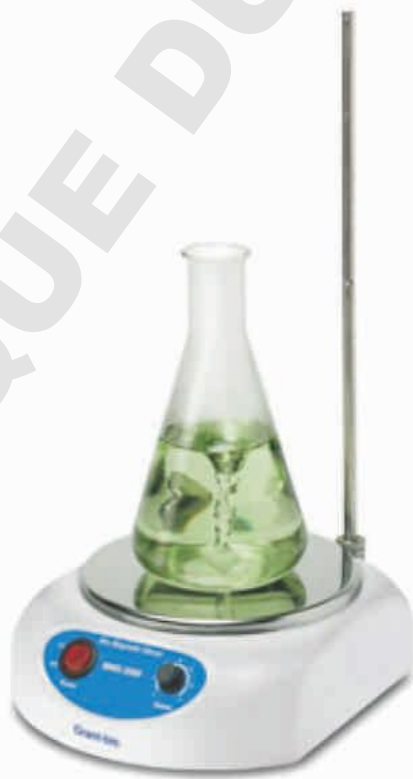


**Grant-bio**

# Magnetic Stirrer MMS-3000

*Operating instructions*



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# 1. Safety

## 1.1 Caution symbol



This symbol means Caution – risk of danger

Where this symbol appears on the Mini Magnetic Stirrer, consult these operating instructions - the relevant passages in the instructions have the symbol marked beside them.



Attention Magnetism! Effects of a strong magnetic field on the biological systems have to be taken in to account. Magnetic fields can affect heart pace - maker, data carriers, etc.

## 1.2 Safety features






The MMS-3000 is constructed so as to meet the requirements of international safety standard IEC 61010-2-051: Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-051 Particular Requirements for Laboratory Equipment for Mixing and Stirring, and national standards based on it, including:

EN 61010-2-051;



BS EN 61010-2-051;

A copy of the Declaration of Conformity with CE requirements is included at the back of this manual.

## 1.3 Before first operating the Magnetic stirrer

-  Read the whole of these instructions, paying particular attention to sections marked with the Caution symbol. Safety may be impaired if these instructions are not followed.
-  If the stirrer has been transported or stored in cold or humid conditions, condensation may form inside it. If that could have happened, allow time for the condensation to evaporate before using the stirrer. Safety may be impaired if the stirrer is switched on before the condensation has evaporated.
-  Use only with the supplied power adaptor; connect the stirrer to the power adapter and connect this to a supply with the correct voltage and frequency, as marked on the power adapter label.
-  The mains plug is the disconnect device; make sure it is easily accessible during use.
-  Do not start operation at maximum speed.

## 1.4 Precautions during and after operation

-  Do not use the stirrer in an area where there are aggressive or explosive chemical mixtures.
-  If liquid is spilt inside the stirrer, disconnect it from the power supply and have it checked by a competent person.

- ☞ It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilled on or inside the equipment.
- ☞ If the stirrer is to be moved, disconnect the plug from the power supply socket.

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## 2. General Information

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Magnetic stirrer MMS-3000 is a medium size magnetic stirrer with the stainless steel working surface. It provides liquid stirring with the rotation speed of magnetic element up to 3000 RPM (max. speed depends on the magnetic element size, stirred volume, viscosity, glassware shape, etc.).

MMS-3000 is equipped with a detachable stand that allows inserting different sensors (temperature, pH etc.) inside the liquid.

The unit is designed for operation with magnetic stirring elements of length up to 70 mm length. Other size magnetic elements may not provide appropriate operation. Magnetic stirrer MMS-3000 is specially designed for effective stirring of various liquids both in chemical and biological laboratory.

Application fields:

- **CHEMISTRY:** stirring reaction ingredients during the fine organic synthesis, research in the organic catalysis field, different viscosity chemical reagents dissolving.
- **BIOCHEMISTRY:** solutions preparation, dialyze, salt and alcohol sedimentation of macromolecules, gradient forming in the column chromatography, etc.
- **SOIL SCIENCE:** biological and chemical substances and samples extraction, research of the soil and ground chemical and biochemical compounds.
- **BIOTECHNOLOGY:** using as a mini-reactor in the micro-organism cells cultivation, culture medium preparation, titration, etc.

# 3. Getting started

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## 3.1. Unpacking.

Remove packing materials carefully, and retain them for future shipment or storage of the stirrer.

## 3.2. MMS-3000 standard equipment includes:

- Magnetic Stirrer MMS-3000 .....1 piece
- Magnetic stirring element \* .....1 piece
- Attachable stand .....1 piece
- External power supply unit .....1 piece
- Operating Manual; Specifications; Certificate .....1 copy

\* Cylinder-shape Magnetic stirring element (6x25mm) for universal use, encapsulated in PTFE.

## 3.3. Stand installation.

Remove the screw on one of the fixing sockets at the stirrer back (fig.1/3) and retain for future. Screw the part of the stand with the counter-nut into the fixing socket and secure with the counter-nut. Screw in the second part of the stand into the attached first part.

