PAINLESS®
PERFORMANCE PRODUCTS

Trail Rocker Installation Instructions

1976-1986 Jeep CJ7 4-Switch Overhead Trail Rocker

For Installing Painless Part Number: 57020

Manual # 90618

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

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If you have any questions concerning the installation of this product, feel free to call Painless Performance Products' tech line at 1-800-423-9696. Calls are answered from 8am to 5pm central time, Monday thru Thursday, 8am-4:30pm Friday, except holidays.

Here we have provided you with accurate instructions for the installation of this product. However, if you have comments/suggestions concerning these instructions, please call or email us (our contact information can be found at the top of this page or online at **www.painlessperformance.com**).We sincerely appreciate your business.

Painless Performance Products, LLC shall in no event be liable in contract or tort (including negligence) for special, indirect, incidental, or consequential damages, such as but not limited to, loss of property, or any other damages, costs or expenses which might be claimed as the result of the use or failure of the goods sold hereby, except only the cost of repair or replacement.

Should you damage or lose part of your manual, a full color copy of these instructions can be found online at www.painlessperformance.com

Installation Manual: **90588**

1st Edition: February, 2017

TABLE OF CONTENTS

CONTENTS OF THE PAINLESS KIT

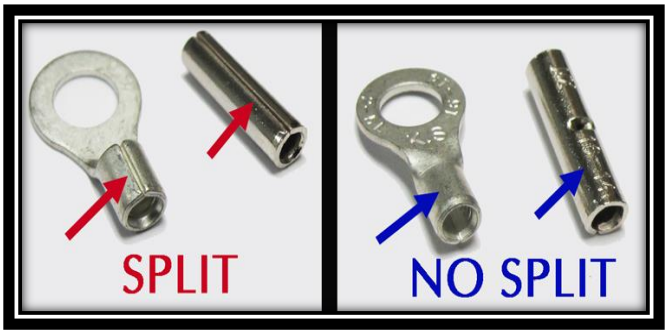
Refer to the **Contents Figure** (below) to take inventory. See that you have everything you're intended to have in this kit. If you find that anything is missing or damaged, please contact the dealer where you obtained the kit or Painless Performance at (800) 423-9696.

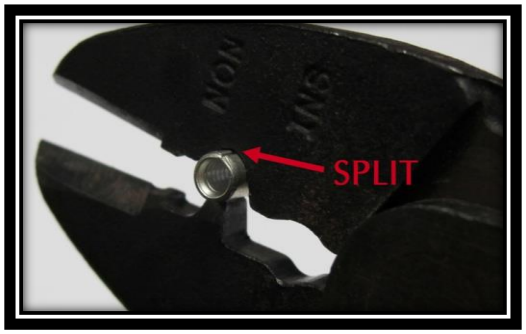
The Painless Trail Rocker Kit should contain the following:

- **Fuse/Relay Center**
- **Powder Coated Bracket**
- **4-Switch Overhead Trail Rocker Switch Panel with pre-installed switches.**
- **Ignition Switch pigtail and weather-pack connector.**
- **Parts Kits**
- **This manual: 90588**

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. T20Torx bit
4. Screwdrivers:
    a. (2) #2 Standard Length and Stubby Phillips Head
    b. #0 “Jewelers” Flat (slot) Head
5. Half-round Metal File
6. Inch/Pound Torque Wrench
7. Wire Cutters or “Dykes”
8. Hand Crimpers
9. Cable Crimping Tool
10. Electrical and Masking Tape
11. Permanent Marker

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 the following bits:

1. Drill bits
    a. ¼”
    b. ⅛”
2. 1 ¼” Hole Saw with Arbor
3. ¼” – ¾” X 1/16” #3 Step Drill Bit

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: voltage measurement and continuity testing. Voltage measurement is the ability to read DC voltage. Continuity testing allows you to test

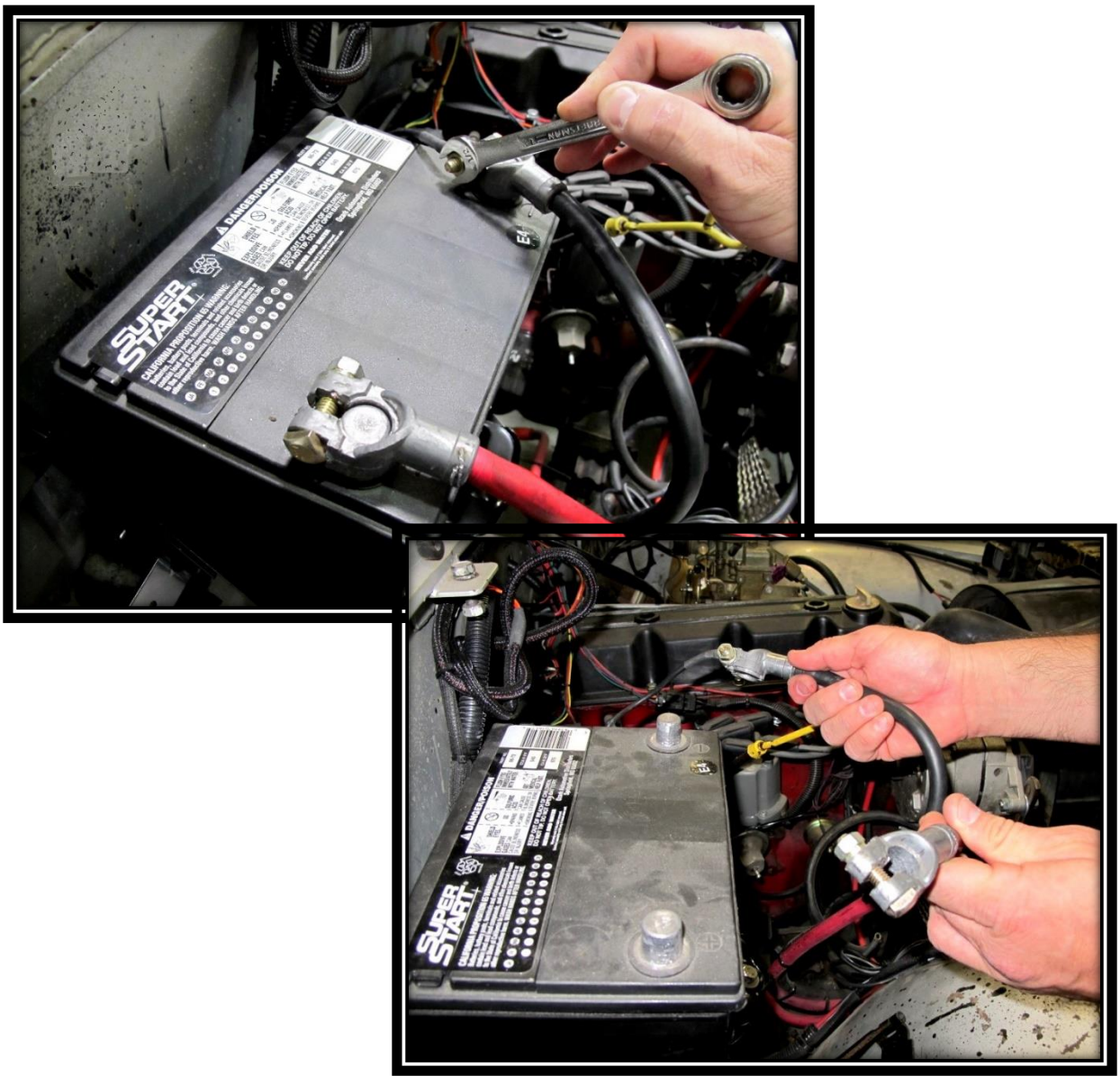
Heat Gun: Very useful to shrink the heat-shrink found in the parts kit.

FUSE/RELAY CENTER INSTALLATION

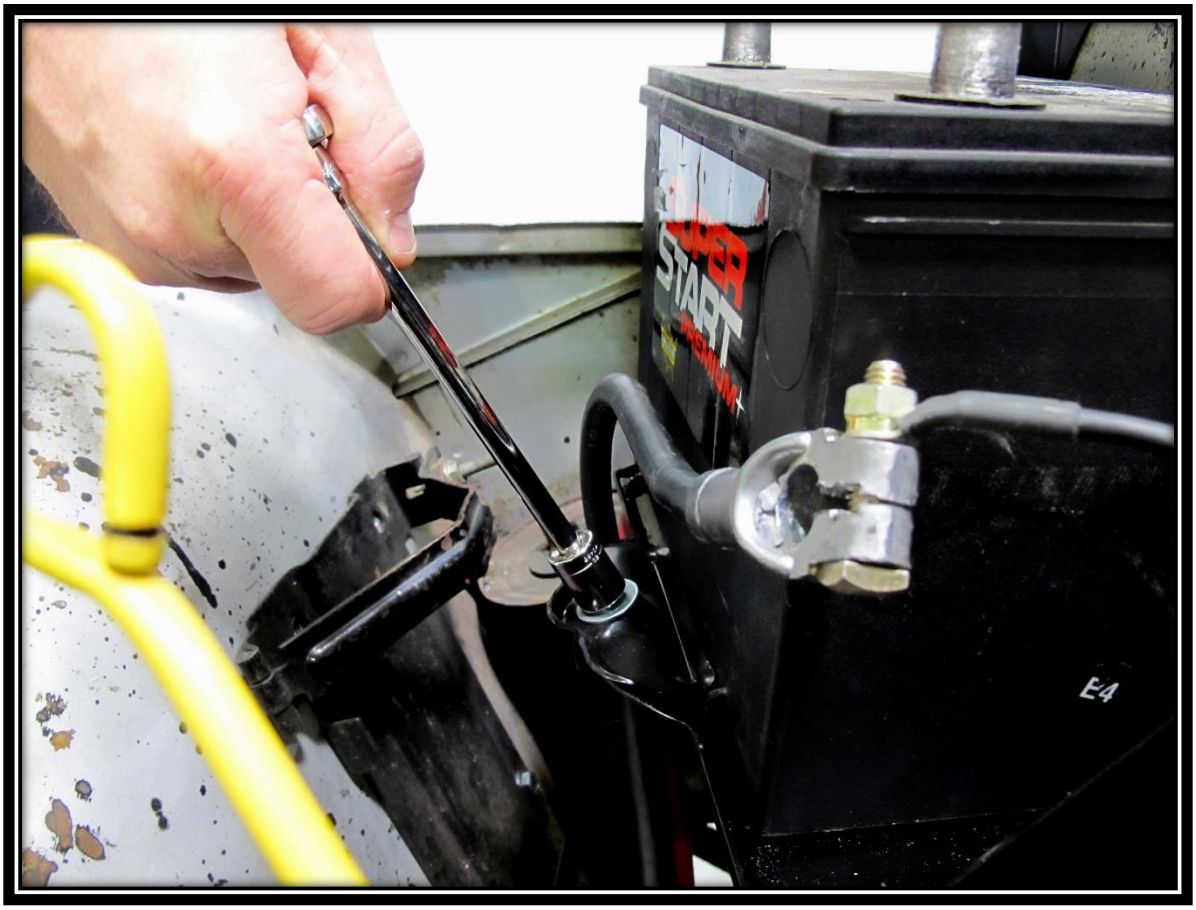
The following steps MUST be followed as they are printed. Do not move onto other parts of the installation out of sequence.

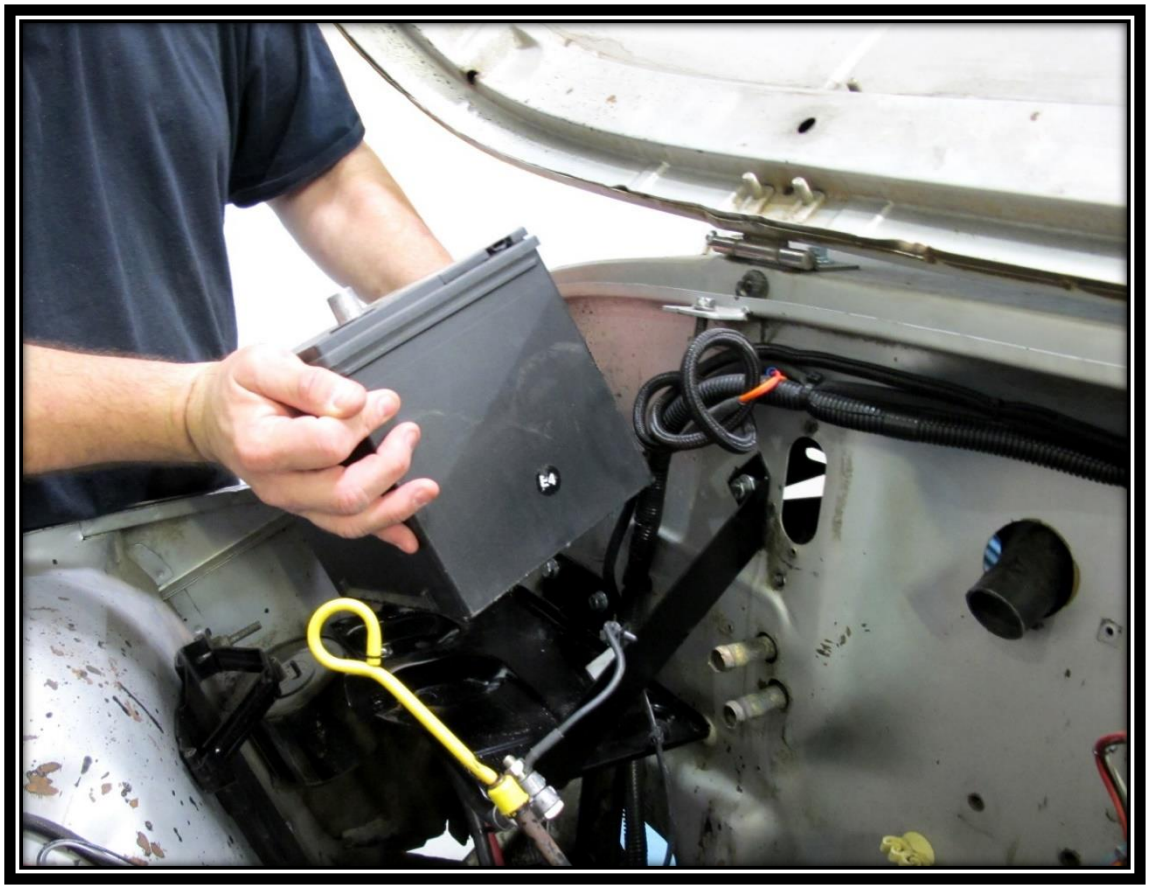
CAUTION: BEFORE THE INSTALLATION OF THIS PRODUCT, DISCONNECT THE POWER FROM YOUR VEHICLE BY REMOVING THE NEGATIVE BATTERY CABLE FROM THE BATTERY. THE BATTERY SHOULD NOT TO BE RECONNECTED UNTIL INSTRUCTED

Step 1: Locate your battery and remove the cables, beginning with the **negative (-) cable**.

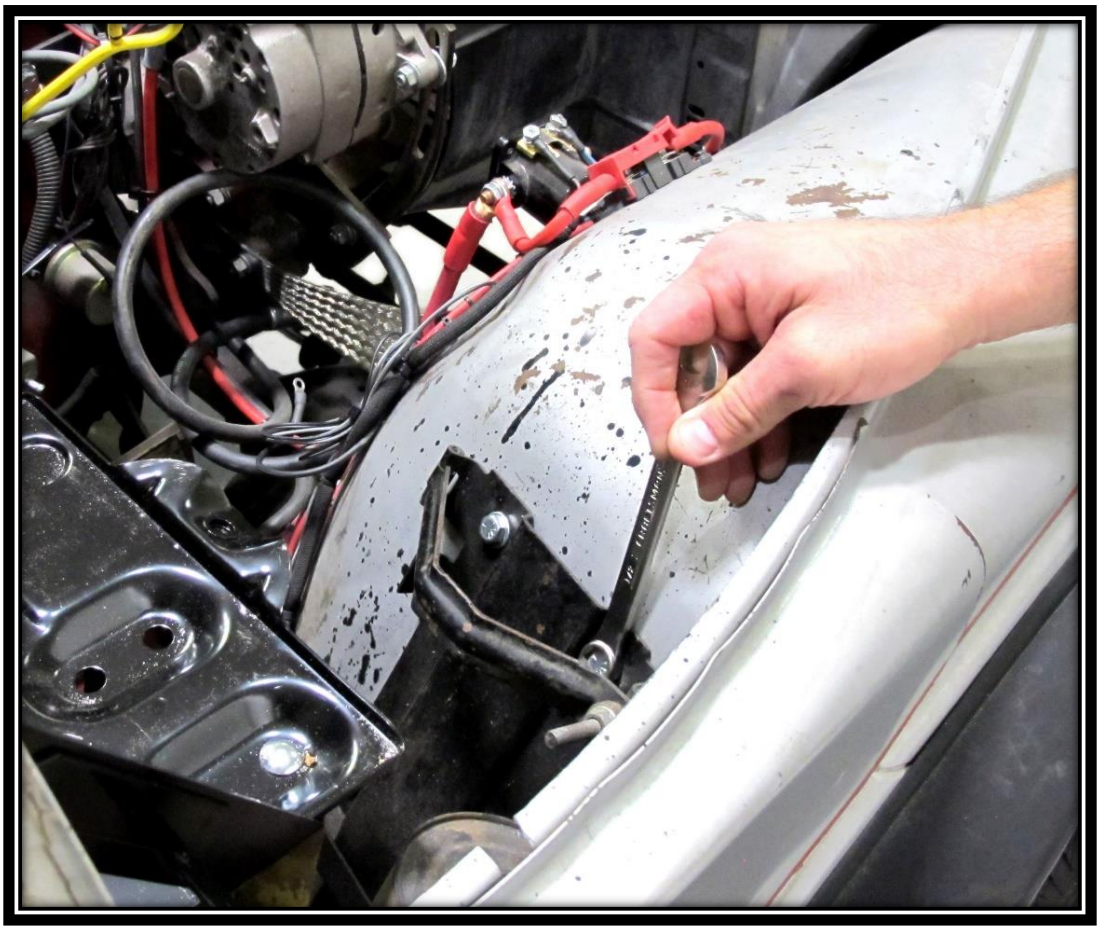


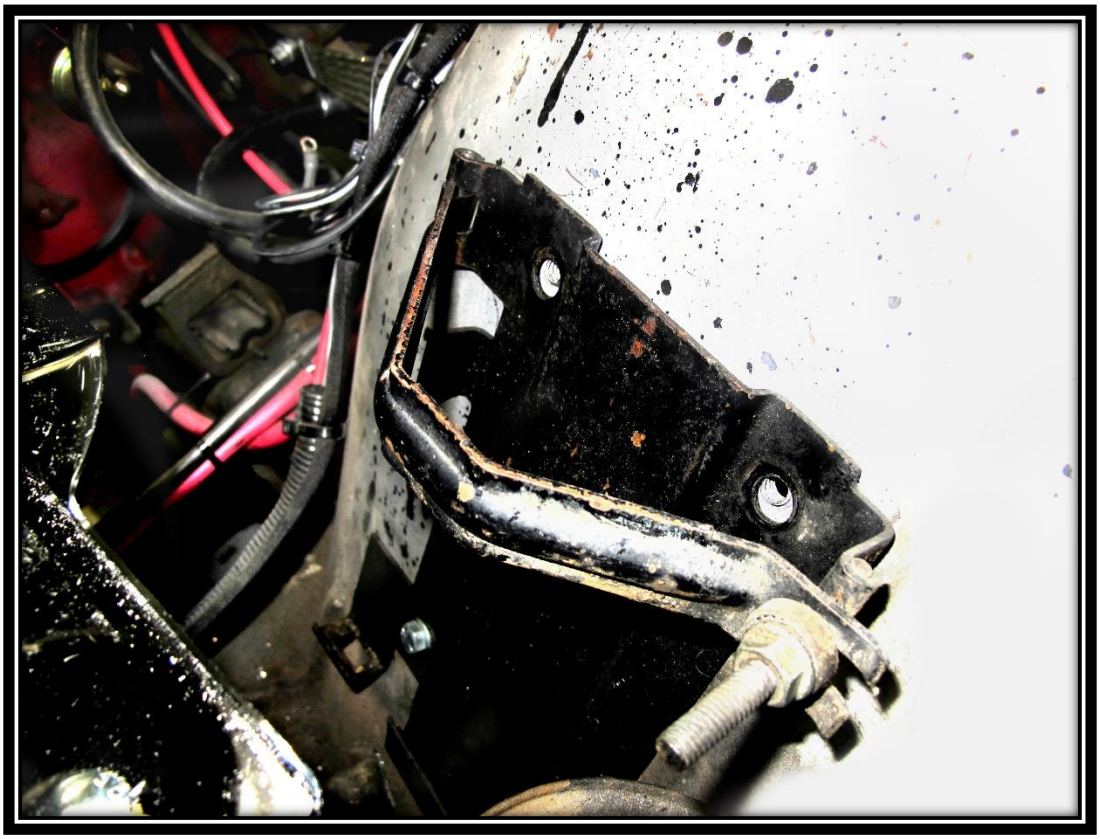
Step 2: Then, unbolt the **battery hold-down** and remove the battery completely.



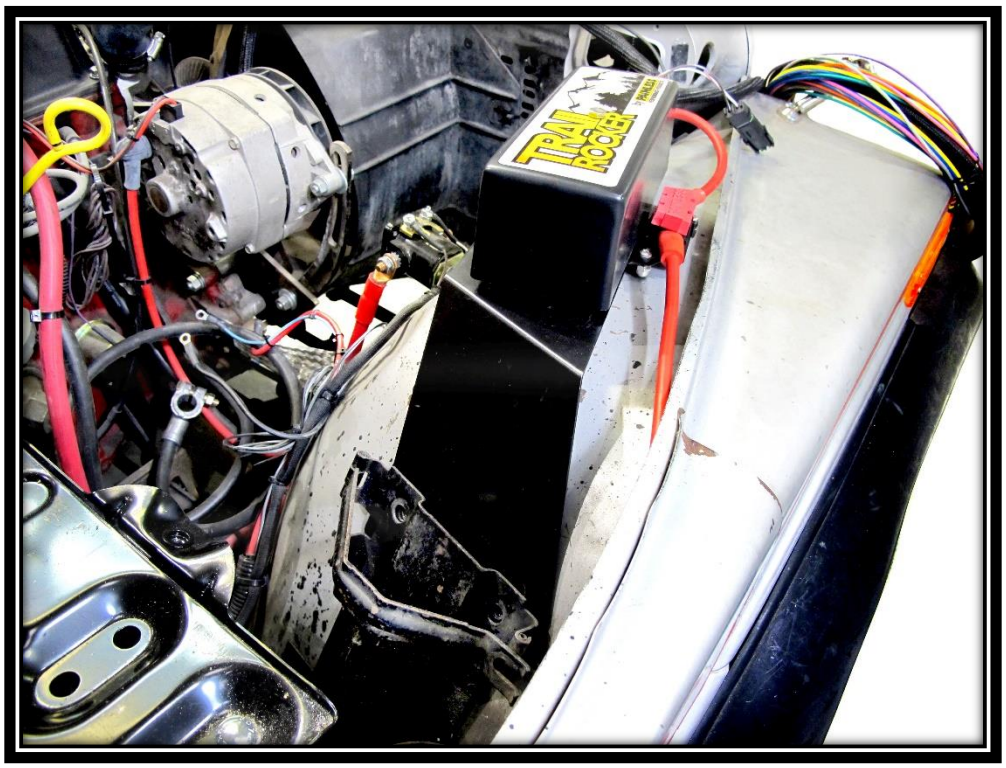


Step 3: Inside the engine compartment, locate the **jack holder** bolted to the passenger side, front fender well. Remove the top two bolts from the **jack holder**. This is where you mount the **Fuse/Relay Center**.

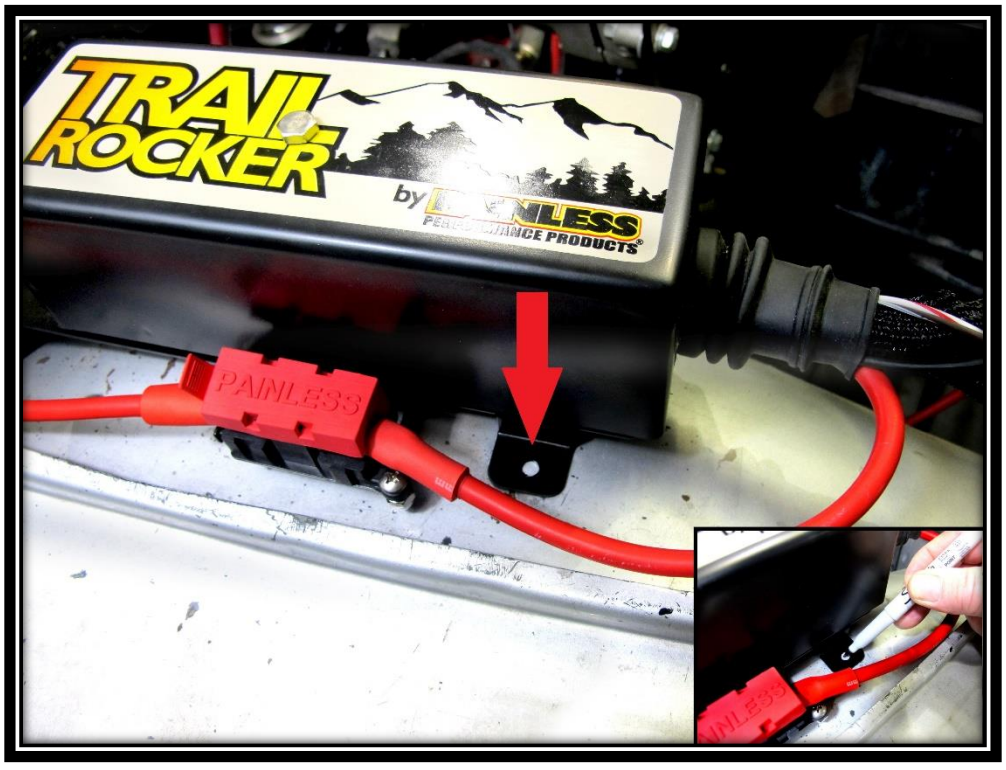




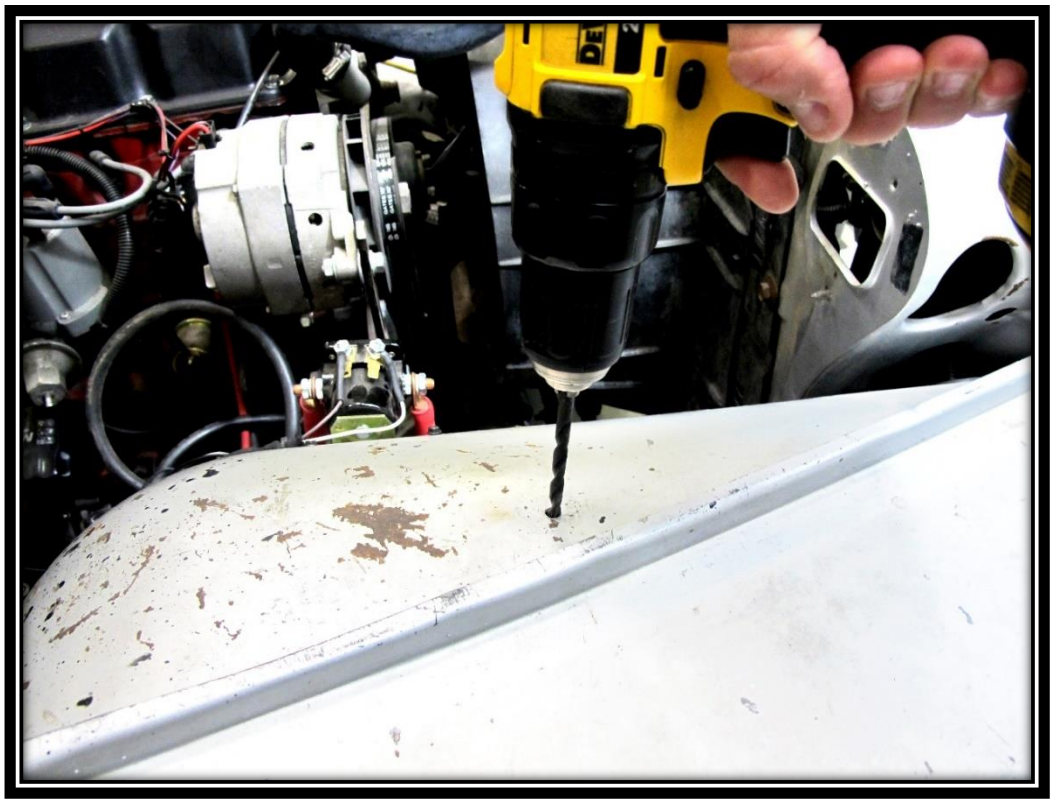
Step 4: Mount the **Fuse/Relay Center bracket** on top of the fender well and slide the end of the bracket behind the **jack holder**. Loosely, reinstall the bolts thru the bracket holes. You will move the **bracket** again after marking the mounting hole you will create in **Step 6**.



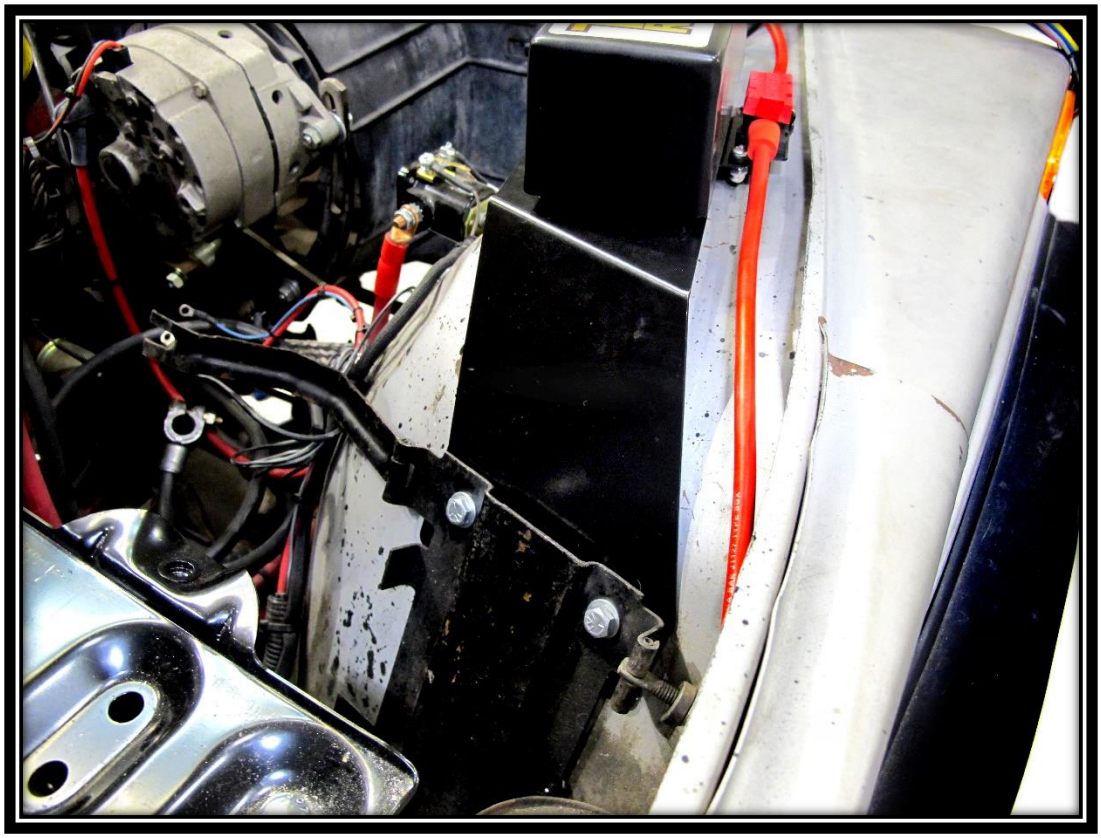
Step 5: If a hole does not exist on the fender well, drill one in order to secure and mount the **Fuse/Relay Center bracket** to the vehicle. Locate the mounting tab on the side of the **bracket** and use a permanent marker to mark the place your hole will be drilled.



