

Rocky Mountain Modelers Safety Officer Tips: January 2020

By David Dust

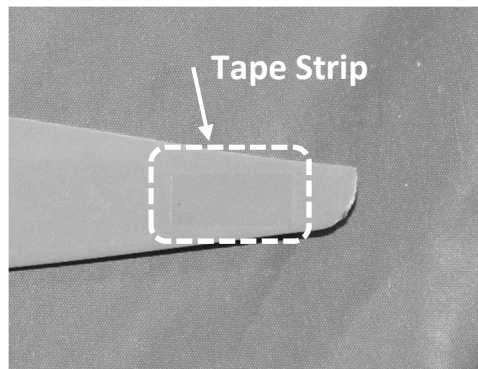
Balancing Electric Motor Propellers

Why are propellers for electric power systems shaped differently than those for fuel engines?

- Brushless electric motors typically generate less torque and operate at lower rpm's than fuel engines of comparable size.
- The shape of propellers designed specifically for use with electric motors have been optimized for the operating specifications of electric motors.
- Propellers specifically designed for electric motors are, subsequently, lighter weight and significantly more flexible than those for fuel engines.

What is an appropriate method for balancing "electric" propellers, that can be very flexible and of very light construction?

- The techniques for balancing thicker more rigid fuel engine propellers are very well documented on the internet; whereas, the techniques most appropriate for balancing electric motor props are far less well documented.
- Since propellers for electric motors are so flexible and can be of very light construction, sanding and/or trimming material off of the "heavier" blade can weaken and/or influence the dynamic balance of the propeller.
- The following is an easy method for balancing propellers for electric motors that does not involve the removal of material:
 1. Placing small strips of "crystal clear" type tape to the back of the lighter blade to balance the blades (Ref. 1). Balancing the blades is done with the propeller in a more horizontal orientation on the balancer.



2. Adding thick CA glue to the lighter side of the hub to balance the hub, if needed (Ref. 2). Testing the hub balance is done with the propeller in a more vertical orientation on the balancer.
- Note: Tape should **NOT** be used to balance propellers for fuel engines, because fuel can dissolve the tape.

References:

1. "Balancing a Propeller" by Horizon Hobby, 2011.
2. Link to video for Balancing Propellers by John Redman/Horizon Hobby:
<https://www.youtube.com/watch?v=OXuNnYQO2s4>