FAA APPROVED

SUBJECT: INSPECTION - FIBERGLASS TAIL ROTOR BLADES, PN 269A6124, 269A6124-9, 269A6035, 269A6035-9, 269A6035-17, 269A6035-19, 269A6035-M, 269ASK15, and 269-6100

MODELS AFFECTED: All 269 Series Helicopter (Hughes 269A, TH55A, 200, 200 Deluxe, 300 and 300C) Equipped With Subject Tail Rotor Blades

TIME OF COMPLIANCE:

1) Tail Rotor Blades in Service - Corrosion Inspection, Parts I through VI

   A. With 500 or more hours time in service, within the next 100 hours service or 6 calendar months from issue date of this Notice, which ever occurs first.

   B. With service time less than 500 hours, at 600 hours of service or 6 calendar months from issue date of this Notice, whichever occurs first.

   C. At 12-month intervals following completion of the initial inspection until retired from service.

2) Spares Inventory Blades and/or Tail Rotor Assemblies - Corrosion Inspection, Parts I through VIII.

   A. Prior to installation on a helicopter.

3) Special Inspection - Tail Rotor Spar Heat Treat, Part XI.

   A. Tail rotor blades in service; within the next 100 hours of operation.

B. Tail rotor blades and/or the tail rotor assemblies in Spares Inventory; prior to installation on a helicopter.

NOTE

Tail rotor blade part and serial numbers affected are listed in Part XI, Table 1.

PREFACE:

Evidence of corrosion of the steel spar in the fiberglass tail rotor blade has been found. In addition, vendor records can not verify the heat treat process on certain tail rotor blade spars.

This service notice defines the inspection procedure to determine if corrosion exists or if the spars have been improperly heat treated and establishes limits to determine if the blades are serviceable. Corrective measures are provided for removal and treatment to prevent further corrosion. A repair of the fiberglass structure adjacent to the inboard rib is included.

Subject tail rotor blades and tail rotor assemblies incorporating subject tail rotor blades delivered from the factory after 1 April 1975, will have met the requirements of Sections 1) and 2) of the Time of Compliance. All tail rotor blades, PN 269A6035-17 and 269A6035-19, noted by serial number in Table 1, Part XI, require inspection per Section 3) of the Time of Compliance.

Tail rotor blades and tail rotor assemblies leaving the factory with improved corrosion protection may be identified as follows:

Green Dot — A green dot which is located just outboard of the data plate indicates blades which were given additional corrosion protection treatment both inside and outside the spar during manufacturing. Since these blades could be visually inspected for corrosion during the fabrication process, no initial X-ray inspection was required. These blades must be reinspected at each 12-month interval after being put into service. Any blades with the green dot and serial numbers listed in Table 1 of Part XI must be inspected for hardness.

White Dot — A white dot which is located just outboard of the data plate indicates that blades have been X-rayed and treated for corrosion protection per the requirements of this service notice. These blades have not had the additional corrosion protection inside and outside the spar during manufacturing unless it shows a green dot. They were clear of any X-ray indications of corrosion pitting at the time they left the factory. These blades must be reinspected at each 12-month interval after being put into service. Any blades with a white dot and serial numbers listed in Table 1 of Part XI must be inspected for hardness.

Reference

269 Series Basic HMI issued 1 April 1973; Revision No. 3, 15 March 1975 and Appendix C issued 1 March 1973; Revision No. 3, 15 July 1974

PART I PRELIMINARY PROCEDURE

TOOLS AND EQUIPMENT

Scale - gram	-	Commercial
Drift - wood or equivalent	1 ea	Commercial

MATERIALS

Solvent - Alcohol or	AR	Commercial
Solvent - Benzine or	AR	Commercial
Solvent - PD-680 or	AR	Commercial
Gasoline White	AR	Commercial
Solvent Dry Cleaning	AR	Commercial
Solvent - Aliphatic Naptha	AR	Commercial
Cloth clean soft	AR	Commercial

PART II BLADE INSPECTION PROCEDURE

TOOLS AND EQUIPMENT

Mirror - inspection ; 7/8 inch dia, handle length as required	AR	Commercial
Flashlight - inspection	1 ea	Commercial

PART III X-RAY CRITERIA AND TECHNIQUE

NOTE

See X-ray Part III

PART IV CORROSION VISUAL INSPECTION AND REMOVAL PROCEDURE

TOOLS AND EQUIPMENT

Steel bristle bottle brush		
1/4 inch dia, Bristle dia, 0.004 inch	1 ea	Commercial (Complete Brush Set - 4 brushes - PN 127; Gordon Brush Co., 1018 Santa Fe Ave., Los Angeles, CA 90021)
3/8 inch dia, Bristle dia, 0.0085 inch	1 ea	
1.0 inch dia, Bristle dia, 0.0085 inch	1 ea	
1.25 inch dia, Bristle dia, 0.0085 inch	1 ea	
*Installation tool - blade pitch bearing	-	Local manufacturer - See Figure 2.
Rod Steel - 0.050 inch dia x 24 inches long	1 ea	Commercial
Borescope National Borescope Catalog No. 250-24C, 0.250 inch dia. with No. 250-RA viewing head-right angle. "X", power 1 to 8 at one inch from objective lens. Focus, universal from objective lens to infinity.	-	National Instrument Div. Englehard Hanovia, Inc. 92-21 Corona Avenue Elmhurst, L.I., N.Y. 11373 Tel: (212) 592-4044 or Expanded Optics Co. 14112 Willow Lane Westminster, CA 92683 Tel: (714) 894-1388

*Not required for high tip speed tail rotor blades

NOTE

Any equivalent instrument is acceptable.

MATERIALS

LOCTITE Grade A, per MIL-S-22473 or equivalent material	AR	Commercial

PARTS

*Pitch bearing outer	1 ea per blade	269A6062-3
*Pitch bearing inner	1 ea per blade	269A6062-5

PART V CASTING PROCEDURE

TOOLS AND EQUIPMENT

Steel wire 0.005 to 0.009 inch dia	AR	Commercial
Magnifying glass - 5x to 10x	1 ea	Commercial
Containers - glass or paper	AR	Commercial

MATERIALS

Wooden sticks 1/4 x 1/8 x 10 long	AR	Commercial
Dental stone - quick setting low shrinkage hard setting	AR	Dental supply house; 50 gr quantity required for 2 blade if pitting is found

NOTE

The following items comply with the above, equivalents are acceptable.

COECAL or SUPER CAL	COE Laboratories, Inc. 8737 W. 127th St. Chicago, Ill. 60658 Tel: (812) 568-2100
VELMIX	Kerr Mfg Co. Romulus, Mich. Tel: (313) 926-7800
Release Agent WD-40	WD-40 Co. San Diego, Ca.

