

Instruction Guide



Cooling Unit AC 710

Please read the Guide before operating this product



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The contents of this manual have been verified to correspond to the specifications of the device. However, deviations cannot be ruled out. Therefore, a complete correspondence between the manual and the real device cannot be guaranteed. The information in this manual is regularly checked, and corrections may be made in subsequent versions.

The visualizations shown in this manual are only illustrative.

This manual is an integral part of the purchase and delivery of equipment and its accessories and both Parties must abide by it.

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1 WARNINGS AND SAFETY PRECAUTIONS

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE TURNING THE FLUORCAM ON!

GENERAL ELECTRICAL SAFETY GUIDELINES:


- Perform a routine check of the devices and their wiring.
- Replace worn or damaged cords immediately.
- Use appropriate electrical extension cords/power bars and do not overload them.
- Place the devices on a flat and firm surface. Keep them away from wet floors and counters.
- Avoid touching the device, socket outlet or switch if your hands are wet.
- Do not perform any alterations to the electrical part of the devices or their components.

The following table presents basic highlight symbols used in this manual:

Symbol	Description
	Important information, read carefully.
	Complementary and additional information.

2 GENERAL DESCRIPTION

Additional Cooling Unit AC 710 is designed to regulate temperature of water bath in the extended range, down to 15 °C with the resolution of ± 1 °C at standard laboratory conditions. This accessory device is also recommended for applications requiring high light intensities as some heating of the water bath by the LEDs always occurs.

	The AC 710 cooling unit is supplied in two versions – for 210-240 V AC and 110 V AC power line.
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2.1 COOLING UNIT AC 710 EQUIPMENT

Cooling Unit AC 710 package consists of:

- AC 710 water pump (Fig. 1A),
- Hailea HC-130A water chiller,
- one piece of power cable,
- one piece of AUX cable,
- one piece of elastic silicone tube 8/6 mm – 5 m length.

NOTE: The AC 710 cooling kit is supplied in two versions – for 210-240 V AC and 110 V AC power line.

1. For a safe and proper operation of the AC 710 cooling kit, switch OFF the Multicultivator MC 1000 device prior installing the AC 710 water pump.
2. To connect the water pump with water chiller place two circular rubber seals (3 mm) around the outlets on the top of the Hailea HC-130A water chiller first.

3 INSTALLATION

1. Place the Cooling Unit AC 710 on a flat, firm and dry surface! Let it stand in upright position for at least **12 hours before plugging it into power supply!**
2. First, connect the water pump with the water chiller (Fig. 1A) by placing two circular rubber seals (3 mm) around the outlets on the top of the Hailea water chiller (Fig. 1B). Then, put the water pump on the top of the water chiller (Fig. 1C) and place the other two seals (2 mm) around the outlets of Hailea water chiller (Fig. 1D). Finally, fix the water pump to the water chiller with screws (Fig. 1E-F).
3. Plug the AC 710 water pump connector into the **AUX1** output on the rear panel of the MC 1000-OD (Fig. 1G). This connection provides the powering of the pump as well as controls its function in remote mode (MC 1000-OD controls the circulation of the water in water cooling circuit).

