GA-UL260-2B (64”-66”)

Installation and Operation Instructions

For UL260 Engines

CAUTION – Experimental Installations Only.

This propeller is an experimental propeller system. WWPC has designed and engineered this propeller for specific series engines with general known characteristics. However, it is impossible to know and test all possible modifications and combinations of modifications for these type engines in the experimental category. The owner and operator of this propeller acknowledges this nature of the experimental category and understands that experimental engine modifications can severely limit the life and reliability of this propeller. INSTALLATIONS ON MODIFIED ENGINES MAY CREATE AN UNSAFE CONDITION THAT MAY RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE.

ATTENTION: Failure to follow these instructions will void all warranties, expressed and implied. Mounting difficulties, vibration, and or failure can result from improper assembly of the propeller blades and hub components.

CAUTION: Rotating propellers are particularly dangerous· Extreme caution must be exercised to prevent severe bodily injury or death·

Checklist

Read through all instructions first, then use this checklist to check off items as you read through a second time and perform the installation.

Checklist

- ❒ Read through this entire instructions manual
- ❒ Ignition off; wheels chocked; parts inventoried; engine flange cleaned (WD-40)
- ❒ Spinner Back Plate:
  - ❒ Sand protruding lug holes if lugs don't fit through them
  - ❒ Line up with blade cutouts
- ❒ Aft Hub Half:
  - ❒ Line up counter-bores with protruding lugs and ensure flush fit against mounting surface
  - ❒ Torque mounting bolts with Broom Trick
- ❒ Blades and Forward Hub Half:
  - ❒ Leading edges should face clockwise from the plane's perspective
  - ❒ Lightly secure hub over blades
  - ❒ Set approximate blade pitch and SLOWLY tighten and torque bolts (clamping bolts may have different torque value than mounting bolts!)
  - ❒ Re-check blade angles (should be within about 0.3° of each other)
- ❒ Check static RPM and adjust pitch as necessary. Lock washers click loudly when loosened and can be reused about 10 times
- ❒ Run engine for 5 min at 50% RPM and re-check all mounting and clamping bolt torques
- ❒ Install spinner dome and Fairings
- ❒ Fly aircraft and note max rpm in level flight, wide open throttle (DO NOT EXCEED MAX ENGINE RPM!), re-pitch propeller as necessary (see Pitch and Propeller Performance)
- ❒ 5 Hr Inspection
- ❒ Dynamically Balance Propeller (Recommended)
- ❒ Follow all inspections

Quick Reference Sheet

Overall Installation Procedure

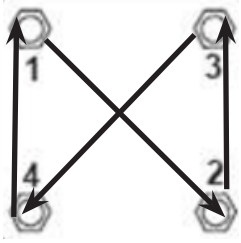
- Install Propeller (Do not install spinner dome yet)
- Perform Static RPM Check
- Re-Pitch Propeller as necessary (100 RPM/1°)
- Run 50% of Max RPM for 5 min.
- Check Bolt Torques
- Install Spinner
- Fly aircraft and note max rpm in level flight, wide open throttle (DO NOT EXCEED MAX ENGINE RPM!).
- Re-Pitch Propeller as necessary (see Pitch and Propeller Performance).
- Perform all inspections and recommended dynamic balancing

Inspection Intervals	Inspection Type
Any Pitch Change	Check Bolt Torque (Mounting bolts may be different than clamping bolts)
First 5 Hours	
Every 25 Hours	
Every 50 Hours	50 Hr Per Page 12
Repeat intervals every 25 and 50 Hr until 2000 hours is reached and a major periodic inspection is necessary	

Broom Trick: Temporarily install forward hub's mounting bolts and place a broom stick between them while you torque desired mounting bolts.

Bolt Type	Size	Socket	Torque	
			(ft-lbs)	(in-lbs)
Clamping	**5/16"**	**1/2"**	**15**	**180**
Mounting	**5/16"**	**1/2"**	**15**	**180**

To torque bolts, follow tightening pattern below and tighten in the following increments: 50%, 75%, then Full Torque.



