

2010 Toyota Prius Fog Light Retrofit

A DIY prospective

Last updated: Friday, December 25, 2009

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Forward:

This document was compiled from a thread titled [Fog Lights: Install \[Retrofit\] fog lights on 2010 Prius?](#) on www.priuschat.com. A special thanks to all those that made this document possible (priuschat user IDs):

[hawkmoon77](#)

[CASUMIK](#)

[rachaelseven](#)

[tjp74](#)

[jayvee](#)

[Jim Calvert](#)

[ALL 600D](#)

and many more. Please forgive me if anyone was left out.

This document will likely grow, as there are many alternatives and options presented in the original thread. As a basis however this document will cover how to upgrade a Prius without existing fog lights. The lights will be activated / deactivated with the parking and or headlight switch. An additional switch will allow the driver to turn off the fog lights when necessary.

Preliminaries:

Parts –

The entire parts list for the **full OEM** approach appears to be:

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81482-47020 - cover fog lamp L/H

81481-47020 - cover fog lamp R/H

93567-A5014 - screw, qty 2 reqd.

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84140-47130 - stalk switch w/fog lamps, w/o auto lights

82998-24350 - terminal, 2C pin 8 (Lexus part number currently)

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81210-0D041 - fog lamp, R/H (see note 1 below)

81220-0D041 - fog lamp, L/H (see note 1 below)

82998-12430 - terminal, CA1 pin 1

90980-09152 - terminal packing

82113-47020 - engine compartment harness

You will also need a suitable piece of wire to run the lead from the interior junction box (connector 2C) to connector CA1 in the engine compartment, as well as miscellaneous butt connectors, wire ties, etc.

For those wanting less than a 100% OEM install, two levels of reduction are available:

1. To use the factory stalk but save some money with aftermarket lights, remove the final five items from the list and purchase an aftermarket fog lamp kit designed for the 2007-2009 Camry or 2006-2008 Yaris. Use the harness in the kit and attach to connector 2C at the junction box. As an alternative, one can tap into wire #18 (brown) on the 36 pin connect @ the ECU. This wire (+12v) is the trigger for the parking lights. It is capable of activating the relay that comes with the Yaris or Camry light kits.

2. To skip the factory stalk as well, some of the aftermarket fog lamp kits will have a switch, which fits in the 4-switch cluster (choose brand of kit carefully). Using that switch and the relay included in the kit would negate the need for all but the first three factory parts listed. And the screws could of course be purchased locally, so you really only need the covers and the kit.

For the basis of this document, the OEM fog light covers were purchased as well as a Yaris (06-08, 4 door version) "**OEM Style**" fog light kit off of e-bay. The fog light kit came with all the wiring needed and a switch. The covers can be purchased from a Toyota dealer or on-line from sites like <http://parts.com>.

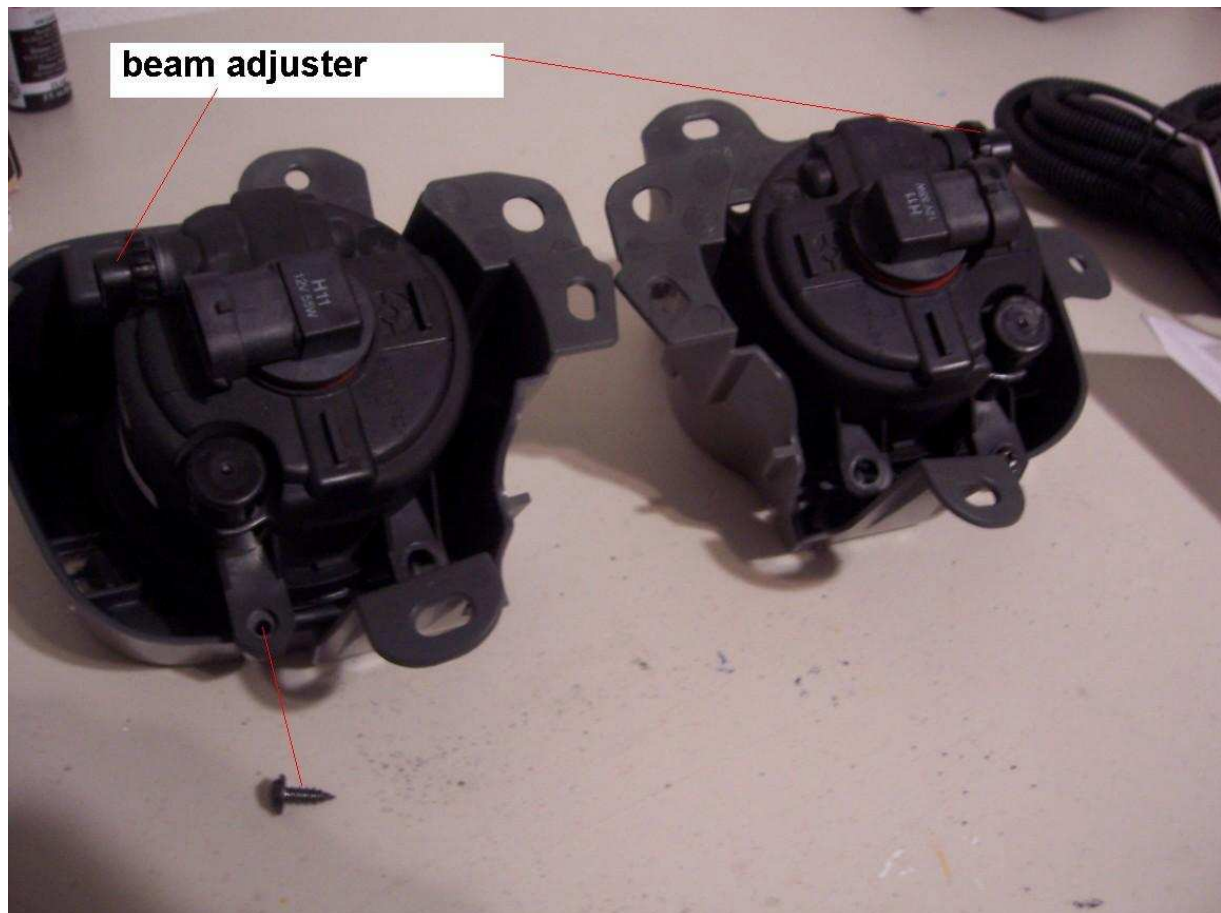
Procedure:

