

# Installation Guide

90-97 Mazda Miata NA Flush Mount Headlight Kit



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**Contents: Basic Kit**

- (2) CF Headlight Buckets
- (2) Aluminum Brackets
- (2) Clear Lexan Covers
- (2) Bolts (4) nuts (4) washers
- (14) Metal Clips

**+Contents: Complete Kit**

- (2) Hella 90mm Low Beam
- (2) Hella 90mm Hi Beam
- (4) Sets of Hella Levelers
- PNP Wiring Harness

# Removal of factory headlights

## Basic Summary

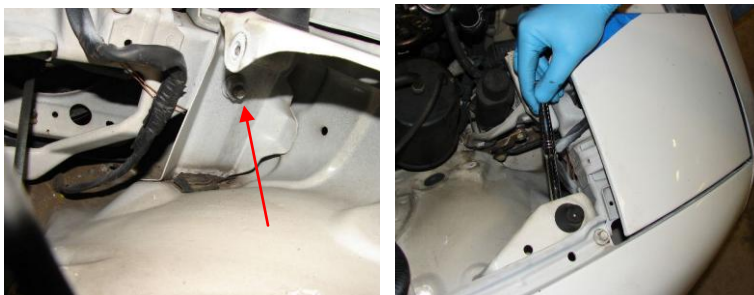
Each factory headlight is bolted to the car by only (3) nuts. Once the (3) nuts are unscrewed the headlight will be able to be removed from where it is bolted. In order to completely remove the headlight from the car you will have to unplug the factory wiring harness from the back of the headlight. To accomplish this remove the 4 screws holding the black plastic surround while the headlight is up. Loosen the four bolts holding the headlight lid on the assembly. Once removed, you will be able to gain access to the headlight to unplug the socket and associated clips. Now you can remove the headlight from the car. Below I will walk you through this entire process.

### Passenger side

Step 1) In order to reach one of the bolts to remove the factory headlight on the passenger side you will have to temporarily remove the radiator overflow bottle. This consists of removing (3) 10mm bolts and moving the entire bottle while the factory headlights are removed



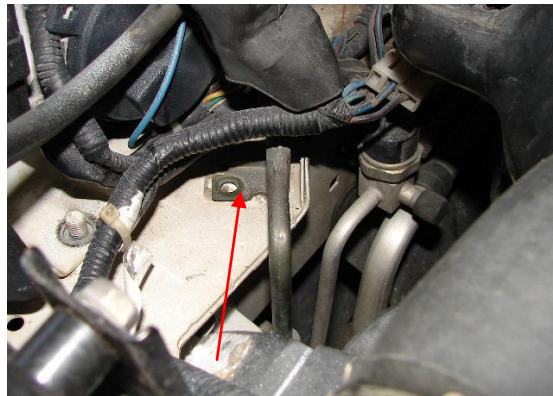
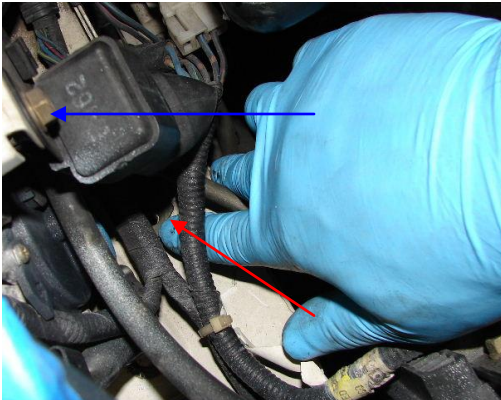
Step 2) with the overflow bottle out of the way it is now time to remove the first nut. This nut is positioned horizontal in relation to the car and was hidden behind the overflow bottle. With a socket wrench remove this 14mm nut.



