

PAINLESS

PERFORMANCE PRODUCTS



Trail Rocker Installation

Instructions

1997-2006 Jeep Wrangler TJ Trail

Rocker For Installing Painless Part Number:

57042

Painless Performance Products recommends you, the installer, read this installation manual from front to back before installing this harness.



Painless Performance Products

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CONTENTS OF THE PAINLESS KIT

Refer to the **Contents Figure** (below) to take inventory. See that you have everything you're intended to have in this kit.

The Painless Trail Rocker Kit 57042 should contain the following:

- Fuse/Relay Center w/ Powder Coated Bracket
- Switch Control pigtail
- Ignition Switch pigtail w/ weather-pack connector, (1) rubber grommet, and zip-ties
- Winch Pigtail and installation kit
- **Parts Kits:** (2) $\frac{3}{8}$ " Adel clamps, (2) 1" Adel clamps, (3) $\frac{1}{4}$ " - 20 x $\frac{3}{4}$ " stainless bolts, (3) $\frac{1}{4}$ " - 20 nylon locking nuts, (12) 16-14 ga. non-insulated butt connectors, (14) pre-cut $\frac{3}{16}$ " black heat-shrink, (8) insulated wire caps, (3) $\frac{1}{4}$ " piggyback terminals, (10) 16-14 ga. spade terminals, (10) 20-18 ga. spade terminals, (4) 30 amp ATC fuses, (2) 18-20 ga. $\frac{1}{4}$ " female terminals, (1) 200 amp MIDI fuse, (1) ECM Support Bracket.
- **Power and Ground Terminal Kit:** (1) pre-cut $\frac{1}{4}$ " black heat shrink, (4") pre-cut $\frac{1}{2}$ " red heat shrink, (1) 16-14 ga. non-insulated ring terminal, (1) 6 ga. $\frac{1}{4}$ " ring terminal, and (1) 6 ga. $\frac{5}{16}$ " ring terminal
- This manual 90615



SMALL PARTS

Included with the Painless harness are parts kits containing miscellaneous terminals, fuses, screws, and nuts. Many of the terminals are non-insulated and will require heat shrink to be applied after the terminal has been properly crimped. Heat shrink has been supplied. These non-insulated terminals allow you to keep a cleaner, more traditional look. When crimping these terminals, take notice to the split in the terminal. Make sure the smooth side of the jaw on the crimper goes towards this split.



TOOLS NEEDED

This installation primarily requires only basic hand tools that may include, but are not limited to:

1. Wrench sets SAE and Metric
2. Ratchet sets SAE and Metric
3. Screwdrivers:
 - a. (2) #2 Standard Length and Stubby Phillips Head
 - b. #0 "Jewelers" Flat (slot) Head
4. Half-round Metal File
5. Inch/Pound Torque Wrench
6. Diagonal Pliers or "dikes"
7. Wire Cutter/ 18-10 ga. Stripper
8. Hand Crimpers
9. Cable Cutters
10. Cable Crimping Tool
11. Hammer



In addition to these basic hand tools, you will need, at least, the following:

Electric Drill & Drill Bits:

You also need an Electric Power Drill (suggest battery powered cordless for ease and maneuverability) and a 1 ¼" Hole Saw with Arbor



Volt/Ohm Meter:

A Volt/Ohm meter is always a good tool to have on hand when installing any type of electrical component into a vehicle. The most basic meters provide the two functions required to diagnose electrical issues commonly seen during a harness install. These two functions are the ability to read DC Voltage and electrical continuity or Ohms. They can be purchased from any home improvement store, local hardware store and electrical supply shop and online.



Heat Gun:

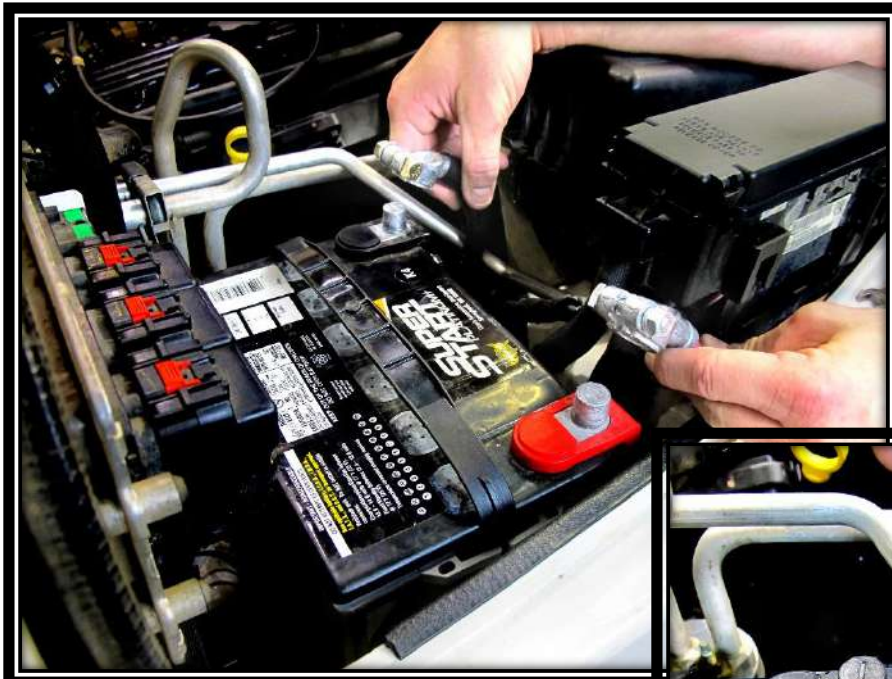
Very useful to shrink the heat-shrink found in the parts kit.

FUSE/RELAY CENTER INSTALLATION

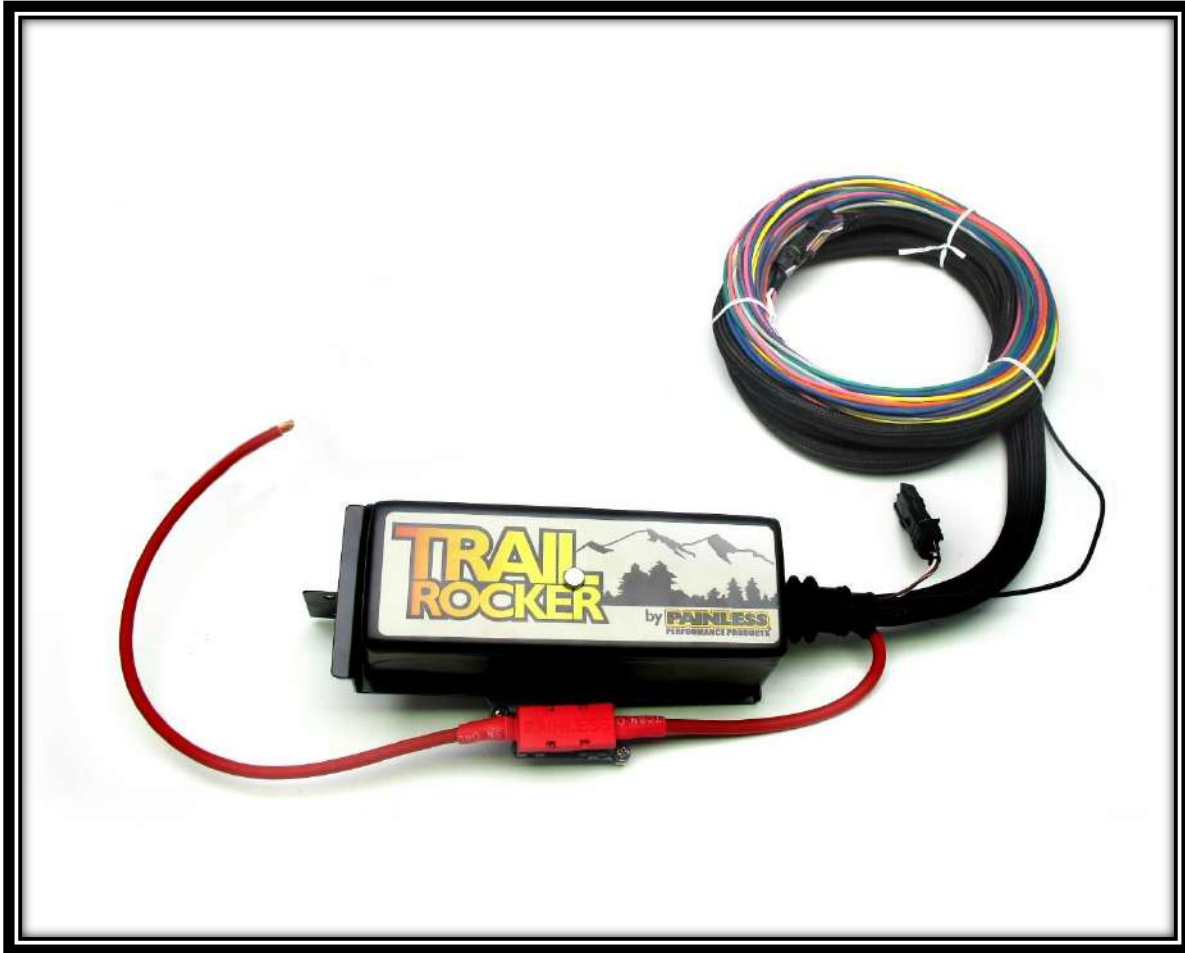
The following steps **MUST** be followed as they are printed. Do not move onto other parts of the installation out of sequence.

CAUTION: BEFORE THE INSTALLATION OF THIS PRODUCT, DISCONNECT THE POWER FROM YOUR VEHICLE BY REMOVING THE NEGATIVE BATTERY CABLE FROM THE BATTERY. THE BATTERY SHOULD NOT TO BE RECONNECTED UNTIL INSTRUCTED

Step 1: Remove the battery cables from the battery and tuck them away so that they won't accidentally make contact with the terminals.



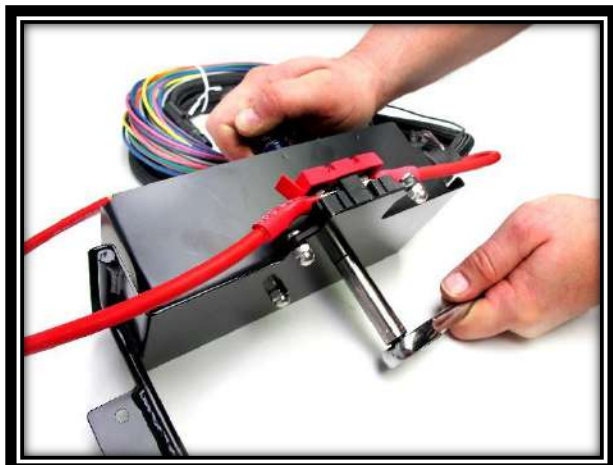
Step 2: After removing the battery cables, locate the Fuse/Relay Center and bracket, (2) $\frac{3}{8}$ " Adel clamps, (2) 1" Adel clamps, (3) $\frac{1}{4}$ "-20 stainless bolts, and (3) $\frac{1}{4}$ " nylon lock nuts.



Step 3: First, remove the Fuse/Relay Center from the bracket. To do this remove the lid from the Fuse/Relay Center using a $\frac{7}{16}$ " wrench or socket.



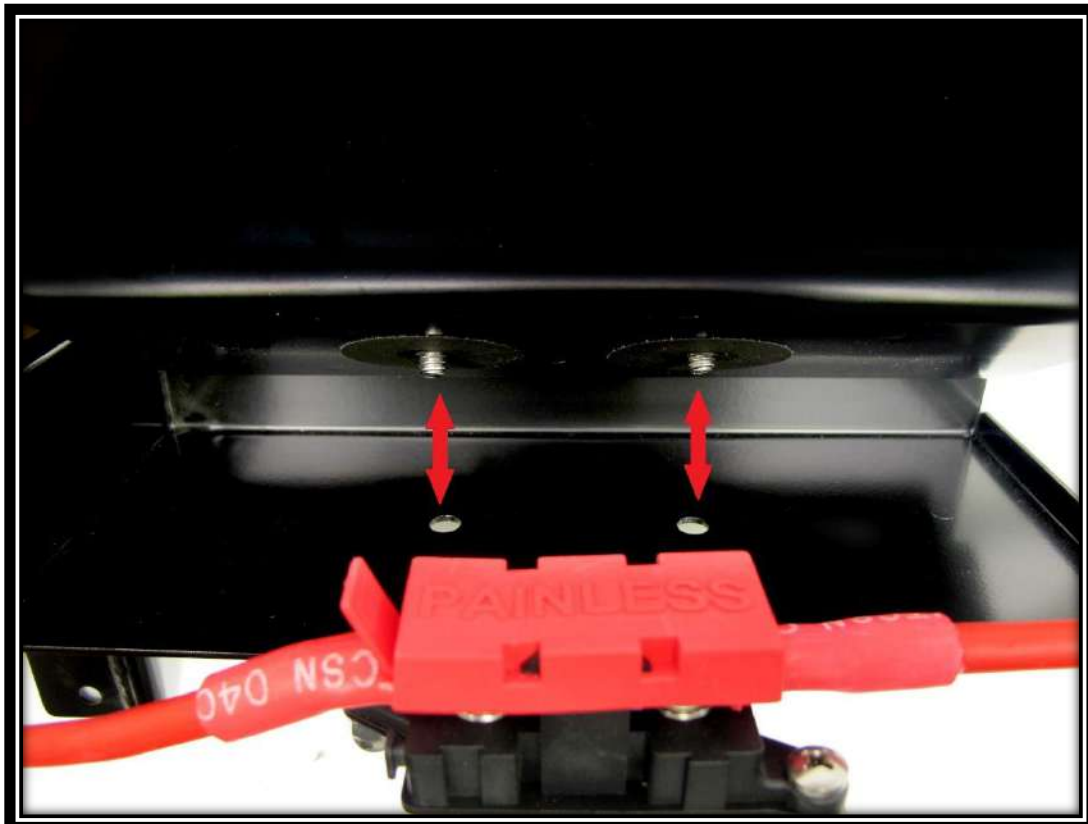
Step 4: Once the cover is removed, notice the mounting bolts located below the relays. Use a #2 Stubby Philips-head screwdriver to hold the bolts in place while you remove the $\frac{1}{4}$ " threaded, acorns nuts on the bottom of the unit with a $\frac{7}{16}$ " wrench or socket.



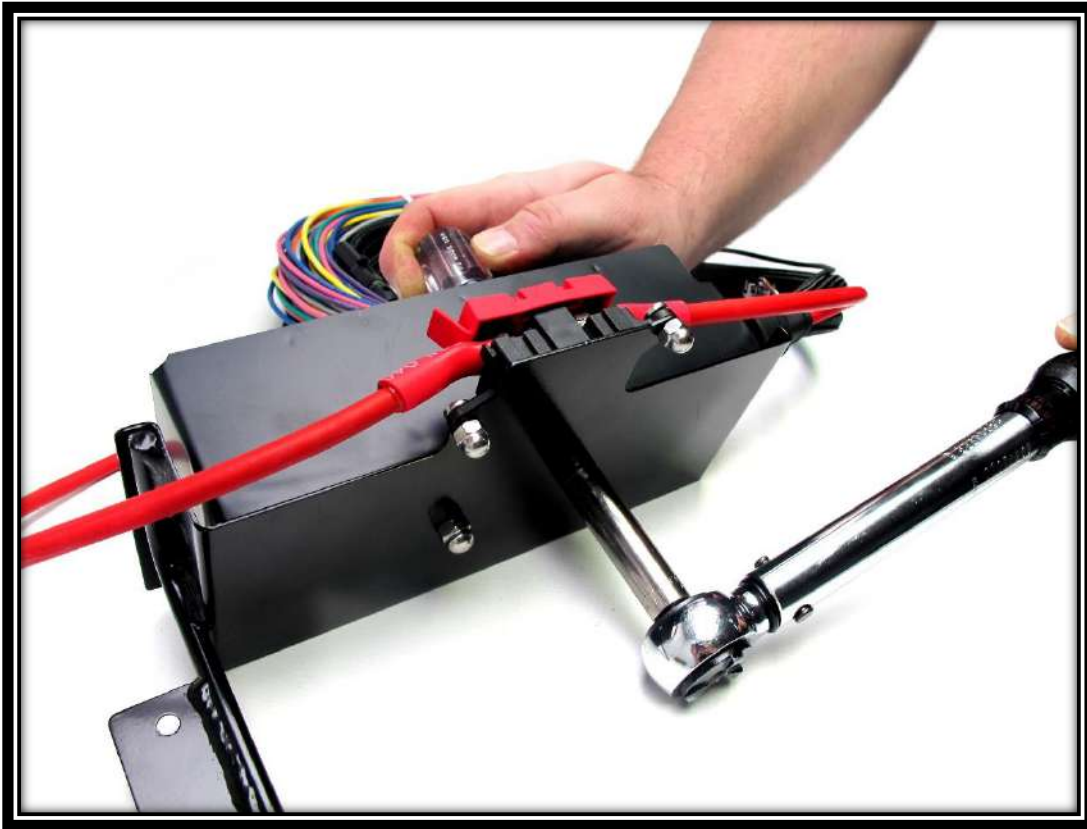
Step 5: With the bracket removed slide 2 of the ¼”-20 stainless bolts into the holes on the back of the Fuse/Relay Center bracket.



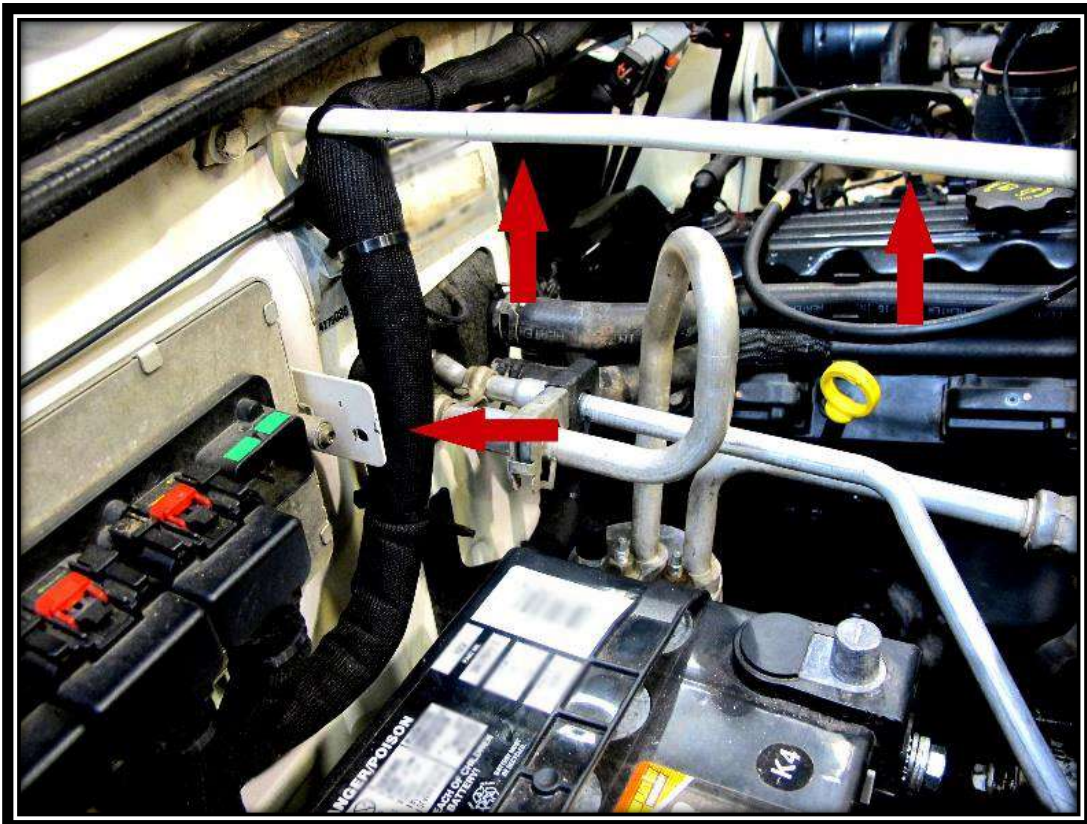
Step 6: With the mounting bolts in place, reattach the Fuse/Relay Center bracket.



Step 7: Fasten the bracket to the Fuse/Relay Center using the $\frac{1}{4}$ " threaded, acorns nuts you removed in Step 4. **Caution:** Do not over-torque these fasteners! If necessary, use a torque wrench to torque to 36 inch/pounds.



