

The Piper logo consists of the word "PIPER" in a bold, sans-serif font, enclosed within a dark, rounded rectangular border. The logo is positioned in the upper left corner of the document, above the "Customer Services" text.

**PIPER**

***Customer Services***

# SERVICE LETTER

**No. 538**

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.  
October 23, 1969

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<u>Subject:</u>	Inspection of Propeller Blade Shank (Reference attached Hartzell Bulletin No. 94, dated October 3, 1969)
<u>Models Affected:</u>	PA-31 Navajo (reference attached Hartzell Bulletin No. 94; <u>Effectivity</u> )
<u>Serial Numbers Affected:</u>	Reference attached Hartzell Bulletin No. 94; <u>Effectivity</u> .
<u>Compliance Time:</u>	Reference attached Hartzell Bulletin No. 94; <u>Required Action</u> .
<u>Purpose:</u>	To provide distribution and insure compliance with the attached Hartzell Bulletin No. 94.
<u>Instructions:</u>	Reference attached Hartzell Bulletin No. 94; <u>Required Action</u> .
<u>Material Required:</u>	Not applicable.
<u>Availability of Parts:</u>	Not applicable.
<u>Material Allowance:</u>	Not applicable.
<u>Labor Allowance:</u>	Not applicable.
<u>Material/Labor Allowance Termination Date:</u>	Not applicable.
<u>Disposition of Parts in Stock:</u>	Not applicable.
<u>Disposition of Replaced Parts:</u>	Not applicable.

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HARTZELL PROPELLER, INC.  
PIQUA, OHIO

Bulletin No. 94

"FAA-DOA-EA-3 APPROVED"

October 3, 1969

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Subject: Inspection of Propeller Blade Shank

Effectivity: Propeller Model HC-E2Y(K,R)-2B/C8475-4 Installed on Piper Model PA-31 "Navajo". (This does not apply to the three-blade propeller.)

Discussion: After 1240 hours operation the cause of extreme vibration of one engine-propeller combination was found to be a cracked blade shank. This crack was due to fatigue, resulting from vibration of the system, and occurred at the outer edge of the ball bearing race which supports the blade within the hub.

The airplane involved was tested to determine the cause; but these tests confirmed the original tests, indicating that the vibratory stresses were well within allowable limits. Even though there appears to be no unusual condition in the engine-propeller system which caused the crack to develop, the consequences of a complete blade failure are such as to make it mandatory for inspection of this propeller on other PA-31 aircraft equipped with this model propeller.

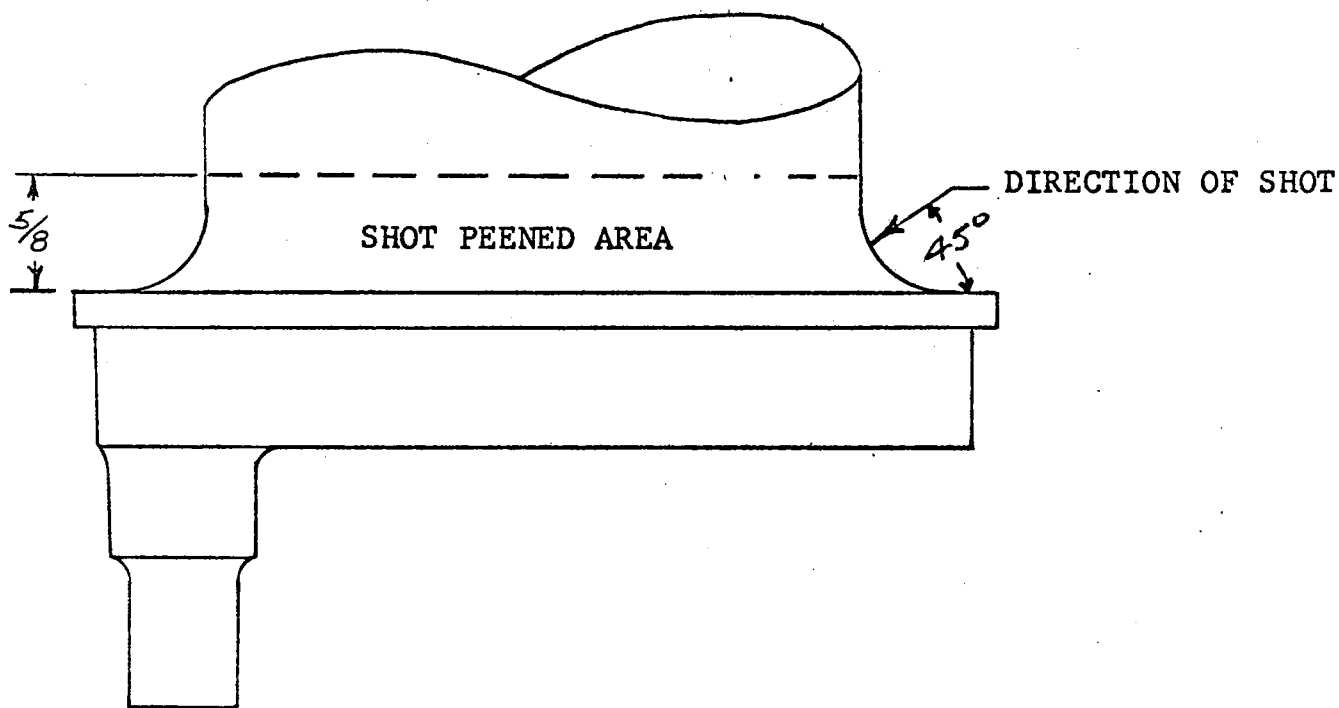
Required  
Action:

1. For propellers which have been in service for 1000 hours or more, inspect the blade shanks within the next 100 hours, by the dye penetrant method, for cracks in the radius adjacent to the retention flange.
2. If no indications are found, re-shot peen the radius and return the propeller to service.
3. This inspection should be repeated at intervals of 500 hours, after the first 1000 hour inspection. Shot peening need not be repeated unless there is evidence that the bearing race has worn the surface smooth, or below the pebble grain; particularly in the area where the edge of the bearing race contacts the surface of the retention shoulder. If the propeller has been overhauled and at that time properly inspected, it is not necessary to repeat the inspection and re-shot peen until 500 hours has elapsed after that overhaul.

October 3, 1969

Required  
Action  
(Cont'd):

4. Disassembly and assembly of the propeller is described in Hartzell Manual No. 117( ).
5. Shot peen with S-390 shot, .007 to .010 inch arc height on C-2 Almen gage. Limit the shot peened area as shown below.



6. The 500 hour inspection requirement may be relaxed if no further problems develop over the next 12 months or so. The recommended overhaul period is 1000 hours.