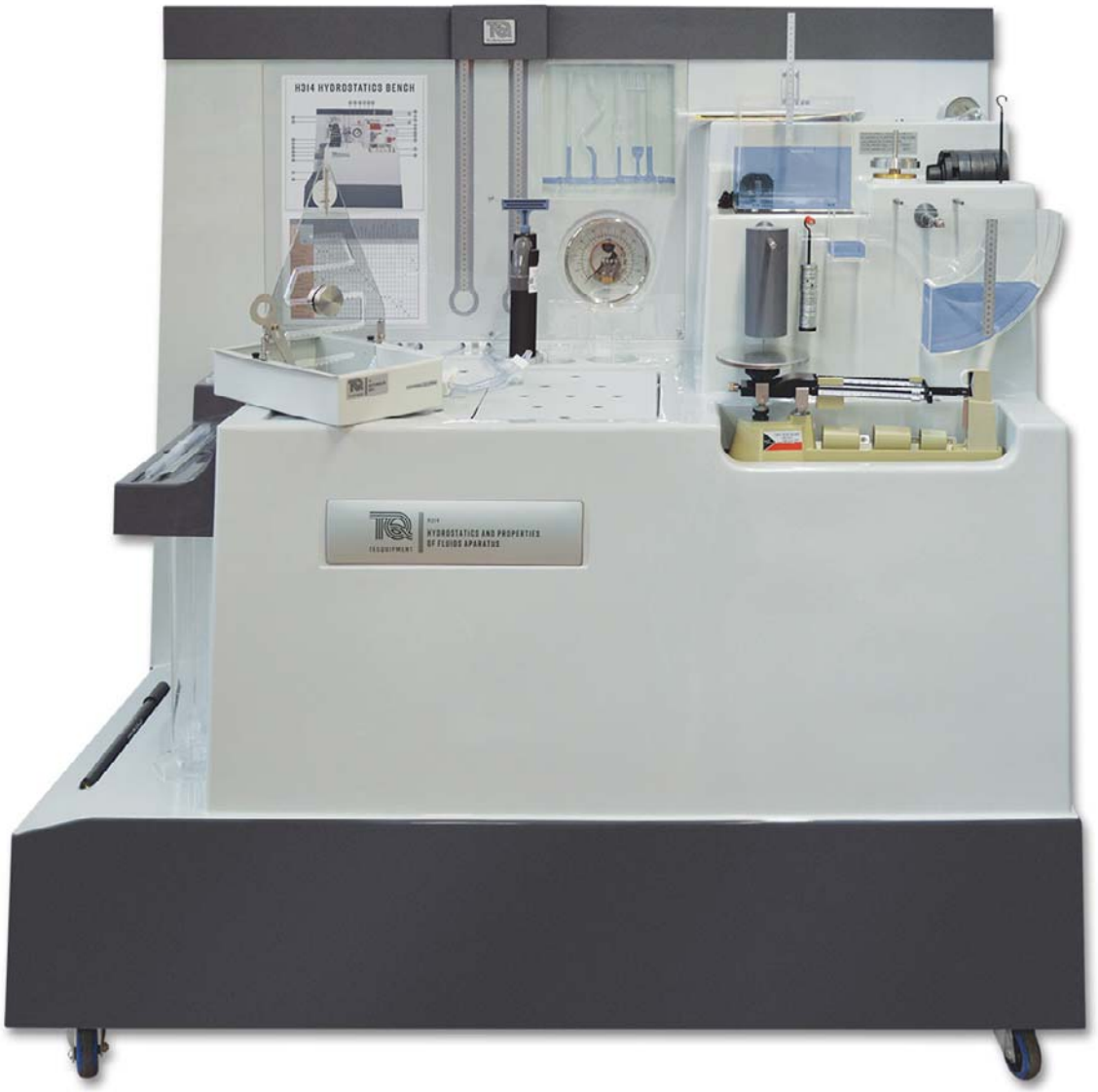
HYDROSTATICS AND PROPERTIES OF FLUIDS

H314

Self-contained mobile unit for many experiments in fluid mechanics. Among other experiments it covers: properties of fluids, hydrostatic principles and buoyancy/floatation and Archimede's principle.



KEY FEATURES

- Wide range of experiments
- Determination of fluid properties including density, specific gravity, surface tension and viscosity
- Demonstration of hydrostatic principles including Pascal's law, Archimedes' principle and determination of pressure at a point in a fluid
- Experiments cover study of buoyancy, flotation and stability of floating bodies, forces on a plane surface, centre of pressure, operation and calibration of a Bourdon pressure gauge and liquid column manometers
- Includes integrated Centre of Pressure (H11) and Metacentric Height and Stability (H2 MkII) experiments
- Ideal for lecture room demonstrations as well as student experiments

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DESCRIPTION

The apparatus consists of a self-contained bench, complete with all necessary equipment for a wide range of demonstrations and experiments in hydrostatics and properties of fluids. Much of the equipment is rigidly mounted on the bench, the remainder being free-standing items suitable for use on the benchtop.

The bench has a reservoir that supplies water for the experiments. A tank on the unit can be filled from the reservoir for experiments that need a free-water surface. A drain tray next to the tank is for collecting and returning water to the reservoir.

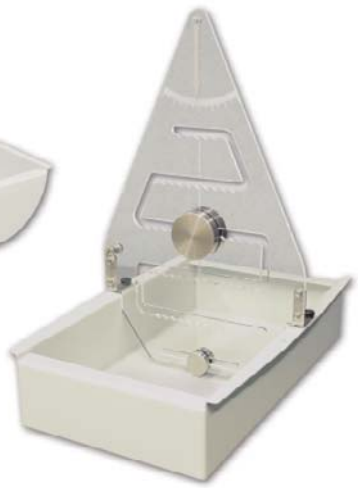
The bench is readily movable and is therefore ideal for lecture room demonstrations as well as student experiments.