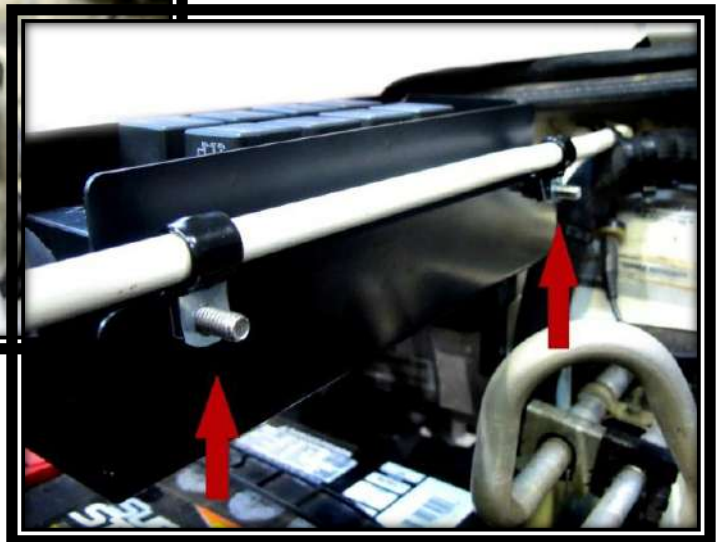
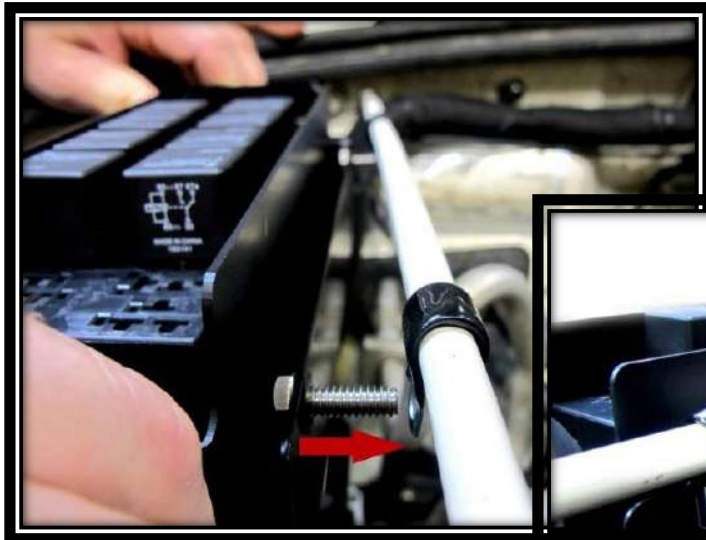
Step 8: In the engine compartment you will notice a strut rod and mounting tab on the firewall. The tab is just above the battery on the passenger side of the vehicle.



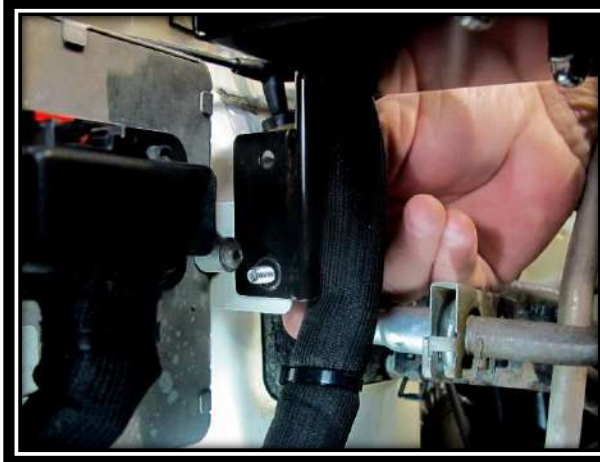
Step 9: places (2) $\frac{3}{8}$ " Adel clamps over the strut rod.



Step 10: Line up the $\frac{1}{4}$ "-20 stainless bolts you placed in the Fuse/Relay Center bracket in Step 3 with the (2) $\frac{3}{8}$ " Adel clamps. **DO NOT install and tighten the $\frac{1}{4}$ " nylon lock nuts until Step 16.**



Step 11: Line up the tab on the bottom of the **Fuse/Relay Center** bracket with the mounting tab on the firewall. Take (1) $\frac{1}{4}$ "-20 stainless bolt and (1) $\frac{1}{4}$ " nylon lock nut and, using a $\frac{7}{16}$ " wrench and socket, secure the tabs together.



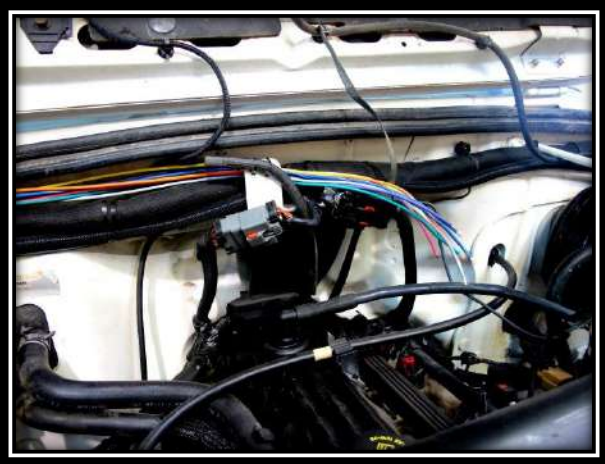
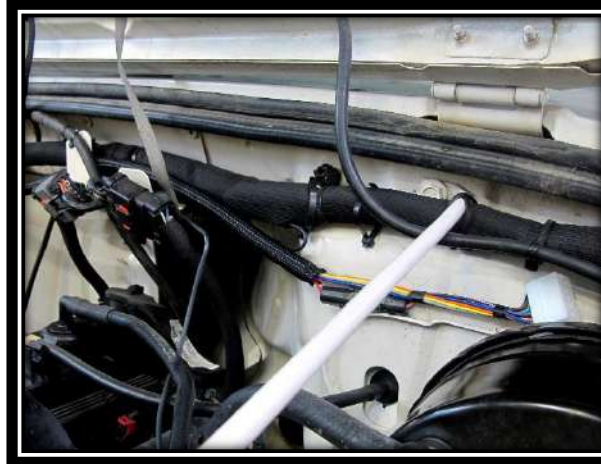
Step 12: Use a $\frac{7}{16}$ " socket to re-secure the lid to the unit. **Caution: Do not over-torque this fastener!** If necessary, use a torque wrench and torque to 11 inch/pounds.



Step 13: Locate the Trail Rocker control wires.



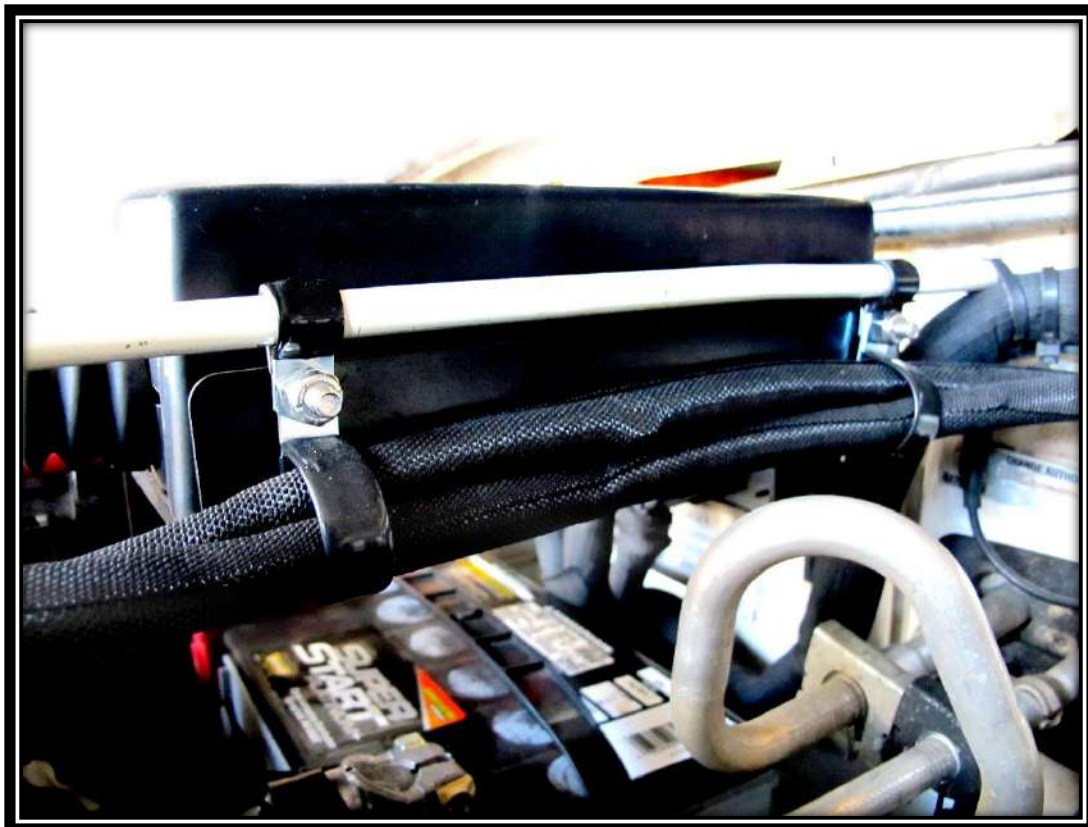
Step 14: Carefully route the Trail Rocker control wires along the factory wire loom, and under the strut rod.



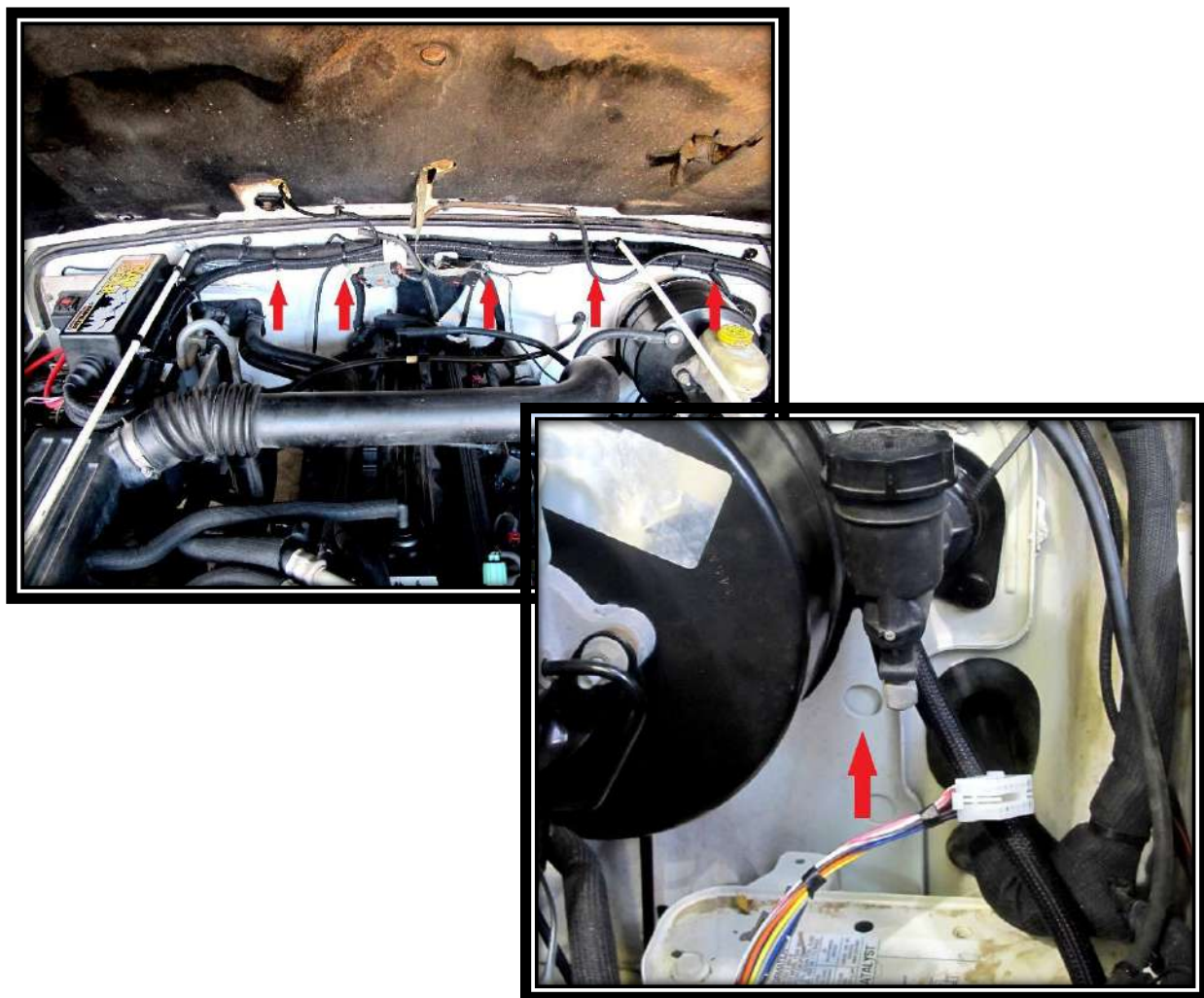
Step 15: Route the Trail Rocker control wires over the brake booster but under the clutch master cylinder, if your Jeep has a manual transmission.



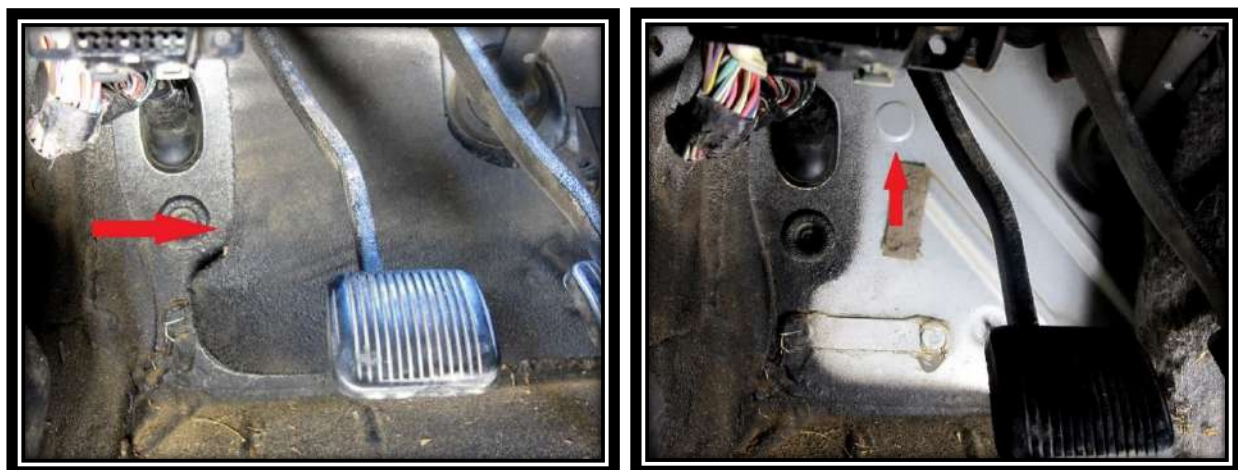
Step 16: Next, secure the Trail Rocker control wires to the Fuse/Relay Center. To do this, place (2) 1" Adel clamps over the Trail Rocker control wires and secure them to the (2) 1/4"-20 stainless bolts on the Fuse/Relay Center bracket with (2) 1/4" nylon lock nuts.



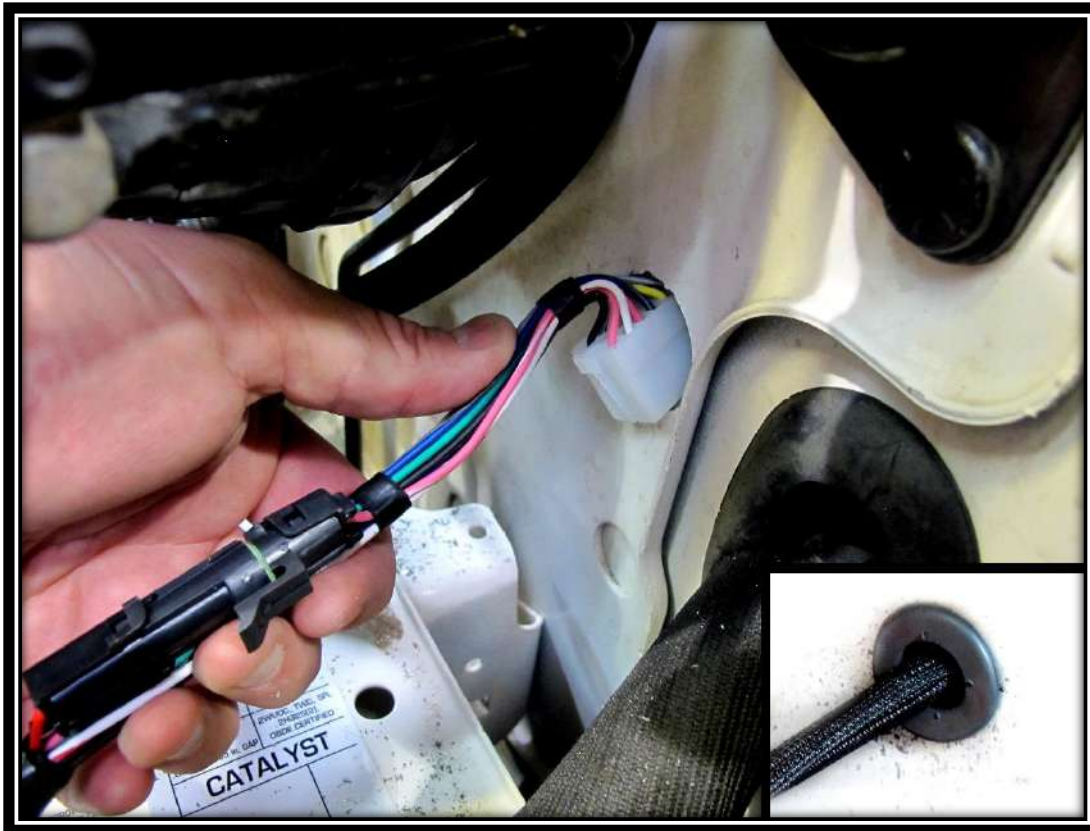
Step 17: Zip-tie the Trail Rocker control wires to the factory wiring harness. Then, locate the small hole below the brake booster and master cylinder. This is where you will drill through the firewall.



Step 18: In the interior there is a cover behind the pedals that will need to be moved before you drill. Once the cover is moved out of the way, you can see from the interior where the hole will be made.



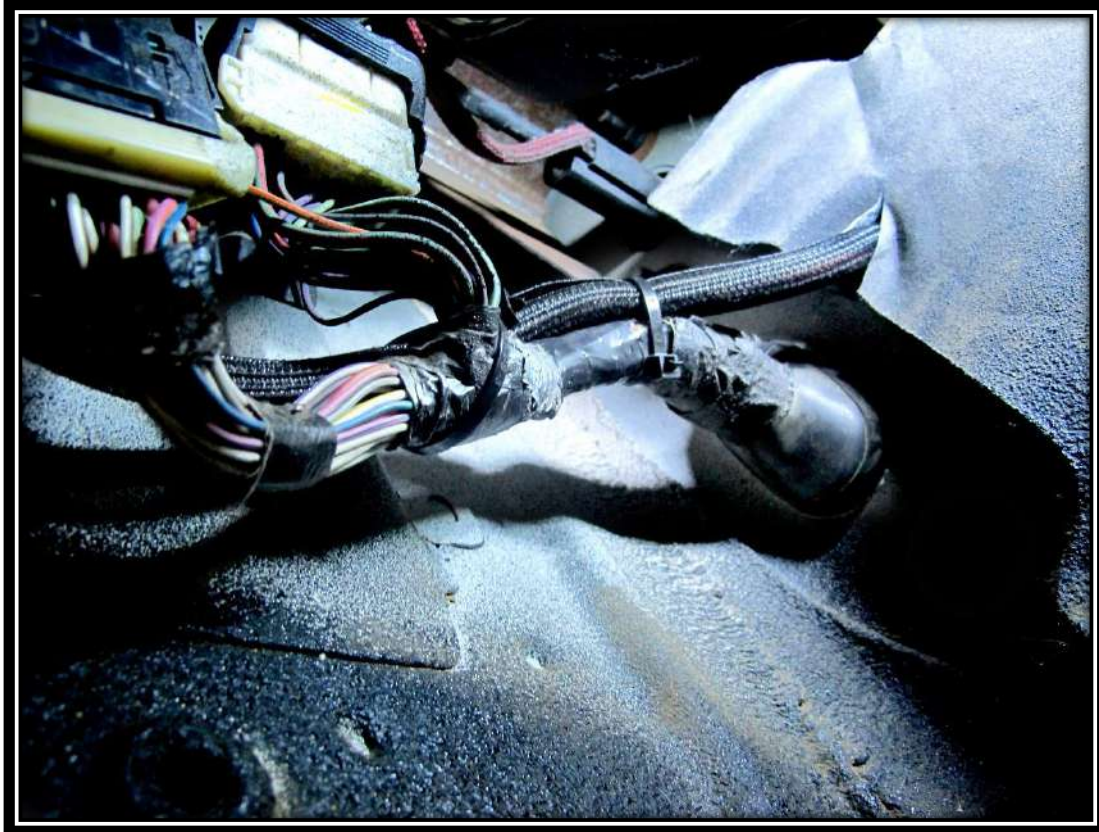
Step 21: Slightly bend the connector and pass it through the hole in the firewall. Secure the **rubber grommet** in the hole.



