

Sturmey Archer HDS22 12 Volt Dynohub Wiring

source <https://motorbicycling.com/threads/sturmey-archer-hds22-dynohub-12v-setup.63820/#post-669849>

I want to share my 12V charging setup that I've been testing for a few months. I saw this setup in the thread [Sturmey Archer X-FDD Dynohub/Drumbrake Experiments](#) by Bairdco and decided to try it out.

I bought the hub for \$45 shipped off ebay. Not only a dynohub, it is also the cheapest sealed bearing disc hub on the market at this price. Spec for this hub is 6V 2.4W, however the drum brake hubs all seem to come with 6V 3W dynamos. I didn't get a choice, and a look at their website seems to show that the dynamos in the disc hubs and non-brake hubs are all 2.4W.



[Dynohub 12V charging system](#)

The Setup:

Sturmey Archer HDS22 disc dynohub. 6V 2.4W, 36h, 100mm spacing 9mm solid axle, 6-bolt ISO disc.

Husky 26x50mm steel rim

CST Cyclops 26x2.4 front tire

Husky 10g spokes 10"

Pitbike 12V regulator/rectifier 4-pin

Autozone 12V LED flood light

12V LED side marker red light

The hub is laced with 10g spokes into a 26x50mm Husky steel rim, with a 26x2.4" tire on it. The wire connector on the hub is a small plastic piece that slides on the tab with the two terminals, holding the wires connected by friction. One of the hots is grounded to the axle, so it needs to be connected to ground on the frame somewhere.

A small 12V regulator/rectifier from a pitbike is next. This is a 4-pin. In a pitbike it typically runs off a stator with two hots plus ground, but here we only have the two hots with one of them being a ground. So we are only using 3 pins. If we look at the R/R with pins 1-4 going clockwise from upper left:

p1: 12V+

p2:

p3: GND/AC-

p4: AC+

R/R housing must be grounded to frame (bolted)

Here you can see the connections: p3 wire mini-harness connecting Batt-, AC-, and frame GND, p4 dynohub+, p1 battery+ and lights. The battery is always connected to the regulator, the lights are switched.



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I was able to tuck the regulator in between the head tube gussets with a single 1/4-20 screw. The right side gusset has a hole for an allen wrench.



Dynohub 12V charging system

Riding it

rigging a voltmeter to the hub and taking a cruise, i found the voltage ranging (approximately) from 5-12v at pedaling to slow motor speeds, 18-24v at cruising speeds (approx 20-25mph) and maxed out at 52v at WOT (approx 45-50mph.) - Bairdco, 2011

Sounds about right; P.out directly proportional to speed. Riding it with a dead or low battery at night shows exactly what is going on without a voltmeter. Turn on the lights at a stop and they glow dimly, the lights start strobing brighter when you start moving, and they are very bright above "slow motor speeds". With a fully charged battery, there is little to no strobing. My battery is beat up and doesn't take or hold charge well. However, I have found that going for a long day ride (over 20mi) charges up the battery sufficiently to not drain much running at night.

Overall, this is a very clean setup that works 100% and has made night riding possible and hassle free. I will take strobing any day over having to charge the lights battery on the bike.

