

The Calibration Bath

Make sure you have read this manual carefully before you use the thermoregulator.

Techne supply a range of liquid calibration baths from 5 to 12 litres on which you can fit one of the thermoregulator range of units. The bath inner containers are manufactured from stainless steel, for maximum corrosion resistance. The 5 and 7 litre baths are deep drawn with large easy clean corner radii. The 12 litre bath is of welded construction.

The thermoregulator is designed to fit all standard laboratory baths, especially Techne baths. It will heat, circulate and safely control the temperature of the liquid in the bath within precise limits.

See the Operator's manual for full operating details for the thermoregulator.

Set Up

- There are two modes of operation for the pump; circulation internal to the bath; circulation external to the bath.
For internal circulation the blanking caps on the top of the outlet and return pipes should be securely in place. They screw on and, for safety, they may be tight.
For external circulation the blanking caps need to be removed. With the blanking cap removed, and an external circuit set up, the liquid will be split between internal flow and external flow.
- CAUTION: DO NOT SWITCH THE THERMOREGULATOR ON UNLESS EITHER THE BLANKING PLUGS ARE FITTED TO THE TOP OF THE PIPES OR AN EXTERNAL CIRCUIT IS FULLY CONNECTED.**
IF YOU ARE PUMPING TO AND FROM A SECOND OPEN BATH A RESTRICTION MUST BE PUT ON THE PRESSURE SIDE OF THE PIPES. THE PRESSURE VOLUME IS GREATER THAN THE SUCTION VOLUME AND YOU COULD OVER-FILL THE SECOND BATH
- Ensure that the bath is set up on a flat level surface.
- Fit the unit securely to the bath. THE UNIT MUST ALWAYS BE MOUNTED WITH THE BACK AND THE SWITCH END OUTSIDE THE AREA OF THE BATH. This will reduce the infiltration of hot vapours into the cooling system of the thermoregulator. Ensure that at all times the air inlet and outlet remain clear of obstructions. Free circulation of air inside the unit is essential for proper cooling of the electronics and pump motor.
- The Thumb Screw secures the unit to the bath at the mains Switch end.
- If the pump has been set correctly for external circulation, suitable hoses should be fitted to the outlet and return pipes. A suitable hose must be capable of withstanding both the temperature of operation and the liquid being used. Always securely clip the hoses in place.
Material Allowable Temperature Range Comments
PVC 10°C to 60°C (50°F to 140°F) For water only
Silicone -40°C to 200°C (-40°F to 362°F) NOT for silicone oil
Viton -20°C to 250°C (-4°F to 482°F)

- You will need to remove the cooling coil when you are using the thermoregulator on one of the Techne Calibration Baths. Remove the screw which is used to fit the cooling coil to the base of the unit. Keep the cooling coil in a safe place in case you need to replace it.

A cooling coil is fitted to the bath. Connect a hose from a tap to one end of the coil and from the other end of the coil to drain. Adjust the water flow to give the required cooling.

- For lower temperatures a Flow Cooler, such as the Techne FC-200 or FC-500 is required.

See the instruction Manuals for these units for connections and setup.

- Fill the bath to between the minimum and maximum levels stated in the specification.

If you are using oil at the highest temperatures, remember that they will expand as the temperature rises. **Even if you fill the bath with oil to the minimum level, it may well reach the maximum level before the top temperature is reached.** Take all precautions and monitor the level through the full range.

If water is used, demineralised water is preferred to reduce the formation of scale. If scale should form, use only mild descaling agents to remove it. DO NOT attempt to hammer, chip or scrape the deposits from the surface of the bath

- Recommended liquids:

Temperature Liquid

-40°C to 0°C 40% water 40% ethylene glycol 20% alcohol
-20°C to 30°C 50% water 50% ethylene glycol
5°C to 95°C water, preferably de-ionised with neutral pH
10°C to 150°C Dow Corning Silicone Oil 200 series *
10°C to 250°C Dow Corning Silicone Oil 210H/100cs series *
* **Warning:** check gel life at top end of range.

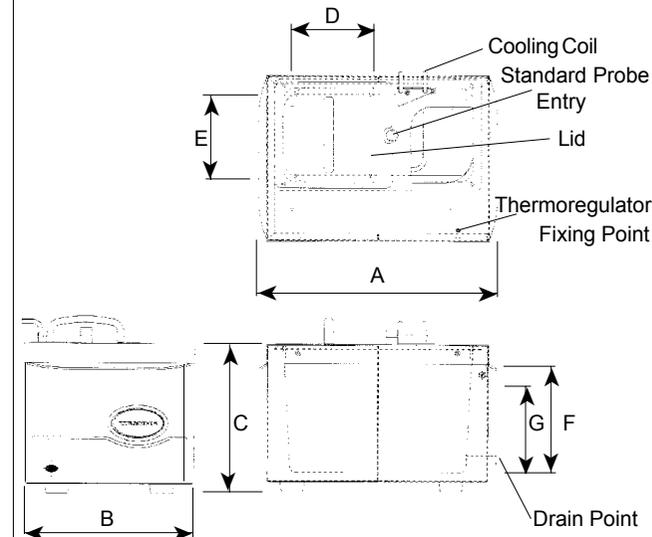
Extraction may be necessary at high temperatures; always check the manufacturer's data and safety sheets before using any of the liquids.

