

ALERT SERVICE BULLETIN



April 19, 2005

ASB248

TITLE

RESTRICTED OPERATION, LIFE LIMIT AND REPETITIVE BLADE AIRFOIL INSPECTION REQUIREMENTS

TO:

FAA-Approved Propeller Repair Stations, Aircraft Manufacturers, STC Holders, Owners and Operators

MODELS AFFECTED

3A32C406/82NDB-X and D3A32C409/82NDB-X

AIRCRAFT AFFECTED

Beech 35, 35R, A35, A36TC, B35, B36TC, C35, D35, E35, F35, G35, H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B, 35-33, 35-A33, 35-B33, 35-C33, 35-C33A, E33, E33A, E33C, F33, F33A, F33C, G33, 36, A36, A45 and D45

Navion A (L-17B, C), B, D, E, F, G and H

NOTE: This is not a complete list of affected aircraft. This service bulletin affects all aircraft with combinations of McCauley 3A32C406 and D3A32C409 propellers with Teledyne Continental Motors IO-520, TSIO-520, or IO-550 series engines.

PUBLICATIONS AFFECTED

McCauley Series C400 Propeller Overhaul Manual, MPC400

McCauley Blade Overhaul Manual, BOM100

McCauley Service Bulletin 137Y

REASON

Recent testing by McCauley has identified stress conditions that effect the fatigue life and damage tolerance of C406 and C409 propellers (hubs and blades) when installed and operated on TCM IO-520, TSIO-520 and IO-550 series engine installations. Instructions provided in this alert service bulletin affect the continued airworthiness of these propellers.

April 19, 2005

Page 1 of 6

TO OBTAIN SATISFACTORY RESULTS, PROCEDURES SPECIFIED IN THIS SERVICE INFORMATION MUST BE ACCOMPLISHED IN ACCORDANCE WITH ACCEPTED METHODS AND PREVAILING GOVERNMENT REGULATIONS. MCCAULEY PROPELLER SYSTEMS CANNOT BE RESPONSIBLE FOR THE QUALITY OF WORK PERFORMED IN ACCOMPLISHING THIS SERVICE INFORMATION.

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ALERT SERVICE BULLETIN



ASB248

DESCRIPTION

This alert service bulletin provides instructions for:

1. The identification of all C406 and C409 propeller blades and hubs as Life Limited parts, with a 10,000 hour Life Limit.
2. Special attention during the routine periodic inspection and repair of blade airfoils on C406 and C409 propellers.
3. The fabrication and installation of an operating restriction placard for C406 and C409 propellers.

COMPLIANCE

MANDATORY:

1. All C406 and C409 propellers with more than 10,000 hours total time in service or if total time is unknown:
 - A. All blades and hubs must be removed from service within the next 50 operating hours.
2. All C406 and C409 propellers with less than 10,000 hours total time in service:
 - A. All blades and hubs with less than 10,000 hours total time in service must be stamped with an "L" indicating Life Limited part, at the next overhaul or major disassembly. Refer to Step 3 of the accomplishment Instruction.
 - B. All blades and hubs must be removed from service upon reaching 10,000 operating hours.
 - C. Fabricate and install an operating restriction placard in the cockpit within the next 10 hours of operation. Refer to Step 1 of the Accomplishment Instructions.
 - D. Inspect and repair blade airfoils within the next 100 hours of operation or at the next aircraft annual inspection, whichever occurs first. Refer to Step 2 of the Accomplishment Instructions.
 - (1) Repeat this inspection and repair every 100 hours of operation or at every aircraft annual inspection, whichever occurs first.

APPROVAL

FAA approval has been obtained on technical data in this publication that affects product type design.

REFERENCES

McCauley Standard Practices Manual, SPM100

ACCOMPLISHMENT INSTRUCTIONS

NOTE: Read all instructions thoroughly prior to performing work in accordance with this bulletin.

