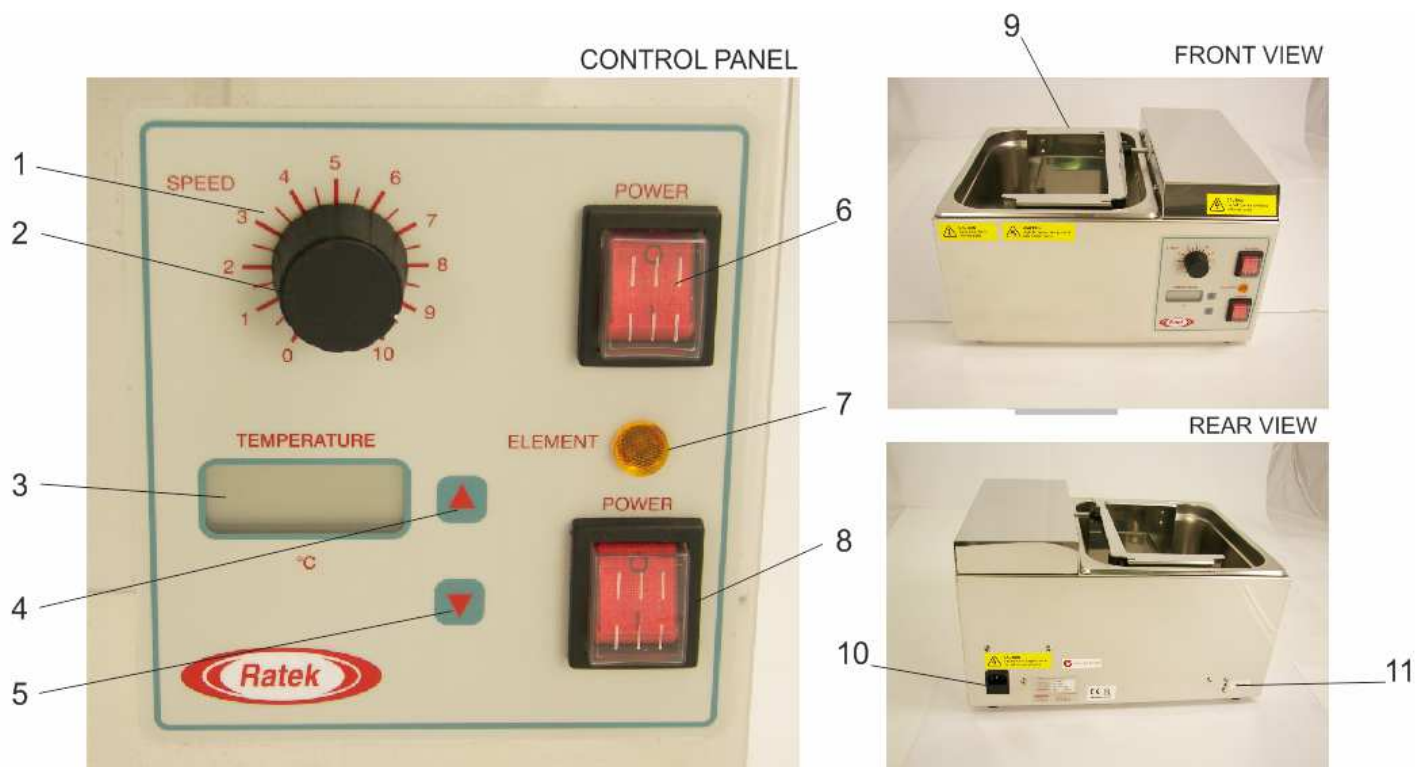





Figure 1

Numerical Element	Description of component
1	Oscillation speed setting indicator dial
2	Oscillation speed control knob
3	LCD temperature display
4	Temperature increase key pad
5	Temperature decrease key pad
6	Oscillation On/Off mains power switch (setting O = Off, setting = On)
7	Heating Element Indicator
8	Heating On/Off mains power switch (setting O = Off, setting = On)
9	Oscillating cradle
10	Mains power input receptacle
11	Over-temperature reset button

Safety Warnings




Throughout this User Manual, specific warnings will be supplied which relate to the current operation being referred to. These warnings are supplied in addition to the main warning labels affixed to the product and the key points outlined in the section of this User Manual titled 'Operator Responsibility - Safety Considerations'.



A graphical symbol as pictured below will be used next to each warning with accompanying text, the danger level for each is described below :

	<p>CAUTION Indicates a possibly dangerous situation which may result in serious injury or threat to life if the situation is not avoided.</p>
	<p>CAUTION Indicates a possibly highly dangerous situation which may result in serious injury or threat to life if the situation is not avoided.</p>
	<p>CAUTION Indicates a possibly harmful situation which may result in injury or damage to product or property if the situation is not avoided.</p>

Safety Recommendations



The following safety recommendations must be followed to prevent damage or injury. In addition to these safety recommendations, it is assumed that the user and operator have had experience in a commercial environment, and had appropriate training in how to perform their work safely in accordance with any local operational health and safety regulations. The operator and all users should be well versed in local emergency procedures as per the workplace safety regulations in effect.





