



# Trail Rocker Installation Instructions

Jeep CJ7 1976-1986 Under-Dash Trail Rocker
For Installing Painless Part Number: 57021, 57022, & 57023
Manual # 90588

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



# Painless Performance Products, LLC

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800-423-9696 phone – 817-244-4024 fax Web Site: <a href="mailto:www.painlessperformance.com">www.painlessperformance.com</a> E-Mail: <a href="mailto:painless@painlessperformance.com">painless@painlessperformance.com</a>

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

1<sup>st</sup> Edition: February, 2017
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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. 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.

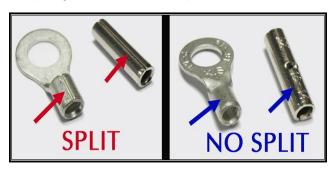
#### The Painless Trail Rocker Kit should contain the following:

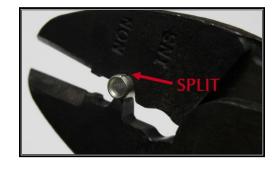
- Fuse/Relay Center
- Powder Coated Bracket
- Trail Rocker Switch Panel with pre-installed switches.
  - The number of switches varies between 4, 6, or 8 based on the kit purchased.
- Ignition Switch pigtail and weather-pack connector.
- Parts Kits
- This manual: 90588



#### **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 <a href="mailto:smooth side of the jaw on the crimper goes towards this split.">smooth side of the jaw on the crimper goes towards this split.</a>





## **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. 1/4"
  - b. ½"
- 2. 1 1/4" Hole Saw with Arbor
- 3.  $\frac{1}{4}$ "  $\frac{3}{4}$ " X  $\frac{1}{16}$ " #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



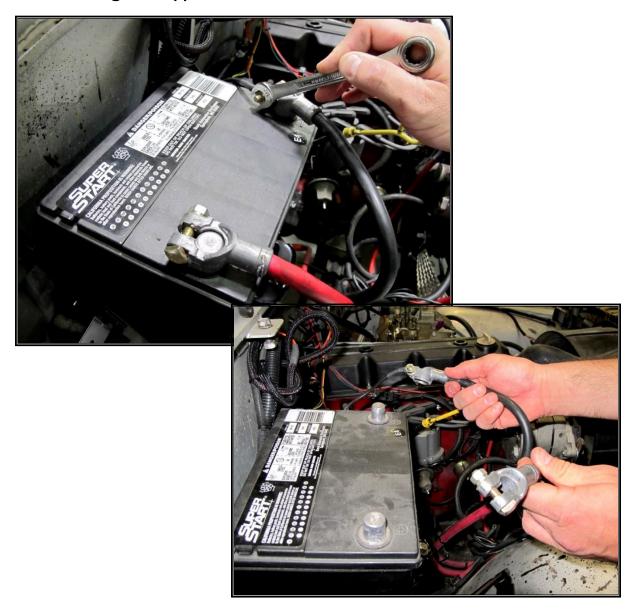
**<u>Heat Gun:</u>** Very useful to shrink the heat-shrink found in the parts kit.

#### **FUSE/RELAY CENTER INSTALLATION**

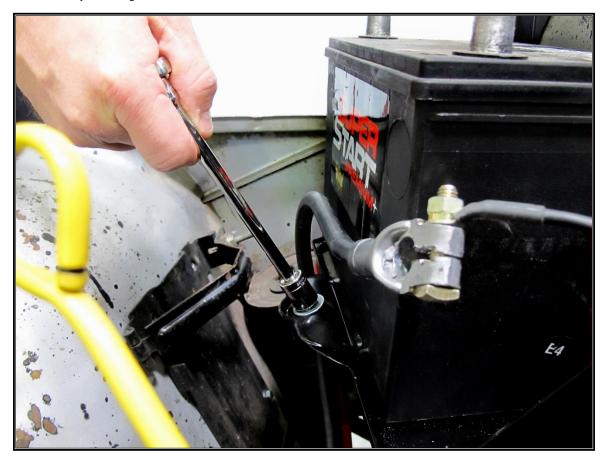
The following steps MUST be followed as they are printed. Do not move onto other parts of the installation out of sequence.

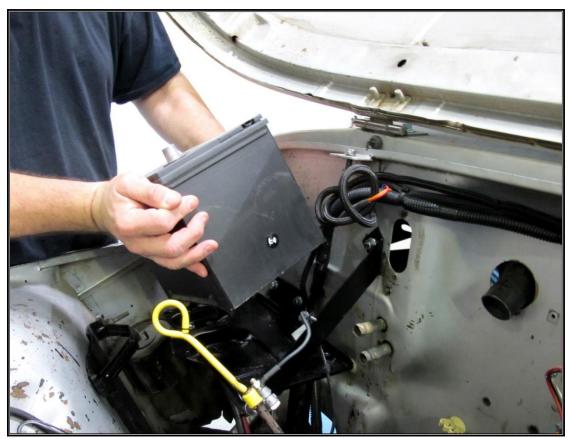
CAUTION: BEFORE THE INSTALLATION OF THIS PRODUCT,
DISCONNECT THE POWER FROM YOUR VEHICLE BY
REMOVING THE NEGATIVE BATTERY CABLE FROM THE
BATTERY. THE BATTERY SHOULD NOT TO BE RECONNECTED
UNTIL INSTRUCTED

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

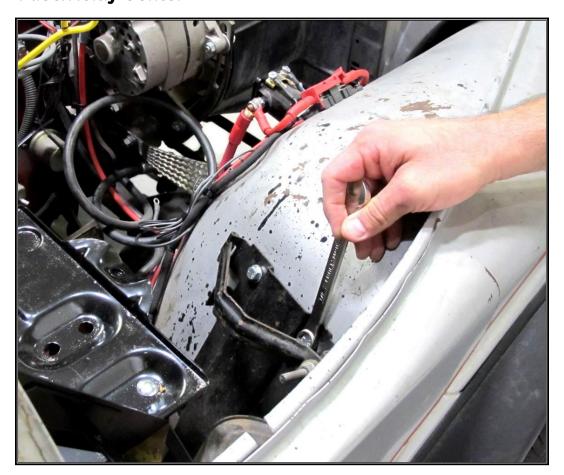


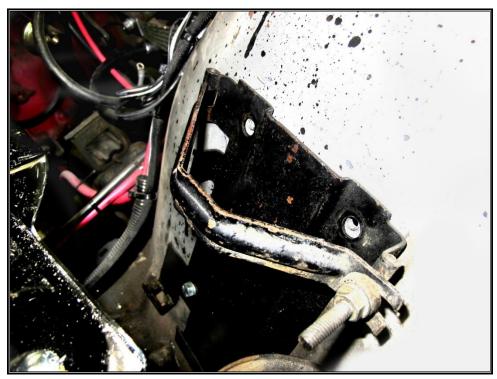
**Step 2:** Then, unbolt the **battery hold-down** and remove the battery completely.





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.

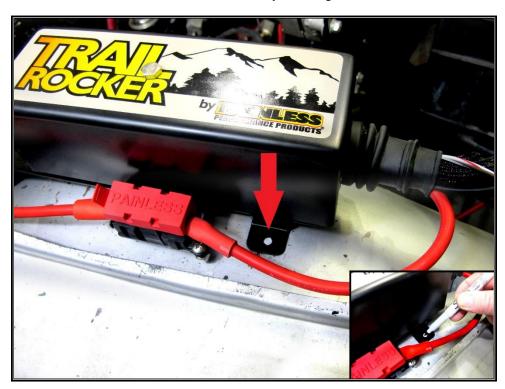




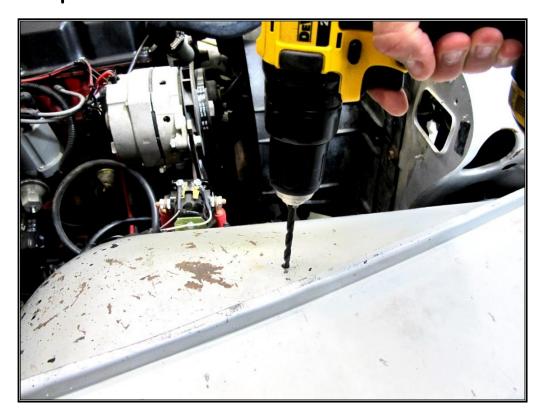
Step 4: Mount the Fuse/Relay Center bracket on top of the fender well and slide the end of the bracket behind the jack holder. Loosely, reinstall the bolts thru the bracket holes. You will move the bracket again after marking the mounting hole you will create in Step 6.



