RULE THE NITE™

BOOGEY LIGHTS

Family Owned Motorsports Lighting Since 1989!

INSTALLATION GUIDE

Semi-Truck Tail-Turn-Brake Add-On 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. Test all of them. 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). If you're not sure how to bench test, download this pdf: https://docs.boogeylights.net/?wpdmdl=1305 . 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?

BEFORE YOU START

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 manual 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 truck. This is particularly the case with 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.

WORK AREA. Make sure you have ample area in which to work and that the area is protected from rain or cold temperatures. The 3M adhesive tape and 3M adhesion promoter works best if applied when the air temperature is above 40 degrees (and of course is DRY).

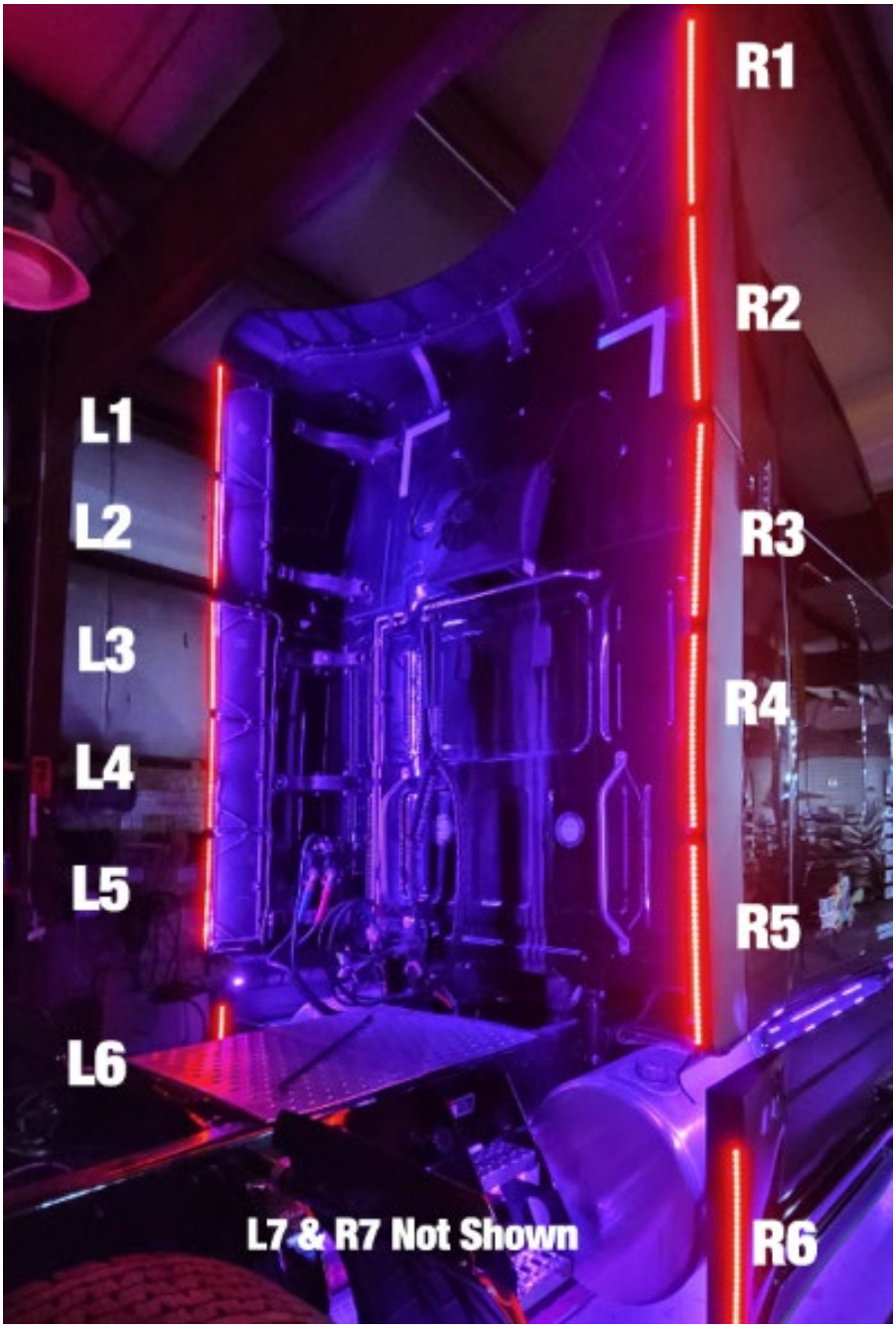
DID YOU PURCHASE THE REDA VERSION OF THIS PRODUCT? If so, be aware that most semi-trucks DO NOT have separate turning indicator and brake light circuits mounted on the rear of the vehicle. Most are setup such that the Brake light and the Turning Indicator share the same circuit (at least on the rear of the vehicle). If you're installing the REDA version of this product thinking you'll use the Amber LED on the REDA strip for your turning indicator you will have to pull the turning indicator circuit from another location on your truck; usually from a forward location. To be clear, it's not difficult to do. Just takes more time to complete the installation as you'll need to extend the left/right turning indicator circuit wiring from another location than the rear of the truck to the relay housing to connect the Amber diodes.

