

## REFRIGERATION INSTALLATION WITH TWO STAGE COMPRESSOR



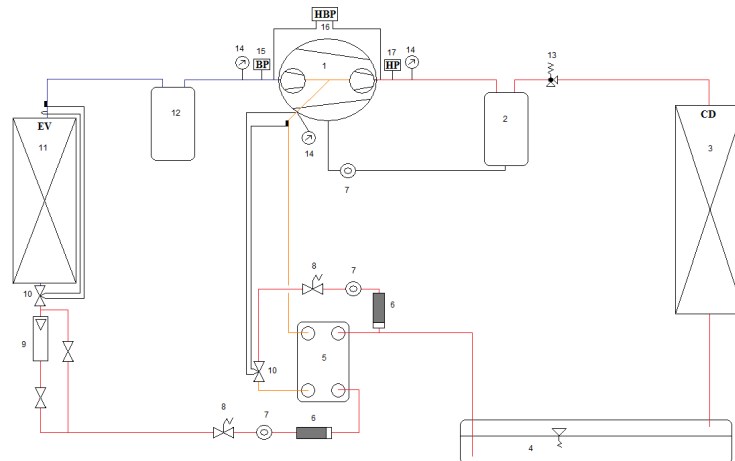
### Experimental capabilities

- Identification of the components of a refrigerating system with two stage compressor
- Commissioning and verification of operation
- Study of the basic concept of a refrigeration installation R404A, with two stages.
- Study of the thermodynamic cycle on enthalpic diagram.
- Calculation of cooling power to the condenser and evaporators.
- Overall efficiency of the unit.
- Preventive and curative maintenance
- Study of oil circuit

## Operating principle

The BIE100 bench allows the study of a low pressure refrigeration cycle with two-stage compressor. The system allows viewing the two compression stages and validate the difference in performance compared to a conventional compressor. Students will start up the system and do temperature readings with different operating modes. They will analyze the data and understand what is the influence of the different components on the system. The robust design of this equipment makes it perfectly suited for use in schools. Its anodized aluminum structure on wheels makes it extremely robust as well as great flexibility of integration into your premises. The manufacturing of this equipment meets the European machine directive.

## Illustrations



## Technical details

1. Semi-hermetic compressor accessible two-stage  
Industrial type  
Refrigerant: R404A  
Condensing temperature + 35°C  
Evaporating temperature -35°C  
Cooling capacity: 6210 W
2. Oil Separator
3. Air condenser
4. Liquid tank
5. Brazed plate exchanger
6. Dehydrator
7. Liquid indicator
8. An electromagnetic valve
9. Refrigerant flowmeter with bypass valve
10. Thermostatic expansion valve with external equalizer
11. Evaporator with forced ventilation of ceiling type.  
The evaporator is installed in a cold chamber of interior dimensions of 1230x1030x2030mm. The chamber is equipped with standard components (anti panic bar, valve ...). The load is simulated by electrical resistors of 2000W with ON/OFF thermostat
12. Suction line accumulator.
13. Safety valve
14. High pressure, medium pressure and low pressure manometer with dual scale pressure temperature
15. Low pressure switch (control pump down)
16. Combined pressure switch HLP (safety)
17. High pressure switch (control of the condenser fan)
18. Oil differential pressure switch

The bench comprises an electrical box to the standards with a multiline display connected to thermocouple probes located at the following points:

- Evaporator outlet
  - Inlet and outlet of the exchanger
  - Compressor suction and discharge
  - Outlet of the condenser and expansion valve inlet
- It also indicates the electric power of the compressor

## Services required

- Power supply: 400Vac – 50 Hz – 25 A
- Power supply type: 3 phase(s) + Neutral + Earth.
- Dimensions: (LxWxH mm): 3830 x 1300 x 2500
- weight (Kg): 400

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

## Documentation

- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Certificate of conformity CE