I test fitted the parts first thing. I didn't want to start tearing into the car before knowing the parts worked together. The following describes putting the lights into the fog light covers:

The Lights fit into the cover, and only one screw holds them in. None of the parts came with this screw (see OEM part list above for actual part number), but any course-threaded (as opposed to fine machine threaded) screw should work. I just had to be careful not to use a screw too big in diameter, as it would crack the plastic. Also, a flat head (as opposed to a fluted head) screw is used. There is no need to over-tighten this, it is just plastic. Also, I had to make sure that the plastic of light fixture was seated properly in the cover where the screw hole is. Note that when everything is put together, you will see a small gap between the front glass and the plastic housing. Note: The plastic housing does not actually touch the glass. There is a slight gap between the light and the cover... this is normal.



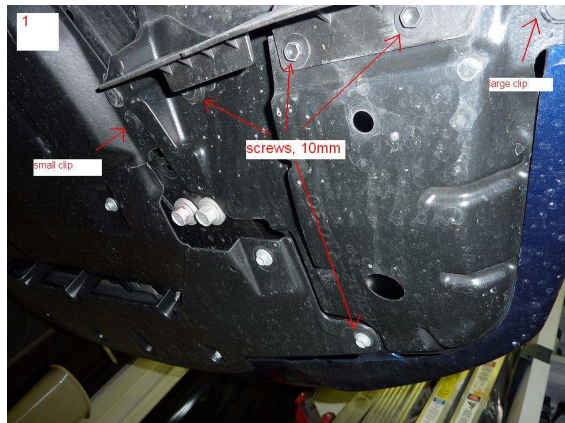
Fog light covers on the left, light kit on the right.



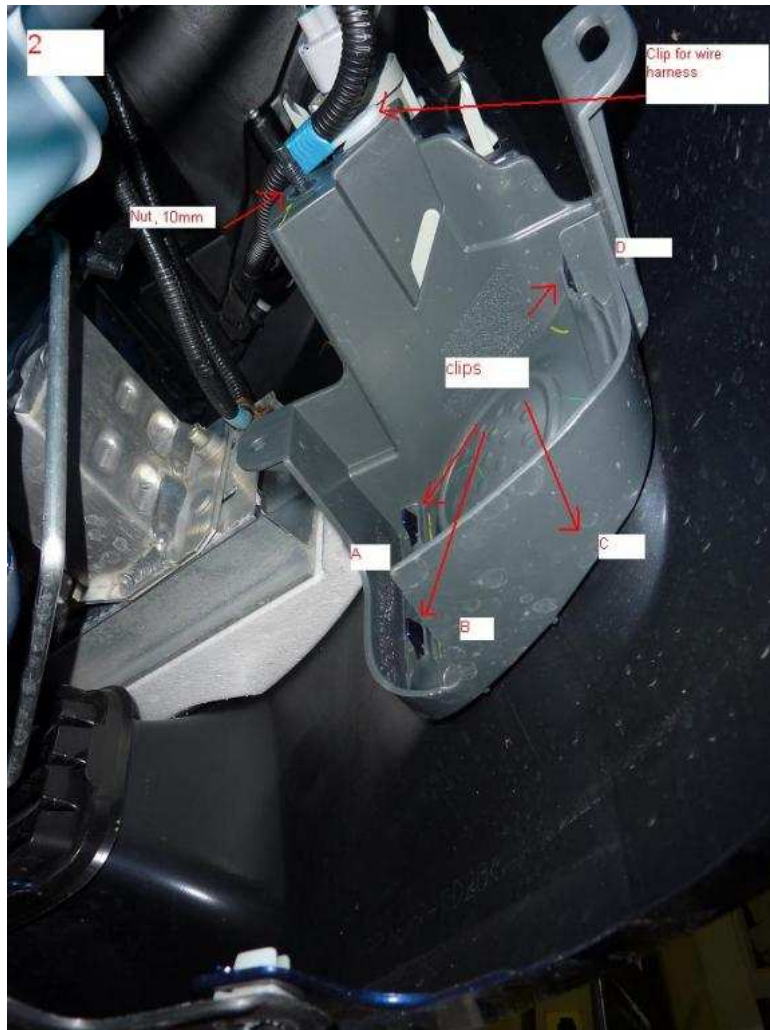
Assembled lights from the rear. Notice screw lower left that was used to secure light to cover.

Existing cover removal:

