

Converting Ford Model A 6-volt electrical system to 12-volts

- Reasons for changing
 - Safety – increased voltage provides brighter headlights, tail lights, and brake lights.
 - Functionality – changing to 12 volt battery with associated electrical components will improve the way everything works together reliably.
 - Accessories – 12-volt system adds options for GPS, phone chargers, radios, electric fuel pump, and the like.
- Changing components
 - Battery
 - 12 volt, BCI-25 with negative ground versus 6 volt BCI-1 with positive ground. BCI stands for Battery Council International.
 - May need to change the battery hold down clamp.
 - Switch to negative ground. A new ground strap may be required if the battery post are of different sizes.
 - Generators and alternators
 - Alternators
 - Do it yourself options
 - GM Delco model 10Si one-wire alternator will provide 63 amps of power
 - Smaller pulley to increase rpm at idle speeds
 - Simple H-style mounting bracket can be made from 1" x 1/4" bar stock and a 3/8-16 x 3" bolt, nut, and locking washer and a 1/2-13 x 3" bolt, nut, and lock washer. Also needed is a 12" support strap that you can buy from the local cars parts store.
 - Mounting kit sells for around \$50 that includes H-bracket, tension arm, and pulley.
 - Recommended options
 - Wagner 100 amp with optional mounting hardware - \$170
 - Nu-Rex 60 amp with included mounting hardware - \$191
 - Mounting hardware
 - Generators
 - Rewire for 12 volts
 - Change field coil windings - \$53
 - Change to Nu-Rex semiconductor cutout to new voltage – limited to 20 amps and sells for \$57.

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- Generator look-alike
 - “Powermaster Power Gen” alternator
 - 90 amp alternator in shell that looks like original generator
 - Available from Brattons, Summit Racing, and others for around \$350.
- Starter
 - Staying with the 6-volt starter
 - It can handle the extra current as it will take less time to start but the starter drive must be changed to the modern Bendix drive – cost around \$40.
 - Add a solenoid to isolate high current starter from starter switch. There is a “No foot Starter” that is a solenoid mounted on top of the starter and you add a push button switch under the dash or some place within easy reach.
 - Add a momentary-on starter switch in place of foot operated switch.
 - 12 volts to a 6-volt starter is a little scary as it engages the flywheel very fast and you barely need to turn the engine over one time to start.
 - Modifying starter
 - Adding 12-volt field coils: cost around \$41 for the windings but may want to rebuild the whole starter at the same time.
 - With 12-volt field coils you can use the original starter drive as it will spin at the same rate as the original 6-volt starter.
 - Gear reduction starter is a 12-volt starter that turns a little faster than the 6-volt starter but has much more power and comes with its own drive. Cost varies from \$185 to \$275.
- Ignition
 - Ignition coil
 - Must add a ballast resistor between 12 power and coil to reduce the heavy current to the coil that would result without it. The ballast resistor is \$7 from Snyders.
 - Or change to 12-volt ignition coil as the resultant higher amperage will burn up the 6-volt coil. A heavy duty 12-volt coil is \$32 from FS Ignitions.
 - Points and condenser
 - May want to change to modern points and condenser, which might handle 12 volts better than the original style condenser. Nu-Rex modern upper plate with points and condenser, \$26 at Snyders. The wireless lower distributor plate is another \$13.
 - Ammeter
 - Change to 30 – 30-amp ammeter.

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- Horn
 - The horn is essentially a 6-volt motor. If you would run it on 12 volts it would sound weird and no longer would be an “Aoooga” horn.
 - Options:
 - Buy a new 12-volt Sparton horn for around \$260+ (from Birdhaven).
 - Modify the 6-volt horn. If you are adept at soldering, can count to 100, and can tell right from left, then you could rewind the two field coils of existing horn with smaller 24 gauge enameled copper wire for about \$7 (~200 feet).
 - Low loss, 12 volt to 6 volt (20 amp) “buck converter” for about \$20. The converter drops the input 12 volts down to the desired 6 volts at an 85% percent efficiency and generates very little heat, which is wasted energy. It can be mounted out-of-sight on the frame rail and could be used for other 6-volt applications.
- Lamps
 - Headlights
 - Halogen lamps – very bright, expensive kit with new reflector and lamp socket, but the heavy current draw requires a relay.
 - LED lamps – bright, price has come down, plug in the existing socket, but the current draw should require a relay. Logo-Lites sells such an LED unit for \$30 each.
 - Taillights
 - Quartz halogen lamps – very bright, fit the existing sockets, generate heat that could melt plastic lenses, and should be fused with a relay.
 - LED lamps – very bright (too bright), use existing sockets, and draw low power.
 - Brakes and Turn signals
 - Quartz halogen lamps – very bright, fit the existing sockets, generate heat that could melt plastic lenses, and should be fused with a relay.
 - LED lamps – very bright (too bright), use existing sockets, and draw low power.
 - Dash light – 12-volt foot-candle equivalent incandescent lamp.
- Add a battery disconnect switch to eliminate all circuits that would drain the battery when you are not using the car. Connect the switch to either the positive or negative lead: it makes no difference. Place the switch where it is handy to turn on or off.
- Add relays and fuses to high current circuits.

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- Logo-Lites sells their “A-Plate”, for around \$70, and mounts inside the cabin behind the terminal box. It has places for 6 fuses, 12-volt buss, and the aluminum plate to which everything is mounted is grounded to the firewall. Or you can make your own 9” x 4” plate and mount a buss, fuses, and relays.
- Relays isolate high current circuits, like headlights, starters, horns and ignition, from low current switches.
- When I turn on my ignition switch, I am supplying low current 12 volts to the switches that control my lights and horn and a relay that supplies high current 12 volts to the fuel shutoff solenoid and electric fuel pump and I have a down-draft carburetor.
- Make a drawing of your electrical configuration.
 - Start with the original Model A circuit and if you have only changed a few components then mark it up and date it.
 - Otherwise, use the original schematic and draw a new one of your own electrical configurations. It will help you troubleshoot problems down the road. It will be invaluable to the new owner if you someday plan to sell your car.
- Automotive electrical supplies – switches, relays, fuse blocks, buss bars, connectors, terminals, crimpers, etc.
 - Waytek Wire – www.waytek.com
 - Del City – www.delcity.net
- Automotive cloth covered wire – www.factorymetalworks.com