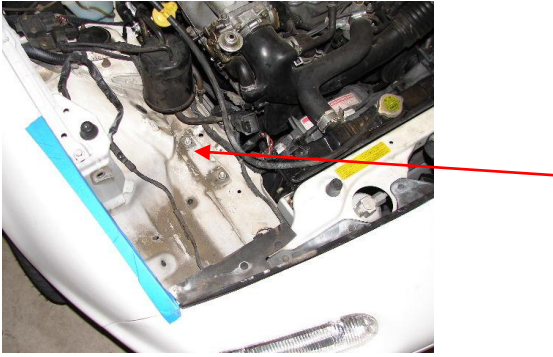
Step 3) Now it is time to remove the first vertical 14mm nut. It is located right behind the headlight while the headlight is in the closed position. Use a socket wrench with an extension on it to reach it,



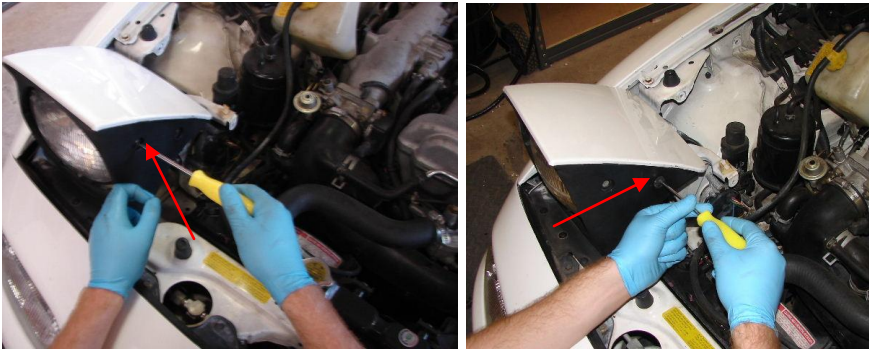
Step 4) The last nut is located right behind the one that was just taken off. It is very hard to see as it is located just under the motor used to raise and lower the headlight. In order to remove this nut, a 14mm open end wrench is necessary to reach it. Because of tight space I have found that in order to give some more room, first remove the relay held by the 10 mm bolt next to the blue arrow. After that is out of the way remove the 10 mm bolt shown by the red arrow. After the bolt is removed gently push the metal bracket and pipe out of the way. Remember to reinstall this bolt once the light is removed.



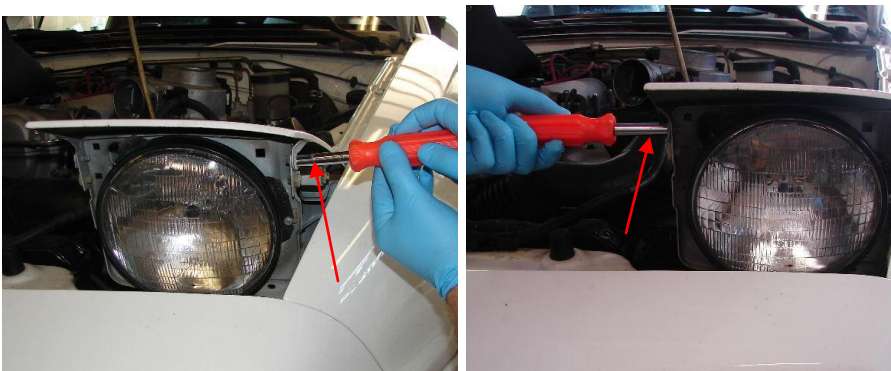
Step 5) now that you have some more room to work, removing the last nut is now possible. If you are having a hard time finding the last nut, look at the picture below to see an open view of where the nut was.



Step 6) Now once the (3) 14mm nuts are removed you will have to raise the headlight in order to remove it. On the middle of your dashboard is a button that will allow you to raise your headlights without having them turned on. After the headlights are raised you will now need to remove the black plastic shield and head light cover to unplug the factory wiring harness from the headlight. To remove the black plastic cover you will need to get a medium sized Philips screwdriver to remove the 4 screws (2 on each side). Once the screws are removed the shield can be pulled off

