

Grant-bio

Centrifuge/Vortexer Multi-spin PCV-3000

Operating instructions



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1. Safety

The following symbols mean:-





















Caution: Read these operating instructions fully before use and pay particular attention to sections containing this symbol

Always observe the following safety precautions.

Care must be taken before every operating session, please check that;

- the Spin-plate is secured tightly.
- that the micro tubes are sealed correctly
- **Do not use if the Spin-plate cover has any cracks or chips.**
- **Do not open the lid until Spin-plate has stopped revolving.**

-  When sitting the PCV-3000 in the laboratory ensure that the unit is level and will not slide once in operation.
-  Ensure that there is a clear working area around the PCV-3000 of at least 10 to 20 centimetres.
-  Although the PCV-3000 can be programmed for unattended use, we advise that the unit should be supervised during operation.
-  All operators of the PCV-3000 should protect themselves against contamination from any hazardous materials that are used during the operation of the unit.
-  Use only as specified by the operating instructions, or the intrinsic protection may be impaired.
-  After transport or storage in humid conditions, dry out the unit before connecting it to the supply voltage. During drying out the intrinsic protection may be impaired.
-  If you are using more than one type of Grant Bio product, be aware that the PSU connections are common throughout the range of units. Therefore, before connecting the unit to the PSU check Voltage and current ratings for the particular unit.
-  Connect only to a power supply with a voltage corresponding to that on the serial number label.
-  Ensure that the mains switch and isolating device (power supply connector) are easily accessible during use.
-  Connect only to a power supply which provides a safety earth (ground) terminal.
-  Before moving, disconnect at the power supply socket.

-  If liquid is spilt inside the unit, disconnect it from the power supply and have it checked by a competent person.
-  It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or inside the equipment.
-  Do not switch on PCV-3000 with the upper lid of the body removed.
-  Do not carry out operation in premises with aggressive and explosive chemical mixtures
-  Do not place a load exceeding 0.2 kg on PCV-3000.
-  Before using any cleaning or decontamination method except those recommended by the manufacturer, user should check with the manufacturer that the proposed method will not damage the equipment.
-  Clean the unit only with a damp cloth, do not use chemical cleaning agents.

2. General information

- 2.1** PCV-3000 Multi-Spin allows considerable time saving compared to PCV-2400 Combi-Spin by automatically performing a cycling program of micro sample mixing and spin according to the set Spin-mix-spin cycle (**SMS** algorithm) for 12 micro tubes simultaneously (see table below).
- 2.2** **SMS** spin cycle is needed for collecting micro samples distributed on the cover and walls of micro tubes after mixing. This will which give reproducibility in micro sampling (total volume of samples smaller than 100 ml).

SPECIFICATION	PCV-2400 COMBI-SPIN	PCV3000 COMBI-SPIN
G-forces	700 g	1000 g
Tube vortexing	1 tube individual	12 tubes simultaneously
Time of Spin-Mix-Spin cycle of 1 tube	0.80 min	0.20 min
Time of Spin-Mix-Spin cycle of 12 tube	4-5 min	0,5 min
Time of Spin-Mix-Spin cycle of 100 tube	32 min	2-3 min

2.3 PCV-3000 Multi -Spin is four devices combined in one:

- multitube centrifuge.
- multitube vortex (3 modes - low, medium, high; time setting).
- multitube centrifuge/vortex.
- centrifuge/vortex/centrifuge cycler for realisation of the **SMS** algorithm.

2.4 Areas of application:

- Reproducible Multi-tubes Vortexing ◆ Reproducible Spin-Mix-Spin cycling
- ◆ PCR samples premixing before thermo cycling u Micro sampling before enzymatic reaction
 - ◆ Cells permeabilization by chelating or hydrophobic agents for reaction in situ
 - ◆ Low solubility Drug testing u Cells washing from culture media after fermentation
 - ◆ Preparing a sample before loading into a gel for Electrophoresis ◆ Magnetic beads technology.

3. Getting Started

3.1 Unpacking

Remove packing materials carefully, and retain for future shipment or storage of the unit.

