INSTALLATION GUIDE

UNDER-GLOW LED LIGHT KIT
For RVs, Trailers and Campers

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). 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 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 vehicle. 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).

MOUNTING SURFACE CONSIDERATIONS. Make sure you have adequate surface area where to affix the LED light strips to the bottom of your RV. Not all RVs have a flat, enclosed bottom. If your RV doesn't have an enclosed bottom you'll need to make sure you have sufficient surface area to attach the LED strips. In addition, the area where you are attaching the LEDs needs to be reasonably clean (eg. free from oil, grease, rust, dirt, road grim), smooth, rigid, flat and one continuous flat surface.

GOT COROPLAST? If you are going to mount your LED strips on coroplast or similar surface make sure the coroplast on your RV is straight, flat and rigid. It cannot have bulges in it. It's not unusual for that coroplast to bulge in-between the supports. In some cases, that coroplast is holding back water-soaked insulation, cables, ducting and hoses. Over time as the RV goes down the road, that weight pushes the coroplast downward between the supports which if the LED strips are mounted to that coroplast, the strips will flex, bend and fail. LED strips mounted to coroplast surfaces that fail under these conditions are not covered under warranty. We have an entire video on this very topic. If your RV has a coroplast (or similar) bottom, we urge you to view this video before doing anything: https://www.boogeylights.com/video-got-coroplast/ .

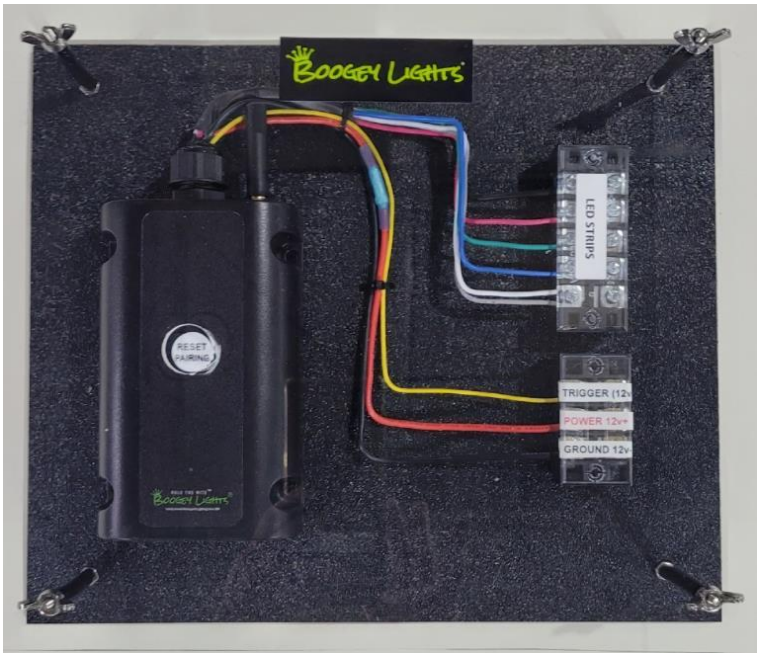
IF YOU NEED TO BUILD OUT A MOUNTING SURFACE. For RVs that don't have a smooth, flat continuous surface to mount to – you can use 1.5" aluminum or plastic flat-stock (available at just about any home improvement store and we offer it for sale on our website too). Rivet (or screw) it to the bottom of the RV typically along the outside edges. Then, mount the LED strip to the aluminum or plastic flat stock. It makes for a nice, clean installation. Doing it this way also makes it easier to remove the lights if for some reason you want to in the future. It's the method we use for our in-house installations. We have a video on our website showing more about how to do this. Here's the link: https://www.boogeylights.com/video-creating-a-smooth-mounting-surface/. This video (and many others) can also be found in our INSTALLATION RESOURCES section here: https://www.boogeylights.com/installation-resources/ .

