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MICROTRON®



MICROTRON® SYSTEM MB 550
Operating instructions

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OPERATING INSTRUCTIONS			
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1 Introduction

This chapter gives information on the structure of this document. It will assist you in making use of it and show how to find the required information quickly.

1.1 Operating instructions

Please read through these operating instructions before switching on or attempting to use the equipment. They describe the use of the **MICROTRON®** MB 550, its installation and maintenance and the appropriate replacement parts and accessories.

They will help you avoid erroneous use and consequent damage. Although **MICROTRON®** machines are designed for ease of service, this does not release you from the obligation to inspect your equipment carefully and to clean it thoroughly.

KINEMATICA AG is a specialist manufacturer of machines and equipment for dispersion and mixing technology.

An important objective of these operating instructions is to fully inform you, the user, about the correct and safe use of our equipment.

In order to achieve this, it is essential that you should carefully study chapter, "Safety", and follow the instructions in this book.

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2 Range of validity

The information in these operating instructions relates to the **MICROTRON®** identified as follows:

Manufacturer: **KINEMATICA AG**, CH-6014 Lucerne
 Product name: **MICROTRON®**
 Type designation: **MICROTRON® MB 550**

Article number	Description
36010005	MB 550, Drive unit 230V
36010010	MB 550, Drive unit 110-120V
Mixing attachment	
36050005	MBA 125, Mixing attachment, 125ml working volume
36050010	MBA 250 Mixing attachment, 250ml working volume
36050015	MBA 500 Mixing attachment, 500ml working volume
36050020	MBA 1000 Mixing attachment, 1000ml working volume
Safety huts for MB 550	
36050025	MBH 125, safety hut to MBA 125
36050030	MBH 250, safety hut to MBA 250
36050035	MBH 500, safety hut to MBA 500
36050040	MBH 1000, safety hut to MBA 1000

2.1 Target Audience

These operating instructions are intended for all authorised users of our machines/equipment. We distinguish different user roles, taking account of the different demands placed on the user by the activity to be carried out.

You will find the definitions of user roles with the demands on the user in chapter "Safety".
 You can fulfil one or more of these roles, provided that you meet the corresponding demands.

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2.2 Organisational matters

If you are unable to find the answer to any question in the operating instructions, please contact the equipment manufacturer directly.

2.3 Location of the operating instructions

The operating instructions can only be of use to you if you always have them to hand. They should, therefore, always be kept at the place where the equipment is used.

2.4 MANUFACTURER AND CONTACT ADDRESS

KINEMATICA AG

Luzernerstrasse 147a

CH-6014 Lucerne

TEL.: +41 41 259 65 65

FAX: +41 41 259 65 75

E-Mail: info@kinematica.ch

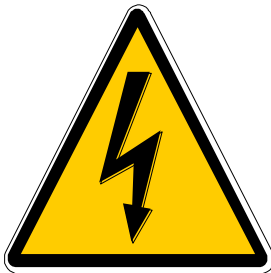
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2.5 Warning Notices

Please be aware of the meaning of the following warning signs:



Safety instructions must be observed to ensure safe operation



This symbol indicates high voltage, with risk to health and environment

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Year of manufacture: A six digit appliance number is printed on the rating plate located on the bottom plate of the machine. The first two digits indicate the year of manufacture for that machine.

So that you are able to enjoy using your MICROTRON® for a long time, please read these operating instructions before starting operation. It will assist you in avoiding malfunctions and damage. MICROTRON® units are maintenance friendly – which, however does not release you from proper inspections and above all from good cleaning.

