

Calibrating the Nano Step-by-Step Using the ECP-100

20 October 2009

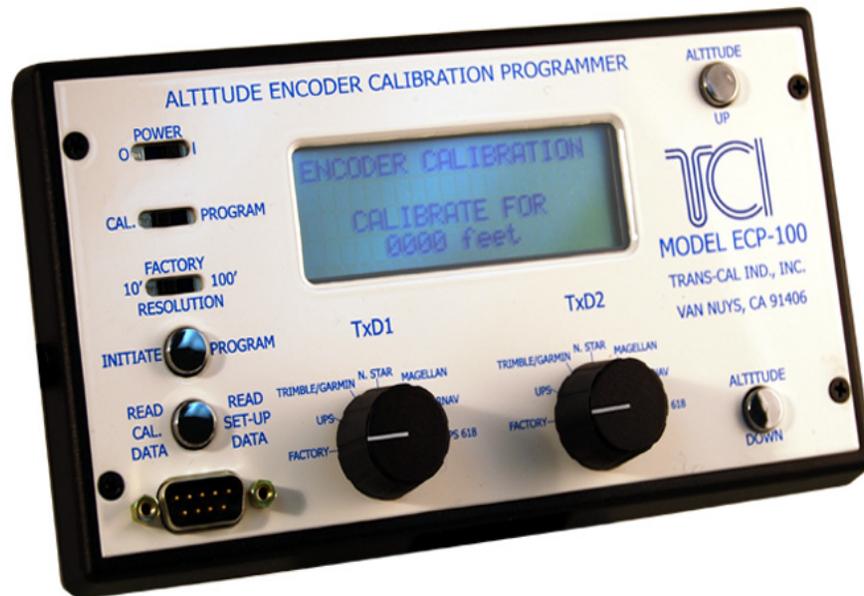


TRANS-CAL ECP-100 Altitude Encoder Calibration Programmer

Hello and welcome to Trans-Cal's calibration training video using the ECP-100.



My name is John Ferrero,
and I will be demonstrating the calibration procedure for
our Altitude Encoders with serial ports using the
ECP-100.



The ECP-100 is an all-solid state programmer that will enter corrections to the encoder's error curve through the serial port.



Even though we are doing this procedure on the bench it could easily be done in the aircraft. The ECP-100 may be powered through it's internal 9 volt battery or, as we are doing here, through an AC adapter.



Our set-up consists of an altitude encoder with a serial port,
a flight altimeter
and the ECP-100.

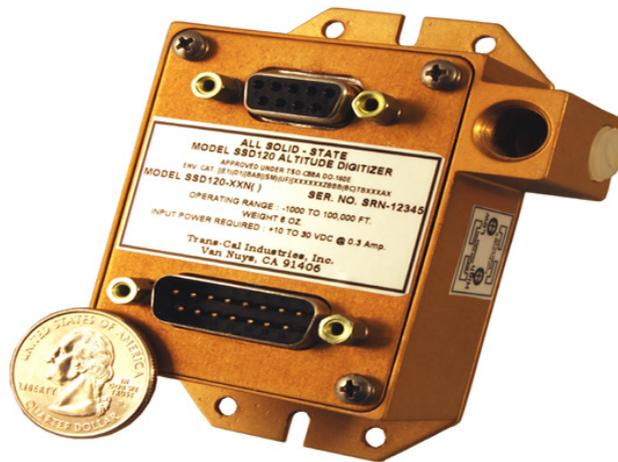
Also required is a DC power supply for the encoder and
some method of controlling the static pressure.

We will be using a Laversab pressure controller.

It is important to have a test set-up that has a leak rate
well under 100'/min.



When an altitude encoder is installed in an aircraft to be used as the transponder's source of "Mode C" information it must "match" or correspond to the aircraft's primary flight altimeter within ± 125 feet, as required by FAR 91.217 and 91.411.



TCl encoders have the ability to be calibrated to the flight altimeter digitally.

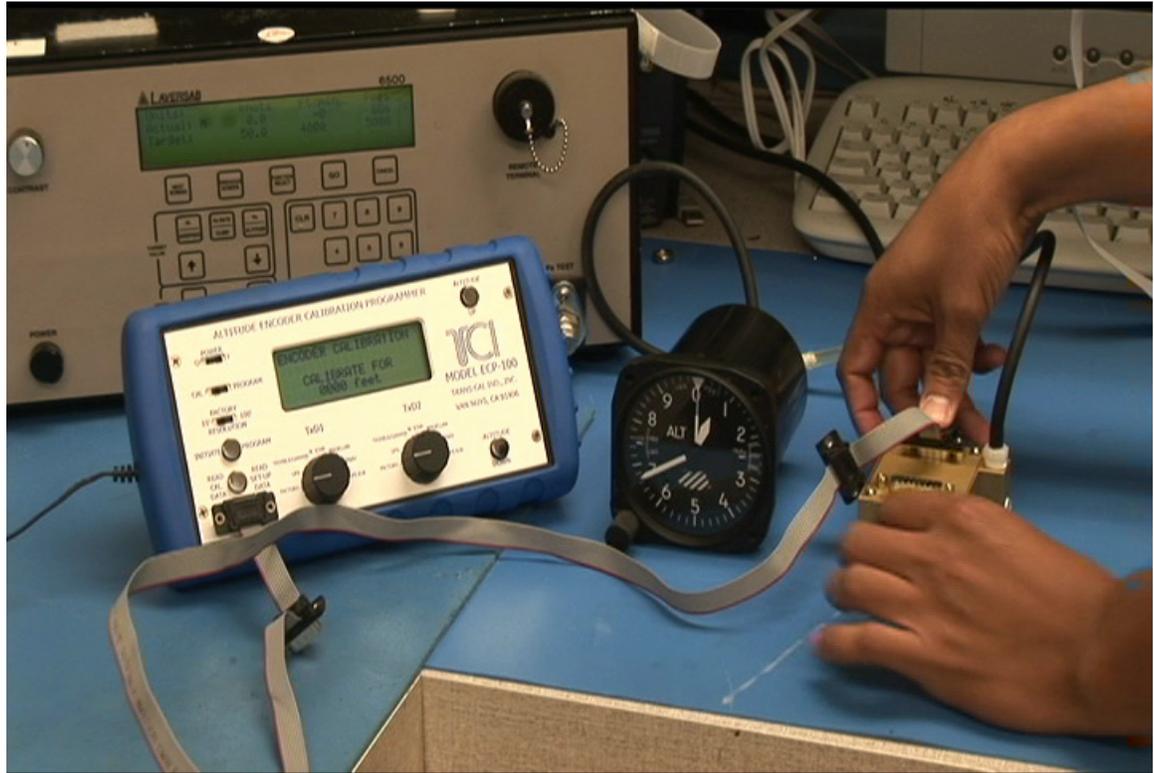
The ECP-100 communicates through the encoder's serial port only and does not provide power to the encoder.