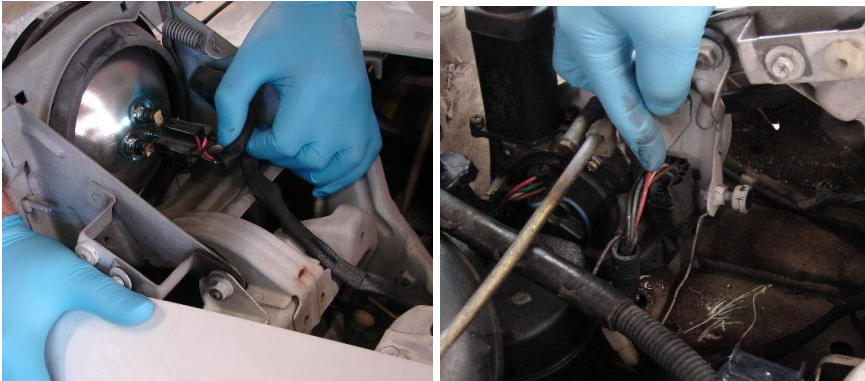


Step 7) After the plastic shield is removed the next step is to remove the headlight cover. It is held on by 4 bolts, 2 on each side. These bolts can be taken off with a Philips screwdriver but it is not recommended as it tends to strip them out. A socket wrench or nut driver to take of small bolts is recommended.



Step 8) After you have successfully removed the headlight lid you can now proceed to unplug the harness from the back of the headlight. Once the harness is unplugged, in order to remove the headlight from the car another connector next to the headlight motor

will need to be unplugged also. A flathead screwdriver can be used to press on the tab to loosen the plug.



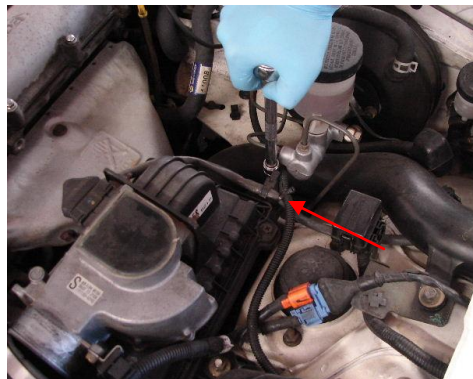
Steps 9) After both plugs have been removed unsnap the factory harness, which is held by small clips to the headlight assembly itself. Once those are removed the entire assembly can be picked up and removed from the car. The end result will look like this.

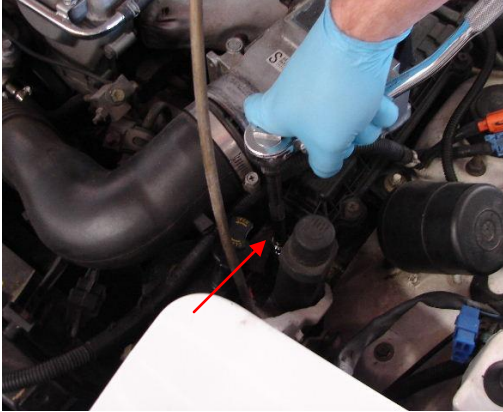


### Driver Side

The driver side headlight removal is very similar to the passenger side. There are a few differences though so I will walk you through these as well. In order to reach the third mounting point with an open end wrench, the air filter box will need to be slightly moved in order to gain access.

Step 1) The removal of the air filter box requires the removal of (3) 12mm bolts.

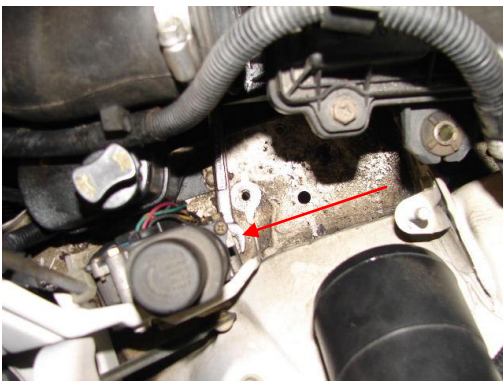




Step 2) After the bolts are removed you can now unscrew the hose clamp and move the plastic intake elbow out of the way.



Step 3) Now that the elbow and box itself are out of the way, there is plenty of room to use a 14mm open or box end wrench to remove the last vertical nut.