## 4. Operation of MMS-3000

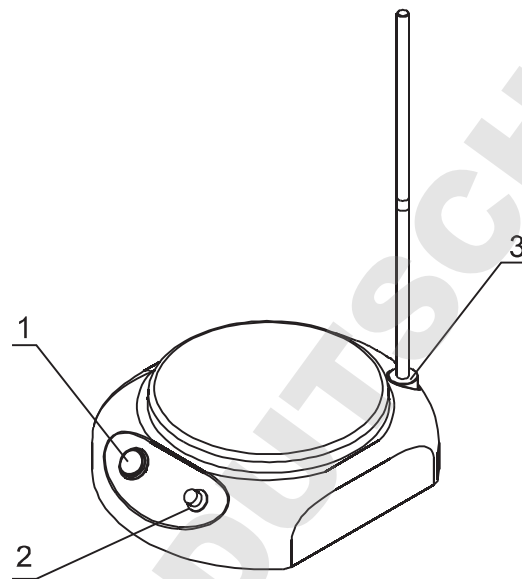


fig.1

### 4.1 Preparation

- 4.1.1. Place the Magnetic Stirrer on the working surface.
- 4.1.2. Plug the external power supply unit into the 12 V socket at the rear side of the Magnetic Stirrer.
- 4.1.3. Connect the external power supply unit to the mains.
- 4.1.4. Turn ON the power switch (fig.1/1).
- 4.1.5. Place a flask on the center the stirrer working surface. Put the magnetic stirring element inside the flask.

### 4.2 Operation

- 4.2.1. Slowly turning the SPEED knob clockwise (fig.1/2) adjust the necessary speed.
- 4.2.1. At the end of operation decrease the mixing speed to minimum by turning the SPEED knob anti-clockwise.
- 4.3. Turn OFF the power switch. Disconnect the external power supply unit from the mains.

# 5. Maintenance

- 
- 5.1 There are no user-serviceable parts inside the unit. For all maintenance and repairs (except as defined below) return to our service department in the UK or in other countries, our distributor.
  - 5.2 Cleaning liquids that do not contain concentrate organic solvents, alkali or acid can be used for device cleaning. Standard ethanol (75%) can be used for disinfection. Before using any other cleaning or decontamination method, check with the manufacturer or supplier to make sure that the proposed method will not damage the equipment.
  - 5.3 Powerful magnetic elements are used in the Magnetic stirrer MMS-300 construction, which can be used for other magnetic element magnetising. Decrease of magnetic properties can be caused by the wrong storage of the magnetic elements (magnetic domain disorientation and centre displacement can occur when the magnets are stored together). The other cause of magnetic domain disorientation may be operation near this element Kyrie point temperatures (200°C). To restore the initial properties of a magnetic element place it on the Magnetic stirrer working surface (strictly at the centre) and keep for 8 - 12 hours.



## 6. Specifications

The Stirrer is designed for operation indoors in a laboratory at altitudes up to 2000m, with ambient temperature from +5°C to +40°C and maximum relative humidity 80% for temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40°C.

- Speed range.....0-3000 R.P.M.
- Continuous operation time .....12 hrs
- Working surface material.....stainless steel
- Working surface size .....diameter 160 mm
- Attachable stand height.....320 mm
- Max. stirring volume .....up to 20 liters

| Magnetic element size | Max. RPM                               |  |   |   |
|-----------------------|--|--|---|---|
|                       | Mixed volume H <sub>2</sub> O 2 litres | Mixed volume H <sub>2</sub> O 5 litres | Mixed volume H <sub>2</sub> O 15 litres | Mixed volume H <sub>2</sub> O 20 litres |
| 25 mm                 | 3000                                   | 2800                                   | 2800                                    | 2540                                    |
| 50 mm                 | 1700                                   | 950                                    | 1500                                    | 1490                                    |
| 70 mm                 | 620                                    | 530                                    | -                                       | -                                       |

- Power .....External power supply unit  
12V DC, 900mA
- Dimensions.....185x230x80 mm
- Weight with power supply, not more.....2 kg

To improve the design manufacturer reserves the right to make changes in specification without prior notice.

# 7. Guarantee and Service

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## 7.1 Guarantee

When used in laboratory conditions and according to these working instructions, this product is guaranteed for TWO YEARS against faulty materials or workmanship.

## 7.2 Service


For service, return for repair to our Service Department in the UK or, in other countries, to our distributor.

# Declaration of Conformity

|                             |   |
|-----------------------------|---|
| Manufacturer:               | BIOSAN LTD.<br>Ratsupites 7, build.2, Riga, LV-1067, Latvia   |
| Equipment name/type number: | MMS-3000  |
| Description of Equipment:   | Magnetic Stirrer  |
| Directive:                  | EMC Directive 2004/108/EC<br>Low Voltage Directive 2006/95/EC |

|                       |  |
|-----------------------|--|
| Applied Standards     |  |
| Harmonized Standards: | <u>EN 61326-1:</u><br>Electrical equipment for measurement, control and laboratory use EMC requirements<br>General requirements<br><br><u>EN 61010-1:</u><br>Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements<br><br><u>EN 61010-2-051</u><br>Particular requirements for laboratory equipment for mixing and stirring |

I declare that this apparatus conforms to the requirements of the above Directive(s)

  
Svetlana Bankovska  
Executive Director  
Biosan Ltd.

Dated 11.04.2011

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