3 Safety Tips

- Connect the MICROTRON® MB550 to an earthed alternating current power supply only. The voltage must correspond to the specifications on the rating plate.
- The appliance is tested in accordance with EN 60335-2-64:1993. (SEV CENELEC and CE). The MICROTRON® MB550 is grounded, doubly insulated and electromagnetically shielded.
- Electrical appliances are not toys. The appliance must be used and stored away from children. Do not allow the mains cable to hang down.
- Never leave the appliance unattended while it is plugged in.
- Keep your hands, hair and other objects away from the moving parts.
- The MICROTRON® MB550 can only be used when all the parts have been properly installed.
- The MICROTRON® MB550 should only be used by instructed personnel.
- Before every cleaning unplug the appliance from the power supply.
- Never attempt to pull out the plug by the cable or with wet hands.
- Do not allow the mains cable to hang over the sharp edge of a table, do not allow it to lie on a work surface and avoid having it come into contact with hot surfaces.
- Use only proper, approved extension cords.
- The MB 550 motor unit must never be submerged in water or any other liquid!
- Never attempt to clean it with a water jet!
Wipe clean with a damp cloth.
- Do not attempt to operate the MICROTRON® MB550 if:
 - the appliance or the mains cable is damaged
 - the appliance has been dropped or has fallen. In this case the appliance must be brought in for repairs or inspection at the next KINEMATICA authorized service center.
- Repairs should only be done by professionally trained technicians.
Serious dangers to the user could result from improperly carried out repairs.
- No low boiling solvents nor pressure-generating materials such as dry ice, liquid nitrogen or the like may be filled in the grinding chamber.



Attention!

If the appliance's mains cable should become damaged, it can only be replaced with an original cable (see chapter 12 - Repairs)

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4 Uses

The MICROTRON® MB550 can be just used for chop, beat, stir, mix, puree and emulsify of cuttable chemical materials/substances.

The chemical and temperature Resistance of the used material (Glass, stainless steel, PP and rubber) has to be noticed in context with the blender.

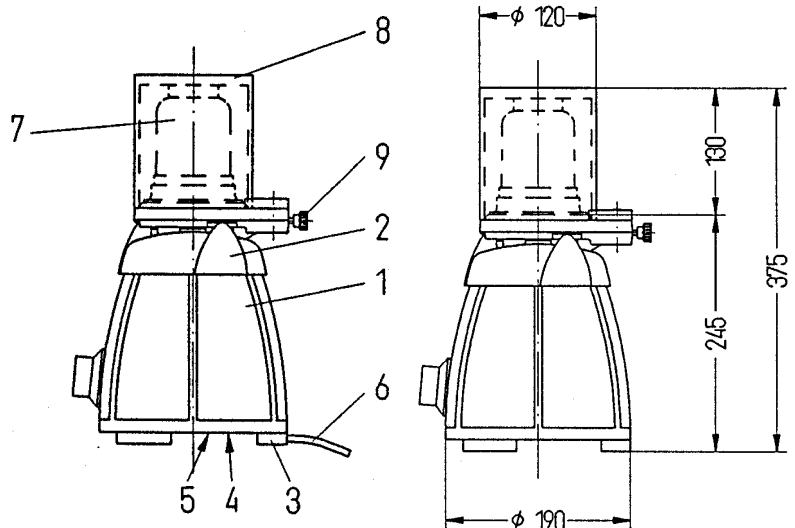
The process of explosive materials is strictly prohibited.

It is forbidden to mix 2 materials which to not correspond with each other, or to get the mixture explosive because of overheating etc.

If the MICROTRON® MB 550 is used for any other purposes or altered, KINEMATICA AG cannot be held responsible for any damages which result.

5 Machine Description

1. Motor base
2. Head piece with security system for the protection cap supervision
3. Rubber foot
4. Bottom plate
5. Rating plate
6. Mains cable
7. Blender attachment 250 ml, cpl. with cutterhead
8. Protection cap



6 Technical Data

Power supply power	220-240V / 50-60 Hz
Requirement motor	550W resp. 800W for continuous operation
Motor control	High temperature resistant collector motor with fan - smooth, gradient starting - infinitely variable speed adjustment between 600 to 14'000 rpm - electronically controlled speed stabilization (actual and desired value comparison) - the motor has a thermal protection switch and is electronically monitored
Electrical equipment	- safety control system for the lid- and protection cap supervision/surveillance - grounded with additional double insulation (according to standard EN 60335-1) - electromagnetically shielded accordance with EMC-Directives 89/336 EEC.
Construction	- Motor base is constructed of chromium-plated die-casting - Knife blades of stainless steel - protection cap made out of PMMA - sealing ring to cutter head made out of NBR 40 Shore special sealing on inquiry - threaded ring made out of PP
Weight	4,6 resp. 5,5 kg net, without attachment

7 Electrical Connection



The **power supply voltage must correspond** to the values on the rating plate on the appliance (the voltage rating is given in volts (V))

The appliance should only be connected to a **single phase grounded alternating current**. Make sure that the original mains cable and the wall outlet correspond.

