



Tracks

August 1, 2017



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July 4, 2017

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By, Mark Rocheleau

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Smileage Section

Sometimes a smile can take you further than a tank of gas...



Thanks for the submission Mark StGermain!!!

4th of July Parade

July 4, 2017

Photos stolen from Facebook



Safety Modification

Blinking LED or incandescent side marker lights

Written by, Mark Rocheleau

Background

I'm not one of those guys who is likely to re-gear his Jeep. Sure, I'll do the easier things like adding skid plates, changing shocks or similarly non-invasive projects. I'm more of a wires guy. So when I decided to replace my fenders for a brand that did not include side marker lights, I took the opportunity to upgrade to LED marker lights. While doing this I learned something I hadn't realized, the Jeep JK front marker lights do not blink when the turn signals are activated! What? I thought all cars did that! Seriously, they don't. Since the JK's front directional lights are only visible from the front of the vehicle, it's unlikely that someone approaching from the side (as in when you are waiting at an intersection) would be able to see your directional and know your intentions. Most vehicles do this for this very reason. What's even more surprising is that for the cost of a couple of inches of wiring, Chrysler could have easily wired them to do this at the factory, but instead said "um, nah." If you're up for a little electrical mod, read on about how to go about making this modification, even if you've upgraded to LED marker lights like me!

Incandescent (Stock) Lighting Modification

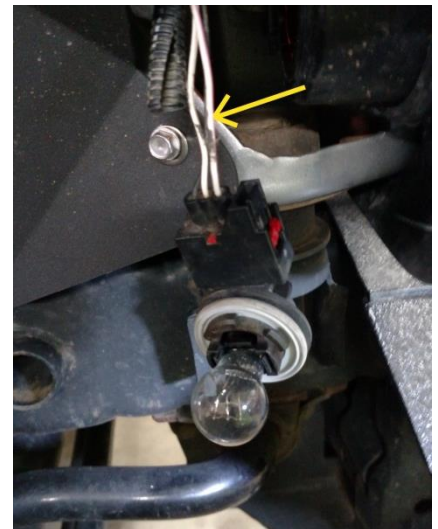
First, let's assume you've got all original equipment (no LED's). If this is the case, you're in luck because the modification is actually pretty easy. This is the modification that Jeep should have done themselves. How does it work? First let's look at how they're wired in the first place. Your marker lights are a 2 wire setup meaning one positive and one negative wire. When you turn them on, charge flows positive to negative through the bulb so it lights up.¹ Quite simple. Elegant even. But lazy.

Now let's look at how your front blinker light works. That is a 3 wire system. Two positives and one negative. The first positive is for your parking lights and the second is for the blinker light. The bulb has two filaments inside allowing them to be activated individually or together. It essentially acts as two lights within the same bulb.

So how do you get the side marker light to blink? Simply take the negative wire coming from the side marker light (black) and splice it into the positive wire that goes to your front blinker light. I'll save you a little trouble and tell you it's the white wire furthest from the black ground wire on the bulb socket. (You're welcome.)

The Explanation

How does that work you ask? When you turn on your headlights and charge flows to the marker light, it finds negative (ground) through the filament in the front turn signal light. The front turn signal light does not illuminate due to the relative wattage of the bulbs. The side marker light is low wattage and does not create enough current to illuminate the high wattage front turn signal filament, instead it acts as a low resistance path to ground. If you turn off your marker lights and activate your turn signal, current flows backwards through the side marker light as well as



through the front turn signal illuminating both bulbs and they both blink in unison. Incandescent bulbs do not have polarity, i.e. they do not care which direction current flows and will work either way.

