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**MANUAL REVISION TRANSMITTAL**

Manual 411 (61-00-11)
Propeller Owner's Manual and Logbook

REVISION 5 dated December 2014

Attached is a copy of Revision 5 to Hartzell Propeller Inc. Manual 411.

Page Control Chart for Revision 5:

Remove	Insert
<u>Page No.</u>	<u>Page No.</u>
COVER/INSIDE COVER	COVER/INSIDE COVER
REVISION HIGHLIGHTS pages 5 thru 8	REVISION HIGHLIGHTS pages 5 thru 8
LIST OF EFFECTIVE PAGES pages 17 and 18	LIST OF EFFECTIVE PAGES pages 17 and 18
INSTALLATION AND REMOVAL pages 3-1 and 3-2 pages 3-5 and 3-6 pages 3-13 and 3-14 pages 3-21 thru 3-24 pages 3-29 and 3-30 pages 3-33 and 3-34 pages 3-37 thru 3-42	INSTALLATION AND REMOVAL pages 3-1 and 3-2 pages 3-5 and 3-6 pages 3-13 and 3-14 pages 3-20.1 thru 3-20.4 pages 3-21 thru 3-24 pages 3-29 and 3-30 pages 3-33 and 3-34 pages 3-36.1 and 3-36.2 pages 3-37 thru 3-42
<u>NOTE 1:</u> When the manual revision has been inserted in the manual, record the information required on the Record of Revisions page in this manual.	
<u>NOTE 2:</u> Pages distributed in this revision may include pages from previous revisions if they are on the opposite side of a revised page. This is done as a convenience to those users who wish to print a two-sided copy of the new revision.	

This page may be discarded after proper filing of the revision.

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Manual No. 411

61-00-11

Revision 5

December 2014

Propeller Owner's Manual and Logbook

Constant Speed, Non-counterweighted
() (A,B)1 Series "Bantam" Propellers
with Composite Blades

Hartzell Propeller Inc.

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REVISION 5 HIGHLIGHTS

- COVER
 - Revised to match this revision.
- REVISION HIGHLIGHTS
 - Revised to match this revision.
- LIST OF EFFECTIVE PAGES
 - Revised to match this revision.
- INSTALLATION AND REMOVAL
 - Updated the Torque Table, Table 3-1
 - Revised the section, "Painting of a Hartzell Propeller Inc. Composite Spinner Assembly"
 - Updated the Spinner Support Bracket/Bulkhead Mounting Hardware-Hub Mounted, Table 3-2
 - Added Figure 3-10.1, Spinner Mounting Ring Attachment to Hub and Bulkhead
 - Added instructions for attaching spinner mounting ring to bulkhead
 - Revised Table 3-3
 - Revised the name of Figure 3-12 and Figure 3-13
 - Added Figure 3-15, 105085 Spinner Assembly Installation
 - Added the 105085 spinner assembly and required installation and removal instructions
 - Revised the section, "Spinner Removal"

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REVISIONS HIGHLIGHTS1. Introduction

A. General

This is a list of current revisions that have been issued against this manual. Please compare it to the RECORD OF REVISIONS page to ensure that all revisions have been added to the manual.

B. Components

- (1) Revision No. indicates the revisions incorporated in this manual.
- (2) Issue Date is the date of the revision.
- (3) Comments indicates the level of the revision.
 - (a) New Issue is a new manual distribution. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.
 - (b) Reissue is a revision to an existing manual that includes major content and/or major format changes. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.
 - (c) Major Revision is a revision to an existing manual that includes major content or minor content changes over a large portion of the manual. The manual is distributed in its entirety. All the page revision dates are the same, but change bars are used to indicate the changes incorporated in the latest revision of the manual.
 - (d) Minor Revision is a revision to an existing manual that includes minor content changes to the manual. Only the revised pages of the manual are distributed. Each page retains the date and the change bars associated with the last revision to that page.

<u>Revision No.</u>	<u>Issue Date</u>	<u>Comments</u>
Original	May/12	New Issue
Revision 1	Oct/12	Minor Revision
Revision 2	Feb/14	Major Revision
Revision 3	May/14	Minor Revision
Revision 4	Aug/14	Minor Revision
Revision 5	Dec/14	Minor Revision

LIST OF EFFECTIVE PAGES

Chapter	Page	Revision	Date
Cover and Inside Cover Message	1 thru 4	Rev. 2	Feb/14
Revision Highlights	5 thru 8	Rev. 5	Dec/14
Record of Revisions	9 and 10	Rev. 2	Feb/14
Record of Temporary Revisions	11 and 12	Rev. 2	Feb/14
Service Documents List	13 and 14	Rev. 2	Feb/14
Airworthiness Limitations	15 and 16	Rev. 2	Feb/14
List of Effective Pages	17 and 18	Rev. 5	Dec/14
Table of Contents	19 and 20	Rev. 2	Feb/14
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Introduction	1-10 thru 1-16	Rev. 2	Feb/14
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Description and Operation	2-5 and 2-6	Rev. 3	May/14
Description and Operation	2-7 thru 2-14	Rev. 2	Feb/14
Installation and Removal	3-1 and 3-2	Rev. 5	Dec/14
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Testing and Troubleshooting	4-7 and 4-8	Rev. 3	May/14
Testing and Troubleshooting	4-9	Rev. 2	Feb/14
Testing and Troubleshooting	4-10 and 4-11	Rev. 3	May/14
Testing and Troubleshooting	4-12	Rev. 4	Aug/14
Inspection and Check	5-1 and 5-2	Rev. 4	Aug/14
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Maintenance Practices	6-1 and 6-2	Rev. 2	Feb/14
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INSTALLATION AND REMOVAL - CONTENTS

