

INSTALLATION GUIDE

**KENWORTH W900
BREATHER LED LIGHT KIT
Upper & Lower**



RULE THE NITE™

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800.847.1359

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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.

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. The photos we include may not precisely match your truck. 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 slightly 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 (and 3M Adhesion Promoter) 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. 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'll Likely Need

Sockets/wrenches in the sizes necessary to remove the breathers as well as the driver's side steps to access the battery bank, drill with 5/16" drill bit, wire cutters/strippers, crimping tool, electrical tape, rubbing alcohol, shop rag or two, ladder to reach the top of each breather. You'll also need a heat gun or hair dryer for the heat shrink.

RGB/MULTI-COLOR KIT Installations: Installation of this led light kit takes 3 to 4 hours depending on whether or not you're adding this light kit to an existing installation or installing this kit as a stand-alone. If the LED Controller is already installed with another kit (e.g. Under-Glow), this kit will simply tie into that controller. If you need to also install the LED Controller, it will take additional time to do this. Wiring diagram is included at the end of the guide.

SINGLE / DUAL-COLOR KIT Installations: Installation of our single color kit typically takes 2 to 3 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 breather 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 Locations

This instruction guide covers both the UPPER and LOWER breather lights. If you only purchased one of these, disregard the other mounting instructions.

Upper: We always prefer to hide the LED strips whenever possible so you can't see the strips themselves; only the glow from them. For breather lights however not all breather can styles will allow this. If your breather can has a removable rubber boot that covers air cleaner, the ideal location is to mount the LED strip to that removable rubber boot. That way the LED strips are completely hidden and only the glow shines out of the breather. If your breather cans don't have a rubber boot, then the next best option is to mount the LED strip at the very top of the breather facing inward (see photos). In both cases, the power lead will need to exit the breather can such that it can then make its way into the engine compartment where it connects with the rest of the lighting system (or power + switching mechanism you're going to use). Our preference is to keep the power lead wires inside the breather can and then fish the power lead cable into the engine compartment via the air intake. Doing so will require drilling one 5/16" hole in the breather can and another hole in the air intake hose inside the engine compartment so the power lead can exit that air intake hose and connect to power/switching. How you do it is up to you. Just make sure you seal any holes and are routing the power lead wire in such a way that the power lead wire isn't pinched or chaffing against any metal. Important too all power lead wires be wrapped in split loom (included) for extra protection. We have some photos of a couple of different breather installs at the end of this guide to show you how we've done it on several different trucks.

Lower: The lower breather light strip can only be mounted one way; inside the lip on the bottom of the breather can. The W900 has a 1.25" aluminum lip on the bottom of the breather can which makes this possible. Routing the power lead wire for this light strip can only be done on the outside to get it inside the engine compartment. Because the LED strip and power lead is attached to the bottom of the breather can, it's relatively easy to hide the power lead going into the engine compartment.

Note that we include a set of male/female quick disconnect connectors for each breather light strip purchased. Adding these to your installation is important for future maintenance of the breathers without damaging the LED light strips. These allow the breathers to be easily removed for service without damaging the electrical connections.

If you're installing an LED controller (or wireless on/off switch) with this kit, you'll need to remove the driver's side steps to access the batteries. You can mount it anywhere you have a dry area. We prefer to mount our led controllers in either the driver's or passenger's side storage box but it's not required. You can just as easily mount the controller in the engine compartment or also inside the battery box. The key is making sure you're mounting it where it is protected from water or extreme heat. There should be air flow too around the controller. If mounting inside either of the storage boxes, you will need to drill a hole in the floor of that box to connect power to the battery box, led wires and antenna. We provide some butyl tape to seal this hole.

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 knows how to remove the breathers from the truck as well as disassembling the breathers from the caps.
- 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 connectors, the importance of having a fuse in the circuit at the battery location and polarity.
- 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, quick-disconnects (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.
- Heat shrink. 1/8” and ½”. Use this heat shrink to make and seal your quick-disconnect connections. Use the 1/8” to cover each of the power lead connections to the connector. Then, use the ½” to cover that group. See photo. You'll have to do this for both breathers.
- 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.
- Butyl Tape. We use butyl tape in a number of places to secure the LED lights to the inside of the breather (see photo) as well as to seal up any holes drilled in the truck. Butyl will only work if you apply it to a clean surface so make sure you first clean the surface with rubbing alcohol.
- 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.

CUTTING YOUR LEDS- While you shouldn't have to do so, 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 use the included heat shrink tubing 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.



Cut Locations

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.
- 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.

