

**HARTZELL PROPELLER INC.**  
**SERVICE BULLETIN**  
**HC-SB-61-401**  
**5D31-NK366B1( ): 107373-2 Spring Guide**

1. Planning Information

A. Effectivity

- (1) Hartzell Propeller Inc. 5D31-NK366B1( )/86DB01B Raptor turbine propellers are affected by this Service Bulletin.

**WARNING:** DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL INSPECTIONS OR WORK IN ACCORDANCE WITH THE MOST RECENT REVISION OF THIS SERVICE BULLETIN. INFORMATION CONTAINED IN THIS SERVICE BULLETIN MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. FAILURE TO COMPLY WITH THIS SERVICE BULLETIN OR THE USE OF OBSOLETE INFORMATION MAY CREATE AN UNSAFE CONDITION THAT MAY RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE. REFER TO THE SERVICE BULLETIN INDEX FOR THE MOST RECENT REVISION LEVEL OF THIS SERVICE BULLETIN.

B. Concurrent Requirements

- (1) Additional service documents may apply to the components/propellers affected by this Service Bulletin. Compliance with additional service documents may be necessary in conjunction with the completion of the Accomplishment Instructions in this Service Bulletin. Refer to the Hartzell Propeller Inc. website at [www.hartzellprop.com](http://www.hartzellprop.com) for a cross-reference of service documents.

C. Reason

- (1) Hartzell Propeller Inc. is introducing the 107373-2 spring guide as a replacement for the 107373 spring guide used in the affected propellers.
  - (a) Incorrect orientation of the asymmetrical 107373 spring guide has been shown to affect the beta ring response due to low spring return force.
  - (b) The symmetrical 107373-2 spring guide can be installed in either orientation.

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D. Description

- (1) This Service Bulletin provides Instructions for Continued Airworthiness (ICA).
- (2) This Service Bulletin provides instructions for removing the 107373 spring guides and installing 107373-2 spring guides.
  - (a) Hartzell Propeller Inc. will provide all of the parts listed in the Material Information section of this Service Bulletin free of charge for each affected propeller.
    - 1 Refer to the Appendix section of this Service Bulletin for additional information about the warranty program.

E. Compliance

- (1) At next propeller overhaul or major disassembly, whichever occurs first, remove the 107373 spring guides and install three 107373-2 spring guides in accordance with the Accomplishment Instructions in this Service Bulletin.

F. Approval

- (1) FAA acceptance has been obtained on technical data in this publication that affects type design.

G. Manpower

- (1) No additional man-hours required when compliance is performed at overhaul or major disassembly

H. Weight and Balance

- (1) Not changed

I. Electrical Load Data

- (1) Not changed

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J. References

- (1) Daher TBM 960 Aircraft Maintenance Manual (AMM)
- (2) Hartzell Propeller Inc. Application Guide Manual 159 (61-02-59)
- (3) Hartzell Propeller Inc. Owner's Manual 486 (61-00-86)
- (4) Hartzell Propeller Inc. Raptor Series Turbine Propeller Overhaul Manual 496 (61-10-96)

K. Other Publications Affected

- (1) Hartzell Propeller Inc. Raptor Series Turbine Propeller Overhaul Manual 496 (61-10-96)

2. Material Information

A. Components Required for Compliance

<u>Part Number</u>	<u>Description</u>	<u>Qty</u>
107373-2	Spring Guide	3

3. Accomplishment Instructions

**CAUTION:** INSTRUCTIONS AND PROCEDURES IN THIS SERVICE BULLETIN MAY INVOLVE PROPELLER CRITICAL PARTS. REFER TO THE APPLICABLE PROPELLER OVERHAUL OR OWNER'S MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS.