*Not required for high tip speed tail rotor blades.

LPS.1 or equivalent		LPS Research Laboratories, Inc. Los Angeles, Ca.

NOTE

Any equivalent non-silicone, rust freeing penetrant packaged in an aerosol container is acceptable.

PART VI METAL TREATMENT PROCEDURE

TOOLS AND EQUIPMENT

Brush long handled - nylon bristles, 3 inch long x 3/4 inch dia	2 ea	Commercial
Heat lamp or oven		Commercial

MATERIALS

Inhibited phosphoric acid base surface cleaner	AR	MIL-C-10578 Type II or TT-C-490 or equivalent

NOTE

The following commercial items are acceptable.

TURCO WO #1	SP-5-2111	Turco Products Wilmington, Ca.
JELCIO #33		Oakite Products
C-621		McGean Chemical Co.
FOSBEND 67 or 36		Penwalt Co.
PHOSIT		BASF Wyandotte Co.
NAVAL JELLY (for ferrous metals)		Woodhill Chemical Co. Cleveland, Ohio

NOTE

Surface cleaner may be obtained by following the formulation given in Part VI.

PART VII CORROSION PROTECTION PROCEDURE

TOOLS AND EQUIPMENT

*Binks Slosh Spray Gun (engine cleaning gun), Model #140B 10-inch nozzle extension	-	Commercial
*Compressed air source, 100 psi	-	Commercial
*, **Oven or heat lamp	-	Commercial or household
**Fitting-T 3/8 in. OD	1 ea	Commercial
**Funnel - small plastic	1 ea	Commercial

MATERIALS

**Tubing - clear polyethylene 3/8 in. ID or equivalent	100 inches, approx.	Commercial
**Cork 2 inches long x 3/4 x 1-1/2 inch	1 per T/R	Commercial
*, **, +Methyl ethyl keytone	AR	Commercial
*, **, +Gauze - medical	AR	Commercial
*, **, +Swabs cotton 6 inch stick	AR	Commercial
Padding		As available
**Wood 2 x 4 inch or equivalent		As available
**Masking tape	AR	Commercial
Zinc dust rich primer	-	MIL-P-26915A Type 1, Class A

* Required if spray method is used
**Required if fill method is used
+ Not required for high tip speed tail rotor blades

NOTE

Premixed zinc primer conforming to the above, and suitable thinner, may be procured from the following manufacturers.

Koppers Co., Los Angeles, Ca.

Sinclair Paint Co., Los Angeles, Ca.

Industrial Metal Protection Inc.
2685 Culver Blvd., Dayton, Ohio

Advanced Coating and Chemical Co.
El Monte, Ca.

Other manufacturers products are acceptable if they comply with the applicable specification.

Refer to the primer and thinner formulation (Part VII) for the ingredients necessary to compound the primer/thinner, should ready mixed materials not be available. The formula as given complies with the above specification.

*, **Cheese cloth	AR	Commercial
*, **Paint Strainer	AR	Commercial

PART VIII FIBERGLASS INSPECTION-REPAIR/SPAR EXTERIOR INSPECTION PROCEDURE

MATERIALS

Abrasive paper 100 and 320 grit	AR	Commercial
EA 9309 or EA9410 (Epoxy Resin - two part)	AR	Hysol/Dexter Co.
or		
EC 1838	AR	3M Company
or		
A1177B or equivalent	AR	B.F. Goodrich Co.

* Required if spray method is used
**Required if fill method is used
+ Not required for high tip speed tail rotor blades

PART I. PRELIMINARY PROCEDURE

a. Remove tail rotor from aircraft; remove blades from tail rotor (refer to HMI).

b. Weigh and record weight of each blade prior to inspection and rework, use scale accurate to within 0.5 gram.

*c. Remove pitch bearings from bore of blade spar using a suitable drift made of hardwood, strike bearing on side with mallet.

d. Clean tail rotor blades using alcohol and soft cloth remove all grease, oil and dirt from exterior of blades.

PART II. BLADE INSPECTION PROCEDURE

2-1. The purpose of the inspection is to determine if undetected corrosion exists on the tail rotor blades.

2-2. The only way exterior corrosion under the fiberglass can be detected is by x-raying the blade. Part III of this Notice provides all necessary data to take and interpret the x-rays. If it is determined that exterior corrosion under the fiberglass exists, the blade must be retired from service.

2-3. The procedures and criteria defined in this Notice for exterior corrosion do not include nor are meant to apply to corrosion on the exterior of the spar not covered by fiberglass. If evidence of corrosion under the paint exists, remove corrosion in accordance with Part VIII.

2-4. Interior corrosion of the spar shall not exceed 0.006 inch depth maximum.

Part IV of this Notice provides an instruction for visual inspection and removal of corrosion-causing contaminants and oxides from the spar interior.

2-5. Parts VI and VII of this Notice provides an instruction for treatment of the spar interior to inhibit corrosion and application of a protective coating to prevent corrosion when the blade is returned to service. Part V furnishes casting and inspection procedures for interior spar areas.

2-6. Parts VIII and IX of this Notice provides an instruction for inspection and repair of voids in the fiberglass adjacent to the blade root and assembly, installation and balancing criteria necessary when the blade is returned to service.

*Step c not required for high tip speed tail rotor.

2-7. Part X of this Notice provides inspections to be performed at 12 month periodic intervals.

2-8. Part XI of this Notice provides for a Rockwell hardness check of certain serial numbered blades. The check will be performed on a one-time basis.

2-9. The following guideline must be followed when inspecting the blade:

a. All blade spars must be inspected for interior and exterior corrosion. Specific procedures for inspection to determine if any corrosion is present are given in subsequent paragraphs.

b. If it is determined that exterior corrosion exists under the fiberglass, the blade must be retired from service.

c. If corrosion exists, the interior pattern formed by the corrosion pits must match exactly that shown in the x-rays.

1. If the patterns do not match, it must be assumed that exterior corrosion is present, making it mandatory that the blade be retired from service.

2. If the patterns match, it indicates that the corrosion is confined to the interior of the spar. If the pitting resulting from interior corrosion does not exceed limits, the blade may be returned to service.

d. Whenever Part IV, CORROSION VISUAL INSPECTION AND REMOVAL, is accomplished, Part VI, TREATMENT, should be accomplished immediately to prevent accumulation of corrosion-producing contaminants, with resultant further damage to the surface.

e. It is recommended that the interior corrosion inspection be completed prior to x-ray; if the interior corrosion exceeds the limits, (see Figure 1, sheet 4), the blade must be retired from service, as the condition is non-reparable.

f. Any blade that is determined to be acceptable for return to service, must have had Parts II, INSPECTION; III, X-RAY*; IV, CORROSION VISUAL INSPECTION AND REMOVAL; VI, TREATMENT; VII, PROTECTION; VIII, FIBERGLASS INSPECTION/REPAIR-SPAR EXTERIOR INSPECTION and PART IX, ASSEMBLY-INSTALLATION-BALANCE; completed for that blade.

g. Re-examine cleaned and treated spar with mirror and flashlight. Determine if corrosion is superficial or otherwise.

