



STACKED V HUB INSTALLATION AND OPERATING INSTRUCTIONS

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 & Spacer Plate
Mounting Bolts, for mounting hub on engine
Clamping Bolts, for clamping hub halves together
Lock Washers & Anti-seize Compound
Optional: Lock Plate & Lock Assembly

Tools

A good quality torque wrench is required to properly torque clamping bolts and mounting bolts. Other tools needed: a large rubber mallet, and socket wrench. See **Table 1** for socket sizes and torques.

Note: Preferred propeller installation method described. Propeller installation may require removal of rudders from boat. Some boats may require blade installation on engine flange. Use caution to not drop or damage propeller components.

Assemble Propeller

1. Take note of rotation direction of your propeller blades. Blade models begin with "R" for right hand rotation or "L" for left hand rotation. 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 the mount half. Refer to **Figures 1 - 6** for views of the hub halves, blade, spacer plate, and CD-DPA spacer.

2. Place spacer plate on mount half aligning mounting holes. **Note: Smaller holes in spacer plate are for part lightening only. Holes do not accept supplied bolts or align with lightening holes in hub. See Figure 3.**

Place inner hub cover half over blades. **Put anti-seize compound on the bolt threads.** Insert mounting bolts with

washers into CD-DPA spacer. Insert mounting bolts to align hub halves with spacer plate. See **Figure 7**. Insert clamping bolts with washers through the cover half and mounting half holes. Snug up clamp bolts by hand to seat the inner cover half, making sure there's an even gap all around the hub.

Note: Blade pitching may be performed before or after installation on the mounting flange (See # 5). If propeller blade angle is set before installation, verify pitch after final mounting is complete.

Mount Propeller on Flange

3. Disable engine starter/magneto to prevent inadvertent engine startup. Clean dirt and oil residue from the mounting flange.

4. Place the propeller assembly with inner hub mount half 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. The CD-DPA spacer must sit flush on the inner hub. Incrementally tighten the 6 mounting bolts using a star pattern until hub and CD-DPA spacer are snug on engine flange. See **Table 1** or blade decals for mounting bolt torques.

Note: The hub must sit flush against the mounting flange with no gaps. Bolt breakage will occur if not flush.

5. There are three methods for setting blade pitch: by Pitch Decal, by Blade Track, and by Blade Angle.

Pitch Decal: Adjust each blade pitch decal with the pitch indicator as shown in **Figure 9** to desired blade angle. 10 - 12 degrees is a good initial setting for most applications. Use R/H blade angles for blade models that begin with "R" and L/H blade angles for blade models that begin with "L". Using

a rubber mallet, tap the leading or trailing edge of the blade nearest the widest blade section to change pitch.

Blade Track: Adjust one blade pitch decal as described above, then measure the distance aft from the blade trailing edge to a fixed point on the airboat, such as transom or metal works. Rotate the other blades into the same position and pitch at the same track distance.

Blade Angle: Align one blade pitch decal as described above, 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 calibrated torque wrench, tighten all bolts in several increments up to full torque, such as 50%, 75%, and full torque. Start by torquing the 6 mounting bolts evenly using a star pattern then torque the clamp bolts using the same method to ensure even pressure on the hub and shanks. See **Table 1** for hub bolt torque recommendations. Check the blade pitch setting and track after full torque. The blades should track within 1/8" of each other (track method), or within 1/16" to the same pitch decal setting (pitch decal method).

7. Repeat Step 1 for outer hub

8. Place the propeller assembly with outer hub mount half on the CD-DPA spacer. Check for proper bushing and pilot stub fit into the outer hub half. The hub must sit flush on the CD-DPA spacer. Incrementally tighten the 6 mounting bolts using a star pattern until hub is snug on CD-DPA spacer. See **Table 1** or blade decals for mounting bolt torques.

Note: The hub must sit flush against the mounting spacer with no gaps. Bolt breakage will occur if not flush.

