Grant bio

Centrifuge/Vortexer Combi-spin PCV-2400

Operating instructions

For versions: V.3GA
V.3GC
V.3G3

Contents

1. Safety

1.1 Caution symbol

The following symbol means:
Caution! Make sure you have fully read and understood the present operating instructions before using the equipment. Please pay special attention to sections marked by this symbol.

1.2 Safety features

The PCV-2400 is constructed so as to meet the requirements of international safety standard IEC 61010-2-020: Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-020: Particular requirements for laboratory centrifuges, and national standards based on it, including:

EN 61010-2-020;

BS EN 61010-2-020;

A copy of the Declaration of Conformity with CE requirements is included at the back of this manual.

Particular safety features include:

- A microswitch that prevents the centrifuge motor from being started while the lid is open;
- An interlock that prevents the lid from being opened until the rotor has slowed down.

1.3. Safety precautions

GENERAL SAFETY

- Use only as specified in the Operating Instructions provided.
- The unit should not be used if dropped or damaged.
- After transportation or storage keep the unit under room temperature for 2–3 hrs before connecting it to the 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 electric circuit with voltage corresponding to that on the serial number label.
- Do not plug the unit into an ungrounded power socket, and do not use an ungrounded extension lead.
- Ensure that the plug is easily accessible during use.
- Disconnect the unit from the electric circuit before moving.
- Disconnect the power cord plug from the power socket to turn off the unit.
- If liquid penetrates into the unit, disconnect it from the electric circuit and have it checked by a repair and maintenance technician.

DURING OPERATION

- Do not open the lid during work, run-up or run-down of the rotor.
- Do not operate the unit in environments with aggressive or explosive chemical mixtures.
- Do not use rotors 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.

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

The Centrifuge/Vortexer Combi-spin PCV-2400 is specially designed for life science research. It can be used in biochemical, microbiological and industrial biotechnology laboratories.

The PCV-2400 makes it possible to centrifuge a batch of samples and at the same time mix other samples using the concave cup, which is driven by the same drive shaft as the centrifuge.

The PCV-2400 is designed for handling small quantities of liquid. Examples include micro quantity enzyme reactions; mixing in microtubes prior to incubation, and in dry block heaters and coolers. It can help to save working space in laminar flow or PCR boxes.

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. PCV-2400 standard set includes:

- Centrifuge/Vortexer PCV-2400 .....1 pce.
- Rotor R-05-02 12 x 0.5ml + 12 x 0.2ml ❶ .....1 pce.
- Rotor R-15 12 x 1.5ml ❷ .....1 pce.
- Concave cup 18090 ❻ .....1 pce.
- Spare Fuse .....1 pce.
- Operating instructions, Declaration of conformity .....1 copy

Optional accessories:

- rotor PR2-05 8 x 1.5/2.0ml + 8 x 0.5ml ❸ .....on request
- rotor PR2-05-02 6 x 1.5/2.0ml + 6 x 0.5ml + 6 x 0.2ml ❹ .....on request
- rotor PSR-16 2 x 8 well strips or 0.2ml ❺ .....on request

3.3. Set up:

- place the unit on an horizontally even working surface;
- position the unit so that there is easy access to the plug.
- 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.

3.4. Rotor replacement

The unit is provided with the fixation mechanism for all the types of the above mentioned rotors; The operator can easily change the rotor for the desired type of tubes in ❸–❺ s. To change a rotor hold it with one hand and turn the concave cup (fig.1/❷) counterclockwise to set rotor free. Change the rotor and re-attach the concave cup by turning until secure.

4. Operation of PCV-2400

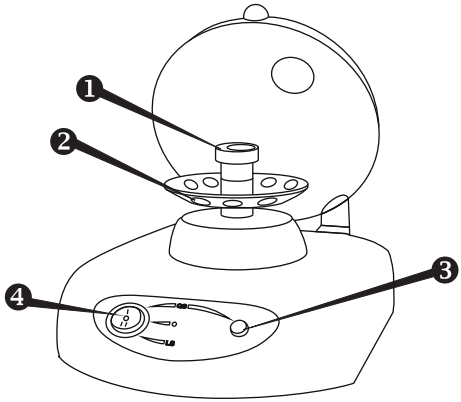
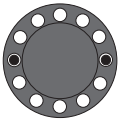


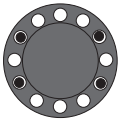
Fig.1 General view

Recommendation during operation

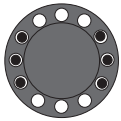
Check the rotor for any signs of wear and replace if necessary. Insert EVEN number of tubes in rotor one opposite another. The opposite tubes must be filled equally.



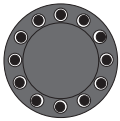
2 TUBE ARRANGEMENT



4 TUBE ARRANGEMENT



6 TUBE ARRANGEMENT



FULL ARRANGEMENT

4.1. Connect unit to a properly grounded power socket.

4.2. Operation in the quick centrifugation mode:

4.2.1 Turn the switch (Fig.1/❹) into position I (**QS**, Quick Spin).

4.2.2 Open the lid and place EVEN number of tubes to the rotor sockets (Fig.1/❷) opposite one another. Close the lid.

4.2.3 Press the **QS** (Fig.1/❸) button for quick mixing / spinning and hold it pressed for the desired time. The unit will automatically stop when the **QS** button is released.

