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Master the Mini-Split

Presented By:

Tony Dzick



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Apollo

— MECHANICAL CONTRACTORS —
Facility Services



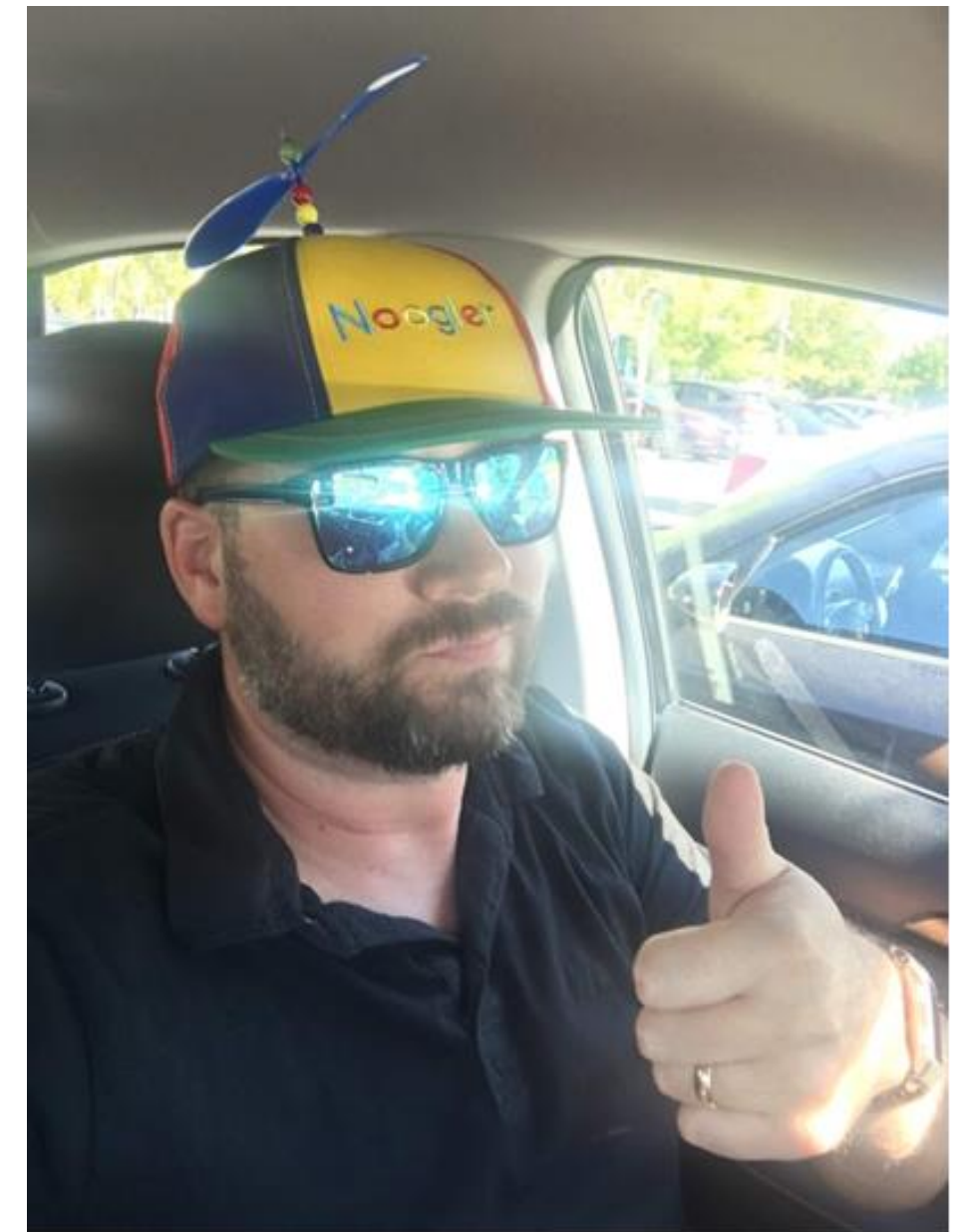
Topics that will be covered

- Introduction
 - Background / Resume
 - Certifications
 - Why?
- Basic Refrigeration and Air Conditioning
 - Basic Refrigeration Components
 - Basic Refrigeration Cycle
 - Basic Refrigeration Troubleshooting
- Conclusion
 - Safety Precautions
 - Contact info