9. For setting blade pitch for outer hub repeat Steps 5-6

10. Refer to **Table 2** for **Propeller RPM's**. Run up the propeller to make sure the prop RPM at wide open throttle falls within the maximum limit. If your RPM's are below the optimum range, adjust the blades to a lower pitch setting. If the RPM's are too high, adjust the blades to a higher pitch setting.

Repitching

If repitching is needed, first loosen the clamp bolts then release full torque from mount bolts until blades can rotate by

using a rubber mallet to tap the leading or trailing edge of the blade near the widest blade section. Once a desired pitch adjustment has been made, Re-torque the mounting bolts in a star pattern to torque specified in **Table 1** then incrementally torque the clamp bolts to full torque specified in **Table 1** to hold pitch at set value.

Remember, the propeller will run approximately 50-100 RPM higher once moving on the water.

Permanent Installation

1. Once you have achieved the desired RPM, re-torque all of the bolts. Torque each bolt to the final torque value.

Note: The clamping and mounting torque value should be checked every 50 hours or at least once a year, whichever comes first.

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

Composite Propeller Operating Tips:

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 recommended Maximum RPM given in Table 2.**
- ❑ Before each ride, 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.
- ❑ **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.
- ❑ When the propeller is not in use and exposed to weather, cover it with a waterproof cover to extend the life of the finish.
- ❑ **Check bolt torque every 50 hours of operation or at least once a year, whichever comes first.** Always check in a tightening direction.
- ❑ Keep your propeller clean. Soapy water or similar cleaner can be used to remove stubborn residue. **Do not use engine cleaners.**
- ❑ Apply a good quality automotive paste wax to the blades at least once a year. Avoid liquid waxes.
- ❑ Be mindful of airboat noise around people and homes. Operate at the lowest RPM's possible

TABLE 1: Hub Bolt Torques

| | Nominal Bolt Diameter | Hex Head Bolts | |
|-------------|-----------------------|-----------------------------|-----------------------------|
| | (inches) | Socket wrench size (inches) | Recommended Torque (ft-lbs) |
| Mount Bolts | 1/2 | 3/4 | 60 +/- 2 |
| Clamp Bolts | 1/2 | 3/4 | 45 +/- 2 |

Notes: **Apply anti-seize compound to bolt threads. This will help reduce corrosion. Check bolt torque at least once a year or if vibration occurs.**

TABLE 2: Propeller RPM's

DO NOT EXCEED MAXIMUM PROPELLER RPM'S. Adjust blade angle as needed. The Optimum RPM range below is with engine at wide open throttle. NOTE: to find prop RPM for reduction drive installations, divide engine RPM by the reduction ratio to get propeller RPM.

| Blade Model | Blade Style | Max Blade Width | Engines | Optimum Prop RPM Range | Maximum Prop RPM |
|-------------|-------------------|-----------------|---------------------------------|------------------------|------------------|
| 70JM | Medium Blade | 10" | Direct drive or reduction drive | 2600-2900 | 3000 |
| 72JN | Narrow Blade | 8 ½" | Direct drive or reduction drive | 2600-2900 | 3000 |
| 72JM | Medium Blade | 11" | Direct drive or reduction drive | 2600-2900 | 3000 |
| 72JW | Wide Blade | 12" | Direct drive or reduction drive | 2600-2900 | 3000 |
| 76JW | Wide Blade | 12" | Direct drive or reduction drive | 2400-2750 | 2850 |
| 80JW | Wide Blade | 12" | Reduction drives only! | 2000-2450 | 2600 |
| 82JR | Really Wide Blade | 13" | Reduction drives only! | 1900-2400 | 2500 |
| 82JX | X-Wide Blade | 14" | Reduction drives only! | 1800-2300 | 2450 |

