

Due to the operation of most micro-joining welders, the force applied to the weld is directly proportional to the amount of spring compression. When calibrating force, the thickness,  $T_c$ , of the calibrator force sensor head may be significantly larger than the work piece,  $T_w$ . To get an accurate force calibration, use the following instructions:

**Error Correction Due to Thickness of WP9000**

The force applied to the workpiece is:

$$F = k * X_w$$

where  $k$  is the spring constant (lb/in) and  $X_w$  is the amount of spring deflection during the weld due the thickness of the workpiece,  $T_w$ .

The force applied with the WP9000 Calibrator installed is:

$$F = k * X_c$$

where  $k$  is the spring constant (lb/in) and  $X_c$  is the amount of spring deflection due to the calibrator. To get a very accurate reading, you must subtract the additional "error" force,  $F_e$ , from the Calibrator reading:

$$F_e = k * (X_c - X_w)$$

To calculate the spring constant,  $k$ :

1. Insert the WP9000 and take a reading,  $F_c$ .
2. Insert a shim of known thickness,  $T_s$ , between the bottom of the WP9000 and the lower electrode and take another reading,  $F_s$ .
3. Calculate the spring constant by:

$$k = (F_s - F_c) / T_s$$

$T_c = 0.175$  in. for indent version of MicroForce Calibrator

$T_c = 0.220$  in. for button version

**To Take Precise Force Readings:**

1. Take reading using WeldProbe,  $F_c$ .
2. Subtract the "error" reading,  $F_e$  (see above).