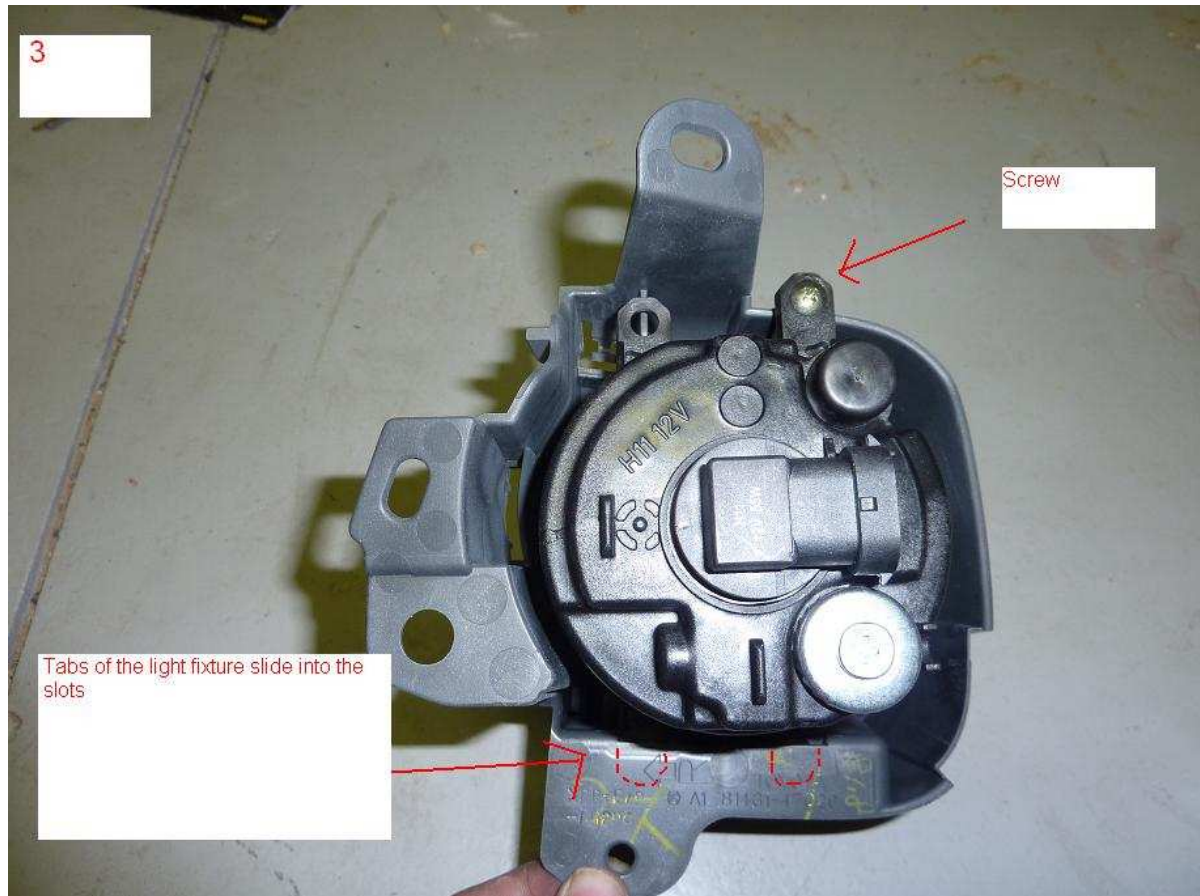
1. I placed a jack behind the wheel at the location indicated in the manual. I raised it a bit, not enough to raise the wheel off the ground, but it gave me about another 6 to 8 inches of clearance under the bumper. The picture shows the black flashing. I removed the 4 screws. When the three black screws are removed, a little piece of plastic can be removed. I then removed the 4th, silver screw. There are two clips. A small flathead screwdriver can remove them well. I inserted it under the round center part, but over the rim (where the rim cut-outs are) and gave the screwdriver a little turn. The round center disc will NOT pop up unless the rim is pressed tightly against the car. Trying to pop up the centerpiece while allowing the rim to come with it will cause a lot of trouble. I popped the center disc up a little bit, and the whole snap comes out very gracefully. These snaps do not in any way require muscle or prying so long as the center disc gets popped up while the rim stays flush against the car. Once all is removed, I popped the flashing out from the front of the car. It does not come off entirely as there are two rivets in the back. Freeing the front of it from the bumper and lowering it a bit toward the floor gave plenty of access.



2. I removed the nut (this picture shows the nut already removed). I then unclipped each of the 4 clips, (while pulling the gray cover toward the wheels very slightly). I unclipped them in the order listed (from A to D) I could not see "C" from under the car, but it can be done by touch alone. Once the clips were released, the assembly can be pulled toward the wheel. Then, from the front of the car, I was able to unclip the wire harness. The clips are on the reverse side of what is pictured. I just reached through the hole where the cover was, and was able to depress the two clips by hand and pop it out. Note that the driver's side as two more clips holding the wire harness in. I was able to remove those from under the car.



3. The Lights fit into the cover, and only one screw holds them in. None of the parts came with this screw, but any course-threaded (as opposed to fine machine threaded) screw should work. I just had to be careful not to use a screw too big in diameter, as it would crack the plastic. Also, a flat head (as opposed to a fluted head) screw is used. There is no need to over-tighten this, it is just plastic. Also, I had to make sure that the plastic of light fixture was seated properly in the cover where the screw hole is. Note that when everything is put together, you will see a small gap between the front glass and the plastic housing. The plastic housing does not actually touch the glass.



