



# INSTALLATION GUIDE

## FREIGHTLINER CASCADIA GEN1 UNDER-GLOW LED LIGHT KIT

**IMPORTANT!** No two installation scenarios are the exact 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 and lighting coverage goals. Our light kits provide the essential components needed for a high-quality, functioning LED light 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 – usually less expensive. We urge you to review this information before starting your install to make sure you have the proper materials available.

### **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 good 12vdc battery to do this (e.g. car battery, motorcycle battery, lawn tractor battery or 12vdc power supply capable of supporting a 5 amp load). If you're not sure how to do this, we have prepared a document explaining the process here: <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 before installing?**

## 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).

**KNOW YOUR AMPERAGE DRAW.** Pay attention to the number of LEDs you are lighting and the total amps you will be drawing. We manufacture a number of LED Controllers of varying capacities. If you over-load the LED controller, it will either not work at all or the lights will dim in a short period of time. Amperage data for all our LED products are on each product page. You can also download it directly here: <https://docs.boogeylights.net/?wpdmdl=1137>

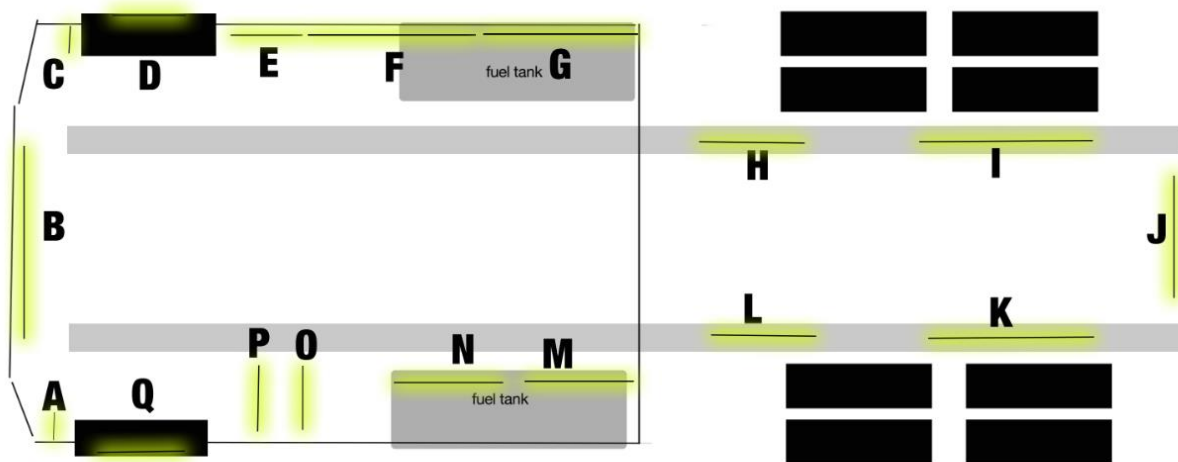
### MOUNTING & PLACEMENT | Planning Your Install

All 17 of the LED strips in this kit are built on our Heavy Duty LED strips. Each Heavy Duty LED strip is encased in rubber with a 12" to 36" power lead. Each LED strip will have to have its power lead extended (using the included power lead cable) based on where the LED strip is located on the truck. In total there are 16 different mounting locations in this kit and all of the power leads need to be carefully run.

The mounting areas are focused in the following areas (see diagram below):

- 3 - Heavy Duty LED strips under the front bumper (A, B C)
- 6 - Heavy Duty LED strips under passenger's side of the truck (D - J)
- 1 - Heavy Duty LED strip across the rear (J)
- 7 - Heavy Duty LED strips under passenger's side of the truck (K - Q)

The LED strips can be moved or adjusted slightly according to available mounting locations on your truck. The goal is to provide full perimeter under-glow lighting such that you only see the glow from the lights.



