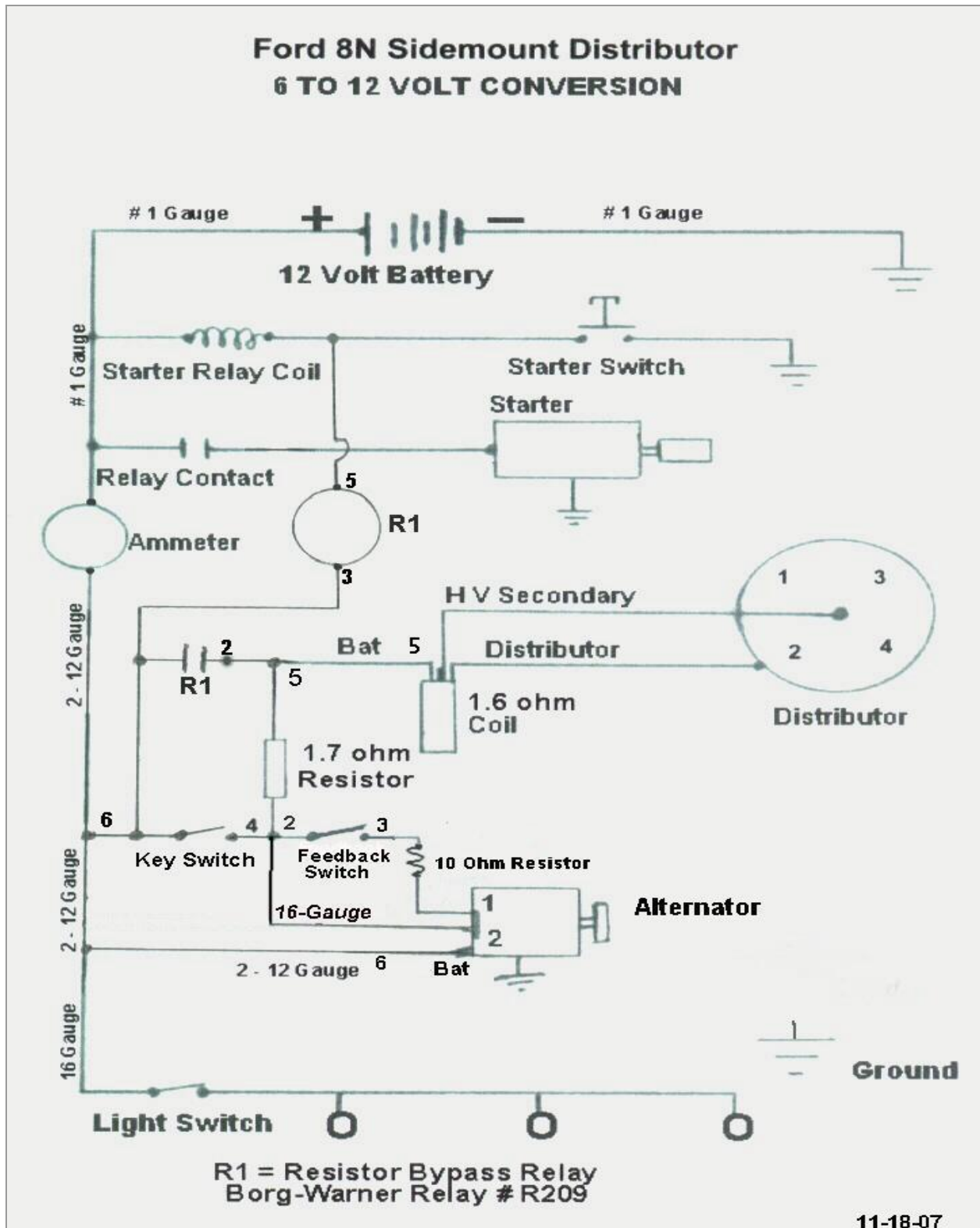


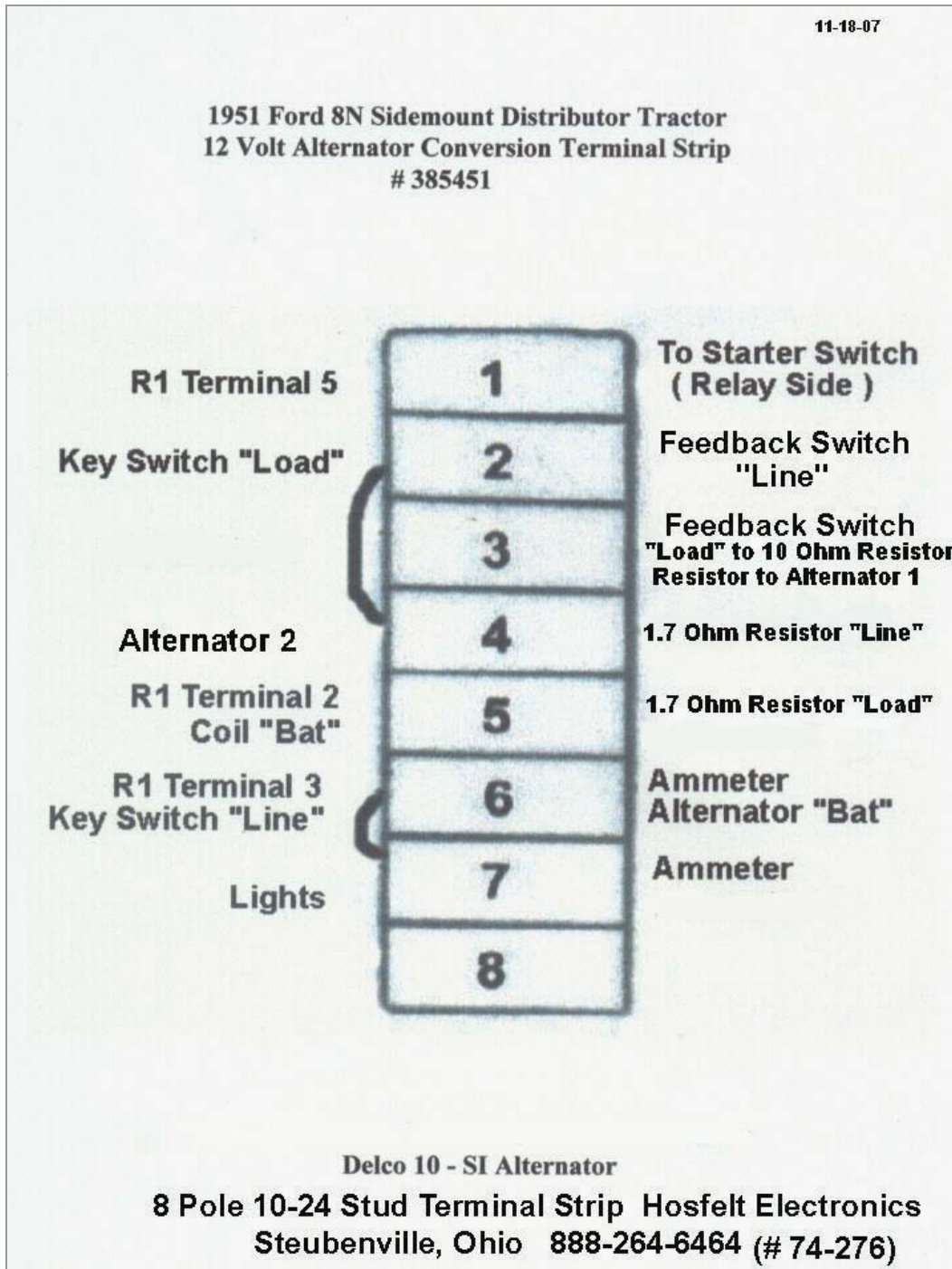
# 51 Ford 8N 6 to 12 Volt Conversion

## Side Mount Distributor

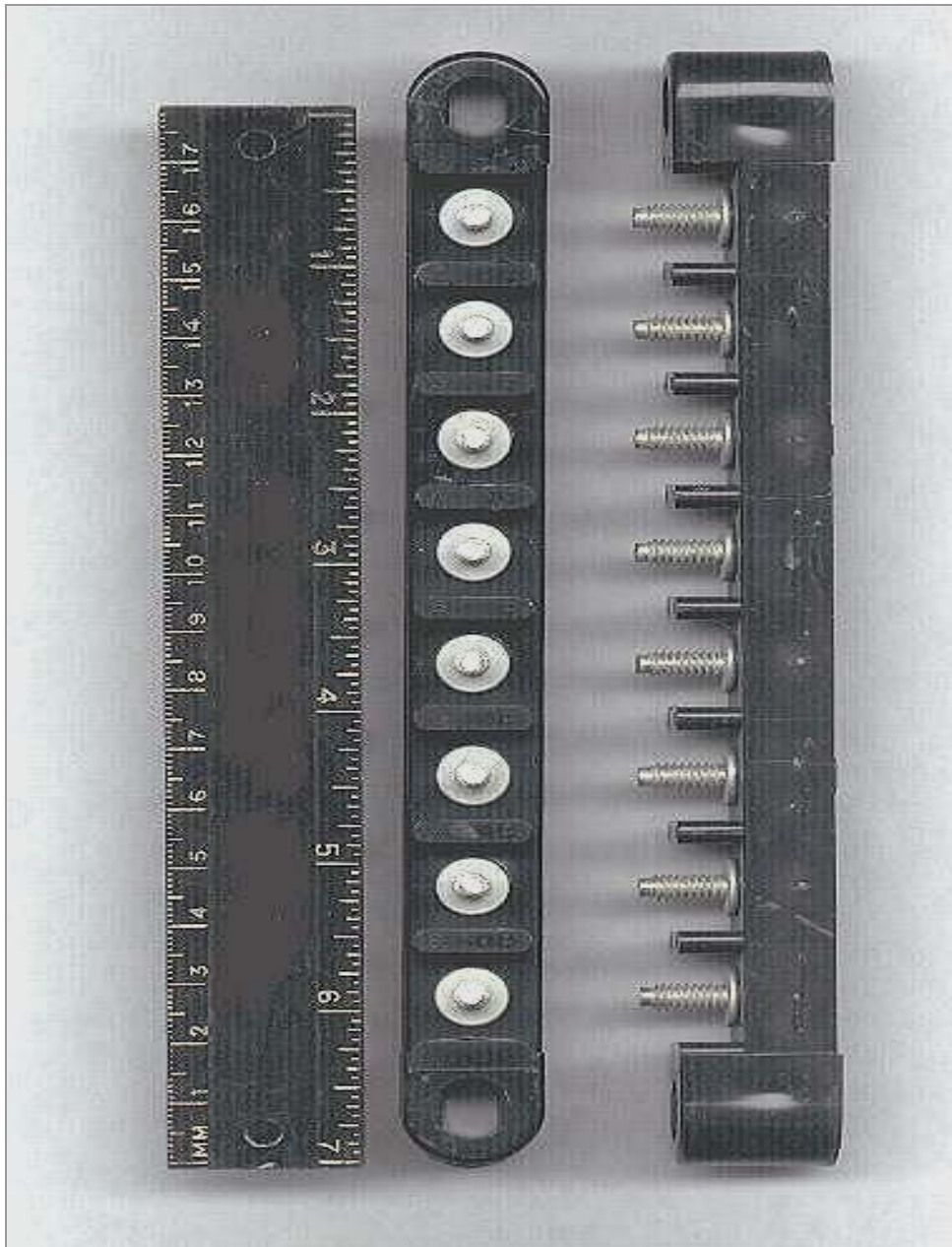


Page-1 contains a basic ladder diagram showing the circuit in a simple form. The numbers on most wires that are in close proximity to junctions or terminations relate to their connection position on the terminal strip. The R1 relay has its own terminal numbers and is energized when the starter button completes the starter relay coil circuit to ground. When R1 coil is energized the R1 contact closes completing the bypass circuit around the ignition coil resistor while the starter is cranking, giving a "hotter" start. The "Feedback Switch" is for completing the alternator exciter circuit while the engine is

