

Great Planes Escapade .61

On a plane like the Escapade .61, it weighs 8.25 to 9.0 pounds, depending on the size battery you use, and being Sport-Pattern kind of plane, you are looking for a power level of around 150 watts per pound for good flight performance. Planes of this size almost always use a 6-cell LiPo battery, with a capacity in the 4500 to 6000mah range, with the 6S-5000mah battery being the most common size. When you start looking at the current draw needed to make the required power, you need to do a little basic math. To get 150 watts per pound from an 8.5 pound plane, you need 150×8.5 or 1275 watts of power. A 6-cell LiPo battery produces 22.2 volts under load, so if you take 1275 watts and divide that by 22.2 volts, you need the motor to pull 57.4 amps to make the required power.

You could also power a plane like this with a 5-cell battery, which makes 18.5 volts under load, so to make the same power, you have to pull more current. 1275 watts divided by 18.5 volts would give you a current draw of 68.9 amps. Likewise, if you dropped to a 4-cell battery, which makes 14.8 volts under load, to get 1275 watts of power you have to pull 86.1 amps, which is getting pretty high!

On a plane like an Escapade .61, which was designed for a .60 to .60 2-stroke, or .90 to 1.20 4-stroke engine, you would be turning a prop in the 12-14 inch range. A prop such as a 13x8, would be right in the middle of the range and give you a good blend of both speed and thrust.

Now that we know how much power we are looking for, what size battery we will likely use, and what size prop we would like to run, we can now go looking for a motor that fits these requirements. That is where our Prop Data charts come in VERY handy! Here you can see the performance of a wide variety of props and how much power they make on the motor.

When you run a motor on 6 cells, you are looking for a motor that has a Kv value more in the 450-600 RPM/Volt range, depending on the size prop you want to turn. As you saw in our Motor Cross Reference Chart, the closest match to the RimFire .80 motor was the Cobra 4120/18 motor, which has a Kv value of 540.

If you go to the prop data chart for the Cobra 4120/18 motor, which is linked below, and look down in the 6-cell section of the chart, you will find the performance data for an APC 13x8-E prop.

https://innov8tivedesigns.com/images/specs/Cobra_4120-18_Specs.htm

This motor and prop combination has the following full throttle performance numbers.

Volts – 22.2
Amps – 53.1
Watts – 1179
RPM – 9486
Thrust – 138 ounces (8 pounds 10 ounces)
Speed – 72 MPH

At a weight of 8.5 pounds, this set-up would get you 139 watts per pound, which is close to what we are looking for, and a thrust to weight ratio of about 1 to 1. This would get you good sport flying, with plenty of power for basic aerobatics, but not quite enough for unlimited vertical performance. The

power of this motor would essentially be the same as what you would get with the recommend RimFire .80 motor.

The BadAss 4520 motors make quite a bit more power than the Cobra 4120 motor do, so if you were looking for great Pattern level performance, with unlimited vertical, then this would be the way to go. On the same 6-cell battery with the same 13x8-E prop, if you look at the Prop Data Chart for the BadAss 4520-540 motor, listed below, will get you these full throttle performance numbers.

<https://innov8tivedesigns.com/badass-4520-540kv-brushless-motor.html>

Volts – 22.2
Amps – 55.3
Watts – 1228
RPM – 9718
Thrust – 145 ounces (9 pounds 1 ounce)
Speed – 74 MPH

As you can see, this motor gave a small increase in performance, up to 144 watts per pound, but that was because we used the same prop and the motor has the same Kv value. However, this motor has a lot more to offer with a simple prop change. Where the Cobra 4120/12-540 motor was just about maxed out with the 13x8 prop, the BadAss 4520-540 motor has plenty of power to spare, and can swing a larger prop to get much better performance. If you switched to an APC 14x8.5 prop, you would get these full throttle performance numbers.

Volts – 22.2
Amps – 68.6
Watts – 1523
RPM – 9518
Thrust – 169 ounces (10 pounds 9 ounces)
Speed – 77 MPH

Now we are up to 179 watts per pound, with a 1.25 to 1 thrust to weight ratio for amazing pattern performance with unlimited vertical ability. Our BadAss Wood 14x8 prop would also work very well, being even more efficient than the APC prop. This prop pulls 8 amps less current AND makes about 4 ounces more thrust at the same time. On top of that, they simply look way cooler on the front of your plane with the gloss black finish, white painted tips and red BadAss Logo!

For a battery, our BadAss 6-cell 5000mah packs would be a good size to use in this airplane, and with decent throttle management, will get you 8-9 minutes of flying time per charge.

So for this airplane, you do have a couple choices, depending on whether you are looking for good Sport performance or more aggressive Pattern level performance.

For the Sport Performance, the Cobra power system would work well. Here are links to the items for that power system.

Cobra 4120/18 Motor: <https://innov8tivedesigns.com/cobra-c-4120-18-brushless-motor-kv-540.html>

Cobra 60-amp ESC: <https://innov8tivedesigns.com/cobra-60a-esc-with-6a-switching-bec.html>

BadAss 6-cell 5000mah LiPo Battery: <https://innov8tivedesigns.com/badass-45c-5000mah-6s-lipo-battery.html>

APC 13x8-E Prop: <https://innov8tivedesigns.com/apc-b13x8e-propeller.html>

For the higher power Pattern Level Performance, here are the links to the BadAss Power System.

BadAss BA-4520-540 Motor: <https://innov8tivedesigns.com/badass-4520-540kv-brushless-motor.html>

BadAss Rebel V2 100 Amp ESC: <https://innov8tivedesigns.com/badass-rebel-v2-series-brushless-esc-100a.html>

BadAss 6-cell 5000mah LiPo Battery: <https://innov8tivedesigns.com/badass-45c-5000mah-6s-lipo-battery.html>

APC 14x8.5-E Prop: <https://innov8tivedesigns.com/apc-14x8-5e-propeller-black.html>

BadAss 14x8 Wood Prop: <https://innov8tivedesigns.com/badass-wood-electric-propeller-14x8.html>