FS SERIES

Fluid Science – Plate FS-3.4

The Fluid Science range is an innovative suite of products designed to enable students to gain an understanding of the fundamentals of Fluid Mechanics and Thermo Fluids by the process of learning via hands-on experimentation.

The high precision elements are supplied as modular tray-based systems which operate in conjunction with the Fluid Science service unit, multifunctional work panel and instrumentation enabling the student to conduct their own individual or group experiments.

The experiments are supplied with a highly visual user-friendly operational guide, allowing the students to understand the theory of the subject by the application of practical experimentation.

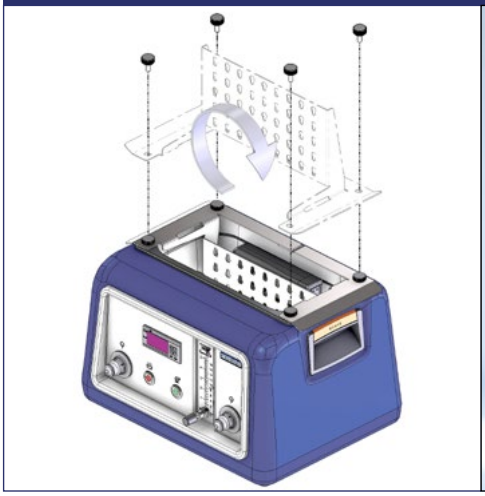
COST EFFECTIVE MOBILE TEACHING SYSTEM DESIGNED TO INTRODUCE THE BASICS OF MANOMETRY

The FS-3.4 Fluid Science Plate Heat Exchanger tray includes experimentation 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) in a plate heat exchanger.

The tray introduces students to concepts such as heat transfer coefficients, thermal resistances, controlling resistance and heat transfer driving forces. The heat exchanger can be used in a co-current or countercurrent configuration.

Experiment trays are sold separately, see **Related Products**

Back plates is easily stored inside the unit



Configurable as hot or cold water supply

Supplied with digital manometer and thermometer

UK office - email: sales@armfield.co.uk tel: +44 (0) 1425 478781 (for ROW)
USA office - email: info@armfield.inc tel: +1 (609) 208-2800 (USA only)

Issue: 1
URL: http://www.armfield.co.uk/ef

Applications: ME ChE CE IP

Description

The FS-3.4 Fluid Science Plate Heat Exchanger tray includes experimentation 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) in a plate heat exchanger.

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Requirements

Scale

Electrical supply:

- 100-240V/1 Phase, 50-60Hz
- Level surface
- FS experiment trays

Initial fill of 5ltrs water. Drain to empty water away once experiment is complete. During use, water supply or drainage are not required.

Technical specifications

- Number of Plates: 10
- Effective exchange surface 0.012 qm per plate = ca. 0.12qm
- Plate material / connecting piece material: stainless steel AISI 304
- Thermocouples 4 x K-Type
  - Cold water in
  - Cold water out
  - Hot water in
  - Hot water out

FS-3.1: Heat Exchanger (Shell and Tube)

FS-3.3: Cross flow

FS-3.2: Heat Exchanger (Tubular)

Overall dimensions

Dimensions tray	
Length	0.430m
Width	0.312m
Height	0.080m
Dimensions set up (excluding power supply)	
Length	0.260m
Width	0.76m
Height	0.100m
Packed and crated shipping specifications	
Net weight	2.15Kg
Gross weight	TBC

Experimental content

- 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
- To calculate the overall efficiency at different fluid flow rates
- To demonstrate the differences between co-current flow (flows in same direction) and countercurrent flow (flows in the opposite direction) and the effect on the heat transferred and temperature efficiencies
- To determine the overall heat transfer coefficient for a plate heat exchanger

Features

- Fully mobile solution
- Each service unit can be used as either a hot or cold-water supply
- Quick connect couplings for easy connection to experiment modules, self-sealing on supply unit to minimise water loss
- Digital manometer and thermometer provided with service unit
- Low voltage within the supply unit to protect users

Benefits

- Applied student learning via experimentation
- Common service unit can be used for either hot or cold-water supply
- Toolless assembly
- Designed to be highly visual and simple to use
- Quick setup
- Suitable for both classroom, laboratory, and mobile environments

Related products

Fluid Mechanics Range

- FS-1.1 Flow Measurement
- FS-1.2 Energy Losses - Straight pipes
- FS-1.3 Energy Losses - Bends
- FS-2.1 Manometer - Inclined
- FS-3.1 Heat Exchanger - Shell and tube
- FS-3.2 Heat Exchanger - Tubular
- FS-3.3 Heat Exchanger - Cross flow
- FS-4.1 Fluidised bed

Essential Accessories / Equipment

One of the range of Fluid Science service trays

Ordering codes

FS-SU	FS-3.2