

EVOffer New Taillights - Weatherproofing Notes

The EVOffer lights a great compromise for those wanting an OEM refresh look without requiring Sheetmetal changes and warranty issues.

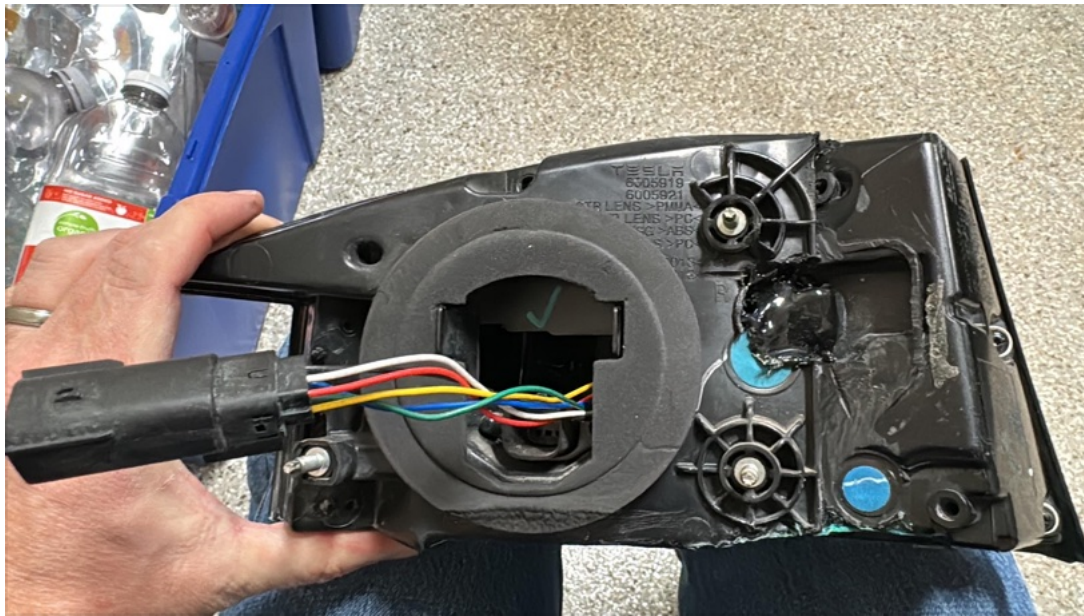
I received a set after a 1.5 Month wait and upon first look they really do look very good. I discovered however that they lacked any type of weatherproofing for the modified rear housing. DOT and SAE standards require that lighting elements on modern vehicles to be sealed components. The 2023 light element still is but the older shell that is grafted onto the 2023 light isn't, at least not as it comes from EVOffer. I took a few days and looked it over. I contacted EVOffer about the issue and after discussions internally, they determined that weatherproofing wasn't required.

I respectfully disagree. The as it comes from EVOffer the design of the light has an open cavity into the car which water could pass if enough of it got into the light, or enough wind and water mixed to slosh around inside the light. My 2021 Model S LR is still under the bumper-to-bumper warranty and given the proximity to HV charging, and the rear audio electronics on either side, I don't want to pay out of pocket for problems later. EVOffer says that several customers in HK/China have installed the lights and haven't had issues. I'm sure that's true, but I'm more of a cautious person. I offered a few different solutions for the issue with EVOffer. We both settled on me making the needed part improvements and them honoring my 1 year warranty.

There are several areas that required sealing. Here is a pic of the unit as received.



Here you can see how water could get into the light and into the car between the seam. The cut line for the old housing isn't sealed at all.



Same for the rear of the housing where the old and new are joined, seen here on the right side. The tops and bottom are epoxied and sanded then painted black. The foam seal you see was transferred from the existing light to the EVOffer one. It doesn't come with that piece in-place.

The game plan to improve the part improvement is as follows:

1. Seal the exterior cut seam between the parts.
2. Seal the rear joining seam with additional epoxy.
3. Close additional openings from old hardware holes and the rear PCB area of the old part.
4. Install electrical tape on the connector wiring to prevent snags and shorts.
5. Install the foam seal from the existing light into the EVOffer Light.
6. Transfer the breather vent (blue sticker) from the existing light to the EVOffer light.