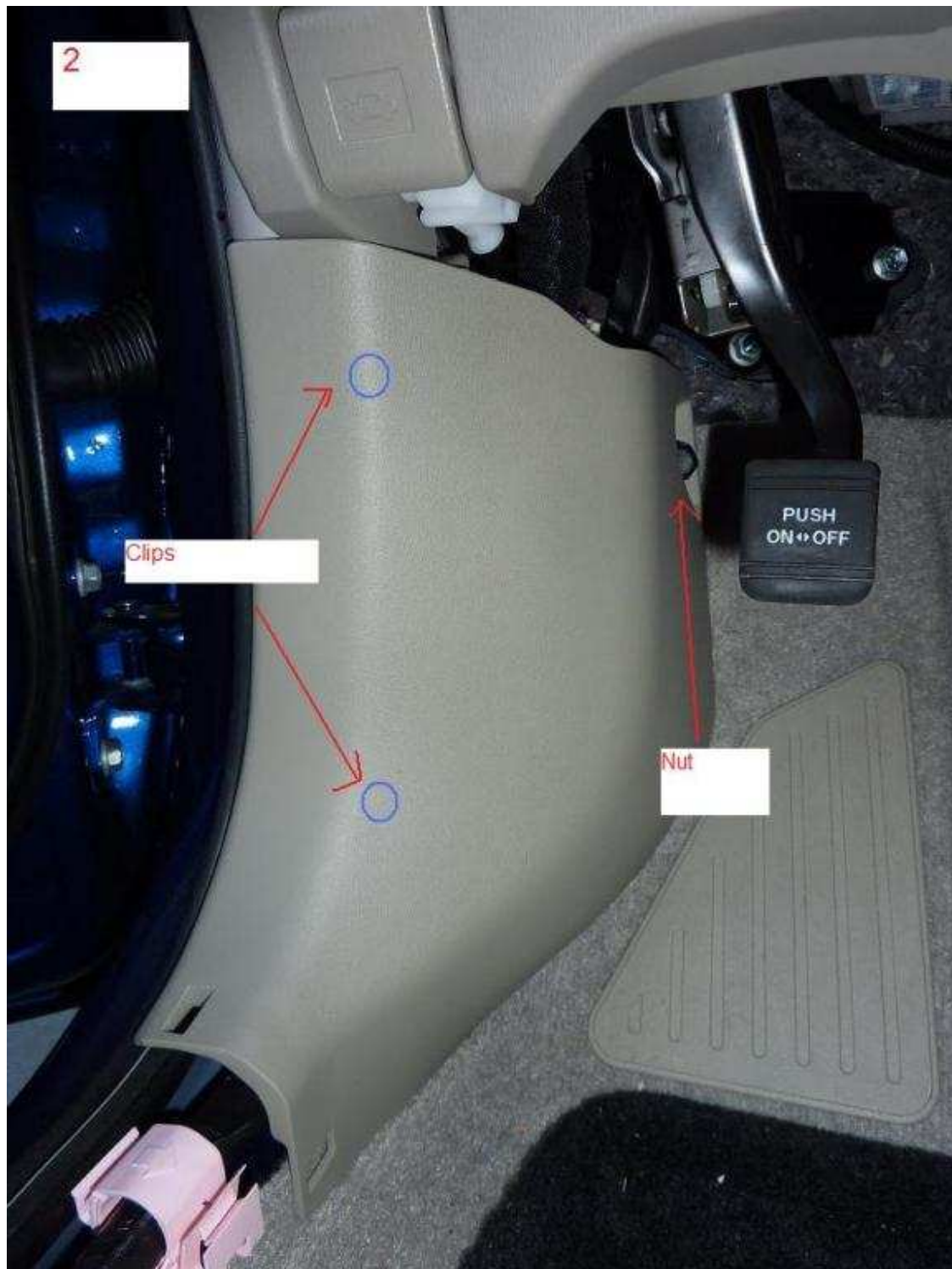
Fog light assembly installation:

First, the light assembly was positioned over the screw (where I removed the nut) shown in picture 2. The whole assembly was then brought straight forward. While looking at it from the front, I was able to reach a hand underneath and push it forward while visually seeing that the four clips were lined up. When everything was lined up, it snapped in place. I was careful to make sure that ALL clips engage. They do not all make a satisfying clipping sound, so I was careful to make sure each engaged properly. I then replaced the nut on the screw (being careful not to over tighten it). Then I clipped the wire harness back in.



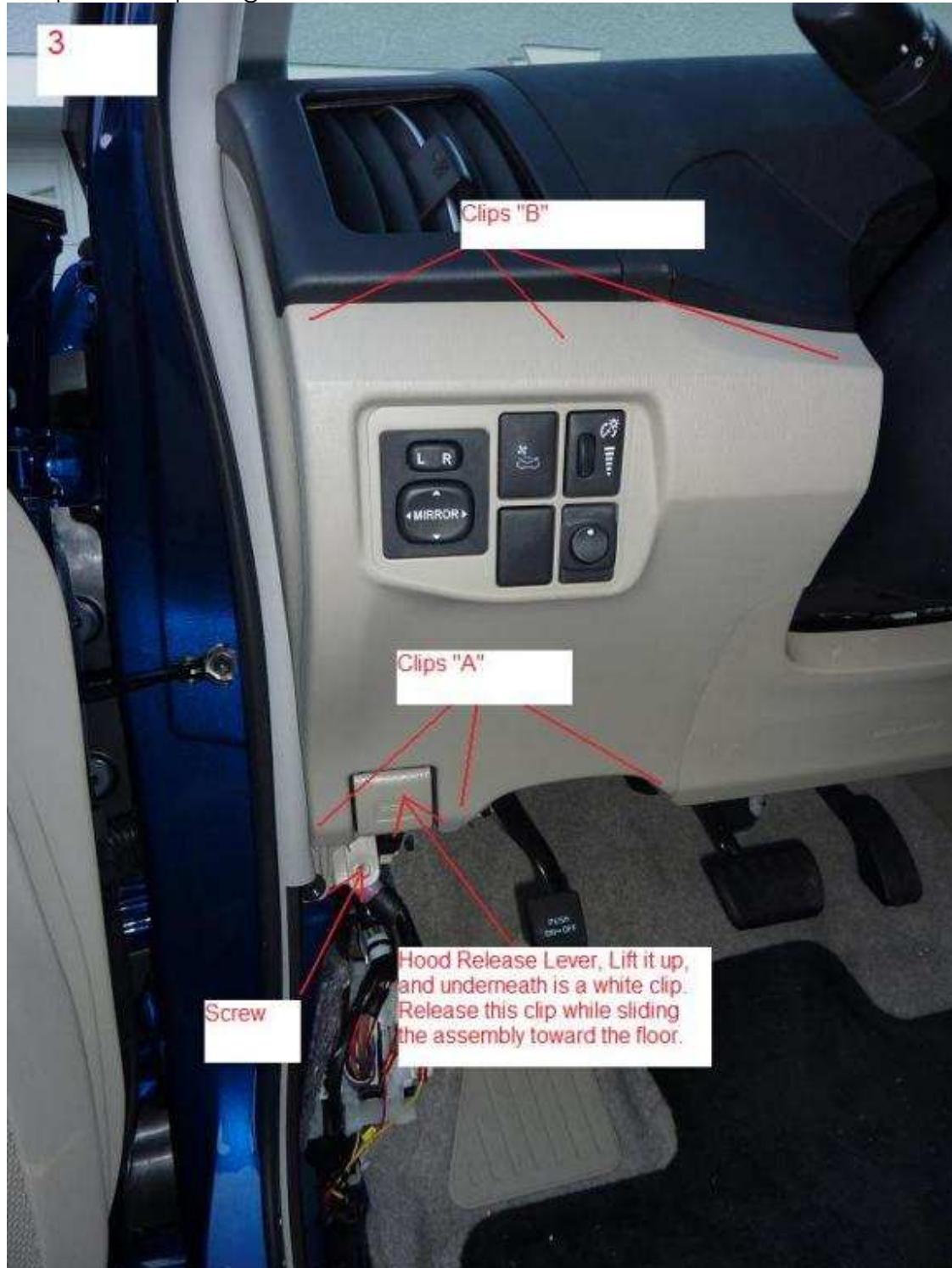
Dash/panel removal:

1. Using my fingers only, I slightly lifted the flashing at the marked points, upward slightly, and then toward the passenger side. It pops off.



3. I removed the screw. Pulled out and up at points A do disengage the clips, then out and slightly down at the clips marked B. To remove the hood release, I lifted up on it (which popped the hood open) and underneath; there is a clip

that is part of the white plastic. Release this clip and slide the assembly toward the floor to remove. Then, I removed all of the wire connectors, and removed this piece, exposing the ECU.



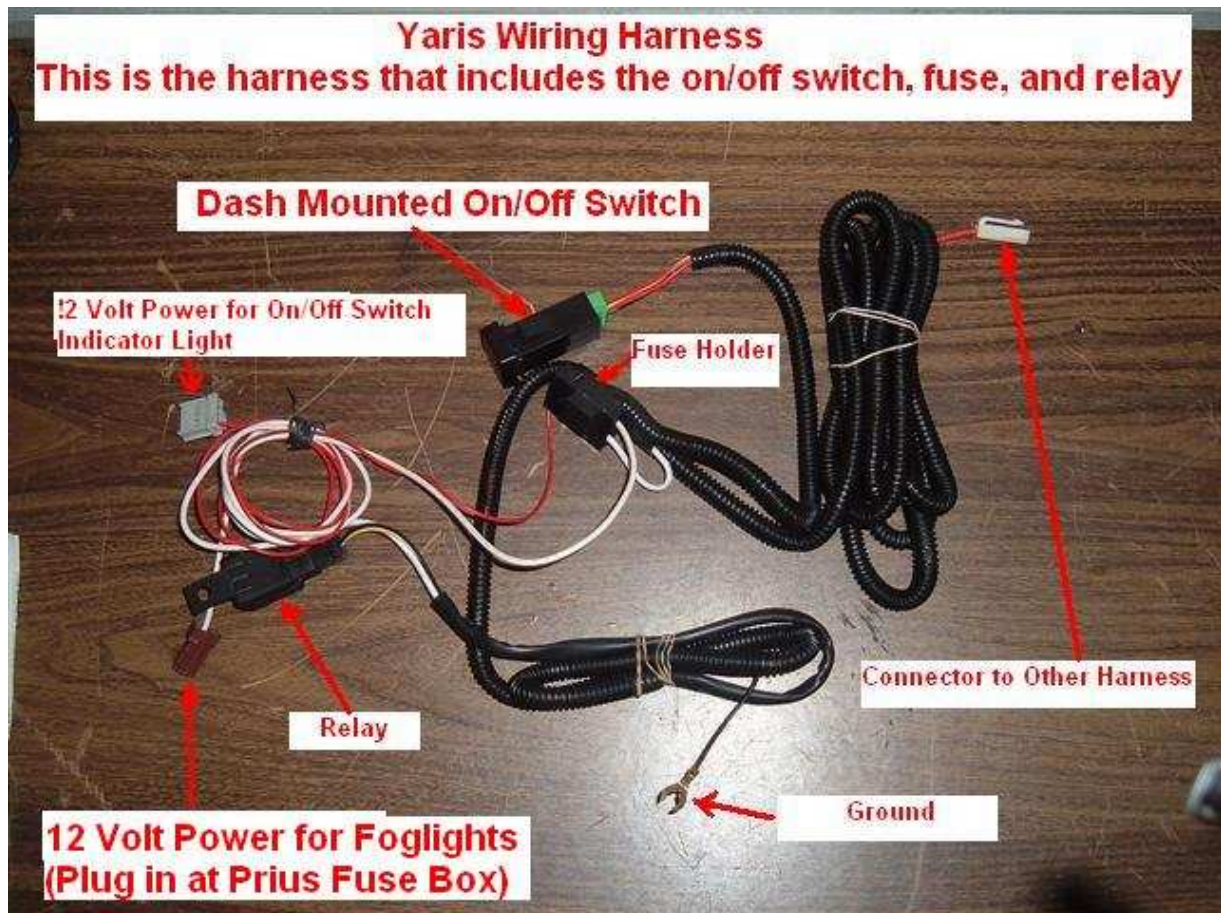
4. I removed the two screws, and then disengaged the clip. The flashing slides out. The plastic stud slides through the square hole, it is NOT clipped in. I had to remember to put this back in the square hole when reassembling. The underside has two wire harnesses, and a clip that holds the wires on. I unclipped all of them to remove the piece.



That's it for the disassembly. Now, for the wiring.