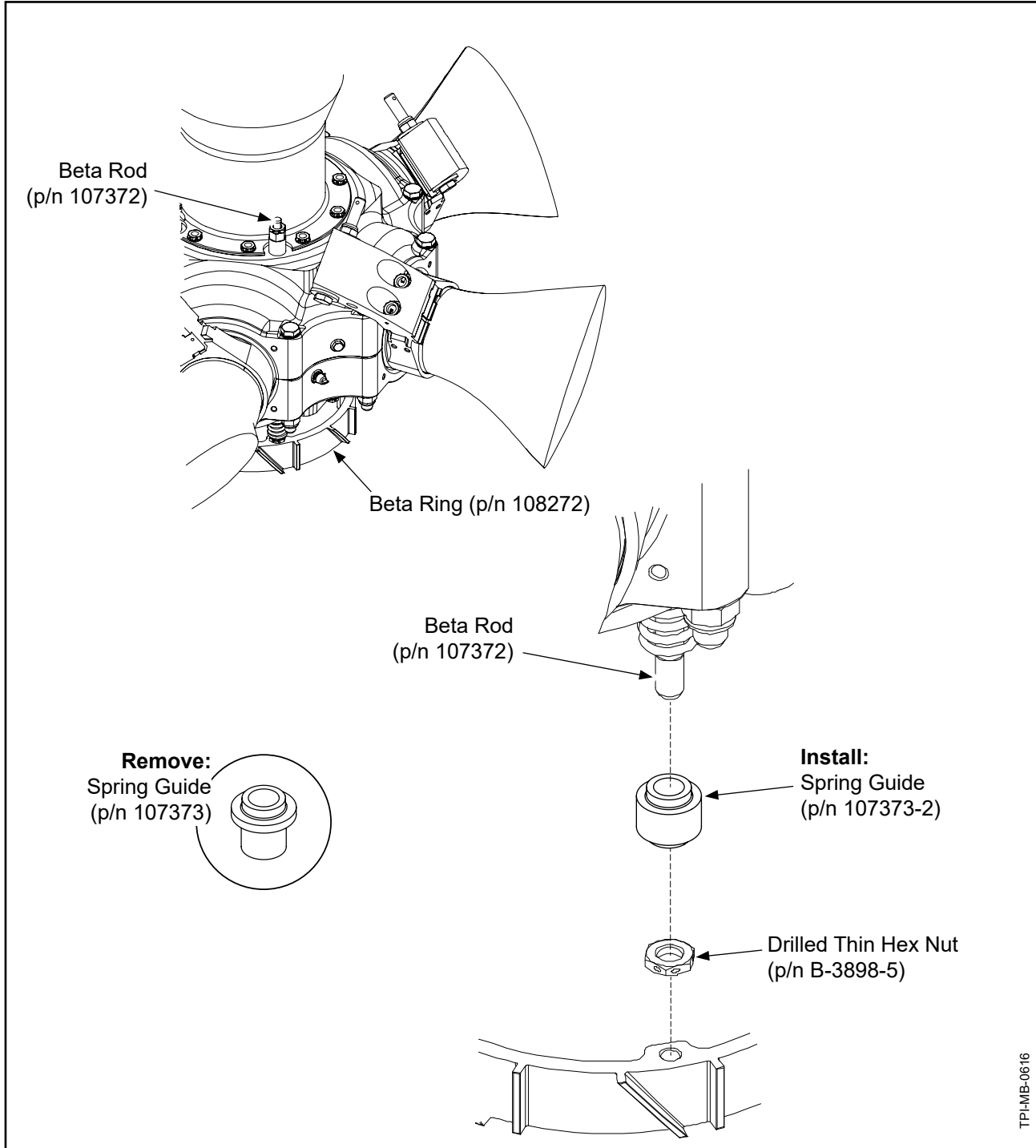
A. Spring Guide Removal/Installation

- (1) Remove the propeller from the aircraft in accordance with Hartzell Propeller Inc. Owner's Manual 486 (61-00-86) and Chapter 61 in the Daher TBM 960 AMM.
- (2) The following steps in this procedure must be performed by a certified propeller repair station with the appropriate rating.
- (3) Remove the three 107373 spring guides (p/n 107373) in accordance with Figure 1 and the following steps:
  - (a) Loosen the three drilled thin hex nuts (p/n B-3898-5).

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**Spring Guide Removal/Installation**  
**Figure 1**

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**CAUTION:**   TURN THE BETA RODS (P/N 107372) ALTERNATELY TO PREVENT DAMAGE TO THE BETA RING (P/N 108272).

- (b) Using a 1/4 inch open-ended wrench on the flats at the cylinder-end of the beta rods (p/n 107372), turn the three beta rods out of the beta ring (p/n 108272).
  - (c) Remove the beta ring from the beta rods.
  - (d) Remove the drilled thin hex nuts and spring guides.
- (4) Install three 107373-2 spring guides in accordance with Figure 1, then install the drilled thin hex nuts.