Before deciding how or where you're going to mount the LED strips, it's super important to understand that these LED strips cannot be mounted in such a way as they span multiple surfaces. They must be mounted on a smooth, flat, continuous rigid mounting surface. Spanning two mounting surfaces on a vehicle that moves, flexes and vibrates will absolutely not work. The LED strip will fail and they will do so sooner rather than later; we can almost guarantee it. We know the temptation is there because it's easy/fast to do BUT you're going to be disappointed if you do. Mounting the LED strip across multiple surfaces will void the warranty as well. Also, do not attempt to mount the strip to follow a radius. The LED strip has to be mounted in a straight line.

ELECTRICAL CONNECTIONS. Make sure you know where your electrical connections will terminate. For Under-Glow lighting we strongly recommend running the lighting system off the house batteries. We like to terminate the LED power leads and mount the LED Controller in the same compartment where the house batteries are stored. Doing so makes for a clean, safe electrical installation. By connecting directly to the house batteries you know you're not going to interfere with any other 12vdc systems in your RV. If you have a motorhome, do not use the engine starting batteries; use the house batteries. Make sure too you're pulling from a 12vdc power source. Many motorhomes have a bank of 6vdc batteries tied in series to generate 12vdc. If you're not familiar with 12vdc power or how to deal with 6vdc batteries in series, we strongly suggest asking someone who is familiar with 12vdc power to assist you with this aspect of the installation.

If you're installing on a travel trailer where the battery box is on the front tongue of the trailer, it's unlikely you'll be able to mount the LED controller in that box. It's too small, doesn't have enough ventilation and not necessarily protected from the elements. Instead, you'll need to extend the 12vdc power from the battery box back to a storage area inside the trailer where you can mount the LED controller and terminate the LED power leads. If you have to extend the power like this, make sure you are using sufficiently sized 12vdc cable; typically 6AWG or 8AWG. If you are using the optional 120vac power converter to power your lights you'll need to make sure you know where that 120vac power will be accessible and how you will run the power. If you need to extend the power leads for any reason, be sure you have purchased the additional cable necessary to do this before starting the installation. You might also want to purchase some crimp on battery terminal lugs. We offer these installation supplies on our website if needed.

While the controller provides the ON/OFF functionality for daily use, we recommend removing the included fuse to the circuit when your RV is going to be sitting for a long time. As an option, you can install a separate on/off hard-wired switch (not included) to isolate the circuit. If you decide to install a separate on/off hard-wired switch, make sure it's big enough to handle the amperage.



If you purchased the optional LED CONTROL CENTER, we suggest mounting it in the same compartment as where the house batteries are located; usually on a wall in that compartment. This Control Center can usually be screwed to the compartment wall. The house batteries compartment is usually easily accessible from under the RV too so it makes terminating the LED power leads simple.

VIDEOS. We have a number of installation related videos on our website (and You Tube channel) which some customers find helpful. Here are some links (they can also be found on our INSTALLATION RESOURCES page). Even though some of the videos might not be of an under-glow kit install, the wiring and LED controller mounting are similar in many cases.

https://www.boogeylights.com/video-how-to-install-led-awning-light-on-any-travel-trailer/
https://www.boogeylights.com/video-how-to-install-a-boogey-lights-multi-color-under-glow-led-light-kit/

You can also view additional videos on our Youtube channel here:
https://www.youtube.com/c/BoogeyLightsLEDs/

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://www.boogeylights.net/?wpdmdl=1137

One 16' RGB LED strip (300 LEDs) will consume about 3.5 amps on full power brightness (white, max brightness setting). One 16' RED single color LED strip (300 LEDs) will consume about 4.3 amps on full power brightness. On lower brightness settings the consumption is considerably less. While most people do not use this max brightness setting for long periods of time, you still need to make sure the 12vdc power source you're using is not only capable of powering the load you're adding, it needs to be able to sustain that load over time. Not all RV converters are sized to handle the additional 12vdc electrical load you're now adding to your system. If your batteries and/or converter isn't sufficient to handle the load, the first thing you'll notice is the lights will dim quickly after turning on. Or, they might dim over the course of an hour or so. more information about this issue in our Trouble Shooting Guide here: https://www.boogeylights.com/trouble-shooting-guide/ . See #6 and #8.

