

Base Unit of Refrigeration & A/C System

Overview

The base unit of refrigeration and air conditioning training system is designed to demonstrate the fundamentals of both the refrigeration and air conditioning systems and their components. The unit allows observation of the systems operation, in addition to a software to perform experiments and analyze the experiments results



Specifications

- The base unit is extended into complete refrigeration circuit with one of the four models.
- The unit is provided with ON/OFF switch and emergency switch.
- The unit is provided with condensing unit (compressor, condenser with add-on fan, receiver), solenoid valves, filter/drier, gauges, pressure switch, humidifier and refrigerant hoses.
- The unit is equipped with self-sealing couplings to reduce the refrigerant loss to a minimum.
- The solenoid valves are used to control the air conditioning / refrigeration system.
- The unit is connected to the other models
- hydraulically using refrigerant hoses and electrically with cables.
- The components are arranged in a way

that introduces trainees to the refrigeration and air conditioning components and allows the trainees to follow the path of the refrigerant.

- Temperatures and pressures in the system are recorded by sensors and displayed

dynamically in the software for system operation.

- The effect of parameter changes can be tracked in log p-h diagram at the software.
- The unit is provided with USB port to be connected to a PC

Experiments

Compressor

- » Type: Reciprocating
- » Voltage/Frequency: 208-220V ~ 50Hz
- » Refrigeration Capacity: 1501W
- » Ambient temperature: 32°C
- » Return gas: 15°C
- » Liquid temperature: 45°C

Receiver

- » Volume: 1.5 L.
- » Temperature (mini/max °C): -30 °C ~ +65 °C.
- » Maximum operation pressure: 32 bar.
- » Refrigerant: R-134a / R-404a.

Filter/Drier

- » Max. Working Pressure [bar]: 46 bar.
- » Temperature range [°C] [Max]: 70 °C.
- » Temperature range [°C] [Min]: -40 °C.

Condenser fan

- » Power supply: 230V.
- » Frequency: 50 ~ 60Hz.
- » Current: 0.18A.
- » Power: 90W.
- » Speed: 1100rpm.

Solenoid Valve

- » Ambient temperature range [°C] [Max]: 80 °C.

- » Ambient temperature range [°C] [Min]: -40 °C.
- » Frequency [Hz]: 50/60 Hz.
- » Power consumption: 12 W.
- » Rel. Humidity [% RH] [Max]: 100 %.
- » Rel. Humidity [% RH] [Min]: 0 %.
- » Supply voltage: 220 V.

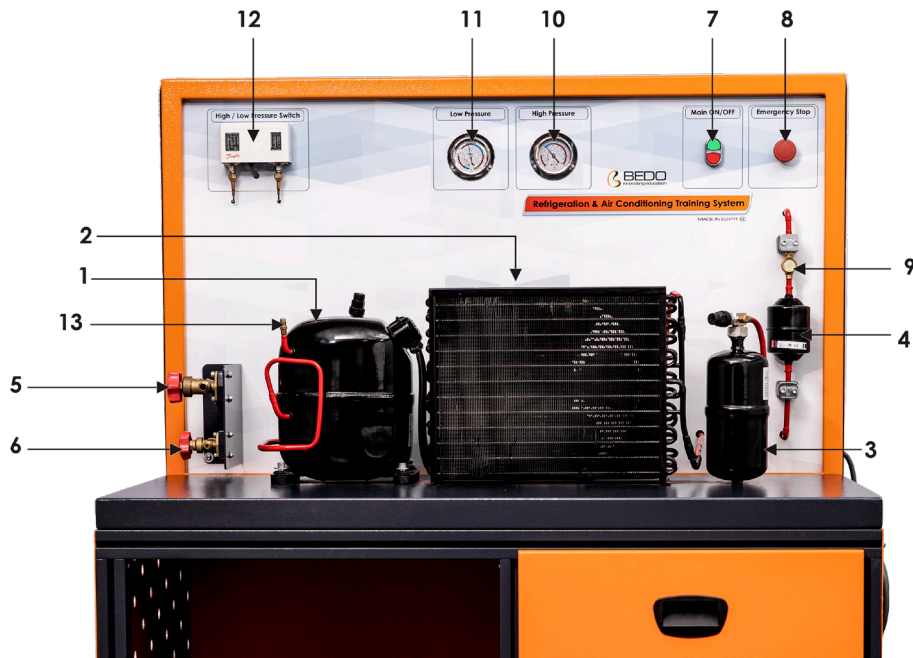
Sight glass

- » Body material: Brass
- » Max. Working Pressure [bar]: 35 bar
- » Moisture indicator: I indicator
- » Temperature range [°C] [Max]: 80 °C
- » Temperature range [°C] [Min]: -50 °C

Pressure switch

- » Ambient temperature range [°C]
 - [Max]: 65 °C
- » Ambient temperature range [°C]
 - [Min]-40 °C
- » Differential left side [bar] [Max]: 4 bar
- » Differential left side [bar] [Min]: 0.7 bar
- » Differential right side [bar]: 4 bar
- » Regulation left side [bar]Pe [Max]: 7.5 bar
- » Regulation left side [bar]Pe [Min]: -0.2 bar
- » Regulation right side [bar]Pe [Max]: 32 bar
- » Regulation right side [bar]Pe [Min]: 8 bar

Components



1	Compressor	2	Condenser, force-ventilated
3	Refrigerant receiver	4	Filter / dryer
5	Inlet quick connection	6	Outlet quick connection
7	ON/OFF switch of the Base Unit	8	Emergency switch
9	Sight glass	10	High pressure gauge
11	Low pressure gauge	12	Double action pressure switch
13	Refrigerant filling valve		

Scope of Delivery

- Base Unit of Refrigeration & A/C System (AR - 001)
- Hard copy user manual

Required for Operation

- Laboratory PC

Options

- Digital Content (BI-01)
- Air-Conditioning Model (AR-002)
- Model of A Simple Air Conditioning System (AR-003)
- Model of Refrigeration System (Refrigeration & Freezing) (AR-004)
- Refrigerator Model (AR-005)