INFORMATION PAMPHLET



All You Need To Know About Grounds

1. All electrical devices MUST be connected (grounded) electrically to the negative battery post.
2. All current going into the battery (+) terminal of all electrical devices must exit via the ground terminal.
3. Heavy wires are able to handle greater amounts of current without heating than thin wires.
4. There is no such thing as a "too heavy wire."

Battery current must flow through each electrical device. In order to accomplish this goal, each electrical device must have a wire or use its case to provide a **"Ground Return"** back to your negative battery terminal.

Electrical devices such as headlamps provide a terminal for the ground, while devices such as parking lamps and alternators use their cases to provide the necessary path to ground.

In order to allow the battery current to operate an electrical device, it must pass through the device much like water passes through a waterwheel. If the water simply remained within the waterwheel and wasn't allowed to exit, the wheel would not turn and no work could be expected from it. Therefore, you can expect that the water entering a waterwheel will be released at the bottom of the wheel when the wheel turns. Basically, you can equate water flow to current flow and water pressure to battery voltage. The amount of current flow is determined by the resistance of the device and the size of the wires going to the device. Picture water running through a large pipe. This pipe will be able to handle a large volume of water without much pressure loss but, if you were to force the same volume of water through a small pipe, you will have a large pressure loss. That is, the pressure at the inlet side of the pipe will be much greater than the pressure at the exit. This loss is due to resistance. Resistance to the flow of water and resistance to the flow of battery current is essentially the same thing.

USING THE FRAME AS A GROUND

Using the frame as a electrical path to the battery (-) terminal is an efficient method of wiring the ground portion of your vehicle. Even though steel is not as efficient as copper when it comes to the conducting current, the thickness and size of the frame easily compensates for the loss in efficiency. The main concern when using your frame as a ground is the problem of getting a good low resistance connection between the battery post and the frame. This method requires the builder to drill and tap the frame or weld on "grounding tabs" at numerous places to allow the attachment of individual ground return wires. In many instances, a ground is made by simply bolting the electrical unit to the frame or to the engine itself.

CENTRAL GROUND BLOCK

An alternative method of providing a ground return is to run copper wire from each electrical unit back to a central junction block located near the battery. This method is especially effective when the builder desires to keep the frame intact by eliminating grounding points to mar the paint. This is accomplished by mounting a multiple contact terminal strip at a place next to the battery (-) post. A short, heavy (#10) wire is attached between the terminal strip common and the battery (-) post. All electrical components, with the exception of those mounted directly to the engine block, will have a ground wire run back to the terminal strip. The builder must keep in mind that these wires must be fairly heavy (#14 or heavier) to allow proper operation. Remember, the "ground return" wire must carry all the current which was used by the electrical units connected to this wire.

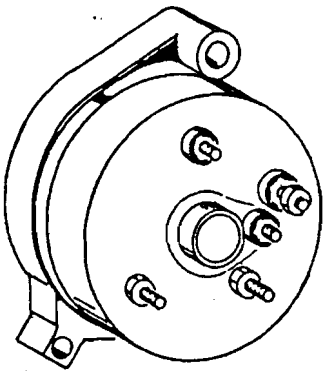
ENGINE GROUNDING

The heaviest current used by the electrical system goes to the starter motor. In fact, the current that goes to the starter is so high that it pulls the battery voltage down to in the neighborhood of 9 volts when cranking the engine. It is imperative that a heavy grounding strap connects the starter motor (engine) to the battery (-) terminal. The best possible way to make certain that the starter is getting maximum voltage is to connect the grounding strap directly from the battery post to the starter motor mounting bolt. Alternatively, a grounding strap can connect the battery post to the frame and then the frame can be connected to the starter via another heavy strap. Make certain that the connections to the frame are clean and well secured. Most hard starting and slow cranking problems are due to improper grounding which reduces the voltage available at the starter.

FIBREGLASS BODY CARS

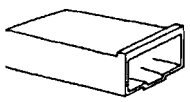
As we all known, fibreglass is an insulator. That means that it doesn't conduct battery current. This makes the installation of many electrical items which normally get their ground through the case more difficult. What must be done is to use copper wire to attach each case to the battery (-) post. For example, many gauges use their case as a ground and expect to get grounded when bolted to the instrument panel or dash board. When mounted in a fibreglass dash no "ground return" current can flow and the gauges will not work properly. The best remedy is to purchase a wiring kit (Centech K30 or K31) which provides wires and terminals which connect each gauge case together and then returns to the battery (-) post.

ALTERNATOR



This harness is designed to work with early model *Ford* alternators which use an external (non internal) regulator. The connector provided uses the late model electrical terminals and fits most regulators although a new electronic regulator is suggested. You will need to shorten the regulator wires and add the "FLD" wire between the alternator and the regulator in this harness. Terminals must be crimped to these wires and inserted into the new regulator connectors shown in the instructions. Make certain that the regulator is grounded. The heavy yellow ALTERNATOR wire gets connected to the heavy "BAT" post on the alternator. Use the special boot and heavy duty electrical lug provided. Solder lug to wire for maximum strength and reliability. We have provided a special Fuse Link at the fuse panel for further protection. See REGULATOR for further information.

AUXILIARY POWER

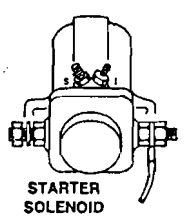


We have added two quick disconnects under your dash to supply power for extra electrical products such as radios and CBs. There are mating connectors and terminals supplied for you to add your wiring. These wires are protected by fuses. The orange "RADIO" wire comes from an ACCESSORY fuse while the grey "CIGAR" wire is always hot. Use the orange wire for switched circuits up to 7.5 amperes and the grey wire for hot (battery) circuits up to 10 amperes. These wires are NOT for high powered lamps, horns or winches.

BACK-UP LAMP WIRING CONSIDERATIONS

Wiring for your backup lamps attaches between the fuse panel and the backup lamps via the **backup switch** located on your transmission or shifter. We have deliberately kept the wires to the backup switch extra long to allow you to use the original backup switch or go to an aftermarket shifter/switch to handle the shifting. You must first determine the location of your switch, then connect the two grey wires from the three pin sealed connector located at the driver's side of the engine compartment to the two switch posts. These two posts are electrically connected whenever the transmission is in reverse. They receive power from the fuse panel only when the ignition switch is in the RUN position. The black "BACK LMPS" wire brings power from the switch to the backup lamps. You must connect the black wire to one backup lamp and then over to the remaining lamp. Make certain that the lamp housings are grounded. See information on REAR HARNESS ASSEMBLY.

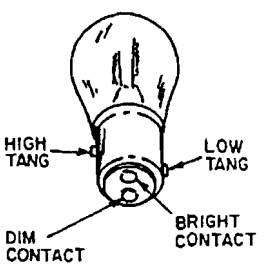
BATTERY POWER CONSIDERATIONS



The heavy red "BATTERY +" wire in the engine compartment is attached to the heavy starter solenoid post that has the very heavy battery cable from the battery (+) post with the FL-1 Fuse Link. This Fuse Link protects the main feed wire in this harness. You will need to securely crimp the FL-1 yellow butt connector to the red BATTERY+ in the engine harness then firmly fasten the ring terminal of the FL-1 to the solenoid post.



BULB PROBLEMS



Lamps and bulbs have one or two filaments. Current goes first to the center terminal then through the filament and on to the metal lamp case and then to ground. Single filament bulbs still need to have their lamp socket "grounded" to the chassis if they only have one wire coming from the socket. The lamp sockets are normally "grounded" when it is bolted to the sheet metal. Two wire single filament bulbs do not need to have the lamp socket grounded.

Bulbs with two filaments have one side of both filaments connected to the metal bulb case. If the metal lamp case isn't grounded, current will flow from one filament into the second filament instead of going to ground. Ungrounded sockets cause weird problems such as causing unexpected lamps to light when they shouldn't. If you have unusual lighting problems make certain to check the ground of the lamp holder. You can use a short "ground test" wire to test the lamp socket housing for proper ground. Touch the lamp socket with the "ground test" wire securely attached to chassis ground to see if the lamp works properly when grounded.

EMISSIONS WIRING & ELECTRIC CHOKES

Power has been made available for OPTIONAL requirements such as electric chokes and electrical switches used to control electrical emissions devices. These wires are labeled "CHOKE", "IDLE SOL" and "DIST MOD" and are HOT when the ignition is ON. These wires are available at the passenger side of the engine compartment at a quick disconnect to allow for removal of these wires if not needed. Many aftermarket carburetors and some original equipment carbs use an electric choke instead of heated air for their operation. Connect the white "CHOKE" wire to the electric choke terminal. Make certain that the remaining choke terminal, if provided, is grounded The electric choke may have only one terminal and doesn't need an extra ground. Follow your Bronco manual for further information on emissions requirements.

ELECTRICAL WIRING FLEXIBILITY

This harness was designed for maximum flexibility when rewiring your Bronco. We have added labeled wires and special water-proof connectors so that you can choose to keep your Bronco stock or to modify it electrically. The engine compartment wiring has been formulated to allow various ignition systems stretching from old style "points" all the way to state-of-the-art electronic ignitions. Follow the instructions included with this harness for stock *Ford* systems. Other ignition systems will require you to install them as per the manufacturer's requirements. We provide a sealed connector with the blue "IGN SYS" wire along plus the white bypass wire labeled "COIL +" and the violet "START" wire to operate stock and modified ignitions. In this manner, we can allow for installation of engines other than Ford products in your Bronco. In most cases, you will need to use a starter motor solenoid which has a "I" or "R" post in addition to the "S" (start) post. This post brings power to the *Ford Ignition Module* and bypasses the ballast resistor during starting. Follow the instructions for the ignition system you're using. A 1.25 Ohm ballast resistor has been included in this kit for use with stock points and *Ford* ignition boxes. Originally, *Ford* used a special resistance wire as their ballast resistor. Since some ignition systems don't use a ballast resistor, you will not need to install the resistor.

An "OPT I" wire is provided to allow you to wire many other undetermined devices to this harness. Call for details.

GAUGES and GAUGE WIRING

Your harness has been made to wire stock gauges including the ammeter. Additionally, there is a special wire assembly used to supply regulated power to each of your gauges (other than the ammeter). Ford (stock) gauges employe a voltage regulator device which converts the standard battery voltage which varies from vehicle to vehicle to a stable voltage for the gauges. You will notice that there is a red wire assembly labeled "I POST" tie wrapped to the red "INST PWR" wire located at the instrument panel wiring location. The ring terminals on this wire get connected to the "I" (ignition) stud on the OIL, WATER and FUEL gauges. The "male end" of this wire plugs into the voltage regulator located below the gauges. The red "INST PWR" wire delivers raw battery power to the gauges and plugs into the other terminal of the stock voltage regulator. There is a special "GND" wire for the gauge panel which must be securely attached to the metal gauge panel. This wire provides the ground return for the stock gauges. The stock ammeter is wired by routing the heavy red "BATTERY +" wire through the clip on the rear of the meter. Meters

which have two electrical terminals will need to have the "BATTERY +" cut at the meter and have two heavy ring terminals crimped and soldered to the wire ends. Attach one ring terminal to either meter post. Attach the remaining wire to the other terminal. If the meter reads backward (shows a discharge instead of a charge), simply reverse the two leads. Special lamps sockets with grounding wires have been utilized to provide reliable operation. Plug these lamps into their respective openings in the gauges (each wire is labeled) or indicator lamp openings including high beam, right and left turn indicators. Several bulbs are used to illuminate the gauges.

When installing aftermarket gauges, you can choose a VOLTMETER in place of the AMMETER. The voltmeter will simply be wired to the "I" post of the other gauges. Make certain that all the gauges (other than ammeter) are grounded by their case or by their "G" post with the "GND" wire provided. The Ford voltage regulator is not used with aftermarket gauges unless indicated by the gauge manufacturer.

The extra long yellow "TACH SNDR" wire has been included to allow for an aftermarket tachometer. Most tachs are connect the sender post to the (-) post of your coil. Follow the instructions which come with the tachometer. Get tachometer power from the red "INST PWR" wire and dash ground.

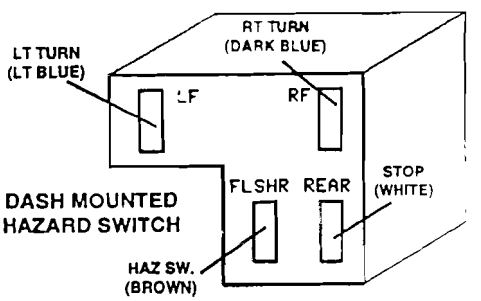
GROUNDS

Faulty grounds are the leading cause of electrical problems in automotive wiring. We have included a special internal grounding system within the harness to reduce grounding problems. There are several places where you will need to provide an extra ground by locating our "GROUND" wire attached to the device to be grounded, cutting it to length and crimp on a ring terminal. Attach the ring terminal to the chassis or a sheet metal " ground" as close as possible to the electrical lamp or device as possible. It is extremely important to secure the ring terminal to clean metal without grease or rust. We have included special sheet metal screws to help secure a proper ground. Take time to read the sheet on **"ALL YOU NEED TO KNOW ABOUT GROUNDS"**.

HAZARD SWITCHES

Broncos use two types of hazard switches. The early models are located on the dash board. These switches will need to reuse your old hazard switch connector. Use a pick to depress the tab holding the electrical terminal inside the connector and gently pull on the wire attached to that pin to remove it. Place the new wires into the old connector as shown in the HAZARD SWITCH INSTRUCTIONS.

Later model Broncos use a hazard switch built into the steering column. The wires needed for hazard operation are present in the turn signal connector.



HEATER WIRING

We supply power to your heater switch through the brown HEATER FAN wire. You will need to reuse to original heater wiring and fan resistor. Simply plug our brown heater wire into your switch to supply power to your heater.

HORN OPERATION

In Ford Broncos, the horns are operated one of two ways. Either method utilizes the horn button in the steering column to complete a circuit. Early Broncos have horn switches with simply close the circuit directly to the horns from the fuse panel. Later model Broncos use a horn relay to connect battery power to the horns. When hooking up your turn signal adaptor to your steering column connector, determine wether you have two wires for horn operation or just one wire which operates the horn relay. See instructions concerning the TURN SIGNAL ADAPTOR. It is advisable to use the horn relay to operate the horns. See ":Steering Column Wiring" for details. Our horn relay must be mounted to the underside of the dash with a sheet metal or machine screw through the relay socket. You will need to remove the relay

to get to the mount opening.

IGNITION SWITCH

We supply a high quality ignition switch with each kit to eliminate the unreliable stock ignition switch. The ignition switch gets power from the battery and supplies power to the fuse panel and starter solenoid "start" post. Additionally, the switch operates a "ground" for the "BRAKE WARNING" lamp during cranking. This ground is routed through the brake proportional valve to the "warning" lamp. You will need to modify you dash board to mount this switch. Make certain that your dash is securely grounded if you intend to have the "warning" lamp operate with the ignition switch.

NEUTRAL SAFETY SWITCH (automatic transmissions)

You must have a neutral safety switch installed on your automatic transmission or on your transmission shifter assembly. This switch keeps the vehicle from energizing the starter motor by breaking the connection between the ignition switch and the starter solenoid unless the transmission is in park or neutral. The Neutral Safety switch is closed only when the transmission is in PARK or NEUTRAL.

When wiring the neutral safety switch, it will be necessary to route the violet "START" wire through this switch. Simply run the violet START wire from the passenger side engine harness to either side of neutral safety switch then use the remaining violet START wire to connect theremaining switch terminal to the "S" terminal on your starter solenoid.

NEUTRAL SAFETY SWITCH (manual transmissions)

Stick shift (manual transmissions) vehicles can connect the "START" wire from the ignition switch directly to the "S" post on their start motor solenoid.

REAR HARNESS ASSEMBLY

A sealed quick release connector with four wires comes from the driver's side of the engine compartment back to the rear of the vehicle. This harness wires both stop lamps, tail & side lamps and the fuel tank sender unit. Split loom material has been supplied to cover these wires along with the backup lamp wire. The best way to do this is to run the four wires for the stop lamps etc., combined with the backup lamp wires, along the left side of the vehicle to the rear. Use plastic tape to hold the wires together every foot or so. Install the split loom over the wires by bending the loom so that the opening allows you to press the wires into the conduit. Continue along the loom until all the wiring is inside.

Two small wire assemblies (light green) are used at the rear of the vehicle to wire the tail, side and license lamps. These wires are "butt spliced" via the blue butt splice connector to the green PARK/SIDE wire from the front. The left side lamps (side, tail & license) are first wired then the remaining PARK/SIDE wire is run across the rear to join with the smaller cable butt splice for the passenger side tail and side lamp. Loom can be placed over the harness if desired for protection.

REGULATOR WIRING

This kit is made to wire stock Bronco regulators and the stock ***Ford*** Alternator with external regulator. You can also use a "ONE WIRE" alternator without the need of a regulator. All that is needed is to connect the yellow "ALTERNATOR" wire to the "BAT" post of the alternator. Eliminate the wires to the regulator. One wire alternators are not readily available and are NOT recommended.

New electrical terminals and connector aresupplied for the alternator and regulator. The orange " FLD" wire must be connected between the regulator "F" terminal and the **FLD** post on the ***Ford*** alternator. Make certain that both the alternator and the regulator are securely grounded. This means that if you have mounted the regulator on a fiberglass fender, you must connect a ground wire between the metal regulator mount and chassis ground.

GM alternators with internal regulators can be use with this kit. Ask about specific instructions concerning the various GM charging systems.

STARTER MOTOR SOLENOID

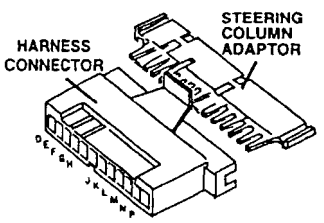
This kit needs an external starter solenoid with two large posts and two small posts. The small posts are labeled "S" for start and "I" (sometimes "R") for ignition bypass. This type of solenoid allows you to use nearly any ignition system. The solenoid mounting bracket must

When power is applied to the "S" post from the violet "START" wire, the two heavy solenoid posts connected the battery power to the starter motor and the engine cranks over. At the same time, the "I" (or "R") post also receives battery power and is used to supply power directly to the ignition coil to bypass the ballast resistor.

When you're cranking the engine, the battery voltage drops to approximately 10 volts and all of this voltage is needed to run the ignition system; therefore, the ballast resistor must be eliminated whenever engine is cranked over to start. After the engine fires and the solenoid is released, the ballast resistor reduces the coil voltage and keeps the points and ignition box from burning out.

