INSTALLATION INSTRUCTIONS

WESTERN STAR TAIL / TURN / BRAKE LED LIGHT KIT

IMPORTANT! No two installation scenarios are the same. Accent lighting is highly subjective. Not everyone shares the same lighting or installation quality goals. Some folks are OK with twisting wires together, others want to solder and heat shrink them. Some folks are OK with running wires where they may be seen or unprotected to save money/time, others want a tidy, clean install so they wrap plastic split-loom around all exposed cables. Some folks are OK with mounting their LED strips to whatever surface they can find, others want to take the time necessary to build out appropriate mounting surfaces to provide the best lighting effect on their vehicle and maximize the longevity of their lighting system. The point is it's not possible to provide all the materials necessary for all installation scenarios on all types of vehicles to meet everyone's quality goals. Our light kits provide the essential components needed for a high-quality, functioning lighting system. Installation of our light kit to your specific vehicle will however likely require additional items to make it look, fit and work the way you want. This is particularly the case with electrical wiring, switching functionality and mounting surfaces for the LED strips. We have created a list of additional items you may need. Here's the link: **https://www.boogeylights.com/other-items-you-might-need/** . While we offer them for sale you can also find these items locally. We urge you to review this information before starting your install.

BENCH TEST YOUR LIGHTING COMPONENTS FIRST

We know this takes a few extra minutes, but we STRONGLY suggest you bench test your lights AND your controller / switches on a table before doing anything further. While we test every light strip and controller before shipping, bench testing your lights will eliminate the possibility of any problems with the lights or controller before mounting. It also lets you know everything is working properly. Also, the process of bench testing gives you an opportunity to understand the wiring system without interference from other wires, connectors and cables. You can use any 12vdc battery to do this (e.g. car battery, motorcycle battery, lawn tractor battery or 12vdc power supply). Bench testing takes an extra 10 or 15 minutes. It's simple to do and can potentially save you hours of time and frustration down the road.

Did we mention the importance of bench testing every LED strip and controller first?

THIS IS A GUIDE. NOT A HOW-TO. It's simply not possible to provide detailed instructions for all installation scenarios. Far too many variables. The information in this document is intended to be used as a guide. It is not a detailed step-by-step how-to installation manual. We do not spell out every single step along the way. We cover the essential steps related to installing this kit. Beyond that we assume the installer has the skills, knowledge and tools necessary to do the work using the information we provide as a guide. You may need to vary your installation and/or make adjustments based on your vehicle. This is particularly the case with led strip mounting locations, electrical wire routing, electrical connections, electrical load sizing and switching. If you're unsure about how to do the installation – particularly the electrical components – we urge you to seek assistance from someone who has those skills.

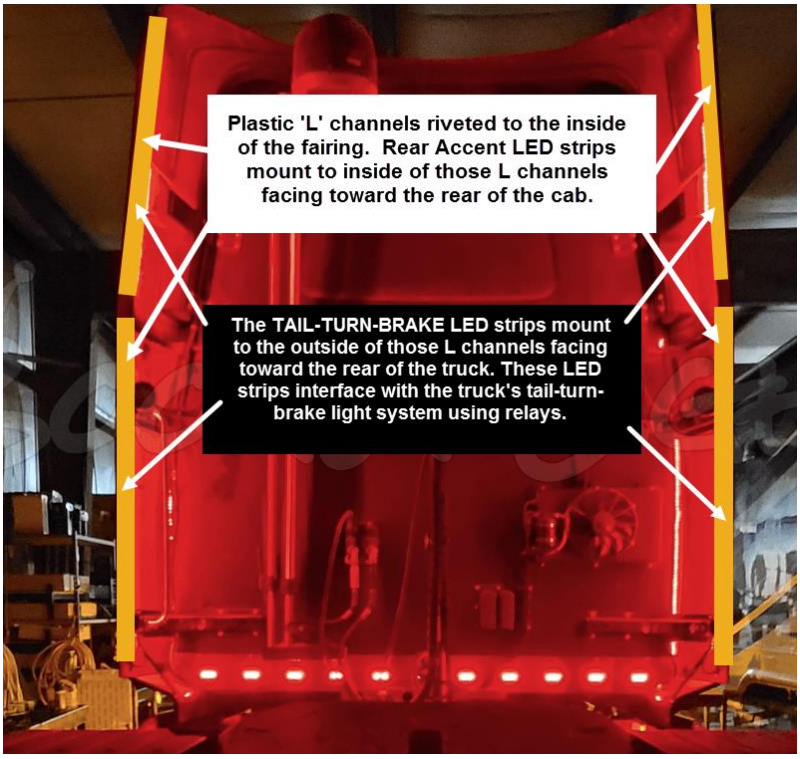
YOU MUST HAVE AN UNDERSTANDING OF 12V POWER. An essential skill with installation of any Boogey Lights LED products is knowing how to correctly wire the product to a 12vdc circuit. This includes understanding the importance of having a properly sized fuse at the power source, polarity, how to properly seal an electrical connection, using properly sized wire gauge for the load, measuring voltage and measuring the additional amperage draw you're adding. If you are uncertain or unfamiliar with any of these concepts, we urge you to ask someone who has the knowledge to assist you. Electricity is unforgiving.

