

Physics 510

Experiment AR-4

Subsonic Pipe Flow

Obtain the axial static pressure distribution and data to obtain the velocity profile at a station for several rates of discharge.

Calculate for each discharge rate the Reynold's Number, rate of discharge, pipe factor, and friction factor.

For one of the larger rates of discharge compare experimental and theoretical velocity profiles. Also find the efficiency with which the Mechanical output of the Motor is converted to kinetic energy of the gas flow.

References: * R. C. Binder, *Fluid Mechanics* Chapter 7 and section 160.

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