



Wire Harness Installation Instructions

For Installing:

Part #10107 – Wiring Harness (Land Cruiser, Scout/12 circuit)

Manual #90535



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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 very little electrical experience.

All kits have a built-in-anti-theft feature. Removing the fuse labeled "coil" from the fuse block will prevent the vehicle from starting.

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 11.0**.

In addition all of our kits have "accessory" terminals at the front of the fuse block for your convenience. These terminals may be constantly hot or "switched" hot but all are un-fused. If you plug into one of these terminals you must provide your own in-line fuse or circuit breaker.

The Painless wire harness can be used with a General Motors style - keyed steering column, or other steering columns, depending on your application. 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 three major groups incorporated into it:

ENGINE/HEADLIGHT GROUP

Includes high beam, low beam, park, right turn, left turn, electric fan, horn, starter solenoid and battery feed, alternator and alternator exciter wire, distributor, water temperature, oil pressure, and air conditioning.

DASH GROUP

Includes wires to connect gauges, indicator lights, and switches to their proper sources.

REAR LIGHT GROUP

Includes tail lights, dome lights (see Paragraph 10.4), left and right turn signals, brake 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 Contents of the Painless Harness Kit
- 4.0 Tools Needed
- 5.0 Pre Installation and General Harness Routing Guidelines
- 6.0 Harness General Installation Instructions
- 7.0 Toyota - Specific Circuit Connection Details
- 8.0 GM -Specific Circuit Connection Details
- 9.0 Ford-Specific Circuit Connection Details

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:

- A** The Main Wire Harness, with the Fuse Block wired in and fuses installed.
- B** Headlamp Connector Cables. (Extra Headlamp Cables are available separately under P/N 80300.)
- C** Maxi Fuse
- D** Firewall Grommet (large)
- E** 2 Fender Well Grommets (for Headlamps)
- F** 2 packages of Nylon Tie Wraps
- G** Parts Box, containing a GM Alternator Connector, Terminals, Splices, etc. This booklet, P/N 90535 Painless Wiring Manual.

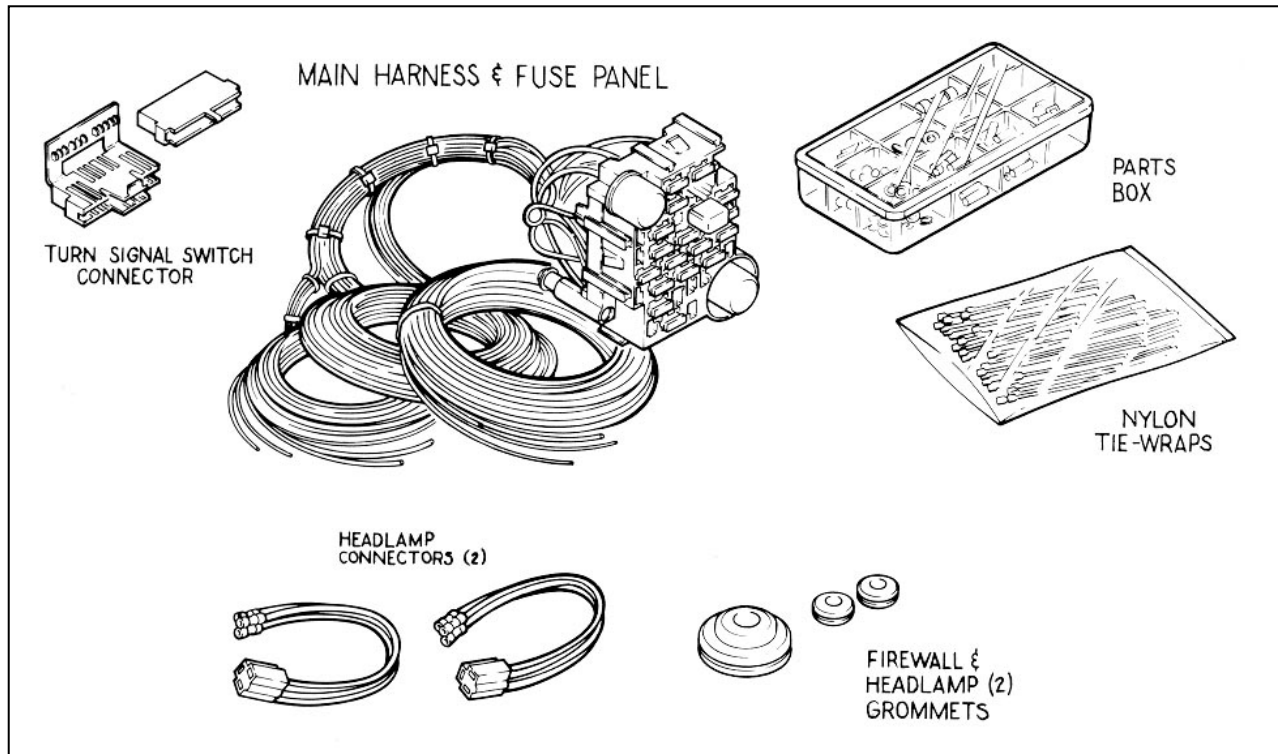


Figure 3-1 The Painless Wire Harness Kit

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 some more wire and make some more connections.

We cannot tell you how to physically route the harness in your vehicle. That depends a great deal upon the particular application 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 beginning 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.) Note that, according to the particular harness you have purchased, some of these sections may not be present, and some are not labeled:

ACCESSORY SECTION SWITCHES	HEADLIGHT SECTION A
ACCESSORY SECTION B+	HEADLIGHT SECTION B
DIMMER SWITCH SECTION	IGNITION SWITCH SECTION
DOOR SECTION A	INSTRUMENT PANEL SECTION
DOOR SECTION B	RADIO SECTION
ENGINE SECTION	SPEAKER SECTION
ENGINE SECTION (Single, 10 ga. red wire)	TAIL SECTION
ENGINE SECTION A	TURN SIGNAL SECTION

Note: For complete information concerning the individual circuits and wires that make up the harness SECTIONS, see **Section 11.0**.

- 5.2** Decide where the fuse block will be mounted. The Painless Wire Harness is designed for the fuse block to be mounted on the driver's side, under the dash.
- 5.3** Decide which of the following circuits you will be using in your system and where the harness groups or wires will be routed:

ROUTING LOCATION AND PLACEMENT

Emergency Flashers	
Horn	
Dome Lights	
Lights	
Power Windows*	
Power Door Locks*	
Cigarette Lighter*	
Wipers	
Electric Fuel Pump*	
Air Conditioner	
Electric Cooling Fan	
Coil	
Trunk Light*	
Turn Signals	
Radio Ignition Switched Power	
Radio Constant Power	
Power Antenna*	
Gauges	
Accessories	
Backup Lights*	
Cruise Control*	

*These circuits are included in the 18-circuit kit only.

5.4 Where will the following harness groups be routed?

Headlights	
Engine	
Dash	
Tail Lights	
Doors and Speakers	

- 5.5 A good exercise is to lay out the wire harness on the floor beside your vehicle 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.
- 5.6 Route the harness away from sharp edges, exhaust pipes, and hood, trunk and door hinges.
- 5.7 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.
- 5.8 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.
- 5.9 The wires should be bundled into groups. Use nylon ties, powerbraid, 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.

Note: Make no wire connections or permanent mounting of any kind at this time!

- 6.1.1 Position the fuse block in its mounting area.
- 6.1.2 Drill a 1-1/4" (1.25") hole near the fuse block for engine and headlight group wires to pass through (ENGINE SECTION, ENGINE SECTION A, SINGLE 10 GA. (Red wire #916), and HEADLIGHT SECTION A).
- 6.1.3 Install the Firewall grommet. Route engine and headlight group wires through the grommet and position the harness groups in the areas decided upon in **Sections 5.1** and **5.3**
- 6.1.4 Route dash group (ACCESSORY SECTION B+, ACCESSORY SECTION SWITCHES, HEADLIGHT SECTION B, INSTRUMENT PANEL SECTION and RADIO SECTION) upward to rear of dash and temporarily tie in place.
- 6.1.5 Position rear group, consisting of DOOR SECTIONS A & B and TAIL SECTION, in tail area decided upon in **Sections 5.3** and **5.4**.

6.2 Harness Attachment

Note: Harness routing and shaping is and should be a time-consuming task. Taking your time will enhance the appearance, and performance 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, etc.
- 6.2.3 Attach harness groups to your vehicle 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 Vehicle

A perfectly and beautifully wired vehicle 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. You must supply ground wire (14-16 gauge) for all circuits.

- 6.3.1 Connect a Ground Cable, (at least 2 ga **MINIMUM**) from the negative terminal of the battery to the cylinder block
- 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 through 10.0**, as appropriate, and continually refer to **Section 11.0**, **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 vehicle chassis or engine block and its POSITIVE output to the automobile's positive battery terminal.

- 6.5.2 INDIVIDUALLY turn on each circuit,(lights, wipers, turn signals,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.

TURN SIGNAL SECTION					
GM Color	Toyota Color	Designation	Painless Wire No.	Painless Color	*Turn Signal Connector
Blk	Grn/Ylw	Horn	953	Blk	G
Lt.Blu	Grn/Blk	LF Turn Signal	926	Lt.Blu	H
Dk.Blu	Grn/Ylw	RF Turn Signal	925	Dk.Blu	J
Brn	Grn/Blu	Hazard Flasher	951	Brn	K
Pur	Grn/Blu	Turn Flasher	952	Pur	L
Ylw	Grn/Blk	LR Turn Signal	949	Ylw	M
Grn	Grn/Ylw	RR Turn Signal	948	Grn	N
Wht	Grn/Red	Stop Lamp Switch	918	Wht	P

IGNITION SWITCH SECTION			Painless Wire No.	Painless Color
Pur/Wht	Blk/Wht	Ignition Start	919	Pur
Brn	Blu/Red	Accessory Fuse Panel	932	Brn
Orn	Blk/Ylw	Ignition Switched Fuse Panel	933	Orn
Red	Wht/Blu	Battery B+	934	Red

* GM Only

Table 7-1 GM/Toyota Ignition & Turn Signal Wiring

7.0 TOYOTA - SPECIFIC CIRCUIT CONNECTIONS

7.1 Toyota Alternator (early- 1977) 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.*

- 7.1.1 Connect ALTERNATOR SECTION wire #915 (red) to the Alternator Output lug (Bat).

CAUTION: IF USING AN ALTERNATOR WITH AN OUTPUT LARGER THAN 65 AMPS, YOU WILL ALSO NEED TO USE JUMPER WIRE #960 (RED), INCLUDED IN BOX. THE WIRE END WITH THE RING TERMINAL AND RUBBER BOOT WILL CONNECT TO THE ALTERNATOR OUTPUT LUG. ROUTE THE OTHER END TO THE STARTER RELAY. CUT THE WIRE AND CRIMP ON A RING TERMINAL. INSTALL ON RELAY TERMINAL WITH CABLE COMING FROM BATTERY. SEE FIGURE 7-1A.

- 7.1.2 Connect ALTERNATOR SECTION wire #914 (wht) to the Voltage Regulator (IG) terminal.
 7.1.3 Connect a 14-gauge wire from the Voltage Regulator F terminal to the Alternator F terminal.
 7.1.4 Connect a 14-gauge wire from the Voltage Regulator E terminal to the Alternator E terminal.

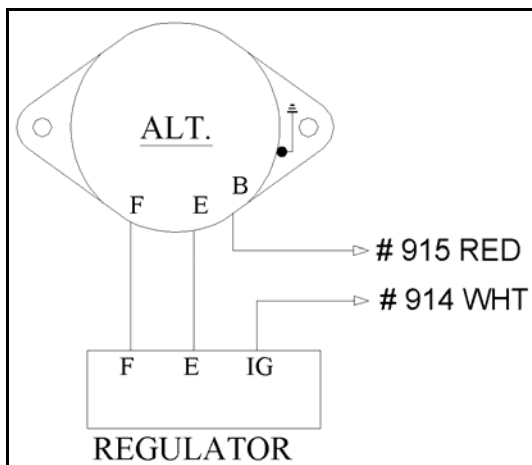


Figure 7-1 Toyota Alt. Diagram (early)

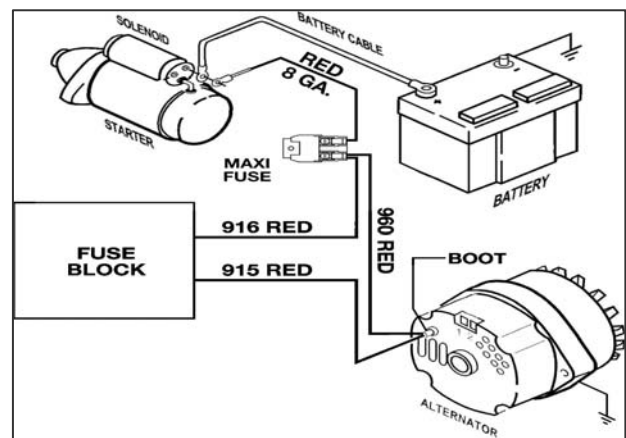


Figure 7-1A High Output wire

7.2 Toyota Alternator (1977-1979) See Figure 7-2

*Note: Your Alternator may not appear exactly as represented in **Figure 7-2**. The circuits are wired the same way, though.*

- 7.2.1** Connect ALTERNATOR SECTION wire #715 (red) to the Alternator Output lug (Bat).

CAUTION: IF USING AN ALTERNATOR WITH AN OUTPUT LARGER THAN 65 AMPS, YOU WILL ALSO NEED TO USE JUMPER WIRE #960 (RED), INCLUDED IN BOX. THE WIRE END WITH THE RING TERMINAL AND RUBBER BOOT WILL CONNECT TO THE ALTERNATOR OUTPUT LUG. ROUTE THE OTHER END TO THE SAME SIDE OF THE MAXI FUSE HOLDER THAT THE #916 WIRE CONNECTS TO. CUT THE WIRE AND CRIMP ON A RING TERMINAL. INSTALL ON RELAY TERMINAL WITH CABLE COMING FROM BATTERY. SEE FIGURE 7-2B.

- 7.2.2** Connect ALTERNATOR SECTION wire #914 (wht) to the Voltage Regulator (IG) terminal.
7.2.3 Connect a 14-gauge wire from the Voltage Regulator F terminal to the Alternator F terminal.
7.2.4 Connect a 14-gauge wire from the Voltage Regulator N terminal to the Alternator N terminal.
7.2.5 Connect the Voltage regulator E terminal and the Alternator E terminal to a chassis ground.

