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THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

SERVICE BULLETIN M20-303

Date: March 25, 2008

SUBJECT: Longeron Repair and Replacement.

MODELS/ SN AFFECTED: **M20R:** 29-0502

TIME OF COMPLIANCE: **MANDATORY - Before Next Flight**

INTRODUCTION: There has been a reported instance, discovered in the Mooney factory, of the Longeron P/N 350160-20 raw material was incorrectly heat treated per Mooney specifications. Aircraft will require rework to comply in accordance with this service bulletin.

INSTRUCTIONS: **Read entire procedures before beginning work.**

NOTE:

Before performing the work instruction within this Service Bulletin the work area should be free of debris, be well lit and be in a closed environment with minimal air circulation.

1-1. Turn master switch - OFF.

1-2. Place jacks under main gear, nose gear jack points and raise aircraft.

1-3. Remove Empennage Assembly: (refer to Figure M20-303-1)
(also refer to applicable A/C Service and Maintenance Manual)
- **a.** Disconnect antenna cables, strobe cable and bonding strap.
- **b.** Disconnect elevator rod attachments.
- **c.** Remove center hinge pin.
- **d.** Remove jack screw bolt attachment.
- **e.** Remove (2) upper hinge bolts.
- **f.** Disconnect (2) control rod tubes.

1-4. Remove all line replaceable units (E.G. Air Conditioner, Oxygen Bottle, Batteries, etc...) to minimize the amount of weight in the tailcone. (refer to Figure M20-303-2)

1-5. Secure tail section with a fixed jack stand at the tail skid. Raise jack until snug with tailcone so as to hold the tailcone fixed with minimal preload on structure.

1-6. Disassemble as required to remove the 350078-10 Longeron and 350160-20 Longeron together as an assembly (Ref P/N 350160-9503 Lower Right Longeron Assembly).
- **a.** Remove rivets along the 120000-505 wing fairing and remove the fairing. (refer to Figure M20-303-2)
- **b.** Remove the 350209-2 skin and 950301 removable step assembly. (refer to Figure M20-303-3)
- **c.** Remove rivets from skin. (refer to Figure M20-303-4)
- **d.** Remove (15) rivets common to floorboard and Longeron.
- **e.** Remove fasteners at both ends on Longeron.
- **f.** Disconnect (2) control rod tubes.

1-5. Remove all (FOD) foreign object debris from drilling out rivets. (refer to Figure M20-303-5)

1-6. Q.A. or Authorized Personnel should perform 100% hole check at all removed fastener holes. Any hole that will not accommodate a B/P sized fastener per Mooney Spec 20, Section 33 Limitations, should have hole size clearly marked and be properly documented for repair by authorized personnel. Inspect for all FOD throughout the tailcone.

1-7. Obtain a new 350160-20 Longeron.

1-8. Remove and replace the 350160-20 Longeron by back-drilling through existing holes in the 350078-10 as well as the 350213-2 stiffener.

NOTE:

Steps 1-7 and 1-8 can be eliminated by the substitution of 350160-9503 Lower Right Longeron Assembly in place of the removed 350160-20 and 350213-2 stiffener.

1-9. Painted Aircraft will require the rivet area to be sanded and feathered out to allow metal to metal contact between rivet head to skin surface. (refer to Figure M20-303-6)

1-10. Install reworked assembly containing the new 350160-20 Longeron (or, if available, a 350160-9503 Lower Right Longeron Assembly). using "Clecos" to hold in place. (refer to Figure M20-303-7)

1-11. If pilot holes exist in assembly being installed, Q.A. or Authorized Personnel should inspect to verify that all pilot holes will be useable without the possibility of creating any double drilled holes. If required, obtain any/all parts same as B/P except with pilot holes omitted.