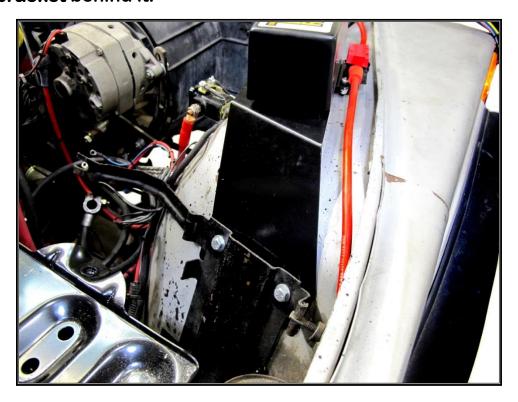
Step 5: If a hole does not exist on the fender well, drill one in order to secure and mount the Fuse/Relay Center bracket to the vehicle. Locate the mounting tab on the side of the bracket and use a permanent marker to mark the place your hole will be drilled.



**Step 6:** Temporarily remove the bracket and set it aside. Use a ½" bit to drill a small hole in the fender well where you made your mark in **Step 5**.



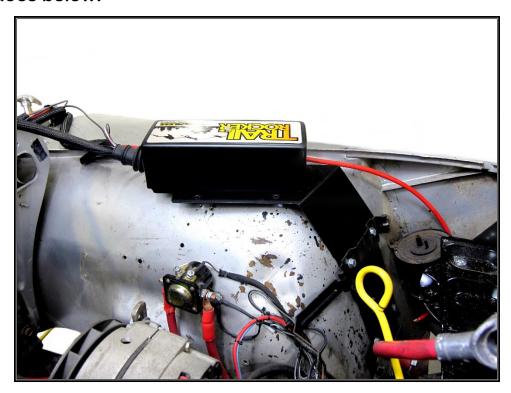
Step 7: Again, mount the Fuse/Relay Center bracket just as you did in Step 4, and secure the assembly to the vehicle. To do this, first, replace and tighten the bolts for the jack holder, securing the bracket behind it.



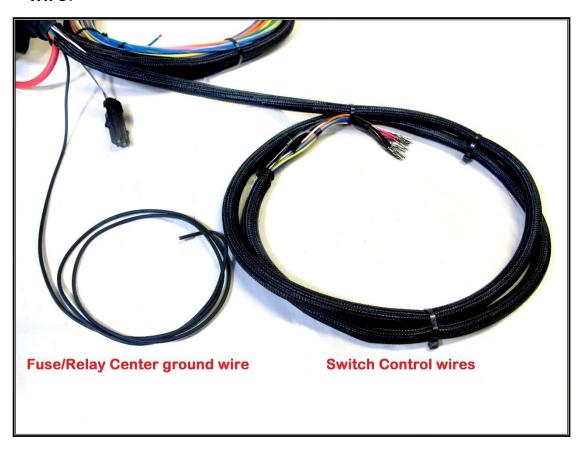
Step 8: Locate (1) 1/4" – 20 X 3/4" bolt, (1) flat washers, and (1) 1/4" lock nut from the included parts kit. With a 1/16" socket and 1/16" wrench, bolt the bracket to the fender well using the hole you created on Step 6.



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) 3/4" Adel clamps, (2) 1/4" Nylock nuts, and (2) 1/4"-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.





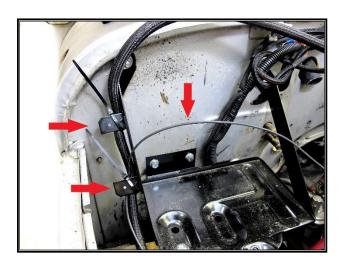
Step 12: After securing the Switch Control wires and ground wire, they should be routed toward the firewall.



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

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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 3/4" from the top and 3" to the right of the battery tray support bolt's center line.



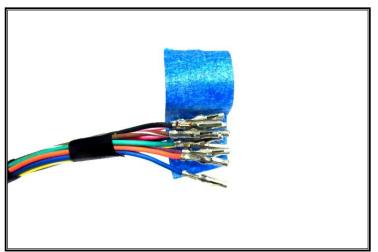


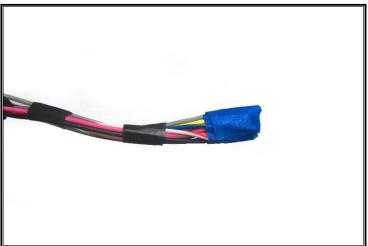
Step 15: Use a 1 ¼" hole-saw w/ arbor to cut a hole in the firewall. Use a half-round file to de-bur the hole before installing the rubber grommet. Before drilling, look behind the firewall to make sure the area is clear!



Step 16: Next, secure the loose ends of the Switch Control wires with a piece of masking tape. This step is necessary to insure ease when feeding the wire through the firewall on Step 17. Failing to tape the ends can cause the loose wires to catch on the internal structure of the dash.

WARNING: MAKE SURE YOUR SYSTEM IS NOT CONNECTED TO THE BATTERY! THESE WIRES ARE HOT WHEN THE TRAIL ROCKER HAS POWER AND WILL SHORT THE SYSTEM OUT IF THEY TOUCH AS SEEN IN THE IMAGES BELOW. AGAIN, DO NOT RECONNECT THE BATTERY UNTIL INSTRUCTED.



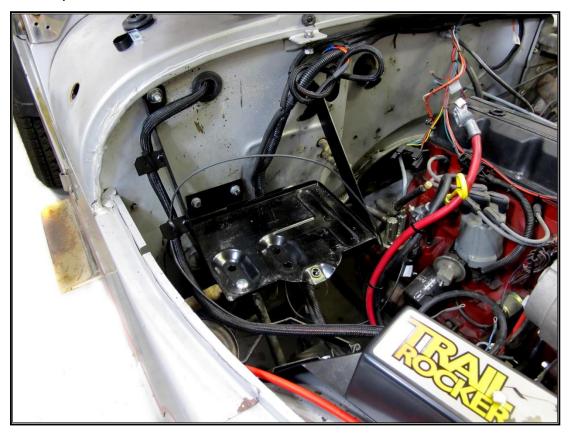


Step 17: Once the Switch Control wires are secured, place the rubber grommet, included in the parts kit, over the Switch Control wires. Then pass the wires through the hole in the firewall.



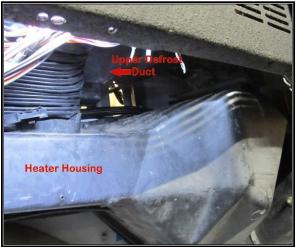


**Step 18:** When finished, everything should appear as it does below. Now, move to the interior of the vehicle.

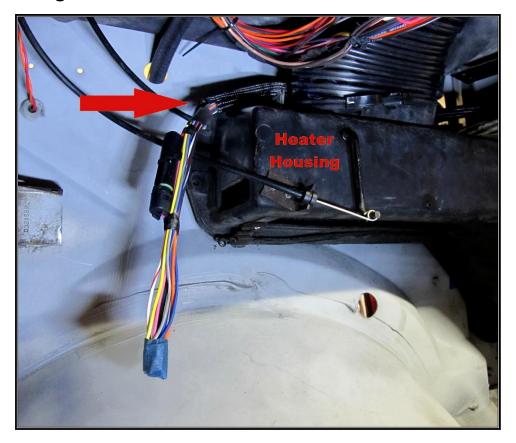


Step 19: From the passenger side floorboard, under the dash, you can see the hole you made and the Switch Control wires coming through. Route the wires toward the center of the vehicle along the back of the firewall, above the heater housing, and behind the upper defroster duct.



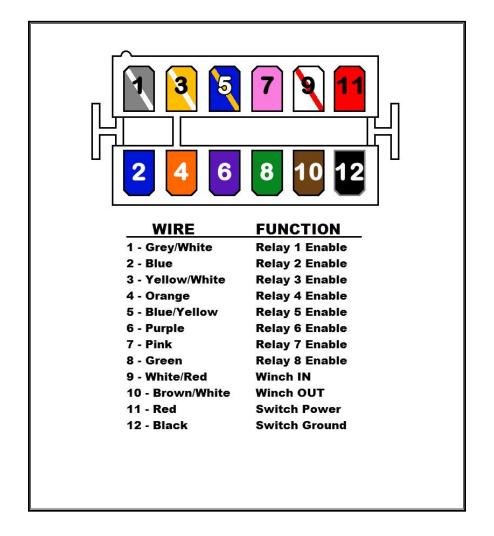


**Step 20:** The harness should come out behind and above the **heater** housing.

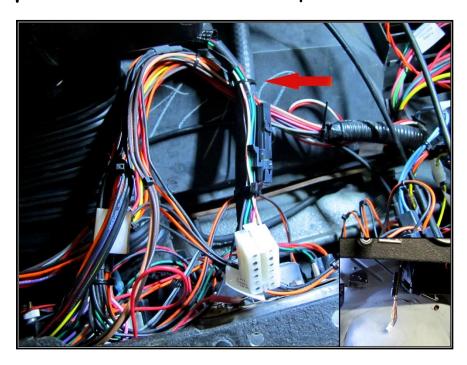


Step 21: Remove the tape and locate the 12-pin connector shell in your parts kit. Then, connect the pinned wires from the Fuse/Relay Center using the diagram on the next page. NOTE: The diagram on the next page shows the connector from the wire side.





