



DDE Lightning PLUS™ Installation Instructions

E36 European Ellipsoids

Thank you for purchasing the DDE Lightning Plus™ system for your BMW E36. These instructions will walk you through the few steps required to install the system. Note that this kit requires European Ellipsoid headlights. Units from Bosch, Hella, ZKW, or others, are compatible. Stock US Spec headlights are not compatible. See your dealer for more information and availability on European specification Ellipsoid headlight systems.

1.0 Required Tools

Normal Installation

- Pliers (common and needle nose)
- A medium flat blade screwdriver
- A utility knife or box cutter
- An 8mm nut driver
- A small tube of clear silicone glue.
- Drill with 1/8" drill bit

Optional Soldered Installation

- The tools above
- Wire cutters and strippers
- Soldering iron, solder and a blow dryer or heat gun

2.0 Installation Notes and Warranty

Please read completely through the instructions before beginning. There are two methods possible to attach the inverter power wiring. You need to read through the instructions and make a choice before beginning that wiring. Please contact us if you have questions before continuing.

The kit is very easy to install. But you must take your time and a helper for some steps is recommended. The rings, once installed, are durable enough to take the rigors of driving on the street. The mounting system and installation method ensure that the rings will resist vibration and jarring extremely well. That said the rings are very susceptible to breakage on installation. Do not attempt to flex, bend or put pressure on the ring itself. They can shatter and like any fluorescent lamp may result in flying glass if broken. It is suggested that you wear eye protection when handling the rings. All fluorescent lamps also contain small amounts of the chemical Mercury. If you break a ring do not blow the debris away or inhale the powder. Wipe up any debris with a damp paper towel and dispose of it. Handle the rings with care until they are installed inside of the bezel of the headlights and they will provide years of trouble free operation. Lamps can last for over 100,000 hours of operation.

This procedure assumes that you are familiar with your European Ellipsoid wiring methods and have previously connected your city light power connections to the automobile's wiring harness. If not, please refer to your ellipsoid dealer for assistance as required.

Apexcone.com warrants the normal operation of this system for life. Return any non-performing component for immediate replacement.

Enjoy your product and thank you for your purchase.



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3.0 Kit Contents

Each system contains different contents based on the application. The exception is that the hardware and supply bag for the system is universal. This means that you may have components in the kit left over that do not apply to your automobile or the installation method you choose to use. For instance, if you choose to use taps for your system to power the power supplies, you will not require the shrink wrap in your kit. Other items may also be left over. If you follow the installation instructions and have left over supplies, DON'T PANIC. It's just easier, and therefore cheaper for everyone, to use one common hardware supply kit.

This is a picture of the system as you will receive it.

It contains:

- 4 lamps
- 1 hardware kit
- 2 inverters



Contents of the hardware bag:

- 8 Tie wraps
- 4 connectors to install on the lamps
- 2 pieces of shrink wrap
- 4 Add-a-Tap connectors
- 4 butt connectors (unused in E36 installation)



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4.0 Installation Procedure



As the first step, remove your lights from the car and remove the four metal band clamps and then carefully pry open the four clips (2 on each end) as shown. This will allow you to pull the front bezel off of the headlight housing.

Using a knife or box cutter cut through the silicone around each inner lens so that it can be removed. You can clean the old silicone off by hand when the glass is removed.

Note: Finger prints are not a good thing on the inner lenses or the inside of the outer bezel. Remember to clean them off before reassembly.



On the 'high' side of the lens, insert a screwdriver and pry the lens up and out of the opening. Do not under any circumstances touch the small retaining clip. It is tempting to do so, but you will only end up breaking it and having to glue the lens in place. Trust us; we've done hundreds of these. Just pry the glass out near the clip. It WILL come free. Yes, it's anti-intuitive. Just do it this way. J

After you get all the lenses out, clean them inside and out to remove oils and fingerprints. Handle them by the edges to prevent prints. It would also be a good idea to do this at a table where you can't drop the lenses and break them.



