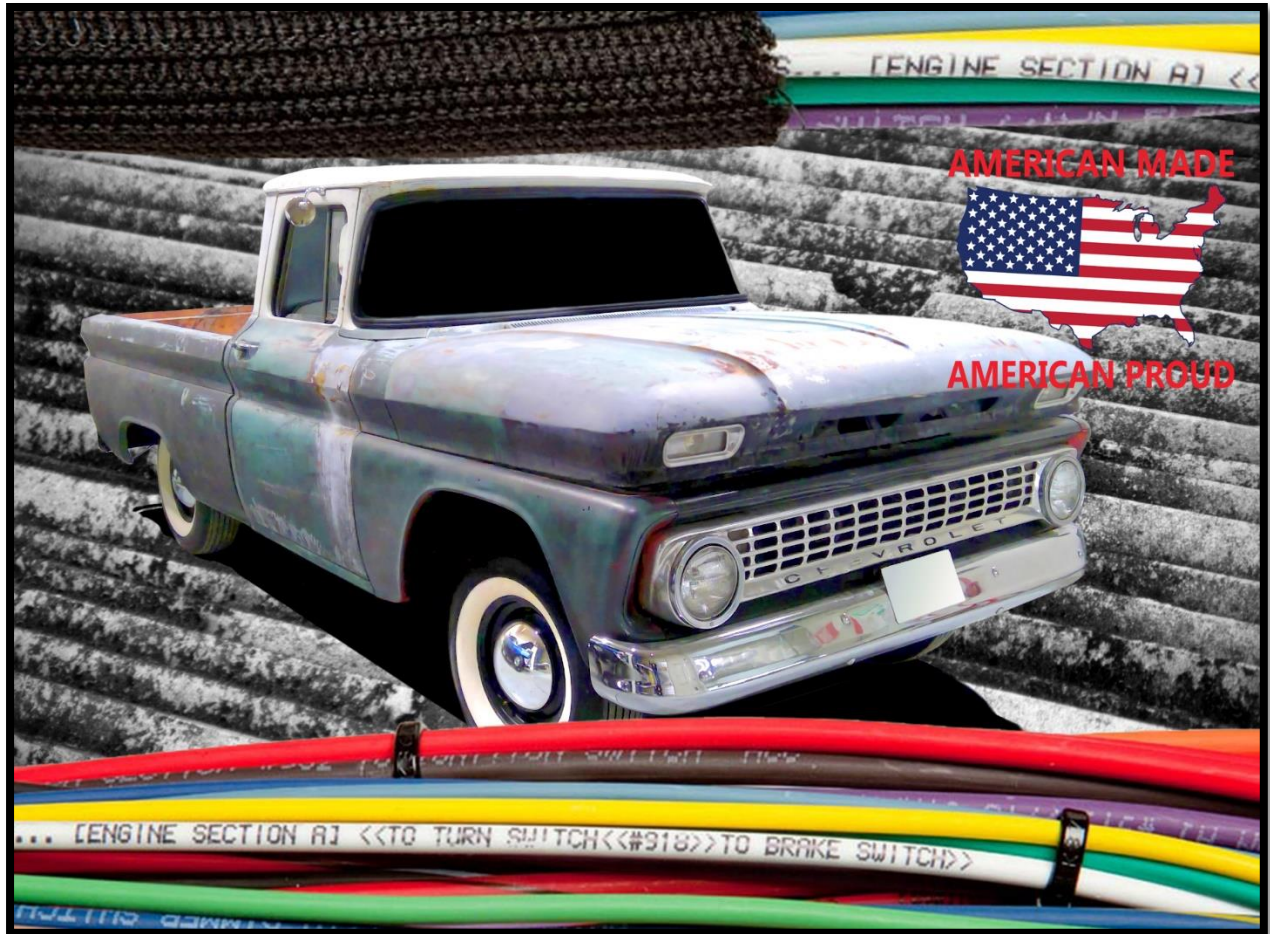


PAINLESS

PERFORMANCE PRODUCTS



Wire Harness Installation Instructions

For Installing Harness Numbers:

10112: 19 Circuit Classic Customizable 1963-66 GMC / Chevy Pickup Truck Harness

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

90519

Painless Performance Products, LLC
2501 Ludelle St.
Fort Worth, TX 76105-1036
PHONE: 800-423-9696 FAX: 817-244-4024
EMAIL: support@painlessperformance.com

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.

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/10112.pdf>

- If your vehicle has an existing harness, you will want to retain it for the possible re-use of various pigtails and connector housing particular to your application. During the removal process, avoid making any unnecessary cuts.
- Please pay attention to the Pre-Installation section of this manual beginning on page 16. Your new Painless harness may need wires rerouted to suit your installation.
- This harness does include wiring from the blower switch to the blower motor/resistor for heater only trucks. It does NOT include any wiring for an A/C. This harness does include a circuit to power factory or aftermarket A/C systems.
- This harness is universal in nature. This means most/all ends are left open to allow you to cut each wire to length and install/make the appropriate connection. The small parts package and the bag kits with terminals and connectors included with the harness will enable you to make connections.

If 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

- 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.

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INTRODUCTION

Thank you for your purchase of this Painless Performance chassis 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.

The fuse block is pre-terminated, and the proper fuses for each circuit are pre-installed. All wires are colored based on GM color codes. 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, beginning on [page 104](#), provides a quick reference guide for the individual wires of this harness. The Wire Index identifies the gauge, color, what is printed on the wire, and point of origin for each wire.

During 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 straightforward and easy to follow.

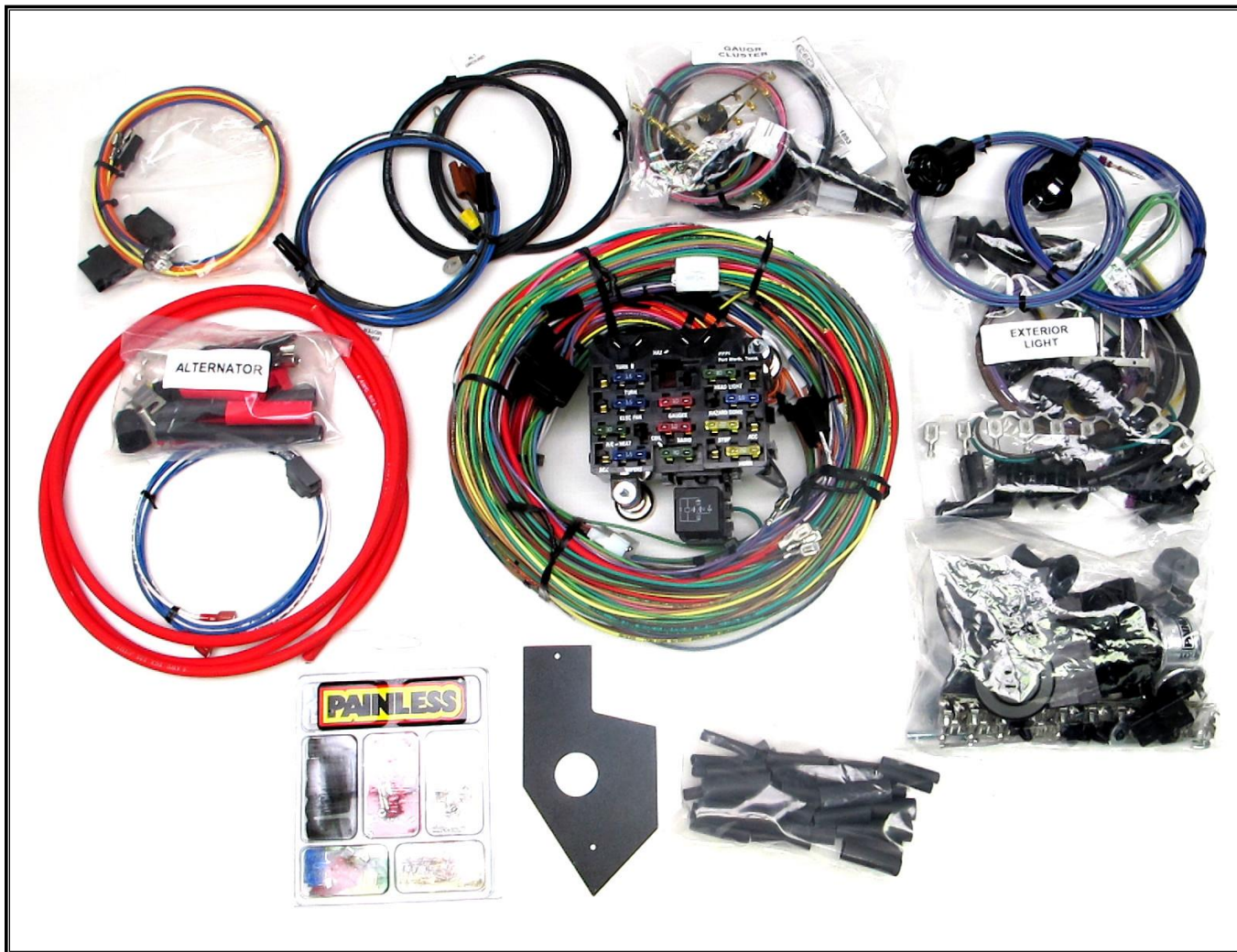
Individual components and sections are tied together for easy routing of the harness. GM color-coded wires, along with the schematic diagrams found throughout this manual and the printed circuit numbers and description printed on the wire, will help you identify the different circuits during installation 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 are 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 10112 contains the following:

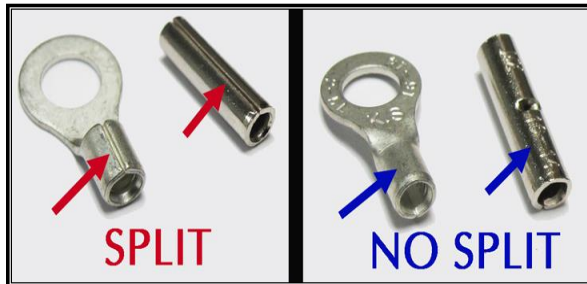
- Pre-terminated fuse block and harness.
- Mounting bracket
- (6) pigtails: (2) Front Turn/Park Lights, (1) Wiper Motor, (1) Alt/Voltage Reg, (1) Alt. Ground, (1) Heater
- (1) 6-gauge charge wire
- (1) Small Parts Kits
- (5) Parts bags: Alternator bag, Exterior Lights, Gauge Cluster, heat shrink bag, and a larger miscellaneous parts bag that includes zip-ties, connectors, and other parts.



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 of 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.

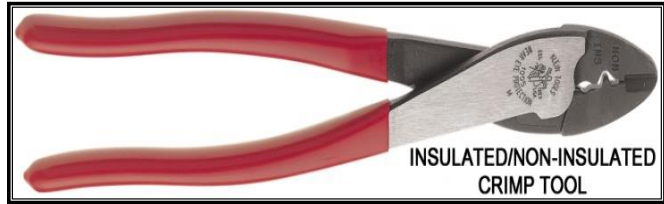


TOOLS NEEDED

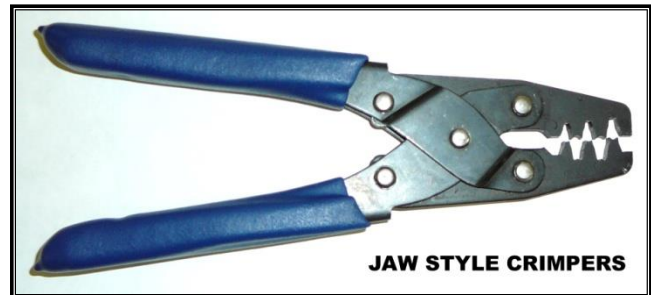
In addition to your regular hand tools, you will need, at least, the following tools:

- **Wire Crimping and Stripping Tools:**

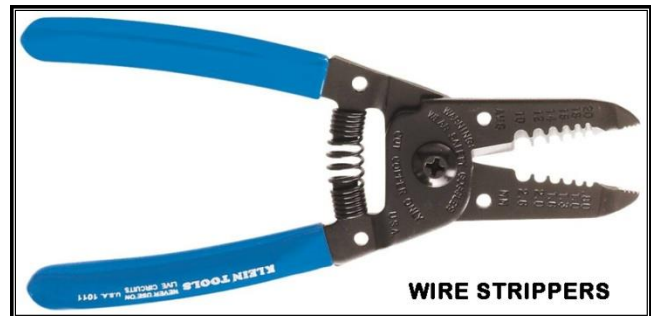
- This style of hand crimper can be purchased from just about any local auto parts store, home improvement store, or can also be purchased online. You will need this style of crimper to crimp the heat shrinkable and non-heat shrinkable, insulated terminals included in the small parts kit.



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

- **Heat Gun:**

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



- **Small (10 amp or less) Battery Charger**

See **TESTING THE SYSTEM** located on [page 103](#).

- **Factory Wire Schematic**

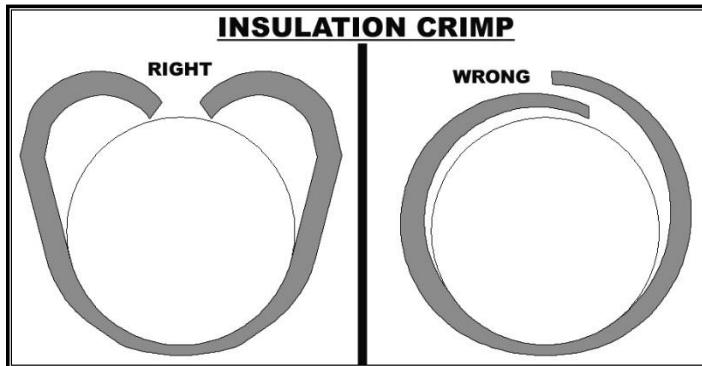
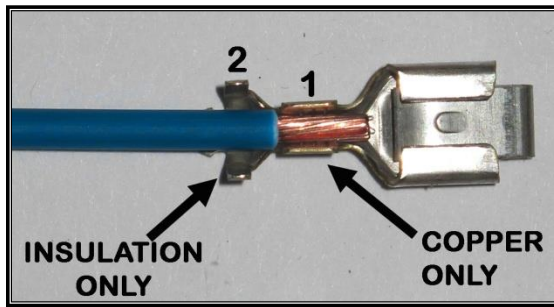
This is not necessary; however, having one handy is good practice with any electrical job.

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

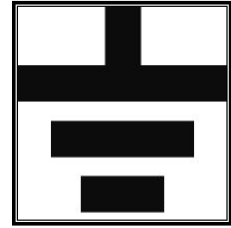


In the parts kit, you will see different uninsulated male and female terminals. These terminals are for factory-style connections and require rollover crimpers.

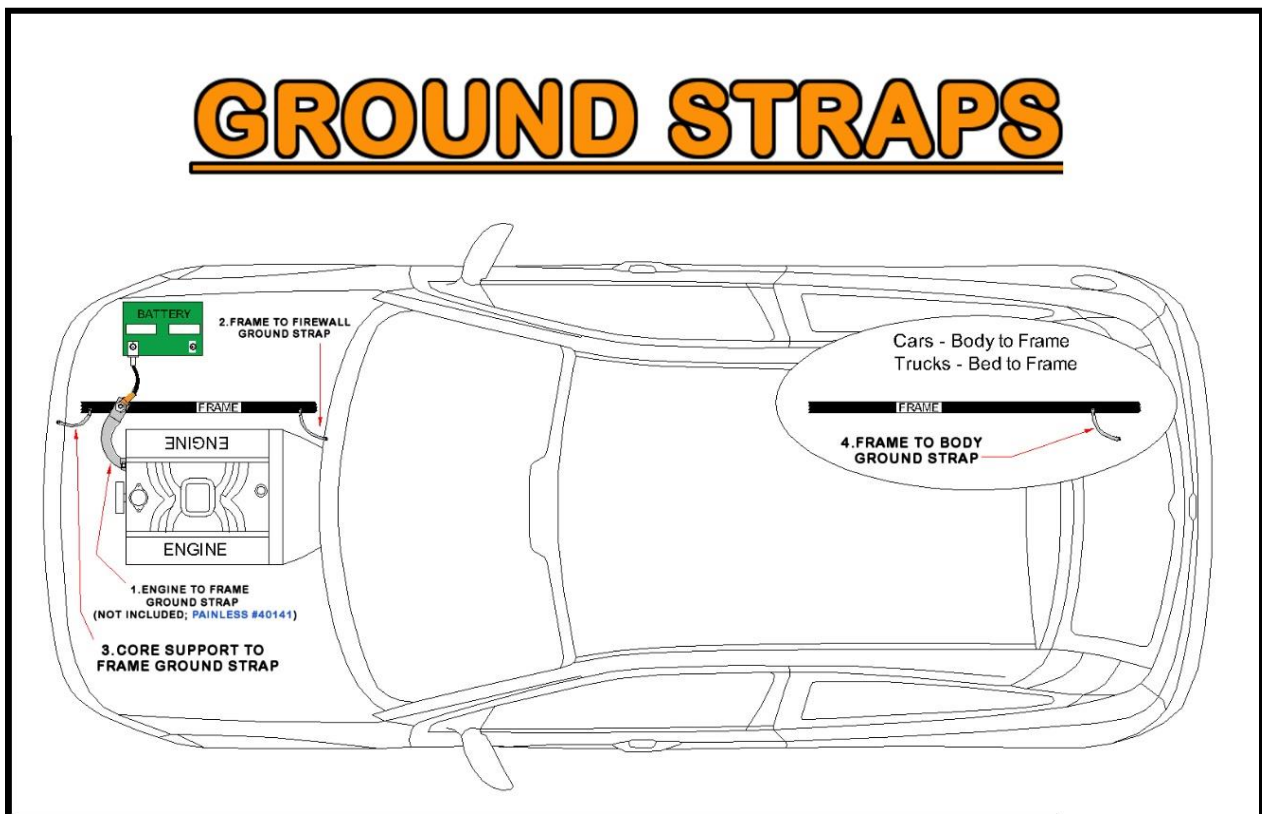
- Strip about $\frac{1}{4}$ " of insulation off the wire.
- Insert the wire into the terminal. There are two terminal straps on the terminal. For instructional purposes, we will label them 1 and 2. Strap 1 crimps the exposed copper strands of the wire, while strap 2 crimps the wire insulation. Make your 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 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.

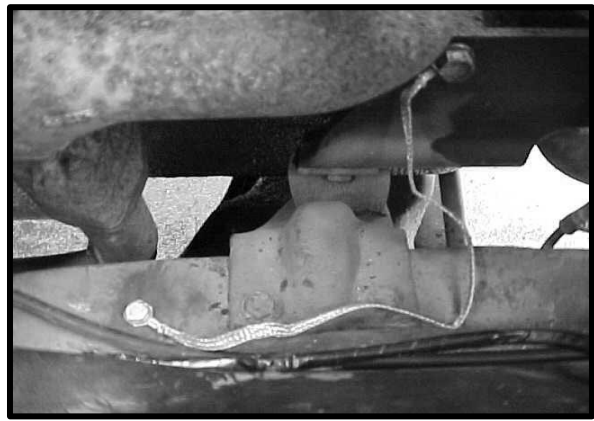


A ground is simply the common path electrical current follows back to the battery. A ground, or chassis ground as it is often called, is any bare metal surface found on the vehicle which is in turn connected back to the frame/negative side of the battery through mounting points and ground straps. Grounds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

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

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

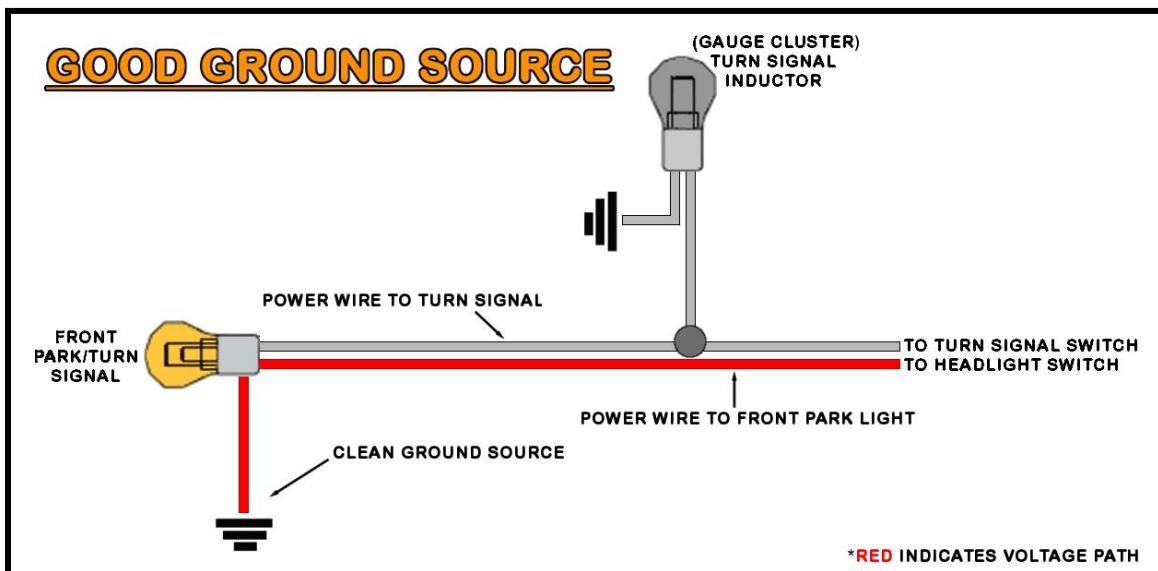
Make sure all mounting points are clean by removing any dirt, corrosion, and/or paint. This includes light housings that ground through mounting them and the harness ground wire connection point. This is especially important for cars that have recently been painted as paint build-up will cause grounding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



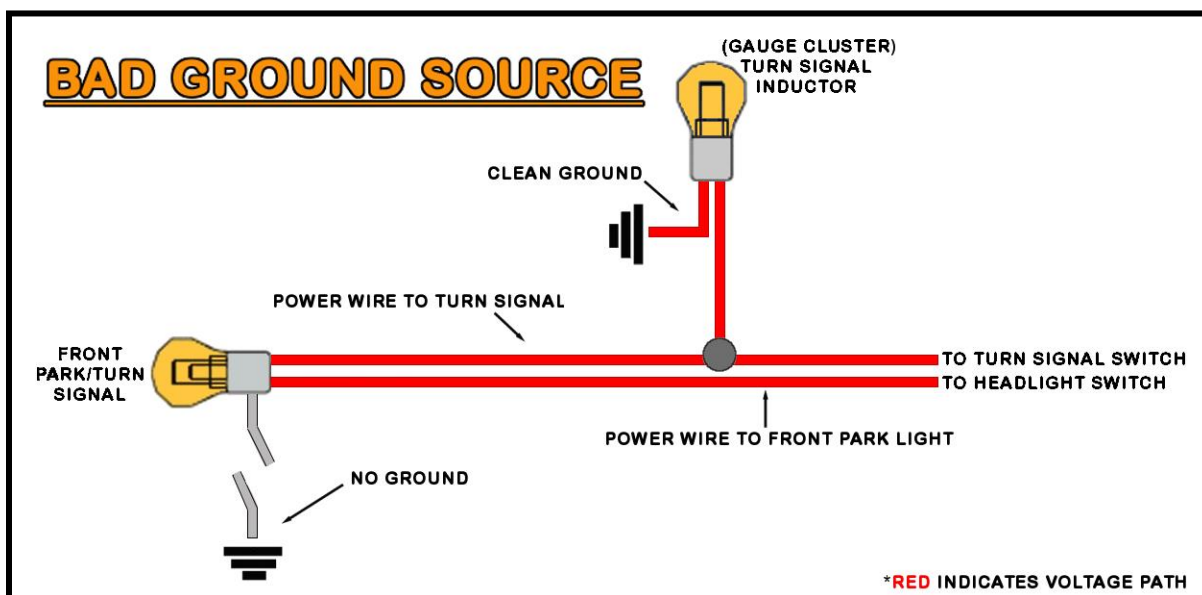
WHY ARE CLEAN GROUNDS IMPORTANT?

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. Then 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 12 fuses controlling 23 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.



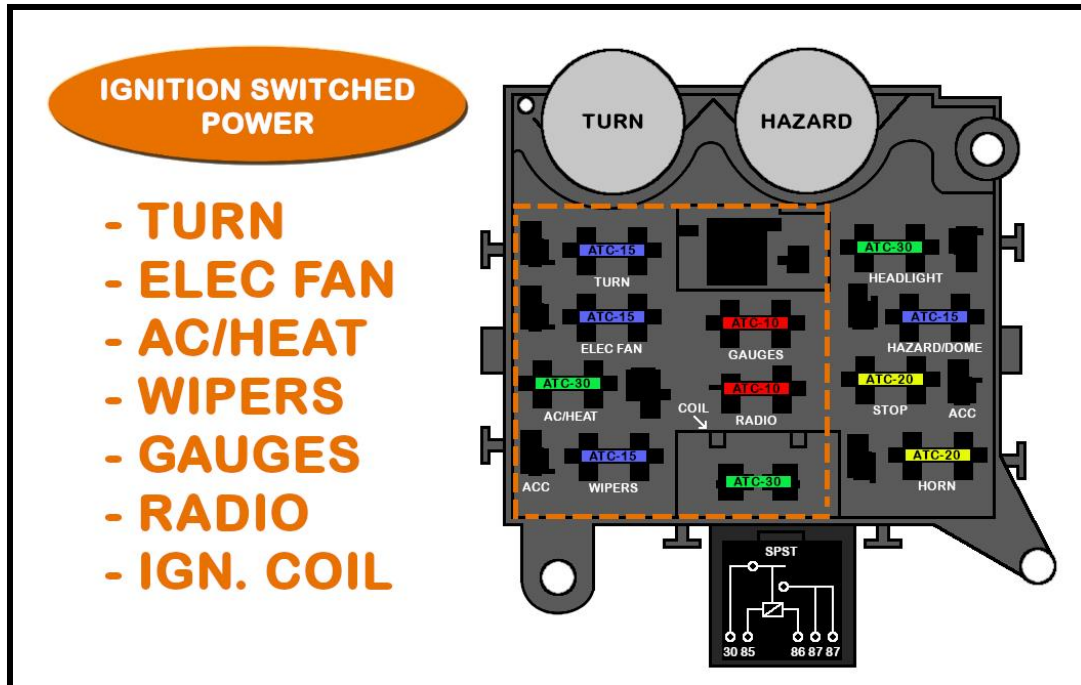
How a flasher functions is simple. Power is switched off and on according to heat built-in the resistance wire inside the flasher. As soon as the current is drawn through the flasher, as when the turn signal or hazard switch is activated, the resistance wire heats up and contacts the output side of the 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

Some LED turn signals do not draw enough current to activate a typical thermal flasher. If you are using LED turn signals, and your turn signals turn on but do not flash, a no-load flasher will be required ([Painless part number #80230](#)).



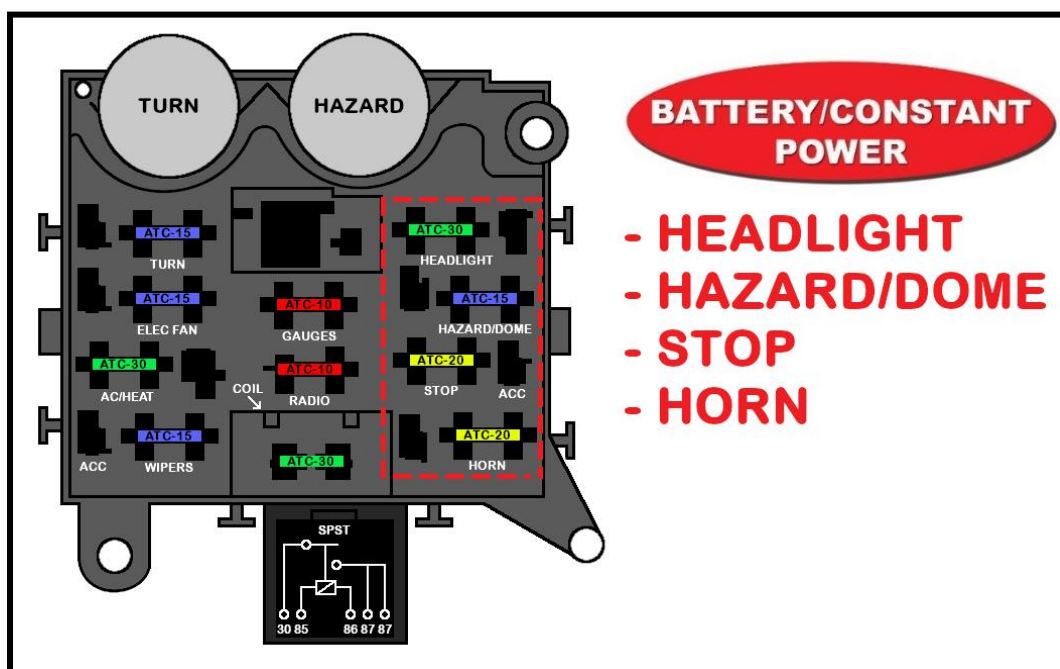
FUSE IDENTIFICATION

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 #931, #932, and #933) and receive power depending on what position the ignition switch is in. These fuses will only have power when the ignition switch is in the ON/RUN position. The **Ignition Switch Section** beginning on [page 76](#) of this manual will go into further detail about power supplied to these fuses. The RADIO fuse will also have power when the ignition switch is in the ACCESSORY position. This is the only fuse with ACCESSORY power.

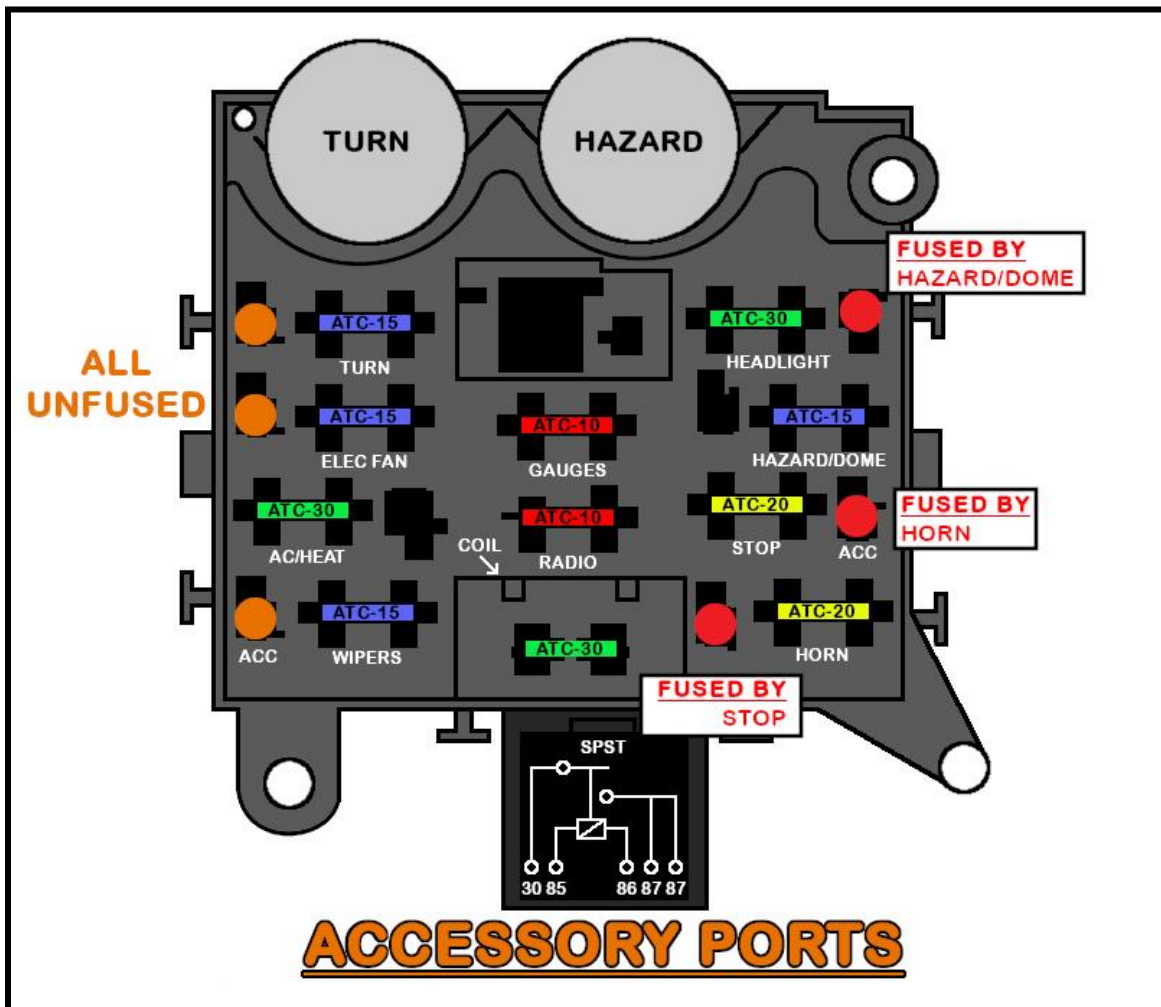
The drawing below shows all the battery power fuses. These fuses are powered by a wire that comes from the large power splice, seen on [page 43](#). The battery power fuses always have power.



ACCESSORY PORTS

You will notice 6 single, open 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 connectors, seen to the right, are provided in the parts kit to allow you to tap into 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 ignition power ports, shown below in **ORANGE**, are all un-fused power sources and must have an inline fuse, no larger than 10 amps, installed before being routed to a component needing power. The ports identified with **RED** are battery-powered and fused as indicated on the drawing. Anything needing more than 10 amps will need to have a relay installed. See relay wiring and activation on the next page for details.



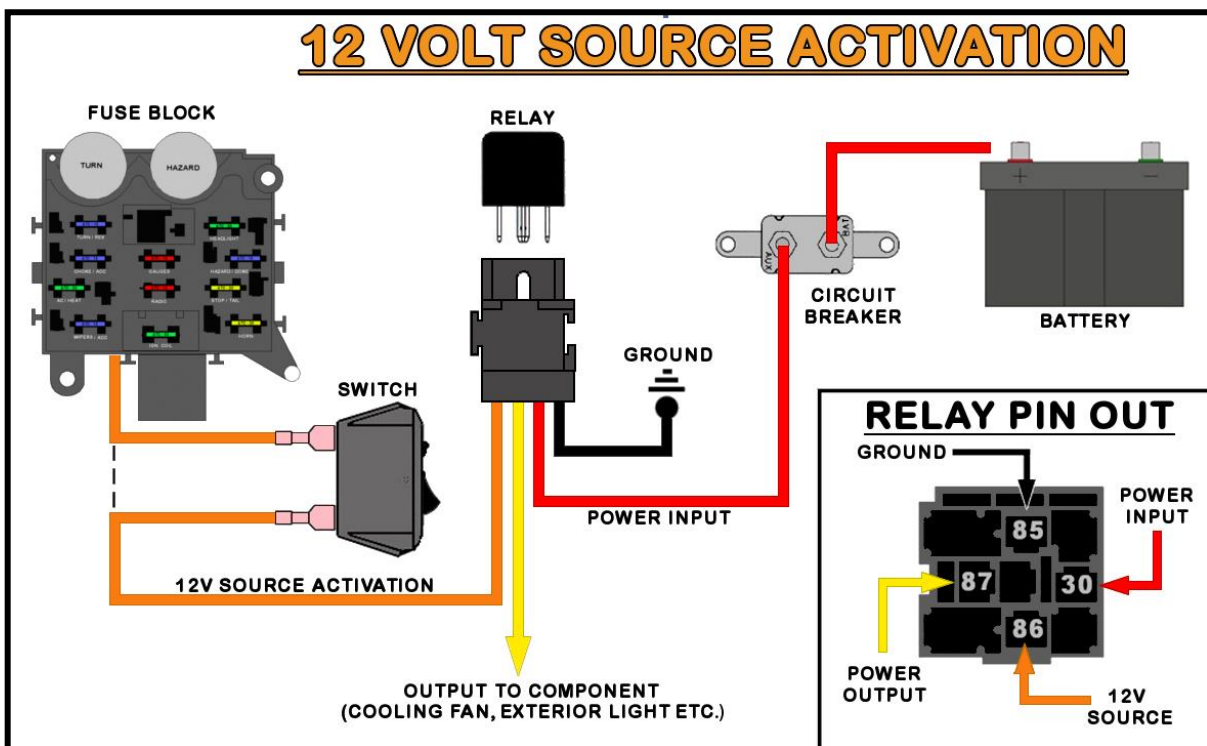
RELAYS & SWITCHES

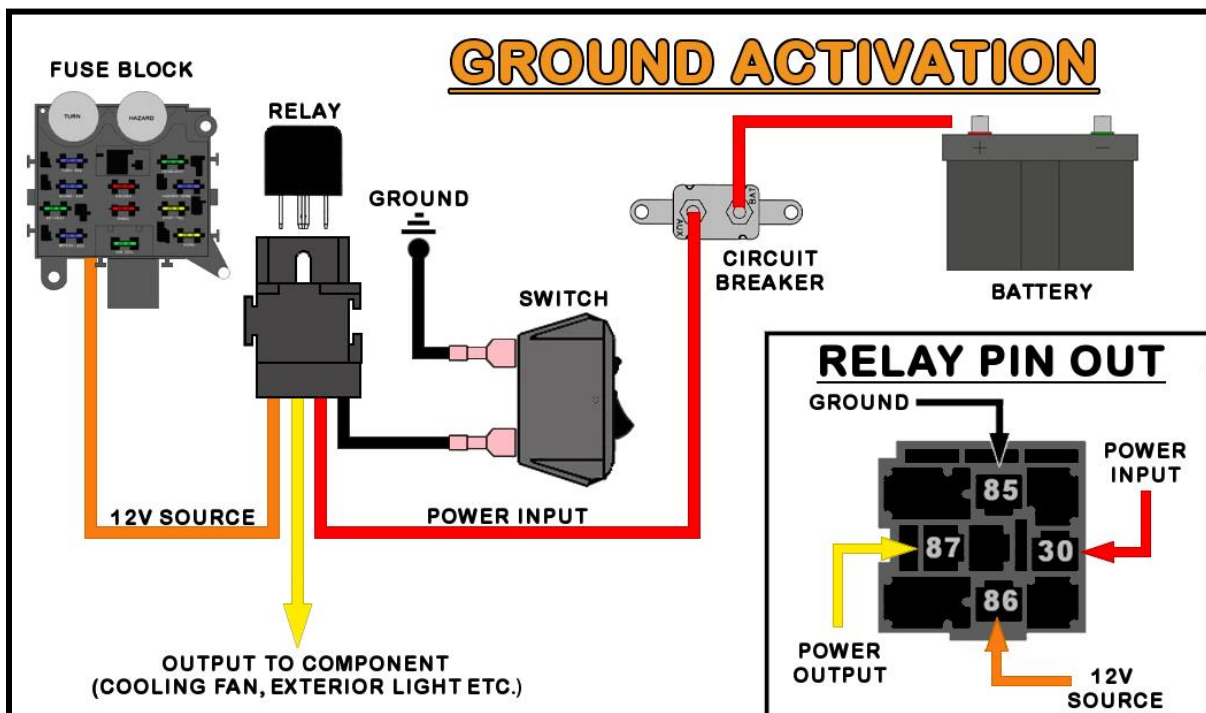
All ACCESSORY wires found in this harness can support up to 15 amps alone. Components requiring more amperage will need to be connected to a relay. The amount of amperage needed by the component will determine the size of the relay and circuit breaker needed. An ACCESSORY wire can be used as a 12-volt activation source or 12-volt source for ground activation in these circumstances. *Take a look at [Painless Relay Banks \(part #'s 30107 & 30108\)](#) or [Painless Single Relays \(like part #'s 80130 & 80131\)](#) 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.

