

# MS-3000, MMS-3000 High Speed Magnetic Stirrers



If you have any feedback on our products or services, we would like to hear from you.  
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## 1. About this edition of user instructions

1.1 The current edition of the user instructions applies to the following models:

Model	Version
<b>MS-3000</b> , high speed magnetic stirrer	V.2AW
<b>MMS-3000</b> , high speed magnetic stirrer	V.3AW

1.2 Edition 2.-3.03 – May of 2022

## 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.



**Caution! Magnetism!** Effects of a strong magnetic field on the biological systems have to be considered. Magnetic fields can affect heart pacemakers, data carriers, etc.

### 2.1 Icons used on the unit and packaging

	CE marking, manufacturer affirms conformity with European health, safety, and environmental protection standards, see <b>12.1</b>
	WEEE directive marking, see <b>12.1</b>
	Polarity of the power connector
	Equipment uses direct current

### 2.2 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 as described in section **9. Storage and transportation** on page 10.
- 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.

### 2.3 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 section **6. Specifications** on page 8.

- 2.4 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.
- 2.5 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** and **MMS-3000** high speed magnetic stirrers are designed for effective stirring of different viscosity liquids.

The unit 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:

- S-3000, high speed magnetic stirrer ..... 1 pce.
- Magnetic stirring element ..... 1 pce.
- External power supply ..... 1 pce.
- User instructions, declaration of conformity ..... 1 copy

4.2.2 MMS-3000:

- MMS-3000, high speed magnetic stirrer..... 1 pce.
- SR-1, attachable stand..... 1 pce.
- Magnetic stirring element ..... 1 pce.
- External power supply ..... 1 pce.
- User instructions, 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.

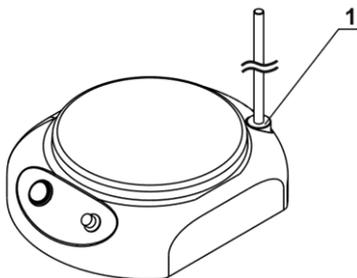


Figure 1. SR-1 stand for MMS-3000

## 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 centre 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.** The 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.

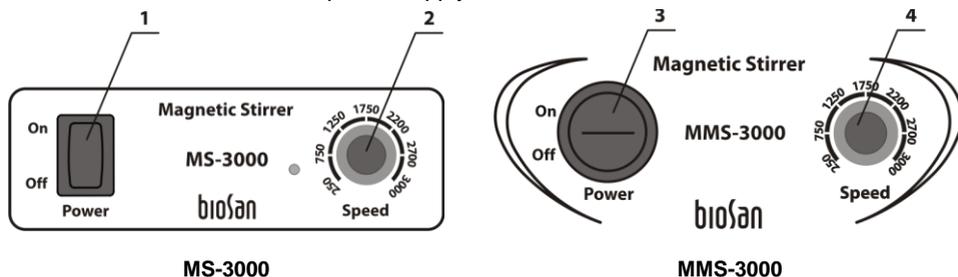


Figure 3. Control panel

## 6. Specifications

The unit is designed for operation in cold rooms, incubators (except CO<sub>2</sub> 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. Operating altitude above sea level is up to 2000 m.

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 <sub>2</sub> 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	24 h	



**Note.** Maintain at least 1 hour long pause between prolonged continuous operations.

Working voltage and current	12 V=, 220 mA	12 V=, 250 mA
Power consumption	2.6 W	3 W
External power supply	in 100–240 V~, 50/60 Hz, out 12 V=	
Weight, accurate within ± 10%	0.8 kg	1.5 kg
Dimensions	120x150x65 mm	185x230x75 mm

**Table 1. MS-3000 and MMS-3000 maximal speed in RPM, depending on H<sub>2</sub>O 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

## 7. Ordering information

### 7.1 Models and versions available:

Model	Version	Catalogue number
MS-3000, high speed magnetic stirrer	V.2AW	BS-010301-AAF
MMS-3000, high speed magnetic stirrer	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:

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 Service.

8.1.1 If the unit is disabled (e.g., no mixing, irregular mixing, etc.) or requires maintenance, disconnect the unit from the mains and contact Biosan or your local Biosan representative.

8.1.2 All maintenance and repair operations (except listed below) must be performed only by qualified and specially trained personnel.

8.1.3 Operating integrity check. If the unit follows the procedure described in section **Operation**, then no additional checks are required.

### 8.2 Cleaning and disinfection.

8.2.1 Use mild soap and water with a soft cloth or sponge for cleaning the exterior. Rinse remaining washing solution with distilled water. Wipe dry the excess water with clean, soft cloth or sponge.

8.2.2 To disinfect the plastic and metal parts, use 75% ethanol or DNA/RNA removing solution (e.g., Biosan PDS-250). After disinfecting, wipe the surfaces dry.

8.2.3 Stand and magnetic element are autoclavable, at 121°C, for 15 min, the unit itself is not autoclavable.

8.3 **Magnetic deterioration.** Improper magnetic stirring elements storage (e.g., storing several elements together, which causes unpredictable magnetic domain disorientation) is one of the reasons for deterioration of magnetic properties of the stirring element. The other reason is working at temperatures close to Curie point temperature of the elements, which is 200°C. To amend this, place the element on the working surface exactly in the centre in conformity with the poles. Leave the element for 8-12 hours for it to regain its initial characteristics.



8.4 **Disposal.** Disposal of the appliance requires special precautions and must be carried out at an appropriate disposal site, separate from normal household waste. To prevent pollution of the environment, all waste resulting from the disposal of the product must be collected and disposed of in the country of use, in accordance with the applicable requirements for the handling of electronic waste.

## 9. Storage and transportation

- 9.1 Store and transport the unit in a horizontal position (see package label) at ambient temperatures between -20°C and +60°C and maximum relative humidity of 80%.
- 9.2 After transportation or storage and before connecting it to the electric circuit, keep the unit under room temperature for 2-3 hrs.
- 9.3 For extended storage, the unit does not require special procedures.

## 10. Warranty

- 10.1 The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 10.2 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**.
- 10.3 Warranty covers only the units transported in the original package.
- 10.4 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.
- 10.5 Extended warranty. For **MS-3000** and **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.
- 10.6 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](https://biosan.lv/en/support)

### Product class description



[biosan.lv/classes-en](https://biosan.lv/classes-en)

- 10.7 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	Serial number	Date of sale
<b>MS-3000 / MMS-3000</b> , Magnetic stirrer		

- 10.8 **Production date.** Production date is placed in the serial number, on the label of the unit. Serial number consists of 14 digits styled XXXXXYYMMZZZZ, where XXXXXX is model code, YY and MM – year and month of production, ZZZZ – unit number.

# 11. EU Declaration of conformity

11.1 High speed magnetic stirrers **MS-3000** and **MMS-3000** are in conformity with the following relevant Union legislations:

<b>LVD 2014/35/EU</b>	<b>LVS EN 61010-1:2011</b> Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements. <b>LVS EN 61010-2-051:2015</b> Particular requirements for laboratory equipment for mixing and stirring.
<b>EMC 2014/30/EU</b>	<b>LVS EN 61326-1:2013</b> Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.
<b>RoHS3 2015/863/EU</b>	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
<b>WEEE 2012/19/EU</b>	Directive on waste electrical and electronic equipment.

11.2 Declaration of Conformity is available for download on the page for the relevant model on our website by links below, in the **Downloads** section:



[MS-3000](#)



[MMS-3000](#)

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