

# How to make longboard lights

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A past winner of the Board Build Off, Loki spreads some light, on how to make your own late night longboard illumination. Check it out, hope you brought your thinking cap. Class is in session.

This 'how to' is on how to make your own set of LED Risers. Or to some people Headlights/Taillights for your longboard.

These risers are easily made, and I would say that anyone can make them, but some minor electrical knowledge and soldering skills would be a bonus, but not a must, because you have to learn some time.

## 1. Materials & Tools

### Material List.

Print out of this light template that I am including in a PDF file

Sheet metal, preferably a metal that doesn't rust (I used 0.025" thick Aluminium sheet metal purchased at Home Depot)

4 High brightness 5mm(T1 3/4) LED's (mine were purchased from eBay, Look for ones with a 15 degree viewing angle in a 10000mcd or higher range, note the smaller the viewing angle the higher the rating will be, so depending on your situation you might want a wide angle viewing angle, can you say under board lighting)

4 Chrome 5mm (T1 3/4) LED holders (also purchased from eBay)

2 feet of insulated 22 gauge or suitable thickness wire

1 1/4 watt resistor with a rating that is dependent on the specs of the LED's you purchase (for my application it was a 22ohm resistor that was needed, which is a decent bet for most LED's out there in this configuration)

One 4AA Covered Battery holder with on off switch (I purchased mine from The Source by Circuit City (ie Radio Shack) part #2700409)

One 2 wire quick connect (not needed but is a bonus, I didn't use one in the riser I made, just due to me not having any)

Various small sized shrink wrap tubing (not necessary but nice)

Soldering Flux, and thing gauge solder (Soldering flux is a must in my opinion, so much easier to solder with it)

Some light tack glue, for gluing your template to the sheet metal (I used some Elmer's white school glue)

Also 4AA batteries, preferably some high mAh (milliamp hour) rechargeable batteries, NiCad are useless, so go with a good set of NiMh batteries, but normal alkaline will do.

### Tool List

A Drill with a 5/16" and 7/32" drill bit

A center punch, or something to make sure you drill your holes perfectly (a small Philips screw driver works, but I don't recommend it even though I did it myself)

Fine point soldering iron

Wire Strippers, or an exacto knife to strip the wire

Wire Cutters

Tin snips, or something to cut the sheet metal (I used a utility knife as I did not have any tin snips here, probably made a cleaner edge anyways)

Needle nose pliers (not needed but very helpful when wiring)

Square nose pliers (normal pliers work)

And a Vice with flat jaws (not needed but helpful for one part)

## 2. Bracket Making

Alright well hopefully you printed out the template and checked to see if the dimensions are right, so cut one of the templates out and glue it to the sheet metal as shown in this photo.

Next center punch and Drill the corresponding holes, where marked on the template (I highly suggest drilling the holes now, if you don't then I will let you find out the hard way what will happen)

Then proceed to cut around the edge of the template to leave yourself with a piece of metal that looks like this (note you still want your template glued on).

Now proceeded with cutting out the two areas with X's on the ends and the one large center section, if using a utility knife score (cut deeply) the line many times till you can see the indentation of the line on the bottom of the sheet metal at which time you can then use a pair of pliers to break off the unwanted piece. Don't worry about bending the sheet metal slightly as you can straighten it later with some pliers.

Next align the nose of a set of pliers or a vice with the dotted line with the tab that has the two 5/16" holes in it, make sure you put the side with the holes on the inside of the pliers (towards you hand or in the are where the teeth of the pliers are, and or down in between the vice jaws, and the bend to a 90 degree angle making sure both sides go in the same direction like this crappy picture. (note if you bend the tabs back and forth to many times they will break off so make sure your bending in the proper direction, or you might have to cut out another piece of metal and start over)

Next bend in the end squares on the dotted line as show at a 90 degree angle which should look like the second picture below.

Now move onto the 1.5cm square that's located besides the 5/16" hole towards the center of the bracket, and bend those up at a 90degee angle, like the picture below.

After that bend along the last two dotted lines, bending them at 90 degree angle, allowing the led buckets to swing down to the side as shown in the following picture. And tada your now done your bracket and now you can remove the template.