Wiring:

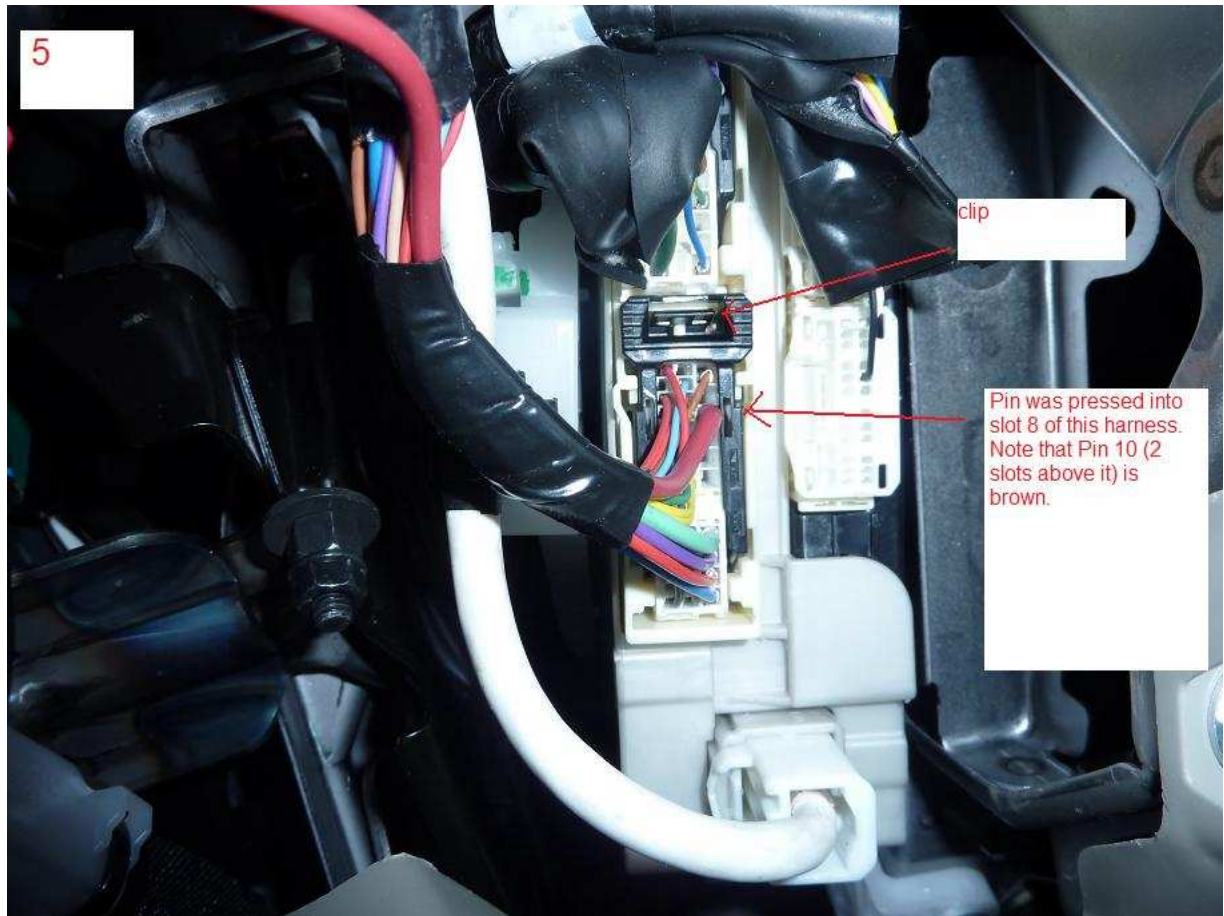
The following is the wiring harness that came with the Yaris Fog Light kit.



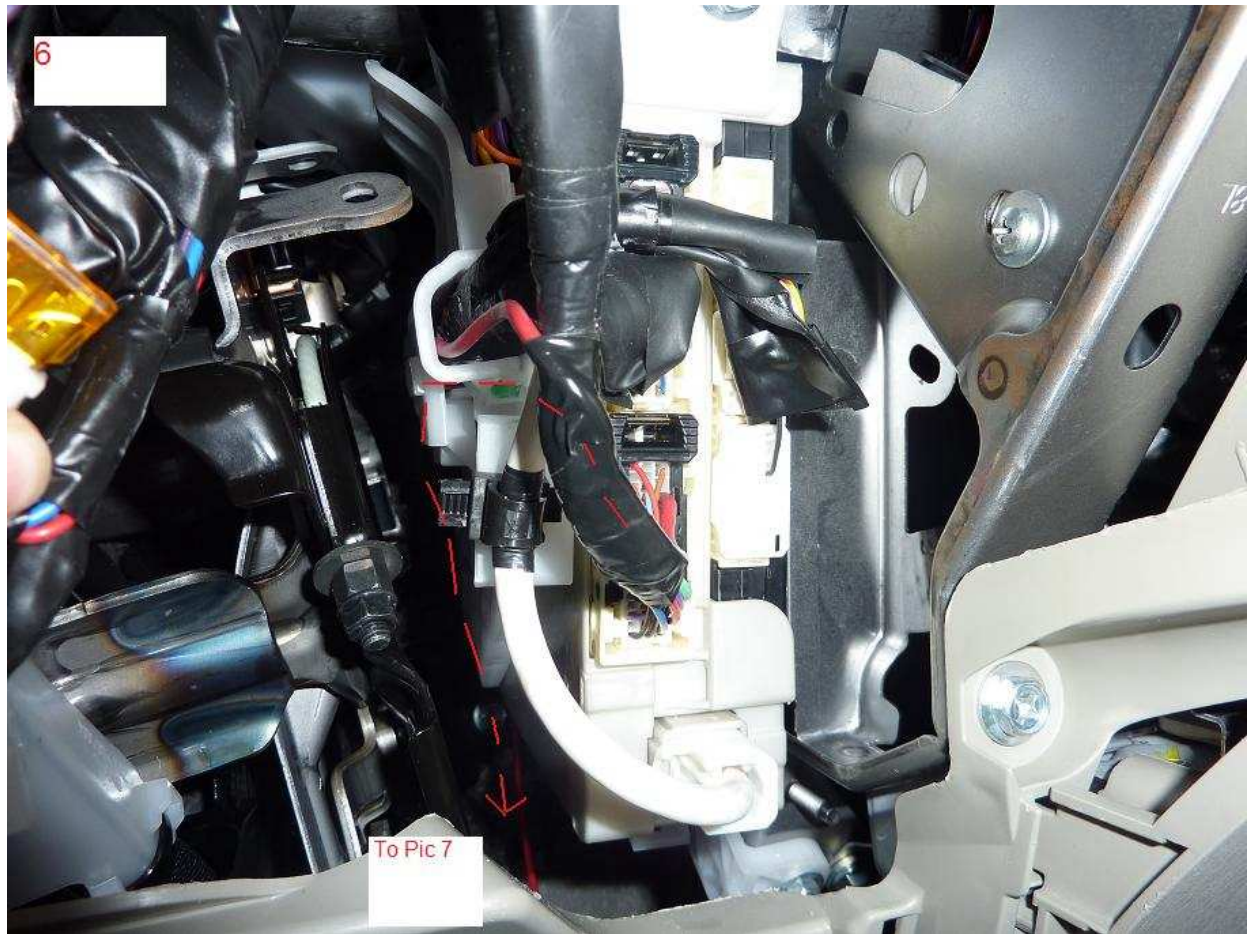
5. Using the wire harness shown above, I first clipped off the connectors on the white wire (labeled "12 Volt Power for Foglights") and the red wire labeled (Connector to Other Harness) leaving about 6 inches of wire or so at the connector end. The other ends I ran through the firewall as described in step 8 below. Once through, I reattached to connectors and the white wire I connected to a slot in the main fuse box as shown below and the red wire connects to the fog light wire harness (also part of the light kit). The relay I attached using a bolt that was holding the upper part of the ECU to the dash frame (partly visible in step 6 photo below at top). I attached the ground wire to a screw hold the dash to the dash frame (visible in step 6 photo below in lower right). The red wire labeled (12 Volt Power for On/Off Switch Indicator Light) I attached to the brown wire as noted in step 5 photo below. That wire is energized when the parking lights and or headlights are on. I replaced one of the switch blanks with the switch in the dash. Also connect the wiring harness to the switch (green connector).



