

PAINLESS
PERFORMANCE PRODUCTS
AMERICAN MADE - AMERICAN PROUD
SINCE 1990



Wire Harness Installation Instructions

For Installing Harness Numbers:
**#10206 Classic Plus Customizable GM Pickup Chassis
Harness - 1967-72 - 28 Circuit**

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

Manual #90510

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If you have any questions concerning the installation of this harness, feel free to call Painless Performance Products' Tech Line at 1-800-423-9696. The Tech Line can be reached from 8 A.M. to 5 P.M. central time, Monday through Thursday, and 8 A.M. to 4:30 P.M. on Fridays.

We have attempted to provide you with as accurate of instructions as possible and are always concerned about corrections or improvements that can be made. If you have found any issues or omissions, or simply have comments or suggestions concerning these instructions, please write us at the above address, send us a fax at (817) 244-4024, or email us at painless@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 damage, 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.

Installation Manual: **90510**

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CAUTION: BEFORE THE REMOVAL OF YOUR ORIGINAL HARNESS AND/OR THE INSTALL OF YOUR NEW PAINLESS HARNESS, DISCONNECT THE POWER FROM YOUR VEHICLE BY REMOVING THE NEGATIVE OR POSITIVE BATTERY CABLE FROM THE BATTERY.

- A full-color copy of these instructions can be found online at:

<http://www.painlessperformance.com/manuals/10206.pdf>

- If your vehicle has an existing harness, you will want to retain it for the possible re-use of various pigtails and connector housings particular to your application. During the removal process, avoid making any unnecessary cuts.
- This harness is universal in nature. This means some ends are left open to allow you to cut each wire to length and install/make the appropriate connection. The small parts packages and the bag kits with terminals and connectors included with the harness will enable you to make connections.
- Only printed wires have a 900-series number. These 900-series numbers are used to identify various wires and circuits in the wiring diagrams that are a part of these instructions.

In the event that there are unused or unconnected wires, they will need to have their ends terminated with an insulated terminal or electrical tape. Doing so will prevent the wires from shorting and causing harness failure or fire.

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INTRODUCTION

Thank you for your purchase of a Painless Performance Products harness. This is a customizable harness; therefore, we suggest you retain your original harness for any unique plugs or connectors you may need while installing your new harness.

Included in this kit is a sheet of pre-printed labels, to assist in identifying of connections as the existing harness is removed from the vehicle. The factory harness can be a useful tool in the installation of your new Painless harness as it can give you a visual reference to connections that need to be made. Identifying and labeling these connections as the factory harness is disconnected is highly recommended.

The fuse block is pre-terminated, and the proper fuses for each circuit are pre-installed. All wires are colored based on the GM color code used during the production of the 1967-1972 GM truck. Also, each wire is marked with a 900-series wire number, what section the wire is in, and the wire's function. These 900-series numbers are assigned by Painless and do not correspond to any circuit numbers found on any factory wiring schematics. A Wire Index is located on [page 97](#) and provides a quick reference guide for the individual wires of this harness. The Wire Index identifies the gauge, color, what's printed on the wire, and point of origin for each wire.

During the course of this manual, you will notice wires with a slash (**Ex. BLUE/WHITE**). This indicates a wire with a stripe. The first color listed is the main wire color, and the second color will reference the stripe color. Therefore, the **BLUE/WHITE** example will be a **BLUE** wire with a **WHITE** Stripe.

Do not let the length of this instruction manual intimidate you. Much of the information contained in this manual is helpful information about each wire, where the wire comes from, where it goes, why a component needs it, etc. In many cases, there are multiple schematics as well as alternate connection options for the same wire/connection point due to this being a customizable harness. You will find that the actual install portions of this manual are pretty straightforward and easy to follow.

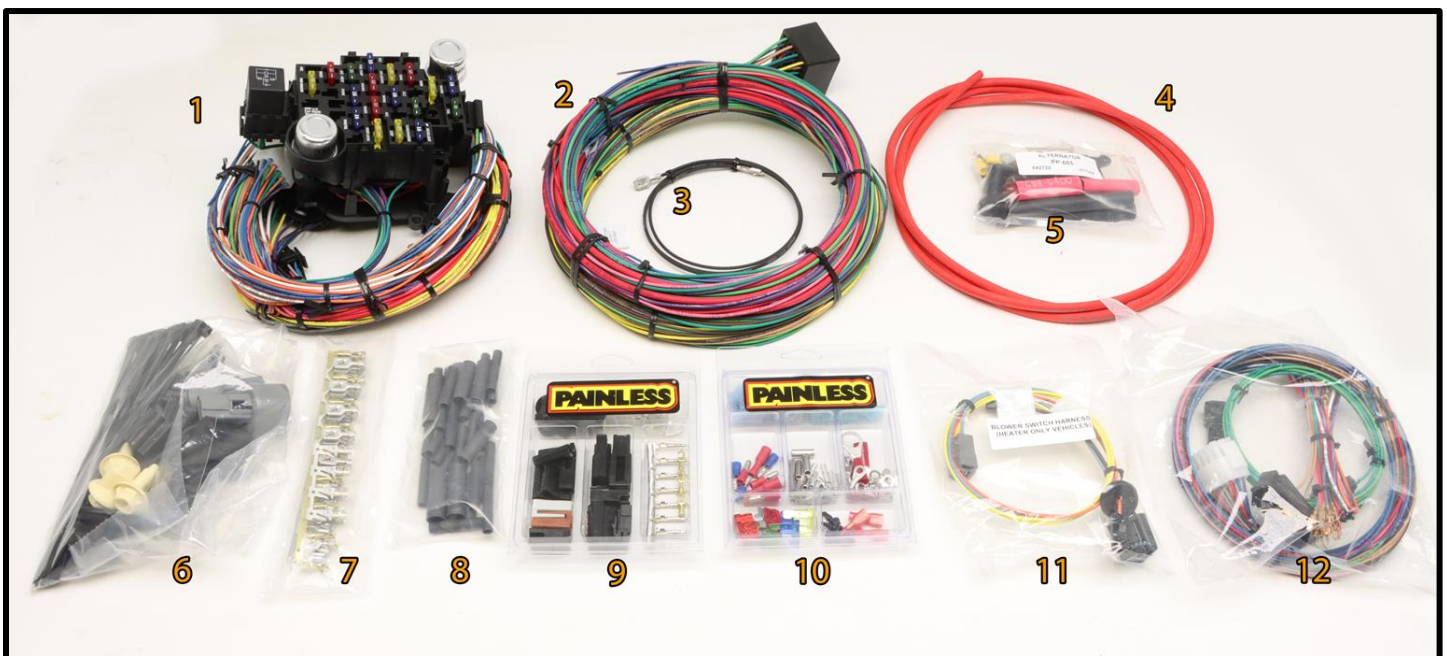
Individual components and sections are tied together for easy routing of the harness. GM color-coded wires, along with the schematic diagrams found throughout this manual and the printed circuit numbers and description printed on the wire, will help you identify the different circuits during installation and later on if additions to the overall system are necessary.

CONTENTS

Refer to the **Contents Picture** (below) to take inventory of this kit. 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 Wire Harness Kit 10206 contains the following:

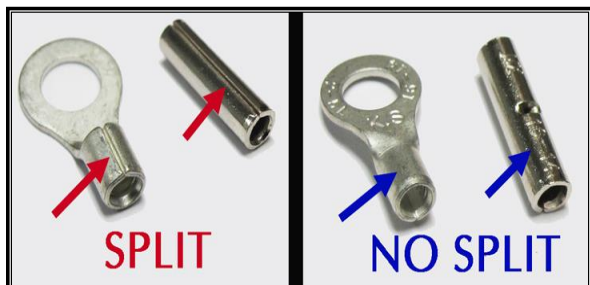
- 1) Pre-terminated fuse block and interior harness.
- 2) Bulkhead and exterior harness
- 3) Headlight ground wire
- 4) 6-Gauge charge Wire
- 5) Alternator bag
- 6) Miscellaneous parts bag that includes zip-ties, connectors and other parts
- 7) Factory style terminal bag
- 8) Heat shrink bag
- 9) Factory style small parts (connectors and terminals)
- 10) Universal style small parts (insulated & uninsulated terminals)
- 11) Heater Only Harness
- 12) Factory Gauge Cluster Harness, Aftermarket Gauge Cluster Harness, Reverse Switch Pigtail, NSS Connector Plug loop



SMALL PARTS

This Painless harness includes several parts kits containing a variety of terminals, fuses, and screws. Many of the terminals are non-insulated and require heat shrink to be applied after the terminal is properly crimped. Heat shrink is supplied with this kit.

These non-insulated terminals allow you to keep a cleaner, more factory look; colored insulated terminals can look out of place. When crimping these terminals, take notice to the split in the terminal. Always make sure the split in these non-insulated terminals is facing the groove.



“Umbrella” style zip-tie clips have been provided for you to attach the Painless harness to the inner fender, core support, and/or frame. These zip-tie clips fit into $\frac{1}{4}$ ” holes left behind by factory plastic retainer loops or those created with a drill by the installer.

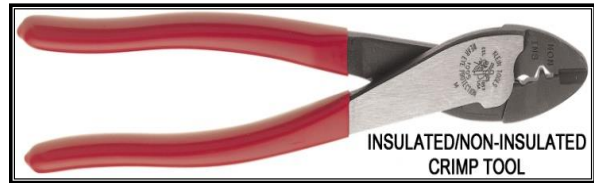


TOOLS NEEDED

In addition to your regular hand tools, you will need, at least, the following tools:

- **Wire Crimping and Stripping Tools:**

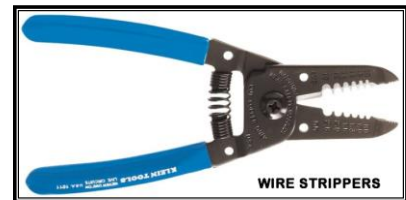
- This style of hand crimper can be purchased from just about any local auto parts store, home improvement store or can also be purchased online. You will need this style of crimper to crimp the heat shrinkable and non-heat shrinkable, insulated terminals included in the small parts kit.



- Another style of crimpers is “Jaw Crimpers” or “Roll-Over Crimpers.” These crimpers will crimp factory style, non-insulated terminals. These types of terminals are provided in the kit for connecting to an HEI distributor, headlights, and factory style alternator. Painless offers “Jaw Crimpers,” such as those seen to the right, under [Painless part #70900](#).



- A good set of wire strippers is required to strip wire properly. This style of wire stripper is ideal for this harness install because of its ability to properly strip wire gauges 10 to 20. These are available from just about any local auto part store, electrical supply shop, home improvement store or can be purchased online.



- A hammer crimper, seen to the right, will be useful for crimping ends onto large gauge wires. These crimpers will crimp large, non-insulated terminals, and can be purchased relatively cheaply from most auto parts stores and online.



- **Volt/Ohm Meter:**

A Volt/Ohm meter is always a good tool to have on hand when installing any type of electrical components in a vehicle. Most basic units provide the two functions required to diagnose electrical issues 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, electrical supply shop, and online.



- **Electric Drill & Drill Bits:**

A drill and bits are needed in order to mount the MIDI fuse holder. Additionally, a $\frac{1}{4}$ " drill bit is required in order to mount the "umbrella" style zip-ties provided with the kit.

- **Heat Gun:**

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



- **Factory Wire Schematic**

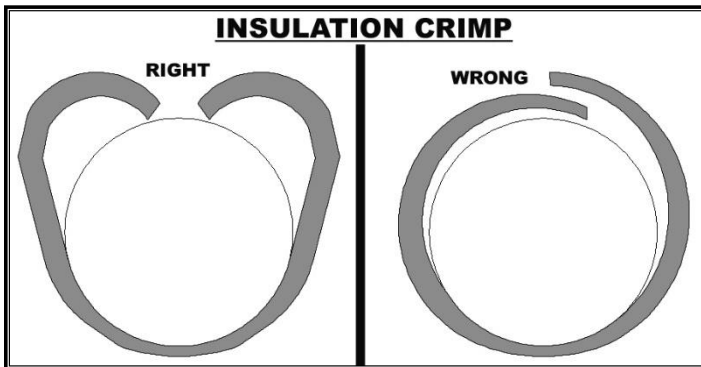
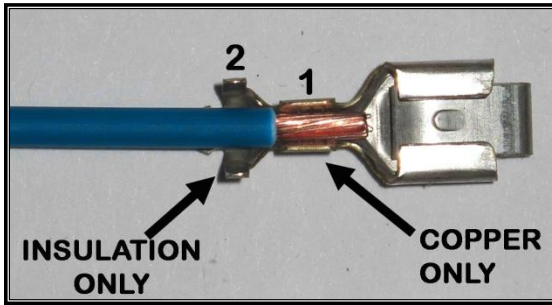
This isn't absolutely necessary; however, having one handy is good practice with any electrical job.

TO REMOVE A TERMINAL



- Notice the locking tang that holds the terminal in the connector. Locate the tang access slot on the terminal end of the connector. Push a paper clip, stiff wire, or a small flat head screwdriver into the slot to depress the locking tang on the terminal.
- Once depressed, pull the harness wire from the connector. Do not pull too hard or you could pull the wire out of the terminal; this leaves the terminal stuck in the connector.
- Some pigtails have been provided in this kit to make connections simpler. However, those who want a cleaner connection, without creating a splice, may wish to run wires directly to the connector.
 - Remove the wires from the pigtail connector using the method above. Then cut the appropriate harness wires to length, strip them $\frac{1}{4}$ ", and use the provided terminals to install them into the now unpopulated pigtail connector.

INSTALLING FACTORY STYLE TERMINALS

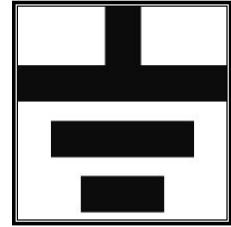


In the parts kit, you will see different uninsulated male and female terminals. These terminals are for factory style connections and require roll over crimpers.

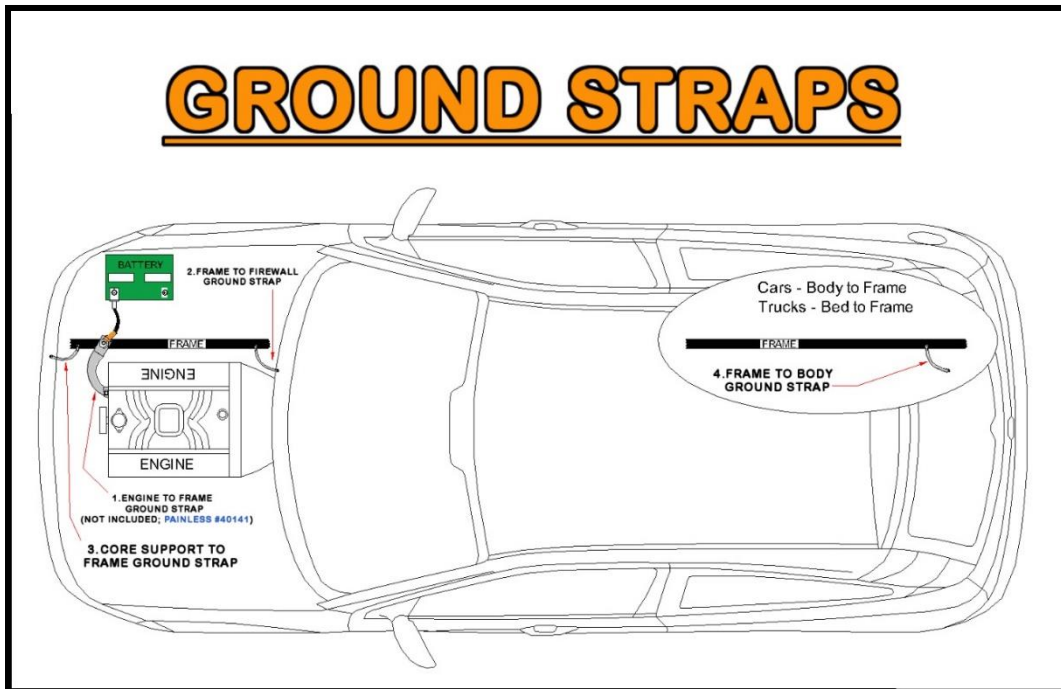
- Strip about $\frac{1}{4}$ " of insulation off of the wire.
- Insert the wire into the terminal. There are two terminal straps on the terminal. For instructional purposes, we will label them 1 and 2. Strap 1 crimps the exposed copper strands of the wire, while strap 2 crimps the wire insulation. Make your strip length long enough to ensure only copper strands are crimped by Strap 1 but short enough that only insulation is crimped by Strap 2. The photo to the left best demonstrates this.
- Using the appropriate jaw on the crimpers, crimp Strap 1. The appropriate jaw depends on the wire gauge as well as the terminal stiffness. If you are unsure which jaw to use, you can always start with the biggest and work your way down until you get a tight crimp.
- With Strap 1 crimped, move onto crimping the insulation strap: Strap 2. Place Strap 2 into the appropriate jaw of the crimpers. This jaw will be larger than the one used to crimp the first strap. Crimp down on Strap 2 making sure the strap folds down into the wire, and not overlapping itself. Refer to the drawing to the left. Overlapping could cause problems with the terminal fitting into the factory connector.

GROUNDS

Throughout this instruction manual, and when looking at the Painless harness, you will see the word GROUND. Maybe you have seen the ground symbol on wiring diagrams before? What exactly is a ground and why do you need it?



You have probably noticed the large cable coming from the negative side of your battery going down to the frame or to the engine. This cable allows voltage to get back to the battery through the metal of the frame and all the other metal pieces bolted to the frame. **It is also important to have ground cables going from the frame to the engine and from the frame to the body.**

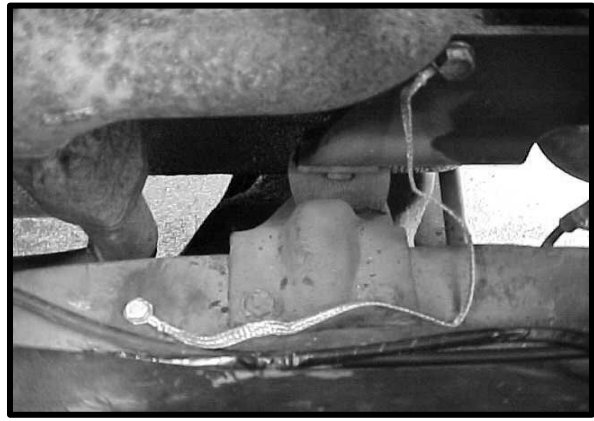


A ground is simply the common path electrical current follows back to the battery. A ground, or chassis ground as it is often called, is any bare metal surface found on the vehicle which is in turn connected back to the frame/negative side of the battery through mounting points and ground straps. Grounds are needed in order for the electrical current to complete the circuit.

There are two ways components are grounded in vehicles: through mounting and through a wired connection.

Some grounds are supplied through mounting of the metal housings in which bulbs are installed, like turn signal or tail light housings. Components with plastic housings or non-conductive housings, like headlights which are glass, get their grounds through wires from the chassis harness.

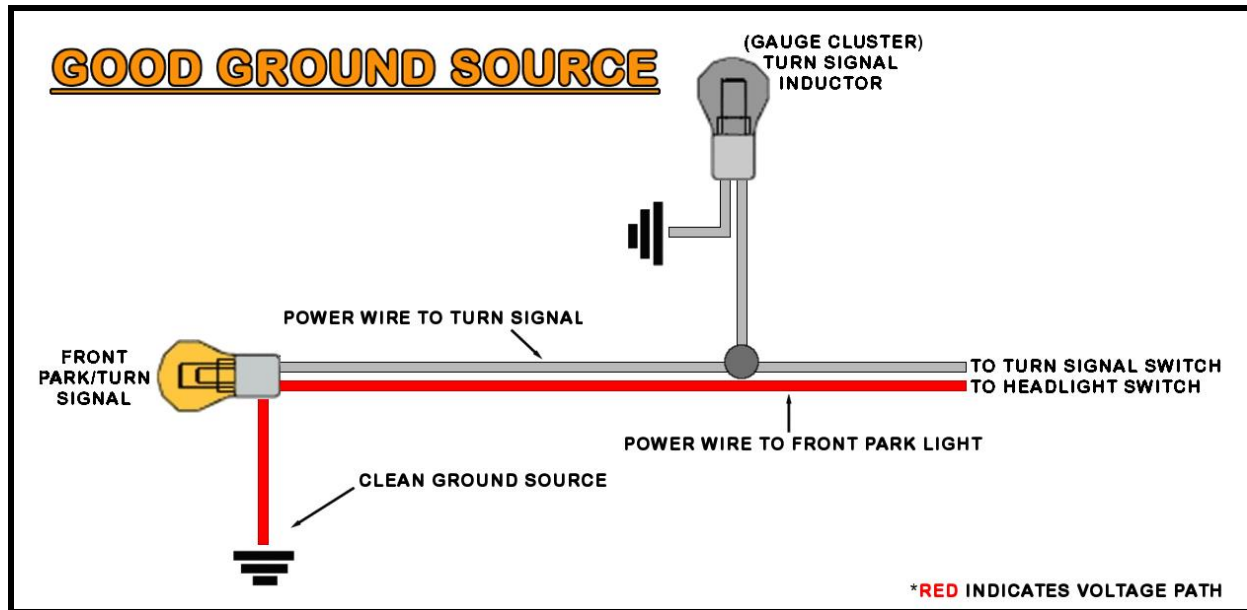
Make sure all mounting points are clean by removing any dirt, corrosion, and/or paint. This includes light housings that ground through mounting them and the harness ground wire connection point. This is especially important for cars that have recently been painted as paint build up will cause grounding issues. 80 grit or courser sandpaper should be all that's needed to properly clean grounding points.



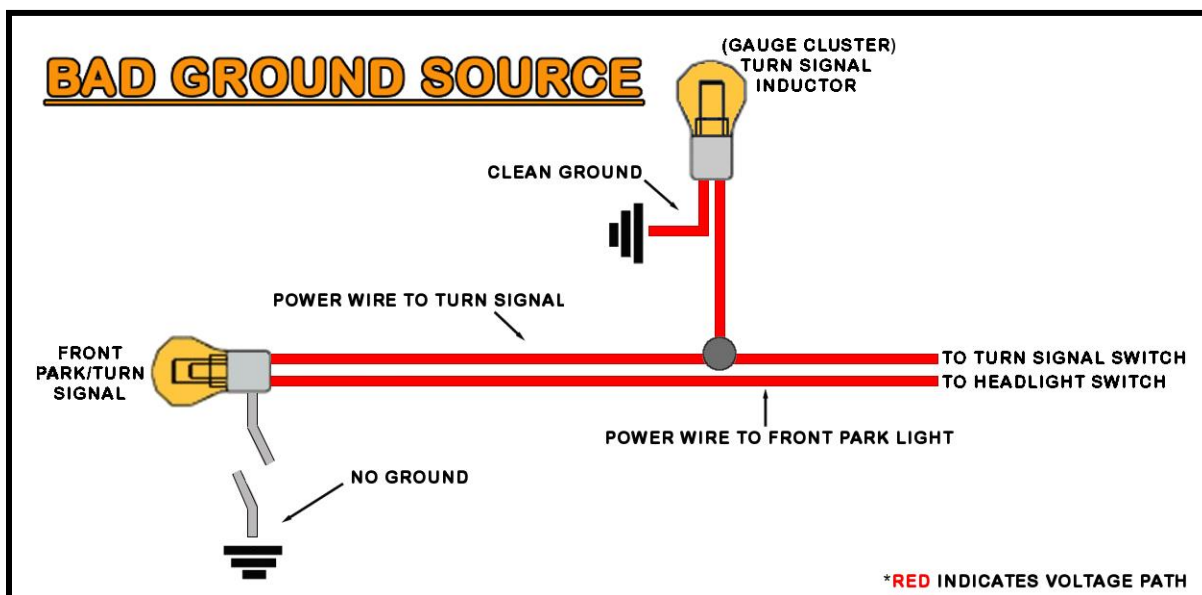
WHY ARE CLEAN GROUNDS IMPORTANT?

As an example, we will use a front turn signal that also functions as a park light. Follow the red line from right to left in the diagram below. This red line indicates the path the electrical current takes when everything is properly grounded. The diagram on the next page represents when the ground is bad. Notice which bulbs illuminate when good and bad grounds are present.

In our park light example with a good ground source, current travels from the headlight switch to the park light bulb element. Since the bulb is properly grounded, current passes cleanly through the bulb causing it to illuminate and the current exits the bulb through the ground source back to the battery. The ground allows everything to work properly without any issues.



When a ground is not connected properly or is contaminated with dirt, corrosion, or paint, the current will then find the easiest path to ground. This is represented in the diagram below.



Current travels from the headlight switch to the park light bulb element, but wait: there is no ground at the bulb. Since the ground it normally uses is not there, the current finds another path to ground and back to the battery. When this happens, things that should not have power receive power coming from the park light bulb. Since the turn signal wire also goes to the bulb, the current will travel out of the bulb through the turn signal wire. Notice this bad ground at the front park/turn signal bulb can cause issues on the interior of the vehicle at the turn signal indicator on the dash. In this case, the turn signal indicator light is illuminated when it should not be. Also, since this one power source which was only supposed to power 1 bulb is now powering 2 bulbs, both bulbs may be dimmer than they would be if everything was grounded properly. This is one of the problems with diagnosing a bad ground: they can cause issues throughout the entire vehicle.

FUSE BLOCK

Your Painless harness contains a pre-terminated fuse block that uses modern ATC blade style fuses. There are 19 fuses controlling 27 circuits. This fuse block allows the convenience of having both flashers (turn signal and hazard), as well as the horn relay, all mounted in one location.

HORN RELAY

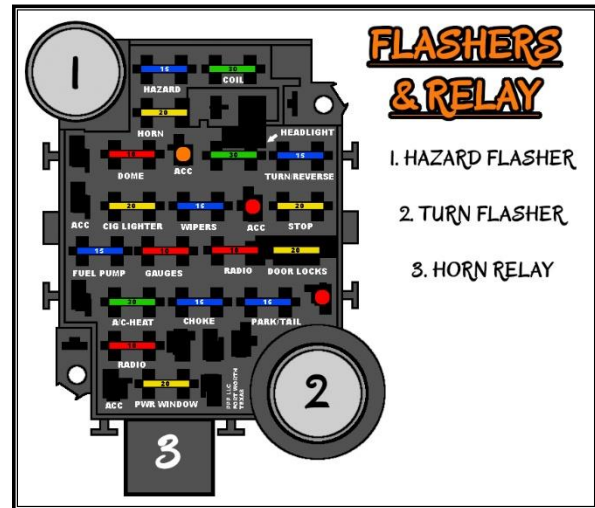
On the fuse block, you will find a horn relay that replaces the factory core support/firewall mounted horn relay found on many older vehicles. The fuse block mounted horn relay uses a standard 30-amp SPST relay and is ground activated from a wire in the Turn Signal Switch group of wires. Replacement relays for the horn relay can be found at any auto parts store or by ordering [Painless part #80131](#).

FLASHERS

The two flashers simply switch power on and off going to the turn signal switch and hazard switch. The flasher on the right is the hazard flasher. The flasher on the left is the turn flasher.

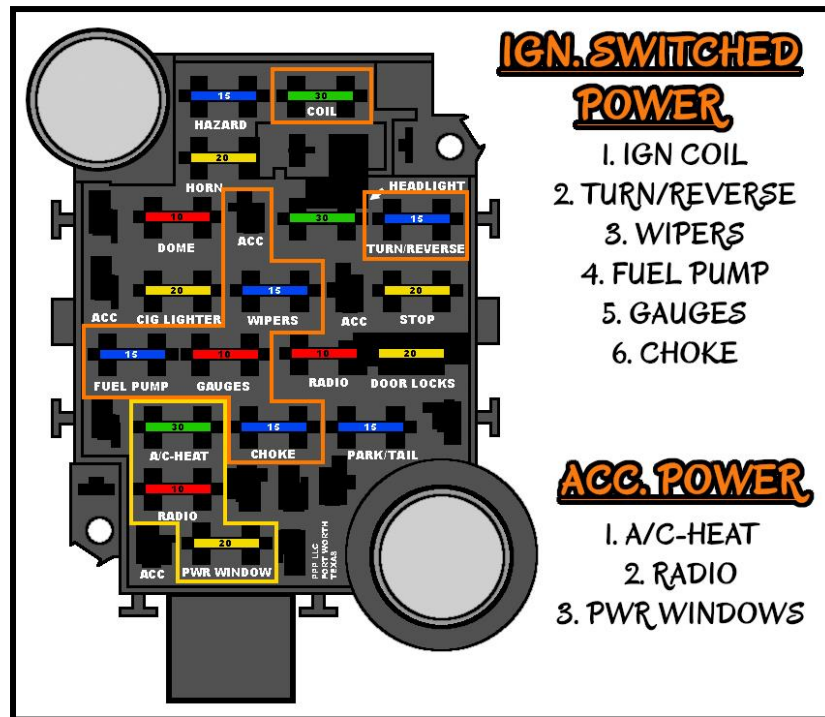
How a flasher functions is simple. Power is switched off and on according to heat built in the resistance wire inside the flasher. As soon as the current is drawn through the flasher, as when the turn signal or hazard switch is activated, the resistance wire heats up and makes contact with the output side of the flasher. This contact passes power through the flasher, into the switch and to the turn signal lamp(s). Once this contact is made, the resistance wire is no longer resisting any current, so it begins to cool; this cooling causes the flasher to lose contact. This loss of contact means that there is no longer any current going to the switch, causing the turn signal light to turn off. Once contact is lost, the resistance wire begins heating up and the entire process starts over again until the turn signal switch or hazard switch is disengaged

Most LED turn signal lights do not draw enough current to activate a typical thermal flasher. If you are using LED turn signals, and your turn signals do not work properly and you are certain everything is connected properly, a no-load flasher will be required ([Painless part # 80230](#)).



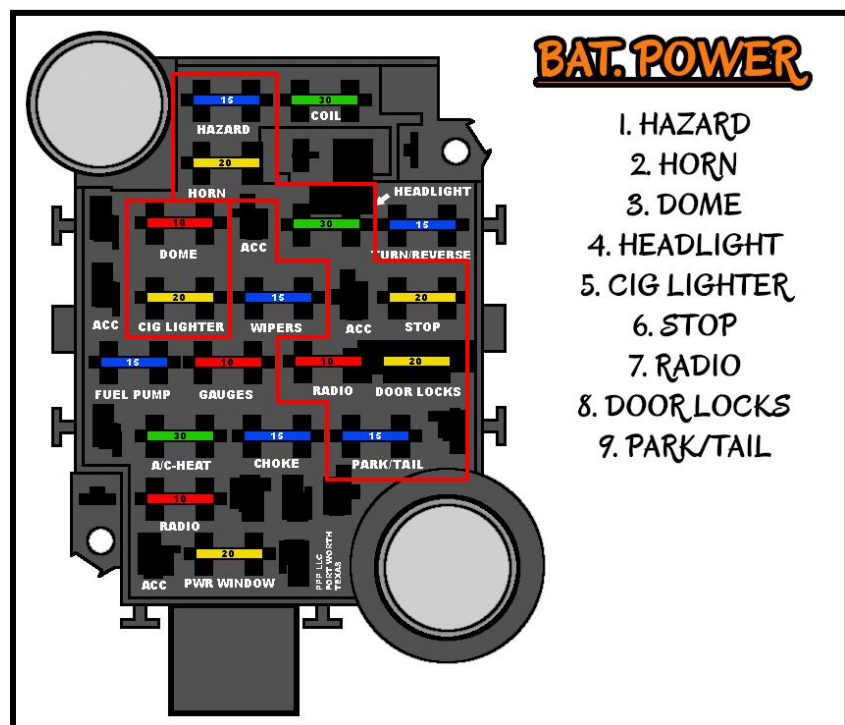
FUSE IDENTIFICATION

The following two diagrams and information will detail each fuse and which components/circuits each fuse powers.



The drawing above shows all the switched ignition fuses. These fuses are powered by wires coming from the ignition switch (wires #932, and #933) and receive power depending on what position the ignition switch is in. **None of these fuses should have power when the ignition is in the OFF position.** The **Ignition Switch Section** beginning on [page 85](#) of this manual will go into further detail about power supplied to these fuses.

The drawing to the right shows all the battery power fuses. These fuses are powered by a wire that comes from the large power splice, seen on [pages 43 & 51](#). The battery power fuses have power at all times.

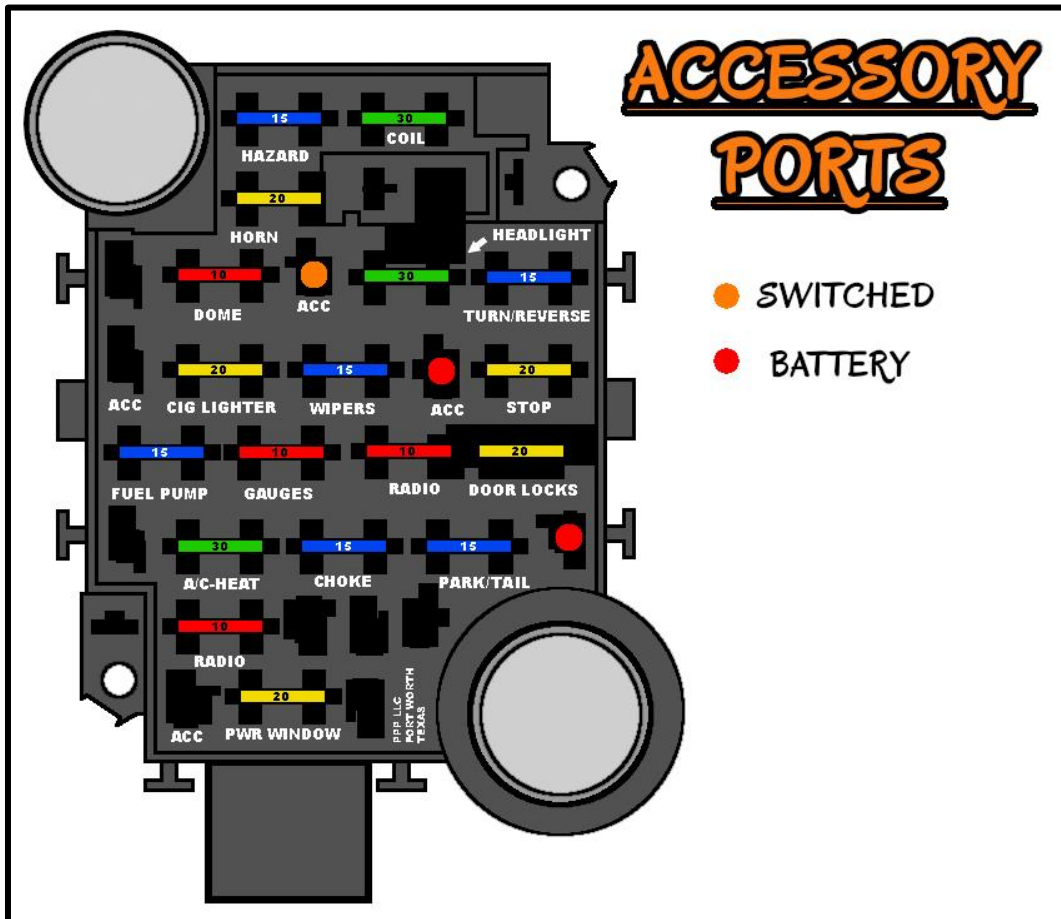


ACCESSORY PORTS

You will notice three (3) terminated power ports on the front of the fuse block. These ports give you access to constant power and switched power for extra circuits you may need now or in the future. Terminals and a connector, seen to the right, are provided in the parts kit to allow you to tap into one of these extra sources.



