Wiring LED headlights in a "Ground" switched system.

(This is ONLY for the Low & High Beams, other lighting such as turn signals and daytime driving lights are another process.)

New LED headlights are a great upgrade to the old sealed beam lights. Because the LED lights are controlled by a circuit board, they will not work with a Negative (Ground) switched system. Because GEN1 Raider's and Montero's are a negative (ground) switched lighting circuit, a relay is required to get LED lights to work properly. Most Foreign vehicles tend to be wired in this fashion, so you could use these directions to install LED lights in any of them. You just have to figure out what the vehicles wiring arrangement is. This procedure may sound daunting but was actually very simple once I figured it out.

Things to be purchased:

- 7" Round LED Headlights
- 5 post relay like the one in the picture.
- 5 post relay PLUG.
- Relay coordinates to Relay Plug as:
    - (30) Blue wire – *12v HOT in*
    - (85) White wire – *12v GRD in*
    - (86) Black wire – *12v HOT in*
    - (87) Yellow wire – *DIM 12v out*
    - (87a) Red wire – *BRIGHT 12v out*

You need the following tools and materials:

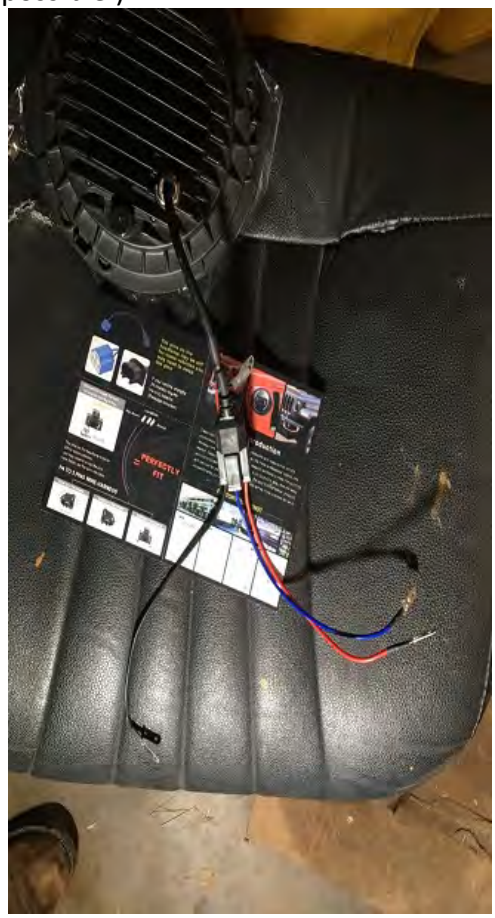
- Wire Stripping Plyers
- Wire Crimping Plyers
- Wire Crimps and Splices (various sizes and types)
- Heat Shrink Tubing (various sizes)
- Phillips Screwdriver
- Self-Tapping Screws (2) and a way to install them
- Electrical Tape
- Voltmeter
- GOOD LIGHTING

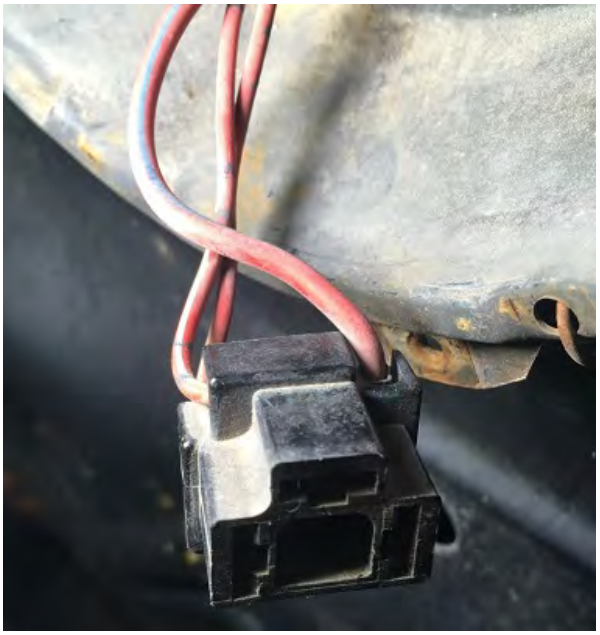
AND NOW LETS BEGIN:

First start off by removing the “Headlight and Turn Signal” bezel. There are 3 total screws per side, one shared with the grill and the other two are behind the turn signal.

