

Grant-bio



Vortex Mixers **PV-1, V-32**

Operating Manual

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1. About this edition of the manual

- 1.1. The current edition of the Manual applies to the following models and versions:

Model	Version
PV-1 , Personal Vortex Mixer	V.4GW
V-32 , Multi-platform Vortex Mixer	V.2GW

2. Safety precautions



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.

2.1. General safety

- Use only as specified in the operating manual provided.
- Do not use the unit if dropped or damaged.
- 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%.
- After transport or storage in humid conditions and before connecting to electric circuit, keep the unit under room temperature for 2-3 hrs.
- 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 to the design of the unit.

2.2. Electrical safety

- Connect only to a power supply with voltage corresponding to that on the serial number label.
- Use only the external power supply provided with this product.
- Ensure that the power switch and the external power supply connector are easily accessible during use.
- Disconnect the unit from the electric circuit before moving.
- Turn off the unit by disconnecting the external power supply from the power socket.
- If liquid penetrates into the unit, disconnect it from the external power supply 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 the Specifications section.

2.3. During operation

- Do not impede the platform motion.
- 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 place a load exceeding the maximum load value mentioned in the Specifications section of this Manual.

2.4. Biological safety

- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilled on or penetrates into the equipment.

3. General information

PV-1 / V-32 vortex mixers are intended for intensive mixing of samples in tubes using an eccentric mechanism. Models are applicable in all the fields of laboratory research in biotechnology, microbiology and medicine:

- Mixing tissue samples;
- Suspending cell samples;
- Mixing chemical samples;
- Mixing bacterial and yeast cells when washing from the culture medium
- Extracting metabolites and enzymes from cells and cell cultures, etc.
- Vortexing during various operations with DNA/RNA.

Models have two operation modes:

- continuous operation;
- impulse operation.

Model PV-1 is a personal vortex with fluoroplastic head for single tube (0.2 – 50 ml) vortexing.

Model V-32 is a universal vortex multipurpose device with different accessories. It is supplied with a 32-socket universal platform PV-32 for Eppendorf type tubes up to 15 ml (1.5/0.5/0.2 ml - 16/8/8 sockets) and a PL-1 head for vortexing a single tube up to 50 ml. An optional 6-socket platform PV-6-10 for 10 ml tubes (maximum tube diameter 15 mm) or a platform PV-48 for 6 strips of 8x0.2 ml microtubes can be supplied on request.

4. Getting started

- 4.1. **Unpacking.** Remove packing materials carefully and retain them for the future. 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. PV-1
- **PV-1**, personal vortex mixer 1 pce.
 - External power supply 1 pce.
 - Operating manual, declaration of conformity 1 copy
- 4.2.2. V-32
- **V-32**, multi-platform vortex mixer 1 pce.
 - External power supply 1 pce.
 - PV-32, universal platform 1 pce.
 - PL-1, single tube vortexing head..... 1 pce.
 - Operating manual, declaration of conformity 1 copy
 - PV-6-10, platform on request
 - PV-48, platform for strips on request



PV-32



PL-1



PV-6-10



PV-48

- 4.3. **Setup:**
- Place the unit on a clean, even, horizontal working area;
 - Plug the power plug of the external power supply into power socket on the rear side of the unit.
- 4.4. **Platform replacement (model V-32):**
- Using a flat screwdriver, unscrew black screw at the middle of the platform (fig. 2/1) and remove it together with the washer.
 - Using a Phillips screwdriver, loosen two fixing screws (fig. 2/3) on the rotor under the platform.
 - Remove and replace the platform (fig. 2/2), fix the platform in place in opposite order.

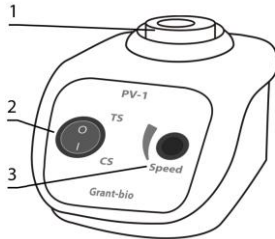


Figure 1. PV-1, front view

5.1. Working with model PV-1.

- 5.1.1. Connect the external power supply to the mains.
- 5.1.2. Gently holding a tube by its upper part, press the lower part to the vortex head (fig. 1/1). During rotation of the rotor, control the intensity of shaking by varying applied pressure.



Caution! To achieve effective vortexing, do not fill the tubes for more than 50% of volume.

- 5.1.3. Continuous shaking mode – **CS**
- 5.1.4. Turn the **TS/CS** switch (fig. 1/2) to position **CS**.
- 5.1.5. Set the required speed by turning the **Speed** knob (fig. 1/3).
- 5.1.6. After finishing the operation, turn the switch into position **TS**.
- 5.1.7. Impulse shaking mode – **TS**.
- 5.1.8. Turn the **TS/CS** switch (fig. 1/2) to position **TS**.
- 5.1.9. Set the required speed by turning the **Speed** knob (fig. 1/3).
- 5.1.10. Push the tube on the vortex head (fig. 1/1) and hold for vortexing. Rotor stops when the tube is raised.
- 5.1.11. Disconnect the external power supply from the mains outlet.

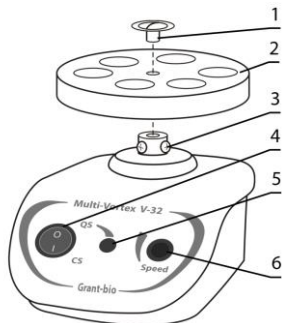


Figure 2. V-32, front view

5.2. Working with model V-32.

5.2.1. Connect the external power supply to the mains.

5.2.2. When shaking several tubes, place the tubes on the platform.

5.2.3. When shaking single tube (PL-1 head), gently holding a tube by its upper part, press the lower part to the vortex head. During rotation of the rotor, control the intensity of shaking by varying applied pressure.