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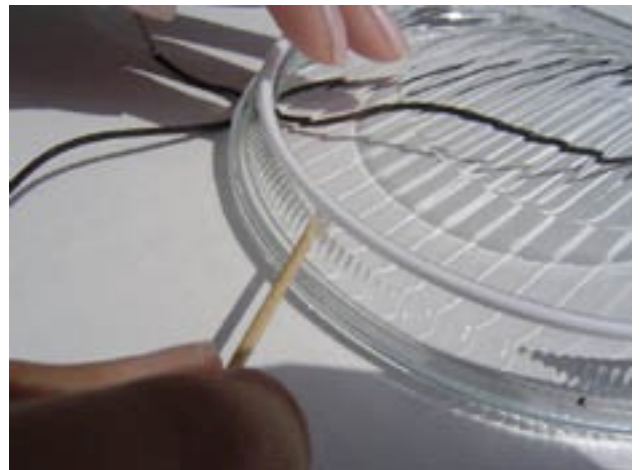
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Each DDE Lightning Plus ring has a small peel and stick glue pad on the mounting point of the ring. Use a knife point or pick to lift the paper off of the glue area. Try not to place and reattach the glue point. They work best when put in place and not lifted off.



If the peel-and-stick glue doesn't stick, stop and clean the glass again. The glue pads may have lost their adhesion so it may be required to put a small coating of silicone under each mounting point. This works just as well as the original 3M brand glue but takes longer to set up. If you do need to put silicone under the mounting pads, tape the ring into position and let it set for about 30 minutes before continuing. In cool temperatures, bring the lenses indoors for warmth to cure.

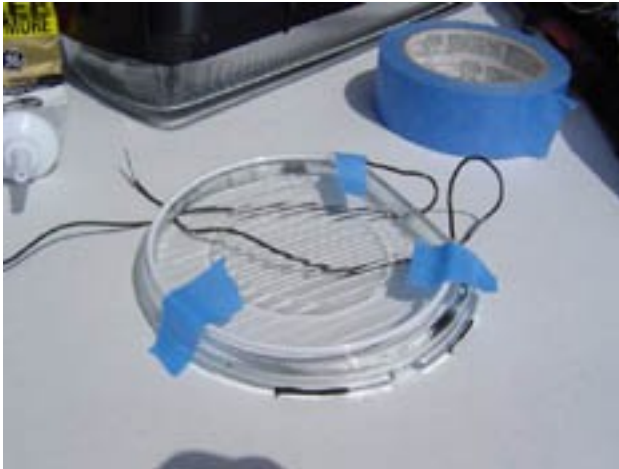
Even with the mounting point glue pads working perfectly, you might want to place a small drop of silicone under the very bottom of the ring to cushion it from vibration.





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Center the ring on the lens and push VERY GENTLY at ONLY the mounting points to adhere the ring to the lens. Take care that no point on the ring or the mounting points is outside of the edge of the glass. This would prevent it from being reinstalled and probable breakage. The bottom edge is particularly important. When reinserted, the ring should not contact the outer black bezel. Keeping the ring 1/8" above the bottom of the lens is best. Tape the ring in place and set aside. Repeat the above procedure for all 4 rings. Let them set while we do some more electrical prep on the headlights. This will give the glue plenty of time to set up.

Remove the cover to the high beam side of the ellipsoid. The rings get their power from small power inverters. The inverters will be powered from the power lead to the city light. The Lightning Plus will become your new city lights.



Soldering method. If you do not feel comfortable soldering, read ahead a few steps and use the Add-a-Tap connectors instead.

Using wire cutters, cut the brown and gray wires going to the city light bulb in the bottom of the light. DO NOT cut the brown wire leading into the main ground point just above the wire cutters.



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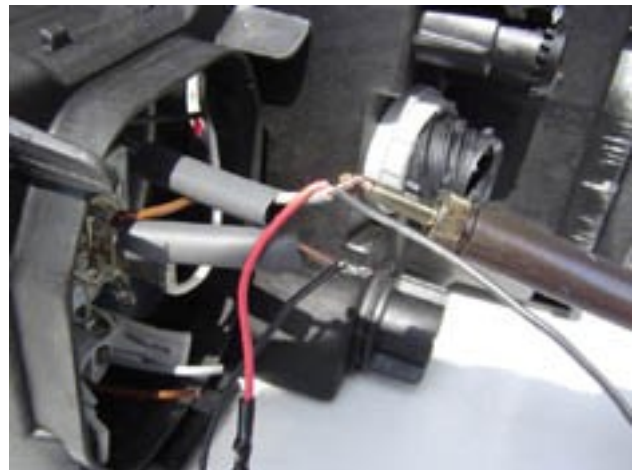
Using wire strippers, strip back ¼" of insulation on the brown and gray wires now left free. The remnants of these wires on the city light socket will not be reconnected. They can be left un-terminated.



