



Wire Harness Installation Instructions

For Installing:

Part #20120

14 Circuit Ford Mustang (1965- 1966)

Manual #90526



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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.

We have attempted to provide you with as accurate instructions as possible, and are always concerned about corrections or improvements that can be made. If you have found any errors or omissions, or if you simply have comments or suggestions concerning these instructions, please write us at the address on the cover and let us know about them. Or, better yet, send us a fax at (817) 244-4024 or e-mail us at painless@painlessperformance.com. We sincerely appreciate your business.

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P/N 90526 Painless Wiring Manual

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1.0 INTRODUCTION

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

The proper fuses have been pre-installed in the fuse block. In addition, all wires are color-coded. This will help you identify the different circuits during installation and later on if additions to the overall system are necessary. For fuse specifications and wire color designations, see **Section 8.1 and Table 8.1**.

The Painless wire harness is designed to be used in 1964 ½ through 1966 Ford Mustangs. All wire is 600 volt, 125°c, TXL. Standard automotive wire is GPT, 300 volt, 80°c, with PVC insulation.

This complete automobile wiring system has been designed with four major groups incorporated into it:

ENGINE: Starter solenoid and battery feed, generator and alternator wire, water temperature, oil pressure, coil, electronic ignition, heater blower motor, choke, idle solenoid, and air conditioning.

HEADLIGHT GROUP: Includes high beam, low beam, park, right turn, left turn, electric fan, horns, and windshield washer motor.

DASH GROUP: Includes wires to connect gauges, indicator lights, windshield wiper motor and switches to their proper sources.

REAR LIGHT GROUP: Includes tail lights, rear courtesy lights, left and right turn signals, brake lights, reverse lights, and fuel sender.

Installation requires four (4) easy steps:

1. Mount the fuse block
2. Route the wires
3. Cut off the excess wire
4. Terminate the wires

2.0 ABOUT THESE INSTRUCTIONS

The contents of these instructions are divided into major **Sections**, as follows:

- 1.0 Introduction
- 2.0 About These Instructions
- 3.0 Tools Needed
- 4.0 Contents of Painless Wire Harness Kit
- 5.0 Pre-Installation and General Harness Routing Guidelines
- 6.0 General Harness Installation Instructions
- 7.0 Specific Circuit Connection Details
- 8.0 Wire Connection Index and Fuse Requirements

Sections are divided into subsections and **Paragraphs**. Throughout these instructions, the **Figure** numbers refer to illustrations and the **Table** numbers refer to information in table form. These are located in Sections or Paragraphs corresponding to the number. Always pay special and careful attention to any *Notes*, especially those in the Tables, and any text marked **Caution**.

3.0 CONTENTS OF THE PAINLESS WIRE HARNESS KIT

Refer to **Figure 3-1** to take inventory. See that you have everything you're supposed to have in this kit. If anything is missing, contact the dealer where you obtained the kit or Painless Performance at (800) 423-9696. The Painless Wire Harness Kit should contain the following items:

- The Main Wire Harness, with the Fuse Block wired in and fuses installed, Headlight Harness
- Pig Tails: Windshield Wiper, Instrument Panel, 5 Indicator Lamp, Heater Switch, 1 Alternator and 1 Generator.
- Bag Kit containing 2 packages of Nylon Tie Wraps, 10 Instrument Panel Light Bulbs, Maxi Fuse, Grommets, 2 Fire Wall Pass-through Plates, and a Fuse Identification Label.
- Parts Box containing Terminals, Splices, Spare Fuses etc.

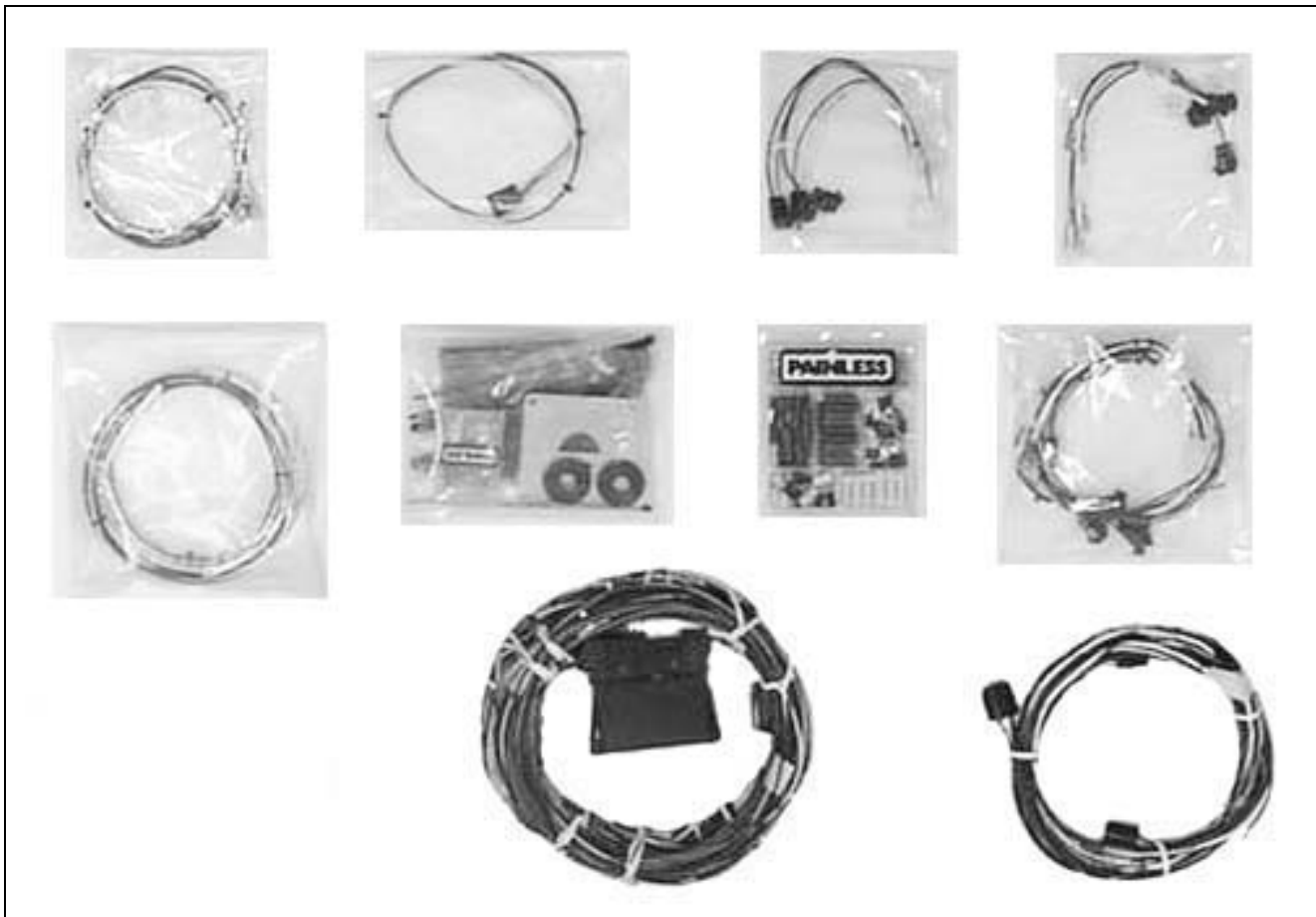


Figure 3-1 The Painless Wire Harness Kit

4.0 TOOLS NEEDED

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

- Crimping Tool *Note: Use a quality tool to avoid over-crimping.*
- Wire Stripper
- Test Light or Volt Meter
- Electric Drill
- 1-1/4" Hole Saw
- Small (10 amp or less) Battery Charger

5.0 PRE-INSTALLATION AND GENERAL HARNESS ROUTING GUIDELINES

The installation of your wire harness mainly consists in two parts:

- The physical routing and securing of the wire harness, wires, and groups.
- The proper connection of the individual circuits.

These two major tasks are not separate steps, but are integrated together. That is, you will route some wires and make some connections, route more wire and make more connections. We cannot tell you how to physically route the harness in your automobile. That depends upon the particular automobile and to what extent you want to secure and conceal the harness. We do offer some general guidelines and routing practices starting in **Section 5.2**, GENERAL installation instructions in **Section 6.0**, and precise instructions concerning the electrical connections you will have to make in **Section 7.0**. To help you begin thinking through the installation of your wire harness, read the following sections:

5.1 Familiarize yourself with the harness by locating each of the harness sections in the following list. Whenever a particular harness section is referred to in these instructions it is shown "all caps": ENGINE SECTION.

A/C-ELECTRIC FAN SWITCH SECTION	HAZARD SWITCH SECTION
ACCESSORY SECTION	IGNITION SWITCH SECTION
ENGINE SECTION	INSTRUMENT PANEL SECTION A
TURN SWITCH SECTION	INSTRUMENT PANEL SECTION B
HEADLIGHT SECTION A	RADIO/TACHOMETER SECTION
HEADLIGHT SECTION B	TAIL SECTION
HEADLIGHT/WIPER SWITCH SECTION	

*Note: For complete information concerning the individual circuits and wires that make up the harness SECTIONS, see **Section 8.2**.*

- 5.2** The Painless Wire Harness is designed for the fuse block to be mounted in or near the factory fuse block location.
- 5.3** A good exercise is to lay out the wire harness on the floor beside your automobile and identify all the SECTIONS. You will want to route the harness through and around open areas. Inside edges provide protection from hazards and also provide places for tie wraps, clips and other support.
- 5.4** Route the harness away from sharp edges, exhaust pipes, hood, trunk and door hinges.
- 5.5** Plan where harness supports will be located. Allow enough slack at places where movement could occur (body to frame, frame to engine, etc.). Use a support every 12 inches unless the harness routes under the floor carpet.
- 5.6** At wire ends don't depend on the terminals to support the harness. The weight of the harness could cause terminals to disconnect or copper wire strands to break.
- 5.7** The wires should be bundled into groups. Use nylon ties, poly split loom, or tape.

6.0 HARNESS GENERAL INSTALLATION INSTRUCTIONS

6.1 Rough Installation

CAUTION: DISCONNECT THE POWER FROM YOUR VEHICLE BY REMOVING THE NEGATIVE (BLACK) BATTERY CABLE FROM THE BATTERY. Make no wire connections or permanent mounting of any kind at this time!

Note: Retain Convertible Power Top or Rally Pack wiring, provisions for these options are not included in this kit.

- 6.1.1 Mount the fuse block base with the self tapping screws provided. **See Figure 6-1**
- 6.1.2 Position the fuse block in its mounting area. **See Figure 6-2**
- 6.1.3 Enlarge the existing firewall opening at the driver's fender to 1- 1/4". Then route the 2 White HEADLIGHT SECTION B harness connectors through the 1-3/4" X 3 1/2" supplied pass through plate and grommet. Follow the same procedure for the ENGINE SECTION using the 3-1/2" X 3-1/2" supplied pass through plate and grommet. **See Figure 6-3**



Figure 6-1 Fuse Block Base Mounting



Figure 6-2 Fuse Block Position



Figure 6-3 Pass Through Plates and Grommets

- 6.1.1** Route HEADLIGHT SECTION B wires through the opening and position the harness groups in the area near the left kick panel.
- 6.1.2** Route dash group (TURN SWITCH SECTION, HEADLIGHT/WIPER SWITCH SECTION, INSTRUMENT PANEL SECTION A, RADIO/TACHOMETER SECTION, HAZARD SWITCH SECTION, IGNITION SWITCH SECTION, A/C- ELECTRIC FAN SWITCH SECTION, and ENGINE SECTION) upward to rear of dash and temporarily tie in place.
- 6.1.3** Position the TAIL SECTION, through the channel under the carpet seal plate on the left side of the car.

6.2 Harness Attachment

Note: Harness routing and shaping is and should be a time-consuming task. Taking your time will enhance the beauty of your installation. Please be patient and TAKE YOUR TIME!

- 6.2.1** Permanently mount the fuse block. (Note: The fuse block itself does not have to be grounded.)
- 6.2.2** Mold harness groups to the contour of floor pan, firewall, fender panels, and any other area where wires or harness groups are routed. Remember to route the harness away from sharp edges, exhaust pipes, hood, trunk and door hinges.
- 6.2.3** Attach harness groups to your automobile with clips or ties starting at the fuse block and working toward the rubber grommet for the front groups and along the floor pan for the rear group. The dash wires should be routed out of the way of any under-dash obstacles, such as cowl vent, air conditioning, radio, etc.

Note: Do not tighten tie wraps and mounting devices at this time. Make all harness attachments LOOSELY.

- 6.2.4** When used every 1-1/2" or so on the visible areas of the harness, the plastic wire ties make a very attractive assembly. A tie installed in other areas every 6" or so will hold the wires in place nicely. Remember to take your time!