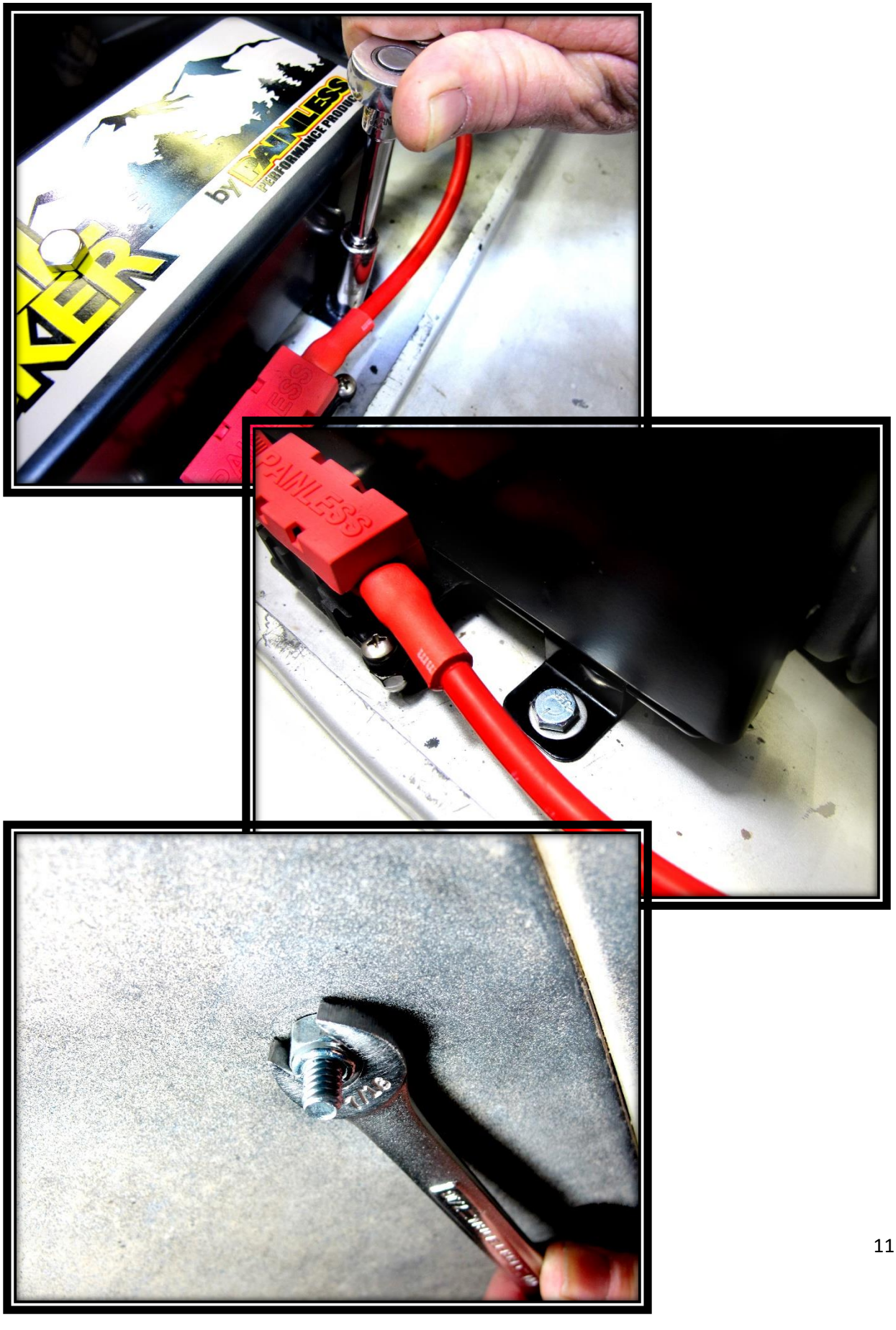
Step 6: Temporarily remove the bracket and set it aside. Use a ¼" bit to drill a small hole in the fender well where you made your mark in **Step 5**.



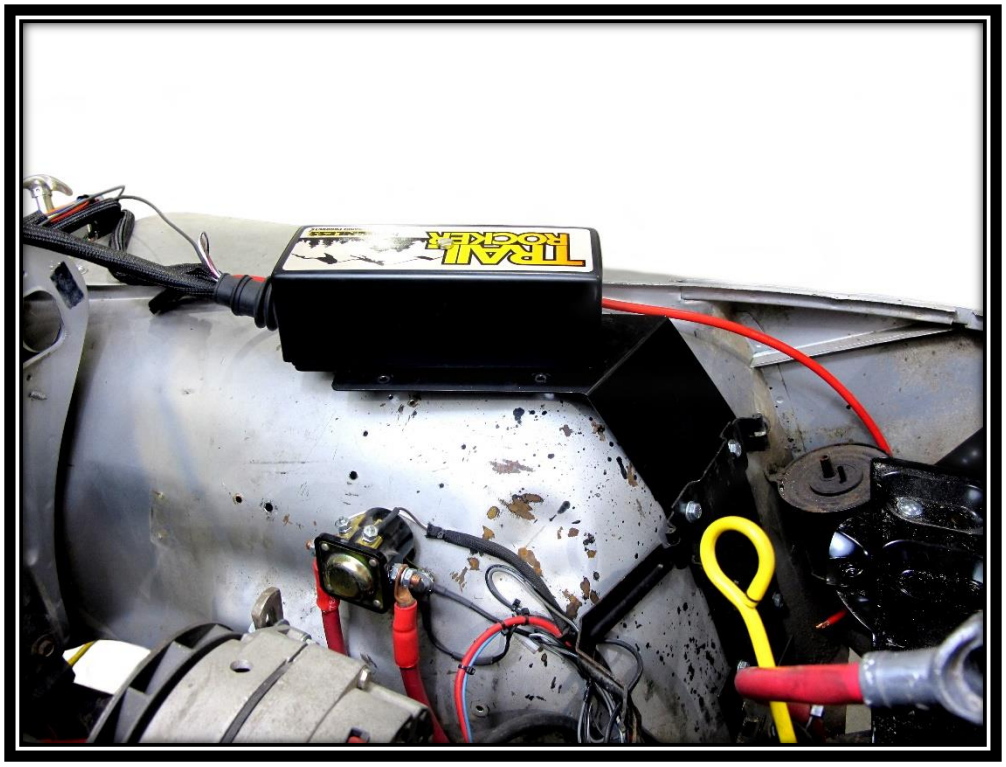
Step 7: Again, mount the **Fuse/Relay Center bracket** just as you did in **Step 4**, and secure the assembly to the vehicle. To do this, first, replace and tighten the bolts for the **jack holder**, securing the **bracket** behind it.



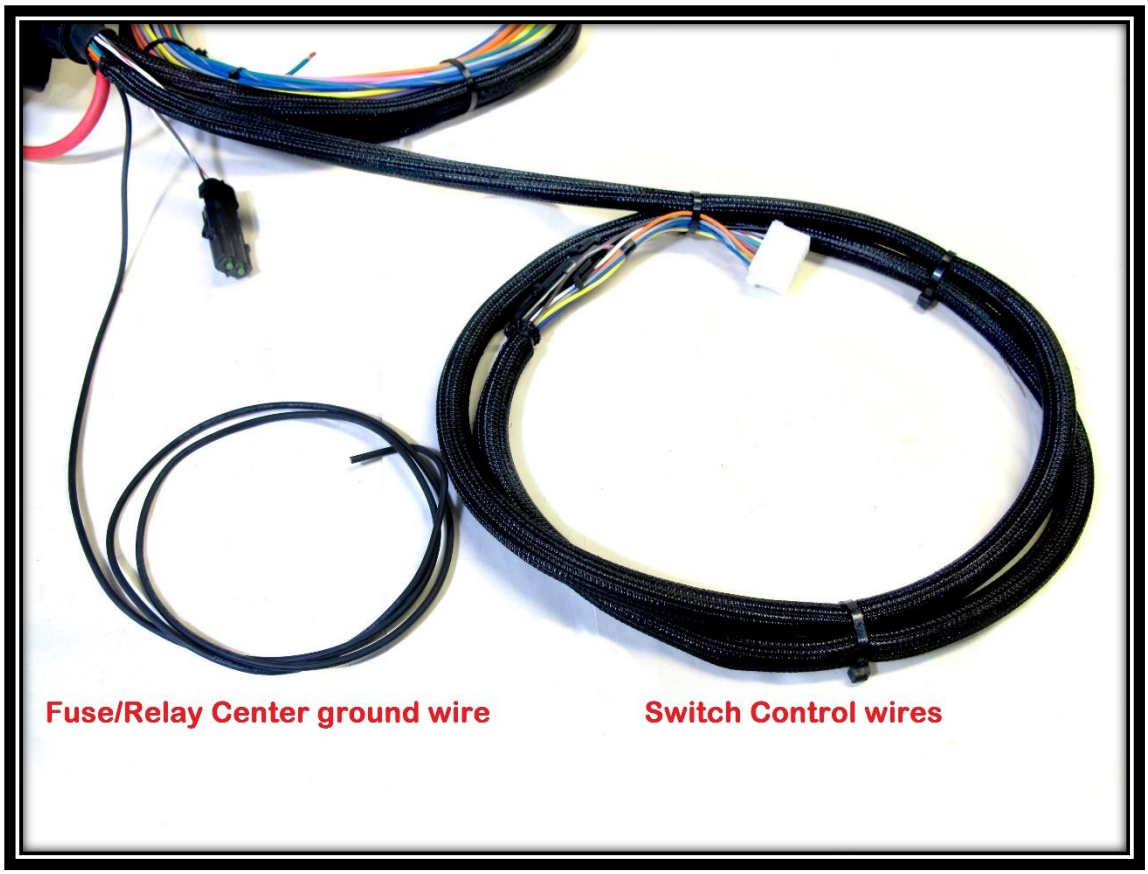
Step 8: Locate (1) ¼" – 20 X ¾" bolt, (1) flat washers, and (1) ¼" lock nut from the included parts kit. With a 7/16" socket and 7/16" wrench, bolt the **bracket** to the fender well using the hole you created on **Step 6**.



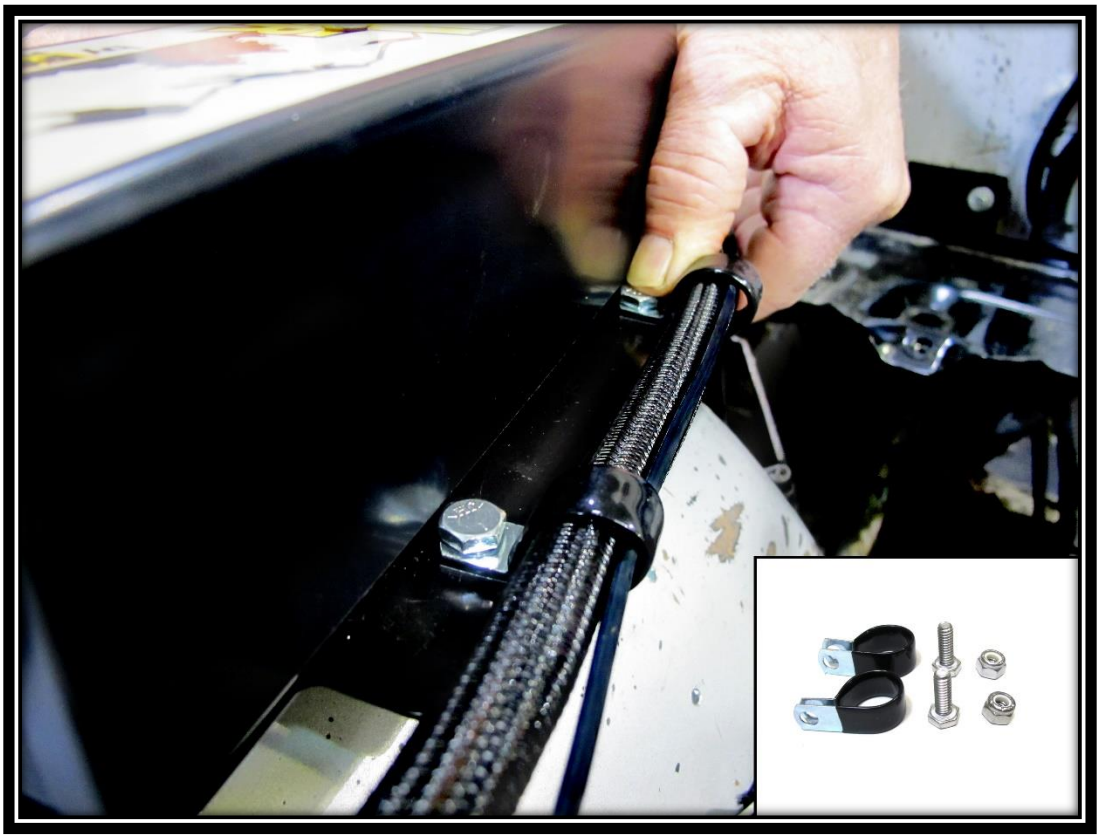
Step 9: At this point, your **Fuse/Relay Center** should appear as it does below.

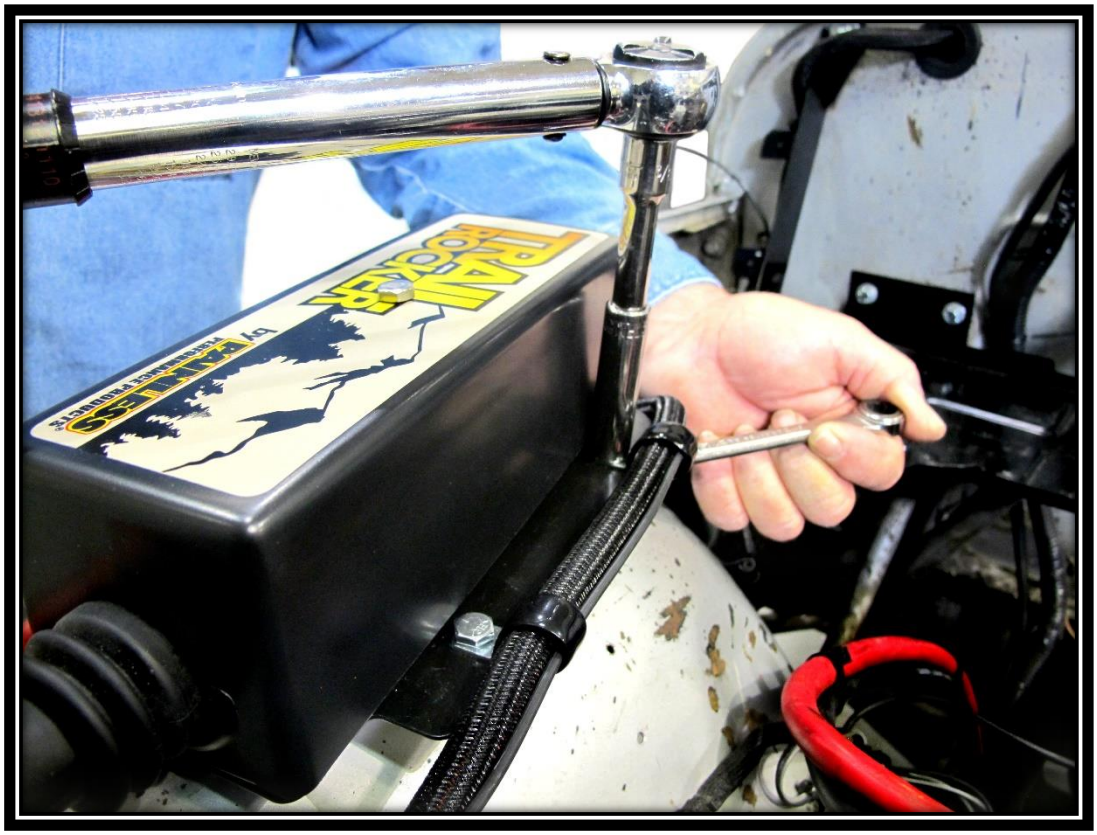


Step 10: Now that the assembly is securely fastened to the vehicle, locate the **Switch Control wires** and **Fuse/Relay Center ground wire**.

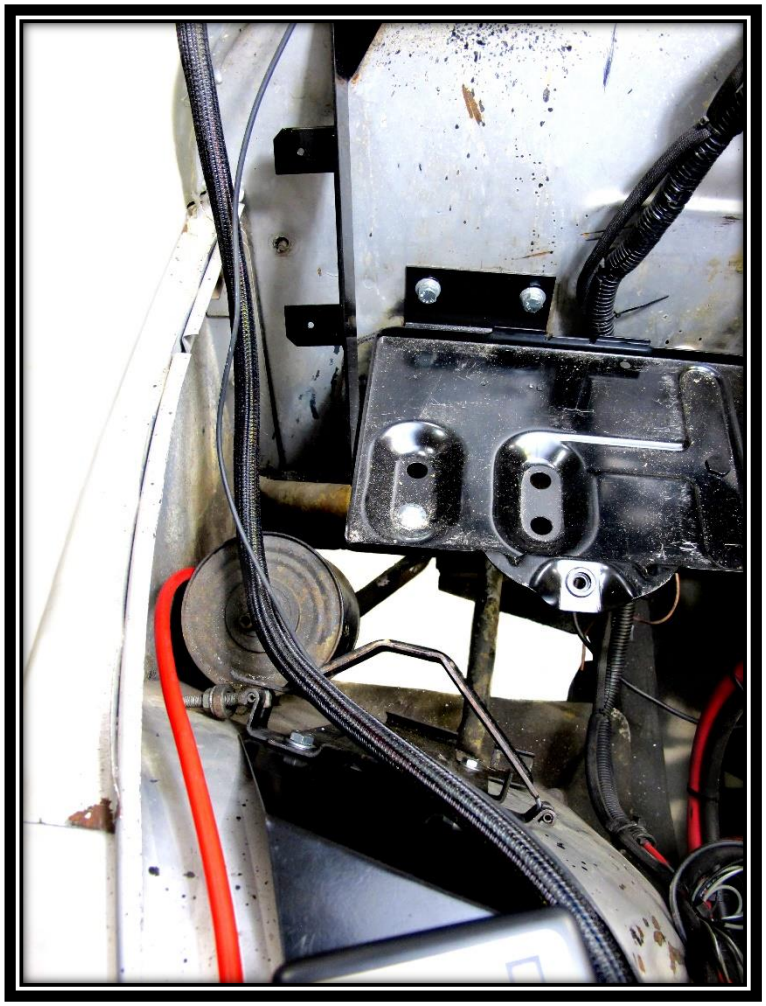


Step 11: Route the **Switch Control wires** and **ground wire** along the top of the **Fuse/Relay Center** and back toward the firewall. Then, use (2) ¾" Adel clamps, (2) ¼" Nylock nuts, and (2) ¼"–20 bolts, found in the included parts kit, to mount the harness to the bracket. **Caution: Do not over-torque these fasteners! Use a torque wrench to torque to 24 inch pounds.**

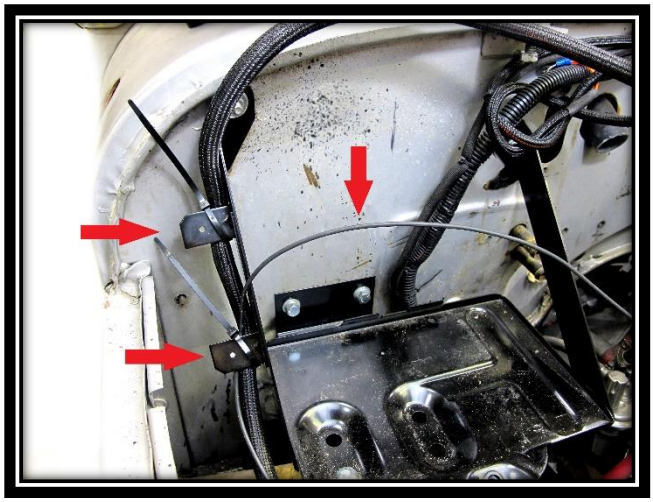




Step 12: After securing the **Switch Control wires** and **ground wire**, they should be routed toward the firewall.

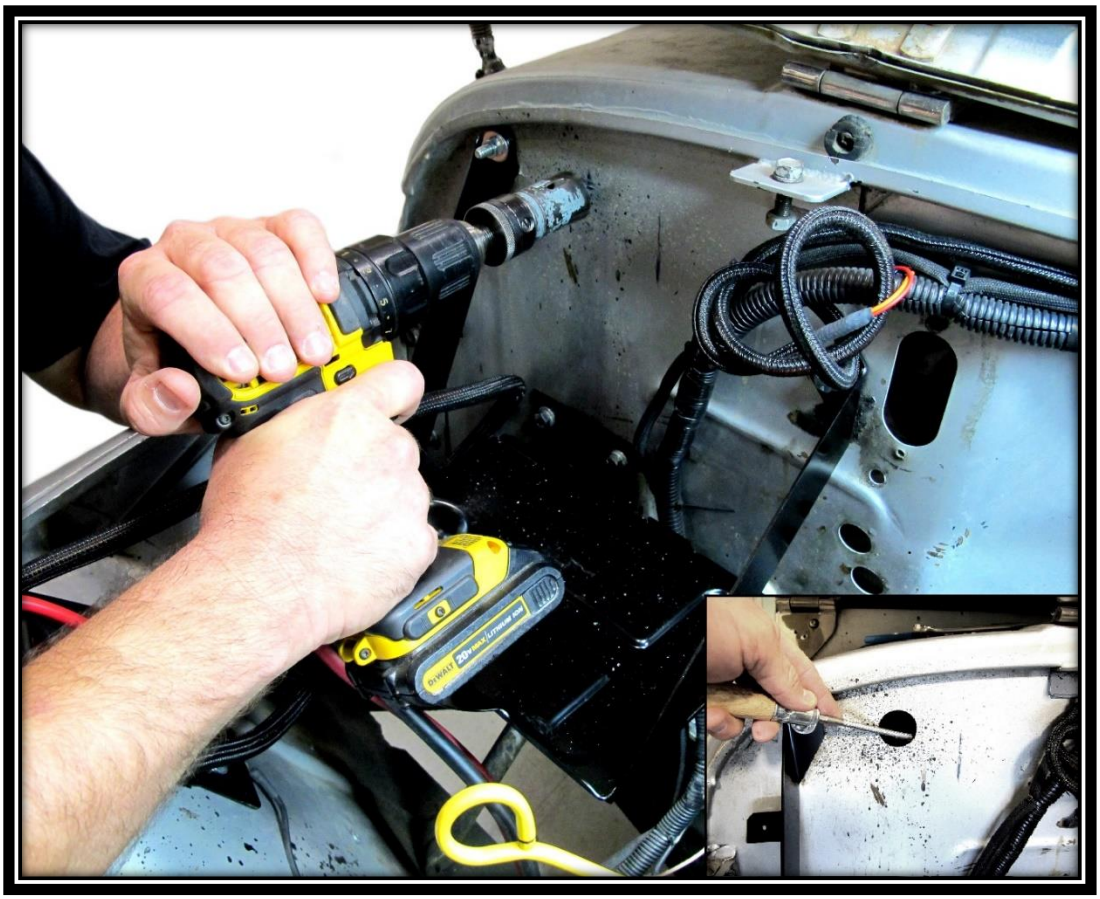


Step 13: Notice two tabs on the side of the battery tray support. Using zip-ties, found in the included parts kit, secure the **Switch Control wires** and **ground wire** to the lower tab. Then, secure just the **Switch Control wires** to the higher tab and remove the excess material from the zip-ties.

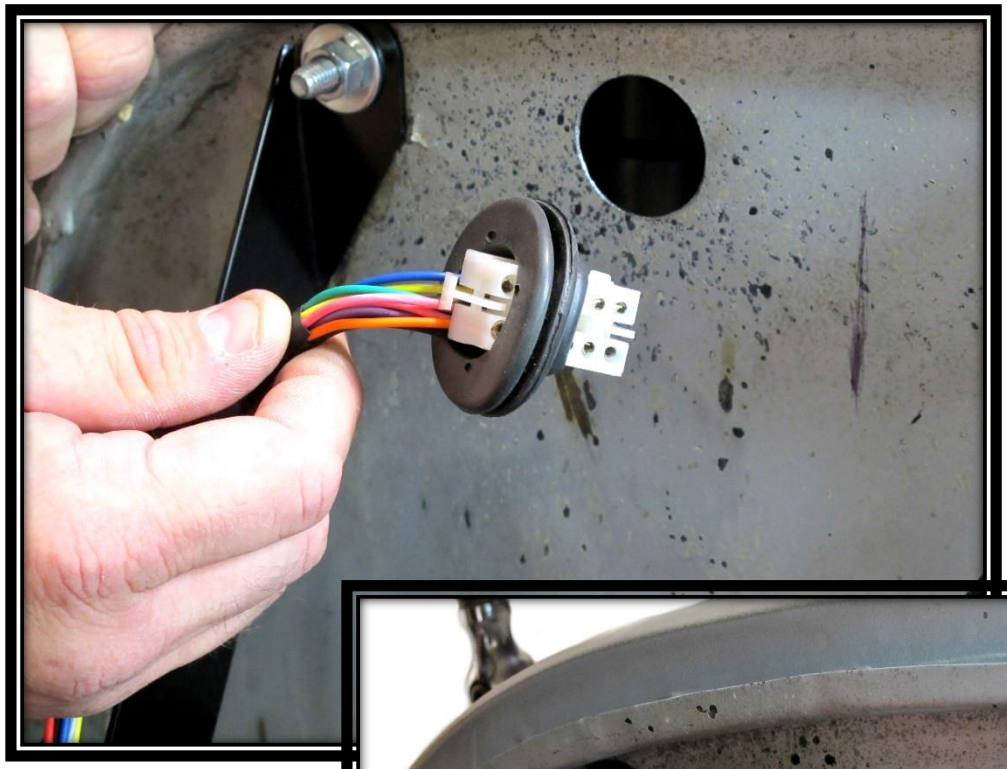


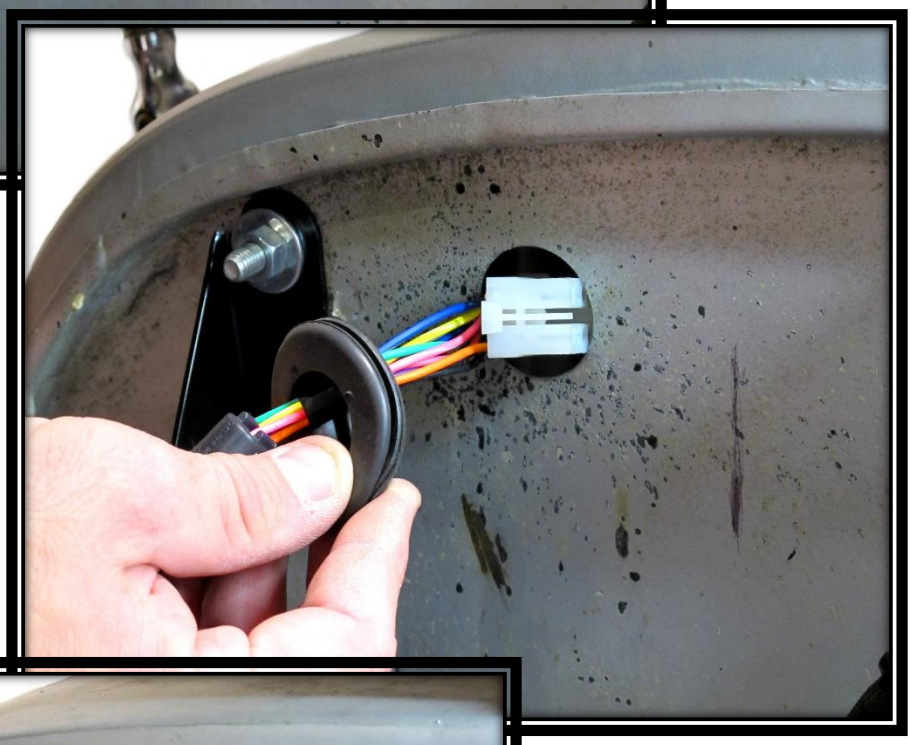
Step 14: Drill a hole in the firewall in order to route the **Switch Control wires** to the interior of the vehicle. First, start by measuring where to make the hole. Use the included rubber grommet as a reference and mark off a space roughly 2 ¾" from the top and 3" to the right of the battery tray support bolt's center line.

Step 15: Use a 1 ¼" hole-saw w/ arbor to cut a hole in the firewall. Use a half-round file to de-bur the hole before installing the rubber grommet. **Before drilling, look behind the firewall to make sure the area is clear!**

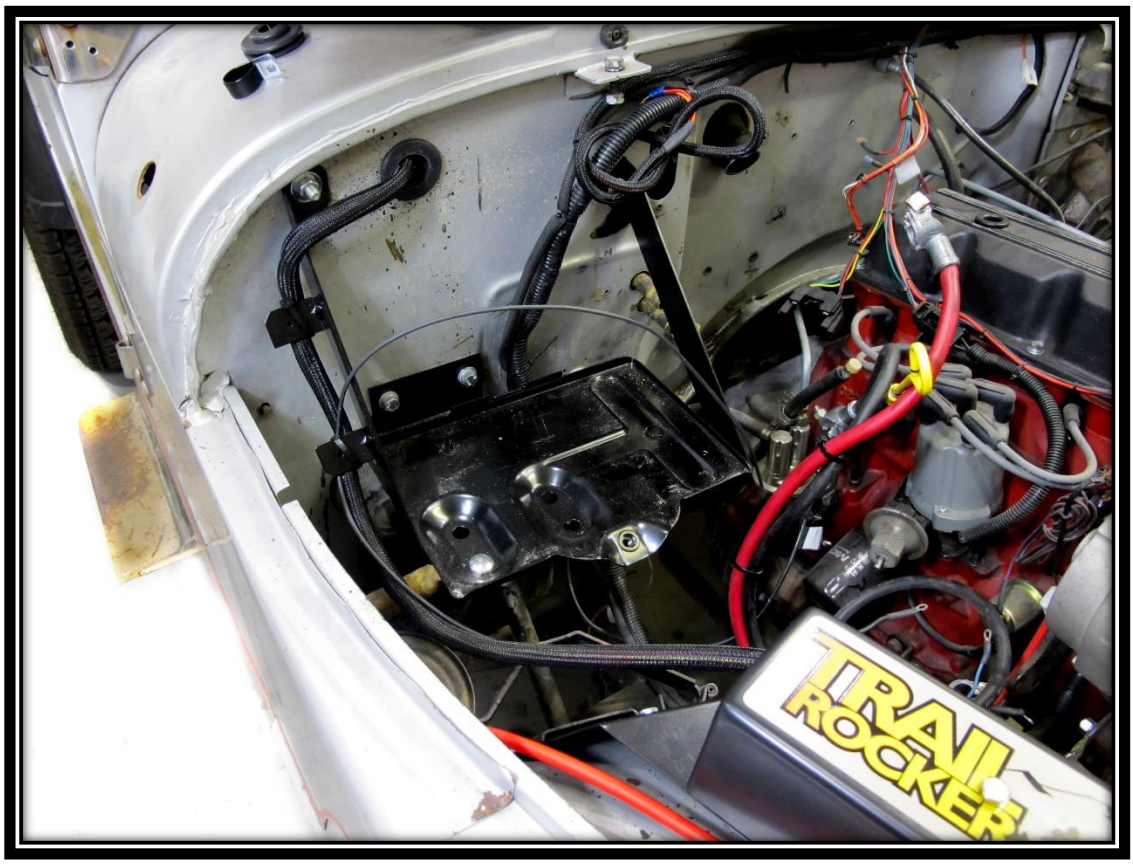


Step 16: Locate the rubber grommet in the included parts kit and slide it over the **Switch Control wire connector** and then through the hole made in **Step 15**.

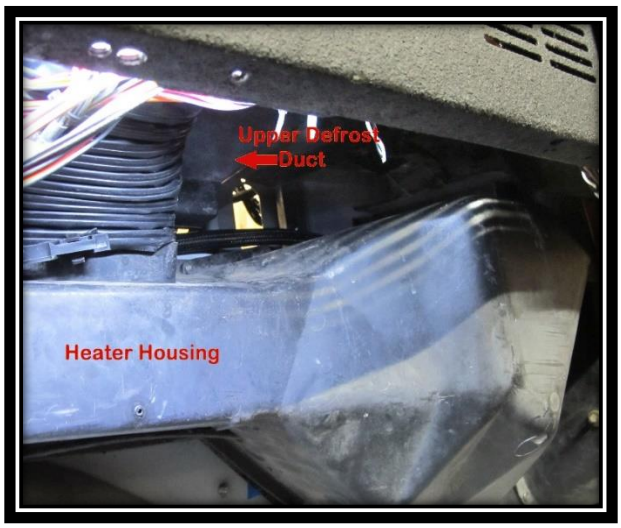




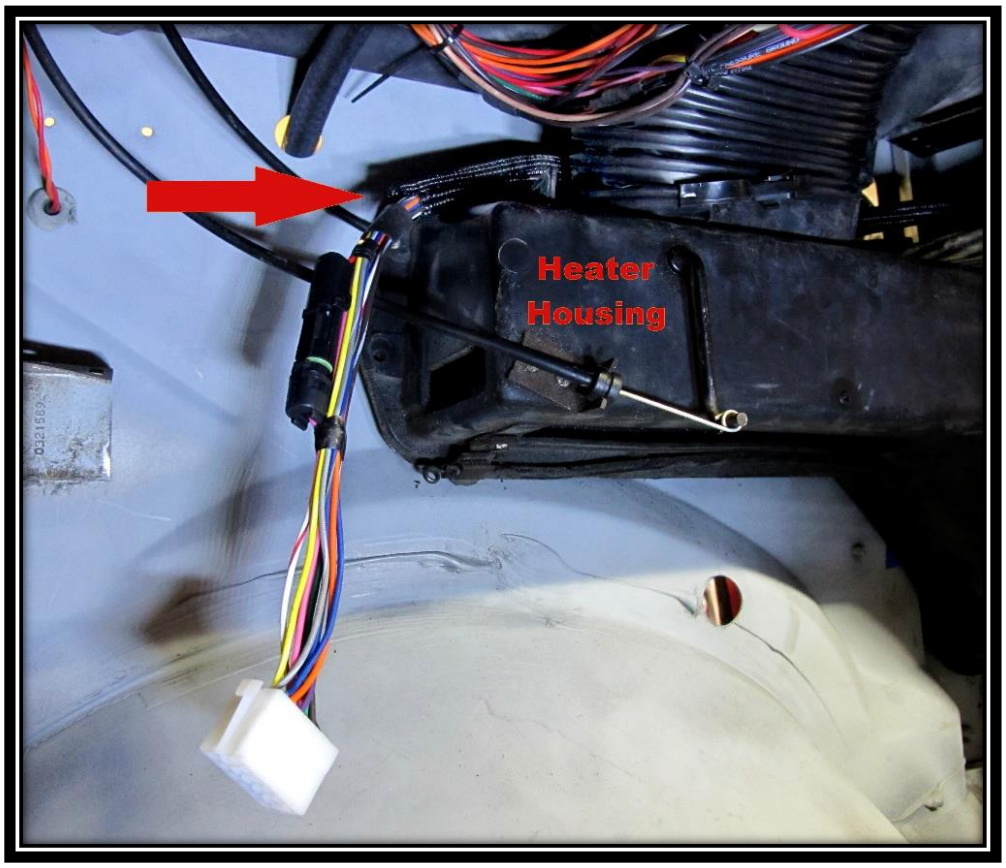
Step 17: When finished, everything should appear as it does below. Now, move to the interior of the vehicle.



