



Cavitation is a phenomenon in which vapor pockets are released in the liquid flow because of the reduction in the local static pressure. Cavitation occurs in any device handling liquids whenever the local static pressure reduces below the vapor pressure of the liquid. The vapor bubbles formed during cavitation may cause the flow to become unsteady and reduce the performance of devices such as pumps and turbines. Collapsing of vapor bubbles on surfaces cause erosion damage or surface pitting damaging components. Understanding of cavitation phenomena is important to the students of marine, civil, hydraulic, mechanical, chemical and several other branches of engineering.

The Tesca Cavitation Demonstration Apparatus is a compact bench top unit and has been designed to visualize and study the cavitation phenomenon in water flow. The apparatus consists of a venturi shaped test section made of clear acrylic to enable visualization of formation of bubbles and subsequent collapse of bubbles in the flow. The upstream section of the venturi is connected to the hydraulic bench or any suitable source of water. The 32096 Hydraulic Bench or any other standard hydraulic bench models can be used. Cavitation is obtained by reducing pressure at the throat according to Bernoulli equation by varying the flow rate. Flow control valves at the upstream and downstream ends of the test section allow control of flow. Static pressures at the upstream section and the throat are measured using pressure gauges. The flow rate is measured using a turbine flow meter. The apparatus can be mounted on the hydraulic bench and is provided with quick release fittings for easy connections. The complete unit is manufactured from corrosion resistant materials.

OPTIONS:

Computer based learning software is included to enable students to understand and conduct experiments, tabulate results and plot graphs. The Tesca Cavitation Demonstration Apparatus is an important experimental set-up for any Fluid Mechanics and Hydraulics Laboratory of an educational institution.

Note: Specifications are subject to change.

Tesca Technologies Pvt. Ltd.

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Experiments:

1. Visualization of cavitation phenomena.
2. Demonstration of reducing cavitation by increasing static pressure in the flow field.
3. Comparison of experimental and theoretical pressures for cavitation.
4. Determination of cavitation number

Measurements:

1. Static pressure at the upstream and the throat.
2. Actual volume flow rate using turbine flow meter or Hydraulic Bench.

Important Features and Specifications:

1. Piping system and quick release fittings, 15mm nominal bore, and stainless steel.
2. Venturimeter, transparent, made of clear Acrylic and having convergent and divergent portions, throat diameter: 7.5mm, maximum diameter: 15mm, upstream taper: 150, downstream taper: 60.
3. Turbine flow meter, 2 liters/s max. flow rate.
4. Upstream pressure gauge: 0 to 1 bar with pressure tubing.
5. Throat vacuum gauge: -1 to 0 bar with pressure tubing.
6. Instrument mounting panel.
7. Computer based learning software.

Options:

1. A self contained unit of Cavitation Demonstration Apparatus mounted on a mobile platform with a flow controlled closed circuit water circulation unit consisting of a centrifugal pump, corrosion resistant sheet metal measuring tank and a sump tank will be supplied on request.
2. Electronic pressure transducers with digital display of pressures can be supplied instead of pressure gauges on request.
3. Computer based data acquisition systems for acquiring pressure data can be supplied on request.

Services Required:

1. Water Supply.
2. Electrical Supply, 240 V, single-phase, 50 Hz.

Overall Dimensions:

Height: 0.40m, Width: 0.40m, Length: 0.75m.

The manual describing the theoretical and practical aspects of the apparatus, operation, analysis of results, and sample of results will be supplied with the equipment.

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