

Accent LED Lights for your C-5 Door cove / gill's



A very easy DIY project - Total Cost - < \$10.00

This is a very easy project and only takes a few hours of your time. It greatly enhances the looks of your Corvette and the color combination is limitless (well, almost). Better than neon tubes, LED lamps will not break, are virtually waterproof, can be mounted in/on just about anything. They use very small current (milliamps) and will provide good lighting for years of trouble free use. They can be directionally aimed, or sanded down for more of a floodlight look. They can be connected in series or parallel (with resistors) or both. Their small compact size makes them very easy to work with, mold, fabricate, and mount virtually anywhere.

Factoid: LED's have been around for years and have been used in just about anything you can think of. Most only recognize them in small mundane low light items. From power ON indicator lights in your coffee pot, computer, telephones, battery chargers, garage door openers, cell phones, smoke alarms, security system status LED's; to the light on your wristwatch, radio, printers, cars, toys, or a calculator, these little wonders are everywhere and are very efficient, durable and use very low power demands. The wavelength of particular color is constant provided the correct voltages are used. As technology has increased, these little non descript, never even thought of lights are now becoming mainstream business for a lot of big business, your city government and everyday use around the house. Many city busses and more and more automobiles are switching to LED's for tail lights. Police and Fire Departments are using them more and more. Traffic Signal lights are being replaced using LEDs instead of the fresnel lens and filament bulbs. Just look around – they are everywhere and they are very inexpensive.

Ok, now you decided you want to use these little wonders to add some accent lighting on/in the door coves/gills on your C5 Corvette. First, here are ALL the supplies you will need: (you can use any number of LED's you want, but the sum total must be somewhere between 11 – 14 volts, total; used in series or in parallel with resistors. In MY application, the 4 Red LED use 2.6 volts each and the one Blue uses 4 volts for a sum total of 14.4 volts- wired in series)

- 8 – Red LED's (assumes 2.6 volt draw each) – four on each side
- 2 – Blue LED's (assumes 4.0 volts each) 1 on each side
- 1 – of something to mount the LED's in.. Plastic, Lexan, Wood, Composite, Cork; get creative and you can use virtually anything that will hold the LED's and stick with double side foam tape!
It needs to be about ½ inch thick, 1 ¼ inch wide, and about 6 inches long.
- 1 – Electric Drill with bits (a vise or even a precision drill press would be nice, but not required)
- 1 – Saw to cut whatever you use to mount the LED's in to proper size.
- 1 – Soldering Gun / or Pen (used to solder the LED leads to each other – in series)
- 1 – Roll of Black Electrical Tape

- 1 – Small tube of clear silicone sealer
- 1 – Spool of Red and Black 18 – 24 gage wire – about 15 feet or so.
- 2 – Scotch© wire taps
- 20 – small zip tie wraps
- 2 – small foam double sided stick pads.

BEGINNING THE PROJECT

You will first want to cut and form whatever material you decide to mount your led lights in. It can be anything, but does need to be able to withstand the elements and stay fairly rigid. Ideas are limitless. Once you've completed that, measure out in equal distance where you will drill holes on your mounting form to mount the LED's. You will be drilling two holes for each LED placement. The first for the entire width of the LED, only drilling to within 1/8 of an inch of where they will come out. The final 1/8 inch will be drilled with a smaller bit (the size of the LED up to the skirt, to allow the tip of the LED to just barely protrude from the front edge of the mounting piece. If you drill all the way through where the LED just falls through, that's OK, because you can seal it with the silicone to hold it in place. (from the back).



Raw Material



Lexan cut to 1 x 6 x 1/2



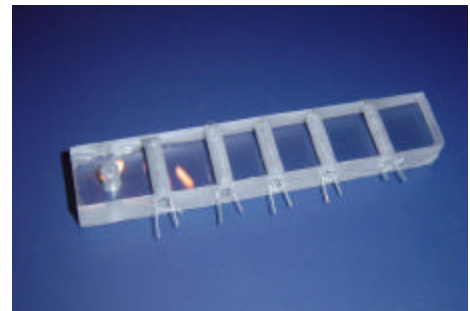
2 drills for mounting LED's



Drill Pressed for mounting



LED ready to go in holes



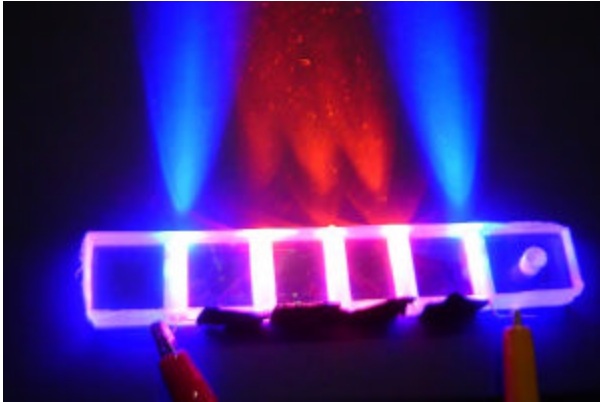
LEDs in holes (note long/short)

