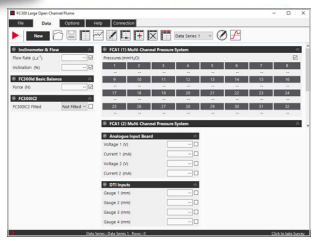
15 METRE FLUME

VDAS® FC300-15S

A 300 mm wide, 15 m long flume for student study and advanced research into a wide range of fluid flow topics. A huge range of ancillaries are available to extend learning potential and offers the opportunity for innovative experimentation.

FC300-7.5 METRE CHANNEL



SCREENSHOT OF THE VDAS® SOFTWARE

KEY FEATURES

- Digital data acquisition for quick and accurate measurements
- Transparent sides for clear visibility, ideal for group demonstrations
- Stainless steel channel base plate and toughened glass channel walls provide long-lasting use
- Built-in re-circulating water supply for convenient laboratory use
- Bed plate pressure tappings at 0.25 metre intervals, providing detailed analysis potential

KEY SPECIFICATIONS

- Pump flow rate: 2100 l.min^{-1} maximum.
- Digital inclinometer: High resolution of 0.05 degrees.

LEARNING OUTCOMES

- Sluice gate for investigations into hydraulic jump, specific energy and the determination of discharge coefficient
- Submerged sharp-crested weir reveals the relationship between head over a weir and discharge
- A broad-crested weir and the effects of changing the profile of the weir (optional ancillary)
- Uniform flow in an inclined channel with investigations into the Chezy factor and coefficient
- Further experimentation with additional optional models
- With the included Sediment Loop (FC300sl) and included permeable medium, sediment transport, scouring, ripple and dune formation and similar studies can be performed

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DESCRIPTION

The FC300-15S channels is 300 mm in width, 450 mm in height, and are 15 metre in length.

The flume has various models available, giving students a wide choice of experimentation in open channel flow.

The flume has a built-in re-circulating water supply connected to a digital flow metre for accurate measurements during experimentation.

The flume has pressure measurement tappings at 0.25 metre intervals along the working section. These tappings can connect either to a multi-tube manometer (included) or to a 32-way pressure display (not included). The 32-way pressure display connects to TecQuipment's VDAS® for real-time data acquisition.

The flume is supplied with level gauges (hook and point) and a Pitot tube, all of which mount onto and run along the instrument rails at the top of the flume. Measurements from these instruments combined with the digital flow meter provide the potential for extensive analysis of open channel flow for research or advanced study.

Bed-load transport can be investigated using the included Sediment Loop (FC300sl). This ancillary provides a closed sediment circuit consisting of a sediment trap and feed mechanism which allows sand to be pumped from the trap to a feeder located above the working section between experiments.

The flume is made of transparent glass, precision-built to ensure parallel walls and a consistently accurate cross-section along its length. A sturdy steel square-section firmly supports the channel throughout its length. It has a floor-standing frame that supports the working section at a convenient eye-level position for students.

Screw jacks raise and lower the supports inclining the channel as required. The digital inclinometer gives an accurate display of the channel angle.

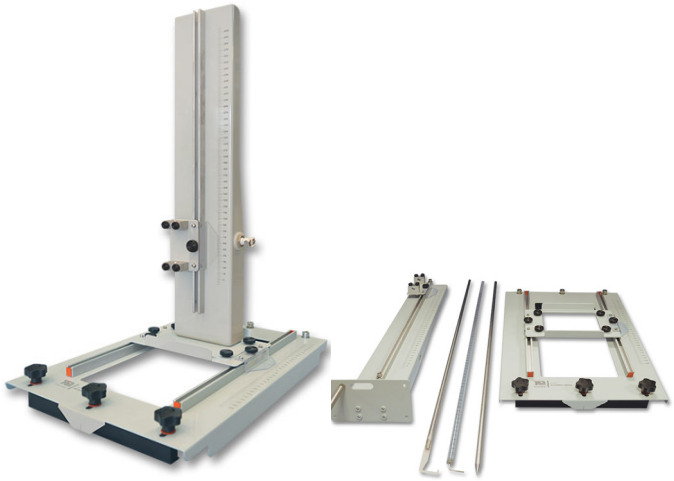
A pump with a speed controller, forces water up to the flow settling chamber at the upstream end of the channel. This gives smooth, uniform flow, free from entry effects.

STANDARD FEATURES

- Supplied with a comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- ISO9001 certified manufacturer
- Versatile Data Acquisition System (VDAS®-FC)

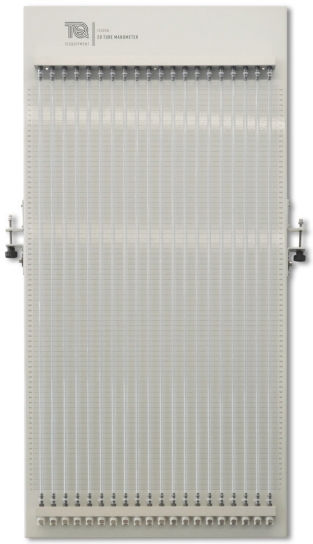
ADDITIONAL ACCESSORIES (INCLUDED)

*For all products mentioned below please refer to separate product datasheets for full specification.



