

# **PAINLESS**<sup>®</sup>

## **PERFORMANCE PRODUCTS**

### **Wire Harness Installation Instructions Manual #90567**

**For Installing:**

**Part #30830**



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

P/N 90567 Painless Wiring Manual

**2<sup>ND</sup> Edition MARCH, 2019**

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

**NOTE :**

- A color copy of these instructions can be found at <http://www.painlessperformance.com/InfoSearch/manuals.php>
- If your vehicle has an existing harness, you will want to retain it for the possible re-use of various pigtailed & connector housings particular to your application. During the removal process, avoid making any unnecessary cuts and label all connectors as they are disconnected. Labeling will allow quicker and easier identification in the event you need the OEM harness for reference during the install of your new Painless harness.
- Painless Performance Products recommends you, the installer, read this installation manual from front to back before installing this harness. Due to the variables in modifications that can be done to vehicles, reading this manual will give you considerable insight on the proper routing and installation of this harness.

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## **INTRODUCTION**

You have purchased what we at Painless Performance Products believe to be the easiest to install engine wire harness on the market. It is designed for easy installation, even if you have no electrical experience

The C.S.I. harness is a universal weather-proof engine harness providing wiring to accommodate the **C**harging, **S**tarting, and **I**gnition of just about any non fuel injected engine. Accessory circuits aide in re-connecting a factory fuse block, electric fuel pump, electric water pump, electric cooling fans, light switch, etc. More information on the Accessory circuits can be found on page 15. Being a universal harness you may find that some wires needed for your particular application are not included in this kit. This kit only contains the wires that are common among all Charging, Starting, and Ignition systems. All wires included in this kit can be seen in the **Harness Schematic** on the next page. In most cases the wires not included pertain to externally regulated alternators and factory electronic ignition systems. Painless has done it's best to include diagrams showing wires you, the installer, may be required to add that are not included in this kit.

The proper fuses have been pre-installed in the fuse block. In addition, wires are printed with their function, connection point, and in most cases a #900 series number for easy identification. This will help you identify the different circuits during installation and later on if additions to the overall system are necessary.

This Painless wire harness is manufactured using high quality 600 volt, 275°F, TXL wire. Standard automotive wire is GPT, 300 volt, 176°F, with PVC insulation.

This complete engine wiring system has been designed with four major sections incorporated into it:

**INTERIOR SECTION:** Gauge connections (Water temperature, oil pressure, tachometer, gauge power / voltmeter, alt/charge indicator) and Ignition Switch

**ENGINE SECTION:** Water temperature, oil pressure, tachometer, coil, ignition bypass, choke, battery feed, alternator, and starter

**ACCESSORY SECTION:** 30 amp max switched power Accessory, 30 amp max constant power Accessory, one un-fused constant battery power Accessory.

**FUSE BLOCK:** includes 4 fused circuits

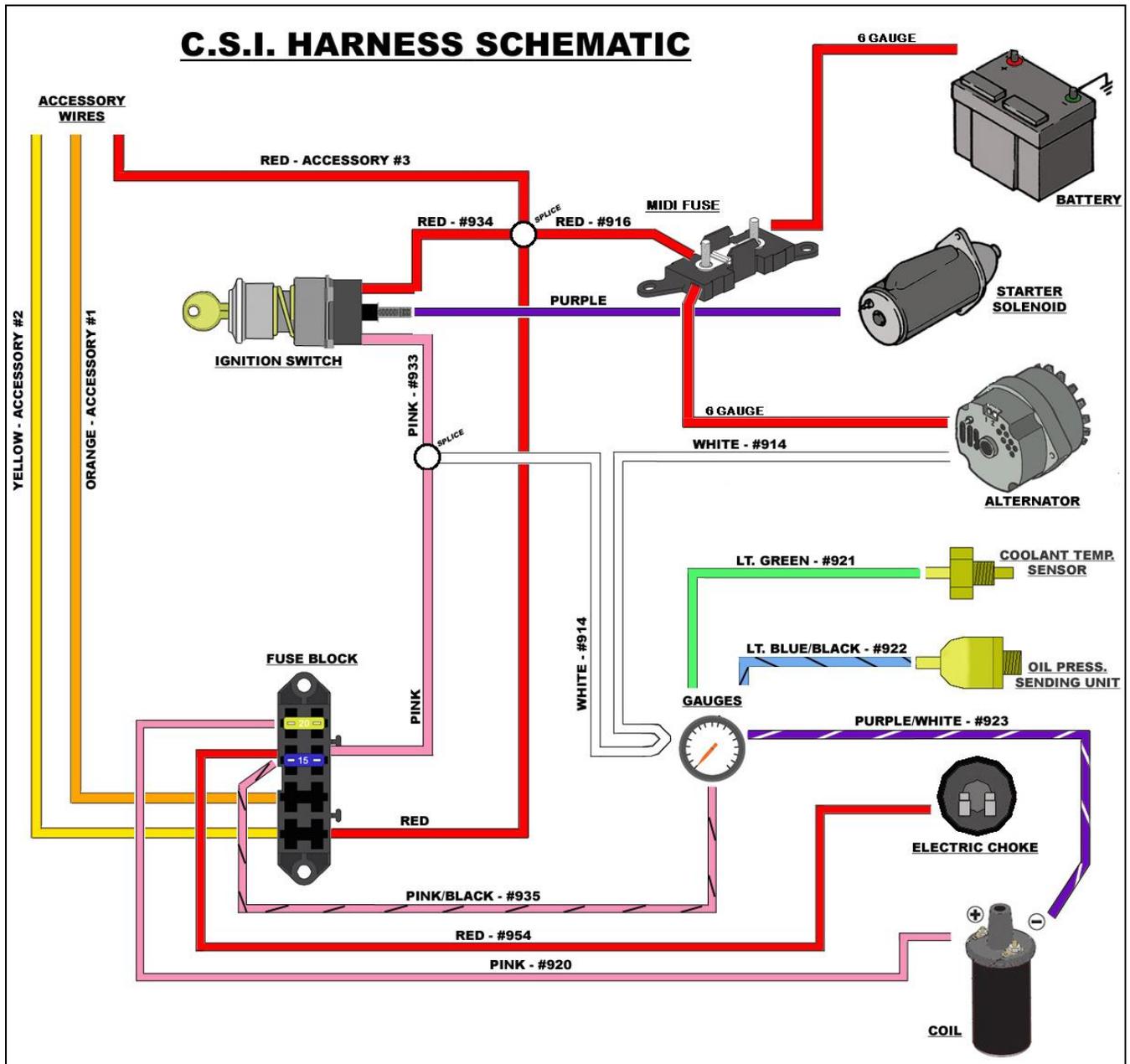


Figure 1 C.S.I. Harness Schematic

### CONTENTS OF THE PAINLESS C.S.I. WIRE HARNESS KIT

Refer to the list below to take inventory of all the parts in the kit. If anything is found to be missing, contact the dealer the kit was purchased from or Painless Performance at (800)423-9696. The C.S.I. Engine Harness Kit should contain the following items:

- The Main Wire Harness, with Fuse Block
- One Red 6 gauge charge wire
- Bag Kit: Nylon Tie Wraps, 1 Grommet, Bag containing MIDI Fuse parts,
- Parts Box containing Terminals, Splices, Spare Fuses etc.



**Figure 2** C.S.I. Wire Harness Kit

## **TOOLS NEEDED**

In addition to basic hand tools the following will also be needed:

- Crimping Tool *Note: Use a quality tool to avoid over-crimping.*
- Wire Stripper
- Test Light or Volt Meter

## **HARNES ROUTING**

The C.S.I. harness has been designed with enough length to allow installation into a wide range of vehicles and applications. You may find that excessive lengths of wire will need to be cut to custom fit the harness to your particular application. Painless Performance recommends that you, the installer, route the entire harness to all connection points particular to your application before any cutting is done and before the fuse block has been mounted.

Pre-routing the harness will allow you to route the harness to your liking without the issue of wire length shortages to compromise your install. During the routing process remember to keep the harness away from high heat areas, sharp edges, and moving components such as hinges.

The zip ties found pre-installed on the harness were only used during the build process of the C.S.I. harness and may need to be cut or moved as the harness is routed to make your particular install cleaner and easier. In most cases it is advised to cut the tie wraps and push and pull the wire to the length needed before any actual cutting is done. This will allow you more room for connection on the opposite end of the wire.



## Fuse Block Mounting

- Begin by finding a suitable location to mount the fuse block. The location of the Fuse Block must be easy to access, yet out of the way during operation of the vehicle. Suitable locations for the fuse block can generally be found under the dash or on the firewall. The Fuse Block supplied with the C.S.I. harness is weather proof; however, avoid mounting the Fuse Block where it may become in direct constant contact with water or in a position which could be submerged in water during operation of the vehicle.
- Using the 2 self tapping screws provided in the parts kit, mount the fuse block in the desired location.

## INTERIOR CONNECTIONS

The interior or passenger compartment connections of the C.S.I. harness include connections to the Ignition Switch and to the Gauges.

### Ignition Switch

Some installers may decide not to use an actual keyed ignition switch. Instead you may opt to use a toggle/rocker switch to activate the switched power and a separate momentary/push button for the start function. For this type of installation, a relay must be used to activate the switched 12v power to the harness and possibly the starter. Connect your Ignition Switch wiring according to the diagram that best represents your set up. Ignition switch schematics are on page 18-23.

Ignition Switch wiring of the C.S.I. harness consists of 3 wires, those wires are as follows:

- **Red- #934 Ignition Switch B+**

This wire will feed the Ignition Switch with direct battery power. It needs to be connected to the "B+" terminal of the Ignition Switch.

This terminal may provide battery power to other components. If you have an existing wire(s) connected to this terminal, trace them out to find where in the vehicle it connects to. If this terminal is providing battery power to a component(s) that will be re-used, double the **#934 Ignition Switch B+** wire up with the existing wire(s)

- **Pink- #933 Ignition Switch "IGN"**

This wire will carry power out of the Ignition Switch to the Fuse Block and to the Alternator Exciter wire. It needs to be connected to the "IGN" terminal of the Ignition Switch.

This terminal may provide switched 12v power to other components. If you have an existing wire(s) connected to this terminal, trace them out to find where in the vehicle it connects to. If this terminal is providing power to a component(s) that will be re-used, such as a factory fuse block, double the **#933 Ignition Switch "IGN"** wire up with the existing wire(s)

- **Purple- #919 Ignition Switch "Start" to "S" on Starter Solenoid**

This wire carries power from the Ignition Switch to the Starter Solenoid. Connect this wire to the "S" terminal or "Start" position of the Ignition Switch.

### Gauges

The electric Gauge wiring incorporated into this kit consist of the signal wires to the Engine Coolant Temperature, Oil Pressure, Tachometer, Voltmeter, and wires necessary for a Charge Indicator / Alternator Light. Additional power and grounds for gauge must be supplied by you, the installer. Also, you may notice there is no wiring for a fuel level gauge as the C.S.I. harness only covers wiring associated with the engine and its working components.

Gauge wiring of the C.S.I. harness consists of 5 wires, all of which can be seen in the **GAUGE SCHEMATIC** located on page 23 The 5 wires of the Gauge wiring are as follows:

- **Pink/Black- #935 Gauge/Voltmeter Power**

This wire shares a circuit with the Electric Choke, and is powered through the 15 Amp fuse found on the Fuse Block. This wire will provide the 12 volts required for a Voltmeter to work properly and can also be used to power other Gauges. Connect this Pink/Black wire to the “I” terminal found on most aftermarket gauges, to the ignition side of your factory Gauge, or to the input side of a voltage regulator found on a factory gauge cluster. It will be up to the installer to make the appropriate splices or jumper power to more than one location. An illustration showing these jumper wires can be seen on page 24.

- **Purple/White - #923 Tachometer to Coil “-“**

This wire will provide the Tach. signal from the Coil or Ignition box to the Tachometer. If you are re-connecting to a factory Tachometer, make sure your Tach requires this type of signal. Not all factory Tachometers work with this type of signal, some early Ford factory installed Tachs required a Coil “+” signal. Consult a factory specific schematic for these Tach. connections

- **Light Green - #921 Coolant Temp. Gauge to Coolant Temp. Sensor**

This wire will provide the Coolant Temp. Gauge a signal from the Coolant Temp Sensor. Connect this Light Green wire to the “S” terminal found on most aftermarket gauges, or to the signal side of your factory Gauge. This wire will not be connected if you are using a mechanical gauge.

- **Light Blue/Black - #922 Oil Press. Gauge to Oil Press. Sending Unit**

This wire will provide the Oil Pressure Gauge a signal from the Oil Pressure Sending Unit. Connect this Light Blue/Black wire to the “S” terminal found on most aftermarket gauges, or to the signal side of your factory Gauge. This wire will not be connected if you are using a mechanical gauge.