In all cases the OVERTEMPERATURE CUT-OUT must be **set correctly** for the liquid being used and the temperature at which it is to operate

- If you are using a low viscosity oil with a TU-20C controller, the pump on the controller may be too powerful and cause the oil to splash from the bath. There is a flow restrictor supplied with the Calibration Bath. Push the "top hat" restrictor into the outlet of the pump and fit the retaining plate over it. Remove the appropriate screw from the pump and fix the retaining plate with the same screw.
- A bath that is fitted with a lid or insulating ball blanket gives the best operating conditions. A lid or ball blanket will prevent vapour loss, heat loss and give better temperature control. If an open bath is used above 80°C (ie where steam or other readily condensing vapours are present) the operation of the unit, particularly the digital display, may be affected.
Below about 80°C a cover becomes less important but will still give better temperature control.

Bath Sizes

Bath		LCB-5	LCB-7	LCB-12
Overall Length	A	351 mm	351 mm	351 mm
Overall Width	B	260 mm	260 mm	260 mm
Overall Height	C	183 mm	233 mm	358 mm
Opening Length	D	140 mm	140 mm	140 mm
Opening Width	E	140 mm	180 mm	140 mm
Max. Working Depth	F	130 mm	140 mm	305 mm
Min. Working Depth	G	90 mm	90 mm	265 mm
Maximum Capacity		5.0 l	6.5 l	12.0 l
Minimum Capacity		4.0 l	5.5 l	11.0 l



Working Environment

The units are designed to work safely under the following conditions:

Ambient temp. range 5°C to 40°C

Humidity Up to 95% relative humidity, non-condensing

Note: The control specifications quoted are for an ambient temperature range of 10°C to 30°C. The specification may deteriorate outside this range but the unit will still work safely.

Radio frequency interference tested and passed to EN50081-1.

Immunity Tested and passed to

EN50082-1

Additional Information

NOTE THAT THIS EQUIPMENT SHOULD ONLY BE DISMANTLED BY PROPERLY TRAINED PERSONNEL. **REMOVING THE TOP CASE EXPOSES POTENTIALLY LETHAL MAINS VOLTAGE.** THERE ARE NO OPERATOR MAINTAINABLE PARTS WITHIN THE EQUIPMENT.

In the unlikely event that you experience any problems with your Thermoregulator which cannot easily be remedied, you should contact your supplier and return the unit if necessary. Please include any details of the fault observed and remember to return the unit in its original packing. Techne accept no responsibility for damage to units which are not properly packed for shipping: if in doubt, contact your supplier.

Operator maintenance

1. Cleaning

Before cleaning your unit ALWAYS disconnect from the power supply and allow to cool below 50° C.

Your Thermoregulator can be cleaned by wiping with a damp soapy cloth. Care should be exercised to prevent water from running inside the unit. Do not use abrasive cleaners.

2. Overtemperature cut-out

The overtemperature cut-out is a sensitive mechanical device and mechanical shock can cause it to trip.

- In the event of no heater power, check the mains plug and lead, then reset the cut-out control.
- Repeated operation of the cut-out indicates a serious fault: you may need to return the unit to your supplier for repair.

3. Fuses

Your unit is protected by two fuses.

For the appropriate fuse see the User's Manual for the unit. These should only be changed by suitably qualified personnel.

If the fuses blow persistently, a serious fault is indicated and you may need to return the unit to your supplier for repair.

Accessories

There are many accessories both for the thermoregulators and the baths. These are constantly being updated and details can be found in Techne Sales literature. However they do include:

Flow Coolers

FFC2D FC-200 230V UK
FFC2D FC-200 230V Europe
FFC2P FC-200 120V
FFC5D FC-500 230V UK
FFC5D FC-500 230V Europe
FFC5P FC-500 120V

FTU232 "Thermsoft" kit inc: disc, cable and connector for TU-20C

Contact Information

For technical, sales or servicing information, contact your local Techne dealer or,

Barloworld Scientific Ltd
Beacon Road, Stone
Staffordshire
ST15 0SA, United Kingdom
Telephone: +44(0)1785 812121
Fax: +44(0)1785 813748
e-mail: equipment@barloworld-scientific.com

or,

Techne Inc, 3 Terri Lane,
Suite 10, Burlington,
New Jersey 08016, USA.
Telephone: 609-589-2560
Toll free: 800-225-9243 ext 306
Fax: 609-589-2571
e-mail: labproducts@techneusa.com
Web site: www.techneusa.com



Liquid Calibration Baths (LCB) Reference Card

WARNING



Warning: HIGH TEMPERATURES ARE DANGEROUS
Avertissement: DANGER DE TEMPERATURES ELEVÉES
Warnung: HOHE TEMPERATUREN SIND GEFÄHRLICH
Aviso: LAS TEMPERATURAS ELEVADAS SON PELI

Issue 5

Date of issue:

3rd May 2005

Techne is a trade mark

© Techne 2002