

# SENENICH PROPELLER CO., INC.

AREA CODE 813  
PHONE - 752-3711  
FAX - 752-2818



2008 WOOD COURT  
PLANT CITY, FL USA  
33563

See us on the Web @ [www.sensenich.com](http://www.sensenich.com)

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## FAQ FOR SERVICE BULLETIN SB2016-06B

Service Bulletin [SB2016-06B](#) contains all the definitive information for model and serial number applicability. This FAQ provides supplemental information to illustrate the following: model and serial number identification, previous service bulletins, hub model progression and pitch system variations, crack location and inspection recommendations, blade retention redundancy, and options available for compliance with the service bulletin.

### Affected hubs:

Models 2A0J5 and 2A0R5, revision "0", "A", "B", "C", and "D".

See Figure 1.

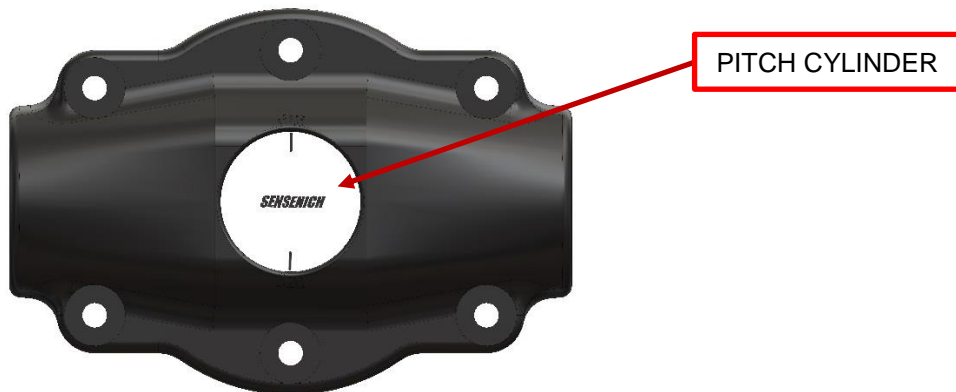


Figure 1. Hub Model 2A0 Series Revision "D" and earlier

The first several years of hub production did not include a stamped model number on the part.

*Identification is denoted by the presence of the white pitch cylinder.*

For exceptions see *Hubs Not Affected\** in next section.

The hub serial number is stamped on each hub half, either on the side or on the inside surface on one side of the blade shank cavity.

The serial number last digit indicates the revision level: If the last digit is a number, then it is revision "0", otherwise there is a letter such as "A", "B", etc...

Revision "D" was the last hub revision which incorporated the pitch cylinder feature.

Sensenich has an affected hub cover serial number list on our website.

### Hubs not affected\*:

- Revision "E" or later 2A0 series hubs with three ½" diameter holes in the hub cover half are not affected. See Figure 2.

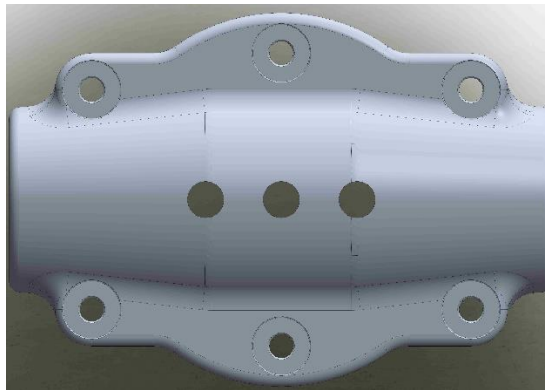


Figure 2. Hub Model 2A0 series Revision "E" and later

- Model 2A1R5 and 3A0B7 hubs with long blade shanks are not affected. While they do incorporate the white pitch cylinder, the blade retention geometry is significantly longer and different from the compact 2A0 series so that this service bulletin does not apply. See Figure 3.

