

INSTALLATION GUIDE

KENWORTH T680 UNDER-GLOW LED LIGHT KIT



Family Owned Motorsports Lighting Since 1989

800.847.1359

www.BoogeyLights.com

Thank you for purchasing genuine Boogey Lights® LED Lighting products! We know you're anxious to get started but we strongly recommend taking time to read through these instructions. You'll likely save yourself some grief and aggravation if you do. For additional installation support refer to www.BoogeyLights.com or give us a call at 800.847.1359 for assistance.

JULY 2022 UPDATE – IMPORTANT!

These instructions make reference to some ALUMINIMUM FLAT BAR. That is no longer the case. We are now including 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 (or sub-structure) in multiple places across the entire length of the flat bar. The goal is to minimize the amount of flexing the plastic flat bar does.

BEFORE YOU START

It's simply not possible to provide detailed instructions for all installation scenarios. Far too many variables and truck variations. **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 however we must assume the installer has the skills, knowledge and tools necessary to do the work using the information we provide. You may need to vary your installation based on your truck. This is particularly the case with electrical wire routing 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.

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 works best if applied when the air temperature is above 40 degrees (and of course is DRY).

Bench test your setup. We know this takes a few extra minutes but we **STRONGLY** suggest you bench test your lights (and LED controller if purchased) 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. 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. You can also use a common 9vdc battery to test your lights if you don't have a 12vdc bench testing power source available (the lights won't be as bright). It's simple to do and can potentially save you hours of time and frustration down the road. Please take our advice. Bench test your LEDs AND controller before mounting.

Tools You May Need

Sockets/wrenches in the sizes necessary to access the remove the steps/panels to get to the battery bank, wire cutters/strippers, crimping tool, electrical tape, rubbing alcohol, shop rag or two and a heat gun (or hair dryer) for the heat shrink connections. We also suggest a 12vdc multi-meter to confirm/check voltages.

RGB/MULTI-COLOR KIT Installations

Installation of this led light kit takes 6 to 8 hours depending on whether or not you're adding this light kit

to an existing installation or installing this kit as a stand-alone. Wiring diagram is included at the end of the guide.

SINGLE COLOR KIT Installations

Installation of our single color kit typically takes 6 to 8 hours. With single color installations we always recommend using a dedicated on/off switch OR if you want to tie them into an existing circuit (e.g. marker lights), we suggest adding a relay to the circuit. If you purchased the on/off wireless switch we offer, you do not need a relay provided the grill lights in this kit are the only lights you're switching on it. The single color on/off wiring diagram is included at the end of this guide.

Mounting & Placement Locations / Planning Your Install

All of the LEDs in this kit are built on our Heavy Duty LED strips. Each strip is encased in rubber with a 36" power lead. Each LED strip will have to have its power lead extended (using the included power lead cable + heat shrink tubing) based on where the LED strip is located on the truck. It's important that each of these connections be sealed. Our kit includes the 1/8" and 1/2" heat shrink tubing to do these connections. In total there are 13 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:

Front Bumper

- 2 – 45 LED strips

Driver's Side

- 1 – 45 LED strip
- 1 – 30 LED strip
- 2 – 60 LED strips
- 1 – 75 LED strip

Passenger's Side

- 2 – 75 LED strips
- 1 – 30 LED strip
- 1 – 75 LED strip

Under-Truck

- 2 – 45 LED strips

See diagram and photos with layout as indicated.

For power, you'll need access to the driver's side steps to access the batteries. 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 install in the driver's side if possible because it's closer to the battery box. 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 bare 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. Be sure to seal that hole as well as protect the sharp edges of the metal from damaging the cables.

All of the our Heavy Duty LED strips include a 3' power lead. Most of the strips will need to have additional power lead cable added which we include in the kit. 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. **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.