Since each of these ports is keyed differently, simply shave the key on the connector off to allow connection into any port. The power ports marked below in with a dot are un-fused power sources and must have an inline fuse, no larger than 10 amps, installed before being routed to a component needing power.



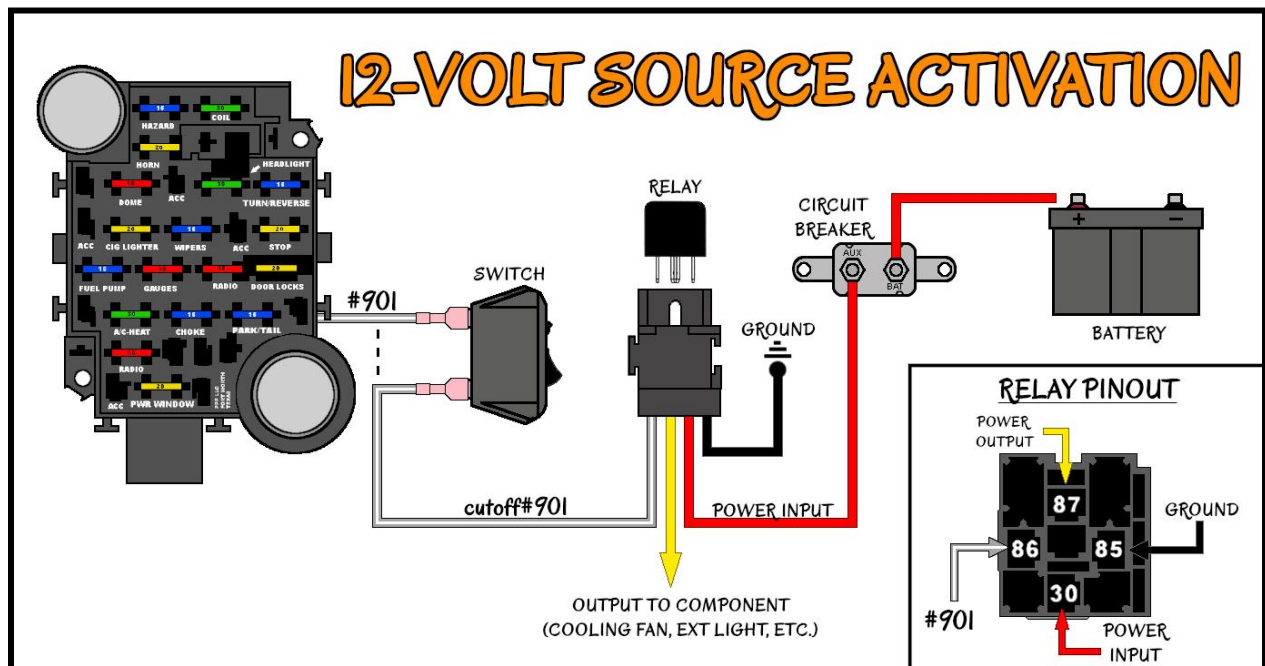
RELAYS & SWITCHES

All ACCESSORY wires found in this harness can support up to 15 amps. Components requiring more amperage will need to be connected to a relay. An ACCESSORY wire can be used as a 12-volt activation source or 12-volt source for ground activation in these circumstances. Take a look at Painless [part #'s 30107 & 30108](#) to fill your relay needs at www.painlessperformance.com/webcatalog/relay.

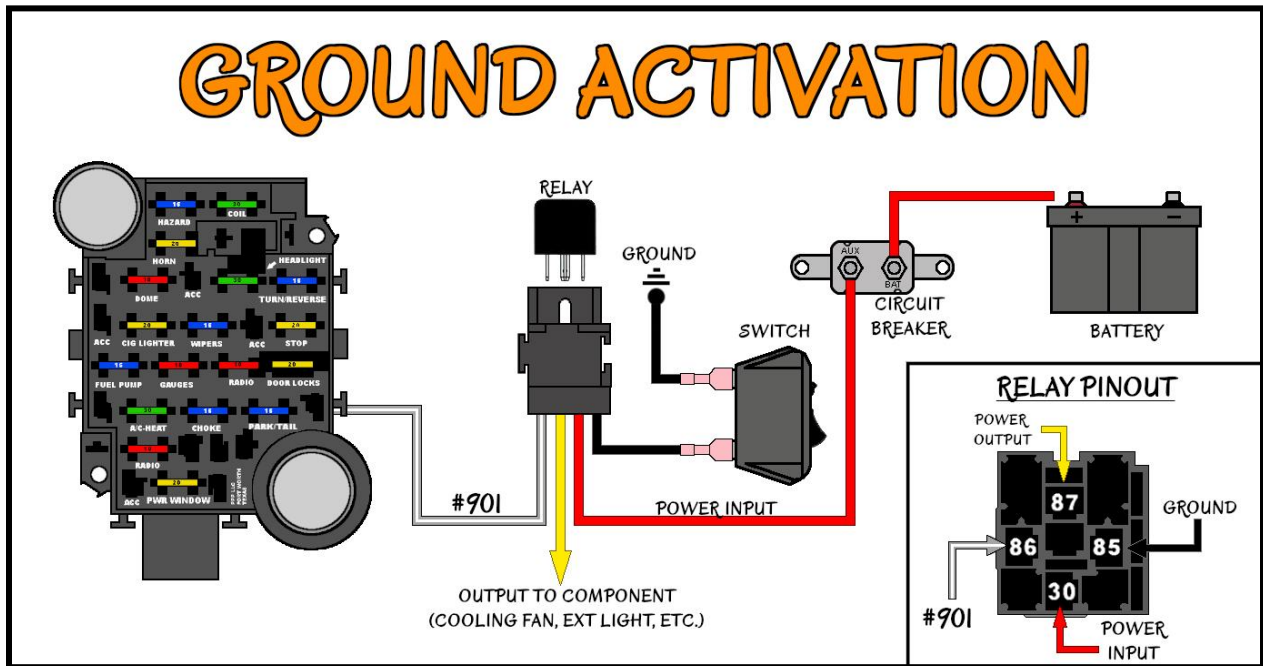
A 12-volt activated relay is constantly grounded. As the name implies, the relay sends power from the output side of the relay to the component being powered when 12 volts is applied. The 12-volt source can be wired directly to the relay or interrupted by a switch, as shown in the *12-VOLT SOURCE ACTIVATION* drawing.

Wiring directly to the relay, as indicated by the dashed line, would be used in the case of wiring a water pump relay or any other high amperage component you would want to run continuously while the key is in the on position. In these cases, make certain the 12-volt wire you are using is an Ignition Switched 12-volt wire and not a battery constant hot.

The 12-volt activation wire can also be wired to a switch to offer the user OFF/ON capabilities. In these situations, a constant battery power source would be used. This would allow a component to be turned OFF or ON without the key in the ON position. However, unless a lighted switch is being used, a ground activated relay may work better to avoid running power through the switch.

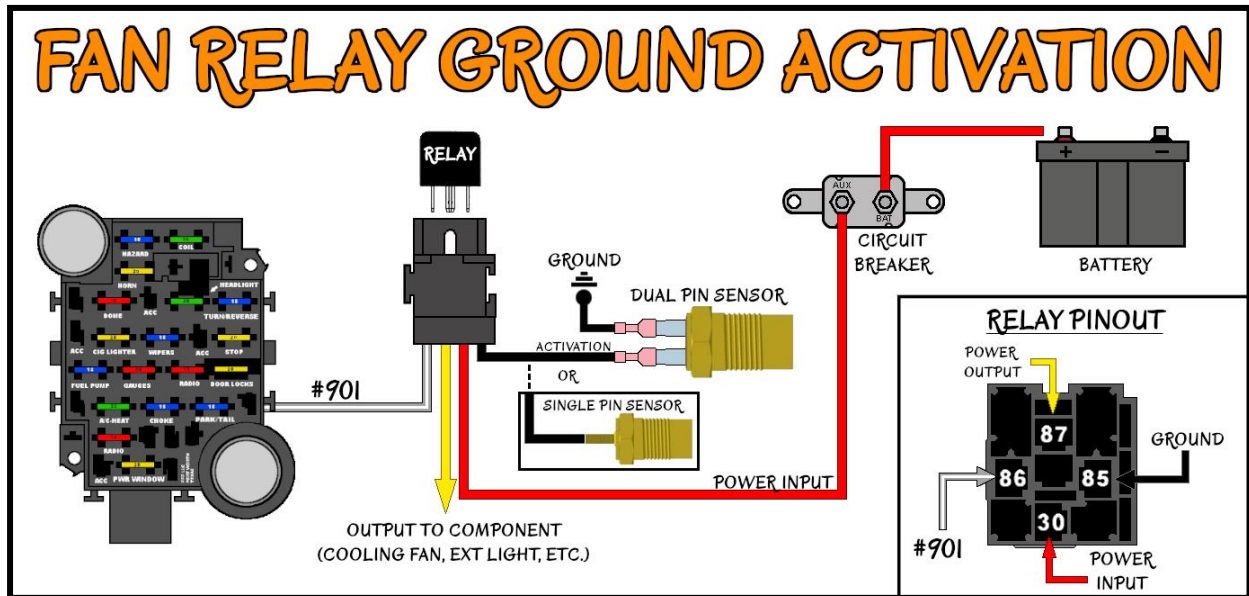


GROUND ACTIVATION



A ground activated relay is just the opposite of the 12-volt activated relay; 12 volts (battery constant or switched) is supplied uninterrupted and the ground wire is switched. The Horn Relay pre-wired in the Painless harness is a Ground Activated Relay. Another example of this method is a thermostat operated fan relay. In this case, however, a thermostatic switch would replace the switch in the drawing above (see below).

FAN RELAY GROUND ACTIVATION



IN THE EVENT THAT A TOGGLE/ROCKER SWITCH IS BEING USED WITHOUT A RELAY, MAKE SURE THE AMPERAGE OF THE COMPONENT YOU ARE POWERING DOES NOT EXCEED THE CAPABILITIES OF THE SWITCH OR SWITCH FAILURE WILL OCCUR. IF YOU NEED A RELAY KIT [PAINLESS OFFERS PART #'S 30128, 30128, & 30130.](#)

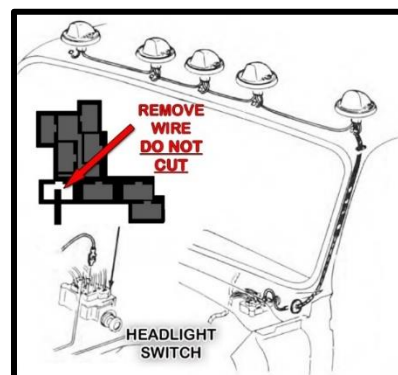
OLD FACTORY HARNESS REMOVAL

During the removal of the old harness avoid making any unnecessary cuts to any wires. The entire harness should be able to come out of the vehicle without any cutting at all unless someone has modified connections.

Labeling the factory harness is highly suggested as it may be helpful to look back at the factory harness during the install of the new Painless harness. Plus, taking this step helps you identify anything that may not be included in the Painless harness and will need to be re-used. Take photos or make a drawing of any connections that have multiple connectors, like at the wiper motor, wiper switch, radio, etc. to help with reconnecting the new harness.

Dome Lights: When disconnecting the dome light connection, there is no need to remove the wiring going behind the headliner, just simply unplug the inline connector that leads to the dome light. This wiring factory wiring will also include wiring for the cargo lamp switch on trucks with that option.

Cab Lights: Those trucks equipped with roof-mounted marker lights, there is a **BROWN** wire running to your headlight switch. The position of this wire is identified in the diagram to the right. This wire must be removed from the connector, so that the **BROWN** wire stays in the truck when the rest of the interior harness is removed. This wire will later be re-connected to the headlight switch of the new Painless harness.



Trucks with factory A/C, aftermarket power locks and/or windows: These accessory harnesses **DO NOT** need to be removed during the removal process. They are their own separate harnesses. The power supplies for these separate harnesses simply need to be disconnected. The factory A/C harness receives power from an in-line connection at the A/C switch.

Trucks with a factory manual transmission: Two wires, light green and dark green, for the reverse switch run from the transmission into the interior of the truck through a hole in the firewall and plugs into the truck's chassis harness near the steering column. Remove this factory extension as Painless provides a replacement pigtail found in the kit. The provided extension will simply plug into the Painless harness reverse switch connector just as the factory pigtail did.

4x4: The factory 4x4 indicator socket and ground wire will need to be re-used. This ground wire connects to the 2-pin switch on the transfer case. The other pin on the transfer case switch will connect to a chassis ground source.

'67 - '68 Front Park/Turn Signals: On all models, the pigtail on the front park/turn lights ends in a rubber connector that fits into the core support. On the '67 & '68 models these connectors should be removed. They will be replaced by a grommet and t-connector that matches the pinout of the later models. See **Front Lighting Section** on [page 23](#).

PRE-INSTALLATION GUIDELINES

Before moving your new harness into your vehicle, it is a good exercise to lay the entire harness out and look over the individual sections that make up the harness. This allows you to get familiar with where specific wires are located and to move and regroup any wires necessary. All wires of this harness have ample length to account for the numerous different truck models and options the harness can fit. They are clearly marked to help ease the process of routing. This allows you to route your wires cleanly, and in the case of open-ended wires, terminate at the length you find fits your build best.

The **WIRE INDEX** on [page 97](#) helps to quickly identify each wire in each section. During this familiarization process is the perfect time to custom tailor your new Painless Harness to your particular vehicle. Use the following instructions to help get your harness ready for installation.

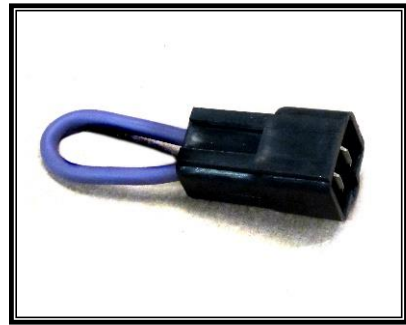
DO NOT SKIP THESE PRE-INSTALLATION STEPS.

Read through this entire manual before any wires are removed from the harness

- Locate the **Dome Light Section**, these wires are open-ended. If you are not running an audio amplifier, and do not plan on ever connecting one, the **BLUE #998** wire can be removed from the harness. The other end of this wire can be found in the **Radio Section**
- If you have a frame mounted fuel tank, the **TAN #939** wire in the **Dome Light Section** will not be needed. This wire is doubled with the fuel gauge signal wire at the bulkhead. **Do not remove the fuel gauge signal wire.**
- **Fan Relay/ Thermostatic Switch:** Locate the **GRY/WHT #901** wire. If you have a fan relay mounted in the engine compartment, this wire will need to exit a pre-existing hole in the firewall. It can be re-routed now to a portion of the interior harness that will line up with one of these firewall holes.
- **Reverse Switch:** If you have a transmission-mounted reverse switch and need to access the connection in the engine compartment, connect the provided extension pigtail from the kit. These wires will need to exit a pre-existing hole in the firewall. Plug this extension into the reverse switch connector. The extension can be re-routed now to a portion of the interior harness that will line up with one of these firewall holes.



- **NSS Switch:** This harness is set up for a column-mounted Reverse/NSS switch. If you have a transmission-mounted NSS, find the **NSS Conn Loop** in the parts kit. Attach the loop to the NSS connector under the dash. This plug jumpers the wires going to the NSS connector and sends power directly to the **PURPLE #919** wire in the **Engine Section**. The **PURPLE #919** wire should then be re-routed to the transmission-mounted NSS switch.



Painless does not recommend removing any power wires from the fuse block as they can possibly be used to power other things.

- **Aftermarket GM Columns:** For those using a later model or aftermarket GM style column, Painless offers a connector kit (**part #30840**) to replace the installed connector.



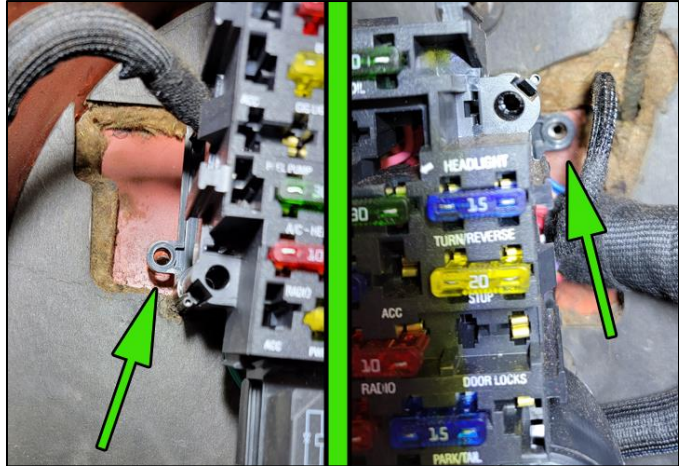
When bundling wires into groups, use cable ties, split loom, or tape. The exposed wires in the engine compartment and wires running to the rear of the vehicle are best protected by wire loom or covering. *Painless offers **Power Braid Kit part #70920** and the **Classic Braid #70970** to fill this need. These kits include everything you need to properly protect your new chassis harness.* A sample card of each braid type was provided with this kit.



FUSE BLOCK MOUNTING

The Painless fuse block and bulkhead will fit the factory firewall opening left behind by the factory bulkhead.

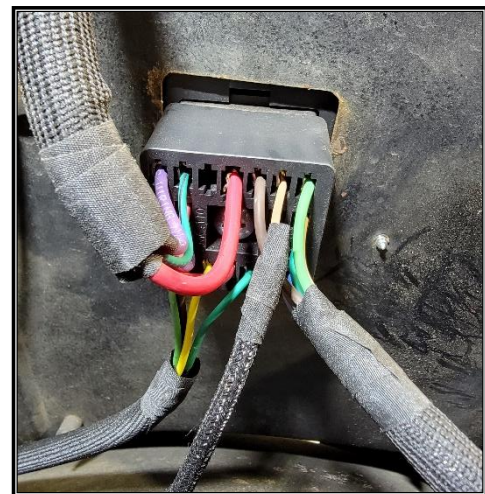
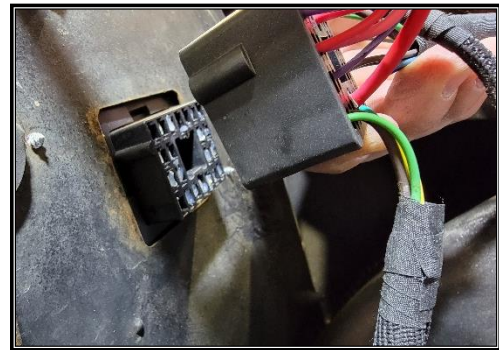
- Install the provided foam gasket onto the bulkhead that is attached to the fuse block. Ensure the gasket is orientated properly on the fuse block before peeling the white film covering the adhesive on the gasket. The adhesive will secure the gasket to the bulkhead connector.
- Locate the **two (2) 8 x 1/2" self-tapping screws** from the parts kit. These screws are used to mount the fuse block to the firewall utilizing the factory mounting holes in the firewall and the mounting tabs on the interior bulkhead.
- Using a **5/16" nut driver/socket** or a **flat blade screwdriver**, tighten the screws to secure the fuse block.



Do Not over tighten as the mounting tabs of the bulkhead could break.

ENGINE BULKHEAD MOUNTING

- Find the tube of dielectric grease in the parts kit and apply a small amount of grease into each terminal of the **Engine Bulkhead Connector**.
- Push the engine bulkhead onto the firewall connector as far as you can, it will not go all the way on. Make sure the connector is on straight. The terminals of the bulkhead will easily bend. There is a keyway on the side of both bulkheads to ensure it will only plug together one way.
- Locate the 1.5" 1/4x20 bolt from the bag kit. This is the bolt that will secure the engine bulkhead to the interior bulkhead.
- Using a **Phillips head screwdriver**, tighten the mounting thru bolt on the engine bulkhead to the firewall connector. **DO NOT FORCE OR OVERTIGHTEN!**



BEFORE ROUTING THE ENGINE HARNESS

The routing of the Engine/ Headlight Harness, covered in the next section, follows much of the factory harness routing. It will be up to you, the installer, to position all wires away from sharp edges, hood hinges, moving parts and exhaust heat.

“Umbrella” style clips for cable ties have been provided for you to attach the Painless harness to the inner fender and the core support in the same fashion the factory did. These cable tie clips fit into the $\frac{1}{4}$ ” holes left behind by the factory plastic retainer loops, or those you drill yourself.

Remember, as the cable ties are installed and the harness is routed, wrap the tie around the harness and **LOOSELY** tie the harness to the mounting surface. Make sure you leave enough room to pull and push the harness as you make your connections. Only when all connections are made, will the cable ties be tightened.



HARNESS ROUTING

Loosely route all of the wire groups to their designated connection points. **NO CONNECTIONS OR CUTTING WILL TAKE PLACE AT THIS TIME.** Harness routing is and should be a time-consuming task. Taking your time will enhance the appearance and quality of the installation. Please be patient and **TAKE YOUR TIME. REMEMBER TO ROUTE THE HARNESS AWAY FROM SHARP EDGES, EXHAUST PIPES, HOOD, AND DOOR HINGES, ETC.**

WHILE ROUTING WIRES: If you are to go through a core support or any other metal pass-through **YOU MUST INSTALL A RUBBER GROMMET.**

FRONT LIGHT & ALTERNATOR SECTIONS

- Route the **Front Light Section** & the **Alternator Section** (if you have a factory external voltage regulator for your alternator) along the inner driver side fender to the core support. Secure the harness to the fender with the factory loom clips or use the umbrella clips and cable ties.
- Once at the core support, isolate the wires for the left-hand side headlight and turn signal and possibly the horn wire, depending on where the horn(s) are located.
- Use a **½” socket** to remove the radiator support brackets.
- Route the wires for the passenger side lights across the core support to the right side of the vehicle. Most trucks will have a rubber lining running the length of the core support. Route the wires through this lining and replace the radiator support brackets.
- **‘67 & ‘68 models:** When routing the park/turn signal wires through the core support use the **5/16” rubber grommets** from the parts kit.



ENGINE & TAIL SECTIONS

- The **Engine Section** routes up from the bulkhead, above the brake booster and across the firewall in the factory plastic channel that houses the washer nozzle hoses. If you have an internally regulated alternator, the **Alternator Section** will route with the **Engine Section** at this time.
- These wires are easiest to route to their final location when their specific connections are made.



- Route the **Tail Section** down away from the bulkhead, under the steering shaft, and mount to the firewall using the factory harness strap.
- Continue to route the **Tail Section** down to the frame and back towards the rear. Be sure to avoid routing wires around any transmission shift linkage.
- At the back of the vehicle, use the **7/8" rubber grommet** included in the parts kit to pass through the frame.
- Then, route the wires to the left and right connections as indicated by the print found on the wires.

INTERIOR HARNESS

- Route the wires intended for dash-mounted components/switches towards their connection points on the dash at this time. Pay attention to the **Courtesy Light Section** and **Accessory Section** as both bundles contain wires that can/will be routed to different places.
- Route the **Dome Section**, **BLUE #998**, and the **TAN #939** wires if the fuel tank is cab mounted down from the fuse block and through the groove in the door jamb.
- Some cab mounted fuel tanks have mounting clips on the seam of the tank that can be used to route the **TAN #939** wire.

Once all the wires are routed and running to the general location of their components, you can begin making connections. We prefer to start with the **Front-Lighting Section** and work from the front of the vehicle to the back.

FRONT LIGHTING SECTION

Once all the wires are routed, we will begin with the **Front Light Section** connections.

The **Front Light Section** of this Painless Harness includes all power wires needed to properly hook up both headlights & the front turn signal lights. There is also a power wire from the fuse block mounted horn relay as well as an accessory wire, generally used as power to the activation side of a relay. All wires in the **Front Light Section** can be seen in the [Front Lighting Schematic](#) on [page 29](#).

Connectors (shown in the image below) have been provided in the parts kit to allow proper connection to standard H4, 2 or 3-prong headlights.



If halogen bulbs are being used, a separate headlight relay kit MUST be used. Due to the higher amperage demands of halogen lights, these lights will cause the circuit breaker in the headlight switch to fail. A headlight relay harness provides battery power through the relays directly to the headlight bulbs. The headlight switch will activate the relays, thus drawing only 1 amp of current. This is beneficial for both the longevity of the headlight switch and the brightness of headlight bulbs themselves. Painless offers part [#30815](#) for single headlight and [#30814](#) for dual/quad headlights vehicles.



LEFT PARK / SIDE MARKER LIGHT

The driver side, fender mounted marker light is the next connection. This feature began in 1970. If you have a 1967-1969 you will not have a marker light to connect to. You may insulate the ends of the below mentioned wires to keep them from shorting or follow these wires in the harness and cut them from the splices they originate from.



The park light feature is activated by a power source coming from the headlight switch. This light illuminates any time the headlight switch is in the "PARK" or "ON" position. The turn signal feature is provided by a power source coming from the turn signal switch.

The left side marker requires two wires to work properly. These wires are:

PURPLE: 18-gauge wire, printed **[FRONT LIGHT SECTION] #988 SIDE MARKER**, this is a power wire for the side marker light function. This **#988** is tied to the other **#988** & **#927** wires in the **Front Light Section**. This wire has power anytime the headlight switch is in the Park/Tail Lights ON or Headlights ON position.

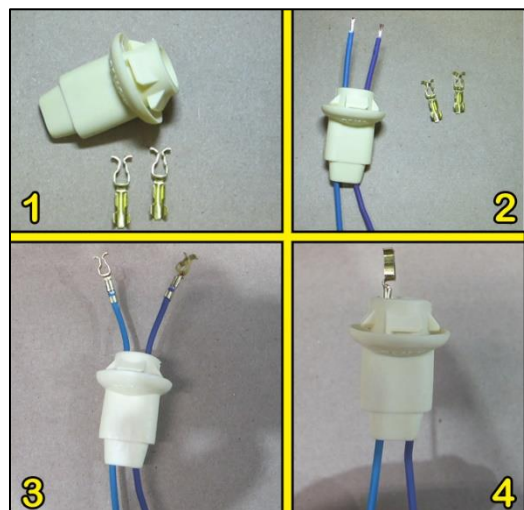
LT. BLUE: 18-gauge wire, **[FRONT LIGHT SECTION] #926 LEFT FRONT TURN SIGNAL SIDE MARKER**, this wire is the power for the turn signal function. This wire comes from the turn signal switch and has interrupted switched power from the turn flasher anytime the left turn signal is activated. It also receives interrupted battery power from the hazard flasher anytime the hazard switch is in the ON position.

- A factory-style socket and terminals are provided with the parts kit, as seen below. These sockets use a wedge base **#194 bulb**, **not included**.

- Route the **PURPLE #988** and **LT. BLUE #926** wires to the marker lamp assembly and cut to length.

- The wires must first be routed though the marker light connector; step 2 in the photo.

- With the wires inserted though the connector, strip $\frac{1}{4}$ " of insulation from each of the wires and install the terminals. Make certain you have a good solid crimp on the terminals using roll over crimpers (step 3) as you will be pulling the wires down into the connector (step 4).



On these side marker lights you will notice that there are no means for a direct ground. This is because the path to ground will travel from this side marker socket to the front turn signal socket, through either one of the wires, and ground through the front turn/park light. The front turn/park signal socket is a higher wattage bulb. So, when the ground passes through that bulb it will not cause the front lamp to illuminate since it has a greater power requirement than the side maker light.

HORN

The **Front Light Section** has a single wire dedicated to connecting to a horn. *Most horns ground through their mounting and only require a power connection. This wire is:

GREEN: 14-gauge wire, printed **[FRONT LIGHT SECTION] #924 TO HORN**, this is a power wire that comes from the fuse block mounted horn relay. It is ground activated by the horn button on the steering column, and only has power when the horn button is pressed.



- Route the **#924** wire to the horn. If your horn(s) are mounted behind the grill, you should have passed this wire through the core support along with the rest of the **Front Light Section** as indicated on [page 20](#).

- Connectors and terminal (seen to the right) are provided in the kit to connect to the tab on the horn.
- Also, ring terminals and heat shrink have been provided for those with an aftermarket horn with “screw” or “post & nut” connections.



- If you have multiple horns, be sure to double up the cut-off portion **GREEN #924** at the first horn’s connector, route it to the other horn, and connect.
- If your horn(s) has a wire to connect to, then a splice and heat shrink are needed.
- If your horn requires a ground wire, it will need to be installer provided. Use a ring terminal from the parts kit and attach the other end of the ground wire to a chassis ground source on the vehicle, such as on the core support.

LEFT / DRIVER SIDE HEADLIGHT

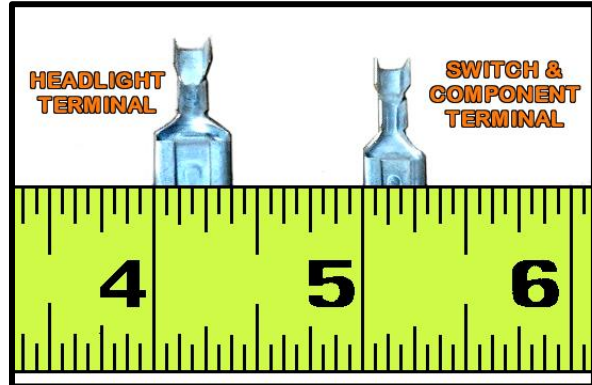
Your first connection in the **Front Light Section** will be the Left/Driver Side Headlight. Three wires make up the connection to the Left Headlight, they are:

LT. GREEN: 14-gauge wire, printed **[FRONT LIGHT SECTION] #908 LEFT HEADLIGHT HIGH BEAM** this wire provides power to the high beam filament of the headlamp. This wire runs from the dimmer switch and has power when the dimmer switch is in the high beam position and the headlight switch is in the headlight ON position.

TAN: 14-gauge wire, printed **[FRONT LIGHT SECTION] #909 LEFT HEADLIGHT LOW BEAM**, this wire provides power to the low beam filament of the headlamp. This wire runs from the dimmer switch and has power when the dimmer switch is in the low beam position and the headlight switch is in the headlight ON position.

Ground wire: 14-gauge wire, printed **HEADLIGHT GROUND**, this wire is a rolled wire provided with the kit.

- Route the power wires, wires **#908** and **#909**, for left/driver side headlamp connection to the back of the headlamp. Cut these wires length and strip a $\frac{1}{4}$ " of insulation from them.
- Locate the headlight terminals from the bag containing the headlight connectors. These terminals look like other terminals supplied in the parts kit. You will be using the larger, wider terminals as shown in the photo. Also, a few of these headlight terminals will have longer crimp straps or deeper wells than the others. These terminals are for those with dual headlights that need to double up two **LT. GREEN #908** wires into one terminal.



GMC models from 1967 – 1972 were equipped with dual/quad headlights, meaning the vehicle has a high/low beam light and a separate high beam light on each side, as shown below.

To power the separate high beam, double up the cutoff portions of the **LT. GREEN #908** and **ground** wires at the headlight connector. Then route the cutoff portion to the headlight and connect with the supplied connectors.



- Install the terminals. If you have a separate high beam (quad-headlight), make sure to double the **LT. GREEN #908** with the cutoff portion.
- Use the connector photo to the right for proper wire pinout. The connector is shown from the wire insertion side.
- Locate the rolled ground wire provided with the kit. This wire has pre-installed terminals to allow plugging into the headlight connector. Connect one of the terminals into the ground location of the headlight connector.



- The left/driver side headlamp connector(s) can now be plugged into the headlamp.
- Find a suitable grounding location on the core support and route the ground wire to that location and cut this wire to length. The same will need to be done for the separate high beam found on GMC models.
- Using ring terminals from the parts kit, connect the ground wire to the core support. Retain the cut off portion of the ground wire for use on the passenger side.

LEFT TURN / PARK LIGHT

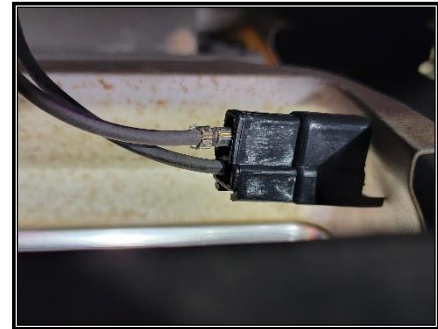
The Left Turn/Park Light of the Painless harness consists of 2 wires. These wires are:

PURPLE: 18-gauge wires, printed [FRONT LIGHT SECTION] #927 PARK LIGHTS, this wire provides power to the park lights. This wire splices to the other #988 & #927 wires in the Front Light Section. This wire has power anytime the headlight switch is in the Park/Tail Lights ON position.



LT. BLUE: 18-gauge wire, printed [FRONT LIGHT SECTION] #926 LEFT FRONT TURN SIGNAL, this wire is the turn signal power. This wire has interrupted switched power from the turn signal flasher any time the left turn signal is activated and the ignition is in the ON position. It also receives interrupted battery power from the hazard flasher any time the hazard switch is in the ON position.

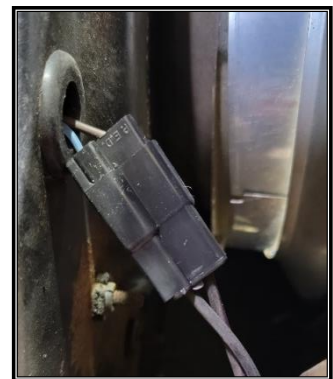
1967 - 1968



- Remove the connector from the turn/marker light and replace it with the **male terminals** and **female connector** shown above.



- Route the **PURPLE #927** and **LT. BLUE #926** through the core support with the **7/8" grommet** provided in the parts kit.
- Strip the both wires **1/4"** and attach the **(2) female terminals** and **(1) male connector** from the parts kit shown to the left.
- Connect the Painless harness to the turn/park light connector.