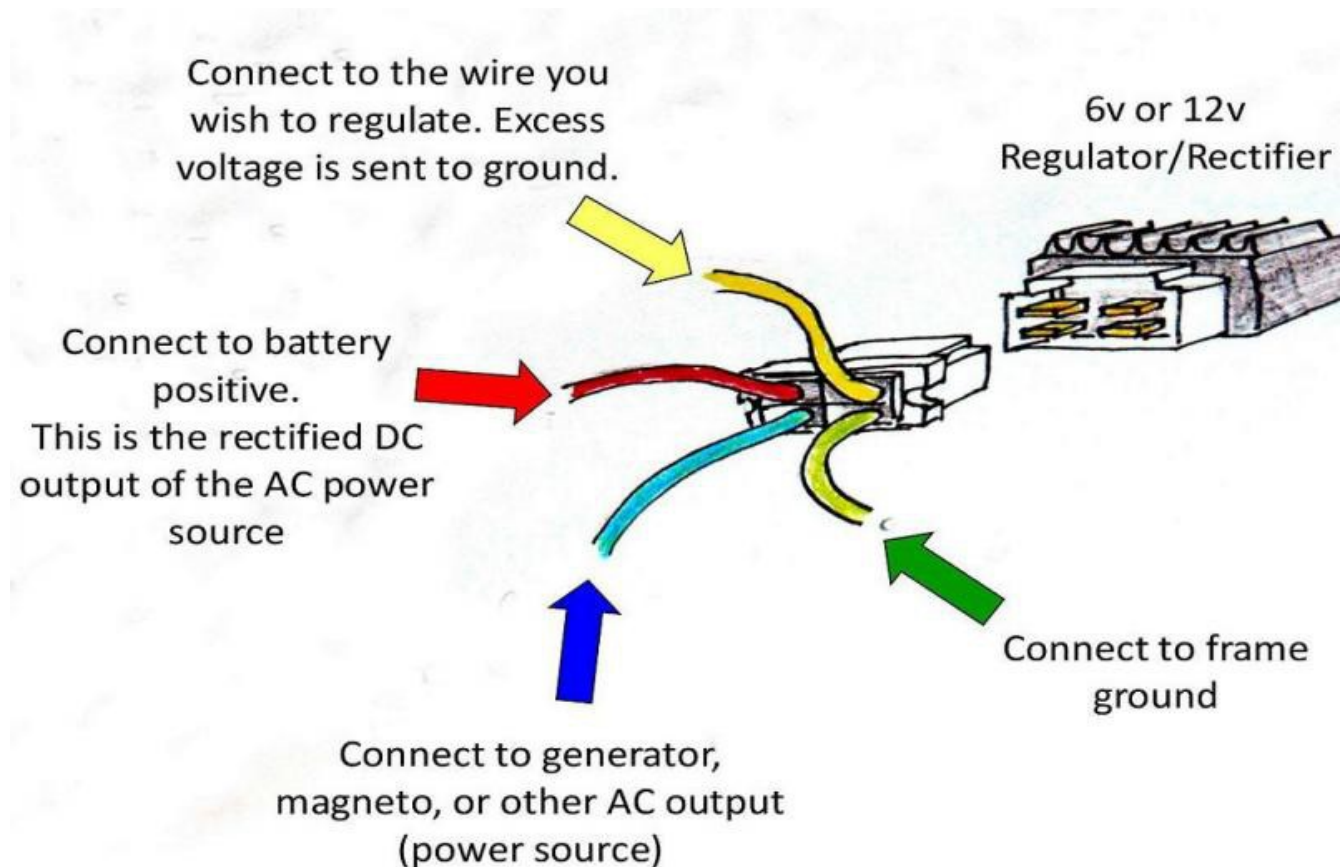
Make it better

Still reading? Run a nice high Ah lithium battery and a switch. Fab up a hook and rubber

strap setup to make battery removal a breeze.

If I was gonna do this again, I'd build a 24" front wheel with an alloy rim, 14g or 13g spokes and run the XL-FDD.

If anybody wants a setup like this, feel free to contact me.



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Well-Known Member

Joined: Nov 28, 2012
Messages: 1,003
Likes Received: 37

dogcatcher said: ↑

Can you provide a wiring diagram of how the parts are all connected?

New

It's like this but without the yellow wire. You have three connections total; ground, hub +ac, and +12vdc. The hub negative goes to ground (frame) and the hub positive ac goes to bottom left on the regulator. From there top left is 12v dc and bottom right is ground.

The way it works is it dumps all excess current to ground.

