

Finally got your LED 6T5 replacement constructed and tested. Thought I'd pass along my findings.

The specification for the 6T5 indicates that full on is displayed with a grid voltage of -22v, so I adjusted the LED to display full range at -22v "grid" voltage.

At first I thought the LED indicator had insufficient dynamic range, but at the photos show, it performs similarly to a genuine 6T5 tube. A zero off and near full scale display were obtained in another similar radio. I consider this a success.

The diffuser from a LED bulb seems to work adequately, with the proper 3mm spacing.

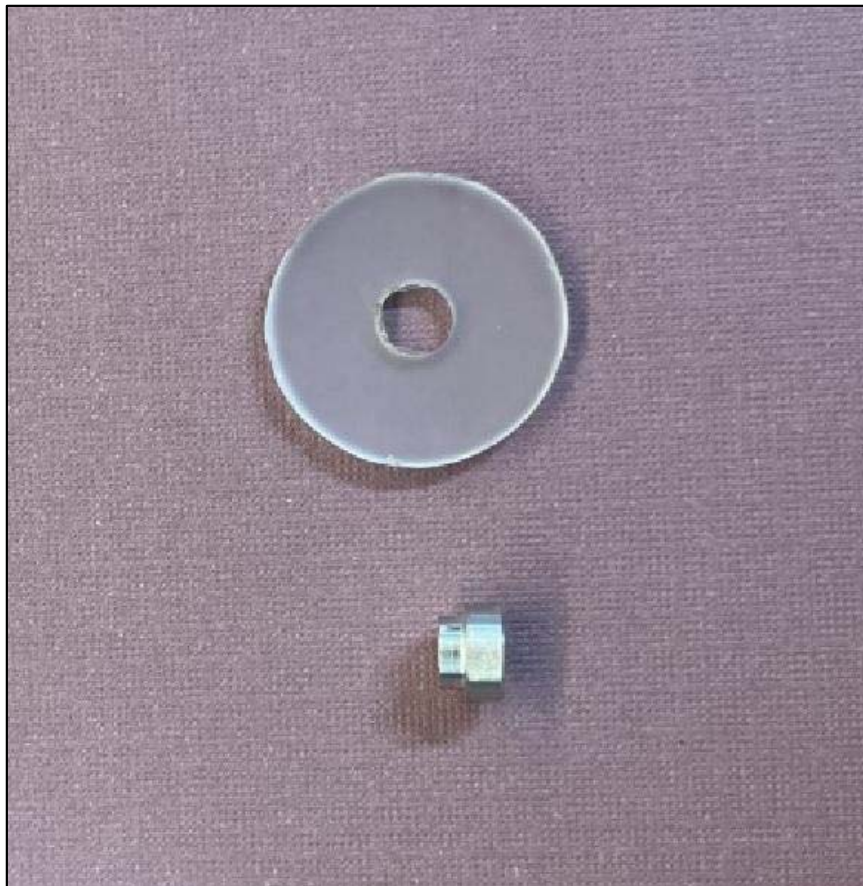
I was only able to get acceptable soldering of the SM LEDs after using a Sn63/Pb37 T5 solder paste. I couldn't get proper melting with a hot plate or a heat gun so I finally obtained a relatively inexpensive reflow oven with the proper heating program. That worked.

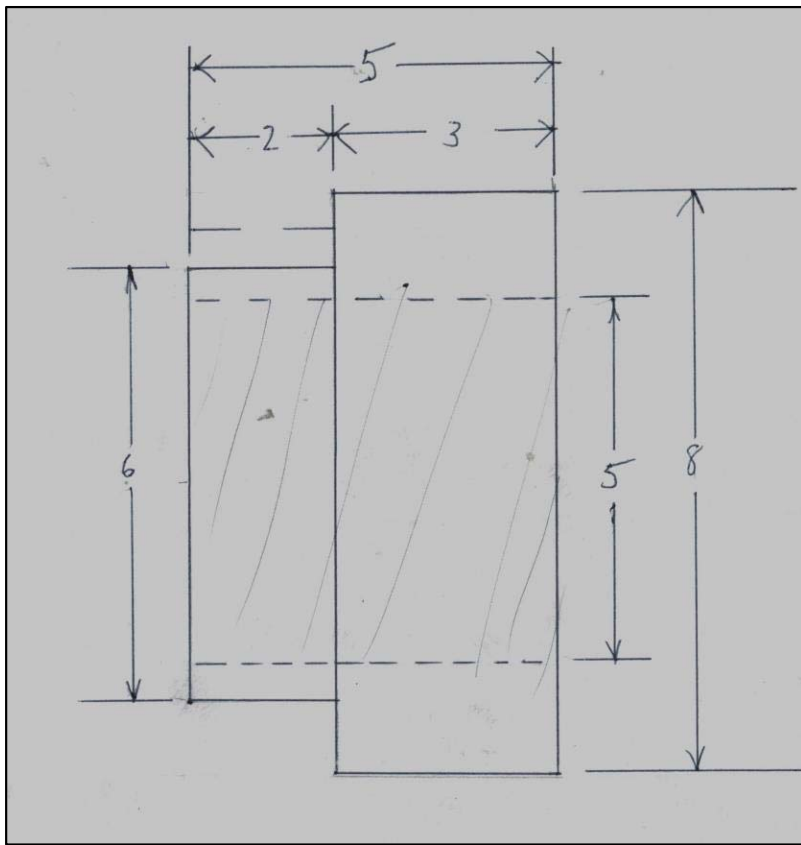
Cutting the glass tube envelope from dud 6E5's was challenging and several other tubes were sacrificed before I finally got an acceptable break with a hot nichrome wire in a fixture to hold the wire taut around the circumference.