INSTALLATION TIME. We suggest allocating 4 to 5 hours to properly install this light kit.

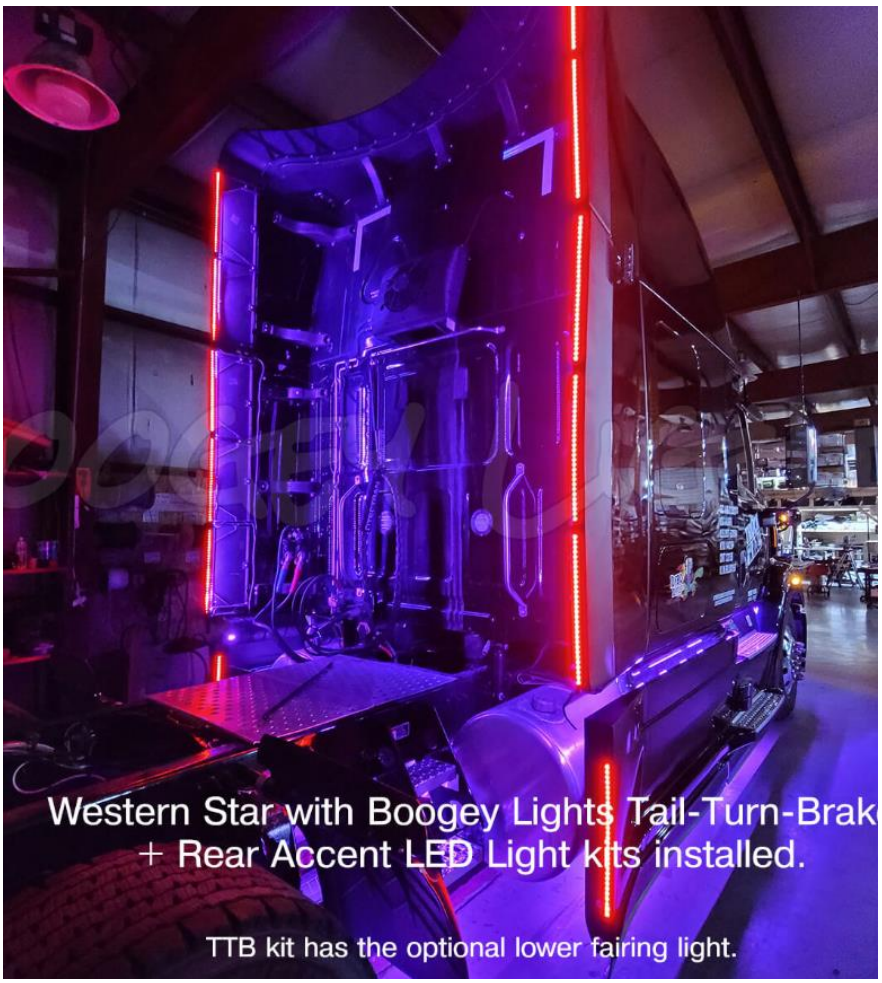
TOOLS & SUPPLIES YOU WILL LIKELY NEED. Drill, rivet gun, wire cutters, wire strippers, crimping tool, electrical tape, rubbing alcohol, shop rags, extra zip ties.

MOUNTING SURFACE. Both our **Rear Facing Accent** Light Kit and **Tail-Turn-Brake** light kit require the LED strip mounting surface to be built out using the included plastic L CHANNEL. There are four 72" plastic L Channels included with this kit. They are used to build out the vertical mounting surfaces where the LED strips mount. You will need to cut these L Channels to fit your truck. We include additional photos and diagrams on the following pages as reference.

Our Tail-Turn-Brake light kits use our 30 LED Heavy Duty LED strips (each are about 22" long). There are 5 on each side as shown in this photo (if you purchase the optional lower fairing LED strip, there will be 6 on each side). These Heavy Duty LED strips mount to the plastic L channels which are secured to the fairing.

