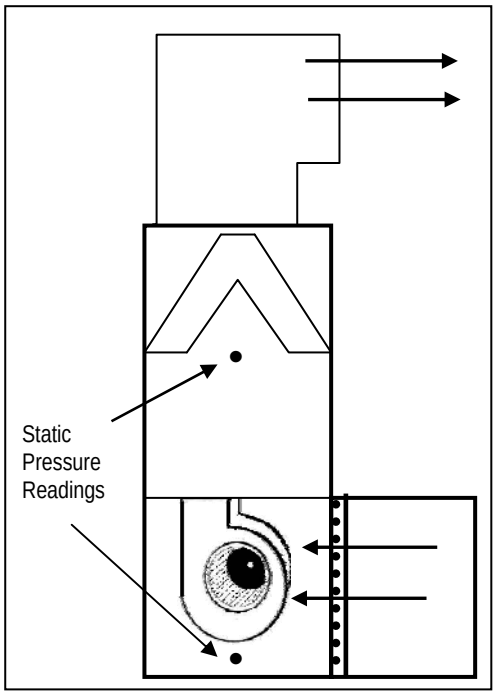
Heat Pump Performance Verification Tips



Tools you will need:
Air, temperature and pressure measurement devices

Section 4A) External static pressure
Readings are taken before and after the fan, before strip heat or indoor coil.

Note: If the pressure is taken after the indoor coil/strip heat, static pressure values will need to be added to compensate for these components. The values for these two components should be in the equipment specifications. Once the total external static pressure is determined, the equipment specifications for that furnace or air handler will indicate what the equivalent CFM is.

When determining CFM with ECM motors, identify the CFM that the motor is programmed for. Ductless mini-split systems have a setting or mode in which the CFM is known, to accommodate testing. An average of multiple temperature readings taken over a cross section of the supply and return air streams will provide the most accuracy.

Section 4B) Airflow check – Temperature Rise Method with Electric Furnace
Place thermostat in emergency heat mode. Heat pump should not be operating. Make sure fan speed is at 100% (or the speed at which the fan operates if the heat pump would be on). When taking temperature readings, make sure the temperature probe and the resistance heaters are not in direct sight of each other.

Section 5A)
When checking the heat pump capacity in the heating mode, make sure the auxiliary heat is switched off.

Section 5B)
When checking capacity in the cooling mode, make sure the system runs at least 10 minutes to get a wet indoor coil. Refer to the chart below for enthalpies at the measured wet bulb temperatures.

Wet Bulb Temp.	Enthalpy	Wet Bulb Temp.	Enthalpy	Wet Bulb Temp.	Enthalpy	Wet Bulb Temp.	Enthalpy	Wet Bulb Temp.	Enthalpy	Wet Bulb Temp.	Enthalpy
40	15.23	47	18.68	54	22.62	61	27.15	68	32.42	75	38.61
41	15.7	48	19.21	55	23.22	62	27.85	69	33.25	76	39.57
42	16.17	49	19.75	56	23.84	63	28.57	70	34.09	77	40.57
43	16.66	50	20.3	57	24.48	64	29.31	71	34.95	78	41.58
44	17.15	51	20.86	58	25.12	65	30.06	72	35.83	79	42.62
45	17.65	52	21.44	59	25.78	66	30.83	73	36.74		
46	18.16	53	22.02	60	26.46	67	31.62	74	37.66		

Section 6)
Manufacturer's rated capacity at the actual outdoor (or water) temperature during testing - this Btuh value is obtained from the manufacturer's detailed performance data (indicates Btuh output for various outdoor air temperatures, or various water temperatures for water-to-air geothermal heat pumps). For water-to-air geothermal heat pumps use water pressure differential to obtain flow in GPM.