

**Product Name :**  
Astra Scientific Fluid Friction Measurements

**Product Code :**  
Fluid Mechanics Lab0013



**Description :**

Astra Scientific Fluid Friction Measurements

**Technical Specification :**

**DESCRIPTION:**

The trainer comprises three straight pipe sections made of different materials and with different diameters. Also included are: a pipe section with pipe bends, a pipe section with contraction and enlargement and a pipe section with interchangeable valves and fittings.

Knowledge of pressure losses in various pipe elements is a key factor in designing pipe systems. The trainer allows the determination by experiment of these important coefficients and the investigation of the pressure curve in typical pipe sections.

The large length of the pipe sections of 2,5m and the fact each section is fitted with at least five pressure measuring points means it is possible to obtain very accurate measurements and demonstrate the linear reduction in pressure in a pipe.

A Rota meter and a volumetric measuring tank are included for comparison measurements and calibrations. The volumetric measurement using a stopwatch gives highly accurate results even at low flow rates. Tube manometers, a Bourdon tube pressure gauge and a differential pressure sensor are provided for pressure and differential pressure measurements.

The pressure measuring points are designed as annular chambers for accurate pressure measurement. A movable manometer panel saves space and allows for optimal accessibility. The trainer includes a closed water circuit with tank and submersible pump. This means the trainer can be used independent of the laboratory network.

### **FEATURES:**

- Investigation of pressure losses
- Three long pipe sections made of copper and steel with different diameters
- Pipe section with pipe bends
- Pipe section with sudden contraction and enlargement
- Pipe section with interchangeable fittings with different opening characteristics: needle valve, shut-off valve, ball valve
- Determination of the pressure curve along the measuring section with up to 8 pressure measuring points
- Easy pressure measurement via annular chambers
- Pressure and differential pressure measurement with 8 tube manometers, Bourdon tube pressure gauge and electronic differential pressure sensor
- Flow measurement via Rota meter and volumetric measuring tank
- Closed water circuit with tank and submersible pump
- Stainless steel tank

### **SPECIFICATIONS:**

- -4 smoothbore pipes of different diameters ranging from 4.5mm I.D. to 17.2mm I.D.
- Artificially roughened pipe

- 90° bends (large & small radii)
- 90° elbow
- 90° mitre
- 45° elbow, 45° Y, 90° T
- Sudden enlargement
- Sudden contraction
- Gate valve
- Globe valve
- Ball valve
- Inline strainer
- Perspex Venturi
- Perspex orifice meter
- Perspex pipe section with a Pitot tube & static tapping
- 38 tapping points
- Measuring ranges

Pressure: -1...1,5bar

Differential pressure: 1x 0...+/-350mbar, 8x 0...1000mmWS

Flow rate: 1x 400...4000L/h

- 230V, 50Hz, 1 phase

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