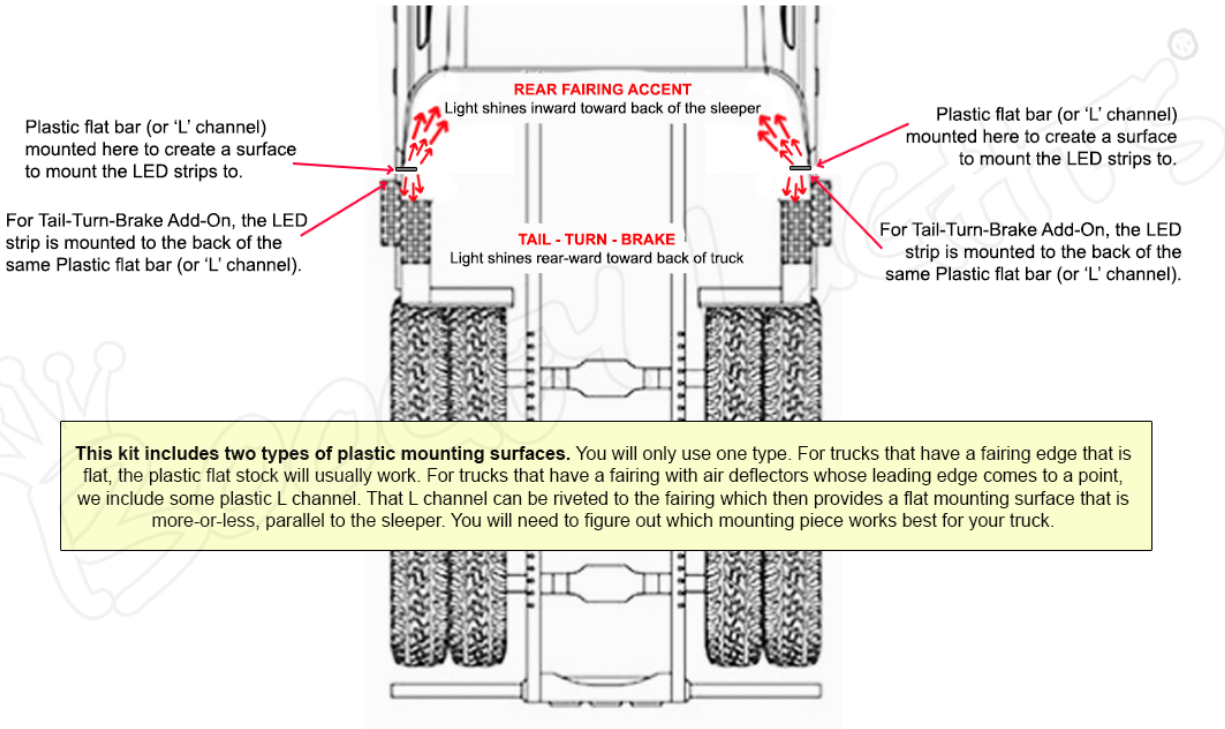

Plastic 'L' channels riveted to the inside of the fairing. Rear Accent LED strips mount to inside of those L channels facing toward the rear of the cab.
The TAIL-TURN-BRAKE LED strips mount to the outside of those L channels facing toward the rear of the truck. These LED strips interface with the truck's tail-turn-brake light system using relays.

