



Labtech HVAC Residential Content List

HVAC Residential Consists of 15 modules which have several learning elements in the form of text, technical simulations, and 3D images to support the learning process to be more interactive and effective.

Vacuum and Evacuation (Recovery)

Familiarization with system evacuation in refrigeration systems

Understand the functions of the equipment used for refrigeration system evacuation

Understand the procedure of refrigerant recovery

Understand the procedure of vacuum process in the refrigeration system

Recovery, Recycling, and Recharging

CFC Refrigerants

HCFC Refrigerants

HFC Refrigerants

Refrigerant Blends (Azeotropic - Zeotropic)

Recovery, recycling, reclaiming of refrigerants

Reclamation

Pressure

Atmospheric, Gauge and Absolute

Evacuating System with a Vacuum Pump

Deep Vacuum

High-Vacuum Pumps

Squirrel Cage Induction Motors, 1 Phase

Introduction to electric motors

Fundamentals of single-phase induction motor

Characteristics and performance of single-phase induction motor

Construction of single-phase induction motor

Parts of a single-phase induction motor

Squirrel Cage induction Motors, 3 Phase

Introduction to electric motors

Fundamentals of three-phase induction motor

Characteristics and performance of three-phase induction motor

Construction of three-phase induction motor

Parts of a three-phase induction motor



Temperature Control

Familiarization with temperature control system in refrigeration systems
Understand operations and functions of an electronic temperature controller
Understand application of electronic temperature controller in a cold storage refrigeration system

Defrost Control

Familiarization with defrost system in refrigeration systems
Understand operations and functions of a mechanical defrost timer
Understand application of a mechanical defrost timer in cold storage

Semi-Hermetic Compressor

Familiarization of semi-hermetic compressor
Identify parts of semi-hermetic compressor
Understand operation cycle of semi-hermetic compressor
Understand compression process in semi-hermetic compressor
Understand lubrication in semi-hermetic compressor
Understand oil circulation in semi-hermetic compressor
Understand refrigerant migration in semi-hermetic compressor
Understand motor cooling in semi-hermetic compressor
Understand electrical connection in semi-hermetic compressor

Open Type Compressor

Introduction to electric motors
Familiarization of open type compressor
Identify parts of open type compressor
Understand operation cycle of open type compressor
Understand compression process in open type compressor
Understand lubrication in open type compressor
Understand electric motor drive system for open type compressor

Automatic Expansion Valve (AXV)

Understand automatic expansion operation and function
Understand automatic expansion valve types and design
Understand automatic expansion valve capacity
Understand automatic expansion valve application



Service Valve

- Familiarization with service valve functions and types
- Familiarization with gauge manifold set
- Using split system installation valves
- Connecting a gauge manifold set to Schrader valve
- Removing gauge manifold set from Schrader valve
- Accessing sealed systems
- Connecting a gauge manifold set to Manual Service valves
- Removing gauge manifold set from Manual Service valves

Oil Separator

- Familiarization with service valve functions and types
- Familiarization with gauge manifold set
- Using split system installation valves
- Connecting a gauge manifold set to Schrader valve
- Removing gauge manifold set from Schrader valve
- Accessing sealed systems
- Connecting a gauge manifold set to Manual Service valves
- Removing gauge manifold set from Manual Service valves

Basic Refrigerator System

- Understand definition of pressure and atmospheric pressure
- Understand Boyle's law
- Understand Charles's law
- Understand Gay-Lussac's law

Cold Room, Refrigeration System and Components

Cold storage room refrigeration components

- Compressor
- Condenser
- Evaporator
- Expansion devices
- Liquid receiver
- Filter drier
- Sight glass
- Accumulator
- Oil separator
- Solenoid valve
- Cold storage room refrigeration system
- Cold storage room insulation panels
- Cold storage room doors



Reverse Cycle (Heat Pump)

Understand refrigeration cycle

Understand heat pump cycles

Understand heat pump parts and their functions

Locate heat pumps parts and components

Familiar with types of heat pump systems

Residential Central Air Conditioner Central Unit

Principle of residential central air-conditioning

Outdoor unit of residential central air-conditioning

Residential central air-conditioning cooling mode

Residential central air-conditioning heating mode

Residential central air-conditioning configuration and installation

Pressure, temperature, and heat transfer process on a residential air-conditioner

Indoor unit of residential central air-conditioning

Air distribution duct system of residential central air-conditioning

Residential central air-conditioning control system

Refrigeration cycle and flow diagram