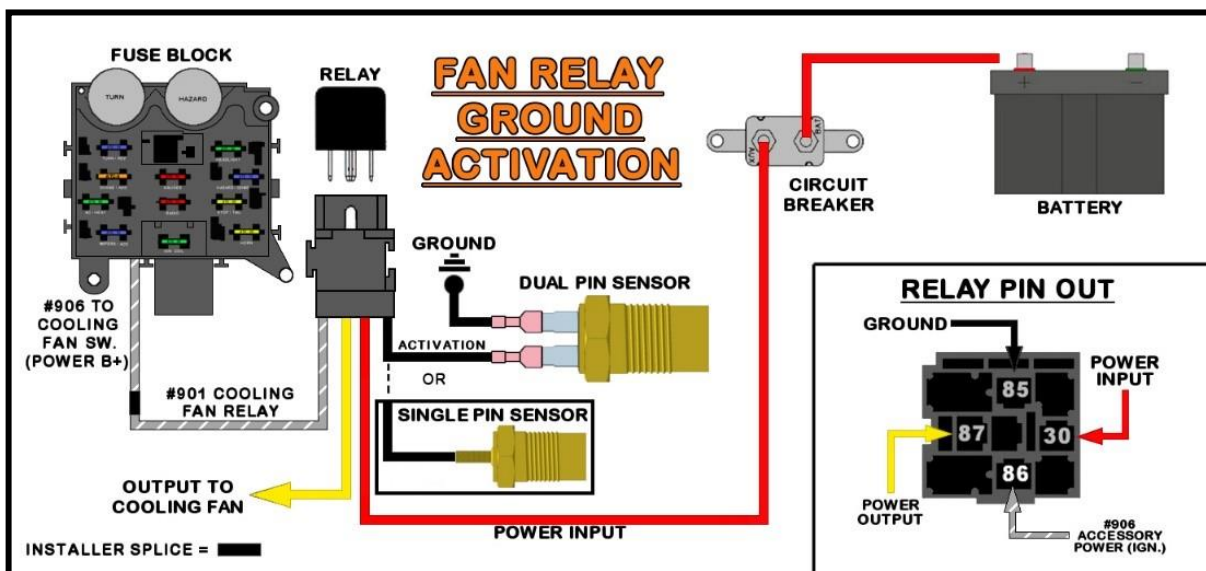
Wiring directly to the relay, as indicated by the dashed line, would be used in the case of wiring a water pump relay or any other high amperage component you would want to run continuously while the key is in the on position. In these cases, make certain the 12-volt wire you are using is an Ignition 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.





A ground activated relay is just the opposite of the 12-volt, activated relay; 12 volts (battery constant or switched) are 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).



IF 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, factory 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. Individual wires and connectors can easily be labeled using masking tape.

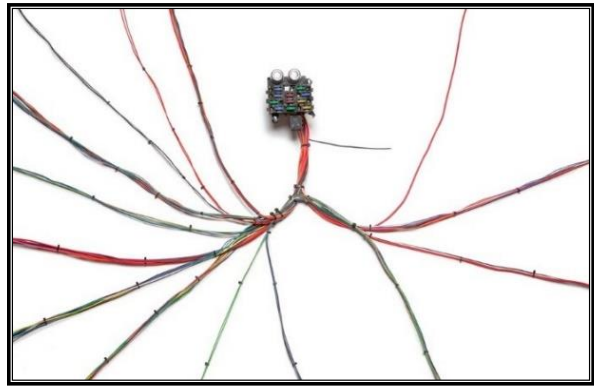
Take photos or make a drawing of any connections that have multiple connectors, like at the wiper motor, wiper switch, radio, etc., to help with reconnecting the new harness.

Trucks with air conditioning and/or power locks/windows power:

These accessory harnesses do not need to be removed during the removal process. They are generally separate harnesses. The power supplies for the separate harnesses already installed in your truck simply need to be disconnected. They are usually plugged into the front of the factory fuse block or on the factory horn relay. Additionally, you do not need to remove the pigtails leading to your dome light. In almost all applications a connection can be made behind the driver's seat to the existing wires going to the dome light itself.

PRE-INSTALLATION GUIDELINES

Before moving your new harness into your vehicle, it is a good exercise to lay the entire harness out on the ground 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 vehicles the harness can fit. They are marked to help ease the process of routing. This allows you to route your wires cleanly and terminate at the length you find fits your build best.



The **WIRE INDEX** on [page 104](#) 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 vehicle.

DO NOT SKIP THESE PRE-INSTALLATION STEPS.

- **Reverse Switch**: If you have a GM, column-mounted reverse switch, a reverse switch on a floor-mounted shifter, or a transmission-mounted reverse switch that you plan to access through the transmission tunnel or floorboard, the **Reverse Switch Section** wires can stay in their current location. If you have a transmission-mounted reverse switch and need to access the connection in the engine compartment, re-route the **Reverse Switch Section** to the **Engine Section**.
 - If you do not have reverse lights, the **PINK #958** can be pulled back to the fuse block. The **LT. GRN #956** wires can be removed from the harness.
- **Neutral Safety/Clutch Switch**: This is a single wire (**PURPLE #919**) that will be cut to length, and the cut off portion will then be used to connect the switch to the starter solenoid. Be aware, if your switch is mounted inside the vehicle, the cut off portion will need to be routed out into the engine compartment and to the starter solenoid.
 - If you have a GM, column-mounted neutral safety switch (NSS), a manual transmission with a clutch pedal switch, an NSS on a floor-mounted shifter, or a transmission-mounted NSS that you plan to access through the transmission tunnel or floorboard, re-route the **PURPLE #919 Neutral Safety Switch** wire toward to switch's location. If you have a transmission mounted NSS and need to access your connection in the engine compartment, the **PURPLE #919 Neutral Safety Switch** can stay in its current location.
- **Fuel Tank**: If your fuel tank is located inside the cab, reroute the **TAN #939** wire with the dome light section. If your fuel tank is located under the bed, the wire can remain with the **Tail Section**.

- **Voltage Regulator**: The 1963 – 1966 truck came with an externally regulated alternator. The external regulator was located on the driver side fender well. However, most factory generators have been replaced with an internally regulated alternator. As such, the **Voltage Regulator Section** is grouped with the **Engine Section**. If you are using an externally regulated an alternator, re-route the two wires of this section (**RED #995** & **BROWN #914**) with the **Front Lighting Section**.
- If you are using an engine mounted thermostatic switch to control your cooling fan, route the **Electric Fan Section** with the **Engine Section** out to the engine compartment.
- This is also the perfect time to remove any wires you will not be using.
 - Read through this manual with the harness laid out in front of you. Take note of wires you may not need and remove them from the harness. This will clean up the appearance of the install.
 - If you are running mechanical gauges, or if you are using an aftermarket gauge cluster or individual gauges that require their own 2 or 3-wire sensors, you can remove the sending unit wires running from the **Engine Section** to the **Instrument Panel Section**.
 - The Choke wire, **RED #954**, can also be pulled back to the fuse block if you have a mechanical choke or if you are running fuel injection.

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

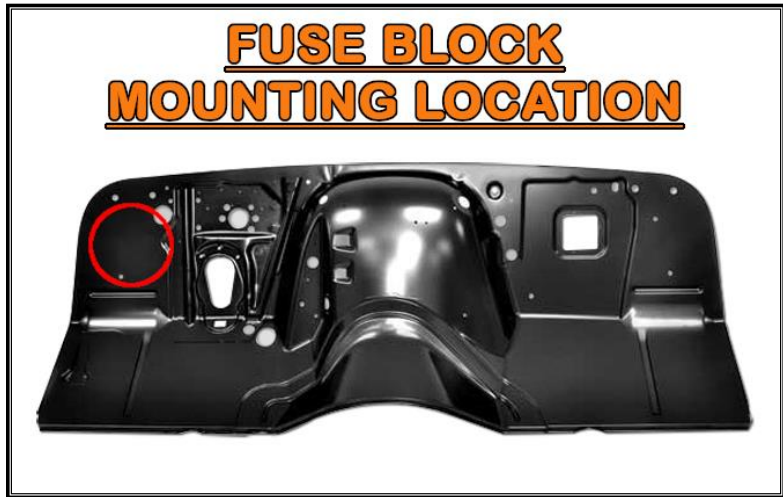
When bundling wires into groups, use zip-ties, split loom, or tape. The exposed wires in the engine compartment and wires running to the rear of the vehicle are best protected by wire loom or covering. *Painless offers the Power Braid Kit part #70920 and the Classic Braid #70970 to fill this need. These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



FUSE BLOCK MOUNTING

This fuse block must be mounted inside the vehicle as it is not suitable for wet conditions. Most of the time, the vehicle's original fuse block location is ideal.

The fuse block can be mounted in two different ways: using the provided magnets or drilling holes in the firewall and using the provided nuts and bolts.

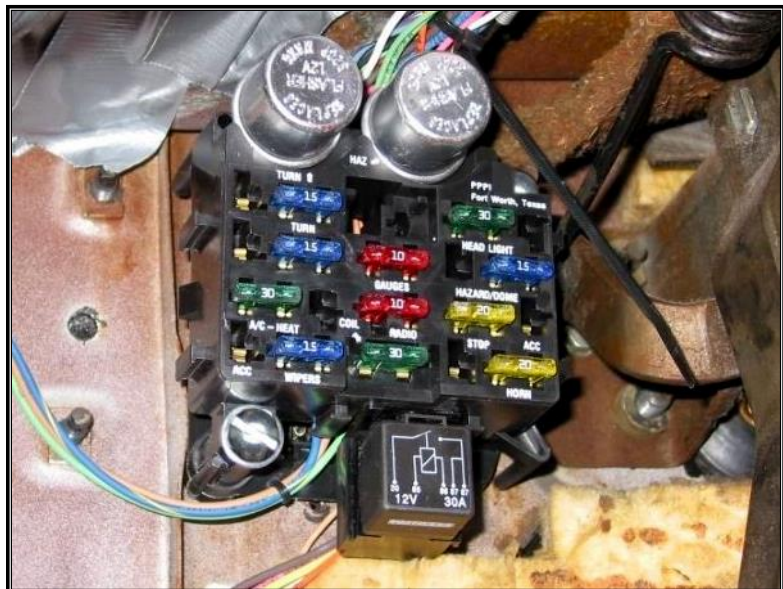


MAGNETS

- Magnets come pre-installed on the fuse block, simply place the fuse block on the firewall. There may be some movement or sliding of the fuse block during the routing of the harness. Once the harness is secured any movement should be minimal.

BOLTS

- Remove the pre-installed magnets. The two solid standoffs on the backside of the fuse block will need to be cut to the same length or shorter than the mounting hole legs.
- Find a location for the fuse block and mark two holes for the mounting. Each hole will need to be drilled using a $\frac{1}{4}$ " bit to mount the fuse block using the two bolts provided. The lengths of this harness assume the fuse block will be someplace left of the steering column.
- Before physically mounting the fuse block, decide on how the wires will need to exit the fuse block on your application. Example being; Does the tail section need to exit the side or bottom of the fuse block?
- Install the fuse block onto the firewall and insert the bolts through the fuse block.



This next step will require a helper.

- Install the flat washers and nuts previously removed from the fuse block; this requires the use of a $\frac{7}{16}$ " socket or wrench. A helper with a flat head screwdriver is needed to keep the bolts from turning while the mounting nuts are tightened.

FIREWALL PLATE

Included with this harness is a metal plate. This plate will cover the large hole found on the driver's side of the firewall. This hole originally had a grommet connector in which the factory from headlight and turn signals passed through. This grommet connector is no longer available.

The firewall plate contains a **1" hole** for a smaller, plug style, tape on grommet to allow for a weather-resistant pass through for the headlight light section of wires found on your new Painless chassis harness. This grommet is pre-installed on the Headlight Section group of wires on the harness.

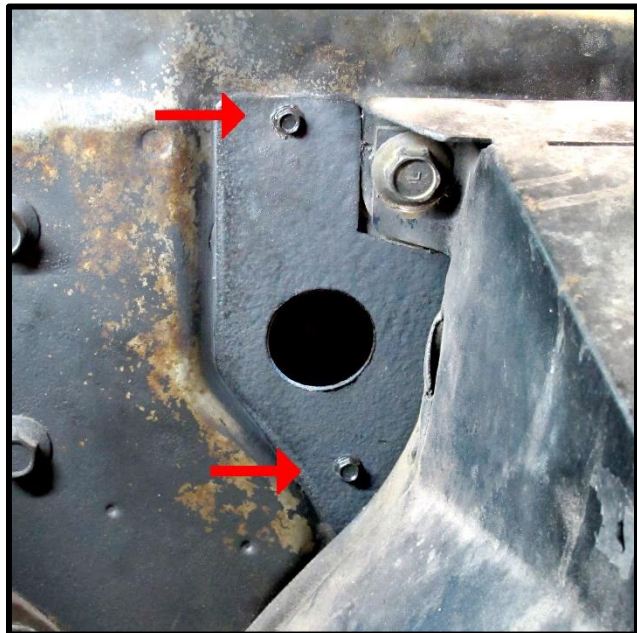
This plate will install on the engine side of the firewall. Test fit this plate before going any further.



- Apply silicone around the holes the plate will cover. While this step is not absolutely necessary, it will prevent water from entering the cab of the truck and it makes installing the plate easier.



- Center the 1" hole on the plate over the large firewall hole. To help with this, you can route the Headlight Section of the harness through the plate and seat the grommet into the plate before securing the plate to the firewall.
- Using the supplied #8 self-tapping screws from the parts kit, secure the plate to the firewall. These screws will require a 1/4" nut driver.



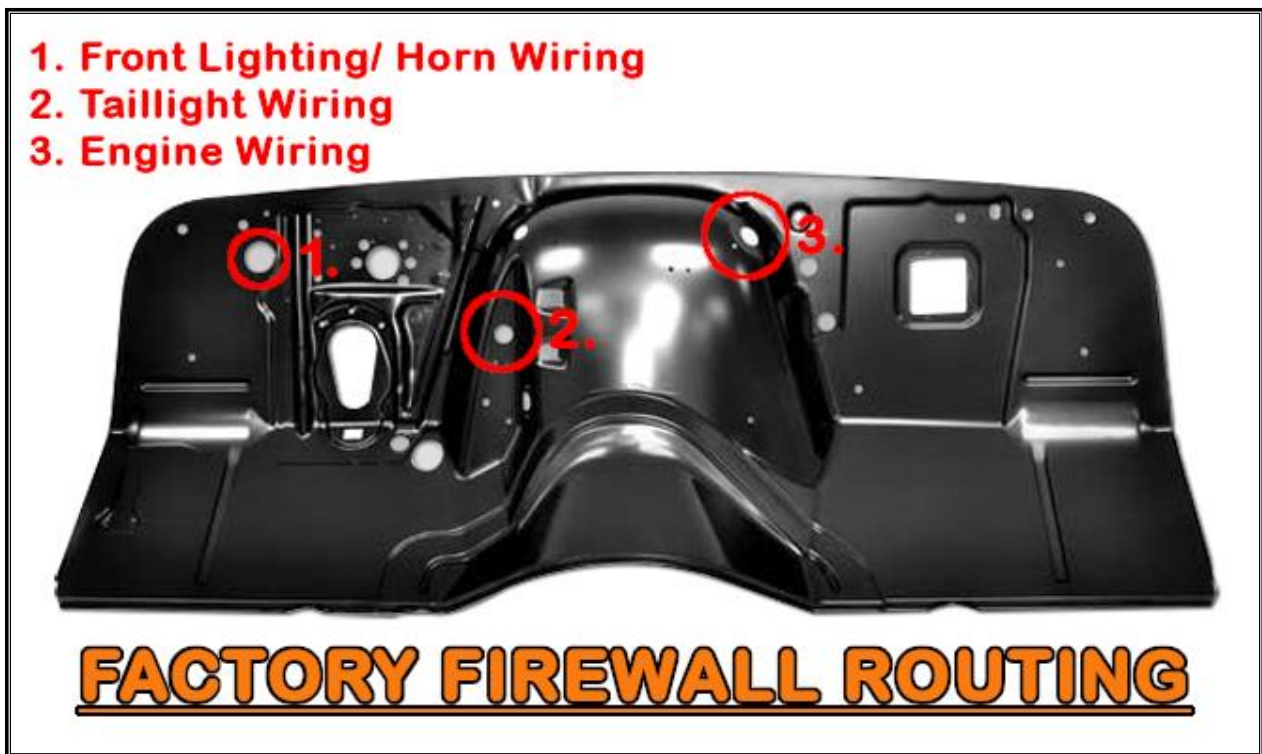
HARNES ROUTING

With the fuse block mounted, the Headlight and Horn Sections, Engine Section, Voltage Reg., Tail Section, and Electric Fan wires will be routed into the engine compartment.

- If you are routing your harness like the factory harness, notice there are three locations in the firewall for the various sections of the harness to pass through.
- Install the necessary grommets provided in the kit into the factory openings. **Note:** Grommet #1 for the Headlight Section has been pre-installed.

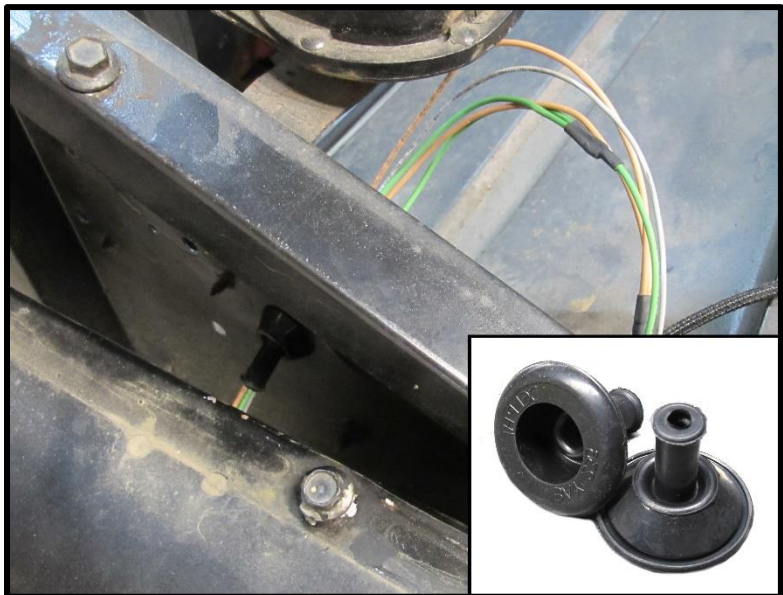
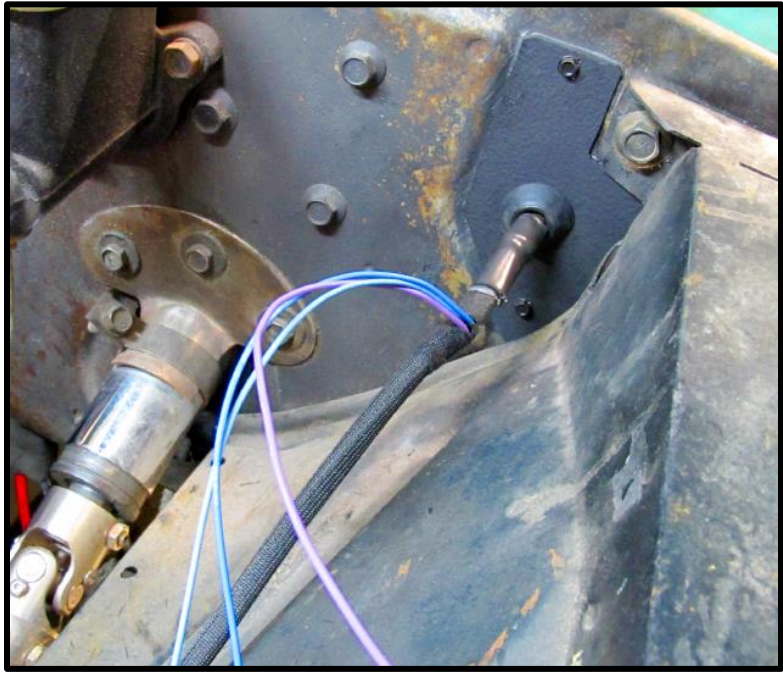


- Then route the wires through the firewall:
 - 1. All front lighting sections (headlight and turn), horn wire, & Voltage Reg. Section. This section will pass through the Firewall Plate you installed in the previous section.
 - 2. All taillight wiring & Fuel Sending Unit (for fuel tanks mounted under the bed)
 - 3. Engine Section & Electric Fan relay wiring
- Routing the wires across the dash will be necessary for the Taillight and Engine sections to be routed.

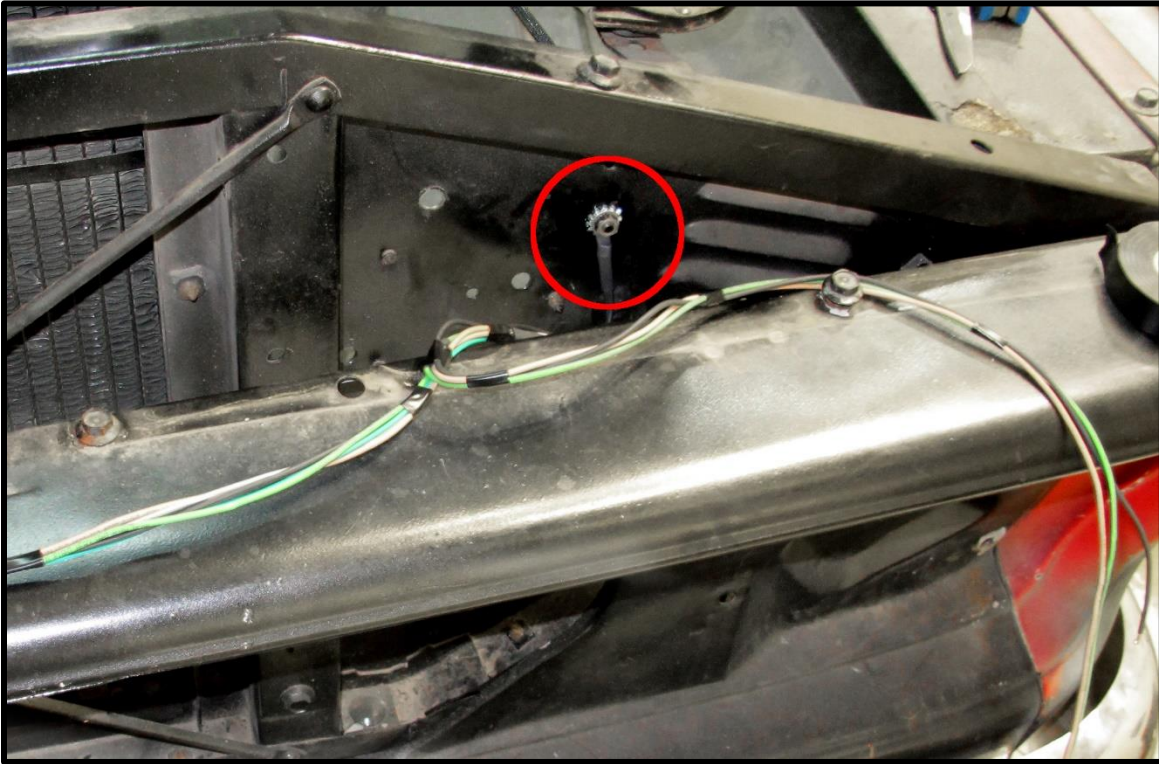


HEADLIGHT SECTION

- In the Headlight Section, locate and separate the **BLUE #925**, **LT. BLUE #926**, and **PURPLE #927** wires from the rest of the section. These wires power the front turn signals and park lights. These wires will be routed beginning on [page 28](#).
- With the front turn signal wires isolated at the firewall, route the remaining wires down the inner driver side fender to the core support. Use the provided cable tie clips in the ¼" holes running the length of the inner fender to secure the harness.
- Once at the core support, you will need to pass the wires through the support itself. To do so, first, remove the core support brackets and grill using a ½" **socket**. The nuts holding the grille can be accessed through the inner fender wells, in front of each tire.
- With the brackets & grill removed, pass the wires through the core support using one of the provided grommets shown below.



- Isolate the wires for the left-hand side headlight. Route the wires for the right-side lights across the core support to the passenger side of the vehicle and possibly the horn wire, depending on where the horns are located.
- While routing the headlight wires, lay in the separate **Headlight Ground Harness** provided in the kit. Ground the wires at the core support and route to the headlights with the rest of the **Headlight Section**.



- This routing of the front light section makes good use of the zip tie clips, shown on [page 3](#). Install these clips and loosely zip tie the harness in place. Tying the wires loosely at first allows the wires to be pushed or pulled during the installation of the **Headlight Section**.

TAIL SECTION

- Route the **Tail Section** down the frame under the vehicle. If they are still there, use the factory mounting brackets along the frame for your **Tail Section** mounting.
- It is especially important to cover the wire with some sort of wiring loom.
- At the back of the vehicle, route the wires to the left and right connections as indicated by the print found on the wires.



ENGINE SECTION

- Routing of the **Engine Section**, **Voltage Reg.**, and **Electric Fan** wires are easier to do during the time of their specific connections, at this time these wires should be in the center of the vehicle in the engine compartment.

INTERIOR

- 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** (and **TAN #939** wire 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.

HEADLIGHT SECTION

Once all the wires are routed, we will begin with the Headlight Section connections.

The Headlight 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 Headlight Section can be seen in the [Front-Lighting Schematic](#) on [page 31](#).

Connectors and pigtails (shown in the image below) have been provided in the parts kit to allow proper connection to standard H4, 2 or 3-prong headlights. Also, provided is a separate, lay-in, ground wires for the Headlight Section.



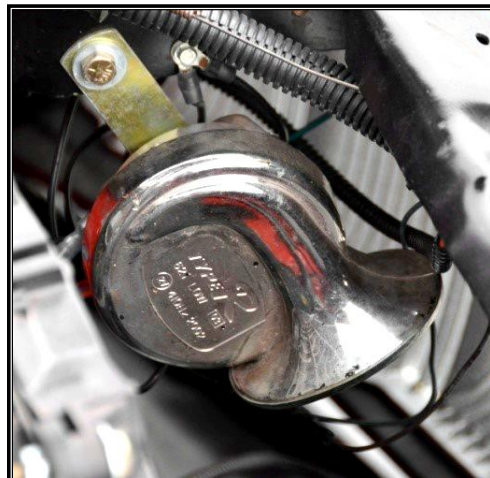
If halogen bulbs are being used, a separate headlight relay kit MUST be used. Due to the higher amperage demands of halogen lights, these lights will cause the circuit breaker in the headlight switch to fail. A headlight relay harness provides battery power through the relays directly to the headlight 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.



HORN

The Headlight 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 **[HEADLIGHT 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 Headlight Section as indicated on [page 24](#).
- 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.



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:

GREY/WHITE: 18-gauge wire, printed **FROM COOLING FAN SWITCH << #901 >> [HEADLIGHT SECTION] TO COOLING FAN RELAY**, this is a lay-in wire is used to connect the temp switch to the fan relay.

How this wire is connected varies depending on what accessory you are connecting and how it is being activated. General information on switches and relays is provided on [page 13](#). Please see the detailed information on the various connections for this wire and the accessory power wire beginning on [page 91](#) before making any connections with this wire.

You can reinstall the core support brackets and grill at this point. Do not reinstall the headlamps, however, until they have been connected in the next segment.

LEFT / DRIVER SIDE HEADLIGHT

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

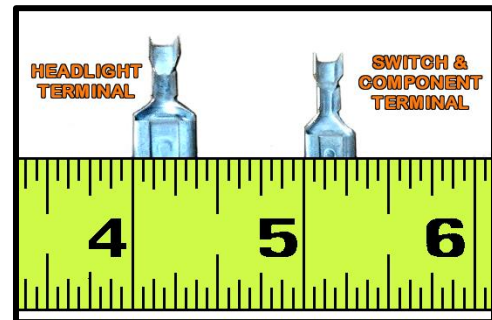
LT. GREEN: 14-gauge wire, printed **[HEADLIGHT SECTION] #908 LEFT HEADLIGHT HIGH BEAM** this wire provides power to the high beam filament of the headlamp. This wire runs from the dimmer switch and has power when the dimmer switch is in the high beam position and the headlight switch is in the headlight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

TAN: 14-gauge wire, printed **[HEADLIGHT 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.

BLACK: 14-gauge wire, printed **#969 DRIVER HEADLIGHT GROUND**. This wire is part of the separate ground harness and provides a ground to the headlight.

- Route the 3 wires for left/driver side headlamp connection to the back of the headlamp.
- Cut all 3 wires to 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 1963-1966 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 **LT. GREEN #908** and **BLACK #969** wires at the headlight connector with the **LT. GREEN** and **BLACK** wires coming from the Dual/Quad Headlight Pigtail shown on [page 24](#).



- Use the connector photo to the right for proper wire pinout. The connector is shown from the wire insertion side. Please notice that
- Install terminals. If you have a separate high beam (quad-headlight), make sure to double the **LT. GREEN #908** wire with the **LT. GREEN** wire from the **Dual/Quad High Beam Pigtail** shown on **page 24**. **BLACK #969** will also double up with the black wire coming from the pigtail.



- The left/driver side headlamp connector(s) can now be plugged into the headlamp(s) and the headlamp(s) can now be installed into the grille.

RIGHT HEADLIGHT

The connections on the right/passenger side of the vehicle all connect in the same manner as those on the left/driver's side.

TURN / PARK LIGHTS

The Turn/Park Lights of the Painless harness consists of three wires. These are the wires you separated from the rest of the **Headlight Section** at the firewall on [page 21](#). They are:



PURPLE: 16-gauge wires, printed **[HEADLIGHT SECTION] #927 TO FRONT PARK LIGHTS**, this wire provides power to the park lights. This wire leads to the headlight switch and has power anytime the headlight switch is in the Park/Taillights ON position.

LT. BLUE: 18-gauge wire, printed **[HEADLIGHT SECTION] #926 TO 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.

BLUE: 18-gauge wire, printed **[HEADLIGHT SECTION] #925 TO RIGHT FRONT TURN SIGNAL**, this wire is the turn signal power. 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.

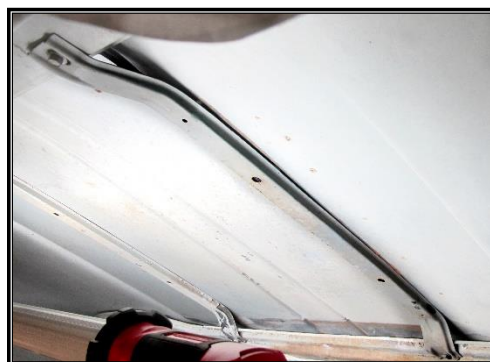
Also, included with this kit is a separate Turn Signal bag kit (contents seen to the right). These parts provide you with new sockets and will be routed through the channel at the top of the hood. Once routed through, the provided weather pack will allow you to connect the Turn signal Harness to the wires of the main harness (mentioned above). This connector all will allow you to quickly disconnect the Turn Signal Harness, should you wish to remove the hood of the vehicle.

1. **PURPLE #927 FRONT PARK LIGHTS**, (splice to weather pack)
2. Turn Signal Harness Side Female Weather Pack Conn.
3. Main Harness Side Male Weather Pack Conn.
4. Heat-shrink
5. Main Harness Side Female Terminals
6. Main Harness Side seals for WP conn.
7. $\frac{5}{16}$ " grommets
8. Right Turn/ Park Socket & Pigtail
9. Left Turn/ Park Socket & Pigtail



These sockets do not require a separate ground wire. Your light socket grounds through the mounting of the lens/bucket. If your vehicle has been freshly painted, you will need to clean the paint from the mounting surface of the light housing. The use of a small star washer on the mounting screws can ensure your light housing is grounded properly.

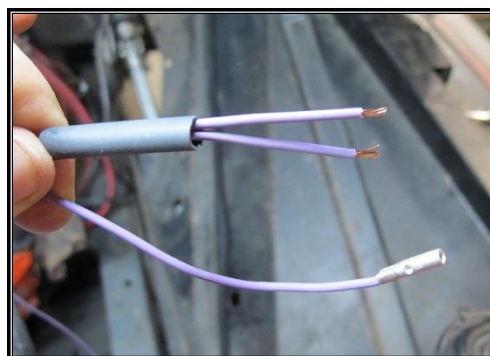
- Remove the driver side hood brace/channel.



- Install the **(#7) 5/16" grommets** into the hood right above the turn signal buckets. (see right)
- Feed the wires from the **(#8 & 9) sockets** through the grommets and into the hood.
- Install bulbs (not included) in the sockets and then install the sockets into the turn/park buckets.
- Use the "umbrella" style zip-tie clips ([page 3](#)) to secure the wires along the front of the hood as you route them toward the driver's side brace you removed.



- Splice the two **PURPLE** wires from the sockets to the **(#1) Park Light Wire** using the **(#4) heat-shrink** and pre-installed butt connector. **DO NOT CUT LENGTH FROM ANY OF THESE WIRES.**

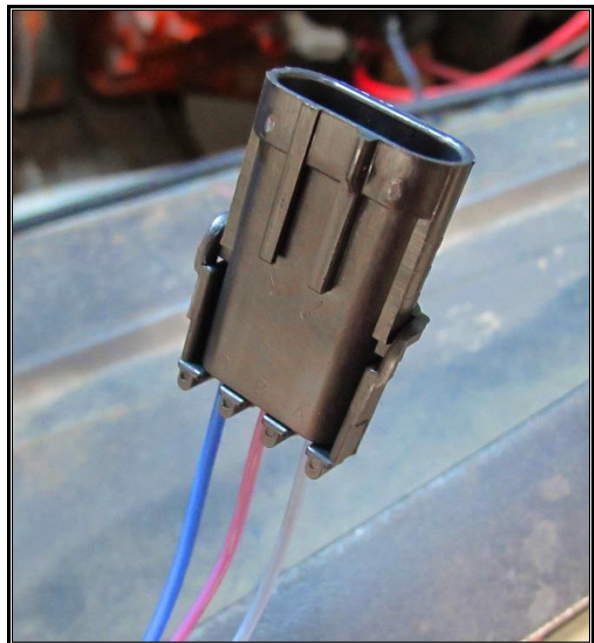


- Route the **LT. BLUE**, **BLUE**, and **PURPLE** wires toward the back of the hood along the brace channel and then to the hole at the bottom corner of the hood.
- Pass the wires through the hole and install the provided tape-on grommet.
- With the grommet seated you can re-install the hood brace



- Install the **(#2) female weather pack connector** onto the wires exiting the hood. Terminals and seals have been pre-installed on the turn signal harness wires.
- Write down your pinout below if you wish. You will need to refer to it to assure the wires will match when you install the male weather pack connector onto the main harness.