Z

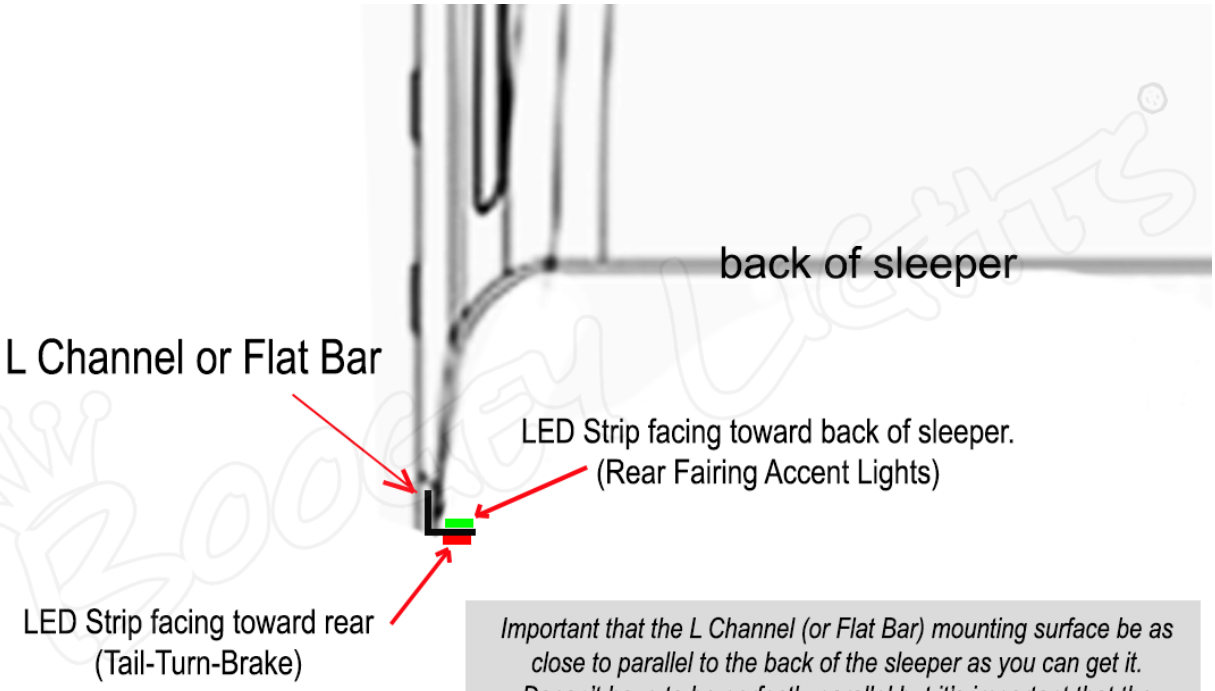

Western Star with Boogey Lights Tail-Turn-Brak
+ Rear Accent LED Light kits installed.
TTB kit has the optional lower fairing light.

TOP VIEW

Rear Fairing Accent / Tail-Turn-Brake Light Kit Mounting



This kit includes two types of plastic mounting surfaces. You will only use one type. For trucks that have a fairing edge that is flat, the plastic flat stock will usually work. For trucks that have a fairing with air deflectors whose leading edge comes to a point, we include some plastic L channel. That L channel can be riveted to the fairing which then provides a flat mounting surface that is more-or-less, parallel to the sleeper. You will need to figure out which mounting piece works best for your truck.



Important that the L Channel (or Flat Bar) mounting surface be as close to parallel to the back of the sleeper as you can get it. Doesn't have to be perfectly parallel but it's important that the LEDs facing inward toward the back of the sleeper not be shining to the sides or rear-ward where drivers around the truck can see the leds directly

TAIL / TURN / BRAKE LIGHT INTEGRATION

There are two wiring diagrams at the end of this guide you'll need to complete the installation. The power leads from these LED strips run down the fairing and from there will connect to the relay housing which we suggest locating immediately behind the cab or similar location where the relay housing can be accessed if needed. A 10 awg battery cable needs to be run to the truck's battery and connected to the 12vdc + power with the included fuse holder. The 12vdc - needs to be connected to the frame.

For integration with the truck's tail-turn-break lights to make the system work, you need access to THREE circuits: the truck's tail light circuit, left turn signal and right turn signal. The truck's brake light uses the same light as the turn signals. Where you pull those circuits from is up to you HOWEVER we prefer to pull them directly from the rear tail light assembly on the rear the truck and then run a feeder cable up to the relay housing where the connections are made. We think it's easier (and cleaner) to do it this way while minimizing the possibility you might interfere with any of the truck's other electrical systems (which is always a concern in these situations). The reality however is that you can also find these wires in the wiring harness that runs on the inside of the frame rails back to the rear tail light assembly. On the frame (aka 'chassis') ground, it's super important to make sure the surface you're connecting to is bare metal. In many cases you'll have grind off the painted surface first. Refer to the RELAY wiring diagram at the end of the guide.

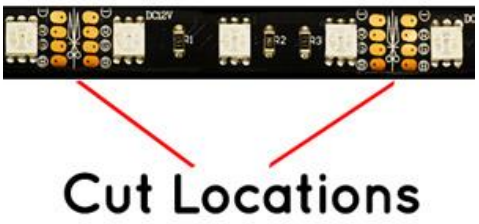
WHAT'S INCLUDED

In addition to the LED light strips and power leads, this kit includes some additional items you'll need. Here's a quick review of those items and why we include them. Some of the photos at the end of this guide reference these items too.