Propeller	Example Aircraft	Engine	Blade Pitch	Static RPM
66"	**STOL**	**UL 260**	**16°**	**2400 to 2600**
66"	**Cruise**	**UL 260**	**20°**	

NOTE: Blade pitch angles will typically need to be adjusted until the target static RPM is achieved. **See Pitch and Propeller Performance** for more info on selecting pitch.

Propeller Models

These instructions apply to the following propellers:

Models	Diameter(s)
GA-UL260-2B	64”-66”

(Table 1)

Torque Values	
5/16” Bolts	**15 ft-lbs (180 in-lbs)**

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Installation (with 11.3" Spinner-Optional)

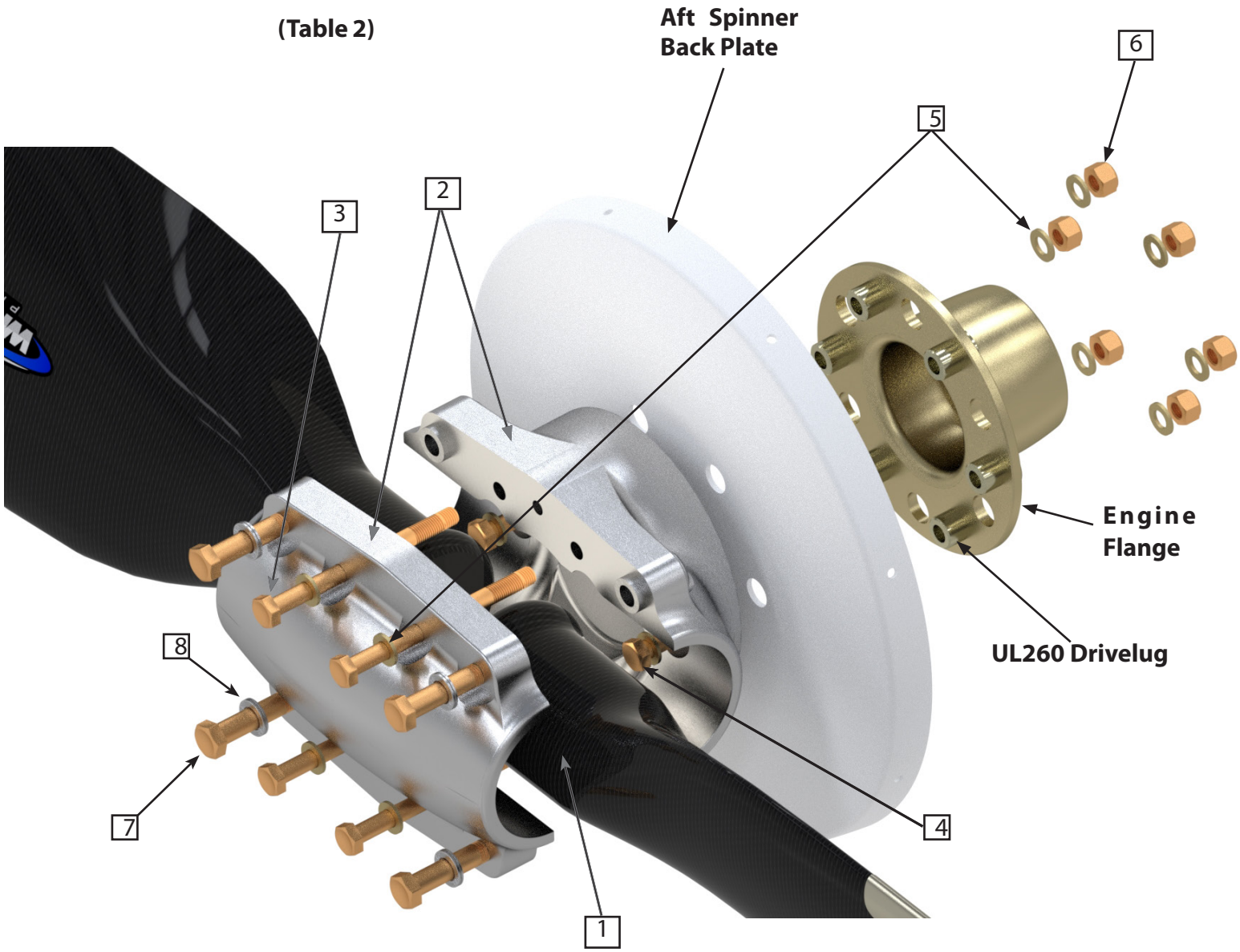
Item	Part	Qty.
1	Blades	2
2	Hub (forward & aft halves)	1
3	Mounting Bolts, Long (5/16" x 4")	4
4	Mounting Bolts, Short AN5-15A (5/16")	2
5	Mounting Flat Washers AN 960-516 (5/16")	12
6	Mounting Lock Nuts AN 365-524	6
7	Clamping Bolts AN5 (5/16" Grade 9)	4
8	Clamping Wedge-Lock Washers (5/16")	4