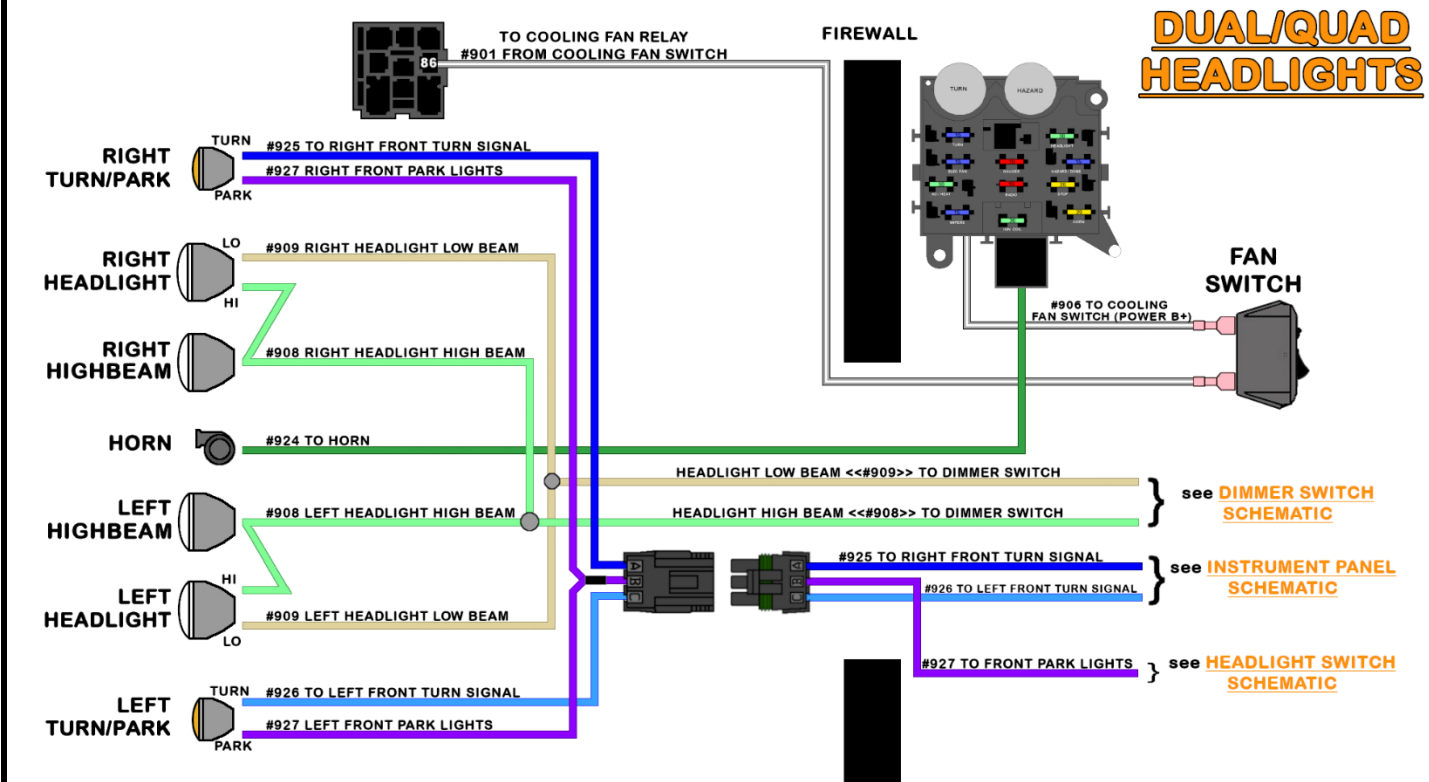
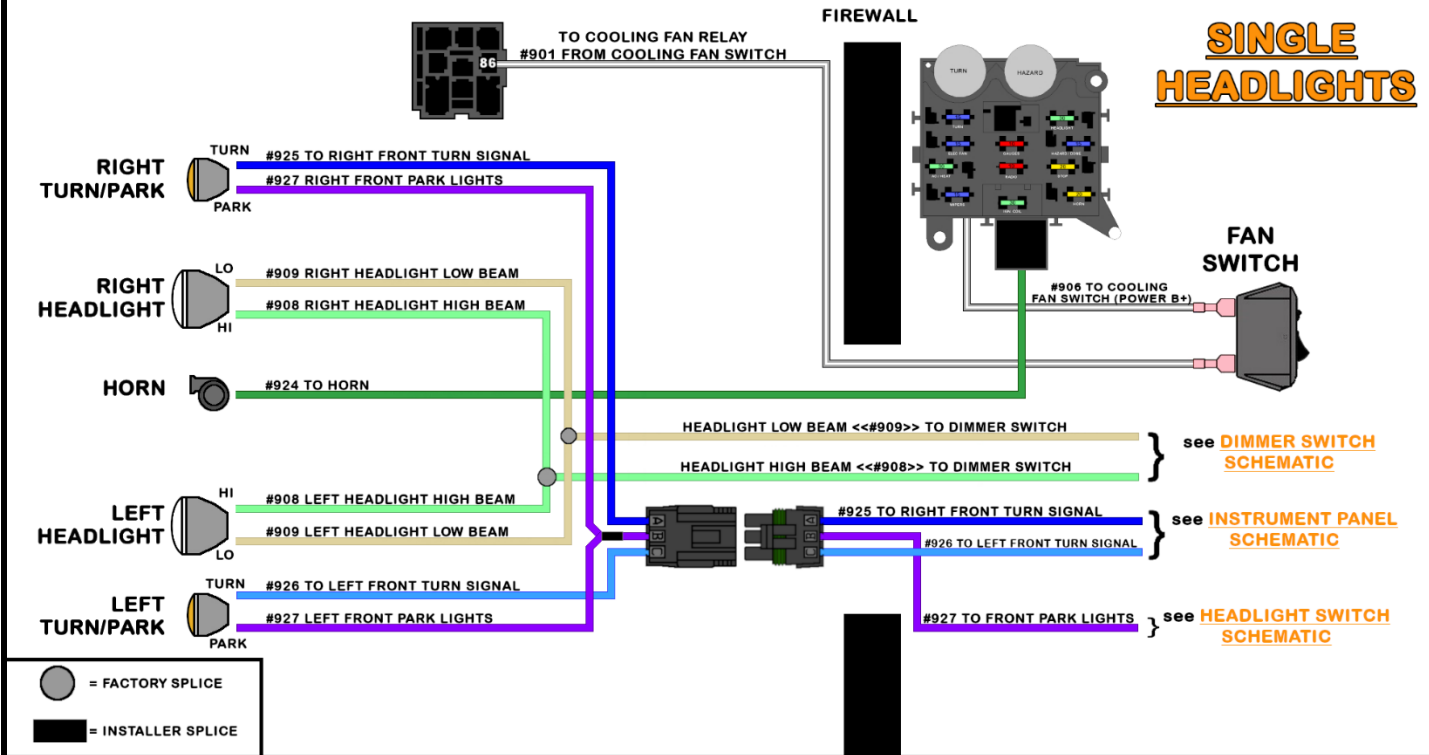
A=	_____
B=	_____
C=	_____



- Move to the wires of the main harness. Route and cut the **BLUE #925**, **LT. BLUE #926**, and **PURPLE #927** wires to length.
- Strip the wires 1/4" and install the **(#5) female terminals** and **(#6) seals** onto the chassis harness. Then, install the male weather pack connector onto the chassis harness. Be sure to reference your pinout above. **THE WIRES OF BOTH CONNECTORS MUST MATCH.**
- If you wish, secure the chassis, turn signal wires to the firewall. Finally, connect the two weather pack connectors.

If done correctly, this will allow you to disconnect the two weather pack connectors anytime you remove the hood in the future, preventing you from having to cut or modify any wiring.

FRONT LIGHTING SECTION

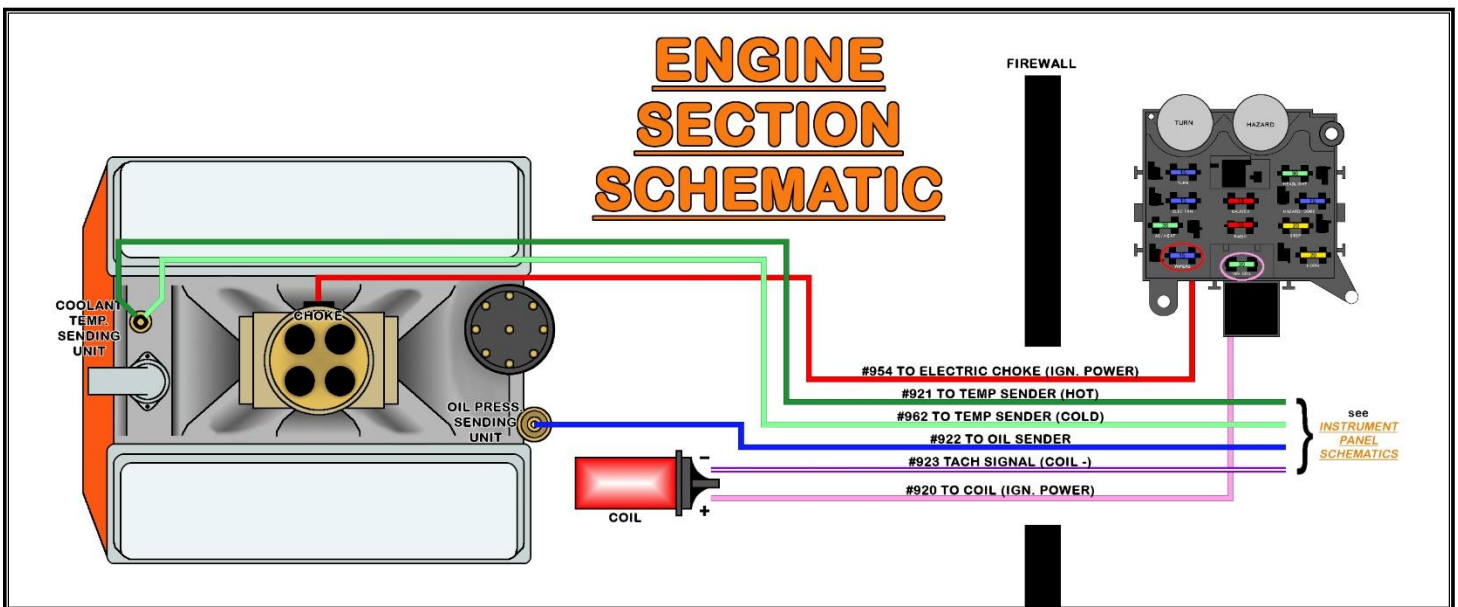


ENGINE SECTION



The **Engine Section** consists of eight 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 eight 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.



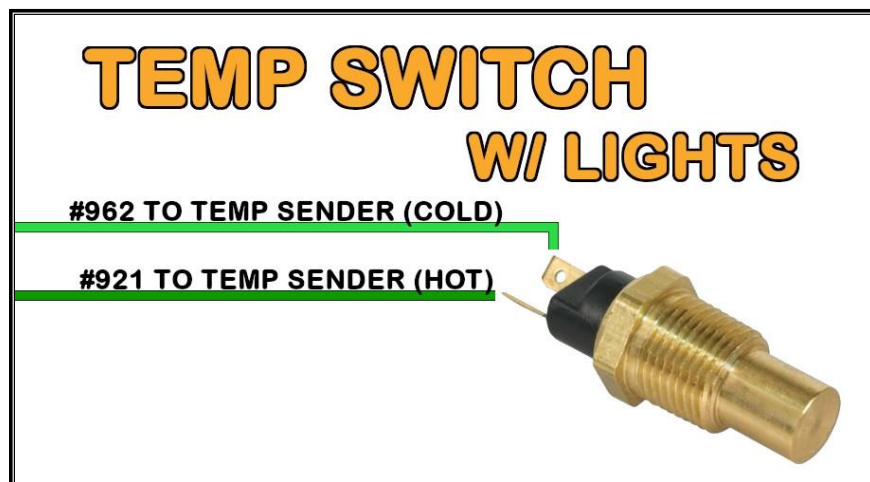
COOLANT TEMP SENSOR

GREEN: 18-gauge wire, printed [ENGINE SECTION] #921 TO TEMP SENDER (HOT), this wire sends a ground signal to the engine coolant temp gauge or light. If you have factory temperature lights, this will be your “Hot” signal. If you have a factory temp gauge, this will be your only signal. If you are using an aftermarket mechanical gauge, this wire is not needed. See the [Engine Section Schematic](#) on [page 32](#).

LT. GREEN: 18-gauge wire, printed [ENGINE SECTION] #962 TO TEMP SENDER (COLD), this wire sends a ground signal to the engine coolant temp light. If you have factory temperature lights, this will be your “Cold” signal. If you have a temp gauge, this wire is not needed. See the [Engine Section Schematic](#) on [page 32](#).

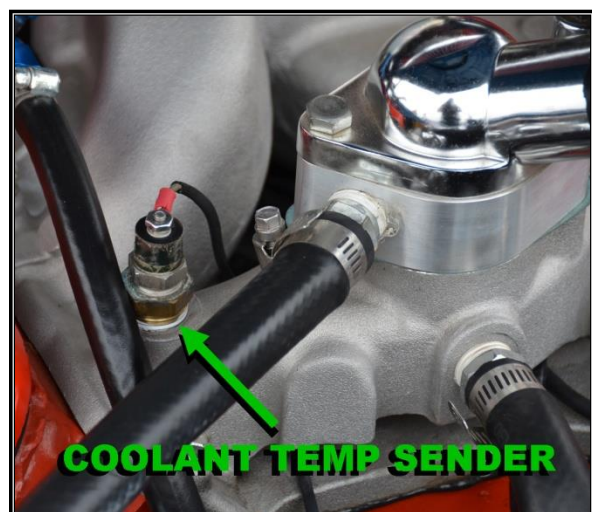


The coolant temp sending unit/switch will have a peg, tab, or threaded post to connect to, as seen in the photos on this page. Terminals and a factory-style connector have been supplied to allow connecting to a factory-style sensor, rollover crimpers will be needed to install this terminal.



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. Liquid/tube sealant or anti-seize can be used on the threads.

- Route the **GREEN #921** and **LT. GREEN #962** (if needed) wires to the coolant temp sensor, cut to length, and crimp on the appropriate terminal for your connection, and connect.



OIL PRESSURE SENSOR

BLUE: 18-gauge wire, printed **[ENGINE SECTION] #922 TO OIL SENDER**, 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 32](#).

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.



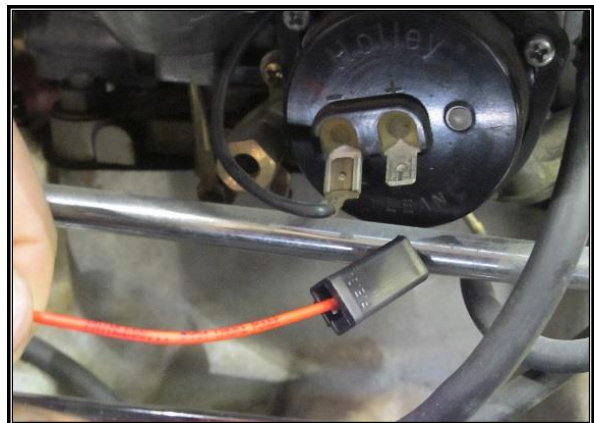
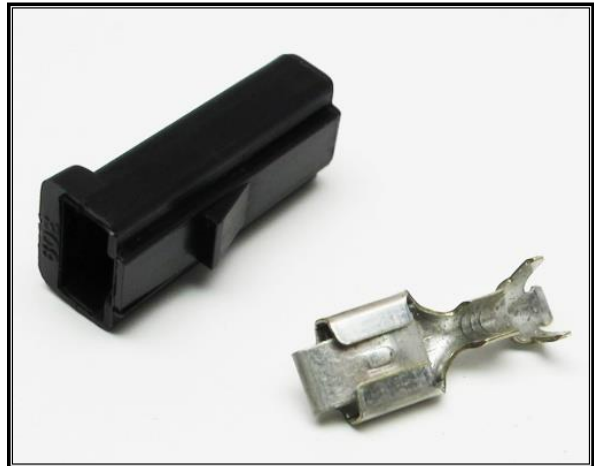
If you have a 2-wire sensor on a newer, fuel-injected, donor engine, it will not work for your pressure gauge. Two-wire sensors on fuel injected engines are for fuel pump control and are not designed for oil pressure gauge readings. These types of sensors are generally found on GM TBI and TPI engines.

ELECTRIC CHOKE

RED: 18-gauge wire, printed [ENGINE SECTION] #954 TO ELECTRIC CHOKE (IGN. POWER), this wire provides a switched ignition power source to the choke from the 15-amp WIPERS 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.

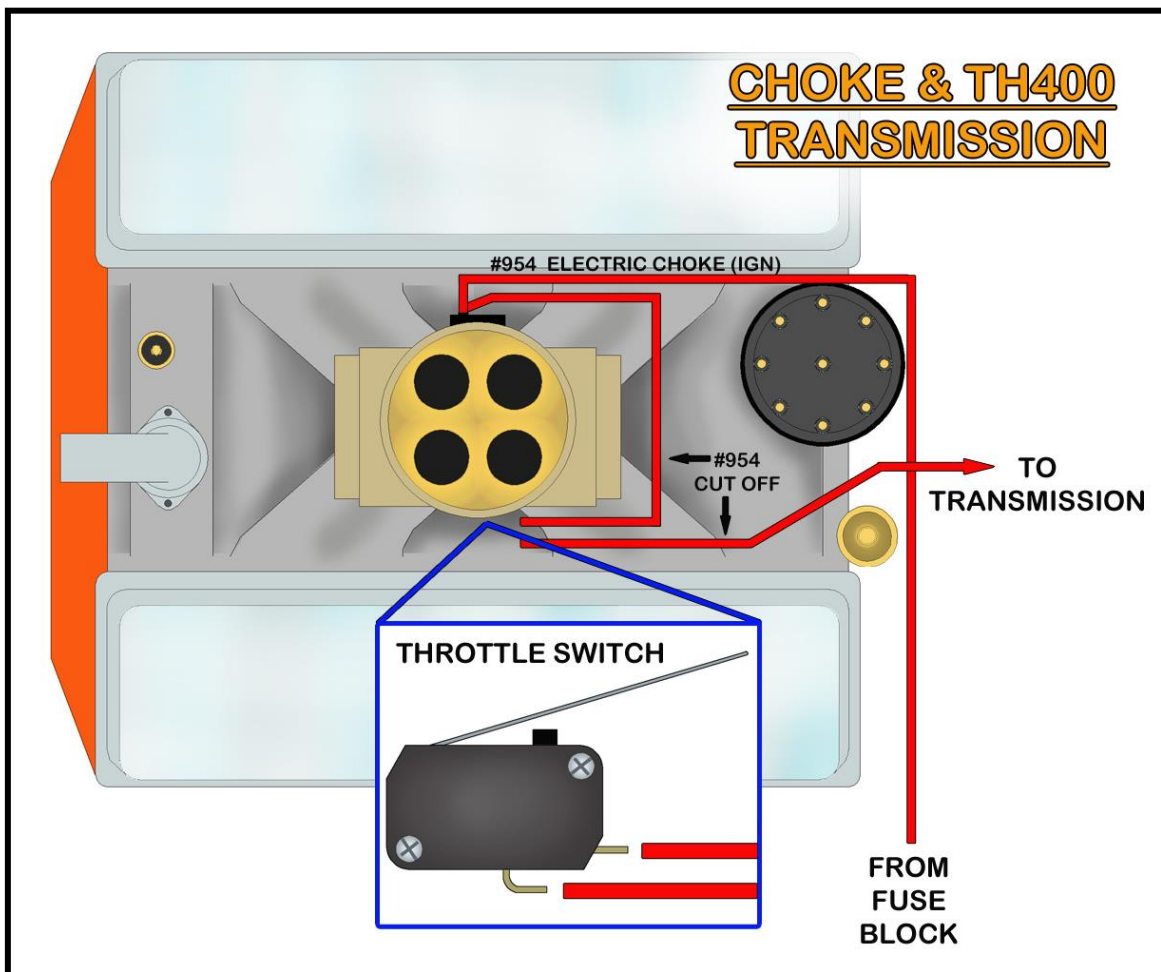
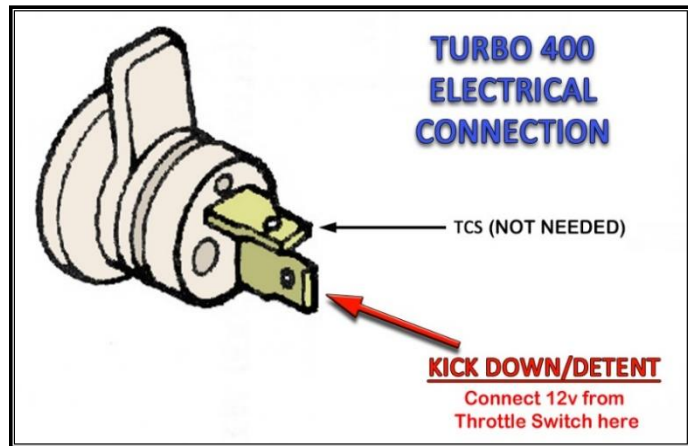
- If you do not have an electric choke, you do not need this wire and it can be capped off and stowed. If you are using a Turbo 400 transmission, see the instructions below before terminating the #954 wire.
- Route the **RED #954** wire to the + terminal of the electric choke, install the supplied terminal and connector, and connect. If you are using a Turbo 400 transmission, and a throttle switch is in the engine compartment, see the instructions below before terminating the #954 wire.
- Double up the cut off piece of #954 at the choke to provide power to the throttle switch.
- Ensure the choke is properly grounded (the ground wire is not supplied in the Painless harness) before continuing with the installation.



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.

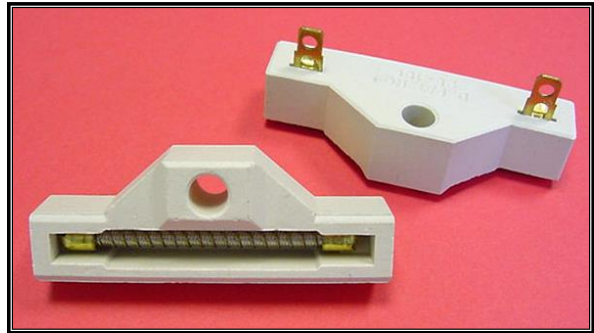
- Double up the cut off piece of **#954** at the choke. Route this cutoff piece of **#954** to one side of the throttle switch and cut to length. Use terminals from the parts kit to connect the wire.
- If you have a factory, accelerator pedal mounted switch, you can use a switched power source inside 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 TO COIL (IGN. POWER), 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 39](#), 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 39](#).
- HEI coils, internally resisted coils, and most aftermarket ignition boxes 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 39](#).
- 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 40](#) 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.

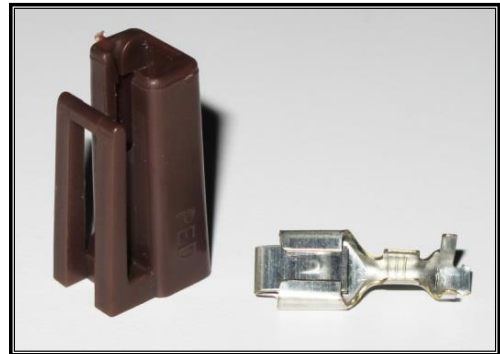
Terminals and a factory-style connector, seen in the photo to the left, have been supplied to allow connecting to the + side of an HEI Coil.

Tachometer

PURPLE/WHITE: 18-gauge wire, printed **[ENGINE SECTION] #923 TACH SIGNAL (COIL-)**, 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 32](#). 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:

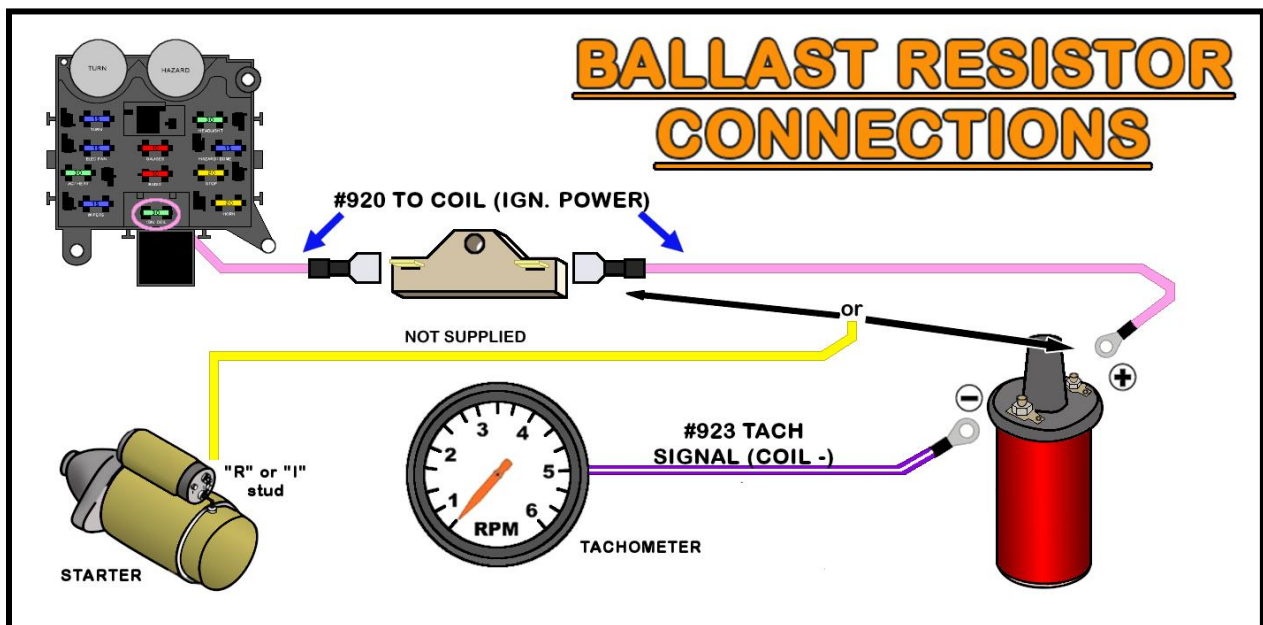
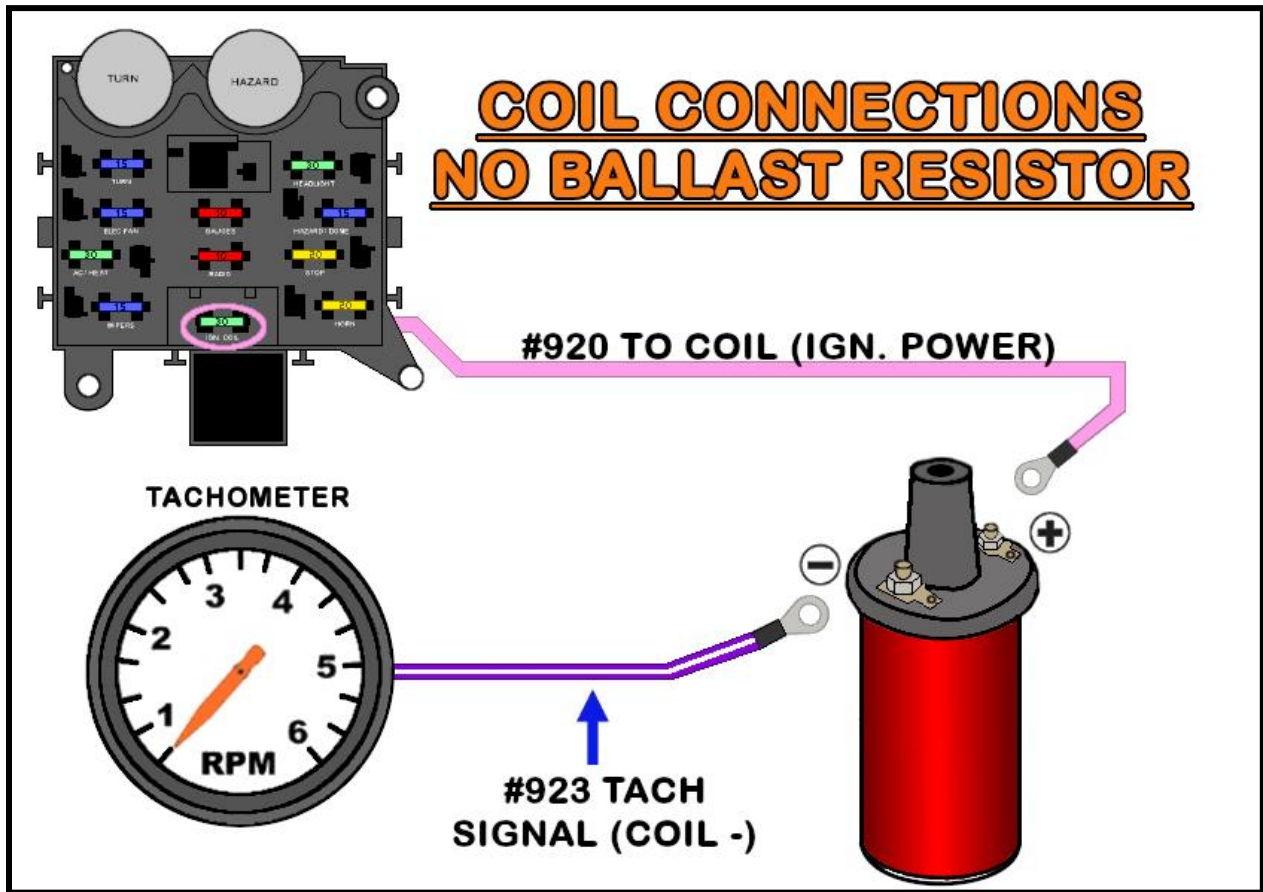
- Installs with an HEI distributor, or external coil ignition systems, require the **#923** wire to be connected to the negative (-) side of the coil. Refer to the diagrams on [pages 39 – 40](#) for proper connection.

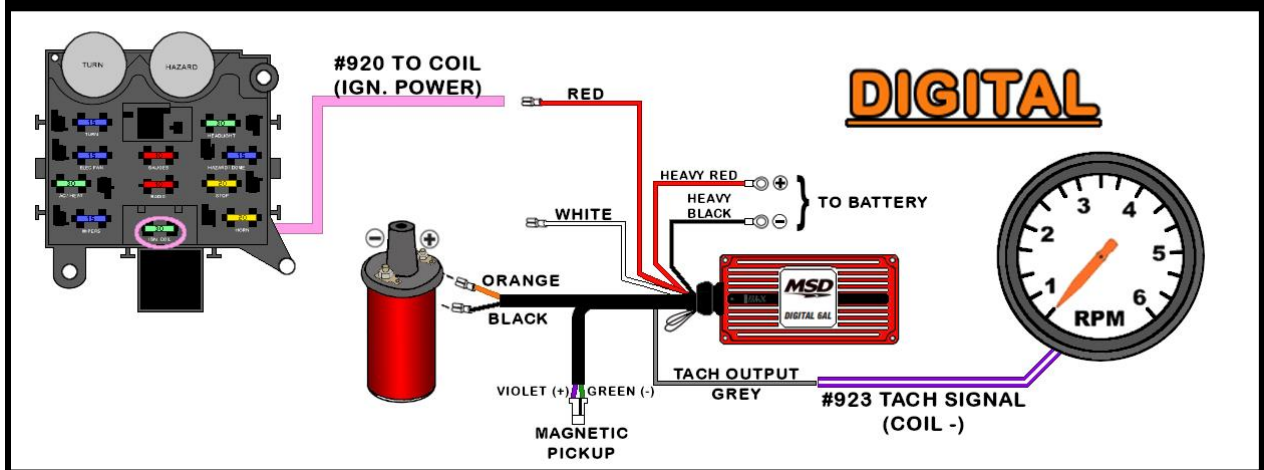
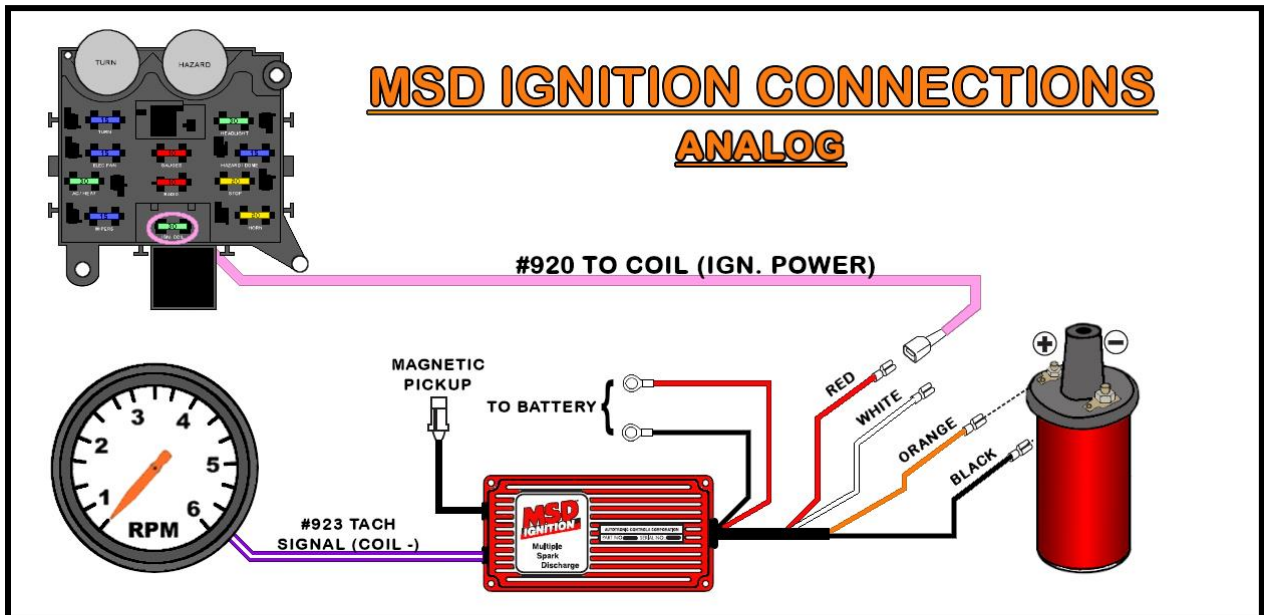
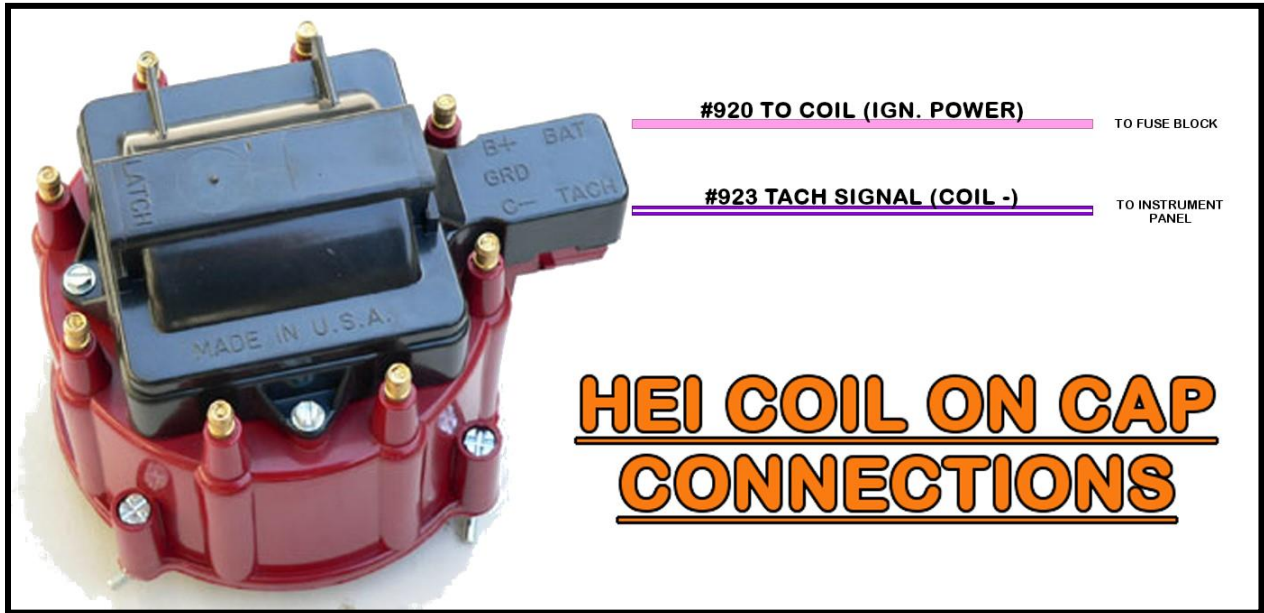
Terminals and a factory-style connector are supplied to allow connecting to the (-) side of an HEI Coil (seen in the photo at right). Rollover crimpers are needed to install this terminal. Insulated terminals in the parts kit are supplied to make other connections.



- 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 40](#) 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.



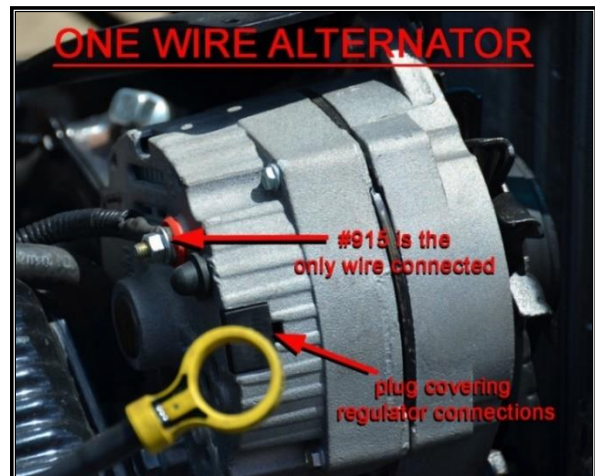


- If the rubber boot is being used, the end will need to be cut, as shown in the photo to the right, to allow the large gauge wire to pass through.
- If the heat shrink is being used, slide it onto the **#915** wire, followed by the rubber boot. A small amount of lubricant such as WD-40 may be applied 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, one has been provided separately in the kit:



BLACK: 12-gauge wire, printed **#971 ALTERNATOR GROUND**, this wire provides a ground source for the alternator.

