HARTZELL PROPELLER INC.

ALERT SERVICE BULLETIN

HC-ASB-61-405

109438 Beta Rod Support Ring

1. Planning Information

   A. Effectivity

      (1) Hartzell Propeller Inc. 5D31-NK366B1( ) Raptor turbine propellers with serial numbers listed in Table 1 are affected by this Alert Service Bulletin.

   WARNING: DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL INSPECTIONS OR WORK IN ACCORDANCE WITH THE MOST RECENT REVISION OF THIS ALERT SERVICE BULLETIN. INFORMATION CONTAINED IN THIS ALERT SERVICE BULLETIN MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. FAILURE TO COMPLY WITH THIS ALERT 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 ALERT SERVICE BULLETIN INDEX FOR THE MOST RECENT REVISION LEVEL OF THIS ALERT SERVICE BULLETIN.

   B. Concurrent Requirements

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

TZ1	TZ16	TZ31	TZ45	TZ59	TZ73	TZ88	TZ107
TZ2	TZ17	TZ32	TZ46	TZ60	TZ74	TZ89	TZ108
TZ3	TZ18	TZ33	TZ47	TZ61	TZ75	TZ90	TZ109
TZ4	TZ19	TZ34	TZ48	TZ62	TZ76	TZ91	TZ110
TZ5	TZ20	TZ35	TZ49	TZ63	TZ77	TZ92	TZ111
TZ6	TZ22	TZ36	TZ50	TZ64	TZ78	TZ93	TZ112
TZ7	TZ23	TZ37	TZ51	TZ65	TZ79	TZ94	TZ113
TZ8	TZ24	TZ38	TZ52	TZ66	TZ80	TZ95	TZ114
TZ9	TZ25	TZ39	TZ53	TZ67	TZ81	TZ96	TZ123
TZ10	TZ26	TZ40	TZ54	TZ68	TZ82	TZ97	TZ124
TZ12	TZ27	TZ41	TZ55	TZ69	TZ84	TZ98	TZ125
TZ13	TZ28	TZ42	TZ56	TZ70	TZ85	TZ99	-
TZ14	TZ29	TZ43	TZ57	TZ71	TZ86	TZ101	-
TZ15	TZ30	TZ44	TZ58	TZ72	TZ87	TZ102	-

Serial Numbers of Affected Propellers
Table 1

C. Reason

(1) During operation, centrifugal force on the 107372 beta rods can create friction that affects the response of the electronic beta system used on the affected propellers.

(a) Centrifugal force causes the top (cylinder-end) of the 107372 beta rods to move outward, creating friction against the B-457 beta sleeves as the beta rods move. Refer to Figure 1.

(2) Hartzell Propeller Inc. is introducing a design change to reduce friction and increase the return spring force of the electronic beta system used on the affected propellers. Refer to Figure 2.

(a) The new design incorporates a beta rod support ring (p/n 109438) to prevent outward movement of the beta rods at the cylinder-end, stronger compression springs (p/n 109235) for increased return force, and a redesigned spring guide sleeve (p/n A-466-1, Rev. I) with a smaller OD to reduce friction.

D. Description

(1) This Alert Service Bulletin provides Instructions for Continued Airworthiness (ICA).

(2) This Alert Service Bulletin introduces the 109438 beta rod support ring for the affected propellers.

(3) This Alert Service Bulletin introduces the 109235 beta compression spring as a replacement for the B-458 beta compression spring on the affected propellers.

(4) This Alert Service Bulletin introduces the A-466-1 (Rev. I) spring guide sleeve as a replacement for the A-466-1 (Rev. H and prior) spring guide sleeve on the affected propellers.

(5) This Alert Service Bulletin provides instructions to install the 109438 beta rod support ring and the 109235 beta compression spring on affected propellers.

(6) This Alert Service Bulletin provides inspection criteria for the 109438 beta rod support ring.

(7) Hartzell 5D31-NK366B1( ) Raptor turbine propellers manufactured after the release date of this Alert Service Bulletin will incorporate the 109438 beta rod support ring and the 109235 beta compression spring.

(8) Hartzell Propeller Inc. will provide the parts listed in the Material Information section and warrant the labor costs associated with the installation of the 109438 beta rod support ring and 109235 beta compression spring.

(a) Refer to the Appendix section of this Alert Service Bulletin for additional information about the warranty program.

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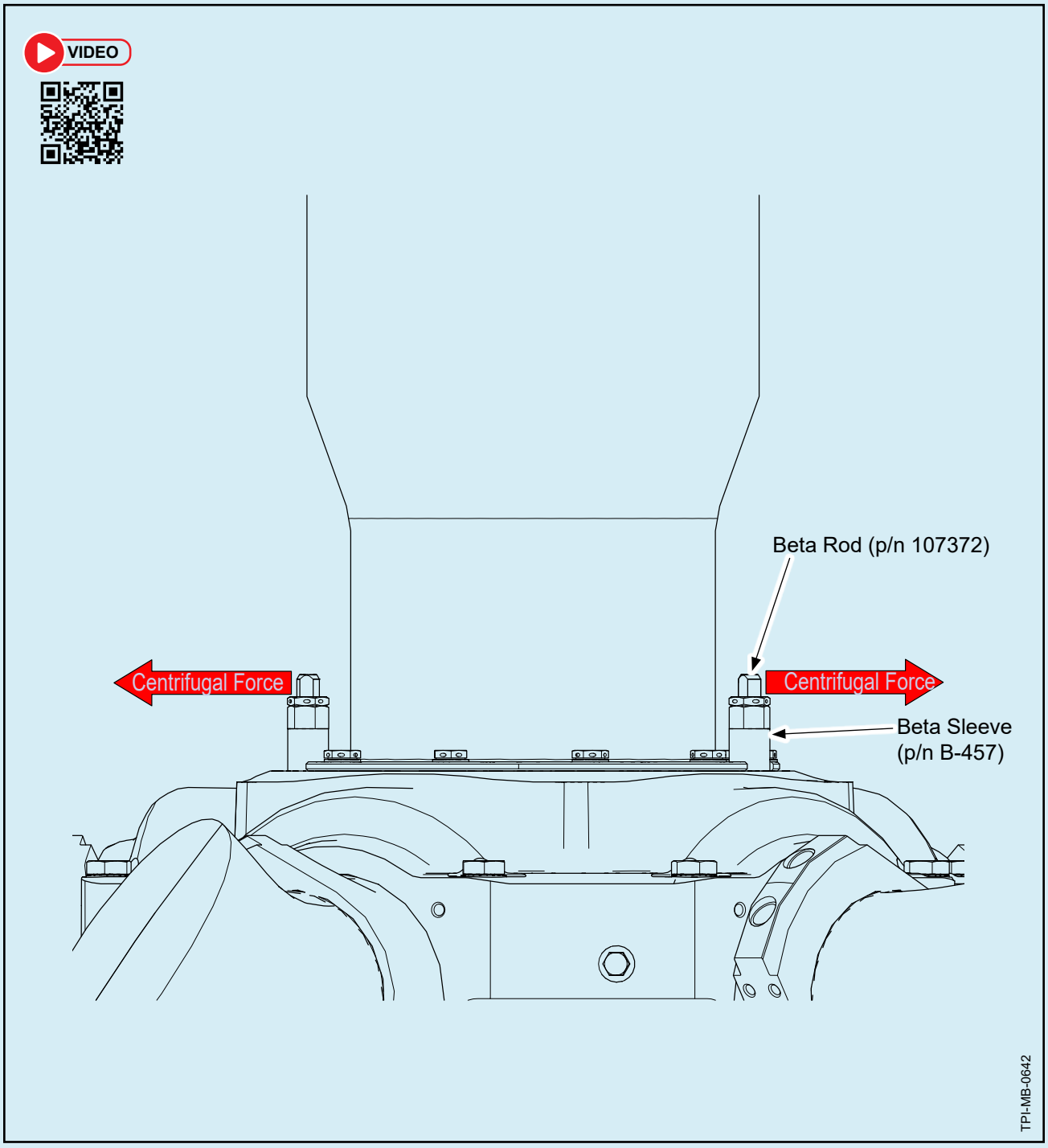

