Converting an A to 12v
and
Adding Turn Signals

Bill Lee
Bill@WRLee.com

When I bought my 1929 Tudor, it had been restored about 20 years earlier. It had halogens and had been converted to 12v negative ground, and had turn signals installed.

I had never been really happy with the whole set-up since the turn signals were add-on clearance lights on the front and rear bumper instead of using the brake lights in the back. And the wiring overall was not attractive to me with lots of various colored wires running here and there. The parking lights (the second light inside the headlights) had never been wired to operate, the passenger-side tail light was intermittent at best, and the whole combination of lights and turn signals had some really weird operational characteristics. And then on our January Mystery Tour, the turn signals just failed completely.

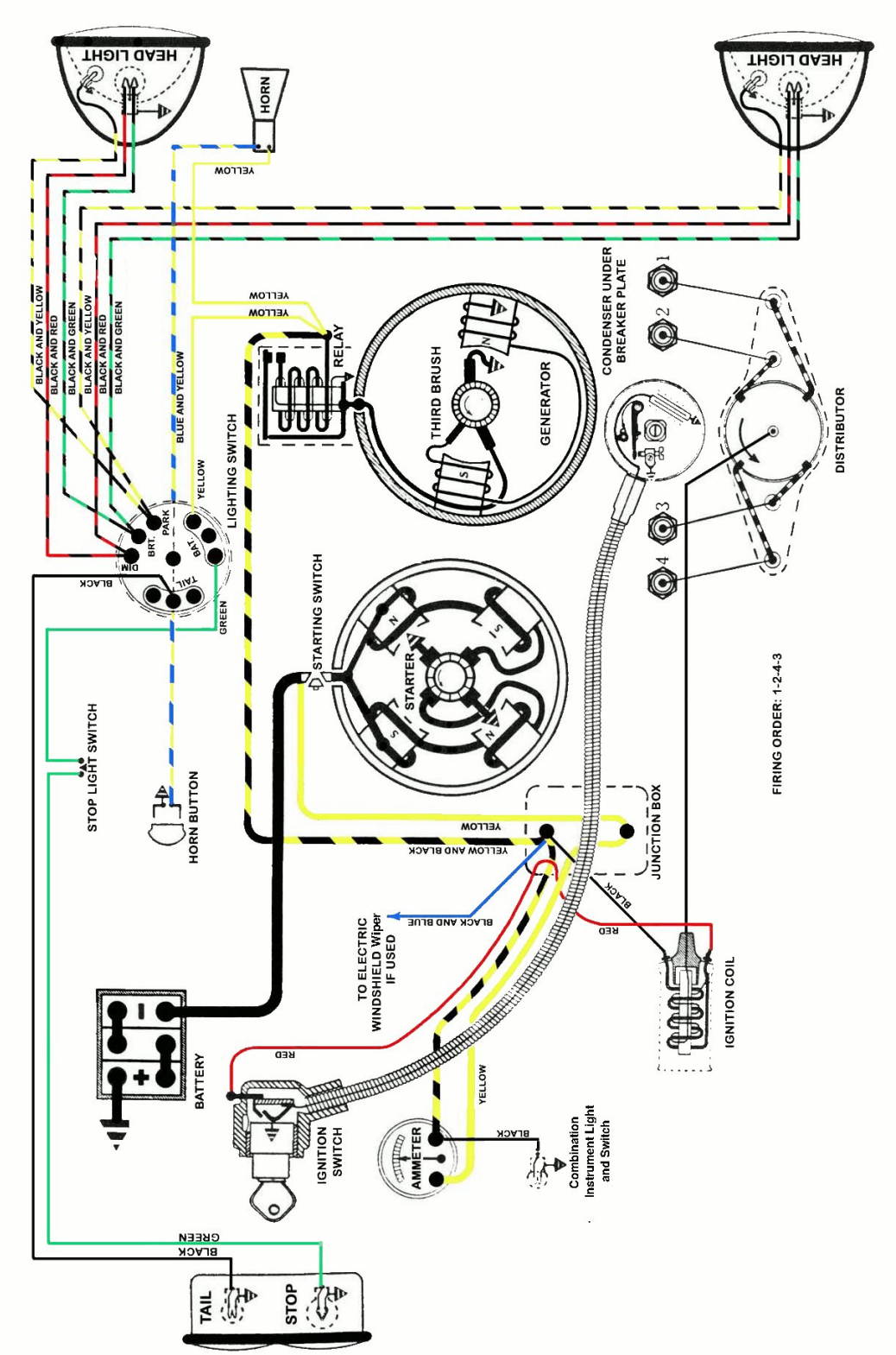
A few weeks ago I bought and installed some LED tail light assemblies. WOW! They are really bright and visible. If you can get them to work as they are supposed to! But the PS light was only partially operational, mostly due to junk sockets with the flimsy cardboard insulation washers in the center.

