



METACENTRIC HEIGHT



DL DKL102

This equipment is designed to study and determine the metacentric height of a floating object simulating a boat. The intersection point between the vertical axis of the ship or floating body and the vertical line coming from the center of the hull is called metacentre. Metacentric height is the distance from the metacentre to the gravity center of the floating body.

In the study of the equilibrium of a floating object, such as a boat, it is possible to identify three cases:

- Stable equilibrium: if the metacentre is above the center of gravity of the object, it will be stable.
- Unstable equilibrium: if the metacentre is below the center of gravity of the object, the deviation between the vector of the floating object and the buoyant force of the fluid in which it floats, making some tilting and thus the deviation tends to increase.
- Neutral equilibrium: if the metacentre matches with the center of gravity, the metacentric height is equal to zero.

With this equipment it is possible to study and perform measurements in different situations so that students can clearly understand the Archimedes' principle and the stability of a floating body. The system grants the possibility to change the position of the gravity center of the floating body thanks to the graduated scales for the direct control of the weights position and the inclination angle of the boat.

PERFORMABLE EXPERIMENTS

- Calculation and study of metacentric height of a floating body.
- Study of the Archimedes' Principle.

TECHNICAL DATA

Boat:

- External dimensions: 350 x 200 x 100mm
- Walls width: 6mm

Weights:

- Counterweight for horizontal slide: 500g
- Counterweight for vertical slide on mast: 200g
- For each supplied equipment, the mass of the weights is calibrated.

Further information:

Maximum angular deviation: 25°

Counterweight linear deviation: ± 90 mm

Barge total weight: ca. 2.300g

Mast height: 400mm