



Figure 6 – Pitot Static Tube

A static pitot has dual coaxial tubes. One terminates in a port facing upstream to register the total dynamic pressure at a stagnation point and the other tube is located away from the tip and faces normal to the flow or downstream to measure the static pressure at approximately the same streamline.

Combined-reversed pitot static tubes circumvent many of the problems associated with flow profiles across the channels. One design is the multi-port or annular averaging element. This element senses dynamic pressure at multiple sensing ports distributed along the diameter to provide a single indication of the average flow through the channel without a transverse. Static pressure is measured by a tube terminating in a port which faces downstream at the centerline of the conduit.

The Annubar™ manufactured by Dieterich Standard Corporation is a specialized pitot tube of this type. The ProBar Flowmeter™ manufactured by Rosemount is also a specialized pitot tube with pressure and temperature compensation. Both these flow elements are very commonly used in low pressure applications.

#### A. Wedge Meters

The segmental wedge is a proprietary design flow meter similar to the segmental orifice plate but with the upstream and downstream surfaces of the measuring point at a 45 degree angle to the flow stream. The wedge meter is located at the top of the pipe or conduit allowing the bottom of the pipe to be unrestricted. Wedge meters are highly linear from Reynolds numbers as low as 500 (laminar flow) to Reynolds numbers in the millions (highly turbulent flows). The wedge meter is useful when measuring slurry flow.