The first task was to rebuild the sockets. The cardboard washer is so flimsy that after a while it allows the spring underneath to escape around the edge, and then the center contact isn't held firmly against the bulb center post. I took the tail lights off and cut the center post off the wire. I used my small lathe and some scrap Delrin barstock and made some new washers: .040” thick and a diameter just small enough to slide into the socket. I pushed the center pin through and soldered the wire to it, covered all up with some heat shrink tubing. Really came out nice and the sockets really do WORK! For sure the springs will stay where they belong now!

Now came the wiring. Rather, now all the wiring came out! Bought new wiring harness from Piranio's (Piranio's Antique Automotive, www.modelaparts.net) but screwed up and didn't get the one which included the turn signals. So that was one of the things I had to do when I re-wired the car.

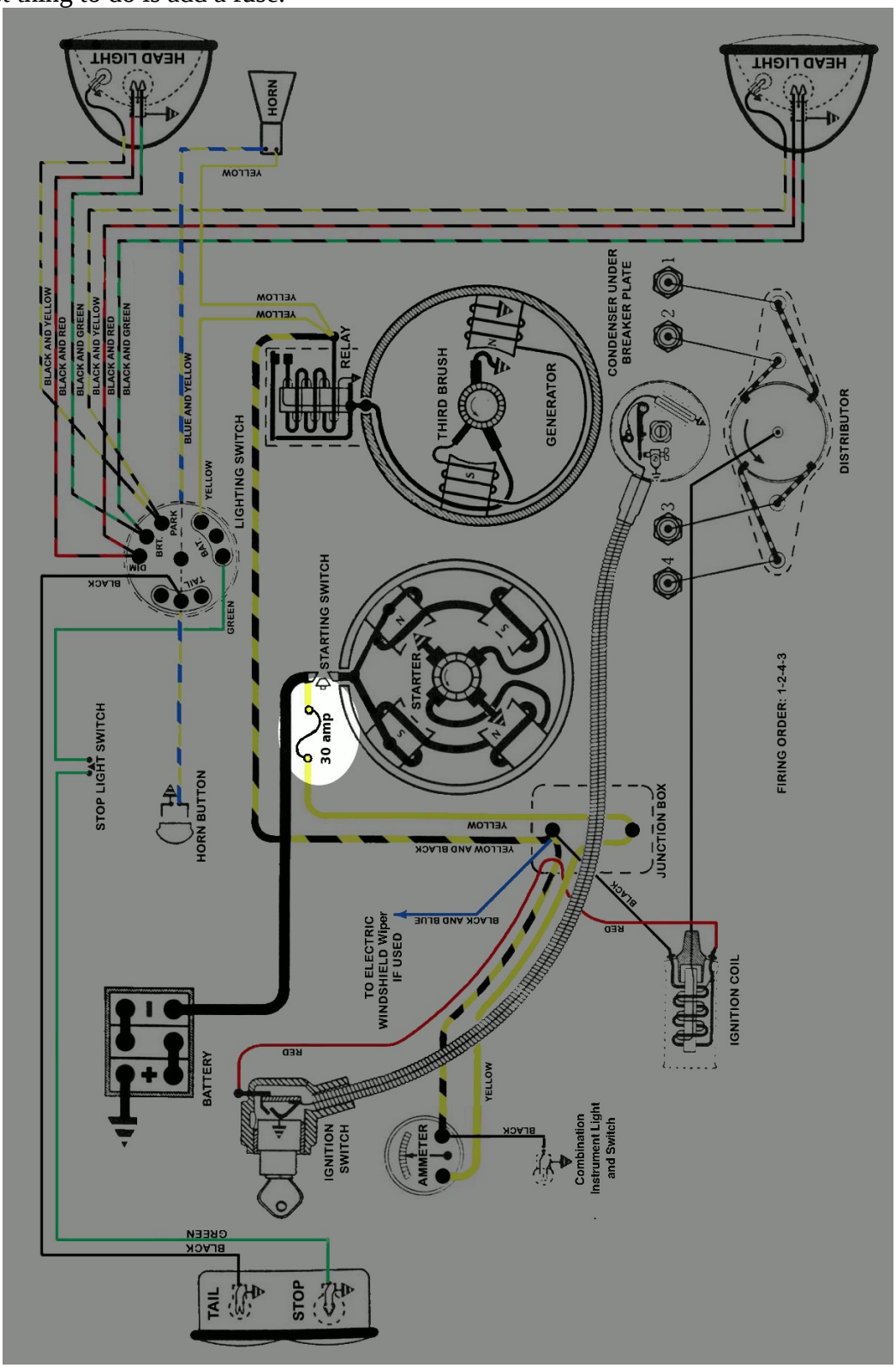
As an exercise to understand the whole thing, I sat down the other day and planned out a 6v->12v conversion as if I was going to have to do it, and then how to wire for the turn signals. I'll walk through it here.

