



## Technical application note

# Torque Sensitivity

### What is Torque Sensitivity?

When torquing a pressure sensor into a fitting, stress forces resulting from hoop stress may be experienced across the sensing diaphragm of the pressure sensor. Sensor manufacturers specify the recommended or maximum torque to be applied.

### Why and when is it important?

Any stresses on the pressure sensing element from outside influences may cause a shift in zero and span, thus affecting calibration. For gauge sensors this can be resolved by performing a zero and span calibration in place.

For absolute sensors, this is not so straightforward, particularly low range absolute pressure sensors, since a reliable vacuum reference will need to be available to perform a good zero calibration. This creates uncertainty in the accuracy of the sensor when installed.

In the same vein, if a pressure sensor technology is sensitive to torque then there will be questions on how those stresses from the torquing will change with temperature. Hence, torque sensitivity may be an error source that needs to be considered in applications where low absolute pressure sensors are used; for example, leak testing, pressure-based mass flow computers, gas volume correctors, inlet manifold pressures, etc..

### How do Druck address these concerns?

The Druck piezoresistive sensing element is packaged in the pressure module in such a way as to provide extremely good stress isolation. Druck has designed and continuously upgraded its pressure module to reduce the effects of external stress influences resulting in extremely low torque sensitivity as well as low thermal hysteresis. For precision, critical applications Druck has you covered.

This is another example of where Druck technology, product design, manufacturing know-how and application experience combine to benefit the end-user.

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