

OPERATOR'S GUIDE



ThermaPlate

Contact Heat Tester
Model 1620

Covering Serial Numbers
1620/16/1001 and
upwards

UniController

James Heal's
signature user interface

James H. Heal & Co. Ltd.
Halifax, England



THE QUEEN'S AWARDS
FOR ENTERPRISE:
INTERNATIONAL TRADE
2012

Publication 290-1620-1\$A
© 2016

Setting the Standard

Published by:

JAMES H. HEAL & CO. LTD.
RICHMOND WORKS
HALIFAX
WEST YORKSHIRE
HX3 6EP
ENGLAND

TELEPHONE +44 (0) 1422 366355
FAX +44 (0) 1422 352440

E-mail info@james-heal.co.uk
Internet <http://www.james-heal.co.uk>

© 2016

Table of Contents

James Heal	4
Setting the Standard	4
Areas of Expertise	4
ThermaPlate Contact Heat Tester	5
Features and Benefits.....	6
Service and Calibration	6
Technical Assistance	6
Applications	6
Standards	7
Safety	8
Installation	9
Unpacking	9
Accessories	10
Standard Accessories.....	10
Calibration.....	10
Consumables	10
Optional Accessories and Consumables	11
Operation	12
Connecting to electrical supply	12
Thermal Protection	12
Resetting the Instrument.....	12
UniController.....	13
Setting the Timer.....	13
Setting the Temperature	14
Setting the Same Temperature on Both Plates.....	14
Setting Different Temperatures on the Plates	14
Temperature Warning Indicator	14
Performing a Test	15
Colour Fastness to Dry Heat	15
Colour Fastness to Hot Pressing	16
Thermal Stability	17
Maintenance.....	18
Dimensions	20
Service & Calibration	21
Revision History.....	21

JAMES HEAL

At James Heal, we are dedicated to designing and developing high precision testing instruments and test materials for physical and colour fastness testing. Our worldwide service and calibration division and expert technical assistance complement our product range, adding real value to your laboratory testing activities.

Setting the Standard

We are committed to forming close relationships and have established numerous partnerships within the textile industry, from trade and standards organizations, to test houses, customers and distribution partners.

With a heritage spanning more than 140 years, we have evolved and grown through a culture of continuous improvement, resulting in a thorough understanding of the applications, operating conditions and requirements of customers worldwide - from independent testing laboratories and test houses, to fabric suppliers, manufacturers and retailers.

Using knowledge and expertise, we consistently set the industry standard through product innovation and technology, with customer and user needs, present and future, driving our technological advancements. You can be assured that with James Heal, you will always receive the highest levels of product quality and customer service. We have Agents and Distribution partners all over the globe, ensuring locally available product whenever, and wherever you need it.

Areas of Expertise

Textile: Colour Fastness

- Chlorinated Water
- Dry Cleaning
- Dry Heat
- Hot Pressing
- Laundering
- Light
- Perspiration
- Phenolic Yellowing
- Print Durability
- Rubbing
- Washing
- Water

Textile: Physical

- Abrasion
- Bursting Strength
- Compression and Puncture
- Crease and Wrinkle Recovery
- Crimp
- Drape
- Durability
- Flammability
- Mass per unit area
- Pilling and Fuzzing
- Security of Attachments
- Seam Slippage
- Shrinkage
- Snagging
- Spray Rating
- Stretch and Recovery
- Surface Deterioration
- Tear Strength
- Tensile Strength
- Washing and Drying

Non-Textile

- Bursting strength of nonwovens, plastics, paper and medical products
- Micro-scratching of laminates, wooden, painted, automotive and high gloss surfaces
- Physical and colour fastness testing of leather
- Rubbing fastness of laminates and wooden surfaces
- Tear strength of paper and plastics

THERMAPLATE CONTACT HEAT TESTER



Features and Benefits

- UniController easy to use interface.
- Efficient temperature control - UniController allows for the independent control of each plate. Controller continuously displays either set (target) or actual temperatures.
- Accurate timing - countdown timer can be set from 1 second to 5 minutes. Test is started with a quick press of the UniController selector button.
- Space efficient - occupies only a small area of bench.
- Easy calibration - lid designed to facilitate calibration, optional temperature checking device and fully traceable certification (ISO/IEC 17025 compliant) available.
- Operator safety - positive park position for lid, cool exterior surfaces and warning light which illuminates when plate temperatures exceed 60°C.
- Standards - complies with all relevant International, European, American and Retailers standards / methods.
- Insulating plate and specimen platform supplied as standard.
- Test Materials - comprehensive range of standards specific test materials available; multifibre, grey scales, as well as felt and cotton limbric cut to size in order to achieve the correct operating pressure of 4kPa ± 1kPa.

