

MODEL: PM-P1050

COMPUTERISED TILTING FLUME APPARATUS



DESCRIPTION

- This apparatus consists of a flow channel fabricated from transparent toughened glass with stainless-steel windows on either side. The equipment is designed to study various flow phenomena in an open channel using different types of blocks, gates, weirs and other accessories. The transparent channel section allows observation of flow patterns and photographs to be taken. The glass panels are sealed with a stainless-steel bed. The channel is floor mounted and provided with an instrument rail along the complete working length. A pointer gauge is provided to measure the depth of flow and can be moved along the rail. An inlet tank with a stilling and smoothing device is provided for obtaining a smooth water profile. The discharge side is fitted with an adjustable-height gate to maintain operating water levels. The flume is suitable for studying and calculating the slope of the channel. A **computerised tilting flume apparatus** is an advanced hydraulic laboratory system used to study open-channel water flow, wave mechanics, and sediment transport. Key features typically include a transparent test channel, an electronic motorized tilting mechanism, and digital data acquisition software.
- **Core Components and Design**
- **Channel dimensions:** Standard working lengths range from 5 meters, widths around 300 mm, and depths around 300 mm.
- **Structure materials:** Built with a rigid mild steel or stainless-steel framework and clear Perspex or toughened glass side walls for full visibility.
- **Water circulation:** Includes a stainless-steel sump tank, a quiet re-circulating water pump, and



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flow regulation control valves.

- **Computerized & Automated Features**

- **Digital control:** Integrated touchscreens or computer interfaces to manage pump speed and slope adjustments accurately.

- **Sensors and meters:** Equipped with electronic pressure sensors, digital flow meters, and automated level gauges to record data in real time.

- **Data logging:** Software packages that plot flow profiles, discharge rates, and gradient slopes without manual calculations.

- **Common Laboratory Applications**

- **Flow visualization:** Observing subcritical, supercritical, and uniform/non-uniform flow patterns.

- **Hydraulic structures:** Testing the behavior of broad-crested weirs, sluice gates, and spillways.

- **Wave and energy studies:** Analyzing specific energy, hydraulic jumps, and boundary

EXPERIMENTATION

- To observe the Hydraulic Jump phenomenon.

- Study of velocity distribution in an open channel and determination of correction factor.

- Other experiments can be performed using additional accessories.

UTILITIES REQUIRED

- Water Supply: Initial fill.

- Laboratory Drain.

- Electricity Supply: 220 VAC, 50 Hz, 2 kW maximum.

TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION
Flow Channel Material	Toughened Glass and Stainless Steel.
Flume Width	300 mm.
Flume Depth	300 mm.
Flume Length	5 m.
Test Section	Normally 5 m; test section length can be provided as required.
Test Section Width	300 mm / 400 mm options.
Total Length	5 m test section with approximately 4 m working length.

Windows	Transparent windows on either side of the test section, approximately 400 mm long and 400 mm wide.
Wind Section	Total length approximately 4000 mm, with width corresponding to the selected test section.
Water Circulation	Centrifugal pump of suitable capacity.
Flow Regulation	Valve-controlled flow regulation.
Pointer Gauge	Provided for measuring water depth.
Rail	Instrument rail provided along the complete working length for movement of the pointer gauge.
Sump Tank	Suitable capacity.
Tank Capacity	Approximately 400 litres.
Pump	2 HP centrifugal monoblock pump.
Gates	Sliding gates provided at upstream and downstream sides.
Orifice Meter	Provided with manometer for measuring discharge.
Orifice Dimensions	Inlet 50 mm / Throat 25 mm respectively.
Mass Flow Rate	Can be calculated using the formula: $\dot{m} = \rho CQ$.
Space Required	Approximately 7 m length $\times$ 1.5 m width.

MODELS / ACCESSORIES SUPPLIED

A) Weirs

- Sharp Crested Weir (Crest Length: 200 mm).
- Broad Crested Weir.
- Ogee Weir or Spillway.
- Venturi Flume.

ADDITIONAL FEATURES

- Sump tank of suitable capacity.
- Tanks fabricated from stainless steel.
- English instruction manual containing experimental procedures, block diagram, etc.
- Complete setup mounted on a rigid, well-designed structure.
- Structure finished with industrial PU paint.