- 18AWG Feeder Cable – 4 Conductor. Use this cable to extend the LED power leads to the relay housing.
- RED - 10awg battery connection cable along with a 25amp fuse holder.
- BLACK – 10 awg ground wire cable with battery lug.
- 3M Adhesion Primer. Used to prep the surface before attaching the LED strips. *Always, always, always* use this adhesion primer with 3M adhesive products if you want the bond to hold.
- Split Wire Loom / ¼". All power leads and the battery extension cables need to be protected from chaffing. Wrap them in this first. See photos.
- Split Wire Loom / ½" . We include the ½" split wire loom to be used when you're connecting multiple power leads together. Helps protect that connection.
- Butyl Tape. We use butyl tape to seal the hole in the storage box where the LED controller is located. We also use it in a few places on this installation to help hold power lead wires in place. Butyl will only work if you apply it to a clean surface so make sure you first clean the surface with rubbing alcohol.
- 8" Zip Ties. We include some zip ties which you'll need to secure the LED power leads to the truck.
- Crimp On Wire Connectors. These are used to secure the wire connectors at the LED Controller as well as making all power lead connectors to the feeder cable. We recommend wrapping each connector after it's crimped with electrical tape to protect it from water intrusion.
- We include three 40A automotive relays with holders and plastic waterproof housing. See wiring diagram at the end of this guide.

NOTE: Every installation varies a little so you may need to purchase additional items (or more of them such as zip ties) for your install.

CUTTING YOUR LEDS- If you need to cut your LED strip you can do so as long as you cut in the proper location – which is every three LEDs as shown in the below photo. Cutting incorrectly could damage your lights and is not covered by the warranty. If you cut the strip, be sure to use the included heat shrink tubing to seal the cut end. You can also use silicone found at your local hardware or RV store. If you do need to cut your LED strip, we strongly suggest doing so BEFORE you mount the strip.



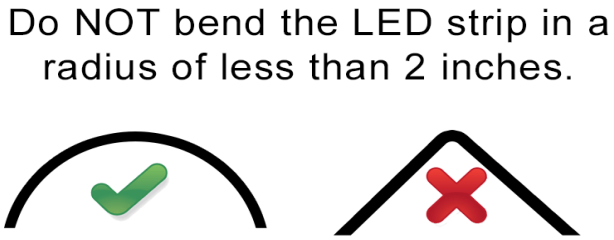
Follow these steps for mounting your LED strips:

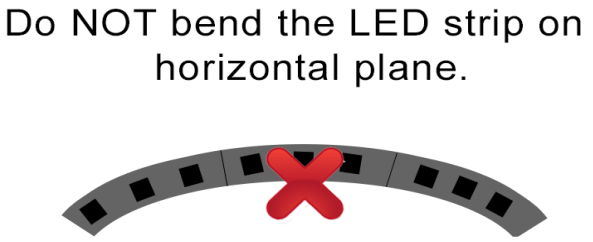
- The area where you are mounting the LEDs has to be clean: free of all dirt, oil or anything that might affect the LED from sticking. You only get one opportunity to mount the LEDs so it's critical the area be prepared properly.

- Use the supplied alcohol pads to clean the area where you are going to mount the LED strip. Be sure to let the alcohol dry completely before proceeding to the next step. (Note: Do not use acetone or similar cleaner).

- Next, use the 3M Adhesion Promoter supplied with your kit to "paint" on the promoter where you are going to mount the LED strip. ***This is an important step. Do not bypass.*** Allow the promoter to dry for 60-90 seconds.

- Peel off the red backing tape that protects the 3M adhesive tape on your LED strip. Be careful not to let the tape touch anything. The 3M backing tape on these LED strips are one-use only. They cannot be reused.

