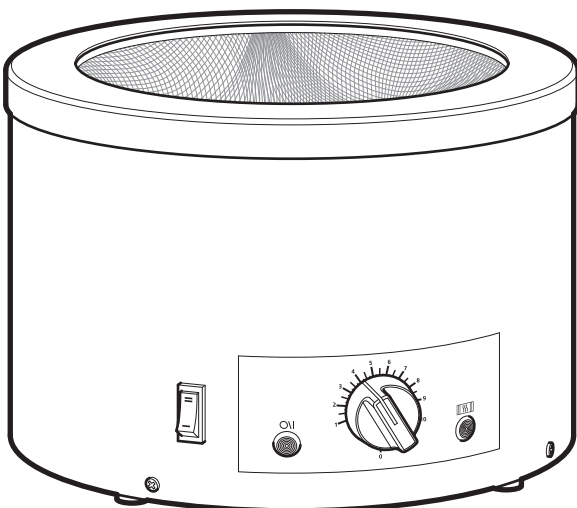
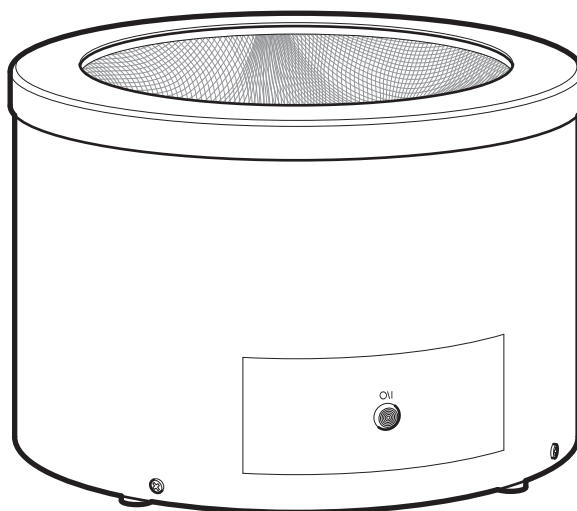
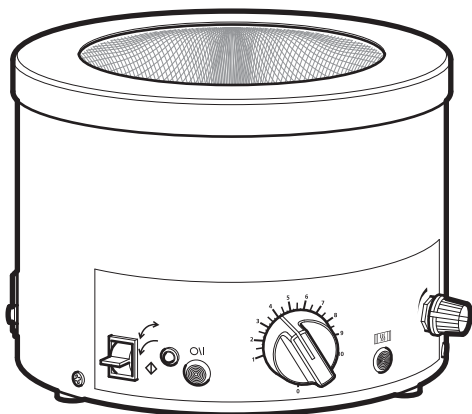


Cole-Parmer®

HM-100, HM-200 & SHM-200 Series Heating Mantles



Instruction Manual
M7153-CPB Version 10.8

Cole-Parmer®
essentials

Please take your time to read this Instruction Manual in order to understand the safe and correct use of your new Cole-Parmer product.

It is recommended the Responsible Body for use of this equipment reads this Instruction Manual and ensures the user(s) are suitably trained in its operation.

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In the interest of continued development Cole-Parmer Ltd. reserve the right to alter or modify the design and /or assembly process of their products without prior notification.

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1. INTRODUCTION

- 1.1. The Cole-Parmer series of heating mantles has been specifically designed to provide a comprehensive answer to heating fluids in round bottomed flasks in the modern laboratory. It combines the traditional Cole-Parmer heating element with many new features thus providing the user with several options to meet different applications.
- 1.2. For controlled mantles, heating control is provided by a built-in solid state Simmerstat (size 1 and 2 mantles) and an Energy Regulator (size 3 and 4 mantles). For uncontrolled mantles, a range of external controllers are available.
- 1.3. All HM & SHM Series heating mantles are housed in aluminum cases with stove paint finish to give good chemical resistance.
- 1.4. These products are provided with ventilation slots in the base and around the rim to allow convection cooling and subsequent low case operating temperature.
On all heating mantle sizes up to five litres a single support rod positioning clamp is provided at the side of the unit.
On the 10, 12, 20 and 22 litre models there are three rod support positions.
All mantle sizes up to five litres have a built in Earth Screen.
All 10, 12, 20 and 22 litre models have a earth line adjacent to the heater element.

Notes:

Size 4 cases have an earth line adjacent to the element instead of an earth screen.

Where controlled, the larger case size 4 mantles use ego stat energy regulators. All other smaller controlled mantles use a solid state simmerstat controller.

For uncontrolled mantles size 1, 2, & 3, the Cole-Parmer CN-200-800 or CN-200-460-115 controller may be used. The CN-200-800 Controller uses solid state simmerstat controlling.

For uncontrolled mantles size 4, the Cole-Parmer CN-200-1800 or CN-200-1150-115 may be used. The CN-200-1800 Controller uses an egostat energy regulator.

For the three circuit models (i.e. three IEC socket inputs) these can be supplied by three CN-200-1800 controllers.

The following mantles in the table below contain three separate circuits with three IEC inlets and three on board controllers.

Size 4 case	MHM-200-10L	MHM-200-10L-115
	MHM-200-12L	MHM-200-12L-115
	MHM-200-20L	MHM-200-20L-115
	MHM-200-22L	MHM-200-22L-115

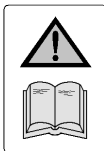
2. SYMBOLS AND USING THIS INSTRUCTION BOOK

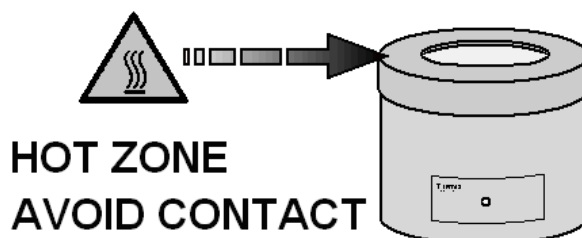
2.1. Throughout this Instruction book the following symbols are shown to identify conditions which pose a hazard to the user, or to identify actions that should be observed. These symbols are also shown on the product, or its packaging. When a symbol is shown next to a paragraph or statement it is recommended the user takes particular note of that instruction in order to prevent damage to the equipment or to prevent injury to one's self or other people.

The Responsible Body and the Operator should read and be familiar with this Instructions book in order preserve the protection afforded by the equipment.

To prevent injury or equipment damage it is the manufacturer's recommendation that all persons using this equipment are suitably trained before use.

2.2. Symbols Defined.

	Caution, risk of danger. See note or adjacent symbol.		This symbol adjacent to an indication lamp means the heater power Off / On when the lamp non-illuminated / illuminated.
	Protective conductor terminal to be earthed. (Do not loosen or disconnect).		This symbol adjacent to an indication lamp means mains power Off / On when lamp non-illuminated / illuminated.
	Caution / risk of electric shock.		Material irritant to skin. When handling wear face mask to BS/EN 149 and protective gloves
	Recyclable Packing Material.		Reverse Stirring facility.
	Do not dispose of product in normal domestic waste.		Single Direction Stirring facility.
	Caution. Hot surface.		Momentary stop stirring to recapture flea.
	Refer to Instructions book		
	Bio Chemical Hazard. Caution required. Will require decontamination.		



General illustration.