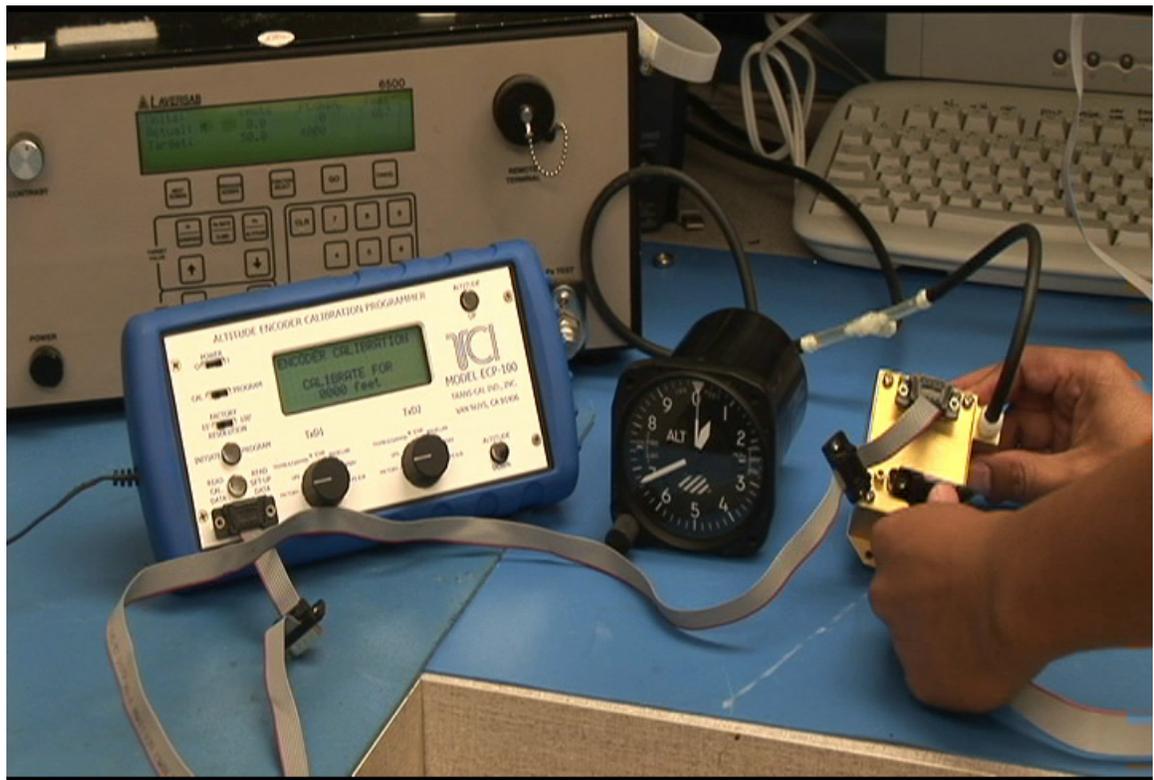
Using the ECP-100 an avionics technician may enter a digital correction to the altitude encoder's error curve in 1000' increments.



I'll begin by connecting the static pressure source to the encoder and the altimeter.



Next I'll connect the ECP-100 to the serial port of the Encoder.



Finally provide power to the encoder, and turn it on.



Narrator :

Next I adjust the altimeter's barometric input to 29.92In. Hg.

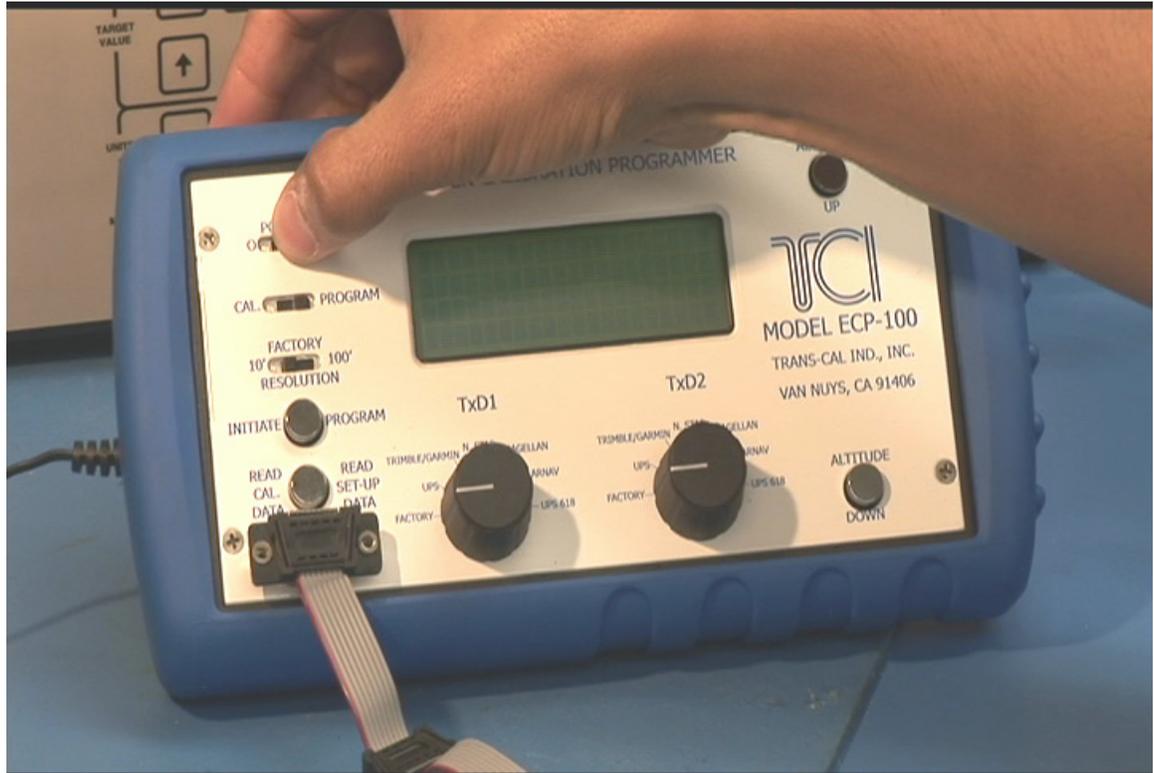
Or 1013 Millibars,



Narrator :

I've run the altimeter to 10,000 feet.

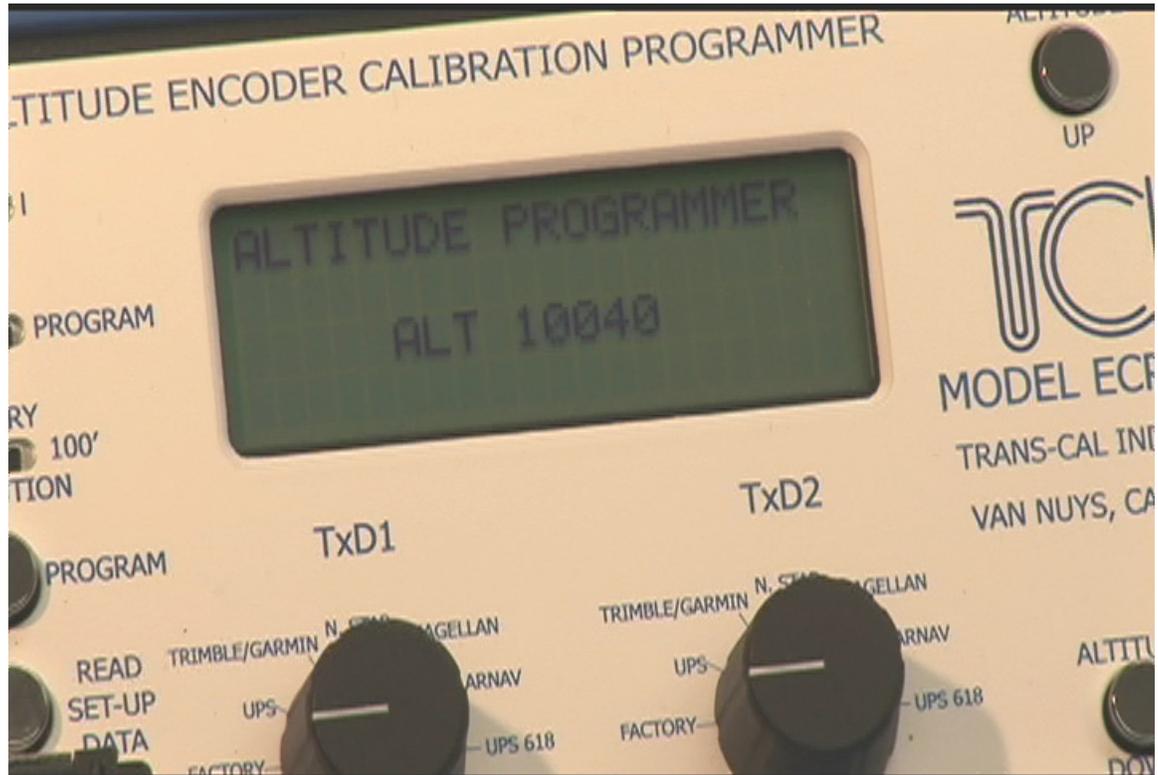
Lightly tap the altimeter to make sure that it settles in eliminating any error due to friction.



