BENCH TOP COOLING TOWER

H893



Year 1
study

Features

- Demonstrates all processes found in a full scale forced draught cooling tower
- Rapid stabilisation allows experimental work to commence immediately upon switching on
- Columns with varying packing densities available as optional extras. Optional Packing Characteristics Column also available
- Can be linked to External Loads of up to 1.5 kW including the R515 Mechanical Heat Pump or R833 Air and Water Heat Pump via an intermediate reservoir system.

Description

The Hilton Bench Top Cooling Tower has been designed to meet the demand for a compact cooling tower which clearly demonstrates all the processes found in a full size forced draught cooling tower and behaves in a representative manner. Supplied with standard column B, a number of additional columns are available as optional extras to cope with a wide variety of educational needs in the study of Thermodynamics, Heat and Mass Transfer, Refrigeration and Air Conditioning. Warm water is pumped from the load tank to the column cap where its temperature is measured. The water is uniformly distributed over the top packing deck and, as it spreads over the plates, a large thin film of water is exposed to the air stream. During its downward passage through the packing, the water is cooled, largely by the evaporation of a small portion of the total flow. The cooled water falls from the lowest packing deck into the basin, from where it flows past a thermocouple and into the load tank where it is re-heated for re-circulation. Due to evaporation, the level of the water in the load tank slowly falls. This causes the float operated needle valve to open and transfer water from the make-up tank into the load tank. Under steady conditions, the rate at which the water leaves the make-up tank is equal to the rate of evaporation, plus any small airborne droplets in the air discharge Air from the atmosphere, pre-heated by external means if desired, enters the fan at a rate which is controlled by the intake damper setting. The fan discharges into the distribution chamber and the air passes wet and dry bulb thermocouples before it enters the packed column. As the air stream flows through the packings, its moisture content increases and the water is cooled. On leaving the top of the column the air passes through the droplet arrester, which traps most of the entrained droplets and returns them to the packings. The air is then discharged to the atmosphere via the air measuring orifice and further wet and dry bulb thermocouples. All of the foregoing may be observed through the transparent structure of the column. All temperatures are indicated by a digital temperature indicator and thermocouple selector switch.

Related Laws/Applications

- Building Services
- Chemical Engineering
- Energy Transfer and Conservation
- Mechanical Engineering
- Mining Engineering
- Plant and Process Engineering

Learning capabilities

- Observation of water flow pattern and distribution.
- Measurement of all “end states”, and rates of flow of water, air and make-up.
- Plotting of end states on a psychrometric chart and the application of the steady flow equation to draw up energy balances.
- Investigation of performance at a range of process cooling loads.
- Investigation of performance at a range of inlet temperatures.

Technical Specification

- Column Dimension: 150(L) x 150(W) x 600(H) mm
- Number of Decks: 8
- Number of plates per deck: 10
- Surface area of Packing: 1.19m²
- Constructed in Powder coated Aluminium
- Load tank with 0.5 and 1.0 kW heaters
- Float level control
- Make-up tank
- 12V circulating pump
- Adjustable speed Air fan
- Electrical control panel with digital temperature indicator
- Column B packing Density: 110m² per m³

Recommended Ancillaries

- H893A - Optional Column A - 7 Plates
- H893B - Optional Column B - 10 Plates (one is supplied as standard with the H893 base unit)
- H893C - Optional Column C - 18 Plates
- H893D - Optional Column D - Empty Column
- H893E - Optional Column E - Packing Characteristics Column Computer Linked/Intermediate Temperatures

What’s in the Box?

- 1 x H893 with column 'B'
- 1 x transformer (115V only)
- 1 x Water measuring cylinder
- 2 x psychometric charts
- 1 x Power lead
- Spares
- Instruction manual
- Packing list
- Test sheet

You might also like

- H893A - Optional Column A - 7 Plates
- H893B - Optional Column B - 10 Plates (one is supplied as standard with the H893 base unit)
- H893C - Optional Column C - 18 Plates
- H893D - Optional Column D - Empty Column
- H893E - Optional Column E - Packing Characteristics Column Computer Linked/Intermediate Temperatures
- R515/230 - Mechanical Heat Pump With Digital Wattmeter
- R515/115 - Mechanical Heat Pump With Digital Wattmeter
- R515/230/RC - Mechanical Heat Pump, Computer Linked Version
- R515/115/RC - Mechanical Heat Pump, Computer Linked Version
- R833/230 - Air And Water Heat Pump
- R833/115 - Air And Water Heat Pump
- R833/230/RC - Air And Water Heat Pump Computer Linked Version
- R833/115/RC - Air And Water Heat Pump Computer Linked Version

Weights & Dimensions

- Weight: 47 kg
- Length: 655mm
- Width: 975mm
- Height: 1010mm

Essential Services

- 1.6 kW, 220-240 Volts
- Single Phase 50Hz
- (With earth/ground).
- 1.6 kW, 110-120 Volts
- Single Phase 60Hz
- (With earth/ground).
- Water: Demineralised or distilled ,approx. 2 kg / hour

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COUNTRY OF ORIGIN - UK WARRANTY PERIOD - 5 YEARS

Ordering information

To order this product, please call PA Hilton quoting the following codes:
H893/230 - Bench Top Cooling Tower (230V / 1ph / 50hz)
H893/115 - Bench Top Cooling Tower (115V / 1ph / 60hz)
H893/230/HC - Bench Top Cooling Tower Computer Linked (230V / 1ph / 50hz)
H893/115/HC - Bench Top Cooling Tower Computer Linked (115V / 1ph / 60hz)

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