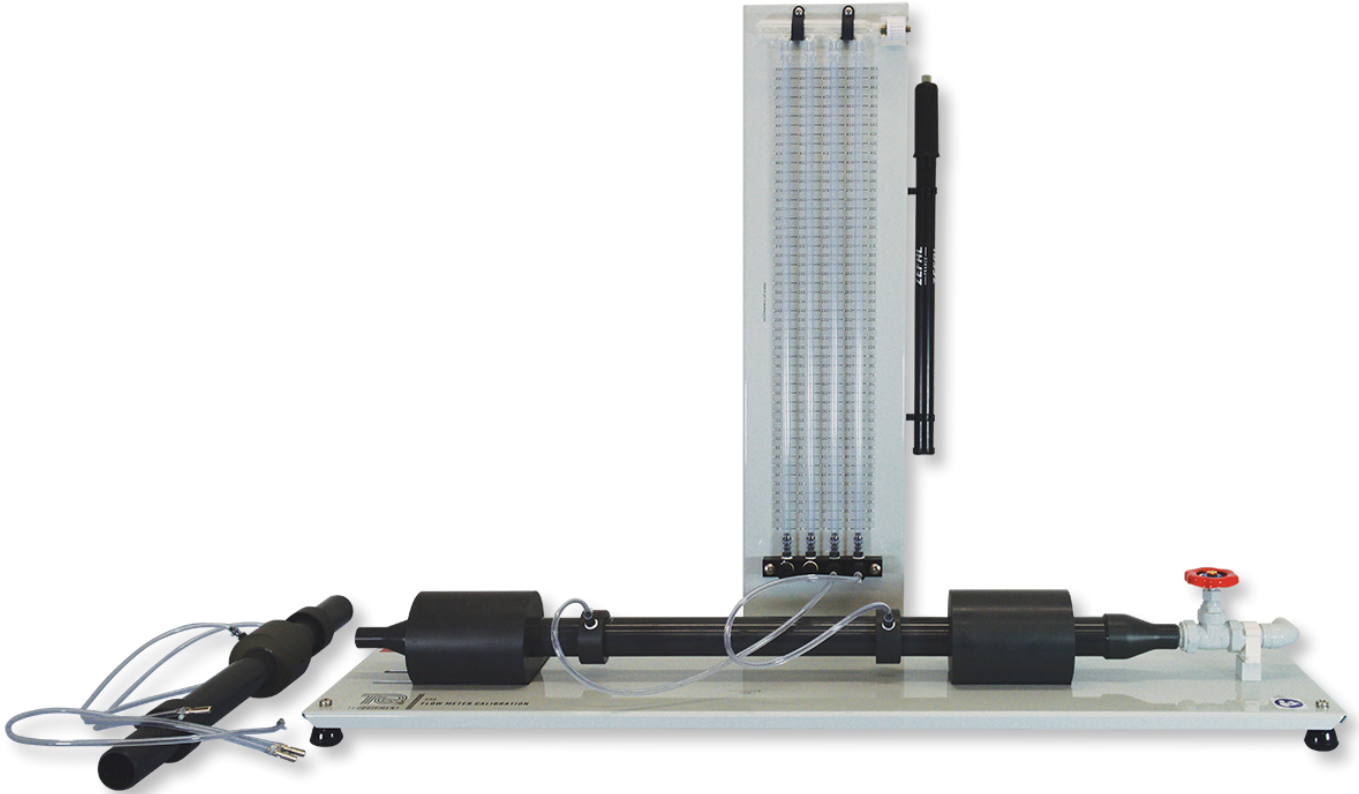


≡ FLOW METER CALIBRATION

HDMS H40

A compact manometer and nozzle flow meter that compares and demonstrates the accuracy, losses and use of fundamental flow meters.