STEERING COLUMN CONNECTOR

An adaptor has been provided to replace your old steering column turn signal connector with a new reliable connector. A new flat connector, pins and instructions are provided for your installation. You will need to cut the old wires from your stock connector then crimp and solder new male pins to the stock wires. Following the instructions concerning wire color and operation to insert the stock wires with the new ends into the new plastic connector housing as shown. Note that new columns have a built-in hazard switch while older Broncos have one on the dash. Wiring has been provided for both types. See information on HORNS concerning the steering adaptor wiring. You will need to reuse your old hazard switch connector on dash mount hazard switches. See instructions provided.



Replacement saginaw (GM) style steering columns will plug directly into the new steering column connector **without** an adaptor. Call us for further information concerning replace steering columns.

SWITCHES and CONNECTORS

In many cases, we have included new electrical switches and connectors to replace the older style pieces. We did this to improve reliability. *Ford* now offers much improved connectors and switches. We have upgraded the headlamp, ignition, and wiper switches along with providing special water-proof connectors with more reliable sealed terminals. Our terminals are installed by machine, then hand soldered. Special heatshrink material has been added for further strength.

New style connectors and terminals have replaced the older ones at the regulator. You will need to cut our labeled wire to the proper length, install the new terminals and solder them. Insert them into the modern regulator connector provided and snap it onto your regulator. It is advisable to purchase a new regulator with fresh terminals at this time.

Superior sealed connectors are provided for the front parking/side and turn lamps. You must remove the old style connector from the lamp wires, then install our sealed version. Follow the instructions for *"WEATHER PACK"* connectors.

WARNING LAMP

The "BRAKE WARNING" lamp is used to warn the operator that the emergency brake is "ON" or that the hydraulic brake system has failed. Additionally, the warning lamp is tested every time the vehicle is started. Note that the warning lamp lights each time the starter is engaged. One side of the warning lamp is connected to ignition power via the "WARN PWR" wire while the other side of the lamp goes to the "BRAKE WARN" wire. These wires are located near the ignition switch. Plug the two pin connector with

black wires labeled "BRAKE WARN" into the brake proportioning valve located near the steering box. The warning lamp lights whenever the "BRAKE WARN" wires get "grounded" by the ignition switch during crank or by the brake proportioning valve during a brake unbalance. The ignition switch grounds the "BRAKE WARN" wire during cranking by applying the "ground" through the balance switch at the proportioning valve. This "tests" the wiring to the valve. When the wiring to the proportioning valve is missing or improperly connected, the ignition switch will not light the brake warning lamp during crank. It is imperative that the ignition switch be grounded securely in order to operate the warning lamp.

WEATHER PROOF CONNECTORS

We supply sealed replacement connectors to use at your front turn and side lamps. Each connector is attached to the stock wiring by exchanging the stock rubber plug with the new weather proof unit. You will need to place a green seal over the wire, strip off 1/8" of insulation and crimp the wire and seal to the new pin. Solder the wire to the pin and insert it into the plastic housing then close the retaining clip to retain the wires.

WINDSHIELD WIPER MOTOR

A new switch and labeled wires are provided to wire your stock or aftermarket wiper motor. These wires exit at the left side of the dash and need to be connected to you motor. A special "GND" wire has been included to ground the motor case for motors mounted in fiberglass material or otherwise insulated from the chassis. Our switch also includes a "WASH" feature. The "WASH wire must be connected to the windshield washer pump motor. Make certain that the wiper and washer motor cases are grounded and does not use more than 10 amperes of current.

BR-10A BRONCO REAR HARNESS ADDENDUM

This kit contains a finished rear apron harness which uses the latest water proof connector system to connect this harness to your license, tail and side lamps. These lamps are not included in this kit. You are expected to install the special weather proof seals and pins to your wires. Additionally, there is an additional "ground" wire that is necessary when wiring a Bronco with a fiberglass body. This wire connects the lamp housing to the vehicle chassis ground. This harness also contains provisions for two fuel tank senders. You can use a single tank to operate your fuel gauge or wire your fuel gauge to the tank dash switch to allow you to select which tank to monitor. Note that this harness is connected to the main harness with two weather proof connectors to allow you to bring the harness through the firewall openings. You will need to disconnect the rear apron harness prior to installing the main harness.

INSTALLATION INSTRUCTIONS

1. Remove the two weather-proof connectors with a "ground" wire taped to the rear apron harness. These will be connected to your tail lamp assemblies.

2. Mount this harness on the driver's side of the Bronco where the original harness was installed. Position the harness in such a way that the 4 pin weather-proof connectors are located near each lamp housing as needed. Make sure to re-connect the two weather-proof connectors at the front of the harness to the main harness.

3. Connect the internal tooth "ring" terminal attached to the black "ground" wire coming from the 4 pin harness connector to the chassis. Do this for both the driver and passenger sides.

4. Locate the light green "LICENSE" wire and connect it to your license plate lamp. Make certain that the lamp housing is grounded.

5. Plug your rear side marker lamps into the black connectors with the green wire marked "SIDE LAMP".

6. Each 4 pin connector has power for your back-up lamp, tail lamp and stop lamp plus the special ground. You will find the pins and wire seals in the bag marked "weather proof connector". Follow the instructions about installing these pin from the main instruction booklet. Install them to your lamp assembly wires by slipping the seal over the wire then crimping the pin over the bare wire and the green seal. Solder the pin to the wire. Solder each pin and insert the sealed pins into the connector as follows:

FUNCTION	*OPENING*
STOP/TURN FILAMENT	"A"
BACK-UP LAMP	"B"
TAIL LAMP FILAMENT	"C"
LAMP HOUSING BOLT	"D"

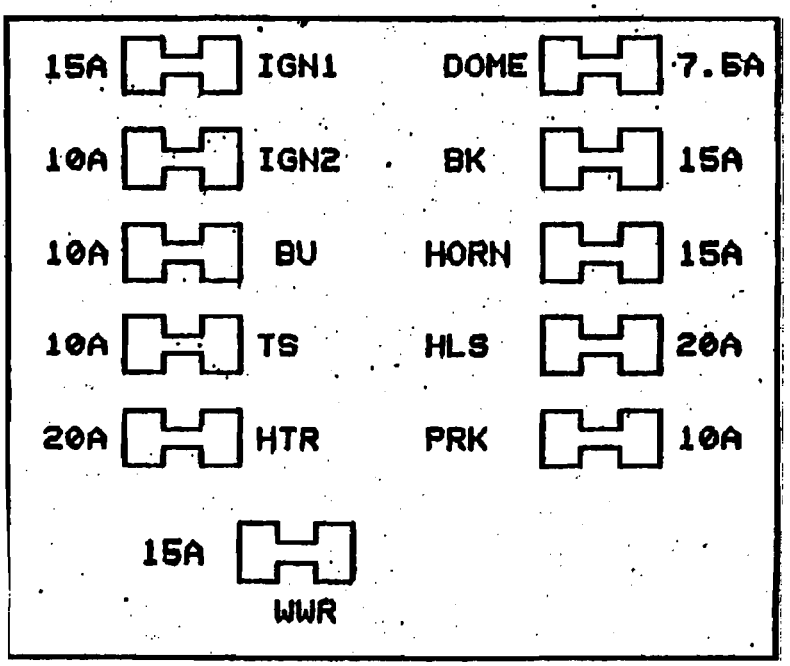
Snap the cover over the housing and push the lamp connector into the mating connector from the rear apron harness until it locks. Make certain that the lamp housing bolt is electrically connected to the lamp socket inside the assembly.

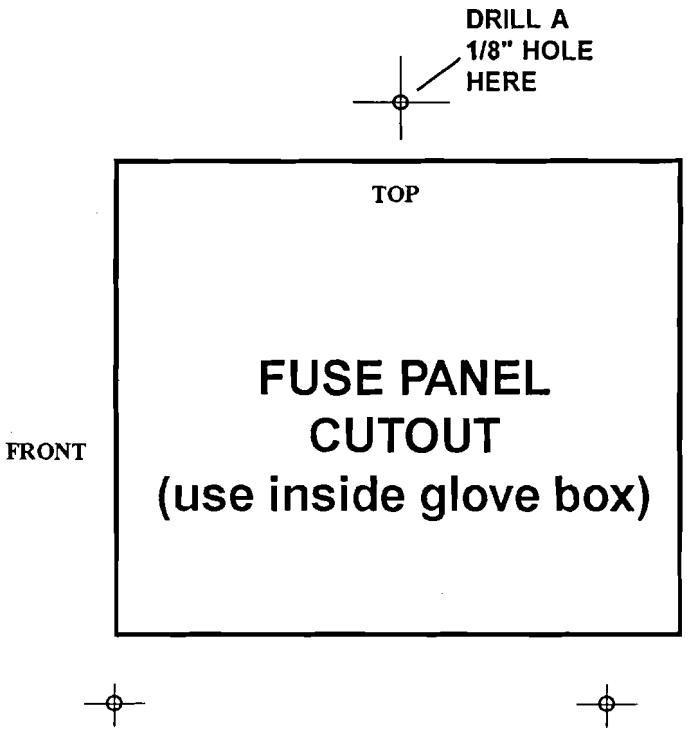
Remember, the tail lamp filament is always "dimmer" than the "stop" filament. If you are not certain which wire is which, use a battery to apply power to each wire before inserting it into the connector housing. *Snap-On Tools* has a pin removal tool (GA500-A) available if you make an error.

7. Locate the pink "FUEL 1" wire in the middle of the harness. Connect it to the *main* fuel tank sender. Make certain the tank is "grounded".

7a. Use the optional "FUEL 2" wire to connect the *auxiliary* tank to the harness. You will need to re-use your original dash fuel tank toggle switch by connecting the pink and brown fuel sender wires to the end terminals of the switch while the center terminal connects to the fuel gauge "S" post.

FUSE PLACEMENT





DANGER!

DO NOT USE AGAINST METAL OR IN A METAL GLOVE BOX.

Use this template to cut an opening in your glove box to mount the fuse panel if your glove box doesn't already have an opening. Use the template to center the opening in the left side of the glove box. Cut from the inside of the box.

Optionally, purchase a new replacement glove box for your Bronco.

BRONCO INSTALLATION MANUAL



GENERAL INSTRUCTIONS

Read through the instructions to familiarize yourself with the instruction sections. We have included additional information to further explain special electrical wiring areas in your Bronco. If you have questions concerning an area such as the ignition system or backup lamps, please refer to the information section of this manual to gain additional insight in a particular area of interest. Unpack your new harness and study how the harness is laid out and how we identify each wire.

INSTALLATION INSTRUCTIONS

1. Remove the battery cables from your battery.
2. Remove your entire old harness from your Bronco. Your original harness is split into several sections depending on the year. Early Broncos have the engine harness coming through connectors at the center of the firewall. Newer Bronco's have the harness passing through two openings at the side of the firewall. Pay special attention to how and where you have removed the old harness to help you to identify the electrical devices connected to the harness. Our harness is designed after a later model Bronco which has the fuse panel located in the glove compartment and the wiring coming through the two openings in the firewall.
3. Remove your original headlamp switch, ignition switch and dimmer switch. This kit supplies new switches to replace the outdated ones. The ignition switch cylinder is removed by first turning the switch to the ACC position, then insert a pick into the small opening at the side of the bezel. Firmly depress the retainer inside the switch then pull on the key to remove the cylinder. Remove the remainder of the switch from the dash.
4. Remove the old glove box if yours doesn't have the original fuse panel mounted there. Use the enclosed template and instructions to modify your glove box for the new fuse panel, if necessary. Your best bet would be to purchase a new replacement glove box which already has this opening.
5. Remove your instrument panel from the dash board. Decide if you're going to use that panel or new aftermarket gauges. This kit fits your original instrument panel but can be modified to work with new instruments. See info provided to install and wire new gauges in place of the originals.
6. Install the new headlamp switch in place of the original.
7. Locate the fuse panel in the harness. Use the instructions on the GLOVE BOX TEMPLATE to install the new fuse panel in place of the original fuse panel. The best method would be to remove the glove box from the dash, pass the new fuse panel with wires from under the dash through the glove box opening to the glove box. Mount the fuse panel to the glove box with the FUSE PANEL FACEPLATE and hardware provided. The harness wires will face down at the left side of the glove box. Re-install the glove box in the dash.
8. Install the harness to the dash switches to the left of the glove box. You will be re-using your old heater switch and wiring between the switch and the fan motor. Find the brown wire marked HEATER FAN. Plug it into the terminal on the heater switch where the original heater fan wire connected. Attach the black GND wire with the lockwasher ring terminal to a good metal ground under the dash. Attach the HORN RELAY under the dash. See special instructions for the hazard switch, warning and gauge lamps plus the new wiper switch.
9. Connect the white "STOP SW" wires to your stop switch terminals. The terminals are interchangeable.
10. Follow our TURN SIGNAL CONNECTOR instructions to replace your old turn signal connector with our reliable connector. You will need to cut off the old Bronco connector, then solder on the new pins and insert them into the new connector as shown in the instructions.
11. Locate the wires which connect to your instruments. They will be bundled together with the gauge lamp sockets and marked as to the gauge senders. Attach them as shown in the GAUGE WIRING INSTRUCTIONS.
12. Locate the DIMMER SWITCH and install it and the wires to your floor pan.
13. Locate the bundle of wires above the dimmer switch which are for the DOME lamps and WIPER MOTOR. The white "DOME LAMP" wire get connected to your dome and courtesy lamps (see Dome Lamp Wiring). The wiper motor wires get connected to your original or aftermarket wiper motor. See instructions on WIPER MOTOR WIRING.

DRIVER'S SIDE ENGINE COMPARTMENT WIRING

14. Unplug the 4 PIN square connector (rear wiring) and the 3 PIN flat connector (backup lamps) from the harness located near the rubber grommet at the driver side firewall. Feed the remaining side of the 3 and 4 Pin connector and the black "BRAKE WARN" wires through the firewall into the engine compartment. On old Bronco's with the center fed harness, you will need to make two 1 3/8" openings at both ends of the firewall to allow the new harness to pass through the firewall. The new harness has special rubber grommets to protect the wires as they pass through the opening. Plug the brake warning connector (black connector with wires labeled BRAKE WARN) onto your brake proportioning valve. Re-connect the 3 and 4 pin connectors re moved at the beginning of this step.

15. Re-connect the 3 pin flat connector to it's mate. Locate the two grey wires for your BACKUP SWITCH which come from the flat 3 pin connector at the driver side firewall. Attach the grey "BK SW1" and "BK SW2" wires to the terminals of your original or aftermarket backup switch. These wires are interchangeable. ***Splice to original connector if necessary.*** Put the black "BACK LMPS" wire (power for the backup lamps) attached to the 3 pin flat connector aside for now.

16. Re-connect the 4 Pin plug (rear wiring) back into the harness. These wires will go to the rear of the vehicle. Put them aside for now.

17. Route the driver's side engine compartment harness towards the front of the vehicle in the stock fashion. Connect the violet "WASH" wire to the windshield washer pump motor. Connect the yellow "HORN" wire to your horn terminal or connector. ***Splice to original connector if necessary.*** Note: there is a special black "GND" (GROUND) wire near these two wires. Connect the "GND" wire to the metal framework of the horn and the washer motor if they are not "grounded" or if you are using a fiberglass body which ***does not*** provide a "ground".

18. Plug in the 3 terminal headlamp connector into your driver's side headlamp. Locate the black "GND" wire coming from the headlamp connector. This wire must be securely connected to your chassis. Cut the wire to length, install a ring terminal, solder the terminal. Use a sheet metal screw or mounting bolt to attach the ring terminal to a clean chassis (frame) surface.

19. Locate the 2 Pin black "WEATHER PACK" connector with the green "PASS/SIDE" and "GND" wires installed. We supply these new weather pack connectors for increased reliability. Find the matching black connector and male pins from the weather pack package. Remove the existing rubber two pin connector from your side lamp removing as little wire as possible, then install our special male pins, seals and black weather pack connector to the original wires. Follow the instructions for "WEATHER PACK" connectors to install these wires into the connector. Insert either wire into opening "A" and the remaining wire into "B" of the matching black weather pack connector.

20. Locate the grey weather pack connector with the light green "PARK/SIDE" and the light blue "LT TURN" wires. Find the matching grey connector and male pins from the weather pack package. Remove the original Ford two pin rubber connector at the end of your LEFT TURN / PARKING LAMP socket wires. Install two male weather pack pins as per the "WEATHER PACK" instructions on these wires. Connect the turn signal wire (bright filament) to PIN "B" of the grey connector and the park wire (weak filament) to Pin "A" of the matching grey two pin weather pack connector.

PASSENGER SIDE ENGINE COMPARTMENT WIRING

21. Locate the passenger side of the Bronco harness. It has the heavy rubber grommet attached to wiring coming from the fuse panel attached to the glove compartment. This section of the harness contains wiring for the ignition system, gauge senders, emissions equipment, electric choke, voltage regulator and wiring for the right side lamps. Remove the connector containing the blue, violet and white wires from the flat 3 pin BLUE connector then push the harness through the firewall at the passenger side until the rubber grommet seats in the firewall opening. Position the wires along the right fender. Replace the blue connector into the harness. See IGNITION SYSTEM WIRING for detail to attaches these wires.