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 **Voltage Reg. Section**. These wires are:

RED: 16-gauge wire, printed **#995 ALT. REGULATOR POWER (BATTERY)**, 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 30-amp HEADLIGHT fuse. **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: 18-gauge wire, printed **#914 TO VOLTAGE REGULATOR (IGN. POWER)**, 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 90](#).

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.**

GENERAL MOTORS EXTERNALLY REGULATED ALTERNATORS

The factory alternator from 1963-1966 was externally regulated. The two wires, **RED #995 ALT. REGULATOR POWER (BATTERY)** and **BROWN #914 TO VOLTAGE REGULATOR (IGN. POWER)**, connect to the regulator. Included in the Painless kit is an Alternator Pigtail that will connect the regulator to the alternator. The pigtail consists of two wires:

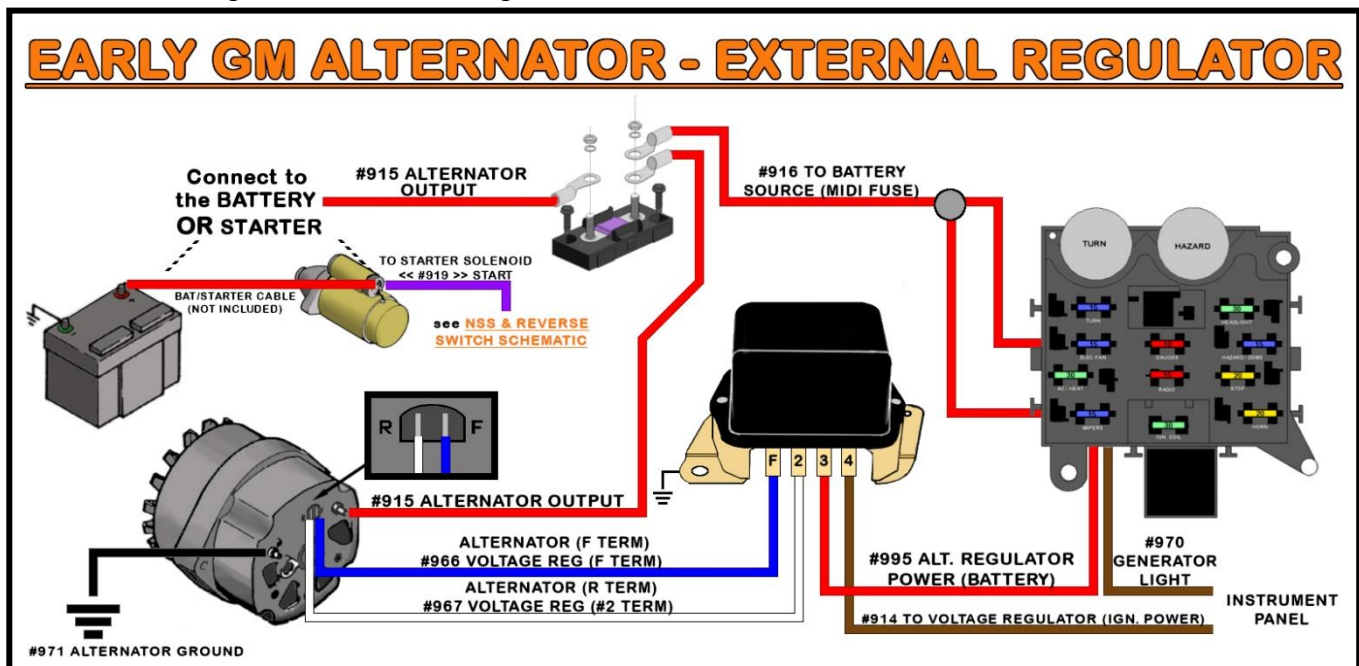
BLUE: 16-gauge wire, printed **ALTERNATOR (F TERM) << #966 >> VOLTAGE REG. (F TERM)**, this wire connects the “F” terminal on the regulator to the “F” terminal on the alternator.

WHITE: 16-gauge wire, printed **ALTERNATOR (R TERM) << #967 >> VOLTAGE REG. (#2 TERM)**, this wire connects the “2” terminal on the regulator to the “R” terminal on the alternator.

- 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.
- Next, install the Alternator Pigtail by connecting the “F” terminal on the regulator to the “F” terminal on the alternator using **BLUE #966** and the “2” terminal on the regulator to the “R” terminal on the alternator using **WHITE #967**.
- The last connection will be connecting a wire from the “G” post on the alternator to a chassis ground source using **BLACK #971**.



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.

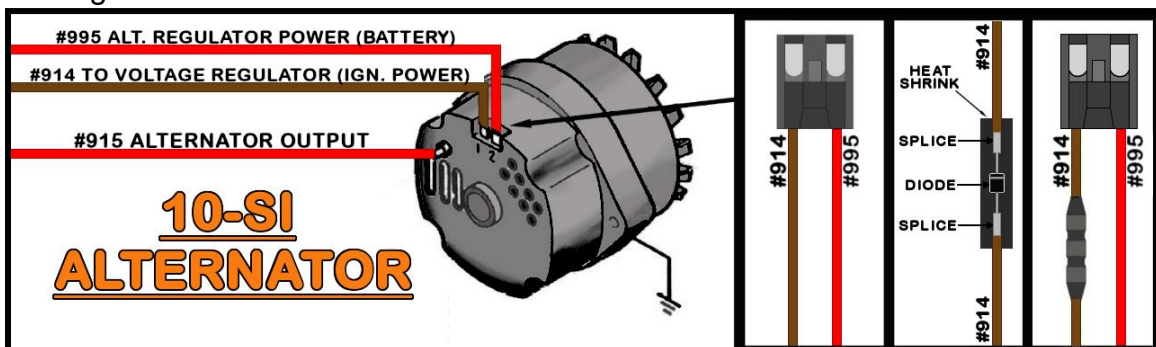
The two wires, **RED #995 ALT. REGULATOR POWER (BATTERY)** and **BROWN #914 TO VOLTAGE REGULATOR (IGN. POWER)**, connect to the two posts on the back of the alternator.

- 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.

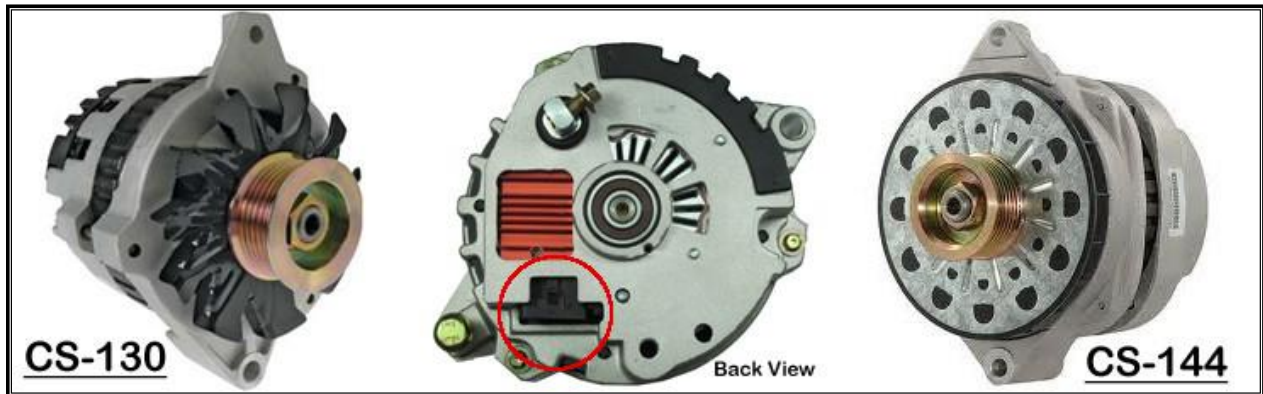


You may experience engine run-on. This is caused when the alternator back feeds voltage down the **#914** wire after the key has been turned off. This allows the ignition system to still function causing the engine to continue running even though the key is turned off or even removed from the ignition. 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.



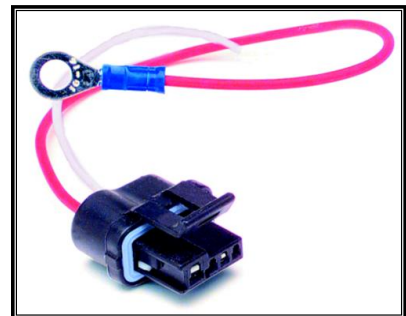
GENERAL MOTORS CS-130 SERIES ALTERNATORS



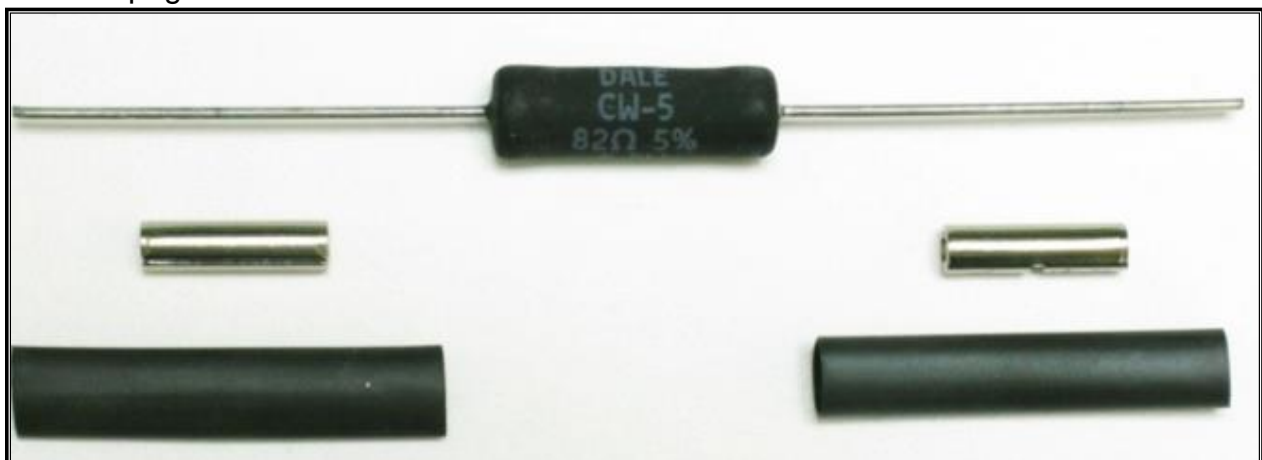
The CS-130, CS-121, and CS-144 alternators closely resemble the SI series alternators. They have an external fan behind the pulley and, generally, a plastic casing on the side and back. These alternators have a 4-pin, sealed connector, shown in the photo below and circled in the image above. The regulator 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 ALT. REGULATOR POWER (BATTERY)** and **BROWN #914 TO VOLTAGE REGULATOR (IGN. POWER)**, 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.

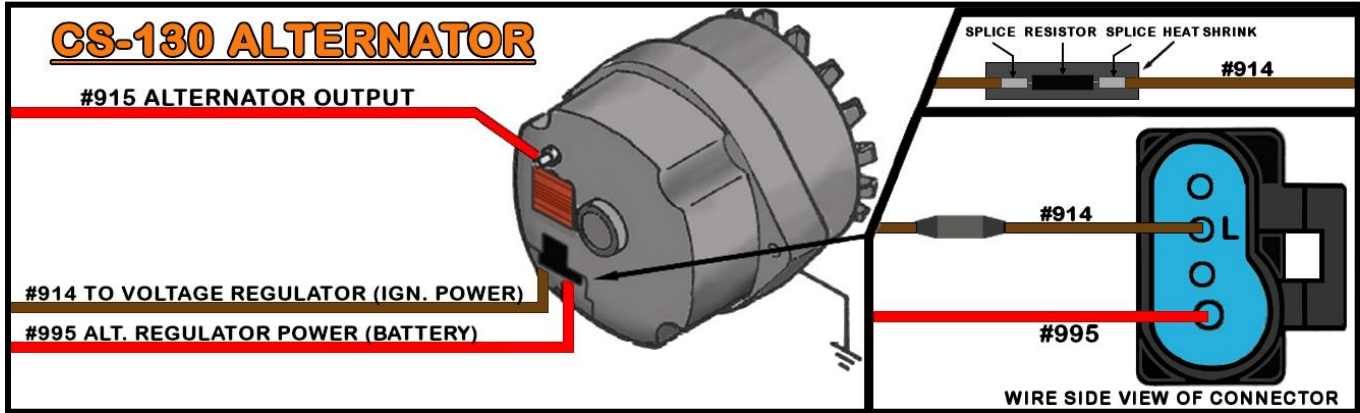


- The CS-130 alternator requires a resistance on the **BROWN #914** wire. Without this resistance, the regulator on the alternator will burn up. A resistor, splices, and heat shrink, seen below, are provided in the "ALTERNATOR" bag kit. The resistor* will simply need to be installed inline on the **#914**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

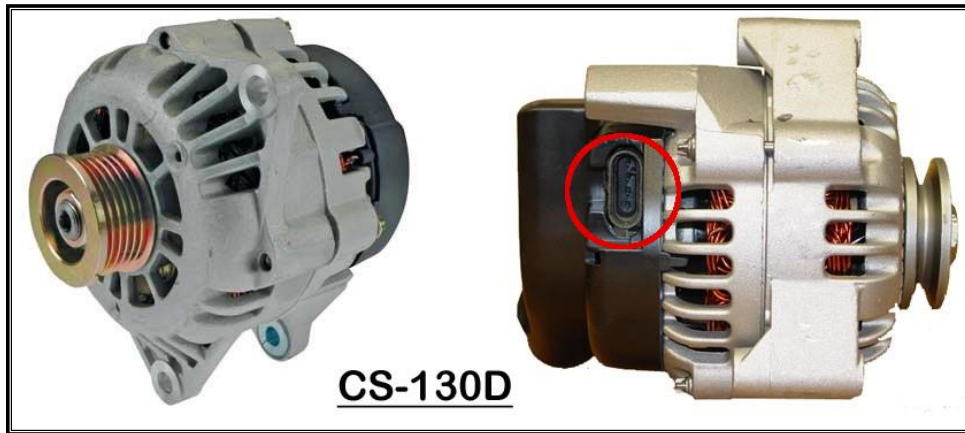


*In factory applications where this alternator was used, a charge indicator light created the necessary resistance. **For those with an instrument panel with a charge indicator light, the resistor is not needed.** A charge indicator light is explained in more detail on [page 82](#).

- 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 **Voltage Reg Section**: **RED #995 ALT. REGULATOR POWER (BATTERY)** and **BROWN #914 TO VOLTAGE REGULATOR (IGN. POWER)**. 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.

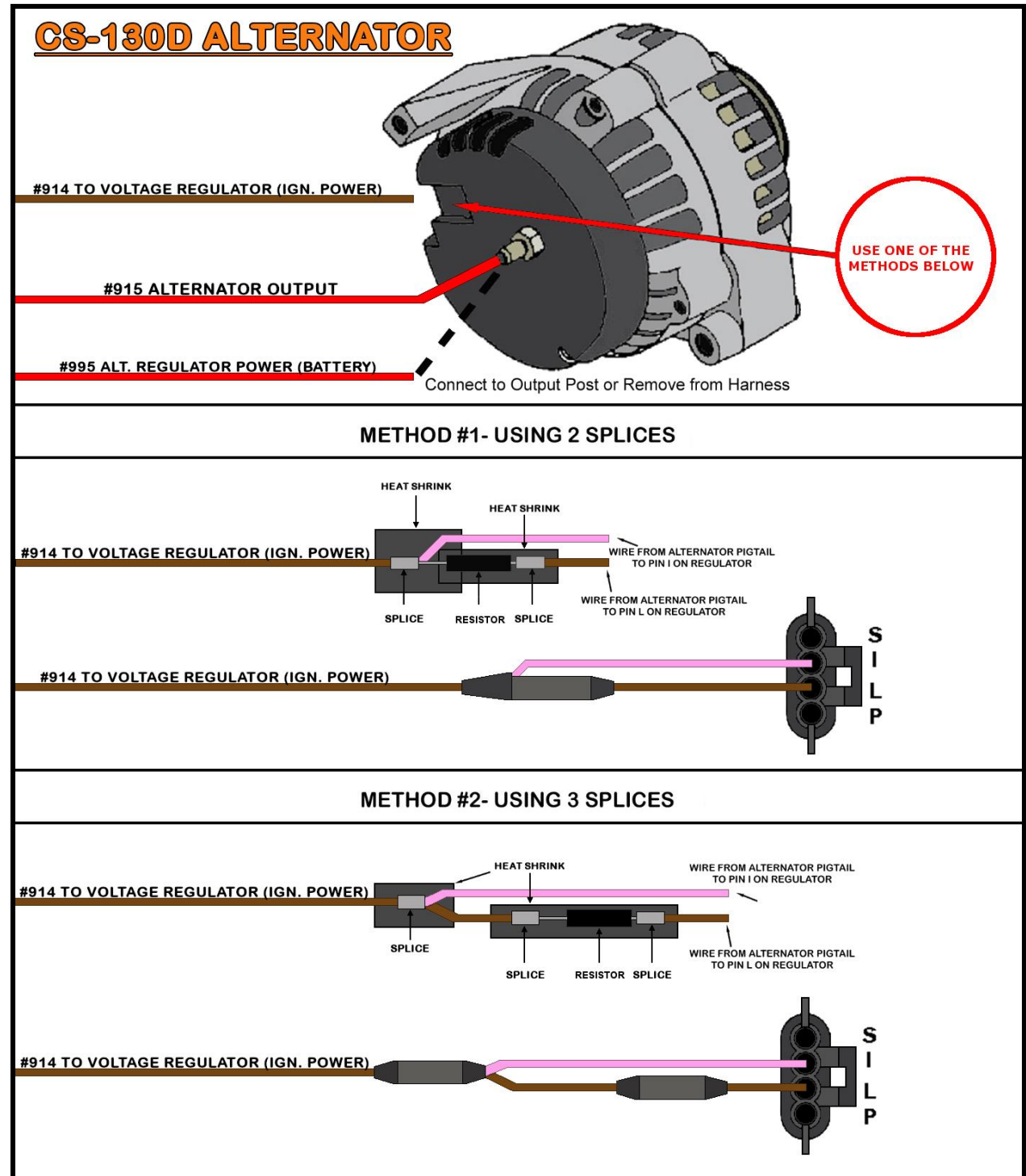
- Route the **BROWN #914** to the connector on the alternator and cut to length. Strip $\frac{1}{4}$ " of insulation.
- The factory, 4-pin alternator connector from a factory GM harness or a CS-130D pigtail purchased from Painless (**part #30705**; see photo), needs to be used.
- The CS-130D alternator 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.** A charge indicator light is explained in more detail on [page 82](#).

- 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 TO BATTERY 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.

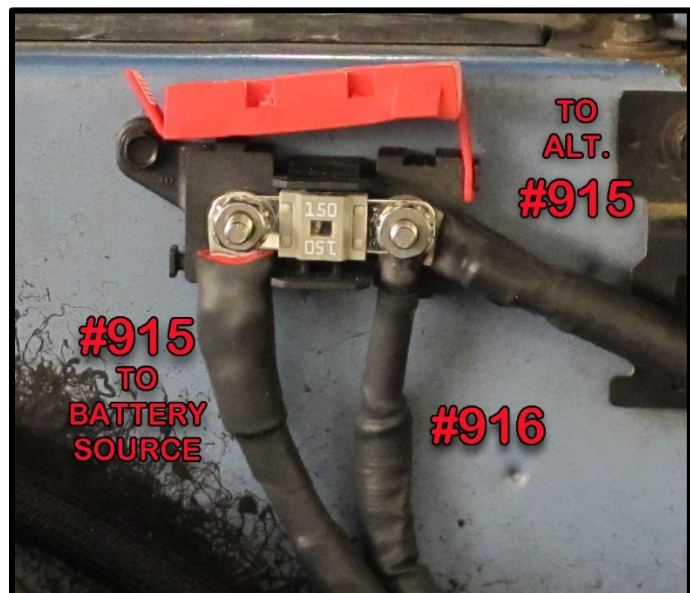
RED: 6-gauge wire, rolled separate from the harness, with a tag reading **#915 ALTERNATOR OUTPUT**, this wire provides power from the alternator to the battery through the MIDI fuse. See [Early GM Alternator – External Regulator Schematic](#) on [page 43](#). The other end of this wire connects to the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

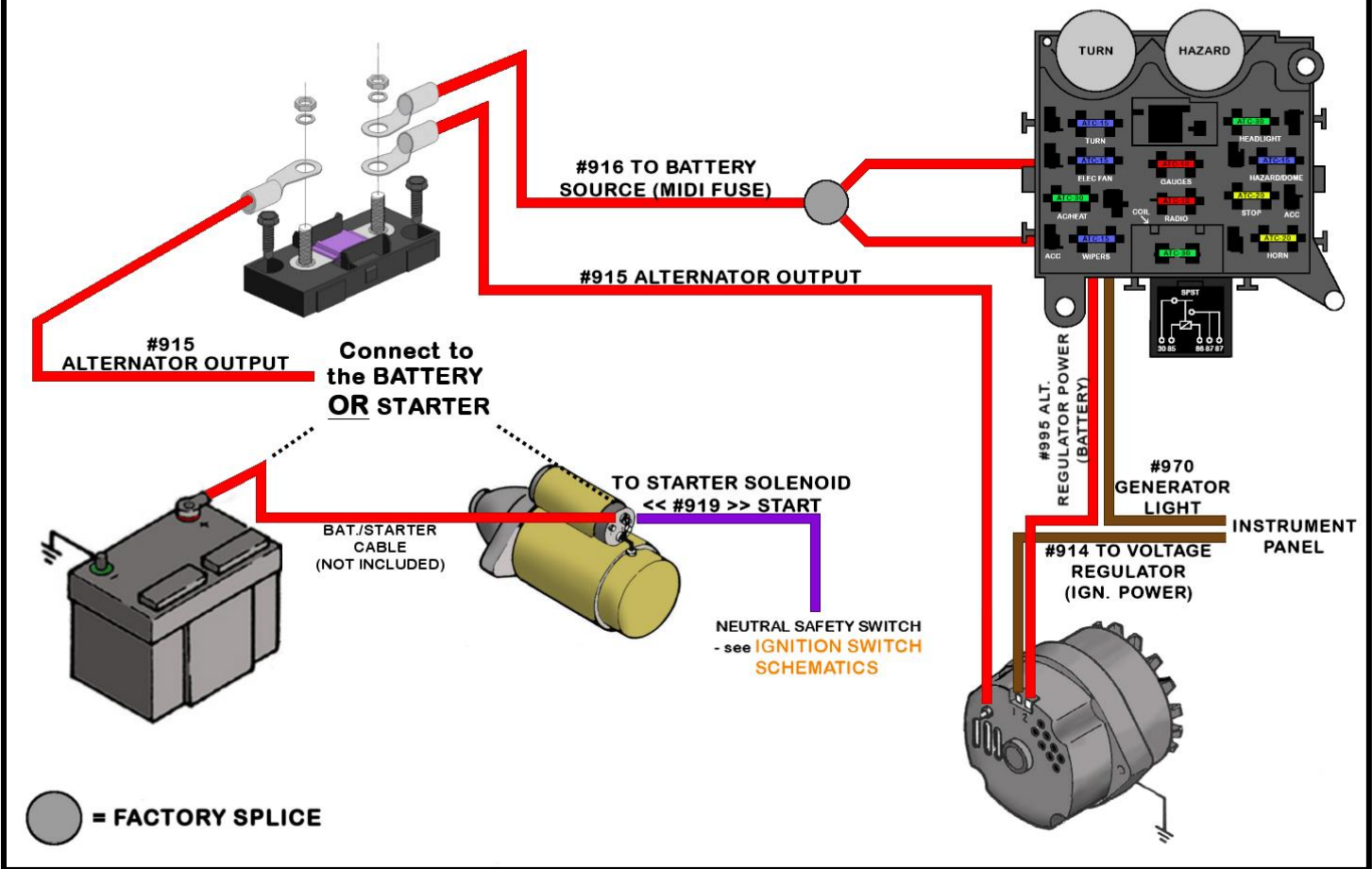
PURPLE: 14-gauge wire, printed **[IGNITION SWITCH] START << #919 >> [ENGINE SECTION] TO STARTER SOLENOID “S”**, this wire will supply the solenoid with a switched power source from the ignition switch. This power will activate the starter solenoid causing it to turn the engine over for startup. This 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



NOTES:

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 TO FUEL SENDER**, 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.

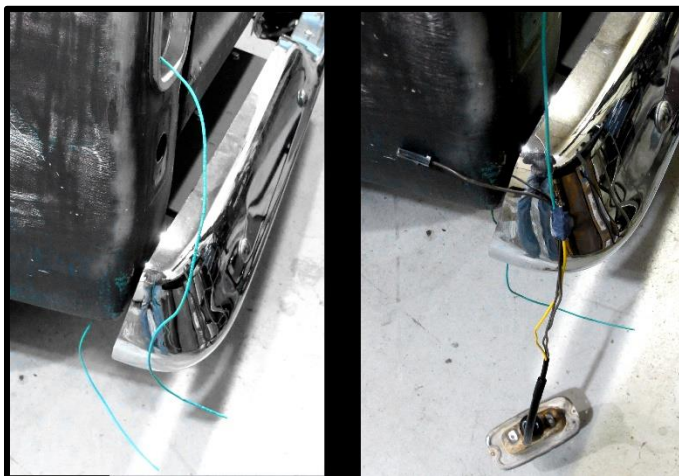
If you do not have a ground tab, run a ground wire from a clean chassis ground source to one of the mounting bolts of the sending unit. Do not rely on a ground through the mounting of the sending unit to the tank.

TAIL & TURN / BRAKE LIGHT SOCKETS

1963 -1966 C10 & GMC trucks had a single assembly with a dual filament bulb to serve for the stop, tail, and rear turn signal. For those with a Fleetside truck, new sockets have been provided for these lights (see below). Stepside vehicles will need to reuse the factory sockets.



- Remove the taillight buckets. Install a new 1157 bulb (not included) into the new socket, and then install the socket into the bucket.
- When installing the new sockets, it may be necessary to use a guidewire to route the socket wires through the body to the main harness.
- Use a cut-off piece of wire and route it through the empty hole in the tail where the taillight buckets were removed, to the bottom of the vehicle.
- Then tape the wires of the new socket to it and use it to guide the wires through the body.
- Re-install the taillights and move to the underside of the vehicle to make the connections.



LEFT TURN / BRAKE LIGHTS

1963 -1966 C10 & GMC trucks had a single assembly with a dual filament bulb to serve for the stop, tail, and rear turn signal. First, find the wire for the left turn/brake signal.

YELLOW: 16-gauge wire, printed **[TURN SIGNAL SWITCH] << #949 LEFT REAR TURN SIGNAL >> [TAIL SECTION]**, 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 the [Tail Section Schematic](#) on [page 57](#).

- Your factory or aftermarket, reverse-light sockets must be re-used; you will need to splice the Painless harness wires to the wires coming from your sockets.
- Loosely route the **YELLOW #949** turn signal wire to the turn signal.
- Cut the wires to length and connect to the **YELLOW** wire of the pigtail. Consult the manufacturer's instructions if you are using aftermarket assemblies. Insulated bullet & socket terminals are provided to make these connections.

LEFT TAIL LIGHTS

As stated before, your rear exterior lights have one housing/assembly with a dual filament bulb. The taillight connections attach to the dimmest filament(s) of this type of housing/assembly. There are three wires for the taillights and license plate light coming from the headlight switch. Locate the appropriate wire for the left taillight:

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

- Loosely route the **BROWN #929** taillight wire to the taillight
- Cut the wires to length and connect to the **BROWN** wire of the pigtail. Consult the manufacturer's instructions if you are using aftermarket assemblies.

LEFT REVERSE LIGHT

While reverse lights were not standard on 1963 – 1966 GM trucks, they were offered as an add-on from the factory. Given their convenience and availability, many trucks have been outfitted with reverse lights. As such, this Painless kit provides a power wire for the reverse lights:

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 or aftermarket, reverse-light sockets must be re-used; you will need to splice the Painless harness wires to the wires coming from your sockets.
- Loosely route the **#956** reverse light wire to the reverse light.
- If the socket requires a ground, one must be supplied by the installer. Do so now.
- Cut the wires to length and connect to the appropriate wire in the assemblies. Consult the manufacturer’s instructions if you are using aftermarket assemblies. Insulated bullet & socket terminals are provided to make these connections.
- If your vehicle does not have reverse lights, tape both **LT. GREEN #956** wires up into the harness, these wires will not be used. The wires only have power if they are connected to a reverse switch. The wires can also be removed from the harness if they are not being used.

LICENSE PLATE LIGHT

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

BROWN: 18-gauge wires, printed **[TAIL SECTION] #929 TO LICENSE PLATE**, this is a power wire for the license plate light function and is separate from the main harness. This wire comes with a connector preinstalled so that it can be plugged into the connector of the left tail socket ([see page 54](#)). This wire has power anytime the headlight switch is in the park light ON or headlight ON positions.

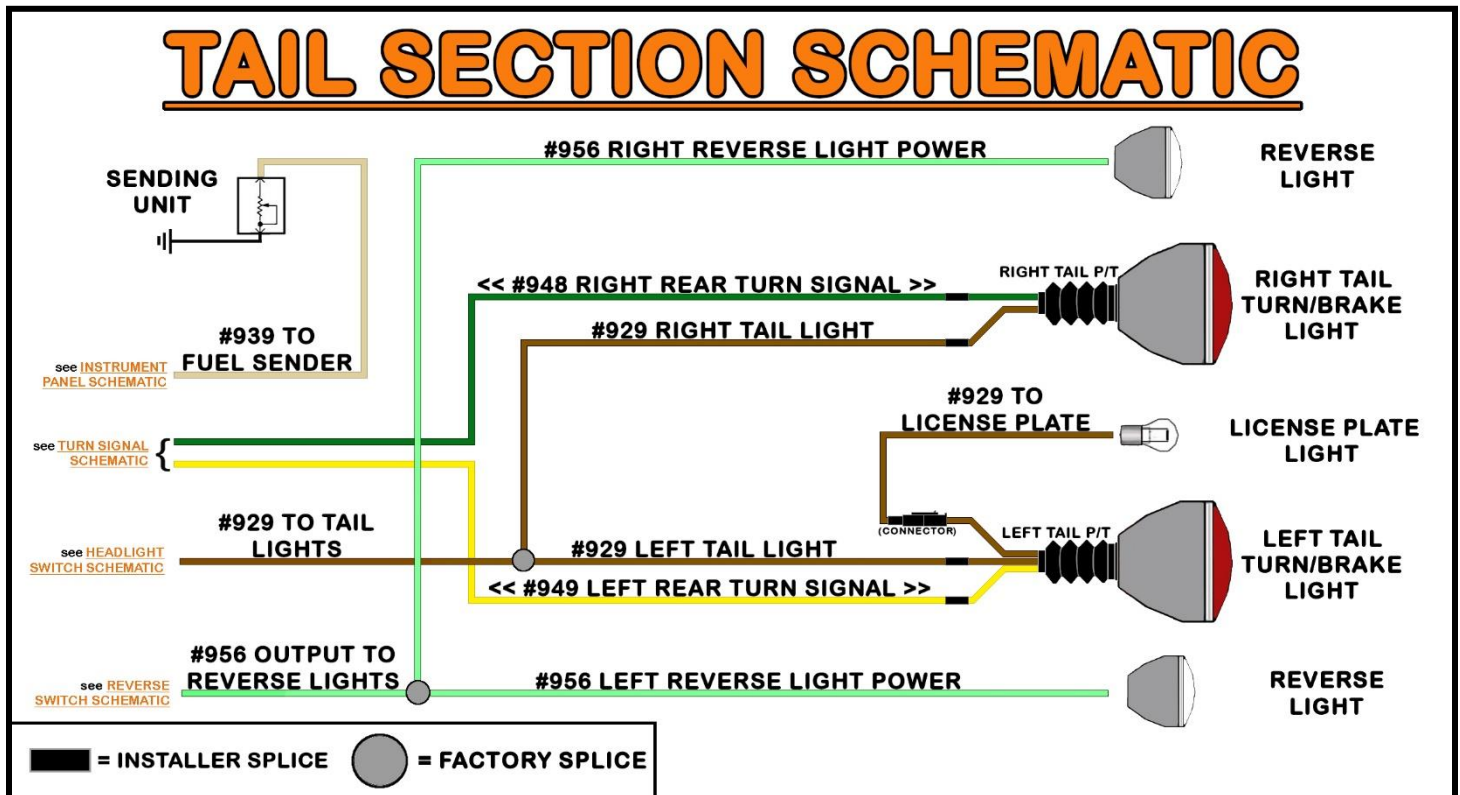
- Plug the **BROWN #929** wire into the left tail socket.
- Then route the **BROWN #929** wire to the license plate light.
- Your factory light socket must be re-used; you will need to splice the Painless harness wires to the factory wires coming from your socket. Insulated bullet & socket terminals are provided to make these connections.



RIGHT TURN/ BRAKE & REVERSE 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 [TURN SIGNAL SWITCH] << #948 RIGHT REAR TURN SIGNAL >> [TAIL SECTION], 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](#) below.



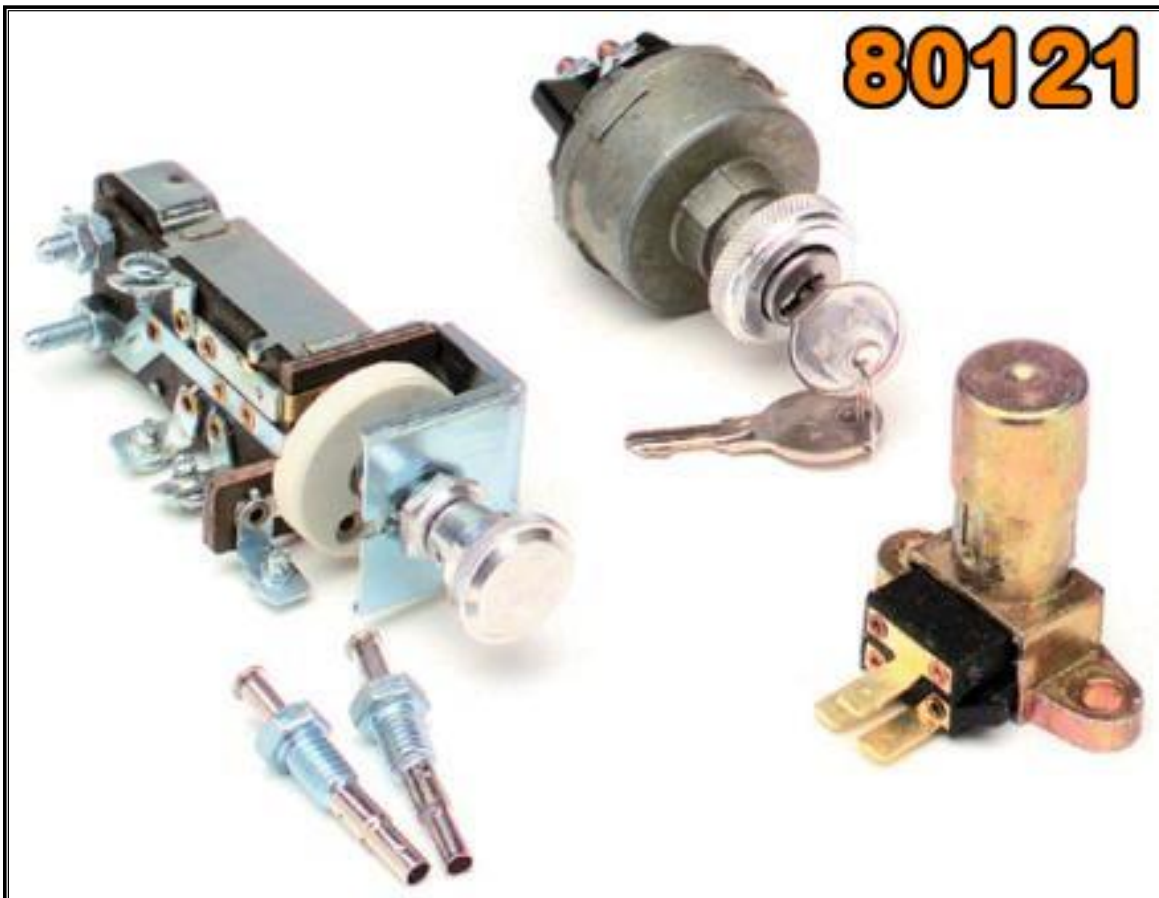
INTERIOR HARNESS

Now that the Engine Section, Start/Charge Section, and Tail Section are wired, move to the interior of the vehicle.

Before you make any connections on the inside of the vehicle, let us address the component switches: like the headlight switch, brake switch, turn signal switch, ignition switch, and headlight dimmer switch.

With older vehicles and hot rods in general, many times switches are replaced by what is available or what previous owners had lying around. In some cases, these switches are not marked and there is no idea what pins on the switch controls each function. If you are unsure about the positions or functionality of the switches currently in your vehicle and are not up to the task of figuring out what each pin does, Painless offers several solutions. We have switch kits and sell switches individually.

A common switch kit that many people choose is **Painless part #80121**. This kit provides you with a new headlight switch, new dimmer switch, door jamb switches, and new ignition switch, all marked with each terminal's function. Part numbers for individual switches are given in each individual section.



