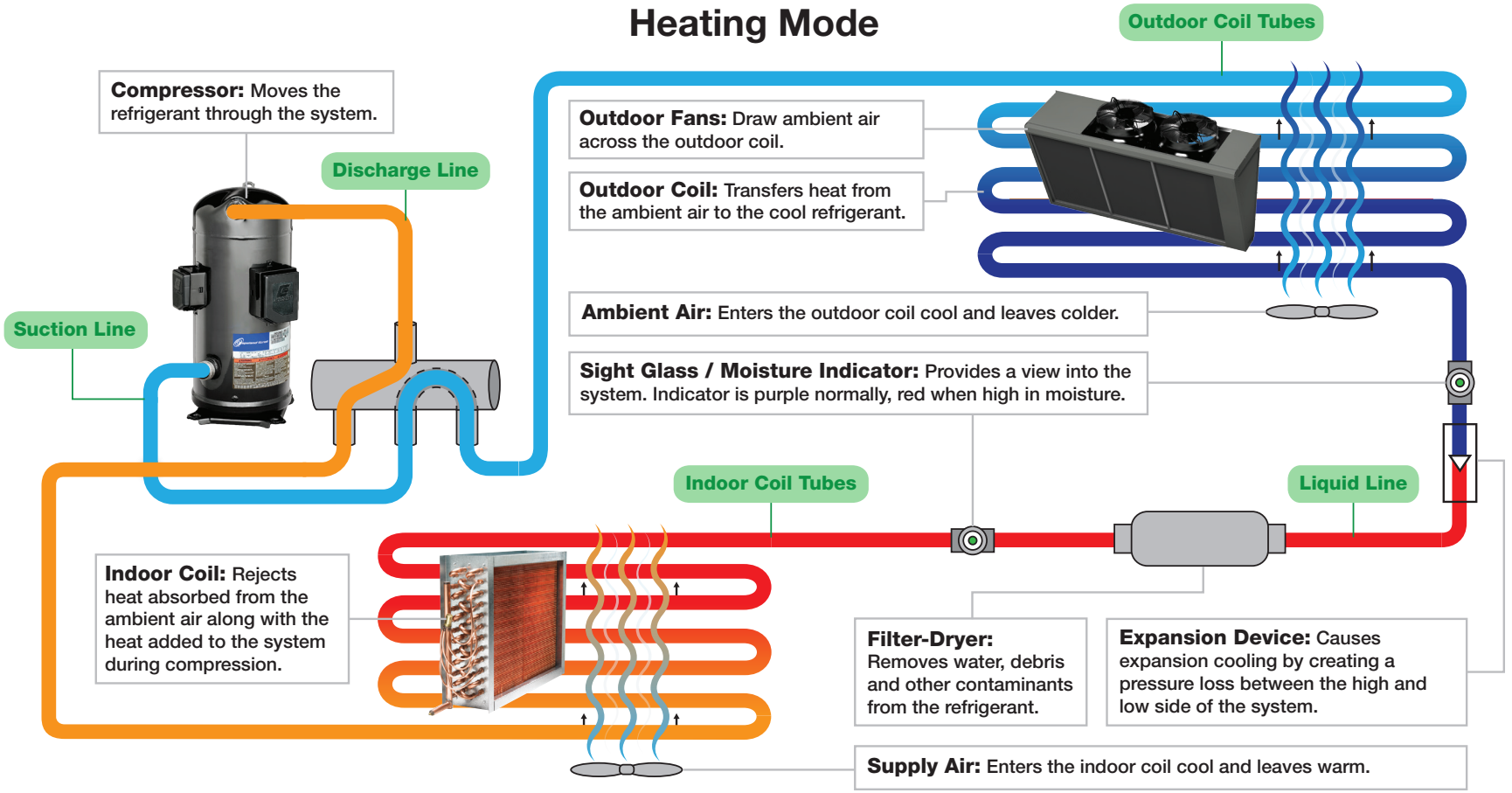
Air-Source Heat Pump Refrigeration System

Heating Mode



SYSTEM TEMPERATURES AND PRESSURES			
Refrigerant State	T, °F	R-410A, psig	Superheat/Subcool
Low Pressure Saturated	27	91	
Low Pressure Superheated Vapor	37	91	Superheat = T - T_{sat} = 37° - 27° = 10°F
High Pressure Gas	145	319	
High Pressure Saturated	100	319	
High Pressure Liquid	90	319	Subcool = T_{sat} - T = 100° - 90° = 10°F

LOAD CALCULATIONS	
Condenser (Indoor Coil)	Q_{out} (Btu/hr) = 1.08 x SCFM x Δ Temperature
Evaporator (Outdoor Coil)	Q_{in} (Btu/hr) = 4.5 x SCFM x Δ Enthalpy