Step 22: 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.

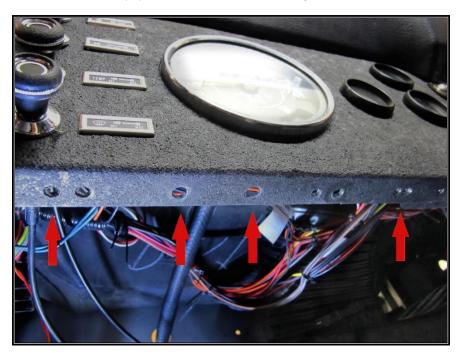


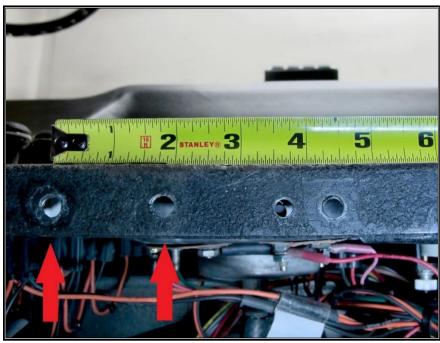
#### **SWITCH PANEL INSTALLATION**

The following pages give steps for the installation of one of three different **Trail Rocker Switch Panels** depending on the kit purchased. Please refer to the table of contents on **page ii** to locate the page number for the particular **Trail Rocker Switch Panel** you purchased.

#### **UNDER-DASH 4-SWITCH PANEL INSTALLATION**

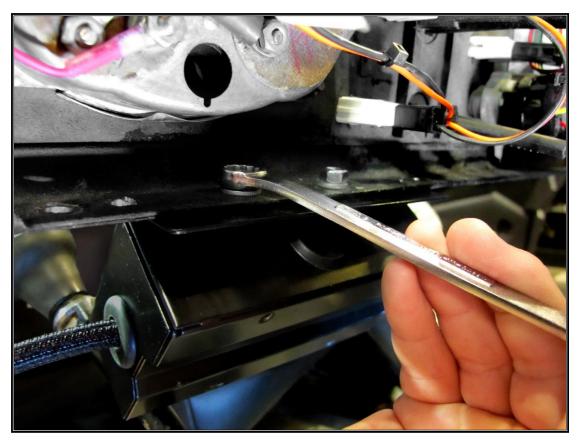
Step 23: On the underside of most 1976 – 1986 CJ dashes you will find a series of ¼" holes. You will use these to mount your under-dash 4-Switch Panel. If the dash of your CJ lacks these holes, use a ¼" drill bit to create (2) ¼" holes 1 ½" apart.



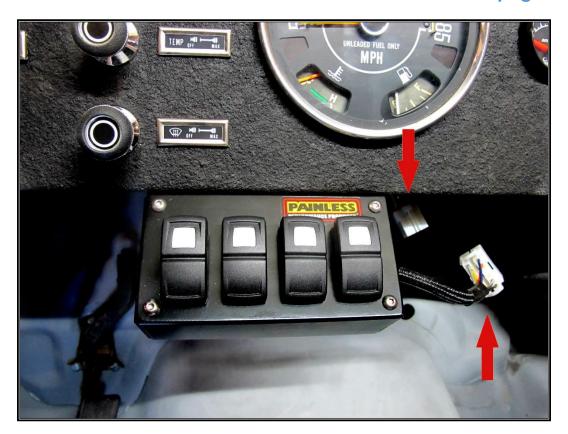


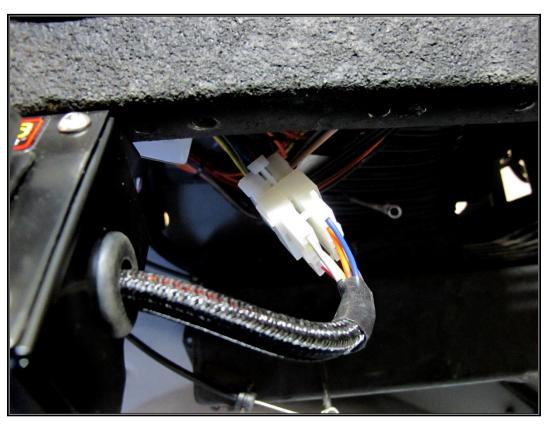
Step 24: Line up the bolts of the 4-Switch Panel's mounting bracket with the holes and attach it using (2) 1/4" flat washers and (2) 1/4" lock nuts found in the included parts kit.





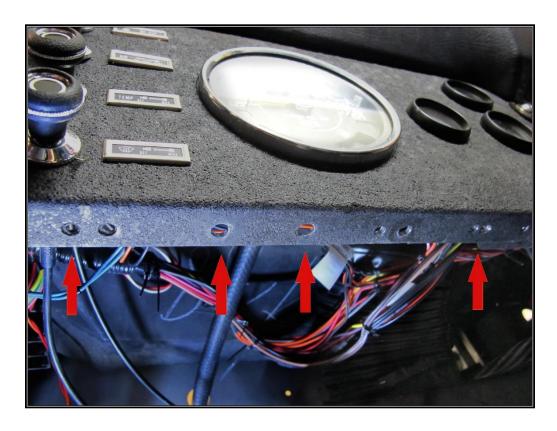
Step 25: After you securely mounted the 4-Switch Panel to the underside of the dash, locate the short pigtail coming from the right side of the panel and the Switch Control Wires from Step 10 – 22. Join these two connectors and then move on to page 26.

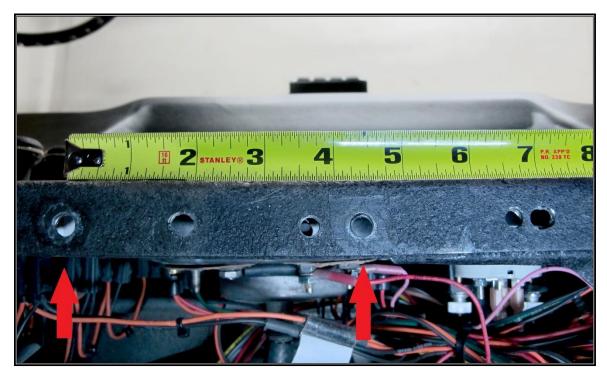




### **UNDER-DASH 6-SWITCH PANEL INSTALLATION**

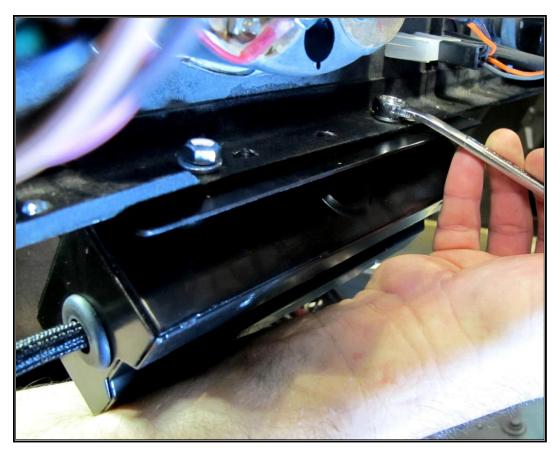
Step 26: On the underside of most 1976 – 1986 CJ dashes you will find a series of ¼" holes. You will use these to mount your under-dash 6-Switch Panel. If the dash of your CJ lacks these holes, use a ¼" drill bit to create (2) ¼" holes 4 ¾" apart.



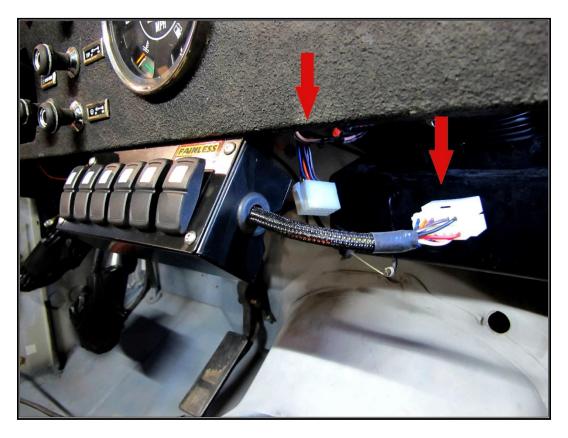


Step 27: Line up the bolts of the 6-Switch Panel's mounting bracket with the holes and attach it using (2) 1/4" flat washers and (2) 1/4" lock nuts found in the included parts kit.





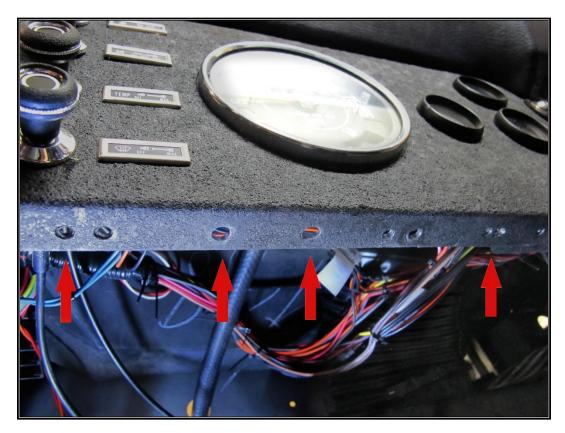
Step 28: After you securely mounted the Trail Rocker 6-Switch Panel to the underside of the dash, locate the short pigtail coming from the right side of the panel and the Switch Control Wires from Step 10 – 22. Join these two connectors and then move on to page 26.