Service and Calibration

- Worldwide Service
- ISO 17025 based Accredited Calibration and Service
- 18 Months' Warranty

Technical Assistance

- Operator Training
- Knowledge transfer
- Applications Support
- Engineering Support

Applications

- Colour fastness to dry heat - Used mainly by fabric producers and dyers & finishers to predict colour changes on dyed and printed fabrics, during subsequent heat treatments.
- Sublimation fastness - Used by polyester producers to select disperse dyes with sublimation characteristics to match their product and process.
- Colour fastness to hot pressing - Used mainly by fabric producers, dyers & finishers and garment makers to determine the resistance of the colour of textiles to change and transfer, when subjected to ironing and to processing on hot cylinders. Tests may be carried out on dry, wet and/or damp specimens.
- Thermal stability - Used by fabric producers, dyers and finishers and garment makers to predict the shrinkage during heat setting synthetic fabrics and particularly those which will be fused together during making up.

STANDARDS



ISO	AATCC	M&S
ISO 105-PO1 Colour fastness to dry heat (excluding pressing) *	AATCC 117 Colorfastness to heat: Dry (excluding pressing)	M&S P010 Thermal stability
ISO 105-X11 Colour fastness to hot pressing ^	AATCC 133 Colorfastness to heat: Hot pressing	M&S C13 Colour fastness to hot pressing



Adidas	JIS	GB
Adidas 5.09 Colour migration of fabrics	JIS L 0879 Test methods for colour fastness to dry heat JIS L 0850 Test methods for colour fastness to hot pressing	GB 5718 Colour fastness to dry heat (excluding pressing) GB 6152 Colour fastness to hot pressing

LOCATION	105-PO1*	105-X11 ^
	PREFIX	
AUSTRIA	ONORM EN ISO	ONORM EN ISO
BELGIUM	NBN EN ISO	NBN EN ISO
BRITAIN	BS EN ISO	BS EN ISO
DENMARK	DS EN ISO	DS EN ISO
EUROPE	EN ISO	EN ISO
FRANCE	NF EN ISO	NF EN ISO
GERMANY	DIN EN ISO	DIN EN ISO
INTERNATIONAL	ISO	ISO
IRELAND	n/a	I.S. EN ISO
ITALY	UNI EN ISO	UNI EN ISO
KOREA	n/a	KS K ISO
NETHERLANDS	NEN EN ISO	NEN EN ISO
NORWAY	NS EN ISO	NS EN ISO
POLAND	PN EN ISO	PN EN ISO
RUSSIA	GOST R ISO	n/a
SOUTH AFRICA	n/a	SANS
SPAIN	UNE EN ISO	UNE EN ISO
SWEDEN	SS EN ISO	SS EN ISO
SWITZERLAND	SN EN ISO	SN EN ISO

ThermaPlate is approved by Marks & Spencer.

*In order to achieve 4 kPa, specimens & adjacent fabrics with dimensions 10 cm x 10 cm are used. This is also applicable to Adidas.

^In order to achieve 4 kPa, appropriately sized test materials are available from James Heal.

SAFETY

Read this manual thoroughly before operating the unit.