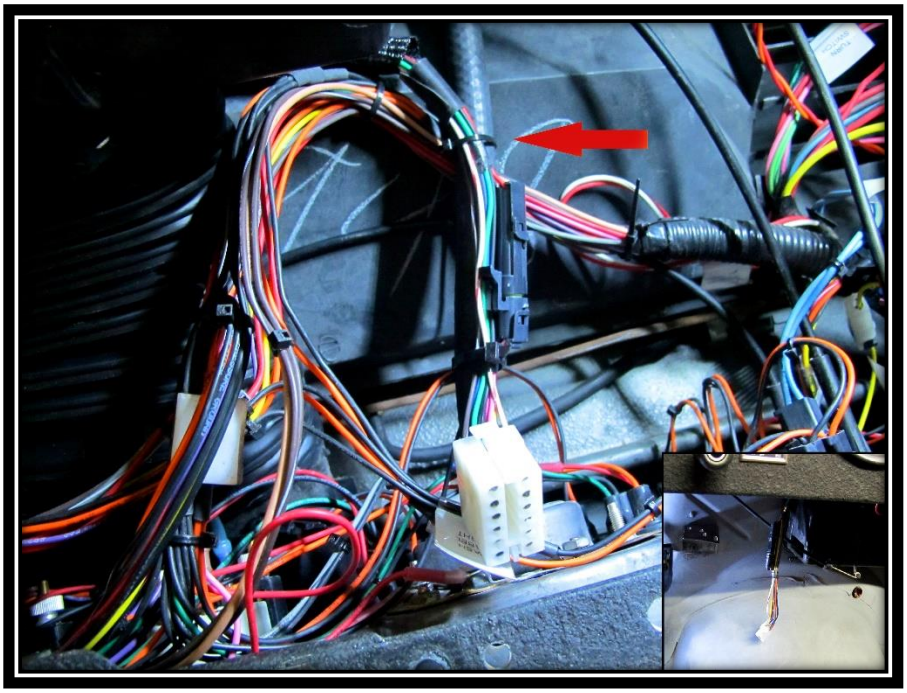
Step 18: From the passenger side floorboard, under the dash, you can see the hole you made and the **Switch Control wires** coming through. Route the wires toward the center of the vehicle along the back of the firewall, above the **heater housing**, and behind the **upper defroster duct**.



Step 19: The harness should come out behind and above the **heater housing**.



Step 20: The **Switch Control wires** should drop down below the dash, right under the speedometer. Zip-tie the end of the harness to the **speedometer cable** so that it is up and out of the way.

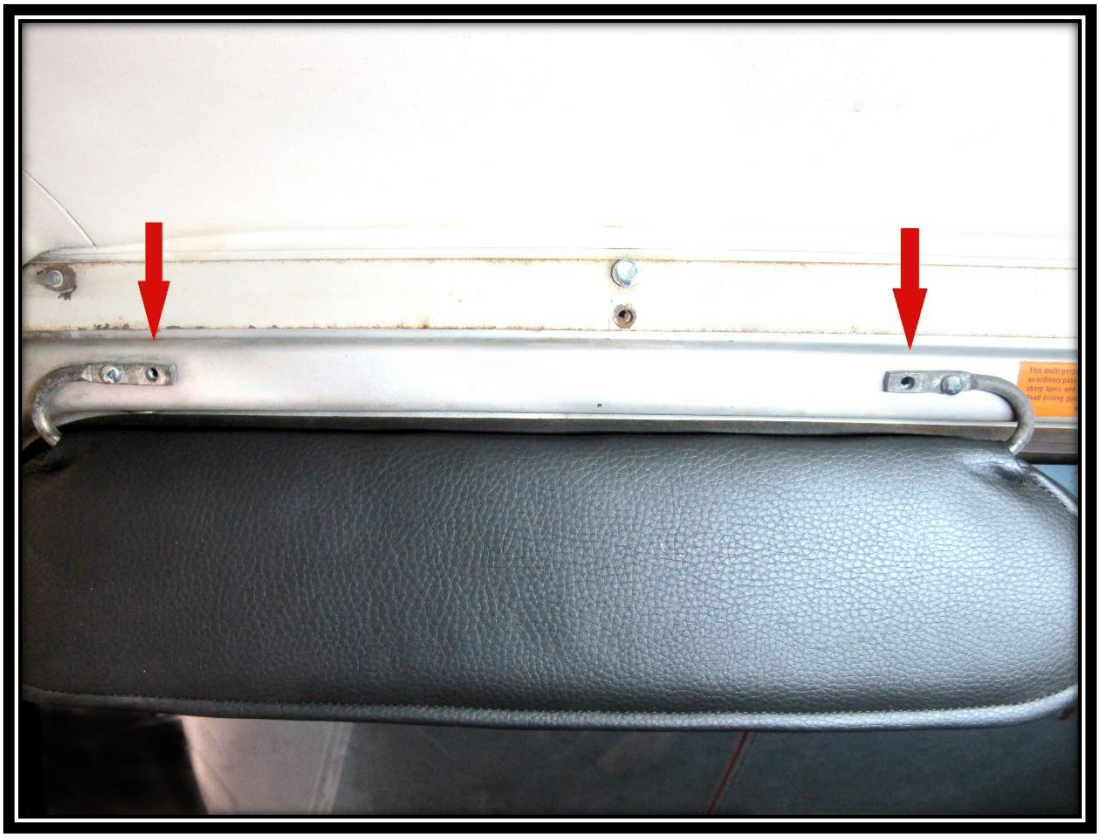


OVERHEAD 4-SWITCH PANEL INSTALLATION

Step 21: Locate the **Footman Loop** at the top of the windshield frame and between the sun visors. Using a **T20 Torx bit**, remove the **Footman Loop** and set it aside for **Step 22.**

Step 22: Locate your **Switch Panel** and line up the holes on its **mounting bracket** with the holes on the windshield frame from the **Footman Loop** you just removed. Reattach the **Footman Loop** over the **bracket** with the factory screws to mount the **Switch Panel** to the windshield.

Step 23: Next, on the driver side sun visor, remove the interior screw from both of the hinges. Originally, these fasteners were **Torx-head screws** that require a T20 Torx bit to remove. However, some CJs, like the one in our example, have been replaced by **Philips-head screws**.



Step 24: Locate the **Switch Panel wires** coming from the right side of the **Switch Panel**. Use (2) ⅜" Adel clamp to secure the wires along the top of the windshield by using the sun visor screws you removed in **Step 23**. Notice in the orientation of the Adel clamp is turned inward to make the wire bundle lie closer to the windshield and, therefore, be less in the way.

Step 25: When finished, the **Switch Panel wires** should be secured above the sun visor as it appears below. Notice the detached wire running down the left side of the sun visor.

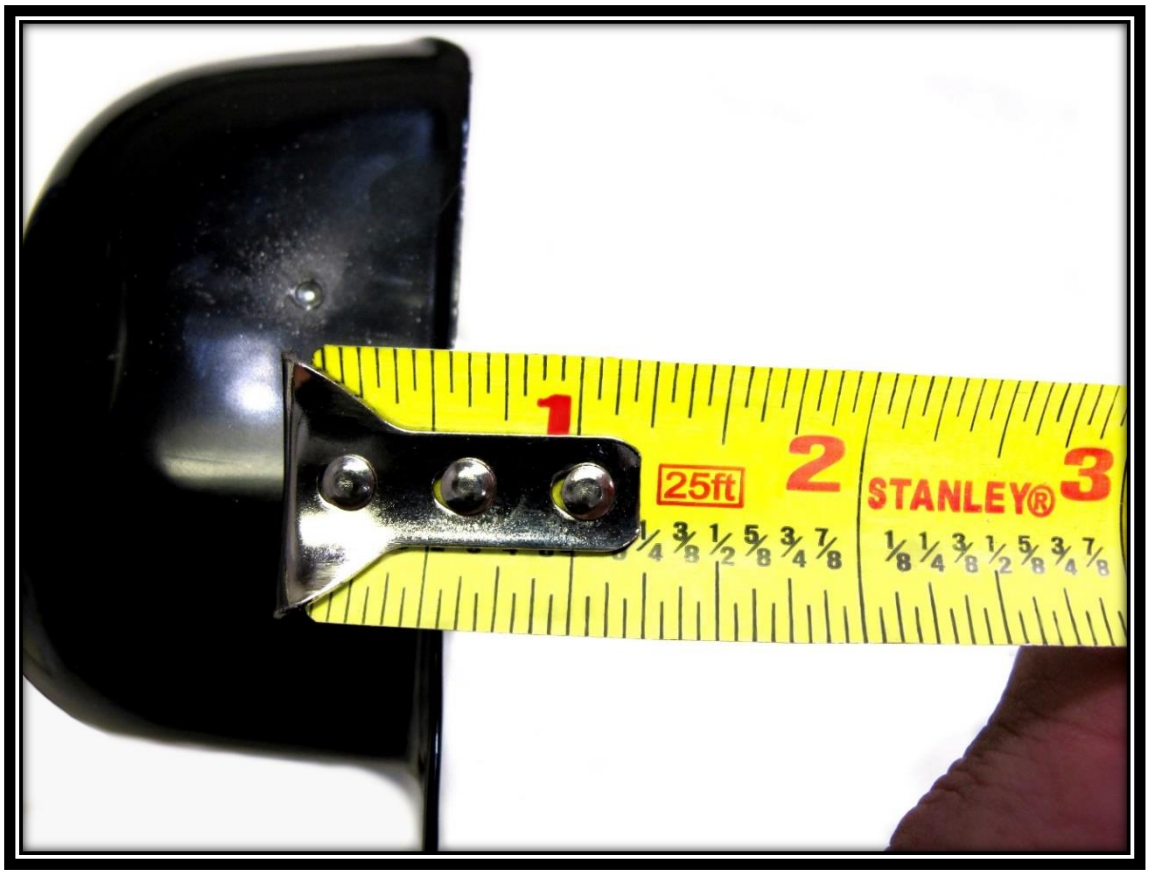
Step 26: Start at about 2 ¼" from the roof and ½" from the driver door frame. Use evenly spaced (7 ½" apart) (3) #8 X ¾" self-tapping screws, (3) washers, and (3) ⅜" Adel clamps to secure the wires to the side of the windshield frame. To do this you need a ¼" socket and ratchet.

Step 27: For the next step, it is necessary to close the hood and lower the windshield. To lower the windshield, unscrew and remove the **windshield bracket knob** on each side of dash.

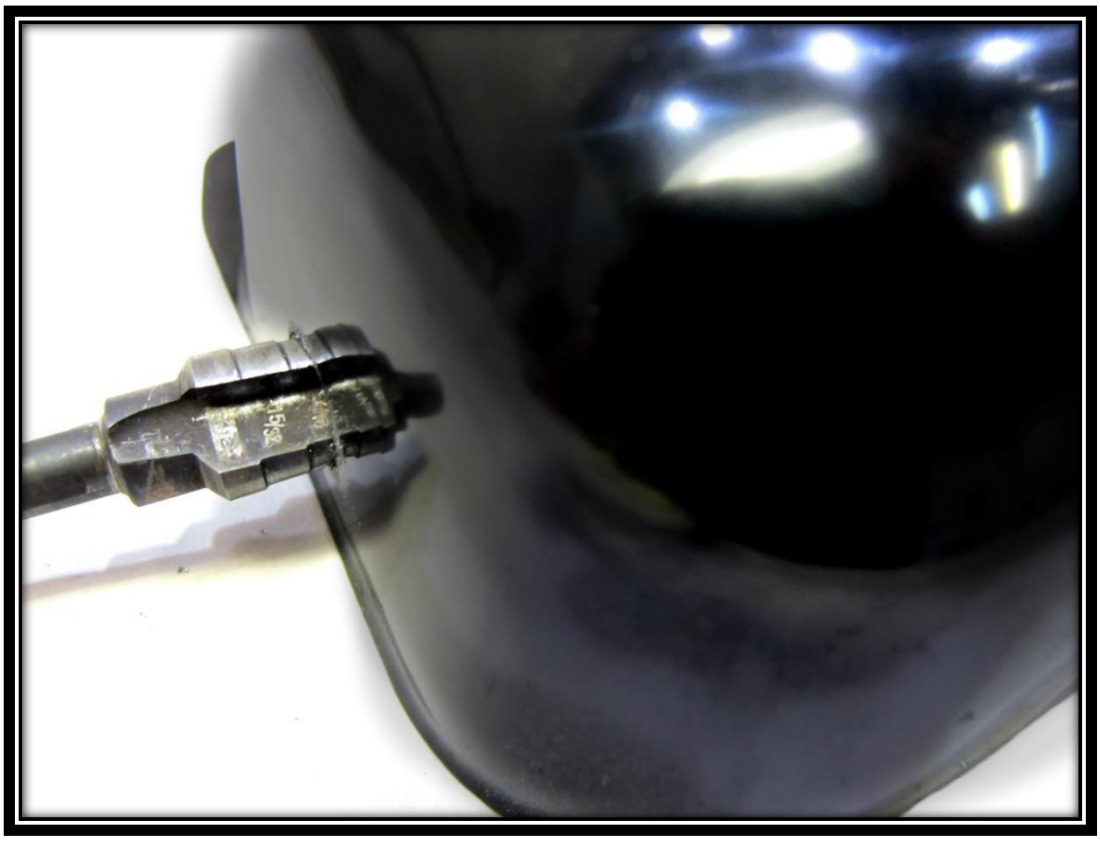
Step 28: Carefully, lower the windshield and locate the windshield **wiper motor cover**.

Step 29: Use a #2 Philips-head screwdriver to remove the three screws from **windshield wiper cover**.

Step 30: With the **wiper motor cover** on a workbench, measure about ½" from the bottom of the **wiper motor cover**, center, and drill a ⅛" pilot hole there.



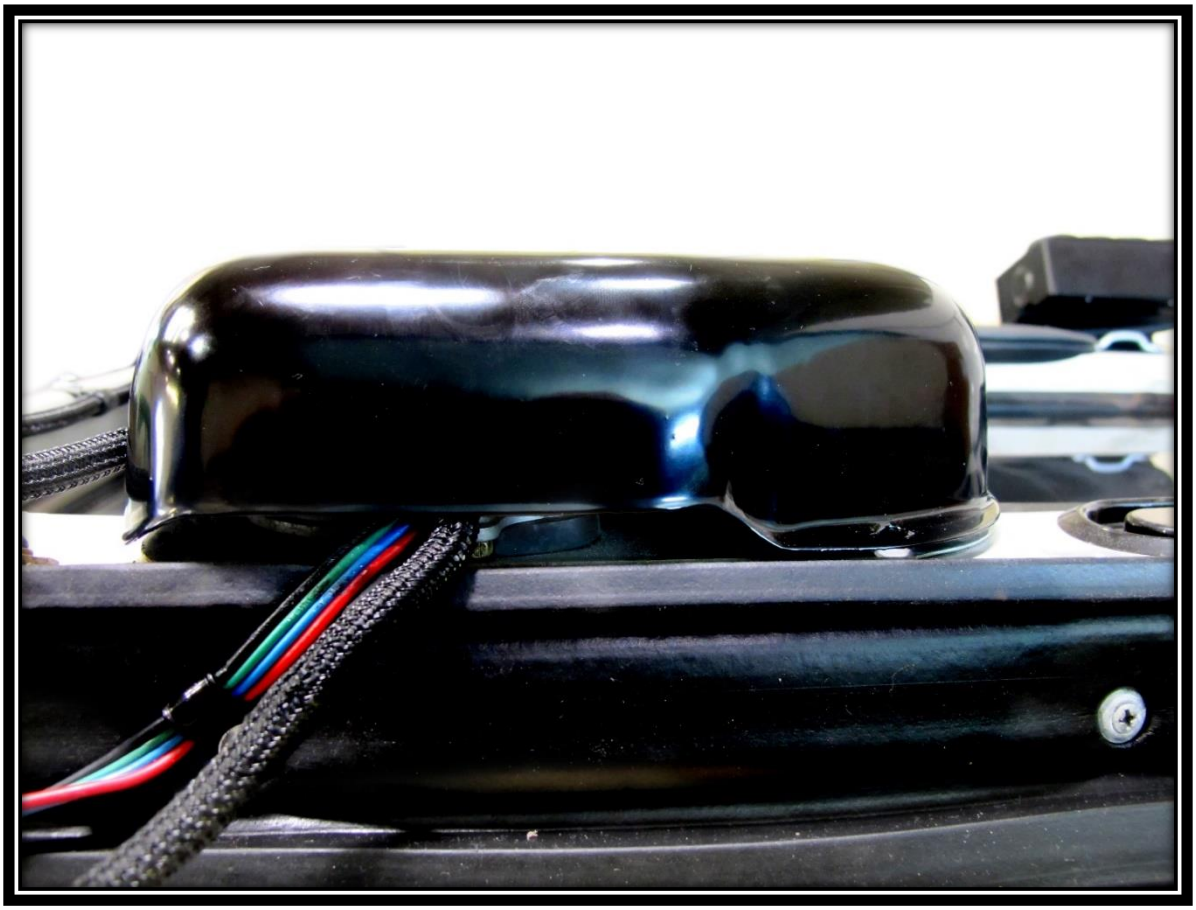
Step 31: Use a ¼ in. – ¾ in. X 1/16 in. #3 Step Drill Bit to bore out a hole that is 7/16" in diameter.

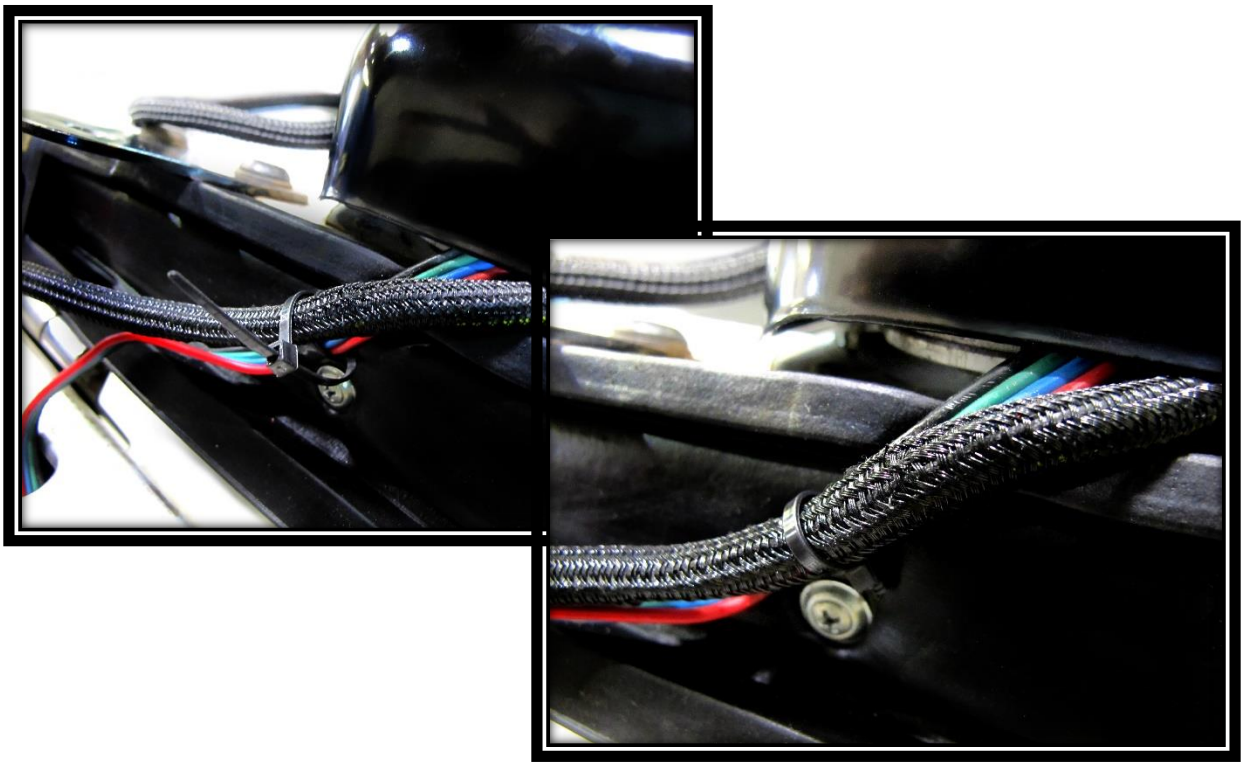


Step 32: Insert the 7/16" grommet from the parts kit. Then, run the end of the **Switch Panel wires** through the grommet.

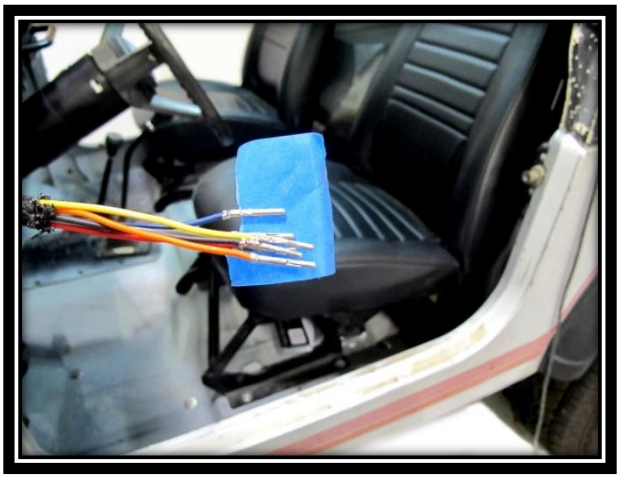
Step 33: Route the **Switch Panel wires** along the **wiper motor** and reattach the **cover**.

Step 34: The **Switch Panel wires** come out of the cover and run parallel to the **wiper motor's** wiring. Use a zip-tie to fasten the two together. This insures that the **Switch Panel wires** stay in place.

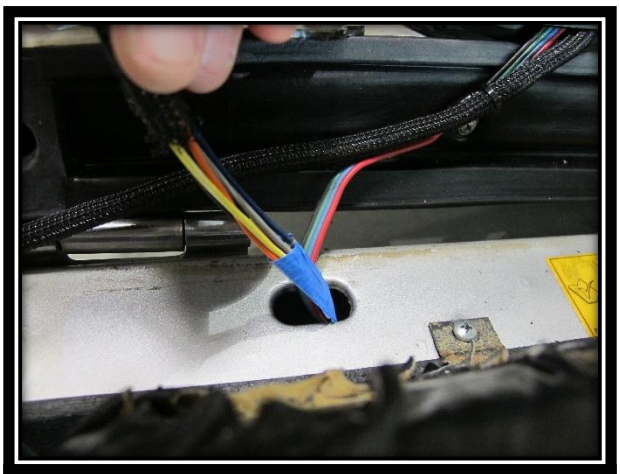


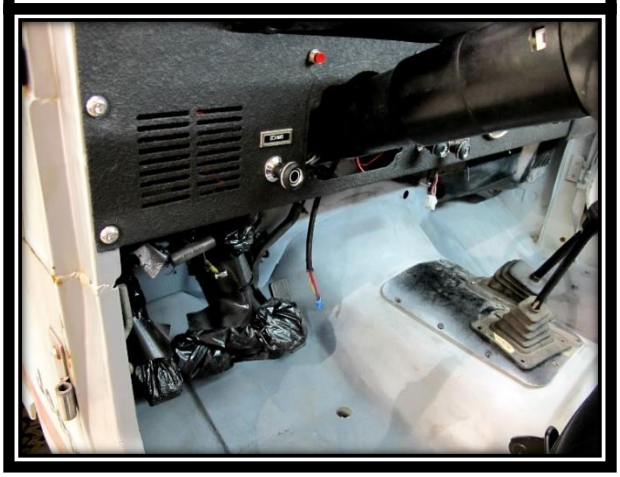


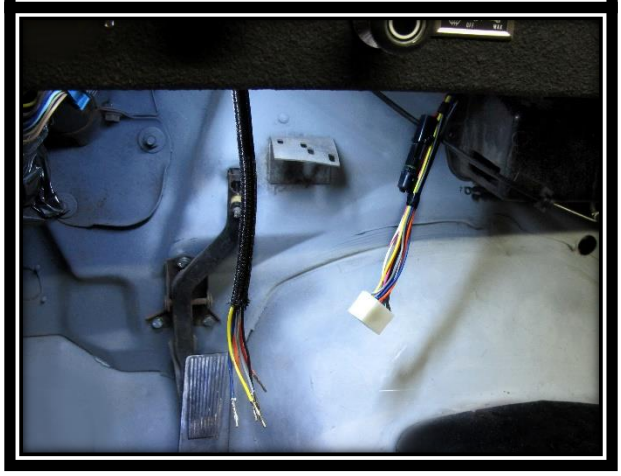
Step 35: Next, secure the loose ends of the **Switch Panel wires** with a piece of masking tape. This step is necessary to insure ease when feeding the wire through the dash on **Step 36**. Failing to tape the ends can cause the loose wires to catch on the internal structure of the dash.



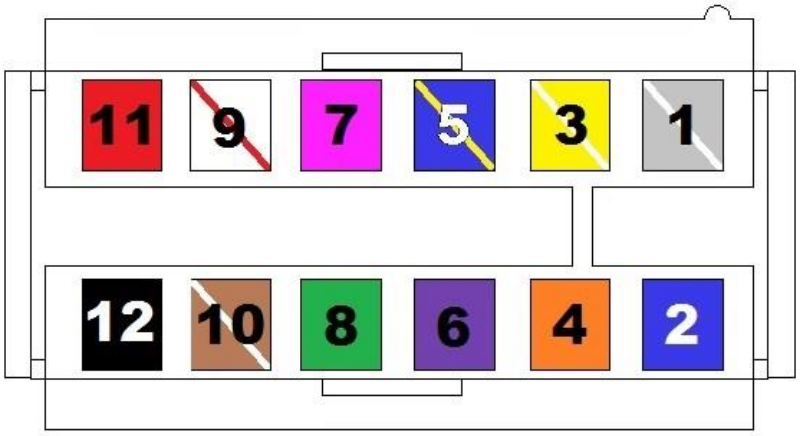
Step 36: Again, follow the **wiper motor wiring** to a hole in the dash and feed the wire through here. Navigate the internal components of the dash so that the end of the bundle comes out on the right (passenger) side of the steering column. Then, remove the tape.





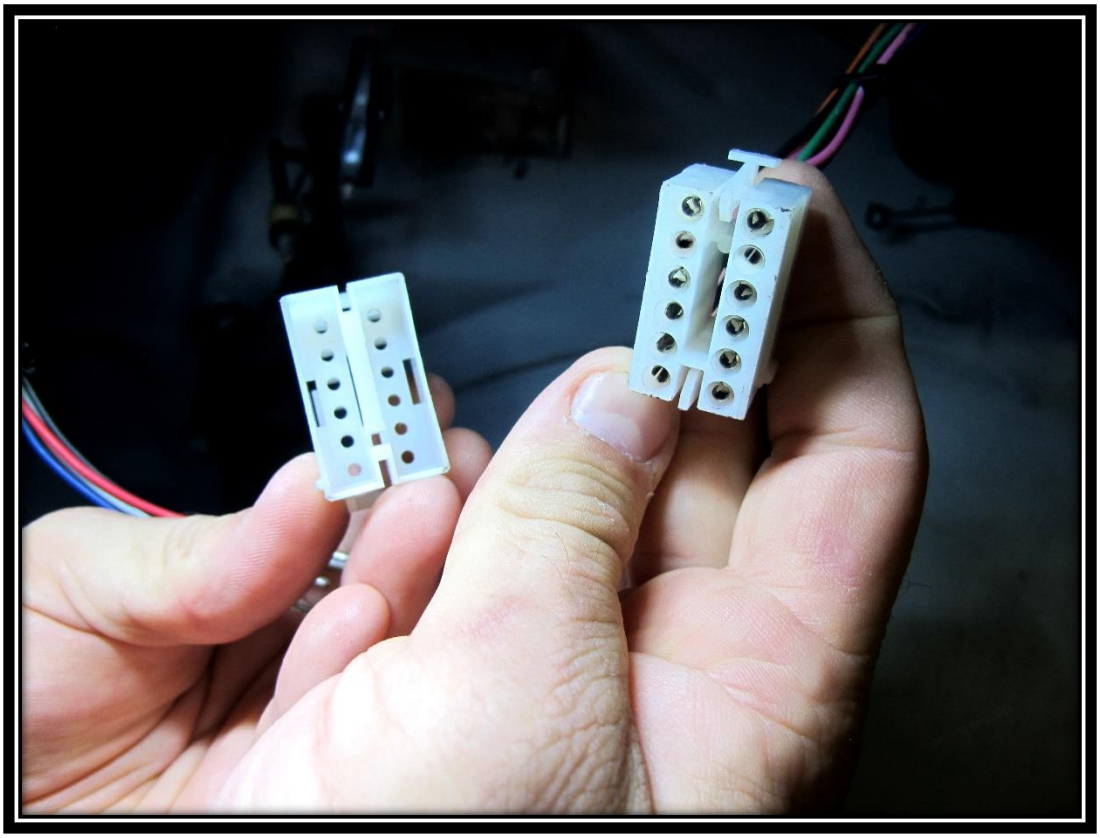


Step 37: It may help to familiarize yourself with the wiring diagram below before connecting the pins from the **Fuse/Relay Center** to the **12-pin connector shell** in **Step 39**.

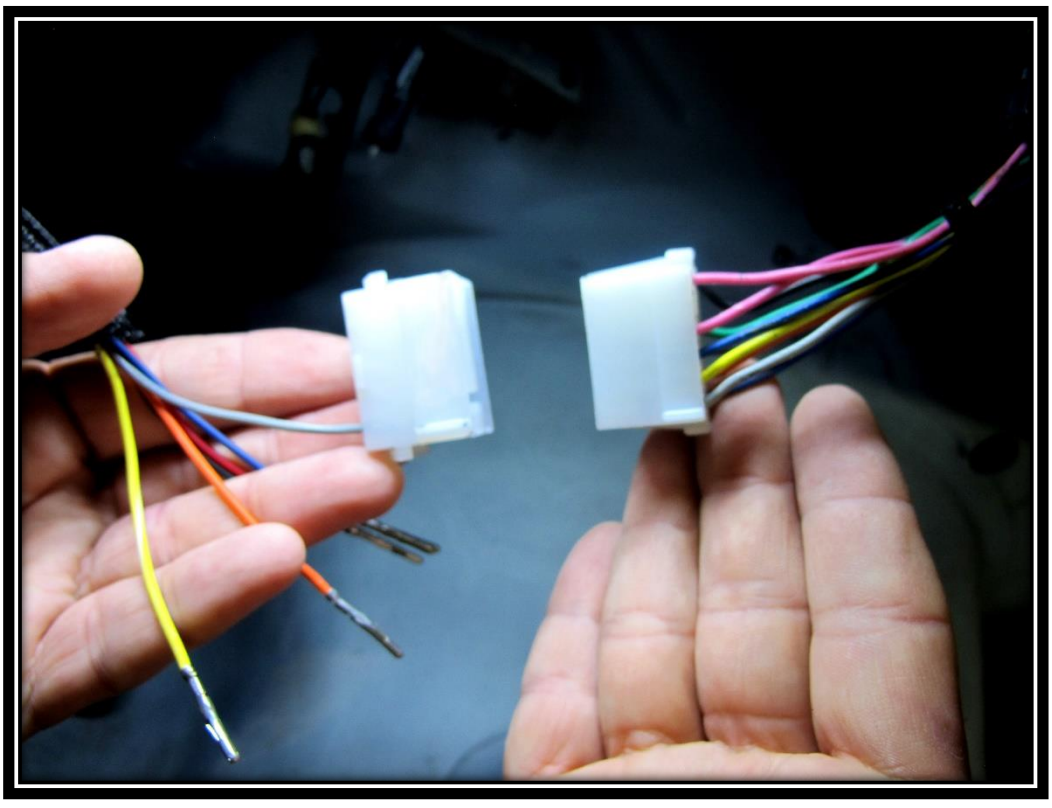


WIRE	FUNCTION
1 - Grey/White	Relay 1 Enable
2 - Blue	Relay 2 Enable
3 - Yellow/White	Relay 3 Enable
4 - Orange	Relay 4 Enable
5 - Blue/Yellow	Relay 5 Enable
6 - Purple	Relay 6 Enable
7 - Pink	Relay 7 Enable
8 - Green	Relay 8 Enable
9 - White/Red	Winch IN
10 - Brown/White	Winch OUT
11 - Red	Switch Power
12 - Black	Switch Ground

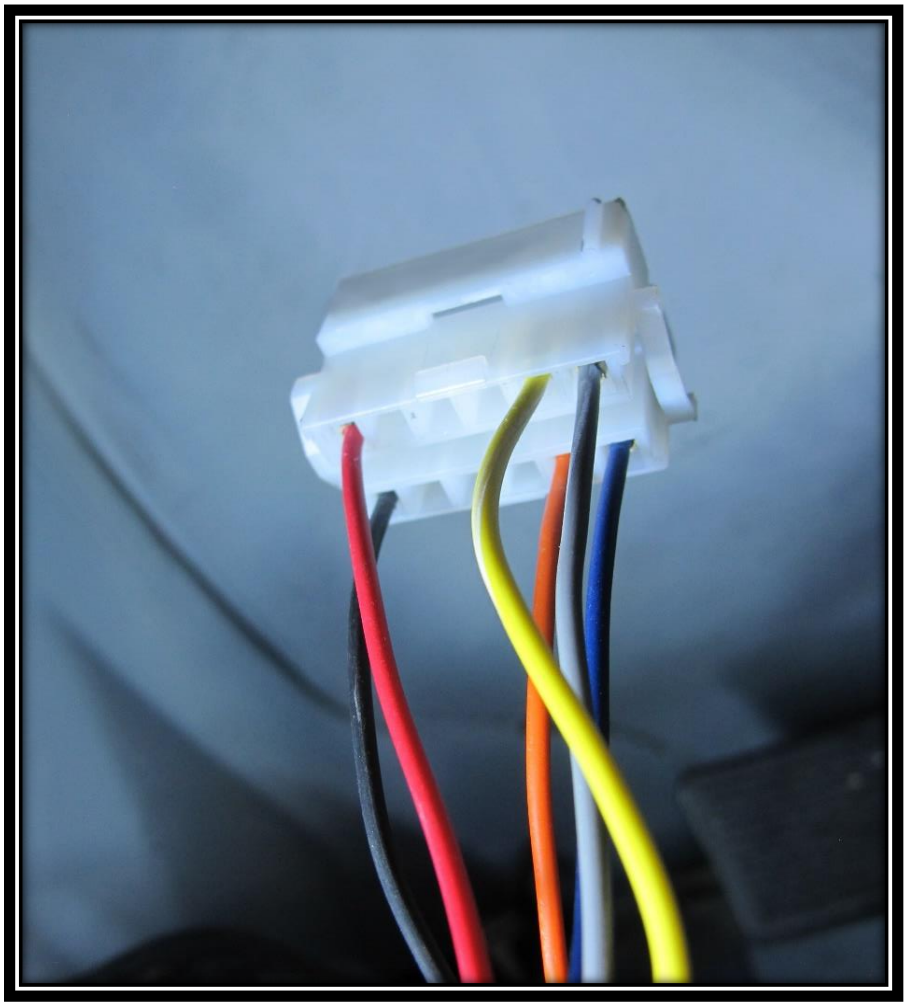
Step 38: Locate the 12-pin connector shell included in the parts kit. Note the locating tab for orientation.

