Medical–Biological
Research & Technologies

Magnetic stirrer

MMS-3000

MS-3000

Operating manual
Certificate

For versions:
MMS-3000 — V.2AW
MS-3000 — V.1AW

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1. Safety precautions

The following symbols mean:

Caution! Make sure you have fully read and understood the present Manual before using the equipment. Please pay special attention to sections marked by this symbol.

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.

GENERAL SAFETY

- Use only as specified in the Operating Manual provided.
- The unit should be saved from shocks or falling.
- After transportation or storage keep the unit under room temperature for 2-3hrs before connecting to electric circuit.
- Use only cleaning and decontamination methods recommended by the manufacturer.
- Do not make modifications to the design of the unit.

ELECTRICAL SAFETY

- Connect only to the external power supply unit with voltage corresponding to that on the serial number label.
- Use only the external power supply unit provided with this product.
- Ensure that the switch and external power supply unit are easily accessible during use.
- Disconnect the external power supply unit from electric circuit before moving the unit.
- If liquid penetrates into the unit, disconnect it from the external power supply unit and have it checked by a repair and maintenance technician.
- Do not operate the unit in premises where condensation can form. Operating conditions of the unit are defined in the Specifications section.

DURING OPERATION

- Do not start operation at maximum speed.
- Do not operate the unit in environments with aggressive or explosive chemical mixtures. Please contact manufacturer for possible operation of the unit in specific atmospheres.
- Do not operate the unit if it is faulty or has been installed incorrectly.
- Do not use outside laboratory rooms.

BIOLOGICAL SAFETY

- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.

2. General information.

MS-3000/MMS-3000 magnetic stirrer is designed for effective stirring of different viscosity liquids.

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

The unit is designed for operation with different size magnetic stirring elements (20-50 mm long for MS-3000 and 20-70 mm long for MMS-3000). Other size magnetic elements may not provide appropriate operation.

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

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 minireactor in the micro-organism cells cultivation, culture medium preparation, titration, etc.

3. Getting started

3.1. Unpacking.

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

Examine the unit carefully for any damage incurred during transit. The warranty does not cover in-transit damage.

3.2. Complete set. Package contents:

MS-3000

- MS-3000 Magnetic Stirrer ..... 1 pce
- magnetic stirring element* ..... 1 pce
- external power supply unit ..... 1 pce
- Operating Manual; Certificate ..... 1 copy

MMS-3000

- MMS-3000 Magnetic Stirrer ..... 1 pce
- magnetic stirring element* ..... 1 pce
- SR-1 attachable stand ..... 1 pce
- external power supply unit ..... 1 pce
- Operating Manual; Certificate ..... 1 copy

3.3. Set up:

place the unit on the horizontal even working surface;

plug the external power supply unit into the 12 V socket at the rear side of the unit.

3.4. MMS-3000 stand installation. Remove the screw on the fixing socket at the stirrer back (fig.1/1) 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.

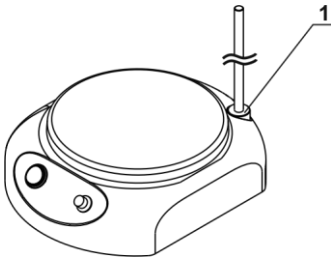


Fig. 1. MMS-3000 stand

4. Operation

4.1. Plug the external power supply unit to electric circuit.

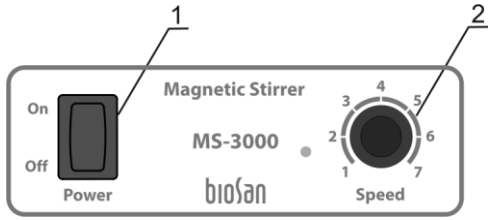
4.2. Place a glass or another chemical vessel with liquid with magnetic stirrer bar in it at the centre of the working plate.

4.3. Turn the **Power** switch (Fig. 2/1 or 2/3) into the position **I** (On).

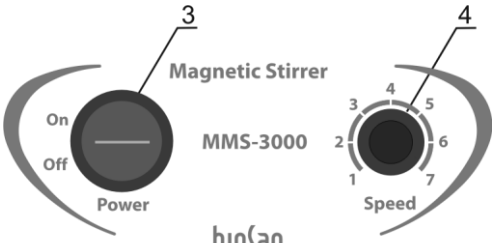
4.4. Set the required speed using the **Speed** knob (fig. 2/2 or 2/4). Increase the speed smoothly.