NOTE ABOUT ELECTRICAL WIRE COLORS. Modern RVs, trailers, motorhomes, fifth-wheels and campers often have a mixture of **110vac** and **12vdc** wiring installed. **ALL Boogey Lights® products are native 12vdc**. If you connect a Boogey Lights® controller or LED strip to 120vac instead of 12vdc, it will absolutely damage the controller and LED strip beyond repair. Similarly, if you reverse the polarity of the power (e.g. connecting 12vdc+ to the negative side of the controller), it may also damage the controller beyond repair.

In a typical 120vac environment the BLACK wire is the positive (hot) wire and the WHITE wire is the neutral/ground wire. HOWEVER, in a 12vdc environment, the BLACK wire is always 12vdc– (ground/negative) and the RED (or WHITE) wire is always 12vdc+ (hot). All Boogey Lights® controllers have the power leads clearly marked as to what is 12vdc positive and 12vdc negative.

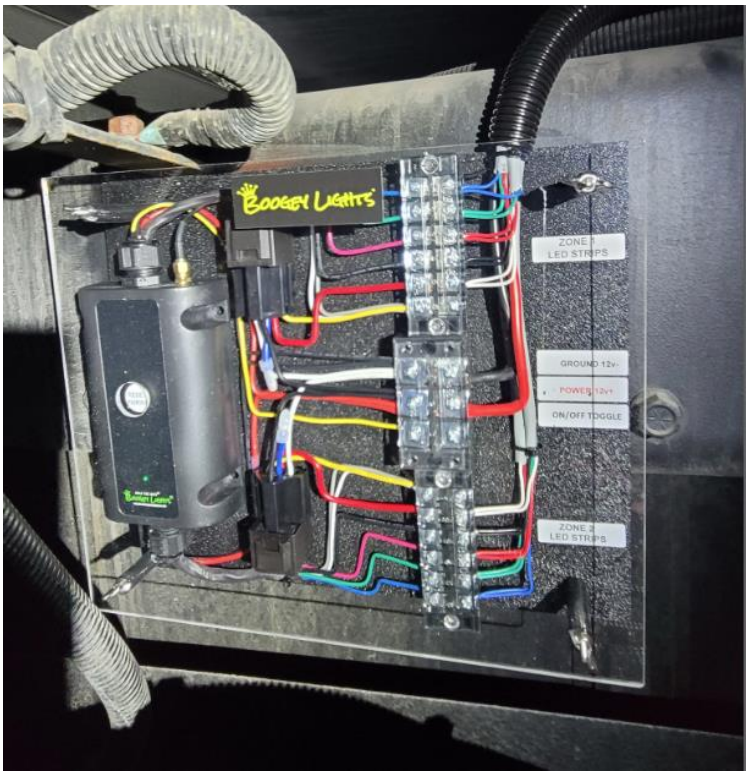
While we suggest only connecting Boogey Lights® products directly to your RV's house batteries it may be more convenient to tie into an existing 12vdc circuit rather than running power back to the house batteries **If you are going to tie into an existing circuit it is important to make sure you have properly identified the type of power you are tapping into (AC or DC) AND have identified the polarity of the wires (positive or negative).** Do not assume the color of the wires will match the controller. We strongly suggest using a volt meter to make sure you are using the proper power and polarity. Also, make sure the circuit you are tapping into (both the circuit-breaker rating and wiring) is capable of handling the additional amperage draw you are adding to the circuit. Overloading the circuit could result in over-heating and potentially cause a fire. Wiring the power incorrectly will damage your controller beyond repair and invalidate the warranty.

12VDC VS 120VAC? All Boogey Lights® lighting products are native 12vdc devices. We strongly suggest using 12vdc power whenever possible. It makes for a cleaner installation and provides for greater flexibility in terms of using the lights. 12vdc power is almost universally available on any modern vehicle including motorhomes, 5th wheel trailers or campers sold in North America. 120vac power on the other hand is not always available – at least not without having access to shore power or an on-board generator. Plus, having to use a 120vac to 12vdc power converter only adds one more point of failure (and expense). It's unnecessary.

