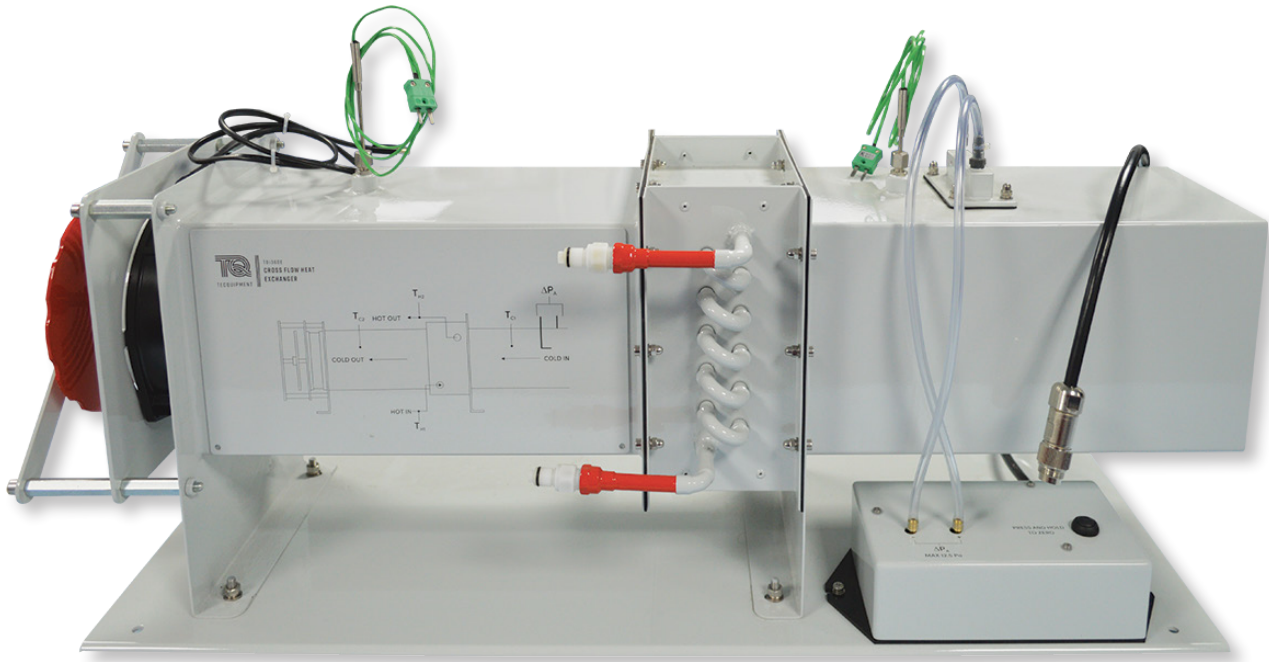


≡ CROSS-FLOW WATER-TO-AIR HEAT EXCHANGER

TDI360E

Shows how cross-flow water to air heat exchangers work.



KEY FEATURES

- One of a set of optional heat exchangers for use with TecEquipment's TD1360V Heat Exchanger Service Module
- Popular design of heat exchanger, used in industry but designed for teaching
- Simple and safe to use – foolproof fittings allow students to change and connect the heat exchanger quickly and easily – needs no tools
- Fully controllable airflow for a range of tests
- Corrosion-resistant materials for use with ordinary clean water at safe temperatures

≡ CROSS-FLOW WATER-TO-AIR HEAT EXCHANGER

TD1360E

DESCRIPTION

This heat exchanger mimics those used in the process industry. It is similar to those used as a cooling radiator for combustion engines in automobiles, or in heating ducts for air-conditioning. It shows heat transfer by forcing air over a series of metal tubes through which water passes. As the air passes around the tubes, the heat present in the water transfers to the turbulent flow of air.

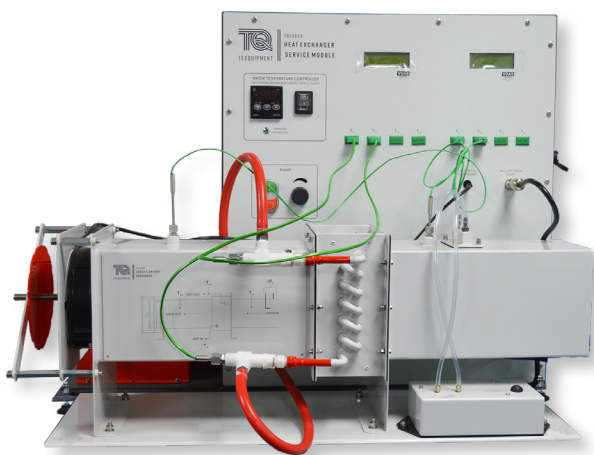
A fan with controllable air flow forces the air through a horizontal metal duct containing the metal tubes. Heated water from the service module passes through the metal tubes. The metal tubes are at right angles (90 degrees) to the air flow, creating a cross-flow heat exchanger. Metal plates or 'fins' surround the tubes, also at right angles to the air flow. These fins increase the effective surface area of the heat exchanger.

Thermocouples and an air flow sensor in the duct measure the air temperature and flow. Additional thermocouples measure the temperatures at the water inlet and outlet of the tubes.

The Heat Exchanger Service Module (TD1360V) provides heated water to the heat exchanger, and instruments needed to measure its performance. All fluid connections between the service module and the heat exchanger are self-sealing quick connectors – for safety and simplicity.

STANDARD FEATURES

- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer



THE SERVICE MODULE (TD1360V) SHOWN WITH THE CROSS FLOW WATER TO AIR HEAT EXCHANGER MODULE

LEARNING OUTCOMES

- Heat transfer from water to air.
- Introduction to the logarithmic mean temperature difference in heat exchangers.
- Effect of water temperature (the 'driving force').
- Effect of water and air flow rate.

ESSENTIAL BASE UNIT

- Heat Exchanger Service Module (TD1360V)

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

SOUND LEVELS

Less than 70 dB(A)

SPECIFICATIONS

TecEquipment 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 AND WEIGHT:

Heat exchanger:

335 mm (height), 820 mm (width), 253 mm (depth), 13.5 kg

APPROXIMATE PACKED DIMENSIONS AND WEIGHT:

0.2 m³ and 20 kg

OTHER DETAILS:

- 0.47 m² effective heat transfer area
- Connection to service module with quick connectors