Installation Procedures and Kit Parts List

for

Piper PA-31, PA31-325, PA31-350
Composite Spinner and Bulkhead

TCB Composite LLC
3088 North Fairfield Road
Layton, Utah USA 84401

Ph: 888-778-1477

Fax: 801-606-3200

E-mail: info@tcbcomposite.com

Web: www.tcbcomposite.com

Revision: C
Date: May 21, 2000

Description of changes:

Note: Change revisions affect specific sheets. When incorporating a new change, remove all old sheets, and replace with new sheets. Changes are locally identified by a vertical bar in the margin.

Revision	Date	Description	Approved
NC		Initial release	RP
A	August 8, 1994	Changed fastener callouts, added description of changes sheet, cover sheet. All sheets affected, due to renumbering	RP
B	February 14, 1996	Sh 7: Torque value WAS 35-40 in-lb NOW 20-25 ft-lb. Sh 9: Part number WAS TCB43933-08 Sh 10: Deleted (RH), Item 2 WAS TCB43933-08, All pages renumbered. REASON: Typographical errors.	RP
C	May 21,2000	Sh 8: Revised spinner weight: WAS 2.22 NOW 2.75. Net change WAS -1.17 NOW -0.64, Arm WAS 48.0 NOW 47.8, Moment WAS -56.16 NOW -30.60	RP

Contents:

1. Installation procedure for replacement spinner and bulkhead:

This section describes the removal of the aircraft propeller, existing spinner and bulkhead; installation of the composite spinner and bulkhead, and reinstallation of the propeller.

NOTE

Prior to performing the installation, refer to the kit list and verify that the items received match the kit list.

CAUTION

Before performing any work on the propeller, ensure that the master switch is in the "OFF" position, that the magneto switch is in the "OFF" (grounded) position, and that the mixture control is in the "IDLE CUT-OFF" position.

CAUTION

Under no condition should blade arms be used with this propeller.

1.1 Removal of propeller:

Numbers in square parentheses [ ] refer to the identifying numbers in Figure 1, sheet 4.

NOTE

To make re-installation easier, identify the position of each removed item in relation to the other, using some means other than scratching the surfaces.

a. Remove the spinner nose cap [2] (retain nose cap, discard screws).

b. Remove the safety wire (discard) and check nut [9] and bolt [not shown] (retain for reuse) that retain the spinner [8] at the forward bulkhead. Remove (and discard) the screws [2] that retain the spinner to the aft bulkhead [1]. Remove (and discard) the old spinner.

c. Remove the engine cowling.

NOTE

It is not necessary to feather prop blades when removing the propeller.

d. If the airplane is equipped with a propeller deice system, disconnect electrical leads [not shown in Fig 1].

e. Place a drip pan under the propeller to catch spillage.

f. Remove (and discard) the safety wire that retains the propeller mounting studs [5] and remove the studs from the engine flange.

(The stud nuts are pinned to the studs, so the studs will turn with the nuts. Studs are captured by the prop flange).

g. Pull the propeller from the engine shaft.

h. Remove (and discard) the old spinner aft bulkhead [1]. Remove and retain the deice connections for reinstallation, if so equipped.