What You Need to Know

In putting together this installation guide we assume the installer has access to and has a basic understanding of using the tools needed to complete this installation. We also assume the following:

- The installer can gain access to the bottom of the truck. While a pit or lift is helpful, it's not essential. If you have a smooth floor and creeper, a reasonably sized person can get under the truck far enough to mount the LED strips in this kit. The biggest challenge will be securing the plastic flat stock to the truck (see photos).
- The installer knows how to remove the truck's driver side steps to access the batteries.
- The installer understands 12vdc electricity, the importance of not overloading a circuit, making electrical connections using crimp on and/or heat shrink connectors, the importance of having a fuse in the circuit at the battery location and polarity. If the single color wireless ON/OFF remote was purchased, the installer needs to know how to wire in the included 40amp heavy duty relay (wiring diagram included).
- How to access the batteries, remove / connect battery connections, how to make electrical connections (e.g. crimping) and the importance of making sure all electrical connections are sealed properly (e.g. no water intrusion).
- How to run power lead cabling such that the power leads and related wiring are secured in a way as to protect them from chafing, pinching or melting because they're too close to the engine or other extreme heat source.

WHAT'S INCLUDED

In addition to the LED light strips, power leads (and controller / switch if ordered), 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 or 20AWG Feeder Cable – 4 Conductor for RGB, 2 Conductor for Single Color. Use this cable to extend the LED power leads back to the battery box and/or the LED controller/switch.
- 3M Adhesion Primer. Used to prep the surface before attaching the LED strips AND the 3M quick-lock tape. *Always, always, always* use this adhesion primer with 3M adhesive products if you want the bond to hold.
- 3M Quick Lock Reclosable Tape. This is a heavy duty "Velcro like" product. Used to mount the LED controller (if purchased) to the wall in the storage compartment or similar location.
- Split Wire Loom / ¼". All power leads and the battery extension cables need to be protected from chaffing. Wrap them in this first.
- 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.
- Battery Extension Cable (if LED Controller is purchased). We include some 12awg cable to extend the battery power inputs going to the LED Controller to the battery. Be sure to wrap this extension cable in split loom.

- Fuse Holder – 25AMP (if LED Controller is purchased). Insert this fuse holder on the 12vdc positive side of the battery connection before the battery extension cable. This is critical.
- Battery Terminal Lugs (if LED Controller is purchased). We include a couple of battery terminal lugs that attach to the battery extension cable (crimp on) to make it easy to connect the positive and negative power leads to the truck's battery to the LED controller. It's a much better way to make this connection than to just simply wrap the bare cable around the battery post.
- 40amp SPDT heavy duty relay (if single color wireless remote is purchased): If you selected the Single Color Wireless On/Off control, we include this heavy duty relay along with the ON/OFF wireless controller. Super important you wire this relay into the circuit with that on/off controller as the amperage of this under-glow light system will exceed the wireless on/off controller's capacity and burn up very quickly.
- Butyl Tape. We use butyl tape in a number of places to secure the LED power lead to the truck as well as to fill in holes drilled. Butyl will only work if you apply it to a clean surface so make sure you first clean the surface with rubbing alcohol.
- Heat Shrink (1/2" and 1/8"): We include heat shrink for extending the power leads on each of the 16 heavy duty LED strips as well as sealing the connections to the LED controller if purchased. The 1/8" heat shrink is used to seal each of the individual connections; there will be 4 per LED strip if RGB and 2 per LED strip is Single Color. Then, the 1/2 " heat shrink is used to seal over top of that group. We have included a photo further on in this guide showing how this is done using quick-disconnect connectors (not applicable to this kit) but the concept remains the same.
- 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.

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.

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. Mounting them in any other way voids warranty.

Under Front Bumper: We mount two 45 LED heavy duty light strips under the front bumper in a 'V' shape. The power leads come together in the middle.