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

Parts List

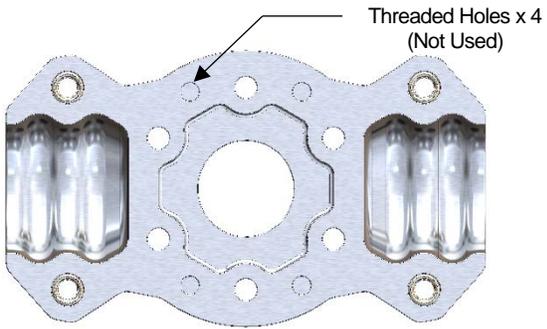


Figure 1: Hub Mount

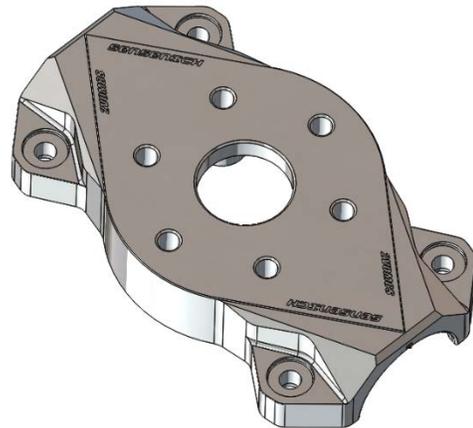


Figure 2: Inner Hub Cover

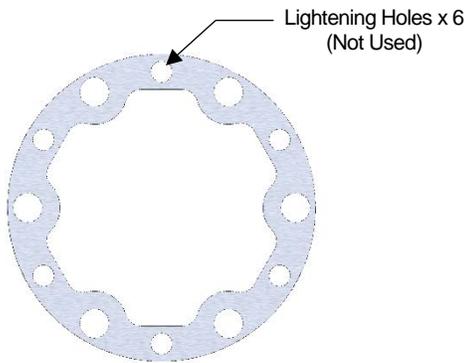


Figure 3: Spacer Plate

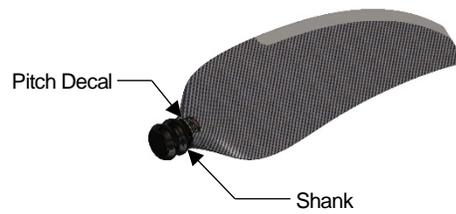


Figure 4: Propeller Blade



Figure 5: CD-DPA Spacer

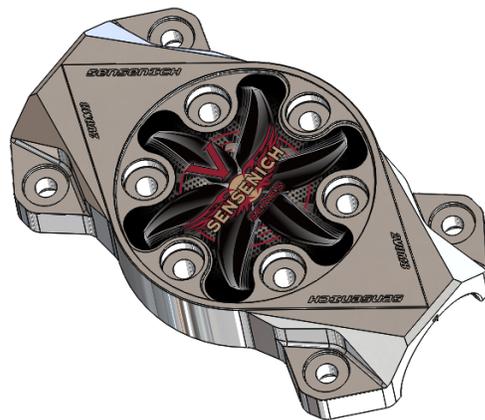


Figure 6: Outer Hub Cover

Propeller Assembly

| Item | Description | Qty |
|------|------------------|------------|
| 1 | Hub Mount | 2 |
| 2 | Spacer Plate | 2 |
| 3 | Propeller Blades | As needed |
| 4 | Inner Hub Cover | 1 |
| 5 | NordLock Washers | 1 per bolt |

| Item | Description | Qty |
|------|------------------|--------------|
| 6 | 6" Mount Bolts | 6 |
| 7 | Clamp Bolts | 2 per blade* |
| 8 | CD-DPA Spacer | 1 |
| 9 | Outer Hub Cover | 1 |
| 10 | 4.5" Mount Bolts | 6 |