Hub	Bolt Type	Size	Socket
GA-UL260-2B	Clamping	**5/16"**	**1/2"**
	Mounting	**5/16"**	**1/2"**

Torque Values	
5/16" Bolts	**15 ft-lbs (180 in-lbs)**

IMPORTANT: See Table 5 on page 4 for torque values and interval checks

(Table 2)



Note, Spinner Dome Omitted for

Figure 1 - Assembly Drawing

Overview

The GA-UL260 propeller by Whirl Wind Propellers Corp is a composite ground-adjustable propeller system. Each GA-UL260 propeller is manufactured to meet or exceed ASTM quality standards and is proudly made in USA.

Composite Blades

The composite blades of the GA-UL260 are manufactured from advanced proprietary thermoset epoxy/graphite composite matrix. This advanced composite structure ensures high-strength and blade accuracy in all flight environments. The blades are finished with a high quality gloss finish and are equipped with an electroformed Nickel leading-edge shield.

Electro-formed Nickel Leading Edge Shield

Each GA-UL260 blade is equipped with a superior electro-formed Nickel leading edge shield for abrasion and wear protection. The electro-formed Nickel leading edge shield is superior to any other material available for blade edge protection. The shield is made to the exact shape of the blade and offers unsurpassed durability.

Aluminum Hub

The GA-UL260 hub is CNC machined from aerospace Aluminum to exacting tolerances, dimensionally certified and anodized.

WARNING!:Exceeding the noted RPM limitation for an extended period of time may lead to **CATASTROPHIC FAILURE**.

Guidelines

Read and follow these guidelines to ensure a safe, successful propeller installation.

CAUTION: Failure to follow these instructions will void all warranties, expressed and implied and may cause mounting difficulties. Improper assembly of the propeller blades and hub parts will lead to Vibration Issues and Bodily Injury or Death.

1. Verify the magneto (ignition) switch is "OFF" and that both magnetos are grounded.
2. Chock the aircraft wheels to prevent movement.
3. Clean all dirt and oil residue from the engine flange.

NOTE: WD-40 (or equivalent) is recommended to clean the prop flange before installation.

4. Always use a calibrated torque wrench when tightening mounting or clamping bolts, and torque to the listed value for your propeller.
5. Take inventory of hardware and tools. Ensure that you have the correct number of pieces with the appropriate sizes and lengths.
6. Slide washers onto their corresponding bolts so they are ready for installation.
7. Never modify the propeller hub.

Required Tools

You will need the following tools to assemble your propeller:

- **a.** 12pt Sockets and Ratchet (see Table 2)
- **b.** Calibrated Torque Wrench
- **c.** Digital Protractor

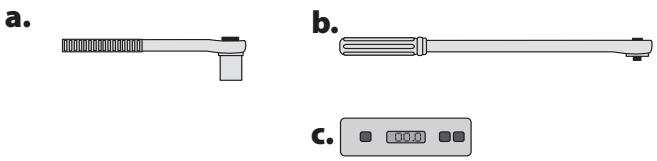


Figure 2- GA200L Required Tools

Hub	Bolt Type	Size	Socket
UL260-2B	Clamping	**5/16”**	**1/2”**
	Mounting	**5/16”**	**1/2”**

Table 3

Recommended Inspection Intervals

IMPORTANT: **After first installation run the propeller for 5 min at 50% RPM. Then check all mounting and clamping bolt torque values with Table 5 below..**