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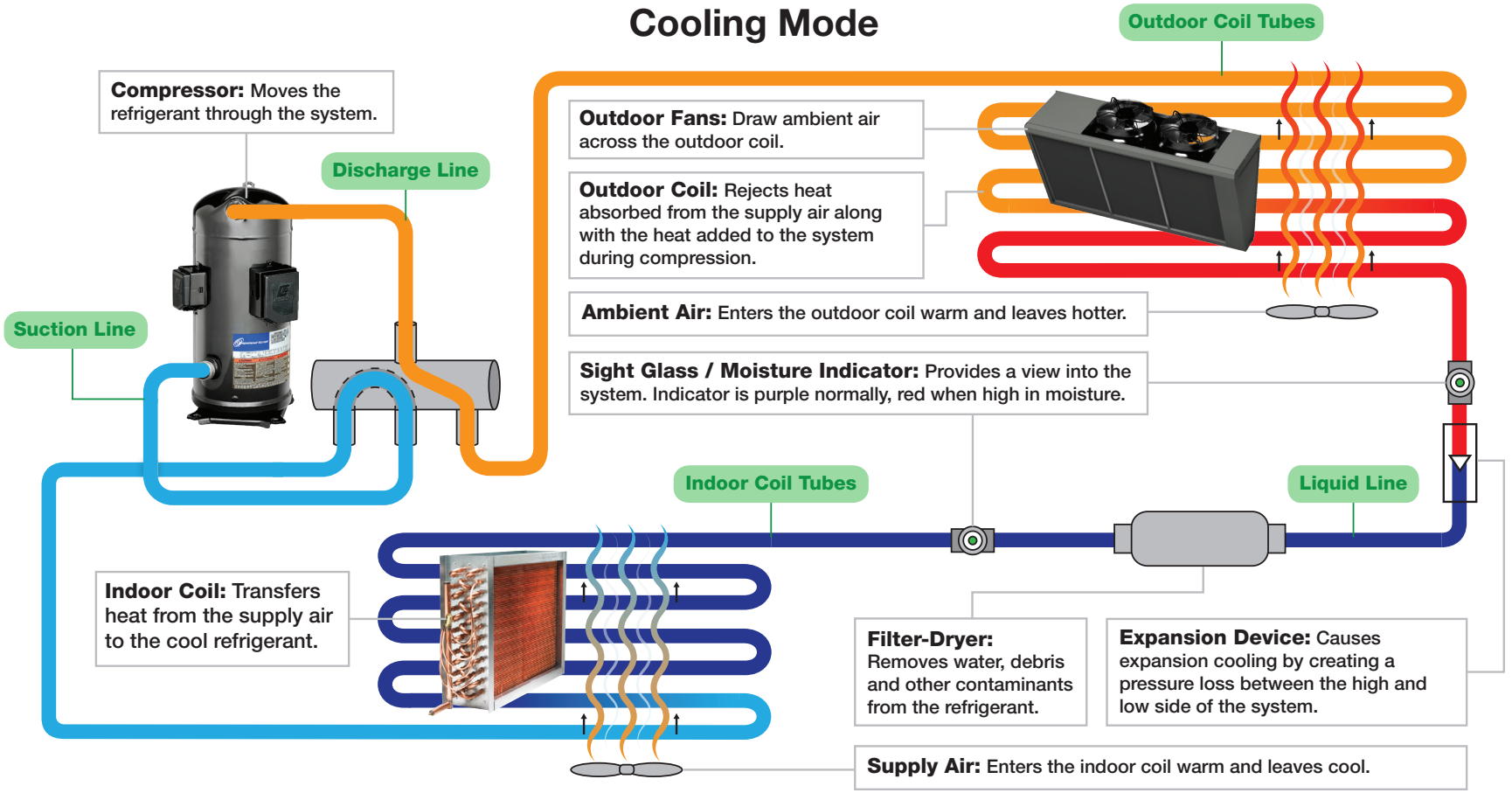
Air-Source Heat Pump Refrigeration System

Cooling Mode



SYSTEM TEMPERATURES AND PRESSURES			
Refrigerant State	T, °F	R-410A, psig	Superheat/Subcool
Low Pressure Saturated	45	131	
Low Pressure Superheated Vapor	55	131	Superheat = T - T_{sat} = 55° - 45° = 10°F
High Pressure Gas	160	393	
High Pressure Saturated	115	393	
High Pressure Liquid	105	393	Subcool = T_{sat} - T = 115° - 105° = 10°F

LOAD CALCULATIONS	
Condenser (Outdoor Coil)	Q_{out} (Btu/hr) = 1.08 x SCFM x Δ Temperature
Evaporator (Indoor Coil)	Q_{out} (Btu/hr) = 1.08 x SCFM x Δ Temperature

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