	<p>CAUTION If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.</p>
	<p>CAUTION The equipment must only be used with a protective earth power socket. The earth contact provides protection to the user and the equipment. If you do not have a protective earth power socket, or you are unsure as to whether you have a protective earth power socket, do not connect the equipment. In such cases you should consult your workplace administrator or electrical maintenance staff to determine if a protective earth power socket is available.</p> <p>A surge protected power outlet is strongly recommended as it provides some protection for the equipment in areas of poor electrical quality as well as providing some protection against lightning strikes. The equipment should be operated on a good, reliable supply of power at all times.</p> <p>Note: The water bath should not be operated on the same electrical circuit as other high voltage household appliances such as fridges, clothes dryers, washing machines or other continuous operation high voltage devices. These types of devices can create power fluctuations that are undesirable for sensitive medical equipment. Consult your workplace administrator or electrical maintenance staff if you are unsure.</p>
	<p>CAUTION The water bath is intended for use with tap water or filtered water only. De-ionized or distilled water can cause corrosion.</p> <p>Use with any other medium is not permitted.</p>

	The use of flammable liquids may cause serious injury or danger to life.
	<p>CAUTION Always work above the level of the water bath to avoid spillage of dangerously hot water. At no point should the user, operator, animal or any other perishable object be situated directly beneath the water bath.</p>
	<ul style="list-style-type: none"> - ALWAYS wear protective eyewear when working with hot liquids. - ALWAYS place the water bath on a strong, even, dry, flat waterproof surface which is made of inflammable material. Placing the water bath on an unstable surface could cause hot water to spill. - ALWAYS empty the water bath before moving the equipment to a new location. - ALWAYS turn off both mains power switches (elements 6 and 8 in Figure 1) when the unit is not in operation and turn off the mains power supply at the outlet. - ALWAYS turn off both mains power switches (elements 6 and 8 in Figure 1) and unplug the equipment from the mains power supply outlet before emptying the water tank or moving the equipment. - ALWAYS be careful of water condensation above or near the water bath and ensure at all times that the condensation cannot come in contact with the water bath control panel or mains power input receptacle (element 10 in Figure 1). Ensure benches are kept dry at all times. - ALWAYS operate the water bath in a well ventilated area with adequate clearance around the water bath as indicated. - ALWAYS be careful of steam and avoid making contact. - ALWAYS use the water bath with the oscillating cradle moving to improve temperature uniformity. - ALWAYS use only the supplied mains power lead. Non-genuine leads may not be suitable. - NEVER operate the water bath without water in the water tank. - NEVER empty the water bath while it contains hot water. Always allow the water to cool to ambient room temperature before emptying. - NEVER operate the equipment if you believe it is damaged in any way. - NEVER operate the water bath if the mains power supply cable is damaged in any way - NEVER use any sharp or metal objects near the water bath control panel or mains power input receptacle (element 10 in Figure 1). - NEVER lift the water bath if you have an existing injury that impairs your ability to lift.

Preparation & Installation



The water bath should be installed and operated in strict accordance with the following instructions.



	<p>CAUTION The water bath is not for use in explosive atmospheres as there is a risk of fire, explosion, burns or scalding present under these conditions.</p>
	<p>CAUTION Be careful when lifting and observe your local operational health and safety requirements for lifting before unpacking the carton.</p>
	Unpacking and Installing
	<ul style="list-style-type: none"> - Carefully remove all packaging material from the water bath, as well as the supplied mains power lead, User Manual and any other supplied accessories. The oscillating cradle (element 9 in Figure 1) inside the water bath should not be removed. - Carefully inspect the water bath, mains power lead and all packaging for any signs of damage. If any signs of damage are present, do not install or operate the equipment. Contact the supplier of your equipment if you have a received a damaged product. - Place the water bath in an upright position as per Figure 1 on a strong, even, flat waterproof surface which is made of inflammable material.





	<ul style="list-style-type: none"> - Ensure that there is a minimum unobstructed distance of 100 millimetres between the left, right and rear panels of the water bath and any other object or wall. - Ensure that there is a minimum unobstructed distance of 500 millimetres above the top of the water tank to allow for adequate ventilation. - Ensure that there is a suitable mains power supply outlet within reach of the supplied mains power lead without placing any strain whatsoever on the lead, socket or plug. The water bath should not be plugged into any double-adaptor, power board, or power point splitter of any kind but instead directly into a correctly earthed wall mounted power socket. - Ensure that there is a minimum unobstructed distance of 1,000 millimetres in front of the water bath to allow adequate room for the user to maintain a safe operating distance of 300 millimetres.
	<p>CAUTION The water bath is designed for the purpose of heating immersed plastic or glass sealed laboratory test tubes, flasks or bottles suitable for use at the water temperature selected by the operator whilst being agitated.</p> <p>The contents of these test tubes is the sole responsibility of the user or operator, and the use of corrosive, flammable, combustible, hazardous, environmentally unsafe or otherwise dangerous materials within the immersed container is done so at the risk and liability of the user or operator.</p> <p>ALWAYS be 100% sure of the contents of your containers, the expected behavior once heated and agitated and the applicable safety measures that should be employed when handling such substances.</p> <p>ALWAYS ensure your containers are firmly sealed and there is no chance of the sample leaking into the water bath.</p> <p>ALWAYS use plastic, stainless-steel or plastic powder-coated tubes racks and accessories in the water bath. This will assist to prevent corrosion and thus help to extend the useful life of the water bath.</p>
	<p>CAUTION Poor water quality can lead to corrosion of the water bath even though it is constructed from stainless steel, and eventually lead to a potentially hazardous situation. The water bath is intended for use with tap water or filtered water only.</p> <p>A soft, decalcified water is the recommended liquid for use with the water bath.</p> <p>Depending on local conditions, the water supply may be ferrous or overly chlorinated. Both of these conditions may lead to corrosion if used with the water bath.</p> <p>Distilled or de-ionized water may lead to corrosion if used with the water bath.</p> <p>Use of any liquid other than that recommended above will void the product warranty.</p> <p>Contact the supplier of your water bath before filling the water tank if you are unsure of your water supply.</p>
	<p>CAUTION Before filling the water tank, ensure the mains power supply outlet is switched off and that the mains lead is removed from the mains power input receptacle (element 10 in Figure 1).</p> <p>The nature of pouring water is unpredictable and should be done carefully away from any electrical supply to avoid the risk of electric shock.</p>
	<p>CAUTION Do not over-fill the water bath. If the water bath is over-filled, the movement of the oscillating cradle may cause water to spill out of the water tank and create a hazardous situation if the water comes near an electrical current.</p>




