

Chapter 1

PROPELLER

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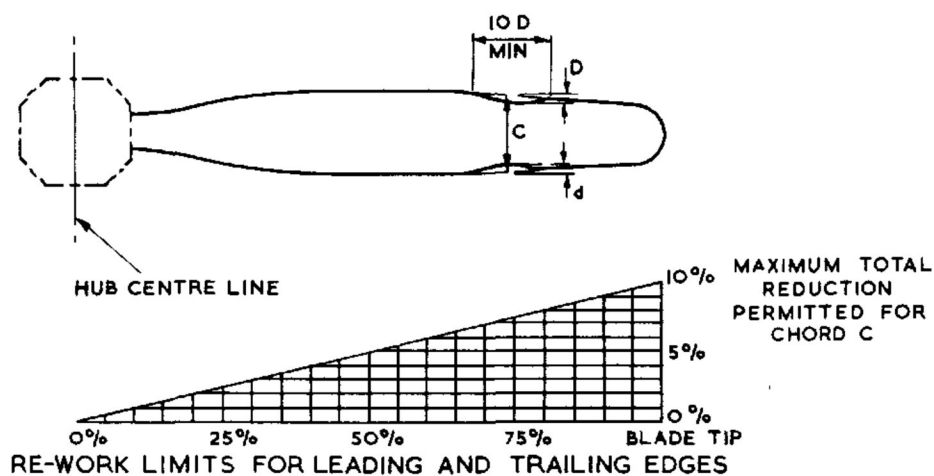
General

1. This chapter covers minor repairs to the propeller types listed in Topic -1, Chap. 1. If the damage is beyond the scope of these instructions, the propeller must be returned to a repair organisation.

Blades

2. While all severe surface damage must be re-worked at the pre-flight or daily inspections minor abrasion of the blade surface is acceptable until re-conditioning when a complete blade re-work must be performed. Where abrasion has caused small indentations, a depth of 0.016 inch or 0.006 inch in a previously re-worked area, is permissible. Although such indentations would not form significant stress raisers, depth in itself is not the most important criterion; the same depth associated with a sharp gouge or score across the blade would be unacceptable. It is not practicable to define comprehensive standards for the repair of damage in excess of 0.016 inch depth which can be regarded as acceptable for short periods of operation, and the acceptability of damage pending complete re-work can only be assessed by competent field inspection.

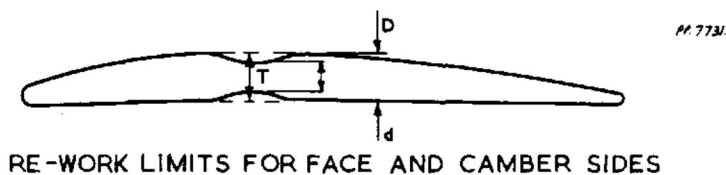
3. All cuts, nicks, dents, and corrosion outboard of the visible shank area (dimension A, fig. 2) and not acceptable in accordance with the instructions in para. 2 must be repaired, provided they are within the repair limits shown in fig. 1. Repairs are not permissible in the shank area which is shown as dimension A in fig. 2.



Reduction of chord C by re-works $D+d$ must be within limits shown above.

Maximum re-work depth on leading or trailing edge is half permitted total chord reduction, or 0.50 in., whichever is the less.

Re-work must be blended over a length of at least 10 times the depth in longitudinal blade direction. Length of any single or combined blend must not exceed 7 in.



Re-work depth D or d must not exceed 0.06 in., or 25 per cent of T whichever is less.

Re-works to be smooth blended over at least 30 times depth in longitudinal blade direction.

Final blend area must not exceed 25 per cent of the chord, or 4 in., in any direction whichever is the less.

Fig. 1. Blade repair limitations

4. Particular attention is drawn to the fact that a number of unblended gouges in a line across the faces of the blade may adversely affect the fatigue resistance and therefore special attention should be paid to this type of damage. It should also be noted that attempts to cover or conceal any damage by peening or other cold working are not permissible in any circumstances.

5. To repair a blade:-

(1) Examine the visible portion of the blade from shank to tip for nicks, dents, scratches, and corrosion.

(2) Check the width or thickness of the blade in the area of damage to ensure that it is within the tolerances given in fig. 1.

Note...

For propellers over 11 ft diameter there are no restrictions on repairs performed in the area between the blade tip (new) and a point 3 inch inboard of the tip. Damage in the tip area must be blended to a smooth contour.

(3) Remove damage outboard of the shank area with a scraper and smooth riffler file, completely removing all sharp corners and indentations to form a smoothly blended depression in the blade.

