TE58 Model Reservoir and Surge Tower

Shows water storage and flood control with reservoirs and pipe distribution

- Shows the use of reservoirs for water storage and flood control
- Also allows investigations of a pipe distribution system
- Includes a sharp-edged weir
- Shows how to calibrate pressure transducers
- Includes two reservoirs and a surge tower
- Supplied with instrumentation
- Ideal for students working in small groups, or for classroom demonstrations

TecQuipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK

T +44 115 972 2611 • **F** +44 115 973 1520 • **E** info@tecquipment.com • **W** www.tecquipment.com

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Description

This equipment has two main parts: a main unit and a separate electrical enclosure. The electrical enclosure has connections for transducers, a power supply and an output for an oscilloscope with printer.

The main unit connects direct to a mains-water supply and has two identical reservoirs connected in series, one above the other. The water passes through an inlet valve into a rotameter-type flow meter. The water then passes into the highest reservoir, out through a sharp-edged weir and down a chute to the lowest reservoir. The lowest reservoir includes an overflow that leads to waste.

The main output of the lowest reservoir is to a serpentine (or 'penstock') pipe. The pipe connects to the floor of the lower reservoir via a shaped bell mouth to minimise frictional losses at entry. The water passes through the pipe to a surge tower and then two valves.

One valve controls the flow from the pipe, the other is used to create a surge in the water flow. The surge tower is transparent so students can see the water behaviour. Level transducers measure the water levels in the reservoirs and the surge tower.

Standard Features

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

Essential Ancillaries

- Two-Channel Oscilloscope (H405a) – Dual-trace (two-channel) oscilloscope with storage and printout.

Experiments

Investigations into the use of reservoirs for storage and flood control, and the properties of a pipe distribution system, including:

- Transducer calibration
- Calibration of a weir
- Reservoir filling and inflow relationship
- The hydrograph and flood routing
- Water surge

Essential Services

Electrical supply (for instruments):
100 to 240 VAC, 50/60 Hz.

Mains water supply:
Clean water supply of 50 $L.min^{-1}$ at 0.5 bar

Operating Conditions

Operating environment:
Laboratory environment

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

Dimensions:
- Nett: 1650 mm x 1200 mm x 2450 mm
- Packed: 3.498 m^3

Weight:
- Nett (without water): 190 kg
- Packed for export: 419 kg

Reservoir dimensions:
900 mm x 900 mm x 300 mm

Surge tower dimensions:
- Internal diameter 62.8 mm
- Height 1.8 m

Serpentine (penstock) pipe:
- Length 4 m
- External diameter 50 mm
- Internal diameter 42.6 mm

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