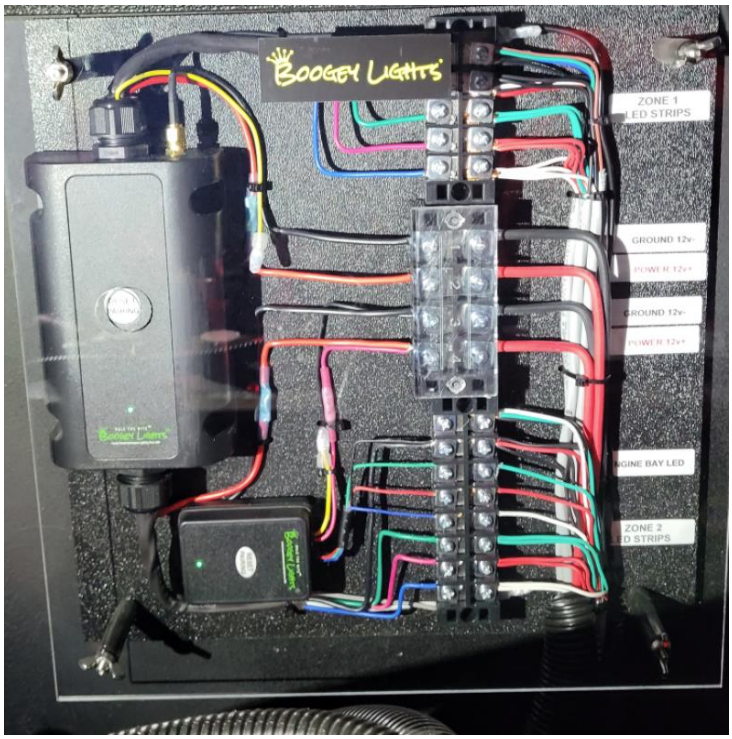
OPTIONAL LED CONTROL CENTER

If you purchased the optional LED CONTROL CENTER, the wiring will be easier since all of the connections are labeled and made on the control center board terminal blocks. This saves time with the installation. Also makes it easier to do. We have included some photos of typical LED CONTROL CENTER configurations below. The control center is intended to be mounted in the battery bay within a few feet of the house batteries.

LED CONTROL CENTER photos installed in motor home battery bays on the next page.


ZONE 1
LED STRIPS
GROUND 12v-
POWER 12v+
ON/OFF TOGGLE
ZONE 2
LED STRIPS


DRIVER-SIDE
SHUTOFF
LED STRIPS
25:
LEVELING
JACKS
(120A)
26:
HOUSE
POWER
(120A)
27:
BATTERY
LINK
(120A)
120


ZONE 1
LED STRIPS
GROUND 12v-
POWER 12v+
GROUND 12v-
POWER 12v+
ZONE 2

SELECTING THE LOCATION FOR YOUR LED CONTROLLER

As mentioned previously, we highly recommend mounting the LED CONTROLLER in the same compartment as your house batteries. This isn't essential but it generally is the most convenient and easiest to do. It's also the safest since you don't have to extend the battery cables. That said, nothing says you absolutely have to mount it there. If you do decide to mount your LED Controller in another location, here are some things to keep in mind:

- While water resistant, the LED controller is not intended to be submerged in water. Mount it someplace where it will not be subjected to the elements. It can get wet, just not submerged.

- Make sure there is enough air flow around the controller. Do not mount it inside a small sealed box without adequate air flow. Doing so will almost certainly mean the controller will shut down (or the lights will dim) when it gets too hot. This is especially the case with larger light systems that draw more amperage.

- DC power drops very quickly over short distances. The further away you mount the controller from the power source, the thicker the cable needed between the power source and the controller to avoid a significant voltage drop. 4AWG or 6AWG cable is often required in these situations. There are lots of voltage drop calculators online you can use to determine the proper wire gauge cable you need given the distance you're having to extend the battery power.

- The LED Controller is operated via a wireless signal. The hand held remote uses Radio Frequency (RF). The Smart Phone APP uses Bluetooth. Where you mount the controller can impact the effective range of both of these technologies. If you're concerned about the reception, we suggest doing some testing of where you mount the controller before permanently mounting it. The good news is that our latest GEN2 LED Controllers are based on the Bluetooth 5 family of semi-conductors. The Bluetooth signal is significantly improved over Bluetooth 4. Also, with our GEN2 Heavy Duty LED Controllers we include a magnetic whip antenna with a 15' cord that can be used to extend the RF radio signal. As a result, reception and distance generally isn't an issue with our GEN2 controllers.