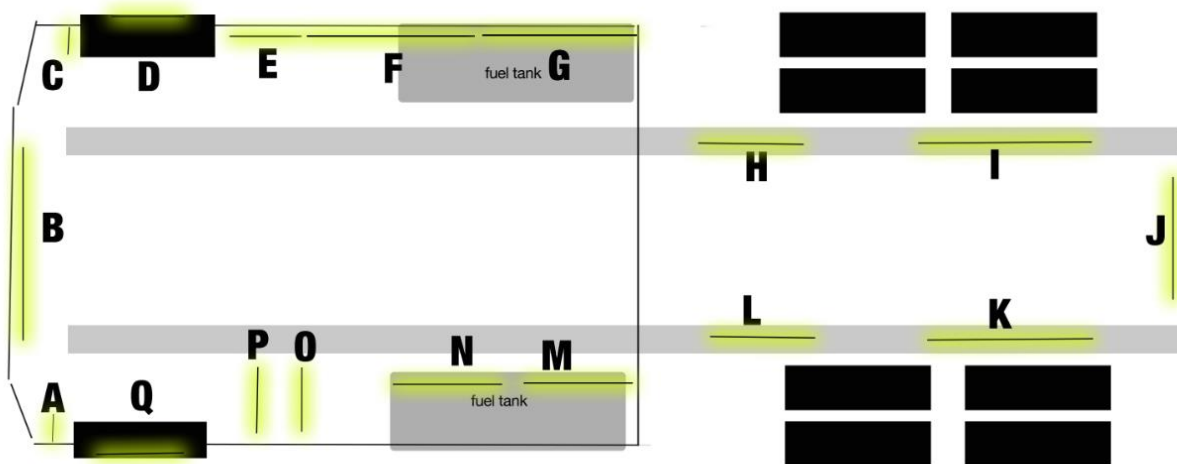
For power, you'll need access to the driver's side steps to access the batteries. Also, if you're installing an LED controller, the LED controller can be mounted in either the driver's side storage box or the passenger's. We prefer to use the driver's side as it is closest to the battery bank. While either location will work, be aware if you mount the controller in the passenger's side, you'll need to extend the positive battery cable a little further than if you mounted the controller in the driver's side storage. The 12vdc + power going to the LED Controller should connect directly to the 12vdc+ terminal on your truck's battery bank. You can connect the ground wire on the LED controller to any metal part of the chassis. Regardless of which side bay you use, you will need to drill a hole in the floor of that box to connect power to the battery box, led wires and antenna. All of the Heavy Duty LED strips include a 1' or 3' power lead. Most of the strips will need to have additional power lead cable added which we include in the kit (heat shrink is included to make these connections.)

Where possible, we recommend connecting all of LED strips in similar locations together and then running one feeder cable back to the LED controller. Doing so reduces the total number of power leads coming back to the LED controller. We will typically connect the following LED segments together – creating 4 groups of led strips - and then use a single feeder cable to connect each of those LED groups back to the controller (or power): A, B, C + D, E, F, G, H, I + J, K, L + M, N, O, P, Q

Regardless, we strongly recommend planning out your install on paper first. Be sure to wrap all power leads in split-loom which is also included and then secure them to the truck using zip ties.

## LED PLACEMENT

These are the LED placement locations we used for this kit. It's important to follow this placement pattern to ensure the LED strips are protected. Placement locations do not have to be exactly as what you see here as not all trucks have the same layout but it should be close. Refer to the below lettered diagram for LED strip placement.



### Front Bumper Area (left to right):

- A - 15 LED strip under the bumper. Mounted on 12" plastic angle.
- B - 30 LED strip under the bumper. Mounted on 24" plastic angle.
- C - 15 LED strip under the bumper. Mounted on 12" plastic angle.

### Passenger's Side (front to rear):

- D - 15 LED strip in wheel well
- E - 45 LED strip mounted on 33" plastic angle.
- F - 75 LED strip mounted on 75" plastic angle (along with segment G).
- G - 30 LED strip mounted on 75" plastic angle (along with segment F).
- H - 30 LED strip mounted to top frame rail shinning downward.
- I - 60 LED strip mounted to top frame rail shinning downward (between air bags).

