



COMPOSITE GROUND ADJUSTABLE AIRBOAT PROPELLER INSTALLATION AND OPERATION INSTRUCTIONS

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CAUTION: *Failure to follow these instructions will void all warranties, expressed and implied. Mounting difficulties and increased vibration will result with improper assembly of the propeller blades and hub parts.*

Packing List

Propeller Blades & Two Piece Hub
Mounting Bolts, for mounting hub on engine
Clamping Bolts, for clamping hub halves together
Lock Washers (for hubs with "A" or higher serial #'s only)

Tools

A good quality torque wrench is required to properly torque clamping bolts and mounting bolts. Other tools needed: a large rubber mallet, anti-seize compound, and socket wrench. See **Tables 1 & 2** for socket sizes.

Attach Mounting Bolt Half

1. Disable engine starter/magneto to prevent inadvertent engine startup. Clean dirt and oil residue from the engine flange. Refer to **Figures 1 - 3** for views of the hub halves and blade.

2. Place the hub mount half, as shown in **Figure 1**, on the engine or reduction unit mounting flange. Check for proper bushing and pilot stub fit into the hub half. The hub must sit flush on the mounting flange. Apply anti-seize compound on the mounting bolt threads and insert bolts into the 6 mounting holes. (If serial number contains a letter, use special lock washers). Torque the 6 bolts using a star pattern. See **Table 1** or blade decals for mounting bolt torques.

Note: The hub must sit flush against the mounting flange. Some installations may require a hub spacer kit or trimming of the drive bushings for proper fit on the engine flange. Bolt breakage will occur if not flush.

Insert Blades in Hub Mounting Half

3. Each blade has a round side and a flat side. Insert one blade at a time into the hub mounting half with the round side of the blade facing towards the front of the boat.

4. Place hub cover half over blades. Put anti-seize compound on the clamp bolt threads and insert with lock washers through the cover half and mounting half holes. See **Figure 4**. Make sure the cover half is fully seated on all blades. Hand tighten the bolts, making sure to have an even gap around the hub between cover and mount halves.

5. There are three methods for setting blade pitch: by Pitch Marks (good for narrow and medium blades), by Blade Track (preferred for wide blades and superwide blades), and by Protractor Blade Angle (most accurate method but requires additional tools).

Pitch Mark: Align each blade pitch mark at 2 ½ or 3 with the face of the mounting hub half.

Blade Track: Align one blade pitch mark at 2 ½ or 3, then measure the distance aft from the blade trailing edge to a fixed point on the airboat, such as transom lip or radiator. Rotate the other blades into the same position and set at the same track distance.

Protractor Blade Angle: Align one blade pitch mark at 2 ½ or 3, then measure in 3" from the blade tip and mark a straight line across the flat side of the airfoil, from leading edge to trailing edge. NOTE: the blade airfoil must be flat at this location. Measure the blade angle with an angle protractor, then rotate the other blades into the same position and set at the same pitch angle.

6. Using a torque wrench, tighten the bolts evenly in a star pattern to the proper torque given in **Table 2**. Torque the bolts in several passes around the bolts. Check the blade pitch marks after full torque; a small gap may remain between hub halves. Check the propeller blades for track. The blades should track within 1/8" of each other at the tip (track method), or within 1/16" to the same pitch mark (pitch mark method).

7. Refer to **Table 3** for optimum recommended prop RPM's. Run up the propeller to check your pitch for desired maximum RPM. If your RPM's are too low, adjust the blades to a lower pitch setting. If the RPM's are too high, adjust

the blades to a higher pitch setting. Re-torque clamp bolts to the proper torque. Remember, the propeller will run approximately 100 RPM higher once moving on the water.

Note: This torque value should be checked after the first 5 hours of operation and every 25 hours thereafter.

Permanent Installation

1. Once you have achieved the desired RPM's and are satisfied with the performance of your boat, re-torque the clamping bolts. **Note: This torque value should be checked after the first 5 hours of operation and every 25 hours thereafter.**

2. **DO NOT DRILL DRAIN HOLES IN THE TIPS!**

Repitching

If repitching is needed, first loosen the bolts. Carefully using a rubber mallet or the heel of your hand, tap the leading or trailing edge of the blade to change pitch. Be careful to not drop the hub or blades. Re-torque according to **Table 2**.

Composite Propeller Operating Tips:

Sensenich composite propellers should be fairly maintenance free besides an occasional torque check and cleaning of the hub and blades. The following will help you to operate your propeller safely, keep it looking good and help it to last longer.