KEY FEATURES

- Unique 'quick-change' flow meter adaptors and pressure connections
- Four manometers show pressure changes
- Nozzle flow meter included as standard
- Optional flow meters available for comparison include: Venturi, orifice and Pitot tube
- Demonstrates the boundary layer effect and the fluid velocity profile – needs Pitot tube (H40a)
- Works with TecEquipment's Digital Hydraulic Bench (H1F)* for easy installation
- Works with TecEquipment's optional, free Hydraulics Data Management System Software (HDMS)

LEARNING OUTCOMES

- Accuracy of nozzle flow meters
- Losses and k value
- Calculation of the coefficient of discharge

KEY SPECIFICATIONS

- Unique 'quick-change' adaptors
- Four tube manometer
- Nozzle flow meter included
- Three optional flow meters
- Downstream flow control valve

≡ FLOW METER CALIBRATION

HDMS H40

DESCRIPTION

For use by all kinds of engineering students, the Flow Meter Calibration apparatus compares and shows the accuracy and use of fundamental flow meters.

The nozzle flow meter (included) or any of the optional flow meters quickly and easily fit into place between the adaptors in the base unit of the apparatus. Four water-filled manometers show the pressure differences at the flow meter and across the overall flow meter assembly. The manometers have a common manifold fitted with an air valve. Students use the hand-pump (included) to increase the air pressure in the manifold. This 'offsets' the manometer measurement (adjusts the datum).

The straight pipe (included) gives a comparison of the true pressure losses caused by the flow meters.

The optional Pitot Tube Flow Meter (H40a) will also show the velocity profile in a pipe. This helps to explain the 'boundary layer' and surface friction in pipes and flow channels.

The Flow Meter Calibration works with TecEquipment's Digital Hydraulic Bench (H1F, available separately)* and stands on the hydraulic bench worktop.

Water enters from the left of the product and leaves at the right through a flow-control valve that sets the flow rate. This valve is downstream, so it does not cause any upstream turbulence.

If required students can download TecEquipment's Hydraulics Data Management System (HDMS) software onto a suitable computer (not supplied) to aid with entering, evaluating and presenting their data.

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)*

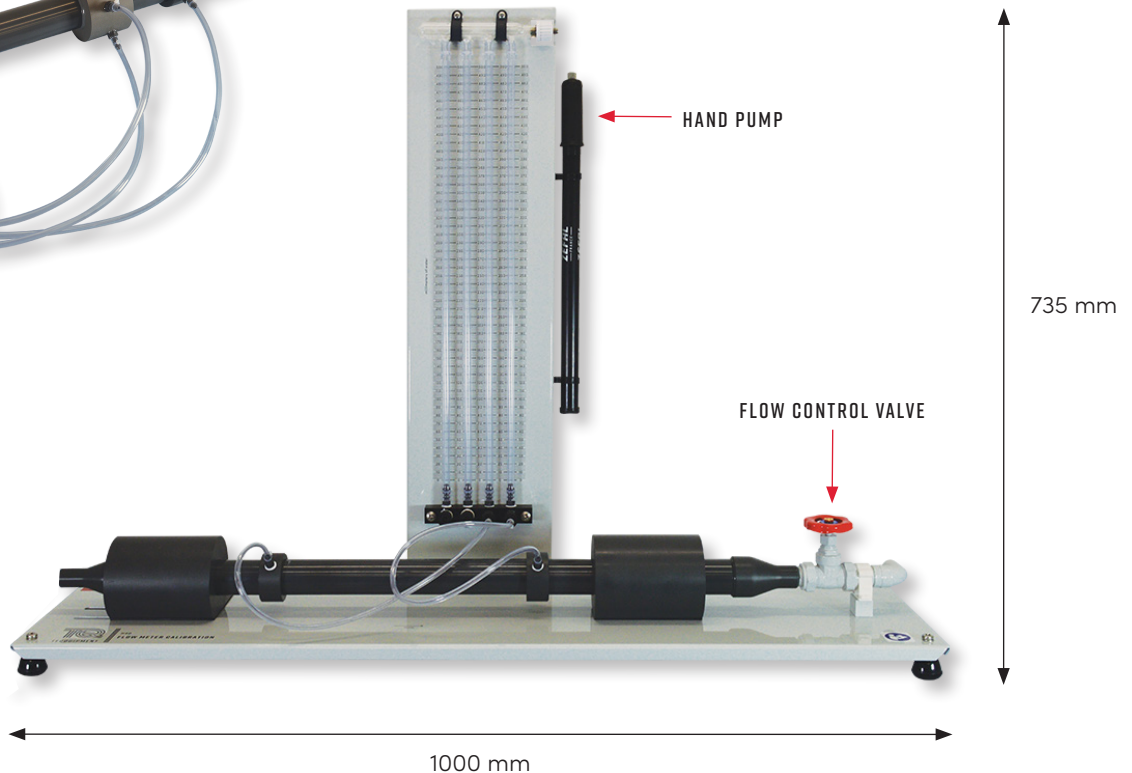
*This product will also work with existing TecEquipment Gravimetric and Volumetric Hydraulic Benches (H1 and H1D)