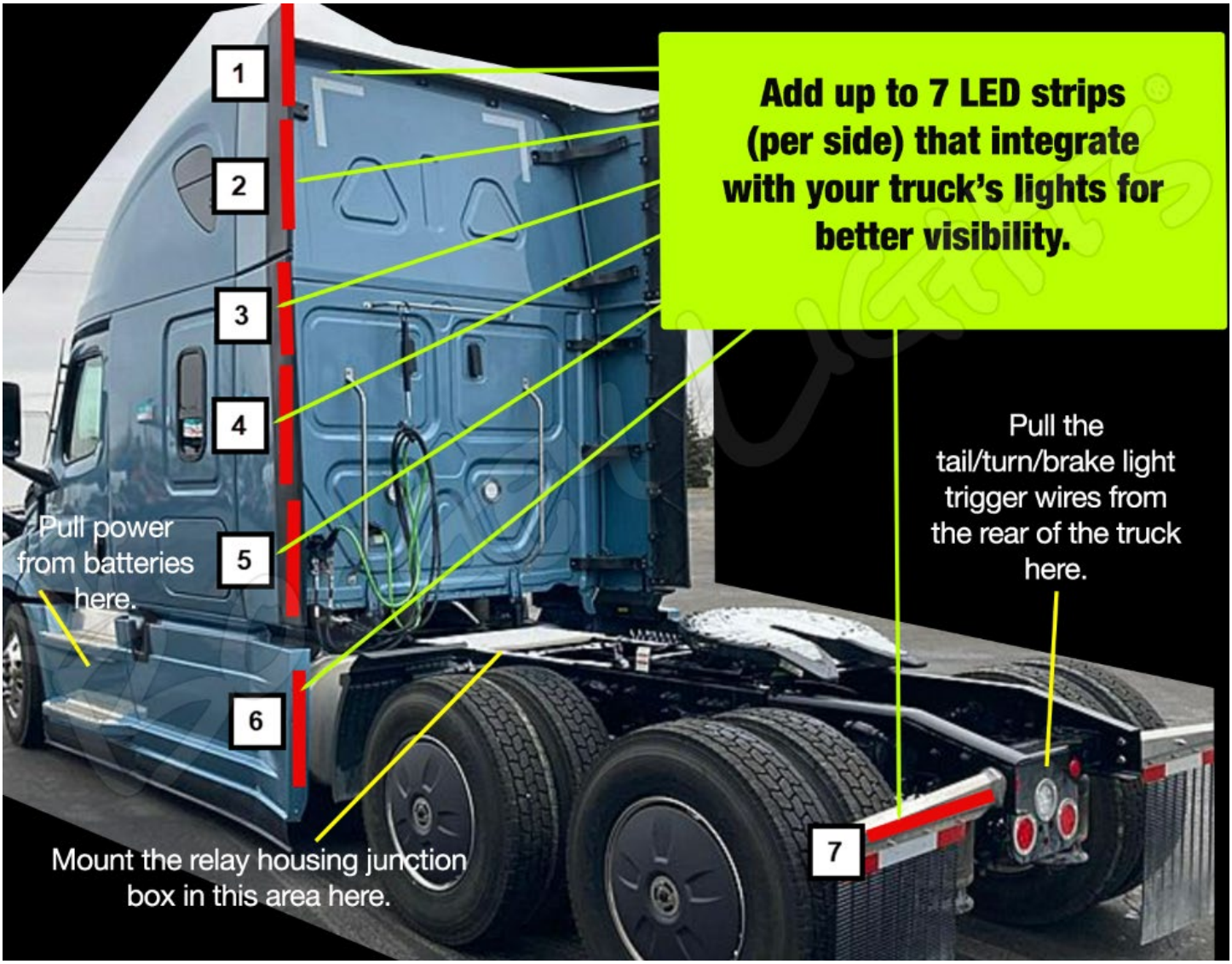
Installation of this light kit takes 2 - 3 hours for the RED version and an additional hour or two for the REDA version. It's important to use the supplied heavy-duty relays when connecting this light system to the truck's tail/turn/brake lights. DO NOT attempt to connect these lights directly to the truck's lighting system. You'll be sorry you did. Seriously.