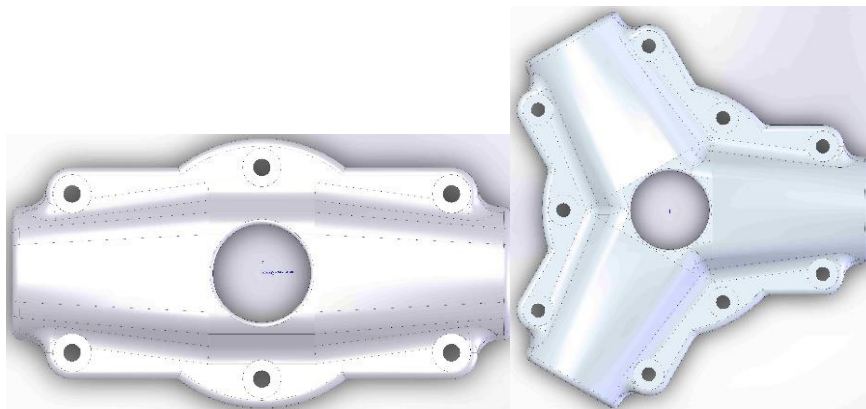


Figure 3. Hub Models 2A1R5 and 3A0B7, respectively

## Previous Service Bulletins:

### **SB11-04-15**

In 2011, Sensenich released service bulletin SB11-04-15 to address blades depitching and increasing rpm's in flight. This only affected model 2A0R5 hubs of revision B. Affected hubs were modified and stamped with "BR" after the serial number.

Service bulletin SB11-04-15 is unrelated and *does not* constitute compliance to SB2016-06.

### **SB2016-06 and SB2016-06A**

Sensenich released the original service bulletin in 2016 when several reports of cracked hubs were received from operators on Jabiru powered aircraft. This only applied to model 2A0J5 hubs. A replacement cover half was made available to affected users. Since this time, no new reports of cracked 2A0 series hubs had been received until receiving notice of a 2A0R5 hub cover crack in June 2018.

Service Bulletin SB2016-06 was updated to revision A to include all 2A0 series hubs regardless of flange configuration or engine installation.

Service Bulletin SB2016-06 has since been updated to revision B to require propeller disassembly and inspection of the inside of the hub cover half.

## Hub Model Progression/Pitch System

In 2004, Sensenich released the 2A0 compact hub series for use on light sport and experimental aircraft with 80-130 HP engines, such as Rotax 912 series and Jabiru. This hub utilized Sensenich's first generation ground adjustment system with a central pitch cylinder for synchronization of blade pitch angles. A pitch reference mark on the white cylinder is aligned with pitch marks in the metal hub to indicate relative blade angle.

The hubs have been manufactured with multiple finishes: bare aluminum, yellow alodine, and black anodize. While the alodine and anodize finishes provide improved corrosion protection, the base aerospace alloy provides satisfactory protection. There is no requirement that the hub cover and mount halves must have the same finish or plating.

In 2014 Sensenich released hub revision E with our third generation pitch system with pitch setting gages (PSG). The PSG system was originally developed for our three blade Rotax hub and larger two blade designs to provide more accurate blade angle reference, but a protractor is the most accurate means to set blade angles.

NOTE: Because of the differences in how the first generation and third generation pitch systems operate, they are incompatible, i.e. you can't use old blades with the newer hub pitch system and vice versa. The metal pitch pins on the blade shank ends must be relocated in order to work properly with revision "E" or later hubs.

NOTE: Since the basic blade shank geometry has not changed, it is possible to use older blades with newer hubs *if a protractor is used to set blade angles*.

### Crack Location and Inspection Recommendations

- The hub cracks typically start at or near the pitch marks on the sides of the central hole, and grow outwards towards the hub sides. They are hairline cracks which are very difficult to see with the naked eye. We recommend using very good lighting, a 10x magnifying glass and inspecting the inside of the pitch cylinder hole in the hub cover next to the pitch marks.
- See Figures 4 through 6 below. Figure 4 shows the best location for inspection, on the inside of the hub cover pitch cylinder hole.
- The hub cover must be removed from the propeller assembly for thorough inspection inside the pitch cylinder hole. *Inspection of the hub exterior is not adequate.*
- Hub color/plating does not appear to be a factor, but the black anodize makes inspection more difficult.
- This inspection must be performed every 50 flight hours or annually, whichever comes first.



