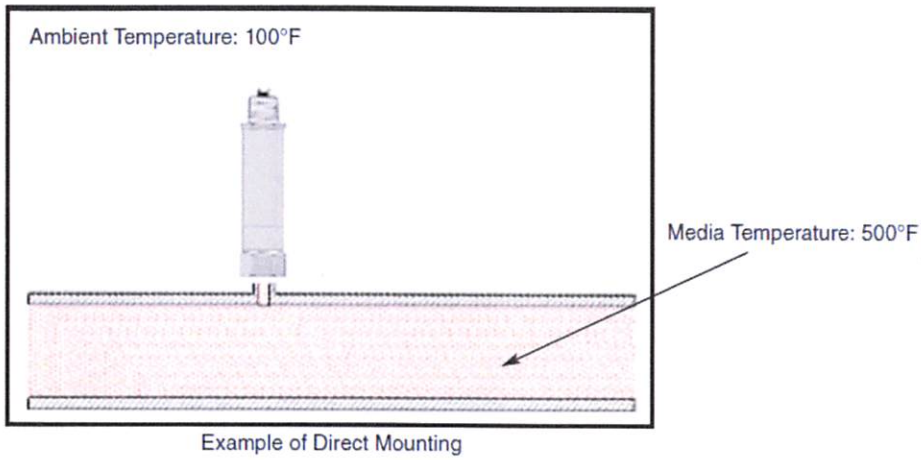
A METHOD OF ISOLATING TRANSDUCERS FROM EXTREME TEMPERATURES

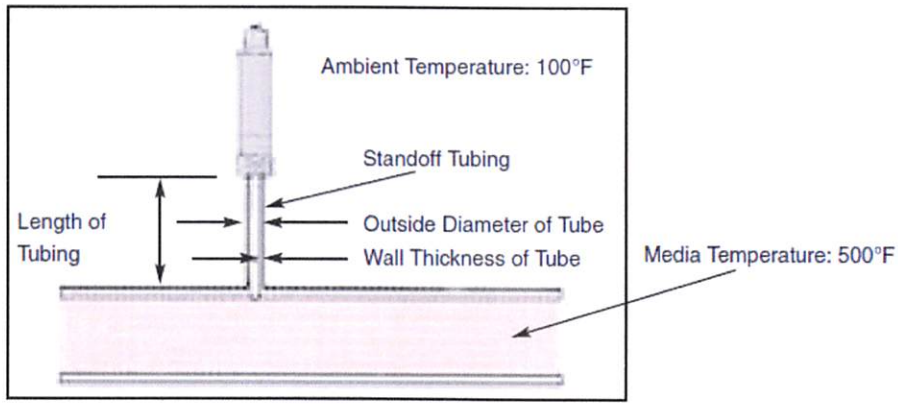
A common challenge in measurement of pressure is related to how high (or how low) a transducer can withstand temperature. In addition, even when a transducer can withstand a temperature it usually induces unwanted effects on accuracy and can reduce the life span of the instrument.

In many applications where temperature of the media is very high or very low, an easy and inexpensive solution can be proposed. Using a short run of "standoff" tubing will usually solve this high ***media*** temperature application, provided the ***ambient*** temperature is below the maximum temperature rating of the transducer.



Example of Direct Mounting

In this example, the transducer is measuring the 500-degree media directly. Chances are good that the sensor won't survive very long like this, so a better approach is shown below.



In this example, the transducer is moved away from the process temperature by a length of isolation tubing.

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We can demonstrate a real world example of how much tubing is required in this application by selecting the maximum temperature the transducer can withstand, and the size and material used for the isolation tubing.

The Example:

Media Temperature:	500°F
Maximum Temperature at Transducer:	185°F
Ambient Temperature:	100°F
Material of Tube:	316 Stainless Steel
Diameter/Wall Size:	0.25″ with 0.035″ Wall Thickness

The charts below and on page three show that a 4½″ (call it 5″ to be safe) length of the tubing would bring the temperatureat he transducer down to below 185°F. As you will also notice, smaller tubing diameters are better for temperature isolation. In addition, you will notice Copper is a good conductor of heat, and therefore a **poor** choice as an isolation tube.