Slip a small piece of shrink wrap over each of the leads just stripped. Note that you received 2 pieces about 3 inches long in your hardware bag. Cut one of these pieces in half and slip a half over each wire. The other 3" piece will be for the other light. If you are soldering your connections, cut the two male quick disconnects off and strip the insulation back to twist the black and red leads to the brown and gray leads. Red = Gray. Black = Brown.

Note. Soldering is the most electrically sound method. If you do not feel comfortable soldering, you can leave the wires uncut and use the 4 Add-a-Taps to these wires and just plug into them. This will work acceptably but is more subject to vibration and damp conditions.

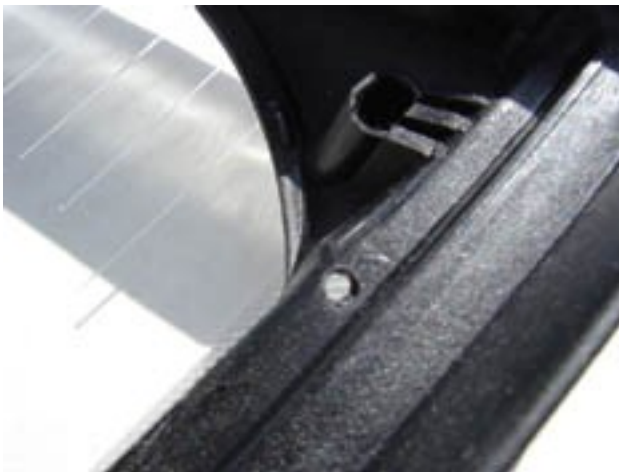
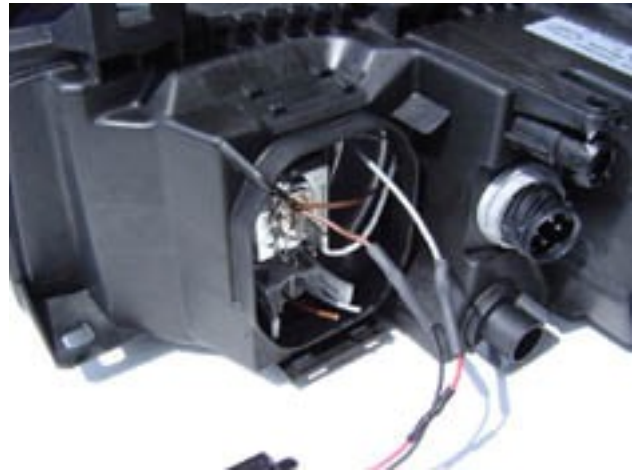
If you are soldering, heat each twisted wire pair with the soldering iron and touch some solder to the wires. It will melt and flow onto and into the wires forming a permanent bond.





For the solder method only, use a heat gun or common hair blow-dryer to warm the heat shrink so that it contracts around your soldered connections to form an insulated watertight covering.

Repeat for both headlights and leave the power inverters outside of the headlight at this time. Set the headlights aside for awhile and return to working on reinstalling the lenses with rings into the outer bezels.



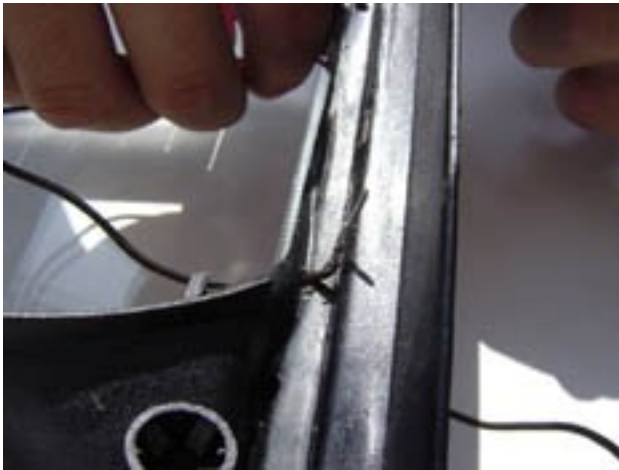
Examine the inside of the bezel. Note the vents along the top of one side (ZKW example) we can feed the black power wires from one ring through these. On the other side, we need to use a drill and 1/8" bit to drill routing holes at the corner of the lens opening as shown. Do this on both sides of the lens without venting. Repeat for the other headlight bezel and clean black plastic debris out of the holes and the bezel. Polish out any fingerprints in the bezel.



