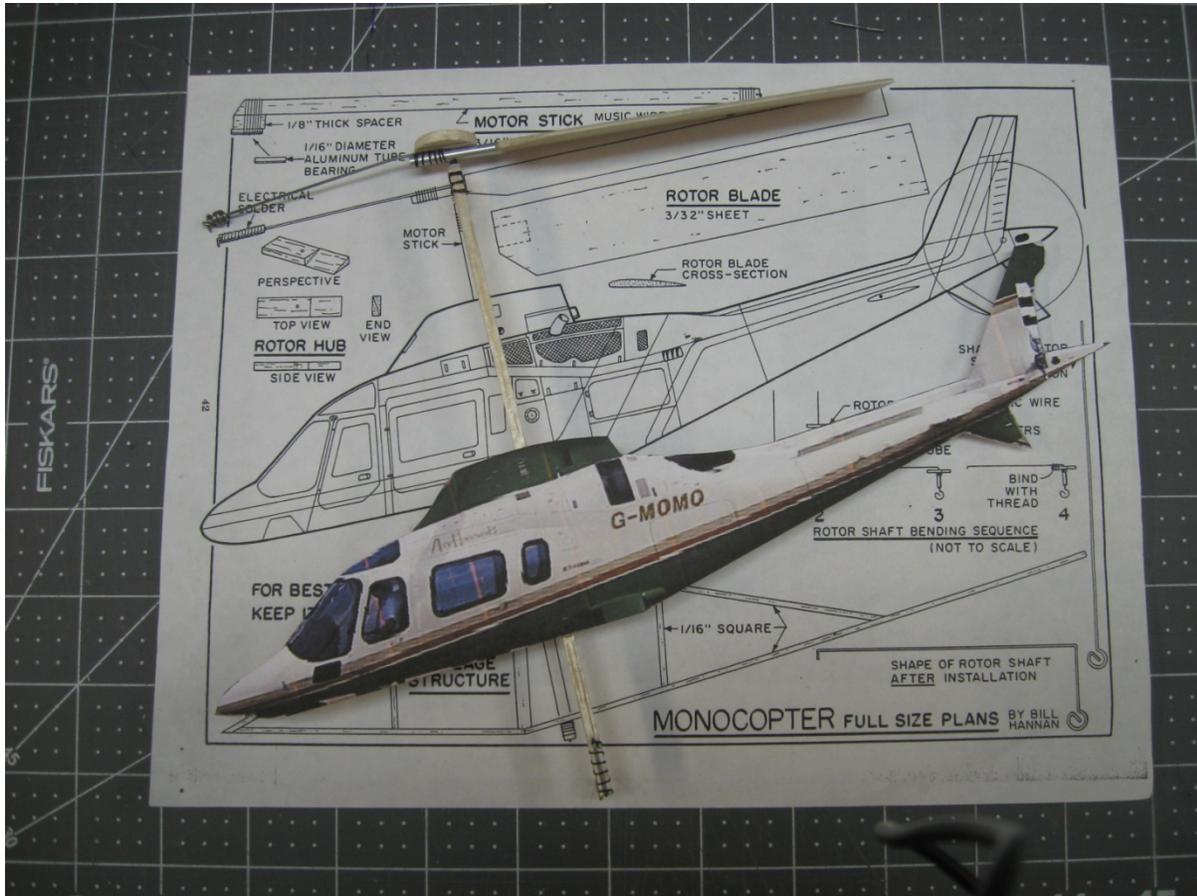


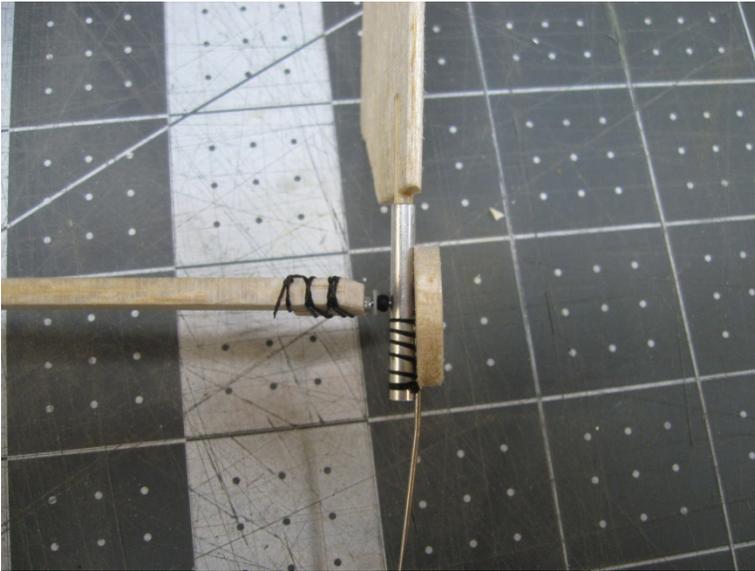
The 2017 Science Olympiad Helicopter rules are almost tailor made for Bill Hannan's Monocopter. This design was flown for years as a one-design by the Washington D.C. Maxcuters fun fly at the National Building Museum . While it was a mass launch event (all up, last down), winning times exceeded a minute and a half. With a 25% bonus for a single blade and some optimization this simple design might be competitive.

What this article will do is show how to make the original design meet the 2017 Science Olympiad rules and provide a few enhancements.

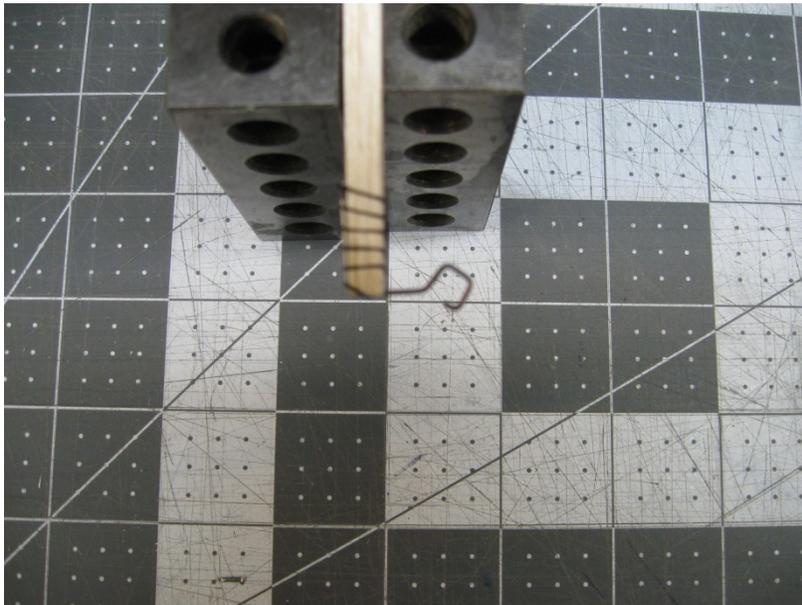


First, the radius of the rotor needs to be reduced to 12.5 cm. To compensate for the reduced area, increase the width of the blade to about 3 cm. While the rotor mounting system shown on the plans will work, I recommend gluing a length of bamboo skewer to the blade and inserting it into a short piece of aluminum tubing as shown below. With this modification, if the rotor blade breaks, it is easy to replace. If drilling a small hole through the tubing for the wire rotor shaft presents a problem, the tube and be clued to the rotor shaft and secured to the wire by wrapping it with thread. Having the ability to replace the rotor blades will allow for experimentation in rotor configuration and construction

The required disc that will cover a dime has been glued to the top of the rotor hub.



The bends for the wire rotor shaft and tail hook on the drawing are a bit complicated. A simple diamond shaped bend for each piece will work just as well. Increase the length of the hook from the bottom of the motor stick so the rubber will clear the motor stick. See below/



That is all that is necessary to make this simple helicopter meet the 2017 rules, Start with the rotor blade at 7 degrees of incidence and a 12" look of .125" wide rubber. Work with the incidence of the rotor and the rubber length to optimize your flight times. This is where a flight log becomes invaluable.

Good luck!