Foglight 12 Volt Source
Inside Engine Compartment
Fuse Box



6. The wire followed this path. I tucked it through the gap on the side of the ECU where the other wires were run, and then ran it downward.



7. This is the path I followed. I used wire ties looped around the wire in the picture. Note that I slid some of that black plastic over the wire from this point forward considering it carries positive voltage. If it were a ground wire, I would not have.



8. This shows the rest of the path to the rubber plug that goes to the engine room. There was a hole just to the passenger side of the plug. The hole doesn't go all the way through. I used a screwdriver to pop the rest of the way. It's only a few millimeters thick. I was careful to avoid hitting any of the existing wires, which was why I stayed to the passenger side of the plug. I imagine that this hole could be in different places on other people's cars if it was rotated slightly when installed. Not a big deal, a small screwdriver can puncture this gasket enough to get a wire through. My hole was so small, that the rubber stayed very tight against the wire, sealing it up well.



9. AFTER I used this screwdriver to put a hole in the rubber gasket, I then taped the wire to it and pushed it through, grabbing the other side from the engine room. I pulled the wire through to get rid of the slack.

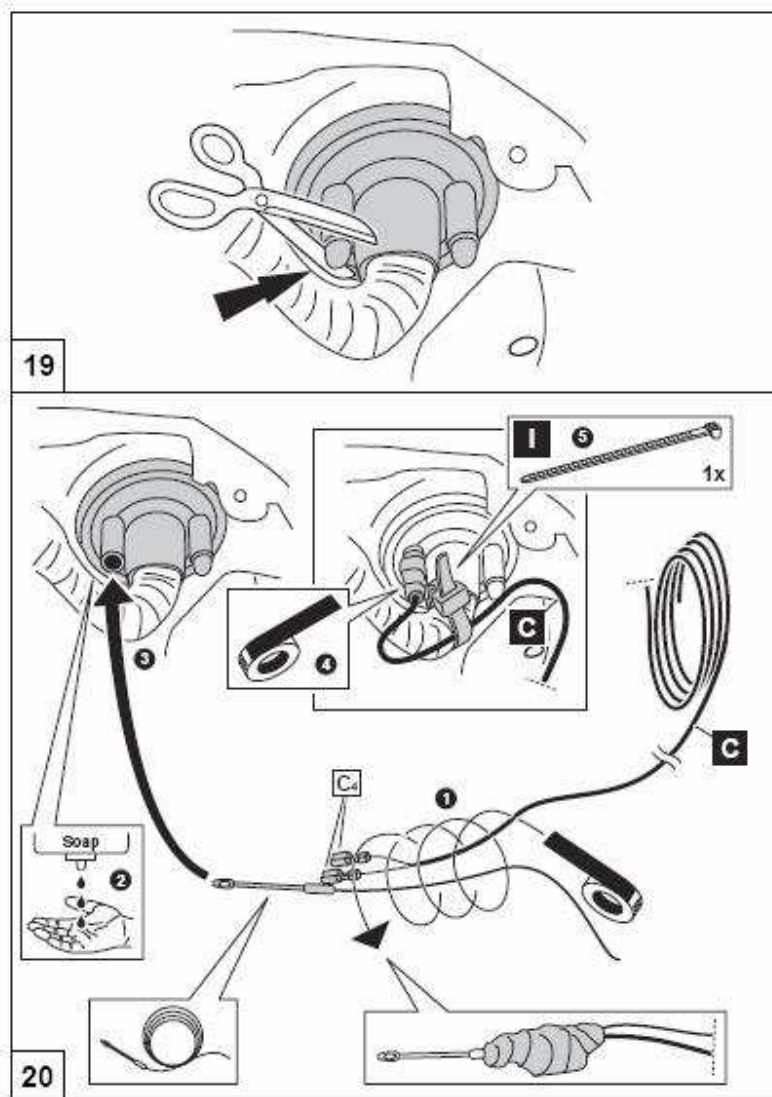
10. This is a great picture. It shows virtually the whole run of the wire. Not that the red wire is inside of the black plastic shroud. On the left of the picture you can see where it goes up into the back of the ECU shown in picture 6. It then runs across the foot well and into and through the rubber firewall plug.