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Choose one lens. Note on it at the perimeter if it has a notch in the circumference. This notch corresponds with a locating ridge on the bezel where the lens will lay. Locate the proper hole to mount it back into. This is a good place to have a helper to hold the lens with the ring face down (by the edges, no fingerprints). Straighten the wires and note if you have the left or right wire so that you can feed it up under the edge of the black plastic and UPWARD from INSIDE. See the picture to see an example of the method of feeding the wire from the inside, upward. Feed the wire up and through the hole. It may take some patience to get the wire with small connector under the lip of the bezel. A helper holding the lens makes this much easier. If a helper isn't available a soft pad would work. Don't set the rings down on a hard surface. Hold them up by hand or on a soft surface!



Repeat this process on the other wire for this lens.

Now, CAREFULLY pull the wire upward as you also lower the lens back into place. You always want to have slack on the wire so you do not put pressure on the point where the wire attaches to the ring. As the lens gets near fitting back into its mounting, ensure the wire is pulled up nearly taut, but not quite.

Set the 'low' side of the lens into place first. Check slack on the wire. You do not want to leave a lot of slack which might be visible. But the wire should have some left at all times to keep strain off the wire attachment point.





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Let the lens sit up on the clip and remove excess slack on the wire to the high side. Leave some slack. Push the lens down past the retaining clip. Again, DO NOT try and pry the mounting clip. The lens will pop by it just fine. Prying on the clip can only make things harder by breaking it.

Repeat for the other three lenses. Using your tube of clear silicone, replace the bead of silicone that you cut earlier to remove the lenses. While the retaining clips do an adequate job of retaining the lenses, the silicone ensures that the lenses do not get jarred loose.

Once the lenses are all back into the outer bezels, the headlights can be reassembled. Feed the wire pairs from the rings up and over the reflector mounting bracket and out through the rear access cover of the high beam headlight where we made our inverter electrical connections previously.

Be VERY careful not to put ANY pulling pressure on the wires from the rings. Have a helper assist you in holding the bezel in position with slack in the wire as you feed them out the back of the headlight.



Once you get all four wires out the back of the headlight, you can reattach the bezel to the main headlight housing. Push it closed until the plastic clips on the end all reattach. It will likely take some fiddling to get the bezel lined up.

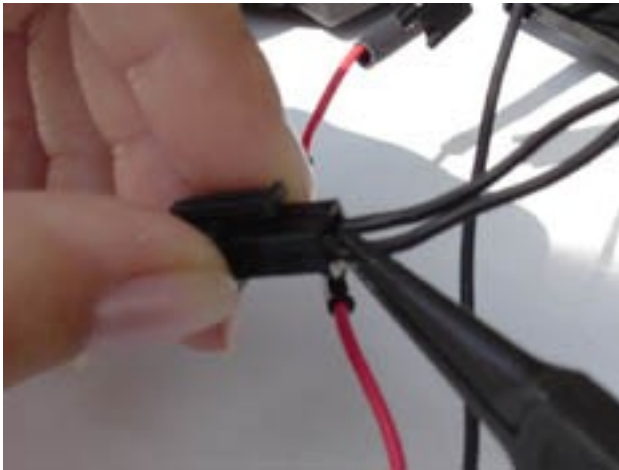
Once complete, check the wiring again and see that you know which two wires make a ring pair. Keep them separate as shown.



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Now it is time to insert the electrical pins on the ring wiring into the connector shells. This could not be done at the factory because the wires needed to be inserted into the bezel through the vent slots and holes you drilled. Carefully note the orientation of the connector in the picture. There is no polarity on the wires. Either one can go in either side of the connector. But there is a small metal barb on the connector. It isn't visible in the picture, but it must point UP when inserted into the connector, when oriented as shown.



If the barb on the connector pin does not seat completely, you may need to push the pin in a bit farther. Needle nose pliers work well. But you can do it with finger pressure with practice.

Once both rings have their pins inserted into the connector shells. Plug them into either white output of the power inverter. Repeat for the other ring.





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The inverter is just stored inside of the cavity of the headlight on the high beam side. Replace the access door.

Replace the metal band clamps on the top and bottom of the headlamp.

When reinstalling your headlights, pin two of the barrel connector is used to power the city lights. Almost all owners have these ran to their parking light hot wire. As shown, this installation is transparent and will be powered by the previously installed city lamp wiring.

You may want to connect the wiring to the lights outside of the car to test your connections.

Reinstall your headlamps and turn your parking lights on to power up the DDE Lightning PLUS™

Thank you once again for your purchase. Please call or send email to info@apexcone.com if you have any questions.

