

**Product Name :** " HEAT PUMP TRAINING KIT "  
**Product Code :** " R.A.C 05 "



**Description :**

## **HEAT PUMP TRAINING KIT:-**

### **AIM:-**

Familiarisation with the function of a heat pump:

- Familiarisation with the main components of a heat pump

### **INTRODUCTION:-**

Mechanical heat pumps exploit the physical properties of a volatile evaporating and condensing fluid known as a refrigerant. The heat pump compresses the refrigerant to make it hotter on the side to be warmed, and releases the pressure at the side where heat is absorbed. The working fluid, in its gaseous state, is pressurized and circulated through the system by a compressor. On the discharge side of the compressor, the now hot and highly pressurized vapor is cooled in a heat exchanger, called a condenser, until it condenses into a high pressure, moderate temperature liquid. The condensed refrigerant then passes through a pressure-lowering device also called a metering device. This may be an expansion valve, capillary tube, or possibly a work-extracting device such as a turbine. The low pressure liquid refrigerant then enters another heat exchanger, the evaporator, in which the fluid absorbs heat and boils. The refrigerant then returns to the compressor and the cycle is repeated. It is essential that the refrigerant reaches a sufficiently high temperature, when compressed, to release heat through the "hot" heat exchanger (the condenser). Similarly,

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the fluid must reach a sufficiently low temperature when allowed to expand, or else heat cannot flow from the ambient cold region into the fluid in the cold heat exchanger (the evaporator). In particular, the pressure difference must be great enough for the fluid to condense at the hot side and still evaporate in the lower pressure region at the cold side. The greater the temperature difference, the greater the required pressure difference, and consequently the more energy needed to compress the fluid. Thus, as with all heat pumps, the coefficient of performance (amount of thermal energy moved per unit of input work required) decreases with increasing temperature difference.

Insulation is used to reduce the work and energy required to achieve a low enough temperature in the space to be cooled.

To operate in different temperature conditions, different refrigerants are available. Refrigerators, air conditioners, and some heating systems are common applications that use this technology.

**TECHNICAL SPECIFICATION:-**

1/4 HP open type belt driven compressor with motor, fan cooled condenser, fan-cooled evaporator, two check valves, two capillary tubes, reversing valve switch, filter-drier – dual flow, high pressure control, main circuit breaker, duplex receptacle, compressor switch, pilot light, evaporator fan speed control, hardware kit, cold box and courseware.

The unit is supplied with a mobile storage cabinet of code-gauge furniture stock steel with 4-inch swivel rubber-tired casters. The unit is charged with R-134a HFC refrigerant.