

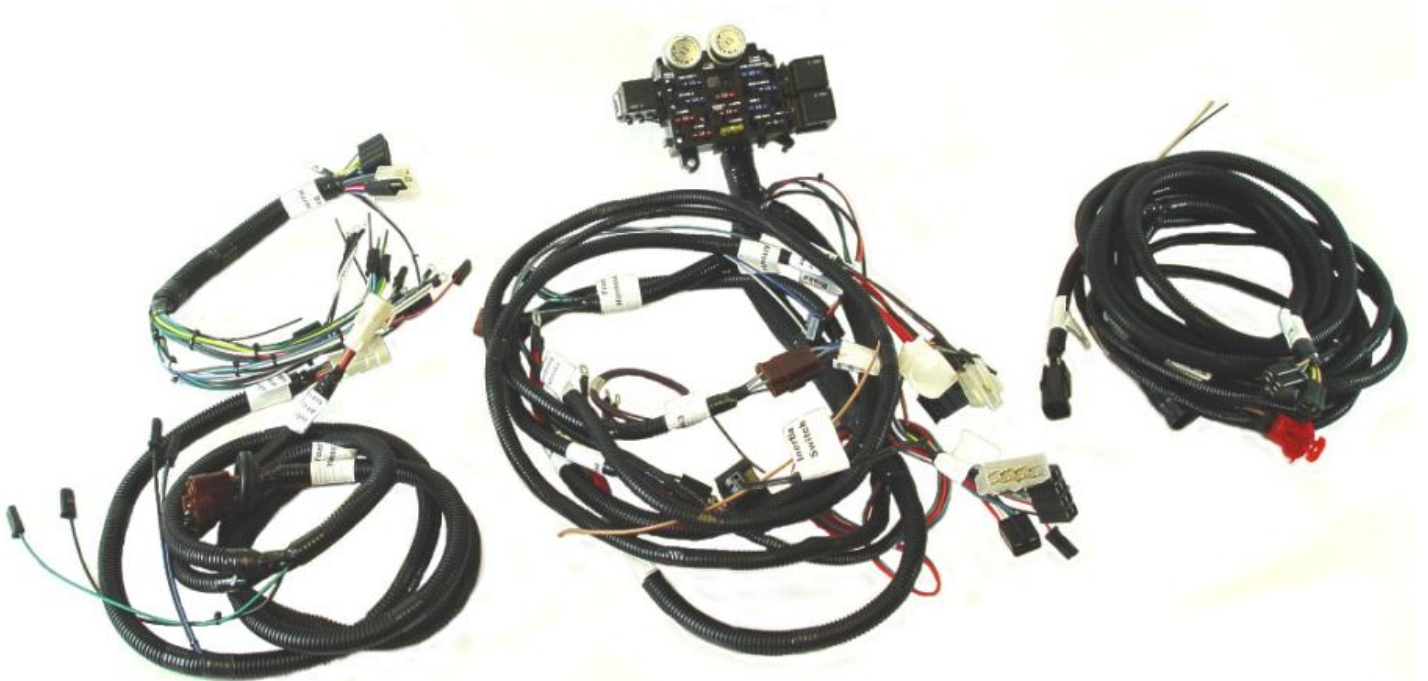


# Chassis Wiring Harness

INSTALLATION INSTRUCTIONS

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ROADSTER, COUPE AND HOT ROD



REVISION L, MARCH 2012

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# Table of Contents

Table of Contents.....	ii
Safety Notice.....	iii
Safety Tips.....	iv
How to use This Book.....	v
What You Get.....	v
Parts Included.....	vi
Tools Needed.....	viii
Pre-installation Information.....	ix
Wiring Harness Layout.....	x
<b>Installation Instructions.....</b>	<b>1</b>
Main Harness.....	1
Brake switch.....	5
Column connector.....	5
Clutch safety Switch.....	5
Carbureted Engine.....	7
Fuel Injected Engine.....	7
Starter Solenoid.....	7
Alternator.....	8
Inertia Switch.....	8
Ignition Switch.....	9
Headlight switch.....	9
Heater.....	10
Radio.....	10
Wiper.....	10
Underdash light.....	10
Rear harness.....	11
License Plate Wiring.....	14
Taillights.....	19
Gauge Sending Unit Harness.....	21
Electric Fan.....	21
Front Harness.....	22
Headlights/Turn signals.....	26
Electric Fan.....	27
Dash Harness/Gauges.....	27
Troubleshooting.....	43

## Safety Notice

While there are many things to love and be proud of in our country today there are a few things that we wish were different. With regret and a small amount of resentment we include the following warning and statement of non-liability at the advice of men with soft hands and necks the size of pencils.

The procedures and recommendations contained in this book are to be used as a guide with the ultimate determination of safe construction to be made by you. If you feel uneasy about whether you have the skills to wire your own vehicle, **DO NOT PROCEED**. This project involves dealing with electrical connections for a vehicle. It is intended for individuals who have the skills and abilities commensurate with the scope of a project of this magnitude.

This kit is only a collection of parts designed for use primarily as a race car. You are responsible for ensuring that the vehicle you build complies with all Federal, State and local laws regarding its use. Except as may be specified in writing, Factory Five makes no warranties, expressed or implied, on the products (parts, or kits) offered for sale. All implied warranties of merchantability and fitness for a particular purpose are expressly disclaimed by Factory Five.

While Factory Five products are thoroughly tested under actual race conditions, Factory Five cannot control the quality of the installation or application of these products. The products offered for sale are true race car components, the installment of which often requires considerable time and fabrication skill. Before attempting any installation or assembly, the purchaser should determine the suitability of the product for the intended use, the time, and level of skill necessary for correct installation or assembly.

Factory Five does not make any warranty, expressed or implied. Purchaser expressly **ASSUMES THE RISK** of all personal, property and economic injury, damage or loss, either direct or indirect, arising from the use, misuse, or failure to determine the appropriate use of any Factory Five product.

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Factory Five Racing, Inc. is not connected to the holders of these marks.

## Safety Tips

Read the manual. It is at least a good guide and place to start.

Don't take short cuts.

Before starting work, make sure you have the proper tools, the required parts, and sufficient space for the job. If you damage any parts, it will probably be because they were either not stored properly or, the wrong tool was used to install them.

Don't work when you're too tired or upset. The car you will be building is capable of supercar levels of performance, and your life depends on the quality of your workmanship.

Never work under a raised car unless it is well supported by stands intended for that purpose. Never work under a car supported by a jack.

Always observe good safety practices such as the use of eye protection, protective clothing, and gloves.

Keep the battery disconnected whenever you work on fuel or electrical systems and always keep a fire extinguisher handy.

Don't allow children in the work area.

Partially assembled cars attract a crowd. Keep garage doors closed or mark off work areas.

Make sure that all electrical equipment is grounded. If working alone, have someone check on you periodically.

Work in a well-ventilated and well-lighted area.

Use portable safety lights for under-carriage work. Never use an exposed bulb type light.




Clean your build area after each assembly is completed. This will speed your build process as it ensures that you know where your tools are and prevents tripping injuries.

It is impossible to anticipate all of the possible hazards. Care and Common Sense will prevent most accidents

## How to use This Book

This Assembly manual is intended to help you wire your Factory Five Kit. This book will not explain such things as radio or power window installations. A secondary purpose of this book is to use it as reference for owners that want to do maintenance work on their cars or for those that purchase finished cars, to understand their cars better.

This manual was written with the average weekend mechanic in mind. It is best to follow the manual step by step but if there is a part missing from the kit move to the next section and come back to it later when the part is available. If the instructions are followed then the resulting car should be a great handling sports car.

I C O N   K E Y	
	Valuable information
	Tools needed
	Parts Needed

We have included an Icon key as the beginning of each section that contains useful information for each assembly that details the tools needed for that assembly, what assembly in the kit parts are packaged in that are needed for that step and any useful information or warnings.

## What You Get

This chassis harness has been especially designed by Factory Five Racing and Ron Francis WireworksT for use in the Roadster and Coupe. Designed to allow easy installation, each end of the loom wrapped harness is labeled with its location on the car and terminated with the appropriate connector. Step by step instructions including color wiring diagrams explain how and where to install the harness.

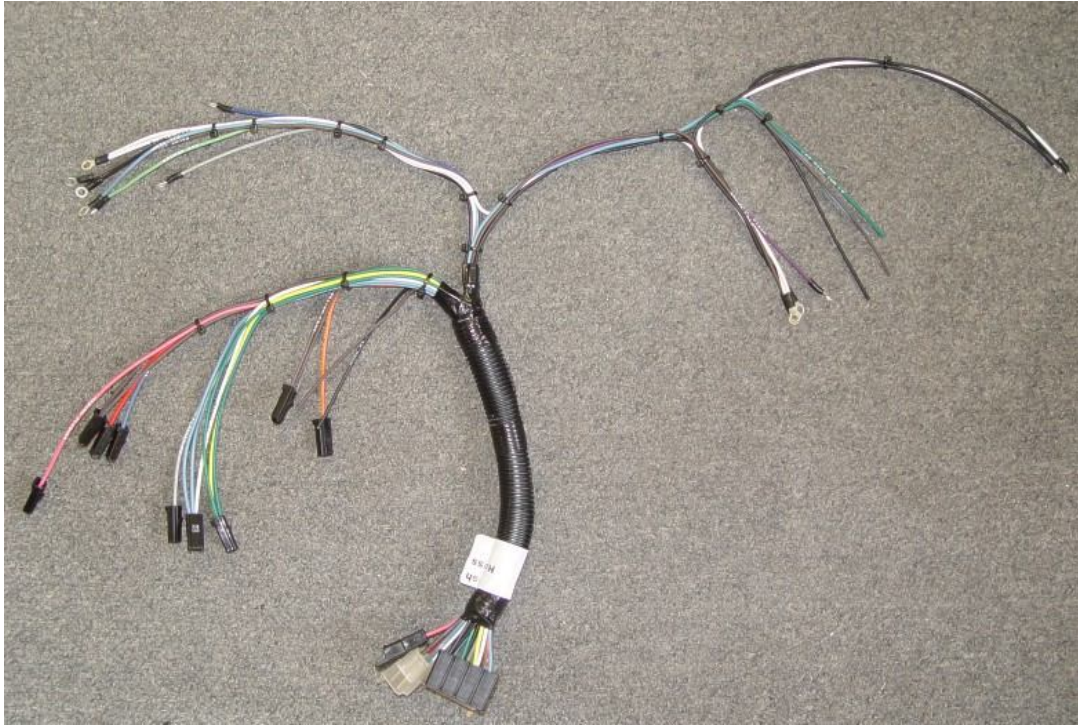
The fuse panel uses standard ATC blade type fuses and includes 11 fuses, 3 relays and 2 flashers. Wires routed to the correct locations have been included for wipers, heater and radio. Weather pack plugs are used at the front and rear of the car to connect the lights. A fuel inertia switch has been wired into the fuel pump circuit for added safety. A gauge wiring harness has been included for wiring the standard gauge layout. The harness also has dedicated power wires if you plan on running Fuel Injected using our available fuel Injection harness.

This is the ultimate chassis harness.



## Parts Included

Dash Harness



Main Harness



Front Harness



Rear Harness





## Tools Needed

The following lists of the tools and supplies that are needed to build your kit. The “helpful” items are not crucial to the assembly but make life easier. Home Depot HUSKY®, Sears CRAFTSMAN®, and Snap-On® tools are all guaranteed for life and we’ve found them to be more reliable over discount tools.

Drill

Drill bits ( $\frac{3}{32}$ ”,  $\frac{1}{8}$ ”,  $\frac{9}{64}$ ”,  $\frac{3}{16}$ ”,  $\frac{7}{32}$ ”,  $\frac{5}{16}$ ”)

Razor knife

Wire stripper/crimping tool

Wire cutters

Electrical tape

Sand paper

$\frac{1}{4}$ ” nut driver

$\frac{3}{8}$ ”,  $\frac{7}{16}$ ” wrench

$\frac{5}{32}$ ” hex key

1 $\frac{1}{4}$ ” Hole saw

$\frac{1}{4}$ ” nut driver

Tin snips

Rivet tool

The thing between your ears

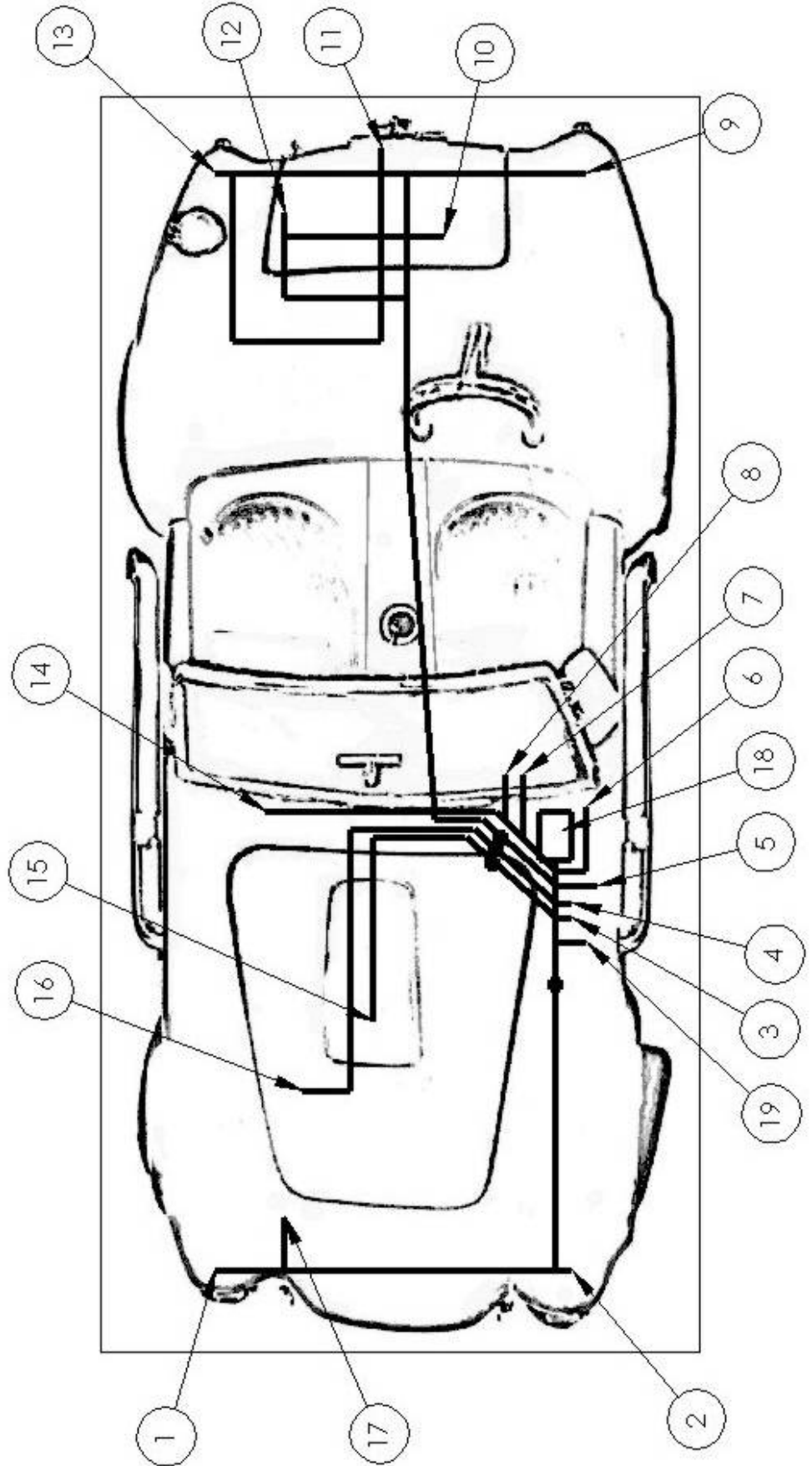


## Pre-installation Information

- Read all of the instructions thoroughly before starting the actual installation. If you have any technical questions concerning this installation please call and ask for our tech department.
- For EFI connections please read the EFI section.
- Some aluminum pieces and other parts should already have been mounted on the frame. Some of these mounted pieces may not be shown in all of the pictures.
- Route the harness away from sharp edges, exhaust pipes and moving parts.
- Have all needed tools and connectors handy
- When crimping wires, select the correct size crimper for the wire.
- The layout in these instructions is specific for the Roadster but the basic layout locations are the same for the Coupe and Hot Rod. See the Hot Rod assembly manual for more routing instructions.

