BOEKEL ™
Boekel Scientific

Hot Tubs

General Purpose Water Bath

290100	6 Liter 115V
290100S	6 Liter 115V
290100-2	6 Liter 230V
290200	14 Liter 115V
290200-2	14 Liter 230V
290300	28 Liter 115V
290300S	28 Liter 115V
290300-2	28 Liter 230V

Operating Instructions

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1. Safety

The following symbols mean:

Caution: Read these operating instructions fully before use and pay particular attention to sections containing this symbol.

Caution: Surfaces can become hot during use.

Always observe the following safety precautions:

- ➢ Use only as specified by the operating instructions or the intrinsic protection may be impaired.
- ➢ These baths are for water use only.
- ➢ Take care when topping or draining, as liquid may be very hot.
- ➢ Do not touch surfaces that become hot during high temperature use.
- ➢ Connect only to a power supply with a voltage corresponding to that listed on the serial number.
- ➢ Ensure that the mains switch and isolating device (power supply connector) are easily accessible during use.
- ➢ Connect only to a power supply which provides a safety earth ground terminal.
- ➢ Before moving, disconnect at the power supply socket.
- ➢ If liquid is spilled inside the unit, disconnect it from the power supply and have it checked by a competent person.
- ➢ It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or inside the equipment.
- ➢ Clean the unit only with a damp cloth; do not use chemical cleaning agents.
- ➢ Place unit on a solid, level work surface or laboratory bench.
- ➢ Drain tank before moving the bath. Before draining allow the unit to cool below 50°C.

2.   Getting Started

2.1. Unpacking

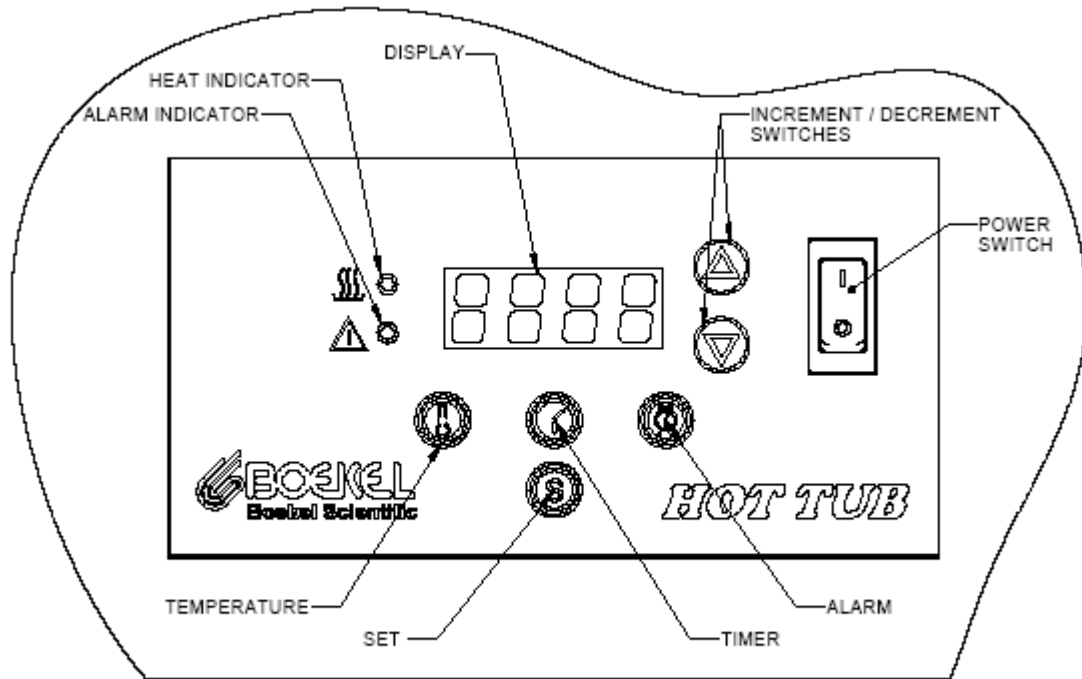Remove packing materials carefully, and retain for future shipment or storage of the unit.

2.2. The Hot Tub package includes:

- ➤ The Hot Tub
- ➤ External Power Cord
- ➤ Polycarbonate Lid
- ➤ Deffuser, Tray
- ➤ Operating Instructions

2.3. Installation

- ➤ Use water only, fill bath to a minimum of 2" above the base of the tank and the maximum of 1 1/4 " from the top of the tank when the bath is fully loaded. A lid or layer of polypropylene spheres must be used with the bath at temperatures above 60°C. After bath is filled with water, connect the power line cord to the unit.

- ➤ The power switch is located on the front panel and is used to turn the unit on and off.

3. Operation

3.1. Changing the Set Temperature

3.1.1   Depress the "Temperature" switch on the front panel, the display will change to "tSEt".

3.1.2   Depress the "Set" switch to enter the set point adjust mode.

3.1.3   Use the up/down arrow keys to obtain the desired set temperature. The display will flash when in the Set Temperature mode.

3.1.4   When the desired set temperature is achieved, depress the "Set" switch. This value is stored in memory and the unit will retain this value after the unit is switched off.

3.1.5   As the bath heats up the heater indicator will remain on steady, as the bath begins to reach equilibrium, the heater indicator will flash.