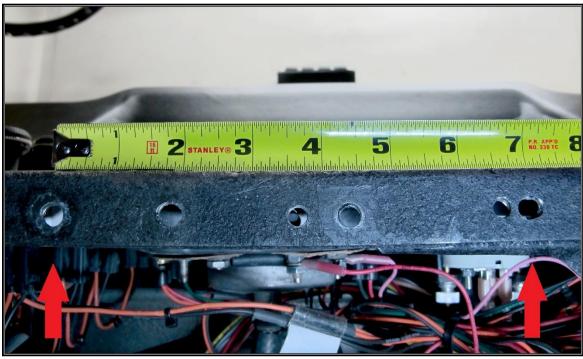




### **UNDER-DASH 8-SWITCH PANEL INSTALLATION**

Step 29: On the underside of most 1976 – 1986 CJ dashes you will find a series of ¼" holes. You will use these to mount your under-dash 8-Switch Panel. If the dash of your CJ lacks these holes, use a ¼" drill bit to create (2) ¼" holes 6 7/8" apart.



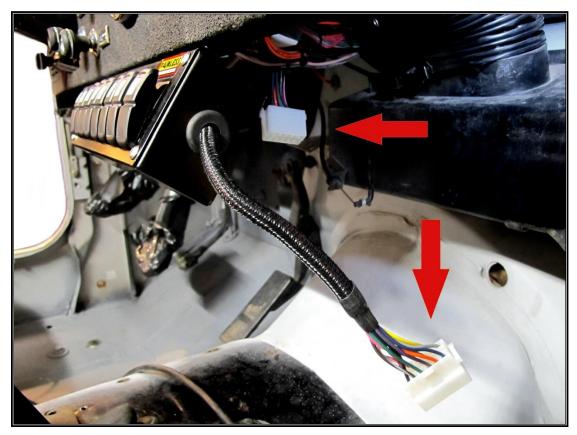


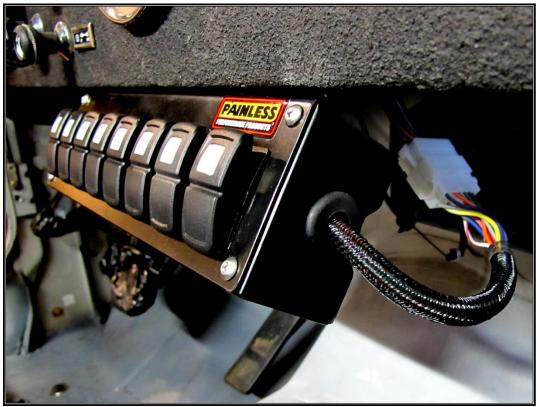
Step 30: Line up the bolts of the 8-Switch Panel's mounting bracket with the holes and attach using (2) 1/4" flat washers and (2) 1/4" lock nuts found in the included parts kit.





Step 31: After you securely mounted the Trail Rocker 8-Switch Panel to the underside of the dash, locate the short pigtail coming from the right side of the panel and the Switch Control Wires from Step 10 – 22. Join these two connectors and then move on to page 26.

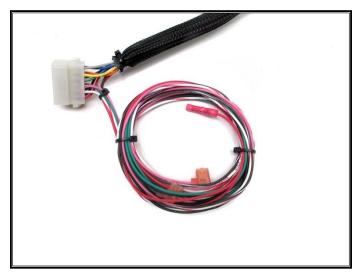




#### **ADDITIONAL WIRES**

There is a roll of wires near the connector on **Trail Rocker Switch Panel**. These wires control various functions described in-depth below.

If you have a 4 (#57021) or 6-switch (#57022) panel, we've provided the additional wires to utilize all 8 the relays/channels of your **Trail** 



Rocker System. You can make use of these wires by adding additional switches or by doubling the control wires on your existing switches (see page 28).

#### Trail Rocker #57021

BLUE/YELLOW: Relay #5

PURPLE: Relay #6PINK: Relay #7

GREEN: Relay #8

#### **Trail Rocker #57022**

• PINK: Relay #7

GREEN: Relay #8

Any additional switches you add to your vehicle (outside of the **Trail Rocker Switch Panel**) will require power and, if it's a lighted switch, a separate ground source. Painless has also provided wires for these functions (see page 27). They are:

RED: Power

BLACK: Ground

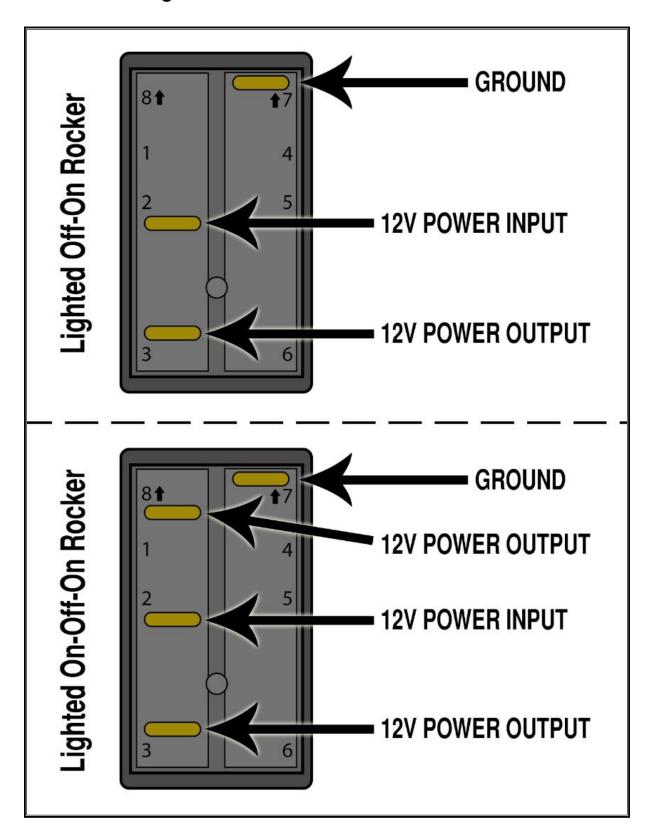
Painless also provides control wires for an interior winch switch. This will not eliminate the original winch manufacturer's remote controller (wired or wireless). For more details on connecting a winch see page 46.

WHITE/RED: Winch Control In

BROWN/WHITE: Winch Control Out

### **SWITCH WIRING**

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

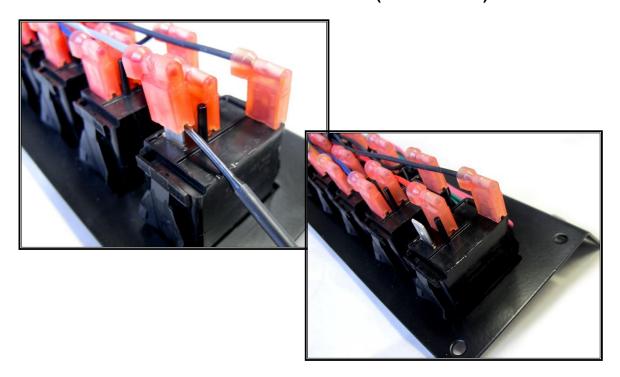


### **DOUBLING SWITCH CONTROL WIRES**

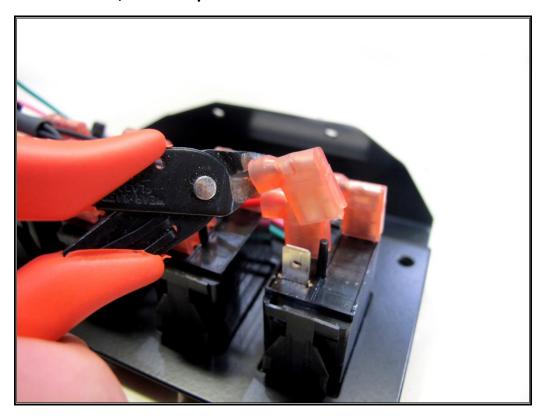
Steps 32-35 are optional and only for those who wish to control multiple functions for one switch. Provided in the kit are some 16ga. – 14ga. terminals, similar to those shown below.

