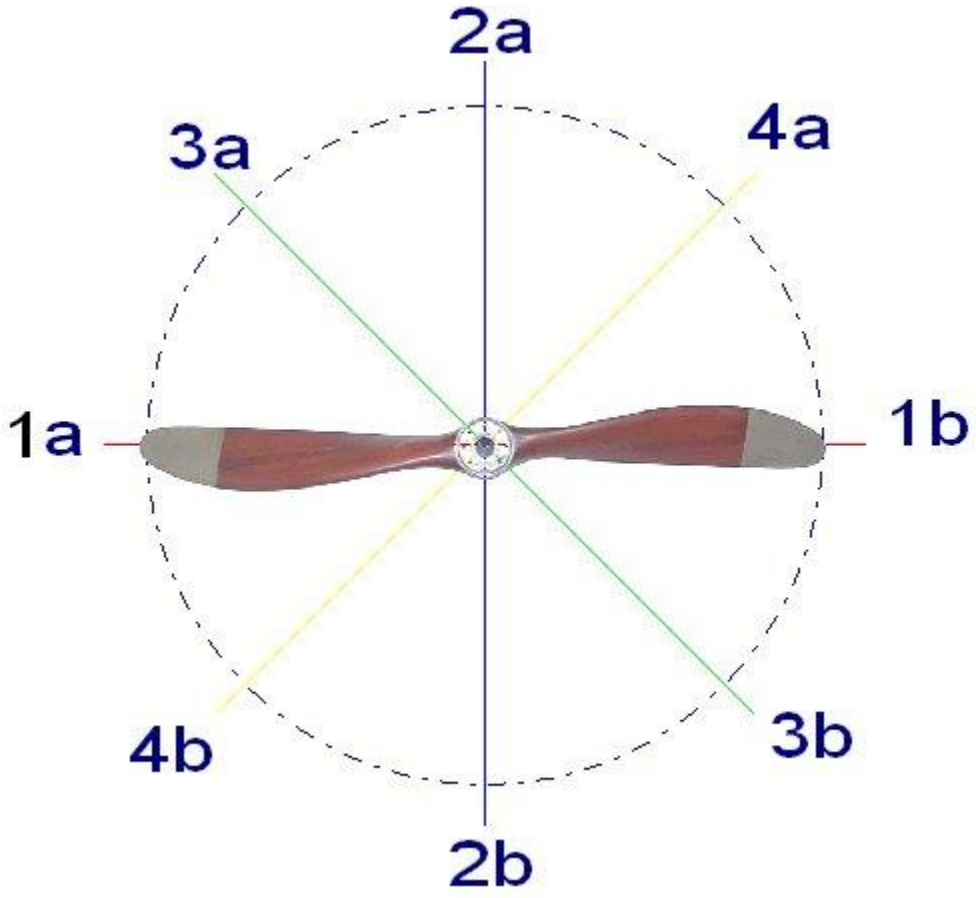
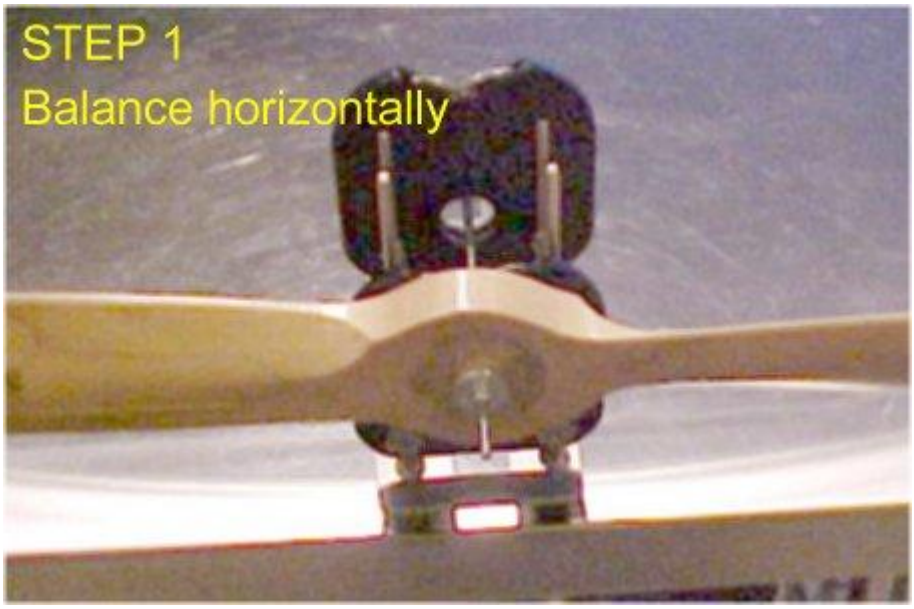
# Two Blade Prop Balancing

