Notes on Use of
Instron Bluehill 3.0 software
and
associated hardware issues

for
5500 retrofit of 1125
a.k.a. 55R1125

Nov. 30, 2016
Notes on Instron Bluehill 3.0 software update. (for 5500 retro fit of 1125 also known as a 55R1125)
Instron contact: Ed Griffith, Ed_Griffith@instron.com,

General comments:
• Digital in/out is provided by a D-connector on rear of interface box (just below the "chart-recorder" analog outputs. This should provide a way to pull the instron signal off and input in the "blue-box" strain-gauge conditioner. Connector from instron will be needed for this.
• A new extensometer is needed (this may be the problem with the strain hold tests)
• Test should be done in low clutch – High clutch is intended for positioning the crosshead before the test.
• Strain is always measured as fraction of extensometer gauge length (usually 1 in for us). This is because the extensometer is commonly clipped to sample. We will need to continue to correct this for our true sample lengths.

Network settings (in case of new computer/etc.)
• Software has security settings (if we choose to engage): usr/pwd = instron/instron
• At windows level:
Network and Internet -> view network status and facts -> change adaptor settings
-> EFI (card that links to Instron small black box on desk behind monitor)
[will also see other choice of "local area" which is the motherboard of computer.]
If computer is replaced, the card needs installed and the link to it be made at this level.
• Now right click on EFI and choose "properties", "protocol version 4", set IP address as shown
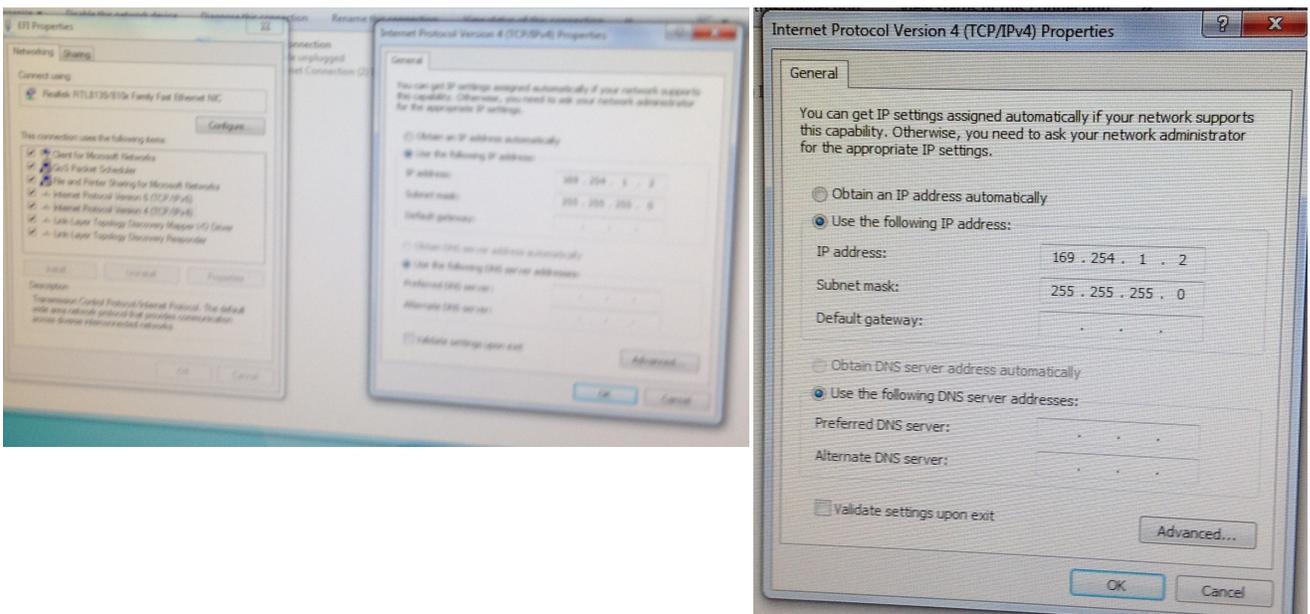
The Frame
• Adjustment of the large nuts on frame (one shown in photo below). These need to be tight for compression tests and loose for tension tests. Adjusted by putting a dowel into indicated hole. One turns clockwise to tighten and one turns counter-clockwise to tighten.
• Buttons on control panel on frame
RESET GL = Reset gauge length
Specimen Protect= keeps load below a maximum value while loading sample (value of maximum set in software)
User defined 1 and 2 = identity set in software
Return = returns crosshead to gauge length of zero.
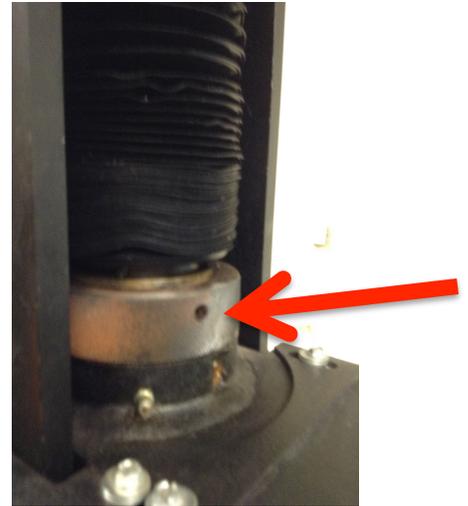
Bluehill software:
• Under "admin"
-> Configure the frame
should look as shown

