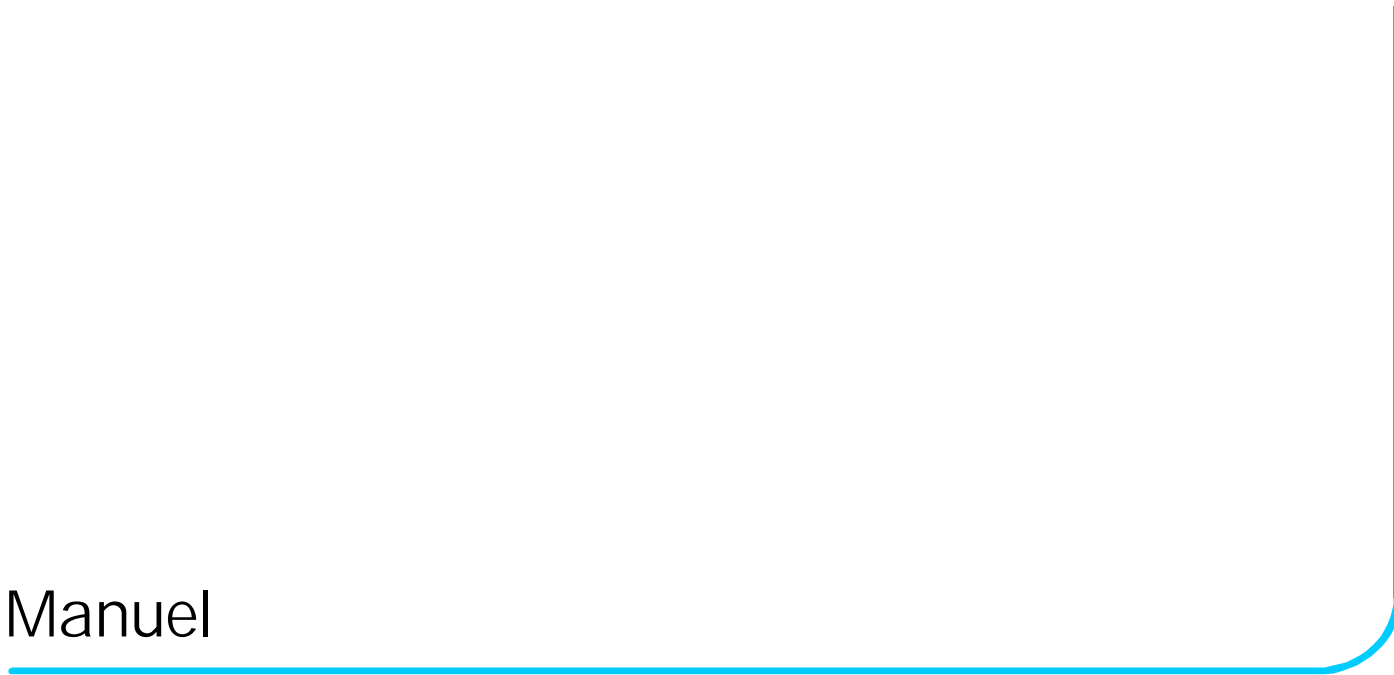




Manuel


Kofler Heating Bench System



Please read these operating instructions carefully before you bring your new Kofler Heating Bench System into operation.

The instructions introduce you to the handling of the device with clear and simple directions.

Information which is useful and important for understanding how the device functions is marked in the text with gray bars.

Please follow the safety notes in these instructions which are marked with the  symbol to ensure that you handle the device safely.

We wish you every success in your work with the

Kofler Heating Bench System

Safety Notes



Ensure that no fluids get on to the cable connections or penetrate into the interior of the electrical device.

Danger of an electric shock!



Always pull out the electrical supply plug before opening the device.

Danger of an electric shock!



Do not touch the heating surface with your bare hands during operation.

Danger of burns!

Contents

1	Description	5
1.1	Device Description	5
1.2	Device Design	6
2	Scope of Delivery	7
2.1	Unpacking and Checking	7
2.2	List of Parts	7
3	Set Up and Connection	8
4	Operation	9
4.1	Operation of the Reading Device	9
4.2	Switching the Device on	10
4.3	Calibrating the Heating Bench	10
4.4	Performing a Determination	12

5	Maintenance	14
5.1	Care and Maintenance	14
5.2	Customer Service	14
	Appendix	15
	Technical Data	15
	Device and Accessories	16
	Notes on the Warranty	17
	EU Declaration of Conformity	18

1 Description

1.1 Device Description

The Kofler heating bench system can be used for a wide range of applications and enables organic substances to be quickly identified within the range from 50 °C to 260 °C.

