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INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

for

SKID TUBES

Bell Textron Inc. STC: SH3260SO

for

Bell Textron Model 205A, 205A-1, 205B Series Helicopters

Bell Textron Inc. STC: SH3261SO

for

Bell Textron Model 212, 412, 412EP, 412CF Series Helicopters

and

Agusta Westland S.P.A. Model AB412, AB412EP Helicopters

Bell Textron Inc. STC: SR01924AT

for

Rotorcraft Development Corporation; Richards Heavylift Helo, Inc.; Hagglund Helicopters, LLC; Southwest Florida Aviation International, Inc.

Model UH-1B, UH-1H Series Helicopters

Report Number: AA-01139

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LOG OF REVISIONS

When revisions are required, the entire document is updated and re-released. All pages are at the revision level annotated in the table below.

Date	Revision	Description	Pages	Reviewed	Accepted
08/16/01	-	Original Release	All	N/A	AEG
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02/27/02	B	Deleted P/N's 412-320-127 and 412-320-128	7, 16, 17, 18	N/A	AEG
04/22/02	C	Deleted 3.0, 3.1, 3.2 Added 3.0, 3.1, 3.1.1, 3.1.2, 3.2, 3.2.1, 3.2.2, 3.3, 3.3.1, 3.3.2, 3.3.3, 3.3.4 Deleted Tables 1 & 2 (Damage and Repair Limits) Added Table 1 (Damage and Repair Limits) Revised weight of skid tubes; Table 5 Added Figures 5 & 6	5-11 5-11 6, 7 8 14 21, 22	N/A	AEG
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Date	Revision	Description	Pages	Reviewed	Accepted
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7/25/2024	K	Reformatted and reorganized to current AA standards Added §§1.3–1.5 Moved Table 1 from §3.3 to §3.4 §3.4.1: Tabulated repair material §3.4.1: Added paint specification §3.4.3: Added paint specification §3.4.4: Added wingwalk specification §5.12: Revised eyebolt torque spec to 49±9 ft-lb. Was 8-31 ft-lb. §10.0: Added metric units §10.0: Revised W&B table to add 412-320-423/-424 Table 5 – Table 7.1: Renamed to shorter more concise Table 6: Revised to add 412-320-423 Table 6.1: Revised to add 605-001-405 Table 7: Revised to add 412-320-424 Table 7.1: Revised to add 605-001-406	All 9–11 15 16 16 18 18 23 25 25 27–30 27 27 30 30		

LIST OF EFFECTIVE PAGES

All pages contained herein are at latest revision shown in Log of Revisions.

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1.0 INTRODUCTION

These instructions contain the information necessary for inspection and maintenance of Aeronautical Accessories Skid Tubes installed on high or low landing gear assemblies in accordance with:

- Bell Textron Inc. STC No. SH3260SO for Bell Textron Model 205A, 205A-1, 205B Helicopters;
- Bell Textron Inc. STC No. SH3261SO for Bell Textron Model 212, 412, 412EP, 412CF Helicopters and Agusta Westland S.p.A. Model AB412, AB412EP Helicopters;
- Bell Textron Inc. STC No. SR01924AT for Rotorcraft Development Corporation; Richards Heavylift Helo, Inc.; Hagglund Helicopters, LLC; Southwest Florida Aviation International, Inc. Model UH-1B, UH-1H Helicopters.

1.1 DISTRIBUTION

These instructions are provided with each Skid Tube. All changes will be made available to any person required to comply with any of these instructions.

The latest approved revision of this document can be accessed on the Aeronautical Accessories website or by contacting Technical Support. Refer to Contact Information below.

1.2 LOG OF REVISIONS

A Log of Revisions section is included in these instructions and is used to document all changes. When revisions are required, the entire document is updated and re-released. All pages are at the revision level annotated in the Log of Revisions.

Change recommendations should be submitted to:
Aeronautical Accessories Technical Support at the address below.

1.3 CONTACT INFORMATION

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1.4 ABBREVIATIONS AND ACRONYMS

AA	Aeronautical Accessories
AC	Advisory Circular
AV	Availability [Code]
BHT	Bell Helicopter Textron
BTCL	Bell Textron Canada Limited
BTI	Bell Textron Inc.
CSSD	Customer Support and Services Division
ELEC	Electrical
FAA	Federal Aviation Administration
ft·lb	Foot-Pound (torque)
FWD	Forward
ICA	Instructions for Continued Airworthiness
in.	Inches
in·lb	Inch-Pound (torque)
kg	Kilogram
lb.	Pounds
L/H	Left-Hand (Port)
MIL-DTL	United States Defense Detail Specification
MIL-PRF	United States Defense Performance Specification
mm	Millimeters
MM	Maintenance Manual
N/A	Not Applicable
No.	Number
NR	No Revision (initial release)
oz	Ounce
PASS.	Passenger
PSE	Product Support Engineering
QTY	Quantity
REF	Reference
R/H	Right-Hand (Starboard)
SPM	Standard Practices Manual
SRM	Structural Repair Manual
STC	Supplemental Type Certificate
INC.	Incorporated

1.5 BELL REFERENCE DOCUMENTS

Refer to the latest approved revision of the following documents when applicable:

Document Title	Document Number
*XXX Maintenance Manual	*BHT-XXX-MM
Structural Repair Manual	BHT-ALL-SRM
Standard Practices Manual	BHT-ALL-SPM
Electrical Standard Practices Manual	BHT-ELEC-SPM
Corrosion Control Guide	CSSD-PSE-87-001

* Insert BTI Helicopter Model for XXX in document

2.0 Description

The Aeronautical Accessories 205A, 205A-1, 205B, 212, 412, 412EP, 412CF, Agusta AB412, AB412EP, and Restricted Type Certificate UH-1H, UH-1B Skid Tubes are complete assemblies, which include Saddles. The Skid Tubes are designed to provide an interface between the Landing Gear Crosstubes and the ground, evenly distributing the weight of the helicopter while at rest.

3.0 **GENERAL MAINTENANCE AND REPAIR**

Maintenance and repair must be done by authorized personnel. Replace damaged equipment.

For damaged or inoperable equipment, Bell Product Support can be contacted for assistance.

Maintenance Instructions for Aeronautical Accessories 205A, 205A-1, 205B, 212, 412, 412EP, 412CF, Agusta AB412, AB412EP, and Restricted Type Certificate UH-1H, UH-1B Skid Tubes consist of two different series of inspections: Series 1 and Series 2. Either inspection series may be employed. *However, once a specific inspection series has been established, the helicopter shall remain on that specific inspection series except for the following:*

NOTE

Scheduled inspection interval tolerances shall be 10% or up to a maximum of 100 hours operating time / 30 days calendar time, whichever is less.

1. If the Skid Tubes are being reviewed on Series 1 Inspection and it is desired to change to Series 2 Inspection, a complete 100-Hour / 12-Calendar-Months Inspection shall be implemented. Only then may the helicopter be changed to Series 2 beginning with the 25-Hour / 30-Day Inspection.
2. If the Skid Tubes are being reviewed on Series 2 Inspection and it is desired to change to Series 1 Inspection, a complete 300-Hour Inspection shall be implemented. Only then may the helicopter be changed to Series 1 beginning with the Daily Inspection.

NOTE

Removal of Skid Tubes from helicopter is not required for inspection. If Skid Tube repair is required, refer to Section 5.0 for removal/replacement of Skid Tubes from helicopter.

NOTE

The indications of corrosion are 1) corrosion deposits (a white or gray powder on aluminum or rust colored deposits on steel), 2) pits in the aluminum or steel surface, 3) blisters, bulging or flaking of protective coatings.

