

P3208

BERNOULLI'S APPARATUS

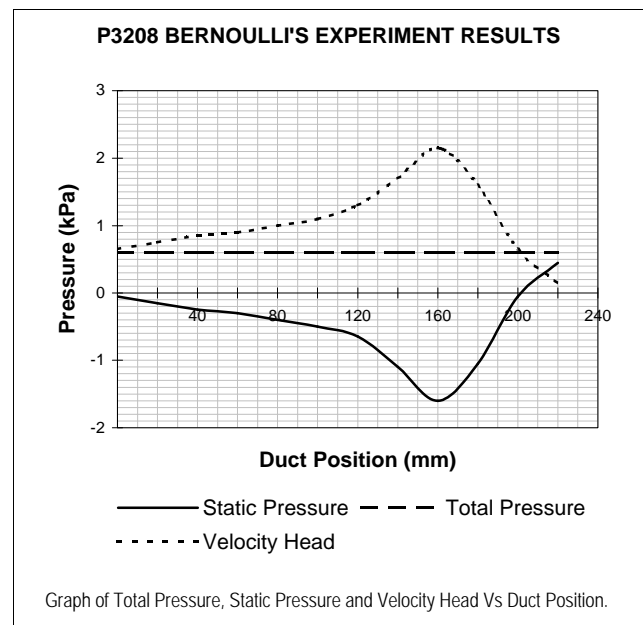
INTRODUCTION

Cussons P3208 Bernoulli's Apparatus is designed to demonstrate visually the interchange between static and dynamic pressure as air flows through a duct of variable cross sectional area. In carrying out the experiment the student is able to verify Bernoulli's Theorem which, in its wider form, states that:

“At any point in a tube through which a fluid is flowing, the sum of pressure energy, potential energy and kinetic energy is constant.”

DESCRIPTION

The apparatus comprises an acrylic duct with the upper and lower surfaces in opaque material and the sides clear. The whole unit forms a 60 x 50 mm rectangular cross section converging to a 20 x 50 mm throat area then diverging back to 60 x 50 mm section at the exit plane. A pitot static tube is fitted at the outlet end of the venturi duct and this can be traversed longitudinally along the centre line to enable its measuring tip to be positioned at various points. Measured positions are obtained against two scales positioned on opposite sides of the duct to avoid parallax errors. The scales are marked in millimetres but are reversible to show imperial measurements.



The apparatus is designed to be used on the working surface of the basic P3200 Air Flow Bench and connected by convoluted hose to the 70 mm dia. “blown” experiment duct on the fan outlet. However, it may be used as a stand alone unit by connecting it to any suitable fan with an air supply of approximately 500 litre/sec. at 600 Pascals and by utilising appropriate manometers.

A plot of typical results which can be obtained is shown in the above graph.