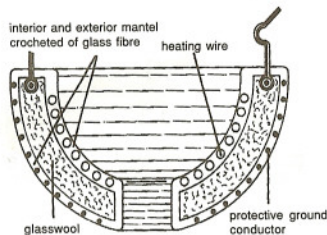


OPERATING INSTRUCTIONS FOR HEATING MANTLES: We manufacture high-quality products which are constantly controlled throughout the production process. If you operate your heating mantle appropriately it will serve you a long time.

Design of the Heating Mantle: The heating mantles are shaped to fit to the respective flasks. They have a flexible structure and are crocheted using either glass fiber yarn or high temperature yarn, depending on the permissible maximum temperature. Important! The heating mantle is non-moisture proof.



Design of the Heating Surface: A highly temperature-resistant chrome nickel heating element is kept in place using crocheted yarn which also ensures an equal distance between the individual turns of winding. This straight and even distance avoids short circuits and heat accumulation in the heater. The connection between heating element and cold end is crocheted into the carrier to avoid heat accumulation.

With its large diameter and surface, the material of the heating elements guarantees optimum surface load and, consequently, an even temperature distribution. The shaped form of the heating mantle provides for a constant heat transmission to the flask.

Thermic Insulation: The heating mantle temperature is low due to the well-adjusted dimensions and high fiber quality of the insulation materials.

Electrical Connections: All cables are made of temperature resistant cable materials and are insulated appropriately. Thick nickel sockets connect the heating elements with the cold ends.

Mantle Structure: Heating mantles Type WM/... are provided with a high-grade nickel strand as a grounded conductor which is crocheted in even windings into the outer wall of the mantle.

A plastic coated steel sheet housing forms the outer wall of heating mantles Type WM/M....

Stability: The operator has to make sure that the heating mantle is stable, for example by mounting it with:

- a supporting ring
- a tripod

The screwed-on clamp for mounting heating mantles Series WM/M (metal housing) must not be overweighted, otherwise the mantle might overturn or be mechanically damaged.

- For example, further stability can be obtained by using an additional tripod with a broad base.

Temperatures: The temperatures stated on the type plate are the maximum operating temperatures of the heating wire (see possible measure). The user has to make sure that the maximum operating temperature is not exceeded at any part of the mantle.

Important! Continuous duty might lead to excess temperature if there is no temperature control.

Certain conditions may lead to excess temperature, e.g.

- heat accumulation, when the used containers do not contact the mantle properly
- varying level
- adverse operating conditions
- adverse ambient conditions

Under these conditions the heating mantle will be damaged or destroyed.

Please remember that temperature coasting occurs in the heaters - even if temperature controllers and sensors are used, whenever these are not properly adjusted. For safety reasons heating mantles should be operated with appropriate temperature controllers and security temperature limiters.

Important! The container or flask and the medium must be resistant to the respective maximum operating temperature. Any prescriptions or specifications issued by the producers of containers, flasks and media must be observed.

The sensor must always be placed at the hottest mantle part, according to the application.

For example 1. Operation with temperature controller Sensor has to be placed at the heating element.

2. Operation with temperature controller and limiter Sensor of the regulator can be placed at random. Sensor of the limiter has to be placed at the hottest part of heating element.

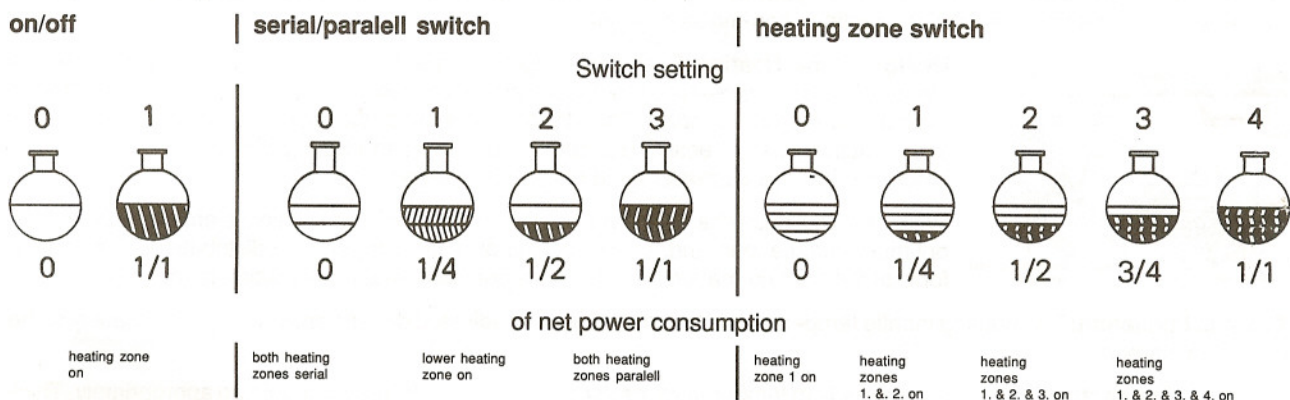
3. Constant Energy regulator controlling with temperature indication Sensor has to be placed at the heating element.

Should you have any questions, please contact the manufacturer.

Switching Options of the Heating Mantles: Depending on the heating mantle model, the heating units are partitioned in one, two, three or four heating zones. Their identification is given after the third (fourth) letter of the type name, e.g. "WM/R 1"

One heating zone	1
Two heating zones	2
Three heating zones	3
Four heating zones	4

Switching Options: Depending on the model, WM heating mantles are equipped with an ON/OFF switch, a series-parallel switch or a heating zone switch.



Technical Specification	Voltage	: seetype plate
	Power	: seetype plate
	Mains	: seetype plate
	Max. permissible heating wire temperature	: seetype plate

Before First Starting: Heating mantles may only be operated by qualified or properly instructed personnel in supervised operation.

All generally recognized technical standards and regulations must be observed, e.g. VDE, SEV, ÖVE, regulations for prevention of accidents, DIN etc.

Before first starting the heating mantle, check the following questions:

1. Do the type plate data correspond with your order specifications?
2. Is the heating mantle suitable for your application (according to the technical data stated on type plate or specifications)?
3. Have any measures been taken to avoid temperature excess?
4. Is your heating mantle placed stably?
5. Have you made sure that the heating mantle can be disconnected from the mains in case of risk?
6. Is the flask or container clean? Encrusted flasks are bad heat conductors and can make the flask burst. If the heating process diminishes the level of liquid, heating mantles with several heating zones should be used. The individual zones have to be switched off according to the level to avoid flask break or heat accumulation (because of lacking heat absorption).

Please note that, given the relevant legal regulations, heating mantles are not suitable for heating up electrically conductive containers. Should any other regulation come into effect, the operator will have to make sure that the corresponding protective measures be taken.

Important! Keep the heating mantle (including switch) dry! And: Even small quantities of aggressive chemicals can destroy the heating elements.

During Operation: Check if the operating temperatures are being observed and the whole system is working properly.

Maintenance: According to ruling regulations the operator has to verify regularly the safety and functioning of heating mantles (just as other electronic devices).

Repair: Heating mantles are constructed using special, high-quality materials of high electrical, chemical and temperature resistance.

One of these materials is an easily accessible supply line. Repairs must be done at the factory or by authorised companies.

MOHR & CO

Laborhandels-gesellschaft mbH

Gottlieb-Daimlerstraße 2 · D-69170 Leimen · Telefon (06224) 7 10 93 + 94
Telefax (06224) 7 70 12

Weltvertrieb der WINKLER Labortechnik und CALOREX