Extension [mm]

-17.478

-2.

Admin

Configure the frame for the system
Choose the controller and frame that match the testing system. The selected controller typ

Frame identification

Controller type: 5500

MAC address: 00-90-c2-f9-d2-1f

Frame model: 55R1125

Frame serial number:

Frame identification

Controller type: 5500

MAC address: 00-90-c2-f9-d2-1f

Frame model: 55R1125

Frame serial number:

Frame options

Frame interlock behavior: Keep the frame enabled but prohibit frame movemei

Digital transducer: AutoX750

☐ Override the default data filter settings

Balance load cell
• Top of main Bluehill screen: circled here is "balance load cell"

see
http://instroncommunity.blog
spot.com/2014_08_01_archive
.html

"We recommend that the
machine and load cell be
switched on for about 15
minutes prior to performing a
soft calibration. This allows the device to warm up, reducing the chances of drift."

• For "new" load cell will see:

For our load cell must enter by
hand: 20,000 lbs for full scale
and 10,000 lbs for Calibration
point (see below)

• Gain is set here for load
control
Find force/strain at strain that
load control will be used and
enter into dialog box.

• various limits are set here
(specimen protect, max strain rate)

• Service close relay should give ½
max
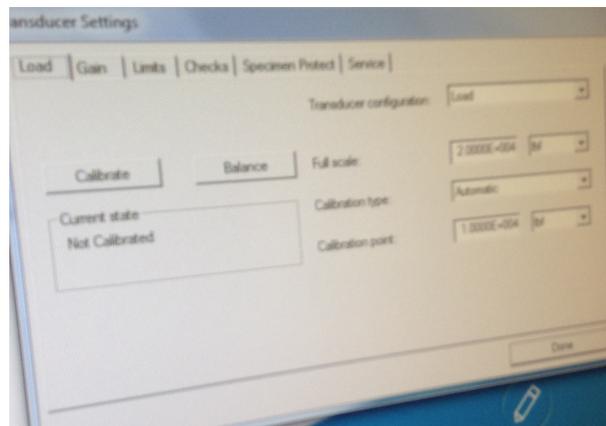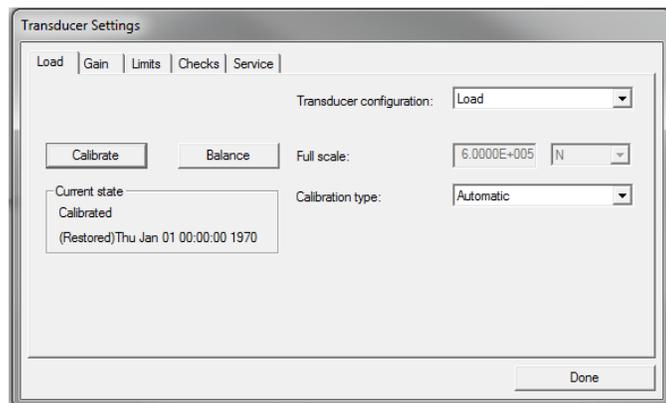
• **Status**:
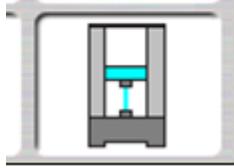
• **Event Icon**:
event log   during testing (if there is a problem, open log and take screen shot of   "event" for when you talk to Instron Tech (log is erased when software is closed)

