



HYDROSTATIC PRESSURE ON SUBMERGED SURFACES



DL DKL101

The objective of this trainer is the study and the calculation of the pressure force acting on a submerged surface.

It is a simple and completely autonomous equipment that can be located anywhere in the laboratory without any installation.

Liquids of different densities can be used to determine the different exerted forces.

It is a stand-alone equipment with the possibility to determine the exerted pressure on flat and curved surfaces. Surface's angle can be varied according to the required experiment.

TRAINING OBJECTIVES

- Measurement and verification of the momentum created by the pressing force acting on a submerged flat vertical surface. It is necessary to determine both the magnitude of the force and its pressure center, according to :
 - a complete submerged surface.
 - a partially submerged surface.
- Obtaining and verifying the momentum created by the pressure force acting on a submerged curved surface. It is necessary to determine both the magnitude of the force and its pressure center, according to :
 - a semicircular sector completely submerged.
 - a semicircular sector partially submerged, fluid level above the center of gravity.
 - a semicircular sector partially submerged, fluid level below the center of gravity.

TECHNICAL DATA

Motor pump:

- Max flow rate: 400 l/h
- Max height: 60cm
- Power: Pump + headlamp = 18W
- Power consumption: Pump + headlamp= 1.6A

Quadrant:

- Inner \varnothing : 100mm
- Outer \varnothing : 200mm
- Width: 50mm

Counterweights: Set composed of

- 1x 10 g, 2x 20 g, 1x 50 g, 1x 100 g, 2x 200 g, 1x 500 g, 1x 1000 g

Surfaces to be studied:

- Readings on flat and curved surfaces.

Measurement of forces:

- Balancing forces are measured by momentum.

Dimensions:

- Methacrylate tank: 380 x 200mm.

Employed materials:

- Methacrylate
- Aluminum
- Polyethylene

Requirements:

Power supply: 230/50Hz