Note! Do not open the lid whilst the rotor is moving. The unit stops automatically when the lid is opened.

4.2.4 Turn the switch (Fig. 1/❹) into position O (OFF).

4.3. Operation in the vortex mode:

4.3.1 Turn the switch (Fig. 1/❹) into position I (**QS**).

4.3.2 Gently holding a tube with fingers at its upper part press the tube's lower part to the vortex head cavity bottom (Fig.1/❶).

4.3.3 Press **QS** button for mixing and hold it pressed until full sediment dissolution.

Caution! Please note that the mixing effectiveness is dependent on the angle of the tube and the pressure applied.

To avoid premature wear of the vortex head and plastic tube's surfaces don't press tubes to the vortex head with too much force.

4.3.4 Turn the switch (Fig. 1/❹) into position O (OFF).

4.4. Operation in the long centrifugation mode:

4.4.1 Open the lid and place EVEN number of tubes to rotor sockets (Fig.1/❷) opposite one another. Close the lid.

4.4.2 Turn the switch (Fig. 1/❹) into position II (**LS**, Lon Spin) to start centrifugation.

4.4.3 Turn the switch into position O (OFF) to stop centrifugation.

4.5. Disconnect unit from the electric circuit.

5. Specifications

The product is designed for operation indoors in a laboratory at altitudes up to 2000 m, with ambient temperature from +4°C to +40°C and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

- Fixed rotation speed .....2800 rpm (50 Hz)
  3500 rpm (60 Hz)
- Acceleration time to max. speed .....5 sec
- Maximum continuous operation time..... 60 min
- Dimensions .....190x235x125 mm
- Nominal operating voltage/ Consumed power .....230 V; 50 Hz; 30 W (0.13 A),
- 230 V; 60 Hz; 25 W (0.1 A) or 120 V; 50/60 Hz; 30 W (0.27 A)
- Weight*.....1.7 kg

  * Accurate within ±10%.

Optional accessories	Description
PR2-05	rotor for 8 x 2.0 ml + 8 x 0.5 ml microtest tubes
PR2-05-02	rotor for 6x2,0 ml + 6x0.5 ml + 6x0.2 ml microtest tubes
PSR16	rotor for 2 strips 8 x 0,2 ml microtubes

Replacement parts	Description
R-15	rotor for 12 x 1.5 ml microtest tubes
R-05-02	rotor for 12 x 0.5 + 12 x 0.2 ml microtest tubes
18090	concave cup with 2 mm eccentric

Grant is committed to a continuous programme of improvement, specifications may be changed without notice.

6. Maintenance

6.1 Cleaning and Disinfection

Clean the centrifuge with a damp cloth, using water only. In particular ensure that the sucker feet are kept clean. Do not use chemical cleaning agents. Standard ethanol (75%) can be used for disinfection. Before using any other cleaning or decontamination method, check with the manufacturer or supplier to make sure that the proposed method will not damage the equipment.

6.2 Routine maintenance and inspections

There are no user-serviceable parts inside the unit. For all maintenance and repairs (except as defined below) return to our service department in the UK or in other countries, our distributor.

6.1.1 Maintenance

Inspect the spin plate and vortex head for mechanical damage/wear. Worn or damaged parts should not be used and must be replaced. Replacement spin plates and vortex heads can be obtained from Grant, but wear/damage to the centrifuge drive shaft will necessitate its return to Grant, or its agent, for repair.

6.1.2 Routine Safety checks

If routine tests are to be made, we recommend a test of the integrity of the protective earth conductor and an insulation test at 500 Vdc. Routine flash tests are not recommended for any electrical equipment, because repeated high voltage tests degrade insulation materials.

Values for tests:
Earth continuity 0.1 Ohm max.
Insulation resistance 10 M Ohm min.

6.1.3 Fuse replacement

Disconnect the unit from the mains power supply. Open the fuse holder located on rear side of the unit by turning its cover counter-clockwise. Replace with the correct fuse.

Fuse ratings
240 V centrifuge.....20mm x 5mm, F250 mA (250V~)
110 V centrifuge.....20mm x 5mm, F500 mA (250V~)

7. Guarantee and Service

7.1 Guarantee

When used in laboratory conditions and in accordance with these working instructions, this centrifuge is guaranteed for TWO YEARS against faulty materials or workmanship.

7.2 Service

Equipment requiring repair should be sent to our Service Department in the UK or in other countries to our distributor.

Declaration of Conformity

Manufacturer:	BIOSAN LTD. Ratsupites 7, build.2, Riga, LV-1067, Latvia
Equipment name/type number:	PCV-2400
Description of Equipment:	Centrifuge/Vortexer Combi-spin
Directive:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC

Applied Standards Harmonized Standards:	EN 61326-1:2006 Electrical equipment for measurement, Control and laboratory use - EMC requirements General requirements EN 61010-1:2001 Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements EN 61010-2-020:2003 Particular requirements for laboratory centrifuges.

I declare that this apparatus conforms to the requirements of the above Directive(s)

Dated 01.12.2011

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