- **White - #914 Charge Ind. / Alternator Exciter**

This wire will be a loop in the Gauge section of wires and carries Switched 12v power from the Ignition splice found on the harness to the Alternator. **DO NOT CUT THIS LOOP if you do not have an Alternator Indicator light on your factory Gauge cluster, or do not wish to install a charge indicator wire.** *If this loop is cut, and not connected to some kind of indicator light, your charging system will not operate.*

In order to make the connection to an Alternator light on a factory cluster or to a charge indicator light, the loop must simply be cut. You will now have 2 white wires. These 2 wires will need to connect to the power and ground side of the indicator light. It does not matter which wire goes where on the light. The resistor provided with this kit will need to be installed between the 2 wires, an illustration showing this connection can be found on page 25.

The Charge Indicator will only work with the key in the “On” position when the engine is not running; this is because the engine is not charging. The Indicator will only be “On” when the alternator is not charging, if at anytime the Indicator is “On” with the engine running, you are having charging issues.

## **ENGINE CONNECTIONS**

The essential portion of the C.S.I. harness is the Engine Connections. These connections consist of sending unit connections for electric Gauges (water temperature & oil pressure), Coil/Ignition connections (coil power, start/ignition bypass, & tachometer signal), Electric Choke, Alternator & MIDI Fuse, and Starter Solenoid.

## Coil / Ignition

The Coil / Ignition wiring included in the C.S.I. harness consist of 3 wires. The connections of these 3 wires will vary according to what type of ignition system you are running. If you are using an aftermarket Ignition system, consult the manufacturer's instructions for proper installation of their ignition system. If a factory ignition system is being used, a factory schematic of the system will aide in properly re-connecting. Some of the wires required for factory Ford DuraSpark or Mopar Electronic ignition system are not included in the kit. Schematics of both systems, along with GM and a common aftermarket system, have been provided. These illustrations are on page 25-28.

The 3 wires that make up the Coil / Ignition portion of the C.S.I. harness are:

- **Pink - #920 to Coil "+"**

This wire carries switched 12v power from the Fuse Block (20 amp fuse) to the Coil / Ignition System. The connection of this wire depends greatly on what type of system you are running. A ballast resistor, supplied with the harness and seen in the photo to the left, will be needed if you do not have a newer internally resisted coil. **Neglecting to use the supplied ceramic ballast resistor on a coil that requires a resisted 12v supply, will cause the coil to quickly overheat leading to complete coil failure.** Connect this Pink wire according to the one of the diagrams shown on page 25-28 that best represents your setup.



- **Brown - #970 Ignition Bypass**

This wire comes from the "I" or "IGN" terminal of the starter solenoid and will ensure the Coil has a full 12v during engine start up. Connect the Brown wire to the "+" side of the Coil. Those using an aftermarket Ignition system or internally resisted coil may find that this wire is not needed in your application.

- **Purple/White - #923 Tachometer to Coil "-"**

This wire will provide the Tach. signal to the Tachometer from the Coil or Ignition box. The Purple/White wire will connect to the "-" side of the coil or to the Tach output on your ignition box.

If you are re-connecting to a factory Tachometer, make sure your Tach requires this type of signal. Not all factory Tachometers work with a signal from the "-" side of the Coil, some early Ford factory installed Tachs required a Coil "+" signal.

## Sensor / Sending Unit

The C.S.I. harness includes 2 signal wires for electric Engine Coolant Temperature and Oil Pressure gauges. These wires will not be connected if you are using mechanical gauges. These 2 wires can be seen in the **GAUGE SCHEMATIC** on page 23, they are:

- **Light Green - #921 Coolant Temp. Gauge to Coolant Temp. Sensor**

This wire will provide the Coolant Temp. Gauge a signal from the Coolant Temp Sensor. Connect this Light Green wire to the Engine Coolant Temperature sensor. This sensor is usually located in the intake manifold or on the side of a cylinder head. Some factory fuel injection engines had 2 coolant temp sensors, one for the ECM and one for electric cooling fans. In most cases, these type of sensors will not work for gauge purposes.

- **Light Blue/Black - #922 Oil Press. Gauge to Oil Press. Sending Unit**

This wire will provide the Oil Pressure Gauge a signal from the Oil Pressure Sending Unit. Connect this Light Blue/Black wire to the oil pressure sending unit. This sending unit can usually be found near the oil filter.

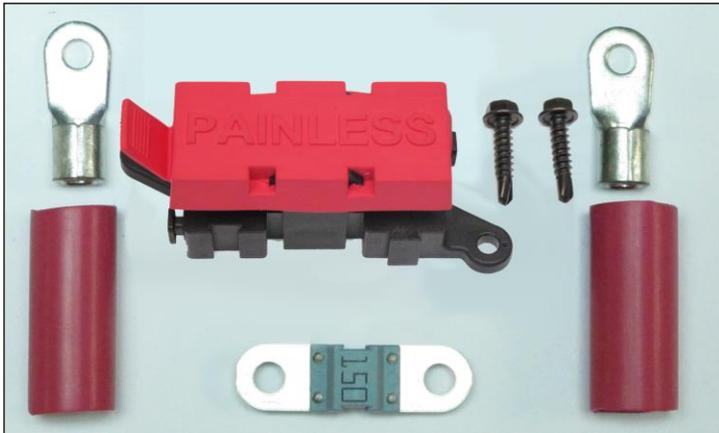
### Carburetor

A single Red wire is provided for connection to an Electric Choke. This wire can be seen in the **FUSE BLOCK SCHEMATIC** on page 9 and also in the **C.S.I. HARNESS SCHEMATIC** on page 7,

- **.Red - #954 Electric Choke**

This wire provides a switched 12v source to the Electric choke. It doubles at the fuse block with the Pink/Black wire providing gauge power (15 amp fuse). This wire needs to be connected to the B+ terminal on the Electric Choke. If an Electric Choke is not being used with red wire can be used as a switched 12v power source to a relay, or any other low amperage (10 amps or less) accessory. If this wire is not connected to the Choke or an accessory, the end of the wire will need to be taped and insulated to avoid it shorting to ground.

### MIDI Fuse



This fuse isolates the battery from the Alternator and the C.S.I. harness. This fuse, and everything required for installation, can be found in its own bag in the parts kit (seen in the photo to the left). This bag will contain:

- A MIDI fuse Base
- a self-tapping mounting screws
- 150 AMP MIDI fuses

*To install:*

- Find a suitable location for the

MIDI Fuse base. It can be mounted anywhere in the engine compartment, preferably near the battery. Make sure to avoid mounting it near excessive heat. Also take into consideration the length of wires which connect to the fuse, see below.

- Using the mounting screws, install the MIDI FUSE Base.
- Install a 150 amp MIDI fuse at this time.

There are 2 wires in the C.S.I. harness dedicated for MIDI Fuse connections, they are:

- **.Red - #916 B+ Power**

This wire is the life line to the C.S.I. harness. It provides constant battery power to the fuse block and ignition switch. This wire will need to be routed to the MIDI Fuse location and cut to length. This wire will connect with the **6 gauge Alternator Output** wire on one side of the MIDI Fuse. Most of the schematics in this manual show the proper MIDI fuse connections. This wire will require a red insulated #10 terminal from the parts kit.

- **Red - 6 gauge Alternator Output**

This large 6 gauge wire connects the Alternator output or B+ to the MIDI Fuse. This wire will also connect the MIDI Fuse to the battery. It is not built into the C.S.I. harness, but is instead just a rolled wire supplied in the kit. This is to allow the customer the ability to route the wire from the MIDI Fuse to the alternator however they choose.

The length of wire cut from 6 gauge, after it is connected to the Alternator and MIDI Fuse, will then be used to connect the opposite side of the MIDI Fuse to the vehicle's battery power. Again, most of the schematics in this manual show the proper MIDI fuse connections.

### **Alternator/Charging**

Like the ignition wiring, the wiring for the charging system will vary greatly from vehicle to vehicle. The Alternator/Charging wiring included in the C.S.I. harness consists of 2 wires. The connections of these 2 wires will depend to what type of charging system you are running. If you are using an aftermarket Alternator, consult the manufacturer's instructions for proper installation. If a factory charging system is being used, a factory schematic of the system will aide in properly re-connecting. Some of the wires required for externally regulated systems are not included in the kit. Schematics of the most common systems and alternators have been provided. These illustrations can be found on pages 28-30.

The 2 wires that make up the Alternator/Charging portion of the C.S.I. harness are:

- **.Red - 6 gauge Alternator Output**

This large 6 gauge wire connects the Alternator output to the MIDI Fuse. Connect this wire to the "B+" stud of the Alternator. A rubber boot has been provided along with an assortment of different size ring terminals to make this connection. This wire will support up to 150 amps. Installations with Alternators exceeding 150 amps will require the installer to supply a larger gauge wire. This will be the only wire connected for one wire Alternators.

- **. White - #914 Charge Ind. / Alternator Exciter**

This white wire will provide a switched 12 v source required by some Alternators and external voltage regulators. Connect this wire according the illustration that best represents the charging system specific to your application. Alternator / Charging system illustrations that begin on page 28.

A bag kit containing all of the parts necessary to connect to a GM 3 wire alternator has been provided, **Figure 20** page 30. If you experience engine run on after the ignition has been turned off, the supplied diode will need to be installed in line of the white wire according to the illustration shown on page 30.

### **Starter**

The Starting system wires will apply according to what kind of system you are using. Illustrations have been provided, on pages 32-33, showing the Ford, Mopar, and GM starting systems. These illustrations show the 2 wires included in the C.S.I. harness for the Starter Solenoid, these 2 wires are:

- **Purple- #919 Ignition Switch "Start" to "S" on Starter Solenoid**

This wire carries power from the Ignition Switch to the Starter Solenoid, engaging the Starter when the ignition switch is turned to the "Start" position.

Extra length has been provided to this Purple wire to allow the use of a Neutral Safety Switch. Painless highly recommends the usage of a Neutral Safety Switch, like [Painless part #80175](#). A Neutral Safety switch will not allow the engine to start while it is in gear. It will only allow the starter solenoid to be engaged with the transmission in Park or Neutral. Neutral safety switches can be found on the transmission, steering column or on the base of some aftermarket floor mounted shifters. The extra length will allow the installer to route the purple wire from the ignition switch to the neutral safety switch and cut it to length. With the length of wire cut from the ignition switch to neutral safety, you can connect the neutral safety switch to the "S" terminal of the starter solenoid.

- **.Brown - #970 Ignition Bypass**

This wire comes from the “+” side of the Coil and connects to the “I” terminal of the Starter Solenoid. The “I” terminal will have 12v only when the engine is cranking, thus providing a full 12v to the ignition system during engine start up. Those using an aftermarket ignition system or internally resisted coil may find that this wire is not needed in your application.

## **ACCESSORY WIRES**

Three different Accessory wires can be found included in the C.S.I. harness. These wires have unlimited possibilities in how they can be used. Any wires that are un-used will need to have the ends taped and/or insulated to prevent them from shorting to ground. The Accessory wires included in the C.S.I. harness are:

- **.Orange – Accessory #1 Switched B+**

This wire can be used to power anything requiring a switched 12 volt power source, so long as the amperage does not exceed 30 amps. It is 48” longer than the other Accessory wires to allow the installer to route this wire to the rear of the vehicle to power an electric fuel pump if they desire. This wire uses the circuit on the fuse block directly below the pre-installed 15 amp (blue) fuse. It is up to the installer to install an appropriate size fuse, supplied in the parts kit, into this location of the fuse block.

- **.Yellow – Accessory #2 Constant B+**

This wire can be used to power anything requiring a constant 12 volt power source, so long as the amperage does not exceed 30 amps. This wire uses the circuit closest to the largest mounting hole of the fuse block. It is up to the installer to install an appropriate size fuse, supplied in the parts kit, into this location of the fuse block.

- **Red – Accessory #3 Un-Fused Constant B+**

This un-fused power source can be used to power a factory fuse block, or to provide battery power input to a component relay (Electric Cooling Fan, Electric Water Pump, Off-Road Lights, etc...)

In some cases this harness will be installed on a vehicle that still requires use of the factory Fuse block. During the removal of the factory engine wiring, the wire(s) supplying battery power to the factory fuse block may have been cut or removed. Accessory #3 wire will now provide the battery power back to the factory fuse block to enable things like the headlights and turn signal to work again. It will be up to the installer to find the original Fuse block feed and connect **Accessory #3 Un-Fused Constant B+**.

## **TESTING**

With the C.S.I. harness connected and using a volt meter on the VDC setting, follow these steps for the first start up. If you run across any problems at any time during the test procedure see the following Trouble Shooting section before proceeding.

- Ensure all wires not used have been taped or insulated to avoid shorting the wires to ground and do a double check on all of your connections.
- If all things are correct, re-connect the battery terminals to the vehicle.