22. Use the proper size ring terminals or spade terminals to connect up the GAUGE SENDER wires to their proper senders. Cut the wires to length, attach the terminal and solder. Identify the wires by their label.
23. Locate the flat black connector next to the blue connector. Connect the wires that you need for your installation and remove those which are not needed. The white CHOKE wire supplies power to your electric choke. The blue and red wires are used to supply power for emission devices such as idle solenoid and distributor modulator valve. The pink OPT-1 wire can be used for your special installation. The opposite end can be found next to the fuse panel. This wire will handle a maximum of 10 amperes.
24. Continue along the harness until you reach the area where the heavy red "BATTERY", white "I TERM" and the violet "START" wires are found. These wires are attached to your starter solenoid. Rework harness as required. Use a the FL-1 (2.0mm) FUSELINK to attach the heavy BATTERY lead to the heavy (3/8") starter motor solenoid post where the battery (+) wire is connected. First connect the ring terminal of the 2.0mm FUSELINK to the solenoid post then cut the red BATTERY wire to length, strip back the insulation 3/8" and crimp the copper wire securely to the yellow butt splice on the FL-1 FUSELINK. Use the proper terminal to connect the violet "START" wire to the "S" post of the solenoid. The white "I TERM" wire goes to the "I" or the "R" (depending on the solenoid) terminal on the starter solenoid. See STARTER SOLENOID WIRING.
25. Locate the yellow "ALTERNATOR" wire. Attach this wire to the heavy "BAT" stud at the rear of the alternator. Use a heavy duty ring terminal. Crimp terminal securely then solder.
26. See REGULATOR WIRING to wire alternator to regulator. The green "REG S" wire goes to regulator as shown.
27. Locate the 2 Pin black "WEATHER PACK" connector with the tan "PARK/SIDE" and "GND" wires installed. We supply these new weather pack connectors for increased reliability. Find the matching black connector and male pins from the weather pack package. Remove the existing rubber two pin connector from your side lamp removing as little wire as possible, then install our special male pins, seals and black weather pack connector to the original wires. Follow the instructions for "WEATHER PACK" connectors to install these wires into the connector. Insert either wire into opening "A" and the remaining wire into "B" of the matching black weather pack connector.
28. Locate the grey weather pack connector with the tan "PARK/SIDE" and the dark blue "RT TURN" wires. Find the matching grey connector and male pins from the weather pack package. Remove the original Ford two pin rubber connector at the end of your RIGHT TURN / PARKING LAMP socket wires. Install two male weather pack pins as per the "WEATHER PACK" instructions on these wires. Connect the turn signal wire (bright filament) to PIN "B" of the grey connector and the park wire (weak filament) to Pin "A" of the matching grey two pin weather pack connector.
29. Plug in the 3 terminal headlamp connector into your passenger's side headlamp. Locate the black "GND" wire coming from the headlamp connector. This wire must be securely connected to your chassis. Cut the wire to length, install a ring terminal, solder the terminal. Use a sheet metal screw or mounting bolt to attach the ring terminal to a clean chassis (frame) surface.
30. Connect the yellow "HORN" and black "GND" wires to the horn. You may need to connect the "GND" wire to the horn body (metal). ***Splice to original connector if necessary.***

REAR HARNESS WIRING

31. Return to the driver side of the engine compartment where the oval 5 Pin plug and the flat 3 Pin plug are located. The grey "BACK LMPS" and the yellow "LEFT STOP", dark green "RIGHT STOP", pink "FUEL SNDR" and the light green "TAIL LAMPS" wire will be routed to the rear of the vehicle. Run these 5 wires to the rear of the vehicle. Spot tape them every foot or so. Split tubing is supplied to wrap and protect these wires against damage.

You will be using the rear harness in conjunction with the two 4 pin weather-proof connectors to wire the rear lamps. Note that there are wires for two fuel tank senders in the rear harness.
32. Use the grey "BACK LMPS" wire to wire both backup lamps. Splice as needed. Make certain that the backup lamp housing (metal) is securely grounded.
33. Use the "LEFT STOP" and "RIGHT STOP" wires to wire both stop lamps. These lamps are used for both

the **stop** and **turn** function.
34. The pink "FUEL SNDR" wire get connected to your fuel tank sending unit" Make certain that the tank is grounded or the metal body of the sender is grounded. Use the brown FUEL 2 for your second tank sender if you're using two tanks.
35. Locate the two light green assemblies which are used to wire the tail , parking and license lamps. One harness has one blue BUTT connector and 4 wires. Wire this harness to the license, tail and side lamps on the driver side of the vehicle. The "TAIL/SIDE" wire with the blue butt connector gets connected to the light green "TAIL LAMPS" wire coming from the front. Cut the "TAIL LAMPS" wire to meet which the butt connector. Strip off 3/8" of insulation and crimp to the "TAIL/SIDE" wire.
36. Locate the "PASS/SIDE" wire in this harness. It is routed over to the passenger side rear lamps and is used in conjunction which the second light green harness. Connect the passenger tail and side lamp to the "TAIL LAMP and "SIDE LAMP" wires. The blue butt connector get spliced to the "PASS/SIDE" wire from the left side.

OPERATION AND TEST

1. Turn all electrical switches to their **OFF** position. This includes the ignition and turn signal switches. The transmission should be in neutral or park with emergency brake **ON.** If a problem occurs, see trouble shooting section of this manual for additional directions.
2. Re-attach the battery **ground (-)** wire securely to the **battery (-)** post.
3. Brush the **battery (+)** clamp across the battery positive post. Look for sparks which show unwanted current flow. If there is no sparking, securely attach the battery cable. If you observe sparks, see the trouble shooting section of this manual.
4. Test the parking and headlamps. Pull your headlamp switch knob out one notch. The parking and side lamps should be **ON.** Continue one more notch. Check high and low beams as well as **HIGH BEAM INDICATOR** lamp. Check to see that you can control the intensity of the instrument lamps with the headlamp switch knob. Turn **ON** the dome lamps with the headlamp switch.
5. Turn **OFF** the headlamps, parking and dome lamps. Test **HORN** operation.
6. Place your foot on the brake pedal. Have someone verify that the stop lamps are working.
7. Place the ignition switch into the **ACC** position. Move directional switch into the **LEFT TURN** position. Check to see that the left front and rear turn signal lamps are flashing while the right side stop lamp stays **ON.**
8. Move the directional lever to the **RIGHT TURN** position. Check to see that the right side turn signals are flashing and the left stop lamp is stays **ON.**
9. Remove your foot from the brake pedal. Then test turn signals again. Make sure that your dash mounted turn indicator lamps work as well.
10. Return ignition switch to **OFF.** Turn **ON** your HAZARD SWITCH. Check to see if all turn lamps are flashing. Turn **OFF** hazard switch.
11. Turn ignition switch to **ON.** This position is called **RUN** and supplies power to both the **ACCESSORY** and **IGNITION** portions of the fuse panel. Check to see that your wiper motor works properly.
12 .Verify that you have auxiliary power at your electric choke etc.
13. Verify that both **BACK-UP** lamps are working by putting the transmission in reverse with the ignition switch in **RUN.**
14. Advance the ignition switch to the **START** position. The engine should immediately **CRANK** and *START.* Also, the **BRAKE WARNING** lamp should light when the engine is **CRANKED.**
15. Use the throttle to increase idle speed and check your **AMP METER.** It should show a "CHARGE" condition. Continue to watch the instruments to check for proper oil pressure and water temperature operation as the engine warms up.

tion as the engine warms up.

16. Turn **OFF** ignition switch. Engine should stop normally with no **run-on.**

TROUBLE SHOOTING

Missing or improper grounds are the cause for most electrical problems. Secondly, wires shorted to ground cause additional problems but are easier to find. Intermittent operation is the most difficult to chase down due to their very nature. The failure to identify the proper lamp filament (bright vs dim) is easily remedied by swapping the wires around but many times an improper ground can cause the same effect as improper lamp wiring. If a electrical device fails to operate at all, first check the FUSE and GROUND for that unit. Remember, fiberglass doesn't conduct electricity so all electrical units mounted to a glass panel which use their metal case as a ground will need to be grounded by a supplementary wire attached between the unit and chassis ground. An example would be your horn and Ford starter solenoid.

BATTERY TERMINAL SPARKS WITH EVERYTHING OFF: There is battery current going to an unexpected place such a shorted power wire or defective electrical unit. The best way to discover the problem is to remove fuses one-by-one until the sparking stops. If you have a very small current flowing from the battery, connect one end of a test lamp to the battery (+) post and attach the other lead to the battery cable. The lamp will light because battery current is going through the lamp. Remove fuses until the lamp goes out then trace the problem to the area protected by that fuse.

MISSING GROUND: Electrical devices which don't work or work marginally, may have their ground missing. Temperorily rig up a "**ground wire**" attached to a known good ground such as the battery (-) post or chassis and then touch the "ground wire" to the device's ground wire or metal framework. If the device functions properly, replace the ground wire or missing wire as required.

BLOWN FUSE: Examine the fuse to see if there is a small overload or a direct short to ground. If the inside of the fuse is black, you have a direct short; however, if the fuse wire is slightly parted, there is a small over current. Follow the wires associated with the blown fuse to find the problem. On slight overload, replace the fuse with one value higher (ie 10 to 15 amps). Use an OHM meter to track down a shorted wire or malfunctioning electrical device. Some electrical devices such as fans draw a high current until they get up to speed and willl need a larger fuse.

NO TURN SIGNALS: Your steering column switches battrey current to the turn lamps through the turn signal flasher to make the lamps flash. With the directional switch OFF, power comes from the fuse panel to the stop switch and then on to both stop lamps via the directional switch. On a left turn, the directional switch connects the flasher to the left front turn lamp and to the left stop lamp while keeping the connection from the stop switch to the right stop lamp. The directional indicator lamps are electrically connected to the front turn lamps. If you have working 4 WAYS, there maybe a bad turn flasher or blown fuse.

NO 4 WAYS: Your hazard switch connects both front turn lamps and both rear stop lamps to the hazard flasher. The hazard flasher has constant power from the fuse panel. Check the hazard flasher, fuse and hazard switch. If the directional switch works properly, check the hazard flasher and fuse. Swap flasher if there is any doubt.

NO PARKING and/or HEADLAMPS: This kit uses separate fuses for the PARKING/TAIL and the HEADLAMPS. If you have parking lamps but no headlamp check the headlamp fuse. Check for electrical short prior to replacing fuse. If fuse blows only in HIGH BEAMS, then check for shorts to ground after the DIMMER switch. Reverse the procedurre for LOW BEAMS. If some PARKING/TAIL/SIDE lamps are ON **but not all**, check for a ground problem or severed wire. If none come ON, check fuse and headlamp switch operation.

ENGINE WILL NOT CRANK: Check to see if your NEUTRAL SAFETY SWITCH is making good contact in PARK and NEUTRAL. Battery current comes from the battery through the ignition switch BAT terminal to the START terminal, through the neutral safety switch (if used) to the "S" post of your starter solenoid then to ground. Check to see if you have battery voltage at the solenoid "S" post with the ignition switch turned turned to "START". If there is voltage present, you have a bad solenoid or a missing ground. NO voltage indicates a bad ignition or neutral switch or an open "START" wire.

ENGINE WILL CRANK BUT NOT START: Remove the coil wire from the distributor. Hold it 1/4" from the engine block and crank the engine. A good spark indicates a distributor cap problem, fuel problem or timing difficulty. NO spark indicates a wiring problem, bad module/distributor (capacitor faulty) or blown fuse. See IGNITION INSTRUCTIONS for additional trouble shooting infomation.

ENGINE FIRES BUT WILL NOT STAY RUNNING: You have a faulty ballast resistor or improper wiring to ignition module/distributor from ignition switch.

ENGINE CONTINUES TO RUN WITH KEY OFF: Faulty wiring from ignition switch or from starter solenoid "I" or "R" terminal. Additionally, you alternator is supplying power back to the fuse panel. Check regulator wiring and the operation of idle solenoid on engines which run-on several seconds.

ALTERNATOR FAILS TO CHARGE: Use a voltage across the battery posts to test fo rproper charging. Voltages above 13.5 and less than 14.7 volts at the battery indicates a proper charge. AMMETERS showing a discharge with prober battery voltage must have their wires swapped or turned around.

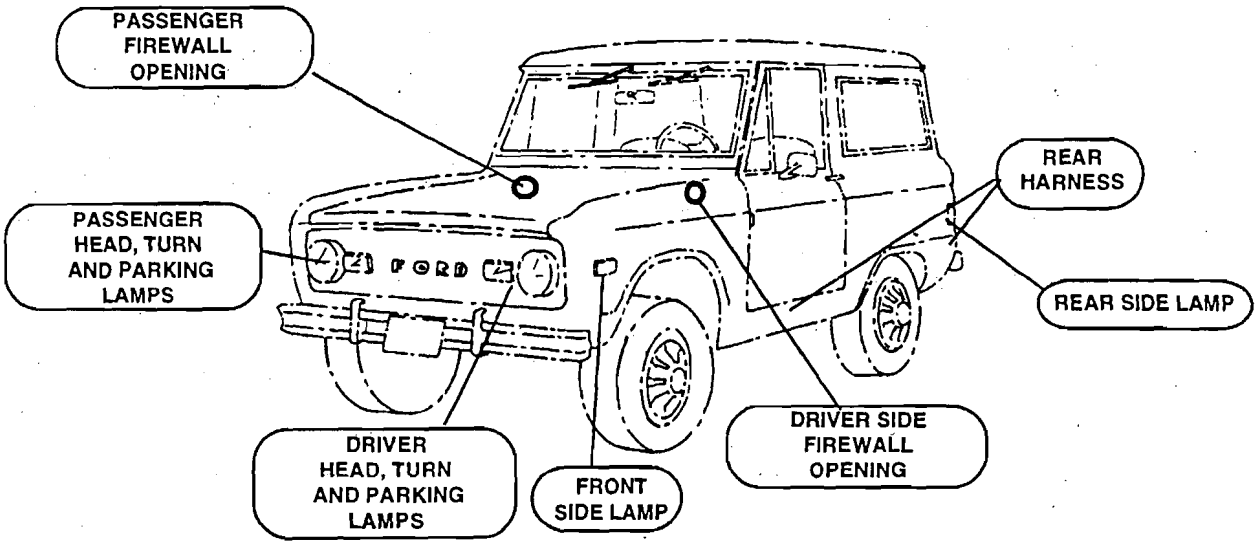
HORN WILL NOT OPERATE: Columns which blow the horns directly (DO NOT USE HORN RELAY) have power going from the fuse panel into the column then through the horn button to the horns, Check horn fuse and horn button operation. If you have power at the button but none coming out, you have a defective horn button. Columns which use a horn relay, operate the relay by grounding a wire connected to the horn button. If you hear the relay CLICK, then the button is good. The problem is between the horn relay and the horns. Check horn ground if battery voltage is good at horn terminal.

BRAKE WARNING LAMP DOES NOT OPERATE: The brake warning lamp should operate when cranking the engine. The lamp is wired **through** the brake proportioning valve. One side of the valve switch is connected to the ignition switch terminal which gets grounded during cranking. The other side of the proportioning valve switch goes to the WARNING LAMP case. The center terminal is hot during RUN and START. If the porportioning valve over-centers, it grounds the wire attached to the WARNING LAMP case thus turning ON the lamp. The ignition switch grounds the WARNING LAMP case during start to test the lamp.

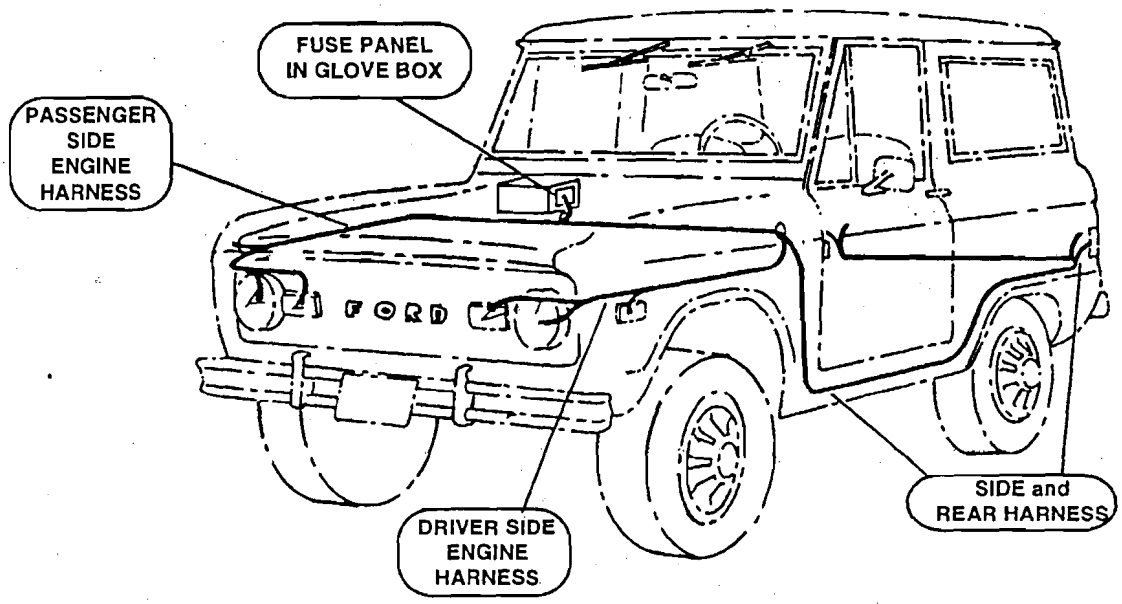
DOME LAMP DOES NOT OPERATE: The headlamp switch connects battery power to your dome and courtsey lamps. The lamp housings must be grounded. Check the "DOME" fuse and "DOME LAMP" wire.

INSTRUMENT LAMPS DO NOT OPERATE: The intensity of your dash and instrument lamps is controlled by the head lamp switch reostat. There is a fuse connected to the headlamp switch which feeds the lamps. Check to see if it is blown, A blown fuse indicates a short in the dash lamp wiring. Look for pinched wires and shorted lamp sockets.

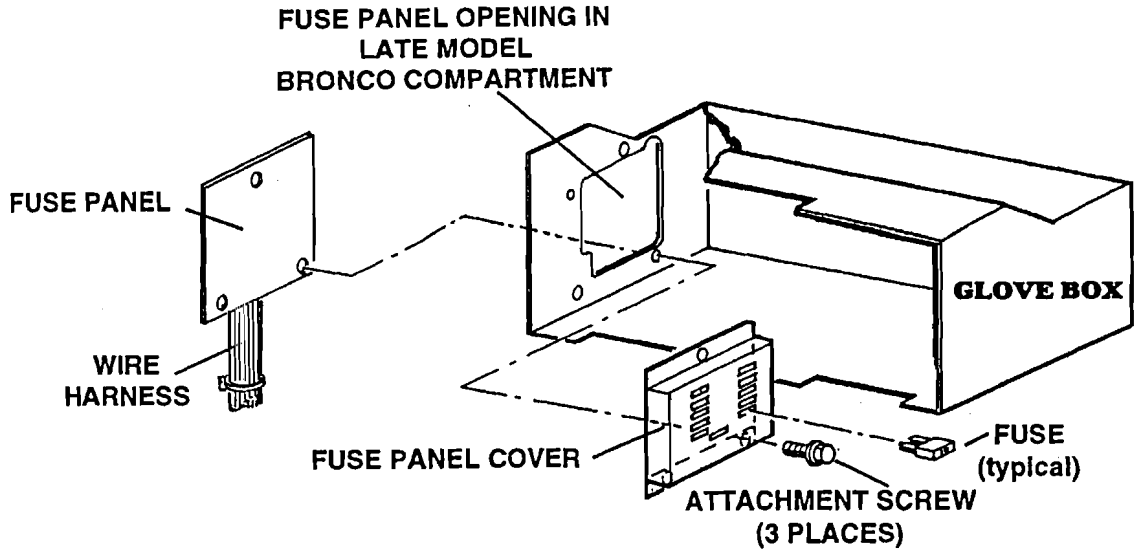
WIRING AREAS



WIRING HARNESS ROUTING



FUSE PANEL INSTALLATION



Centech has redesigned the original fuse panel to accept additional six fuses modern fuses. This provides additional safety for our customers. We mount this panel in the glove compartment of all Broncos. Old style Broncos will need to install a late model glove compartment or make an opening in your original glove box to accept the new fuse panel. The fuse panel mounts on the outside of the box and is held in place by the Fuse Panel Cover by three bolts. These bolts clamp the fuse panel to the cardboard. Be careful not to over tighten the bolts to prevent the cardboard from squishing out.