3.1 SERIES 1 INSPECTION

An Inspection Record is located in Appendix A for convenience to document inspection completion. It is permissible to incorporate this inspection into an existing scheduled maintenance program.

3.1.1 Daily Inspection

Visually inspect Skid Tubes and Skid Shoes for condition and security of attachment (evidence of debonding and/or movement). Refer to Section 3.4 for repair.

3.1.2 100-Hour / 12-Month Inspection

1. Visually inspect Skid Tubes and Skid Shoes for excessive wear, scratches, nicks, dents, cracks, holes, corrosion, and security of attachment. Refer to Table 1 for damage and repair limits and to Figure 2 for damage and repair zones. The minimal axial distance between repairs is 3.0 inches. If the damage limits are exceeded the skid tube must be replaced. Refer to Section 3.4 for repair instructions.

NOTE

Particular care should be taken to inspect in the areas of the fasteners in the Skid Tubes and all attaching components.

2. Inspect the region of the Skid Tube between the Saddles for bending. A smooth bend from Saddle to Saddle with an apex of 1.5 inches is acceptable. If the bending exceeds 1.5 inches the tube must be replaced (see Figure 1).
3. Damage exceeding .03 inches deep and/or 1.25 inches long on the tow fitting (604-013-001 / 604-013-007 / 604-013-103) is not permitted. If these limits are exceeded the tow fitting must be replaced. Replace the mounting hardware (NAS9926-6L nut, NAS1149D0663J and NAS1149D1063J washers) if damaged.
4. Inspect the wingwalk coating on the top 1/3 of each Skid Tube. Refer to Section 3.4.4 for repair instructions.
5. Check the torque on the Saddle Bolts attaching the Crosstube and Skid Tube. Retorque if necessary, in accordance with the values in Table 2.
6. The Inspection Record provided in Appendix A can be utilized to document inspection completion.

3.2 SERIES 2 INSPECTION

An Inspection Record is located in Appendix A for convenience to document inspection completion. It is permissible to incorporate this inspection into an existing scheduled maintenance program.

3.2.1 25-Hour / 30-Day Inspection

Visually inspect Skid Tubes and Skid Shoes for condition, corrosion, and security of attachment (evidence of debonding and/or movement). Refer to Section 3.4 for repair.

3.2.2 300-Hour Inspection

1. Visually inspect Skid Tubes and Skid Shoes for excessive wear, scratches, nicks, dents, cracks, holes, corrosion, and security of attachment. Refer to Table 1 for damage and repair limits and to Figure 2 for damage and repair zones. The minimal axial distance between repairs is 3.0 inches. If the damage limits are exceeded the skid tube must be replaced. Refer to Section 3.4 for repair instructions.

NOTE

Particular care should be taken to inspect in the areas of the fasteners in the Skid Tubes and all attaching components.

2. Inspect the region of the Skid Tube between the Saddles for bending. A smooth bend from Saddle to Saddle with an apex of 1.5 inches is acceptable. If the bending exceeds 1.5 inches the tube must be replaced (see Figure 1).
3. Damage exceeding .03 inches deep and/or 1.25 inches long on the tow fitting (604-013-001 / 604-013-007 / 604-013-103) is not permitted. If these limits are exceeded the tow fitting must be replaced. Replace the mounting hardware (NAS9926-6L nut, NAS1149D0663J and NAS1149D1063J washers) if damaged.
4. Inspect the wingwalk coating on the top 1/3 of each Skid Tube. Refer to Section 3.4.4 for repair instructions.
5. Check the torque on the Saddle Bolts attaching the Crosstube and Skid Tube. Retorque if necessary, in accordance with the values in Table 2.
6. The Inspection Record provided in Appendix A can be utilized to document inspection completion.

3.3 SPECIAL AND CONDITIONAL INSPECTIONS

A special inspection is temporary or of a special time interval that is not consistent with the scheduled inspection.

A conditional inspection does not occur at a specific time. It is caused by known or suspected unusual events, such as suspected rotor strike, lightning strike, flight through hail, or hard landing.

In the event of a special or conditional inspection, perform 100-Hour / 12-Month Inspection (Section 3.2.1) or 300-Hour Inspection (Section 3.2.2), as applicable.

3.4 REPAIR

Repair must be done by authorized personnel. General repair practices shall be in accordance with advisory circular AC 43.13-1B, BHT-ALL-SRM, BHT-ELEC-SPM, and applicable BHT-XXX-MM* Maintenance Manual. (* Replace XXX with applicable helicopter model number.)

Replace missing or damaged hardware.

Refer to Table 1. Damage Limits.

Table 1. Damage and Repair Limits

Description of Damage	Dimensions and Locations of Damage		
	Zone 1 ⁽¹⁾	Zone 2 ⁽¹⁾	Zone 3 ⁽¹⁾
Dents	Repair damage up to 3-inch diameter.	No dents allowed. Replace as required.	No repair required. Plug holes to keep out moisture.
Holes	Repair damage up to 3-inch diameter.	No holes allowed. Replace as required.	No repair required. Plug holes to keep out moisture.
Cracks (after cleanup hole)	No cracks allowed. Replace as required.	No cracks allowed. Replace as required.	No cracks allowed. Replace as required.
Scratches, Scuffs, or Nicks	If damage is less than .03-inch deep and/or 1.25-inch length, no repair required.	If damage is less than .03-inch deep and/or 1.25-inch length, no repair required.	No repair required. Plug holes to keep out moisture.
	If damage is between .03 – .05-inch deep and/or 1.25 – 1.65-inch length, repair.	If damage is between .03 – .05-inch deep and/or 1.25 – 1.65-inch length, repair.	No repair required. Plug holes to keep out moisture.
	If damage is greater than established limits, replace as required.	If damage is greater than established limits, replace as required.	No repair required. Plug holes to keep out moisture.
Corrosion (after cleanup)	No corrosion allowed. Corrosion cleanup limits are .05-inch depth and 1.65-inch length. Refer to 3.4.3 for repair.	No corrosion allowed. Corrosion cleanup limits are .05-inch depth and 1.65-inch length. Refer to 3.4.3 for repair.	No corrosion allowed. Corrosion cleanup limits do not apply. Plug holes to keep out moisture. Refer to 3.4.3 for repair.

⁽¹⁾ Note: See Figure 2 for Repair Zones.

3.4.1 Skid Tube Repair

NOTE

Repair to skid tube is limited to patching top of skid tube in areas indicated in Table 1 and Figures 2 and 3.

1. Repair damage by patching the top of the skid tube as follows.
 - a. For Dents: Prepare the damaged region for repair by polishing out any raised areas that would hinder with the patch application. Do not reshape or cut out smooth dents.
 - b. For Holes: Deburr all holes and remove scratches, scuffs, nicks or corrosion by sanding and polishing.
 - c. Fabricate a repair patch (refer below for applicable repair material) large enough to cover the affected area and the rivet rows indicated in Figure 3. Repairs may extend to the edge of the skid shoes, but no further around the tube, as patches are not permitted on the bottom of the tube.

NOTE

Repair material thickness to match skid tube thickness: i.e., if skid tube wall thickness is .095 inch; use .095-inch-thick repair material.