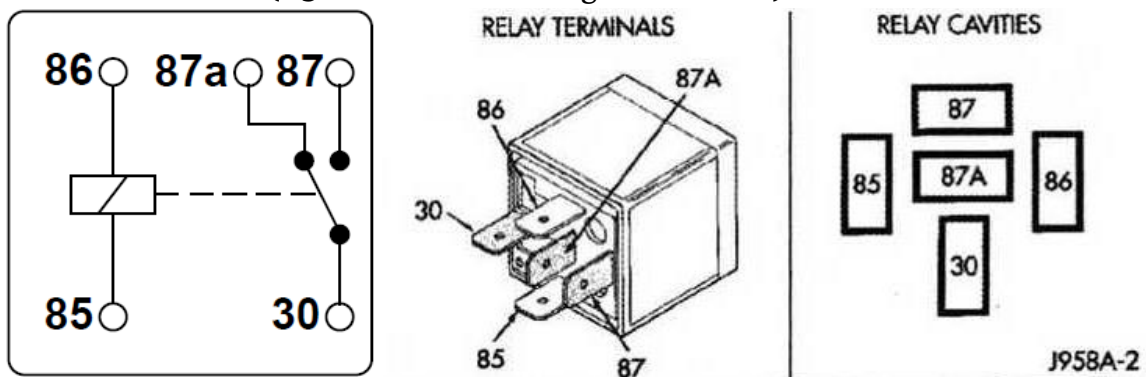
What if you have your headlights on when you activate your turn signal? If you just asked yourself that question, congratulations, you're keeping up! Actually it's quite simple, when there's 12v potential coming from one direction and 12v potential coming from the other direction the net voltage is 0v and the light doesn't illuminate! Your front directional light still illuminates because it has its own ground for an unobstructed circuit. As a result, turning on your marker light and activating your turn signal will cause the two lights to blink in an alternating pattern rather than in sync because when the front turn signal is on AND the marker light is on, no current will pass through the marker light and it will be off. When the blinker cycles to an off state, current will flow through the marker light in a normal direction turning it on for the duration of the blinker cycle. [View a video of this in action here.](#)

LED Marker Lights

As I stated in the introduction, I recently upgraded my fenders to a brand that did not have side marker lights. To stay legal I installed some small [12v LED amber marker lights](#) right into the body of the quarter panel. This changes everything! LED's are a bit more tricky than standard incandescent bulbs due to the nature of an LED. If you're not sure exactly what an LED is, it is a "light emitting diode." A diode is a one-way valve for electricity (like a check valve for water flow) that allows current to flow in one direction, but not the other. An LED is simply a diode that emits light while doing what a standard diode does. If you understand that, then you realize that our previous instructions above will not work as current cannot flow in both directions through our LED light. To make this work, you will need two relay switches (one for each side of the vehicle.)

What's a relay?

A relay is basically an electromagnet switch that is activated when low current is passed through two of its contacts (85 and 86 in the diagrams below).



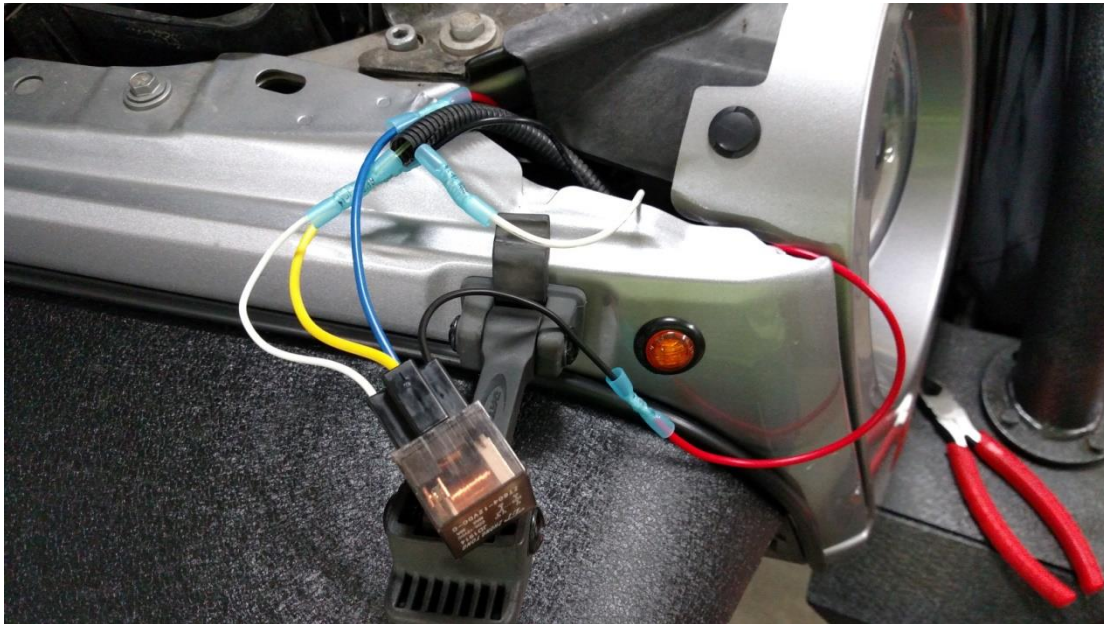
Notice how 30 is connected to 87A in the image on the left. This is its position when no current flows through 85-86. It switches to 87 when current flows through 85-86.

