FOUR E'S SCIENTIFIC

Operating Instructions

Vortex Mixer

MI0101002



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Safety Instructions

For your protection

- **Read the operating instructions in full before starting up and follow the safety instructions.**
- Keep the operating instructions in a place where they can be accessed by everyone.
- Ensure that only trained staff work with the appliance.
- Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations.
- Socket must be earthed (protective ground contact).
- Wear your personal protective equipment in accordance with the hazard category of the media to be processed.
  Otherwise there is a risk from:
  - Splashing liquids
  - Projectile parts
  - Body parts ,hair ,clothing and jewellery getting caught.



- Keep hand/arm vibration to a minimum (Directive 2002/44/EC)
  When operated manually:
  - Keep the sample container as vertical as possible.
  - Only exert the minimum pressure necessary for the mixing process.
  - Use attachments for multiple samples when there is a large number of samples.
- Set up the appliance in a spacious area on an even, stable, clean, non-slip, dry and fireproof surface.
- The feet of the appliance must be clean and undamaged.
- Position the knob at the left stop before starting up.
  Gradually Increase the speed.
- If the shaking movement of the appliance increases (resonance), reduce the speed or pass through the critical phase as quickly as possible.

- Reduce the speed if
  - The medium splashes out of the vessel because the speed is too high
  - The appliance is not running smoothly
  - The container moves on the base plate
- Firmly secure the accessories and vessels in place, otherwise shaking vessels could be damaged or projected out.
- Check the appliance and accessories beforehand for damage each time you use them. Do not use damaged components.
- Position one single shaking vessel in the centre and several shaking vessels so that they are evenly spread out.
- The appliance is not suitable for manual operation.
- Sharp edged vessels cause wear debris on the attachments.
- Beware of hazards due to:
  - flammable materials
  - glass breakage as a result of mechanical shaking power.
- Only process media that will not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in other ways, e.g. through light irradiation.
- Do not operate the appliance in explosive atmospheres, with hazardous substances or under water.
- Safe operation is only guaranteed with the accessories described in the “Accessories” chapter.
- Always disconnect the plug before fitting accessories.
- The appliance starts up again automatically following a cut in the power supply.
- The appliance may heat up when in use.

To the protection of the equipment

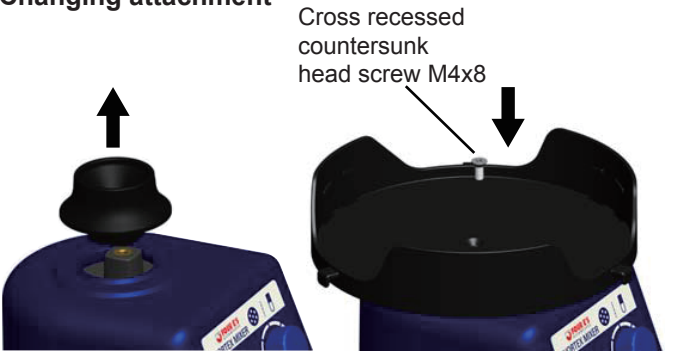
- The voltage stated on the nameplate must correspond to the mains voltage.
- Protect the appliance and accessories from bumps and impacts.
- The appliance may only be opened by experts.

Operator's Control



Item	Description	Function
①	Mode Indicator Light	The left one is for continuous working mode and the right one is for touch working mode.
②	Mode Switch	It's the continuous mode when the switch is on the left side and the left mode LED is light. It's the touch mode when the switch is on the right side and the right mode LED is light.
③	Adapter	Different adapters are used for various mixing applications
④	Speed Setting	To set the speed in the range of 0-3000rpm/min by horizontal rotation of the knob

Changing attachment



Using insert



Unpacking

- Unpacking
  - Please unpack the device carefully
  - In the case of any damage a fact report must be set immediately (post, rail or forwarder)
- Delivery scope
  - Vortex Mixer
  - Plug-in power supply
  - Operating instructions

Correct Use

- Use
  - For mixing liquids
  - Touch mode for single test tubes
  - Continuous mode for single or several vessels
- Range of use
  Laboratories / Schools / Pharmacies
- This device is suitable for use in all areas except:
  - Residential areas
  - Areas that are connected directly to low-voltage supply network that also supplies residential areas.