3.2. Changing Bath to Boil Mode

3.2.1 Depress the "Temperature" switch; the display will change to "tSEt".
3.2.2 Depress the "Set" switch to enter the set point adjust mode.
3.2.3 Depress the "up" arrow key until the display changes to "Boil". This will occur after the display reaches 100.0°C.
3.2.4 Depress the "Set" key to enter the Boil Mode. The display will now alternate between "Boil" and the actual bath temperature.
3.2.5 To exit Boil Mode, depress the "Temperature" switch, the display will change to "tSEt". Depress the down arrow key twice and hold until desired bath set temperature is achieved.
3.2.6 When the desired set temperature is achieved depress the "Set" switch.

Note: *An optional Stainless Steel lid is required when the bath is used in the Boil Mode.*

3.3. Using the Timer

3.3.1 To operate the unit in the timer mode, depress the "Timer" switch; the display will change to "CLOC".
3.3.2 Depress the "Set" switch to enter the Timer mode.
3.3.3 Depress the "up" arrow key once to change the display from "OFF" to "On".
3.3.4 Depress the "Set" switch to enter the timer adjust mode.
3.3.5 Use the up/down arrow keys to select the desired timer value, a time of between 1 minute and 99 hours and 59 minutes can be selected. The timer value is display as HH:MM. When the desired timer value is selected, depress the "set" again, this turns on the timer and stores the timer duration in memory.
3.3.6 The display will now alternate between the bath temperature and the time remaining as the timer counts down.
3.3.7 When the timer reaches 00:00, the alarm indicator will illuminate, and the display will now alternate between "End" and the actual bath temperature.
3.3.8 Press the "Timer" and "Set" switch simultaneously to return the unit to normal operating mode. This will turn the timer function "off"

3.4. Using the High Temperature Alarm

3.4.1 The unit is programmed with an adjustable high temperature alarm. The high temperature alarm value is factory defaulted at 5°C above the set temperature value. To change this value, follow the steps below.

3.4.2 Depress the "Alarm" switch; the display will now alternate between "Alar" and the current high temperature alarm value. Depress the "S" switch and the display will now flash the current high temperature alarm value. If a different value is desired use the up/down arrow keys to obtain the required high temperature alarm value.

3.4.3 When the desired alarm value is indicated, press "Set". This new value is now stored.

3.4.4 If a high temperature alarm condition is encountered the display will flash "ALAr", the heater will shut off, and the "alarm" indicator will illuminate. This condition will persist until the bath temperature drops below the alarm set value, or the user raises the High Temperature Alarm setting above the bath temperature. This can be accomplished when in the Alarm mode by depressing the "alarm" switch, and then pressing the "Set" switch. The current high temperature alarm setting is now displayed. Use the up/down arrow keys to adjust to desired value and then press "Set".

Note: If a change to the temperature set point is made, the high temperature alarm value will return to a default of 5°C above set temperature.

3.5. Catastrophic Heater Condition

3.5.1 In the event that a chamber temperature would reach 120°C the systems heater will be disabled and remain in the disable mode until the over temperature condition is corrected.

4. Maintenance and Service

a. The adjustable high temperature alarm cutout should be tested periodically by setting the high temperature alarm value below the set temperature value, when this condition is present the unit should go into high temperature alarm failure as indicated in step 3.4.4

b. The unit is equipped with circuit breaker(s) on the rear of the unit. The breakers are reset by depressing fully.

c.   The baths should be drained and cleaned once a week to prevent the any possibility of corrosion which can occur with distilled or deionized water

and even some tap water, even with the high grade of stainless steel used in the manufacture of this unit.

When the bath is used under certain conditions, algal growth can occur which can be mistaken for rust. This can easily be cleaned off using warm soapy water.

Boekel recommends the use of a bath algaecide, item # B1906001 to help maintain the bath water. Apply treatment at a dose of 20 drops per 1 gallon of distilled water, free of visible algae.

5. Specifications

Temperature Range	Ambient +5 to 100°C
Temperature Setting Range	10 to 100°C
Stability	±0.2°
Temp Resolution	0.1°C

Heat up to 65°C -   6 liter unit
                14 liter unit
                28 liter unit
	40 minutes
	40 minutes
	45 minutes

Timer	Settable from 1 min. to 99 hrs. 59 min.

Power Rating: 115VAC 60Hz.
                230VAC 50/60Hz.
 	
Amperage Rating : 115VAC
                230VAC
	6L - 300w 14L - 575w 28L - 1100w
	6L – 300w 14L - 575w 28L – 1100w
	
	6L – 2.6a 14L – 5.0a 28L – 9.6a
	6L – 1.3a 14L – 2.5a 28L – 4.8a

6. Warranty and Service

a. Warranty

When used in laboratory conditions and according these operating instructions Boekel warrants this product to be free of defective parts, material and workmanship for a period of two years from the date of shipment. The liability of Boekel Scientific for any defective equipment during the warranty period shall be limited to the repair of defective equipment or replacement thereof without charge for parts or labor.

b. Service

A Boekel Scientific Returned Material Authorization (RMA) number provided by Boekel Scientific is required before any Boekel products are returned for any reason. Contact Boekel Customer Service at 1-800-336-6929 extension 5. A Decontamination Certificate must be completed, signed by the user, and returned to Boekel Scientific prior to receiving the RMA number. Please be sure to mark the outside of the returned goods package with this RMA number to ensure prompt handling.

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