1. Operating Restriction Placard
 - A. Fabricate an Operating Restriction Placard as shown below:

Continuous Propeller Operation Between 2350 and 2450 RPM at 24 inches Hg and higher manifold pressure is prohibited.
 - B. Install the placard in the cockpit at a location which will be in clear operational view of the pilot.
2. Blade Airfoil Inspection and Repair
 - A. Personnel Requirements
 - (1) Individuals performing inspections and repair in accordance with the instructions in this section must have a current FAA approved A&P license, Propeller Repairman Certification or international equivalent.

ALERT SERVICE BULLETIN



ASB248

B. Inspection

- (1) Inspect for damage that has a sharp bottom (stress riser type damage) caused by stones or other small objects striking the propeller blade as it is rotating. Refer to Step 2.C for repair procedures.

NOTE: Erosion not creating stress riser type damage, caused by sand, dirt, water, etc., does not need to be repaired at this time but should be repaired at the next overhaul unless it is over 1/16 inch in depth.

- (2) Inspect the deice boots (if installed) carefully during a visual inspection.

CAUTION: DO NOT ASSUME THE DEICE BOOT IS NOT DAMAGED IF IT IS HEATING NORMALLY.

- (a) Check for cuts, tears or exposed elements in the deice boots.
- (b) Boot damage is an indication of possible blade damage beneath the boot.
- (c) Remove boot and inspect blade if this type of damage is suspected.

C. Repair Criteria

CAUTION: DO NOT USE A RASP FILE FOR FIELD REPAIRS. RASP FILES REMOVE MORE METAL THAN NECESSARY AND MAY CAUSE PREMATURE REPLACEMENT OF THE BLADE AT OVERHAUL.

(1) Stress Riser Damage Repair

- (a) Repair stress riser damage by filing the damaged area as illustrated in Figure 1.
- (b) Do not perform additional repairs on the blade after the stress riser has been removed. Unnecessary repairs will cause premature replacement of blades at overhaul.
- (c) If damage exceeds 1/8 inch depth on the leading edge or 1/16 inch depth on the face or camber side, the propeller must be sent to a propeller repair facility for repair.

(2) Leading Edge Repair

- (a) Remove metal at the damaged area starting back from and working toward the edge in such a way that the contour remains substantially the same.
 - 1 File strokes must run from blade shank to blade tip.
 - 2 Avoid abrupt changes in contour and blunt edges.
- (b) (Refer to Figure 1.) Blend the area to a length of 10 times the depth of the nick.
- (c) Work the repair surface to a smooth finish with fine grain emery cloth, crocus cloth, or 600 grit sandpaper.

(3) Face and Camber Repair

CAUTION: USE EXTREME CARE TO CONTROL THE HAND HELD GRINDER.

- (a) Remove metal at damaged area using a hand held rotary grinder with a sanding bob with 120 grit or less, or by hand using coarse grain emery cloth. Do not use a file in this area.
- (b) (Refer to Figure 1.) Grind the blade with light pressure in a circular motion until the damage is totally removed.
 - 1 The repaired area must have a diameter equal to 20 times the depth of the damage as illustrated in Figure 1.

ALERT SERVICE BULLETIN



ASB248

- D. Perform a dye penetrant inspection of the repaired area to make sure that the damage has been completely removed.

NOTE: For additional Instructions refer to the McCauley Standard Practices Manual, SPM100, 60-00-03, Non-Destructive Inspection Procedures.

- E. Alodine the repaired area in accordance with MIL-C-5541.

NOTE: For additional Instructions refer to the McCauley Standard Practices Manual, SPM100, 60-00-04, Protective Treatments.

- F. Paint the repaired area. (McCauley Recommends Sherwin Williams Polane T polyurethane enamel paint.)

NOTE: For additional painting instructions refer to the McCauley Standard Practices Manual, SPM100, 60-00-06, Paint Instructions.

3. Life Limit Stamping

- A. Blade life limit stamping.

(1) (Refer to Figure 2.) The life limit stamping "L" must be stamped under the blade type certificate stamping on each blade.