Introduction

Tony's Background

- Born in Carlton, MN moved to Denver, CO
- Enlisted in US Army
- Denver, CO high-rise Operations
- Columbus, OH Alliance Data Systems
- Google / Oracle / Archer DX
- Spokane, WA Apollo Mechanical



Tony's Resume

- US Army 19D Cavalry Scout
 - M2A1 Bradley Fighting Vehicle Gunner
 - Army Commendation Medal
- ING / CB Richard Ellis / Jones Lang LaSalle
 - Assistant Chief Engineer
 - EPA – Universal Refrigerant License
 - Refrigerant Plant Operator License
 - BOMA – SMT & SMA
 - LEED Green Associate
- Alliance Data Systems
 - Technical Systems Facilities Manager Columbus, OH
 - Managed all HVAC and Electrical for 11 locations, 12 HVAC/Electrical Techs
 - Main Data Center 24/7 and Disaster Recovery Data Center
 - Printing, outgoing mail, receiving mail facilities, banks, and call centers
 - HVAC, Generators, ATS, Battery, UPS and building automation
- Google/Oracle
 - Maintenance Planner Google New Albany, OH
 - Maintenance planning & Commissioning for 120 MW Google Data Center in New Albany, OH
 - Technical Systems Manager Oracle Broomfield, CO
 - Managed HVAC & Electrical trades for Oracle Broomfield campus



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Why?

- HVAC and Electrical trade jobs are in high demand.
 - Average age of HVAC techs is 54 years old
 - Bureau of Labor and Statistics
 - Demand for HVAC techs expected to grow 13% from 2018 to 2028
 - Basic troubleshooting skills can save money in your facilities
 - Basic troubleshooting skills can decrease work injuries
 - I love what I do!



Refrigeration Components

- Compressor
- Metering Device
- Evaporator Coil
- Evaporator Fan
- Air Filter
- Condenser Coil
- Condenser Fan
- Controls
- Electrical Disconnect

