

Growler “Mr. Big Stuff” BBSHD build

1) “Basic ingredients” for my build:

- a) 2017 Growler “Mr. Big Stuff” 26” fat bike (size 19”/large). This bike is no longer offered by [Growler](#), so any Growler builder might want to start their BBSHD building planning by asking owner Willo Glynn about any differences between their Growler model and this Mr. Big Stuff frame/model I used.
 - i) I’ve modified the bike in ways that may not apply to other riders: significant stem extension, backswept bar and large [Peddling Innovations Catalyst platform pedals](#) allow me to comfortably “stand” on the bike to “scout around” for wildlife/nature (the main purpose of my backcountry rides), as well as relieve some pretty on my lower back.
- b) Bafang BBSHD Mid-Drive ebike kit from Luna with 120mm motor, as well as thumb throttle, upgraded 500c Mighty Mini Display, programming cable, gear sensor and the Luna One 36T chainring
- c) Unit Pack Power Battery: 52v 17.5Ah Hailong with Sanyo GA cells/14S5p configuration (bought off eBay from seller unit-pack-power). This has been a very good battery so far, but this is my first ebike/battery so I have nothing to compare it against. I was impatient and wanted to get my ride built/tested, so I didn’t want to wait 2-3 weeks for a battery from EM3ev which would be my choice all other things being equal.

2) Build discussion:

- a) BEFORE beginning your build:
 - i) Buy the Luna BBSxx [wrench](#) (with your kit) rather than rolling the dice with other versions; the one I ordered off Amazon didn’t seat well on the BBSHD nuts. It worked “OK” but not ideal.
 - ii) Buy better cranks than the stock Bafang ones that come with the BBSHD kit (discussed below); I ended up ordering/installing Shimano StePS FC-E6000 175mm cranks which have worked great.
 - iii) Hold off on buying something like the Batt-Man until you’ve used/learned enough about your existing display to see if the info it provides is ‘enough’ for your needs
- b) Battery “fit” wasn’t an issue on my downtube, but I needed to drill extra holes similar to what was done in [this video](#) since the water bottle bolt holes on this frame didn’t line up to the battery plate/mount.
 - i) I’ve been using a beefy [elastic web belt](#) to help secure this battery and provide a little ‘insurance’ against movement, falling off, etc. So far it has worked great; I like the fact that you can really cinch it tight, and the buckle is beefy/large enough to securely hold the best in place without slipping.
- c) Before installing the motor/drive, I disassembled/greased both the secondary gear (easy) and the nylon gear (not as easy), using recommended [Mobilith SHC 100](#) (basically same as Mobil 28 recommended elsewhere). Helpful resources: [secondary cover removal](#); [nylon gear access/greasing](#)
 - i) I needed to buy special snap ring pliers for nylon gear access
 - ii) Make sure nylon gear is inserted ‘right side up’ or else there won’t be the necessary groove for re-seating the snap ring holding the gear in place

- d) Knowing I'd be biking in some wet/muddy conditions now and then, I decided to try to protect the secondary gear and the nylon gear/controller housings by running a bead of all purpose acrylic latex caulk plus silicone along the seams where the housing separate. I've used this product before, and it's pretty durable and reasonably easy to remove. This won't truly 'waterproof' anything, but should provide an extra layer of removable protection for water getting into these housings.
- e) For general mounting of the drive/controller and accessories, I found the 2 [videos](#) from Rev Bike to be the most helpful.
 - i) I had to use an angle grinder to cut back the chain-guard support (similar to what is shown [here](#))
 - ii) I needed approx. 3.5-4mm of spacers (used 2 Luna ones included with their supplemental spacer kit) on drive side to avoid contact between the drive unit and the Growler chainstay. NOTE you'd need an additional spacer if you wanted to use the stock 46t Bafang ring; I installed a smaller 36T Luna ring
 - iii) With my 120mm unit, the drive-side spacers left approx. 16-17mm of 'tube space' before the threading begins (see picture below); I made my own 'spacer' by using a Rigid 1 1/2" x 1 1/4" Reducing Bushing like [this](#) from Menards, painted flat black, which provided almost exactly 17mm of spacing and sufficient remaining thread for the Bafang lock nut and the final black 'cover' holding nut (see pic). Would I have been ok with the 100mm unit? I'm thinking yes. You can look at my photo and see the approximate amount of remaining 'thread' you'd have...seems like that would be enough to secure the nuts...?
 - iv) Installed cranks and pedals. Don't be like me and install the drive-side crank before your chainring (doh!)—you may not get it off with the stock Bafang cranks. Apparently it's a well-known issue with the Bafang Aluminum cranks being difficult to remove. I didn't have crank-puller, but shot some WD-40 in and used heat gun and a plastic mallet to get the crank back off (hence the earlier advice of investing in a decent set of cranks to begin with to avoid this hassle). As previously mentioned, I soon replaced the lousy Bafang cranks with the Shimano StePS FC-E6000 175mm cranks which have worked great.
- f) The speedo sensor was a bit tricky to position with the large rear fatbike tire. This will either need to be gently rotated out or removed entirely for rear wheel/tire removal. I also needed to install a small 1/2" rare earth magnet as discussed in [this thread](#).
- g) The 500c display has been a good display so far; I will likely replace it with the [EggRider V2](#) in the near future, however, since the EggRider will allow programming the BBSHD from my phone without the hassle of hooking a cable up to a computer, etc.