Step 22: In the interior, replace the cover you moved in **Step 18**. It may be necessary to cut a small hole in the cover to allow the **Switch Control wires** to pass neatly through.



Step 23: Zip-tie the **Switch Control** wires to the factory wires coming through the firewall, and allow the **Switch Control** wires to hang below the dash for the moment.



SWITCH CONTROL PIGTAIL

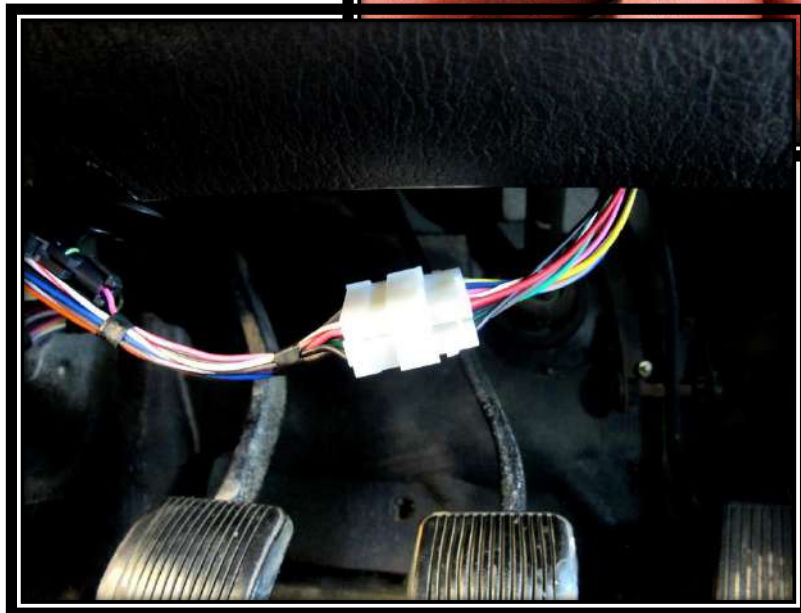
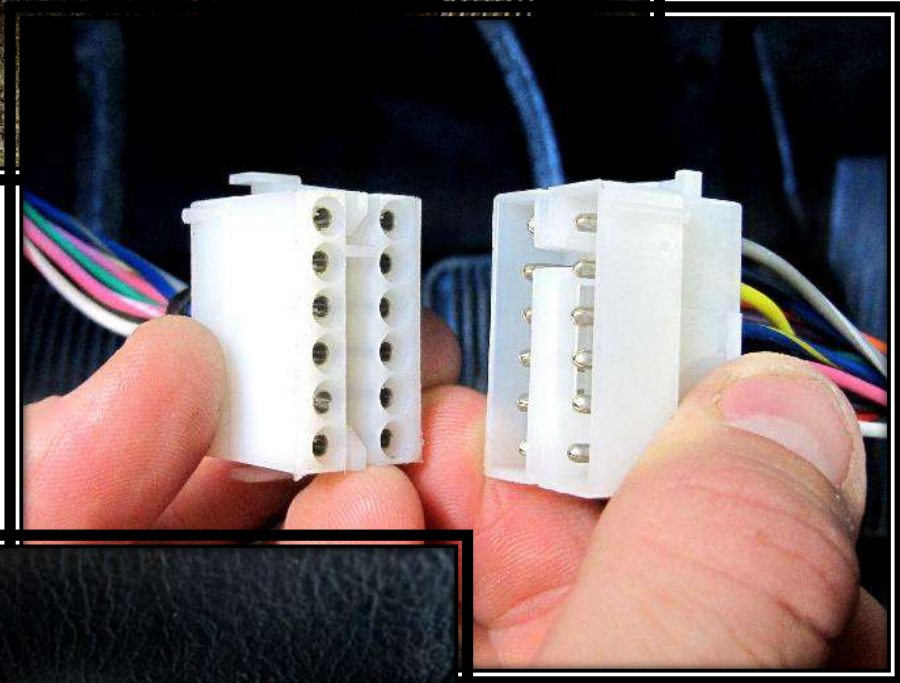
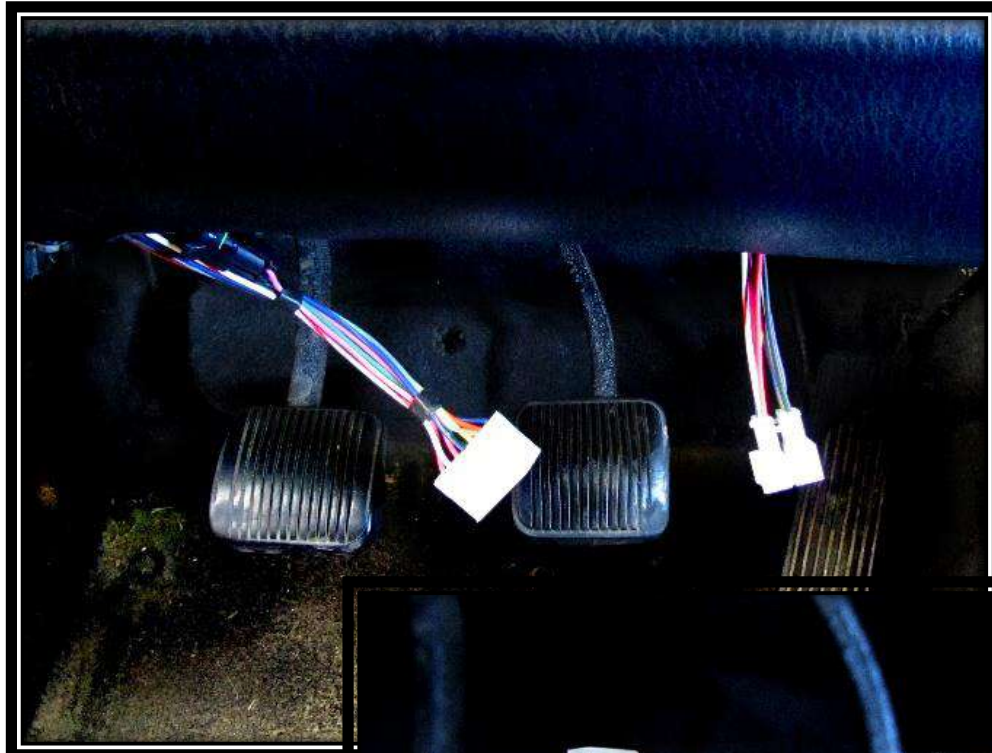
Step 24: Remove the access panel below the steering column by removing its 2 screws with a **Philips-head screwdriver**.



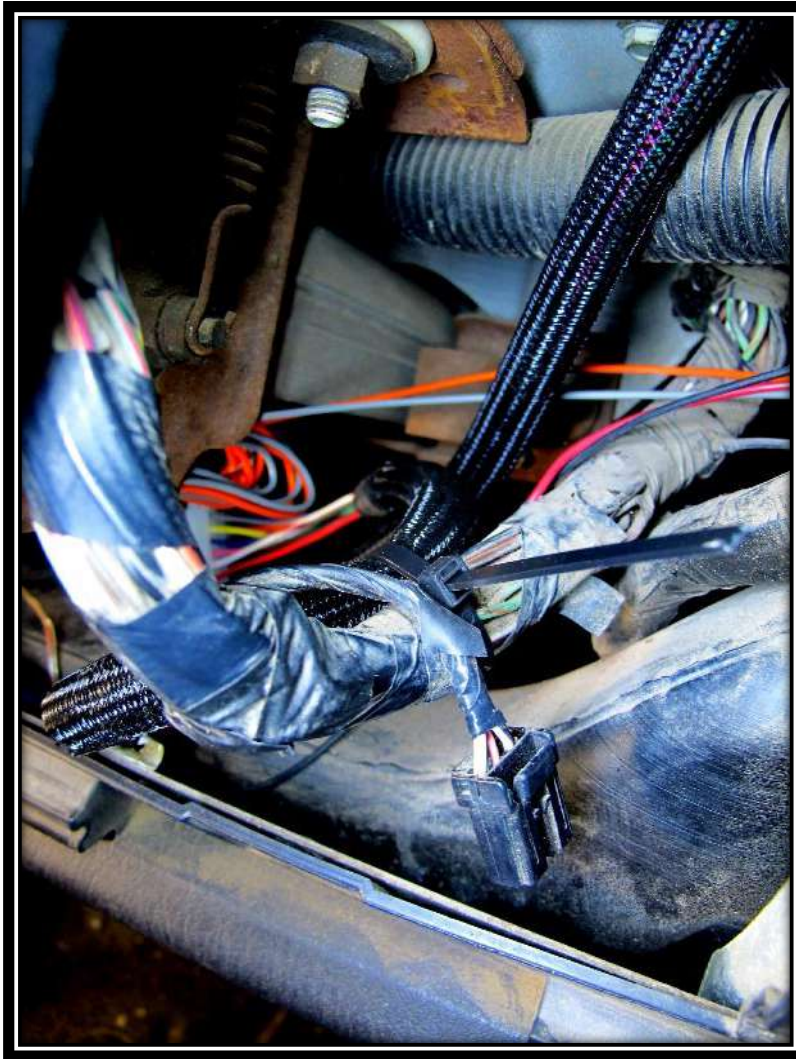
Step 25: Locate the **Switch Control pigtail** included in your **Trail Rocker Kit**. Route the pigtail through the open panel to your switches, and let the connector hang below the dash.



Step 26: Connect the Switch Control pigtail to the connector on the Switch Control wires you passed through the firewall in the previous section.



Step 27: Secure the wires using the provided [zip-ties](#).

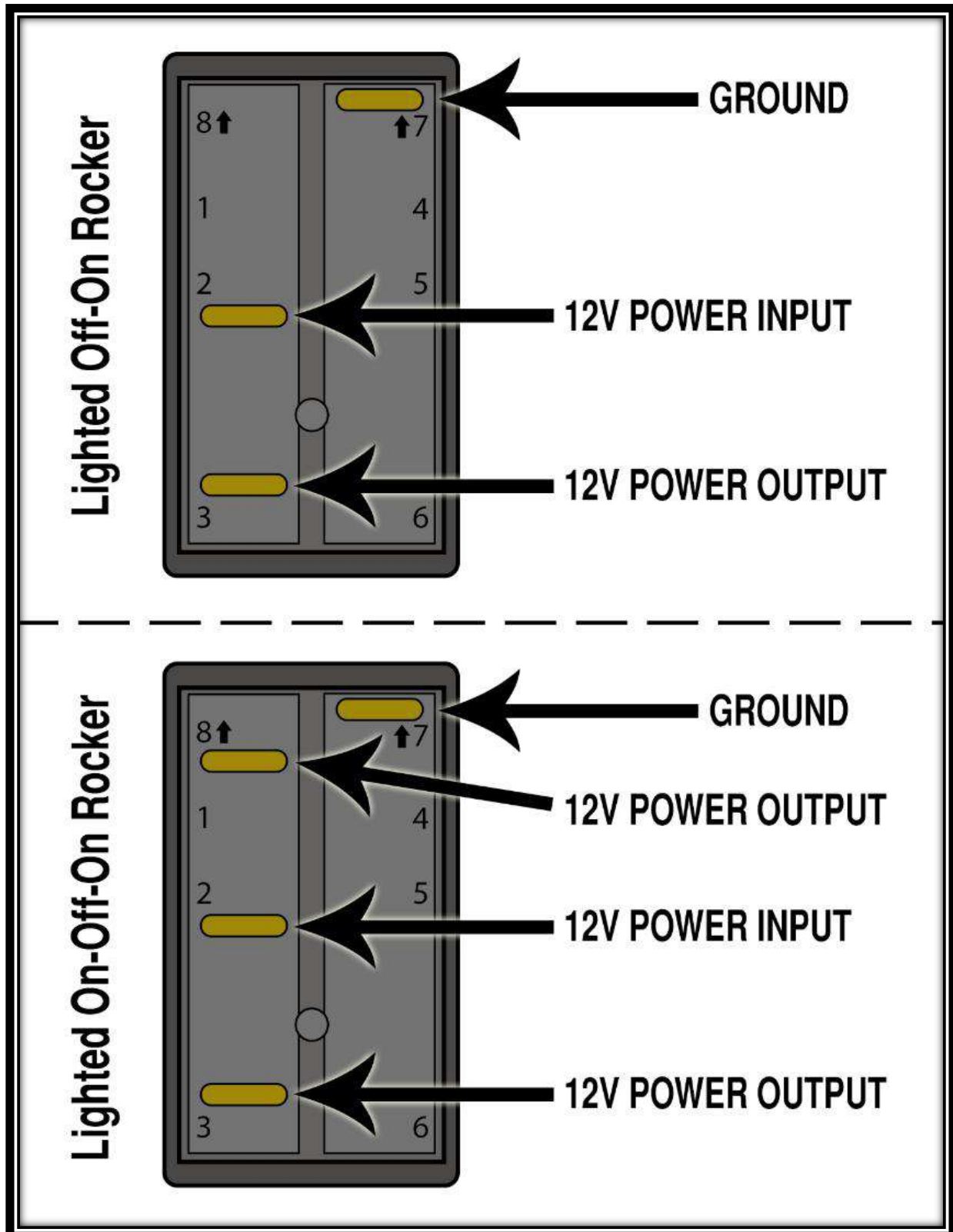


Step 28: Reinstall the access panel you removed in Step 24.

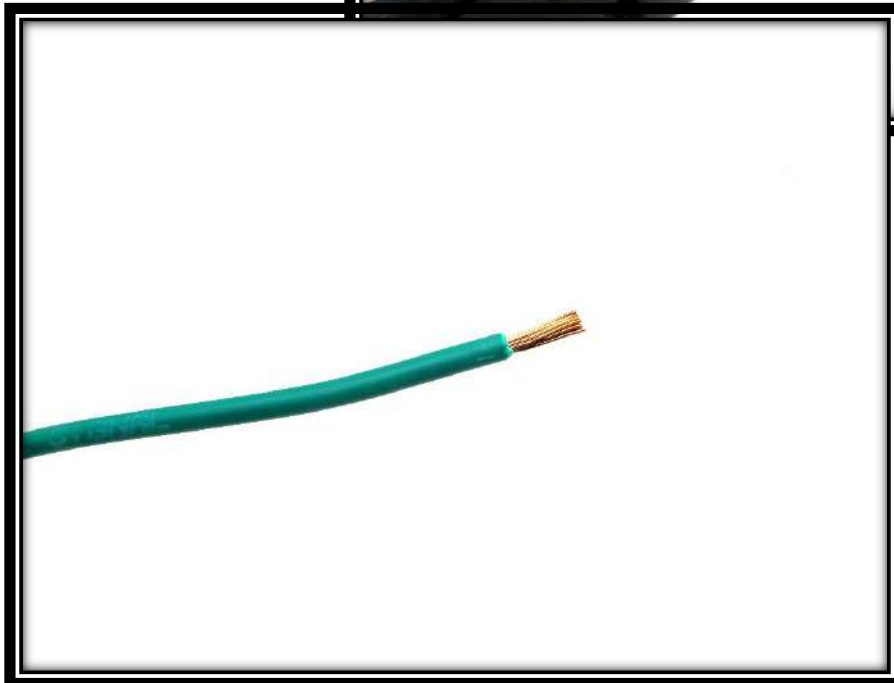
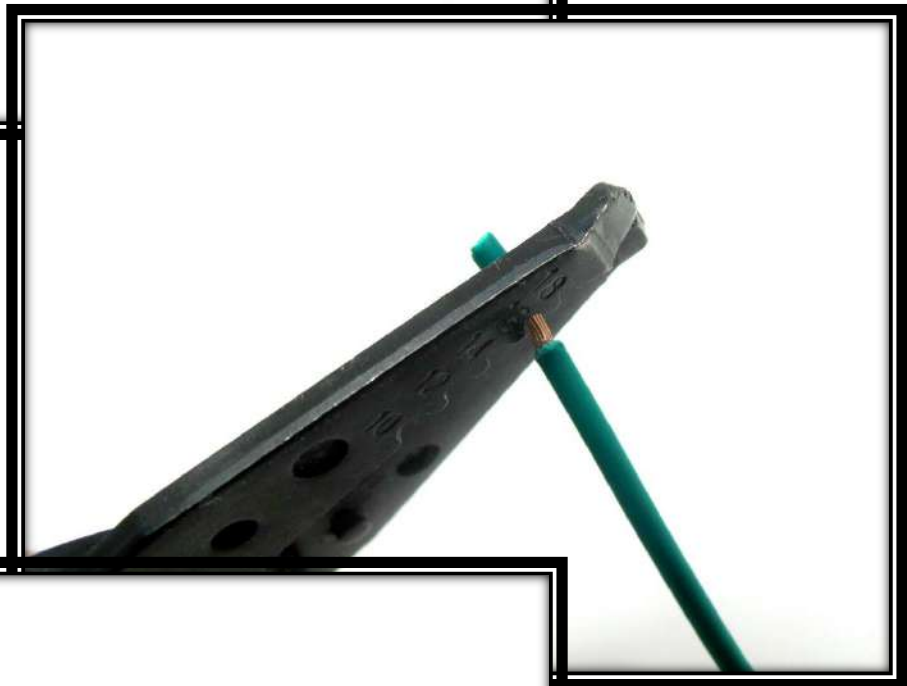
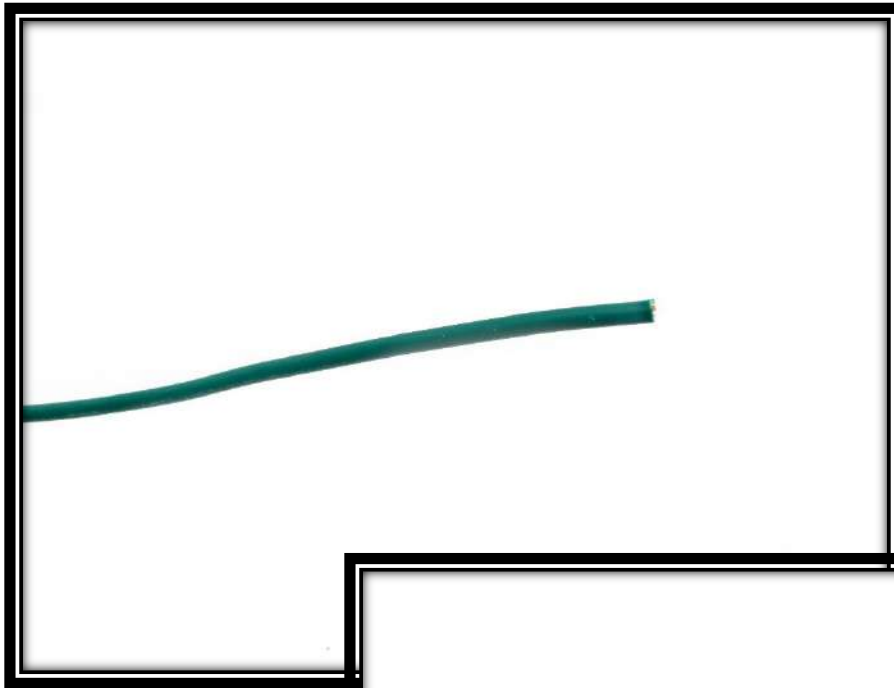