6.3 Grounding the Automobile

A perfectly and beautifully wired automobile will nevertheless have bugs and problems if everything is not properly grounded. Do not go to the careful effort of installing a quality wire harness only to neglect proper grounding.

Note: The Painless Wire Harness Kit includes no ground wire except the black wire from the two headlamp connectors, a tail light ground, a instrument panel ground, and a ground wire for the accessory relay. You must supply ground wire (14-16 gauge) for all other circuits.

- 6.3.1 Connect a Ground Strap or Cable (even a 10-gauge wire is too small) from the Negative Battery terminal to the automobile chassis (frame).
- 6.3.2 Connect a Ground Strap from the Engine to the chassis. **DO NOT RELY UPON THE MOTOR MOUNTS TO MAKE THIS CONNECTION.**
- 6.3.3 Connect a Ground Strap from the Engine to the Body.
- 6.3.4 If you have a fiberglass body you should install a terminal block to ground all your Gauges and Accessories. Ground the Terminal Block with at least a 12-gauge wire to the chassis.

6.4 Terminal Installation and Making Connections

*Note: In the following steps you will be making the circuit connections. Before you start, you should carefully read **Sections 7.0**, as appropriate, and continually refer to **Section 8.0**, **DOUBLE-CHECKING** your routing and length calculations before cutting any wires and making connections. Give special attention to Turn Signal and Ignition Switch connections. These can be somewhat confusing.*

- 6.4.1 Have all needed tools and connectors handy.
- 6.4.2 Select the correct size terminal for the wire and stud application.
- 6.4.3 Determine the correct wire length and cut the wire. Remember to allow enough slack in the harness and wires at places where movement could possibly occur, such as automobile body to frame, frame to engine, etc. **Double-check your calculations.**
- 6.4.4 Strip insulation away from wire. Strip only enough necessary for the type of terminal lug you are using.

*Note: In the following step, make sure that the terminal is crimped with the proper die in the crimping tool. An improper crimp will **NOT** make a good connection.*

- 6.4.5 Crimp the terminal onto the wire.

CAUTION: DO NOT OVER-CRIMP!

- 6.4.6 Connecting the harness throughout the groups is a redundant process. Make sure that each wire is **FIRST** properly routed and **THEN** attach. **DO NOT ATTACH FIRST THEN ROUTE AFTERWARD.**
- 6.4.7 When all wires are attached, tighten the mounts and ties to secure harness permanently.

6.5 Testing The System

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

CAUTION: IF YOU HAVE NOT YET DISCONNECTED THE BATTERY FROM THE AUTOMOBILE, DO SO NOW! DO NOT CONNECT THE BATTERY CHARGER WITH THE BATTERY CONNECTED.

Connect the battery charger's NEGATIVE output to the automobile chassis or engine block and its POSITIVE output to the automobile's positive battery terminal.

- 6.5.2** INDIVIDUALLY turn on each light, ignition, wiper circuit, etc. and check for proper operation.

Note: The turn signals will not flash properly if you do not have both the front and rear bulbs installed and connected.

- 6.5.3** When all circuits check out THEN attach the battery cable to the battery for vehicle operation.

7.0 SPECIFIC CIRCUIT CONNECTIONS

7.1 Ford Alternator (2 configurations). See Figure 7-1.

*Note: Your Alternator may not appear exactly as represented in **Figure 7-1**. The circuits are wired the same way, though.*

*Note: If you experience engine run on after turning off the ignition switch, a diode (Radio Shack Part #276-1661) must be installed to the Voltage Regulator "exciter" wire. Splice the diode into wire #972 (wht/blk) near the voltage regulator, **the stripe on the diode should face towards the regulator.***

- 7.1.1** Connect ENGINE SECTION wire #971(blk/ylw) from the fuse block to the Alternator Output lug "Bat".
- 7.1.2** Connect ENGINE SECTION wire #972 (wht/blk) to the Voltage Regulator "I" terminal. This wire supplies a switched 12 volt power source. This wire is one side of the charge indicator light circuit and is the exciter wire to the voltage regulator.
- 7.1.3** Connect the 14-gauge wire #913 (ylw) from the Voltage Regulator "A" terminal to the Alternator Output lug "Bat".
- 7.1.4** Connect the 14-gauge wire #915 (grn/red) from the Voltage Regulator "S" terminal to the Alternator Stator "S" terminal.
- 7.1.5** Connect a 14-gauge wire #970 (wht) from the Voltage Regulator "F" terminal to the Alternator Field "F" terminal.
- 7.1.6** Connect the 14-gauge wire #981 (blk/red) to the Alternator Ground lug and to the Voltage Regulator chassis ground.
- 7.1.7** An alternate (and less-used) method is to omit the Alternator Stator wire. Install a 14-gauge jumper across Voltage Regulator terminals "A" & "S", and connect wire #915(grn/red) to either the "A" or "S" terminal of the Voltage Regulator. The FIELD wire #970 (wht) and wire #971 (blk/ylw) are connected as above. The Voltage Regulator Ignition "I" terminal is not used. Install ground wires as in **Paragraph 7.1.6**. This alternate configuration is illustrated in dashed lines in **Figure 7-1**.

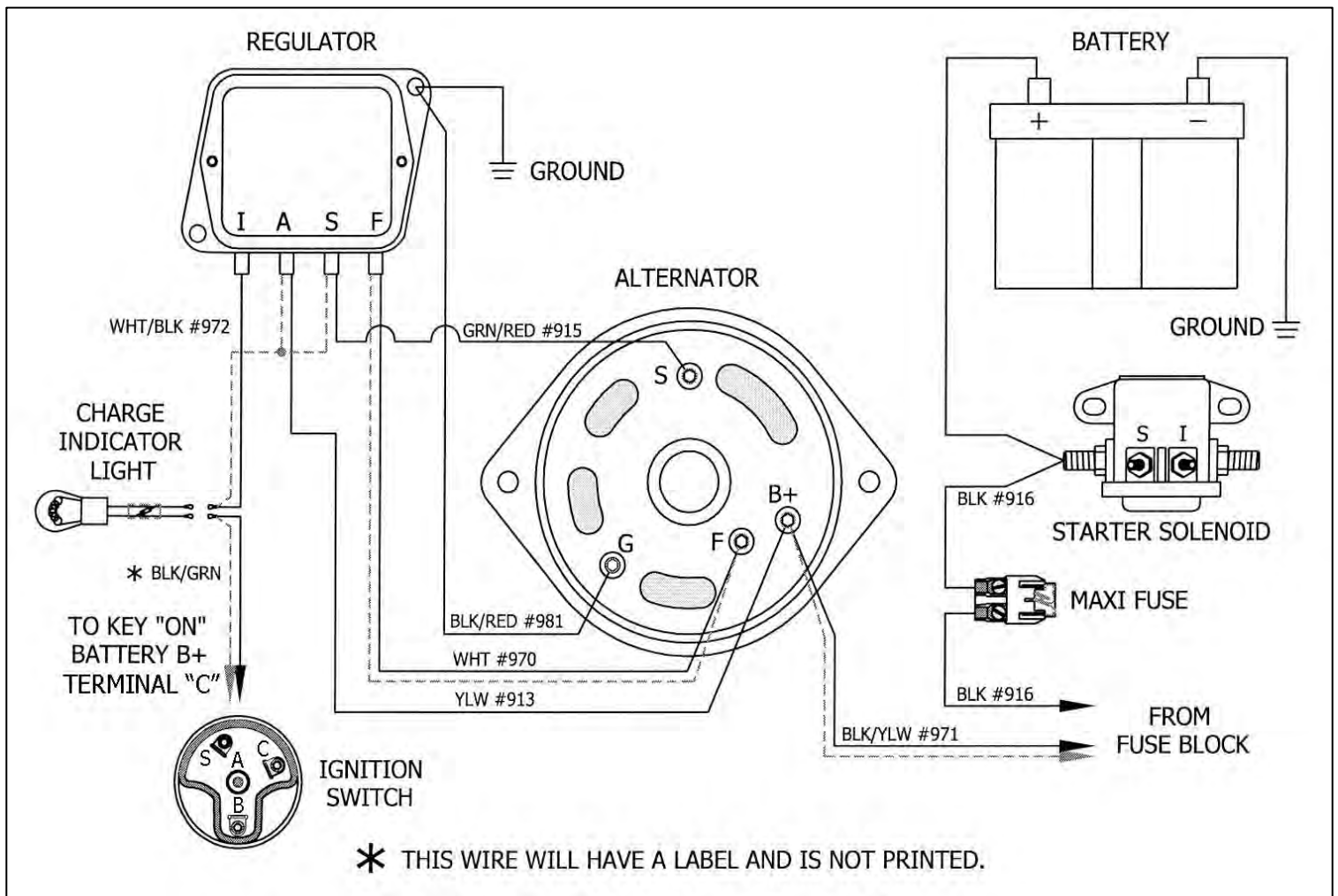


Figure 7-1 Ford Alternator (2 configurations)

7.2 Generator to Alternator Conversion

- 7.2.1** You can convert your generator charging system to use an alternator and external regulator without altering or re-routing existing wires.
- 7.2.2** Install the new alternator and replace the existing generator voltage regulator with the new, alternator compatible one.
- 7.2.3** Use the Alternator pig tail harness included in this kit to connect the Alternator and Regulator wiring, follow the step listed in **Section 7.1**.

7.3 Generator Charging System. See Figure 7-2.

- 7.3.1** Connect ENGINE SECTION wire #971 (blk/ylw) from the Fuse Block to Voltage Regulator "B" terminal.
- 7.3.2** Connect the 14-gauge wire #958 (ylw/blk) to the Generator ARMATURE "A" lug to the Voltage Regulator "A" terminal.
- 7.3.3** Connect the 14-gauge wire #984 (wht) to the Generator FIELD "F" lug to the Voltage Regulator "F" terminal.
- 7.3.4** Connect the 14-gauge wire #981 (blk/red), *Included in Alternator pig tail bag*, to the Generator Ground lug and to the Voltage Regulator chassis ground.

