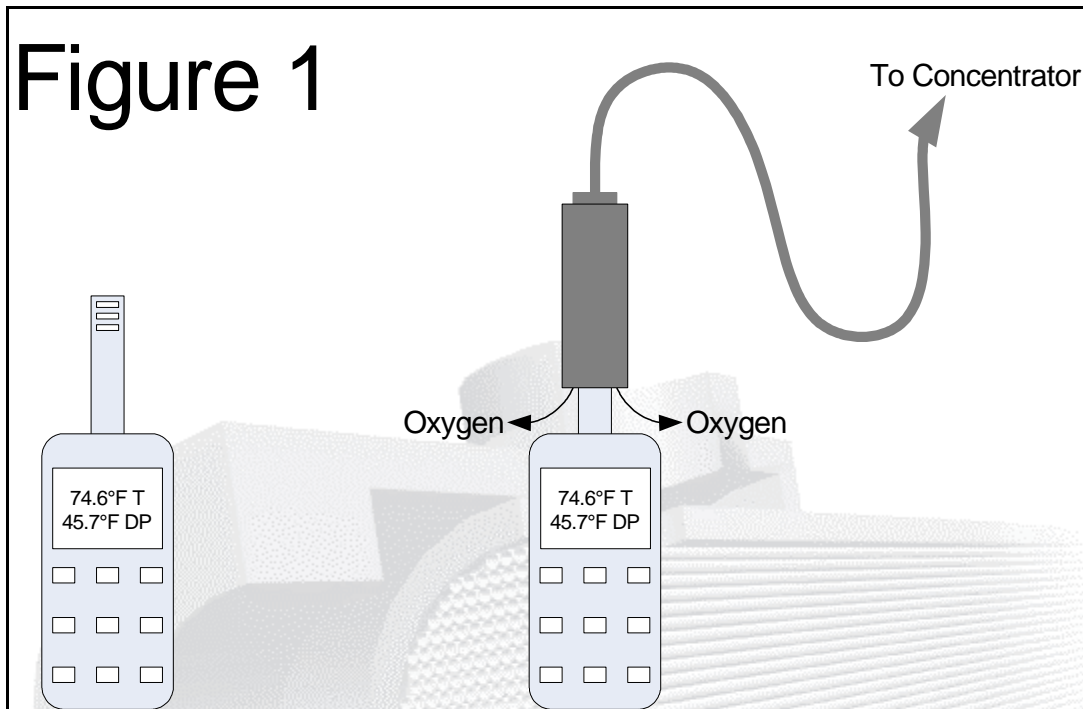


## HUMIDIFLOW™ Optional Performance Verification

Each HUMIDIFLOW™ module is put through a series of tests prior to leaving our facility to ensure a high quality product that will perform well for many years. To ensure long life and optimal performance, it is important that the filters in the O2 concentrator are replaced according to the mfg.'s recommended schedule and in some cases (i.e. cigarette smoking indoors) more often than recommended. Proper and timely replacement of the filters will ensure peak performance of both the Humidiflow and the O2 concentrator. If you wish to check the performance of the HUMIDIFLOW™, please use the following procedure.

You will need a humidity sensor with a humidity probe that can be enclosed by tubing (see Figure 1). We recommend a humidity sensor that has at least an accuracy of  $\pm 3\%$  of reading, preferably  $\pm 2\%$  of reading or better. This sensor also needs to have the ability to read out moisture level as dew point. This is important because most oxygen concentrators warm the out coming oxygen, and relative humidity (RH) is strongly affected by temperature. Dew point is not affected by changes in temperature. There are many places to buy such a unit including McMaster-Carr, Cole-Parmer, Fisher Scientific, and Grainger. The units can be found on their websites or in their catalogues by searching for “Hygrometer” or “Thermohygrometer” or “dew point”. Not all of these units will be able to read out in dew point, so it’s important to verify this feature. The unit that we use is the Lufft model C200. It is available through McMaster Carr (<http://www.mcmaster.com/>) as part number 6495T98, but may also be found elsewhere.



**Note:** While Figure 1 shows two humidity sensors, it is best to use only one sensor for both measurements, due to slight disagreement between sensors.

1. Place the concentrator in a stable environment. (One where the temperature and relative humidity change slowly.)  
**Note:** Use an environment that is at normal environmental relative humidity (at least 30% RH or 40°F dew point). If the environment is very dry, it will be difficult to measure the HUMIDIFLOW™ performance.
2. Make sure that the concentrator has a new inlet filter and a new outlet final filter. If either filter has a high pressure drop, it will reduce the HUMIDIFLOW™ performance.
3. Turn on the concentrator and allow it to warm up. Allow at least 30 minutes if the concentrator has come from a different environment, such as a cold vehicle.
4. Once it has warmed up, set the oxygen flow to 3 liters per minute.
5. Turn on the humidity sensor, place it near the oxygen concentrator, preferably near the air inlet, and allow it to stabilize at the dew point of the room.  
**Note:** Do not breathe near sensor nor have it near a person.
6. Record the room dew point.

7. Enclose the probe of the humidity sensor in tubing from the oxygen concentrator. It may be necessary to install an adapter with larger diameter tubing at the end to fit over the probe. See Figure 1  
**Note:** Make sure that the tubing completely encloses the open portion of the probe. Make sure also that the fit over the probe is loose enough to easily allow the oxygen to exit around the probe.
8. Allow the humidity sensor to stabilize at the dew point of the oxygen.
9. Record the oxygen dew point.
10. If the HUMIDIFLOW™ is working correctly, the dew point of the oxygen should be within 7°F (4°C) of the ambient room dew point.  
**Note:** There are many factors that can affect the performance of the HUMIDIFLOW™ device once installed in an oxygen concentrator. Any pressure drop in a gas stream dries the stream slightly, so inlet filters, restrictive tubing, and sound abatement equipment producing a pressure drop in the air stream will dry the air slightly before entering the HUMIDIFLOW™ and thus reduce the dew point of the outlet oxygen slightly. Pressure drop in the outlet filter or any constricted tubing will reduce the oxygen pressure and thus dry it slightly after leaving the HUMIDIFLOW™. Small oxygen concentrators (3 lpm units) intake less air into the HUMIDIFLOW™ and thus do not humidify the oxygen quite as well as larger 5 and 10 lpm units.