- Keep clear of the heater plates while the instrument is in use and after the instrument has been turned off. A warning light on the instrument fascia will illuminate when the heater plates are above 60°C, providing the machine is turned on. After use, close the lid covering any exposed hot surfaces and allow the instrument to cool down slowly. Note: the heater plates takes approximately 2 hours to cool down from 220°C to 60°C with the fan running.
- Open the lid using only the attached handle. Avoid touching the metal case.
- It is possible, if a sample is left in the machine for longer than the stated length of time or at a higher temperature than that required by the test method, for the sample to scorch or even ignite. The heater plates are capable of generating temperatures up to 220°C. As a precaution it is recommend that a suitable fire extinguisher, i.e., dry powder is readily available.
- Do not accelerate cooling of the instrument, other than by using the fan. Allow the instrument to cool slowly by radiating heat to the atmosphere.
- The instrument is suitable for wet testing of fabric; however, water should not be poured directly onto the instrument. Water or other liquids should be added to the specimen before it is placed on the instrument.
- The instrument weighs approximately 15.9 kg. Only attempt to lift the instrument if you feel it is within your ability or preferably ask a colleague for assistance.
- ThermaPlate complies with the CE regulations in full.
- Covers should not be removed, other than by a qualified engineer, in which case ensure the machine is isolated from the electrical supply before removing any covers.
- Fuses of the correct type and with the correct amperage rating must be used.
- Never use ThermaPlate for anything other than what it is designed for.

INSTALLATION

Unpacking

Do not dispose of any packaging material until the order has been checked.

Cut the plastic strapping with scissors. We recommend wearing goggles and gloves to avoid damage to the eyes and hands. Remove the packing tape.

Lift out the accessories box. Remove the tape and ensure that the contents are correct as per your order. Report any anomalies immediately.

Using both hands, remove the cardboard layer from the lower section to reveal the instrument below. The instrument weighs approximately 15.9 kg. Only attempt to lift the instrument if you feel it is within your ability or preferably ask a colleague for assistance. Grasp ThermaPlate by the front and back and lift out carefully.

Stand the instrument on a firm, level surface such as a bench or table. This should be situated in the environment as recommended by the chosen test method.

Unwrap ThermaPlate and remove the paper insert from between the plates.

Level the instrument using the levelling feet - these can be adjusted by rotating them.

Important: position the instrument so that the cooling fan at the rear of the instrument is not obstructed. Ensure the air intake duct underneath the instrument is not restricted.

A conditioned environment will be required once the testing is complete.

Accessories

Standard Accessories

906-602	ThermaPlate model 1620 230V 50/60HZ Temperature range: Ambient - 220°C Dimensions of heated plates: 210 x 210mm Standard accessories: 1 x Specimen Platform 794-827 1 x Insulating Board 794-826
906-603	ThermaPlate model 1620 110V 50/60HZ Temperature range: Ambient - 220°C Dimensions of heated plates: 210 x 210mm Standard accessories: 1 x Specimen Platform 794-827 1 x Insulating Board 794-826
297-039	CD Operator's Guide

Calibration

201-620	ISO Certificate of Calibration for Contact Heat Tester
794-903	Temperature Measuring Kit (supplied with UKAS Certificate of Calibration) The Temperature Measurement Kit comprises a digital thermometer and probes. It is mandatory for M & S testing. Otherwise, it is a valuable tool for checking the calibration of ThermaPlate.

Consumables

	ISO 105-P01, JIS L 0879, GB 5718
702-500	Multifibre Adjacent Fabric DW - per roll (10m)
766-200	Grey Scale for assessing Change in Colour ISO 105 A02
766-201	Grey Scale for assessing Staining ISO 105 A03
	ISO 105-X11, JIS L 0850, GB 6152
702-447	Woven Felt 125 x 90 mm - per pack (10)
702-446	Cotton Limbric 125 x 90 mm - per pack (20)
766-200	Grey Scale for assessing Change in Colour ISO 105 A02
766-201	Grey Scale for assessing Staining ISO 105 A03
	M & S P010
772-133	Ruler 300 mm/12 in
	M & S C13
766-200	Grey Scale for assessing Change in Colour ISO 105 A02

OPERATION

Before operating ThermaPlate please read and follow the safety instructions.

Connecting to electrical supply

Connect to mains electricity with the lead provided and switch on.

IMPORTANT: THIS INSTRUMENT MUST BE EARTHED

This instrument is available for use with mains voltage of either 240V 50Hz/60Hz or 110V 50/60Hz. The mains inlet and fuse holders are located at the rear of the instrument. The mains lead wires are coloured in accordance with the following code:

Green/Yellow	Earth
Blue	Neutral
Brown	Live

Thermal Protection

Should the internal compartment of the instrument base overheat, a thermal trip (cut-out) will activate, preventing damage to the instrument. This may occur if the cooling fan fails or if cooling air is restricted from entering / exhausting from the instrument. Activation of the thermal trip will be noticeable by the heater plates failing to maintain temperature. Should this occur, turn the heaters off and allow the instrument to cool down. Check the cooling fan is operating correctly.

