Photon Systems Instruments

Instructions for connecting AC-710 cooling kit to Multi-Cultivator MC 1000

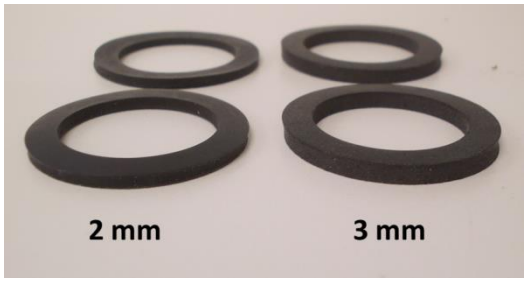
AC-625 cooling kit contains following parts:

1 pc	*AC-710 water pump* + AUX cable
1 pc	*Hailea HC-130A water chiller*
1 pc	Power cable
1 pc	Elastic silicon tube 8/6 mm – 5 m length
2 + 2 pcs	Rubber seals 2 mm/3 mm

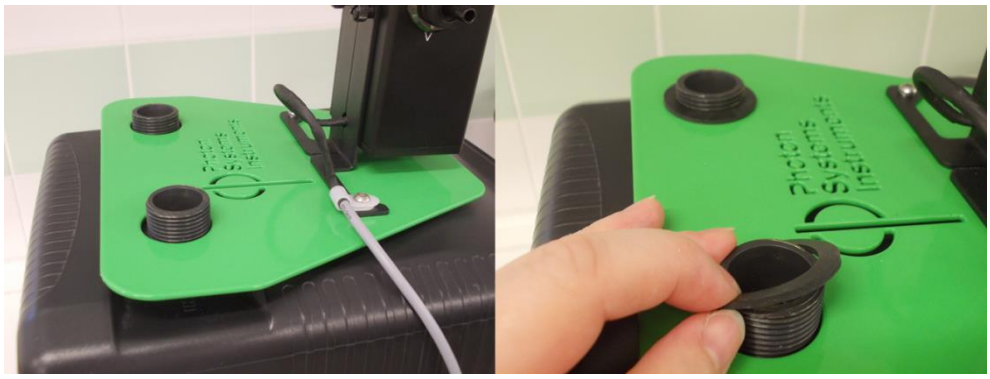
NOTE: The AC-710 cooling kit is supplied in two versions – for 210-240V AC and 110V AC power line.

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*.

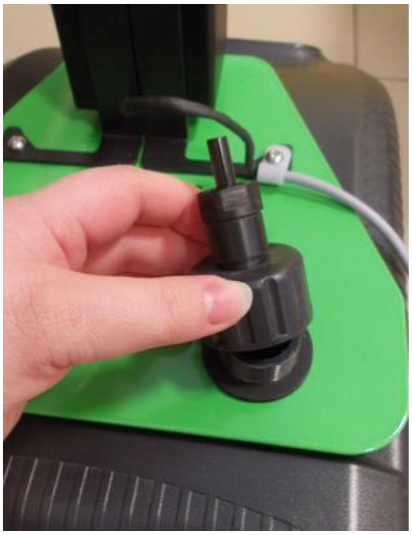
2) To connect the water pump with water chiller place two circular rubber seals (3 mm) around the outlets on the top of the *Hailea HC-130A water chiller* first.



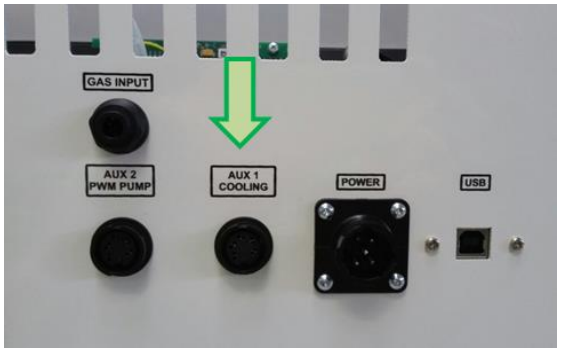
3) After that put the water pump on the top of the water chiller and place the other two seals (2 mm) around the outlets of *Hailea HC-130A water chiller*.



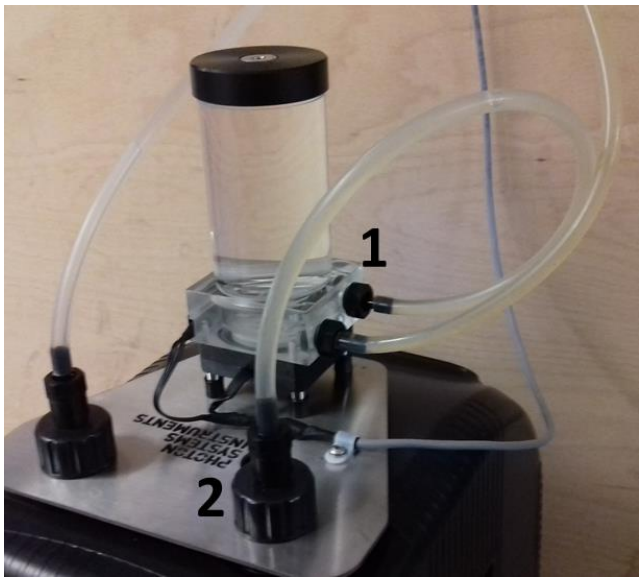
4) Finally, fix the water pump to the water chiller with screws.



