In Progress BL DynXXX Illumination Insert

Initially when I got my first few Dynoptic and Dynazoop microscopes I was interrested in restoring these microscopes to their orginal state. However as time passed I became interested in LED inserts instead. Initially various LED flashlight types were experimented with; various Web serches were investigated. After examining various search results I decided to experiment with 1 watt cool white LEDs available from eBay.

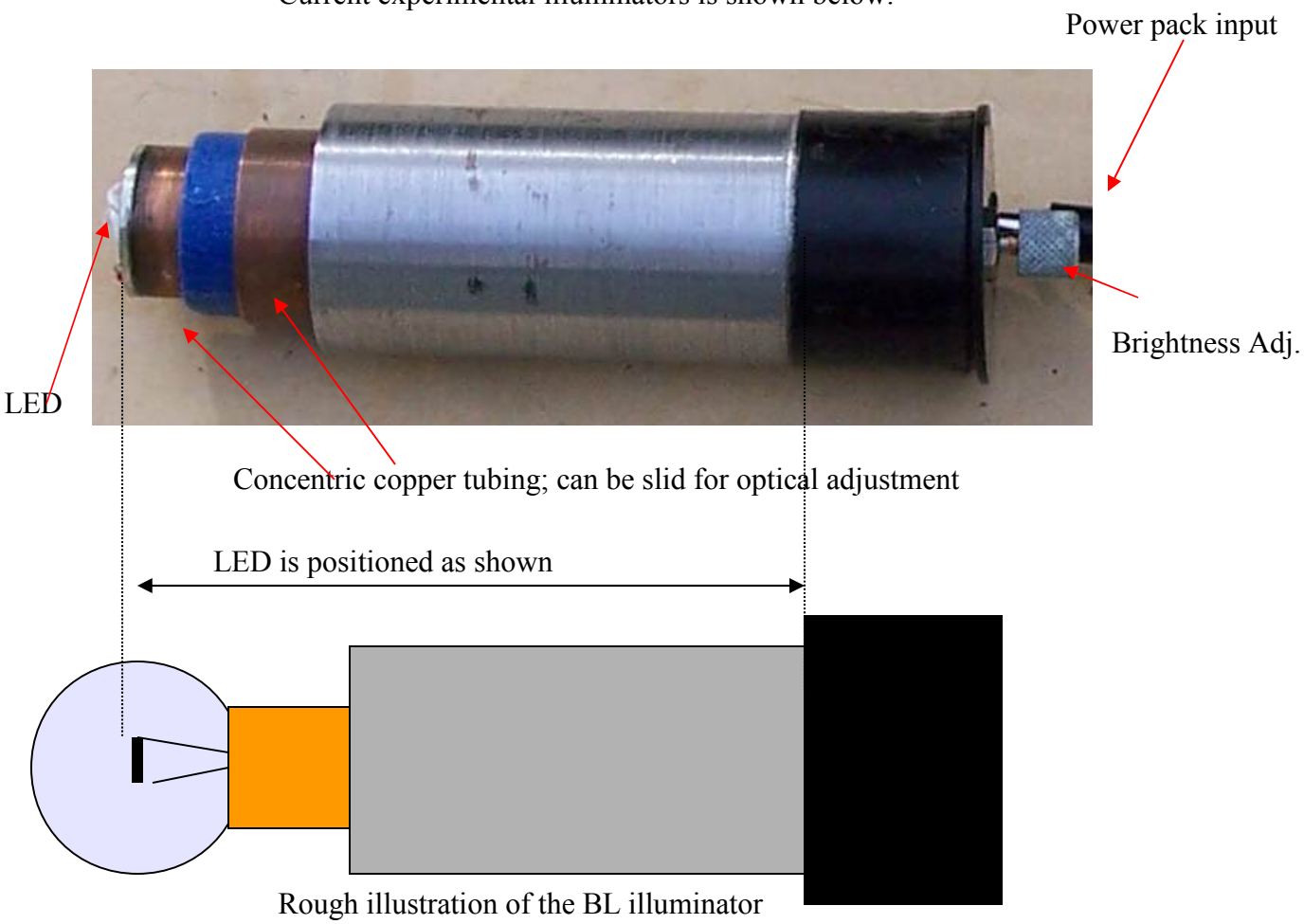
Checking the web for LED microscope illumination I decided to use the electrical circuit provided by:

http://www.frankshospitalworkshop.com/electronics/diy-led_microscope.html

due to its simplicity. In the effort of keeping my expenses down I decided to use what parts avaible on hand. This required substituting and changing circuit values of various electronic parts. However for simplicity I suggest using the electronic componet values given in the above link .