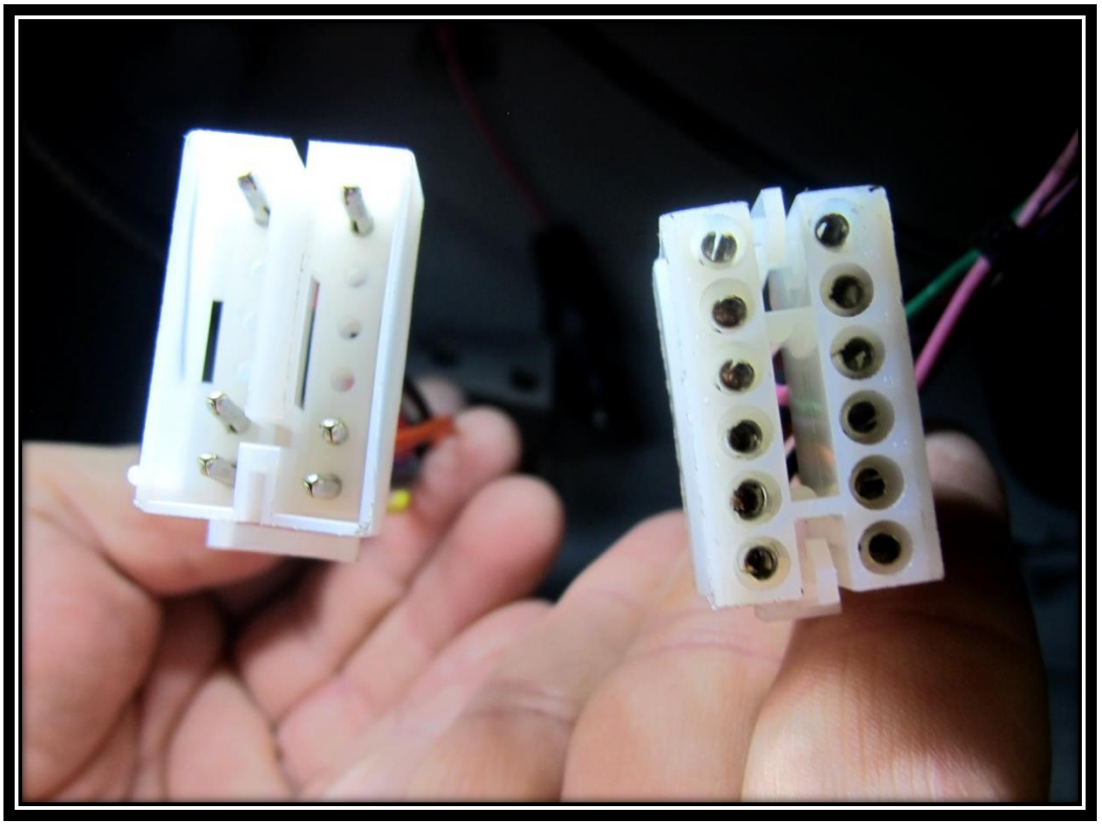


Step 39: Notice that the end of each wire has a pin crimped onto it. Insert these pins into the 12-pin connector shell. Make sure, while inserting the pins, that once connected the wire matches the one across from it. Also, see the diagram on page 31 for a diagram illustrating the connections.

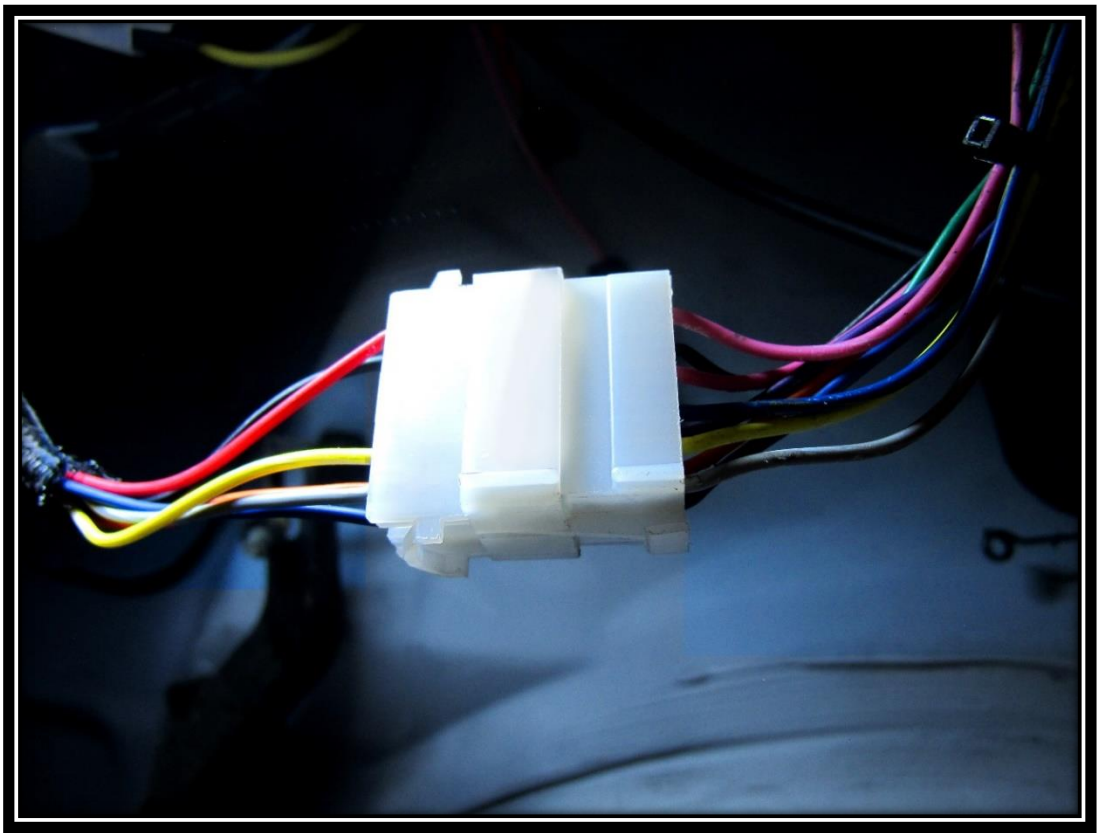


Step 40: Once completed, the connector should appear as it does below.

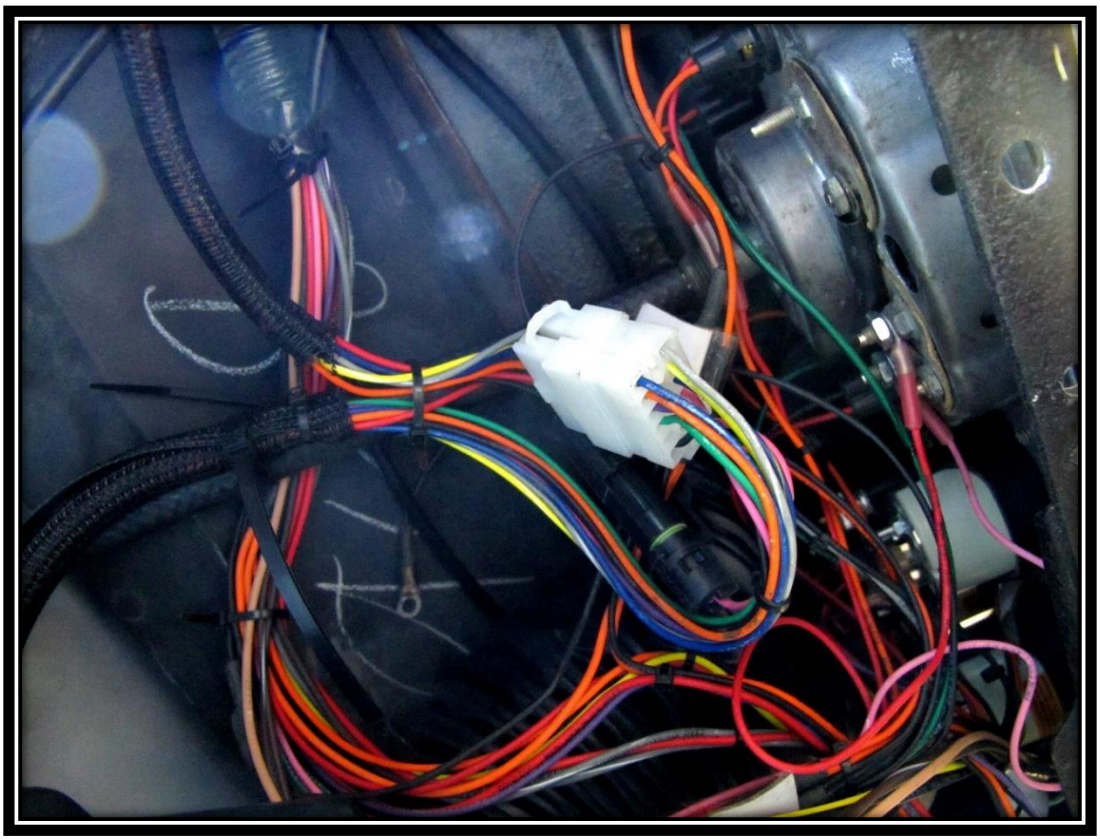




Step 41: Link the two connectors and join the wiring harness from the **Switch Control wires** to the **Switch Panel wires**.

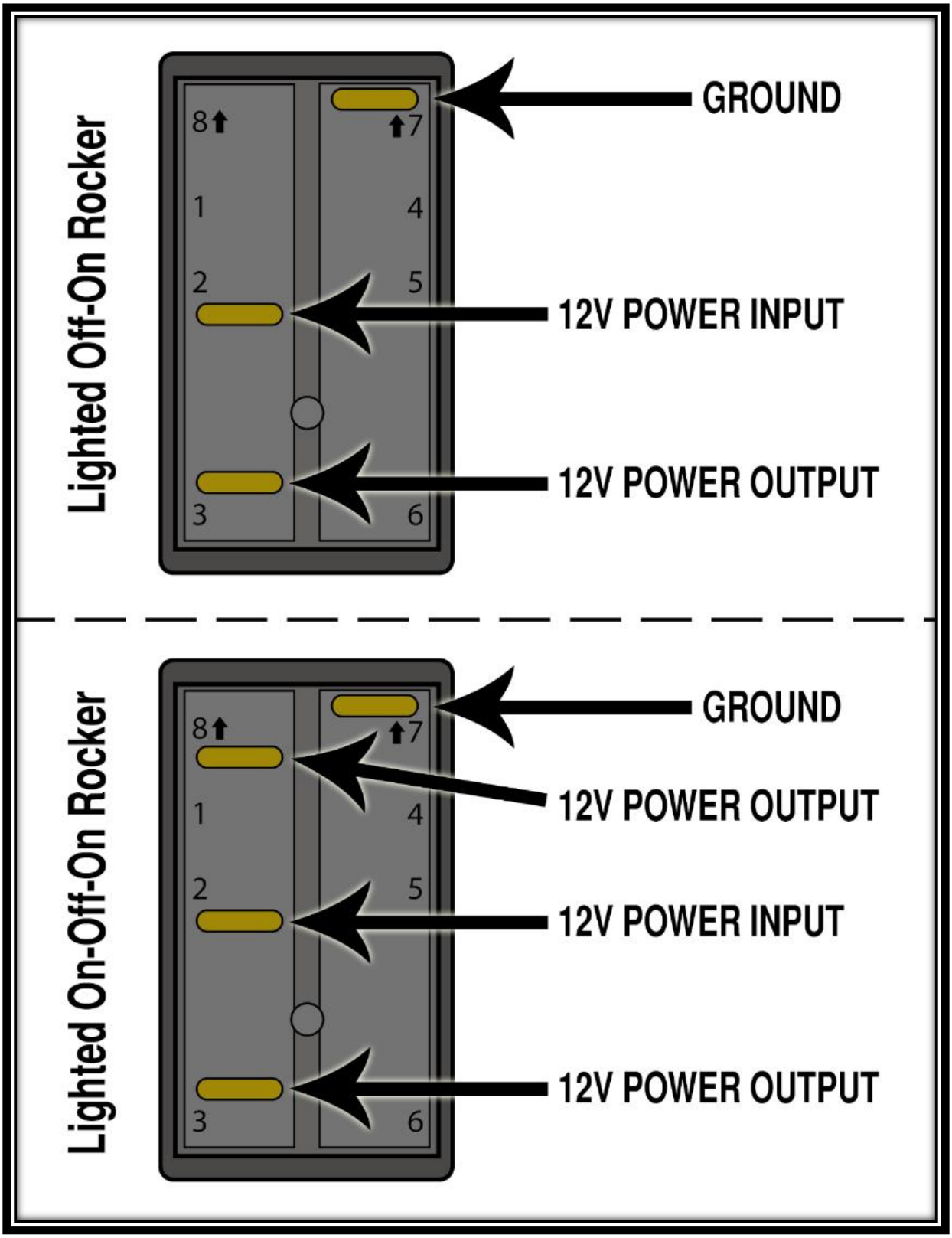


Step 42: Use zip-ties to secure the wires up under the dash and out of the way.



SWITCH WIRING

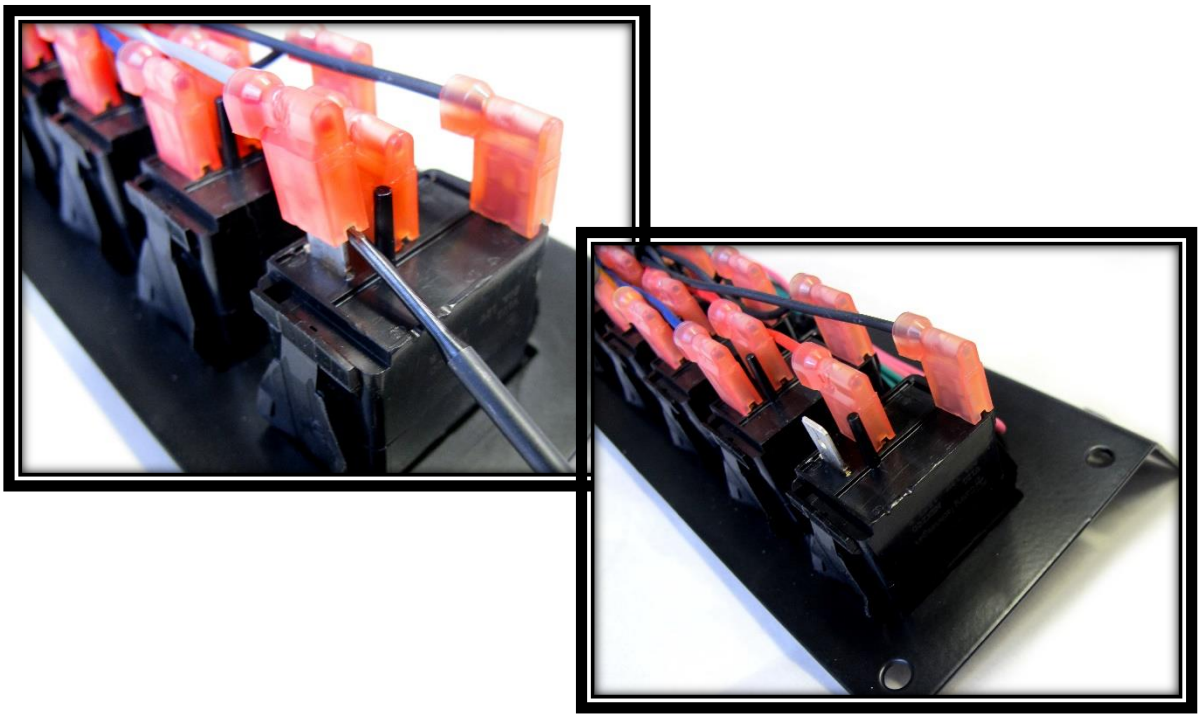
The lighted rocker switches included in your kit are wired as shown in the diagram below.



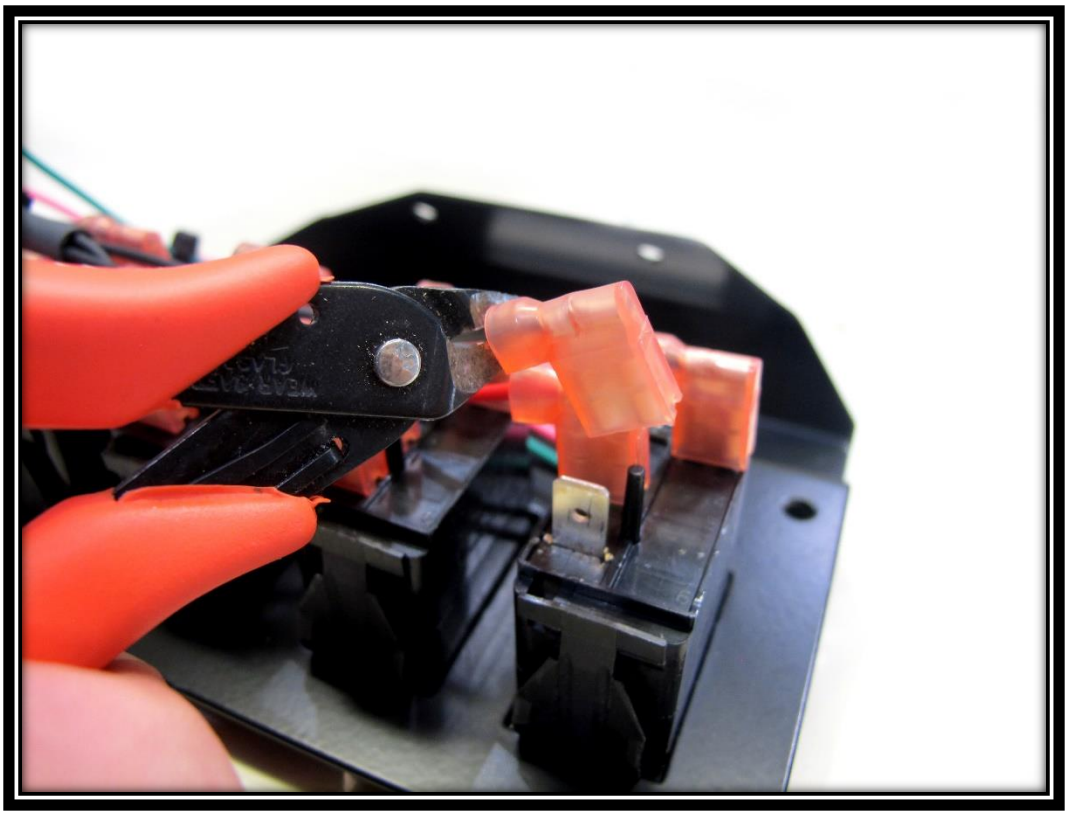
DOUBLING SWITCH CONTROL WIRES

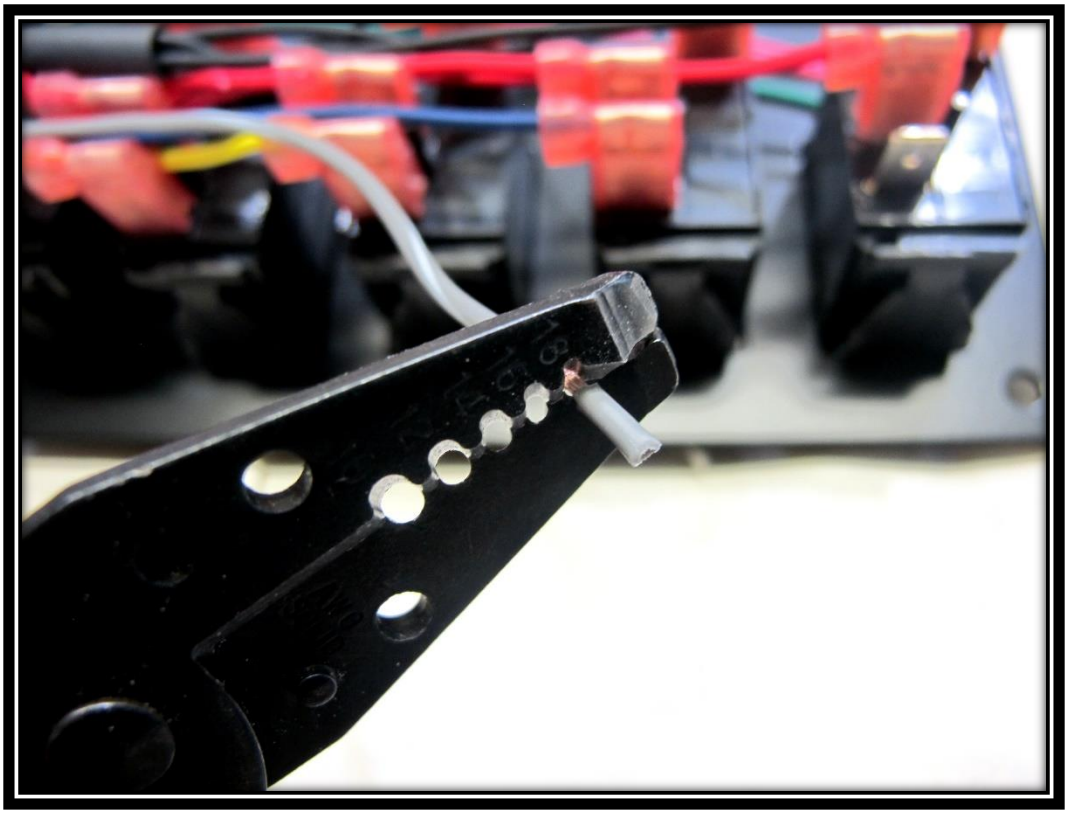
Steps 43 - 46 are optional and only for those who wish to control multiple functions for one switch. Provided in the kit are some 16ga. – 14ga. terminals, similar to those shown below.

Step 43: Choose which switch you want to control multiple functions with, and disconnect the existing **Switch Panel wire** from the terminal on the bottom of the switch (terminal #3).

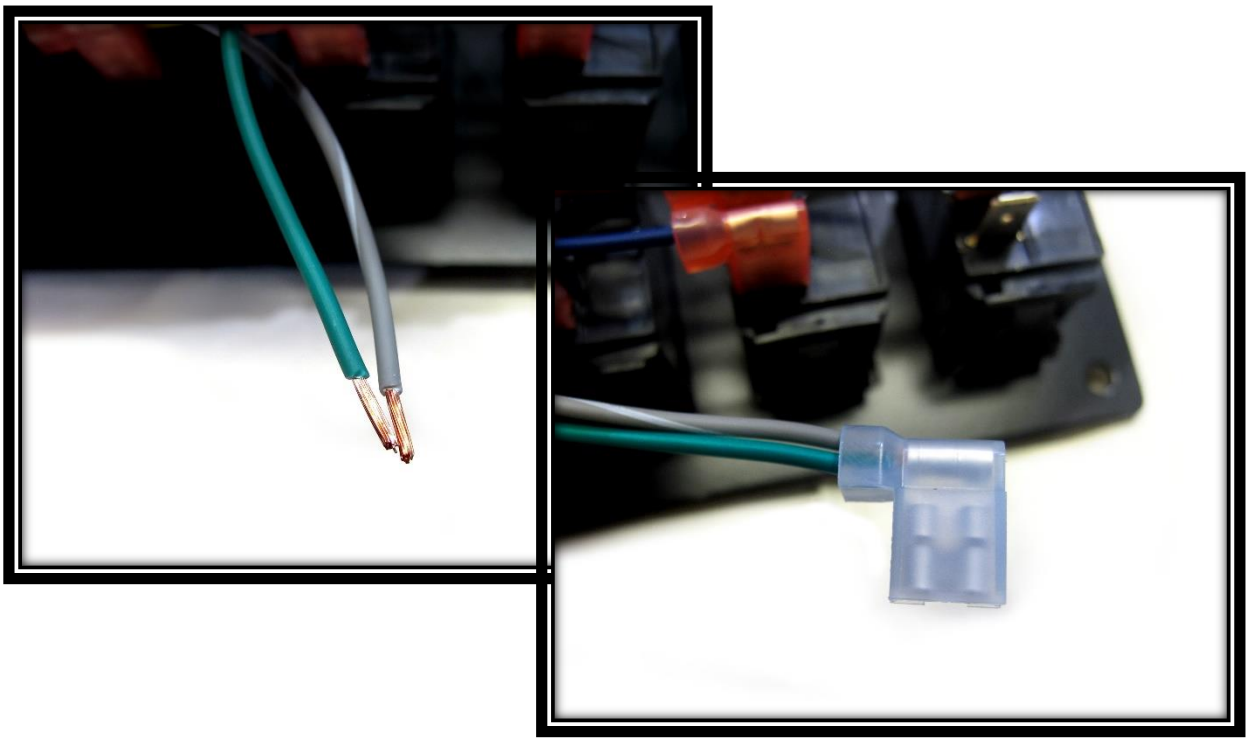


Step 44: With the Switch Panel wire removed from the switch, cut off the terminal, and strip the wire ¼".

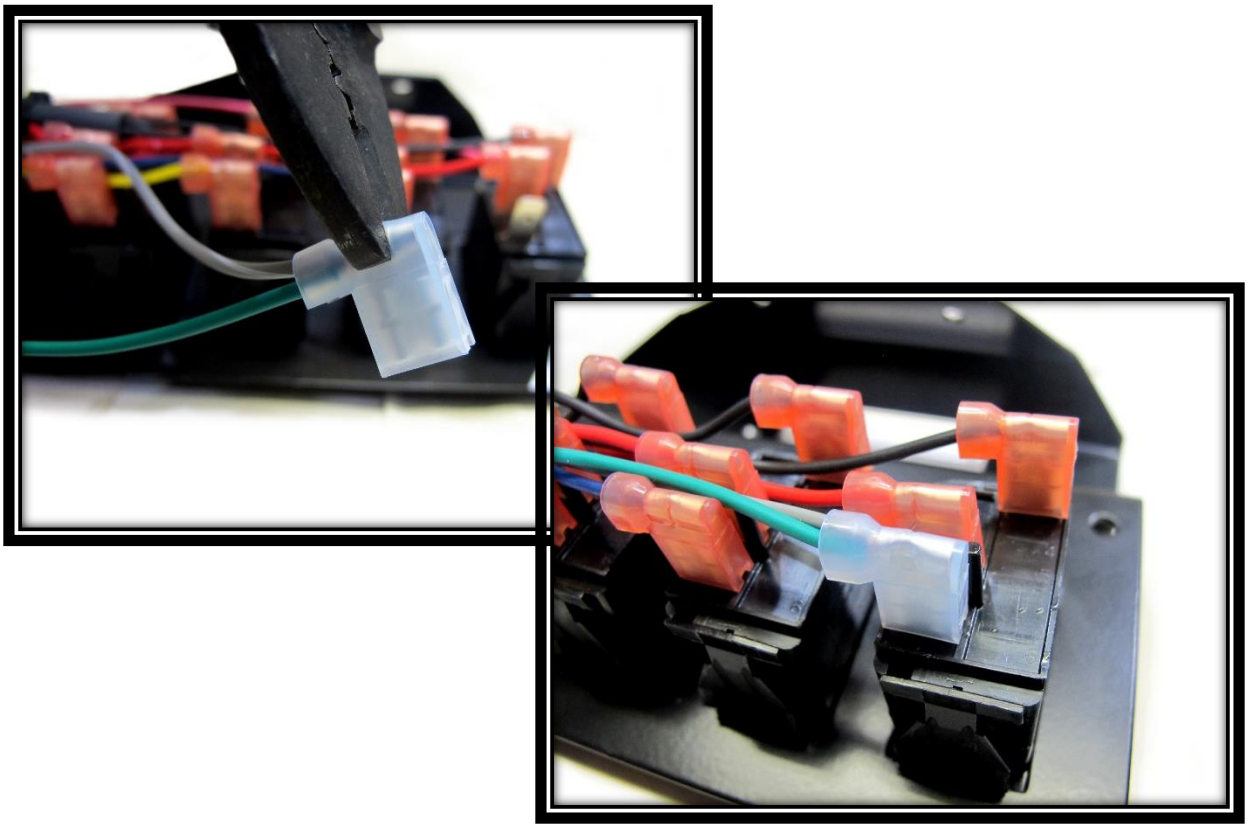




Step 45: Take the **Switch Panel wire** you just stripped and one of the additional **Switch Panel wires**; then slide them together into a 16-14 ga. terminal provided in the included parts kit.



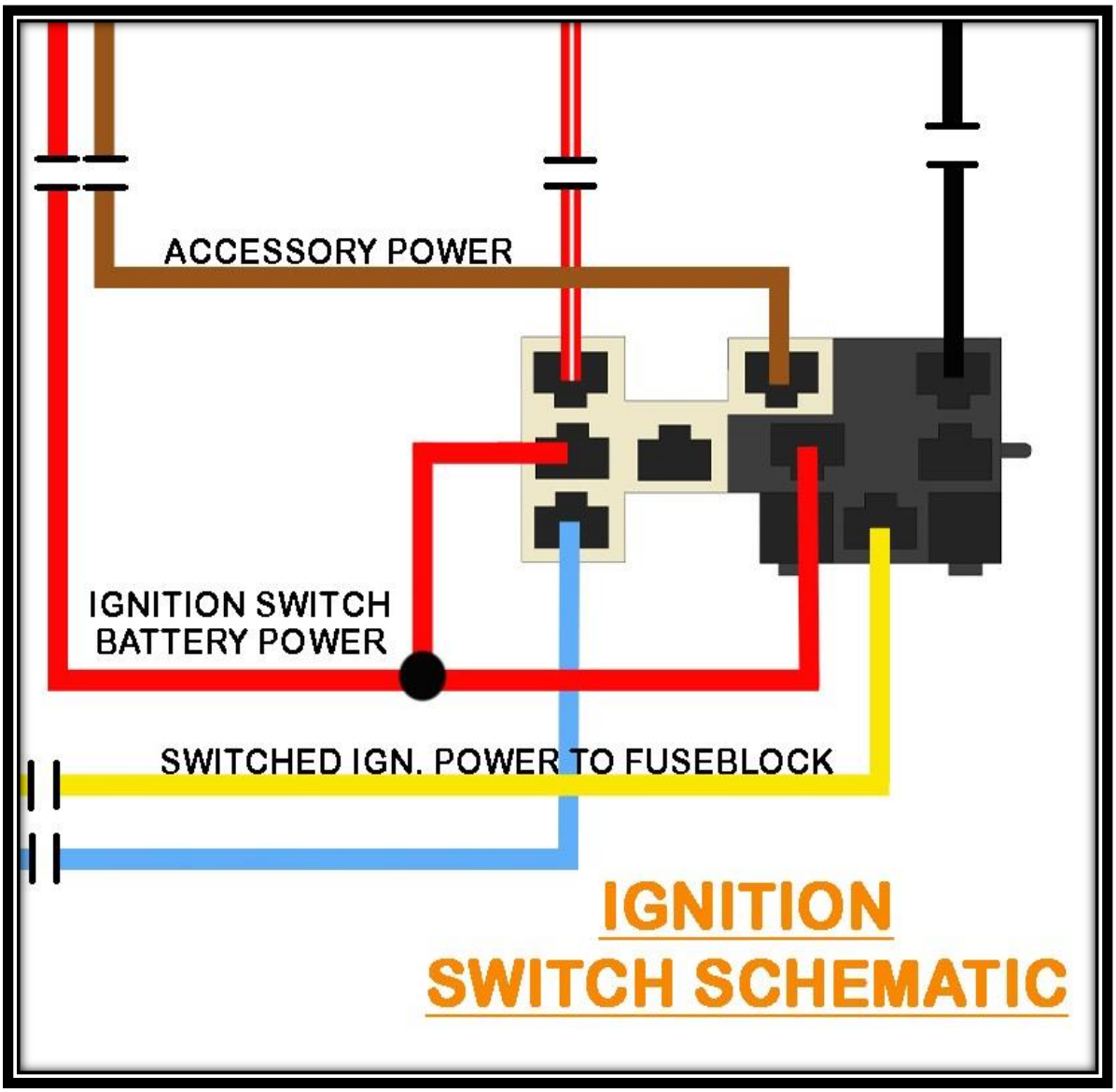
Step 46: With both wires inside, crimp the terminal, and reconnect the doubled **Switch Panel wires** to the switch.