DIMMER SWITCH

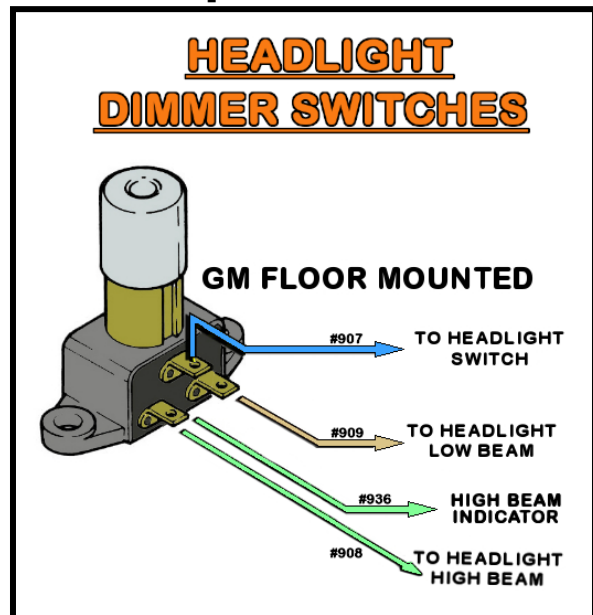
The first connection is the group of three wires that belong to the **Dimmer Switch Section**. These three wires provide power to the headlights for low beam and high beam power. These wires can be seen in the schematic below. They are:

LT. BLUE: 14-gauge wire, printed **TO DIMMER SWITCH << #907 >> [HEADLIGHT SWITCH] OUTPUT TO DIMMER 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 **[HEADLIGHT SECTION] HEADLIGHT LOW BEAM << #909 >> TO DIMMER SWITCH**, this wire provides power from the dimmer switch and into a splice with two other wires. The other two wires feed power to each low beam of the headlights, as seen in the [Front Lighting Section Schematic](#) on [page 31](#). 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 **[HEADLIGHT SECTION] HEADLIGHT HIGH BEAM << #908 >> TO DIMMER SWITCH**, this wire provides power from the dimmer switch and into a splice with 2 other wires. The other wires feed power to each high beam of the headlights as seen in the [Front Lighting Section Schematic](#) on [page 31](#). 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.

LT. GREEN: 14-gauge wire, printed **TO DIMMER SWITCH << #936 >> [INSTRUMENT PANEL] HIGH BEAM INDICATOR**, this wire provides power to the high beam indicator. 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.

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. So, **Passenger Side Courtesy Lights** are covered on [page 99](#).

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 the next page, these wires are:

ORANGE: 18-gauge, printed **[COURTESY SECTION] #971 DRIVER COURTESY LIGHT**

(POWER B+), this wire provides power from the 15-amp HAZARD/DOME fuse on the fuse block. This fuse is battery powered and always has power.

WHITE: 18-gauge, printed **[COURTESY SECTION] #961 DRIVER 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.

- If you do not have under-dash courtesy lights, sockets and terminals (see above) have been provided in the kit.
- 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. You may also use screws that hold existing trim. **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. Once mounted, route the cut-off pieces of **WHITE #971** to the driver side door jamb switch, if one has been installed.



DRIVER DOOR JAMB SWITCH

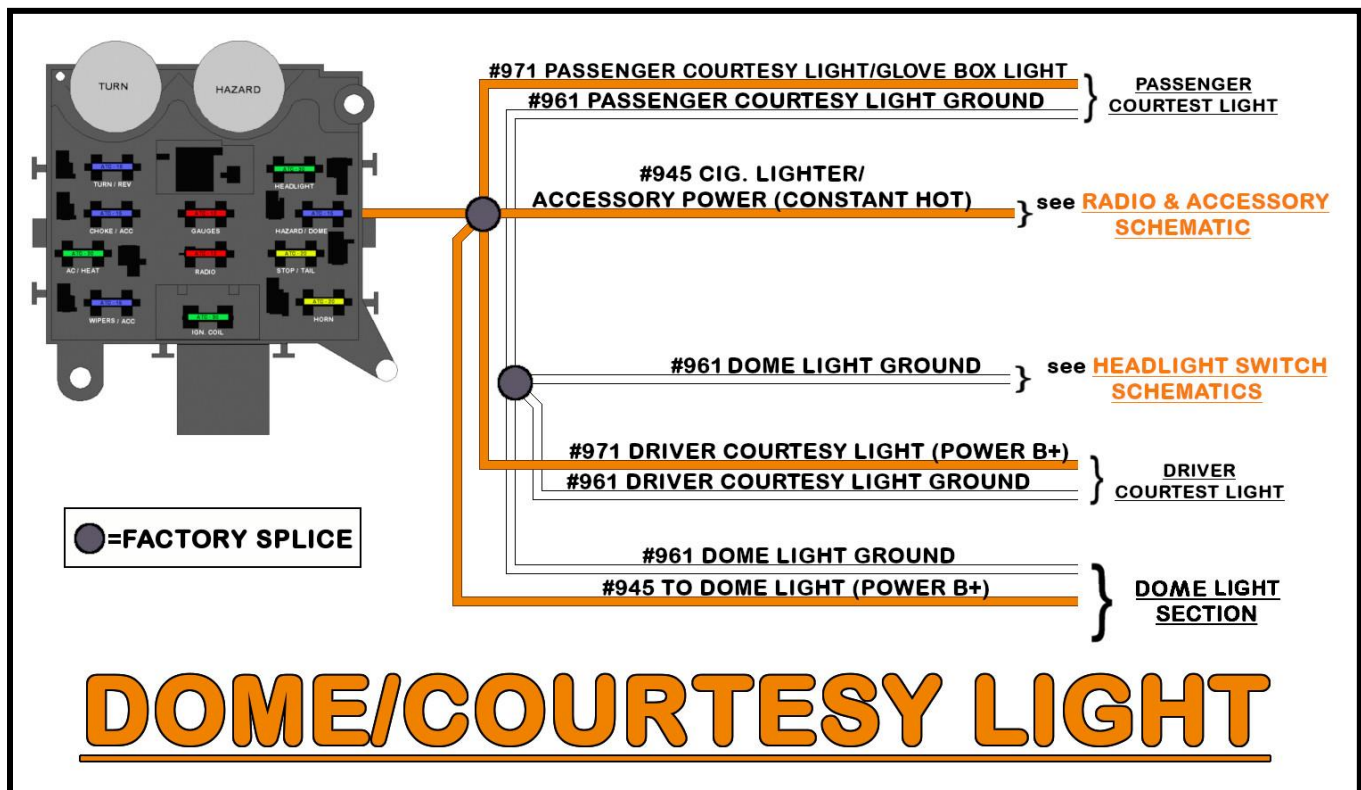
1963-1966 GM pickups did not come equipped with door jamb switches. However, door jamb switches are a popular, aftermarket addition. As such this kit provides you with ample wire length to make this connection from the courtesy light.

Painless offers GM style jamb switches as part #80170. Please note that **part #80170** is for 1 switch, and each door requires its own switch.

The door jamb switch provides 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.

As stated on the previous page, if you have installed door jamb switches, the ground source will come from the cut-off portion of **WHITE #961** that was doubled up at the courtesy light.

- 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 two tabs, it does not matter which tab the **#961** connects to.



HEADLIGHT SWITCH

The headlight switch's connections send power to the headlights, front park/marker lights, rear taillights, 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 seven wires are:

ORANGE: 14-gauge wire, printed **[HEADLIGHT SWITCH] #959 TAIL LIGHT POWER INPUT (POWER B+)**, this wire supplies constant battery power for the park/taillights as well as for the gauge backlighting. This wire comes from the 20-amp HORN fuse on the fuse block.

PURPLE: 16-gauge wire, printed **[HEADLIGHT SWITCH] #927 TO 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 TO REAR TAIL LIGHTS**, this wire supplies power to the taillights. 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 **TO DIMMER SWITCH << #907 >> [HEADLIGHT SWITCH] OUTPUT TO DIMMER 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.

GREY: 16-gauge wire, printed **[HEADLIGHT SWITCH] #930 TO 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.

RED: 14-gauge wire, printed **[HEADLIGHT SWITCH] #928 TO HEADLIGHT SWITCH (POWER B+)**, 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.

WHITE: 18-gauge wire, printed **[HEADLIGHT SWITCH] #961 TO DOME LIGHT GROUND**, this wire provides a ground source for the interior dome/courtesy lights.

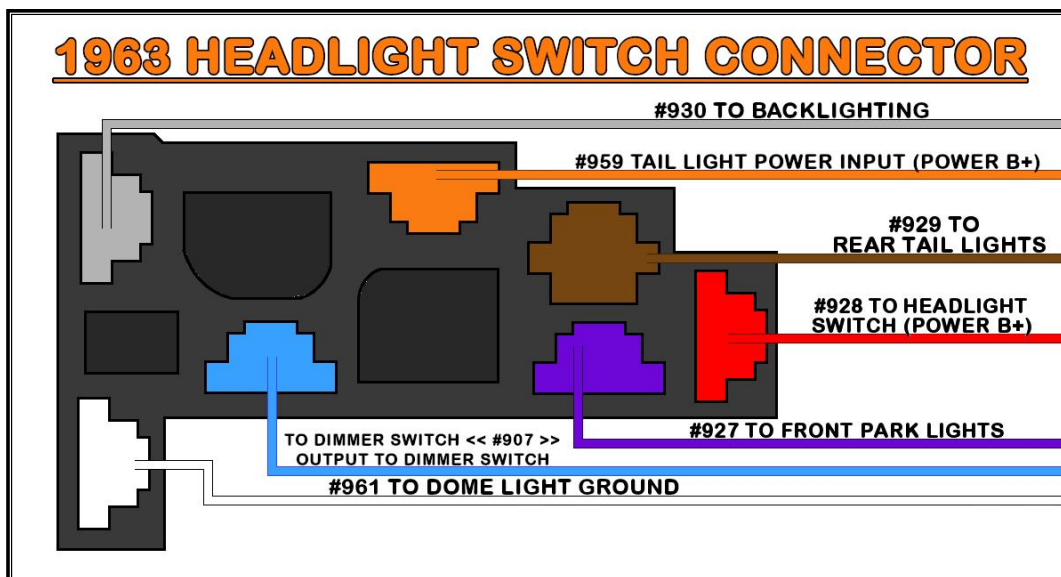
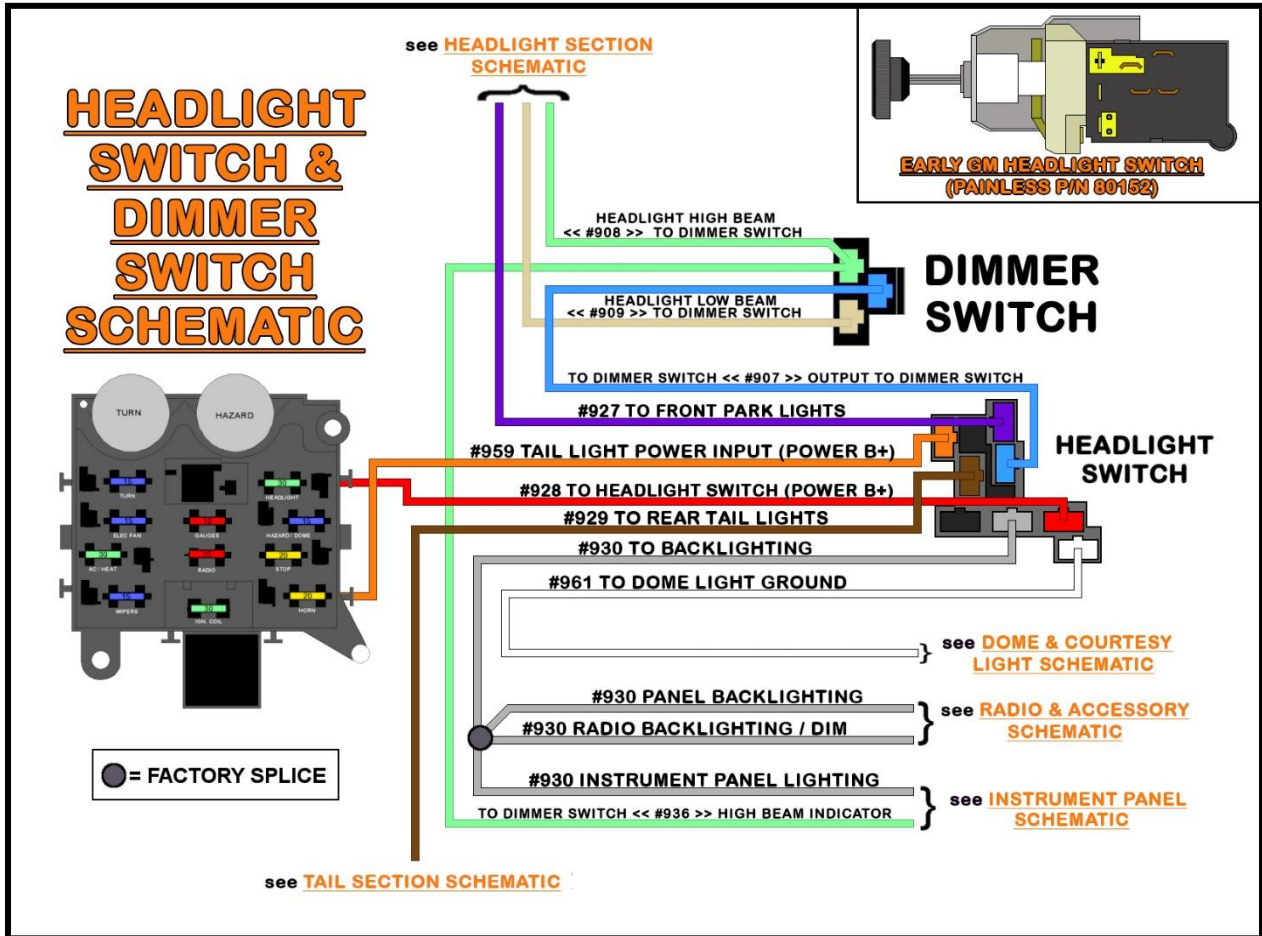


- Route the wires to the headlight switch and connect them. A connector and terminals, seen to the right, have been pre-installed for those with factory 64 – 66 GM switches. If you need a new switch, [Painless offers P/N 80152](#).

- Those using the 1963 switch will need to unpin the pre-installed connector. Your factory connector must be re-used. If you do not have a factory connector, single-pin connectors from the parts kit can be used. A proper wire connection to a 1963 headlight switch can be found on the next page.

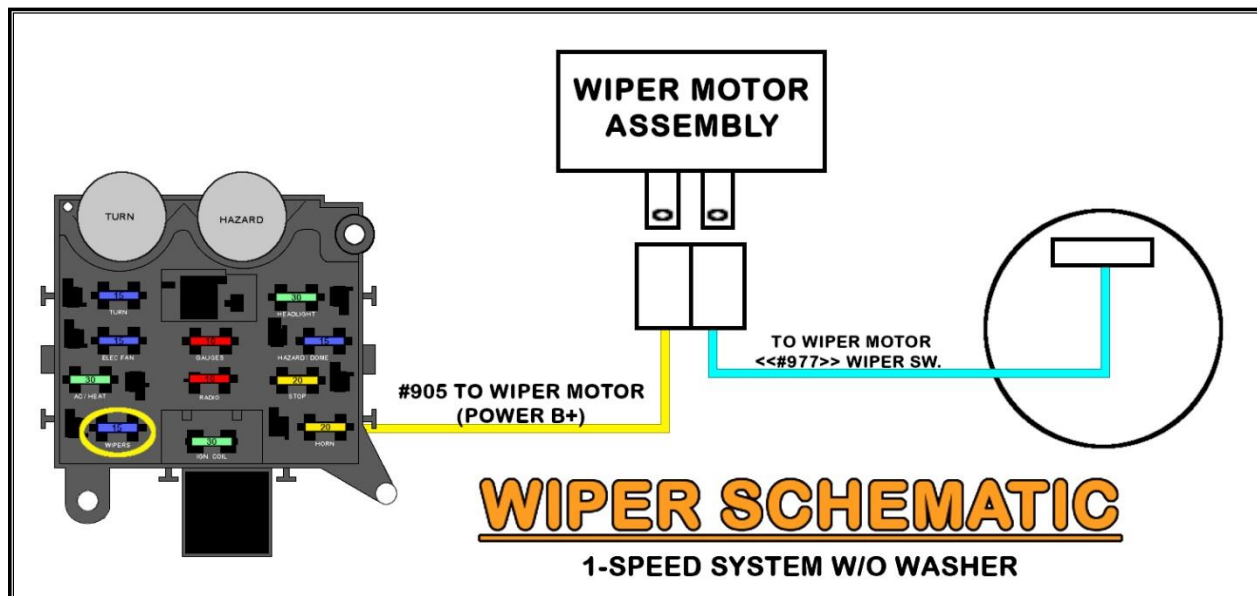
The use of some or all these wires will depend on the headlight switch you use. Factory-style switches will use all wires, whereas most universal switches may not require all of them. Diagrams have been provided of the most common switches, along with universal switches that Painless also offers.

If your switch does not have a separate terminal for gauge backlighting, connect wire #930 with the taillight wire #929 at the switch. If your switch does not have separate tail and park terminals, #927 and #929 wires will connect at the switch. In the case you do not have a backlighting terminal and do not have separate tail/park terminals, all three wires #930, #927, and #929 will all share the same terminal on the switch.



WIPER SWITCH

The **Wiper Switch Section** consists of a single wire that runs directly between the switch and the motor. If you do not have a wiper system, this wire can be removed from the harness. The wiper motor and washer pump are covered on [page 95](#).



LT. BLUE: 18-gauge wire, printed **WIPER SW. << #977 >> [WIPER MOTOR SECTION]** TO WIPER MOTOR, 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.

The 1963 – 1966 pickups came with several wiper system set-ups: single or dual speed and with or without a washer pump. The most basic system (1-speed w/o washer) has a one-terminal switch and only requires the **LT. BLUE #977** wire. For more complex systems you will need to use the additional Wiper Pigtail included in the Painless kit (seen to the right). The wires in this pigtail are:



BLACK/YELLOW: 16-gauge wire, not printed, **WIPER MOTOR TO WASHER PUMP**, this is a small jumper wire that provides power from the wiper motor to the washer pump.

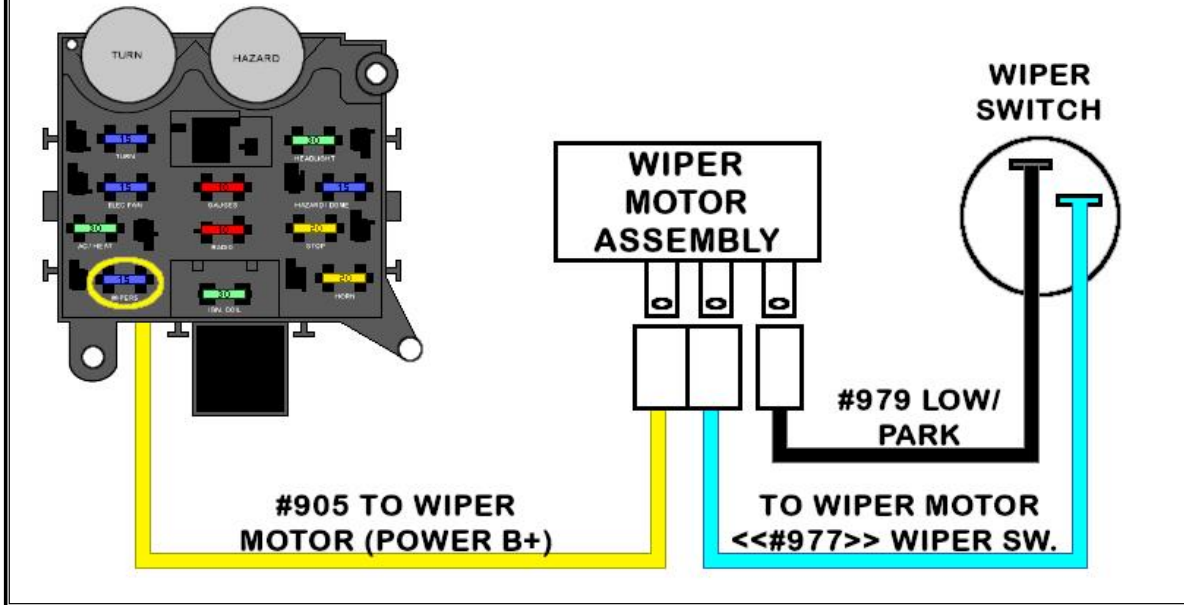
BLACK: 16-gauge wire, printed **#979 LOW/PARK**, this is the low/park signal from the wiper switch to the motor in a dual speed system.

BLUE: 16-gauge wire, printed **#984 WASHER PUMP**, this is the pump control wire coming from the wiper switch.

- Route the necessary wires to the wiper switch and connect them. Refer to the [Wiper System Schematics](#) on this page and the next that best represents your system.
- Also, refer to your factory harness or schematic for the correct switch pinout.

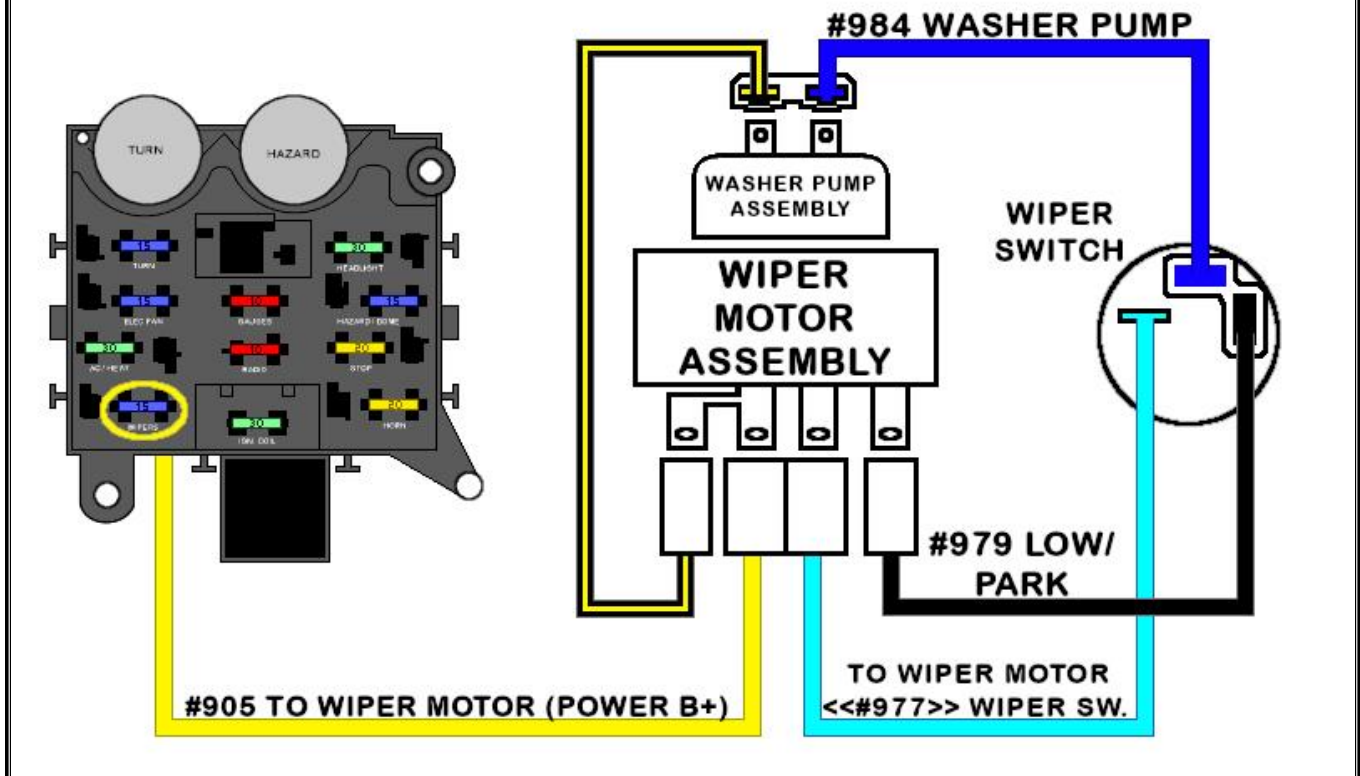
WIPER SCHEMATIC

2-SPEED WIPER SYSTEM w/o WASHER PUMP



WIPER SCHEMATIC

2-SPEED WIPER SYSTEM w/ WASH PUMP



TURN SIGNAL SWITCH

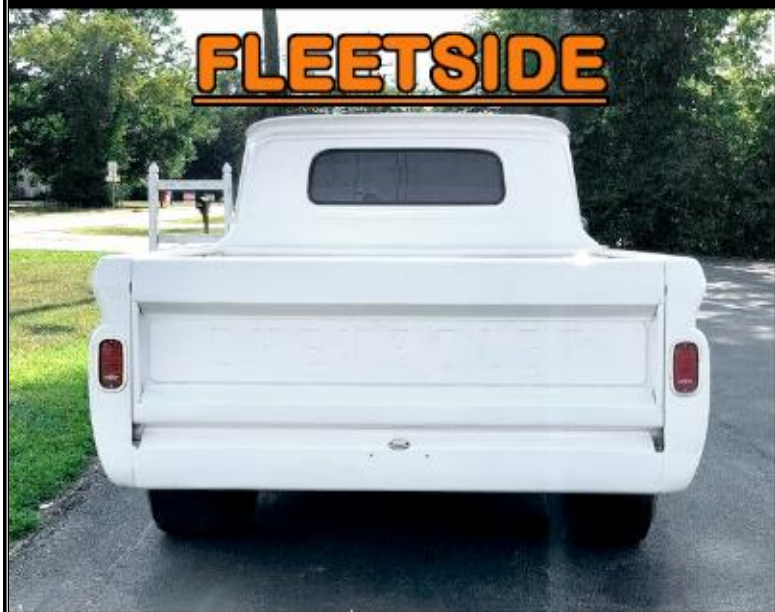


The turn signal switch provides power to each turn signal and turn signal indicator. For those using a later model or aftermarket GM style column, turn signal switch connectors are provided. If you have a factory style crescent-shaped connector, it will need to be reused. As noted on [page 10](#), if 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 usually have 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 [page 70](#), they are:

BLACK: 18-gauge wire, printed **[TURN SIGNAL SWITCH] #953 TO HORN SWITCH**, 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: 16-gauge wire, printed **[TURN SIGNAL SWITCH] #926 LEFT FRONT**, 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: 16-gauge wire, printed **[TURN SIGNAL SWITCH] #925 RIGHT FRONT**, 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 EMERGENCY FLASHER SW. B+**, 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 SWITCH (TURN FLASHER)**, this wire provides power to the turn signal switch. It comes from the turn signal flasher found on the fuse block. It is an ignition power wire, but it 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 SIGNAL >> [TAIL SECTION]**, 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 SIGNAL >> [TAIL SECTION]**, 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] TO TURN SW. << #918 >> [BRAKE SW. SECTION] TO BRAKE SW.**, this wire feeds the brake light power into the turn signal switch. This wire has power anytime the brake pedal is pressed.

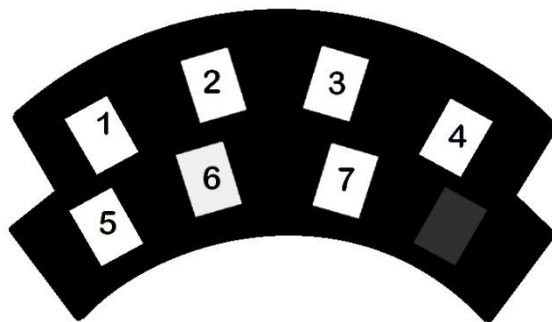
- Route the turn signal wires to the turn signal switch and cut to length if terminals are not pre-installed.
- Use one of the following turn switch diagrams and connect each wire of the **Turn Signal Switch Section** to its correct connection.
- If a diagram is not provided, a factory schematic for your vehicle may be needed to figure out your connections.

1963 – 1966 GM COLUMNS

- Those with a factory 1963 – 1966 column will need to reuse the factory “crescent” turn signal connector from the old harness as this connector is no longer produced. This is done by using a small flat screwdriver to flatten the locking tang of the side of the terminal. Then remove the terminal from the connector, as shown in the photos below.



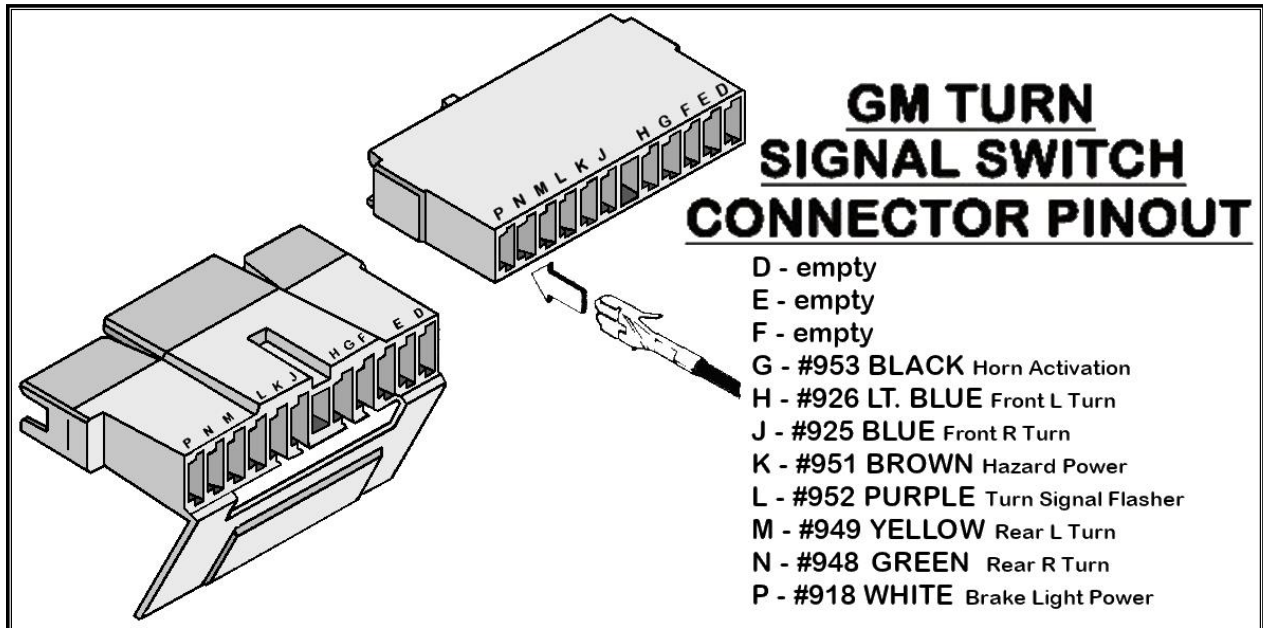
FACTORY '63-'66 TURN SIGNAL SWITCH CONNECTOR



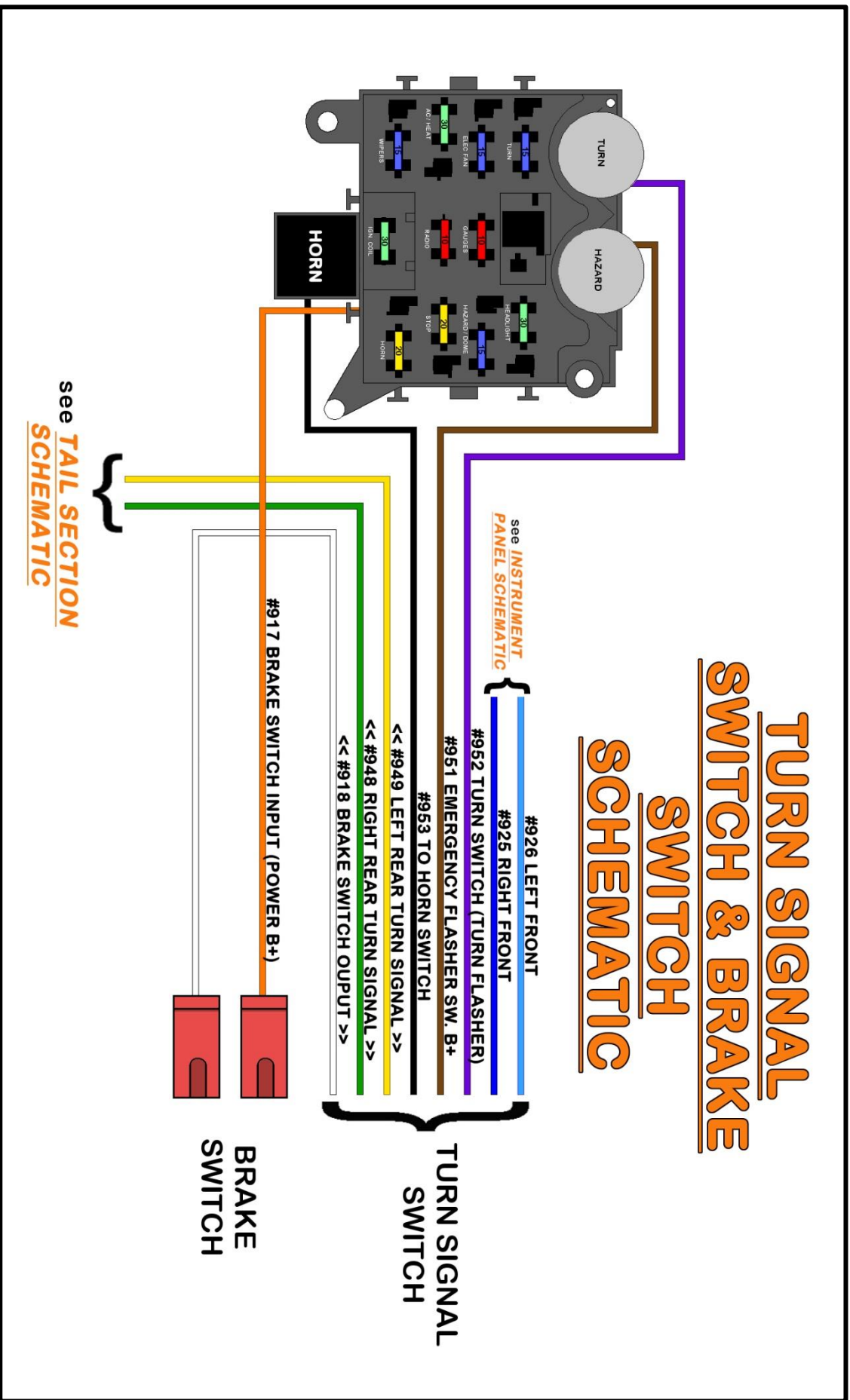
1. BLACK #953 TO HORN SWITCH
2. BLUE #925 RIGHT FRONT TURN SIGNAL
3. LT. BLUE #926 LEFT FRONT TURN SIGNAL
4. GREEN #948 RIGHT REAR TURN SIGNAL
5. PURPLE #952 POWER FROM TURN FLASHER
6. WHITE #918 TO BRAKE SWITCH
7. YELLOW #949 LEFT REAR TURN SIGNAL

GM COLUMNS / AFTERMARKET GM STYLE COLUMNS

- Locate the black connectors and terminals in the kit that fit your column. Most columns will use the plug seen to the right, which is found on most aftermarket columns, as well as GM columns from the mid-1970s onward. These GM columns are a popular retrofit item because of their key on the column and tilt function.
- Using the diagram below, pin each wire into its correct location on the connector. Remember,
- If you use the connector, once all wires have been installed, fold the locking tab down onto the connector. It will click/snap and lock the terminals in their place.
- Connect the now installed connector onto the connector on the steering column.



TURN SIGNAL SWITCH & BRAKE SWITCH SCHEMATIC



BRAKE SWITCH

The factory brake switch on the 1963 – 1966 GM pickups was a mechanical switch, like **Painless part #80172**, and will be mounted on or near the pivot point of the brake pedal.

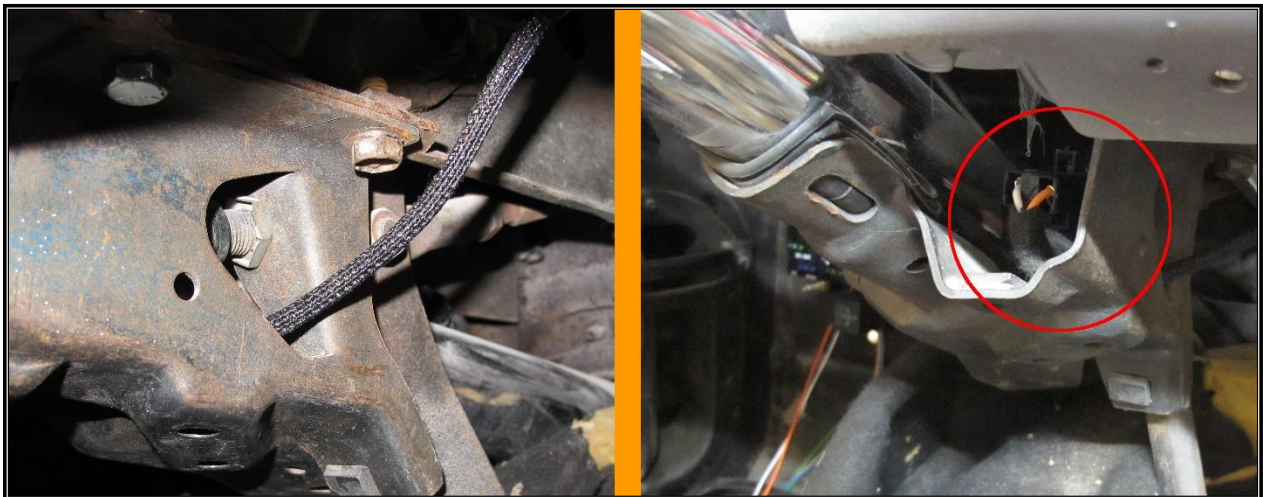


There are two wires found in the Painless chassis harness for proper brake switch connection, and they are:

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

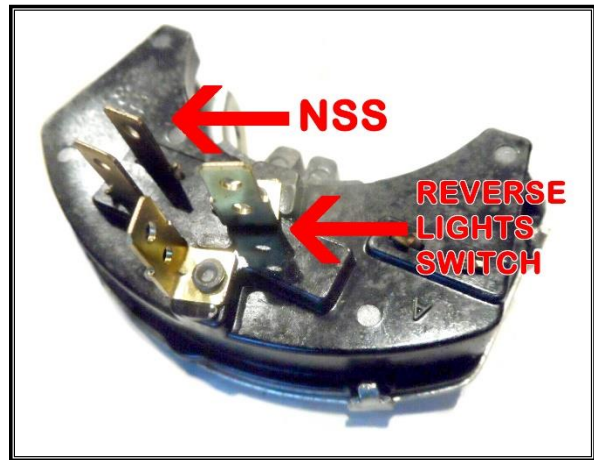
WHITE: 16-gauge wire, printed **[TURN SIGNAL SECTION] << #918 BRAKE SWITCH OUTPUT >> [BRAKE SWITCH]**, this wire feeds the brake light power into the turn signal switch. This wire has power anytime the brake pedal is pressed.

