

2017+ Raptor 3 Pair Fog Kit Install instructions

Rigid, Baja Designs, Diode Dynamics & Others

STOP

Refer to Bracket installation instructions for mounting the brackets & lights. Refer to wire harness instructions (Last Page) to Preassemble your wire harness unless you purchased our Plug n Play Custom Harness. If you have Radiance/Scene/360 lights, our custom harness is INCLUDED with connectors for your lights. It is easier to put the connectors on the lights first and you can see the procedure on th 2nd to last page. Then return here. All others, continue..

Step 1:

Gen 2 & 3- (17-20 Gen 2, 21+ Gen 3)

Once you have your Harness assembled, or your custom harness, you need to lay it in place. First, starting from the PASSENGER side, under and behind the front bumper, take the LONG side of the wire harness that goes to the driver side lights, and feed it through to the driver side from BEHIND the bumper ABOVE the skid plate (Fig 1-2) or above the frame behind the bumper. There are several pockets. Some are easier or more difficult to feed wire through. It's all in how clean or hidden you want it.

Gen 3 ONLY- (21+ Gen 3) (Gen 2 owners can skip to step 2)

Most Gen 3 models (801A or 800A with Upgrades) will have the small DOT Ford Spec Rigid lights. In this case, Ford MOVED your Aux 1 connection down to the bumper openings. There is no other access the the Aux 1 or the Fog switch connection. If you purchased our "Relocation Harness", you simply plug each end into the OEM connectors (Fig 3) in the bumper on each side, and the pull it up by the other switch wires between the battery and passenger headlight. It is the same shape and takes the same route as your fog harness. So you can run them together. If your truck didn't have the factory fogs in the pocket, all 6 wires are in the same place and the relocation harness isn't needed. Since the relocation harness isn't "required", it is an optional component. If you didn't get it, you can simply use the other 5 wires by the battery (Aux 2-6) or adapters at the 2 connections in the bumper in SOME cases. Though we are trying to give you the simplest plug in options here. Adapters won't work with 3 wire lights like the Radiance without some major work. If you want the relocation harness and just missed it. Visit SPVparts.com. You can always add it later.

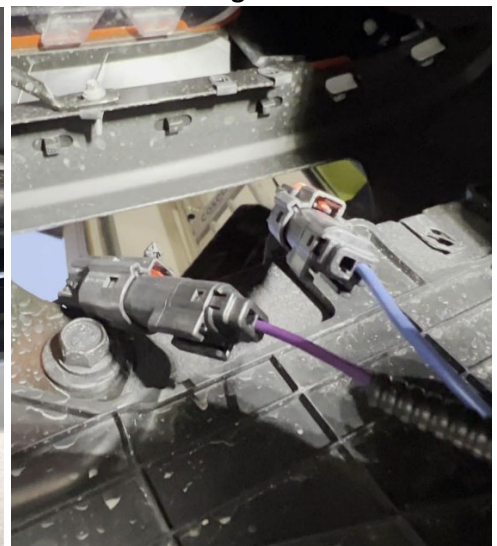
Figure 1:



Figure 2:



Figure 3:



Step 2:

Once you have your long harness end pulled across to the other side, behind the bumper or over the skid plate. You can then pull the other end up into the engine bay behind where the headlight is, near the battery (fig 4). That is the switch wire end which will have single port connectors if you have our plug n play harness. Be sure when securing your harnesses, they do not touch anything hot like the radiator, engine or coolant hoses. In the 21+, your switch wire bundles are right there between the headlight and battery. On 17-20 models. You will continue running the wire harness along some other harnesses attached the the battery casing until you get to the fire wall area, where the switch wires are located in those models (fig 5). There are more details and pictures on locating the switch wires later on.