For integration with the truck's tail-turn-brake lights to make the system work, you need access to these circuits: the truck's taillight circuit, left turn signal, right turn signal and brake light. In most cases, the truck's brake light uses the same light as the turn signals so the brake and turn signals use the same circuits. Where you pull those circuits from is up to you HOWEVER we prefer to pull them directly from the rear taillight assembly on the rear the truck and then run that trigger wire up to the relay housing where the connections are made to the relays. 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). If you're going to be using the frame for the ground, it's super important to make sure the surface you're connecting to is bare metal; not painted. To power this system we connect directly to the truck's batteries under the driver's side. Do not use any other 12vdc source. Also, it's important to pull the amperage through **all starter (4) batteries, not just one.** If you don't know how to do this, ask someone to assist you with the installation. Balancing the amperage draw across all four truck batteries is important. We include an inline blade fuse holder to make the power connection along with 10awg battery cable.

LED PLACEMENT

This product uses our HEAVY DUTY LED strips. The RED (or REDA) tail/turn/brake light LED strips will face rearward as shown in the photo below. These strips are typically mounted to the leading edge of each vertical fairing upright. It's important the LED strips be mounted on a smooth, straight flat surface. DO NOT span multiple mounting surfaces. Up to 7 LED strips can be mounted: 6 on the vertical fairing edge as shown below and 1 horizontally across the mud flap holder on each side of the truck.

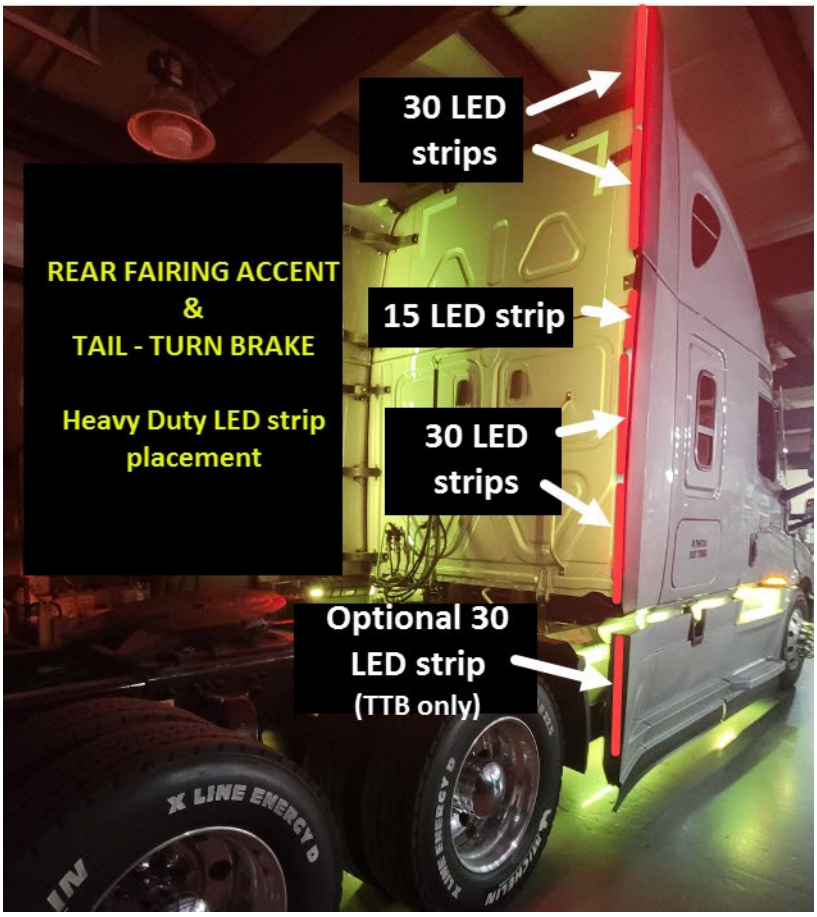




POWER CONNECTIONS

To power this system we connect directly to the truck's batteries which is usually located under the driver's side. Do not use any other 12vdc source. Also, it's important to pull the amperage through **all available batteries (usually four), not just one.** If you don't know how to do this, ask someone to assist you with the installation. Balancing the amperage draw across all starter batteries is important. We include an inline blade fuse holder to make the power connection along with 10awg battery cable sufficient to connect the main power to the waterproof junction box where the relays are housed under the catwalk at the rear of the cab.