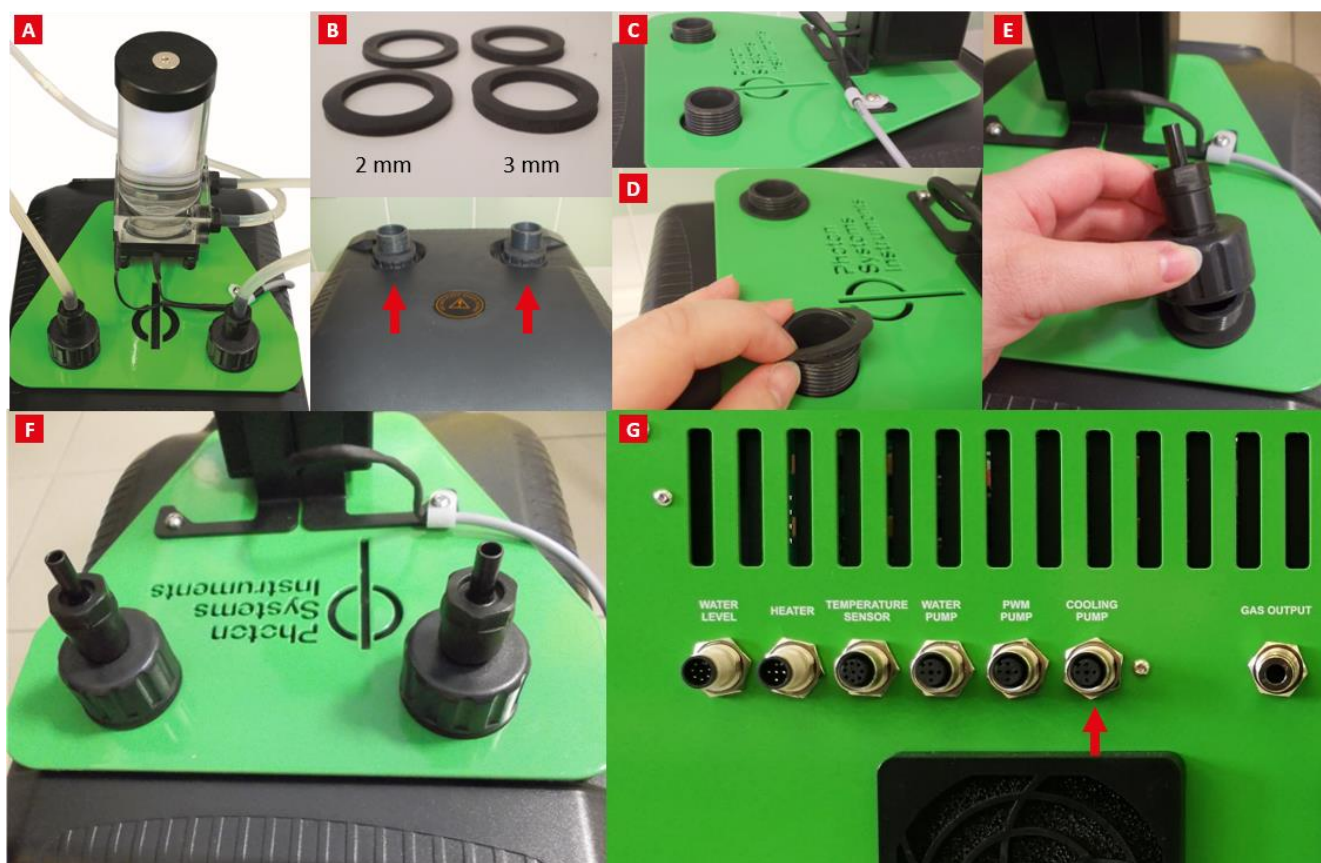


Fig. 1 A) AC 710 water pump and four circular rubber seals. B) Water outlets on the top of the Hailea water chiller. C)-F) Step-by-step montage of the water pump to the water chiller. G) Inner-connection of the cooling unit with the Multi-Cultivator using the AUX cable.

4. Inter-connect the AC 710 water pump, water chiller and MC 1000-OD cooling spiral using the water circulation hose (Fig. 2A-B). First, attach the short, 20 cm silicone hose to the **lower port** (Fig. 2A-1) on the right side of the water pump. Then connect the second end of this tubing to the right top input of the water chiller (Fig. 2A-2).
5. Second, connect the 50 cm long silicone hose to the **upper port** (Fig. 2A-3) on the right side of the water pump and inter-connect it with the right top input of the cooling spiral (Fig. 2B-4).

- Finally, use the 1 m long silicone hose to connect left output of the MC 1000-OD cooling spiral (Fig. 2B-5) with the HC-130A water chiller (Fig. 2A-6).

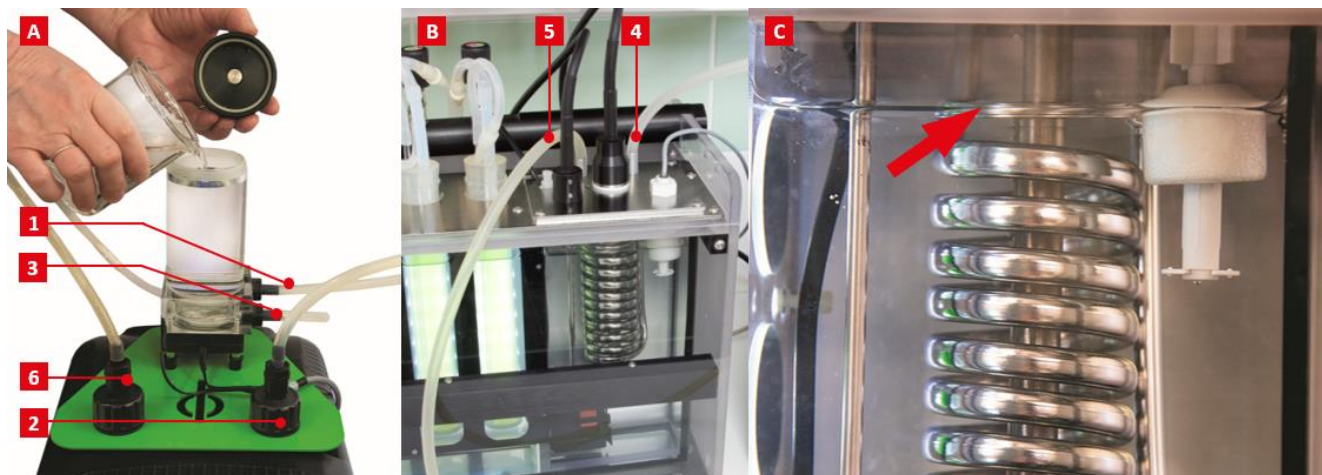


Fig. 2 A), B) Connection of the HC-130A water chiller with water pump and the MC 1000-OD. C) Unscrew/screw back the top cover of the AC 710 water pump. D) Optimal water level in the MC 1000-OD water bath. E) Filling of the water pump with distilled water.