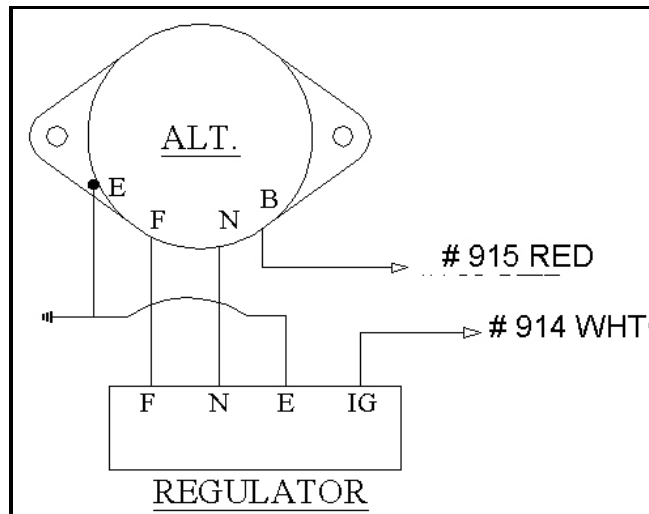


Figure 7-2 Toyota Alt. Diagram (1977-1979)

7.3 Toyota Alternator (1975, 1981+) See Figure 7-3

*Note: Your Alternator may not appear exactly as represented in **Figure 7-3**. The circuits are wired the same way, though.*

- 7.3.1** Connect ALTERNATOR SECTION wire #915 (red) to the Alternator Output lug (Bat) and the Voltage Regulator B terminal.

CAUTION: IF USING AN ALTERNATOR WITH AN OUTPUT LARGER THAN 65 AMPS, YOU WILL ALSO NEED TO USE JUMPER WIRE #960 (RED), INCLUDED IN BOX. THE WIRE END WITH THE RING TERMINAL AND RUBBER BOOT WILL CONNECT TO THE ALTERNATOR OUTPUT LUG. ROUTE THE OTHER END TO THE STARTER RELAY. CUT THE WIRE AND CRIMP ON A RING TERMINAL. INSTALL ON RELAY TERMINAL WITH CABLE COMING FROM BATTERY. SEE FIGURE 7-2B.

- 7.3.2** Connect ALTERNATOR SECTION wire #914 (wht) to the Voltage Regulator (IG) terminal.
7.3.3 Connect a 14-gauge wire from the Voltage Regulator F terminal to the Alternator F terminal.
7.3.4 Connect a 14-gauge wire from the Voltage Regulator N terminal to the Alternator N terminal.
7.3.5 Connect the Voltage regulator E terminal and the Alternator E terminal to a chassis ground.
7.3.6 Make connections to Voltage Regulator L terminal according to the factory schematic for your year model.

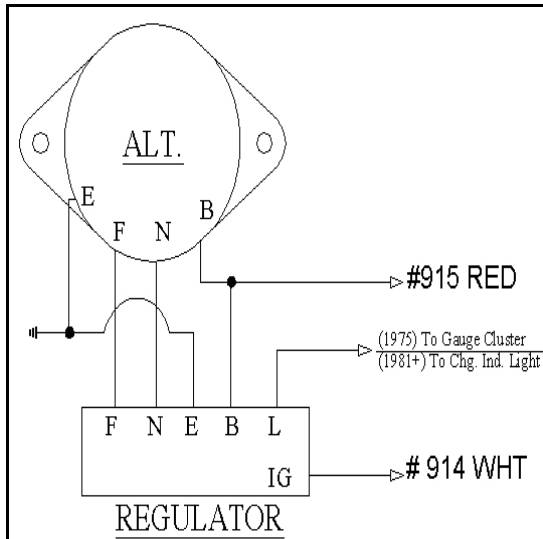


Figure 7.3 Toyota Alt Diagram (1975-81)

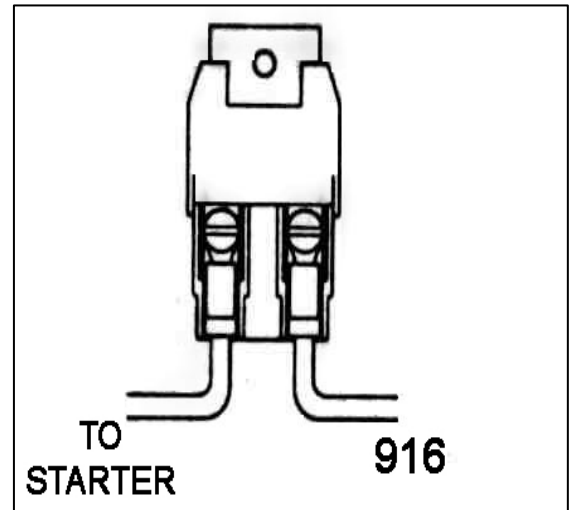


Figure 7-3A Maxi Fuse

7.4 Toyota Alternator w/Internal Regulator. See Figure 7-4

*Note: Your Alternator may not appear exactly as represented in **Figure 7-4**. The circuits are wired the same way, though.*

7.4.1 Connect ALTERNATOR SECTION wire #915 (red) to the Alternator Output lug (Bat)

CAUTION: IF USING AN ALTERNATOR WITH AN OUTPUT LARGER THAN 65 AMPS, YOU WILL ALSO NEED TO USE JUMPER WIRE #960 (RED), INCLUDED IN BOX. THE WIRE END WITH THE RING TERMINAL AND RUBBER BOOT WILL CONNECT TO THE ALTERNATOR OUTPUT LUG. ROUTE THE OTHER END TO THE STARTER RELAY. CUT THE WIRE AND CRIMP ON A RING TERMINAL. INSTALL ON RELAY TERMINAL WITH CABLE COMING FROM BATTERY. SEE FIGURE 7-1A.

7.4.2 Connect ALTERNATOR SECTION wire #914 (wht) to the Alternator (IG) terminal.

7.4.3 Make connections to the Alternator L terminal according to the factory schematic for your year model.

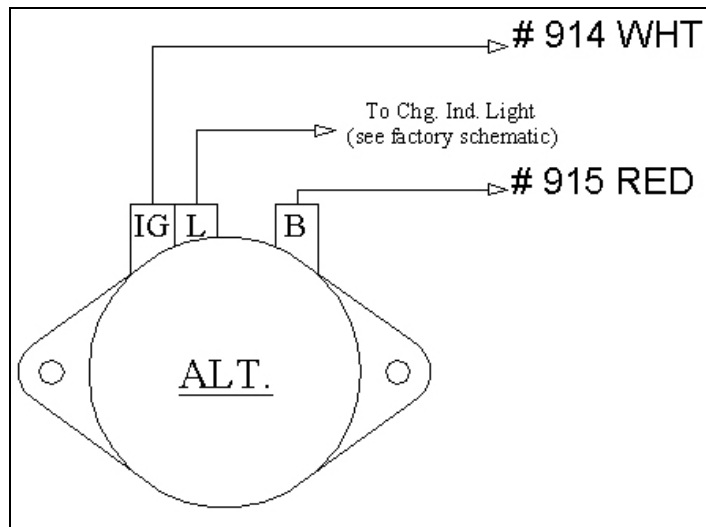


Figure 7-4 Toyota Alt. Diagram (Internal Regulator)

7.5 Toyota Ignition (Start/Run) System. See Figure 7-5.

Note: Your Igniter may not appear exactly as represented in **Figures 7-5.7-5B**. The circuits are wired the same way.

Note: If you are going to install an ammeter, see **Section 10.3** first.

- 7.5.1** With crimping tool, attach Maxi Fuse (**Figure 7-3B**) onto end of ENGINE SECTION A (single) 10 ga. wire #916 (red) AFTER having routed wire from the Fuse Panel to the Starter Solenoid. This serves as a fuse to protect the entire harness. DO NOT OMIT IT!
- 7.5.2** Connect wire #916 - with Maxi Fuse installed - to the Starter Solenoid Battery terminal. This is the same lug that the large red cable from the battery is normally connected to.
- 7.5.3** Connect ENGINE SECTION A wire #919 (pur) to the Starter Solenoid Start (S) terminal. (See illustration on page 31)
- 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 A wire #920 (pnk) to one end of the Ballast Resistor. Connect the other end of the Ballast Resistor to the Ignition Coil B+ terminal with 14-gauge wire (you may have enough pink wire left over to accomplish this). If you are not using a Ballast Resistor, connect wire #920 directly to the Ignition Coil B+ terminal.

Note: The ballast resistor has been deleted from this kit due to lack of consumer usage. If one is needed in your application, please call Painless Performance at 800-423-9696 for assistance.

- 7.5.5** The Ignition Coil NEGATIVE (-) terminal is connected to the Distributor. Also Connect ENGINE SECTION A wire #923 (pur/wht) to the Ignition Coil NEGATIVE (-) terminal. This is the tachometer source. If you are not using a tach, insulate and stow wire #923.

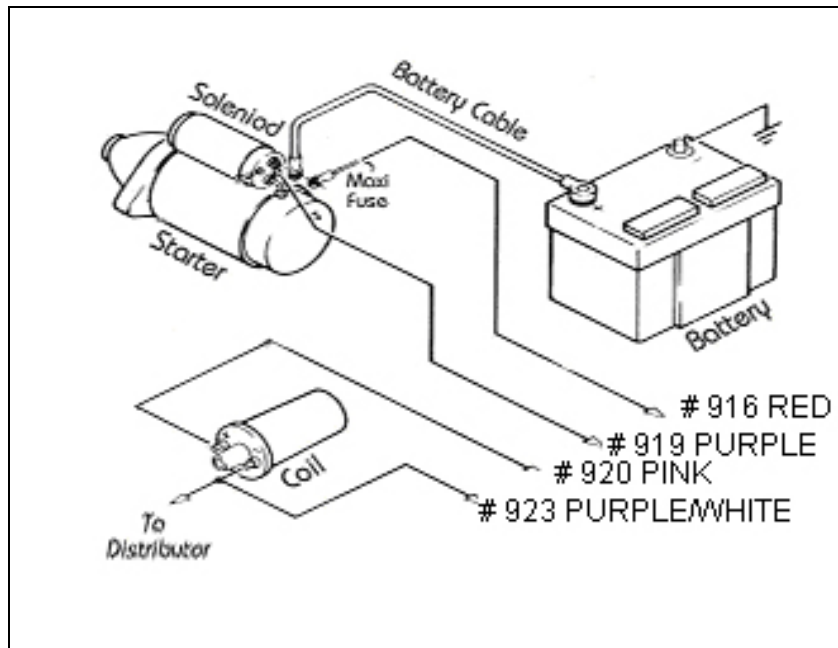


Figure 7-5 Toyota Ignition (Start-Run) System, without Elect. Igniter

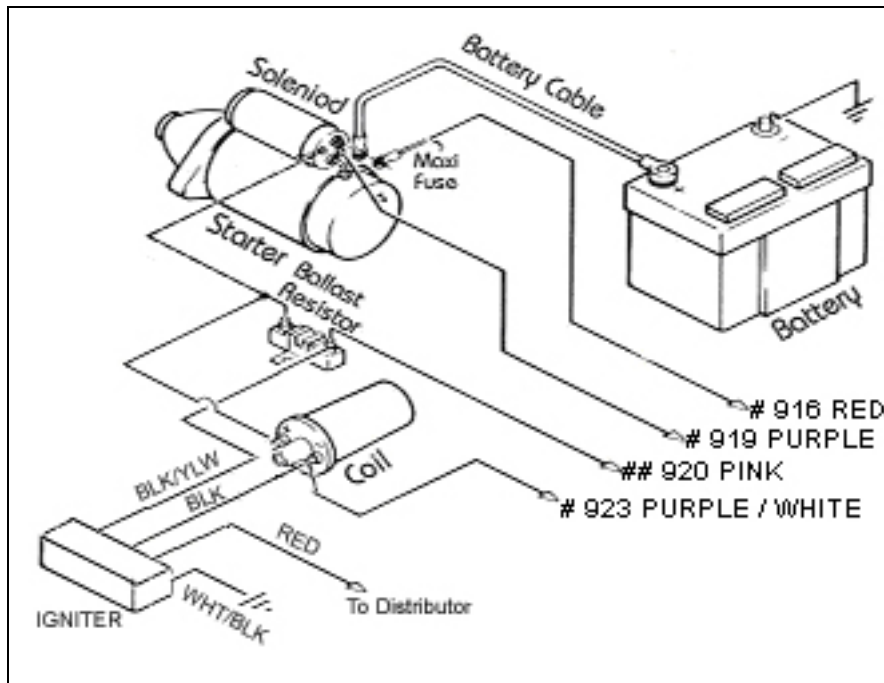


Figure 7-5A Toyota Ignition (Start-Run) System
With Igniter (early)

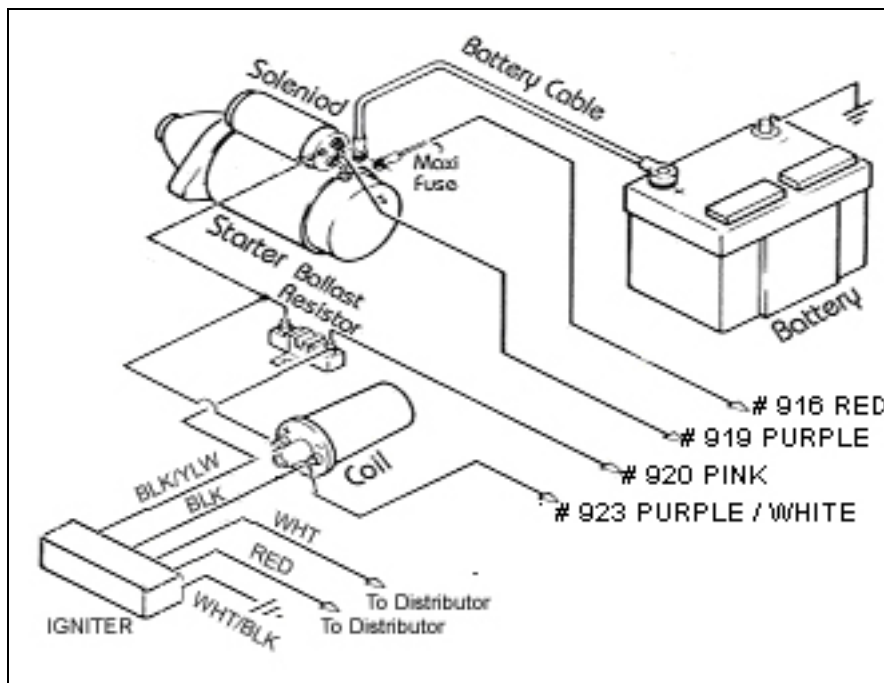


Figure 7-5B Toyota Ignition (Start-Run) System
With Igniter (late)

8.0.GM - SPECIFIC CIRCUIT CONNECTIONS

8.1 GM Alternator - Early Internal Regulator. See Figure 8-2.

- 8.1.1 Connect ENGINE SECTION wire #914 (wht) to Alternator terminal 1. Connect ENGINE SECTION wire #915 (red) to the Alternator Output lug (Bat).
- 8.1.2 Connect a short 14-gauge jumper wire from Alternator terminal 2 to the Alternator Output lug (Bat).
- 8.1.3 A connector and terminals for GM style Internally Regulated Alternators are included in the parts kit