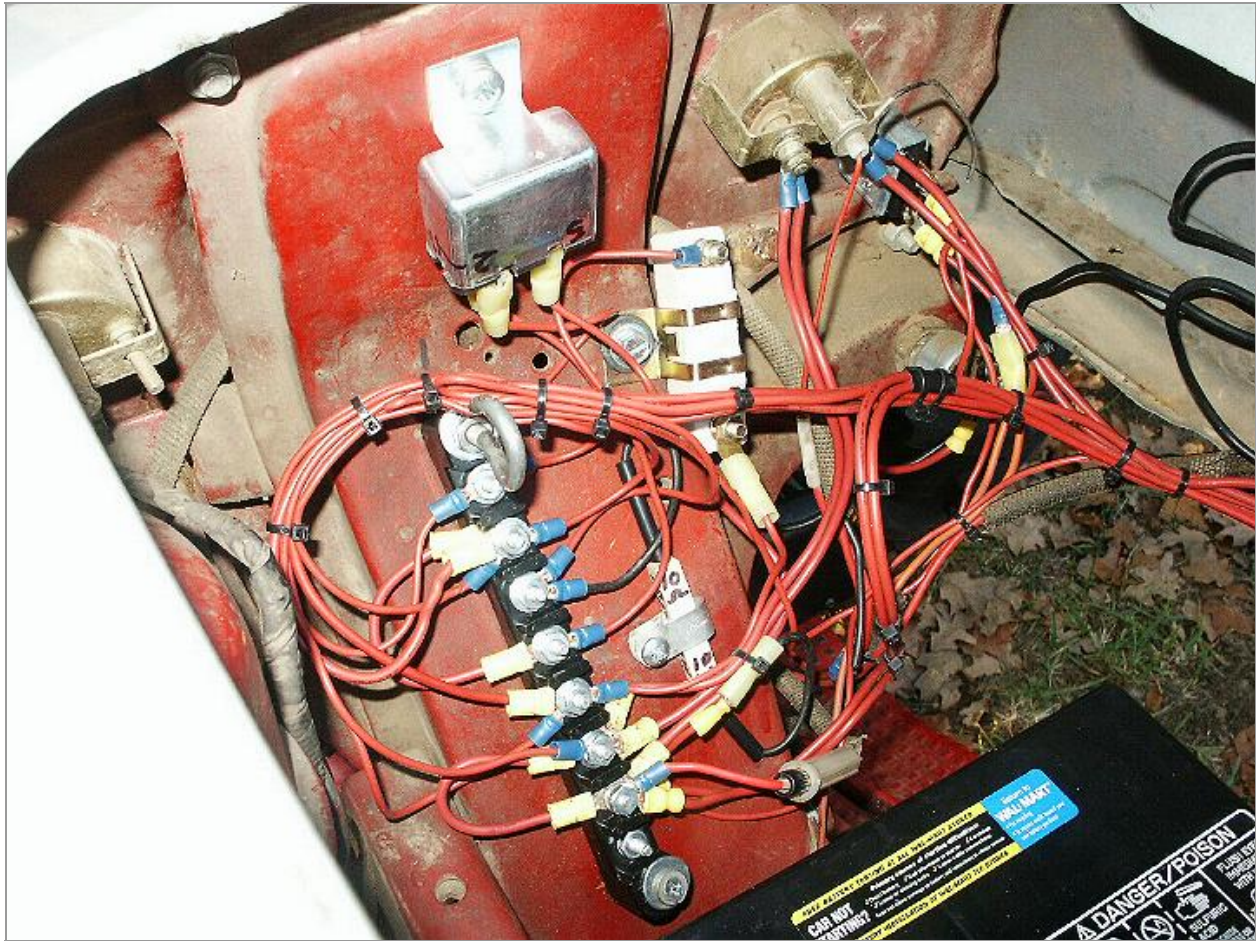
running and is located on the left side of the dash above the "Key Switch". Note that the alternator terminal # 2 (voltage sensing circuit) is connected to the load side of the ignition switch. The most common practice is to connect this circuit to an un-switched "remote voltage source". The reasoning for this was so the alternator internal regulator could sense the voltage at a remote point where it was most critical that the voltage be maintained at an optimum level. This made sense in the "muscle car" days when boom boxes and other voltage sensitive accessories were common but in an 8N the ignition circuit is by far the most voltage sensitive location. It makes sense to me to sense the voltage at the beginning of the ignition circuit and I am taking it a step farther by connecting to the load side of the ignition switch. By connecting to the load side I will be eliminating one more potential current leaking point.