You can install the fuse panel to the side the glove compartment while the glove box is still in the dash; however, it would be easier to remove the glove box and bring the harness through the opening prior to attaching the fuse panel.

1. Locate the portion of the wire harness which contains the fuse panel. Position the fuse panel so that the wires will face down towards the floor.

2. Locate the fuse panel cover and the 3 attachment screws from this kit. Note how the cover will be positioned over the fuses. Insert the fuse panel into the glove box opening then place the fuse panel cover over the fuses.

3. Line up the lower rear hold down hole on the cover, glove box and fuse panel. Insert one attachment screw and tighten slightly.

4. Use the fuse panel as a guide to open up the two remaining mounting holes. Insert the two remaining attachment screws. Tighten all 3 screws until the fuse panel is held securely to the glove compartment. Do not over tighten.

GAUGE WIRING

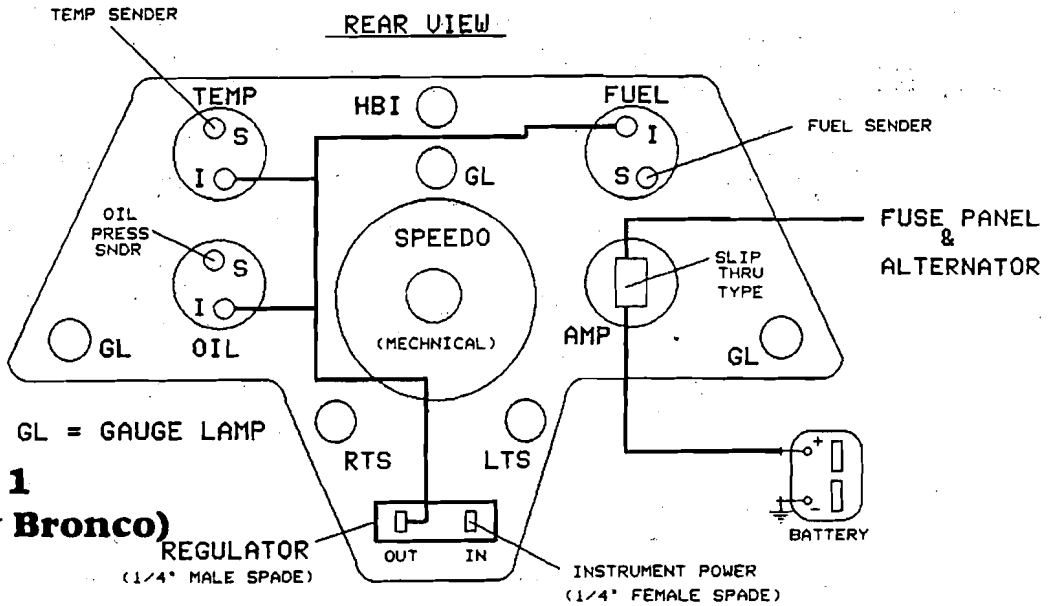


Figure 1
(Typical Early Bronco)

1. Locate the portion of the harness which contains the gauge lamp sockets and wiring for your stock gauges. Remove the gauge panel and old wires to make the wiring easier to wire if desired. Make certain that battery power is removed.

2. Install the six small instrument lamps from this kit in the black lamp sockets. Note that we have used special lamp sockets which have a built-in ground wire (GND) for extra reliability. Your stock lamp sockets use only one wire per lamp.

3. Locate and remove the red "I POST" wire tie wrapped to the red "INST PWR" wire in the gauge harness. Insert the male spade terminal on the end of the "I POST" wire into the voltage regulator at the bottom of the gauge panel. Connect the ring terminals on the "I POST" wire assembly to the "I" stud on the OIL, TEMPERATURE and FUEL gauge.

4. Attach the ring terminal of the orange "OIL PRESS" wire to the "S" terminal of the oil gauge. The blue "WATER TEMP" wire goes to the "S" post of the temperature gauge and the pink "FUEL SNDR" wire to the "S" post of the fuel gauge.

5. Snap the lamp with the dark blue "RT TURN" wire into the RTS opening. The lamp with the light blue "LT TURN" wire goes into the LTS opening and the green "HBI" snaps into the HBI opening.

6. Locate the three gauge lamp sockets with the black (GND) and dark green (GAUGE LAMPS) wires. Snap these into the three openings shown as GL in Figure 1. Note the different wire lengths.

7. Attach the heavy red "BATTERY +" wire into the rear of the AMP GAUGE. If your gauge has two posts, cut the "BATTERY+" wire and install two heavy duty ring terminals. Secure either wire to one post and the other wire to the remaining amp meter post..
NOTE: if the AMMETER reads backwards, reverse the wire(s) to the gauge.

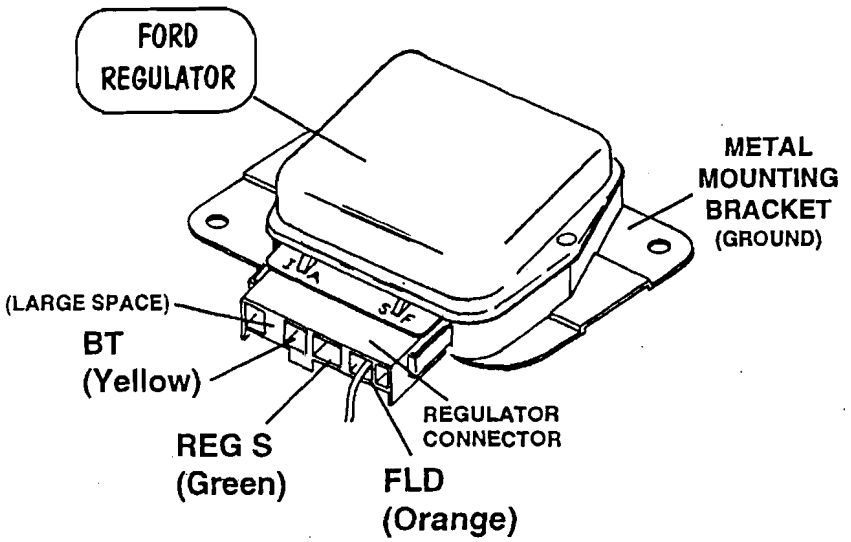
8. The red "INST PWR" wire with the female spademust be is pushed onto the male regualtor terminal. This is the wire which bring unregulated (battery) power to your stock gauges.

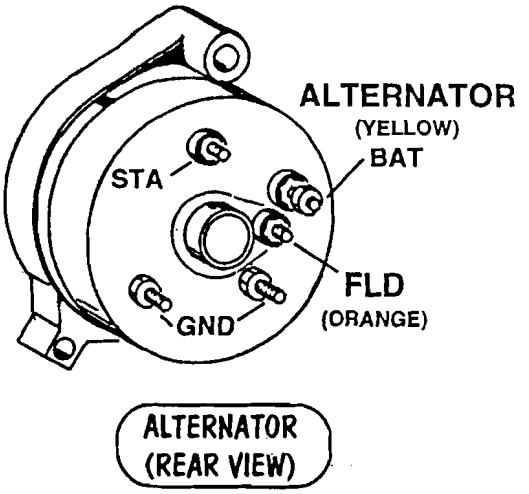
9. The yellow tach sender wire brings "tach" voltage to your tachometer from the Ignition coil. Follow the instructions with your tachometer to wire your tach. Tach power can be gotten from the "I" post and "GND" on the stock panel.

10. Attach the black "GROUND" wire to your gauge panel while re-installing the panel in the dash.

FORD CHARGING SYSTEM

This kit wires your external regulator to your alternator and to the main Bronco harness. You will need to install a Ford electrical terminal to the green "REG S" wire after the wire is cut to length. Solder the terminal before installing it. Make sure that the regulator mount is securely "grounded" to the metal inter-fender. Regulators mounted to a fiberglass front end must have a "ground" wire connected from the regulator to the chassis ground. When your alternator is charging properly, you will see your ampmeter show a slight (+) or charge. Voltmeters must indicate a voltage between 13.5 and 14.8 volts. Too high a charge current (high voltage) will cause the battery to loose water rapidly.





INSTALLATION

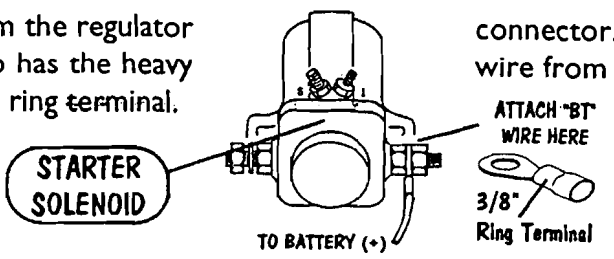
1. Securely mount your alternator and regulator in their final operating positions. Make certain that the regulator is properly "grounded" to the chassis through your fender or through a "ground" wire.

2. Locate the black REGULATOR CONNECTOR in this kit. Also find the single electrical terminal.

3. Locate the dark green wire labeled "REG S" coming from the passenger side engine harness. Cut this wire to the proper length to be installed into the regulator connector. Strip off 1/8" of the insulation and crimp the bare copper wire to the electrical terminal. Solder terminal and insert this terminal into the regulator connector "S" opening.

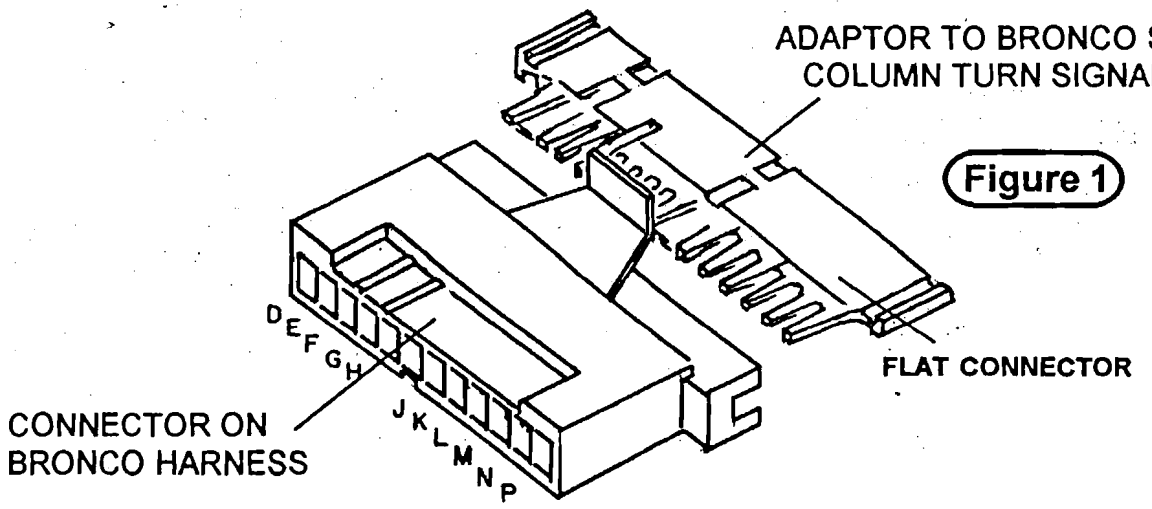
4. Locate the orange "FLD" wire coming from the regulator connector. Run this wire over to your alternator. Cut orange wire to length, strip insulation back 3/8" and crimp a blue #10 RING TERMINAL to the bare copper. Attach ring terminal to the FLD terminal at the rear of the alternator.

5. Locate the yellow "BT" wire from the regulator connector. Attach this wire to the starter solenoid terminal which also has the heavy wire from the battery (+). Cut the "BT" wire to length and use the 3/8" ring terminal.



6. Locate the heavy yellow ALTERNATOR wire in the passenger side engine harness. Run this wire over to the alternator "BAT" tuerminal. Cut the wire to length and push the rubber protective boot over the wire. Strip off 3/8" of insulation from the yellow wire and crimp on the heavy alternator electrical terminal. Solder the terminal securely. Gently attach the yellow ALTERNATOR wire terminal to the "BAT" terminal of the alternator then push the boot over the terminal.

TURN SIGNAL CONNECTOR WIRING

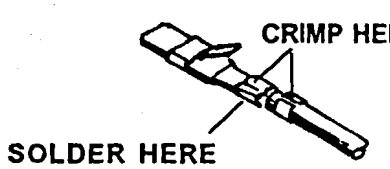


WIRE DESTINATION	TERMINAL	EARLY	MID YEARS	LATE
STOP SWITCH	P	LT GREEN	RED/BLACK	RED/BLACK
PASS. STOP LAMP	N	ORANGE/BLUE	ORANGE/BLUE	LT GREEN
DRIVER STOP LAMP	M	GREEN/ORANGE	GREEN/ORANGE	YEL/BLACK
TURN SIGNAL FLASHER	L	LT BLUE	BLUE	BLUE
HAZARD FLASHER	K	NA	WHITE/RED	WHITE/RED
RIGHT FRONT TURN LAMP	J	WHITE/BLUE	WHITE/BLUE	WHITE/BLUE
LEFT FRONT TURN LAMP	H	LT GRN/WHT	LT GRN/WHT	LT GRN/WHT
HORN RELAY	G	NA	BLUE/YELLOW	BLUE/YELLOW

Early Style Horn Connection

HORN SWITCH POWER IN	Terminal D	YELLOW
HORN SWITCH OUT TO HORNS	Terminal E	BLUE/YELLOW
	(No Horn Relay Used)	

Remove the stock Bronco turn signal connector coming from the middle of the steering column. Cut the wire as close to the old connector as possible. Install our new male terminals to your old wires by stripping off approximately 1/8" of insulation then crimping the bare wire to the new terminal. Solder each terminal (Figure 2). Crimp the terminal over the wire insulation after soldering. Insert each terminal into the flat connector turn signal adaptor as shown in Figure 1.

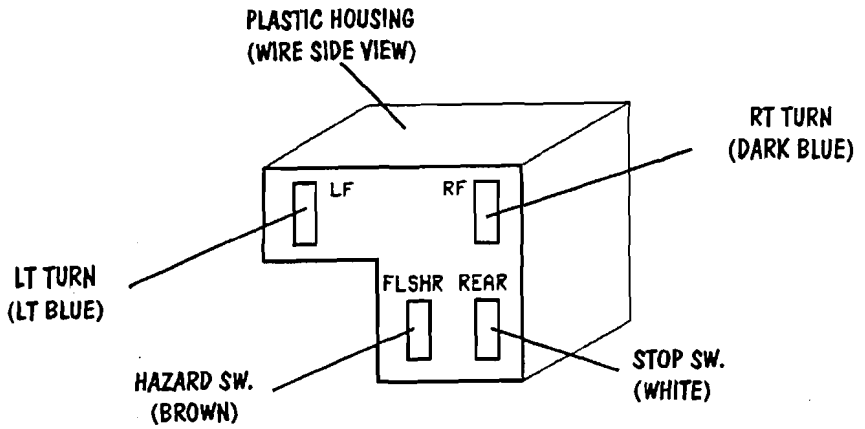


TURN SIGNAL ADAPTOR PIN
Figure 2

NOTE: Early Broncos' do not use a horn relay but blow the horn using only the HORN BUTTON in the steering column. Use the YELLOW and BLUE wires as shown. Newer Broncos' use a horn relay. Connect the BLUE/YELLOW wire to Pin G of the adaptor.

DASH MOUNTED HAZARD SWITCH WIRING

USE THESE INSTRUCTIONS WHEN WIRING A *Bronco* WITH A DASH MOUNTED HAZARD SWITCH. TAPE WIRE TERMINALS WHEN NOT USING A DASH HAZARD SWITCH!



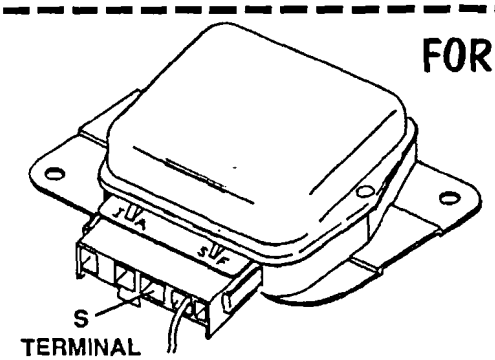
Remove your stock hazard switch from your dash board by removing the knob and retaining nut. Customers with a dash mounted hazard switch must reuse the old hazard switch and it's connector. After removing your original dash wiring harness, locate the hazard switch and the connector plugged into it. Find the section of the new harness near the headlamp and ignition switches which has 4 wires with brass terminals attached. These wires are marked "RT TURN", "LT TURN", "STOP SW." and "HAZARD SW.". Examine these pins to see how they use a small metal flap to hold the pin to the plastic connector.

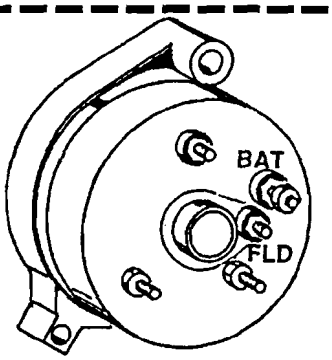
Use a paper clip or flattened pick to remove the old terminals from the connector by inserting the pick into the switch side of the plastic housing to depress the retaining flap. Gently pull the wire and pin from the rear (wire side) of the plastic housing. Remove all four pins.

Clean the plastic connector housing and install the four wires and pins from the new dash harness as shown above. Install the connector onto your original hazard switch and mount the switch to the dash. Replace knob.

The HAZARD SWITCH operates by connecting the front turn and rear stop lamps to the HAZARD FLASHER. The flasher switches battery power ON and OFF to the four lamp when activated.

FORD REGULATOR WIRING





The regulator controls the amount of current supplied by the alternator. This is controlled by varying the current from the regulator to the "FLD" of the alternator. The regulator is switched ON and OFF by the "S" terminal. We supply the proper terminals and connector for your regulator and alternator. By sure to solder these terminals after crimping the wire. *Ground* regulator case if mounted to fiberglass material (i.e. *fender*).