STRAIGHT PIPE



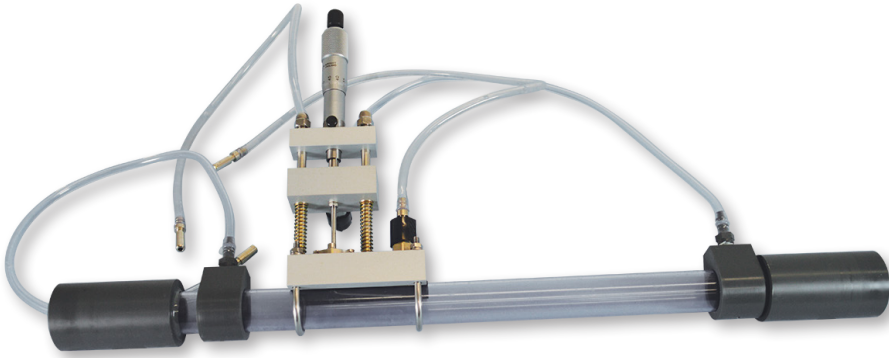
NOZZLE FLOW METER



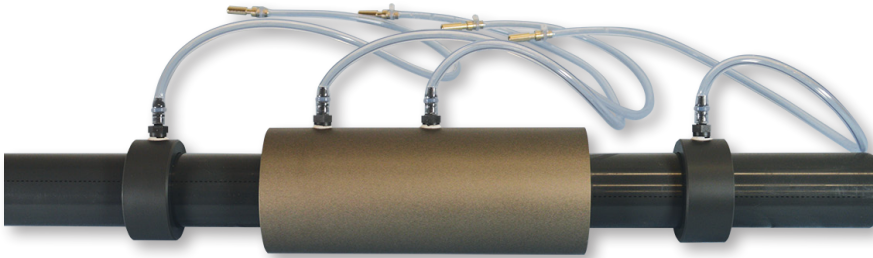
≡ FLOW METER CALIBRATION

HDMS H40

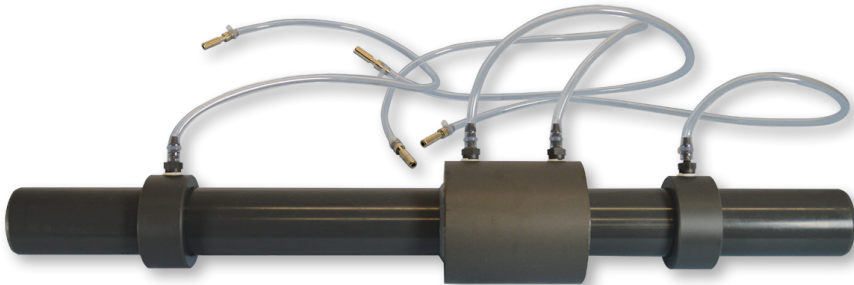
AVAILABLE EXPERIMENT MODULES



PITOT TUBE (H40A)



