

Microspin 12 High-speed Mini-centrifuge



Contents

1.	Safety precautions.....	4
2.	General information	5
3.	Getting started	6
4.	Operation.....	8
5.	Specifications	10
6.	Maintenance	11
7.	Warranty and Claims	12
8.	Declaration of Conformity	13

1. Safety precautions

The following symbol means:



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.

GENERAL SAFETY

- Use only as specified in the Operating Manual provided.
- Do not use the unit if dropped or damaged.
- After transportation or storage and before connecting it to the mains, keep the unit under room temperature for 2-3hrs.
- 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 to the 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 switch and external power supply are 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.
- Disconnect the external power supply from power socket to turn off the unit.
- If liquid penetrates into the unit, disconnect it from the external power supply 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 operate the unit without rotor protection lid.
- 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 use rotor or adapters with visible signs of corrosion, wear or mechanical damage.
- Do not operate the unit if it is faulty or has been installed incorrectly.
- Do not use outside laboratory rooms.
- Ensure that no persons and/or dangerous materials are located within a safety zone of 300 mm around the equipment when the centrifuge is running.
- Do not centrifuge flammable or chemically vigorously reactive materials.
- Do not fill in the tubes after they are inserted in the rotor.

- Do not fill centrifuge rotor over the capacity specified by the manufacturer (see the Specifications section).
- Use only original accessories provided by the manufacturer.
- Rotor must always be fixed securely. Stop the operation immediately by pressing the Run Stop button if any unusual noise occurs during acceleration, which can be due to improper rotor fixation.

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

Microspin 12 high-speed mini-centrifuge is nice example of a good quality instrument for components separation, which can be used for extracting RNA/DNA samples, separation of cell suspensions and for the others micro quantitative analyses.

Microspin 12 has a spherical bioform shape and its compact footprint requires limited space on the laboratory bench. Centrifuge has a single, aluminium fixed rotor, which spins up to 14500 rpm, that is approximately 12400g. The rotor can accommodate up to 12 x 2 ml (or smaller) microtubes (such as Eppendorf, Axygen, etc.). Adapters for 0.5 ml and 0.2 ml microtubes are included in the standard set. The enlarged lid for the rotor, MSL-SC, allows centrifuging spin columns.

Microspin 12 is equipped with an efficient fan system, which provides constant air-cooling for the rotor to reduce the risk of sample overheating during operation. There is only a slight sample temperature elevation during longer centrifugation periods (e.g. 10°C after 20 min. at maximal rotation speed).

Rotor can be removed and autoclaved, it is equipped with protection lid. This is extremely useful as it provides additional protection against RNase degradation during RNA isolation procedures.

Microprocessor control provides precise control of the set and actual parameters and user-friendly interface with straightforward set-up. LCD screen indicates two lines of set and actual values:

- centrifugation time;
- centrifugation speed;
- relative centrifugal force.

Brushless motor provides quiet vibration free performance even at high speeds and long product service life. Metal protective inserts and enclosures inside the body and lid of the centrifuge as well as automatic imbalance switch-off and lid locking mechanism provide safe operation throughout the speed range. Sound signal indicates when centrifugation is completed.

Due to its external power supply, Microspin 12 can be safely used in cold rooms (from +4 °C to 15 °C).

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.

Warranty covers only the units transported in the original package.

3.2. Complete set. Package contents:

- Microspin 12 High-speed Mini-centrifuge 1 pce
- MSR-12 rotor ❶ with MSL-SC lid ❷ and securing nut..... 1 pce
- A-05 adapters for 0,5 ml tubes ❸ 12 pcs
- A-02 adapters for 0,2 ml tubes ❹ 12 pcs
- pin for the lid unblocking (screwed in rear panel of the unit) ❺..... 1 pce
- wrench for rotor removing ❻..... 1 pce
- external power supply..... 1 pce
- power cord..... 1 pce
- Operating manual, Certificate 1 copy



3.3. Set up:

- place the centrifuge on even stable surface;
- remove protective film from the display;
- connect the power cord to the external power supply.
- plug the power cord into the socket on the rear, and position the centrifuge so that there is easy access to the power switch and connector;
- according to EN 61010-2-20, people and hazardous materials must not be within a 300 mm area around the device during the centrifuge operation.
- do not place any objects in front of the ventilation slots underneath and 100 mm behind the centrifuge.

3.4. Rotor and adapter installation:

- connect the centrifuge to a properly grounded power socket. Switch ON the power switch (I position) on the rear.
- press the Open key (fig.3/1) and open the outer lid lifting it upwards by hand.
- unscrew a fixation nut counter clockwise using the wrench included in standard set and remove it.
- place the rotor (fig.1/1) and secure it tightly with the fixation nut, placing the nut with the key holes up (fig.1/2) and turning it clockwise by securing wrench.
- insert adapters in the rotor sockets if it is necessary.
- place the rotor lid on the rotor pressing the lid holder down tightly (fig.2/1).
- close the outer lid.
- turn OFF the centrifuge with switch on the rear (position O).

