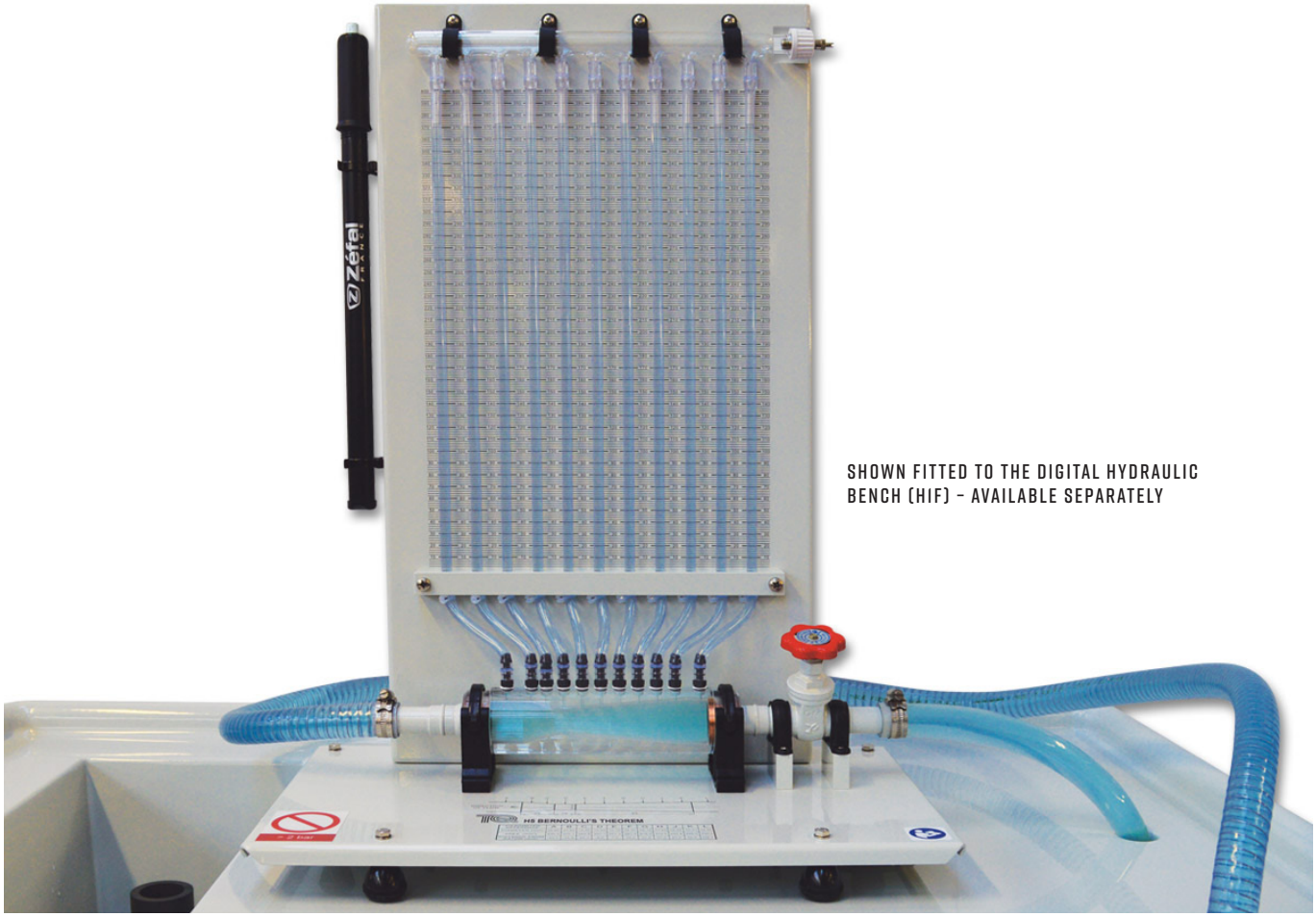
H5

BERNOULLI'S THEOREM

Allows students to study Bernoulli's Theorem by measuring the complete static head distribution along a horizontal Venturi tube



SHOWN FITTED TO THE DIGITAL HYDRAULIC BENCH (H1F) – AVAILABLE SEPARATELY

KEY FEATURES

- Transparent working section and manometer tubes, provides students with a highly visual display of the experiments
- Robust circular-section Venturi tube for long life
- Multiple manometers for direct measurement of static heads
- Compact and simple to operate
- Works with TecQuipment's Digital Hydraulic Bench (H1F)* for easy installation

LEARNING OUTCOMES

Comprehensive study of a Venturi meter and Bernoulli's Theorem, including:

- Direct measurement of the static head distribution along a Venturi tube
- Comparison of experimental results with theoretical predictions
- Measurement of the meter coefficient of discharge at various flow rates

KEY SPECIFICATIONS

- Eleven pressure tappings
- Downstream flow control valve

TECQUIPMENT LTD, BONSALL STREET, LONG EATON, NOTTINGHAM NG10 2AN, UK
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TECQUIPMENT

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DESCRIPTION

TecQuipment's Venturi meter is typical of meters used throughout industry. However, it has many more pressure tappings, connecting to water manometers, which allow full study of the pressure distribution along the convergent-divergent passage.