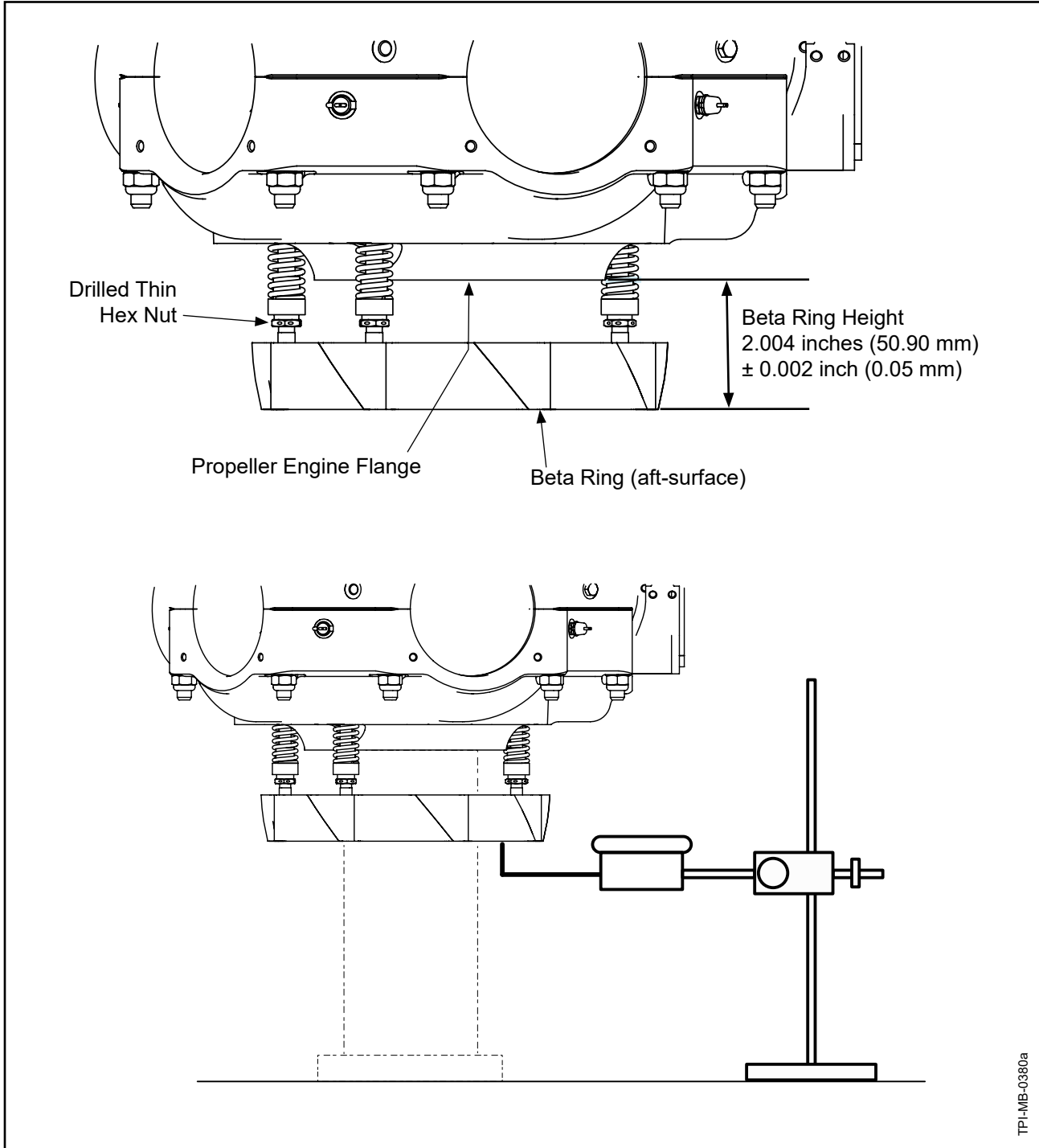
**CAUTION:**   TURN THE BETA RODS (P/N 107372) ALTERNATELY TO PREVENT DAMAGE TO THE BETA RING (P/N 108272).

- (5) Install the beta ring onto the beta rods in accordance with Figure 1 and the following steps:
- (a) Using a 1/4 inch open-ended wrench on the flats at the cylinder-end of the beta rods, turn the three beta rods into the beta ring until the beta rods bottom out in the threaded holes of the beta ring.
  - (b) Back each beta rod out of the beta ring by rotating one turn.
- (6) Check the beta ring height/OD run-out in accordance with the instructions in this Service Bulletin.
- (7) Set/check the low pitch blade angle in accordance with the instructions in this Service Bulletin.
- (8) Install the propeller onto the aircraft in accordance with Hartzell Propeller Inc. Owner's Manual 486 (61-00-86) and Chapter 61 in the Daher TBM 960 AMM.
- (9) Make an entry in the propeller logbook indicating the 107373-2 spring guide was installed in accordance with this Service Bulletin.

