



Bernoulli's Theorem Apparatus (SMT-FM-01)

This ESOLS Product of Fluid Mechanics related labs used to study the Bernoulli's principle which describes the relationship between the flow velocity of a fluid and its pressure. An increase in velocity leads to a reduction in pressure in a flowing fluid, and vice versa. The total pressure of the fluid remains constant. Bernoulli's equation is also known as the principle of conservation of energy of the flow.

This Apparatus is used with ESOLS Hydraulic Bench (SMT-FM-100) and this experimental unit includes a pipe section with a transparent Venturi nozzle and a movable Pitot tube for measuring the total pressure. The Pitot tube is located within the Venturi nozzle, where it is displaced axially. The position of the Pitot tube can be observed through the Venturi nozzle's transparent front panel.

A manometer panel hold transparent manometer tubes. Manometer tubes have engraved scale on back sheet for direct reading of water levels in the tube. Unit has corrosion proof structure.

This unit can be operated by Laboratory supply of with any Hydraulic Bench.

TECHNICAL SPECIFICATIONS

Specifications:

- Round Transparent Venturi for robust use and visualisation.
- Familiarisation with Bernoulli's principle.
- 6 tube manometers for displaying the static pressures.
- Single tube manometer for displaying the total pressure.
- Axially movable Pitot tube for determining the total pressure at various points within the Venturi nozzle.
- Flow rate determined by SMT-FM-100 base module.
- Water supply using SMT-FM-100 base module.
- Supplied with a comprehensive user guide.
- Acrylic Tubes and Acrylic Venturi Holdings.
- PVC Pipe Fittings.



Technical Data:

- Venturi nozzle:
 - Angle at the inlet: 11°.
 - Angle at the outlet: 4°.
 - Inlet Diameter: 26mm
 - Venturi Throat Diameter: 16mm
 - Outlet Diameter: 26mm
- Pitot tube:
 - range: 0...200mm.
 - Diameter: 4mm.
- Pipes and pipe connectors: PVC.
- Max Flow Rate: 35L/min
- Manometer Measuring Tube Range:
 - 0...300mmWC
- LxWxH: 600x500x900mm.
- Weight: approx. 28kg.
- Accessories (Included)
 - All necessary Flexible pipes and fittings.
 - Instruction Manual
- Operating Conditions
 - Laboratory Temperature: 5°C to 40°C
- Note:

This product may produce small splashes of water in use, so you must use it at a safe distance from electrical supplies. ESOLS recommends approximately 2.0 m.

Experimental Data:

- Study of Venturi meter and Bernoulli's Theorem.
- Study of Energy conservation in divergent/convergent pipe flow
- Direct measurement of static head distribution and Recording the Pressure curve in a Venturi Nozzle
- Determination of Flow coefficient
- Comparison of experimental results with theoretical results
- Study of friction effects in venturi