



PLATE HEAT EXCHANGER H102B



Year 1
study

Features

- Multiple brazed stainless steel plates
- Four thermocouples measure hot and cold fluid entry and exit temperatures
- Self-sealing quick release connections enable rapid connection to the H102
- Conversion from parallel to counter-current flow.

Description

The H102B Plate Heat exchanger is a 4-plate brazed model that demonstrates the basic principles of heat transfer. The H102B is designed to be used with the Heat Exchanger Service Module H102. The heat exchanger is mounted on the H102 panel. The 'Hot side' self-sealing plugs are on the left and the 'Cold side' sockets on the right. Each plate is corrugated to promote turbulence and is perforated to allow the hot and cold streams to remain in sealed passages on opposite sides of the plates and allow the transfer of heat. It is the combination of turbulence, low volume, high surface area and high fluid velocities that give the high heat transfer capacity in a small volume. In normal operation, hot water from the heater/circulator flows via the 'HOT OUT' braided hose into the upper 'Hot side' coupling. Its temperature at entry to the heat exchanger is measured by a thermocouple. It then flows through the heat exchanger and leaves. Its temperature on exit is measured by a similar thermocouple. Cold water flows through the alternate passage between the alternate plates. The cold water is fed into the heat exchanger via the 'COLD OUT' reinforced hose and leaves via the 'COLD RETURN' hose. Thermocouples measure the cold water inlet and return temperatures. The flow direction of the cold stream relative to the hot stream can be reversed by changing the location of cold inlet and exit tubes.

Related Laws/Applications

- Mechanical Engineering
- Nuclear Engineering
- Chemical Engineering
- Control and Instrumentation
- Plant and Process Engineering
- Building Services
- Engineering Physics
- Refrigeration
- Marine Engineering

Learning capabilities

- To demonstrate indirect heating or cooling by transfer of heat from one fluid stream to another when separated by a solid wall (fluid to fluid heat transfer).
- To perform an energy balance across a plate heat exchanger and calculate the overall efficiency at different fluid flow rates
- To demonstrate the differences between counter-current flow (flows in opposing directions) and co-current flows (flows in the same direction) and the effect on heat transferred, temperature efficiencies and temperature profiles through a plate heat exchanger.
- To determine the overall heat transfer coefficient for a plate heat exchanger using the logarithmic mean temperature difference to perform the calculations (for counter-current and co-current flows).
- To investigate the effect of changes in hot fluid and cold fluid flow rate on the temperature efficiencies and overall heat transfer coefficient.
- To investigate the effect of driving force (difference between hot stream and cold stream temperature) with counter-current and co-current flow.

Technical Specification

- Plate Material: Stainless steel
- Number of plates: 4
- Number of Hot side channels: 2
- Number of Cold side channels: 3

Essential Ancillaries

- H102

Recommended Ancillaries

- H102F

What's in the Box?

- 1 x H102B
- Instruction manual
- Packing List
- Test sheet

You might also like

- H102F

Weights & Dimensions

- Plate overall dimensions 189(L) x 72(H)mm
- Weight, Full: 0.846kg
- Weight, empty: 0.776kg

Essential Services

- H102

Ordering information

To order this product, please call PA Hilton quoting the following code: H102B

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