# Wiring Harness Layout

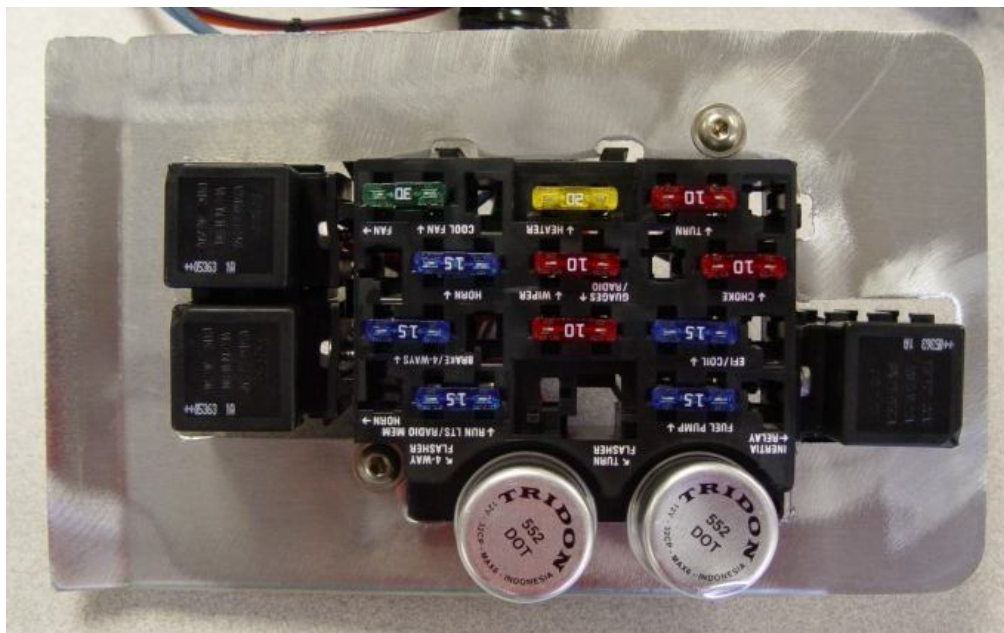
1	Passenger headlight/turn signal	10	Fuel level plug
2	Driver headlight/turn signal	11	License plate light
3	Brake Switch	12	Fuel pump plug
4	Clutch safety wires	13	Passenger tail lights
5	Inertia Switch	14	Radio/Heater/Wiper wires
6	Headlight Switch	15	Gauge sending unit wires
7	Ignition Switch	16	Alternator plug
8	Dash/Gauge plugs	17	Electric fan plug
9	Driver tail lights	18	Fuse panel
		19	EFI power/Coil wires



# Installation Instructions

## Main Harness

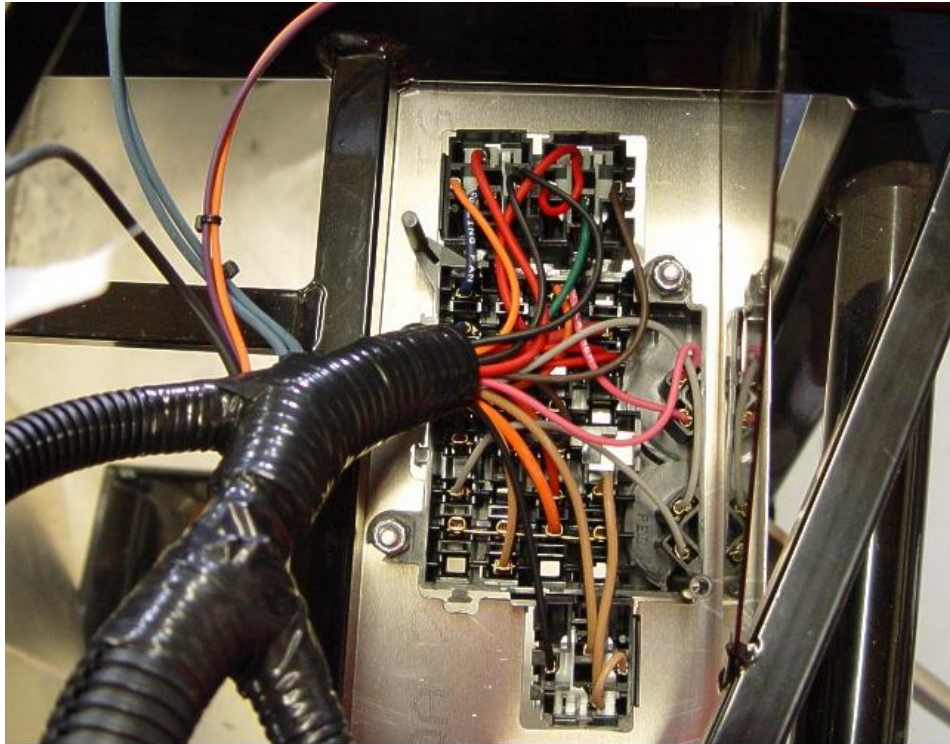
Find the main harness (has the fuse panel) in the box. Remove the two flashers from the panel. Attach the fuse panel mount to the fuse panel using the ¼” screws and locknuts included.



Fuse panel mounted in holder.

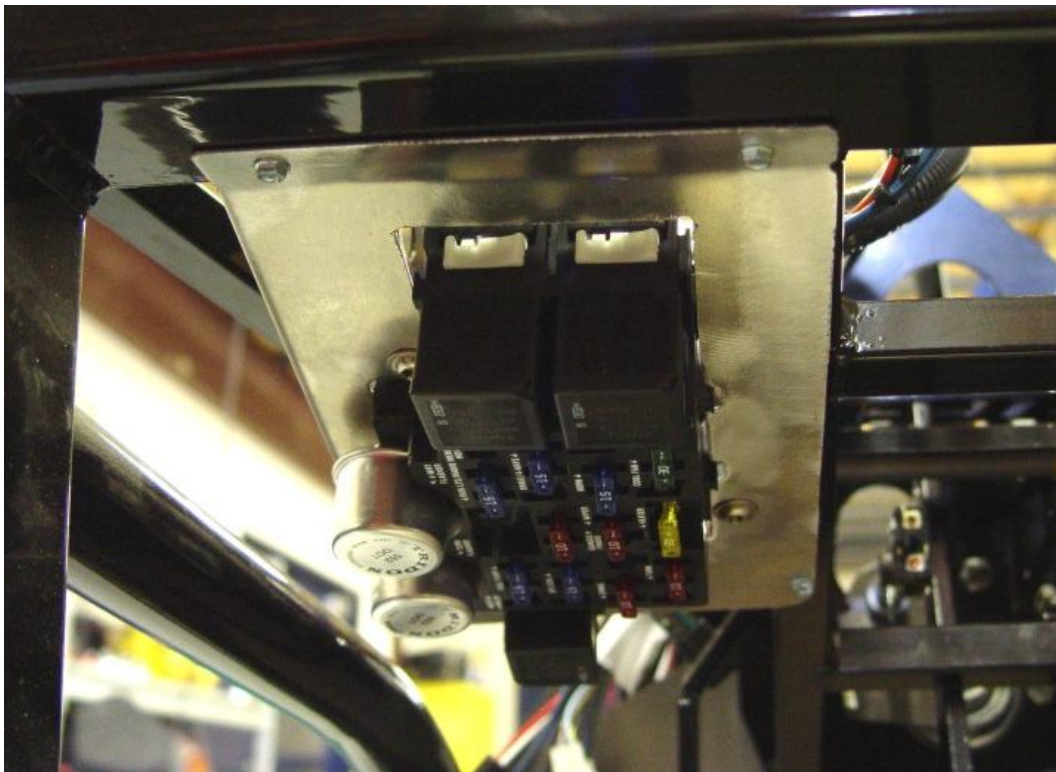
Lay the main harness on the frame so that the fuse panel hangs to the left of the ¾” tubes in the pedalbox area.





Fuse panel between the pedalbox tubes and the 2"x 2" tube.

Attach the fuse panel mount to the 2"x 2" tube and the 3/4" tube as shown below using the #6 self tapping screws that originally attached the aluminum panels to the frame.

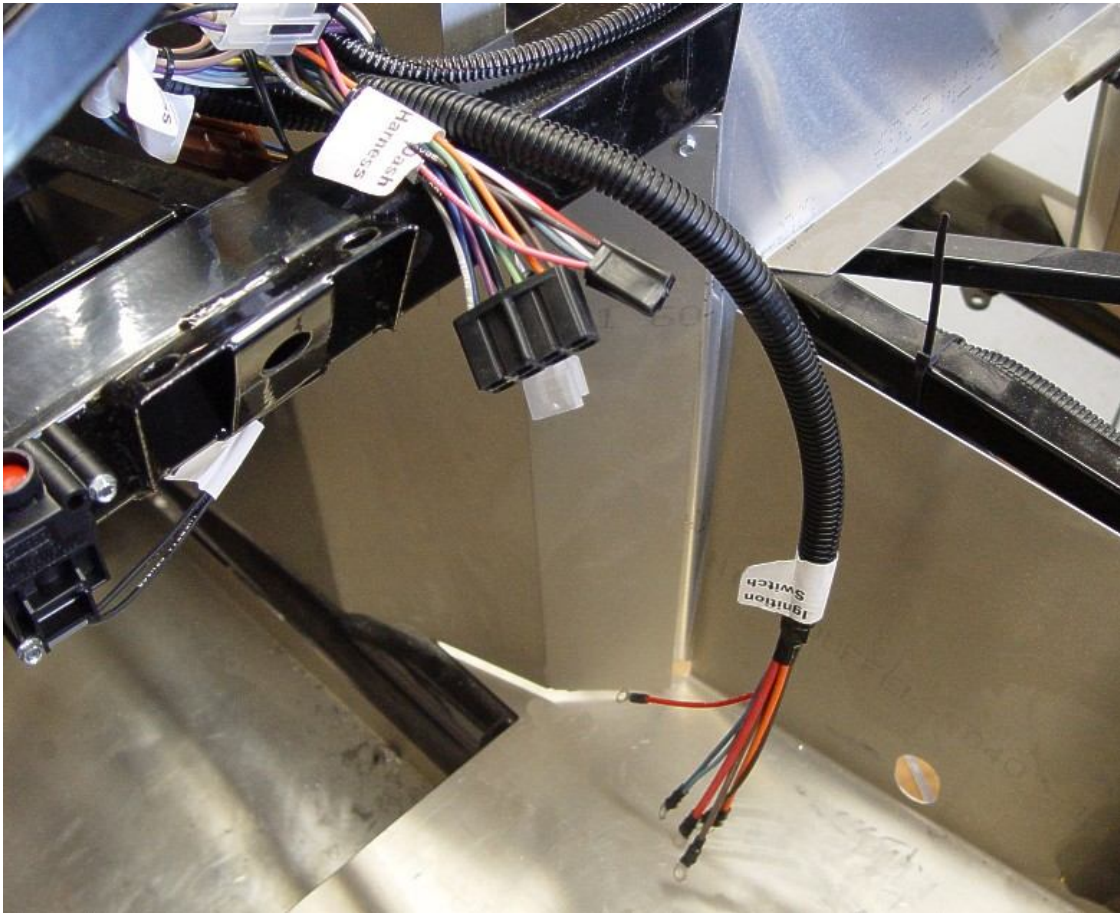


Lay the front harness connectors on top of the pedal box.



Pull the dash connectors and ignition switch wires into the cockpit area so that they hang next to the steering shaft.

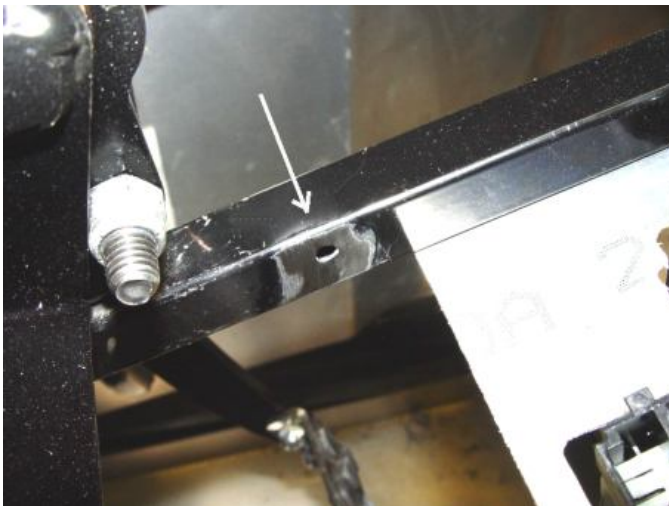




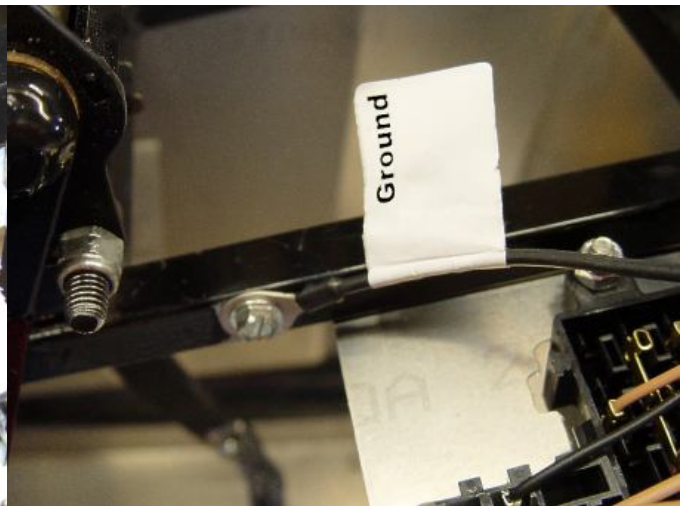
Run the radio/wiper harness wires along the top of the 2"x2" tube towards the passenger side. Attach the ground wire near the fuse panel to the frame. Either drill a hole, remove any frame coating from the area and screw the ground in or, place the ground between the frame and the pedalbox and attach the pedalbox bolt.



