

Microspin 12 Plus

High-Speed Mini-Centrifuge



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 and name	Version
Microspin 12 Plus, high-speed mini-centrifuge	V.1AW

1.2. Edition 4.02 – July of 2024.

2. Safety precautions

2.1. Symbols used in these instructions:



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.

2.2. Icons used on the unit and packaging

	CE marking, manufacturer affirms conformity with European health, safety, and environmental protection standards, see 11.1
	WEEE directive marking, see 11.1
	Polarity of the power connector
	Equipment uses direct current
	Do not use without lid. Secure the safety cover and the lid as described in 4.4
	Emergency opening location, see 5.14

2.3. General safety

- Use the device and accessories only for the purposes specified by the manufacturer in these instructions. Otherwise, the protection provided by the device may be impaired.
- Only use accessories (rotors, adapters, etc.) that are recommended or supplied by the manufacturer. Otherwise, the protection provided by the device may be impaired.
- Save the unit from shocks and falling.
- Store and transport the unit as described in section **Storage and transportation**.
- 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.

2.4. 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.
- 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 **Specifications**.

2.5. During operation

- 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.
- Do not leave the operating unit unattended.
- Do not operate the unit without rotor protection lid.
- Do not use rotors with visible signs of corrosion, wear or mechanical damage.
- Observe the safety area of 300 mm around the unit. Personnel and hazardous materials must not be located in the safety area whilst the unit is operating.
- Do not centrifuge flammable or chemically active substances. If such liquids are spilled on the rotor or rotor chamber, the centrifuge must be cleaned with a moist cloth and a mild soap solution.
- 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 in section **Specifications**.
- 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.

2.6. Biological safety

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

3. General information

Microspin 12 Plus 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.

The centrifuge has a spherical bioform shape and its compact footprint requires limited space on the laboratory bench. Centrifuge rotors spin up to 16250 rpm, which is approximately 15588g. Centrifuge detects installed rotors automatically.

The **MSR-12** 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-12, allows centrifuging spin columns.

The strip rotor **MSR-16** (the lid MSL-16 is included) can hold up to two 8 x 0.2 ml PCR strip rows or 16 individual 0.2 ml PCR tubes.

Microspin 12 Plus 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).

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.

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

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. Standard set

- **Microspin 12 Plus**, High-speed Mini-centrifuge..... 1 pce
- MSR-12 rotor with MSL-12 lid and securing nut 1 pce
- A-05 adapters for 0.5 ml tubes, 12 pcs.....1 set
- A-02 adapters for 0.2 ml tubes, 12 pcs.....1 set
- Pin for the lid unblocking (in the rear panel of the unit)..... 1 pce
- Wrench for rotor fixation 1 pcs
- External power supply 1 pce
- Power cable 1 pce
- User instructions, declaration of conformity 1 copy

4.2.2. Optional accessories – on request:

- MSR-16 rotor with MSL-MT lid and securing nut 1 pce



MSR-12



MSL-12



MSR-16



MSL-16



A-05



A-02



Wrench for rotor fixation



Lid pin

4.3. Setup.

- Place the unit on horizontal even working surface.
- Remove the protective film from the display.
- Connect the power cable to the external power supply.
- Connect the external power supply unit into the socket at the rear side of the unit and position the unit for easy access to the external power supply and the power switch.
- 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.

4.4. Rotor and adapter installation:

- Connect the centrifuge to a properly grounded power socket. Switch on the power switch (position I) on the rear.
- Press the **Open** key (fig. 6/5) 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 lid on the rotor and firmly press the holder down around the latch (fig. 2/1).
- Firmly press on the covering lid in two places over both hinges to close it. The clicking sound of the lock and the indication **STOP** in the lower line of the display (see figure 6) confirm that the lid is closed.
- Turn off the centrifuge with switch on the rear (position O).

