

½ Day R 410A Installation and Service

Course Description & Topics

Objective: This class will discuss the current R-22 phase out schedule, the differences between R-22 and R-410A and how to safely work with and properly install ICP R-410A systems.

Topics:

- Ozone & Global Warming
- EPA & Clean Air Act Update
- Current Phase-Out Schedule
- R-410A Properties
- Safety & Handling
- Service Tools
- POE Oil Properties
- Component Differences
- Replacing R-22 Systems
 - Equipment
 - Existing Line Sets
- Proper Installation & Service Procedures
 - Driers
 - Nitrogen & Brazing
 - Evacuation
 - Measuring Airflow
 - Charging
- Troubleshooting & R-410A
 - Measurements Needed
 - Using Trend Charts

R 410A Installation and Service Course Syllabus

Course Name: R 410A Installation & Service

Classroom Hours: 3.5 Class Hours

Course Description: This course relates to the Installation and Service procedures for central Air Conditioning and Heat Pump Equipment, which uses the alternative refrigerant R 410A. Information regarding the Montreal Protocol, Refrigerant Phase-out dates, Global Warming Potential, Refrigerant Efficiency and reasons behind the choice of R 410A as the alternative refrigerant for R 22 will also be discussed. The properties and safe handling of R-410A and POE oil as well as service tools required will be discussed. There will be a comparison of R-22 and R-410A system components. Replacing R-22 equipment, existing line sets, line set sizing and proper installation practices will also be covered. The proper balance of Airflow and Refrigerant flow will be discussed as well as methods of checking for Proper Airflow. Review of the basics of Mechanical Cooling, the Refrigeration Cycle, Properties of Air, System Mechanical Components and Pressure Temperature Relationships. In addition the class will cover proper use of Wet Bulb and Dry Bulb Temperatures to determine System Pressures, use of Superheat Charging Charts and Subcooling Charts, proper use of Unit Pressure Charts and Refrigerant Cycle Diagnostic Charts.

Overall Goal: The overall goal is to teach the contractor the proper service, installation and troubleshooting methods for equipment that uses R 410A refrigerant.

Specific Behavioral Objectives: The contractor should be able to: determine proper sequence of operation as related to the flow of refrigerant in an air conditioning system; interpret refrigerant charging charts to determine proper operating pressures; use superheat and subcooling charts to determine correct operating conditions for an air conditioning system; use diagnostic charts to determine system faults; use Temperature Rise and Static Pressure to determine proper system airflow.

Method of Presentation: This class consists of lecture, discussion, class participation and written exercises.

Method of Evaluation: Evaluation is measured testing.