3. SAFETY INFORMATION

3.1. This product has been designed for safe operation when used as detailed in accordance with the manufacturer's instructions.

NOTE: Failure to use this equipment in accordance with the manufactures operating instructions may compromise your basic safety protection afforded by the equipment and may invalidate the warranty / guarantee. The warranty / guarantee does not cover damage caused by faulty installation or misuse of the equipment.

3.2. Prevention of Fire and Electric shock.



To prevent a risk of fire or electric shock, **DO NOT** open your product case without authorisation. Only qualified Service personnel should attempt to repair this product.



Replace fuses only with the type as listed in section, Parts and Accessories and Technical Specifications. (See fuse type and rating).



Ensure the Mains Power Supply conforms to rating found on the data plate located on the product case.



Never Operate this equipment with out connection to earth / ground. Ensure the mains supply voltage is correctly earthed / grounded in accordance with current area legislation.



Do not install or remove any heating mantle from the mains input lead or external controller while power is applied.

3.3. General Safe Operating Practice.



Always follow good laboratory practice when using this equipment. Give due recognition to your company's safety and legislative health & safety procedures and all associated legislation applicable to your areas of operation. Check laboratory procedures for substances being heated and ensure all hazards (e.g. explosion, implosion or the release of toxic or flammable gases) that might arise have been suitably addressed before proceeding. When heating certain substances the liberation of hazardous gases may require the use of a fume cupboard or other means of extraction.



Avoid Spillages: Always fill the glassware / vessel away from the heating mantle. Only introduce a charged, clean, dry flask into the heating mantle.



Ensure equipment is used on a clean, dry, non-combustible, solid work surface with at least 300mm suitable clearance all around from other equipment.



Do not position the product so that it is difficult to disconnect from the mains supply.



Do not touch the heating element or any glass vessel whilst in use.



Do not lean or stretch over equipment, glassware and fixings when in use.



Do not immerse unit in water or fluids.



Do not spill substances onto the mantle. If spillage does occur, disconnect unit from mains supply and follow instructions as detailed in Maintenance. (Section 9).



Do not cover the mantle whilst in use. **Do not** block or obstruct ventilation slots / airways.



Do not leave equipment switched on without a charged flask.



Do not thermally insulate the exposed upper section of the vessel, as the insulation used may obstruct the convection cooling airways around the rim of the cartridge enclosure and cause the mantle to overheat.



It is not recommended to leave any heating apparatus unattended during operation.



Only use Original Equipment manufactures spares and accessories. Refer to Section 10.



Stirring versions of this equipment generate magnet fields. Keep all metal objects and magnetic data devices (e.g. credit cards) away from the stirrer unit.



The equipment is not spark, flame or explosion proof and has not been designed for use in hazardous areas in terms of BSEN 60079-14:1997. Keep flammable, low flash point substances away from the apparatus.



Do not operate or handle any part of the product with wet hands.



Mantles which do not have a built in controller should only be used with an external means of control. **(Never connect directly to the mains supply).**



Following an interruption of the mains supply, the mantle will automatically resume its previous operating condition



Keep the Mains cord and moulded IEC plug and lead set away from the heating surface.



ATTENTION:-

With high energy input and certain configurations of glassware in HM and SHM Series products, where the heating contact of glassware is relatively small, localised heating and subsequent 'bumping' of the fluid being heated may occur. Application advice should be sought from the manufacturer.

NOTE: if this product is not used in accordance with the Manufacturers Instructions then the basic safety protection afforded by the equipment may not be preserved and the guarantee invalidated.

4. UNPACKING AND CONTENTS

4.1. Product Identification:

The following tables identify the different sizes and groups within the HM & SHM Series Heating Mantles.

Case Size	Uncontrolled		Controlled	
	(230V)	(115V)	(230V)	(115V)
1	MHM-100-100	MHM-100-100-115	MHM-200-100	MHM-200-100-115
	MHM-100-250	MHM-100-250-115	MHM-200-250	MHM-200-250-115
2	MHM-100-500	MHM-100-500-115	MHM-200-500	MHM-200-500-115
	MHM-100-1000	MHM-100-1000-115	MHM-200-1000	MHM-200-1000-115

Case Size	Controlled - Bottom Drain Off	
	(230V)	(115V)
4	MHM-200-10L	MHM-200-10L-115
	MHM-200-12L	MHM-200-12L-115
	MHM-200-20L	MHM-200-20L-115
	MHM-200-22L	MHM-200-22L-115

Case Size	Controlled - 3 in 1 shaped Earth Screen	
	(230V)	(115V)
2	MHM-200-MV*	MHM-200-MV-115*

Case Size	Controlled with Stir facility	
	(230V)	(115V)
2	MSHM-200-100	MSHM-200-100-115
	MSHM-200-250	MSHM-200-250-115
2	MSHM-200-500	MSHM-200-500-115
	MSHM-200-1000	MSHM-200-1000-115
3	MSHM-200-5000*	MSHM-200-5000-115*

Note: All 230V products and are supplied with UK and European moulded mains lead cable set.

Variants ending with "-115" are 115V USA and supplied with a USA moulded mains lead cable

set. * Denotes a switch fitted for two heater circuits.

The model number allocated to each type of mantle is descriptive. The method of coding is detailed below.

STIRRING AND NON-STIRRING MODELS

Example

MSHM-100 - 50 - 115
Uncontrolled, Stirring Flask volume (ml) Voltage Supply

Naming Convention

MHM-100: Uncontrolled, Non-Stirring
Flask volume: 100ml, 250ml, 500ml, 1000ml

MHM-200: Controlled, Non-Stirring
Flask volume: 100ml, 250ml, 500ml, 1000ml

MSHM-200: Controlled, Stirring
Flask volume: 100ml, 250ml, 500ml, 1000ml, 5000ml

Supply Voltage: Model numbers not suffixed "-115" = 230V a.c

MULTIPLE VOLUME

Example

MHM-200 - MV - 115
Controlled, non-Stirring Multiple volume Voltage Supply

Note: Non-Stirring models only

Flask volume: 250ml - 1000ml

Supply Voltage: Model numbers not suffixed "-115" = 230V a.c

LARGE VOLUME

Example

MHM-200 - 10L - 115
Controlled, non-Stirring Flask volume (ml) Voltage Supply

Note: Non-Stirring models only

Flask volume: 10L, 12L, 20L, 22L

Supply Voltage: Model numbers not suffixed "-115" = 230V a.c

Please check the contents of your carton against the relevant product diagram.

Applicable to all MHM and MSHM Series product.