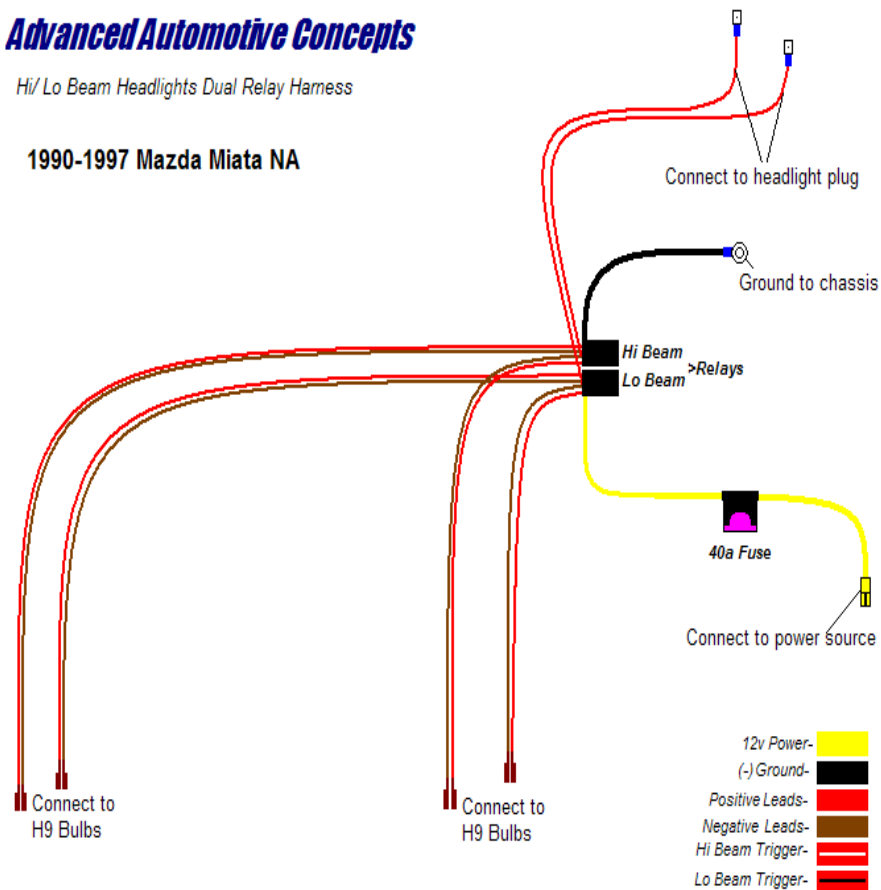
The rest of the driver side removal is the same as the passenger side. If any issues arise please follow the passenger side directions for assistance. Once both sets of headlight are removed you are ready to move onto the next step of the kit.

## Installation of the wiring harness

### **Advanced Automotive Concepts**

Hi/Lo Beam Headlights Dual Relay Harness

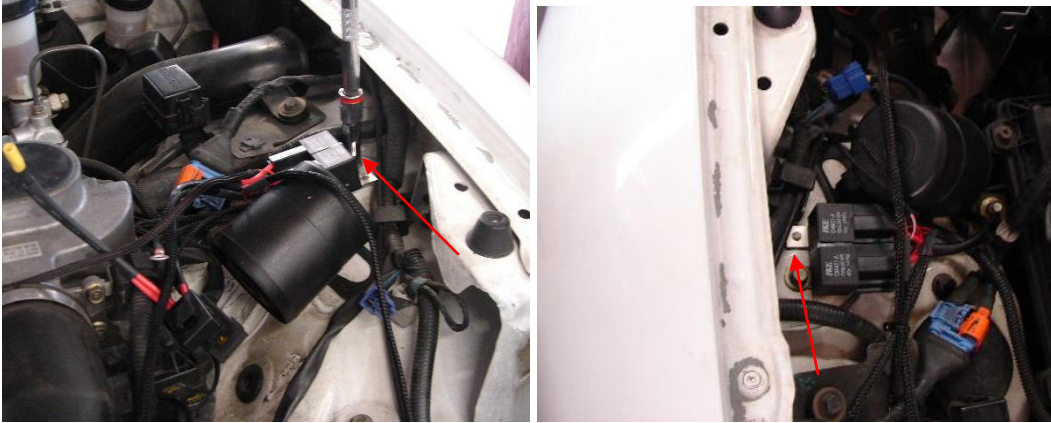
1990-1997 Mazda Miata NA



### **Summary:**

The picture above of the wiring harness shows what each piece of the harness is. The harness is mounted to the driver side of the car and the long set of wires is run against the firewall to the passenger side of the car. I will go through a step by step process of how to install the harness. Please look over the wiring schematics before you try and install it.