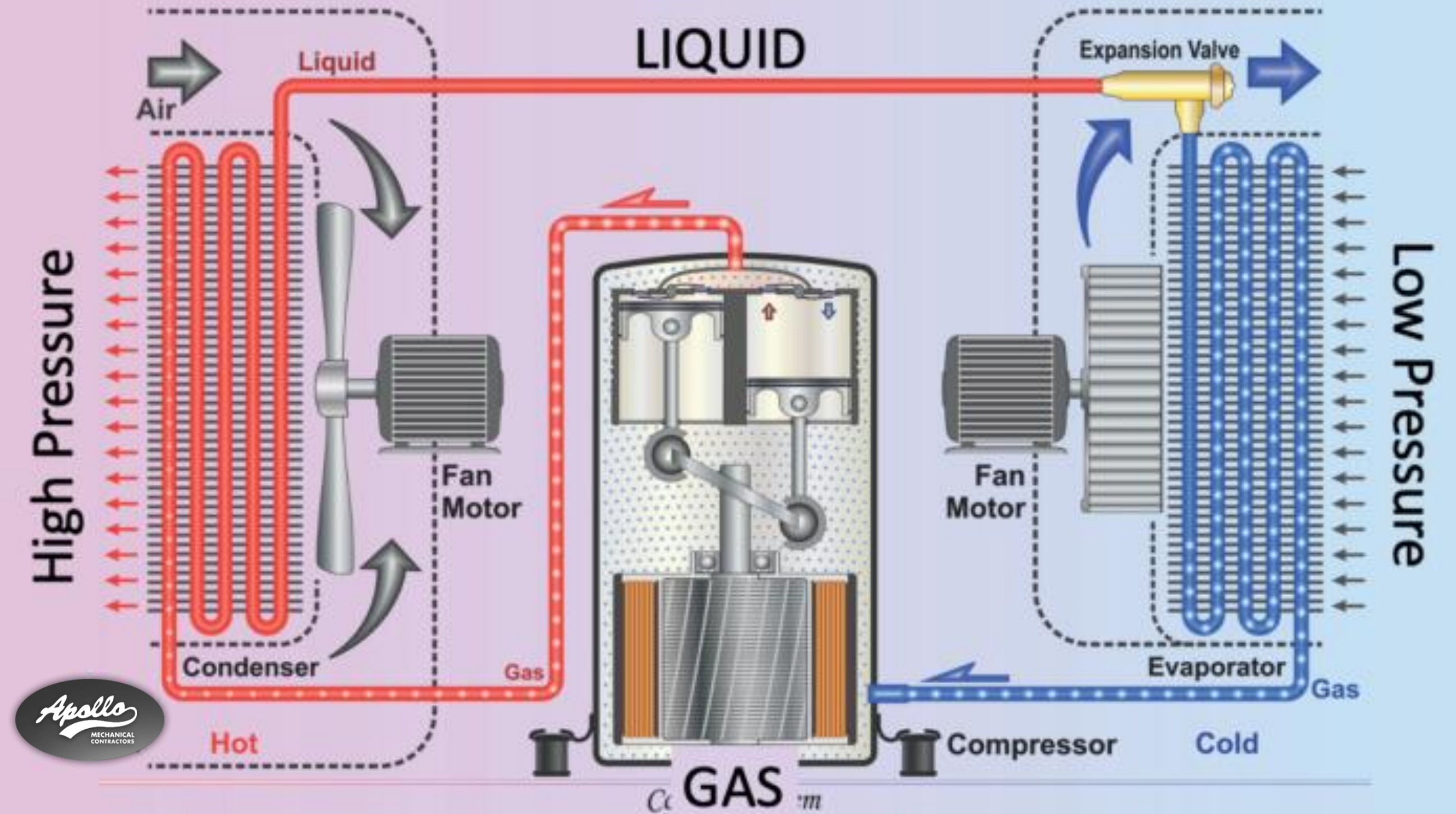


Capillary Tube