Figure 4:

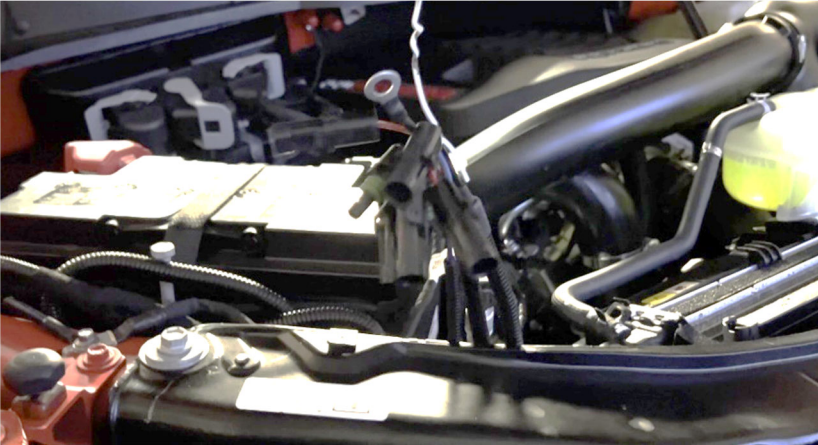


Figure 5:



Step 3: Wiring

Ground Locations-

Locate your ground locations. No matter which harness you have, you should have a BLACK ground wire with the ring connector/s on it, and you will GROUND it to an existing ground bolt. In the 17-20 model year (fig 6), the best place is on the fender well near the hood strut. In the 21+ model year (Fig 7), you will see there are 2 ground bolts in front of the battery. Also notice in figure 7, the index finger is pointing to the wire bundle for the Aux wires. You can see the little loop of one there.

Figure 6:

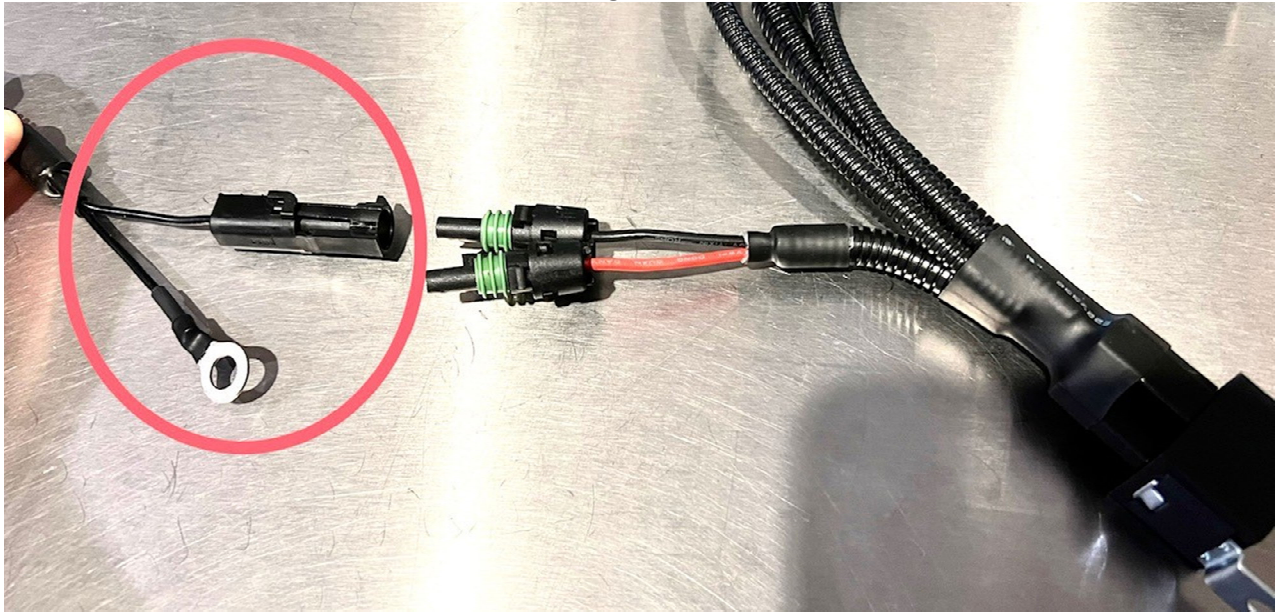


Figure 7:



If you are using our custom Plug n Play harness, notice In figure 8, below. You will see that there are 2 connections for the ground on most of our harnesses. This is the SAME ground. There are just 2 different ways to connect it. The ring is the most common and normal way. However, in the event you need higher amperage than your built in switches/fuses can handle. You can plug the harness into one of our relay adapters (also shown to the right in figure 8) where the ground and power run through the relay. So if you don't have a plug in relay, (most cases) just ignore the connector.