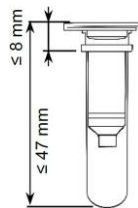
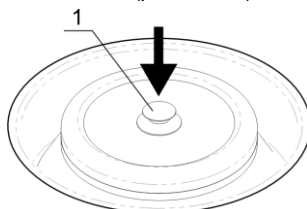
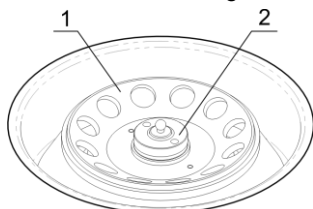
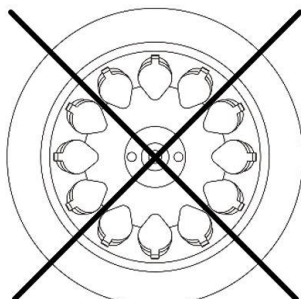


Figure 1. Installing the rotor

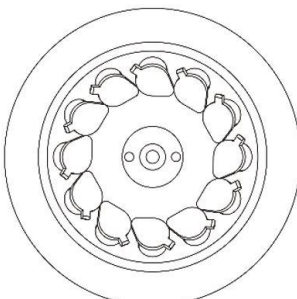
Figure 2. Installing the rotor lid

Figure 3.

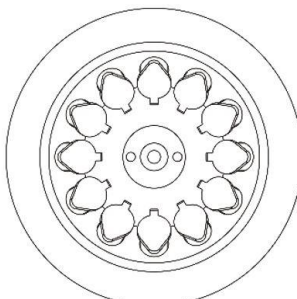
- The height of the spin column must be 47 mm or less, and the portion above the rotor must be 8 mm or less, see figure 3 for explanation.
- When loading spin columns in the **MSR-12**, ensure that spin column hinges are not pointed outwards. Otherwise, rotor lid cannot close properly. See figure 4 for explanation.



Wrong



Correct



Correct

Figure 4. Loading spin columns

5. Operation

5.1. Recommendations during operation.



Caution! Insert tubes in the rotor sockets, maintaining balance. The opposite tubes must be filled equally.

- Recommended time interval between operation sessions:
 - for 15 min operation session – 10 min,
 - for 30 min operation session – 15 min.

5.2. 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).

5.3. The centrifuge switches on, rotor is detected automatically, and the following readouts show on the display (fig 5/1):

- Currently installed rotor (here: MSR-12) and previously set speed (in RPM, 1000r) in the upper line.
- Current status (■ stopped and ■ lid locked), set time (90 minutes) and current speed in RPM (0r) in the lower line.

5.4. Press the **Open** key (fig. 5/1) and open the outer lid by lifting it upwards by hand. The display shows ■ (see figure 5). The lid can be opened only when the rotor is stopped.

5.5. Remove the rotor lid by lifting the lid holder up.

5.6. Check the rotor for any signs of wear and replace if necessary. Insert tubes symmetrically to the centre of the rotor. 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.

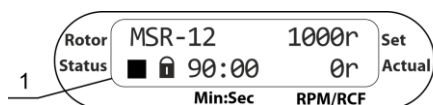


Figure 5. Control panel

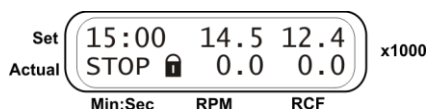


Figure 6. Quick spin

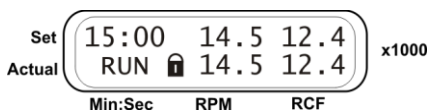


Figure 7. Long spin

5.7. Place the rotor lid on the rotor and firmly press the lid holder down around the latch (fig. 2/1). Firmly press on the covering lid in two places over both hinges to close it. The clicking sound of the lock and the indication STOP with a lock icon in the lower line of the display (see figure 6) confirm that the lid is closed.

5.8. Quick spin.

5.8.1. Press and hold the **Run Stop** key (fig. 5/3). After 3 seconds, centrifugation starts. Display changes:

- Indication QS in the middle and maximum speed in RCF for the currently installed rotor on the upper line;
- Indication ► (blinking when the rotor is running up, steady when the speed is reached), timer as 00:00 and actual speed in RCF on the lower line.



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.

5.8.2. Release the **Run Stop** key to stop. Rotor spins down and display shows blinking ■ when the rotor is winding down, steady ■ when the rotor stops, accompanied by a short sound signal. Unlock the lid by pressing the **Open** key (fig. 5/5).

5.9. Long spin.

5.9.1. Use the ▲ and ▼ **SELECT** keys (fig. 5/2) to choose the parameter to edit. The selected parameter is blinking.

5.9.2. Use the - and + keys (fig. 5/4) to change the selected parameter:

- Centrifugation speed value;
- Centrifugation units in RPM (indication r) or RCF (g);
- Timer.



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.