Centrifugal Force on Beta Rods
Figure 1

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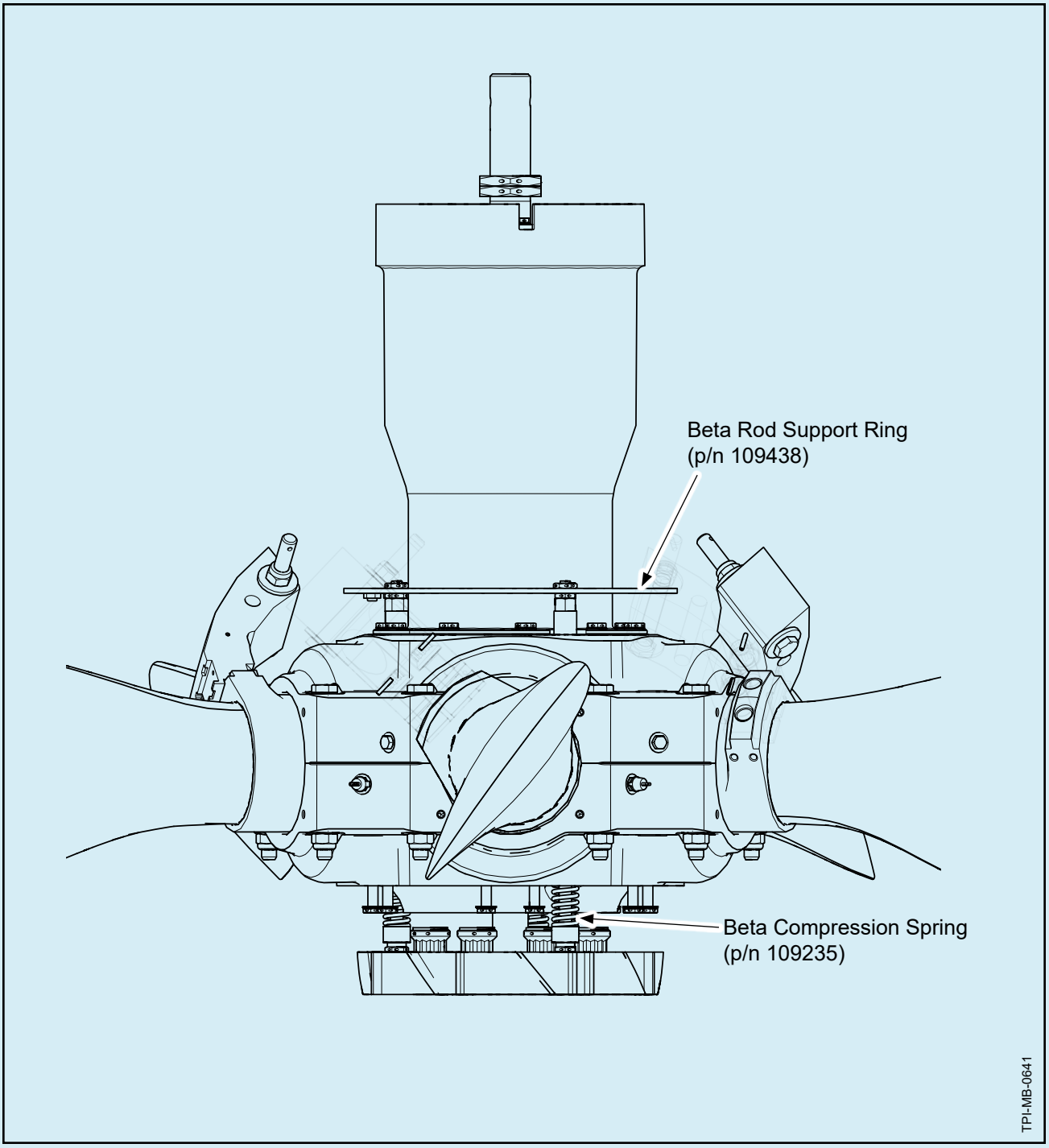
109438 Beta Rod Support Ring



109438 Beta Rod Support Ring and 109235 Beta Compression Spring
Figure 2

E. Compliance

(1) Within 50 flight hours or 180 days from the release date of this Alert Service Bulletin, whichever occurs first, install the 109438 beta rod support ring, 109235 beta compression springs, and A-466-1 (Rev. I or later) spring guide sleeves in accordance with the Accomplishment Instructions section of this Alert Service Bulletin.

(2) When inspection of the 109438 beta rod support ring is required, inspect in accordance with Table 2 in the Accomplishment Instructions section of this Alert Service Bulletin.

F. Approval

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

G. Manpower

Procedure	Allowable Man-hours
Propeller Removal/Installation	4.0 hours
Dynamic Balance	3.0 hours
Installing 109438 Beta Rod Support Ring and 109235 Beta Compression Spring	5.0 hours

CAUTION: DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL INSPECTIONS OR WORK IN ACCORDANCE WITH THE MOST RECENT REVISION OF A DOCUMENT.