Resetting the Instrument

The thermal trip will reset automatically once the temperature inside the instrument base compartment has fallen to the correct operating temperature. Resetting is automatic and requires no intervention from the operator.

UNICONTROLLER

When ThermaPlate is first switched on, a menu can be accessed allowing the user to set:

- Volume - 0 to 5
- Units of temperature - °C or °F
- Language - English, French, German, Spanish & Italian
- Powersave - the heaters will turn off after a period of inactivity, from 1 to 8 hours.

The time and temperature settings can be accessed by turning the selector button.

Setting the Timer

The home screen display indicates the current set cycle time.



Set the timer to the required test duration by turning the selector button to <TIMER>. Select by pressing and then rotate to desired time. Press again to select and it will return to the home screen.

The timer displays in seconds up to 1 minute, and then in 5 second increments up to a maximum of 5 minutes.

If the button is rotated in error, either rotate it back to its origin, or press the top small black button (Esc) and it will return to the home screen.

The test is activated by pressing the large UniController selector button once the time has been selected and the plates are within $\pm 2^{\circ}\text{C}$ of the target temperature.

Setting the Temperature

The home screen displays the set temperature for each plate when the heaters are off. When the heaters are on, the live temperature is displayed.



Setting the Same Temperature on Both Plates

Set the temperature of both plates by turning the selector button to <TEMPERATURE>. Select by pressing, then rotate to desired temperature. Press again to select and it will return to the home screen. Heaters will be off.

Turn the heaters on by pressing both small black buttons and 'Warming Up' will be displayed. If the set temperature overshoots, 'Cooling Down' will appear until the target temperature has stabilised. ThermaPlate should achieve 220°C in approximately 10 minutes with both upper and lower plates closed and turned on. 'Push to Start' will be displayed once the plates have reached temperature.

The test can be started by pressing the large UniController selector button once the plates are within $\pm 2^{\circ}\text{C}$ of the target temperature.

Setting Different Temperatures on the Plates

Certain tests require the top and bottom plates at different temperatures, therefore these can be set individually. Turn the selector button to <TEMPERATURE>. Press the bottom small black button next to 'Both Plates' - this will scroll through 'Top Plate' and 'Btm Plate.' Stop on 'Top Plate' and select by pushing the selector button, rotate to the required temperature, press to select and it will return to the home screen. Repeat for the bottom plate or leave the heater off if required.

For plates at different temperatures, the plates should be kept open whilst heating. Turn the heater/s on by pressing the small black button/s and 'Warming Up' will be displayed. If the set temperature overshoots, 'Cooling Down' will appear until the target temperature has stabilised. 'Push to Start' will be displayed once the plate/s have reached temperature.

The test can be started by pressing the large UniController selector button once the plates are within $\pm 2^{\circ}\text{C}$ of the target temperature.

Temperature Warning Indicator

The temperature warning indicator on the front of the instrument will illuminate when the top and/or bottom hot plates exceed 60°C, warning that they are no longer safe to touch. Only when both plates have cooled below 60°C will this indicator go out.



PERFORMING A TEST

Before use, when the instrument is cold, inspect the top and bottom plates for damage and debris. Clean if necessary as described in Maintenance.

Set the plates to the temperature required in the standard. Upon reaching the required temperature allow the machine to stabilise for 10 minutes, unless the standard specifies a longer period of stabilisation in which case this should be followed.

A non-conducting / insulated tool may be used to remove the hot specimens, e.g. glass rod.

