



Block Heaters

SBH130 SBH130D SBH200D
SBH200D/3 SBH130DC SBH200DC

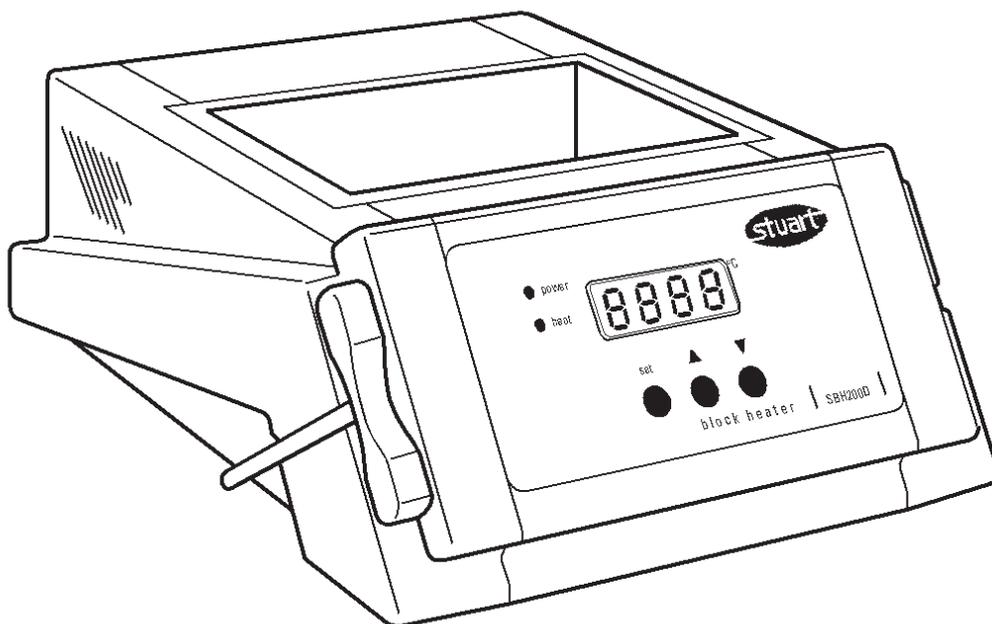
Instructions for use

Manuel d'utilisation

Istruzioni per l'uso

Instrucciones de funcionamiento

Bedienungsanweisung



Distributed by:



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Version 1.1

English

Figure 1 - front view

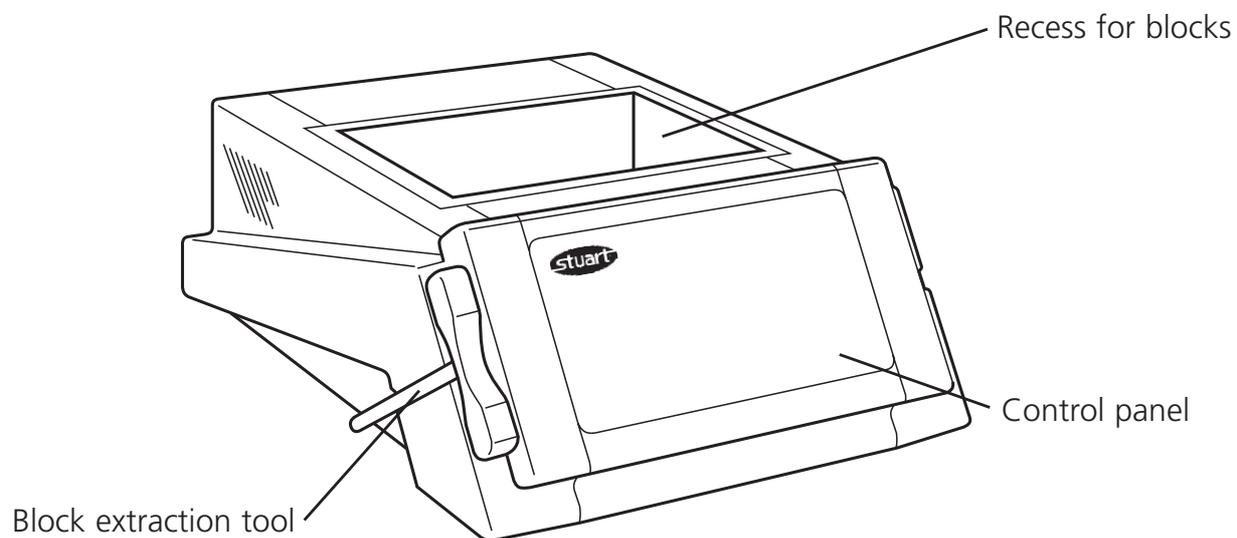
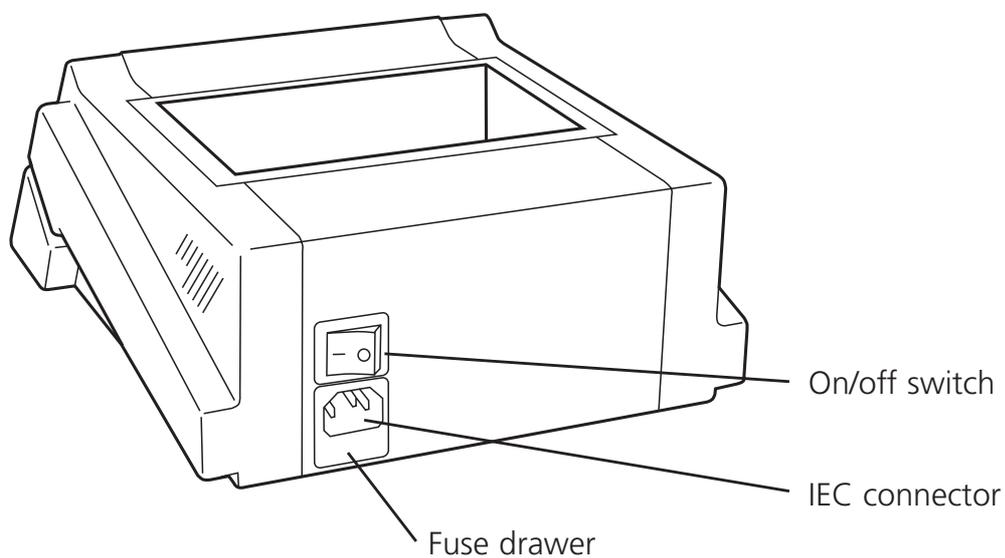


Figure 2 - rear view



Thank you for purchasing this piece of Stuart equipment. To get the best performance from the equipment, please read these instructions carefully before use.

BLOCK HEATERS

SBH130, SBH130D, SBH200D, SBH200D/3, SBH130DC, SBH200DC



For your own safety and that of others please read and understand the safety advice given in section 9 of this manual before using the equipment.

If the equipment is not used in the manner described in this manual the protection provided might be impaired.

1. General description

Stuart block heaters are designed to accurately control the temperature of test tubes and other small containers using heated aluminium blocks drilled with holes of the appropriate size for the containers in use. A large variety of blocks with different holes for different sizes and type of container are available – see section 7.

The blocks are fitted into the recess in the top of the instrument (see figure 1) and heated from below. All blocks are fully interchangeable and blocks for different sizes of container may be used in a block heater at the same time.

The large thermal mass of the aluminium blocks allows very accurate and stable temperature control.

Perspex safety covers are available as accessories for protection in the event of tubes “spitting”. These also help improve temperature uniformity within the blocks by excluding draughts.

2. Preparation for use – All models

1. Follow the instructions for Electrical Installation given in section 8 of this manual and connect the instrument to the electricity supply – **DO NOT SWITCH ON.**
2. Choose aluminium blocks with holes suitable for the containers to be heated.
3. Carefully place the appropriate number of aluminium blocks into the recess in the top of the instrument – see figure 1.

N.B. The plate at the bottom of the recess and the base of the aluminium blocks must be kept scrupulously clean to allow good thermal contact. If foreign matter, especially particulate matter, is present the performance of the instrument will be impaired.