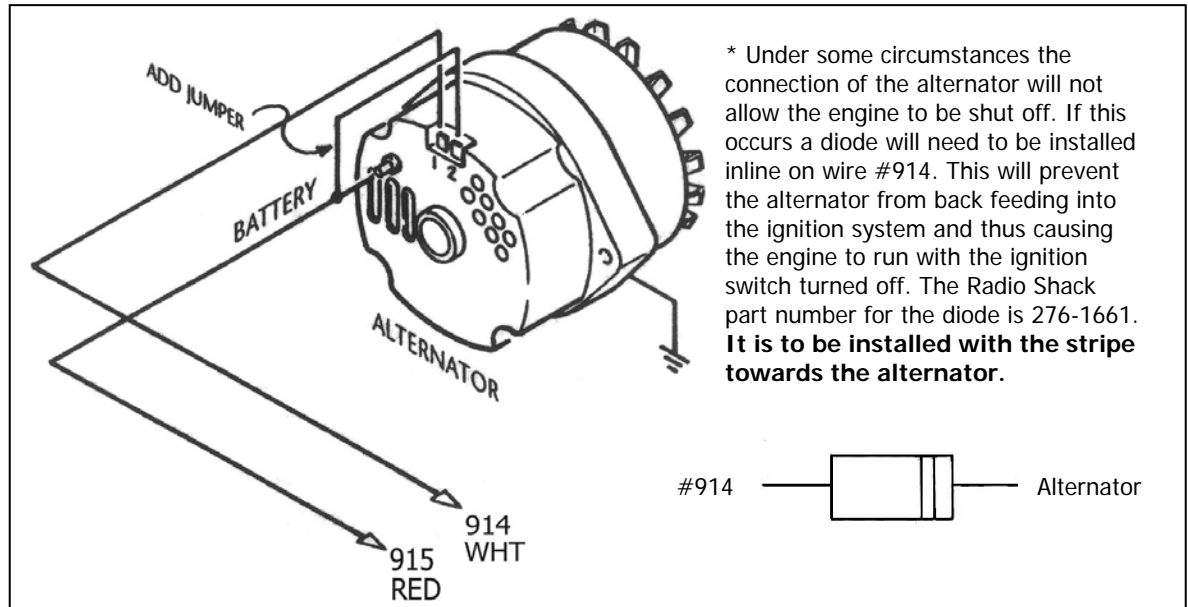


Figure 8-2 GM Alternator - Internal Regulator

8.2 GM style One-Wire Alternator.

- 8.2.1 Connect ENGINE SECTION wire #915 (red) to the Alternator Output lug (Bat). Insulate and stow ENGINE SECTION wire #914 (wht). Do not install jumper wire. No wires are connected to Alternator terminals 1 & 2. If alternator output is greater than 65 amps refer to Figure 7-2B and the caution on page 6.
- 8.2.2 When using a 1-wire alternator you must use a voltmeter or ammeter. A WARNING LIGHT CANNOT BE WIRED IN

CAUTION: IF USING AN ALTERNATOR WITH AN OUTPUT LARGER THAN 65 AMPS, YOU WILL ALSO NEED TO USE THE RED 10 GAUGE WIRE #960 AND THE RED 8 GAUGE WIRE INCLUDED IN THE BOX. THE WIRE END WITH THE RING TERMINAL AND RUBBER BOOT WILL CONNECT TO THE ALTERNATOR OUTPUT LUG WITH #915. ROUTE THE OTHER END TO THE MAXI FUSE TERMINAL WITH WIRE #916. CUT THE WIRE AND CRIMP ON A RING TERMINAL. NOW INSTALL A RING TERMINAL ON THE REMAINING RED 8 GAUGE WIRE AND ATTACH IT TO THE STARTER SIDE TERMINAL OF THE MAXI FUSE. CUT THE 8 GAUGE RED WIRE TO LENGTH, CRIMP ON A RING TERMINAL AND ATTACH IT TO THE MAIN SOLENOID LUG WITH THE POSITIVE BATTERY CABLE. SEE FIGURE 9-2B.

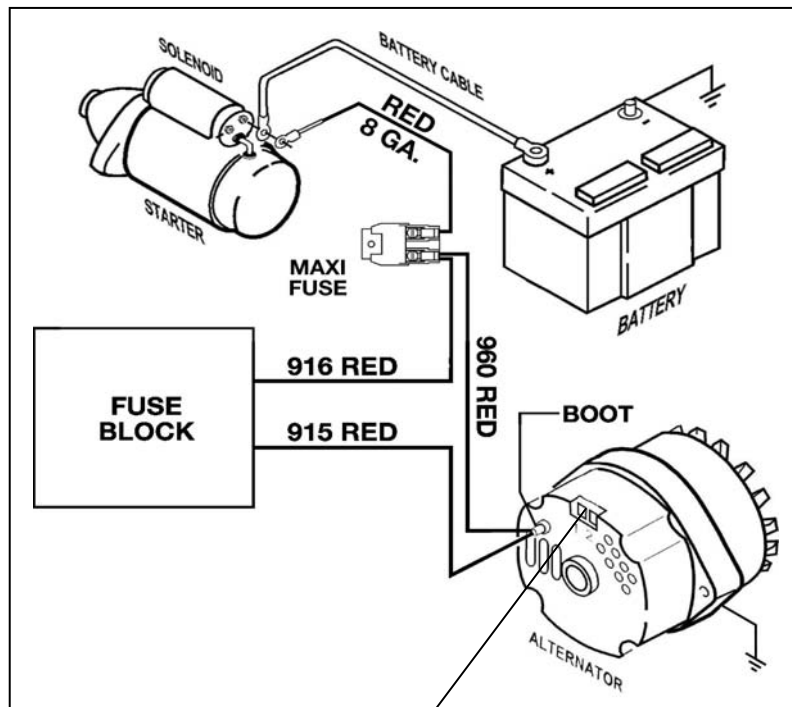


Figure 8-2A High Output Wire on a GM style 1 wire alternator

* These terminals will not be used on One Wire alternators. They will normally have a black plastic plug which blocks off the terminals.
 ** If you do not have a One Wire alternator refer to Figure 9-2A.

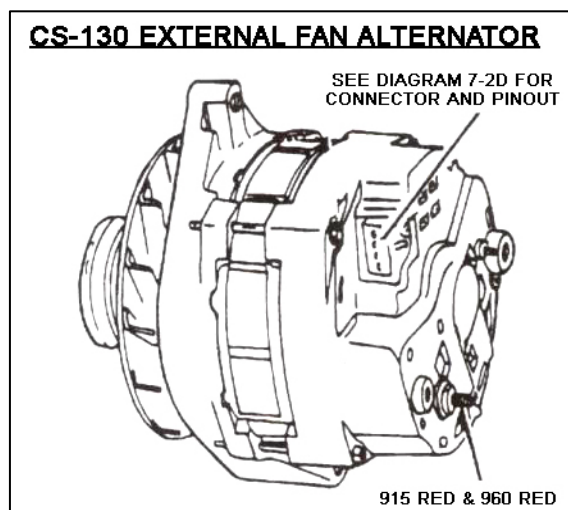


Figure 8-2B CS-130 External Fan Alternator

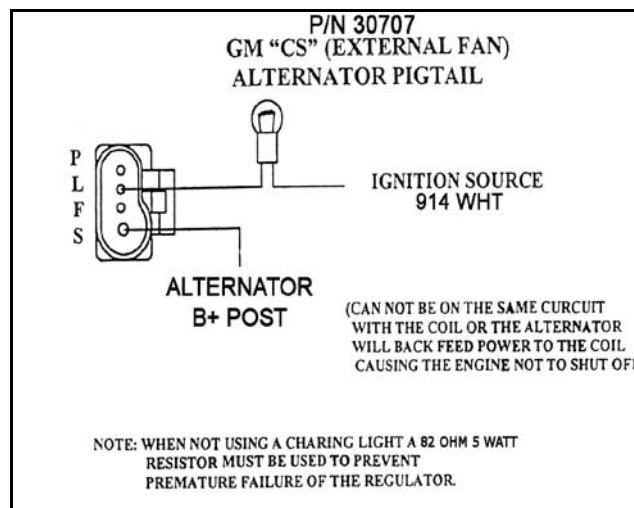


Figure 8-2C CS-130 Connector and Pin Out

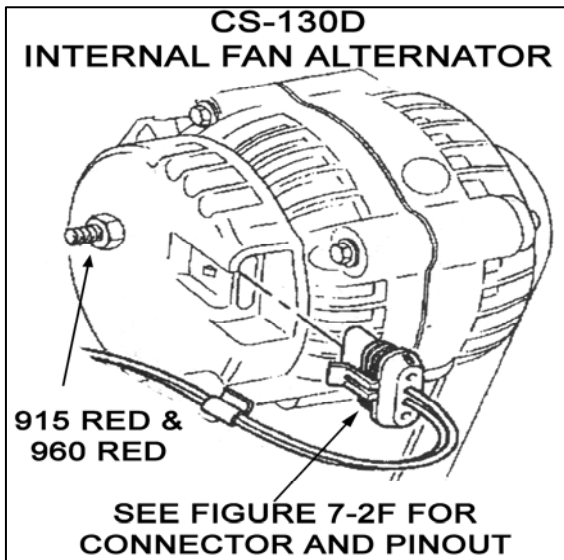


Figure 8-2D CS-130D Internal Fan Alternator

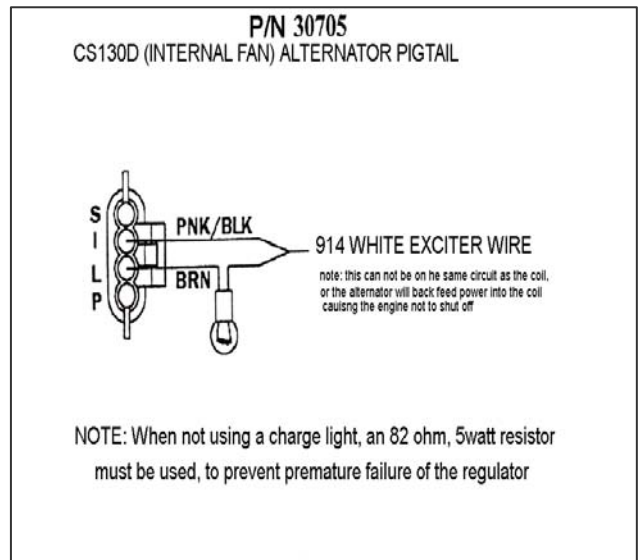


Figure 8-2E CS-130D Connector and Pin Out

8.3 GM Ignition (Start/Run) System. See Figure 7-4.

Note: If you are going to install an ammeter, see **Section 10.3** first.

8.3.1 With crimping tool, attach Maxi Fuse (**Figure 8-3**) onto end of ENGINE SECTION (single) 10 ga. wire #916 (red) AFTER having routed wire from the Fuse Panel to the Starter Solenoid. This serves as a fuse to protect the entire harness. DO NOT OMIT IT!

8.3.2 Connect wire #916 - with Maxi Fuse installed – to the Starter Solenoid Battery terminal. This is the same lug that the large red cable from the battery is normally connected to.

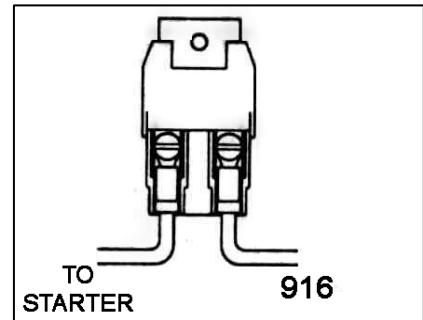


Figure 8-3 Maxi Fuse

8.3.3 Connect ENGINE SECTION A wire #919 (purple) to the Starter Solenoid Start (S) terminal. (See illustration on page 31)

8.3.4 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 A wire #920 (pnk) to one end of the Ballast Resistor. Connect the other end of the Ballast Resistor to the Ignition Coil B+ terminal with 14-gauge wire (you may have enough pink wire left over to accomplish this). If you are not using a Ballast Resistor, connect wire #920 directly to the Ignition Coil B+ terminal.

Note: The ballast resistor has been deleted from this kit due to lack of consumer usage. If one is needed in your application, please call Painless Performance at 800-423-9696 for assistance.

Important Note! For HEI systems route wire #920 (pnk) to the Distributor and attach it to the terminal labeled BAT. No Ballast Resistor is required.

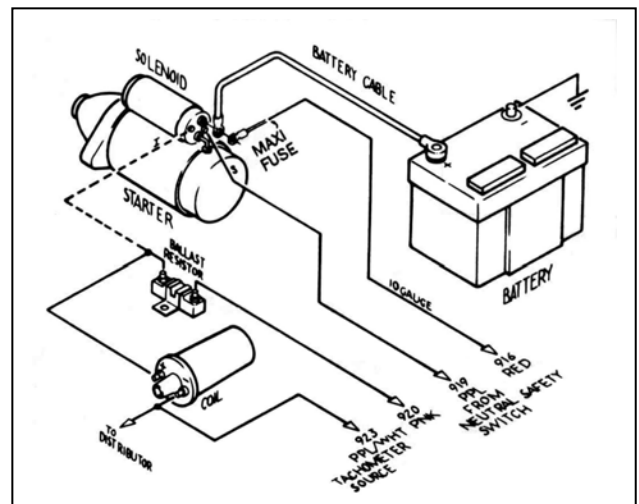


Figure 8-4 GM Ignition (Start-Run) System

- 8.3.5 The Ignition Coil NEGATIVE (-) terminal is connected to the Distributor. Connect ENGINE SECTION A wire #923 (pur/wht) to the Ignition Coil NEGATIVE (-) terminal. This is the tachometer source. If you are not using a tachometer, insulate and stow wire #923.
- 8.3.6 A 14-gauge wire connected from the Starter Solenoid Ignition (I) terminal to the ignition coil side of the Ballast Resistor is optional. This wire (the dashed line in **Figure 8-4**) serves as a ballast resistor BYPASS during engine starting. However, if the starter solenoid shorts out, which is not unusual, the engine will stop running and will not restart as long as this wire is connected. You may therefore choose to omit it. If you are not using a Ballast Resistor, leave the Starter Solenoid Ignition (I) terminal unconnected and do not install the bypass wire.

8.4 Steering Column Wiring – GM Turn Signal & Ignition Switch Connections

- 8.4.1 There are two different plugs on most tilt columns. The difference is in the length of the male plug that is mounted ON THE COLUMN. One plug is 3-7/8" (3.875") long and the other is 4-1/4" (4.250"). This is only a difference of 3/8" (0.375"), so measure the plug carefully. The Wire Harness Kit has included two different female connectors to mate with the column-mounted plug. See **Figure 8-5** to determine which female connector is correct for your automobile.