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 that trigger wire 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 taillight assembly. If you're going to be using the frame for the ground, it's super important to make sure the surface you're connecting to is bare metal; not painted. .

If you're installing the REDA led strips where the amber diodes are connected to your turn signals, be aware that most (perhaps all?) semi-trucks DO NOT have separate turning indicator and brake light circuits mounted on the rear of the vehicle. Most are setup such that the Brake light and the Turning Indicator share the same circuit (at least on the rear of the vehicle). To get the amber diodes to work, you will have to pull the turning indicator circuit from another location on your truck; usually from a forward location. To be clear, it's not difficult to do. Just takes more time to complete the installation as you'll need to extend the left/right turning indicator circuit wiring from another location to the relay housing to connect the Amber diodes. We include wiring diagrams for both 3 relay and 4 relay integrations at the end of this guide.

MOUNTING THE LED STRIPS

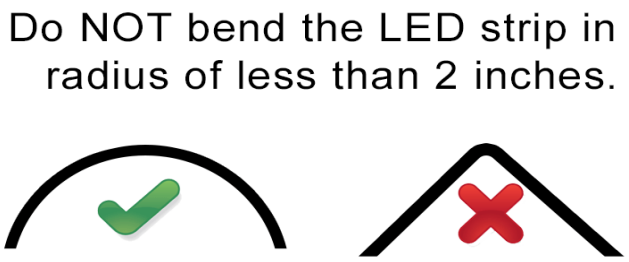
Follow these steps for mounting your LED strips:

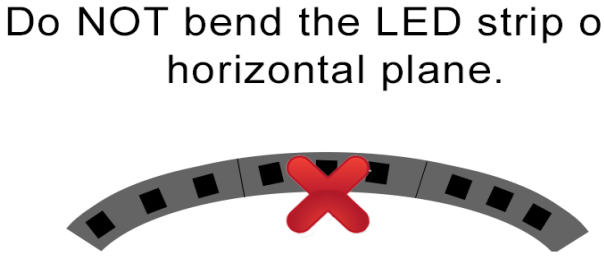
- The area where you are mounting the LEDs has to be clean: free of all dirt, oil or anything that might affect the LED from sticking. You only get one opportunity to mount the LEDs so it's critical the area be prepared properly.

- Use alcohol 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 petroleum 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.