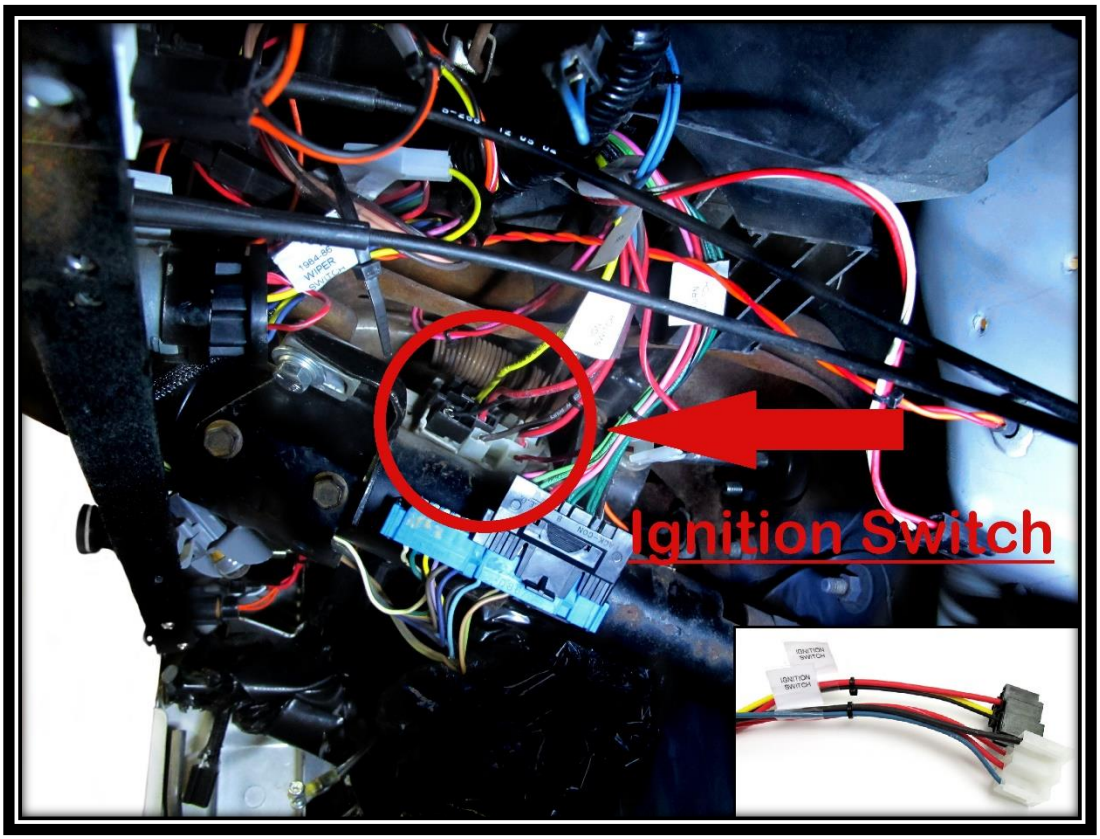
IF YOU WANT TO OPERATE YOUR SWITCHES WITH A CONSTANT POWER (AS SHIPPED), SKIP STEPS 47-55. THESE STEPS ILLUSTRATE HOW TO HOOK UP YOUR TRAIL ROCKER TO IGNITION SWITCHED POWER AND ARE COMPLETELY OPTIONAL.

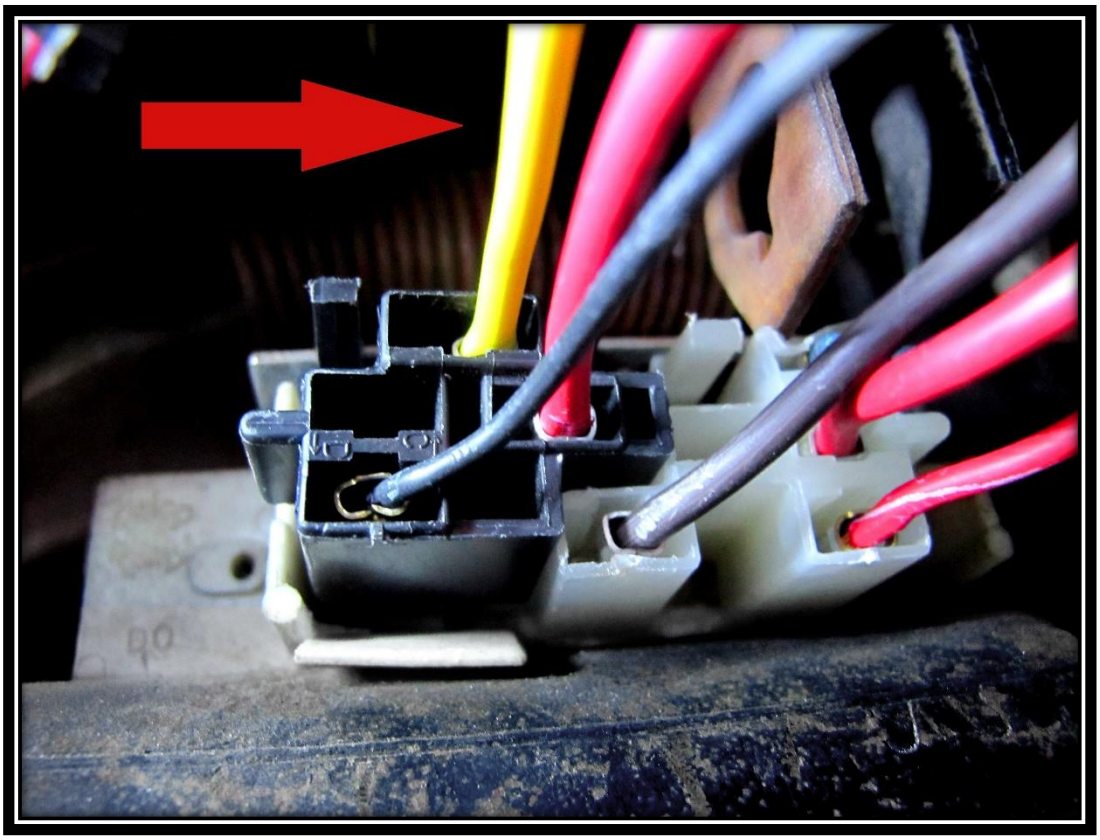
IGNITION SWITCH CONNECTOR INSTALLATION

Step 47: It will help to familiarize yourself with the *Ignition Switch Schematic* below.

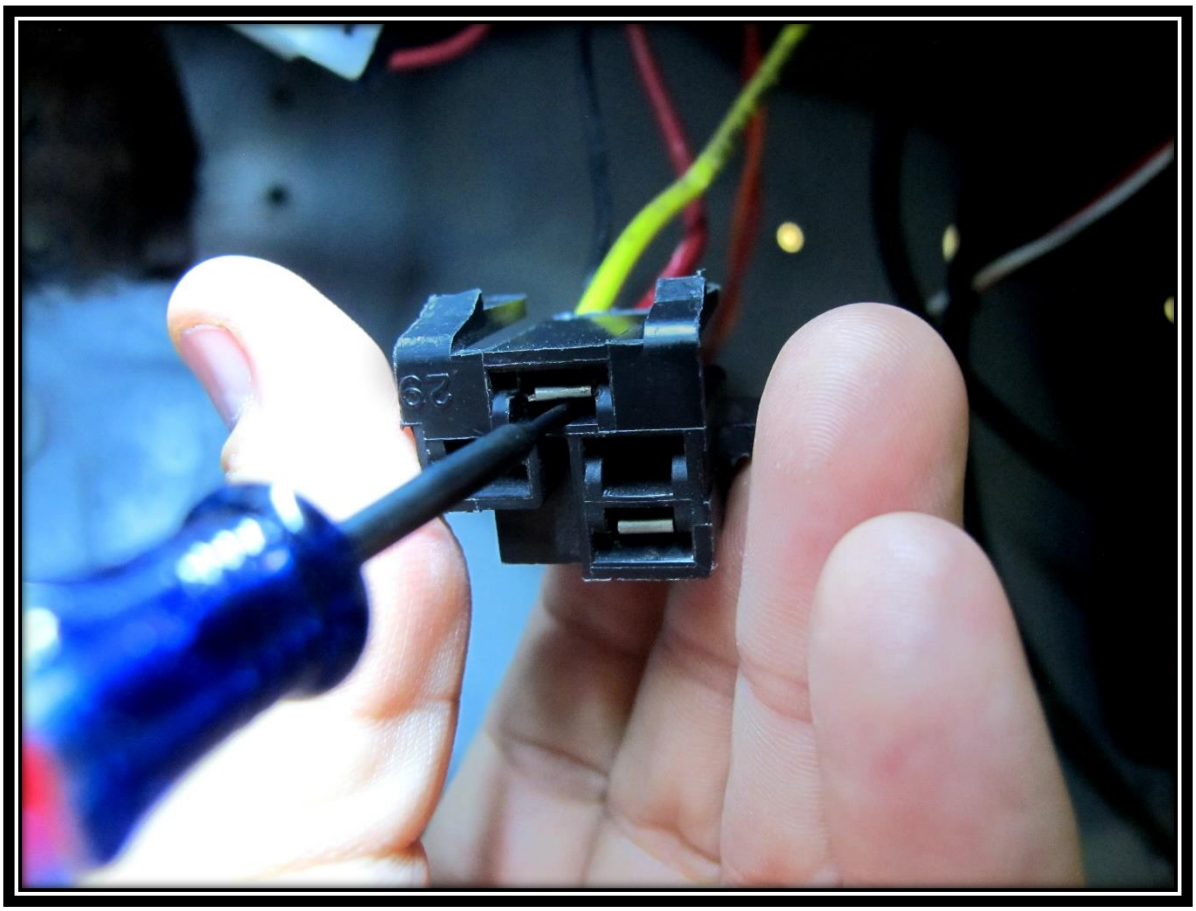


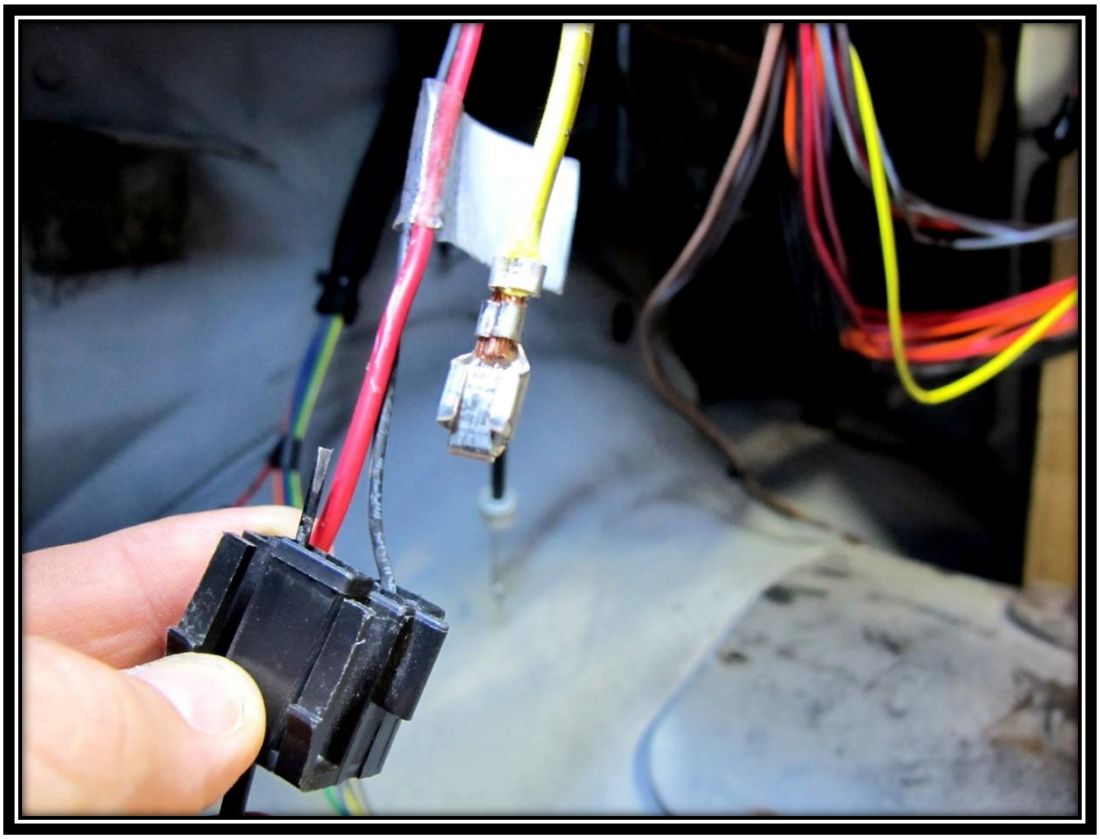
Step 48: Then, locate your vehicle's ignition switch on the steering column and the YELLOW, switched, ignition power wire. In this example the YELLOW wire, is plugged into the BLACK connector. These connectors may very between model years and package options.



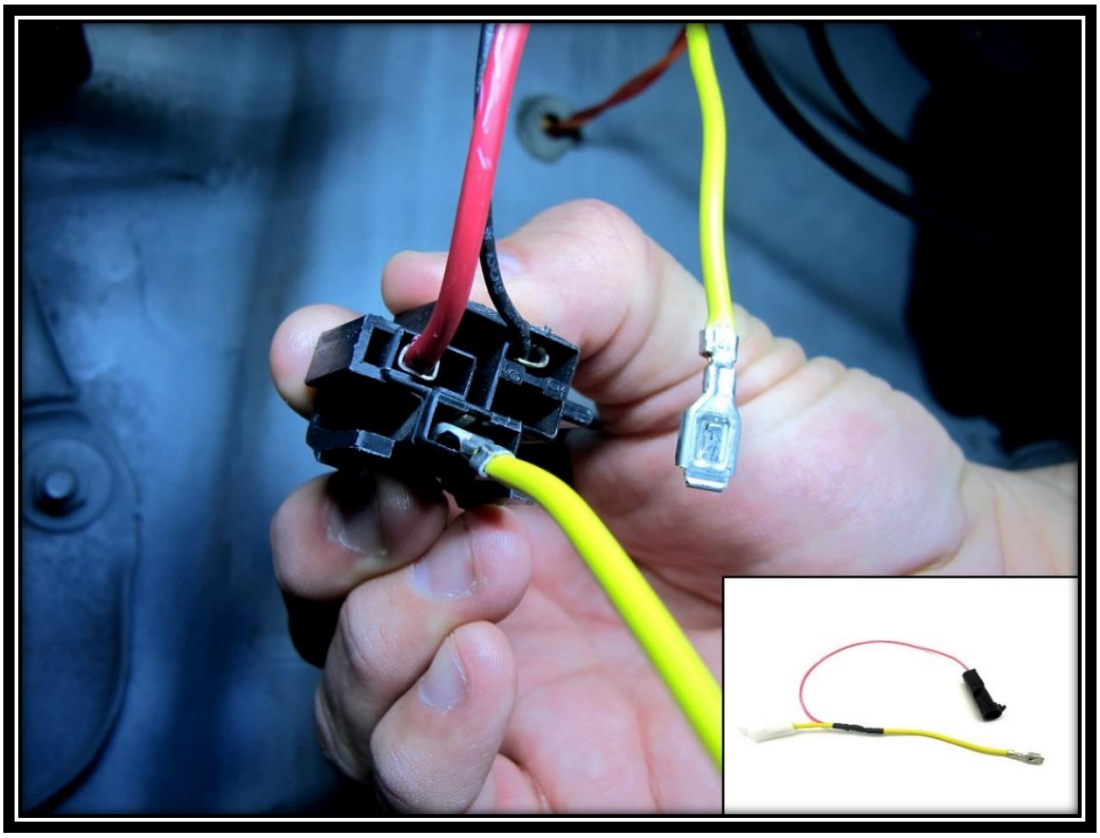


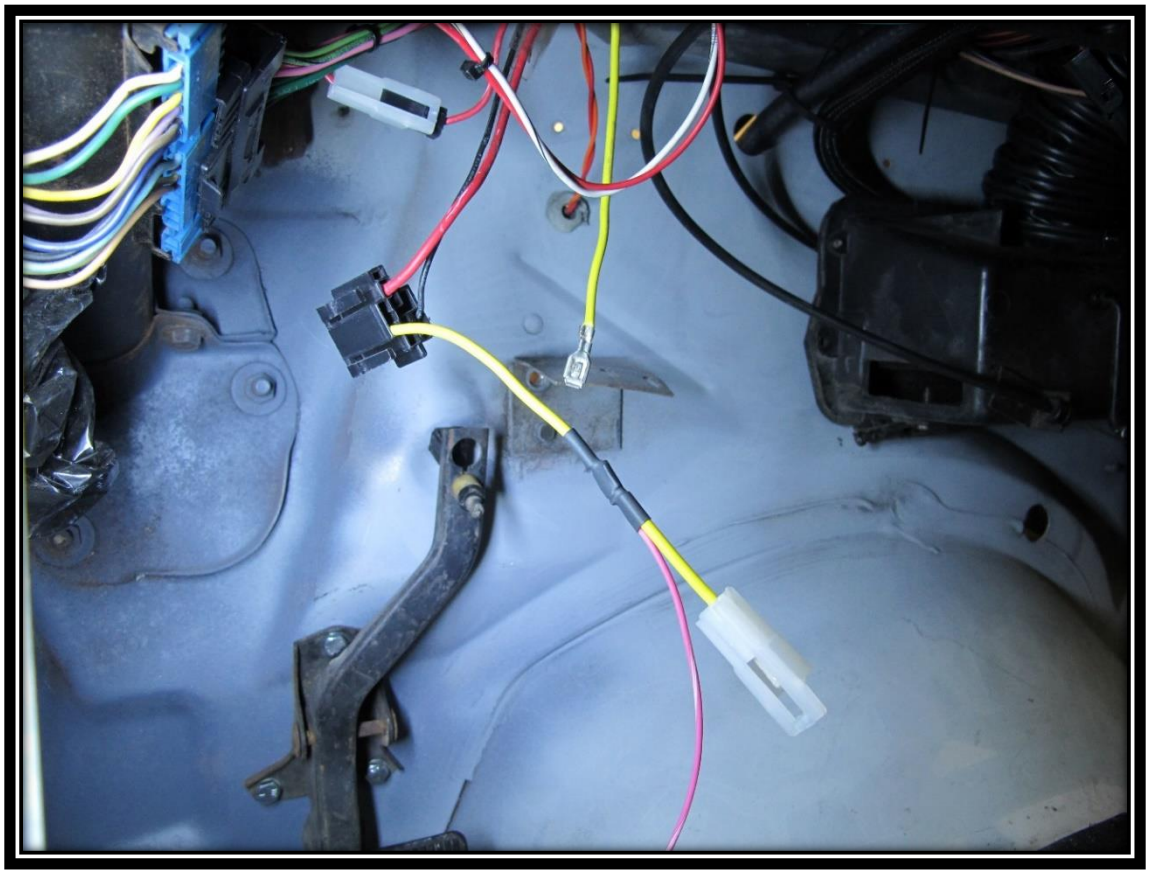
Step 49: Use a #0 "Jewelers," flat-head screwdriver to unplug the BLACK connector from the ignition switch and remove the terminal of the wire from the connector.



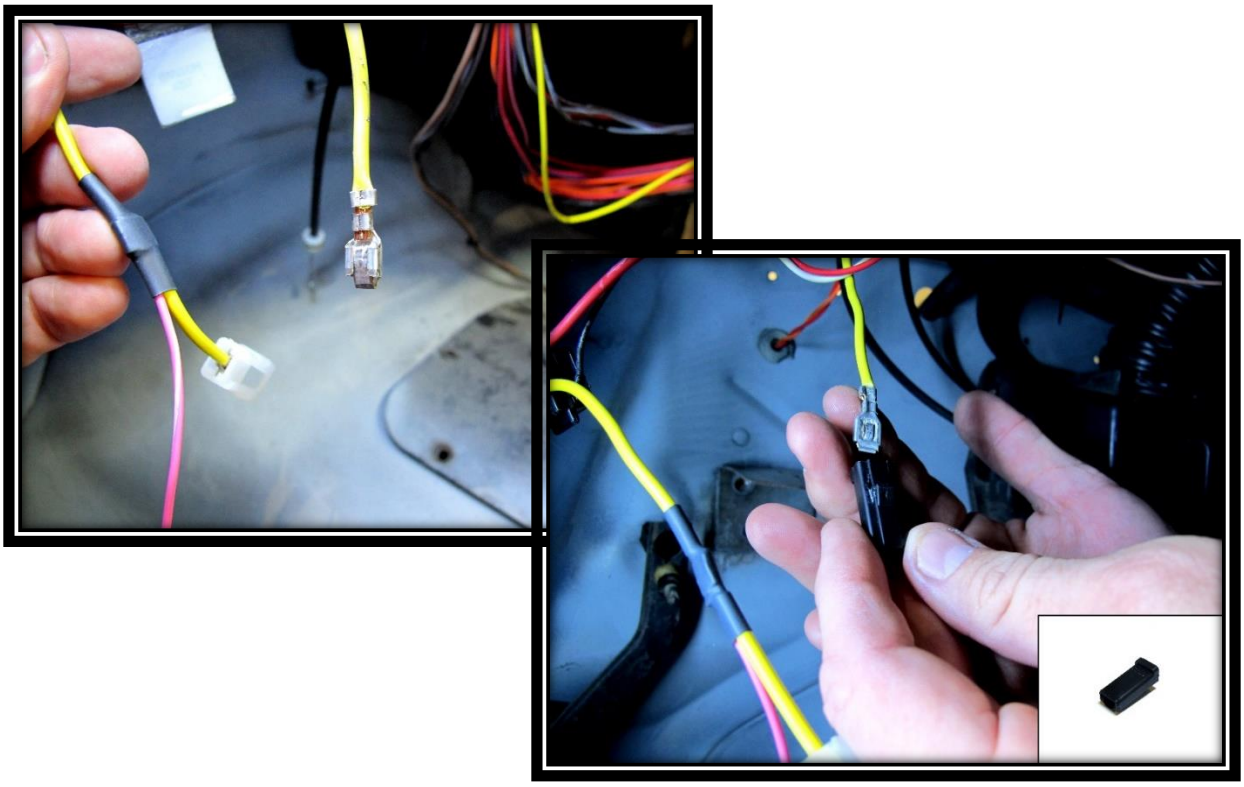


Step 50: Locate the ignition pigtail included in your kit. Insert the exposed terminal from the ignition pigtail into the slot on the factory connector that you removed the switched, ignition power wire from.

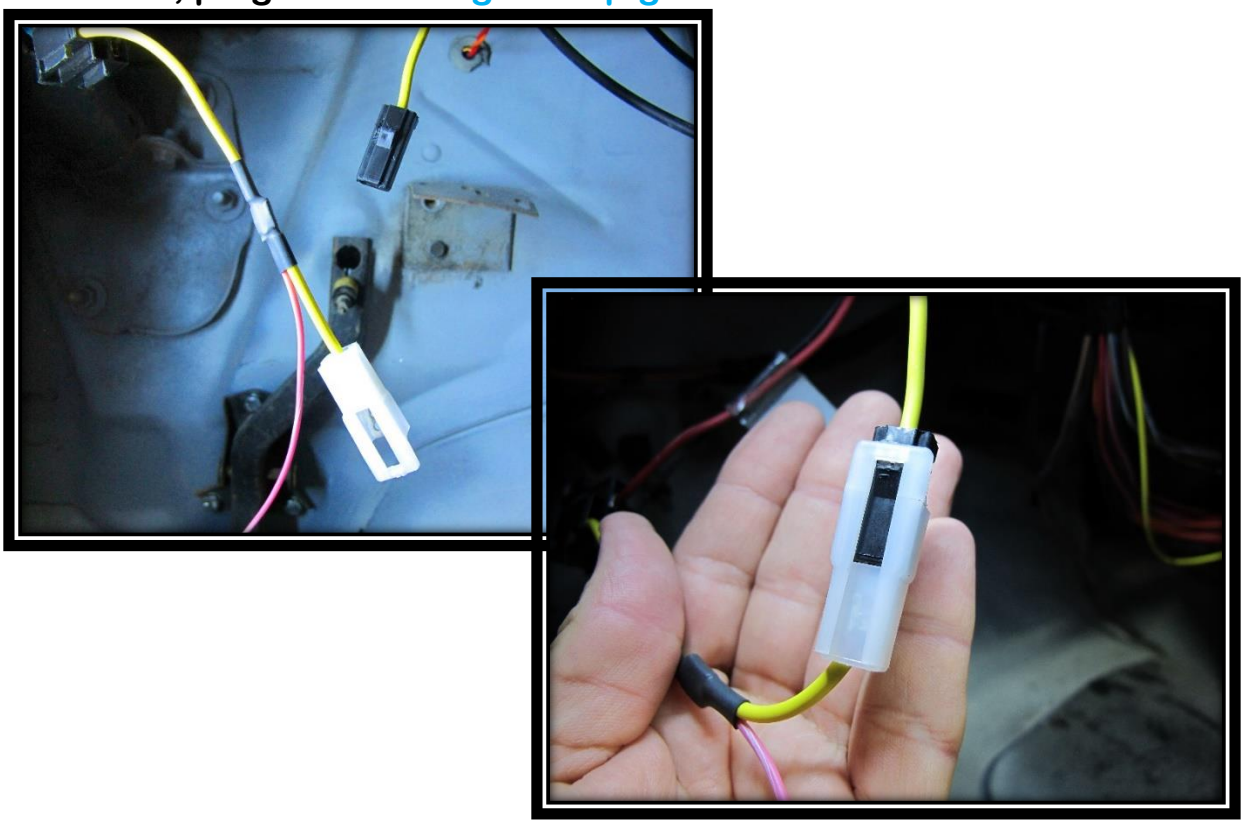




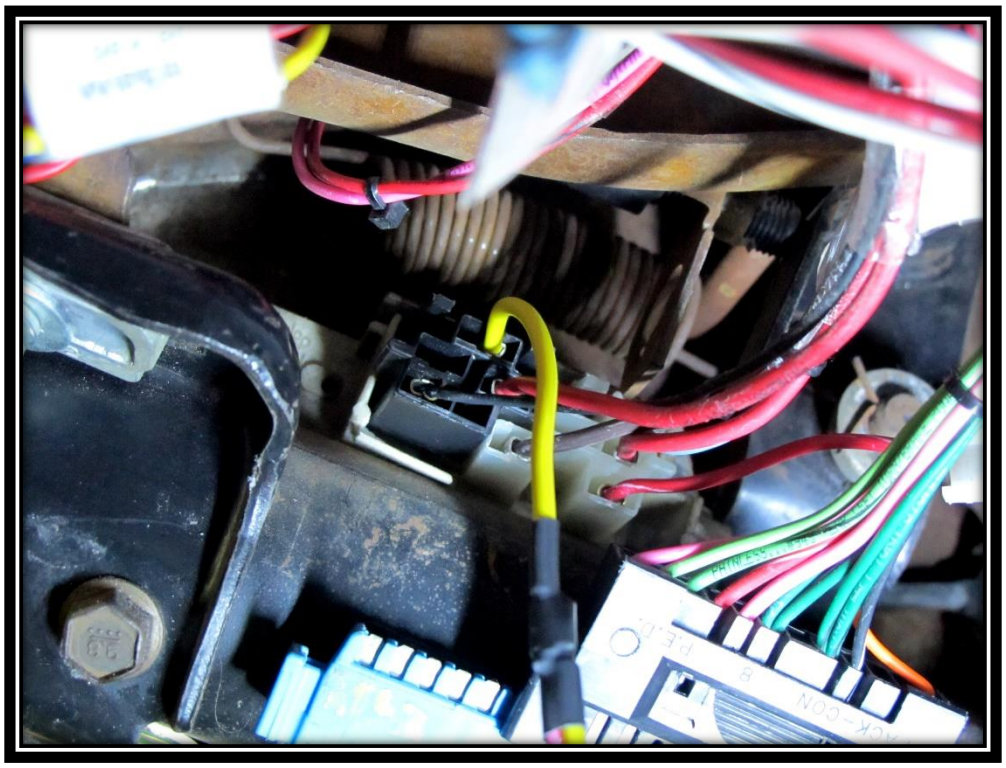
Step 51: Locate the switched, ignition power wire you removed from the factory connector in **Step 49**. Insert the terminal into the black, single-wire connector included in your **Trail Rocker Kit**.



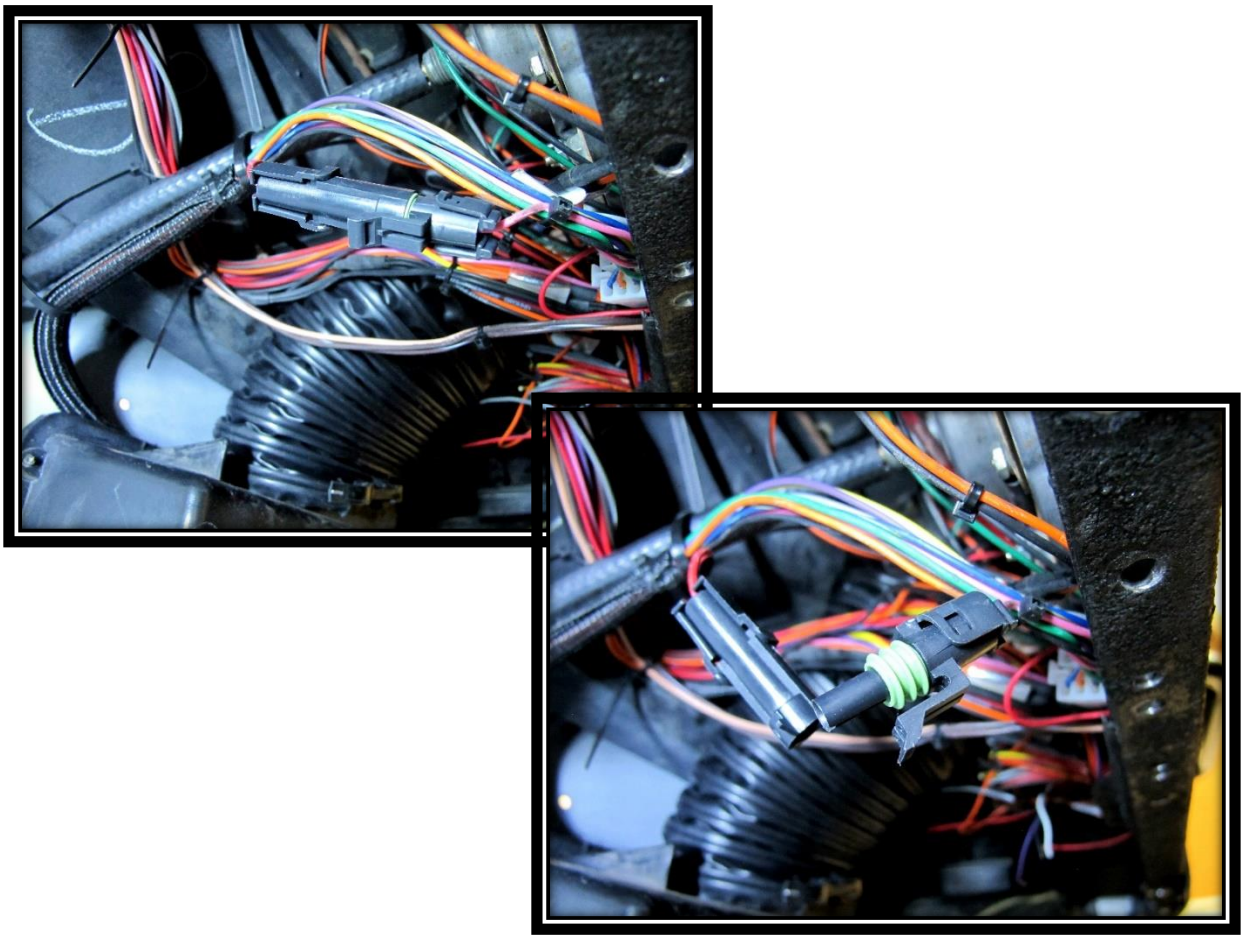
Step 52: With the connector installed on the switched, ignition power wire, plug it into the ignition pigtail.



