



This equipment has been developed for the study of the characteristics of a centrifugal fan, through the realization of a wide range of experiments and experiences.

A pitot tube allows the measurement of air velocity at any diametral point of the tube, measuring the position of the tube through a digital display.

The vertical and inclined manometers allow a correct reading of the pressures.

The equipment is supplied with 2 different impellers (blades tilted forward and backward), which can be exchanged in a very simple way. Through a control of 3 positions we control the direction of rotation of the motor.

The frequency shifter allows the variation of the speed of rotation, while we observe the consumed electrical power in a wattmeter.

Through a conical cap in the air outlet we can cause an adjustable pressure drop, and study the operating points of the fan.

LEARNING OBJECTIVES

- Study and obtaining the characteristic curves of a centrifugal fan of straight blades.
 - Static pressure - flow ($D_{pe} - Q$).
 - Total pressure - flow ($D_{Pt} - Q$)
 - Power - flow ($P-Q$)
 - Efficiency - flow ($\eta-Q$).
- Study and obtaining the characteristic curves of a centrifugal fan of forward curved blades.
 - Static pressure - flow ($D_{Pe} - Q$)
 - Total pressure - flow ($D_{Pt} - Q$)
 - Power - flow ($P-Q$)
 - Efficiency - flow ($\eta-Q$).
- Study of the regulation of a centrifugal fan by varying its speed of rotation. Obtaining new characteristic curves at different revolutions.
- Use of the Pitot tube. Difference between static, dynamic and total pressure.
- Obtaining the profile of flow velocities in the suction line.
- Measurement of the flow using the Pitot tube.

TECHNICAL DATAInner diameters

- Aspiration pipe
 - \varnothing interior = 114 mm
 - \varnothing exterior = 120 mm
- Impulsion pipe
 - \varnothing interior = 114 mm
 - \varnothing exterior = 120 mm

Fan characteristics

- Maximum pressure increase 700 Pascuales.
- Maximum flow 1.000 m³/h.
- Rated power of the engine 250 W.
- Rotational speed 2.810 r.p.m. a 50 Hz.

Manometers

- Manómetros verticales de 100 mm wc.
- Manómetro inclinado 50 mm wc.

Other elements

- Frequency variable:
 - Rated power of the engine: 0.37kW
 - Maximum current of the input fuse: 10A
 - Input current at typical full load: 5.8A
 - Output Current RMS 100%: 2.2A
 - Intensity of overload 150%(during 60seg): 3.3A
 - Minimum value of brake resistor 68 Ω .
- Power indicator 0-400W
- Pitot tube \varnothing 3 mm in L de 200mm length.
- Supplied impellers:
 - With blades inclined forward.
 - With blades inclined backward.

REQUIREMENTS

- Power Supply: 230V/50Hz.