Once the holes and countersunk holes are drilled, place each LED of whatever color you choose into each hole. You only want to allow about 1/4 of an inch of the tip of the LED to protrude. NOTE. Each LED has two leads. One short and one long. One is Positive, the other Negative. When wiring in series, you will want to align them: long to short, long to short, long to short, etc until you have used your math to come up with the LED's voltage demands when wired in series - that do not exceed a total of 14-15 volts or so. Certainly you need enough LED's to equal 11 or 12 volts, but nothing lower or they could blow or burn out. In other words, say you are using a Blue LED that requires 4.0 volts. This means you can connect 3 blues in series for a total of 12 volts or 4 in series for 16 volts. 4 will be dimmer than 3, but less than 3 is pushing the limit of what each LED can handle before it pops or quits working. Each LED color is assigned a working voltage that has some tolerance –

say 15% either way for voltage requirements. Also a resistor could be used to more finely tune the current to each LED. (Suggest you study-up on LED's from another source to learn about current and LED, series, parallel, resistors, or other types of useful information.)

MOUNTING AND CONNECTING THE LED's

Now that you have two sets each (one for the right side and one for the left), it is time to start wiring them together. In this particular scenario I used 4 Red LED's (requiring 2.6 volts each) and 1 Blue LED (requiring 4.0 volts) for a total current demand of 14.4 volts (close enough to the output current of the alternator when the engine is running). They are a little dimmer because they don't match 13.2 volts usually put out by the alternator, but this is close enough. (w/in 10% range)

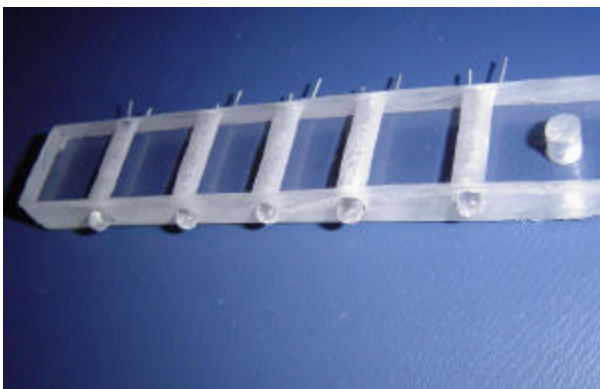


Testing LEDs for polarity and alignment



Shows LED's lit and almost ready to mount

Anyway, go ahead and push the LED's into the mounting bar and position the LED's wire so they are + to -, + to -, + to -, etc. Simply fold the lead over to where they touch and heat with soldering iron to just drop a touch of solder on them. Then at each end, one lead will be the positive (+) and one (-). It doesn't matter which is which as they will only light one way. (+ to -, but not - to +) If no light the first time, switch the wires at each end. Solder a 8 to 10 inch section of wire (18 to 22 gage wire) one red; one black to each of the end LED leads. Once all are connected and working, use a dab of silicone to put in the rear of the holes where the LED's go in to seal them in the holes and spread some along the back side where all the LED leads are soldered to isolate each lead from coming into contact with the other. Allow an hour or so to cure. (you can start the car wiring while waiting for the silicone to set up)



A look at the front where LED's protrude



Hard to see but wires bent ready to solder

Determine which end will be facing 'up' when they are installed in the door gills. Use some black tape, or duct tape, or whatever to stick across the back edge where all the wire connections are made, Use several layers so they don't come off.

You are now virtually done with the part of the project except for connecting them and sticking them (using double side - sticky foam pads) where you want them on the inside of the gills, door side is where they will stick.