Note that terminals 6 and 7 are both connected to the un-switched positive side of the battery.



The original terminal block has been replaced with an 8 terminal phenolic stud strip that is mounted on the back side of the instrument panel. (I needed a good sharp drill for the tap holes. That is one hard piece of metal) Most of the wiring is routed through this strip. The wiring is #16 AWG and #12 AWG stranded automotive type wire. The jumpers on the strip are #12 AWG wire.

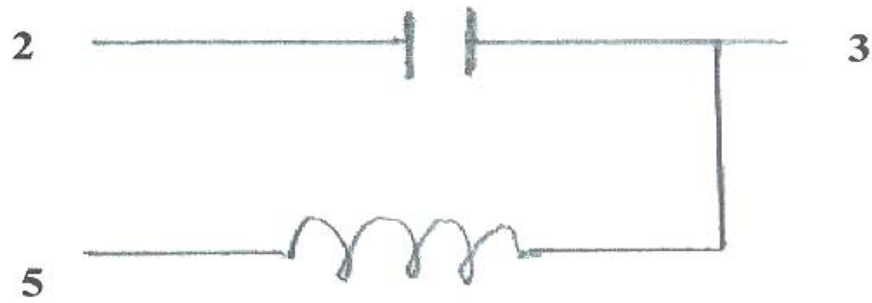


If I were doing this conversion again I would move the terminal strip to the left edge of the fire wall because there is more space between the metal and the steering gear box behind that location.

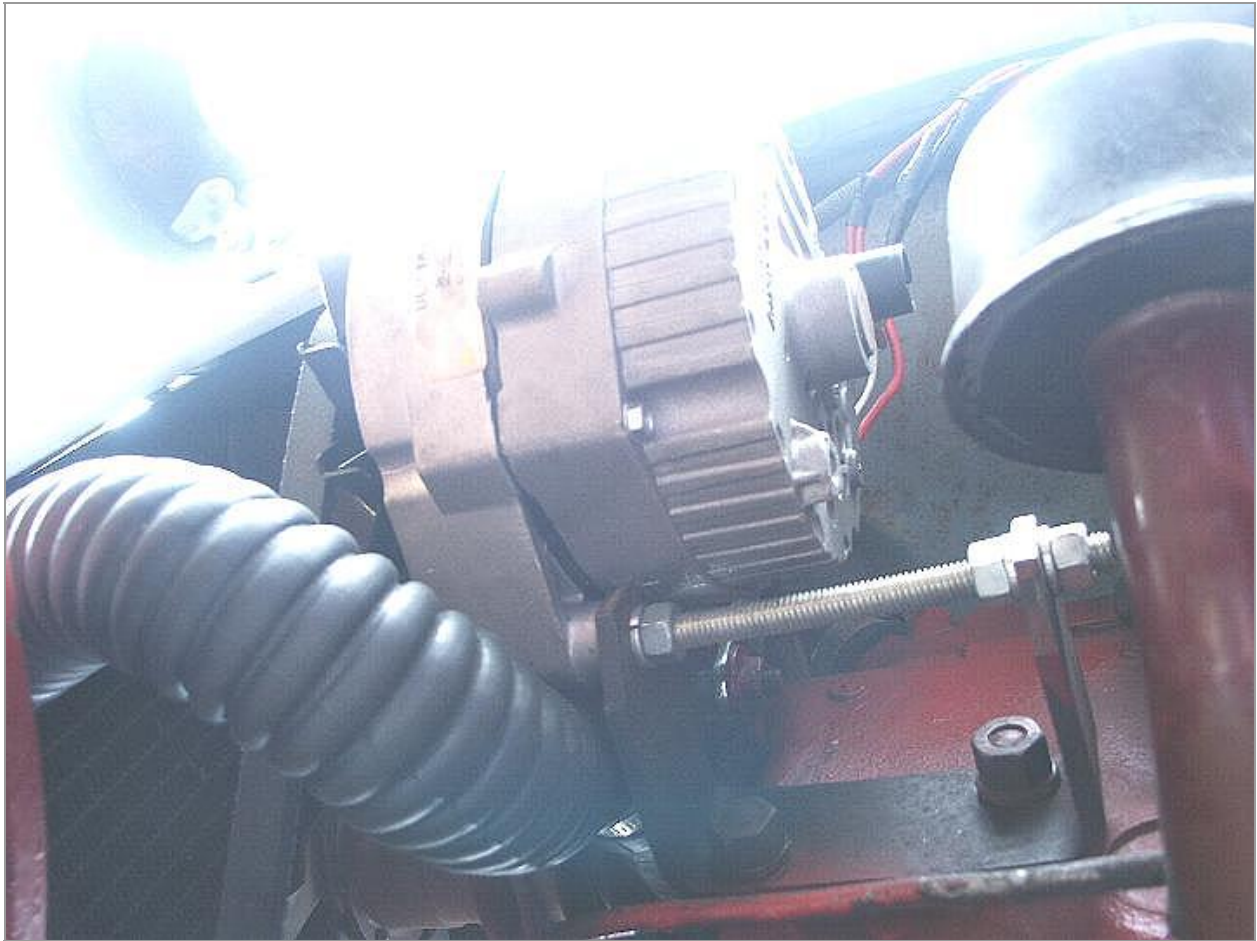
The wiring from the starter relay through the ammeter and to the terminal strip and alternator is two #12 wires in parallel. I paralleled two #12's because I didn't have access to #8 AWG wire.

