

Calibration Tolerances

Example for Paragraphs 9 and 11

Paragraphs 9 and 11 address the transducer/transmitter reference accuracy specifications, expressed in actual units of measure: inches of water column or psia/psig.

The purpose of Paragraphs 9 and 11 is to recognize that even the best transducers/transmitters will drift slightly, and to allow some level of tolerance when performing verification. Using the stated transducer/transmitter reference accuracy, provided by the manufacturer, is an objective way to specify the tolerance.

Example: You are performing a verification of the differential pressure transducer on an EFC. The manufacturer's specifications for this transducer state a reference accuracy of $\pm 0.2\%$ of span. The calibrated span of the transducer is 0-50". Assume the normal operating differential pressure is 27.0". You obtain the following "as found" readings as required by paragraph 8:

Required Test Point	Applied Pressure (inches water)	"as found" Pressure (inches water)	Error (inches water)
Zero	0.0	0.1	0.1
100 percent of span	50.0	50.0	0.0
Normal operating pressure	27.0	27.2	0.2

Does this transmitter need to be calibrated according to Paragraph 9?

Answer: Since the calibrated span is 50", the reference accuracy of the transducer, expressed in units of measure, is ± 0.1 " (0.2% of 50"). If any of the required "as found" readings are off by more than ± 0.1 ", the transducer must be calibrated. The "as found" reading at the "normal operating pressure" is 0.2" greater than the applied pressure, which is more than the ± 0.1 " allowed. Therefore, according to Paragraph 9, this transducer must be calibrated in accordance with the manufacturer's specifications. Per paragraph 11, if after calibration the transducer still could not achieve a tolerance of ± 0.1 " for all three required test points, it would have to be repaired or replaced within 48 hours.