3.2 The PCV-3000 set includes:

- Centrifuge/Vortexer PCV-3000.....1 piece
- Spin-plate for 12 x 1.5/2 ml micro tubes.....1 piece
- Spin-plate for 12 x 0.5 + 12 x 0.2 ml micro tubes.....1 piece
- Vortex module.....1 piece
- Pin (for assisting in Spin-plate removal).....1 piece
- External AC/AC adapter 220V/12V, 1A.....1 piece
- Specifications; Operating Manual; CE Certificate.....1 copy

3.3 Replacement parts and optional extras

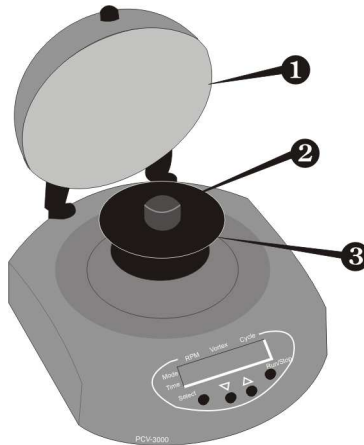
- **18091** Spin-plate for 12 x 1.5/2 ml micro tubes
- **18092** Spin-plate for 12 x 0.5 + 12 x 0.2 ml micro tubes
- **18090** Spin-plate fixing screw

- **PR2-05** Spin-plate for 8 x 2.0 ml + 8 x 0.5 ml micro tubes
- **PR2-2-05-02** Spin-plate for 6 x 2.0 ml + 6 x 0.5 ml + 6 x 0.2 ml micro tubes
- **PSR-16** Spin-plate for 2 x 8 well 0.2 ml micro tube strips

3.4 The Spin-plate is provided with a fixing mechanism; the operator can easily change the spin-plate for the desired type of tubes within 3-5 seconds.

To change a Spin-plate (③), insert the Pin into the recess of the fixing screw, hold the Spin-plate with one hand and turn the fixing screw (②) counter clockwise to release the Spin-plate. Change the Spin-plate, locate in the key slot and using the Pin secure tightly with fixing screw.

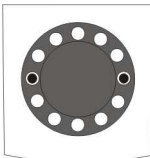
4. Operation of PCV-3000



4.1. Connect PCV-3000 to the AC/AC adapter and the adapter to the mains.

4.2. SMS operation

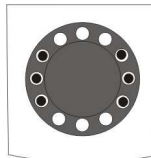
4.2.1 Open the lid (1) and place an even number of tubes into spin-plate sockets (3). To give the unit an even balance when in operation, the tubes need to be arranged as shown in the example below. Close the lid.



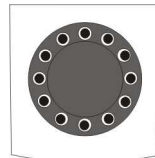
2 TUBE
ARRANGEMENT



4 TUBE
ARRANGEMENT



6 TUBE
ARRANGEMENT

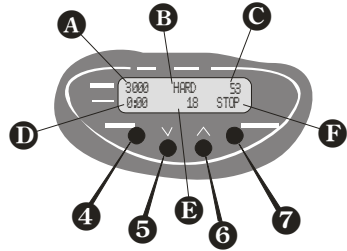


FULL TUBE
ARRANGEMENT

4.2.2 Parameter setting

Press Select key (4) to choose the parameter to change (the active parameter will flash on the display). Each press of the Select key will scroll through the available parameters (d to i).

Use ▾ and ▴ keys (5 & 6) to set the necessary value (note: if the key is pressed for more than 4 sec the display changes quickly).



4.2.3 The program can also be modified during operation. The microprocessor automatically enters the last modifications into the memory. The changes will take effect when the new cycle begins.

4.2.4 Set the necessary speed of spin (A), from 1000 to 3500 RPM (In steps of 100 RPM).

4.2.5 Set the time of spin (D), from 1 sec to 99 minutes. Selected times of less than 1 minute (increment in steps of 1 second). Selected times of more than 1 minute (increment in steps of 1 minute).

4.2.6 Set the vortexing strength, select from soft, medium and hard (e).

4.2.7 Set the time of vortexing (E), from 1 to 20 seconds (in 1 second steps).

4.2.8 Set the SMS cycle number (C, from 1 to 999 times).

4.2.9 Press Run/Stop key (7) to start the program.

4.2.10 The rotor motion begins and RUN will be displayed (F), also the cycle countdown (C) and the changing time values (D and E) will be displayed. (Note; countdown time D will not commence until the chosen spin speed A has been reached).

4.2.11 PCV-3000 automatically stops after the set number of cycles are performed (STOP F will blink on the display) and a sound signal will be audible at the end of the operation (press Run/Stop key to stop the signal).

4.2.12 For repeated operations of the program press Run/Stop key.


4.2.13 If necessary the PCV-3000 can be stopped at any time during operation, by pressing the Run/Stop key. Pressing Run/Stop key again will start the program from the beginning (cycle countdown will be restarted).

