Making an LED fly tying lamp

For months I have been looking for a decent LED fly tying lamp. I saw a few at horrendous prices, between R800 and R1200. Way too expensive. In addition, once the LED gives up the ghost on those things, it is not possible to repair because they are all custom made and sealed into units.

After many nights of “designing a lamp” instead of “counting sheep”, I came up with this idea.

When I set about to make the lamp, I wanted to make it:

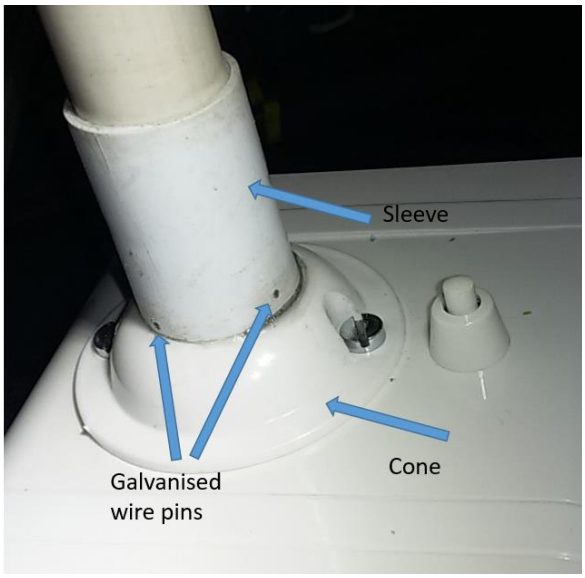
- as cheap as possible
- as bright as I needed
- reasonably handsome
- not run all around town looking for components

So, yesterday I went down to the local Mica hardware shop and spent about an hour looking through the electrical department and bought the following:

- 2 meters of white PVC conduit
- 1 PVC right angled elbow
- 1 PVC sleeve (that fits over the conduit)
- 1 (not sure what you call it?) cone shaped fitting that you can use to hang a light
- 1 socket box (the kind you put into the wall)
- 1 blank cover for the socket box
- PVC glue
- A press button switch
- 2 meters of electrical cord
- A 12 volt transformer
- 2 LED strip lights (30cm long with 18 LEDs each). I decided that one would not give sufficient light
- Bolts nuts and washers
- At home I had a strip of flat aluminium 40mm wide and 2mm thick (a left over from another project), some large lead sinkers that I will never use and a tube of silicon sealer

This is how I built it

1. I started by cutting the conduit to size, one for the vertical piece and another for the horizontal piece that would hold the LEDs. The height of the lamp I measured by eye – at my desk and using my vice as a gauge.
2. I took the cone shaped fitting and glued the PVC sleeve onto the tapered end. The problem here was that there was not enough of the head on the cone to hold the sleeve securely. So I took some thin galvanised wire and made four pins that I heated up and burnt through the sleeve and through the end of the cone (see picture) and glued it together. The cone is a different kind of plastic to the PVC and the PVC glue does not work. However, with the pins through both, a sufficient join was made. I then glued the vertical conduit into the sleeve.

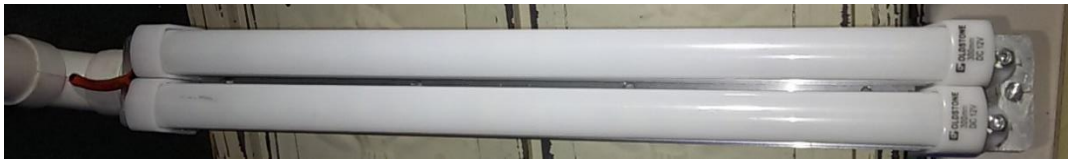


3. I then drilled holes in the socket box cover and bolted the cone shaped fitting on it. I also drilled a hole for the push button switch as well as a two holes for the electrical cable to the transformer – one on the cover below the cone so that the wire could be fed up the vertical conduit, and another on the side of the socket box leading to the transformer. I then installed the switch on the cover.

4. I cut the aluminium strip to just over the length of the LED fittings, leaving enough space on either side so that it could be bolted onto the horizontal piece of PVC. I bolted the LED fittings side by side onto the aluminium strip and then bolted the conduit onto that.

Underneath view

View from the end



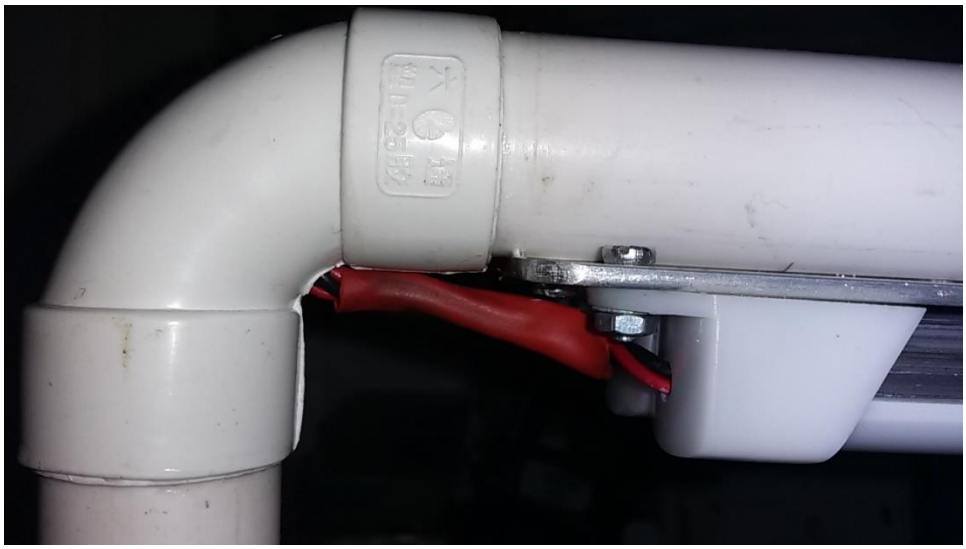
Assembled

5. I drilled a hole into the inside middle of the PVC elbow to fit the wires coming from the LED fittings. I then glued the elbow onto the horizontal conduit (which now had the aluminium strip and the LED fittings bolted on to it). I made sure that everything was square and level before gluing. I then fed the wires through the elbow – but first using a short strip of heat shrink to keep the wires together and neat between the elbow and the LED fittings.

6. I fed the electrical cable through the hole in the switch box Making an overhand knot inside to prevent it from being pulled out) and up the vertical conduit and connected that to the LED

fitting wires and fed all slack into the vertical conduit. In the socket box I made sure that there was enough slack in the wire so as to connect the positive through the switch on the socket box.

7. I then glued the elbow on the top of the vertical conduit – again making sure that everything was square and level.



8. I squeezed the silicon sealer onto the inside bottom of the switch box and placed the sinkers into the silicon. This gave sufficient weight to the box so that the lamp would not topple over.

9. I then screwed the cover onto the socket box (at this stage, the cover was attached to the cone and the vertical conduit – and attached to that was the horizontal conduit holding the LED fittings.)
10. I then connected the cable to the transformer.

And now I have a fly tying lamp – exactly how I wanted it for about R320 and two hours labour!