AA18, AA19, AA20

Stainless Steel Pitot Tubes
for Use With PX3 Series Products

NOTICE

- **This product is not intended for life or safety applications.**
- **Do not install this product in hazardous or classified locations.**
- **Read and understand the instructions before installing this product.**
- **Turn off all power supplying equipment before working on it.**
- **The installer is responsible for conformance to all applicable codes.**

If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this material.

Product Overview

The AA18, AA19 and AA20 stainless steel pitot tubes are constructed from corrosion resistant stainless steel with permanently etched insertion depth graduations for a lifetime of service. The static pressure port is parallel to the sensing tube to allow quick, easy alignment of the tube with air flow. A universal model fits the user supplied 3/4" schedule 40 pipe in any length.

Product Identification

Insertion Length

AA ☐

18 = 8-5/8 in. (21.91 cm) velocity duct probe, 5/16 in. (0.79 cm) diameter
19 = 12-5/8 in. (32.07 cm) velocity duct probe, 5/16 in. (0.79 cm) diameter
20 = 18-5/8 in. (47.31 cm) velocity duct probe, 5/16 in. (0.79 cm) diameter

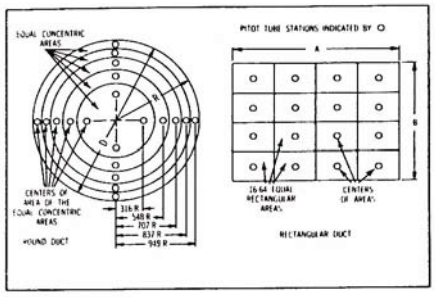
Example:
AA18

Installation

The total pressure of an air stream flowing in a duct is the sum of the static or bursting pressure exerted upon the sidewalls of the duct and the impact or velocity pressure of the moving air. Through the use of a pitot tube connected differentially to a manometer, the velocity pressure alone is indicated and the corresponding air velocity determined.

For accuracy of plus or minus 2%, as in laboratory applications, extreme care is required and the following precautions should be observed:

1. Duct diameter to be 30 times pitot tube diameter, or greater.
2. Make an accurate traverse per the diagram below, calculate the velocities and average the readings.



3. Provide smooth, straight duct sections a minimum of 8-1/2 diameters in length upstream and 1-1/2 diameters downstream from the pitot tube.
4. Provide an egg crate type straightener upstream from the pitot tube.

In making an air velocity check select a location as suggested above, connect tubing leads from both pitot tube connections to the manometer and insert in the duct with the tip directed into the air stream. If the manometer

Installation (cont.)

shows a minus indication reverse the tubes. With a direct reading manometer, air velocities will now be shown in feet per minute. In other types, the manometer will read velocity pressure in inches of water and the corresponding velocity will be found from the curves shown in the graphs below. If circumstances do not permit an accurate traverse, center the pitot tube in the duct, determine the center velocity and multiply by a factor of 0.9 for the approximate average velocity. Field tests run in this manner should be accurate within plus or minus 5%.

The velocity indicated is for dry air at 70 °F., 29.9 inches of barometric pressure and a resulting density of .075 pounds per cubic foot. For air at a temperature other than 70 °F, refer to the curves shown in the graphs below. For other variations from these conditions, corrections may be based upon the following data:

$$\text{Air Velocity} = 1096.2 \sqrt{\frac{Pv}{D}}$$

where:

Pv = Velocity pressure in inches of water

D = Air density in pounds per cubic foot

$$\text{Air Density} = 1.325 \times \frac{P_B}{T}$$

where:

P_B = Barometric pressure in inches of mercury

T = Absolute temperature (indicated temperature in °F plus 460)

Flow (in cubic feet per minute) = Duct area in square feet x air velocity in feet per minute