SWITCH WIRING

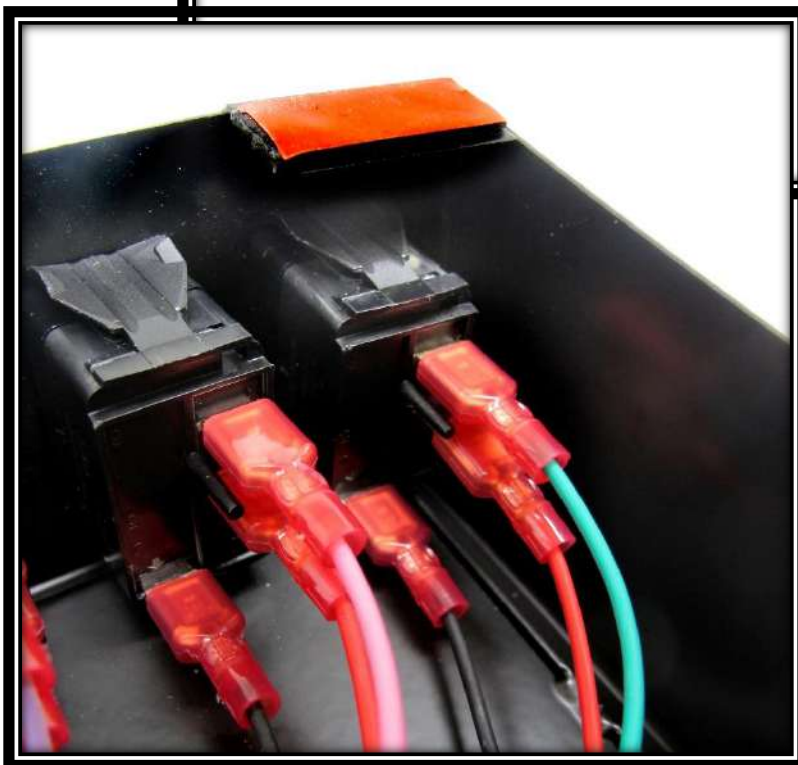
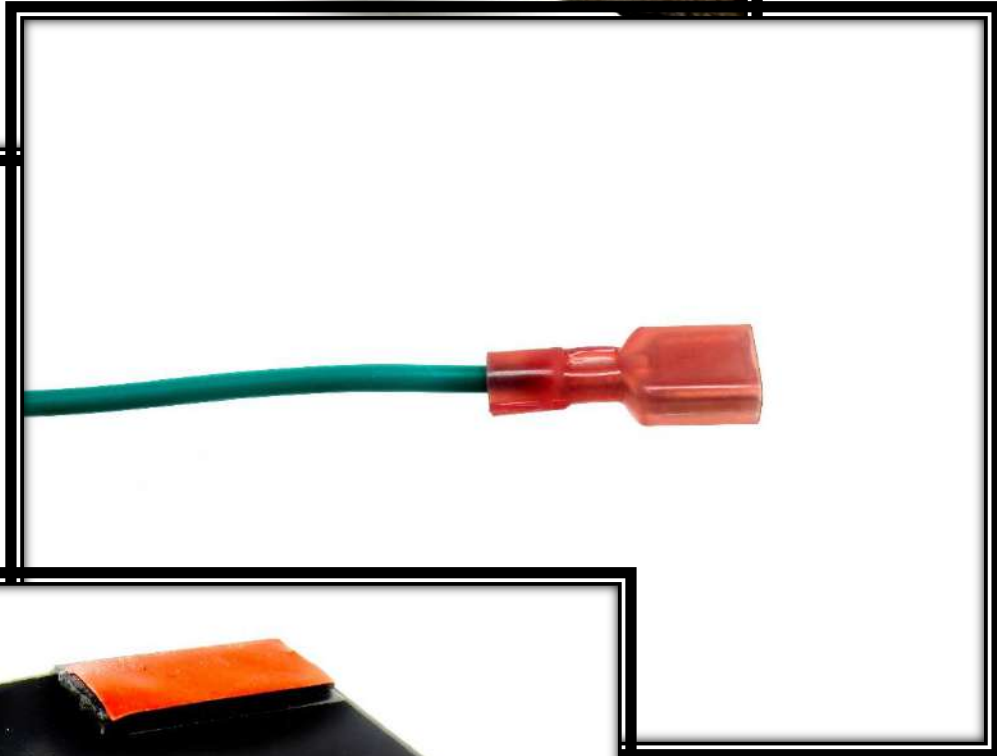
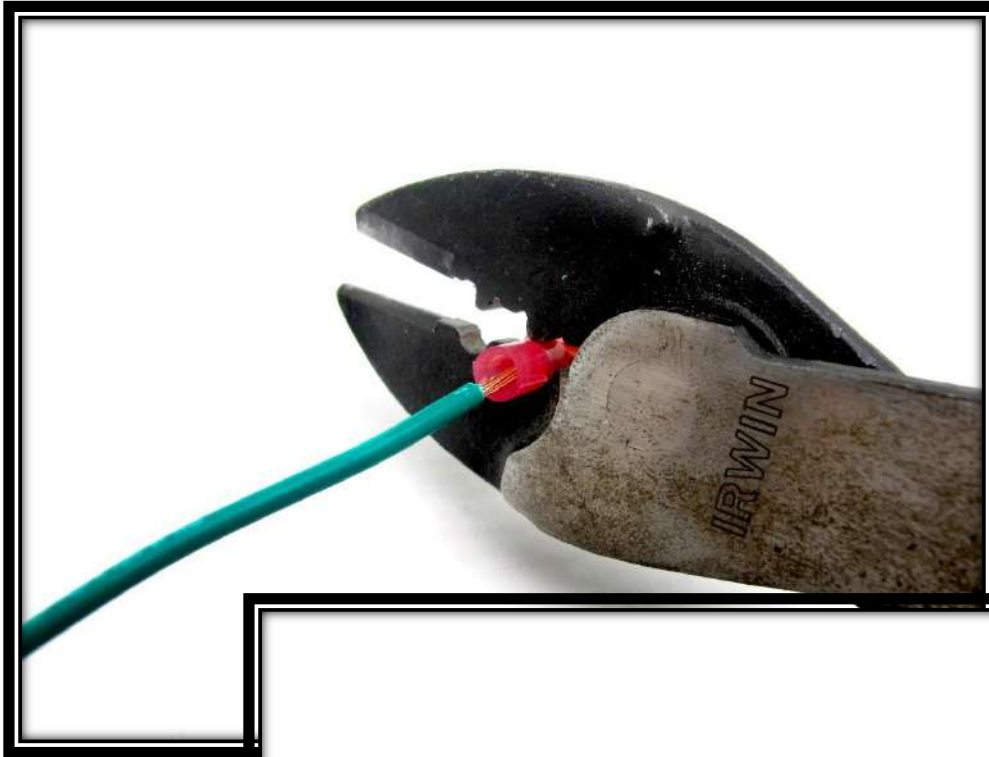
If you are running lighted rocker switches, they will need to be wired as shown in the diagram below. The **switch control wires** connect to the **12V POWER OUTPUT** terminals.



Step 29: Locate the wire on the **Switch Control** pigtail you wish to connect to a switch and strip it about $\frac{1}{4}$ ".



Step 30: Crimp on a **20-18 ga. ¼" spade terminal** found in the included parts kit. Then, connect the wire to the switch.



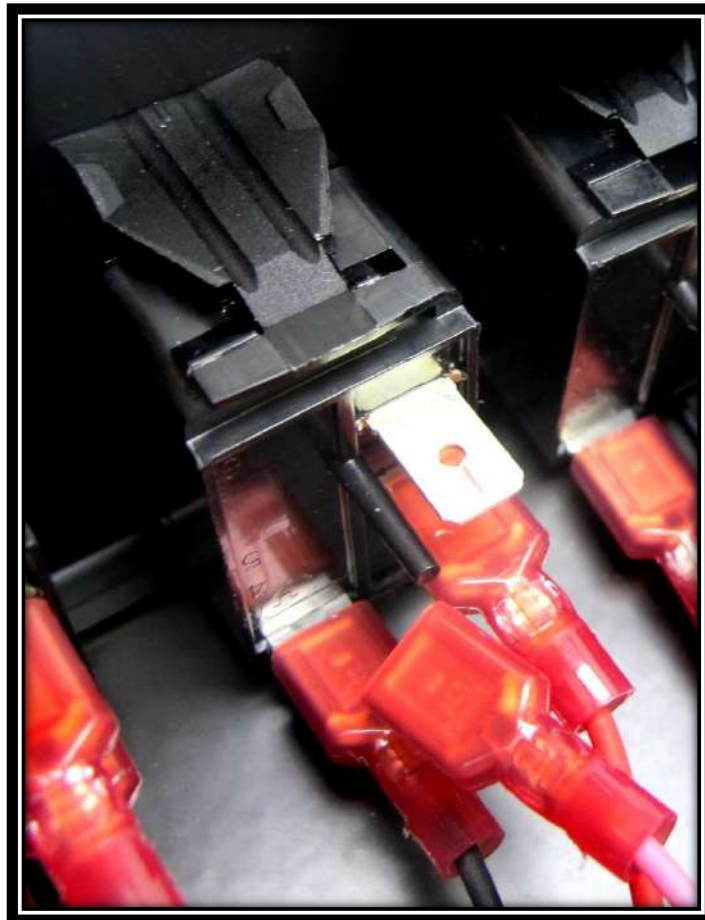
DOUBLING SWITCH CONTROL WIRES

Steps 31-35 are optional and only for those who wish to control multiple functions for one switch. Provided in the kit are several 16-14 ga. ¼" spade terminals and piggyback terminals, similar to those shown below. These terminals provide you with two different options for doubling switch control wires.

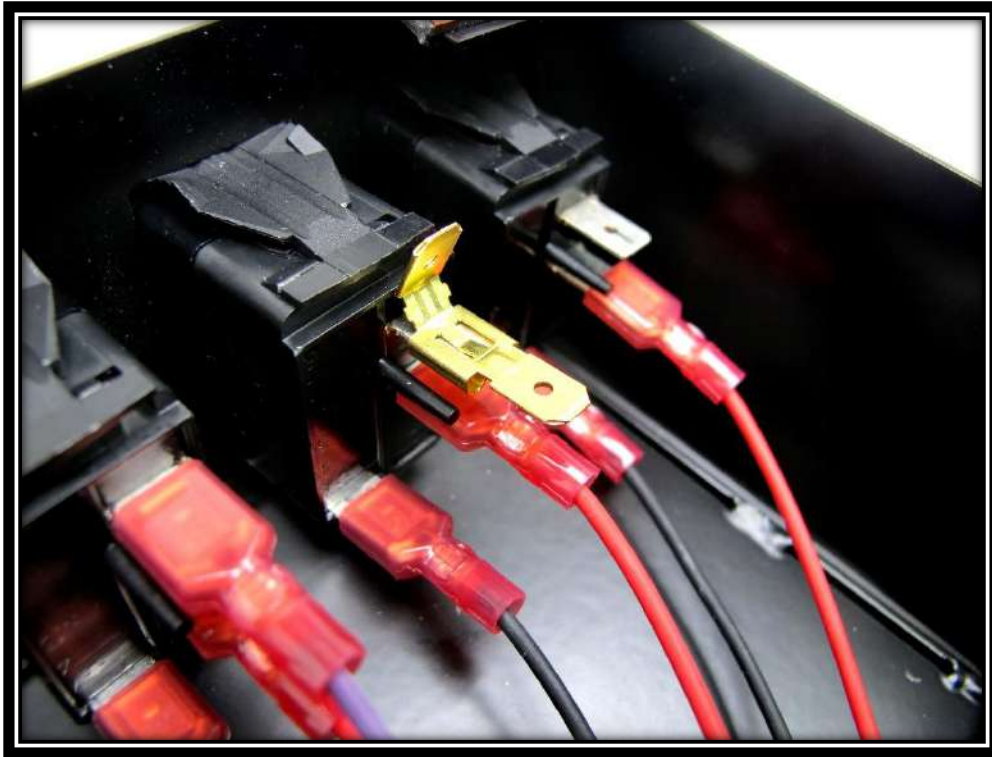


PIGGYBACK TERMINALS

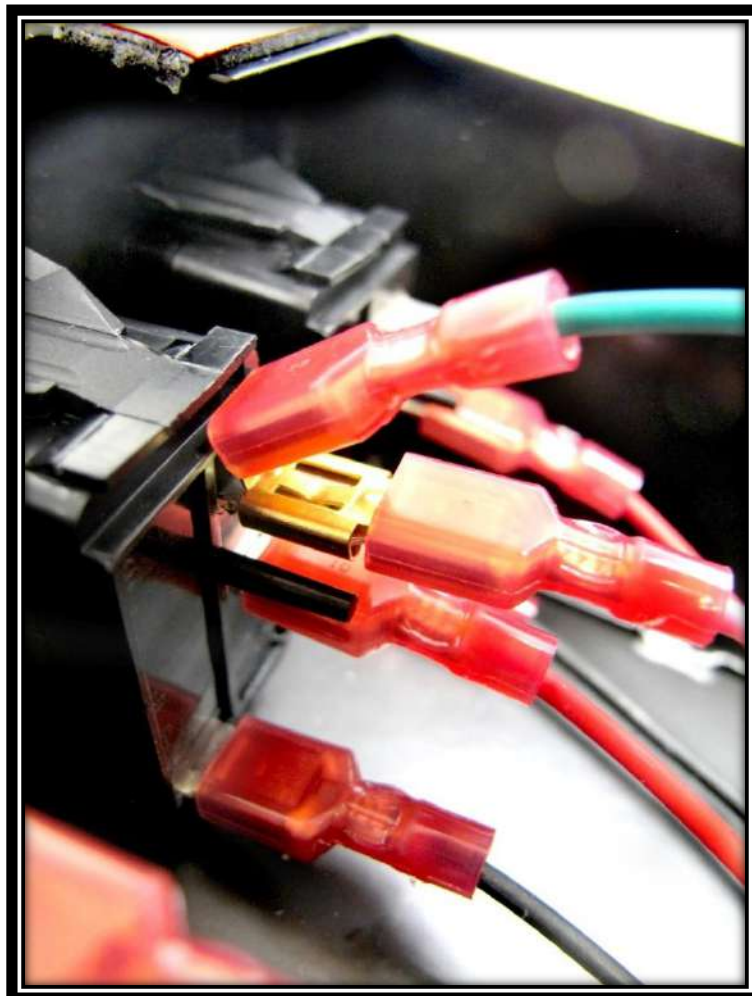
Step 31: Choose which switch you want to control multiple functions with, and remove the existing power output wire from the terminal on the bottom of each switch (terminal #3).



Step 32: Place on the [piggyback terminal](#).

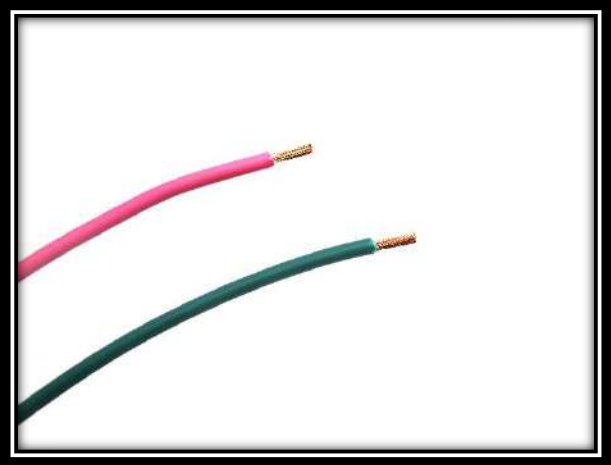
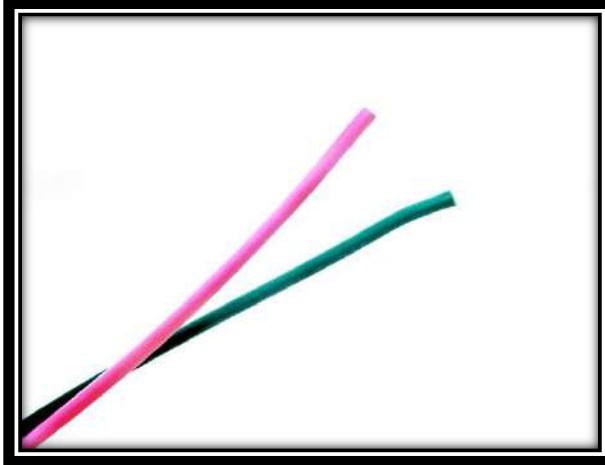


Step 33: Take the power output wire and an additional wire from the Switch Control pigtail and connect them to the [piggyback terminal](#).

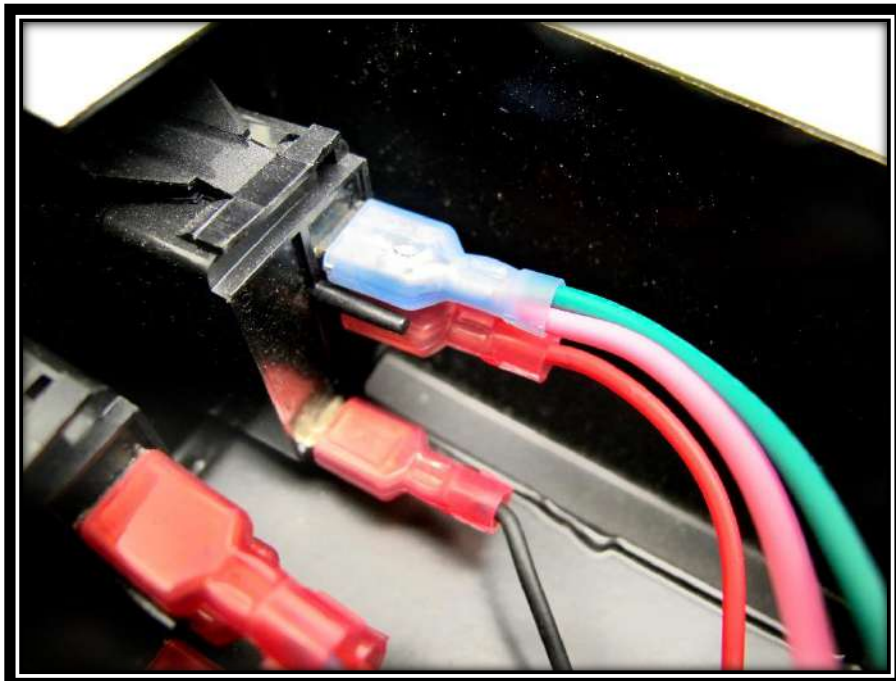
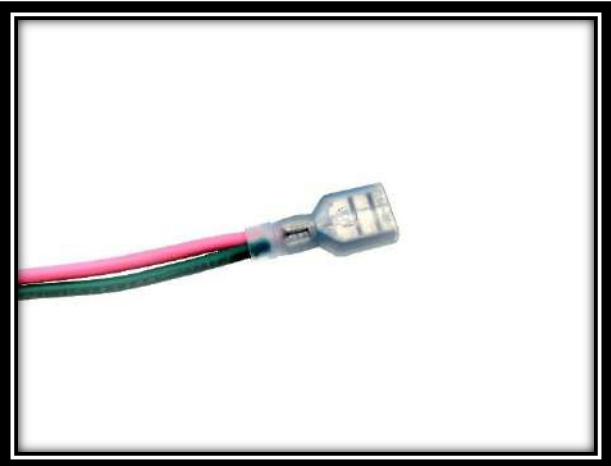
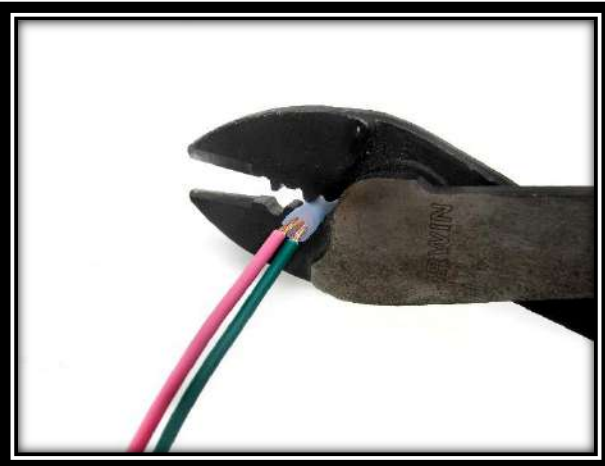


16-14 ga. 1/4" SPADE TERMINALS

Step 34: Locate the two wires from the Switch Control pigtail you wish to use and strip them 1/4".



Step 35: Place both wires in a 16-14 ga. 1/4" spade terminal and crimp. Then, connect the doubled wires to the power output terminal (terminal #3) on your switch.



OPTIONAL: IGNITION SWITCH CONNECTOR INSTALLATION

THESE STEPS ILLUSTRATE HOW TO HOOK UP YOUR TRAIL ROCKER TO IGNITION SWITCHED POWER AND ARE COMPLETELY OPTIONAL. IF YOU WANT TO OPERATE YOUR SWITCHES WITH A CONSTANT POWER (AS SHIPPED), SKIP STEPS 36-51 AND MOVE ON TO THE RELAY OUTPUT WIRE SECTION ON [PAGE 37](#).

Step 36: With the access panel still removed, release the steering column lock.



