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 Products
 Products range
 Units
 8.-Fluid Mechanics
 & Aerodynamics

DESCRIPTION

This unit has been designed to allow the visualization of the flow patterns associated with water flowing past solid objects or boundaries. The main elements are a visualise table, hydrogen bubble generator and a comprehensive set of acrylic flow guides and models. The hydrogen bubble technique is highly visual and is particularly useful for laboratory. A stream of small hydrogen bubbles accurately follows the water and clearly shows any changes in the direction of the water as it flows around objects in its path.

SPECIFICATIONS

Bench-top unit.

A compact, unit comprising: a flow tank, hydrogen bubble generator, designed for direct flow visualisation of fluid mechanics phenomena.

Hydrogen bubbles generated by an interchangeable fine platinum wire cathode ensure a faithful visualization of undistorted flow.

A powerful light source illuminates the hydrogen bubbles in the working section. Light source: several high intensity leds.

A variable speed pump controlling a unique fluid-drive unit.

A set of polished acrylic flow guides.

Pulse generator range: 3 to 2500 mS (on/off periods).

Cathodes: 35, 50 and 75 mm lengths.

Flow tank capacity: 20 litres. approx.

Working section: length: 430 mm., width: 290 mm., depth: 36 mm. approx.

Current generator: 0 to 100 mA.

Polished acrylic flow guides & models:

- Flat plate.
- Curved plate.
- Two blocks with radiused ends.
- 4 cylinders: 6, 12, 19 & 25 mm diameter.
- 1 pair of 330 mm long straight guides.
- 2 spacer blocks for straight guides.
- Flat plate with radiused ends.
- Aerofoil section.
- Rectangular block of 70 x 40 x 25 mm.
- Container for guides and models.

Electronic Console, incorporating display for operating parameters, control for pump, source lamp and hydrogen bubbles generator. This console provides all the necessary electrical services for the unit.

Cables and accessories, for normal operation.

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



ISO:9001-2000 Certificate
of Approval. Reg. No. E204034



European Union Certificate



Certificates ISO 14001: 2004 and
ECO-Management and Audit Scheme
(environmental management)



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EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Unit:

- 1.-Visualising two-dimensional flow using hydrogen bubbles.
- 2.-Analogy of aerodynamic flow.
- 3.-Understanding laminar and turbulent flow.
- 4.-Visualization of boundary layer.
- 5.-Demonstration of the boundary layer growth.
- 6.-Quantitative observing of flow measuring devices.
- 7.-Demonstration of boundary layer separation and eddy formation.
- 8.-Quantitative analysis of flow patterns using pulsed bubbles.
- 9.-Observation of flow around standard shapes (cylinder, aerofoil, etc.).
- 10.-Observation of flow around user created models.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V/50Hz or 110V/60Hz.

CONSUMABLES

Sodium Sulphate ($\text{NaSO}_4 \cdot 10\text{H}_2\text{O}$).
Platinum wire.
Amyl Acetate.

OPTIONAL ACCESSORIES

- Camera with interface and appropriate software.
- Control Software for remote operation of the Electronic Console via computer (PC).

DIMENSIONS & WEIGHT

- Flow table:
 - Dimensions: 1000 x 400 x 550 mm. approx.
 - Weight : 50 Kg. approx.
- Electronic Console:
 - Dimensions : 490 x 330 x 310 mm. approx.
 - Weight: 10 Kg. approx.

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



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