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



Do NOT bend the LED strip on a horizontal plane.



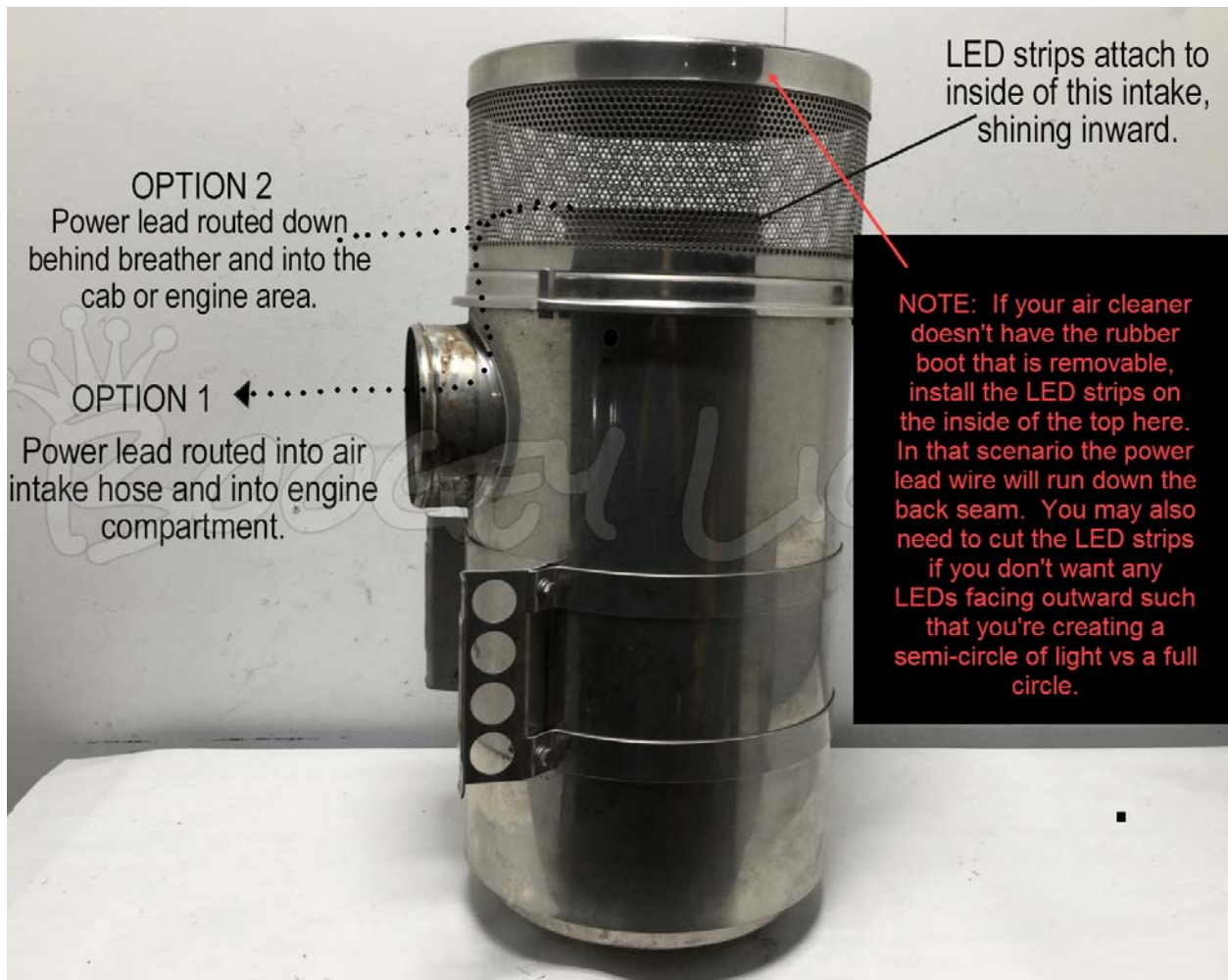
Carefully push the LED strip to the area you have prepared. You will want to apply only enough pressure to the strip to make sure it is firmly mounted. *You only get one opportunity to do this.* Once the LED strip touches a properly prepared surface that has been promoted, that LED strip will be very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