First off, the standard 6v system. (You've probably seen this picture elsewhere. I used it as the basis for my work.)



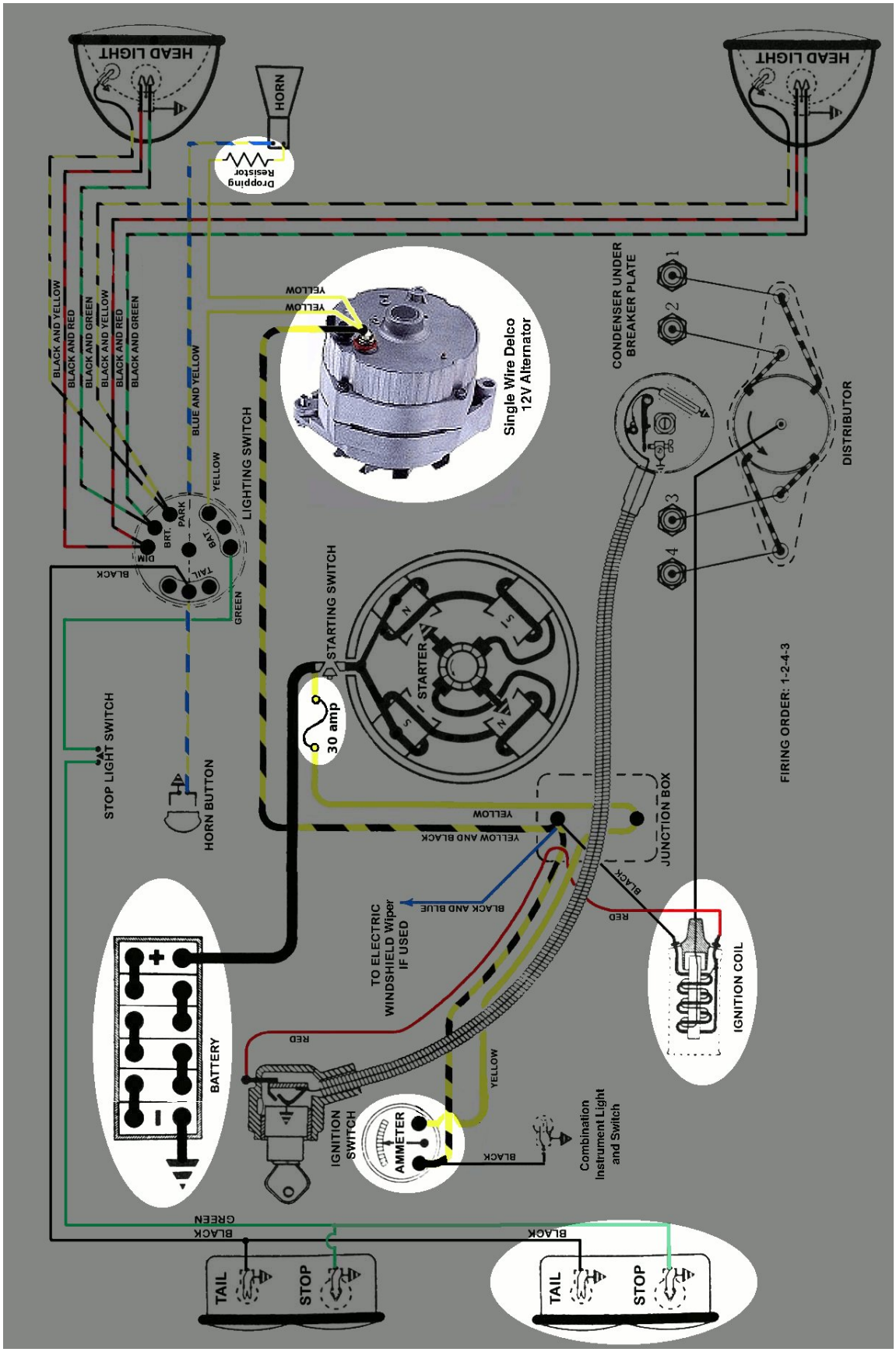
This picture is color coded to represent the standard wiring of the 6v, positive ground Model A. Note that this version is for the 2-bulb headlights. As far as I can tell, this was the stock configuration for my '29 Tudor.

The first thing to do is add a fuse.



This is something that should be done if NOTHING else is to be done to the wiring system!

Now the changes to make it a 12V negative ground system. In addition to replacing all of the 6v bulbs in the system with the 12v equivalents, there is a bit to be done with the wiring.



Battery: you will need to get a 12V battery. The A uses a “type 25”. I found one that works o.k. at WalMart. You will need to get a new ground cable and a new cable to the starter since the positive and negative posts on the battery are different size. Also get a ground strap that runs from a bolt on the transmission to the frame.

