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## УФ-очиститель рециркулятор UVR-M

# UV Cleaner-Recirculator UVR-M

*Operating instructions*



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## 1. About this edition of user instructions

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The manual applies to the following versions of UV cleaner-recirculator:

- **UVR-M** V.2G02, V.2G03, V.2G05, V.2G06, V.2G07

## 2. Safety Precautions

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The following symbols mean:



### **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.



### **Caution!**

Do not switch on the unit with the cover removed or without filters! UV-lamp must be covered at all times during operation. Otherwise it can expose the operator and other people to a dangerous level of UV light.

### GENERAL SAFETY

- The unit is designed only for decontamination.
- Save the unit from shocks or falling.
- After transportation or storage, keep the unit under room temperature for 2-3 hrs before connecting it to the mains.
- Store and transport the unit at ambient temperatures between  $-20^{\circ}\text{C}$  and  $+60^{\circ}\text{C}$  and maximum relative humidity of 80%.
- 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 unit is not moisture-resistant.

### ELECTRICAL SAFETY

- Connect only to the mains with voltage corresponding to that on the serial number label.
- Do not plug the unit into an ungrounded power socket, and do not use an ungrounded extension lead.
- Ensure that the power plug is easily accessible during use.
- Disconnect the unit from the mains before moving.
- If liquid penetrates into the unit, disconnect it from the mains 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.

### DURING OPERATION

- 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.

### BIOLOGICAL SAFETY

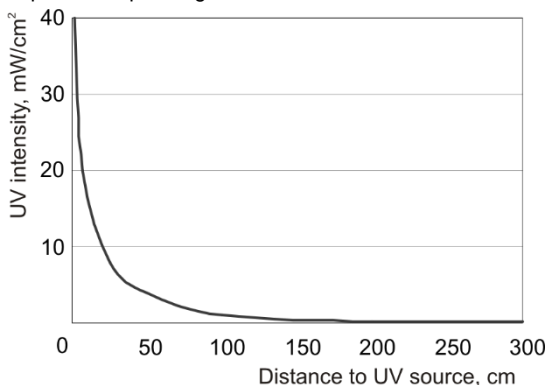
- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.

### 3. General Information

UV DNA/RNA recirculators are compact airflow exchange chambers with built-in UV lamps and a fan unit equipped with dust filters and a control unit. UV DNA/RNA recirculators provide active constant airflow in close vicinity to UV lamps, thus ensuring maximum efficiency of disinfection (see Figure 1). In this version, low ozone 25 W G13 lamps with 9000 hour life time are used.

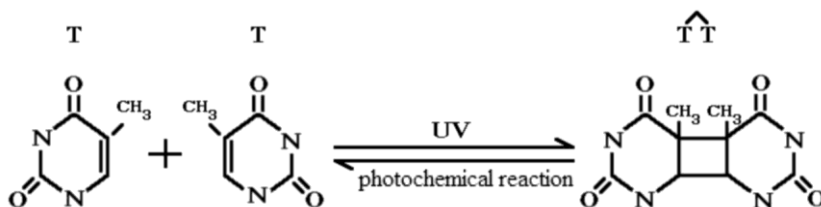
The software of the control unit allows:

- Programming a time of switching-on;
- Switching off the device in a real time mode;
- Estimation of lamp overall operating time and condition.



**Figure 1. Dependence of UV intensity on distance to UV source (25W lamp 254 nm)**

UV radiation affects viability of microorganisms by causing photochemical reactions in the structure of DNA and RNA. Adjacent pyrimidine molecules form dimers and block the reproduction of microorganisms, as a result, causing their death. The diagram (fig.2) shows the process of formation of pyrimidine dimers using thymine as an example.



# 4. Getting started

- 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.
- 4.2.1. Standard set
  - UVR-Mi UV Cleaner-Recirculator .....1 piece
  - Spare dust filters .....2 pieces
  - Spare fuse .....1 piece
  - Screw with dowel.....1 piece
  - Operating instructions, declaration of conformity .....1 copy
- 4.2.2. Optional accessories
  - UVR-S support stand..... on request
- 4.3. Setup:
  - Choose recirculator location so that the air intake and discharge operate unimpeded, providing the best air circulation in the room.



**Caution!** UV recirculator must be used only in clean rooms because dust accumulation on the electrical parts of the device can cause a short circuit.

- Fix the unit on the wall with the screw and dowel, or on a UVR-S movable support stand (Fig.3).
- Position the unit so that there is easy access to the power switch and the power plug.