1. Mount the alternator and regulator in their final positions. Make certain that the regulator case is securely "grounded" to the chassis (frame).
2. Plug the alternator harness kit into your regulator. Route the wires from the connect into the passenger side harness.
3. The yellow "BT" wire goes to the starter solenoid post which has the battery (+) wire attached.
4. The orange "FLD" wire from the regulator goes to the FLD terminal on the alternator.
5. Connect the dark green "REG S" wire from the passenger side engine harness to the "S" opening on the regulator connector. Use *Ford* terminal provided.Solder terminal before installing.
6. Connect the heavy yellow "ALTERNATOR" wire to the BAT terminal on the rear Of the alternator. Use rubber boot and lug. Place rubber boot over wire, cut wire to length, strip off 1/4" insulation, crimp and older lug.

WINDSHIELD WIPER WIRING

We supply replacement wiring for your stock or aftermarket windshield wiper motor. There is a special ground wire included to "ground" the motor case if you're using a fiberglass body. We also supply a new wiper switch to replace your stock one. Use your original knob on our new switch if you want or use our special aluminium "billet" knobs if you want to spruce up your dash.

Our wiper wires will carry a maximum of 10 AMPERES; do not over fuse this circuit.

Our wires are labeled to show their function as follows:

PARK SWITCH	*(black)*	Returns power to "PARK" wipers.
PARK POWER	*(red)*	Supplies power to motor to return wipers to the "park" position.
LOW SPD	(white)	Supplies power to low speed wire from motor.
HIGH SPD	*(dark blue)*	Supplies power to high speed wire from motor.

HINTS: Bronco wiper motor wire colors:

PARK = RED
LOW = WHITE/ORANGE
HIGH = BLUE
MOTOR STOP = BLACK/WHITE

If your wire colors do not match these, experiment by using the PARK wire as a power source to test the motor functions by turning the igition switch to accessories which puts power on the *park* wire.. Remember, there is a special wire coming from a stock Bronco motor to help stop the motor at the park position.

EMISSIONS WIRING

We supply wiring for your stock emissions electrical devices. These wires are labeled "CHOKE", "DIST MOD" and "IDLE SOL". They come from the passenger side engine harness near the rubber grommet in the firewall.

The white "CHOKE" wire is connected to your electric choke element on the carburetor. Original carburetors sometimes use this method to control the choke operation. Many aftermarket carbs use an electric choke. Connect the "CHOKE" wire to the electrical terminal from the carburetor choke. This wire is "hot" when the ignition switch is ON.

The dark blue "IDLE SOL." wire get connected to the electrical terminal of the 'idle anti-dieseling solenoid". This wire supplies power whenever the ignition switch is ON. The anti-dieseling solenoid allows the throttle plate to close nearly completely to prevent run-on after the ignition switch is turned OFF. See your factory manual for further details on the *THROTTLE EMISSION CONTROL SOLENOID.*

The red "DIST MOD" wire supplies power to your *distributor modulator valve.* The modulator valve is wired to the *distributor modulator ambient switch* and to the *distributor vacuum control valve* (see your factory manual).

WARNING LAMP WIRING

The *WARNING LAMP* on your dash indicates a failure in your brake system. The *WARNING LAMP* is tested every time you start your Bronco. One side (center post) of the lamp is connected to *ignition power* while the warning bulb case is connected to the warning switch and the ignition switch "test" terminal. The ignition switch grounds the case of the warning bulb whenever the engine is cranked. Your *WARNING LAMP* must light during "crank". This make certain that the bulb is OK.

1. Insert the black 2 pin warning switch connector onto your brake proportioning switch located at the driver's side of the engine compartment.
2.. Install the black "BRAKE WARN" connector onto the single "test" terminal on the rear of the ignition switch.
3. Splice the red "WARN PWR" wire located near the wiper switch to the center post of your *Brake Warning Lamp.*
4. Splice the black "BRAKE WARN" wire to the case terminal of your *Brake Warning Lamp.*

Ford IGNITION SYSTEM

We have included a new ignition switch in this kit to replace your old unit. This wiring kit has the capability of carrying far more current than your stock harness and needs a superior ingnition switch to handle the additional load. You will need to remove your stock switch then adapt this switch to your dash. This switch also accomadates "warning" terminal to test your "Brake Warning" lamp when cranking.

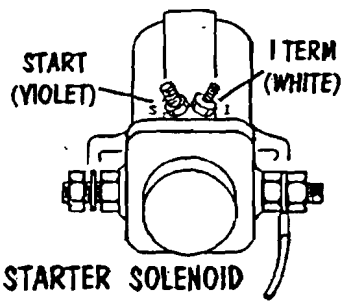


Bronco IGNITION SWITCH

To remove your stock ignition switch, first turn the switch to th ACCES- SORY position then use a thin pick to depress the release pin inside th switch. This button is reach through the small opening in the side of the bezel area Depress the button which gently pulling on the key . Slide the cyclinder out of th sawitch and then remove the switch from the dash. Install the new ignition switch and electrical connector.

Ford IGNITION MODULE

Ford electronic ignition systems consist of the ignition module (box), breaker less distributor, coil and ballast resistor. Early points systems use a points distributor, coil and ballast resistor. Broncos use resistance wire as a ballast resistor built into the wire harness.
Ballast resistors are used to reduce the voltage to the ignition coil. The ballast resistor is bypassed by the starter solenoid when cranking your engine so that full battery voltage is available at the coil (+) post when starting the engine.



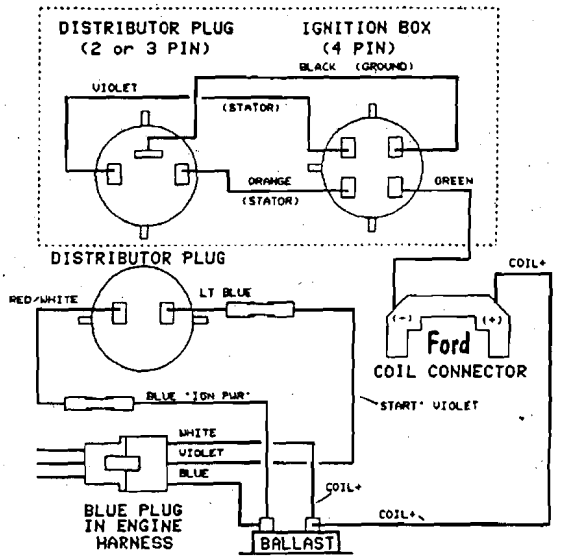
When using a stock electronic ignition system, you will need to reuse the wiring between the stock distributor and your ignition box plus splice wires from this kit to the original ignition box connector.

When splicing two wires together, the best way is to first slip a short section of heatshrink over the wire and then solder the two wires together. Wait until the joint cools somwwhat then move the heatshrink over the joint. Use a heat gun or match to shrink the heatshrink tubing tightly.

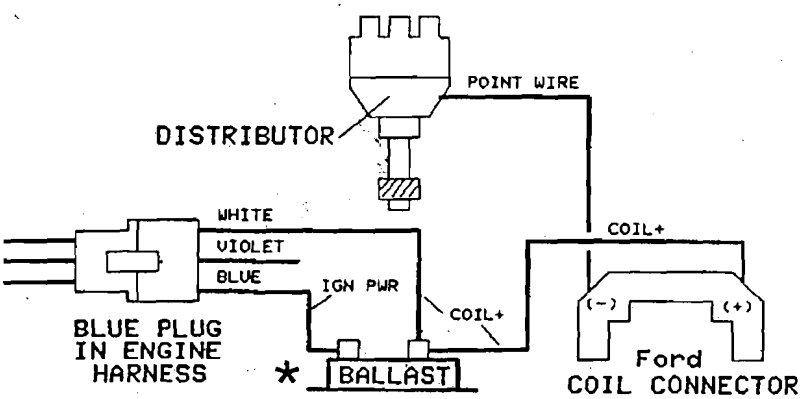
Dura Spark ELECTRONICS IGNITION SYSTEM INSTALLATION

1. Mount your ignition system in it's stock position or in a area away from the high heat generated by the exhaust manifolds and near the passenger side firewall. Make certain that the aluminium box is grounded to the metal frame or body. Mount the ballast resistor supplied in this kit to your firewall using the sheet metal bolt provided. This resistor gets very hot so keep it away from heat sensitive materials.
2. Locate the short engine harness with the blue sealed connector coming through the passenger side firewall grommet. This connector has a violet, dark blue and white wire attached to it.
Use a blue ring terminal to connect the dark blue "IGN SYS" wire to either side of the ballast resistor. Shorten as needed. Use the remaining "IGN SYS" wire to connect the ignition box power wire (usually red or red/white) to the same ballast resistor terminal by splicing the dark blue wire to the red module power wire then use a second blue ring terminal at the ballast resistor. Tighten ring terminals securely.
3. Splice the violet "START" wire to the ignition box bypass wire (usually light blue).
4. The white "COIL+" wire goes to your ignition coil (+) post and to the unused ballast resistor terminal. Attach these wires as neatly as possible.
5. Connect the GREEN wire from the 4 PIN ignition box connector to the COIL (-) terminal or post.

Ford Electronic Module Schematic



Ford Points Ignition System



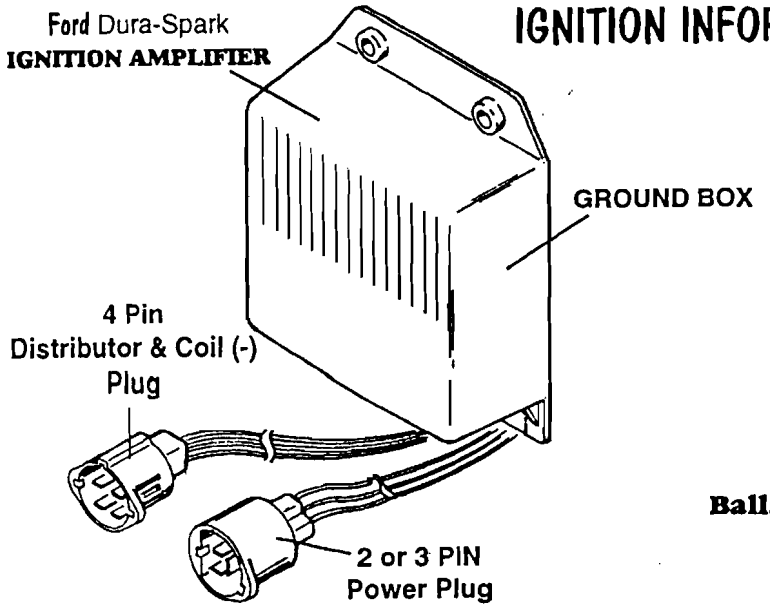
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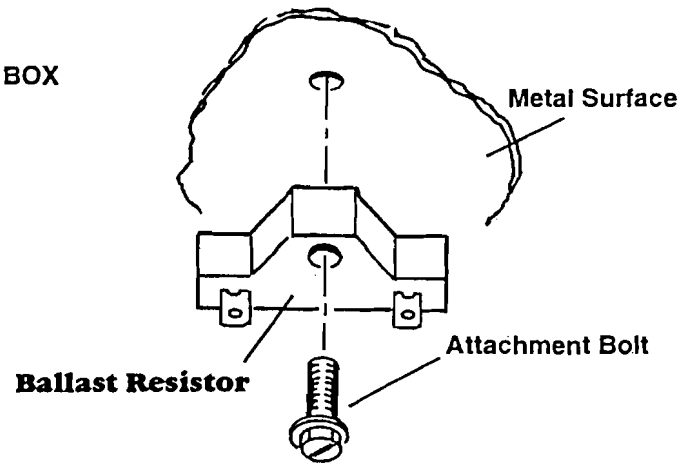
Please note that the ballast resistors are matched to their ignition coil. When purchasing a replacement coil which is not an exact replacement for your Ford vehicle, always purchase a matching ballast resistor and use this ballast resistor in place of the resistor included in this kit.

When installing an aftermarket ignition system with this harness, always follow the instructions which come with your new ignition module.

WIRE COLOR	WIRE LABEL	DESCRIPTION
Dark Blue	IGN PWR	Switched power for ignition system.
Violet	START	Hot during crank (from solenoid "S").
White	COIL+	Bypasses BALLAST Resistor during start (from starter solenoid "I").

IGNITION INFORMATION





Bronco's use a "points" or an "electronic ignition system". The points ignition consists of a distributor (with points and condenser), ignition coil and ballast resistor. Ford electronic ignition systems use a special electronic distributor, coil, ignition amplifier and a ballast resistor. Distributors tell the coil when to fire and to direct the spark to that plug. Ballast resistor reduce the battery voltage to a value needed by the coil. The ballast resistor is bypassed when "cranking" the engine to supply the maximum battery voltage to start the engine. Ballast resistors get hot when operating and need to be mounted to a metal surface to remove excess heat. Condensers are needed to allow the coil to produce a spark.

You will need to re-use the wiring between the distributor and the ignition box. This harness could have two or three wires at the distributor end. The GREEN wire from the 4 pin plug on the ignition box goes to the coil (-) post. Aftermarket tachometer sender wires get attached to the same coil (-) post. The RED ignition box wire bring ignition power to your box and the BLUE wire get connects to the violet START wire from the blue plug.

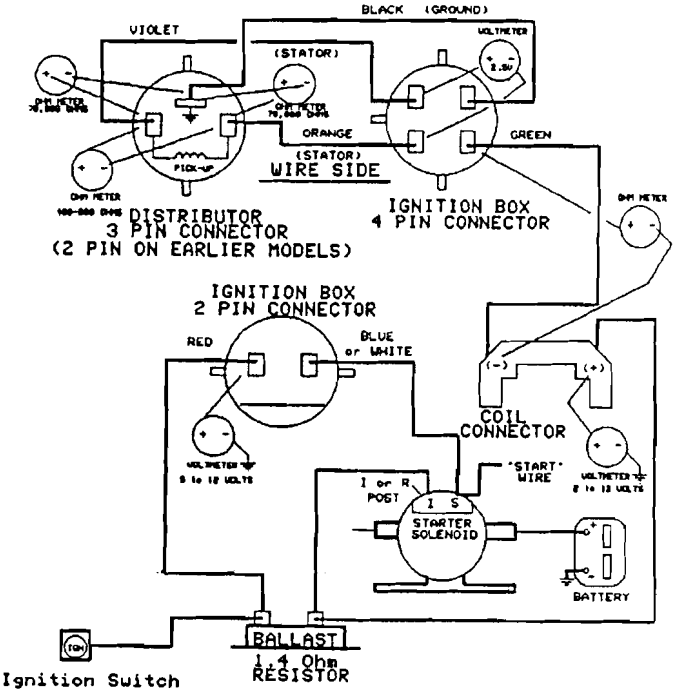
TROUBLE SHOOTING PROCEDURE

MAGNETIC PICKUP

Use a VOLT/OHMETER to measure the resistance across the violet and orange wire at the distributor to test the distributor pickup coil. Set the meter on the 2000 OHM scale. The meter should read between 400 and 800 Ohms. You can check the pickup coil at the ignition box end of the distributor harness for the same reading. A very high ohm reading indicates a open wire between the distributor and the ignition box connector. Replace the pickup coil or wire harness as needed. The black wire from the distributor should measure nearly zero ohms to ground.

IGNITION BOX TEST

Make certain that the GREEN wire from the ignition box goes to the COIL (-) post. Use your ohmmeter to test for a near zero resistance between the ignition box and coil (-). The BLUE wire must be connected to the "S" terminal of the starter solenoid. The RED box wire must go to the BALLAST resistor and has 8 to 12 volts when the key is "ON" and the motor is stopped. Make certain that the ballast resistor measures between 1 to 2 OHMs. See Trouble Shooting Diagram for details.



TROUBLE SHOOTING DIAGRAM

MISCELLANEOUS AND AFTERMARKET IGNITION SYSTEMS

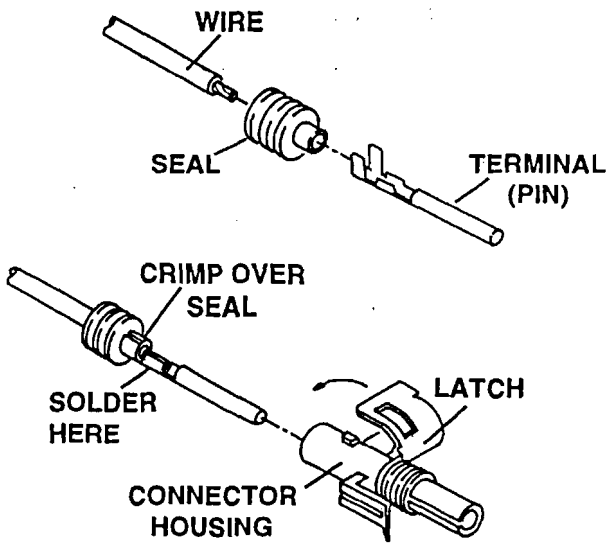
Ford Motor Sports offers new and more efficient breakerless ignition systems for many Ford engines. These systems include a modern distributor along with a ignition box. The distributor simply tells the ignition box when to fire a specific cylinder while the ignition box switches power on and off to the coil. When power goes through the coil, energy is stored inside that coil. This energy is released to generate a spark by quickly interrupting the current flow through the coil. Some ignition systems require a ballast resistor to reduce the current through the coil. Use the appropriate resistor which comes which your ignition system. We provide a 1.4 Ohm ballast required by most Ford coils.

Performance Distributors Inc. offers a drop in HEI ignition system (called "DUI") for most Ford engines. This system consists of a distributor/coil assembly much like the GM system. Everything is included in the distributor itself. All you need to do is to supply power from our dark blue "IGN PWR" wire on the blue connector in the engine compartment. No ballast resistors are needed with the DUI or the GM HEI ignition systems. Additionally, you can connect your tachometer sender post to the "TACH" terminal on their distributor. We supply the connectors for this distributor as well as the GM HEI distributor.

weather pack connector installation

Weather Pack connectors seal the electrical terminals against corrosive elements such as lubricants and anti-freeze. Each terminal can handle a maximum of 20 amperes. Each wire in a weather pack connector uses a special seal which is placed on the wire prior to attaching the wire to it's terminal. The electrical terminal is crimped over the bare copper wire and the wire seal. We supply solder to solder every terminal. Each connector opening is labeled on the connector housing. Use caution when inserting the terminal into the connector opening to prevent installing the terminal into the wrong opening. Special tools are available to remove weather pack pins from the connector if necessary. After inserting pins, close the retaining latch.