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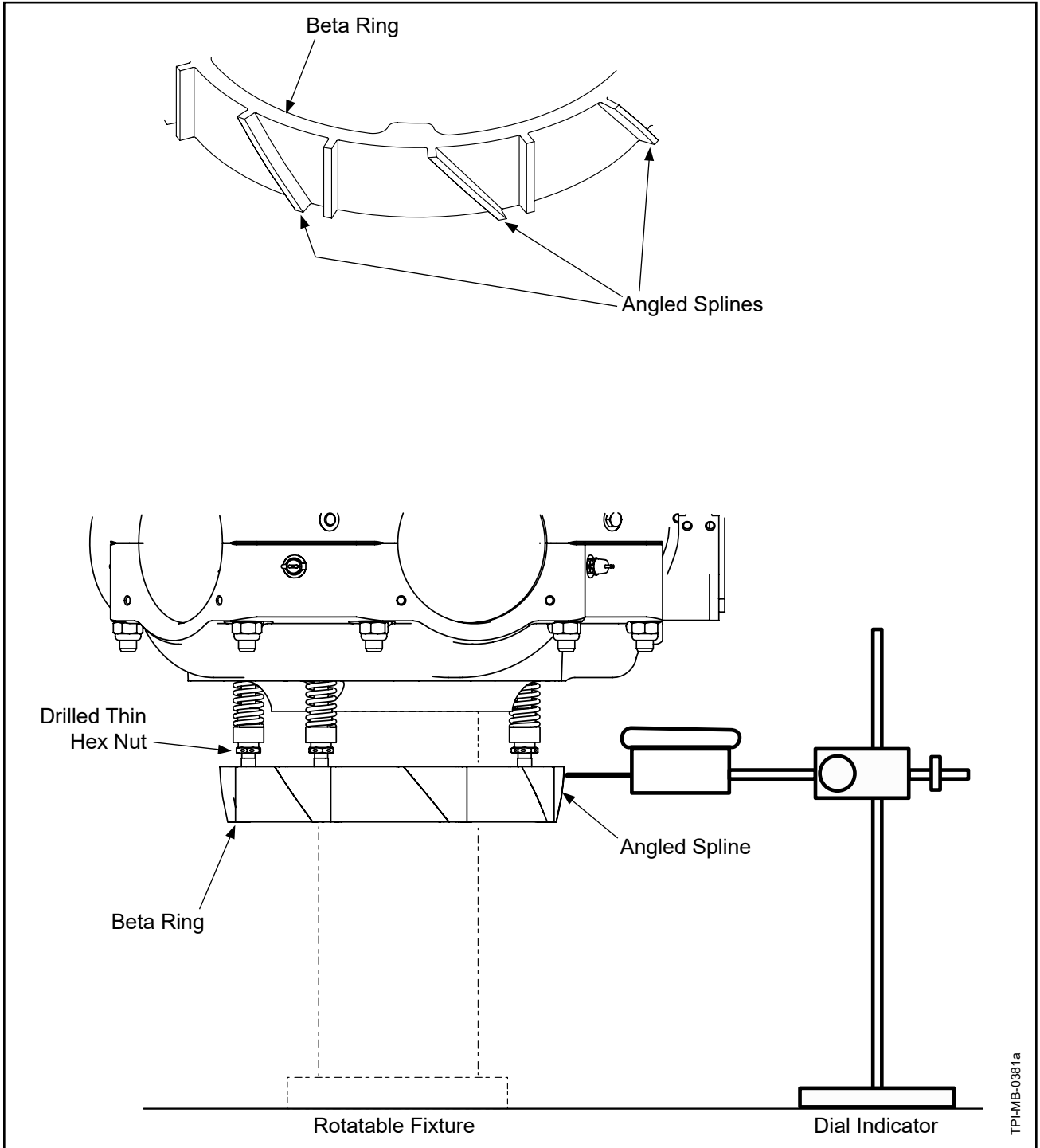
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TPI-MB-0380a