4. Place the containers to be heated into the holes in the aluminium blocks.
5. Fit safety cover if required. This may simply rest on the top of the block heater or be hinged by using the screws provided. These should be located in the holes at the top rear of the block heater (see figure1).
6. The instrument may now be switched on and the desired temperature set.

3. Temperature setting

3.1 Digital models SBH130D, SBH200D, SBH200D/3, SBH130DC and SBH200DC

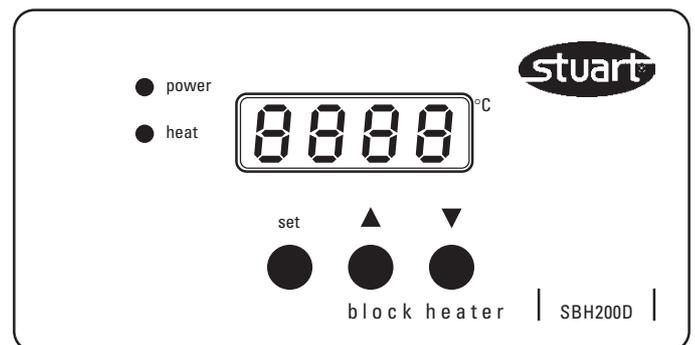


Figure 3 - digital controls

1. Switch on using the switch located at the rear of the instrument – see figure 2.
2. The “power” light will illuminate as will the digital display - see figure 3.
3. The digital display will show the actual temperature of the aluminium blocks. If the instrument’s current set temperature is above this value it will begin to heat and the “heat” light on the control panel will illuminate. The current set temperature may be viewed at any time by pressing and holding the “set” button – see figure 3.
4. To adjust the set temperature first press and hold the “set” button to show the current setting.

5. This setting may be increased by pressing the button labeled ▲ or decreased by pressing the button labeled ▼ while continuing to press and hold the “set” button – see figure 3.
6. Pressing these buttons once adjusts the setting up or down in 0.1°C increments. Pressing and holding will scroll the display rapidly up or down until the desired value is reached.
7. When the desired temperature is displayed release the “set” button to revert the display to showing actual temperature.
8. The instrument will now begin to heat the aluminium blocks to this temperature.
9. The light labeled “heat” on the control panel will illuminate continuously during the heating phase but will begin to flash when the set temperature is approached.
10. Once the set temperature is reached the instrument will maintain the blocks at this temperature until the setting is changed or the instrument is turned off.
11. Containers may be removed from or added to the blocks at any time during operation.

N.B. Care must be taken if placing cold glass vessels into pre-heated blocks. The resulting thermal shock may cause the container to break.

12. After use the instrument should be switched off at the rear and allowed to cool. It should then be disconnected from the electricity supply. Note that when next used the instrument will have retained its previous set temperature.

3.2 Dual control digital models SBH130DC & SBH200DC

Models SBH130DC & SBH200DC accommodate 2 aluminium blocks with independent temperature controls so that each block may be set to a different temperature. The layout and operation of the controls for each block is exactly as described above.

If using this model with only one block in place the side with no block should have its set temperature adjusted to 30°C.

