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**Product Name :**  
Water to Water Turbulent Flow Heat Exchanger

**Product Code :**  
LBNY-0005-10200021



#### **Description :**

The heat exchanger has been divided into three equal sections in order to allow examination of the intermediate stream temperature conditions and temperature distribution through the heat exchanger. Water to Water Turbulent Flow Heat Exchanger is a highly advanced concentric tube heat exchanger with hot water flowing through the central tube while cooling water flows through the annular space. The addition of the central tube surface temperatures at inlet and exit allow detailed investigation of the surface heat transfer coefficient inside and outside the central tube. Thermocouples sense the hot and cold stream temperatures at the four stations and the inner tube wall temperatures on entry and exit.

#### **Technical Specification :**

Water Heater: 3kW with electronic control .

Pump: Continuous rated to circulate hot water.

Heat Exchanger: Concentric tube type with inlet, outlet and two intermediate measuring points plus pipe temperature. Area 0.0288m<sup>2</sup>.

Digital Thermometer: 0.1°C resolution, with multi-way selector switch.

Cold water flow reversal valves: To establish concurrent and counter-current flow.

Flow Meters (1+1):- For hot and cold water.

Investigations using these two methods of control allow students to experimentally determine the constants in one of the classic empirical equations for turbulent heat transfer in a tube.

The PID temperature control on the Heat Exchanger Service Unit allows investigation of turbulent flow conditions at a range of fixed Prandtl numbers.

#### **Experimental Capability:**

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Determination of surface heat transfer coefficient inside and outside the tube, and of the effect of fluid velocity.  
Determination of heat transfer rate, logarithmic mean temperature difference, overall heat transfer coefficient and 4 point hot and cold stream temperature profiles.  
Comparison of performance in concurrent and in counter-current flow.



**Laboratory Instrument India**