



Adjust R102 for -89.2mV at junction of R101, R102 with the head attached.

Adjust R202 for -66.4mV at junction of R203, R204 with the head attached.

Adjustments of R102, R202 are one time adjustments to the calibration circuit.

The trim-pot shown as R7 in the levelling head schematic is used to calibrate the levelling head for variations in the forward voltages of the detector and reference diodes.

It allows the adjustment of the reference voltage at pin 4 over a range of just under 90mV.

When the levelling head is connected to an SG504, a bias current of 2.43uA is driven through the detector diodes and 87.3uA through the reference diodes, and -89.2mV is present at Pin1.

This circuit is designed to drive both the detector and reference diodes with the same current of 87.3uA.

R7 in the head is then adjusted for the same voltage on pins 3 and 4.

This is easiest to achieve by making a null measurement between Pin3 and Pin4.

With the original head attached, the voltage between Pin3 and Pin4 was less than 9mV without touching R7.

R7 in my original head was initially set exactly mid-range with -67.2mV at the wiper.

Adjustment for a "null reading" between Pin3 and Pin4 gave -75mV at the wiper, and -0.785V at Pin3 and Pin4. Varying the diode current by changing the supply voltage resulted in a differential voltage of +3mV at 50uA and -6mV at 150uA.

Refer to "Calibration Data.xls" for the details of the improvement in levelling after making this adjustment.

**Tektronix 015-0282-00 Levelling Head
Calibration circuit
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