Repair Material Thickness (in)	Tube	Sheet
.095	2024-T3 Aluminum Tube per WW-T-700/7	2024-T73 Aluminum Sheet per AMS-QQ-A-250/4, or equivalent
.125	7075-T6 Aluminum Tube per WW-T-700/7	7075-T6 Aluminum Sheet per AMS-QQ-A-250/4, or equivalent

- d. Clamp the repair patch in place and lay out the rivet patterns per Figure 3. Match drill (.205 – .209 drill bit) the rivet holes (Cleco's may aid as drilling progresses).
- e. Remove the repair patch and deburr all holes. Clean the repair patch and the repair area of the tube using a clean cloth dampened with isopropyl alcohol.
- f. Apply one coat of Epoxy Polyamide Primer per MIL-PRF-23377 or equivalent to the repair area of the skid tube and non faying side of the repair patch.
- g. Coat the repair area of the skid tube and faying side of the repair patch with Sealant per AMS-S-8802. Position the repair in place, secure with rivets (CR3243-6-XX), and coat surface with Epoxy Polyamide Primer.
- h. Paint the reworked area with 2-3 coats of polyurethane coating per MIL-PRF-85255, or equivalent. Color-match paint as needed. Apply two coats of wingwalk to appropriate areas. Refer to Section 3.4.4 for wingwalk application procedures.

3.4.2 Skid Shoe Repair

NOTE

Refer to Figure 5, Sheets 1 and 2, for Skid Shoe Repair Methods.

CAUTION

Prior to welding repairs, remove the Skid Shoe from the Skid Tube per Section 5.3 to avoid damage to the aluminum Skid Tube from excessive heat.

1. Using an acetylene torch, apply heat to the Skid Shoe and remove dents that are not closer than 2-inch from borium weld beads.
2. Repair Skid Shoe Tabs with holes elongated up to 0.030-inch in diameter as follows:
 - a. Fabricate a circular or elongated doubler (sheet 2, detail A or B) using 4130 steel, 0.050-inch thick that has been normalized per AMS-6345.
 - b. Remove zinc or cadmium plating from Skid Shoe repair area as noted in Step 5.
 - c. Weld the fabricated doubler to the repair area of the Skid Shoe.
3. Repair Skid Shoe Tabs with holes elongated in excess of 0.030-inch in diameter as follows:
 - a. Remove zinc or cadmium plating from Skid Shoe repair area as noted in Step 5.
 - b. Using an acetylene torch, apply heat to the Skid Shoe Tab and reshape to an original form.
 - c. Fabricate a doubler (sheet 2, detail C) using 4130 steel, 0.050-inch thick that has been normalized per AMS-6345.
 - d. Weld the fabricated doubler to the repair area of the Skid Shoe.
 - e. If Skid Shoe Tab will not reform into an original form, cut Tab off parallel to the Skid Shoe. Fabricate a new Tab (sheet 2, detail D) using 4130 steel, 0.050-inch thick that has been normalized per AMS-6345 and weld in place.
4. Reform weld beads as follows:
 - a. Remove zinc or cadmium plating from skid shoes as noted in Step 5.
 - b. Weld beads 0.06-inch to 0.10-inch high along Skid Shoe using acetylene and 0.125-inch hard facing weld tube (borium).
 - c. Using heat, reform Skid Shoe to fit the contour of Skid Tube.
5. Remove zinc or cadmium plating from skid shoes prior to welding repair as follows:
 - a. Mix a solution of 16 ounces of aluminum nitrate per gallon of water.
 - b. Maintain solution at a temperature of 120° F. Immerse Skid Shoe into solution until all plating has been removed. Rinse Skid Shoes in clean water and allow to air dry.

6. After repair and cleanup of weld deposits, apply two coats of Epoxy Polyamide Primer per MIL-PRF-23377 or equivalent. When dry, apply 2-3 coats of polyurethane coating per MIL-PRF-85285 or equivalent.
7. Replace damaged or loose inserts (see Figure 4). Wet install inserts with sealant per AMS-S-8802.

3.4.3 Corrosion Repair

Repair slight damage or light corrosion as follows.

1. Remove scratches, scuffs, nicks or corrosion by sanding or polishing.
2. Apply one coat of Epoxy Polyamide Primer per MIL-PRF-23377 or equivalent to the affected skid tube area.
3. Paint the reworked area with 2-3 coats of polyurethane coating per MIL-PRF-85255, or equivalent. Color-match paint as needed. Apply two coats of wingwalk to appropriate areas. Refer to Section 3.4.4 for wingwalk application procedures.

3.4.4 Wingwalk Repair

Repair Material

Wingwalk Compound/Coating per A-A-59166 Type II.

Repair wingwalk coating as follows.

1. Clean the area to be repaired by lightly sanding with abrasive cloth or paper and dry with a clean cloth.
2. Mask the area not to receive wingwalk coating.
3. Apply wingwalk to the needed area. Allow a minimum of 30 minutes drying time between coats. The first coat shall be a light coat, and the second coat shall be a heavy cross coat.
4. Remove masking paper when process is finished.

3.5 CLEANING

Any dirt, sand, or debris should be cleaned from the Skid Tubes using a mild, nonabrasive soap. Wipe surfaces dry with a nonabrasive cloth or paper before cleaning agent evaporates.

3.6 ADJUSTMENTS

Adjustments to the Skid Tubes are not required. Apply the following torque to all noted fasteners during component or fastener replacement (torque all fasteners in accordance with Table 2):

1. Torque the fasteners attaching the Skid Shoe to the Skid Tube (#10 Fastener Size).
2. Torque the fasteners attaching the Saddles to the Crosstubes (1/4 or 3/8 Fastener Size).

Table 2. Torque Values

Fastener Size	Torque (in·lb)
#10	20 – 25
1/4 (AN4-XXX)	30 – 40
1/4 (NAS6604-XX)	50 – 70
3/8 (AN6-XXX)	95 – 100
3/8 (NAS6606-XX)	160 – 190

4.0 GENERAL TROUBLESHOOTING

Table 3. Troubleshooting

Problem	Probable Cause	Remedy
Landing Gear - Skid Tube is loose or has excessive vibration.	Attachment components or fasteners loose, damaged, or missing.	Check security of Skid Tube attachment components. Check torque on all fasteners according to Section 3.6
	Skid Tube is damaged allowing movement.	Check Skid Tube for cracks or other damage in accordance with Table 1. Repair / replace as needed.

5.0 GENERAL REMOVAL AND INSTALLATION

The removal / installation procedures use accepted methods, techniques, and practices.

NOTE

Items without removal/installation instructions are considered permanent installations. If these items must be removed or replaced, contact Bell Product Support for instruction.

NOTE

Save all serviceable hardware of removed parts for reinstallation, unless otherwise noted.

General Instructions:

- Disconnect battery before starting work on the aircraft.
- Remove components only to the extent necessary to perform the required maintenance.
- Items removed from the helicopter should be tagged for identification and protected from damage until reinstalled.
- Put protective caps on open piping.
- When reinstalling/replacing components, ensure proper electrical bonding is maintained.
- General repair practices shall be in accordance with advisory circular AC 43.13-1B, BHT-XXX-MM, BHT-ALL-SRM, and BHT-ELEC-SPM.

WARNING

OBEY ALL THE SAFETY PRECAUTIONS WHEN DOING MAINTENANCE ON OR NEAR ELECTRICAL/ELECTRONIC EQUIPMENT.

5.1 REMOVAL – SKID TUBES

1. Hoist or jack the helicopter until no weight is on the skid tubes.
2. Remove all attaching hardware from the forward and aft saddles.
3. Remove skid tubes from the forward and aft crosstubes.

NOTE

The use of heat may be needed to remove the skid tube from the crosstube as desired.

5.2 INSTALLATION – SKID TUBES

1. Hoist or jack the helicopter until there is sufficient space under the fuselage to place the skid tubes.
2. Place the skid tubes to fit the forward and aft crosstubes.
3. Apply sealant (AMS-S-8802) under each screw head.
4. Before tightening, ensure screws are in place and threads have engaged. Torque all screws attaching crosstubes to saddles per Table 2.
5. Lower helicopter to ground.
6. Apply a fillet of sealant (AMS-S-8802) around the top edge of the saddles. Installation complete.