Alternator: Go to the auto parts store and get a Delco single wire alternator. You will have to get a pulley for it that matches the A belt width (5/8”), available from the A vendors.

Horn: The horn runs on 6v and a dropping resistor is needed. Go to the A parts vendors and look for the one that is made to hide completely inside the horn. I don't know what resistor it is, don't really care since it works just fine. Got mine from Brattons. A word of caution: that resistor gets HOT when you honk the horn, but since you only use the horn very briefly, it is no real concern.

Ammeter: Switch the wires on the back of the ammeter in order to make the meter read the right direction. Nothing hurt if you don't, just that the meter will read backwards.

Coil: you'll need to get a 12v coil with internal resistor. Again, available from the A vendors, although I got a suitable one at the local parts house. Showed them the 6v coil and said “Match this size.”. They did. Turned out it was an Airtex coil 5C1019. A little sleuthing on the 'net revealed that it was used on several foreign cars, 1974 Volkswagen and 1975 MGB and perhaps others as well. This is a 12V coil with internal resistor, and it has worked very well for the past 2+ years I have been running it.

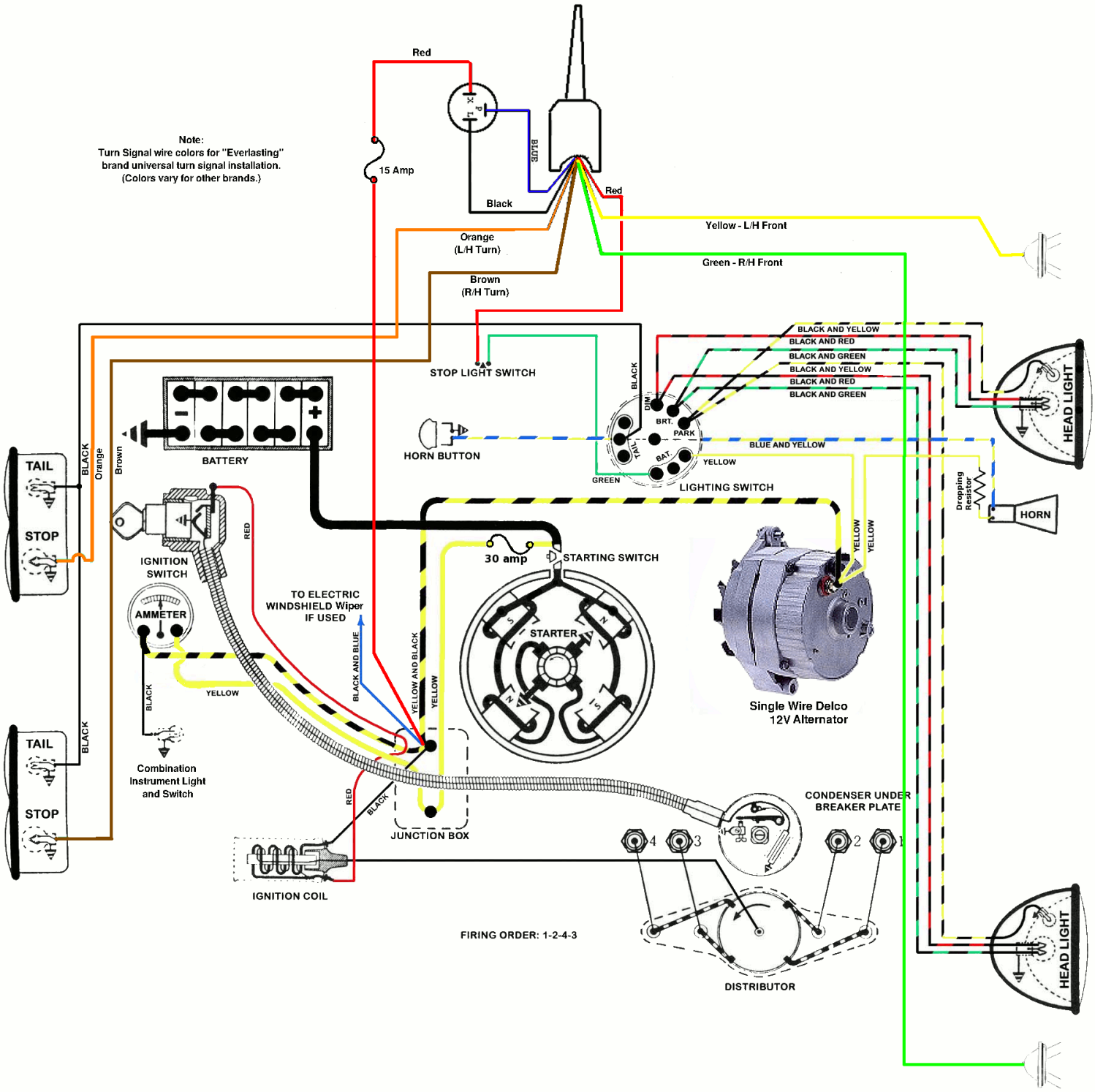
When I first made the coil change, I did not have Les Andrews' books. His recommendation is a UF-3 coil with internal resistor. (You really need to read Andrews' book. I did and it has helped immensely.)

