Flex Innovations Cap 232EX 60E

Looking over the specs for this plane that are listed on their website at the link below, it shows a flying weight of 6 pounds 3 ounces with a 6S-3500mah LiPo Battery. If you use a larger 6S-4000mah pack you will be up towards 6 pounds 6 ounces, and with a 6S-5000mah battery you would be up around 6 pounds 12 ounces flying weight. Based on that, you would want to get around 12-13 pounds of thrust from the power system to get true 3D level performance.

https://www.flexinnovations.com/product/qq-cap-232ex-60e-g2-super-pnp/

On the website they call out a 16x7 wood prop, so now we just need to look through the different BadAss 4520 motors and find the one that will make around 12-13 pounds of thrust on a 16x7 prop while running on a 6S LiPo Battery. Looking at the prop charts for the different models, the BA-4520-470 would be the best fit. Looking at the performance numbers for this motor, running on 6 cells, with our BadAss 16x7 wood prop, we get the following full throttle performance numbers.

Volts – 22.2
Amps – 57.9
Watts – 1284
RPM – 8350
Thrust – 189 ounces (11 pounds 13 ounces)
Speed – 55 MPH

This setup gets you a power loading of 198 watts per pound and a thrust to weight ratio of 1.82 to 1, so this is very close to the ideal 3D power of 200 watts per pound with a 2 to 1 thrust to weight ratio.

The APC 16x7-E prop was designed for larger 3D type airplanes, and it is pretty efficient. With that prop on the motor, you will get these full throttle performance numbers.

Volts – 22.2
Amps – 61.7
Watts – 1369
RPM – 8271
Thrust – 204 ounces (12 pounds 12 ounces)
Speed – 55 MPH

Now the power loading has increased to 211 watts per pound, and the thrust to weight ratio is at 1.96 to 1. One thing to remember with 3D flying is that the wood props typically weigh about 2/3 of what a comparable nylon composite prop weighs, so you do get a bit brisker throttle response from wood prop because it can spin up quicker with a throttle increase.

The BA-4520 motors are about 9mm shorter than the stock motor, so you may have to cut a spacer out of some 3/8” plywood to put between the cross mount and the firewall to get the prop adapter in the correct location so the spinner clears the cowl properly.

The BA-4520-470 motor is rated for up to 78 amps of current, so you would want to use an 80-amp or larger ESC with this motor. You stated that you have a 100-amp ESC in the plane already, so you are good there. If you do ever need an ESC for this motor, our BadAss Rebel 80-amp or the BadAss Renegade 85-amp model would be good choices for the motor.

Here are links to everything discussed in the above power system recommendation.

BadAss BA-4520-470 Motor: https://innov8tivedesigns.com/catalog/product/view/id/1887/s/badass-4520-470kv-brushless-motor/category/324/

BadAss Rebel V2 80-amp ESC: https://innov8tivedesigns.com/badass-rebel-v2-series-brushless-esc-80a.html

BadAss Renegade V2 85-amp ESC: https://innov8tivedesigns.com/badass-renegade-v2-series-brushless-esc-85a.html

BadAss 6-cell 4000mah LiPo Battery: https://innov8tivedesigns.com/badass-45c-4000mah-6s-lipo-battery.html

BadAss 16x7 Wood Prop: https://innov8tivedesigns.com/badass-wood-electric-propeller-16x7.html

APC 16x7-E Prop: https://innov8tivedesigns.com/apc-16x7e-propeller.html