H. References

(1) Hartzell Propeller Inc. Illustrated Tool and Equipment Manual 165A (61-00-65) - Available on the Hartzell Propeller Inc. website at www.hartzellprop.com

(2) Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02) - Volume 7, Consumable Materials is available on the Hartzell Propeller Inc. website at www.hartzellprop.com

(3) Hartzell Propeller Inc. Owner's Manual 486 (61-00-86) - Available on the Hartzell Propeller Inc. website at www.hartzellprop.com

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

I. Other Publications Affected

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

2. Material Information

A. Parts Supplied by Hartzell Propeller Inc.

Part Number	Description	Qty	Replace at O/H
109485-Kit	ASB-405 Kit *(includes bulleted items listed below)*	1	-
109438	• Beta Rod Support Ring	1	No
109235	• Beta Compression Spring	3	Yes
A-466-1 (Rev. I or later)	• Spring Guide Sleeve	3	Yes
CM118	• Anti-seize Compound, 1/3 oz.	1	-
C-3317-050	• O-ring (cylinder mounting)	1	Yes
C-3317-230	• O-ring (mounting flange)	1	Yes

B. Locally Procurred Parts

Description	Qty
1"-12 Thread, Hex Nut - NAS1423-16	2
Metal Pin or Drill Bit	1

C. Consumable Materials

CM Number	Description
CM12	Grease (NYCO, GN3058)
CM106	Methyl-Ethyl-Ketone (MEK)
CM118	Anti-sieze Compound
CM219	Methyl-Propyl-Ketone (MPK)

NOTE: All CM numbers in this Alert Service Bulletin refer to the Consumable Materials chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).

D. Special Tooling

TE Number	Description
TE125	Rotatable Fixture
TE129	Assembly Table
TE148-1	Strap Wrench
TE658	Spring Installation Tool

NOTE: All TE numbers in this Alert Service Bulletin refer to Hartzell Propeller Inc. Illustrated Tool and Equipment Manual 165A (61-00-65).

3. Accomplishment Instructions

A. Parts Order/Compliance Form

(1) Complete and sign the Parts Order/Compliance Form in the Appendix section of this Alert Service Bulletin.

(a) Send the completed form to Hartzell Propeller Inc. to initiate the order for the required parts.

B. Installing the 109438 Beta Rod Support Ring/109235 Beta Compression Springs

(1) Remove the spinner dome in accordance with Hartzell Propeller Inc. Owner's Manual 486 (61-00-86).

(2) Remove the propeller in accordance with with Hartzell Propeller Inc. Owner's Manual 486 (61-00-86).

WARNING: THE USE OF BLADE PADDLES TO MOVE BLADES CAN RESULT IN THE OVERLOAD AND DAMAGE OF THE BLADE PITCH CHANGE MECHANISM. THIS DAMAGE IS NOT REPAIRABLE AND CAN RESULT IN SEPARATION BETWEEN THE BLADE AND THE PITCH CHANGE MECHANISM, CAUSING LOSS OF PITCH CONTROL DURING FLIGHT.

CAUTION 1: USE COMPRESSED AIR THAT HAS BEEN FILTERED FOR MOISTURE, OR NITROGEN TO ACTUATE THE PROPELLERS.

CAUTION 2: DO NOT USE MORE THAN 200 PSI (13.8 BARS) WHEN ACTUATING AFFECTED PROPELLERS.

CAUTION 3: USE ENOUGH PRESSURE TO MAKE SURE THAT THE PROPELLER ACTUATES AGAINST EACH POSITIVE STOP.

NOTE: This procedure must be performed by a certified propeller repair station with the appropriate rating.

(3) Put the propeller on the rotatable fixture TE125 on the assembly table TE129 for disassembly.

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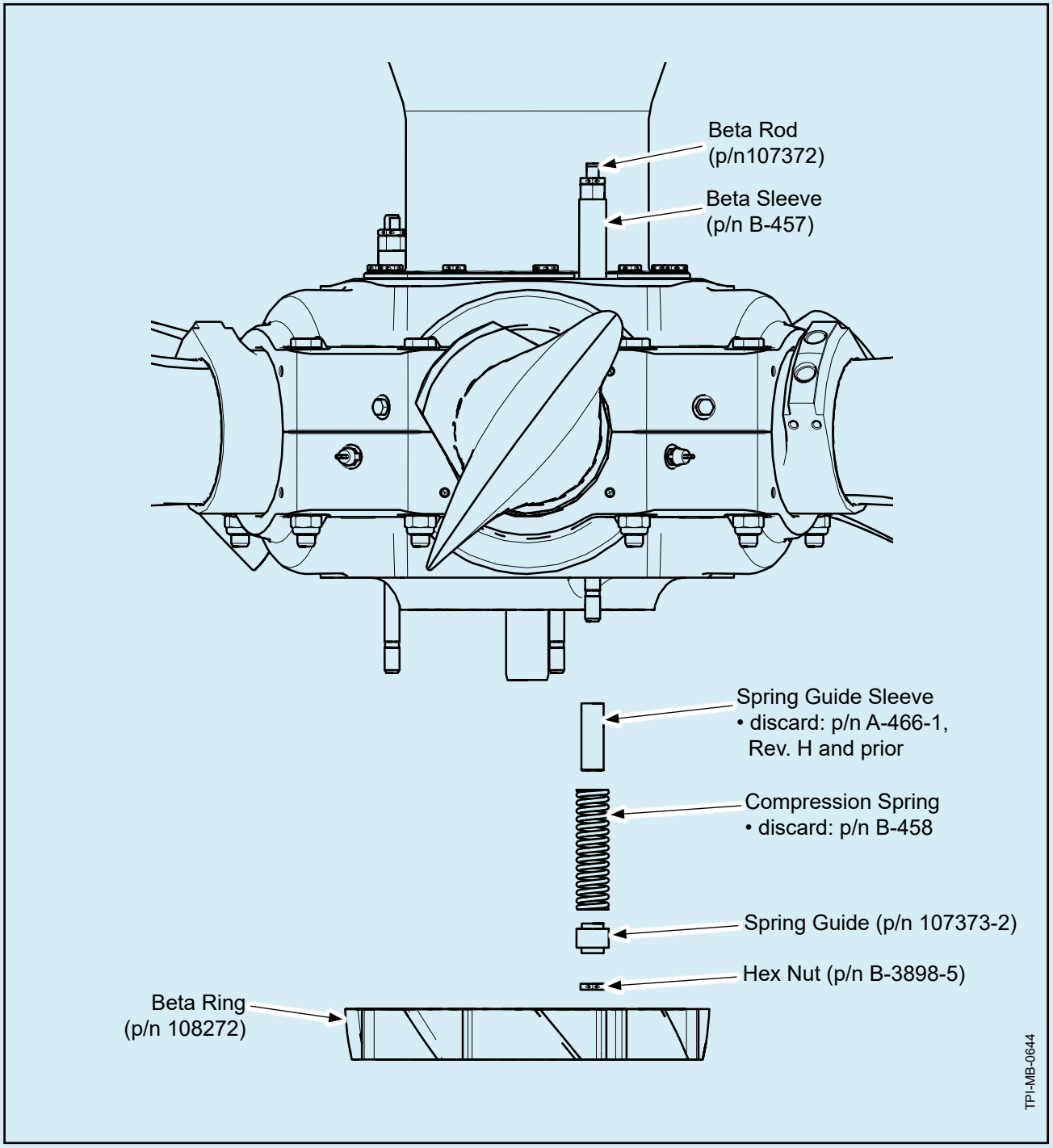

Beta System Component Removal
Figure 3

(4) Remove the beta system components in accordance with Figure 3 and the following steps:

(a) Using a 1/4 inch open-end wrench on the flats at the cylinder-end of the beta rods (p/n 107372), hold the rods in place then loosen the three hex nuts (p/n B-3898-5).