*Greater Southwest Aero Modelers*

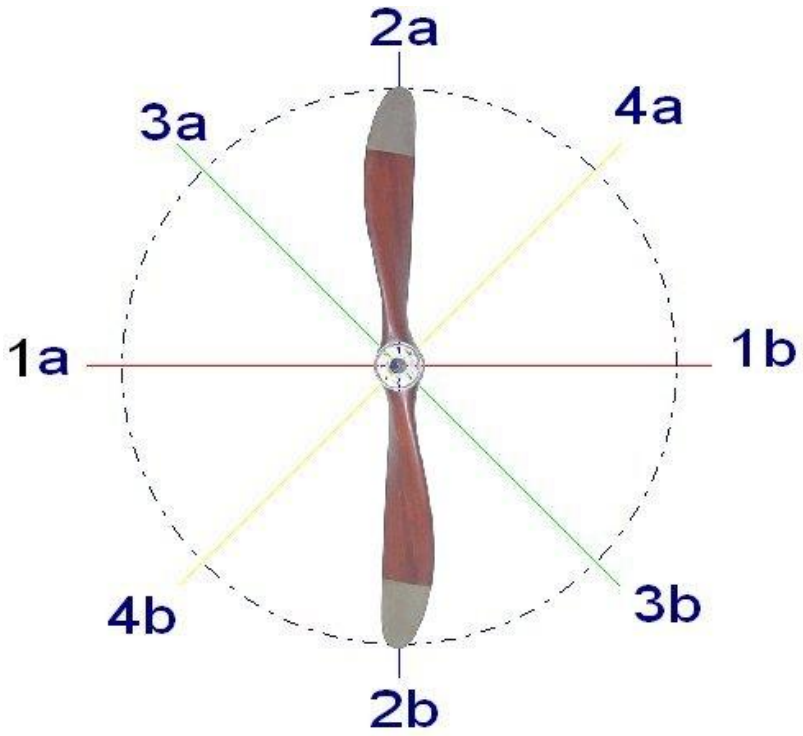
**Prop** balancing is a critical function to our hobby. Every propeller needs to be checked and balanced regardless of its size or type. Wood props are the most likely to need balancing, however I've seen plastic, fiberglass and carbon fiber one's needing balance as well. Vibration is your airplanes worst enemy, and a prop is a primary source, second only to the engine itself.

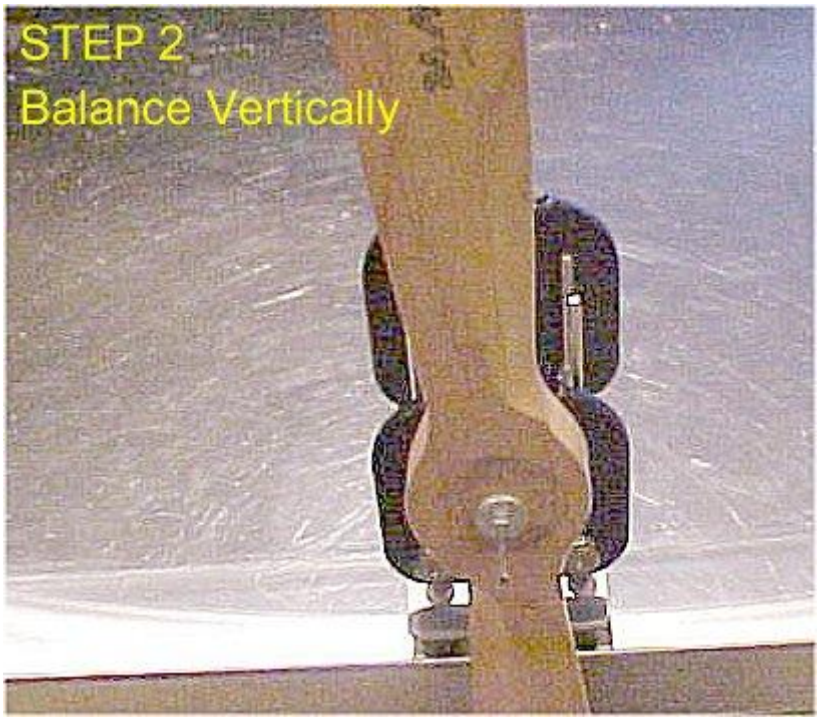
**A** perfectly balanced and centered prop will stay in ANY position it's placed in. And you need to check your prop accordingly. A horizontally balanced prop spinning off-center has the same effect as though it's out of balance! So you must check the prop in at least four positions, as illustrated as 1a, 2a, 3a,4a. The "b" positions are the "a" positions simply rotated 180 degrees.