The use of a **faulty-energy-protection switch**, (FI) is suggested by all the works with electro-appliances. If at all possible, avoid using an extension cord. If it is unavoidable, only proper, approved extension cords should be used. Do not subject the mains cable to strong tension or pressure.

8 Putting into operation

Before using the appliance for the first time it must be **thoroughly cleaned**. Follow the instructions in Chapter 9 under "Cleaning".

Place the MICROTRON® MB 550 on a **firm, flat base** and plug it into a nearby, appropriate electrical outlet.

Note:



The windings of the MICROTRON® MB 550 commutator motors are covered with high-quality insulating lacquer. For this reason, the motor may, at first, exude an odour when it heats up. This is normal and does not damage the motor; it disappears after the motor has been used several times.

9 Operating Instruction

250 ml glass, blender attachment assembly

- Insert the cutter head together with the gasket into the black threaded ring
- Screw the bowl turning **counter clockwise** into the threaded ring.
Always ensure that it is inserted straight

9.1 Mixing

- Add ingredients to be mixed, assemble the blender attachment, see above
- Insert the blender attachment into the retaining ring on the motor base, taking care to keep it vertical
- Place the protection cap on the holding ring in such a way that the pin of the protection cap will be plugged into the hole of the holding ring. Tighten the stop screw afterwards.

- Switch on motor and vary the speed according to the ingredients being mixed, that is, turn the speed control clockwise until the desired speed is reached. The maximum speed is reached at position 8

→ **Motor works only when the protection cap is set up right !**

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- Turn off: Turn the speed control knob counter clockwise to "0"

10 Safety Features and Motor Protection

The safety control prevents the motor from being switched on when the protection cap/mixing lid is not in position and stops it if the protection cap/lid is raised during operation.

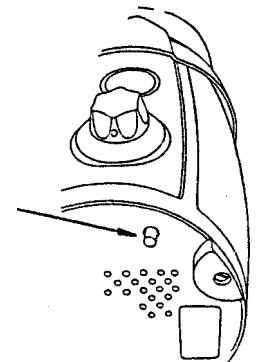
When the protection cap/lid is replaced, the speed control knob must be turned back to "0" (reset function), before the motor can be restarted.

→ **Only the speed control knob can be used to turn the machine on and off**

When the machine is overstressed or overheated, it switches off automatically.

If this occurs, after about 60 seconds, please press the black button on the bottom plate of the motor base.

If you notice any irregularities or defects, please contact your supplier. For more information see Chapter 12 under "Repairs".



11 Cleaning

Never submerge or spray the engine block in water or other fluids! Do not clean with a water jet!

If necessary, only clean it with a damp cloth and be sure to unplug the machine first.

DANGER!

Thoroughly clean the machine after each use! Improper and careless cleaning can cause considerable health risks from microorganisms.

MIXING ATTACHMENT:

The mixing attachments should not be cleaned while assembled in the dishwasher, they have to be disassembled. The mixing attachments are to be thoroughly cleaned after each use or once a day.

Our mixing attachments are made from borosilicate glass and are therefore autoclavable. Borosilicate glass has very good chemical and physical properties and is used for applications where in addition to the very good chemical resistance, a very high heat resistance and thermal shock resistance and high mechanical strength are required (e.g. round-bottomed flasks, beakers).

Upon heating of the flask no deformations are to be expected up to 400° C, however, they already occur at lower temperatures due to the thermal expansion and the poor thermal conductivity of tensile and compression stresses. If the permissible strength values are exceeded as a result to rapid heating or cooling rates, fracturing occurs. Therefore - as with any glass - a maximum permissible temperature can not generally be defined. If the flask is evenly and slowly heated up in the autoclave and then correspondingly cooled off, then no problems should be expected for example at 135° C.

Never heat the flask on a hotplate and never expose it to abrupt temperature changes (e.g. don't take it hot out of the drying cabinet and put on a cold or wet lab table).

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CUTTER HEAD:

Just rinse and brush off if necessary. Never place in water or in the dishwasher, because otherwise the self-lubricating bearings will wear out.

Cleaning by hand is recommended!