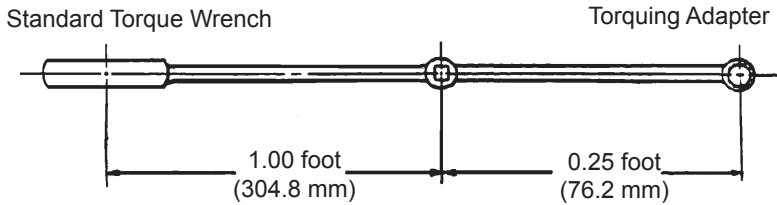
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$$\frac{(\text{actual torque required}) \times (\text{torque wrench length})}{(\text{torque wrench length}) + (\text{length of adapter})} = \text{Torque wrench reading to achieve required actual torque}$$

EXAMPLE:

$$100 \text{ Ft-Lb (136 N}\cdot\text{m)} \times 1.00 \text{ ft (304.8 mm)} = 80 \text{ Ft-Lb (108 N}\cdot\text{m)} <$$

reading on torque wrench with 3-inch (76.2 mm) adapter for actual torque of 100 Ft-Lb (136 N·m)

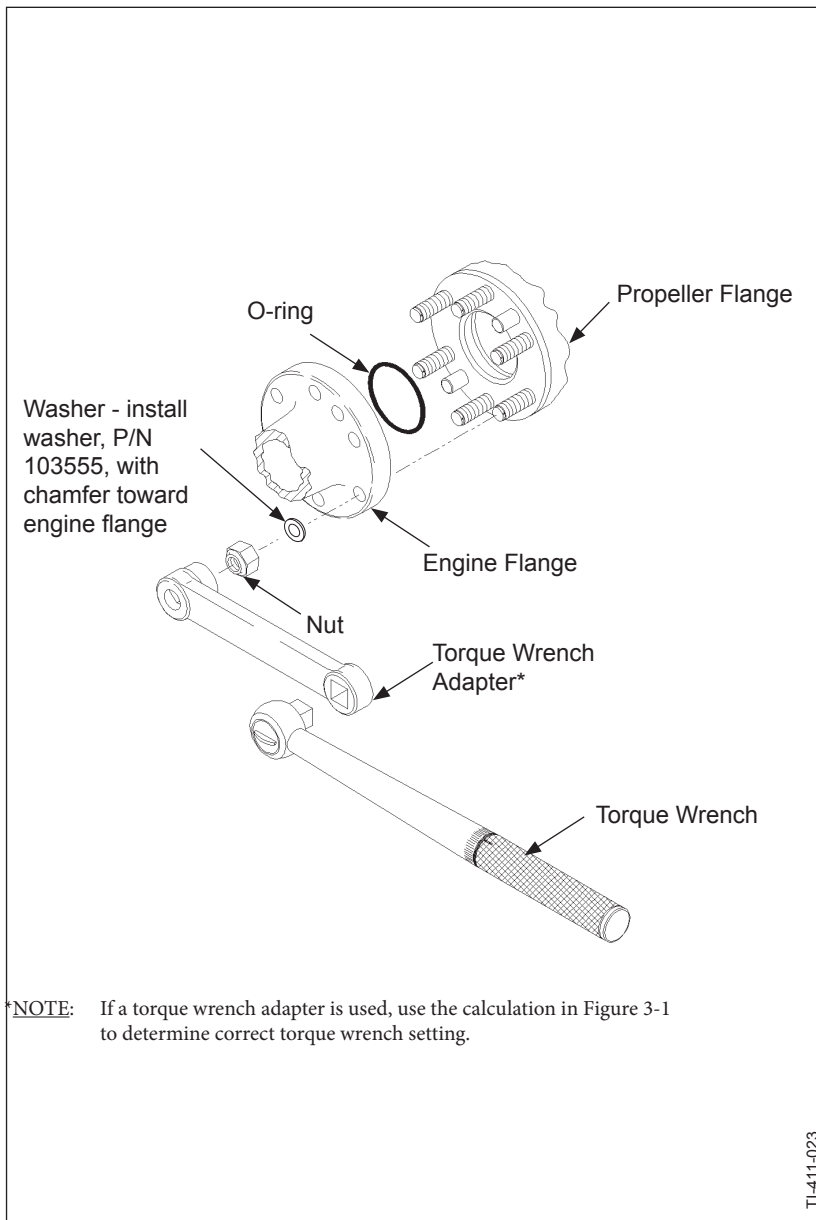
The correction shown is for an adapter that is aligned with the centerline of the torque wrench. If the adapter is angled 90 degrees relative to the torque wrench centerline, the torque wrench reading and actual torque applied will be equal.

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**Determining Torque Value When Using Torquing Adapter
Figure 3-1**

