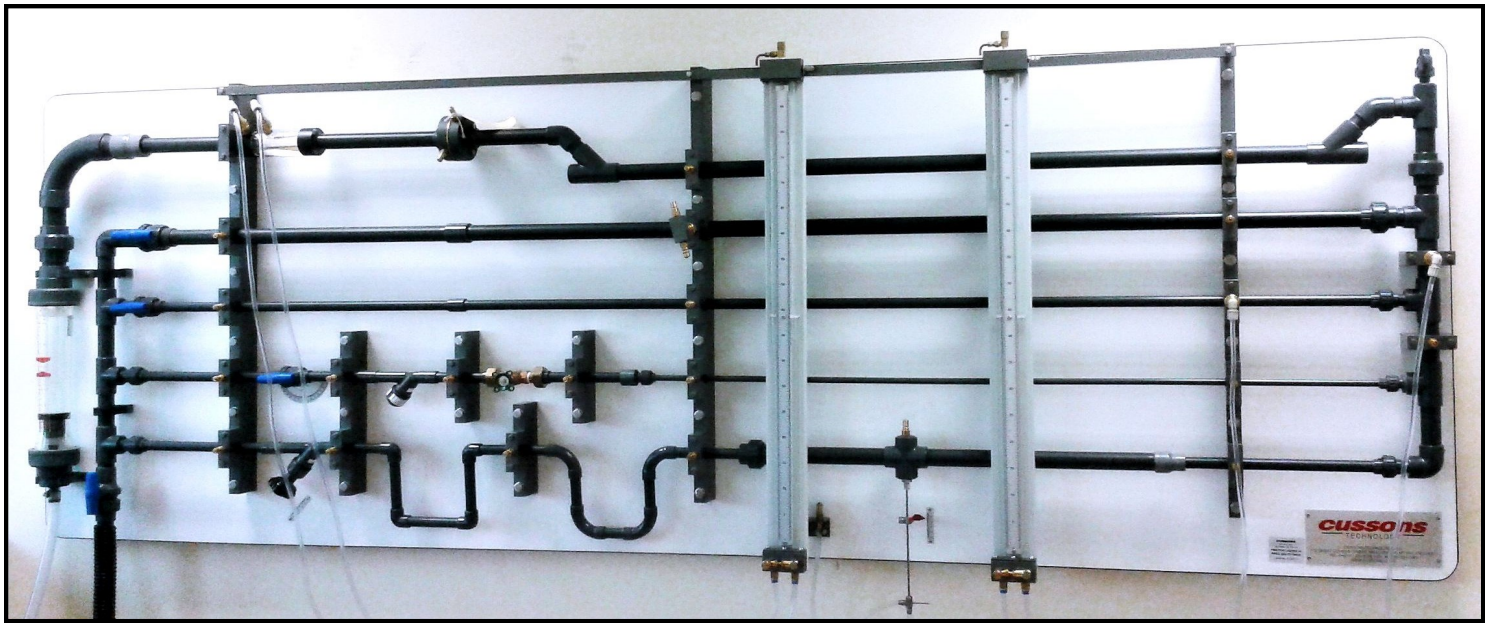
P5160 FRICTION LOSS IN PIPES



EXPERIMENTAL CAPABILITY

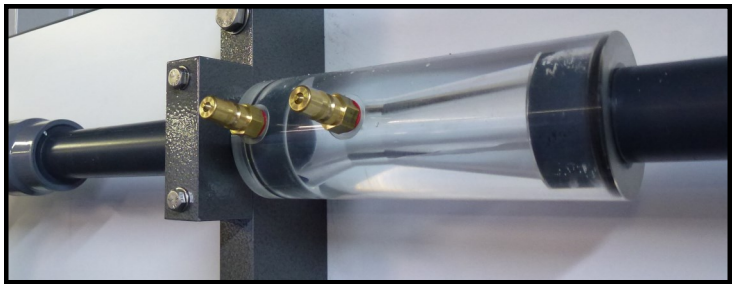
- Flow through smooth pipes of differing diameters under laminar and turbulent flow conditions with logarithmic plot of friction factor 'f' against Reynolds number (Stanton diagram).
- Flow through roughened pipes of different diameters under laminar and turbulent flow conditions with logarithmic plot of friction factor 'f' against Reynolds number (Nikuradse diagram).
- Investigations of the flow/pressure drop relationship for an annular pipe, using the concept of equivalent hydraulic diameter.
- Investigation of pressure drops across various fittings enabling the results to be used to predict resistance coefficients or equivalent lengths.
- Investigation of various methods of flow measurement including variable area meter (Rotameter), Transparent Venturi Meter, Orifice Plate Meter and Pitot Static Tube.
- Comparison of pressure drops across three different types of valve (i.e. ball valve, gate valve and seat valve) under different conditions of valve opening.

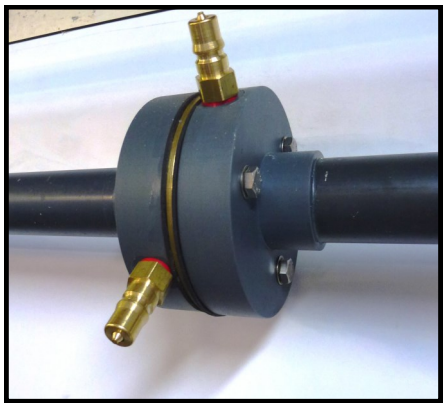
INTRODUCTION

Cussons P5160 Friction Loss in Pipes apparatus allows the student to study flow through pipes and fittings, investigate the relationship between flow and pressure drop and plot values of friction factor against Reynold's number. It is designed for use with Cussons P6100 Hydraulics Bench and P6101 Auxiliary Pump Unit, but can be used as a stand alone unit if connected to a suitable water supply and drain.

DESCRIPTION

The apparatus consists of a set of parallel pipes manifolded and valved so that a wide variation of flow circuits can be produced. Pressure tappings are provided at appropriate points so that measure-ments can be made of head loss over standard lengths of differing pipework, and various types of fittings as required. The first pipe which acts as a feed pipe to the four manifolded pipes, contains a variable area flow meter, a transparent venturi tube, an orifice plate assembly and an annular test section. Means are available to vary the rate of flow over a wide range.