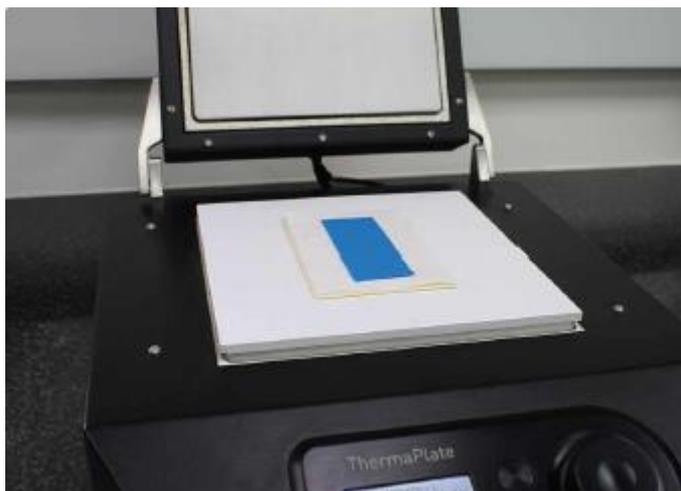
The following test methods are illustrations of suitable applications. Examples are illustrated below but please refer to latest version of the chosen standard for specific instructions on specimen preparation, sizes, temperatures and times.

Colour Fastness to Dry Heat



- Set the timer to the required end point.
- Set both plates to the required temperature and allow to stabilise.
- Place the composite specimen (10cm x 10cm) on the bottom plate and lower the lid. This will receive the required pressure of 4kPa \pm 1kPa.
- Press the selector button immediately- the timer will start.
- At the end of the test, slide the specimen onto the platform using a non-conducting tool.
- Separate the individual layers, place in the conditioned atmosphere and follow the grading procedure as stated in the standard.

Colour Fastness to Hot Pressing

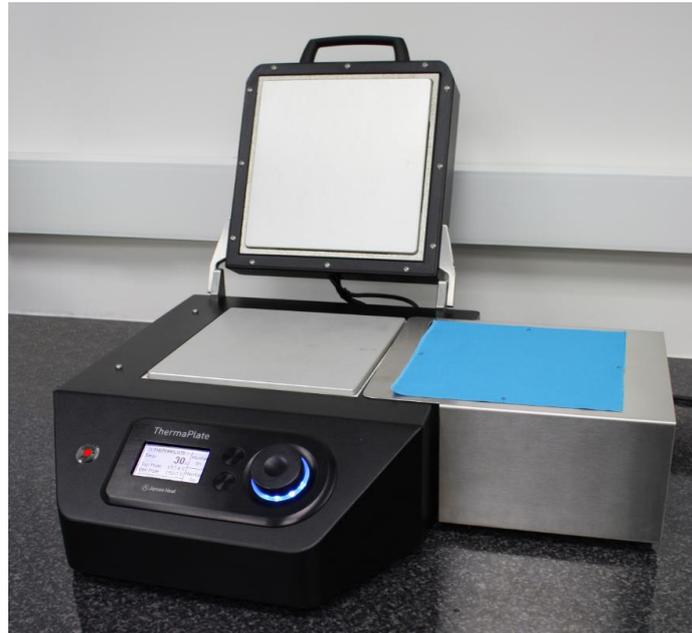


- Set the timer to the required end point.
- The heat on the specimen is only administered from the top plate - set the top plate to the chosen temperature and allow to stabilise.
- Place the heat resistant tile over the bottom plate.
- Place a piece of felt padding onto the tile. The felt should be pre-cut to a size which provides the required pressure ($4\text{kPa} \pm 1\text{kPa}$) onto the sample.
- Place a piece of cotton limbric of the same dimensions as the felt padding over the felt.
- On top of this, place the test specimen (wet or dry) in the centre.
- If required, place an adjacent fabric (e.g., Multifibre, Cotton Limbric) of the same dimensions as the test sample over the test sample (wet* or dry).
- Lower the top plate and press the selector button immediately.
- Once the timer has finished, open the lid and remove the composite specimen carefully with a non-conducting tool by sliding onto the specimen platform.
- Separate the individual layers, place in the conditioned atmosphere and follow the grading procedure stated in the standard.

*Some standards require damp or wet pressing in which case the adjacent fabric and /or test sample may need to be wet out prior to pressing. In these cases, the piece is weighed whilst dry, wet out and reweighed. The correct amount of water pick up can then be calculated. i.e. 100%.

Thermal Stability

See appropriate standard for full details - an outline of the test procedure is provide here.