1-12. Install Longeron assembly per all B/P requirements, except as noted:

- **a.** At STA 211.50, Install (3) CR3213-5-(X) rivets in lieu of the B/P MS20470AD4 rivets common to the 350070-3 fuselage bulkhead assembly and the 350160-25 skin.
- **b.** At STA 176.00, Install (2) CR3213-5-(X) rivets in lieu of the B/P MS20470AD4 rivets common to the 350025-503 fuselage bulkhead and the 350160-21 skin.
- **c.** At STA 176.00, Install (1) CR3213-5-(X) rivet in lieu of the B/P MS20470AD4 rivet common to the 350025-503 fuselage bulkhead, 350160-20 Longeron and the 350160-21 skin.
- **d.** At STA 169.60-STA 176, Install (4) CR3213-5-(X) rivets in lieu of the B/P MS20470AD4 rivets common to the 350160-20 Longeron and the 350160-21 skin.
- **e.** Defects which exceed the limitations and tolerances of Mooney Spec 20, Section 33 require repair by Authorized Personnel.

1-13. Reinstall all line replaceable units removed from the tailcone in Step 1-4 per all B/P requirements.

1-14. Reattach the Empennage per all B/P requirements by reversing procedures from Step 1-3. (refer to Figure M20-303-8)

1-15. Verify rigging of installed Empennage (refer to applicable Service and Maintenance Manual).

1-16. Paint touchup as required after all repair and replacement.

1-17. Complete log book entry for procedures completed.

1-18. Return aircraft to service.

1-19. Procedure complete.

WARRANTY: N/A

REFERENCE DATA: MAC Service & Maintenance Manuals (applicable A/C), Mooney Process Specification #20

PARTS LIST: Mooney Airplane Company, Inc., Parts Kit:

Item	P/N	Description	Qty
1.	350160-9503	Longeron (Lower Right Assembly)	1
2.	CR3213-5-(x)	Rivets	A/R
3.	MS20470AD4	Rivets (B/P)	A/R