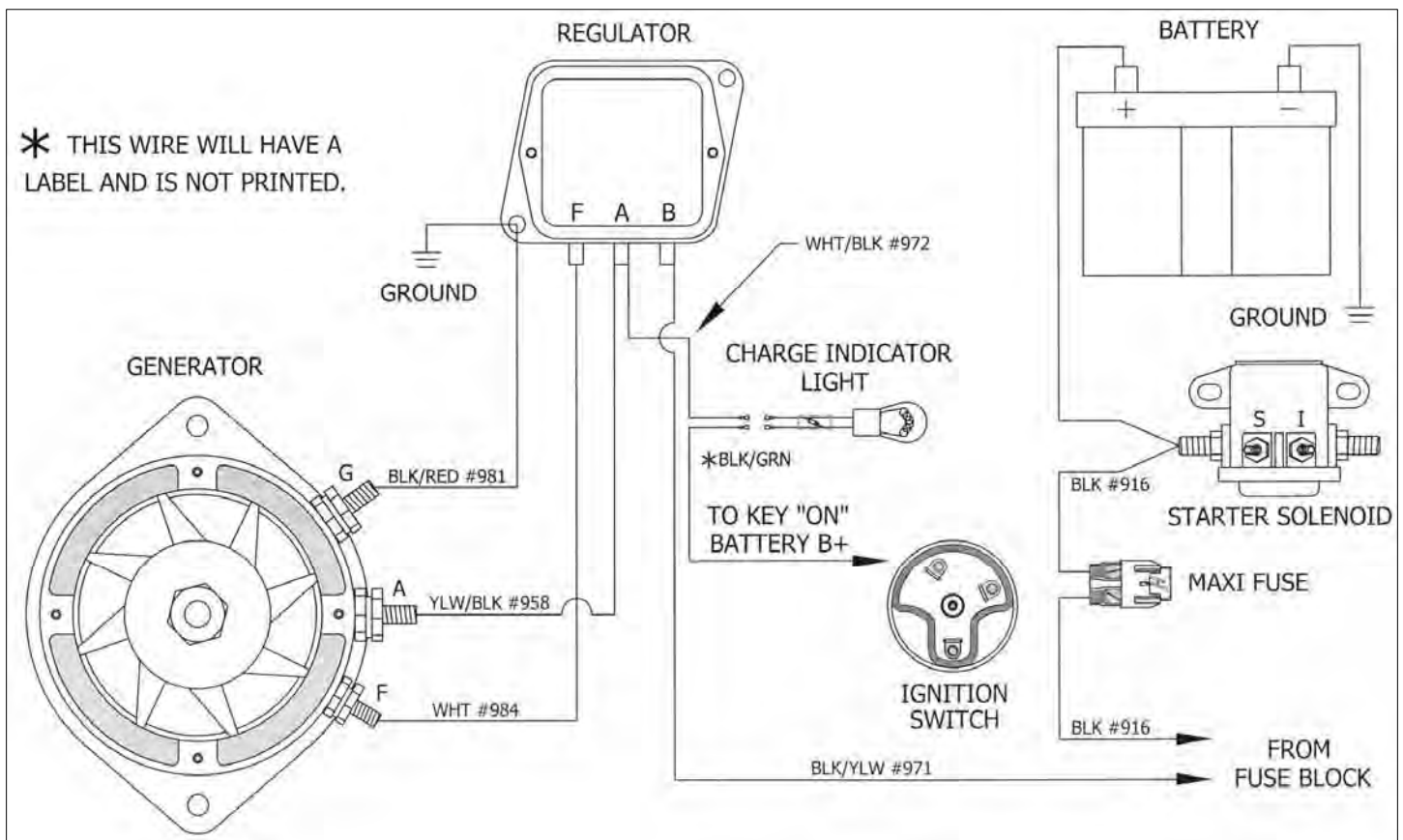


Figure 7-2 Generator Charging System

7.4 Connecting to Ammeter and the Maxi-Fuse

- 7.4.1** 1964½ thru 1966 Mustangs came with two different designs of Ammeters. Most Mustangs were equipped with shunt-type ammeters. These type ammeters **only** require a sampling of the current flowing in the harness. Mustangs with this type of ammeter will have two threaded posts on the back of the instrument cluster which will need to be connected to the red and yellow wires in the ammeter section. The red wire connects to the (right) ammeter post and the yellow wire connects to the (left) ammeter post, using the provided (pink) female bullet connectors. The second design of Ammeter used in early Mustangs was an inductive type. This simply means a wire is passed through a metal channel behind the ammeter and the ammeter senses the field of electricity passing through the wire. If this type of ammeter is in the Mustang being wired, simply cut the #916, route it through the metal channel behind your meter and reconnect the two cut ends using a provided yellow butt connector.
- 7.4.5** The Maxi Fuse connects to the battery side stud of the starter solenoid and the other side to the #916 wire from the fuse block. Also connect the red ammeter wire to the fuse block side of the Maxi Fuse. **See Figure 7-2.**

CAUTION: *If not using a shunt type ammeter be sure to tape up and stow the red and yellow ammeter wires. These wires have constant power and could result in a harness failure if they were shorted to ground.*

7.5 Ford Ignition (Start/Run) System. See Figure 7-4.

- 7.5.1 In the ENGINE SECTION, terminate the two 10 gauge wires #916 (blk), labeled **MAXI FUSE**, with supplied ring terminals and install the Maxi Fuse. This should be done regardless if you use an Ammeter or not. This serves as a fuse to protect the entire harness. **DO NOT OMIT IT.**
- 7.5.2 Connect wire #916 (blk)– with Maxi Fuse installed – to the Starter Solenoid Battery terminal. This is the same lug that the large red cable from the battery will be connected. This is the main power feed for the harness.
- 7.5.3 Connect ENGINE SECTION wire #919 (red/blu) to the Starter Solenoid Start “S” terminal.
- 7.5.4 If you are using the Ballast Resistor, mount it away from other wiring or hoses. The Ballast Resistor gets very hot during operation. Connect ENGINE SECTION wire #990 (red/wht) to one end of the Ballast Resistor. Connect the other end of the Ballast Resistor to the Ignition Coil B+ terminal with 16-gauge wire (you may have enough wire left over to accomplish this).
- 7.5.5 The Ignition Coil NEGATIVE (-) terminal is connected to the Distributor. Also connect ENGINE SECTION wire #923 (blk) to the Ignition Coil NEGATIVE (-) terminal. This is the tachometer source. If you are not using a tachometer, insulate and stow wire #923 (blk).
- 7.5.6 Connect a 16-gauge #920 (wht) wire from the Starter Solenoid Ignition “I” terminal to the coil side of the Ballast Resistor. This wire serves as a ballast resistor BYPASS during engine starting. **Note: If you are using electronic ignition and the resistor bypass wire you must install a diode (Radio Shack #276-1661) in wire #920 (wht) with the arrow or (current) pointing away from the starter solenoid, See Figure 7-5.** If you are not using a ballast resistor, leave the Starter Solenoid Ignition “I” terminal unconnected.
- 7.5.7 Be sure the large, red battery cable is connected from the other side of the Starter Solenoid to the Starter Motor. **See Figure 7-4**

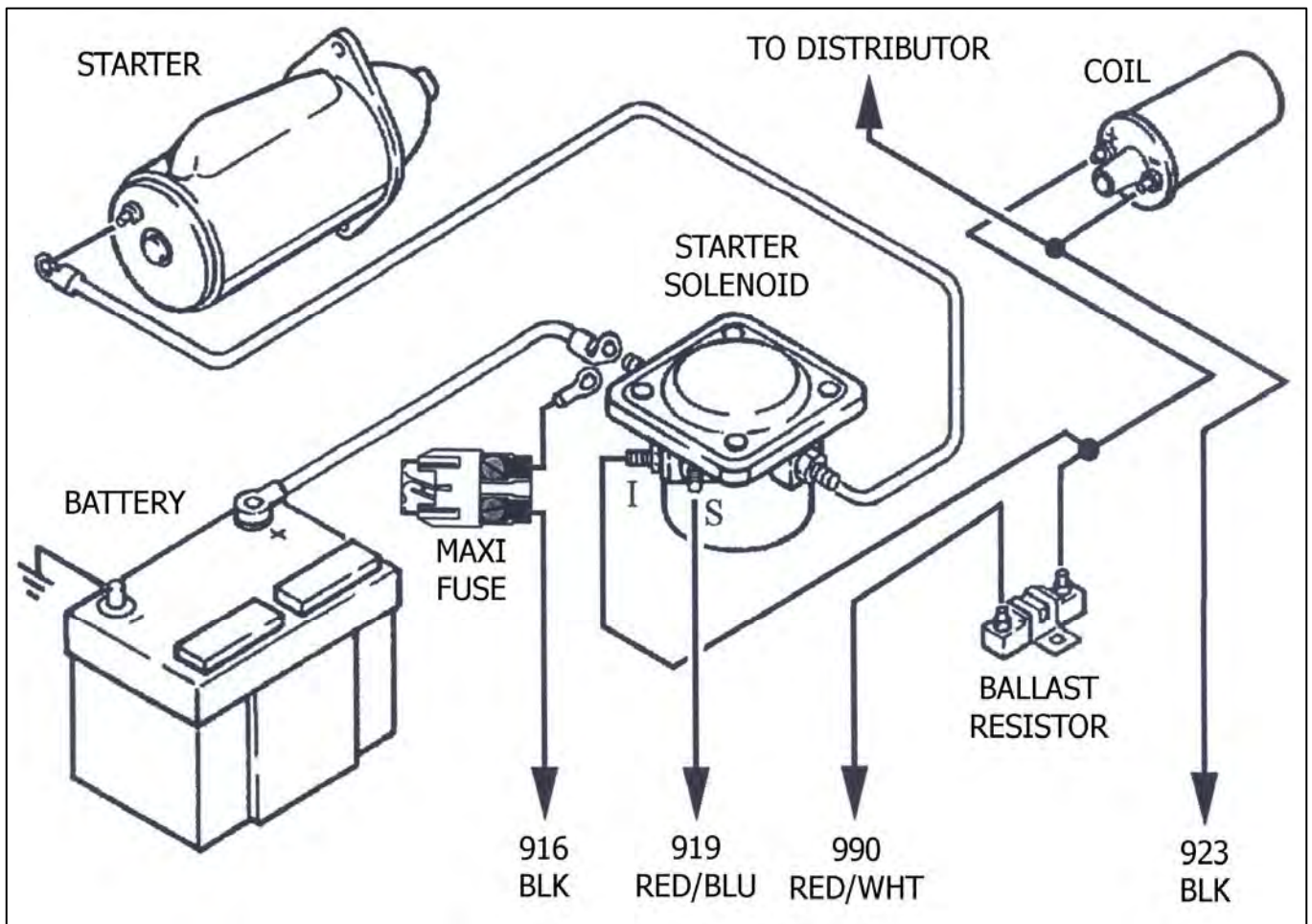


Figure 7-4 Ford Ignition (Start/Run) System

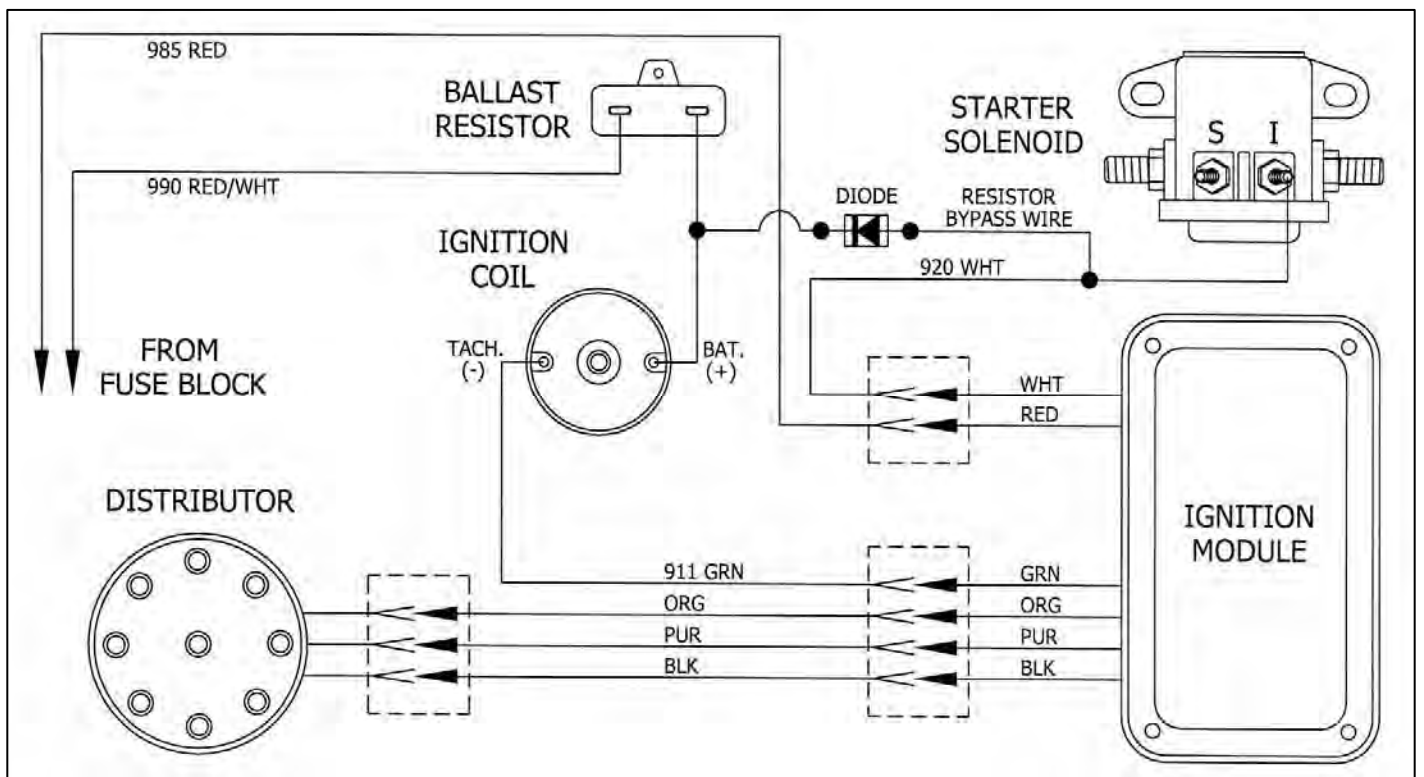


Figure 7-5 Ford Ignition (Duraspark II Systems)

7.6 Steering Column Wiring-Turn Signal Connections

7.6.1 Connect the 6-way and the 2-way connectors labeled TURN SWITCH SECTION to the factory steering column harness. These connectors will plug directly to the existing connectors and will take care of all the Turn Switch connections.

7.7 Ignition Switch Wiring – Ignition Switch Connections

7.7.1 Connect the wires of the IGNITION SWITCH SECTION according to **Figure 7-6**. IGNITION SWITCH SECTION wire #919 (red/blu) needs to be connected to the neutral safety switch. If the switch is mounted on the floor shifter, add some length of wire to reach it. FOR SAFETY, PLEASE USE A NEUTRAL SAFETY SWITCH!