**Beta Ring Height/Run-out  
Figure 2**

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**Beta Ring OD Run-out  
Figure 3**

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**B. Beta Ring Height/OD Run-out**

- (1) Using a depth micrometer, measure the height of the beta ring.
  - (a) Beta ring height is measured from the aft surface of the beta ring to the propeller engine flange surface. Refer to Figure 2.
  - (b) Set the height of the beta ring to 2.004 inches (50.90 mm)  $\pm 0.002$  inch (0.05 mm).
  - (c) Adjust the height by rotating the beta rods clockwise to decrease or counterclockwise to increase.
- (2) Using a dial indicator on the aft-surface of the beta ring, check the height run-out of the beta ring. Refer to Figure 2.
  - (a) The height run-out of the beta ring must be within 0.004 inch (0.10 mm).
- (3) Using a dial indicator on the angled splines of the beta ring, check the OD run-out of the beta ring. Refer to Figure 3.
  - (a) The OD run-out of the beta ring must be within 0.015 inch (0.38 mm).
- (4) Torque the drilled thin hex nuts 108-132 In-Lbs (13-14 N•m) against the beta ring.
- (5) Measure the height of the beta ring and the run-out (height and OD). Correct as necessary. Refer to Figure 2 and Figure 3.

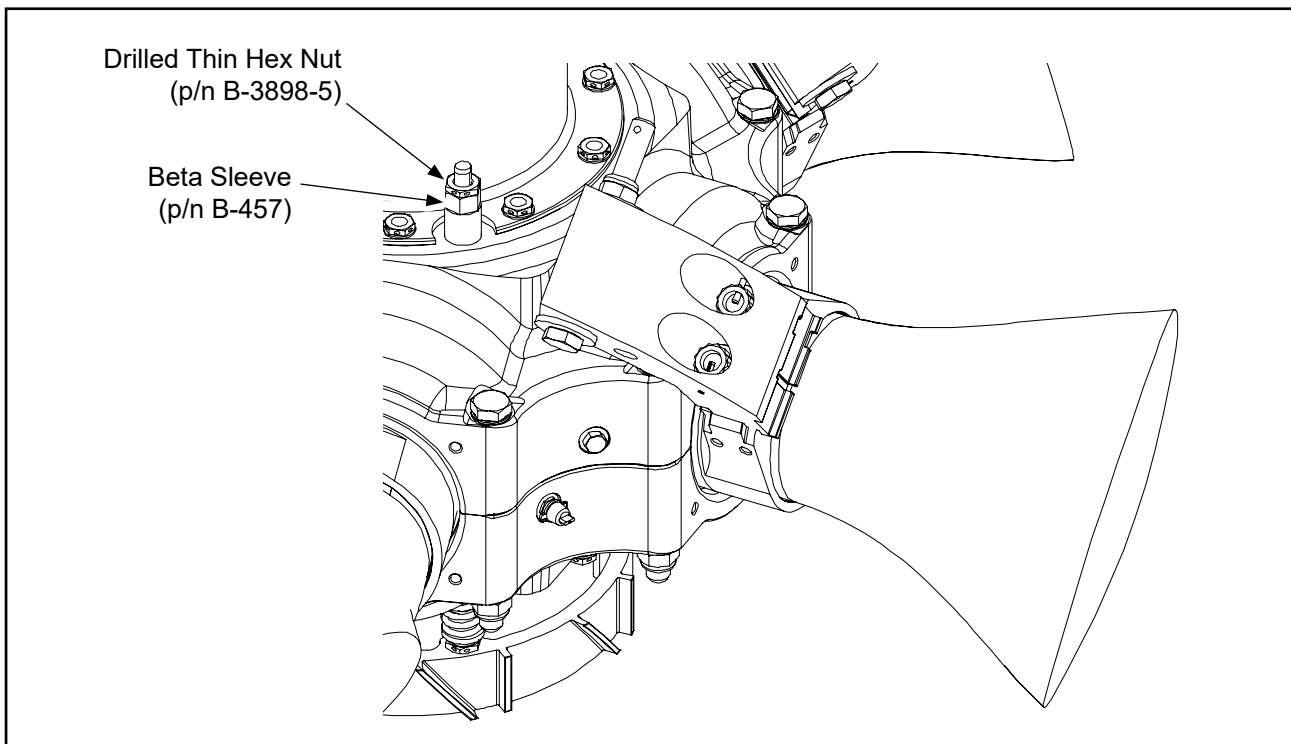


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C. Setting/Checking Low Pitch Blade Angle