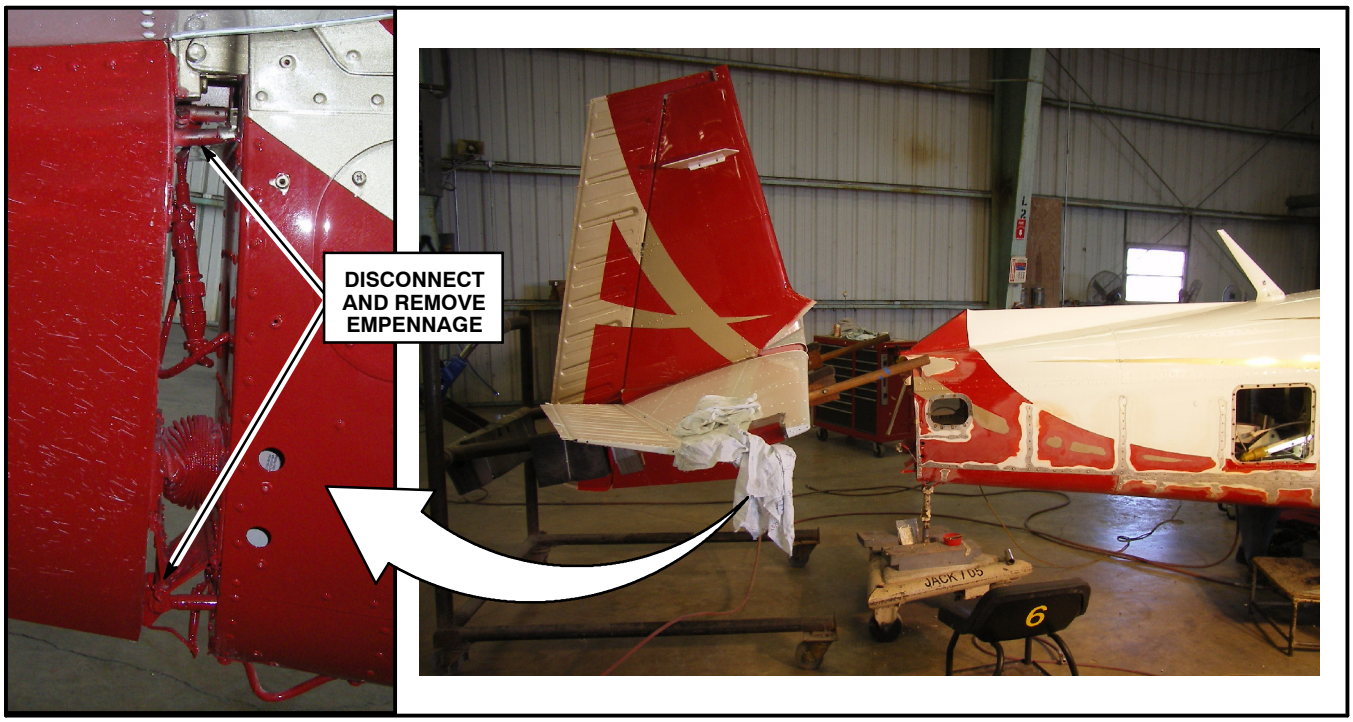

Figure SB M20-303-1 - REMOVE EMPENNAGE

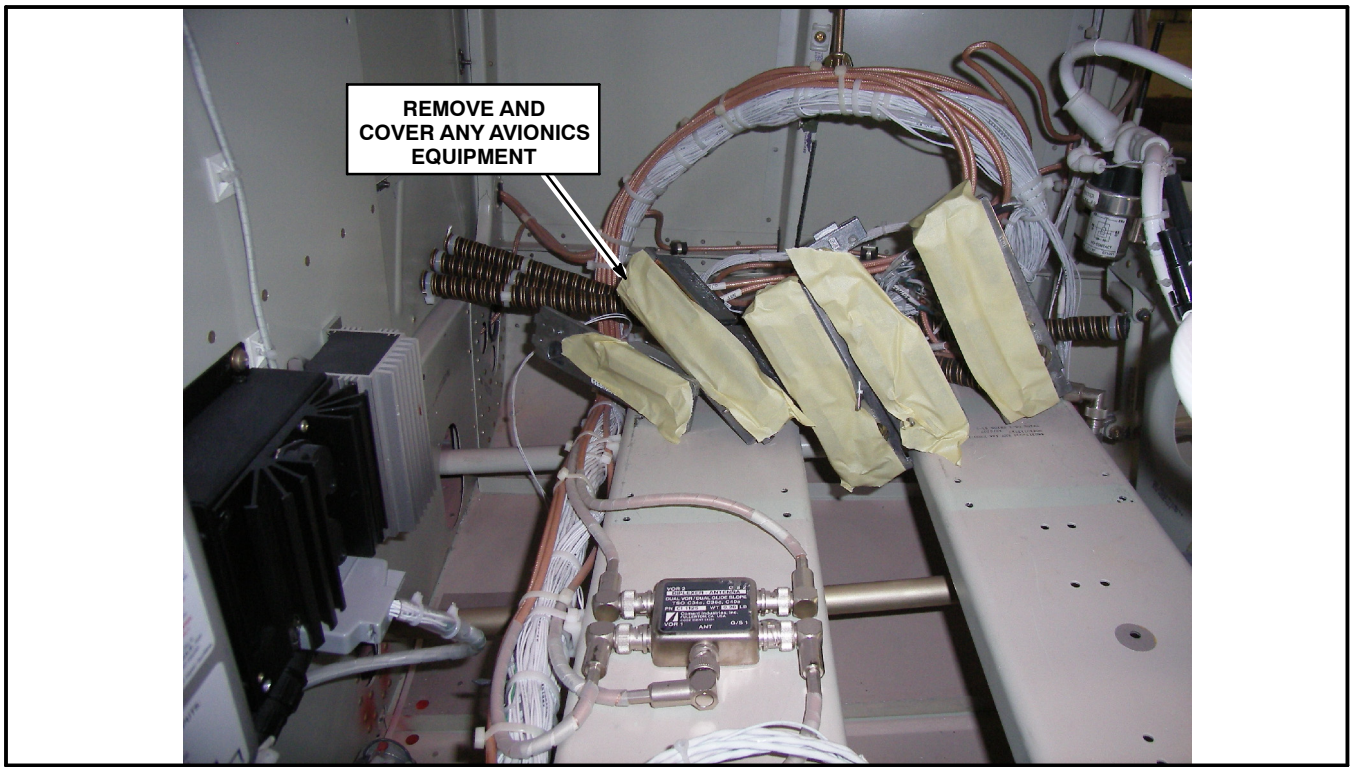

Figure SB M20-303-2 - REMOVE ALL LINE REPLACEABLE UNITS

