

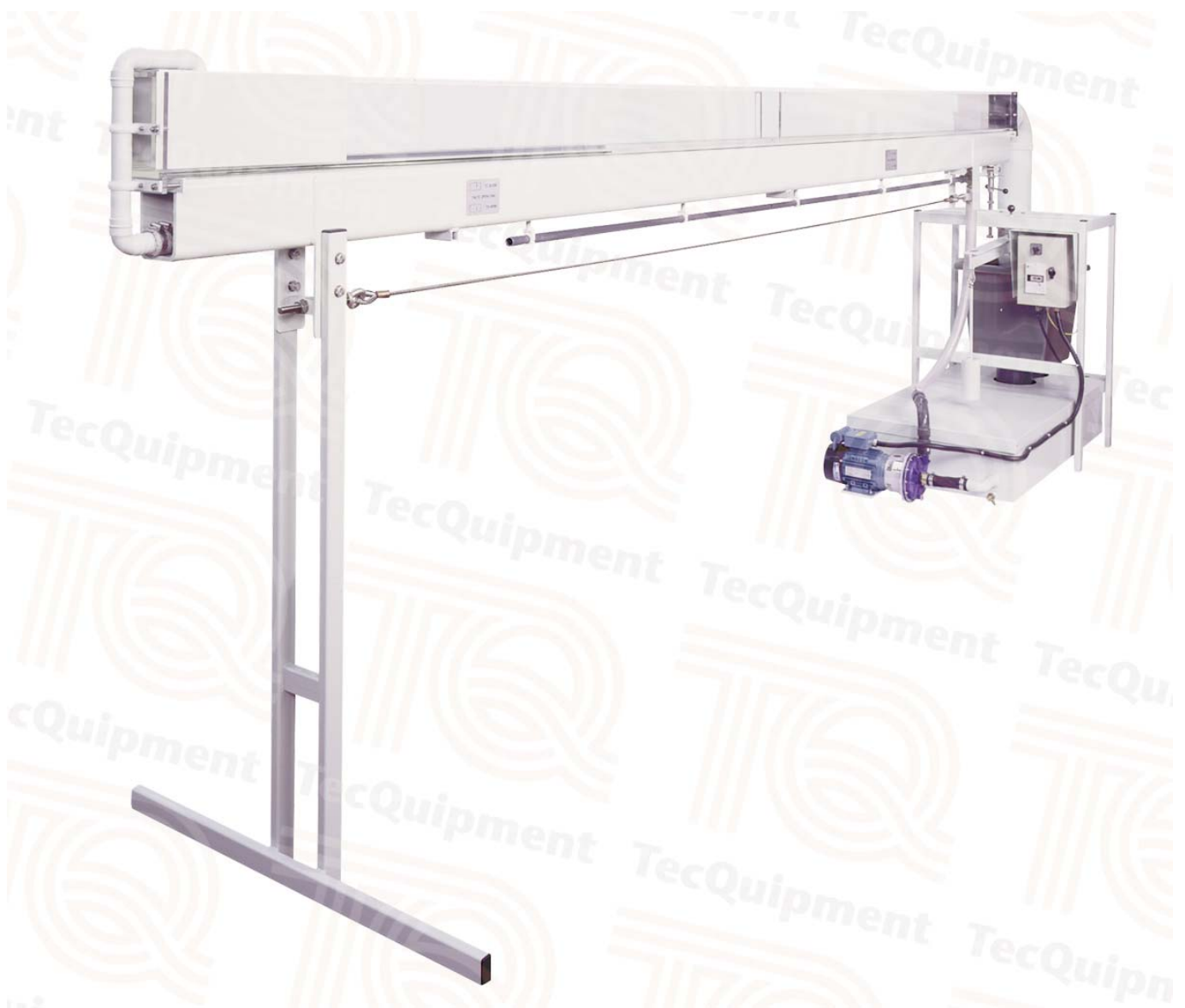


Fluid Mechanics

H12

Five-Metre Flow Channel

Provides facilities for experiments and demonstrations in water flow, including weirs, gates and flumes



- Adjustable channel angle (inclination) and flow rate
- Clear sides at eye-level for all-round visibility of flow
- Completely self-contained, free-standing unit – only needs an electrical supply
- Ideal for group demonstrations
- Includes Pitot tube for pressure measurement
- Includes models of sluice gate, different weirs and flume
- Extra models available include wave generator, different weirs and flow splitter

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- An ISO 9001 certified company

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Five-Metre Flow Channel

Description

The channel is made of transparent perspex, precision-built to ensure parallel walls and a consistently accurate cross-section along its length. A sturdy tubular-steel section firmly supports the channel throughout its length. It has a floor-standing 'T' frame at the upstream end, and a trunnion screw support at the downstream (weigh tank) end. A calibrated jack raises and lowers the screw support to give an accurate adjustment of the channel angle (inclination).