4.5. After finishing the operation decrease the rotation speed to the minimum and turn the **Power** switch into position **O** (Off).

4.6. Unplug the external power supply unit from electric circuit.



MS-3000



MMS-3000

Fig. 2. Control panel

5. Specification

The unit is designed for operation in cold rooms, incubators and closed laboratory rooms at ambient temperature from +4°C to +40°C in a non-condensing atmosphere and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

	MS-3000	**MMS-3000**
Speed range	0—3000 rpm	
Maximum stirring volume (H_2O)	5 l	20 l
Working surface dimensions	110x110 mm	Ø160 mm
Working surface material	Stainless steel	
SR-1 detachable stand size	—	Ø8x320 mm
Maximum length of magnetic stirring element	50 mm	70 mm
Maximum stirred liquid viscosity	Up to 1170 mPa*s	
Continuous operation time	Not more than 12 hours	
Internal current / power consumption	220 mA / 2.6 W	250 mA / 3 W
External power supply	input AC 100-240 V, 50/60 Hz, output DC 12 V	
Weight*	0.8 kg	1.5 kg
Dimensions	120x150x65 mm	185x230x75 mm

MS-3000 and MMS-3000 maximal speed

Magnetic element size	**H_2O volume 2 l**		**H_2O volume 5 l**		**H_2O volume 15 l**		**H_2O volume 20 l**	
	MS-3000	MMS-3000	MS-3000	MMS-3000	MS-3000	MMS-3000	MS-3000	MMS-3000
25 mm	3000	3000	2400	2800	-	2650	-	2600
50 mm	700	1700	700	1500	-	1300	-	1250
70 mm	-	620	-	530	-	440	-	360

Replacement parts	**Description**	**Catalogue number**
SR-1	Detachable stand for MMS-3000	BS-010302-AK
Magnetic stirring element	Cylindrical shape (6x25 mm) and PTFE encapsulated	BS-010302-S12

Biosan is committed to a continuous programme of improvement and reserves the right to alter design and specifications of the equipment without additional notice.

* Accurate within ±10%.

6. Maintenance

6.1. If the unit requires maintenance, disconnect the unit from electric circuit and contact Biosan or your local Biosan representative.

6.2. All maintenance and repair operations must be performed only by qualified and specially trained personnel.

6.3. Standard ethanol 75% or other cleaning agents recommended for cleaning of laboratory equipment can be used for cleaning and decontamination of the unit.

6.4. 
Improper magnetic stirring elements storage (storing several elements together, which causes unpredictable magnetic domain disorientation) is one of the reasons of the magnetic properties deterioration of the element. The other reason is working at temperatures close to Curie point temperature of these elements, which is 200°C. Place the element on the unit working surface exactly in the centre and in conformity with the poles and leave for 8-12 hours to have it regained its initial characteristics.

7. Warranty and Claims

7.1. The Manufacturer guarantees the compliance of unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.

7.2. The warranted service life of unit from date of delivery to the Customer is 24 months. Contact your local distributor to check availability of extended warranty.

7.3. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment claim shall be compiled, certified and sent to the local distributor address. Please visit www.biosan.lv, Technical support section to obtain the claim form.

7.4. The following information will be required in the event that warranty or post-warranty service comes necessary. Complete the table below and retain for your records.

Model	MS-3000 / MMS-3000 Magnetic stirrers
Serial number	
Date of sale	

8. Declaration of conformity

Declaration of Conformity

Equipment name:	**MMS-3000 / MS-3000**
Type of equipment:	Magnetic Stirrer
Directive:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC RoHS 2011/65/EC WEEE 2002/96/EC & 2012/19/EU
Manufacturer:	SIA BIOSAN Ratsupites 7, build.2, Riga, LV-1067, Latvia
Applied Standards:	**EN 61326-1:** Electrical equipment for measurement, control and laboratory use EMC requirements. General requirements **EN 61010-1:** Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements **EN 61010-2-051:** Particular requirements for laboratory equipment for mixing and stirring

We declare that this product conforms to the requirements of the above Directive(s)

Signature
Svetlana Bankovska
Managing director
12.06.2013
Date

Signature
Aleksandr Shevchik
Engineer of R&D
12.06.2013
Date

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