MOUNTING YOUR LED STRIPS

The basic Boogey Lights® LED ***UNDER-GLOW*** RV light kit has two 16' LED strips intended to be installed on the bottom of an RV, camper or trailer. We typically center them between the first rear axle and the front of the RV. Regardless of where you mount them, make sure you have adequate area where to affix the LED light strips. If your RV doesn't have an enclosed bottom, you'll need to make sure you have a sufficiently smooth surface to attach the LED strips. In addition, the area where you are attaching the LEDs needs to be reasonably clean, smooth, flat and a continuous surface (do not span surfaces). In these situations we recommend using 1.5" x 1/8" aluminum or plastic flat stock (https://www.boogeylights.com/mounting-supplies/) . It can usually be screwed, riveted or wire-tied to the bottom of the RV and then the LED strips mounted to the smooth surface. In some situations you might need to use aluminum angle (https://www.boogeylights.com/aluminum-angle/) if you're spanning open areas for rigidity. As mentioned earlier in this manual, we have a video on our website showing this process. Here's the link again: https://www.boogeylights.com/video-creating-a-smooth-mounting-surface/. We include some photos on the following page.

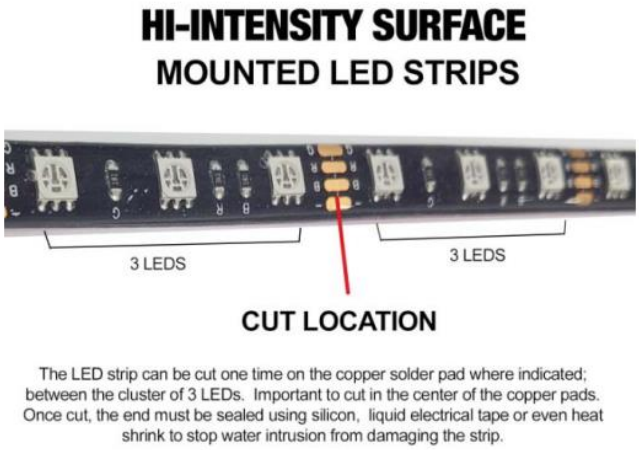
Tip: Since these LEDs are mounted to the bottom of your RV, we find the use of a "shop creeper" to be extremely handy in making the job much easier. You can purchase a simple shop creeper for less than $50 at most auto parts stores. Of course, you also need a flat smooth surface such as a warehouse or garage floor to make the use of a shop creeper possible.

With regard to placement, one option is to mount the two LED strips 12-18" in from each side of your RV and run parallel to each other. This placement provides the best "glow" effect without seeing the LEDs when lit. Of course, this is a matter of personal preference and depends on available mounting locations. In deciding where to place these strips be mindful of where your electrical connection is going to be made. You will want the power

lead end of the LED strips to be as close to the electrical connection location as possible. If you need to extend the power leads, we offer additional power lead wire or feeder cable. See suggested layout wiring diagrams.

HOW TO VIDEOS -> https://www.boogeylights.com/how-to-videos/

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 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 to your RV/Camper/Trailer. **NOTE: Heavy Duty LED strips CANNOT be cut. LOW PROFILE only.**