Installation Torques	
CAUTION 1:	MOUNTING HARDWARE MUST BE CLEAN AND DRY TO PREVENT EXCESSIVE PRELOAD OF THE MOUNTING FLANGE.
CAUTION 2:	ALL TORQUES LISTED ARE DRY TORQUE.
CAUTION 3:	REFER TO FIGURE 3-1 FOR TORQUE READING WHEN USING A TORQUE WRENCH ADAPTER.
3-blade hub clamping bolts ONLY	27-33 ft-lbs (37-44 N•m)
3-blade low pitch jam nut ONLY	13.5-16.5 ft-lbs (18.3-22.4 N•m)
5-blade low pitch jam nut (B-3839-16) ONLY	120 ft-lbs (163 N•m)*
Spinner bracket/bulkhead mounting bolts (hub clamping bolt installation only)	27-33 ft-lbs (37-44 N•m)
Spinner bracket/bulkhead/ring mounting bolt to rear of hub	96-120 in-lbs (10-13 N•m)
Spinner bulkhead to ring mounting screw	70-85 in-lbs (94- 115 N•m)
F flange propeller mounting nuts	Initial torque 30 ft-lbs (54 N•m) Final torque 70-80 ft-lbs (94-108 N•m)
G flange propeller mounting nuts	Initial torque 10 ft-lbs (13 N•m) Final torque 15-20 ft-lbs (21-27 N•m)
H flange propeller mounting nuts	Initial torque 30 ft-lbs (54 N•m) Final torque 60-65 ft-lbs (81-88 N•m)
Q flange propeller mounting nuts	Initial torque 30 ft-lbs (54 N•m) Final torque 60-65 ft-lbs (81-88 N•m)
R flange propeller mounting bolts	Initial torque 30 ft-lbs (54 N•m) Final torque 60-70 Ft-Lbs (82-94 N•m)
T flange propeller mounting bolts	Initial torque 30 ft-lbs (54 N•m) Final torque 50-55 ft-lbs (67-74 N•m)
* Torque tolerance is ± 10 percent unless otherwise noted.	

**Torque Table
Table 3-1**



**F, H, Q, and T Flange Propeller Mounting
Figure 3-7**

3. Painting of a Hartzell Propeller Inc. Composite Spinner Assembly**A. General**

- (1) A Hartzell Propeller Inc. spinner assembly may consist of a combination of metal or composite components.
- (2) Composite spinner components supplied primed for painting require a resistance check after painting. Refer to Figure 3-8, Figure 3-9, and Figure 3-10 for resistance check instructions.
 - (a) Composite spinner assemblies may be supplied primed for paint or may be painted at the time of manufacture.
 - (b) If the spinner assembly is primed for paint, the spinner dome must be painted before being installed.
- (3) Painting the Spinner Assembly Components.

CAUTION 1: CAUTION MUST BE TAKEN WHEN PAINTING A PRIMED COMPOSITE SPINNER COMPONENT IN ORDER TO MEET THE P-STATIC DISSIPATION REQUIREMENTS FOR THESE COMPONENTS. IMPROPER P-STATIC DISSIPATION COULD LEAD TO DISTORTION OR DAMAGE OF THE ELECTRONIC COMPONENTS IN THE AIRCRAFT, INCLUDING NAVIGATIONAL EQUIPMENT.

CAUTION 2: THE SCREW HOLES IN THE SPINNER DOME, SPINNER BULKHEAD, AND THE SPINNER FAIRING MUST BE MASKED TO MEET THE P-STATIC REQUIREMENTS.

CAUTION 3: THE MAXIMUM PERMITTED FILM THICKNESS OF PAINT IS 2 MILS WHEN DRY.

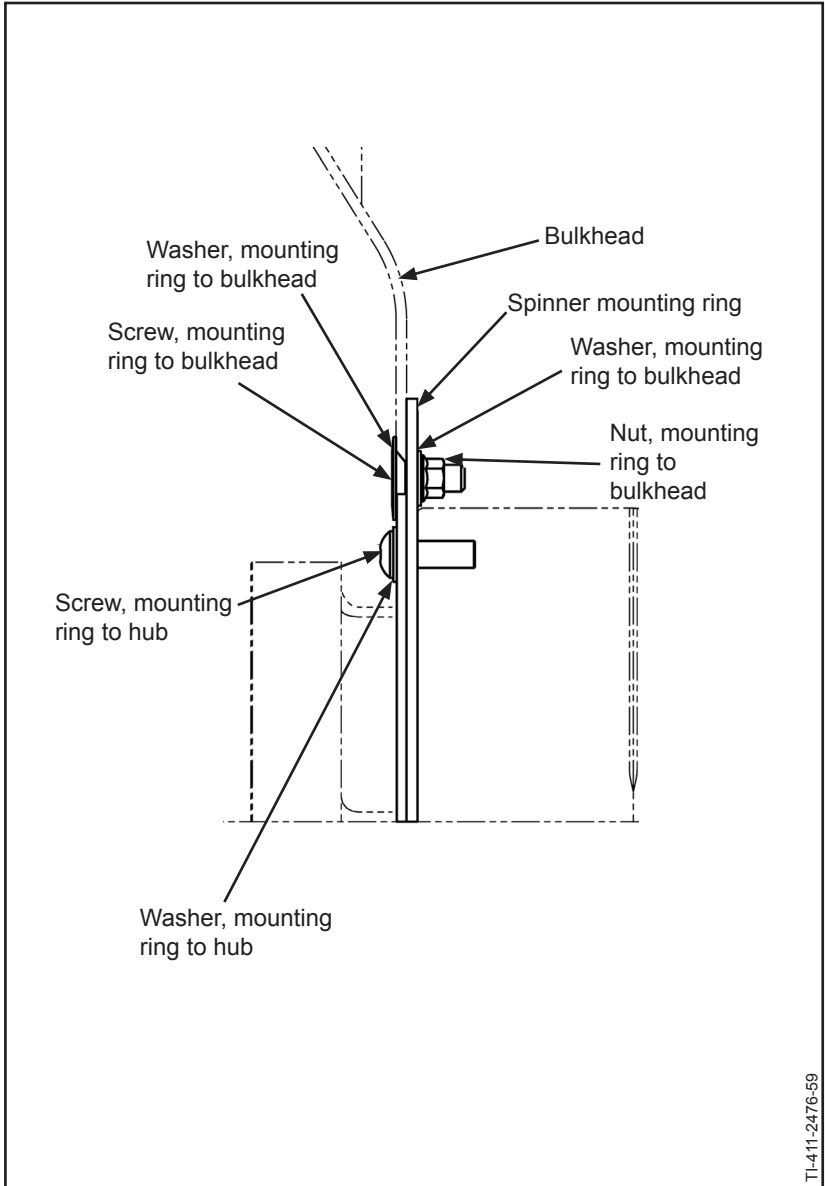
- (a) The components must be finished to the aircraft manufacturer's specifications using an approved paint before flight.