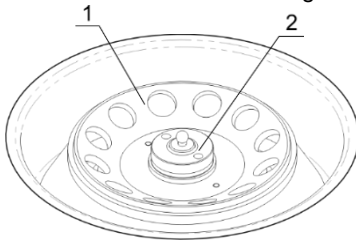


Fig. 1. Rotor installation

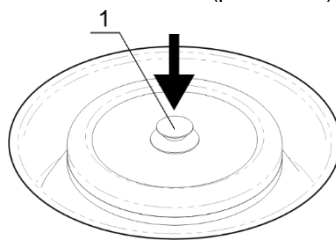


Fig. 2. Rotor lid installation

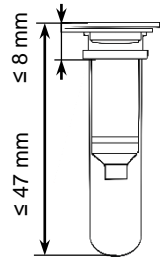
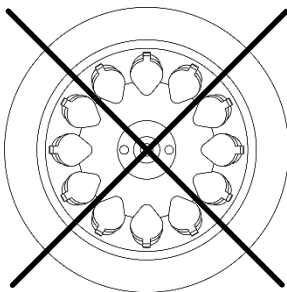


Fig. 3.

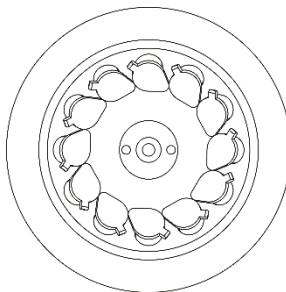
3.5. Spin column installation.

The height of the spin column must be 47 mm or less, and the portion above the rotor must be 8 mm or less, see figure 3 for explanation.

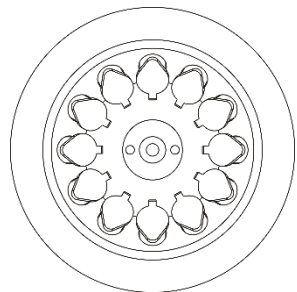
When loading spin columns, ensure that spin column hinges are not pointed outwards. Otherwise, rotor lid cannot close properly. See figure 4 for explanation.



X Wrong



✓ Correct



✓ Correct

Fig. 4. Loading spin columns

4. Operation

Recommendation during operation



Use even number of tubes arranged symmetrically (one opposite another) when loading to give the unit even balance during operation. The opposite tubes must be filled up equally.

Recommended time interval between operation sessions:

for 15 min operation session — 10 min,

for 30 min operation session — 15 min.

- 4.1. Check the external power supply power cord for any signs of damage preliminary and replace if necessary. Connect the power cord to a properly grounded power socket. Set the power switch on the rear side to I position (ON).
- 4.2. The centrifuge switches on and the following readouts show on the display:
 - previously set time, speed and relative centrifugal force, accordingly the set speed in the upper line (Set);
 - mode indication (STOP — means that the lid is closed and the rotor is stopped) and current speed - 0 rpm and correspond centrifugal force in the lower line (Actual).
- 4.3. Press the **Open** key (fig. 5/1) and open the outer lid by lifting it upwards by hand. The display shows OPEN (see figure 5). The lid can be opened only when the rotor is stopped.
- 4.4. Remove the rotor lid lifting the lid holder up.
- 4.5. Check the rotor for any signs of wear and replace if necessary. Insert EVEN number of tubes in rotor one opposite another. The opposite tubes must be filled equally.



Note!

When loading spin columns, ensure that spin column hinges are not pointed outwards. Otherwise, rotor lid cannot close properly. See figure 4 for explanation.

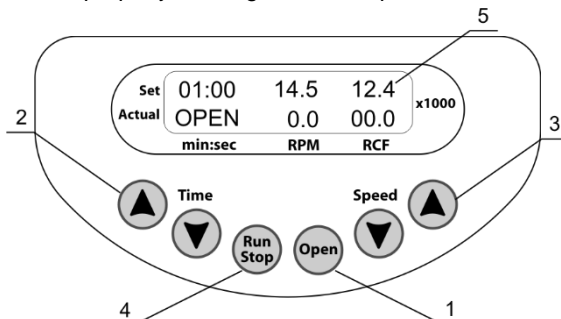


Fig. 5. Control panel

- 4.6. Place the rotor lid on the rotor pressing the lid holder down tightly. Close the outer lid (the clicking sound of the lock and readings STOP in the lower line of the display indicate that the lid is closed, see fig. 6).
- 4.7. Use the ▲ and ▼ **Time** keys (fig. 5/2) to set the required time interval.
- 4.8. Use the ▲ and ▼ **Speed** keys (fig. 5/3) to set the required speed and required centrifugal force, using the centrifugal force readings (fig. 5/5). These parameters can also be adjusted during operation.



Note! Some plastic tubes can be damaged at higher speeds. Refer to the tube material specifications to make sure that it will not get damaged at the set speed.

- 4.9. Press the **Run Stop** key (fig. 5/4) to start centrifugation. Blinking RUN indication and current speed is displayed in the lower line (fig. 7). The timer in the upper line starts countdown after the set speed is achieved (stable RUN indication).