5.3 REMOVAL – SKID SHOES

1. Hoist or jack the helicopter until no weight is on the skid tubes.
2. Remove all attaching hardware from the skid shoes.
3. Remove the skid shoes.

5.4 INSTALLATION – SKID SHOES

1. Clean the surface of the skid tube as to remove dirt and old sealant. Apply a ¼ inch bead of sealant per AMS-S-8802 around the perimeter of the skid shoe and fasten in place with the existing screws and washers. Torque fasteners 20 – 25 in·lb (refer to Table 2).
2. Apply sealant per AMS-S-8802 to the edge of the skid shoe to form a fillet between the shoe and the tube. Remove excess sealant. Installation complete.

5.5 REMOVAL – SADDLES

NOTE

If removing both saddles (forward and aft), remove and install one at a time.

1. Remove skid tubes from helicopter per Section 5.1.
2. Drill out the rivets attaching the saddle to the skid tube.
3. Remove the saddle.

NOTE

The use of heat may be needed to remove the saddle from the skid tube as desired.

5.6 INSTALLATION – SADDLES

1. Clean the surface of the skid tube as to remove dirt and old sealant.
2. Position the saddle on the skid tube. Using the non-removed saddle to obtain proper angular alignment, match drill existing rivet holes from the skid tube to the saddle. Ensure proper rivet hole edge distance.
3. Deburr and apply coat of primer per MIL-PRF-23377 to rivet holes in saddle.
4. Apply ¼ inch bead of sealant per AMS-S-8802 around the perimeter of the saddle.
5. Wet install rivets with sealant per AMS-S-8802.
6. Apply sealant per AMS-S-8802 to the edge of the saddle to form a fillet between the saddle and the tube. Remove excess sealant. Installation complete.

5.7 REMOVAL – CAP

1. Hoist or jack the helicopter until no weight is on the skid tubes and there is sufficient space under the skid tube to remove the cap.
2. Remove all attaching hardware from the cap.
3. Remove the cap from the skid tube.

NOTE

The use of heat may be needed to remove the cap from the skid tube as desired.

5.8 INSTALLATION – CAP

1. If required, hoist or jack the helicopter until no weight is on the skid tubes and there is sufficient space under the skid tube to install the cap.
2. Slide the cap over the end of the skid tube until it stops. If installing new cap, match drill the cap to the skid tube.
3. Deburr and apply coat of primer per MIL-PRF-23377 to the rivet holes in the cap.
4. Apply ¼ inch bead of sealant per AMS-S-8802 around the inside edge of the cap.
5. Wet install rivets with sealant per AMS-S-8802.
6. Apply sealant per AMS-S-8802 to edge of cap to form a fillet between the cap and the skid tube. Remove excess sealant. Installation complete.

5.9 REMOVAL – STEP

1. Remove and retain all attaching hardware from the step.
2. Remove the step from the skid tube.

NOTE

The use of heat may be needed to remove the step from the skid tube as desired.

5.10 INSTALLATION – STEP

1. Clean skid tube surface to remove dirt, debris, and old sealant.
2. Slide step over end of the skid tube and align with inserts. If installing new step, match drill the step to the skid tube.
3. Deburr and apply coat of primer per MIL-PRF-23377 to the screw holes in the step.
4. Apply ¼ inch bead of sealant per AMS-S-8802 around the inside edge of step.
5. Wet install screws with sealant per AMS-S-8802.
6. Apply sealant per AMS-S-8802 to edge of step to form a fillet between the step and the skid tube. Remove excess sealant. Installation complete.

5.11 REMOVAL – FORWARD/AFT EYEBOLT

1. Remove the forward or aft eyebolt by unscrewing the eyebolt from the skid tube. Retain washer and any shim(s) installed between eyebolt and skid tube.

NOTE

Holes in both eyebolts are aligned on installation using shim(s) as required, to obtain proper torque and alignment.
Four shims maximum per eyebolt.

5.12 INSTALLATION – FORWARD/AFT EYEBOLT

1. Clean skid tube surface to remove dirt and debris.

NOTE

Holes in both eyebolts are aligned on installation using shim(s) as required, to obtain proper torque and alignment.
Four shims maximum per eyebolt.

2. Temporarily insert eyebolt with washer into skid tube. Verify hole alignment before applying torque to eyebolt. Remove eyebolt and washer and add shim(s) as required for hole alignment.
3. Torque eyebolt 49 ± 9 ft-lb, ensuring eyebolt holes maintain alignment. Eyebolt installation complete.

6.0 **STRUCTURAL FASTENER DATA**

For hardware identification and torque refer to Tables 2 and 4 thru 7.1.

7.0 **SPECIAL TOOLS NEEDED**

Torque Wrench (capable of measuring in in·lb and ft·lb)

8.0 **RECOMMENDED OVERHAUL PERIODS**

No component overhaul required for this type design change.

9.0 **AIRWORTHINESS LIMITATIONS**

"The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved."

No airworthiness limitations are associated with this type design change.

10.0 WEIGHT AND BALANCE

Component	Weight	Station	Lateral Arm
412-320-105 / -423 412-320-106 / -424	42.2 lb (93.0 kg)	96.63 in. (2454 mm)	± 50.0 in. (Low) ± 55.0 in. (High) (±1270 mm (Low)) (±1397 mm (High))
412-320-115/-119/-123/-301 412-320-116/-120/-124/-302	46.16 lb (101.7 kg)	96.63 in. (2454 mm)	± 50.0 in. (Low) ± 55.0 in. (High) (±1270 mm (Low)) (±1397 mm (High))
412-320-117/-125 412-320-118/-126	37.02 lb (no shoes/hardware) (81.6 kg) (no shoes/hardware)	96.63 in. (2454 mm)	± 50.0 in. (Low) ± 55.0 in. (High) (±1270 mm (Low)) (±1397 mm (High))
412-320-129 412-320-130	52.7 lb (116.2 kg)	112.0 in. (2845 mm)	± 50.0 in. (Low) ± 55.0 in. (High) (±1270 mm (Low)) (±1397 mm (High))

11.0 PART BREAKDOWN

The following tables contain Part Breakdown data:

- Table 4 is a list of inactive part numbers for Aeronautical Accessories 412-320 series skid tube assemblies.
- Table 5 contains Parts Breakdown data for Aeronautical Accessories 212-320 (low gear) and 212-321 (high gear) Skid Gear Assemblies.
- Tables 6 and 6.1 contain Parts Breakdown data for Aeronautical Accessories 412-320 series left hand skid tube assemblies.
- Tables 7 and 7.1 contain Parts Breakdown data for Aeronautical Accessories 412-320 series right hand skid tube assemblies.