1. If corrosion is within limits, complete Part III, X-RAY* and if found acceptable, Parts VII, PROTECTION; VIII, FIBERGLASS; and Part IX, ASSEMBLY and INSTALLATION-BALANCE.

2. Blades meeting the x-ray and interior inspection criteria may be returned to service following completion of Parts VI through IX.

*Not required for high tip speed tail rotor.

PART III. X-RAY CRITERIA AND TECHNIQUE

a. X-ray each low tip speed tail rotorblade in the area from 0.75 inch to 4.75 inches outboard of the blade retention bolt centerline. X-ray in two directions: (See Figure 1, sheet 1).

1. Parallel to the blade chord.

2. Perpendicular (90°) to the blade chord.

b. X-ray parameters

1.	Tube distance to film	40 inches min
2.	Voltage	100-200 KV
3.	Time	As required
4.	Penetrameter	2% sensitivity of 0.12 inch thick steel
5.	Object to film distance	Contact
6.	Screen Lead-Front	0.005 inch thick
7.	Screen Lead-Back	0.005 inch thick
8.	Tube Angle	None
9.	Densitometer Reading	1.5 to 2.7 on National Bureau of Standards Scale

c. X-ray equipment and materials:

1.	X-ray machine 100 to 200 KV capability	-	Industrial

NOTE

An x-ray machine other than industrial may be used provided the x-rays meet the density and sensitivity requirements.

2.	Film-X-ray, AGFA Gevaert Gevar Polyester Base, Type TA-D2 or D4	AR	Industrial Grade
	or		
3.	Film-X-ray, Dupont Type 510	AR	Industrial Grade
	or		
4.	Film-X-ray, Kodak Type M or T	AR	Industrial Grade

d. Take x-rays in accordance with the following:

1. Sandwich film between screens placed on flat surface.

2. Position x-ray equipment as required.

3. Expose film as required to obtain density.

4. Determine that sensitivity is acceptable.

5. Position penetrameter on 0.12 inch thick steel tab and place on top surface of upper screen so as not to interfere with x-ray image.

Viewing Technique

The examination of the x-rays should be made under the conditions that favor the best visualization of detail. The illuminator must provide light of an intensity that will illuminate the areas of interest in the x-ray to the best advantage, free from glare. The light must be diffused evenly over the entire viewing area. Mask off areas of the light source to avoid glare from bright light coming from around the edges of the x-ray.

View x-rays to determine that entire area of the steel penetrameter is clearly outlined. Determine that the inspection area of the blade spar is clear of indication of pitting or cracks (see Figure 1, sheet 3 and x-ray negatives if available; sample x-ray negatives of pitting limits are available at Hughes Service Centers and Distributors for examination and comparison).

NOTE

Corrosion is indicated by a mottled darker patch of irregular shape (peppered appearance).

Cracks are indicated by a single straight dark line beginning at the surface. Spars suspected of being cracked should have the paint removed from the suspect area for visual inspection.

X-rays should be retained for one year and used for comparison when complying with the twelve month calender inspection.

CAUTION

IMPORTANT INFORMATION

In all cases where interior corrosion is found to exist in area A1, Figure 1, sheet 1, a comparison must be made between the x-ray pattern and the interior pattern. If the patterns do not match exactly, the blade must be retired from service because it indicates external corrosion.

PART IV. CORROSION VISUAL INSPECTION AND REMOVAL PROCEDURE

Visual Inspection

The following instructions shall be followed when inspecting the blade for interior corrosion.

a. Using inspection mirror and flashlight, inspect interior of blade for evidence of corrosion or cracks.

NOTE

Corrosion will have the same appearance as rust on any other ferrous metal, varying in color from dark brown to bright red. Evidence may be visible as spots, patches or uniform discoloration of a considerable area. The normal appearance of the interior finish is a uniform smooth textured dull dark gray to blackish color, normally associated with a Parco Luberite finish. A red tint may also be seen; this is due to the Epon primer treatment applied over the Parco Luberite and should not be confused with rust.

b. If corrosion is other than superficial, inspect spar interior in area shown in Figure 1, sheet 3 using a borescope.

