

Grant-bio

Rotator PTR-60

Operating instructions



Contents

1	Safety	3
2	General Information	4
3	Getting Started	5
4	Operation of PTR-60	6
5	Specifications.....	9
6	Guarantee and service	10
7	Declaration of Conformity	11


1. Safety

The following symbol mean -



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

GENERAL SAFETY

- ☞ Operation of the unit must be carried out according to the given instruction manual.
 - ☞ The unit should be saved from shocks and falling.
 - ☞ The unit must be stored and transported only in a horizontal position (see marking on the package).
 - ☞ After transport or storage in humid conditions dry out the unit (2-3 hrs) before connecting it to the supply voltage.
 - ☞ 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.
 - ☞ Do not make modifications in design of the unit.
 - ☞ When loading use even number of tubes arranged symmetrically to the rotation axis to give the unit even balance during operation.
-  As the unit is producing shaking or rotational movement, be aware of the surface that the unit will be placed on.

ELECTRICAL SAFETY

- ☞ Ensure that the mains switch and external power supply connector are easily accessible during use.
- ☞ Do not plug the unit into the main outlet without grounding, and do not use extension lead without grounding.
- ☞ Connect only to a power supply with a voltage corresponding to that on the serial number label.
- ☞ Only use the external power supply unit provided with this product.
- ☞ If liquid is spilt inside the unit, disconnect it from the external power supply and have it checked by a competent person.
- ☞ Before moving, disconnect from the mains.
- ☞ To turn off the unit, disconnect the external power supply from the power outlet.

DURING OPERATION

- ☞ Do not operate the unit in premises with aggressive or explosive chemical mixtures.
- ☞ Do not operate the unit outside the laboratory premises.
- ☞ Do not operate the unit which have not been correctly installed or repaired.

BIOLOGICAL SAFETY

- ☞ It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or inside the equipment.

2. General Information

Rotator PTR-60 provides:

- Orbital rotational motion,
- Reciprocal motion,
- Vortexing motion of the platform in different planes.

The microprocessor control allows the user to set a program which can deliver not only separate mixing motions, but also programming of different motion types consecutively.

The setting options are:

- Speed and time of ordinary rotational motion of the platform (1 to 100 rpm for a time period 0 to 250 seconds, or non-stop);
- Segment of reciprocal motion when the direction of the platform rotational motion is changing in turns within the limits of the set segment (turning angle 15 to 90° for a time period 0 to 250 seconds, or non-stop);
- Segment and time of vortexing motion of the platform (turning angle 1 to 5° for a time period 1 to 5 seconds);
- Pause duration (1 to 5 seconds) when the vortexing motion is off (the turning angle of vortexing motion is set to zero).
- A working period from 1 minute to 24 hours, or non-stop.

Applications

- Rotator PTR-60 is designed for mixing biological solutions, cell suspensions, magnetic particles conjugated with specific antibodies as well as incubation and cultivation of biological liquids according to the operator set program.
- The device is applicable in all areas of laboratory research in biotechnology, microbiology, chemistry, and medicine.

3. Getting started

3.1 Unpacking

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

3.2 Rotator PTR-60 set includes:

- Rotator PTR-60 with platform1 piece
- External power supply.....1 piece
- Specifications; Operating Manual; CE certificate1 copy

3.3 Principle operation

The principle of operation of the PTR-60 is based on the creation of rotational movement of the platform in the vertical plane providing effective mixing of biological liquids in tubes. The control keys on the front panel provide program setting and operation control.

3.4 The three types of motion

3.4.1 The PTR-60 provides 3 types of motion, which can be used separately (except for vortex mode, which works in conjunction with reciprocal motion mode) and consecutively in a cycle:

3.4.2 *Rotating motion (Orbital)*



Simple even circular motion - common type of motion used in Rotators. Adjustable speed from 1 to 100 RPM.

3.4.3 *Reciprocating Rotating motion (Reciprocal)*



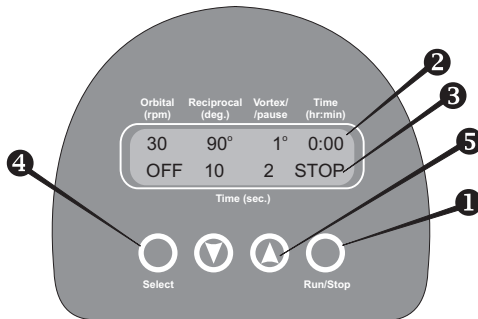
Vertical rotation with changing direction of rotation. Adjustable turning angle (from 15° to 90°, increments of 15°) sets the limits for this type of motion. The speed is the same as set for rotational motion (from 1 to 100 RPM). In this type of motion there is a pause function (from 0 to 5 seconds, increment of 1 second), this can be set in the Vortex/pause mode.