SINGLE PIN WEATHER PACK



1. Cut wire to length.
2. Place seal over wire. The "rib" side goes on first.
3. Strip wire insulation back 1/8".
4. Position seal and wire into end of terminal then crimp terminal over bare wire.
5. Crimp terminal over seal. Solder wire to terminal.
6. Insert sealed terminal into rear of connector housing.
7. Close retaining latch.

NOTE: A pin removal tool is available. Contact Centech, Inc. for price and availability.

Bronco Wiper Switch Wiring

You will need to connect the four wiper switch wires from this harness to your wiper motor. This can be done at the motor or at the pillar leading up to the motor by splicing the Centech wiper wires to your original wires. The wire colors should match your stock wires as follows:

RED	PARK POWER
BLACK	PARK SWITCH
WHITE	LOW SPEED
BLUE	HIGH SPEED

ALTERNATOR

DELCO 10Si, 12Si..... 1
Ford Bronco 2
Ford (Late Models) 3
One Wire 4

AUXILIARY POWER

Accessory & Battery 5

Gauge Panel

Aftermarket 6
Ammeter 7

IGNITION SYSTEMS

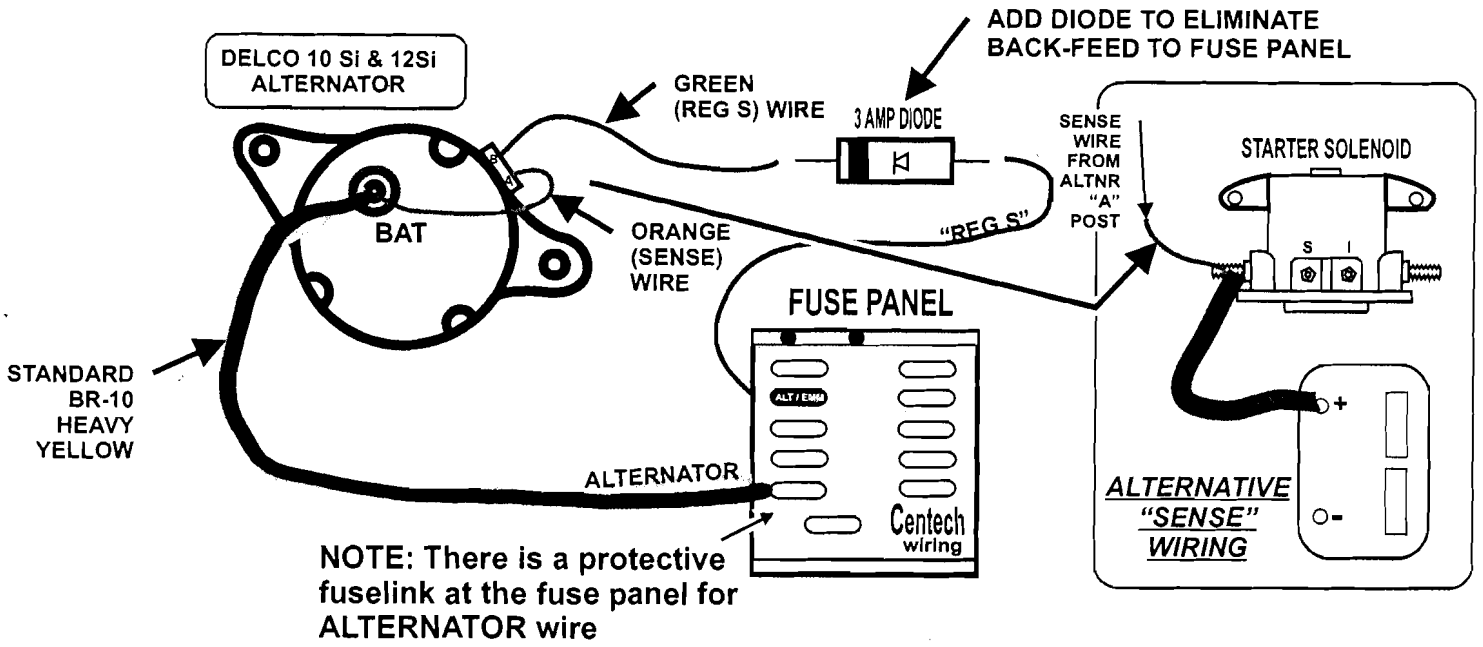
Dura-Spark 8
MSD 9
Points 10

STARTER

Bronco (stock) 11
Gear Reduction 11

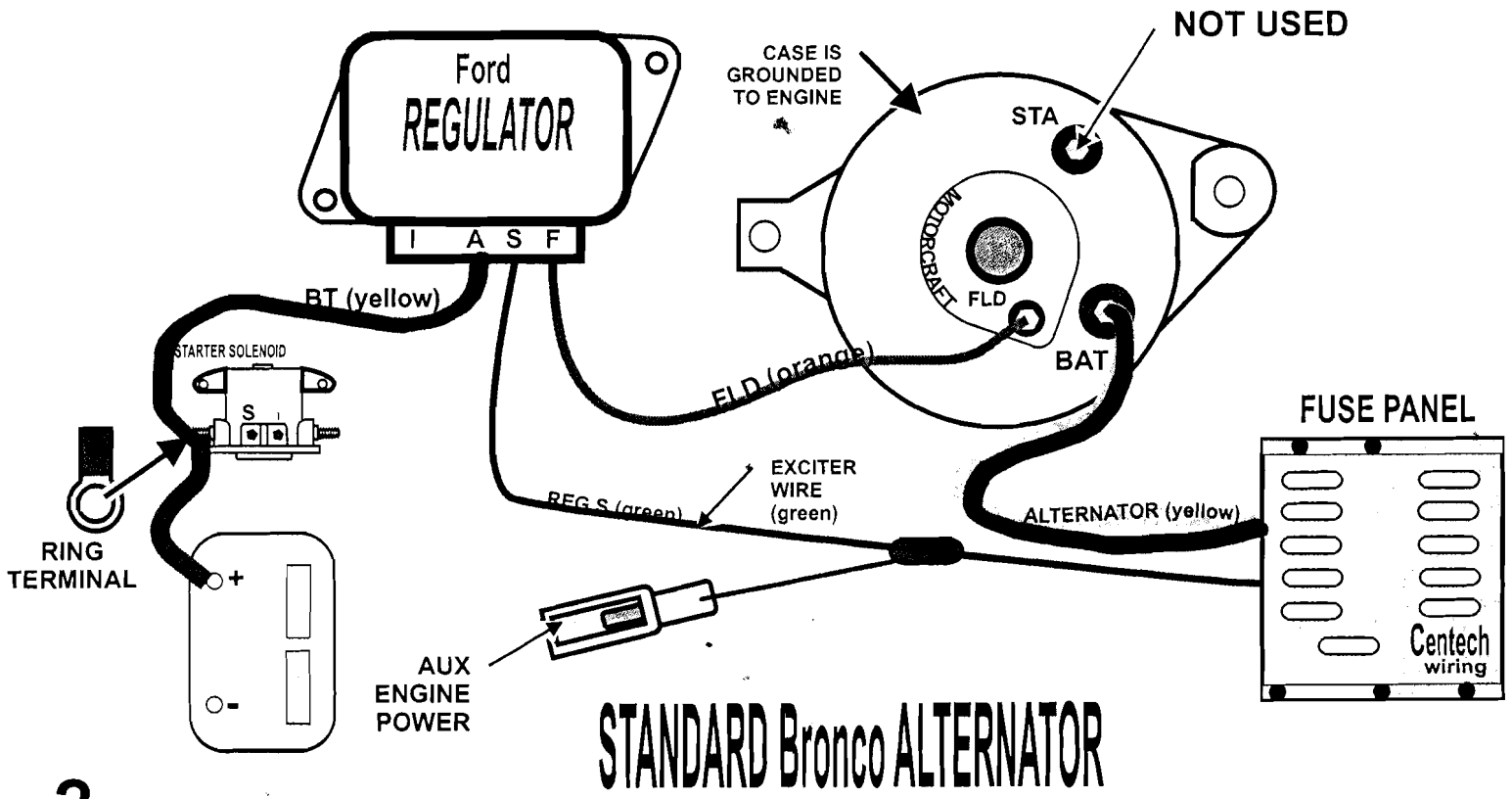
SWITCHES

Back_Up Lamps 15
Brake Warning 12
Hydraulic Brake 12
Hazard (Dash Type) 13
Heater Wiring 14
Neutral Safety (C4,C6) 15
Stop 13
Tanks 16



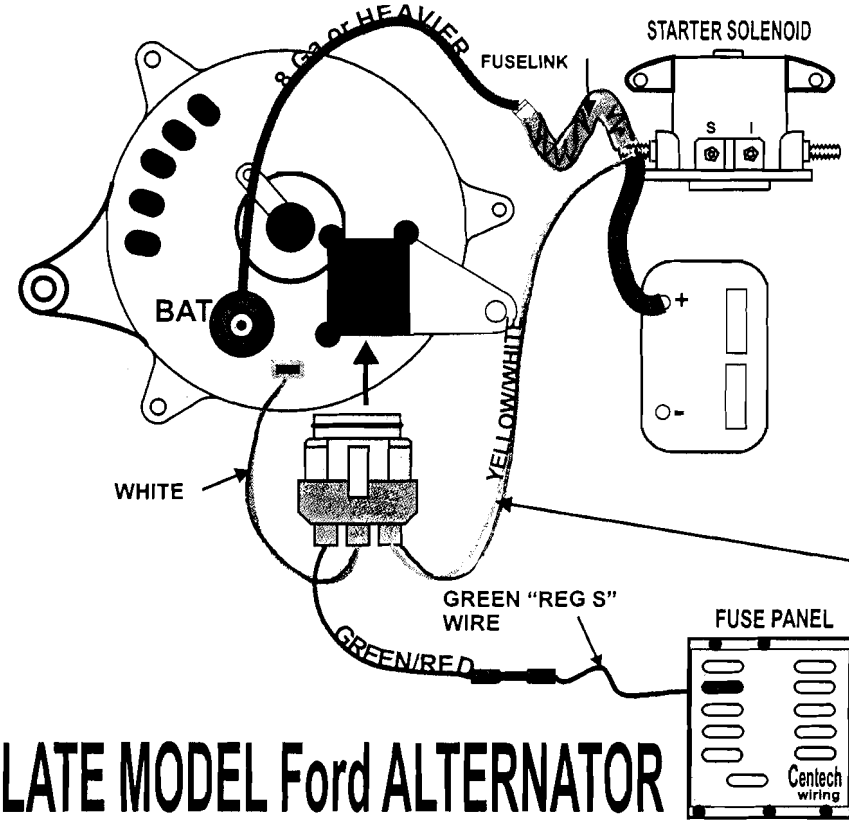
DELCO INTERNALLY REGULATED ALTERNATOR

10 Si OR 12 Si



STANDARD Bronco ALTERNATOR

2



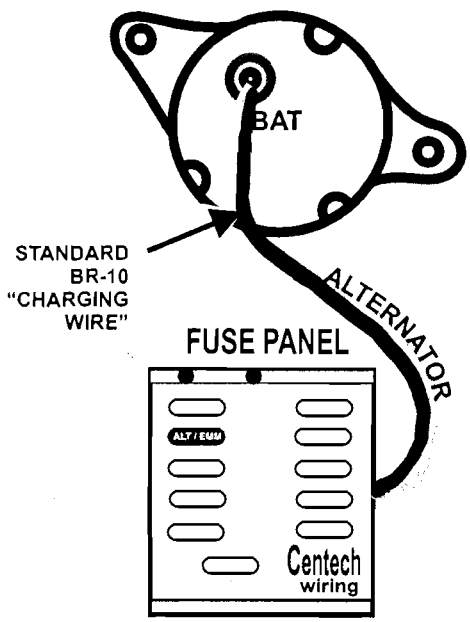
LATE MODEL Ford ALTERNATOR

Late model Ford alternators with a 3 pin plug require a larger charge wire than supplied with our BR-10 harness. Use an 8 gauge or heavier wire between the alternator BAT post and the battery (+). This wire needs to be protected by a fuselink or maxi-fuse as shown. The charge wire can be attached to the starter solenoid where the battery+ wire is connected OR directly to the battery+ post for Broncos not using an external starter solenoid.
DO NOT USE THE BR-10 ALTERNATOR WIRE

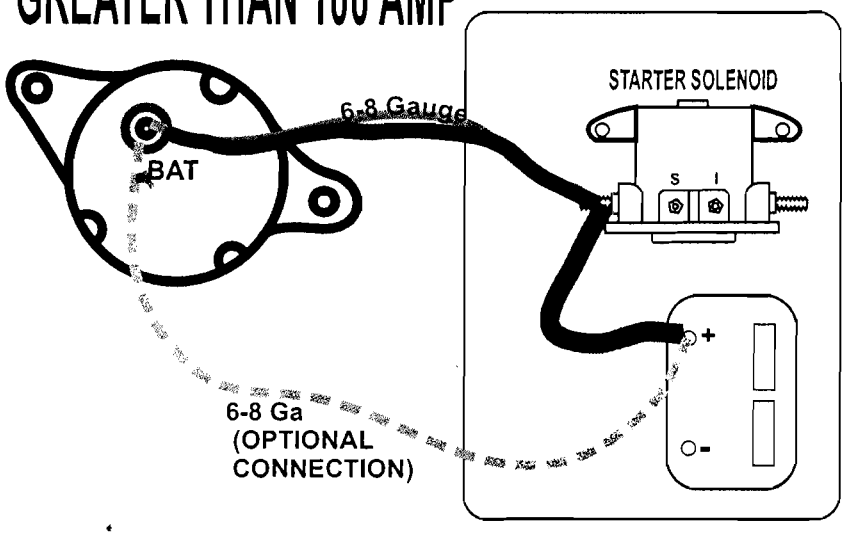
The yellow/white wire measures the voltage at the battery to control the charging current.

The green wire "excites" (TURNS ON) the alternator when the ignition key is ON. There must be battery voltage present on the "REGS" wire with the KEY-ON. This voltage is fused at the BR-10 fusepanel.

LESS THAN 100 AMP



GREATER THAN 100 AMP

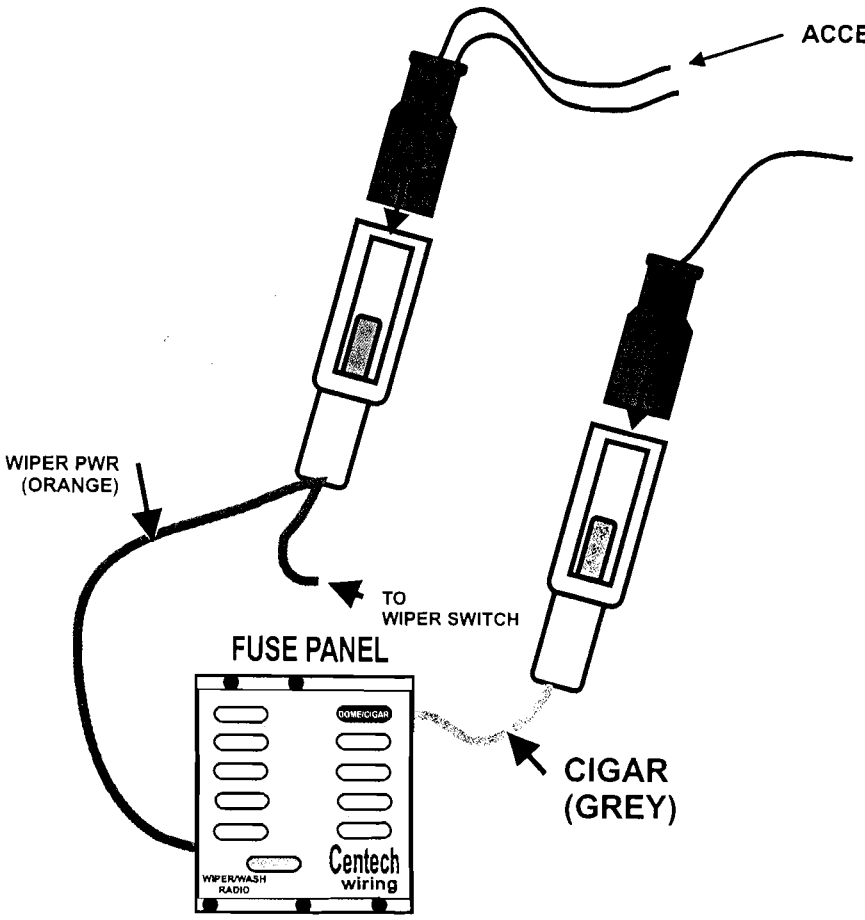


ONE WIRE ALTERNATORS do NOT use an external regulator. They are self-excited.

The stock Ford regulator needs to be eliminated along with the BR-10 green "REG S" plus the orange "FLD" and yellow "BAT" wires normally attached to it.

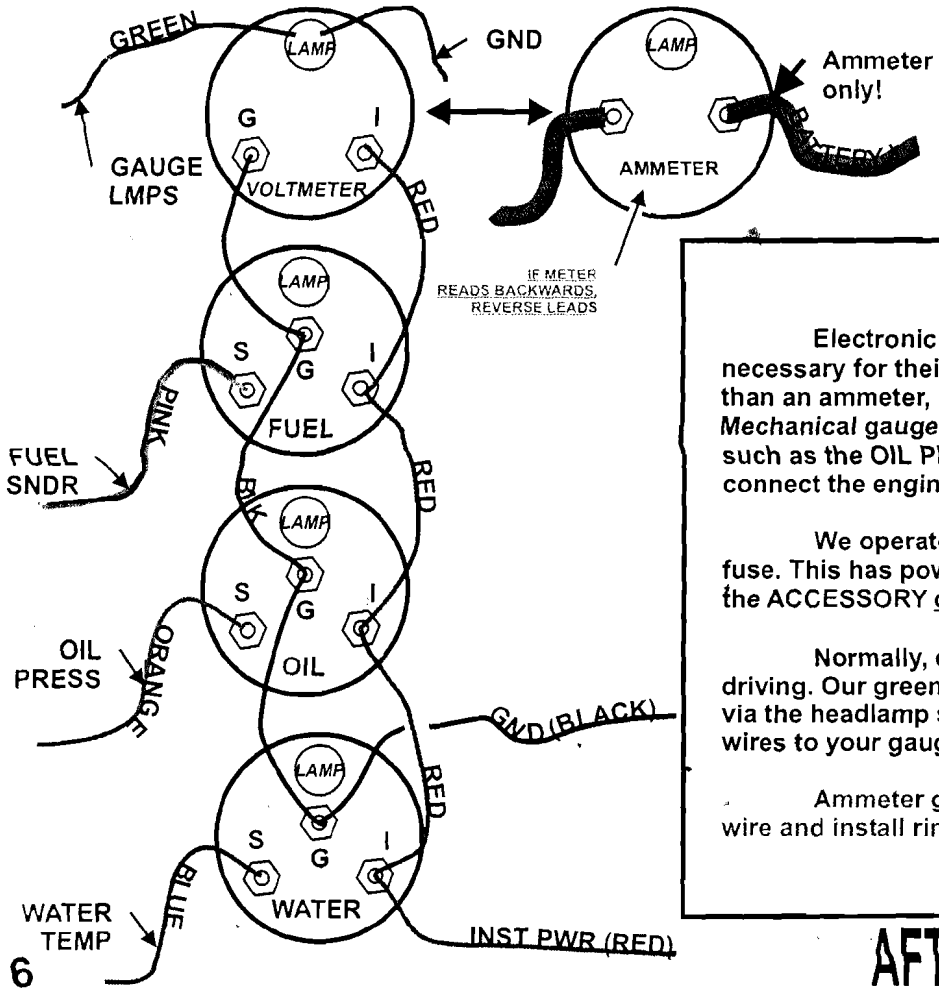
Use our standard ALTERNATOR WIRE *or* add your heavy custom wire between the alternator and the battery. 8 Ga or heavier is recommended.

