Study of net force due to pressure on a submerged surface and the concept of center of pressure are of importance in fluid mechanics and hydraulics engineering. This understanding is important for the design of several structures and hydraulic equipment such as dams, ship building, maritime structures and other underwater bodies. The Tesca Hydrostatic Force & Center of Pressure Apparatus demonstrates various principles of hydrostatics and is an important experimental set-up necessary for any Fluid Mechanics and Hydraulics Laboratory of an educational institution.

The Tesca Hydrostatic Force & Center of Pressure apparatus has been designed to enable students' measure the net hydrostatic force and the center of pressure on a submerged plane surface. The apparatus consists of a quadrant fixed to the balance arm. The balance arm is pivoted at the knife edge on the centerline of the quadrant. The quadrant is immersed in the Perspex water tank having an integral flat base. The base of the water tank has leveling screws for accurate leveling. The balance arm is placed above the water tank and the quadrant is balanced by the adjustable counter- balance such that the rectangular end face of the quadrant is always vertical.

When the quadrant is submerged in water, the arrangement is such that only the forces acting on the rectangular end face produces a moment about the knife edge axis. The system of beam level indicator, balance pan and the adjustable counterbalance on the balance arm provide the necessary arrangement for the measurement of the resultant hydrostatic force and the center of pressure on the rectangular end face of the quadrant.

Water can be poured into the tank and may be drained through the drain cock at the base of the tank. Water level scale is provided on the side face of the quadrant. Experiments can be carried out for both partially and fully submerged cases by varying the water level in the tank. The 32096 Hydraulic Bench or any other standard hydraulic bench models can be used to supply water.

Option:

Computer Based Learning Software is included to enable students to understand and conduct

Note: Specifications are subject to change.

Tesca Technologies Pvt. Ltd.
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experiments, tabulate results and plot graphs. The Tesca Hydrostatic Force & Center of Pressure apparatus is an important experimental set-up for any Fluid Mechanics and Hydraulics Laboratory of an educational institution.

Experiments

1. Measurement of hydrostatic force on a fully and partially submerged vertical plane surface.
2. Determination of center of pressure on a fully and partially submerged vertical plane surface.
3. Comparison of experimental results with principles of hydrostatics.

Important Specifications:

1. Water tank, Perspex, capacity: 10 liters with level adjustment support screws at the base.
2. Quadrant, 75mm internal radius, 150mm outer radius, 60mm width.
3. Balance arm.
4. Balance pan.
5. Beam level indicator.
6. Adjustable counterbalance.
7. Distance between balance pan and knife edge: 285mm.
8. Set of standard weights.
9. Spirit level.
10. Computer based learning software.

Services Required:

Water supply and drainage.

Overall Dimensions

Height: 0.45m, Width: 0.3m, Length: 0.55m.

Instruction Materials

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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