CAUTION 1: TURN THE THREE BETA RODS ALTERNATELY TO PREVENT DAMAGE TO THE BETA RING.

CAUTION 2: DO NOT ALLOW THE BETA RING TO FALL ONTO THE BENCH DURING DISASSEMBLY.

(b) Using a 1/4 inch open-end wrench on the flats on the cylinder-end of the beta rods (p/n 107372), turn the beta rods out of the beta ring (p/n 108272).

(c) Remove the beta ring from the beta rods.

(d) Remove the three hex nuts (p/n B-3898-5) and three spring guides (p/n 107373-2).

1 Optionally, use the spring installation tool TE658 to compress the compression springs (p/n B-458) before removing the hex nuts (p/n B-3898-5). Refer to the section, "Using the Spring Installation Tool" Hartzell Propeller Inc. Raptor Series Turbine Propeller Overhaul Manual 496 (61-10-96).

(e) Remove and discard the three compression springs (p/n B-458) and the three spring guide sleeves (p/n A-466-1).

(f) Remove the three beta rods and beta sleeves (p/n B-457) from the hub assembly.

1 Using solvent CM106 MEK or CM219 MPK, clean the beta rods and beta sleeves.

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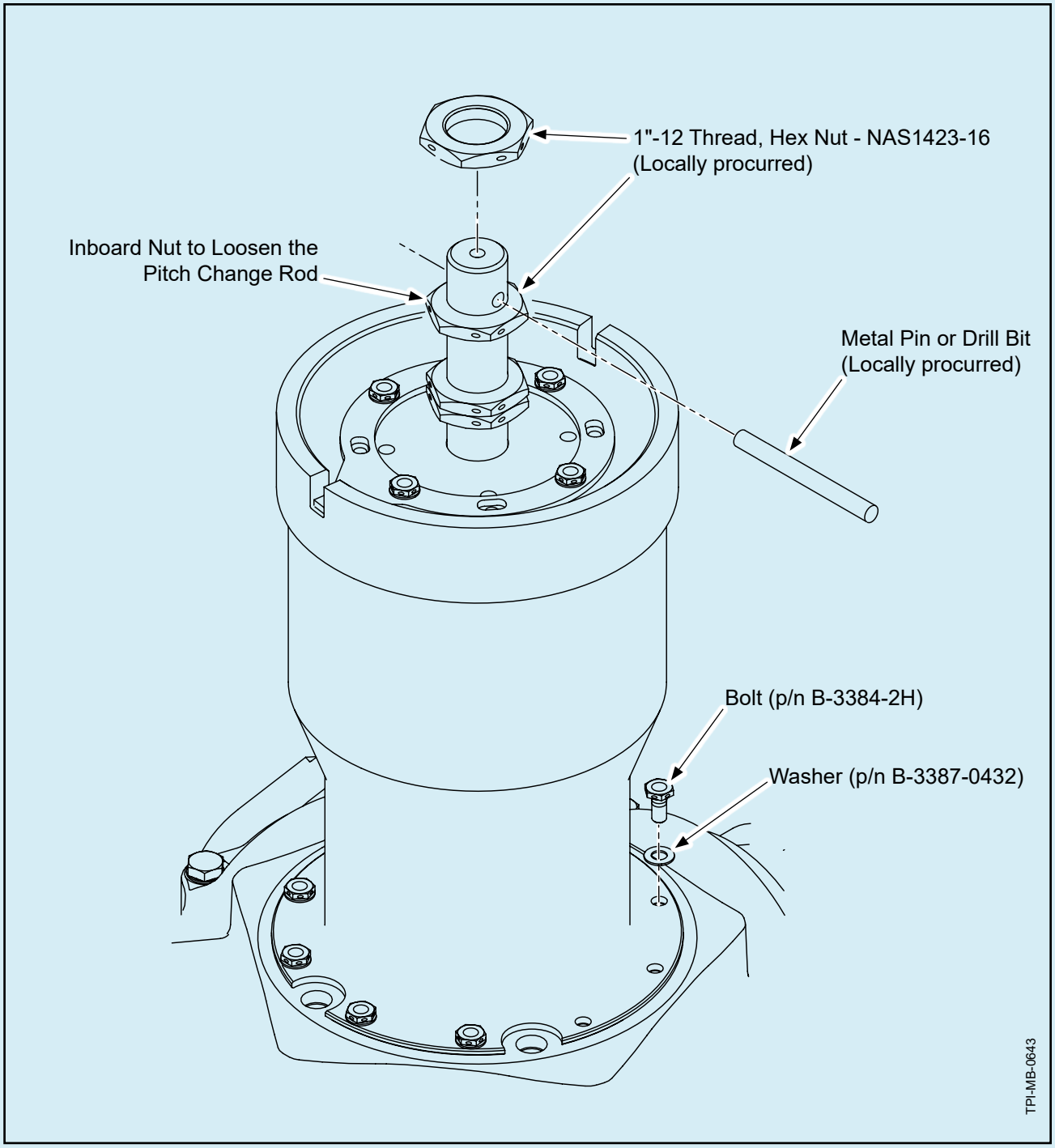

Cylinder/Pitch Change Rod Removal
Figure 4

(5) Remove the cylinder/pitch change rod assembly in accordance with Figure 4 and the following steps:

(a) Thread one 1"-12 thread hex nut onto the pitch change rod until it is below the hole in the pitch change rod.

(b) Insert a metal pin or drill bit through the hole in the pitch change rod.

(c) Thread another 1"-12 thread hex nut onto the pitch change rod until it contacts the metal pin or drill bit

(d) Remove the bolts (p/n B-3384-2H) and washers (p/n B-3837-0432).

(e) Use a wrench on the inboard hex nut installed in step 5.(a) to loosen the pitch change rod from the fork.

(f) Turn the cylinder (by hand) to unthread the pitch change rod from the fork.

(g) Carefully remove the pitch change rod/cylinder assembly.

1 Clean the threads of the pitch change rod to remove anti-sieze compound.

(h) Remove and discard the cylinder mounting O-ring (p/n C-3317-050) from the hub.