- (1) Refer to the applicable Aircraft Type Certificate Data Sheet or Hartzell Propeller Inc. Application Guide Manual 159 (61-02-59) for the specific low pitch blade angle and reference blade radius required
- (2) Pressurize the propeller to the low pitch blade angle.
  - (a) Lock the air pressure into propeller to maintain the low pitch blade angle.
- (3) Rotate each beta sleeve (p/n B-457) into the hub until it touches the fork plate (p/n 106067 - not shown). Refer to Figure 4.
- (4) Tighten the drilled thin hex nuts (p/n B-3898-5) against the beta sleeves. Refer to Figure 4.
  - (a) Torque the drilled thin hex nuts to 108-132 In-Lbs (13-14 N•m).
- (5) Release the air pressure, then repressurize the propeller to the low pitch blade angle.

**NOTE:** The beta sleeves and fork plate should just contact.



**Setting/Checking Low Pitch Blade Angle**  
**Figure 4**

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- (6) Recheck the low pitch blade angle and adjust the beta sleeves if required.
- (7) Apply 200 psi (13.78 bars) air (or oil) pressure to the propeller.
- (8) With the propeller in full reverse, check the run-out of the beta ring in accordance with the step below:
  - (a) Using a dial indicator on the aft-surface of the beta ring, check the height run-out of the beta ring. Refer to Figure 2
    - 1 The height run-out of the beta ring must be within 0.004 inch (0.10 mm).
- (9) Correct if necessary by readjusting the beta sleeves.
- (10) Recheck the low pitch and correct as necessary.

**D. Recommended Service Facilities**

- (1) Hartzell Propeller Inc. has a worldwide network of Recommended Service Facilities for overhaul and repair of our products.
- (2) Each service facility must meet standard FAA requirements and additional Hartzell Propeller requirements before being recommended by Hartzell Propeller Inc. Each service facility is audited by Hartzell Propeller Inc. to verify the continuation of the standards.
- (3) Hartzell Propeller Inc. recommends that you use one of these service facilities when having your propeller overhauled or repaired.
- (4) For a current list of Hartzell Propeller Inc. Recommended Service Facilities, contact Hartzell Propeller Inc. Product Support or refer to the Hartzell Propeller Inc. website at [www.hartzellprop.com](http://www.hartzellprop.com).

**E. Contact Information**

Hartzell Propeller Inc.  
Attn.: Hartzell Propeller Inc. Product Support  
One Propeller Place  
Piqua, Ohio 45356-2634 USA  
Phone: (001) 937.778.4379  
Fax: (001) 937.778.4215  
E-mail: [techsupport@hartzellprop.com](mailto:techsupport@hartzellprop.com)

**HARTZELL PROPELLER INC.**  
**SERVICE BULLETIN APPENDIX**  
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1. Warranty Program Information

A. Eligibility

- (1) Hartzell Propeller Inc. 5D31-NK366B1( )/86DB01B Raptor turbine propellers are eligible for this warranty program.

B. Parts

- (1) Hartzell Propeller Inc. will provide all of the parts listed in the Material Information section of this Service Bulletin free of charge for each affected propeller.
- (2) Complete and sign the Parts Order/Compliance Form in this Service Bulletin Appendix and send it to Hartzell Propeller Inc. for processing.

C. Labor

- (1) No additional man-hours are required when performed at overhaul.

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**Compliance Form**

<b>Warranty Claim Number:</b>		
<b>Propeller/Aircraft Information:</b>		
Propeller Model:	Propeller S/N:	
Aircraft Model:	TSN (Time Since New):	
Aircraft Registration #:		
<b>Owner Information:</b>		
Name:		
City:	State:	
Zip/Postal Code:	Country:	
E-mail:	Phone:	
<b>Repair Facility:</b>		
Company:	Contact Name:	
Address:		
City:	State:	
Zip/Postal Code:	Country:	
E-mail:	Phone:	Fax:
<b>Replacement Parts:</b>		
Refer to the Material Information section in this Service Bulletin for a list of parts that will be provided.		
<b>Signature:</b>		
Repair Technician's Signature:	Date:	
Send this completed <b>and signed</b> form to Hartzell Propeller Inc. Product Support Department: Fax - (001) 937.778.4215 or E-mail - techsupport@hartzellprop.com		

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Authorized By:
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