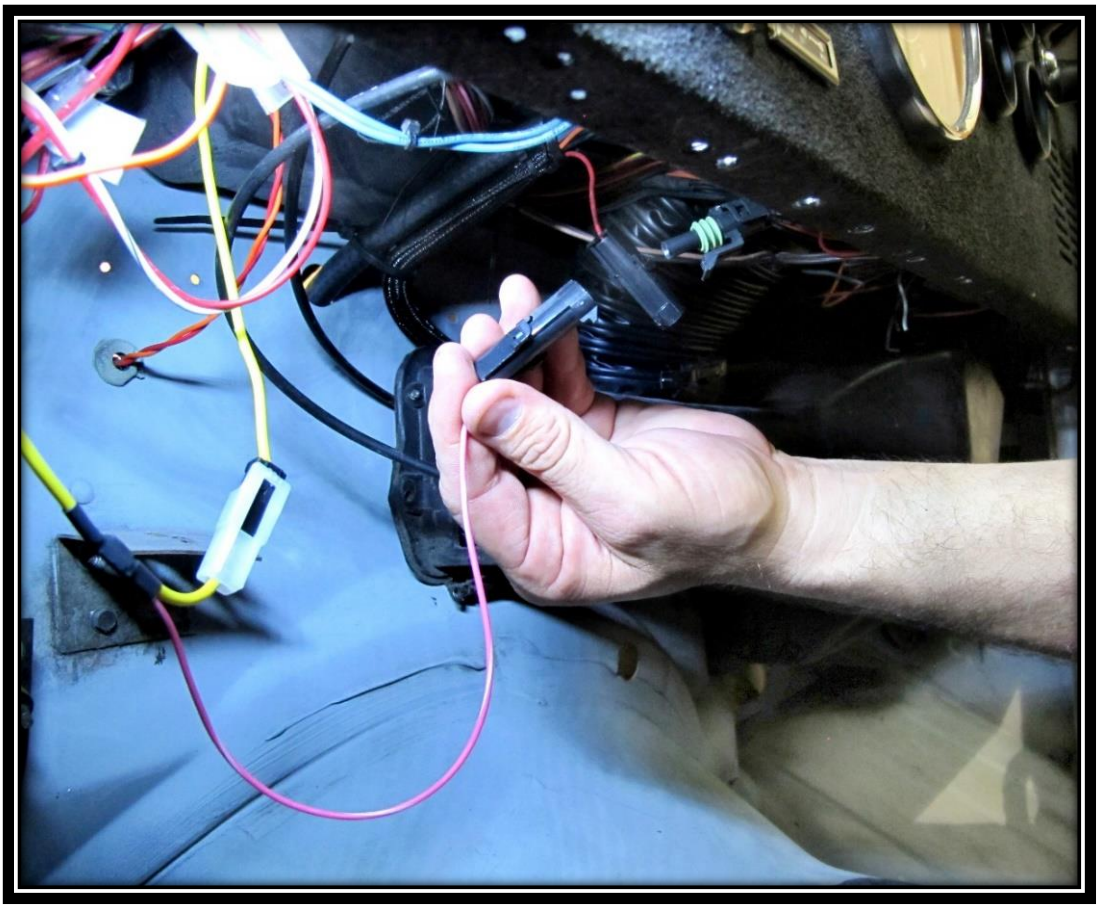
Step 53: Recouple the connector to the ignition switch.

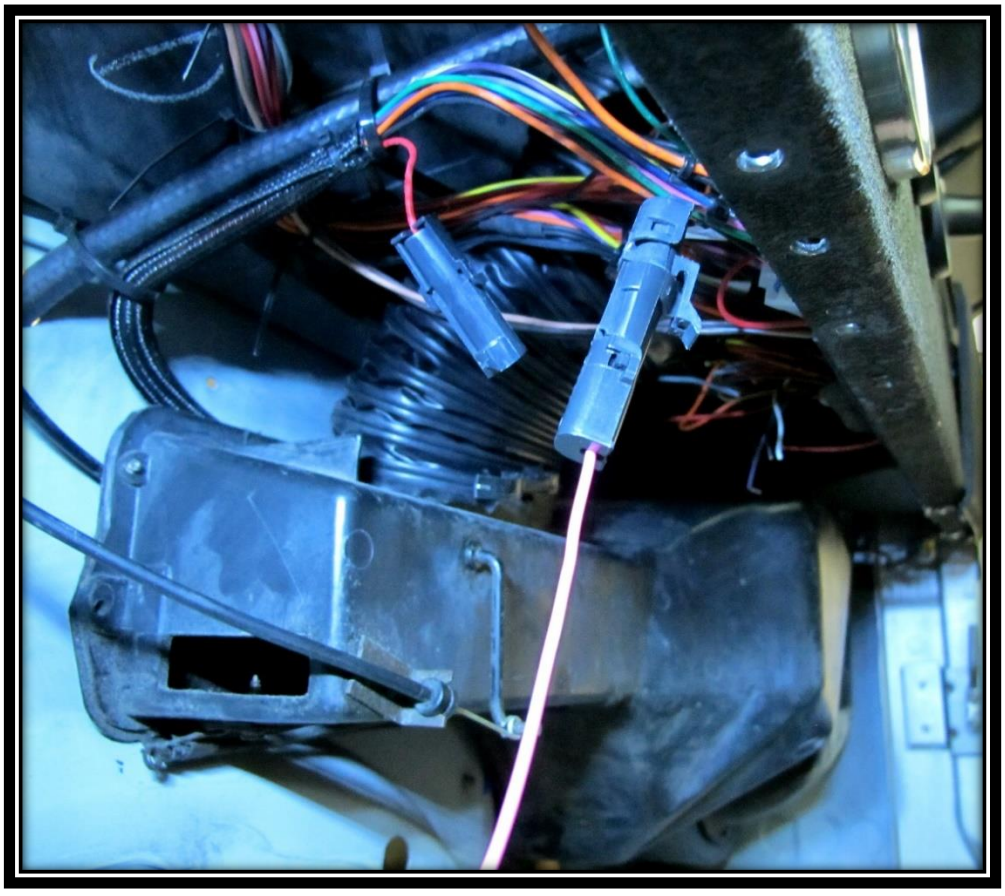


Step 54: Locate the weather-pack connector on the harness and remove the cap to expose the male connector.



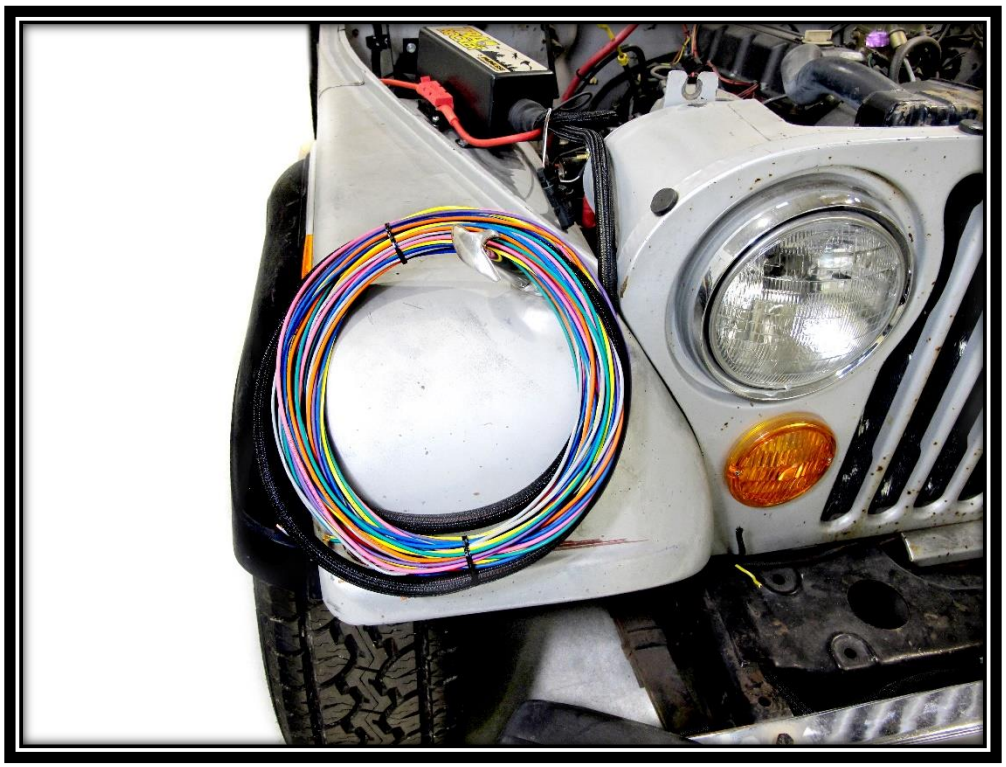
Step 55: Connect the pink wire from the ignition pigtail to the weather-pack connector, secure the wires up out of the way with a provided zip-tie. This completes the installation of your new **Trail Rocker Kit**.



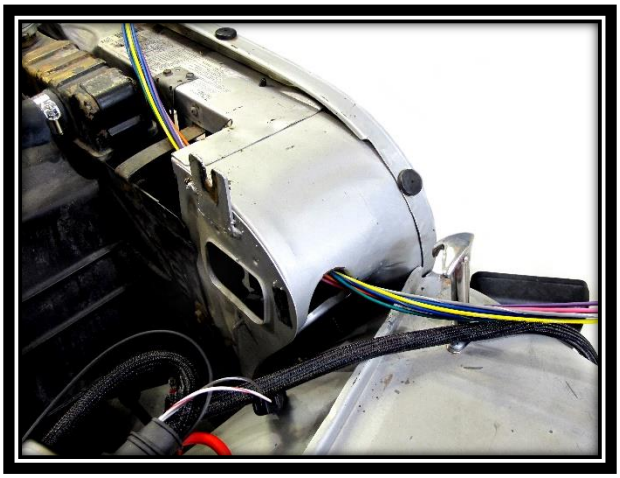


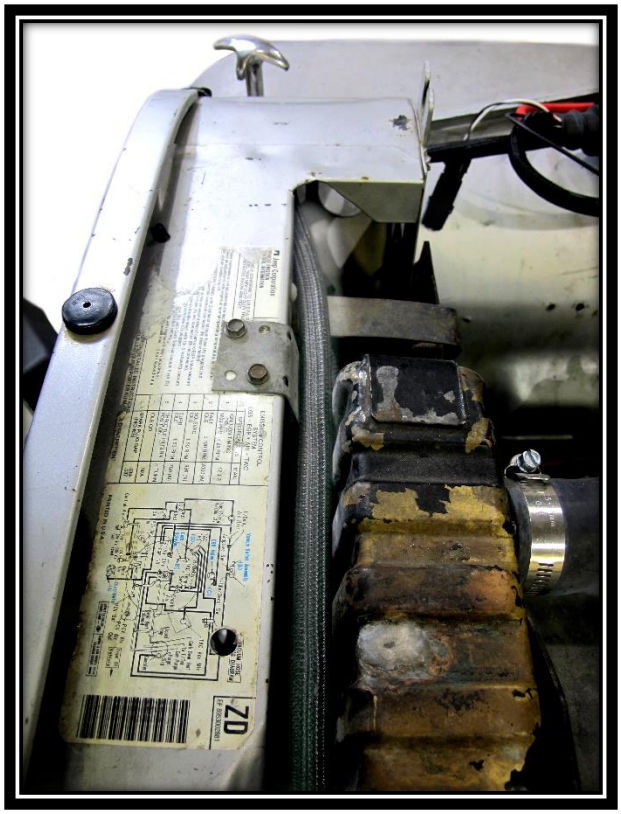
RELAY OUTPUT WIRES

Step 56: Locate the **Relay Output wires.**

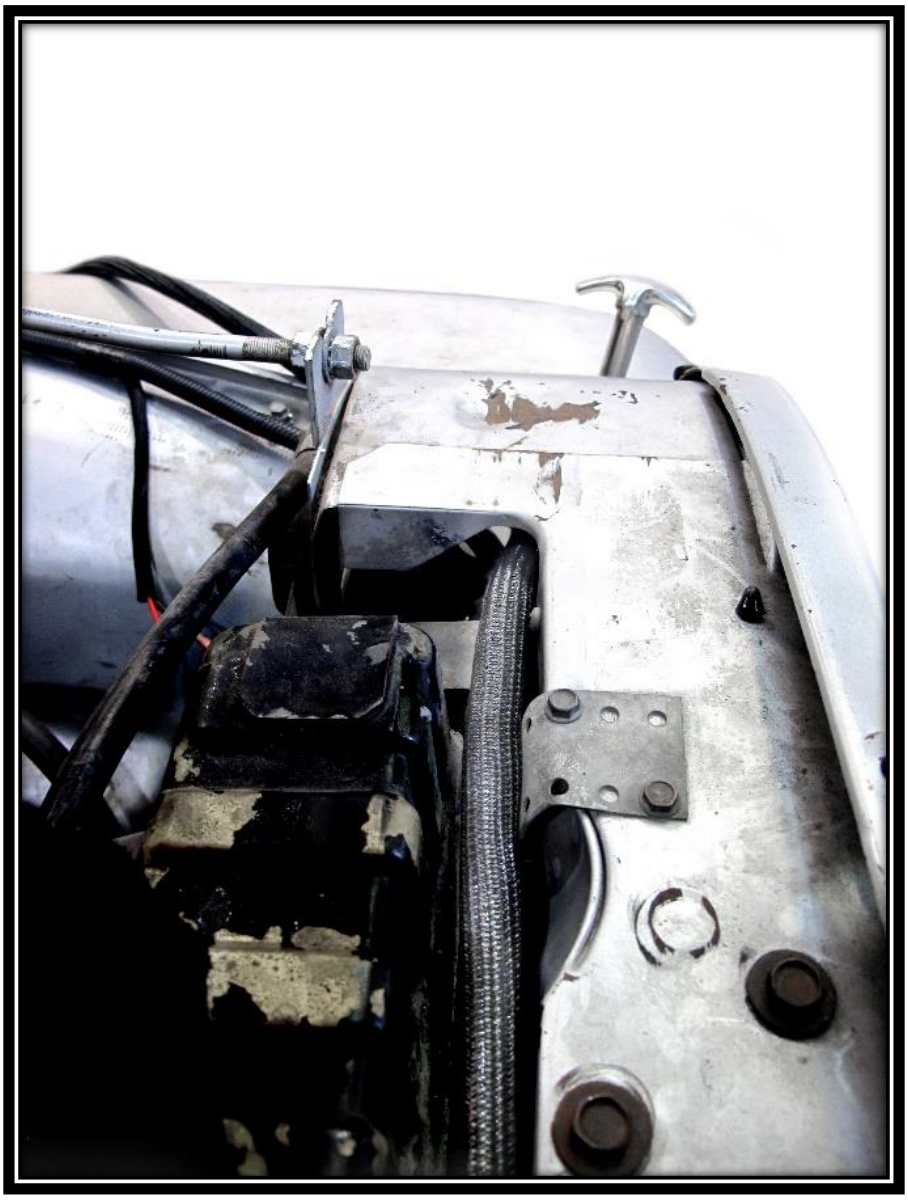


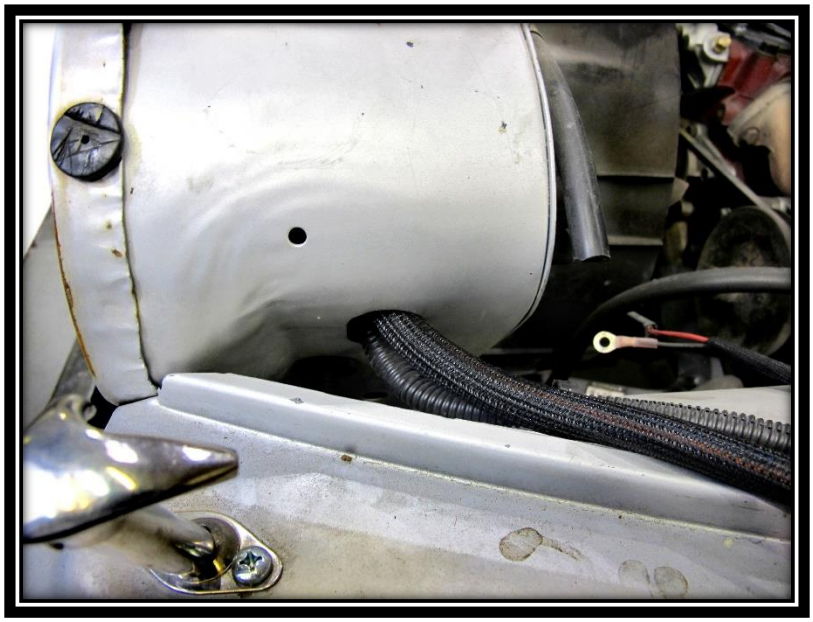
Step 57: Rout the **Relay Output wires** through the grill and in front of the radiator.



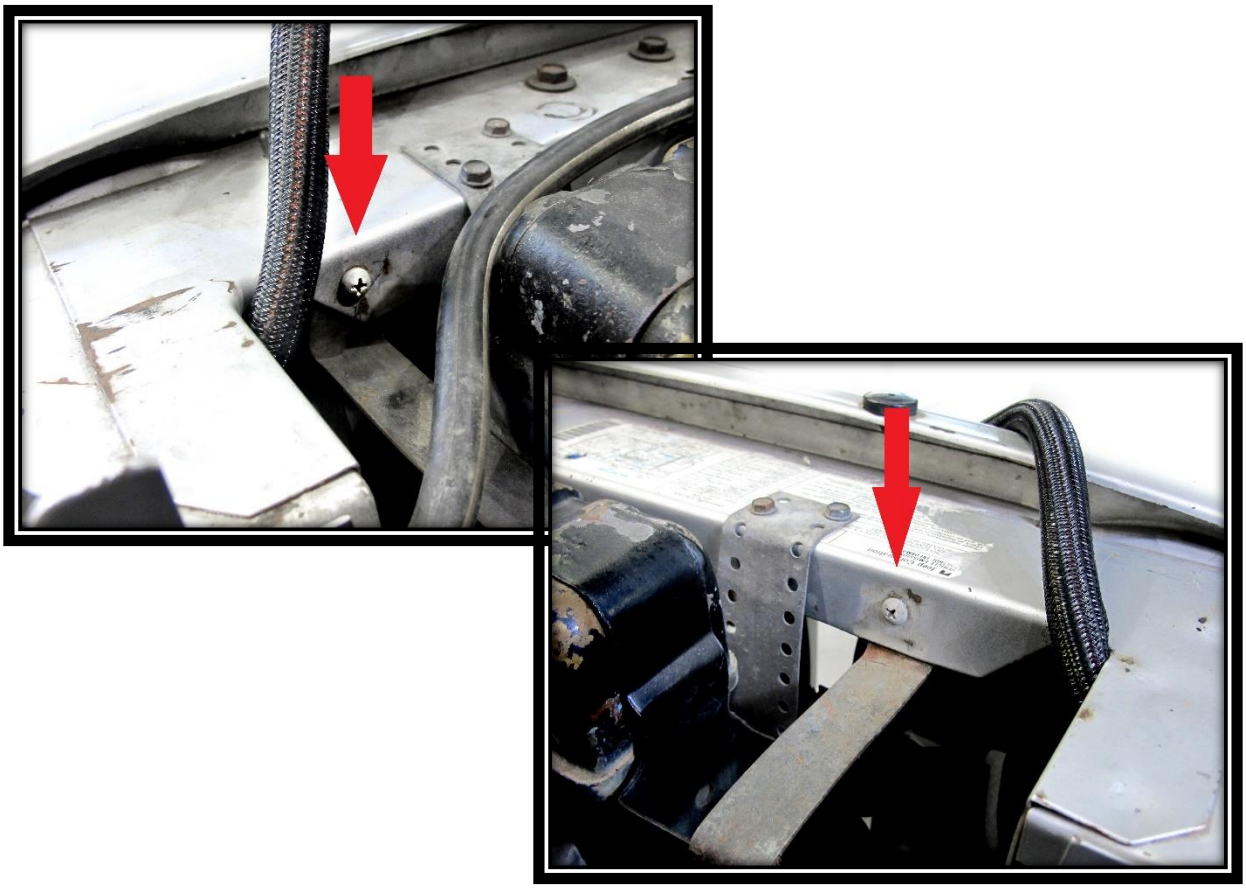


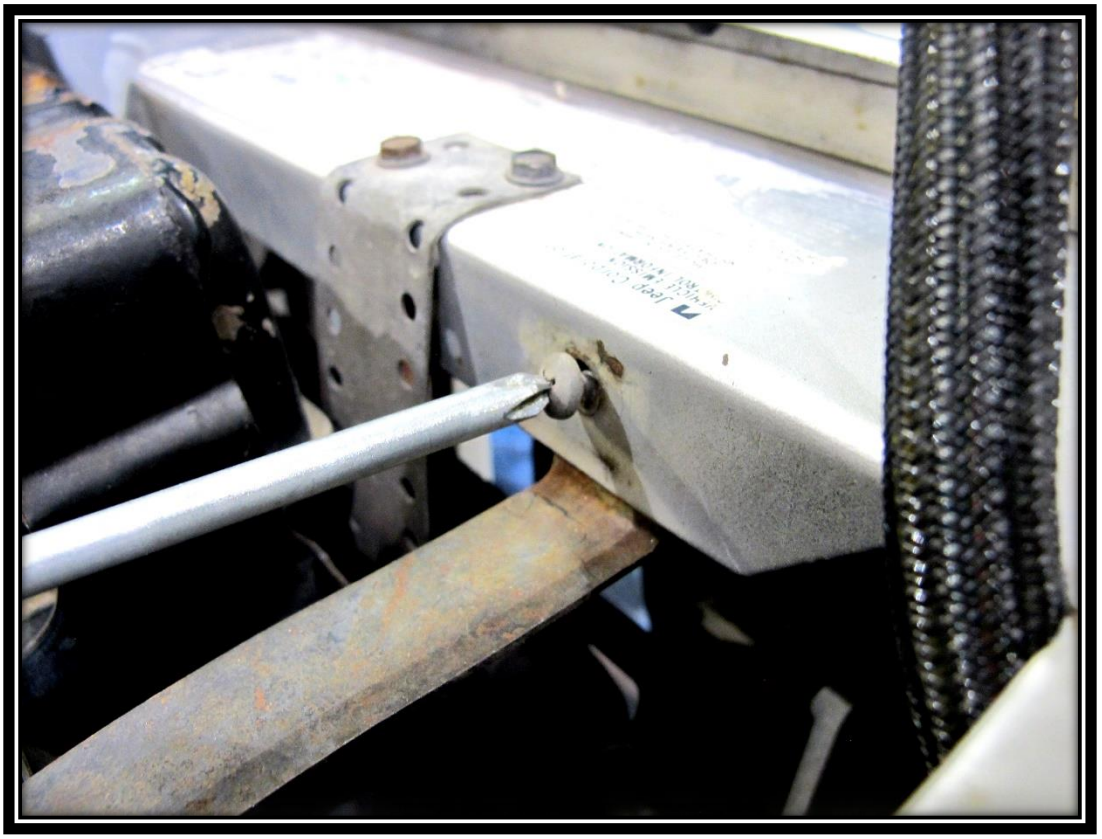
Step 58: Continue to run the **Relay Output wires** along the radiator and through the other side of the grill.



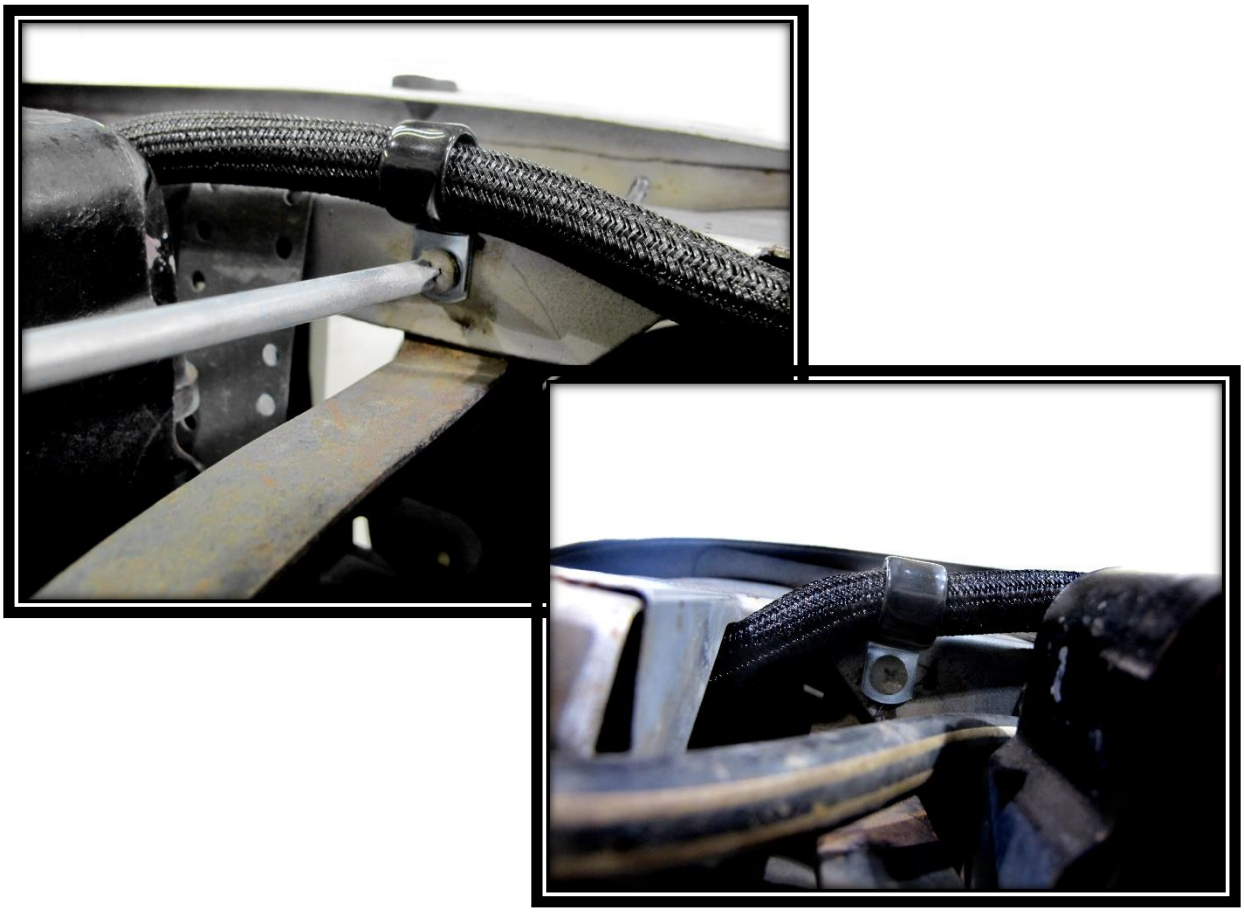


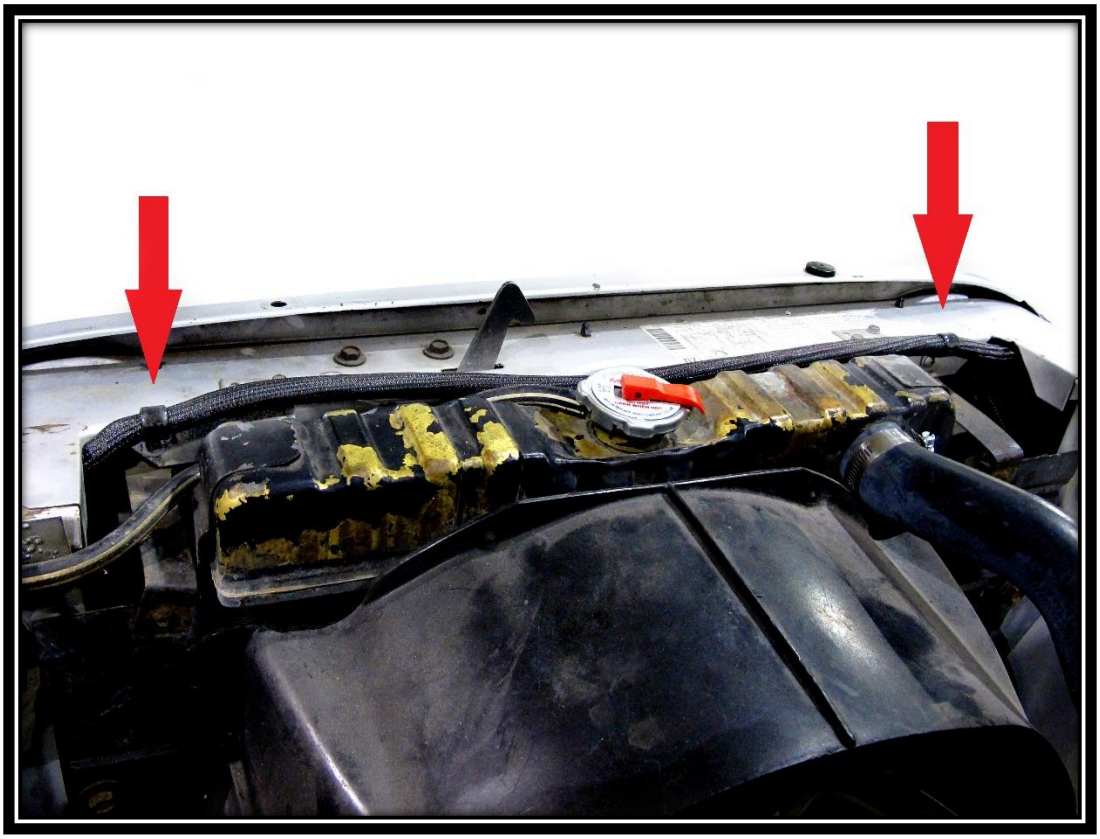
Step 59: Locate the 2 support brackets running from the grill to the fan shroud and remove the screws attaching them to the grill.



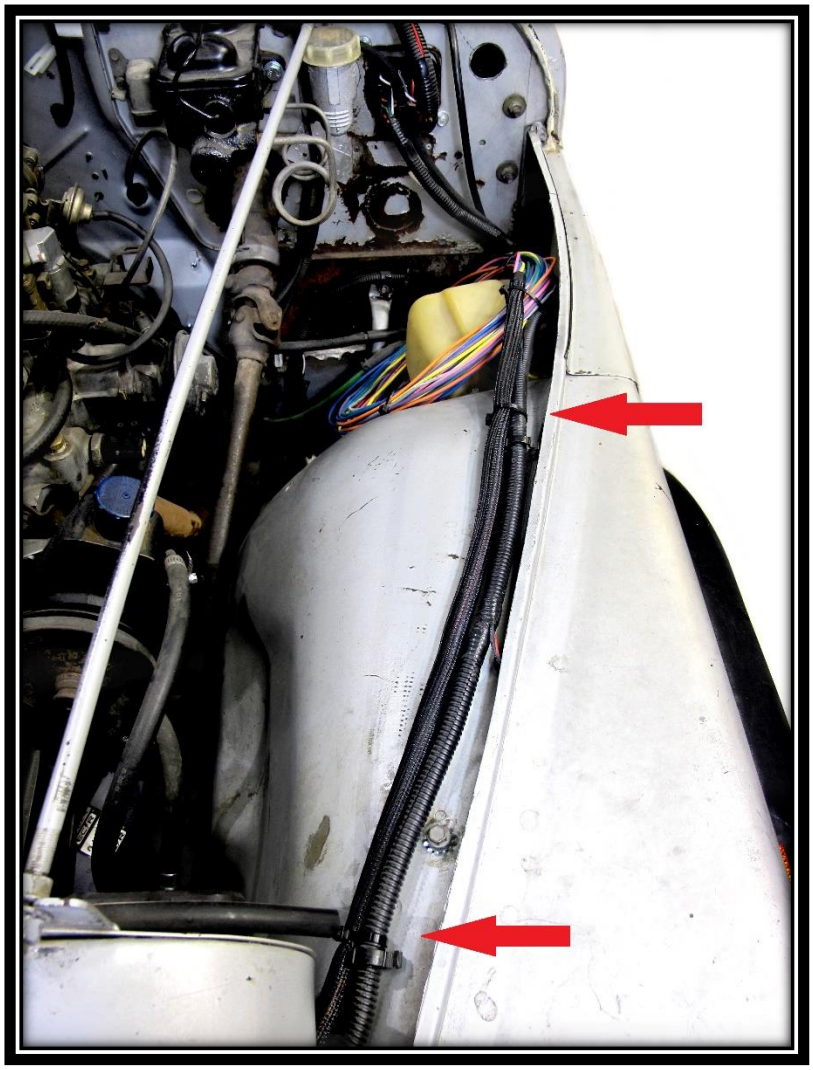


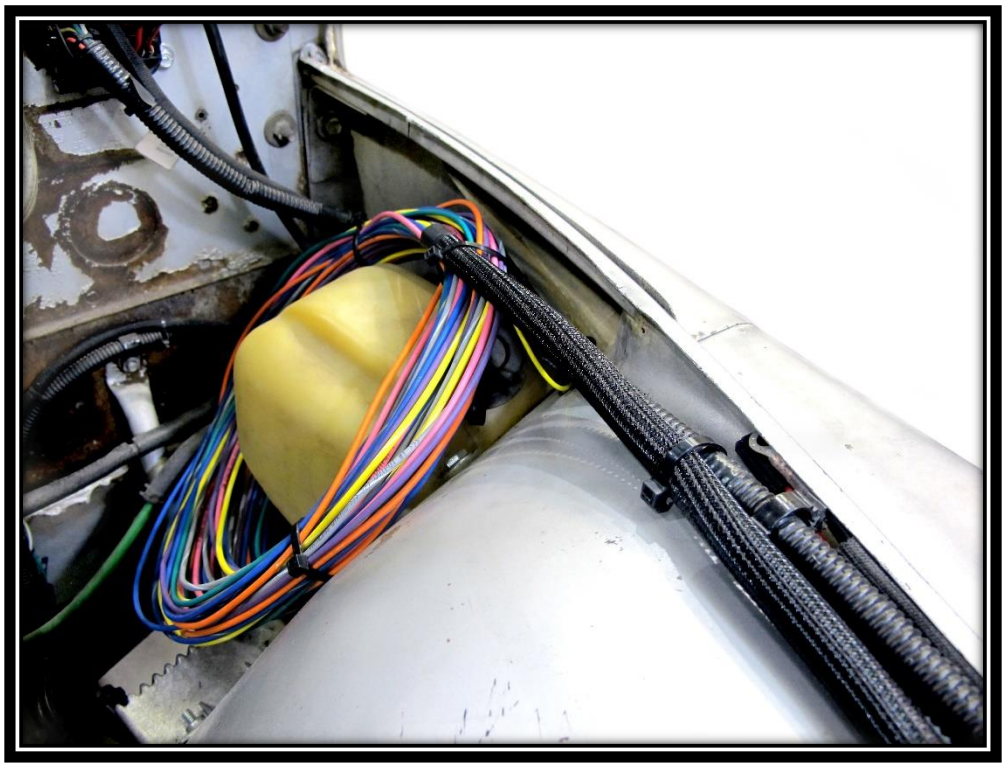
Step 60: Locate (2) ¾" Adel clamps from the included parts kit. Slide the clamps over the **Relay Output wires** and attach them to the grill using the screws you removed in the previous step.