* 5 blade hubs have 1 clamp bolt per blade

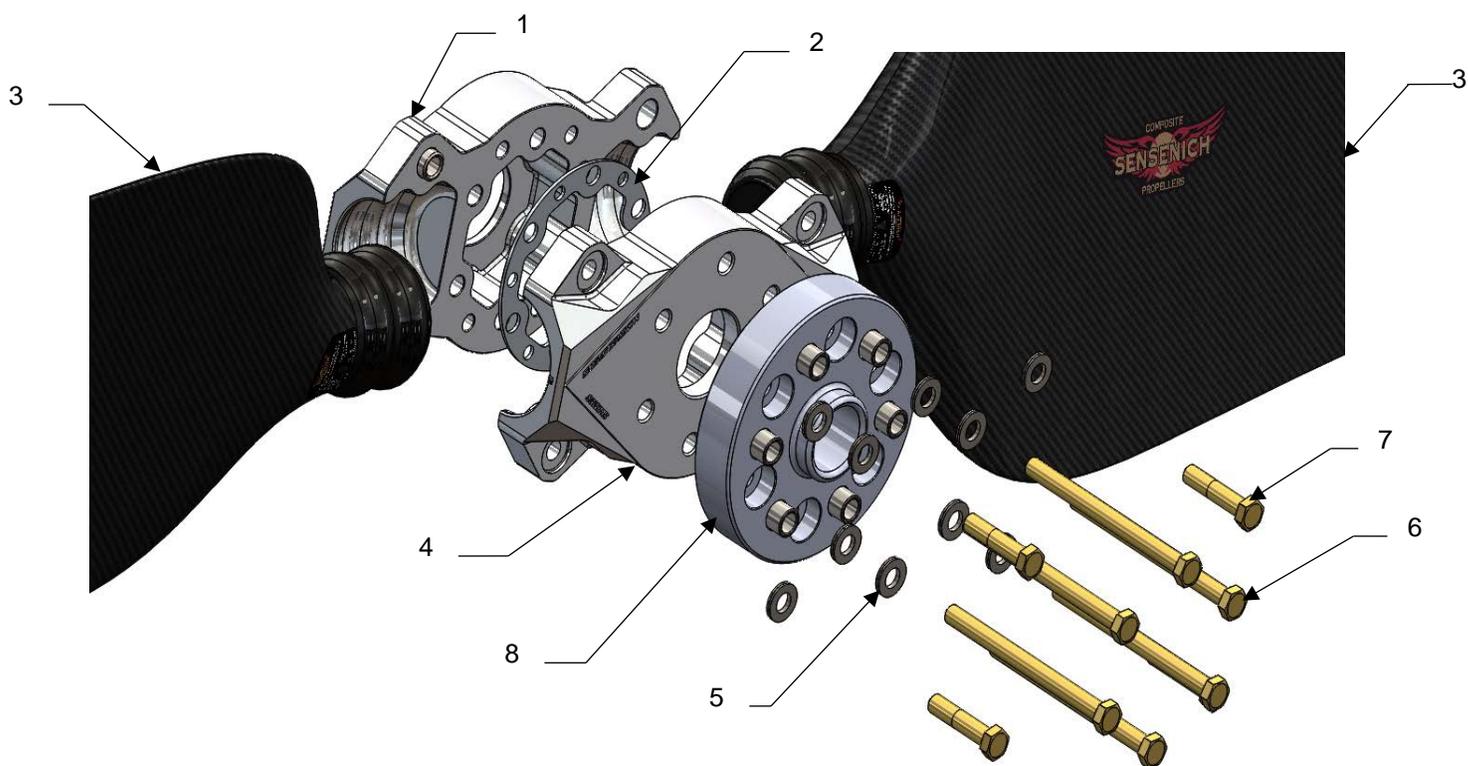


Figure 7: First Hub Assembly

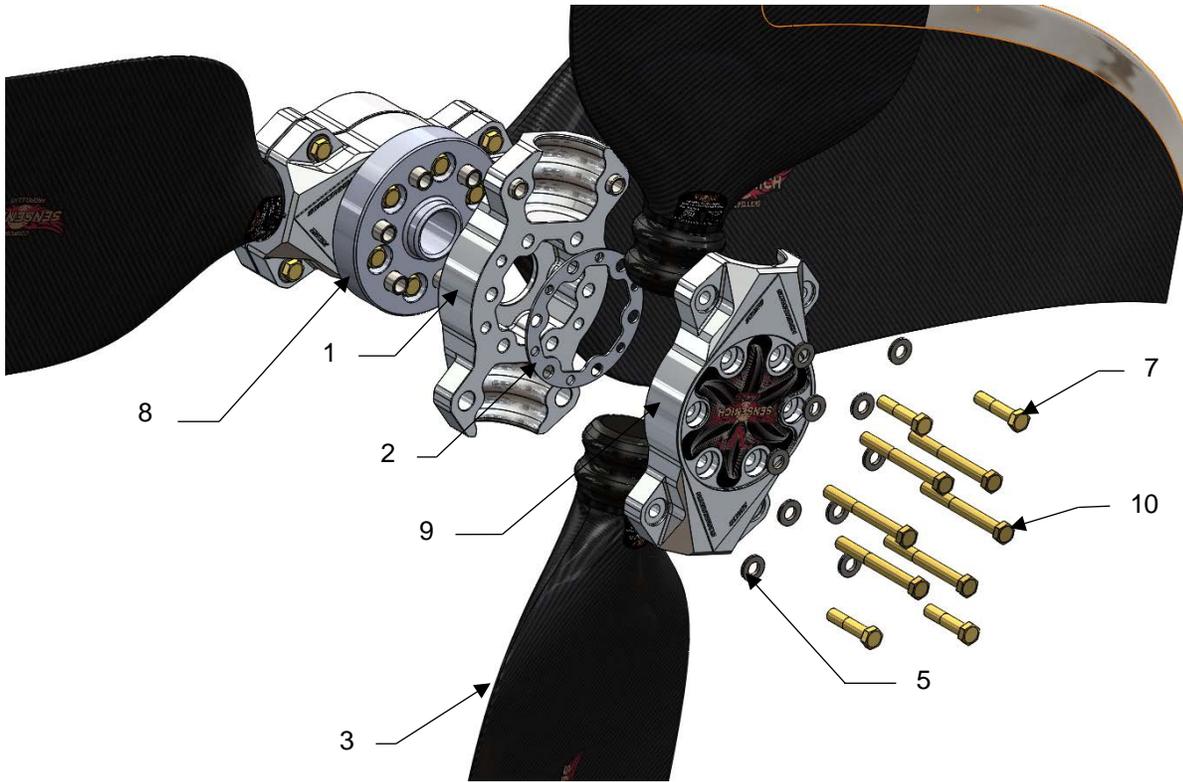


Figure 8: Second Hub Assembly

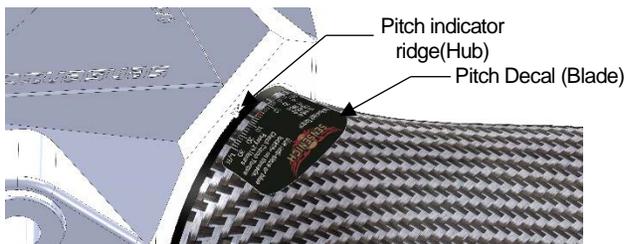


Figure 9: Pitch Setting Detail

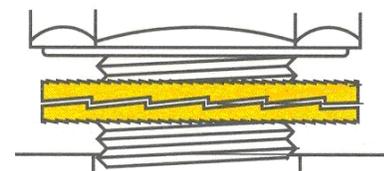


Figure 10: Nordlock Washer
Note: Each lock washer works in pairs with “ramped” sides facing each other.

SENENICH 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 limited warranty on complete propeller assemblies for defective 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 Composites will repair or replace the defective material at its place of business at Plant City, FL USA. Sensenich Composites 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.

Obtaining Warranty Service

Units or parts that are defective must be shipped prepaid to Sensenich Composites 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 Composites), 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 Composites 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 Composites. 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 Composites to a customer or user, whether based on contract, negligence or otherwise. **IN NO EVENT SHALL SENSENICH COMPOSITES 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.