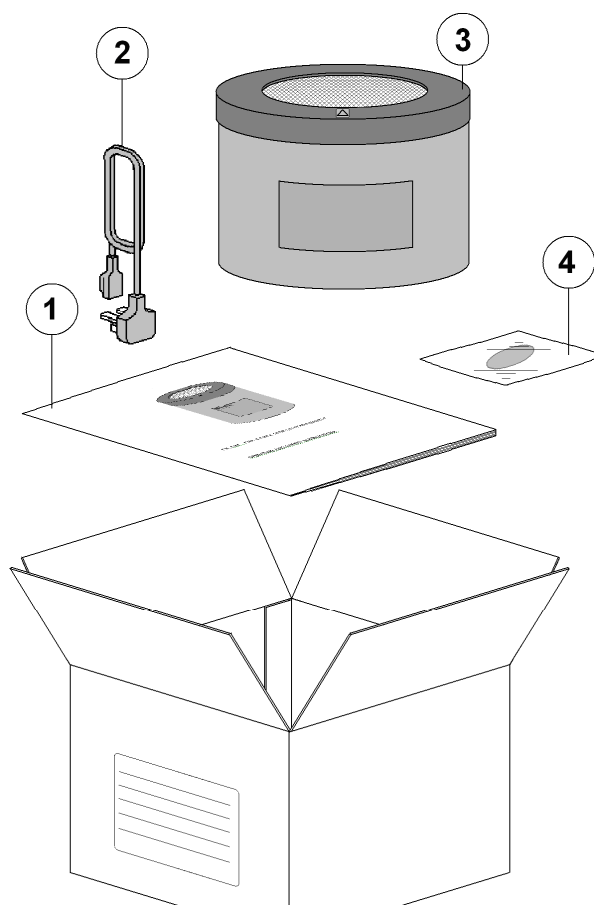


Illustration only

Item No	Description	Qty
1	Instruction Book	1
2	Mains cord and Moulded Plug and Lead set <i>(May vary from illustration).</i>	As Req
3	Heating Mantle – <i>(May vary from illustration).</i>	1
4	Stir bar <i>(Only on MSHM variant).</i>	1 Pkt

	Serial Number	Unit Model/Cat Number
For future reference please record your products Serial and Model Numbers.		

5. INSTALLATION

5.1. Electrical safety and installation.

5.1.1. This equipment is designed to be used safely under the following conditions:-

- Indoor use.
- Altitude up to 2000 meters.
- Temperatures between 5°C and 40°C.
- Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
- Mains supply voltage fluctuations up to $\pm 10\%$ of the nominal voltage.
- Transient overvoltages typically present on the mains supply. (Overvoltage category II)
- Applicable rated pollution degree 2.



5.1.2. This equipment must be earthed / grounded to a fixed earth / grounded mains socket outlet. The mains supply is to be earthed / grounded in accordance with current legislation.

5.1.3. Ensure only the correct rated mains input fuses are fitted. (Where applicable ensure the correct Mains cord and moulded IEC plug and lead set fuse is fitted). See Technical Information Section 8 of this Instruction book.

5.1.4. Check the voltage on the product data label on this product unit and those of any accompanying electrical accessory. Ensure the rating conforms to your local supply. If an 115V product is used in a 230V supply area, then a 230/115V transformer must be installed between the 230V mains supply and the product, by a competent electrician.

5.1.5. This product should be connected to a mains supply source which incorporates an RCD (residual current device) or GFCI device (ground fault circuit interrupter) that has a tripping current of 30mA or less. The RCD or GFCI cuts off power to the equipment immediately upon detection of a current leakage fault. For example; power will be removed when there is an accidental liquid spillage in a mantle.



The RCD MUST be selected and installed by a qualified electrician in accordance to local wiring regulations



5.1.6. Do not install this product or accessories on a surface which may become flooded.

5.1.7. The unit is supplied with a Mains cord and moulded IEC plug and lead set wired as follows.



Green / Yellow

Blue

Brown

or

or

or

Green

White

Black

=

=

=

Earth / Ground

Neutral

Live / line hot.

5.1.8. Cole-Parmer Heating Mantles should only be directly connected to the mains power supply outlet using the moulded lead sets provided with the equipment. Extension cords should not be used unless authorised by a competent Electrician, after review of the equipments electrical power rating.

Observation: the surface of the heating element of a mantle cartridge will upon receipt look slightly discoloured. This discolouration is normal and occurs at the factory during test when the mantle is first heated up.

Note: Cole-Parmer controllers, series CN-200-1800 / CN-200-800 are used on uncontrolled mantles and can also be used for external control when the mantle is used in a fume cupboard.

USA Notification.

Warning ! Any modification or changes made to this device, unless explicitly approved by Cole-Parmer, will invalidate the authorisation of this device. Operation of an unauthorised device is prohibited under Section 302 of the Communications Act of 1934 as amended, and Subpart 1 of Part 2 of Chapter 47 of the code of Federal Regulations.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

6. ENVIRONMENTAL PROTECTION

6.1. Maximum consideration has been given to environmental issues within the design and manufacturing process without compromising end product performance and value.



6.2. Packaging materials have been selected such that they may be sorted for recycling.



6.3. At the end of your product and accessories life, it must not be discarded as domestic waste. Ref: EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment Directive (WEEE). Please contact your distributor / supplier for further information. For end users outside of the EU consult applicable regulations.

6.4. This product should only be dismantled for recycling by an authorised recycling company.



This product and accessories must be accompanied by a completed Decontamination Certificate prior to any disposal. Copies of the Certificate are available from Distributor/Manufacturer.

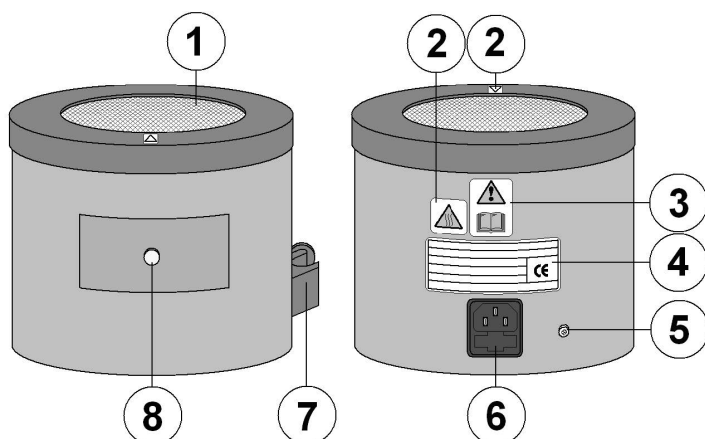
7. PRODUCT OPERATION

7.1. MHM-100 Mantle (Uncontrolled)

Note: Circuit selection switch (only for mantles with two heating circuits).

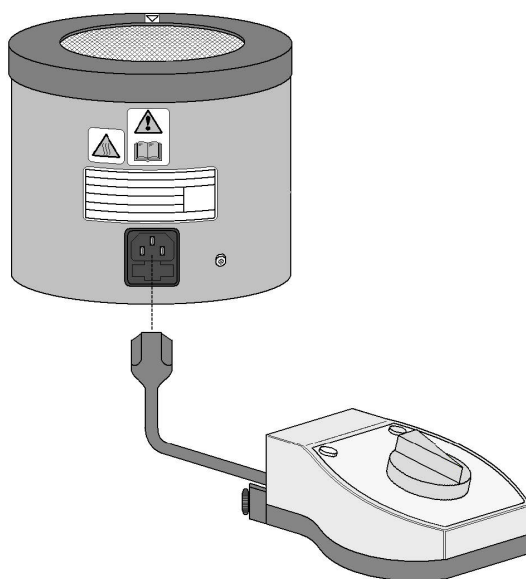
Position I is for lower heating circuits only.
Position II is for both circuits on.

Note: This product will require a CN-200 Series Controller to operate it.