- 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.



REVERSE SWITCH

The reverse lights on the 1963 – 1966 GM pickups were not standard but, rather, an add-on. However, since so many C10 owners have added this option, we have included the wiring necessary to connect your reverse lights. If your vehicle does not have reverse lights, these wires will not be needed.



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:

PINK: 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

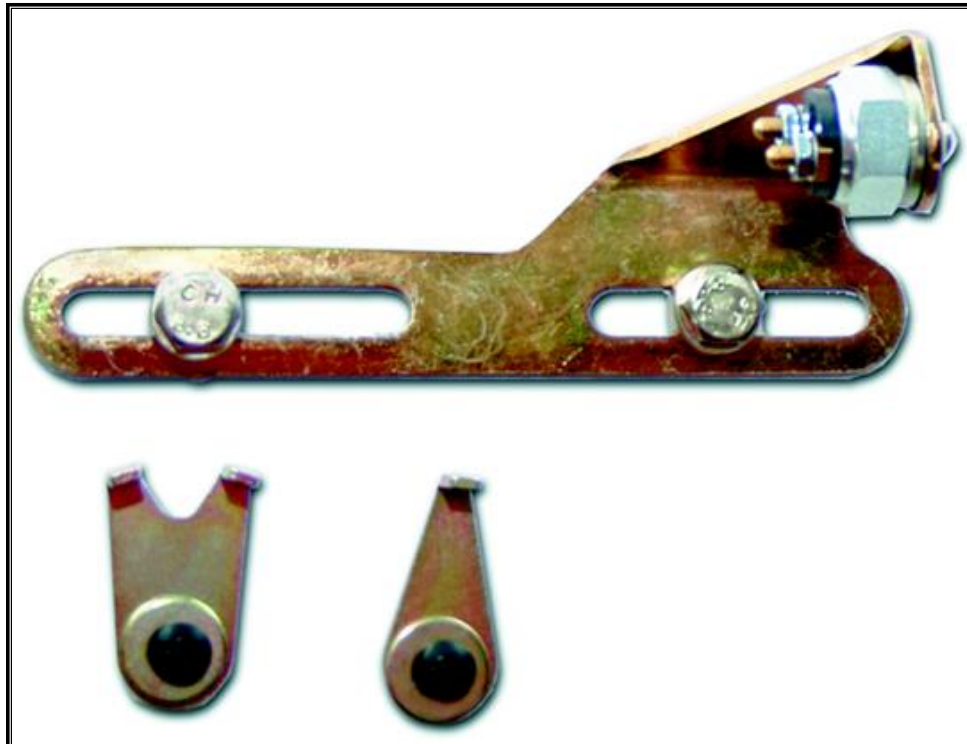
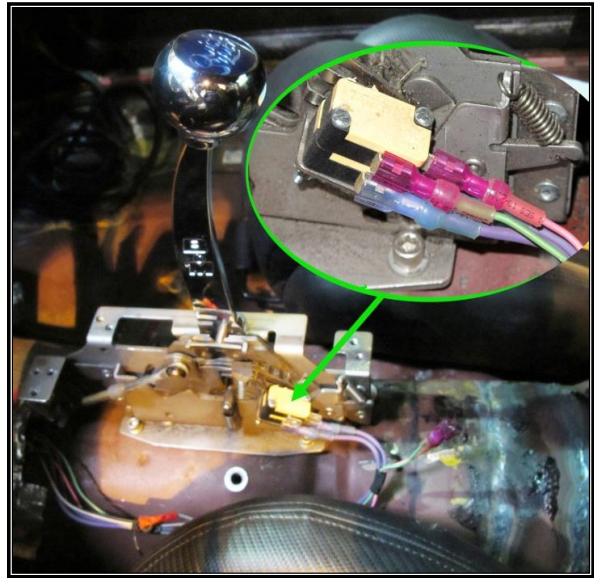


- Route the wires to the reverse switch, cut to length, and strip $\frac{1}{4}$ " of insulation.
- A connector and terminals are provided for those with the factory reverse switch seen above. It does not matter which tab each wire connects to.

- 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.

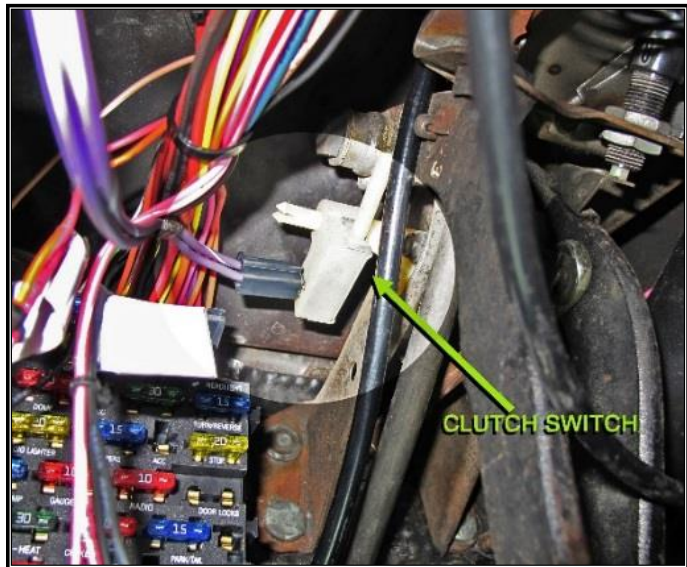
Small insulated terminals have been provided in the parts kit to accommodate aftermarket shifter switches.

- **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.



NEUTRAL SAFETY / CLUTCH SWITCH

This switch is a safety device that prevents the vehicle from being started while in gear and causing an unfortunate accident. The purpose of this switch is to only allow the engine to be started when the vehicle is in park or neutral (automatic transmissions) or if the clutch pedal is depressed (manual transmissions). When the transmission is put into park/neutral or the clutch pedal is depressed, contact is made between these two pins, closing the switch. This allows power to flow from one pin to another, transferring power through the switch to the starter solenoid.



The neutral safety/clutch switch connection is a single wire:

PURPLE: 14-gauge wire, printed [IGNITION SWITCH] START << #919 >> [ENGINE SECTION] TO STARTER SOLENOID "S", this wire comes from the ignition switch and only has power when the switch is in the START position. This wire provides power to the neutral safety switch (NSS) from the ignition switch. **Once the wire is routed and cut, the excess wire is used to provide power from the NSS to the starter solenoid "S" terminal.** This wire can be seen in the [Early GM Alternator – External Regulator Schematic](#) on [page 43](#), [Late GM Alternator – Internal Regulator](#) on [page 51](#), in the various ignition switch schematics found on [pages 76 – 77](#), and in the [Neutral Safety Switch and Reverse Switch Schematic](#) on the next page.

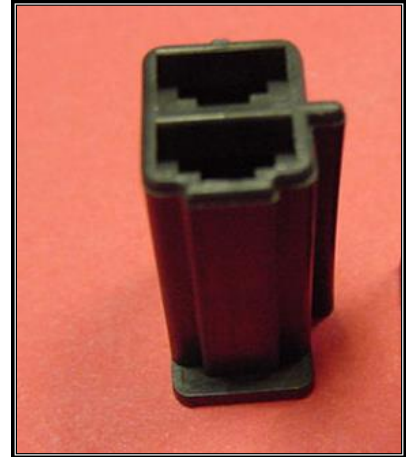
- If you have an automatic transmission with a column shift, the NSS is usually located at the base of the steering column, as seen in the photo with the reverse switch to the right. This same switch can be found at the base of factory console shifters.



AFTERMARKET FLOOR SHIFTER

- If you have a manual, the clutch switch is located at the top of the clutch pedal, much like the brake switch on the brake pedal.
- Route the wires to the reverse switch, cut to length, and strip $\frac{1}{4}$ " of insulation. Also, strip $\frac{1}{4}$ " of insulation from the cutoff piece of #919 wire as it will connect to the switch as well.

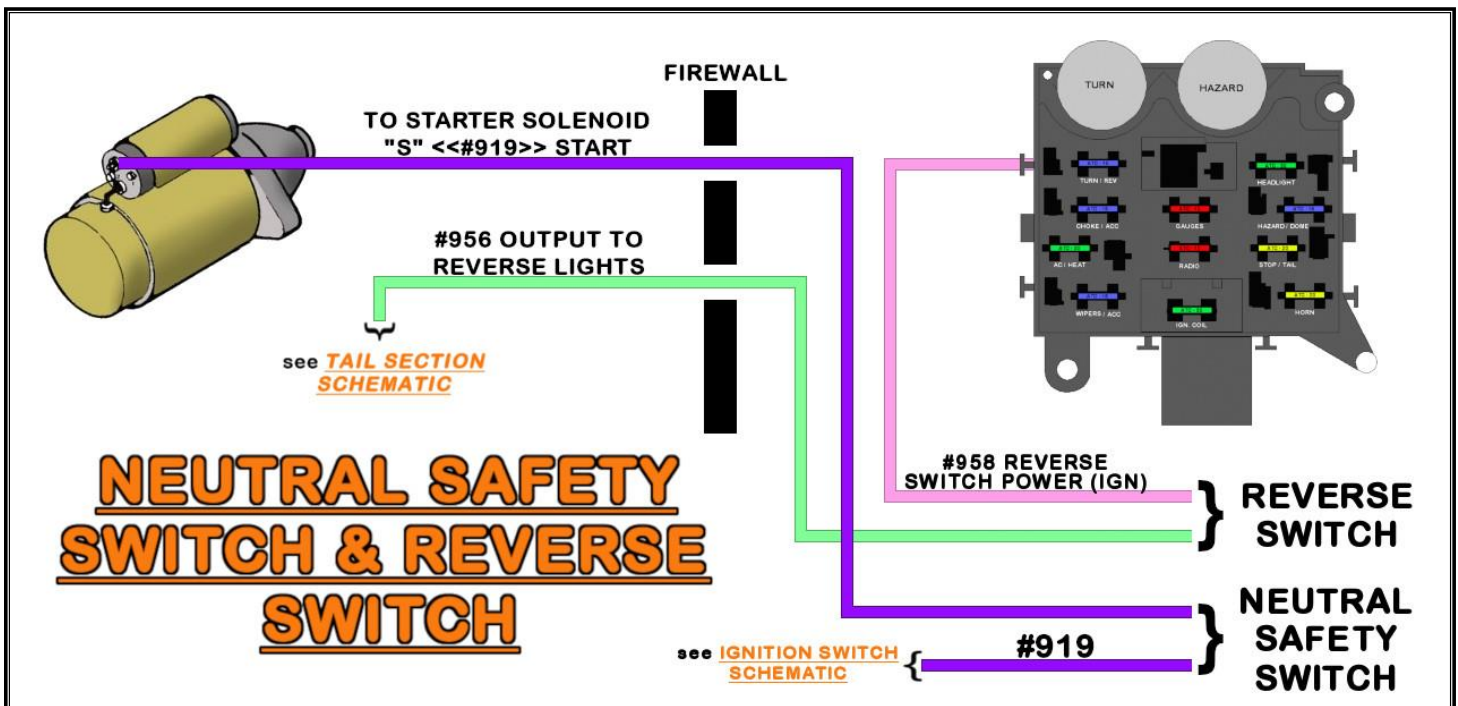
A connector, seen in the photo, and terminals have been provided for those with the standard, column-mounted Reverse/NSS switch seen on the previous page. It does not matter which tab each wire connects to. Once connected to the switch, route the cutoff portion of #919 to the "S" terminal on the Starter and connect as mentioned on the previous.



- Those with a 4L60e/4L80e transmission, a starter relay must be used (not supplied) if using a factory switch; as shown on [page 52](#). The switch is not capable of handling the amperage the solenoid requires.

If you do not have a neutral safety/clutch switch and do not plan on getting one, route this wire directly to the Starter Solenoid "S" Terminal.

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



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 five wires with section label reading "IGN SWITCH." These wires have factory terminals installed, but the factory connector is no longer available; your factory connector must be re-used. All wires going to the ignition switch can be seen in the [Ignition Switch Schematic](#) below. These wires are:

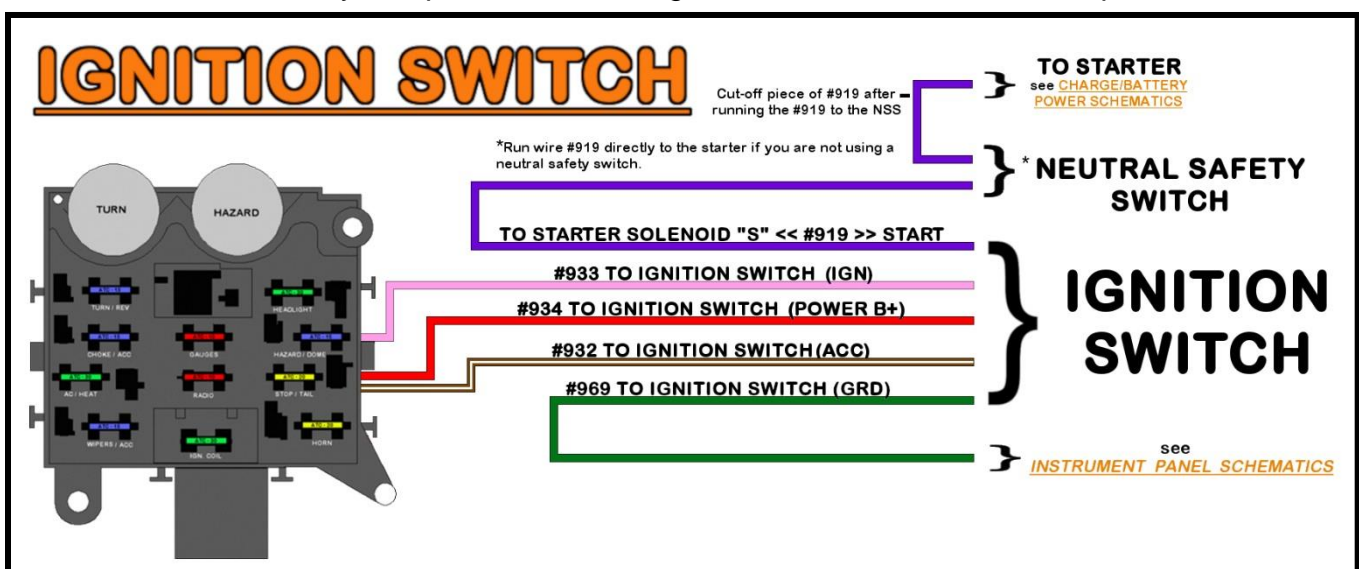
RED: 12-gauge wires, printed [IGNITION SWITCH] #934 TO IGNITION SWITCH (POWER B+), this wire comes from a buss bar on the fuse block and feeds battery power to the ignition switch. This wire always has power.

PINK: 12-gauge wire, printed [IGNITION SWITCH] #933 TO IGNITION SWITCH (IGN), 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 RADIO fuse. This wire only has power when the ignition switch is in the ON/RUN position.

BROWN/WHITE: 16-gauge wire, printed [IGNITION SWITCH] #932 TO IGNITION SWITCH (ACC), this wire carries power to the RADIO fuse on the fuse block. This wire has power when the ignition is in the ACCESSORY position and when in the ON/RUN position.

GREEN: 18-gauge wire, printed [IGNITION SWITCH] #969 TO IGNITION SWITCH (GRD), this wire provides ground from the ignition switch to the temp light on the instrument panel. When the ignition is in the ACCESSORY position this wire will send a ground signal to the light, activating it and letting the operator know that it is functioning properly. **GMCs will not use this wire.**

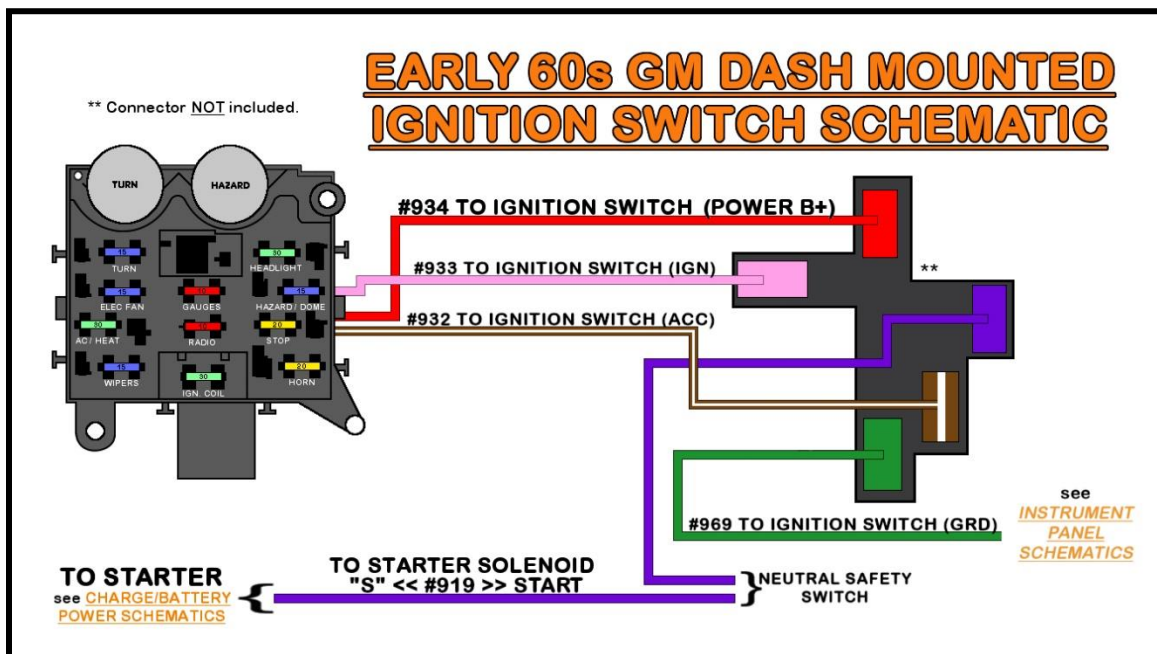
PURPLE: 14-gauge wire, printed [IGNITION SWITCH] START << #919 >> [ENGINE SECTION] TO STARTER SOLENOID "S", this wire sends power to the starter solenoid and only has power when the ignition switch is in the START position.



Since there are so many different types of ignition switches, chose from one of the following that best fits your application:

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.

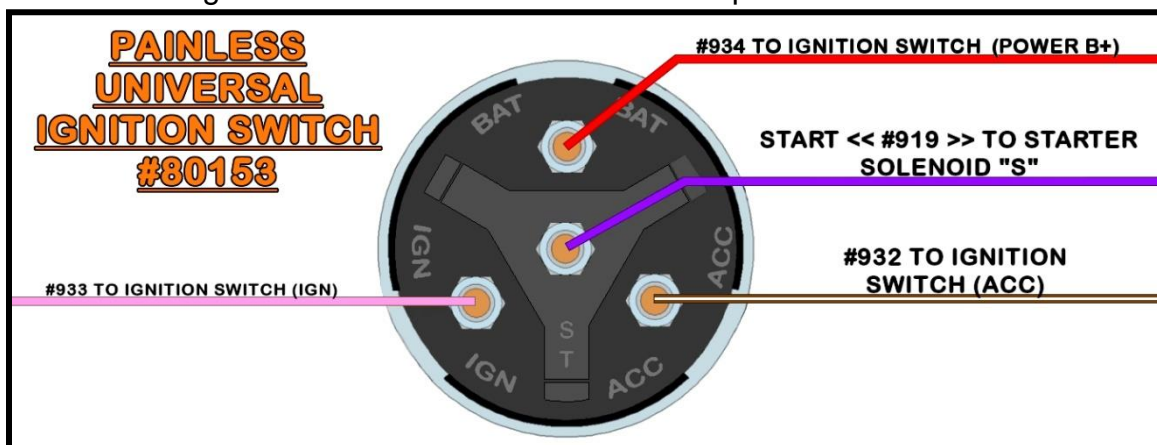
EARLY 60s GM DASH-MOUNTED SWITCH



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** cannot be connected, therefore the temp light will not come on when the ignition switch is in the ACCESSORY position.



ACCESSORIES

This Painless harness includes provisions for several accessory components that may or may not be used on your install. These accessory wires include two power wires (one switched and one constant) and a backlighting wire. Below, you will find information about each of these accessories and the wires provided in this harness to connect them. These wires can be seen in the [AC, Radio, & Accessory Schematic](#) on [page 97](#).



CIGARETTE LIGHTER/ POWER PORT/ CONSTANT HOT ACCESSORIES

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.

ORANGE: 14-gauge wire, printed, [ACCESSORY SECTION] #945 CIG. LIGHTER / ACCESSORY POWER (CONSTANT HOT), this wire provides a battery power source to a cigarette light/power port or any accessory requiring a constant power source. If you need to power multiple items, you must splice or chain this wire to the various accessories. Linking or chaining is explained on [page 83](#) in the Instrument Panel section.



- Route the **ORANGE #903** wire to the cigarette lighter/power port or accessory.
- Cut the wire to length and connect according to one of the following options. Remember before doing any termination to identify any other accessories requiring a constant hot power source, as the cut-off portion of **ORANGE #903** will be doubled at the first accessories terminal before being routed to any additional accessories.
 - Ring terminals and bullet/socket/spade style terminals are provided in the parts kit to connect universal aftermarket lighters/power ports. Universal Lighter sockets can be found at most local parts stores. A ground wire is needed.
 - For those with a factory socket, you can cut the connector from your factory harness. Leave 3" or 4" of wire to create a pigtail and splice it to the **ORANGE #903** wire on the Painless harness. Splices have been provided in the parts kit.

CLOCK

- GM offered a dash-mounted clock for these trucks as an added accessory. If you have a clock, retain the cutoff portion of the **ORANGE #903** wire.
- Then double it with the wire connected to the cigarette lighter/power port, and then route this wire to the clock and connect.



DASH MOUNTED TACHOMETER/ SWITCHED POWER ACCESSORIES

ORANGE/BLACK: 16-gauge wire, printed [**ACCESSORY SECTION**] **#955 ACCESSORY POWER (IGN)**, this wire provides a switched Ignition power source for an accessory not exceeding 15 amps. In most cases, this wire is used to provide aftermarket, dash-mounted gauges (usually a tachometer) a 12v source activation. If you need to power multiple items, you must splice or chain this wire to the various accessories. Linking or chaining is explained on [page 83](#) in the **Instrument Panel** section.



- Cut the wire to length and connect according to the requirements of the accessory. Specific connections will depend on the accessory.

BACKLIGHTING

GREY: 18-gauge wire, printed [**ACCESSORY SECTION**] **#930 PANEL BACKLIGHTING**, this wire provides backlighting to column-mounted gear indicators (seen on the previous page) as well as any other accessory panels or switches. If you need to light multiple panels, you must splice or chain this wire to the various accessories. Linking or chaining is explained on [page 83](#) in the **Instrument Panel** section. This wire has power anytime the headlight switch is in the Park/Taillights ON or Headlights ON position. This wire/splice can be seen in the [Radio, AC, & Accessory Schematic](#) on [page 97](#).

- Cut the wire to length and connect to any accessory requiring a separate power source for backlighting.
- Connect the **GREY #930** according to the requirements of the accessory. Specific connections will depend on the accessory.

INSTRUMENT PANEL

The instrument panel connections of the Painless harness vary according to the gauge cluster or aftermarket gauges you are using. There were six different factory panels from 1963 – 1966.

To accommodate the numerous possible connections, the wires for the instrument panel are grouped together in a separate Instrument Panel Pigtail, that connects to the main harness via a pre-installed in a 12-pin connector. There is also a separate 3-wire ground harness.



The main harness wires that lead to the instrument panel are listed on the next page. The Instrument Panel Pigtail wires are:

BROWN: 18-gauge wire, printed #970 **GENERATOR LIGHT**, this wire goes into one side of the charge indicator light and has switched ignition power from the fuse block.

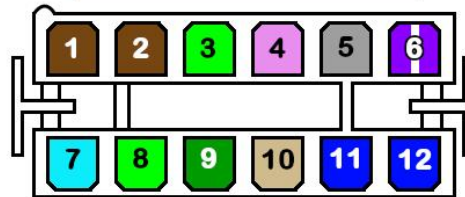
BROWN: 18-gauge wire, printed #914 **IGN POWER OUT TO REGULATOR**, this wire comes from the other terminal on the charge indicator light and leads to the #4 terminal of the voltage regulator.

LT. GREEN: 18-gauge wire, printed #962 **TO TEMP GAUGE (COLD LIGHT)**, this wire is a ground signal from the engine coolant temperature sending unit. Some vehicles come equipped with two temp lights on the instrument panel: a hot and a cold. In those cases, this wire will be the “Cold” signal from the temp switch. If you have a single terminal temp switch and/or a temp gauge, you will not need this wire and it can be removed from the pigtail.

(2) PINK: 18-gauge wire, printed #935 **GAUGE POWER**, these wires provide a switched ignition power source to the cluster. These wires come from the 10-amp GAUGES fuse on the fuse block. These wires have power anytime the key is in the ON/RUN position.

(2) GREY: 18-gauge wire, printed #930 **INSTRUMENT PANEL LIGHTING**, these wires provide a power source for gauge backlighting. The **GREY #930** wires are tied to the **GREY #930** wire coming from the headlight switch. These wires have power anytime the headlight switch is in the Park/Taillights ON or Headlights ON position.

INSTRUMENT PANEL P/T PINOUT



1. BROWN #970 - GENERATOR LIGHT
2. BROWN #914 - IGN POWER OUT TO REGULATOR
3. LT. GREEN #962 - TO TEMP GAUGE (COLD LIGHT)
4. (2) PINK #935 - GAUGE POWER
5. (2) GREY #930 - INSTRUMENT PANEL LIGHTING
6. PURPLE/WHITE #923 - TO TACHOMETER
7. LT. BLUE #937 TO LEFT TURN INDICATOR
8. LT. GREEN #936 TO HIGH BEAM INDICATOR
9. GREEN #921 - TO TEMP GAUGE (HOT LIGHT)
10. TAN #939 - TO FUEL GAUGE
11. BLUE #922 - TO OIL GAUGE
12. BLUE #938 - TO RIGHT TURN INDICATOR

MAIN HARNESS WIRES LEADING TO THE INSTRUMENT PANEL

1. **BROWN** [INSTRUMENT PANEL] #970 GENERATOR LIGHT
2. **BROWN** #914 TO VOLTAGE REGULATOR (IGN. POWER)
3. **LT. GREEN** [ENGINE SECTION] #962 TO TEMP SENDER (COLD)
4. **PINK** #935 GAUGE POWER
5. **GREY** [INSTRUMENT PANEL] #930 INSTRUMENT PANEL LIGHTING
6. **PURPLE/WHITE** [ENGINE SECTION] #923 TO TACH SIGNAL (COIL -)
7. **LT. BLUE** [HEADLIGHT SECTION] #926 TO LEFT FRONT TURN SIGNAL
LT. BLUE [TURN SIGNAL SECTION] #926 LEFT FRONT
8. **LT. GREEN** TO DIMMER SWITCH << #936 >> [INSTRUMENT PANEL] HIGH BEAM INDICATOR
9. **GREEN** [ENGINE SECTION] #921 TO TEMP SENDER (HOT)
GREEN [IGNITION SWITCH] #969 TO IGNITION SWITCH (GRD)
10. **TAN** [TAIL SECTION] #939 TO FUEL SENDER
11. **BLUE** [ENGINE SECTION] #922 TO OIL SENDER
12. **BLUE** [HEADLIGHT SECTION] #925 TO RIGHT FRONT TURN SIGNAL
13. **BLUE** [TURN SIGNAL SECTION] #925 RIGHT FRONT

PURPLE/WHITE: 18-gauge wire, printed **#923 TO TACHOMETER**, this wire is a ground signal from the negative side of the ignition coil. For those with an aftermarket, column, or dash-mounted tachometer, this wire will need to be rerouted toward the tach's location.

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

LT. GREEN: 18-gauge wire, printed **#936 TO 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.

GREEN: 18-gauge wire, printed **#921 TO TEMP GAUGE (HOT LIGHT)**, 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. This wire also connects to the **GREEN #969** wire from the ignition switch. Some vehicles come equipped with two temp lights on the instrument panel: a hot and a cold. In those cases, this wire will be the "Hot" signal from the temp switch.

TAN: 16-gauge wire, printed **#939 TO FUEL GAUGE**, this wire connects to the ground signal wire 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.

BLUE: 18-gauge wire, printed **#922 TO OIL GAUGE**, 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. If you are using a mechanical gauge, this wire will not be used and can be removed from the harness.

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

(3) **BLACK/WHITE:** 18-gauge wire, printed **#961 INSTRUMENT LIGHTING GROUND**, these three wires provide a ground source to any gauges in the instrument panel. These wires comprise a small ground harness that is separate from the Instrument Panel P/T.

INSTRUMENT PANEL PIGTAIL

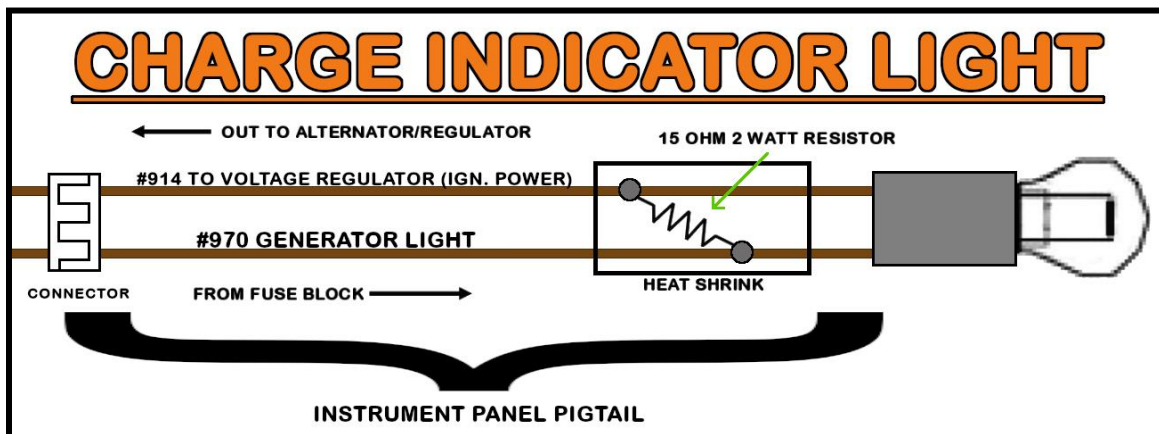
The Instrument Panel Pigtail is composed of several wires that will need to be chained or spliced to multiple components. The next few sections will cover exactly how this is done.

If you are using a factory panel, schematics can be seen on [pages 86 – 89](#) for each of the available options for 1963 – 1966. If you are using aftermarket gauges, refer to our basic hardwiring guidelines as well as the gauge manufacturer's instructions.

CHARGE INDICATOR LIGHT

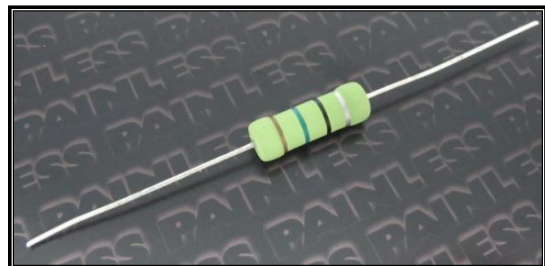
Many factory and aftermarket instrument panels have a charge indicator light. As such your Painless harness has been set up to accommodate one. The **BROWN #914** wire runs from the voltage regulator to the instrument panel where it connects to one side of the charge indicator light. The **BROWN #970** wire from the fuse block connects to the other side of the light.

Current from the fuse block, through the filament, and out to the alternator causes the light to illuminate. This light will illuminate when the key is in the ON/RUN position and the alternator is not charging because the engine is not running or when the alternator is not working properly. Once the alternator is charging, the voltage regulator no longer needs the switched ignition voltage supplied by the **#914** wire, which stops the current flow. Since power is no longer flowing through the filament, the bulb does not illuminate.

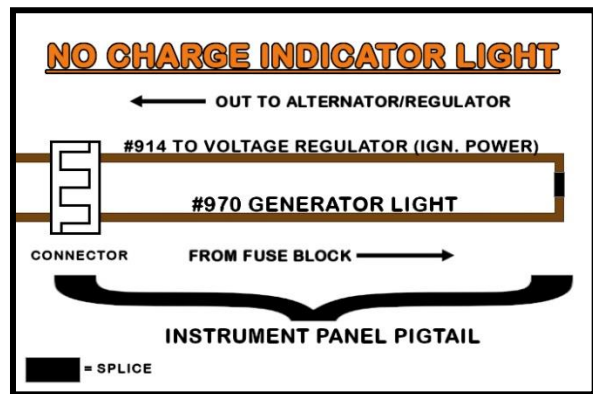


If you are using a one-wire alternator, a charge light cannot be installed since you do not have an alternator exciter wire going to the regulator.

It is also recommended, but not necessary, to wire in a 15 ohm 2-watt resistor between the power in and power out, as seen in the diagram below. This provides enough power to the voltage regulator to allow the alternator to still charge in the event the bulb burns out. This resistor can be found through online, electronic component suppliers such as Mouser or Allied Electronics under part **#OY150KE**.



If you do not want to use a charge indicator light, simply connect these wires, as seen to the right. It is easiest to do this on the pigtail side, not on the main harness. **If this is not done, the truck will not charge!**



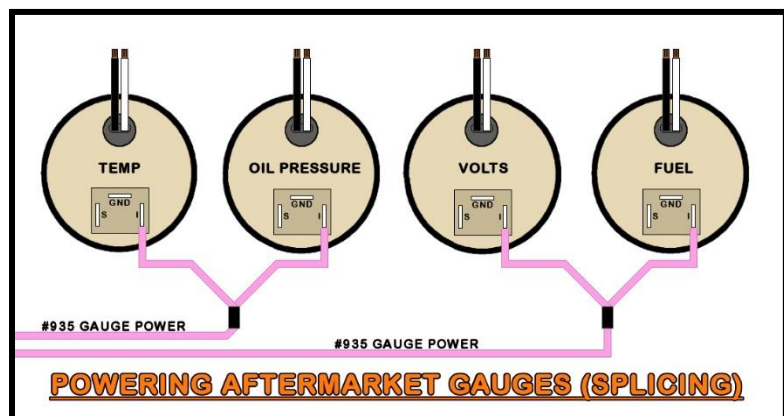
The remaining alternator connections vary based on which alternator is being used. Choose the alternator that best represents the alternator found on your vehicle from those on the next few pages. Then, follow the instructions provided for your alternator.

HARDWIRING:

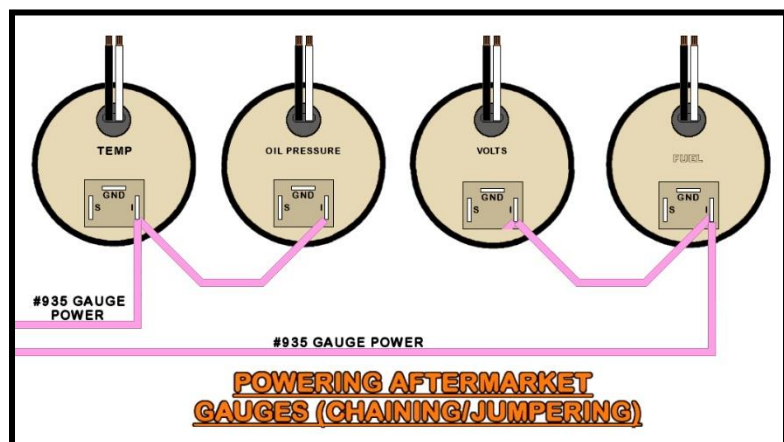
The following steps will walk you through the process of distributing power and ground as well as connecting the sender wires. The following diagrams only show temp, oil pressure, volt, and fuel level gauges. Power, ground, and sender wires connect in the same manner to speedometers and tachometers.