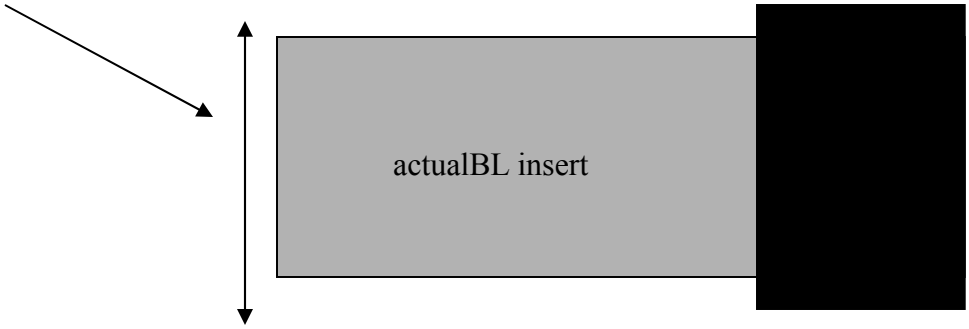
My purpose here is to illustrate the physical concept of the illumination insert; reason being that it is still in its experimental stage. The current version uses 1 watt cool white LEDs which are pleanty bright for the DynXXX illumination insert (very bright , too intense); I assume is due to the BL illumination optical coupling.

Current experimental illuminators is shown below:

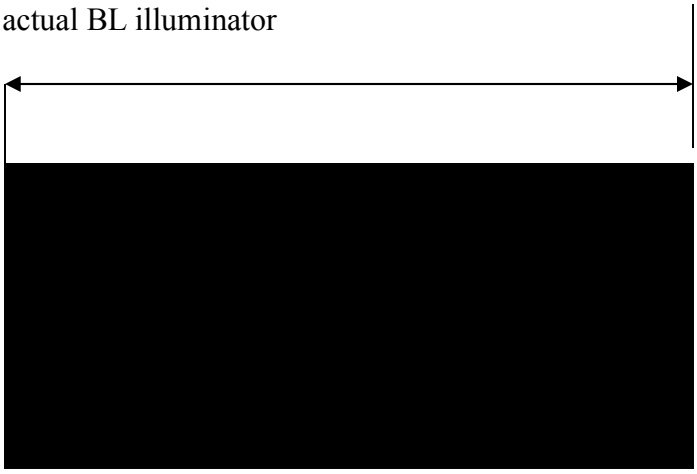


Rough illustration of the BL illuminator

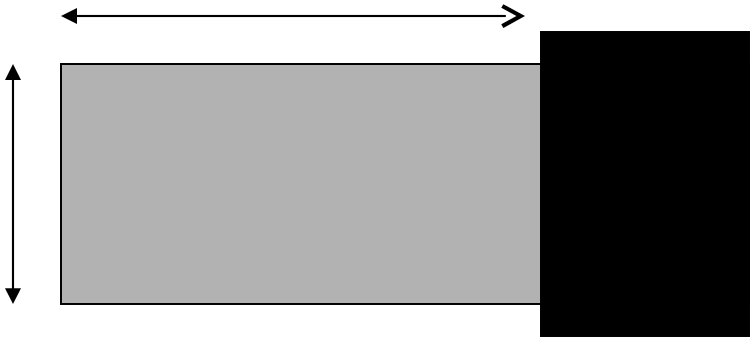
Using metal scrap electrical lamp post tubing having **slightly larger** diameter than the actual BL insert portion:



