

HM 115

Hydrostatics trainer



Description

- basic experiments in hydrostatics
- wide range of experiments
- closed water circuit with tank and pump

Hydrostatics is the study of fluids at rest. Phenomena occurring as a result of hydrostatic pressure are analysed and the force effect determined. Hydrostatic aspects play a crucial role in various areas of engineering, such as in plumbing and domestic engineering, in pump manufacturing, in aerospace and in shipping (buoyancy, load on the sides of a ship).

The HM 115 trainer can be used to conduct experiments in the field of hydrostatics, such as ground pressure measurement or demonstrating Boyle's law. Determining the centre of pressure completes the range of experiments. Furthermore, experimental units for studying capillarity and buoyancy are included. The hydrostatic pressure and surface tension are measured. Additionally, one experiment uses a Pitot tube and a tube for static pressure to study the pressure components in a flowing fluid.

To make the functions and processes visible, the tanks and the experimental units use a transparent design. Tanks and pipes are made entirely of plastic.

Various pressure gauges are available for measuring pressure and differential pressure of the liquid fluid, such as a Pitot tube, tube for static pressure a pressure sensor with digital display, twin tube manometers or a differential pressure manometer. A diaphragm manometer and a Bourdon tube manometer indicate the pressure of the gaseous fluid.

The trainer has its own air and water supply. The closed water circuit includes a supply tank with submersible pump. A compressor is included to generate positive and negative pressures for the experiments with air.

Learning objectives/experiments

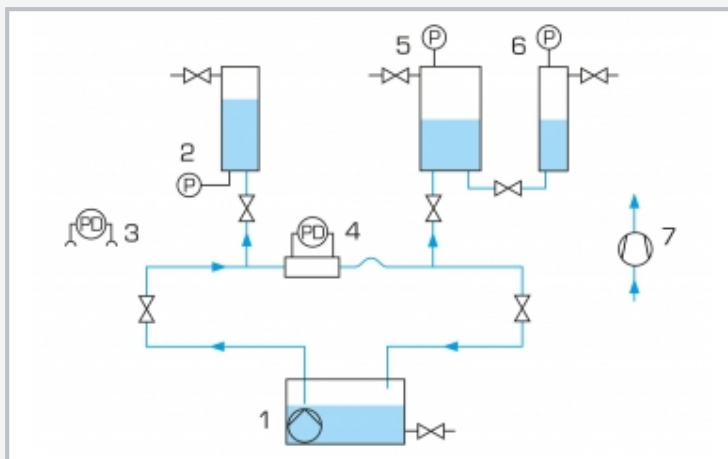
- study of buoyancy on a variety of bodies
- study of the density of liquids
- hydrostatic pressure, Pascal's law
- communicating vessels
- determination of the centre of pressure
- study of surface tensions
- demonstration of capillarity
- Boyle's law
- study of static and dynamic pressure component in flowing fluid
- familiarisation with various methods of pressure measurement

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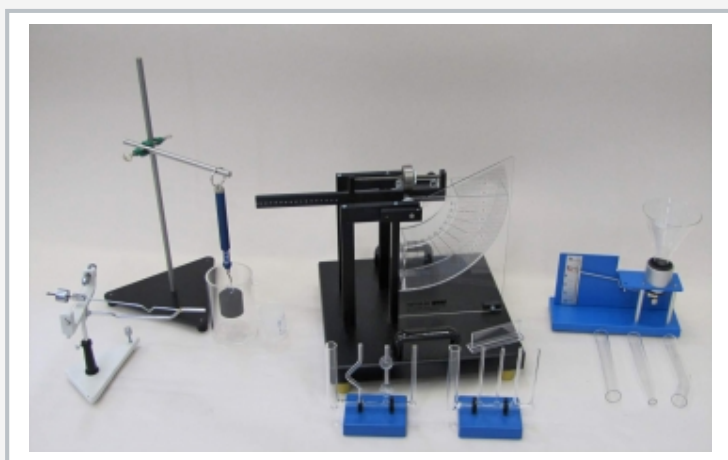
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1 twin tube manometers, 2 tank, 3 digital pressure display, 4 pressure sensor, 5 supply tank with submersible pump, 6 Pitot tube and tube for static pressure, 7 differential pressure manometer, 8 pipe section, 9 hydrostatic pressure in liquids, 10 pressure vessel, 11 pressure vessel, 12 Bourdon tube manometer, 13 diaphragm manometer



1 supply tank with submersible pump, 2 tank with pressure sensor, 3 twin tube manometers, 4 Pitot tube + tube for static pressure with differential pressure manometer, 5 pressure vessel with Bourdon tube manometer, 6 pressure vessel with diaphragm manometer, 7 compressor; P pressure, PD differential pressure



Accessories for a wide range of experiments

Specification

- [1] comprehensive experimental introduction to hydrostatics
- [2] transparent tank for observing the processes
- [3] wide range of accessories included: compressor for generating positive and negative pressures, bottom pressure apparatus, two areometers
- [4] 1 experimental unit each: measuring the buoyancy force, investigation of the hydrostatic pressure in liquids, measuring the surface tension, communicating vessels, capillarity
- [5] Pitot tube for determining the total pressure and tube for static pressure
- [6] instruments: pressure sensor with digital display, differential pressure manometer, twin tube manometers, diaphragm manometer, Bourdon tube manometer

Technical data

Pump

- power consumption: 250W
- max. flow rate: 9m³/h
- max. head: 7,6m

Compressor

- power: 65W
- pressure at inlet: 240mbar
- pressure at outlet: 2bar

3 tanks

- height 500mm
- d=100mm, d=133mm, d=200mm

Supply tank for water: 55L

2 areometers with different measuring ranges

Measuring ranges

- pressure: 2x -1...1,5bar
- differential pressure: 0...500mmWS
- differential pressure: 0...0,4bar
- density: 1x 0,8...1g/cm³, 1x 1...1,2g/cm³

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase

UL/CSA optional

LxWxH: 1760x840x1950mm

Weight: approx. 250kg

Scope of delivery

- 1 trainer
- 1 compressor
- 1 bottom pressure device
- 2 areometers
- 1 wedge-shaped tank
- 1 experimental unit each: surface tension, hydrostatic pressure in fluids, buoyancy force, capillarity, communicating vessels
- 1 set of instructional material

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Optional accessories

070.15002	HM 150.02	Calibration of Pressure Gauges
070.15006	HM 150.06	Stability of floating bodies