

**WHY ARE MY
LIGHTS
DIMMING?**

"WHY DO MY LIGHTS DIM WITH MY NEW ALTERNATOR, BUT IT DOESNT WITH MY STOCK ONE?"

It doesn't seem like it should be a very complex question, but there really IS a lot going on and a lot to explain about the phenomenon and why it happens

Light dimming is from a fluctuation in voltage. It doesn't necessarily mean that you are pulling current from your batteries or mean that you're dropping to battery voltage, it just means your voltage is bouncing around some when playing your system and it's reflected in your lights

It could be going from 14.5 to 14.0 which is very good, but you will see that 0.5v drop through your headlights and interior lights. Halogen or any of Filament type bulb will dim with a small amount of voltage drop. HID's are much less susceptible to dimming

I'LL USE A CUSTOMER SYSTEM AS AN EXAMPLE...

2001 Honda Civic 1.7L with a 70-amp stock alternator and we sell a direct bolt on 200-amp model that is in the exact same housing as factory

The customer has a 5000-watt amplifier which pulls around 500 amps, plus what the car pulls, and amp on the highs if he has one so, let's just call it 550 amps worth of draw total. The alt is 200 amps so that leaves 350 amps having to come from batteries

As soon as you pull more than 200 amps you will drop to battery voltage. The higher your regulator set point is the bigger voltage drop swing you'll have, if you start at 15 and drop to 12 you will have way more dimming than starting at 13.5 and dropping to 12. It's an ENORMOUS difference

The only way to NOT have dimming is to have more alt power than total current draw, which is almost never feasible. HID's will make a massive difference but if you're pulling more than what your alt can do, it's going to happen

"SO WHY DOES THE FACTORY ONE DOES NOT DIM?" YOU ASK.

The factory alternator is only 70 amps, more than half of that is going to the car leaving little to no current left for anything else, so as soon as you turn your system on you go straight to battery voltage and stay there until you turn the system down, but actually, stay there a little longer than that while your tiny alternator tries to charge the heavily drained batteries back up. They go back up slowly, so you never notice your lights getting brighter

A member made a comment that they needed more batteries because they couldn't maintain 13 volts or better while under load. You could add all the batteries you want, and you'll never be in the 13's if you are pulling more current than what your alt can

produce, you basically have 2 sources of power, the Primary source is your alternator, and the secondary is your battery

Your alternator is typically in the 14-volt range and your battery is typically in the 12.8-volt range. Alternator voltage may range from 13.5 to 15.2 depending on vehicle and ambient temperature. Battery voltage may range from 12.6 to 13.3, depending on the battery type

The BIG difference between a Battery and an Alternator is an alternator can maintain its voltage until its max output is reached, ... whereas a Battery drops voltage the millisecond you put a load on it and doesn't stop until its dead

Power will come from the source of highest potential first. Voltage is the Potential, and Current is what actually does the work

So, as you turn up the volume the alternator provides 100% of the load until you pull more than the alt can do at that particular RPM. Once you pull more than the alt can do your batteries will start to produce current to make up the balance

There is a very fine line between 12.8 and 14.4 as far as current draw and voltage drop.

A battery can only produce a very small hand-full of amps above its float voltage when the car is running. That is why you sometimes see voltage dropping halfway between those two numbers for short periods of time

So, in order to maintain voltage ABOVE battery float voltage you need one of the following

- More alternator power
- Additional power sources that produce current at higher voltage levels like a bank of capacitors or lithium batteries

Hope this helps to understand what's going on with voltage drop and what's lacking. *Thoughts/opinions are always welcome, and as always, these are opinions, others may not agree*