INSTALLATION

1. Remove the top of the breather. There are usually 4 bolts. Take the top of the breather to a workbench or flat surface where it's easier to work on it. NOTE: If your breather has a rubber or plastic boot (see photos at the end of this guide), the installation is easier since you can mount the LED strips to that boot vs mounting them directly to the breather can itself. If your breather has the one piece boot/air cleaner, you'll need to mount the LED strips on the inside of the top of the breather. See photo for LED placement.
2. Determine how you're going to run the power lead that attaches to the LED strip from inside the breather top and into the engine compartment. There are two ways you can run the power lead from inside the breather top into the engine compartment where you'll make your electrical connections (or, connect to an existing Boogey Lights light kit already installed). We provide a diagram on the next page showing both options. Pick the option that works best for you.
3. The first way is to route the power lead down into the air intake manifold hose that connects the breather to the engine and then exit that intake manifold hose once inside the engine compartment. We find this to be the easiest and cleanest since it doesn't require removing the entire breather can from the truck. It might not however always be that way depending upon your truck.
4. The second option is to route the power lead out of the back of the top of the breather. This is done by drilling a hole through the screen mesh at the back of the breather top at the seam and then routing the power lead through an existing hole in the truck behind the breather and either into the cab area or the engine compartment. This option may require removing the entire breather can from the truck to gain access to a suitable access hole.
5. Once you've determined which method of routing the power lead cable you're going to use, you'll need to either drill a 5/16" hole into the base of the breather top (see photo) for wiring option one OR into the screen seam for wiring option two (see photo).
6. Clean the LED mounting surface with rubbing alcohol and then apply the 3M Adhesion Primer. At this point you can mount the LED strips. Make sure you plan the layout such that the power lead points toward the rear of the breather. Use the supplied Butyl tape to secure the power lead firmly against the breather top (see photo).
7. Route the power lead wire through the hole you drilled in the breather top. Once you have the power lead through the hole, you can wire in the supplied male end of the quick disconnect plug. Important that the breather top be able to be removed easily for service with the LEDs installed inside. Installing the quick-disconnect plug does that. We suggest allowing 12" to 18" of slack in the power lead cable so you have some room to work; but not too much that you have to coil up excess cable inside the air intake hose. The female end of the quick-disconnect plug needs to be wired to the included feeder cable with the opposite end going through the hole you'll drill in the intake hose inside the engine compartment (see photo). The male and female quick-disconnect plugs will connect together inside the air intake hose just inside the engine compartment.

8. Once you have the power lead cable in the engine compartment, you can continue with wiring the LEDs to power and/or a switch.

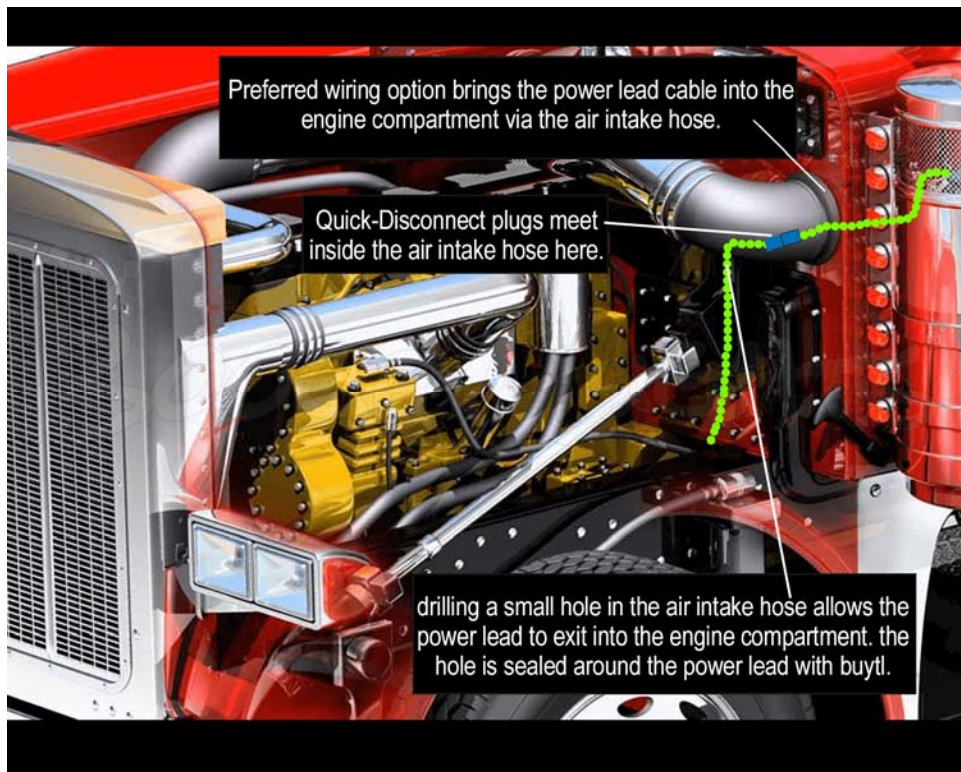
Here's a photo of the breather referenced above. Ideally you want to mount the LED strips to the inside of the rubber boot. If that's not possible, mount them to the inside of the top of breather. We prefer the rubber boot option because it completely hides the LEDs. You only see the glow. If your breather however has a one piece boot/filter, that's not possible since you'd have to replace the LEDs every time you changed out the filter. In that scenario mount them to the inside of the top of the breather. The LEDs are designed to make a full circle of light. In some cases you may want but those LED strips such that you only have a semi-circle of light with the LEDs mounted in such a way that they face inward toward the truck (vs outward toward other drivers).

