didactic technology

RFC – 1 | SINGLE CHAMBER REFRIGERATION TRAINER

Technical specifications:

The single chamber refrigeration trainer is a fully operational refrigeration system, with safety features, ideal to be used by the instructors and by the students with the ability to quickly connect and disconnect all the components required for the execution of the experiments that simulate the real use of such a system.
The refrigeration means used by the trainer is environmental friendly (R-134a).
The trainer is composed of a work bench with a metal base and a wooden work surface like the ones used in kitchen benches with dimensions 80X200cm, made by a wood chip board 3 cm thick coated by a fireproof surface pressed to it. Mounted vertically on the work surface is a metal perforated plate. On this plate the electromechanical installation of the trainer is mounted and developed.
On the trainer there are also various test points and a fault insertion and restoration unit.
The metal frame of the work bench is made of a reinforced plate with dimensions 30x50mm with each part welded to the other and it is dyed by an electrostatic method.
The metal legs are welded to the rest of the frame. At the lower part the legs are attached to each other with a metal traverse for the secure support of the work bench.
The single chamber refrigeration trainer also includes :
- A control panel with a safety switch and a panic switch.

- A condenser unit with a hermetically closed type 3/8 – 1/2 HP compressor with 2 SERVICE base valves, a forced circulation condenser and a collector with a SERVICE valve.
- A forced air circulation evaporator.
- An one use ¼ ´´ detachable filter.
- A refrigeration fluid flow pointer.
- A thermostatic valve.
- A capillary tube
- A low pressure pressostat.
- A high pressure pressostat.
- A thermostat – an electronic thermometer mounted inside the chamber.
- Two (2) contact thermometers.
- Low and high pressure gauges.
- A chamber with dimensions 60 X 50 X 40 cm made of a transparent material (6 mm thick plexi glass) with a thermal load. The chamber has a door that provides the ability to the instructor and to the students to make the inside observation and measurements.

The trainer includes an experiments manual (student's – instructor's) that covers the following subjects :

- Drawing the refrigeration cycle in the P-H chart
- Assembling – disassembling the refrigeration system
- Vacuum creation – leak detection and control
- Charging – Satisfactory charging detection and control
- Electrical connections of the installation
- Automations – adjustments
- Circulating refrigeration fluid supply determination – calculation of the refrigeration efficiency – COP calculation
- Fault insertion and restoration in the condenser unit – in the evaporator unit
- Fault insertion and restoration in the fluid expansion system