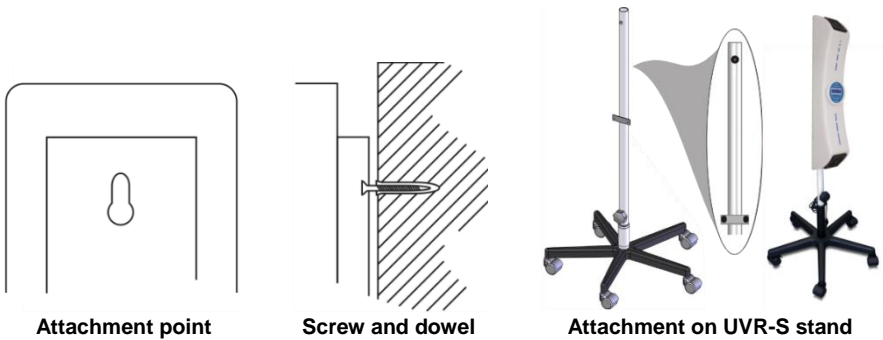


Figure 3. Unit attachment methods

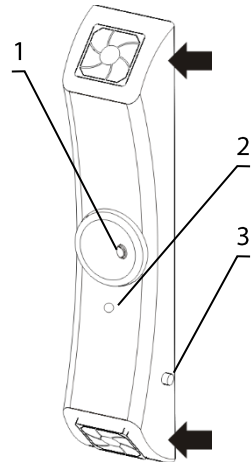
# 5. Operation

- 5.1. Plug the power cord to a grounded mains socket. Switch on the power switch (fig. 4/1).
- 5.2. Unit starts the recirculator automatically. Lit indicator (fig. 4/2) shows that the UV lamp is working.



**Caution!** Bactericidal lamp properties reduce by ~12% after 5000 hours of operation (data given by the manufacturer), so lamp replacement or air recirculation time extension by 12% is recommended in order to achieve the desired air cleaning result.

- 5.3. After finishing the operation, switch off the power switch and unplug the power cable from the mains.



**Figure 4. Overview**

## 6. Specifications

The unit is designed for operation in cold rooms 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.

- 6.1. UV light source ..... low ozone 1 x 25 W G13 UV-C
- 6.2. Wavelength ..... 253.7 nm
- 6.3. Emission intensity (averaged) ..... 18 mW/cm<sup>2</sup>
- 6.4. Lamp service life ..... 9000 h
- 6.5. Flow speed with standard filters ..... 14 m<sup>3</sup>/h
- 6.6. Dimensions ..... 130x110x660 mm
- 6.7. Operating voltage / power consumption ..... 230 V, 50 Hz / 110 W (0.5 A)  
..... or 120 V, 60 Hz / 160 W (1.3 A)
- 6.8. Weight\* ..... 3.4 kg

Optional accessories	Description
UVR-S	Movable support stand

Replacement parts
Dust filter

# 7. Guarantee and service

- 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. For full Details of the Grant Bio Warranty policy, please contact Grant Instruments.
- 7.2. **Service.** For service, return for repair to our Service Department in the UK or, in other countries, to our distributor.
- 7.3. **Cleaning & disinfection.**
- 7.3.1. **Dust filter control/replacement.** The dust filters on either end of the UV-recirculator should be checked monthly and cleaned or replaced when they become clogged.  
To check, replace or clean the filters, simply unclip the covers (fig. 4/4), if necessary, fit a new one; otherwise rinse in water, dry and set up existing filters. Clip covers back in place. This maintenance operation is performed by the user.
- 7.3.2. **Cleaning of the outside parts.** Standard ethanol (75%) or other cleaning agents recommended for cleaning of laboratory equipment can be used for cleaning and decontamination of the unit. This maintenance operation is performed by the user.
- 7.3.3. **Cleaning of the inside parts.** Cleaning of the inside parts must be performed only by qualified and specially trained personnel. In order to ensure proper efficiency in the long run, it is recommended to clean the UV-recirculator once a month.
- 7.4. **Fuse replacement.** Disconnect the device from the mains. Open the fuse holder located on the side of the unit (fig. 4/3) by turning its cover counter clockwise using a screwdriver. Replace with a new fuse, M 1.0 A for 230 V or M 1.6 A for 120 V (type **M** - time lag: **Medium**).
- 7.5. **UV-lamp replacement.** Replacement must be performed only by qualified and specially trained personnel. UV lamp replacement is necessary after lamp stops functioning or at the end of manufacturer specified lifetime. Use the indicator in the centre of recirculator (fig. 4/2) to check operation of UV lamp inside the recirculator. If the indicator is alight while the switch is ON, then the UV lamp is functioning. If it is not, replace the lamp.



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