<i>Spinner Support Bracket/Bulkhead Mounting Hardware Aluminum Spinner Assembly</i>	
Description	Hartzell Part Number
Bolt, 1/4-28, hex head	B-3384-()
Washer	B-3851-0463
<i>104529 Spinner Dome and Fairing Attaching Hardware</i>	
Screw, bulkhead to hub	B-3872-2
Washer, bulkhead to hub	B-3860-416
Screw, spinner dome and fairing attaching to spinner bulkhead	B-3867-272
Washer, spinner dome and fairing attaching to spinner bulkhead	A-1020
Screw, fairing tab holes	B-3845-8
Washer, fairing tab holes	A-1020
<i>104888() Spinner Dome and Bulkhead Attaching Hardware</i>	
Bolt, bulkhead to hub	B-3384-1H
Washer, bulkhead to hub	B-3837-0432
Screw, spinner dome attaching to spinner bulkhead	B-3867-272
Screw, spinner dome attaching to spinner bulkhead	B-3860-10L
Spacers	105542
O-ring, Cylinder to Bulkhead	C-3317-129

**Spinner Support Bracket/Bulkhead Mounting Hardware
- Hub Mounted
Table 3-2 (page 1 of 2)**

<i>105085() Spinner Dome and Bulkhead Attaching Hardware</i>	
Spinner mounting ring	105124
Screw, mounting ring to hub	A-2070-6
Washer, mounting ring to hub	B-3837-0432
Screw, mounting ring to bulkhead	104789
Washer, mounting ring to bulkhead	B-3860-416
Nut, mounting ring to bulkhead	B-3814
Washer, mounting ring to bulkhead	B-3837-0432
Screw, spinner dome attaching to spinner bulkhead	102612-S50
Washer, spinner dome attaching to spinner bulkhead	B-3860-10L
Forward bulkhead mount	105330
O-ring, cylinder to bulkhead	C-3317-129

**Spinner Support Bracket/Bulkhead Mounting Hardware
- Hub Mounted
Table 3-2 (page 2 of 2)**



Spinner Mounting Ring Attachment to Hub and Bulkhead
Figure 3-10.1

4. Spinner Pre-Installation

CAUTION 1: INSTRUCTIONS AND PROCEDURES IN THIS CHAPTER MAY INVOLVE CRITICAL PARTS. REFER TO THE INTRODUCTION CHAPTER OF THIS MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS. CONTACT HARTZELL PROPELLER INC. FOR THE IDENTIFICATION OF SPECIFIC PROPELLER CRITICAL PARTS.

CAUTION 2: CONTACT HARTZELL PROPELLER INC. PRODUCT SUPPORT BEFORE REMOVING A SPINNER BULKHEAD FROM A PROPELLER WITH THE SPINNER BULKHEAD ATTACHED USING THE HUB CLAMPING BOLTS. DO NOT REMOVE THE HUB CLAMPING BOLTS EXCEPT AS SPECIFIED IN THIS INSTRUCTION. REMOVAL OF THE INCORRECT BOLTS MAY BREAK THE SEAL AND PERMIT LEAKAGE OF THE OIL.

A. General

- (1) The spinner support, bulkhead, or spinner mounting ring mount to the propeller hub. The spinner dome will mount to the bulkhead. Follow the applicable directions in this section.
- (2) Early configurations may have had a spinner support bracket/bulkhead that attached to the hub using the hub clamping bolts. Contact Hartzell Propeller Inc. Product Support before removing this spinner support bracket/bulkhead.

B. Spinner Mounting Ring to Bulkhead Installation - Refer to Figure 3-10.1

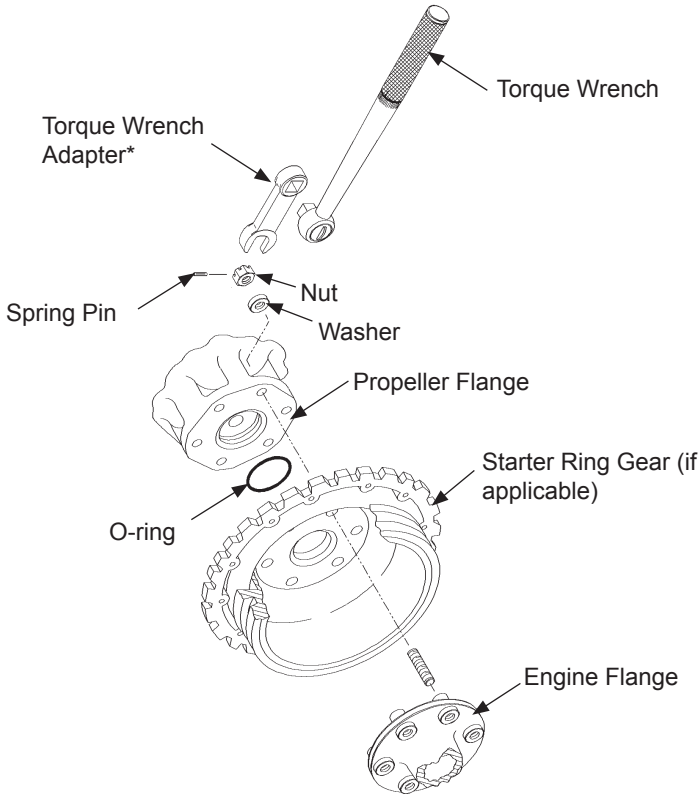
- (1) Align the holes in the spinner mounting ring to the holes in the bulkhead.
- (2) Using the screws and washers specified in Table 3-2, attach the spinner mounting ring to the bulkhead.
- (3) Torque the spinner mounting ring to bulkhead mounting screws (dry) in accordance with Table 3-1.