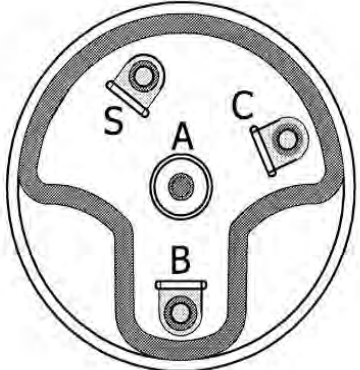
Designation	Painless Wire Color	Terminal	
Radio Switched B+	941 Gry/Blk	A	
Fuse Block B+	933 Ylw	B	
F. B. Switched B+	932 Blk/Org 935 Blk/Grn	C	
Starter Solenoid	919 Red/Blu	S	

Figure 7-6 Ignition Switch Connections

7.8 Interior Lighting

7.8.1 Interior Lights are switched through the door switches and the dash-mounted headlight switch, which is usually rotated counter-clockwise to turn on. These switches apply a ground to the circuit.

7.8.2 If possible leave your existing interior light wiring intact. The Painless harness supplies the 12V feed (B+) to the circuit via wire #918 (lt.grn/ylw) and wire #945 (blk/blu).

7.8.3 The Glove Box and Courtesy Light bulbs are grounded through their housings and mounting points so make sure that they are clean and tight. The Painless Harness provides a ground wire for the INSTRUMENT PANEL SECTION lighting.

7.8.4 Due to the different types of Interior Lighting options, you may not have all of the necessary wiring to accommodate your specific interior lighting package. Rear quarter panel light wiring for both left and right sides as well as wiring for the Glove Box light is provided along with connection points for Center Console, and Door lights. It will be necessary to reuse some of the original wiring or add new wiring were applicable.

7.8.5 Connect wire #918 (lt.grn/ylw) and wire #945 (blk/blu) to the left door jamb switch and route the harness along the bottom side of the dash to the right door jamb switch and make the same connections there. This allows the Interior Lights to be turned on when either of the doors are opened or the headlight switch knob is turned. The specific courtesy lamp locations will be printed on the wire or will have a label indicating its proper connection.

7.9 Brake Light Switch

- 7.9.1 Route the brake switch wires #917 (lt.grn/red) and #982 (grn) in HEADLIGHT SECTION A, from the driver side kick panel, over the steering column, and behind the instrument panel opening to the brake switch located on the brake pedal.
- 7.9.2 Install wires #917 (lt.grn/red) and #982 (grn) into the brake switch connector housing. These two wires are interchangeable and can be installed on either side of the connector. These wires are terminated with the correct terminals to fit in the original connector housing. From the front side of the connector housing, use a small pick or pocket screw driver to release the tab on the terminal and gently pull the old terminal and wire out from the rear (wire side) of the housing. **Use the terminals on the Painless Harness as a visual reference.**

7.10 Instrument Panel Wiring

- 7.10.1 Connect the wires of the INSTRUMENT PANEL SECTION as indicated in **Table 8.2 or Figure 7-7 and 7-8**. Insulate and stow any wires you do not use.
- 7.10.2 Connect dash power wire labeled CONSTANT VOLTAGE REGULATOR (lt.grn/red) with female terminal to the Constant Voltage Regulator on the "In" terminal. Connect the wire labeled CONSTANT VOLTAGE REGULATOR (blk/grn) wire with male terminal to the Constant Voltage Regulator on the "Out" terminal. Connect the remainder of the blk/grn wires to the "I" post on the Oil, Temperature and Fuel Gauges.
- 7.10.3 Connect wire #922 (wht/red) to the "S" post of the Oil Pressure Gauge, then wire #921 (red/wht) to the "S" post of the Temperature Gauge and wire #939 (ylw) to the "S" post of the Fuel Gauge.
- 7.10.4 Wire #923 (blk) supplies the tachometer signal from the ignition coil, follow the instructions with your tachometer for proper installation. Power is provided by wire #934 (red/lt.grn). A ground can be taken from the (blk) wire labeled GROUND in INSTRUMENT PANEL SECTION B.
- 7.10.5 After installing the bulbs (supplied) into the black lamp sockets, snap the lamp sockets with the lt.blu/red and blk wires into the gauge light openings. Then decide which of the turn indicator pig tails you will need, some models use a single turn indicator lamp and others use a separate left and right turn indicator. A HIGH BEAM INDICATOR pig tail is included for those vehicles with that option, use wire labeled HIGH BEAM INDICATOR and the wire labeled GROUND in the INSTRUMENT Panel Section. If you use an oil pressure warning light instead of a gauge connect wire #922 (wht/red) to the pig tail labeled OIL PRESSURE INDICATOR LAMP. If you use a charge indicator lamp connect the pig tail labeled CHARGE INDICATOR LAMP to the two wires (wht/blk) and (grn/blk) labeled CHARGE INDICATOR LAMP on INSTRUMENT PANEL SECTION B. If you do not use a charge indicator lamp connect the two wires (wht/blk) and (grn/blk) labeled CHARGE INDICATOR LAMP together.

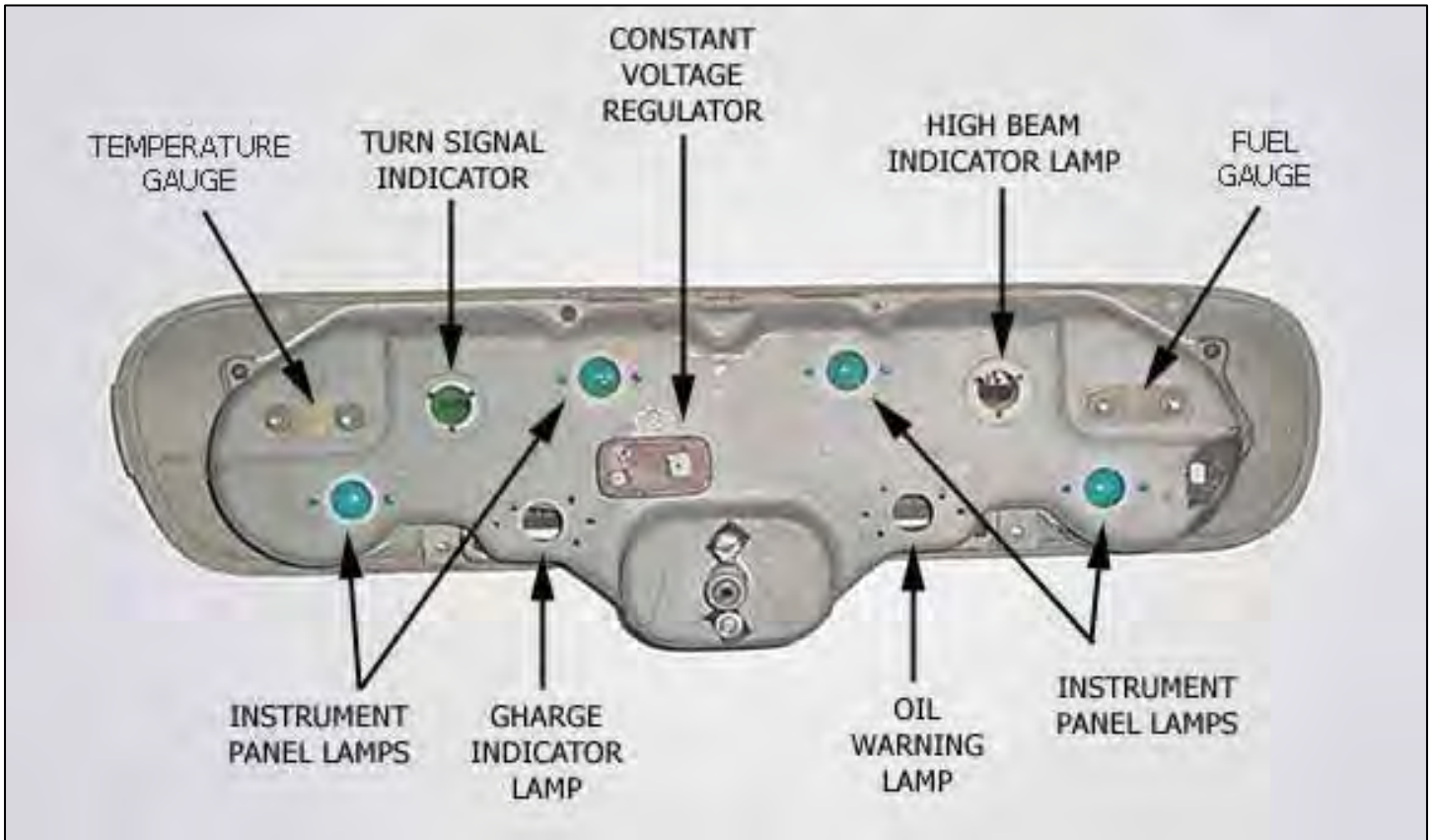


Figure 7-7 Instrument Panel and Gauges (1964 ½ - 1965)

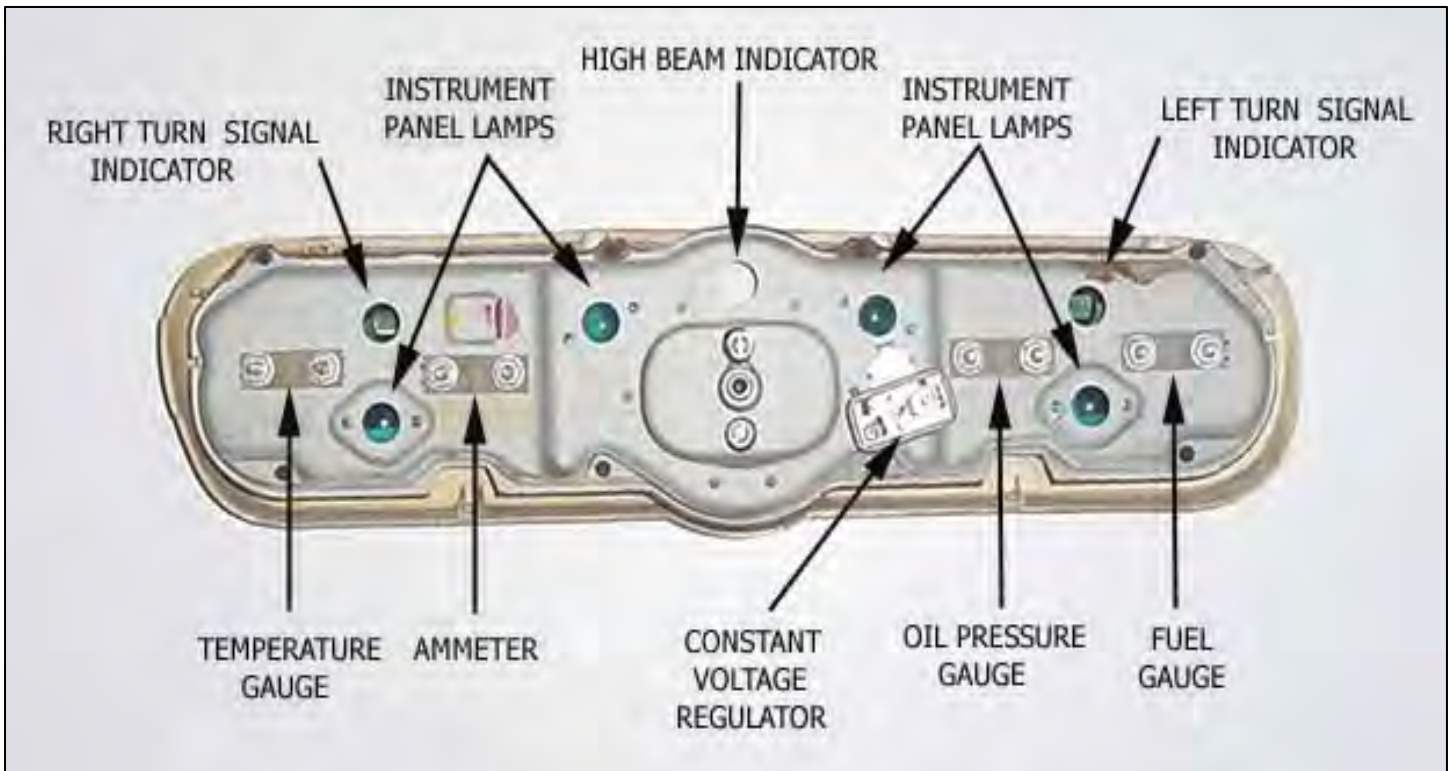


Figure 7-8 Instrument Panel and Gauges (1966)

7.11 Wiper Switch Wiring (Single and Two Speed)

- 7.11.1** Connect the wires of the WIPER SWITCH SECTION as indicated in **Figure 7-9**, or **Figure 7-10** depending on which wiper system you have. The wires for the Wiper Switch are terminated with the correct terminals to allow you to reuse the original connector housing. Refer back to **Section 7.9.1** for terminal removal procedure.
- 7.11.2** Connect the wires of the Wiper Motor as indicated in **Table 8.2**. Connect wire #966 (wht) from the Wiper Switch to the Wiper Motor "park" circuit. Connect wire #967 (ylw) from the Wiper Switch to the Wiper Motor "On" circuit. Connect wire #993 (lt.blu) from the Wiper Switch to the Wiper Motor "Constant B+" Circuit. Take wire #930 (lt.grn) terminated with the blue push on terminal, and cut the nylon tie wrap that secures it to the other lt.grn wire, bring wire #930 (lt.grn) down 3 inches to break out with the blk ground wire. Double it in a ring terminal with the black wire and ground it to the chassis in the instrument panel section. Wire #968 (blk/wht), #969 (blk), #965 (red) and the short lt.grn wire spliced with wire #965 (red) are not used in this application. These wires can be retained for conversion to a two speed wiper system.