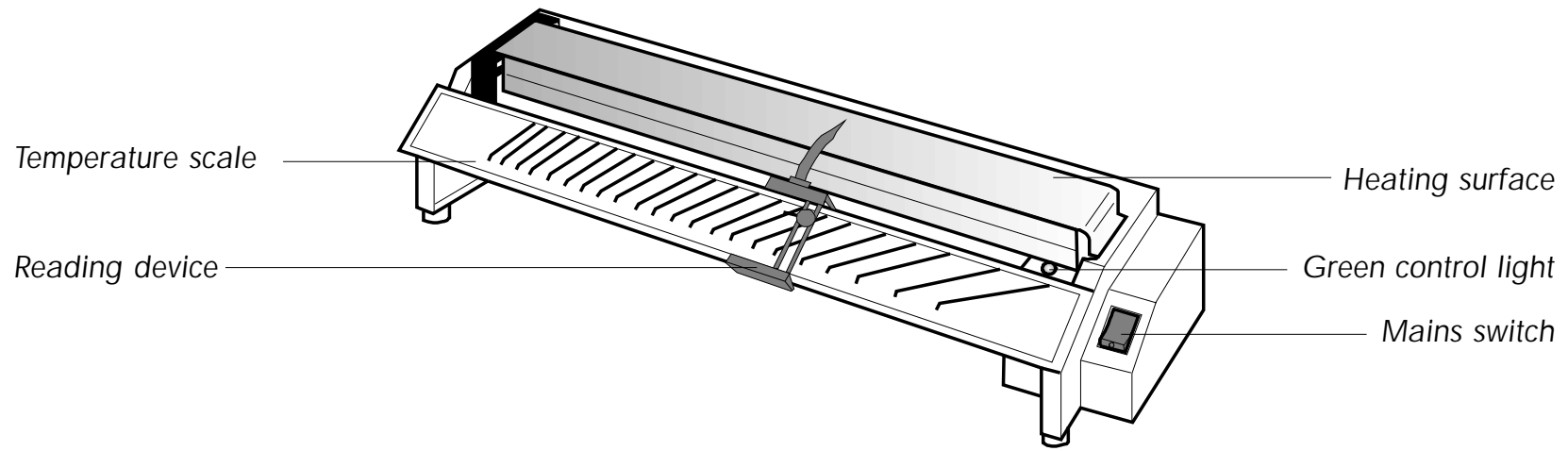
Apart from determining the melting point, the following test and investigations can be made:

- Determining the degree of purity of substances
- Presence and behaviour of water of crystallisation
- Observing decomposition processes and volatility

- Determining eutectic temperatures and
- Determining the softening or fusion point of synthetic resin powders

The heating bench is also eminently suitable for preparative work and preliminary investigations.

1.2 Device Design



2 Scope of Delivery

2.1 Unpacking and Checking

The individual parts of the heating bench have been assembled and packed with the greatest possible care.

Nevertheless, before installing the device, please check the contents of the packaging to make sure that the delivery is complete and undamaged.

Check the correct contents of the packaging against the following list.

Please keep the high-quality packaging of the heating bench – for the event that it may be necessary to return the device to the manufacturer.

If you find any damage or reason for complaint please contact:

Wagner & Munz GmbH
In der Rosenau 4
81829 München
Germany

Telephone: +49 (0)89 45 10 23-0

Telefax: +49 (0)89 45 10 23-33

e-mail: office@wagnermunz.com

Internet: www.wagnermunz.com

2.2 List of Parts

- Kofler Heating Bench System
- Testing and Calibrating Substances Set

3 Set Up and Connection



Ensure that no fluids get on to the cable connections or penetrate into the interior of the electrical device. Danger of an electric shock!

Place the heating bench on a level, horizontal surface.

Turn the pointer of the reading device upwards and remove the protective cap.

Ensure that the supply voltage stated on the type plate is the same as your supply voltage.

Set the power switch on the front side of the device to the „O“ position.

Connect the heating bench to the electric network.

4 Operation



Ensure that no fluids get on to the cable connections or penetrate into the interior of the electrical device. Danger of an electric shock!



Always pull out the electrical supply plug before opening the device. Danger of an electric shock!



Do not touch the heating surface with your bare hands during operation. Danger of burns!