Tail Lights: You might just as well add the second tail light on the passenger side at this time as well.

Windshield wipers: If your car has original electric wipers, you will need a dropping resistor to cut the voltage back to 6v. Since I am not sure if the original motor will run properly with negative ground, you're on your own there. If you have an after-market motor, you have two choices. Either spend the money and buy the 12v version, or get a dropping resistor for the 6v one. But be warned: since when you use the wipers they are on for a lengthy period of time, you must get a resistor that can handle a continuous load. Usually is large, usually has some sort of heat-sink attached. Can 't offer any guidance there.

And don't forget the modern Bendix (i.e., starter drive gear) to safely handle the extra “oomph” of the 12V system.

Now it's time to add the turn signals. On my car, I had an “Everlasting” universal turn signal. It is a seven-wire unit and can be found on eBay. But there are a jillion (it seems) other turn signal systems available, each with different color-coded wires. The drawing below is for the color coding of my Everlasting unit. If your universal controller has differently colored wires, perhaps one of the wiring diagrams at http://www.cedarcreekas.org/TechTopics/TurnSignalsCollection.pdf will get you started.



When I examined the halogen headlights that my car had installed, I found that the two-bulb system actually had a 2-filament bulb for the second bulb. The light is a standard 1157 bulb commonly used for tail lights. The low power filament is for park lights and the (much) higher power filament for brake lights. These bulbs come in all colors, mine are amber since that is what the front park lights and turn signals should be.

The drawing above shows separate front turn signals, but I actually used the high power filament in the second bulb instead of a separate lamp. If you start counting, that's four wires, plus a fifth as a positive ground connection back to the body of the car. If all of these four wires are “modern” wire without the bulky cloth wrapping, you CAN get all five of them through the conduit!

The drawing above shows the wiring using the Everlasting color codes. Obviously you will take advantage of a lot of the existing wires in the harness, and they don't match the colors shown here. Just use your head and make sure that you label everything.

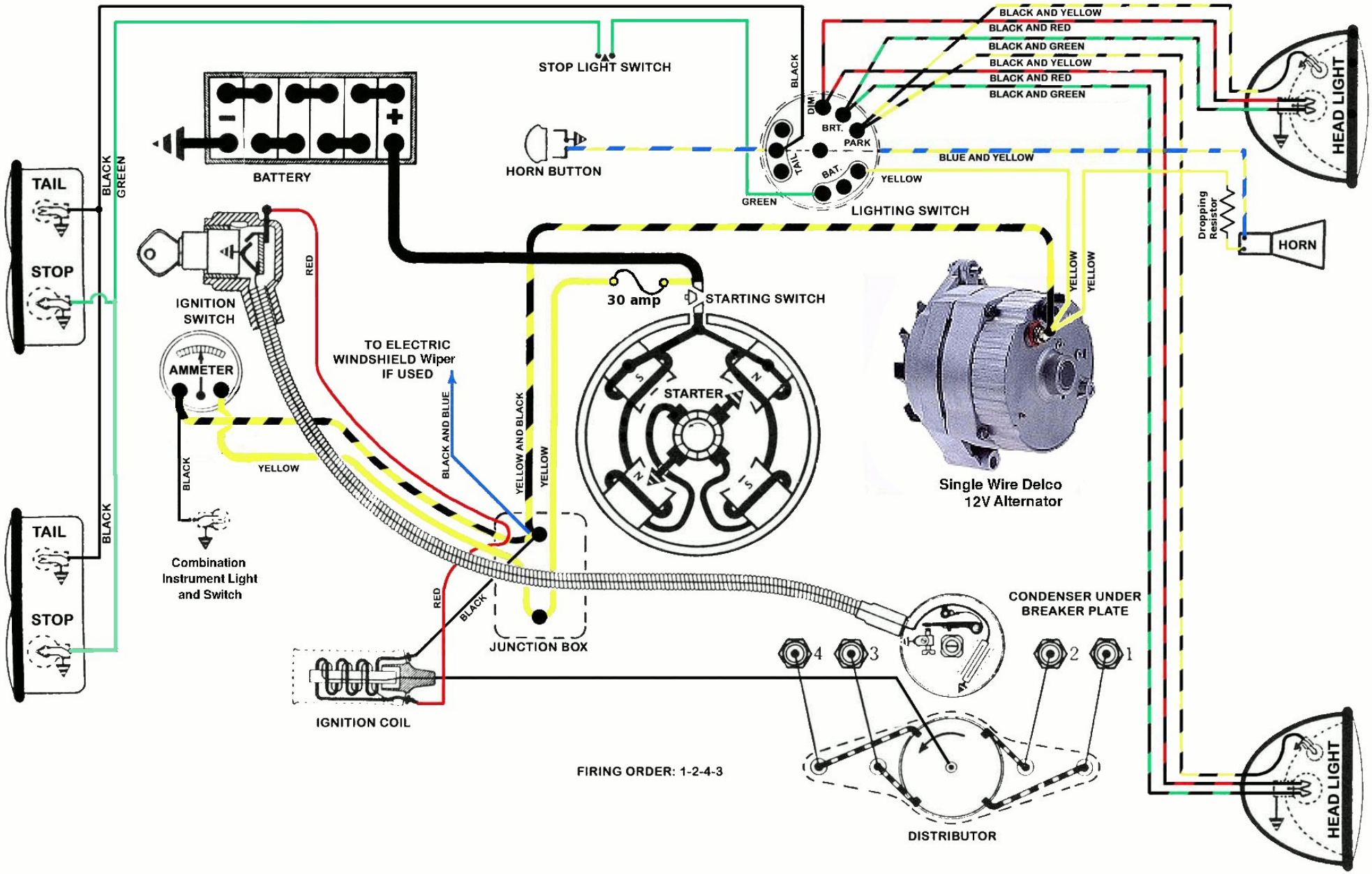
There will be many places where wires will need to be joined. If I needed to lengthen a wire, I simply wrapped the two ends together, soldered the connection, and then covered with a piece of heat-shrink tubing. For places where I may need or want to take the connection apart in the future, I used the male/female plugs. I bought a couple of packages for all of my wiring in the wiring department at Lowes. (You have to look to find them, even the sales folks don't know they are there!) Get the size that works with 16-gauge wire since that's what you'll be using throughout.