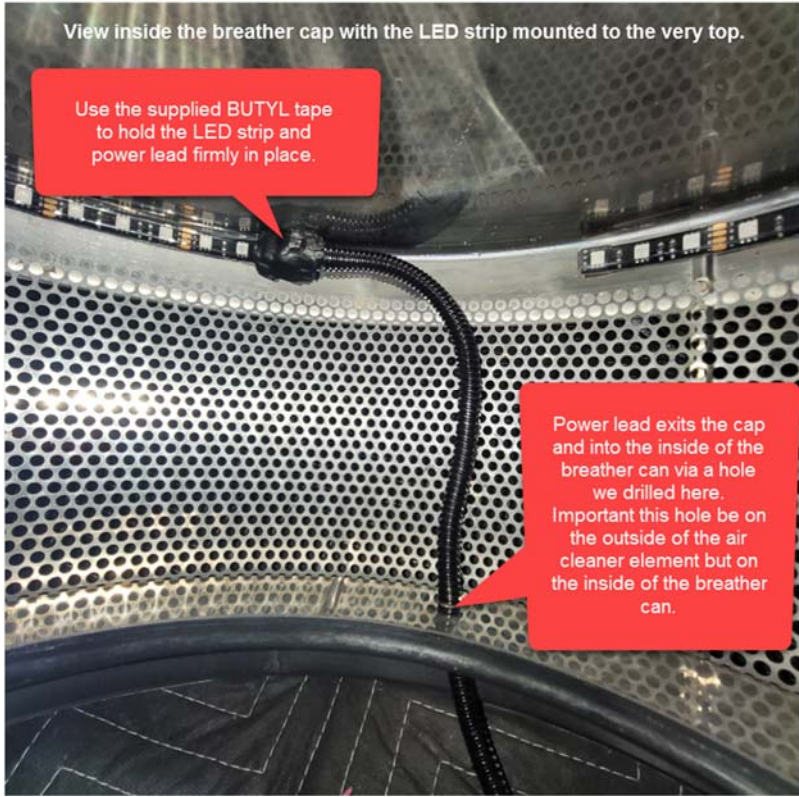


Here's a diagram of the two power lead routing options. We prefer OPTION 1 however either will work.



Diagram of the larger picture with the power lead routed into the engine compartment. Note the location of the quick-disconnect connectors.