At this time you should have 12v on both sides of the MIDI fuse, the B+ terminal of the Ignition Switch, and to Accessory wires #2 and #3 (only if fuses have installed)

- Turn the Ignition switch to the “On” position.

At this time the “IGN” terminal of the Ignition switch, “+” of the Coil, the Electric Choke, and Accessory #1 should have power. The Gauges and Alt/Charge indicator (if connected) should have also come to life.

- Before turning the key to the “Start” position or pushing the “Start” button, make sure the transmission is in “Park” or “Neutral”. Try starting the Engine.

With the engine running and using a voltmeter, test to see if the Charging system is working. This is done by putting the black or ground lead of the voltmeter to the ground on the battery. The red or power lead of the voltmeter will then be placed on the positive side of the battery. You will have a 13-14 volt reading if your charging system is working properly.

- Turn the Ignition switch to the “Off” position

At this time the engine should have died and the only components with power should be both sides of the MIDI fuse, the B+ terminal of the Ignition Switch, and Accessory wires #2 and #3.

## **TROUBLE SHOOTING**

Most problems encountered during the test procedure are a result of either bad grounds or improper crimps.

- You have no battery power to any or some of the following when the battery is reconnected: the MIDI Fuse, the B+ terminal of the Ignition Switch, and Accessory wires #2 and #3
  - Double check your ground at the battery, without a good ground from the battery to the frame; you will not get the proper voltage readings.
  - Make sure the MIDI Fuse is installed.
  - Double check the crimps on the ring terminals of the wires connected to the MIDI Fuse
- You have no switched 12v power to any or some of the following when the Ignition Switch is in the “On” position: the “IGN” terminal of the Ignition switch, “+” of the Coil, the Electric Choke, Accessory #1, Gauges, and Alt/Charge indicator
  - Make sure the #933 wire is connected to the “IGN” or “Output” terminal of the Ignition switch; if it is connected as described, the Ignition Switch could be faulty.
  - If you do not have power to the Coil, check to see if the pre-installed 20 amp fuse is blown. Also, check your crimp to the terminal(s) installed on the #920 wire going to the coil and Ballast resistor.
  - If you do not have power to the gauge(s), check to see if the pre-installed 15 amp fuse is blown. Do you have a ground wire installed to the gauge (if required)? Make sure the #935 connected to the “I” terminal or ignition side of the Gauge
  - Problems with the electric choke are usually a ground problem; make sure a good ground is being made. The 15 amp fuse located on the fuse block also controls this circuit; make sure the fuse is not blown.
  - Accessory #1 will have problems if a fuse has not been installed or the wrong size fuse for the component being powered has been installed and is blown.
  - If the Charge Indicator does not work with the key in the “On” position then the bulb is either no good, or the light is not getting a good ground at the Alternator or Voltage Regulator.

- You try to start the engine and it doesn't try to start.
  - Before checking the harness make sure you have a fully charged battery. Engine start up requires lots of amperage and your battery may not be up to the task if it has been sitting for a length of time.
  - Make sure the Purple #919 wire is connected to the "S" terminal of the Ignition switch.
  - If you are using a push button or toggle switch, make sure you have 12v coming into the other side of the switch or to the relay depending on your setup.
  - Do you have the neutral safety switch connected correctly, some Neutral Safety switches also have reverse switch functions, make sure you are not connected to the reverse switch side.
  - If a Neutral Safety switch is being used, is the engine in "park" or "neutral" and activating the switch properly? If it is in "Park" or "Neutral", and not activating the switch, the switch may need adjustment.
  - You can test to see if the switch is good by seeing if you have 12v from the start position to the switch. If you have 12v coming in but nothing coming out, it could be a faulty switch.
  
- The engine cranks but will not start.
  - Check to see if you are getting spark. If you are getting no spark go to the second step of these trouble Shooting procedures and check power at the coil. If you are getting good power to the coil, but no spark, you could have a faulty Coil.
  - If you are getting spark, check the Choke on the Carburetor. You can check to ensure you have switched 12v going to the power terminal along with a good ground. Also make sure it is not open too much during cold start situations.
  - If using an electric fuel pump and you are powering it with Accessory #1, ensure you have a fuse installed or do not have the wrong size fuse and or blown fuse. Most electric fuel pumps require 20 amps.
  - If everything electrical checks out then you have a fuel delivery problem through the carburetor or fuel filter.
  
- The engine continues to run even though the Ignition is turned off.
  - If you are using an internally regulated Alternator, the diode provided with the kit will need to be used. It needs to be installed with the stripe of the diode towards the alternator as shown in the illustration on page 29.
  - If you are using an external Voltage Regulator, a faulty Regulator can cause engine run on as well.

## Diagrams

The diagrams shown on the following pages are provided in order to help you, the installer, with your particular installation. These diagrams show the most common Charging, Starting, and ignition systems from Ford, Dodge, and GM. Those doing an installation into something produced by any other manufacturer may find a diagram depicted for your particular set up is not included in this manual. If you have any questions concerning the installation of this harness or having trouble in general, feel free to call Painless Performance Products' tech line at 1-800-423-9696. Calls are answered from 8am to 5pm central time, Monday thru Friday, except holidays.

You will notice the terms "Power Splice" and "Ignition Splice" on some diagrams. These terms refer to the 2 splices built into the C.S.I. Harness and can be seen in detail on page 9.