	<p>The maximum water depth is 35 millimetres below the tank rim. This level is just beneath the cradle wheels support rail and you should use this rail as a guide.</p> <p>The minimum filling level is 30 millimetres above the bottom of the oscillating cradle, or approximately 50 millimetres from the bottom of the water tank.</p> <p>If the water level falls below this minimum level during operation, the water bath should be powered off, disconnected from the mains electrical supply and the water level topped up with cold water. Be aware that this will result in the rapid decrease in the water bath water temperature and the effect of this in relation to the current procedure being carried out must be considered.</p> <p>No liability will be accepted if in the normal course of operation the contents of the containers being heated and oscillated are damaged due to insufficient water levels or inappropriate temperatures being applied as a result of re-filling.</p>
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Using The Water Bath

	<h4 style="color: blue;">Filling The Water Tank</h4>
	<ul style="list-style-type: none"> - The water bath should be filled by slowly pouring cold water (below 25° Celsius) into the end of the water bath furthest from the control panel, initially to 50% of the desired water level. - Place the empty container/s to be used in the appropriate rack or tray and submerge in the water to gauge the displacement created by the containers. - Continue filling the water tank the desired working level. - Remove the containers. - Avoid splashing as much as possible.
	<h4 style="color: blue;">Connecting Power</h4>
	<p>CAUTION The equipment must only be used with a protective earth power socket. The earth contact provides protection to the user and the equipment. If you do not have a protective earth power socket, or you are unsure as to whether you have a protective earth power socket, do not connect the equipment. In such cases you should consult your workplace administrator or electrical maintenance staff to determine if a protective earth power socket is available.</p> <p>The mains power supply must be rated to match the power requirement as identified on the product identification label on the bottom left corner of the rear panel. This is normally expressed in the format of Voltage Range and Frequency.</p> <p>A surge protected power outlet is strongly recommended as it provides some protection for the equipment in areas of poor electrical quality as well as providing some protection against lightning strikes. The equipment should be operated on a good, reliable supply of power at all times.</p> <p>Note: The water bath should not be operated on the same electrical circuit as other high voltage household appliances such as fridges, clothes dryers, washing machines or other continuous operation high voltage devices. These types of devices can create power fluctuations that are undesirable for sensitive medical equipment. Consult your workplace administrator or electrical maintenance staff if you are unsure.</p> <p>IMPORTANT : Use of an incorrect power supply will void the product warranty waive all liability for any and all damage caused by such use. If you are unsure about the rating of your power supply, consult your workplace administrator or electrical maintenance staff to determine if your power supply is suitable for use with this product before connecting the power lead.</p>
	<p>CAUTION Regularly check the mains power lead condition over the life of the product, and do not operate the equipment if you suspect there is damage to any part of the equipment or the mains power lead.</p>

	<p>Replace the mains power lead if you suspect it has been stretched, over-extended or damaged in any way.</p>
	<ul style="list-style-type: none"> - Using the supplied mains power lead, insert the socket end of the lead firmly into the mains power input receptacle (element 10 in Figure 1) until it will move no further.
	<ul style="list-style-type: none"> - Insert the plug end of the mains power supply lead firmly into a properly rated, protective earthed wall mounted power supply outlet. <p>If there are double-adapters or oversized DC power packs causing obstruction of the mains power lead plug, these should first be removed.</p>
	<ul style="list-style-type: none"> - Ensuring your hands are dry, switch on the power on the mains power supply outlet.
	<h3>Switching On The Water Heating</h3>
	<p>CAUTION Ensure you have filled the water bath to at least the minimum required level before switching on power to the heating system. Failure to do so may create a hazardous situation that can cause burns, scalding and create a fire risk.</p>
	<ul style="list-style-type: none"> - The water heating control circuit will retain the last used temperature set-point set on the control panel, so for many applications it will only ever need to be set once. - Before switching on the water heating, determine the temperature you wish to operate the bath at. - If you wish to heat your containers from ambient temperature, you should load the cradle with a suitable rack, tray and containers prior to switching on the heating system, see the section titled "Loading the Water Bath" below. - If you wish to add your containers to warm or hot water, this should be done with extreme care once the temperature of the water bath has stabilized.
	<ul style="list-style-type: none"> - Once you are ready to begin heating the water, switch the Heating On/Off mains power switch (element 8 in Figure 1) down to the position marked with a vertical line. The Heating On/Off mains power switch (element 8 in Figure 1) will light up red to indicate the heating system is active. - The heating control system will begin its startup, after several seconds the LCD temperature display (element 3 in Figure 1) will read the current water temperature in degrees Celsius. - If the last set temperature is greater than the current water temperature, the Heating Element Indicator (element 7 in Figure 1) will light up and either flash to indicate intermittent heating or remain lit constantly to indicate constant heating.
	<p>CAUTION The heating element is the round disc visible in the bottom of the water tank, directly underneath the oscillating cradle.</p> <p>Once the Heating Element Indicator (element 7 in Figure 1) is lit, the heating element is active and the surface of the element will remain extremely hot whilst heating and for many minutes even after power to the unit has been disconnected. Once the Heating Element Indicator has lit, under no circumstances should you place any part of your body near the bottom of the water tank. The residual heat of the element creates a hazardous situation sufficient to cause burns or scalding if contact with the element is made.</p> <p>IMPORTANT : Under no circumstances should the oscillating cradle ever be removed from the water bath. If the oscillating cradle is removed, a hazardous situation will be created sufficient to cause burns or scalding if contact with the element is made.</p>
	<h3>Setting the Required Water Temperature</h3>
	<ul style="list-style-type: none"> - The LCD temperature display (element 3 in Figure 1) indicates the current water temperature in degrees Celsius in its default operating mode. - When the temperature is being set, the LCD temperature display (element 3 in Figure 1) will temporarily read the temperature set-point value that the operator is adjusting.