Next I'll power-up the ECP-100. Note that the function switch is in the PROGRAM mode.

This will allow us to see the serial data output of the encoder.

And there it is displaying 10,040 feet.



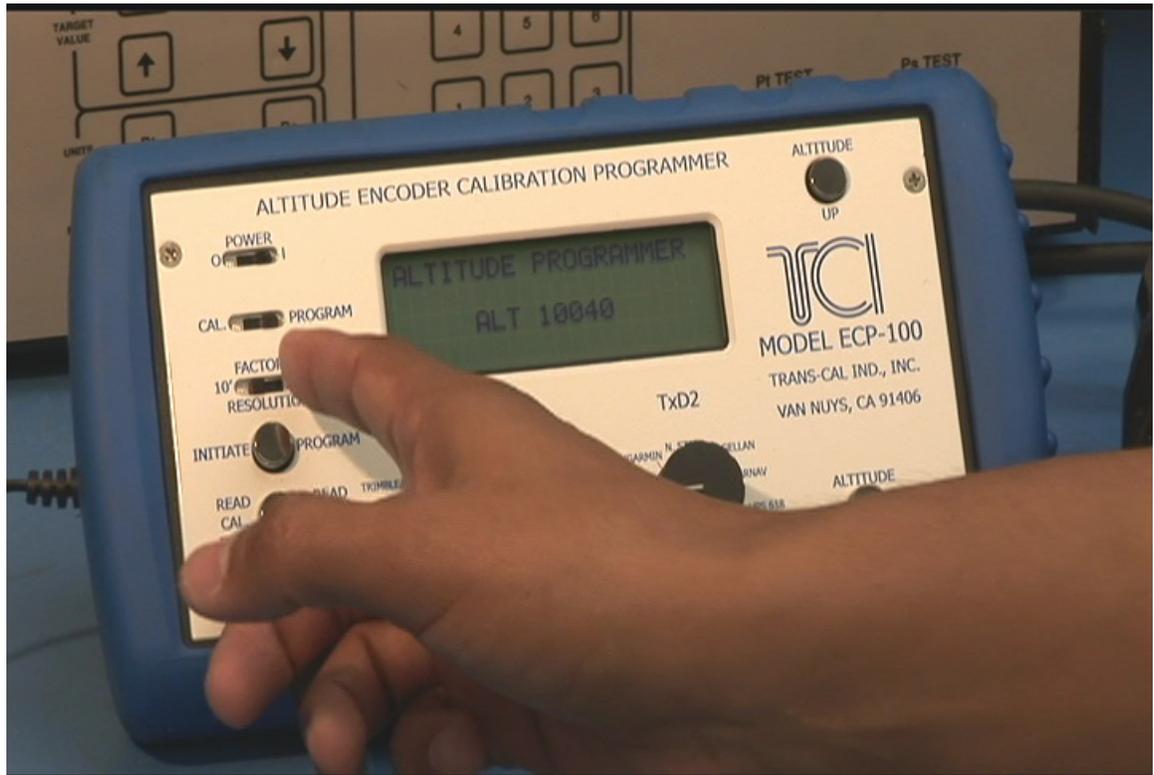
And there it is displaying 10,040 feet.

The encoder is reporting 40 feet higher than the altimeter.

Let's eliminate that error using the ECP-100.

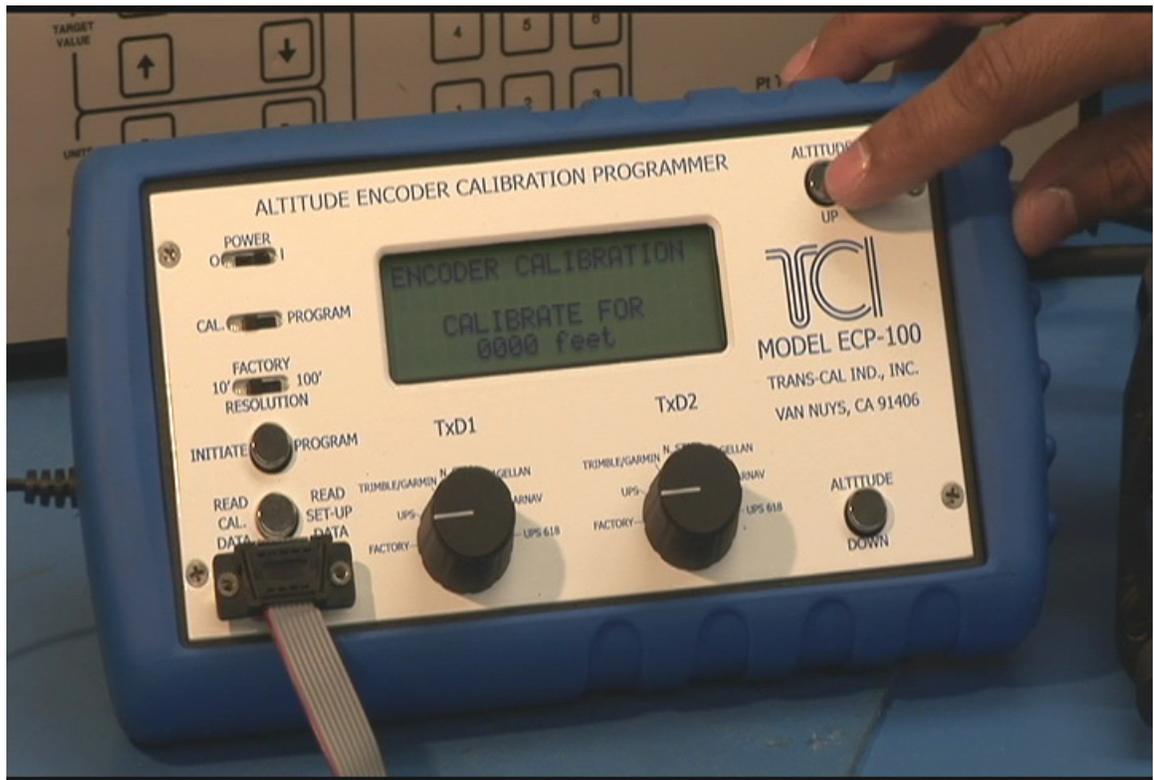


Our altimeter reads 10,000 feet,
while the altitude encoder is reading 10,040 feet as
displayed on the ECP-100.