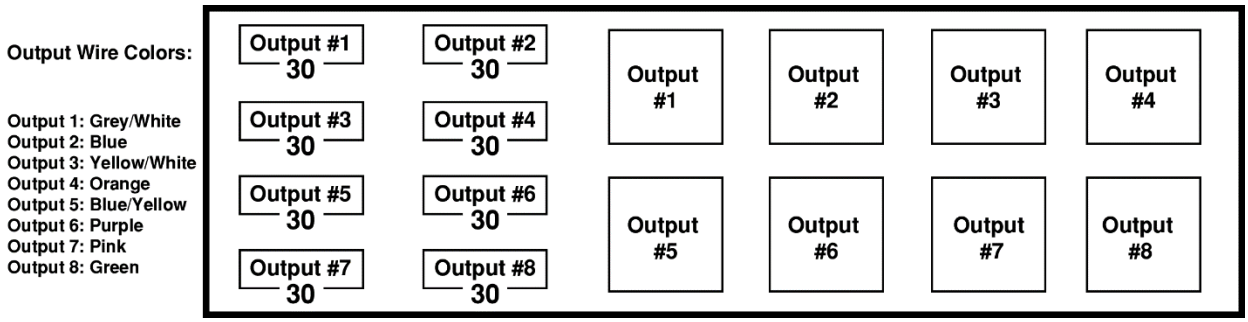




Step 61: Route the remainder of the bundle back toward the firewall, and zip-tie it to the factory wiring. Then, zip-tie and stow away any unused wires as neatly as possible.







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 arcing. Make sure any accessories and/or components you install are properly grounded.

See **Steps 62 - 65** starting on page 52 for a common example on connecting the **Relay Output wires** to most accessories.

Relay Output Wire Color Diagram:

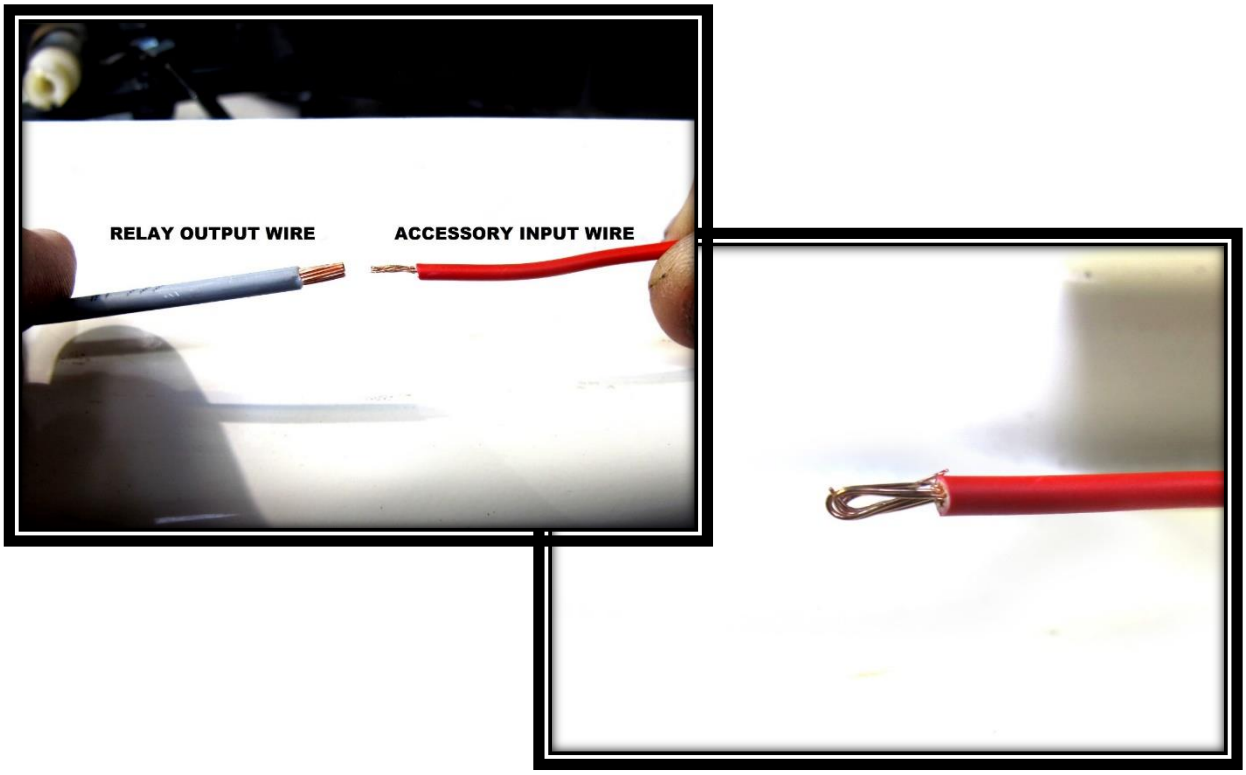
- Switch #1: Grey/White
- Switch #2: Blue
- Switch #3: Yellow/White
- Switch #4: Orange
- Switch #5: Blue/Yellow
- Switch #6: Purple
- Switch #7: Pink
- Switch #8: Green

Winch Control wires:

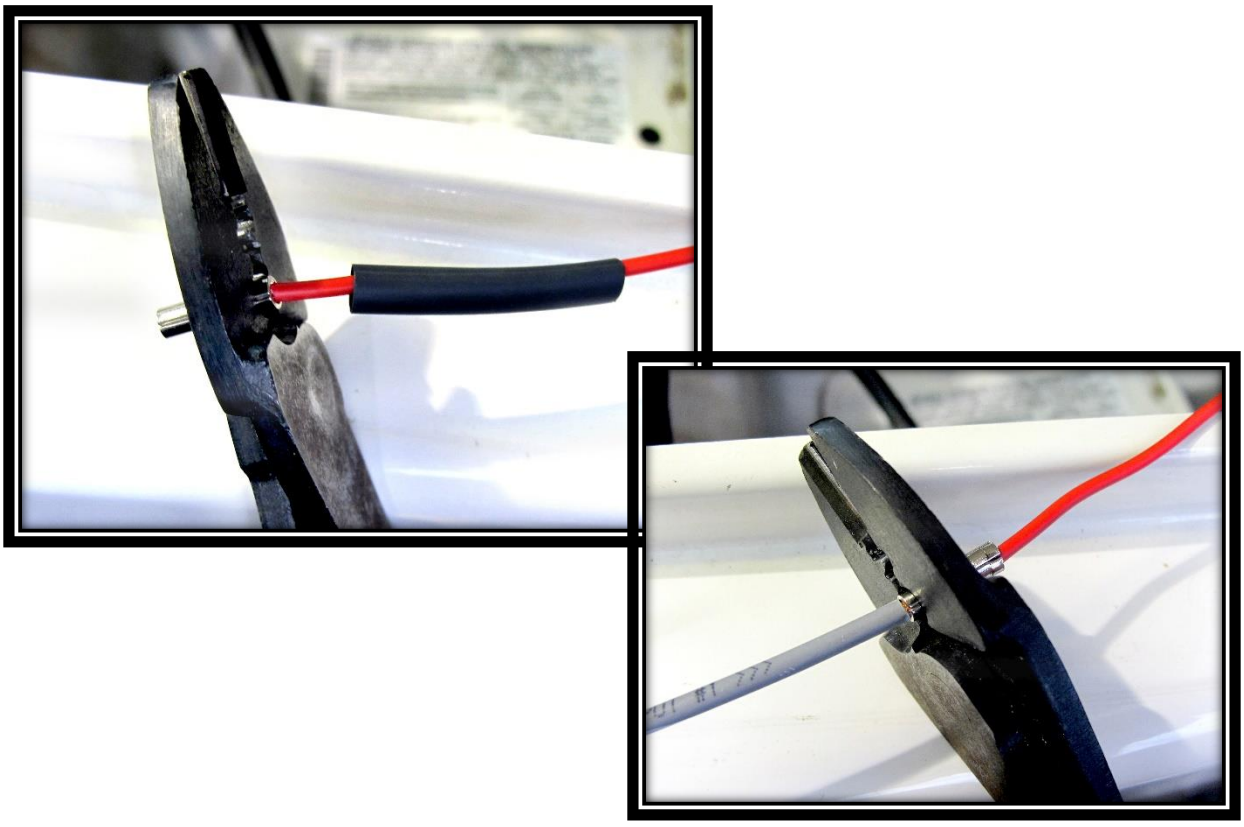
- Winch Control In: White/Red
- Winch Control Out: Brown/White

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 **Steps 43 - 46** for a step-by-step tutorial on achieving this. For winch switch installation, see page 54.

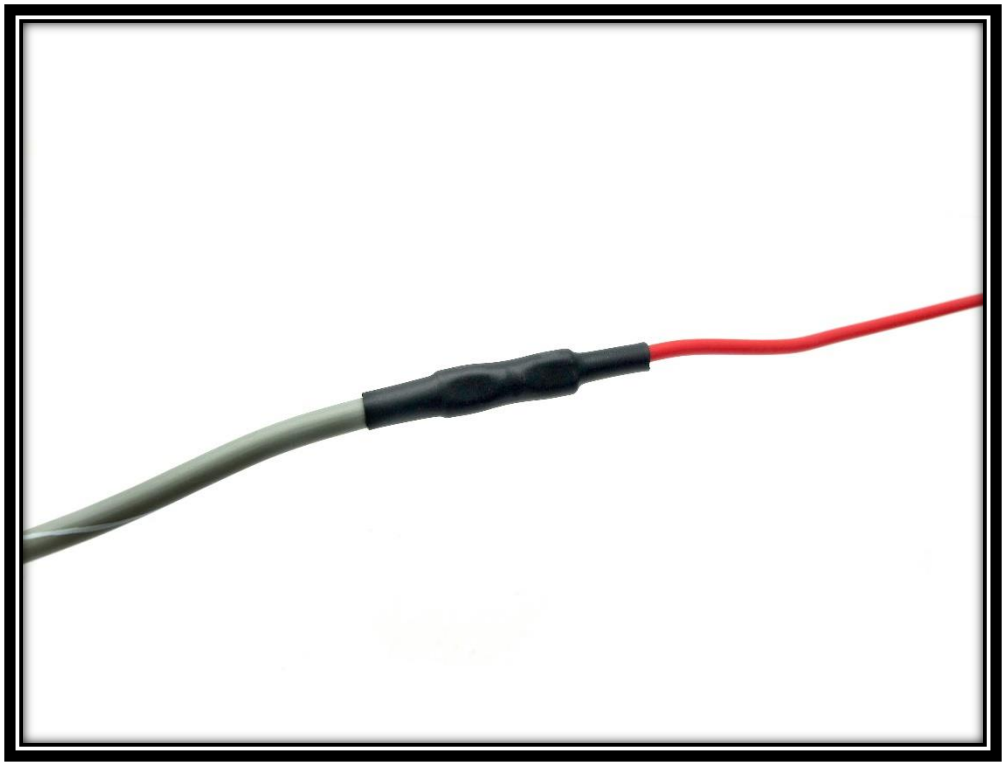
Step 62: Locate the **Relay Output wire** you wish to use. Then, locate the **input wire** on the accessory you are installing. Double up the accessory's **input wire** if necessary.



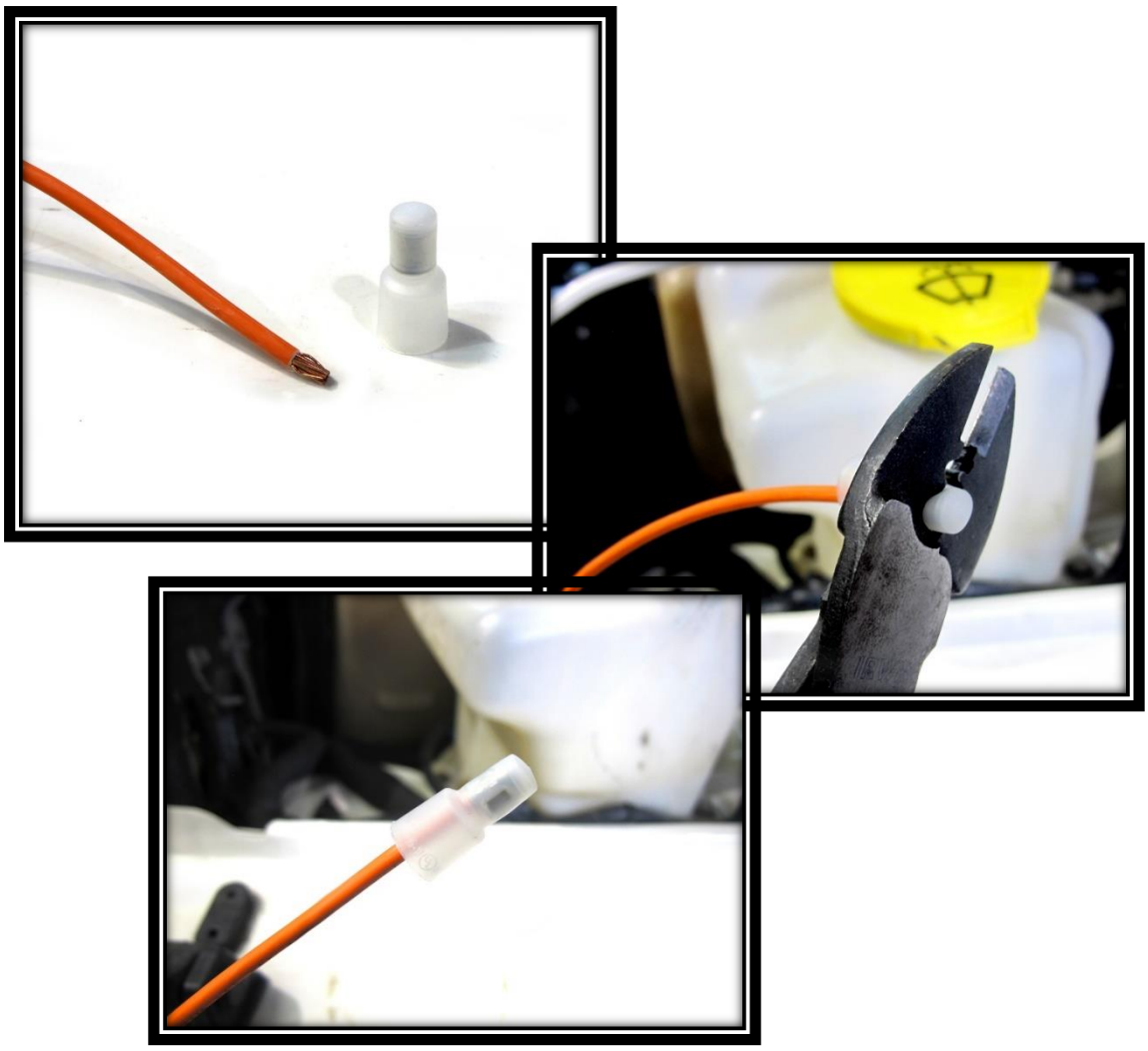
Step 63: Slide a piece of heat shrink from the included part kit over the **accessory wire**. Then, use an un-insulated butt connector to crimp together the accessory wire with the **Relay Output wire**.



Step 64: Secure the heat shrink over the connection.

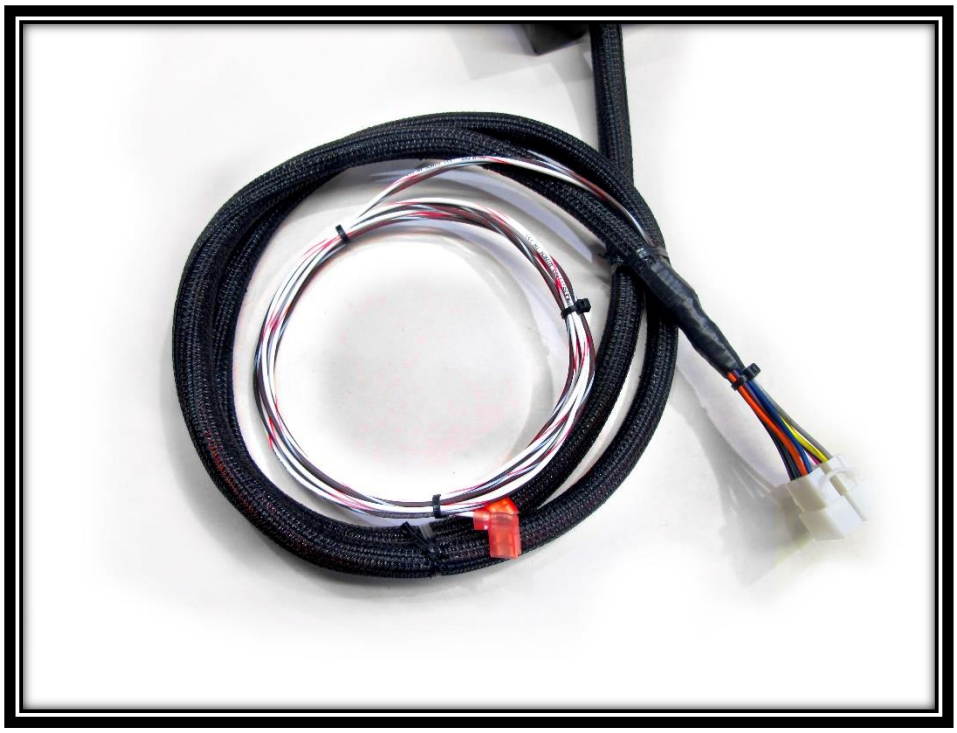


Step 65: Cap all unused **Relay Output wires** by crimping on the provided insulated wire caps. Then store the extra wires out of the way in the most convenient way possible.



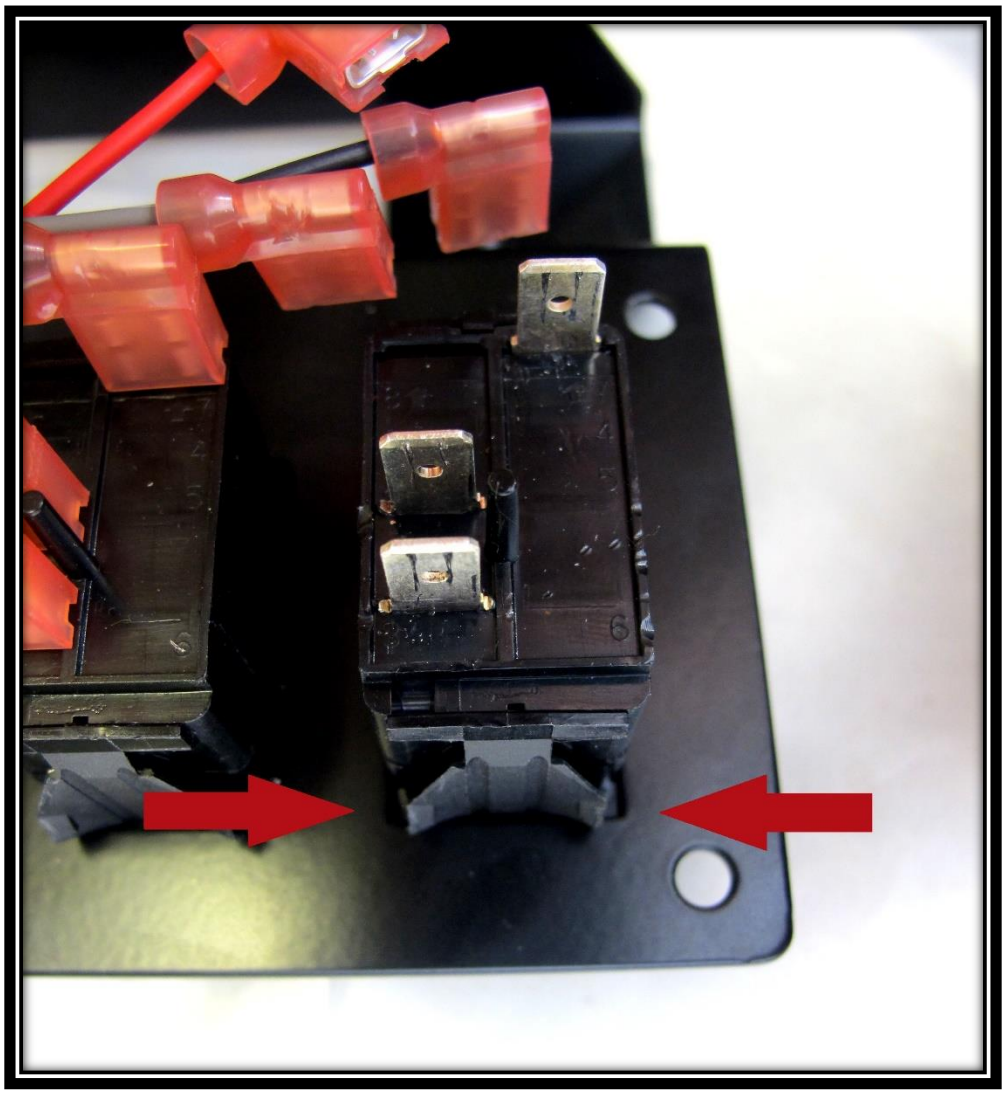
OPTIONAL: PAINLESS PART#: 57150 - WINCH CONTROL ADD-ON KIT

As part of your **Switch Panel wiring harness**, there are 2 optional winch control wires: a WHITE/RED (IN) and a BROWN/WHITE (OUT). These wires control the in and out functions of a winch when it is installed.

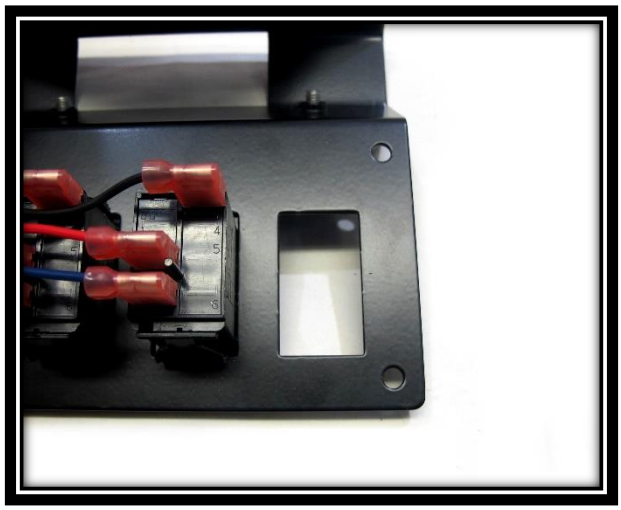


These control wires can be connected to a winch switch (not provided in the kit). If you do not have a winch switch, Painless offers a **Winch Control Add-on Kit** (Painless Part #: 57150, available online at **www.painlessperformance.com**). **Steps 66-70** show you how to install a **Winch Control Add-on Kit** to your **Trail Rocker Switch Panel** and connect the control wires to the switch.

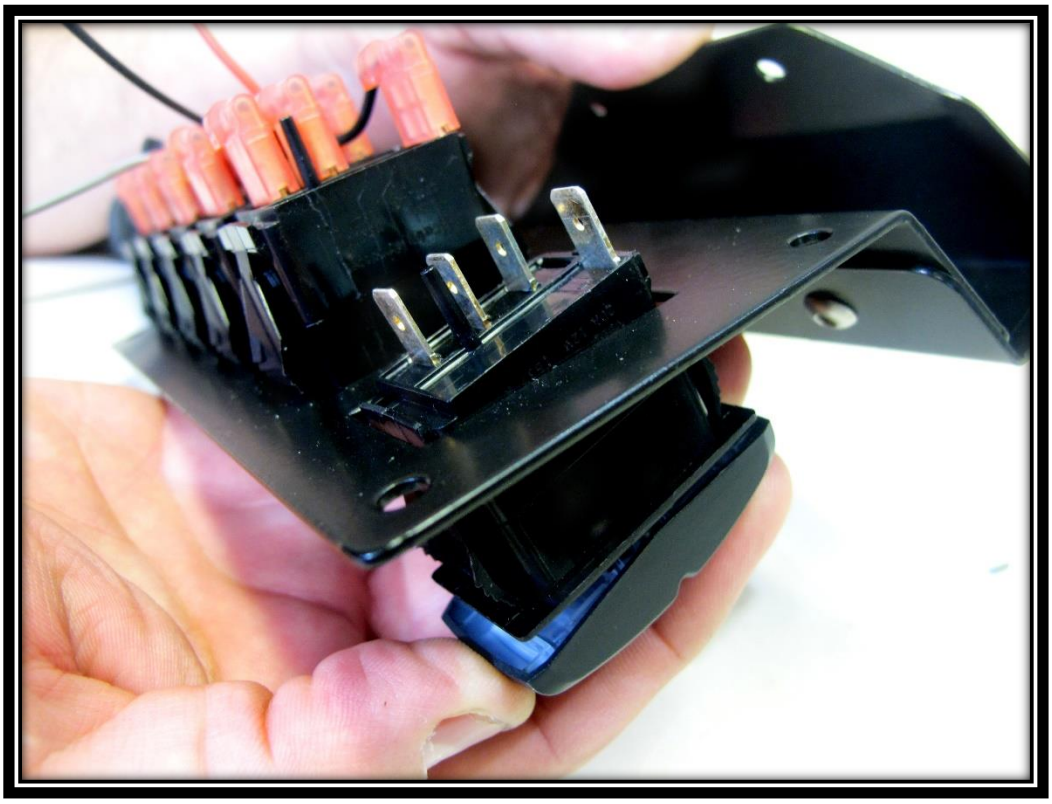
Step 66: Remove the **switch panel**, **power**, and **ground wires** from the switch you are replacing with the **Winch Control Add-on Kit**. Then, locate the tabs located at the top and bottom of the switch.



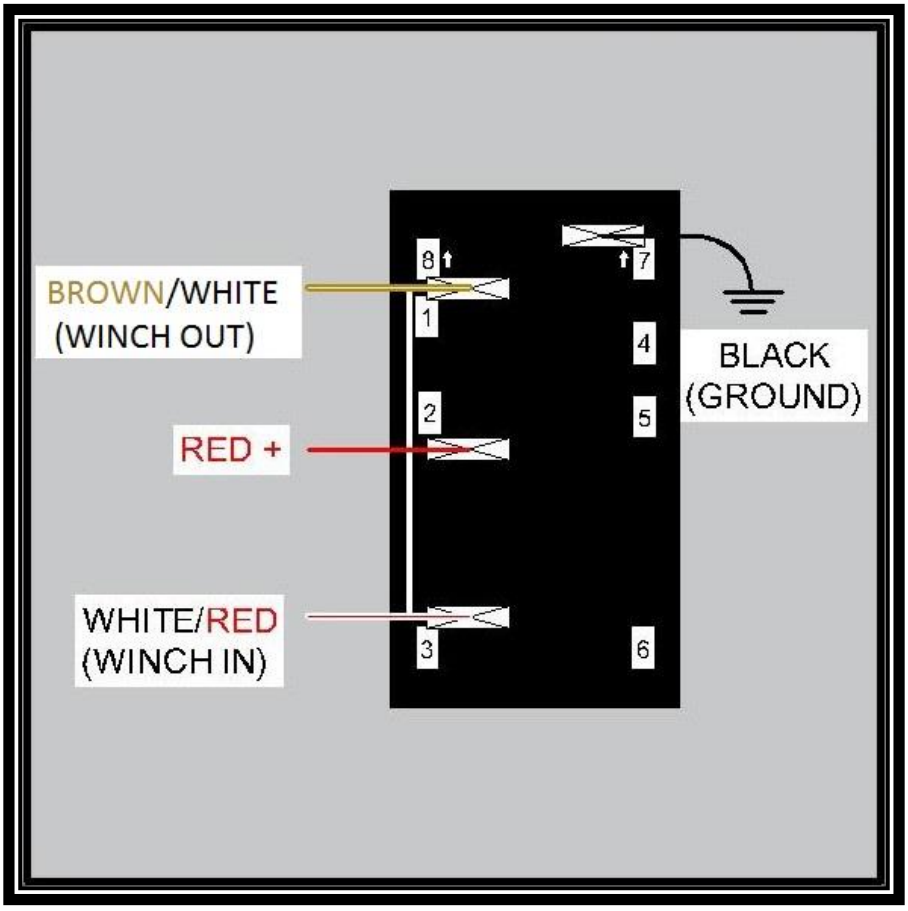
Step 67: These tabs lock the switch in place. To remove the switch, squeeze the tabs in and slide it out of the bracket.



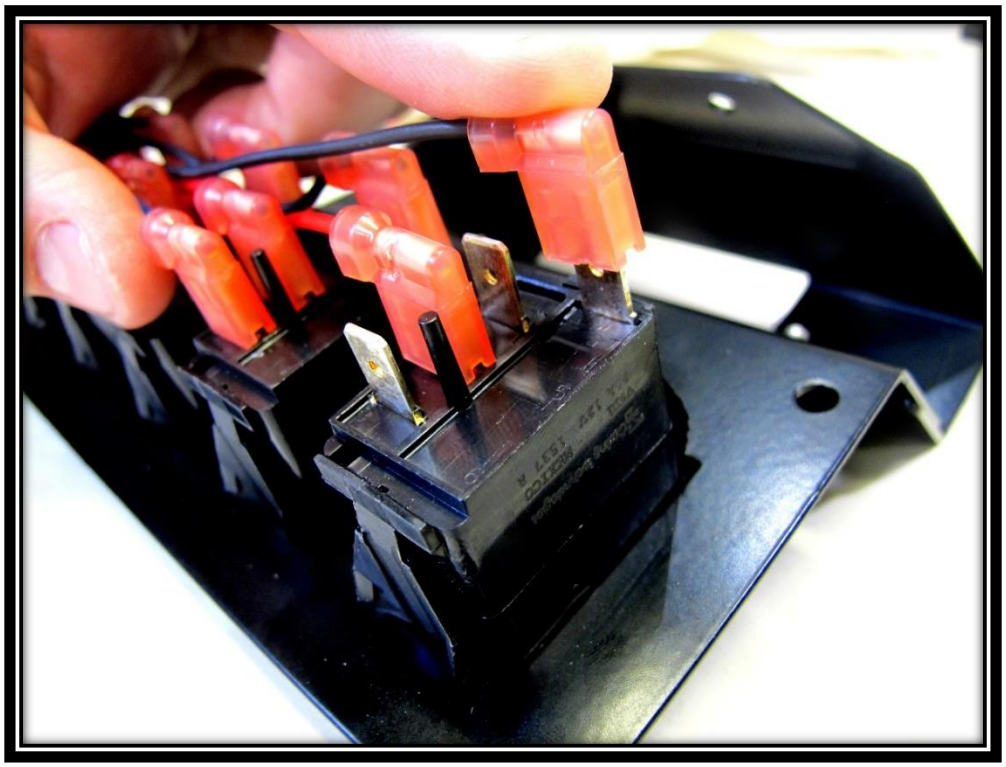
Step 68: Insert the **Winch Control Add-on Kit** into the empty socket of the bracket.

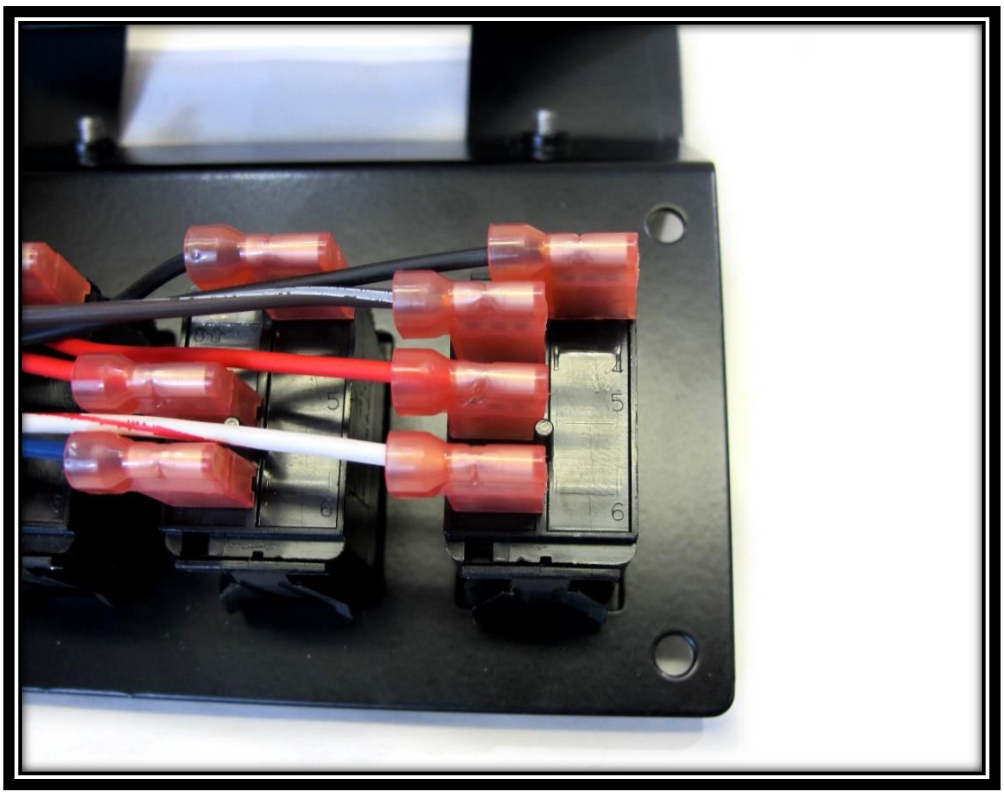


Step 69: Before connecting the wires to the **Winch Control Add-on Kit**, take time to familiarize yourself with the wiring diagram below.