The column Availability Code (AV Code) specifies the procurement status for each part. The codes to identify if a part is procurable, procedure details to get an assembly or local manufacture code are as follows:

Av Code	Details
0	Non-procurable part
1	Procurable part
2	Procure as detail parts only
3	Procurable as Next Higher Assembly
4	Local manufacture. Contact AA Product Support Engineering (PSE)
5	Part replacement requires a fixture or special equipment. Contact AA PSE
6	Non-stock procurable part

Table 4. Inactive Part Numbers

Part Number
412-320-001
412-320-002
412-320-101
412-320-102
412-320-107
412-320-108
412-320-127
412-320-128
412-320-129
412-320-130

Table 5. 212-320-XXX Low Skid Gear / 212-321-XXX High Skid Gear Assemblies

Qty 212-320-XXX		Qty 212-321-XXX		Part Number	Description	AV Code
-500	-501	-500	-501			
1	1			212-320-103	FWD Crosstube Assembly	3
1	1			212-320-104	AFT Crosstube Assembly	3
		1	1	212-321-103	FWD Crosstube Assembly	3
		1	1	212-321-304	AFT Crosstube Assembly	3
1		1		412-320-115	Skid Tube Assembly L/H	3
1		1		412-320-116	Skid Tube Assembly R/H	3
	1		1	412-320-123	Skid Tube Assembly L/H	3
	1		1	412-320-124	Skid Tube Assembly R/H	3

Table 6. 412-320-XXX Skid Tube Assemblies, L/H

412-320-XXX								Part Number	Description	AV Code
Qty -105	Qty -115	Qty -117	Qty -119	Qty -123	Qty -125	Qty -301	Qty -423			
1								605-001-003	Skid Tube Assembly L/H	3
	1							605-001-103	Skid Tube Assembly L/H	3
		1						605-001-105	Skid Tube Assembly L/H	3
			1					605-001-203	Skid Tube Assembly L/H	3
				1				605-001-205	Skid Tube Assembly L/H	3
					1			605-001-207	Skid Tube Assembly L/H	3
						1		605-001-301	Skid Tube Assembly L/H	3
							1	605-001-405	Skid Tube Assembly L/H	3

Table 6.1. 605-001-XXX Skid Tube Assemblies, L/H

605-001-XXX								Part Number	Description	AV Code
Qty -003	Qty -103	Qty -105	Qty -203	Qty -205	Qty -207	Qty -301	Qty -405			
1								604-001-101	Skid Tube (L/H)	3
	1	1						604-001-201	Skid Tube (L/H)	3
			1	1	1		1	604-001-301	Skid Tube (L/H)	3
						1		604-001-401	Skid Tube (L/H)	3
				1	1		1	412-728-121	Forward Saddle	1
				1	1	1	1	412-728-122	Aft Saddle	1
						1		412-728-123	Forward Saddle	1
1	1	1	1					604-007-111	Forward Saddle (forged)	1
1	1	1	1					604-007-113	Aft Saddle (forged)	1
1	1	1	1	1	1	1	1	604-011-001	Forward Eyebolt	1
1	1	1	1	1	1	1	1	604-011-003	Aft Eyebolt	1
1	1	1	1	1	1	1	1	604-011-005	Forward Washer	1
1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	604-011-006	Forward Shim	1
1	1	1	1	1	1	1	1	604-011-007	Aft Washer	1
1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	604-011-008	Aft Shim	1
1	1	1	1	1	1	1	1	604-011-109	Forward Doubler Assembly	1
1	1	1	1	1	1	1	1	604-011-111	Aft Doubler Assembly	1
1						1		604-013-007 ⁽²⁾	Tow Fitting	1
	1	1	1	1	1		1	604-013-103	Tow Fitting (Alt:604-013-001)	1
1	1		1	1		1	1	604-015-101	Fwd Shoe Assembly (L/H) (Alt: 205-050-174-035 / 205-050-174-035AGH)	1
1	1		1	1		1	1	604-015-103	Aft Shoe Assembly (L/H) (Alt: 205-050-174-033 / 205-050-174-033AGH)	1
1	1	1	1	1	1	1	1	604-017-001	Lower Doubler	1
1	1	1	1	1	1	1	1	604-017-003	Upper Doubler	1
1	1	1	1	1	1	1	1	604-019-001	Cap	1
1	1	1	1	1	1	1	1	604-033-001	Step (Alt: 204-050-149-001)	1
1	1	1	1	1	1		1	099-050-171	Adhesive (Loctite 26221)	1
1	1	1	1	1	1	1	1	099-050-222	Sealant (Alt: 099-050-223)	1
	6	6	6	6	6	6	6	AECH10K366L	Insert (Alt: NAS1330H3K366L)	1

605-001-XXX								Part Number	Description	AV Code
Qty -003	Qty -103	Qty -105	Qty -203	Qty -205	Qty -207	Qty -301	Qty -405			
34								AN3-4A	Bolt	1
7	41	41	41	41	41	37	41	AN3-5A	Bolt	1
6	6	6	6	6	6	6	6	AN3-6A	Bolt	1
111	111	111	111	111	111	111	111	CR3242-5-5	Rivet	1
1	1	1	1	1	1	1	1	NAS9926-6L	Nut	1
4	4	4	4	4	4		4	MS27039-4-10	Screw	1
1	1	1	1	1	1	1	1	MS35489-42	Grommet	1
6	6	6	6	6	6	6	6	MS90354-0605	Lock Bolt (Alt: MS90354U0605)	1
2	2	2	2	2	2	2	2	MS90354-0606	Lock Bolt (Alt: MS90354U0606)	1
2	2	2	2	2	2	2	2	MS90354-0607	Lock Bolt (Alt: MS90354U0607)	1
1	1	1	1	1	1		1	NAS1081C8D16	Setscrew	1
7	7	7	7	7	7	3	7	NAS1149D0332J	Washer	1
4	4	4	4	4	4		4	NAS1149D0416J	Washer	1
1	1	1	1	1	1	1	1	NAS1149D0663J	Washer	1
1	1	1	1	1	1	1	1	NAS1149D1063J	Washer	1
40	40	40	40	40	40	40	40	NAS1149F0332P	Washer	1
4	4	4	4	4	4		4	NAS1329H4K140L	Insert	1
37								NAS1330H3K116L	Insert	1
	37	37	37	37	37	37	37	NAS1330H3K166L	Insert	1
6								NAS1330H3K316L	Insert	1
				12	12	12	12	OSR-10B	Huck Rivet	1
32	32	32	32	16	16	16	16	OSR-10C	Huck Rivet	1
				2	2	2	2	OSR-10D	Huck Rivet	1
				2	2	2	2	OSR-10E	Huck Rivet	1
1	1	1	1	1	1		1	4067	Plug	1
				1		1	1	A-A-59298	Tape (Dissimilar Metals)	1
4	4	4	4	4	4		4	NAS1330H3K366L	Insert	1
3	3	3	3	3	3	3	3	CR3213-4-3	Rivet	1

(1) Note 1: Allowable quantity to be installed on eyebolt is 1 – 4.
(2) Note 2: Alt: 204-050-104-101 for -301 only.

Table 7. 412-320-XXX Skid Tube Assemblies, R/H

412-320-XXX								Part Number	Description	AV Code
Qty -106	Qty -116	Qty -118	Qty -120	Qty -124	Qty -126	Qty -302	Qty -424			
1								605-001-004	Skid Tube Assembly R/H	3
	1							605-001-104	Skid Tube Assembly R/H	3
		1						605-001-106	Skid Tube Assembly R/H	3
			1					605-001-204	Skid Tube Assembly R/H	3
				1				605-001-206	Skid Tube Assembly R/H	3
					1			605-001-208	Skid Tube Assembly R/H	3
						1		605-001-302	Skid Tube Assembly R/H	3
							1	605-001-406	Skid Tube Assembly R/H	3

Table 7.1. 605-001-XXX Skid Tube Assemblies, R/H

605-001-XXX								Part Number	Description	AV Code
Qty -004	Qty -104	Qty -106	Qty -204	Qty -206	Qty -208	Qty -302	Qty -406			
1								604-001-102	Skid Tube (R/H)	3
	1	1						604-001-202	Skid Tube (R/H)	3
			1	1	1		1	604-001-302	Skid Tube (R/H)	3
						1		604-001-402	Skid Tube (R/H)	3
				1	1		1	412-728-121	Forward Saddle	1
				1	1	1	1	412-728-122	Aft Saddle	1
						1		412-728-123	Aft Saddle	1
1	1	1	1					604-007-111	Forward Saddle (forged)	1
1	1	1	1					604-007-113	Aft Saddle (forged)	1
1	1	1	1	1	1	1	1	604-011-001	Forward Eyebolt	1
1	1	1	1	1	1	1	1	604-011-003	Aft Eyebolt	1
1	1	1	1	1	1	1	1	604-011-005	Forward Washer	1
1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	604-011-006	Forward Shim	1
1	1	1	1	1	1	1	1	604-011-007	Aft Washer	1
1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	1 ⁽¹⁾	604-011-008	Aft Shim	1
1	1	1	1	1	1	1	1	604-011-109	Forward Doubler Assembly	1
1	1	1	1	1	1	1	1	604-011-111	Aft Doubler Assembly	1
1						1		604-013-007 ⁽²⁾	Tow Fitting	1