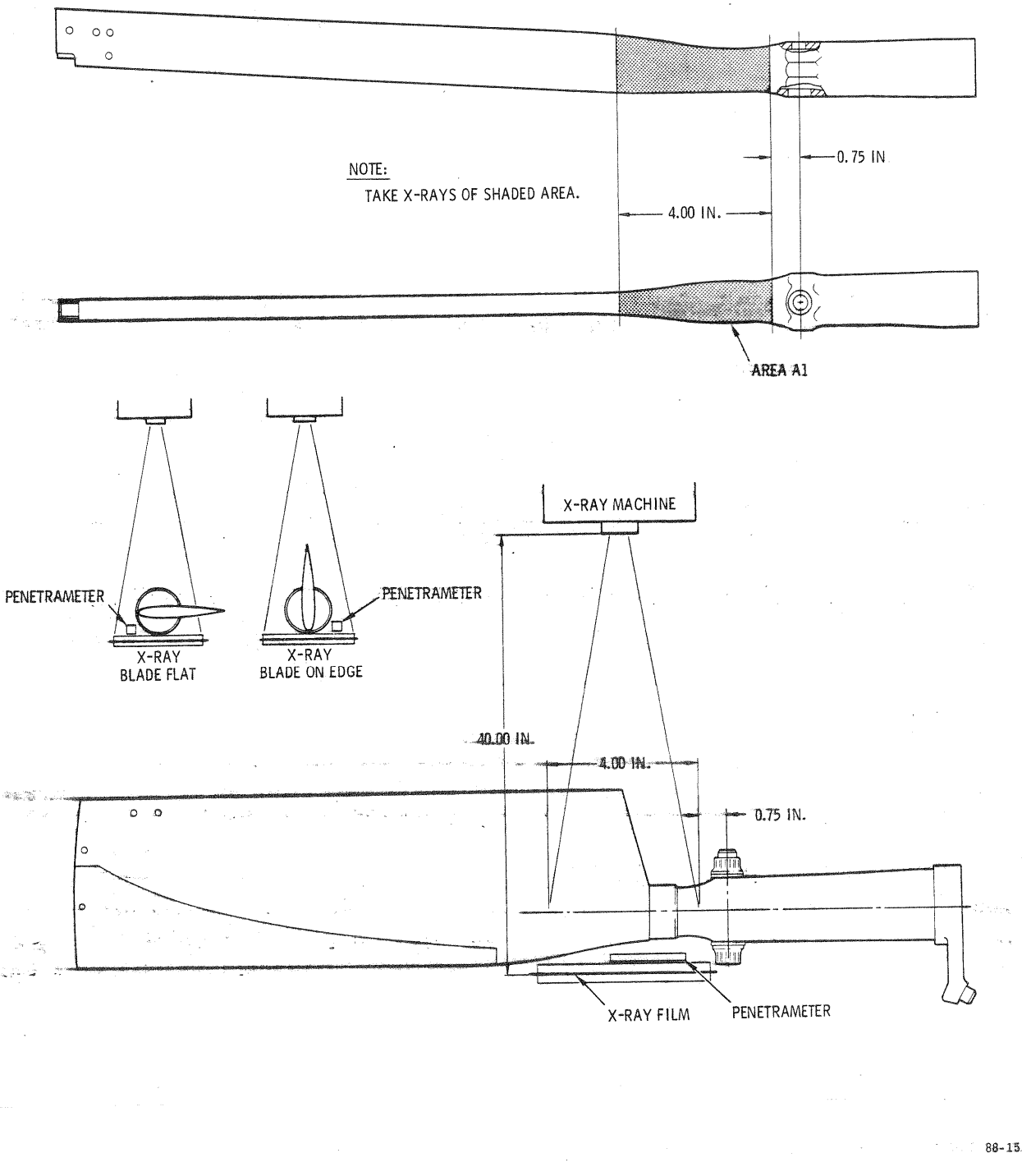
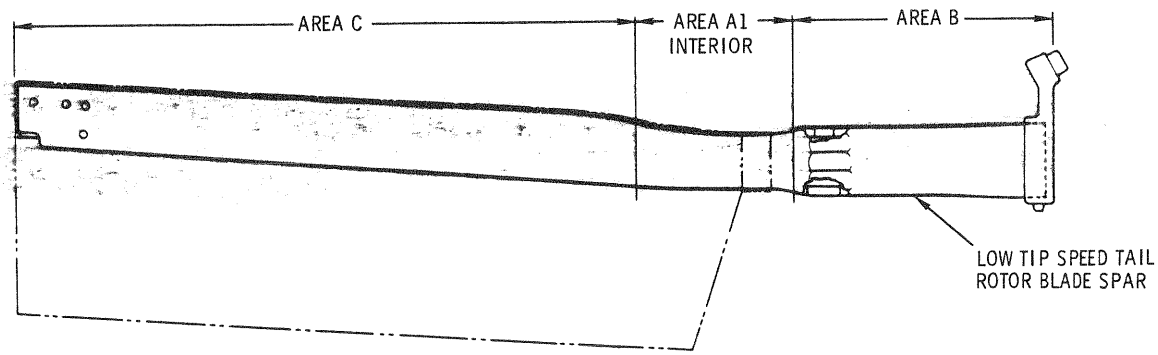


Figure 1. Low-Tip Speed-Tail Rotor Blade and Spar X-ray Setup and Area (Sheet 1 of 3)

NOTE: Sample x-rays are available at Hughes Service Centers and Distributors for examination and comparison.

Figure 1. X-ray Reproduction (Sheet 2 of 3)



AREAS A THROUGH E

ALLOWABLE INTERNAL PITTING 0.006 DEEP X 0.015 WIDE X 0.020 LONG MAXIMUM.

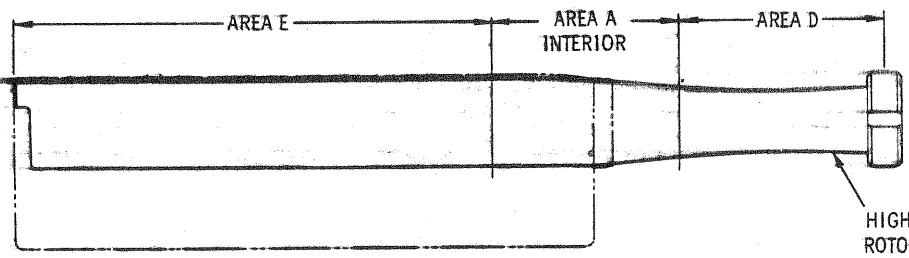


Figure 1. Blade Spar Internal Inspection Areas
(Sheet 3 of 3)

Corrosion Removal

a. With blade secured in horizontal position, remove corrosion from interior of blade spar.

1. Using appropriate size wire brushes, by hand and an in-and-out motion, brush out full length of spar until all corrosion and loose scale is removed. Use progressively smaller diameter brushes as cleaning progresses up the tube interior. Clean blade mounting holes in same manner (low tip speed tail rotor blades only). After cleaning determine that all corrosion and loose scale has been removed.

NOTE

To facilitate brush use, attach brush handle onto rod of right ID to obtain handle rigidity.

CAUTION

Chordwise scratches will impair structural integrity. Do not use drill motor or any radial motion. Use lengthwise motion only.

2. Remove debris from spar interior by shaking; follow with compressed air, then use clean cloth.

3. Determine that drain holes in blade and spar are free from obstructions, open drain holes if required, using wooden tooth pick for vent holes and steel rod for drain hole between tip weight and spar.

4. Make casts (Part V) of areas determined to have corrosion pits.

PART V. CASTING PROCEDURE

a. The casting materials are prepared and used as follows:

1.	COECAL	50 grams of powder 15 cc, distilled water
2.	SUPER-CAL	50 grams of powder 12 cc, distilled water
3.	VELMIX	50 grams of powder 15 cc, distilled water

NOTE

Amounts given are sufficient to make casts of two blades. Increase quantities in same proportions as required.

b. Add powder to water, stir until mixture is smooth with no lumps and will stand up in peaks in container. If possible, vibrate before, during and after mixing.

c. Apply release agent to spar interior.

d. Place sufficient amount of mixture on stick. Press mixture into approximately 1/3 of interior circumference of spar, being sure to cover entire pitted area, (areas A and A1, B and D, Figure 1, sheet 3). Leave stick in place to facilitate removal of cast after hardening.

NOTE

Keep coated area to 1/3 of tube to facilitate removal. Mix has a working life of approximately 20 minutes and will cure within 45 minutes at room temperature.

e. Repeat steps c and d for remaining 2/3 of spar interior, 1/3 at a time, as required.

f. Remove all casting residue from spar interior.

g. Using magnifying glass and wire sizes noted as a comparable object, inspect casts in accordance with the limits defined in Figure 1, sheet 3, for the area for which the casts were made (0.006 inch maximum).

h. The blade shall be retired from service if limits are exceeded.