The ignition coil resistor at this point in time is a 1.7 ohms (RU504) and the coil primary resistance is 1.6 ohms for a total of 3.3 ohms in the coil primary circuit. This is subject to change. I say this because the impedance of the coil dictates the amount of resistance that is required to be in series with it. Simple, right? ----- wrong. It is more trial and error than it is science because the people that make coils don't think the impedance of their coils is something the consumer needs to know. They keep that information close to their hearts. Most other types of transformers come with their impedance marked on the label but not gasoline engine ignition coils. Impedance, simply put, is the total opposition to the flow of current in a circuit. This includes pure resistance, inductive reactance and capacitive reactance. You can measure the pure resistance in a circuit while it is not energized but this does not tell you the total opposition to the flow of current while the circuit is energized. Capacitive reactance and inductive reactance kick in when the circuit is energized with an alternating or pulsating current source.

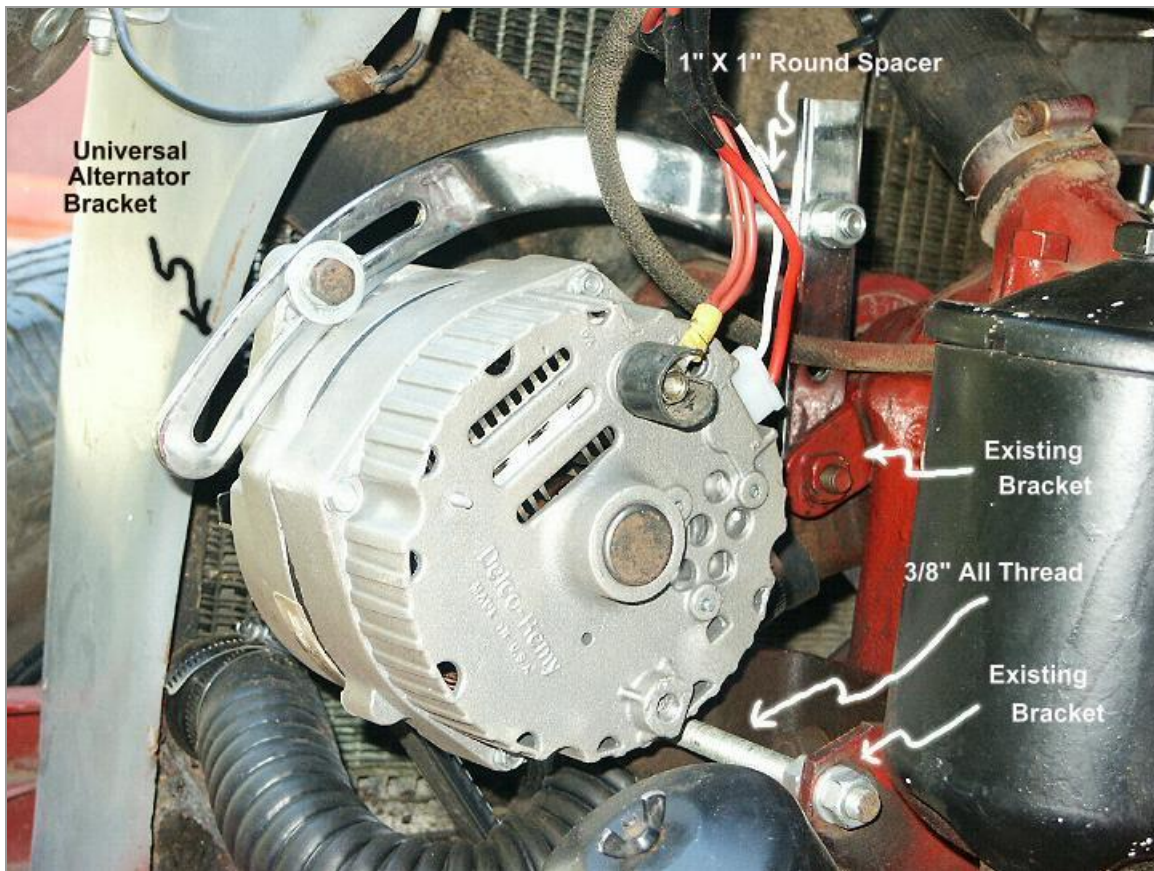
Borg-Warner Relay # R209



09-07



If you were under my tractor looking up at the alternator this is what you would see. It is mounted on the existing generator bracket. Some say that this bracket needs to be reversed for the alternator but I looked at mine very carefully and it is identically the same either way so I left it as it was. Note that the alternator is not mounted in the cradle of the bracket but on the front side of it. The 3/8" all thread is cut 7<sup>3</sup>/<sub>4</sub>" long with standard hex nuts and lock washers used. Note that the lower radiator hose is new. I took the old hose off to give me more room to work and by the time I got it back on it leaked like a soaker hose. ;o)