Make sure that any coating on the frame is removed before attaching the ground so that a good contact is made.



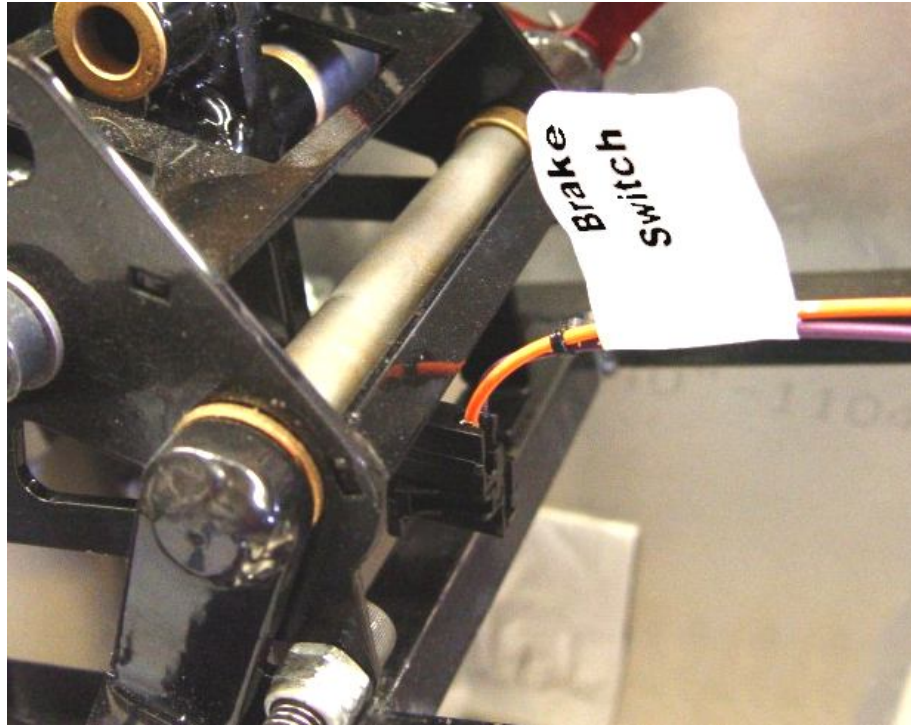
Frame coating ground off.



Ground wire attached.

## Brake switch

Attach the brake switch connector to the brake switch on the brake pedal.



## Column connector



This is for use with the Hot Rod steering column only.



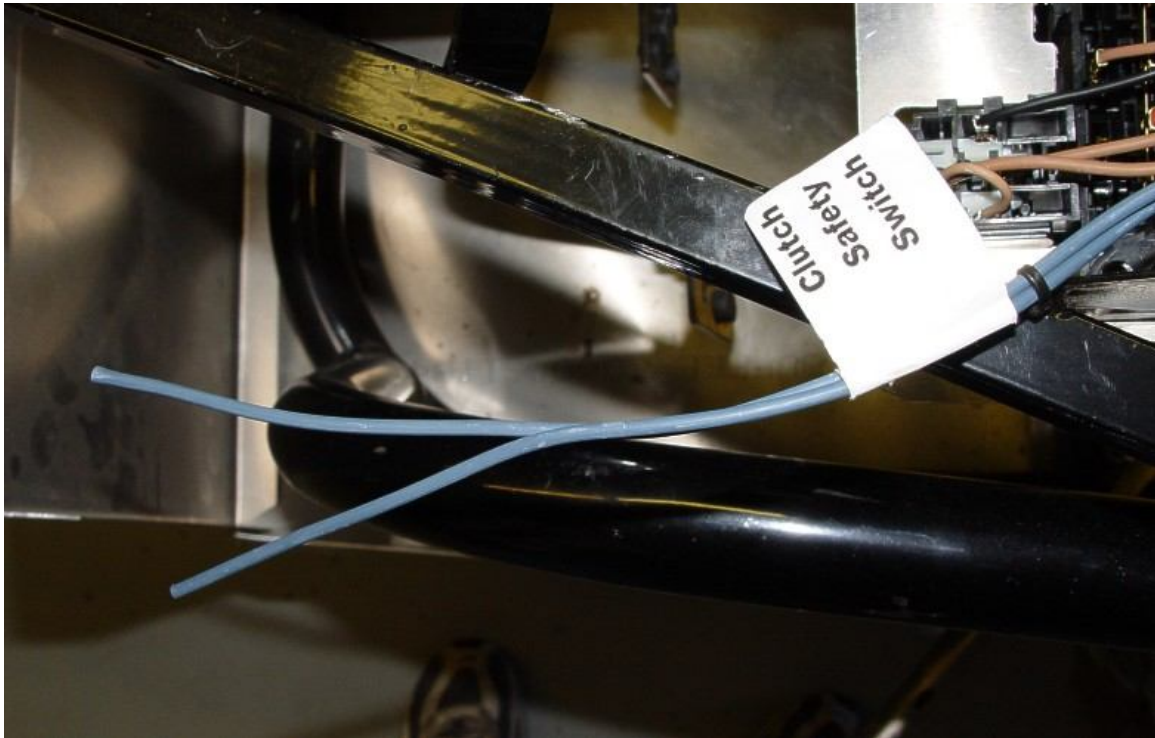
Refer to Hot Rod assembly manual instructions if connecting otherwise, do not use.

## Clutch safety Switch

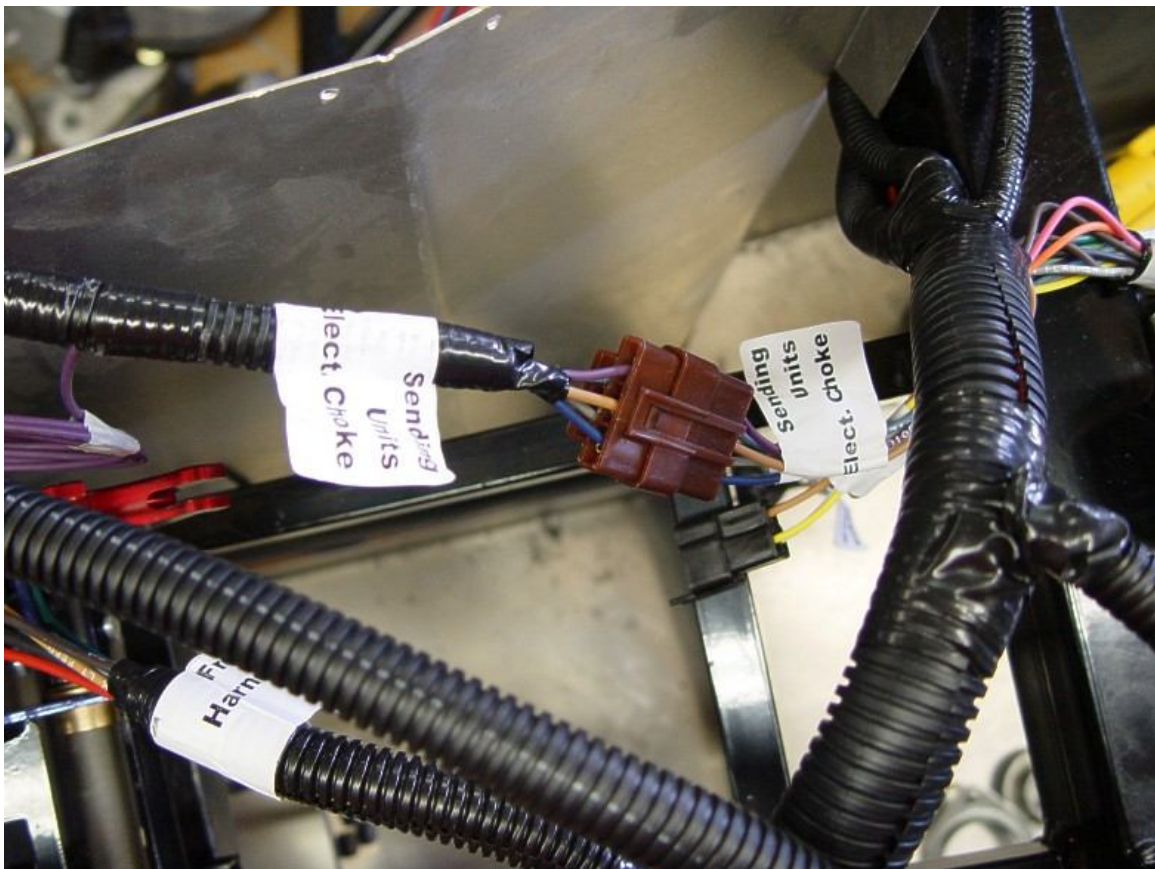


If you are going to use a clutch safety switch (used to prevent starting the car while in gear), attach the two wires to your switch. Another option if the pedal box does not have a switch is to use a momentary dash switch that must be used at the same time as the key. If a switch is not going to be used, connect the two wires together by either soldering the wires or using a butt connector from the “misc. electrical components” assembly in the Factory Five Racing main kit pack.





Locate the gauge sending unit wire harness in the box and attach it to the sending unit connector on the main harness near the fuse panel.



Sending unit connector attached.

Run the alternator and gauge sender wires through the hole in the inside wall of the driver footbox. This can be done by sliding the harness down from the top into the hole.



## Carbureted Engine

Run the coil wires with the alternator wires and gauge sender wires for use with the coil.

## Fuel Injected Engine



If running a Coyote Engine, refer to the Coyote Fitment instructions for Roadster or Hot Rod.

Leave the coil and crank wires in the footbox and connect them to the power wires for the EFI harness according to the EFI harness instructions.

The COIL/EFI wire is a KEY ON - RUN POWER wire.

The EFI CRANK POWER wire is the START POWER wire

If the EFI harness uses its own wires for the fuel pump, remove the fuse for the fuel pump from the fuse panel and cut and solder the fuel pump wire from the EFI harness onto the chassis harness wire.

Connect the Speed sensor wires to the EFI wiring harness.

## Starter Solenoid

Decide where you would like the Starter solenoid to be located, behind the engine or near the Master cylinder.

Run the starter solenoid wires to the desired location.

Attach the starter solenoid to the frame.



Connect the wires to the starter solenoid according to the wiring diagram.

The starter wires can be hooked up now. There are two different starters that were used and the wires are run differently for each.

On the older starters the cable runs from the starter to the empty post on the solenoid.

On the newer starters the heavy starter wire connects to the same terminal as the battery cable and the smaller 8-10 gauge wire runs to the empty terminal. The newer starters can be recognized by their smaller size and solenoid mounted on top.

## Alternator

Run the alternator wires along the top of the engine to the alternator.

Attach the alternator plugs to the 1987-1993 Alternator.



If you are using a one-wire Alternator, cut the large plug off the wires and attach two 10-12 ga. Ring connectors to the two large wires and attach them to the post on the alternator. The other plug and wires are not used.



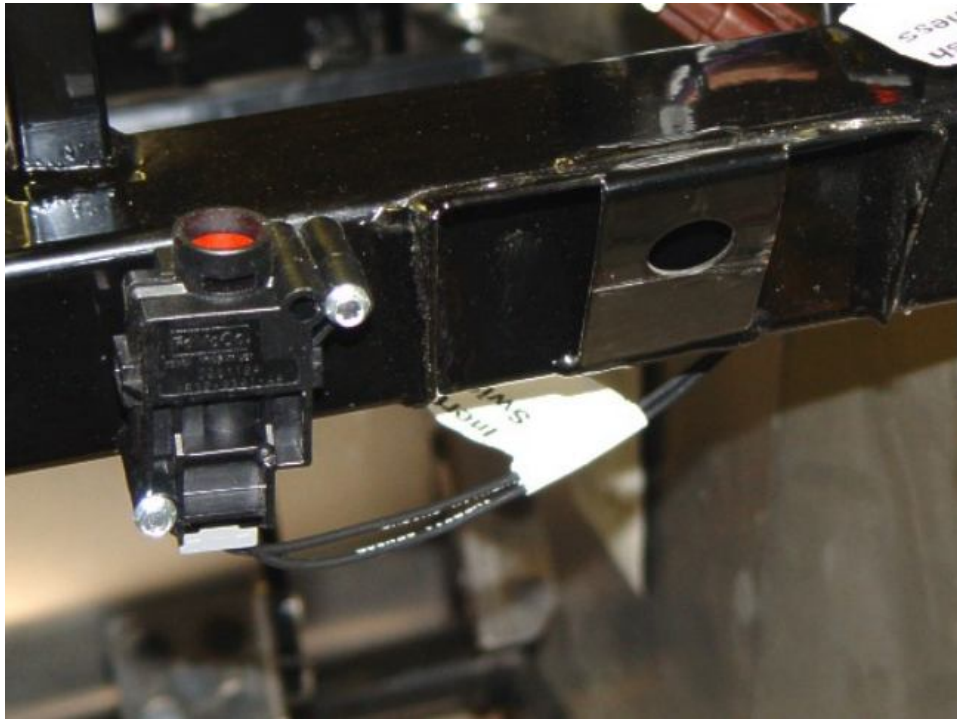
If you are using an EFI harness with the chassis harness, hooking the Alternator ignition power (#22) is not necessary.



If you would like to have a light on the dash indicating that the alternator is charging, you will have to run another wire to the smaller alternator plug and put a dash light in line with the end connected to the ignition switch and put a 510Ω 1 watt resistor between the two light wires. Set-up this way, when the engine is started the light will turn on then go out. If the Alternator stops working, the light will stay on.

## Inertia Switch

Use the fuel inertia cut-off switch (attached to the main harness near the fuse panel) as a guide and mount the inertia fuel cut-off switch to either the front of the 2"x 2" tube or the back as shown, using the #8 self tapping screws provided. Use a cordless drill with a ¼" nut driver. The switch should just fit on the tube. Do not mount the switch over the stamped chassis numbers.