PART VI. METAL TREATMENT PROCEDURE

Phosphoric Acid Cleaner Formulation

As noted in the List of Materials, premixed materials conforming to the specification may be procured from the manufacturers indicated. Should it be impossible to procure the premixed, the following formula will provide the proper cleaning material.

Mixing instructions are also provided.

Item	Nomenclature	Parts By Weight (PBW)
a.	Phosphoric Acid 85%	18.0
b.	Water Distilled	22.0
c.	I - Butanol	35.0
d.	Iso Propanol	25.0
	Total	100.0

1. Place distilled water (22.0 PBW) in suitable glass container, slowly add phosphoric acid (18.0 PBW).

2. Add Butanol (35.0 PBW) to mixture; then add Iso Propanol (25.0 PBW). Stir well.

NOTE

Store mixture in closed glass container.

CAUTION

Materials containing fluoride may induce hydrogen embrittlement. Use no material containing fluoride.

a. After CORROSION REMOVAL and prior to CORROSION PROTECTION treat interior of spar as follows:

*1. Using masking tape, cover mounting bolt holes.

2. Using long handled brush, treat the exposed metal with phosphoric acid cleaner (diluted 2 to 1 with water), keep the surface wet for at least 10 minutes.

NOTE

When other products are used follow manufacturer mixing and application directions.

*3. Remove tape from mounting bolt holes, using clean cloth on dowel, apply diluted cleaner to bolt holes.

4. Rinse blade spar thoroughly with water, drain and flush with alcohol; thoroughly air dry, using moderate heat (not to exceed 150°F).

*5. Inspect mounting bolt holes for corrosion and wear. (Refer to HMI Appendix C).

*Steps a1, 3 and 5, and b not required for high tip speed tail rotor blades.

*b. Replace pitch bearings as follows, (see Figure 2).

CAUTION

Do not sand bore of blade spar to clean bearing seat areas.

1. Using masking tape, mask bearing inner diameter.

2. Apply Loctite grade A, locking compound to outer surfaces of outer pitch bearing by rolling the bearing over a stamp pad saturated with locking compound (an alternate method of application is acceptable).

3. Place outer pitch bearing over shoulder on outer end of bearing installation tool and insert bearing and tool into blade spar. Use mallet to tap installation tool and bearing into spar until bearing is fully seated inside spar.

4. Remove installation tool from blade spar. Clean excess Loctite off with alcohol.

5. Prepare inner pitch bearing; place bearing on opposite end of installation tool and insert end of tool into bore of blade spar, tapping with mallet to seat bearing. Clean excess Loctite off with alcohol.

NOTE

Do not install mounting bolt bushings at this time.

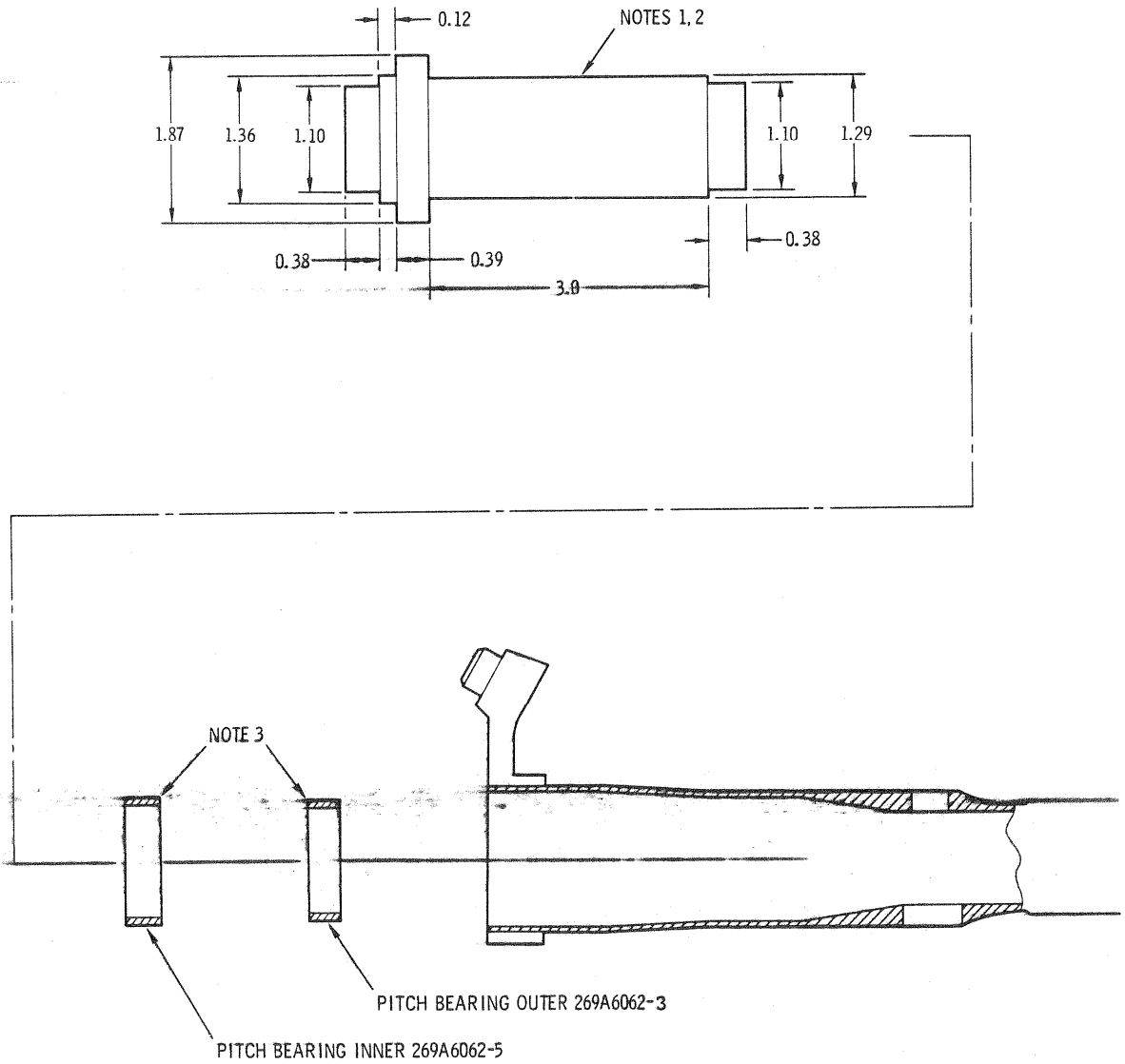
PART VII. CORROSION PROTECTION PROCEDURE

CAUTION

The following procedures (spray or fill method) must be strictly adhered to. Any deviation may allow paint to enter fiberglass cavity of blade, making it impossible to balance tail rotor.

a. Treat interior of spar to prevent corrosion. (See zinc pigment primer formulation at end of this procedure.)

