



## ADVISORY LEVEL: Important

DESCRIPTION: Props and Prop selection

ENGINE TYPE: R2800 / R3600

*\* Note: Rotec are engine makers and as such can only supply general information about props. Rotec do supply props but these are out sourced.*

### Recommended Props - keeping in mind that the Rotec radial is a high torque engine:

**R2800 - 2 Blade Wood Laminated:** The recommended prop for the R2800 is a 76" diameter Rotec supplied wood laminated prop with a pitch in the vicinity of 55" tho in a high drag aircraft drop the pitch a few inches lower. Maximum diameter in use is 82" with 43" pitch (not a Rotec supplied/recommended prop)

**R3600 - 2 Blade Wood Laminated:** The recommended prop for the R3600 is a 84" diameter Rotec supplied wood laminated prop with a pitch in the vicinity of 55" tho in a high drag aircraft we'd drop the pitch a few inches lower. Maximum diameter tested is 87" with a 52" pitch (not a Rotec supplied/recommended prop).

**Cord:** Cord and profile are important in achieving desired results. As a rough guide the cord of the Rotec prop for the R2800 is approximately 5" and for the R3600 its approximately 5 1/2". Please consult your prop-maker (if not using a Rotec supplied prop). At best prop making is a black art\*

**Correct loading:** For **both** engines loading to rpm figures are as follows:

The prop needs to perform as follows (WOT is "Wide Open Throttle" and unless other wise stated all rpm are crank rpm; to get the prop rpm the crank rpm needs to be divided by 1.5 as there is a planetary gear reduction unit in place)

Under static conditions rpm at wide open throttle should fall between 2850 to 3000 rpm on the crank and 1900 to 2000 rpm on the prop (3:2 PSRU is in place)

*NOTE: Wide open throttle in flight MUST NOT get to 3640 rpm on the crank! This is the figure that would be obtained on an aircraft with no drag on the engine - a hypothetical/extrapolated figure only.*

In flight, taking aircraft drag into consideration, Wide Open Throttle in a practical situation should fall in the vicinity 3300 - 3400 rpm on the crank. Its to be stressed that this is a practical result that the prop maker needs to achieve, and can only do so by factoring the aircraft into the equation. Typically Rotec's Flybaby gets up to 3350 rpm WOT in flight

At 80% throttle, in level flight, expected crank rpm should fall between 2850 to 3000 rpm on the crank and 1900 to 2000 rpm on the prop.

As the torque curve is relatively flat between 70% and 80% throttle it is possible to fly at as low 2700 rpm on the crank (1800 rpm at the prop) without loss of efficiency

**Ground Clearance:** Please ensure that ground clearance is set at your comfort level. Increasing the length of the landing gear should be considered in event that the desired prop diameter is too great to allow for comfortable ground clearance.

**Adjustable pitch props:** have been used with our engines but one would need to contact companies like Warp, Bolle, Powerfin, GT props, Sensenich etc for additional information. Opt for the largest blade size available/possible for efficiency using the adjustable pitch to load the engine correctly to achieve the load and rpm numbers.

**Multi blade props with fixed pitch:** if more than 2 blades these are generally used when ground clearance becomes a problem. Trials with 3 blade showed a substantial reduction in performance/efficiency and on that basis 3 or 4 blade props are not recommended. If at all possible increase ground clearance by increasing the landing gear or decrease the diameter of the 2 blade prop whilst increasing pitch. Try and use the largest possible diameter possible.



*Left R2800 prop 76" x 55" Rotec wood laminated prop*

*Right R3600 84" x 55" Rotec wood laminated prop*

*Paul is 6' and provides an approximate comparative between the 2 props.*

*Lower red guideline provides an approximate comparative on the diameter difference between the 2 props.*