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Flange	O-ring	Stud/Bolt	Nut	Washer/Spacer	Spring Pin
F	C-3317-225-1	A-2429-()	A-2044	A-1381	n/a
G	C-3317-225-1	104606	104339	B-3851-0563	B-3842-0500
H	C-3317-225-1	A-2429-3	A-2044	A-1381	n/a
Q	C-3317-225-1	A-2429-()	A-2044	103555	n/a
R	C-3317-228	A-2067	A-2069	A-1381	B-3842-0750
T	C-3317-225-1	100041	A-1373	A-965	n/a

Propeller/Engine Flange O-rings and Mounting Hardware
Table 3-3

- (4) Align the holes in the spinner mounting ring to the attaching holes in the hub.
 - (5) Using the screws and washers specified in Table 3-2, attach the spinner mounting ring to the hub.
 - (6) Torque the spinner mounting screws (dry) in accordance with Table 3-1.
- C. Spinner Bracket/Bulkhead Installation - Hub Mounted
- (1) Align the holes in the spinner bracket/bulkhead to the attaching holes in the hub.
 - (2) Using the screws and washers specified in Table 3-2, attach the spinner support bracket/bulkhead to the hub.
 - (3) Torque the spinner support bracket/bulkhead mounting bolts (dry) in accordance with Table 3-1.



***NOTE:** If a torque wrench adapter is used, use the calculation in Figure 3-1 to determine correct torque wrench setting

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**G and R Flange Propeller Mounting
Figure 3-11**

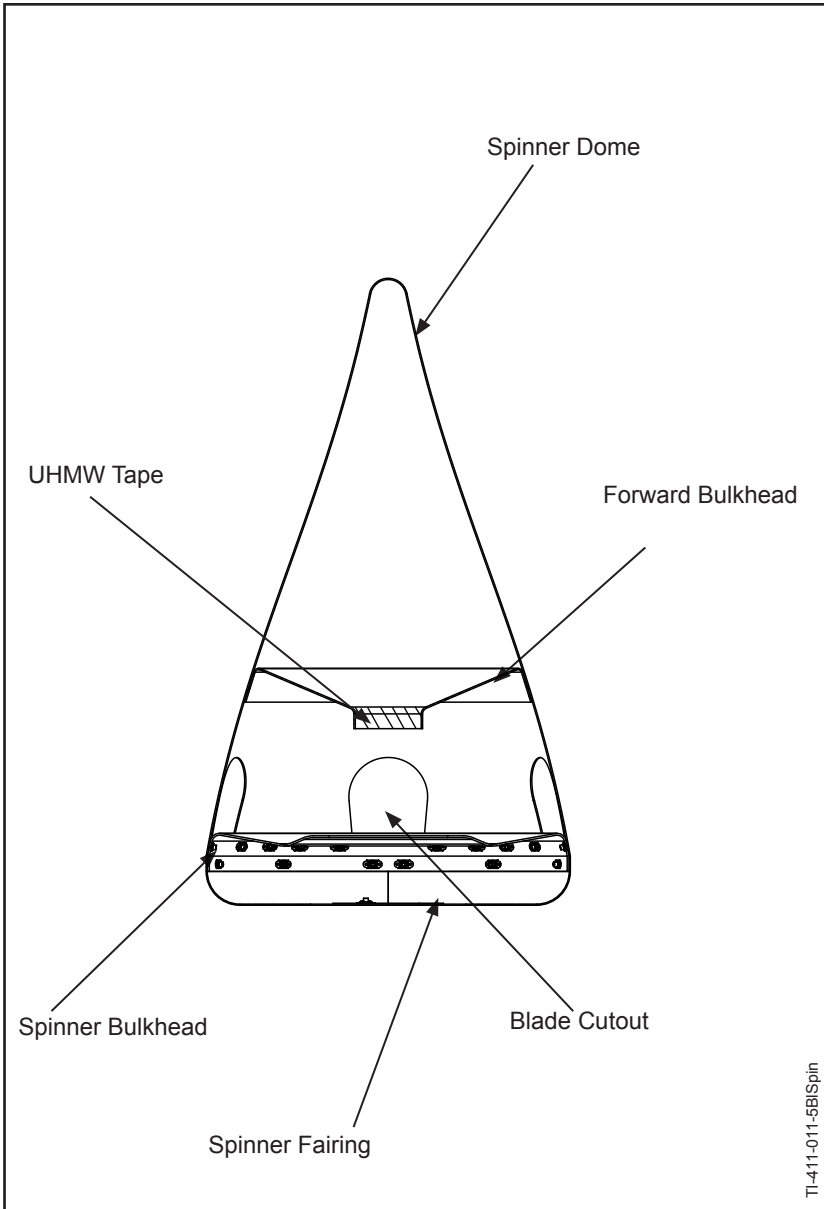
C. Installation of G and R Flange Propellers

- (1) Perform the applicable steps under Spinner Pre-Installation within this chapter.

WARNING: SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION IS REQUIRED. AVOID PROLONGED CONTACT. USE IN WELL VENTILATED AREA.

