INSTALLATION GUIDE

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). 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.

<u>Mounting & Placement Locations / Planning Your Install</u>

We suggest mounting these ADD-ON Tail-Turn-Brake light above the existing stock tail light housing where it can be easily seen from 100+' behind you. The longer the LED strip, the better the visibility. The LED strip has a 36" power lead so unless you want to extend that power lead length, you'll need to mount the LED strip within 30" or less of the stock light housing. See our product photos for examples of real customer installations. The ideal mounting location is one in which you can drill a 1/4" hole in the RV to feed the power lead cable through and then drop down to splice into the back of the existing tail/turn/brake circuit. This makes for a clean installation. In some situations you may not be able to do that in which case the power lead cable may need to be run on the outside of the RV and down to the stock tail/turn/brake light housing. You'll need to take a look at your RV to see what's possible. If you have to run the power lead wiring on the outside, we suggest using either Butyl tape or 3M VHB tape to securely fasten the power lead cable to the RV (we also suggest wrapping the power lead in split-loom). It's not ideal but it can be done so it looks good. You'll of course need to remove the existing tail light housing on both the left and right sides from the RV to gain access to the wiring. It's usually a very simple thing to do. As for making the actual wire connections, we prefer to cut the existing wires (once we've clearly identified them) and then use butt connectors (supplied in the kit) to re-connect while at the same time adding in the new Boogey Lights LED strip. Some folks prefer to use a scotch lock connector however in our experience, they're not as reliable particularly on vehicles that move, flex and vibrate. Our kit includes some butt connectors to do this.

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).

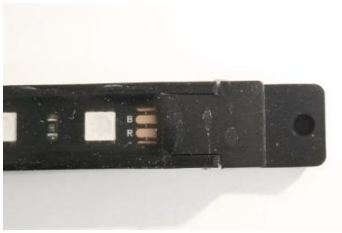
- Next, use the 3M Adhesion Promoter supplied with your kit to "paint" on the promoter where you are going to mount the LED strip. ***This is an important step. Do not bypass.*** Allow the promoter to dry for 60-90 seconds.

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

Do NOT bend the LED strip on a horizontal plane.

- 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 these HEAVY DUTY LED strips, you can also add a screw into each end. 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. Torqueing 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.



WIRING TO EXISTING TAIL / TURN / BRAKE

Note that some trial and error may be required to identify which wires on the existing tail-turn-brake light housing operate each of the lighting functions. If you are installing these on a trailer, you'll obviously need to have the tow vehicle connected to test each of the tail/turn/brake light functions. We assume the installer has the skills necessary to safely do this trial and error testing without blowing a fuse. Having a 12vdc multi-meter handy can be helpful in these cases. See suggested wiring for RED, REDA and REDW LED strips on the next page.

DON'T MAKE ASSUMPTIONS ON JACKET COLOR. Do not assume the color of the wires on your RV's tail light circuit follows any particular wiring convention. It's entirely possible the black wire on your existing circuit is a 12vdc POSITIVE wire instead of 12vdc negative which is customary for 12vdc. Super important you isolate and test each wire on your existing circuit to confirm what is does (e.g. brake/tail/turn) and its polarity (e.g. positive or negative). If you're unfamiliar with how to do this, please ask someone who has the experience to do this to assist you with this part of the installation.

Do not over-load your vehicle's lighting circuit. Adding more LEDs to your vehicle's lighting circuit will increase the load (amperage) on that circuit. Depending on your vehicle, increasing that load may cause the lighting control module to shut down the light circuit if that additional load exceeds the pre-programmed limit for your vehicle. You can get around this limitation by using relays to power the additional LEDs or of course, reducing the number of LEDs you're adding such that the load is below the limit set by your vehicle. We offer heavy duty relays (https://www.boogeylights.com/heavy-duty-12vdc-40-30-amp-relay/) or they can be purchased at just about any auto parts store.

3 Diode RED LED STRIP: Each RED Boogey Lights LED contains THREE DIODES, all of which are RED. Each RED Heavy Duty LED strip has 4 conductors: One 12vdc negative (the black wire which is ground) and three 12vdc positive wires (color coded red, green and blue). Each of those three positive wires connects to one of the diodes in each LED. This gives you three different LED Diodes you can control.

STOCK LIGHT	BOOGEY LIGHTS LED STRIP
• Existing Ground (12vdc-) ->	Black wire on Boogey Lights LED Strip (12vdc -)
• Existing Tail Light 12vdc+ ->	Red wire on Boogey Lights LED Strip (12vdc+)
• Existing Turn Light 12vdc+ ->	Green wire on Boogey Lights LED Strip (12vdc+)
• Existing Brake Light 12vdc+ ->	Blue wire on Boogey Lights LED Strip (12vdc+)

Depending on your RV's tail-turn-brake light wiring, you may not have these same three 12vdc positive wires. In some RVs the brake light and the turn signal share the same circuit. In that case you would wire both the Green and Blue 12vdc+ wires on the Boogey Lights LED strip to the existing turn/brake light circuit on each side of the RV. If you purchased REDW (4 diodes), there will be a YELLOW wire on the Boogey Lights LED strip. That wire can be connected to the REVERSE circuit to light up the White diodes on the REDW strip. Follow the above for wiring the three RED diodes on the LED strip.

4 Diode REDA LED STRIP: Each REDA Boogey Lights LED contains FOUR DIODES, three of which are RED and the fourth is AMBER. Each REDA Heavy Duty LED strip has 5 conductors: One 12vdc negative (the black wire which is the ground) and then four 12vdc positive wires (color coded red, green, blue and yellow). Each of those four positive wires connects to one of the diodes in each LED. This gives you four different LED Diodes you can light up.

STOCK LIGHT	BOOGEY LIGHTS LED STRIP
• Existing Ground (12vdc-) ->	Black wire on Boogey Lights LED Strip (12vdc -)
• Existing Tail Light 12vdc+ ->	Red wire on Boogey Lights LED Strip (12vdc+)
• Existing Brake Light 12vdc+ ->	Green & Blue wire on Boogey Lights LED Strip (12vdc+)
• Existing Turn Light 12vdc+ ->	Yellow wire on Boogey Lights LED Strip (12vdc+)