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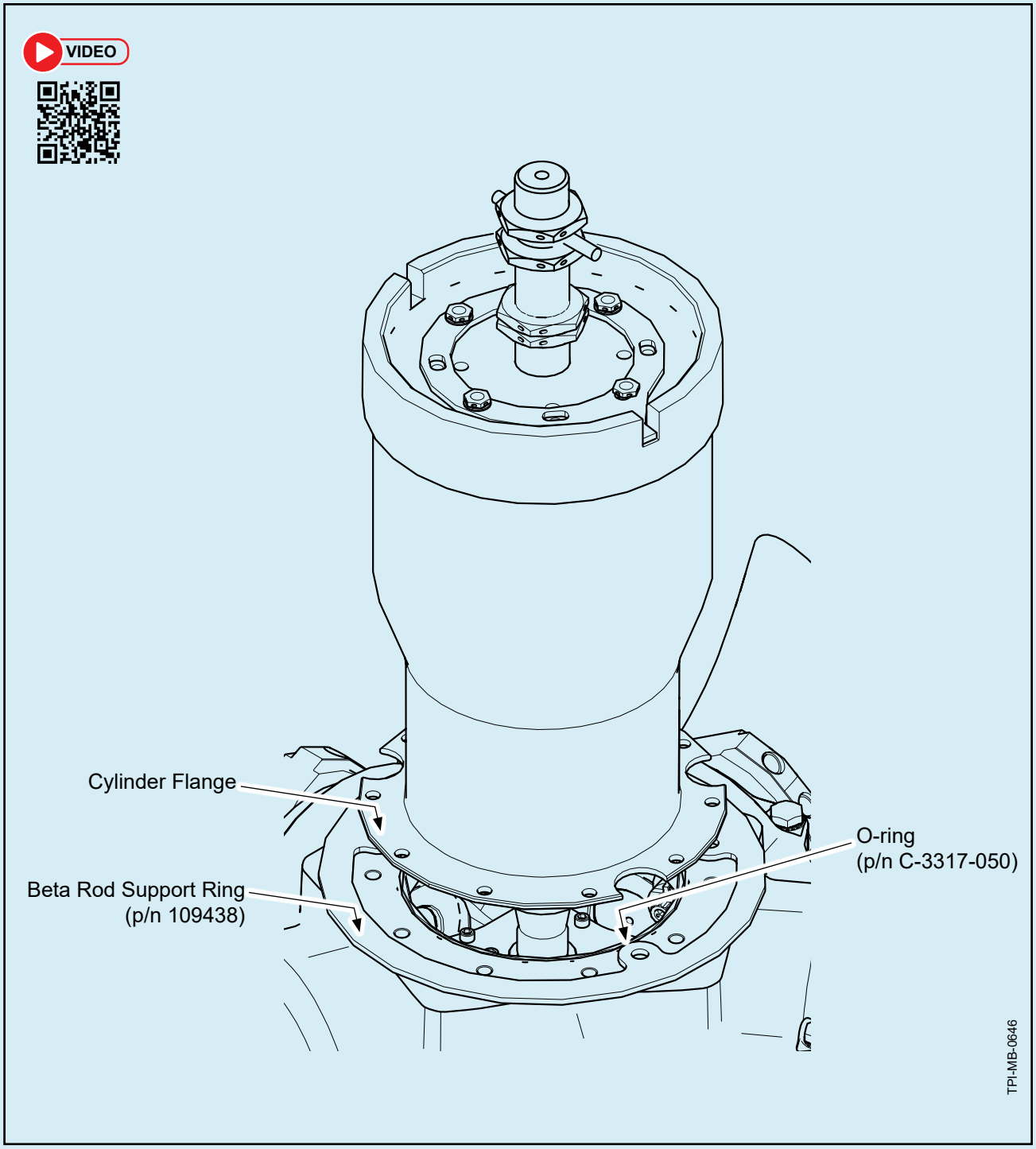

Cylinder/Pitch Change Rod Installation
Figure 5, page 1 of 2

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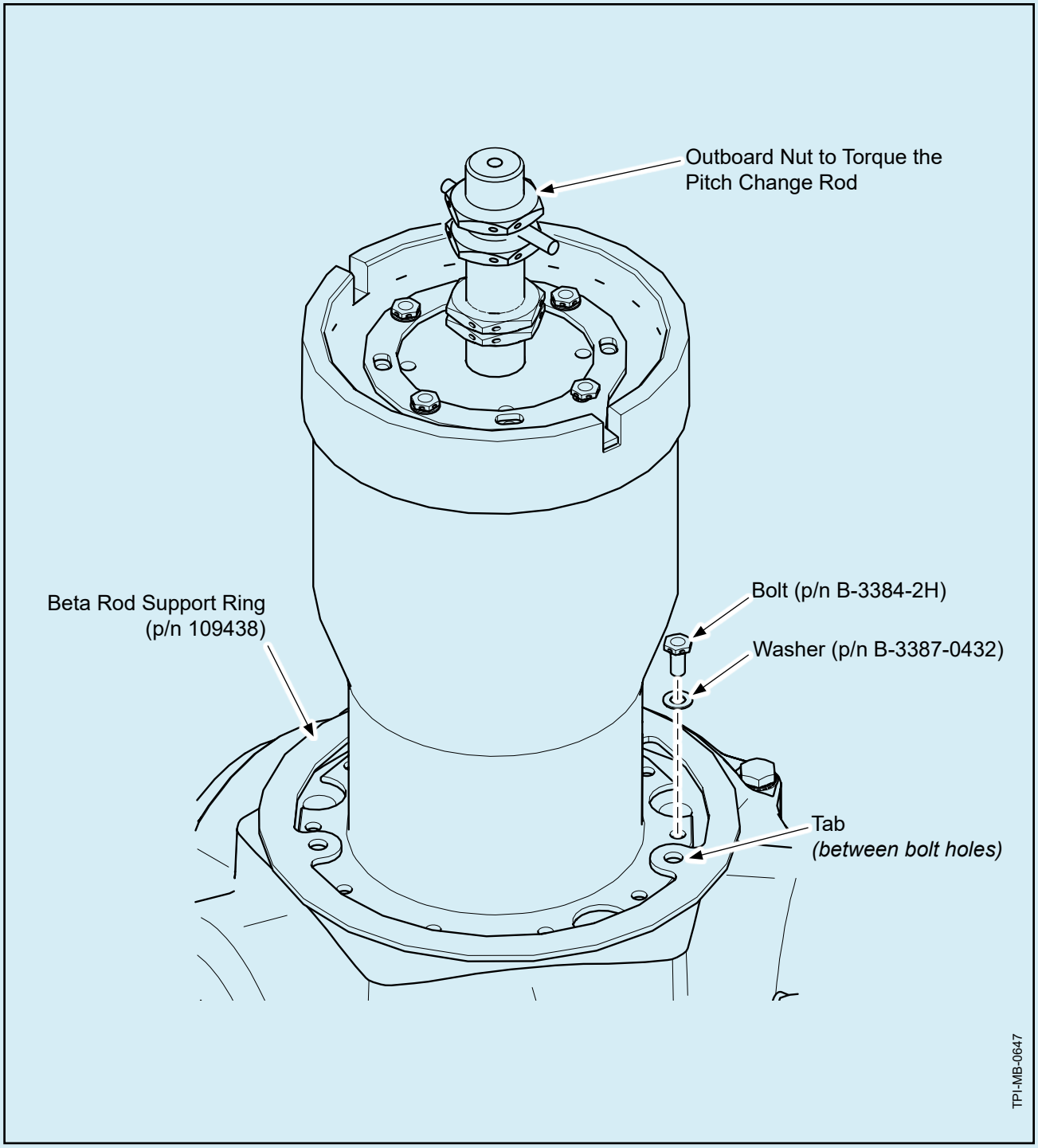
109438 Beta Rod Support Ring



Cylinder/Pitch Change Rod Installation
Figure 5, page 2 of 2

(6) Install the beta rod support ring (p/n 109438) and the pitch change rod/cylinder assembly in accordance with Figure 5 and the following steps:

(a) Apply NYCO grease CM12 to the cylinder mounting O-ring (p/n C-3317-050), then install the O-ring in the cylinder-side of the hub.