	<ul style="list-style-type: none"> - Use the temperature increase key pad (element 4 in Figure 1) to increase the required temperature by pressing quickly for single digit increments, or holding the key to increase the temperature setting by larger amounts. The value on the LCD temperature display (element 3 in Figure 1) will alter. - Use the temperature decrease key pad (element 5 in Figure 1) to decrease the required temperature by pressing quickly for single digit increments, or holding the key to decrease the temperature setting by larger amounts. The value on the LCD temperature display (element 3 in Figure 1) will alter. - Once the adjustments have been made, the LCD temperature display (element 3 in Figure 1) will return to show the current water temperature after a few seconds. - If the last set temperature is greater than the current water temperature, the Heating Element Indicator (element 7 in Figure 1) will light up and either flash to indicate intermittent heating or remain lit constantly to indicate constant heating. - Once the water temperature nears the set point, the PID temperature control circuit will start to intermittently engage the element to reduce the rate of heating. - It is normal for the temperature to exceed the set point slightly whilst the temperature in the bath stabilizes. The bath temperature will drop back down to the set temperature and then the proportional temperature control will attempt to maintain the set temperature.
	<p>CAUTION If the temperature of the water in the water bath is critical to your application, ensure the water bath is left for at least 30 minutes to stabilize after the temperature has reached the set-point before you insert your containers and samples into the water.</p>
	<p>CAUTION Temperatures above 50 degrees are sufficient to cause steam and are also capable of causing burns or scalding. Exercise extreme care paying particular attention to steam and splashing of water when the water bath is operating at these high temperatures, particularly whilst loading and unloading, containers, racks or accessories. ALWAYS use appropriate tools (such as silicon insulated tongs) to lower such containers into the water to avoid your hands coming into contact with hot water.</p>
	<p>IMPORTANT : The maximum attainable temperature in the water bath is approximately 80° Celsius (depending on environmental factors such as volume of water, ambient air temperature, water quality and humidity), however the control circuitry will allow a set-point of up to 99.9° Celsius. Due to environmental factors including the size of the water tank, the power of the heating element, the water being open to the air and the resulting evaporation, the water bath is rated for practical use only up to 70° Celsius whilst maintaining accurate temperature stability. The water bath will not achieve a water temperature of 99.9° Celsius by design.</p>
<p>Loading/Un-Loading the Water Bath</p>	
	<p>CAUTION NEVER load or unload items from the cradle whilst the cradle is in operation. The moving cradle is capable of causing injury if any part of the body becomes lodged around it.</p> <p>ALWAYS load items ONLY onto the bottom of the cradle platform which is suspended above the bottom of the water tank, and ensure that no part of the item extends beyond the width of the cradle (outside the retaining walls). Items that extend beyond the width of the cradle may cause the water bath to jam or create a hazardous situation whereby personal injury could occur.</p> <p>NEVER load items directly onto the bottom of the water tank as this will result in the oscillating cradle becoming jammed. The bottom of the water tank is also in direct contact with the element and any items that come into contact with it may be destroyed.</p>
	<p>CAUTION NEVER touch the bottom of the water tank whilst the water bath is heating as serious burns and scalding could result.</p> <p>ALWAYS use appropriate tools (such as silicon insulated tongs) to load and unload items from the water</p>

	<p>to avoid your hands coming into contact with hot water or the heating element.</p>
	<p>CAUTION When working with glass tubes, flasks, bottles, breakable or other brittle or fragile articles it is important to use an appropriate retaining rack or fixture that ensures individual vessels are supported independently and cannot come into contact with one another.</p> <p>For example, if using glass test tubes, each tube should be retained in it's own division of a test tube rack, and the rack itself should be wide enough to be retained by the base of the oscillating cradle without sliding around during oscillation. A powder coated stainless steel test tube rack is recommended for retaining test tubes.</p> <p>No vessel should be allowed to come into contact with any other vessel during high speed oscillation in order to prevent breakage and a potentially hazardous situation from being created.</p> <p>ALWAYS use appropriate tools (such as silicon insulated tongs) to load and unload items from the water to avoid your hands coming into contact with sharp, broken or contaminated vessels.</p>
	<ul style="list-style-type: none"> - Turn power Off to the oscillating cradle by setting the Oscillation On/Off mains power switch (element 6 in Figure 1) up to the setting marked with a circle. - When loading, use appropriate tools (such as silicon insulated tongs) to place the required rack, container or accessory onto the oscillating platform. Ensure the item is adequately retained by the 2 retaining walls on the bottom of the cradle. If the item is too small to be adequately retained, it should be loaded into another suitable rack or tray which will be adequately retained by the retaining walls. - When unloading, use appropriate tools (such as silicon insulated tongs) to slowly remove the items and place them onto a water-proof and heat-proof surface. - Continue to load or unload your containers, racks or accessories until complete.
	<p>CAUTION Be careful when working with hot items removed from the water bath as burns or scalding may occur if contact occurs.</p> <p>Always wear eye protection when loading or unloading items from a hot water bath.</p> <p>Do not use explosive or volatile containers with this water bath.</p> <p>Ensure all containers remain tightly sealed at all times whilst loading and unloading the water bath.</p> <p>Only use containers suitable for the water temperature selected.</p>
	<p>Starting the Oscillating Cradle</p>
	<p>CAUTION Always turn the Oscillation speed control knob (element 2 in Figure 1) down to setting 0 before starting the oscillating cradle. This will assist in preventing any splashing or unexpected behavior once the cradle starts to move.</p>
	<ul style="list-style-type: none"> - Turn the Oscillation speed control knob (element 2 in Figure 1) down to setting 0. - Turn power On to the oscillating cradle by setting the Oscillation On/Off mains power switch (element 6 in Figure 1) down to the setting marked with a vertical line. The Oscillation On/Off mains power switch (element 6 in Figure 1) will light up red to indicate the speed control is now active. - Slowly turn the Oscillation speed control knob (element 2 in Figure 1) clockwise up towards the required oscillation speed, the cradle will begin to move. - Continue to increase the speed until the desired oscillating speed is reached. - Note : In cases where the required oscillation speed is very slow, it may be necessary to increase the oscillation speed to slightly more than the required speed, and then reduce the speed back to the