ONE WIRE ALTERNATORS



The ORANGE wire is connected to the ACCESSORY fuse for the windshield wipers. You can use a 1/4" female spade to attach to this wire. It provides power when your ignition switch is in the ACC or RUN position. This is good for RADIO, GPS, CB and other low power requirements.

The GREY wire has constant power available. It is marked CIGAR but can be used for MEMORY RETENTION, PHONES or GPS etc.



I or + = ACCESSORY POWER
G or ⏚ = CHASSIS GROUND
S = SENDER

GAUGE WIRING

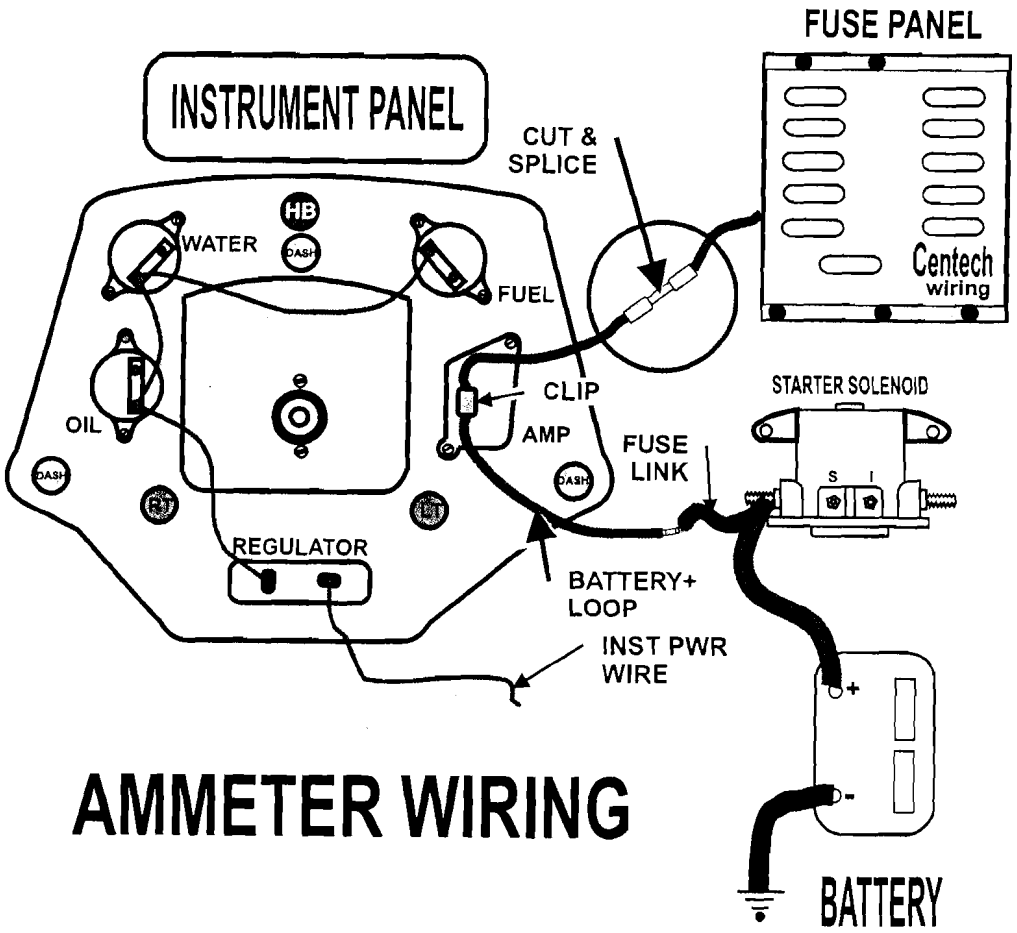
Electronic gauges have two or three terminals necessary for their operation. All electronic gauges, other than an ammeter, require a power source and a ground. *Mechanical gauges normally contain a "lamp" only.* Gauges such as the OIL PRESSURE" need an additional wire to connect the engine sender to the gauge.

We operate these gauges from the BACKUP/INST fuse. This has power available with the IGNITION SWITCH in the ACCESSORY or RUN (KEY-ON) position,

Normally, each gauge contains a lamp for night driving. Our green GAUGE LMPS wire supplies lamp power via the headlamp switch. Use our lamp socket or splice our wires to your gauge lamp(s).

Ammeter gauges require you to cut our BATTERY+ wire and install ring terminals as shown. Voltmeters do not.

AFTERMARKET GAUGES



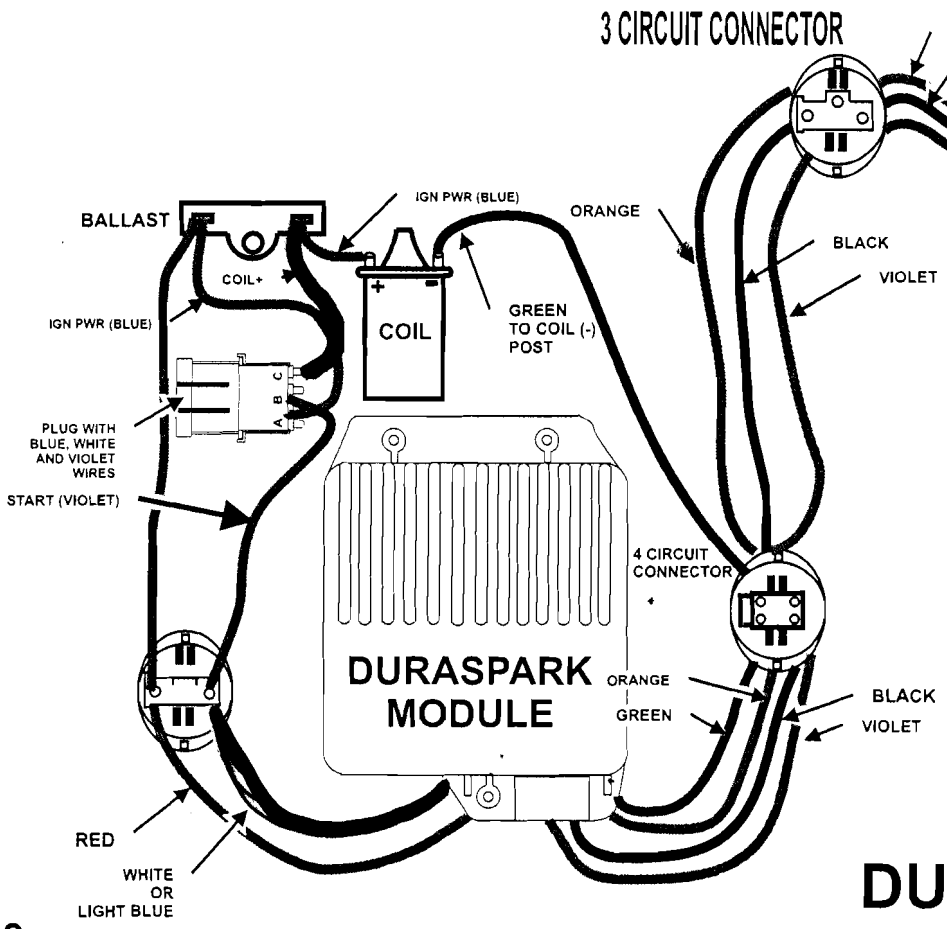
AMMETER WIRING

Find red BATTERY+ wire loop at instrument panel location.

Cut the wire and push it through the AMMETER CLIP.

Strip off 3/8" of insulation and splice it back together to restore connection.

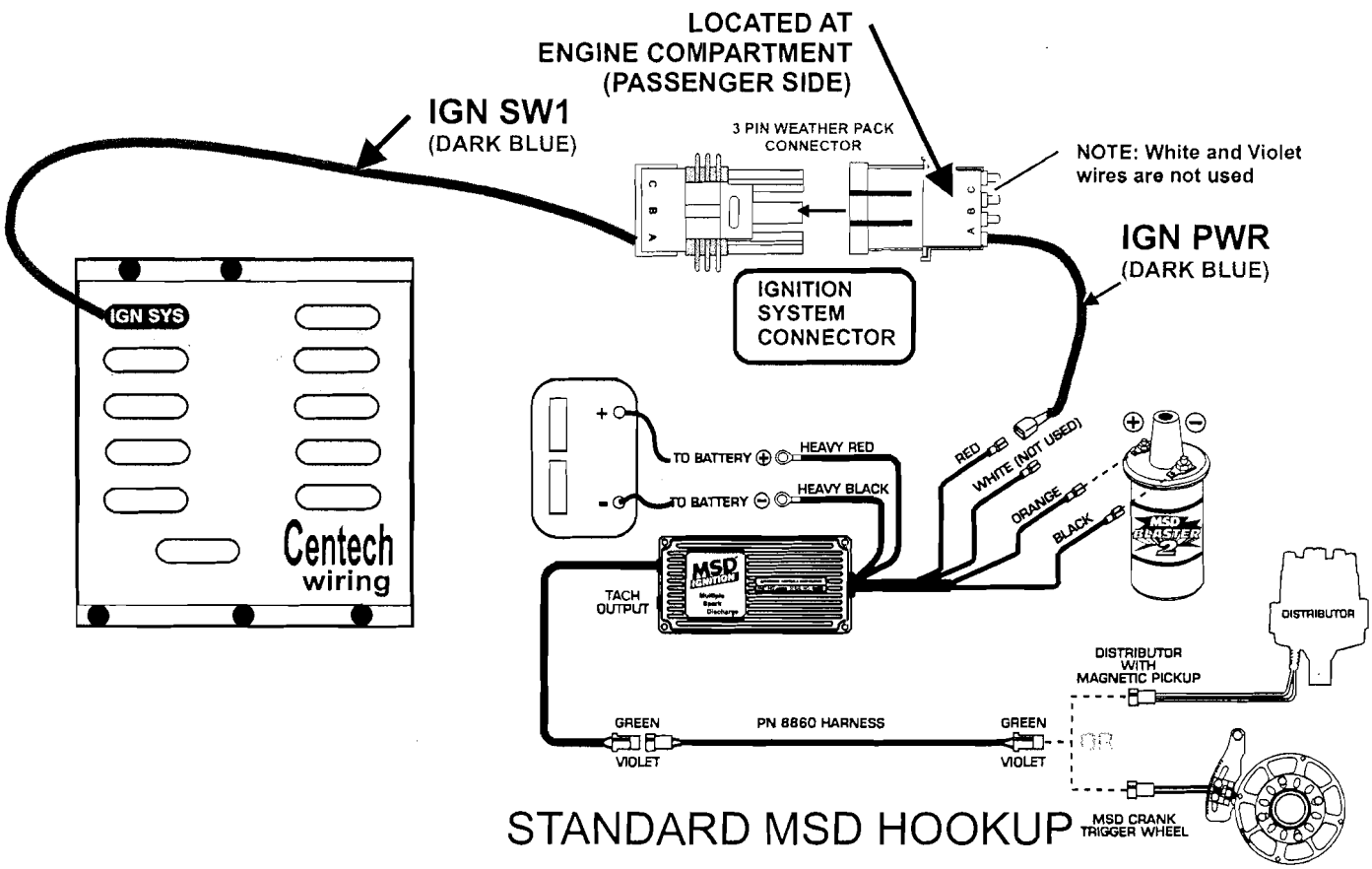
NOTE: There is no electrical connection to the Ammeter. Magnetic force



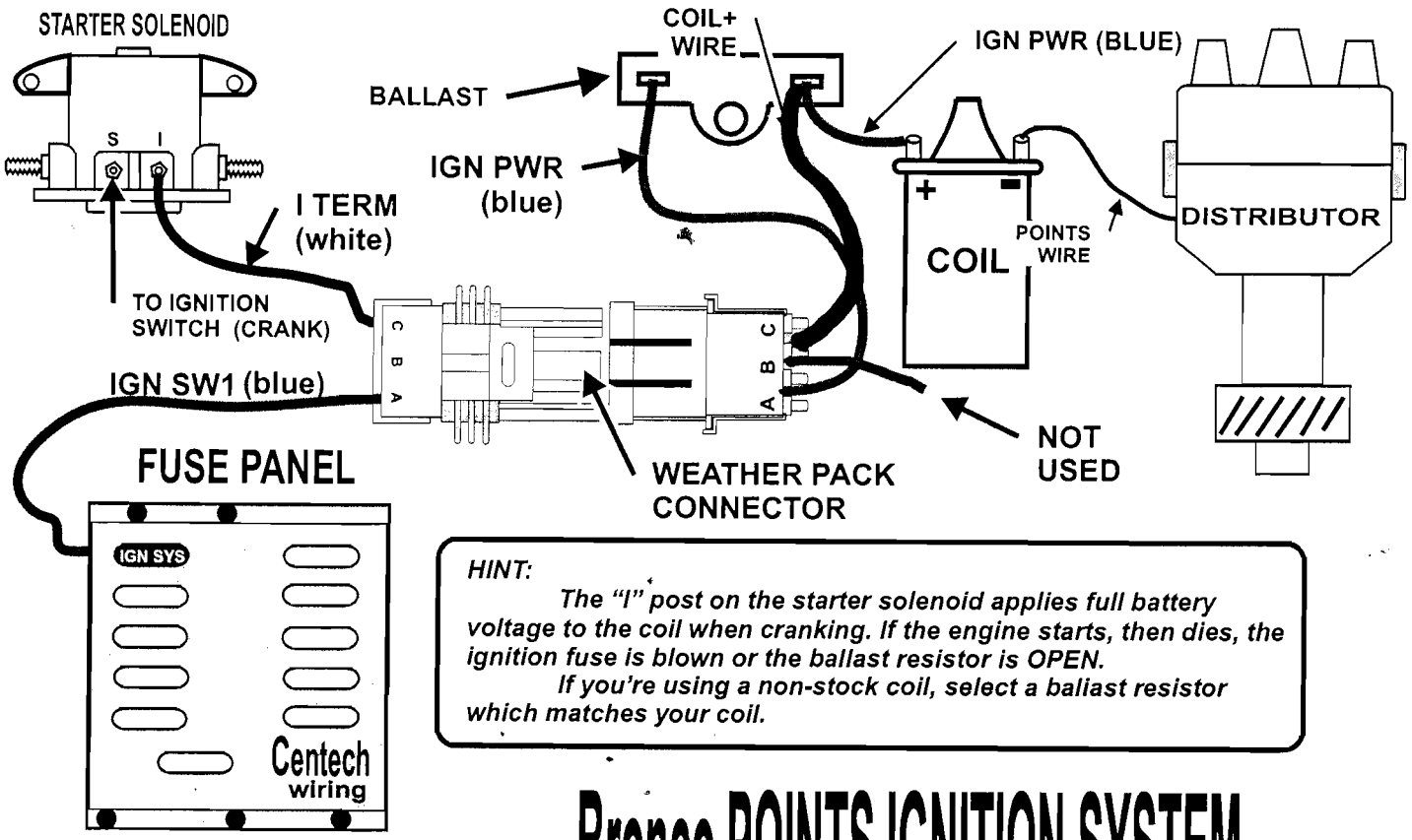
Determine that you have the Dura-Spark ignition system VS a points system. You will reuse then wiring between the distributor and the DURASPARK module. Also, the GREEN wire from the module to the coil (-) will need to be reused.

Locate our 3 pin "WEATHER-PACK" connector with the BLUE, WHITE and VIOLET WIRES. Connect these three wires as shown to one ballast resistor and your coil.

DURA-SPARK



STANDARD MSD HOOKUP

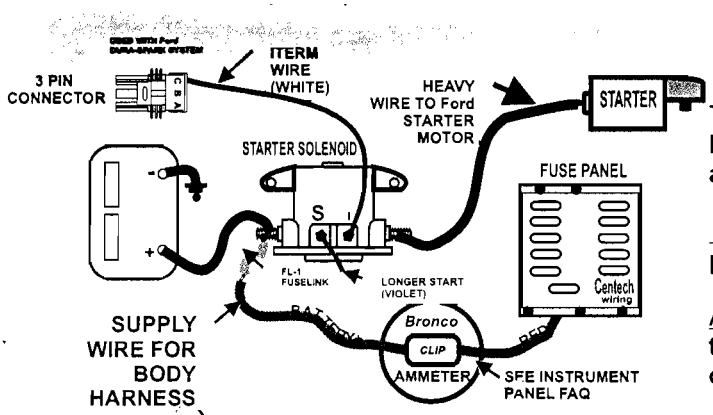


HINT:

The "I" post on the starter solenoid applies full battery voltage to the coil when cranking. If the engine starts, then dies, the ignition fuse is blown or the ballast resistor is OPEN.

If you're using a non-stock coil, select a baliast resistor which matches your coil.

Bronco POINTS IGNITION SYSTEM



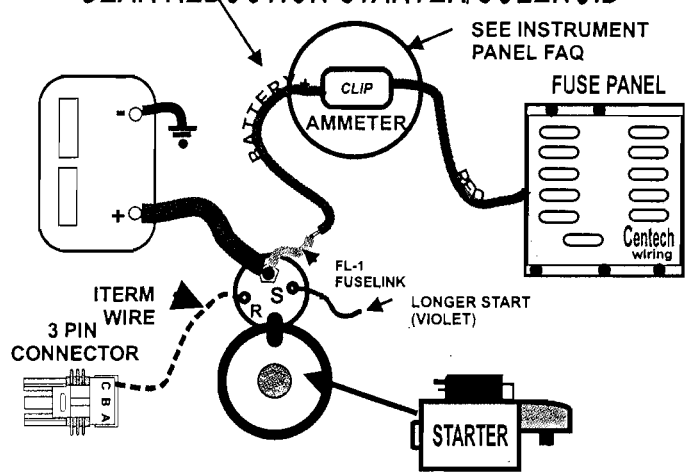
Ford SOLENOID POWER WIRING

The red BATTERY+ wire is attached to the **FL-1** fuselink which is bolted to the starter solenoid post where the battery plus wire is attached.

