

Grant bio

Rotator PTR-35

Operating instructions



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1. Safety

The following symbol means:



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

GENERAL SAFETY

- ☞ Use only as specified in the operating instructions provided.
- ☞ The unit should be saved from shocks or drops.
- ☞ The unit must be stored and transported in a horizontal position (see package label).
- ☞ After transport or storage allow the unit to dry out (2-3 hrs) before connecting to the supply voltage.
- ☞ Before using any cleaning or decontamination method 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.
- ☞ As the unit is producing shaking or rotational movement, be aware of the surface that the unit will be placed on.

ELECTRICAL SAFETY

- ☞ Connect only to a power supply with a voltage corresponding to that on the serial number label.
- ☞ Use only the external power supply unit provided with this product.
- ☞ Ensure that the external power supply connector is easily accessible during use.
- ☞ Before moving the unit, disconnect it from the mains.
- ☞ To turn off the unit, disconnect the external power supply from the power outlet.
- ☞ If liquid is spilt inside the unit, disconnect it from the external power supply and have it checked by a competent person.

DURING OPERATION

- ☞ Do not operate the unit in environments with aggressive or explosive chemical mixtures.
- ☞ Do not operate the unit if it is faulty or been incorrectly installed.
- ☞ For indoor use only.
- ☞ Do not use outside laboratory rooms.
- ☞ Do not place a load exceeding maximum loading mentioned in p. Specifications.

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-35 provides:

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

The microprocessor control allows to set a program for realisation of not only separate mixing motions but also for the consecutive realisation of different motion types on the cyclical principle.

The setting options are:

- Speed and time of ordinary ROTATIONAL MOTION (360°) of the platform for a time period 0 - 250 sec, or non-stop 1 - 100 rpm.
- Segment of RECIPROCAL MOTION when the direction of platform rotational motion from the vertical plane is changing in turns within the limits of the set segment (turning angle 1 - 90° for a time period 0 - 250 sec, or non-stop);
- Segment and time of VIBRO MOTION of the platform (turning angle 1 - 5° for a time period 1 - 5 sec) run on the borders of reciprocal motion segment. It is available only when the reciprocal motion is ON;
- PAUSE duration for temporary platform motion stops (1 - 5 sec) when the vibro motion is off (the turning angle of vibro motion is set to zero) run on the borders of reciprocal motion segment. It is available only when the reciprocal motion is ON;
- Working period from 1 min to 24 hours, or non-stop.

Applications

- Rotator PTR-35 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-35 set includes:

- Rotator PTR-351 piece
- Platform PRS-261 piece
- External power supply1 piece
- Operating instructions; Certificate.....1 copy

Optional accessories:

- platform PRS-5-12.....on request
- platform PRS-10on request
- platform PRSC-22on request
- platform PRSC-10on request

3.3 Set up:

- Place the unit on the horizontal even working surface.
- Plug the external power supply unit into the 12 V socket at the rear side of the unit.

3.4 Platform replacement:

- Screw out two fixing screws on the platform.
- Replace the platform and install the new platform securing it with the screws.
- Fix the screw tightly.

3.5 Principle operation

The principle of operation of the PTR-35 is based on the creation of rotational movement of the platform in the vertical plane providing effective mixing of biological liquids in tubes or microplates. The control keys on the front panel provide program setting and operation control.

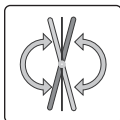
3.6 The three types of motion

- 3.6.1 The PTR-35 provides 3 types of motion, which can be used separately (except for vibration mode, which works in conjunction with reciprocal motion mode) and consecutively in a cycle:



Rotating motion (Orbital)

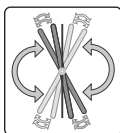
Simple even circular motion - common type of motion used in Rotators. Adjustable speed from 1 to 100 RPM.



Reciprocating Rotating motion (Reciprocal)

Vertical rotation with changing direction of rotation.