required set-point once the cradle is carrying enough momentum to maintain the lower speed.

Stopping the Oscillating Cradle

- Slowly turn the Oscillation speed control knob (element 2 in Figure 1) anti-clockwise down to setting 0.
- Turn power Off to the oscillating cradle by setting the Oscillation On/Off mains power switch (element 6 in Figure 1) up to the setting marked with a circle. The Oscillation On/Off mains power switch (element 6 in Figure 1) will go dark which indicates the speed control is now inactive.

Switching Off The Water Heating

- Switch the Heating On/Off mains power switch (element 8 in Figure 1) up to the position marked with a circle. The Heating On/Off mains power switch (element 8 in Figure 1) will darken which indicates the heating system is now inactive.



CAUTION

Although the heating system may now be inactive, the residual heat in the heating element may be sufficient to cause serious burns or scalding.

The residual water temperature may also be sufficient to cause burns or scalding.

Allow at least 10 minutes after switching off the heating system to allow the heating element to cool.

Allow the water temperature to reach ambient room temperature before proceeding to empty the water tank.

Emptying The Water Tank



CAUTION

Do not empty the water tank while the water is hot as burns or scalding may result.

- Turn off both mains power switches (elements 6 and 8 in Figure 1) by setting these to the up position marked with a circle.
- Unplug the equipment from the mains power supply outlet.
- Remove all containers, racks and accessories from the water tank and place them in a safe place, **do not remove the oscillating cradle.**
- Allow the water bath water to cool down until it reaches ambient room temperature.
- If emptying the water into another container, ensure the container is placed below the level of the water bath on a firm, hard, flat surface.
- If emptying into a sink or drain, ensure you have clear and unobstructed access to it.
- Ask for assistance to empty the water tank. Depending on the volume of water in the tank, you may require 2 people to lift the water bath. The water bath should be lifted in accordance with any local operational health and safety guidelines in place.
- The water must be emptied towards the end of the water bath furthest from the control panel. This reduces the volume of water that may come into contact with the control panel. This end is indicated by the following caution label on the case of the water bath.



CAUTION
Always empty water tank from this end

Colours: Black on a yellow background

- **Important: Whilst emptying the water bath, the oscillating cradle will become free to move as the bath is tipped up. Ensure you support the cradle at all times whilst emptying the water bath to avoid damage to the cradle mechanism.**
- Using one hand under each end of the water bath, slowly lift the control panel end of the water bath to direct the water out the opposing end and into the relevant water tank, drain or sink. Where possible, empty the water from the corners of the water bath to reduce splashing. Slowly increase the lift angle of the bath until all water has emptied from the tank.
- Slowly lower the water bath back down to the flat surface until it is fully supported by the surface before letting go. Do not drop the water bath.
- Allow the remaining water to evaporate, or use a soft dry cloth to dry around the water bath water tank.
- Using a soft dry cloth, dry around the control panel if this has become wet.
- Dry your hands before operating any electrical equipment.

Over Temperature Safety Cutout

The water bath features a manually reset over-temperature safety cutout which cuts power to the heating element in cases where the heating element has become too hot as a result of an insufficient water level being maintained in the bath.

When the cutout activates, a small click sound may be heard.



Depending on the quality of the water being used, an unpleasant smell may also be noticed as a result of the impurities in the water becoming hot. This is normal.

- If the over-temperature cutout activates, turn off all power to the water bath immediately by setting both mains power switches (elements 6 and 8 in Figure 1) to the up position marked with a circle.
- Turn off the mains power supply at the outlet.
- Allow the unit to cool for at least 10 minutes.
- Refill the water tank by referring to the section in this User Manual labeled “Filling The Water Tank”.
- On the rear panel of the water bath, the Over-temperature reset button (element 11 in Figure 1) should be pressed in firmly until it remains in place. A small click sound should be heard.
- The water bath is now ready to be re-operated as per the section of this User Manual labeled “Switching On The Water Heating”.

Storing & Relocating The Water Bath




The water bath should be stored out of direct sunlight at an ambient temperature below 30° Celsius in a clean and dry location which meets the environmental conditions required as detailed in the technical specifications of this User Manual.



- Turn off both mains power switches (elements 6 and 8 in Figure 1).
- Unplug the equipment from the mains power supply outlet.
- If the water bath is empty, clean and dry, you may relocate it to an appropriate storage location.