Note! If the rotor imbalance occurs causing vibration the centrifuge will stop automatically (IMBALANCE indication will be shown). After the rotor is stopped, open the lid and remedy the cause of imbalance.

- 4.10. Centrifugation is stopped automatically after the set time elapses (while braking display shows blinking indication STOP (fig. 6). A sound signal is emitted after full stop of the rotor (press the **Run Stop** key (fig.3/4) to stop the signal).
- 4.11. Centrifugation can be stopped before the set time elapses if necessary by pressing the **Run Stop** key. The set time interval will be shown on the display.
- 4.12. After finishing the operation, turn off the centrifuge with switch (O position) on the rear. Disconnect the device from the mains.



Note! The electrical lid lock allows opening the lid only when the unit is connected to the mains and is turned on. Do not force the lid to open when the unit is switched off!

- 4.13. Emergency opening.
Disconnect the power cord from the mains. Wait until the centrifuge full stopping. Find the emergency opening slot on the right side of the unit. Insert the pin for unblocking the lid (screwed in rear panel of the unit) into the emergency opening slot and press until the lid opens.

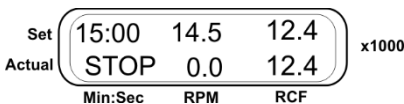


Fig. 6. Control panel in stop mode

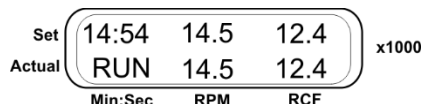


Fig. 7. Control panel in run mode

5. Specifications

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.

- 5.1. Rotor imbalance automatic diagnostics
(emergency stoppage, IMBALANCE indication)
- 5.2. Speed control range 1000 — 14500 rpm
- 5.3. Speed setting resolution 100 rpm
- 5.4. Relative centrifugal force control range 50 — 12400 x g
- 5.5. Digital time setting 15s — 30 min
- 5.6. Time setting resolution
 - Shorter than 1 min 15 s
 - 1 min and longer 1 min
- 5.7. Acceleration time up to 14500 rpm* 20 s
- 5.8. Slowdown time, not more 10 s
- 5.9. Display LCD
- 5.10. Standard **MSR-12** rotor capacity for 12 x 1.5/2 ml tubes
- 5.11. Maximum tube height
 - Above the rotor ≤ 8 mm
 - Full tube ≤ 47 mm
- 5.12. Maximum rotor load 36 g
- 5.13. Dimensions 200x240x125 mm
- 5.14. Input current/power consumption 24 V, 2,5 A/60 W
- 5.15. External power supply input AC 100—240 V 50/60 Hz, output DC 24 V
- 5.16. Weight** 3.5 kg

Replacement parts	Description	Catalogue number
A-05	Adapter for 12x0.5 ml microtubes	BS-010213-AK
A-02	Adapter for 12x0.2 ml microtubes	BS-010213-BK
MSL-SC	higher rotor lid to accommodate spin columns	BS-010213-EK

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

* Accurate within ± 8 s.

** Accurate within ± 10%.

6. Maintenance

- 6.1. If the unit requires maintenance, disconnect the unit from the mains 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 disinfection of the unit.
For rotor cleaning, it is necessary to do the following operations:
 - if the centrifuge is switched on, press the Open key (fig.1/1) and open the outer lid lifting it upwards with a hand;
 - if the centrifuge is switched off the mains, find the emergency opening slot on the right side of the unit. Insert the pin for unblocking the lid (screwed in rear panel of the unit) into the emergency opening slot and press until the lid opens;
 - remove the rotor lid lifting the lid holder up;
 - hold the rotor with one hand and turn a fixation nut counter-clockwise to release the rotor with the help of wrench included in standard set;
 - release the rotor and clean it;
 - the rotor is autoclavable (120°C, 20 min).



Note!

Due to frequent autoclaving the rotor label can be damaged or unstuck. If necessary, a new label can be requested from the manufacturer or your local distributor.

- after cleaning install the rotor, secure it carefully turning the rotor fixation nut tightly;
- place the rotor lid on the rotor pressing the lid holder down. Close the outer lid.

7. Warranty and Claims

- 7.1. The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 7.2. The warranted service life of the unit from the date of its delivery to the Customer is 24 months. Contact your local distributor to check availability of extended warranty.
- 7.3. Warranty covers only the units transported in the original package.
- 7.4. 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.
- 7.5. 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	Microspin 12 High-speed Mini-centrifuge
Serial number	
Date of sale	

8. Declaration of Conformity

Declaration of Conformity

Equipment name:	Microspin 12
Type of equipment:	High-speed Mini-centrifuge
Directive:	EMC Directive 2014/30/EC Low Voltage Directive 2014/35/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 61010-2-20: Particular requirements for laboratory centrifuges.

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



Signature
Svetlana Bankovska
Managing director

28.01.2015

Date



Signature
Aleksandr Shevchik
Engineer of R&D

28.01.2015

Date

Biosan SIA

Ratsupites 7, build.2, Riga, LV-1067, Latvia
Phone: +371 67426137 Fax: +371 67428101

<http://www.biosan.lv>

Edition 3.03 - April 2016