Power to the gauges comes from the **PINK #935** wire, 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:

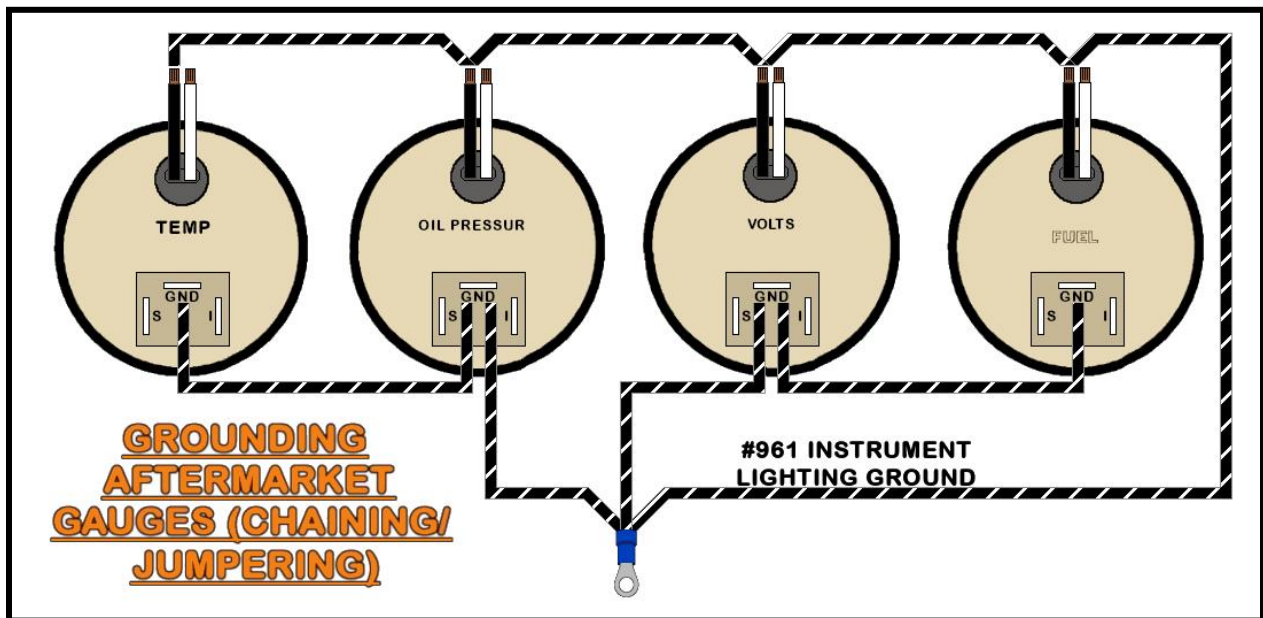
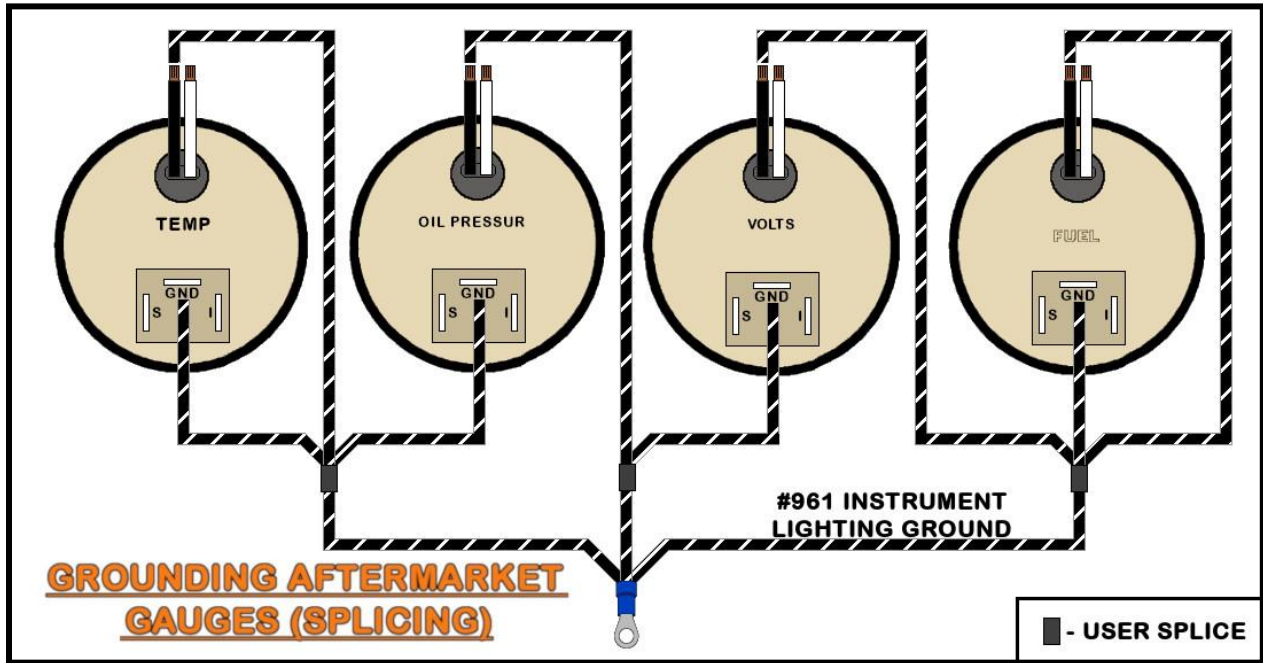
#1) Splicing- This is when you connect multiple wires to a single wire to distribute power/ground to multiple components. In this case, splices on the **PINK #935** wire are running wires to several gauges to provide power to each gauge.



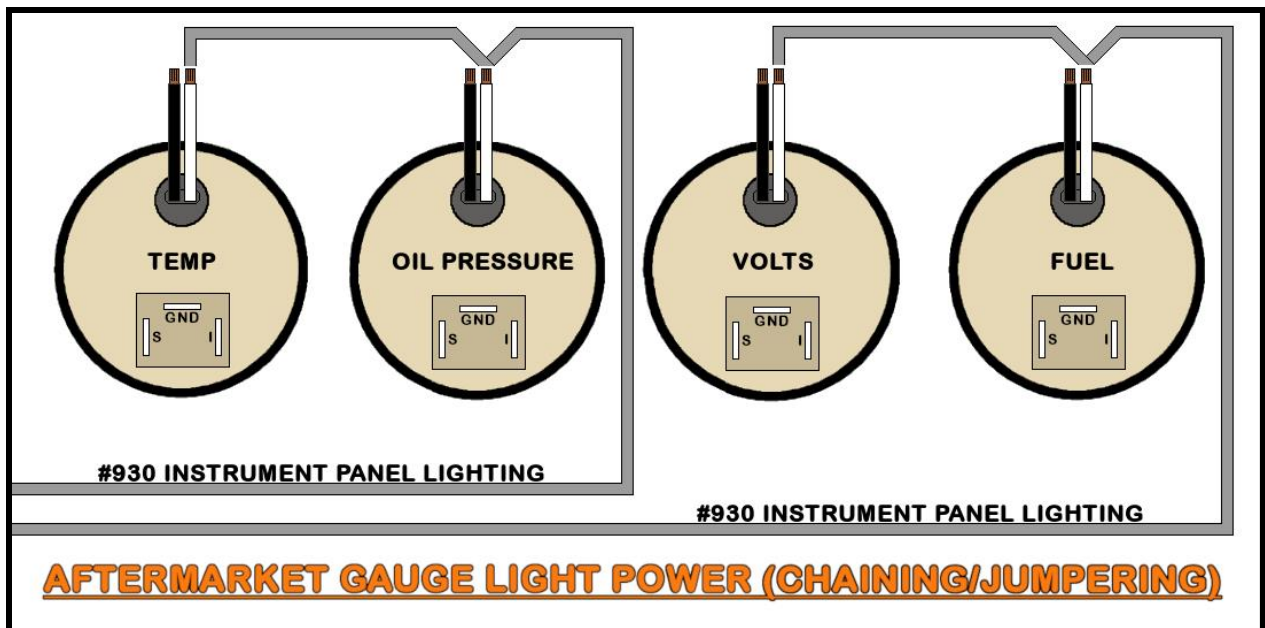
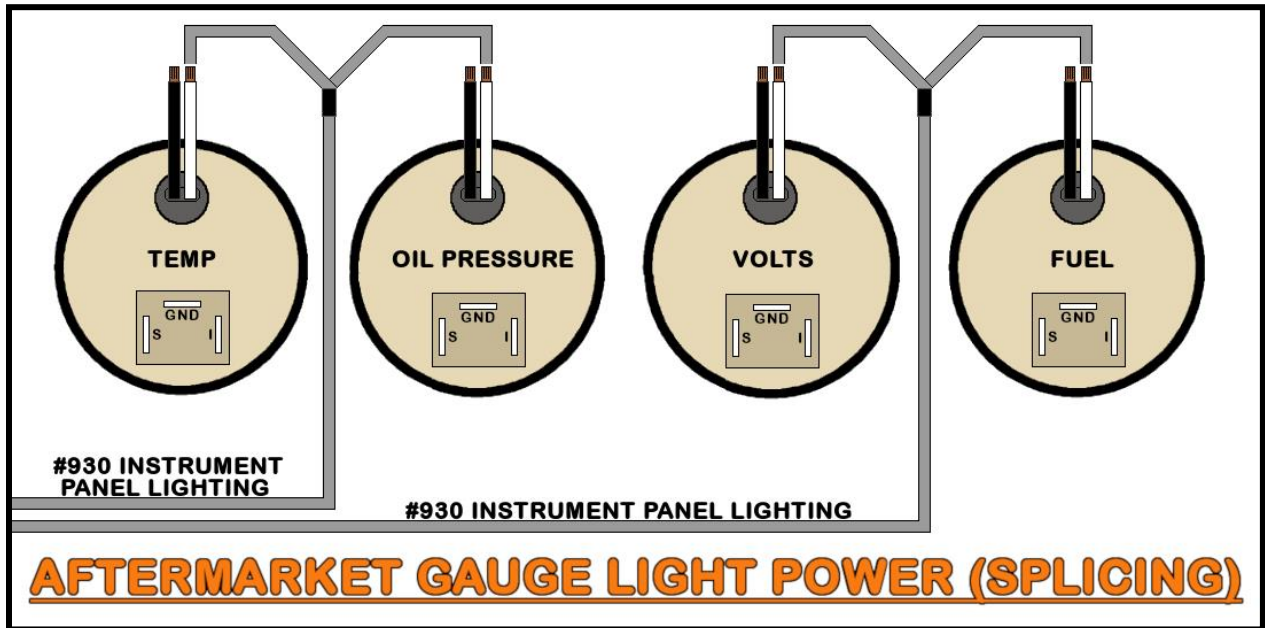
#2) Chaining or Jumpering- Run the **PINK #935** wire to a power post. **Before terminating the wire** with the proper terminal, insert another wire into the terminal and crimp. You now have 2 wires in 1 terminal. This additional wire then routes to the next gauge's power post. Before terminating that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



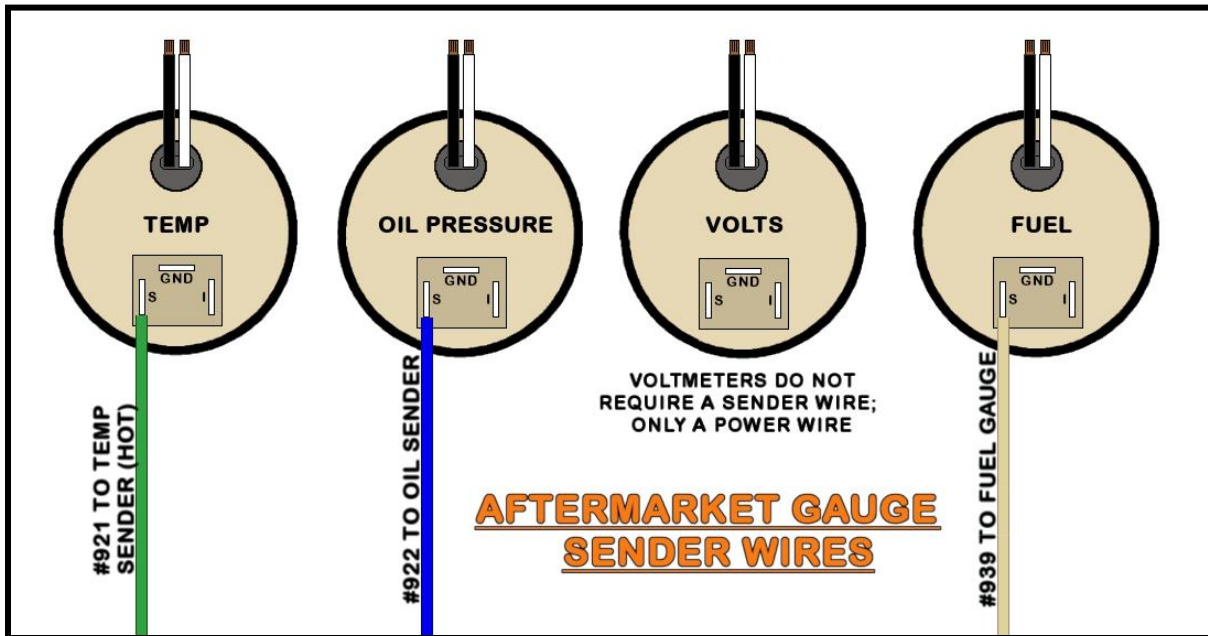
Grounds need to be supplied to the gauge lights and any ground tab on the gauges. The installer needs to run their own ground circuit for gauge connections. To make these ground connections you can splice from the installer provided ground wires to all the gauges or chain/jumper it all together. Both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



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



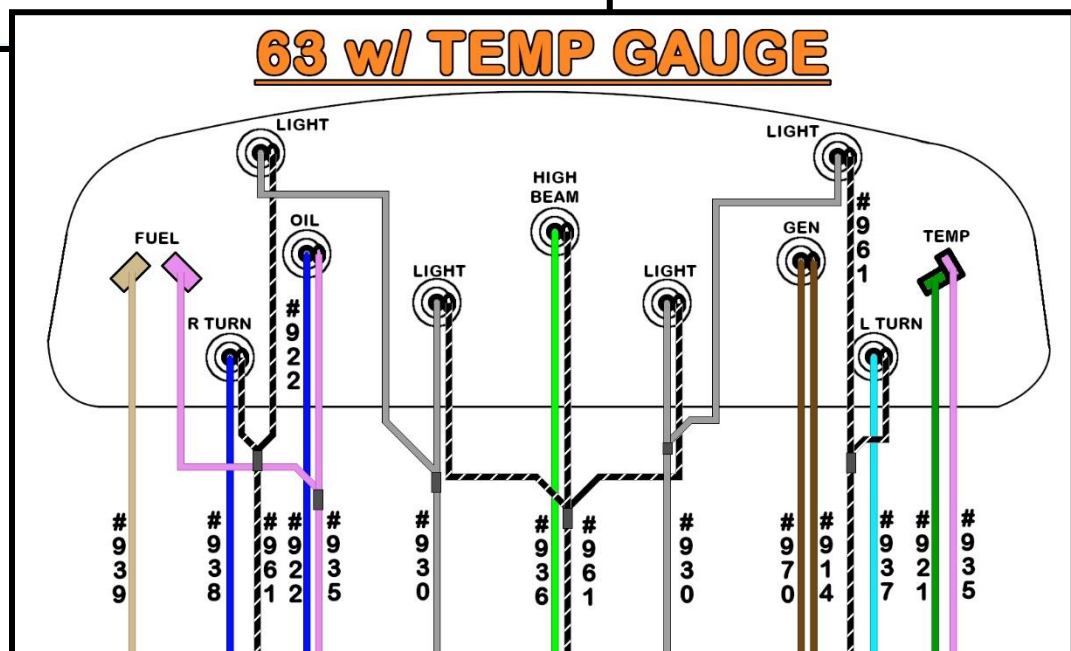
The last connections that need to be made are the sending unit wires or signal wires. These are the wires which come from the temperature sending unit, oil pressure sending unit, and fuel level sending unit. Not shown in the diagram, but also provided in the Painless chassis harness is the **PURPLE/WHITE: #923 TACH SIGNAL (COIL-)** wire.



FACTORY PANEL WIRING:



1963 C10 w/ Temp Gauge Panel



1963 C10 Deluxe Panel

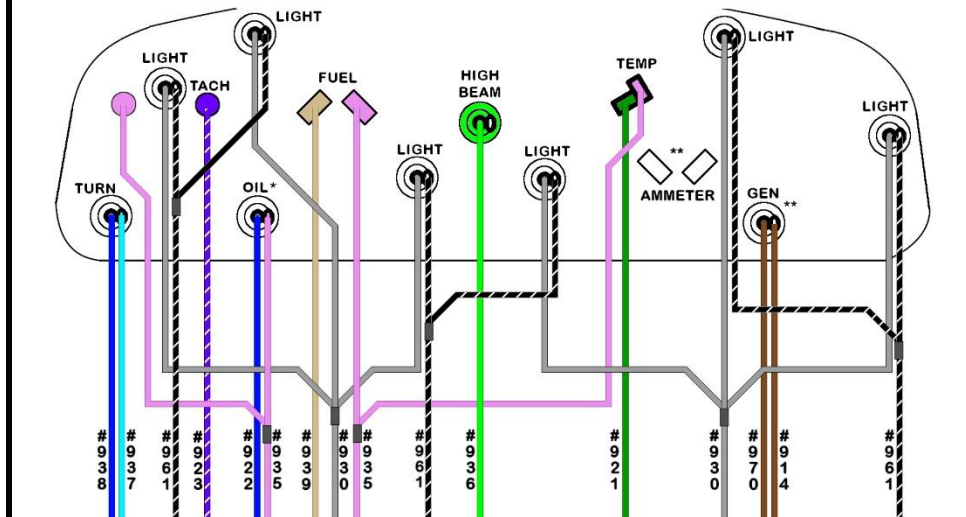


63 w/ DELUX PANEL ***

*Oil gauge is mechanical and this light socket is for the "Inter-Axle Lock-Out Light." This function was mainly used on medium and heavy duty vehicles. However, it was often used as an oil light for C10s using this panel.

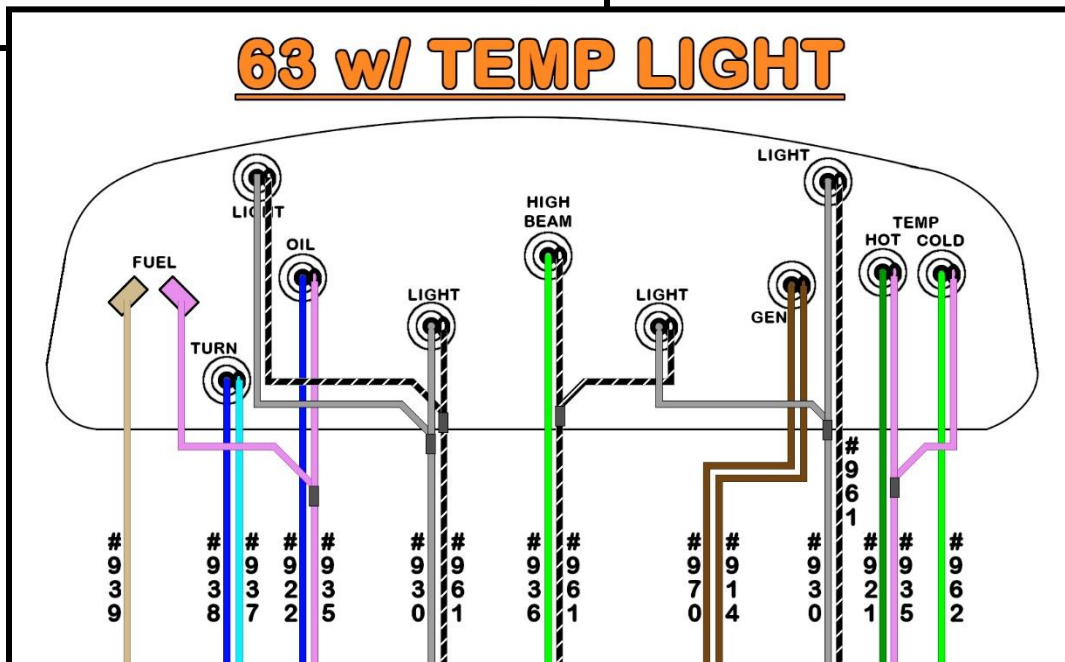
**Engine Overspeed Light - 80 series gas models only; unused. Our harness does not support an ammeter, so this socket can be used for the gen light

***10 series only used these if optional gauges/tachometer was added.



1963 C10 w/ Temp Light Panel

63 w/ TEMP LIGHT



1964 – 1966 C10 w/ Temp Gauge Panel

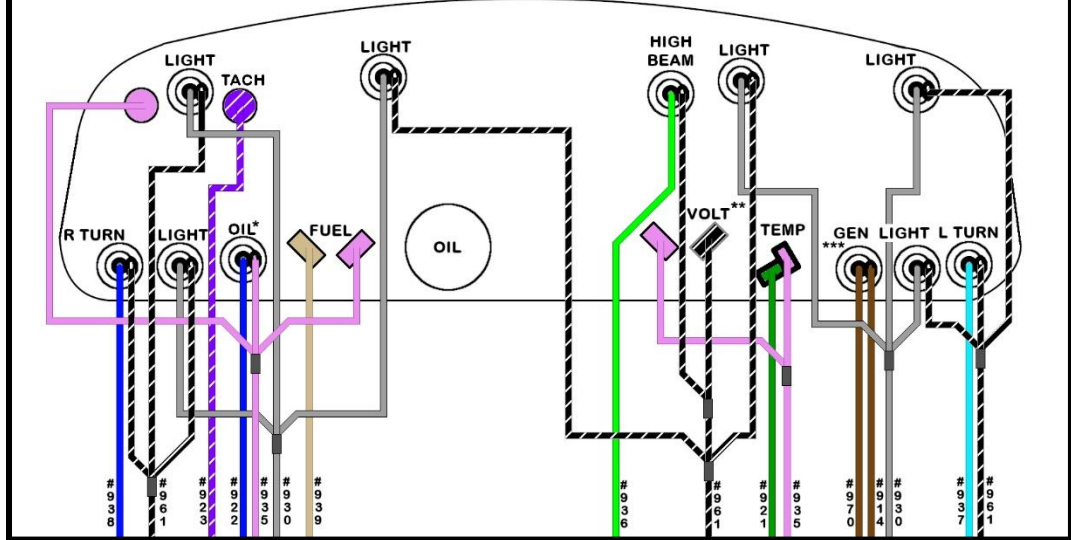


64-66 w/ GAUGES

* If this socket is not populated on your factory harness, you can use it for the oil light if you are not using the mechanical gauge.

** Our harness d/n support an ammeter, but aftermarket versions (Classic Instruments) have a voltmeter instead which is supported by adding a power and a ground.

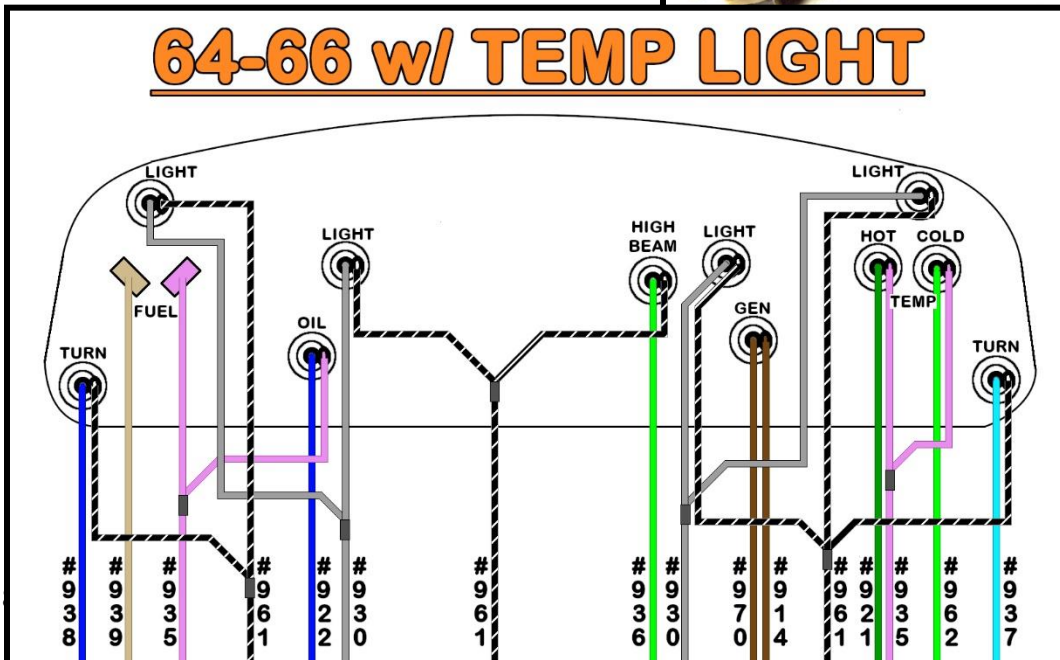
*** If this socket is not populated on your factory harness, you can use it for the generator light.



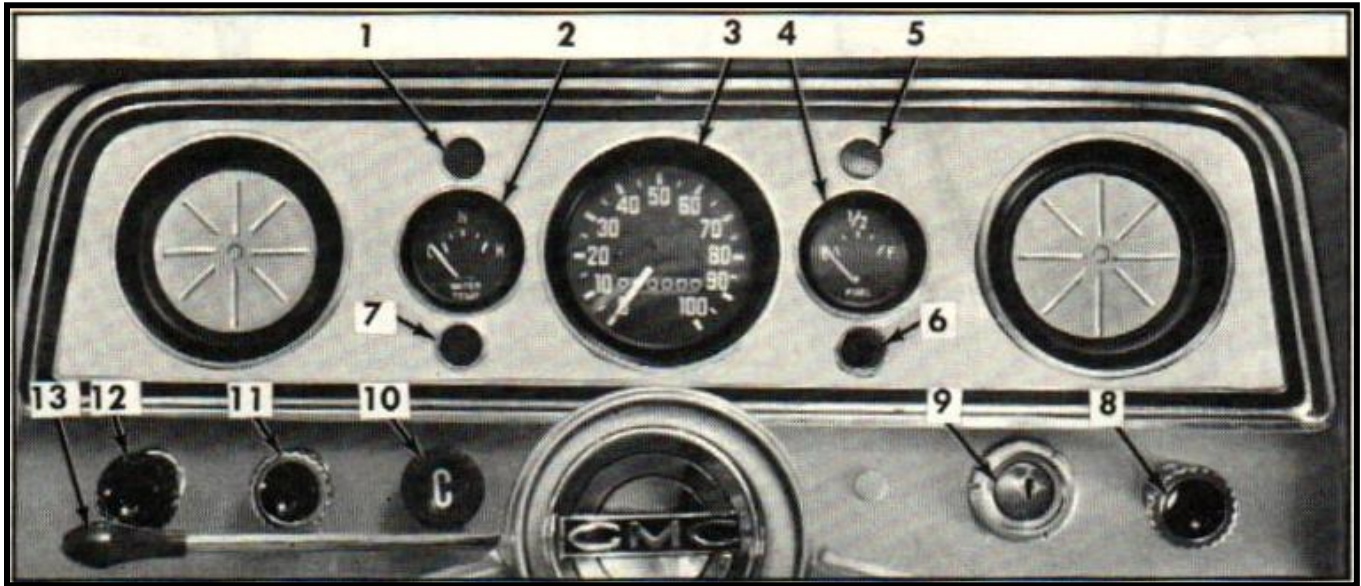
1964 – 1966 C10 w/ Temp Light Panel



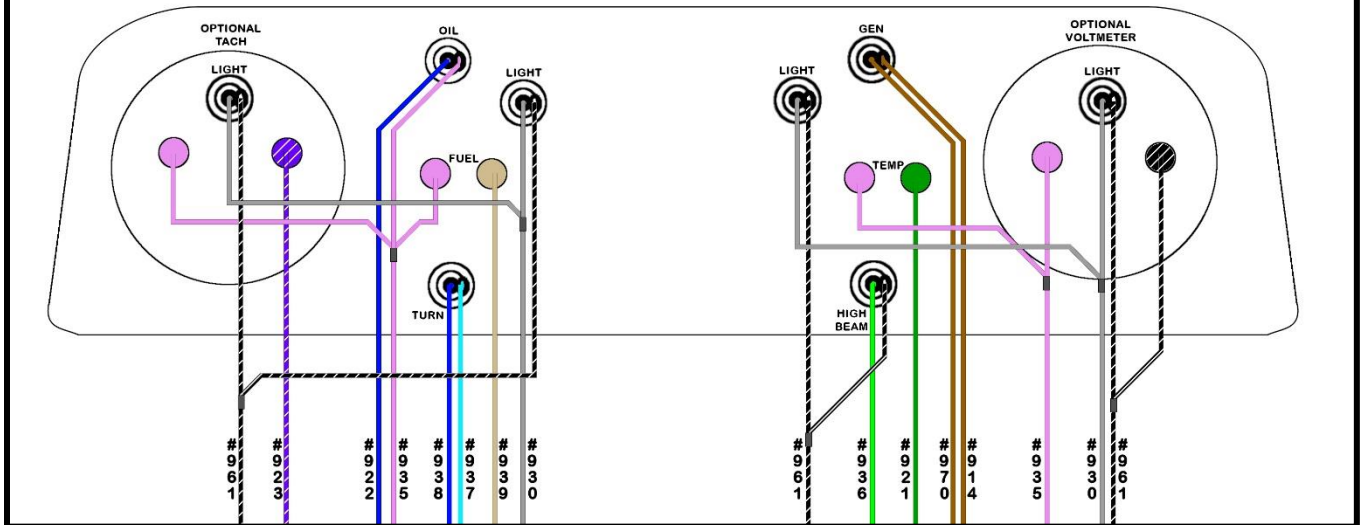
64-66 w/ TEMP LIGHT



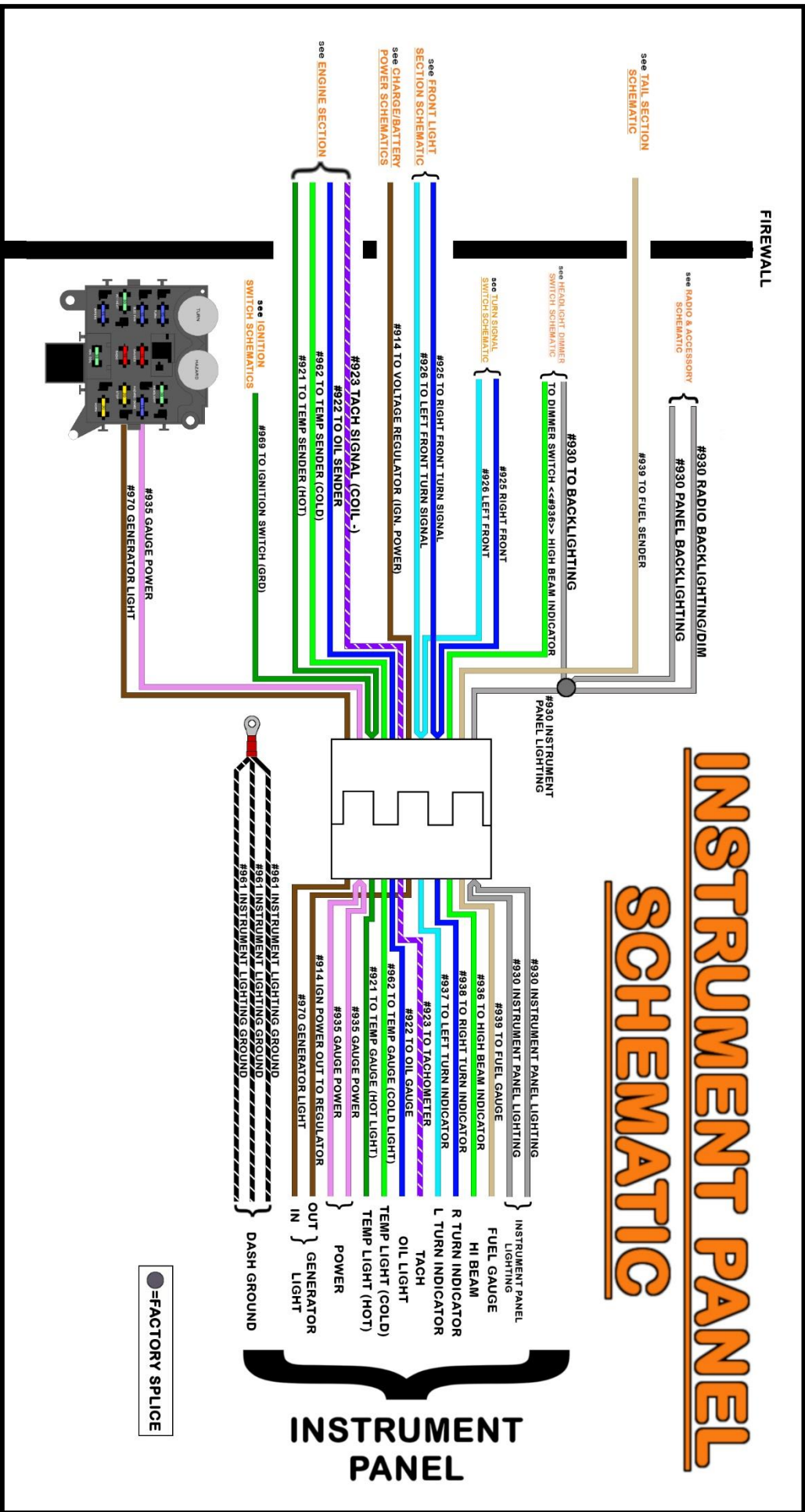
1963 – 1966 GMC Panel



63-66 GMC



INSTRUMENT PANEL SCHEMATIC



RELAY ACTIVATION / ACCESSORY POWER

As stated before, there are two wires in the Electric Fan Section that allow power to be sent to an engine bay mounted relay for such things as a cooling fan relay or driving light relay(s). **Please be aware these wires are only intended to energize the solenoid of a relay and will NOT power a cooling fan or driving lights directly.** These two wires are:

GREY/WHITE: 18-gauge wire, printed **#906 TO COOLING FAN SWITCH (POWER B+)**, this wire provides a switched Ignition power source for a cooling fan relay. **DO NOT POWER A COOLING FAN DIRECTLY WITH THIS WIRE.**

GREY/WHITE: 18-gauge wire, printed **FROM COOLING FAN SWITCH << #901 >> [HEADLIGHT SECTION] TO COOLING FAN RELAY**, this is a lay-in wire is used to connect the temp switch to the fan relay. See the diagrams below.

There are numerous ways these two wires can be used and connected. If an accessory will be powered directly or an accessory relay, like a cooling fan or driving light relay, will be installed, choose the best option for connection according to the instructions and diagrams that follow.

If there is no need for an extra switched ignition power source at this time, simply insulate the **GREY/WHITE #906** wire with an insulated terminal from the parts kit. **GREY/WHITE #901** can be removed or be bundled away for later use.

POWERING A COMPONENT DIRECTLY

If you are powering a component directly, the fuse may need to be replaced with a larger one to handle additional amperage.

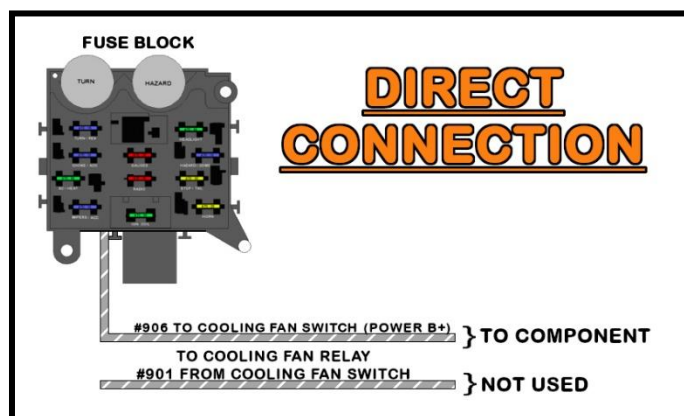
- Remove the 15-amp fuse from the location on the fuse block labeled "ELEC FAN". Replace this fuse with a larger fuse that corresponds to the amperage rating the component you connected requires; **this fuse can NOT be larger than 20 amps.**

The 18-gauge **#906** wire will only be able to handle a maximum rating of 20 amps.

Cab-Mounted Direct Connection

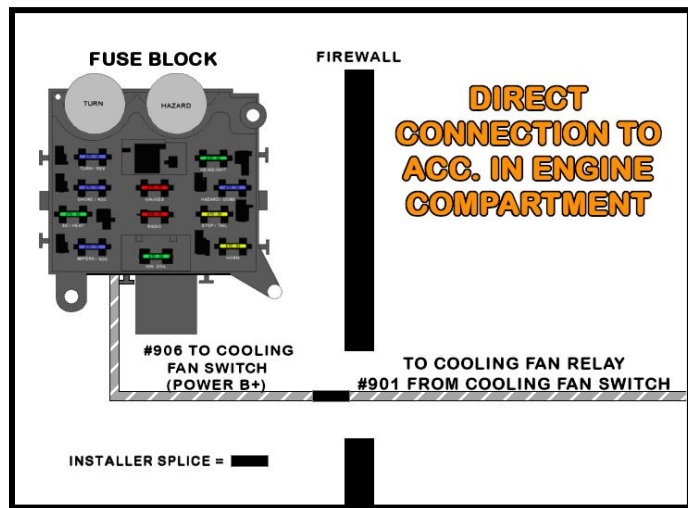
The connection for powering an aftermarket component will depend on where the component is located. If the component is located within reach of the **#906** wire on the inside of the truck, wire **#901** will not be used.

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



Engine Compartment Mounted Direct Connection

If a component is in the engine compartment Connect **GREY/WHITE #906** and **GREY/WHITE #901**. This will supply power to the **GREY/WHITE #901** wire.