	<ul style="list-style-type: none"> - If the water bath is filled with water, it should not be moved for storage. If you wish to keep dust and dirt out of the water tank, the supplied plastic cover can be fitted for short periods of time to filled water baths (maximum 48 hours). - If the water bath is clean and dry, the plastic cover can be used indefinitely to keep dust and dirt out of the water tank. - Before fitting the plastic cover, ensure that the water tank is either empty, or if filled, ensure the water temperature is back to ambient room temperature before fitting the cover. - To fit the cover, simply slide the cover over the control end of the bath first, and then the opposing end until the whole water bath is covered. - Ensure the water bath is stored in a clean and dry location away from potential damage by accidental knocks and bumps.
	<p>CAUTION Be careful when lifting and observe your local operational health and safety requirements for lifting before relocating the water bath. Ask for help if you are unable to move the water bath by yourself.</p>
	<p>CAUTION Do not fit the plastic cover if the bath is filled with heated water. The heated water will cause condensation on the plastic cover, which can in-turn damage the electrical circuits of the water bath and potentially create a hazardous situation.</p> <p>The cover should only be fitted to either a dry empty water bath, or a bath filled with ambient temperature water (for a maximum of 48 hours when filled with water).</p>

Routine Cleaning And Maintenance

To maintain the water bath in good, safe working order and ensure maximum product lifespan, regular cleaning and general maintenance is required. The water bath should be cleaned at least once every month for a unit being used on a daily basis, for infrequently used water baths a cleaning frequency of once every 3 months is recommended. On each occasion, the general maintenance routine should be employed following cleaning with the exception of the over-temperature safety cutout test which need only be conducted every 2 years of normal operation.

	<p>Cleaning The Water Bath</p>
	<p>CAUTION If the water bath has been operated recently the heating element may be hot enough to create a hazard sufficient to burn or scald if contact is made.</p> <p>Allow the water bath to cool for at least 20 minutes after it has last been operated prior to starting the cleaning procedure.</p>
	<p>CAUTION Do not use alcohol based cleaners or solvents on the water bath as these may break down certain components of it's construction, reducing it's life and potentially creating a hazardous situation. Use only a mild household detergent when cleaning the water bath.</p>
	<p>CAUTION If the water bath has been used with any dangerous, chemical or biological substances it should be decontaminated prior to cleaning. Decontaminate the water bath using a decontamination procedure appropriate to the contaminant, however in all cases ensure the following :</p> <ul style="list-style-type: none"> - No decontamination or cleaning agents are used which could cause a hazardous situation to arise

	<p>as a result of a reaction with parts of the water bath or with any materials contained in it. For example, substances that may compromise the integrity or function of electrical insulation, electrical components, stainless steel components or water seals.</p> <ul style="list-style-type: none"> - Ratek and the manufacturer are consulted prior to decontamination or cleaning being undertaken if there is any doubt about the compatibility of decontamination or cleaning agents with parts of the water bath or with any materials contained in it.
	<p>CAUTION When cleaning the unit, only use a damp sponge. Do not use a sodden wet sponge. Do not make any part of the control panel, any exposed control or receptacle or any part of the water bath excessively wet. If these receptacles and controls remain wet once electrical power is restored they can create a hazardous situation sufficient to cause serious injury or risk to life due to electrical shock. Always ensure the unit and in particular all controls and receptacles are completely dry before restoring electrical power.</p>
	<ul style="list-style-type: none"> - Turn off both mains power switches (elements 6 and 8 in Figure 1). - Unplug the equipment from the mains power supply outlet. - Empty all water from the water tank as per the section of this User Manual titled “Emptying The Water Tank”. - Allow the water bath to air dry, or use a dry cloth to remove water from all surfaces. - Using a mild detergent and damp sponge, clean around the cradle and the sides of the water tank as required. - NEVER remove the oscillating cradle during cleaning. If the water bath element disc is excessively dirty, the equipment should be passed to a qualified service technician for disassembly and cleaning (NOT covered by this User Manual and NOT to be carried out by the user or operator). - Once the water bath is clean, use a soft dry cloth to dry all surfaces of the water bath paying particular attention to any controls or receptacles. - Once cleaning has been completed, it may be re-installed and operated in accordance with this User Manual.
	<p>Maintenance</p>
	<ul style="list-style-type: none"> - Turn off both mains power switches (elements 6 and 8 in Figure 1). - Unplug the equipment from the mains power supply outlet. - Under good light, carefully inspect the mains power input lead and check for any signs of wear, over-extension or damage. If you believe the lead to be damaged in any way, contact your supplier to purchase a new genuine replacement lead. - Carefully check to ensure all safety warning labels are affixed and in a good readable condition. Refer to the section in this User Manual titled “Safety Labels & Markings” for a table of factory-fitted warning labels. If any labels are missing, illegible or otherwise not functional, contact your supplier to obtain new replacement labels before operating the equipment. - Ensure all controls and input receptacles are fitted firmly and are good condition. If any are found to be loose or in poor condition, have an authorized service technician repair the unit before operating it.
	<p>CAUTION If any controls or input receptacles are found to be loose or in poor condition, do not operate the equipment. Loose or damaged electrical controls and connections create a hazardous situation sufficient to cause serious injury or risk to life. Refer the equipment to an authorized service technician for repair.</p>