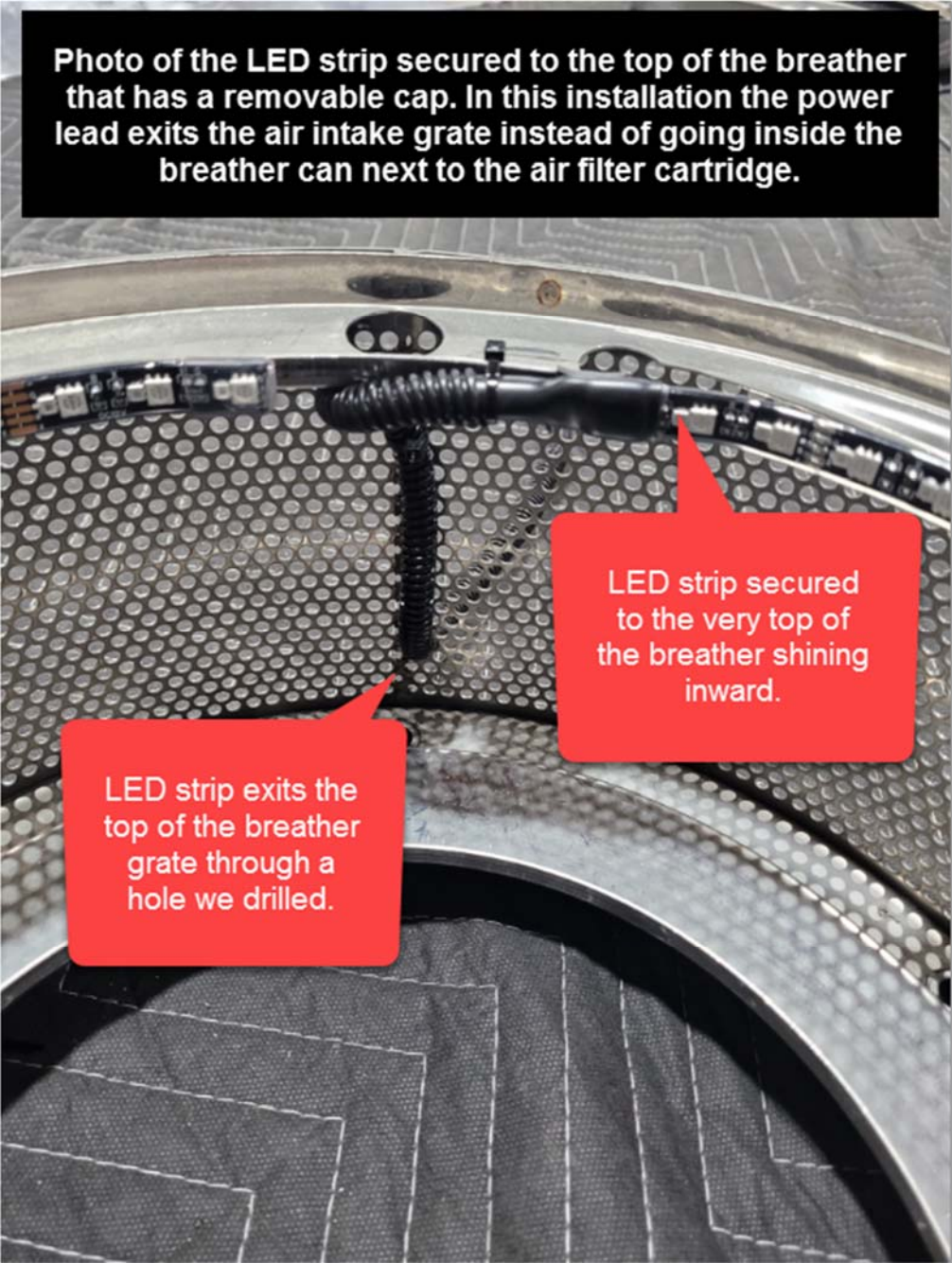
View from the bottom looking up into the breather top.

Hole we drilled for the power lead to enter the breather can on the outside of the air filter.

LED Strip Mounted Here

Quick Disconnect

This is a different installation where we had to route the power lead out of the breather can instead of going into the bottom of the can. There wasn't enough room between the outside breather can and the air filter cartridge to route the power lead wire inside the can completely.



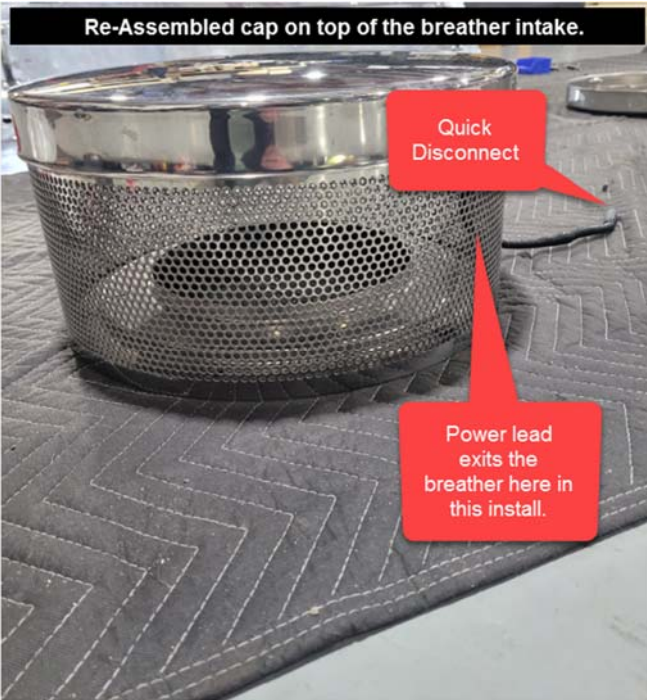


Photo of the LOWER breather led strip.

The LED strip is mounted to the inside of this lip facing inward.

Not seen here but the power lead is routed up on the back of the breather can and into the engine compartment.