Item	Description
1	 Heating Element.
2	Hot surface warning
3	Refer to Instruction Book Label.
4	Data Plate (Refer to for correct voltage).
5	Do not loosen or disconnect.
6	Mains Input IEC socket (Contains protective fuses).
7	Support rod bracket (Note: For 10 to 22 litre size 4 cases, 3 clamps are fitted).
8	Clear Neon. (will illuminate / pulsate when the power is supplied to heater.

- 7.1.1. With the mains electricity supply turned off, connect the IEC output plug from the CN-200 Series Controller to the IEC socket of the mantle as illustrated.

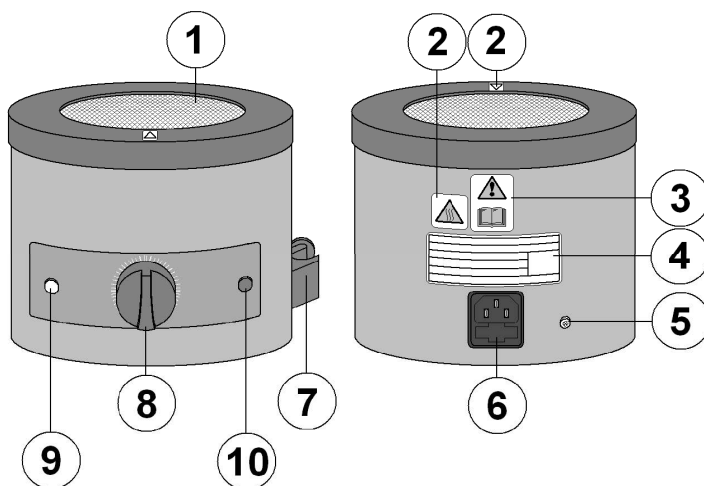


(Illustration of controller may be different depending on your model).

- 7.1.2. Plug the mains lead supplied with the CN-200 Series controller into the IEC socket of the controller.
- 7.1.3. Place a charged, clean, dry glass vessel of the size indicated on the mantle data plate label. Wherever possible the glass vessel should be supported within the mantle by means of the support rod and clamp.
- 7.1.4. Switch on the mains electrical supply. Adjust the controller regulator knob to the required setting. **(Refer to Controller 'Operating and Safety Instructions' document for further information on the controller).**
- 7.1.5. When the process is complete switch the controller regulator knob to the off position. Disconnect the mains electricity supply.

- 7.1.6.   Remove charged vessel. Handle hot charged vessel with care.

7.2. MHM-200 Mantle (inbuilt Controller)



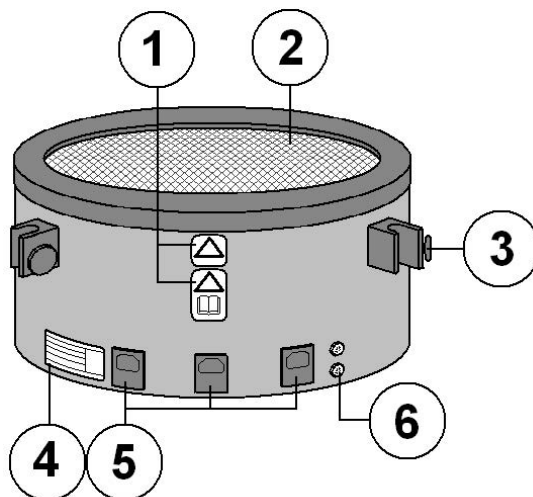
Item Description.

- | | |
|----|--|
| 1 |  Heating Element. |
| 2 | Hot surface warning |
| 3 | Refer to Instruction Book Label. Data |
| 4 | Plate (Refer to for correct voltage). |
| 5 | Do not loosen or disconnect. |
| 6 | Mains Input IEC socket (Contains protective fuses). |
| 7 | Support rod bracket (Note: For 10 to 22 litre size 4 cases, 3 clamps are fitted). |
| 8 | Heating control knob. |
| 9 | Mains power on indicator. |
| 10 | Heating function activity indicator. |

- 7.2.1. With the mains electricity supply switched off, connect the Mains cord and moulded IEC plug and lead set to the mains IEC socket.
- 7.2.2. Place a charged, clean, dry glass vessel of the size indicated on the mantle data plate label. Wherever possible the glass vessel should be supported within the mantle by means of the support rod and clamp.
- 7.2.3. Switch on the mains electrical supply. Adjust the controller regulator knob to the required setting. Setting 1 is low heat up to setting 10 maximum heat.
- NOTE: The 'mains power on' indication neon will illuminate. The 'amber heating on' neon will illuminate / pulsate when the heaters are in operation.**
- 7.2.4. When the process is complete switch the regulator knob to the off position. Disconnect the mains electricity supply.

- 7.2.5.   Remove charged vessel. Handle hot charged vessel with care.

7.3. MHM-200 Size 4 (with 3 Controller Inputs)



Item	Description.
1	Refer to Instruction Book Label.
2	 Heating Element.
3	Support rod bracket (Note: For 10 to 22 litre size 4 cases, 3 clamps are fitted).
4	Data Plate (Refer to for correct voltage).
5	Mains Input IEC socket (Contains protective fuses).
6	Do not loosen or disconnect.

7.3.1. Take 3 x CN-200 Series controllers. With the mains electricity turned off connect the IEC output plug from each controller into to an input socket on the Mantle. **(DO NOT USE AN EXTENSION BLOCK RUNNING FROM THE MAINS ON A SINGLE CABLE).**

7.3.2. Plug each mains lead supplied with the CN-200 Series controller into the IEC socket of the controller.

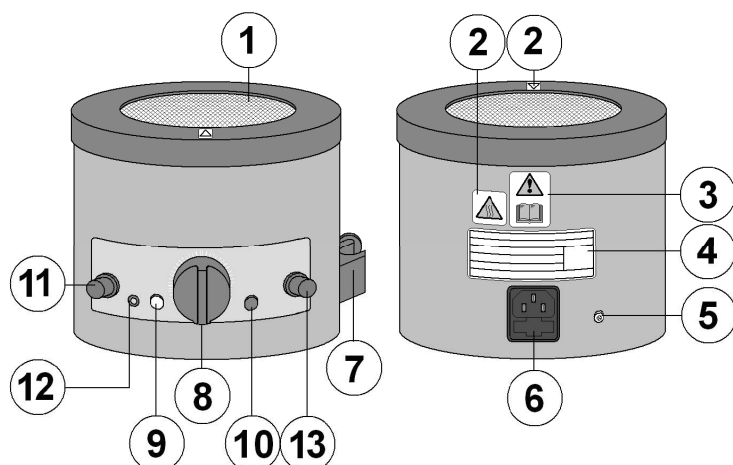
7.3.3. Place a charged, clean, dry glass vessel of the size indicated on the mantle data plate label. Wherever possible the glass vessel should be supported within the mantle by means of the support rod and clamp.

7.3.4. Switch on the mains electrical supply to each controller. Adjust each controller's regulator knob to the required setting. **(Refer to Controller 'Operating and Safety Instructions' document for further information on the controller).**

7.3.5. When the process is complete switch the controller regulator knob on each controller to the off position. Disconnect all mains electricity supply.