### Driver's Side (front to rear):

- Q - 15 LED strip in wheel well
- P - 30 LED strip mounted on 24" aluminum flat bar secured to bottom of air tank 1.
- O - 30 LED strip mounted on 24" aluminum flat bar secured to bottom of air tank 2
- N - 75 LED strip mounted on 75" plastic angle (along with segment M)
- M - 30 LED strip mounted on 75" plastic angle (along with segment N)
- L - 30 LED strip mounted to top frame rail shinning downward.
- K - 60 LED strip mounted to top frame rail shinning downward (between air bags).

### Rear:

- J - 30 LED strip across the back bumper. Mounted on 24" plastic angle.

If you purchased a SINGLE COLOR kit without an LED Controller we do not include any switching devices with the kit. We assume you already have a switch available in your truck or will be installing another switch of some type. Regardless of how you decide to switch your single color LEDs, be mindful of the amperage that adding 615 LEDs will draw. If you're considering adding these LEDs to an existing circuit (e.g. with your existing marker or running lights) we strongly suggest using a relay vs simply tapping into the existing circuit. This is especially important on newer trucks where the LCM will likely throw an error when you add 600+ more LEDs to the system.

*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 rubbing 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 cleaner).

If the area is especially greasy, you'll need to clean it with a degreaser or similar solvent. IF you do, be sure to use rubbing alcohol on the surface next to completely remove any left-over residue from the degreaser.

- 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.

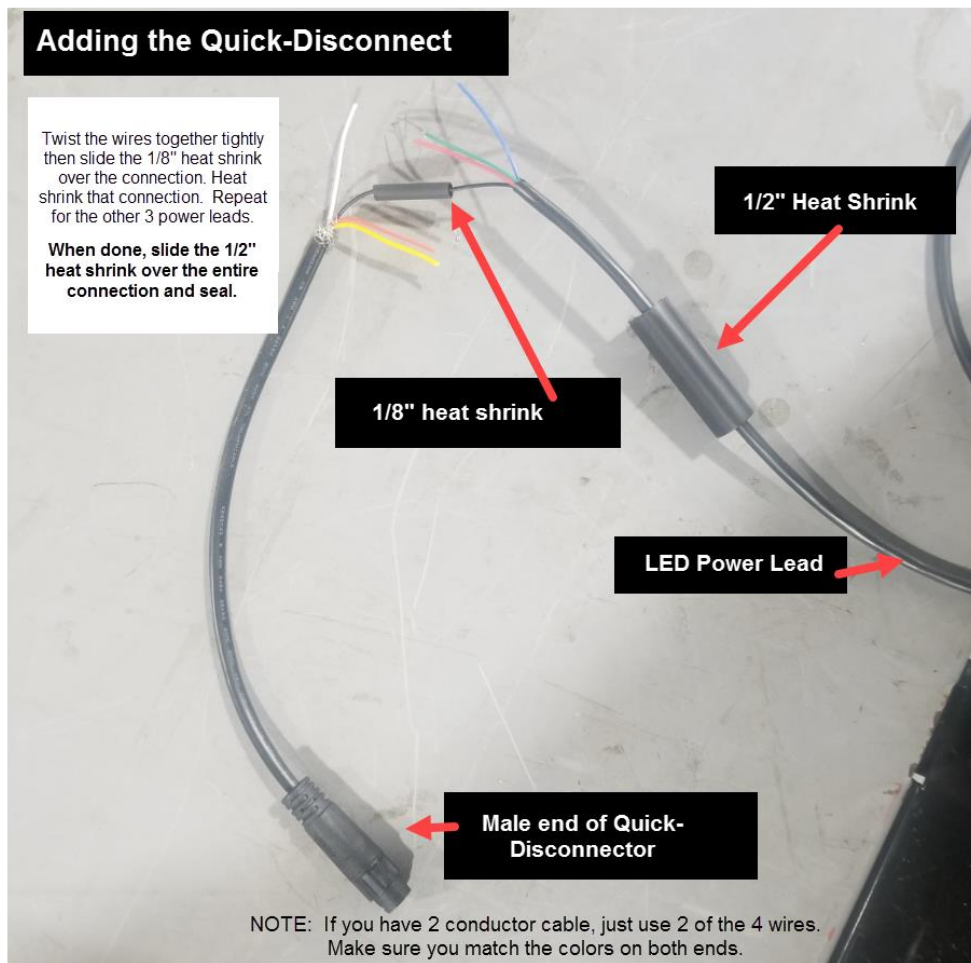
Do NOT bend the LED strip in a radius of less than 2 inches.



