

## Applying Calibration Factors to BDI Strain Transducers

Each BDI strain transducer is supplied with a general gage factor that has the following format and units:

$$\mathbf{GGF = (###)\mu\varepsilon * V_{exc}/V_{out}}$$

where:

GGF = General Gage Factor

### = factor for particular transducer, usually between 300 and 500.

$\mu\varepsilon$  = units of microstrain

$V_{exc}$  = Excitation Voltage in (Volts)

$V_{out}$  = Output Voltage (millivolts)

To calculate the strain level for a given excitation voltage, use the following calibration constant formula:

Calibration Constant: 
$$\mu\varepsilon = (GGF/V_{exc}) * (V_{out})$$

Also, if a hardware gain is used, the user must divide it out. For the majority of the structural testing BDI has been involved with, a gain of 1000 has been used. However, depending on the A/D limits of the User's data acquisition system and the anticipated strain levels for a particular test, the gain may need to be reduced. As a double-check of the hookup and calibration factor application, it is highly recommended that the User perform a simple calibration experiment to ensure that correct strains are indeed being measured.

BDI Strain Transducers have been calibrated with precision equipment traceable to NIST standards. Although the supplied calibrations are quite reliable (within plus/minus 2%), it is recommended that transducers be re-calibrated periodically. For heavy usage (several field tests per month), calibrations should be performed on a yearly basis. For lighter usage, approximately once every three years is sufficient.

If you are doing your own calibration verification, please refer to our discussion on this topic entitled "Verifying Accuracy of BDI Strain Transducers" available from us and on our website.