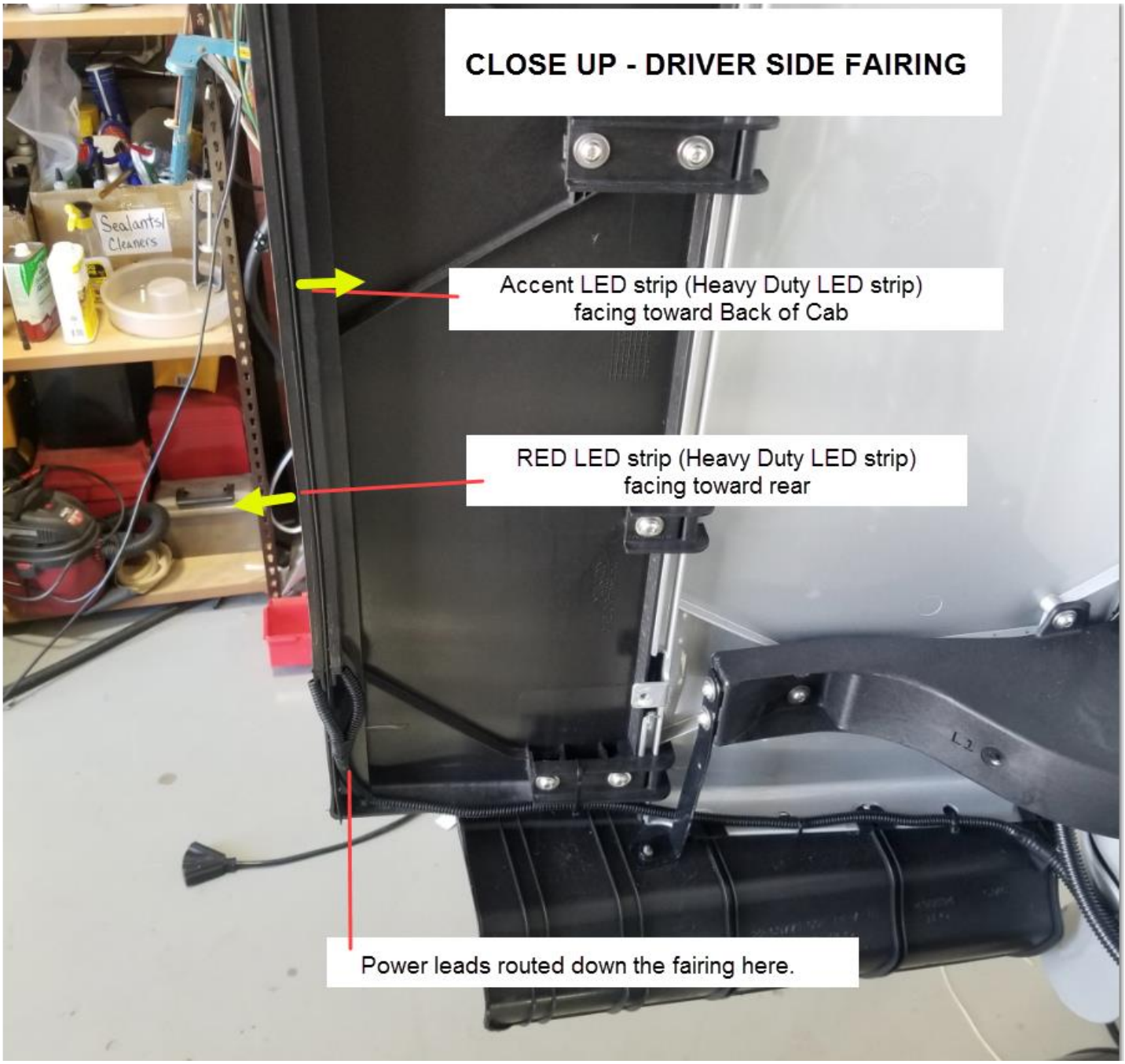




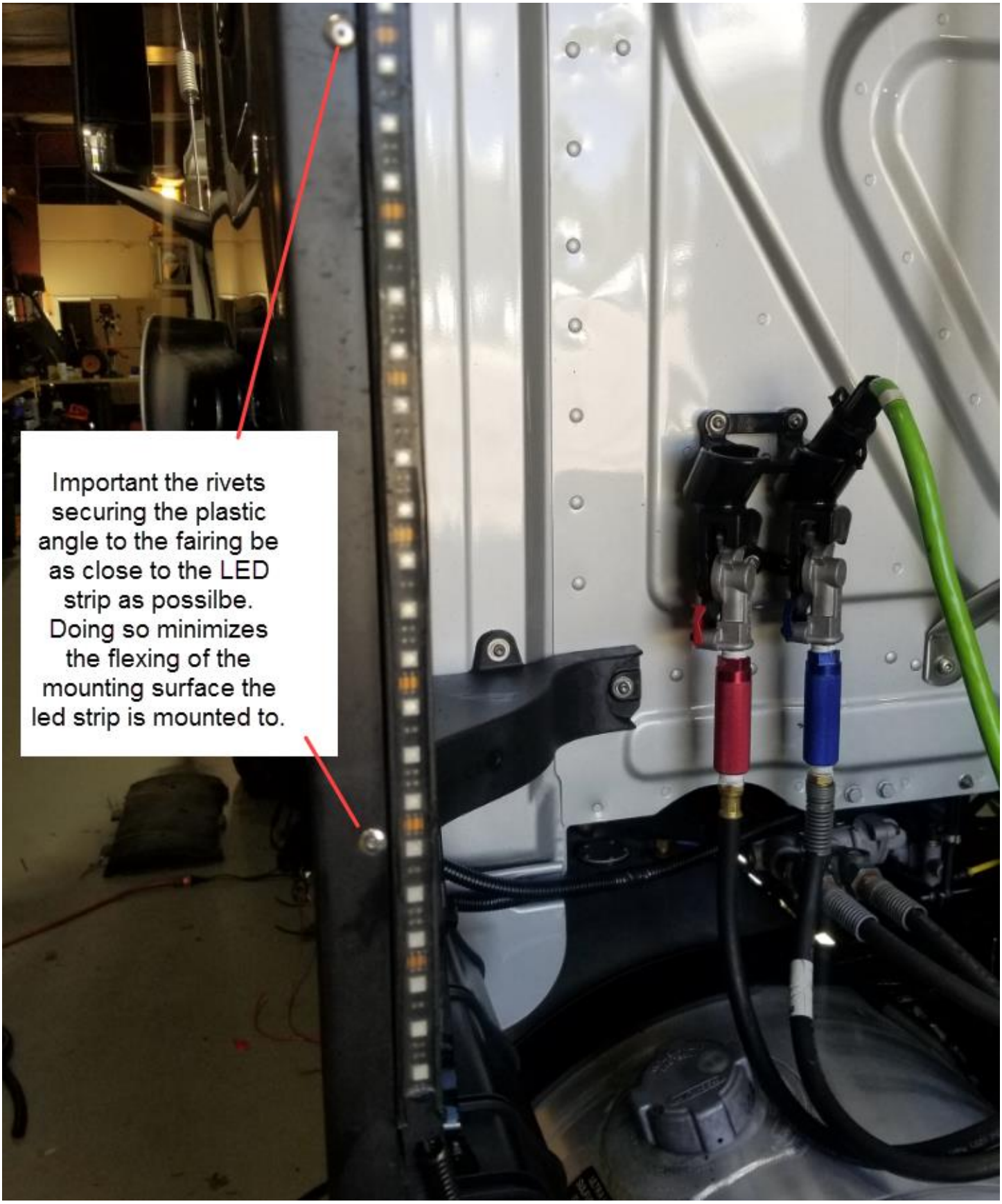
- Carefully push the LED strip to the area you have prepared. You will want to apply only enough pressure to the strip to make sure it is firmly mounted. *You only get one opportunity to do this.* Once the LED strip touches a properly prepared surface that has been promoted, that LED strip will be very difficult to remove. Moreover, if you do remove the LED strip, the strip cannot be used again without adding another layer of 3M adhesive tape to the back. DO NOT press too hard as too much pressure can damage the LEDs and connecting wires in the strip. Also, do not pull, stretch or twist the LED strip. Too much tension on the strip will also damage the LEDs such that some of the LEDs in the strip will not illuminate. The strip must be mounted flat against a single continuous mounting surface, in a straight line. Really important that the ENTIRE STRIP be stuck to the mounting surface and that you NOT attempt to span across multiple mounting surfaces.

INSTALLATION PHOTOS

Here are some photos with comments on the installation we did in building this kit. We've commented on key parts of the installation along the way. NOTE: These photos are of a FREIGHTLINER CASCADIA. The installation process is the same on the WESTERN STAR.




RED heavy duty led strip facing toward the rear.
If your truck doesn't have the fairing extensions, mount the plastic angle to these brackets OR sister in the plastic angle to the fairing itself here..
Heavy Duty LED strip facing toward back of cab.


Important the rivets securing the plastic angle to the fairing be as close to the LED strip as possilbe. Doing so minimizes the flexing of the mounting surface the led strip is mounted to.