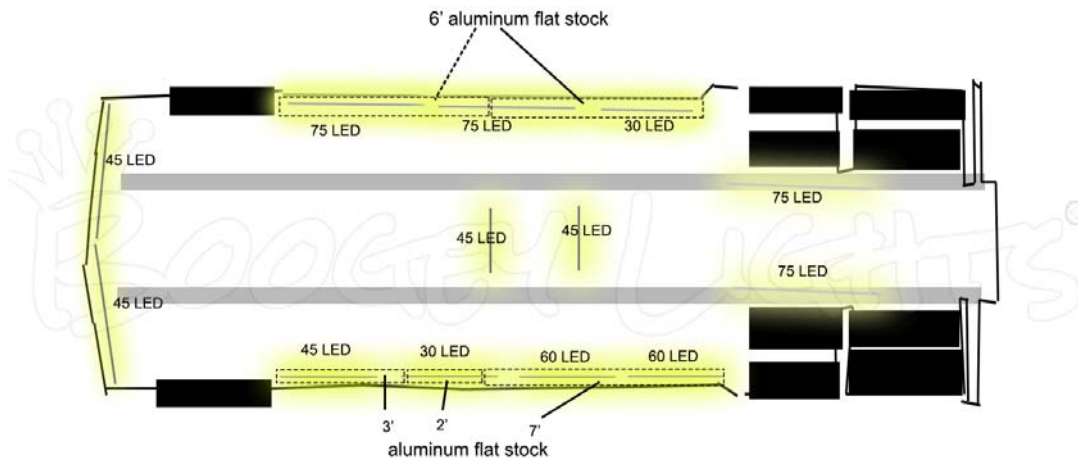
Driver's Side Under-Structure: To build out the mounting structure for the LED strips, we mount three pieces of plastic flat bar (84", 36", 24") to the truck's under-structure. Then, we mount a total of FOUR heavy duty led strips to that plastic flat bar: 2 - 60 LED strips, 1 - 45 LED strip, and 1 - 30 LED strip.

Passenger's Side Under-Structure: To build out the mounting structure for the LED strips we mount two pieces of plastic flat bar (each are 72" long) to the truck's under-structure. Then, we mount a total of THREE heavy duty led strips to that plastic flat bar: 2 - 75 LED strips and 1 - 30 LED strip.

Fuel Tank Center: We mounted 2 - 45 LED heavy duty strips to the horizontal cross beams, shining downward.

Rear Frame Rails: We mount two 75 LED heavy duty strips to the rear frame rails just behind the cab and in front of the drive axle. Both shining downward.

