

Falling Sphere Viscosimeter and Drag Coefficient HVB



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DESCRIPTION

The unit HVB makes it possible to measure kinematic viscosity, and thus to deduce dynamic viscosity from it, from liquids.

This unit consists of two precision transparent tubes fixed onto a frame.

The viscosity of a fluid characterizing its resistance to flow, it is considered that the displacement study of a body in a motionless liquid is identical to that the flow of the fluid around this static body.

By measuring the falling speed of a sphere in a vertical tube filled with the fluid to study, it is possible to deduce kinematic viscosity. During the phase of the uniform rectilinear motion, the forces which apply to the sphere, gravity, the pressure of Archimedes and the force of the trail related to viscous friction, are in balance.

Each tube of the unit contains top device for introducing the particles or test spheres into the tube. The spheres are retrieved at the base of the tubes by means of a double value arrangement.

A light source is placed between the tubes.

A set of spheres of different diameters and materials and a stopwatch are also provided.

Various students projects can be created to design and produce various geometric shapes and compare their drag coefficients.











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SPECIFICATIONS =

Anodized aluminium structure. Main metallic elements in stainless steel.

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

Support panel.

2 Precision transparent methacrylate tubes of 125 mm. diameter and 1500 mm length.

There are two liquids with different viscosities inside the tubes.

At the upper part of the tubes there is a device for introducing particles to be tested.

At the bottom part of the tubes there is a device for recovering the tested bodies, without emptying the tubes.

Fluorescent tube for a better visualization of the particles.

2 vats and 2 valves for recovery of the balls and draining of tubes.

1 set of balls (spheres) of various diameters and materials (stainless steel, aluminium, plastic).

1 stopwatch.

Falling particles / spheres clearly visible.

Accurate determination of drag coefficient and viscosities.

Variety of particles for comparison.

Cables and accessories.

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

EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Unit:

- 1.- Determination of the viscosity of liquids.
- 2.- Drag coefficient of various particles of spheres.
- 3.- Determination of the drag coefficient of various geometric shapes (to be produce by students).
- 4.- Measurements of the spheres resistance coefficients vs Reynold's number.
- 5.- The viscosity of the liquids place in the tubes by measurement of the terminal velocities of the spheres in free fall in the liquids.
- 6.- Kinematic viscosity.
- 7.- Dynamic viscosity.

REQUIRED SERVICES =

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

DIMENSIONS & WEIGHTS

-Dimensions: 300 x 400 x 1700 mm. approx. -Weight: 30 kg. approx.

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

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