3.3 Analogue model SBH130

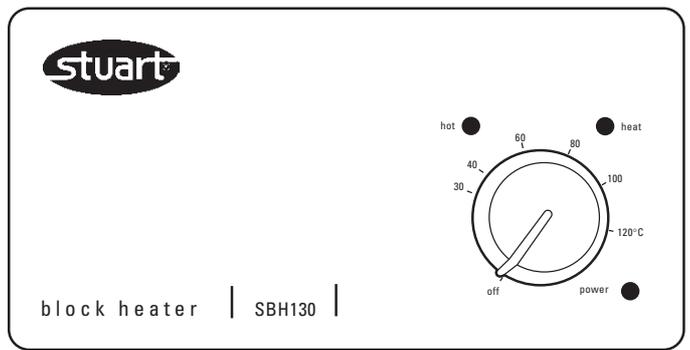


Figure 4 - analogue controls

1. Switch on using the switch located at the rear of the instrument – see figure 2.
2. The “power” light will illuminate - see figure 4.
3. The desired temperature may be set using the control knob labeled “heat” on the right hand side of the control panel – see figure 4. If turned to the position labeled “off” the heater will be switched off. Otherwise the scale around the knob will give guidance as to the set temperature.
4. The instrument will now begin to heat the aluminium blocks to this temperature and the light labeled “heat” on the control panel will illuminate – see figure 4.
5. If the temperature of the blocks exceeds 50°C the red light labeled “hot” will begin to flash to warn that the blocks are too hot to touch – see figure 4. This will continue even if the heater is turned off using the knob on the control panel so long as the instrument remains connected to the electricity supply and turned on with the switch at the rear.
6. Once the set temperature is reached the instrument will maintain the blocks at this temperature until the setting is changed or the instrument is turned off.
7. Containers may be removed from or added to the blocks at any time during operation.

N.B. Care must be taken if placing cold glass vessels into pre-heated blocks. The resulting thermal shock may cause the container to break.

8. If the temperature needs to be set accurately it may be measured using a thermometer placed in the small hole in the top of the

block. The position of the control knob should then be adjusted to raise or lower the temperature as required. If this setting needs to be repeated regularly it is possible to leave the control knob in position and use the switch on the rear of the instrument to turn it on and off. Note that switching off at the rear will cause the hot warning light to stop flashing.

9. After use the instrument should be switched off at the rear and allowed to cool. It should then be disconnected from the electricity supply.

4. Calibration – Digital models only

These units are calibrated during manufacture using blocks designed for 16mm tubes. The different mass of aluminium in blocks designed for other sizes or types of container can cause small discrepancies between the displayed temperature and the actual temperature of the blocks.

If the block heater is to be used with other blocks and very accurate temperature setting is required then the unit should be re-calibrated for the blocks to be used.

You will need an accurately calibrated thermometer for this procedure to be worthwhile. The block heater can only be as accurate as the thermometer used to calibrate it.

Follow the procedure outlined below.

1. Begin with items that are cool.
2. The blocks should be pushed firmly to the right hand side of the recess with no air gap between blocks. The right hand block will be used as the calibration block.
3. Switch on the unit and set the temperature display to 30°C following the procedure outlined in section 3.1
4. Press all three buttons together and hold for 5 seconds until the amber “heat” light stops flashing and remains permanently on.
5. Self-calibration will now begin and the unit will begin to heat.
6. After approximately 30 minutes the unit will have stabilized at approximately 40°C and the

display will change from showing temperature to read (EEEE).

7. Accurately measure the block temperature within the thermometer hole in the right hand block.
8. Press the set button and release
9. Press and hold the set button and use either the up or down buttons to adjust the display temperature to equal the actual temperature measured.
10. Press the up and down buttons together to confirm the value. The amber “heat” light will stop flashing and remain permanently on.
11. Self-calibration will now continue and the unit will ramp up to approximately 5°C below maximum, i.e. either 125°C or 195°C depending on model..
12. After approximately 30 minutes the unit will have stabilized and the display will change from showing temperature to read (EEEE).
13. Accurately measure the block temperature within the thermometer hole in the right hand block.
14. Press the set button and release
15. Press and hold the set button and use either the up or down buttons to adjust the display temperature to equal the actual temperature measured.
16. Press the up and down buttons together to confirm the value.
17. The unit will now begin to control with the new calibration parameters.
18. Allow 30 minutes for the temperature to stabilize.
19. Check that both the display temperature and the thermometer temperature are now between 124°C and 126°C or 194°C and 196°C depending on model.
20. Press the set button and release to confirm the calibration. The set temperature will revert to 30°C.
21. Reset the set temperature to maximum (130 or 200°C) and allow a few minutes to confirm that the unit actually achieves that temperature.
22. Calibration is now complete and the unit may be used normally.

5. Factors affecting calibration and accuracy

In order to get the maximum accuracy from the equipment and to ensure accurate calibration the factors listed below should be considered as they will all affect performance.

