Grant-bio



CO_2 Tube Roller

CTR-6

Operating Manual

Contents

1. About this edition of user instructions 2
2. Safety precautions 3
3. General information 4
4. Getting started 5
5. Operation 8
6. Specifications 9
7. Ordering information 9
8. Care and maintenance 10
9. Storage and transportation 10
10. Compliance 11

1. About this edition of user instructions

1.1. The current edition of the user instructions applies to the following models:

Model and name	**Version**
CTR-6, CO_2 tube roller	V.1GW

1.2. Edition 1.01 – November of 2024.

2.1. Symbols used in these instructions:

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

2.2. Icons used on the unit and packaging:

CE	CE marking, manufacturer affirms conformity with European health, safety, and environmental protection standards, see section **Compliance**
UK CA	UK Conformity Assessed marking, see section **Compliance**
	WEEE directive marking, see section **Compliance**
	Do not impede the roller motion

2.3. General safety

- Save the unit from shocks or falling.
- Store and transport the unit as described in **Storage and transportation**.
- 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 in design of the unit.
- The protection provided by the equipment may be impaired if the equipment is used with accessories not provided or recommended by the manufacturer or used in a manner not specified by the manufacturer.

2.4. Electrical safety

- Connect only to external 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 external power supply is easily accessible during use.
- Disconnect the unit from the mains 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 power socket 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 section **Specifications**.

2.5. During operation

- Hazards may occur if the equipment is used to mix flammable or explosive materials.
- Do not mix materials where the transfer of mechanical energy to glass could lead to a breakage.
- Do not use the equipment in hazardous atmospheres or with hazardous materials for which the equipment is not designed.
- Do not impede the roller 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 section **Specifications**.

2.6. Biological safety

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

3. General information

CO_2 Tube Roller **CTR-6** provides regulated rocking and rolling of maximum up to 6 rollers and is designed for use specifically in CO_2 incubators. CTR-6 is specifically designed for use in harsh environments such as CO2 and humidity and provides reproducible results for cell culture growth. Possibility to remove rollers makes the unit flexible and allows for performing various procedures and techniques in various cultivation vessels. The specially designed remote controller allows for protection of electronics from CO_2 incubator environment, as well as does not interfere with the experiment.

Tube roller **CTR-6** incorporates a stepper motor with a guaranteed service life up to 10000 hours. It is possible to stack up to 2 units, saving valuable bench space. Typical applications include cells cultivation (eukaryotic, microbial) and general mixing (resuspension, viscous and liquid-solid suspensions).

4.1. **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. Warranty covers only the units transported in the original package.

4.2. **Complete set**. Package contents:

4.2.1. Standard set

- **CTR-6** Tube roller ..... 1 pce.
- External power supply ..... 1 pce.
- Remote controller ..... 1 pce.
- Operating instructions, declaration of conformity ..... 1 copy

4.2.2. Optional accessories, on request

- Rubber O-rings ..... 1 set
- Stacking kit for two units ..... 1 set
- Stacking kit for three units ..... 1 set
- Roller ..... 1 pce.

4.3. **Roller installation**. Install the roller (fig. 1/1) to the base mechanism of the rolling unit. Open the back fixation plate (fig. 1/2) by unscrewing both screws (fig. 1/3). Fit the roller on the mechanism shaft (fig. 1/4). The roller must be carefully aligned with other rollers horizontally. Close the fixation plate.

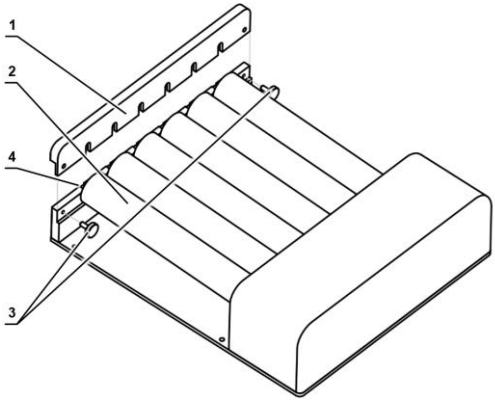
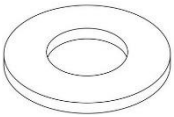


Figure 1. Roller installation

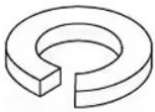
4.4. **Stacking**.

4.4.1. Stacking kit contains:

Component	**Kit for 2 units**	**Kit for 3 units**
Catalogue number	BS-010174-BK	BS-010174-CK
Connecting rods	4	8
Holder bracket	8	12
Headless hex socket screw (M4)	–	4
Hex screw (M4x8 mm)	16	24
Washer (M4)	8	12
Lock washer (M4)	8	12
Hex key M4	1	1



Flat washer



Lock washer

4.4.2. **Acquiring a kit**. To purchase the kit, contact Grant or your local Grant representative, with information from the section **Ordering information**.

