



Fluid Friction Measurement Apparatus (SMT-FM-24)

Fluid Friction Measurement Apparatus allows detailed studies of flow, flow measurement techniques and losses in a wide variety of pipes and fittings. Pressure losses occur during the flow of real fluids due to friction and turbulence (vortices). Pressure losses in pipes, piping elements, fittings and measuring instruments (e.g. flow meter, velocity meter) cause pressure losses and must therefore be considered when designing piping systems.

This unit contains six different pipe sections capable of being shut off individually. The pipe sections are equipped with piping elements such as bends, elbows and branches. In one pipe section, different shut-off devices and measuring objects are installed to determine the flow rate. The measuring objects are made of transparent material and provide excellent insight into the inner structure. The pressure measuring points in the piping system are designed as annular chambers. This creates a largely interference-free pressure measurement. The pressures are measured with tube manometers.

A manometer panel hold transparent manometer tubes. Manometer tubes have engraved scale on back sheet for direct reading of water levels in the tube. Unit has corrosion proof structure. This unit can be operated by Laboratory supply of with any Hydraulic Bench.

TECHNICAL SPECIFICATIONS

Specifications:

- Measurement of pressure losses in piping elements and shut-off devices.
- Different measuring objects for determining flow rate according to the differential pressure method.
- Six pipe sections capable of being individually shut off, with different piping elements: sudden contraction, sudden enlargement, t-pieces, corners and bends.
- Measuring objects made of transparent material: venture nozzle, orifice plate flow meter and measuring nozzle.
- Shut-off devices: globe valve, gate valve.
- Annular chambers allow measurement of pressure without interaction.
- Water supply using SMT-FM-100 base module.
- Flow rate determined by SMT-FM-100 base module.



Technical Data:

High quality frame and backboard to support test circuits comes with the following facilities:

- Pipes for sudden contraction and sudden enlargement.
- Smooth bore pipes of various diameters (6~7mm, 9~10mm, 12~13mm and 19.1mm)
- An artificially roughened pipe
- A 90o bend
- A 90o elbow, 90o Mitre
- A 45o elbow
- A 90o "T"
- A gate valve
- A globe valve
- An in-line strainer
- A venturi made of PMMA
- An orifice meter made of PMMA
- Pitot Static Tube
- Ball Valve
- Manometers:
 - Twin Tube manometers 0 to 1000mm
 - QTY=02
- Pipes and pipe connectors: PVC.
- Max Flow Rate: 75L/min
- Measuring Tube Range:
 - 0 TO 100mBar
- LxWxH: 2400x500x1600mm.
- Weight: approx. 65kg.
- Accessories (Included)
 - All necessary Flexible pipes and fittings.
 - Instruction Manual
- Operating Conditions
 - Laboratory Temperature: 5°C to 40°C
- Note:

This product may produce small splashes of water in use, so you must use it at a safe distance from electrical supplies. ESOLS recommends approximately 2.0 m.

Experimental Data:

- Velocity profile and the Pitot-static tube
- Flow measurement using a Venturi meter and an orifice meter
- Determining resistance coefficients

Pressure (head) losses in:

- Smooth and roughened straight pipes
- Sudden expansion and contraction
- Bends and elbows
- Valves and in-line strainer
- Pipes of different diameter