1. The base of the blocks and the heated surface in the unit must be scrupulously clean to ensure good contact.
2. The blocks should be pushed firmly together to the right hand side of the recess
3. The thermal radiation from the blocks can be affected by surface condition and affect accuracy. The top surface should be kept clean and shiny.
4. If the unit is used in an area of strong drafts such as inside a fume hood there can be a temperature gradient across the blocks. In this case the safety cover should be used to protect the blocks from the air flow.
5. During calibration the temperature probe used should be a good fit in the hole in the block.

6. Removal of aluminium blocks

N.B. Do not attempt to remove blocks until the instrument has been switched off and allowed to cool

The instrument is supplied with a special tool to facilitate removal of the blocks.

This should be screwed into the thermometer hole in the top of the block and then used to lift the block clear of the instrument. An extension piece is provided for use with long tubes.

There is a convenient storage groove located on either side of the body casing – see figure 1.

7. Aluminium blocks and accessories

The following range of aluminium blocks is available. All are manufactured from anodized aluminium and have an extra hole designed to accommodate a thermometer if desired.

All blocks have dimensions (w x d x h) of 75 x 95 x 50mm and can be used in any combination.

Cat. No.	Tube size (diameter /type)	No. of holes	Hole size, mm (diameter x depth)
SHT1/0	Plain block	-	-
SHT1/10	10mm	20	10.5 x 47
SHT1/12	12mm	20	12.5 x 47
SHT1/12/33	12mm	20	12.5 x 33
SHT1/13	13mm	20	13.5 x 47
SHT1/16	16mm	12	16.6 x 47
SHT1/19	19mm	8	19.5 x 47
SHT1/20	2ml tubes	20	10.5 x 33
SHT1/21	Block with removable channels for glass and disposable cuvettes.		
SHT1/22	1.5ml tubes	20	10.7 x 14
SHT1/25	25mm	6	25.5 x 47
SHT1/28	28mm	6	28.0 x 47
SHT1/30	0.5ml tubes	30	7.8 9° taper
SHT1/30/1	30mm	4	30.1 x 47
SHT1/33	33mm	4	33.2 x 47
SHT1/48	0.2ml tubes	48	6.1 9° taper
SHT1/80	0.2ml strip tubes	10 x 8	-
SHT1/96	96 well plate	-	7.5 9° taper
SHT1/384	384 well plate	-	3.6 9° taper

The following accessories are available from Barloworld Scientific or its agents:-

Cat. No.	Description
SBH/2	Safety cover, 2 block models
SBH/3	Safety cover, 3 block and dual control models
SBH/4	Block extraction tool

8. Electrical installation



THIS INSTRUMENT MUST BE EARTHED



Before connection please read and understand these instructions and ensure that the line supply corresponds to that shown on the rating plate.

Power consumption is:

Model	Power	Frequency	Fuses
SBH130	300W	50/60Hz	F3.15AL
SBH130D	300W	50/60Hz	F3.15AL
SBH200D	300W	50/60Hz	F3.15AL
SBH200D/3	450W	50/60Hz	F3.15AL
SBH130DC	300W	50/60Hz	F3.15AL
SBH200DC	300W	50/60Hz	F3.15AL

The instruments are fitted with an IEC socket at the rear of the instrument for connection of the mains lead. The IEC socket contains a pull out draw containing the fuses and a mains on/off switch - see figure 2.

Caution:
Fuses fitted in both live and neutral lines.

These units are supplied with two mains leads fitted with IEC plugs for connection to the instrument. One lead has a U.K. 3 pin plug and the other has a 2-pin "Shuko" plug for connection to the mains. Choose the lead appropriate for your electrical installation and discard the other.

Should neither lead be suitable, take the lead with the U.K. plug and replace the plug with a suitable alternative. This involves cutting off the moulded plug, preparing the cable and connecting to the rewirable plug in accordance with its instructions.

IT IS IMPORTANT THAT THIS OPERATION SHOULD ONLY BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN

NOTE: Refer to the equipment's rating plate to ensure that the plug and fusing are suitable for the voltage and wattage stated.

The wires in the mains cable are coloured as follows:

LIVE - BROWN

NEUTRAL - BLUE

EARTH - GREEN/YELLOW

The appropriate mains lead should be connected to the instrument BEFORE connection to the mains supply.