- Prepare a test specimen 200mm X 200mm and mark centrally A-B and C-D.
- Condition for a minimum of 4 hours
- Measure e.g. A to B = 200mm, C to D = 198mm.
- Heat ThermoPlate to the appropriate temperature and allow to stabilise.
- Set the duration of the test at this point.
- Once stabilised, raise the top plate and position the specimen centrally.
- Lower the top plate and press the selector button immediately to start the test.
- Once the timer has finished, open the top plate and remove the specimen carefully with a non-conducting tool by sliding onto the specimen platform.
- Return to the standard testing atmosphere and allowed to relax on a flat surface - do not use a wire mesh tray.
- Assess the appearance.
- Re-measured the specimens and calculate the percentage elongation or shrinkage:

$$\frac{\text{Initial measurement} - \text{end measurement}}{\text{Initial measurement}} \times 100 = \text{change in \%}$$

E.g.

	Initial	End	Change (%)
A to B	200	198	1.00 % shrinkage
C to D	198	195	1.50 % shrinkage

$$\frac{200 - 198}{200} \times 100 = 1.00 \%$$

MAINTENANCE

Between service and calibration visits no regular maintenance is required; simply keep the instrument clean and free from dust and debris.

Periodical verification checks of the temperature can be carried out using the thermocouple available from James Heal.



Clean the heater plates when cold only, using a mild detergent on a damp cloth to remove contamination. **DO NOT** use abrasive cleaners, as these will permanently damage the surface coating.

Periodically check the cooling fan is working correctly and ensure the air intake duct in the base of the instrument is unrestricted. If air duct appears to be blocked, disconnect the instrument from the mains and clear the holes using a suitable vacuum nozzle.

DO NOT probe any objects through the holes to clear any blockage.

THERMAPLATE 1620 TECHNICAL SPECIFICATION

Standards	AATCC 117, AATCC 133 adidas 5.09 ISO 105-P01, ISO 105-X11 M&S P010, M&S C13 JIS L 0879, JIS L 0850 GB 5718, GB 6152
------------------	--

Temperature Range	20°C to 220°C (68°F to 428°F)
--------------------------	-------------------------------

Temperature Units	°C or °F
--------------------------	----------

Temperature Accuracy	± 1°C
-----------------------------	-------

Timer Range	1s to 5 min
--------------------	-------------

Languages	English, French, German, Spanish, Italian
------------------	---

User Interface	UniController
-----------------------	---------------

Hot Plates	210 x 210 mm, top plate 4 kg
-------------------	------------------------------

