OPERATING INSTRUCTIONS

NOTE:

Various factors will influence the amount of time it takes for bath temperature to stabilise but generally 30 minutes should be allowed where critical control is important.

The difference between ambient and water temperature has the most influence on control stability.

Use of a lid over the bath will not only prevent water loss through evaporation, but will greatly improve control stability.

Safety

The TH6 is designed to operate continuously for long periods of time when required, however it is important to maintain the water level to at least 60mm above the base of the element

An over temperature thermal fuse is incorporated as a safety feature. If the water level falls below the minimum requirement the fuse will blow and remove power to the element.

Should the fuse blow it should be replaced by a qualified technician.

Environmental conditions in use.

Although purpose built, as with all electrical equipment certain precautions should be observed.

The TH6 has a built in ventilation system which is designed to draw clean air into the rear of the case. This air passes over the motor and electronics to provide cooling, and is expelled through the bottom of the case.

To ensure a long and trouble free service life, care must be taken during use to prevent the ingress of vapours or heavily contaminated air which could cause damage and eventual failure of the controller.

It is recommended, especially for higher temperature use, that the thermoregulator is isolated from steam or other vapours by the use of a bridging plate to support the thermoregulator and also act as a lid over the working bath.
Heavy condensation on the instrument case indicates that some form of protection should be provided, without cutting off the essential air flow to the unit.

Recommended fluids for different temperature ranges to keep evaporation to a minimum are as follows:

- Plain tap water 5° to 90°C
- Ethylene Glycol 30% / Water 70% 0° to 95°C *
- Ethylene Glycol 50% / Water 50% -20° to 100°C *
- Low viscosity silicone oil (20cs) 0° to 100°C

* Automotive antifreeze is unsuitable, use Laboratory grade Ethylene Glycol.

Corrosion prevention

Immersed components used on Ratek Thermoregulators are made of materials that when used as intended have excellent corrosion resistance.
Stainless steels used are either 316 or 304 grade.

The custom made heating elements are electropolished Incoloy which is a high nickel, high chromium content stainless steel alloy developed specifically for its resistance to corrosion in hazardous, high temperature applications.

All stainless steel and nickel alloys however have limitations, and are very sensitive to chlorine and solutions containing chlorine.
Concentrations of chlorine as low as 20ppm have been known to cause catastrophic failures in nickel alloys which are under stress.
An immersion element can be considered to be under stress as the inside of the tube can be at several hundred ºC, whilst the outside is rarely above 120ºC.
Many cleaning solutions contain chlorine or chlorine compounds that can severely damage an element, and their use should be avoided.
Acids will also attack the element surface and cause premature failure.
Following are guidelines which if followed, will extend the life of immersion elements:-

1. Change water regularly to prevent build up of contaminants.

2. Avoid scratching, denting or marking of the element surface.

3. Regularly clean the element with mild soap and water.

4 Ensure that the element coils are always under the water surface when In operation

5. Clean and dry thoroughly before long term storage.

OPERATING INSTRUCTIONS

⇒ Clamp the TH6 to the side of the container of water to be heated.

⇒ Fill the container to the desired level with water making sure that it is clear of debris that could become entangled in the pump (TH6P) or circulating paddle (TH6C), ensure that the pump outlet is free of any obstruction.

⇒ If required re-direct the pump outlet by connecting a piece of silicone or rubber tubing.

⇒ Plug into a properly grounded mains outlet.

⇒ Press the power switch on the rear panel to turn the unit on.

⇒ Select the temperature required using the UP/Down arrows press and hold to scroll.

⇒ Once set the display will show actual bath temperature.

The element indicator will remain on until just before the set temperature is reached, at which point it will begin to alternate on and off, signifying that proportional control is in operation.

For critical applications allow the bath to stabilise (approx 30 mins),

Once the desired temperature is set and stabilized it will be automatically maintained.