It seems like a lot, but it's really only about an hour of additional work on each part most of that is the dry time for the Epoxy.

Parts:

JB Weld - AutoWeld x2

FlexTape - Single Roll

Electrical Tape - Single Roll

Painters Tape

2 parts for your existing light

Foam Seal

Blue breather vent sticker

Tools:

Xacto Knife

Light Table (If your kid has a LightBright, you have one)

The JB Weld kit makes it easy to access the interior of the light and deliver the Epoxy in the correct spots. The procedure here is to use a light table and get rid of all the light you see or holes you see in how the part was assembled. The obvious ones are the mating area of the old and new light on the back vertical face towards the left/right, and the interior cut line inside the light. Take some time before beginning work to inspect the part for holes, areas that require epoxy to seal.

Place a strip of electrical tape and painters tape together with the electrical tape inside the center of the masking tape. Then grease the electrical tape. This will prevent the Epoxy from sticking to the surface and causing material transfer when you remove it. Make the piece of electrical tape thin. So it will fit within the crack to block the epoxy from reaching the surface. The tighter the line and recess the better the end result. Now place the tape down the length of the exterior cut wrapping it on the ends of the top and bottom. Use your nail to trace the line and force the tape into the recess. You could also use a strip of wax paper in place of the electrical tape and grease.

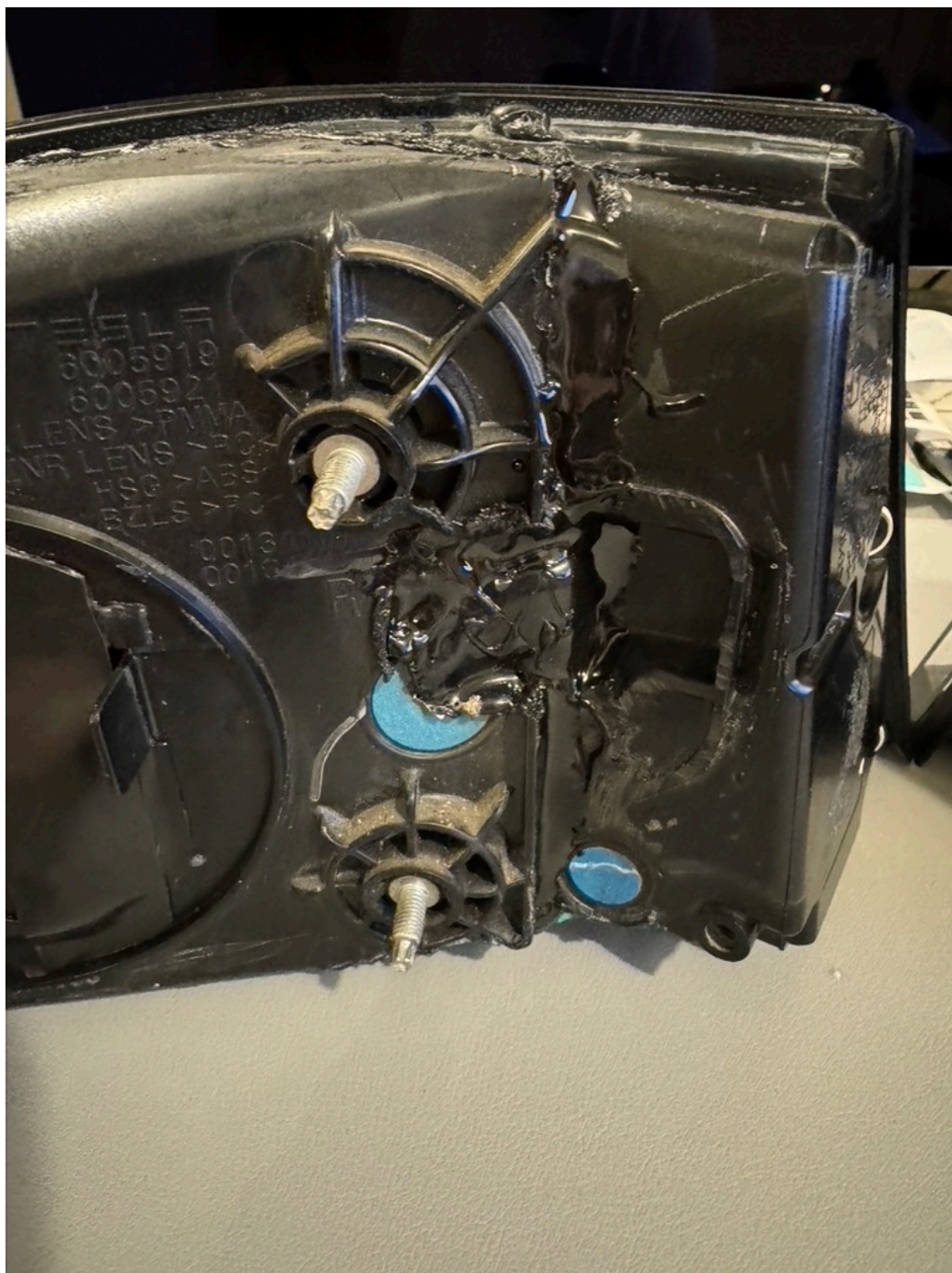
Lay the lights down and start with the interior cut line. Place a towel or rag down so you don't scratch the lenses. You should mask the area on the front as outlined before starting. Use a headlamp or other back light to see as you go for this part. Open the AutoWeld (trim the tip to just the first ring) and connect the dispenser tube. Press the plunger to start mixing the epoxy. When it gets to the tip, then insert it into the rear hole on the part and find the cut line with your light. Once you hit it with the tip push down on the plunger and fill the entire line. It won't take long. Look over your work and refill as needed. The top and bottom of the cut will have spaces to fill. You can try and get them all from the inside, or it might require an exterior fill.