11. This is where it emerges. Well, sort of, this did not photograph well.



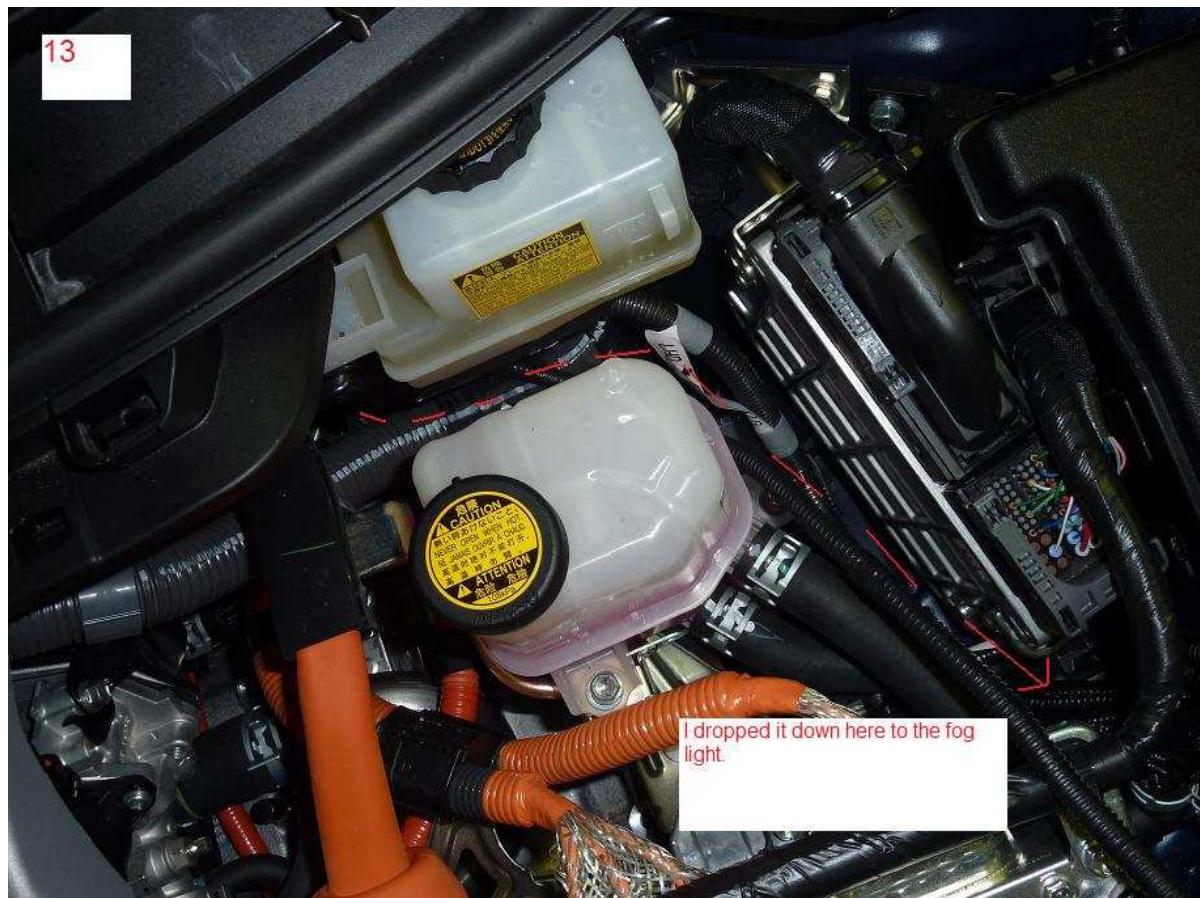
Here is a diagram from a Yaris to give you an idea of what to look/feel for:



12. This is it zoomed in a bit more. Note that only the red wire was pushed through the rubber hole, not the black plastic shroud. I did however add more of the black plastic shroud after I pulled the wire through the engine compartment. It followed this path.



13. This is the rest of the path. Note that I have not yet put the wire in place in that picture. But the path I followed should be clear. I used wire ties to hold everything in place. The arrow points to the headlight, from there, the wire goes straight down to the fog light. I used wire ties looped around the other wire harnesses that are already there.



14. From under the car, I removed the flashing just behind the front bumper. There is one clip in the center. the rest use silver (zinc) screws. Course threads in the front, and machine threads in the back. I was careful not to over tighten them on reassembly. Once removed, the wire connecting the driver's side fog to the passenger side was wire tied up there, and the flashing was replaced. I then put the corner flashing pieces back to cover the fogs. I lowered the jacks, and put the interior trim pieces back together.

15. That's it! Fog lights complete. (**Edit** After seeing them on for the first time at night, I realized that I forgot a crucial step. They need to be adjusted! The screw on the back of the light, with the toothed washer, is the adjusting screw. It's An easy step, but a very critical one).

Alignment:

FYI, according to Toyota, the proper adjustment is that the top of the beam should be the following distance below the height of the center of the lamp (measured from the ground to the center of lamp):

Vehicle 3m (10 ft) from wall: Top of beam 40mm below center of lamp.

Vehicle 7.62m (25 ft) from wall: Top of beam 102mm below center of lamp.

There is Philips type slot in the interior of the knobby adjustment dial (see upper left-hand corner of second picture in this document) on the lamp. You can insert a long Philips type screwdriver through a hole in the panel from the underside of the car into dial. Clockwise lowers the beam, counter-clockwise raises the beam. It is tough to get the screwdriver into the slot but it will go.