*Steps a 1, 3 and 5, and b not required for high tip speed tail rotor blades.



NOTES:

1. ALL DIMENSIONS IN INCHES
2. FABRICATE FROM HARD WOOD, PHENOLIC, OR ANY OTHER SUITABLE MATERIAL.
3. MASK INTERIOR DIAMETER OF BEARINGS PRIOR TO INSTALLATION.

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Figure 2. Low Tip Speed Tail Rotor Blade Pitch Bearing Installation

*1. Verify bearing inner diameter masking.

*2. Cover bolt holes with masking tape.

3. Test spray gun for evidence of fine spray pattern.

4. Use zinc pigment primer thinned and spray gun with regulated pressure of from 45 to 55 psi; spray coat (0.003 inch thick) of zinc primer full length of spar interior. Maintain blade upright (blade tip up) during spraying.

NOTE

As soon as primer comes out of spray gun, start to withdraw nozzle from spar interior, using smooth motion. (Time inside spar 2 to 3 seconds.) Continually agitate primer by stirring or shaking container to prevent separation.

CAUTION

Primer will drain into blade cavity if blade is inverted. Keep blade upright (blade tip up) during and after spraying.

*5. Remove masking tape from bearings and bolt holes; clean bearing ID as necessary after primer application using MEK and small gauze pad on finger or swab on stick; use MEK and swab for bolt holes.

CAUTION

Damage to primer finish will result if excess solvent is used. Confine cleaning to bearing seats.

6. With blade tip up, air dry a minimum of 2 hours, then oven cure at 170° ±15°F for 4 hours. Monitor oven temperature using separate thermometer.

7. Determine that drain holes at trailing edge of blade and area between tip weight and spar are not plugged with primer, by blowing into spar. With fingers over bolt holes, listen for air escaping from blade tip vent holes.

*Step a 1, 2 and 5, and "Alternate Procedure" 2, 3 and 8 not required for high tip speed tail rotor.

NOTE

A long wire may be used to clear holes.

Alternate Priming Procedure (See Figure 3.)

1. Assemble large cork, "T" fitting, plastic tubing and funnel.

*2. Verify bearing inner diameter masking.

*3. Cover bolt holes with masking tape.

4. Using padding and masking tape, secure tail rotor blade to 2 x 4 or other suitable wooden support. Secure wooden support in vise. Install cork-tubing assembly in spar, secure funnel and drain tubes (clamp drain tube closed) to any convenient rigid support.

5. Agitate, then slowly pour thinned primer into funnel. During pouring, determine primer level in spar tube by observing fill tube and funnel mouth, fill spar to X dimension shown on Figure 3.

CAUTION

Do not overfill. Do not squeeze or disturb fill tube and funnel.

6. Unclamp drain tube, drain spar tube immediately by placing drain tube into container positioned below hub end.

7. Remove cork/tubing assembly. Allow 3 hours for primer to drain and air dry with blade still in vertical position.

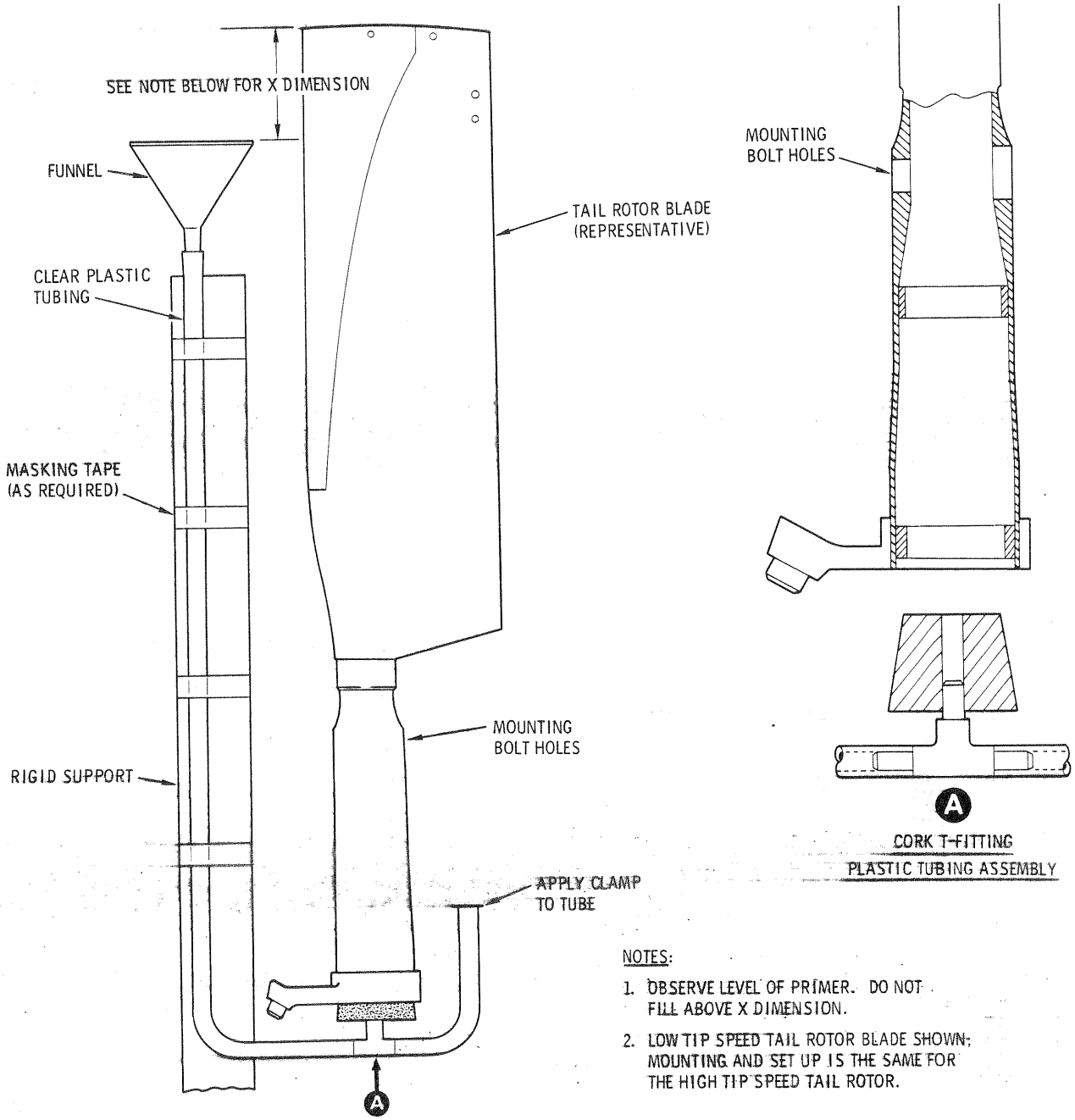
*8. Remove masking tape from bearings and bolt holes. Clean bearing ID as necessary after primer application, using MEK and small gauze pad on finger or swab on stick. Use MEK and swab for bolt holes.