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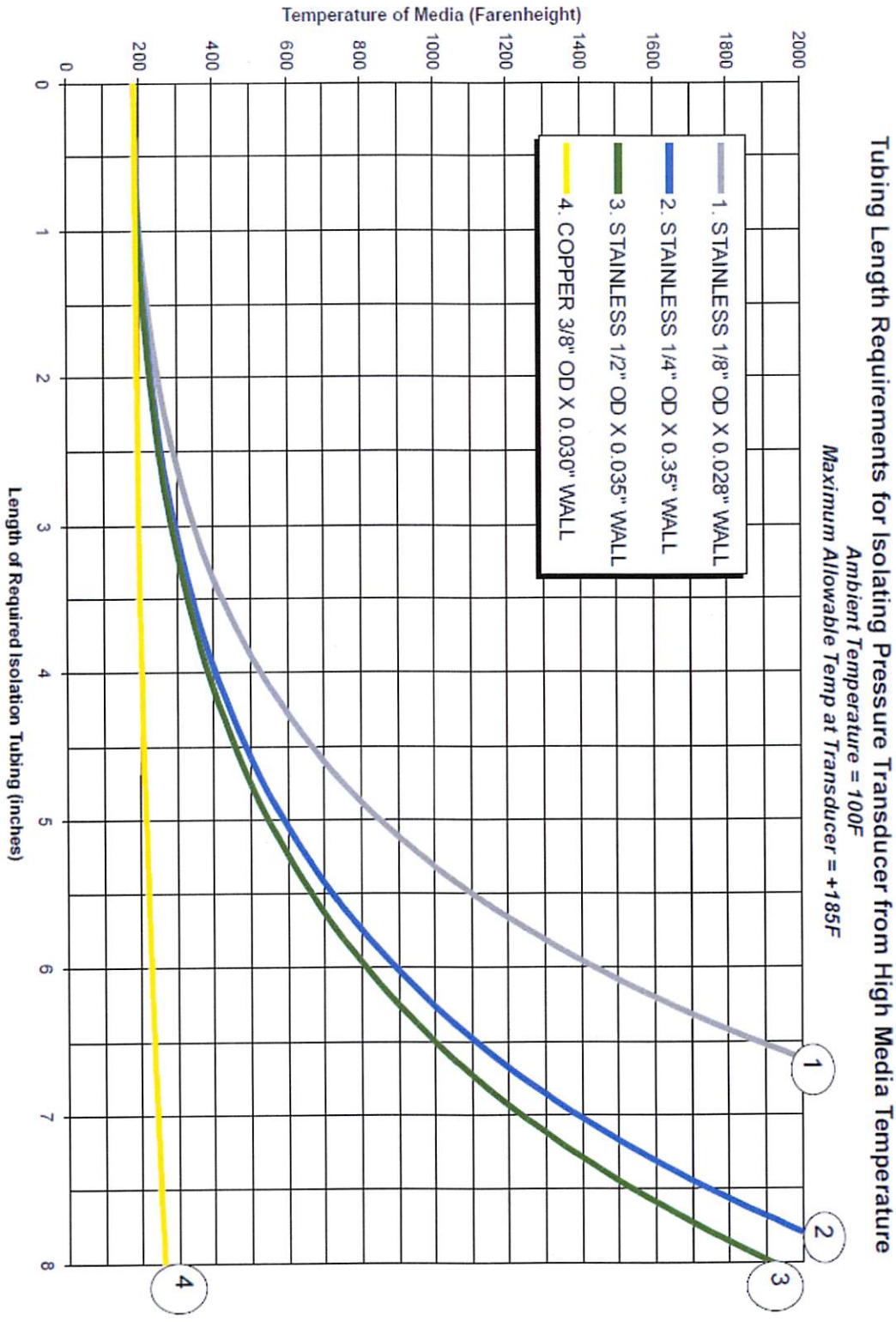