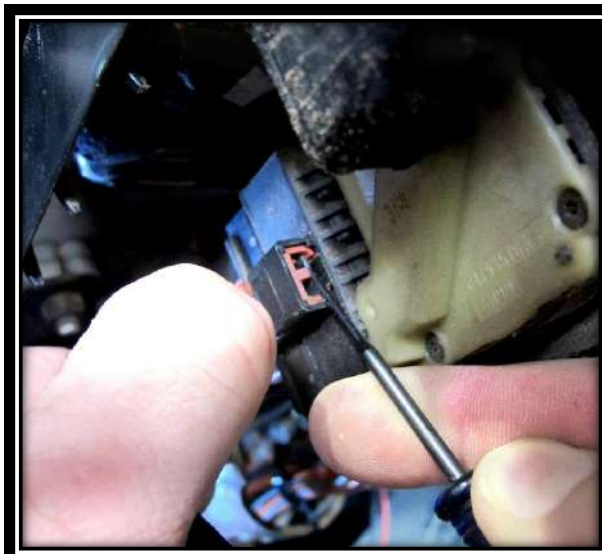
Step 37: Use a [Philips-head screwdriver](#) to remove the steering column cover.



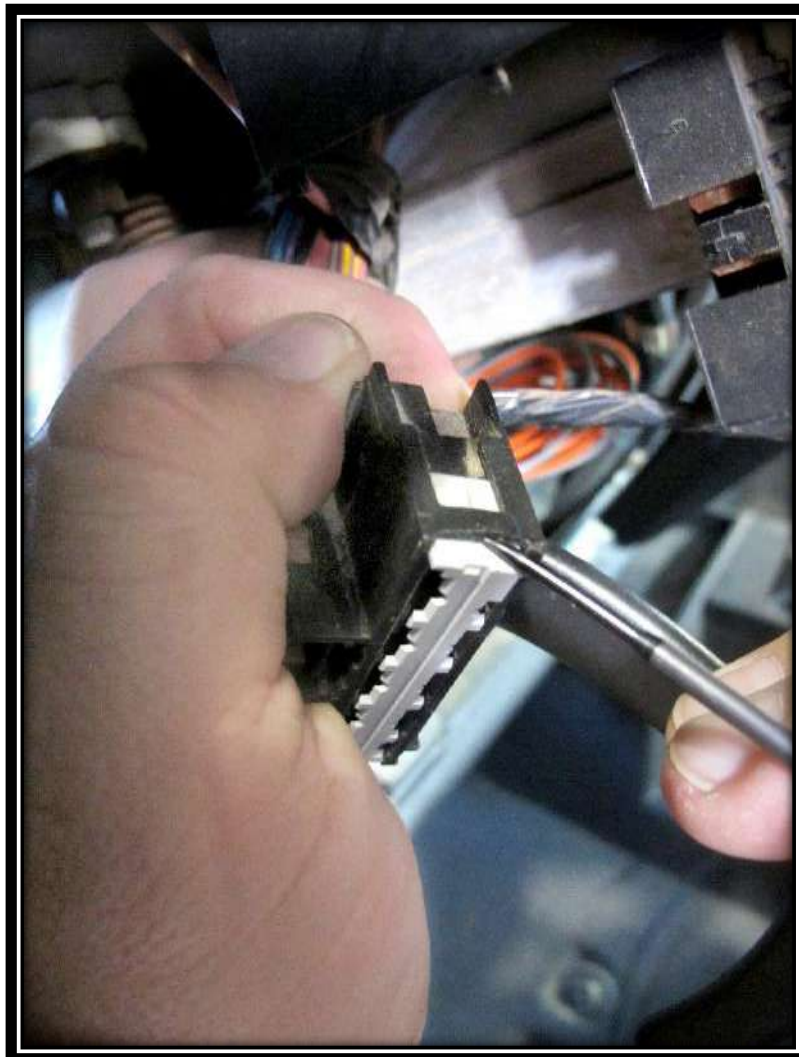
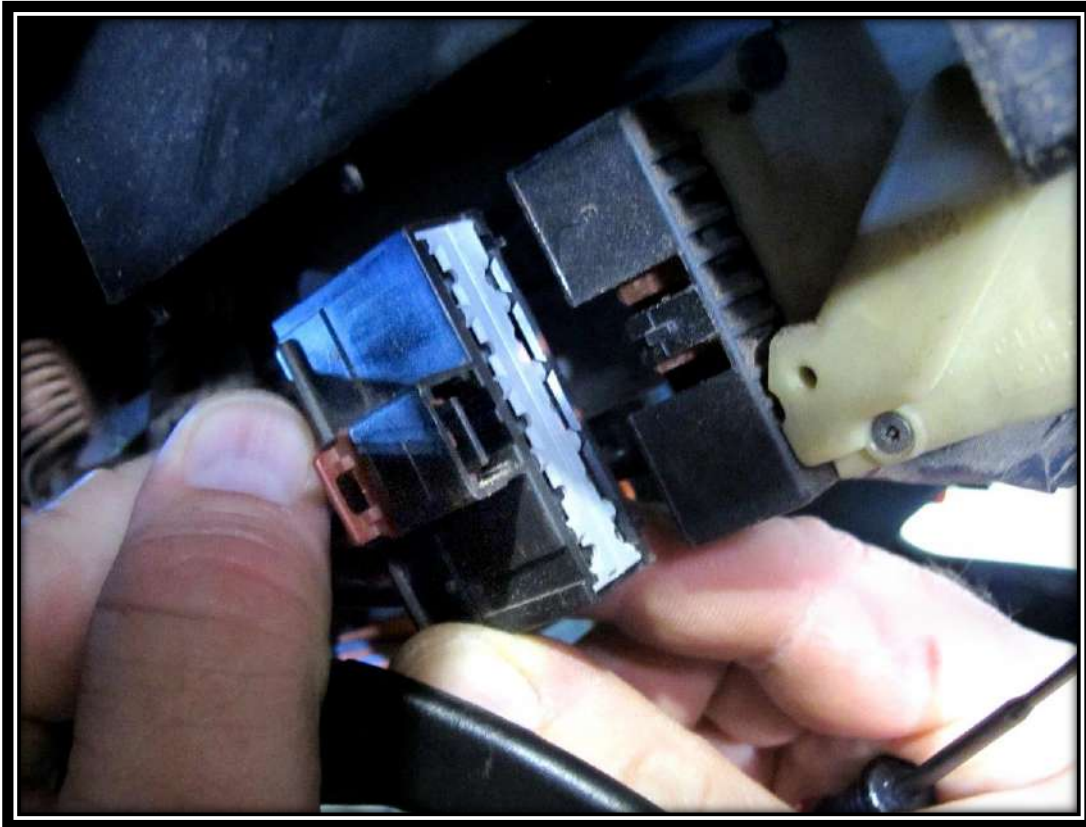
Step 38: You will now locate the ignition switch connector.



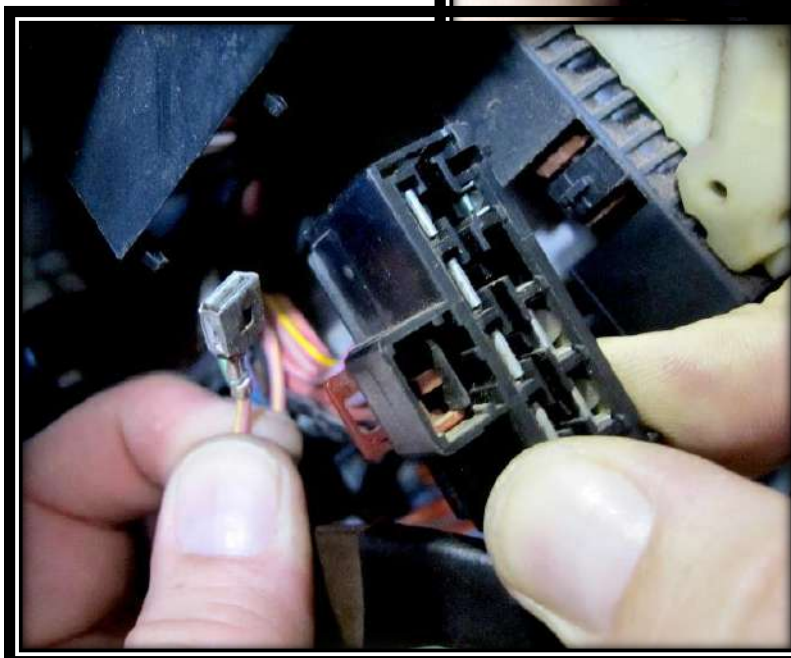
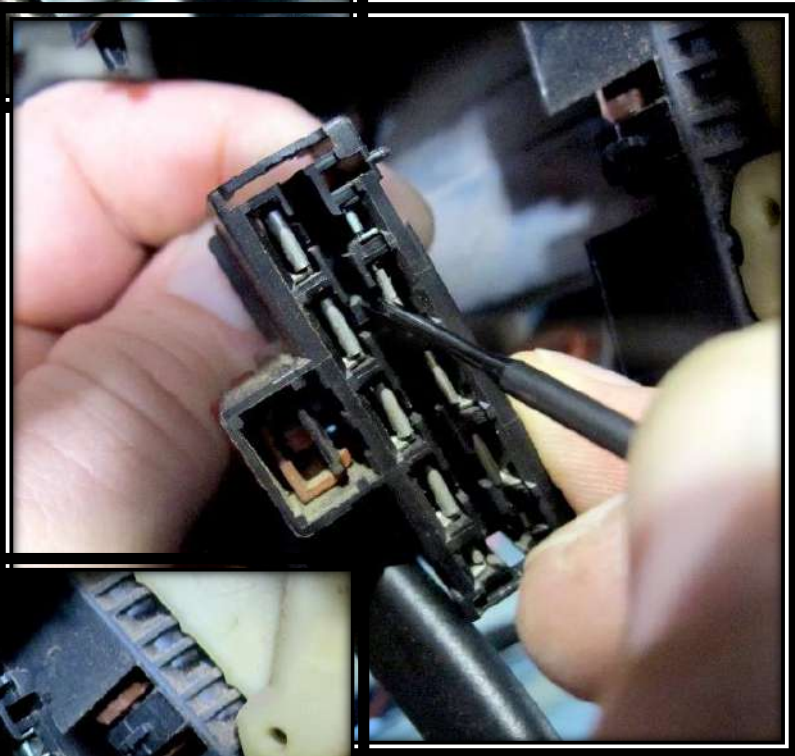
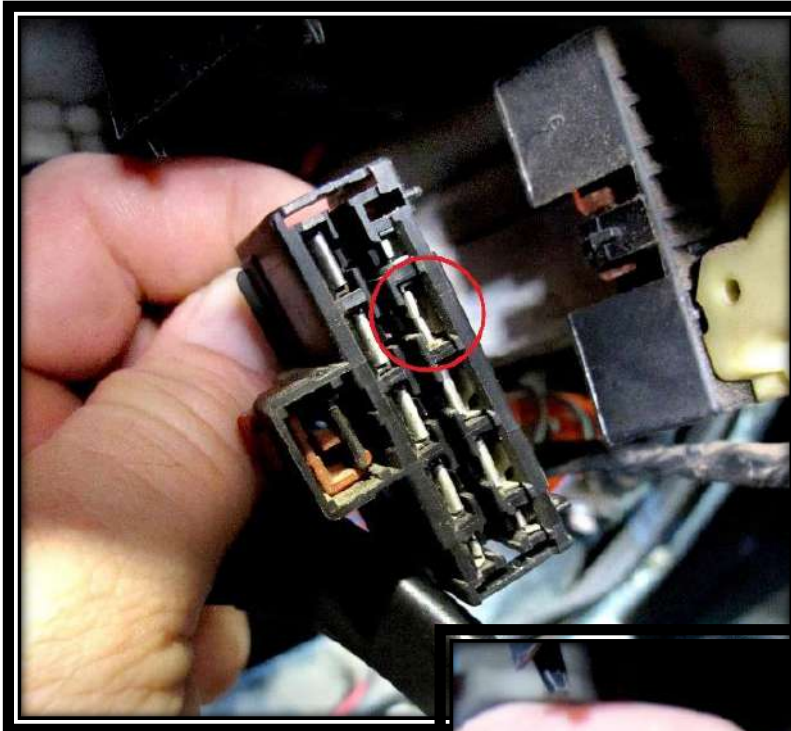
Step 39: Use a **small flathead screwdriver** to unlock the orange locking clip.



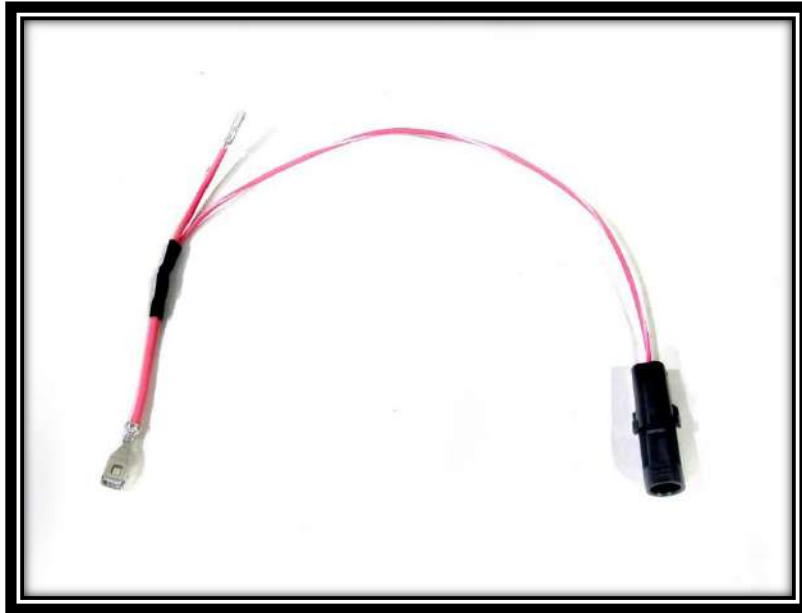
Step 40: Disconnect the ignition switch connector and use a **small flathead screwdriver** or a **pick** to remove the grey locking tab.



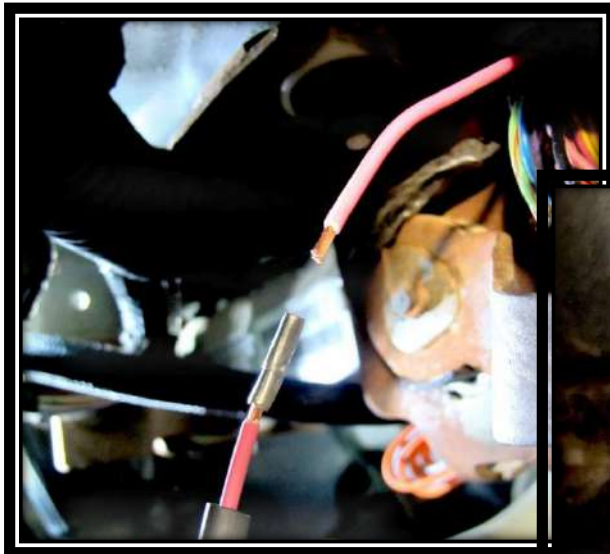
Step 41: With the grey lock removed, use a **small screwdriver** or **pick** to depress the lock underneath the second terminal on the right. With the terminal unlocked, pull the **factory ignition switched 12V wire** out of the connector.



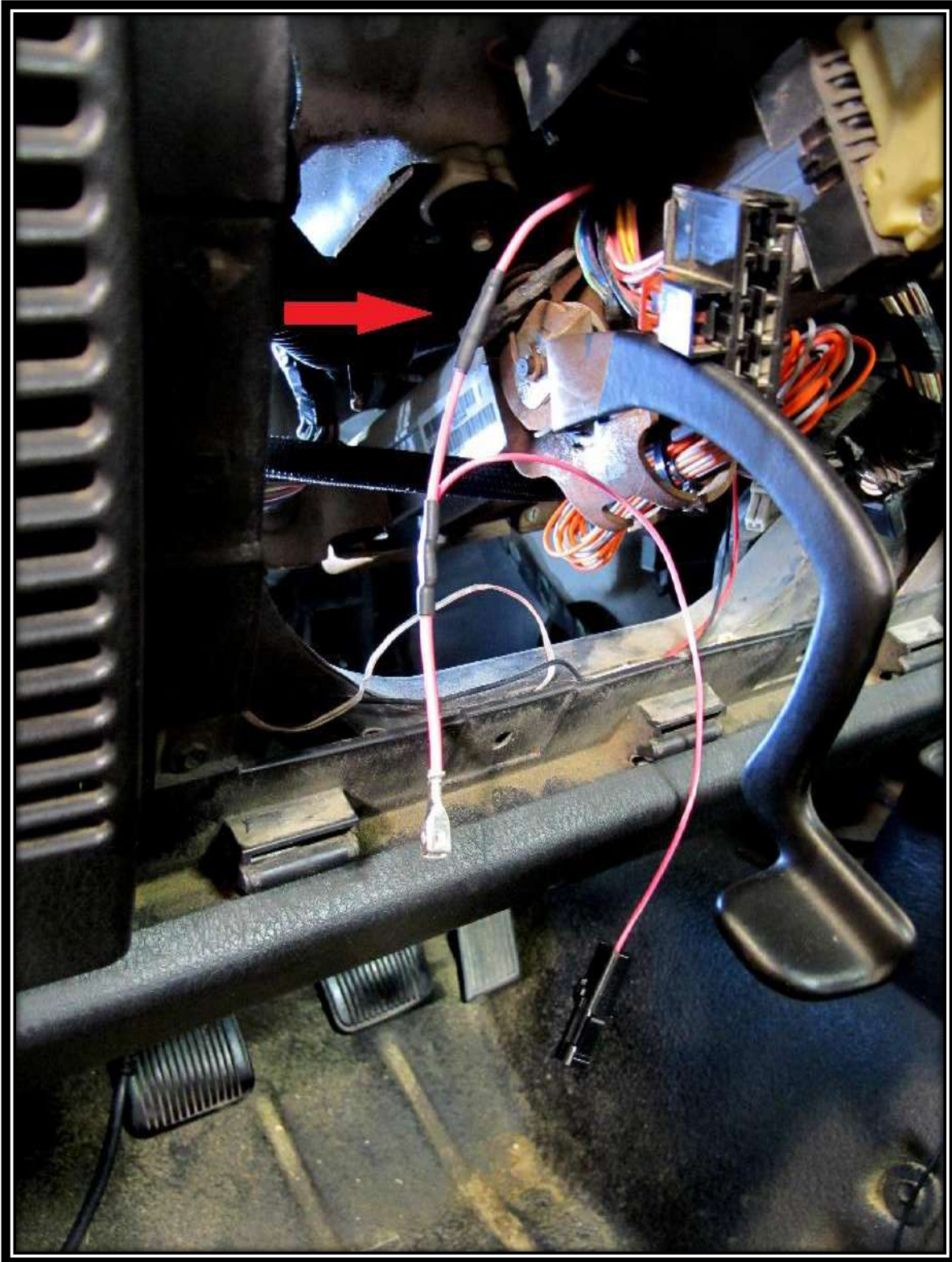
Step 42: Provided in your parts kit is a replacement **ignition pigtail** that will provide your Trail Rocker with ignition switched power while allowing you to terminate into the factory ignition switched 12V wire.



