

7. Check-out Procedures

7.1 Adjusting the Output Level

The value of the 10K pot on the analog board is set to provide balanced input to the LM733 video amplifier. With your scope set at 2mV/division, sync on the *ScanStart* signal (pin #3B-10). Place a white strip of paper on the document window and examine the output of the video amplifier (pin #IC2-7). When the pot is below the minimum allowable value, the output is a constant high value (~4V). Turning the pot clockwise will cause the output signal to move through the correct setting range (Figure 7.1) to a point above the maximum allowable value, where the output will be a constant low value (~2V). The optimum setting is where high light level produces an output value just above the bottom constant line, and zero light level produces an output value just below the top line.

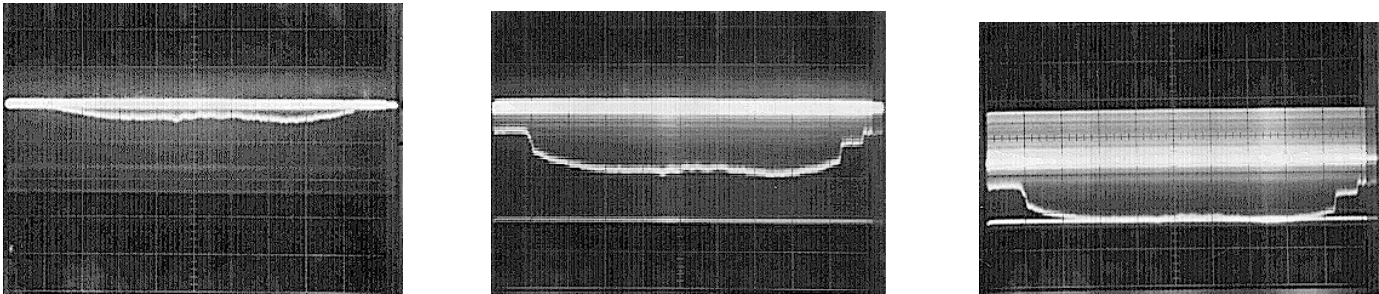


Figure 7.1: output at #IC2-7 with low, optimum, and high settings of pot

With the pot set to its optimum position, examine pin #IC8-3. The signal here should vary between 0V (black) and about -2.2V (white). If the signal goes below -2.5V, reduce the value of the final gain resistor #R10 until the maximum value falls into the permissible range. If the signal goes much above -2V, increase the value. (Levels below -2.5V will cause the A/D system to wrap around so that high light levels read as "black", and levels above -2.5V will reduce the maximum range of output values. Setting the gain for a nominal value of -2.2V reduces output range only slightly, and guarantees no wrap-around).

7.2 Optical Assembly

Fasten the analog board to the lens mount assembly. There is play in the board position due to oversized mounting holes: this allows corrections for minor variations in the position of the detector array elements. Fasten the lens mount assembly to the chassis at the midpoint of the adjustment slots. Thread the lens into the mounting collar as far as it will go. Set the lens aperture to $f4$ (full open).

The three optical adjustment steps are performed with an alternating pattern of broad black and white stripes in the transport; this allows easy identification of the image window for alignment and provides the appropriate patterns for magnification and focus adjustment. There is a small amount of interdependence in the adjustment steps: changing the focus may alter the alignment slightly.

7.2.1 Alignment

The lens axis must be positioned so that the image of the document window reflected by the mirror falls across the detector elements. Small variations in the tilt of the lens to achieve this goal are