

MS-3000 & MMS-3000 Magnetic stirrers



Contents

1.	About this edition of user instructions.....	3
2.	Safety precautions	4
3.	General information.....	5
4.	Getting started.....	6
5.	Operation	7
6.	Specifications	8
7.	Ordering information	9
8.	Care and maintenance	9
9.	Warranty.....	10
10.	EU Declaration of conformity.....	11

1. About this edition of user instructions

The manual applies to following models and versions of magnetic stirrers:

- **MS-3000**..... version V.2AW
- **MMS-3000**..... version V.3AW

2. Safety precautions



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 into account. Magnetic fields can affect heart pace-makers, data carriers, etc.

GENERAL SAFETY

- The protection provided can be ineffective if the operation of the appliance does not comply with the manufacturer's requirements.
- Save the unit from shocks and falling.
- Store and transport the unit at ambient temperatures between -20°C and +60°C and maximum relative humidity of 80%.
- After transportation or storage and before connecting it to the electric circuit, keep the unit under room temperature for 2-3 hrs.
- Before using any cleaning or decontamination methods except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.
- Do not make modifications in design of the unit.

ELECTRICAL SAFETY

- Connect only to the mains with voltage corresponding to that on the serial number label.
- Use only the external power supply provided with this product.
- Ensure that the power plug is easily accessible during use.
- Do not plug the unit into an ungrounded power socket, and do not use an ungrounded extension lead.
- Disconnect the unit from the mains before moving.
- If liquid penetrates into the unit, disconnect it from the mains 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

- The user is responsible to carry out appropriate decontamination if hazardous material spills on or penetrates into the equipment.

3. 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.
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.

4. Getting started

- 4.1. **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. Warranty covers only the units transported in the original package.
- 4.2. **Complete set.** Package contents:
- 4.2.1. **MS-3000:**
- MS-3000, Magnetic Stirrer 1 pce.
 - Magnetic stirring element¹ 1 pce.
 - External power supply 1 pce.
 - Operating manual, declaration of conformity 1 copy
- 4.2.2. **MMS-3000:**
- MMS-3000, Magnetic Stirrer 1 pce.
 - SR-1, attachable stand 1 pce.
 - Magnetic stirring element¹ 1 pce.
 - External power supply 1 pce.
 - Operating manual, declaration of conformity 1 copy
- 4.3. **Setup.**
- Place the unit on horizontal even working surface.
 - Connect the external power supply unit into the socket at the rear side of the unit and position the unit for an easy access to the external power supply and the power switch.
- 4.4. **SR-1 stand installation on MMS-3000.** Remove the screw on the fixing socket at the back of the stirrer (fig. 1/1). Screw in 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.

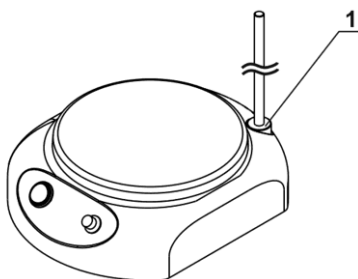


Figure 1. SR-1 stand for MMS-3000

¹ Cylindrical (6x25 mm) and encapsulated in PTFE

5. Operation

- 5.1. Connect the external power supply to the mains.



Note!

Vessel must be flat-bottomed and fit tightly to the working surface of the magnetic stirrer (figure 2).



Figure 2.

- 5.2. Position the vessel on the center of the platform. Immerse the magnetic stirring element.
- 5.3. Turn the **Power** switch (fig. 3/1 or 3/3) into the position **On**.
- 5.4. Set the required speed using the **Speed** knob (fig. 3/2 or 3/4). Increase the speed.



Note!

A maximum efficient speed is shown in **Table 1** for different stirring element lengths and mixing volumes. Beyond these numbers, mixing might be unstable.



Note!

In the model **MMS-3000**, if the stirring element loses positioning, the motor drops the speed, positions the element and slowly picks up the speed. If mixing is still unstable due to high viscosity or large mixing volume, consider lowering mixing speed.

- 5.5. After finishing the operation, decrease the rotation speed to the minimum and turn the **Power** switch into position **Off**.
- 5.6. Disconnect the external power supply from the mains outlet.