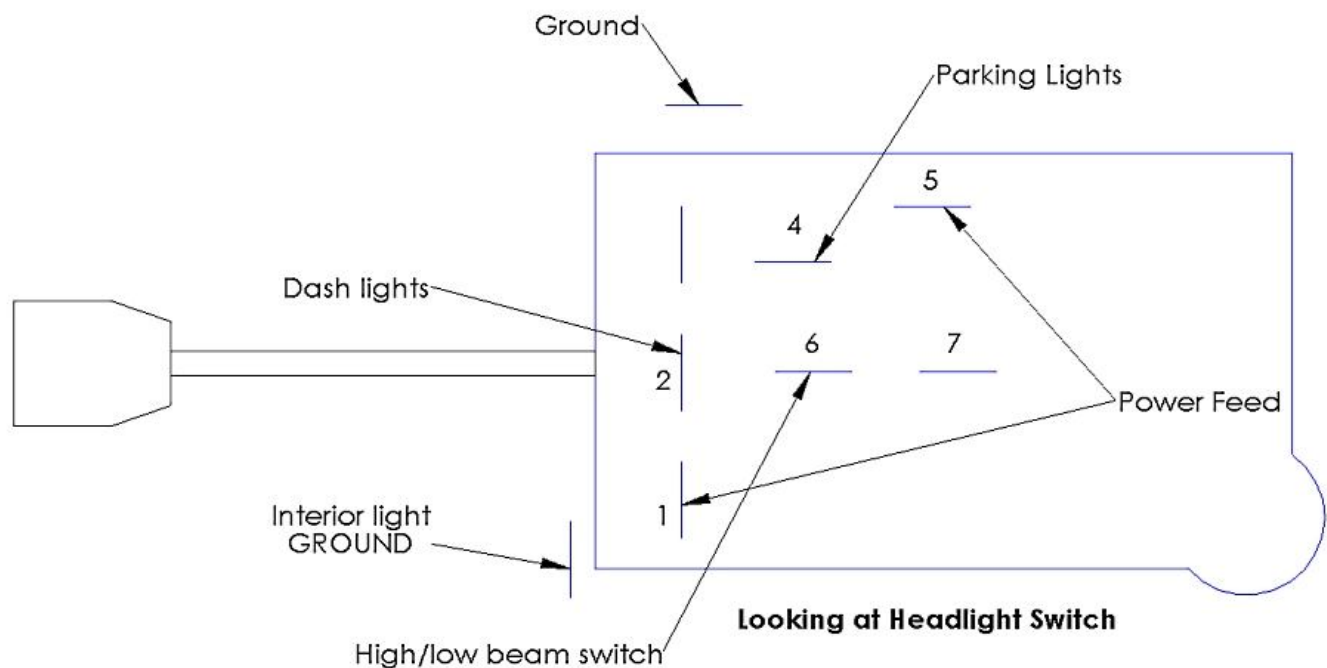


Fuel Inertia switch mounted to 2"x 2" tube

## Ignition Switch

Attach the ignition wires to the ignition switch using the wiring diagram as a guide for the correct post for the wire.

## Headlight switch



Attach the headlight switch to the main wiring harness plug.



## Heater

If used, connect the A/C or heater power wires to the A/C or heater.

## Radio



This harness does not have any speaker wires or amplifier power wires in it

If used, connect the correct power wires and ground to the correct wires on the radio.

## Wiper

If used, connect the power and ground wires to the correct wires on the wiper motor.



The Factory Five wiper kits come with a switch and additional wires for the high, low, switched 12v and park functions of the wiper motor

## Underdash Light



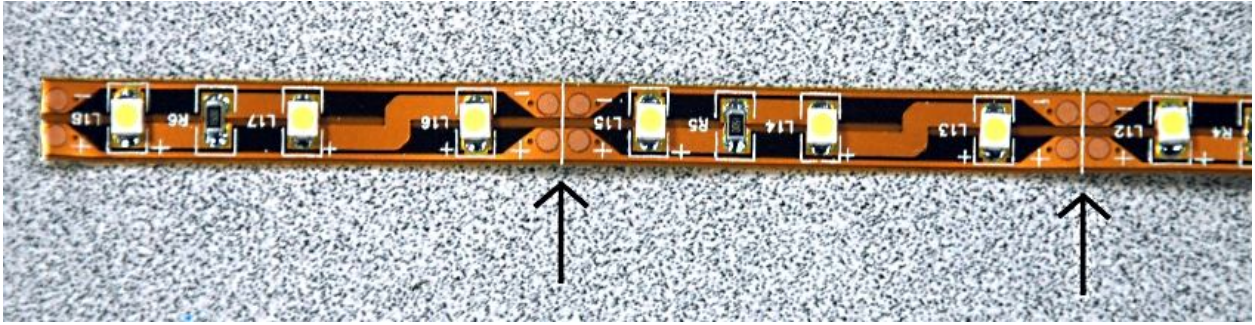
The dash light provided in the complete kits and the Hot Rod can be cut into multiple pieces if lighting is desired in each footbox and under the dash.



### How to cut the LED light strip



If you choose to cut and spread the lights around, wires will need to be soldered to each piece to connect them in series.



## Wiring

Connect the power to a 12v source such as the electric choke if not using a carburetor.  
Attach the ground wire to the headlight switch courtesy light ground wire.

Attach the LED strip to the bottom of the dash or to the frame tube going across the cockpit.

## Rear harness

Find the rear harness in the box.

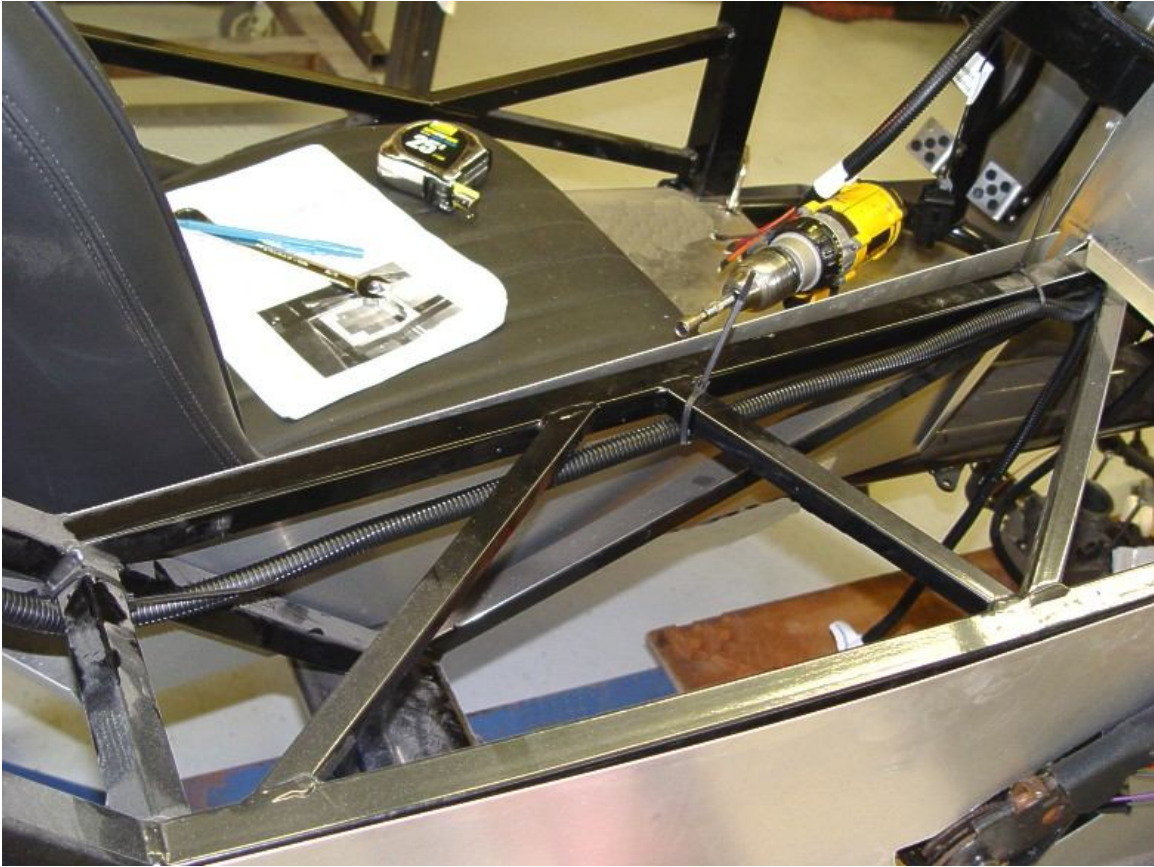
Connect the rear harness connector to the connector on the main harness.

Run the rear harness out of the footbox using the hole under the 2"x 2" tube on the inside footbox wall. This can be done by sliding the harness down from the top into the hole. Depending on where the starter solenoid was mounted, this hole may need to be enlarged to fit all of the wires.

Using zip ties included with the kit to hold the harness in place, run the harness along the driver top transmission tunnel tube and up to the 2"x 3" tube at the back of the cockpit.

Connect the speedometer sender plug to the sender in the transmission.





Rear harness running along the transmission tunnel.



Rear harness going up to 2"x 3" tube.

Run rear harness down the center of the rear frame  $\frac{3}{4}$ " tubes to the back of the frame. Make sure to leave enough harness at the back of the 2"x 3" tube (arrow below) so that the aluminum for the trunk can fit properly



Rear harness going to back of frame.

At the back of the frame, run the harness to the correct side of the frame as marked. The harness "Y" should be at the back of the frame. If it is not, you may have too much harness in the footbox or it may be too loose in the transmission tunnel.





Harness "Y" at the back of the frame.



Driver side rear harness

Passenger side rear harness

Attach the fuel level sender plug and fuel pump plug to the correct connectors on the fuel tank.

## License Plate Wiring

### Roadster

Run the license plate light wires from the passenger rear corner up the outside of the trunk to the arched trunk tube. Run the wires along the back of the arched tube to the center of the trunk for now.

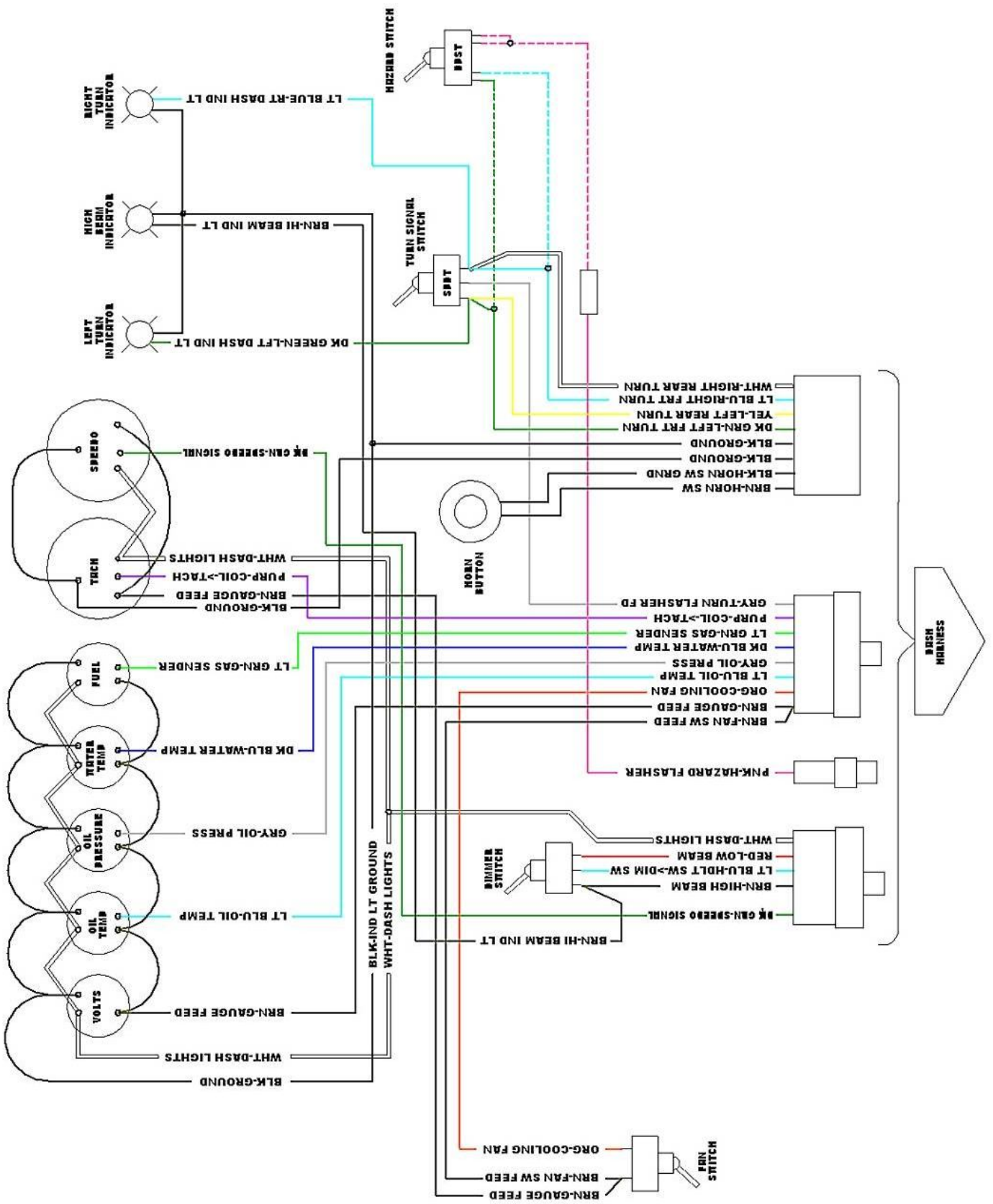


Rear harness running up to the top of the trunk.













### **Coupe**

Leave the license plate wires at the passenger side rear for now.

If not already done, mount the trunk side aluminum pieces.

Permanently attach the harness to the frame using the insulated clips and  $\frac{3}{16}$ " rivets supplied with the kit.

### **Hot Rod**

See assembly manual.

### **Tail Lights**

The rear light connector is the black four hole connector shown below:



Rear light connector.

Once the body has been painted and is ready to get put on, install the Taillights in the body.

**Roadster tail light wires:**

Black – Ground

Red – running lights

Green – stop/turn signal

Attach the wires from the lights to the connectors included with the wiring harness. Connect the common wires such as the grounds together from both lights. Use the following pictures as a guide to assemble the weatherpack connector.



Using the wiring diagram or the harness on the frame as a guide, insert the connectors into the correct opening in the plastic casing.

## Gauge Sending Unit Harness

If not installed, install the sending units for the gauges in the engine as described in the gauge installation instructions.

Run the harness wires down the center of the engine to the gauge sending units.

## Electric Fan



There are two ways to run the electric fan, use a dash switch to turn it on and off and keep an eye on the water temperature gauge or, use a thermostatic switch to turn the fan on at 185° and off at around 150°. The harness has been set-up for both ways.

### Switch controlled

Ground the sending unit wire marked "Fan Thermo switch".

Connect and attach the fan switch as instructed in the dash wiring section later.

### Thermostat switch controlled



The thermostat switch is included with complete kits and the Hot Rod kit.



In your engine block or cylinder head locate a coolant access point to install the thermostat switch and thread it in.



Attach the “Fan Thermo switch” wire to the thermostat switch.  
Do not use the dash switch, connect the leads for the dash switch together using a butt connector.  
Follow the remaining fan wiring in the front harness.