STICK SHIFT: The long violet START wire attaches to the "S" post of the solenoid.

AUTOMATIC TRANS: The long violet START wire is first routed through your Neutral Safety Switch located at the transmission or shifter then back to the "S" post on the Ford solenoid.

GEAR REDUCTION STARTER/SOLENOID

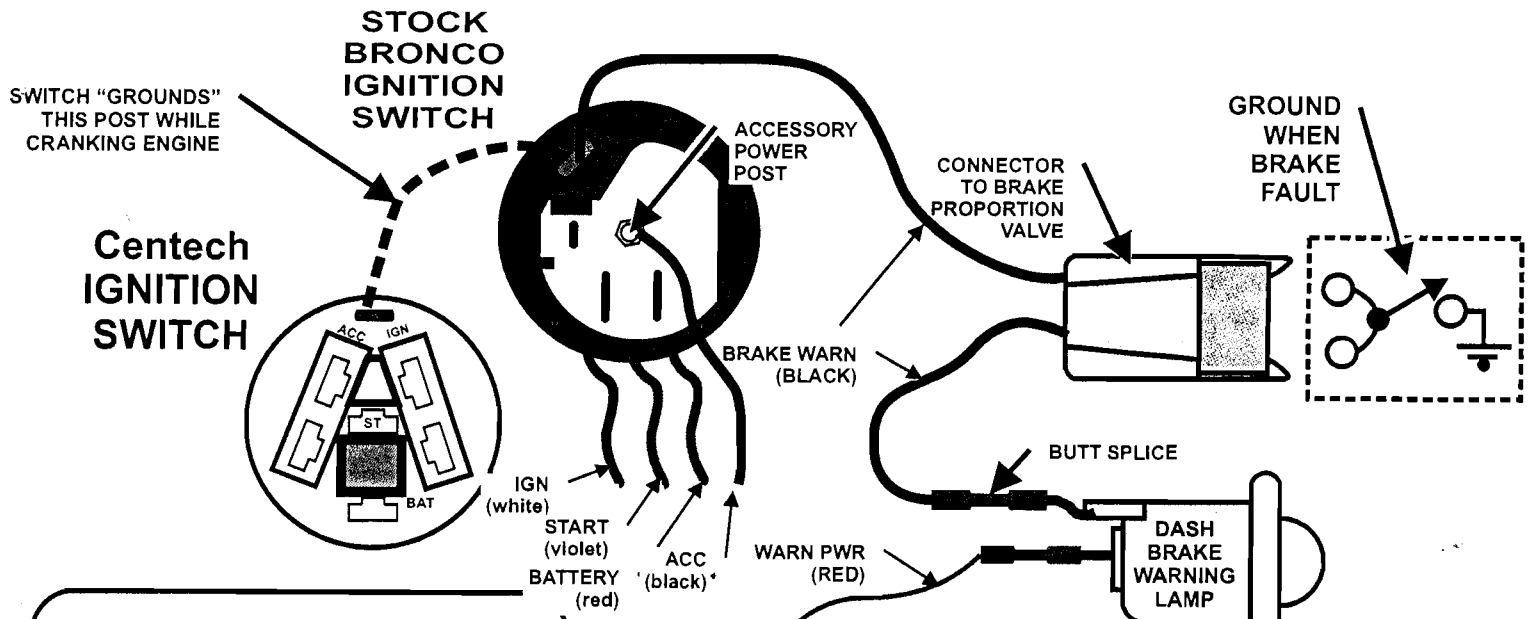


The red BATTERY+ wire is attached to the FL-1 fuselink which is bolted to the starter solenoid post where the battery plus wire is attached.

STICK SHIFT: The long violet START wire attaches to the "S" post of the STARTER solenoid.

AUTOMATIC TRANS: The long violet START wire is first routed through your Neutral Safety Switch located at the transmission or shifter then back to the "S" post on the solenoid.

NOTE: Most gear reductions starters do NOT have a "R" or "I" post . This post is necessary when your ignition system employs a BALLAST RESISTOR. See IGNITION SYSTEM FAQ.



NOTE:
Igniton switch must be "grounded" for proper "BRAKE WARNING" operation.

Your PROPORTIONING VALVE grounds the "BRAKE WARN" wire to turn "ON" the BRAKE WARNING lamp if there is an unbalance between the front and rear brake system. Also, your ignition switch tests the warning lamp by "grounding" the brake warn wire each time the engine is cranked.

HINT:
PROPORTIONING VALVES WHICH HAVE A SINGLE POST CAN BE USED BY REMOVING OUR 2 PIN CONNECTOR THEN COMBINING THE TWO WIRES INTO ONE CONNECTION.

Fig #1

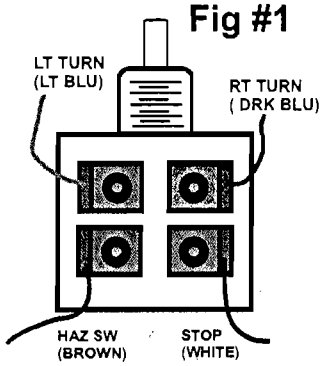
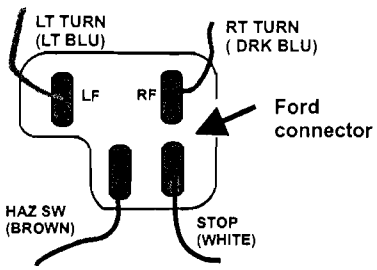


Fig #2



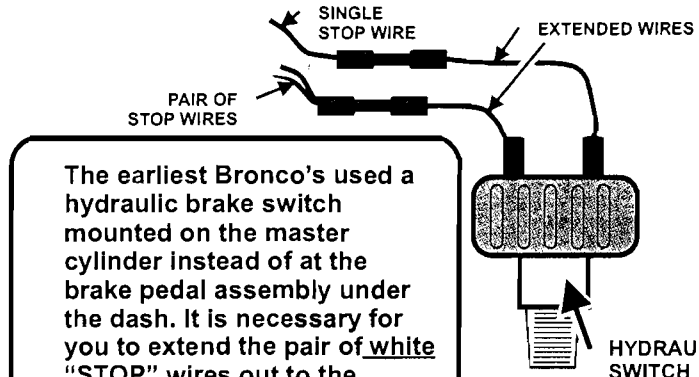
Hazard switches are found on the dash on the very early Broncos while in the later years, Ford incorporated the switch into the steering column. Wiring has been provided for both.

EARLY: There is a bundle of 4 wires available under the dash for the early switches. You must reuse your original connector. See Fig1 or Fig2

COLUMN: Use our aftermarket connector kit. See "TURN SIGNAL" wiring instructions.

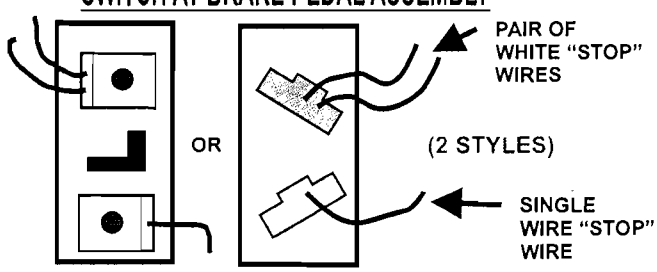
TAPE EACH UNDER-DASH HAZARD SWITCH WIRE
(they must not touch one another)

Bronco HAZARD SWITCHES



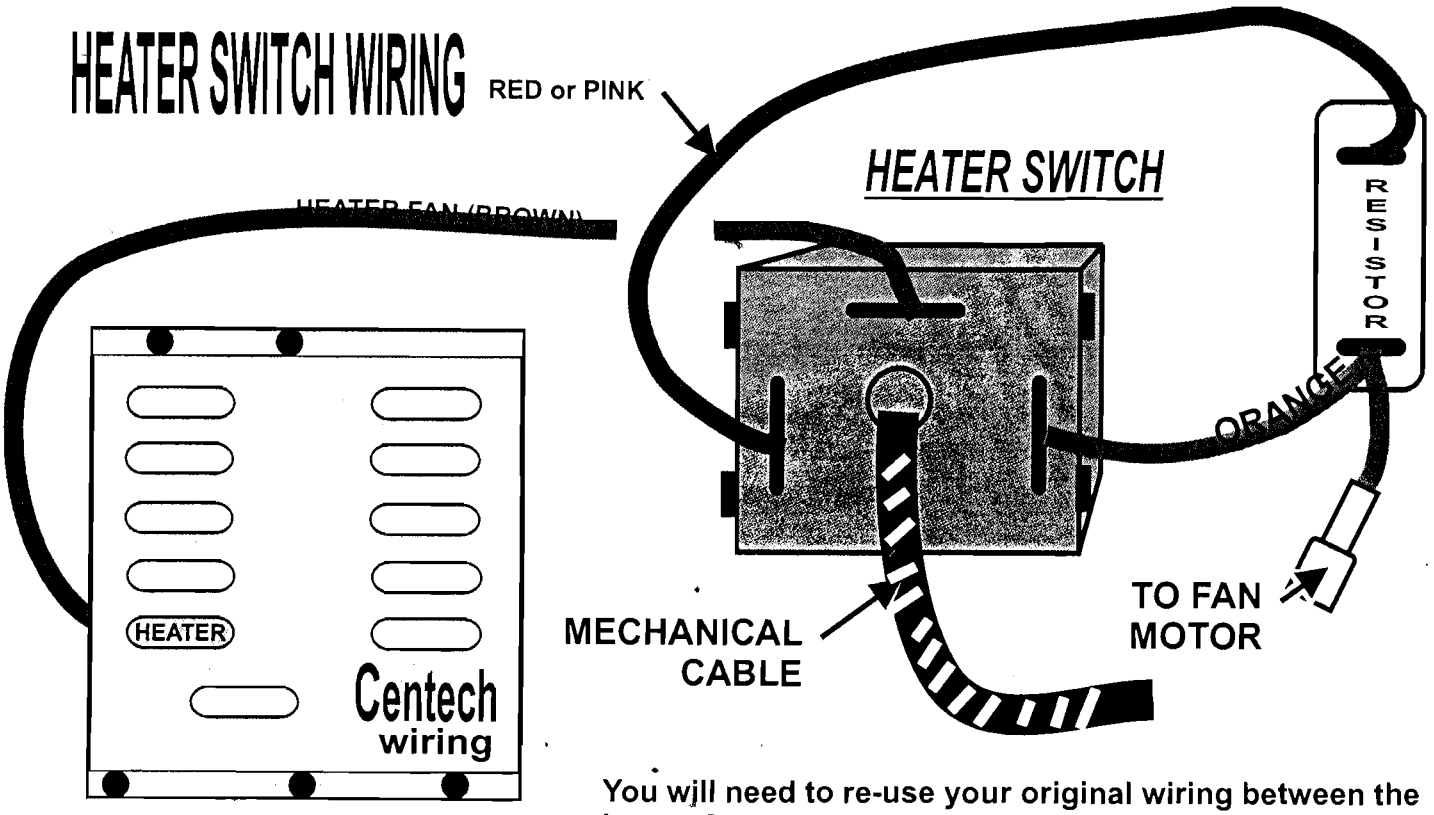
The earliest Bronco's used a hydraulic brake switch mounted on the master cylinder instead of at the brake pedal assembly under the dash. It is necessary for you to extend the pair of white "STOP" wires out to the master cylinder stop switch.

SWITCH AT BRAKE PEDAL ASSEMBLY

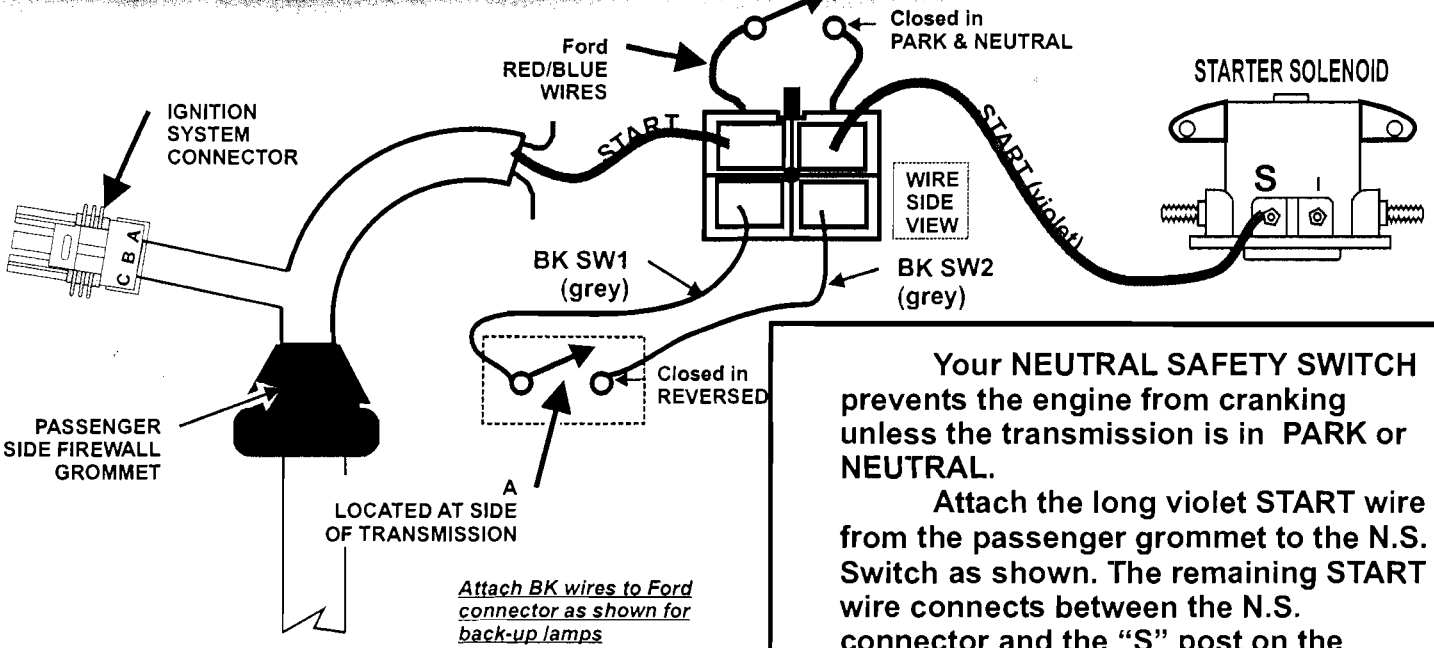


STOP SWITCH WIRING

HEATER SWITCH WIRING



You will need to re-use your original wiring between the heater fan motor and your switch. Attacjh our brown HEATER FAN wire to the center terminal of the switch.



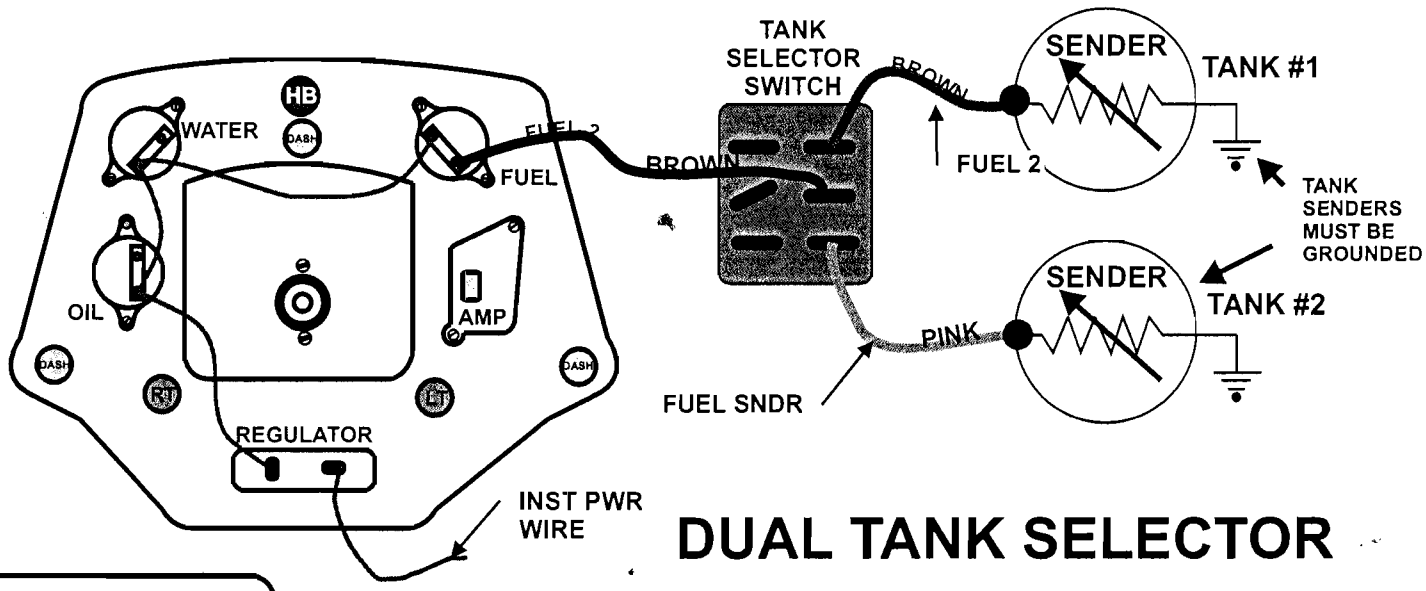
Ford C4-C6 NEUTRAL SAFETY SWITCH

Ford BACK-UP LAMP SWITCH

Your NEUTRAL SAFETY SWITCH prevents the engine from cranking unless the transmission is in PARK or NEUTRAL.

Attach the long violet START wire from the passenger grommet to the N.S. Switch as shown. The remaining START wire connects between the N.S. connector and the "S" post on the starter solenoid.

If you're using an aftermarket shifter, connect the long violet START to the N.S. switch on your shifter or shift-arm as above.



DUAL TANK SELECTOR

Your tank selector switch determines which fuel sender is connected to your fuel gauge. Use the PINK and BROWN wires in harness, as shown.

In some cases, the switch also provides battery power to a "fuel solenoid". This solenoid connects the proper tank fuel line to the carburetor.