Do NOT bend the LED strip on a horizontal plane.



Here's a photo showing how to use the 1/8" and 1/2" heat shrink to connect and seal the feeder cable connections to the power leads of each Heavy Duty led strips. Tightly twist the copper wires together. Important that none of the copper wire strands poke through the heat shrink. Make sure they're all laying down (and not pointing outward). Then, slide the 1/8" heat shrink over the connection and heat shrink that connection. Repeat for the other 3 (or 1 if single color LEDs). When those connections have been made, slide the 1/2" heat shrink on top of the bundle and heat shrink. For the 1/8" heat shrink you only need about an inch (1") or 1.25" of heat shrink to seal each connection. Use 2 or 2.5 inches of the 1/2" heat shrink to cover the bundle. **Note: The under-glow kit does not include any quick-disconnect connectors. This is for illustration of how to use the 2 different heat shrink sizes when extending the heavy duty LED strip power leads .**





## PHOTOS OF THE INSTALLATION

These photos make reference to some ALUMINUM FLAT BAR. That is not always the case. We include PLASTIC FLAT BAR instead of the aluminum flat bar. The plastic flat bar should be mounted the same way as the aluminum with one exception when mounting to the bottom of the fuel tanks: make sure the plastic flat bar is securely fastened to the fuel tank in multiple places across the entire length of the flat bar (not just on the two ends as some of the photos show). The goal is to minimize the amount of flexing the plastic flat bar does.



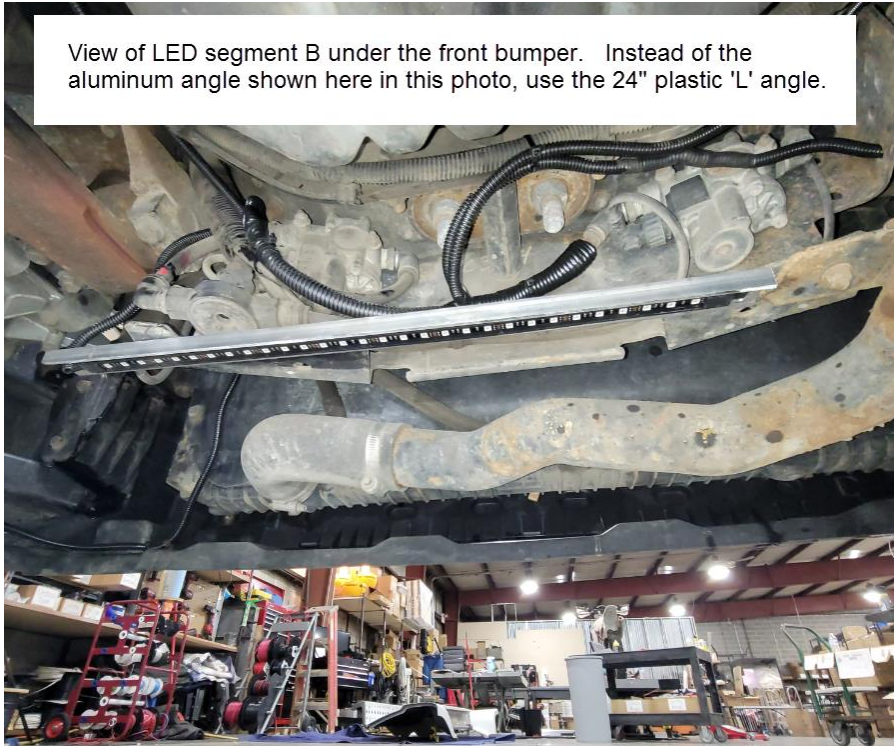


This view is of the front bumper, right passenger's side. We use a piece of black plastic 'L' angle here which is riveted to the bottom of the flair in front of the tire. Then, we mount the Heavy Duty led strip (segment C) to that L angle. The L angle is used here to force the light downward vs shining outward.