Figure 8:



Switch Wire Location-

The switch wires can be difficult to locate sometimes. For the 21+ Models, they are again located right behind the headlight before the battery. There are 2 sets that look the same in all Raptors. One is powered, the other is **NOT**, and it is just a pass thru set to the cab. On the 21+ (fig 9) they should have red tape on them. The ones with white tape should be the dead wires. Though Ford changes things from time to time. The 17-20 models (fig 10) are on the fire wall behind the battery. They don't have different color tape, but the powered set is generally closest to the fender or higher up. They are attached to a long bundle of wire that goes up and down. In either case, they are taped to that bundle of wires and generally are folded over. So look for LOOPS of wire and then you can pull on them.

In the case of the 21+. Figure 9 shows the battery removed. Figure 7 (previous page) shows the battery in place. Removing the battery isn't required. However, the space between the battery bucket and the metal frame is tight unless you have tiny hands and it is sometimes easier to just remove both the battery and the bucket (battery holder). There are only a couple bolts, so it is sometimes quicker and easier.

Figure 9:

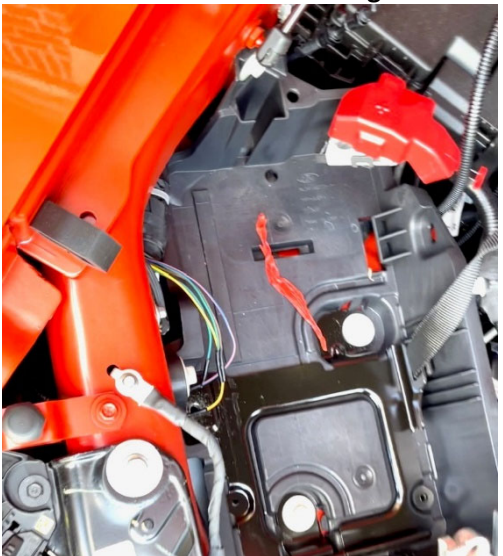


Figure 10:



For the Gen 2 Raptor (17-20) you should have a supplement owners manual (Small Packet) that says “Raptor Supplement” with your main owners manual. It will tell you which switch wires are which colors and amp max. The colors changed year over year so you can reference that. There are some included pics of the various ones to date, ahead on the next page though for your convenience. If yours doesn’t match, check your manual.

On the gen 3 Raptor (21+) they eliminated the owners manual. Instead, the owners manual is built into your vehicles center dash screen. 22+ may be different colors so you may or may not need to reference your trucks screen.

NOTE:

Gen 2 - Switches 1-2 use 15 amp fuses. Switches 3-4 uses 10 amp fuses. Switches 5-6 use 5 amp fuses.

Gen 3 - Switches 1 and 4 are reversed as far as amps. So Switches 2 and 4 uses a 15 amp fuse. Switches 1 and 3 uses 10 amp fuses. Switches 5-6 use 5 amp fuses.

Always be sure your amp maximum on your switch can handle the amp draw of your light, or you will blow your fuse. Generally, any single pair of fog/pod lights will work fine on the 15 or 10 amp switches. However, if you combine 2 or 3 pairs to one switch, you need to be sure you don’t exceed the power max.

Remember. With our harnesses, we have lots of options though for plug n play customization. If you want to put lights onto a switch that exceed its rating. You can simply add one of our plug n play relay adapters (Fig 8). This will give you up to 30 amp capacity. Again, most of the time that isn’t needed. However, if you want to use 3 lights on one switch or even the low power 5 amp switches, that will allow it. Our harnesses have pairs labeled so you can match to your lights.

Connectors/Adapters

Now that you know where your switch wires are, if you do have one of our plug n play harnesses, you will want to install the included connectors on the bare switch wires. This will allow you to just plug in your harness and also allow you to use any of our adapters, splitters, relays, etc. Directions for the switch wire connectors are on the second to last page.

If you have Radiance/Scene or 360 Lights, there are no connectors on your lights. Just bare wires. Your harness kit includes a matching connector kit. You will simply install the pins and connectors on your lights as shown on the second to last page. They then just plug in. This was mentioned on the first page.

