

# GSC SYSTEMS Ltd

## ASSEMBLY INSTRUCTIONS FOR TECH SERIES PROPELLERS

### LIABILITY WAIVER

THIS PROPELLER HAS NOT BEEN TESTED FOR AIRWORTHINESS. AIRWORTHINESS IS TO BE DETERMINED BY THE USER. WE DO NOT ACCEPT RESPONSIBILITY FOR PROPERTY DAMAGE, INJURY OR DEATH RELATING TO THE USE OF THIS PRODUCT, AS THE ASSEMBLY, MOUNTING AND USE OF THIS PRODUCT IS BEYOND OUR CONTROL.

**Note:** Before use of this propeller, please read all assembly and operating instructions carefully. Failure to adhere to all instructions may result in improper assembly and improper operation. This in turn may cause premature damage or failure of this propeller.

Please note that all propeller blades shipped from our factory have been balanced. Do not alter these blades in any way or form!!! A simple procedure such as painting the tips may cause improper balance, which could cause vibration. Also note that individual blades cannot be balanced by simply placing them on a weigh scale; individual blades must be balanced according to the C of G weight, not their mass weight. One proper balance method to balance individual blades if the need should arise is to use a T-scale setup.

- 1) Inspect all blades to make sure there has been no damage in shipment.
- 2) Inspect the aluminum hub and carefully remove any burrs, etc. which might impede in adjusting propeller blades.
- 3) Now carefully install blades into hub. In tractor configuration, flat side is on engine side – in pusher configuration, airfoil side is on engine side. **Note:** Hub halves are a matched set and are stamped on one arm of the hub match these numbers up. A slight up and down movement may be necessary to allow retaining ring on roots to slip into groove in the root end of blade.
- 4) Use six ¼” x 2 ½” bolts (supplied) to bolt hub halves together. Place a ¼” flat washer both on bolt head side and nut side and using ¼” nylock nuts (supplied) tighten slightly, leaving slack to allow for blade adjustment. **Note:** If you are using AN4, ¼” bolts to attach the propeller to the gearbox flange, you must now install the six 8 mm torque studs

(supplies) into reduction flange. Use loctite on the stud threads. You can now install propeller onto the propeller flange, using proper length attachment bolts (not supplied), and again tighten slightly.

- 5) Blade pitch angle may now be set on the propeller. You may refer to enclosed charts to determine proper pitch angle in degrees. These charts are starting references only and fine-tuning may still be required. The GSC pitch adjustable tool is a handy device for adjusting pitch on the aircraft (instructions are enclosed with pitch adjustable tool). As the angle of each blade is set, the bolts on that blade can be tightened just enough to keep blade from rotating. **Note:** It is very important to have all blades set at the same relative pitch angle.
- 6) Bolts may now be torqued.

**It is very important to tighten the bolts in the following procedure and to the following torque specifications.**

**6-1)** Torque all bolts to minimum 75 in./lbs. And never exceed 100in./lbs.

Bring bolts up to proper torque specs in several increments.  
Tighten

bolts in a cross pattern

**6-2)** Tighten propeller mounting bolts first. (The inside circle of bolts) If

these bolts are threading into reduction flange, they should have

drilled heads and should now be safety wired.

**6-3)** Finally tighten the bolts at ends of each hub arm.

Remember to tighten them to the specified torque only. If over tightening occurs, possible damage to the root end of the blade may result.

- 7) Now that the propeller is mounted, tracking should be checked. Using a reference point, rotate each blade and record the distance at the tip that each blade is from reference point. The tolerance allowable from blade to blade is 1/8".
- 8) If tracking is good and all bolts are secured and torqued properly, you can run the propeller up. During initial run-up, check to see if your engine is operating in the proper RPM range. If your engine is operating at too high an RPM, you may be at too fine a pitch and a steeper pitch is required. If you do not have enough RPM, you may have too much pitch and it will have to be adjusted shallower. If re-adjusting is necessary, a helpful hint is to make small scribe marks on

**the rootend of the blades in line where the two hub halves join. Then use these marks as reference points when rotating the blades.**

**Enjoy your GSC propeller!! With proper maintenance and care it will give you many years of trouble free flying!**

`gscassemblytechseries.doc`