(b) Place the beta rod support ring (p/n 109438) on top of the hub.

(c) Apply anti-seize compound CM118 to the external threads adjacent to the tapered section of the pitch change rod.

(d) Install the pitch change rod/cylinder assembly, carefully aligning the pitch change rod with the hole in the fork and the engine-side hub bushing.

1 Turn the cylinder (by hand) to thread the pitch change rod into the fork.

(e) Rotate the beta rod support ring (p/n 109438) to align the tabs with the cutouts in the cylinder flange, then lift and rotate the beta rod support ring so that it is on top of the cylinder flange.

1 Position the tabs of the beta rod support ring between bolt holes in the cylinder flange.

(f) Use a wrench on the outboard hex nut installed during cylinder removal to torque the pitch change rod to 72-88 Ft-Lbs (98-119 N•m).

1 Remove the metal pin/drill bit and the two locally procurred hex nuts installed to loosen/tighten the pitch change rod into the fork.

(g) Use a strap wrench TE148-1 or equivalent, turn the cylinder to align the cutouts in the cylinder flange with the beta rod holes in the hub.

(h) Install ten hex bolts (p/n B-3384-2H) and ten washers (p/n B-3837-0432).

1 Torque the hex bolts (p/n B-3384-2H) to 12-14 Ft-Lbs (17-19 N•m).

(i) Rotate the beta rod support ring (p/n 109438) to align the tabs with the cutouts in the cylinder flange, then safety wire the ten hex bolts (p/n B-3384-2H).

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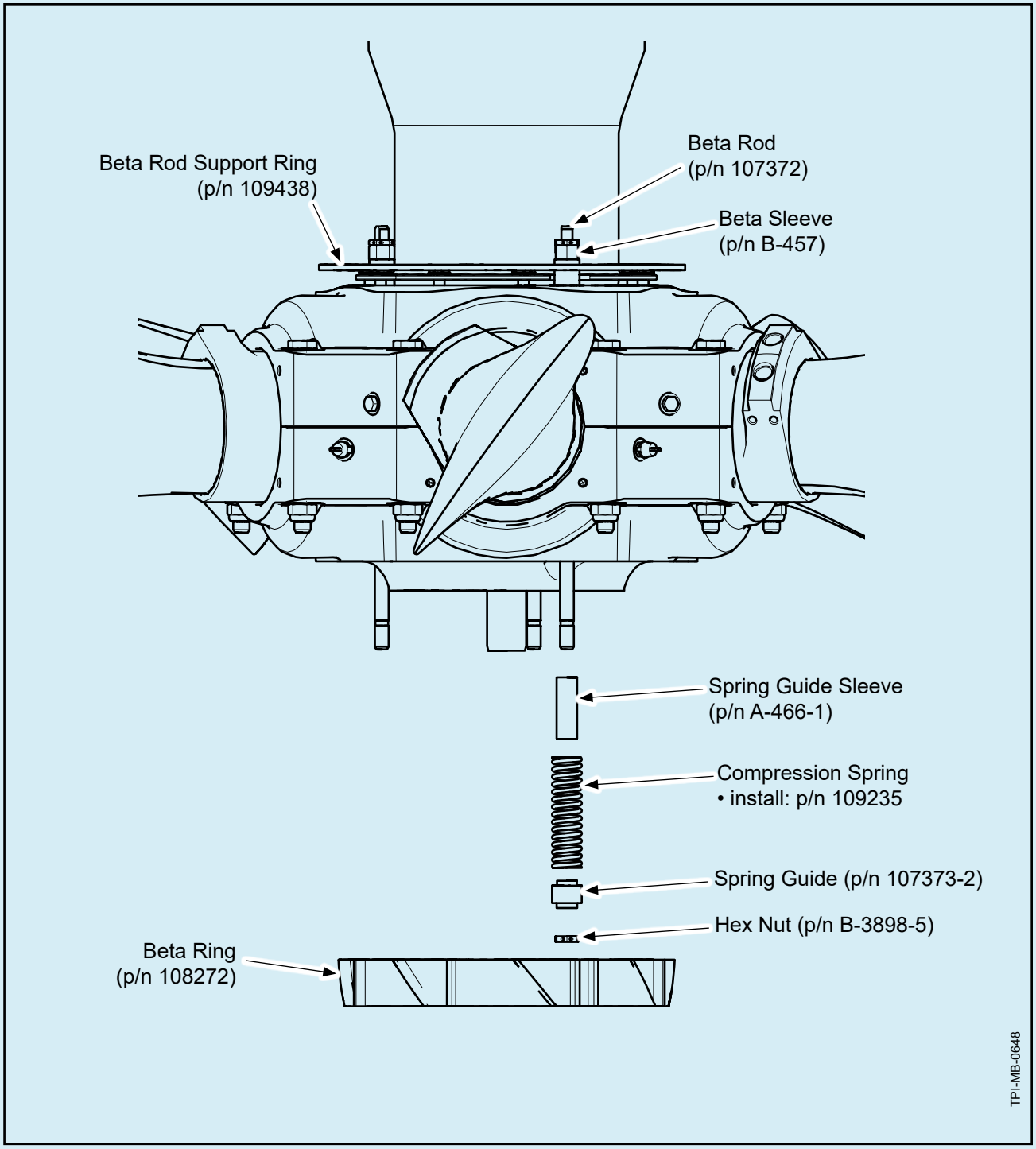


Beta System Component Installation
Figure 6

(7) Install the beta system components in accordance with Figure 6 and the following steps:

(a) Apply a light coat of NYCO grease CM12 to the three beta sleeves (p/n B-457).

(b) Lift and rotate the beta rod support ring (p/n 109438), then install three beta sleeves (p/n B-457) and beta rods (p/n 107372) thru the hub unit.

(c) Install a spring guide sleeve (p/n A-466-1, Rev. I or later), compression spring (p/n 109235), spring guide (p/n 107373-2), and hex nut (p/n B-3898-5) onto the engine-side of each beta rod.

1 Optionally, use the spring installation tool TE658 to compress the compression spring (p/n 109235) when installing the hex nuts (p/n B-3898-5). Refer to the section, "Using the Spring Installation Tool" Hartzell Propeller Inc. Raptor Series Turbine Propeller Overhaul Manual 496 (61-10-96).

