

Evaporator temperature:

$$T_{\text{evap}} = 40^\circ\text{F}$$

Evaporator pressure (P_1) $\rightarrow$ R-134a saturated at 40°F

$$P_{\text{evap}} = 34.14 \text{ psia}$$

Condenser temperature:

Assume approach temp equals 20°F , outdoor air temp equals 90°F

$$T_{\text{cond}} = 20^\circ\text{F} + 90^\circ\text{F} = 110^\circ\text{F}$$

$$P_{\text{cond}} = 220 \text{ psia at } 110^\circ\text{F} = \text{R-134a table}$$

$$P_{\text{evap}} = 34.14 \text{ psia}$$

$$P_{\text{cond}} = 220 \text{ psia}$$

① $\xrightarrow{\text{Const Entropy}}$ ② $\xrightarrow{P_{\text{const}}}$ ③ $\xrightarrow{T_{25} \text{ Isenthalpic}}$ ④ $\xrightarrow{P_{\text{const}}}$

$$T_1 = 40^\circ\text{F} \quad T_2 = 140^\circ\text{F} \quad T_3 = T_4 = 110^\circ\text{F} \quad T_4 = T_1 = 40^\circ\text{F}$$

$$P_1 = 34.14 \text{ psia} \quad \Delta T_{12} = 121.5^\circ\text{F} \quad P_3 = P_2 = 101.325 \text{ kPa} \quad P_4 = P_1 = 34.14 \text{ psia}$$

$$h_1 = 94.5 \text{ Btu/lb} \quad h_2 = 125.2 \text{ Btu/lb}_m \quad h_3 = h_4 = 82 \text{ Btu/lb}_m \quad h_4 = h_f + x_4 \cdot h_{fg}$$

$$x_1 = 1$$

$$x_2 = 1$$

$$x_3 = 0$$

$$x_4 =$$

$$P_2 = 101.325 \text{ kPa}$$

$$h_4 = 82 \text{ Btu/lb}_m$$