RELAY ACTIVATED COMPONENT

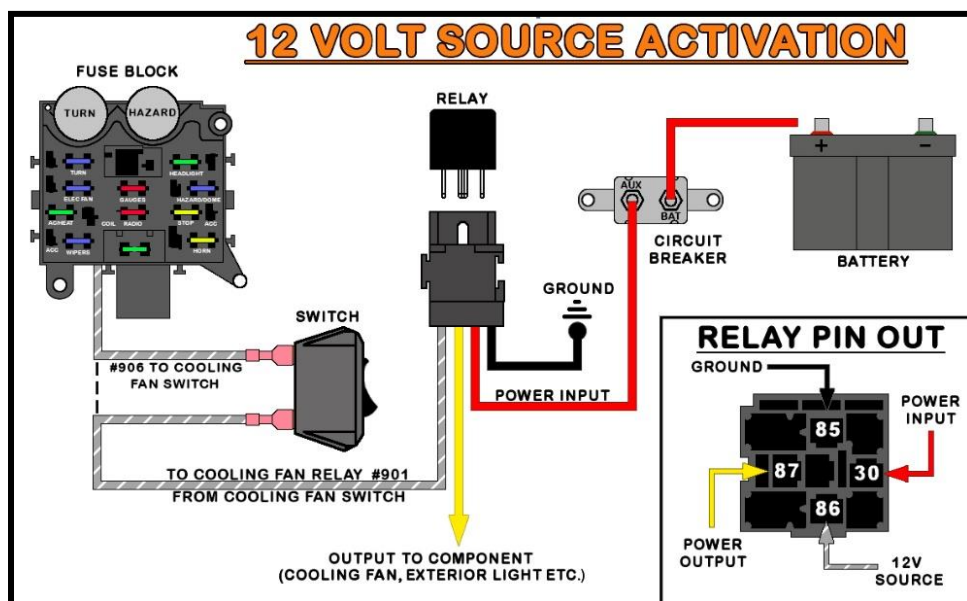
Those needing to activate relays have two options: power activate the relay or ground activate the relay. The difference will determine how the **GREY/WHITE #906** and **GREY/WHITE #901** wires are wired.

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.

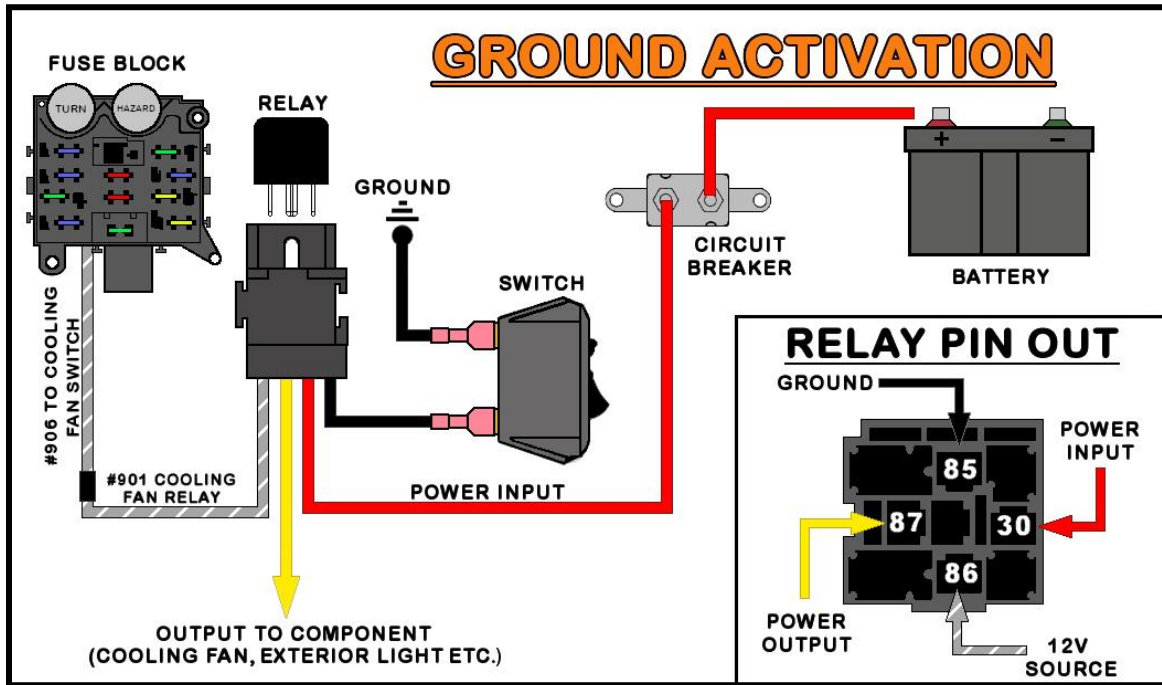
Wiring directly to the relay, as indicated by the dashed line, would be used in the case of wiring a Fuel Pump relay, water pump relay, or any other high amperage component you would want to run continuously while the key is in the on position. In these cases, Connect **GREY/WHITE #906**, and **GREY/WHITE #901**. This will supply power to the **GREY/WHITE #901** wire.

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.



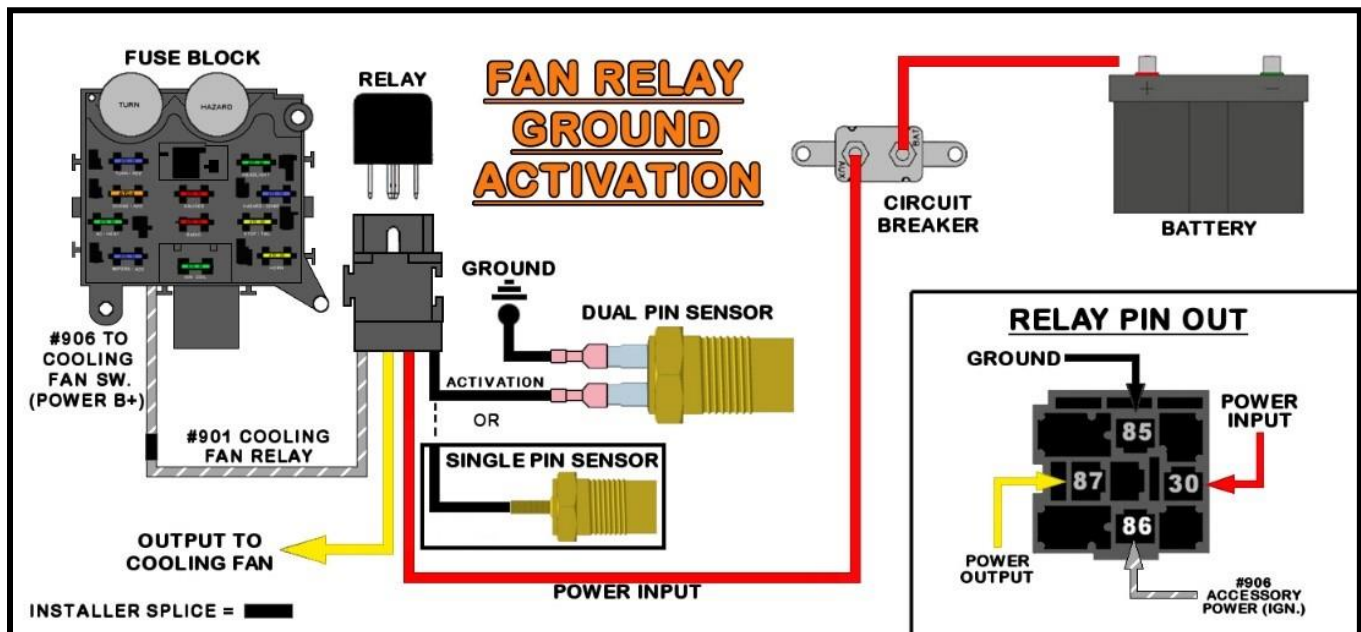
Ground Activated Relay

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 using a thermostatic switch, located in the engine compartment, to control your cooling fan relay, you should have re-routed the Electric Fan Section with the Engine Section.



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 sensor, connects according to the instructions below. The instructions below also work when installing a relay that will operate an electric fuel pump, water pump, or some other component that you want to activate anytime the key is in the "ON/RUN" position.

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

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

VIEW THESE OPTIONS AND MORE AT WWW.PAINLESSPERFORMANCE.COM

WIPER MOTOR/ WASHER PUMP SECTION

The **Wiper Motor Section** consists of 2 wires; the **LT. BLUE #977** wire that runs between the Wiper Switch and the Wiper Motor and a power wire for the motor. If you do not have a wiper system, the **LT. BLUE #977** wire can be removed from the harness and the **YELLOW #905** power wire can be used as an ignition switched power source or capped and stowed away.



LT. BLUE: 18-gauge wire, printed **WIPER SW. << #977 >> [WIPER MOTOR SECTION] TO WIPER MOTOR**, 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.

YELLOW: 18-gauge wire, printed **[WIPER MOTOR SECTION] #905 TO WIPER MOTOR (POWER B+)**, this wire supplies switched ignition power to the wiper motor from the 15-amp WIPERS fuse on the fuse block.

As stated in the **Wiper Switch Section**, the 1963 – 1966 pickups came with several wiper system set-ups: single or dual speed and with or without a washer pump. The most basic system (1-speed w/o washer) has a one-terminal switch and only requires the **LT. BLUE #977** and the **YELLOW #905** wires. For more complex systems you will need to use the additional Wiper Pigtail included in the Painless kit (seen to the right). The wires in this pigtail are:



BLACK/YELLOW: 16-gauge wire, not printed, **WIPER MOTOR TO WASHER PUMP**, this is a small jumper wire that provides power from the wiper motor to the washer pump.

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 **#984 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.

WIPER MOTOR

The motor receives power via the **YELLOW #905** wire from the fuse block. The ground signals come from the wires running between the motor and the pump. Again, the connections to the Wiper Motor, like the Wiper Switch, will depend on your setup.



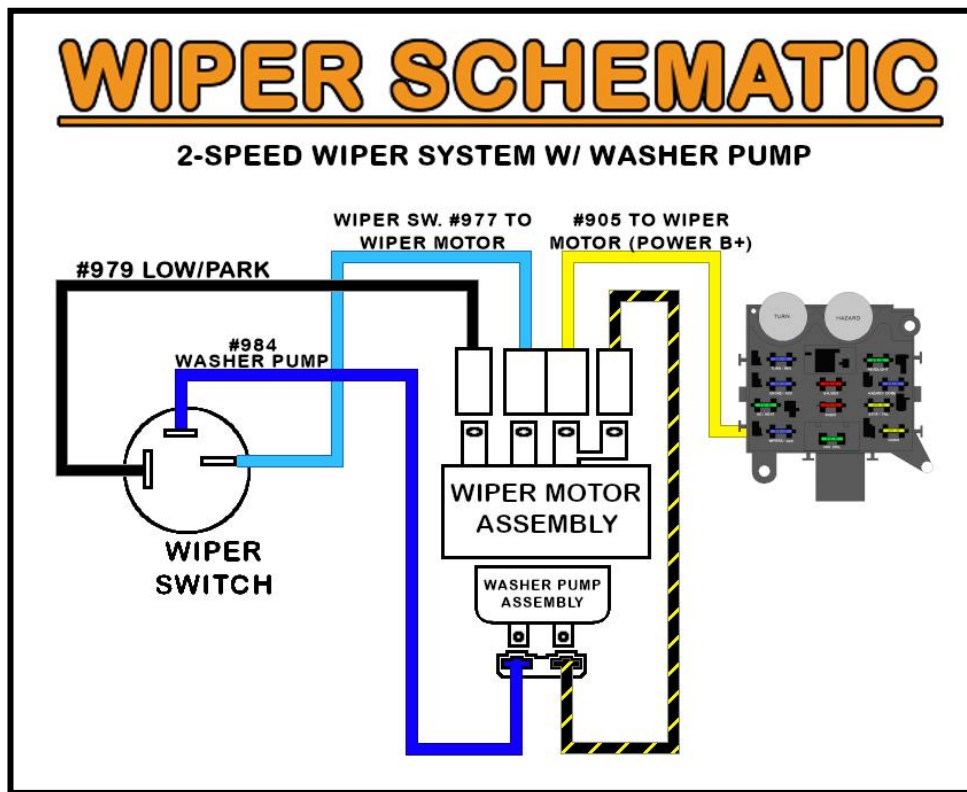
- All factory wiper systems will use these two wires: **LT. BLUE #977** and **YELLOW #905**. These wires have a pre-installed, 2-terminal connector like the one seen to the right. Route these to the Wiper Motor and connect.
- If you are using a dual-speed system connect the **BLACK #979** pigtail wire from the switch to the motor. This wire sends a ground signal to the motor from the switch for the LOW/PARK function.

WASHER PUMP

The washer pump receives a ground signal from the wiper switch to activate the pump. Once activated, it pumps washer fluid from the reservoir to the washer nozzles.

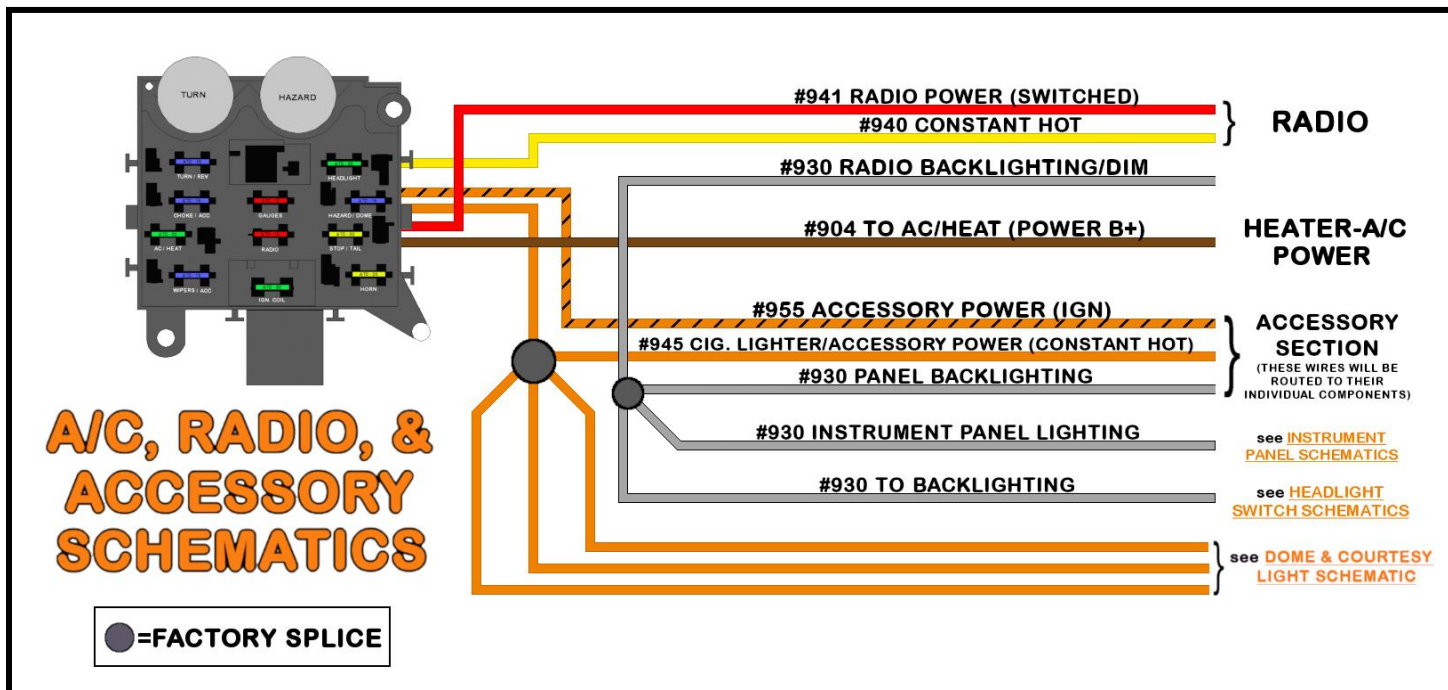
- For the washer pump, connect the **BLUE #984** from the switch to the pump.
- Then, connect the **BLACK/YELLOW** jumper wire from the motor to the washer.

Refer to the [Wiper System Schematics](#) on [pages 64 & 65](#) that best represents your system, factory schematics, or your old harness for proper connections to your wiper motor and washer pump.



RADIO & HEATER

This Painless harness includes basic connections for a radio and an air conditioner/ heater. 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 two wires dedicated to connecting to the radio and general panel backlighting wire. They are:

YELLOW: 18-gauge wire, printed **[RADIO SECTION] #940 CONSTANT HOT**, 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 30-amp HEADLIGHT fuse.

RED: 18-gauge wire, printed **[RADIO SECTION] #941 RADIO POWER (SWITCHED)**, 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 10-amp RADIO fuse of the fuse block.

GREY: 18-gauge wire, printed **[RADIO SECTION] #930 RADIO BACKLIGHTING / DIM**, this wire provides a power signal to the radio to dim the backlighting/display during low light conditions. This wire is also long enough to be jumpered or chained (see [page 83](#)) to additional accessories requiring power for backlighting. This wire has power anytime the headlight switch is in the Park/Taillights ON or Headlights ON position.

- 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.

- If you are using a factory radio, a factory schematic for the vehicle it came out of is needed to identify the connections to the radio.

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.

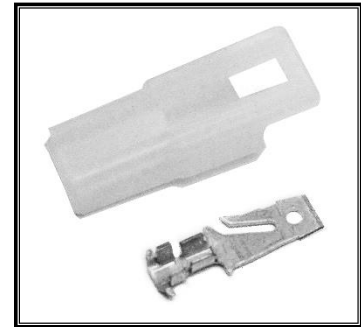
- You must supply a ground for the radio.

HEATER/ AC POWER

The Painless harness provides a single power wire for factory and aftermarket heater and/or A/C systems. That wire is:

BROWN: 14-gauge wire, printed, **[AC/HEAT SECTION] #904 TO AC/HEAT (POWER B+)**, this wire provides a switched ignition power source for a factory or aftermarket A/C system.

- Install mating insulated terminals onto the **#904** and to the wire of your aftermarket A/C system harness that requires a fused, switched ignition, 12v source.



Those using factory heater or A/C harness:

As previously mentioned on [page 15](#), this harness does not include any wiring for the factory air conditioning or wiring to the blower motor and blower motor resistor; your original harness or a reproduction of the original harness must be used. The Painless harness plugs directly into a factory/reproduction harness without any modifications.

- 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 air conditioning harness.

GLOVEBOX & 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 61](#). They are:

ORANGE: 18-gauge, printed [PASS. COURTESY] #971 PASSENGER COURTESY LIGHT / GLOVE BOX LIGHT, this wire provides power from the 15-amp HAZARD/DOME fuse on the fuse block. This fuse is battery powered and always has power.



WHITE: 18-gauge, printed [PASS. COURTESY] #961 PASSENGER 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 an aftermarket 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.

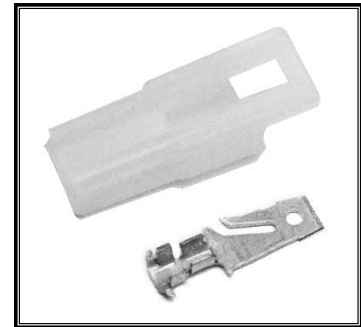
- Locate a lamp socket and terminals from the parts kit. This light socket can use either a 63 or 67 series bulb.
- Locate a suitable mounting location under the passenger's side of the dash. The light socket has a small hole in a mounting tab to allow mounting. This kit provides both self-tapping screws 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.

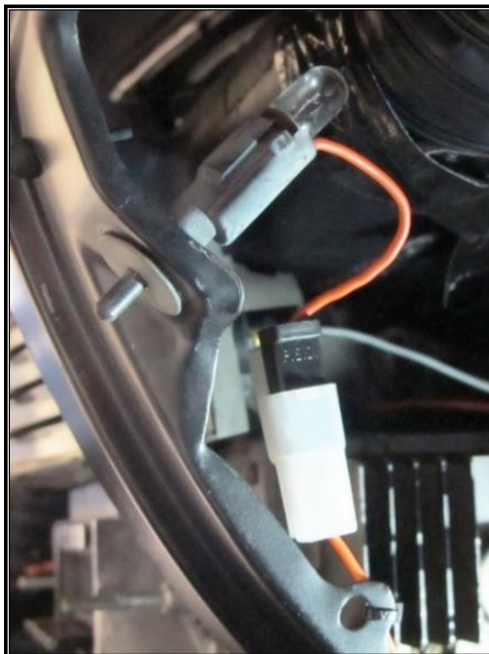
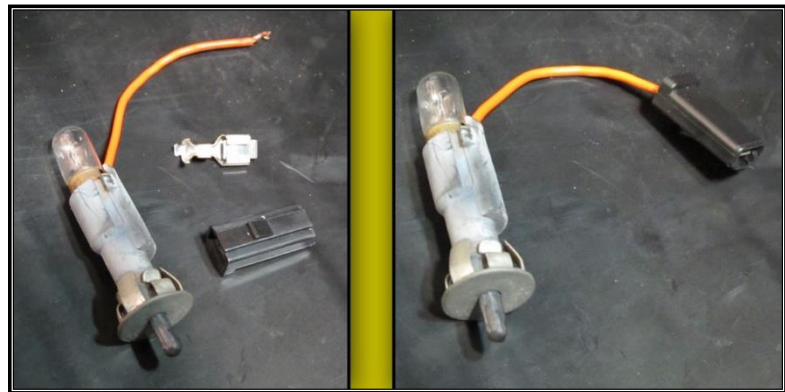
GLOVEBOX SWITCH

The glovebox switch is a simple, plunger activated light that illuminates the inside of the glove box when the glove box door is opened. The glovebox switch requires a single power wire to function correctly as it grounds through its mounting.

- Route the **ORANGE #971** wire to the glove box switch and cut to length. Install the terminal and connector (seen in the photo to the right).



Factory Switch: The factory wire for the switch has a single terminal installed into the side of the switch. This wire can be difficult to remove, and, chances are, you will break the switch trying to remove it. Painless recommends cutting the wire going to the switch and installing a terminal and connector, as seen in the photo below. This allows the connector shown above to be installed on the Painless harness and plug right in.



- With the factory switch now modified, install it into the dash and connect it to the **ORANGE #971** wire on the Painless harness.

PASSENGER SIDE DOOR JAMB SWITCH

If you have installed aftermarket door jamb switches, the passenger side door jamb switch is the last connection on the passenger side of the vehicle's interior.

Locate the cut-off portion of the **WHITE #961** wire in the courtesy light section that should have been doubled at the courtesy light.

- Route the **WHITE #961** wire to the passenger's 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.

The final connection in the interior of your vehicle will be the dome light and, if applicable, the cab mounted fuel tank. If you have a cab-mounted fuel tank, the **TAN #939** wire should have been rerouted with the **Dome Light Section** on [page 16](#).

DOMELIGHT

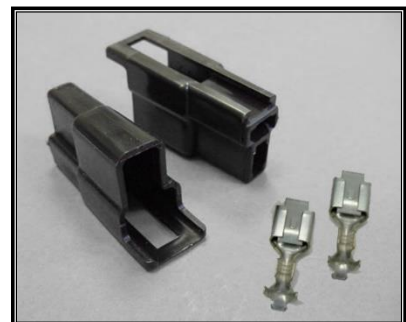
The dome light has constant battery power applied to it. This light, along with the under-dash courtesy lights, are ground activated by turning the headlight switch to the DOME LIGHT ON position or by aftermarket door jamb switches. These wires can be seen in the [Dome / Courtesy Light Schematic](#) on [page 61](#). They are:

ORANGE: 18-gauge wire, printed **[DOMELIGHT SECTION] #945 TO DOME LIGHT (POWER B+)**, this power wire comes from the 15-amp HAZARD/DOME fuse on the fuse block; this fuse has battery power and is "hot" at all times.

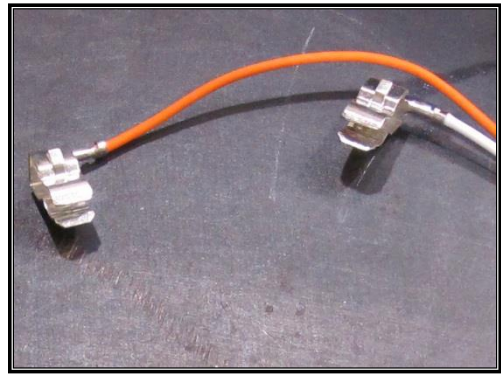


WHITE: 18-gauge wire, printed **[DOMELIGHT SECTION] #961 DOME LIGHT GROUND**, this wire is the ground wire that activates the dome light. When this wire is grounded it completes the voltage path causing the light to illuminate. This ground will come from either the door jamb switch or the headlight switch.

- Rout the **Dome Light Section** (**TAN #939** included if applicable) down from the fuse block and through the groove in the door jamb.
- 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.



- If you do not have a factory pigtail, there has been ample length supplied to allow routing of 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. Terminals have been provided to allow connecting to your existing dome light fixture.



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 TO FUEL SENDER**, 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.

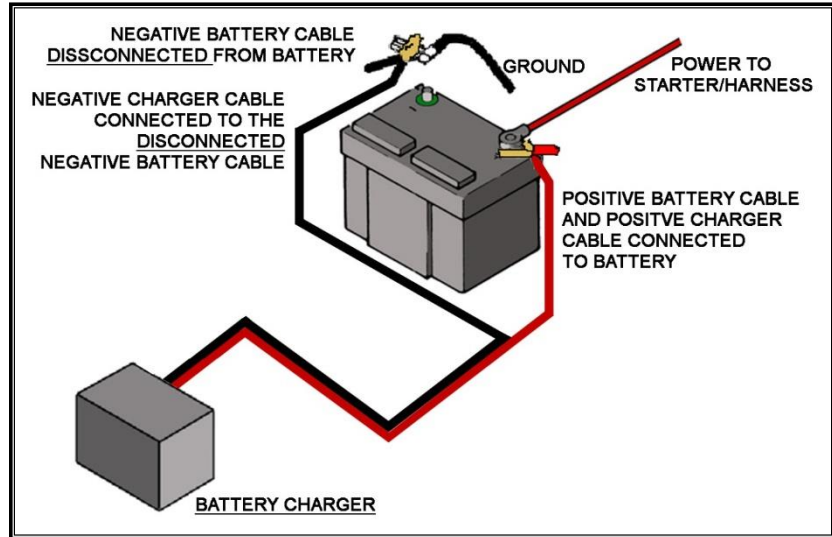
If you do not have a ground tab, run a ground wire from a clean chassis ground source to one of the mounting bolts of the sending unit. Do not rely on a ground through the mounting of the sending unit to the tank.



TESTING THE SYSTEM

Use a small (10-amp or less) battery charger to power up the vehicle for the first time to test the circuits. If there is a problem anywhere, the battery charger's low amperage and internal circuit breaker will provide circuit protection.

- Make sure the negative (-) battery cable is connected to the frame or engine block, and make sure there is a ground between the engine and frame. **The negative battery cable should still be disconnected from the Battery**



- Connect the positive (+) battery cable to the positive side of the battery and make sure the other end of this cable is connected to the B+ side of the starter solenoid.
- At this point connect the **RED #915** from the MIDI fuse to the positive side of the battery, either through the starter lug or the battery lug.
- Connect the Battery Charger's NEGATIVE cable to the automobile chassis, engine block, or the disconnected Negative Battery cable. **Do NOT connect the Battery Charger's NEGATIVE cable to the Battery.**
- Connect the Battery Charger's POSITIVE cable to the automobile's positive battery terminal lug.
- INDIVIDUALLY turn on each light, ignition, wiper circuit, etc. and check for proper operation. Turn off each component before testing another.

Note: If you try to test more than one circuit at a time, the charger will not provide enough amperage for each circuit to work correctly.

- After all circuits have been checked, disconnect the battery charger and attach the vehicle's negative (ground) battery cable to the battery.
- 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.

FRONT LIGHT SECTION

Color	Gauge	Wire Print	Origin
Light Green	14	#908 RIGHT HEADLIGHT HIGH BEAM	Dimmer Switch
Light Green	14	#908 LEFT HEADLIGHT HIGH BEAM	Dimmer Switch
Tan	14	#909 LEFT HEADLIGHT LOW BEAM	Dimmer Switch
Tan	14	#909 RIGHT HEADLIGHT LOW BEAM	Dimmer Switch
Purple	18	#927 LEFT FRONT PARK LIGHTS	Headlight Switch
Purple	18	#927 RIGHT FRONT PARK LIGHTS	Headlight Switch
Blue	18	#925 TO RIGHT FRONT TURN SIGNAL	Instrument Panel
Light Blue	18	#926 TO LEFT FRONT TURN SIGNAL	Instrument Panel
Green	14	#924 TO HORN	Horn Relay
Grey/White	18	FROM COOLING FAN SWITCH <<#901>> TO COOLING FAN RELAY	Fan Switch

ENGINE SECTION

Color	Gauge	Wire Print	Origin
Red	18	#954 TO ELECTRIC CHOKE (IGN. POWER)	Fuse Block
Purple	14	START << #919 >> TO STARTER SOLENOID "S"	Ignition Switch
Pink	16	#920 TO COIL (IGN. POWER)	Fuse Block
Red	8	#916 TO BATTERY SOURCE (MIDI FUSE)	Fuse Block
Green	18	#921 TO TEMP SENDER (HOT)	Instrument Panel
Lt. Green	18	#962 TO TEMP SENDER (COLD)	Instrument Panel
Blue	18	#922 TO OIL SENDER	Instrument Panel
Purple/White	18	#923 TACH SIGNAL (COIL -)	Instrument Panel

VOLTAGE REG. SECTION

Color	Gauge	Wire Print	Origin
Brown	18	#914 TO VOLTAGE REGULATOR (IGN. POWER)	Instrument Panel
Red	16	#995 ALT. REGULATOR POWER (BATTERY)	Fuse Block

ALTERNATOR PIGTAIL

Color	Gauge	Wire Print	Origin
Blue	16	ALTERNATOR (F TERM) << #966 >> VOLTAGE REG. (F TERM)	Alt. to Volt. Reg.
White	16	ALTERNATOR (R TERM) << #967 >> VOLTAGE REG. (#2 TERM)	Alt. to Volt. Reg.

TAIL SECTION

Color	Gauge	Wire Print	Origin
Brown	18	#929 LEFT TAIL LIGHT	Headlight Switch
Brown	18	#929 RIGHT TAIL LIGHT	Headlight Switch
Brown	18	#929 TO LICENSE PLATE	Headlight Switch
Yellow	16	<< #949 LEFT REAR TURN SIGNAL >>	Turn Switch
Green	16	<< #948 RIGHT REAR TURN SIGNAL >>	Turn Switch
Light Green	18	#956 LEFT REVERSE LIGHT POWER	Reverse Switch
Light Green	18	#956 RIGHT REVERSE LIGHT POWER	Reverse Switch
Tan	18	#939 TO FUEL SENDER	Instrument Panel

DIMMER SWITCH SECTION

Color	Gauge	Wire Print	Origin
Light Green	14	HEADLIGHT HIGH BEAM << #908 >> TO DIMMER SWITCH	Headlight Section
Light Green	18	TO DIMMER SWITCH << #936 >> HIGH BEAM INDICATOR	Instrument Panel
Tan	14	HEADLIGHT LOW BEAM << #909 >> TO DIMMER SWITCH	Headlight Section
Lt. Blue	14	TO DIMMER SW. << #907 >> OUTPUT TO DIMMER SWITCH	Headlight Switch

DRIVER COURTESY SECTION

Color	Gauge	Wire Print	Origin
Orange	18	#971 DRIVER COURTESY LIGHT (POWER B+)	Fuse Block
White	18	#961 DRIVER COURTESY LIGHT GROUND	Headlight Switch

HEADLIGHT SWITCH SECTION

Color	Gauge	Wire Print	Origin
Red	14	#928 TO HEADLIGHT SWITCH (POWER B+)	Fuse Block
Orange	14	#959 TAIL LIGHT POWER INPUT (POWER B+)	Fuse Block
Lt. Blue	14	TO DIMMER SWITCH << #907 >> OUTPUT TO DIMMER SWITCH	Dimmer Switch
Purple	16	#927 TO FRONT PARK LIGHTS	Headlight Section
Grey	16	#930 TO BACKLIGHTING	Instrument Panel
Brown	16	#929 TO REAR TAIL LIGHTS	Tail Section
White	18	#961 TO DOME LIGHT GROUND	Dome Light Section

WIPER SWITCH SECTION

Color	Gauge	Wire Print	Origin
Lt. Blue	18	WIPER SW. << #977 >> TO WIPER MOTOR	Wiper Motor

TURN SIGNAL SWITCH SECTION

Color	Gauge	Wire Print	Origin
Blue	16	#925 RIGHT FRONT	Instrument Panel
Light Blue	16	#926 LEFT FRONT	Instrument Panel
Black	18	#953 TO HORN SWITCH	Fuse Block
Purple	16	#952 TURN SWITCH (TURN FLASHER)	Fuse Block
Brown	16	#951 EMERGENCY FLASHER SW. B+	Fuse Block
White	16	<< #918 BRAKE SWITCH OUPUT >>	Brake Switch
Green	16	<< #948 RIGHT REAR TURN SIGNAL >>	Tail Section
Yellow	16	<< #949 LEFT REAR TURN SIGNAL >>	Tail Section

BRAKE SWITCH SECTION

Color	Gauge	Wire Print	Origin
Orange	16	#917 BRAKE SWITCH INPUT (POWER B+)	Fuse Block
White	16	<< #918 BRAKE SWITCH OUPUT >>	Turn Signal Switch

REVERSE SWITCH SECTION

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

IGNITION SWITCH SECTION

Color	Gauge	Wire Print	Origin
Red	12	#934 TO IGNITION SWITCH (POWER B+)	Fuse Block
Pink	12	#933 TO IGNITION SWITCH (IGN)	Fuse Block
Brown/White	16	#932 TO IGNITION SWITCH (ACC)	Fuse Block
Green	18	#969 TO IGNITION SWITCH (GRD)	Ignition Switch
Purple	14	START << #919 >> TO STARTER SOLENOID "S"	Eng Section

ACCESSORIES SECTION

Color	Gauge	Wire Print	Origin
Orange/Black	16	#955 ACCESSORY POWER (IGN)	Fuse Block
Grey	18	#930 PANEL BACKLIGHTING	Headlight Switch
Orange	14	#945 CIG. LIGHTER/ACCESSORY POWER (CONSTANT HOT)	Fuse Block

INSTRUMENT PANEL SECTION

Color	Gauge	Wire Print	Origin
Light Green	18	TO DIMMER SWITCH << #936 >> HIGH BEAM INDICATOR	Dimmer Switch
Blue	18	#925 TO RIGHT FRONT TURN SIGNAL	Headlight Section
Blue	16	#925 RIGHT FRONT	Turn Switch
Light Blue	18	#926 TO LEFT FRONT TURN SIGNAL	Headlight Section
Light Blue	16	#926 LEFT FRONT	Turn Switch
Tan	18	#939 TO FUEL SENDER	Tail Section
Pink	16	#935 GAUGE POWER	Fuse Block
Green	18	#921 TO TEMP SENDER (HOT)	Engine Section
Light Green	18	#962 TO TEMP SENDER (COLD)	Engine Section
Blue	18	#922 TO OIL SENDER	Engine Section
Brown	18	#970 GENERATOR LIGHT	Fuse Block
Brown	18	#914 TO VOLTAGE REGULATOR (IGN. POWER)	Engine Section
Grey	16	#930 INSTRUMENT PANEL LIGHTING	Headlight Switch
Purple/White	18	#923 TACH SIGNAL (COIL -)	Engine Section
Green	18	#969 TO IGNITION SWITCH (GRD)	Ignition Switch

WIPER MOTOR SECTION

Color	Gauge	Wire Print	Origin
Yellow	18	#905 TO WIPER MOTOR (POWER B+)	Fuse Block
Light Blue	18	WIPER SW. << #977 >> TO WIPER MOTOR	Wiper Switch

WIPER SYSTEM PIGTAIL

Color	Gauge	Wire Print	Origin
Black	16	#979 LOW/PARK	Switch to Motor
Blue	16	#984 WASHER PUMP	Switch to Pump
Black/Yellow	16		Motor to Pump

RADIO SECTION

Color	Gauge	Wire Print	Origin
Yellow	18	#940 CONSTANT HOT	Fuse Block
Red	18	#941 RADIO POWER (SWITCHED)	Fuse Block
Grey	18	#930 RADIO BACKLIGHTING/DIM	Headlight Switch

HEATER SECTION

Color	Gauge	Wire Print	Origin
Brown	14	#904 TO AC/HEAT (POWER B+)	Fuse Block

ELECTRIC FAN SECTION

Color	Gauge	Wire Print	Origin
Grey/White	18	#906 TO COOLING FAN SWITCH (POWER B+)	Fuse Block
Grey/White	18	FROM COOLING FAN SWITCH << #901 >> TO COOLING FAN RELAY	Headlight Section

PASSENGER COURTESY SECTION

Color	Gauge	Wire Print	Origin
Orange	18	#971 PASSENGER COURTESY LIGHT/GLOVE BOX LIGHT	Fuse Block
White	18	#961 PASSENGER COURTESY LIGHT GROUND	Headlight Switch

DOME SECTION

Color	Gauge	Wire Print	Origin
Orange	18	#945 TO DOME LIGHT (POWER B+)	Fuse Block
White	18	#961 DOME LIGHT GROUND	Headlight Switch

Painless Performance Products, LLC **Limited Warranty and Return Policy**

Chassis harnesses and fuel injection harnesses 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 seller's 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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