Experimental equipment supplied with the bench includes a fluid-level apparatus for demonstrating Pascal's law, and two U-tube manometers. A toroidal sloped tank is mounted within an integrated balance to determine centre of pressure. Archimedes' principle is proved by using a fixed mass immersed in a header of water mounted on a beam balance. Further items of equipment include a Bourdon pressure gauge with deadweight calibration, and a rectangular pontoon with adjustable weights for studies of a floating body and metacentric height.

Included with the H314 is the H2 MkII for the study of the metacentric height of a floating body.

Apparatus for determination of fluid properties includes a Eureka can, a specific gravity bottle, a hydrometer capillarity apparatus, a falling sphere viscometer and a vernier point gauge for fluid level measurement.

HALF CIRCLE AND VEE CHINE PONTOONS (H2A MKII)



METACENTRIC HEIGHT AND STABILITY (H2 MKII) (INCLUDED)

STANDARD FEATURES

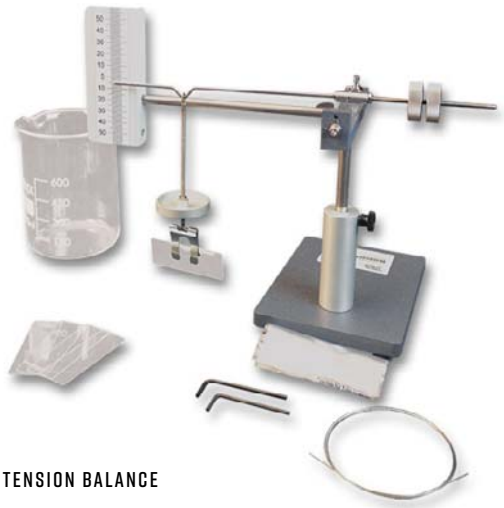
- Supplied with comprehensive user guide
- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer

LEARNING OUTCOMES

- Determination of fluid density and specific gravity
- Principles and use of a hydrometer
- Capillarity in tubes and between plates
- Measurement of viscosity by falling sphere method
- Demonstration of Pascal's law
- Measurement of fluid levels by vernier hook gauge
- Fluid flow head relationship
- Verification of Archimedes' principle and demonstration of principles of flotation
- Stability of a floating body and determination of metacentric height
- Measurement of force and centre of pressure on a plane surface
- Operation and calibration of a Bourdon pressure gauge
- U-tube manometers with fluids of different density

RECOMMENDED ANCILLARIES

- Surface Tension Balance (H314a) – Searle's torsion balance with scale and pointer for the determination of the surface tension of liquids.
- Hares Tube (H314b) – Hares tube to establish the specific gravity of a liquid when compared with water.
- Half Circle and Vee Chine Pontoons (H2a MkII)



SURFACE TENSION BALANCE (H314A)

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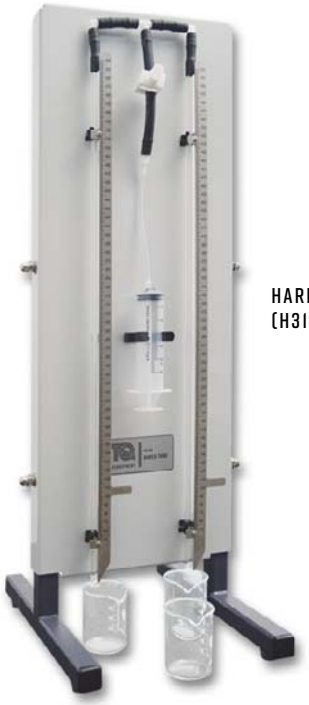

HARES TUBE
(H314B)

OPERATING CONDITIONS

SPACE REQUIRED:

The apparatus is free-standing and needs a floor area of approximately 2.5 m x 1.5 m

OPERATING ENVIRONMENT:

Laboratory

STORAGE TEMPERATURE RANGE:

–25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

H314

DIMENSIONS AND WEIGHTS:

Nett: 1700 x 750 x 1700 mm; 120 kg
Gross: 3.25 m^3; 250 kg (approx – packed for export)

EQUIPMENT INCLUDED:

- Reservoir tank with hand pump
- Hook gauge
- Fluid level apparatus: 5 off interconnected glass tubes of varying cross sections and shapes
- Pressure gauge: Bourdon type with visible mechanism and dead weight calibrator
- Manometers: 2 off U-tubes
- Capillarity apparatus: glass tubes of various bores, glass plates with plastic shims for various separations
- Calibrated hydrometer
- Measuring cylinder
- Graduated beaker
- Timer
- Floating rectangular pontoon with adjustable centre of gravity
- Specific gravity bottle
- Eureka can
- Air pump
- Three-beam balance
- Centre of pressure tank and balance
- Archimedes' mass
- Various ball bearings

H314A

NETT DIMENSIONS AND WEIGHTS:

Nett: 350 x 150 x 270 mm; 2.8 kg

APPROXIMATE PACKED DIMENSIONS AND WEIGHT:

0.05 m^3 and 5 kg

EQUIPMENT INCLUDED:

- 5 x glass slides
- 50 off masses (stainless steel bearings)
- 1 m wire
- Hexagon tools

H314B

NETT DIMENSIONS AND WEIGHTS:

Nett: 600 x 252 x 310 mm; 4 kg

EQUIPMENT INCLUDED:

- 3 x 100 ml glass beakers
- Two acrylic tubes mounted on a metal frame, connected in an 'm' formation to a syringe.