5.9.3. Press the **Run Stop** key (fig. 5/3) to start centrifugation. Blinking ► indication and current speed is displayed in the lower line (fig. 7). The timer in the upper line starts count-down after the set speed is achieved (steady ► 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.

5.9.4. Centrifugation stops automatically after the set time elapses. While braking, display shows blinking ■. A sound signal is emitted after full stop of the rotor. Press the **Run Stop** key to stop the signal. Unlock the lid by pressing the **Open** key (fig. 5/5).

5.10. 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.

5.11. After finishing the operation, turn off the centrifuge with switch (O position) on the rear. Disconnect the device from the mains.



Note.

Lid is unlocked only when the unit is powered. Connect the external power supply to the grounded mains socket to switch on the unit. Do not force the lid open.

5.12. **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.

6. Specifications

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

6.2. Centrifugation specifications

Rotor imbalance automatic diagnostics	emergency stop, IMBALANCE indication
Speed control range	1000–16250 rpm (increment 100 rpm)
Relative centrifugal force control range	53–15588g
Digital time setting	15 s – 90 min
Time setting resolution	
Shorter than 1 min	15 s
1 min and longer	1 min
Acceleration time to 16250 rpm, accurate within ±8s	20 s
Slowdown time to 0 rpm, not more	10 s

6.3. General specifications

Display.....	LCD
Standard MSR-12 rotor capacity	12 x 1.5/2 ml tubes
Maximum tube height	
Above the rotor	≤ 8 mm
Full tube.....	≤ 47 mm
Maximum rotor load.....	36 g
Dimensions	200x240x125 mm
Weight, accurate within ±10%	3.5 kg
Input current	24 V~, 2.5 A
Power consumption.....	60 W
External power supply	input 100–240 V~, 50–60 Hz, output 24 V=

6.4. Workroom requirements

Workroom description	Indoors, cold rooms, incubators (except CO ₂ incubators) and closed laboratory rooms
Temperature range	+4 °C ... +40 °C
Humidity requirements	Maximum of 80% RH at 31 °C, decreasing linearly to 50% RH at 40 °C. Non-condensing atmosphere.
Operating height, maximum	2000 m ASL
Overvoltage category	II
Pollution degree	2

7. Ordering information

7.1. Models and versions available:

Model	Version	Catalogue number
Microspin 12 Plus , high-speed mini-centrifuge	V.1AW	BS-010218

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

7.2.1. Optional accessories:

Description	Catalogue number
MSR-16, rotor for 8 × 0.2 ml PCR strip rows or 16 x 0.2 ml PCR tubes	BS-010218-AK

7.2.2. Replacement parts:

Description	Catalogue number
A-05, set of 12 adapters for 0.5 ml tubes	BS-010213-AK
A-02, set of 12 adapters for 0.2 ml tubes	BS-010213-BK
MSL-12, high lid	BS-010213-EK

8. Care and maintenance

8.1. Service.

8.1.1. If the unit is disabled (e.g., no centrifugation or vortexing, no reaction to key presses, 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 parts, use 75% ethanol or DNA/RNA removing solution (e.g., Biosan PDS-250). After disinfecting it is necessary to wipe the surfaces dry.

8.2.3. For rotor cleaning: if the centrifuge is switched on, press the **Open** key (fig. 5/1) and open the outer lid lifting it upwards with a hand. If the centrifuge is disconnected from 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 by 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. After cleaning install the rotor, secure it carefully turning the rotor fixation nut tightly. Close the rotor lid and the covering lid as described in **5.7**. Unpower the unit, if necessary.

8.2.4. The rotor is autoclavable, without the lid, at 120°C, for 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.

8.3. **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. Production date

- 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 **10.5**.
- 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 **Microspin 12 Plus**, the *Basic Plus* class model, 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

Product class description



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
Microspin 12 Plus , High-speed Mini-centrifuge		

- 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 mini-centrifuge **Microspin 12 Plus** is in conformity with the following relevant Union legislations:

LVD 2014/35/EU	LVS EN 61010-1:2011 + A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements. LVS EN 61010-2-020:2017 Particular requirements for laboratory centrifuges.
EMC 2014/30/EU	LVS EN 61326-1:2021 Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.
RoHS3 2015/863/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
WEEE 2012/19/EU	Directive on waste electrical and electronic equipment.

11.2. Declaration of Conformity is available on request.

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