7.3.6.   Remove charged vessel. Handle hot charged vessel with care.

7.4. MSHM-200 (with Stir control)



Item	Description.
1	 Heating Element.
2	Hot surface warning .
3	Refer to Instruction Book Label.
4	Data Plate (Refer to for correct voltage).
5	Do not loosen or disconnect.
6	Mains Input IEC socket (Contains protective fuses).
7	Support rod bracket (Note: For 10 to 22 litre size 4 cases, 3 clamps are fitted).
8	Temperature control knob.
9	Mains power indicator.
10	Heating function activity indicator.
11	3 position stir function selector switch.
12	Stir function operational indicator.
13	Stir speed controller.

7.4.1. With the mains supply switched off. Connect the mains lead and moulded IEC plug and lead set to the mains IEC socket.

7.4.2. Place a charged, clean, dry glass vessel of the size indicated on the mantle data plate. Wherever possible the glass vessel should be supported within the mantle by means of the support rod and clamp. Place Stir bar in vessel contents.

7.4.3. Switch on the mains electricity supply. Adjust the heater control regulator knob to the required setting.

NOTE: The mains power neon will illuminate. The amber heating neon will be illuminated when the heaters are operational.

7.4.4. On the MSHM there are three stirring functions available.

-  Bi-directional with auto capture and auto reverse (period of approximately 20 / 30 seconds).
-  Uni-directional stir (speed range 400 – 3600 RPM, no load).
-  Manual capture / reset.

7.4.5. Carefully place the stirrer bar provided into the vessel and turn the rotational speed control to its minimum position.

7.4.6. Select the centre position of the position selector switch.

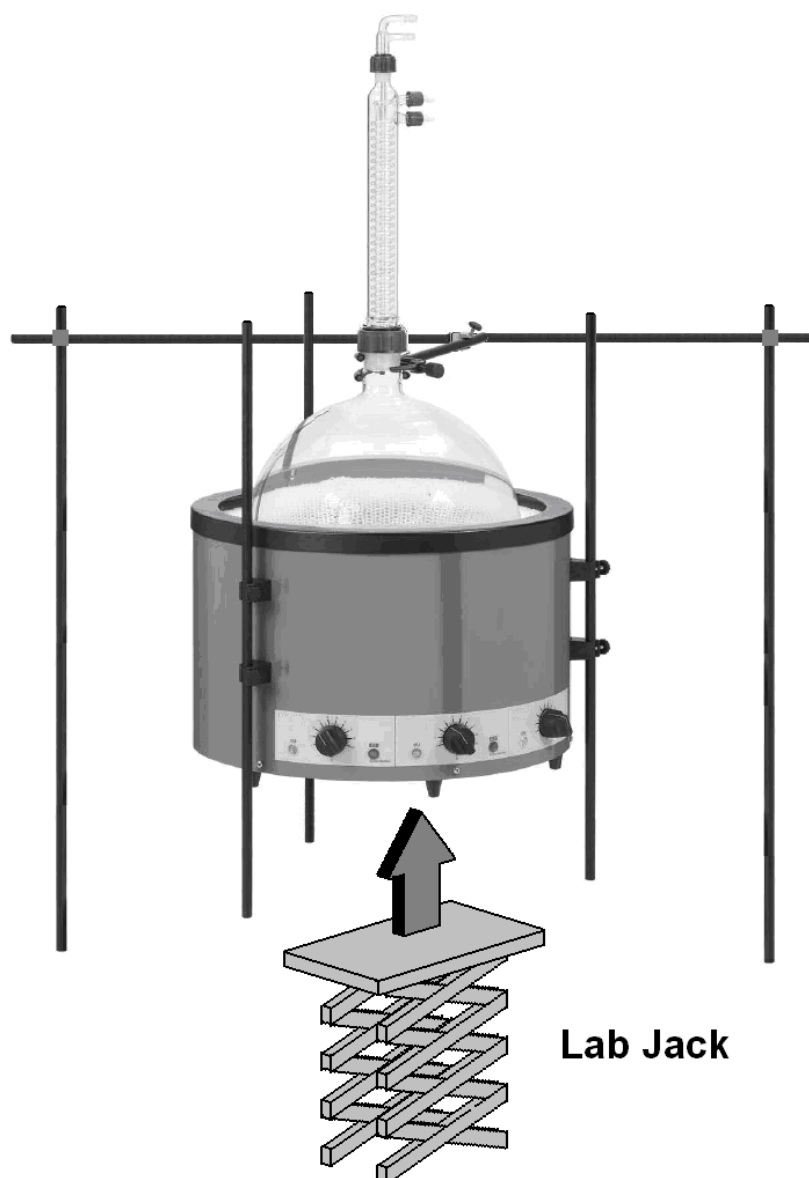
7.4.7. Switch the stirrer unit on. The green LED will now illuminate.

7.4.8. Adjust the rotational speed by means of the speed control knob. Should the stirring action be lost by over rotation, then reduce the stir speed slightly and recapture the stir bar by rotating the selector switch to the lowest position. Once the correct stirring speed has been obtained then, if desired, the selector switch may be set in the uppermost position to obtain the auto reverse function.

7.4.9. When the process is complete switch the stir speed and regulator knobs to their off positions. Disconnect the mains electricity supply.

7.4.10.   Remove charged vessel. Handle hot charged vessel with care.

7.5. Glassware Support



Glassware should always be supported to maintain the glassware in a vertical position.

It is recommended that for all MHM / MSHM products that the round bottomed glassware should only be filled to the equator. This ensures maximum heating efficiency and, for larger mantle size 4, prevents excessive loads being applied to into the mantle where separate glassware gantry supports are not being used.

For mantles without an earth screen, care needs to be taken when introducing loaded round bottomed 10L (12L) & 20 L (22L) glassware into the heating mantle: glassware must be introduced vertically and not allowed to drag down the side of the knitted carrier / element. For installations where additional glassware may be stacked on top of round bottomed flask, or where bottom drain off feature is being used, then we would always recommend that the glassware is separately supported on gantry arrangement and the heating mantle be jacked up underneath the glassware, such that the full load of the glassware is not taken by the mantle.

8. TECHNICAL SPECIFICATIONS

8.1. General specification

Product suffixed "-115" – mains supply voltage (115V ~ AC).	115Volts ~ AC $\pm$ 10% at 50/60 Hz.
Mains input supply voltage (230V ~ AC).	230Volts ~ AC $\pm$ 10% at 50/60 Hz.
Fuse Type.	20mm x 5mm Glass Quickblow (2 per unit) See rating table (page 18).
Heating Element Construction.	Thermal insulated element wire stitched into a cartridge construction.
Maximum Element Temperature.	450°C. Nominal Max.
Heating Mantle Case Construction.	Aluminium.
Thermal Insulation.	Rockwool mineral insulation. Size 1, 2, and 3. Ceramic Size 4.

The Ingress Protection Rating of all the MHM / MSHM Mantles is IPX0.