4.1 Operation of the Reading Device

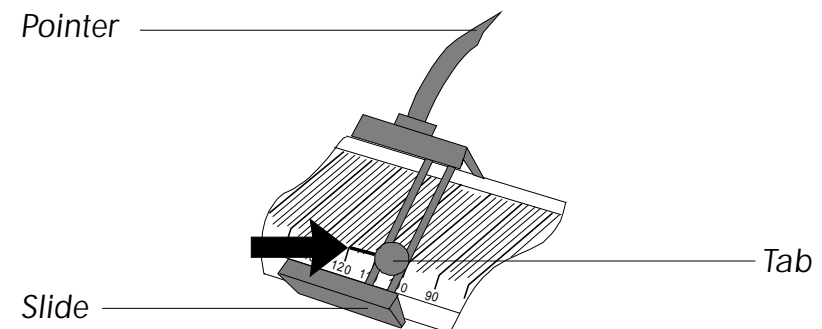
The reading device is slid onto the temperature scale with the aid of the slide.

The tip of the pointer points towards the heating surface.

There is a tab on the reading device.

When calibrating the heating bench, the tab is shifted according to the room temperature. In which the position

- at the lower end of the temperature lines corresponds to a room temperature of 14 °C and
- at the upper end of the temperature lines corresponds to a room temperature of 28 °C.



4.2 Switching the Device on

Switch the heating bench with the mains switch. The green control light and the mains switch light up.

The heating bench reaches its full operating temperature after about 40 minutes.

If the heating bench is used frequently, it is recommended to leave it switched on, this avoids the preheating time.

4.3 Calibrating the Heating Bench

In order to achieve very accurate measuring results, the heating bench must be calibrated

- immediately before a test, and
- when the room temperature changes.

Use the calibration and test substances provided for this purpose.

Dicyandiamide is unsuitable as a calibration substance because it decomposes easily when it melts. Use this substance only as a test substance for determining eutectic temperatures.

The accuracy of the measurement depends upon the calibrated range on the heating bench.

If you calibrate the heating bench for the middle range, for example, then you work in this range to a measuring accuracy of ± 1 °C.

The further you go from the calibrated range, then the less accurate your measuring results become. For this reason, you should always use a calibration substance with a melting point near the melting point of the substance to be tested.

To calibrate the heating bench, proceed as follows:

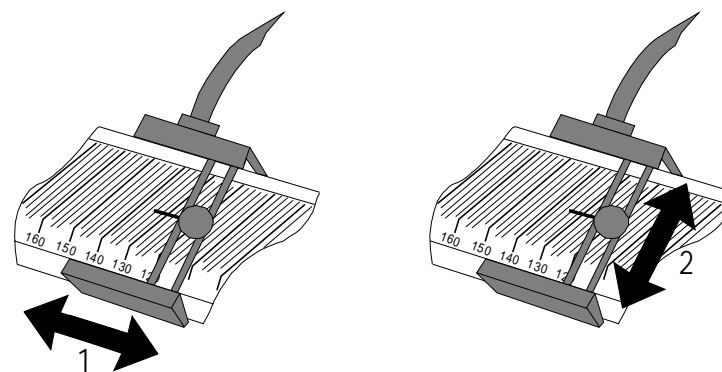
- Select a calibration substance, e.g. phenacetin.

- Using a lancet needle apply a small quantity of the calibration substance to the corresponding area of the heating surface, e.g. for phenacetin on the area around 135 °C.

In order to avoid scratching the surface, do not use any instrument made of steel for applying the substance. Apply the smallest possible quantities. This gives you a sharper delimitation and increases the accuracy of measurement.

- Wait for ca. 10 seconds.
- Place the pointer of the reading device on the boundary between the melted and unmelted substance. This is done by shifting the slide along the temperature scale (1).

When setting the pointer on the heating surface ensure that the pointer covers its mirror image. This is the only way to avoid setting errors.



- Now place the tip of the tab on the corresponding temperature line, e.g. on 135 °C for phenacetin (2). Make sure that you do not move the slide while doing this.

The heating bench is now calibrated.

Then clean the heating surface with a dry cloth, with water or with an organic solvent.

Always wipe in the direction of the higher temperature range – that is towards the left. If you wipe in the direction of the lower temperature range, the substance can form a crust on the heating surface. This makes the cleaning more difficult.

4.4 Performing a Determination

Determine the melting point of the substance to be investigated if you do not know it. This is the only way that you can calibrate the heating bench for a defined range and so obtain very accurate measurement results.