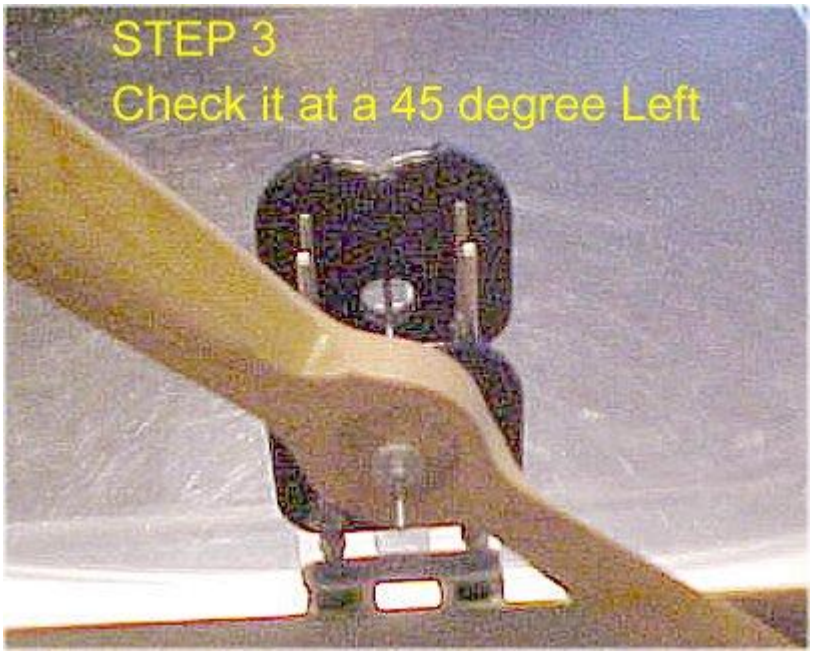

**This** position (2a,2b) will find a mounting hole that's off-center to the left or right, and will also find thicker/thinner blades. Most of the time, a prop that won't hold this position but will hold 1a,1b will be OK to use... if it's not too far off (if it's less than 3a & 4a positions). If the prop exceeds 3a or 4a, you should consider not using it.





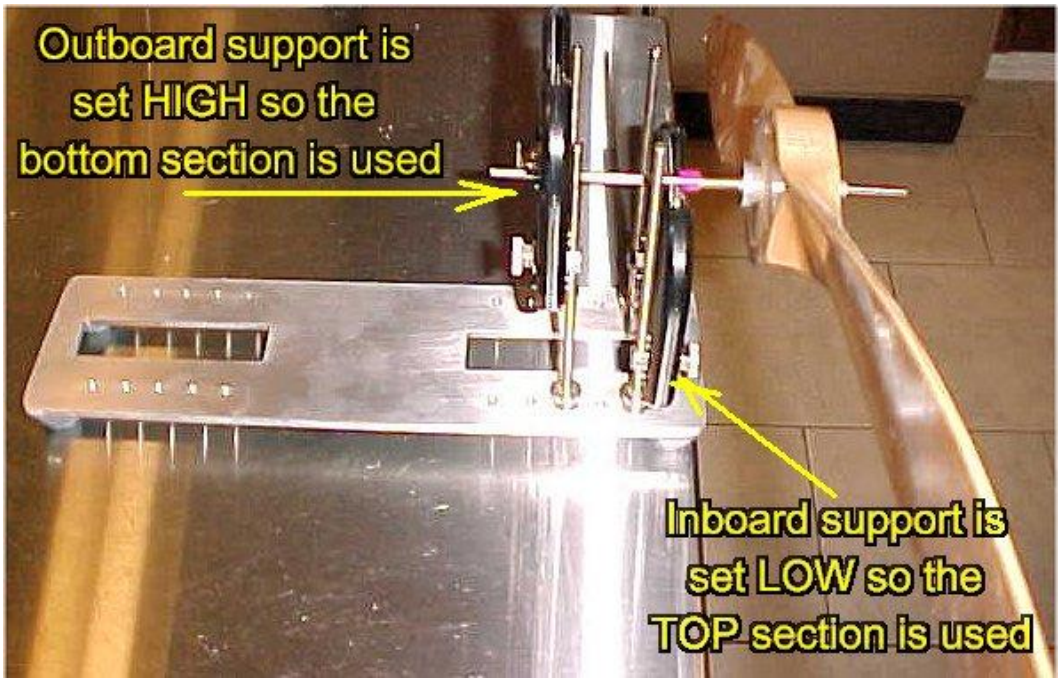

Here's how you should balance your prop:

**Mount** your prop on a high quality balancer, and set the prop to the 1a position, If either 1a or 1b drops, remove weight from the heavy blade by scraping it with a safety razor blade toward the outer tip. DO NOT remove material from the trailing edge or shorten the tip length! You can remove material from the leading edge, but it's not recommended. When it balances, rotate the prop 180 degrees. It should still be in balance. If not, the mounting hole is slightly off-center vertically, or your prop is not properly secured on the balancing shaft. If it checks out OK, then move your prop to the 2a, 2b position.