CAUTION

Damage to primer finish will result if excess solvent is used. Confine cleaning to bearing seats.

9. Oven cure primer at 170° ±15°F for 4 hours. Monitor temperature using separate thermometer.

*Step a 1, 2 and 5, and "Alternate Procedure" 2, 3 and 8 not required for high tip speed tail rotor.



NOTES:

1. OBSERVE LEVEL OF PRIMER. DO NOT FILL ABOVE X DIMENSION.
2. LOW TIP SPEED TAIL ROTOR BLADE SHOWN; MOUNTING AND SET UP IS THE SAME FOR THE HIGH TIP SPEED TAIL ROTOR.

X DIMENSION – TAIL ROTOR BLADE PART NUMBERS

2.25 IN.	269A6035 BASIC AND -17
1.75 IN.	269A6035-9 AND -19
2.96 IN.	269ASK15
2.25 IN.	269A6035M
0.75 IN.	269-6100
0.75 IN.	269A6124
0.75 IN.	269A6124-9

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Figure 3. Zinc Primer Application, Fill Method

10. Determine that drain holes at trailing edge of blade and area between tip weights and spar are not plugged with primer, by blowing into spar, with fingers over bolt holes, listen for air escaping from blade tip vent holes.

NOTE

A long wire may be used to clear holes between tip weight and spar.

11. Inspect primer finish for smooth even coat.

General: If it should become necessary to remove zinc primer due to insufficient coverage, use MEK and swab.

Zinc Pigment Primer Formulation

As noted in the List of Materials, premixed materials conforming to the specifications may be procured from the manufacturers indicated. Should it be impossible to procure the premixed, the following formula will provide the zinc rich primer coating necessary to protect the interior of the spar. The quantities of material noted is sufficient to prime up to 12 blades.

Mixing instructions, thinner preparation and other necessary data are also provided.

Item	Nomenclature	Parts by Weight (PBW) Spray Method	Grams - Fill Method
a.	~~Phenoxy resin - PKHH~~[1] EPONAL 53[2]	19.0	190.0
b.	Cellusolve acetate	66.0	660.0
c.	Toluene	15.0	150.0
d.	Zinc oxide	1.5	15.0
e.	Bentone[3] or equivalent	2.0	20.0
f.	MPA -60[4] or equivalent	1.5	15.0
g.	Zinc dust[5] (9 micron or less)	95.0	950.0
	Total	200.0	2000.0

The liquid vehicle portion of the primer shall be a thermoplastic, high molecular weight phenoxy resin PKHH or EPONAL 53.

NOTES

(1) Union Carbide Corp
(2) Shell Chemical Corp
(3) NL Industries
(4) Baker Castor Oil Co.
(5) New Jersey Zinc Co.

Primer Mixing

1. Dissolve phenoxy resin in cellusolve acetate. Use high speed agitator. Heat to approximately 170°F. Cool mixture to 120°F before proceeding.

NOTE

Heating speeds up solution process.

Any device such as an electrical household mixer or a drill motor with a rod bent at right angles installed (1/2 inch bend) is acceptable.

2. While stirring, add toluene to phenoxy resin and cellusolve acetate mixture.

3. Continue stirring, add zinc oxide, Bentone and MP A-60 to mixture.

4. Continue stirring and add zinc dust.

NOTE

Continue stirring until primer mixture is homogeneous with a smooth texture. Mixture shall be free of any contaminants.

Primer/Thinner Mixing

1. Primer/thinner mix shall be as follows:

Item	Nomenclature	Parts by Volume (PBV)
a.	Primer	100.0
b.	Methyl Ethyl Keytone	70.0

2. While stirring add thinner to primer

NOTE

Continue stirring until primer/thinner mix is homogeneous with a smooth texture. Strain mixture through a double layer of cheese cloth or paint strainer. Mixture is now ready for use.

PART VIII. FIBERGLASS INSPECTION - REPAIR/SPAR EXTERIOR INSPECTION PROCEDURE

Voids - Inspection and Repair

a. Inspect the fiberglass wrapped area of the spar adjacent to the blade root (see Figure 4, area A) for voids, separation or cracking of the fiberglass; pay particular attention to the edge of the wrapped area.

b. If damage is found proceed as follows:

NOTE

The following repair is limited to surface cracks, separations or voids at the blade root. The primary purpose of the repair is to close any pockets that might trap corrosion causing substances.

1. Using 100 grit abrasive paper folded to form a rounded edge abrade area to remove paint and foreign materials.

2. Clean abraded area using MEK and allow to dry.

3. Mix epoxy in accordance with manufacturer's instructions. Fill voids with epoxy blending to match surface contour.

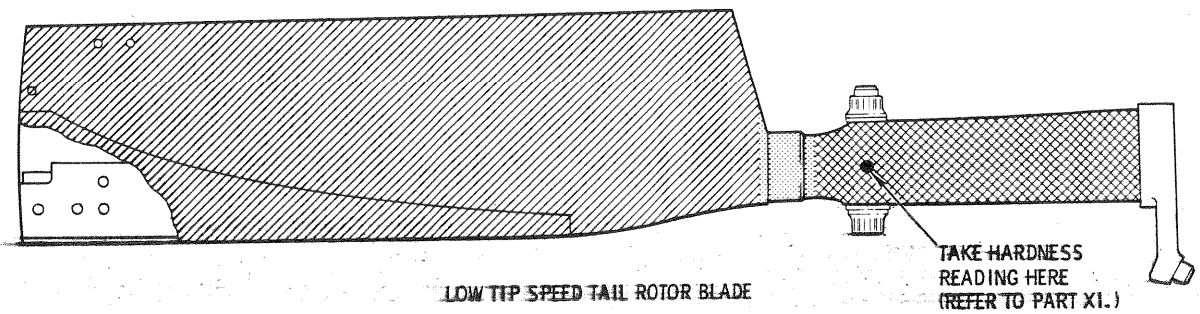
4. Restore original finish per HMI.

NOTE

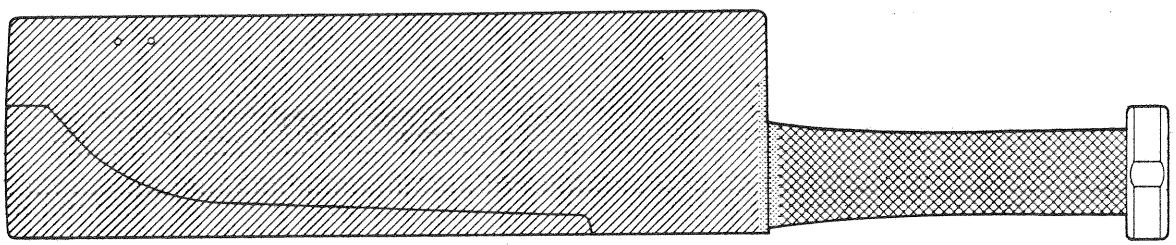
Repair will affect tail rotor balance.