- B. Hub life limit stamping.

(1) The life limit stamping "L" must be stamped under the model number stamping on the hub as shown below.

Example of Life Limit Stamping for C406 Hubs

T.C. P47GL P.C. 3
MOD. NO. 3A32C406-X
L

Example of Life Limit Stamping for C409 Hubs

T.C. P47GL P.C. 3
MOD. NO. D3A32C409-X
L

4. Make appropriate entry, with propeller total time, indicating compliance with this service bulletin in aircraft/engine logbook.

ALERT SERVICE BULLETIN



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ASB248

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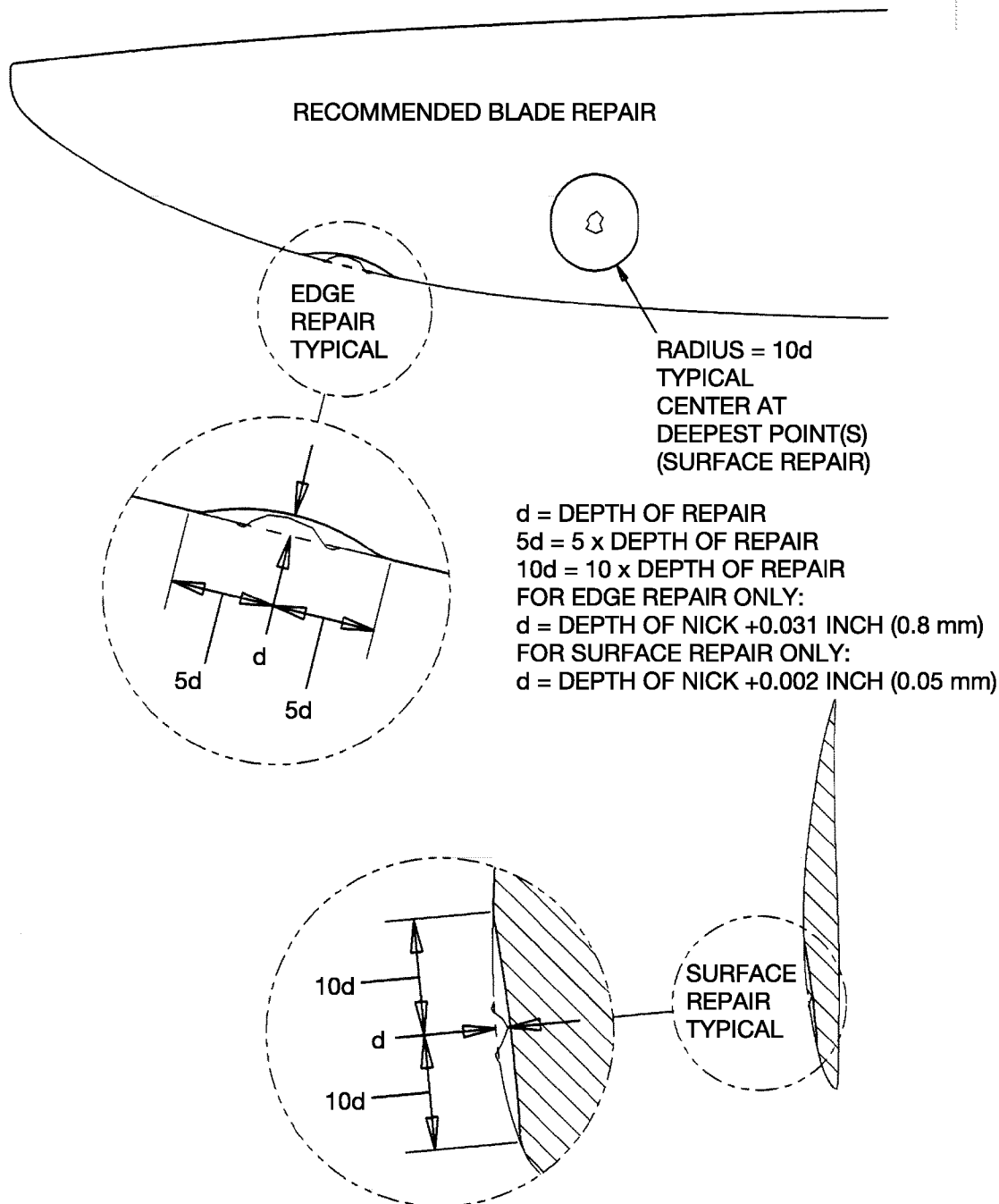