The cutter head is made of stainless steel parts, which are actually very resistant. However, high temperatures and detergents generally reduce the lubricating effect of the grease in the built-in stainless steel ball bearings (with integrated NBR seals, heat resistant up to a maximum of 120° C). As a result, wear and tear-related failure often occurs sooner if the cutter head is treated in a dishwasher or an autoclave. Normally bearing damage initially only leads to a steady increase in noise of the mixer, so that the device is able to continue to work a long time yet before it fails. It can often be worth it for the user to save time by cleaning the disassembled mixing attachment mechanically and for that reason to more frequently replace the cutter head.

The shock absorbers on the bottom of the cutter head are made of H-NBR (max. 140° C, cleaning with hot water and steam also possible) and the hard-paper cover plates on both sides of the bearings are based on phenolic resin and tolerate at most 120° C.

The flash seal (gray ring) is standard NBR (max. 90° C, FDA, ideal for the food industry, resistant to gasoline, oils, weak acids, and bases). For special requirements (laboratory applications), the seals can be supplied in special materials that have a higher chemical and thermal resistance:

- **Viton** (can withstand approximately 200° C, ideal for chemical applications, excellent resistance to aromatic solvents)
- **EPDM** (up to 150° C, industrial applications, especially for hot water and steam)
- **Silicone rubber** (max. 200° C, FDA, for the food and pharmaceutical industries)

THREADED RING:

The black threaded ring (that mostly does not come into contact with the product) is resistant up to 115° C and has a good resistance in the dishwasher. The inside of the threaded ring is best cleaned with a stiff brush.

FEATURES WHEN CLEANING STAINLESS STEEL PITCHERS (MB 800):

For example, with applications in laboratories even the stainless steel parts can reach their limits concerning chemical resistance when they come into contact with chlorides (e.g. hydrochloric acid). The initial drying of chloride-containing disinfectants or the evaporation of hydrochloric acid-containing floor cleaner or similar can lead to chloride-induced pitting on the surface of the stainless steel. Such disinfectants should be sufficiently rinsed off after the prescribed contact time. Alternatively, chloride-free disinfectants can be used. Hydrochloric acid-containing cleaners should be avoided. Improper use (e.g. inadequate rinsing) of active chlorine-containing cleaning agents, leads to pitting. Any stainless steel can corrode under adverse conditions. Outside rust is caused by iron particles that attach themselves to the steel surface.

The source of the particles can be:

- The water supply
- Steel wool sponges, with which the dishes were pre-cleaned
- Paper clips, drill cuttings, screws, etc., just to name a few.

Since all of these parts are introduced from the outside, it is called outside rust. If the rust spots and whose source can not be directly resolved, corrosion damage can become increasingly common.

CARE OF PROTECTIVE CAPS MADE FROM PMMA:

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Chemically-speaking, Plexiglas® (brand name) is a product made from polymethylmethacrylate, abbreviation PMMA, which is also known as acrylic glass.

Plastics can generally become electrostatically charged. This can cause the parts to then attract dust. Outdoors, this phenomenon is normally prevented by the rain and humidity. The phenomenon can also be promoted by mechanical rubbing of the plastic surfaces, air movement, and dry air with plastic parts indoors.

To clean the protect caps, which do not often come into contact with the product, use only a microfiber cloth lightly dampened with water.

As a basic principle, no alcohol or solvents should be used to clean PMMA!

A chemical resistance chart for PMMA can be downloaded here: <https://adobe.ly/2lXBgrP>
(Document only available in German).

In it you can see which chemicals are compatible with PMMA and which are not.

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12 Maintenance

The motor bearings are permanently lubricated and therefore require no maintenance.

13 Troubleshooting

PROBLEM	CAUSE/SOLUTION
The appliance doesn't run.	- Make sure the mains cable is plugged into a wall socket.
The motor runs at the highest speed when the appliance is switched on.	- Defective electronics
The motor speed is difficult or impossible to adjust.	- Defective potentiometer or electronics
The motor stops under load	- The overload switch has been activated - Brushes worn - Defective electronics
The motor continues to run even after the protection cap/lid has been lifted.	- Defective safety switch or electronics

14 Repairs

Repairs on electrical appliances should only be carried out by professional technicians. Serious dangers to the user could result from improperly carried out repairs.

Obtain the address of your nearest KINEMATICA authorized service center from the store where you purchased your appliance.