CAUTION: ROTATE THE BETA RODS ALTERNATELY, NO MORE THAN TWO FULL TURNS AT A TIME TO AVOID WARPING THE BETA RING.

(d) Install the beta ring (p/n 108272) on the engine-side of the beta rods.

1 Using a 1/4 inch open-end wrench on the flats on the cylinder-end of the beta rods (p/n 107372), turn the beta rods into the beta ring (p/n 108272).

CAUTION: PROPER ADJUSTMENT OF BETA RING HEIGHT, HEIGHT RUN-OUT, AND O.D. RUN-OUT ARE CRITICAL WHEN ASSEMBLING MODEL ( )D31-( )( )( ) PROPELLERS. DO NOT DEVIATE FROM THE REQUIRED DIMENSIONAL VALUES AND TOLERANCES, AS BETA SYSTEM MALFUNCTION CAN RESULT.

(8) Set the beta ring height and check the beta ring run-out in accordance with the Assembly chapter in Hartzell Propeller Inc. Raptor Series Turbine Propeller Overhaul Manual 496 (61-10-96).

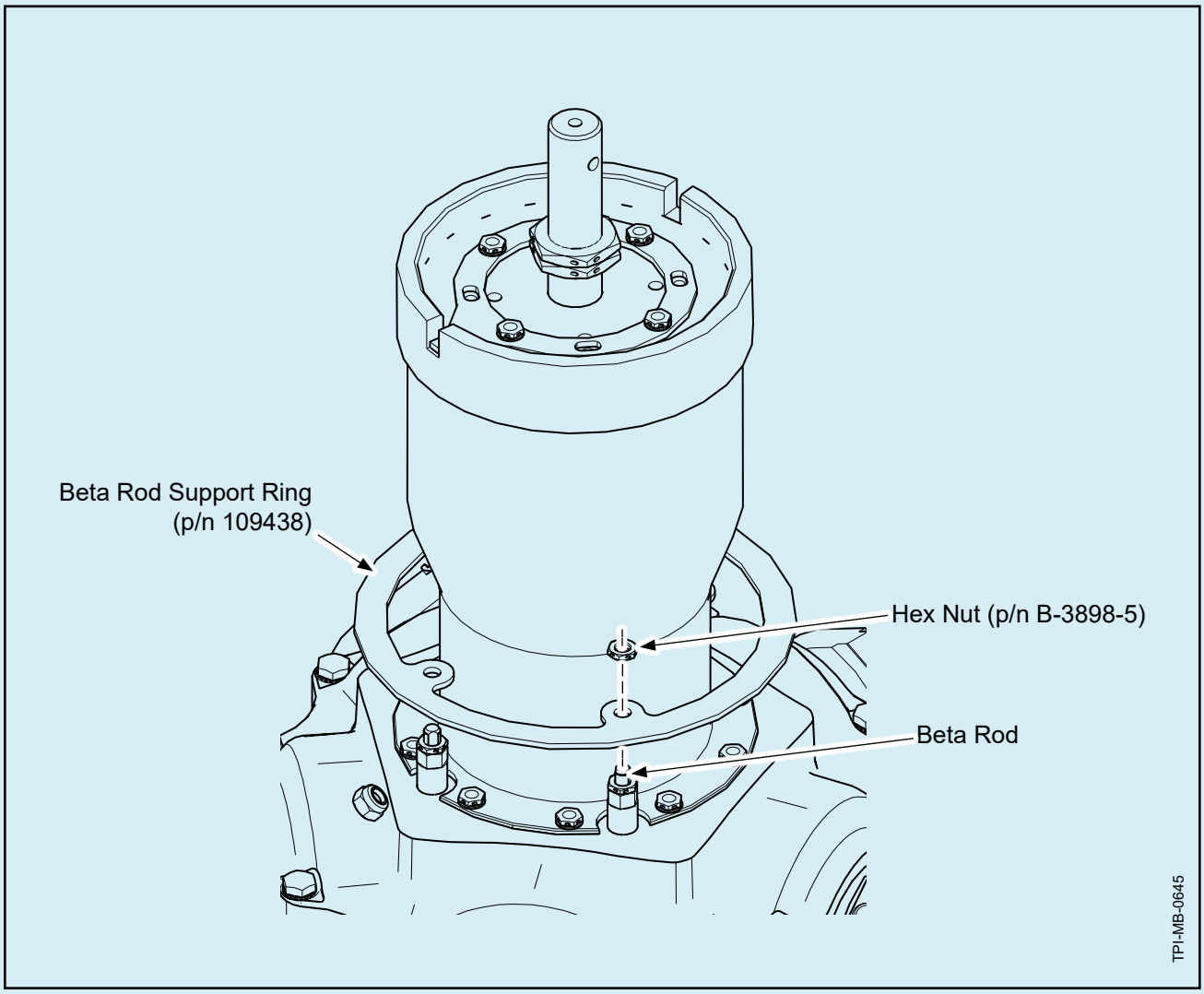
(9) Check the propeller blade angles (reverse, feather, and low pitch) in accordance with the Assembly chapter in Hartzell Propeller Inc. Raptor Series Turbine Propeller Overhaul Manual 496 (61-10-96).

(10) Install the beta rod support ring (p/n 109438) in accordance with Figure 7 and the following steps:

(a) Install the beta rod support ring (p/n 109438) on the three beta rods.

(b) Install three hex nuts (p/n B-3898-5) onto the beta rods.