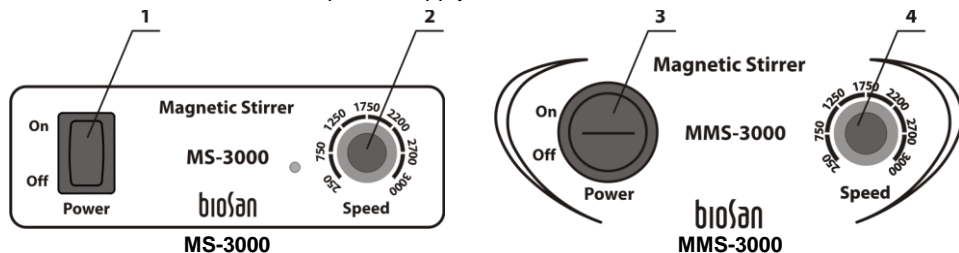


Figure 3. Control panel

6. Specifications

The unit is designed for operation in cold rooms, incubators (except CO₂ 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.

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

	MS-3000	MMS-3000
Speed control range	0–3000 rpm	
Maximum stirring volume (H ₂ O)	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	
Maximum continuous operation time ¹	24 h	
Working current / Power consumption	220 mA / 2.6 W	250 mA / 3 W
External power supply	in AC 100-240 V, 50/60 Hz, out DC 12 V	
Weight ²	0.8 kg	1.5 kg
Dimensions	120x150x65 mm	185x230x75 mm

Table 1. MS-3000 and MMS-3000 maximal speed in RPM, depending on H₂O volume and magnetic element length

Magnetic element length, mm	MS-3000		MMS-3000			
	2 L	5 L	2 L	5 L	15 L	20 L
25	3000	2400	3000	2800	2650	2600
50	700	700	1700	1500	1300	1250
70	—	—	620	530	440	360

¹ Maintain at least 1 hour long pause between prolonged continuous operations

² Accurate within ± 10%

7. Ordering information

7.1. Models and versions available:

Model	Version	Catalogue number
MS-3000	V.2AW	BS-010301-AAF
MMS-3000	V.3AW	BS-010305-AAF

7.2. To inquire about or order the replacement parts, contact Biosan or your local Biosan representative.

7.3. Replacement parts:

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

8. Care and maintenance

8.1. If the unit requires maintenance, disconnect the unit from the mains and contact Biosan or your local Biosan representative.

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

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

9. Warranty

- 9.1. The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 9.2. The warranted service life of the unit from the date of its delivery to the Customer is 24 months. For extended warranty, see **9.5**.
- 9.3. Warranty covers only the units transported in the original package.
- 9.4. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment report shall be compiled, certified and sent to the local distributor address. To obtain the claim form, visit **Technical support** page on our website at link below.
- 9.5. Extended warranty. For **MS-3000 MMS-3000**, the *Basic Plus* class models, extended warranty is a paid service. Contact your local Biosan representative or our service department through the **Technical support** section on our website at the link below.
- 9.6. Description of the classes of our products is available in the **Product class description** section on our website at the link below.

Technical support



biosan.lv/en/support

Product class description



biosan.lv/classes-en

- 9.7. 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	

10. EU Declaration of conformity

EU Declaration of Conformity

Unit type	Magnetic stirrers
Models	MS-3000, MMS-3000
Serial number	14 digits styled XXXXXXYYMMZZZZ, where XXXXXX is model code, YY and MM – year and month of production, ZZZZ – unit number.
Manufacturer	SIA BIOSAN Latvia, LV-1067, Riga, Ratsupites str. 7/2
Applicable Directives	EMC Directive 2014/30/EU LVD Directive 2014/35/EU RoHS2 2011/65/EU WEEE 2012/19/EU
Applicable Standards	<u>LVS EN 61326-1: 2013</u> Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements. <u>LVS EN 61010-1: 2011</u> Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements. <u>LVS EN 61010-2-051: 2015</u> Particular requirements for laboratory equipment for mixing and stirring.

We declare that this product conforms to the requirements of the above Directives



Signature

Svetlana Bankovska
Managing director

19.07.2016.

Date



Signature

Aleksandr Shevchik
Engineer of R&D

19.07.2016

Date

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