



(602) 999-0942 phone  
(480) 656-1072 fax  
[www.ceautoelectricsupply.com](http://www.ceautoelectricsupply.com)  
[info@ceautoelectricsupply.com](mailto:info@ceautoelectricsupply.com)

## The Truth about the Big 3 Upgrade

Wow! There seems to be a ton of mis-information about this topic abound. I've seen and heard some pretty farfetched stuff. Keep in mind that all of our Big 3 Upgrade Kits are a direct reflection of our findings in regards to measured performance and our twenty years of experience in upgrading vehicle charging systems, not something we read on the internet.

So, let's set the story straight.

### What the Big 3 Upgrade Does

1. Optimizes the performance of the alternator.
2. Provides a low resistance path between the charging system and the audio system - but only when done correctly.

### What the Big 3 Upgrade Doesn't Do

1. Increase the output voltage capability of the alternator.
2. Increase the output current capability of the alternator.
3. Offset the fact that your audio system requires substantially more current than the stock alternator can provide if that is the case.

### A Little Background

When your vehicle was built originally, the manufacturer did not envision you dropping in a 3,000 watt audio system. Therefore, the alternator, wiring, and return path of the charging system was only designed to be adequate for the stock on-board electronics and electrical accessories. Your alternator is likely a bit larger than what all electronics and electrical accessories truly require because it has been designed to operate all of them simultaneously under worse case conditions - like at idle and in 110 degree weather.

Now, you drop in said 3,000 watt audio system, which requires substantial additional current when you're doing hair tricks with the new Psyph album. Let's say that you leave the stock charging system as is - stock. You will experience substantial voltage drop at the B+ and B- terminals of your power amps when you crank it up. This is typically accompanied by a voltmeter that looks more like a VU meter, dimming lights, etc. Leave it and you'll be that guy with a dead battery, blown gear, and even a damaged alternator. Do you really want to be on a first name basis with the customer service department of your brands of choice, the local auto parts store, the local alternator shop, or all three?

### The Real Benefit of the Big 3 Upgrade

By doing the Big 3 Upgrade, you're able to do two very important things:

1. Maximize the performance of what you already have.
2. Pave the way for the installation of an aftermarket high output alternator.

*Providing Solutions to all of your Automotive Electrical Needs!*



(602) 999-0942 phone  
(480) 656-1072 fax  
[www.ceautoelectricsupply.com](http://www.ceautoelectricsupply.com)  
[info@ceautoelectricsupply.com](mailto:info@ceautoelectricsupply.com)

Let's talk about # 1. Obviously upgrading the charge lead with larger cable really doesn't require an explanation, so let's discuss the return path. Before we proceed, pop your hood and look at the wiring on the battery negative terminal. Got your hood open? Waiting . . . I mean you're likely reading this on your smart phone anyway so get out there and open the hood!

OK - most domestic vehicles will have two cables connected to the battery negative, one large and one small, and most imports will have one large cable. For domestic vehicles, the large black cable is the return path for the starter and the alternator - that's right, both. Alternator mounts to bracket . . . bracket mounts to cylinder head . . . cylinder head mounts to block . . . big black cable bolts to block . . . cable connects block to battery negative. Now, look at the small cable from the battery negative to the inner fender. That's the return path for all of the electrical accessories and electronics - NOT the large cable. If you own an import vehicle, you will notice that the negative cable typically connects to the inner fender near the base of the battery AND then on to the engine block - so you import owners actually have a leg up on the domestics in the return path department but you also typically get hosed with a smaller alternator.

Now, think for a second about where your amps are grounded. Now, think about the return path between the amps and the alternator - what exactly does that look like? Simple - amp to chassis . . . chassis to battery negative . . . battery negative to engine block . . . engine block to cylinder head . . . cylinder head to alternator bracket . . . alternator bracket to alternator. Hey, aren't there gaskets between the cylinder head and block? Are those stock cables big enough? Hmm . . .

