

## If you feel that your Split System is not Cooling or Heating Properly

There are some simple steps to determine if there is something wrong with your split system if you feel it is not performing as expected:

- a. Measure your outdoor ambient temperature to see if it is too hot for the summer (cooling) conditions or too cold for the winter (heating conditions). Your system is rated to provide it's full capacity at 95 °F Ambient for the cooling mode and at 47 °F Ambient Temperature for the heating mode. Increased ambient temperature in cooling mode, as well as reduced ambient temperatures in heating mode will cause the system capacity to drop from the full rated capacity levels. For every 5 °F degrees change in your ambient temperatures (increase in cool and drop in heat mode), your cooling and heating capacity will be negatively affected by approximately 7%. You should not expect full performance under harsh outdoor ambient conditions.
- b. Firstly record your actual room temperature and the temperature of the conditioned air, being blown out of the indoor unit. Calculate the net difference. Usual difference is 20+ °F in cooling mode and 25+ °F in heating mode between the room air (entering temperature) and supply air temperature.

- c. See the below picture, and locate the larger diameter copper pipe attached to your outdoor unit. Measure the surface temperature of this pipe using a proper thermometer (if you do not have one, press your thumb on its surface), while the system is running and the compressor is on (heating or cooling). In cooling mode, the surface temperature should be approximately between 36 °F to 45 °F (slightly warmer than ice water but quite cold) and should be sweating with water condensation. Assure there is no frost on any of the pipes in cooling mode.



- d. In heating mode, the surface temperature of the same larger diameter copper pipe should be approximately between 105°F to 130 °F (Hotter than you can bear comfortably for more than a second). The smaller diameter tube should be fairly warm but not as hot.
- e. If the above referenced pipe surface temperatures are significantly higher in cool mode (c) and lower in heat mode (d), while the air discharge temperature difference (b) is also significantly lower than indicated, you need to get your system professionally diagnosed. First thing to check is that there is no component failure and all systems are running. Then the operating pressures must be checked.
- f. Someone with proper pressure gauge set must check your operating pressures and compare them against [THIS](#) chart. Remember to attach the low side gauge in cool mode and high side gauge in heat mode to the service port (there is only one service port, on the larger diameter valve).
- g. If the operating pressures are lower, according to the chart referenced above, then the best recommended solution is a complete system evacuation by using proper vacuum pump and then charging fresh new refrigerant into the system based on the listed weight amount on the unit's labeling. If your refrigerant was in fact low, there could be a leak. Some leaks can develop by time or could be accelerated by the ultra high system pressures in heating mode. The leaks are almost always at your flare connections. Therefore the leak must be located and repaired by properly tightening the flare nuts, prior to servicing/recharging the system.
- h. If your indoor fan is not starting to blow in HEAT mode, while the DEFROST light is stays illuminated for a long period of time. OR, if the fan starts occasionally with warm air being blown from the unit but fan stops frequently and rather quickly while the defrost light re-illuminates, then this is also an indication of significant underperformance. The reasons are either due to super low existing outdoor ambient temperatures or lack of proper refrigerant charge in the system, or both. The defrost light indicates the specific comfort mode, called the WARM START (in addition to the actual defrost mode, which should not take more than 5-6 minutes). While in the warm start mode, system's indoor fan does not start, until the sensors indicate that the indoor heat exchanger is hot enough (to prevent the uncomfortable cold air draft). If the system is underperforming, the indoor coil may never become hot enough for the fan to start or may quickly cool down as soon as the fan starts, to a level below the preset comfort level temperature. This is indicated by the defrost light.