• **Console setting**:
This is where you   set user-defined buttons on console on frame.

• **Frame Icon:**
enable/disable
set specimen protect
set jog control speed
set analog/digital outputs

• **crosshead icon:**

• **extensometer:**

to set this go to admin
1) configure transducer
2) cannot use "strain1" with old extensometer instead set "user-defined" -> change name to "strain".
3) unit group -> strain; connector-> strain1
4) after setting exit bluehill and restart software
Now click button (above) and calibrate

Also gain control for strain control here. Material needs to be in place to set gain correctly
Strain is always with respect to extensometer gauge length

Method:
• measurements. User defined strain
• compressive strain (extension)
• click to change "primary source" to extensometer
• set export results (Raw Data)
• set end of test conditions (may be able to set max strain as safety)

Calibration of Extensometer

Calibration of Extensometer:

• Click on:
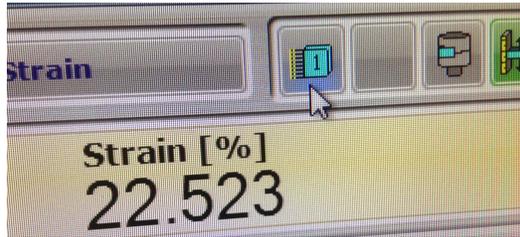
Strain [%]
22.523

• You will see:
This is for an extensometer with gauge length of 1 inch and range of 0.5 in.

Transducer Settings

User | Gain | Limits | Service

Transducer configuration: Strain

Full scale: 50.0000 %

Calibrate   Balance

Gauge length: 1.0000 in

Current state
Calibrated

Calibration type: Manual

(Restored)Thu Dec 01 15:36:24 2016

Calibration point: 50.0000 %

Offset: 0.0000 %

Done
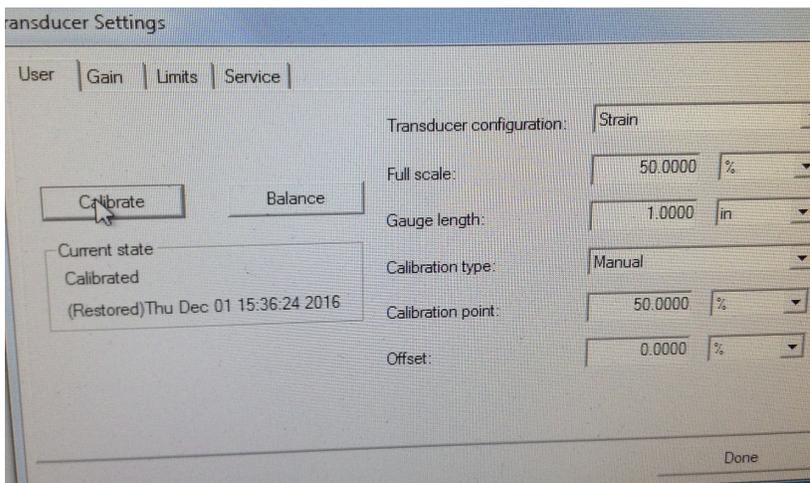
• Click "**Calibrate**"
• You will see:

User   X

Set the transducer to the offset point to perform a balance.

