



# Water Conditioning Unit

MODEL: WCU-110

**Water conditioning unit model WCU-110 uses a hydrophobic membrane cartridge and a vacuum to remove dissolved gases from water.** Water is circulated through the degassing cartridge, chiller, and heater unit using a gear pump. As the water passes through the cartridge, it is exposed to a vacuum through the pores. The total surface area of the pores is quite large (approaching 0.10 m<sup>2</sup>), and the dissolved gas content in the water quickly equilibrates with this vacuum level. Externally mounted fill and drain valves control the amount of water in circulation, allowing an inflatable membrane to be adjusted. Since the water does not pass directly through a vacuum (as in other degas methods), the total energy requirement is quite low. A compact vacuum pump is used to generate a vacuum level of 100 millibars. All pump parts are compatible with water vapor.

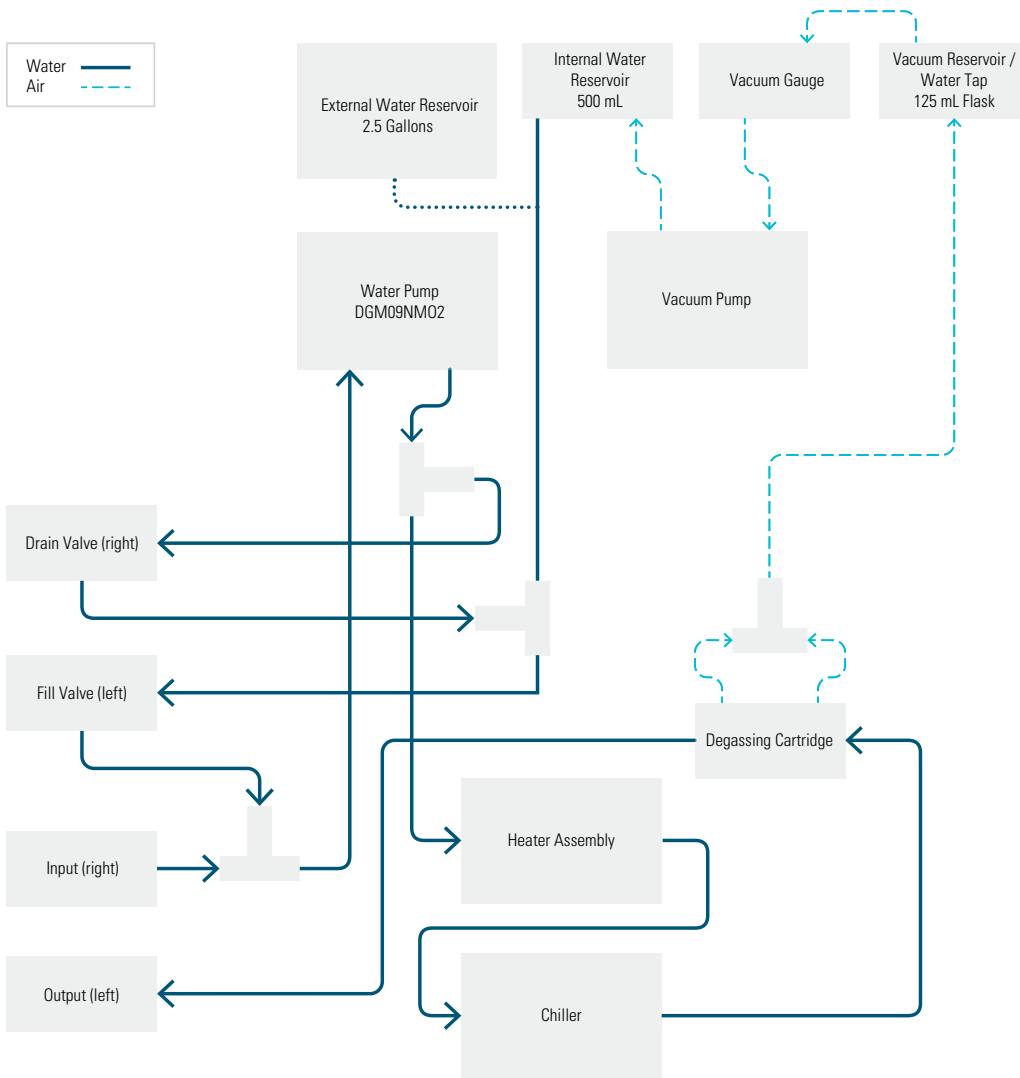
The heater and chiller run on low voltage DC power and are controlled by a PID temperature controller. The heating element is enclosed in stainless steel piping and protected with a high-temperature cutoff switch to ensure it cannot overheat and damage the system. The water chiller features a stainless-steel coaxial evaporator for excellent cooling performance. The controller is user-adjustable and can be easily programmed to maintain temperature at a wide range of set points. The controller is also able to learn your setup to minimize overshooting while maintaining your desired temperature.

The water circulation pump is magnetically coupled and gear driven. The water circulation pump has a speed control knob to adjust the water flow rate, as required. All components are mounted in a single enclosure.

## WCU-110 Specifications

<b>Degas time</b>	60 minutes to <18% of saturation, starting at 100% saturation, at room temperature, for volumes up to 10 L
<b>Water temperature</b>	5 – 40° C operating range
<b>Temperature display</b>	Visible when heating unit is turned on (C or F)
<b>Heating unit</b>	300 W output – Able to raise 1 L water to 36° C in minutes
<b>Chiller unit</b>	Max chilling capacity 300 W
<b>Temperature controller</b>	PID control with dual temperature display, RTD +/- 0.3° C accuracy
<b>Vacuum pump</b>	100 millibars (27 inches Hg), 2 L/minute, continuous
<b>Water pump</b>	500-2000 mL/min, continuous duty, max 3.45 Bar (50 PSIG)
<b>Timer mechanical</b>	0 – 6-hour timer controls vacuum and circulation pump
<b>Size</b>	62 cm H x 37 cm W x 60 cm D (24" H x 15" W x 24" D)
<b>Power input</b>	100-240 VAC, 57-63 Hz (24 VDC internal to cabinet)

**WCU-110 Water Conditioner Unit Flow Diagram**



**NOTE:**

Minor components, such as fitting and leur connections, are not shown. See BOM for additional parts.

For large filling and draining operations, connect external reservoir to reservoir line. System reservoir can be connected after operation for water conditioning.

Avoid creating kinks in the tubing during installation. Kinks will degrade system performance, create leaks, and cause potential system failures.

**WCU-110 Performance**

Dissolved oxygen and temperature of 10 liters of water monitored over 140 minutes.

**WCU-110 Heating and Degassing 10 Liters**