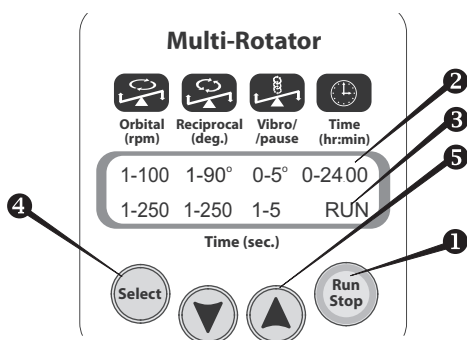
Adjustable turning angle (from 1° to 90°, increments of 1°) sets the limits for this type of motion. The speed is the same as set for rotational motion from the vertical plane (from 1 to 100 RPM). In this type of motion there is a pause function (from 1 to 5 seconds, in crement of 1 second), this can be set in the Vibration/pause mode.



Vibration motion (Vibro)

Intensive mixing of samples at high speed with small amplitude requires a Vibrating motion. The vibration mode decreases adhesion of liquids to the tube surface, this is especially important when using micro quantities when the sample weight may be equal to the surface adhesion force. The choice of vibration mode depends on a number of parameters, namely viscosity, surface adhesion, volume and specific gravity of the bio-sample.

4. Operation of PTR-35



Recommendation during operation

When loading use even number of tubes arranged symmetrically to the rotation axis to give the unit even balance during operation.

- 4.1 Connect the external power supply to the mains.
- 4.2 Place samples on the platform: Eppendorf tubes up to the end; vacutainers and tubes with caps - halfsize.
- 4.3 Set the appropriate program and operation time according to the methodical prescriptions (see 4.11).
- 4.4 Press **Run/Stop** key (1) to start the program.
- 4.5 The platform motion begins and the corresponding indication [RUN] (2) and the changing time values are displayed.
- 4.6 If the operation time is not set and the timer indicator (3) 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-35 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.

4.10 Once you have finished using the unit, unplug the external power supply from the mains outlet to turn off the unit.

4.11 Program setting

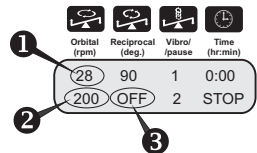
- 4.11.1 Press Select key (Ⓚ) to choose the parameter to change (the active parameter is flashing). Use ▲ and ▼ keys (Ⓛ) to set the necessary value (note: if the key is pressed for more than 2 seconds the display changes quickly).
- 4.11.2 The program can also be changed during the operation - the microprocessor automatically enters the last changes into the memory during the program operation.
- 4.11.3 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).
- 4.11.4 The examples below show separate motion types and their available combinations in cycles.

Note! When setting program parameters for operation with higher loads on PTR-35 please mind that the unit may not perform at highest settings in reciprocal and vibration modes. The recommended load is indicated in table 1 on page 12.

4.12 Motion cycles

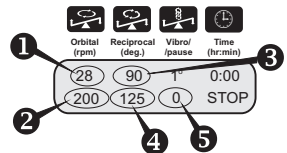
4.12.1 Orbital Rotation

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



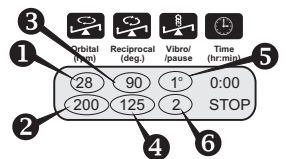
4.12.2 Orbital + Reciprocal Rotation

Set the speed (Ⓚ 1 to 100 RPM) and time (Ⓛ 1 to 250 seconds) of Orbital rotation. Set the turning angle (Ⓛ 1 to 90°) and time (Ⓛ 1 to 250 seconds) for Reciprocal motion. Switch off the Vibrating motion (Ⓛ set the time of Vibrating motion to [0]) off.



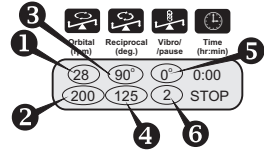
4.12.3 Orbital + Reciprocal + Vibration

Set the speed (Ⓚ 1 to 100 RPM) and time (Ⓛ 1 to 250 seconds) of Orbital rotation. Set the angle (Ⓛ 1 to 90°) and time (Ⓛ 1 to 250 seconds) for Reciprocal motion. Set the turning angle (Ⓛ 1 to 5°) and time (Ⓛ 1 to 5 seconds) for Vibrating motion.



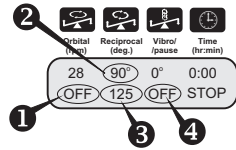
Note! If the set time of Reciprocal motion is shorter or equal to the set time of Vibrating motion then the Reciprocal motion will be omitted (Orbital + Vibration).