OK   Cancel
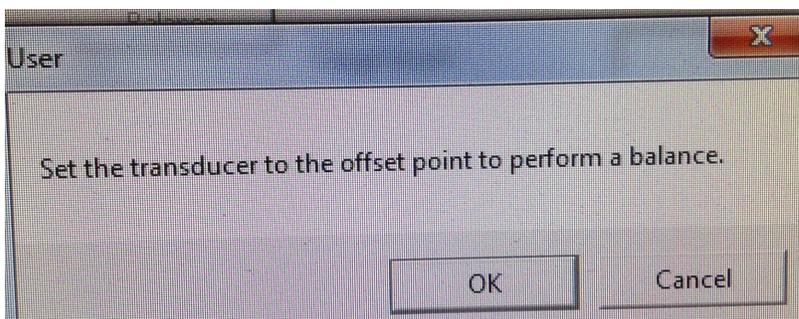
• Set Extensometer to zero strain (compressed to the gauge length)

• Extensometer set to strain=0 (Note the metal rods are touching. Note that the scale curst through "0" and is lined up at zero)
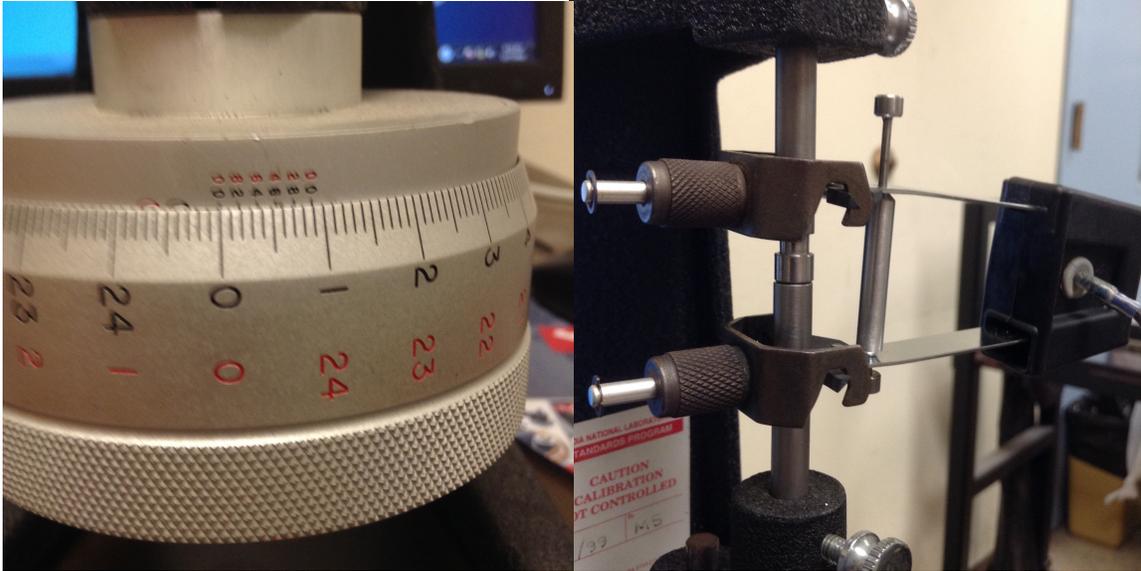
• Click "OK"