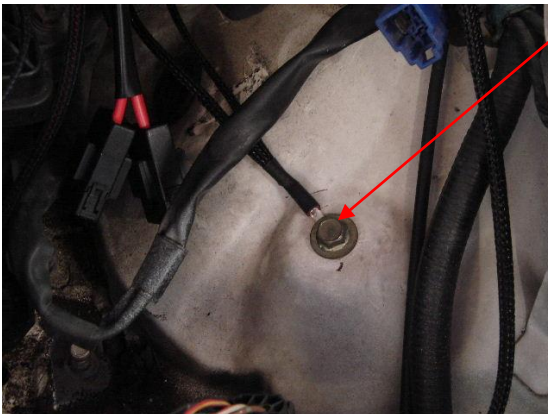
Step1) Find the two relays that are attached to one another. It is time to bolt this to the chassis of the car. There is a 10mm bolt on top of the fender well hump. Loosen the bolt and mount your relay assembly in its place. Now remove the fuses from the fuse holders.



Step 2) Now it is time to connect the 12v power source. With the fuses removed, find the blue plug on the driver side of the engine compartment. Unplug the cover and insert the yellow power plug over the connector.



Step 3) Find the ground wire, it is a black loom with an o-ring terminal on the end. Right below the blue connector there is a 10mm bolt on the bottom portion of the fender well hump. Unbolt this bolt and ground the wire here. In order to assure a good ground you should use sandpaper to remove the paint and grease where the terminal will contact the chassis.





Step 4) Find the factory headlight plug that was inserted into the back of the bulb. Take the two trigger wires attached to the AAC harness and plug them into the factory plug female connectors for hi and lo beams.

- Red/ White= Hi Beam
- Red/ Black= Lo Beam
- Black Wire= Not Used



After everything has been plugged in you can now test the lights before you actually install them. Find the longer set of connectors and run them on the back of the firewall to the passenger side of the headlights.

To connect the plugs to the bulbs simply plug the female connectors into the back of each bulb. There is no polarity so there is no wrong way to do this. One red wire for positive and one brown wire for negative goes to each bulb. If the fit is too tight you can shrink the red sleeve by heating it with a heat gun or lighter. As long as there is no metal to metal contact inside of the connector the light will function correctly. Be sure to test that you have the low beams connected to the projector type bulbs before taking the car on to the road.

Once the connectors are plugged to the back of each headlight you will now reinstall your fuses. Now turn on the lights and make sure the both headlights light up at the same time, if not you need to switch the connectors to correct this. Be sure your key is turned on the “on” position as the power wire is only hot when the key is in the “on” position. Once you have confirmed your wiring harness is working, it is now time to move on to the installation portion of the headlight install.

## Installation of headlights

### Summary:

In order to install the headlights in the car, you will have to first mount the headlights to the metal bracket with the Hella supplied levelers. The metal brackets are bolted to the car using the existing hardware and mounting points as your factory headlights. After the headlights are bolted into the car you will need to further adjust the lights to make sure they are level and give enough clearance to install the carbon fiber buckets. Once the buckets are installed you now have the ability to attach the clear covers and clips. After everything is fitted, drill your two mounting holes for the bucket and bolt it in place.