IMPORTANT: **After the first 5 hours of operation, or any blade angle (pitch) change, re-check all hub mounting bolts and blade clamping bolts torque values from Table 5 below.**

Inspection Intervals	Inspection Type
First 5 Hours	Check Bolt Torque After Pitch Change
25 Hours	Check Bolt Torque
50 Hours	50 Hr Per Page 10
Repeat Intervals 25 and 50 Hr Inspections Until 2000 Hours is Reached and a Major Periodic Inspection is Necessary	

Table 4

Torque Values	
5/16” Bolts	**175-185 in-lbs**

Table 5

Install Propeller

1. Spacer: If installing optional spacer/extension, match up engine drive-lugs with counter-bores on spacer. Slide spacer on to engine drive-lugs and secure with spacer mounting bolts.

NOTE: Torque Bolts With a Calibrated Torque Wrench to the Appropriate Value (Table 5, Page 4). Tighten in the Following Increments 50%, 75% and Full Torque.

2. Spinner: If installing spinner, place the Spinner Back-plate on the engine flange. Temporarily install the aft hub and spinner dome to make sure blade cutouts line up properly.

3. Place the GA-UL260 aft hub-half on the engine flange or spacer(if installed). Make sure the GA-UL260 hub is flush with the engine flange or spinner back plate.

Note: Bolt breakage **WILL** occur if there is a gap between the propeller hub, and the engine flange (or spacer).

4. Secure the GA-UL260 aft hub half with the two short mounting bolts and wedge-lock washers.

TIP: To tighten the mounting bolts, hold the aft hub-half in place by inserting two long mounting bolts into the hub and place a sturdy length of wood (roughly the length of the torque wrench being used) in between them to apply counter torque (see Figure 6).Torque Bolts with a Calibrated Torque Wrench to the Appropriate Value (Table 5, Page 4). Tighten in the Following Increments 50%, 75% and Full Torque.

Figure 3- Counter Torque Diagram

5. Now the forward hub and blades can be installed.

Tip: This is easier with two people however you can install the propeller by yourself;

1. Place the GA-UL260 blades, hub hardware and tools within arm's reach of the mounted aft hub.
2. Turn the aft hub until the blade sockets are aligned vertically.
3. Place the top blade in first (with one hand) and hold it in place using the forward hub half (with the other hand).
4. Tip: Each blade airfoil has a round side and a flat side. Insert the blades into the hub mount half with the round side facing away from the aircraft.
5. Now angle the forward hub-half so that it holds the top blade but provides a large enough gap to insert the bottom blade and forward hub half.
6. Once both blades are in the hub, lightly secure the propeller assembly with the Mounting and Clamping bolts.

CAUTION: Make sure there is an even gap between the two hub halves. The blades should be secure but easily rotated.

6 Setting Blade Pitch Angle

Once the propeller is mounted on the prop flange, you are ready to set the initial blade pitch angles.

NOTE: If the Clamping Bolts have already been torqued, loosen the bolts so the blades can rotate smoothly in the hub. The wedge-lock washers will click loudly when loosened.

1. Rotate the propeller so that the blades are parallel with the ground and as close to level as possible.
2. Calibrate your digital angle gauge to the zero reference plane by placing it on an exposed flat portion of the forward hub half (or spinner back plate if installed) and set zero on the read out.
3. Slide the pitch paddle and protractor on the blade as shown in Figure 6. Make sure the pitch paddle is parallel with the blade's cord-line.