• You will now see:
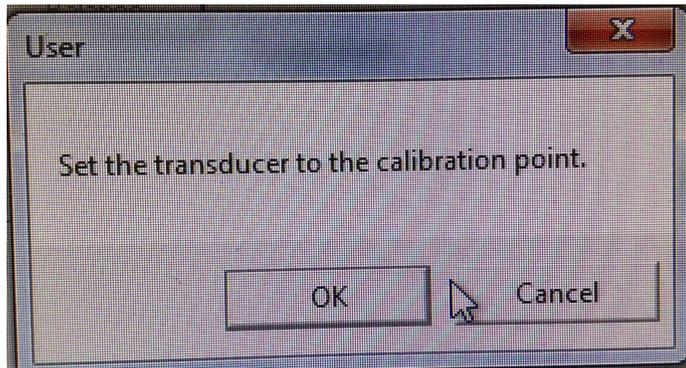
• Adjust extensometer to 0.5 in (roughly 5 on the scale). It is hard to see when it is on 5 so check with caliper.
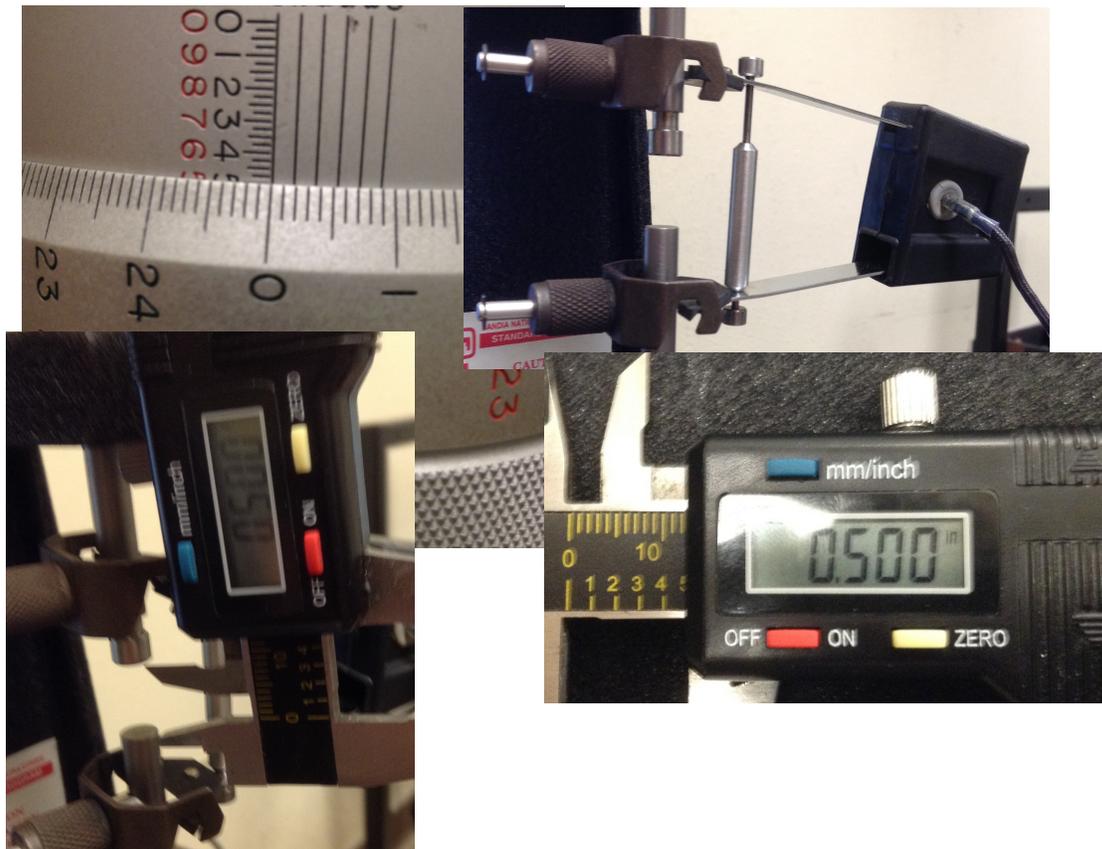
• Click "OK"

• You will see:

Return the transducer to the offset point to perform a fine balance.
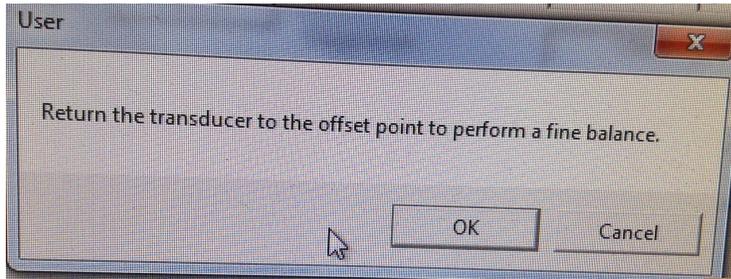
• return the extensometer to the zero point

• Click "OK"

• Extensometer will now be calibrated.