- ❑ **Do not spin your propeller above the maximum RPM given in Table 3.**
- ❑ Before each airboating excursion, carefully examine the propeller blades and hub for looseness, any signs of damage, excessive wear or any other condition that would make the propeller unsafe to operate.
- ❑ In particular, before operating check: blade shanks for roughness or raised fibers, blades for impact damage or cracks, and the metal erosion shield for tightness.
- ❑ Never run up your propeller with someone standing in the plane of the propeller.
- ❑ For maximum leading edge life, maintain a *minimum* of 2-3" clearance from the blade to the cage and hull. This is especially important for deck-over hulls and the transom area for fiberglass hulls.
- ❑ Wear on the blade tips and beside the metal erosion shield depends on your maximum rpm's, type of running, and tip clearance.
- ❑ **Check hub clamping bolts every 25 hours of operation.** Always check in a tightening direction.
- ❑ Keep your propeller clean. Soapy water will remove most residue, but 409 or similar cleaner can be used to remove stubborn residue.

- ❑ To help maintain blade gloss and reduce fading, store the propeller out of direct sunlight and apply a good quality automotive paste wax several times a year.
- ❑ Be mindful of airboat noise around people and homes. Operate at the lowest RPM's possible.

LIMITED WARRANTY

We hope you enjoy your new composite propeller. We have worked hard to ensure that your propeller will meet or exceed your expectations for years to come.

We offer a 3-year / 300hr year limited warranty on any defect in materials and workmanship. **This does not cover surface imperfections as our process does not always produce a perfect finish.**

In the event a unit does not conform to this express warranty, Sensenich Wood Propeller Company will repair or replace the defective material at its place of business at Plant City, FL USA. Sensenich Wood Propeller Company will decide which remedy, repair, or replacement it will provide. Any replacement of a unit or a part of a unit during the warranty period will not extend the warranty beyond the original duration. The remedy of repair or replacement is exclusive and does not include the cost of shipping, removal, or installation, all of which are the customer's responsibility.

Procedure For Obtaining Warranty Service

Units or parts that are defective must be shipped prepaid to Sensenich Wood Propeller Company at the address listed on page 1. The unit must be accompanied by a copy of the original (Distributor or Dealer) invoice, a Return Authorization Number (which can be obtained by phoning Sensenich Wood Propeller Company), and a brief description of the defect.

Conditions, Exclusions, and Disclaimers

This limited warranty applies only to units that have been installed, used, and maintained properly in strict accordance with our specifications, instructions, and recommendations. It does not cover units that show abuse, alterations, improper installation, improper maintenance or repair, or improper packaging for shipment; and it does not pertain to damage due to object strike, or excessive blade wear due to operation. The use of units on or with engines or equipment not approved by Sensenich automatically voids this warranty. For purposes of this limited warranty, "engines or equipment not approved by Sensenich" shall mean engines or equipment that are not explicitly consistent with all specifications and instructions applicable to that engine or equipment, including, without limitation, those established by the Federal Aviation Administration, those established by the manufacturers of any component parts used in connection with the units, and/or those established by Sensenich. The purchaser has sole responsibility for ensuring that the use of the units is in compliance with all applicable specifications and instructions, and no conduct by Sensenich shall prevent this Warranty from being voided for failure to comply with the instructions or specifications provided by any third-party.

Racing use of any kind or use on or with engines or equipment not approved by Sensenich Composites automatically voids this warranty.

This limited warranty is the only warranty provided with respect to covered units, and **THERE ARE NO OTHER WARRANTIES, REPRESENTATIONS, CONDITIONS OR GUARANTEES, EXPRESS OR IMPLIED, WITH RESPECT TO THE COVERED UNITS OR THE MANUFACTURE THEREOF, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

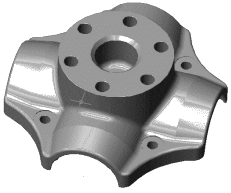
Repair or replacement of a nonconforming unit or part is the exclusive remedy for breach of this limited warranty, and shall constitute fulfillment of all liabilities of Sensenich Wood Propeller Company to a customer or user, whether based on contract, negligence or otherwise. **IN NO EVENT SHALL SENSENICH WOOD PROPELLER COMPANY BE LIABLE FOR ANY OTHER EXPENSES, CLAIMS OR DAMAGES OF ANY KIND HOWSOEVER CAUSED, INCLUDING (WITHOUT LIMITATION) ANY OTHER PRODUCT REPLACEMENT OR INSTALLATION COSTS AND/OR ANY DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES.**

The purchaser of the covered units has read, understood and, by purchasing the units, agrees to be bound by the above terms and conditions.

Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you.