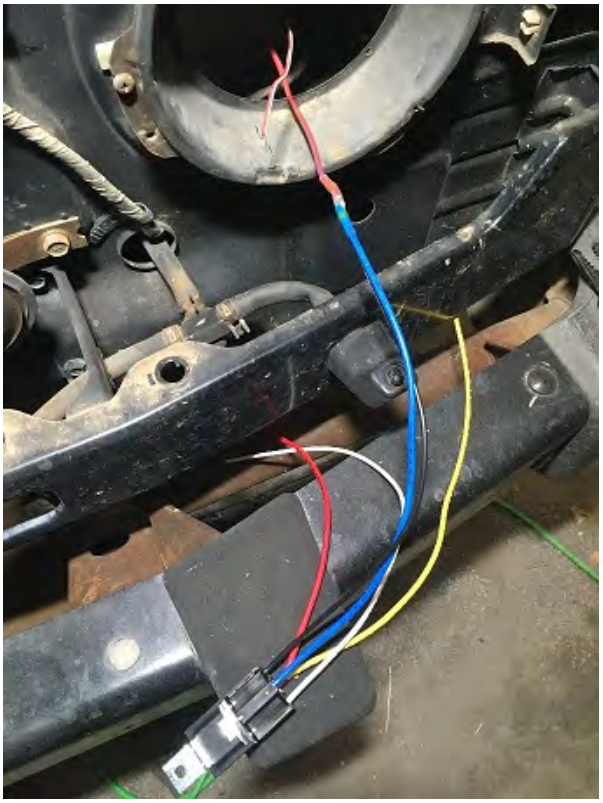
Then remove the headlight retaining ring, 3 smaller Philips head around each ring. DO not remove the adjustment screws or you’ll have to fight all that to get the headlights aligned later. Disconnect 3-prong plug from back of headlight. It should now look like this picture.

My new LED lights came with adaptor plugs that I used. You could cut the headlight plug wires approximately 2“from the existing plug if you had to but this will make it more difficult to connect all the wires back together. (I like easy, so I cut the wires as close to the plug as possible.)



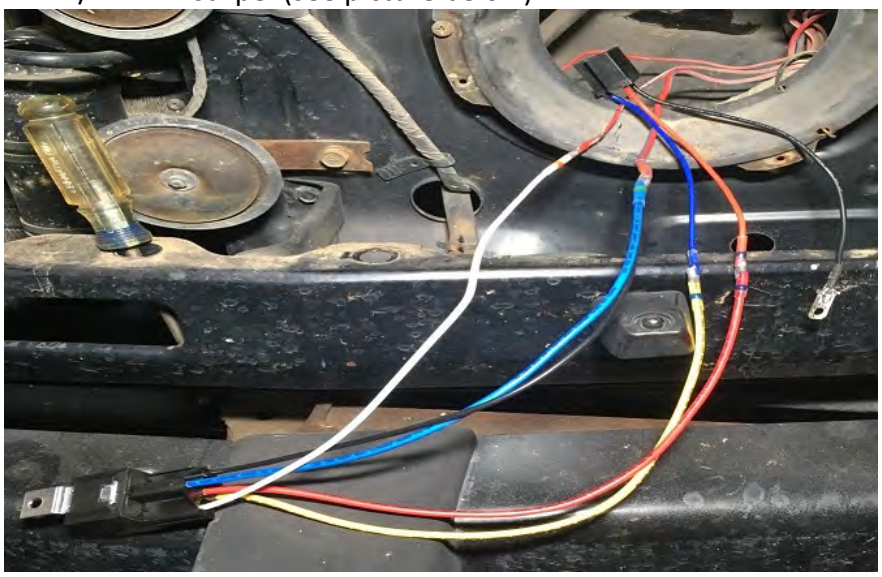


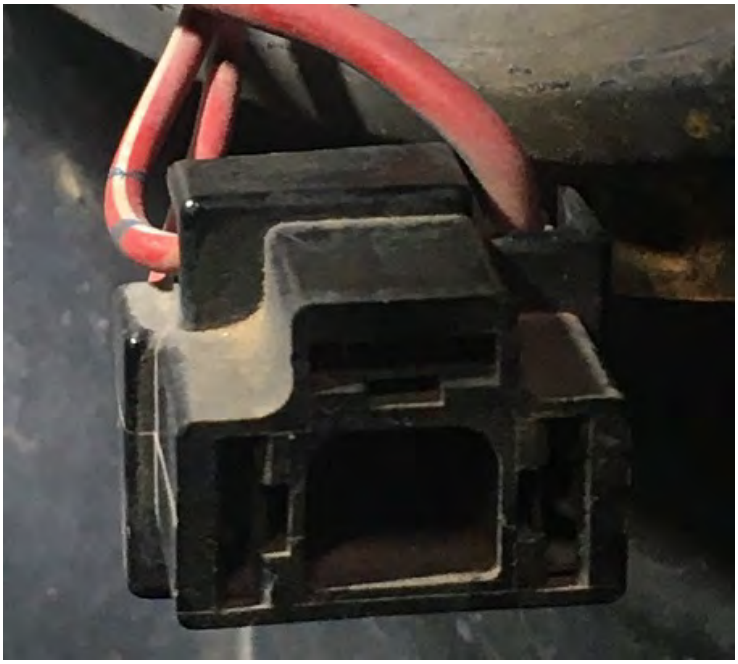
Next, Connect the BLUE and BLACK wires on the Relay to the RED w/BLUE stripe wire from the removed headlight plug. This puts power to the relay only when the headlight switch is turned on. Heat shrink all connections.



