



MICRO-KJELDAHL EQUIPMENT (MM SERIES)

OPERATING AND SAFETY INSTRUCTIONS

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1. **INTRODUCTION:**

The Bibby Scientific MM Series of products are designed for Kjeldahl digestion on a micro scale and are able to accommodate flasks between 18-50ml in size.

These multibank units have a stainless steel housing which is designed to make them suitable for use with existing or specifically constructed stands.
All MM's are available in 115 volt or 230 volt. MM products with suffix /E incorporate earth (ground) screens and are CE marked.

The lower part of the unit contains the control equipment. This is separated from the heating element by a stainless steel tray, and a well ventilated air space.

Each heating mantle has its own energy regulator incorporating an ON/OFF switch and an amber, Mains to Heater indicator. There is also a Mains ON indicator (clear) on the front panel.
The units are also fused on the supply line and neutral.

WARNINGS ()** given in these Operating Instructions identify conditions and actions which pose hazards to the user. It is therefore recommended that the Responsible Body for the Equipment follow the Operating Instructions and Safety Information and that the User(s) are suitably trained before using the equipment.

2. **SAFETY INFORMATION**

This product has been designed for safe operation when in normal use and operated in accordance with manufacturers instructions.

WARNING

** This equipment is classified as Class O (IEC519: Part 2) with regard to overtemperature protection and should be used accordingly.

** Always follow good laboratory practice when using the equipment and give due recognition to your company's safety procedures and the health and safety and associated legislation applicable to your areas of operation. Check laboratory procedures for substance being heated to ensure that any 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 extraction system.

** Ensure equipment is used on a clean, dry, non-combustible work surface with suitable clearance from other equipment.

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

** Do not lean or stretch over equipment, glassware and fixings protruding from top could be broken or cause injury.

** The equipment is not spark, flame or explosion proof and has not been designed for use in hazardous areas in terms of BS 5345. Keep flammable, low flash point substances away from the equipment.

** Do not spill substances onto the mantle. If spillage does occur, disconnect unit from mains supply and follow instructions detailed at Equipment Maintenance.

** Do not cover the mantle whilst in use or leave it switched on without a charged flask.

** Do not thermally insulate the exposed upper section of the vessel, as the insulation used may cause the mantle to overheat.

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- ** It is not recommended to leave any heating equipment unattended during operation. This equally applies to this equipment.
- ** The Kjeldahl unit should only be handled at its coolest area, which is the lower part of the casing. Do not allow the mains lead to come into contact with the lid of the casing.
- ** Never touch the top surface (lid) of the unit when in operation as it can become extremely hot. Always allow time to cool down after use.
- ** Ensure that the vents on the front, rear, sides, and base of the casing remain free from obstruction.

NOTE: If this product is not used in accordance with manufacturer's Operating Instructions then the basic safety protection afforded by the equipment may not be preserved and the guarantee will be invalidated.

3. INSTALLATION INSTRUCTIONS

- 3.1** The equipment is Installation Category (Over Voltage Category) Class II with regard to protection against electric shock (IEC664 Sub-clause 5.6).
- 3.2** Environmental Conditions: Indoor use only; temperature 5°C to 40°C; 80% RH max.; mains voltage supply fluctuations not to exceed ± 10%.
- 3.3** This equipment must be connected to a fixed earth (grounded) mains socket outlet. See Technical Specification section for recommended fuse rating.
- 3.4** Ensure that the correct equipment fuse and mains lead fuse are fitted for the supply used. Check the voltage rating on the product data label, ensure the rating conforms to the local supply.
- 3.5** The surface of the heating element will, on receipt, be slightly discoloured. This discoloration is normal and occurs when the element carrier material is first heated.
- 3.6** It is recommended that for normal use the appliance should be connected to a mains supply source which incorporates a RCD or GFCI. The RCD or GFCI Residual current device cuts off power to the equipment immediately it detects a current leakage fault. For example, cutting off power when there is an accidental liquid spillage in a mantle protected with an earth (ground) screen. If the unit is supplied without a fixed mains plug the colour coding of the mains cable is:

Green/Yellow	or Green	=	Protective Earth (Ground)
Blue	or White	=	Neutral
Brown	or Black	=	Line (Hot Line)

3.7 ENVIRONMENTAL PROTECTION

- It is Bibby Scientific policy to give consideration to environmental issues in design and manufacturing without compromising end product performance and value to customers.
- Packaging materials have been selected such, that they may be sorted for recycling.
 - For other recycling, see Technical Section for Main Enclosure Materials etc.

4. EQUIPMENT OPERATION

- 4.1** Place charged, clean and dry glass vessels of the size indicated on the label, in the recess(es). Wherever possible the vessels should be supported within the recess by means of a support rod and clamp. Care should be taken to ensure a good contact between the surface of the vessel and the heating element before switching on the power supply.

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4.2 Switch off power supply before removing the vessels.

5. **TECHNICAL SPECIFICATION**

- 5.1.1 Mains Power Supply: 230V or 115V 50/60 Hz as stated on Electrical data label.
- 5.1.2 Plug and lead Set: 3 core 2 metres long.
- 5.1.3 Power Consumption: See table.
- 5.1.4 Fuse rating: See table.
- 5.1.5 Fuse: 20mm x 5mm Glass Quickblow.
- 5.1.6 Operating Ambient Temperature: Up to 40 degs C.
- 5.1.7 Heating Element Temperature: 800 degs C maximum.
- 5.1.8 Case Material: Stainless Steel
- 5.1.9 Thermal Insulation: Ceramic Fibre/Mineral Wool
- 5.1.10 Clamps for Support rods: Fitted with adjustable clamps to accept the standard arms supplied

5.2 **Dimensions and weight (unpacked)**

Capacity (ml)	DxWxH (mm)	Net Weight (Kg)	Recesses
MM2313/E 18-50	160x520x162	3.5 kg	6

5.3 **Power Dissipation and Fuse Ratings**

Capacity	Total Power (W)	Fuse rating (A)	
		230V	115V
MM2313/E 18-50	600	F3.15 A	F6.3 A

6. **MAINTENANCE**

The equipment is classified as Class I (ref. IEC536: 1976) with regard to protection against electric shock.

WARNING

- ** Isolate equipment from mains supply and allow to cool before undertaking any maintenance tasks.
- ** Maintenance should only be carried out under the direction of the Responsible Body, by a competent electrician.

With proper care and operation the mantle should give reliable service. Contamination, or general misuse will, however, reduce the effective life of the product and may cause a hazard.

Maintenance for the equipment should include:

- Periodic electrical safety testing (an annual test is recommended as a minimum requirement).
- Regular inspection for damage with particular reference to the mains lead and plug/socket.

Preventive maintenance for the equipment should include keeping the unit clean and protecting it from spillage, contamination or corrosive environments.

**** DO NOT USE SOLVENTS FOR CLEANING ANY PART OF THE EQUIPMENT.**

- ** If the equipment has been exposed to spillage or contamination, then the Responsible Body is responsible for carrying out appropriate decontamination if hazardous material has been spilt on or

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inside the equipment. Decontamination should only be undertaken under the control of the Responsible Body with due recognition of possible hazards that may ensue. Before using any cleaning or decontamination method, the Responsible Body should check with the manufacturer that the proposed method will not damage the equipment.

6.1 Procedure in the event of a Spillage or Flask breakage

If the heater cartridge comes into contact with liquids, in cases of flask breakage or light spillage, then the mains plug must be removed from the supply immediately.

- 6.1.1** Disconnect the mantle from the electrical supply.
- 6.1.2** Remove any broken glass or solids from the heater element.
- 6.1.3** Place the mantle in a low temperature oven at 60-70 degs C in order to evaporate the spilled fluid.