Caution! To achieve effective vortexing, do not fill the tubes for more than 50% of volume.

5.2.4. Continuous shaking mode – **CS**

5.2.5. Turn the **QS/CS** switch (fig. 1/4) to position **CS**.

5.2.6. Set the required speed by turning the **Speed** knob (fig. 1/6).

5.2.7. After finishing the operation, turn the switch into position **TS**.

5.2.8. Quick shaking mode – **QS**.

5.2.9. Turn the **QS/CS** switch (fig. 1/4) to position **QS**.

5.2.10. Set the required speed by turning the **Speed** knob (fig. 1/6).

5.2.11. Position the tube on the vortex head, press and hold **QS** button (fig. 1/5) for vortexing. Rotor stops when the button is released.

5.2.12. Disconnect the external power supply from the mains outlet.

6. Specifications

The unit is designed for operation in cold rooms, incubators (excluding CO₂ incubators) and closed laboratory rooms at ambient temperature from +4°C to +40°C in a non-condensing atmosphere and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

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

	PV-1	V-32
Speed control range	500-3000 rpm	
Acceleration time	2 s	3 s
Maximum continuous operation time	24 h	



Note. Maintain at least 1 hour long pause between prolonged continuous operations.

Tube volume	0.2 – 50 ml	
Maximum load	30 g	70 g
Orbit	4 mm	2 mm
Dimensions	90x150x80 mm	120x180x100 mm with platform
Working voltage and current	12 V=, 320 mA	
Power consumption	3.8 W	
External power supply	in 100–240 V~, 50/60 Hz, out 12 V=	
Weight, accurate within ± 10%	0.8 kg	1.5 kg

7. Ordering information

7.1. Models and versions available:

Model	Version
PV-1, personal vortex mixer	V.4GW
V-32, multi vortex mixer	V.2GW

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

7.3. Optional accessories (for **V-32**):

Accessory	Description
PV-6-10	6-socket platform for 10 ml tubes, maximum \varnothing 15 mm
PV-48	6 strip platform, 8x0.2 ml each or for 48 microtubes 0.2 ml each

7.4. Replacement parts (for **V-32**):

Part	Description
PV-32	32-socket platform for Eppendorf type microtubes, 1.5/0.5/0.2 ml - 16/8/8 sockets
PL-1	Platform for single tube vortexing, 0.2 - 50 ml in volume

8. Guarantee and service

- 8.1. **Guarantee.** When used in laboratory conditions and according to these working instructions, this product is guaranteed for TWO YEARS (excluding items mentioned in 7.3 and 7.4) against faulty materials or workmanship.
- 8.2. **Service & Maintenance.** There are no user-serviceable parts inside the unit. For all maintenance and repairs return to our service department in the UK or in other countries, our distributor.
- 8.3. **Cleaning & Disinfection.**
- 8.3.1. **Cleaning the outside parts.** 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.
- 8.3.2. **Suction feet.** Regularly clean support suction feet for improvement of their adhesion with desk surface. Use mild soap and water with a soft cloth or sponge to clean the support suction feet and desk surface. Wipe excess water from support suction feet and desk surface.
- 8.3.3. **Disinfecting the exterior plastic and metal parts.** Use 75% ethanol or DNA/RNA removing solution. After disinfecting it is necessary to wipe the surfaces dry.
- 8.3.4. **Autoclave.** The unit and its accessories are not autoclavable.

9. Compliance

EU Declaration of Conformity

All the products covered by this Manual comply with the requirements of the EU harmonised legislation verified using the following standards

Low Voltage Directive (2014/35/EC) for Electrical safety.	LVS EN 61010 Part 1 LVS EN 61010 Part 2-051
EMC directive (2014/30/EC) for Electromagnetic compatibility	LVS EN 61326-1
RoHS Directive (Directive 2011/65/EC including 2015/863) for Hazardous substances	LVS EN 50581

UK Declaration of Conformity

All the products covered by this Manual comply with the requirements of UK statutory requirements verified using the following standards.

Electrical Equipment (Safety) Regulations 2016	BS EN 61010 Part 1 BS EN 61010 Part 2-051
Electromagnetic Compatibility Regulations 2016	BS EN 61326-1
The Restriction of the Use of Certain Substances in Electrical and Electronic equipment Regulations 2012	BS EN 50581

Waste Electrical and Electronic Equipment (WEEE)



All the products covered by this Manual are marked with the crossed-out wheeled bin symbol indicating they must not be disposed of with unsorted waste. Safe recycling of WEEE helps conserve natural resources and protect human health.

Grant Instruments complies fully with the UK Waste Electrical & Electronic Equipment (WEEE) regulations 2013. We are a member of the B2B compliance scheme (Scheme Approval Number WEE/MP3338PT/SCH), which handle our WEEE obligations on our behalf. Grant Instruments have been issued with a unique registration number by the Environmental Agency, this reference number is WEE/GA0048TZ. For information regarding WEEE collections in the UK please contact our B2B Compliance Scheme directly on 01691 676 124 or www.b2bcompliance.org.uk

In the EU, Grant Instruments complies with WEEE Directive 2012/19/EU. Contact your local equipment supplier for WEEE collections.

REACH Regulations

This product does not contain any Substances of Very High Concern (SVHCs) at greater than 0.1% that have to be identified in accordance with Regulation (EC) No 1907/2006 and therefore does not have an entry in the SCIP database.

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