

An Exterior Lighting Project

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Well here we are in the middle of January, so it's time to tackle a few projects on the Miata to start getting it ready for next Spring. This month and next, I thought I'd show you a few easy lighting projects that can make a nice difference in looks and convenience. This month's project is adding lights to your rear side reflectors...

Somewhere in the early years of Miata production, Mazda stopped putting bulbs and sockets in the rear markers (red) located on the sides of the rear bumper. The front markers (amber) have always been lighted, and now it looks a bit odd when the fronts are lit up and the rears are not. I used the following instructions on a couple of cars now, and they're pretty easy to follow. These instructions are also posted in the *garage* section of www.miata.net. All credit goes to Bob Caruthers for figuring this out and sharing the procedure with the rest of us!

First, gather the following parts:

- Two License, Sidemarkers Sockets. (they are also called pigtailed.) AutoZone part # is 85814, Pep Boys part number is 85868. These have two wires (black and tan/brown) connected to a cream colored rubber socket.
- One package (2 bulbs) of #194 bulbs (for sidemarkers / instruments).
- A package of Butt Connectors. (wire range 16 to 14 gauge.) These are blue plastic tubes about an inch long to which you will need to add short pieces of wire to extend the pigtail wires. This will give you some extra wire to pull out of the side light when you will eventually need to change the bulb. You'll need four of these: two per pigtail.
- A box of Quick Connectors. (for use with 18 to 14 gauge wire.) They are blue and box shaped with a fold-over tab. You'll need four: two for each tail light.
- One roll of 14 gauge wire. (18 gauge will work.) You'll only need about a foot, but they usually come in rolls of 20 feet or so. You might look around and get the shortest length you can find.
- One roll of Vinyl Electrical Tape.

Now for the fun part:

1. Remove the back side reflectors with a Phillips head screw driver.
2. You will see a gray-ish plastic back to the red reflectors into which a light bulb socket could be inserted... if only there was a hole there!
3. Make the hole using a drill, start by drilling a small starter hole. You can then change bits to a progressively larger size--up to a one-half inch bit. BE CAREFUL: you can easily drill through the back of the reflector right through the front red part. That'll require a trip to your local Mazda dealer for a new reflector. Stop once the hole is drilled to one-half inch.
4. Insert a #194 bulb into the pigtail.
5. Check to see how close in size the socket is to the drilled hole in the reflector. Use an x-acto knife to ream out the hole if needed until you can get the front part of the socket in the hole. You want a tight fit. Tape the socket to the back of the reflector with the vinyl electrical tape to hold it securely in place. There is probably a way to get the socket to fit perfectly like the factory ones in the front are, but you will need to get it back out again to change the bulb someday. Use your best judgment on this one...
6. Next, add several inches of extra wire to the end of the two pigtail wires. Four to six inches should do it. Cut two pieces of the 14 gauge wire and attach them to the ends of the pigtail wires using the Butt Connectors. You'll need a pair of pliers to squeeze the Butt Connectors onto the wires. Be sure to strip away 1/4 inch of wire off only one end of the new wire. Leave the other end blunt cut. Wrap the Butt Connectors with the vinyl electrical tape covering some of the tape on the ends.
7. Put the pigtail/side reflector assemblies back on the car, sticking the wires through the holes in the bumper. Let the wires hang down inside the bumper. Go ahead and screw the reflectors

back in.

BTW, the reflectors are marked L and R.

8. Open the trunk and remove the cheesy trunk liner which covers the tail lights. There are seven black plastic clips that hold the trunk liner in place. The "clips" have a center piece which needs to be pried up. Use your finger nail or small screw driver. Then pull each clip out. Just remove the part of the liner that is directly next to the trunk lock and tail lights. The two clips behind the taillights are stuck in rubber grommets, so they are a tad bit more difficult to pull out. A flash light will help locate the seven black clips.
9. DISCONNECT THE NEGATIVE TERMINAL OF THE BATTERY!!!! (it is closest to the taillight. it has a 10mm bolt)
10. Remove the Tail Light assemblies from the back of the car. (you would have to do this if you were to ever have to change a bulb back there) There is a picture of how to do this in the owner's manual, too. There is a black Philips head screw on top and two 10mm nuts inside the trunk which hold the tail light assembly in place. Remove the top screw and the two 10mm nuts. Pull the tail light assembly out toward you. There are two short plastic pegs which hold the assembly in place. You may have to do some wrestling with the light assembly to get it out. When out, let it kind of hang there.
11. Now, look carefully down between the fender and the wheel well towards where the side lights and pigtail wires are. You will need to sorta hand the wires up from the pigtail to yourself, or someone else, from underneath the fender. It's a very short distance.
12. Look for the outside light on the tail light assembly. (there is a helpful picture in the owner's manual for reference.) This is the parking light. This is the one you will be tapping in to. There are three wires coming out of the parking light: Black, White, Green.
13. You will be splicing, with the Quick Connectors, into the BLACK wire and WHITE wire only, ignore the green wire. You can either unwrap the black electrical tape holding these three wires together to reveal enough wire to tap into or tap in to the wires above the tape.
14. Look at one of the blue Quick Connectors. You will see there is a groove on one side. This fits over the BLACK parking light wire: this is the ground. The black wire kind of snaps in from the side of the Quick Connector.
15. On the other side of the Quick Connector, there is a hole in which you insert the blunt cut wire extension from the pigtail. The wire can't come out of the other side of this hole because it is sealed closed. Push the wire in until it stops. Take a pair of pliers and squeeze down on the little metal piece which is sticking up out of the top of the Quick Connector. Close the blue tab over the Quick Connector.
16. Do this again connecting the TAN/BROWN wire to the WHITE wire. (this is the +12v)
17. If you would like, you could put the negative cable back on the battery and see if the side light works.
18. BE SURE to DISCONNECT the battery cable again before doing the other side.
19. Do the same thing on the other side: BLACK to BLACK. TAN/BROWN to WHITE.
20. Re-install the two tail light assemblies: one screw and two 10mm nuts on each side.
21. Re-connect the battery, tighten down the bolt.
22. Test.
23. Success!!!
24. Put the trunk liner back in.

Now your rear reflectors light up like the fronts. I hope you enjoyed a little bonding time with your car. Next month, we'll cover how to add lights to your footwells on the inside of the car. As always, happy motoring!

Disclaimer: the ideas and instructions stated above are not original in any way and are provided for your information and convenience. Use at your own risk. Your results may vary. Contents may settle during shipment. Not responsible for accidents. Always read the fine print! :O)