• Check by returning to 50% strain

Strain
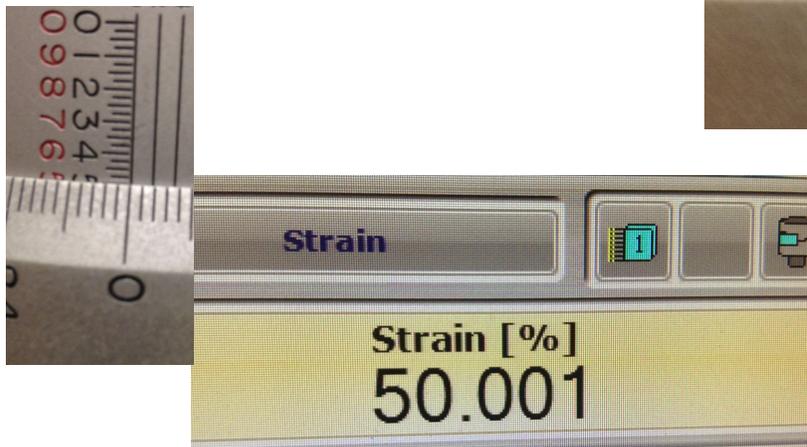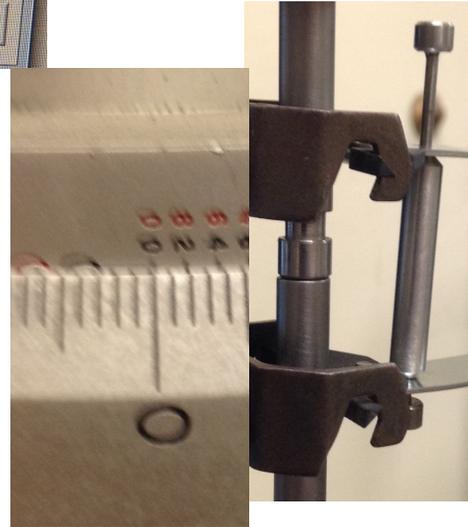
Strain [%]
50.001

The linearity if checked and results in :
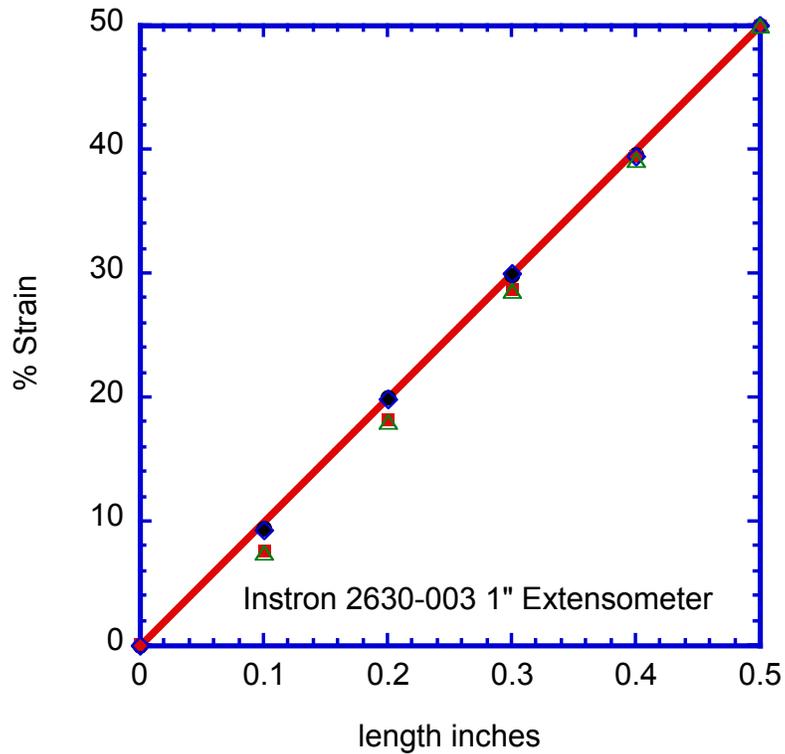
Calibrates well, but the clips may slip a little between increasing and decreasing –
red and green points are decreasing length (from 2 different calibrations)
The % error at a strain of 10% is about 20% during the decreasing length run.
On increasing, error less than 0.0006 inches. (less than 6% error at 10% strain)
Note that on compression we do decreasing length.