1969 – 1972

- If you still have a factory turn/park light pigtail connector plugged into the firewall, keep it installed. The provided connector will plug directly into it. If this connector has been replaced, use the instructions for the 1967 – 1968 vehicles on the previous page.
- Route the **PURPLE #927** and **LT. BLUE #926** to the core support.
- Strip the both wires $\frac{1}{4}$ " and attach the **(2) female terminals** and **(1) male connector** from the parts kit shown to the right.
- Connect the Painless harness to the turn/park light connector.



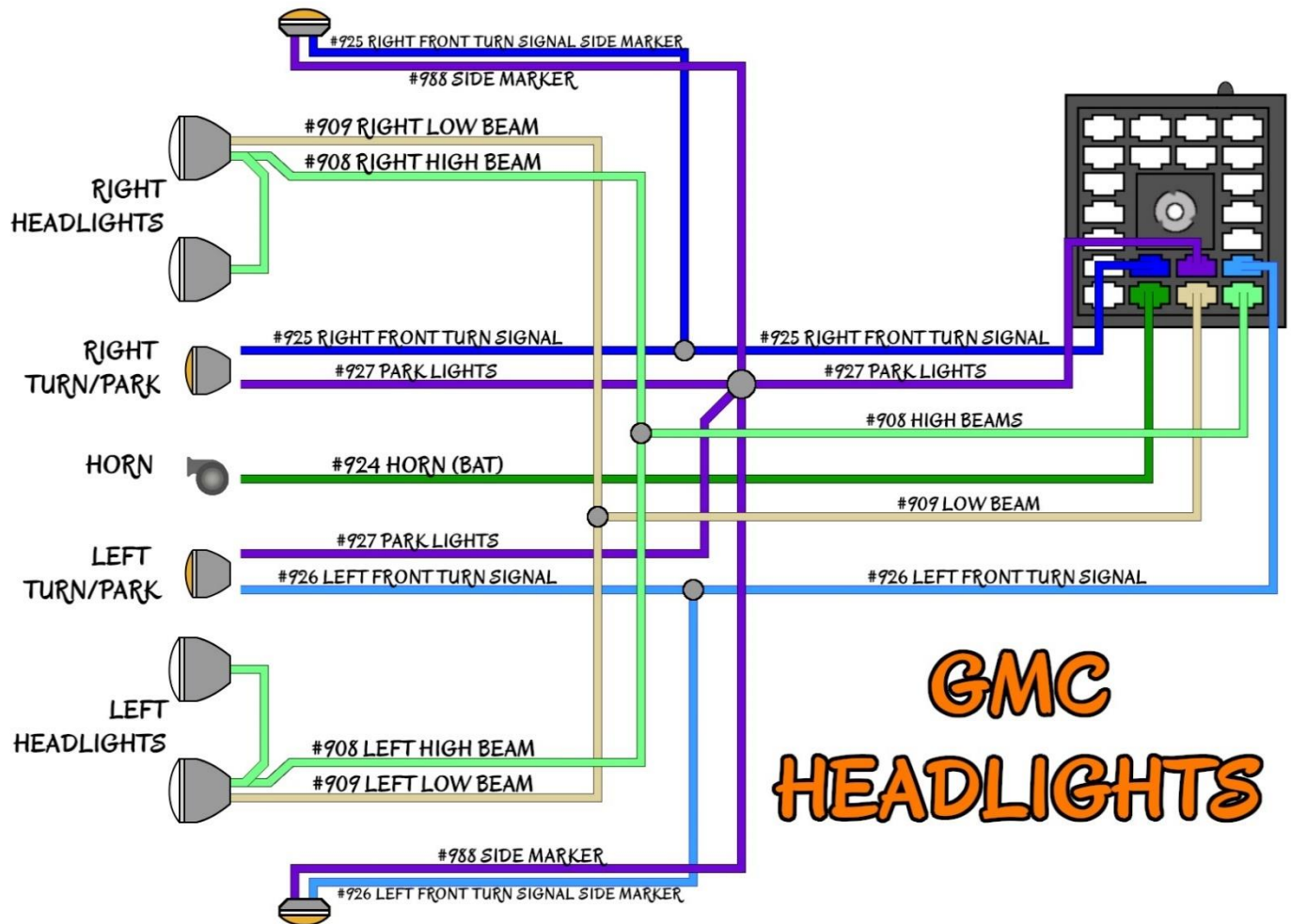
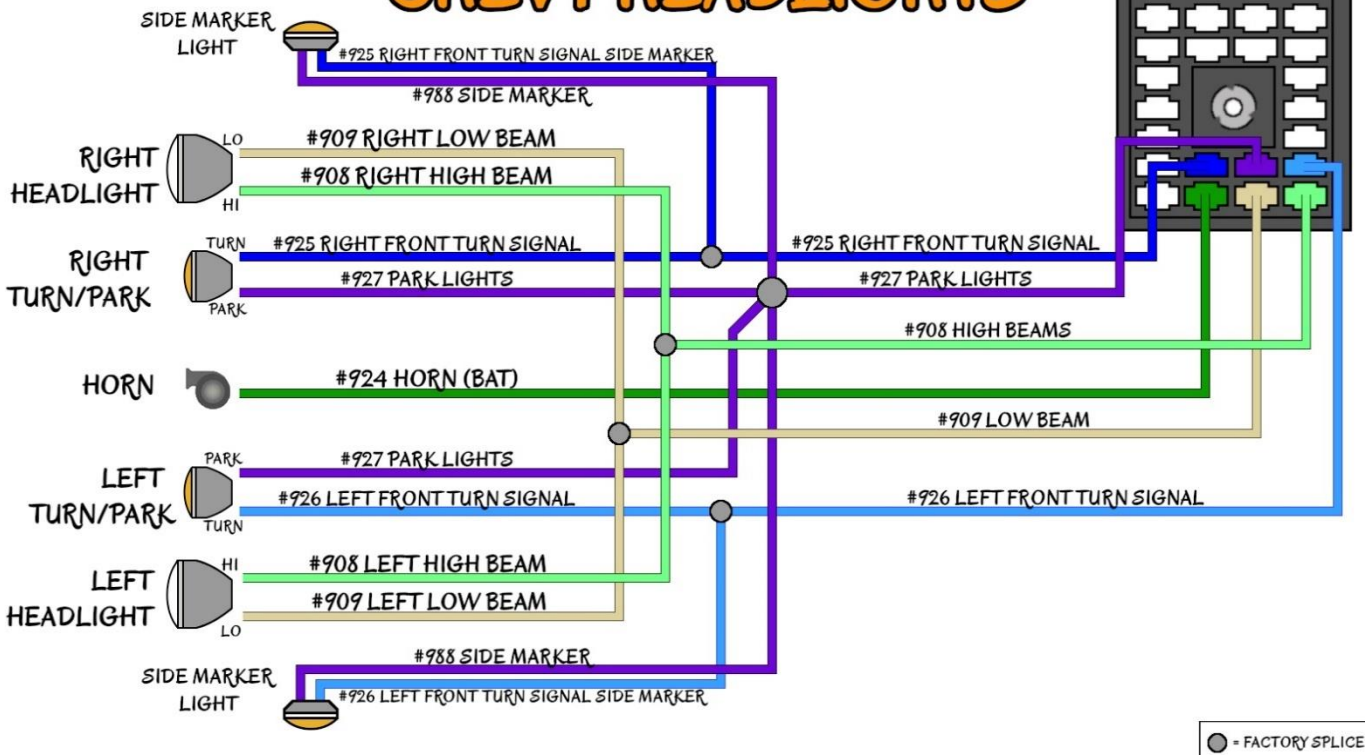
RIGHT PARK / SIDE MARKER LIGHT, TURN / PARK LIGHT & HEADLIGHT

The connections on the right/passenger side of the vehicle all connect in the same manner as those on the left/driver side. The only difference you will find is the turn signal wires for the right turn signal is a different color than those used for the left turn signal. The right turn signal wires will be:

BLUE: 18-gauge wire, printed **[HEADLIGHT SECTION] #925 RIGHT FRONT TURN SIGNAL**, this wire is the turn signal power, and goes to the turn signal switch. This wire has interrupted switched power from the turn signal flasher any time the right turn signal is activated and the ignition is in the ON position. It also receives interrupted battery power from the hazard flasher any time the hazard switch is in the ON position.

BLUE: 18-gauge wire, **[FRONT LIGHT SECTION] #925 RIGHT FRONT TURN SIGNAL SIDE MARKER**, this wire is the power for the turn signal function. This wire comes from the turn signal switch and has interrupted switched power from the turn flasher anytime the right turn signal is activated. It also receives interrupted battery power from the hazard flasher anytime the hazard switch is in the ON position.

CHEVY HEADLIGHTS



ENGINE SECTION



The **Engine Section** consists of seven wires. Two of these wires will be covered in the **Start/Charge Section** on **page 41**: **PURPLE #919** and **RED #916**. For now, we will focus on the other wires. These wires connect to the coil or ignition system, oil sender, coolant temperature sender for gauges or lights, cooling fan relay, and an electric choke on a carburetor.

All wires of the **Engine Section** have ample length to account for the numerous way components can be mounted inside an engine compartment. For example, an ignition box mounted on the inner fender requires more length of wire than a firewall mounted coil.

COOLANT TEMP SENSOR

GREEN: 18-gauge wire, printed [ENGINE SECTION] #921 TEMP SEND UNIT, this wire sends a ground signal to the engine coolant temp gauge. If you are using an aftermarket mechanical gauge, this wire is not needed. See the [Engine Section Schematic](#) on [page 39](#).



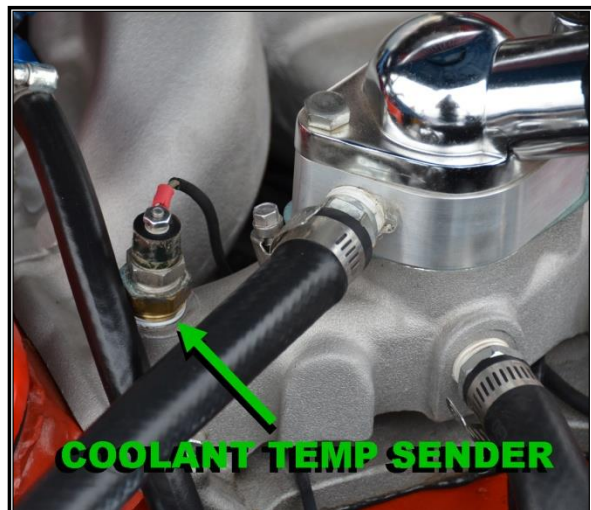
The coolant temp sending unit/switch can be mounted in the intake manifold or in the side of either cylinder head. These will have a peg, tab, or threaded post to connect to, as seen in the photos on this page. Terminals and a factory style connector have been supplied to allow connecting to a factory style sensor, rolover crimpers will be needed to properly install this terminal.



Two-wire temperature sensors on fuel injected engines are for engine computer input, not for gauge signal. Also, if connecting to an engine in a vehicle that has electric cooling fans, make certain you know the difference between the coolant temp sensor and the electric fan thermostatic switch; both of these sensors can look identical.

If you are installing a new temp sensor, or are unsure of the temp sensor currently mounted in your engine, make sure there is no sealant tape on the sensor threads. The tape can interfere with the ground source the sensor needs to read correctly. Paste or sealing compound can be used on the threads.

- Route this **GREEN** #921 wire to the coolant temp sensor, cut to length, crimp on the appropriate terminal for your connection, and connect.



OIL PRESSURE SENSOR

BLUE: 18-gauge wire, printed **[ENGINE SECTION] #922 OIL PRES. SENDING UNIT**, this wire sends a ground signal to the oil pressure gauge. If you are using an aftermarket mechanical pressure gauge, this wire is not needed. See the [Engine Section Schematic](#) on [page 39](#).

The oil pressure sending unit will generally be located near the oil filter or on the back of the block behind the intake manifold.

- Route this **BLUE #922** wire to the oil pressure sending unit, crimp-on the appropriate terminal for your connection, and connect.

Terminals and a factory-style connector, seen in the photo below, are supplied to allow connecting to a factory-style sensor like those shown on this page. Rollover crimpers are required to install this terminal.

If you have a 2-wire sensor on a newer, fuel-injected, donor engine, it will not work for your pressure gauge. Two-wire sensors on fuel injected engines are for fuel pump control and are not designed for oil pressure gauge readings. These types of sensors are generally found on GM TBI and TPI engines.



ELECTRIC CHOKE

RED: 18-gauge wire, printed [ENGINE SECTION] #954 **ELECTRIC CHOKE**, this wire provides a switched ignition power source to the choke from the 15-amp CHOKE fuse. It has power when the ignition switch is in the ON/RUN position.

When you turn your key to the "ON/RUN" position, the voltage this wire carries heats the bi-metal spring attached to the shaft of the choke. This spring will unravel as it is heated causing the choke to slowly open. When the ignition is turned to the "OFF" position, power is no longer on this wire, causing the spring to begin to cool and contract, closing the choke.

- If you do not have an electric choke, you do not need this wire and it can be capped off and stowed. If you are using a Turbo 400 transmission, see the instructions below before terminating the #954 wire.
- Route the **RED** #954 wire to the + terminal of the electric choke, install the supplied terminal and connector, and connect.

If you are using a Turbo 400 transmission, and a throttle switch is in the engine compartment, see the instructions on the next page before terminating the #954 wire.

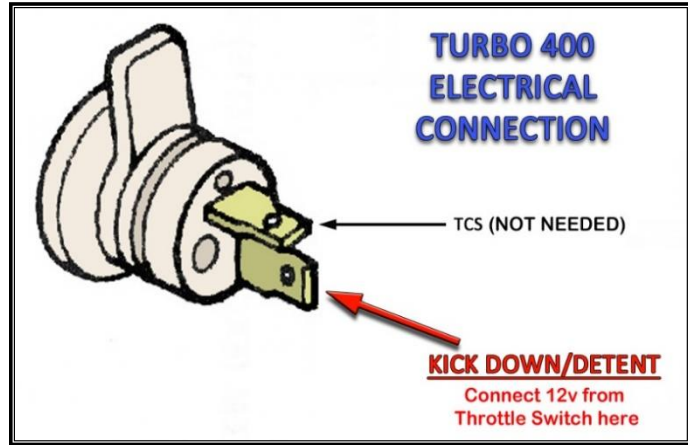
Some choke tabs may be short or "stubby", causing the connector to not fit properly. If this is the case on your install, simply remove the connector and cover the terminal with a piece of the provided heat shrink. Once the heat shrink has been installed and heat has been applied, plug the terminal onto the tab of the choke.

- Ensure the choke is properly grounded (the ground wire is not supplied in the Painless harness) before continuing with the installation. This ground is typically a wire from the ground tab of the choke to one of the mounting screws of the choke housing to the carburetor body.

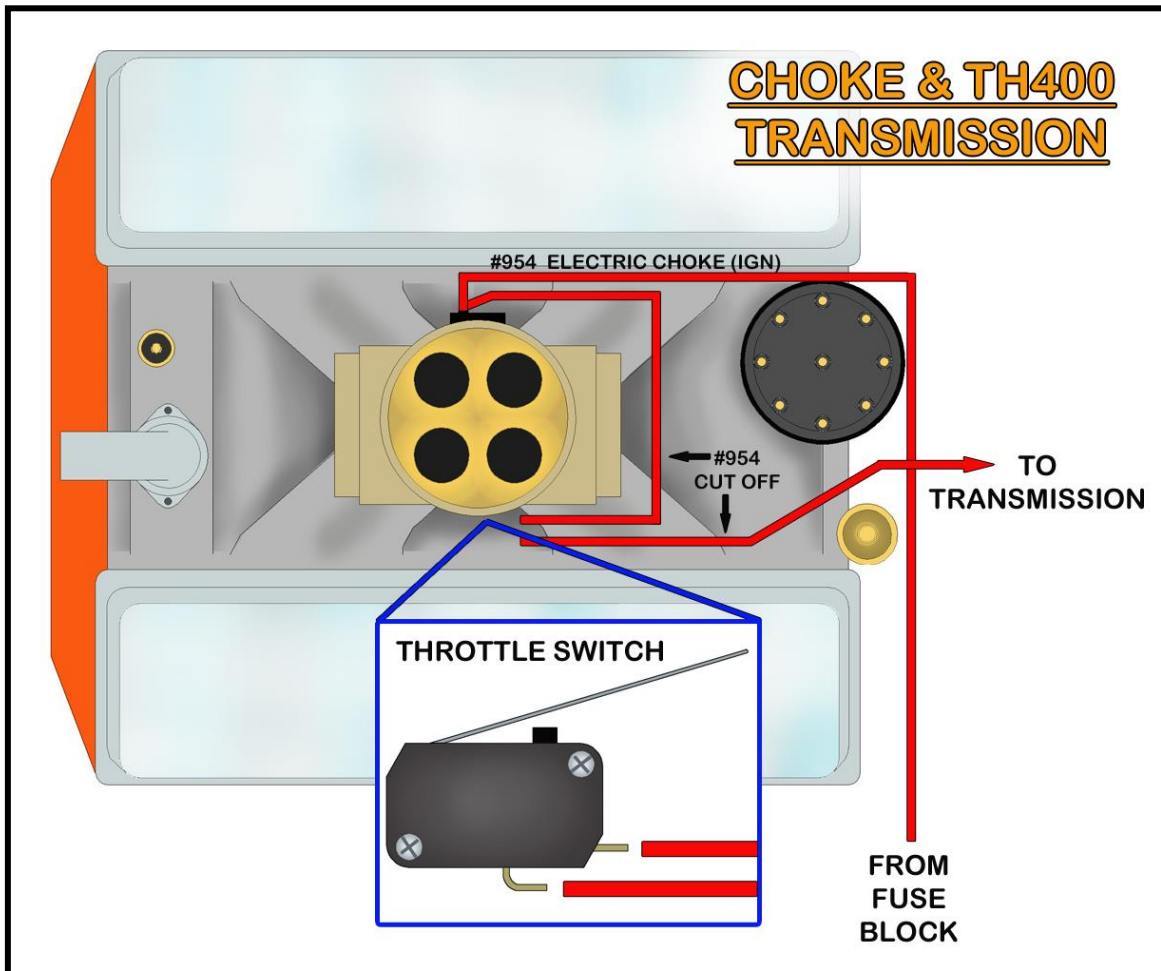


Turbo 400 Transmission

The Turbo 400 transmission requires a 12v power source to downshift the transmission under wide-open throttle. This is done using a throttle switch either located on the accelerator pedal inside the vehicle or on the throttle linkage on top of the engine.



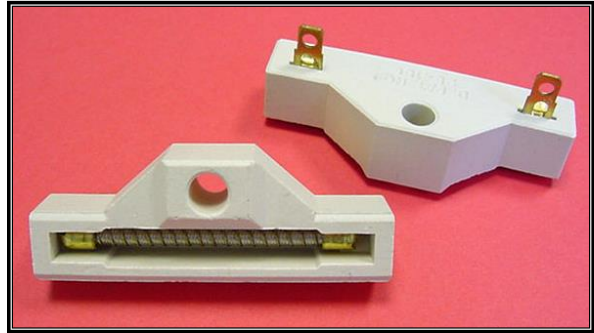
- Double up the cut off piece of **#954** at the choke. Route this cutoff piece of **#954** to one side of the throttle switch and cut to length. Use terminals from the parts kit to connect the wire.
- If you have a factory, accelerator pedal mounted switch, you can use a switched power source inside the vehicle or you can route the cutoff piece of **#954** to the interior, connect at the throttle switch, and then route it back out to the transmission.



COIL / IGNITION SECTION

A single wire, coming from the fuse block, supplies power to the coil/ignition system. The connection of this wire varies depending on what ignition system (factory or aftermarket) you use. The wire needed to supply a switched ignition power source is:

PINK: 16-gauge wire, printed **[ENGINE SECTION] #920 COIL (IGN)**, this wire comes from the 30-amp COIL fuse. This wire has power anytime the ignition switch is in the ON and START positions. This wire provides the coil/ignition system with switched power in one of several ways:



- If the Coil you are using is not internally resisted, a ballast resistor, along with the installer provided bypass wire shown on [page 37](#), will be required. **If a coil is not internally resisted and a ballast resistor is not used, the coil will overheat within a few minutes to the point that it will no longer work.** A ballast resistor can be obtained at your local parts store using part number **RU11**. See the [Ballast Resistor Connection Diagram](#) on [page 37](#).
- HEI coils and other internally resisted coils do not require the use of a ballast resistor. The **#920** wire connects directly to the + side of the coil. See the [Coil Connection \(NO Ballast Resistor\) Diagram](#) on [page 37](#).
- If you use an aftermarket ignition box, such as an MSD, Accel, etc., this **PINK #920** wire will supply the ignition box with the switched power source it requires. This wire goes to the aftermarket ignition box and **not the Coil**; the ignition box will provide the Coil + connection. This **#920** wire may need to be pulled from the **Engine Section** and routed to where the box is mounted. See the ignition box manufacturer's instructions for a specific connection point of this power source. [MSD Ignition Connection](#) on [page 38](#) has been provided.
- If you have converted to fuel injection, are using a standalone harness, such as any of Painless fuel injection harness, and coil power is supplied through the fuel injection harness, in LT1/LS1 and newer applications, this **PINK #920** wire provides the fuel injection harness with the switched power source the harness requires. If you use a Painless fuel injection harness, this **PINK #920** wire will connect to the open-ended **PINK** wire of the fuel injection harness labeled **"IGN"** or **"Fuse Block IGN."**
- Route this **PINK #920** wire to its proper connection point and cut to length, install the appropriate terminal for your connection, and connect.

Terminals and a factory-style connector, seen in the photo to the left, have been supplied to allow connecting to the + side of an HEI Coil.



Tachometer

PURPLE/WHITE: 18-gauge wire, printed **[ENGINE SECTION] #923 TACHOMETER SOURCE**, this wire sends a tachometer signal from the coil to the gauge cluster. This wire only needs to be connected if you are using a tachometer (factory or aftermarket). See the [Engine Section Schematic](#) on [page 39](#). If you do not have a tachometer, this wire may be removed from the harness. Depending on your ignition system (factory or aftermarket), or use of fuel injection, the connection of this **#923** wire can vary:

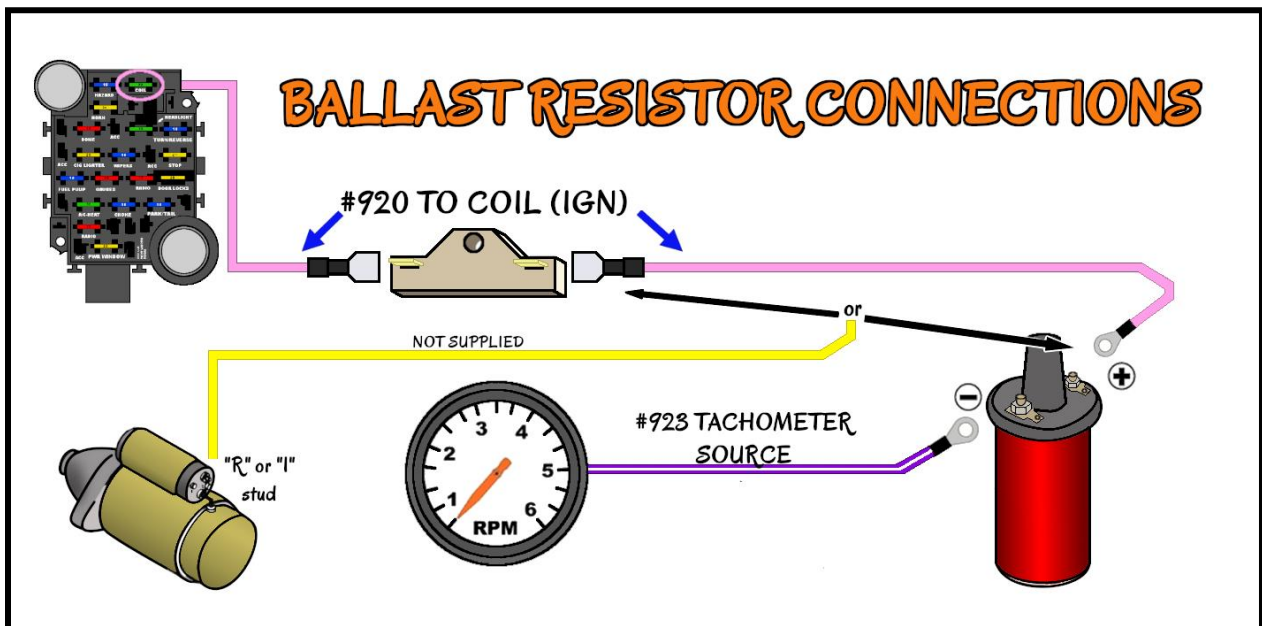
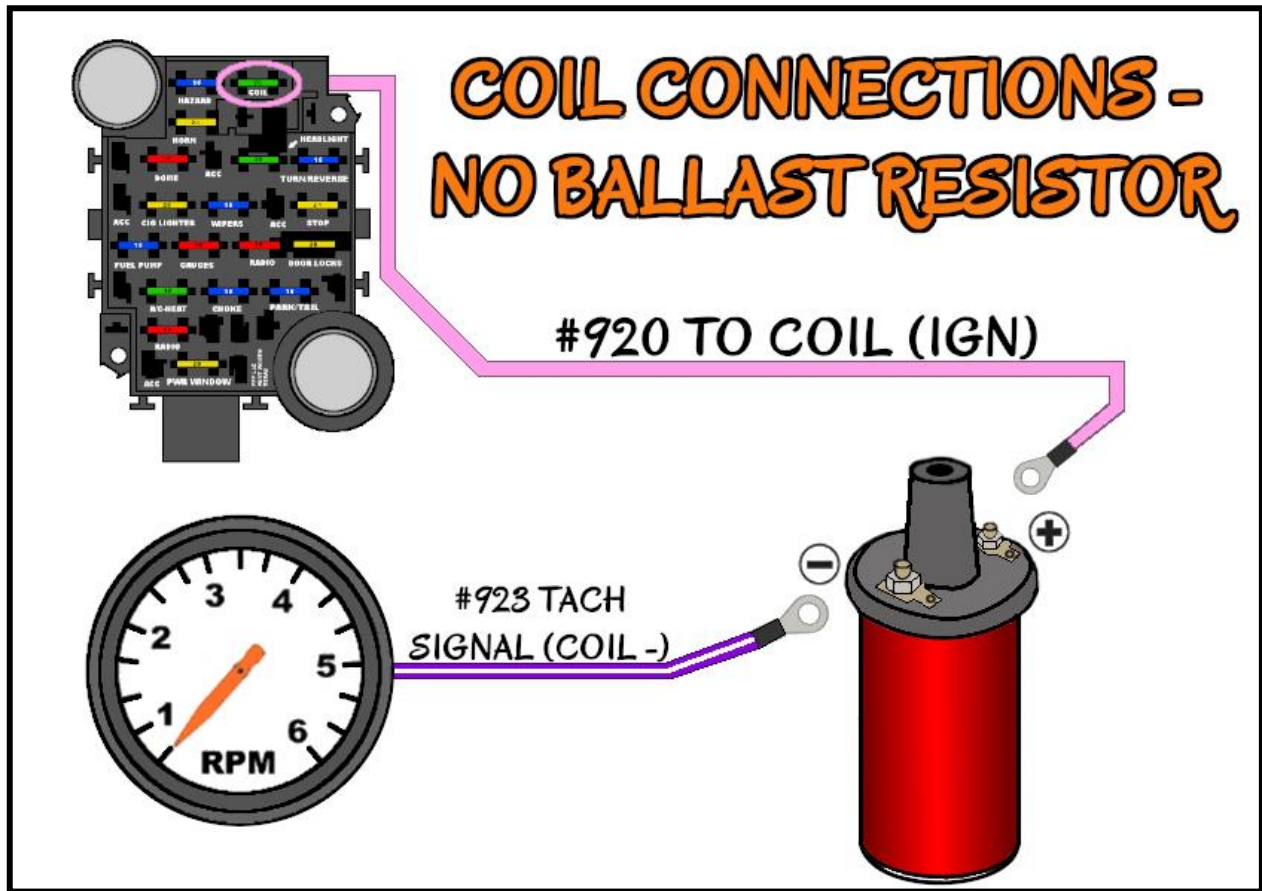
- Installs with an HEI distributor, or external coil ignition systems, require the **#923** wire to be connected to the negative (-) side of the coil. Refer to the diagrams on [pages 39 – 40](#) for proper connection.

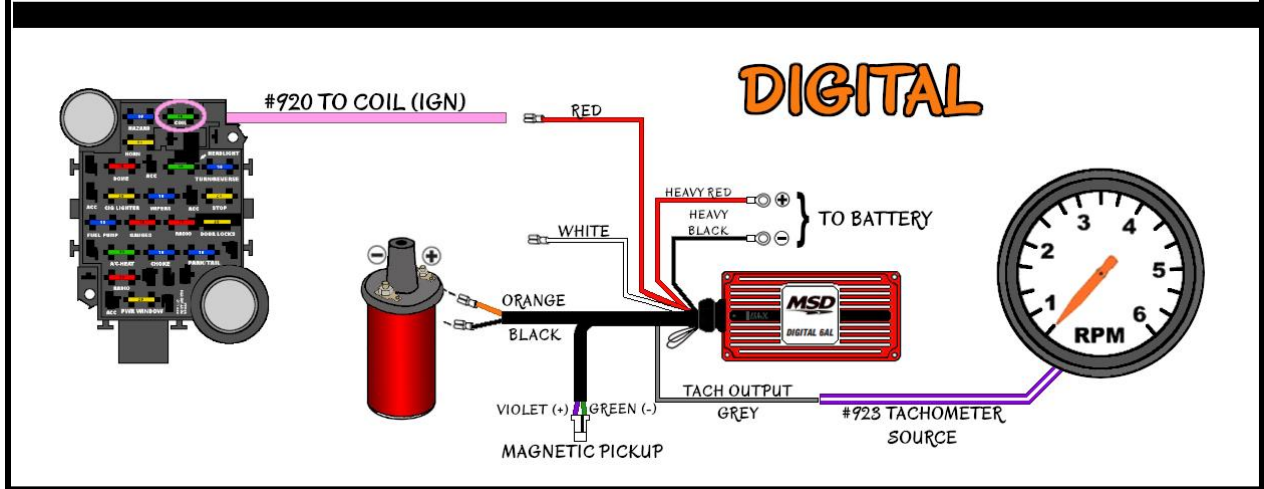
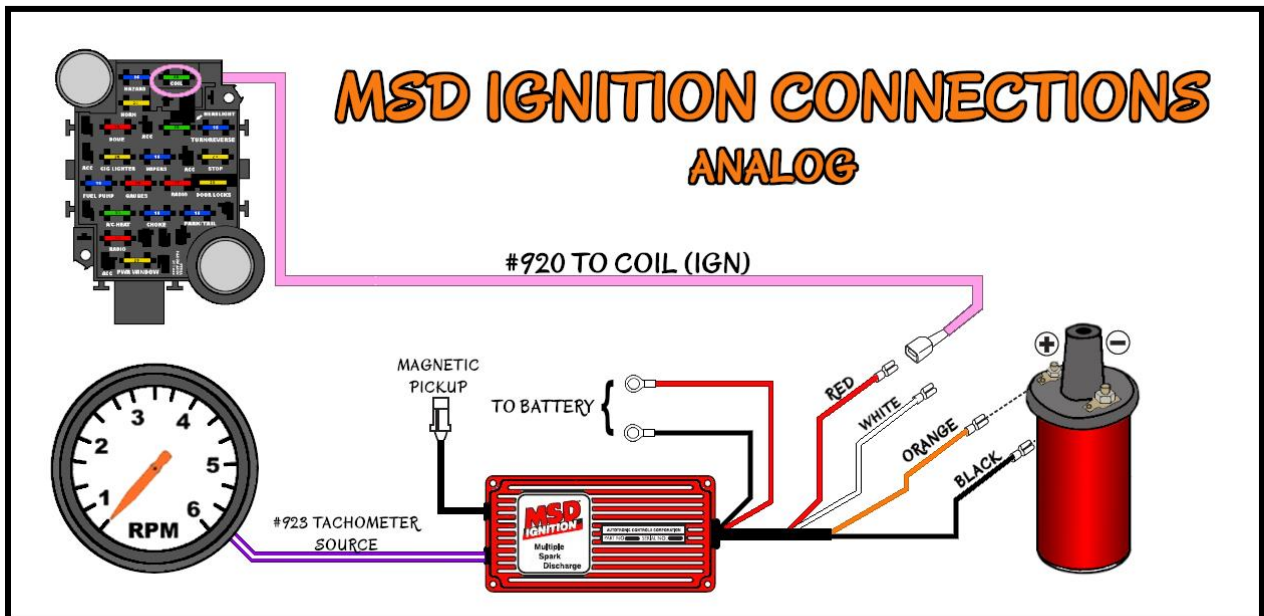
Terminals and a factory-style connector are supplied to allow connecting to the (-) side of an HEI Coil (seen in the photo at right). Rollover crimpers are needed to install this terminal. Insulated terminals in the parts kit are supplied to make other connections.