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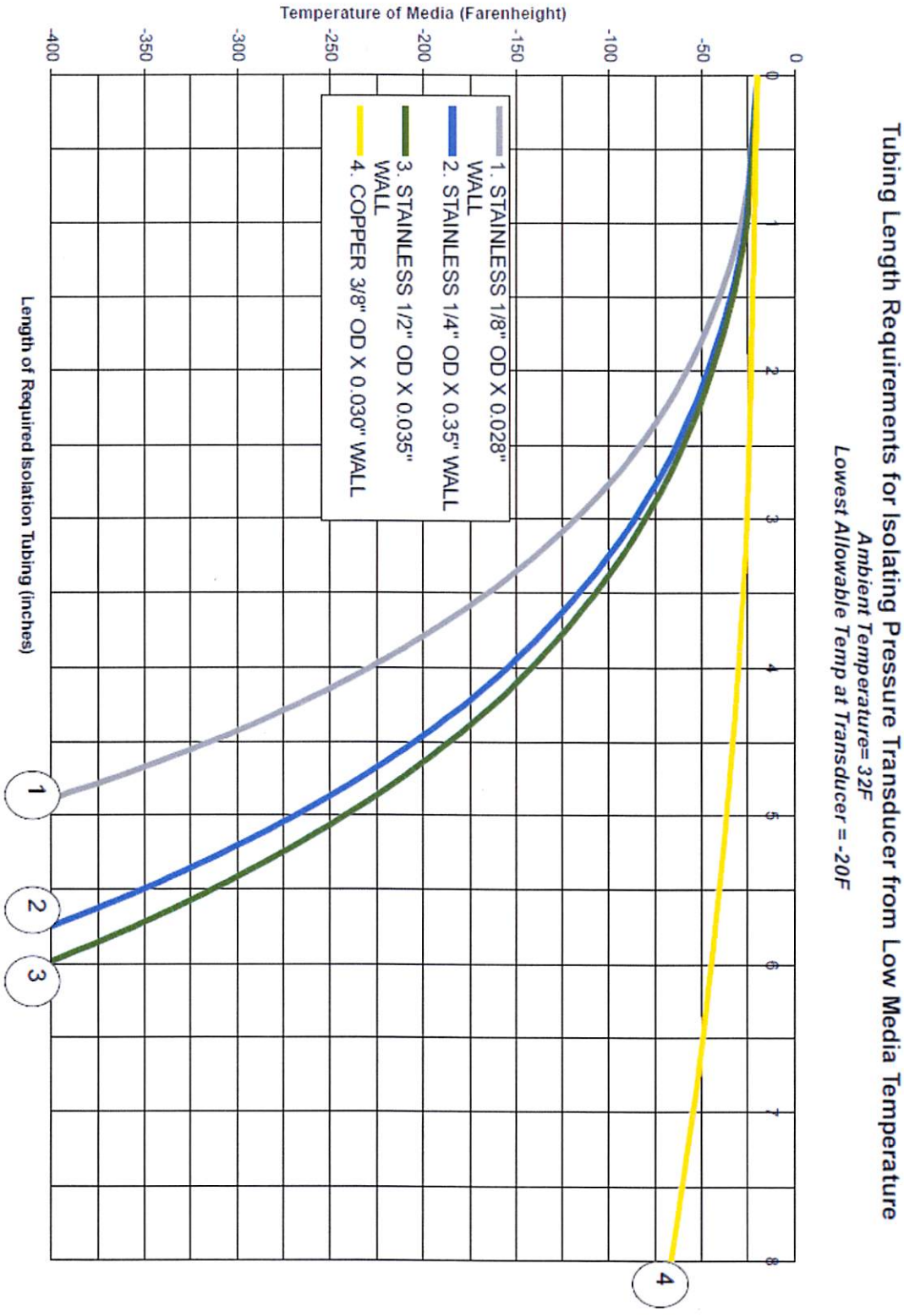

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