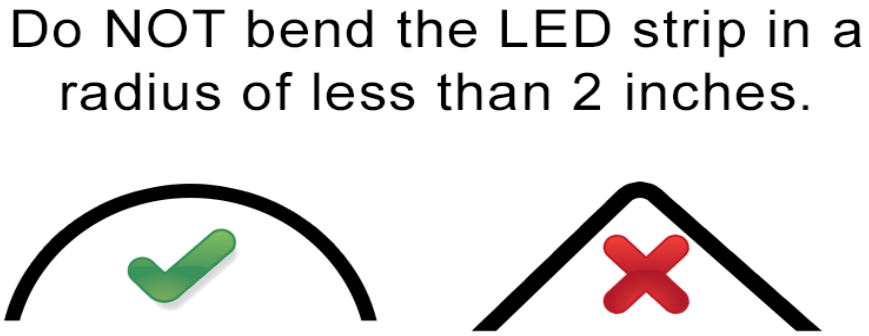
MOUNTING THE LED STRIPS

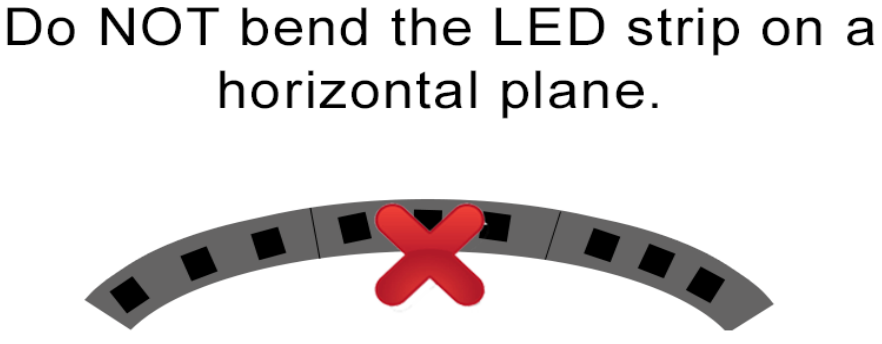
Once you have your LED strips cut (if necessary) and you know where you are going to attach them, follow these steps:

- 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 cleaner without reading the section "A Word About 3M Tape & 3M Promoter" further on in this document).

- Next, use the 3M Adhesion Promoter supplied with your kit to "paint" on the promoter where you are going to mount the LED strip. See the note below (on page 6) about the proper way to use promoter. ***This is an important step. Do not bypass.*** Allow the promoter to dry for 30-60 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. **NOTE: With these large LED rolls we suggest you unroll the LEDs as you apply them to the side or bottom of your RV, camper or trailer.**

- Use ZIP TIE mounts and ZIP TIES to affix the left-over power lead cable running to the LED strip to the bottom of your RV. You don't want to leave this power lead cable hanging. Doing so will place too much stress on the LED strip itself causing it to fall off or fail where the power lead connects to the LED strip. Before affixing the Zip Tie Mounts be sure to prepare the area with alcohol and 3M Promoter just like you did with the LED strip. It's important these Zip Tie mounts hold. If you need more support, add more zip tie mounts.

3M Tape & 3M Adhesion Promoter (aka Primer)

All Boogey Lights® LED strips have 3M Tape backing affixed to them. This 3M Tape is designed to make a more-or-less permanent bond between the LED strip and the surface to which it is attached. When properly prepared, 3M Tape can be affixed to polyethylene, polypropylene, ABS, PET/PBT blends, concrete, wood, glass, metal and painted metal surfaces. To make this bond you must however prepare the surface to which the LED strip will be affixed. You do this by first cleaning the surface with isopropyl alcohol (50/50 mixture with water) and then painting on 3M Adhesion Promoter. YOU CANNOT SKIP THIS STEP. Always apply 3M Adhesion Promoter to any surface Boogey Lights® LED strips will be mounted. The promoter acts as a primer that ensures maximum adhesion. Porous surfaces may require 2 applications of 3M Promoter for uniform coverage and good adhesion. If you are going to add a second coat, allow the first application of promoter to dry before applying the second coat. Our lighting kits include a small bottle of 3M Adhesion Promoter. Simply use a clean, dry cloth to apply it to the mounting surface.

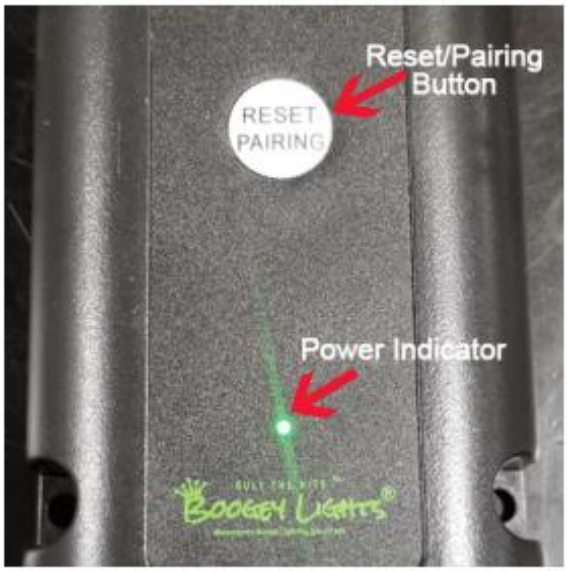
Using Acetone on Heavy Oiled or Greasy Surfaces