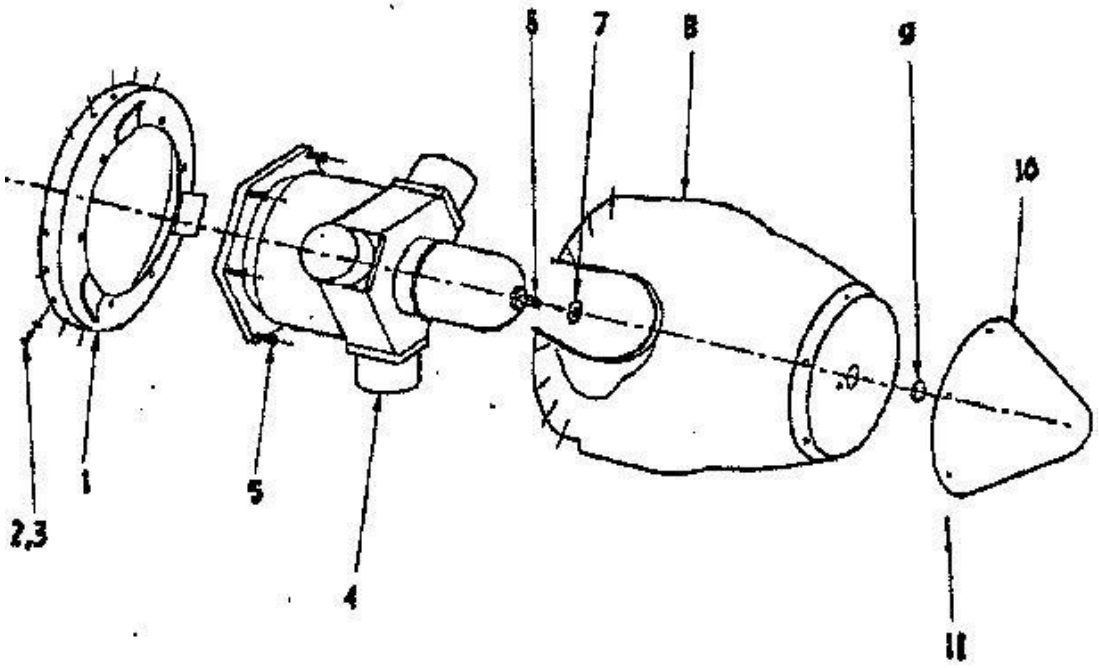

Figure 1. Bulkhead and spinner installation
(RH / CCW installation shown. Prop assy simplified for clarity)

1. Aft spinner bulkhead
2. Screw and washers
3. Bolts
4. Prop assy
5. Prop attach studs
6. Valve
7. Spacer
8. Spinner assy
9. Spinner check nut
10. Spinner nose cap
11. Nose cap attach screw

1.2 Installation of propeller:

a. Clean propeller and engine flanges.

b. Position the TCB43933(see kit list for dash number) spinner bulkhead assy [1] on propeller hub aft side. Torque bolts [3] per Table 1.

c. Lubricate and install PRP 909-6 0-ring [not shown in Fig. 1] in propeller shaft hole.

d. Mount propeller on engine. Thread each mounting stud [5] into its mating flange bushing a few threads at a time until all of the studs are finger tight, then torque per Table 1. Using MS20995C41 safety wire, safety the studs, routing the wire through the roll pins which hold the stud and nut together.

e. Install de-ice terminal blocks, if so equipped. Connect prop de-ice leads.

f. Install the TCB43933(see kit list for dash number) spinner assy [8] by first aligning the bulkhead [1] screw holes up and checking that the hole in the forward face of the spinner seats on the prop shaft flange. Use up to eight A169-7 spacers [7] to shim the gap between the spinner and the flange. Assemble check nut [9] to prop shaft, torque per Table 1, reinstall adjacent bolt [not shown in Fig.1] and safety using MS20995C41 safety wire through bolt.

Attach the spinner [8] to the bulkhead [1] using fifteen AN526C1032R10 screws [2] and NW10 nylon washers [3], and torque per Table 1.

NOTE

Charging the prop cylinder with accurate pressure is critical to the correct function of the propeller. DO NOT check pressure, or charge cylinder, with the propeller in the feathered position.

g. Using the placard in the spinner cap, determine the correct feathering cylinder pressure (adjusted for ambient temperature), and check the pressure. If needed, charge the cylinder through valve [6] using dry compressed air or nitrogen.

h. Using the six provided MS24693C50 screws [11], install the metal spinner nose cap [10]. Torque per Table 1.

i. Install the engine cowl. Check for security of propeller and spinner. Prior to releasing the aircraft for flight, perform a brief runup of the aircraft engine, watching the spinner for indications of imbalance or looseness. Cycle the prop in accordance with the aircraft flight manual and observe proper operation. Shut down the engine and inspect the installation.

Propeller installation is now complete.

NOTE: SUBMIT FAA FORM 337. MAKE ENTRY TO WEIGHT AND BALANCE, AND EQUIPMENT LIST.

Description	Required Torque
Propeller to shaft mount bolts	60 ft-lb
Spinner to prop shaft check nut	20-25 ft-lb
Nose cap to spinner screws	30 in-lb
Spinner to aft bulkhead screws	40 in-lb
Spinner bulkhead mount bolts	22 ft-lb

Table 1: Assembly torque values

2. Weight and balance data

Item	Weight, lbs	Arm, inches
Remove metal spinner	-3.1	46.2
Remove metal bulkhead	-1.1	49.8
Install composite spinner	2.75	46.2
Install composite bulkhead	0.81	49.8

Table 2: Weight and balance data

- Data applicable to all models.
- All weights include hardware.
- Net change to aircraft weight and balance per installed spinner is: -2.33 lb at 21.16 inch arm, and resulting moment is -49.29 in/lb.

Included Parts List

Item	Description	Part number	Quantity
1	Spinner Assy, RH	TCB43940-08	1
2	Washer, nylon		15