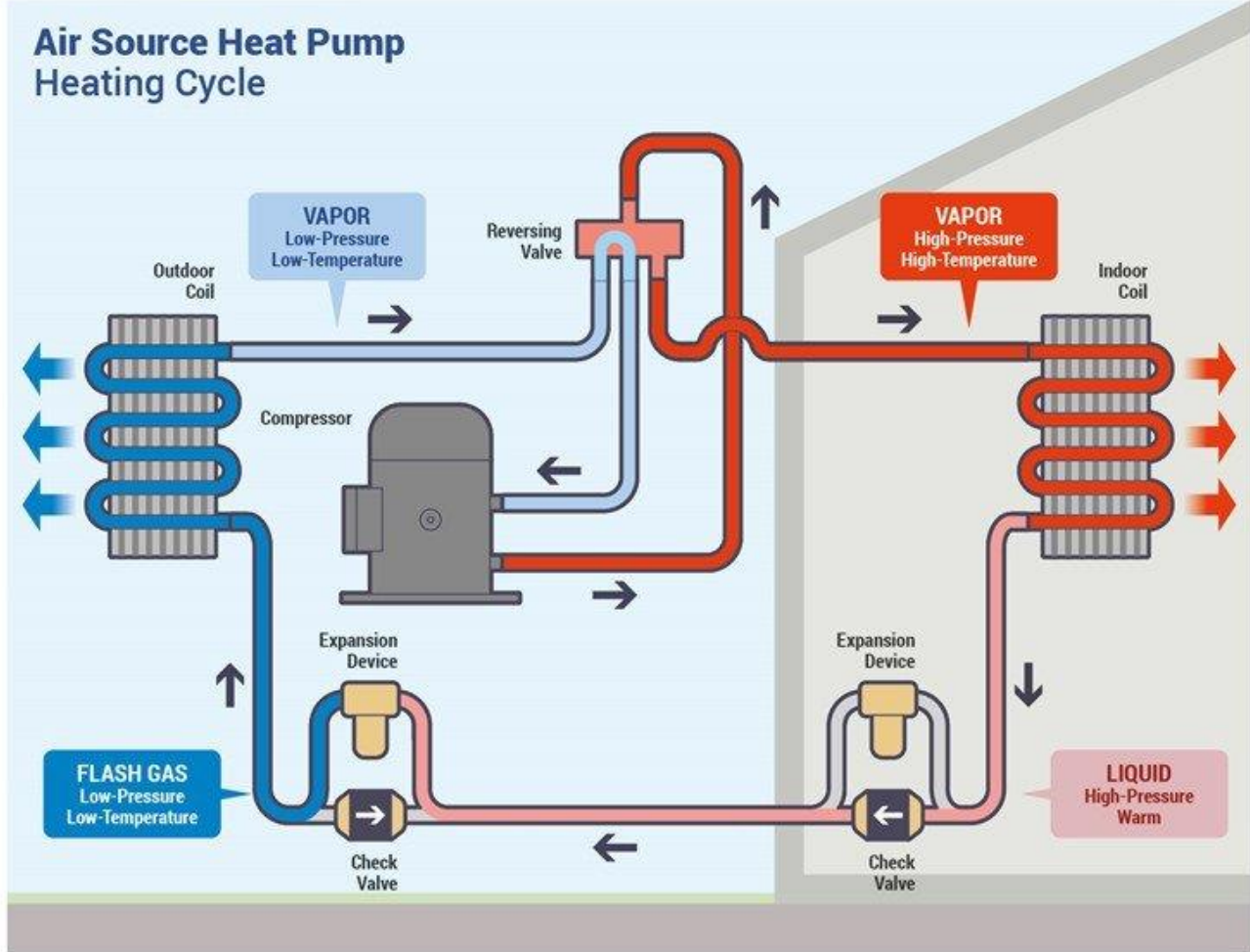
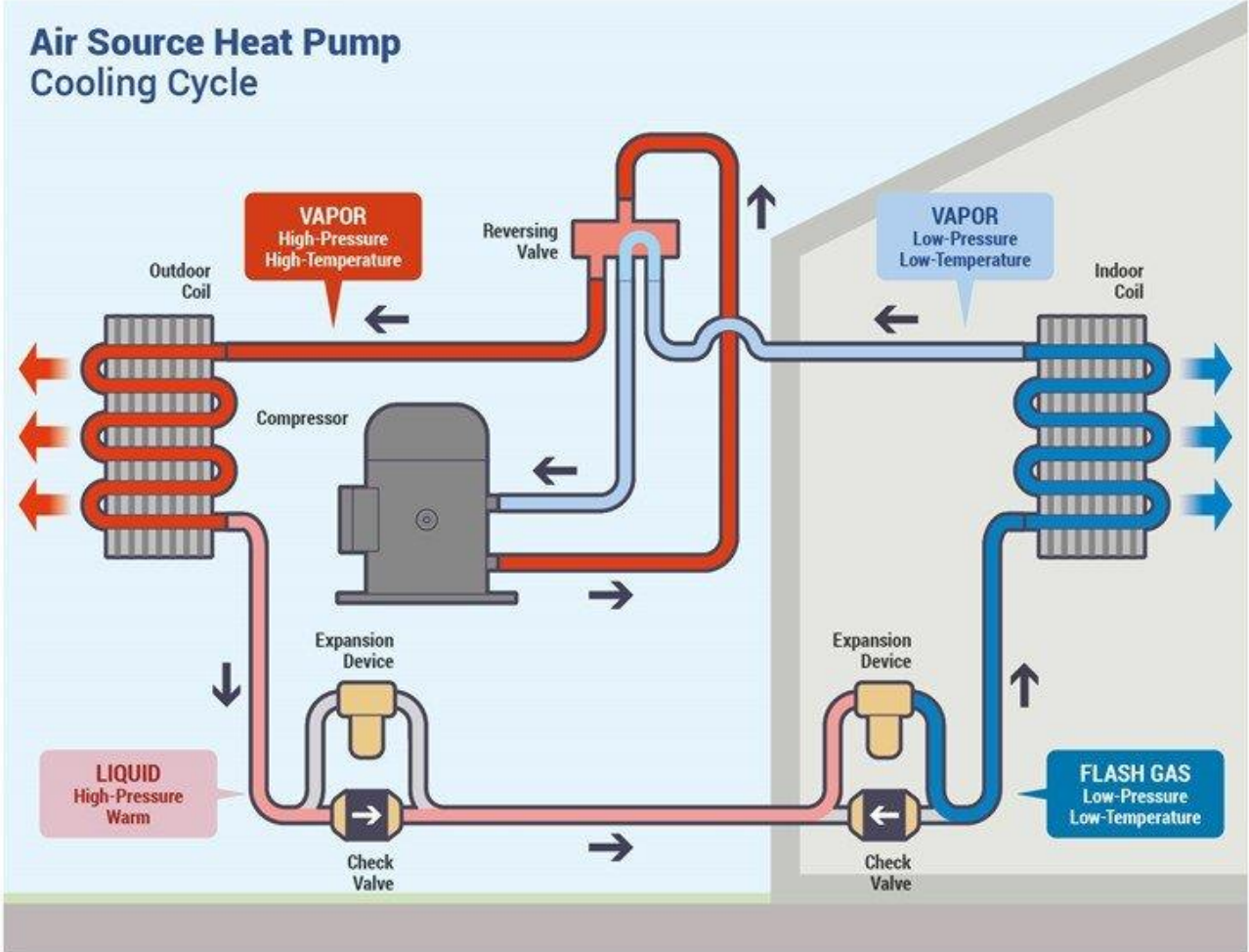