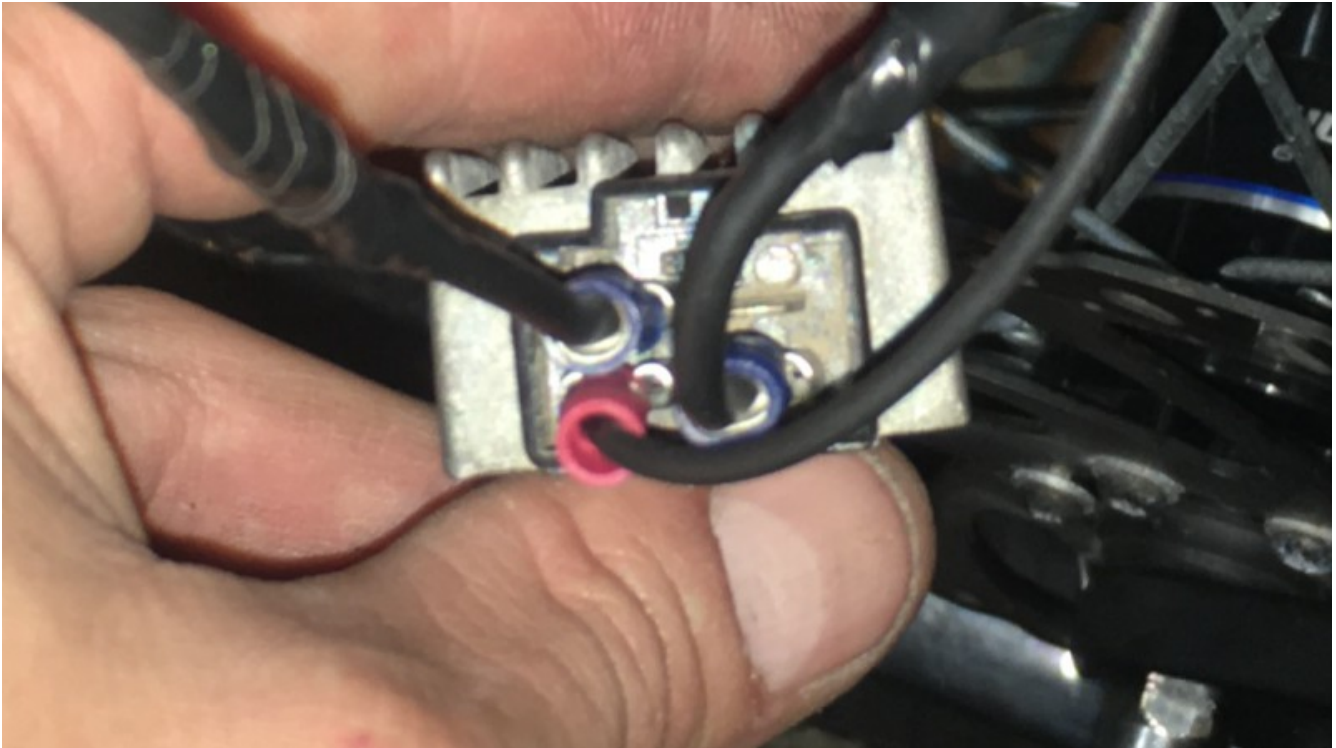
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Upgrade Idea

The better hub to use for charging is the XL-FDD which is the 90mm drum with a 3W dynamo. That extra half a watt of output power should help to lower the max strobing speed. The only problem is braking.

The 90mm drum will never match a 200mm disc with quad piston hydraulic caliper. But with some mods, it might. Now I haven't tried this but I might someday. There is a company in Europe that adds heat sinks to these for trike users. Their modded hubs are NOT cheap. Of course with the dynamo there is no space. I'd put a heatsink similar to the hub motor hubsinks; they go on the OD. Also run with a quality incompressible brake lining. Possibly even one fabbed from stainless tubing. And use the right lever. The drum hubs need the pull. I think people have said the Sturmey levers are the best. Overall if this was close to even a 2-piston hydraulic disc it would be way better not to have to change disc pads constantly.

Also... running the forks without a brace for the lowers... I bent the front axle on that heavy bike... 125lb! Could have happened once when the brake caliper bracket came loose... allowed dropout to rotate a bit on axle... dunno. Not the fault of the hub.