- Plug the Hailea HC-130A water chiller in AC electricity.

	The Hailea HC-130A water chiller is supplied with specific power cable for 220 V or 110 V AC plug.
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- Switch **ON** the HC-130A water chiller. Front display shows the actual temperature in the small water reservoir positioned inside of the HC-130A. Please read the attached HC-130A manual for more information.
- Unscrew the top cover of the AC 710 water pump. This way you access the filling tank of the water circuit (Fig. 2A).
- Switch **ON** the MC 1000-OD device. Fill the MC 1000-OD water bath with distilled water while the water level in water bath is optimal (Fig. 2C).
- Set the low temperature via display: **Sensors > Temperature > 15°C**. Then set the temperature control ON: **Sensor > TControl > ON** (Fig. 3).
- Pour carefully approximately 1 liter of distilled water in the water pump reservoir (Fig. 2C). Wait while the water is pumped into the cooling system. Fill the water into the system the water returns from the **upper port** on the right side of the water pump (Fig. 2A-3).
- Let the bubbles leave out and add the water into the filling tank. It must stay filled up to the **upper port** on the right side of the water pump.
- Set the required temperature of the water in the water chiller always to 5 °C. It is easily done by long push of the **SET** button on the front panel. Afterwards (set value is blinking) change the temperature to 5 °C and confirm by the short **SET** push.
- Set the desired temperature via display or via control software.
- MC 1000-OD is now set to control automatically the temperature in the water bath by circulating the water from the water chiller. Regulation is provided by the MC 1000-OD.
- For the proper function of the AC 710 cooling device with the MC 1000-OD it is **IMPORTANT** to regularly check the water level in the cooling circuit. Water should be re-filled as described in Fig. 2A, when the water level in water pump reservoir drops to 50 %. It is recommended not to let the water amount drop below this level as the cooling unit will not operate properly and the required temperature in MC 1000-OD may not be stable and increase.

	It is recommended not to leave the tank without the water. However, the pump operation without the water will not damage the AC 710 Unit . The water pump is prevented of overheating as it is automatically switched off in the case when pump temperature rises up too high.
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18. When Cooling Unit device is operating and the water bath is cooled down blue LED light indicator **COOL** in the Multi-Cultivator control panel is lit (Fig. 3).



Fig. 3 Display of the MC 1000-OD control unit when Cooling Unit AC 710 is operating.

4 WARRANTY CONDITIONS

1. Photon Systems Instruments, Ltd. (PSI) warrants all its instruments to be free from defects in materials or workmanship for a period of **one year** from the date of invoice/shipment from PSI. Warranty term for the European Union member states is **two years**.
2. If at any time within this warranty period the instrument does not function as warranted, return it and PSI will repair or replace it **at no charge**. The customer is responsible for shipping and insurance charges (for the full product value) to PSI. PSI is responsible for shipping and insurance on return of the instrument to the customer.
3. No warranty will apply to any instrument that has been (i) modified, altered, or repaired by persons unauthorized by PSI; (ii) subjected to misuse, negligence, or accident; (iii) connected, installed, adjusted, or used otherwise than in accordance with the instructions supplied by PSI.
4. The warranty is return-to-base only, and does not include on-site repair charges such as labor, travel, or other expenses associated with the repair or installation of replacement parts at the customer's site.
5. PSI repairs or replaces the faulty instruments as quickly as possible; maximum time is one month.
6. PSI will keep spare parts or their adequate substitutes for a period of at least five years.
7. Returned instruments must be packaged sufficiently so as not to assume any transit damage. If damage is caused due to insufficient packaging, the instrument will be treated as an out-of-warranty repair and charged as such.
8. PSI also offers out-of-warranty repairs. These are usually returned to the customer on a cash-on-delivery basis.
9. **Wear & Tear Items** are excluded from this warranty. The term **Wear & Tear** denotes the damage that naturally and inevitably occurs as a result of normal use or aging even when an item is used competently and with care and proper maintenance.
10. Some PSI instruments use accessories made by other manufacturers. In such case, these accessories may be covered by a different warranty period.
11. Contact us at support@psi.cz in case of any support with the assembly and installation of the device is needed.