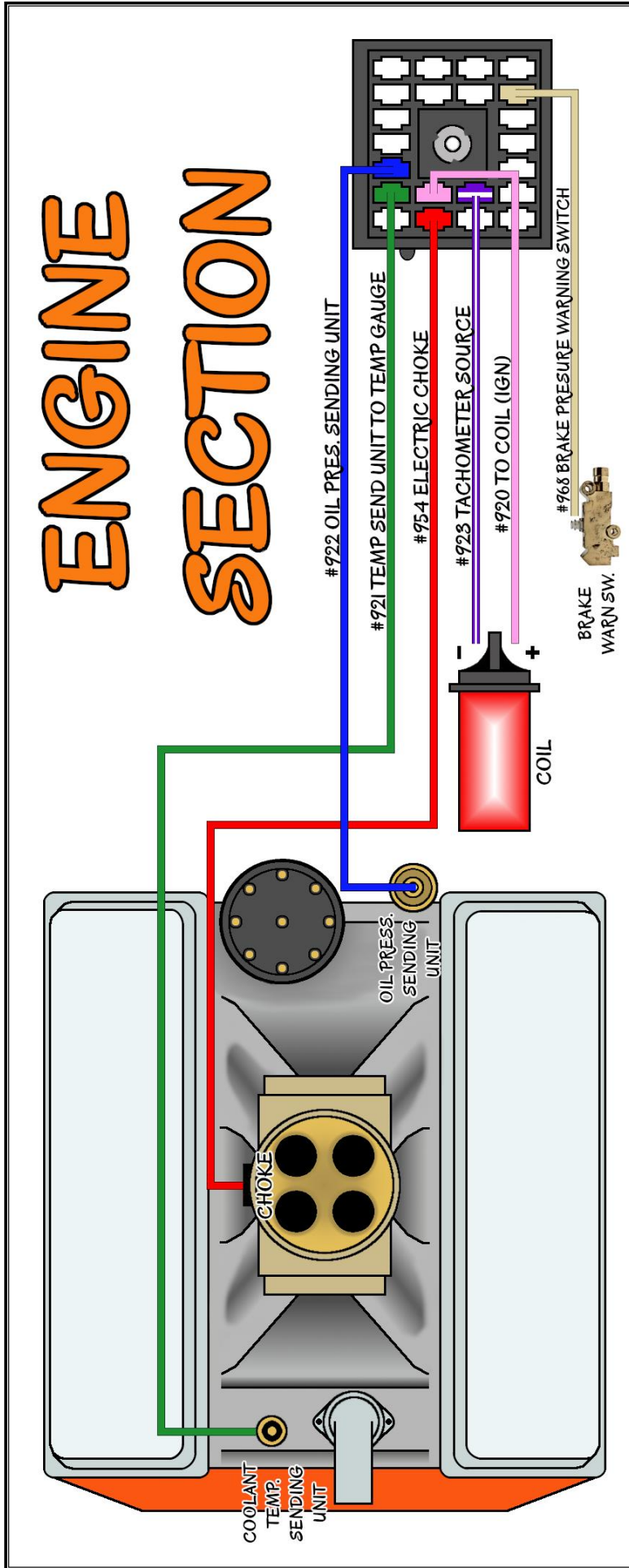
- If you are running fuel injection and the tach output wire of the fuel injection harness does not reach the tachometer, this **#923** wire will connect to the tach output wire from the ECM.
- If an aftermarket ignition box is being used, such as an MSD, Accel, etc., this **#923** wire will connect to the tach output found on the ignition box. Refer to the [MSD Ignition Connection](#) on [page 38](#) and the ignition manufacturer's installation procedure.
- Route this **PURPLE/WHITE #923** tach signal wire to its proper connection point and cut to length, install the appropriate terminal for your connection, and connect.

Use one of the following four diagrams to properly connect the coil power (#920) and tachometer (#923). Not shown in the diagrams are the wire(s) connecting the coil and the distributor, these are not included.





ENGINE SECTION

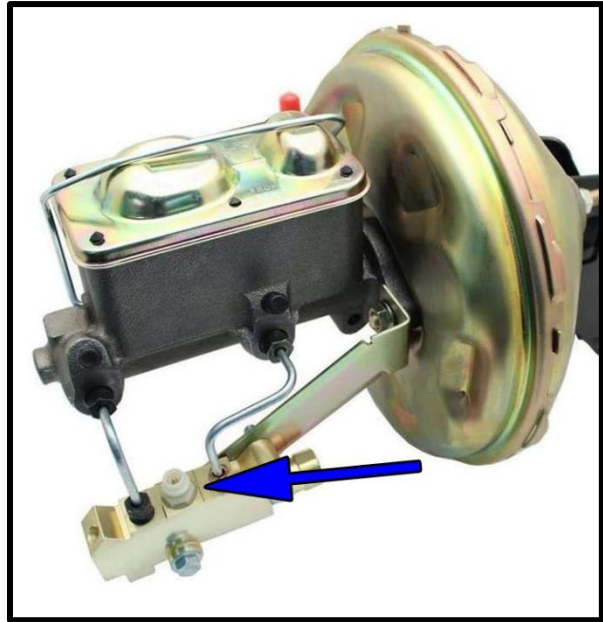


BRAKE PRESSURE WARNING SWITCH

The brake pressure warning switch is located on the brake proportioning valve. The proportioning valve is located toward the firewall, near the brake master cylinder.

If there is ever an imbalance in the hydraulic system, due to a cracked line, leaking caliper or wheel cylinder, this switch will ground itself. This ground signal will activate the brake warning light in the dash. This switch requires a single wire, it is:

TAN: 18-gauge wire, printed **[ENGINE SECTION] #968 BRAKE PRESURE WARNING SWITCH**, this wire will provide a ground signal through the bulkhead to the brake indicator light on the instrument panel when there is an issue with your brakes.

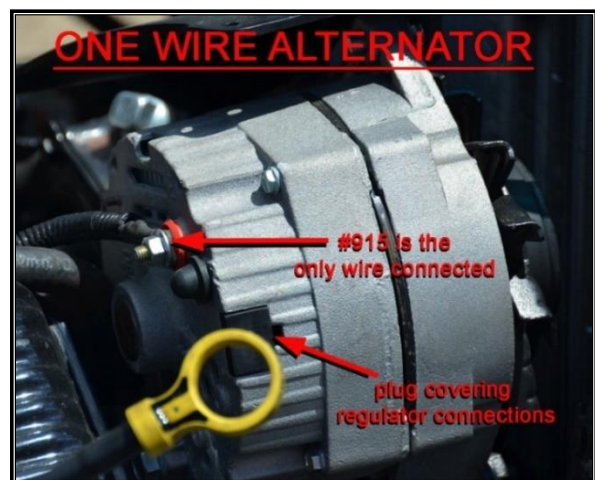


- Route the **#968** wire to the brake warning switch, cut to length, strip $\frac{1}{4}$ " of insulation from the wire.
- You must reuse the factory molded connector from your factory harness and create your connection using a splice and heat shrink sourced from the parts kit. These molded connectors can also be purchased online as "PV-2 or PV-4 Connector"

- If the rubber boot is being used, the end will need to be cut, as shown in the photo to the right, to allow the large gauge wire to pass through.
- If the heat shrink is being used, slide it onto the **#915** wire, followed by the rubber boot. A small amount of lubricant such as WD-40 may be applied on the inside of the rubber boot to allow the boot to slide down the wire easier.
- With the boot on, strip about $\frac{3}{8}$ " of insulation from the charge wire and crimp the ring terminal on. You can use a hammer crimper if your hand crimper will not accept this large gauge wire/terminal.
- Connect this wire to the B+/Output stud on the alternator. Once the nut on the output post stud has been tightened, slide the boot over the nut and ring terminal installed on the alternator.
- If your alternator requires a ground wire, you will need to provide one.



If your vehicle has an aftermarket, **ONE WIRE ALTERNATOR**, meaning it does not require a switched 12v source or regulator connections, or if the Painless or other aftermarket fuel injection harness you are using has an alternator connector, **then this output wire is the only wire used in this section at the alternator.**



Locate the 2 wires intended for alternator regulator connections; they will be grouped together in the **Alternator Section**. These wires are:

RED: 16-gauge wire, printed **#995 REGULATOR POWER (BAT)**, this is the sense wire, it provides a battery power source, or voltage sense, that all voltage regulators require. This wire always has power and comes from the main battery supply splice. **This wire will not be needed if you have a one wire alternator or a GM CS series alternator.** See the various alternator illustrations on [pages 43 – 51](#).

BROWN: 14-gauge wire, printed **#914 REGULATOR POWER (IGN)**, this is the indicator light wire and has switched ignition power from the fuse block. **This wire will not be needed if you have a one-wire alternator.** The Charge Indicator Light is covered in more detail in the [Instrument Panel Section](#) on [page 80](#).

If you have a one wire alternator, and only if you have a one wire alternator, you need to insulate the ends of these wires and stow them in the harness, **THEY ARE POWER WIRES.** **#995** may also be connected to the output post of the alternator to avoid removing it from the harness since this wire goes into the big battery power splice.

GM EXTERNALLY REGULATED ALTERNATORS

The factory alternator from 1968 – 1972 was externally regulated. The two wires, **RED #995 REGULATOR POWER (BAT)** and **BROWN #914 REGULATOR POWER (IGN)**, connect to the regulator.

- Route the two wires of the Painless harness to the connection point on the regulator, cut to length, and strip $\frac{1}{4}$ " of insulation from both wires.

The factory 4-pin regulator connector from a factory GM harness needs to be used. Due to a lack of usage by most customers, this connector is not included with this Painless chassis harness. If you do not have this connector, you can obtain one aftermarket or use the loose piece insulated terminals in the parts kit to make connections.

- Connect the **BROWN #914** wire to the "4" terminal on the regulator and the **RED #995** to the "3" terminal on the regulator.

Two 14-gauge wires, which run from the regulator to the alternator, and a 14-gauge wire for a ground need to be provided by the installer to finish the connections. **These wires are not in the Painless harness.**

- Connect the "2" terminal on the regulator to the "R" terminal on the alternator. This was a white wire from the factory.
- Connect the "F" terminal on the regulator to the "F" terminal on the alternator. This was a blue wire from the factory.
- The last connection will be connecting a wire from the "G" post on the alternator to a chassis ground source.

GENERAL MOTORS SI SERIES ALTERNATORS



The 10-SI and 12-SI alternators are easy to identify. They have an external fan behind the pulley (the 12-SI has enclosed style fan blades) and a 2-pin connection. This 2-pin connection is circled on the second example in the image above. These are also commonly referred to as “Delco” or “Delcotron” alternators.

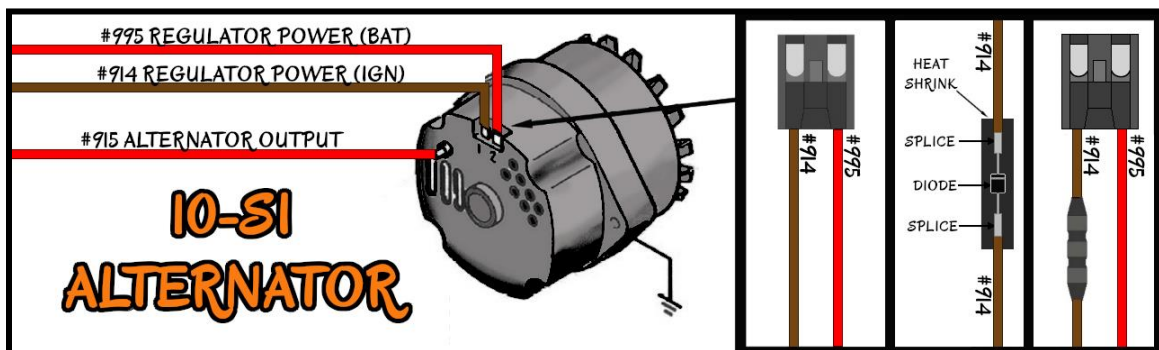
The two wires, **RED #995 REGULATOR POWER (BAT)** and **BROWN #914 REGULATOR POWER (IGN)**, connect to the two posts on the back edge of the alternator.

- Route the two wires to the numbered 1 & 2 terminals on the alternator and cut to length. Strip $\frac{1}{4}$ " of insulation from both wires.
- A factory-style connector and terminals, seen in the photo to the right, are provided in the “ALTERNATOR” bag. Crimp a terminal onto each of the two wires.
- Insert the wires into the connector as shown in the diagram below. When the terminal pin-out is complete, plug the connector into the alternator.

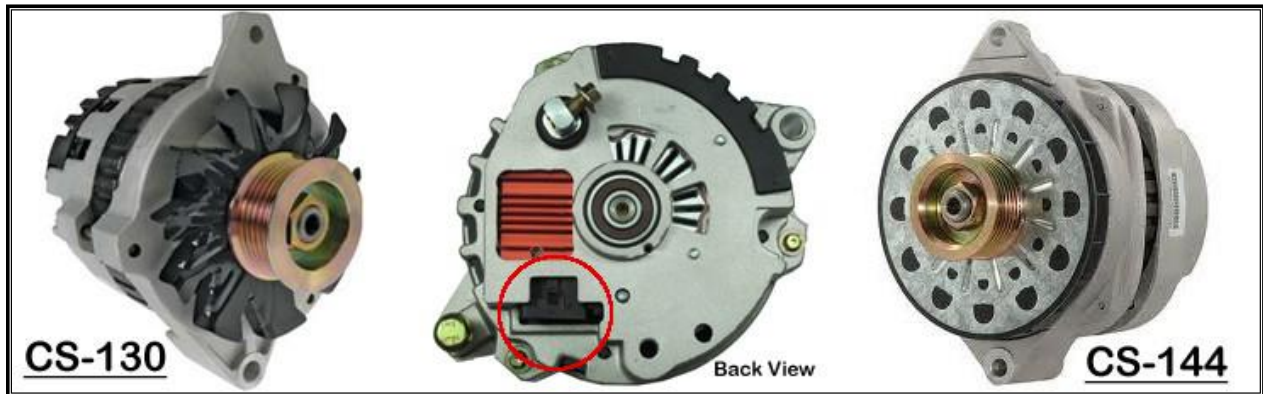


You may experience engine run-on. This is caused when the alternator back feeds voltage down the **#914** wire after the key has been turned off. This allows the ignition system to still function causing the engine to continue running even though the key is turned off or even removed from the ignition. If this should happen, unplug the alternator connector to shut the engine off. If you experience this, a remedy has been provided.

As shown in the photo above and diagram below, a diode, splices, and heat shrink are provided. If engine run-on occurs, simply install the diode as shown. When the diode is installed inline of the **#914** wire **with the stripe towards the alternator** it lets current flow towards the alternator, but not away from the alternator back feeding the ignition system, thus fixing the run-on issue.



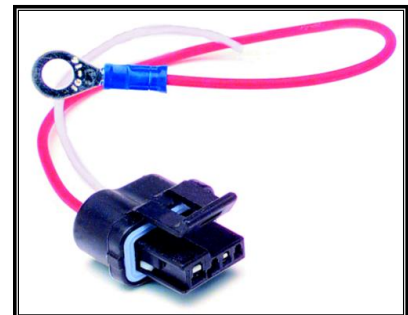
GENERAL MOTORS CS-130 SERIES ALTERNATORS



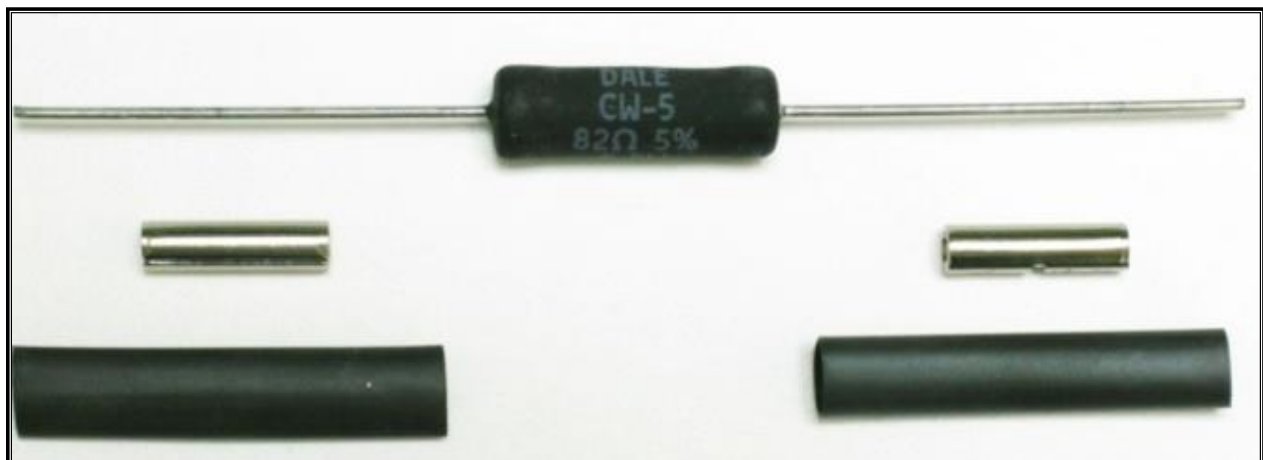
The CS-130, CS-121, and CS-144 alternators closely resemble the SI series alternators. They have an external fan behind the pulley and, generally, a plastic casing on the side and back. These alternators have a 4-pin, sealed connector, shown in the photo below and circled in the image above. The regulator will be marked P, L, S, F. This type of alternator was used on GM TPI and LT1 fuel injected engines among other late 1980s to mid-1990s GM vehicles.

The two wires, **RED #995 REGULATOR POWER (BAT)** and **BROWN #914 REGULATOR POWER (IGN)**, connect to the regulator on the back of the alternator.

- Route the two wires to the connector on the alternator and cut to length. Strip $\frac{1}{4}$ " of insulation from both wires.
- The factory 4-pin alternator connector from a factory GM harness or a CS-130 aftermarket pigtail must be purchased. It is not included with this Painless chassis harness as we no longer produce this pigtail due to parts supply issues.

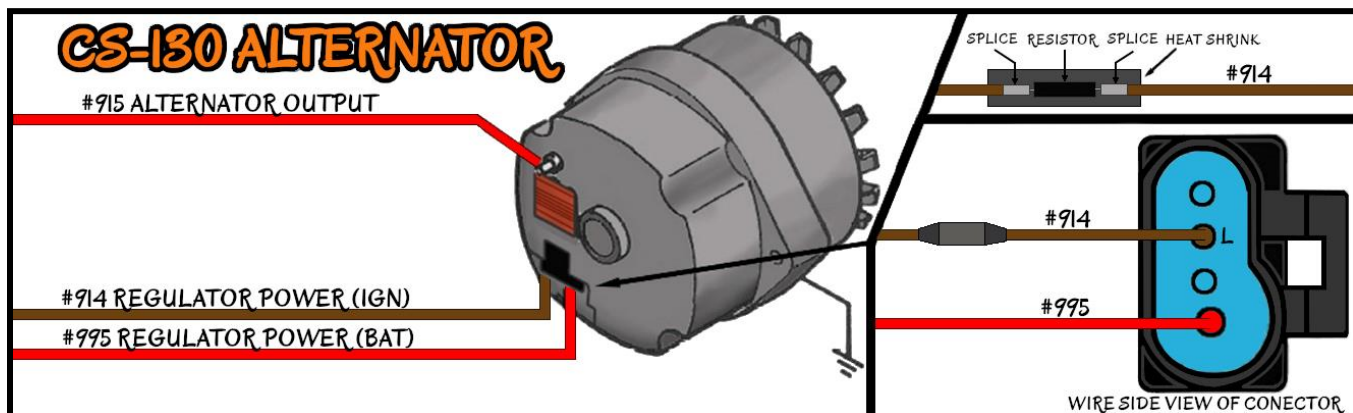


- The CS-130 alternator requires a resistance on the **BROWN #914** wire. Without this resistance, the regulator on the alternator will burn up. A resistor, splices, and heat shrink, seen below, are provided in the "ALTERNATOR" bag kit. The resistor* will simply need to be installed inline on the **#914** wire as shown in the diagram on the next page.

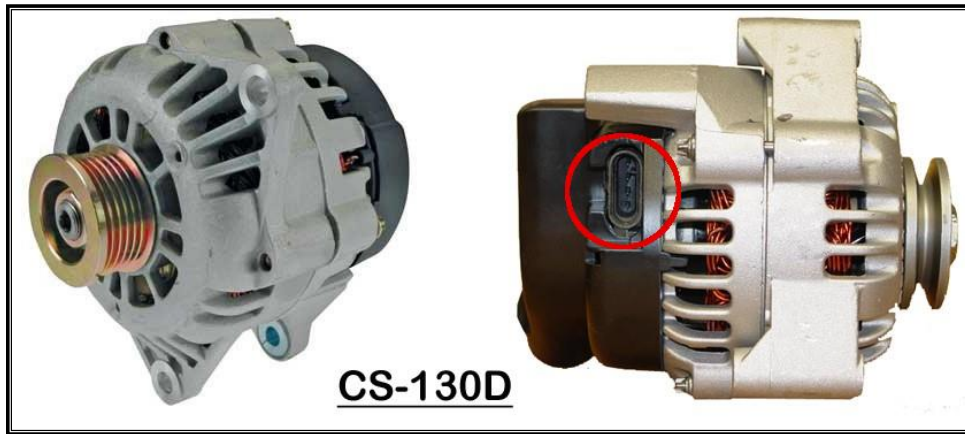


*In factory applications where this alternator was used, a charge indicator light created the necessary resistance. **For those with an instrument panel with a charge indicator light, the resistor is not needed.**

- Use 2 of the splices and heat shrink provided in the "ALTERNATOR" bag kit to splice the CS-130 pigtail to the #914 and #995 wires according to the diagram below.



GENERAL MOTORS CS-130D SERIES ALTERNATORS



The CS-130D can be spotted by the lack of an external fan behind the pulley. These alternators have an internal fan and a plastic casing on the back. These alternators have an elongated, oval, 4-pin, sealed connector, seen circled in the image above. The regulator will be marked P, L, I, S. This type of alternator was used on many engines, including the GM LS series, Vortec, and Gen. III Vortec truck fuel injected engines.

There are two wires in the **Alternator Section: RED #995 REGULATOR POWER (BAT)** and **BROWN #914 REGULATOR POWER (IGN)**. For the CS-130D alternator, only the BROWN #914 is used. The #995 may be connected to the alternator output post or removed from the harness.

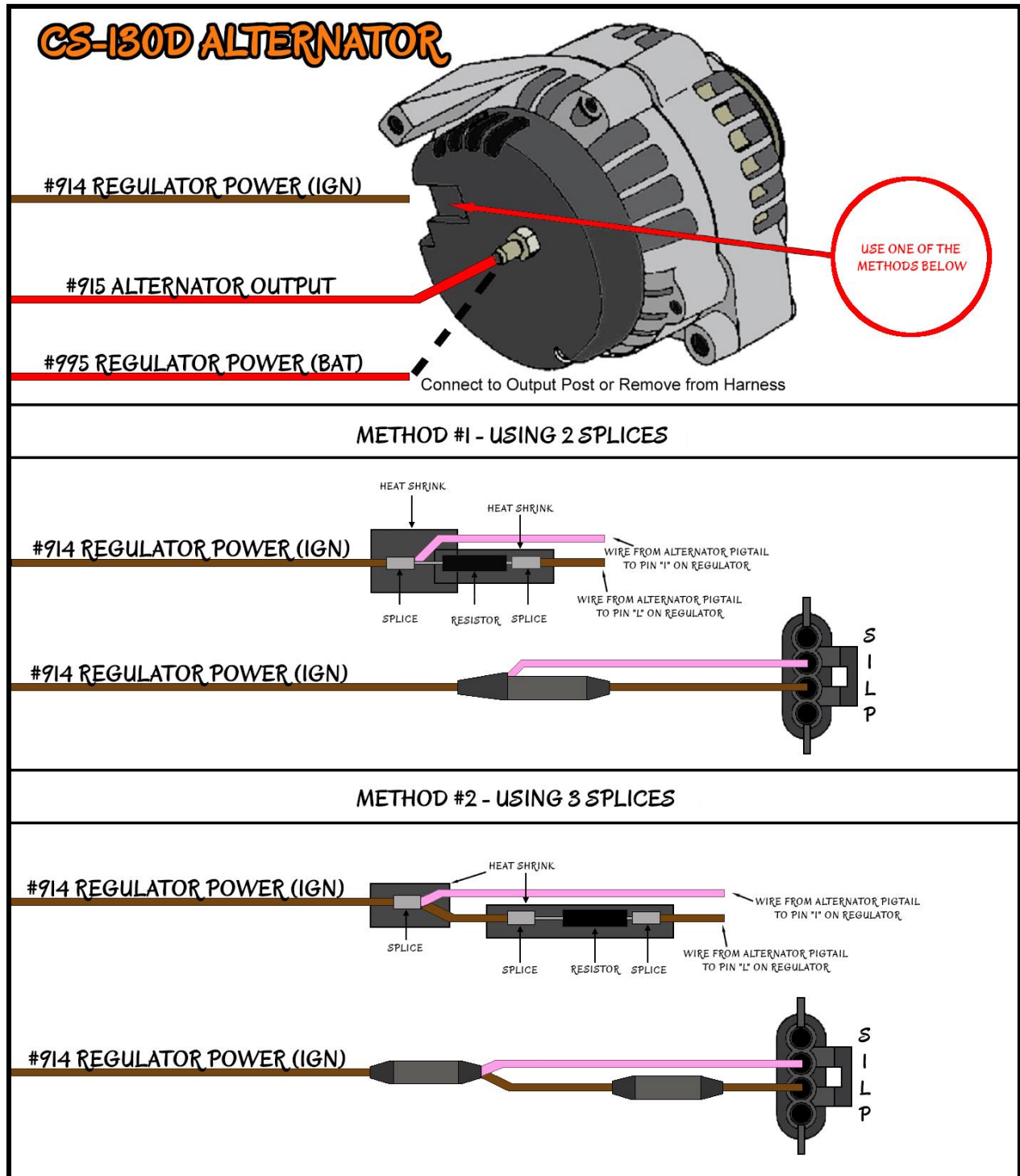
- Route the **BROWN #914** to the connector on the alternator and cut to length. Strip $\frac{1}{4}$ " of insulation.
- The factory, 4-pin alternator connector from a factory GM harness or a CS-130D pigtail purchased from Painless ([part #30705](#); see photo), needs to be used.
- The CS-130D alternator requires a switched power source to pin "I" of the regulator and a resisted power source on the wire going to pin "L" of the regulator. Without this resistance, the regulator on the alternator will burn up. A resistor, splices, and heat shrink, seen on [page 45](#), are provided in the "ALTERNATOR" bag kit. The resistor simply needs to be installed inline on the pin "L" wire, #914, as shown in the diagrams on the next page.



In factory applications where this alternator was used, a charge indicator light created the necessary resistance. **For those with an instrument panel with a charge indicator light, the resistor is not needed.**

- Using a splice and heat shrink provided in the "ALTERNATOR" bag kit, splice the CS-130D pigtail to the **BROWN #914** wire according to one of the diagrams on the next page.

Both diagrams accomplish the same task: they use the **BROWN #914 TO VOLTAGE REGULATOR (IGN. POWER)** wire to provide a switched power source and a resisted power source to the 2 wires of a CS-130D alternator pigtail/connector when a charge indicator light is NOT being used. Pick the method that easiest for you to understand.



MIDI FUSE

A large, inline MIDI fuse is included in the “ALTERNATOR” bag kit. This inline fuse provides a fused link between the alternator and battery.

- Find a suitable location to mount the supplied fuse holder using the (2) **self-tapping screws** provided. A drill with a **¼” nut driver** is required to drill holes for the mounting screws.

With the fuse holder now mounted, locate the following two wires:

RED: 8-gauge wire, printed **[ENGINE SECTION] #916 BATTERY POWER SOURCE (MIDI FUSE)**, all power sources in this Painless harness originate from this wire. This wire provides battery power to the fuse block, which in turn supplies battery power to the ignition switch, which provides switched power. During normal operation, this wire always has battery power.

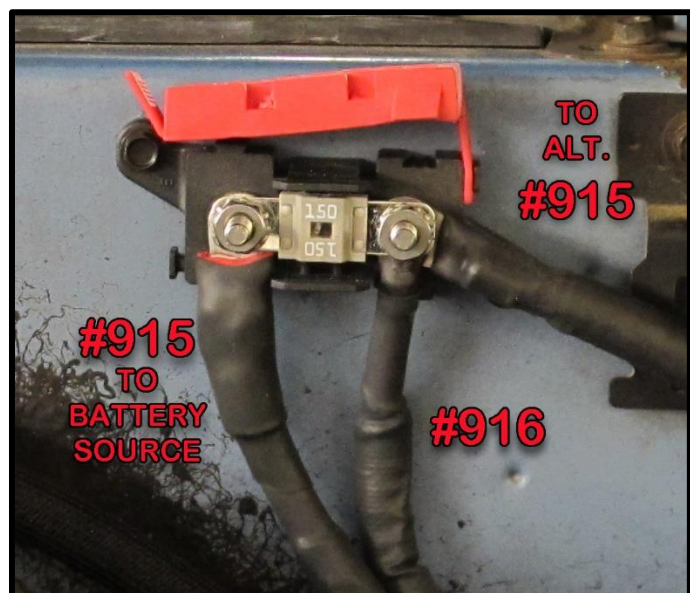
RED: 6-gauge wire, rolled separate from the harness, with a tag reading **#915 ALTERNATOR OUTPUT**, this wire provides power from the alternator to the battery through the MIDI fuse. See [Early GM Alternator – External Regulator Schematic](#) on [page 43](#). The other end of this wire connects to the output post of the alternator.

- Route the **#915** and **#916** wires to one side of the fuse holder and cut the wires to length. **DO NOT DISCARD THE CUT OFF PORTION OF #915.**

The length of excess wire cut from the **#915** wire will be used to connect the other side of the fuse to the “+” side of the vehicle’s battery or to the battery post on the starter solenoid. **DO NOT CONNECT THE #915 TO THE ACTUAL BATTERY AT THIS TIME.** If routed to the starter solenoid, this wire will NOT replace the battery cable needed by the starter from the positive side of the battery to the “BAT” or (+) post of the starter solenoid.

- Make connections to both sides of the fuse holder with the large ring terminals with the small, **#10 hole** provided with the kit. You can use a hammer crimper if your crimpers will not accept this large gauge wire/terminal. The heat shrink supplied with this kit is intended to cover the crimped end of each of these (2) ring terminals. A schematic showing these connections can be found on [pages 43 & 51](#).

- Once you install the ring terminals onto both studs of the fuse holder, the fuse can be installed, and everything can be tightened down with the two retaining nuts provided with the fuse holder. Once everything is tightened, the cover can be reinstalled. Depending on how your crimp flares the ring terminal, the cover may or may not need slight trimming to snap into place.



STARTER SOLENOID

The connections to the starter solenoid vary depending on your ignition system, the location of a neutral safety/clutch switch, and your connection point on the battery power source for the MIDI fuse.

One connection to the starter solenoid all vehicles share is:

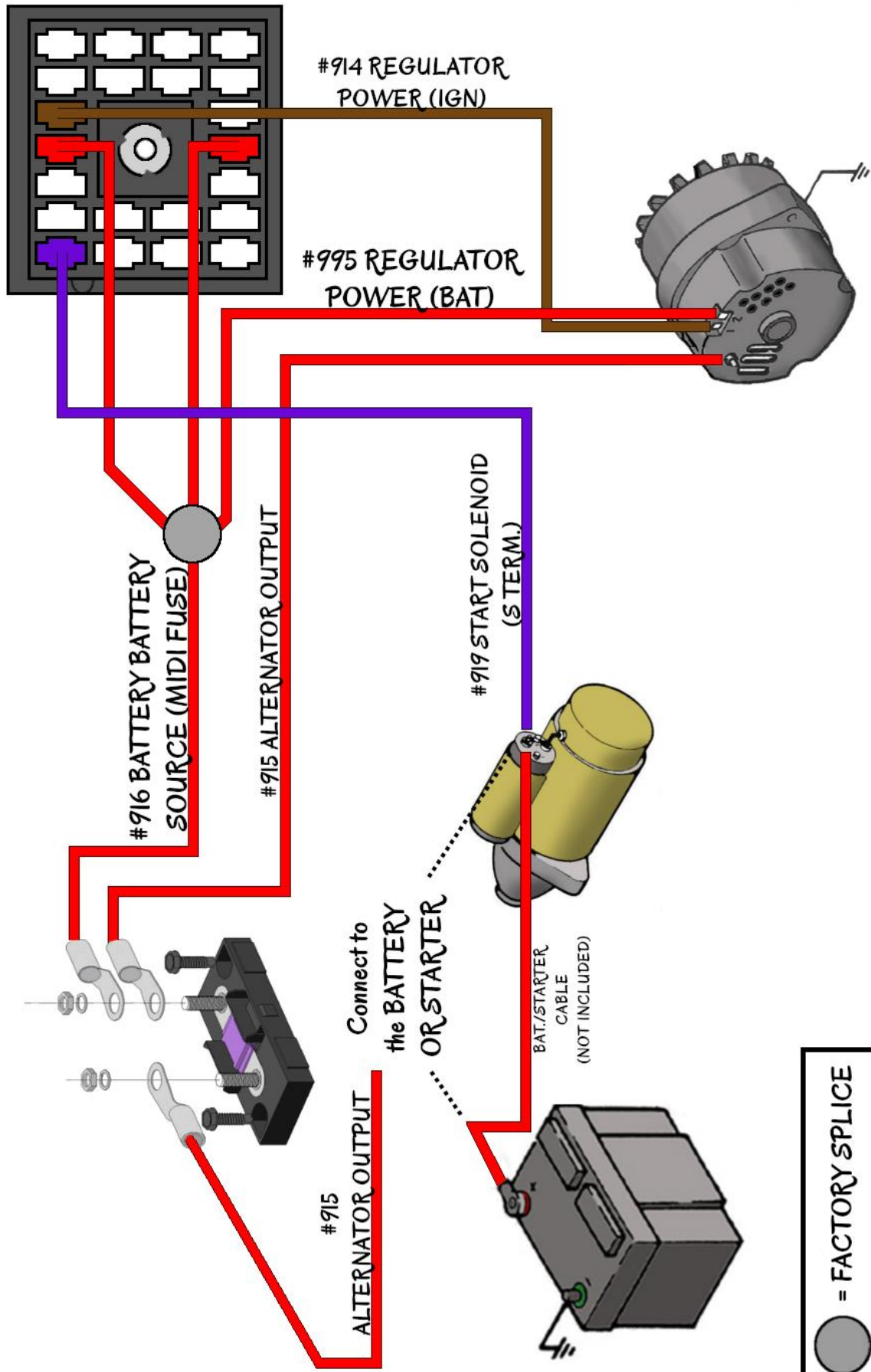
PURPLE: 12-gauge wire, printed **[ENGINE SECTION] #919 STARTER SOLENOID (S TERM.)**, this wire will supply the solenoid with a switched power source from the ignition switch. This power will activate the starter solenoid causing it to turn the engine over for startup. This wire will only have power when the ignition switch is in the *Start/Crank* position.

- Route the **PURPLE #919:**

This wire may not be in the engine compartment at this time. This wire will need to be routed, cut to length, and connected to one side of the neutral safety or clutch switch. The cutoff portion of **#919** will then connect to the other side of the neutral safety or clutch switch and then be routed to the starter.