The chrome plated "Made in China" universal alternator stabilizer bracket came from O'reilly Auto Parts. I cut 5½" off of the long straight end of it and used it for the vertical piece that is bolted to the existing generator stabilizer bracket bolt hole at the bottom using the end hole that was already in it (the existing bracket hole on the tractor is actually a part of the water pump). At the point that the vertical and horizontal brackets intersect they are separated by a 1" X 1" round spacer that provides the necessary offset needed for it to line up with the alternator. They are bolted together with a 3/8" bolt. I bought a pre-made spacer at a farm store for about \$3.00 (gulp). One can be made by cutting a piece off of a ¾" heavy walled pipe but the pre-made spacers are more true than what I would have cut with a hack saw. The center of the hole at the top of the vertical bracket is 1-5/8" from the top edge.

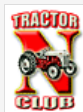
Thanks to all the people that have given me access to their research and ideas. In particular I want to thank Ken LaRue, "John the Old Tractor Guy and llamas" and the Ignition Coil Simulation Tool [By Bowling & Grippo](#) .

This post is not a "how to" set of instructions on 6 to 12 volt conversions. It is about how I converted my 8N, a conversion that evolved over a period of several months. It is my hope that it may be of use to others that are not afraid to think outside of the lines.

***" Far better is it to dare mighty things, to win glorious triumphs, even though checkered by failure... than to rank with those poor spirits who neither enjoy nor suffer much, because they live in a gray twilight that knows not victory nor defeat." Theodore Roosevelt***

BeeMO

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