### 3. Led mounting and soldering

Ok now insert the 4 chrome LED holders into the 5/16" holes and tighten up the nut on the back using a set of needle nose pliers with turning the front (put the locking washer on the back of the tab)

Now slip on the holder plug over the LED legs (wire) with the open end going towards the LED, it will seem backwards but once you try to put it into the holder you will understand. And align the legs to be parallel like shown (OK LED's typically come with one leg that is shorter than the other, this is the negative side, if the legs are the same length the LED should have a flat spot going around the base of the casing indicating which side is the negative side) now align them so either that short leg(negative side) is on the top or bottom but make them the same for all of them cause once you trim the legs you wont know which is which without testing it. So make sure you have them all aligned. Like this picture shows.

Now take your needle nose pliers and bend the outside LED legs toward the inner LED legs like shown here and then trim off the excess (note the leg in the picture should be bent at a 90 degree angles and the inserted along the other LED

legs into the Holder plug, like shown in following photos below the one below).

After those are bent apply a small amount of soldering flux to where each pair of LED legs meets and solder them together (should only take about one second to two seconds of contact and soldering to do each pair, as you don't want to have the soldering iron there too long or it could melt/burn/damage your LED's) Make sure the top pair isn't connected to the bottom pair by excess solder, if good then do the other side of the riser. If there is soldering connecting them wipe the tip of your soldering iron on a damp crumpled up paper towel removing any excess solder you have on your iron, then lightly touch the iron where its connecting the two places, this should cause the solder to stick to the soldering iron in which you then just remove it, effectively removing the short. This is what it should look like after you have soldered the pairs together and trimmed off the excess.

Now cut 4 4.5" pieces of wire (or 2 of each color like myself, thus 4 in total), stripping ¼" from one end of the wires and 1/8" for the other side, now twist two wires together creating two pairs like the following picture, and then solder the striped 1/8" ends to the point where you soldered the LED legs together using soldering flux on the wires, so if you put the negative legs of the LED's on the bottom then solder the black wire to it and the red to the top and visa-versa if done the other way. You should have something that looks like this.

Now bend the paired wires at about 2.5" from the LED side at 90 degree angle so the pair are now pointing at each other, they should overlap a bit both the striped and non striped part, now bend the wires again at another 90 degree angle pointing away from the bracket and twist the red on the one side with the red on the other side and the same for the black and solder together, getting something like the following picture.

Next you solder in your resistor to the positive wire (so one end of the resistor is soldered to the wires that go to the led and the other side will be soldered to your battery pack or quick connect), Now if using a quick connect this is when you solder the ends to the battery holder and the other connector to the wires for the LED's (plus the resistor also) But if direct wiring it like myself first put on a small section of shrink tubing on the wires on the battery holder, then solder the positive(red) battery pack wire to the Resistor that is soldered to the positive side of the LED's (red also), and then same goes for the negative wires(black to black). Then slip the shrink tube over the connection and use a flame to heat up the tubing to allow it to shrink over top of your solder connections (the reason why you put the tubing on before soldering is because you can get it on after it's all soldered together, try it and you will understand what I mean. And Tada your done slap in some batteries flip the switch and you have light, and mount to you board, and adjust the tab the LED's are mounted to adjust where you want them pointing, if you need to. And then tape, or Velcro the battery pack to the bottom of your board. And if you wanted once adjusted you could epoxy all the edges together so it doesn't move.

#### 4. Notes ect

That's basically about it, try different colors different battery options (9V), or different designs.

Too give some ideas you could do an 8 LED light setup having a square of 4 LED's on each side by just extending two of the tabs and drilling some more hole, one problem is you would have to run ½" riser that way you could do it with out having the extra light being on the wheel side more than likely touching the wheels at some point. Also you could enclose each side completely but the bending would need to be done in stages, or you could do an easy one tab bent hanger design if lazy but that would be more susceptible to rock damage.

Try mounting them on the inside of you trucks and having the light shine down at the ground or use some wide angle LED's to give an under board glow type effect.

So have fun, wear a helmet when your riding, and keep the stoke alive.

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Legal mumbo jumbo just in case

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