If you have Baja Designs, Rigid Pro Series or Diode Dynamics AND you selected our custom plug n play harness, you will get adapters (fig 11 & 12) that will plug into our harness and the lights. If you are using the standard harnesses that came with the lights, they will have the corresponding connectors already. You can cut up and customize those harnesses in the instructions on the last page. You can also use our 2 or 3 way splitters to combine pairs of lights to ONE switch, or split an end for 2 pairs of lights with our harnesses. (figures 13-15) (Sold Separately for customization)

Fig 11:

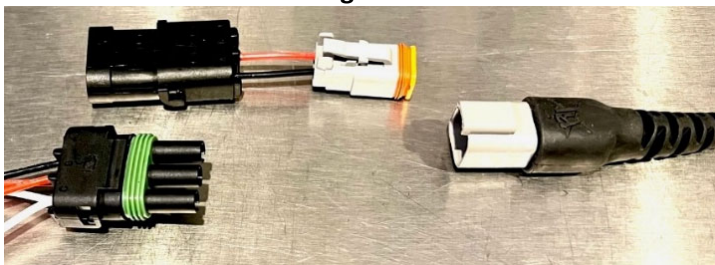


Fig 12:

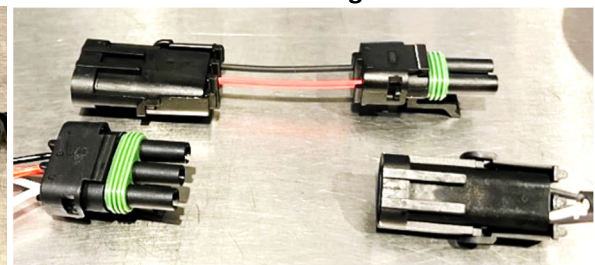


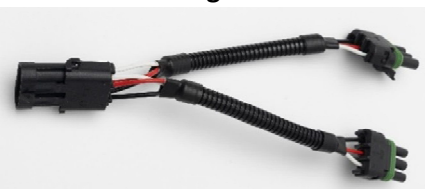
Fig 13:



Fig 14:



Fig 15:



Backlight Wiring- (For Radiance/Scene, 360 Series and others with backlighting) **EVERYONE! See Fig 16!!**

Figure 16 shows the white wire connection that comes out by the switch wires if you have our custom harness. **If you have lights that DON'T have amber backlights, you will NOT connect that wire to anything.** If you DO have lights with backlights and you have REAR lights with our tail light adapter installed, you can connect the 2 harnesses white wires TOGETHER with a coupler as shown in figure 18. The front harness backlights then are also powered from the tail light adapter. Otherwise, there are 2 other ways to power your backlights. You can use one of our marker adapters and just plug it into the white wire connection (fig 17). Both the tail light adapter and marker adapter are powered from the parking light/markers in the grille & fenders. So if you connect to either of those, when you unlock the doors, the amber will flash and be on with the headlights. Or, you can simply connect the backlight connection (the white wire circled in fig 16) to another switch and turn them on and off manually. The marker adapter plugs between an existing connector on top of the grille under the plastic cover. 17-20 models shown in fig 19 by the hood latch. 21+ models shown in fig 20 toward the left front. The plastic front grille cover needs removed for the 17-20, but not the 21+. There is a small opening. There are just push pins on top to remove the grille. If you didn't purchase the Marker adapter, and want one. Visit SPVparts.com

Fig 16:



Fig 17:



Fig 18:

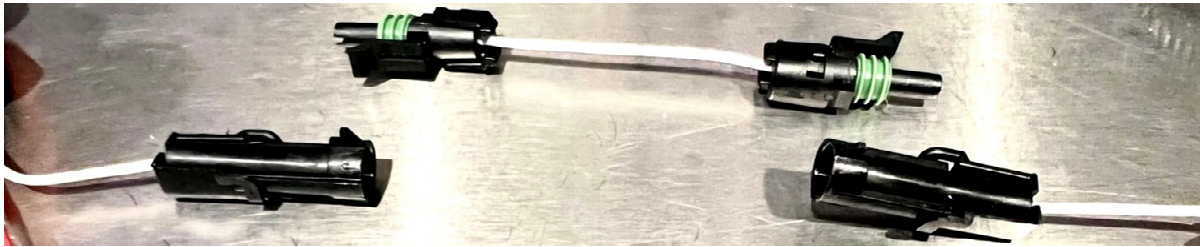


Fig 19:



Fig 20:



Once your lights are connected to your switches, secure your lower harness under the bumper area wherever you can. Use zip ties and you can tie them off on existing harnesses, the frame, other brackets, etc. Make sure it isn't loose or sloppy. If it is, it could vibrate and wear a hole in the insulation or get caught on something driving down the road.