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The second and third pipes of 25 and 12mm bore respectively are each divided into smooth and artificially roughened sections.

The fourth pipe is of small bore and contains a ball-valve, a filter fitting and a gate valve.

The final pipe contains a transparent portion of enlarged cross section which allows a study of sudden enlargements and contractions to be made as well as affording a test section to house a pitot tube assembly.

The enlarged section is followed by a series of four slow bends, a series of four elbows and an angled seat valve.

TENDER SPECIFICATION

P5160 - Friction Loss In Pipes Apparatus comprising set of 5 variable-sized PVC pipes manifolded and valved together and mounted on melamine backboard with pressure tappings at appropriate points and including pressurised water manometers. Feed pipe at top with air vent and containing Series 2000 Rotameter 10 to 100 litres/mm, transparent venturi meter, annulus and orifice plate assembly. Second and third pipes 25 and 12mm bore respectively each divided into smooth and artificially roughened sections.

Fourth pipe of small bore (8.5mm) containing in line strainer and ball and gate valves (12mm dia.). Final pipe containing enlarged section, pitot static tube assembly, a series of four slow bends, a series of four elbows and an angled seat valve.

P5161 Water Recirculating Unit

DIMENSIONS AND WEIGHTS

Dimensions: 307 x 119 x 43cm
Gross weight: 230kg,
Nett weight: 100kg

OPTIONAL ACCESSORIES

P6100 Hydraulic Bench

or

P5161 Water Recirculating Unit

P5161 Water Recirculating Unit

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