### **Why Our Big 3 Upgrade Kits Offer the Best Results**

Our Big 3 Upgrade Kits provide an extremely low resistance return path between the alternator, battery, and your audio system. If you own a unit-body vehicle, our kit will greatly improve the return path utilizing the vehicle chassis. If you own a body on frame vehicle, our kit adds a new return path – one capable of supporting very high current, the frame. Yes, you will now ground your amplifiers to the frame (per the instructions included with the kit). In either case, our kits also improve the return path between the charging system and chassis which improves the return path to all of your stock electronics and electrical accessories - like current hungry electric fans and fuel pumps. It is not uncommon to see improvements in the performance of the stock accessories as a result of installing one of our kits.

The connections between the cables and the chassis / frame are vital to the performance of such an upgrade, especially with the passage of time. Each of our kits includes Grade 5 bolts, lock washers, flat washers, and zinc plated internal / external star washers to properly secure each cable. The terminations are equally important, which is why we use a crimping press to install our lugs to meet industry standard pull tests. We use only the highest quality super thick tinned lugs in the manufacture of our kits. Tinned lugs resist oxidation and corrosion that will immediately go to work on standard copper lugs. In addition, these lugs have greater surface area with the mounting surface than standard thin wall copper lugs which promotes lower resistance connections. Finally, each lug is insulated with super thick adhesive lined heat shrink to keep the elements from getting into and breaking down the connection between the cable and lug itself.

*Providing Solutions to all of your Automotive Electrical Needs!*



(602) 999-0942 phone  
(480) 656-1072 fax  
[www.ceautoelectricsupply.com](http://www.ceautoelectricsupply.com)  
[info@ceautoelectricsupply.com](mailto:info@ceautoelectricsupply.com)

When you bolt the included ground cables to your vehicle's chassis and frame per the included instructions, you are making a connection that will last the lifetime of your vehicle. With our kits, you do it once, do it the correct way the first go, and forget about it. Cross this OFF your to do list as you won't ever need to fix it, update it, improve it, etc.

So . . . between the upgraded charge lead and the upgraded return path, we have maximized what you have. That's right, maximized. Your 140 Amp alternator will not suddenly be able to put out bursts of 150 Amps. But . . . and here is the big one . . . you will typically see an increase in the average voltage available at idle and when cruising around and voltage is that which causes current to flow - more voltage = more available current. This is due to the fact that our kits will reduce the resistance of your stock charging system layout to a point of insignificance. Any power that was prior wasted into heating the stock charge lead, heating the stock accessory ground lead, etc. is now available to be put to work. In addition, voltage drops between the myriad of connections between the original return path of your amplifiers and the alternator, voltage drop across the stock charge lead, etc. have been eliminated. In essence, this is FREE power! [Well, it'll cost you the price of the Big 3 Upgrade Kit and a few hours of your time to install it.] In addition, your audio system now has a direct connection and return path to the point of the highest voltage potential - the alternator.

It all adds up. Our super thick tin plated copper lugs, full spec tinned OFC, proper terminations, super thick adhesive lined heat shrink, and Grade 5 hardware will maximize what you'll gain while minimizing degradation over time.

And . . . you're all set to upgrade the alternator when your budget permits as you've paved the way for this. Generally speaking:

- 2 AWG Big 3 Upgrade Kits will accommodate aftermarket alternators making up to 225 Amps.
- 1/0 AWG Big 3 Upgrade Kits will accommodate aftermarket alternators making up to 300 Amps.

Big 3 Upgrade or not, you still can't pull 200 Amps out of a 140 Amp alternator so you still gotta' use your head and exercise a bit of common sense when installing and using an audio system that requires more current than your stock alternator can deliver.

#### What About the Block to Battery Negative Upgrade?

Upgrading the cable between the battery negative and engine block has absolutely no bearing on improving the return path of your charging system with respect to your audio system, but your starter will thank you. Of course we can absolutely make an upgraded cable for this if you'd also like to optimize the performance of your starter.

At CE Auto Electric Supply, you absolutely get what you pay for when installing one of our Big 3 Upgrade Kits per the included instructions. We'll stake our reputation on it.