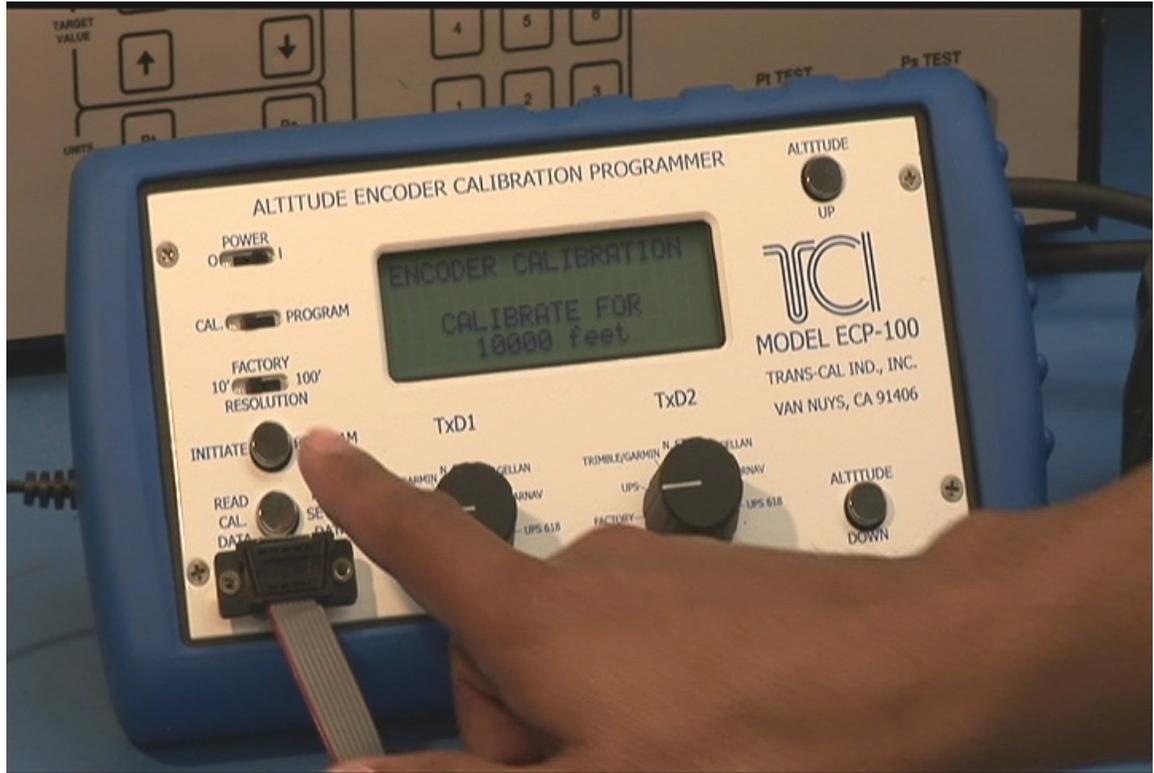


Slide the function switch to CAL.

The display will change to the ENCODER
CALIBRATION page

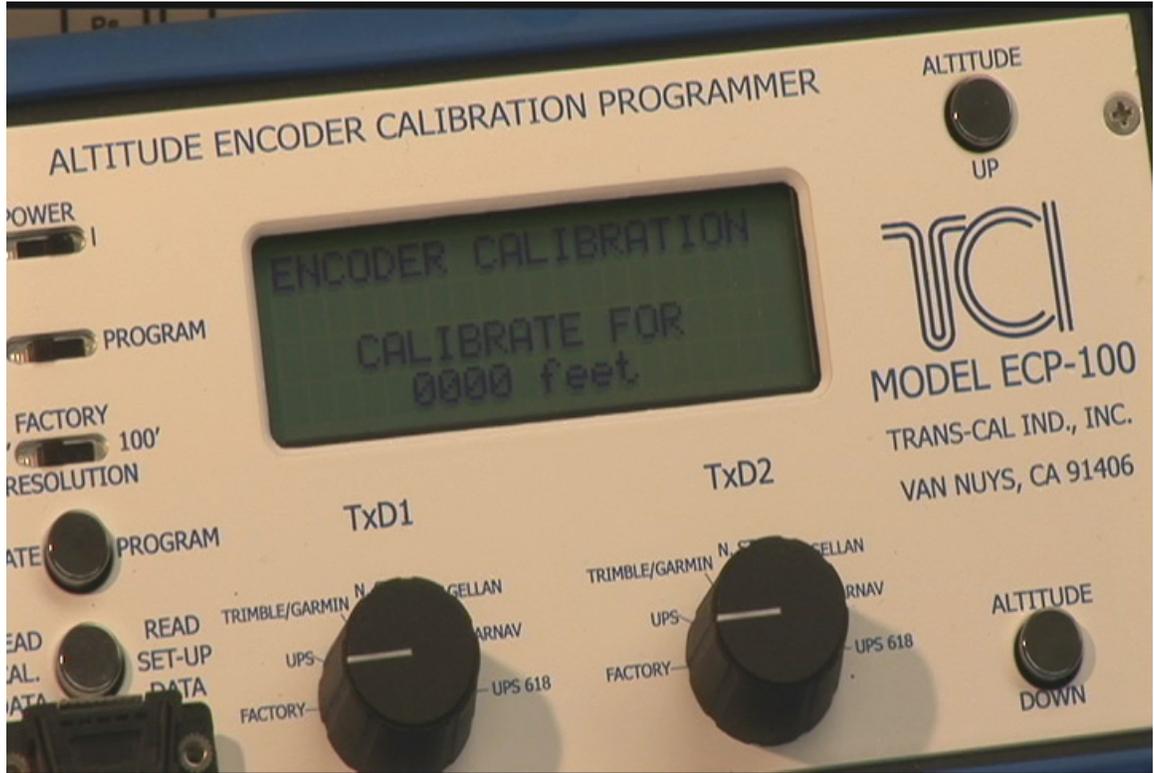


Now push the altitude up button until 10,000 feet is shown on the display.

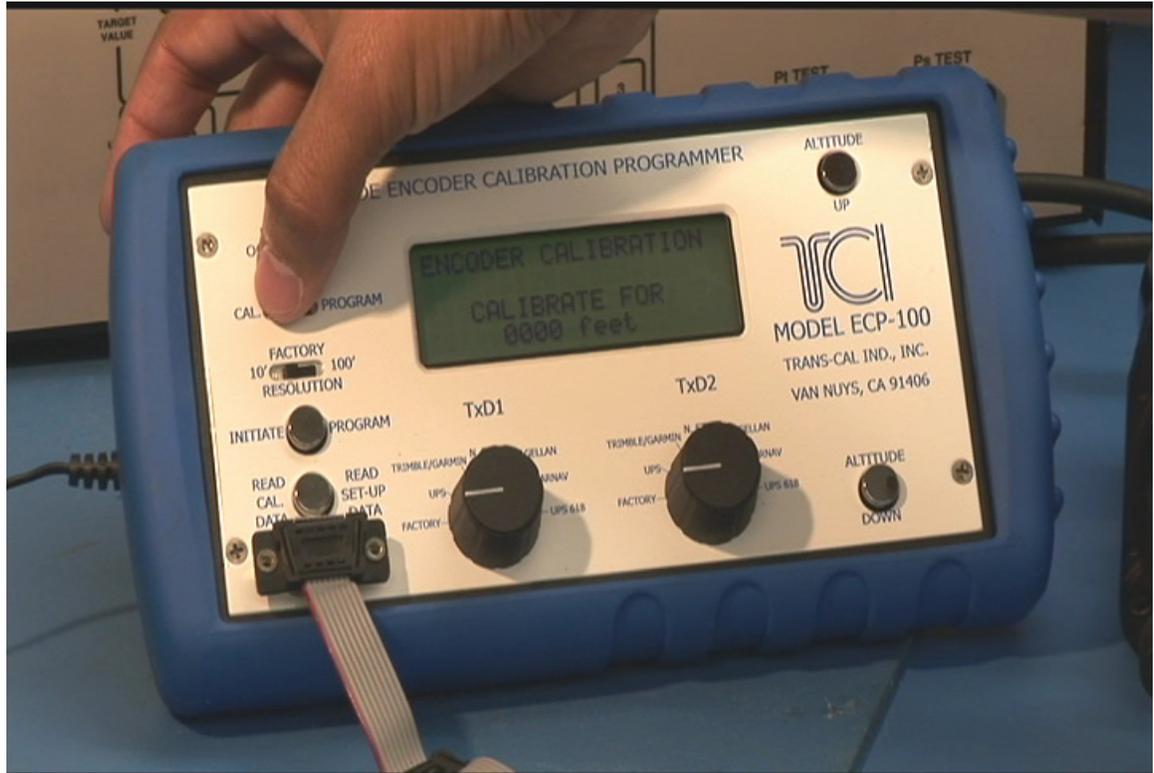


Now push the INITIATE PROGRAM button.