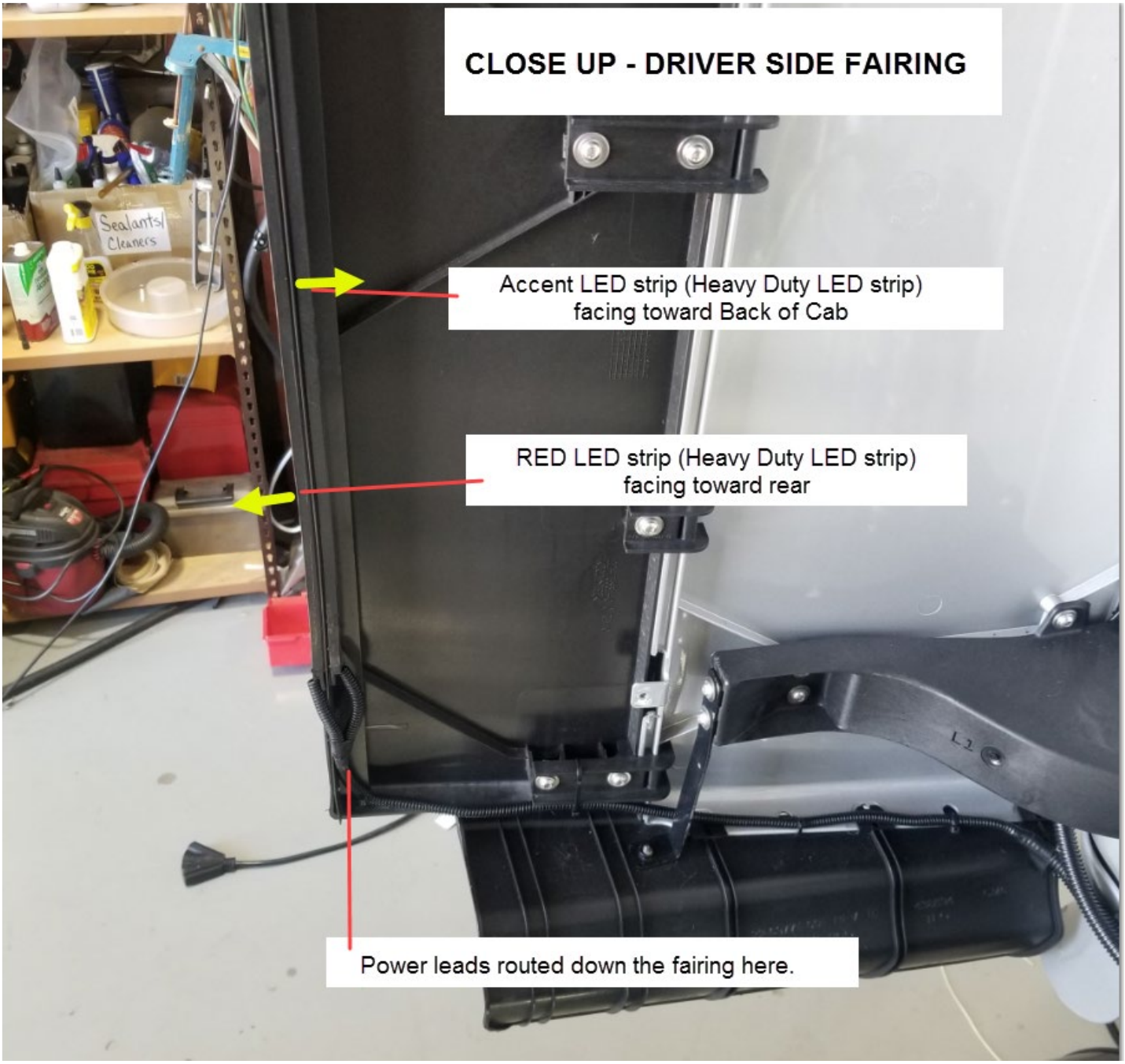


- Carefully push the LED strip to the area you have prepared. You will want to apply only enough pressure to the strip to make sure it is firmly mounted. *You only get one opportunity to do this.* Once the LED strip touches a properly prepared surface that has been promoted, that LED strip will be very 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.

- For the HEAVY DUTY LED strips used in this light kit you can also add a screw or rivet into each end if you want (not required). The screws are designed to only hold the ends of the strip to the surface. DO NOT TORQUE them down. Why? Because the end caps are glued to the black PVC rubber that encases the LED strip itself. Torquing them down will most likely cause the end cap to spin and pull away from the PVC rubber. This is by design so the LED strip itself isn't damaged. The end cap screw hole are only there to hold the end against the mounting surface.

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 that in these photos, we also installed our REAR FAIRING ACCENT light kit to the truck which is a separate light kit designed to light up the back of the cab/sleeper. It's not however relevant to the Tail-Turn-Brake installation.




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.

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.