Next, connect the Relays WHITE wire to the removed plugs RED w/ WHITE stripe wire. This is what is now activating the coil in the Relay, turning on the HIGH BEAMS. If the Relay goes bad, the DIMS will still work, so you're not left in a pinch without any headlights.

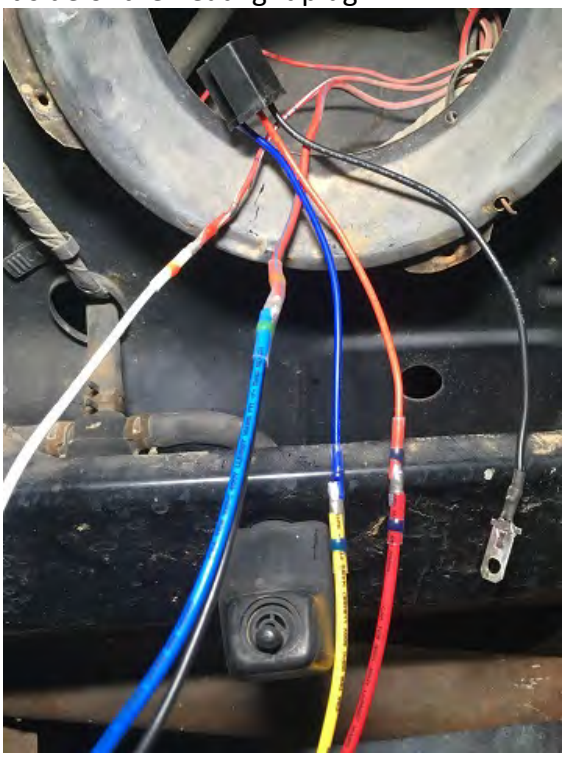
Next, connect the Relays YELLOW wire to the wire connected to the headlight plugs upper center position. Mine happen to be a BLUE wire but if you were using the removed plug it would be the RED w/ WHITE stripe. (see picture below)