4.12.4 Orbital + Reciprocal + Pause
 Set the speed (1 1 to 100 RPM) and time (2 1 to 250 seconds) of Orbital rotation. Set the turning angle (3 1 to 90°) and time (4 1 to 250 seconds) for Reciprocal motion. Set the angle of Vibrating motion to [0] (5). Set the time for Vibration/pause mode (6 1 to 5 seconds) - this is the time of pause duration.

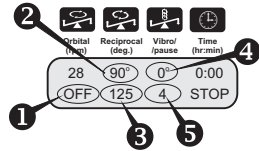


Note! If the set time of Reciprocal motion shorter or equal to the set time of Vibration/pause mode, the Reciprocal motion will be omitted (Orbital + Pause).

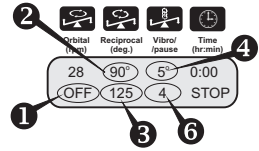
4.12.5 Reciprocal Rotation
 Set time for Orbital rotation to zero (1) [OFF]. Set the turning angle (2 1 to 90°) and time (3 1 to 250 seconds) of Reciprocal motion. Set the time for Vibrating motion to [OFF] (4).



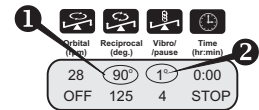
4.12.6 Reciprocal + Pause
 Set time of Orbital rotation to zero (1) [OFF]. Set the turning angle (2 1 to 90°) and time (3 1 to 250 seconds) of Reciprocal motion. Set the time for Vibrating motion type (5 1 to 5 seconds) - this is the time of pause duration. Set the angle of Vibrating motion to [0] (4).



4.12.7 Vibration + Reciprocal Rotation
 Set time of Orbital rotation to zero (1) [OFF]. Set the turning angle (2 1 to 90°) and time (3 1 to 250 seconds) of Reciprocal motion. Set the angle (4) (1 to 5°) and time (1 to 5 seconds) of Vibrating motion.



Note! Normally PTR-35 performs soft vibration. However there is a mode for hard vibration. To perform hard vibration set the turning angle of Reciprocal motion (1) to 90° and the angle of Vibrating motion (2) to 1° (Hard Vibration).



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

5. Specifications

Operating conditions

The unit is designed for operation in cold rooms, incubators and closed laboratory rooms at 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.

Rotating motion

- Speed range1 - 100 rpm
- Timer.....0 - 250 seconds
- Vertical rotation movement360°

Reciprocal motion

- Turning angle1° to 90° (increment 1°)
- Timer0 to 250 seconds

Vibration motion / pause

- Turning angle.....1° to 5° (increment 1°)
- Timer1 to 5 sec
- Pause1 to 5 sec

General specifications

- Program timer1 to 24 hours (increment 1 min) or non-stop
- Dimensions (W x D x H).....365 x 195 x 155 mm
- Input current/power consumption.....12V, 660 mA / 8 W
- External power supply input AC 100-240 V 50/60Hz, output DC 12V
- Weight, not more than.....1,8 kg

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

Optional accessories	Capacity	Tube volume	Tube diameter
Platform PRS-5-12*	5/12	max. 50/2-15 ml	max.30/16 mm
Platform PRS-10*	10	50 ml	max. 30 mm
Platform PRSC-22*	22	15 ml	max. 16 mm
Platform PRSC-10*	10	50 ml	max. 30 mm

Replacement parts	Capacity	Tube volume	Tube diameter
Platform PRS-26*	26	from 2 to 15 ml	max. 15 mm

* PRS – series platforms are equipped with universal rubber clamps for different size tube fixation;
 PRSC – series platforms have metal clamps able to hold heavier solutions (e.g. soil, sand).

Motion type	Recommended load	
	Tubes	Weight
Rotation	Full load	Up to 450 g.
Reciprocal rotation	26 Eppendorf type tubes; 8-15 ml Falcon tubes, 2-50 ml Falcon tubes	Up to 100 g. for platform with rubber clamps; or 200 g. for platform with metal clumps
Vibro motion	Eppendorf type tubes only	Up to 100 g.

Table 1. Recommended loading for PTR-35 depending on motion type

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-35
Description of Equipment:	Rotator
Directives:	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

Part 1: General requirements

EN 61010:

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

EN 61010-2-051:2003

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 30.07.2010.

Grant bio

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