The safety of the user cannot be guaranteed if the appliance is operated with accessories that are not supplied or recommended by the manufacturer or if the appliance is operated improperly contrary to the manufacturer's specifications.

Installation

- Assemble the adapters per the Figure 2 and 3.
- Choose the working mode by the mode switch
- Set the speed by the knob
- Run the mixer by "Run/Stop" in the continuous mode and by pressing the adapter by single test tube in the touch mode.
- Turn off the mixer by putting the mode switch on middle gear.

Maintenance

The appliance is maintenance-free.

Cleaning

Only use cleansing agents which have been recommended by us.

Use to remove

Dyes	isopropyl alcohol
Constructions materials	water containing tenside / isopropyl alcohol
Cosmetics	water containing tenside / isopropyl alcohol
Foodstuffs	water containing tenside
Fuels	water containing tenside

Do not allow moisture to get into the appliance when cleaning.

- Wear protective gloves during cleaning the devices
- Before using another than recommended method for cleaning or decontamination, the user must ascertain with us that this method does not destroy the instrument.
- The rubber of the attachments' pads is a natural product, so talcum can discharge .Clean the rubber pad with glycerin.

Spare parts order

When ordering spare parts, please give:

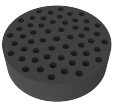
- Machine type
- Manufacturing number, see type plate

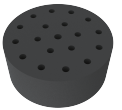
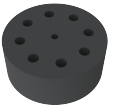
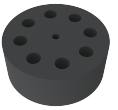
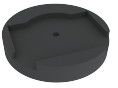
Repair

In case that the device has to be cleaned, please be free from any material which may constitute a health hazard.

If you require services, please return the appliance in its original packing.

Accessories

Item	Part No.	Product Photo	Description
1	MI0101002-31		Test Tube Attachment, 54 x Φ6mm, used with MI0101002-14

Item	Part No.	Product Photo	Description
2	MI0101002-32		Test Tube Attachment, 18 x Φ10mm, used with MI0101002-14
3	MI0101002-33		Test Tube Attachment, 12 x Φ12mm,used with MI0101002-14
4	MI0101002-34		Test Tube Attachment, 8 x Φ16mm,used with MI0101002-14
5	MI0101002-35		Test Tube Attachment, 8 x Φ20mm, used with MI0101002-14
6	MI0101002-36		Microtiter plate attachment, used with MI0101002-14
7	MI0101002-14		Universal top plate
8	MI0101002-13		Standard top < Φ30mm tubes and small vessels
9	MI0101002-37		Erlenmeyer flask attachment 100-250ml, used with MI0101002-14

Application of Accessories

Accessory	Adjustable Speed Model 400-3000rpm			
	Touch Mode		Continuous Mode	
	High Speed	Low Speed	High Speed	Low Speed
MI0101002-13	Y	Y	Y	Y
MI0101002-31+ MI0101002-14		Y		Y
MI0101002-32+ MI0101002-14		Y		Y
MI0101002-33+ MI0101002-14		Y		Y
MI0101002-34+ MI0101002-14		Y		Y
MI0101002-35+ MI0101002-14		Y		Y
MI0101002-36+ MI0101002-14+		Y		Y

The high speed is 3000rpm; the low speed is below 500rpm.

Warranty

In accordance with our warranty conditions, the warranty period is 24 months. For claims under the warranty please contact your local dealer. You may also send the machine directly to our factory, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs.

The warranty does not cover worn out parts, nor does it apply to faults resulting from improper use, insufficient care or maintenance not carried out in accordance with the instructions in this operating manual.

Technical Data

Model	MI0101002
Operation mode	Continuous/touch operation
Type of movement	Orbital
Orbital diameter	6mm
Speed range	0-3000rpm
Permissible ambient temperature	5 - 40 °C
Permissible relative humidity	<80%
Protection class according to DIN EN 60529	IP 21
Voltage	200 - 240 / 115 / 100V compatible
Frequency	50/60 Hz
Power	36W
Motor rating input	30W
Motor rating output	15W
Dimensions (W x H x D)	107x146x166mm
Weight	2.62kg