The TURN SIGNAL SECTION wires may have already been terminated for you. If not, cut wires to length and install the terminals provided. Choose the proper plug and install the terminals according to **Table 8-1**, as shown in **Figure 8-5**. The GM wire color codes have been included for reference. **Note:** *The terminals will only insert into the connector ONE WAY, as shown in **Figure 8-5**. Make certain you are inserting the wire into the CORRECT LOCATION as the terminals are difficult if not impossible to remove once inserted.*

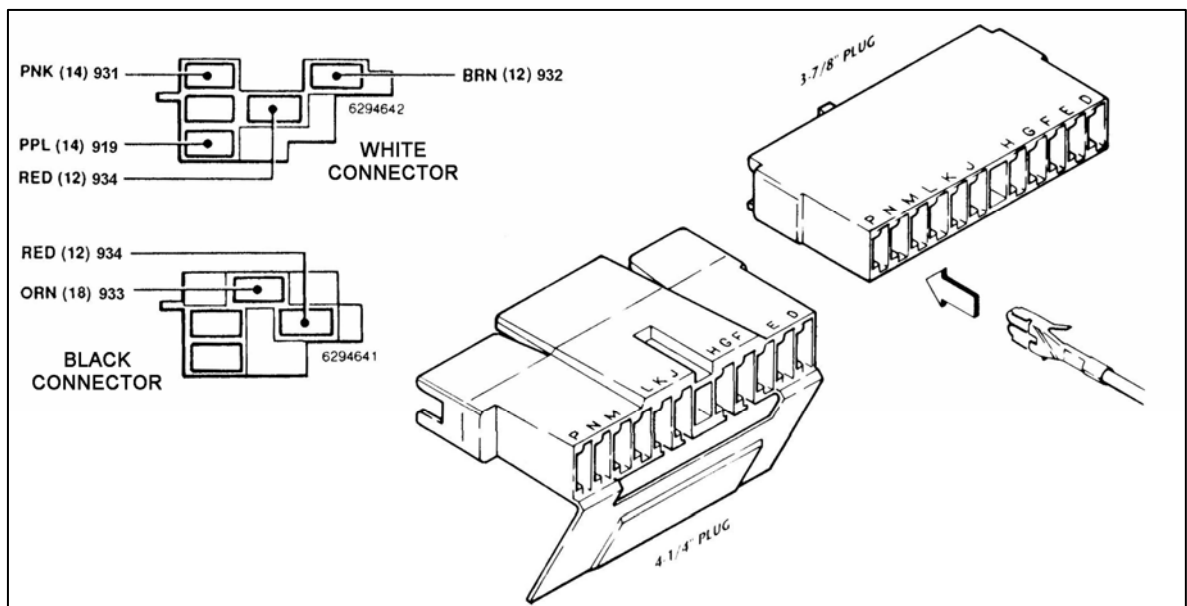


Figure 8-5 GM Turn Signal Connectors

- 8.4.2 If You are using a GM style Keyed column, you will need Painless kit # 30805 ignition switch connectors for the ignition switch connection.
- 8.4.3 IGNITION SWITCH SECTION wire #919 (purple) is a direct connection between the ignition switch & the starter solenoid. It is HIGHLY recommended that you install a neutral safety switch somewhere in this circuit, to prevent snagging the starter while the vehicle is in gear.
- 8.4.4 The harness does not support seat belt buzzers or key alarms.
- 8.4.5 To supply power to a fuel injection system, use ENGINE SECTION A wire #920 (pnk) as the fused ignition power source.

TURN SIGNAL SECTION

GM Color	Designation	Painless Wire No.	Painless Color	Turn Signal Connector
Blk	Horn	953	Blk	G
Lt.Blu	LF Turn Signal	926	Lt.Blu	H
Dk.Blu	RF Turn Signal	925	Dk.Blu	J
Brn	Hazard Flasher	951	Brn	K
Pur	Turn Flasher	952	Pur	L
Ylw	LR Turn Signal	949	Ylw	M
Grn	RR Turn Signal	948	Grn	N
Wht	Stop Lamp Switch	918	Wht	P

IGNITION SWITCH SECTION

		Painless Wire No.	Painless Color
Pur/Wht	Ignition Start	919	Pur
Pnk	Ignition Coil	931	Pnk
Brn	Accessory Fuse Panel	932	Brn
Orn	Ignition Switched Fuse Panel	933	Orn
Red*	Battery B+	934	Red
Red*	Battery B+	934	Red

* See note 8 on page 28

Table 8-1 GM Ignition & Turn Signal Wiring

9.0 FORD - SPECIFIC CIRCUIT CONNECTIONS

9.1 Ford Alternator (3 configurations). See Figure 10-1A,B, & C)

Note: Your Alternator may not appear exactly as represented in **Figure 9-1-3** The circuits are wired the same way, though.

- 9.1.1** Connect ENGINE SECTION wire #915 (red) to the Alternator Output lug (Bat). Connect ENGINE SECTION wire #914 (wht) to the Voltage Regulator (I) terminal.

CAUTION: IF USING AN ALTERNATOR WITH AN OUTPUT LARGER THAN 65 AMPS, YOU WILL ALSO NEED TO USE JUMPER WIRE #960 (RED), INCLUDED IN BOX. THE WIRE END WITH THE RING TERMINAL AND RUBBER BOOT WILL CONNECT TO THE ALTERNATOR OUTPUT LUG. ROUTE THE OTHER END TO THE SAME SIDE OF THE MAXI FUSE THAT THE 916 CONNECTS TO. CUT THE WIRE AND CRIMP ON A RING TERMINAL. INSTALL ON RELAY TERMINAL WITH CABLE COMING FROM BATTERY. SEE FIGURE 9-1B.

- 9.1.2** Connect a 14-gauge jumper from the Voltage Regulator A terminal to the Alternator Output lug (Bat).
- 9.1.3** Connect a 14-gauge wire from the Voltage Regulator S terminal to the Alternator Stator (S) terminal. Connect a 14-gauge wire from the Voltage Regulator F terminal to the Alternator Field (F) terminal.
- 9.1.4** Connect the Alternator Ground lug and the Voltage Regulator to chassis ground.
- 9.1.5** 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 #14 to either the A or S terminal of the Voltage Regulator. The FIELD wire and wire #915 are connected as above. Do **NOT** install a jumper as in **Paragraph 9.1.2**. The Voltage Regulator Ignition (I) terminal is not connected. Install ground wires as in **Paragraph 9.1.4**. This alternate configuration is illustrated in dashed lines in **Figure 9-1A**.

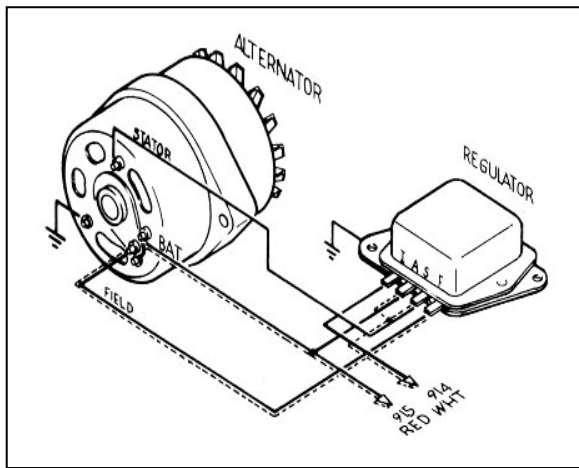


Figure 9-1A Ford Alternator (2 configurations)

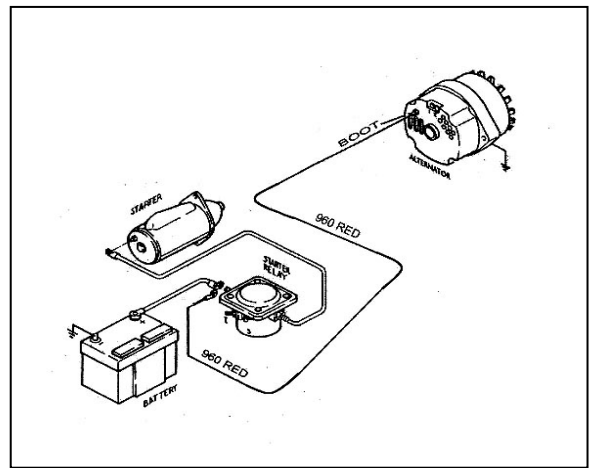


Figure 9-1B High Output Wire

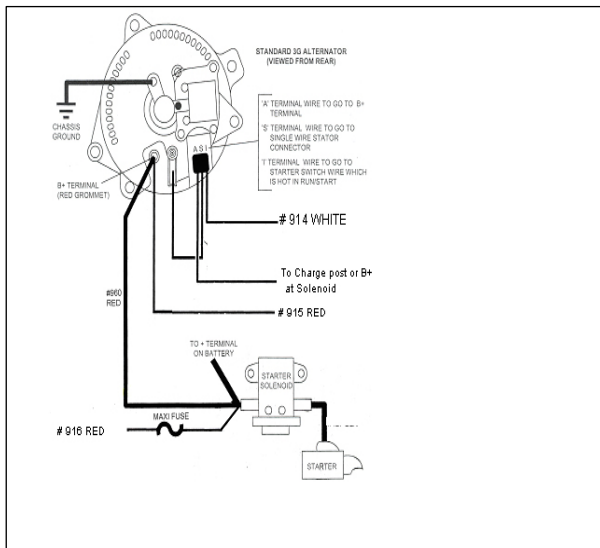


Figure 9-1C Ford 3G Alternator

9.2 Ford Ignition (Start/Run) System. See Figure 9-2.

Note: If you are going to install an ammeter, see **Section 10.3** first.

Note: Original ignition module wire should be retained if possible. If damaged beyond repair, a Duraspark II harness is available from Painless. Part # 30812

- 9.2.1 With crimping tool, attach the Maxi Fuse (**Figure 9-2**) onto end of ENGINE SECTION (single) 10 ga. wire #916 (red) AFTER having routed wire (with or without ammeter) from the Fuse Panel to the Starter Relay. This serves as a fuse to protect the entire harness. **DO NOT OMIT IT!**
- 9.2.2 Connect wire #916 - with Maxi Fuse installed - to the Starter Relay Battery terminal. This is the same lug that the large red cable from the battery is normally connected to.
- 9.2.3 Connect ENGINE SECTION A wire #919 (purple) to the Starter Relay Start (S) terminal.
- 9.2.4 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 A wire #920 (pnk) to one end of the Ballast Resistor. Connect the other end of the Ballast Resistor to the Ignition Coil B+ terminal with 14-gauge wire (you may have enough pink wire left over to accomplish this). If you are *not* using a Ballast Resistor, connect wire #920 directly to the Ignition Coil B+ terminal.

Note: The Ballast Resistor has been deleted from this kit due to lack of consumer usage. If one is needed in your application, please call Painless Performance at 800-423-9696 for assistance.

- 9.2.5 The Ignition Coil NEGATIVE (-) terminal is connected to the Distributor. Also connect ENGINE SECTION A wire #923 (pur/wht) to the Ignition Coil NEGATIVE (-) terminal. This is the tachometer source. If you are not using a tachometer, insulate and stow wire #723.
- 9.2.6 Connect a 14-gauge wire from the Starter Relay Ignition (I) terminal to the ignition coil side of the Ballast Resistor. This wire serves as a ballast resistor BYPASS during engine starting. If you are not using a ballast resistor, leave the Starter Relay Ignition (I) terminal unconnected and do not connect the bypass wire.
- 9.2.7 Be sure the large, red battery cable is connected from the other side of the Starter Relay to the Starter Motor.

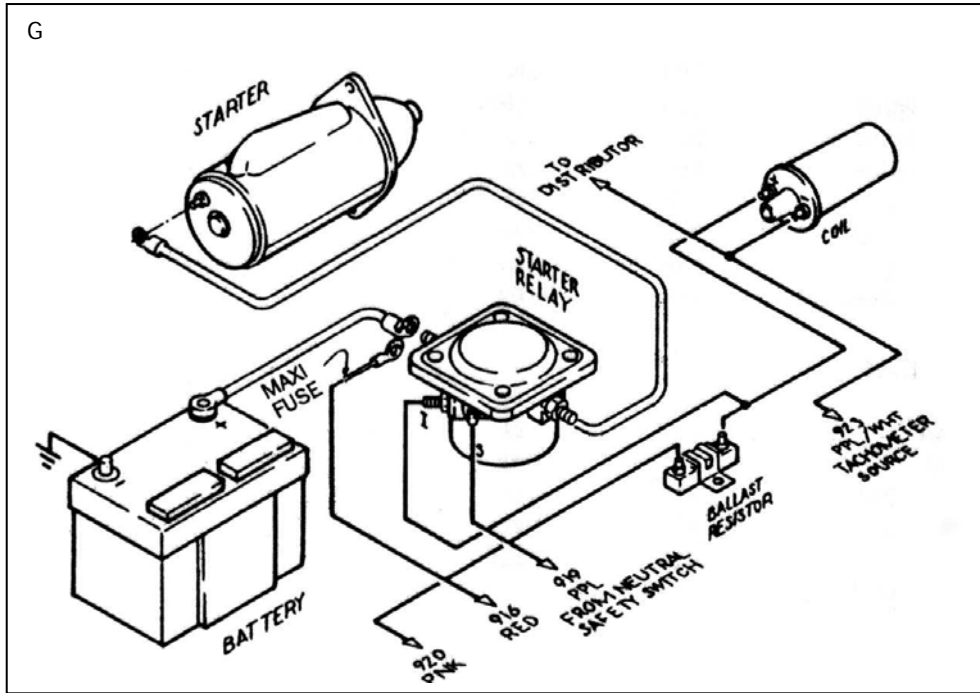


Figure 9-2 Ford Ignition (Start/Run) System

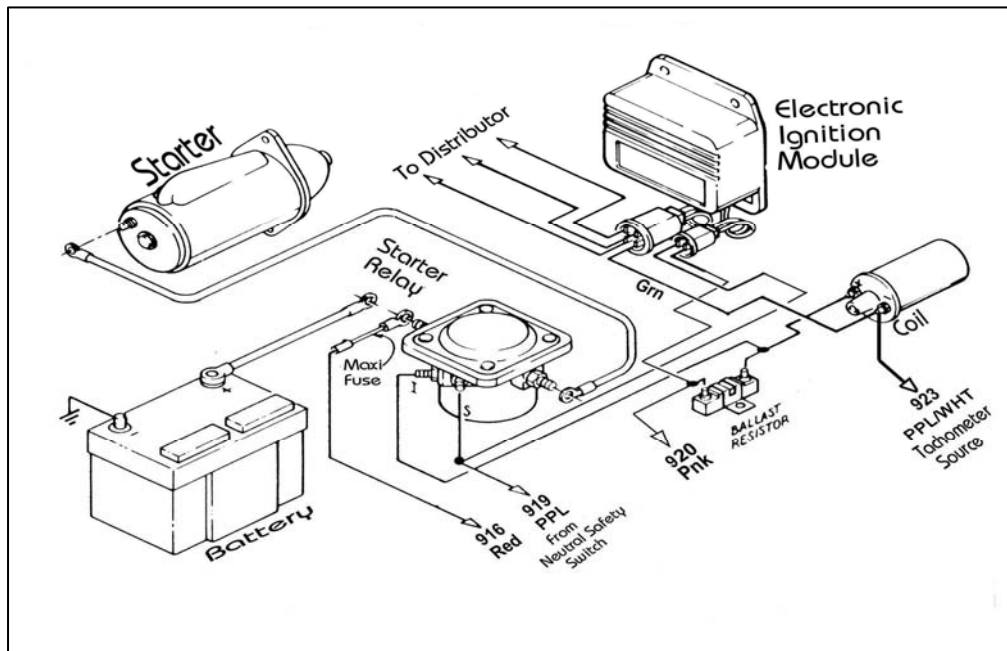


Figure 9.3 Motorcraft Electronic Ignition System (start/run)