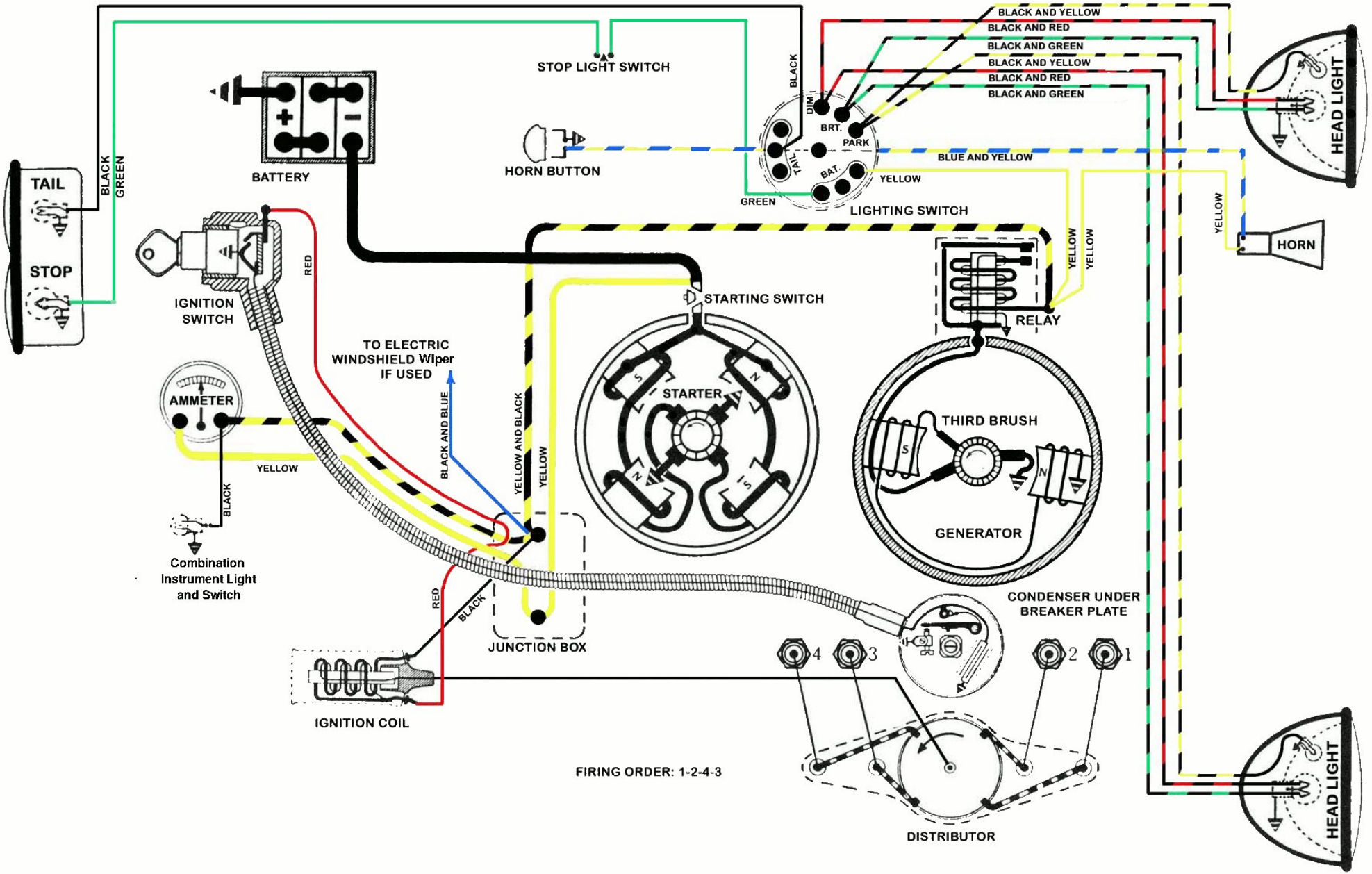
After I get everything wired and working to my satisfaction, I plan on going back through the system and putting a piece of heat-shrink on each of the take-apart connections, just to make them a bit more resistant to water and vibration.