The course of a determination depends upon the procedure used. That is, you determine

- the melting temperature, *in the case of easily decomposable substances*, 10 seconds after applying the substance, *in the case of very volatile substances*, immediately after the application, *in the case of hydrates*, after the water of crystallisation has escaped
- eutectic temperatures ca. 1 minute after application (earlier in the case of very volatile substances)
- the softening or melting point of synthetic resin powders ca. 1 minute after application and wiping the powder.

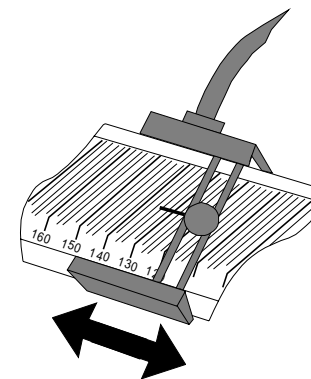
Always proceed as follows:

1. First calibrate the heating bench as described in section 4.3.
2. Now apply the substance to the calibrated area of the heating surface.

In order to avoid scratching the surface, do not use any instrument made of steel for applying the substance. Apply the smallest possible quantities. This gives you a sharper delimitation and increases the accuracy of measurement.

3. Observe the course of events.
4. Set the pointer at the boundary between the melted and unmelted substance, in the case of a synthetic resin on the powder residue remaining on the heating surface after wiping off. This is done by shifting the slide along the temperature scale.

Ensure that you do not move the tab, otherwise you must repeat the calibration process. When setting the pointer on the heating surface ensure that the pointer covers its mirror image. This is the only way to avoid setting errors.



5. The tip of the tab now lies on a temperature line. Read off the temperature value.
6. Subsequently clean the heating surface with a dry cloth, with water or with an organic solvent.

Always wipe in the direction of the higher temperature range – that is towards the left. If you wipe in the direction of the lower temperature range, the substance can form a crust on the heating surface. This makes cleaning more difficult.

5 Maintenance



Ensure that no fluids get on to the cable connections or penetrate into the interior of the electrical device. Danger of an electric shock!



Always pull out the electrical supply plug before opening the device. Danger of an electric shock!



Do not touch the heating surface with your bare hands during operation. Danger of burns!

5.1 Care and Maintenance

Clean the heating surface of the heating bench after every working cycle with a dry cloth, with water or with an organic solvent.

Always wipe in the direction of the higher temperature range – that is towards the left. If you wipe in the direction of the lower temperature range, the substance can form a crust on the heating surface. This makes cleaning more difficult.

Remove strongly adhering dirt with a non-scratching metal cleaning paste.

5.2 Customer Service

In the case of an operational fault or a defect in your heating bench, please always contact:

Wagner & Munz GmbH

In der Rosenau 4

81829 München

Germany

Telephone: +49 (0)89 45 10 23-0

Telefax: +49 (0)89 45 10 23-33

e-mail: office @ wagnermunz.com

Internet: www.wagnermunz.com

Appendix

Technical Data

Rated voltage	230 VAC, 50/60 Hz
Rated consumption	max. 100 W
Temperature range	50 °C to 260 °C
Temperature scale graduations	2 °C
Measuring accuracy in the calibrated range	±1 °C
Preheating time	about 40 min
Dimensions (W x H x D)	about 430 x 100 x 140 mm
Weight	about 2.5 kg

Device and Accessories

	Item Name	Item No.
<i>Complete Device</i>	Kofler heating bench incl. set of test and calibration substances	50 400
	Item Name	Item No.
<i>Accessories</i>	Complete set of test and calibration substances	50 401
	Phenacetin (134.5 °C)	50 402
	Acetanilide (114.5 °C)	50 403
	Benzil (95.0 °C)	50 404
	Azobenzole (68.0 °C)	50 405
	Benzanilide (163.0 °C)	50 406
	Salophene (191.0 °C)	50 407
	Dicyandiamide (210.0 °C)	50 408
	Saccharin (228.0 °C)	50 409
	Lancet	50 419
	Other substances can be obtained on request.	

Notes on the Warranty

The warranty period is ½ year from the date of purchase and covers:

- material defects and
- manufacturing defects

Note:

Proof of purchase is required!

The warranty lapses in case of:

- using the device for other than the intended purpose
- devices which have been opened or repaired other than in our works

EU Declaration of Conformity



Wagner & Munz GmbH
In der Rosenau 4
81829 München

Device _____ Heating Bench

Type _____ Kofler

Applicable EU Directives _____ 89/336/EEC (EMC Directive)
73/23/EEC (EU Low Tension Directive)

Harmonised standards applied _____ EN 60335-1

We herewith confirm that the above-named device conforms to the named EU directives.

signed M. Riemer
Director

wagner & munz