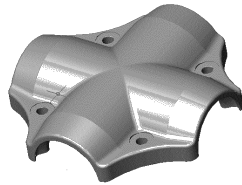
This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Figure 1:



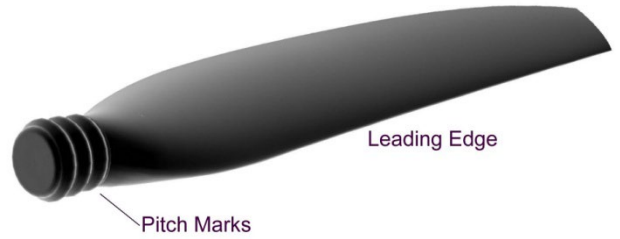
Hub Mount Half

Figure 2:



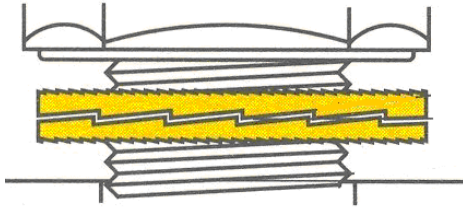
Hub Cover Half

Figure 3:



Blade

Figure 4:



Special Lock Washer

Newer hubs with “A” or higher serial numbers incorporate threaded drive bushings / hubs and special lock washers. Each lock washer works in pairs with the “ramped” sides facing each other.

**TABLE 1:
BOLT TORQUE FOR NEWER HUBS WITH THREADED CLAMP**

Mounting Bolt Diameter (inches)	Hex Head Bolts		Flat Head Allen Screws <i>*(only for old hubs)</i>	
	Socket wrench size (inches)	Recommended Wrench Torque*** (ft-lbs)	Allen Hex Wrench Size (inches)	Recommended Wrench Torque (ft-lbs)
3/8	9/16	45 +/- 2	7/32	35 +/- 2
7/16	5/8	45 +/- 2	1/4	45 +/- 2
1/2	3/4	60 +/- 2	5/16	45 +/- 2

New hubs typically have a letter suffix after the stamped serial number, for example: 33052B or 21005D

**TABLE 2:
BOLT TORQUES FOR OLDER HUBS WITH LOCK NUTS FOR CLAMP BOLTS**

Clamping Bolt Diameter (inches)	Recommended Wrench Torque (ft-lbs)***	Hex Bolt Socket Wrench Size (inches)	Nut* Open End Wrench Size <i>*(only for old hubs)</i> (inches)
1/2	60 +/- 2	3/4	3/4
9/16* <i>*(only for old hubs)</i>	65 +/- 2	13/16	7/8

*****Bolt Torque Notes:** Check mounting bolt torque at least once a year or if vibration occurs. Check clamping bolt torque after the first 5 hours of operation and every 25 hours thereafter. Apply anti-seize compound to bolt threads. This will aid removal after long service in harsh environments.

Table 3: Pitch Setting Guide

Set all blades at Pitch Mark 2 ½ or 3 to start. **DO NOT EXCEED MAXIMUM PROPELLER RPM'S.** Adjust pitch as needed. The pitch marks indicate general pitch; ex) "3" is a higher pitch than a "2". While only three marks are indicated, higher pitches than "3" can be used, up to a maximum of "4". Your final setup may vary due to configuration of your particular boat and desired top RPM.

WARNING: Propeller blade failure may occur if maximum propeller RPM is exceeded – resulting in severe bodily injury or death!

	Blade Model	Blade Style	Blade Width	Engines	Max Prop RPM	Optimum Prop RPM *
<i>Maximum Propeller RPM's:</i>	L72H / L78H / R78H	"H" narrow blade	8 ½" wide	Direct drive or reduction drive	3000	2650-2850
	L68N / L72N	"NGH" winglet blade	9 ½" wide	Direct drive or reduction drive	3000	2650-2850
	L72Q	"Q" swept medium blade	10 ½" wide	Direct drive or reduction drive	3000	2650-2850
	L68NQ	"NGQ" winglet medium blade	11" wide	Direct drive or reduction drive	2950	2700-2900
	L74N	"NGQ" winglet medium blade	12" wide	Direct drive or reduction drive	2850	2600-2800
	L79K / R79K	"K" wide blade	12" wide	Reduction drives only!	2800	2200-2500
	L79R / R79R	"R" swept wide blade	13" wide	Reduction drives only!	2800	2000-2400
	L79G / R79G	"NGR" winglet wide blade	13" wide	Reduction drives only!	2800	2000-2400
	L79S / R79S	"S" swept superwide blade	15" wide	Reduction drives only!	2300	1800-2100

* *Optimum Prop rpm's* are for the best all around performance at static and on the plane, and for reasonable sound levels at cruise. Operating up to maximum rpm is acceptable but you can expect less static thrust, higher cruising rpm's and higher sound levels at cruise.

For propellers on reduction drives, take the optimum prop rpm and multiply by the reduction ratio to get equivalent engine rpm.

WARNING: Due to the infinite variety of racing modifications and setups, there is ABSOLUTELY NO WARRANTY FOR RACING USE OF ANY KIND. The racer assumes all risks and accepts personal responsibility for any and all loss, liability, damages, or costs following such injury, permanent disability, or death.