

Tip of the Week

September 27, 2004

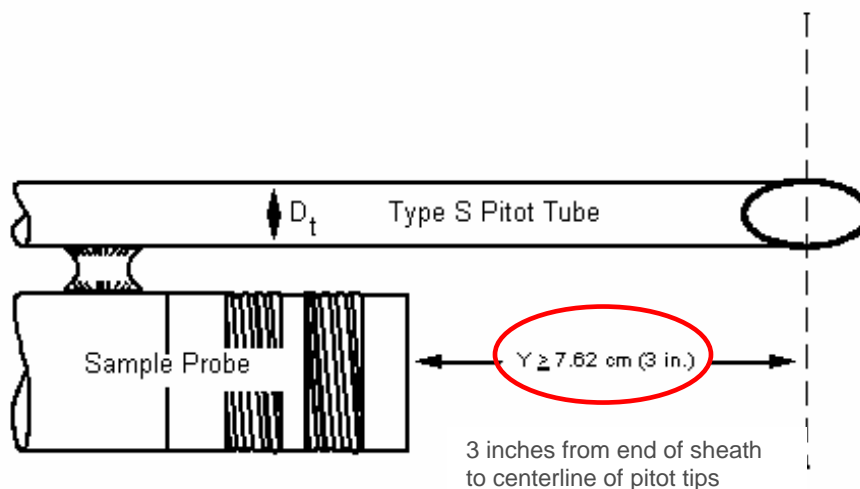
Pitot Tube Alignment

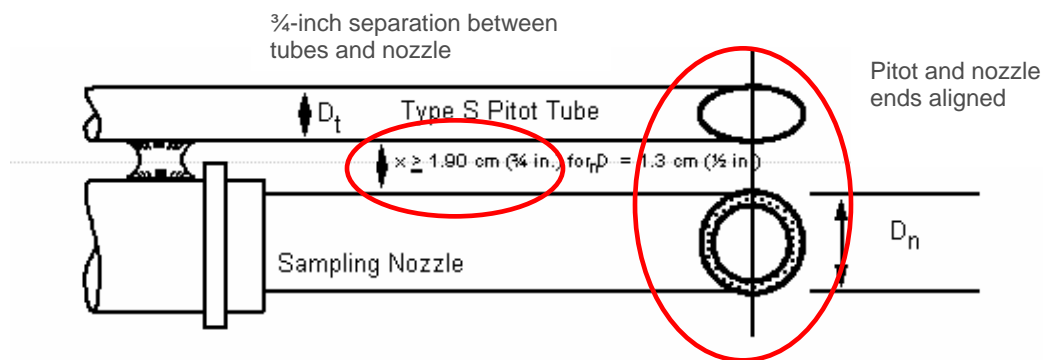
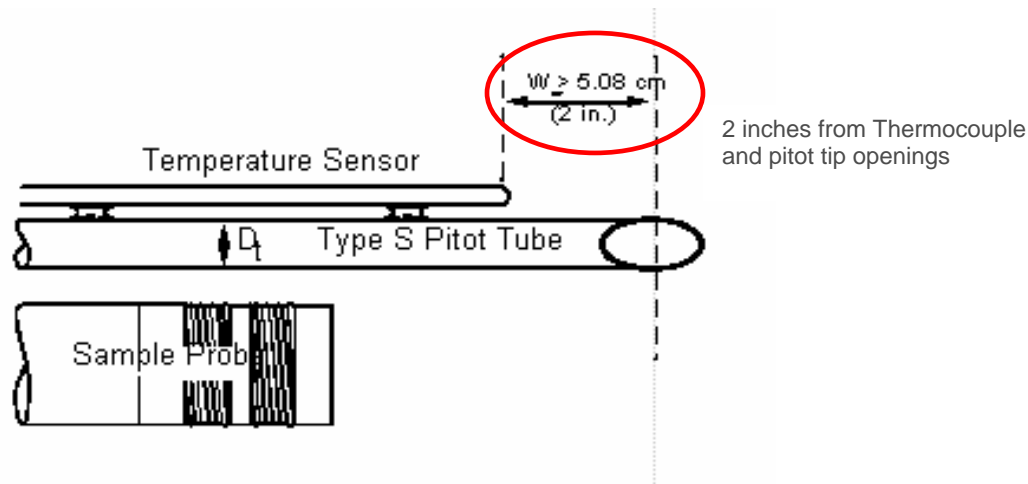
USEPA Method 2 specifies the allowable configurations of a pitot tube relative to the probe thermocouple and nozzle. Essentially, there are five things you should always check to ensure that the assembly meets these specifications prior to using a probe for a test:

1. The pitot tube openings extend at least 3 inches beyond the end of the probe sheath.
2. The thermocouple is at least 2 inches behind the pitot tube openings (center of opening to thermocouple tip).
3. The nozzle is separated from the pitot tubes by at least 3/4-inch.
4. The end of the nozzle is even with the end of the pitot tube tips.
5. The pitot tube impact side opening is even with or above the opening of the nozzle.

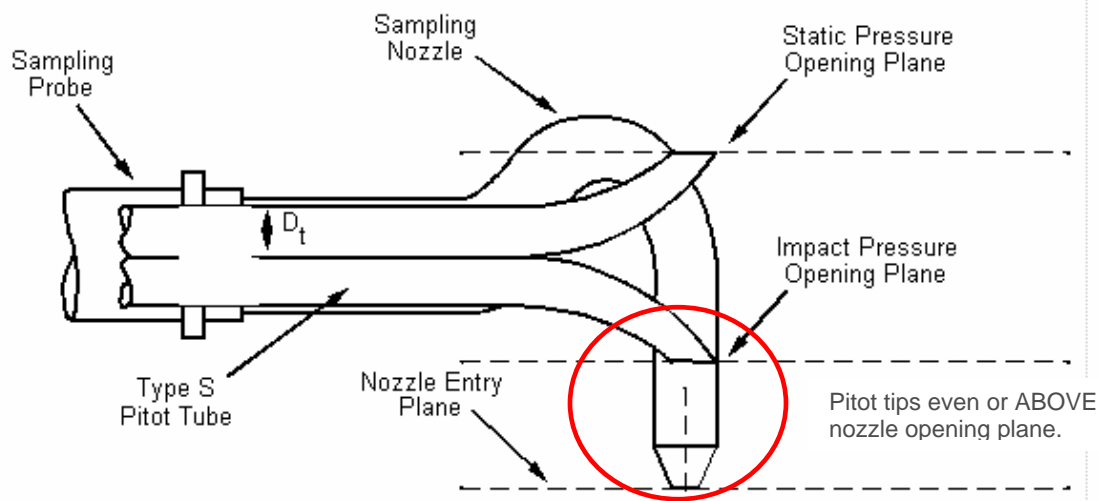
The figures below from Method 2 illustrate these points.

If these criteria are not met, then the flow results will likely be biased high, possibly by as much as 10%!





A. Bottom View; showing minimum pitot tube-nozzle separation.



B. Side View; to prevent pitot tube from interfering with gas flow streamlines approaching the nozzle, the impact pressure opening plane of the pitot tube shall be even with or above the nozzle entry plane.