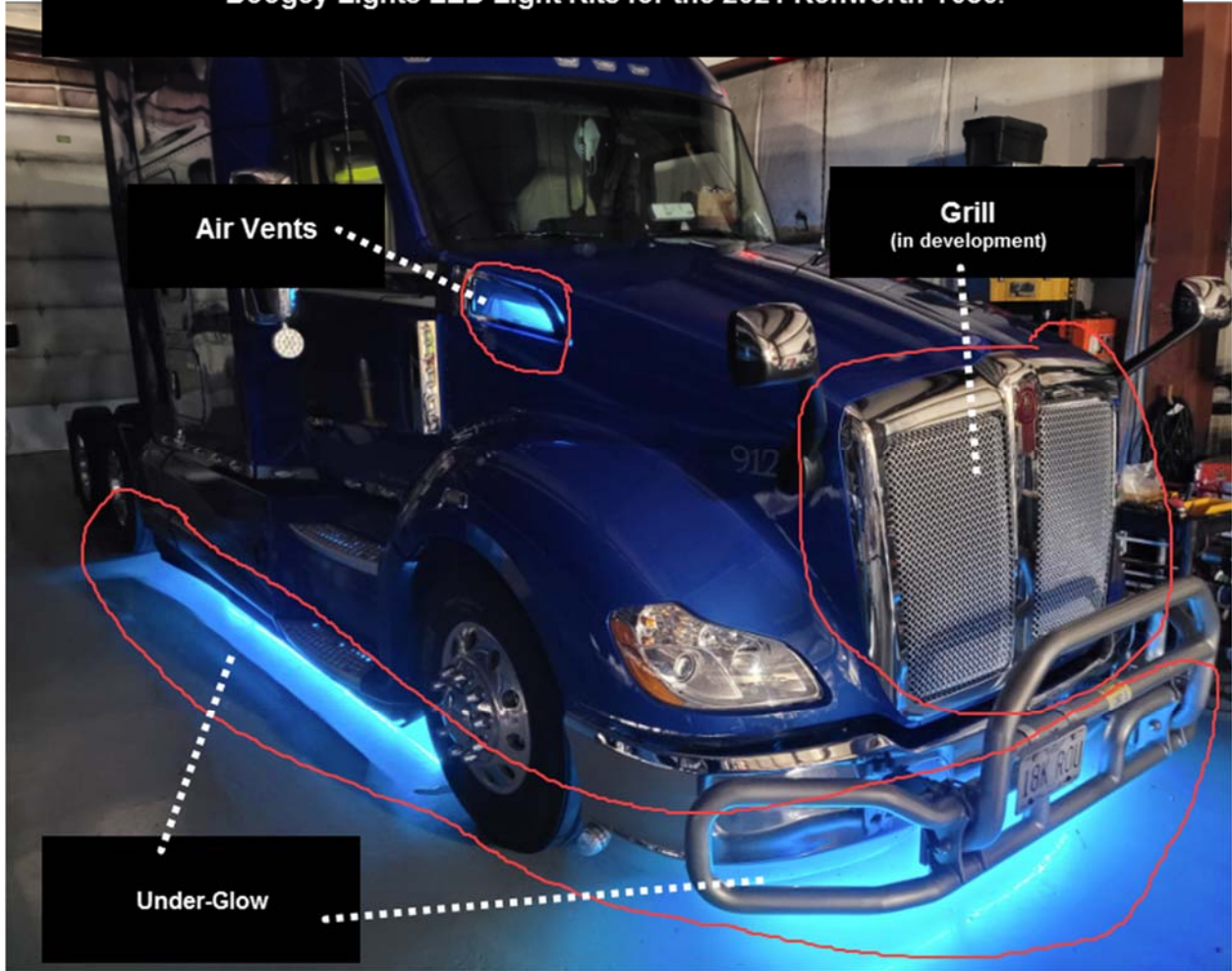
Kenworth T680 LED Under-Glow Light Kit LED Placement Layout



For the driver's and passenger's side of the truck (between the steer and the drive) there is not a smooth mounting surface so we have to build that surface using aluminum flat bar. This kit includes five pieces of aluminum flat bar. That flat bar is secured to the bottom of the truck using zip ties and screws. Then, the heavy duty led strips are mounted to the flat bar. See install photos for a closer look at how this is done.

Not to scale. For LED strip placement illustration purposes only.

Boogey Lights LED Light Kits for the 2021 Kenworth T680.



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.