Specimen Thickness	15 mm (max)
---------------------------	-------------

Weight	15.9 kg
---------------	---------

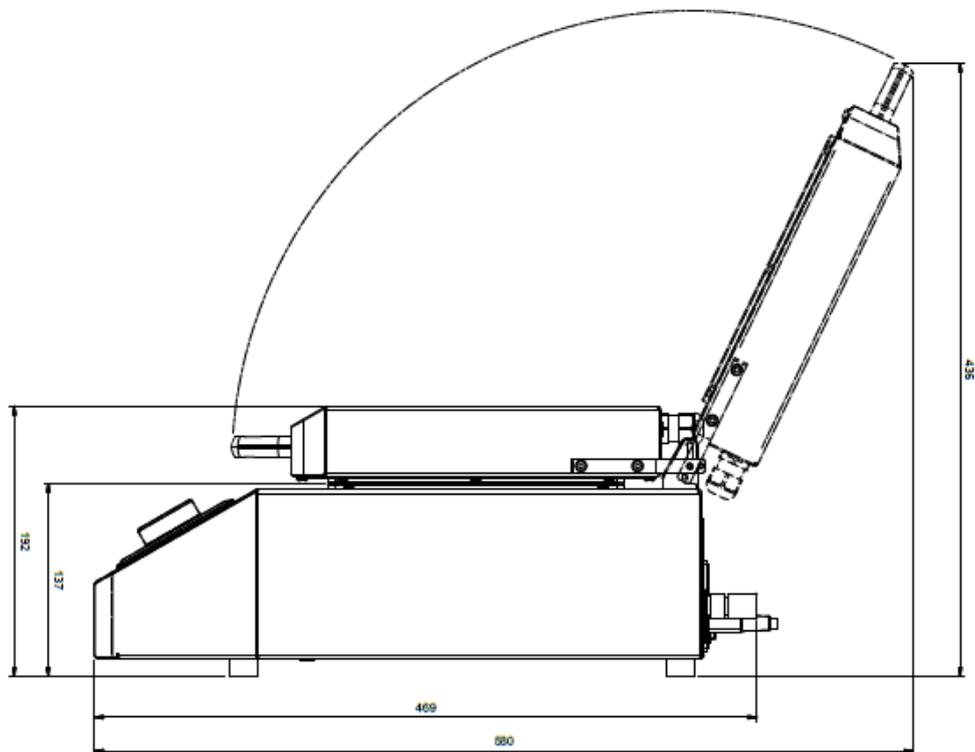
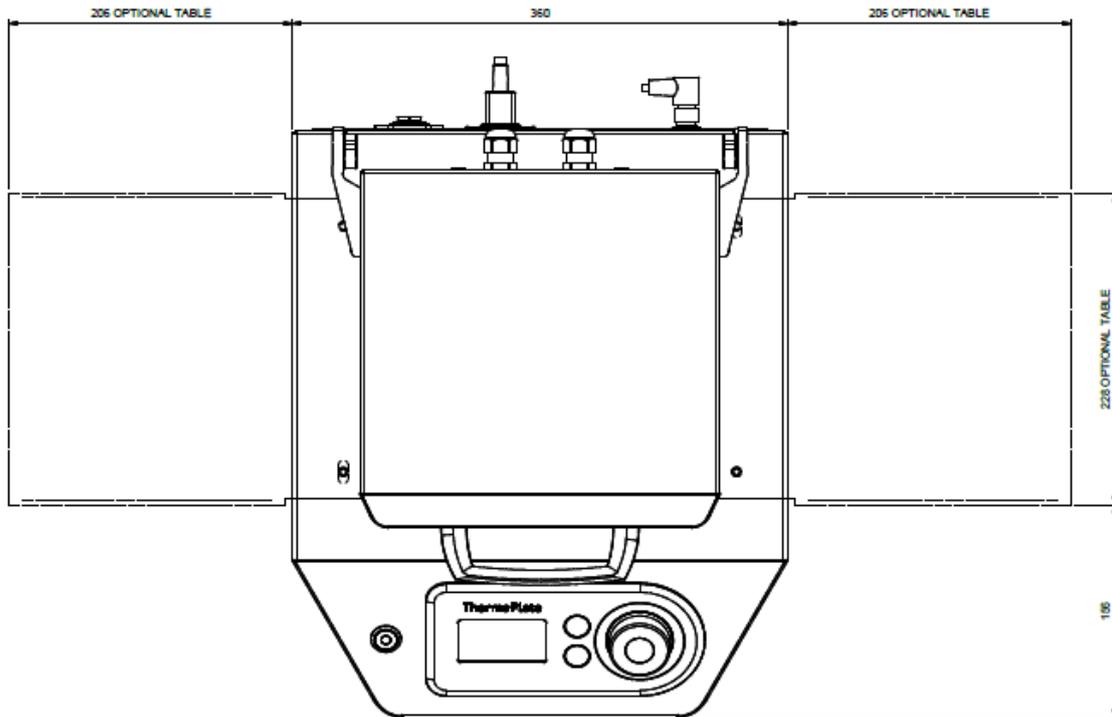
Dimensions (Open)	360 x 580 x 436 mm (W x D x H)
--------------------------	---------------------------------

Safety	Over-temperature thermostats
---------------	------------------------------

Power	230V ±10%, 1P+N+E, 50/60Hz, 890W 5A 110V ±10%, 1P+N+E, 50/60Hz, 890W 10A
--------------	---

Energy Saving	Power save feature automatically turns the heaters off after a period of inactivity
----------------------	---

Dimensions



SERVICE & CALIBRATION

James Heal Service & Calibration is a totally comprehensive, worldwide support programme. When you buy instrumentation for us, it is the beginning rather than the end of an association. Our aim is simple, to provide precisely the services you need to maintain and protect the value of your investment.

For any enquiries you may have regarding your instrument please contact the James Heal Service & Calibration Support Team by email or phone.

In all communications please quote the serial number, located of your instrument, for example 620/03/1001.

Email support@james-heal.co.uk

Telephone +44 (0)1442 366355

REVISION HISTORY

See front cover for Publication number, e.g., 290-1620-1\$A

Rev	Date	Originator	Details of revision
A	19.09.16	CB	First release