

Diagnosing Air Conditioning System Problems

Superheat and Subcooling:

When running properly, the evaporator temperature and superheat should be within manufacturer's specifications. This ensures that the compressor is protected from liquid flood-back and overheating as is common when high superheat is present.

Typically the condensers performance is effected by proper subcooling. If no manufacturer's literature is available, rule of thumb is 10 degrees of subcooling on low SEER rated units and 15 degrees subcooling on the higher SEER rated units.

How to measure Superheat:

Measure the suction pressure at the inlet of the compressor.

This will give you evaporator saturation temperature

Convert the pressure to temperature using a P/T chart

Measure the suction line temperature six inches from the compressor

Use a digital type thermometer only

Subtract suction line temperature from saturation temperature, the difference is ***Superheat***

How to measure Subcooling:

Measure the high side pressure at the liquid line service valve

This will give you the condenser saturation temperature

Convert the pressure to temperature using a P/T chart

Measure liquid line temperature at condenser outlet

Use a digital type thermometer only

Subtract the liquid line temperature from the saturation temperature, the difference is ***Subcooling***

Ideally, systems should maintain a “delta t” (temperature difference) of 20 degrees between indoor and outdoor temperature.