Foam Double Sided Tape in position



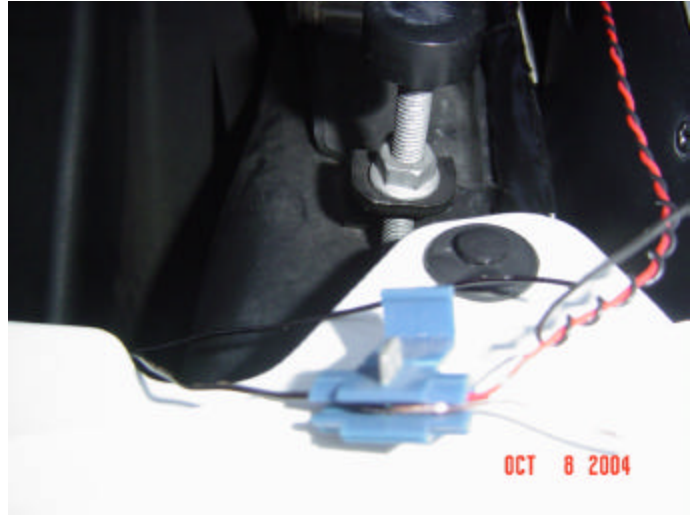
View of LED's mounted inside cove/gill

ELECTRICAL CONNECTION

This is pretty much up to you and how you want to do it. I found it extremely difficult to find a place to run a wire through the firewall for a separate switch, so I chose another route. I simply tapped into the fog light wire for my current to power the LED's. These fog lights wires are fairly difficult to get to (but far easier than any other nearby switched source). Raise the headlights so you have some room to get your hand down to the connector on the left side (driver side) fog light. Pull the connector off the fog light, work the wire back under the rail, then pull it up where you can get to it a little easier. It is wrapped in black tape around some split loom tubing. Go ahead and un-do or cut the tape to expose the two wires inside the split loom tubing. Come back a couple of inches and use an in-line Scotch© tap connector to tap into each of the two wires – one for the + side, the other for the – side. (I used about 15 feet of black and red 18 gage wire for this part) Insert your wire that will power the LED's then squeeze the connector together with pliers. Fold the cap protector over and you're done. Repeat for the other wire. Use some black electrical tape to wrap things back up, reconnect the wire to the fog lamp. ****CAUTION**** make sure the Fog lights are NOT on and that the other ends of your black and red leads for the LED's is taped on the ends to prevent a shor



Photo trying to show fog light connection



Sample Photo showing a Scotch Connector to power LED wires

WIRE ROUTING AND CONNECTING TO LED BLOCKS

From this point on, just use some common sense. You should have about 15 feet or so of wire now coming from the fog light you just tapped into that needs to get routed around the engine compartment to then connect each sides of the car to the LED. Just route the wire along an adjoining wire bundle or rubber hose and use Zip tie wraps about every 6 to 8 inches and try to keep it concealed as best you can. When you get to the Left side – by the brake reservoir, measure out about a foot or so, temporarily tie that off, then toss the end of the wire over to the right side of the car just behind the battery. Allow about a foot or so of extra to make connections. Now going backwards, so to speak, use zip tie wraps and secure the red/black wire to the hood release cable until you have run back over to the left side and the brake fluid reservoir.



Passenger side where wire goes into gill/cove area



Showing Zip ties from passenger to driver side

I used a coat hangar wire to use as a fische to find how to get the wire up though the gill / wheel well into the engine compartment without drilling any holes! Keep at it and you will finally see, feel or both where the wire is coming through then tape your red/black wire on the fische and pull back through. Do your final connection of the LED block to the red/black power wires– TEST to make sure they light up (if not - reverse connection) tape it up and secure a small zip tie wrap around the tape (so it will not come loose from wind or other elements). Do this on BOTH sides of the car, confirm all lights are lit. They go on and off by using the fog light switch, then you are ready to start finalizing the install and clean up some loose ends.

FINALIZING THE INSTALL

By now, you should have both LED light blocks working and have only to make final placement of the LED's lights block they are in and attach to the vehicle. Once completed with that, just a matter of cleaning up excess wire and a few final adjustments.

Get the LED block and use a 1x1 inch square of double sided sticky foam pads and remove the covering from one side. Stick that securely to the LED block at the top. Likewise for the bottom. Reach in with your hand inside the gill and sort of get a feel for where you want to stick the lights and what angle, how far back and all other considerations. Get a clean rag with window cleaner or a small rag with lacquer thinner on it and reach inside the gill and rub the area down where it is nice and clean. Follow that by another rag of just water or rubbing alcohol. Do this on both sides of the car. When you are confident the inside surface is clean and DRY, remove the plastic film from the other side of the foam stick pad, both upper and lower, then hold in your hand in such a way that the sticky pad doesn't come in contact with the inside of the door panel until you are ready to press it into place. Once stuck, it will very difficult to move and it will loose about one-half of it's sticking ability if moved once in contact. When you are ready, push the sticky pad on the LED block on the inside door panel to get a good adhesive bond. As you are pressing on fiberglass, it will bow, so use your other hand as a backing plate and push hard for a couple of seconds. Do that on both sides, and you are now DONE with your project.



A second look at the LED's prior to sticking them in place



Photo showing LED's final position

You will want to pull up slack from the wire inside the wheel well / door cove into the engine compartment then bundle any excess wire and secure out of sight with a zip tie wrap. When the job is complete, you should be

able to open the hood and not see a glob of red/black wires anywhere. If you really wanted to walk-the-dog, so to speak, you could buy some ¼ inch black split loom tubing and put your wire from the fog light to each side of the car and it would be virtually undetectable that anything had ever been done. (you also may want to consider adding an in-line fuse somewhere along the way. While you are already protected by virtue of the same fuse that works the fog lamps, it would not hurt to put an in-line ½ amp fuse on the red/black wires, just in case something shorted)

YOU ARE NOW DONE WITH THE PROJECT! Final details and check the system to see it operate

Upon completion, turn on your parking lights, and make sure the fog light switch inside the car is illuminated. Now, you should see some AWESOME accent lighting coming of the gill slits on each door of your Corvette. Sit back a moment, enjoy the view, then wait till dark, head out cruising around, and guaranteed, within 10 minutes, several people will make note of your addition, smile, or even ask how you did it! Just tell um.

LED's DUDE, the latest in ultra-cool lighting!



Good Luck on YOUR project

ENJOY -- If you have any questions, please Email me at Diy-Guy@Sbcglobal.net

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