Tip for working with the AutoWeld: Once you've filled something and you're inspecting your work, pull up slightly on the plunger to relieve the pressure and stop the flow of epoxy.

Once the inside of both lights is done move to the exterior. The rear joint of the old and new, where the connector is epoxied is next. Trace the line all the way down the part filling it with epoxy and filling in any opening left in the connector area. Repeat for the other light. Once complete you should have exhausted a single tube or close to it. The parts fill areas should be getting tacky as it sets in 15 minutes. The dispenser tip will be trash at this point. Remove it, replace the cap if you have any left and let the parts sit for an hour or more. Leave the lights face down to dry.

When the time has passed now you can remove the cut line mask and check your work. Using a light table or strong lamp, peer through the hole in the part and check for light. If you see some, make a note of it. Inspect both lights. Once you have an idea of the other areas left to fill, open the second package of AutoWeld, use the new dispenser tip on the old package to exhaust it if needed. Then move the tip to the new one to continue. This part goes pretty quick. The epoxy will stick to the areas so you can move it around and hit all your rework. Fill those top and bottom areas and any others left. You can choose if you want to fill the open hardware holes. I chose not to, more on that later.

Now let it sit and dry a second time. Once the drying time has elapsed, reinspect the part for any light still showing through. If there are any, you may need to either buy another package or switch to super glue or the like depending on location. The point is to fill all the holes and areas that need sealing.