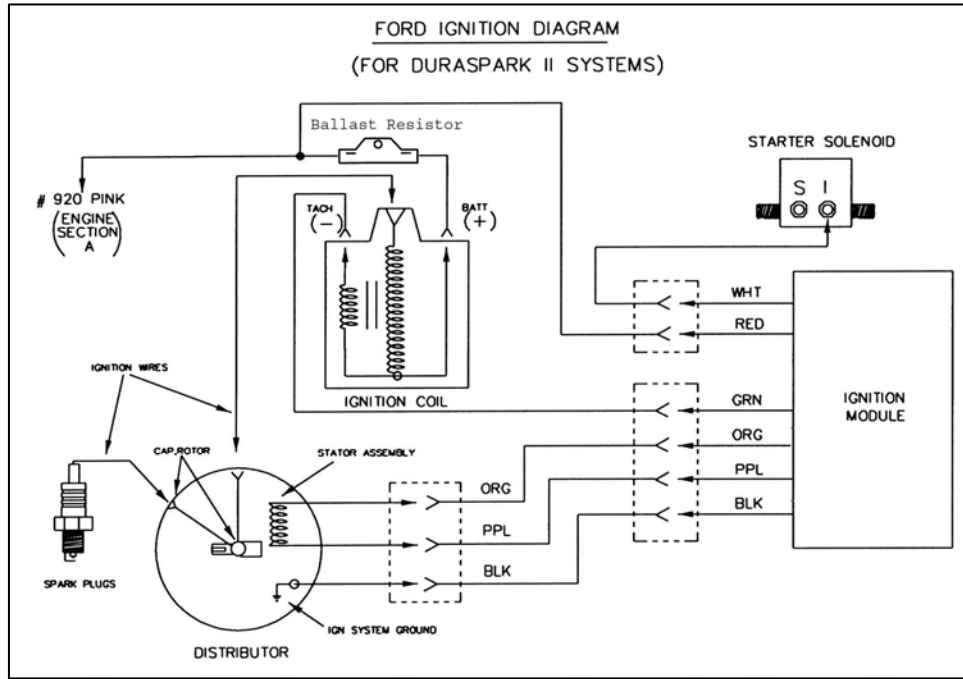


Figure 9-4 Ford Ignition Diagram (Duraspark II Systems)

10 ALL MAKES - SPECIFIC CIRCUIT CONNECTIONS

10.1 Generator Charging System. See Figure 10-1.

- 10.1.1 Connect Generator ARMATURE terminal (A) to Voltage Regulator terminal A. Connect Generator FIELD terminal (F) to Voltage Regulator terminal F. Use 14-gauge wire (color optional) for FIELD and 12-gauge wire for Armature.
- 10.1.2 Be sure both the generator and the voltage regulator are securely grounded. The voltage regulator may have a terminal for this purpose (labeled "G") or you may have to ground the regulator case.
- 10.1.3 Connect ENGINE SECTION wire #915 (red) to Voltage Regulator terminal B.
- 10.1.4 Insulate and stow ENGINE SECTION wire #914 (wht).

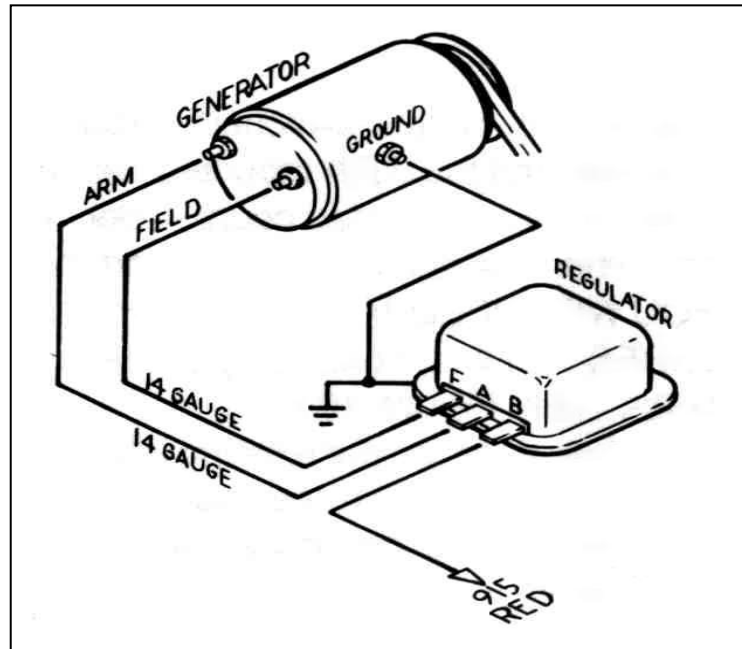


Figure 10-1 Generator Charging System

10.2 Generator to Alternator Conversion

- 10.2.1 You may be able to convert your generator charging system to use an alternator and external regulator without altering or re-routing existing wires.
- 10.2.2 Install the new alternator and replace the existing generator voltage regulator with the new, alternator compatible one.
- 10.2.3 Connect the existing wiring according to either **Section 7.6** ,or **8.3**, as appropriate.

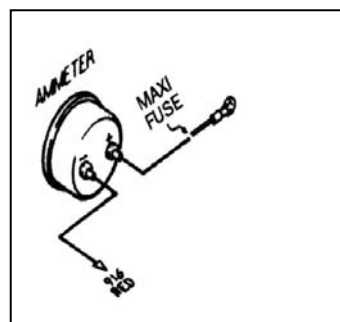


Figure 10-2 Ammeter & Maxi Fuse

10.3 Connecting an Ammeter and the Maxi Fuse. See Figure 10-2.

- 10.3.1 Most, but not all Ammeters must be inserted IN SERIES onto the ENGINE SECTION (single) 10-gauge wire #916 (red) that routes from the Fuse Panel to the Starter Solenoid on GM (**Section 7.6**) and from the Fuse Panel to the Starter Relay on Ford (**Section 8**.)

- 10.3.2 The overall physical length of this circuit should be as short as possible (allow some slack, however). You may have to cut wire #916 and you may have to add some additional length of 10-gauge wire. **USE ONLY 10-GAUGE WIRE OR LARGER.**
- 10.3.3 Route wire #916 (from the Fuse Panel) and connect to the Ammeter NEGATIVE terminal. To complete the installation, follow ONE of the next three (3) paragraphs, as appropriate.
- 10.3.4 If you are using a GM starter, route the remainder of wire #916 from the Ammeter POSITIVE terminal to the Maxi Fuse terminal. Connect the other side of the Maxi Fuse (**Figure 7-3**) to the Starter Solenoid Battery (B+) terminal.
- 10.3.5 If you are using a Ford starter with a starter relay, route the remainder of wire #916 from the Ammeter POSITIVE terminal to the Maxi Fuse terminal. Connect the other side of the Maxi Fuse (**Figure 7-3**) to the Starter Solenoid Battery (B+) terminal.

CAUTION: ***BOTH AMMETER TERMINALS MUST ABSOLUTELY BE ISOLATED FROM GROUND. IF EITHER AMMETER TERMINAL COMES IN CONTACT WITH GROUND A HARNESS FIRE IS INEVITABLE. USE EXTREME CARE AND DILIGENCE IN CONNECTING AMMETERS.***

CAUTION: ***BE SURE YOUR AMMETER'S CURRENT (AMPS) RATING EXCEEDS THE CURRENT OUTPUT OF YOUR ALTERNATOR. PERFECT PERFORMANCE PRODUCTS, LLC DOES NOT RECOMMEND USING ANY AMMETER RATED AT LESS THAN 65 AMPS. DO NOT USE AN AMMETER WITH ANY HIGH OUTPUT ALTERNATOR (MORE THAN 65 AMPS).***

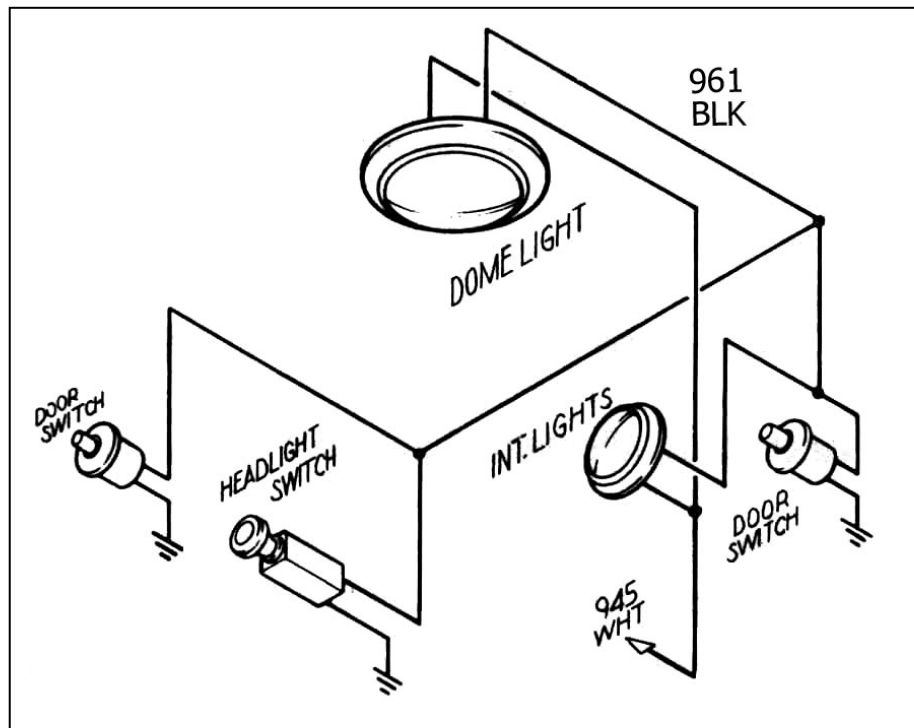


Figure 10-3 Interior Lighting (GM Style Jamb Switch – Painless Part #80170)

10.4 Interior Lighting. See Figure 10-3

- 10.4.1 Interior Lights are switched through the door switches and the dash-mounted headlight switch, which is usually rotated counter-clockwise to turn on. These are GROUND ACTIVATED circuits. The headlight switch & the door pin switches provide a GROUND to complete the circuit. 12V is continually present at the light bulbs. See **Figure 11-3**.
- 10.4.2 If possible leave your existing interior light wiring intact. The Painless harness supplies the 12V feed (B+) to the circuit via TAIL SECTION wire #945 (wht) and a ground via TAIL SECTION wire #961 (blk).

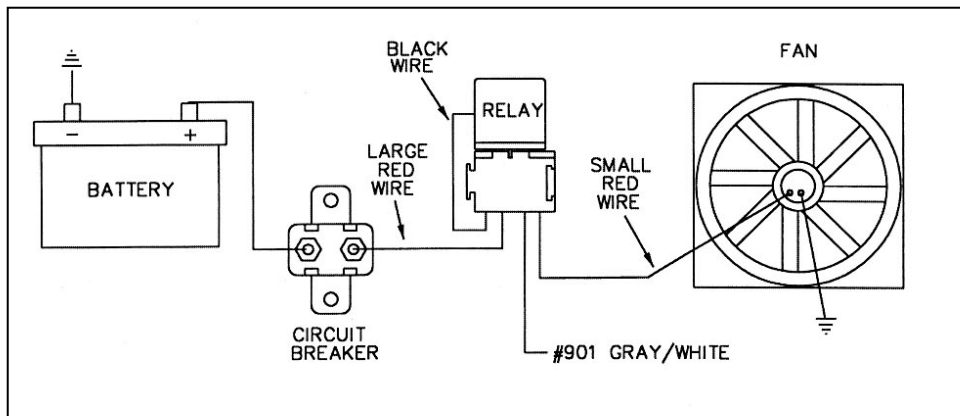


Figure 10-4 Typical Fan Relay Installation (Painless Part #30101)

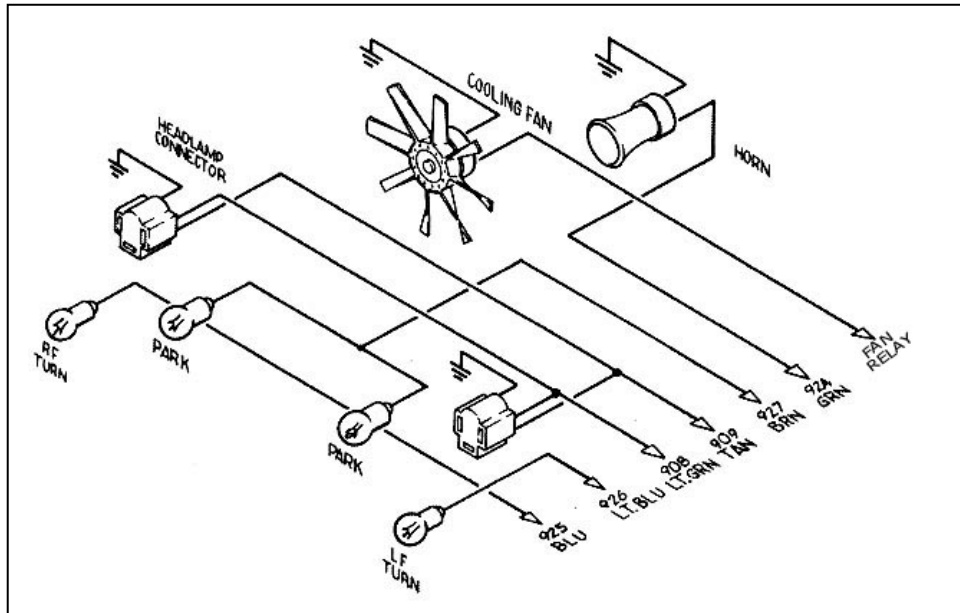


Figure 10-4A Headlight Section Wiring

10.5 HEADLIGHT SECTION A. See Figure 10-4A

- 10.5.1 Connect HEADLIGHT SECTION A wire #924 (grn) to the Horn's hot terminal. TURN SIGNAL SECTION wire #953 (blk) was connected in the Turn Signal Connector section of these instructions. The Horn Relay is pre-wired into the Fuse Panel.
 - 10.5.2 Connect HEADLIGHT SECTION A wires #908 (lt.grn) and #909 (tan) to the green and tan wires of BOTH Headlamp Connectors. Connect the black wires of the Headlamp Connectors to Chassis Ground. You should have enough wire to accomplish this. You have been supplied with two small grommets (Figure 3-1) should you need to pass these wires through a fender well. Don't forget to thread them onto the wires BEFORE you connect the wires.
 - 10.5.3 Connect HEADLIGHT SECTION A wire #927 (brn) to ALL front Park Lights. Connect HEADLIGHT SECTION A wire #925 (blu) to the RIGHT FRONT Turn Signal. Connect wire #926 (lt.blu) to the LEFT FRONT Turn Signal. **Note: Don't confuse Park Lights with Turn Signals.**
 - 10.5.4 Connect HEADLIGHT SECTION A wire #901 (gry/wht) to the Electric Fan Relay. **THIS WIRE IS AN ACTIVATION WIRE FOR A RELAY, NOT A POWER FEED.** The other end of wire #901 is in the ACCESSORY SECTION SWITCHES and should be connected to the electric fan switch in the dash. Connect 906 (gry/wht) from ACCESSORY SECTION B+ to the other side of the fan switch. **Figure 11-4A** shows a typical fan relay installation
- Note: The wire going to the fan in Figure 10-4 will be coming from the fan relay output terminal. Wire #901 (gry/wht) from the ACCESSORY SECTION SWITCHES is an activation wire for the fan relay.*

NOTE: If you are using a thermostatic switch in the engine to control the ground for the fan relay, you will then connect the 901 (gry/wht) directly to the 906 (gry/wht), in the under dash section. This will provide switched power into the fan relay.