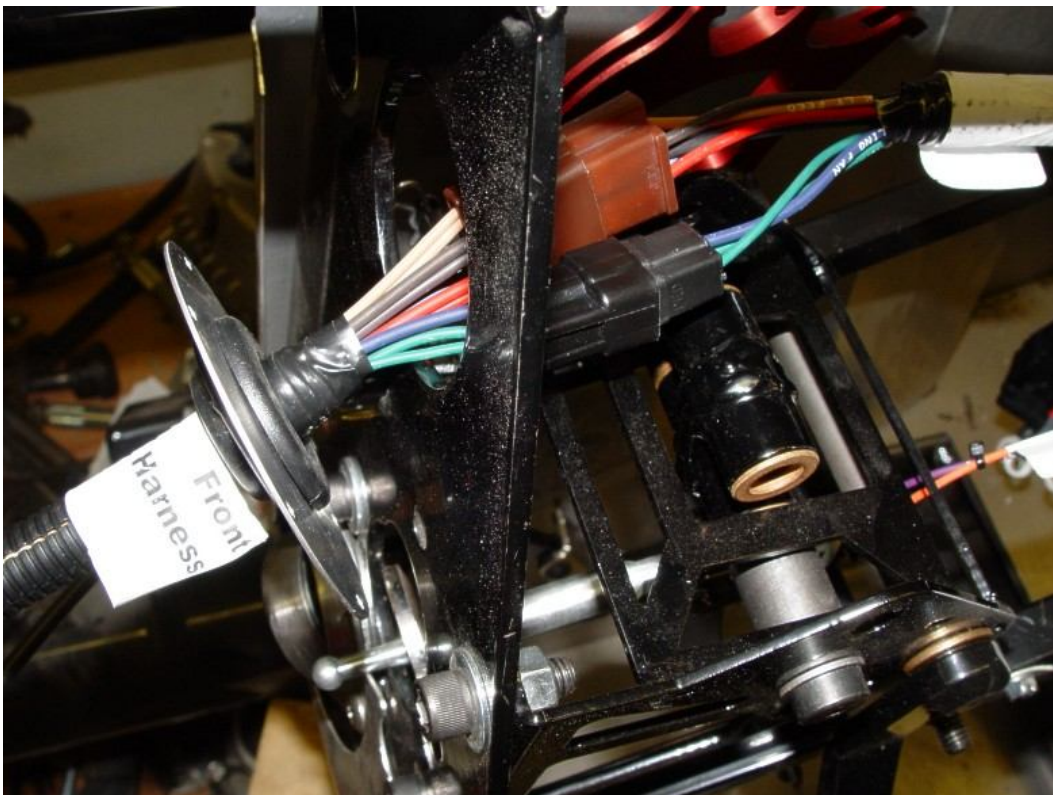
### **Front Harness**

Drill a 1.25” hole in the block off plate for the front of the footbox that is included with the kit.



Find the front harness in the box.

Pass the entire front harness connector through the block off plate and insert the grommet into the hole in the plate. The hole is too small for the two large connectors at the end close to the grommet.



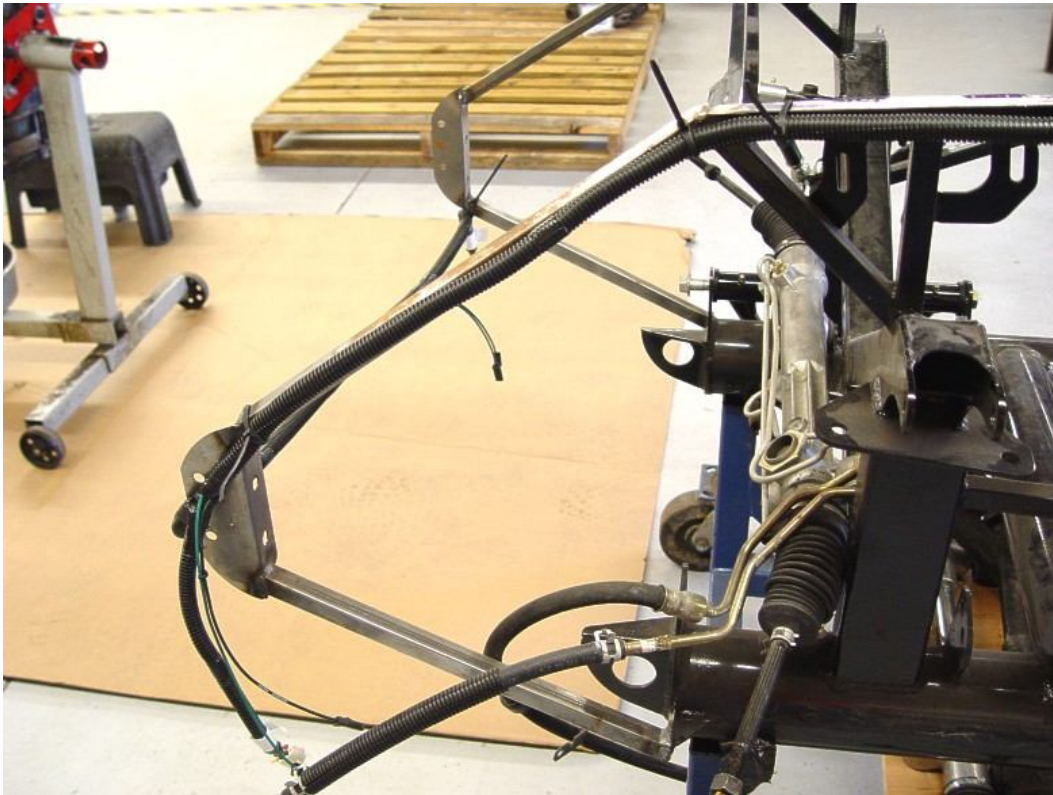
Attach the two harness plugs to the correct plugs on the main harness.

Attach the block off plate to the front of the footbox using silicone and rivets.

Using zip ties to hold the harness in place, run the front harness along the top  $\frac{3}{4}$ " tube to the front of the frame. Make a notch in the top of the "F" panel for the harness to pass through.







Front harness going down to the front of the frame.

Attach the harness to the channel along the bottom of the radiator.  
Attach the harness to the front of the frame on the passenger side.



Front harness passenger side. Note fan wires also shown.

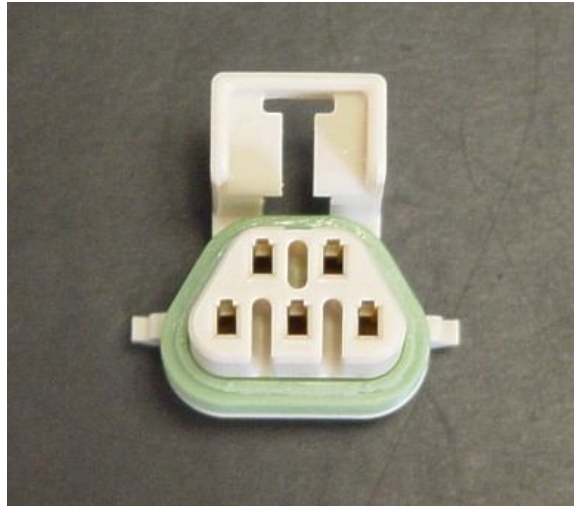


If installed, attach the fan to the fan connectors on the harness.

Permanently attach the harness to the frame using the insulated clips and  $\frac{3}{16}$ " rivets in the kit.

## Headlights/Turn signals

The front light connector is the white five hole connector shown below:



Front light connector.

Once the body has been painted and is ready to get put on, install the head lights and turn signals in the body.

Attach the wires from the lights to the connectors included with the wiring harness. Connect the common wires such as the grounds together from both lights. Use the following pictures as a guide to assemble the weatherpack connector.



Seal loaded on stripped wire  
(wire stripped 5.0mm or 3/16")



Terminal, seal and wire  
(positioned to be crimped)



Using the wiring diagram or the harness on the frame as a guide, insert the connectors into the correct opening in the plastic casing.

## Electric Fan

Connect the fan wires to the harness.

## Dash Harness/Gauges



Additional holes will need to be drilled in order to install the fan switch (if not using a thermostat switch), high/low beam switch and turn signal switch in the dash. Keep in mind when deciding where to place different switches, how hard it is to reach them and if they will interfere with your hands when they are on the steering wheel. The described switch layout in these instructions requires drilling the fan switch hole (if not using a thermostat switch) between the ignition and headlight switch hole and drilling the Turn signal and high/low beam switch on the far side of the headlight switch. It is easier to drill these holes before covering the dash or at least before installing the gauges. If you are using a thermostat switch in the engine for the electric fan you would not need the dash switch unless you want to use it as an over ride switch.



This harness is set-up to use the turn and high beam indicator lights when positioned above the steering column.



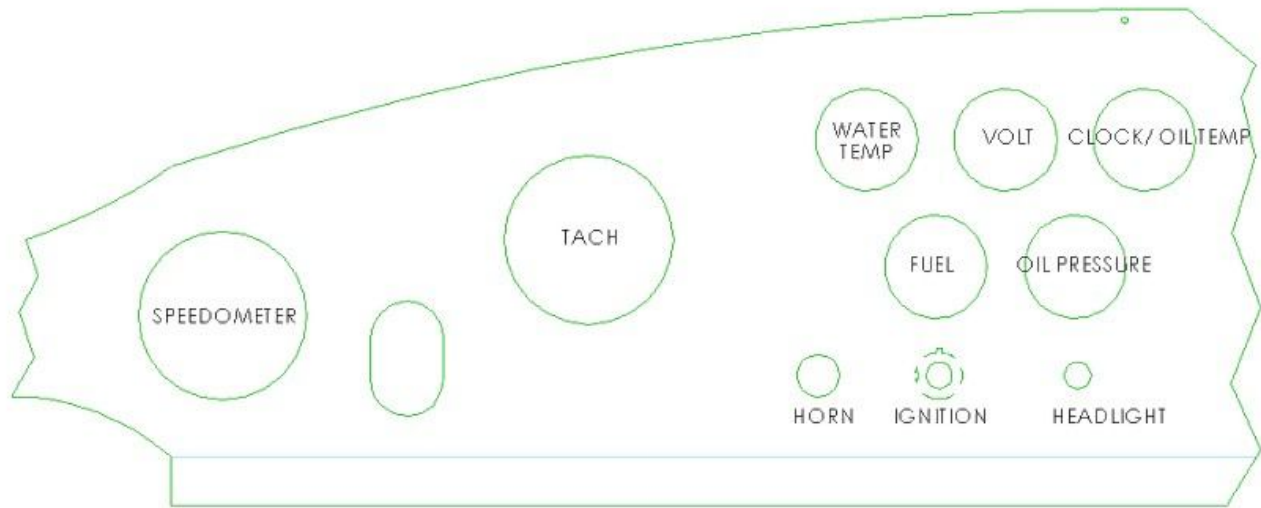
In order to install the ignition switch to fit the laser cut hole correctly it is necessary to put one cut in the middle of each of the dashed cut sections and use a pair of pliers to bend the metal back and forth until it breaks.



The ignition switch and headlight switch have longer wires and can be located in other positions that the ones used in this layout. The headlight switch can go on the other side of the speedometer if desired.



These install instructions are written for the Autometer Ultra-lite gauges. If using the Factory Five Vintage gauges, use the instructions provided with them, the installation is much easier.

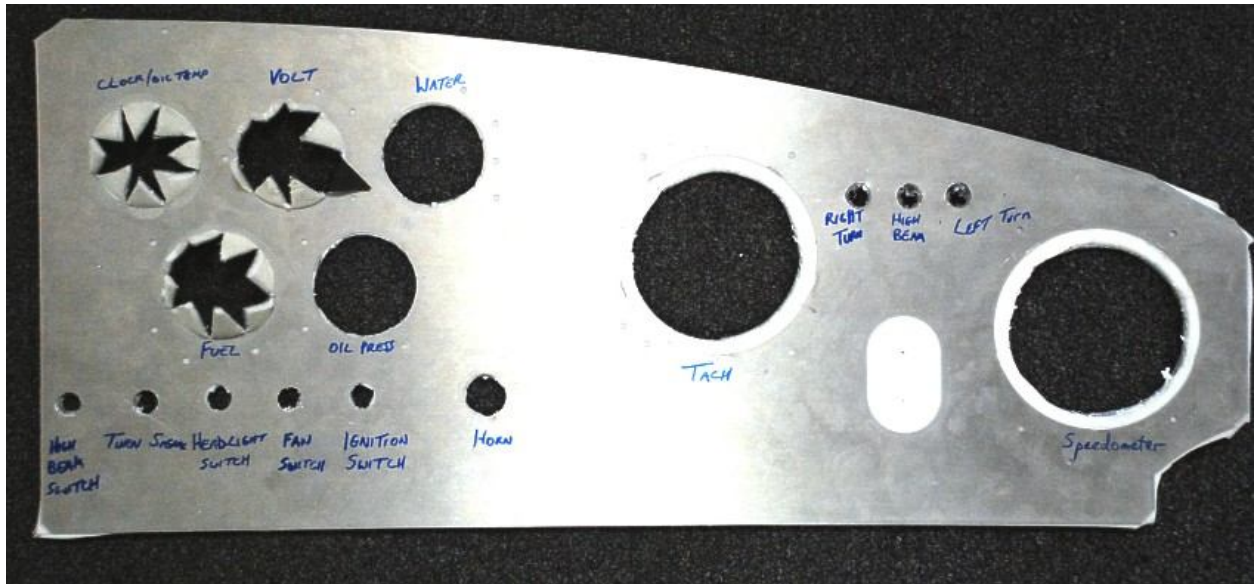


Standard Roadster lasercut gauge layout.



Possible switch/key layout.

Write the names of the gauges next to their holes on the backside of the dash for easier and correct installation.