Finally, make sure to secure the rest of your wire harness! You don't want it to get caught in the engine or belt. That would be a mess. Zip tie the slack out of the way using zip ties to existing harnesses and factory locations.

YOU'RE DONE!!!

*For liability purposes, these instructions are intended to help you install your lights. However, SPV cannot be held responsible for faulty installation issues done by the consumer.

Wire Harness Colors/Amp Rating based on Ford Manuals

Fig 22: (2017-2018 ½)

The relays are coded as follows:

| Switch | Circuit number | Wire color | Fuse |
|--------|----------------|---------------|------|
| AUX 1 | CBB47A | Green/Blue | 15A |
| AUX 2 | CBB48A | Gray/Yellow | 15A |
| AUX 3 | CBB94 | Violet/Orange | 10A |
| AUX 4 | CBB96 | Brown/Blue | 10A |
| AUX 5 | CBB98A | Gray/Orange | 5A |
| AUX 6 | CBBA0B | Yellow/Violet | 5A |

Fig 22: (2018 ½ - 2020)

The relays are coded as follows:

| Power Distribution Box | Wire Color | Under-hood Pass Through | Wire Color | Passenger Footwell | Wire Size | Fuse |
|------------------------|--------------|-------------------------|--------------|--------------------|----------------------|------|
| AUX 1 | Green/White | AUX 1 | Green/White | AUX 1 | 1.0 mm ² | 15A |
| AUX 2 | Brown/Blue | AUX 2 | Brown/Blue | AUX 2 | 1.0 mm ² | 15A |
| AUX 3 | Gray/Yellow | AUX 3 | Gray/Yellow | AUX 3 | 0.50 mm ² | 10A |
| AUX 4 | Green/Brown | AUX 4 | Green/Brown | AUX 4 | 0.50 mm ² | 10A |
| AUX 5 | Brown/White | AUX 5 | Brown/White | AUX 5 | 0.35 mm ² | 5A |
| AUX 6 | Green/Orange | AUX 6 | Green/Orange | AUX 6 | 0.35 mm ² | 5A |

Fig 22: (2021+ Raptor)

F-150 Owner's Manual

What are you looking for?

IDENTIFYING THE AUXILIARY SWITCH WIRING

The relays are coded as follows:

| Power Distribution Box | Wire Color | Underhood Pass Through | Wire Color | Passenger Footwell | Wire Size | Fuse |
|------------------------|---------------|------------------------|---------------|--------------------|---------------------|------|
| AUX 1 | Violet/Green | AUX 1 | Violet/Green | AUX 1 | 1.0 mm ² | 10A |
| AUX 2 | Green/Brown | AUX 2 | Green/Brown | AUX 2 | 1.0 mm ² | 15A |
| AUX 3 | Green/Blue | AUX 3 | Green/Blue | AUX 3 | 1.0 mm ² | 15A |
| AUX 4 | Brown | AUX 4 | Brown | AUX 4 | 1.0 mm ² | 10A |
| AUX 5 | Blue/Orange | AUX 5 | Blue/Orange | AUX 5 | 1.0 mm ² | 5A |
| AUX 6 | Yellow/Orange | AUX 6 | Yellow/Orange | AUX 6 | 1.0 mm ² | 5A |

Finally! – If you need any additional add on components, adapters, splitters, etc. that you may have missed, or you purchased through a 3rd party site, You can get them at SPVparts.com

Installing connectors on your switch wires

PAY VERY CLOSE ATTENTION TO THESE DIRECTIONS! The pins are SPECIFIC for each connector.

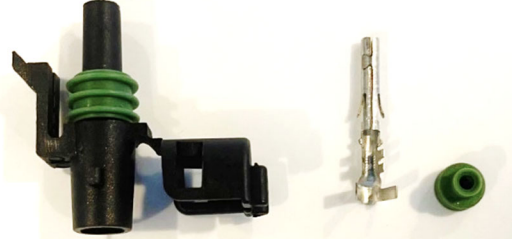
These connectors and pins go on the **LIGHTS** bare wires.
(You won't use these for lights that have adapters)

Pointed Pins on these!!!



These go on the **SWITCH WIRES**, on the truck.
(You will use these in any case)

Tubular open end pins on these!!!



INSTALLATION OF TERMINALS AND PINS.