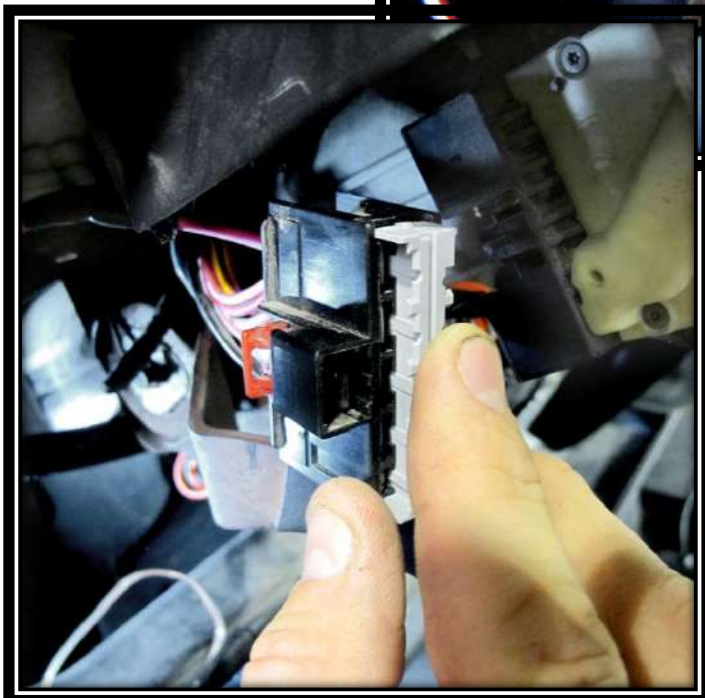
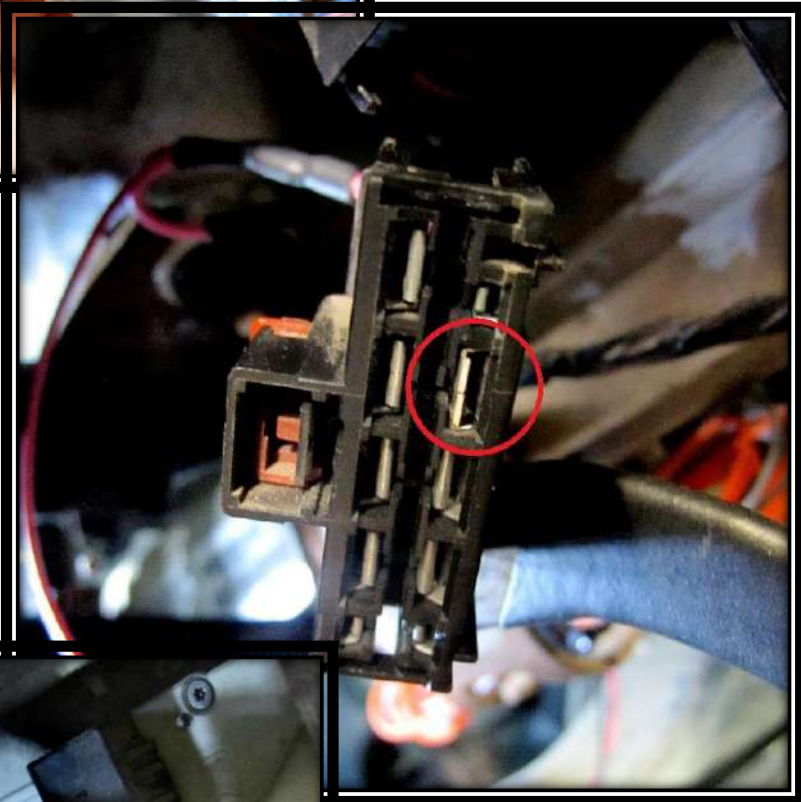
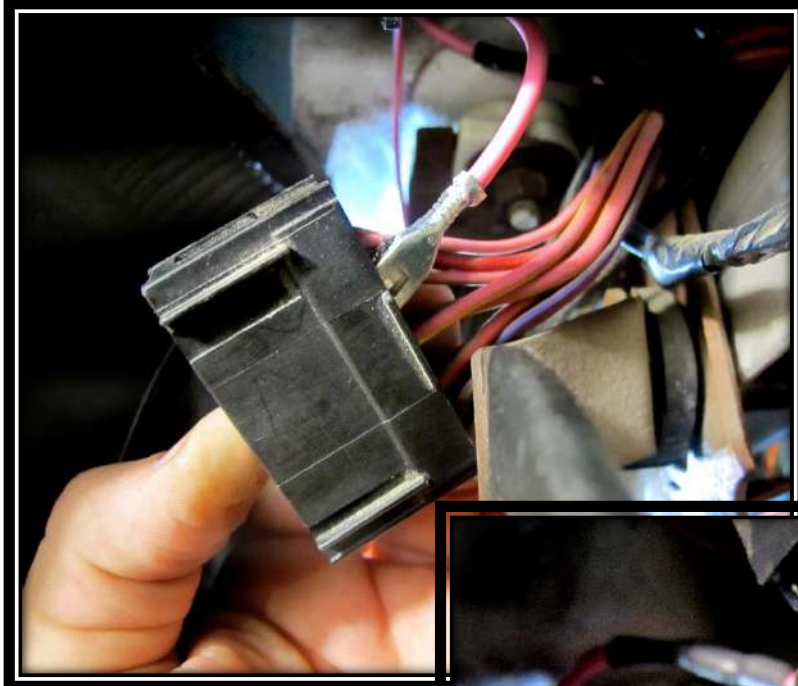
Step 43: Now, cut off the factory terminal and strip the factory ignition wire $\frac{1}{4}$ ". Once stripped, slide a piece of **heat shrink** over the **ignition pigtail**. Place the stripped factory ignition wire into the open end of the butt connector on the **ignition pigtail** and crimp it.



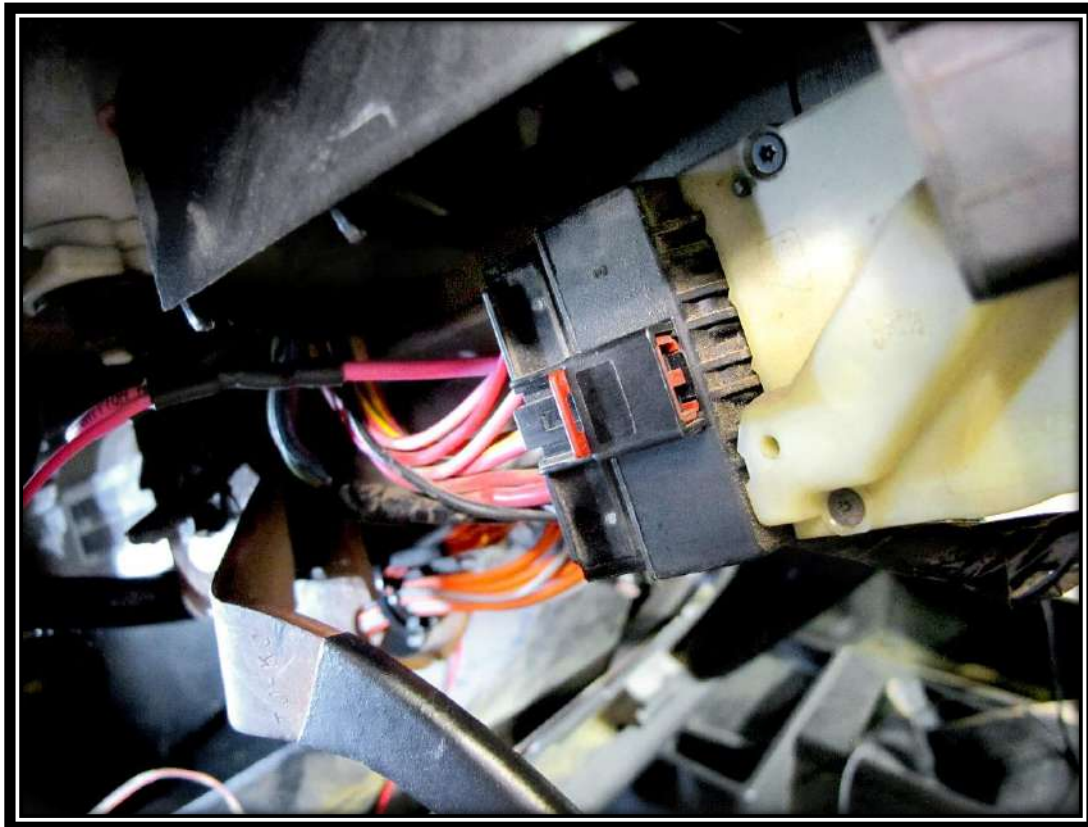
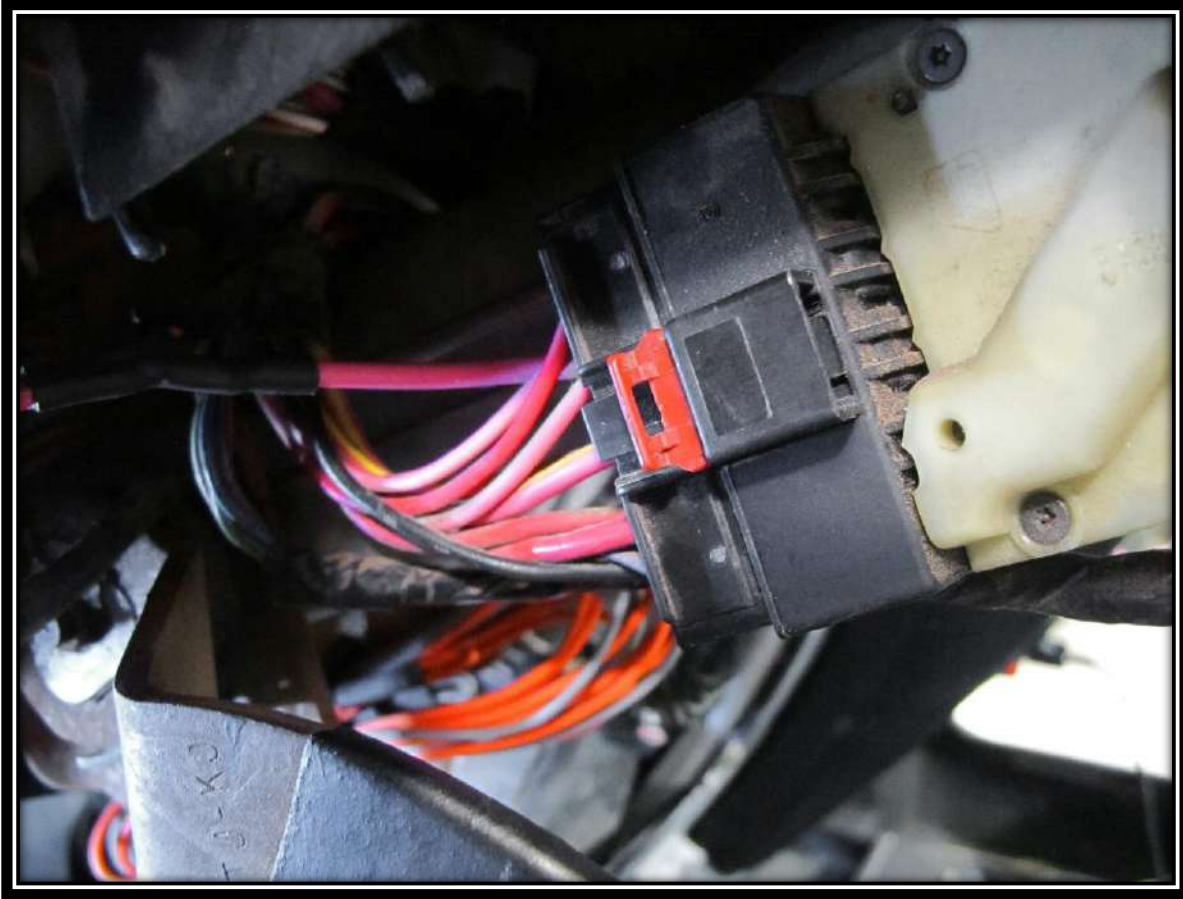
Step 44: After crimping, slide the **heat shrink** over the connection. Using a heat source, heat the **heat shrink** to seal and protect the connection.



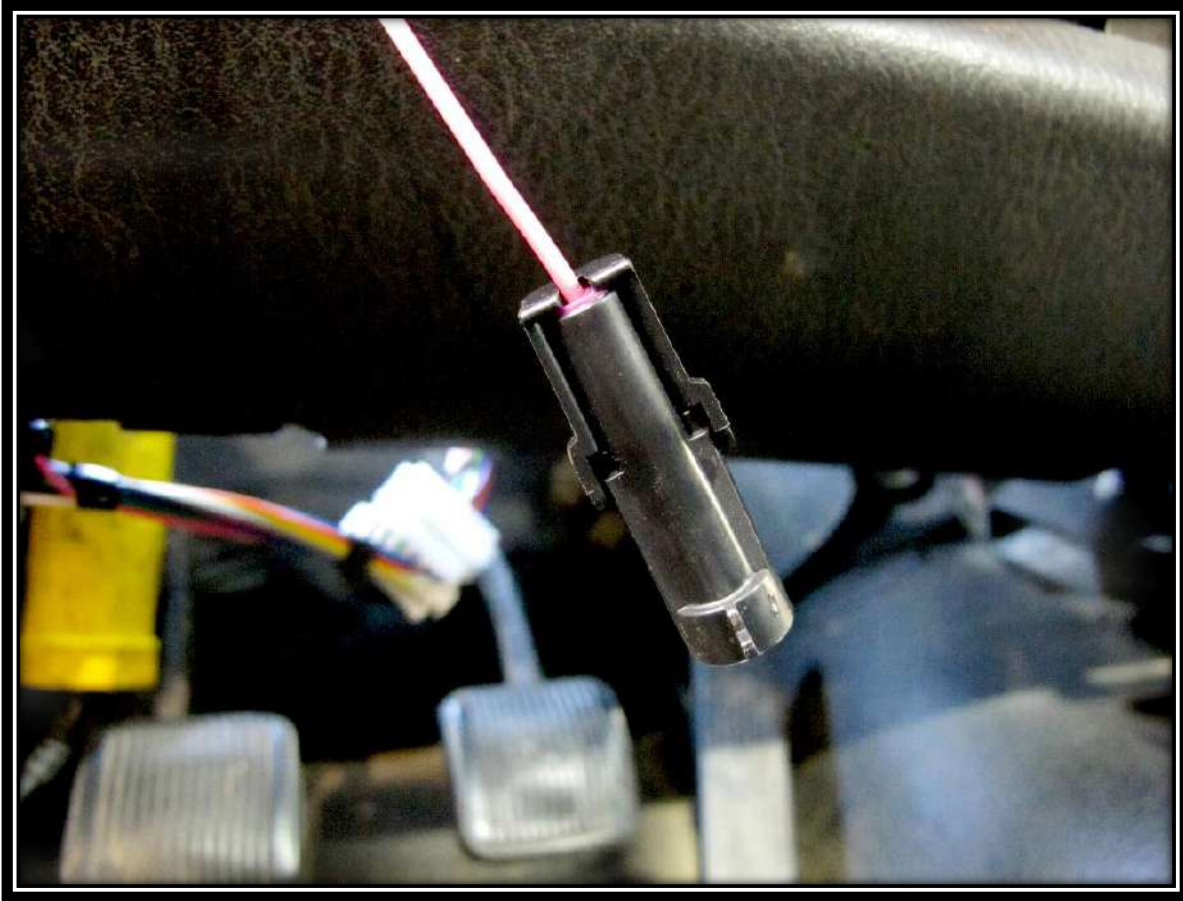
Step 45: Now, re-pin the factory ignition switch connector with the new **ignition pigtail**. With the **ignition pigtail** fastened, reinstall the **grey terminal lock**.



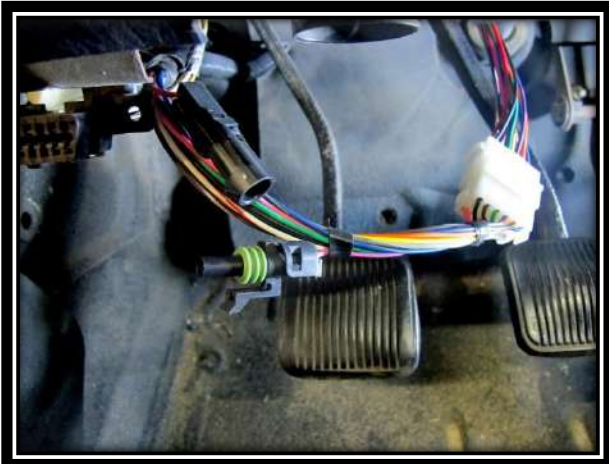
Step 46: Reinstall the factory ignition switch connector and lock it into place. You may wish to apply some dielectric grease before reconnecting the factory ignition switch connector.



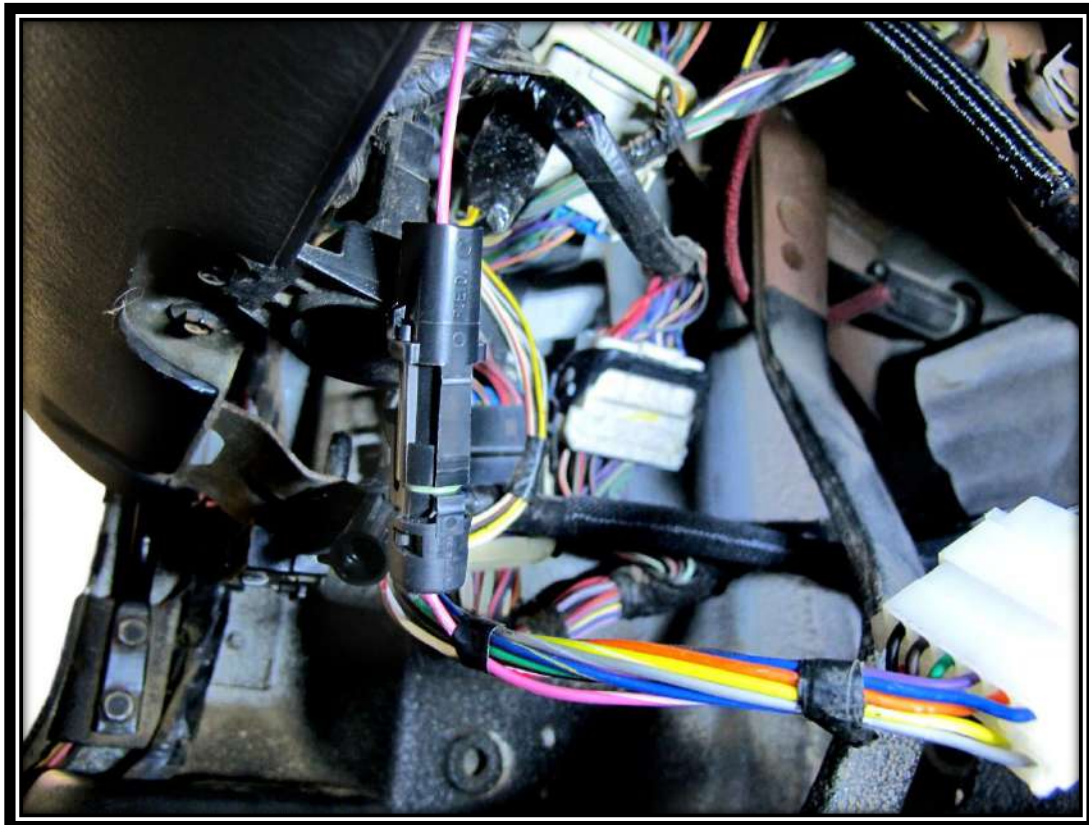
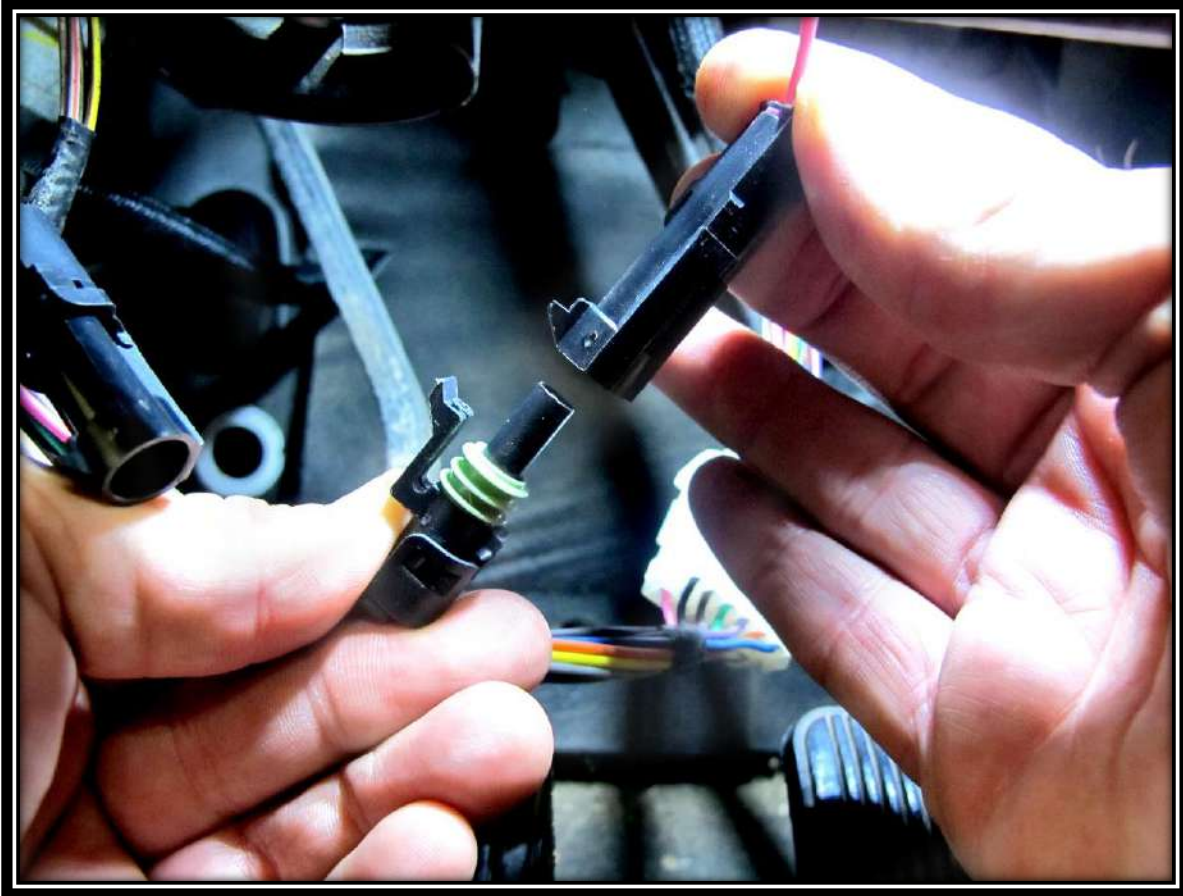
Step 47: Locate the weather pack connector on the **ignition pigtail**.



