

Taken from a [post](#) by NotFastEnuf from MMW community

This guide is most related to the 2 pass (Kalman) filters

### **Brushless:**

I really only have my 4in to test on currently, and I'm running pass 1 at 90hz, pass 2 at 140hz, and a first order D filter at 70hz or I have also tried a second order D filter at 120hz. I've been slowly eeking it towards a typical betaflight setup that I would run if not using the dynamic notch and it's still clean.

I think it's really build dependent to be honest and we just need to collect more data and experience. Start with the 2 gyro passes both at 90, and the second order D at 100... Then go from there. If it's clean bump D 2nd up to 120. Still clean then start pushing the second gyro pass back. Still clean then drop from 2nd order D to a first order but lower the cut to 70hz and then push that back but no further than 120hz.

That is sort of the routine I'm following now but as we know filtering is a trade off. It will be a whole new game when I make D split into 2 passes.

Again consider your build and your goals. If you want no propwash and you're always gonna run good props vs a tank you can bounce off the ground that will tolerate all sorts of nonsense.

A point of reference ... I noticed Vanover's filters in raceflight during a YouTube video he was featured in ... 2 gyro passes 100 and 150hz, and a 2nd order D at 120hz. Keep in mind that's a pro race rig that may be more focused on tolerating clipping a gate, bending a prop, but needing to finish a race anyway.

Overall, I think we are close to the big boys now with our filter behavior... Gone are the days of "what oddness works for silverware" ... And here are the days of what works for quadcopters in general. Makes life easier.

(...for brushless) I like 90/140 gyro and D 2nd at 120 too. That flies very well on just about everything I've tried it on.

### **Brushed:**

I am finding that I occasionally need to go even lower than 90hz on some brushed. My boss 7 is happiest with two gyro passes at 70hz... And the 2nd order D filter at 120. But anything you think is helpful is always fair game for the wiki. No need to ask. I guess it's the same procedure ... I just start it all off a little lower on brushed.

### **User Experiences (by Yets):**

Got some feedback for the Kalman beta filters, been experimenting with a 6" 2204 on the Dedicated board (and brushless fork). Followed your instructions and have it settled and flying at 90/140hz and and 2nd Dterm at 120hz. I originally tried 1st at 70hz but was getting some resonance and wasn't able to get D PIDs on roll and pitch to any decent level without horrible throttle/noise. At the moment it seems to be flying really nice and crisp with a lot of P. The previous rough tune was using WEAK filtering but D was quite a bit higher. Not sure if I'm doing it right but motors are cold (it is around 8 degrees here). So far I'm pleased. Now just trying to get Torque Boost at an acceptable level.

A bit more feedback on the Dual pass beta filtering on the 6 inch brushless; so I lowered the D Term 2nd to 70hz while keeping gyro 1 at 90hz, 2 at 140hz (not sure it was the correct thing to do) but with

it I was able to add Torque Boost without quad flying away. Flips very cleanly now with nearly bounce back and nearly no propwash on descends in it's own dirty air. Nice stuff.

My next test is the 0603 whoop which flies like a dream. Will see if I can get it the same and then wait for the D term pass Looking forward to it all

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