605-001-XXX								Part Number	Description	AV Code
Qty -004	Qty -104	Qty -106	Qty -204	Qty -206	Qty -208	Qty -302	Qty -406			
	1	1	1	1	1		1	604-013-103	Tow Fitting (Alt: 604-013-001)	1
1	1		1	1		1	1	604-015-102	Fwd Shoe Assembly (R/H) (Alt: 205-050-174-036 / 205-050-174-036AGH)	1
1	1		1	1		1	1	604-015-104	Aft Shoe Assembly (R/H) (Alt: 205-050-174-034 / 205-050-174-034AGH)	1
1	1	1	1	1	1	1	1	604-017-001	Lower Doubler	1
1	1	1	1	1	1	1	1	604-017-003	Upper Doubler	1
1	1	1	1	1	1	1	1	604-019-001	Cap	1
1	1	1	1	1	1	1	1	604-033-001	Step (Alt: 204-050-149-001)	1
1	1	1	1	1	1		1	099-050-171	Adhesive (Loctite 26221)	1
1	1	1	1	1	1	1	1	099-050-222	Sealant (Alt: 099-050-223)	1
	6	6	6	6	6	6	6	AECH10K366L	Insert (Alt: NAS1330H3K366L)	1
34								AN3-4A	Bolt	1
7	41	41	41	41	41	37	41	AN3-5A	Bolt	1
6	6	6	6	6	6	6	6	AN3-6A	Bolt	1
111	111	111	111	111	111	111	111	CR3242-5-5	Rivet	1
1	1	1	1	1	1	1	1	NAS9926-6L	Nut	1
4	4	4	4	4	4		4	MS27039-4-10	Screw	1
1	1	1	1	1	1	1	1	MS35489-42	Grommet	1
6	6	6	6	6	6	6	6	MS90354-0605	Lock Bolt (Alt: MS90354U0605)	1
2	2	2	2	2	2	2	2	MS90354-0606	Lock Bolt (Alt: MS90354U0606)	1
2	2	2	2	2	2	2	2	MS90354-0607	Lock Bolt (Alt: MS90354U0607)	1
1	1	1	1	1	1		1	NAS1081C8D16	Setscrew	1
7	7	7	7	7	7	3	7	NAS1149D0332J	Washer	1
4	4	4	4	4	4		4	NAS1149D0416J	Washer	1
1	1	1	1	1	1	1	1	NAS1149D0663J	Washer	1
1	1	1	1	1	1	1	1	NAS1149D1063J	Washer	1
40	40	40	40	40	40	40	40	NAS1149F0332P	Washer	1
4	4	4	4	4	4		4	NAS1329H4K140L	Insert	1
37								NAS1330H3K116L	Insert	1
	37	37	37	37	37	37	37	NAS1330H3K166L	Insert	1
6								NAS1330H3K316L	Insert	1

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
 SKID TUBES

605-001-XXX								Part Number	Description	AV Code
Qty -004	Qty -104	Qty -106	Qty -204	Qty -206	Qty -208	Qty -302	Qty -406			
				12	12	12	12	OSR-10B	Huck Rivet	1
32	32	32	32	16	16	16	16	OSR-10C	Huck Rivet	1
				2	2	22	2	OSR-10D	Huck Rivet	1
				2	2		2	OSR-10E	Huck Rivet	1
1	1	1	1	1	1		1	4067	Plug	1
				1		1	1	A-A-59298	Tape (Dissimilar Metals)	1
4	4	4	4	4	4		4	NAS1330H3K366L	Insert	1
3	3	3	3	3	3	3	3	CR3213-4-3	Rivet	1

(1) Note 1: Allowable quantity to be installed on eyebolt is 1 – 4.

(2) Note 2: Alt.: 204-050-104-101 for -302 only.

12.0 **REFERENCE SKID TUBE FIGURES**

NOTE

Reference Skid Tube figures are **NOT TO SCALE**.