- Route the **PURPLE #919** and the ballast bypass, if needed, to the starter solenoid and cut to length. If the remainder of **RED #915** from the MIDI fuse is being connected to the “BAT” or (+) post of the starter solenoid, it may be routed at this point as well. Be sure to keep all wires away from the exhaust manifold or header.
- Locate the ring terminal and heat shrink from the parts kit that best fits the posts found on the starter solenoid and install onto the wires going to the starter solenoid. Be sure to apply heat shrink the insulation to protect the crimp.
- The **PURPLE #919** wire will connect to the “START” or “S” post on the solenoid and the bypass wire, if needed, will connect to the “I” or “R” post of the solenoid.
- If you are connecting the battery supply to the MIDI fuse to the battery cable/post on the Starter, connect it now. **BE SURE THE BATTERY CABLE IS DISCONNECTED FROM THE BATTERY BEFORE MAKING THIS CONNECTION.**

LATE GM ALTERNATOR - INTERNAL REGULATOR

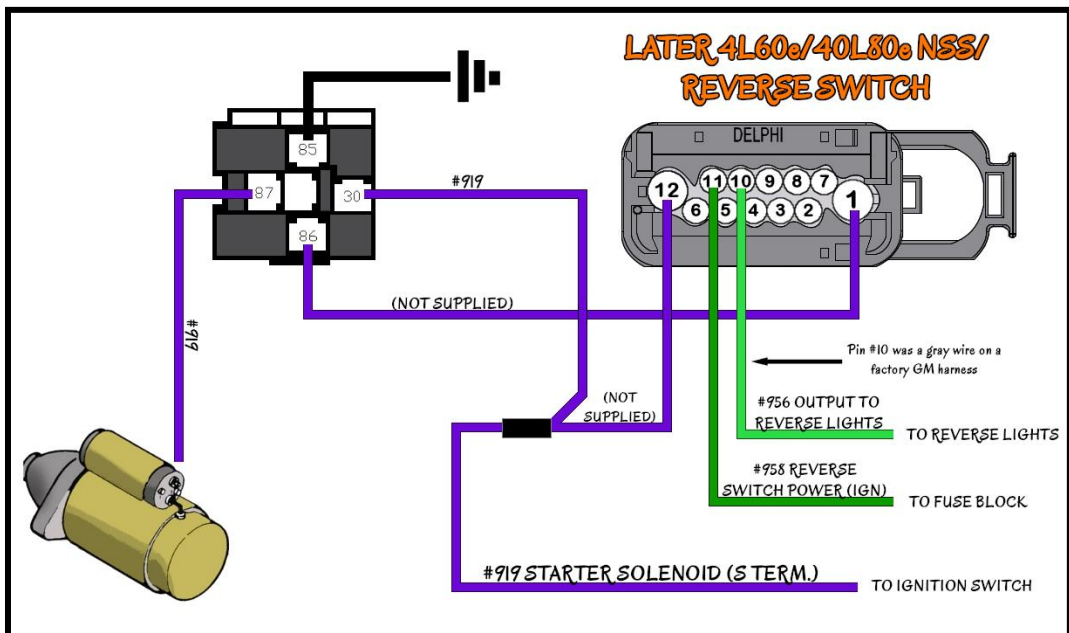
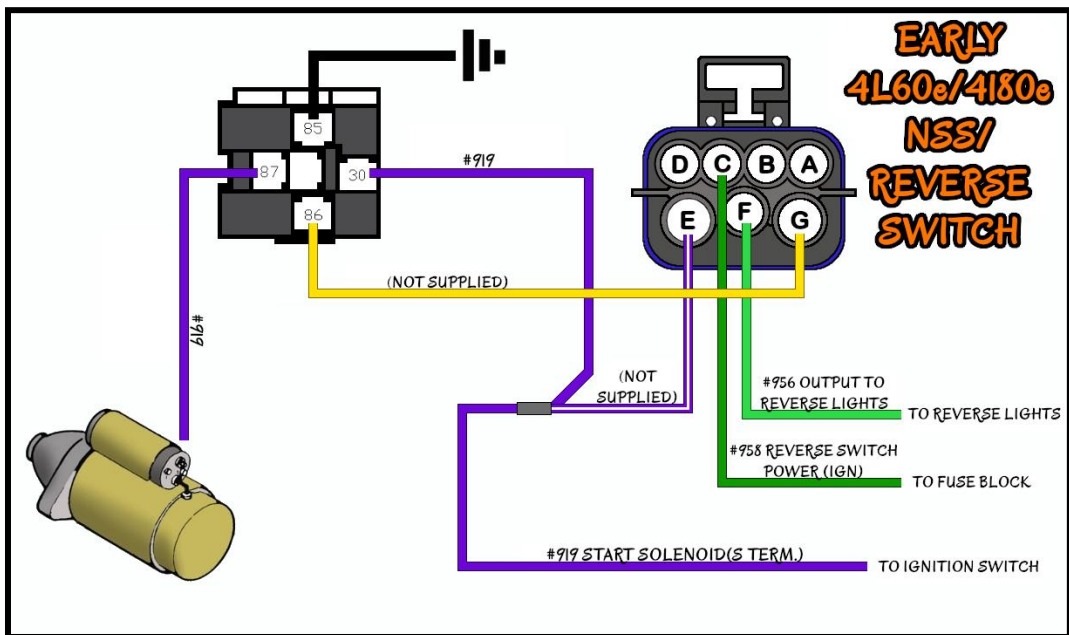


4L60E/4L80E Switch

The 4L60e/4L80e transmission, from trucks or SUVs, has a factory reverse switch on the shift detent rod on the driver's side of the transmission. This same switch also has a park/neutral switch incorporated. Use the diagrams below to connect the reverse wires of the Painless harness to this switch if a newer style electronic transmission has been installed.

For those with a 4L60e/4L80e transmission, a starter relay must be used (not supplied). The switch is not capable of handling the amperage the solenoid requires.

- A splice to the **PURPLE #919** will need to be made to provide power to the switch as well as to the input of the starter relay.
- Route the **GREEN #958** and **LT. GREEN #956** from the provided reverse switch pigtail extension to the switch connector as shown below.



TAIL SECTION

The **Tail Section** wires are the last group to be connected on the exterior of the truck. This group of wires connect to things like the right & left turn signals, taillights, reverse lights, license plate light, and fuel level sending unit. All the wires found in the **Tail Section** can be seen in the [Tail Section Schematic](#) found on [page 57](#).

Please note that the factory taillights grounded through the mounting, and, therefore, no ground wires have been provided for the tail section. If you are using aftermarket lights that require a separate ground wire, you will need to supply it.

FUEL SENDING UNIT (UNDER BED)

The fuel level sending unit sends a ground signal to the fuel level gauge. The float inside the tank moves up and down with the level of fuel in the tank. This raising and lowering of the fuel level moves an arm/contact across a resistor of the sending unit. This sends a resisted signal to the fuel level gauge. The amount of resistance the gauge sees is evident based on the reading of the gauge. For the fuel gauge to work properly, the fuel level sending unit operating range must match the gauges operating range. One wire is included in this Painless kit for this function, it is:

TAN: 18-gauge wire, printed **[TAIL SECTION] #939 FUEL SENDING UNIT**, this wire sends the ground signal from the fuel level sending unit to the fuel level gauge.

- Route the **TAN #939** wire to the fuel level sending unit.
- The parts kit provides insulated terminals to make this connection.
- **The sending unit must be grounded to work properly;** Painless does not offer a wire specifically for this. Some sending units have a tab for a ground connection while others may rely on the sending unit mounting. If your sending unit has a ground tab, run a wire from a clean chassis ground source to this tab.

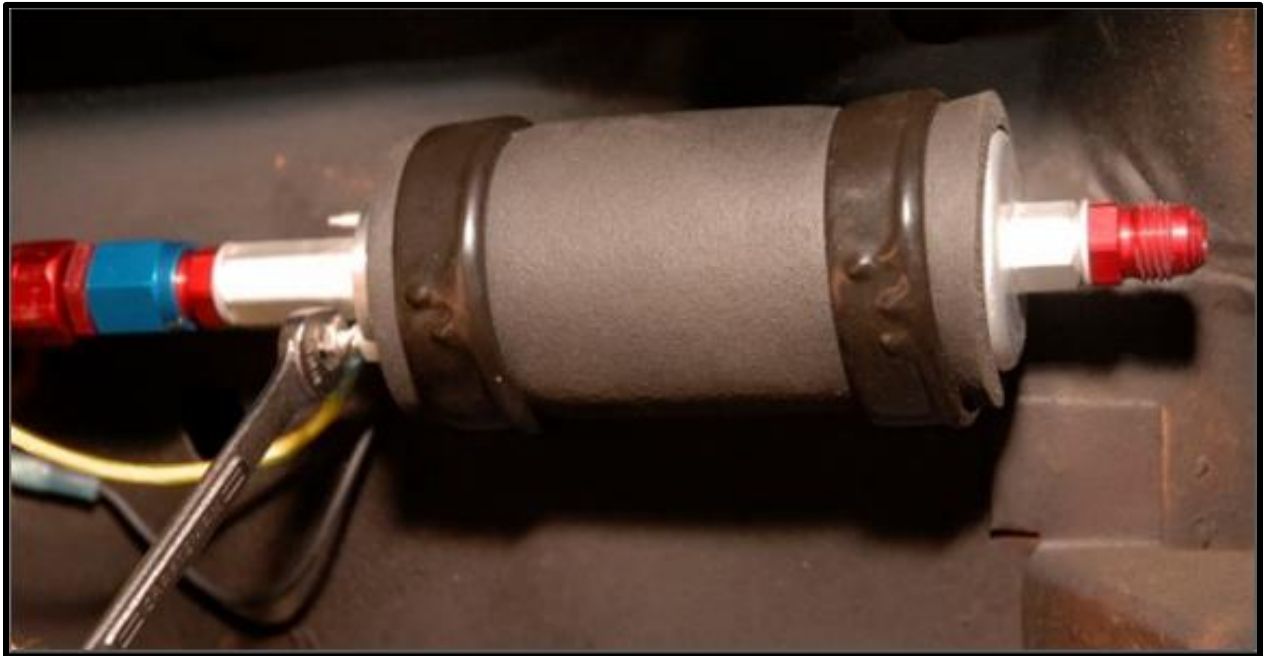
If you do not have a ground tab, run a ground wire from a clean chassis ground source to one of the mounting bolts of the sending unit. Do not rely on a ground through the mounting of the sending unit to the tank.

FUEL PUMP

YELLOW/WHITE: 16-gauge wire, printed **[TAIL SECTION] #947 FUEL PUMP POWER (IGN)**, this wire provides a power source to an electric fuel pump. This wire comes from the 15-amp, FUEL PUMP fuse on the fuse block, and only has power when the ignition switch is in the ON/RUN position and the START position.

- If a mechanical pump is being used, this wire can be used to power any component needing a switched ignition power source, not exceeding 15 amps.

- **DO NOT USE THIS WIRE FOR AN EFI PUMP.** An EFI fuel pump with a psi of 40 lbs. or more requires a fuel pump relay and not this wire. This wire can be used for the 12v activation of a fuel pump relay.
- Route the #947 YLW/WHT wire out of the tail panel with the fuel sending unit wire.
- Using an insulated terminal that matches the connection your pump requires, connect the YLW/WHT #947 wire to the power or + post/tab/wire of the fuel pump. The parts kit provides insulated terminals to make these connections.
- At this time, you will need to provide a ground wire. This harness does not provide a ground wire for an electric fuel pump. However, a ground can be easily connected using insulated terminals from the parts kit and a length of scrap wire created during a previous connection. Simply connect the ground or - post/tab/wire of the fuel pump to one of the mounting bolts holding the fuel pump to the frame/body.



LEFT SIDE MARKER LIGHT

The left side marker light is the next connection. This feature began in 1970. If you have a 1967-1969 you will not have a marker light to connect to. You may route this wire to the license plate light and use it for that function. The marker light is activated by a power source coming from the headlight switch. This light illuminates any time the headlight switch is in the *PARK* or *ON* position.

The park light requires one wire to work properly, it is:

BROWN: 18-gauge wire, printed **[TAIL SECTION] #929 LEFT SIDE MARKER**, this is a power wire for the marker light function. This wire has power anytime the headlight switch is in the Park/Taillights ON or Headlights ON position. This wire, along with all the other wires and splices it is associated with, can be seen in the [Tail Section Schematic](#) on [page 57](#).

- The parts kit provides a factory-style ¼-turn socket and terminals. This socket requires a wedge base **194 bulb**; not provided.
- Route the side marker wires to the marker light and cut to length. Strip ¼” of wire from the wires of the Painless harness and the wires on the socket. Connect the wires to the socket as outlined with the front left side marker on [page 24](#).
- Using a piece of cut off wire from a previous connection, create a ground wire from the other pin location of the socket to a clean chassis ground source.

LEFT TURN / BRAKE LIGHT & TAIL LIGHT

To begin making connections to the left turn-brake and tail light socket locate the wires in the tail section dedicated to this function. They are:

YELLOW: 16-gauge wire, printed **[TAIL SECTION] #949 LEFT TURN / BRAKE**, this wire provides power to the left turn signal. This wire has power anytime the turn signal is in the down/left position and the ignition switch is in the *ON/RUN* position. This wire is also the brake light power. The wire has power anytime the brake pedal is pressed or anytime the hazard switch is activated. This wire can be seen in [Tail Section Schematics](#) starting on [page 57](#).

BROWN: 18-gauge wire, printed **[TAIL SECTION] #929 LEFT TAIL LIGHT**, this wire provides the tail light power. This wire receives power from the headlight switch and has power anytime the headlight switch is pulled into the *PARK/TAIL LIGHT ON* and *HEADLIGHT ON* positions. This wire can be seen in the [Tail Section Schematics](#) starting on [page 57](#).

- The light socket connectors from your factory must be re-used as this connector is obsolete and Painless has been unable to find a replacement at this time.
- Cut the wires to length and connect them to the appropriate wire on the socket. Consult the manufacturer’s instructions if you are using aftermarket assemblies. Splices are provided to make these connections.
- Double up the **BROWN #929** wire with its cutoff portion. Then, route the excess to the license plate light.

REVERSE LIGHT

One wire is provided in the tail section for the reverse light connection, it is:

LT. GREEN: 18-gauge wire, printed **[TAIL SECTION] #956 LEFT REVERSE LIGHT POWER**, this wire provides power to the reverse or back up lights. This wire receives power from the reverse switch and has power anytime the shifter is in the “REVERSE” position with the ignition switch in the “ON/RUN” position.

- Your factory light socket must be re-used as it is crimped to the lamp assembly. A terminal and heat-shrink have been provided that will allow connecting the **#956** wire to the factory terminal on the reverse light assembly.
- Loosely route the **#956** reverse light wire to the reverse light.
- Cut the wire to length and install the supplied terminal and heat shrink over the terminal.

LICENSE PLATE LIGHT

The license plate light is the next connection that needs to be made. This light is tied to the rear marker lights and taillights and will illuminate the license plate when the headlight switch is in the park light “ON” or headlight “ON” positions.

cutoff BROWN: 18-gauge wires, printed **[TAIL SECTION] #929 LEFT TAIL LIGHT**, this is the cutoff portion of the left tail light wire that was routed to the license plate light on [page 55](#). This wire has power anytime the headlight switch is in the park light ON or headlight ON positions. This wire can be seen in the [Tail Section Schematic](#) on [page 57](#).

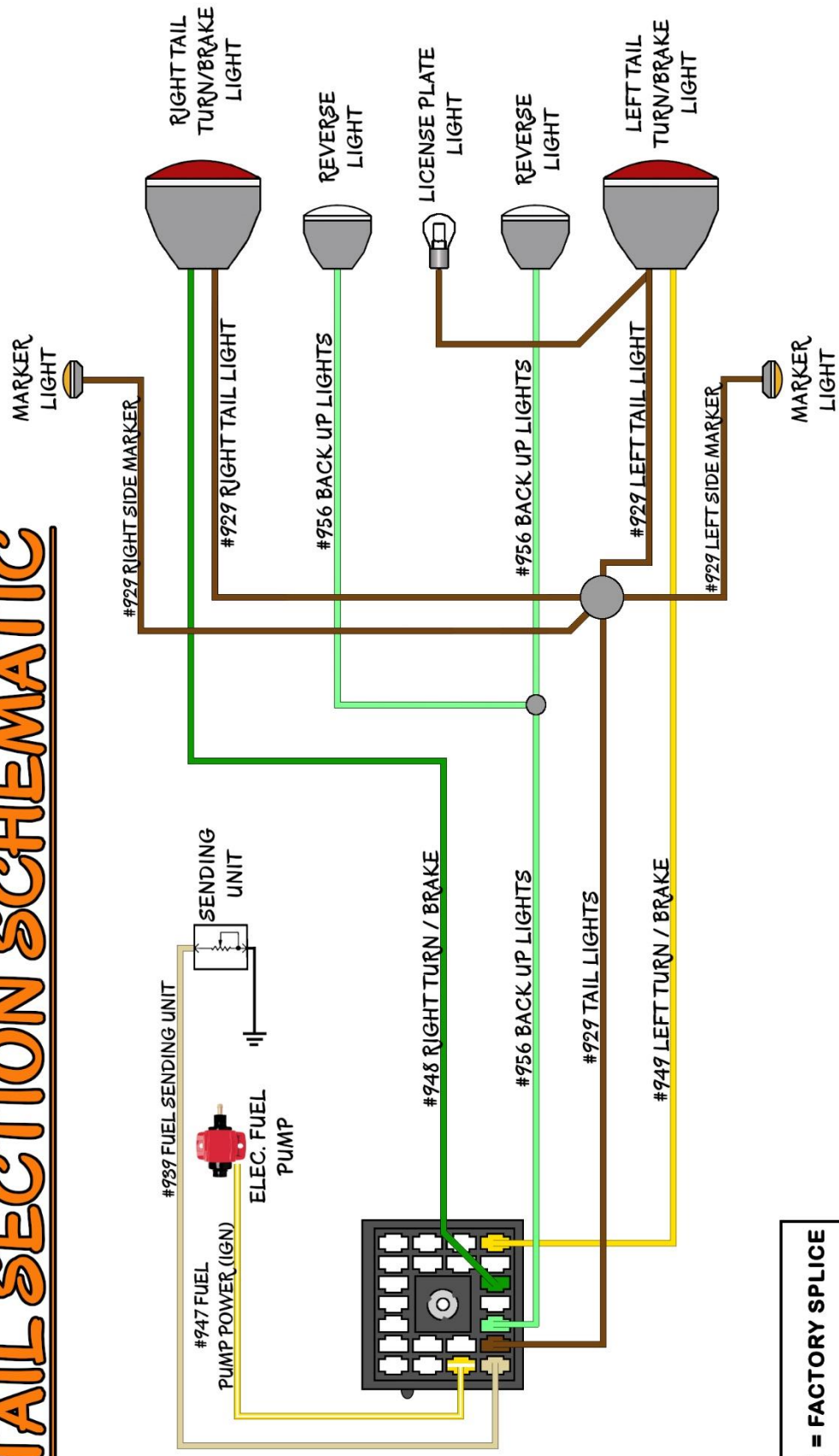
- In most cases, your license plate light will have a socket/bullet terminal connection. Insulated terminals have been provided in the parts kit to connect to these types of plate lights. You can cover the insulated terminal with heat shrink once connected to clean up the look of this connection since colored insulated terminals can often look out of place.

RIGHT SIDE REAR LIGHTS

The connections mentioned above all connect in the same manner as those on the left/driver side. The only difference you will find is the turn signal wire for the right turn signal is a different color than the one used for the left turn signal. The right turn signal will be:

GREEN: 16-gauge wire, printed **[TAIL SECTION] #948 RIGHT TURN / BRAKE**, this wire provides power to the right turn signal. This wire has power anytime the turn signal is in the up/right position and the ignition switch is in the *ON/RUN* position. This wire is also the brake light power and has power anytime the brake pedal is pressed, or the hazard switch is activated. This wire can be seen in the [Tail Section Schematic](#) on the next page.

TAIL SECTION SCHEMATIC



○ = FACTORY SPLICE

INTERIOR HARNESS

Now that the **Engine Harness** is wired, move to the interior of the vehicle. This harness should have already been routed and ready to be connected.

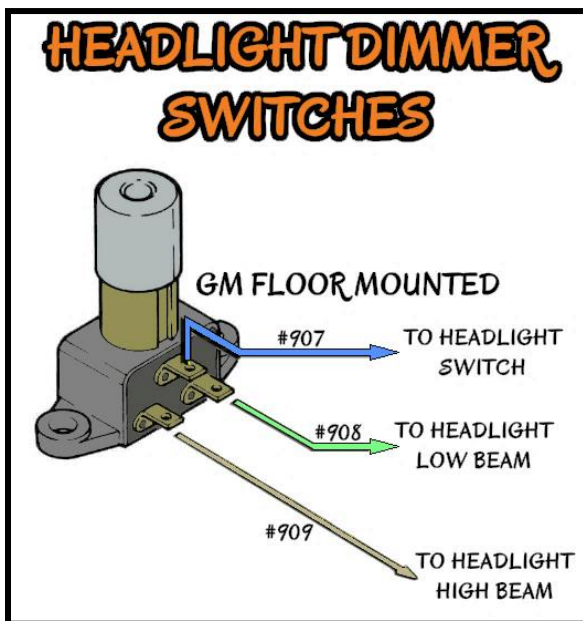
DIMMER SWITCH

The first connection is the group of three wires that belong to the **Dimmer Switch Section**. These three wires provide power to the headlights for low beam and high beam power. They are:

LT. BLUE: 14-gauge wire, printed **[DIMMER SWITCH] #907 DIMMER SWITCH – PWR [HEADLIGHT SWITCH]**, this wire provides power to the dimmer switch from the headlight switch. This wire has power whenever the headlight switch is in the “HEADLIGHT ON” position.

TAN: 14-gauge wire, printed **[DIMMER SWITCH] #909 LOW**, this wire provides power from the dimmer switch and into a splice with 2 other wires. The other two wires feed power to each low beam of the headlights, as seen in the [Headlight Section Schematics](#) on **pages 64**. Once connected, this wire has power when the headlight switch is in the “HEADLIGHT ON” position and the dimmer switch is in the “LOW BEAM” position.

LT. GREEN: 14-gauge wire, printed **[DIMMER SWITCH] #908 HIGH BEAM**, this wire provides power from the dimmer switch to each high beam of the headlights and to the high beam indicator as seen in the [Headlight Section Schematics](#) on **pages 64**. Once connected, this wire has power when the headlight switch is in the “HEADLIGHT ON” position and the dimmer switch is in the “HIGH BEAM” position.



- A connector and terminals have been pre-installed for those using the factory, GM style switch, either column or a floor-mounted like **Painless part #80150**.
- Route all three wires to the floor-mounted dimmer switch and connect.

EMERGENCY BRAKE SWITCH

Locate the wire coming from the top of the fuse block. This connection is for an emergency brake switch that activates the brake indicator light on the dash. This is not a factory option but provided in the event a switch is desired.

The installer will have to source and provide a switch that can be made to fit your e-brake assembly. This switch will need to supply a ground signal when the e-brake is engaged. Something similar to the switches shown should work. Mount the switch so that when the brake is not engaged, a moveable portion of the brake assembly depresses the plunger, opening the switch. When the brake is engaged, the switch should open, causing it to ground and send a signal to the light.

For those that are using aftermarket gauges and do not have a brake indicator light or those who do not wish to add a switch, this wire will have no function and can be removed from the harness.

This connection will be one wire and it is:

TAN 18-gauge wire, printed **[EMERGENCY BRAKE SECTION] #968 EMERGENCY BRAKE**, this wire sends a ground source to the brake warning light in the dash; this causes the light to turn on when the emergency brake pedal is down (see [Instrument Panel Schematic](#) on [page 80](#)).

- Route the **TAN #968** wire to the emergency brake switch found next to the driver side kick panel.
- Connect using an appropriate terminal from the parts kit.



DRIVER COURTESY LIGHT SECTION

There are two **Courtesy Light Sections** consisting of four wires, and connections in these sections lead to both sides of the vehicle. Therefore, it is easiest to wire the passenger side after working your way across the dash. The **Passenger Courtesy Light Section** is covered on [page 93](#).

DRIVER COURTESY LIGHT

This connection allows the driver side under the dash/floorboard of the vehicle to be illuminated any time a door is open or when the headlight switch is activating the dome light.

These wires can be seen in the [Dome / Courtesy Light Schematic](#) on [page 62](#), these wires are:

ORANGE: 18-gauge, printed **[COURTESY SECTION] #971 DRIVER COURTESY LIGHT POWER (BAT)**, this wire provides power from the 10-amp DOME fuse on the fuse block. This fuse is battery powered and always has power.



WHITE: 18-gauge, printed **[COURTESY SECTION] #961 COURTESY LIGHT GROUND**, this is the ground wire that activates the courtesy light. When this wire is grounded, it completes the voltage path and causes the light to illuminate. This ground comes from the headlight switch when it is turned to the “DOME LIGHT ON” position, or either of the aftermarket door jamb switches when the door is opened.

- Locate a lamp socket and terminals from the parts kit. This light socket can use either a 63 or 67 series bulb.
- Locate a suitable mounting location under the driver’s side of the dash. The light socket has a small hole in a mounting tab to allow mounting. This kit provides both self-tapping screws and small zip ties as to accommodate the various ways you might affix the socket. **Do not mount the socket at this time.**
- Route the wires to where the socket will be mounted and cut to length. Due to the different terminal positions in the socket, cut the **ORANGE #971** about ½” longer than the **WHITE #961**. Retain the cutoff **WHITE #961** wire as it will be doubled up at the terminal of this socket and routed to the driver side door jamb switch if one has been installed.
- Strip ¼” of insulation from each wire and install the terminals; crimp the smaller, brass terminal to the **WHITE #961** wire and the larger terminal to the **ORANGE #971** wire.
- Insert the terminals into the connector, install a #67 bulb (not included), and mount the socket.

DRIVER DOOR JAMB SWITCH

The door jamb switches provide a ground activation for the courtesy lights and dome light. When the door is opened, the plunger on the switch extends out as it is no longer being pushed in by the door. When the plunger extends, the contact point on the back of the switch contacts the body of the switch, which is grounded through the mounting into the metal door jamb. This grounding gives the wire attached to the switch a ground source which will then cause the interior lights to turn on.

Locate the wire in the courtesy light section intended for the driver door jamb switch. It is:

WHITE: 18-gauge wire, printed **[COURTESY LIGHT] #961 DRIVER SIDE DOOR JAMB SWITCH**, this wire is spliced to other white wires leading to the dome light, courtesy light, headlight switch, and the passenger side door jamb switch. This wire is grounded anytime either door is opened, or when the headlight switch knob is rotated to the "DOME LIGHT ON" position. This wire can be seen in the [Dome / Courtesy Light Schematic](#) on [page 62](#).

- If your truck is not equipped with jamb switches, and you are not adding them, you will not use this wire. You can skip to the next connection.
- Route the **WHITE #961** wire to the driver side door jamb switch and use an insulated terminal from the parts kit that fits your switch to connect it. If you find that your door jamb switch has 2 tabs, it does not matter which tab the **#961** connects to.

If new switches are needed, Painless offers factory style GM jamb switches as [part #80170](#). Please note that [part #80170](#) is for 1 switch, and each door requires a switch.



HEADLIGHT SWITCH

The headlight switch's connections send power to the headlights, front park/marker lights, rear tail lights, and component backlighting, such as gauges and the radio. These wires can be seen in the [Headlight Switch & Dimmer Switch Schematic](#) on the next page. These wires come with a connector pre-installed; they are:

ORANGE: 14-gauge wire, printed **[HEADLIGHT SWITCH] #959 HEADLIGHT SWITCH POWER (BAT)**, this wire supplies constant battery power for the park/tail lights as well as for the gauge backlighting. This wire comes from the 15-amp PARK/TAIL fuse on the fuse block.

RED: 12-gauge wire, printed **[HEADLIGHT SWITCH] #928 HEADLIGHT SWITCH POWER (BAT)**, this wire provides constant battery power to the headlight switch for headlight operation. This wire comes from the 30-amp HEADLIGHT fuse on the fuse block.

PURPLE: 18-gauge wire, printed **[HEADLIGHT SWITCH] #927 FRONT PARK LIGHTS**, this wire supplies power to the park lights. This wire has constant battery power any time the headlight switch knob is pulled to Park Light ON and, depending on your switch, the Headlight ON position.

BROWN: 16-gauge wire, printed **[HEADLIGHT SWITCH] #929 TAIL LIGHTS**, this wire supplies power to the tail lights. This wire has constant battery power any time the headlight switch knob is pulled to both the park light ON and headlight ON positions.

LT. BLUE: 14-gauge wire, printed **[DIMMER SWITCH] #907 DIMMER SWITCH – PWR [HEADLIGHT SWITCH]**, this wire supplies power to the dimmer switch for headlight operation. This wire has constant battery power any time the headlight switch knob is pulled to the headlight ON position.

GRAY: 18-gauge wire, printed **[HEADLIGHT SWITCH] #930 GAUGE BACKLIGHTING**, this wire provides power to the gauge lights. This wire should have constant battery power any time the headlight switch knob is pulled to both the park light ON and headlight ON positions.

WHITE: 18-gauge wire, NOT PRINTED. This wire provides a ground source for the interior dome/courtesy lights.

- Route the wires to the headlight switch and connect. Make sure the connector goes on straight as the tabs of the headlight switch can bend.

TURN SIGNAL SWITCH

The turn signal switch provides power to each turn signal and turn signal indicator. A factory style crescent-shaped connector has been pre-installed. As noted on [page 10](#), if you use LED lights, a no-load flasher is required (Painless [part #80230](#)).

In this group of instructions, you will see the term “integrated turn/brake lights.” This terminology refers to turn signals that also function as brake lights. Integrated turn/ brake signal vehicles, like these trucks, will have one (1) socket per side with a dual filament bulb (brighter filament for turn/brake, dimmer filament for taillights).

The wires provided in the Painless harness for turn signal connection can be identified by the wires reading “TURN SWITCH.” These wires can be seen in the [Turn Signal Switch & Brake Switch Schematic](#) on the next page, they are:

BLACK: 18-gauge wire, printed **[TURN SIGNAL SWITCH] #963 HORN RELAY ACTIVATION**, this wire is a ground activation signal to the horn relay. The only time this wire is grounded is when the horn button on the steering wheel makes contact to a ground source.

LT. BLUE: 18-gauge wire, printed **[TURN SIGNAL SWITCH] #926 LEFT FRONT TURN SIGNAL**, this wire leads to the instrument panel and provides power to the front left turn signal. This wire has power anytime the hazard switch is activated and also when the turn signal lever is in the down/left turn position and the ignition switch is in the ON/RUN position.

BLUE: 18-gauge wire, printed **[TURN SIGNAL SWITCH] #925 RIGHT FRONT TURN SIGNAL**, this wire leads to the instrument panel and provides power to the front right turn signal. This wire has power anytime the hazard switch is activated and also when the turn signal lever is in the up/right turn position and the ignition switch is in the ON/RUN position.

BROWN: 16-gauge wire, printed **[TURN SIGNAL SWITCH] #951 HAZARD SWITCH POWER (BAT)**, this wire provides power to the hazard switch. It comes from the hazard flasher found on the fuse block. It is a battery power wire, but it has power only when the hazard switch is activated which causes the flasher to send power through this wire. See [Flashers](#) on [page 10](#) for how this process works.

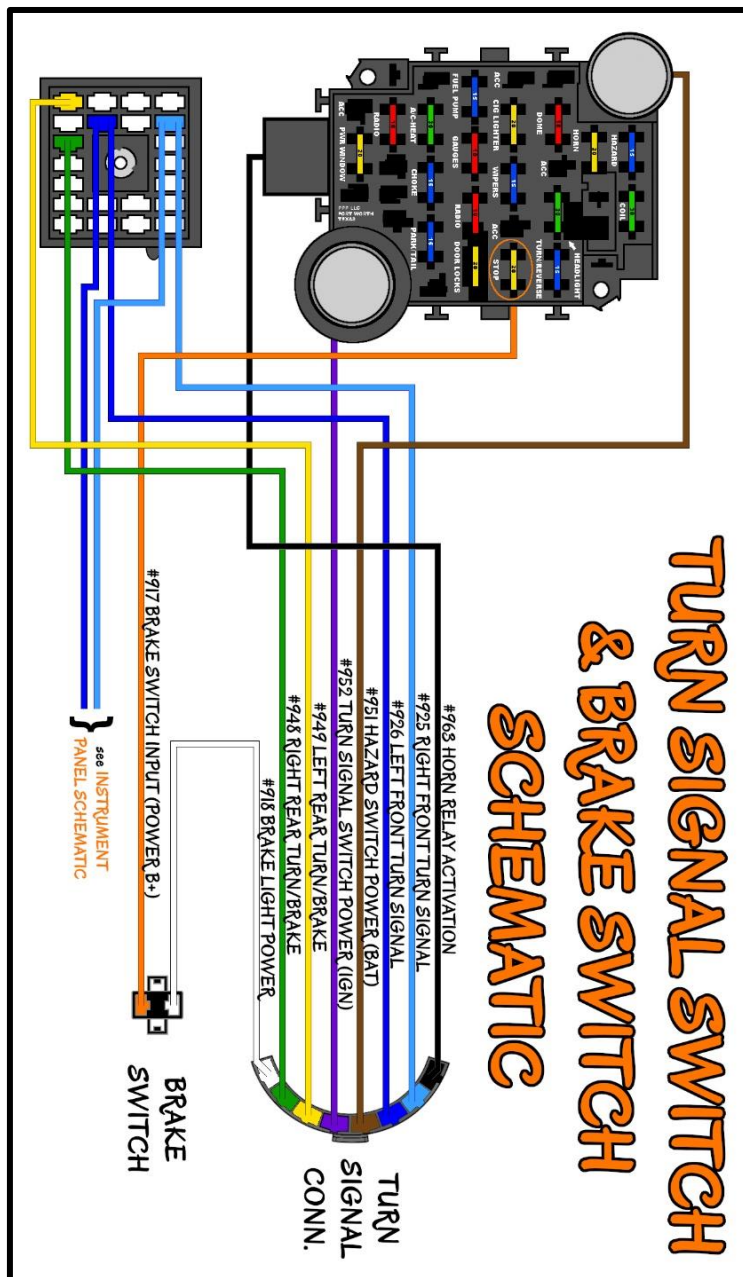
PURPLE: 16-gauge wire, printed **[TURN SIGNAL SWITCH] #952 TURN SIGNAL SWITCH POWER (IGN)**, this wire provides power to the turn signal switch. It comes from the turn signal flasher found on the fuse block. It is a switched ignition power wire, but also, only has power only when the turn signal switch is activated, which causes the flasher to send power through this wire. See [Flashers](#) on [page 10](#) for how this process works.

YELLOW: 16-gauge wire, printed **[TURN SIGNAL SWITCH] #949 LEFT REAR TURN / BRAKE**, this wire provides power to the left rear turn signal. This wire has power anytime the hazard switch is activated and when the turn signal lever is in the down/left turn position and the ignition switch is in the ON/RUN position. On vehicles with integrated turn/brake lights, this wire also carries the brake light power. In those cases, this wire will also have power anytime the brake pedal is pressed.