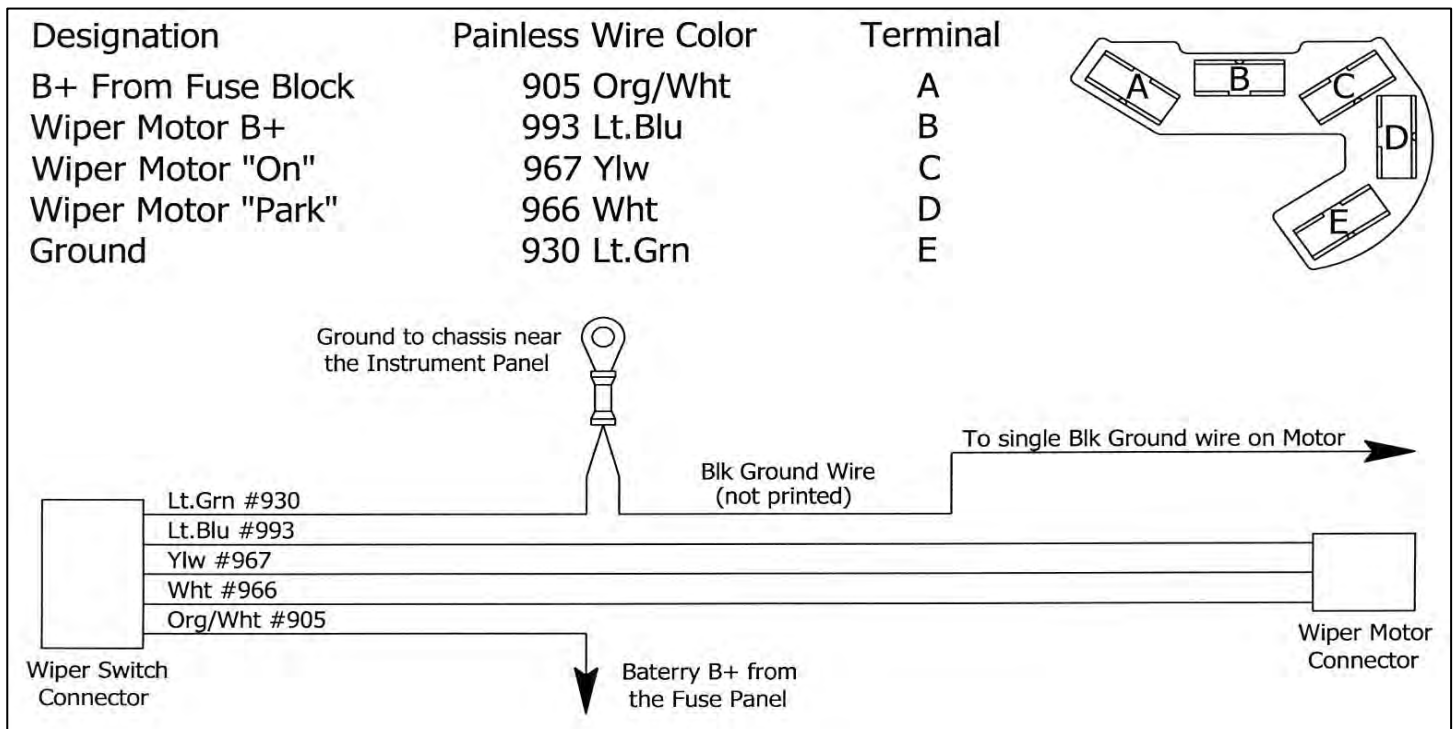


Figure 7-9 Single Speed Wiper Switch Connections (Wire Side View)

- 7.11.3** For Two Speed Wiper Systems, connect the wires of the Wiper Motor as indicated in **Figure 7-10** and **Table 8.2**. The opposite ends of Wire numbers, #966 (wht), #993 (lt.blu), #967 (ylw) and #930 (lt.grn) will be connected to the four way connector at the Wiper Motor using the terminals provided. These wires are color coded to match the original harness but due to inconsistent wire coloring check these circuits to be sure.
- 7.11.4** Connect the two wires #930 (lt.grn) with the female spade terminals to the two male power terminals on the side of the Wiper Motor. Connect the remaining blk wire with the ring terminal from the Dash grounding point to the blk ground wire at the rear of the Wiper Motor. Connect wire #969 (blk) to the single male terminal on the side of the wiper motor.

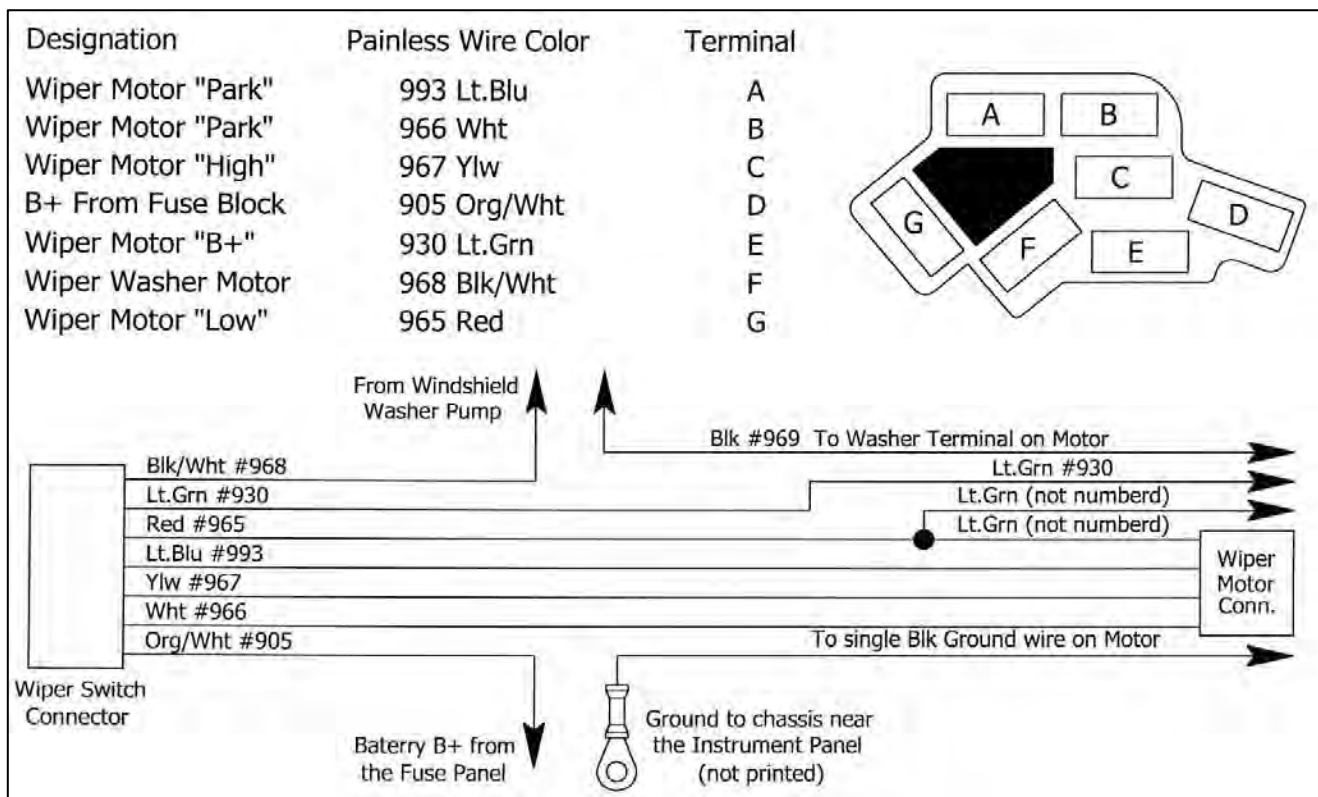


Figure 7-10 Two Speed Wiper Switch Connections (Wire Side View)

7.12 Hazard Switch Wiring

- 7.12.1** Connect the wires of the HAZARD SWITCH SECTION as indicated in **Table 8.2**. The terminals on the Hazard Switch are made to the switch, it may be necessary to splice into the original Hazard Switch Harness. The original wires can be removed using a soldering iron, making it possible to solder the new Painless Wires into the original terminals. **Figure 7-11**



Figure 7-11 Hazard Switch Wiring

7.13 Heater-A/C Switch Wiring

- 7.13.1** Connect wire #904 (brn) in the ENGINE SECTION to the (brn) wire on the Heater Blower Motor, this wire supplies power from the fuse block.
- 7.13.2** Connect wire #903 (ylw) in the ENGINE SECTION to the ylw wire on the Heater Blower Motor.

Note: 1964-1/2 through 1966 Mustangs had two types of Blower Motor Switches, a two speed switch and a three speed switch. Decide which type of switch you have and connect the opposite end of wire #903 (ylw) according to the one of the following two steps.

- 7.13.3 For two speed switches connect wire #903 (ylw) to the blower motor switch.
 - 7.13.4 For three speed switches wire #903 (ylw) is connected to the Heater Blower Motor Resistor, and acts as the ground through the resistor from the Blower Motor Switch.
 - 7.13.5 Plug the three way connector on the HEATER SWITCH PIG TAIL on to the Blower Motor Resistor and route the other end of the pig tail to the Heater Switch. The wires at the Blower Motor Switch are soldered onto the terminals, it may be necessary to splice onto these wires. These wires can be removed with a soldering iron allowing the new Painless wires to be soldered directly to the Heater Switch terminals. The wire colors at the Blower Motor Switch may vary so test the switch to identify the correct wire locations. Connect wire #992 (blk/grn) to the Blower Motor Switch "LOW" wire or terminal. Connect wire #994 (lt.blu) to the Blower Motor Switch "MED" wire or terminal. Connect wire #910 (wht/blk) to the Blower Motor Switch "HIGH" wire or terminal.
 - 7.13.6 Provisions have been included in this harness for Mustangs with Air Conditioning. Locate the two blk/wht wires and the two gry/wht wires labeled together as A/C-ELECTRIC FAN.
 - 7.13.7 Connect the blk/wht wire that is NOT printed to the B+ side of the A/C Switch. Connect wire #902 (blk/wht) to the remaining A/C Switch wire, this wire goes to A/C Compressor.
 - 7.13.8 The two gry/wht wires are for an electric cooling fan switch. If using an electric cooling fan, locate a suitable mounting point for the switch. *Enough wire is provided for mounting the cooling fan switch in several locations around the instrument panel.*
 - 7.13.9 Connect wire #906 (gry/wht) from the fuse block to one side of the Electric Cooling Fan Switch, this wire supplies power to the switch. Connect wire #901 (gry/wht) to the other side of the Electric Cooling Fan Switch, connect the opposite end of wire #901 (gry/wht) in HEADLIGHT SECTION B to a 30amp relay and then to the Electric Fan. Wire #901 is long enough to make the connection between the switch and relay and the relay and fan. **Painless Performance Part #30101, Fan-Thom Electric Fan Relay Kit** may be used for this application.
- Note: A detailed illustration showing TYPICAL RELAY INSTALLATION can be found on Page 21, Diagram 1.*
- Note: A 20amp Accessory Relay is provided at the Fuse block, it can be used as a GROUND or POWER activation Relay. It is not fused and uses 14 gauge input/output wires and 18 gauge activation/ground wires.*
- 7.13.9 Connect wire #996 (ylw) from the relay to one the device that you will be using. Connect wire #997 (ylw/blk) from the relay to the switch/button you will be using. Connect wire #998 (blk) from the relay to a grounding point. Connect wire #999 (red) from the relay to a 12 volt switched power source.