The following improved procedure is followed for calibrating for compression tests.
1) the extensometer is set to open at 0.5 in on the micrometer

2) The screen inputs are set as follows (same as before):

3) This calibrates as

4) Strain is in inches. For instance 40% means 0.40 inches

y = -50.011 + 1.0001x   R= 1
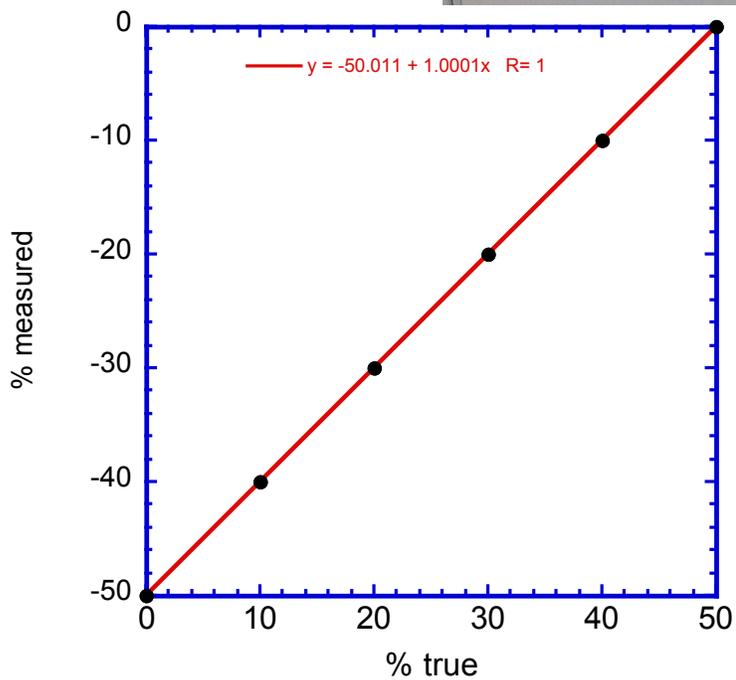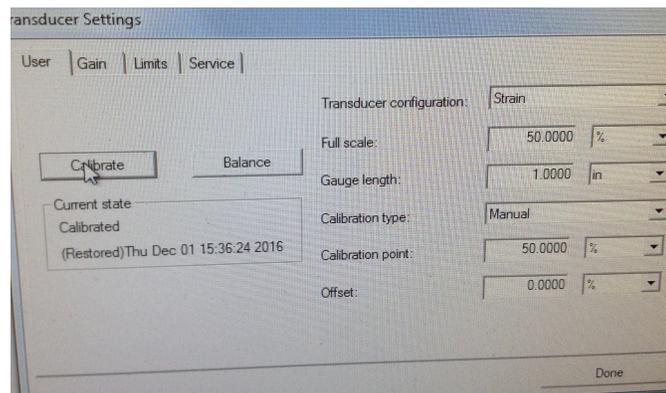
G57-11 Calibration Notes:

Calibration distance from top of box = 0.02 in
Range of travel about 0.09in
Calibration achieved by use of sample set to be about 0.02in. greater than closed
position.

1)Calibration is done with Feeler gauge and an addition thin metal spacer. An
alligator clip is used to hold gauge together. Initial width is just enough to engage
the gauge. The screws are arranged so that the flat ends of the nuts sit on the metal
spacer.

2) Additional 1 metal strip of Feeler gauge measured with caliper (0.022 inches)