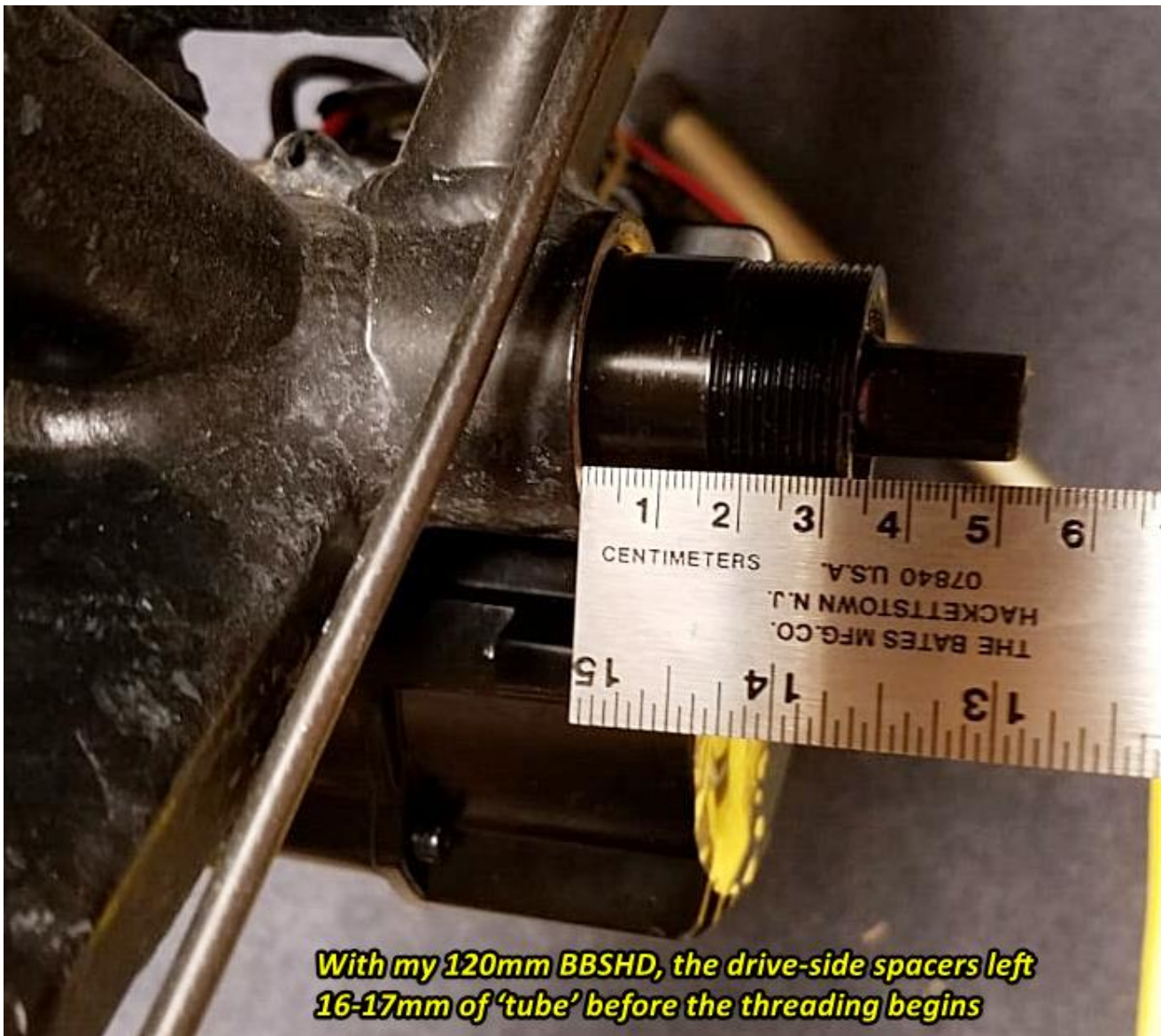
3) Initial test rides/modifications/upgrades