7.14 Headlight Section Wiring

- 7.14.1 Connect the wires in HEADLIGHT SECTION B according to **Figure 7-12**. All Headlight wires and both Horn wires are terminated and have the correct connectors already installed, locate the left and right side of both and make the connections. Ground the (blk) wires from the headlight connector to the chassis.

- 7.14.2 Connect wire #926 (blk/ylw) to both of the front turn/park lamps, on dual element bulbs this will be the "dimmer" of the two elements. Connect wire #925 (blu/wht) to the brighter element of the RIGHT turn/park lamp. Connect wire #943 (grn/wht) to the brighter element of the LEFT turn/park lamp. A ground wire is supplied from the headlight connector to ground both turn/park lamps.
- 7.14.3 Connect wire #968 (blk/wht) from the Wiper Switch to the Windshield Washer Pump. Connect wire #969 (blk) from the Wiper Motor to the other side of the Wiper Washer Pump.
- 7.14.4 Connect wire #972 (wht/blk) from the Ignition Switch to the "I" terminal of the Alternator Voltage Regulator or on the "B" terminal of the Generator Voltage Regulator as described in **Section 7.1 and 7.2**.
- 7.14.5 Connect wire #901 (gry/wht) from the Cooling Fan Switch to the Electric Cooling Fan Relay, this wire is long enough that it can be used to connect from the switch to the relay and then to the fan.

*Note: This wire is an activation wire for the relay, **NOT A POWER FEED**. Refer to **Section 7.13.8 and 7.13.9**.*

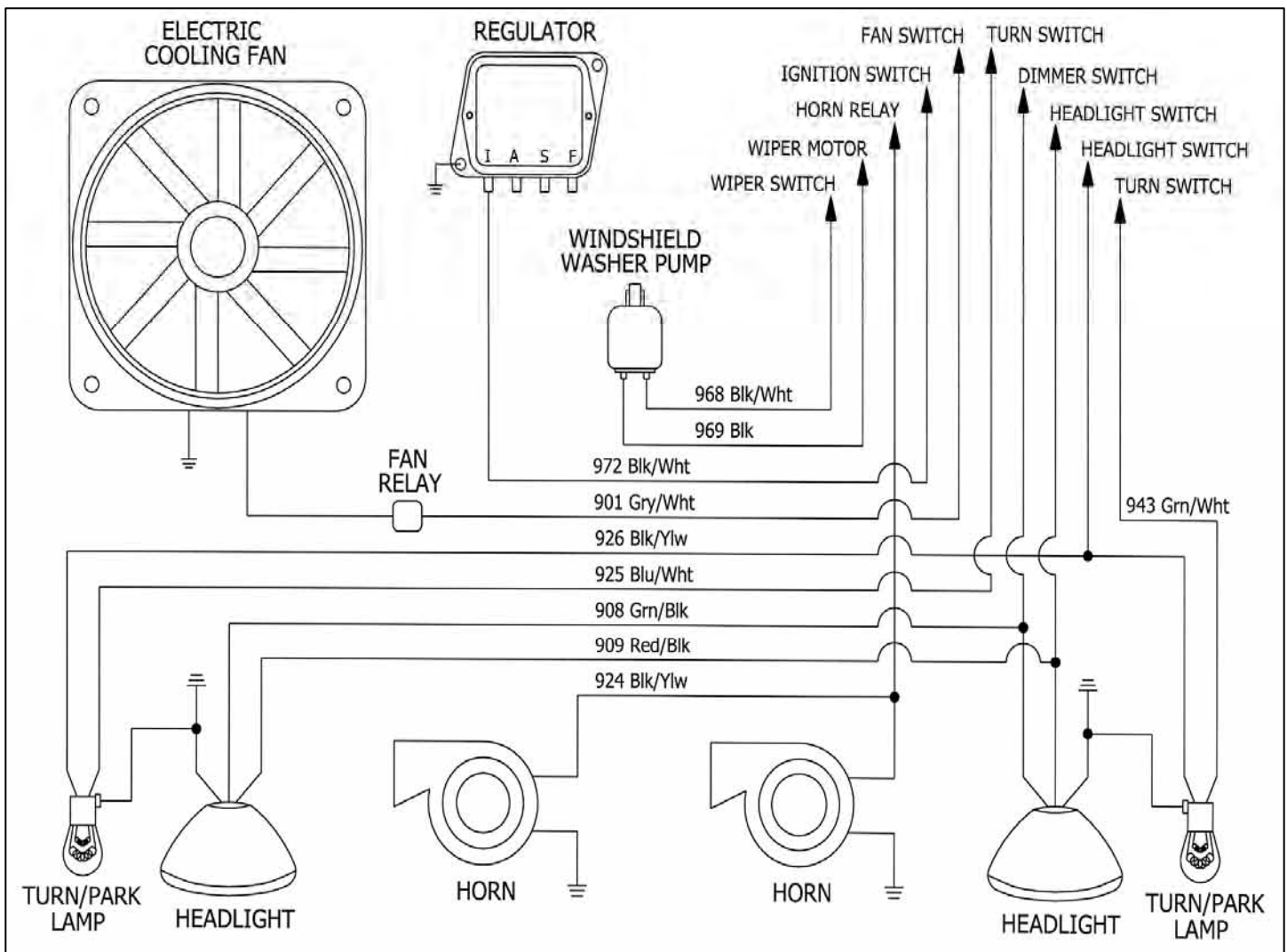


Figure 7-12 Headlight Section B Wiring

7.14.6 Connect these wires in the HEADLIGHT/WIPER SWITCH SECTION according to **Figure 7-13 and Table 8.2.**

All Headlight Switch wires are terminated with the correct terminals to fit the original Headlight Switch connector housing. Repeat the procedure for terminal removal and installation discussed in **Section 7.9.1.**

Wires #905 (org/wht), #968 (blk/wht), and #969 (blk) in the HEADLIGHT/WIPER SWITCH SECTION were connected in **Section 7.11.**

Note: Terminal positions A, D1, D2, and H are turned 180° from positions B, I, R and P.

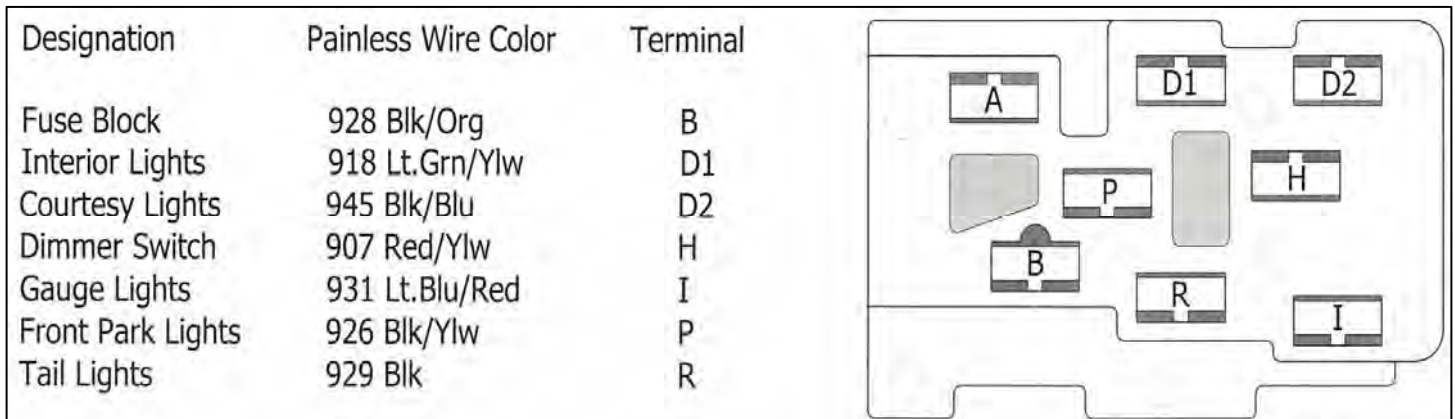


Figure 7-13 Headlight Switch Connector Housing Wiring (Wire Side View)

7.15 Tail Section Wiring

- 7.15.1** Connect the wires in the TAIL SECTION according to **Table 8.2 and Figure 7-14.**
- 7.15.2** Connect wire #945 (blk/blu) to the left and right rear Courtesy Lamps if applicable, stow the wires out of the way if you do not have rear courtesy lamps.
- 7.15.3** Connect wire #939 (ylw) to the Fuel Tank Sending Unit, this wire controls the Fuel Gauge.
- 7.15.4** Connect wire #948 (org/blu) to the right rear Turn Lamp, this is the “brighter” element on dual element bulbs. Connect wire #949 (lt.grn/red) to the left rear Turn Lamp, this is the “brighter” element on dual element bulbs. Connect wire #929 (blk) to both Tail Lamps, this is the “dimmer” element on dual element bulbs and to the License Plate Lamp.
- 7.15.5** Connect wire # 991 (pur) to both of the Reverse Lamps, this wire supplies power from the Back up Switch. Connect wire #980 (red/blk) to the ground side of the Reverse Lamps and to a chassis ground near the trunk latch.
- 7.15.6** When you have Integrated Brake Lights on your vehicle the Turn Signal switch acts as a brain to control when the Lights in the rear are on constantly (braking) or flashing (turning) or a combination of both. **The Turn Signal switch you use must be built to do this! If you are using a steering column out of a salvage yard that was originally in a vehicle that had separate Brake Lights then the switch will not work for Integrated Brake Lights.**
- 7.15.7** Almost all light bulbs get the ground they need through the socket housing. If you mount your socket housing into anything other than a grounded metal part then you will need to provide a separate ground wire.

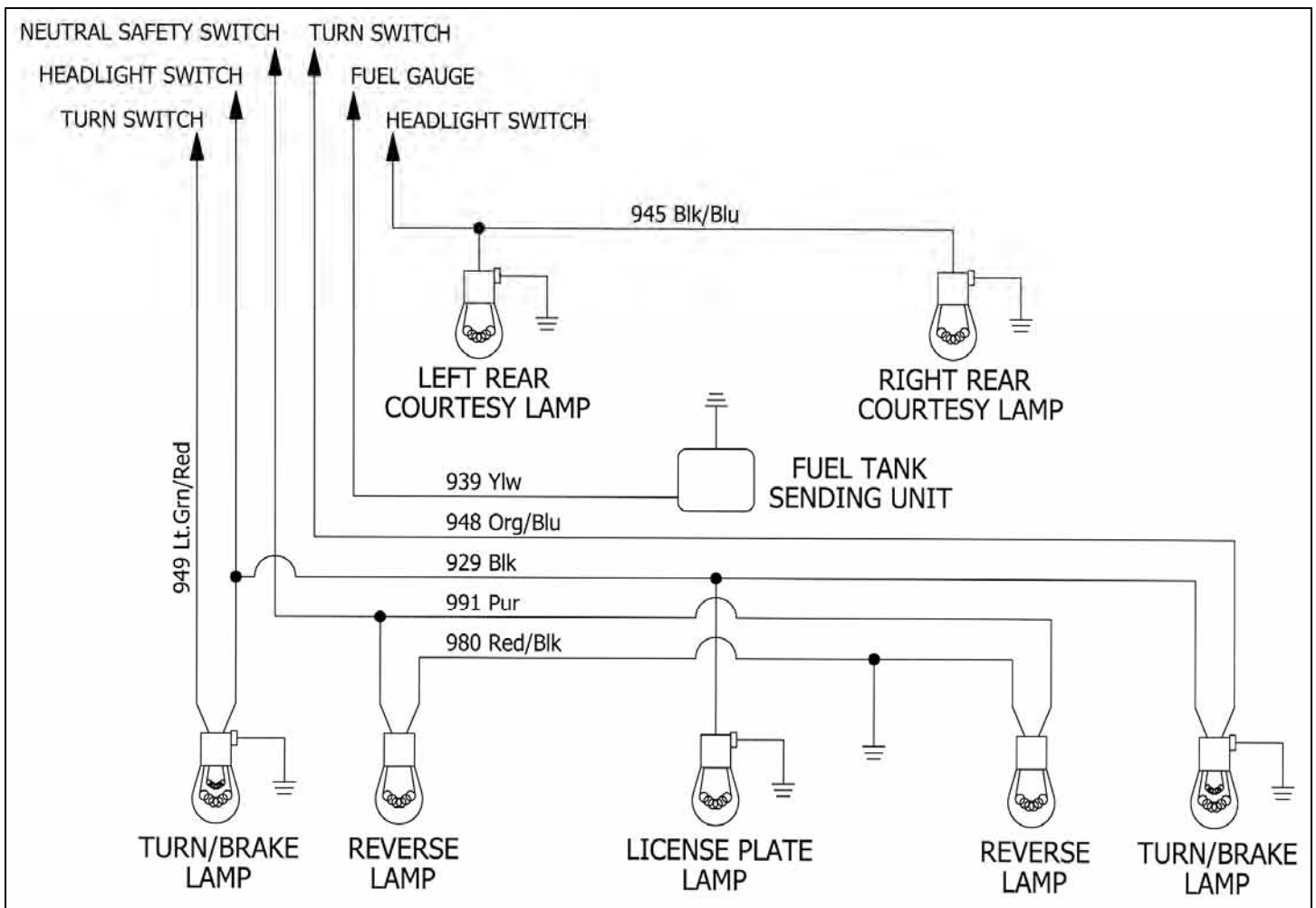


Figure 7-14 Tail Section Wiring

8.0 WIRE CONNECTION INDEX AND FUSE REQUIREMENTS

8.1 Wire Connection Index

In each section, connect the wire, as identified by its wire color, to the appropriate item in the CONNECT TO column.