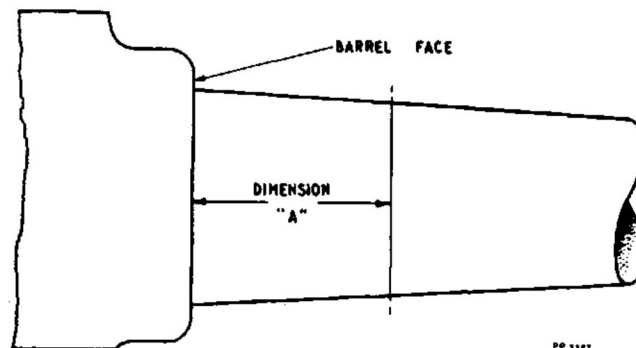


Fig. 2. Shank dimension measured from the barrel arm face

Propeller type No.	Dimension A	Propeller type No.	Dimension A
D158/313/1)	2.9 in	D197/312/1 and /2)	2.9 in
D187/313/1)		D232/313/1)	
D193/313/1)		D100/446/3 and /4	3.2 in



A ENLARGED VIEW OF DAMAGE TO BLADE SURFACE-
BEFORE TREATMENT



B FIRST STAGE OF REPAIR-RIFFLER FILE



C SECOND STAGE OF REPAIR-EMERY CLOTH



D ENLARGED VIEW OF DAMAGE TO BLADE SURFACE-
AFTER TREATMENT
PP1995

Fig. 3. Sequence of blade re-work

(4) Remove all traces of re-work marks with 240 grade emery cloth, and polish with 320 grade emery cloth.

(5) After performing the foregoing instructions, which are illustrated in figs. 3 and 4, examine the re-worked area with a 5X to 10X magnifying glass; if no damage remains remove a further 0.002 inch minimum of stock by polishing.

6. The following limitations apply in all instances; any blade which is outside these limits must be withdrawn from service and sent to a repair organisation:-

(1) Blades damaged by fire may not be repaired in the field.

(2) Blades damaged in the visible shank area (dimension A, fig. 2) may not be repaired, other than for damage to the de-icing overshoes, until a full report has been submitted to the manufacturer.

(3) A reasonable number of re-worked nicks and dents are permitted in the same area, but a continuous line of depressions across the face or camber side of the blade is not permitted.

(4) All damage repaired in accordance with the instructions in para. 5, sub-para. (1) to (5) must, after repair, remain within the limits given in fig. 1.

(5) After repair, wash the blade in a solution of compound detergent emulsion and warm fresh water, rinse with warm clean water and dry thoroughly.

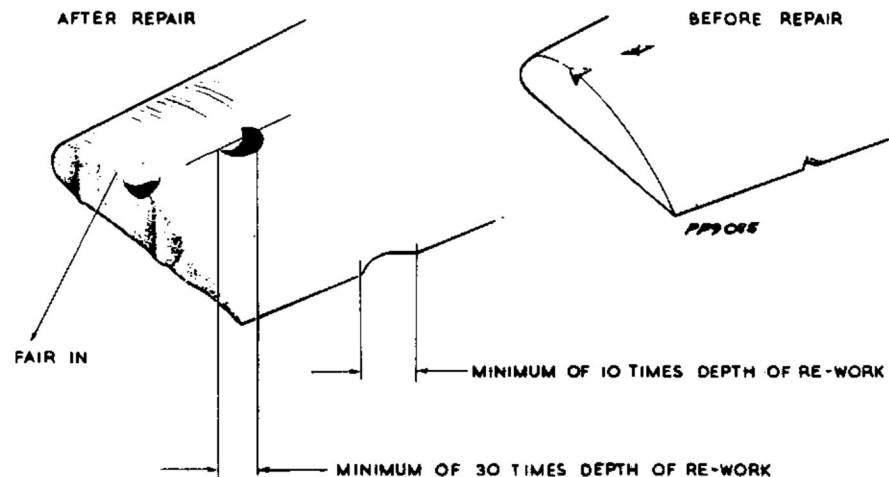


Fig. 4. Example of blade re-work

(6) Apply protective treatment to all exposed metal surfaces of the blades. Degrease the area using trichloroethane allow the solvent to evaporate and proceed as follows in accordance with sub-para. (7) and refer to Table 1 for blade tips.

Note...

- (1) Spray applications should be applied at an air pressure of 30 to 40 lb/in². Allow 30 minutes to elapse between applications and 24 hours to elapse for complete hardening of the paint finish.
- (2) If the black, matt paint finish is to be restored prepare the paint as detailed in (7). If an anodized surface has been reworked exposed areas should be protected with a coating of lacquer, DTD899A.

(7) Prepare DTD5555 paint finish: mix equal volumes of primer SL4853 and reducer TSL 4854.

Note...

The pot life of the prepared primer is 4 hours. If the primer is to be applied by means of a brush use reducer TSL4855.

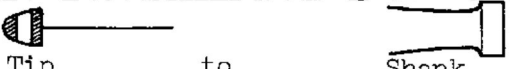
Thoroughly stir, in its container, catalyst CSL6201 and mix with an equal volume of paint finish 2SL5459.

Note...

The pot life of the prepared paint finish is 4 hours.

(8) Finally, wipe over the whole surface of the blade with a rag soaked in Lanolin DTD122B diluted to a pasty consistency with white spirit. The Lanolin is applied to seal the blade surface against corrosion.

TABLE 1
Blade tip colour scheme (DTD5555) and dimensions

Propeller type	White (in)	Black (in)	White (in)	Red (in)	White (in)	Red (in)
D158/313/1	1½	1	1½			
D165/312/1/2				2½	4	2
D187/313/1	1½	1	1½			
D193/313/1	1½	1	1½			
D197/313/1/2				2½	4	2
D232/313/1/2	1½	1	1½			
D100/446/3/4	Yellow (matt)	Yellow (matt)	Yellow (matt)			
				Tip	to	Shank

Note...

On propeller blades of aircraft types which have the propeller installation forward of the cockpit the yellow-painted band is maintained on the face side i.e. the face of the blade facing aft.