Figure 4. Cracks start near pitch marks and grow outwards. Inspection inside the hub cover is required.

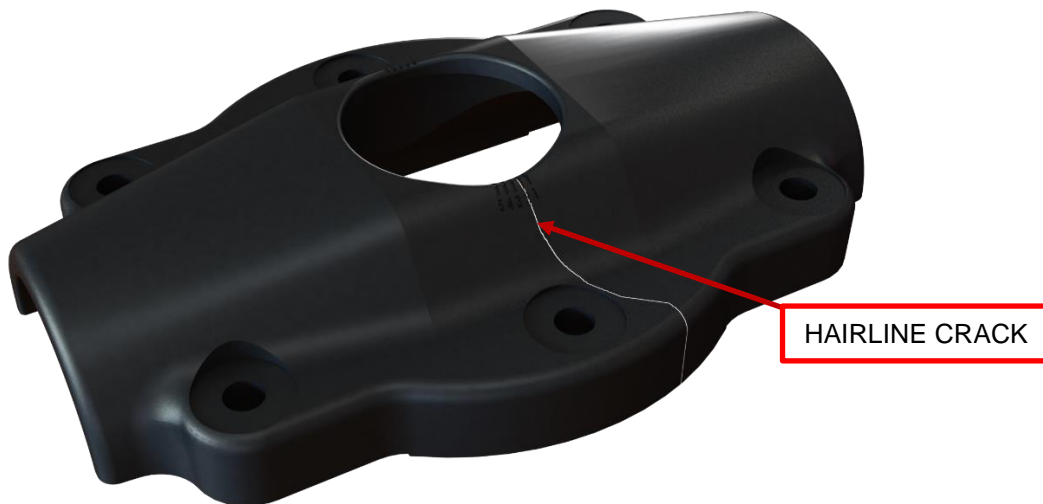


Figure 5. Unattended cracks may progress to edges of hub cover half.

### Note Regarding Nord-lock Washers

Nord-lock washers work in pairs with the ramped sides facing each other. See Figure 6.

During loosening, the Nord-lock washers may click loudly; this is normal. Inspect Nord-lock washers on the inside cam surfaces and outside serrations. Replace washers with excessive wear.

Lubricate acceptable washers with a light coating of engine oil or equivalent.

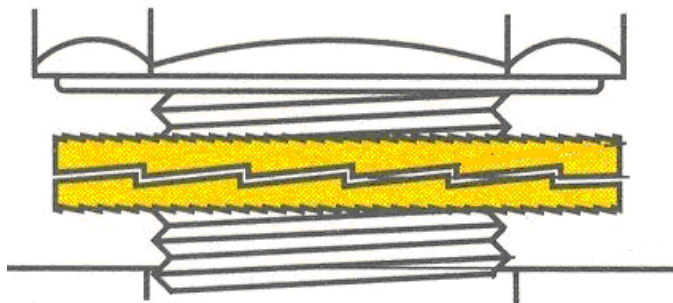


Figure 6. Nord-Lock Lock Washer

## Propeller Hub Redundancy

Cracks of any type in aircraft parts are of concern, especially so in propellers.

One design element which increases the retention safety for the 2A0 hub series is the incorporation of threaded clamp bushings. These bushings are press fit in the hub mount half and engage the hub cover half when the propeller blades are pitched and clamp bolts fully torqued. This ensures that the propeller clamp bolts do not carry any shear loads even if the hub cover cracks into two pieces.

See Figure 6.

NOTE: The clamp bushings provide blade retention backup *and do not change the 50 hour inspection interval for this service bulletin.*