### How to install the lights on the metal brackets:

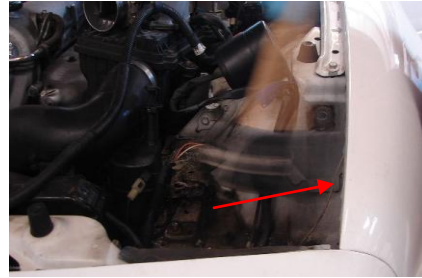
Hella 90mm Lamp modules are designed for custom applications. The mounting system comprises of three adjuster screws with captive nuts. The nuts have a tri-lobular locking feature that engage the ears and lock in with a 30 degree rotation. The instructions that come with the adjusters explain how they are installed. The ball on the end of the adjuster screw snaps into the black plastic Ball Socket. The Ball Sockets snap into the round holes on the metal bracket. Install the Ball Sockets into the mounting surface **FIRST** and **THEN** snap the ball end of the adjusting screw into the Ball Socket. The Ball Sockets have slots in them to allow them to collapse when being installed in the mounting plate. If you install the ball into the Ball Socket, the Ball Socket can not collapse and most likely you will shear the barbs off when it is inserted into the mounting surface. If you need to remove the Ball Sockets from the mounting surface, remove the ball end of the adjuster screw from the Ball Socket **FIRST** and then remove the Ball Socket from the mounting surface. Try to avoid doing this as every time you snap the ball in and out of the ball socket, additional wear to the ball socket is created.

Make sure when you install the lights that the low beam is mounted to the inside of the metal bracket. Because of clearance issues with the larger projector it is mounted to the portion of the bracket that is stepped up from the other side. The red arrow below shows where the projector should be mounted. Also make sure the word Hella on the front lenses of each light is right side up when the light is mounted.



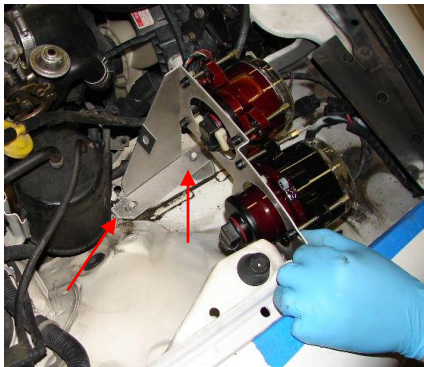
## How to install the metal bracket to the car

Step 1) Before you install your metal brackets it is now a good time to ensure the best possible fitment of the carbon fiber buckets and clear covers. I have opted to slight bend the inner part of the fender. As you will see the inside of the fender was made with a wavy pattern to it. With a rubber hammer I very gently hit back this part of the metal so it was bent back and straight.



Step 2) The metal bracket attaches to the same mounting points and uses the same nuts as your factory headlights. First find one of the bolts that were included in your kit and thread it through your horizontal mounting point as shown below. Take one of the factory nuts and thread it on this bolt and tighten it.

Step 3) Position your metal bracket over the two vertical studs. I have found that sliding the metal bracket as far back as it will go is the ideal location. Thread both of the factory nuts back over the factory studs.



Step 4) Find one of the included locking washers and nuts. First screw the nut on the bolt as far as it will go and then install the locking washer. It is now time to slide the last mounting hole through the bolt until it reaches the locking washer. Install another locking washer and then the last nut. You will need to tighten down the bolts with a 13mm socket and wrench.



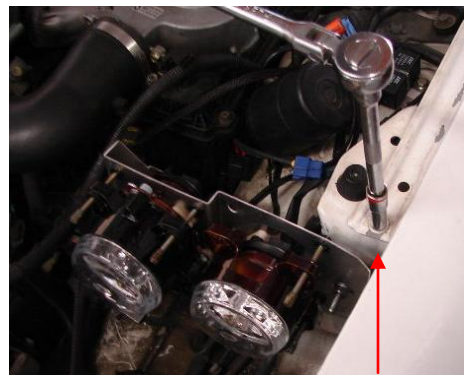
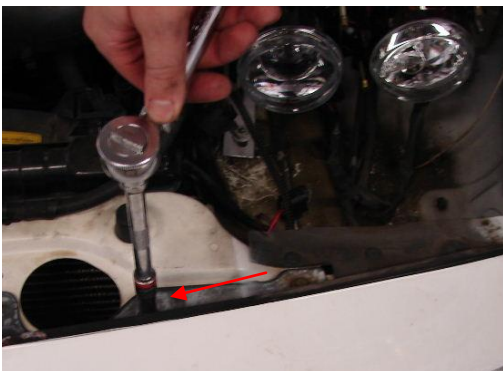
At this time your headlights have been mounted to the car. This is an ideal time to begin to level your lights. Plug in both of the connectors to the back of each headlight and find a level surface with a flat wall to project the light onto. Use the adjusting screws to level out the light output, the lower screws are for horizontal adjustment and upper is for vertical adjustment. The lights might need to be adjusted again to get the carbon fiber buckets on but this will give you a good baseline to work with.