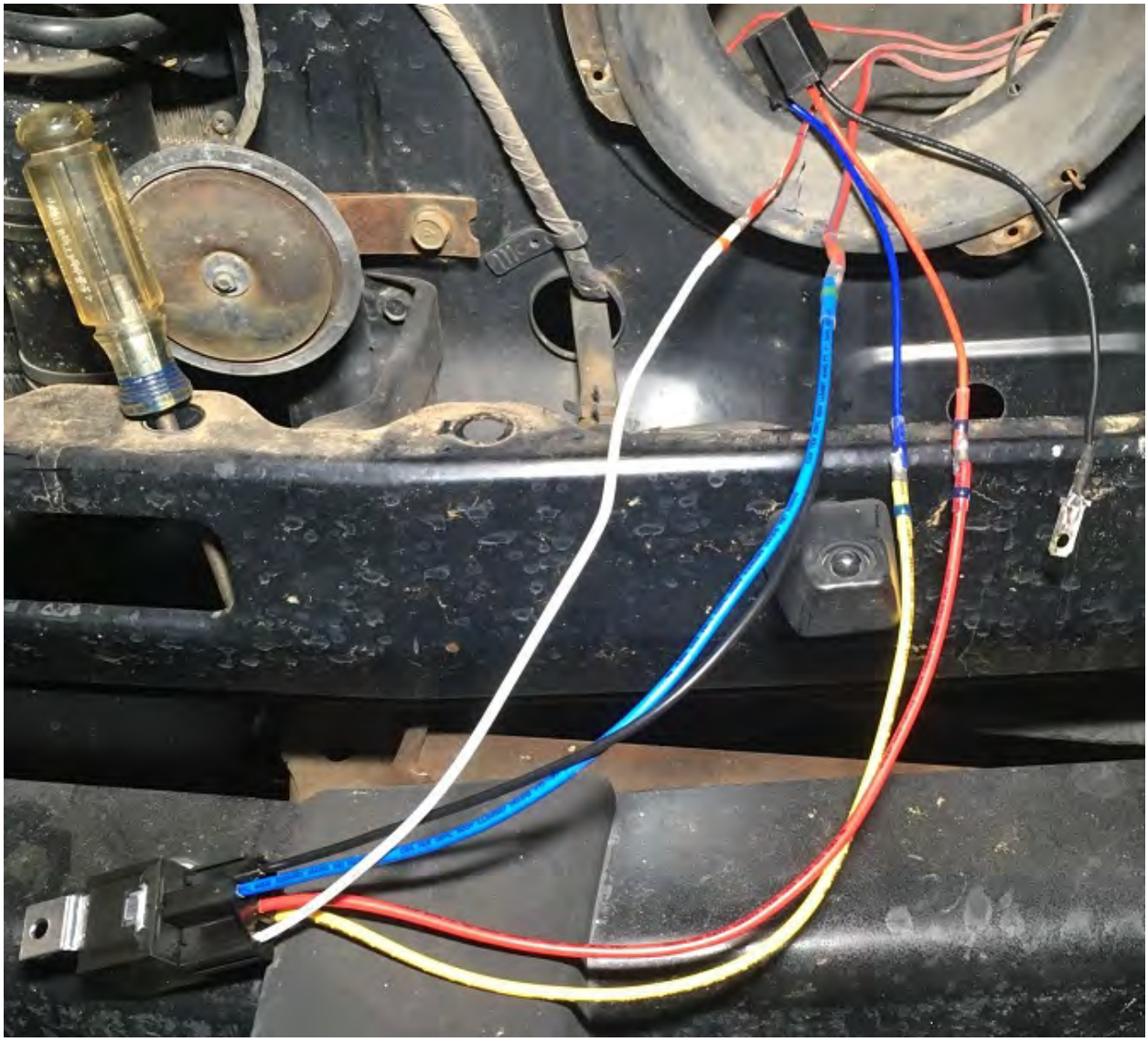




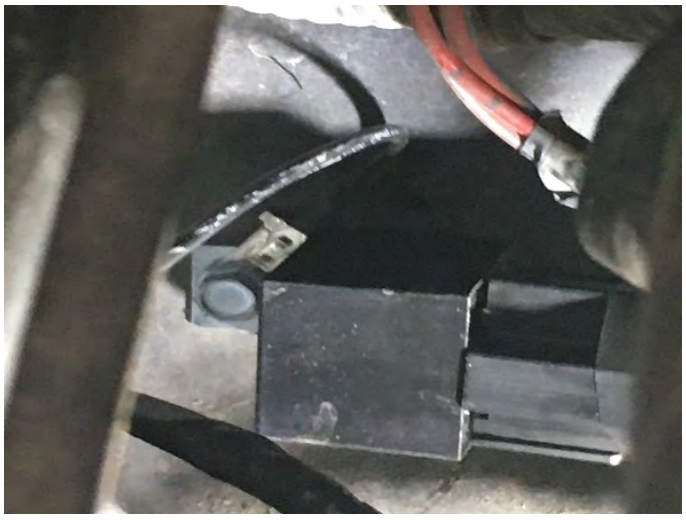
And the RED wire from the Relay to the wire connected to the Lower Left position on the Headlight plug. Mine happen to be a RED wire but if you are using the removed plug, it would also be the SOLID RED wire. (see picture above) This will configure the wiring into a “Standard H4” plug arrangement, which is what most after-market LED lights will come wired as.

Now all the Relay wires are attached to another wire and the only wire that isn’t connected is the wire on the Lower Right side of the headlight plug.





I connected this wire to the firewall with a self-tapping screw and also used the screw to mount the Relay itself.



Now that all the wires are connected, plug in the light and check that it works properly compared to your “High Beam” light on the dash and that both “Brights” and “Dims” work properly when you turn on the lights and switch between them.

If they happen to be reversed and the lights are on “Dim” when the “High Beam” indicator light is on, simply swap the YELLOW and RED relay wires with their corresponding wires.

If everything works like it’s supposed to, you can start bundling and taping all your wires so they are properly protected. Coil them up and put them in a secure location where they won’t move or zip tie them to another wire bundle behind the headlight.

Repeat the same procedure for the other headlight and re-assemble the bezels and grill.

DON”T FORGET TO PROPERLY ALIGN YOUR HEADLIGHTS, nothing is worse than meeting someone on the roadway with LED headlights that aren’t properly aligned.

So here is how all the wires should be attached to each other:

- Relay BLUE and BLACK to existing headlight plug RED w/ BLUE stripe.
- Relay WHITE to existing headlight plug RED w/ WHITE stripe.
- Relay YELLOW to New Headlight Plug BLUE (upper center position)
- Relay RED to New Headlight Plug RED (lower left position)
- New Headlight Plug BLACK (lower right position) to firewall w/ screw

You should be able to pick up these relays at any electronic stores for $10-$15 apiece. If you don’t have access to a store with them and you can’t seem to find them on the internet, just let me know and I can give you a phone number to a local store here that will ship them out to you.

Good Luck and I hope things get BRIGHTER in your future. (just couldn’t resist the pun)