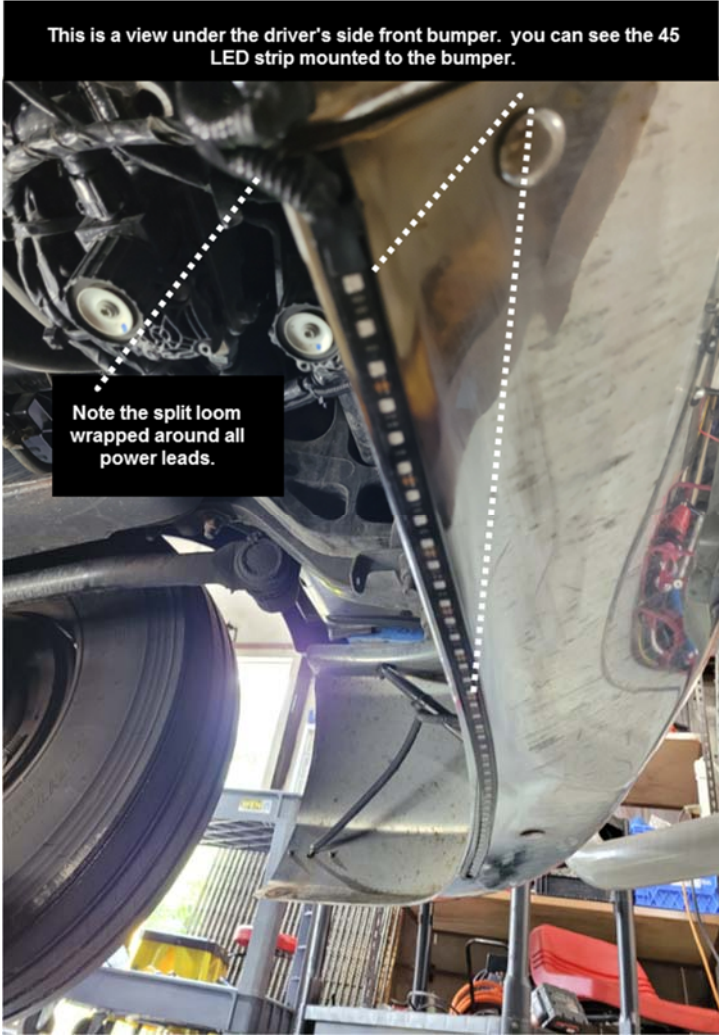
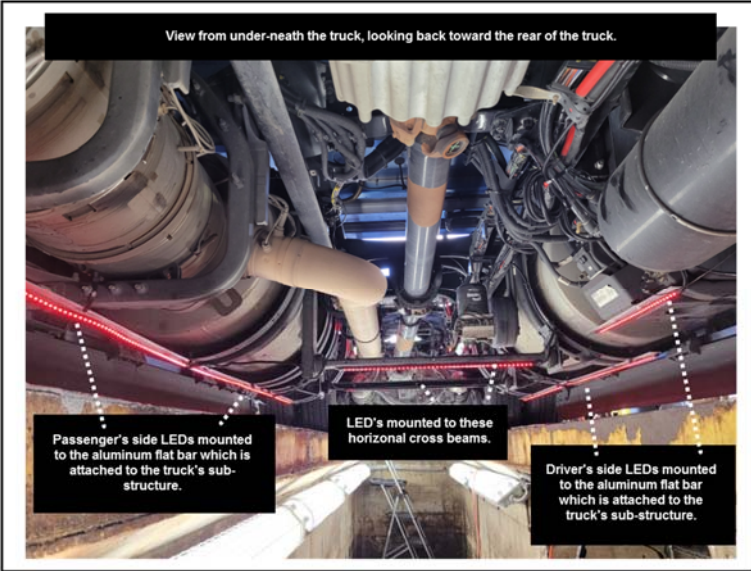
Carefully push the LED strip to the area you have prepared. You will want to apply only enough pressure to the strip to make sure it is firmly mounted. *You only get one opportunity to do this.* Once the LED strip touches a properly prepared surface that has been promoted, that LED strip will be very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