GREEN: 16-gauge wire printed **[TURN SIGNAL SWITCH] #948 RIGHT REAR TURN / BRAKE**, this wire provides power to the right rear turn signal. This wire has power anytime the hazard switch is activated and when the turn signal lever is in the up/right turn position and the ignition switch is in the ON/RUN position. On vehicles with integrated turn/brake lights, this wire also carries the brake light power. In those cases, this wire will also have power anytime the brake pedal is pressed.

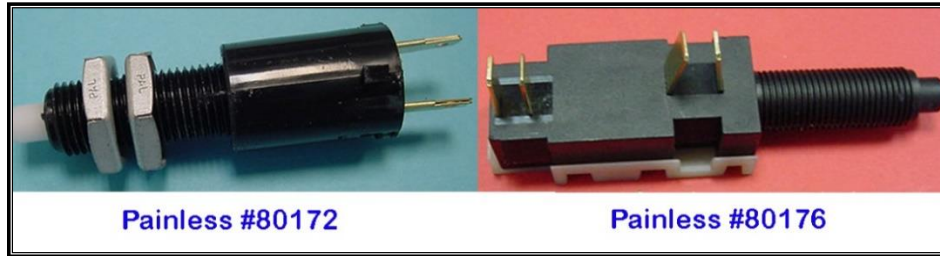
WHITE: 14-gauge wire, printed **[TURN SIGNAL SWITCH] #918 BRAKE LIGHT POWER [BRAKE SWITCH]**, this wire feeds the brake light power into the turn signal switch. This wire has power anytime the brake pedal is pressed.

- Route the turn signal wires to the turn signal switch and connect.
- For those with a later style “flat” GM turn signal switch, the terminals and connector pre-installed on the harness may need to be removed. Painless offers part #30840 to aid in connecting this harness to a later style switch. If you are using an aftermarket column, it may have come with an adapter pigtail to convert the pre-installed plug to the later style turn signal switch connection.



BRAKE SWITCH

The factory brake switch on the 1967 – 1972 GM pickups was a mechanical switch, like **Painless part #80172**, and will be mounted on or near the pivot point of the brake pedal.



There are two wires found in the Painless chassis harness for proper brake switch connection, and they are:

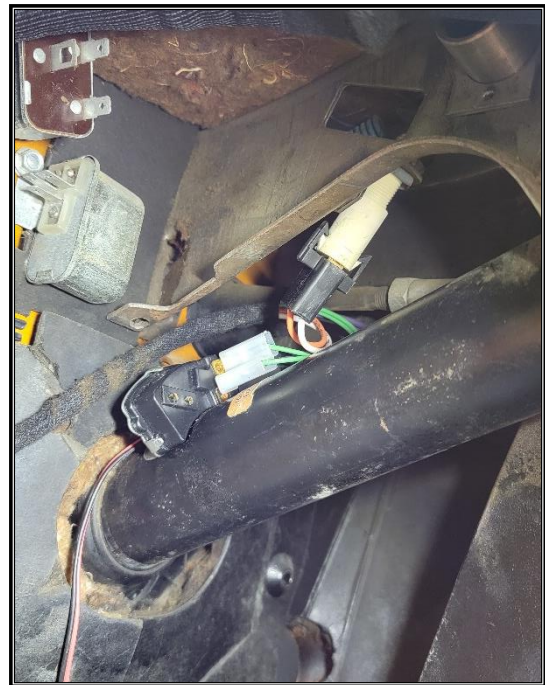
ORANGE: 16-gauge wire, printed **[BRAKE SWITCH] #917 BRAKE SWITCH (BAT)**, which provides power from the 20-amp STOP fuse. This wire always has power.

WHITE: 14-gauge wire, printed **[TURN SIGNAL SECTION] #918 BRAKE LIGHT POWER [BRAKE SWITCH]**, this wire feeds the brake light power into the turn signal switch. This wire has power anytime the brake pedal is pressed.

- Route the brake switch wires to the brake switch and connect them using the pre-installed connector. Be sure to route the wires away from the moving parts of the brake pedal and/or clutch pedal.

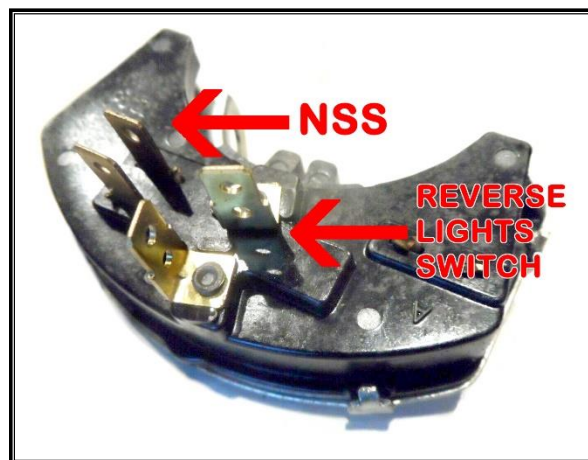
If your brake switch has four connection pins:

- Two pins will have contact (closed) when the brakes are not applied. This is usually the pair of terminals closest together. These pins are for cruise control and/or torque converter lockup.
- Two pins will be separate (open) when the brakes are not applied. This is usually the pair of terminals further apart. You will need the two posts that are normally open for brake light function.



REVERSE SWITCH

The reverse switch connection provides the backup lights the power they need to illuminate. This switch is a 2-pin, normally open switch that has power coming into one side and out the other to the backup lights. When the shifter is put into the reverse position, contact is made between these two pins, closing the switch. This allows power to flow from one pin to another, thus transferring power through the switch out to the backup lamps. The two wires provided for this option are:



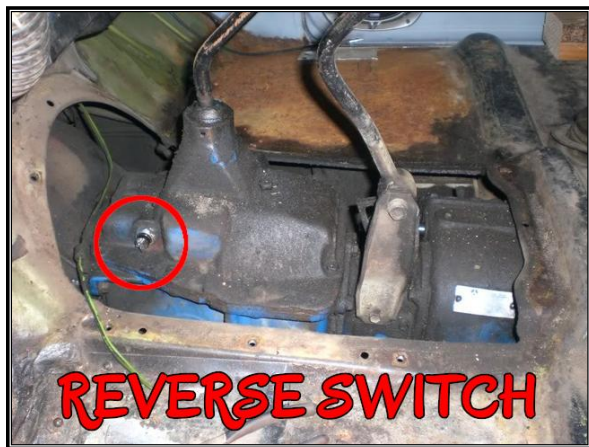
GREEN: 18-gauge wire, printed **[REVERSE SWITCH] #958 REVERSE SWITCH POWER (IGN)**, this wire comes from the 15-amp TURN fuse on the fuse block. This wire is a switched ignition power wire meaning it will only have power when the ignition switch is in the ACCESSORY and ON/RUN positions.

If you do not have back up lights, **#958** can be used to power an accessory requiring a switched 12v power source. If you do not use the wire, cap it, and stow it away safely, as it is a power wire.

LT. GREEN: 18-gauge wire, printed **[REVERSE SWITCH] #956 OUTPUT TO REVERSE LIGHTS**, this wire provides power from the reverse switch to the backup lights in the Tail Section of the Painless harness.

- Locate the reverse switch; the location varies depending on your vehicle.

Many of those using a factory GM column can find it at the base of the steering column as shown on the switch above. The switch can also be found at the base of the shifter on some manual transmissions as shown below. If you have a transmission mounted switch the extension pigtail should have been added and routed on [page 16](#).

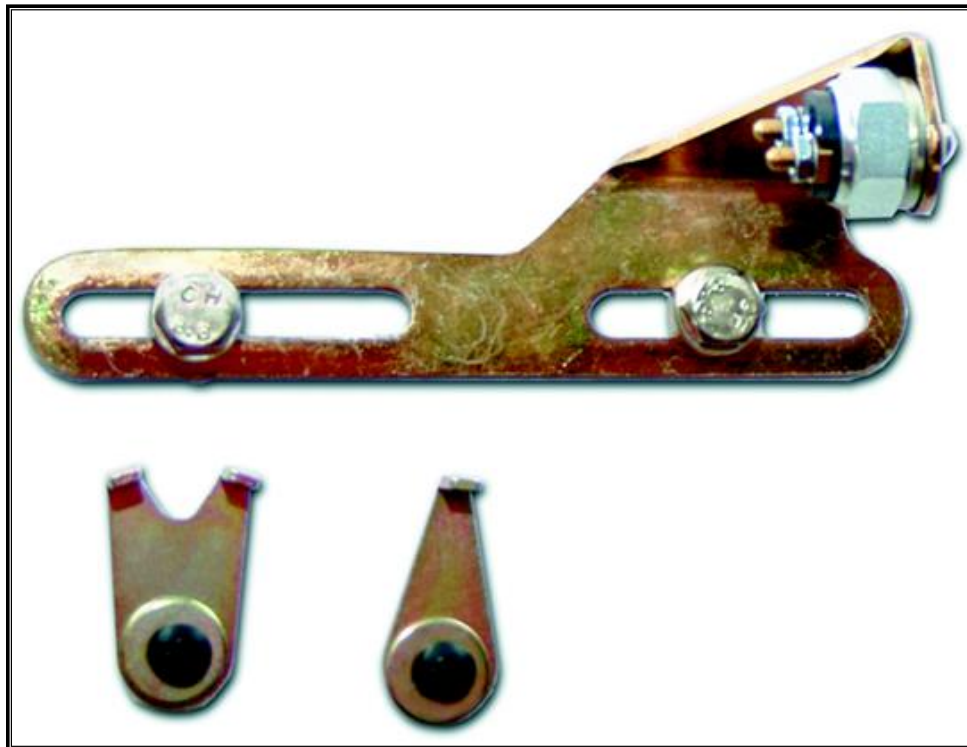
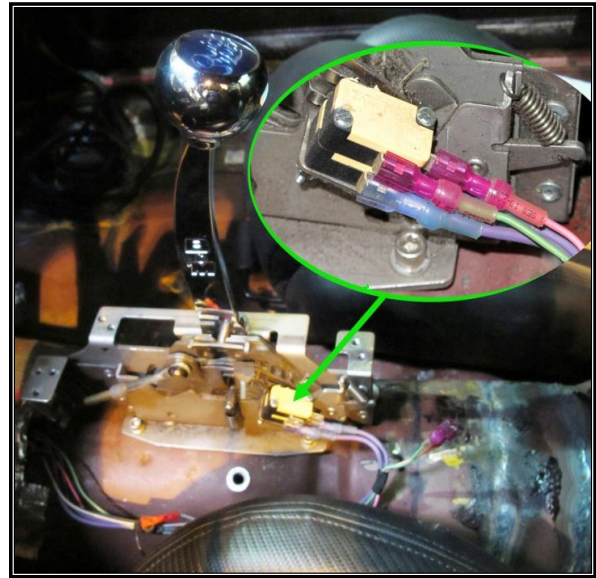


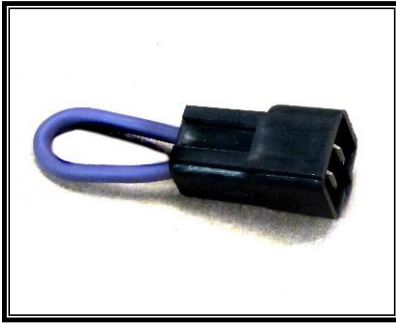
- Route the wires to the reverse switch and connect.

- If you are using an aftermarket floor-mounted shifter, the reverse switch may be found on the base of the shifter. There may also be a neutral safety switch found on the shifter as well. When testing the system, if you notice the reverse lights on when the transmission is in park or neutral, you have the reverse switch wires connected to the neutral safety switch.

Small insulated terminals have been provided in the parts kit to accommodate aftermarket shifter switches.

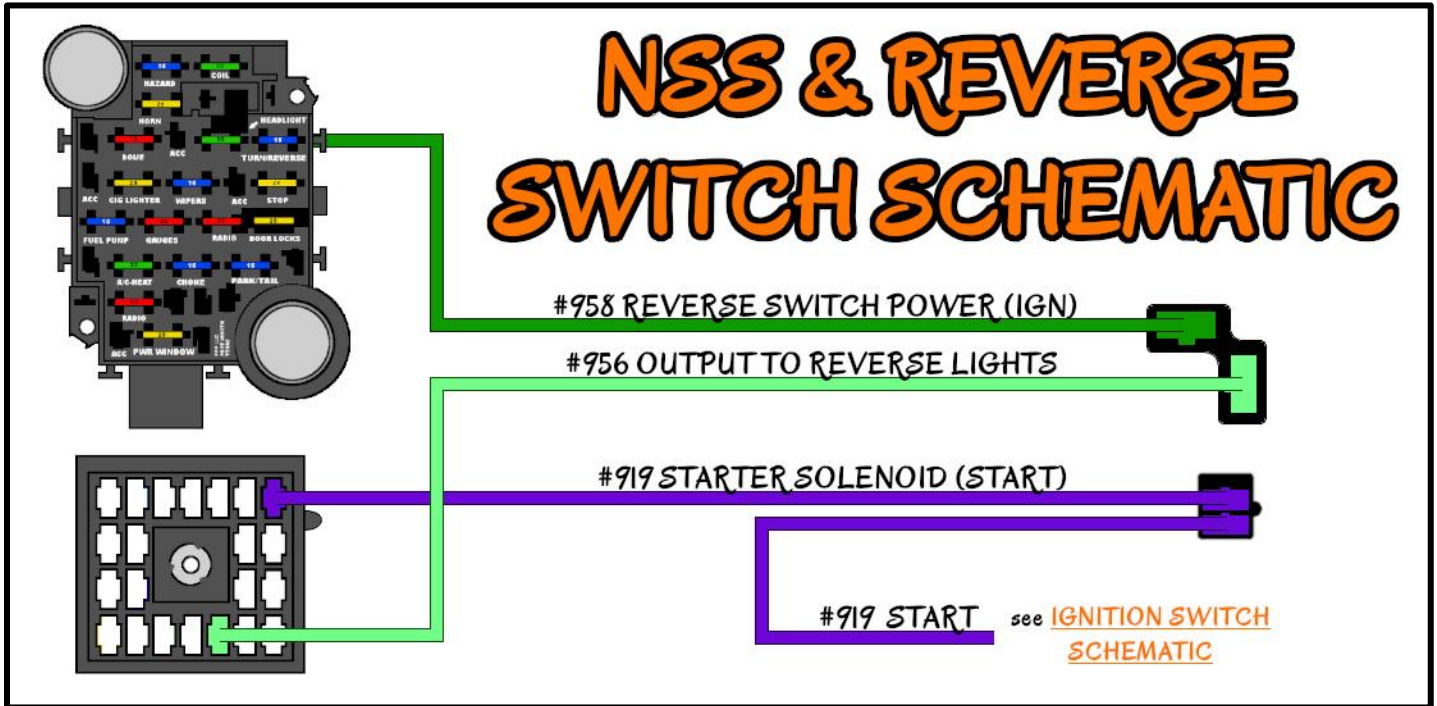
- **Painless offers part #80175** for those using GM TH350, TH400, 700-R4, TH200, 200-4R, & 4L60 transmissions. This part can be used as either a reverse switch or a neutral safety switch.





- A connector loop, seen in the photo, has been provided in the parts bag for those using a transmission mounted neutral safety switch, like the factory truck 4L60E/4L80E switch. This loop will plug into the NSS connector found on the Painless harness.
- If you do not have a neutral safety/clutch switch and do not plan on getting one, use the provided loop to connect the two (2) **PURPLE #919** wires together.

Painless does not recommend operating your vehicle without a neutral safety/clutch switch.



INSTRUMENT PANEL

On the main harness the **Instrument Panel Section** has a pre-installed 15-pin connector. Some wires double up at the 15-pin connector and lead to a 6-pin connector for aftermarket, dash-mounted gauges (see [page 87](#)).

In the kit you will find 2 instrument panel pigtails that plug directly into the 15-pin connector. One for factory gauges and a universal pigtail for aftermarket clusters or a controller like those provided by Dakota Digital. Which pigtail you use and how it is setup will vary depending on your setup.



While some of the pigtails' wires are not labeled, you can consult the text of the main harness wires for their individual functions. The wires of the **Instrument Panel Section** are:

PINK: 18-gauge wires, printed **[INSTRUMENT PANEL] #935 GAUGE POWER (IGN)**, this wire provides a switched ignition power source to the cluster. This wire comes from the 10-amp GAUGES fuse on the fuse block. This wire has power anytime the key is in the ON/RUN position.

GRAY: 18-gauge wire, printed **[INSTRUMENT PANEL] #930 GAUGE LIGHT POWER**, this wire provides a power source for gauge backlighting. This **GRAY #930** is tied to the other four (4) **GRAY #930** wires coming from the headlight switch and going to the other dash lighting. This wire has power anytime the headlight switch is in the Park/Tail Lights ON or Headlights ON position. This wire can also be seen in the [Headlight Switch & Dimmer Switch Schematic](#) on [page 64](#).

BLUE: 18-gauge wire, printed **[INSTRUMENT PANEL] #922 OIL PRES. SENDING UNIT**, this wire is a ground signal from the oil pressure sending unit. The sending unit will create resistance to ground according to oil pressure. This resistance is transferred through this wire to the gauge.

GREEN: 18-gauge wire, printed **[INSTRUMENT PANEL] #921 COOLANT TEMP SIGNAL**, this wire is a ground signal from the engine coolant temperature sending unit. The sending unit will create resistance to ground according to engine temperature. This resistance is transferred through this wire to the gauge.

TAN: 18-gauge wire, printed **[INSTRUMENT PANEL] #939 FUEL GAUGE**, this wire is a ground signal from the fuel level sending unit in the fuel tank. The resistance to ground will vary on this wire according to the amount of fuel in the tank.

PURPLE/WHITE: 18-gauge wire, printed **[INSTRUMENT PANEL] #923 TACHOMETER SIGNAL**, this wire provides a signal to the tachometer from the negative side of the coil or from your ignition box.

LT. GREEN: 18-gauge wire, printed **[INSTRUMENT PANEL] #936 HIGH BEAM INDICATOR**, this wire provides power to the high beam indicator when the headlight switch is in the “ON” position and the dimmer switch is in the “HIGH” position.

LT. BLUE: 18-gauge wire, printed **[INSTRUMENT PANEL] #937 LEFT TURN INDICATOR**, this wire provides power to the left turn indicator when the turn signal switch is in the left turn position.

BLUE: 18-gauge wire, printed **[INSTRUMENT PANEL] #938 RIGHT TURN INDICATOR**, this wire provides power to the right turn indicator when the turn signal switch is in the right turn position.

ORANGE/BLACK: 18-gauge wire, printed **[INST. PANEL SECTION] #955 4-WHEEL DR. LIGHT POWER (IGN)**, this wire provides a switched ignition power source to the 4x4 indicator light. This wire comes from the 10-amp GAUGES fuse on the fuse block. This wire has power anytime the key is in the ON/RUN position.

BROWN: 18-gauge wire, printed **[INSTRUMENT PANEL] #987 GENERATOR LIGHT**, this wire provides a signal to the generator light and has switched ignition power from the fuse block. Not used if you have a factory ammeter.

TAN: 18-gauge wire, printed **[INST. PANEL SECTION] #968 BRAKE WARNING INDICATOR**, this wire is a ground activation wire for the brake light on the cluster from the brake pressure warning switch. This wire will be grounded, causing the light to illuminate when an imbalance in fluid pressure occurs.

BLACK: 18-gauge wires, printed **[GROUND] #969 GROUND**, this wire provides a ground source to the cluster.

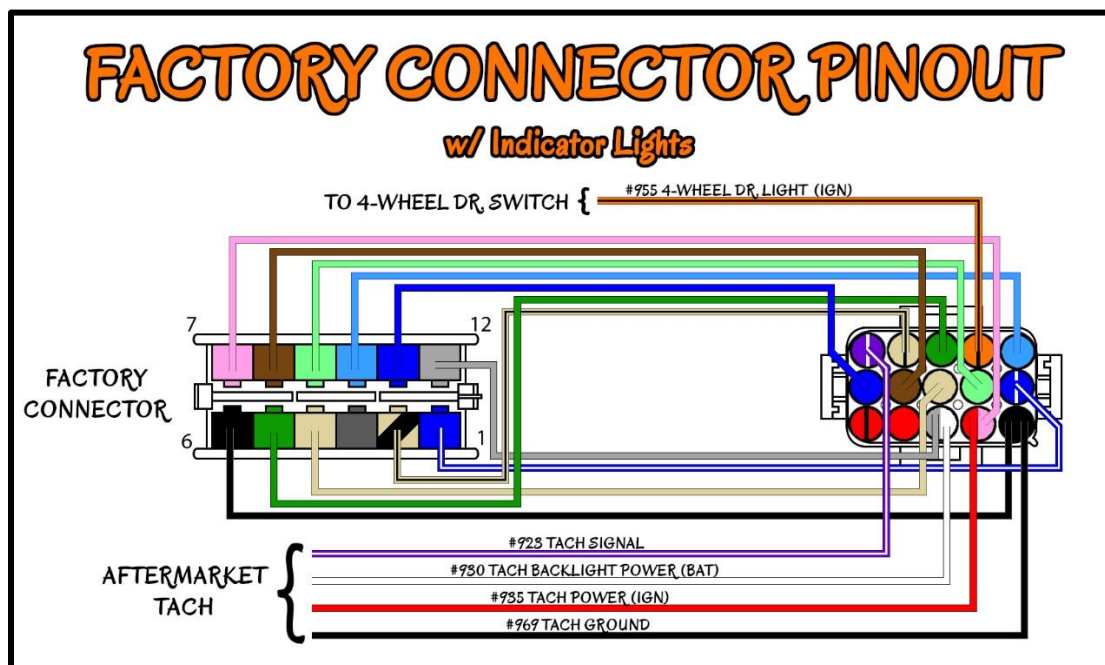
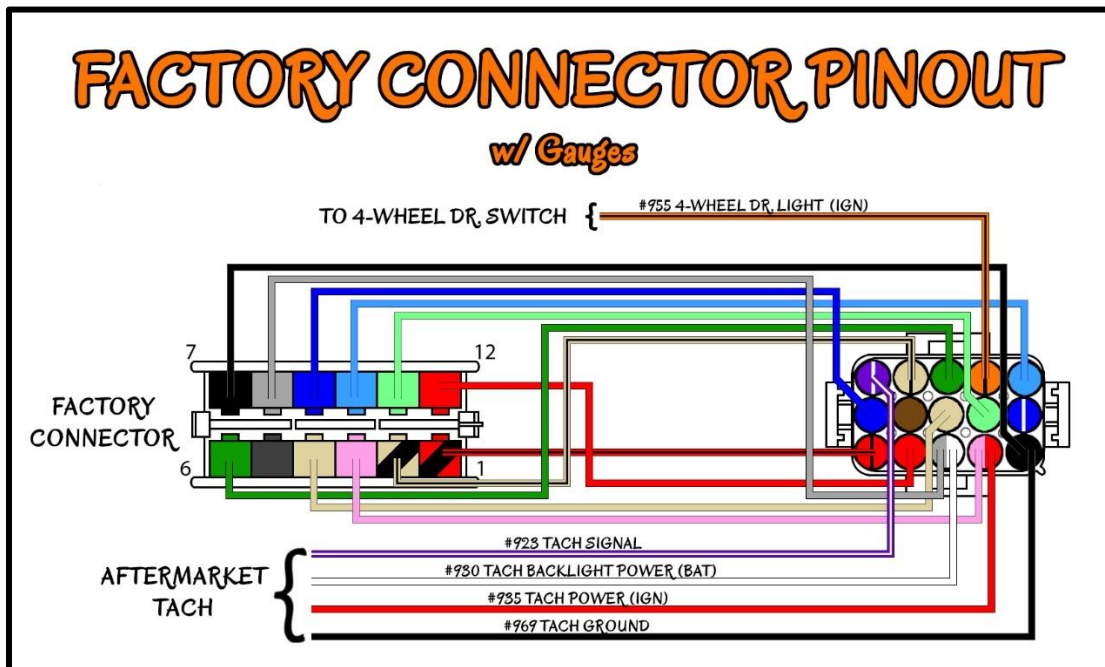
RED/BLACK: 18-gauge wire, printed **[INSTRUMENT PANEL] #986 AMMETER TO IGN. SW.**, this wire comes from the ignition switch and provides BAT power to the ammeter. Not used if you have a factory generator light.

RED: 18-gauge wire, printed **[INSTRUMENT PANEL] #989 AMEMETER TO FUSEBLOCK**, this wire connects to the other side of the ammeter and carries power back to the fuse block. Not used if you have a factory generator light.

FACTORY PRINTED CIRCUIT GAUGES

Locate the instrument pigtail for the factory clusters. You can tell it by the factory connector pre-installed on some of the wires. Notice not all of the wires have been pinned. To complete the pinout, please refer to the diagrams below. Which schematic you choose will depend on whether you are using a cluster with factory gauges or factory indicator lights.

To identify the terminal location there are numbers molded on the side of the connector. You can also reference the end tabs as one is smooth and larger while the other tab has a ridge and is smaller. You can also use the key, located on the side of the connector between pins 16/17 on the diagrams. **DO NOT MIS-PIN THE CONNECTOR OR YOU WILL BURN OUT THE PRINTED CIRCUIT.**



4x4 INDICATOR

The factory 4x4 indicator socket and ground wire will need to be re-used. This ground wire connects to the 2-pin switch on the transfer case. The other pin on the transfer case switch will connect to a chassis ground source. This Painless harness only supplies the power wire to the light. This wire is:

ORANGE/BLACK: 16-gauge wire, printed **[INSTRUMENT PANEL] #955 4-WHEEL DRIVE INDICATOR B+**. This wire provides a switched ignition power source to the 4x4 indicator. This wire comes from the 10-amp GAUGES fuse on the fuse block. This wire has power anytime the key is in the ON/RUN position.

- Splice this **ORG/BLK #955** wire to the socket wire not leading to the transfer case. Splices and heat shrink have been provided.
- If you do not have a four-wheel drive, insulate the end of this wire, it is a power wire and **WILL short to the dash if left uninsulated**. This wire could also be used to power aftermarket gauges

TACHOMETER

This factory cluster pigtail harness comes with four (4) wires for a factory or aftermarket tachometer. These four (4) wires are:

RED: 18-gauge wire, printed **[AFT. MKT. TACH] #935 TACH POWER (IGN)**, this wire provides a switched ignition power source to the tachometer. This wire comes from the 10-amp GAUGES fuse on the fuse block. This wire has power anytime the key is in the ON/RUN position.

BLACK: 18-gauge wire, printed **[AFT. MKT. TACH] #969 TACH GROUND**, this wire will provide a ground source to the tachometer.

PURPLE/WHITE: 18-gauge wire, printed **[AFT. MKT. TACH] #923 TACH SIGNAL**, this wire provides a signal to the tachometer from the negative side of the coil or from your ignition box.

WHITE: 18-gauge wire, printed **[AFT. MKT. TACH] #930 TACH BACKLIGHT POWER (BAT)**, this wire provides a power source for tach backlighting.

- If you do not have a tach, insulate the end of the **RED #935** & **WHT #930** power wires. These wires **WILL short to the dash if left uninsulated**.

- Factory Tach: Locate the factory connector and terminals provided in the parts kit. Using the photo to aide in the correct pinout, terminate and install **RED #935** & **PURPLE/WHITE #923** wire into the connector and install on your tach. Wires **#930** and **#969** will not be used.

- Aftermarket Tach: Consult the tachometer instructions for proper hookup of an aftermarket tachometer.



HARDWIRING AFTERMARKET GAUGES

For those using aftermarket gauges, locate the universal instrument panel pigtail from the parts kit. It will have one (1) pre-installed connector on 15 unterminated wires.

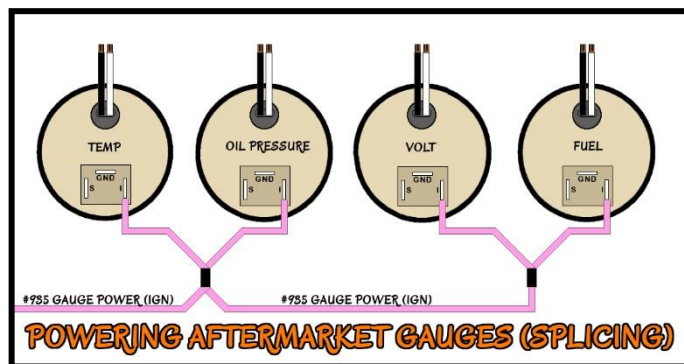
INSTRUMENT PANEL PIGTAIL WIRES

1. **LT. GREEN** [AFTMKT GAUGE CLUST] #936 HIGH BEAM INDICATOR
2. **PINK** [AFTMKT GAUGE CLUST] #935 GAUGE POWER (IGN)
3. **LT. BLUE** [AFTMKT GAUGE CLUST] #937 LEFT TURN INDICATOR
4. **BLUE** [AFTMKT GAUGE CLUST] #938 RIGHT TURN INDICATOR
5. **BLUE** [AFTMKT GAUGE CLUST] #922 OIL PRES. SENDING UNIT
6. **TAN** [AFTMKT GAUGE CLUST] #939 FUEL GAUGE
7. **GREY** [AFTMKT GAUGE CLUST] #930 GAUGE BACKLIGHTING
8. **BROWN** [AFTMKT GAUGE CLUST] #987 GENERATOR LIGHT
9. **PURPLE/WHITE** [AFTMKT GAUGE CLUST] #923 TO TACHOMETER
10. **BLACK** #969 GROUND
11. **TAN** [AFTMKT GAUGE CLUST] #968 BRAKE WARNING INDICATOR
12. **RED/BLACK** [AFTMKT GAUGE CLUST] #999 GAUGE CONTROLLER BATTERY POWER
13. **GREEN** [AFTMKT GAUGE CLUST] #921 COOLANT TEMP SIGNAL

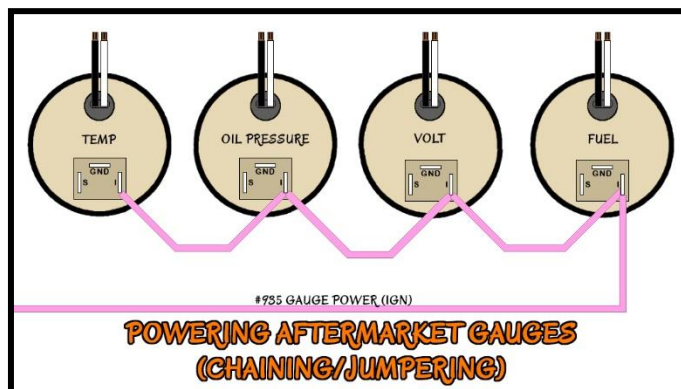
The following steps will walk you through the process of distributing power and ground as well as connecting the sender wires. The following diagrams only show temp, oil pressure, VOLTE, and fuel level gauges. Power, ground, and sender wires connect in the same manner to speedometers and tachometers.

Power to the gauges comes from the **PINK #935** wires, and it needs to be connected to the “I” or “12v” post on each gauge. The power wire can be connected in one of two ways:

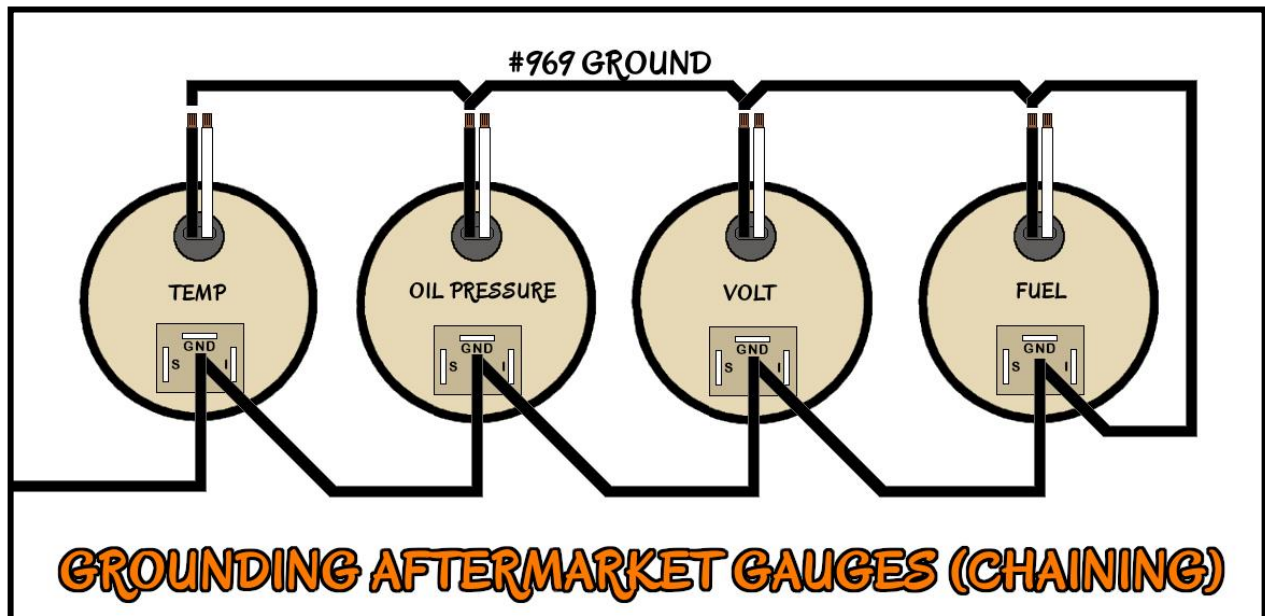
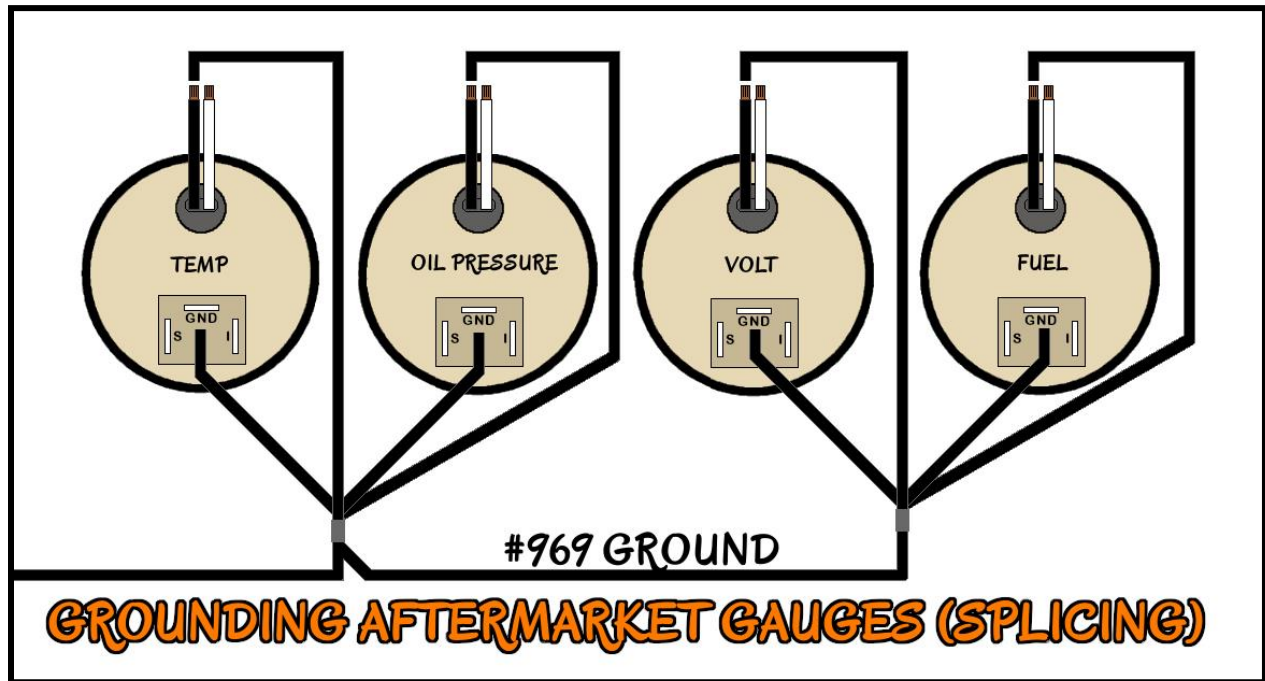
#1) Splicing- This is when you connect multiple wires to a single wire to distribute power/ground to multiple components. In this case, a splice from one of the **PINK #935** wires is powering wires to several gauges.