Table 8.2 is divided into sections that correspond to the sections of your wire harness. (ACCESSORY SECTION , IGNITION SWITCH SECTION, etc.). The index is divided vertically into six columns. COLOR, GAUGE, NUMBER, CONNECT TO, WIRE STARTING POINT, and SECTION OF STARTING POINT.

The columns labeled WIRE STARTING POINT and SECTION OF STARTING POINT are for your reference ONLY. The items in these columns tell you where each wire originates and from which section of the harness.

The column labeled NO. contains a 900-series number that is used to identify various wires in the wiring diagrams that are a part of these instructions.

Many (but not all) of the wire numbers occur TWICE in this index. That is because you will be connecting BOTH ENDS of many of the particular wire segments. However, some wire segments are pre-connected at one end. For instance, all wires originating from the fuse panel and certain other wires such as from the horn relay, the dimmer switch, and the instrument panel section.

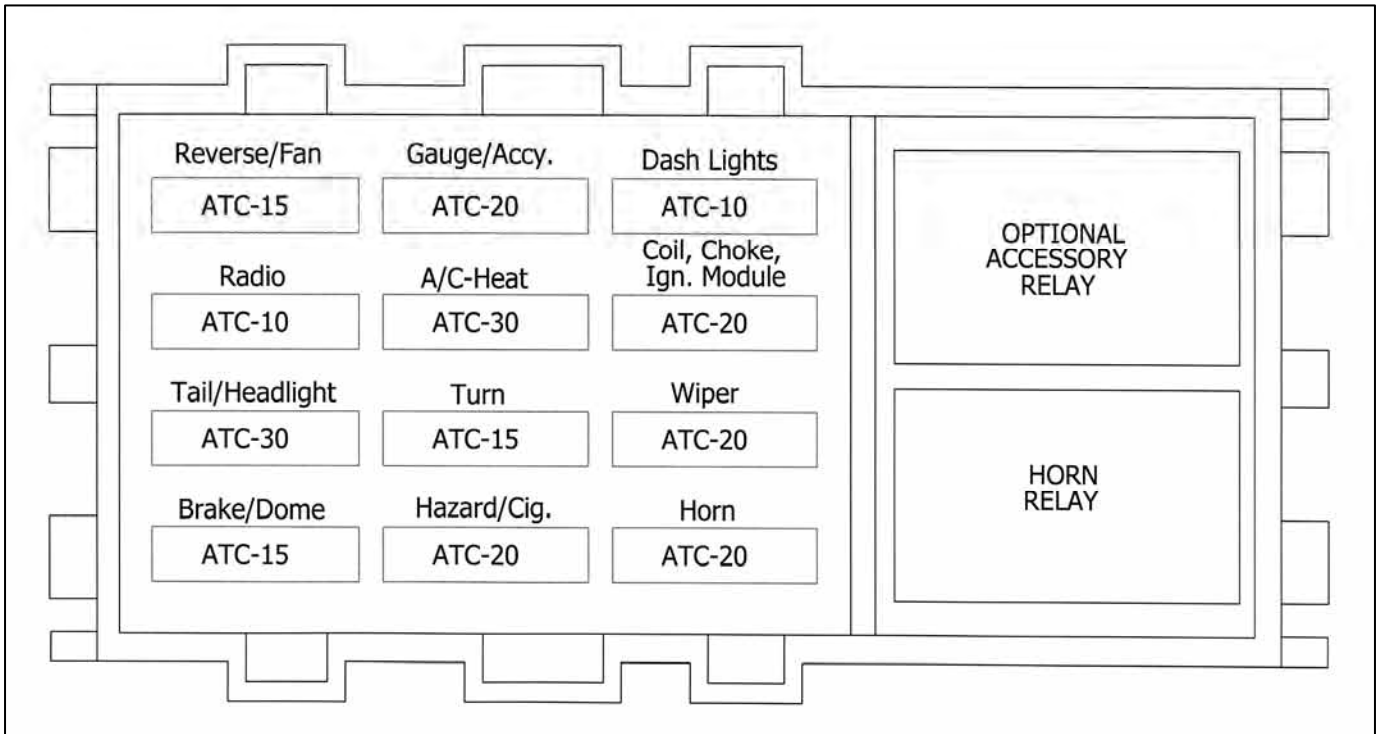


Table 8.1 Fuse Requirements

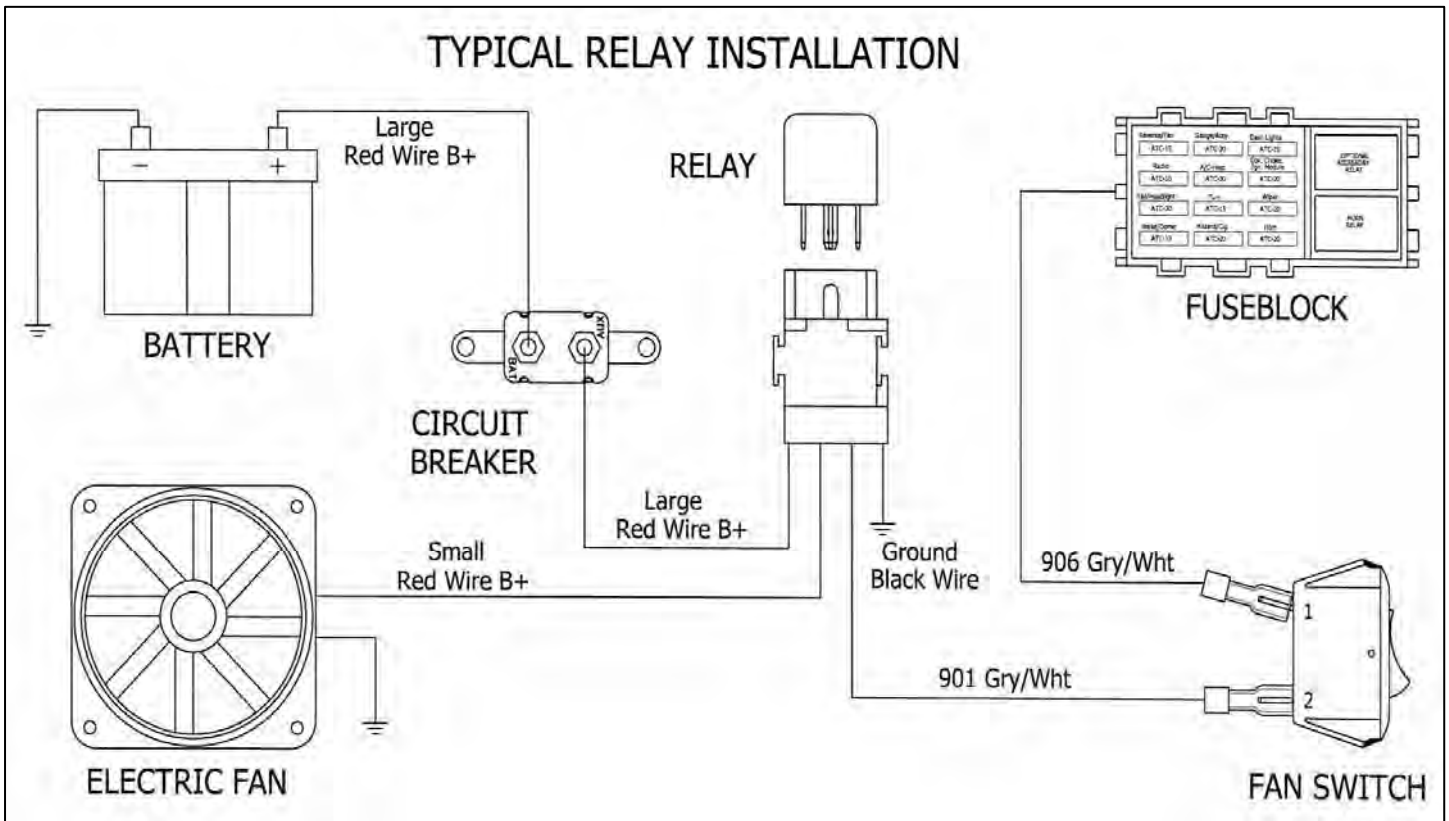
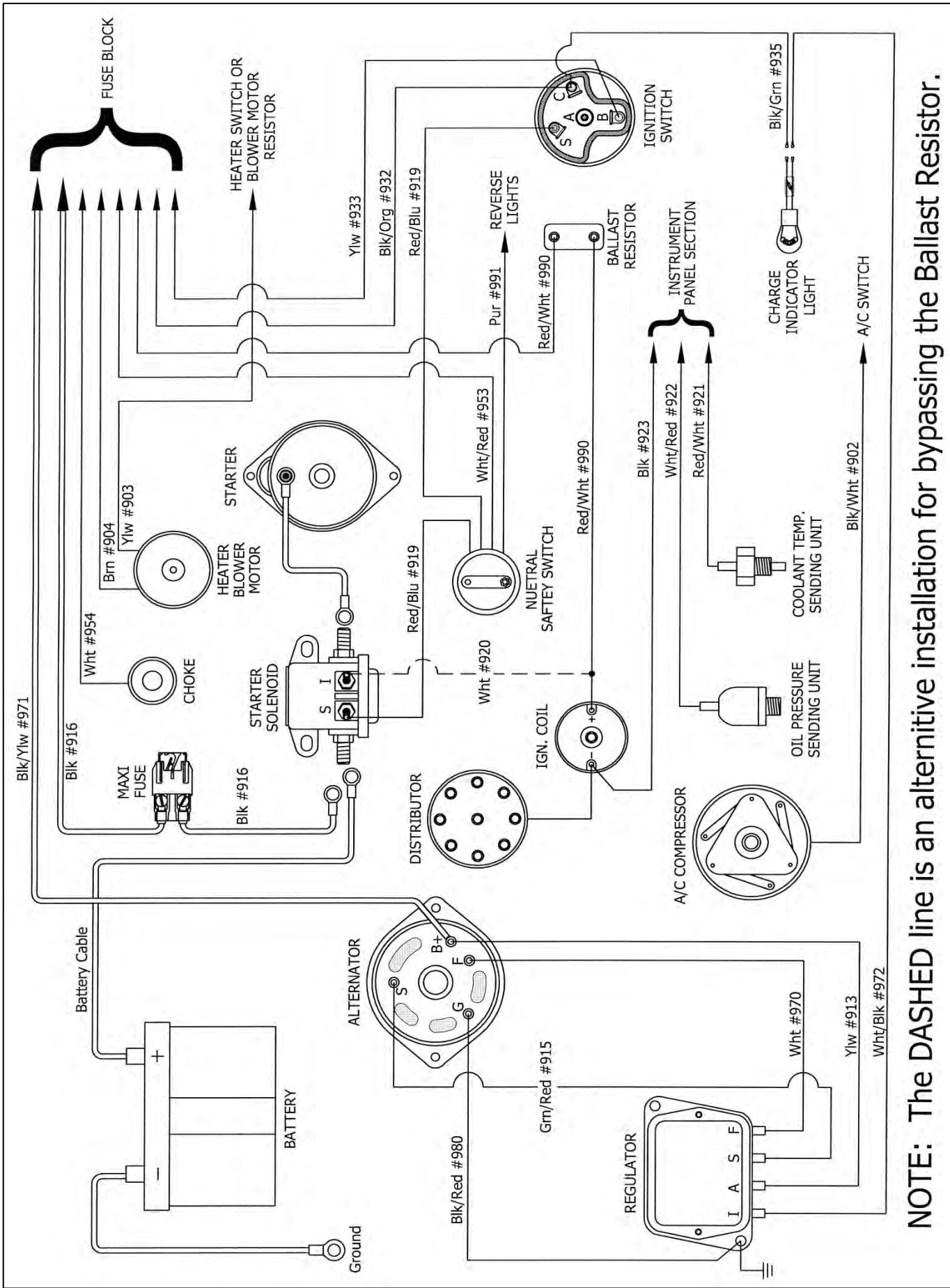


Diagram 1 Typical Fan Relay Installation



NOTE: The DASHED line is an alternative installation for bypassing the Ballast Resistor.