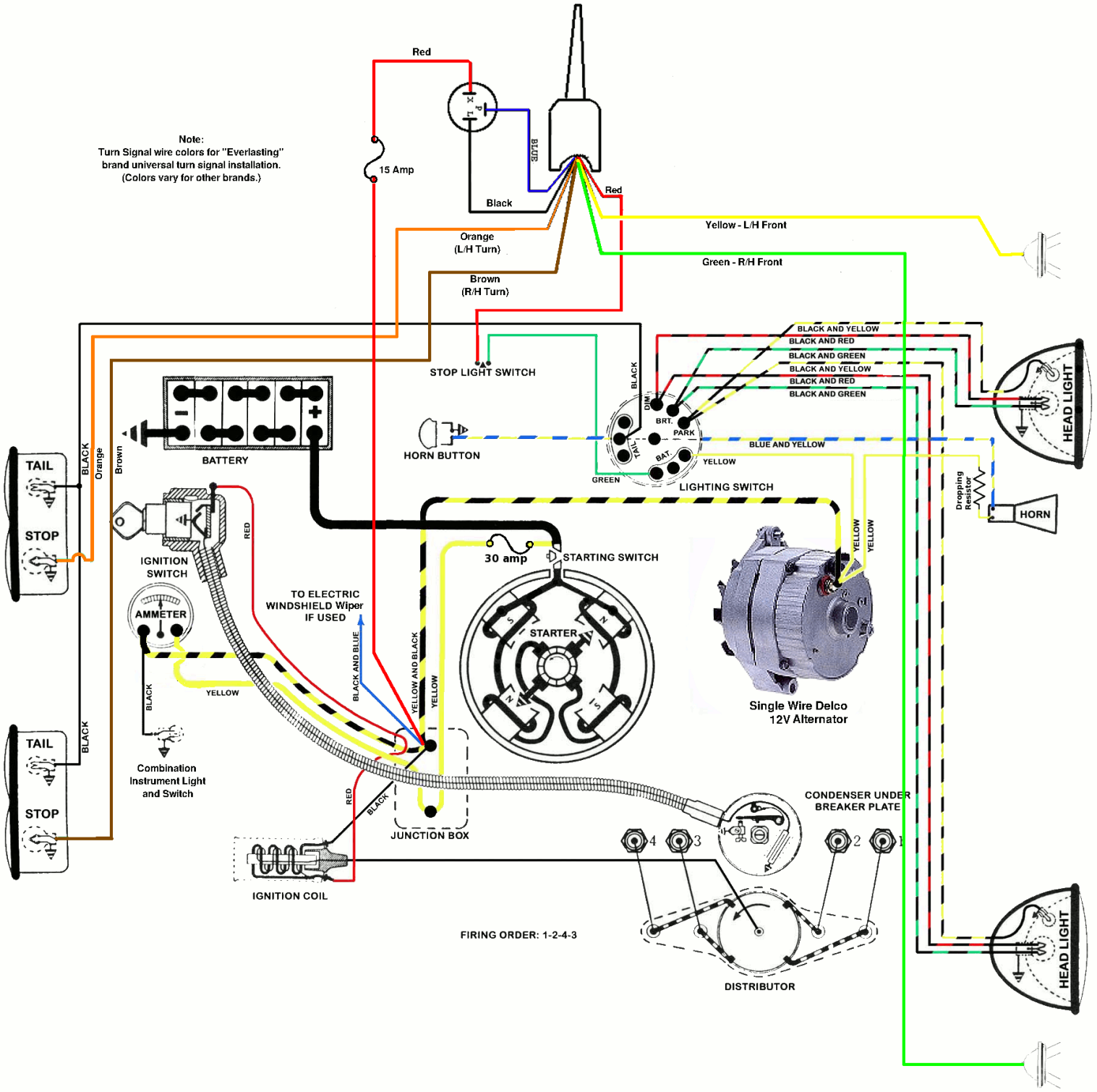
I've just about completed my re-wiring of the car and I can vouch that all works properly. The complete failure of the turn signals on the Mystery Tour was due to a wire that broke a solder joint inside the Everlasting controller. (The blue wire in the drawing above.) One other thing I did was to add a ground wire to the Everlasting unit to make sure that the indicator light in it works as it's supposed to. (As it turns out, the indicator light STILL doesn't work! Sure wonder why.)