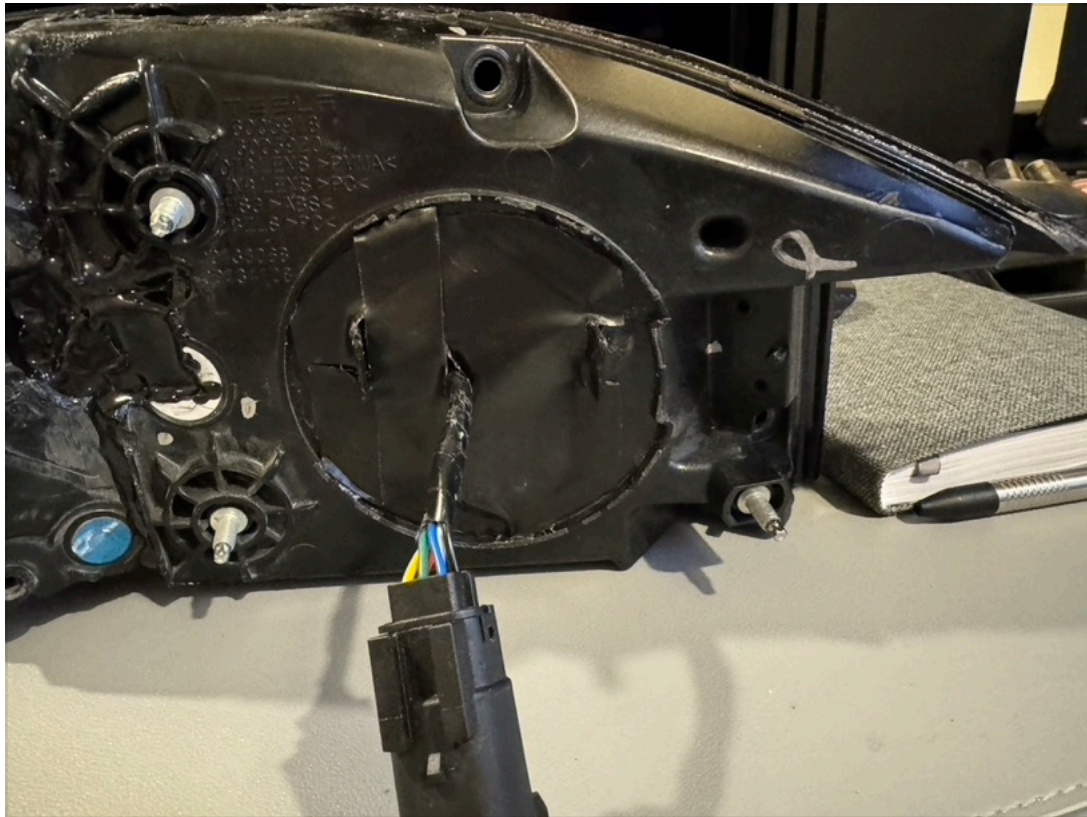


Once you've had the fun with the epoxy it's time to move on to FlexTape!

There are two spots to fill with FlexTape. The first is one of two hardware holes left open. Pick one and fill it. You'll use the other as an air vent for the newly sealed cavity.

The second is the large rear hole where the old PCB and connector used to be on the light. First we need to wrap the wiring with electrical tape to keep the wires together and prevent snagging inside the car on install. That's the primary reason

wiring is wrapped BTW, to prevent shorts, wire breakage, and snagging. Tape it starting at the connector and wrap it as far inside the light as you can get. Once done. Cut a piece of FlexTape to size to cover the hole. Leave space in your cut out for the locator tabs for the foam seal. Cut a line into the center and cut out a small hole for the connector to fit through. Remove the backer from the tape and stick it into place. Now cut a piece of tape and cover the cut line you made on the last piece to get the connector centered.



The remainder of the work will require the existing light to be removed and both the existing and EVOffer parts available.

The Foam ring is the primary weather seal between the car and the light. It keeps everything dry. Carefully pry under the seal against the plastic to get the adhesive and foam off in one piece. Then transfer it to the EVOffer part.

The Vent is a blue circular sticker, might be a different color on other years, that is on the backside of the part either to the right/left of the connector. Use your fingernail and pull the edge back. Make sure you're getting the adhesive and not just the vent. If you don't get the adhesive, flip the light around and peel from the opposite side. It'll come up with some deliberate force and peel the whole thing off. Stick it to the hole you didn't cover previously. This vent allows air/moisture transfer out of the light. Now that you've ruined your old lights. You can install the new ones!

The final part will look something like this:



I also transferred the installed rubber boots and spacers onto the EVOffer lights as they were on the existing light. I'm sure someone in the factory was using them to shim the parts into place and make them work with the body.

****End****