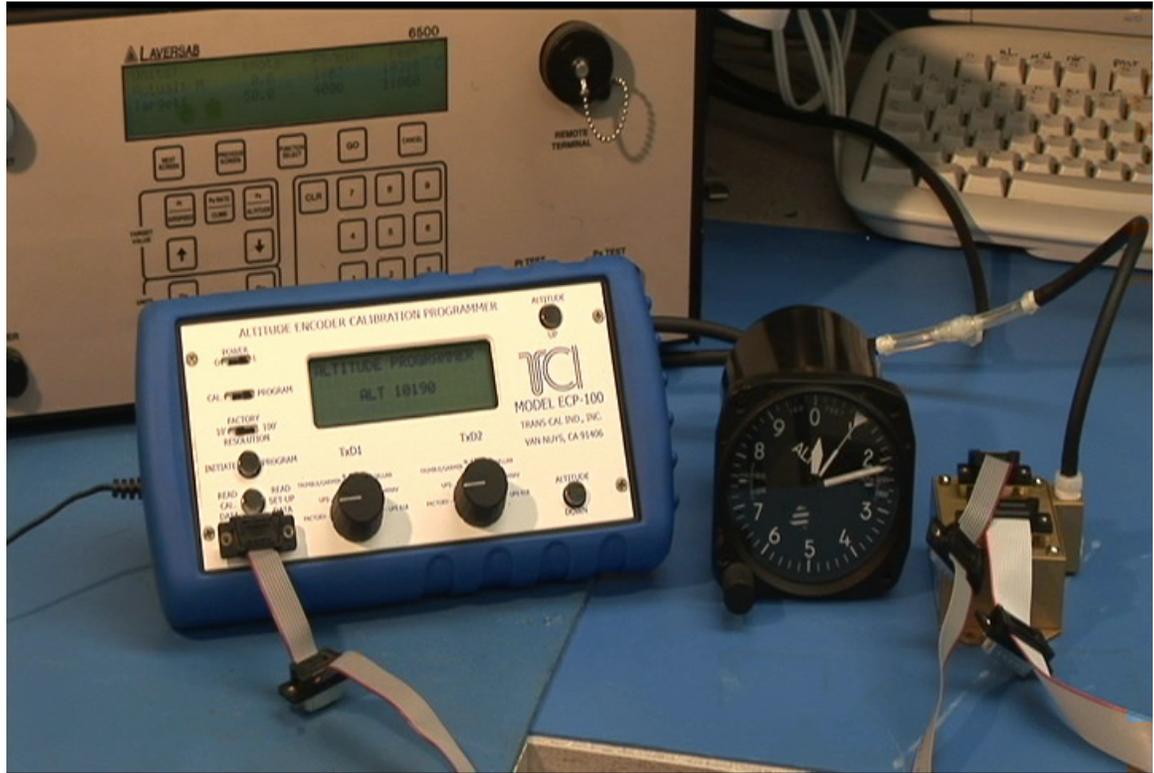
We wait while the ECP-100 enters a correction to the encoder's error curve.



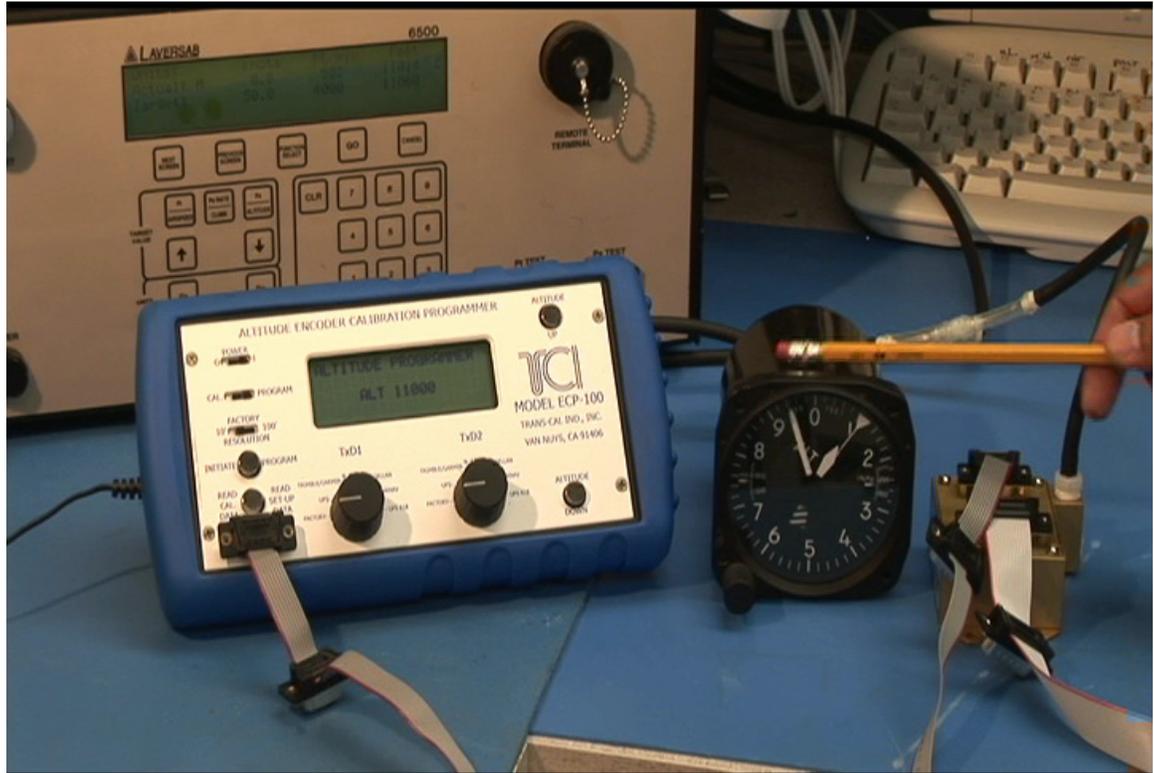
When the ECP-100 returns to the Encoder Calibration page then the correction is complete.