- a) On my initial ride I broke the chain several times, likely due to my own link repair that was apparently sufficient for the normal torque of riding on this bike, but not enough with the new torque of the BBSHD. Decided to upgrade my entire drivetrain to the following:
 - i) Sunrace CSMS8 EAZ 11-46 cassette (based on advice from several e-bikers, popular due to its all-steel cogs and design of 6 largest cogs on 2 alum spiders, reducing stress on freehub)
 - ii) Shimano XT RD-M8000 long cage derailleur
 - iii) Shimano Deore XT M8000 shifter
 - iv) Shimano Ultegra/XT CN-HG701 11spd chain
- b) After several rides this has been a good combination. My chainline isn't the best on the largest cogs, but I've not had any shifting/chain-throwing issues. The existing chainline can't be good in terms of chain wear when on those larger cogs, however. From what I've read, I'd probably go with either the Lekkie or

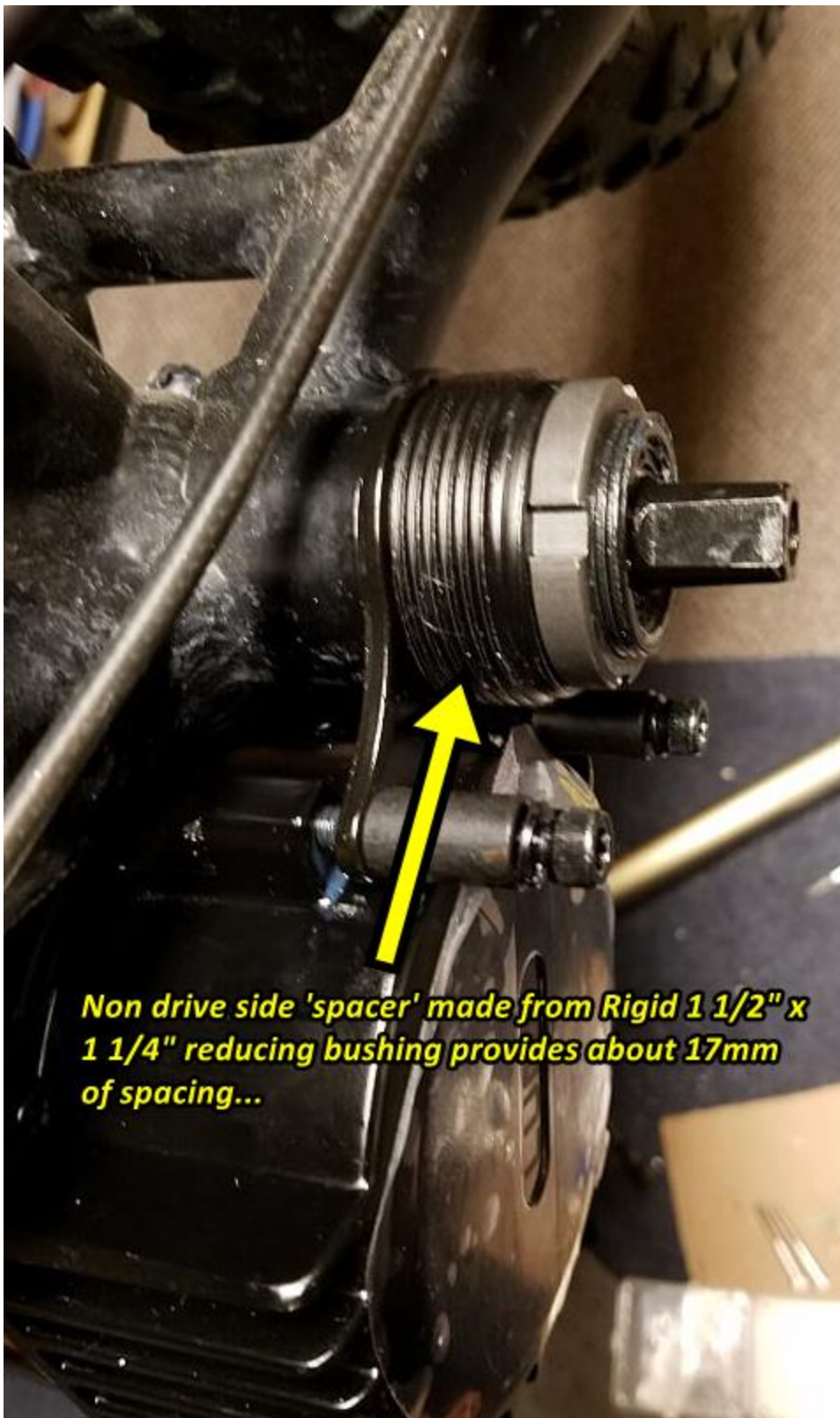
Luna Eclipse 42T. My existing Luna Eclipse 36T has 8.5mm offset I believe; [apparently](#) there is only .8mm difference between the Lekkie and the Luna 42T. 'Might have an issue with chainstay clearance however requiring shifting around the spacers...