4.4.3. **Getting started**.

- Unpack the kit. Unpower and unload the units and disconnect the power cables.
- Prepare the working space. Ensure that there are no obstacles, there is enough space, the surface is clear and clean.
- Position the units so that the access to the mains plugs, the sockets and the power switches is unobstructed.

4.4.4. **Stacking two units** (figure 2).

- Lock the bracket parts (fig. 2/1) with hex screws and flat washers (fig. 2/2) in 4 positions on the base plate for each stacking unit.
- Insert the connecting rod (fig. 2/3) on the bottom bracket and secure it tightly with a hex screw and a lock washer. Repeat for other connecting rods.
- Place the second unit on top of the first-level rods, insert and secure with the screws and lock washers.
- Connect the power cables to the units and to grounded mains sockets.

4.4.5. **Stacking three units**.

- Lock the bracket parts (fig. 2/1) with hex screws and flat washers (fig. 2/2) in 4 positions on the base plate for each stacking unit.
- Insert the connecting rod (fig. 2/3) on the bottom bracket and secure it tightly with a hex screw and a lock washer. Repeat for other connecting rods.
- Screw in the headless hex socket screws into the first-level connecting rods.
- Place the second unit on top of the first unit, aligning the headless screws and brackets of the second unit.
- Screw the connecting rod onto the headless screw, securing rods and the bracket. Repeat for other connecting rods.
- Place the third unit on top of the second-level rods, insert and secure with the screws and lock washers.
- Connect the power cables to the units and to grounded mains sockets.

4.4.6. **Maintenance**. Check the screw fixation and unit stack stability once a month.

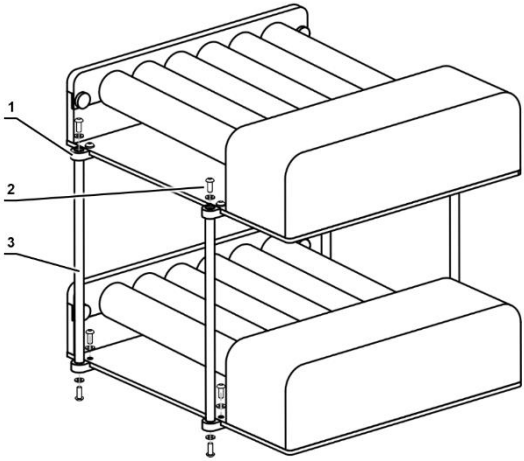


Figure 2. Stacking kit installation

4.5. **Setup**.

Note. The CO_2 incubator must be not operating, switched off and in non-condensing environment during the installation of CO2 tube roller.

- Gently pull the control cable apart at the middle connector by pressing on clips.
- Thread the control cable of the shaking unit through the opening port in the CO_2 incubator.
- Place the shaking unit inside a CO_2 incubator positioned on an even horizontal and firm surface place. Make sure that the control cable does not obstruct the movement of the platform.
- Accurately connect the control cable in the middle. Align ends by the white marking on the rim. Do not force the connection.
- Remove protective film from the display.
- Plug the external power supply into the 12 V socket at the bottom of the unit controller and position the power supply so that the plug is easily accessible.
- If necessary, install the unit controller on the outer wall or a door of the CO_2 incubator. The unit controller features magnets on the back.



Figure 3. Stacked units

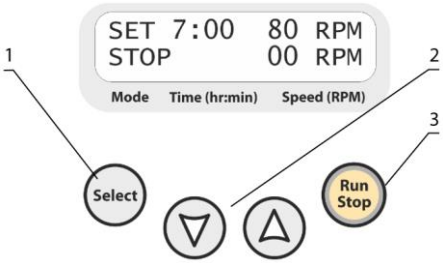


Figure 4. Control panel of CTR-6

5.1. Connect the external power supply to the mains. Switch the power switch on the rear side of the unit into position **I** (on).
5.2. Place samples on the unit platform.
5.3. **Setting the parameters**. Press the **Select** key (fig. 4/1) to choose the parameter to change. Each pressing of the **Select** key consecutively activates the parameters. The active parameter is flashing. Use the ▼ and ▲ keys (fig. 4/2) to set the necessary value. Pressing the key for more than 2 s increases the speed of value change.
5.3.1. Set the required working time interval in hours and minutes, the increment is 1 minute.
5.3.2. Set the required shaking speed, the increment is 1 rpm.
5.4. Press the **Run Stop** key (fig. 4/3). The platform starts rotation, indication RUN appears on display and the timer in the lower line of the display starts counting the time interval.
5.5. After the timer reaches the set time, the platform motion will stop and the flashing indication STOP, accompanied by the repetitive sound signal, will appear in the lower line of the display. Press the **Run Stop** key to shut down the signal.
5.6. The unit can be stopped before the set time elapses, if necessary, by pressing the **Run Stop** key. Press the **Run Stop** key to repeat the operation with the same working time and speed.