	<p>Over-Temperature Safety Cutout Test The over-temperature safety cutout should be tested periodically to ensure correct operation. This test should be conducted once every 2 years of normal operation.</p> <ul style="list-style-type: none"> - Turn off both mains power switches (elements 6 and 8 in Figure 1). - Unplug the equipment from the mains power supply outlet. - Empty the water bath by referring to the section in this User Manual labeled “Emptying The Water Tank”. - Fill the water tank with 300mL (approximately 1.5 cups) of cold water by referring to the section in this User Manual labeled “Filling The Water Tank”, ensuring water is covering the element plate in the bottom of the water tank.
	<p>CAUTION NEVER touch the water tank or heating element whilst conducting the Over-Temperature Safety Cutout Test as serious burns and scalding could result.</p> <p>The test involves water reaching boiling temperature and the resulting steam present could cause serious burns or scalding.</p> <p>ALWAYS wear eye protection during the Over-Temperature Safety Cutout Test. ALWAYS maintain a safe working distance from the water bath during the Over-Temperature Safety Cutout Test.</p>
	<ul style="list-style-type: none"> - Connect power to the water bath as per the section of this User Manual labeled “Connecting Power”. - Switch on the heating system as per the section of this User Manual labeled “Switching On The Water Heating”. There is no need to switch on the oscillating cradle for the test. - Ensure the temperature set-point is set higher than the temperature of the water used to fill the tank, this ensures the heating element will remain on during the test. Refer to the section of this User Manual labeled “Setting the Required Water Temperature”. - The water bath will begin heating the water and the Heating Element Indicator (element 7 in Figure 1) will light up. - Prepare 600mL of cold water ready to fill the water tank on completion of the test. - The water in the water tank will gradually boil away until the heating element plate is dry, this may take some minutes. Do not leave the water bath unattended during the test. - After a period of less than 60 seconds following the surface of the heating element being completely dry, the over-temperature cutout should activate. When the cutout activates, a small click sound may be heard and the Heating Element Indicator (element 7 in Figure 1) light will go out. If the over-temperature cutout has failed to operate within 60 seconds of the heating element being completely dry, the test has failed and the water bath should be turned off immediately to prevent damage to the water bath. - Depending on the quality of the water being used, an unpleasant smell may also be noticed as a result of the impurities in the water becoming hot. This is normal. - Once the test has been completed (either the cutout activated or 60 seconds has passed following the element being completely dry and the cutout has not activated), turn off all power to the water bath immediately by setting both mains power switches (elements 6 and 8 in Figure 1) to the up position marked with a circle and refill the water tank with 600mL of cold water to cool the element by referring to the section in this User Manual labeled “Filling The Water Tank”. This will help to maintain the working life of the over-temperature safety device. - If the over-temperature cutout has failed to operate, contact Ratek using the contact details provided in the section of this User Manual titled “Ratek Service Contact Information”.



CAUTION

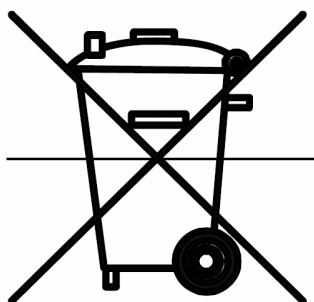
NEVER operate the water bath if the over-temperature safety cutout test has failed. Operating the water bath without a functional over-temperature safety cutout may result in serious injury, threat to life, fire or damage to property.

- Turn off the mains power supply at the outlet.
- Allow the unit to cool for at least 10 minutes.
- Refill the water tank by referring to the section in this User Manual labeled "Filling The Water Tank".
- Connect power to the water bath by referring to the section in this User Manual labeled "Filling The Water Tank".
- On the rear panel of the water bath, the Over-temperature reset button (element 11 in Figure 1) should be pressed in firmly until it remains in place. A small click sound should be heard.
- If the over-temperature safety cutout test passed, the water bath is now ready to be re-operated as per the section of this User Manual labeled "Switching On The Water Heating".

Technical Specifications

Temperature Controller Type	Digital PID
Temperature Controller	Ambient +5° Celsius to 99.9 ° Celsius
Maximum Controllable Bath Temperature	70° Celsius when tank full
Temperature Control Stability	+/- 0.2° Celsius with oscillating cradle moving
Temperature Display	LCD
Cradle Oscillation Speed	20 to 107 RPM +/- 10%
Mains Power Connection	230-240V / 50 Hz
Current Input	5A
Replaceable Fuse Rating	F250V/5AL, M205 miniature glass type
Total Operating Wattage	510 Watts
Overall Dimensions	409 mm W x 370 mm D x 250 mm H
Oscillating Cradle Dimensions	230 mm W x 150 mm D x 130 mm H
Bath Opening	240 mm W x 300 mm D
Maximum Water Filling Volume	7.2 Litres
Nett Weight	8.5 Kg
Over-Temperature Protection Device	Capillary type manual-reset thermostat at 120° Celsius, 250VAC/16A
Maximum oscillating cradle load	1 Kg
Environmental Conditions	<p>Suitable for use according to IEC 61010-1 standard as follows :</p> <ul style="list-style-type: none"> - Indoor use - Altitude up to 2,000 Metres - Temperature 5° Celsius to 40° Celsius (Ambient temperature will limit the minimum achievable water temperature) - Maximum relative humidity 80 % for temperatures up to 31° Celsius decreasing linearly to 50 % relative humidity at 40° Celsius - MAINS supply voltage fluctuations up to ±10 % of the nominal voltage <p>Over-voltage Category - II Pollution Degree - 2</p>

Disposal



Valid in EU countries.

The 2002/96/EC Waste Electrical and Electronic Equipment (WEEE) directive requires that equipment marked with a crossed-out trash can be disposed of in an environmentally friendly way. Such equipment cannot be disposed of with other general waste, but instead taken to your local or regional waste collection facility for recycling and/or suitable treatment procedure.

For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or your nearest commercial recycling centre.

Electrical & Safety Conformity

The water bath is made to international quality standards and is certified as conforming to the following standards:



AS/NZS CISPR 14.1:2010 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Emission. This forms the basis of compliance to the requirements of the Electromagnetic Compatibility Framework ('C TICK').



The products described in this User Manual conforms to the requirements of the following European guidelines :

- Low voltage regulations with respect to legal harmonization of the member countries concerning electric devices for use within certain voltage limits.
- EMC guideline with respect to legal harmonization of the member countries concerning electromagnetic compatibility.

The product has been tested in accordance with the following standards :

IEC 61010-1 - Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements.