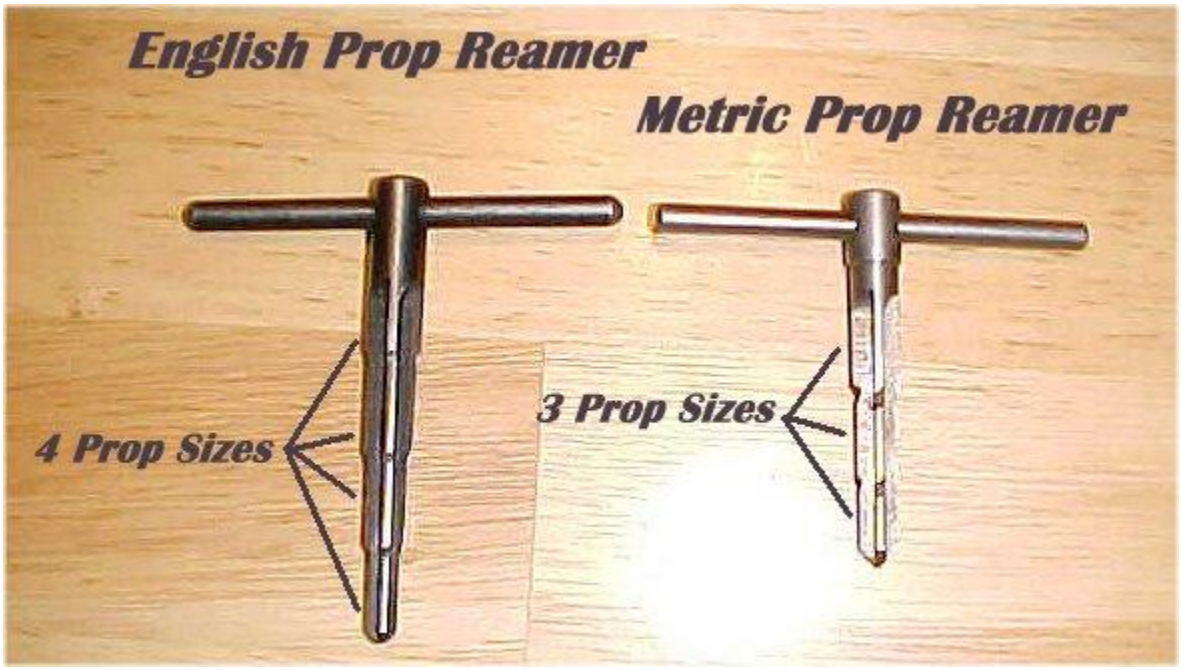

There's some controversy as to where to remove the weight... Some say take it from the front of the blade, others say remove it from the back. There's another solution available. Add weight! Clear urethane or enamel sprayed on the light blade works well, and easy to do.

**For bigger props, set up your balancer so you can hang the prop off an edge of a table or bench as**
**ILLUSTRATED.**



The prop shown in this photo is a Pro Zinger 24x12 and it balanced just as easy as a 10x6 Master Airscrew. So don't let size scare you!

**OK,** now your prop is balanced... you're only PARTIALLY done! If you need to bore out your prop to fit your engine, you have another potential problem. Do not bore your prop with a drill bit. Why, you may ask? Drill bits are 2 flute cutters meaning two cutting edges. Drill bits follow a path of least resistance meaning that they won't necessarily directly follow another hole. In other words, you'll likely bore your new hole off-center. You need to use a REAMER! Either a prop reamer or a chucking reamer. They have a minimum of four cutters and are designed to follow a hole accurately. There are two types of prop reamers available from the hobby shop. English (AKA: SAE) and Metric size. Be sure to get the one that matches your engine properly. You can tell one from the other by observing the number of sizes on it. The English reamer has 4 prop sizes, and the Metric has three prop sizes.




**We're** getting close to done now. If you use a spinner... it needs to be checked for balance! Some spinners are better than others but all of them need to be checked! Simply put the complete spinner (this includes the back plate) on your prop balancer. Check it just like you did your prop. If it's out of balance remove material from the inside using a flap wheel sanding disc or similar tool.

A word about prop balancers... Don't waste your money or time on one of those fingertip balancers! Get a real balancer, like a DuBro, Robart, or Great Planes. If you can, use one of the magnetic support models that's OK. But big props and spinners will require the double roller type as illustrated in the photos.

**Again** I must stress, vibration is a supremely destructive energy that will sooner or later destroy your investment, so take the time to balance your props!