- (2) Clean the engine flange and propeller flange with solvent.
- (3) Refer to Figure 3-11. Install the O-ring in the O-ring groove in the rear of the hub. Refer to Table 3-3 for the applicable O-ring and mounting hardware.

NOTE: When the propeller is received from the factory, the O-ring has been installed.



104529 Single Piece Spinner Assembly
Figure 3-12

6. Spinner Dome Installation

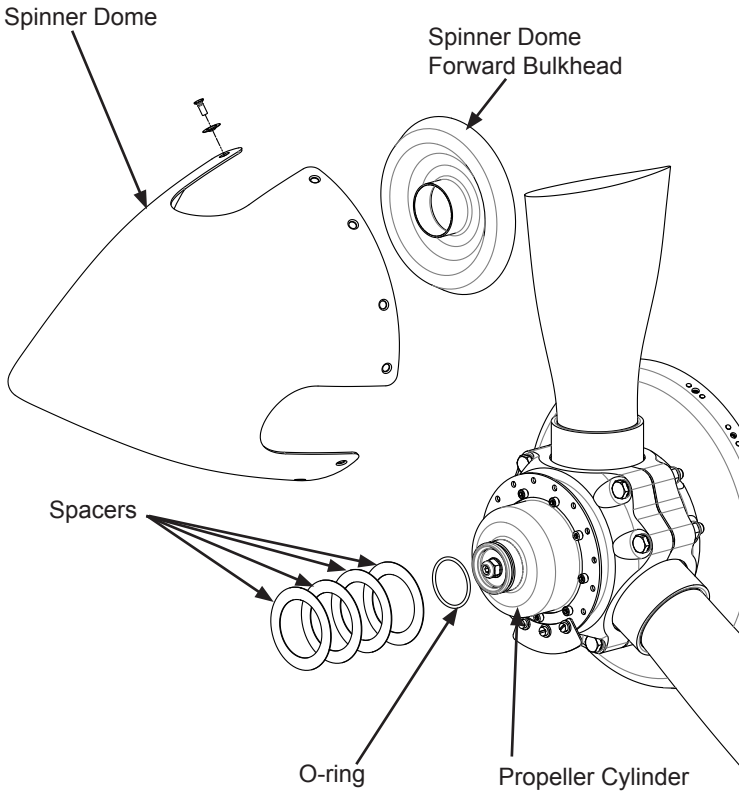
CAUTION 1: INSTRUCTIONS AND PROCEDURES IN THIS CHAPTER MAY INVOLVE CRITICAL PARTS. REFER TO THE INTRODUCTION CHAPTER OF THIS MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS. CONTACT HARTZELL PROPELLER INC. FOR THE IDENTIFICATION OF SPECIFIC PROPELLER CRITICAL PARTS.

CAUTION 2: TO PREVENT DAMAGE TO THE BLADE AND BLADE PAINT, WRAP THE BLADE SHANKS IN SEVERAL LAYERS OF MASKING OR DUCT TAPE BEFORE INSTALLING THE SPINNER DOME. REMOVE THE TAPE AFTER THE SPINNER IS INSTALLED.

A. General

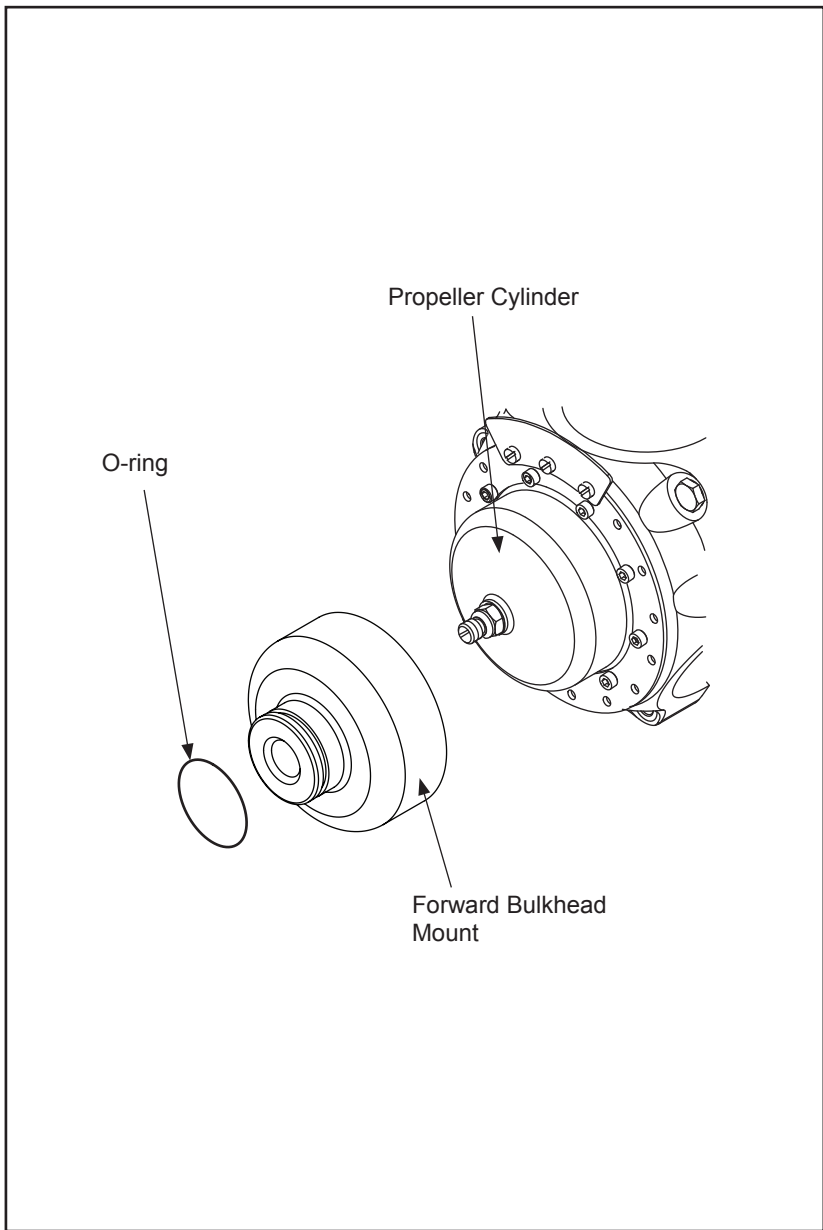
- (1) The following instructions relate to Hartzell Propeller Inc. spinner assemblies only. In some cases, the airframe manufacturer produced the spinner assembly. If so, refer to the airframe manufacturer's manual for spinner assembly installation instructions.
- (2) Composite spinner assemblies P/N 104529 and with part serial numbers listed in Table 3-4 must be indexed when installed.
 - (a) The parts listed in Table 3-4 were manufactured using a process that matched the spinner dome, spinner bulkhead, and spinner fairing.
 - (b) The parts are identified with a number and the index mark.
 - 1 The spinner dome, spinner bulkhead, and spinner fairing being installed must have the same number.
 - 2 The parts will be identified with a number 1, 3, or 4.