Next the tubing was cut to actual BL illuminator



The metal tubing surface was turned down to size using a metal lathe



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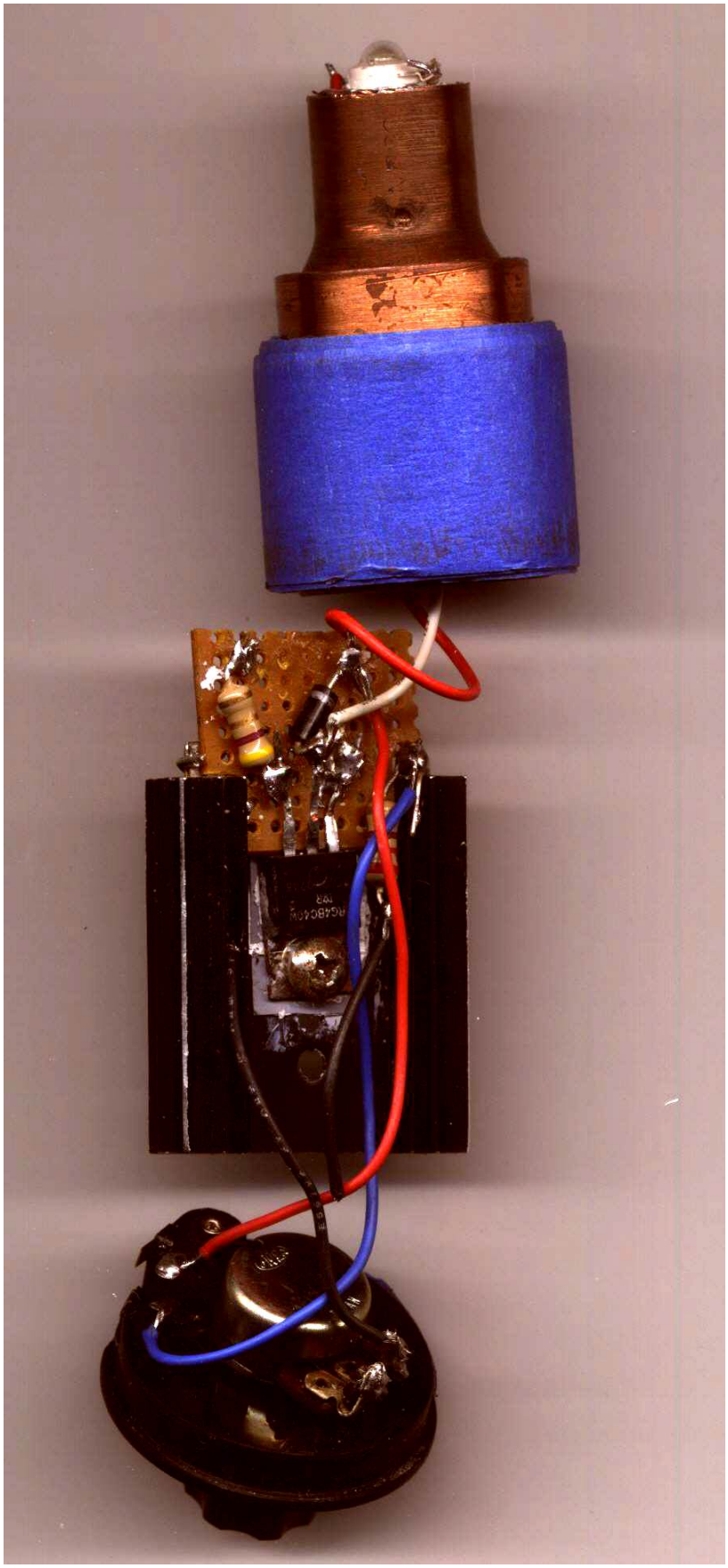
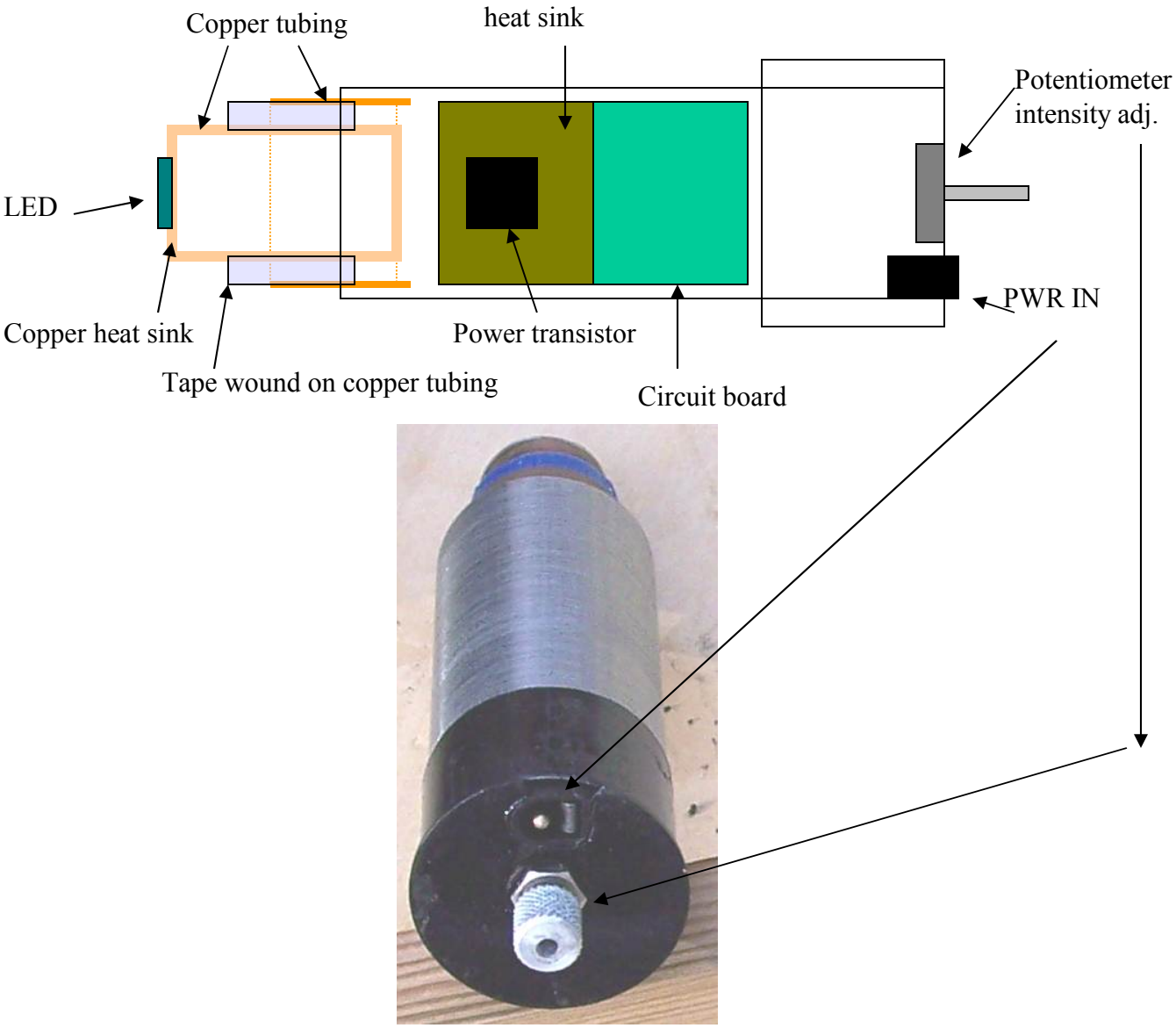
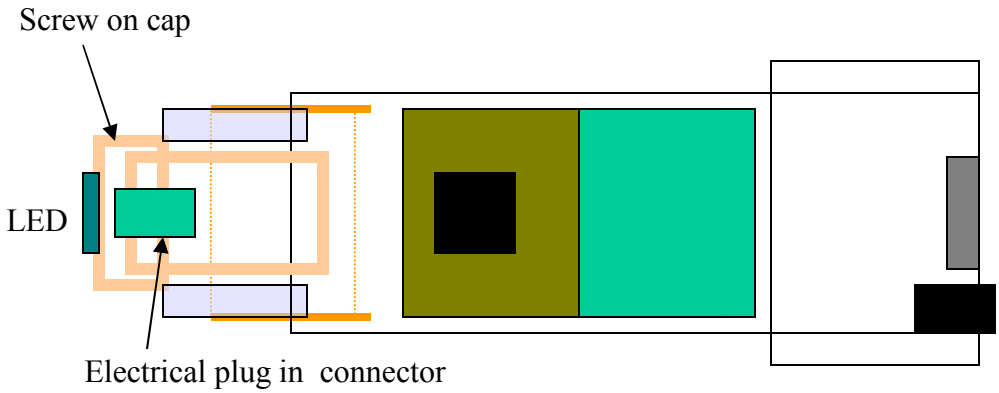




The plugin power supply : 120VAC to 4.5 to 12 VDC at 300 and above milliamps that appear at most thrift stores for a few dollars.

I tried an alternative concept for interchanging LEDs; ie white, green, blue, royal blue, and UV LEDs.,



I have already tried the ~ 4000 angstrum LED (~ same wavelength as used in the blue ray laser diode) but had limited success. I seem to recall that glass doesn't pass light of much shorter wavelength; so I may have been on the edge. When I was checking LED chips on eBay various colors were available; much shorter wavelengths were available but more expensive; in my case I don't have the UV optics for these anyways. But it seems to me that interchangable visible color LEDs would be neat for color experimentation. The electrical circuit referenced to I believe should work except for shorter wavelengths the minimum power input voltage may have to be increased due to the increase in forward operating diode voltage.