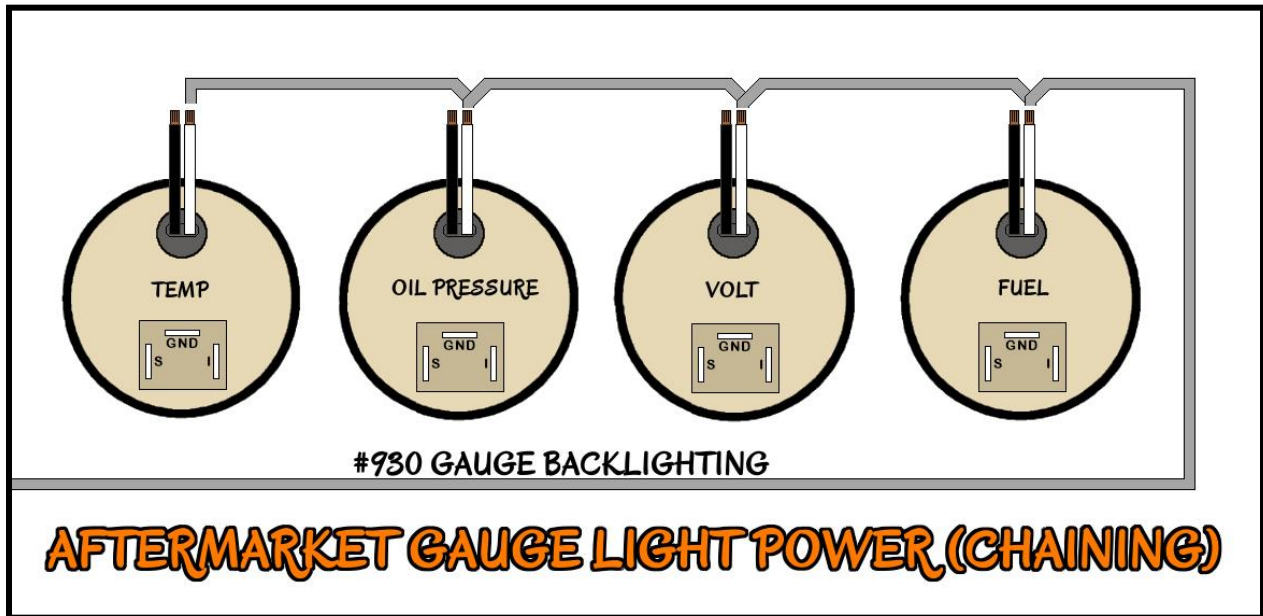
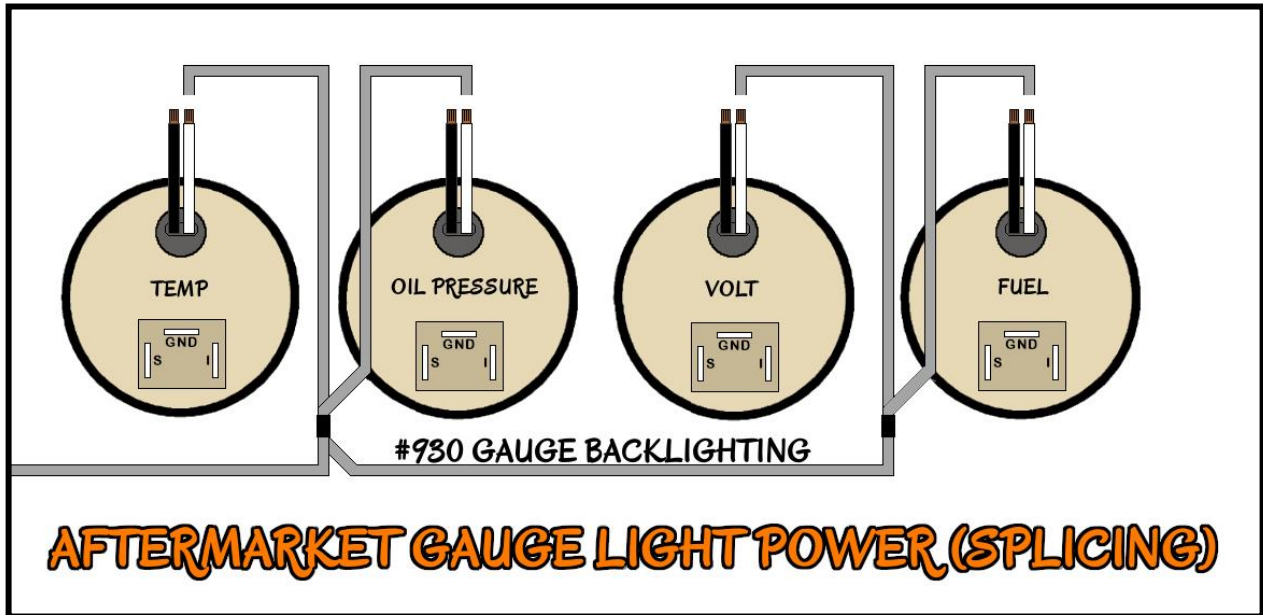
#2) Chaining or Jumpering- Run a **PINK #935** wire to a power post. **Before terminating the wire** with the proper terminal, insert another wire into the terminal and crimp. You now have 2 wires in 1 terminal. This additional wire then routes to the next gauge's power post. Before terminating that wire with the proper terminal, insert another wire into the terminal; and so on.



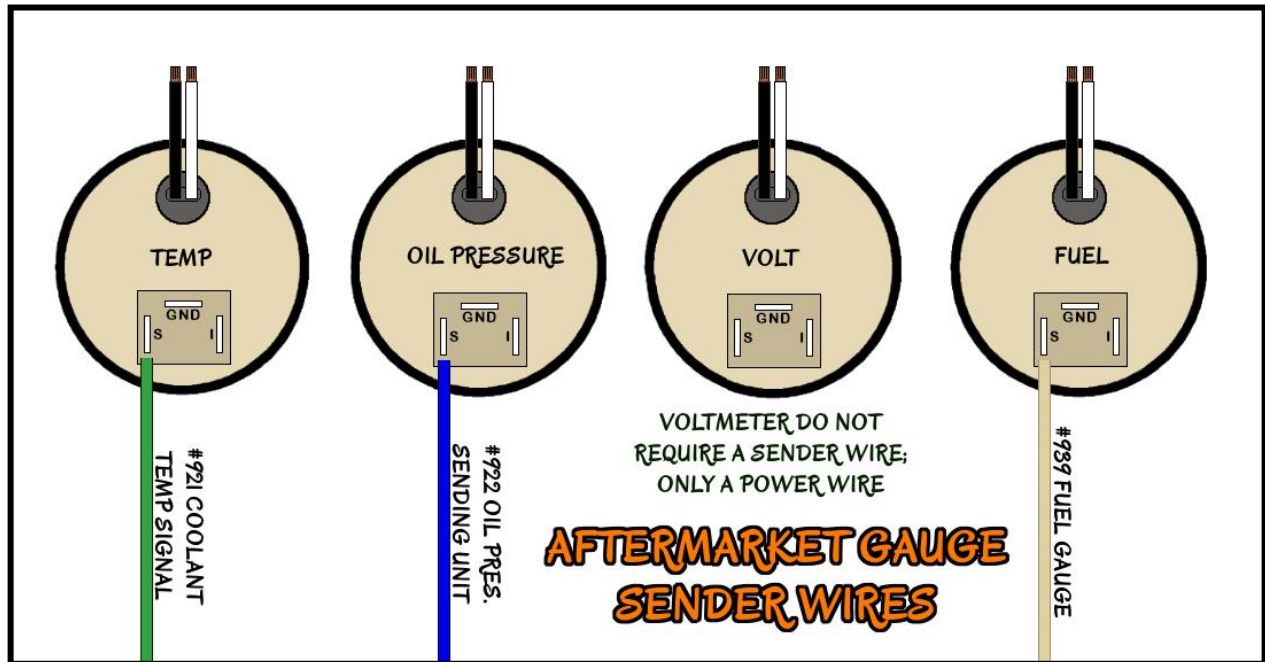
Grounds need to be supplied to the gauge lights and to any ground tab on the gauges. To make these ground connections you can splice from the provided ground wires to all the gauges or chain/jumper it all together. Both methods can be seen in the following two drawings:



Gauge light power is supported by the **GRAY #930** wire. This wire connects to one of the leads for the gauge light or to the gauge light tab found on gauges with LED backlighting. To make these connections you can splice from this **GRAY #930** wire to all the gauges or chain/jumper it all together.



The last connections that need to be made are the sending unit wires or signal wires. These are the wires which come from the temperature sending unit, oil pressure sending unit, and fuel level sending unit. Not shown in the diagram, but also provided in the Painless chassis harness is the **PPL/WHT #923 TO TACHOMETER** wire.



ACCESSORY / FAN RELAY

This Painless harness includes an activation wire for the connection between an accessory relay and a control switch. Most people will use this wire for a fan relay. This wire is:

GRAY/WHITE: 18-gauge wire, printed **#901 RELAY ACTIVATION/ACC POWER (IGN)**; this is an extra-long wire under the dash used to power and accessory or relay. This wire comes from the 15-amp CHOKE fuse and has ignition switched power.

There are numerous ways this wire can be used and connected. If an accessory is to be powered or an accessory relay, like a cooling fan or driving/fog light relay, is to be installed, choose the best connection method according to the instructions and diagrams that follow. This wire can only be used to directly power an accessory up to 10 amps.

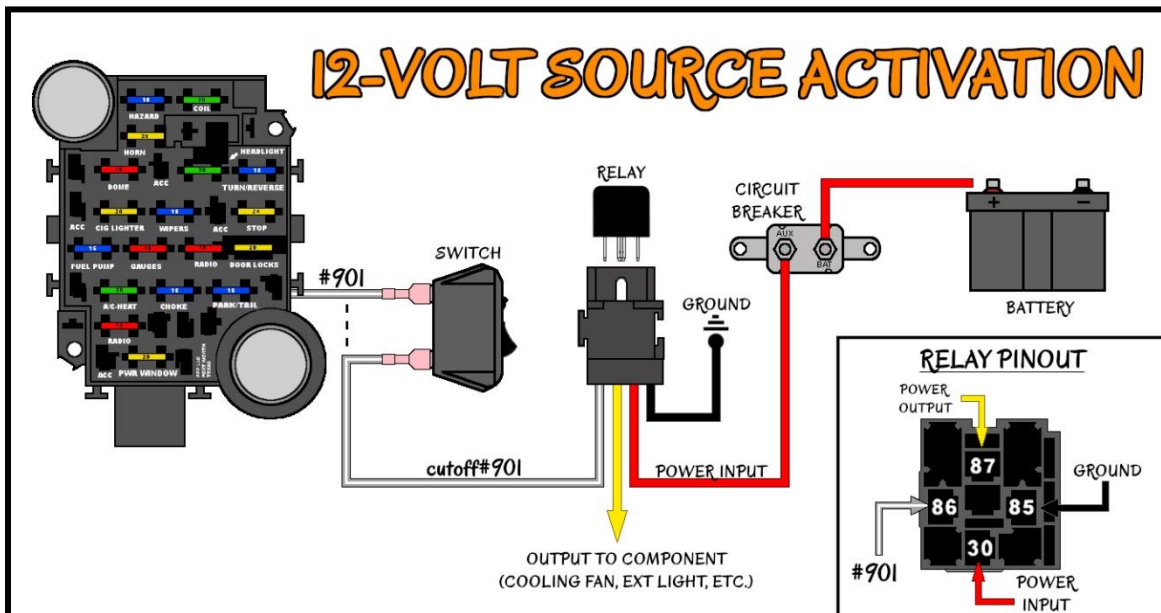
If there is no need for an extra switched ignition power source at this time, simply insulate the **#901** wire with an insulated terminal from the parts kit.

POWER ACTIVATED RELAY

A 12-volt activated relay is constantly grounded and will send power out of the output side of the relay to the component being powered when 12 volts is applied to the relay, as the name implies. The 12-volt source can be wired directly to the relay or interrupted by a switch, as shown in the [12-Volt Source Activation Schematic](#) below.

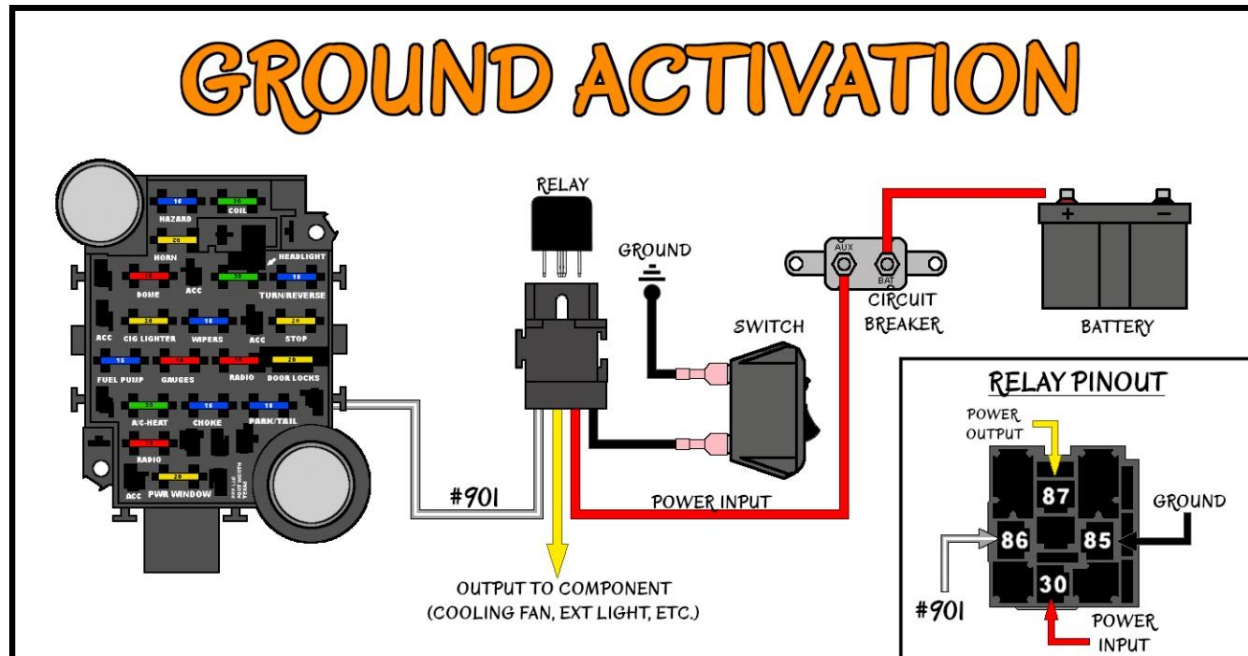
Wiring directly to the relay, as indicated by the dashed line, would be used in the case of wiring a Fuel Pump relay, water pump relay, or any other high amperage component you would want to run continuously while the key is in the on position.

The 12-volt activation wire can also be wired to a switch to offer the user OFF/ON capabilities. These are the situations a battery constant power source would be used. This would allow a component to be turned OFF or ON without the key in the ON position. However, unless a lighted switch is being used, a ground activated relay may work better to avoid running power through the switch.



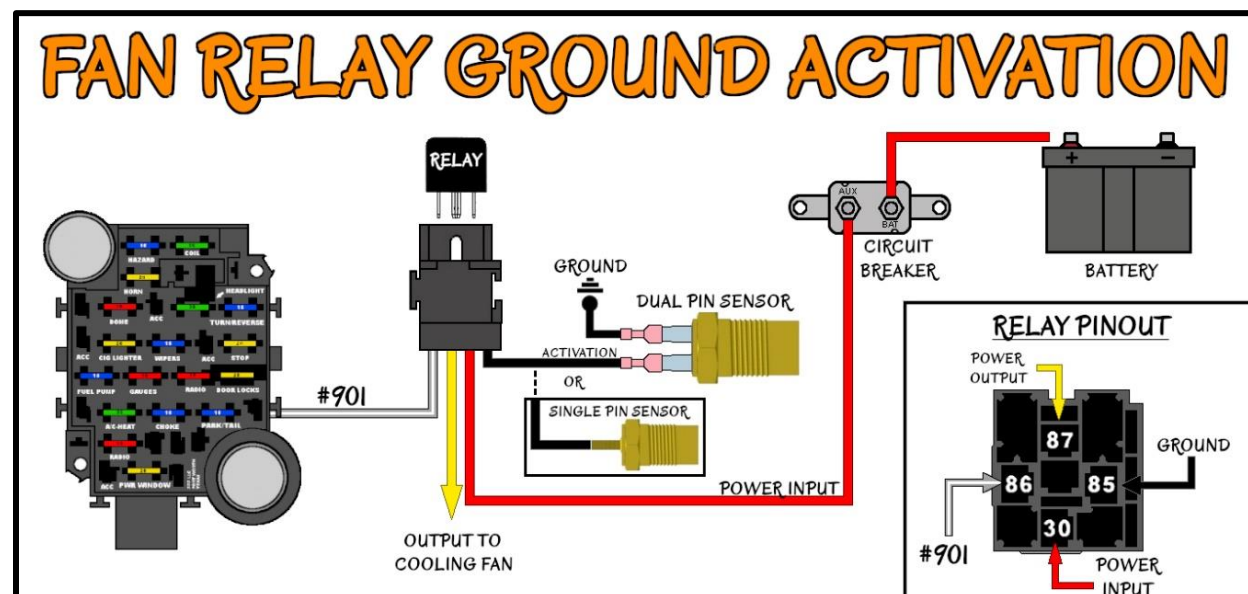
GROUND ACTIVATED RELAY

A ground activated relay is just the opposite of the 12-volt activated relay, 12 volts (battery constant or switched) is supplied uninterrupted and the ground wire is switched. The Horn Relay pre-wired in the Painless harness is a Ground Activated Relay. Like mentioned before, ground activation method is best used when a component is operated by an unlit switch from the interior of the vehicle.



THERMOSTATIC FAN SWITCH

If you are ground activating a relay such as in the case of a cooling fan, a thermostatic switch, more commonly referred to as a coolant temp switch, connects according to the instructions below. If you are using a thermostatic switch to control your cooling fan relay, you should have re-routed the **GRAY/WHITE #901** wire with the **Engine Section** on [page 39](#).



The relay, circuit breaker, and additional wiring seen in the preceding diagram are not provided in this kit. Painless does, however, offer several options for fan control relays.

ELECTRIC FAN WIRING MADE **PAINLESS**

Fan relays are inexpensive protection for an electric fan and a vehicle's wire harness. Provides constant voltage, protects from voltage and amperage spikes and prevents the fan from back feeding voltage through the vehicle's wire harness.



Universal With Thermostatic Switch

Dual Fan/Dual Activation

Universal Waterproof

ECM Controlled

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GROUNDS

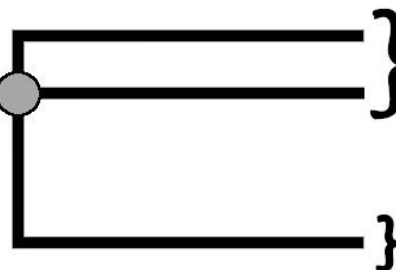
Ground wires have been provided for components such as the factory and aftermarket gauges and radio. These grounds are provided through splicing and can be seen in the [Ground Schematic](#) below. One (1) wire will need to be connected to a chassis ground source to complete the ground circuit; it is:

BLACK: 18-gauge, printed **#969 TO CHASSIS GROUND**; when connected to a chassis, these wires will complete the grounding circuit of the interior harness.

- This wire has a pre-installed ring terminal. Find an appropriate spot behind the dash and ground to chassis.

GROUND SCHEMATIC

#969 TO CHASSIS GROUND



see [INSTRUMENT PANEL SCHEMATIC](#)

see [RADIO & ACCESSORY SCHEMATIC](#)

IGNITION SWITCH

The most important connection of a wiring harness, the ignition switch, controls power to the switched ignition fuses in the fuse block as well as sending power to the starter solenoid to crank the engine.

The ignition switch connection consists of nine (9) wires. These wires have a factory connector installed. All wires going to the ignition switch can be seen in the [Ignition Switch Schematic](#) on the next page. These wires are:

RED: 12-gauge wire, printed **[IGNITION SWITCH] #934 IGNITION SWITCH POWER (BAT)**, this wire comes from a buss bar on the fuse block and feeds battery power to the ignition switch. This wire always has power.

RED/BLACK: 18-gauge wire, printed **[INSTRUMENT PANEL] #986 AMMETER TO IGN. SW.**, this wire provides the “LOAD” current to the ammeter. This wire always has power.

ORANGE: 12-gauge wire, printed **[IGNITION SWITCH] #933 SWITCHED (IGN) POWER TO FUSE BLOCK**, this wire provides the switched power source to the fuse block. This wire powers all the switched power circuits to the harness except for the A/C-HEAT, RADIO, and PWR WINDOW fuses. This wire only has power when the ignition switch is in the ON/RUN position.

BROWN: 12-gauge wire, printed **[IGNITION SWITCH] #932 ACCESSORY POWER**, this wire provides power to the A/C-HEAT, RADIO, and PWR WINDOW fuses on the fuse block. This **BROWN #932** wire has power when the ignition is in the ACCESSORY position and when in the ON/RUN position.

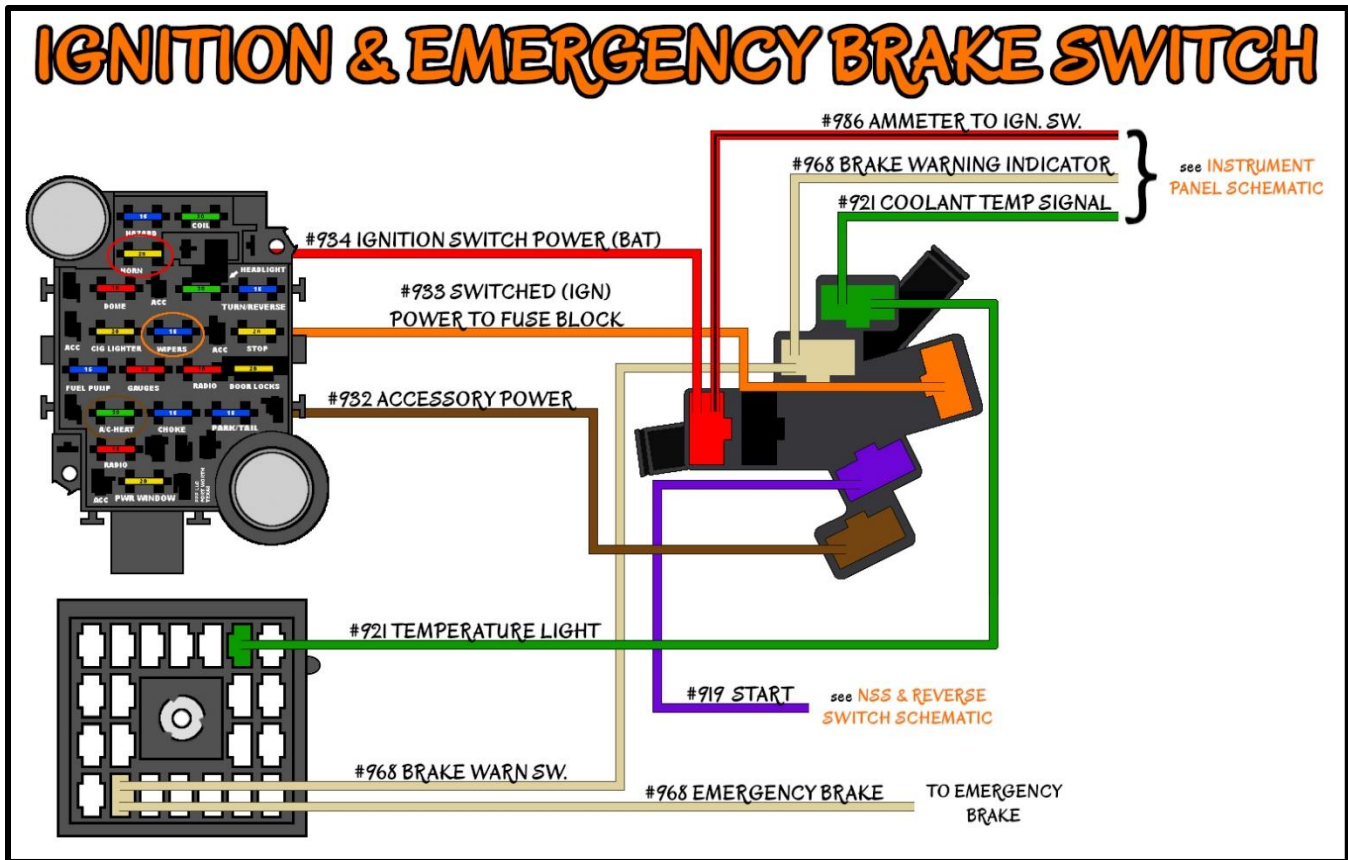
(2) GREEN: 18-gauge wire, printed **[IGNITION SWITCH] #921 TEMPERATURE LIGHT**, this wire provides ground from the temp switch to the temp light on the instrument panel. When the ignition is in the start position this wire will send a ground signal to the light, activating it and letting the operator know that it is functioning properly.

(2) TAN: 18-gauge wires, printed **[IGNITION SWITCH] #968 BRAKE WARN SW.**, this wire is a ground activation wire for the brake light on the cluster from the brake pressure warning switch. When the ignition is in the START position this wire will send a ground signal to the light, activating it and letting the operator know that it is functioning properly. The other tan wire ties this circuit back to the brake warning switch.

PURPLE: 12-gauge wire, printed **[IGNITION SWITCH] #919 START [NEUTRAL SAFETY SWITCH]**, this wire goes from the ignition switch to the NSS. This wire sends power to the starter solenoid and only has power when the ignition switch is in the START position.

Your vehicle may have one of the many different dash-mounted ignition switches, as the factory switch may have been replaced over time. Some have functions printed next to each pin on the switch; this allows for identification as to where each wire connects. Others will need a factory schematic to identify the functions of their switch. Below, there are diagrams showing the proper connection of a few of these popular switches.

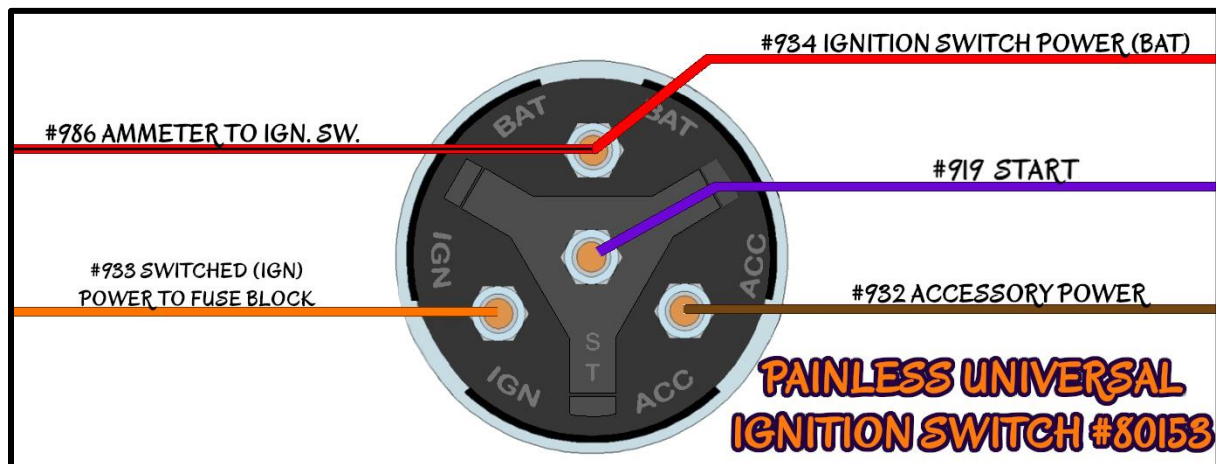
- If you are using a factory style switch, a connector has been pre-installed. Route the wires the switch and connect.



PAINLESS UNIVERSAL IGNITION SWITCH - #80153

Painless offers a universal, dash mount ignition switch. This switch comes with the trim ring, which screws onto the switch to hold the switch in place, as well as 2 keys. The switch can be found as [part #80153](#) or in switch kit [#80121](#).

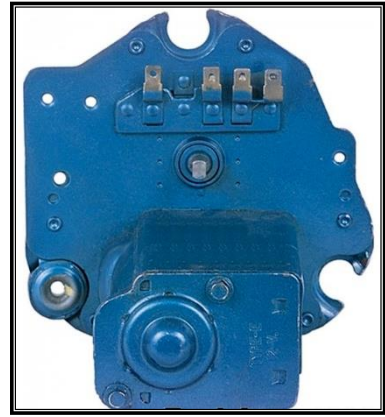
- Use insulated ring terminals, found in the parts kit, to make these connections.
- NOTE: The **GREEN #969** and **TAN #968** cannot be connected, therefore the temp light and brake warn light will not come on when the ignition switch is in the ACCESSORY position.



WIPER SECTION

The **Wiper Section** consists of five (5) wires to power the wiper switch, washer pump, and wiper motor.

The motor and pump receive power via the **YELLOW #982** wire from the fuse block. The ground signals come from the wires running between the motor and the switch. The switch, pump, and motor subsections all come with factory-style connectors pre-installed. The **Wiper Section** wires are:



YELLOW: 16-gauge wire, printed **[WIPER SECTION] #982 WIPER MOTOR POWER (IGN)**, this wire supplies switched ignition power to the wiper motor & washer pump from the 15-amp WIPERS fuse on the fuse block.

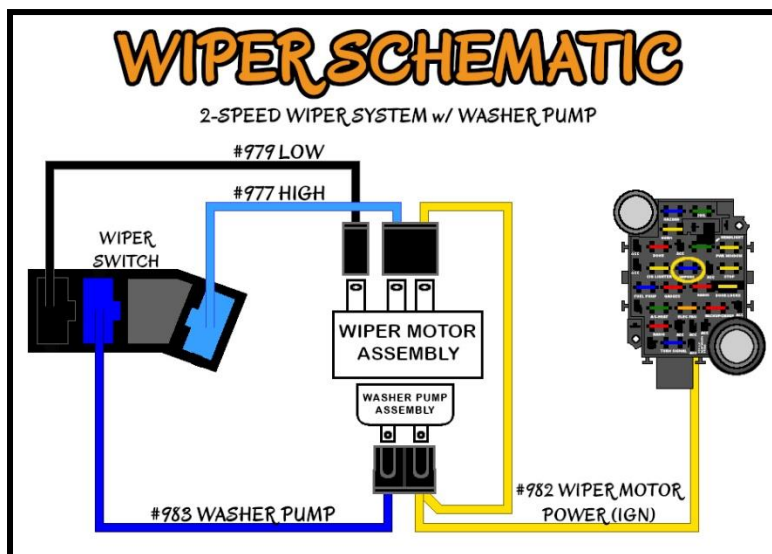
YELLOW: 16-gauge wire, not printed, this is a small jumper wire that doubles with the **YELLOW #982** wire at the washer pump and provides power to the wiper motor.

LT. BLUE: 16-gauge wire, printed **[WIPER SECTION] #977 HIGH**, this wire provides a ground signal to the wiper motor. This is the main switch control wire in a single-speed system or the “High” setting in a dual speed system.

BLACK: 16-gauge wire, printed **#979 LOW/PARK**, this is the ground signal from the wiper switch to the motor in a dual speed system that controls the LOW/PARK function.

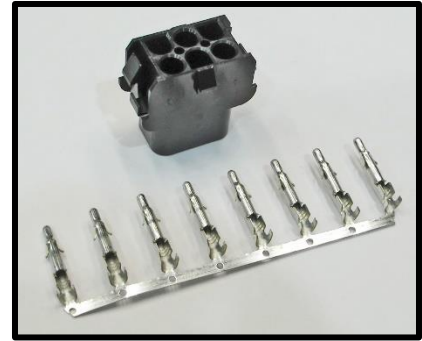
BLUE: 16-gauge wire, printed **#983 WASHER PUMP**, this is the pump control wire coming from the wiper switch. This wire sends a ground signal from the switch to the pump to activate the washer pump.

- Route the necessary wires to the various components and connect them. 2 terminal motors will not need the black wire
- Also, if you are using aftermarket components, remove the pre-installed connectors. Terminals are provided in the parts kit for most connections, but the manufacturer’s schematics may be required for the correct switch pinout.



DASH-MOUNTED AFTERMARKET GAUGES

On the main harness the **Aftermarket Gauges Section** has a pre-installed 6-pin connector. This section provides power, ground, backlighting, and signal (oil, coolant, & fuel) to under dash-mounted aftermarket gauges you will find a loose connector and terminals that plug directly into the **Aftermarket Gauges Section** connector. If you do not have under dash gauges, you may skip to the next step.