### **Installing the clear covers and carbon fiber buckets**

#### **Summary:**

Once the headlights have been adjusted and are in working order you can now install the carbon fiber buckets, clear covers and metal retaining clips. Please do not drill holes in the buckets until everything has been fitted exactly the way you want them. You can install the clear cover on the bucket first then install the entire unit or install them after the buckets have been installed. I will walk you through the step of making sure everything fits the way it should.

Step 1) Before the bucket can be installed the removal of the two bolts that will be used to secure the bucket will be necessary.



Step 2) The Carbon Fiber buckets have 3 mounting points. The addition of the front “leg” is used for support and is not bolted to anything. When you try and install the bucket make sure to slide the rear of the cover on first and then push the leg of the bucket into place. The fit is tight so take your time and make sure it is done right. In order to get

proper fitment the lights might need to be readjusted. Remember that once everything is installed you will have to remove the bucket in order to readjust the light so doing it while it is still off is crucial.

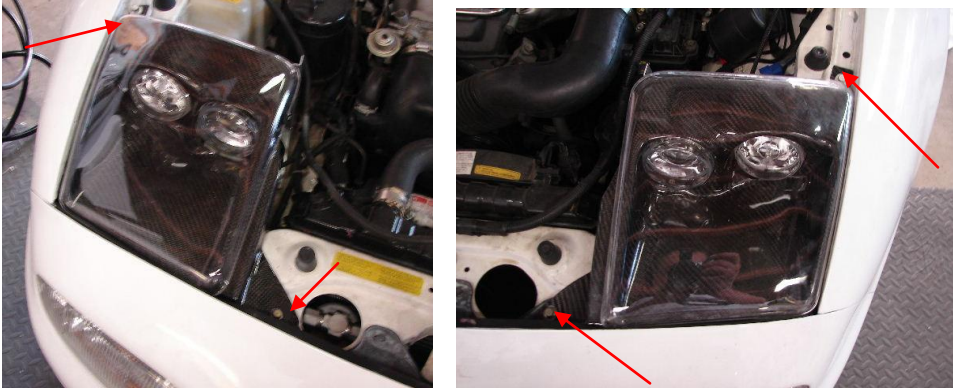
Step 3) After the carbon fiber bucket has been installed it is now time to put the clear cover on. In order to put the maximum number of retaining clips on it is necessary to install the carbon fiber bucket with the clear cover already attached to it. The cover can still be installed after the bucket has been placed in the car but retaining clips will only be able to be on the rear and one side of the bucket. To install the clips the curved portion of the clip goes on the inside of the bucket and the flat piece is the part that rests on the clear cover. The clips can be bent in either direction to get the desired fitment.

Step 4) In order to get the hood to close properly the removal of the plastic rain guard will have to be removed on both sides. The plastic clips are held on by plastic Philip head screws. Three pieces will be removed in all.



Step 5) Now it is important to check for fitment of all pieces. After everything is fitted to your desired result you are now able to drill the holes for your bucket. I would recommend either drilling the holes while the bucket is on the car or to take careful measurement. If you do not plan to ever run the clear covers your measurement will be slightly different then if you want to run the covers.

Step 6) Once your holes have been drilled you are now able to bolt down the (2) factory bolts used to secure the buckets. The carbon Fiber is very durable so you can make sure to tighten both bolts down securely.



Step 7) on the back of your factory headlights is your prop rod and connector for it. Remove both of those pieces from your factory headlights. On the rear of each metal bracket is a tab with a hole in it. Snap in the prop rod to one and the connector to the other.

Step 8) You are now finished with your install. Make sure all of the factory parts such as the radiator overflow tank and intake box are reinstalled before you take the car out for a drive!

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