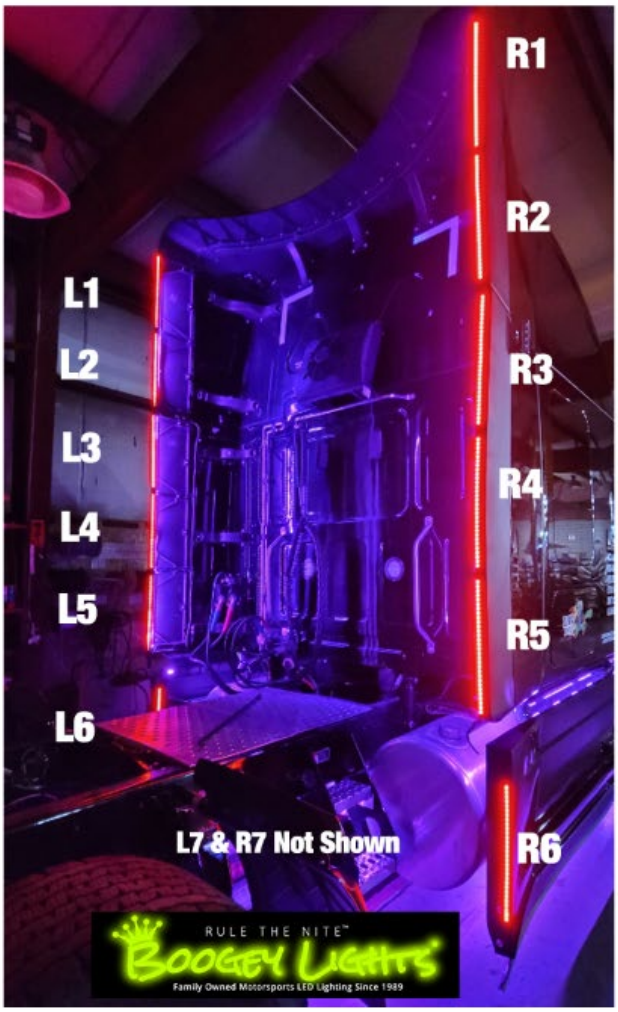
Be sure the RELAYS are mounted in the provided housing OR something similar to keep them dry. NOTE: The colors of the wires coming out of the wiring harness are not standard and will change. Super important to pay attention to the pole numbers on the relay itself which are standard and do not change. We like the mount this junction box housing just forward of the fifth wheel hitch and under the cat walk where it can be accessed if needed. See photo below.

TAIL-TURN-BRAKE RELAY WIRING - 3 RELAYS

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 7 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

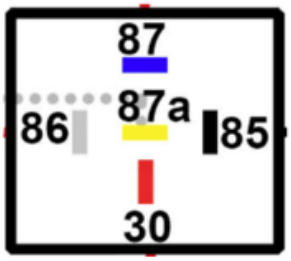
Power leads from all L and all R strips can be wired together to a single cable on each side OR wired directly to the appropriate Relay poles for each side.

TAIL-TURN-BRAKE RELAY WIRING - 3 RELAYS

For Vehicles where the Brake and Turn Signals use the same circuit.

Left Signal + Brake

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.

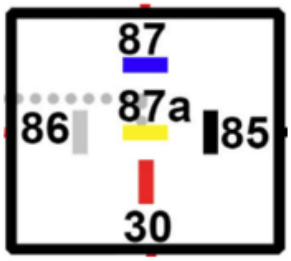
87: 12vdc+ OUT to Diodes 2 and 3 on the LEFT SIDE Boogey Lights LED STRIP.

87a: not used. cap the wire

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

Tail Light Circuit

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.

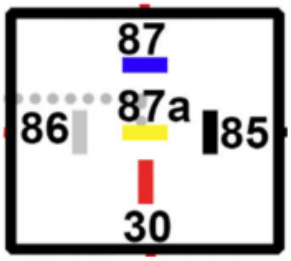
87: 12vdc+ OUT to Diode 1 on BOTH the LEFT and RIGHT SIDE Boogey Lights LED STRIPS

87a: not used. cap the wire

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

Right Signal + Brake

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

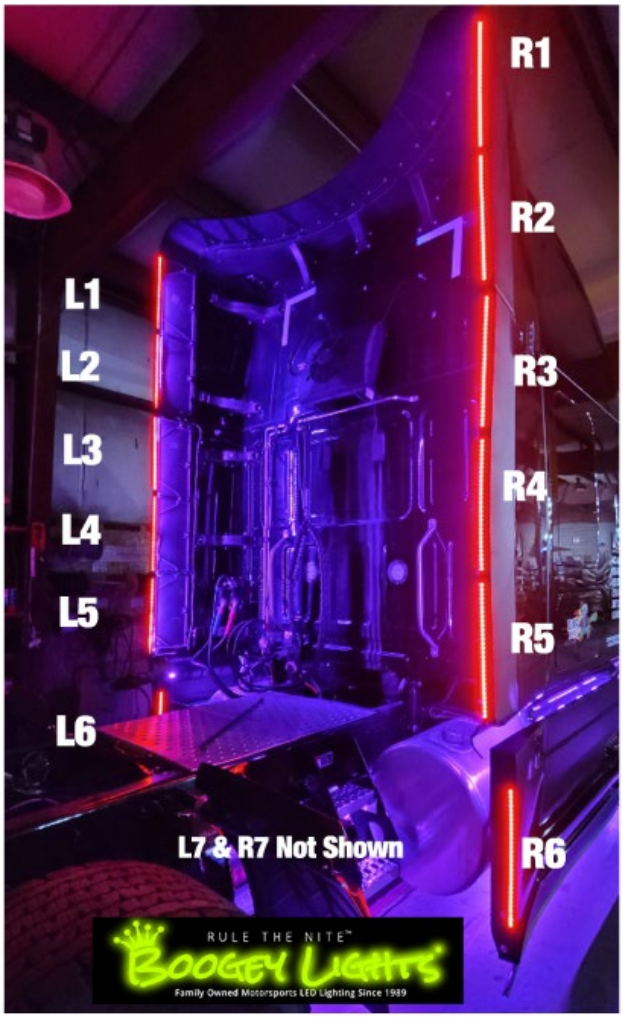
30: Connects to 12vdc+ side of battery (with inline fuse).

