

# Installation of the Cooling Option (Miller-Nelson Atmosphere Generator HCS)

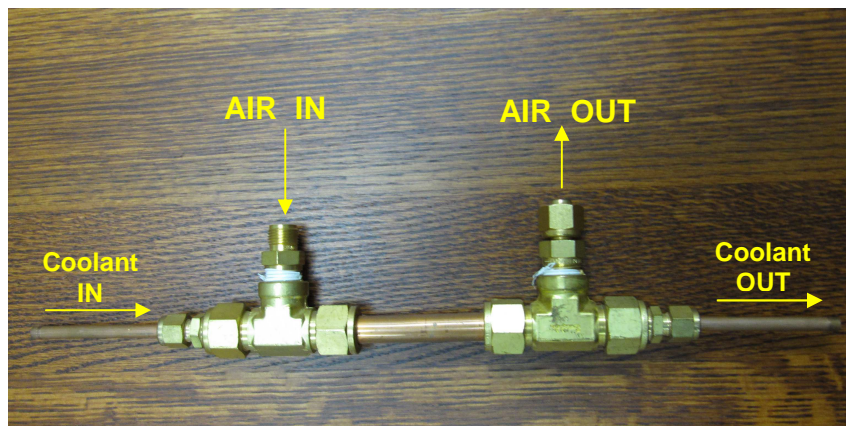
## 1. Description

1.1 The Cooling Option for the Miller-Nelson Instrument is a heat-exchanger incorporating two sizes of copper tubing including brass fittings for connection to the Miller-Nelson HCS 501 Atmosphere Conditioner (the Instrument).

1.2 The smaller 0.25" (0.98 mm) diameter tubing is connected to an external source of Coolant.

1.3 The larger 0.375" (1.48 mm) diameter tubing is connected to the Flow Path of the Miller-Nelson HCS 501 Atmosphere Conditioner (the Instrument) at the "AIR OUT" port.

1.4 The Temperature Relative Humidity (T/RH) Probe associated with the Instrument (normally connected at the "AIR OUT" port of the Instrument), is connected to the larger diameter tube fitting in the Cooling Option, such that the Cooling Option is interposed between the Instrument "AIR OUT" Port and T/RH Probe.



**Fig. 1**

## 2. Principle of Operation

2.1 The Cooling Option is a heat exchanger that allows air coming from the Instrument at ambient temperature to be equilibrated with coolant so that the air temperature approaches that of the coolant.

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### 3. Installation

3.1 Remove the Cooling Option assembly from its packaging. Grasp the Cooling Option fitting labeled "AIR IN" (Fig 1, above) and attach it to the fitting on the Instrument labeled "AIR OUT".

3.2 Refer to the document entitled "Installation of Temperature Relative Humidity Probe" which should be included with the Instrument, and install the Temperature Relative Humidity (T/RH) Probe into the gray plastic "T" included with the Instrument.

3.3 Grasp the brass elbow associated with gray plastic "T" and T/RH Probe and attach it to the Cooling Option fitting labeled "AIR OUT" (Fig 1, above).

3.4 Tighten all brass fittings.

3.5 Connect the copper tubing at the location labeled "Coolant IN" (Fig 1, above) to a tube coming from a source of Coolant that has been controlled at a temperature slightly below the desired temperature.

3.6 Attach the copper tubing at the location labeled "Coolant OUT" (Fig 1, above) to a tube that is returning the Coolant to the Coolant reservoir.

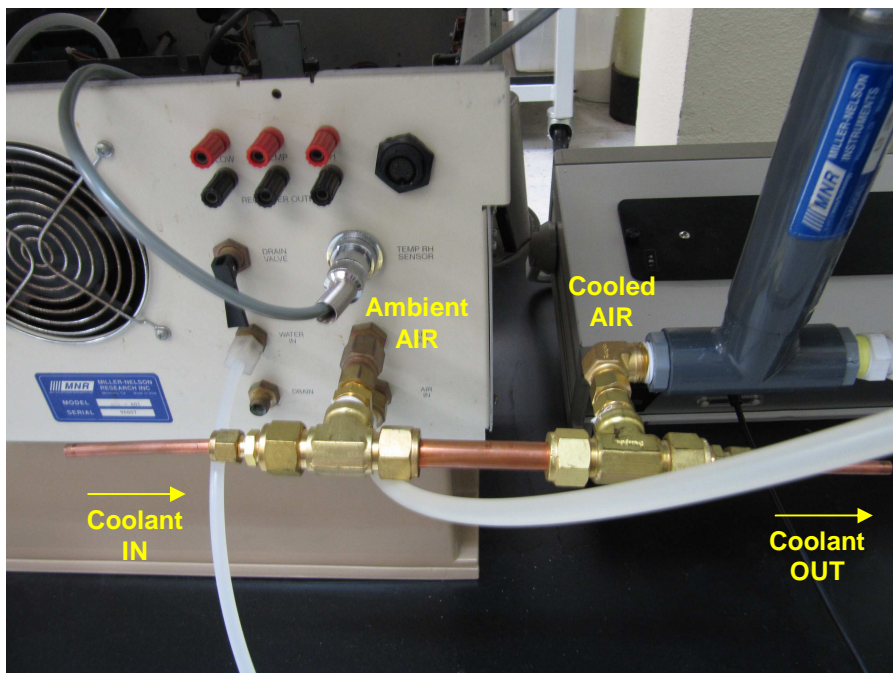


Fig 2.

3.7 If necessary, adjust the temperature at which the Coolant reservoir is being controlled until the desired temperature is displayed on the front panel of the Instrument and is in a state of control as evidenced by the temperature light on the front panel blinking regularly "ON" and "OFF".