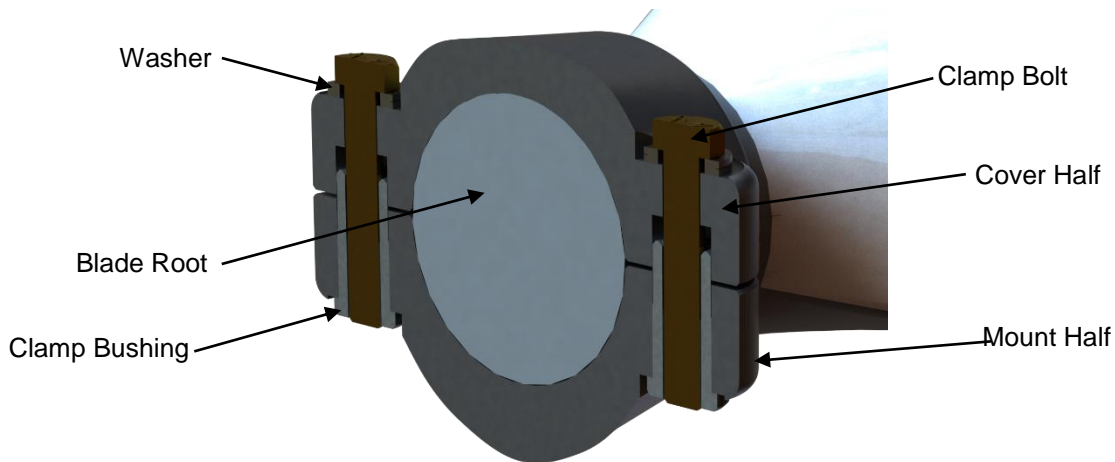


Figure 6. Clamp Bushing Engagement into Hub Cover

## Service Experience

Sensenich instructions for 2A0 series propellers specify a condition inspection annually for continued airworthiness by repairman or A&P's and a major periodic inspection (MPI) at the manufacturer every 2000 hours.

Hundreds of 2A0 series propeller hubs have been inspected by Sensenich for the 2000 hour MPI with no cracks, and several propeller hubs have exceeded over 5000 flight hours.

## Service Bulletin Compliance Options

- Inspect Affected Hub Cover

Inspect affected hub cover every 50 flight hours or annually, whichever comes first. This requires removal of the spinner dome and spinner front plate (if used) so that the inside of the hub cover can be inspected.

The annual inspection includes re-torque of the hub clamp bolts *and mounting bolts underneath the blades*.

Part Cost: \$00.00

Lead Time from Sensenich: none

- Replacement Hub Cover

Replace affected hub cover half with new revision “D1” hub cover half. This replacement part will significantly reduce stress in the problem areas while adding only 74 grams (0.15 lbs) to the total propeller weight. It is a direct replacement and will fit and function with all current spinner assemblies.

This option will **permanently comply with the service bulletin**, remove the 50 hour inspection interval and also eliminate the annual re-torque for the mounting bolts under the blades. This means the only re-torque at annual will be the clamp bolts.

An addendum to the installation instructions has updated condition inspection procedures for 2A0 series hub covers for revision “D1”.

*Priority will be given to customers with cracked hub cover halves for replacement “D1” hub covers, with remaining customers fulfilled in order of contacting Sensenich and stock availability.*

New clamp bolts and washers will be provided with the Rev “D1” hub cover.

Part Cost: \$195 each

Lead Time from Sensenich: as supplies allow

- Replace Hub Assembly with Revision “E” or Later

Replace affected hub assembly with Revision “E” or later hub with third generation pitch system. All propeller blades and hub must be returned. The blades will have the pitch pins relocated to be compatible with the PSG system. Complete hub will be replaced; includes three pitch setting gages.

This option will **permanently comply with the service bulletin**, remove the 50 hour inspection interval and also eliminate the annual re-torque for the mounting bolts under the blades. This means the only re-torque at annual will be the clamp bolts.

Part Cost: \$545

Lead Time from Sensenich for Blade Rework: 3-4 weeks

NOTE: As explained previously, blades for revision “D” and earlier hubs will install and operate normally in revision “E” and later hubs with the Pitch Setting Gage system, but the pitch setting functionality is incompatible.

Blade pitch can be set by use of a blade protractor. Basic procedures for protractor use are included in the propeller installation instructions or our [special template instructions](#).

## Contact Information

Notify Sensenich of any crack occurrences or with any questions regarding this service bulletin:

Sensenich Propeller Company, Inc.

2008 Wood Court

Plant City, FL

33563

(813) 752-3711 option 2

[www.sensenich.com](http://www.sensenich.com)

propsales@sensenich.com