3.4.4 *Vortexing mode*



Intensive mixing of samples at high speed with small amplitude - Vortex motion. The vortex mode is necessary for intensive mixing in Vortex/pause mode and is provided to decrease adhesion of solutions with the tube surface. This is especially important for conducting micro quantity research, when the sample weight may be equal to the adhesion force. The choice of vortex mode is individual and depends on a number of parameters, namely viscosity and surface adhesion, volume and specific gravity of the bio-sample, etc.

4. Operation of PTR-60



- 4.1 Connect the PTR-60 to the AC/DC adapter and the adapter to the main power supply.
- 4.2 Place tubes on the platform: Eppendorf tubes up to the cap; vacutainers and tubes with caps midway in the carousel.
- 4.3 Set the appropriate program and operation time (see 4.10).
- 4.4 Press **Run/Stop** key (❶) to start the program.
- 4.5 The platform motion begins and the corresponding indication [RUN] (❷) and the changing time values are displayed.
- 4.6 If the operation time is not set and the timer indicator (❸) shows [0:00], pressing **Run/Stop** key causes continuous operation of the unit until the **Run/Stop** key is pressed again.
- 4.7 If the operation time is set then the unit stops after the set time interval has elapsed, (flashing indication STOP on the display) and a sound signals the end of the operation (press **Run/Stop** key to stop the signal).
- 4.8 For repeat operation of the previous program press **Run/Stop** key.

- 4.9 If necessary the PTR-60 can be stopped at any time during operation by pressing **Run/Stop** key. In this case platform motion stops when the platform achieves horizontal position. Pressing **Run/Stop** key again will start the program from the beginning (countdown timer will be restarted).

Note: A stepper motor is used in this model. This allows the user to stop the platform with their hand for a moment - without causing damage to the unit. If the platform is stopped by hand during the operation, the program is not interrupted and the platform motion is automatically resumed after the platform is released.

Once you have finished using the unit, unplug the AC\DC adapter from the main power supply to turn off the device.

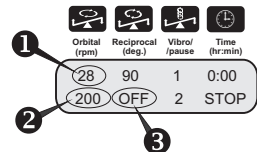
- 4.10 Press Select key (➤) to choose the parameter to change (the active parameter is flashing). Use ▲ and ▼ keys (⬆) to set the necessary value (note: if the key is pressed for more than 2 seconds the display changes quickly).
- 4.11 The program can also be changed during the operation - the microprocessor automatically enters the last changes into the memory during the program operation.
- 4.12. The countdown timer is used to control the operation time. The timer can be set for a period from 1 minute to 24 hours (timer increment of 1 minute).
- 4.13 The examples below show separate motion types and their available combinations in cycles.

Note: Setting the program, used in the cycles, setting the parameters (rotation speed and platform tilt angle) it is necessary to take into account, that the platform is loaded on maximum, the unit doesn't guarantee a proper operation for reciprocal and vibro motions. In this case it is recommended to slow down the rotation speed, decrease the loading or to set only rotation motion.

4.14 Motion cycles

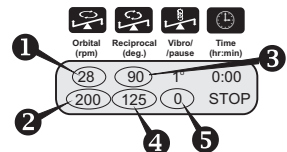
4.14.1 Orbital Rotation

Set the speed of Orbital rotation (➊ 1 to 100 RPM), time of Orbital rotation (➋ 1 to 250 seconds) and time for Reciprocal motion to [OFF] (➌).



4.14.2 Orbital + Reciprocal Rotation

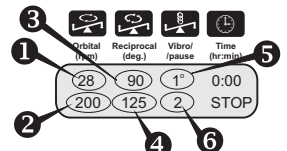
Set the speed (➊ 1 to 100 RPM) and time (➋ 1 to 250 seconds) of Orbital rotation. Set the turning angle (➌ 15 to 90°) and time (➍ 1 to 250 seconds) for Reciprocal motion. Switch off the Vortex motion (➎ set the time of Vortex motion to [0] off).



4.15.3 Orbital + Reciprocal + Vortex

Set the speed (➊ 1 to 100 RPM) and time (➋ 1 to 250 seconds) of Orbital rotation. Set the angle (➌ 15 to 90°) and time (➍ 1 to 250 seconds) for Reciprocal motion. Set the turning angle (➎ 1 to 5°) and time (➏ 1 to 5 seconds) for Vortex type motion.

