

HP MODEL 5004A SIGNATURE ANALYSERSupersedes:
5004A-1A**Serial Prefix 1736 and above****DATA PROBE THRESHOLD VOLTAGE
ADJUSTMENT AND COMPENSATION**

These adjustments will only be necessary if repairs have been done on the A3 data probe assembly. This note replaces the adjustment procedure in 5004A Operating and Service Manual for probes with this applicable serial prefix.

This instrument is adjusted at the factory prior to shipment and no periodic calibration is necessary

The following equipment is needed for these adjustment procedures:

	Instrument	HP Recommended
1.	Function Generator	HP 3312A
2.	Oscilloscope	HP 1720A
3.	Digital Voltmeter	HP 3465A
4.	Pulse Generator	HP 8007B
5.	Power Supply	HP 6114A

DATA PROBE THRESHOLD VOLTAGE ADJUSTMENT

The voltage adjustment is to compensate for the effect on Input Threshold Voltage due to V_{CC} and comparator input bias current variations.

Proceed as follows:

- a. Remove data probe tip by turning it with fingers counterclockwise; carefully pull the red window off the probe tip; slide the two half covers carefully off the probe printed circuit board.
- b. Connect digital voltmeter leads between A3U1(11) and A3U1(1), and adjust A3R7 until digital voltmeter reads . . . 1.320 volts.
- c. Connect DVM leads between A3U1(12) and A3U1(1), and adjust A3R4 until DVM reads . . . 1.425 volts. Disconnect DVM leads.

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DATA PROBE COMPENSATION

The data probe compensation is to ensure minimum distortion of a very narrow pulse that could result in a wrong signature being displayed. To properly compensate the data probe, perform the following steps:

- a. Set Function Generator to output a 3 volts peak-to-peak triangular waveform ($\cong 300$ Hz). (No offset.)
- b. Replace data probe tip. Connect Function Generator output to scope's vertical input (Channel A) and also to the data probe. Connect A3U1(14) to the scopes horizontal input (Channel B).

Note: For the 1720A oscilloscope, operate in X-Y mode. Channel A and B are the vertical and horizontal inputs, respectively.

Observe the hysteresis loop similar to Figure 1 below:

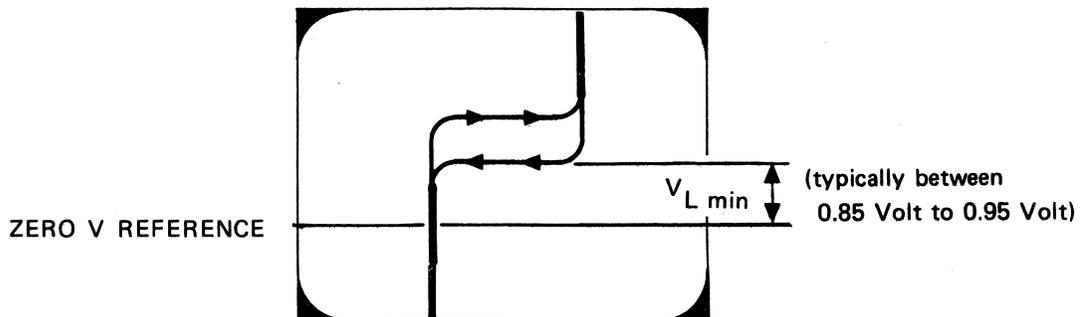


FIGURE 1

Record $V_{L \text{ min}}$ and remove input from scope. Switch scope back to normal horizontal sweep mode.

- c. Turn on power supply and set output to $V_{L \text{ min}}$ (recorded in b above). (This dc voltage is used to establish a reference line on the scope.) Apply this voltage to scope channel A. Using vertical position control, move trace to center line. After this center line reference is set, do not readjust the vertical control.
- d. Set pulse generator to output a 50 nanosecond pulsewidth, at 5 MHz, 3 volts peak-to-peak and a rise time ≤ 2 nanoseconds. Connect channel A to pulse generator output.
- e. Adjust pulse generator offset so the bottom of the pulse is 100 millivolts below center reference line (see Figure 2).

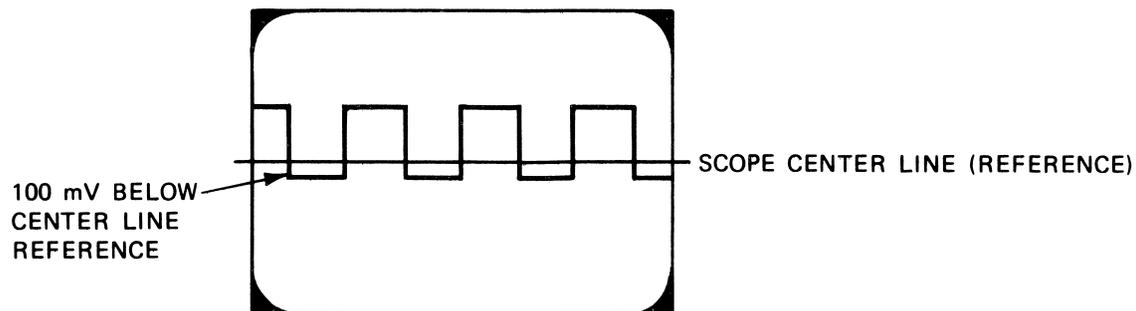


FIGURE 2

- f. Reassemble the data probe.
- g. Insert special adjusting tool (8710-1177) through hole in bottom probe shell, and adjust Data Probe trimmer capacitor very slowly until Data Probe lamp indicator flashes constantly.
- h. Verify adjustment by raising pulse generator offset until probe lamp stops flashing; bottom of pulse should be < 100 mV from original position.
- i. Repeat steps e and g if necessary.