Should the mains lead need replacement a cable of 1mm² of harmonised code H05W-F connected to an IEC320 plug should be used.

N.B. The U.K. mains lead is protected by a 10A fuse mounted in the plug top.

IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN

9. Safety advice

This equipment is designed to operate under the following conditions: -

- ❖ For indoor use only
- ❖ Use in a well ventilated area
- ❖ Ambient temperature range +5°C to +40°C
- ❖ Altitude to 2000m
- ❖ Relative humidity not exceeding 80%
- ❖ Mains supply fluctuation not exceeding 10%
- ❖ Over-voltage category II IEC60364-4-443
- ❖ Pollution degree 2
- ❖ Use with a minimum distance all around of 200mm from walls or other items

The unit should be carried using both hands.

Never move or carry the unit when in use or connected to the mains electricity supply.

The instrument should not be switched on and allowed to heat unless the appropriate number of aluminium blocks are fitted into the recess in the top.

The aluminium blocks may be HOT. Never move or carry the unit until it has been disconnected from the electricity supply and allowed to cool

Blocks should NEVER be removed from the instrument until it has been disconnected from the electricity supply and allowed to cool.

Blocks should only be removed using the specially designed tool supplied with the instrument - see figure 1.

If liquid is spilled on the blocks the instrument should be switched off immediately and allowed to cool. The blocks and the recess in the top of the instrument should be carefully cleaned and dried before further use. Ensure adequate safety precautions are observed depending on the nature of the spilled liquid.

If there has been heavy drenching of the blocks or spillage into the instrument it should be checked by a qualified electrician before further use.

In the case of mains interruption, a fault or electrical failure, the unit will continue to operate on restoration of the electricity supply or removal of the fault.

10. Warranty

Barloworld Scientific Ltd warrants this instrument to be free from defects in material and workmanship, when used under normal laboratory conditions, for a period of **three (3)** years. In the event of a justified claim Barloworld Scientific will replace any defective component or replace the unit free of charge.

This warranty does NOT apply if damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage caused by incorrect installation, adaptation, modification, fitting of non approved parts or repair by unauthorised personnel.

Notes



These products meet the relevant EC harmonised standards for radio frequency interference and may be expected not to interfere with, or be affected by, other equipment with similar qualifications. We cannot be sure that other equipment used in their vicinity will meet these standards

and we cannot guarantee that interference will not occur in practice. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advice before use, please contact the Technical Service Department of Barloworld Scientific Ltd.

Declaration of Conformity

Block Heater

Models

**SBH130 SBH130D SBH130DC
SBH200D SBH200D/3, SBH200DC.**

These products comply with the requirements of the EU Directives listed below:

89/336/EEC Electromagnetic Compatibility Directive amended by 93/68/EEC.

73/23/EEC Low Voltage Directive amended by 93/68/EEC.

Compliance with the requirements of these Directives is claimed by meeting the following standards:

EN 61326: 1997 + Amendments A1 & A2. (Electrical Equipment for Measurement, Control and Laboratory use, EMC Directive).

EN 61010-1: 2001. (Safety Requirements Electrical Equipment for Measurement, Control and Laboratory use, LVD Directive).

EN 61010-2-010:1995. (Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use. Particular requirements for laboratory equipment for the heating of materials).

Compliance Certificates and Full Reports.

Ref: RETS(E)0621/A/1, RETS(E)0621/A/2, RETS(E)0621/A/3, RETS(L)0621/A/4

From "Epsilon Technical Services," an Independent Accredited Test House Showing Compliance to the above Standards, are available on request.

CE Mark affixed 03

Signed:

(Mr D E Hicks)

Date:

25/7/05

Authority: Technical / Development Manager

for

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INSPECTION REPORT

MODEL _____

SERIAL No. _____

ELECTRICAL SAFETY

1. Earth continuity



2. Insulation



3. Flash test



FUNCTIONAL

1. Indicators



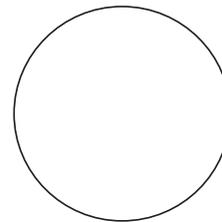
2. Temperature control



3. Visual acceptance



QUALITY CONTROL INSPECTOR



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