TAIL-TURN-BRAKE RELAY WIRING - 4 RELAYS

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

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

Not all Tail-Turn-Brake light kits have 7 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

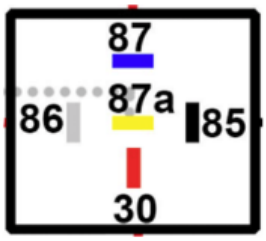
BLACK = chasis ground
BLUE (diode 1) -> RELAY 2
GREEN (diode 2) -> RELAY 3
RED (diode 3) -> RELAY 3
YELLOW (amber) -> RELAY 4

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 - 4 RELAYS

LEFT TURN SIGNAL

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.

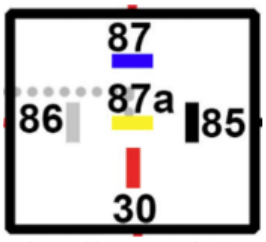
87: 12vdc+ OUT to Diode 2 on the LEFT SIDE Boogey Lights LED STRIP.

87a: not used. cap the wire

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

TAIL LIGHT

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.

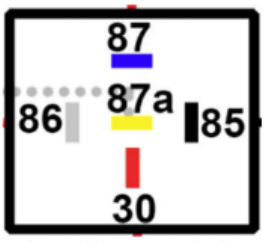
87: 12vdc+ OUT to Diode 1 on BOTH the LEFT and RIGHT SIDE Boogey Lights LED STRIPS

87a: not used. cap the wire

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

BRAKE LIGHT

RELAY 3



view of bottom of relay
each pole is numbered

85: Frame ground.

86: 12vdc+ trigger wire INPUT from truck's BRAKE LIGHT.

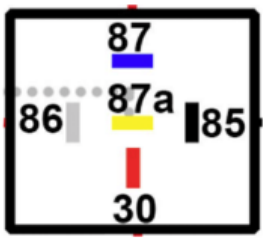
87: 12vdc+ OUT to Diode 3 on BOTH the LEFT and RIGHT SIDE Boogey Lights LED STRIPS

87a: not used. cap the wire

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

RIGHT TURN SIGNAL

RELAY 4



view of bottom of relay
each pole is numbered

85: Frame ground.