8.2. Power Consumption and fuse ratings.

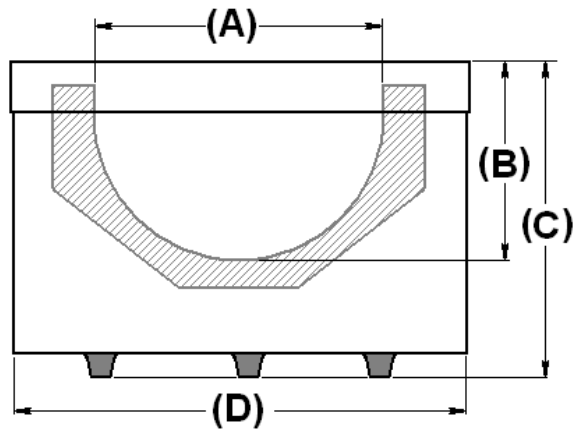
Size	Type	Total Heating Power (Watts)		Fuse Rating (Amps)	
		(230v)	(115v)	(230v)	(115v)
1	MHM-100-100	120	-	1	-
	MHM-100-250	230	-	1.25	-
	MHM-100-100-115	-	120	-	1.25
	MHM-100-250-115	-	230	-	2.5
	MHM-200-100	120	-	1	-
	MHM-200-250	230	-	1.25	-
	MHM-200-100-115	-	120	-	1.25
	MHM-200-250-115	-	230	-	2.5
2	MSHM-200-100	120	-	1	-
	MSHM-200-250	230	-	1.25	-
	MSHM-200-100-115	-	120	-	1.25
	MSHM-200-250-115	-	230	-	2.5
	MHM-100-500	330	-	2.5	-
	MHM-100-1000	440	-	2.5	-
	MHM-100-500-115	-	330	-	3.15
	MHM-100-1000-115	-	440	-	5
	MHM-200-500	330	-	2.5	-
	MHM-200-1000	440	-	2.5	-
	MHM-200-500-115	-	330	-	3.15
	MHM-200-1000-115	-	440	-	5
	MHM-200-MV	440	-	2.5	-
	MHM-200-MV-115	-	440	-	3.15
	MSHM-200-500	330	-	2.5	-
	MSHM-200-1000	440	-	2.5	-
	MSHM-200-500-115	-	330	-	3.15
	MSHM-200-1000-115	-	440	-	5
3	MSHM-200-5000	880	-	6.3	-
	MSHM-200-5000-115	-	880	-	10

Size Type		Bottom Element C1 (230v)		Middle Element C2 (230v)		Top Element C3 (230v)	
		Watts	Fuse	Watts	Fuse	Watts	Fuse
4	MHM-200-10L	575	6.3	575	6.3	1200	6.3
	MHM-200-12L	575	6.3	575	6.3	1200	6.3
	MHM-200-20L	1200	6.3	1200	6.3	1200	6.3
	MHM-200-22L	1200	6.3	1200	6.3	1200	6.3

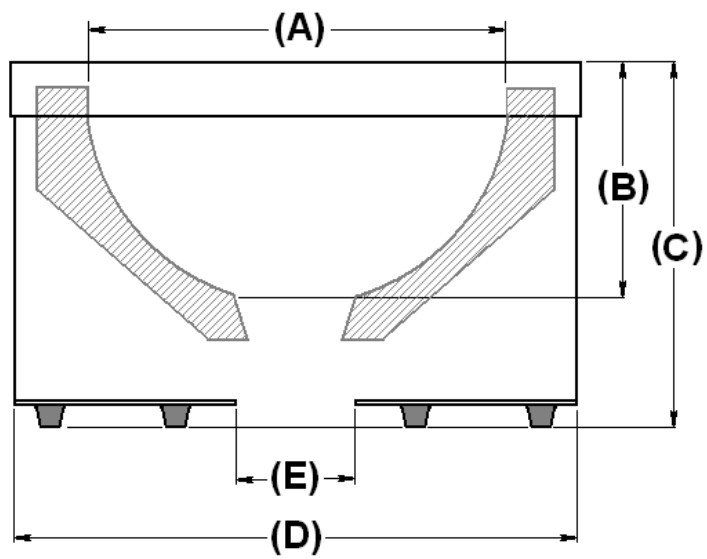
Type		Bottom Element C1 (115V)		Middle Element C2 (115V)		Top Element C3 (115V)	
		Watts	Fuse	Watts	Fuse	Watts	Fuse
	MHM-200-10L-115	575	10	575	10	1200	10
	MHM-200-12L-115	575	10	575	10	1200	10
	MHM-200-20L-115	1200	10	1200	10	1200	10
	MHM-200-22L-115	1200	10	1200	10	1200	10

8.3. Dimensions and Weight (Unpacked).

Case size	Capacity	Product	(A)mm	(B)mm	(C)mm	(D)mm	W
1 1 1 1 2 2	100ml	MHM-100-100 MHM-100-100-115 MHM-200-100 MHM-200-100-115 MSHM-200-100 MSHM-200-100-115	67	39	150	175	0.75Kg
1 1 1 1 2 2	250ml	MHM-100-250 MHM-100-250-115 MHM-200-250 MHM-200-250-115 MSHM-200-250 MSHM-200-250-115	86	48	150	175	0.75Kg
2 2 2 2 2 2	500ml	MHM-100-500 MHM-100-500-115 MHM-200-500 MHM-200-500-115 MSHM-200-500 MSHM-200-500-115	106	61	170	220	1.5Kg
3 3 3 3 3 3 3 3	1000ml	MHM-100-1000 MHM-100-1000-115 MHM-200-1000 MHM-200-1000-115 MHM-200-MV MHM-200-MV-115 MSHM-200-1000 MSHM-200-1000-115	136	78	170	220	1.5Kg
3 3 3 3	5000ml	MSHM-200-5000 MSHM-200-5000-115	224	190	220	320	2.75Kg



Size 4	Product	(A)mm	(B)mm	(C)mm	(D)mm	(E)mm	W
10Litre	MHM-200-10L MHM-200-10L-115	280	147	300	485	70	6.0Kg
12Litre	MHM-200-12L MHM-200-12L-115	330	175	300	485	70	6.0Kg
20Litre	MHM-200-20L MHM-200-20L-115	356	185	300	485	70	8.5Kg
22Litre	MHM-200-22L MHM-200-22L-115	390	211	300	485	70	8.5Kg



9. MAINTENANCE

9.1. General Information.



Unplug the unit from the mains voltage supply and allow it to cool before undertaking any maintenance tasks.



Maintenance should only be carried out under the direction of the Responsible Body, by a competent electrician. Failure to do so may result in damage to the product and in extreme cases be a danger to the end user.

With proper care in operation this equipment has been designed to give many years of reliable service. Contamination or general misuse will reduce the effective life of this product and may cause a hazard.

Maintenance for the unit should include:

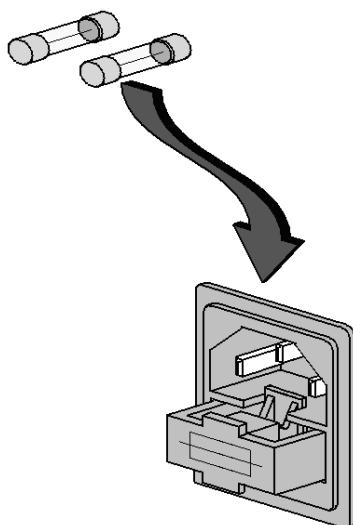
- Periodic electrical safety testing (an annual test is recommended as the minimum requirement).
- Regular inspection for damage with particular attention to the mains lead and plug set.
- Routine cleaning of the equipment should be undertaken using a clean cloth.