TXV

Basic Refrigeration Cycle



Heat Pump Operation



Diagnosing Issues and When to Call for Help

Best Acronym Ever

- **T.E.C.H.**
 - **T**emperature Controls
 - **E**vaporator
 - **C**ondenser
 - **H**eat Measurements

Temperature Controls (Thermostat/Sensor)

- Thermostat
 - Check Settings
 - Check Batteries/Power
 - Location – Potential Heat Sources



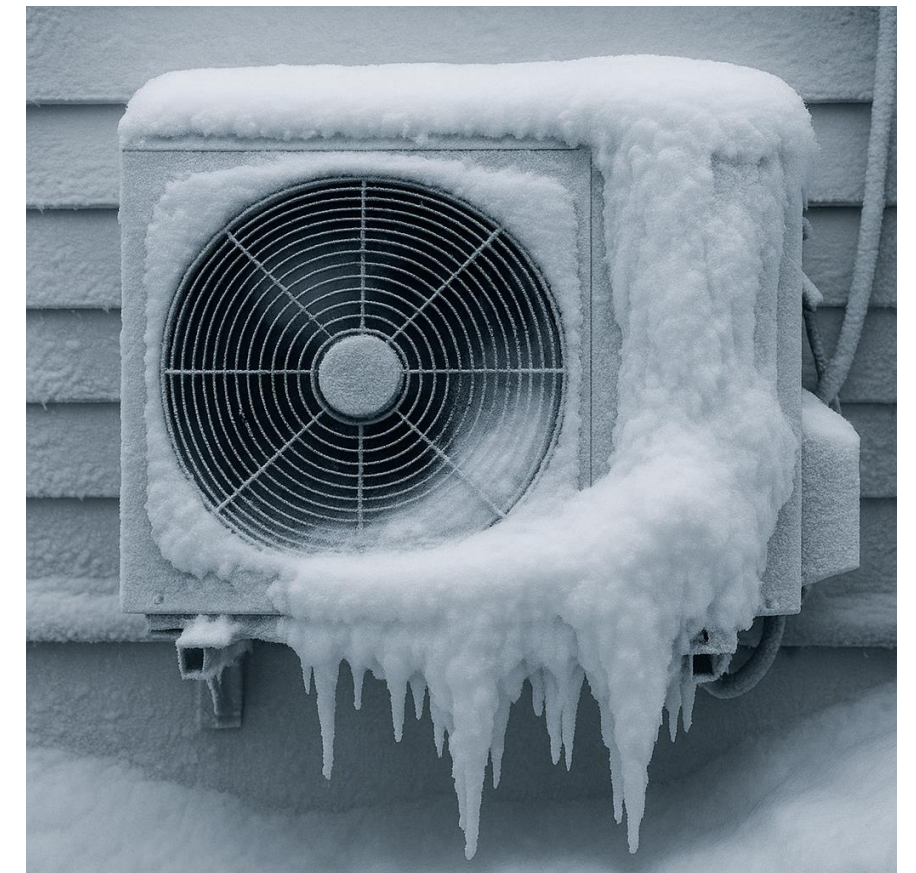
Evaporator

- Verify Airflow (Supply Fan)
- Check Filters/Clean Evaporator
- Frozen Evaporator
- Condensation Lines



Condenser

- Condenser Fan Operation
- Compressor Operation / Refrigerant Leak Indications
- Coil Clean - Unrestricted Airflow Over Coil
- Ice Build-up



Heat Measurements

- Evaporator Measurements
 - Measure air temperature on both sides of the evaporator coil.
Delta - should be close to 20 degrees.
- Condenser Measurements
 - Measure ambient air temp and the air temp leaving the condenser Delta - should be 10-15 degrees.



Working Safe Together

- Lock Out – Tag Out
 - HVAC equipment starts automatically
 - Controls and supply voltages may have separate disconnects
- Hot Works / Fire Safety
 - Torch Use
 - Fire Alarm Impairment
- PPE (Personal Protective Equipment)
 - HVAC equipment starts automatically
 - Safety Glasses and Gloves are minimum for HVAC

HD Supply



On Demand Water Heater Installation

Ryan Fowler

Field Account Representative

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509-868-1218

Thanks!

Thank You, from Apollo Mechanical!

Apollo

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Contact Info
-Linktree



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Thank You For Attending!