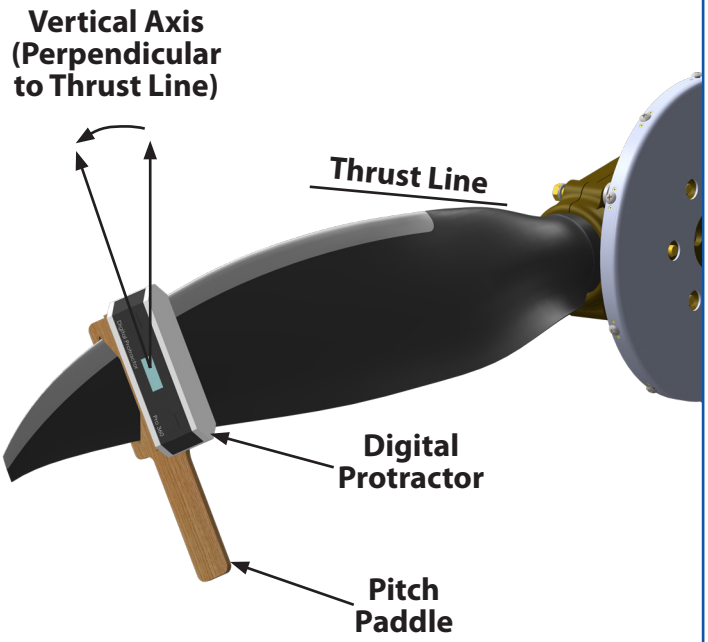


Figure 4- GA-UL260 Pitch Paddle

4. Rotate the blade to the suggest starting pitch angle in Table 7 below. Blade angles will vary from the initial suggested starting angle, but it is recommended that target static RPM should fall within the ranges listed in Table 7 .

NOTE: Blade pitch angles will typically need to be adjusted until the target static RPM is achieved.

NOTE: Certain aircraft manufacturers limit the total pitch range to comply with aircraft design regulations.

Example Aircraft	Engine	Blade Pitch	Static RPM
STOL	107 HP	16	2400 to 2600
High Speed	107 HP	20	

Table 6

5. Rotate the GA-UL260 propeller 180° and repeat Steps 1-4 for the other blade.
6. After the blade pitch angles have been set on both blades, Torque Bolts With a Calibrated Torque Wrench to the Appropriate Value (Table 8, Page 7).

   Tighten in the Following Increments 50%, 75% and Full Torque. Follow the symmetrical pattern and tighten each bolt 1/8 to 1/4 turn at a time. (See Figure 6)

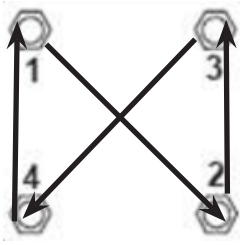


Figure 5- GA-UL260 4-Bolt Tightening Pattern

Continued on Pg.11

NOTE: It is important to maintain an even gap between the hub half to prevent a change in pitch angle.

NOTE: After all mounting and clamping bolts have been properly tightened, check the blade angles again to make sure they have not changed.

Inspection Intervals	Inspection Type
First 5 Hours	Check Bolt Torque After Pitch Change
25 Hours	Check Bolt Torque
50 Hours	50 Hr Per Page 10
Repeat Inspections Intervals Every 25 and 50 Hours Until 2000 Hours is Reached and a Major Periodic Inspection is Necessary	

Table 7

Torque Values	
5/16" Bolts	**175-185 in-lbs**

Table 8

IMPORTANT: After first installation run the propeller for 5 min at 50% RPM. Then check all mounting and clamping bolt torque values with Table 8 Above.`

IMPORTANT: After the first 5 hours of operation, or any blade angle (pitch) change, re-check all hub mounting bolts and blade clamping bolts torque values from Table 8 Above.

6. If installing a spinner, place the Spinner Dome over the back plate and secure it using the #8 screws .

1. Before operation, **Verify Static RPM**

WARNING: Exceeding a Limitation for an extended period of time may lead to a **CATASTROPHIC FAILURE and BODILY INJURY OR DEATH**.

NOTE: Have your tachometer calibrated by a professional before performing this next operation.

1. With the brakes on, run the engine at full throttle and note the static RPM on the tachometer.

   The Static RPM for the GA-UL260 propeller should be between 2400-2600 RPM.

   If your measured RPM does not fall within the appropriate range, use the following guide lines to repitch the blades.

   - 1 Degree of pitch changes the static engine RPM by 100 RPM
   - If the static engine RPM is too low, decrease the blade pitch angle
   - If the static engine RPM is too high, increase the blade pitch angle

WARNING: **NEVER EXCEED THE MAXIMUM RPM RATING FOR YOUR ENGINE**. If you are not seeing your correct static RPM, be certain the tachometer was properly calibrated and verify blade pitch angles.