IEC 61010-2-010 - Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of materials.

IEC 61010-2-051 - Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-051: Particular requirements for laboratory equipment for mixing and stirring.

IEC 61326-1 - Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements.

RoHS

The product is categorized in both Category 8 and Category 9 of the Directive 2002/95/EC of the European Parliament, Restriction of Hazardous Substances, "RoHS Directive". These categories are currently exempt from RoHS requirements.

Ratek Service Contact Information

Ratek are here to assist you in getting the most from your water bath. Our friendly staff can you assist you at any stage of the product lifecycle.

If you have any concerns or questions regarding the operation of your water bath, please contact us.

	Contact Us
	<p>Ratek Instruments Pty Ltd 60 Wadhurst Dve Boronia Victoria 3155 Australia Telephone : 613 9887 2161 Fax : 613 9887 2163 Email: sales@ratek.com.au Web: www.ratek.com.au</p>

Troubleshooting

The water bath provides a simple-to-operate user interface when used in conjunction with this User Manual.

If at any stage, you are presented with an abnormal condition (anything other than the current temperature or temperature set-point once the water bath has completed it's startup procedure) being displayed on the LCD temperature display (element 3 in Figure 1), this may indicate a fault condition. If the oscillating cradle fails to operate, or any other control or indicator on the water bath fails to operate as per this User Manual, this may indicate a fault condition.

The equipment is fitted with a replaceable mains safety fuse. If the replaceable mains fuse has operated, no power will be made available to the control systems and no controls will activate. This may indicate an electrical fault. In such cases the replacement fuse (as specified in the technical specifications of this User Manual) should be fitted only by an authorized service agent once they have tested and inspected the water bath. Under no circumstances should the user or operator replace the safety fuse.

Fault conditions must be referred to an authorized service technician immediately and the equipment should be unplugged from the mains power supply socket.

Make a written note of any displayed error codes and contact Ratek using the contact details provided in the section of this User Manual titled "Ratek Service Contact Information" if you believe your equipment is exhibiting a fault condition.

Warranty Conditions

This Ratek product is covered by a 3 year parts and 12 months labour return-to-base warranty effective from the date of purchase. The product is manufactured in Melbourne, Australia.

The warranty is offered by Ratek Instruments Pty. Ltd. located at 60 Wadhurst Drive, Boronia, Victoria, Australia 3155, phone number +613 9887 2161.

- This warranty covers the repair or replacement of any parts or components found to be defective, subject to the service options listed below.
- The warranty is a return-to-base warranty, meaning the product must be returned to Ratek Instruments or an authorised Ratek agent for service at the discretion of Ratek Instruments. Where practical an on-site repair may be carried out at the discretion of Ratek Instruments.
- This warranty excludes any defect resulting from misuse, neglect, accidental damage, improper voltage, operation of the product outside the acceptable operating conditions as indicated in these operating instructions or any alteration which affects the performance of the equipment.

- It does not extend to any costs associated with delivery of the product to or from Ratek Instruments or an authorised Ratek agent, damage, or loss incurred during transport.
- This warranty is in addition to any Statutory regulations and provisions implied by the Trade Practices Act and any relevant State or Federal Government obligations, applicable only when purchased within Australia.
- The product may be replaced within the warranty period at the discretion of Ratek Instruments, however repair will be the normal course of action.
- For a period of 3 years from date of purchase, replacement parts will be supplied at no charge and the original components returned to the repairer. These replacement parts may be installed by an approved service agent with prior written agreement from Ratek Instruments.
- For a period of 12 months from date of purchase, service labour and repairs will be carried out at no charge by an approved repairer or Ratek Instruments at the discretion of Ratek Instruments.
- The limit of liability shall extend to the repair of the product only, all other compensation claims are excluded from this guarantee.
- The warranty does not extend to claims of suitability where the product does not deliver the intended function or fails to operate.
- No claims of suitability are made in relation to the product by Ratek Instruments. Any claim of suitability lies with the operator.
- The product is used at the risk of the operator. Any loss or damage caused to any item used with the product including but not limited to biological samples, tubes, racks, accessories, flasks, containers or the contents of such containers caused by the malfunction of the product or the failure of the product to function is not covered by this warranty.
- Proof of purchase is required for all warranty repairs.

DOA Product

Any claim under this warranty must be made within 7 days of the date of purchase of the product. To make a claim under the Warranty, you must present the product, together with proof of purchase or issue, to the store where you purchased the product from. If the product is defective and does meet the Warranty, you will be provided with a replacement product, or where that is not possible, a refund. Ratek Instruments will pay your reasonable, direct expenses of claiming under this Warranty. You may submit details and proof of your expense claim to Ratek Instruments for consideration.

This Warranty is provided in addition to other rights and remedies you have under law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Return & Repair Procedures

The product is engineered from quality components designed to give long trouble-free operation. In the event that a technical problem has occurred that requires servicing by a Ratek Service agent, please follow these steps before returning the unit :

- Contact the supplier from where the equipment was purchased. If this is not possible, please contact Ratek Instruments either via email to service@ratek.com.au, or phone on +613 9887 2161 during business hours AEST. You may be referred to a local repair agent for service.
- Clean the unit thoroughly in accordance with this Operating Manual. If necessary, decontaminate the unit to ensure safety for the service technicians.
- Pack the unit into it's original packaging with the supplied mains power lead and use all original protective inserts. If the original packaging is not available, the unit must be packed with extreme care to ensure a safe journey. "Fragile" and "This Way Up" labels should be applied to the carton in a prominent location. No liability for a unit damaged in transit will be accepted. Use only reputable carrier services.
- Provide a full and complete fault description and your return contact details in the package and return the product as advised by the service representative.