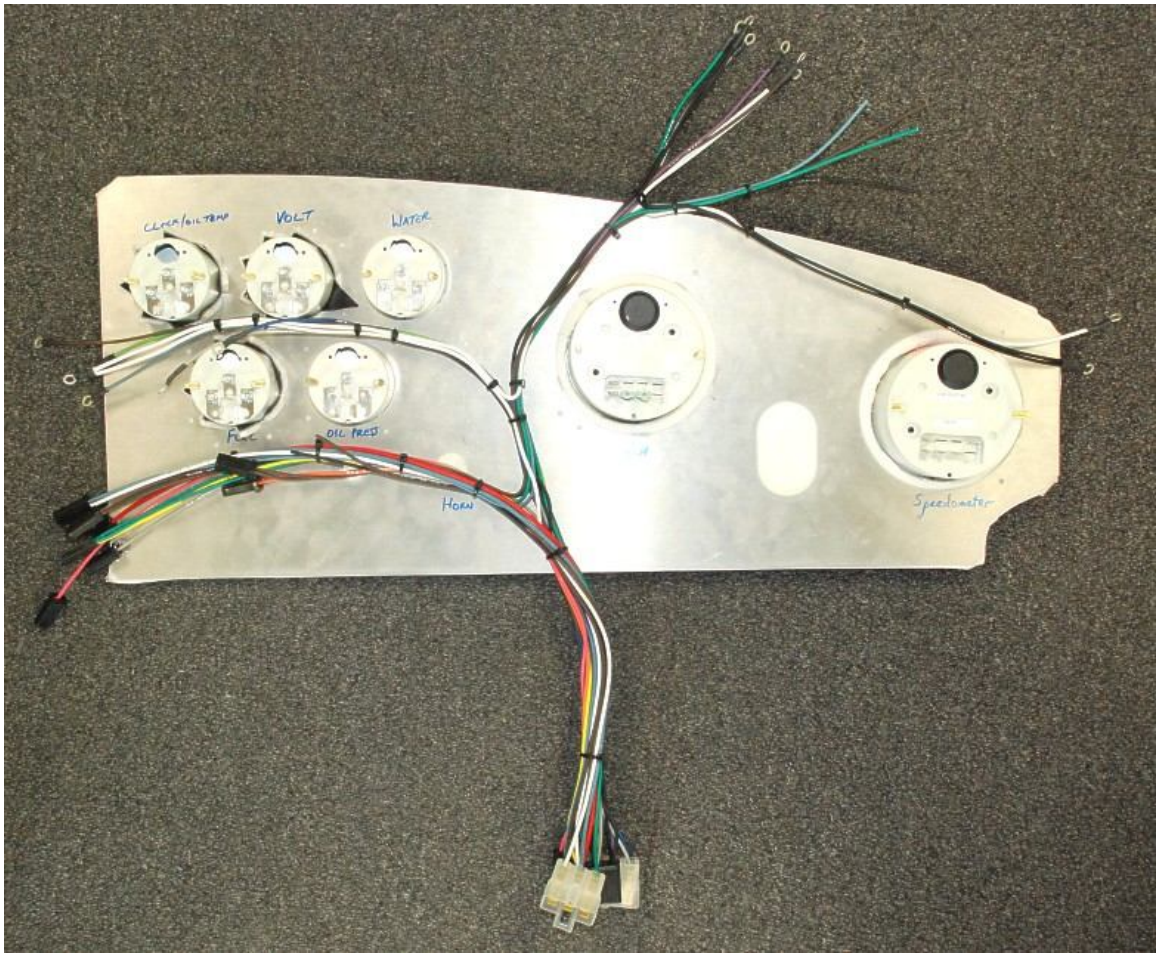


Install the gauges in the dash using the gauge instructions and the standard layout.

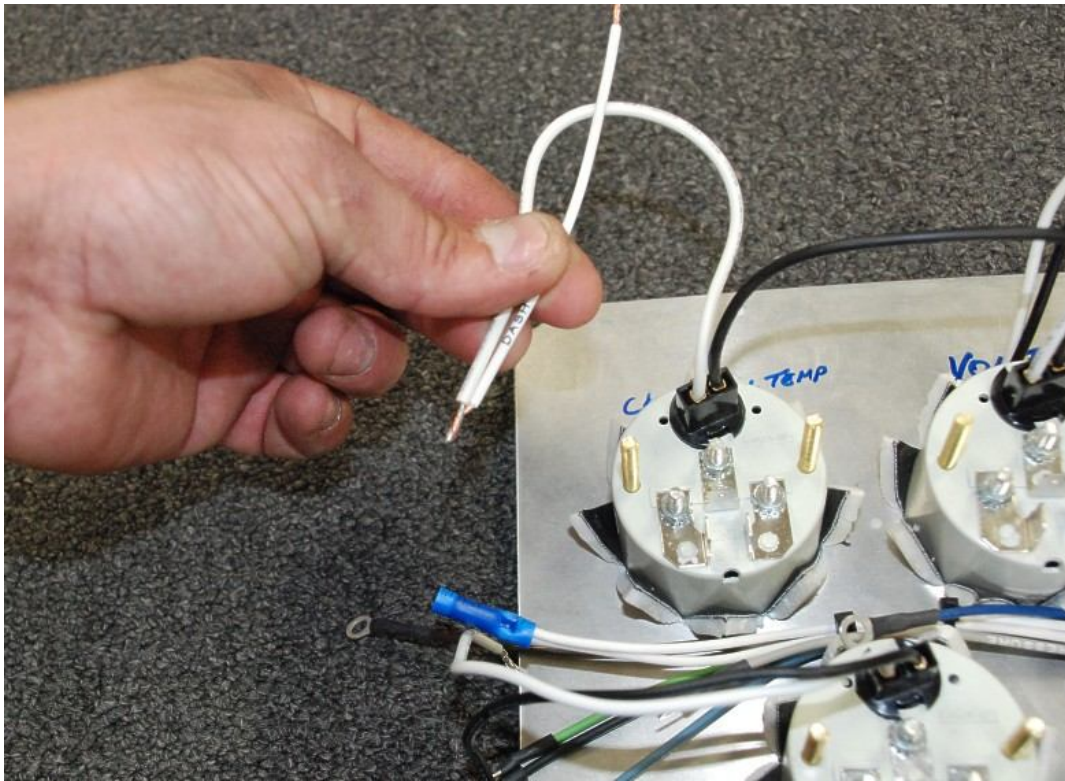


Lay the gauge harness around the gauges as shown below:

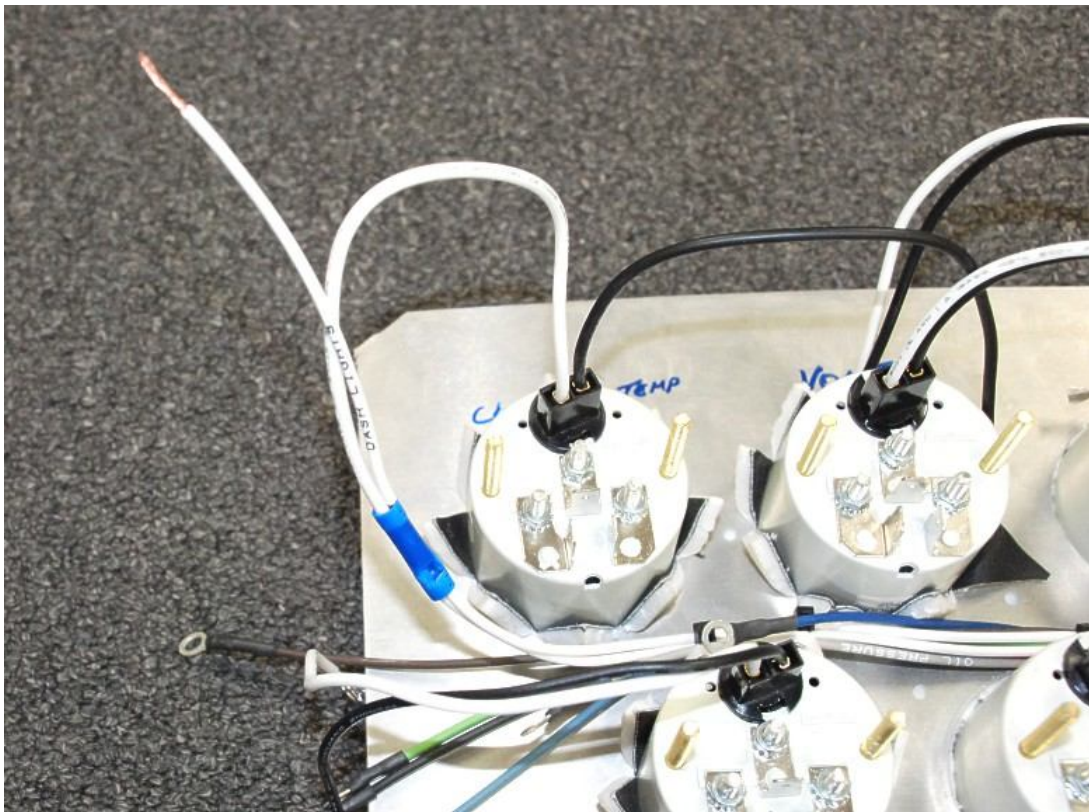




Twist the gauge light power wire from the Oil Temp gauge with one of the small white jumper wires.



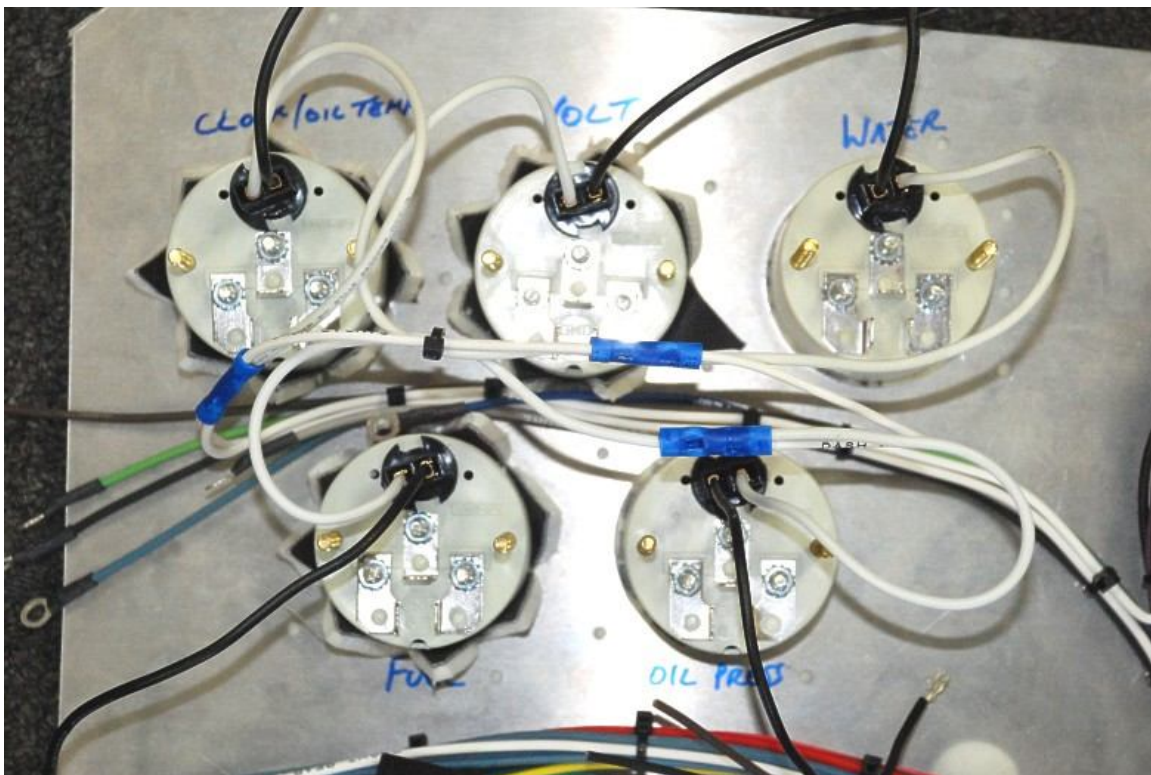
Connect the twisted wire to the white gauge light power wire.



Connect the remaining small gauges in series using the small white jumper wires included. Solder the wire connections or use butt connectors. If necessary, use the butt connectors from the misc. electrical components assembly in the Factory Five Racing main kit pack. If using Butt connectors, twist the

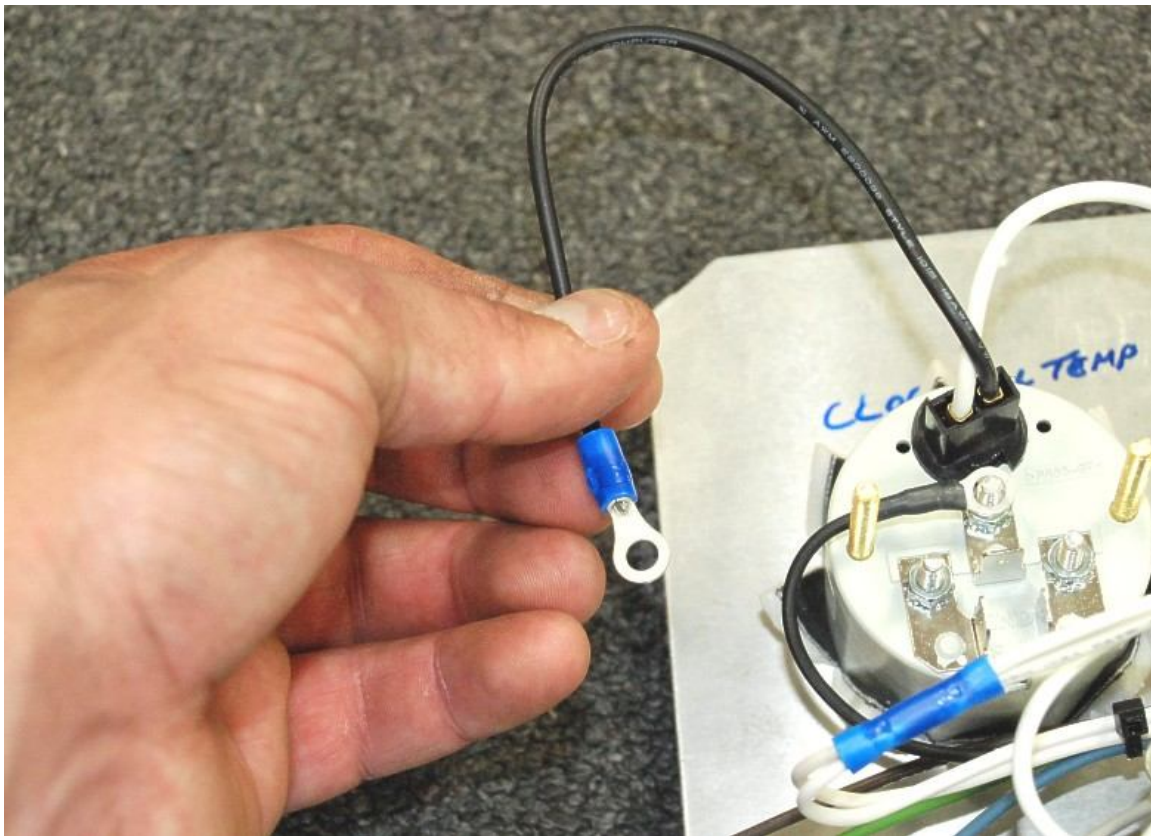


small jumper wire from the oil temp/clock with the light wire from the volt gauge and insert into one side of the butt connector and twist the gauge light wire from the water temp gauge and another jumper together and insert into the other side of the butt connector then repeat for the other small gauges.



Remove all of the small nuts on the small gauges for the connections using a 7mm socket.