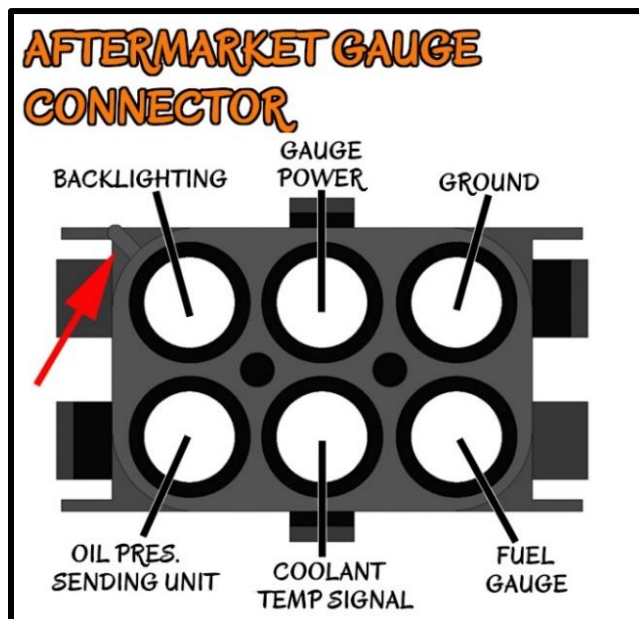
PINK: 18-gauge wires, printed **[AFTMKT GAUGES] #935 GAUGE POWER (IGN)**, this wire provides a switched ignition power source to the cluster. This wire comes from the 10-amp GAUGES fuse on the fuse block. This wire has power anytime the key is in the ON/RUN position.

GRAY: 18-gauge wire, printed **[AFTMKT GAUGES] #930 GAUGE BACKLIGHTING**, this wire provides a power source for gauge backlighting. This **GRAY #930** is tied to the other four (4) **GRAY #930** wires coming from the headlight switch and going to the other dash lighting. This wire has power anytime the headlight switch is in the Park/Tail Lights ON or Headlights ON position. This wire can also be seen in the [Headlight Switch & Dimmer Switch Schematic](#) on [page 64](#).

BLUE: 18-gauge wire, printed **[AFTMKT GAUGES] #922 OIL PRES. SENDING UNIT**, this wire is a ground signal from the oil pressure sending unit. The sending unit will create resistance to ground according to oil pressure. This resistance is transferred through this wire to the gauge.

GREEN: 18-gauge wire, printed **[AFTMKT GAUGES] #921 COOLANT TEMP SIGNAL**, this wire is a ground signal from the engine coolant temperature sending unit. The sending unit will create resistance to ground according to engine temperature. This resistance is transferred through this wire to the gauge.

TAN: 18-gauge wire, printed **[AFTMKT GAUGES] #939 FUEL GAUGE**, this wire is a ground signal from the fuel level sending unit in the fuel tank. The resistance to ground will vary on this wire according to the amount of fuel in the tank.

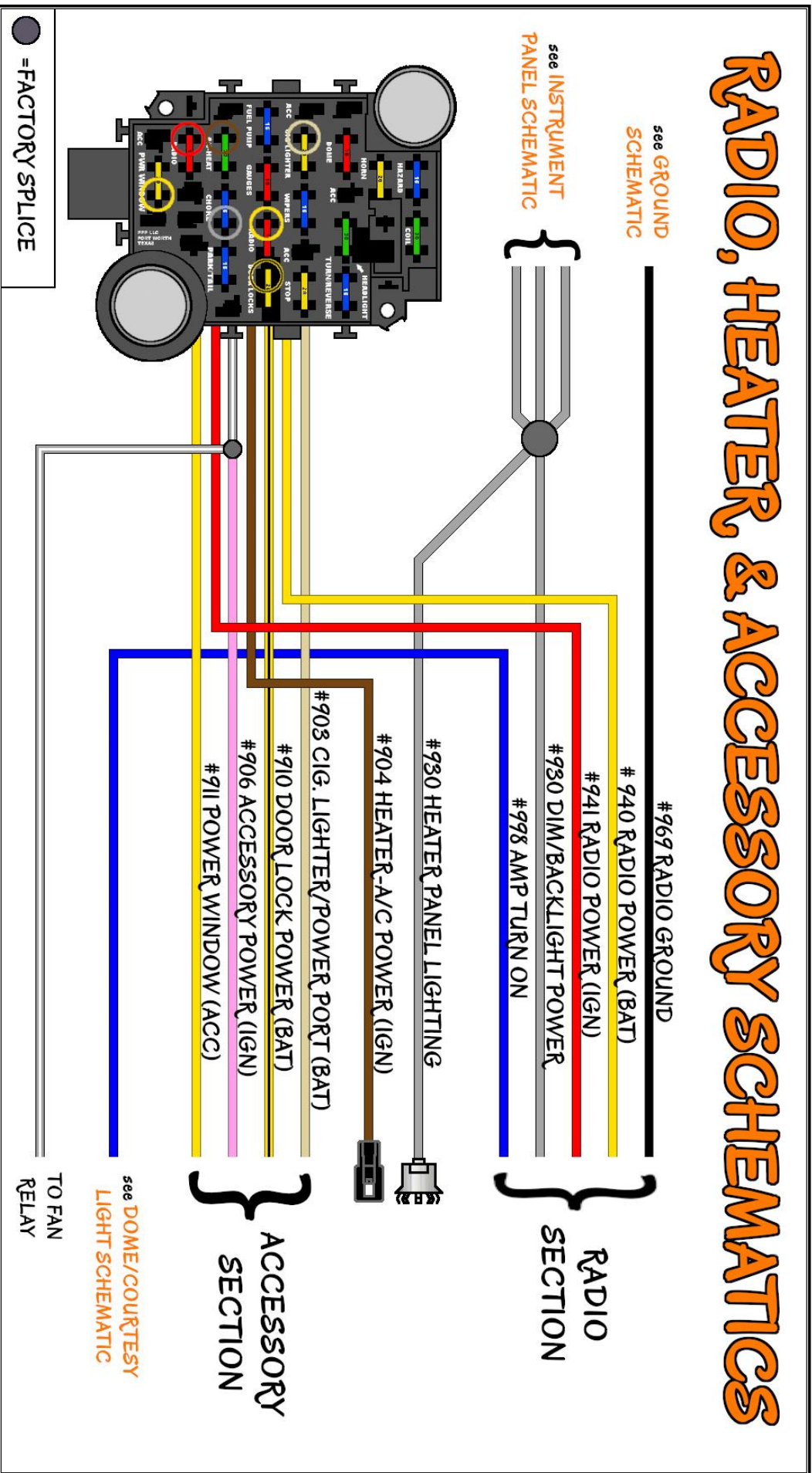


BLACK: 18-gauge wires, printed **[AFTMKT GAUGES] #969 GROUND**, this wire provides a ground source to aftermarket gauges.

- Locate the mating connector and terminals in the parts kits, shown above. These terminals require ¼ strip length and roll over crimpers for proper termination.

- Use the provided pinout guide, at left, to wire your under-dash gauge(s). Take notice of the tab/key in the upper left of the connector for proper orientation, identified with the red arrow on the drawing.

RADIO, HEATER & ACCESSORY SCHEMATICS



RADIO, HEATER, & ACCESSORIES

This Painless harness includes basic connections for a radio, heater, power windows, power locks, cigarette lighter, and other accessories. Below, you will find information about each of the wires provided in this harness to connect them.

RADIO

The radio connection on the Painless harness is set up for a universal application. This means the wire colors used by Painless reflect the colors most aftermarket companies use on radios/head units manufactured today. The Painless harness includes five wires dedicated to connecting to the radio and general panel backlighting wire. They are:

YELLOW: 18-gauge wire, printed **[RADIO SECTION] #940 RADIO POWER (BAT)**, this wire provides the radio a battery power source that allows the time and radio presets to remain every time the ignition is turned off. This wire comes from the upper 10-amp RADIO fuse.

RED: 18-gauge wire, printed **[RADIO SECTION] #941 RADIO POWER (IGN)**, this wire provides the radio with ignition-switched power for operation. This wire has power when the ignition switch is in the ACCESSORY and ON/RUN positions. This wire comes from the lower 10-amp RADIO fuse of the fuse block.

GREY: 18-gauge wire, printed **[RADIO SECTION] #930 DIM/BACKLIGHTING POWER**, this wire provides a power signal to the radio to dim the backlighting/display during low light conditions. This wire has power anytime the headlight switch is in the Park/Taillights ON or Headlights ON position.

BLUE: 18-gauge wire, printed **[DOME SECTION] #998 AMP TURN ON [RADIO SECTION]**, this wire provides switched power from the head unit to an amplifier. You will only need this wire if you have an audio amplifier.

BLACK: 18-gauge wire, printed **[RADIO SECTION] #969 RADIO GROUND**, this wire provides a ground to the radio and can also be seen in the [Ground Schematic](#) on [page 83](#).

- If you use an aftermarket radio, refer to the manufacturer's installation guide for proper connection. Splices and quick-disconnect terminals are provided in the parts kit.

Many older, factory radios require one power source. Painless recommends connecting the **RED #941** wire to the radio in these circumstances so that the radio will only operate when the ignition switch is in the ACCESSORY or ON/RUN position. This prevents the radio from draining the battery if it is accidentally left on.

HEATER / AC POWER

As previously mentioned, this harness does not include any wiring for the factory air conditioning. Your original harness must be used. The harness provides a power wire that plugs into a factory. This kit does include wiring for the blower motor and blower motor resistor for vehicles with heat only systems. Also, in this section, is a wire for control panel backlighting with a socket pre-installed. These wires are:

BROWN: 14-gauge wire, printed, [**HEATER SECTION**] **#904 HEATER – A/C POWER (IGN)**, this wire provides a switched ignition power source for a heater blower motor or a factory or aftermarket A/C system.

GREY: 18-gauge wire, printed [**HEATER SECTION**] **#930 HEATER PANEL LIGHTING**, this wire provides power to the light socket and will have power whenever the park/tail lights and gauge backlighting are turned on. This wire comes from a splice that distributes power from the headlight switch and can be seen in the [Radio, Heater, and Accessories Schematic](#) on [page 88](#).

A/C Systems

- Factory System: Locate the inline connector on the factory heat or A/C harness, it will be a single-pin connector with a **BROWN** wire several inches away from the blower switch connection. Plug the **BROWN #904** power wire into this connector on the factory A/C harness.
- Aftermarket System: Use the **BROWN #904** power wire to supply your system a switched ignition power source, consult you're A/C manufacturer's instructions. A mate to the connector on the Painless harness, a single-pin black connector and terminal, has been provided in the parts kit.
- All: The light socket on **GREY #930** will fit factory fit control panels. Simply plug in and the light will ground through the connection. For aftermarket panels, it may be necessary to remove this socket. Connect the **GREY #930** wire to the wire on your aftermarket system that needs to see backlight power. Again, consult you're A/C manufacturer's instructions.



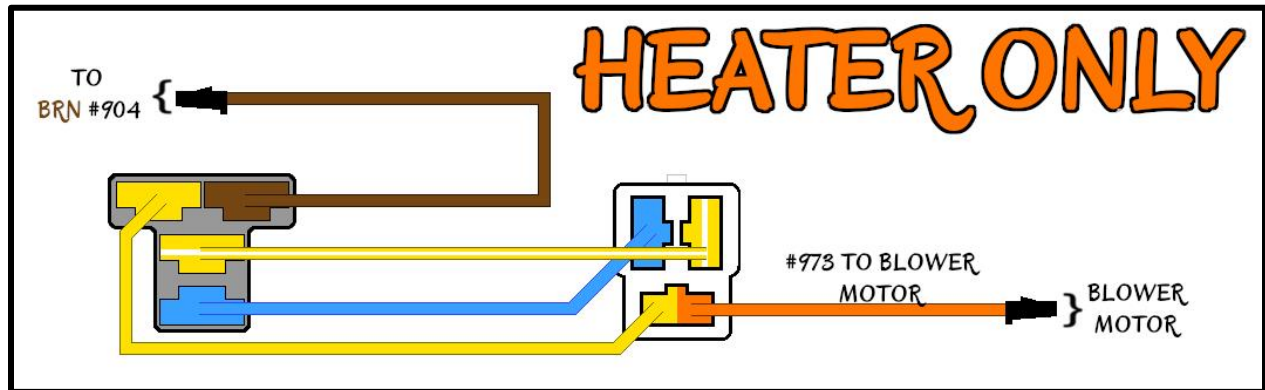
Heater Only Systems

Locate the bag labeled “Blower Switch Sub Harness.” This harness will allow a connection between the blower switch mounted on the dash, the blower motor resistor, and the blower motor located in the engine compartment on the passenger side of the firewall. This harness is intended to pass through the factory $1\frac{5}{8}$ ” hole in the firewall and has a grommet pre-installed.

- Plug the heater harness onto the blower switch and connect the **BROWN** wire coming from the blower switch connector to the **BROWN #904** wire on the chassis harness.
- Route the resistor connector to the passenger side of the truck and connect to the blower motor resistor on top of the plenum.

- Route the single-pin blower motor connector through the firewall hole and seat the grommet that is pre-installed on the harness.
- From the engine compartment plug the **ORANGE** wire onto the tab of the blower motor. The **ORANGE** wire will provide power to the blower motor from the resistor when in low or medium speeds and directly from the blower switch when high is selected.

A ground wire is not provided as it is a separate wire coming off the blower motor to the firewall. Inspect your ground wire and its mounting point for a good connection.



ACCESSORY SECTION

The **Accessory Section** of the Painless harness consists of four (4) wires for various accessory applications. The locations of all of these components vary from vehicle to vehicle, so no specific routing instructions can be given. **Any unused power wires MUST have the end of the wire insulated.**

PINK: 18-gauge wire, printed **[ACCESSORY SECTION] #906 ACCESSORY POWER (IGN.)**, this wire provides a switched ignition power source from the 15-amp CHOKE fuse.

There are numerous ways this wire can be used and connected. This wire can only be used to power an accessory up to 10 amps when an electric choke is also connected.

The component you are powering, plus the other circuits tied to the CHOKE fuse, must not exceed 20 amps. The fuse found pre-installed on the fuse block for the CHOKE circuit is 15 amps and may be swapped out in favor of a larger 20-amp fuse if the need arises. **DO NOT EXCEED A 20-AMP FUSE** as the wires on these circuits are only 16- and 18-gauge wires.

- Route wire **PINK #906** to the component to be powered. Use male and female disconnect terminals to connect the **PINK #906** wire to the terminal/stud/wire on the component requiring a switched ignition power source.

If there is no need for an extra switched ignition power source at this time, simply insulate the **PINK #906** wire with an insulated terminal from the parts kit.

Cigarette Lighter / Power Port

The Cigarette Lighter/Power Port connection on the Painless harness is set up for a universal application since most sockets have been replaced by aftermarket sockets. Typically, the cigarette lighter is more commonly used as a power port to charge and run electronic components requiring a 12vDC power source.

TAN: 14-gauge wire, printed, [**ACC. SECTION**] **#903 CIGARETTE LIGHTER / POWER PORT (BAT)**, this wire comes from the 20-amp CIG LIGHTER fuse and provides a battery power source to a cigarette light/power port.

- Route the **TAN #903** wire to the cigarette lighter/power port.
- Cut the wire to length and connect according to one of the following options:
 - Ring terminals and insulated socket style terminals, as well as a factory style, black, single-pin connector and terminals are provided in the parts kit to connect universal aftermarket and/or factory lighters/power ports.
 - For those with a factory socket requiring a large round connector that snaps to the back, you will have to cut the connector from your factory harness. Leave 3" or 4" of wire to create a pigtail and splice it to the **TAN #903** wire on the Painless harness. Splices have been provided in the parts kit.

Power Windows & Power Locks

Two accessory wires have been provided in the **Accessory Section** for those with power windows and/or power locks. These wires are:

YELLOW/BLACK: 14-gauge wire, printed [**ACCESSORY SECTION**] **#910 DOOR LOCK POWER (BAT)** this wire provides a battery power source, from the 20-amp DOOR LOCKS fuse. This wire provides constant battery power for door locks.

YELLOW: 14-gauge wire, printed [**ACCESSORY SECTION**] **#911 POWER WINDOW (ACC)**, this wire provides a switched ignition power source for power windows from the 20-amp PWR WINDOW fuse. This wire provides power to the windows any time the ignition key is in the ACCESSORY or ON/RUN position.

- For those installing aftermarket power locks, connect the **YLW /BLK #910** wire to the wire or switch/relay input that requires a fused battery power source.
- For those installing aftermarket power windows, connect the **YELLOW #911** wire to the wire or switch/relay input that requires a fused switched ignition power source.

PASSENGER COURTESY LIGHT SECTION

Next, connect the remaining wires of the Courtesy Light Section. The left/driver's side was installed on [pages 60 – 61](#).

PASSENGER COURTESY LIGHT

This connection allows the passenger side under dash/floorboard of the vehicle to be illuminated any time a door is open or when the headlight switch is activating the dome light.

These wires can be seen in the [Dome / Courtesy Light Schematic](#) on [page 62](#). They are:

ORANGE: 18-gauge, printed [**COURTESY LIGHT**] #971 **PASS. COURTESY LIGHT POWER (BAT)**, this wire provides power from the 10-amp DOME fuse on the fuse block. This fuse is battery powered and always has power.



WHITE: 18-gauge, printed [**COURTESY LIGHT**] #961 **COURTESY LIGHT GROUND**, this is the ground wire that activates the courtesy light. When this wire is grounded, it completes the voltage path and causes the light to illuminate. This ground comes from either the headlight switch or a door jamb switch (if one has been installed) depending on if the headlight switch is turned to the “DOME LIGHT ON” position or the door is opened.

- Locate a lamp socket and terminals from the parts kit. This light socket can use either a 63 or 67 series bulb.
- Locate a suitable mounting location under the passenger's side of the dash. The light socket has a small hole in a mounting tab to allow mounting. This kit provides both self-tapping screws and small zip ties as to accommodate the various ways you might affix the socket. You may also use screws that hold existing trim. **Do not mount the socket at this time.**
- Locate the **ORANGE #971** wire and route it to where the socket will be mounted on the passenger side and cut to length. **If you have a glove box light, retain the piece of ORANGE #971 wire, double it with the ORANGE wire at the courtesy light.**
- Locate the **WHITE #961** wire and route it to where the socket will be mounted on the passenger side and cut to length. **If you have a door jamb switch, retain the piece of WHITE #961 wire, double it with the WHITE wire at the courtesy light.**

Strip $\frac{1}{4}$ " of insulation from each wire and install the terminals; crimp the smaller, brass terminal to the **WHITE #961** wire and the larger terminal to the **ORANGE #971** wire.

- Insert the terminals into the connector, install a bulb (not included), and mount the socket. Once mounted, route the cut off pieces of **ORANGE #971** to the glovebox switch and **WHITE #961** to the passenger side door jamb switch if either are being used.

DOMELIGHT SECTION

The Dome Light Section has 4 wires: dome light power, dome light ground, amplifier activation power, and fuel sending unit signal for in cab mounted tanks.

DOMELIGHT

The dome light has constant battery power applied to it. This light, along with the under-dash courtesy lights, are ground activated by the door jamb switches and also by turning the headlight switch to the DOME LIGHT ON position. These wires can be seen in the [Tail Section Schematics](#) starting on [page 57](#), they are:

ORANGE: 18-gauge wire, printed **[DOME SECTION] #971 DOME LIGHT (BAT)**, this power wire comes from the 10-amp DOME fuse on the fuse block. This fuse has battery power and is “hot” at all times. This wire can also be seen in the [Dome / Courtesy Light Schematic](#) on [page 62](#).

WHITE: 18-gauge wire, printed **[DOME SECTION] #961 DOME LIGHT GROUND**, this wire is the ground wire that activates the dome light. When this wire is grounded it completes the voltage path causing the light to illuminate. This ground will come from either door jamb switch or the headlight switch. This wire can also be seen in the [Dome / Courtesy Light Schematic](#) on [page 62](#).

- In most cases, these wires will attach to the factory dome light wires. The factory wires coming from the dome light can usually be found in the rear of the cab, on the driver’s side. A connector and terminals, seen to the right, have been provided to connect the Painless harness to the factory pigtail coming from the dome light.



This factory dome light wires also contain a jumper to power the cargo switch for those with that option.

- If you do not have a factory pigtail, there has been ample length supplied to allow routing the **ORANGE #971** and the **WHITE #961** to the dome light fixture. In most cases, this will require the headliner of the vehicle to be removed.

If you have a cargo lamps switch, this **ORANGE #971** will also provide power to the switch.

AFTERMARKET AMPLIFIER

For those with an audio sound system, a wire has been provided in the Painless harness to allow for amplifier activation. This wire is only needed if you have an amplifier:

BLUE: 18-gauge, printed **[DOME SECTION] #998 AMP TURN ON [RADIO SECTION]**, this is a switched power source that comes from the radio/head unit and not a power source that comes directly from the fuse block.

- Route and connect the **#998** wire to the “Remote Turn On” terminal of the amplifier. If you have multiple amplifiers, double up the cut off portion of **#998** with the **#998** at the first amp and route it to the “Remote Turn On” terminal of the second amplifier.

FUEL SENDING UNIT (CAB MOUNTED)

The fuel level sending unit sends a ground signal to the fuel level gauge. The float inside the tank moves up and down with the level of fuel in the tank. This raising and lowering of the fuel level moves an arm/contact across a resistor of the sending unit. This sends a resisted signal to the fuel level gauge. The amount of resistance the gauge sees is evident based on the reading of the gauge. For the fuel gauge to work properly, the fuel level sending unit operating range must match the gauges operating range. One wire is included in this Painless kit for this function, it is:

TAN: 18-gauge wire, printed **[TAIL SECTION] #939 FUEL SENDING UNIT**, this wire sends the ground signal from the fuel level sending unit to the fuel level gauge.

- Route the **TAN #939** wire to the fuel level sending unit across the top of the tank.
- The cab mounted fuel tank has mounting clips on the seam of the tank.
- The parts kit provides insulated terminals to make the connection to the sending unit.
- **The sending unit must be grounded to work properly;** Painless does not offer a wire specifically for this. Some sending units have a tab for a ground connection while others may rely on the sending unit mounting. If your sending unit has a ground tab, run a wire from a clean chassis ground source to this tab.

If you do not have a ground tab, run a ground wire from a clean chassis ground source to one of the mounting bolts of the sending unit. Do not rely on a ground through the mounting of the sending unit to the tank.



TESTING

You've now completed the installation portion of the harness and can move onto testing your connections. Make certain all fuses and flashers are in place on the fuse block and the fuse is installed on the MIDID fuse holder.

- Reconnect your battery, and test each battery powered function of the truck one component at a time. These would be functions of the headlight switch (park lights, tail lights, and gauge backlighting), headlights via the floor mounted dimmer switch, high beam indicator in the dash, brake switch, hazard switch, horn, and dome/courtesy lights. Turn the function ON, verify it is working, turn it off, and move to the next function.
- Next, turn the ignition switch to the ON position and verify the switched ignition circuits all work correctly. This would be functions for right and left turn signals and turn signal indicators in the dash, gauges, wipers, heater/A/C, radio, and back up lights.
- If you run into issues during your testing, Painless recommends you first check the pinout or connection to the component. If it is a bulb not turning ON verify the bulb is good by replacing it with a known good bulb.

If the connection and/or bulb checks to be good, use a volt/ohm meter, or at the very least a test light, to verify you have power coming to the component. Make sure your meter or light is grounded directly to the battery. Use a long length of scrap wire to accomplish this. Grounding to the battery ensures your test equipment will test accurately.

If you have power, check your ground connection for the component. On bulbs that ground through their mounting, run a dedicated ground from the battery to the bulb with a scrap piece of wire. It may be necessary to touch this test wire to the brass of the bulb from the front, lens side, of the light socket.

If you do not have power, check the fuse and power at both sides of the fuse.

- Once testing is complete, re-install any panels, lens, or other parts that were removed during the harness installation. You are now finished installing this Painless Harness, congratulations!

WIRE INDEX

- The index is listed in the same order in which the manual instructed components to be connected.
- The **BLUE** descriptions indicate sections found throughout the harness.
- **ORIGIN** indicates where the opposite end of this wire is.
- **BLACK** boxes are simply to make the colored text easier to read

ENGINE HARNESS

FRONT LIGHT SECTION

Color	Gauge	Wire Print	Origin
Light Blue	18	#926 LEFT FRONT TURN SIGNAL	Turn Switch
Light Blue	18	#926 LEFT FRONT TURN SIGNAL SIDE MARKER	Turn Switch
Blue	18	#925 RIGHT FRONT TURN SIGNAL	Turn Switch
Blue	18	#925 RIGHT FRONT TURN SIGNAL SIDE MARKER	Turn Switch
Tan	14	#909 LEFT LOW BEAM	Dimmer Switch
Tan	14	#909 RIGHT LOW BEAM	Dimmer Switch
Light Green	14	#908 LEFT HIGH BEAM	Dimmer Switch
Light Green	14	#908 RIGHT HIGH BEAM	Dimmer Switch
Purple	18	#927 PARK LIGHTS	Headlight Switch
Purple	18	#927 PARK LIGHTS	Headlight Switch
Purple	18	#988 SIDE MARKER	Headlight Switch
Purple	18	#988 SIDE MARKER	Headlight Switch
Green	14	#924 HORN (BAT)	Horn Relay

ENGINE SECTION

Color	Gauge	Wire Print	Origin
Pink	16	#920 COIL (IGN)	Fuse Block
Green	18	#921 TEMP SEND UNIT	Instrument Panel
Blue	18	#922 OIL PRES. SENDING UNIT	Instrument Panel
Purple/White	18	#923 TACHOMETER SOURCE	Instrument Panel
Red	18	#954 ELECTRIC CHOKE	Fuse Block
Red	8	10206 #916 BATTERY POWER SOURCE (MIDI FUSE)	Fuse Block
Purple	12	#919 STARTER SOLENOID (S. TERM)	NSS

ALTERNATOR SECTION

Color	Gauge	Wire Print	Origin
Brown	14	#914 REGULATOR POWER (IGN)	Fuse Block
Red	16	#995 REGULATOR POWER (BAT)	Fuse Block

BRAKE WARN SWITCH

Color	Gauge	Wire Print	Origin
Tan	18	#968 BRAKE PRESSURE WARNING SWITCH	Instrument Panel

TAIL SECTION

Color	Gauge	Wire Print	Origin
Yellow	16	#949 LEFT TURN / BRAKE	Turn Switch
Green	16	#948 RIGHT TURN / BRAKE	Turn Switch
Brown	18	#929 RIGHT TAIL LIGHT	Headlight Switch
Brown	18	#929 RIGHT SIDE MARKER	Headlight Switch
Brown	18	#929 LEFT TAIL LIGHT	Headlight Switch
Brown	18	#929 LEFT SIDE MARKER	Headlight Switch
Light Green	18	#956 BACK UP LIGHTS	Reverse Switch
Light Green	18	#956 BACK UP LIGHTS	Reverse Switch
Tan	18	#939 FUEL SENDING UNIT	Fuel Gauge
Yellow/White	16	#947 FUEL PUMP POWER (IGN)	Fuse Block

INTERIOR HARNESS

DIMMER SWITCH SECTION

Color	Gauge	Wire Print	Origin
Light Green	14	#908 HIGH BEAM	Headlight Section
Tan	14	#909 LOW	Headlight Section
Light Blue	14	#907 DIMMER SWITCH - PWR	Headlight Switch

EMERGENCY BRAKE

Color	Gauge	Wire Print	Origin
Tan	18	#968 EMERGENCY BRAKE	Instrument Panel

DRIVER COURTESY SECTION

Color	Gauge	Wire Print	Origin
Orange	18	#971 DRIVER COURTESY LIGHT POWER (BAT)	Fuse Block
White	18	#961 DRIVER SIDE DOOR JAMB SWITCH	Headlight Switch
White	18	#961 COURTESY LIGHT GROUND	Headlight Switch

HEADLIGHT SWITCH SECTION

Color	Gauge	Wire Print	Origin
Red	12	#928 HEADLIGHT SWITCH POWER (BAT)	Fuse Block
Orange	14	#959 HEADLIGHT SWITCH POWER (BAT)	Fuse Block
Light Blue	14	#907 DIMMER SWITCH - PWR	Dimmer Switch
Purple	18	#927 FRONT PARK LIGHTS	Headlight Section
Gray	18	#930 GAUGE BACKLIGHTING	Instrument Panel
Brown	16	#929 TAIL LIGHTS	Tail Section
White	18		Courtesy Light Section

TURN SIGNAL SWITCH SECTION

Color	Gauge	Wire Print	Origin
White	14	#918 BRAKE LIGHT POWER	Brake Switch
Blue	18	#925 RIGHT FRONT TURN SIGNAL	Headlight Section
Light Blue	18	#926 LEFT FRONT TURN SIGNAL	Headlight Section
Purple	16	#952 TURN SIGNAL SWITCH POWER (IGN)	Fuse Block
Black	18	#963 HORN RELAY ACTIVATION	Fuse Block
Green	16	#948 RIGHT REAR TURN / BRAKE	Tail Section
Yellow	16	#949 LEFT REAR TURN / BRAKE	Tail Section
Brown	16	#951 HAZARD SWITCH POWER (BAT)	Fuse Block

BRAKE SWITCH SECTION

Color	Gauge	Wire Print	Origin
Orange	16	#917 BRAKE SWITCH (BAT)	Fuse Block
White	14	#918 BRAKE LIGHT POWER	Turn Signal Switch

REVERSE SWITCH SECTION

Color	Gauge	Wire Print	Origin
Green	18	#958 REVERSE SWITCH POWER (IGN)	Fuse Block
Light Green	18	#956 OUTPUT TO REVERSE LIGHTS	Tail Section

NEUTRAL SAFETY SWITCH SECTION

Color	Gauge	Wire Print	Origin
Purple	12	#919 START	Ignition Switch
Purple	12	#919 STARTER SOLENOID (START)	Starter Sol.

INSTRUMENT PANEL SECTION

Color	Gauge	Wire Print	Origin
Pink	18	#935 GAUGE POWER (IGN)	Fuse Block
Blue	18	#922 OIL PRES. SENDING UNIT	Engine Section
Light Blue	18	#937 LEFT TURN INDICATOR	Turn Switch
Blue	18	#938 RIGHT TURN INDICATOR	Turn Switch
Purple/White	18	#923 TACHOMETER	Engine Section
Tan	18	#939 FUEL GAUGE	Tail Section
Grey	18	#930 GAUGE LIGHT POWER	Headlight Switch
Brown	18	#987 GENERATOR LIGHT	Alternator
Green	18	#921 COOLANT TEMP SIGNAL	Engine Section
Black	18	#969 GROUND	Chassis Ground
Tan	18	#968 BRAKE WARNING INDICATOR	Brake Switch
Red/Black	18	#986 AMMETER TO IGN. SW.	Ign. Switch
Red	18	#989 AMMETER TO FUSEBLOCK	Fuse Block
Orange/Black	16	#955 4-WHEEL DR. INDICATOR	Fuse Block
Light Green	18	#936 HIGH BEAM INDICATOR	Dimmer Switch
Pink	18	not printed; TO FUEL GAUGE	Afr Mrkt Gauges
Blue	18	not printed; Ign Power	Afr Mrkt Gauges
Green	18	not printed; Ign Power	Afr Mrkt Gauges
Tan	18	#968 TO EMERGENCY BRAKE	Afr Mrkt Gauges

RELAY ACT. SECTION

Color	Gauge	Wire Print	Origin
Grey/Black	18	#901 RELAY ACTIVATION/ACC POWER (IGN)	Fuse Block

GROUND

Color	Gauge	Wire Print	Origin
Black	18	#969 TO CHASSIS GROUND	Ground Splice

IGNITION SWITCH SECTION

Color	Gauge	Wire Print	Origin
Red	12	#934 IGNITION SWITCH POWER (BAT)	Fuse Block
Red/Black	12	#986 AMMETER TO IGN. SW.	Instrument Panel
Brown	12	#932 ACCESSORY POWER	Fuse Block
Orange	12	#933 SWITCHED (IGN) POWER TO FUSE BLOCK	Fuse Block
Purple	12	#919	NSS
Tan	18	#968 BRAKE WARNING INDICATOR	Instrument Panel
Tan	18	#968 BRAKE WARN SW.	Brake Switch
Green	18	#921 COOLANT TEMP SIGNAL	Instrument Panel
Green	18	#921 TEMPERATURE LIGHT	Temp Sender

WIPER SECTION

Color	Gauge	Wire Print	Origin
Black	16	#979 LOW	Wiper Switch
Light Blue	16	#977 HIGH	Wiper Switch
Blue	16	#983 WASHER PUMP	Wiper Switch
Yellow	16	not printed; washer pump power	Wiper Motor
Yellow	16	#982 WIPER MOTOR POWER (IGN)	Fuse Block

AFTERMARKET GAUGE SECTION

Color	Gauge	Wire Print	Origin
Tan	18	#939 FUEL GAUGE	Tail Section
Pink	18	#935 GAUGE POWER (IGN)	Fuse Block
Black	18	#969 GROUND	Chassis Ground
Grey	18	#930 GAUGE BACKLIGHTING	Headlight Switch
Blue	18	#922 OIL PRES. SENDING UNIT	Engine Section
Green	18	#921 COOLANT TEMP SIGNAL	Engine Section

RADIO SECTION

Color	Gauge	Wire Print	Origin
Yellow	18	#940 RADIO POWER (BAT)	Fuse Block
Red	18	#941 RADIO POWER (IGN)	Fuse Block
Blue	18	#998 AMP TURN ON	Dome Light Section
Black	18	#969 RADIO GROUND	Ground Splice
Gray	18	#930 DIM/BACKLIGHT POWER	Headlight Switch

ACCESSORIES SECTION

Color	Gauge	Wire Print	Origin
Tan	14	#903 CIG. LIGHTER/POWER PORT (BAT)	Fuse Block
Yellow	14	#911 POWER WINDOW (ACC)	Fuse Block
Yellow/Black	14	#912 DOOR LOCK POWER (BAT)	Fuse Block
Pink	14	#906 ACCESSORY POWER (IGN)	Fuse Block

A/C - HEAT

Color	Gauge	Wire Print	Origin
Brown	14	#904 HEAT-A/C POWER (IGN)	Fuse Block
Gray	18	#930 HEATER PANEL LIGHTING	Headlight Switch

PASSENGER COURTESY SECTION

Color	Gauge	Wire Print	Origin
Orange	18	#971 PASS. COURTESY LIGHT POWER (BAT)	Fuse Block
White	18	#961 PASSENGER SIDE DOOR JAMB SWITCH	Headlight Switch
White	18	#961 COURTESY LIGHT GROUND	Headlight Switch

DOMES SECTION

Color	Gauge	Wire Print	Origin
Tan	18	#939 FUEL SENDING UNIT	Seat Belt Relay
White	18	#961 DOME LIGHT GROUND	Headlight Switch
Orange	18	#971 DOME LIGHT (BAT)	Fuse Block
Blue	18	#998 AMP TURN ON	Radio

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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