- c) Based on the first couple of rides—with a fair amount of off-road and reasonably liberal use of PAS and throttle for some hilly sections—I'm running between 18-21 Wh/mile. And that's with close to 300lbs of bike/motor/battery, rider, backpack, etc. etc.

4) Some pictures



With my 120mm BBSHD, the drive-side spacers left 16-17mm of 'tube' before the threading begins



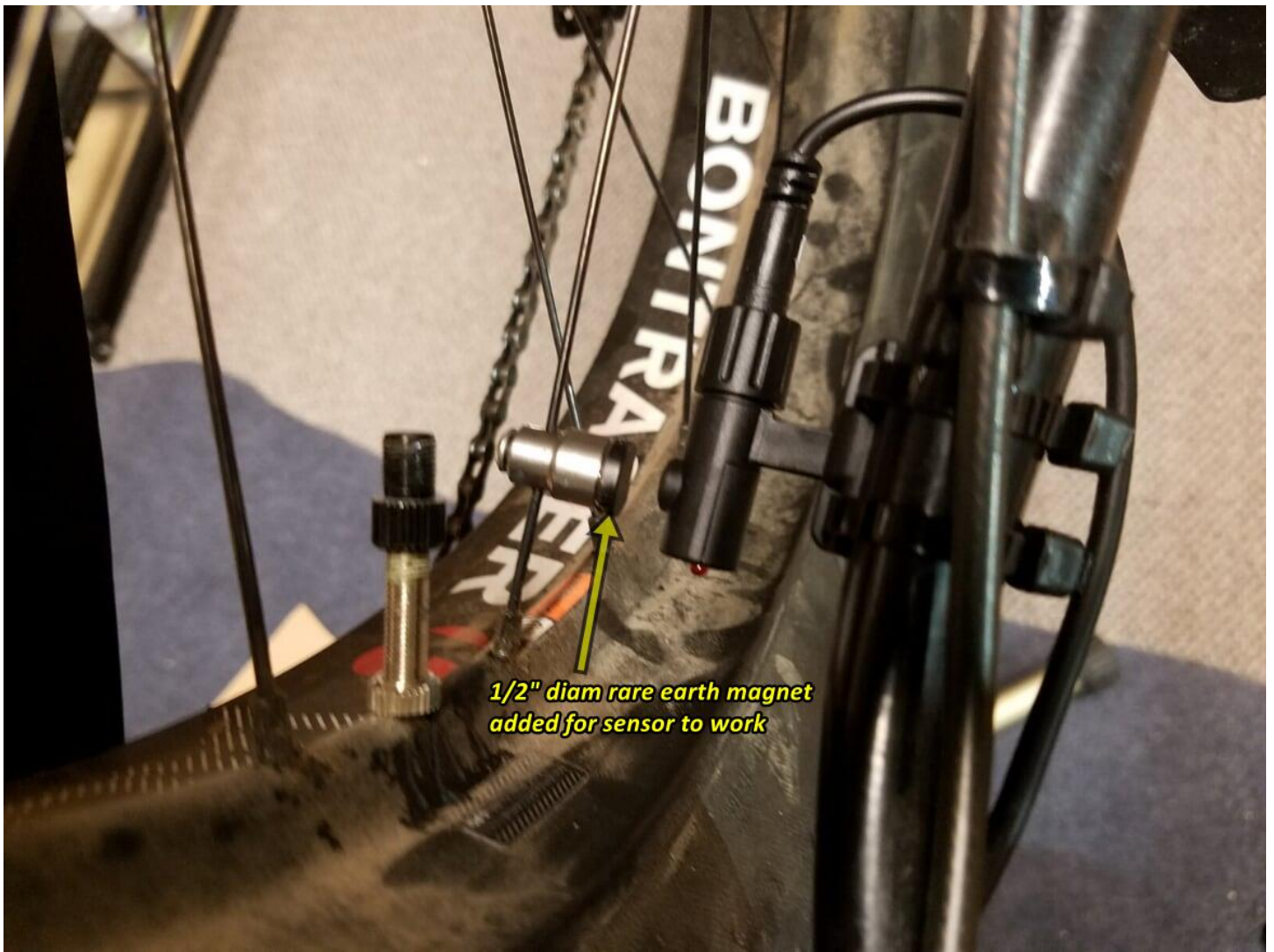
Non drive side 'spacer' made from Rigid 1 1/2" x 1 1/4" reducing bushing provides about 17mm of spacing...

Amazon elastic webbing belt to help hold/secure battery





*Sealing motor/drive seams
for a little extra protection
from water*



*1/2" diam rare earth magnet
added for sensor to work*