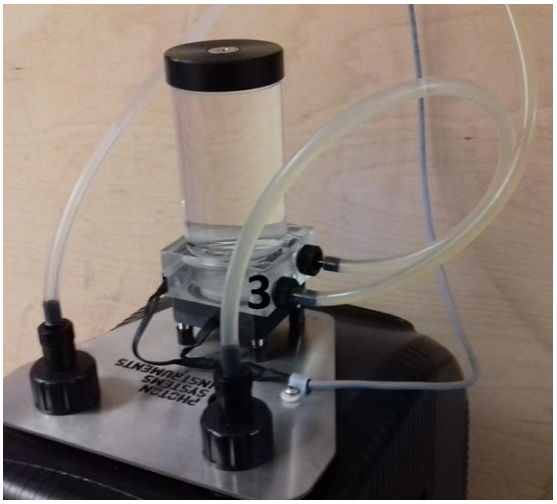
5) Plug the *AC-710 water pump* connector into the **AUX1** output on the rear panel of the *MC 1000*. This connection maintains the powering of the pump and controls its function in remote mode (*MC 1000* controls the circulation of the water in water cooling circuit).



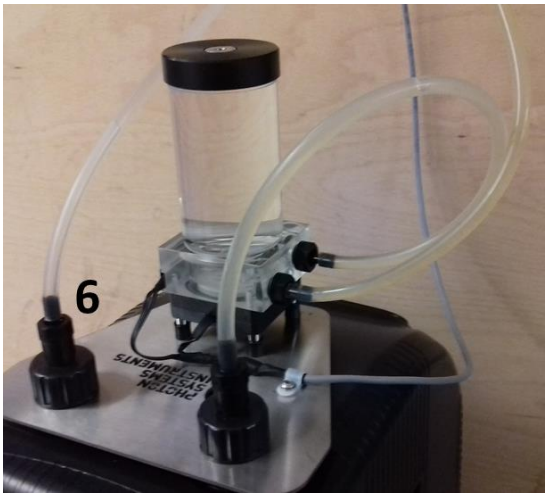
6) Connect the water circulation hose to the *AC-710 water pump* and *MC 1000* cooling spiral. First connect the short 20 cm silicon hose to the **port 1** on the right side of the water pump. Connect the second end of the 20 cm tubing to the right top input of the water chiller (2).



7) Second connect the short 50 cm silicon hose to the **port 3** (OUT) on the right side of the water pump. Connect the second end of the 50 cm tubing to the right top input of the cooling spiral (4).



8) Use the long 1 m silicon hose to connect left output of the *MC 1000* cooling spiral (5) with the *HC-130A water chiller* (6).

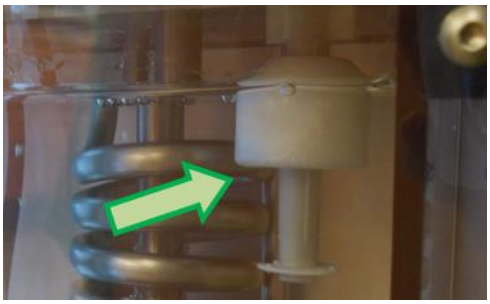


9) Put the *Hailea HC-130A water chiller* in 220V or 110V AC plug (depend on the cooling kit version).

10) Switch ON the *HC-130A water chiller* by the main switch on the right side of the instrument. Front display shows the actual temperature in the small water reservoir positioned inside of the *HC-130A*. Read the attached *HC-130A* manual for more information.

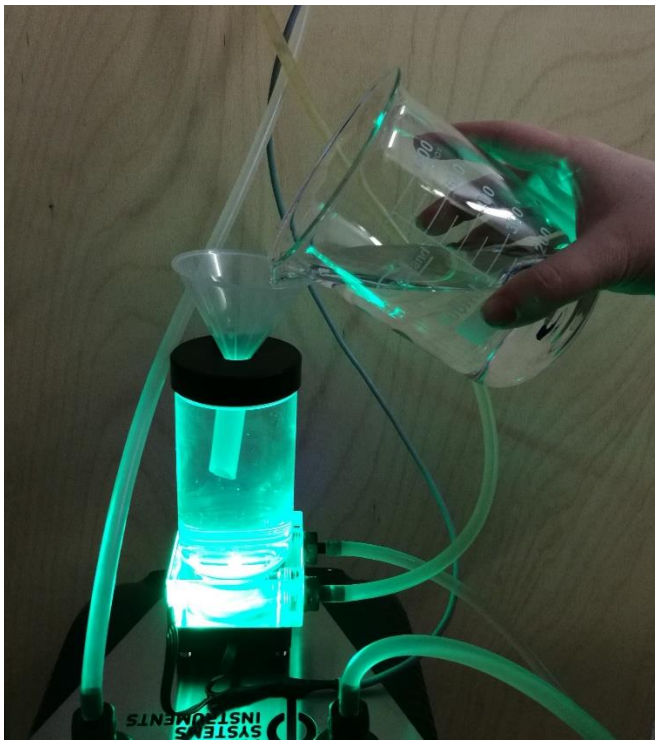
11) Unscrew the top cover of the *AC-710 water pump*. This way you access the small filling tank of the water circuit.

12) Switch ON the *MC 1000* device. Fill the *MC 1000* water bath with distilled water while the water level in water bath is optimal.



13) Set the low temperature via display: **Sensors > Temperature > 15°C**. Then set the temperature control ON: **Sensor > TControl > ON**.

14) Pour carefully approximately 1liter of deionized water in the water pump reservoir. Let the water be 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.



15) 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.

16) Screw back the top cover of the *AC-710 water pump*.

17) 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. Then (set value is blinking) change the temperature to 5 °C and accept by the short **SET** push.

18) *MC 1000* now can control the temperature in the water bath by circulating the water from the water chiller.

19) 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 step 14 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.
Note: 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 images are only illustrative.