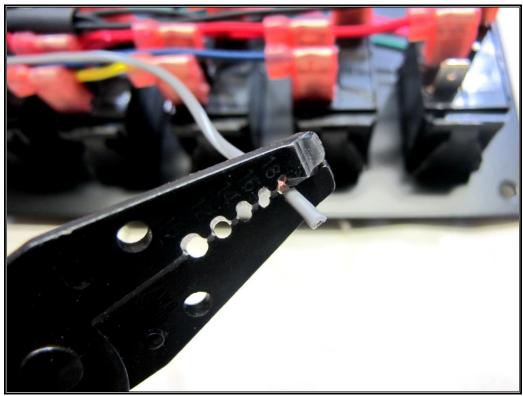


Step 32: Choose which switch you want to control multiple functions with, and disconnect the existing Switch Panel wire from the terminal on the bottom of the switch (terminal #3).

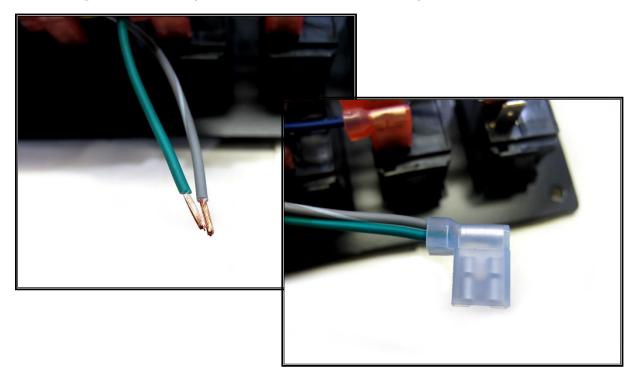


Step 33: With the Switch Panel wire removed from the switch, cut off the terminal, and strip the wire 1/4".

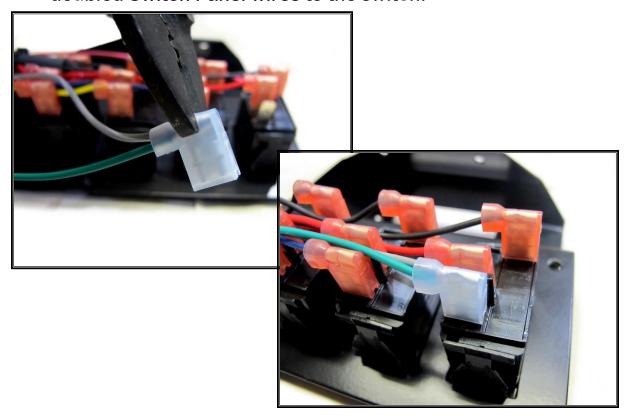




Step 34: Take the Switch Panel wire you just stripped and one of the additional Switch Panel wires; then slide them together into a 16-14 ga. terminal provided in the included parts kit.



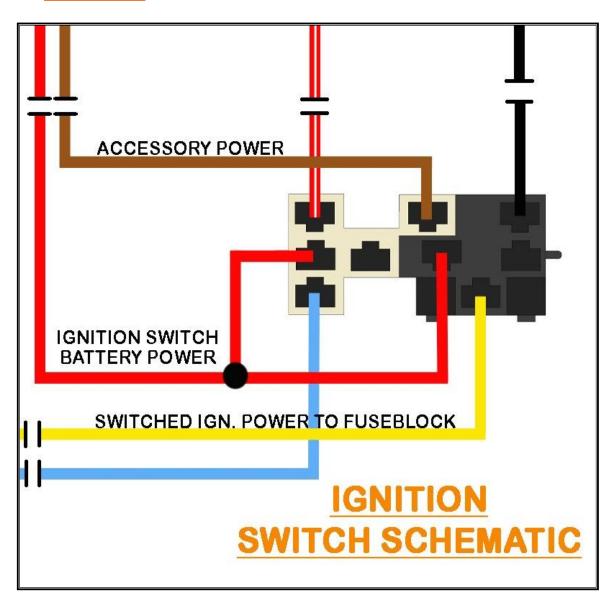
**Step 35:** With both wires inside, crimp the terminal, and reconnect the doubled **Switch Panel wires** to the switch.



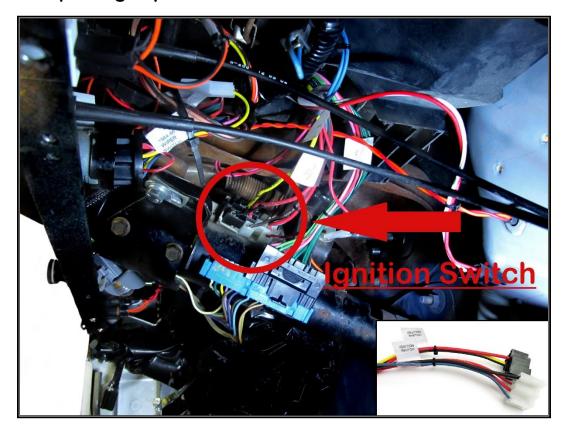
IF YOU WANT TO OPERATE YOUR SWITCHES WITH A CONSTANT POWER (AS SHIPPED), SKIP STEPS 36-44. THESE STEPS ILLUSTRATE HOW TO HOOK UP YOUR TRAIL ROCKER TO IGNITION SWITCHED POWER AND ARE COMPLETELY OPTIONAL.

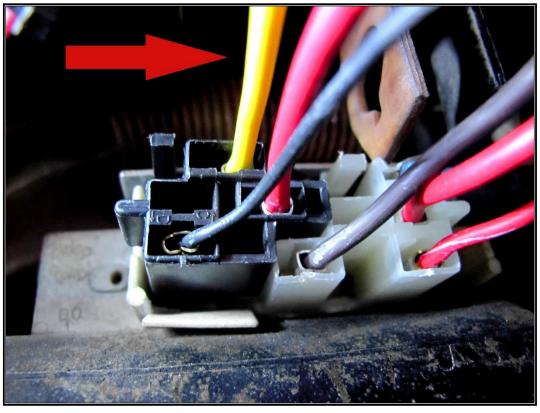
#### **IGNITION SWITCH CONNECTOR INSTALLATION**

**Step 36:** It will help to familiarize yourself with the *Ignition Switch Schematic* below.

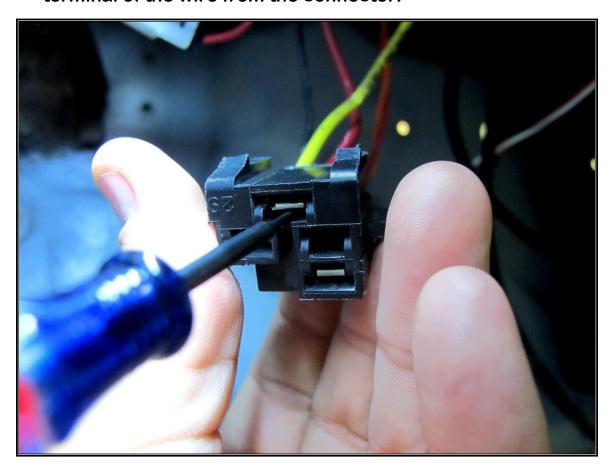


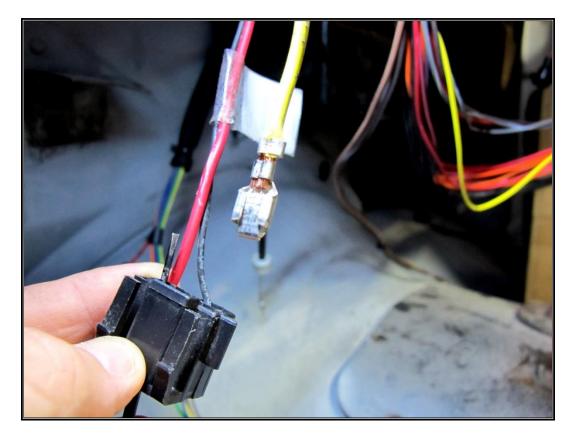
Step 37: Then, locate your vehicle's ignition switch on the steering column and the YELLOW, switched, ignition power wire. In this example the YELLOW wire, is plugged into the BLACK connector. These connectors may very between model years and package options.



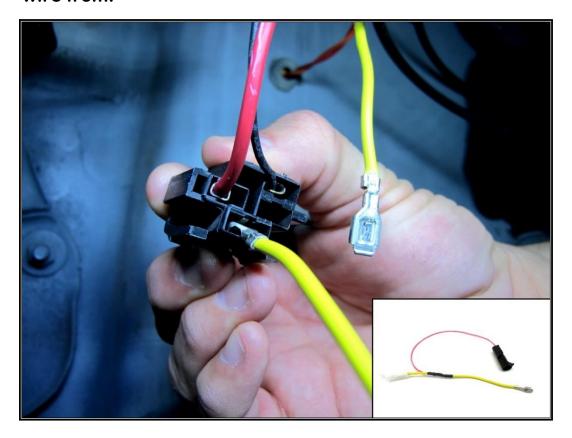


**Step 38:** Use a #0 "Jewelers," flat-head screwdriver to unplug the BLACK connector from the ignition switch and remove the terminal of the wire from the connector.