The above procedure is intended as a guide. Should spillage occur with a toxic or hazardous fluid then special precautions may be necessary.

Prior to further use, check the electrical safety of the mantle.

Only if all safety requirements are met can the mantle be used again.

6.2 Replacing the Fuse.

- 6.2.1** Isolate mains supply or unplug mantle from power source.
- 6.2.2** Turn or unscrew the barrel of fuseholder and withdraw.
Note: Line and neutral are fused.
- 6.2.3** Replace the fuse with an appropriately approved fuse.
- 6.2.4** Re-insert barrel and turn or screw to lock in place.

6.3 Replacing the heater cartridge

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

- 6.3.1** Unplug or disconnect the unit from the power supply.
- 6.3.2** The unit should be turned over and placed upside down on a clean surface.
- 6.3.3** Take off the back plate by removing the two cross head fixing screws from the base and the two cross head fixing screws from the back that retain the plate in place.
- 6.3.4** Disconnect the two appropriate heater cold leads.
- 6.3.5** Return unit to its upright position.
- 6.3.6** Remove the cross head screws on the ends of the unit which retain the lid to the case.
- 6.3.7** Gently lift case lid and appropriate earth assembly away from heater.
- 6.3.8** Carefully remove redundant heater assembly and replace with the new replacement assembly, passing the cold leads through the relevant eyelets in the tray.
- 6.3.9** Replace the earth assembly and lid and refit four cross head screws.
- 6.3.10** Turn unit back onto its lid.

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6.3.11 Refit base and screws.

6.3.12 The responsible body shall check the electrical safety of the unit before further use.

7. **SERVICE INFORMATION**

7.1 For service or technical assistance contact the local distributor where the unit was purchased.

7.2 Any unit return for service/maintenance should be accompanied by a completed decontamination certificate prior to any work being undertaken. Copies of this certificate are available from the distributor/manufacturer.

8. **SPARES AND ACCESSORIES**

Replacement Heater Elements for all Micro - Kjeldahl equipment are specified by the letters RE and the catalogue number.

e.g. for MM2313/E order REMM2313
AZ9156 MM Earth Screen Assembly (18-50mL)

LIST OF REFERENCES

1. **IEC519:** Safety in electroheat installations - Part 2: Particular requirements for resistance heating equipment.
2. **BS5345** Codes of Practice for selection, installation and maintenance of electrical equipment for use in potentially explosive atmospheres.
3. **IEC664** Guide to insulation co-ordination within low voltage systems including clearances and creepage distances for equipment.
4. **IEC536** Memorandum. Construction of electrical equipment for protection against electric shock.
5. **BS7687:** Section 2.10:1993 Specification for laboratory equipment for the heating of materials.
6. **IEC1010-2-010: 1992** Safety requirements for electrical equipment for measurement, control and laboratory use. Part 2. Particular requirements. Section 2.10 Specification for laboratory equipment for the heating of materials.
7. **CSA Standard C22.2 No. 151**
8. **EN55014** Specification for limits and methods of measurement for radio interference characteristics of household electrical appliances, portable tools and similar electrical equipment.
9. **EN50082** Electromagnetic compatibility. Generic Immunity standard.
EN50082-1:1992 Residential, commercial and light industry.
10. **FCC15 Class A - ANSI C63.4** Electromagnetic interference Part 15 low powered emitters of radio frequency energy between 9KHz and 40GHz. US and Canada.

EC DECLARATION OF CONFORMITY:

The Macro-Kjeldahl products with /E suffix covered by this document conform to the following regulations/standards:

EMC Directive (89/336/EEC)
Low Voltage Equipment Directive (73/23/EE)
In particular:
BS EN 61010-1: 1993 Pt 1
BS7687: Section 2.10: 1993
IEC1010-2-010: 1992
CSA Standard C22.2 No. 151
EN55014
EN50082-1
FCC 15 Class A - ANSI C63.4

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