2. After the desired static RPM is achieved, re-check all bolt torque values (The ideal pitch setting will allow the propeller to reach (with out exceeding) maximum RPM at full throttle in level flight.

WARNING: Do not operate your propeller above the recommended propeller RPM. If your propeller has been subjected to an over speed condition of 10% over the maximum propeller RPM (example 3300X 1.1 = 3630) for more than 2 minutes, you must land and perform a 100 hour inspection. **After a Suspected impact or an overspeed condition of *20% or higher, the propeller must be removed from service and returned to the manufacturer for inspection***.

Tachometer Inspection

An improperly operating tachometer can lead to propeller failure, excessive vibration or cause an engine to exceed maximum RPM limits established by manufacturers.

Proper tachometer operation and accuracy should always be checked (using the manufacturer's procedure, if available) during normal maintenance intervals.

Pre-Flight Inspection

Perform this inspection before every flight.

IMPORTANT: After first installation run the propeller for 5 min at 50% RPM. Then check all mounting and clamping bolt torque values with Table 10 below.

IMPORTANT: After the first 5 hours of operation, or any blade angle (pitch) change, re-check all hub mounting bolts and blade clamping bolts torque values from Table 10 below.

Inspection Intervals	Inspection Type
First 5 Hours	Check Bolt Torque After Pitch Change
25 Hours	Check Bolt Torque
50 Hours	50 Hr Per Page 10
Repeat Intervals 25 and 50 Hr Inspections Until 2000 Hours is Reached and a Major Periodic Inspection is Necessary	

Table 9

Torque Values	
5/16" Bolts	**175-185 in-lbs**

Table 10

Before each flight, 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.

The pre-flight walk-around is an important element of the process of airworthiness maintenance. It should not be merely a superficial look, but a studied review of the condition of everything that might give trouble during the forthcoming flight.

1. Carefully examine the propeller assembly for looseness, any signs of damage, excessive wear or any other condition that would make the propeller unsafe to operate.
2. Check the leading edge of blades for cracks and debonding.
3. Check the spinner and bulkhead for security, missing screws, damage and cracks. Cracks typically originate from the attachment screws.
4. Check for looseness of the bulkhead. This could be an indication that the mounting bolts are loose and need to be retightened. **After Every 25 Hours of Operation all Bolt Torques Must be Checked.**
5. Note any indications in the logbook for future reference to determine whether an acceptable condition is getting worse.

50-Hour Inspection, 12 Calender Months Inspections

In addition to the recommendations for the Pre-Flight Inspection, the propeller and spinner should be visually examined in detail after every 50 hours or 12 calender months. This will require the removal of the spinner for a detailed examination.

50-Hour or 12 calendar months inspection:

1. Remove Spinner Dome and examine it for damage, and cracks. If necessary, replace the Spinner Dome.
2. Remove Clamping Bolts and dimensionally check against one another. Any bolts that exhibit stretching, corrosion or damage are to be replaced.
3. Remove the Forward Hub-Half and set aside.
4. Remove each blade and inspect blade shanks for any wear. A thorough visual inspection is recommended together with a coin tap inspection of each composite blade, including the nickel erosion shield on the leading edge (see AC 43-5).
   - No dents in the metal erosion shield should be deeper than 1/8".
   - No dents should puncture the metal erosion shield.
   - No excessive wear on the leading edge.

   (If further inspection is required, return the blades to the factory or an approved propeller shop for further examination.)
5. Conditions requiring blade replacement:
   - Any hole in hollow blade shell (doesn't apply if a replacement metal erosion shield will cover hole).
   - Any crack deeper than .025".
   - Any solid tip damage that can't be trimmed off completely
6. Remove Mounting Bolts and dimensionally check against one another. Any bolts that exhibit stretching, corrosion or damage such as cracks or nicks are to be replaced.
7. Remove the Hub Mount Half . Inspect both hub halves for corrosion.
8. Remove the rear spinner bulkhead and examine for missing fasteners, damage, and cracks. If damaged, replace the spinner bulkhead.
9. It is recommended to replace the Hub hardware during the 12 months condition inspection. The special wedge-lock washers should also be replaced.
10. Reinstall the assembly per the above installation instructions.

