

Calibration Procedure

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1. Connect the 36 Volt Power Supply (the precise voltage is not important) & measure the voltage across the Zener diode, Z1 and record it as V_z . eg. $V_z = 18.35$ Volt.
2. Subtract this value from 40 Volt and record it as V_b , ie. $V_b = 40 - V_z$. eg. $V_b = 40 - 18.35 = 21.65$.
3. Subtract this value from 38 Volt and record it as V_a , ie. $V_a = 38 - V_z$. eg. $V_b = 38 - 18.35 = 19.65$.
4. Disconnect the cathode of Z1 from the 36 Volt line & leave it open.
5. Measure the voltage at TP1 & adjust R_b until $V_3 = V_b$. This sets the upper threshold.
6. Connect a temporary 1 k resistor from the junction of R_2 & Z1 to the 27 Volt line.
7. The relay should operate & the LED should light.
8. Now adjust R_a until $V_3 = V_a$. This sets the lower threshold.
9. Disconnect the temporary resistor from the 27 Volt line & the relay should release & the LED should go off.
10. Remove the temporary resistor and re-connect Z1 to the 36 Volt line.
11. The circuit is now ready to use.