Description

Centre of Pressure

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The equipment consists of a vertical panel that holds a clear plastic quadrant, to which students add water. The quadrant has engraved lines to help students keep the plane in a vertical or angled position.

A pivoted clear plastic assembly which students use to find the centre of pressure of a totally or partially submerged plane surface. Compact, self-contained and excellent for classroom demonstrations.

The cylindrical sides of the quadrant have their central axis coincidental with the moment measurement axis. Students measure this moment using weights suspended from a level arm. A scale on the panel of the apparatus shows the head of water. The total fluid pressures on these curved surfaces therefore exert no moment about this pivot. Therefore, the moment is only due to the fluid pressure on the plane test surface.

To perform experiments, students level the apparatus using its levelling feet and spirit level. They decide whether to test either a vertical or inclined plane. They take results by balancing incremental weights on the hanger with known quantities of water. They then initially balance the quadrant tank using one of the weight hangers and the smaller trimming tank. They then use the results

to calculate the equivalent moment of force (M) or hydrostatic thrust. Students note the relationship between the moment and the water height (h). The equipment includes non-toxic water dye to help students see the water levels more clearly and a syringe for accurate addition or removal of small amounts of water.

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