As you can guess from the drawing above, there are a lot of extra wires running around due to the turn signal installation. In order to make the wiring neat and unobtrusive, I use the split plastic conduit wherever there were extra wires accompanying the wire harness. It really cleans up the engine compartment and provides an added measure of protection to the wiring.

On the following pages are as-big-as-I-can-make-them images of the 6v, 12v and 12v w/turn signals illustrations without the highlighting.


STOP LIGHT SWITCH
BLACK
BLACK AND YELLOW
BLACK AND RED
BLACK AND GREEN
BLACK AND YELLOW
BLACK AND RED
BLACK AND GREEN
HEAD LIGHT
TAIL
STOP
BLACK
GREEN
BATTERY
HORN BUTTON
DIM.
BRT.
PARK
TAIL
BAT.
BLUE AND YELLOW
YELLOW
GREEN
LIGHTING SWITCH
Dropping Resistor
HORN
IGNITION SWITCH
RED
30 amp
STARTING SWITCH
YELLOW
YELLOW
TO ELECTRIC WINDSHIELD Wiper IF USED
AMMETER
STARTER
BLACK AND BLUE
YELLOW AND BLACK
YELLOW
Single Wire Delco 12V Alternator
BLACK
YELLOW
Combination Instrument Light and Switch
RED
BLACK
JUNCTION BOX
CONDENSER UNDER BREAKER PLATE
4
3
2
1
IGNITION COIL
FIRING ORDER: 1-2-4-3
DISTRIBUTOR


TAIL
STOP
BLACK
GREEN
STOP LIGHT SWITCH
BATTERY
HORN BUTTON
BLACK
DIM
BRT.
PARK
TAIL
BAT.
GREEN
YELLOW
BLACK AND YELLOW
BLACK AND RED
BLACK AND GREEN
BLACK AND YELLOW
BLACK AND RED
BLACK AND GREEN
BLUE AND YELLOW
LIGHTING SWITCH
HEAD LIGHT
HORN
YELLOW
YELLOW
YELLOW
IGNITION SWITCH
RED
STARTING SWITCH
RELAY
TO ELECTRIC WINDSHIELD Wiper IF USED
AMMETER
BLACK AND BLUE
YELLOW AND BLACK
YELLOW
STARTER
THIRD BRUSH
GENERATOR
YELLOW
BLACK
Combination Instrument Light and Switch
RED
BLACK
JUNCTION BOX
CONDENSER UNDER BREAKER PLATE
4
3
2
1
IGNITION COIL
FIRING ORDER: 1-2-4-3
DISTRIBUTOR
HEAD LIGHT


Note:
Turn Signal wire colors for "Everlasting" brand universal turn signal installation.
(Colors vary for other brands.)
Red
15 Amp
Black
BLACK
Red
Yellow - L/H Front
Green - R/H Front
Orange
(L/H Turn)
Brown
(R/H Turn)
STOP LIGHT SWITCH
BLACK AND YELLOW
BLACK AND RED
BLACK AND GREEN
BLACK AND YELLOW
BLACK AND RED
BLACK AND GREEN
HEAD LIGHT
BATTERY
HORN BUTTON
DIM.
BRT.
PARK
TAIL
BAT.
BLUE AND YELLOW
YELLOW
GREEN
LIGHTING SWITCH
Dropping Resistor
HORN
TAIL
STOP
BLACK
Orange
Brown
IGNITION SWITCH
RED
30 amp
STARTING SWITCH
YELLOW
YELLOW
AMMETER
TO ELECTRIC WINDSHIELD Wiper IF USED
BLACK AND BLUE
YELLOW AND BLACK
YELLOW
STARTER
Single Wire Delco 12V Alternator
BLACK
YELLOW
Combination Instrument Light and Switch
TAIL
STOP
BLACK
RED
BLACK
JUNCTION BOX
CONDENSER UNDER BREAKER PLATE
IGNITION COIL
4
3
2
1
FIRING ORDER: 1-2-4-3
DISTRIBUTOR
HEAD LIGHT