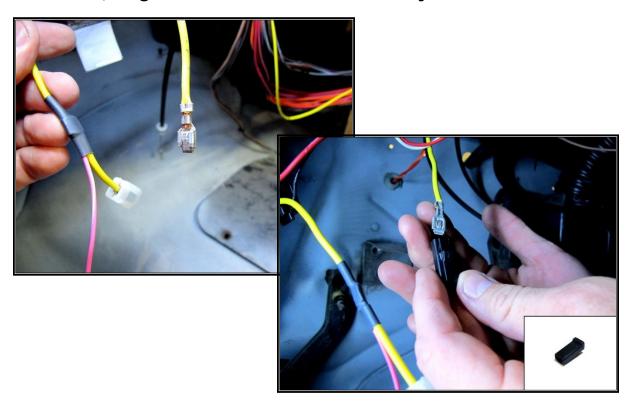


**Step 39:** Locate the <u>ignition pigtail</u> included in your kit. Insert the exposed terminal from the <u>ignition pigtail</u> into the slot on the factory connector that you removed the switched, ignition power wire from.

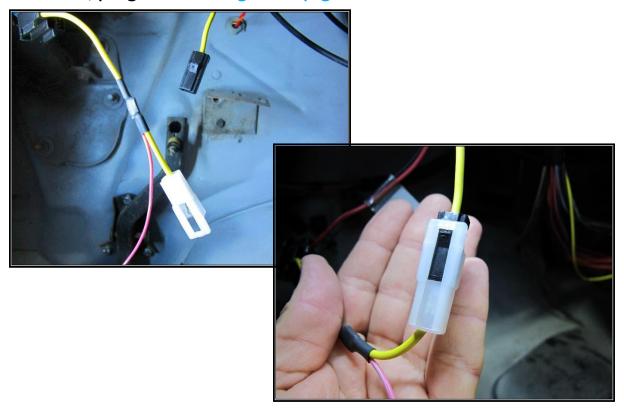




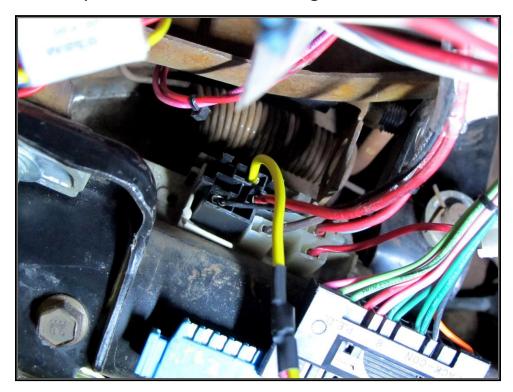
**Step 40:** Locate the switched, ignition power wire you removed from the factory connector in **Step 38**. Insert the terminal into the black, single-wire connector included in your **Trail Rocker Kit**.



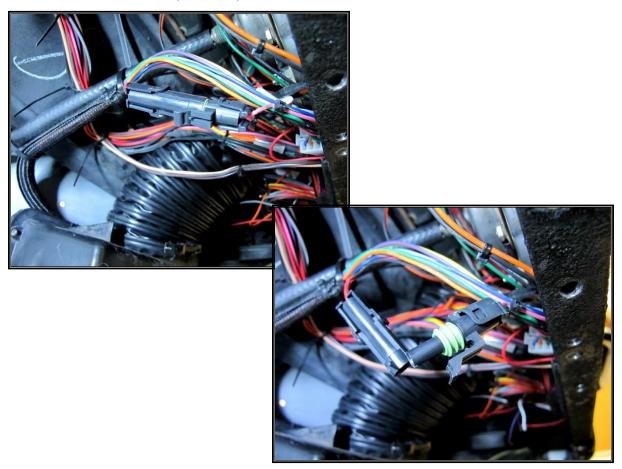
**Step 41:** With the connector installed on the switched, ignition power wire, plug it into the ignition pigtail.



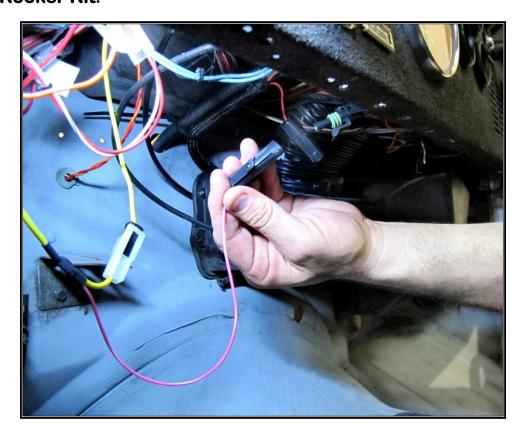
**Step 42:** Recouple the connector to the ignition switch.



**Step 43:** Locate the weather-pack connector on the harness and remove the cap to expose the male connector.



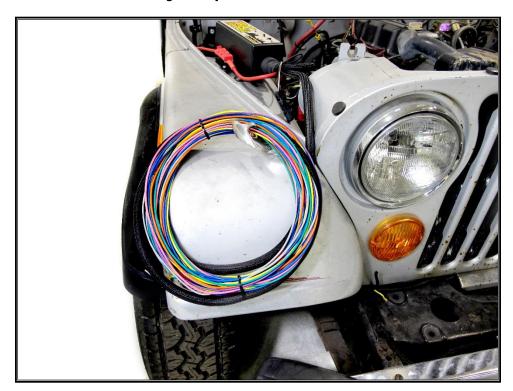
Step 44: Connect the pink wire from the ignition pigtail to the weather-pack connector, secure the wires up out of the way with a provided zip-tie. This completes the installation of your new Trail Rocker Kit.



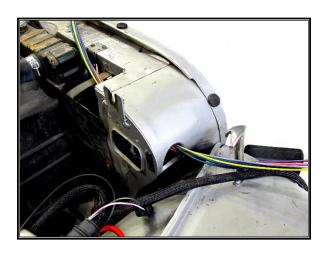


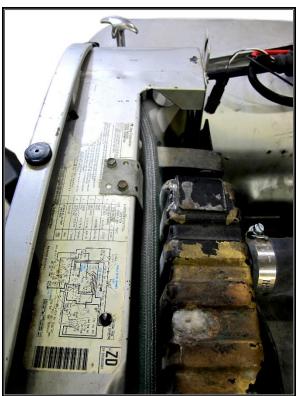
## **RELAY OUTPUT WIRES**

**Step 45**: Locate the **Relay Output wires**.



Step 46: Rout the Relay Output wires through the grill and in front of the radiator.



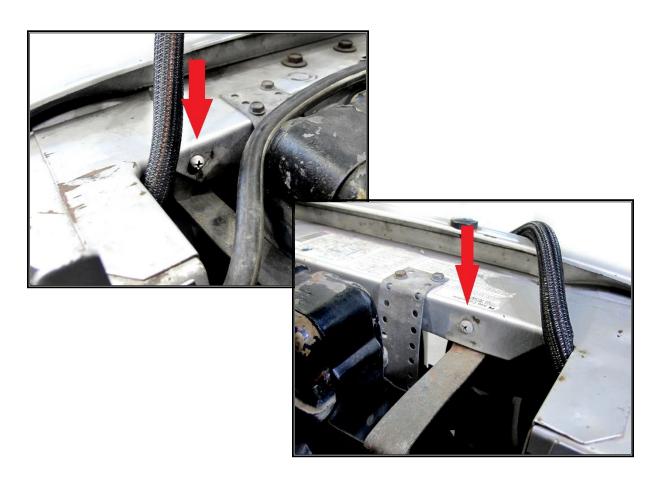


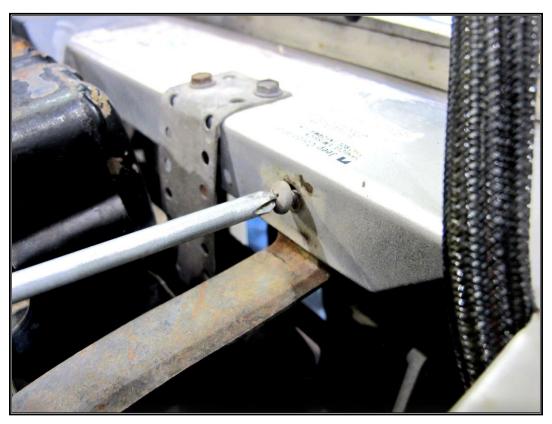
**Step 47:** Continue to run the **Relay Output wires** along the radiator and through the other side of the grill.



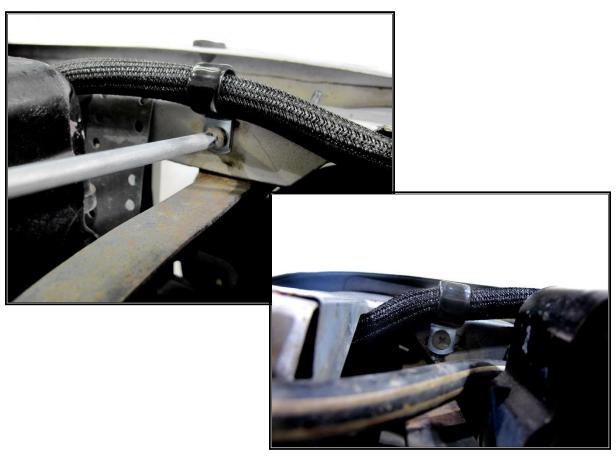


**Step 48:** Locate the 2 support brackets running from the grill to the fan shroud and remove the screws attaching them to the grill.



