

Residential Heat Pump Troubleshooting Training System | Multimedia Courseware

Introduction to Residential Heat Pump Systems - M19173

Objective 2: Describe the Basic Operation of a Mechanical Refrigeration System

Basic

All refrigeration systems use the same basic components and operational principles.

The basic components of a refrigeration system are the:

- ✓ Compressor
- ✓ Condenser
- ✓ Expansion Valve
- ✓ Evaporator
- ✓ Refrigerant

Each of these components performs a specific function in a mechanical refrigeration system.

The diagram illustrates a closed-loop refrigeration system. It includes a condenser (top left), an expansion valve (top right), an evaporator (middle right), and a compressor (bottom center). The condenser is labeled with 391 psi (2696 kPa) and 102 °F (39 °C). The evaporator is labeled with 130 psi (896 kPa) and 35 °F (2 °C). The compressor is labeled with 130 psi (896 kPa) and 54 °F (12 °C). The expansion valve is labeled with 391 psi (2696 kPa) and 175 °F (79 °C). A callout box labeled 'Condenser' provides a detailed view of the condenser coils.

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Page 9 of 48

Residential Heat Pump Troubleshooting Learning System: M19173

Amatrol's Residential Heat Pump Troubleshooting Learning System teaches the critical skills HVACR technicians need to succeed when working with residential HVAC systems that use a heat pump and traditional ducting. Learners will cover topics, such as: a heat pump condenser, heat pump air handler, Wi-Fi-enabled thermostat, fuse box, ducting, and manifold.

With Amatrol's interactive multimedia eLearning curriculum, learners cover a wide variety of fundamental residential heat pump topics, including: thermostat operation, pressure and temperature measurements, component tests, and system troubleshooting.

In-Depth Curriculum

Interactive Multimedia eLearning Curriculum

Amatrol's curriculum features a highly-interactive, multimedia format that includes stunning 3D graphics and videos, voiceovers of all text, and interactive quizzes and exercises designed to appeal to learners with different learning styles. The T7100 curriculum teaches learners the fundamentals of residential heat pump systems. For example, learners will study relevant topics, such as electronic thermostat operation, pressure and temperature measurements, heat pump component tests, and residential heat pump system troubleshooting.

The combination of theoretical knowledge and hands-on skills solidifies understanding and creates a strong basis for pursuing more advanced skills. For example, learners using these systems can expect to learn critical hands-on skills, including:

- Operating a heat pump in heating and cooling modes
- Using a gauge manifold to measure thermal system pressures

- Determining if a system is properly charged using the subcooling method
- Testing a thermostatic expansion valve
- Troubleshooting insufficient cooling

Additional Info

Additional Requirements

- Computer: [See requirements](#)
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