VENTURI FLOW METER (H40B)



ORIFICE FLOW METER (H40C)

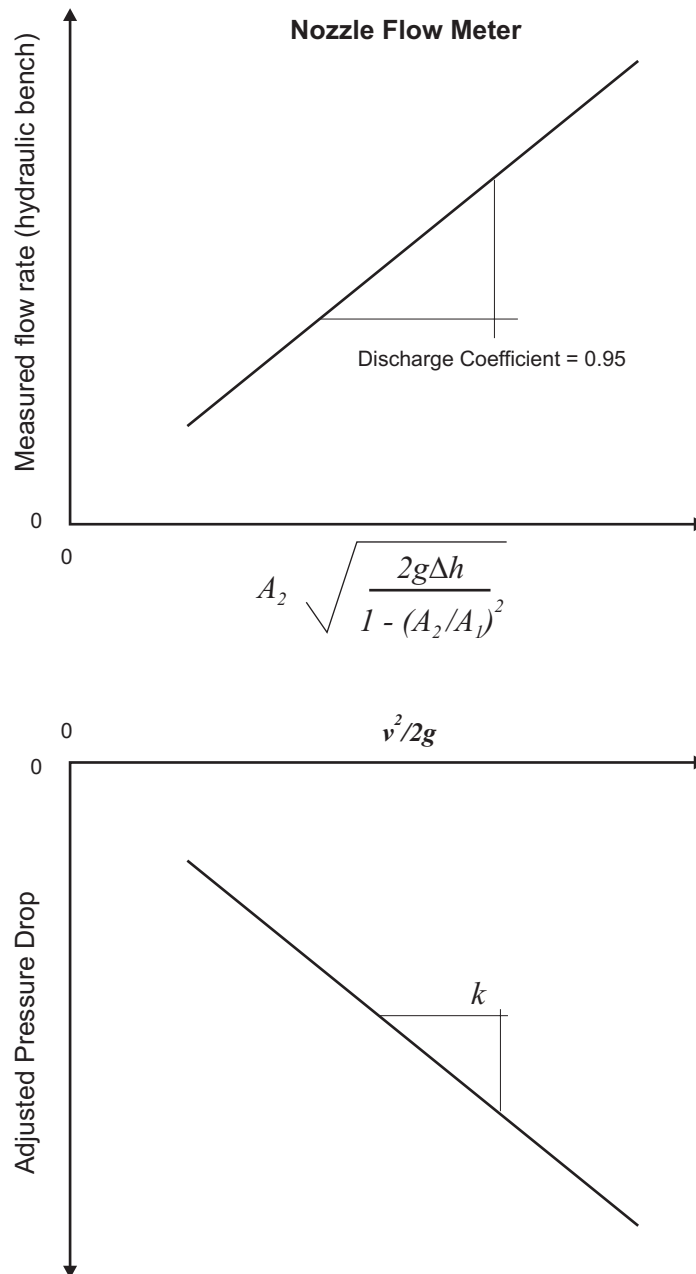
≡ FLOW METER CALIBRATION

HDMS H40

TYPICAL WORK ASSIGNMENTS

ACCURACY, COEFFICIENT OF DISCHARGE AND LOSSES

This experiment tests a flow meter against the flow measured by the hydraulic bench to find its accuracy and calculate its coefficient of discharge from the gradient of calculated results. It also measures the losses of a flow meter and compares with those from a straight pipe to give adjusted pressure drop. When plotted against velocity squared (v^2) over $2g$, these results produce linear charts of pressure drop, of which the gradient gives a k value for the flow meter.



≡ FLOW METER CALIBRATION

HDM S H40

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:

735 mm high x 1000 mm long x 300 mm front to back and 10 kg (including Nozzle Flow Meter)

APPROXIMATE PACKED VOLUME AND WEIGHT:

0.4 m³ and 16 kg

OPERATING CONDITIONS

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