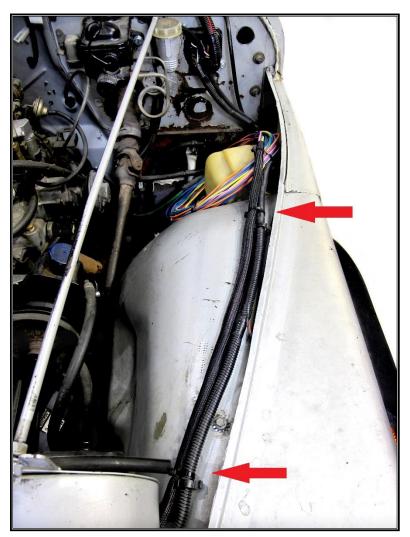


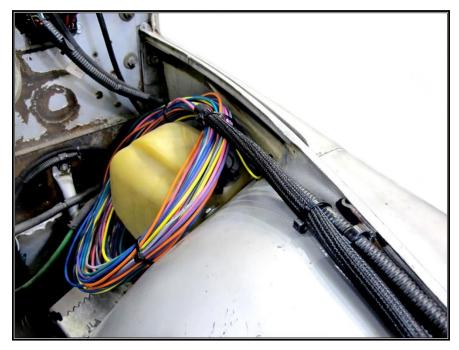
Step 49: Locate (2) 3/4" Adel clamps from the included parts kit. Slide the clamps over the Relay Output wires and attach them to the grill using the screws you removed in the previous step.





**Step 50:** 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.





Output Wire Colors:  Output 1: Grey/White Output 2: Blue Output 3: Yellow/White Output 4: Orange Output 5: Blue/Yellow Output 6: Purple Output 7: Pink Output 8: Green	Output #1 30 Output #3 30	Output #2 30 Output #4 30	Output #1	Output #2	Output #3	Output #4
	Output #5 30 Output #7 30	Output #6 30  Output #8 30	Output #5	Output #6	Output #7	Output #8

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 51-54** starting on page 44 for a common example on connecting the **Relay Output wires** to most accessories.

#### **Relay Output Wire Color Diagram:**

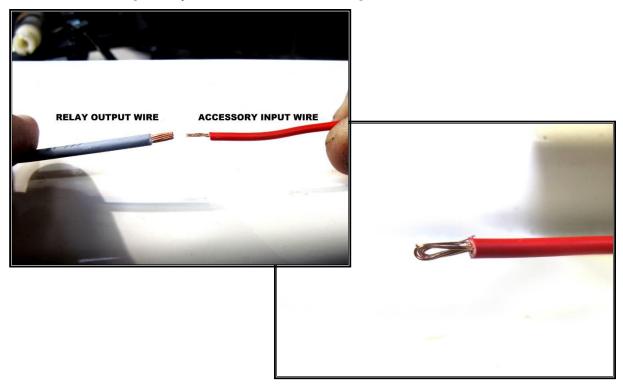
- Switch #1: Grey/White
- Switch #2: Blue
- Switch #3: Yellow/White
- Switch #4: Orange
- Switch #5: Blue/Yellow
- Switch #6: Purple
- Switch #7: Pink
- Switch #8: Green

#### **Winch Control wires:**

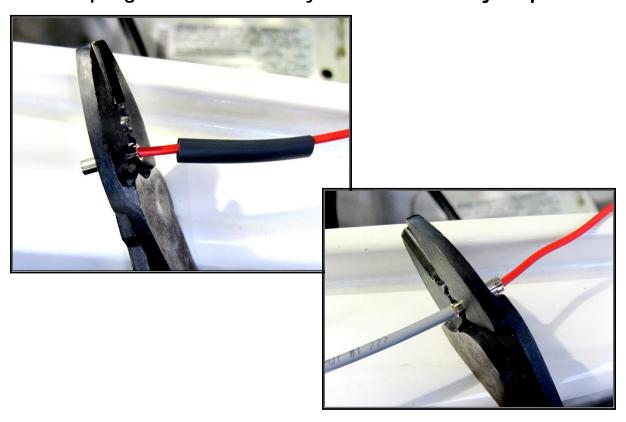
- Winch Control In: White/Red
- Winch Control Out: Brown/White

**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 32-35** for a step-by-step tutorial on achieving this. For winch switch installation, see page 46.

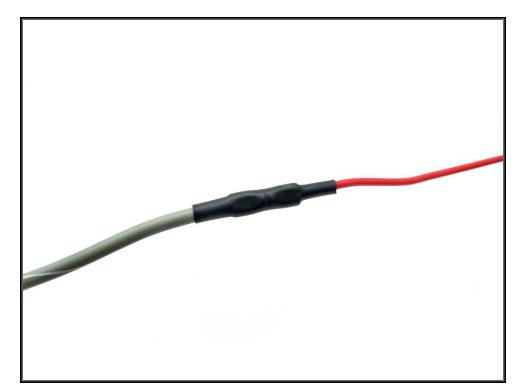
**Step 51**: Locate the **Relay Output wire** you wish to use. Then, locate the **input wire** on the accessory you are installing. Double up the accessory's **input wire** if necessary.



Step 52: 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 53: Secure the heat shrink over the connection.





Step 54: 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.

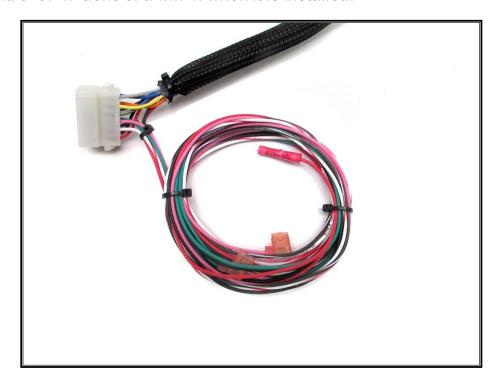




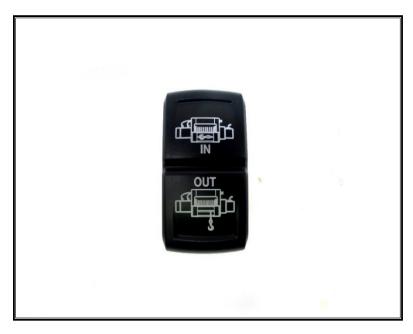
#### **OPTIONAL: PAINLESS PART#: 57150 - WINCH**

#### **CONTROL ADD-ON KIT**

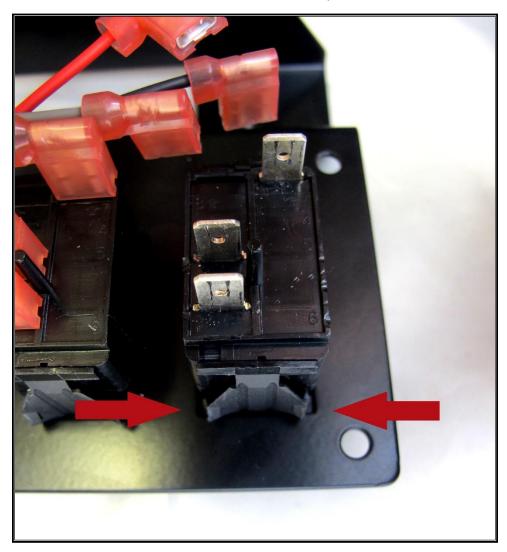
As part of your **Switch Panel wiring harness**, there are 2 optional winch control wires: a WHITE/RED (IN) and a BROWN/WHITE (OUT). These wires control the in and out functions of a winch when it is installed.



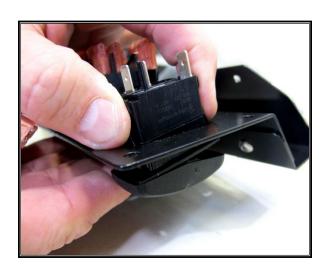
These control wires can be connected to a winch switch (not provided in the kit). If you do not have a winch switch, Painless offers a Winch Control Add-on Kit (Painless Part #: 57150, available online at www.painlessperformance.com). Steps 55-59 show you how to install a Winch Control Add-on Kit to your Trail Rocker Switch Panel and connect the control wires to the switch.

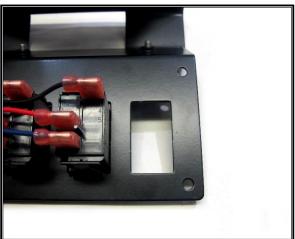


Step 55: Remove the switch panel, power, and ground wires from the switch you are replacing with the Winch Control Add-on Kit. Then, locate the tabs located at the top and bottom of the switch.