View of LED segment B under the front bumper. Instead of the aluminum angle shown here in this photo, use the 24" plastic 'L' angle.

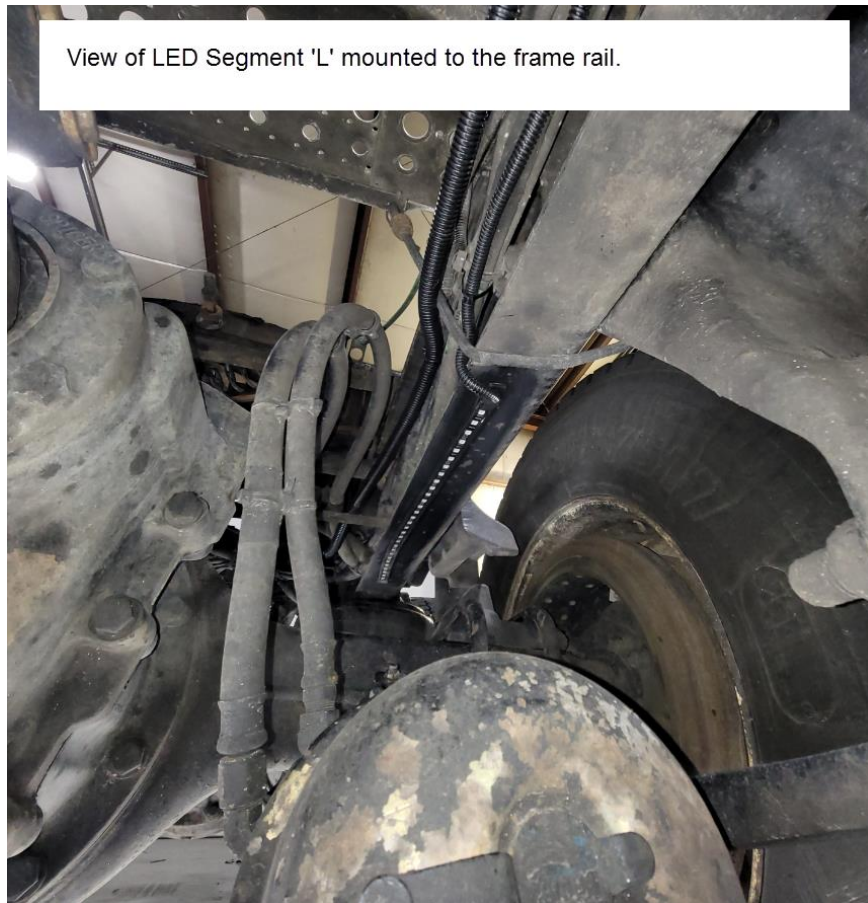


View of LED Segment 'E'. Mounts to the 33" plastic 'L' angle (aluminum angle not used as shown in this photo).





View of LED segments N and M mounted to 75" plastic 'L' angle.



View of LED Segment 'L' mounted to the frame rail.



View of LED Segment 'I' mounted to the frame rail.



View of LED Segment 'J' mounted across the rear of the truck, mounted to 24" plastic 'L' angle.



## Additional Resources

- How to Videos: <https://www.boogeylights.com/how-to-videos/>
- Freightliner Cascadia Light Kit Page: <https://www.boogeylights.com/freightliner-cascadia-led-accent-light-kit/>
- 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>
- 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>
- Amperage Data: <https://docs.boogeylights.net/?wpdmdl=1137>

## 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/>.