2000-Hour Major Periodic Inspection

Must be accomplished by an A&P or IA.

1. Remove Spinner Dome and examine it for damage, and cracks. If necessary, replace the spinner dome.
2. Remove Clamping Bolts and washers and retire both sets from service.
3. Remove the Hub Clamp Half and set aside.
4. Remove Mounting Bolts and washers and retire both sets from service.
5. Remove the Hub Mount Half .
6. Remove the rear spinner bulkhead and examine for missing fasteners, damage, and cracks. If damaged, replace the spinner bulkhead.
7. Send both hub half's both blades to an **Approved Propeller Repair Center** for the remaining 2000 hour inspection.

NOTE: These blades do not have life limitation. There is no specified overhaul time. The propeller parts are removed from service when they can no longer meet the Continued Airworthiness Requirements.

Propeller Removal

1. Before working on the propeller disconnect the battery and make sure the ignition switch is turned off.
2. Perform installation procedure as illustrated on page 2 or 3 (depending on installation) in reverse order of operation.

Suspected Impact

Propellers that have been involved in a known or suspected static or rotating impact with relatively solid objects (e.g., ground, maintenance stands, runway lights, birds, etc.) or relatively yielding objects (e.g., snow banks, puddles of water, heavy accumulation of slush, etc.) should be inspected for damage before further flight.

If the inspection reveals one or more of the following listed indications, the propeller should be removed and sent to Whirl Wind Propellers for evaluation.

- A blade that tracks out of limits or out of edge alignment.
- Loose blades in the hub.
- Any diameter reduction (tip damage).
- Visible major damage to the hub that cannot meet the Minor Hub Repairs criteria.
- Visible major damage to a blade that cannot meet the Minor Blade Repairs criteria.
- Operating changes, such as vibration or abnormal RPM.

IMPORTANT: After any propeller strike the bolts should be replaced.

Lightning Strike

Any Whirl Wind composite blade suspected of lightning strike should be inspected and may require repair or replacement.

Lightning strikes usually enter a composite blade through the metal erosion shield. If a lightning strike is present, a darkened area and possible pitting, usually in the proximity of the tip, will be noticeable.

If a lightning strike is suspected or detected, consider the blade unairworthy. Return the blade to the factory or an approved propeller repair center for further examination.

Normal Wear and Tear

The following picture shows various size paint chips on the aft (high pressure) side of a propeller blade. This is normal wear and tear, no action is needed, and there are no delaminations here. For asthetics you can use primer to fill chips, sand flush with a sanding block, and touch up with paint. Another option is to paint over with a clear coat.

Wear is inevitable on the metal erosion shield. The wear rate depends on several factors, including high operating RPM's in rain or sandy areas, FOD on taxiways and runways, etc.

Continued Airworthiness Requirements

The following recommendations will help you operate your propeller safely, keep it looking good and help it to last.

NOTE: There is no specified overhaul time. The propeller parts are removed from service when they can no longer meet the Continued Airworthiness Requirements.

- Never install a propeller unless it is a model approved for the aircraft/engine. The service history must be properly documented, and the propeller must pass a pre-installation inspection.
- A thorough visual inspection will could catch a dangerous flight condition. Use touch and hearing as well as visual clues. Changes in surface roughness, unusual free play, and odd sounds indicate conditions that may affect airworthiness. Feel for roughness and look for texture changes, waviness, and changes in reflection that may signal the removal of protective coatings. Some areas may require the use of a 10x magnifying glass to identify small features or find cracking.
- The pre-flight walk-around is very important, and should be a studied review of any condition that might give trouble during flight. Refer to the **Pre-Flight Inspection** section for details.
- Do not paint over areas of corrosion on hub parts.
- Do not operate any aircraft after a propeller has been subjected to an impact without a thorough inspection. Refer to the **Inspection After Suspected Impact** section for details.
- Do not use the propeller as a tow-bar to move your aircraft.
- Apply a good quality automotive paste wax to the blades at least once a year.
- Avoid running-up in areas containing loose stones, sand, and gravel, to reduce erosion and/or damage to the leading edges and blades.
- Finish loss off the leading edge is a normal wear item and is dependent on the amount of operation in rain and grit.
- Whenever there is evidence of engine roughness, check bolt torque on both the clamping and mounting bolts, and check the propeller blades for track. The blades should track within 1/8" of each other at the tip. Rotating the propeller and reinstalling may help.
- If the bolts are inadvertently over-torqued, they should be replaced immediately.
- If your propeller blade(s) or hub assemblies begin to show any of the following conditions, it must be repaired by an approved propeller shop or retired from service:
  a. Cracks in the metal hub or bolts,
  b. Loose metal leading edge,
  c. Any crack across the blade,
  d. Any crack along the blade length,
  e. Blade impact damage with missing composite material larger than 0.5 square inches and/or deeper than 0.025"
  f. Obvious damage or wear beyond economical repair.