Step 48: Then locate and uncap the weather pack connector on the **Switch Control wires** coming from the **Fuse/Relay Center**.



Step 49: Now, connect the weather pack connector from the **ignition pigtail** to the weather pack connector on the **Switch Control wires**.



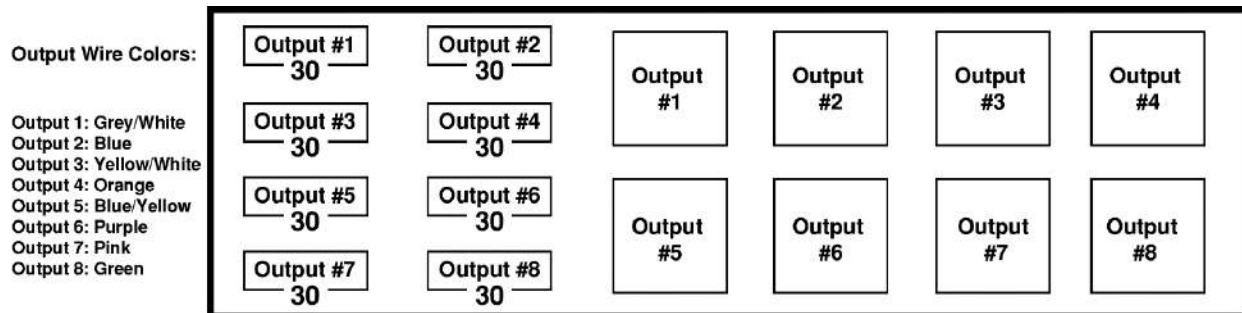
Step 50: Reinstall the steering column cover.



Step 51: Reinstall the access panel you removed in Step 24.



RELAY OUTPUT WIRES



Route these wires to the location of your components. Ensure to route them safely and avoid high heat areas, moving parts, and sharp edges. Painless recommends using grommets for any wires passing through metal to avoid wearing through the wire insulation and causing a short circuit. Make sure any accessories and/or components you install are properly grounded.

See **Steps 52-55** starting on [page 41](#) for a common example on connecting the **Relay Output wires** to most accessories.

Relay Output Wire Color Diagram:

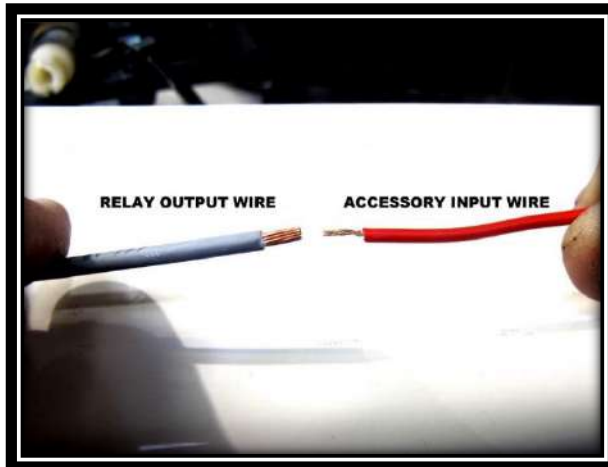
- Switch #1: Grey/White
- Switch #2: Blue
- Switch #3: Yellow/White
- Switch #4: Orange
- Switch #5: Blue/Yellow
- Switch #6: Purple
- Switch #7: Pink
- Switch #8: Green

Winch Control wires:

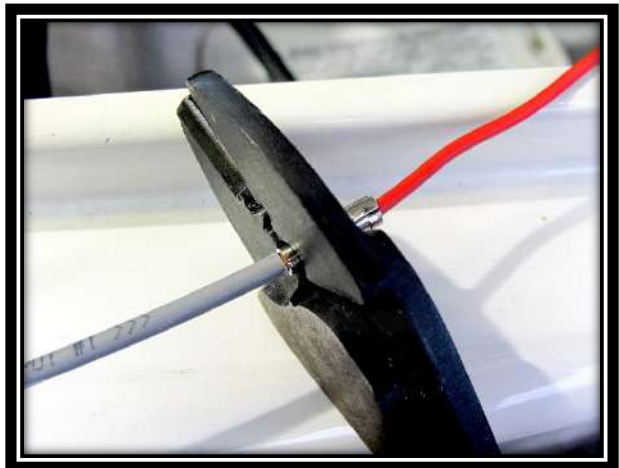
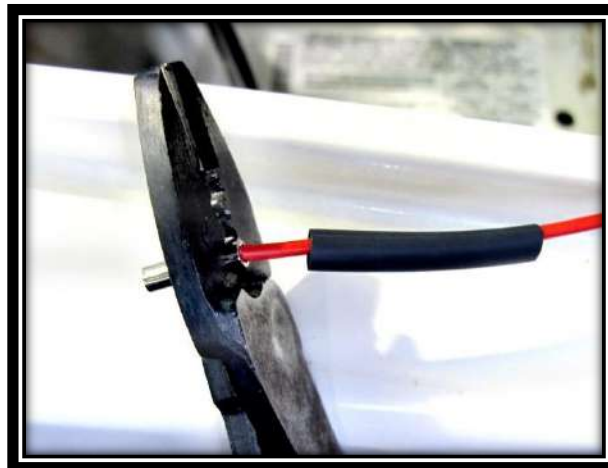
- Winch Control In: White/Red
- Winch Control Out: Brown/White

OPTIONAL: If you wish to double the **Switch Panel wires** on a single switch, thus allowing you to control two accessories with one switch, then see [pages 23 – 25](#) for a step-by-step tutorial on achieving this. For winch switch installation, see [page 40](#).

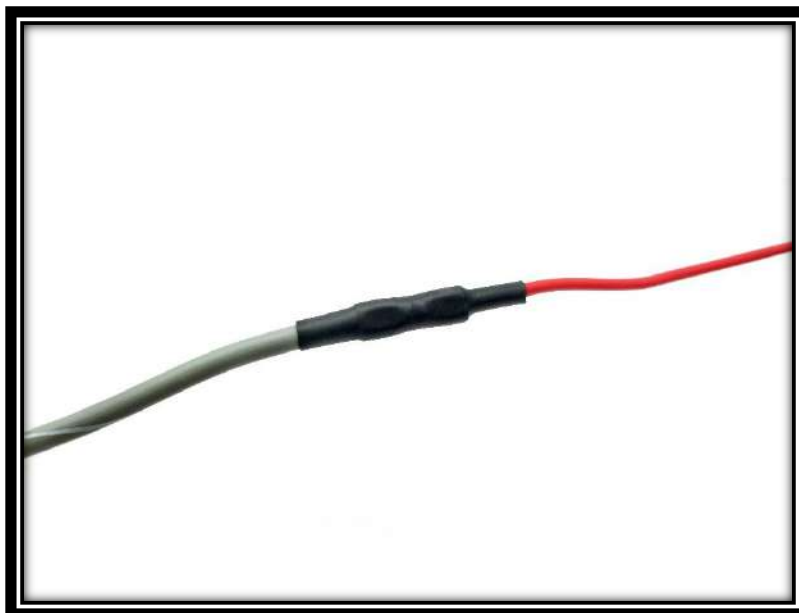
Step 52: Locate the **Relay Output wire** you wish to use. Then, locate the **input wire** on the accessory you are installing. We provide **12 ga. Relay Output wires**. Therefore, it may be necessary to double up the accessory's input wire if it's too small.



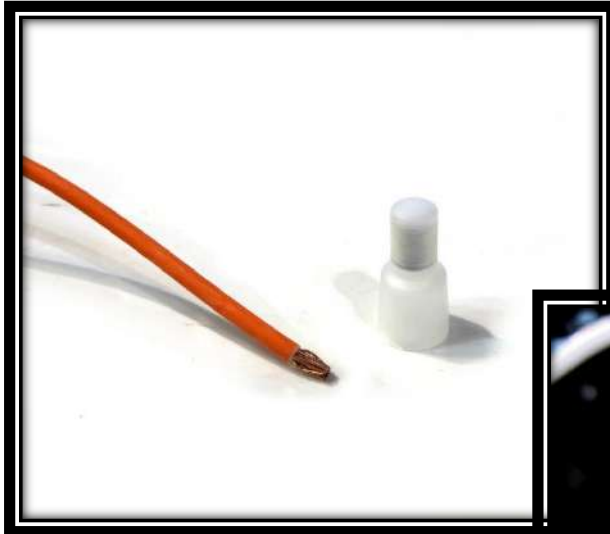
Step 53: Slide a piece of **heat shrink** from the included part kit over the **accessory wire**. Then, use an **un-insulated butt connector** to crimp together the accessory wire with the **Relay Output wire**.



Step 54: Secure the **heat shrink** over the connection.



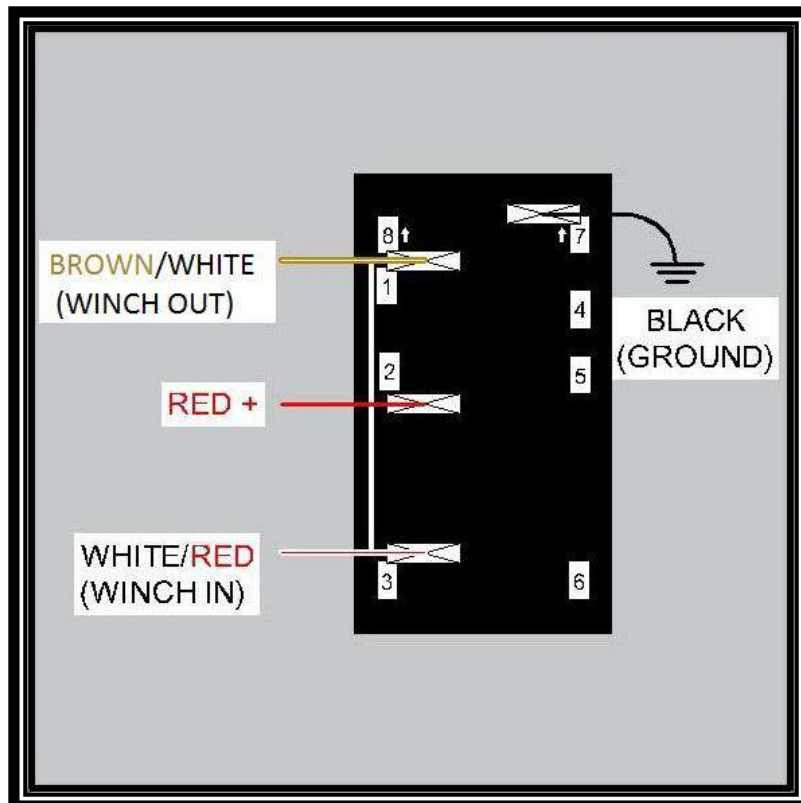
Step 55: Cap all unused Relay Output wires by crimping on the provided **insulated wire caps**. Then store the extra wires out of the way in the most convenient way possible.



OPTIONAL: PAINLESS PART#: 57150 - WINCH
CONTROL ADD-ON KIT



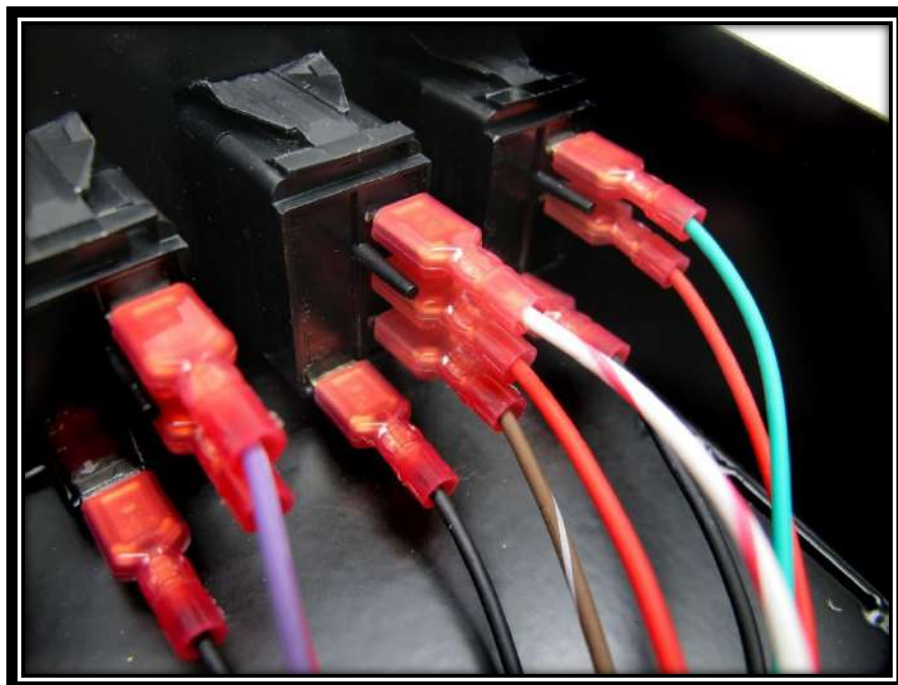
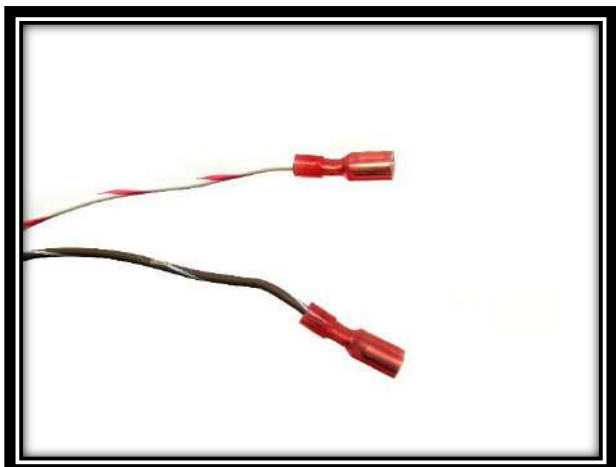
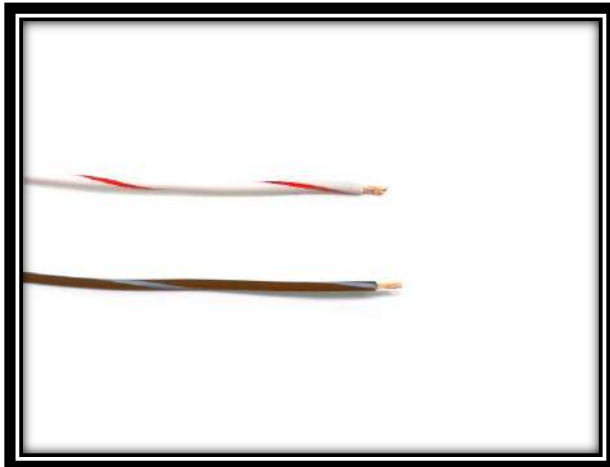
Step 56: Before connecting the wires to the Winch Control Add-on Kit, take time to familiarize yourself with the wiring diagram below.



Step 57: Insert the Winch Control Add-on Kit into the empty socket you are using.



Step 58: Locate the winch control wires on the Switch Control pigtail, and crimp on the spade terminals found in your parts kit. Connect the power, ground, and control wires to the Winch Control Add-on Kit as seen below. **WHITE/RED = WINCH IN, BROWN/WHITE = WINCH OUT**



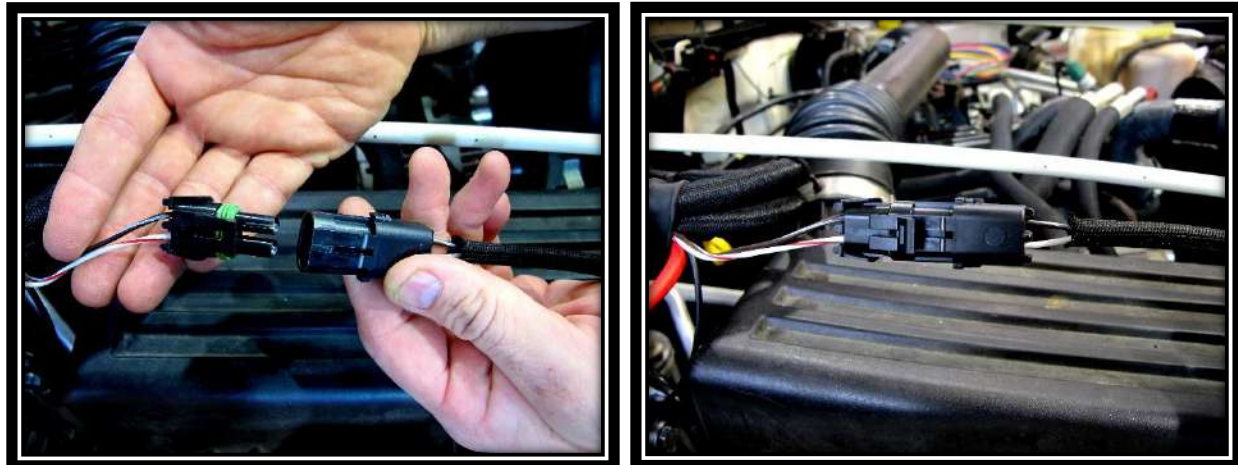
OPTIONAL: WINCH PIGTAIL

If you are hooking up your winch to your Trail Rocker System, read the following steps for attaching the included winch pigtail.

Step 59: Locate the **winch pigtail** included in your parts kit. Then locate the winch connector on your Fuse/Relay Center.