Figure 6

# IGNITION SWITCH SCHEMATIC

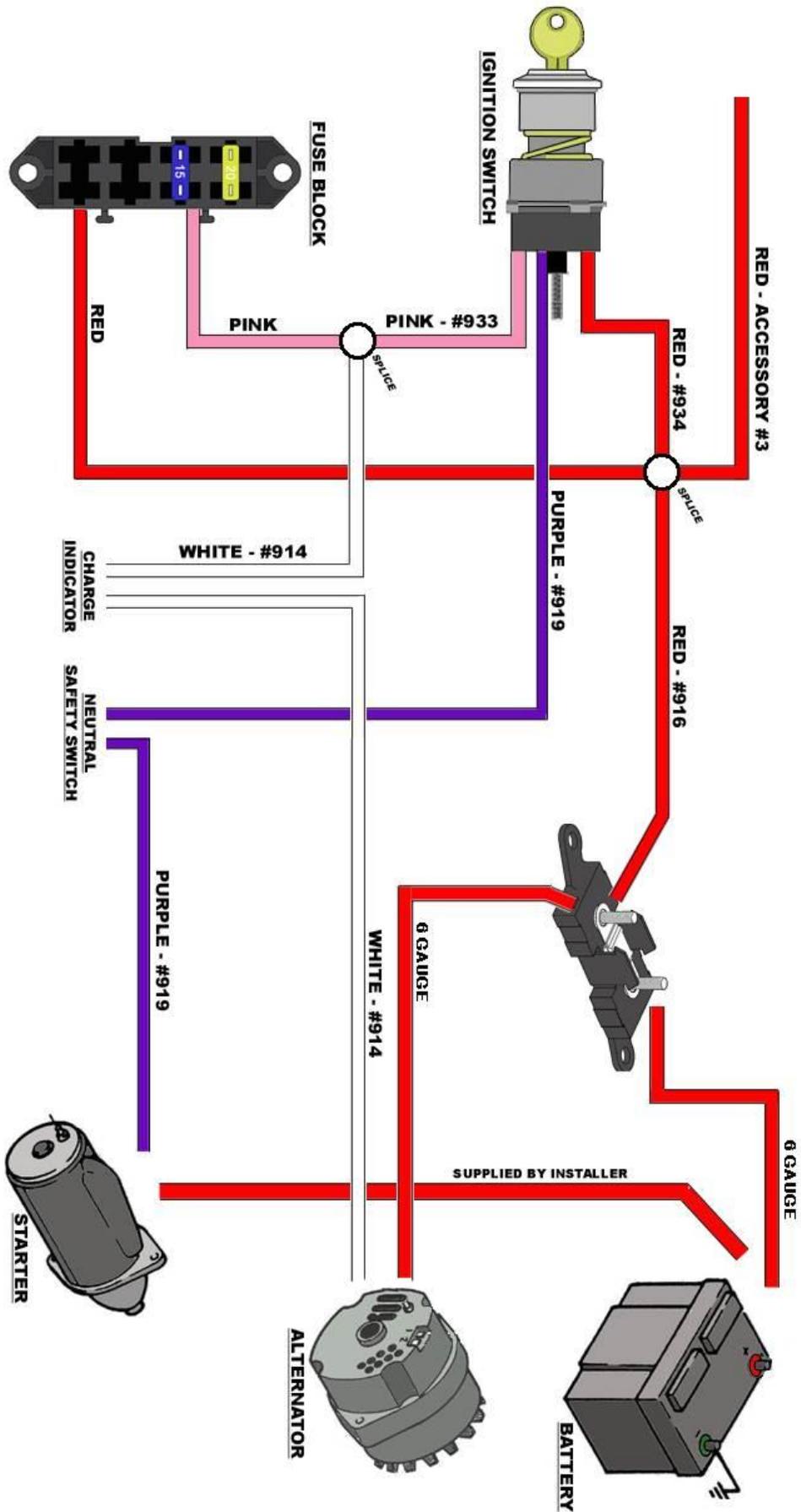


Figure 7

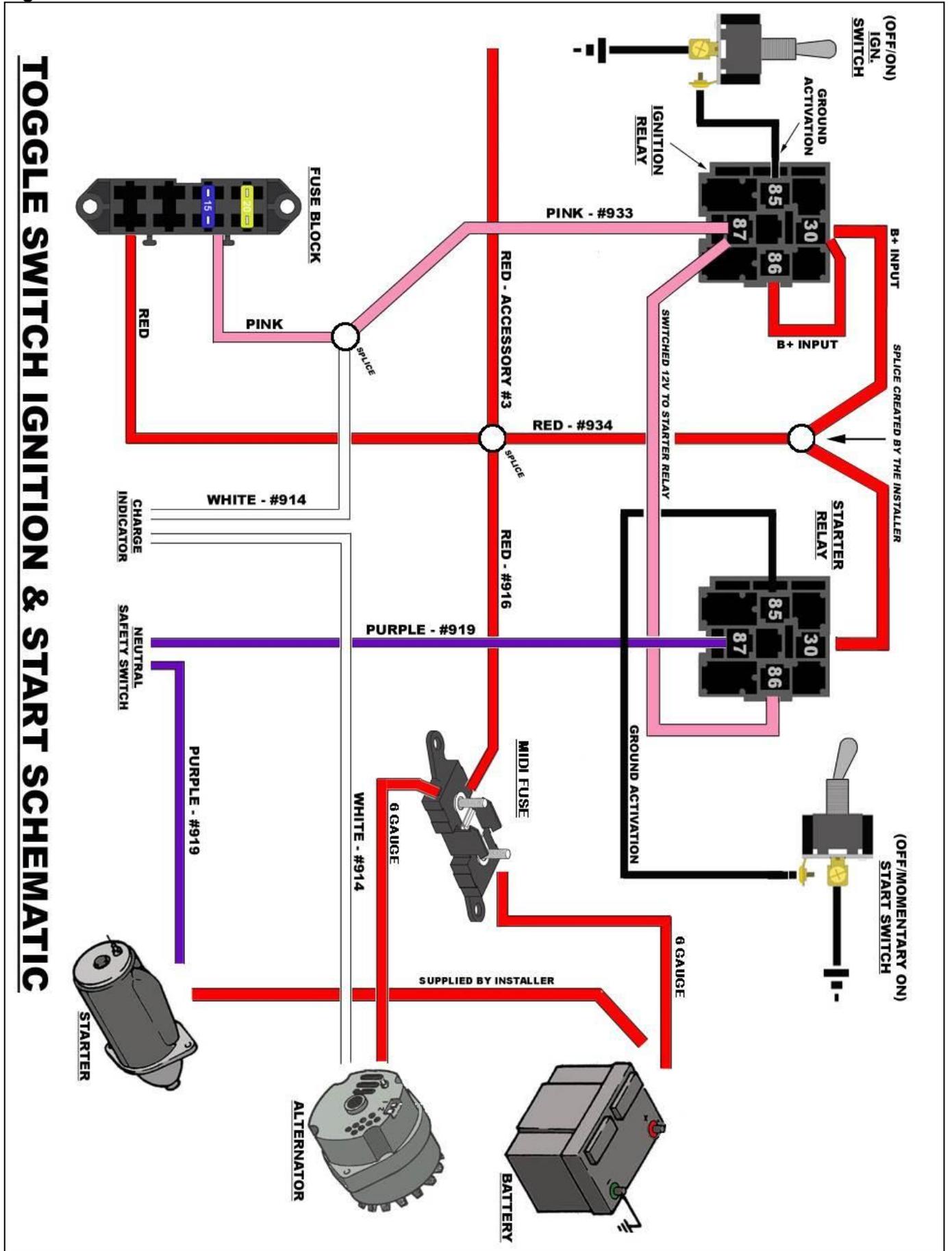


Figure8

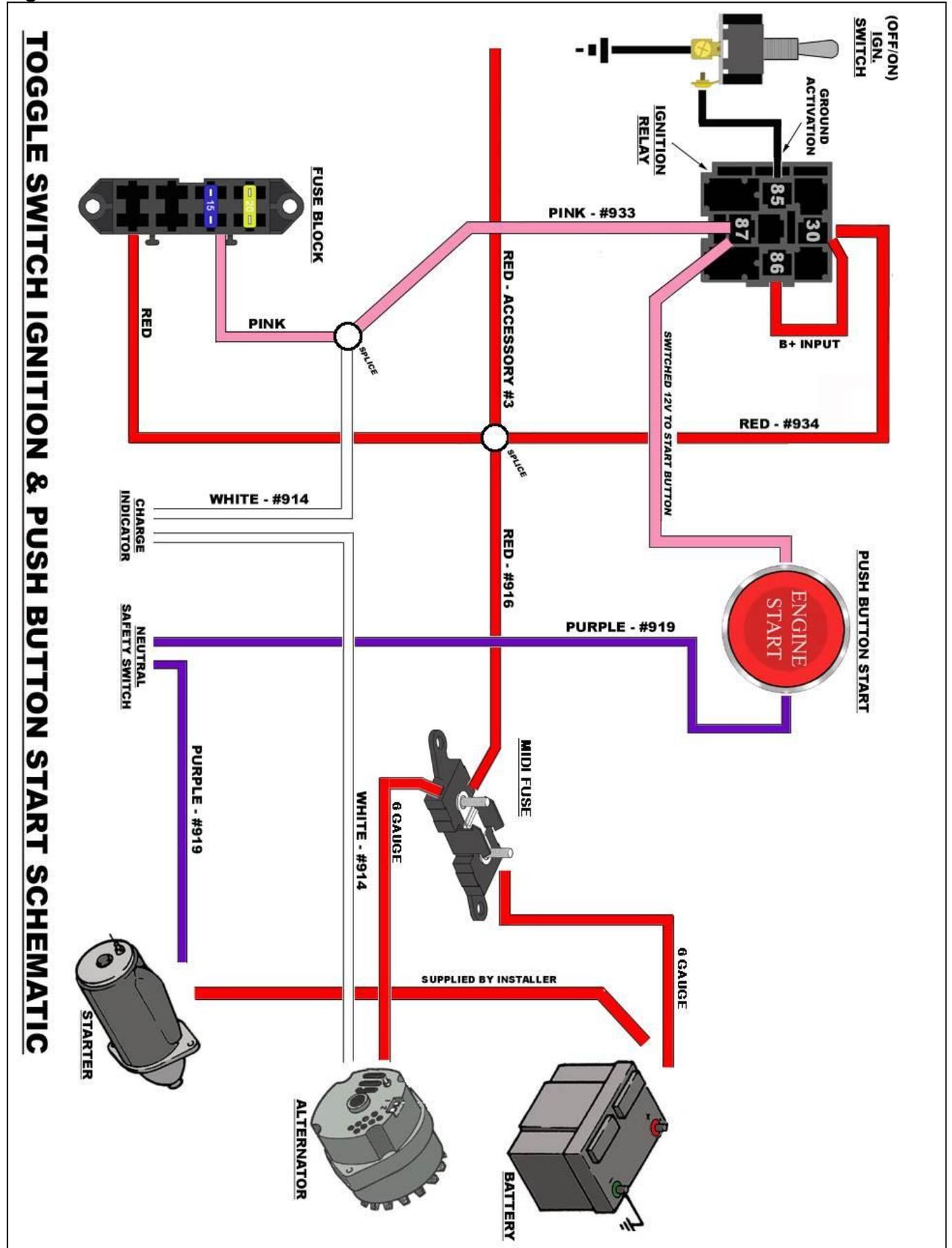


Figure 9

**LIGHTED ROCKER SWITCH IGNITION & TOGGLE/ROCKER START SCHEMATIC**

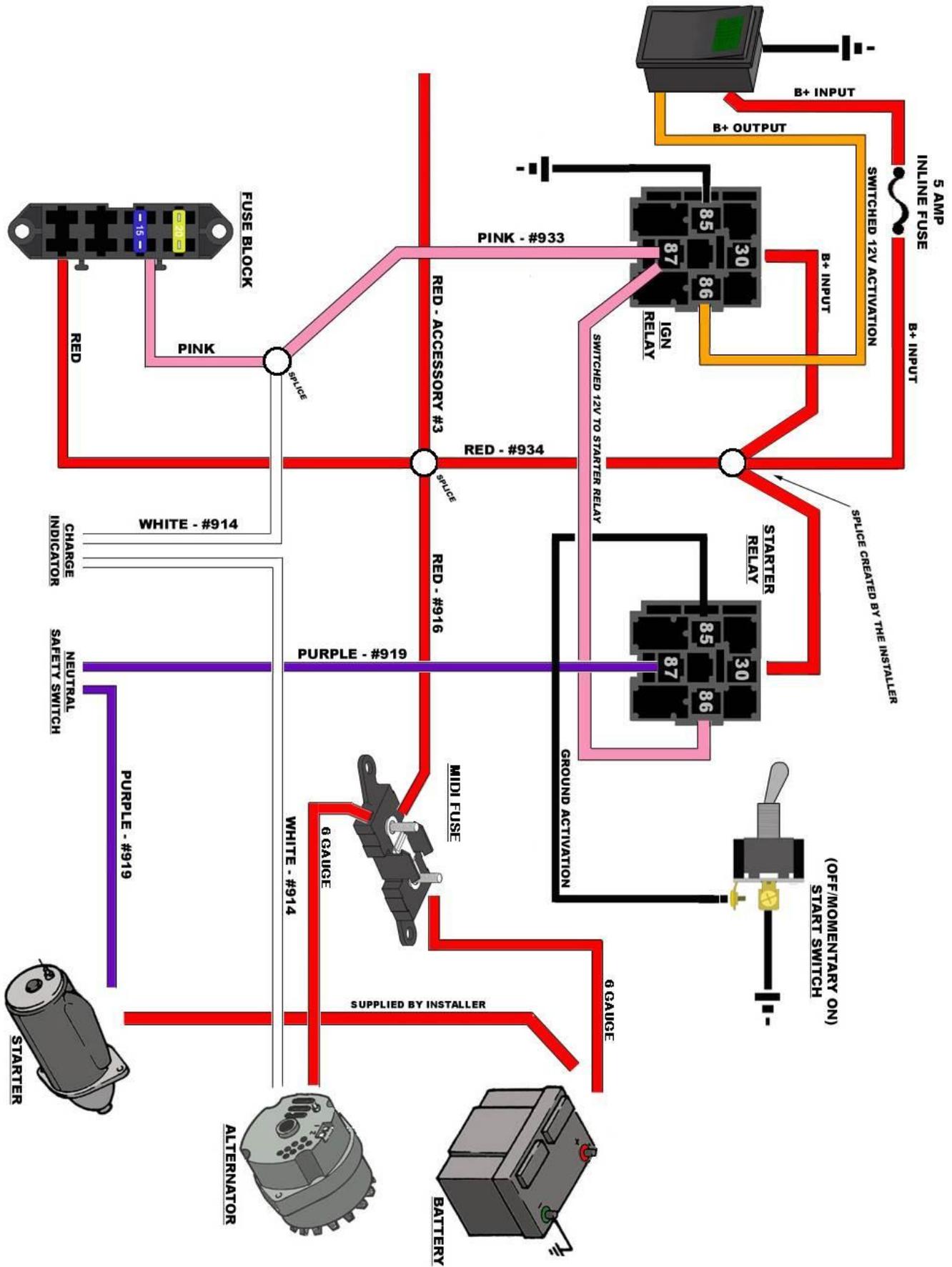


Figure 10

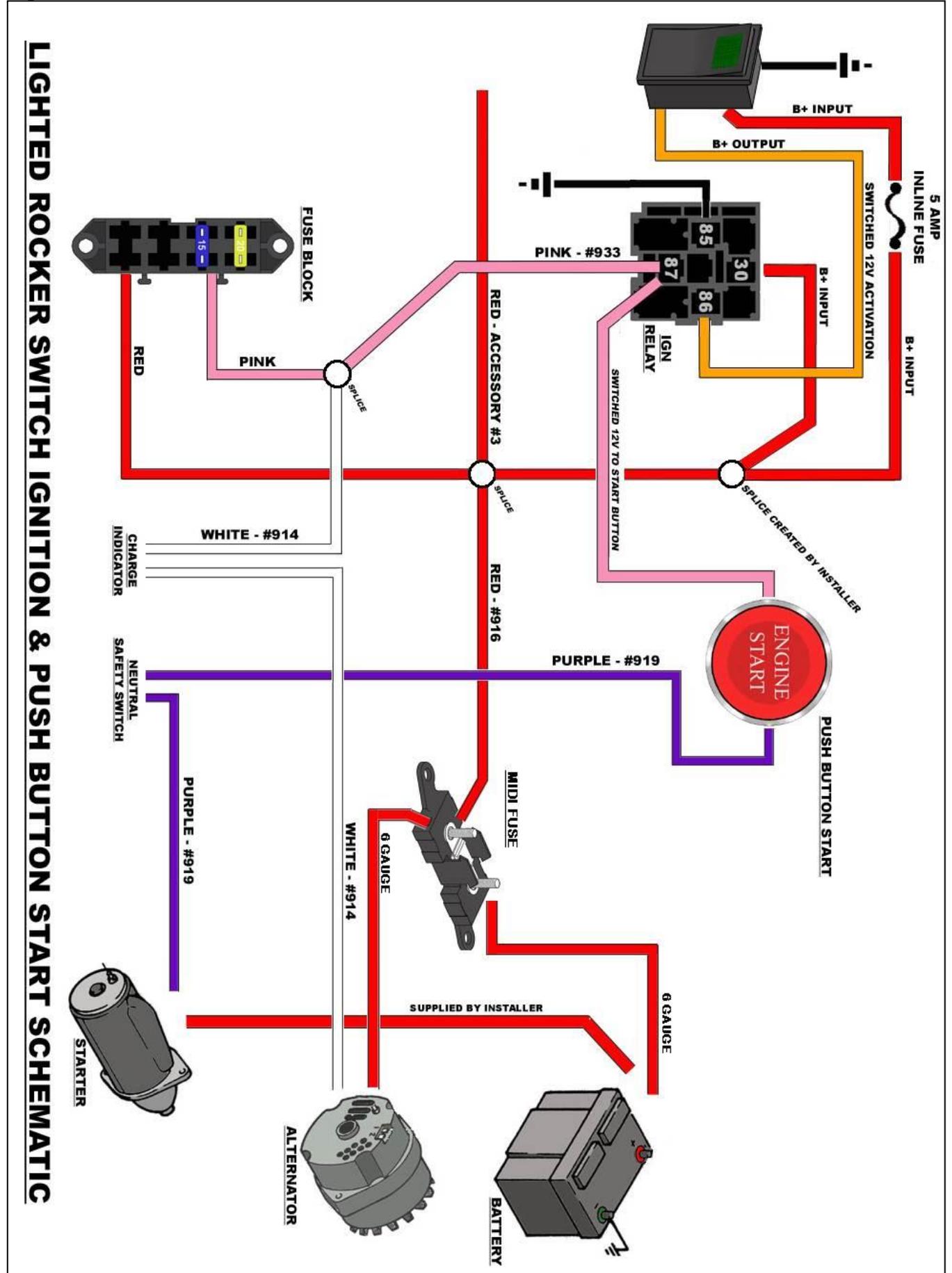
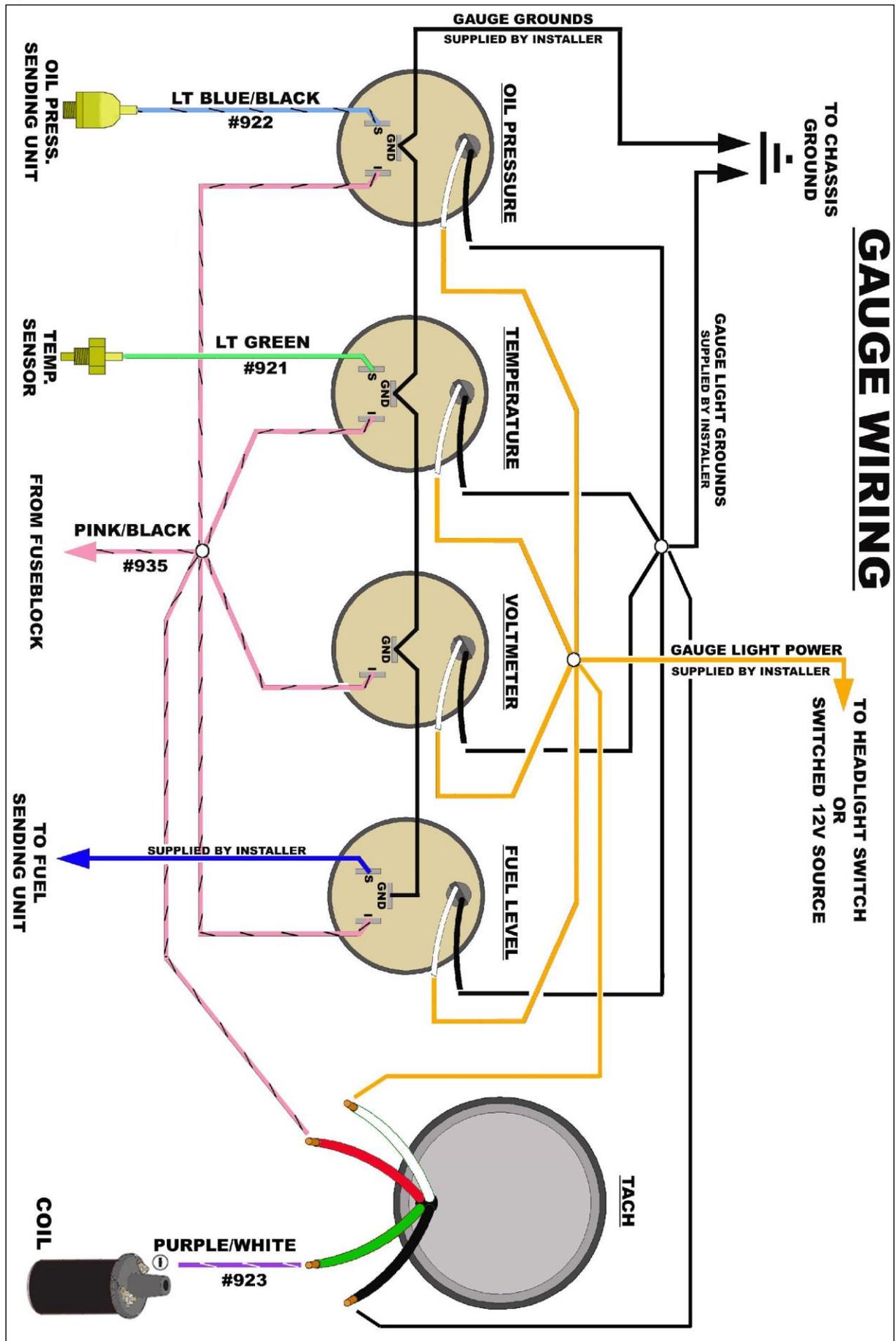
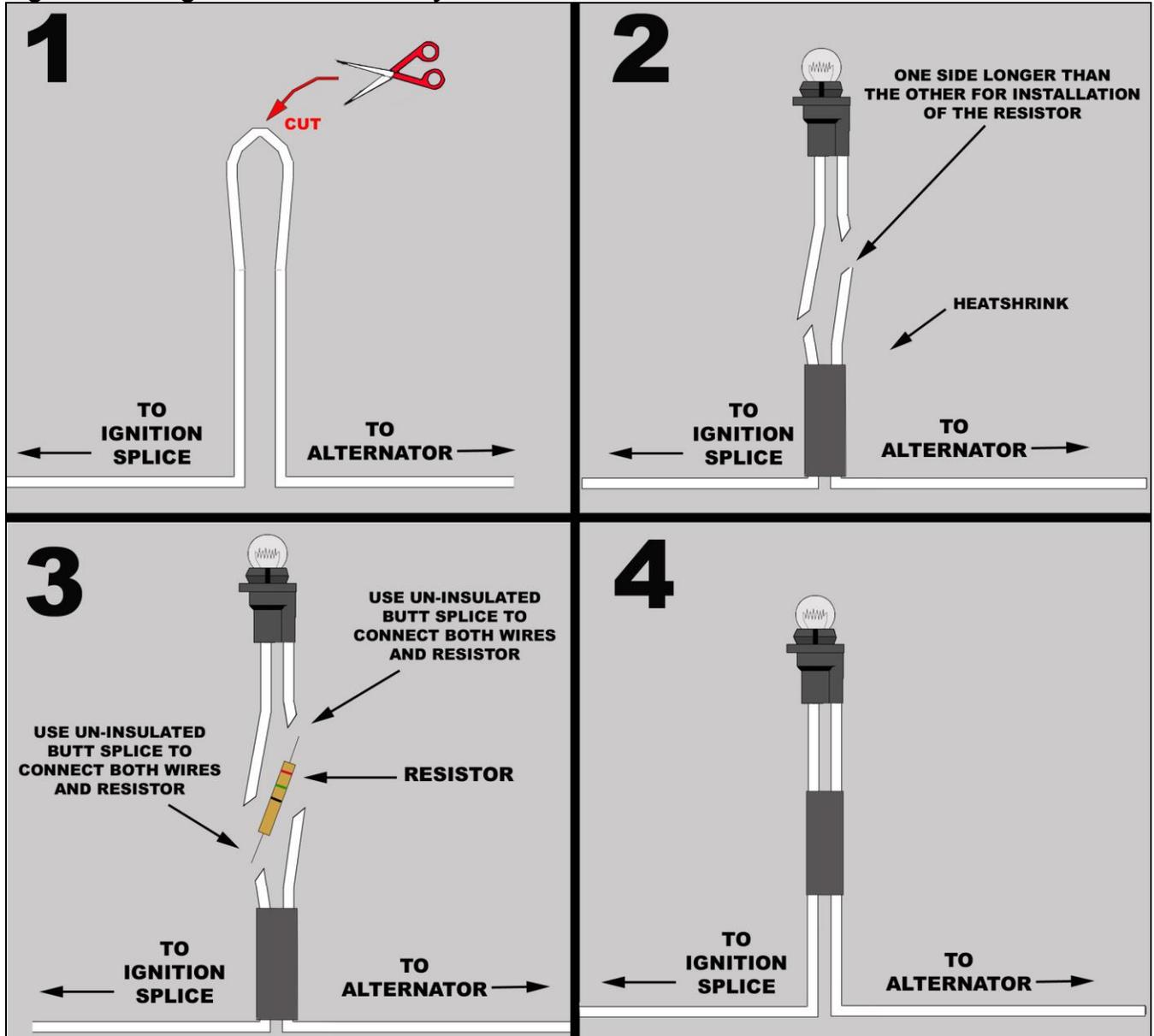


Figure 11



**Figure 12 Charge Indicator Assembly**



The resistor shown in the illustration above will allow the charging system to still operate in the event the Indicator bulb burns out. The switched 12v required by the Alternator goes from the Ignition Switch to the Alternator through the bulb filament. The resistor, when installed in parallel to the bulb, will allow switched 12v to reach the Alternator if the filament is no longer functional.