NOTE: For spinner assembly 104888() the forward bulkhead is bonded inside the spinner dome. For spinner assembly 105539() the forward bulkhead is not bonded to inside the spinner dome. The forward bulkhead is shown separately for illustration purpose only.



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**Installation of 104888() and 105539 Spinner Assemblies
Figure 3-13**



105085 Spinner Assembly Installation
Figure 3-15

C. Composite spinner assembly P/N 105539()

- (1) Using grease, Aeroshell 5 or Aeroshell 6, thoroughly lubricate the O-ring. Refer to Table 3-2.
- (2) Put the O-ring in the groove on the cylinder. Refer to Figure 3-13.
- (3) Put four spacers on the cylinder. Refer to Table 3-2.
NOTE: The spacers are used to adjust the spinner dome preload.
- (4) Gently push the spinner dome as far aft as it will go onto the bulkhead unit.
- (5) Visually examine the spinner fit.
 - (a) The spinner is correctly spaced when the holes in the spinner dome are misaligned 1/4 -1/3 of their diameter toward the front of the aircraft, or rear in a pusher installation. Refer to Figure 3-14.
 - (b) Remove the spinner dome and add or remove spacers to achieve this alignment.
- (6) Install and push the spinner dome aft to align the spinner mounting holes with those of the bulkhead or adapter ring.

CAUTION: MAKE SURE THAT THE SCREWS DO NOT EXTEND MORE THAN THREE THREADS PAST THE BULKHEAD NUTPLATES. IF THE SCREWS EXTEND MORE THAN THREE THREADS, THIS CAN CAUSE DAMAGE TO THE AIRCRAFT COWLING.

- (7) Using screws and washers, attach the spinner to the bulkhead or adapter ring. Refer to Table 3-5.

D. Composite Single Piece Spinner Dome

- (1) If a P/N 104529 spinner assembly is being installed:
 - (a) Align the index mark on the inside of the spinner dome with the index mark on the spinner bulkhead.
 - (b) Installation of the spinner dome. Refer to Figure 3-12. The forward bulkhead is bonded to the spinner dome. This spinner assembly incorporates a fairing attached to the engine side of the spinner bulkhead.

- (2) If a P/N 105085 spinner assembly is being installed:
 - (a) Install the forward bulkhead mount on the cylinder.
 - 1 The forward bulkhead mount should fit snugly on the cylinder.
 - 2 If the forward bulkhead mount is loose on the cylinder, cut the B-6654-100-1 UHMW tape into strips approximately 2.0 inches (50.8 mm) long, as needed.
 - a Install strips of the B-6654-100-1 UHMW tape from front to back and spaced evenly around the inner diameter of the forward bulkhead mount.
 - b If needed, install multiple layers of the B-6654-100-1 UHMW tape until the forward bulkhead mount fits snugly on the cylinder.
 - (b) Using grease, Aeroshell 5 or Aeroshell 6, thoroughly lubricate the O-ring. Refer to Table 3-2.
 - (c) Put the O-ring in the groove on the forward bulkhead mount. Refer to Figure 3-15.
 - (d) Install the spinner dome over the forward bulkhead mount and onto the bulkhead. The O-ring on the forward bulkhead mount will cause resistance when the spinner dome is installed.
 - (e) The spinner dome must fit snugly on the forward bulkhead mount.

NOTE: This spinner dome installation is not preloaded.

- (3) For all composite spinner domes, except 104888():
- (a) Cut the B-6654-100-1 UHMW tape into strips approximately 2.0 inches (50.8 mm) long as needed.
 - (b) Install strips of the B-6654-100-1 UHMW tape from front to back and spaced evenly around the inner diameter of the forward bulkhead.
 - 1 If needed, install multiple layers of the B-6654-100-1 UHMW tape until the spinner dome fits snugly on the cylinder.
 - (c) Install the spinner dome over the cylinder and onto the bulkhead. If the spinner dome slips easily over the cylinder, remove the spinner dome and install an additional layer of UHMW tape.
 - (d) The spinner dome must be a snug fit on the cylinder of the propeller.

NOTE: This spinner dome installation is not preloaded.