- 10.5.5 Connect the DIMMER SWITCH SECTION Extension Cable (**Figure 3-1**) to its mating connector in the harness (if applicable) and your floor-mounted Dimmer Switch or column-mounted Dimmer Switch.

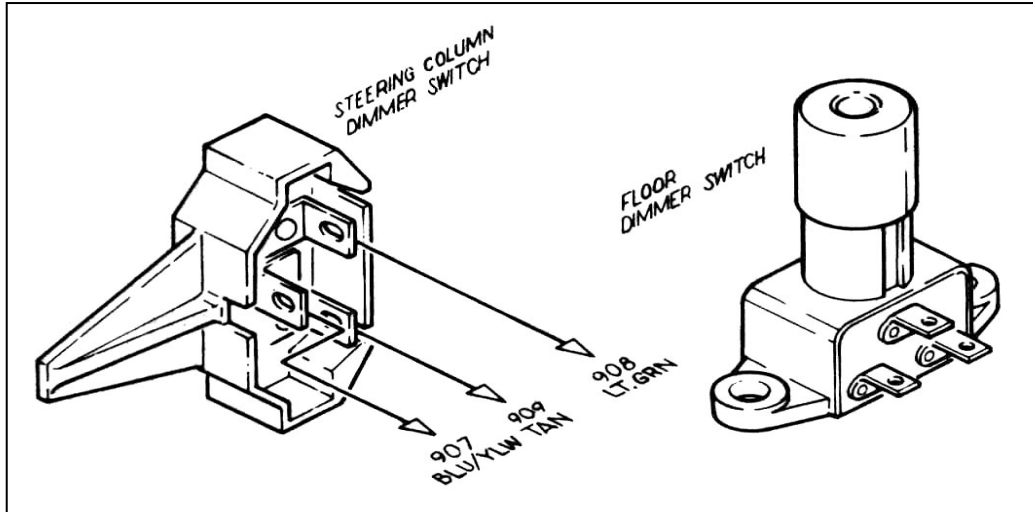


Figure 10-5 Dimmer Switches (Push Button Style – Painless Part #80150)

10.6 HEADLIGHT SECTION B Wiring. See Figure 10-4A.

- 10.6.1 Connect the 6 wires of HEADLIGHT SECTION B, the Dome and Interior Light return circuit, and the Headlamp Switch Ground as shown. If you do not have a GM headlight switch, you should trace out the wires of your existing harness and connect the new harness according to **Table 11-2**.

*Note: On late-style GM headlight switches, the park lights terminal to which wire #927 (brn) is connected (shown in **Figure 10-6**) has been omitted. In this case, wire #927 must be connected as indicated by the dashed line in **Figure 10-6**.*

10.7 Instrument Panel Wiring

- 10.7.1 Connect the wires of the INSTRUMENT PANEL SECTION as indicated in **Table 11-2**. Insulate and stow any wires you do not use.
- 10.7.2 Connect a jumper from wire #935 (red/wht) to all Gauges' power or "I" terminals. Connect a jumper from wire #930 (brn) to all Gauges' Instrument Lighting terminals. Connect a jumper to all Gauges' Ground terminals & connect to a good chassis/under dash ground

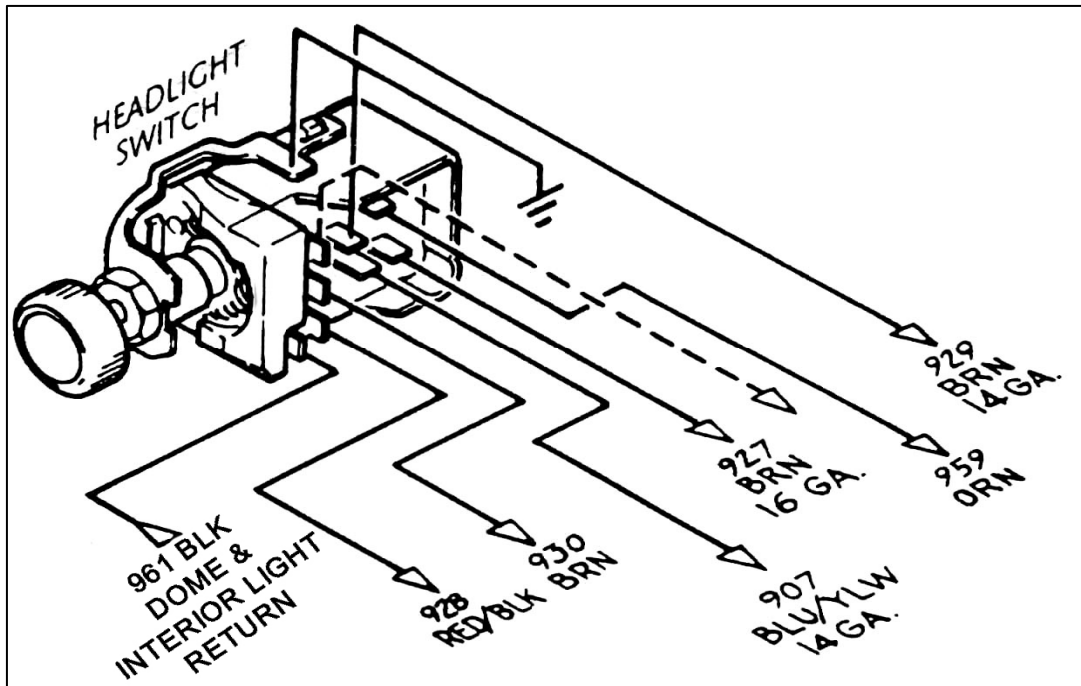


Figure 10-6 HEADLIGHT SECTION B Wiring (Painless Part #80152)

10.8 Brake Light Switch

10.8.1 Connect wires #917 (orn) and #918 (wht) to the Brake Light Switch wherever it may be mounted.

10.8.2 The Third Brake Light wire is pre-connected on the Switch end. Connect TAIL SECTION wire #950 (orn) to the Third Brake Light if applicable. If not using a 3rd brake light, cap & stow this wire.

10.9 Tail Section Wiring

10.9.1 Connect the wires of the TAIL and TURN SIGNAL SECTIONS as indicated in **Table 11-2** with the exception of #918 (wht), #948 (grn), #949 (ylw) and #950 (orn).

10.9.2 These 4 wires will be connected according to one of the diagrams shown in **BELOW**. Which Diagram brake/tail **and** Turn Signal Lights (this is referred to as integrated lights) **or** you have **more than one** bulb on each side **and** the Brake and Turn Signal Lights are hooked to different bulbs (referred to as separate Brake/Turn Lights).

Note A: If you have Integrated Brake Lights you must use bulbs that have two (2) filaments in them such as in an 1157 bulb.

Note B: The three wires shown in these diagrams are connected to the "brighter" of the two filaments when using a two-filament bulb (the Tail Lights are usually connected to the "Dimmer" filament). The Tail Lights, License Plate Lights, Reverse Lights, etc. are not shown on the diagrams for clarity.

Note C: In the separate Brake Light diagram the arrangement shown is only one of several ways to wire a vehicle. The important thing is that the Brake and Turn Signal Lights use completely separate bulbs.

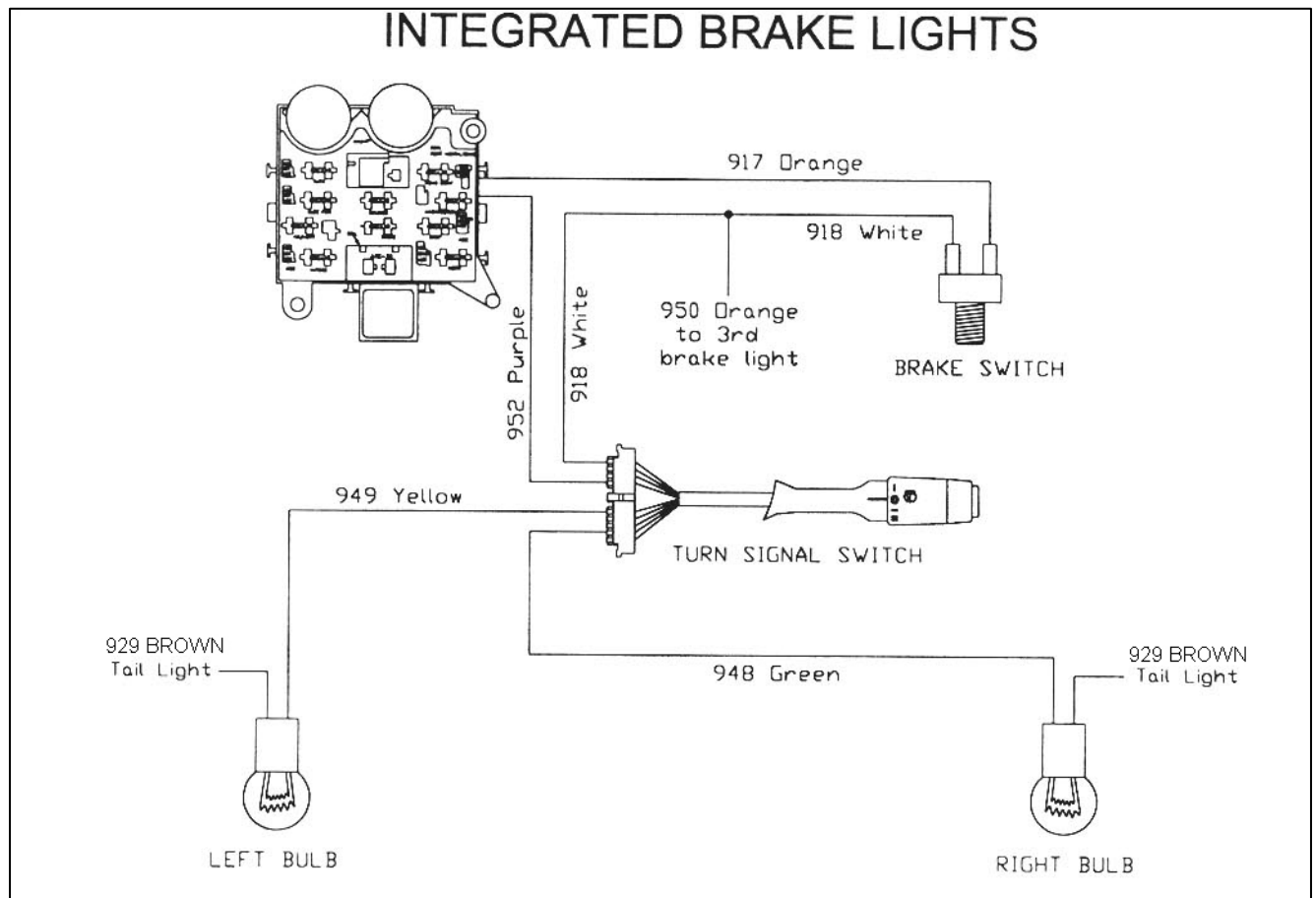


Figure 10-7 Integrated Brake Lights

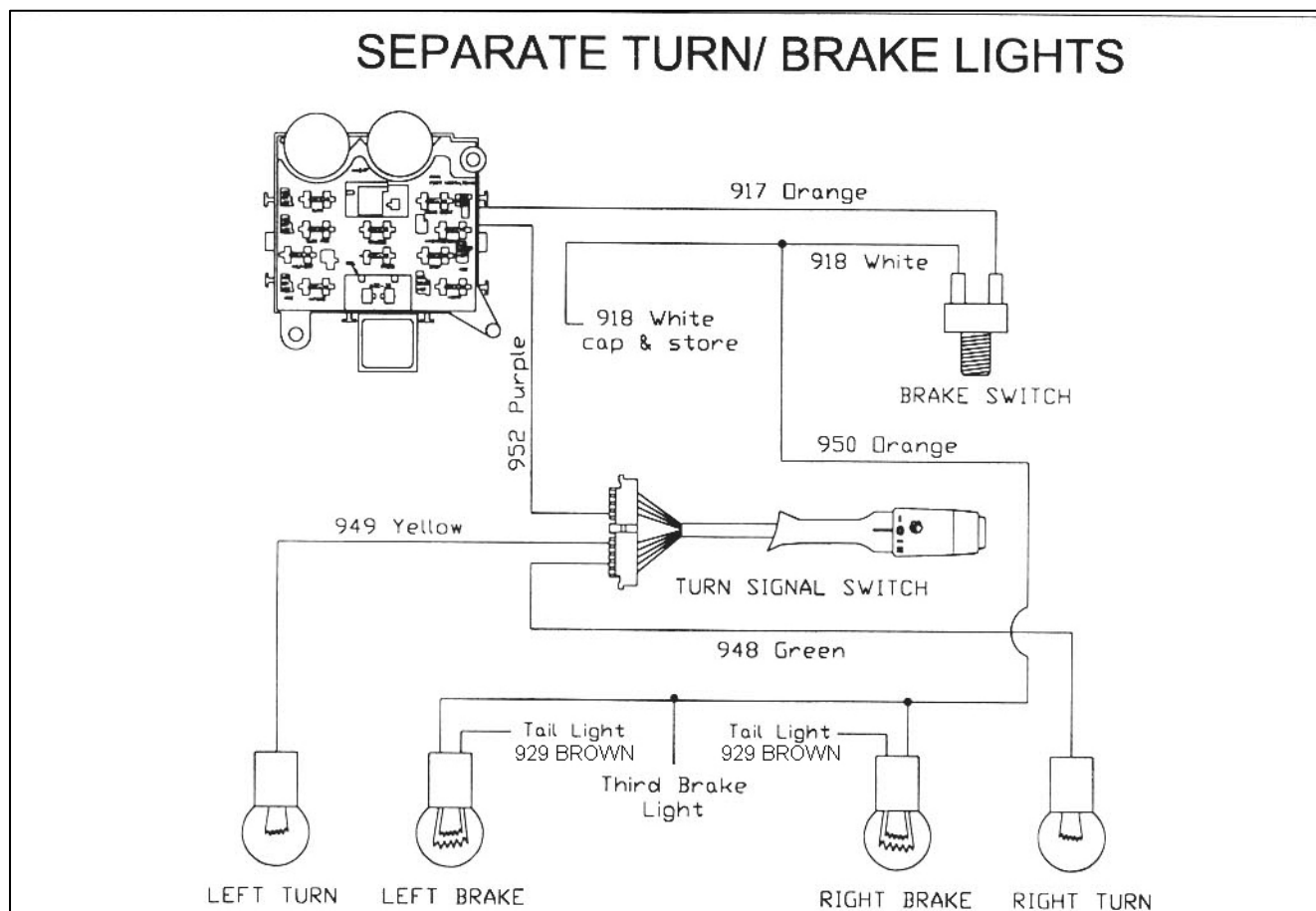


Figure 10-7A Separate Turn/Brake Lights

10.10 Helpful Hints for Tail Section Wiring

- 10.10.1** 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.**
- 10.10.2** 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.