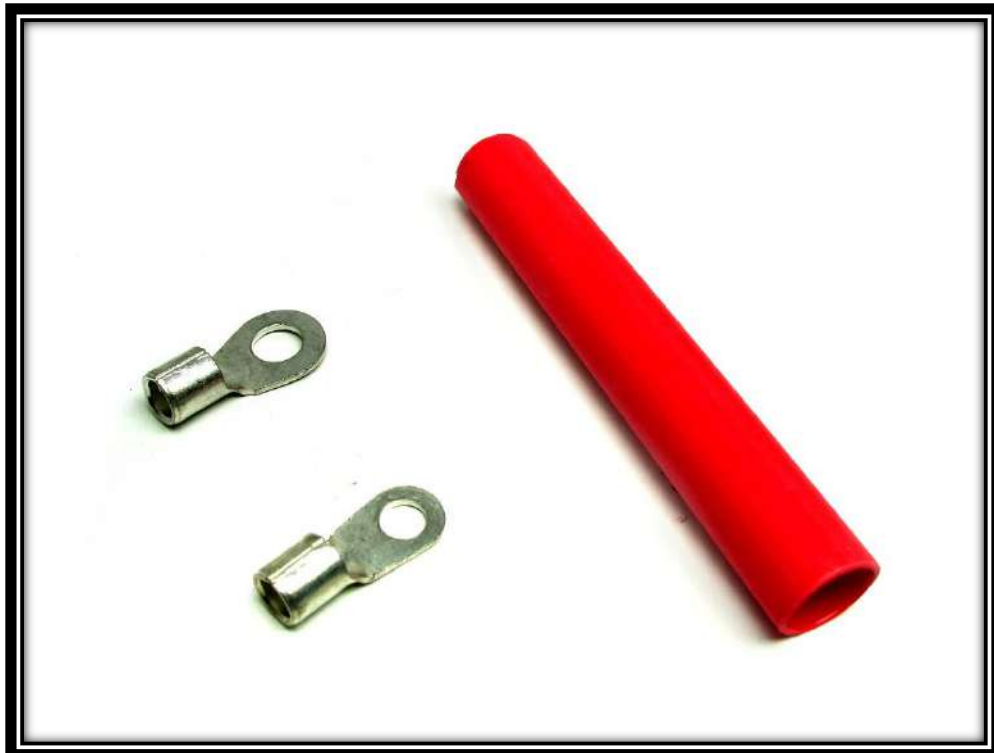
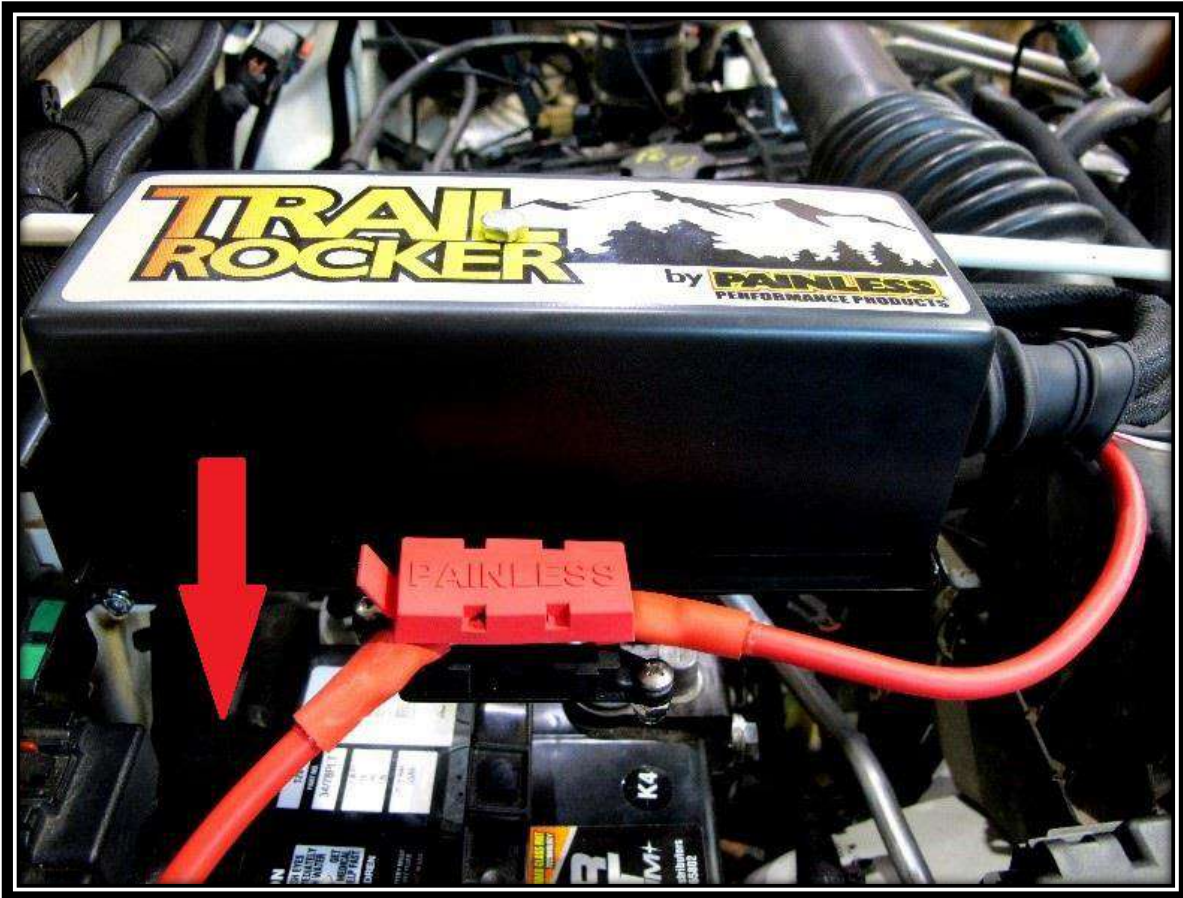
Step 60: Remove the cap from the winch connector on the Fuse/Relay Center. Then plug in the **winch pigtail** and route the wires safely to your winch.



Terminals for installing the **winch pigtail** can be found in the Winch Installation Kit.

FINAL STEPS

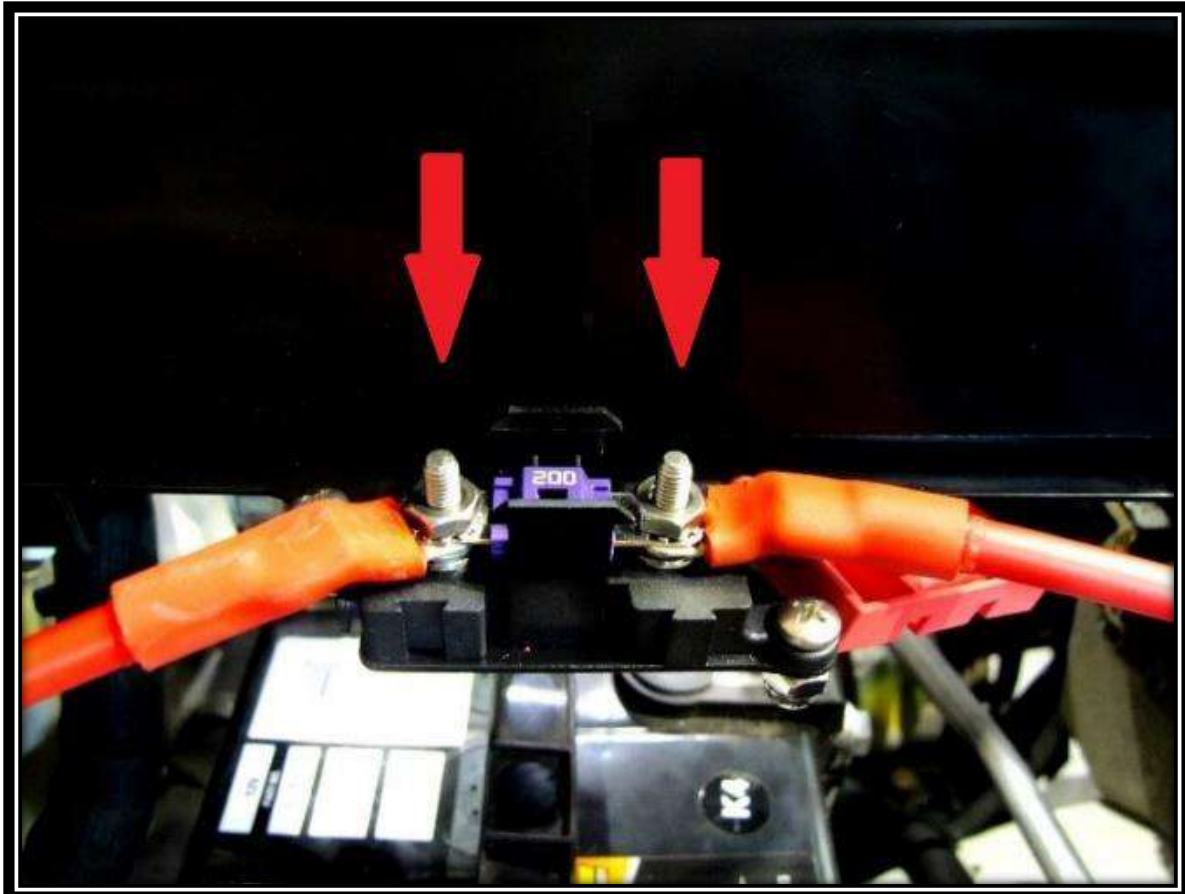
Step 61: Locate the 6-gauge, unterminated, red cable coming from the Fuse/Relay Center, heat shrink, and the appropriate sized (for your particular application) non-insulated ring terminal.



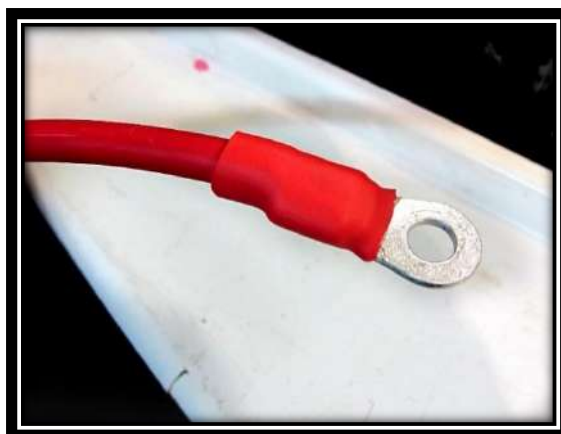
Step 62: Notice that the **6-gauge red cable** does not have an eyelet on one end. This is so you can cut the cable to the length you need for your specific application. Mark the length you need to route the cable to the positive terminal. Cut and strip the wire about **1/2"**.



Step 63: Once the cable is stripped, remove it from the **Fuse/Relay Center** in order to crimp on the included **ring terminal** from your parts kit. To remove the cable lift up the fuse cover on the **Fuse/Relay Center** bracket. Then, remove the **2 nuts** and **200-amp MIDI fuse** holding the cable in place.



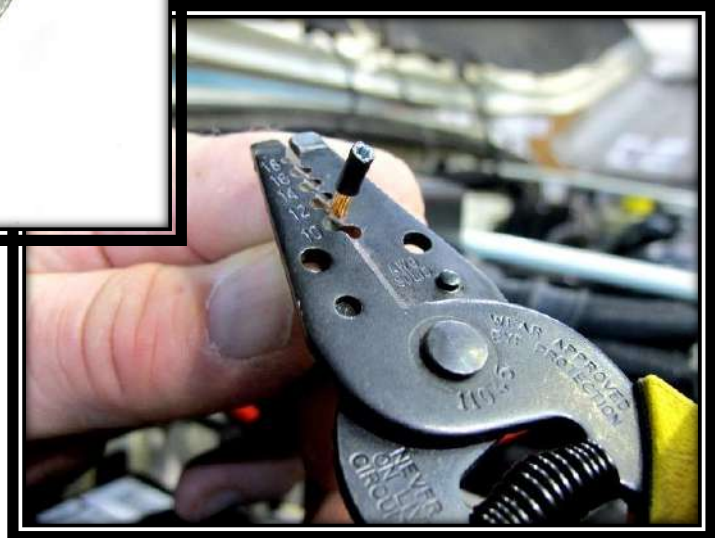
Step 64: These **ring terminals** can be difficult to crimp. It can be done with a chisel and hammer or with a crimping tool like the one below. These crimping tools can be found at your local parts store or online. Once the terminal is crimped secure it with about **1" of heat shrink**.



Step 65: Next, re-install the cable and **200-amp MIDI fuse** to the **Fuse/Relay Center** and connect it to the positive battery terminal. Then, route the ground wire coming from the **Fuse/Relay Center** to the negative battery terminal



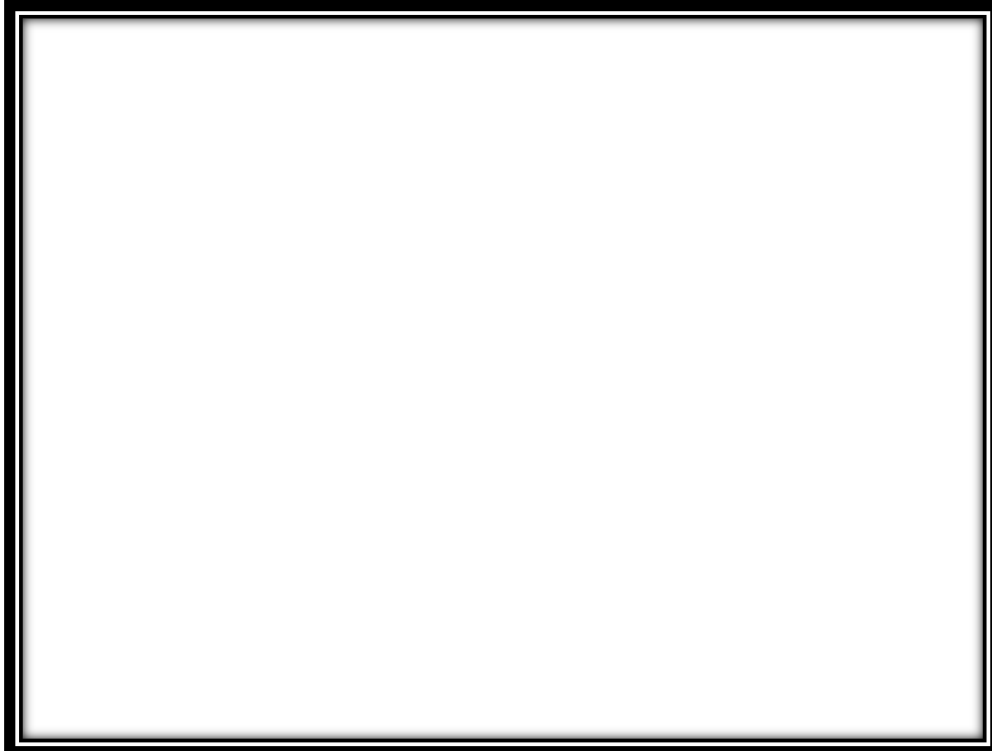
Step 66: Locate (1) ¼" black heat shrink and (1) 16-14 ga. non-insulated ring terminal. Strip the wire about ¼" and slide the heat shrink over it.



Step 67: Crimp on the ring terminal and secure it with the heat shrink.



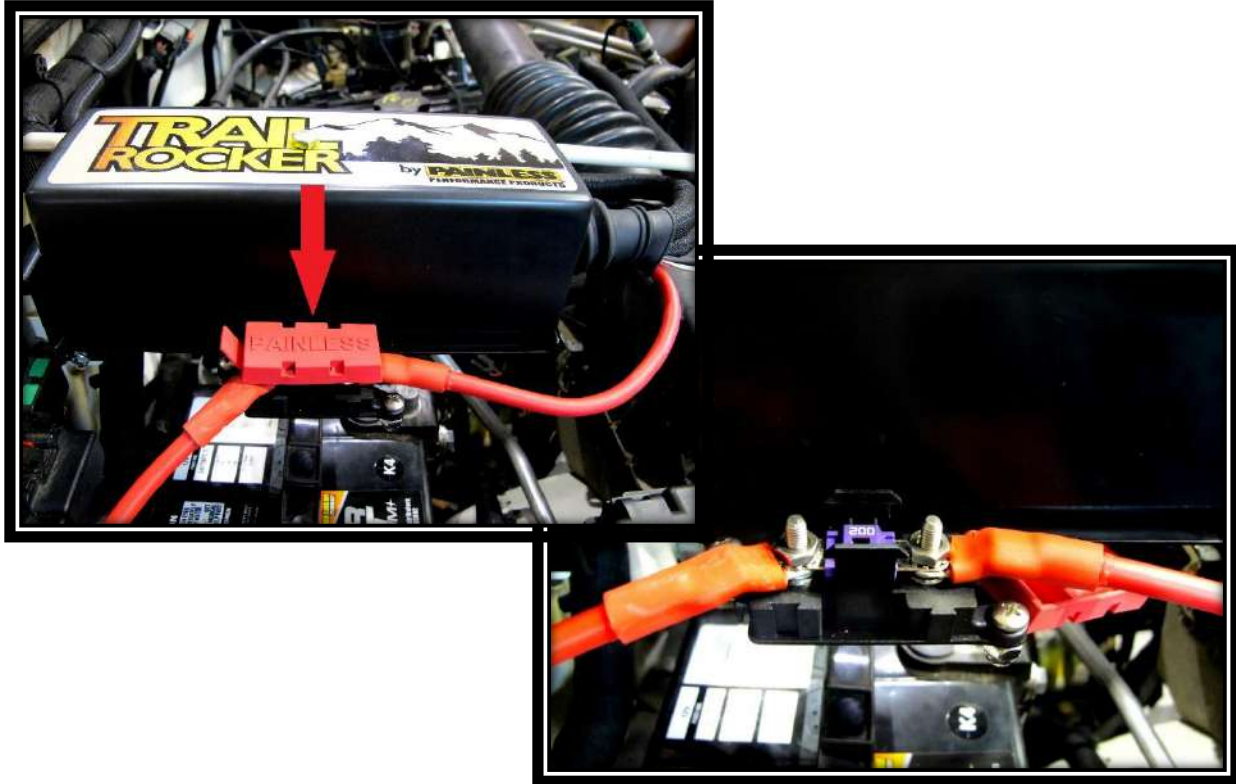
Step 68: Hook the terminals back up to your battery. Connect the red cable to the positive terminal and the ground wire to the negative terminal.



With the battery connected, you can now test out and enjoy your new Trail Rocker!

FUSE PLACEMENT

The **200 amp midi fuse** is located on the fuse block on the side of the Fuse/Relay Center mounting bracket.



The Fuse/Relay Center contains eight **30 amp ATO fuses**, and can be accessed by removing the lid from the Fuse/Relay Center.

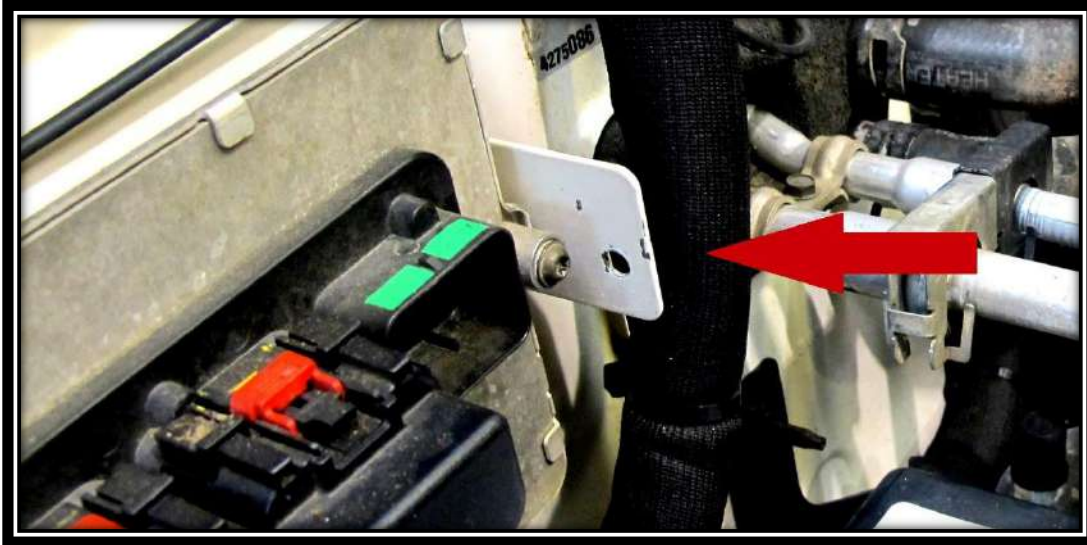


Trail Rocker Fuse Centers are equipped with 8 Indicator Fuses. These fuses are equipped with an LED light that will turn on when the fuse is blown, thus indicating when the fuse needs to be replaced.



APPENDIX A.

In the engine compartment, most Jeeps will have a **mounting tab** on the firewall. The tab is just above the battery on the passenger side of the vehicle, on the engine side of the **ECM**. Some TJ models, like the 2002 – 2003 Apex Editions, do not have this **mounting tab**.



Step A: If your vehicle does not have a **mounting tab** on the firewall, you will need to mount the **Trail Rocker Fuse/Relay Center Mounting Bracket** to the **ECM**. To begin, use a **T25 Torx driver** to remove the bolt from the **ECM**.



Step B: In order to mount the **Fuse /Relay Center Mounting Bracket** to the **ECM**, locate the **ECM Support Bracket**, **(2) 1/4"-20 stainless bolts**, **(2) 1/4" flat washers** and **(2) 1/4" nylon lock nuts**, included with this kit.

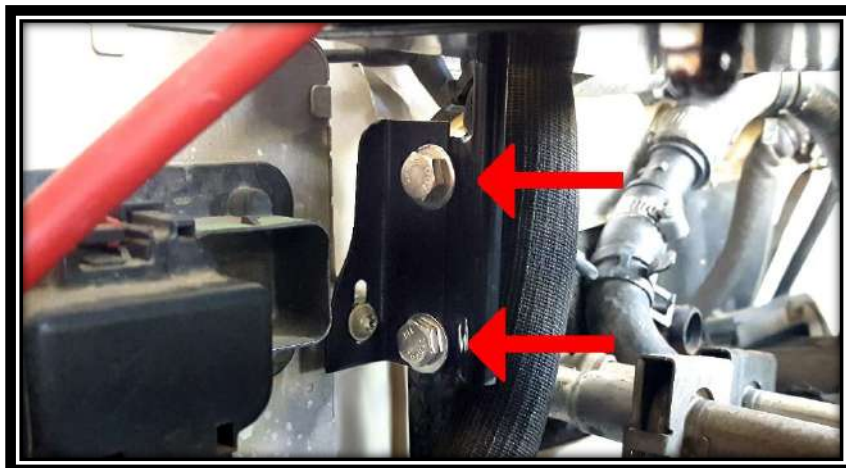
Step C: Use a $\frac{7}{16}$ " wrench and socket to secure the ECM Support Bracket to the Fuse/Relay Center Mounting Bracket exactly as seen in the image below. **Do not completely tighten the bolts yet.** The holes in the ECM Support Bracket are slotted so you can adjust its position as needed when mounting the Trail Rucker Fuse/Relay Center.



Step D: Mount the Fuse/Relay Center Bracket to the strut rod (see Steps 9 & 10). Then, use a T25 Torx driver and the bolt you removed in Step A to secure the Fuse/Relay Center to the ECM.



Step E: Finally, tighten the bolts from Step C that hold the Fuse/Relay Center Mounting Bracket to the ECM Support Bracket. Then continue on the Step 12.



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