**Diffuser cut from a LED bulb with a
1" (25.4 mm) hole saw**



Diffuser and fabricated aluminum spacer

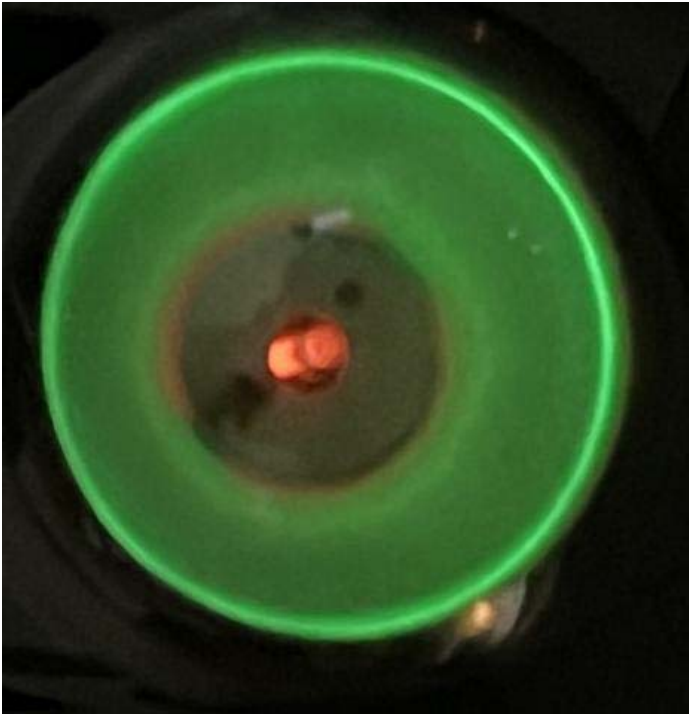




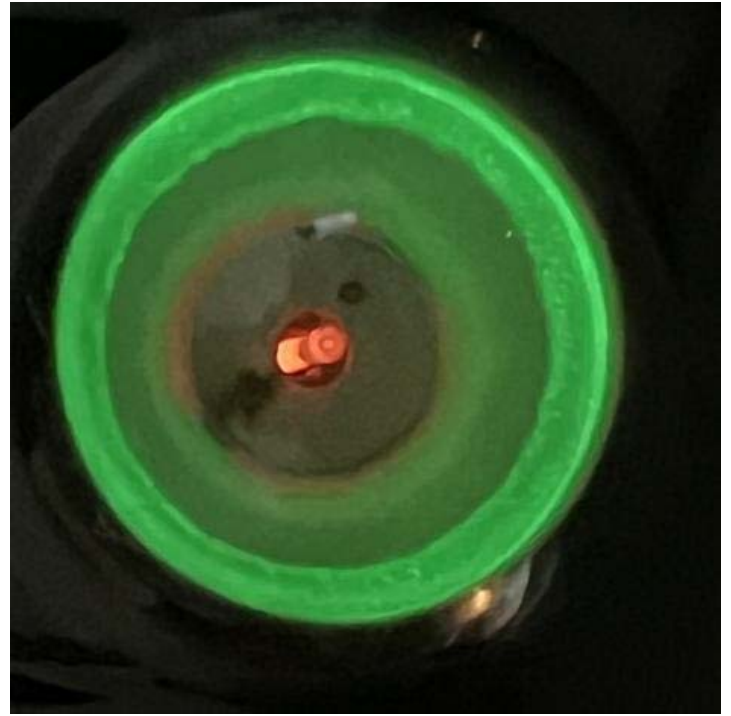
Aluminum spacer dimensions. The 6 mm flange was determined by the size of the hole from the pilot drill in the 1" (25.4 mm) hole saw. A spacing of the diffuser from the LED board of 3 mm seemed to be a good compromise between light intensity and diffusion.



6T5 vs LED Comparison in Zenith Radio



6T5 no signal -3V grid



6T5 local station -12V grid



LED no signal -3V grid



LED strong signal -12V grid

6T5 spec. blank-full scale = 0 to -22v grid
LED calibrated for full scale at -22v grid

LED in Zenith Radio #2



LED no station Zenith radio #2



LED strong station Zenith radio #2

Cracking 6E5 tube envelope with hot wire