Figure 13

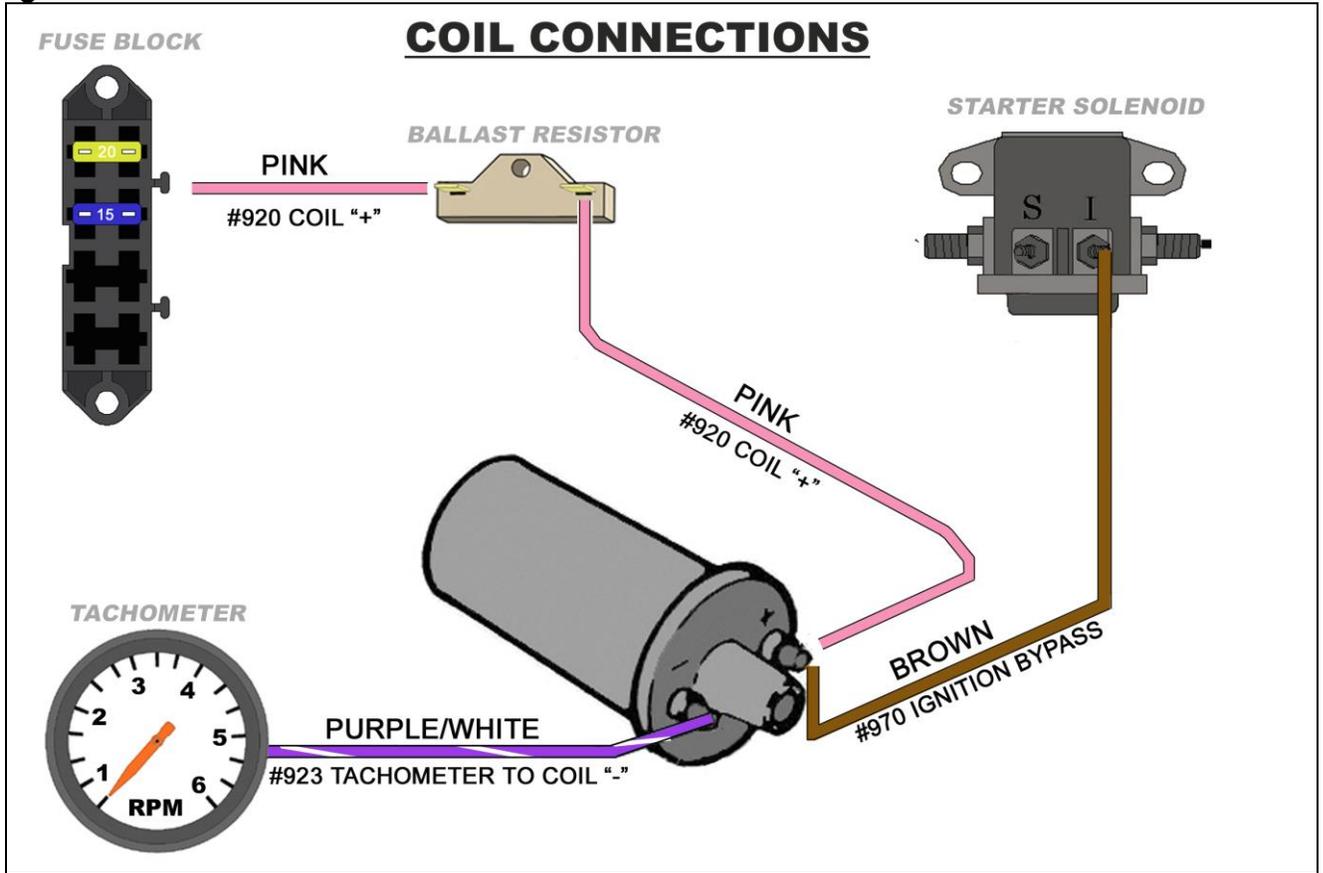


Figure 14

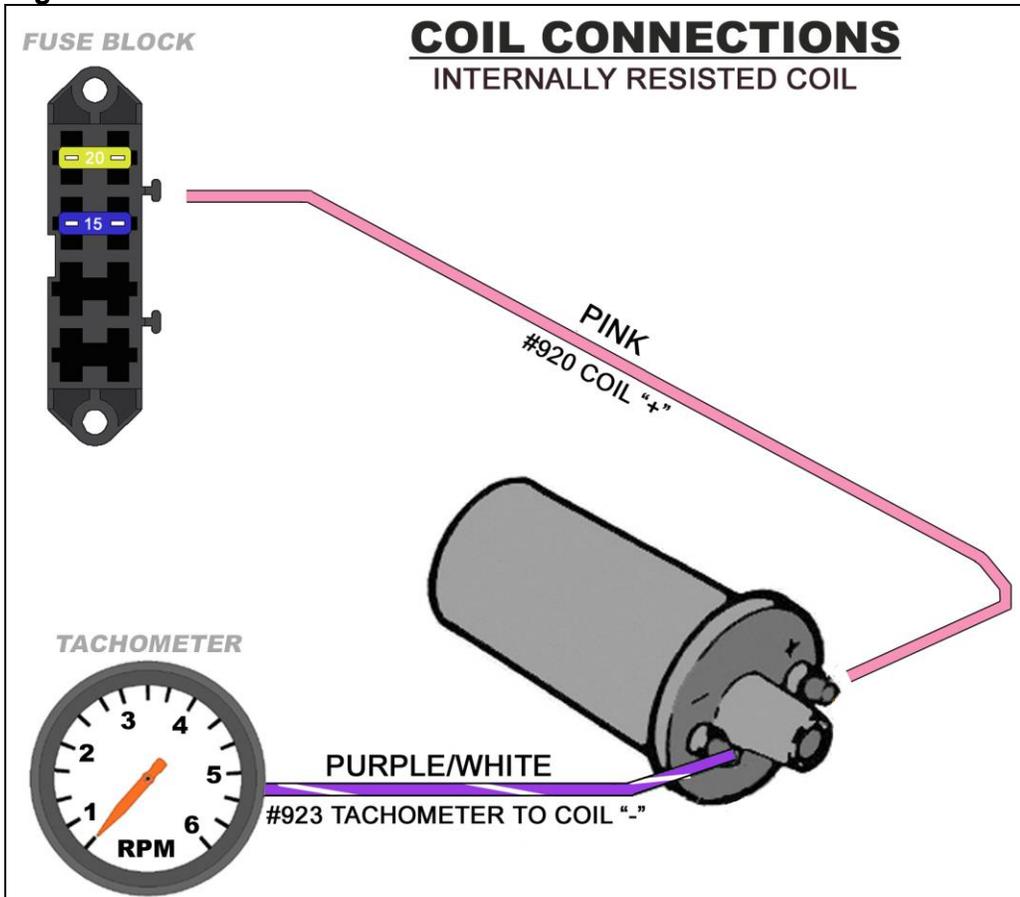


Figure 15

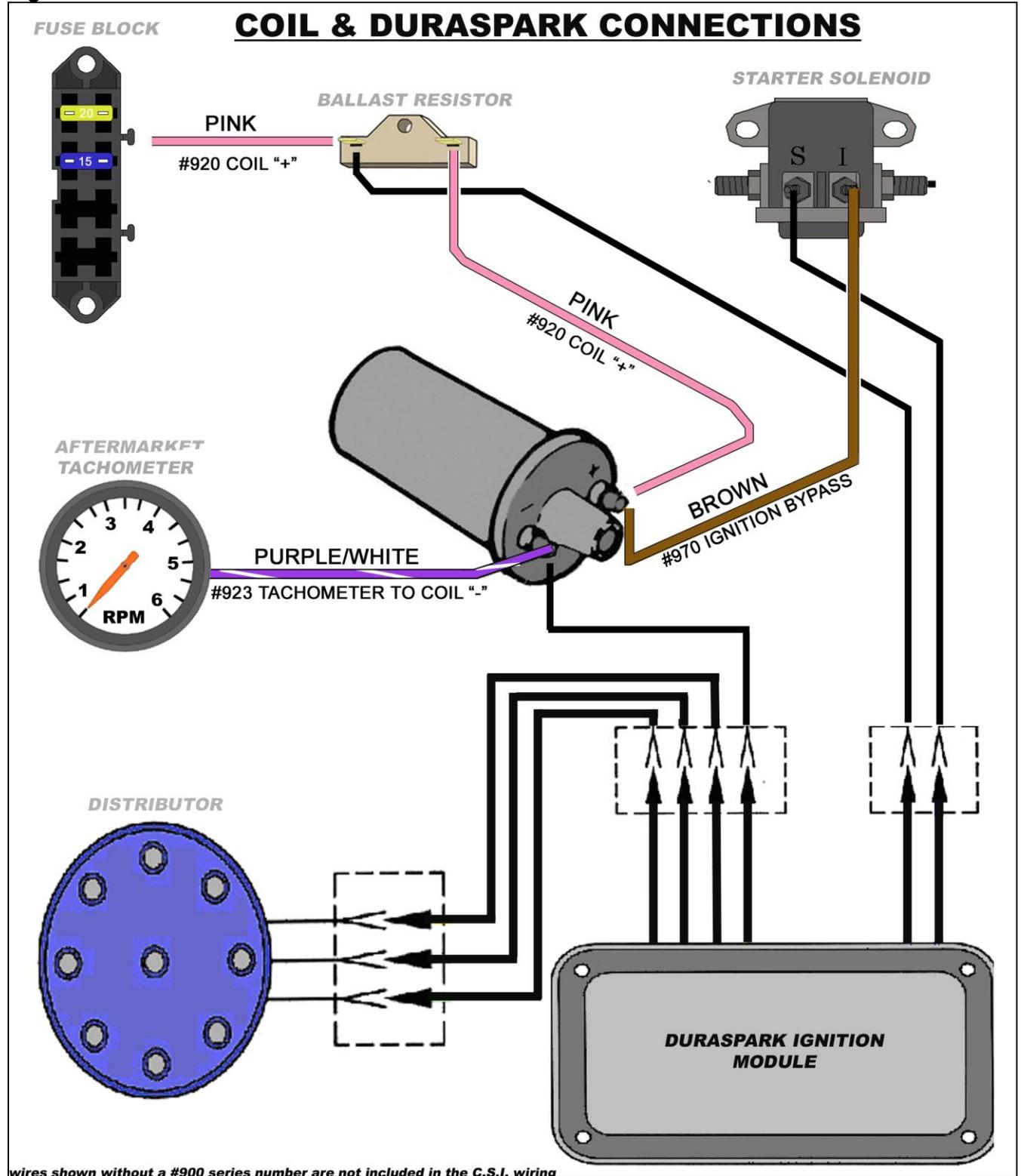


Figure 16

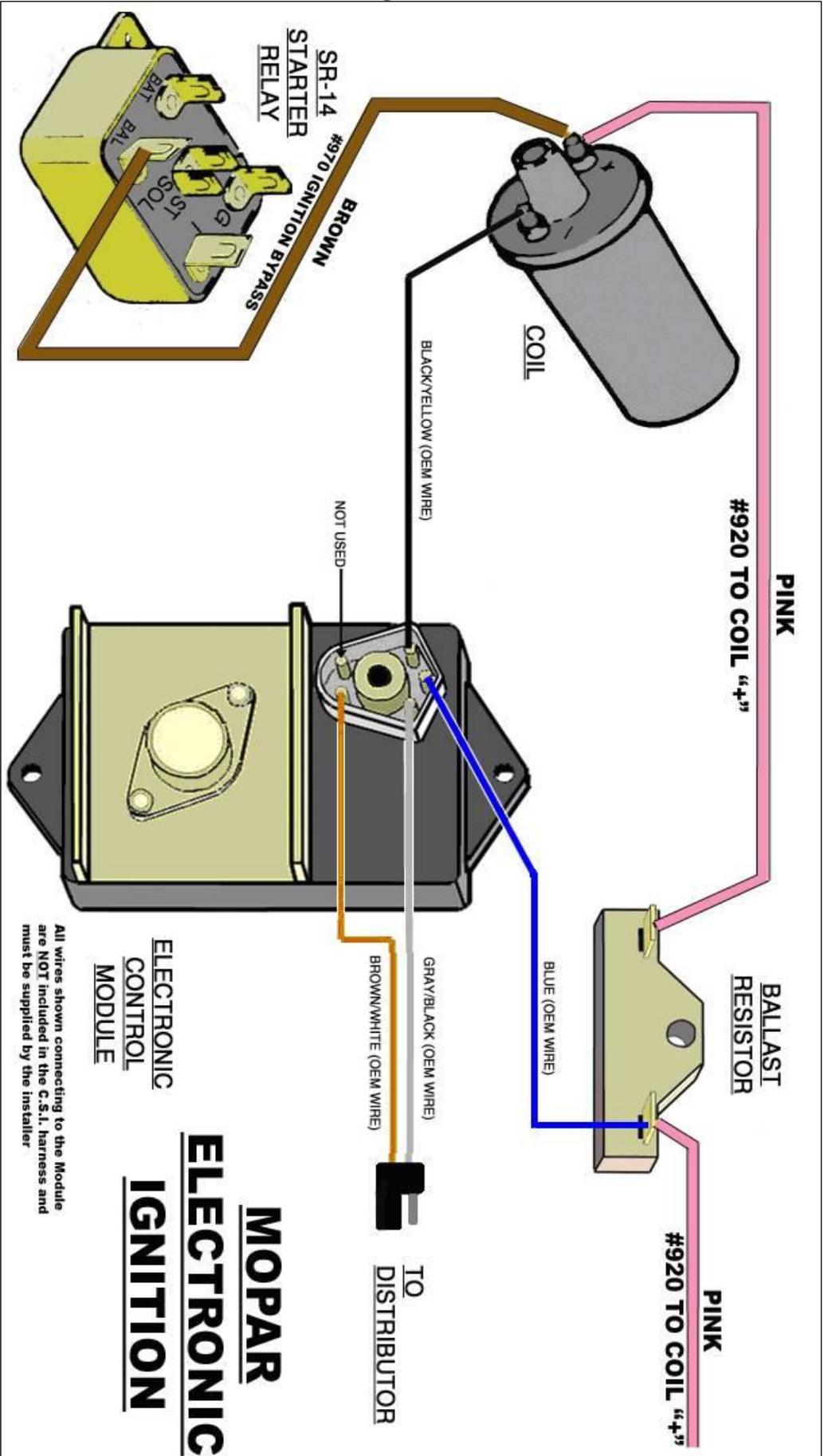


Figure 17

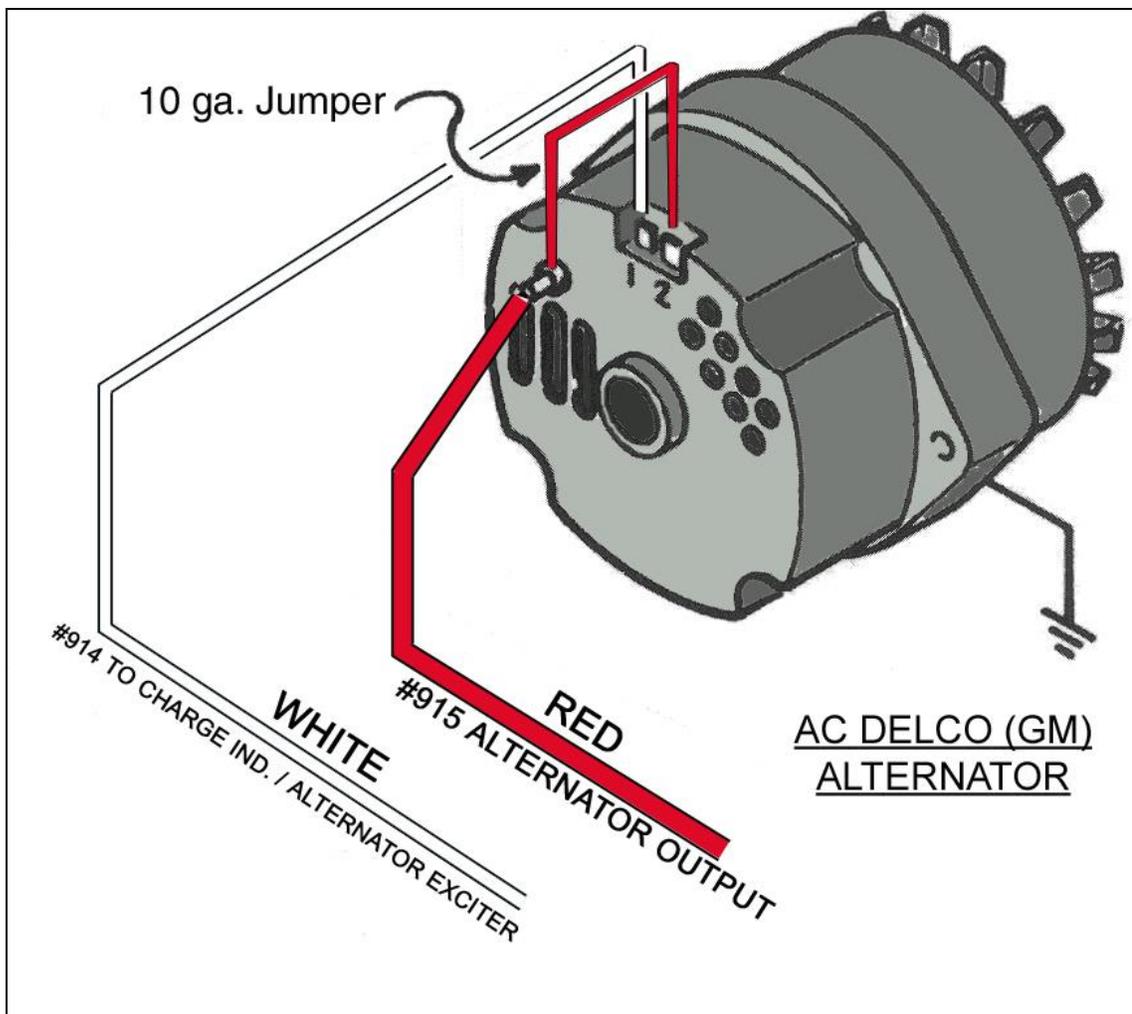
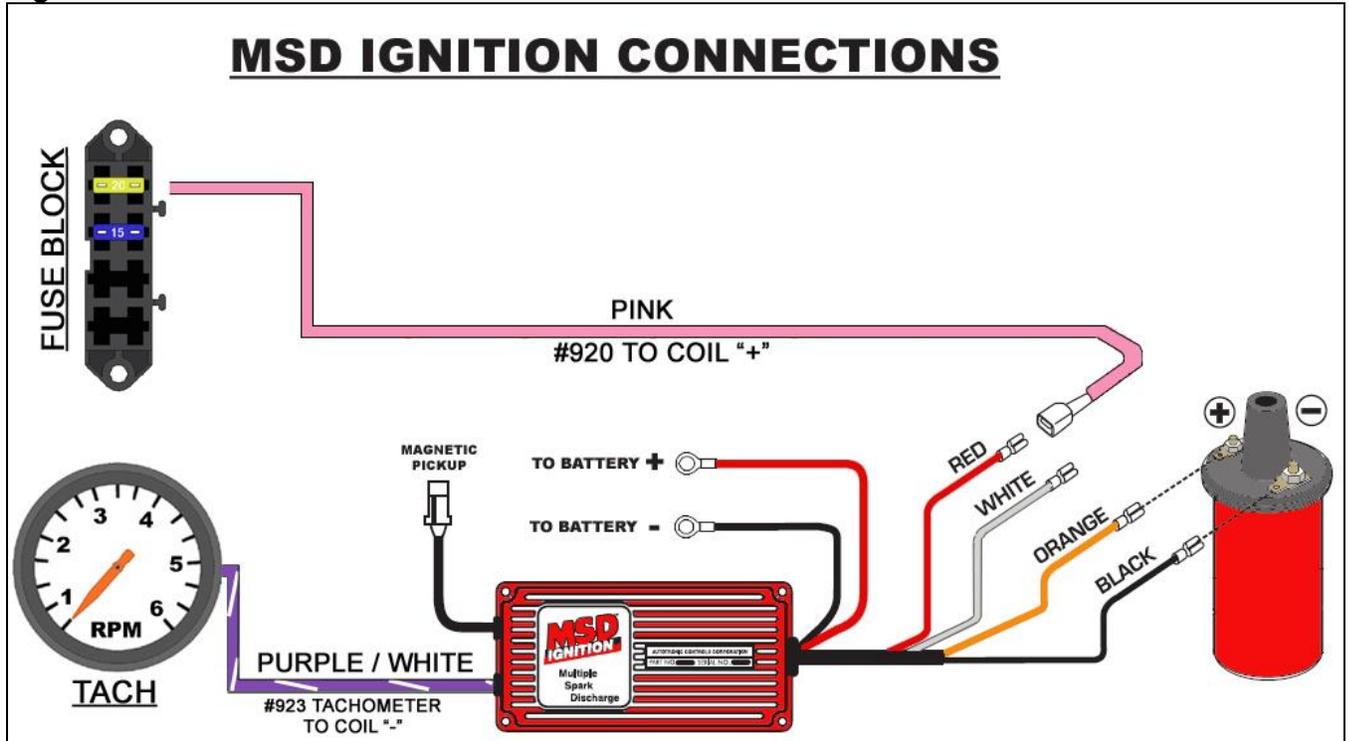