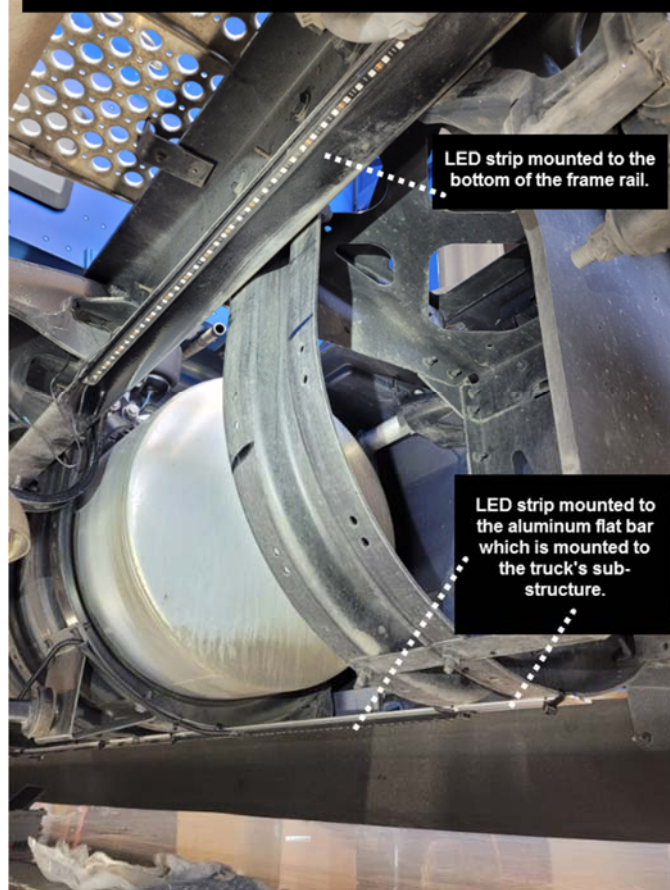


Do NOT bend the LED strip on a horizontal plane.





This is a view from the rear looking forward to the passenger's side.



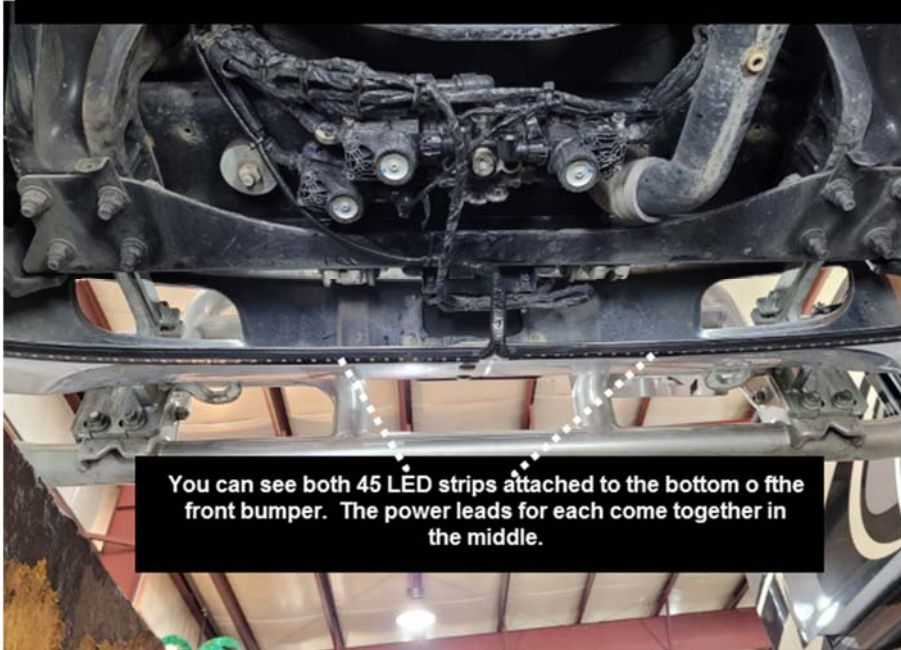
LED strip mounted to the bottom of the frame rail.

LED strip mounted to the aluminum flat bar which is mounted to the truck's sub-structure.

View of where we mounted the LED Controller inside the driver's side storage box. The wires go through a hole in the floor which then connects to the battery and LED strips.



View from under the truck looking up at the front bumper



You can see both 45 LED strips attached to the bottom of the front bumper. The power leads for each come together in the middle.

A close up view of how we mount the aluminum flat bar to the truck's sub-structure



Large Zip Ties are used to secure the aluminum to the truck.

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 strip. 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: There are no quick-disconnect connectors in this kit. The below diagram is provided for illustration purposes.