The Bernoulli's Theorem works with TecQuipment's Digital Hydraulic Bench (H1F, available separately)* and stands on the hydraulic bench worktop. The benches measure flow rate, so students can find the Venturi meter coefficients over a range of flow conditions.

The apparatus includes a horizontal Venturi tube, a downstream flow-control valve and manometer tubes. A manometer panel holds the manometer tubes vertically. A common manifold above the tubes has an air pressure-control valve. The base has adjustable feet. The manometer panel has a scale behind the manometer tubes for direct reading of the water levels in the tubes. Plastic materials and corrosion-resistant finishes throughout the equipment protect against corrosion.

Water enters the Venturi meter and its flow-control valve sets the flow rate. This valve is downstream, so it does not cause any upstream turbulence.

To adjust the datum water level in the manometer tubes, students connect a hand-pump (included) to the air valve above the manometer tubes.

To perform experiments, students set and measure the flow rate through the Venturi. They measure the head at the cross-sectional area at the upstream section, and the head at the throat section. They also note the pressure distribution along the rest of the meter. They then repeat the procedure, reducing the flow rate in increments and taking similar readings each time. Students can compare ideal pressure distribution to measured pressure distribution and calculate the coefficients of discharge for the meter.

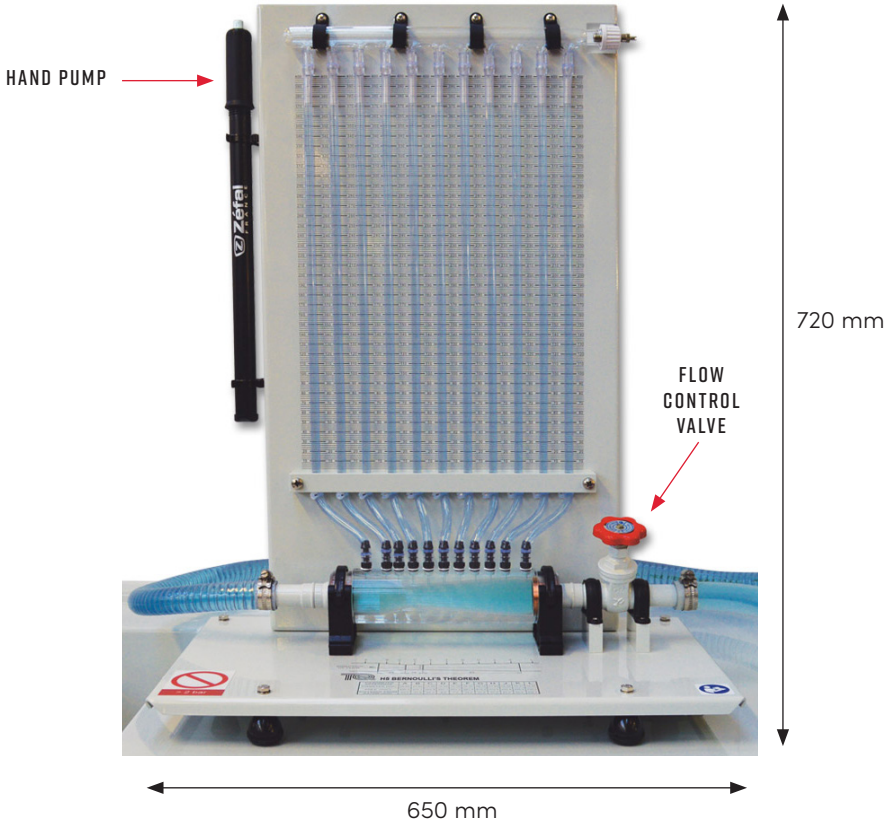
STANDARD FEATURES

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

ESSENTIAL BASE UNIT

- Digital Hydraulic Bench (H1F)*

*This product will also work with existing TecQuipment Gravimetric and Volumetric Hydraulic Benches (H1 and H1D)



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DETAILED 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.

NETT DIMENSIONS AND WEIGHT:

720 mm high x 650 mm x 300 mm and 15 kg

APPROXIMATE PACKED DIMENSIONS AND WEIGHT:

0.14 m^3 and 25 kg

MAXIMUM FLOW RATE:

Nominally 27 $L.min^{-1}$

INSIDE DIAMETER OF VENTURI INLET:

26 mm

INSIDE DIAMETER OF VENTURI THROAT:

16 mm

INSIDE DIAMETER OF VENTURI OUTLET:

26 mm

PRESSURE TAPPINGS:

11

MANOMETER TUBE RANGE:

0 to 400 mm

ACCESSORIES (INCLUDED):

Hand-pump, outlet tubing, pipe clips

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory

STORAGE TEMPERATURE RANGE:

–25vC 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