11.0 WIRE CONNECTION INDEX AND FUSE REQUIREMENTS

11.1 Wire Connection Index

In each section, connect the wire, as identified by its wire color, to the appropriate item in the CONNECT TO column. Pay close attention to the **Notes** in this section, as identified by a small, raised number such as the one at the end of this sentence. ❶

The Wire Layout Index is divided into sections that correspond to the sections of your wire harness. (ACCESSORY SECTION B+, DIMMER SWITCH SECTION, etc.). The index is divided vertically into six columns. COLOR, GAUGE, NUMBER, CONNECT TO, ORIGIN, and SECTION OF ORIGIN.

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

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 those originating from the fuse panel and certain other wires such as those originating from the horn relay, the dimmer switch, and the instrument panel section. **These pre-connected wires are identified by an asterisk (*) in the ORIGIN column.**

11.2 Fuse Requirements

Cigarette Lighter.....	20
Headlight Switch.....	30
Emergency Flashers.....	15
Turn Signals.....	15
Gauges.....	10
AC/Heat Relay.....	5
Radio (Constant).....	10
Horn.....	20
Door Lock.....	20
Wipers.....	15
Brake Switch.....	20
Dome/Trunk.....	10
Electric Fan Relay.....	5
Power Antenna.....	10
Power Windows.....	20
Electric Fuel Pump.....	15
Coil.....	30
Radio Ignition (Switched).....	10
Backup/Cruise Control.....	10

Table 11-1 Fuse Requirements

Table 11-2

Wire Layout Index

10107 WIRING HARNESS

Color	Ga.	No.	Connect to	Origin	Section of Origin
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Accessory Section Switches

Gry/Wht	18	901	Cooling Fan Switch	Electric Fan Relay	Headlight Section A
Blk/Wht	14	902	A/C – Heat Switch	A/C Compressor	Engine Section A

Accessory Section B+

Tan	14	903	Cigarette Lighter B+	Fuse Panel*	Fuse Panel
Blk/Wht	14	904	A/C – Heat Switch B+	Fuse Panel*	Fuse Panel
Blu	16	905	Wiper Switch B+	Fuse Panel*	Fuse Panel
Gry/Wht	18	906	Cooling Fan Switch B+	Fuse Panel*	Fuse Panel
Wht/Red	18	959	Clock	Fuse Panel*	Fuse Panel
Orn/Blk	18	970	4 WD Switch	Fuse Panel*	Fuse Panel

Dimmer Switch Section

Blu/Ylw	14	907	Dimmer Switch	Headlight Switch	Headlight Section B
LtGrn	14	908	Dimmer Switch	High Beam	Headlight Section A
Tan	14	909	Dimmer Switch	Low Beam	Headlight Section A

Engine Section

Wht	14	914	Alternator Exciter	Fuse Panel*	Fuse Panel
Red	12	915	Alternator B+	Fuse Panel*	Fuse Panel
Tan	18	960	Brake Pres.Sw. (M.Cyl)	Emergency Brake Ind.	Instr. Panel Section
Orn	18	963	Hood Light	Fuse Panel*	Fuse Panel

Engine Section (Single Wire)

Red (1)	10	916	Battery@Start Sole.B+	Fuse Panel*	Fuse Panel
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Emergency Brake Section

Tan	18	962	Emergency Brake Sw.	Instrument Panel	Inst. Panel
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Brake Switch Section

Orn	16	917	Brake Switch B+	Fuse Panel*	Fuse Panel
Wht	16	918	Brake Switch	Turn Signal Switch	Turn Signal Section

Engine Section A

Pur	12	919	Str.Solenoid (S-Term)	Ignition Switch Start	Ign.Switch Section
Pnk	14	920	Coil B+	Fuse Panel*	Fuse Panel
LtGrn	18	921	Coolant Temp Sender	Temperature Gauge	Instr.Panel Section
LtBlu/Blk	18	922	Oil Pressure Sender	Oil Pressure Gauge	Instr.Panel Section
Pur/Wht	18	923	Tachometer Source	Tachometer	Instr.Panel Section
Blk/Wht	14	902	A/C Compressor	A/C Thermostat Sw.	Accy.Section Switches
Red	18	954	Electric Choke	Fuse Panel*	Fuse Panel
Blk	18	971	4 Wheel Drive Switch	4 Wheel Drive Light	Instr.Panel Section

Backup Section

LtGrn	18	958	Backup Switch	Fuse Panel*	Fuse Panel
LtGrn	18	956	Backup Switch	Backup Lights	Tail Section

Headlight Section A

Grn	14	924	Horn B+	Horn Relay*	Fuse Panel
Blu	18	925	Rt.Front Turn Signal	Turn Signal Switch	Turn Signal Section
LtBlu	18	926	Lt.Front Turn Signal	Turn Signal Switch	Turn Signal Section
Brn	18	927	Park Lights	Headlight Switch	Headlight Section B
LtGrn	14	908	High Beam	Dimmer Switch	Dimmer Switch Section
Tan	14	909	Low Beam	Dimmer Switch	Dimmer Switch Section
Gry/Wht	18	901	Cooling Fan Relay	Fan Switch	Accy.Section B+

Headlight Section B

Red/Blk	12	928	Headlight Sw. B+	Fuse Panel*	Fuse Panel
Blu/Ylw	14	907	Headlight Switch	Dimmer Switch	Dimmer Switch Section
Brn	14	929	Headlight Switch	Tail Lights	Tail Section
Brn	18	927	Headlight Switch	Park Lights	Headlight Section A
Brn (2)	18	930	Headlight Switch	Instr.Panel Lighting	Instr.Panel Section
Orn	14	959	Headlight Switch	Fuse Panel	Fuse Panel

Ignition Switch Section

Pnk	14	931	Ign. Switch (Coil Ign)	Fuse Panel*	Fuse Panel
Orn	12	933	Ign. Switch Ign	Fuse Panel*	Fuse Panel
Red	12	934	Ign. Switch B+	Fuse Panel*	Fuse Panel
Pur (3)	12	919	Ign. Switch Start	Starter Solenoid	Engine Section A
Brn	12	932	Ign. Switch Accy.	Fuse Panel	Fuse Panel

Instrument Panel Section

Red/Wht	18	935	Voltmeter & Gauges B+	Fuse Panel*	Fuse Panel
Grn	18	936	High Beam Indicator	Dimmer Switch	Dimmer Switch Section
LtBlu	18	937	Left Turn Indicator	Lt.Front Turn Signal*	Turn Signal Section
Blu	18	938	Right Turn Indicator	Rt.Front Turn Signal*	Turn Signal Section
Brn	18	930	Instr.Panel Lighting	Headlight Switch	Headlight Section B+
Pnk	18	939	Fuel Gauge	Fuel Sending Unit	Tail Section
LtGrn	18	921	Temperature Gauge	Temp.Sending Unit	Engine Section A
LtBlu/Blk	18	922	Oil Pressure Gauge	Oil Pres.Sending Unit	Engine Section A
Pur/Wht	18	923	Tachometer	Tachometer Source	Engine Section A
Tan	18	960	Emergency.Brake Ind.	Emergency Brake Sw.	Engine Section
Tan	18	961	Emerg.Brake Ind. B+	Fuse Panel*	Fuse Panel
Blk	18	971	4 Wheel Drive Light	4 Wheel Drive Switch	Engine Section A

Turn Signal Section

Brn	14	951	Emerg.Flasher Sw.B+	Emerg.Flasher Relay*	Fuse Panel
Pur	14	952	Turn Sig.Sw.Flasher B+	Turn Flasher Relay*	Fuse Panel
Blk	18	953	Horn Switch	Horn Relay*	Fuse Panel
Grn	14	948	Turn Signal Switch	R/R Turn Signal	Tail Section
Ylw	14	949	Turn Signal Switch	L/R Turn Signal	Tail Section
Blu	18	925	Turn Signal Switch	R/F Turn Signal	Headlight Section A
Wht	16	918	Turn Signal Switch	Brake Switch	Engine Section A
LtBlu	18	926	Turn Signal Switch	L/F Turn Signal	Headlight Section A

Radio Section

Red/Blk	18	941	Radio B+ Switched	Fuse Panel*	Fuse Panel
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Tail Section

Wht	18	945	Dome Lights B+	Fuse Panel*	Fuse Panel
Grn	14	948	R/R Turn Signal	Turn Signal Switch	Turn Signal Section
Ylw	14	949	L/R Turn Signal	Turn Signal Switch	Turn Signal Section
Pnk	18	939	Fuel Sending Unit	Fuel Gauge	Instr.Panel Section
Brn	14	929	Tail Lights	Headlight Switch	Headlight Section B
Orn	18	950	Third Brake Light	Turn Signal Switch*	Turn Signal Section
LtGrn	18	956	Backup Lights	Backup Switch	Backup Light Section

Notes: 2-color wires: 2nd color (stripe) may not be intense color. Observe two-color wires closely.

- (1) This consists of only one large 10 gauge wire.
- (2) This is a short length of 18 gauge brown wire that is not connected at either end.
- (4) Your vehicle may have had a neutral safety switch installed in this circuit. The neutral safety switch may be located at the base of the steering columns, on the transmission at clutch pedal linkage. Do not attempt to defeat your vehicles neutral safety switch. Please install one.