CAUTION: TO AVOID DAMAGING THE AIRCRAFT COWLING, THE SCREWS MUST NOT EXTEND MORE THAN THREE THREADS PAST THE SPINNER BULKHEAD NUT PLATES.

(e) Using the supplied screws and washers, attach the spinner dome to the spinner bulkhead. Refer to Table 3-2.

- 1 Install two screws in the two holes centered between two blade cutouts.
- 2 Tighten the two screws until snug.
- 3 Install two screws in the two holes centered between two blade cutouts on the opposite side of the spinner dome.
- 4 Tighten the two screws until snug.
- 5 Repeat installation of two screws in the holes centered between two blade cutouts for the remaining areas.
- 6 Tighten two screws until snug.
- 7 Install the remaining screws in the remaining holes.
- 8 Tighten until snug.

(4) Installation of the fairing, if applicable:

- (a) Align the attaching holes of the fairing to the holes in the spinner bulkhead.
- (b) Using the supplied screws and washers, attach the fairing to the spinner bulkhead. Refer to Table 3-2.
 - 1 Install two screws in the center two holes used to attach the fairing to the bulkhead.
 - 2 Tighten the two screws until snug.
 - 3 Install each remaining screw and tighten until snug.
- (c) Each fairing, has a tab. Using the supplied screws and washers, attach the tab to the opposite fairing. Tighten until snug. Refer to Table 3-2.

- (5) Composite spinner assembly P/N 104888()
- (a) Using grease, Aeroshell 5 or Aeroshell 6, thoroughly lubricate the O-ring. Refer to Table 3-2.
 - (b) Put the O-ring in the groove on the cylinder. Refer to Figure 3-13.
 - (c) Put four spacers on the cylinder. Refer to Table 3-2.
NOTE: The spacers are used to adjust the spinner dome preload.
 - (d) Gently push the spinner dome as far aft as it will go onto the bulkhead unit.
 - (e) Visually examine the spinner fit.
 - 1 The spinner is correctly spaced when the holes in the spinner dome are misaligned 1/4 -1/3 of their diameter toward the front of the aircraft, or rear in a pusher installation. Refer to Figure 3-14.
 - 2 Remove the spinner dome and add or remove spacers to achieve this alignment.
 - (f) Install and push the spinner dome aft to align the spinner mounting holes with those of the bulkhead or adapter ring.

CAUTION: MAKE SURE THAT THE SCREWS DO NOT EXTEND MORE THAN THREE THREADS PAST THE BULKHEAD NUTPLATES. IF THE SCREWS EXTEND MORE THAN THREE THREADS, THIS CAN CAUSE DAMAGE TO THE AIRCRAFT COWLING.

- (g) Using screws and washers, attach the spinner to the bulkhead or adapter ring. Refer to Table 3-5.

7. Post-Installation Checks

- A. Perform Static RPM Check as outlined in the Testing and Troubleshooting chapter in this manual.

8. Spinner Removal

CAUTION 1: INSTRUCTIONS AND PROCEDURES IN THIS CHAPTER MAY INVOLVE CRITICAL PARTS. REFER TO THE INTRODUCTION CHAPTER OF THIS MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS. CONTACT HARTZELL PROPELLER INC. FOR THE IDENTIFICATION OF SPECIFIC PROPELLER CRITICAL PARTS.

CAUTION 2: WRAP THE BLADE SHANKS IN SEVERAL LAYERS OF MASKING OR DUCT TAPE BEFORE REMOVING THE SPINNER DOME, TO PREVENT DAMAGING THE BLADE AND BLADE SURFACE.

- A. If the spinner assembly is supplied by a source other than Hartzell Propeller Inc., refer to the airframe manufacturer's manual for spinner installation instructions.
- B. Removal of Hartzell Propeller Inc. Single Piece Spinner
 - (1) If applicable, remove the screws and washers that attach the tabs on the fairing to the opposite fairing.
 - (2) If applicable, remove the screws and washers that attach the spinner fairing to the spinner bulkhead.
 - (3) Remove the screws and washers that attach the spinner dome to the spinner bulkhead or adapter ring.
 - (4) Remove the spinner dome.
 - (5) If applicable, remove the forward bulkhead mount and O-ring from the cylinder.

9. Propeller Removal

CAUTION: INSTRUCTIONS AND PROCEDURES IN THIS CHAPTER MAY INVOLVE CRITICAL PARTS. REFER TO THE INTRODUCTION CHAPTER OF THIS MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS. CONTACT HARTZELL PROPELLER INC. FOR THE IDENTIFICATION OF SPECIFIC PROPELLER CRITICAL PARTS.

A. Removal of F, H, Q, and T Flange Propellers

- (1) Remove the spinner dome in accordance with the section "Spinner Removal" in this chapter.
- (2) If the propeller is equipped with an ice protection system applicable instructions and technical information for the components can be found in the following publications available on the Hartzell Propeller Inc. website at www.hartzellprop.com:
 - (a) Hartzell Propeller Inc. Manual 180 (30-61-80)
- Propeller Ice Protection System Manual
 - (b) Hartzell Propeller Inc. Manual 181 (30-60-81)
- Propeller Ice Protection System Component Maintenance Manual
 - (c) Hartzell Propeller Inc. Manual 182 (61-12-82)
- Propeller Electrical De-ice Boot Removal and Installation Manual
 - (d) Hartzell Propeller Inc. Manual 183 (61-12-83)
- Propeller Anti-icing Boot Removal and Installation Manual
- (3) Propeller ice protection system components installed on a propeller manufactured by Hartzell Propeller Inc. are controlled by the Hartzell Propeller Inc. Instructions for Continued Airworthiness (ICA).