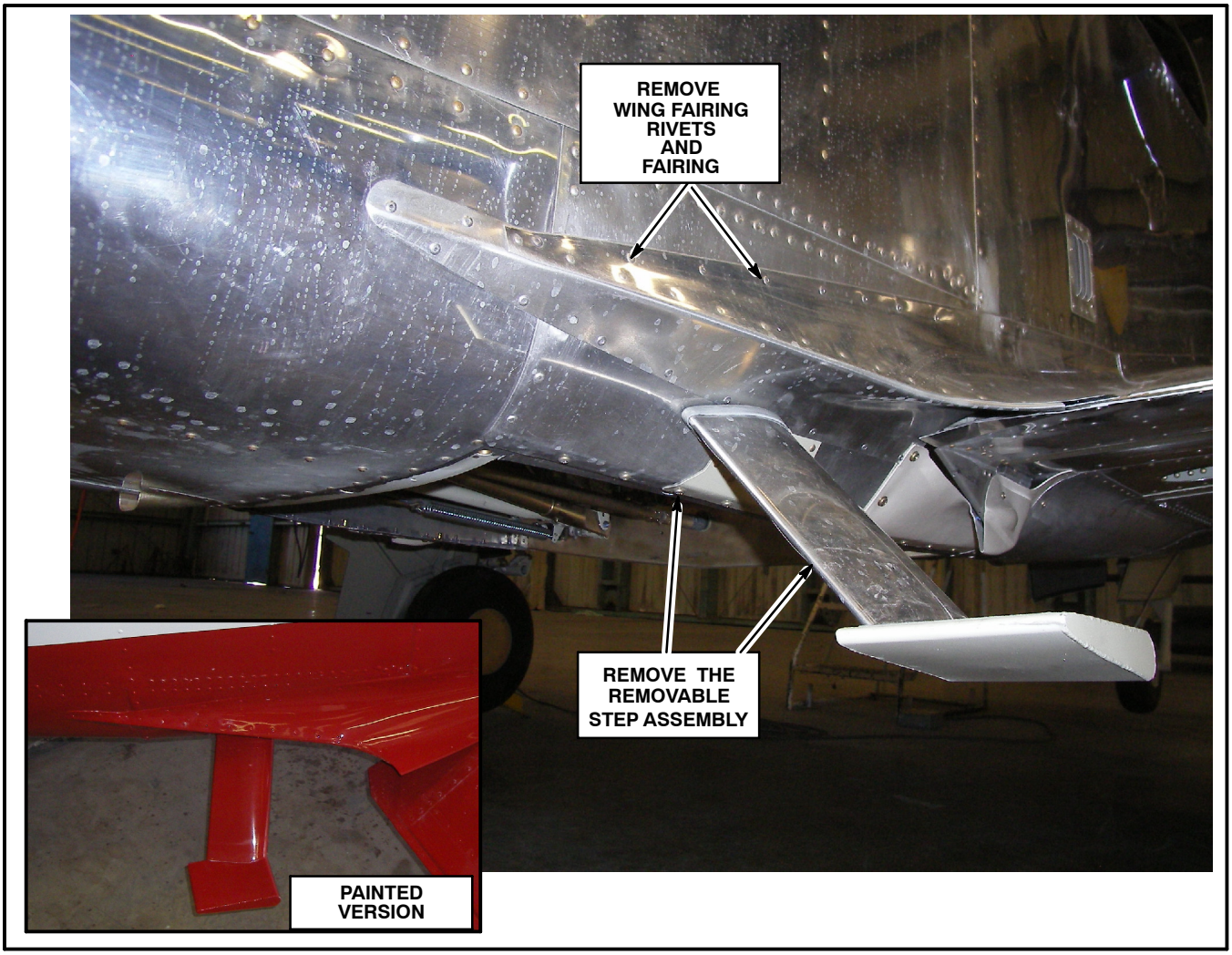

Figure SB M20-303-3 - REMOVE REMOVABLE STEP AND WING FAIRING

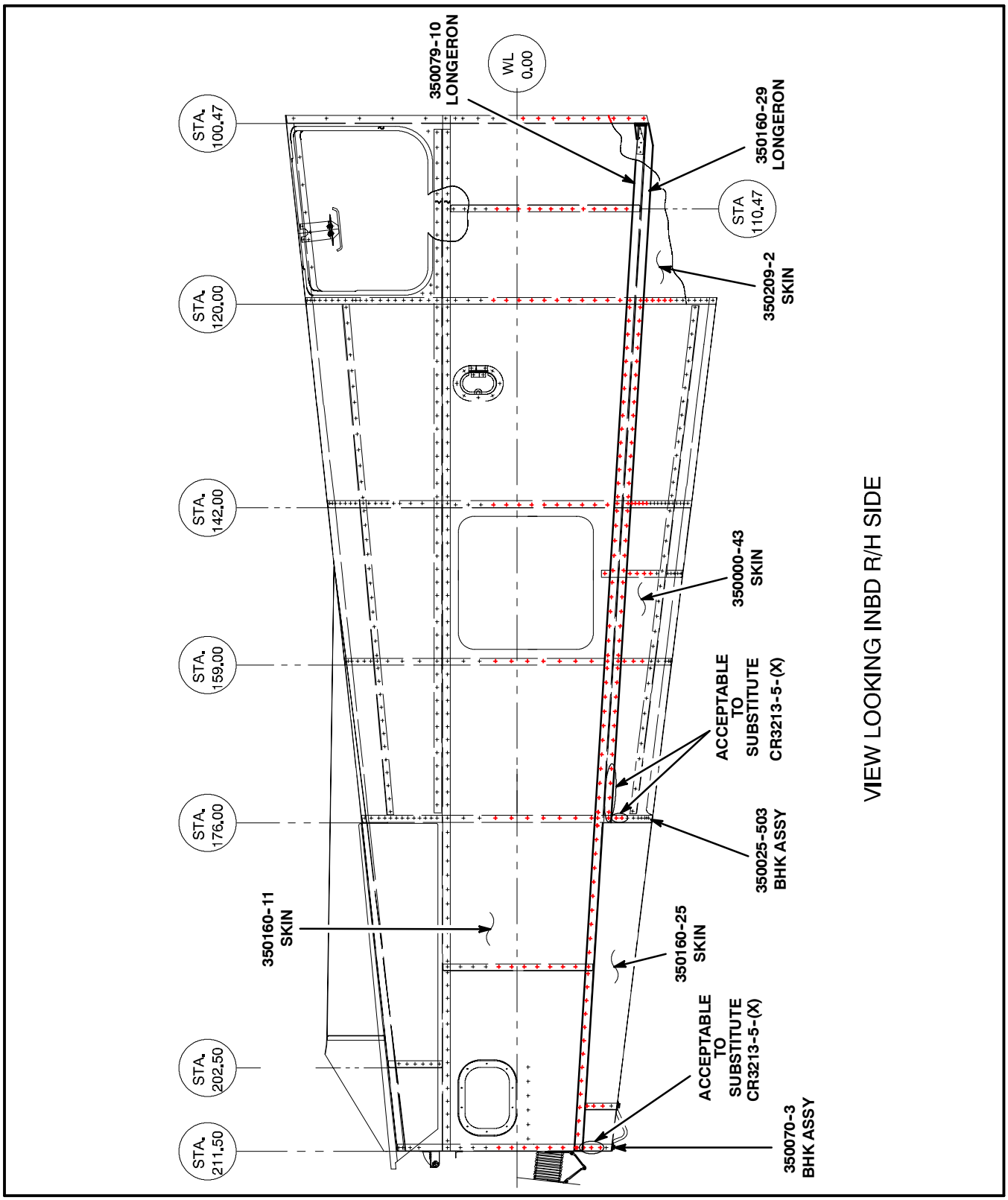