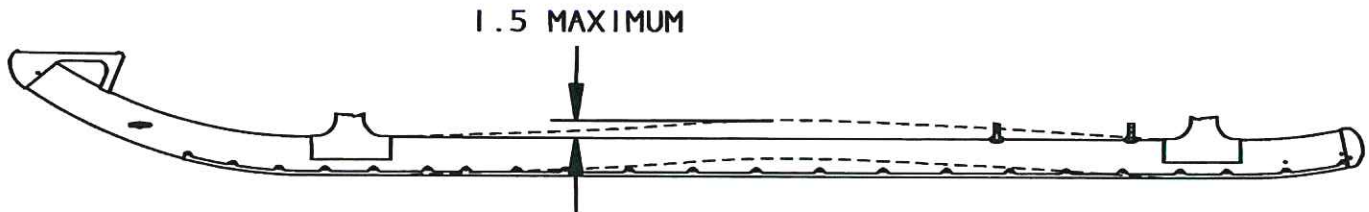


Figure 1. Skid Tube Bend Limit

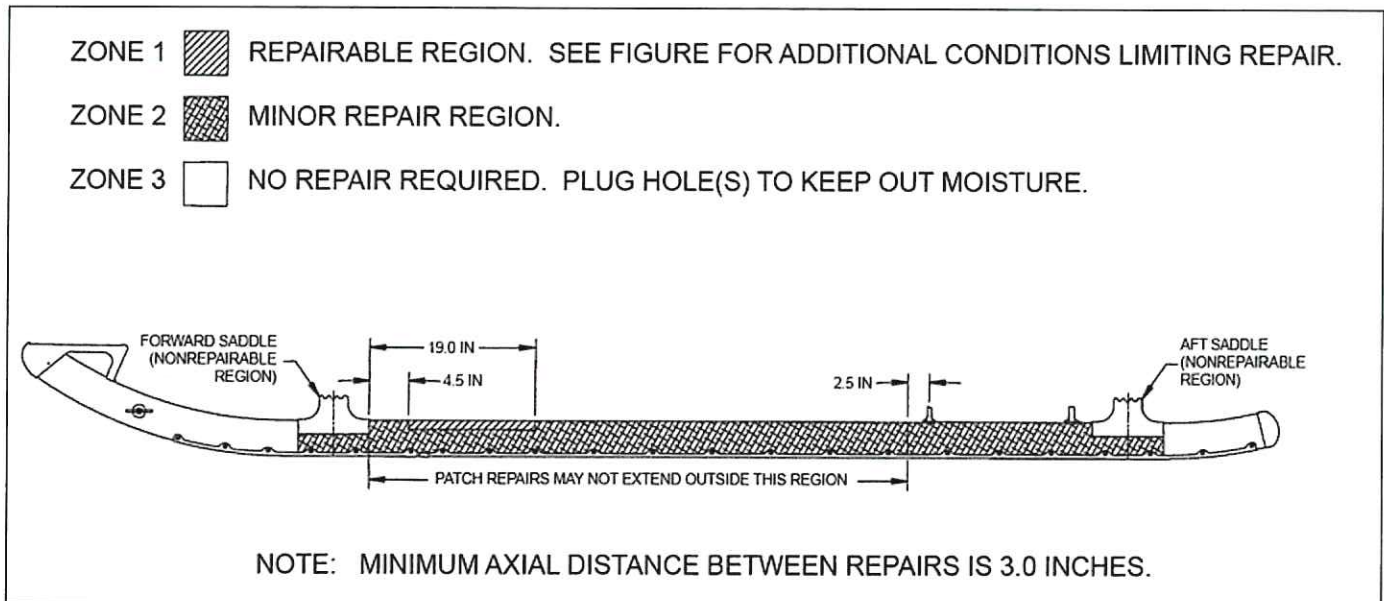


Figure 2. Skid Tube Damage and Repair Zones

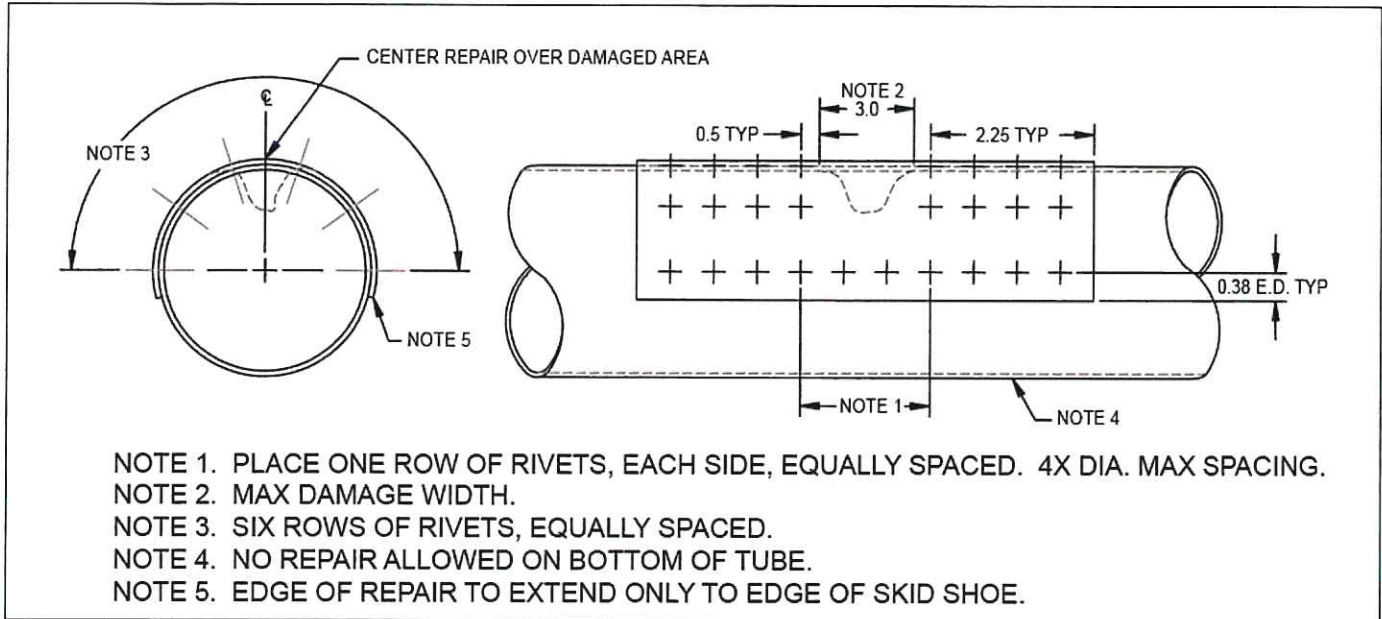


Figure 3. Typical Repair Instruction

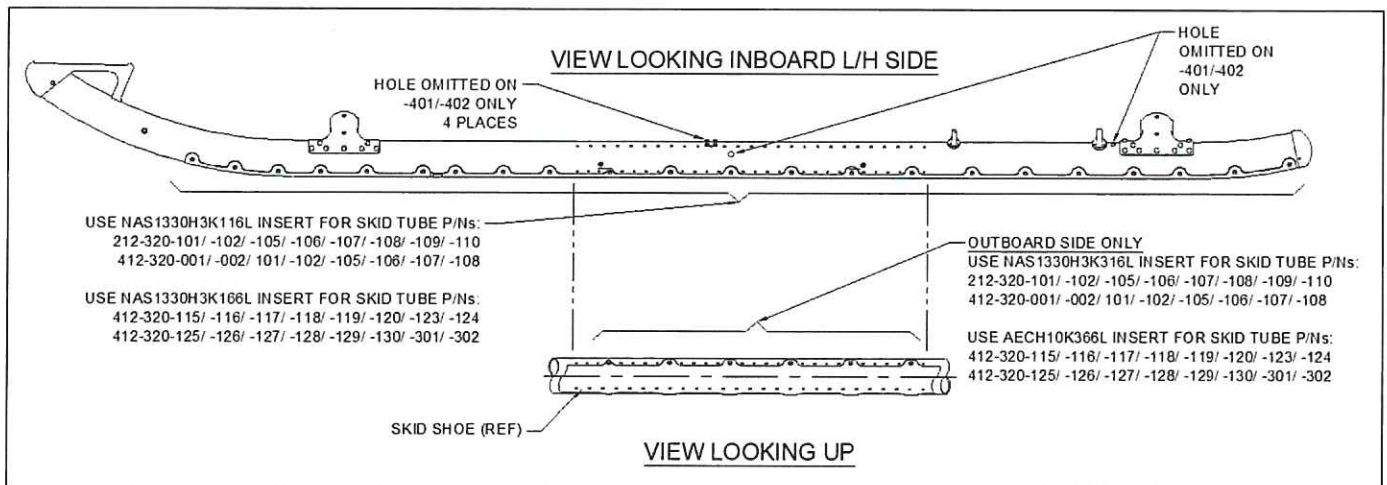


Figure 4. Skid Shoe Attachment Repair

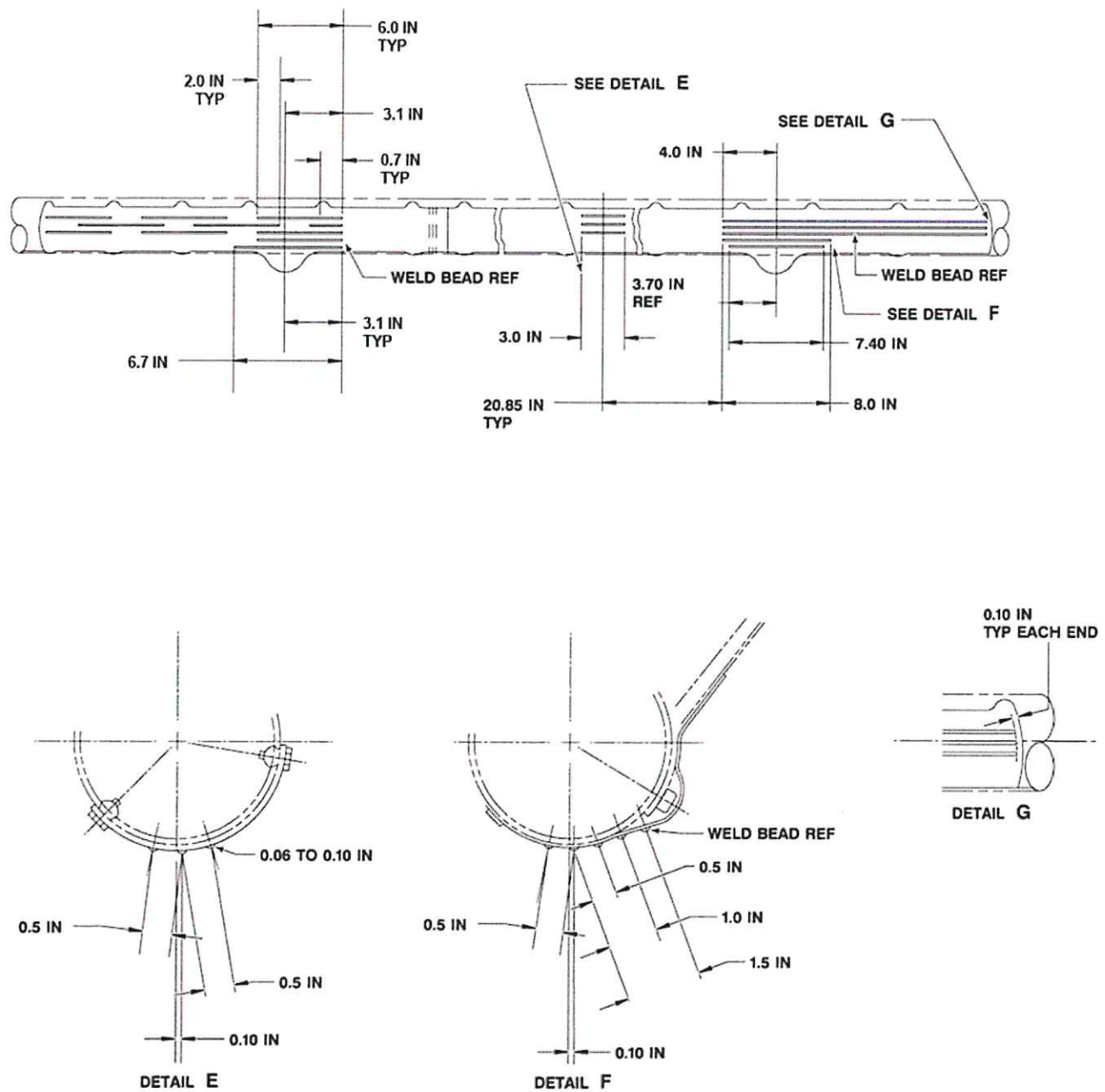


Figure 5 (Sheet 1 of 2). Skid Shoe Repair Methods

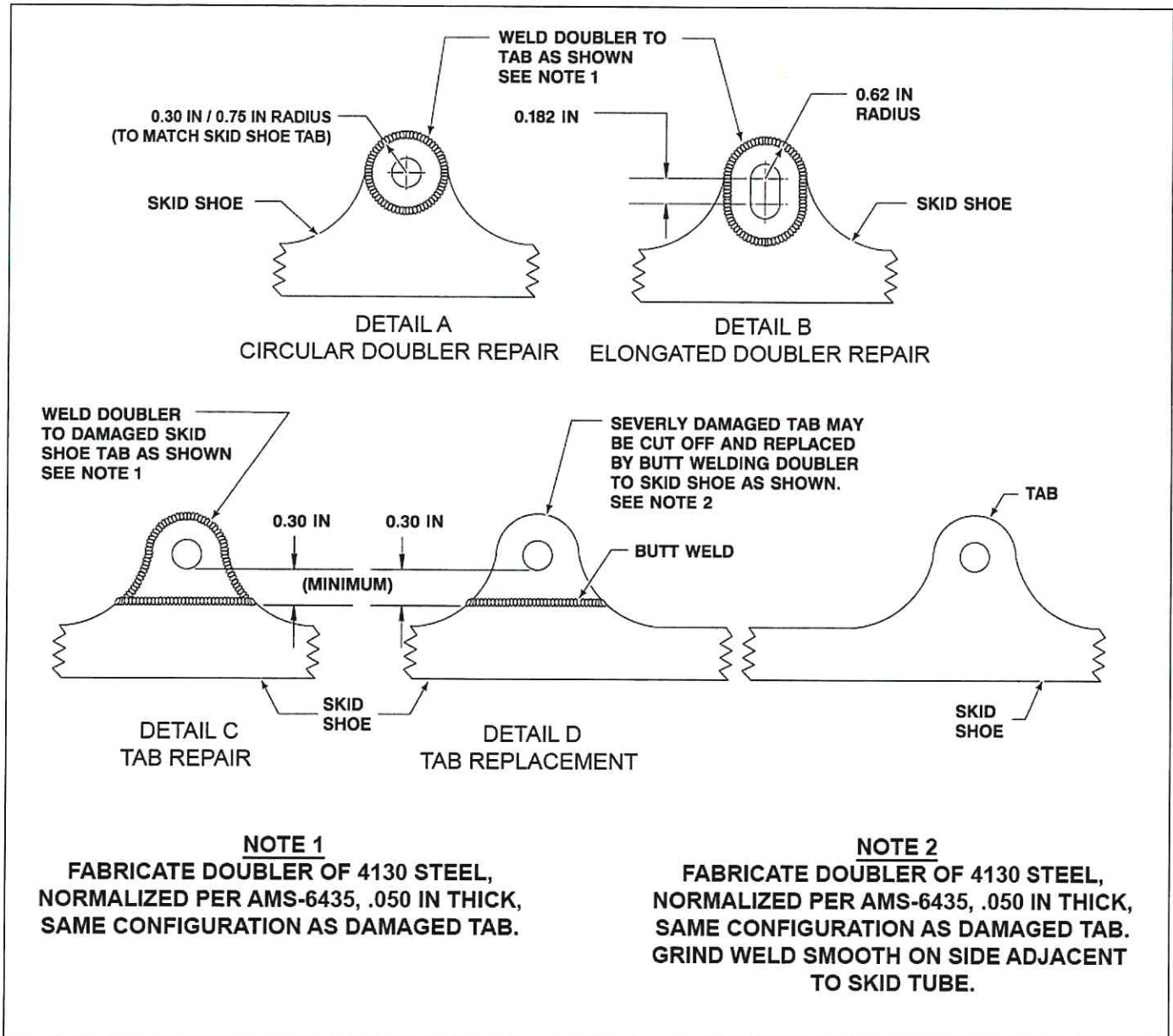


Figure 5 (Sheet 2 of 2). Skid Shoe Repair Methods

APPENDIX A: INSPECTION RECORD

**SERIES 1 – 100-HOUR / 12-MONTH INSPECTION RECORD
OR
SERIES 2 – 300-HOUR INSPECTION RECORD**

Work order number: _____

Serial number: _____

Total time: _____

Date: _____

Inspect in accordance with Section 3.1 Series 1 Inspection or Section 3.2 Series 2 Inspection as appropriate. The inspection shall consist of the following items:

1. Visually inspect Skid Tubes and Skid Shoes for excessive wear, scratches, nicks, dents, cracks, holes, corrosion, and security of attachment. Refer to Table 1 for damage and repair limits and to Figure 2 for damage and repair zones. The minimal axial distance between repairs is 3.0 inches. If the damage limits are exceeded the skid tube must be replaced. Refer to Section 3.4 for repair.

NOTE

Particular care should be taken to inspect in the areas of the fasteners in the skid Tubes and all attaching components.

2. Inspect the region of the Skid Tube between the Saddles for bending. A smooth bend from Saddle to Saddle with an apex of 1.5 inches is acceptable. If the bending exceeds 1.5 inches the tube must be replaced (see Figure 1).
3. Damage exceeding .03 inches deep and/or 1.25 inches long on the tow fitting (604-013-001 / 604-013-007 / 604-013-103) is not permitted. If these limits are exceeded the tow fitting must be replaced. Replace the mounting hardware (NAS9926-6L nut, NAS1149D0663J and NAS1149D1063J washers) if damaged.
4. Inspect the wingwalk coating on the top 1/3 of each Skid Tube. Refer to Section 3.4.4 for repair.
5. Check the torque on the Saddle Bolts attaching the Crosstube and Skid Tube. Retorque if necessary, in accordance with the values in Table 2.

Signature: _____

A & P No.: _____

Signature: _____

Inspector: _____