TAIL / TURN / BRAKE LIGHT INTEGRATION

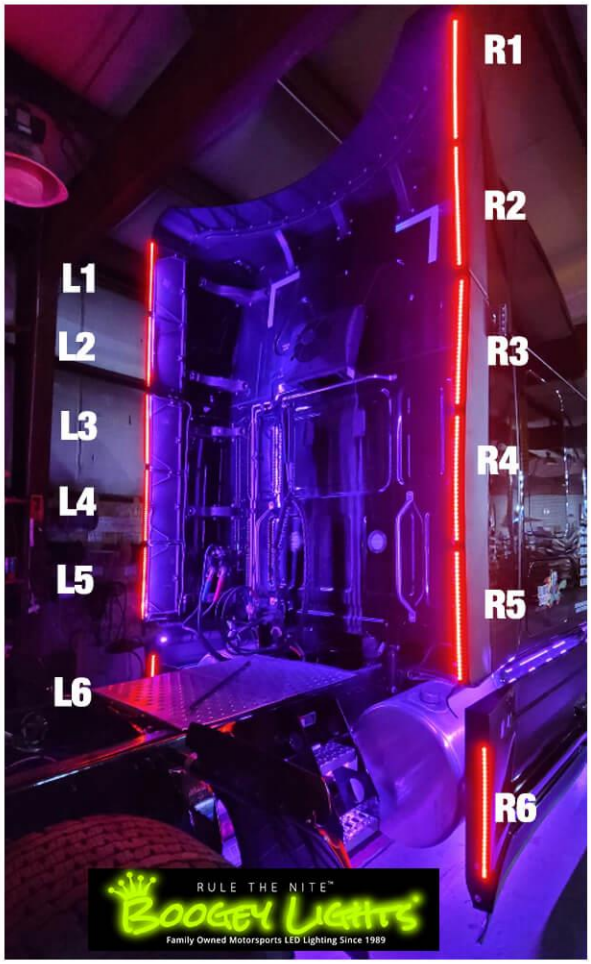
Refer to the following two diagrams which show you how the LED strips and relays need to be wired. NOTE: You must use the RELAYS we provide. Do not attempt to run the Boogey Lights tail/turn/brake light system using the truck's own lighting system power. Doing so will over-load the truck's LCM which will cause all of the lights on the truck to shut down. When that happens, you won't have any lights at all.

TAIL-TURN-BRAKE RELAY WIRING

BOOGEY LIGHTS
LED STRIP
LEFT SIDE power leads coming from L1- Lx

BLACK = chasis ground
BLUE (diode 1) -> RELAY 2
GREEN (diode 2) -> RELAY 1
RED (diode 3) -> RELAY 1

Not all Tail-Turn-Brake light kits have 6 LED strips. The key is making sure you wire the Left and Right diodes properly for the turn signals to work correctly.



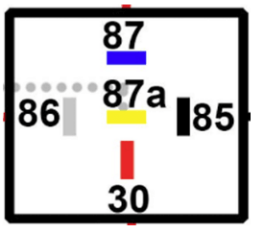
BOOGEY LIGHTS
LED STRIP
RIGHT SIDE power leads coming from R1 - Rx

BLACK = chasis ground
BLUE (diode 1) -> RELAY 2
GREEN (diode 2) -> RELAY 3
RED (diode 3) -> RELAY 3

Power leads from all L and all R strips can be wired together to a single cable on each side OR wired directly to the appropriate Relay poles for each side.

TAIL-TURN-BRAKE RELAY WIRING

RELAY 1



view of bottom of relay
each pole is numbered

85: Frame ground.

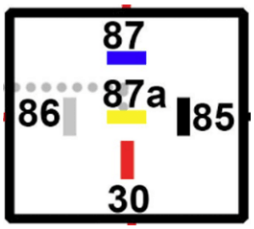
86: 12vdc+ trigger wire INPUT from truck's LEFT turn signal.

87: 12vdc+ OUT to Diodes 2 and 3 on the LEFT SIDE Boogey Lights LED STRIP.

87a: not used. cap the wire

30: Connects to 12vdc+ side of battery (with inline fuse).

RELAY 2



view of bottom of relay
each pole is numbered

85: Frame ground.

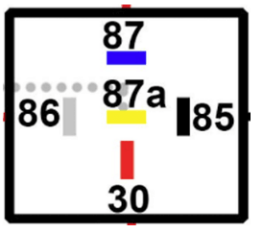
86: 12vdc+ trigger wire INPUT from truck's TAIL LIGHT aka Running Lights.

87: 12vdc+ OUT to Diode 1 on BOTH the LEFT and RIGHT SIDE Boogey Lights LED STRIPS

87a: not used. cap the wire

30: Connects to 12vdc+ side of battery (with inline fuse).

RELAY 3



view of bottom of relay
each pole is numbered

85: Frame ground.

86: 12vdc+ trigger wire INPUT from truck's RIGHT turn signal.

87: 12vdc+ OUT to Diodes 2 and 3 on the RIGHT SIDE Boogey Lights LED STRIP.

87a: not used. cap the wire

30: Connects to 12vdc+ side of battery (with inline fuse).

RULE THE NITE™
BOOGEY LIGHTS
Family Owned Motorsports Lighting Since 1989!

Be sure the RELAYS are mounted in the provided housing OR something similar to keep them dry.

NOTE: When wiring up the relays, make sure you compare the numbers on the relay posts itself (eg. 85, 86, etc) with the source and NOT rely on the color coding of the wires coming from the relay base to determine which wire goes where. This is super important. Don't ask us how we know.

View of the 3 relays in the water proof housing.