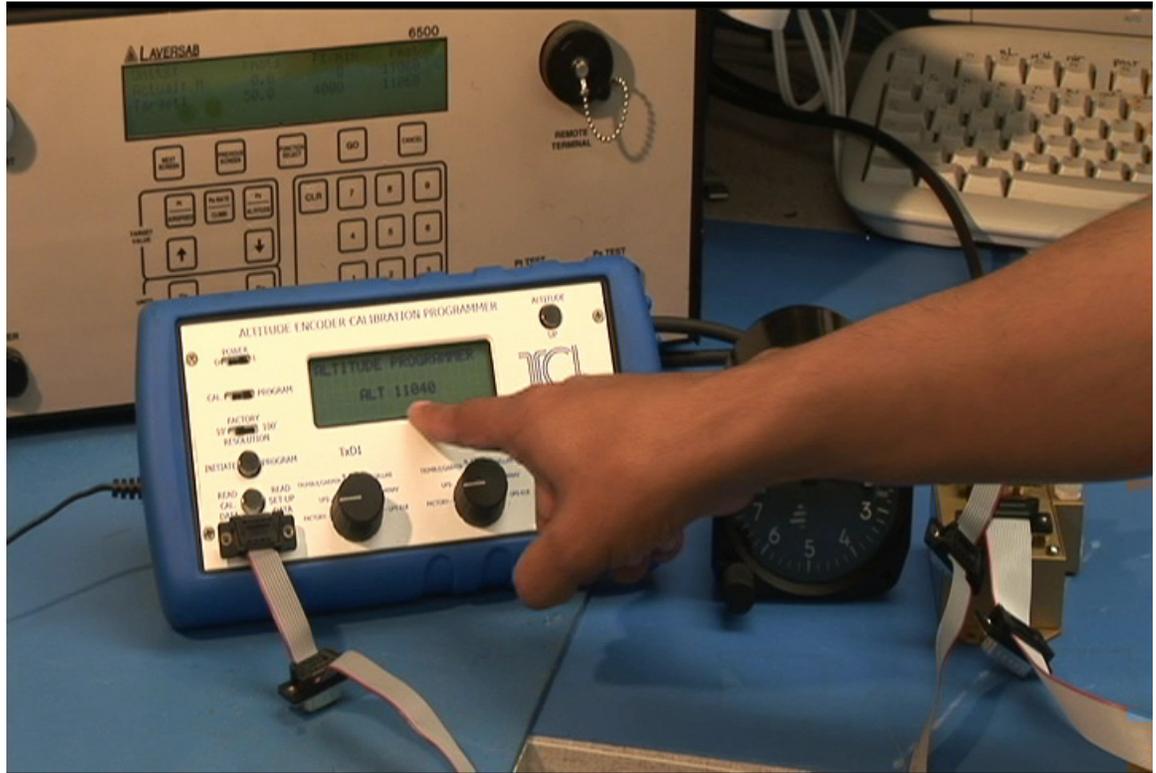
Now let's switch back to program mode and see what the encoder is transmitting as the current altitude. We can see that it is now showing 9990 to 10,000 feet. That is as close as we are going to get.



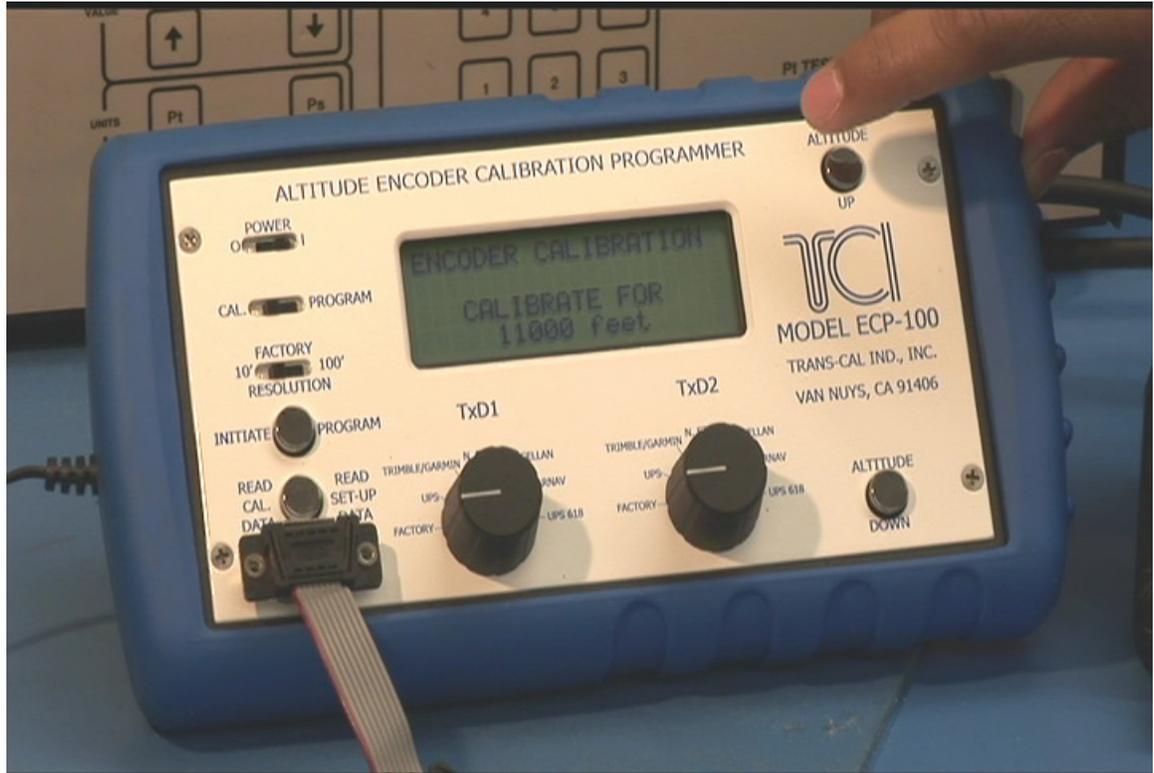
We have calibrated the encoder to the altimeter at
10,000 feet
let's move on to 11,000 feet.



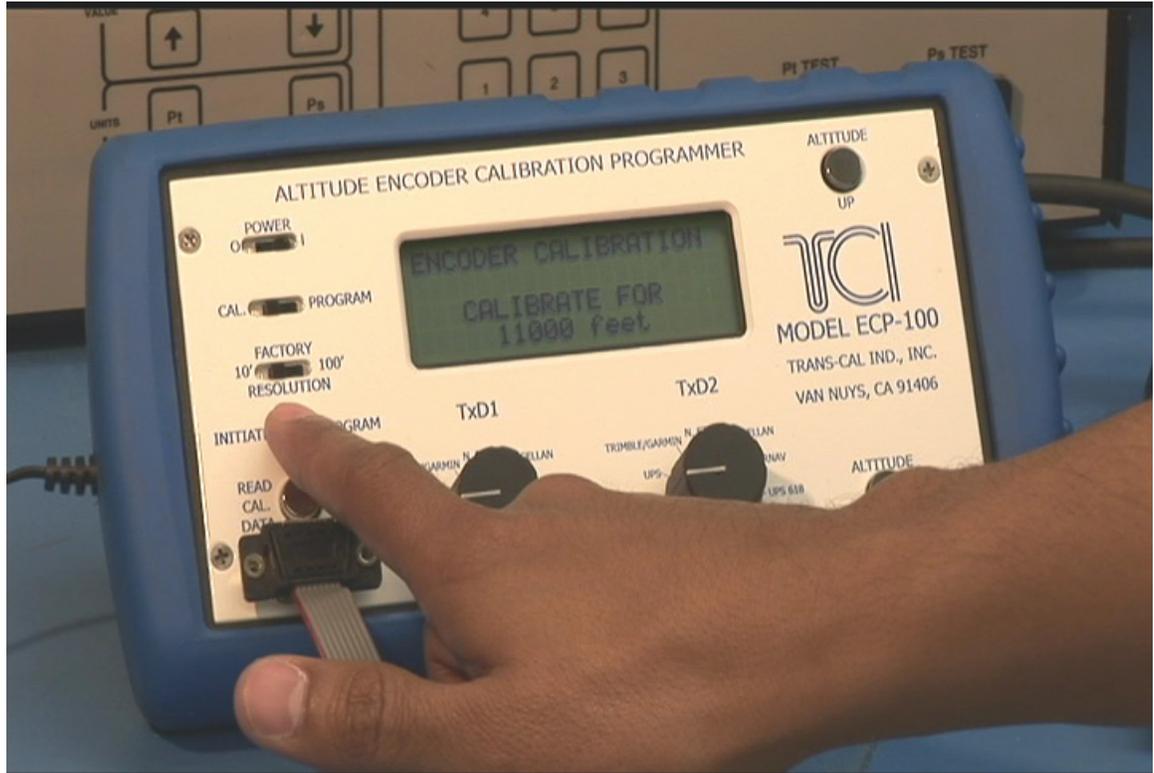
We lightly tap the altimeter to eliminate any friction error



The altimeter reads 11,000 feet and the encoder is reading 11,040 feet.

