

H10

Flow Measurement

Shows typical methods of measuring the flow of an incompressible fluid, and demonstrates applications of Bernoulli's equation



- Includes Venturi meter, orifice plate and rotameter
- Works with Tecquipment's Gravimetric or Volumetric Hydraulic Benches for easy installation
- Easy to operate
- Direct measurement of head loss
- Three different flow meters that work with Bernoulli's equation
- Multitube manometer shows pressure at various points

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- An ISO 9001 certified company

H10

Flow Measurement

Description

TecEquipment's Flow Measurement apparatus shows the typical methods of measuring the flow of an essentially incompressible fluid (water). It also shows applications of Bernoulli's equation.

Students measure flow using a Venturi meter, an orifice plate meter and a rotameter. Bernoulli's equation works for each meter. Students find and compare the head losses associated with each meter, as well as those arising in a rapid enlargement and a 90-degree elbow.

The apparatus is for use with TecEquipment's Gravimetric or Volumetric Hydraulic Bench (H1 or H1D, available separately).

The equipment consists of a horizontal pipe including a gate valve, Venturi meter, orifice plate and pressure tapings. An elbow connects the pipe to a rotameter (gap-type flow meter) with further pressure tapings. All pressure tapings connect to manometers held on a vertical panel behind the pipe work. The manometers measure and clearly show pressure distribution against a calibrated scale.

To perform experiments, students connect the apparatus to the hydraulic bench supply, and set it to a low, steady flow through the apparatus. Water from the hydraulic bench then flows through the Venturi meter, through a rapidly diverging section, a settling length and the orifice plate. It then flows around the elbow, through the rotameter and finally returns to the hydraulic bench measuring tank.

Students measure the flow using the hydraulic bench, noting the manometer levels and rotameter reading. They then increase the flow in set increments, taking readings each time, until reaching maximum flow rate. They then use Bernoulli's equation to find mass flow rate through each of the meters, comparing to flow rates measured using the hydraulic bench. Students can compare advantages, disadvantages and potential applications of each meter.

Standard Features

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

Experiments

Study of Bernoulli's equation, flow measurement and losses, including:

- Application of the Bernoulli equation for incompressible fluids
- Direct comparison of flow measurement using a Venturi meter, orifice plate and rotameter
- Comparison of pressure drops across each flow measurement device
- Comparison of pressure drops across a sudden enlargement and a 90-degree elbow

Essential Base Unit

- Gravimetric Hydraulic Bench (H1)
or
- Volumetric Hydraulic Bench (H1D)

Essential Services

Water supply:

From the Hydraulic Bench (H1 or H1D)

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

Specification

Nett dimensions: 900 mm x 380 mm x 900 mm

Packed dimensions and weight: 0.31 m³ and 19 kg

Orifice plate:

20 mm diameter with corner tapings, manufactured to BS1042

Sudden enlargement:

26 mm to 51 mm

Rotameter:

Scaled 0 to 210 mm. Includes calibration chart for 0 to 35 litres per minute.

Manometer:

Scaled 0 to 380 mm

Maximum flow:

28 litres per minute

Accessories (included):

All necessary tubing and pipe clips

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infoWERK is a leading expert in the development of eLearning courseware, learning system solutions, teaching and AV equipment.

Furthermore infoWERK is the representative and system integrator of "TecQuipment".

TecQuipment is one of the global leaders in technical teaching equipment for engineering. If you are interested in one of TecQuipment's products feel free to contact us at:



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