Figure SB M20-303-4 – LONGERON AND RIVET CHART

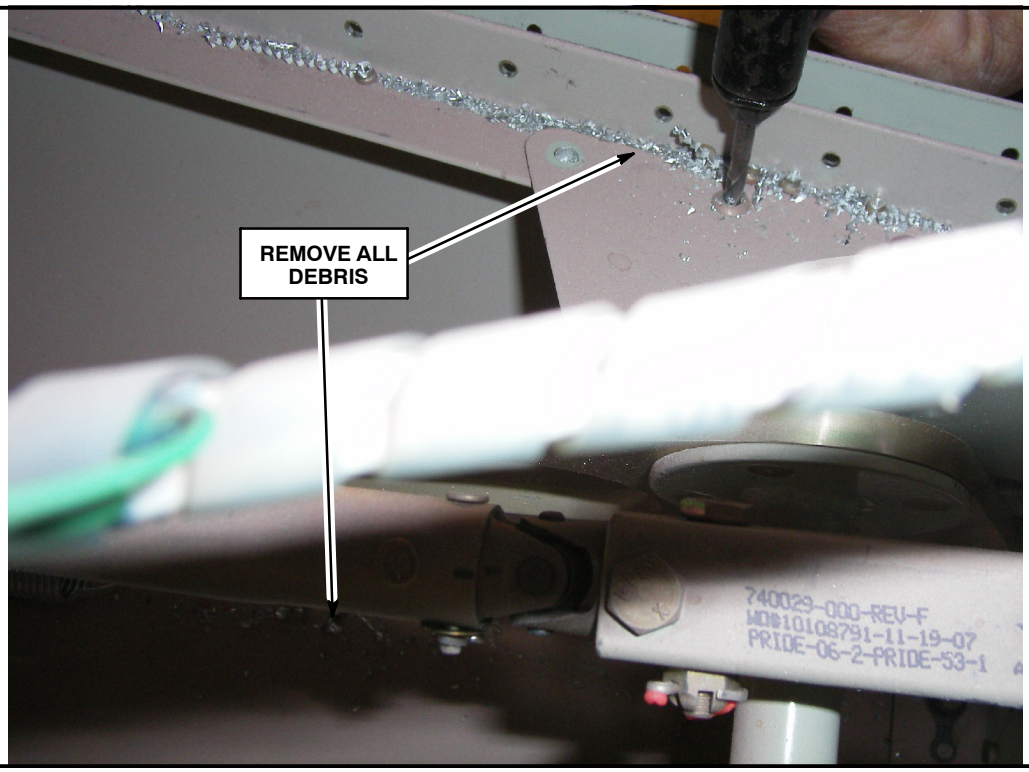

Figure SB M20-303-5 – REMOVE ALL FOREIGN DEBRIS FROM TAILCONE AREA

Figure SB M20-303-6 – REMOVE ALL PAINT FROM RIVET AREA (IF PAINTED)

Figure SB M20-303-7 – INSTALL LONGERON USING CLECOS AND NEW RIVETS

Figure SB M20-303-8 – INSTALL EMPENNAGE ASSEMBLY