Example Propeller Combinations

Model	Diameter(s)	Weight	Engines	Limits
GA-UL260-2B	64"- 66"	8 lbs	UL260i, UL260iS, UL260iSA, UL260iF series engines	3300 RPM MAX (Propeller) 107 HP Max

(Table 11)

Pitch and Propeller Performance

PROPELLER PERFORMANCE

In selecting a propeller, keep in mind that both aircraft and engines of the same model may vary in performance, and that operators may want different performance characteristics. For instance, one person may require a high climb rate while another seeks maximum cruising efficiency.

STANDARD PITCH / NORMAL FLYING

For normal or cross country flying, a propeller that turns up to maximum continuous engine RPM at full throttle level flight will give best all-around performance. To achieve this configuration, aim for the lowest static rpm within the recommended range.

CRUISE PITCH

A cruise propeller will turn 150 to 250 static RPM less than a standard pitch propeller. While cruise pitches will provide 4-6 mph higher airspeeds at low-altitude cruise power rpm's, maximum level flight speeds are no better than climb or standard pitches, and the take-off and climb performance will noticeably suffer. Additionally, at higher altitude the cruise-power rpm increases to max engine rpm anyway, so the standard pitch configuration then becomes a better cruise pitch configuration for altitudes above about 8,000'.

CLIMB PITCH / HIGH ALTITUDE OPERATION

For improved take-off and climb performance, use a climb pitch that will turn 100 to 200 static rpm more than a standard pitch propeller (Refer to your particular aircraft operating manual for propeller limitations). Climb pitches will typically reduce flight speeds by 4-6 mph at cruise power RPM's. A climb pitch is also recommended for aircraft operating from high density altitude runways. To achieve this configuration, aim for the highest static rpm within the recommended range. Be careful not to exceed max engine rpm when flying a climb pitch configuration.

PITCH NOTES AND LIMITATIONS

The faster the airplane, the higher the pitch setting that will be required to keep the engine from overspeeding at Wide Open Throttle (WOT). While the propeller may be structurally operated at any pitch setting from +14° through +26°, the take off RPM at WOT must meet the aircraft manufacturer's recommended limits to ensure safe flight. The propeller RPM should never exceed the engine manufacturers recommended maximum RPM.

NOTE: Certain aircraft manufacturers limit the available propeller pitch range to comply with aircraft design regulations.

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 one year limited warranty on any defect in materials and workmanship.

In the event a unit does not conform to this express warranty, Whirl Wind Propellers Corporation will repair or replace the defective material at its place of business in El Cajon, CA, USA. Whirl Wind Propellers Corporation 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 Whirl Wind Propellers Corporation at the address listed below:

Whirl Wind Propellers
1800-C Joe Crosson Dr
El Cajon, CA 92020

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 or emailing wwpc@whirlwindpropellers.com), 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. Overspeed of any kind or use on or with engines or equipment not approved by Whirl Wind Propellers Corporation 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 Whirl Wind Propellers to a customer or user, whether based on contract, negligence or otherwise. IN NO EVENT SHALL WHIRL WIND PROPELLERS CORPORATION BE LIABLE FOR ANY OTHER EXPENSES, CLAIMS OR DAMAMGES 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.

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