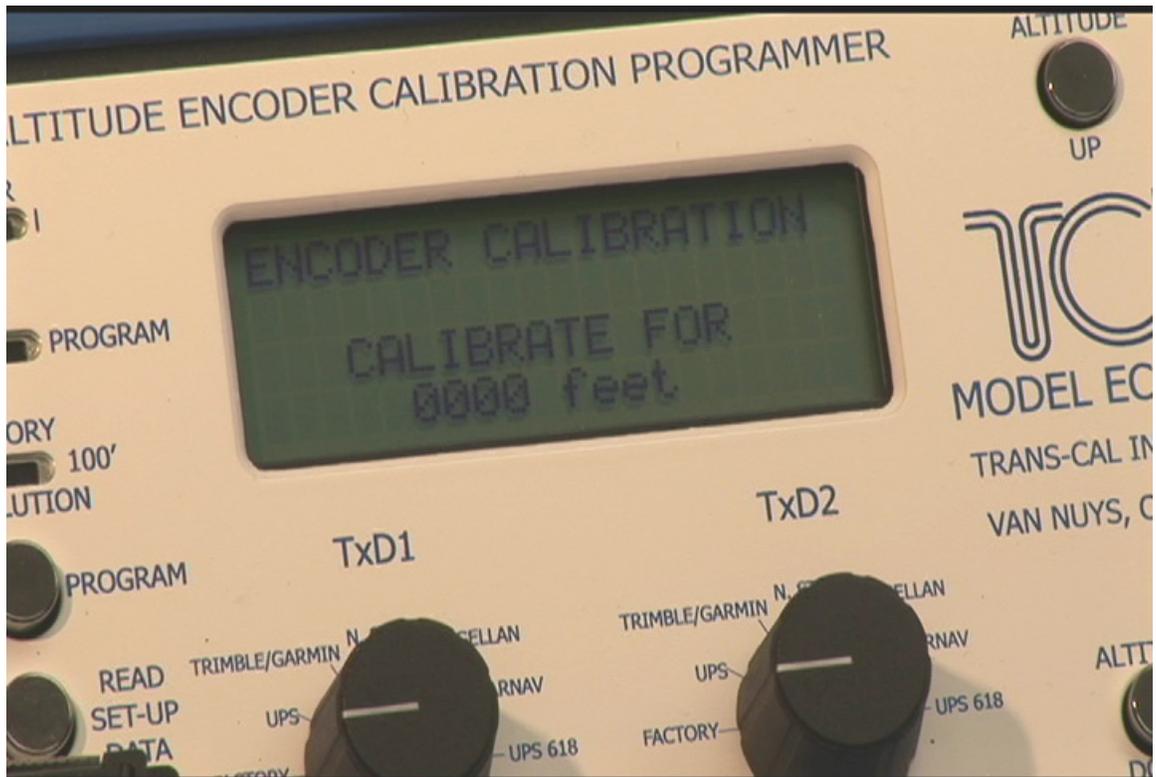


We switch to CAL mode again, and push the ALTITUDE UP button until 11,000 feet is displayed.



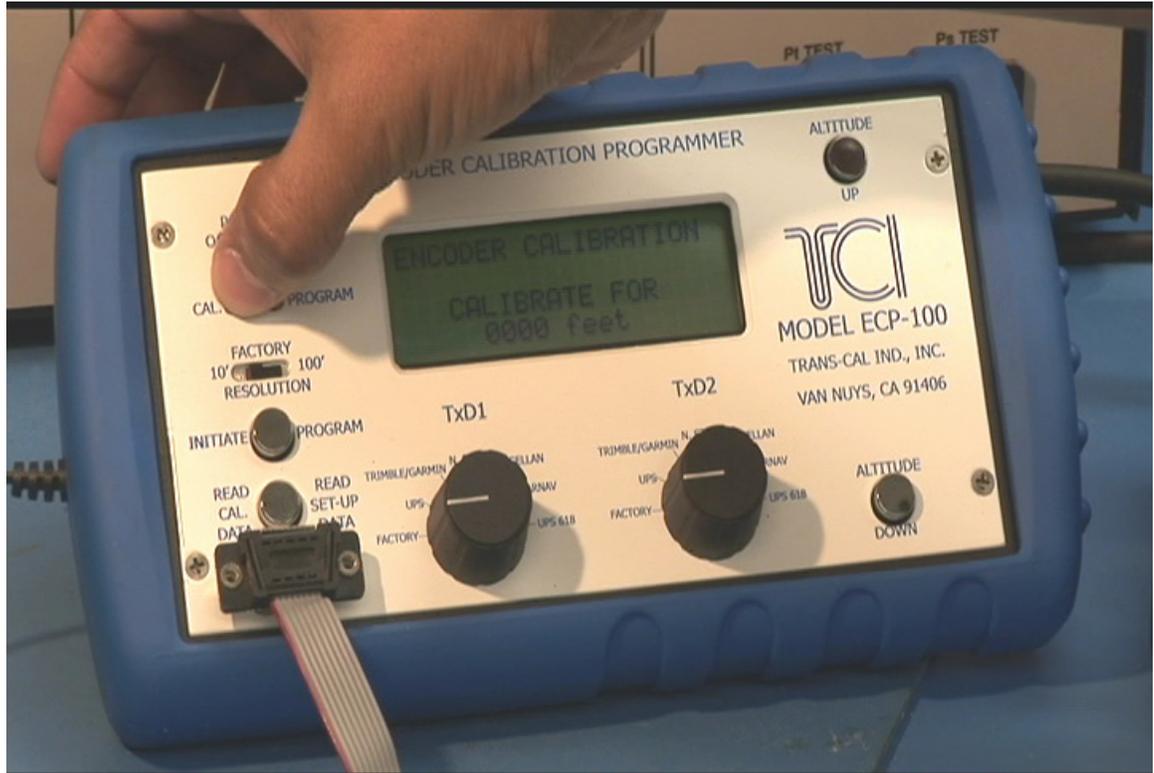
Now push the INITIATE PROGRAM button.

We wait while the ECP-100 enters a correction to the encoder's error curve at 11,000 feet.



When the ECP-100 returns to the Encoder Calibration page then the correction is complete.

That's it!



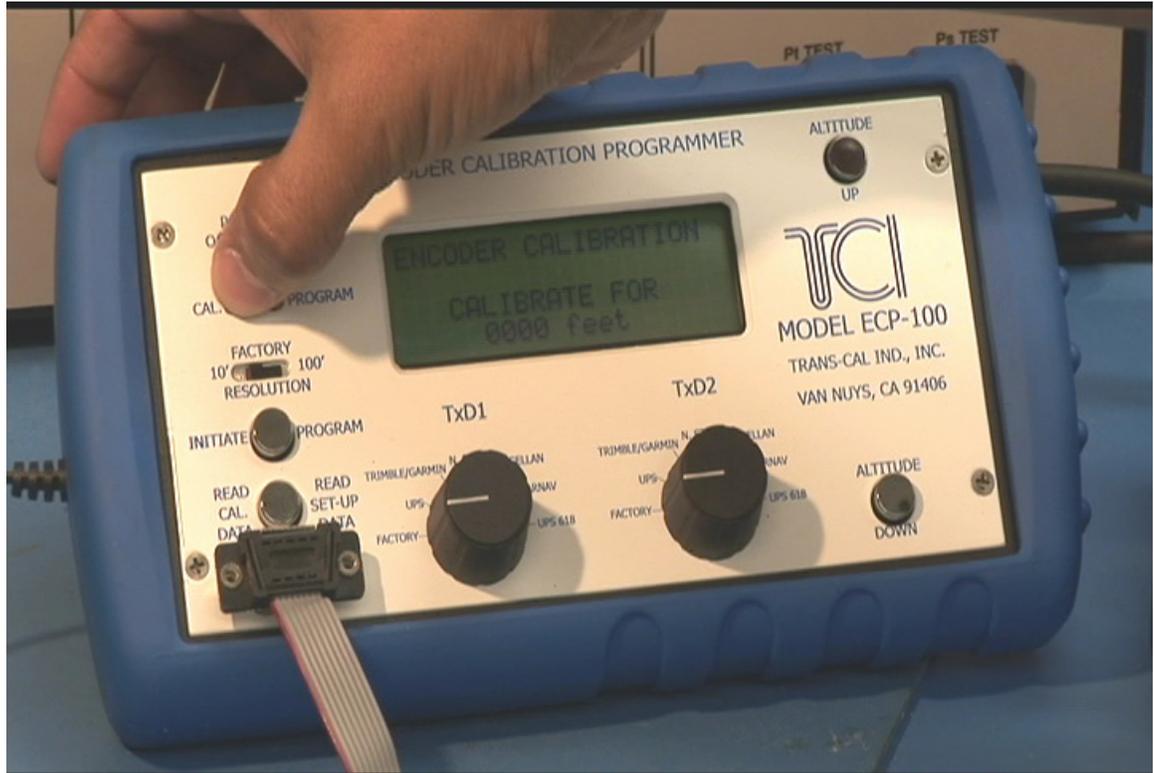
Now let's switch back to program mode and see what the encoder is transmitting as the current altitude.