4.3. Multitube centrifugation

- 4.3.1 Open the lid and place EVEN number of tubes in rotor sockets facing one another (refer to page 8). Close the lid.
- 4.3.2 Set the necessary speed of spin (A), from 1000 to 3500 RPM (In steps of 100 RPM).
- 4.3.3 Set the time of spin (D), from 1 sec to 99 minutes. Selected times of less than 1 minute (increment in steps of 1 second). Selected times of more than 1 minute (increment in steps of 1 minute).
- 4.3.4 Turn off the Vortex type motion by setting the time of Vortex to zero OFF (B). (Note that the cycle counter also switches to OFF).
- 4.3.5 Press **Run/Stop** key (V) to start centrifugation.
- 4.3.6 The rotor motion begins and the corresponding indication (RUN V), is displayed along with the time countdown (D). (Note; countdown time D will not commence until the chosen spin speed A has been reached).
- 4.3.7 PCV-3000 automatically stops after the set number of cycles are performed (STOP B will blink on the display) and a sound signal will be audible at the end of the operation (press **Run/Stop** key to stop the signal).
- 4.2.12 For repeated operations of the program press **Run/Stop** key.
- 4.2.13 If necessary the PCV-3000 can be stopped at any time during operation, by pressing the **Run/Stop** key. Pressing **Run/Stop** key again will start the program from the beginning (cycle countdown will be restarted).

4.4. Multitube vortexing

- 4.4.1 Open the lid and place EVEN number of tubes in rotor sockets facing one another (refer to page 8). Close the lid.
- 4.4.2 Turn off the Spin motion by setting the time of the Spin motion to zero OFF (D). Note, that the cycle counter also turns OFF.
- 4.4.3 Set the vortexing strength, select from SOFT, MEDIUM and HARD (B).
- 4.4.4 Set the time of vortexing (B), from 1 to 20 seconds (in 1 second steps).
- 4.4.5 Press **Run/Stop** key (V) to start vortexing.
- 4.3.6 The rotor motion begins and the corresponding indication (RUN V), is displayed along with the time countdown (D). (Note; countdown time D will not commence until the chosen spin speed A has been reached).

- 4.3.7 PCV-3000 automatically stops after the set time of vortexing has elapsed (STOP  will blink on the display) and a sound signal will be audible at the end of the operation (press Run\Stop key to stop the signal).
- 4.3.8 For repeated operations of the program press **Run\Stop** key.
- 4.3.9 If necessary the PCV-3000 can be stopped at any time during operation, by pressing the **Run/Stop** key. Pressing **Run/Stop** key again will start the program from the beginning (cycle countdown will be restarted).
- 4.3.10 Once the current operating session has been completed disconnect the power adaptor from the supply.

4.4 Post session cleaning

It is important to thoroughly clean all parts of the PCV-3000 that may have been contaminated by the previous operation. This can be done by using isopropyl alcohol or hot soapy water.

5. Specifications

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- **Spin rotation**1000 - 3500 RPM (100 RPM steps)
 - **Spin timer**.....1 sec - 99 min
 - **Vortexing strength**.....soft, medium, hard
 - **Vortexing time**.....0-20 sec (1 second steps)
 - **Cycle regulation**.....1-999 cycles
 - **Rotor capacity**.....see page 8
 - **Power (external AC/AC adapter)**.....12V AC, 1A
 - **Dimensions**.....170x220x120 mm
 - **Weight with power supply**.....1.8 kg

6. Maintenance

7.1 Guarantee

When used in laboratory conditions and according to these working instructions, this product is guaranteed for TWO YEARS against faulty materials or workmanship.

7.2 Service

For service, return for repair to our Service Department in the UK or, in other countries, to our distributor.

Declaration of Conformity

Manufacturer:-	GRANT INSTRUMENTS (CAMBRIDGE) LTD, Shepreth, Cambridgeshire SG8 6GB
Equipment Name/Type Number:-	PCV-3000
Description of Equipment:-	Centrifuge/Vortexer Multi-spin
Directives:-	EMC Directive 89/336/EEC LVD Directive 73/23/EEC

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

Applied Standards:- Harmonized Standards:-	<u>EN 61326:</u> Electrical Equipment for measurement, control and laboratory use - EMC requirements <u>Part 1:</u> General requirements <u>EN 61010:</u> Safety requirements for electrical equipment for measurement, control and laboratory use. <u>Part 1:</u> General requirements Part 2-020: Particular requirements for Laboratory centrifuges.*
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*This product does not fully conform to Part 2-020, section 7.2.101

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