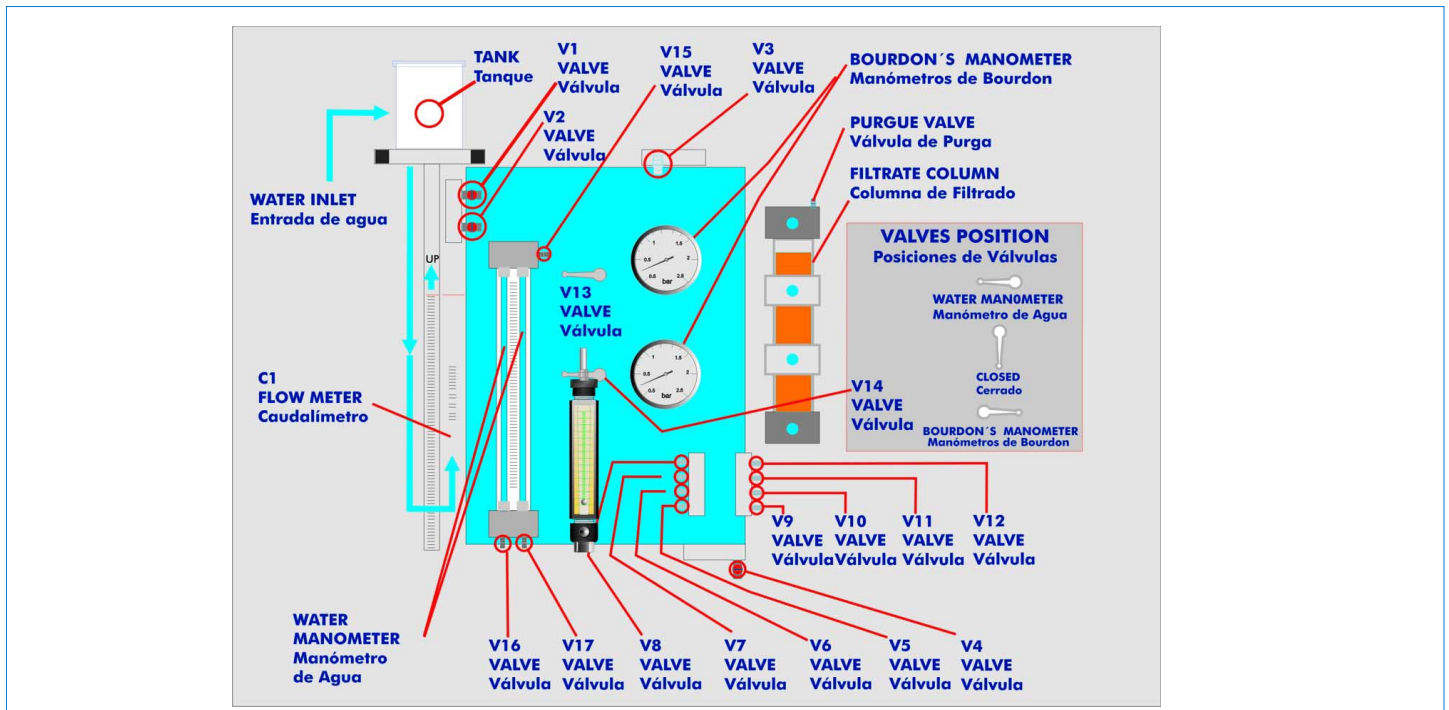




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 Products  
 Products range  
 Units  
 13.- Environment

PROCESS DIAGRAM AND ELEMENTS ALLOCATION



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## DESCRIPTION

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The EDIBON Permeability/ Fluidisation Studies Unit is designed for student to measure and understand the characteristics of flow through a bed of particles. Such flows occur both naturally and in process plant designs. This unit can also be used for a part of the studying of media for water and wastewater filtration.

This unit verifies Darcy's Law, examines Kozeny's equation and observes liquid fluidisation behaviour of a granular bed.

This unit is formed by:

**Permeameter:** This device is basically a transparent acrylic cylinder that encases the soil specimen to be tested. There are four piezometer taps located along the vertical axis of the cylinder, these will measure the total head at specific point in the soil specimen. The permeameter cell also has pots in the top and one purge valve placed in the top.

**2 Filter Metallic disk:** These will be placed between the soil and porous element, and will act as filters. They are placed in top and bottom of the cylinder. These filters also act primarily to distribute flow over entire cross-section area of the specimen.

**Piezometer or Manometer:** Transparent tube and will allow the observation of total head.

Two Bourdon type manometers.

**Constant-Head supply device:** This is a tank, with an overflow, help up on a stand above the permeameter. A flexible tube connects the bottom outlet of the tank to the bottom inlet of the flowmeter.

**Flowmeter:** To measure the water flow. The outlet is connected to the collector.

**Distribution Collector:** The distribution allows to determine the direction of the liquid, upper to bottom or vice versa.

**Piezometer taking collector:** It allows selecting the piezometer reading in the cylinder between four allowed configurations.

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## SPECIFICATIONS

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**Unit to verify Darcy's Law, to examine Kozeny's equation and to observe liquid fluidisation behaviour of a granular bed.**

**Anodized aluminium structure.**

**Main metallic elements in stainless steel.**

**Diagram in the front panel with similar distribution that the elements in the real unit.**

**Permeameter: transparent acrylic cylinder of 50 mm. diameter, 500 mm. length.**

**2 Filter metallic disks.**

**4 Piezometer taps located along the vertical axis of the cylinder.**

**Piezometric taking collector.**

**Piezometer or Manometer of water: 500 mm. length.**

**2 Manometers, Bourdon type, of 0-1000 mm H<sub>2</sub>O.**

**Constant head supply device: max. height variation: 500 mm.**

**Flowmeter: 2 l/min. max.**

**Manuals:**

This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices manuals.

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## EXERCISES & PRACTICAL POSSIBILITIES

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### Some Practical Possibilities of the Unit.

- 1.- Pressure drop measurements and correlations for flow through packed beds.
- 2.- To calculate the density of each specimen.
- 3.- To calculate the relative density of specimen mixing.
- 4.- Study and verification of Carman-Kozeny's equation.
- 5.- Calculation the void ratio.
- 6.- To determine the permeability constant (Darcy's Law).
- 7.- Observation of a liquid fluidised bed.
- 8.- Characteristic of a liquid fluidised bed.
- 9.- Attrition test.
- 10.- Measurement of permeability of selected solids.

## REQUIRED SERVICES

- Water supply: 2 l./min. (max.)
- Drainage.
- Sand of different diameters.

## DIMENSIONS & WEIGHT

- Dimensions: 850 x 400 x 1200 mm. approx.
- Weight: 70 Kg. approx.

## RECOMMENDED ACCESORIES

- Thermometer.
- Balance.
- Alternative bed materials (Ballotini, anthracite, gravel, silt, clay, etc.)
- Standpipe.
- Chronometer.
- Sieve Shaker

\*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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