3) Input screen is set as follows. NOTE Gauge length sets scale to 1 inch. So a 2% reading is really 0.02 inches. 0.022 inches then corresponds to 2.2%
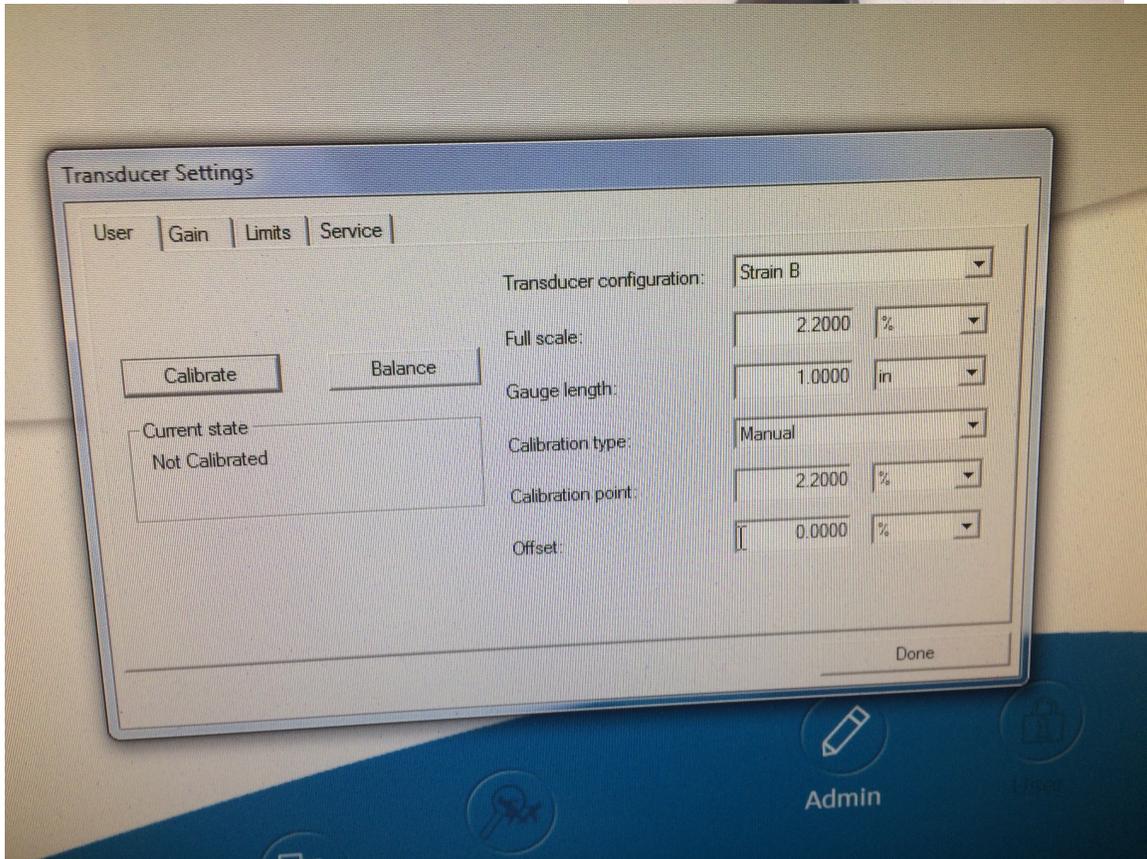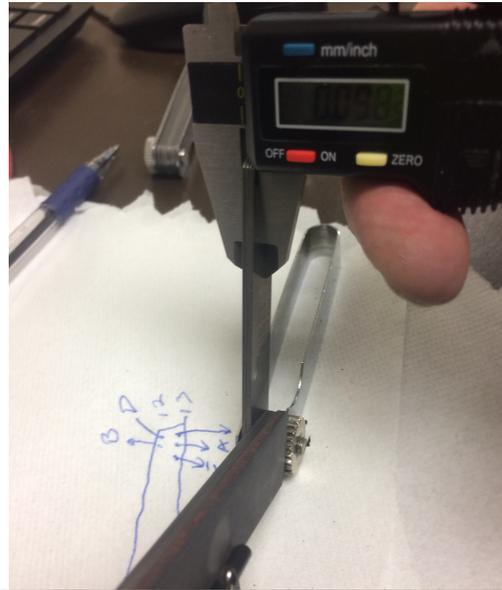
This gauge calibrates well up to about 7%. (Note slope of 1 line)

y = m0-.335		
	Value	Error
Chisq	0.00067823	NA
R	0.94403	NA

Plot: Gauge reading (y-axis) vs Gauge width (inches) (x-axis)