INSTRUMENT CARRIER (FC300IC)

The instrument carrier can precisely place the tip of the supplied instruments at any position in the x, y, and z planes of the flume.



MULTI-TUBE MANOMETER (FC300W)

A 20-tube manometer for measuring pressure. It mounts onto the side of the FC300-15S on the instrument rails.

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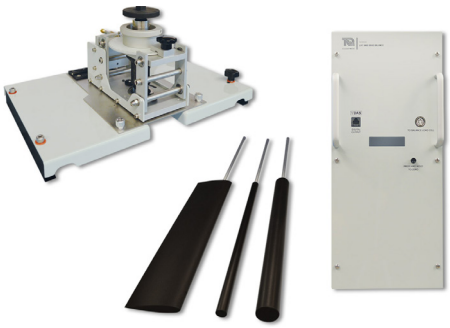

LIFT AND DRAG (FC300LD)

The FC300ld Lift and Drag module provides a means to measure and display the lift or drag on a set of models consisting of two different sized cylinders and a hydrofoil.

BROAD CRESTED WEIRS (FC300R)

TecQuipment's broad crested weirs consists of two model weirs sufficiently wide to prevent the jet from springing clear at the upstream corner. The models supplied are one block with rounded upstream and downstream corners, and a similar block with sharp edges.

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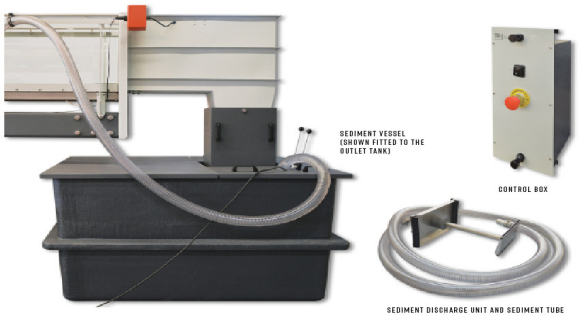

SEDIMENT LOOP (FC300SL)

An ancillary that allows sediment to be re-circulated continually into the flow channel from a sediment vessel located in the outlet tank.

ACCESSORIES (INCLUDED)

- VDAS®-FC
- Float switch
- Sluice gate
- Level gauges
- Pitot tube
- Sharp crested weir
- Powered end gate
- 10 x 25 kg bags of permeable medium, filter size 16/30, particle size 0.5 - 1.0 mm

AVAILABLE EXPERIMENTS

- Radial Gate (FC300b)
- Sluice Gate (Undershot Weir) (FC300c)
- Crump Weir (FC300d)
- Dam Spillway (FC300e)
- Ogee Weir with Tappings (FC300e2)
- Energy Dissipation (FC300e3)
- Venturi Flume (FC300f)
- Parshall Flume (FC300h)
- Bridge Piers: Cylinder, Round Nose, Square, Sharp Nose (FC300j)
- Roughened Bed (FC300k)
- Roughened Bed - Sand (FC300k2)
- Roughened Bed - Turf (FC300k3)
- Siphon Spillway (FC300l)
- Self Regulating Siphon (FC300l2)
- Vortex Induced Vibrations (FC300m)
- Wave Generator and Beach (FC300n)
- Culvert Model (FC300p)
- Rectangular and V-Notch Weirs (FC300q)
- Trapezoidal Flume (FC300z)

RECOMMENDED INSTRUMENTATION

- Digital Instrument Carrier (FC300ic2)
- Water Velocity Meter (FC300x)
- 32-Way Pressure Display (FCA1)

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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:

- FC300-15 metre channel:

  Approximately 17.5 metres long, 2.2 metres wide, 2.1 to 2.95 metres high and 4100 kg

NOTE:

Heights are variable because they are dependant on the inclination of the channel and the instruments placed.

DIMENSIONS OF WORKING SECTION:

Nominally 15 metres long, 300 mm wide and 450 mm deep

FLOW RATE:

15 metre flume flow rate - please enquire.

TILTING:

15 metre flume tilting range - please enquire.

FLOW CHANNEL SECTION:

Model fixing points at 0.5 metre intervals

WATER STORAGE CAPACITY:

- 7200 litres

ESSENTIAL SERVICES

WATER:

- Clean water supply and drain

POWER SUPPLY (SPECIFY ON ORDER):

- 3 Phase, 380-415 VAC, 50/60 Hz, 9A

  OR

- 3 Phase 220 - 240 VAC, 50/60 Hz, 16A

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

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