

HOW DO I MAKE MY BIKE SYSTEM LOUDER??

A very good question and NOT easy to answer. The EASY (but not realistic) answer is simply put more power on you bike. Meaning bigger, more powerful amplifier(s). Unfortunately, this isn't REAL because you're NOT taking into account the speakers you're using, their efficiency and power handling. Getting more power is easy. Just spend more money. But that is too is un realistic and too simplistic and really NOT going to get you where you want to go. There are a lot of amplifiers out there that say they put out some amazing power for cheap. BUT...do they really deliver? Have you or someone you trust actually measured this amplifier? And then there is the 3dB law (NOT a suggestion!) that to get double the output (volume level measured in SPL/dB) takes double the power. That's the LAW. The problem is that for us mere mortals 10dB is the REAL volume doubling number – NOT just 3dB. What this means is that if you go from 50 Watts RMS per channel to a 100 watts RMS per channel it will double in power and gain you 3 dB more output. ASSUMING that the speakers you're using can handling double the power. And this may get a little louder (3dB) but...NOT much. To obtain the 10dB number we need literally 10 TIMES the power! So now you go from 50 watts per channel to 500 watts per channel!!! NOW that will make a difference for sure! A Holy Crap difference!!! But...at what cost? Energy AIN'T free (that damn Physics S#*t gets in the way!!) Basically you need 11.6 amperes per 100 watts RMS ..to make that kind of RMS power. So... if you started with a 50 X 4 amplifier and switched to this Holy Crap 500 X 4 amplifier to REALLY hear a difference the current draw goes from 23.2 amperes to 232 amperes!!!! Wholly F#@K where is that coming from on a bike that might have a 55 amp stator???

Let's assume that I am correct on this current draw issue (which I am). But I didn't throw into the mix is that current draw is usually measured with Sine Waves into load resistors. Neither of these exist on your bike, or in "Real-World". On top of that...You and I DON'T listen to sine waves, and we certainly don't listen to load resistors (they sound AWFUL!!!). And music has what is called Crest Factor. Or Dynamic Range. Meaning from the lowest level to the highest level (in amplitude -voltage in our case. AC volts to be precise) on that song or piece of music you listen to. So in reality with this MONDO powered system you would draw AVERAGE of 23.2 Amperes...with PEAKS of 232 amperes. It WILL kill a stock HD charging system. For sure. Maybe not instantly ...but it wouldn't take long if you REALLY CRANK you're audio system. But you guys NEVER listen to you're HD system loud? NEVER!? (Lair lair...pants on fire!!)

So that doesn't sound good. Like... this is a REALLY bad idea!!! BUT....You saying...wait a minute....I see on the internet guys doing BIG sound systems on HD bikes with 2,000, 3,000, 4,000 WRMS all the time.



NOT with a stock HD charging system they aren't!!! And NOT moving. These are typically "Parking Lot Queens"

SERIOUS "PARKING LOT QUEEN"



(Courtesy of Michael Shawn Foundation - STURGIS 2021)

Meaning they have dual lithium batteries in their bags, and a external power supply running it at the parking lot at the local bar/hang out. NOT riding ...not at the same levels they can do parked!!!!

You say to yourself....I am NOT building a "Parking Lot Queen" bike system. I want my bike totally drivable. You can still go pretty big, BUT...this is like drag racing....get ready for the BIG time!!! Be smart and be prepared.

So...oooo what do I recommend doing? I am so glad you asked!!

First look at the speakers you have now. What are they and what are their specifications? Are they like car audio speakers with dome tweeters , but waterproof or water resistant cones? Or Coax Horn Pro Audio type speakers? This makes a HUGE difference. CoAx speakers with domes are ALWAYS lower sensitivity then their counter-part CoAx horn pro drivers.

HIGH POWER 6.5 INCH COAX



HIGH SENSITIVITY 6.5 INCH COAX HORN





There are Pros and Cons to both speakers. There is NO right nor WRONG. It is a personal preference in speakers. BUT....the math (Phyics) don't lie!! And batter/charging power is a serious issue on a Harley Davidson® motorcycles, in general. it was NEVER designed to handle an extra 200 amps of current draw! (2,000 watts RMS is 232 amps of FULL power current draw -no matter who builds it!!!) Or even 1,000 watts RMS (still 116 EXTRA amps of current draw!!)

CoAx speakers for motorcycles (similar to car audio coax speakers with dome tweeters)

VARIOUS STYLES OF COAX SPEAKERS (WITH DOMES, LIKE CAR AUDIO)



(These are ALL very good speakers. This is NOT a slam on any of them! Hell ..one of them is mine!)

PROS:

- Typically have better bass response (but NOT always)
- Smoother sounding
- Usually, light magnet structures so they fit better
- Usually much less expensive than the CoAx Horn versions.

CONS:

- Because of the better bass these coax's have lower sensitivity, typically around 89-92dB 1W/1M
- Takes much more that double the power to make these go REALLY loud like 6 dB more power at least (4X!)
- These usually utilize 1" to 1.5" voice coils which are NOT that high power handling. Good average power handling BUT it takes BIGGER voice coils to handle more power (that Physics S#*t – that is always getting in the way!!)
- IF voice coils get bigger, than the magnet has to get bigger negating the ease of install



CoAx Horns (like Pro Audio Type speakers with horn tweeters)



PROS:

- Have MUCH higher sensitivity - typically around 94 -100dB 1W/1M
- Takes way less power to make these speakers go REALLY loud like 6 dB LOUDER than the car audio coax style speaker
- Thats 4X LESS power to drive these! Meaning 1/4 the power gets you to the same place as the normal car audio style coax -with 4X the power!
- (This means 4X LESS current draw! A REALLY BIG deal!)
- Usually, NEO is used, lighter weight than Ferrite and slimmer

CONS:

- Usually a little less bass then the car audio style coax's speakers
- Not cheap because of the NEO magnet structure (just changing form Ferrite to NEO doubles the price of the speaker!!)

Most COAX horns available today usually utilize 1.5" voice coils which are relatively higher power handling. BIGGER voice coils (like Cicada Audio CH series which are 2" voice coils) handle at least 50% more power. And considering the levels that MANY bikers play their systems at it is IMPORTANT to ME (Cicada Audio) that my product is built to take it. Doesnt mean you can't blow them up (*toast vocie coils) thats why I have gone the extra steps and use larger voice coils (2" on the midbass driver and 1.4" on the horns) Blackened them and used US wire for the voice coils.

If you blow my speakers you are REALLY working it!!!!



RECOMMENDATIONS??

So.. what do I recommend? There are TONS of options. All kinds of ways to “skin this cat” so to speak. As a general rule I would go with CoAx Horn type speakers. All the way around, Fairing and in the Bags, Way louder and easier to drive with low to medium power amplifier. And come ALIVE with high power amplifiers. I also recommend going to 2 ohm speakers which will reduce the size of the amplifier and need for super powered versions.

Look...I am a BIG proponent of BIG power. BUT...it is a SERIOUS issue on a HD motorcycle charging system.

IF you want to go BIG, Go for it. But be mindful of what you are doing. And HOW to get there. What battery and wiring upgrades you need to make.

So..what have you(we) all learned here??

Higher sensitivity horn speakers and medium to high power amplifiers will get you where you want to goquicker, easier and less expensive, at least in the long run.

But this is for “Daily drivers” not “Parking Lot Queens”.

Thats a whole nother Bee Hive to kick!! Below is a killer simple system.

CICADA AUDIO 2014 & Newer Harley-Davidson® Road King® Speaker Update and DSP125.4D Amplifier Tuning **SYSTEM 1**