For situations where you are affixing Boogey Lights® to a surface where heavy oils or grease are present, a "degreaser" solvent such as acetone may need to be used first. If you use acetone (or any other degreasing solvent) you must still apply the 3M Promoter. Acetone is not a replacement for promoter. In addition, if you use acetone to clean a heavy oiled or greased surface, you will still need to follow up with an alcohol cleaning to help ensure any residue or film from the acetone is removed. This is because acetone (and most other degreasing solvents) will thin the promoter as well as break down the adhesive in the tape greatly reducing the tape's stickiness. Any surface first cleaned with acetone must also be cleaned with alcohol and then thoroughly dried before painting on promoter.

Important Reminder! The 3M adhesive tape on the back of Boogey Lights® LED stripes are one-use only. If you apply them to a surface that has not been properly prepared, the holding power of the 3M adhesive tape will be greatly diminished perhaps making the light strip unusable. If you take the time to properly prepare the surface in accordance with our instructions here, you won't have any problems mounting your LEDs.

NOTE ABOUT RF REMOTE PAIRING WITH THE CONTROLLER

Our GEN2 LED Controllers include a RF hand held remote to operate the lights. This remote comes already paired with the LED Controller. If you accidentally press the PAIRING button on the controller during the installation process (when the controller is powered ON) you will delete the pairing settings between the controller and the remote. You will need to PAIR the controller with the wireless RF remote. To pair the RF wireless handheld remote with the LED controller, quickly press and release the pairing button on the face of the LED controller (do not hold it down). As soon as you do, the green power indicator light will start flashing. You have 30 seconds at that point to press any button on the RF wireless remote to 'pair' it. If the pairing is successful, the green power indicator light will stop flashing. If you wish to pair a second RF remote, repeat the process. You can pair up to THREE (3) m7 rf remotes to a single GEN2 led controller. You can find this information online in our INSTALLATION RESOURCES (https://www.boogeylights.com/installation-resources/) section of our website.



NEED HELP? HAVE MORE QUESTIONS?

Links to all product specs and installation information including remote control functions, wiring diagrams, APP control instructions and operating instructions can be found on our website in the **INSTALLATION INSTRUCTIONS** section (https://www.boogeylights.com/installation-resources/). We also offer a number of How To Videos which can be found here: https://www.boogeylights.com/how-to-videos/ . For Trouble Shooting, refer to this page here: https://www.boogeylights.com/trouble-shooting-guide/ .

If you need additional assistance or have questions, we offer a number of options. If it's during regular business hours you can call us TOLL FREE at 800.847.1359, M-F 9-6 Eastern. We also offer TEXT support (859.955.8155). If it's after hours, you can check our website. We include as much information as we can online for 24x7 access. You can also send us an email by visiting the CONTACT US link at the top of every page of our website.

WARRANTY INFORMATION

The Boogey Lights® original-owner warranty is only available to customers who purchase genuine Boogey Lights® products from the Boogey Lights website or an authorized Boogey Lights® dealer and present the original sales receipt from that dealer. **THIS WARRANTY IS NULL AND VOID IN THE ABSENCE OF AN ORIGINAL SALES RECEIPT FROM AN AUTHORIZED BOOGEY LIGHTS® DEALER.** This warranty is a product-only warranty and does not cover reimbursement for labor or any other charges you may incur having a defective product replaced. Complete warranty details can be found here: https://www.boogeylights.com/warranty/

You can register your purchase for warranty by visiting our website at http://www.BoogeyLights.com/warranty-registration/. This is especially important if you purchased this product from someone other than the Boogey Lights website directly.