Caution! Do not impede the roller motion.

5.7. If the working time is not set (or is reset) and the Time indicator on display shows OFF, pressing the **Run Stop** key will start continuous operation of the unit until the **Run Stop** key is pressed.
5.8. The platform motion can be stopped at any time by pressing the **Run Stop** key. In this case, the program realization and the platform motion will stop, and the unit will switch into the STOP mode.
5.9. **Power interruption.** In case of mains/power failure, the unit is not equipped with automatic restart function, which requires the user to reinitiate the platform motion manually.
5.10. After finishing the operation, switch the power switch on the rear side of the unit into position **O** (off) and disconnect the external power supply from the mains.

6. Specifications

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

6.2. Shaking specifications

Speed control range..... 5–80 RPM

Note. Maximum speed depends on the load on the platform and the shape of the vessels

Increment..... 1 RPM

Digital time setting .....1 min – 96 h or non-stop

Increment..... 1 minute

6.3. General specifications

Maximum load ..... 3 kg

Tilt angle..... 4°

Dimensions, WxDxH.....310x262x80 mm

Operating voltage and current.....12 V=, 415 mA

Power consumption .....5 W

External power supply..... input 100–240 V~, 50–60 Hz, output 12 V=

Weight, accurate within ±10%..... 3 kg

6.4. Workroom requirements

Unit part	**Shaking unit (w/o controller unit)**	**Controller unit**
Workroom description	Specifically designed for CO_2 incubators. Cold rooms and closed laboratory rooms, incubators	Cold rooms and closed laboratory rooms, incubators (excluding CO_2 incubators)
Temperature range	+4 °C … +40 °C	+4 °C … +45 °C
Humidity requirements	Maximum of 80% RH at 31 °C, decreasing linearly to 50% RH at 40 °C. Non-condensing atmosphere.	Maximum of 98% RH. Non-condensing atmosphere.
Operating height	Maximum 2000 m ASL	

7. Ordering information

7.1. Models and versions available:

Mode	**Version**	**Electric plug**
CTR-6, CO_2 tube roller	V.1GW	230 V~, EU plug (type C)
		100–240 V~, Multi plug

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

7.2.1. Optional accessories:

Description
Rubber O-ring set, different diameter
Stacking kit for two rollers
Stacking kit for three rollers
Roller

8. Care and maintenance

8.1. **Guarantee**. When used in laboratory conditions and according to this Operating Manual, this product is guaranteed for TWO YEARS (excluding items mentioned in **7.2.1**) against faulty materials or workmanship.
8.2. **Service**.
8.2.1. If the unit is disabled (e.g., no platform movement, no reaction to key presses, etc.) or requires maintenance, disconnect the unit from the mains and contact Grant or your local Grant representative.
8.2.2. All maintenance and repair operations (except listed below) must be performed only by qualified and specially trained personnel.
8.2.3. Operating integrity check. If the unit follows the procedure described in section **Operation**, then no additional checks are required.
8.2.4. If the stacking kit is used, check the screw fixation monthly.

8.3. **Cleaning and disinfection**.
8.3.1. 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. To disinfect the plastic and metal parts, use 75% ethanol or DNA/RNA removing solution (e.g., Grant PDS-250). After disinfecting, wipe the surfaces dry.
8.3.3. The unit and its accessories are not autoclavable.

8.4. **Disposal**. Disposal of the appliance requires special precautions and must be carried out at an appropriate disposal site, separate from normal household waste. To prevent pollution of the environment, all waste resulting from the disposal of the product must be collected and disposed of in the country of use, in accordance with the applicable requirements for the handling of electronic waste.

9. Storage and transportation

9.1. 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%.
9.2. After transportation or storage and before connecting it to the electric circuit, keep the unit under room temperature for 2-3 hrs.
9.3. For extended storage, the unit does not require special procedures.

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 EN50581

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 EN50581

Waste Electrical and Electronic Equipment (WEEE)



All the products covered by this Manual are marked with the crossed-out wheelie 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.

Grant-bio

Grant Instruments
(Cambridge) Ltd
Shepreth
Cambridgeshire
SG8 6GB
UK
Tel: +44 (0) 1763 260811
Email: salesdesk@grantinstruments.com
www.grantinstruments.com

Representative in the European Union
Grant Instruments Europe B.V
Strawinskylaan 411
WTC, Tower A, 4th Floor
1077 XX Amsterdam
The Netherlands
Email: grant@eu.grantinstruments.com

CO_2 tube roller / CTR-6 / 1.01