DO NOT USE SOLVENTS FOR CLEANING ANY PART OF THIS EQUIPMENT.

9.2. Fuse Replacement.

The mains fuse holder is located at rear your product. Refer to Technical Specification, 'Fuse Rating' for correct fuse type and rating. Turn your product off and disconnect it from the mains supply.

Open the draw of the IEC mains electrical input socket. Remove fuses and fit replacement fuses of the correct rate and type – See section 8.



9.3. Heater Cartridge Replacement. (SIZE 1, 2, 3).



IRRITANT

Cole-Parmer mantles contain Rockwool mineral insulation. When handling a suitable face mask which bears the CE mark should be used. A face mask to BS/EN 149 is adequate. When handling, wear gloves. Should skin irritation be experienced it can be lessened by rinsing hands under cold running water before washing. For further information refer to guidance note EH46 published by HMSO and technical data sheets available from Rockwool Limited. Pencoed. Bridgend. CF35 6NY.

In the event of a heater element becoming damaged or open circuit the follow procedure should be adopted for its replacement.

CONTROLLED AND STIRRER (SIZE 1, 2, 3).

9.3.1. Remove any glassware from the mantle and unplug or disconnect the mantle from the power supply and allow it to cool down.

9.3.2. Turn the Cole-Parmer mantle upside down onto a clean dry surface.

9.3.3. Remove the cross-head screws from around the base of the mantle and hinge the base to one side.

Note: the stir motor assembly is attached to the base on the stir version. Lift the base clear with the motor assembly remaining attached to the base.

9.3.4. Remove the cross-head screws retaining the rod support clamp to the case and remove the clamp. **Note: Not necessary on 2, 3, and 5 litre mantles.**

9.3.5. Remove the M3 nuts retaining the heater cartridge.

9.3.6. Disconnect two sleeved wires from the IEC socket. On 5 litre mantles only disconnect cartridge wires from switch, IEC socket and inline connector.

9.3.7. Separate case from rim and hinge case away to one side.

9.3.8. Disconnect the Earth wire from the cartridge. **(DO NOT DISCONNECT ANY OTHER EARTH WIRE).**

9.3.9. Lift and remove original cartridge.

9.3.10. Position replacement cartridge in top rim and fix in position using clips provided, which locate on the fixing studs. **RECONNECT THE EARTH WIRE.**

9.3.11. Reconnect case ensuring correct alignment to studs cartridge and cartridge wires are nearest to IEC socket.

9.3.12. Reverse procedure 9.3.6 to 9.3.2 to complete.

9.3.13. The responsible body shall check the electrical safety of the product before further use.

UNCONTROLLED. (SIZE 1, 2, 3).

- 9.3.14. Remove the glassware from the mantle and unplug or disconnect the mantle from the power supply and allow it to cool down.
- 9.3.15. Turn the Cole-Parmer mantle upside down onto a clean dry surface.
- 9.3.16. Remove the cross-head screws from around the base of the mantle and hinge the base to one side.
- 9.3.17. Remove the M3 nuts retaining the heater cartridge. Disconnect the heater wires from the clear neon.
- 9.3.18. Lift the heater cartridge clear of the case.
- 9.3.19. Disconnect the earth wire tag attached to the heater assemble. **(DO NOT DISCONNECT ANY OTHER EARTH WIRE).**
- 9.3.20. Take replacement heater cartridge and connect the earth lead to the heater earth terminal
- 9.3.21. Insert the heater cartridge into the case and fasten it to the rim using the M3 nut previously removed.
- 9.3.22. Connect the heater wires to the Clear neon.
- 9.3.23. Fasten the base to the case using the screws previously removed.
- 9.3.24. The responsible body shall check the electrical safety of the product before further use.

9.4. Heater Cartridge Replacement (SIZE4).



IRRITANT Attention. The heater contains insulation material made from Refractory Ceramic Fibres (RCF), classified as a category 2 carcinogenic under Regulation (EU) 1272/2008. Follow the guidelines for working with RCF as described in the ECFA Code of Practice. Wear suitable protective clothing and gloves.

In the event of a heater element becoming damaged or open circuit the following procedure should be adopted for its replacement.

- 9.4.1. Remove any glassware from the mantle and unplug or disconnect the mantle from the power supply and allow it to cool down.
- 9.4.2. Turn the Cole-Parmer mantle upside down on a clean dry surface.
- 9.4.3. Remove the 6 cross head screws securing the base into position located around the side of the case.
- 9.4.4. Lift the base and spacer tray assembly clear ensuring the earth wire isn't stretched or damaged.
- 9.4.5. Remove the nuts retaining the heater cartridge to the top ring.

- 9.4.6. Disconnect the heater wire tags from the Amber neons (Controlled) or Clear neon (Uncontrolled).
- 9.4.7. Undo the earth post retention nut attaining to the heater earth wires and remove the heater wire tags. **(DO NOT DISCONNECT ANY OTHER EARTH WIRES)**. Separate the heater mantle assembly from the rim and lift clear.
- 9.4.8. Position the replacement cartridge in the top ring.
- 9.4.9. Reconnect the heater earth wires and retain with previously removed M4 lock nut.
- 9.4.10. Reconnect the new heaters tags onto terminals of the Amber neons (Controlled) or Clear neon's (Uncontrolled).
- 9.4.11. Fasten base and spacer tray assembly back into position using the six screws removed previously.
- 9.4.12. The responsible body shall check the electrical safety of the product before further use.

9.5. Spillage and Decontamination.



Spillage:

In the event of spillage or glassware fracture, do not touch the mantle. Disconnect the product from the mains electrical supply. Allow the product to cool. Wearing suitable hand protection (giving due consideration to substances that were being heated) carefully remove any pieces of broken glassware. If decontamination is necessary, see section below. Otherwise wipe off all excess liquid from the mantle and surrounding area using an absorbent soft cloth. Drain of any residual fluid retained in the mantle. In the case of excessive spillage/ flask fracture, invert the mantle and allow it to drain for minimum of one hour. Then proceed with the following drying out procedure. Place the complete mantle, correct way up, in a heated oven at 50 °C for a minimum period of 40 hours for sizes 1, 2 & 3 i.e. up to 5000 ml, and for 80 hours minimum for size 4, i.e. 10L up to 22L.

! Warning: The equipment cannot be assumed to meet all the safety requirements of BS EN 61010 during the drying out process and until the drying out process is completed.

If in doubt please consult Customer Support. Refer to section 11."

NB: Replacement heater cartridges are obtainable from your Distributor/ Manufacturer.



Before further use, the mantle must be subjected to electrical safety testing by competent service personnel. Ensure the unit has stabilised at room temperature for 2 hours before performing the safety tests.

If in doubt please consult Customer Support. Refer to section 11.



If the equipment has been exposed to contamination, the Responsible Body is responsible for carrying out appropriate decontamination. If hazardous material has been spilt on or inside the equipment, decontamination should only be undertaken under the control of the Responsible Body with due recognition of possible hazards. Before using any cleaning or decontamination method, the Responsible Body should check with the manufacturer the proposed method will not damage the equipment.