Figure 18

Figure 19 Delco Alternator Connector

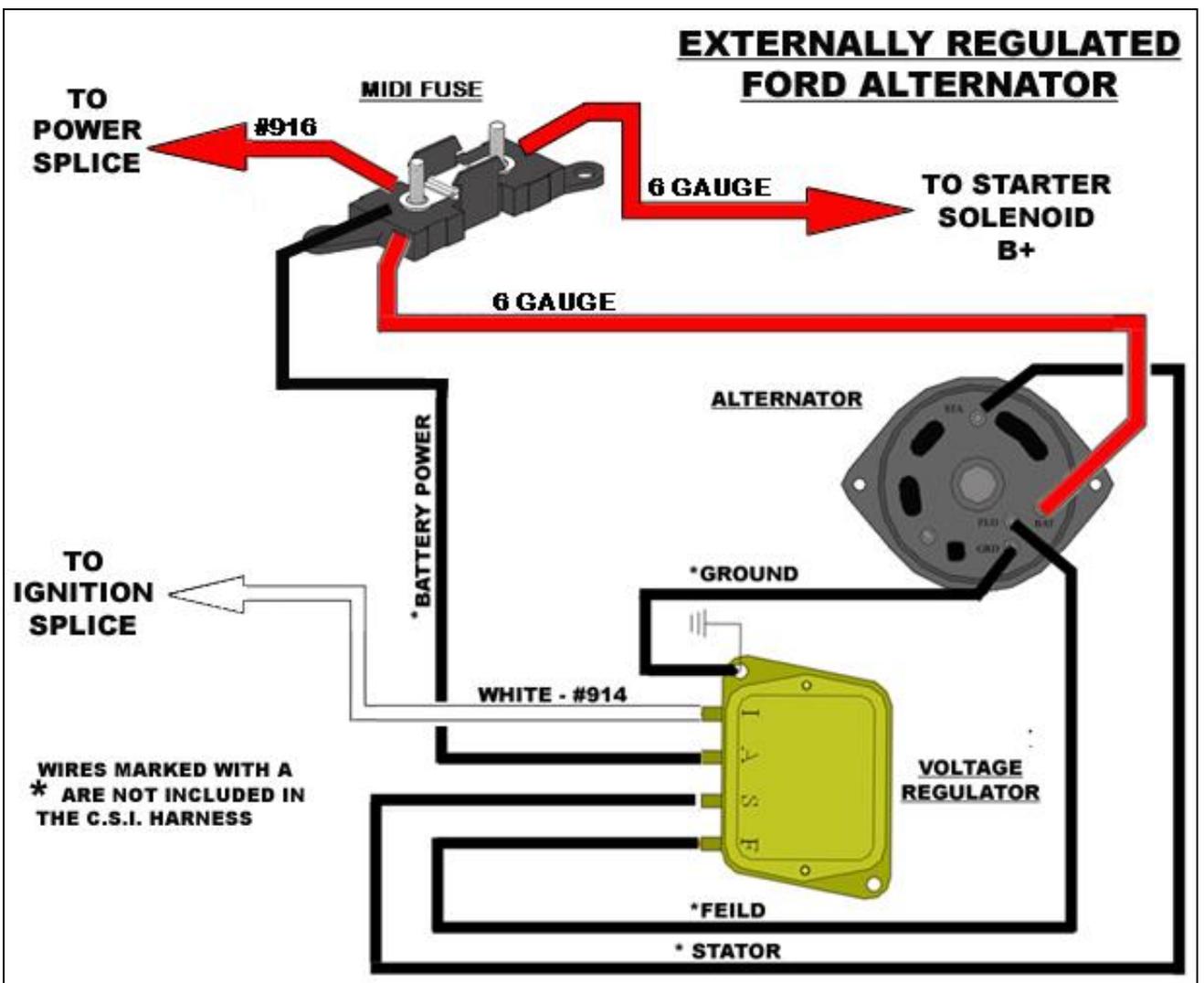
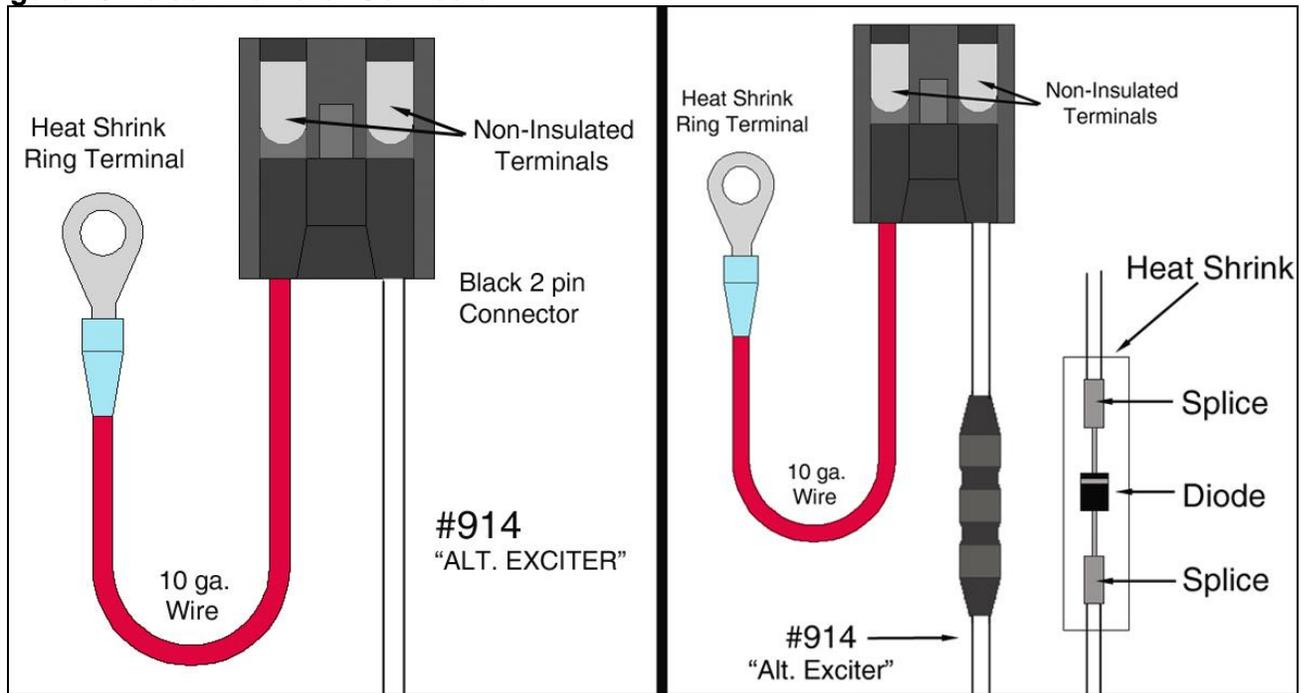


Figure 20

Figure 21

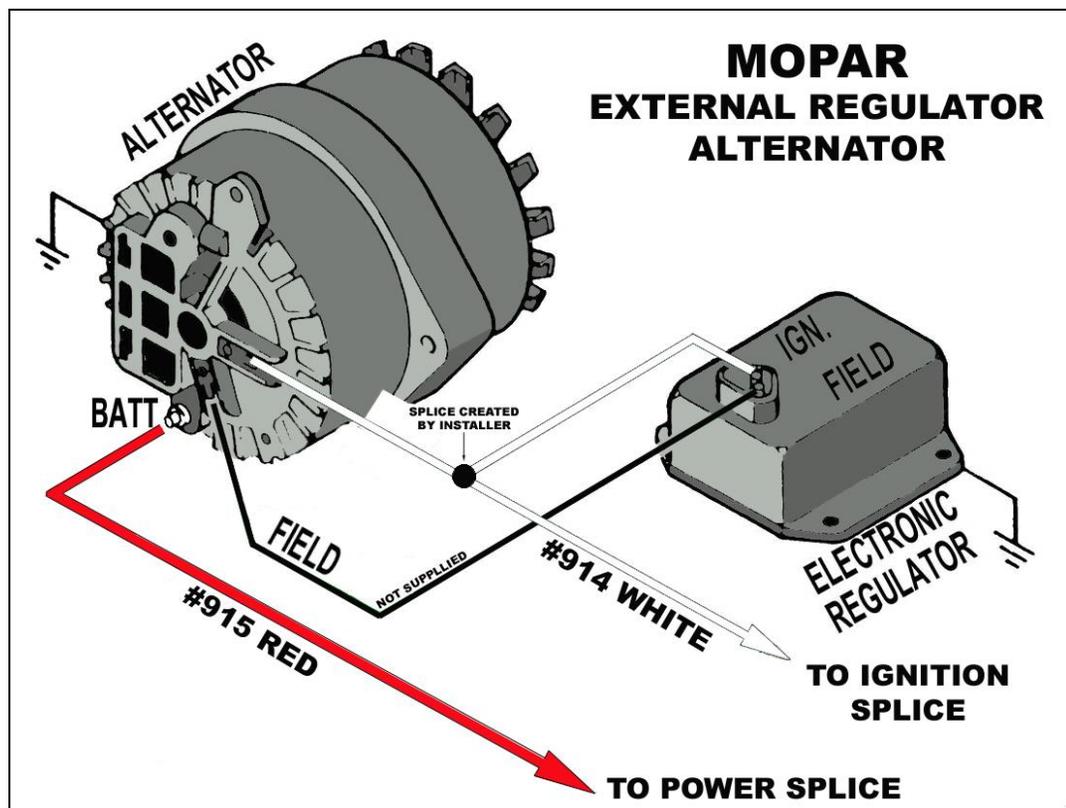
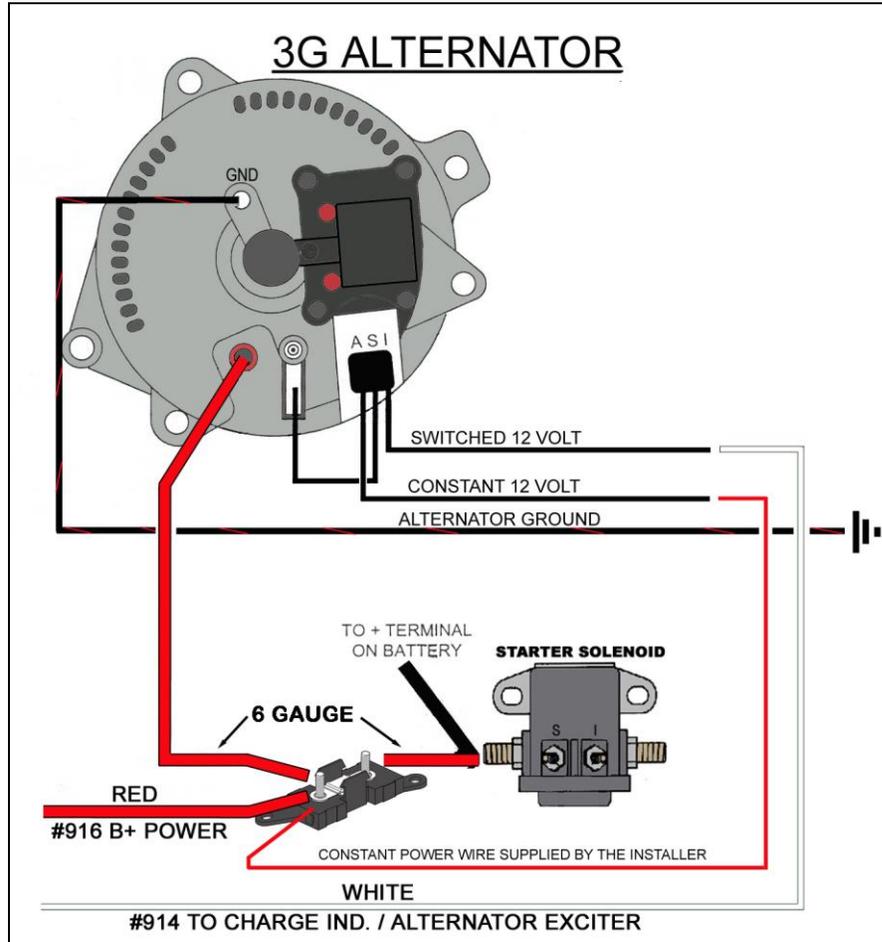