Step 70: Reconnect the **power**, **ground**, and **Switch Panel wires** to the **Winch Control Add-on Kit** as seen below.

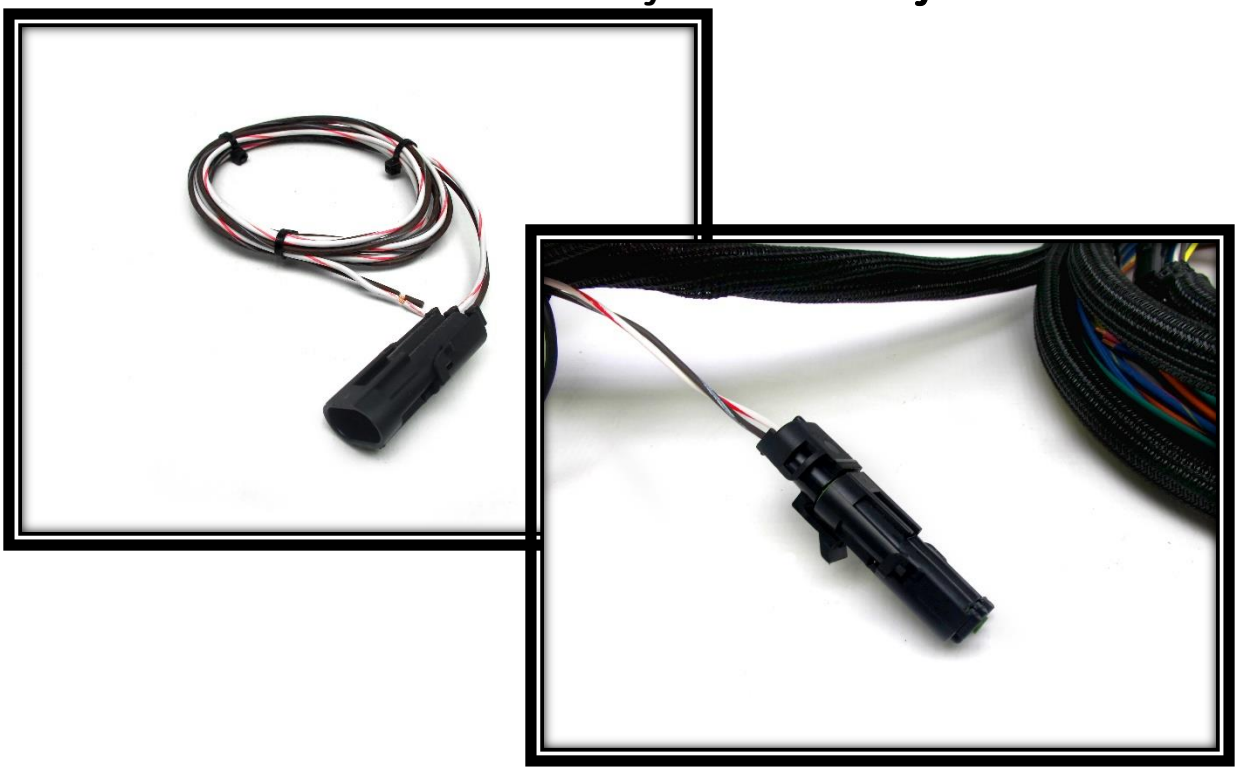




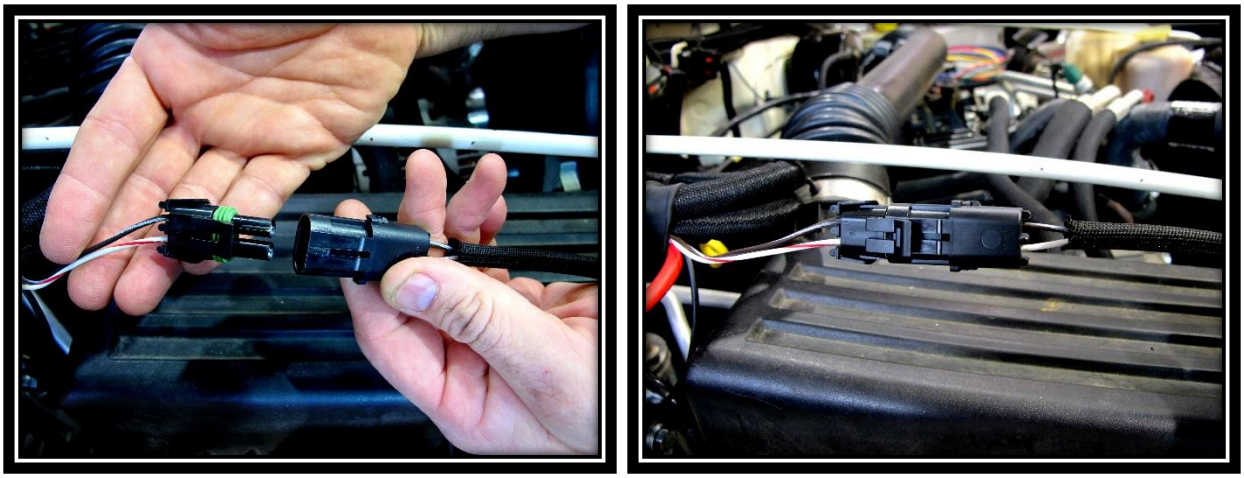
OPTIONAL: WINCH PIGTAIL

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

Step 71: Locate the winch pigtail included in your parts kit. Then locate the winch connector on your **Fuse/Relay Center**.



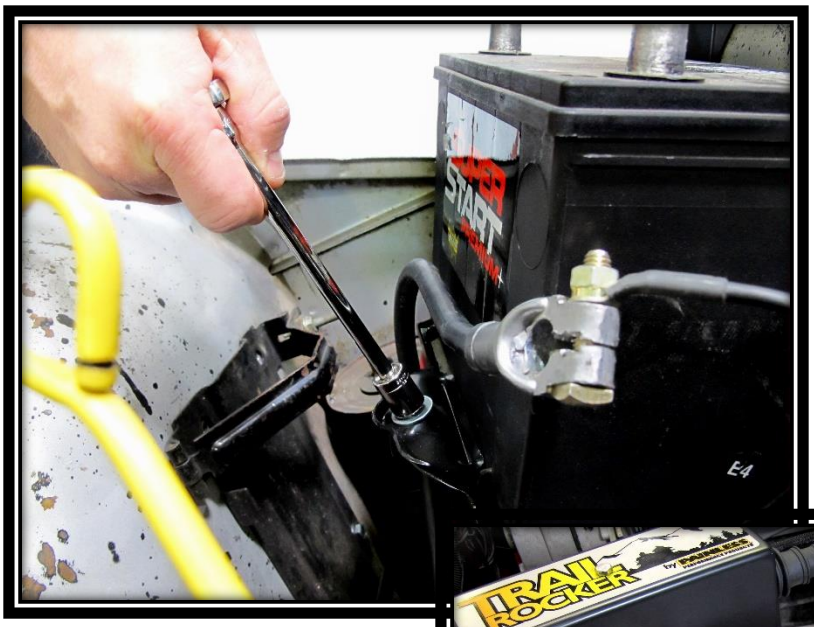
Step 72: Remove the cap from the winch connector on the **Fuse/Relay Center**. Then plug in the winch pigtail and route the wires safely to your winch.

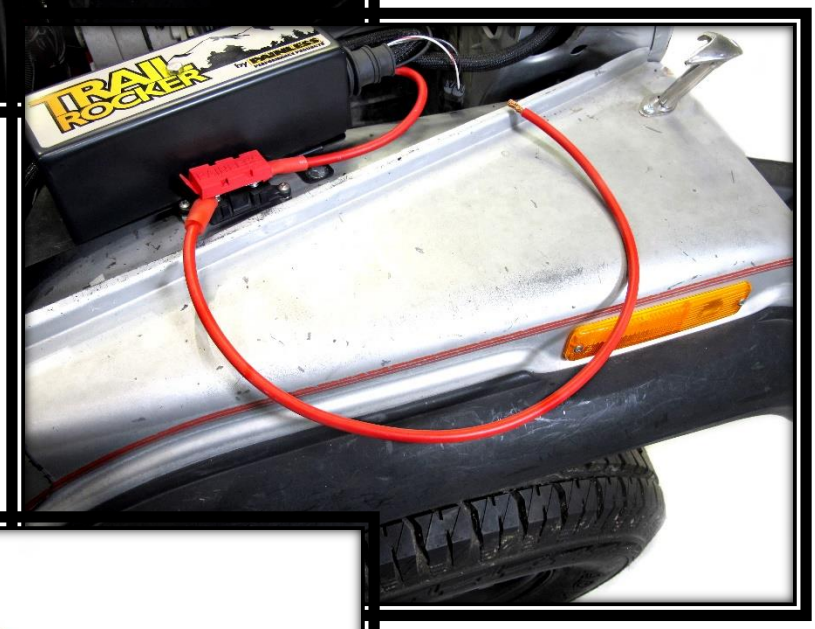


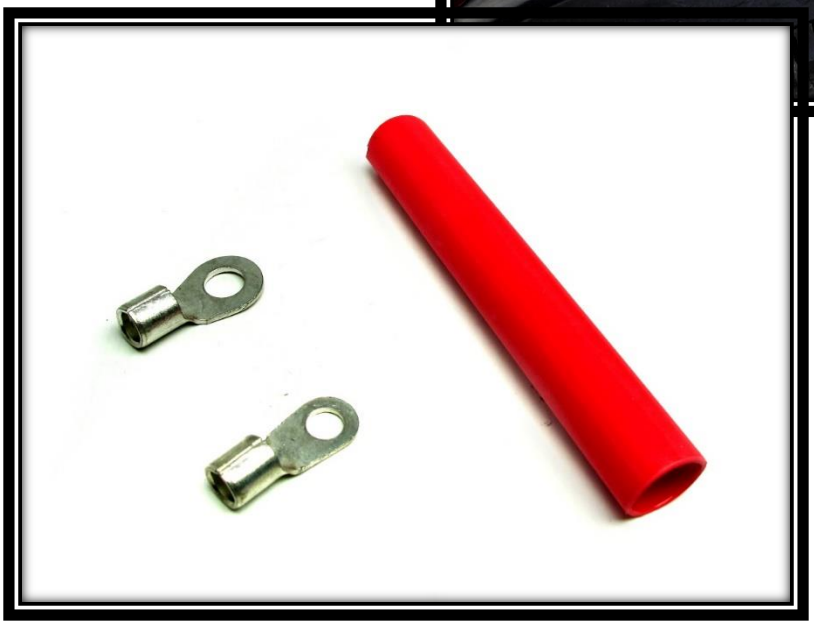
Wiring diagrams for specific winch set-ups can be found at **http://www.painlessperformance.com/schematics** under the **Trail Rocker** section.

FINAL STEPS

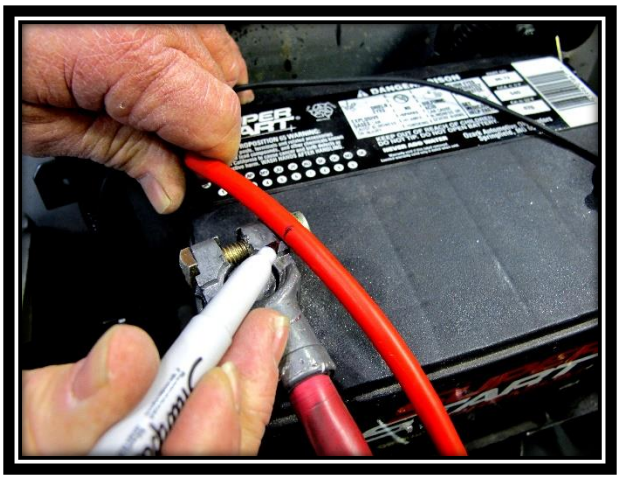
Step 73: Reinstall the battery. Then, locate the 6-gauge, unterminated, red cable coming from the **Fuse/Relay Center**, heat shrink, and the appropriate sized (for your particular application) non-insulated ring terminal.

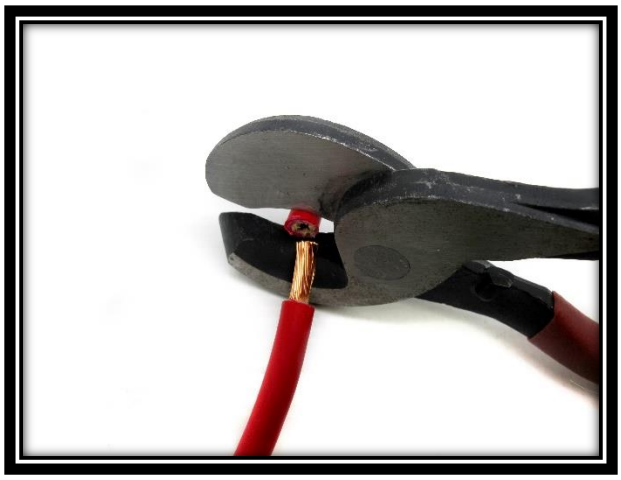




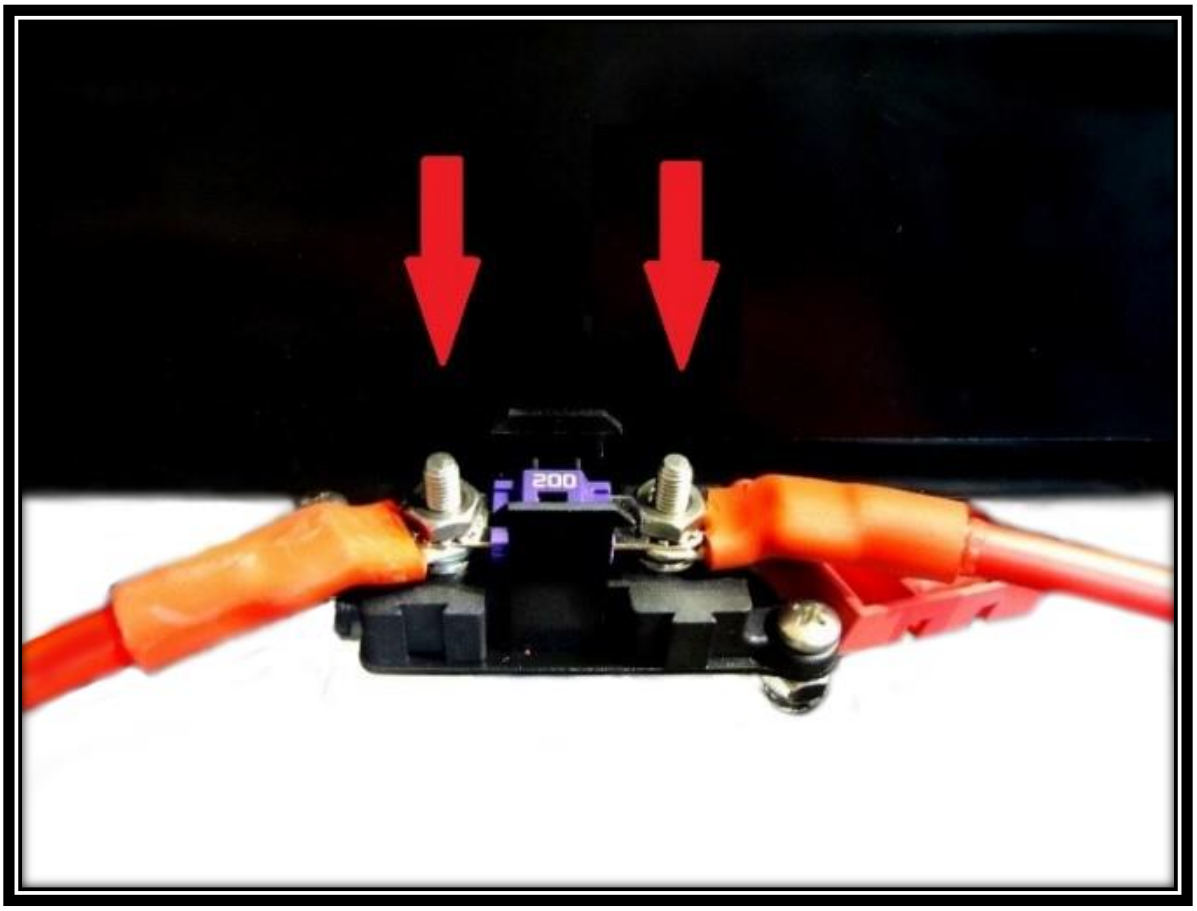


Step 74: Notice that the 6-gauge red cable does not have an eyelet on one end. This is so you can cut the cable to the length you need for your specific application. Mark the length you need to route the cable to the positive terminal. Cut and strip the wire about ½".

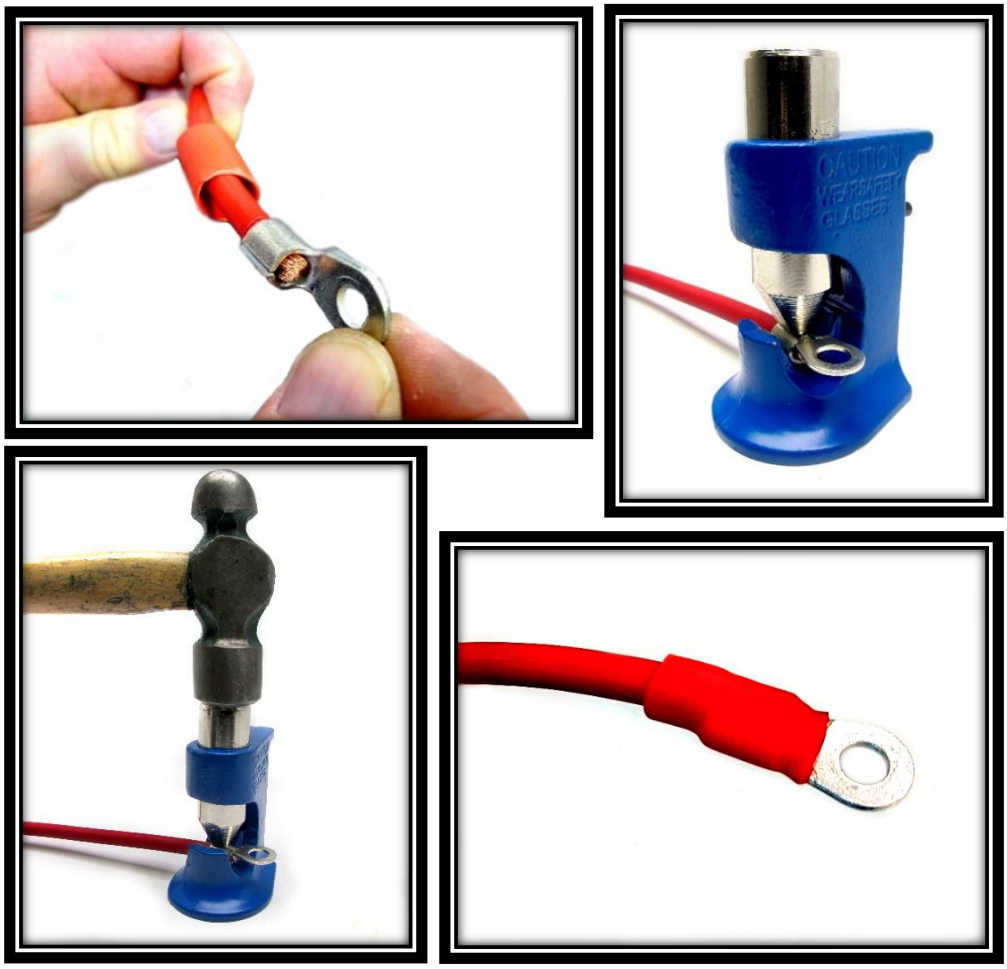




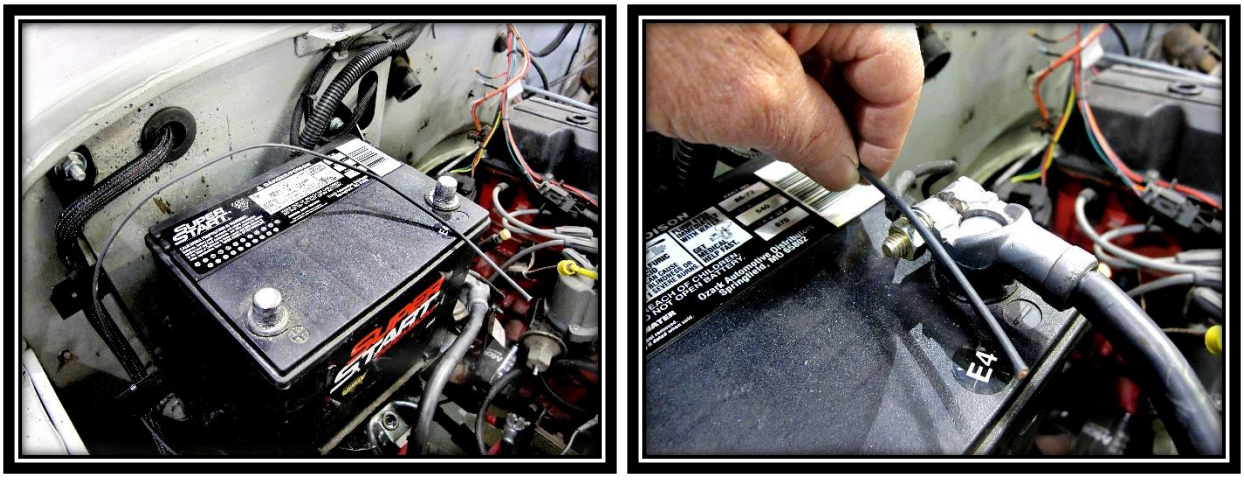
Step 75: Once the cable is stripped, remove it from the **Fuse/Relay Center** in order to crimp on the included ring terminal from your parts kit. To remove the cable lift up the fuse cover on the **Fuse/Relay Center bracket**. Then, remove the 2 nuts and 200-amp MIDI fuse holding the cable in place.



Step 76: 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.

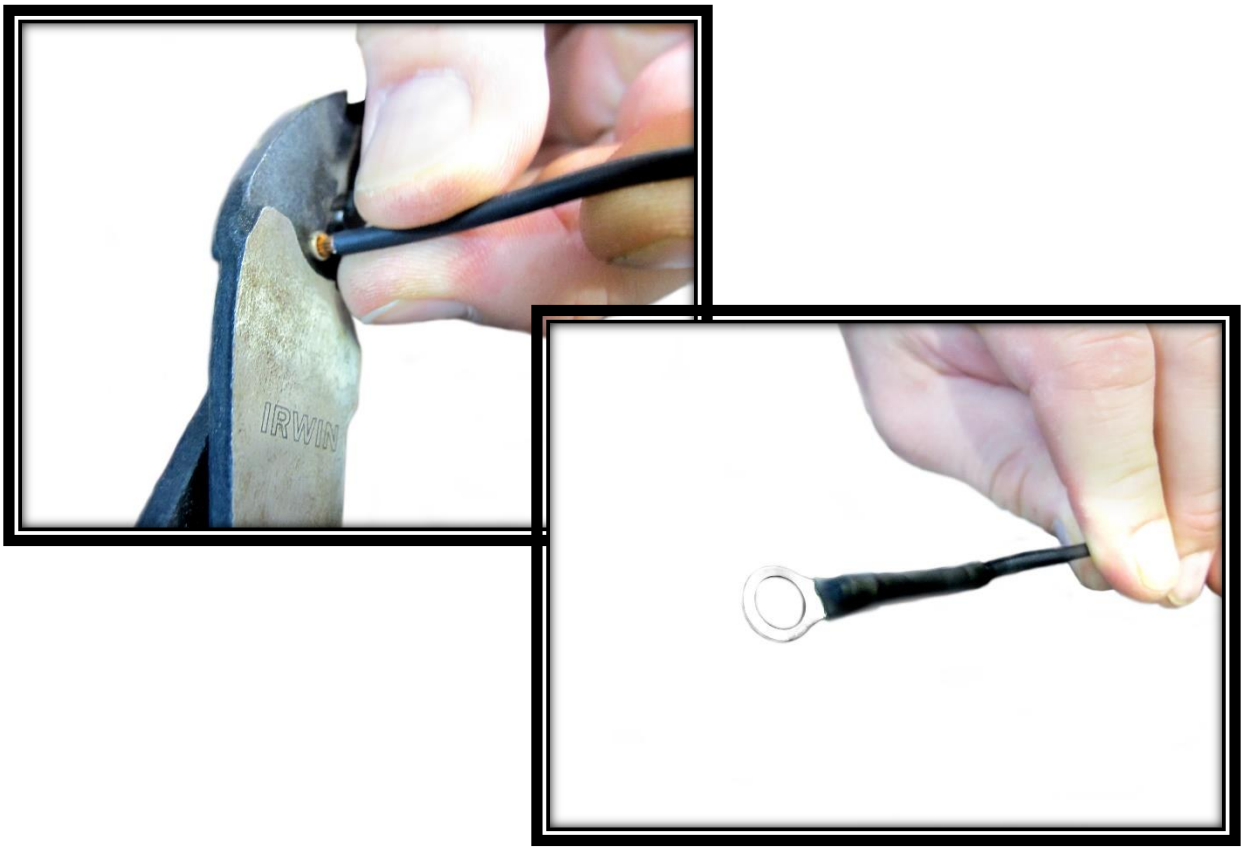


Step 77: Next, re-install the cable and 200-amp MIDI fuse to the **Fuse/Relay Center** and connect it to the positive battery terminal. Then, rout the ground wire coming from the **Fuse/Relay Center** to the negative battery terminal.

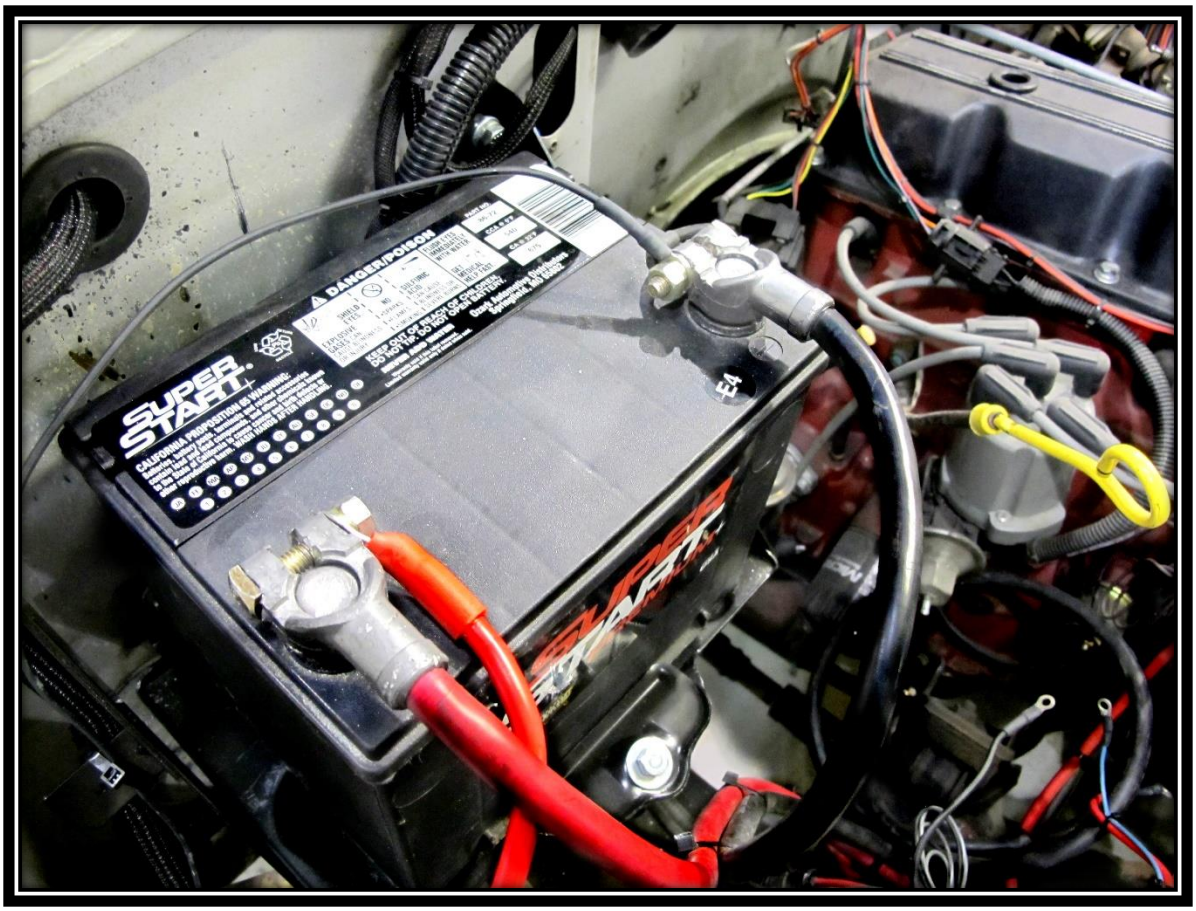


Step 78: Locate (1) ¼" black heat shrink and (1) 16-14 ga. non-insulated ring terminal. Strip the wire about ¼" and slide the heat shrink over it.

Step 79: Crimp on the ring terminal and secure it with the heat shrink.



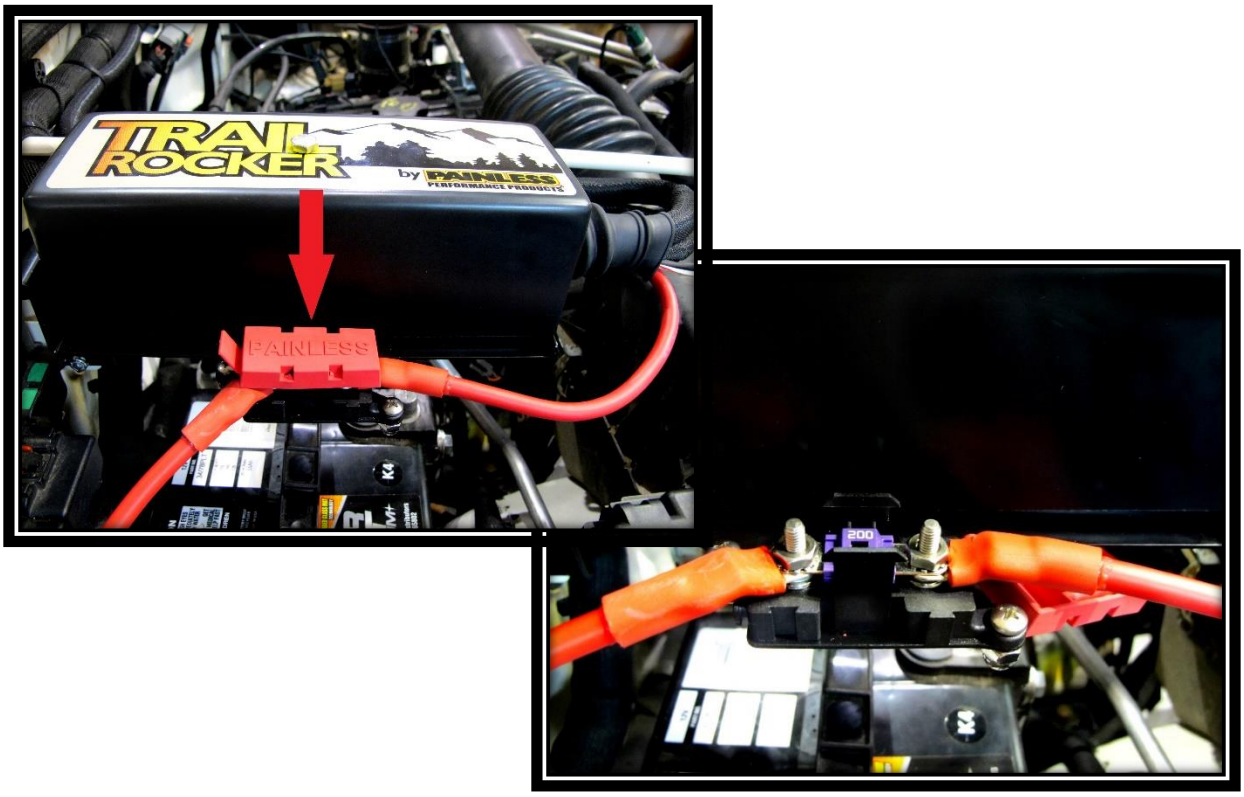
Step 80: Hook the terminals back up to your battery. Connect the red cable to the positive terminal and the ground wire to the negative terminal.



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

FUSE PLACEMENT

As seen in the **Final Steps** section 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 turns on when the fuse is blown, thus indicating when the fuse needs to be replaced.

Painless Performance Limited Warranty

and Return Policy

Chassis harnesses, fuel injection harnesses, and Trail Rocker units are covered under a lifetime warranty.

All other products manufactured and/or sold by Painless Performance are warranted to the original purchaser to be free from defects in material and workmanship under normal use. Painless Performance will repair or replace defective products without charge during the first 12 months from the purchase date. No products will be considered for warranty without a copy of the purchase receipt showing the sellers name, address and date of purchase. You must return the product to the dealer you purchased it from to initiate warranty procedures.

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