LAB 3

REGULATED POWER SUPPLIES

OBJECTIVE

At the end of this lab you should have some experience with electronic voltage regulators and how much of an improvement they are over power supplies with capacitor filters.

PROCEDURE

Remove the jumpers and resistor you soldered to test points in Lab 2. Specifically remove:

- the $1.5k\Omega$ resistor between TP7 and TP9.
- the wire jumper from TP10 to TP17.
- the wire jumper from TP12 to TP 18.
- 1) Perform CONSTRUCTION beginning on page 37 of the Graymark manual. Perform +15 VOLT REGULATOR TEST on page 38 of the Graymark manual.

IMPORTANT: Be very careful with applying the heat sink compound as shown in Figure 74 to the bottom of the voltage regulators and the corresponding top surface of the heat sink. Heat sink compound is VERY DIFFICULT to remove from clothing. I recommend that you use a small scrap of wire or a toothpick to apply the compound to the metal surfaces. Do not use your fingers. Heat sink compound improves the thermal conductivity between the transistor and the heat sink to keep the regulators cool.

- 2) Perform CONSTRUCTION beginning on page 38 of the Graymark manual. Perform -15 VOLT REGULATOR TEST on page 39 of the Graymark manual.
- 3) Perform CONSTRUCTION beginning on page 39 of the Graymark manual. Perform +5 VOLT REGULATOR TEST on page 39 of the Graymark manual.

We will not perform the overtemperature and voltage adjustment experiences. However, we will perform overcurrent experiences.

4) Perform steps 1-7 on page 44. This is a test of the overcurrent protection circuitry built into the voltage regulator integrated circuit.

The Graymark has extra circuitry to protect other power supply components. Perform the CONSTRUCTION on page 48, OVERCURRENT PROTECTION CIRCUITRY TEST on page49, and the OVERCURRENT PROTECTION EXPERIENCE beginning on page 49.

LAB 3 STOPS HERE

At this point your Graymark power supply is essentially finished. Perform the CONSTRUCTION. VOLTAGE CONTROL OPERATIONAL TEST, FINAL PCB ASSEMBLY, and CABINET ASSEMBLY beginning on page 50 to finish the assembly of your power supply.