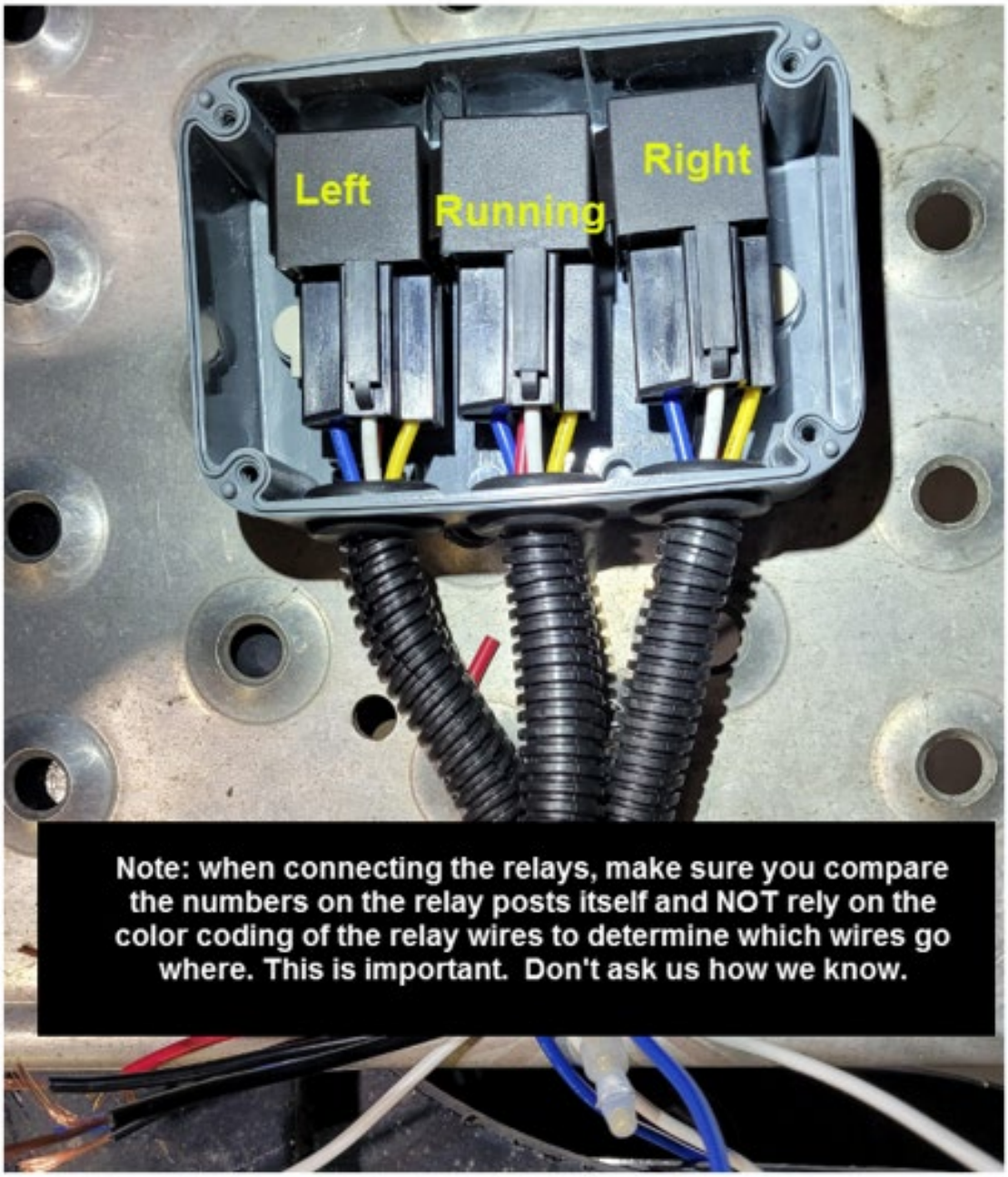
86: 12vdc+ trigger wire INPUT from truck's RIGHT turn signal.

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

87a: not used. cap the wire

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

View of the 3 relays in the water proof housing.



Additional Resources

- How to Videos: https://www.boogeylights.com/how-to-videos/
- Product Page: https://www.boogeylights.com/tail-turn-brake-add-on-leds-for-semi-trucks/
- Troubleshooting: https://www.boogeylights.com/trouble-shooting-guide/
- Installation Resources: https://www.boogeylights.com/installation-resources/
- How to Bench Test: https://docs.boogeylights.net/?wpdmdl=1305
- Amperage Data: https://docs.boogeylights.net/?wpdmdl=1137
- GEN2 LED Controller Wiring Diagrams + Operating Info: https://docs.boogeylights.net/?wpdmdl=1163
- GEN2 RF Wireless Remote Operating Info: https://docs.boogeylights.net/?wpdmdl=1164
- GEN2 Bluetooth APP Operating Info: https://docs.boogeylights.net/?wpdmdl=1169
- GEN2 Bluetooth APP Quick-Start: https://docs.boogeylights.net/?wpdmdl=1167

Support

- Phone: 800.847.1359 (M-F, 9-6 Eastern)
- Text: 859.955.8155
- Open a Support Ticket: https://www.boogeylights.com/email-us/
- Online: 24/7 resources at https://www.boogeylights.com/installation-resources/
- How to Make a Warranty Claim: https://www.boogeylights.com/make-a-warranty-claim/

Warranty

The Boogey Lights® warranty requires an original sales receipt from Boogey Lights or an authorized dealer. It covers product replacement only, not labor or other costs. Register your purchase at: https://www.boogeylights.com/warranty-registration/. Full details: https://www.boogeylights.com/warranty/.