

Criteria	Design Conditions	Actual Conditions	Difference	
<b>Ambient temperature</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	
<b>Saturated Condensing Temperature</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Does this match your prediction from the condenser TD chart? Is the ambient too high or low and can you correct it to check?
<b>Air on Condenser</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Too much or not enough condensing?
<b>Difference in Temp (Condenser TD)</b>	<sup>o</sup> K	<sup>o</sup> K	<sup>o</sup> K	Check against Condenser TD Chart
Discharge Temperature	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Abnormally high or low?
Difference in Temp ( air recirculation)	<sup>o</sup> K	<sup>o</sup> K	<sup>o</sup> K	Is an external heat source affecting the condenser higher than the ambient?
<b>Liquid line temp at the condenser outlet</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Subcooling check
<b>Difference in Temp (Condenser sub cooling)</b>	<sup>o</sup> K	<sup>o</sup> K	<sup>o</sup> K	Is there too much refrigerant in the condenser? Undercharged, Overcharged or correct?
Liquid line temp at Expansion Device	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Was there more or less subcooling after leaving the condenser or receiver?
Filter Drier Temperature Difference	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Do you have a possible restriction from a temperature difference across the filter Drier?
<b>Air on Evaporator</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Normal or excessively high /low? ◆Note evaporator superheat can be affected.
<b>Saturated Evaporator Temperature</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	With the correct superheat this will indicate the operating TD of the evaporator. Note check your superheat!
<b>Difference in Temp (Evaporator TD)</b>	<sup>o</sup> K	<sup>o</sup> K	<sup>o</sup> K	◆Check against TD chart for humidity
<b>Suction line temp at the evaporator outlet</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Check your superheat, is more or less than 6K?
<b>Evaporator Superheat</b>	<sup>o</sup> K	<sup>o</sup> K	<sup>o</sup> K	Is the TXV set correctly? Is there a loss of refrigerant? ◆Note super heat cannot exceed evaporator TD
<b>Vapour entering temp at compressor suction inlet.</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Is the TXV set correctly? Is the temperature lower or higher than the Saturated evaporation temperature? ◆Note must be higher than S.E.T.
<b>Suction line superheat</b>	<sup>o</sup> K	<sup>o</sup> K	<sup>o</sup> K	Abnormally higher >10K? Do you have good pipe insulation? Are there other heat sources adding to the total superheat.
<b>Saturated Suction Temperature</b>	<sup>o</sup> C	<sup>o</sup> C	<sup>o</sup> C	Is this more than 1K pressure drop from the Saturated evaporation temperature?

<p>Condenser TD</p>	<p>Does the condenser TD match the Ambient and S.S.T (chart)?</p> <p>If not, Why?</p>	<ul style="list-style-type: none"> <li>◆Note the evaporator TXV superheat should be at least 6K for the condenser TD chart to be accurate.</li> <li>◆Note Over or under condensing will also alter the actual outcome from expected. Check your subcooling is within 3-6K</li> <li>◆Note, Check your condenser airflow is not restricted, poor or excessive. The expected condenser ambient should not exceed design ambient.</li> <li>◆Note ,Mismatched equipment will cause incorrect TD</li> </ul>
<p>Evaporator TD</p>	<p>What application is the evaporator suited for RH%</p> <p>(see design chart for matching application)</p> <p>Air-Conditioner 20K</p> <p>Coolroom 6K</p> <p>Freezer Room 6K</p>	<ul style="list-style-type: none"> <li>◆Note the evaporator TXV superheat should not exceed the design TD. High and low superheats will affect the evaporator TD.</li> <li>◆Note Check the evaporator airflow is not restricted, poor or excessive.</li> <li>High and Low room loads can affect the evaporator TD.</li> <li>◆Note ,Mismatched equipment will cause incorrect TD</li> </ul>

Evaporator fan Motor amps	A	A	A	
Compressor Motor amps	A	A	A	
Condenser fan Motor amps	A	A	A	
Compressor pump down test				
Sight glass indicator colour				
Receiver level	Vertical	Horizontal	Mounted wrong	Vertical or horizontal design receiver?
Low pressure control Cut in				Cut in lower /higher than S.E.T?
Differential				
Cut out				
High pressure control Cut out				Cut out lower /higher than S.C.T?
Condenser/condensing unit / compressor condition	Good	Bad	Other	
Evaporator condition	Good	Bad	Other	
Cabinet or coolroom condition	Good	Bad	Other	
Door seals/gaskets	Good	Bad	Other	
Condensate Drains	Condition	Secure	Blocked/Clear	
Refrigerant type	Correct type	Charge	Leaks?	Correct type in system? Non condensable P/T test required?
EPR Used	Fitted	Location	Good/Bad	Is this set to design S.E.T?
Oil	Correct type	Charge	Leaks?	Is oil visible in sight window ?(if fitted to sump) Are leaks in system evident? Is the oil correct for the refrigerant type?
CPR Used	Fitted	Location	Good/Bad	Is this set to required motor amps? , does it have more than 1K Temperature drop each side?
T.X.V / Capillary	Condition	Location	Good/Bad	Kinked pipes, incorrectly installed, bulb location, poor condition or rusty?

Type of Product Stored	Storage Temp °C	Moisture cond.%RH	TD between air and refrigerant °K	
			Forced Convection	Natural Draft
Eggs, dairy produce, vegetables	3 °C	90 to 95%	5 K	8 to 10 K
Fruit	2 °C	90%	6 K	10 to 12 K
Cut meats	1 °C	85 to 90%	6 K	10 to 12 K
Carcase meats	3 °C	82 to 86%	8 K	12 to 14 K
Cheese, packaged or bottled goods	3 °C	70 to 80%	10 K	14 to 16 K
Frozen goods	-20 °C	90% approx	6 K	11 to 14 K
Air conditioning	24 °C	50%	20 K	-
Frozen food merchandiser	-20 °C	-	15 to 17 K	-
Meat merchandiser	0 °C	-	12 K	-
Dairy merchandiser	3 °C	-	12 K	-

## CONDENSER TEMPERATURE DIFFERENCE CHART

### FORCED DRAFT AIR COOLED