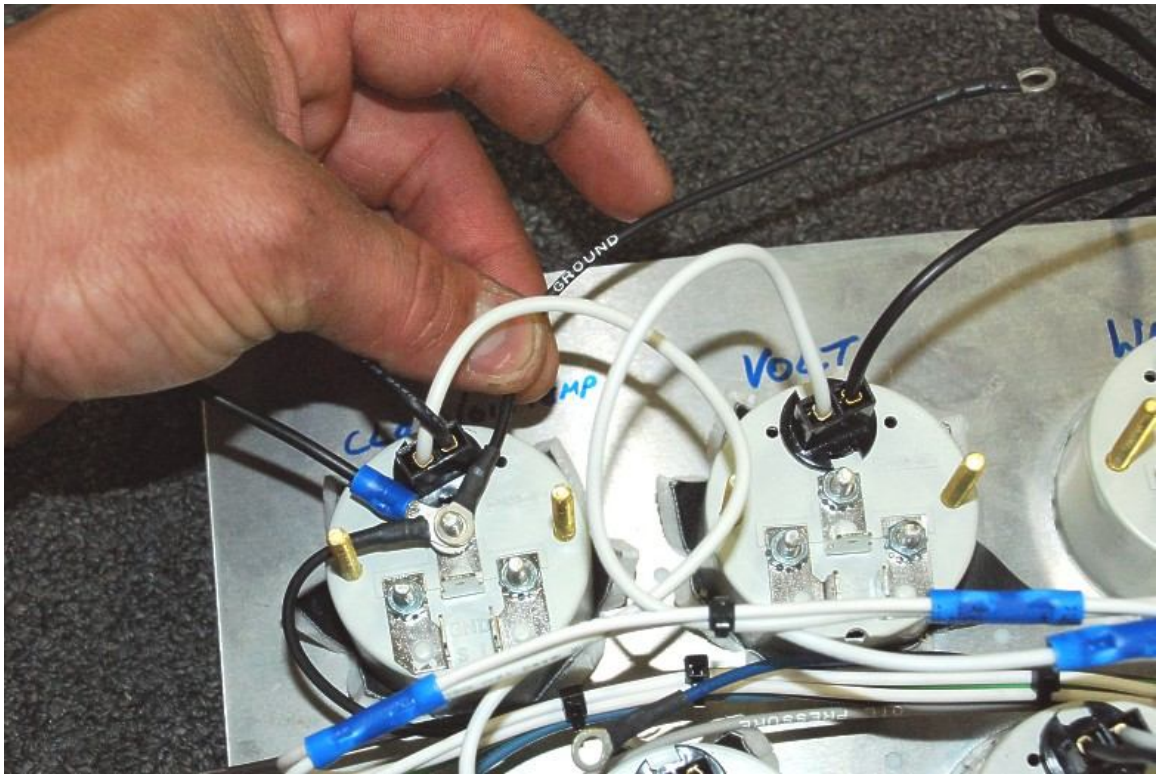
Attach a ring connector to each of the gauge light ground wires and put each of them on the “GND” (ground) stud of each gauge.



Attach the gauge ground wire from the dash harness to the Oil Temp gauge on top of the gauge light ground.

Put one of the small black jumper wires on the oil temp stud and jump it over to the volt gauge.





Attach the another black jumper wire to the Volt gauge and connect it to the water temp gauge. Continue jumping the gauges using the small jumper wires included. Replace and tighten the nut on the ground studs of the gauges.

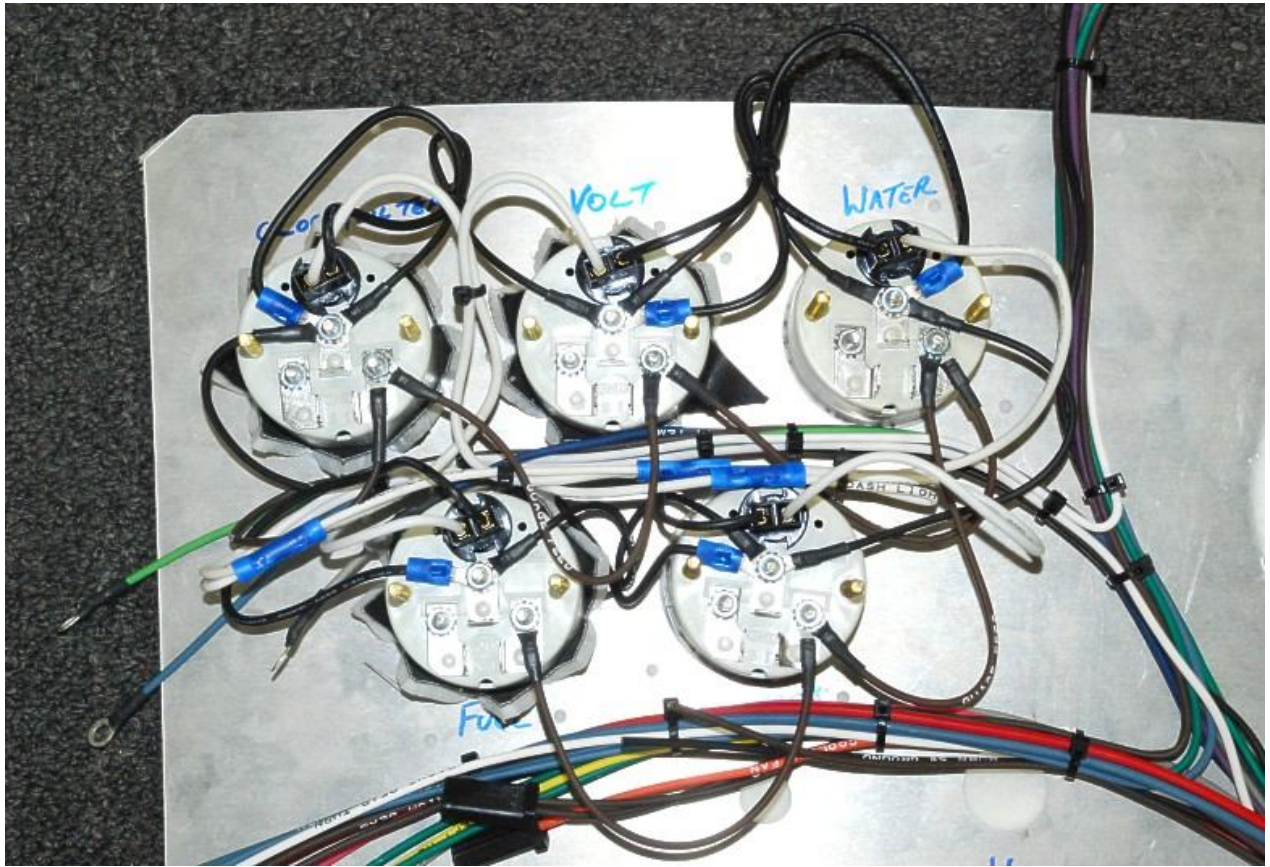


Attach the gauge power wire to the Oil Temp gauge "I" (Ignition) terminal along with one of the small brown jumper wires.



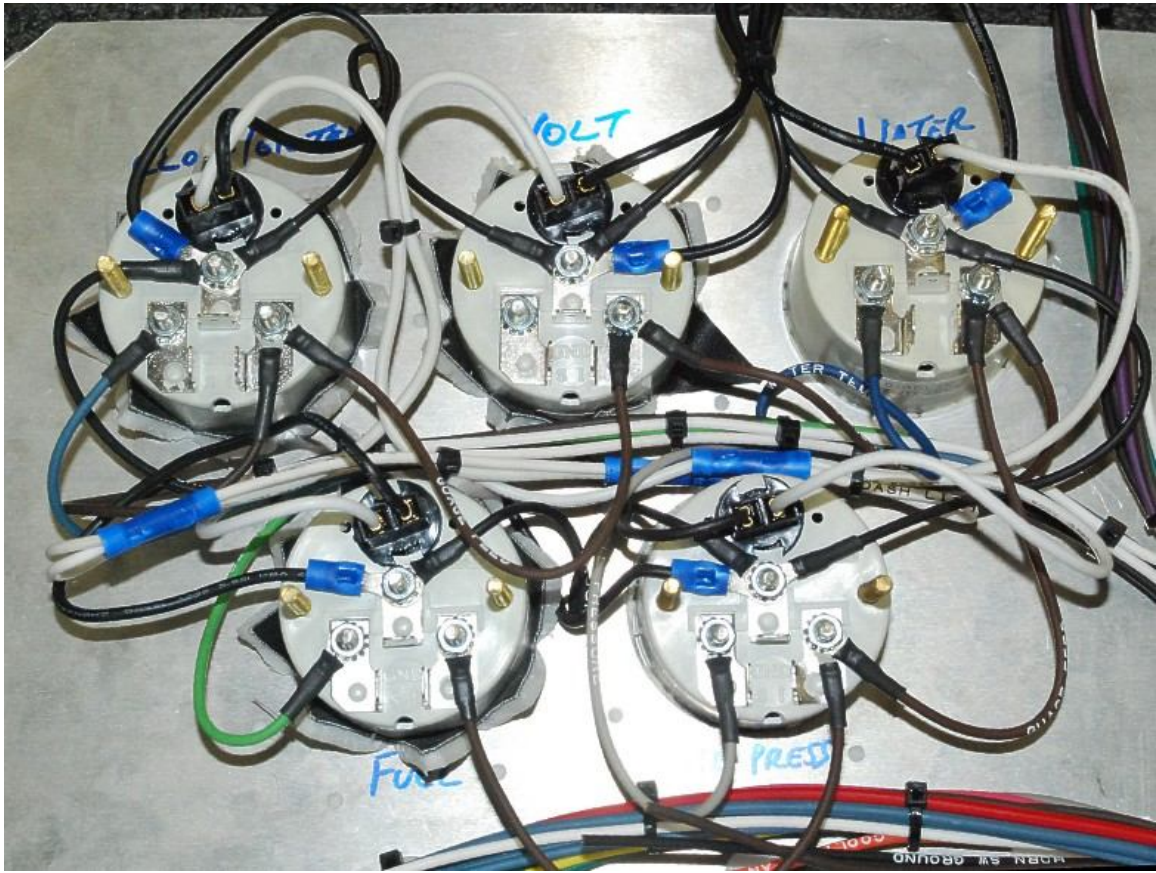
Connect the remaining small gauges in series using the small jumper wires as done before.





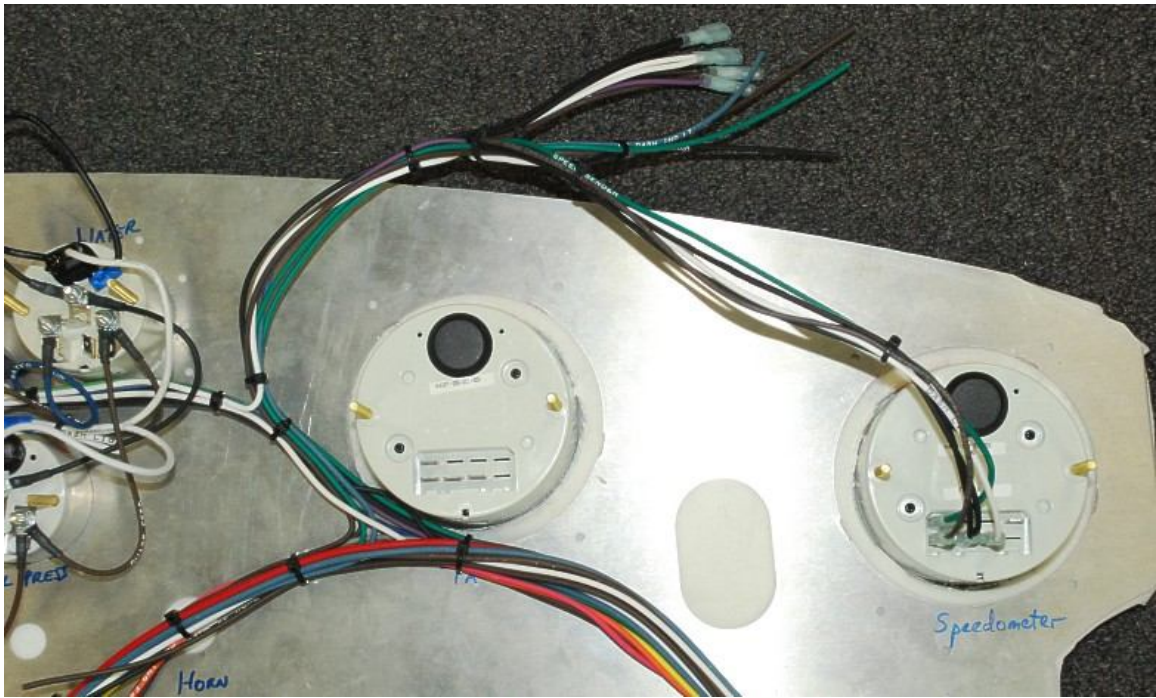
Attach each of the gauge sending unit wires to the correct “S” (signal) stud on each of the gauges and replace and tighten the small nut.



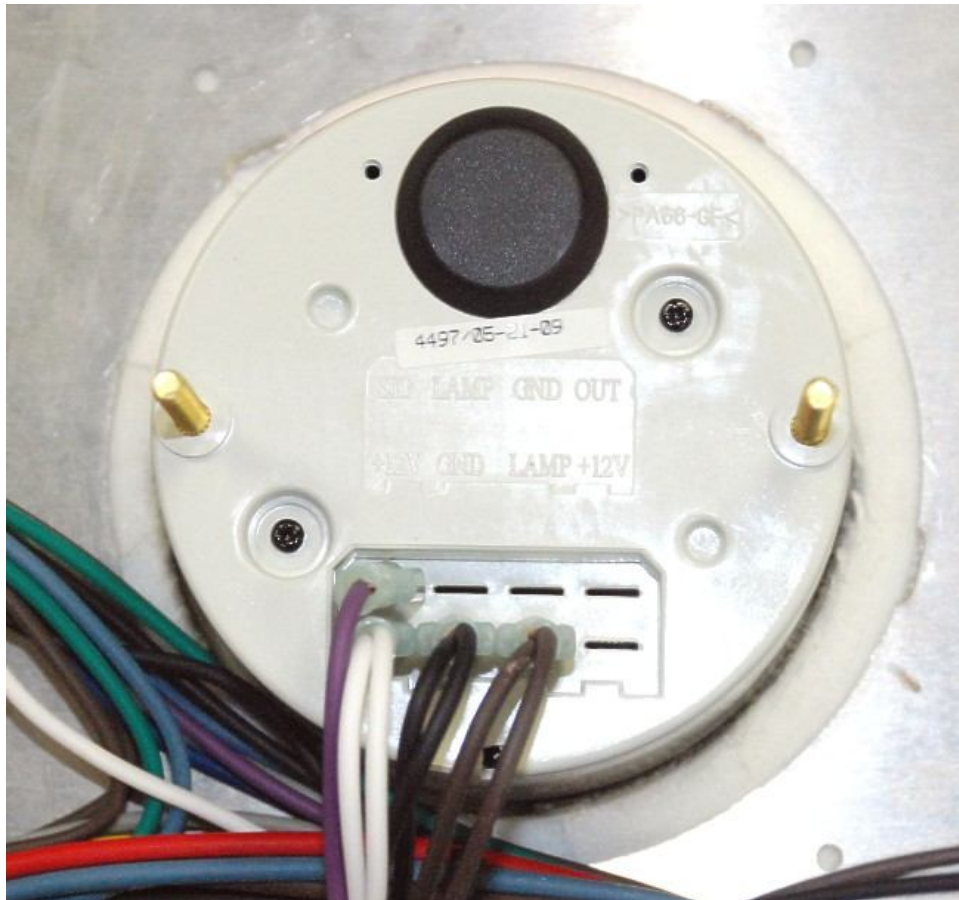


Connect the harness wires to the Speedometer.