Figure 22

Figure 23

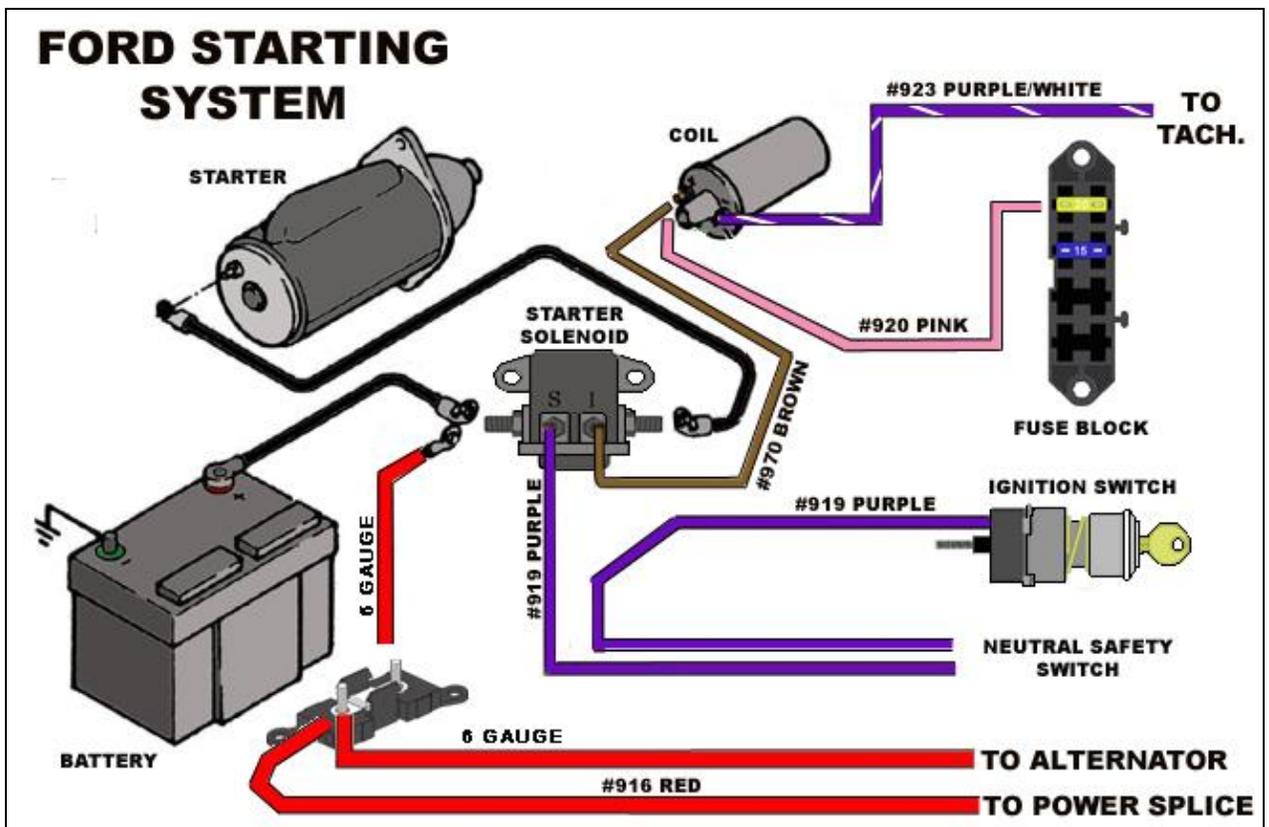
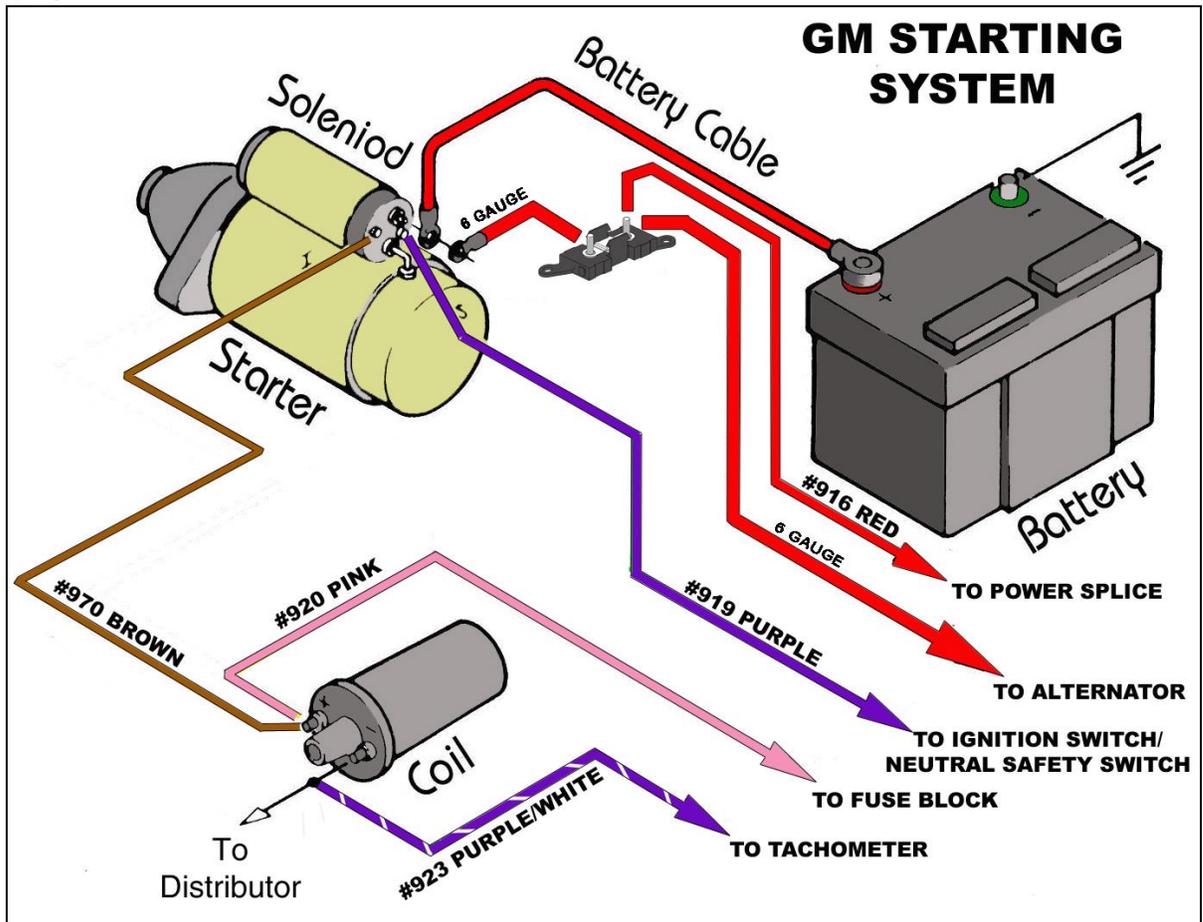
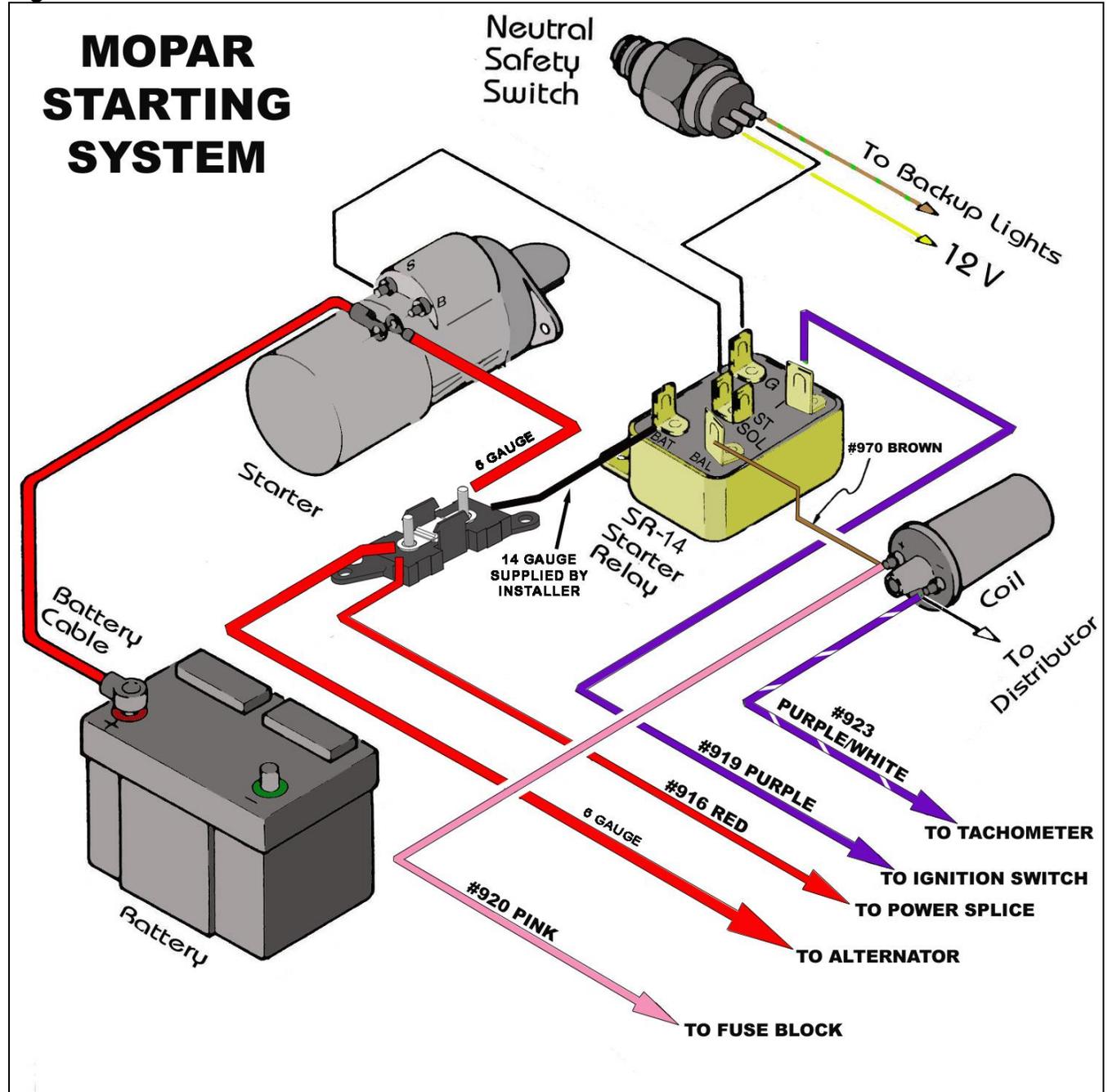


Figure 24

Figure 25



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

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

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

### **NOTES:**