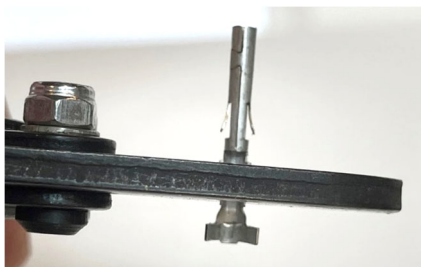
Use Crimping Pliers to crimp pins on wires (Don't use generic pliers). Be sure to strip off insulation on wire so you crimp OVER the wire, not the insulation. In the below left/middle photo, you crimp over the BARE WIRE in the center where the tabs are. You slide the rubber seal (Shown below) on the wire before crimping the pin on the wire. Then crimp the outer wings over it. **DO NOT INSERT THE BARE WIRE INTO THE PIN TUBE!** The Wings on the PIN are to be crimped on bare wire like a staple. It won't get connection if you put the wire in the tube and crimp on the insulation



IMPORTANT! Pay attention to where the different color wires are inserted!

BEFORE you slide the pins into the connectors on the switch end, make sure the proper colors line up in the right holes with the harness colors in the connector. If you use the adapters, this is already done. You just connect and plug them in.

Black Wire to A, Red Wire to B, White Wire to C



If you need crimpers and don't know what to get, here is a QR Code for a cheap set on Amazon **(Right QR Code)**



If you mess up.

You will need a PIN RELEASE TOOL. To the **left is a QR Code** for a CHEAP set on Amazon. These are only examples for your convenience.

We have no affiliation with these in any way.



If you are unfamiliar with how to use these QR codes, you simply open the camera on your phone like you are going to take a photo. Aim it at the code and focus. A window will pop up with a link. You touch it, it will take you there.

Make Your Own Raptor Harness (Using Generic Light Harnesses)... (SUPPLEMENT)

If you want to make your own custom harness and get rid of the bulk from the long generic harnesses, you can follow these instructions and cut yours down. Be sure you have enough wire. Measure it all out so you cut the long sections from the right areas. You will have some sections you need to get your longer wire from. The relays and fuses are NOT needed. Just the gray connectors. You will need to get some LOOM though at an auto parts store for a clean harness.

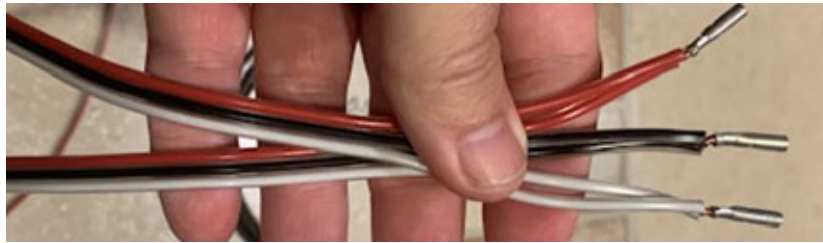
You will need to cut **3** sections 55" long

You will need to cut **3** sections 63" long (With the gray connector attached)

You will need to cut **3** sections 13" long (With the Gray Connector Attached)

Now, the first group you want to combine are the LONGEST 63" with connector, and the SHORTEST 13" with connector. (You will combine them SIDE BY SIDE using a butt connector and heat shrink)

Line them up SIDE BY SIDE, twist them together and insert them in a butt (crimp) connector as seen in the pic below and crimp it down TIGHT. Again, notice that these 2 groups are SIDE BY SIDE, not end on end. That leaves the other end OPEN for the last wire group. You will connect all 3 colors like this for ONE harness for ONE pair of lights. So you will need to do this 3 TIMES in all... (Disregard the white wire if you have the pro kit. That is used for RADIANCE version)



Now you can crimp down your 63" Wire. Then slide the heat shrink over the exposed connectors and wire so that it is completely covered. Then use a small touch or electric heat gun to shrink it over the wires. If you use a torch, be careful. You can melt both the wire insulation, and the heat shrink tubing if you just HOLD the flame in one spot. You want to wave the flame around close to it. Don't touch the flame to the material. Keep it back a little. If you use an electric gun like on the right, it is easier to control and hard to burn or melt the material.



You connect one of each section together for ONE pair of lights. When you make all 3, you can loom them all together for ease and protection. At the very end, you will need to crimp a ring connector to the black wires for your ground. You can cut one off the generic harnesses and use it.