INSTRUMENT PANEL SECTION WIRING

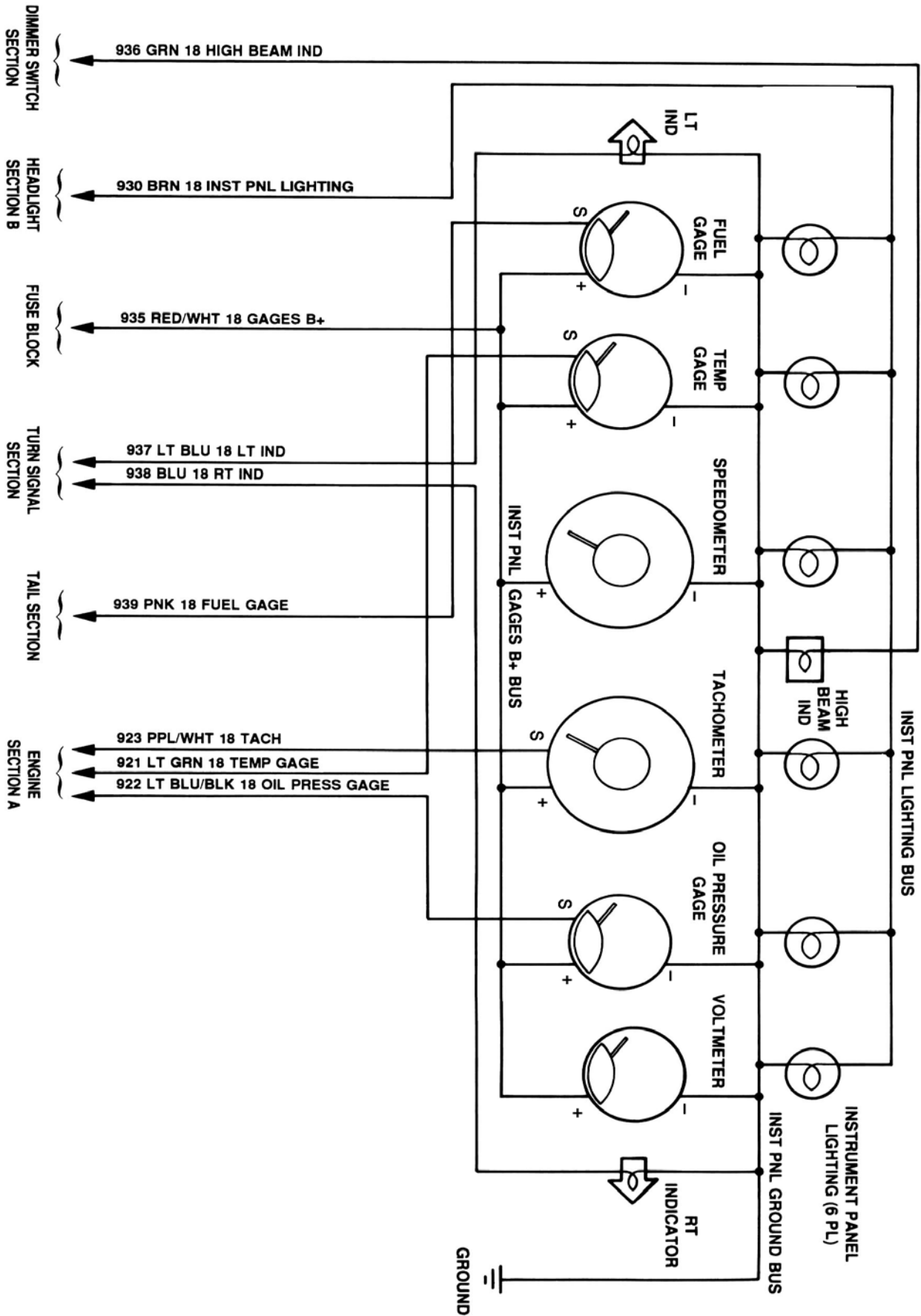
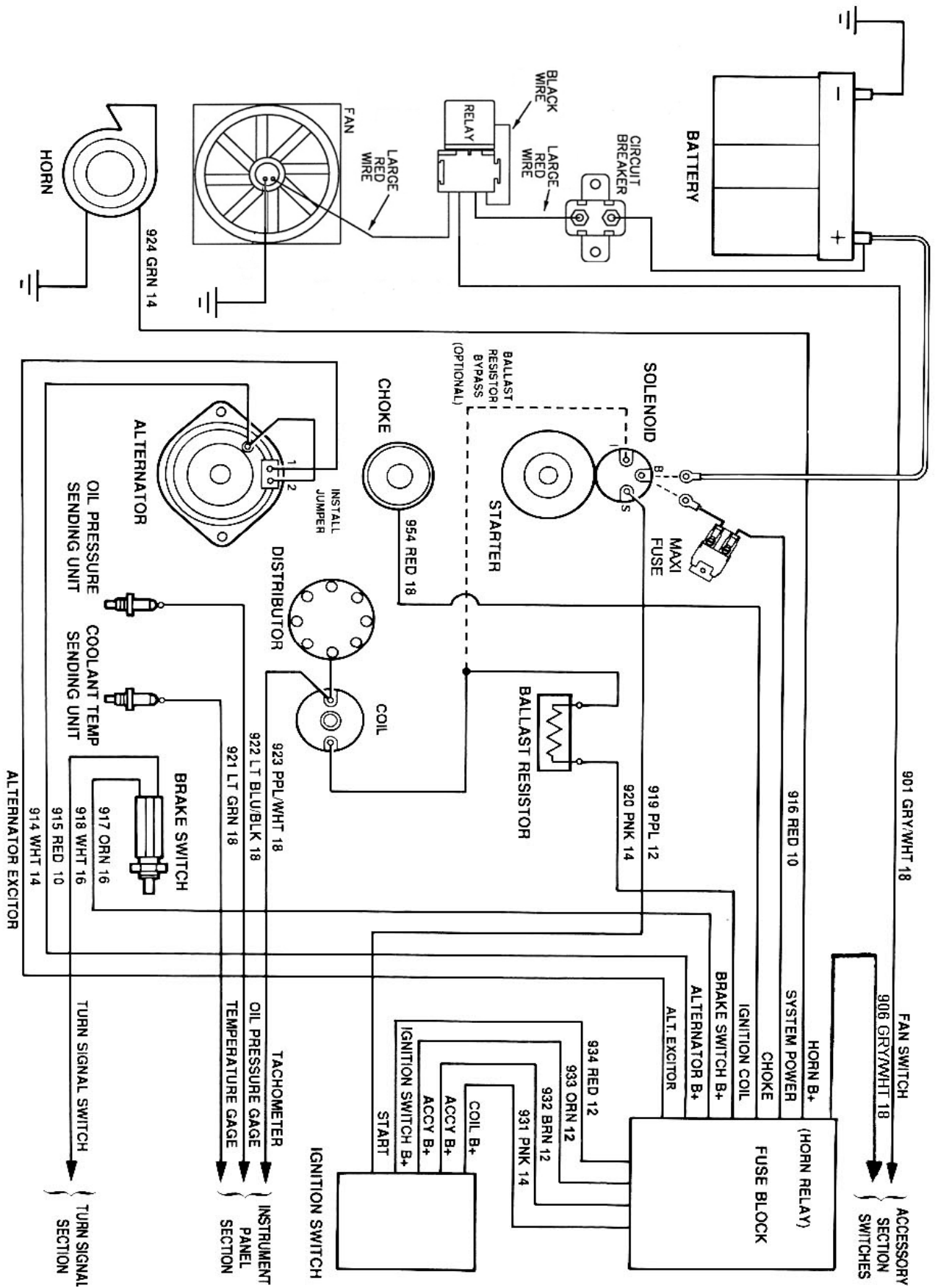


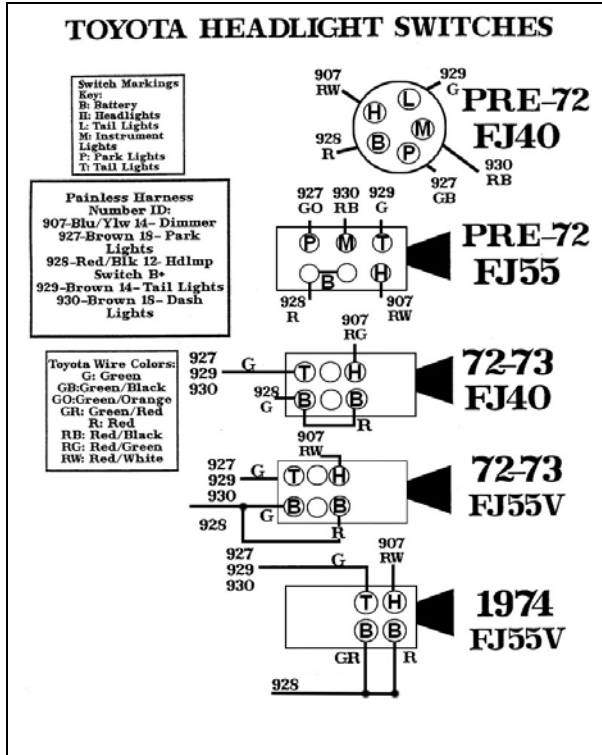
Diagram 1 Instrument Panel Section Wiring (typical)



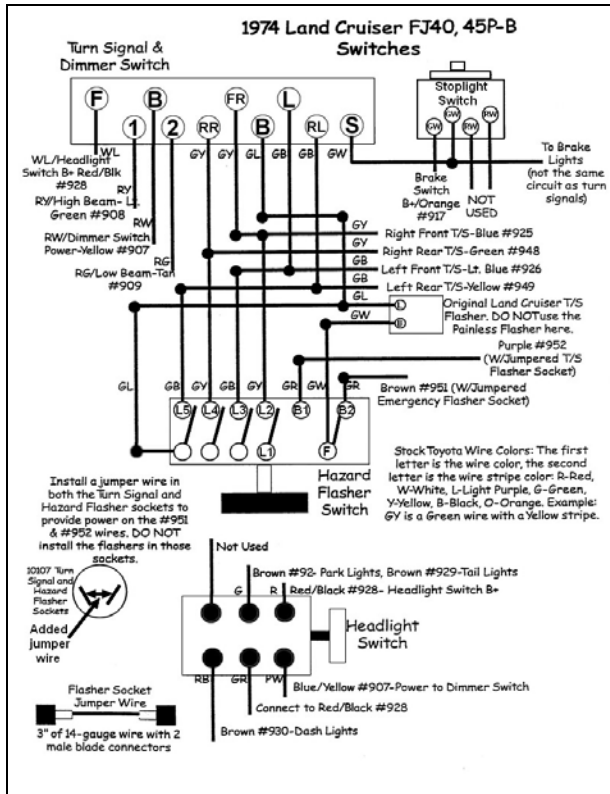
ENGINE WIRING

Diagram 2 Engine Wiring (typical)

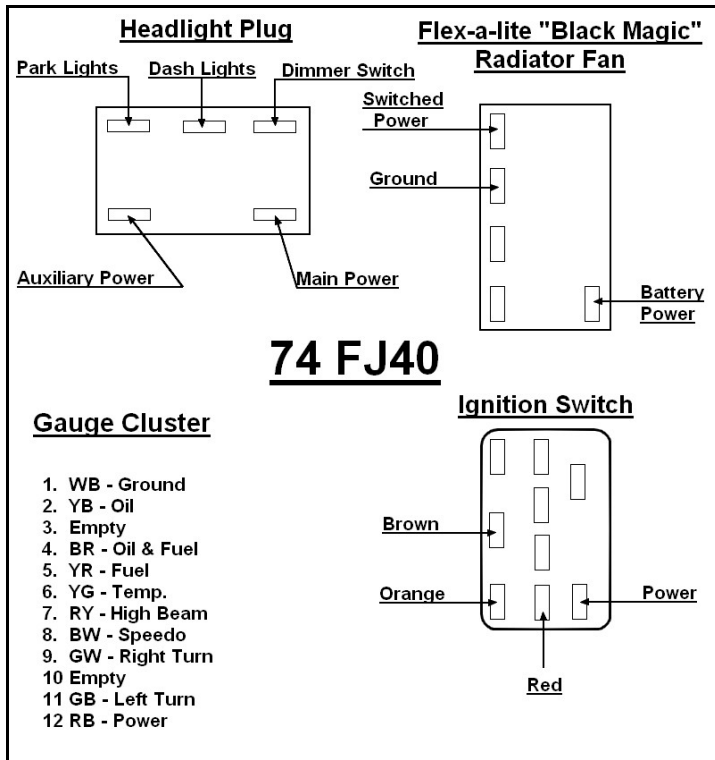
Toyota Switches/ Connections



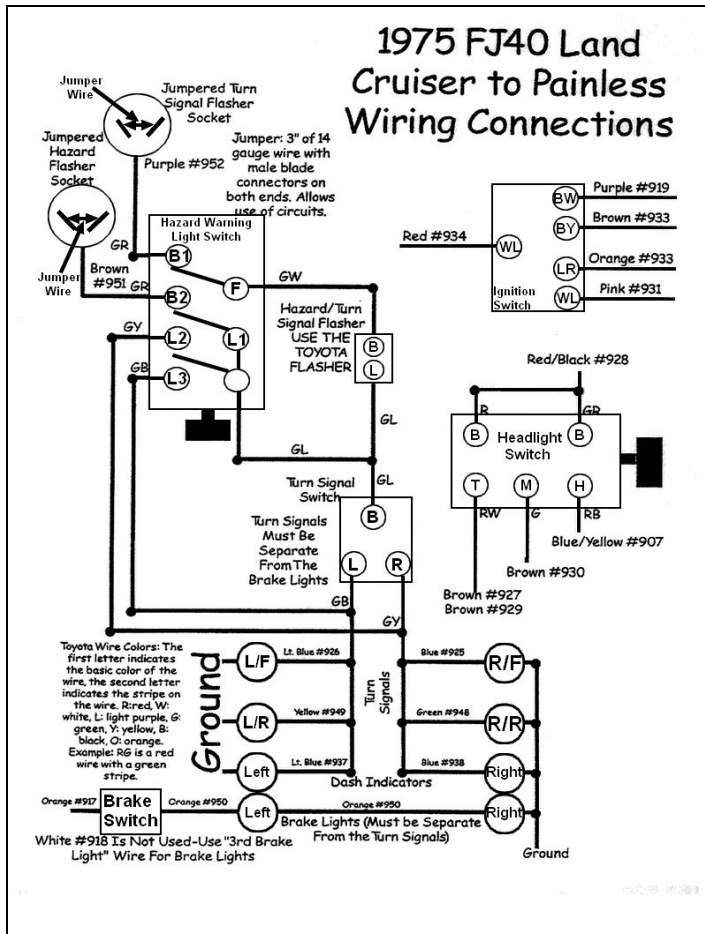
Toyota Switches (various years)



Land Cruiser Switches

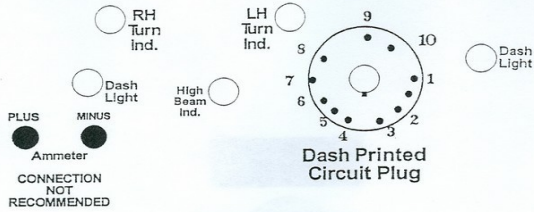


74 Land Cruiser Connections



75 Land Cruiser Undeash

FJ40 Instrument Connections- Rear View



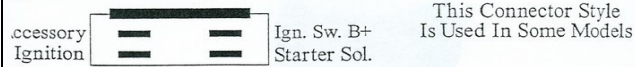
Ammeter connection not recommended unless using stock Toyota alternator, because high amperage outputs of most alternators will burn out ammeter.

Pre-'72 FJ40 Land Cruiser Cluster Connections:

Key: Terminal # / Circuit Name/ Toyota Color/ Painless Color & Circuit Number:

- 1) Ground: provided by customer-not in harness.
- 2) Oil Pressure: YB/Lt. Blue/Black #922
- 3) Gauges B+: NONE/ Red/White #935
- 4) Fuel Gauge: YR/ Pink #939
- 5) Temp Gauge: YG/Lt. Grn #921
- 6) High Beam Ind.: RY/Green #936
- 7) not used
- 8) RH Turn Signal: GY/Blue #938
- 9) LH Turn Signal: GO/Lt. Blue #937
- 10) Instrument Lights: RB/Brown #930

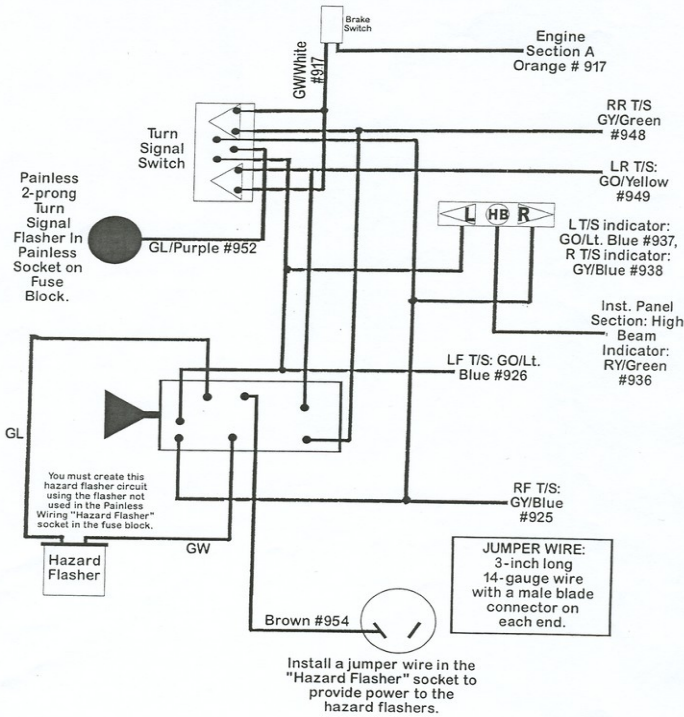
Ignition Switch Plug-in: Switch Side



Alternator connection using stock Toyota alternator: Connect White #914 wire to IG terminal of regulator. Connect Red #915 to large alternator post.

FJ40 Underdash Connections

Pre-'72 FJ40 Land Cruiser Turn Signal/ Hazard Flasher



Pre 72 FJ 40 Underdash Connection

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.