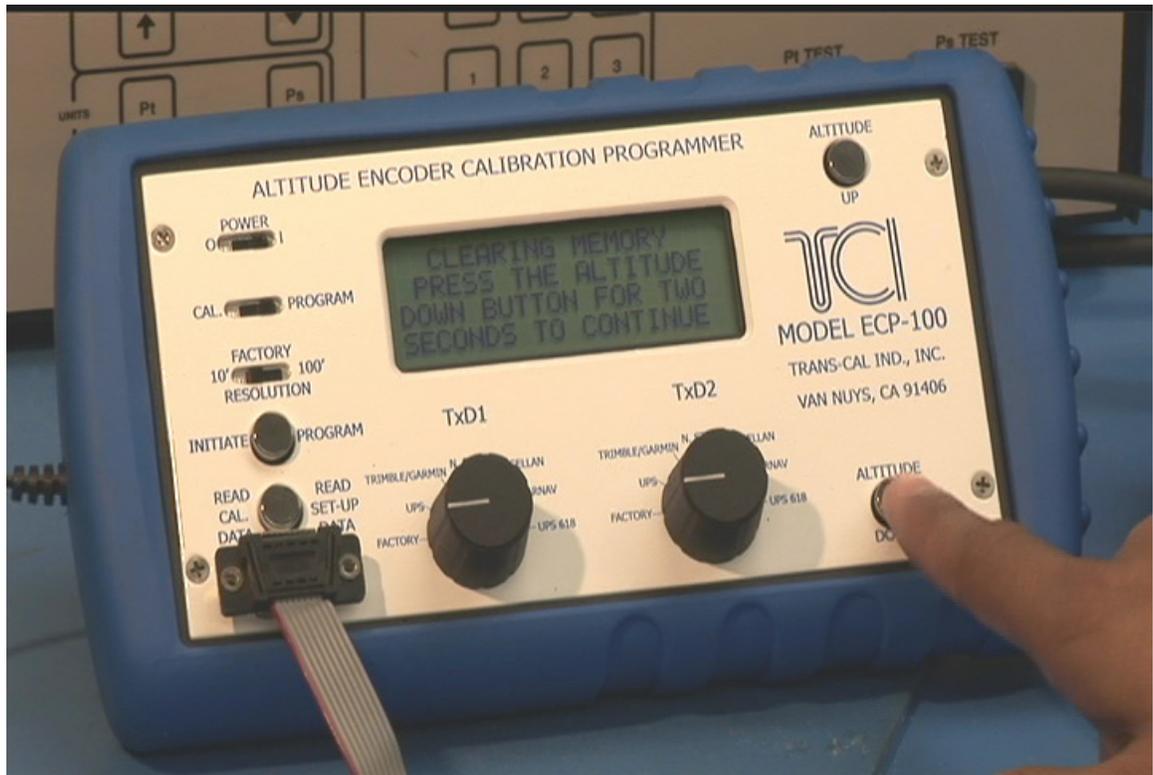
We can see that it is now showing 10,990 feet.

That is as close as we are going to get.

If we were to change the pressure slightly we would see that we are right on the transition point between 10,990 and 11,000 feet.



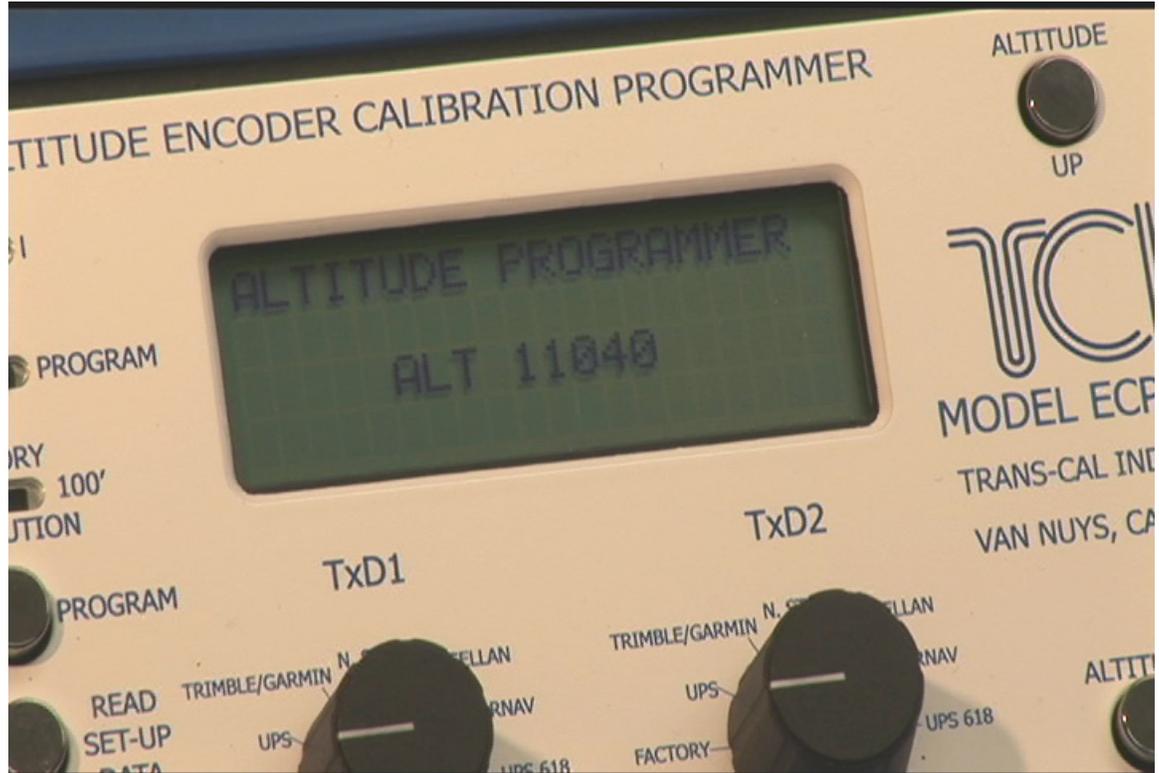
Now let's say you have made an error and you want to return the encoder's calibration to the original factory specs.



Put the ECP-100 into program mode,
and then push the altitude up button.

A message displays instructions to hold the altitude
down button for two seconds.

We'll push the button and wait while the ECP-100
returns the encoder's calibration curve to the factory
setting.



You can see that the error we saw in the beginning has returned.

So we are back to the factory error curve.



That's It!! Hope this helps!

If you have any further questions drop me an e-mail or give us a call.

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