The water supply and measuring system is similar to that of TecEquipment's successful Gravimetric Hydraulic Bench (H1), but larger in overall size. A pump forces water from a sump, up to flow straighteners at the upstream end of the channel. This gives smooth, uniform flow, free from entry effects. The outlet water from the channel falls freely into a weigh tank. On completion of weighing, students open the outlet valve of the weigh tank to discharge the water back to the sump tank for recirculation.

Supplied with the flow channel is a selection of models that fit into the channel for experiments and demonstrations. The models include weirs, a sluice gate and a flume. Also included is a Pitot tube to accurately measure pressures around the models.

TecEquipment makes a selection of extra (optional) models for use with the flow channel – see Recommended Ancillaries for details.

Standard Features

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

Experiments

- Friction in a uniform channel flow
- Flow under a sluice gate
- The Venturi flume
- Flow over a sharp-crested weir
- The broad-crested weir

Additional experiments with the recommended ancillaries:

- The drum gate and the radial sector gate (H12a and b)
- The Crump weir (H12d)
- Flow over a spillway (H12e/f and l)
- Flow over a streamlined hump (H12g)
- The Parshall flume (H12h)
- Flow round a bridge pier (H12j)
- Friction in a uniform channel with roughened bed (H12k)
- Flow over a siphon spillway (H12l)
- Flow-induced vibration of a cylinder (H12m)
- Wave generator and beach (H12n)
- Flow through a culvert (H12p)
- Splitting flow in an open channel (H12v)

Essential Services (H12)

Electrical supply:

220 VAC to 240 VAC 50 Hz at 6.5 A with earth

or

110 VAC to 120 VAC 60 Hz at 13 A with earth

(other supplies available – state on order)

Floor space needed:

5.5 m x 1 m

Essential Services (H12n)

Electrical supply:

Single-phase 100 VAC to 240 VAC 50 Hz to 60 Hz at 1 A with earth

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

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Five-Metre Flow Channel

Recommended Ancillaries

Cylindrical Gate (H12a)

Shows simple underflow gate regulation. The gate can be positioned at any point along the flow channel.

Radial Gate (H12b)

Shows the head/flow and discharge characteristics of a radial gate.

Crump Weir (H12d)

Can be positioned at any point within the channel to show the Crump Weir device for flow measurement techniques used in rivers and waterways.

Spillway (Ogee Weir) with Flat Apron and Ski Jump (H12e/f)

A spillway with three interchangeable aprons and a ski jump. Shows Head/Discharge relationships. Students can change the aprons to show the energy dissipation options.

Streamlined Hump (H12g)

Can be positioned at any point within the channel to show the effects of critical flow conditions and energy loss.

Parshall Flume (H12h)

Shows how flow may be measured with minimal effect on upstream conditions. Manufactured in transparent acrylic to allow a clear view of the flow.

Bridge Pier Construction (H12j)

Clearly demonstrates obstructions in flow leading to upstream flooding or downstream scouring and undermining of footings.

Roughened Bed (H12k)

For investigations into the effect of roughened beds on the flow characteristics of open channels. Includes two different grades of roughness.

Siphon Spillway (H12l)

Shows the effect of a siphon spillway and the increased flow permitted when compared with an ordinary spillway at similar height. Supplied with sealing rubber gaskets.

Vibration of Structural Columns (H12m)

For study of the mechanism by which a fluid flow may induce structural vibration through vortex shedding.

Wave Generator and Beach (H12n)

Demonstrates the dissipation of waves on a beach. The operating range of the wave generator is between 0-3 Hz via a speed controller.

Culvert (H12p)

Shows how flow behaves in an open channel that becomes enclosed.

Flow Splitter (H12v)

Demonstrates the creation of different flow regimes in an open channel caused by a flow splitter.

Specification (Flow Channel Only)

Nett dimensions and weight (assembled):
5300 x 800 x 1600 mm and 340 kg.

Packed dimensions and weight:
2.96 m³ and 440 kg (approx – packed for export)

Channel:
Nominally 5 m long x 175 mm high x 75 mm wide.

Maximum flow rate:
120 litre/min.

Specification (Ancillaries)

Approximate packed dimensions and weight:

H12a – 0.023 m³ and 4 kg
 H12b – 0.023 m³ and 4 kg
 H12d – 0.023 m³ and 4 kg
 H12e/f – 0.025 m³ and 3 kg
 H12g – 0.023 m³ and 1 kg
 H12h – 0.025 m³ and 3 kg
 H12j – 0.023 m³ and 2 kg
 H12k – 0.012 m³ and 7 kg
 H12L – 0.023 m³ and 2 kg
 H12m – 0.023 m³ and 1 kg
 H12n – 0.023 m³ and 5 kg
 H12p – 0.02 m³ and 5 kg
 H12v – 0.025 m³ and 5 kg

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