Figure 1. Blade Surface Repair (Sheet 1)

ALERT SERVICE BULLETIN



ASB248

C253

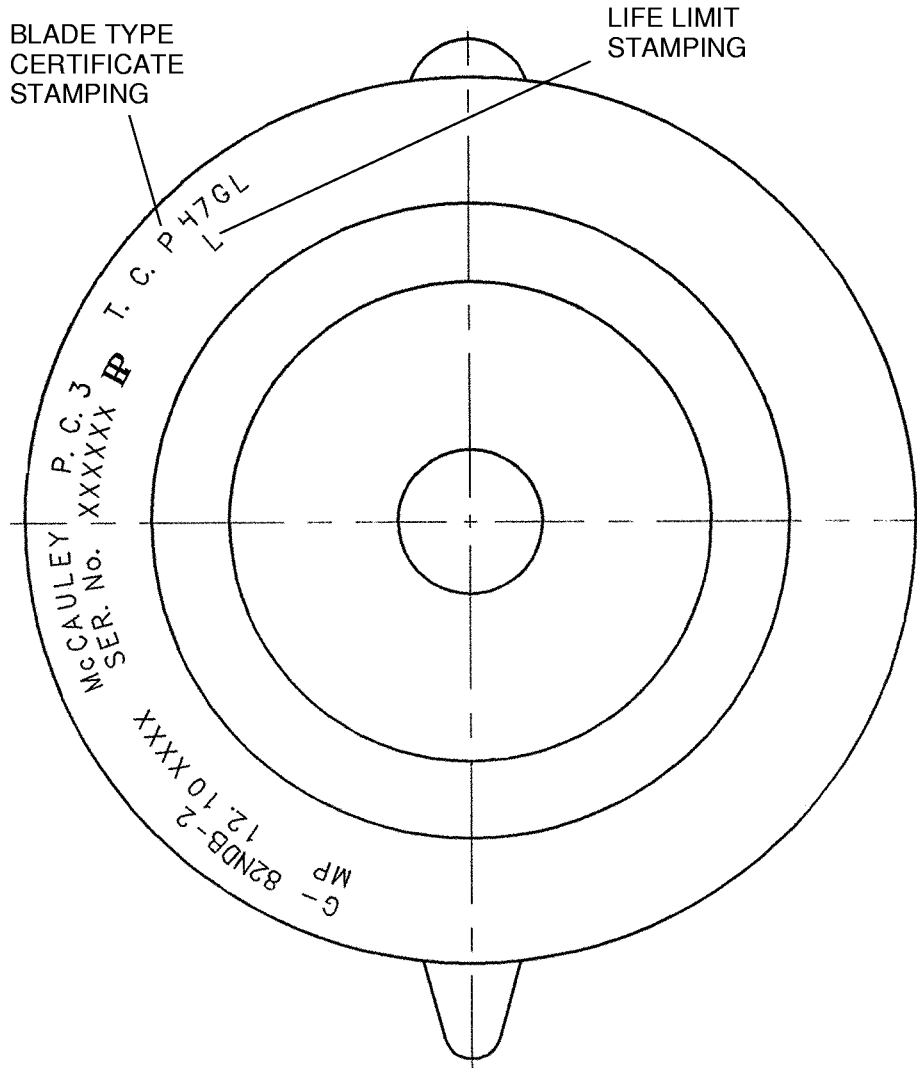


Figure 2. Blade Life Limit Stamping (Sheet 1)

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