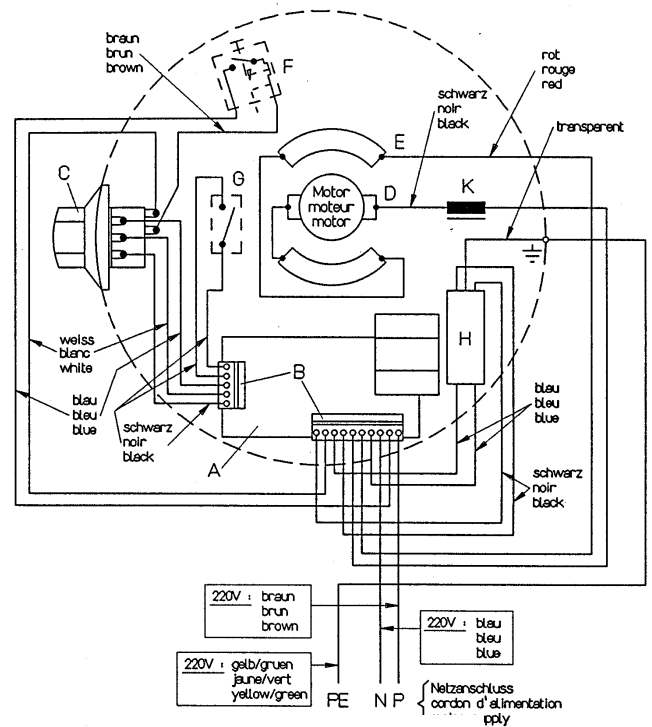
Bring your appliance to the service center or send it as a postage paid, registered package.

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15 Connection Drawing

- A Circuit board holder
 - B Motor safety switch
 - C Potentiometer with On/Off-Switch
 - D Motor brushes connection
 - E Stator connection
 - F Safety switch for cap surveillance
 - G Electronic
 - H Potentiometer connection for control device
 - K Suppressor screen filter
 - L EF-Choke
 - M Ground
 - O Neutral wire
 - P Phase
- } Mains supply



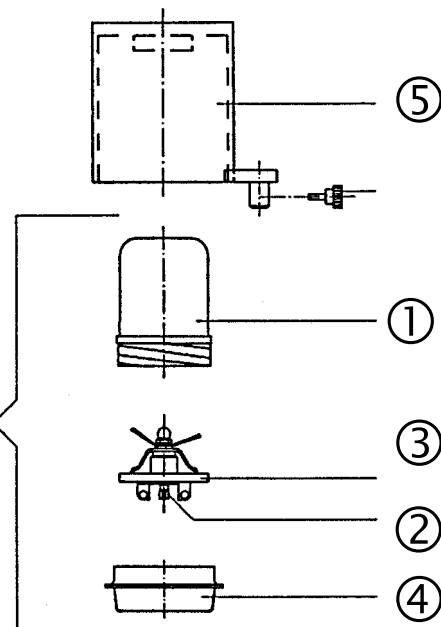
16 Small Spare Parts List

Description

Blender attachment 250 ml cpl., glass

- 1 Glass, 250 ml
- 2 Cutter head
- 3 Gasket
- 4 Threaded ring
- 5 Safety cap cpl.

Attachment
250 ml cpl., glass



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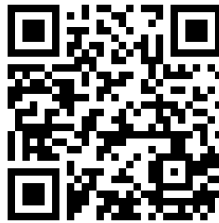
17 Warranty

KINEMATICA AG guarantees that the equipment that it produces will run free of any fault related to materials or manufacturing faults for **24 months**.

ADDITIONAL WARRANTY FOLLOWING REGISTRATION

Consumers who complete a warranty registration within 20 days of receiving their device will benefit from a free warranty extension of a further 12 months. This means that the total warranty period after registration is 36 months.

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If thorough testing shows a fault to be due to either of the above causes, KINEMATICA AG guarantees that the equipment will be repaired or replaced free of charge. The guarantee does not cover parts that are subject to normal wear. It is void if any person other than an employee of KINEMATICA AG or their appointed representative has made modifications to the equipment or if the damage is due to failure to comply with the operating instructions, to carelessness, accident, incorrect use or incorrect supply voltage.

Please check our further warranty conditions and the correct procedure for a repair application on our website:

<http://www.kinematica.ch/en/contact-service/service-and-repair.html>

KINEMATICA AG reserves the right to make technical changes to the equipment without modifying equipment delivered earlier in the same way.

In the event of technical problems, for spare parts requirements or for advice, contact our regional appointed agent, your preferred dealer or us directly at:

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