Making it work

If you treat the coil (85-86) like you did the incandescent marker light in the first section, this will allow you to use the switch side to either supply current to the LED or not. By connecting contact 30 to 12v power (aka your battery, through a fuse) and connecting contact 87 to the positive lead of your LED (and grounding your negative LED lead), you have duplicated the effect of the original plan! The relay will activate regardless of which direction current flows through the 85-86 coil, and when there is 12v potential coming from both sides, no current will flow, just like before.

Pinout

Contact	Socket Color (may vary)	Connect to
30	Blue	+12v battery terminal (use small in-line fuse)
87	Yellow	Positive lead on side marker light
87A	Red	Not used
85	White	Marker light source (+12v)
86	Black	Front turn signal tap



A work in progress. I like to use [shrink tube butt connectors](#). (I haven't shrunk them yet here.)

Some tips

1. When splicing into the turn signal, you're going to find there's not much wiring to be had. You could remove the front grill in order to get a better reach, but I was too lazy. You could also use splice connectors, but I personally hate them as I find they're not very reliable. Instead I simply cut the wire and then splice them together using butt connectors. Due to the limited amount of wiring available I did not have enough slack to reinstall the driver's side bulb and had to recut and add a section of wire to make up the difference. Oops. You've been forewarned. Do yourself a favor and just remove the grill (pop up those little black fasteners, shown at right, and pull them out.)
2. Try not to touch the bulb, it can shorten its life span. Remove it to do the work (grip it with a clean cloth or something.)
3. For the LED mod to work, you must keep your parking/blinker lights incandescent. This is key to making the modification work and also keeps your Jeep from blinking really fast because it thinks the turn signal lamp is blown.
4. Use an [in-line fuse](#) on your power source. I used a single [10A fuse](#) for both marker lights, but I could have gone smaller if I had it since I'm only powering two LED lamps. In any case, don't just wire them directly to your battery – always use a fuse!
5. Since I did not use 87A, I simply pulled the red wire right out of the relay socket. To do that, remove the relay module and then give the wire a yank. If it doesn't come out, remove the module first!
6. You do not need to add any resistance to 85 or 86. There is sufficient resistance in the coil to prevent shorting.



7. Seal all of your connections. Add a little dielectric grease (non-conductive grease) to the base of the contacts on the socket and wrap the socket/module combination with tape. Do your best to seal it up. Keeping moisture out will prevent corrosion.

That's it! It's fairly simple to do and will improve the safety of your vehicle. I only paid \$12 for [5 relays](#) on Amazon and \$3 for a [5-pack of fuse holders](#). Total cost, less than \$5 including wire and butt connectors. If you don't have LED's, it's practically free! Happy mod-ing!

¹ Okay, smarty-pants, we all know electrons flow negative to positive. I'm using "conventional current" here!



I hope you enjoyed this issue of Tracks. More importantly, I hope you're looking forward to the next issue.

Thanks,
Shannon

Please email article submissions and photos (Drobox links work, too) to: RedAnimalTJ@yahoo.com