Diagram 2 Engine Wiring

Color	Ga.	No.	Connect To	Wire Starting Point	Section Of Starting Point
HEADLIGHT SECTION "A"					
Grn/Blk	14	908	Headlight Section "B"	Dimmer Switch	Headlight Section "A"
Red/Blk	14	909	Headlight Section "B"	Dimmer Switch	Headlight Section "A"
Wht/Blu	16	925	Headlight Section "B"	Turn Signal Switch	Turn Switch Section
Grn/Wht	16	943	Headlight Section "B"	Turn Signal Switch	Turn Switch Section
Blk/Ylw	16	926	Headlight Section "B"	Headlight Switch	Headlight/Wiper Switch Sec.
Grn/Blk ¹	18	908	High Beam Indicator	Dimmer Switch	Headlight Section "A"
Grn	16	982	Brake Switch	Turn Switch	Headlight Section "A"
Lt.Gr/Red	16	917	Brake Switch	Fuse Panel	Fuse Panel
Red/Ylw	14	907	Headlight Switch	Dimmer Switch	Headlight Section "A"
Lt.Blu	16	952	Turn Flasher	Turn Switch	Turn Switch Section
Gry/Wht	18	901	Headlight Section "B"	Electric Cooling Fan Switch	A/C-Electric Fan Switch
Wht/Blk	14	972	Charge Indicator Lamp	Voltage Regulator "I" Term.	Headlight Section "B"
Blk	16	969	Wiper Motor (Washer)	Windshield Washer Pump	Headlight Section "B"
Blk/Wht	16	968	Wiper Motor Switch	Windshield Washer Pump	Headlight Section "B"
HEADLIGHT SECTION "B"					
Grn/Blk	14	908	Headlight (High Beam)	Dimmer Switch	Headlight Section "A"
Red/Blk	14	909	Headlight (Low Beam)	Dimmer Switch	Headlight Section "A"
Wht/Blu	16	925	Right Front Turn Lamp	Turn Switch	Turn Switch Section
Grn/Wht	16	943	Left Front Turn Lamp	Turn Switch	Turn Switch Section
Blk/Ylw	16	926	Front Park Lights	Headlight Switch	Headlight/Wiper Switch Sec.
Gry/Wht	18	901	Electric Cooling Fan Relay	Electric Cooling Fan Switch	A/C-Elec.Cooling Fan Sw.Sec
Wht/Blk	14	972	Voltage Regulator "I" Term.	Charge Indicator Lamp	Instrument Panel Sec. "B"
Blk/Ylw	16	924	Horns	Horn Relay	Fuse Panel
Blk	16	969	Windshield Washer Pump	Windshield Wiper Motor	Windshield Wiper Motor
Blk/Wht	16	968	Windshield Washer Pump	Windshield Wiper Switch	Headlight/Wiper Switch Sec.
ENGINE SECTION					
Brn	14	904	Heater Blower Motor	Fuse Panel	Fuse Panel
Blk/Wht	16	902	A/C Compressor	A/C Switch	A/C-Electric Fan Section
Red/Wht	18	921	Coolant Temp Sending Unit	Temperature Gauge	Instrument Panel Sec. "B"
Ylw	16	903	Heater Blower Motor	Blower Motor Resistor	Hazard Switch Section
Wht/Red	18	922	Oil Pressure Sending Unit	Oil Pressure Gauge	Instrument Panel Sec. "B"
Blk	18	923	Ignition Coil	Tachometer	Radio/Tachometer Section
Red/Blu	16	919	Starter Solenoid "S" Post	Neutral Safety Switch	Engine Section
Grn	16	911	Ignition Coil (-)	Electronic Ignition Module	Engine Section
Red/Wht	16	990	Ballast Resistor/Ign.Coil (+)	Fuse Panel	Fuse Panel
Wht	16	954	Electric Choke	Fuse Panel	Fuse Panel
Blu/Ylw	16	986	Idle Solenoid	Fuse Panel	Fuse Panel
Wht	16	920	Starter Solenoid "I" Term.	Electronic Ignition Module	Engine Section
Red	16	985	Electronic Ignition Module	Fuse Panel	Fuse Panel
Blk/Ylw	10	971	Alternator/Generator B+	Fuse Panel	Fuse Panel
Blk	10	916	Starter Solenoid B+	Fuse Panel	Fuse Panel

Table 8.2 Wire Connection Index Page 1 of 3

Color	Ga.	No.	Connect To	Wire Starting Point	Section Of Starting Point
A/C-ELECTRIC COOLING FAN SWITCH SECTION					
Blk/Wht	16	902	A/C Switch	A/C Compressor	Engine Section
Gry/Wht	18	901	Electric Cooling Fan Switch	Electric Cooling Fan Relay	Headlight Section "B"
Gry/Wht	18	906	Electric Cooling Fan Switch	Fuse Panel	Fuse Panel
HAZARD SWITCH SECTION					
Lt.Blu	16	951	Hazard Flasher Switch	Hazard Flasher	Hazard Switch Section
Grn	16	982	Hazard Flasher Switch	Turn Signal Switch	Turn Switch Section
Grn/Wht	16	943	Hazard Flasher Switch	Turn Signal Switch	Turn Switch Section
Wht/Blu	16	925	Hazard Flasher Switch	Turn Signal Switch	Turn Switch Section
IGNITION SWITCH SECTION					
Red/Blu	16	919	Ignition Switch "S" Term.	Neutral Safety Switch	Engine Section
Ylw	10	933	Ignition Switch "B" Term.	Fuse Panel	Fuse Panel
Blk/Orn	10	932	Ignition Switch "C" Term.	Fuse Panel	Fuse Panel
Blk/Grn	14	935	Ignition Switch "C" Term.	Fuse Panel	Fuse Panel
RADIO/TACHOMETER SECTION					
Blk	18	923	Tachometer	Ignition Coil	Engine Section
Gry/Blk	16	941	Radio (Switched B+)	Fuse Panel	Fuse Panel
Red	18	940	Radio (Constant B+)	Fuse Panel	Fuse Panel
Ylw	14	995	Cigarette Lighter	Fuse Panel	Fuse Panel
INSTRUMENT PANEL SECTION "A"					
Blk/Ylw	14	935	Ignition Switch	Charge Indicator Lamp	Inst. Panel Section "B"
Wht/Blk	14	972	Voltage Reg. "I" Term.	Charge Indicator Lamp	Inst. Panel Section "B"
Red/Wht	18	921	Temperature Gauge	Temperature Sending Unit	Engine Section "B"
Grn/Blk	18	908	High Beam Ind. Lamps	Dimmer Switch	Headlight Section "A"
Ylw	18	939	Fuel Gauge	Fuel Tank Sending Unit	Tail Section
HEADLIGHT/WIPER SWITCH SECTION					
Blk/Ylw	16	926	Headlight Sw. Front Park	Front Park Lamps	Headlight Section "B"
Blk/Orn	12	928	Headlight Switch B+	Fuse Panel	Fuse Panel
Blk	16	929	Headlight Sw. (Tail Light)	Tail Lamp	Tail Section
Lt.Blu/Red	18	931	Headlight Sw. (Inst.Panel)	Instrument Panel Lamps	Inst. Panel Section "B"
Red/Ylw	14	907	Headlight Switch	Dimmer Switch	Headlight Section "A"
Orn/Wht	16	905	Wiper Switch B+	Fuse Panel	Fuse Panel
Blk/Wht	16	968	Wiper Switch Washer	Wiper Washer Pump	Headlight Section "B"
Blk	16	969	Wiper Motor	Wiper Washer Pump	Headlight Section "B"
Wht	16	966	Wiper Motor (Park)	Wiper Switch	Wiper Switch
Lt.Blu	16	993	Wiper Motor (Park) (1)	Wiper Switch	Wiper Switch
Lt.grn	16	930	Wiper Motor (B+) (2)	Wiper Switch	Wiper Switch
Red	16	965	Wiper Motor (Low)	Wiper Switch	Wiper Switch
Ylw	16	967	Wiper Motor (High) (3)	Wiper Switch	Wiper Switch
TURN SWITCH SECTION					
Orn/Blk	16	948	Turn Signal Switch	Right Rear Turn Lamp	Tail Section
Lt.Gr/Red	16	949	Turn Signal Switch	Left Rear Turn Lamp	Tail Section
Wht/Blu	16	925	Turn Signal Switch	Right Front Turn Lamp	Headlight Section "B"
Grn/Wht	16	943	Turn Signal Switch	Left Front Turn Lamp	Headlight Section "B"
Grn	16	982	Turn Signal Switch	Brake Switch	Headlight Section "A"
Lt.Blu	16	952	Turn Signal Switch	Turn Flasher	Headlight Section "A"
Blk/Blu	18	945	Headlight Switch	Courtesy Lamps	Tail Section
TAIL SECTION					
Blk/Blu	18	945	Courtesy Lamp	Headlight Switch	Headlight/Wiper Switch Sec.
Ylw	18	939	Fuel Sending Unit	Fuel Gauge	Inst. Panel Section "B"
Lt.Gr/Red	16	949	L Rear Turn Lamp	Turn Switch	Turn Switch Section
Red/Blk	16	980	Ground to Chassis	Reverse Lamp	Tail Section
Blk	16	929	Tail Lights	Headlight Switch	Headlight/Wiper Switch Sec.
Orn/Blu	16	948	R Rear Turn Lamp	Turn Switch	Turn Switch Section
Pur	16	991	Reverse Lamp	Reverse Switch	Engine Section
Lt.Gr/Ylw	18	918	Door Jamb Switch	Fuse Panel	Fuse Panel

Color	Ga.	No.	Connect To	Wire Starting Point	Section Of Starting Point
INSTRUMENT PANEL SECTION "B"					
Red/Wht	18	921	Temperature Gauge	Temperature Sending Unit	Engine Section
Ylw	18	939	Fuel Gauge	Fuel Sending Unit	Tail Section
Wht/Red	18	922	Oil Pressure Gauge	Oil Pressure Sending Unit	Engine Section
ALTERNATOR/GENERATOR PIGTAIL					
Grn/Red	14	915	Alternator "S" Post	Voltage Reg. "S" Terminal	Engine Section
Wht	14	970	Alternator "F" Post	Voltage Reg. "F" Terminal	Engine Section
Blk/Red	14	981	Alt/Generator Ground Post	Voltage Regulator Ground	Engine Section
Ylw	14	913	Alternator B+	Voltage Reg. "A" Terminal	Engine Section
Ylw/Blk	14	958	Generator "A" Post	Voltage Reg. "A" Terminal	Engine Section
Wht	14	984	Generator "F" Post	Voltage Reg. "F" Terminal	Engine Section
Blk/Ylw	14	944	Starter Solenoid B+	Generator Reg. "B" Terminal	Engine Section
HEATER BLOWER MOTOR PIGTAIL					
Ylw	16	903	Blower Motor Resistor (4)	Heater Blower Motor	Engine Section "B"
Blk/Grn	16	992	Blower Motor (Low)	Heater Switch	Heater Switch
Lt.Blu	16	994	Blower Motor (Med)	Heater Switch	Heater Switch
Wht/Blk	16	910	Blower Motor (high)	Heater Switch	Heater Switch
ACCESSORY RELAY WIRING					
Ylw	14	996	Accessory Relay Output	Accessory Relay	Interior Section
Ylw/Blk	18	997	Accessory Relay Activation	Accessory Relay	Interior Section
Blk	18	998	Accessory Relay Ground	Accessory Relay	Interior Section
Red	14	999	Accessory Relay to "B+"	Accessory Relay	Interior Section

Table 8.2 Wire Connection Index Page 3 of 3

- (1)-Lt.Blu #993 Supplies constant 12 volts for single speed wiper systems.**
- (2)-Lt.Grn #930 Is used as a ground for single speed wiper systems.**
- (3)-Ylw #967 Supplies 12 volt for single speed wiper "On" activation.**
- (4)-Ylw #903 Is Connected to the heater switch on Two speed systems.**

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.

We have attempted to provide you with as accurate instructions as possible, and are always concerned about corrections or improvements that can be made. If you have found any errors or omissions, or if you simply have comments or suggestions concerning these instructions, please write us at the address on the cover and let us know about them. Or, better yet, send us a fax at (817) 244-4024 or e-mail us at painless@painlessperformance.com. We sincerely appreciate your business.

Painless Performance 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 sellers name, address and date of purchase. You must return the product to the dealer you purchased it from to initiate warranty procedures.