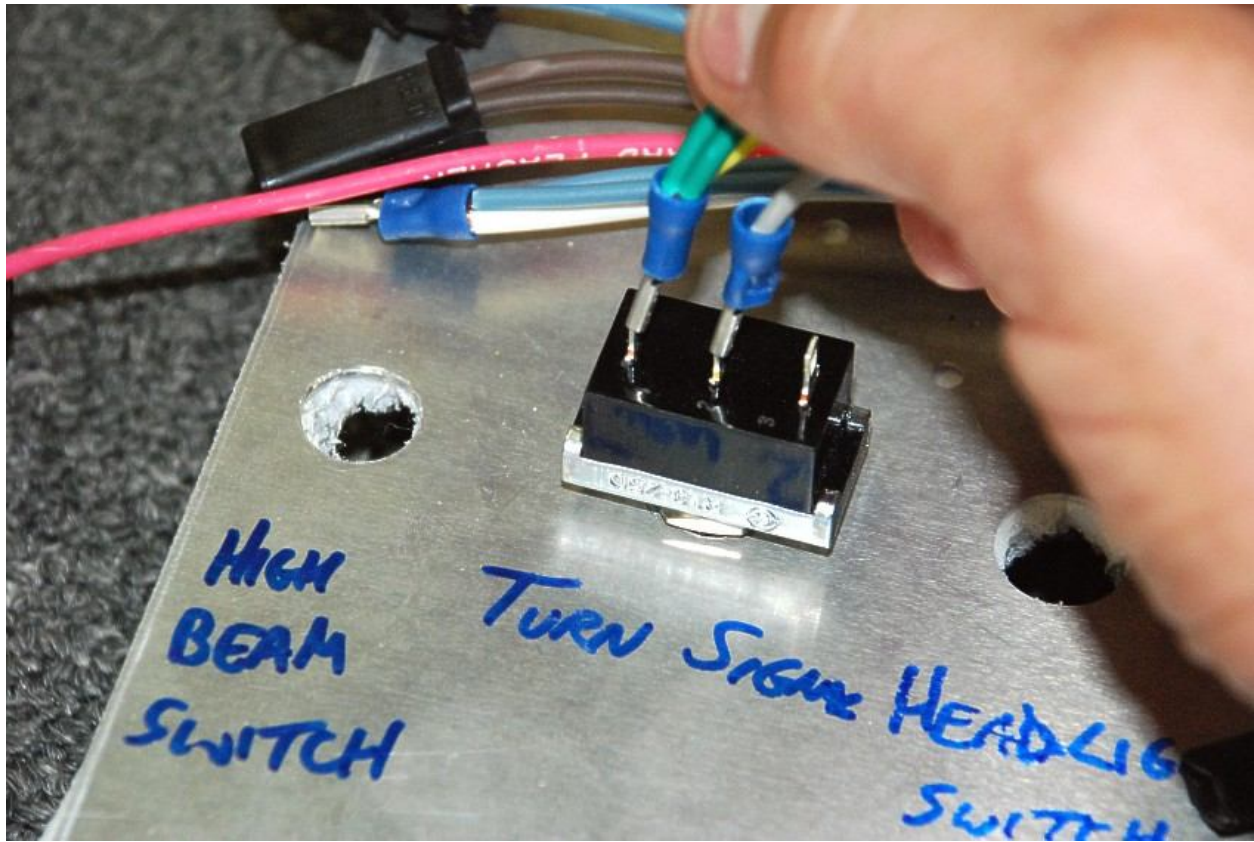
Connect the harness wires to the Tach.



Insert the Horn button into the dash and attach the wires to each terminal.



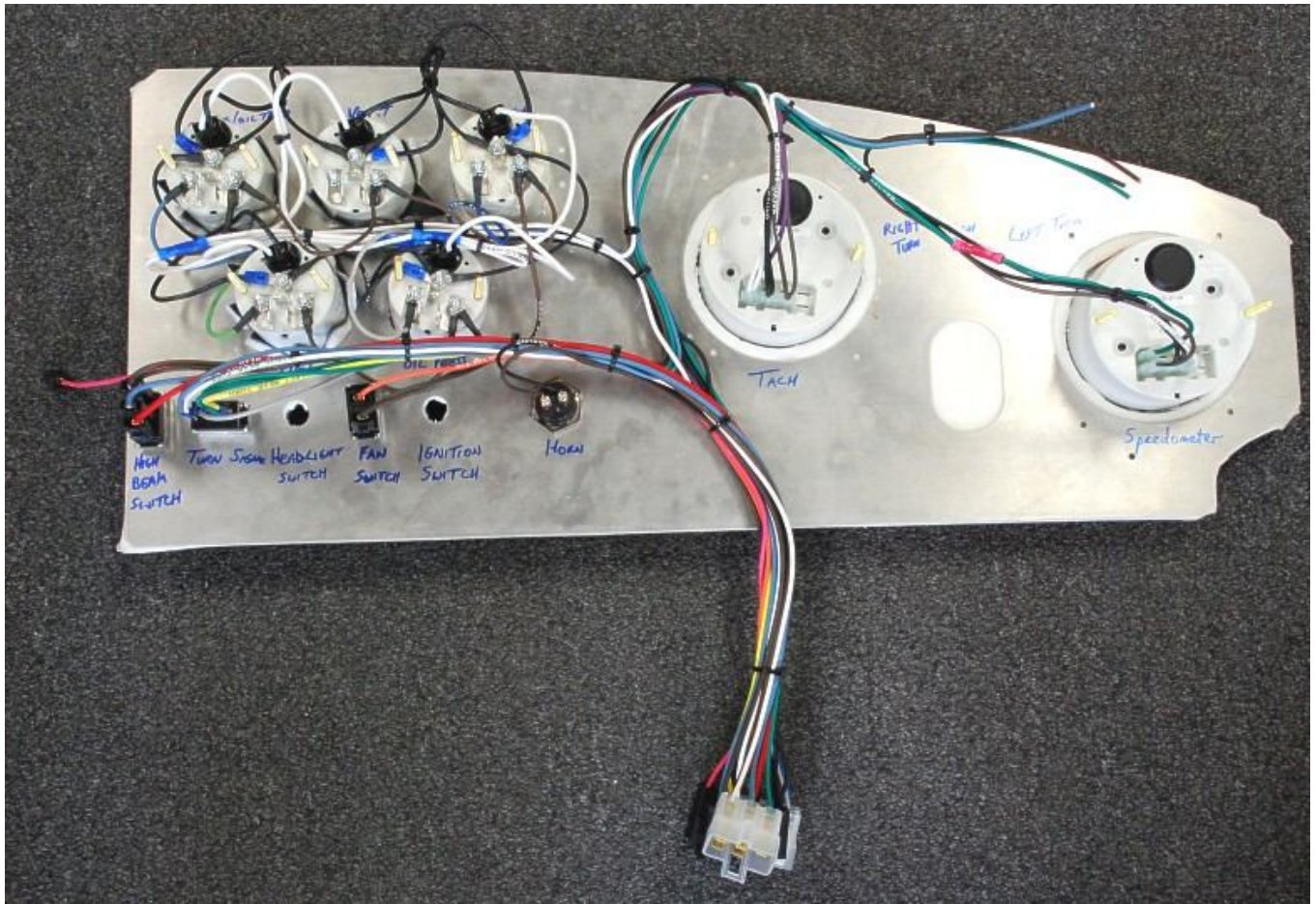
Insert the Turn signal switch into the correct drilled hole in the dash and connect the wires to the terminals. Gray feed wire in the middle and the signal wires on the sides. Left turn wires on the left post and right on the right post.



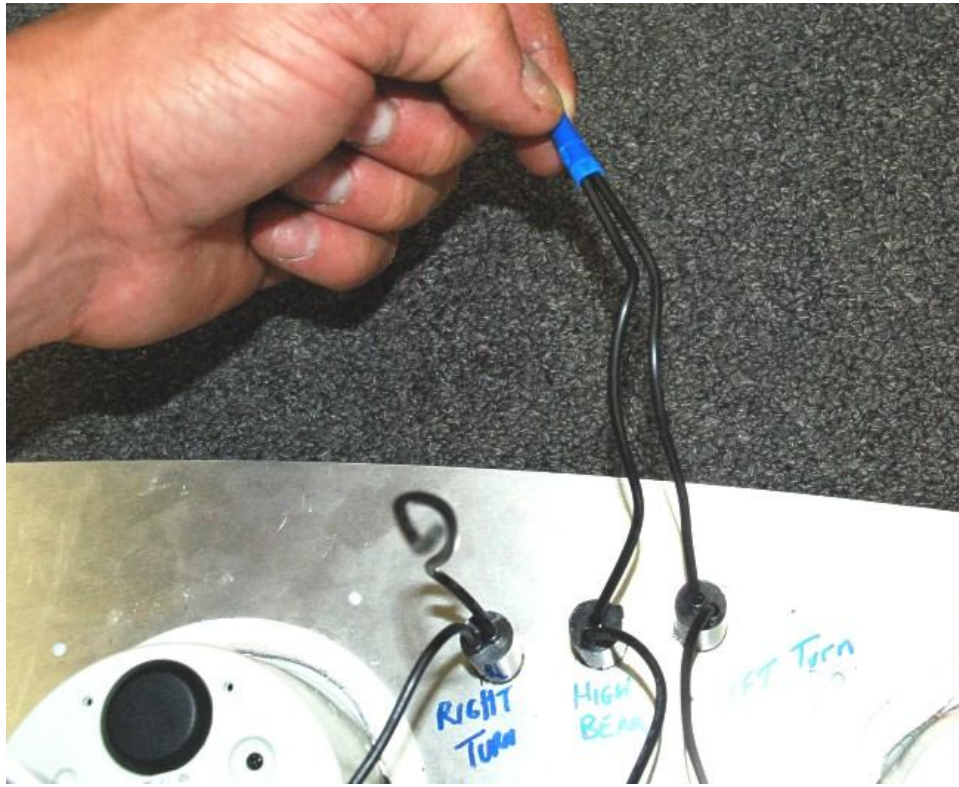
Insert the high/low beam dimmer switch into the correct drilled hole in the dash and connect the wires to the terminals. Light blue wire in the middle with the red low beam wire on the top and the brown High Beam wire on the bottom.

Insert the fan switch in the hole between the ignition switch and the headlight switch holes then connect the electric fan wires to the switch. The 2-position toggle will serve as your on-off switch. It is also possible to control your fan with a thermostat switch so that the fan turns on and off with the coolant temperature. If you do this you don't need a fan switch unless you want to use it as an over ride switch. If you are not using the switch, you need to cut the connectors off the wires and connect them together.

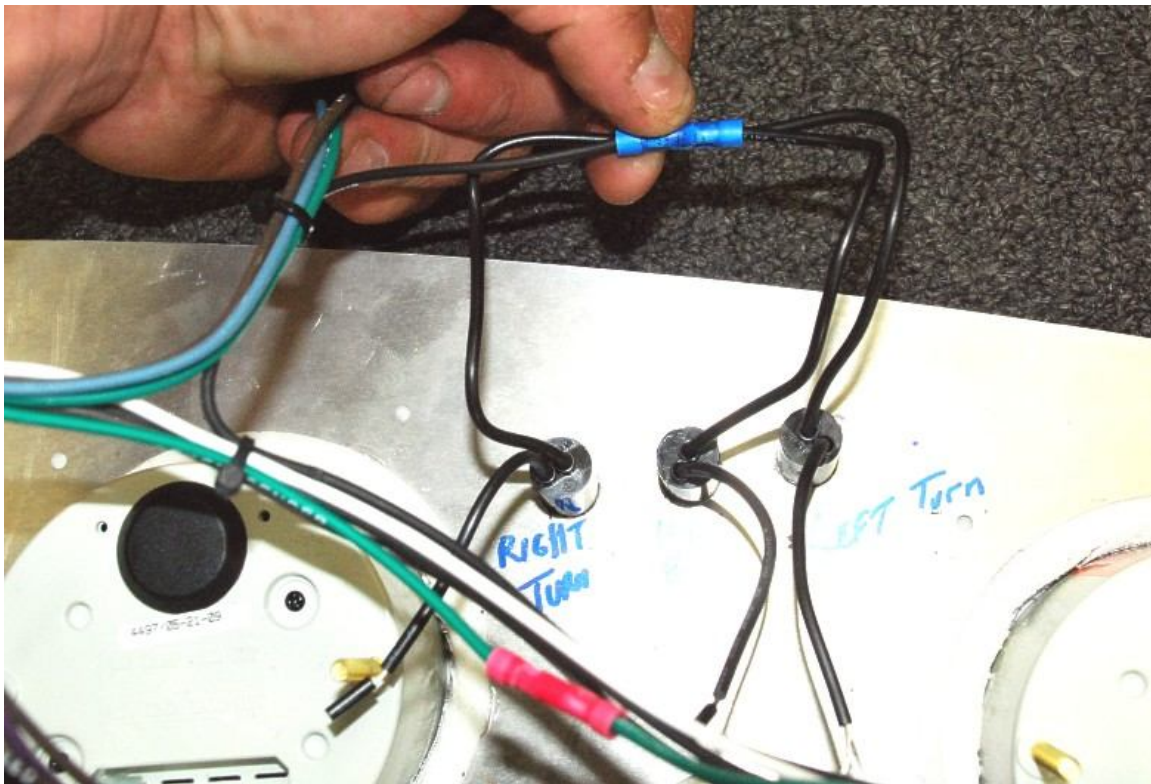




Insert the high beam and two indicator lights into the dash and twist two of the ground wires together for the lights and insert them into one side of a Butt connector.



Twist the other light ground wire together with the harness indicator light ground wire and crimp it in the other side of the same butt connector.



Connect the correct signal wires to the correct indicator light.

Position the dash on the frame using masking tape to temporarily hold the dash in place.

Position the ignition switch and headlight switch on the dash.

Remove any fuses from the fuse panel for components/circuits that are not used. This will eliminate any electrical shorts in wires that are not connected (i.e. Wiper, heater, radio, etc...)

## **Troubleshooting**

Some of the areas that can cause problems are:

**Inertia Switch** – This switch can cause a “no start” problem. Make sure that the button is pushed down.

**Wire connections** – Tape connections are not recommended. The best connection is a soldered connection that has heat shrink tubing over it. If this is not possible, a well crimped connector is recommended.

**Grounds** – Make sure that the ground wires are connected to clean bare metal surfaces. Battery grounds must be attached to the battery.