Prior to further use, the Responsible Body shall check the electrical safety of the unit. Only if all safety requirements are met can the unit be used again. The above procedure is intended as a guide. Should spillage occur with a toxic or hazardous fluid then special precautions may be necessary.

Decontamination Certificate.

Note: In the event of this equipment or any part of the unit becoming damaged or requiring service, the item(s) should be returned to the manufacturer for repair accompanied by a decontamination certificate. **Copies of the Certificate are available from Distributor/ Manufacturer.**

At the end of life, this product must be accompanied by a Decontamination Certificate. See section 6.3 and 6.4

10. REPLACEABLE PARTS AND ACCESSORIES

- 10.1. Replacement Heater Cartridges.** All Cole-Parmer Mantle Replacement Heater Cartridges are specified by the letters RE and Flask size XXX0. Suffix **X1** denotes 115V voltage variant.

MHM-100-100 MHM-200-100	Order	RECMU0100
MSHM-200-100	Order	RECMUA0100
MHM-100-100-115 MHM-200-100-115	Order	RECMU0100X1
MSHM-200-100-115	Order	RECMUA0100X1
MHM-100-250 MHM-200-250	Order	RECMU0250
MSHM-200-250	Order	RECMUA0250
MHM-100-250-115 MHM-200-250-115	Order	RECMU0250X1
MSHM-200-250-115	Order	RECMUA0250X1
MHM-100-500 MHM-200-500	Order	RECMU0250
MSHM-200-500	Order	RECMUA0500
MHM-100-500-115 MHM-200-500-115	Order	RECMU0250X1
MSHM-200-500-115	Order	RECMUA0500X1
MHM-100-1000 MHM-200-1000	Order	RECMU1000
MSHM-200-1000	Order	RECMUA1000
MHM-100-1000-115 MHM-200-1000-115	Order	RECMU1000X1
MSHM-200-1000-115	Order	RECMUA1000X1
MHM-200-MV	Order	RECMUT1000
MHM-200-MV-115	Order	RECMUT1000X1
MSHM-200-5000	Order	RECMUA5000
MSHM-200-5000-115	Order	RECMUA5000X1
MHM-200-10L	Order	RECMUV10
MHM-200-10L-115	Order	RECMUV10X1
MHM-200-12L	Order	RECMUV12
MHM-200-12L-115	Order	RECMUV12X1
MHM-200-20L	Order	RECMUV20
MHM-200-20L-115	Order	RECMUV20X1
MHM-200-22L	Order	RECMUV22
MHM-200-22L-115	Order	RECMUV22X1

Order Number	Description	Qty
AZ9021	Spares pack Simmerstat Controller	1
AZ9038	F500mA Fuse Pack	10
AZ9034	F10A Fuse Pack	10
AZ9036	F6.3A Fuse Pack	10
AZ9040	F2.5A Fuse Pack	10
AZ9041	F3.15A Fuse Pack	10
AZ9130	F3A Fuse Pack	10
129320/3	Support Rod (710mm / 28" long)	1
129320/4	Support Rod (1160mm / 45" long)	1
129320/5	Support Rod (1440mm / 55" long)	1
129320/6	Support Rod (590mm / 23" long)	1
CRM5607	Neon: Clear (230V)	1
CRM5608	Neon: Amber (230V)	1
CRM5619	Neon: Clear (115V)	1
CRM5620	Neon: Amber (115V)	1
HH179(S)	Mains cord and moulded IEC plug and lead set cable (UK) 13A BS1362	1
HH180(S)	Mains cord and moulded IEC plug and lead set cable (Europe)	1
CRM6288	Mains cord and moulded IEC plug and lead set cable (USA)	1

11. CUSTOMER SUPPORT

For help and support in using this product, please contact Customer Services at the following address.

**Antylia Scientific Ltd.
Beacon Road,
Stone,
Staffordshire,
ST15 0SA,
United Kingdom
Tel: +44 (0)1785 812121**

**General enquiries: cpinfo@antylia.com
Order enquiries: cpsales@antylia.com
Technical support: cptechsupport@antylia.com**

www.coleparmer.com

12. DECLARATION OF CONFORMITY INFORMATION



This product meets the applicable CE Directives and UKCA Legislation 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 its vicinity meet these standards so we cannot guarantee

that interference will not occur in practise. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advise before use, contact the manufacturer.

Declaration of Conformity is available to view online at www.coleparmer.com

EU Representative address

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Email: sales@coleparmer.de

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13. Ordering Information

Order No.	Series	Model	Legacy SKU
36003-06	HM-100	MHM-100-100	CMU0100/E
36003-04	HM-100	MHM-100-100-115	CMU0100/EX1
36103-05	HM-100	MHM-100-250	CMU0250/E
36103-04	HM-100	MHM-100-250-115	CMU0250/EX1
36003-14	HM-100	MHM-100-500	CMU0500/E
36003-12	HM-100	MHM-100-500-115	CMU0500/EX1
36003-18	HM-100	MHM-100-1000	CMU1000/E
36003-16	HM-100	MHM-100-1000-115	CMU1000/EX1
03012-23	HM-200	MHM-200-100	CMU0100/CE
03012-21	HM-200	MHM-200-100-115	CMU0100/CEX1
03012-33	HM-200	MHM-200-250	CMU0250/CE
03012-31	HM-200	MHM-200-250-115	CMU0250/CEX1
03012-43	HM-200	MHM-200-500	CMU0500/CE
03012-41	HM-200	MHM-200-500-115	CMU0500/CEX1
03012-53	HM-200	MHM-200-1000	CMU1000/CE
03012-51	HM-200	MHM-200-1000-115	CMU1000/CEX1
36013-00	SHM-200	MSHM-200-100	CMUA0100/CE
36013-01	SHM-200	MSHM-200-100-115	CMUA0100/CEX1
36013-02	SHM-200	MSHM-200-250	CMUA0250/CE
36013-03	SHM-200	MSHM-200-250-115	CMUA0250/CEX1
36013-04	SHM-200	MSHM-200-500	CMUA0500/CE
36013-05	SHM-200	MSHM-200-500-115	CMUA0500/CEX1
36013-06	SHM-200	MSHM-200-1000	CMUA1000/CE
36013-07	SHM-200	MSHM-200-1000-115	CMUA1000/CEX1
36013-12	SHM-200	MSHM-200-5000	CMUA5000/CE
36013-13	SHM-200	MSHM-200-5000-115	CMUA5000/CEX1
36013-16	HM-200	MHM-200-10L	CMUV10/CL
36013-17	HM-200	MHM-200-10L-115	CMUV10/CLX1
36013-18	HM-200	MHM-200-12L	CMUV12/CL
36013-19	HM-200	MHM-200-12L-115	CMUV12/CLX1
36013-20	HM-200	MHM-200-20L	CMUV20/CL
36013-21	HM-200	MHM-200-20L-115	CMUV20/CLX1
36013-22	HM-200	MHM-200-22L	CMUV22/CL
36013-23	HM-200	MHM-200-22L-115	CMUV22/CLX1
36013-14	HM-200	MHM-200-MV	CMUT1000/CE
36013-15	HM-200	MHM-200-MV-115	CMUT1000/CEX1

Warranty Registration



Cole-Parmer®
essentials

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