

Refrigerant Readings Cross Reference

Low Suction Pressure

- Low On Charge - Low Air Flow, dirty filter, dirty evaporator, kinked return, return too small, not enough supply ducts, blower wheel dirty, blower not running correct speed, insulation pulling up against the blower Etc.... - Liquid Line Restriction, clogged filter / drier, clogged screen, kinked copper - Metering Device Restricting Flow Too Much, piston too small, piston or T.X.V. restricted, T.X.V. failing closed - Low Ambient - Kinked Suction Line - Internal Evaporator Restriction

High Suction Pressure

- Overcharge - High Return Temperature - Metering Device Allowing Too Much Liquid Flow, piston too large, T.X.V. failing open, piston seating improperly - Reversing Valve Allowing Discharge Gas To Enter The Suction Line - Compressor Not Pumping Properly, bad suction valve, bad discharge valve, bad or broken crank - Too Much Airflow Over The Evaporator

Low Head Pressure

- Low On Charge - Low Ambient Temperature - Metering Device Allowing Too Much Liquid Flow - Reversing Valve Allowing Discharge Gas To Enter The Suction Line - Compressor Not Pumping Properly - Kinked Suction Line - Wet Condenser Coil

High Head Pressure

- Overcharge - Low Condenser Airflow, condensing fan / blower not operating, dirty condenser, fins bent on condenser, bushes too close to condenser - High Ambient Temperature - Liquid Line Restriction - Metering Device Restricting Flow Too Much - Non-condensables

High Superheat

- Low On Charge - High Return Air Temperature - Metering Device Not Allowing Enough Refrigerant Flow - Liquid Line Restriction - Compressor Not Pumping Properly - Reversing Valve Bypassing

Low Superheat

- Overcharge - Low Air Flow - Metering Device Allowing Too Much Refrigerant Flow - Low Return Temperature - Abnormally Low Humidity - Internal Evaporator Restriction

High Subcool

- Overcharge - Liquid Line Restriction - Metering Device Not Allowing Enough Refrigerant Flow
- Evaporator Restriction - Kinked Suction Line - Low Ambient Surrounding The Condenser
- Wet Condenser Coil

Low Subcool

- Low On Charge - Reversing Valve Bypassing - Compressor Not Pumping Properly - High Ambient Surrounding The Condenser - Dirty Condenser Coil (Not a very low subcool, but low considering how high the head pressure will be) - Metering Device Allowing Too Much Refrigerant Flow

High Evaporator Air Temperature Split

- Low Air Flow - Abnormally Low Humidity - Blower Not Running The Correct Speed or Running Backwards

Low Evaporator Air Temperature Split

- Too Much Airflow Through The Evaporator - Abnormally High Humidity - Evaporator Not Being Fully Fed With Boiling Refrigerant, Undercharge, Overcharge (because saturation temp. is increased with overcharge), liquid line restriction, kinked suction line, reversing valve bypassing, compressor not pumping, metering device not working properly Etc.... - Heat strips running with air

The way this list must be utilized is by taking all five calculations, and matching up the potential problems until you find the most likely ones. **A very critical thing to remember is that a T.X.V. system will maintain a constant superheat, and a fairly constant suction pressure. The exceptions to this rule are when the T.X.V. has failed, and when the T.X.V. is not receiving a full line of liquid. This would result in a 0 subcool, in this case the T.X.V. will no longer be able to maintain the correct superheat. Before using this list you must know what type of metering device is being utilized, and then adjust accordingly.**

Also Remember in heat mode the condenser is inside, and the evaporator is outside.