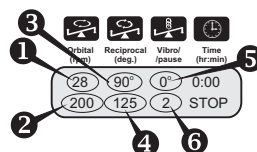
Note, that if the set time of Reciprocal motion is shorter or equal to the set time of Vortex motion then the Reciprocal motion will be omitted (Orbital + Vortex).



4.16.4 Orbital + Reciprocal + Pause

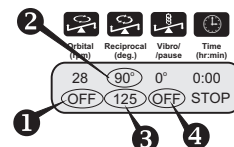
Set the speed (❶ 1 to 100 RPM) and time (❷ 1 to 250 seconds) of Orbital rotation. Set the turning angle (❸ 15 to 90°) and time (❹ 1 to 250 seconds) for Reciprocal motion. Set the angle of Vortex type motion to [0](❺). Set the time for Vortex/pause mode (❻ 1 to 5 seconds) - this is the time of pause duration.

Note, that if the set time of Reciprocal motion is shorter or equal to the set time of Vortex/pause mode, the Reciprocal motion will be omitted (Orbital + Pause).



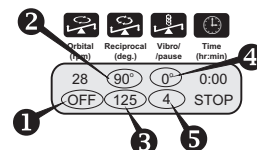
4.16.5 Reciprocal Rotation

Set time for Orbital rotation to zero (❶) [OFF]. Set the turning angle (❷ 15 to 90°) and time (❸ 1 to 250 seconds) of Reciprocal motion. Set the time for Vortex type motion to [OFF] (❹).



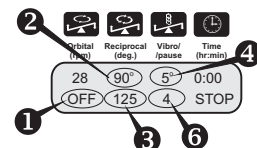
4.16.6 Reciprocal + Pause

Set time of Orbital rotation to zero (❶) [OFF]. Set the turning angle (❷ 15 to 90°) and time (❸ 1 to 250 seconds) of Reciprocal motion. Set the time for Vortex motion type (❹ 1 to 5 seconds) - this is the time of pause duration. Set the angle of Vortex type motion to [0] (❺).

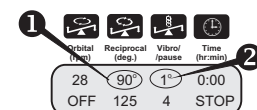


4.16.7 Vortex + Reciprocal Rotation

Set time of Orbital rotation to zero (❶) [OFF]. Set the turning angle (❷ 15 to 90°) and time (❸ 1 to 250 seconds) of Reciprocal motion. Set the angle (1 to 5°) and time (1 to 5 seconds) of Vortex type motion.



Note, that normally PTR-60 performs soft vortexing. However there is a mode for hard vortexing. To perform hard vortexing set the turning angle of Reciprocal motion (❶) to 90° and the angle of Vortex type motion (❷) to 1° (Hard Vortex).



Working in vibro motion mode for long period nonstop and using the platform with universal rubber clamps, choose the tubes not longer than 7 cm from cap till bottom.

5. Specifications

The product is designed for operation indoors in a laboratory at altitudes up to 2000m, 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.

Vertical and reciprocal rotation modes

- Speed range1 - 100 rpm
- Timer0 - 250 seconds

Reciprocal rotation mode

- Turning angle15° to 90° (increment 15°)
- Timer0 to 250 seconds

Vortexing/pause mode

- Turning angle0° to 5° (increment 1°)
- Timer0 to 5 sec
- Pause.....0 to 5 sec

Standard platform capacity

- Eppendorf tubes and vacutainers48 pcs x (2-15) ml

General

- Program timer0 to 24 hours (increment 1 min)
- Input current/power consumption24V, 750 mA / 18W
- External power supply..... input AC 100-240 V 50/60Hz, output DC 24V
- Dimensions (W x D x H)430 x 230 x 230 mm
- Weight (without External power supply)3.5 kg

Accessories

- PRS-14 platform14 x 50ml tubes
- PRS8-22 platform.....8 x 50ml and 22 x 2ml tubes

Company retains the right to make changes and supplements in product design aimed at enhancement of consumer performance and operation quality without prior notice.

6. Guarantee and Service

6.1 Guarantee

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

6.2 Service

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

Declaration of Conformity

Manufacturer:	BIOSAN LTD. Ratsupites 7, build.2, Riga, LV-1067, Latvia
Equipment name/type number:	PTR-60
Description of Equipment:	Rotator
Directives:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC

Applied Standards

Harmonized Standards:

EN 61326-1:

Electrical equipment for measurement,
Control and laboratory use -
EMC requirements

Part 1: General requirements

EN 61010-1:

Safety requirements for electrical equipment
for measurement, control
and laboratory use.

Part 1: General requirements

EN 61010-2-051

Particular requirements
for laboratory equipment for mixing
and stirring

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


Svetlana Bankovska
Executive Director
Biosan Ltd.

Dated 06.09.2011

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