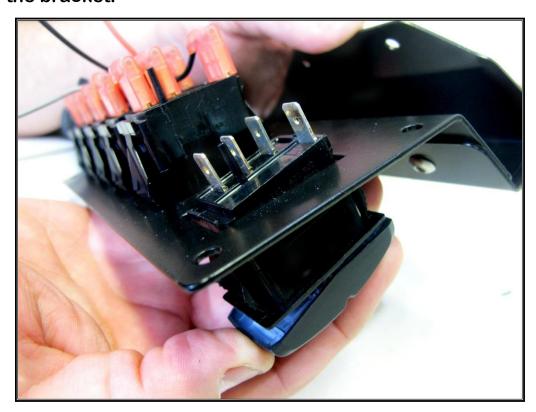


**Step 56:** These tabs lock the switch in place. To remove the switch, squeeze the tabs in and slide it out of the bracket.

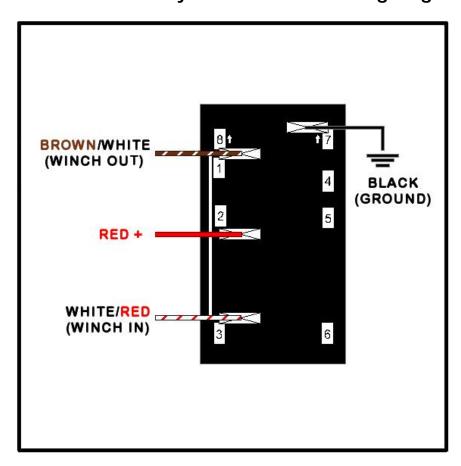




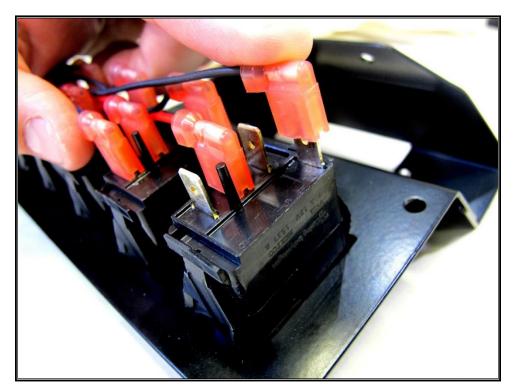
**Step 57:** Insert the **Winch Control Add-on Kit** into the empty socket of the bracket.

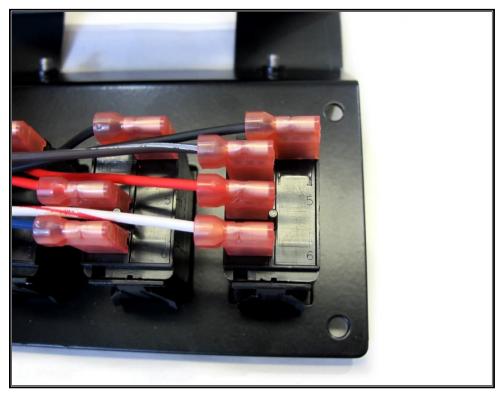


**Step 58:** Before connecting the wires to the **Winch Control Add-on Kit**, take time to familiarize yourself with the wiring diagram below.



Step 59: 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 60:** Locate the winch pigtail included in your parts kit. Then locate the winch connector on your Fuse/Relay Center.



Step 61: 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 <a href="http://www.painlessperformance.com/schematics">http://www.painlessperformance.com/schematics</a> under the Trail Rocker section.

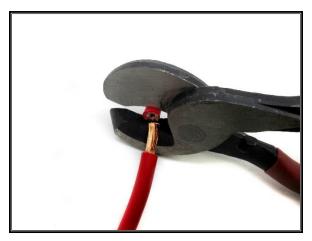
### **FINAL STEPS**

Step 62: 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.

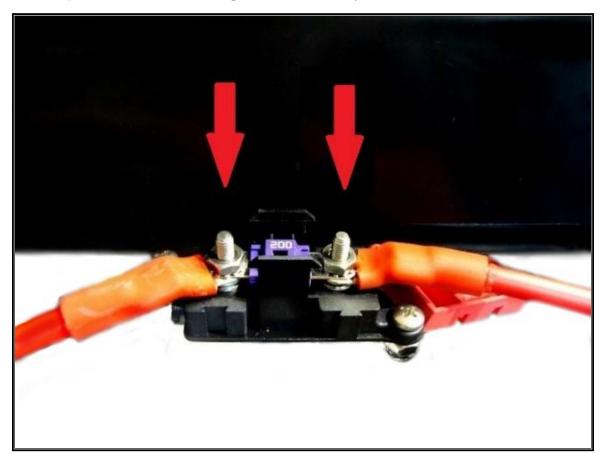


Step 63: Notice that the 6-gauge red cable does not have an eyelet on one end. This is so you can cut the cable to the length you need for your specific application. Mark the length you need to route the cable to the positive terminal. Cut and strip the wire about 1/2".





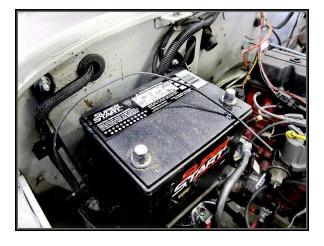
Step 64: Once the cable is stripped, remove it from the Fuse/Relay Center in order to crimp on the included ring terminal from your parts kit. To remove the cable lift up the fuse cover on the Fuse/Relay Center bracket. Then, remove the 2 nuts and 200-amp MIDI fuse holding the cable in place.



Step 65: 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 66: 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.

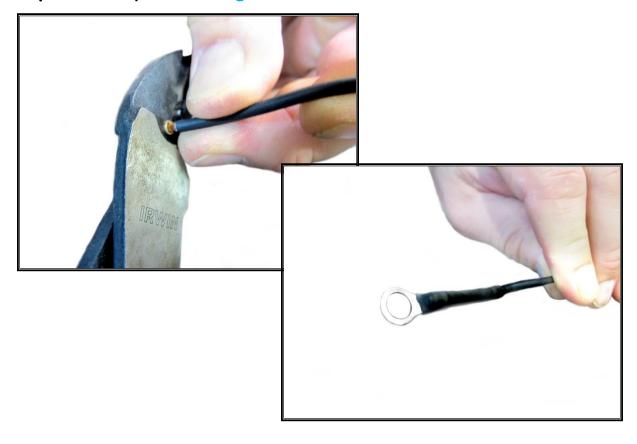




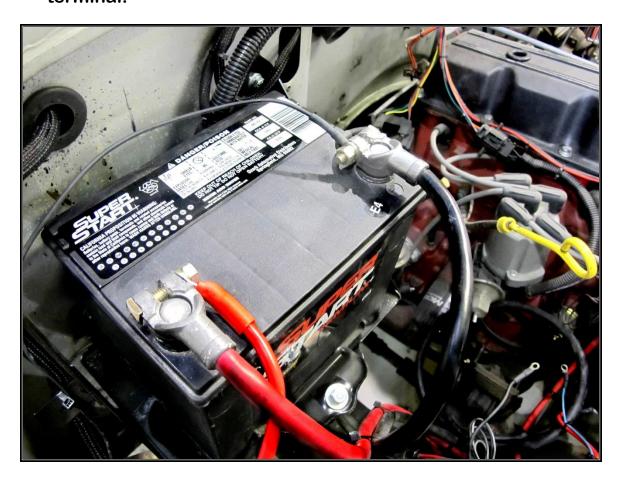
Step 67: Locate (1) 1/4" black heat shrink and (1) 16-14 ga. non-insulated ring terminal. Strip the wire about 1/4" and slide the heat shrink over it.



Step 68: Crimp on the ring terminal and secure it with the heat shrink.



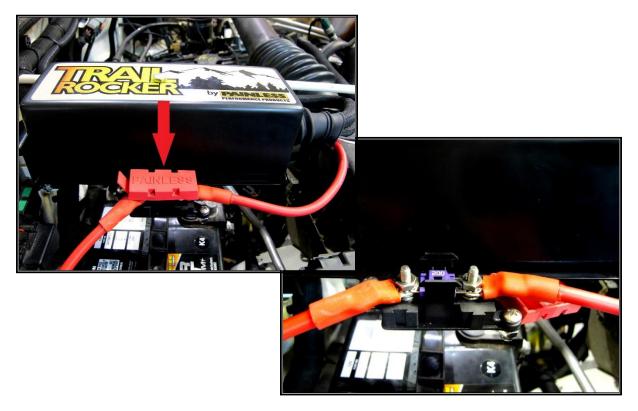
**Step 69:** Hook the terminals back up to your battery. Connect the red cable to the positive terminal and the ground wire to the negative terminal.



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

#### **FUSE PLACEMENT**

As seen in the <u>Final Steps</u> section the <u>200 amp midi fuse</u> is located on the fuse block on the side of the <u>Fuse/Relay Center mounting bracket</u>.



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.