Corrosion - Inspection and Repair

a. Visually inspect blade shank for evidence of surface defects per HMI. (See Figure 4, area B.)



LOW TIP SPEED TAIL ROTOR BLADE



HIGH TIP SPEED TAIL ROTOR BLADE

NOTES:

INSPECT FOR SURFACE CRACKS; VOIDS, SEPARATIONS OR DISCONTINUITIES.	AREA A
INSPECT FOR EXTERIOR CORROSION UNDER PAINT.	AREA B
INSPECT FOR DAMAGE TO FIBERGLASS.	AREA C

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Figure 4. Tail Rotor Blade Inspection for Damage, Voids and Corrosion

NOTE

Exterior corrosion on the spar will most likely occur where paint has been chipped, nicked or scratched and on any nonpainted surface. Pay particular attention to these areas. Corrosion under the paint will produce loose and/or blistered paint.

b. If evidence of exterior corrosion exists proceed with step c.

c. Remove loose paint where necessary using 320 grit abrasive paper.

d. Use fine steel brush to remove all evidence of corrosion products by brushing lightly.

CAUTION

Chordwise scratches will impair structural integrity. Do not use any radial motion; use lengthwise motion only. (Refer to HMI, Appendix C, Part VII.)

e. Corrosion pits up to 0.002 deep repaired per HMI, or nicks, scratches, and dents up to 0.005 deep, repaired per HMI are allowed if not within 0.50 inch of interior surface defects.

NOTE

If pitting or defects exceed limits, retire blade from service.

f. Treat exposed metal with phosphoric acid cleaner, rinse and dry thoroughly.

g. Restore original finish per Appendix C of the HMI.

h. Inspect interior and exterior diameter of hub for corrosion, repair as required (refer to HMI).

Fiberglass Damage - Inspection

a. Inspect fiberglass portion of blade (see Figure 4, area C) for evidence of damage.

NOTE

Perform inspection and repair in accordance with criteria in HMI.

PART IX. ASSEMBLY INSTALLATION AND BALANCE-TAIL ROTOR

a. Using gram scale, weigh and record weight of each blade after all work defined in this Service Notice has been completed.

b. If the weight of one blade has increased more than 2 grams greater than the weight increase of the other blade, determine the static balance moment. (Refer to HMI, Appendix C.)

c. If the weight of one blade has not increased more than 2 grams greater than the other blade, dynamically balance tail rotor. (Refer to Basic HMI.)

1. Reassemble and install the tail rotor in accordance with the HMI.

2. Perform an operational check of the tail rotor control system.

3. Balance tail rotor.

CAUTION

During runup, increase rpm slowly; monitor aircraft for vibration. Excess vibration due to out of balance condition can result in damage.

d. Identify reworked blades by adding a 1/4-inch white paint dot above data plate on spar.

PART X. INSPECTION OF TAIL ROTOR BLADE - 12 MONTHS INTERVAL

1. Using light and mirror, inspect interior of blade spar for obvious corrosion penetrating the zinc primer.

2. X-ray blade spar.

3. If indications of corrosion are noted in the x-rays, remove zinc primer from area 0.75 to 4.75 inches outboard of strap pack attachment bolt hole using swab wetted with MEK.

4. Compare previous x-rays of spar which showed corrosion pitting with x-rays taken during current inspection. Look for changes which would indicate external pitting due to corrosion. If internal corrosion pitting patterns do not match exactly with exterior x-ray pattern, blade must be retired from service.

5. If additional internal corrosion pitting is evident on the x-rays, proceed with further inspection, then corrosion prevention treat internal surface of tail rotor blade spar in accordance with Parts IV through IX of this Service Information Notice.

Retention Bolt Retorque

*1. Retorque blade retention bolts at first 100-hour time in service following initial inspection.

Record compliance with this Service Information Notice: initial, 12 months and 100 hours as applicable, in Compliance Record of helicopter Log Book.

WEIGHT AND BALANCE

Weight and Balance not affected.

PART XI. SPECIAL INSPECTION - TAIL ROTOR BLADE SPAR HEAT-TREAT CONFORMITY PROCEDURE, PART NO. 269A6035-17 AND 269A6035-19

NOTE

The following procedure outlines an inspection for heat-treat to determine that the blade spar has the proper hardness.

The table lists tail rotor blades by serial number, which are to be inspected.

a. Take hardness reading across flats at 90 degrees to the centerline of the strap attachment retention bolt hole in blade spar. (See Figure 4.)

b. Using Rockwell tester and "C" scale, test blade spar for a hardness of C-20 minimum.

c. If blade spar hardness is below minimum in Step b., retire blade from service.

NOTE

Equivalent testing equipment is acceptable.

d. Restore finish per Appendix C of the HMI.

*Not applicable to high tip speed tail rotor blades.

PART XI - TABLE 1

Serial Number Listing of Affected Tail Rotor Blades

Tail Rotor Blade Serial Numbers	Originally Installed on 269C Aircraft Serial Numbers	Tail Rotor Blade Serial Numbers	Originally Installed on 269C Aircraft Serial Numbers
5289		5633	
5292		5634	0379
5302		5635	0379
5313		5636	0389
5591	0346	5637	
5592	0371	5638	
5593		5639	
5594	0388	5640	0375
5595	0378(1)	5641	
5596	0371	5642	
5597	0349	5643	
5598	0346	5644	
5599		5645	0387
5602		5646	0387
5604		5648	
5605	0389	5650	
5607	0349	5651	
5608	0383	5652	0375
5609	0385(1)	5653	
5610		5654	
5611	0388	5655	0392
5612	0377	5656	
5613	0383	5657	
5614		5658	
5615	0376	5659	
5617		5660	0390
5618		5662	
5619		5664	0390
5621	0392	5665	
5622	0376	5666	
5623	0377	5668	
5624		5669	
5625		5673	
5626		5675	
5627		5676	
5628		5680	
5629	0382(1)	5684	
5630		5687	
5631		5690	
5632		5692	

(1)Helicopters S/N 378, 392, and 385 each had only one blade on tail rotor in suspect group.

All tail rotor blades listed by serial number in this table must be Rockwell hardness tested, as well as complying with the other parts in this Notice. All other tail rotor blades must comply with all parts of this Notice but may exclude Part XI.