1 Torque the hex nuts (p/n B-3898-5) to 108-132 In-Lbs (13-14 N•m).



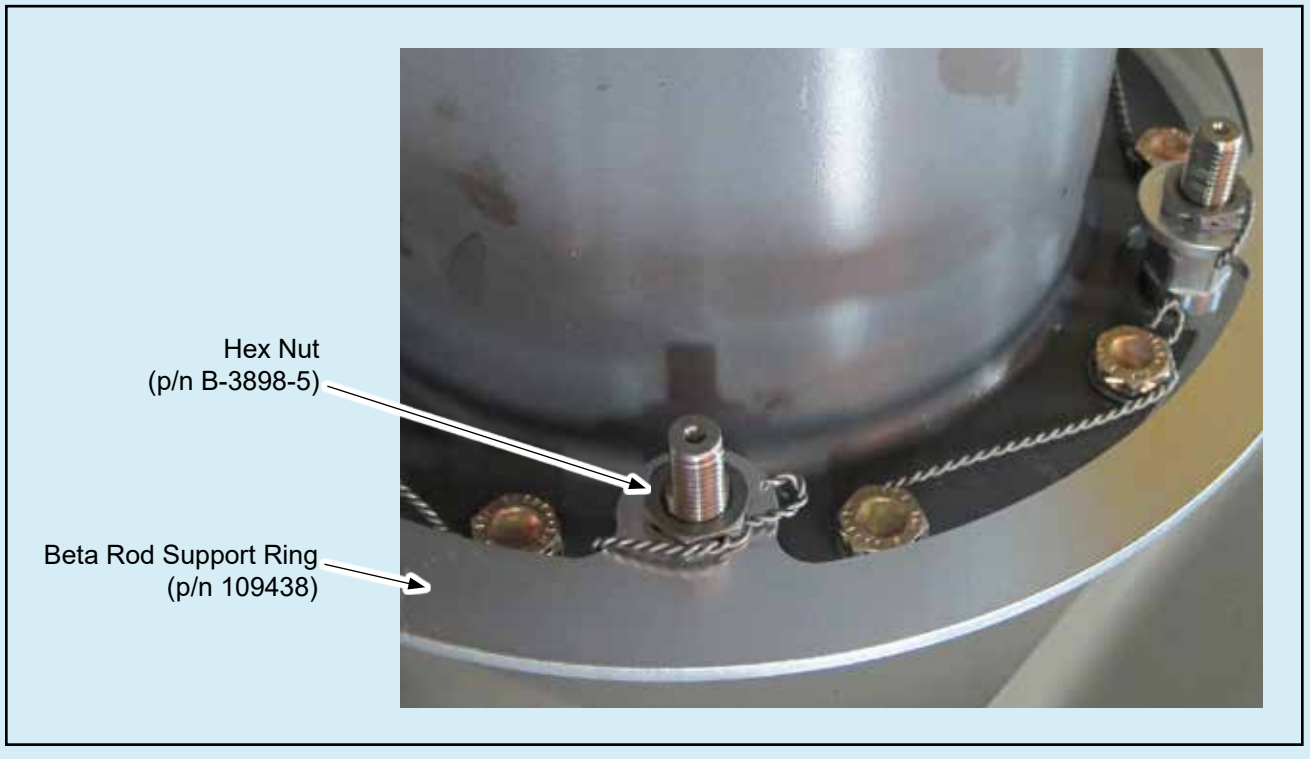
Beta Rod Support Ring Installation
Figure 7

(11) Safety wire the three hex nuts (p/n B-3895-5) on both sides of the beta rod support ring as shown in Figure 8.

(12) Install the propeller in accordance with with Hartzell Propeller Inc. Owner's Manual 486 (61-00-86).

(13) Install the spinner dome in accordance with Hartzell Propeller Inc. Owner's Manual 486 (61-00-86).

(14) Make an entry in the propeller logbook indicating installation of the 109438 beta rod support ring and 109235 beta compression springs as Terminating Action for this Alert Service Bulletin.



Safety Wire on Beta Rod Support Ring Nuts
Figure 8

C. Inspection Criteria for the 109438 Beta Rod Support Ring

(1) When inspection of the 109438 beta rod support ring is required, inspect the ring in accordance with Table 2 in this Alert Service Bulletin.

	Inspect	Serviceable Limits	Corrective Action
109438 BETA ROD SUPPORT RING			
(1)	Visually examine the beta rod support ring for corrosion product and pitting.	Corrosion product is not permitted. Pitting may not cover more than 10% of the beta rod support ring surface. The maximum permitted depth of pitting is 0.005 inch (0.12 mm).	Remove corrosion product using glass bead cleaning. Refer to the Cleaning chapter of Hartzell Standard Practices Manual 202A (61-01-02). If the corrosion product or depth of pitting is greater than the permitted serviceable limits, replace the beta rod support ring.
(2)	Visually examine the beta rod support ring for wear.	If there is wear, measure the wear. The maximum permitted depth of material loss is 0.005 inch (0.12 mm).	If the wear is greater than the permitted serviceable limits, replace the beta rod support ring.
(3)	Visually examine the beta rod support ring for flatness.	The beta rod support ring must be flat. Dimensional measurement of flatness is not required.	If the beta rod support ring is not flat, replace the beta rod support ring.
(4)	Visually examine the beta rod support ring for cadmium plating coverage.	Loss of cadmium plating that is caused by the clamping nuts around each of the three holes is permitted. Sparse and light, random scratches are permitted. In all other areas, complete coverage of the cadmium plating is required.	If the cadmium plating coverage is less than the permitted serviceable limits, cadmium replate the beta rod support ring in accordance with the Cadmium Replating chapter in Hartzell Standard Practices Manual 202A (61-01-02).

Inspection Criteria: 109438 Beta Rod Support Ring
Table 2

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.

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

HARTZELL PROPELLER INC.

ALERT SERVICE BULLETIN APPENDIX

HC-ASB-61-405

109438 Beta Rod Support Ring

1. Warranty Program Information
   A. Eligibility
      (1) Hartzell Propeller Inc. 5D31-NK366B1( ) Raptor turbine propellers with serial numbers listed in Table 1 of this Alert Service Bulletin are eligible for this warranty program.
   B. Parts
      (1) Hartzell Propeller Inc. will provide the parts listed in the Material Information section of this Alert Service Bulletin free of charge when the completed and signed Parts Order/Compliance form is processed.
   C. Labor
      (1) Hartzell Propeller Inc. will authorize payment for the allowable labor charges when the 109438 beta rod support ring/109235 compression spring are installed in accordance with the Accomplishment Instructions in this Alert Service Bulletin.
         (a) Refer to the Manpower section of this Alert Service Bulletin for warranted procedures and allowable man-hours.
         (b) Labor charges will be reimbursed at the service facility's CURRENT POSTED SHOP LABOR RATE, pending Hartzell Propeller Inc. approval.
         (c) Send the invoice for labor charges to Hartzell Propeller Inc. for processing.
   D. Shipping
      (1) Hartzell Propeller Inc. will authorize payment for expenses incurred to ship the evaluation propeller to/from a propeller repair station.
         (a) Send the invoice for shipping charges to Hartzell Propeller Inc. for processing

HARTZELL PROPELLER INC.

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Parts Order/Compliance Form

Warranty Claim Number:		
Propeller Information:		
Propeller Model:	Propeller S/N:	
TSN (Time Since New):	TSO (Time Since Overhaul):	
Aircraft Information		
Aircraft Model:	Aircraft Registration #:	
Owner Information:		
Name:		
City:	State:	
Zip/Postal Code:	Country:	
E-mail:	Phone:	
Repair Facility/Shipping Information:		
Company:	Contact Name:	
Address:		
City:	State:	
Zip/Postal Code:	Country:	
E-mail:	Phone:	Fax:
Replacement Parts:		
Refer to the Material Information section of this Service Bulletin for a list of parts that will be provided.		
Signature:		
Repair Technician's Signature:	Date:	

Send this completed **and signed** form to Hartzell Propeller Inc. Product Support Department:
Fax - (001) 937.778.4215 or E-mail - warranty@hartzellprop.com

DO NOT WRITE BELOW THIS LINE - FOR HARTZELL PROPELLER INC. USE ONLY

Authorized By: