



A Textron Company

## **TECHNICAL BULLETIN**

**505-19-18**

**PSL # 700000311**

23 April 2019

**MODEL AFFECTED:** 505

**SUBJECT:** AIRFRAME TRUSS CORROSION PREVENTIVE MAINTENANCE PROGRAM, INTRODUCTION OF.

**HELICOPTERS AFFECTED:** Serial numbers 65011 and subsequent.

**COMPLIANCE:** At customer's option.

### **DESCRIPTION:**

It was brought to Bell's attention that some model 505 helicopters operating in salt laden environments showed premature signs of corrosion appearing on the airframe truss. The investigation and review of the build requirements revealed that some truss assemblies may have been produced with some areas covered with minimal surface protection.

This Technical Bulletin (TB) highlights those areas as found by operators during routine maintenance activity and gives instructions to address and limit corrosion propagation if found during scheduled inspection. Special attention to additional areas is also highlighted for all 505 helicopters operating in salt laden environments having heavy exposure to local atmosphere and moisture.

### **APPROVAL:**

The engineering design aspects of this bulletin are Transport Canada Civil Aviation (TCCA) approved.

### **CONTACT INFO:**

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering  
LIGHT Tel: 450-437-2862 / 1-800-363-8023 / [productsupport@bellflight.com](mailto:productsupport@bellflight.com)

**MANPOWER:**

Approximately 3.0 man-hours are required to complete this bulletin. This estimate is based on hands-on time and may vary with personnel and facilities available. This estimate does not include any hands-on time to address findings.

**WARRANTY:**

Owners / Operators of Bell Helicopters who comply with the instructions in this Bulletin will be eligible to receive labor as applicable, listed in the bulletin. Bell Helicopter has recently introduced enhancements to the VISTA Portal which allocates specific warranty entitlement for an aircraft by serial number. The Product Service Letter (PSL) number which will be listed below the bulletin number on the introduction page is going to be a required field when submitting a claim for replacement parts, labor, and/or freight. If you receive an ASB or TB that does not have a PSL number, then there is no warranty entitlement for that bulletin.

Labor entitlement: Yes     \$595.00 USD

To receive labor, under warranty:

- If there is a PSL number identified in the bulletin you will be required to enter this PSL number which will validate warranty entitlement for the selected aircraft. Please ensure that you use the Bulletin tab on the warranty section in VISTA to file your claim.

NOTE: Customers who fail to comply with the instructions in this Bulletin before the 31<sup>st</sup> of May 2020 will not be eligible for the special warranty listed above.

**MATERIAL:**

**Consumable Material:**

The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator’s consumable material stock levels. This material may be obtained through your Bell Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty (Note)</u>	<u>Reference *</u>
2900-08001-00	Corrosion Inhibitor	500 ml (1)	C-075
2010-12481-00	Sealant	1 Pt (1)	C-251
2230-00425-00	Primer	1 Pt (1)	C-204
5040-60115-00	Nylon Web abrasive pad	1 Roll (1)	C-407
2110-06257-00	MEK	1 Gal (1)	C-309

2100-00343-00	Turco W.O. #1	1 Gal (1)	C-344
5060-60160-00	Abrasive cloth (400 Grit)	1	C-423
2100-00061-00	Acetone	1 Gal (1)	C-316
2230-05688-00	Turco 5351 Paint remover	1Pt (1)	C-436

\* C-XXX numbers refer to the consumables list in the BHT-ALL-SPM, Standard Practices Manual

**NOTE 1:** The quantity indicated is the format the product is delivered in. The actual quantity required to accomplish the instructions in this bulletin may be less.

**SPECIAL TOOLS:**

10X Magnifying glass  
 Inspection mirror

**WEIGHT AND BALANCE:**

Not affected.

**ELECTRICAL LOAD DATA:**

Not affected.

**REFERENCES:**

BHT-505-MM, Maintenance Manual.  
 BHT-505-MPI, Maintenance Planning Information.  
 BHT-ALL-SPM, Standard Practices Manual.  
 BHT-ELEC-SPM, Electrical Standard Practices Manual  
 CSSD-PSE-87-001, Corrosion Control Guide.  
 General Information Letter GEN-18-141

**PUBLICATIONS AFFECTED:**

BHT-505-MM, Maintenance Manual, Chapter 53.

**ACCOMPLISHMENT INSTRUCTIONS:**

**CAUTION**

The Chapter 5 of the BHT-505-MPI (Maintenance Planning Information) provides the minimum maintenance requirements applicable to all 505 helicopters. Any additional requirements needed, or shortened intervals required due to geographical location and/or type of operations, fall under the responsibility of the owners/operators.

-NOTE-

All Bell helicopters receive corrosion protections such as paint, sealants, preservative compounds, plating, and other finishes to counteract environmental deterioration. The Corrosion Control Guide CSSD-PSE-87-001 provides guidance to owners/operators and serves them to develop their own corrosion control program for continued economical and safe operation of their helicopters. The CSSD manual sets the minimal inspection requirements for corrosion not to exceed 100 flight hours or 90 days, whichever occurs first. Helicopters, while operating in hot and dry environments, will resist to corrosion better than those which operate in hot and humid regions. Each owner/operator is encouraged to develop or improve their own maintenance program to counteract corrosion based on the mission and environment in which his helicopter operates.

- 1) Prepare the helicopter for maintenance.

**WARNING**

**The airframe truss is a flight critical part. Repair instructions of this bulletin should be strictly followed. Any deviation shall be submitted by the owner/operator to Product Support Engineering for review and approval.**

- 2) With a flash light and mirror, do a general visual inspection of the complete truss assembly for condition and environmental deterioration (Ref. DMC-505-A-53-30-03-00A-281A-A and DMC-505-A-53-30-03-00A-281B-A, BHT-505-MM, Maintenance Manual, Chapter 53).
- 3) Inspect and pay close attention to the following locations;
  - a) The eight upper avionic shelf brackets for corrosion (Figure 4).
  - b) The four Emergency Locator Transmitter (ELT) shelf brackets (Figure 5).
  - c) The four oil cooler support brackets (Figure 6)
  - d) The three hydraulic reservoir support brackets (Figure 7)

- e) The two forward pulley support brackets (Figure 8). Those are considered restricted. If damage is found, go to step 9.
  - f) The two aft pulley support brackets (Figure 9).
  - g) The eight air conditioning compressor attachment brackets (Figure 10).
  - h) The two aft firewall attachment brackets (Figure 11).
  - i) The two center firewall attachment brackets (Figure 12).
  - j) The two oil cooler blower housing attachment brackets (Figure 13).
  - k) The two oil cooler blower front and aft hanger bearing attachment brackets (Figure 14).
  - l) The six air conditioning condenser attachment brackets (Figure 15).
  - m) The two forward lower avionics/battery shelf attachment brackets (Figure 16). The aft attachment areas (plates) are considered restricted. If damage is found on the aft plates, go to step 9.
  - n) The two aft fuselage panels attachment frame clips (Figure 17).
  - o) The two forward upper and the two aft lower main body attachment plates. (Figure 18). Those plates are considered restricted. If damage is found, go to step 9.
  - p) Pay attention to all unprimed/unpainted surfaces, including riveted grounding plane brackets (Figure 19). If corrosion exists near a ground lug attached to any of the unprimed/unpainted area of the truss (Figure 20), omit step 6 and repair area in accordance with step 7.
- 4) If no environmental damage on the truss assembly is observed, go to step 8.

-NOTE-

During repair, do not increase depth of existing damage. Do not remove more than 0.005 inch (0.127 mm) deep of material. Blending close to welds is restricted and dependent if the weld is on a tube or on an attachment bracket/clip. Restricted areas of tubes where rework is not allowed are adjacent to welds attaching a tube to a tube, or near a tube vent rivet where limitation is 1.0 inch (25.4 mm) as seen in Figure 1 and Figure 2. Areas of tubes and brackets/clips adjacent to common weld are restricted to 0.100 inch. (2.54 mm) as seen in Figure 3. Restoring affected surface finish

(primer or paint top coat) must be done within 4 hours after completion of the applicable repair process.

- 5) If corrosion or damage is observed on any tube, review the truss Historical Service Record (HSR) for possible repairs recorded for the affected areas where corrosion is found. If corrosion was reworked in the past at the same area just observed, go to step 9. If the damage found is affecting an area of a tube for the first time, proceed as follows;

**CAUTION**

Restricted areas of tubes where rework is not allowed are adjacent to welds attaching a tube to a tube, or near a tube vent rivet where limitation is 1.0 inch (25.4 mm) as seen in Figure 1 and Figure 2. Go to step 9 if corrosion is seen in these restricted areas.

- a) Remove all paint and primer to expose complete affected region. Paint remover (C-436) or Plastic Media Blasting (PMB) method can be used to expose primed and painted metal surfaces as per procedure in Chapter 4-2 (Paint Removers) or Chapter 3-24 (PMB) of the Standard Practices Manual (BHT-ALL-SPM). Protect surrounding areas and equipment as required.
- b) Do a primary cleanup of exposed area where corrosion/damage is found with nylon abrasive pad (C-407) and MEK (C-309) or Acetone (C-316) while protecting surrounding areas and equipment from dripping liquid. Sand affected tube in longitudinal direction only.
- c) If corrosion (pitting) or mechanical damage beyond 0.005 inch (0.127 mm) deep is observed after exposure and primary clean-up, go to step 9.
- d) Repair any pitting or damage 0.005 inch (0.127 mm) deep or less using abrasive cloth (C-423) 400 Grit or finer. Sand smooth in longitudinal direction only with adjacent surfaces while maintaining a 40:1 ratio. Do not sand in any of the restricted area (1.0 inch (25.4 mm)) adjacent to the weld attaching a tube to a tube (Figure 1) or near a vent rivet (Figure 2). Restricted area for corrosion to a tube near a weld securing a clip or a bracket is 0.100 inch (2.54 mm) as seen in Figure 3.
- e) After repair of the affected surface, apply Alcoholic Phosphoric Cleaner (C-344) on the reworked section (BHT-ALL-SPM Section 3-7). Do not exceed 4 hours before carrying out step 5f). If 4 hours maximum period is exceeded, repeat step 5e).
- f) Restore any areas on the truss assembly showing lack of primer/paint film coating and/or protective surface finish (BHT-ALL-SPM). Apply Epoxy Polyamide primer (C-204) on all bare metal surfaces. Apply final paint as

needed on all primed and sealed areas of the truss assembly using Polyurethane top coat color No. 16492 (per Fed STD No. 595).

- g) Annotate the truss Historical Service Record (HSR) to indicate type, size, depth and exact location of the damage that was reworked for future reference.
  - h) To prevent moisture entrapment, seal all opened areas common to bracket flanges and tube junctions using a bead of sealant (C-251) as seen in Figure 21. Apply primer (C-204) and if required, paint top coat over the sealant when dry.
  - i) For added truss surface protection, apply corrosion inhibitor (C-075) to sensitive areas reported in this bulletin or as specified by your company's corrosion preventive maintenance program (Figure 22)
- 6) Except for the brackets listed in 3(e), 3(m) and 3(o) above which are restricted at this time, repair corrosion or damage seen on any welded bracket/clip and/or truss mating tube for applications listed in Step 3, as follows;

**CAUTION**

Restricted areas where rework is not allowed are adjacent to welds attaching brackets/clips to a mating tube and are limited to 0.100 inch (2.54 mm) as seen in Figure 3. Go to step 9 if corrosion is seen in these restricted areas.

- a) Review truss Historical Service Record (HSR) for possible repairs recorded for the affected areas where corrosion is found. If corrosion was reworked in the past at the same area as recorded and affecting a clip/bracket with mating tube, go to step 9.
- b) Remove all paint and primer to expose complete affected region of bracket/clip and/or mating tube. Paint remover (C-436) or Plastic Media Blasting (PMB) method can be used to expose primed and painted metal surfaces as per procedure in Chapter 4-2 (Paint Removers) or Chapter 3-24 (PMB) of the Standard Practices Manual (BHT-ALL-SPM). Protect surrounding areas and equipment as required.
- c) Do a primary cleanup of exposed area where corrosion/damage is found with nylon abrasive pad (C-407) and MEK (C-309) or Acetone (C-316), while protecting surrounding areas and equipment from dripping liquid.
- d) If pitting or mechanical damage beyond 0.005 inch (0.127 mm) deep is observed after exposure, go to Step 9.

- e) If any corrosion or damage is found on restricted areas shown in Figures 8, 16 and 18, those areas are considered critical. Go to step 9.
  - j) Repair any pitting or damage 0.005 inch (0.127 mm) deep or less by using abrasive cloth (C-423) 400 Grit or finer. Sand affected bracket/clip smooth with adjacent surfaces while maintaining a 10:1 ratio. Sand defect on mating tube if affected in the longitudinal direction only while maintaining a ratio of 40:1 with adjacent surfaces. Restricted area for corrosion to a tube near a weld securing a clip or a bracket is 0.100 inch (2.54 mm) as seen in Figure 3.
  - f) After repair of the affected surface, apply Alcoholic Phosphoric Cleaner (C-344) on the affected reworked section (BHT-ALL-SPM, Section 3-7). Do not exceed 4 hours before carrying out step 6g). If the 4 hours maximum period is exceeded, repeat step 6f).
  - g) Restore any areas on the truss assembly showing lack of primer/paint film coating and/or protective surface finish (BHT-ALL-SPM). Apply Epoxy Polyamide primer (C-204) on all bare metal surfaces. Apply final paint as needed on all primed and sealed areas of the truss assembly using Polyurethane top coat color No. 16492 (per Fed STD No. 595).
  - h) Annotate the truss Historical Service Record (HSR) to indicate type, size, depth and exact location of the damage that was reworked above for future reference.
  - i) To prevent moisture entrapment, seal all opened areas common to bracket flanges and tube junctions using a bead of sealant (C-251) as seen in Figure 21. Apply primer (C-204) and if required, paint over the sealant when dry.
  - j) For added truss surface protection, apply corrosion inhibitor (C-075) to sensitive areas reported in this bulletin or as specified by your company's corrosion preventive maintenance program (Figure 22).
- 7) Repair any unprimed/unpainted area where a ground lug is attached (Figure 20) as follows;

**CAUTION**

Restricted areas where rework is not allowed are adjacent to welds attaching brackets/clips or plates to a mating tube and are limited to 0.100 inch (2.54 mm) as seen in Figure 3. If corrosion is seen in these restricted areas, go to step 9.

- a) Review the truss Historical Service Record (HSR) for possible repairs recorded for the affected areas where corrosion is found. If corrosion was reworked in the past at the same area as recorded and affecting a ground lug, go to step 9.



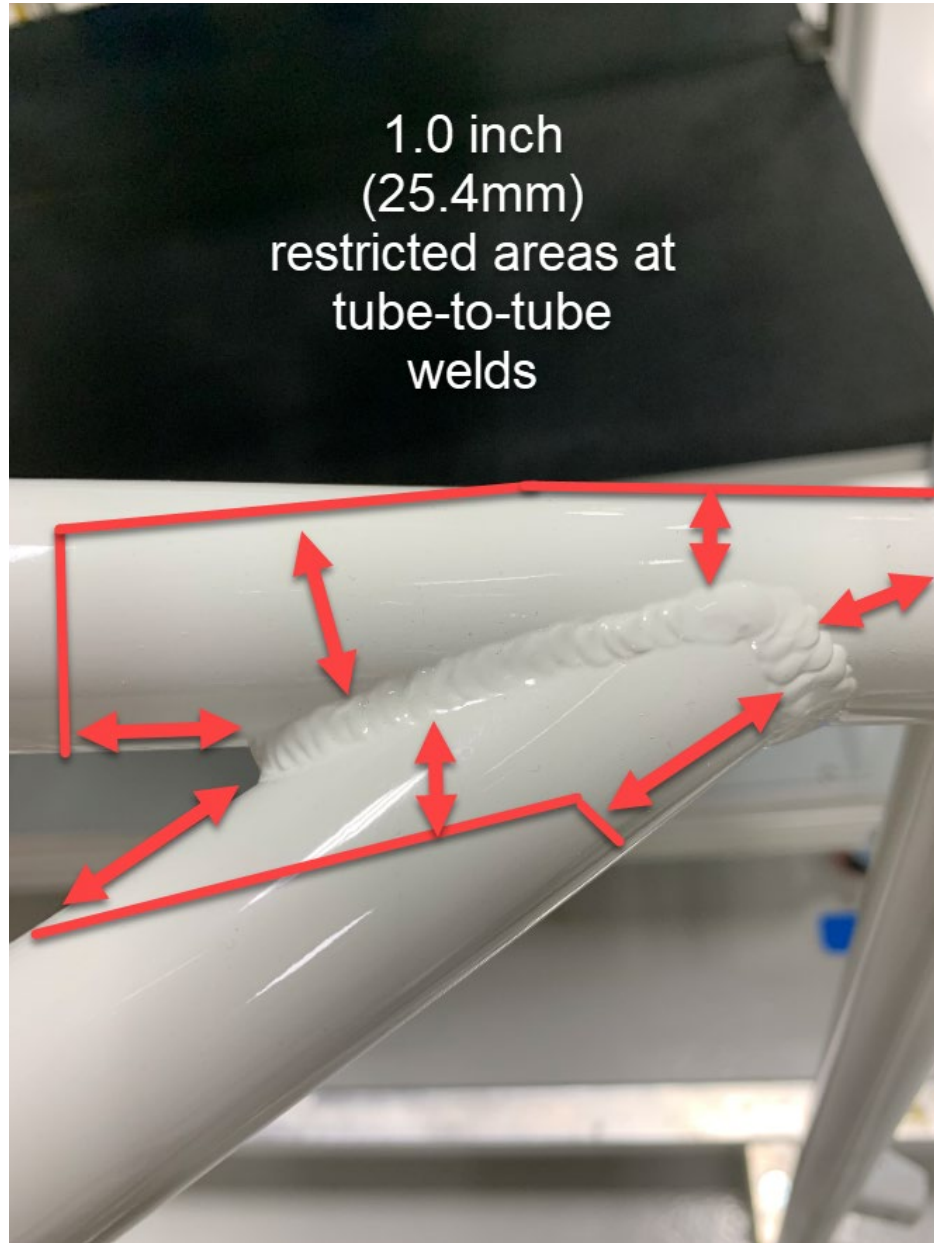
- b) Do not remove existing ground terminal lug at this time but do a primary cleanup of exposed area where corrosion/damage is found with nylon abrasive pad (C-407) and MEK (C-309) or Acetone (C-316) while protecting surrounding areas and equipment from dripping liquid.
- c) If pitting or mechanical damage beyond 0.005 inch (0.127 mm) deep is observed after exposure, go to step 9.

**CAUTION**

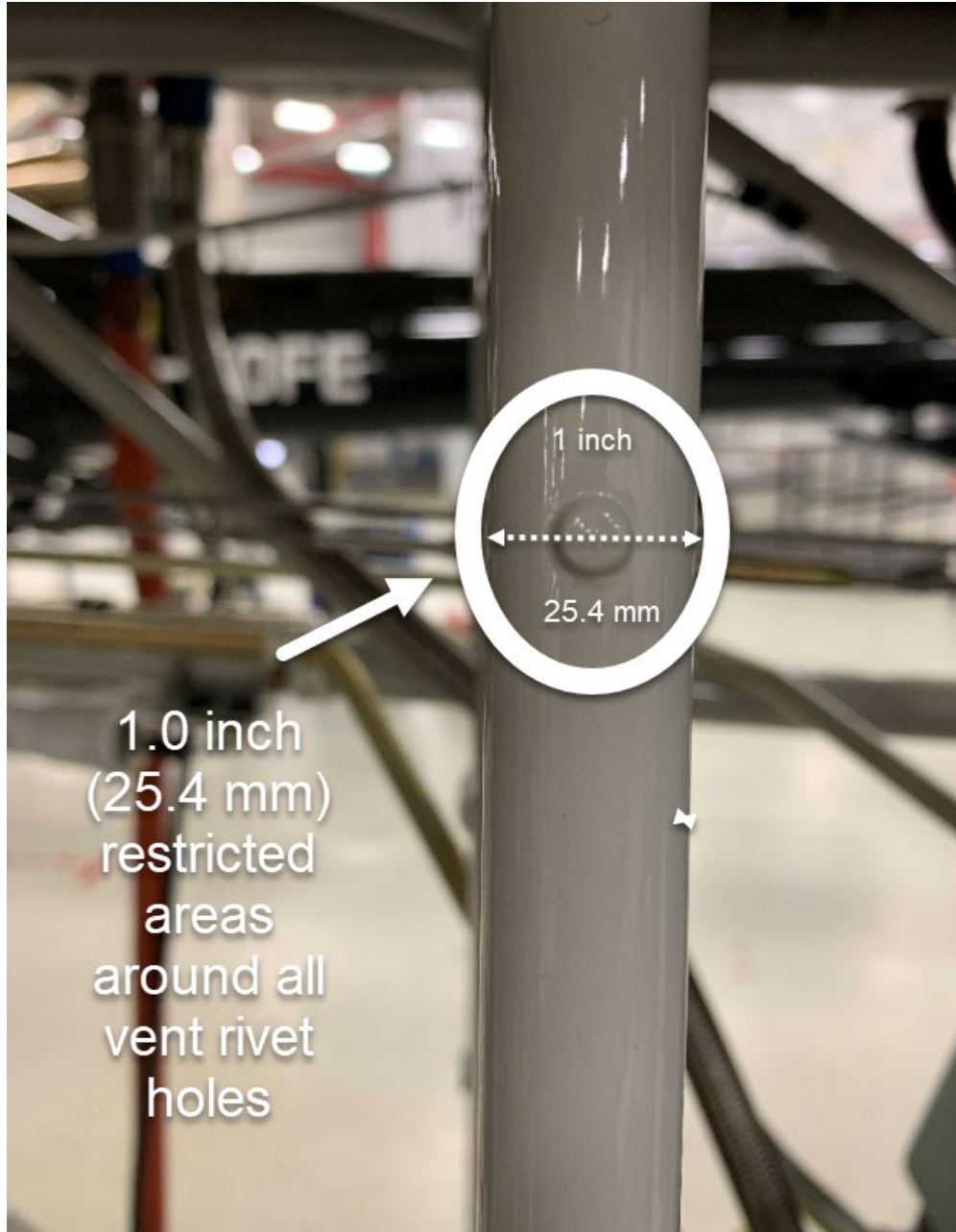
If any ground terminal lug must be removed (Figure 20) to accomplish the repair described below, protect the Cadmium plated surface finish under the footprint of the terminal lug. If Cadmium plating is not protected and is removed during repair process, proper ground bond surface will have to be restored using selective Brush Cad Plating and portable equipment (BHT-ALL-SPM and BHT-ELECT-SPM ).

- d) Do not remove ground terminal lug but repair around it any pitting or damage 0.005 inch (0.127 mm) deep or less by using abrasive cloth (C-423) 400 Grit or finer. Sand smooth with adjacent surfaces while maintaining a 10:1 ratio. Do not sand in any of the restricted area described in this bulletin.
  - e) After repair of the affected surface, apply Alcoholic Phosphoric Cleaner (C-344) on the affected reworked section (BHT-ALL-SPM, Section 3-7). Do not exceed 4 hours before carrying out step 7f). If the 4 hours maximum period is exceeded, repeat step 7e).
  - f) Following rework above, Apply Epoxy Polyamide primer (C-204) on all bare metal surfaces. Apply final paint as needed on all primed and sealed areas of the truss assembly using Polyurethane top coat color No. 16492 (per Fed STD No. 595).
  - g) Annotate the truss Historical Service Record (HSR) to indicate type, size, depth and exact location of the damage that was reworked above for future reference.
  - h) To prevent moisture entrapment, seal all opened areas common to bracket flanges and tube junctions using a bead of sealant (C-251) as seen in Figure 21. Apply primer (C-204) and if required, paint over the sealant when dry.
  - i) For added truss surface protection, apply corrosion inhibitor (C-075) to sensitive areas reported in this bulletin or as specified by your company's corrosion preventive maintenance program.
- 8) Make an entry in the helicopter logbook and historical service records as required indicating compliance with this Technical Bulletin.

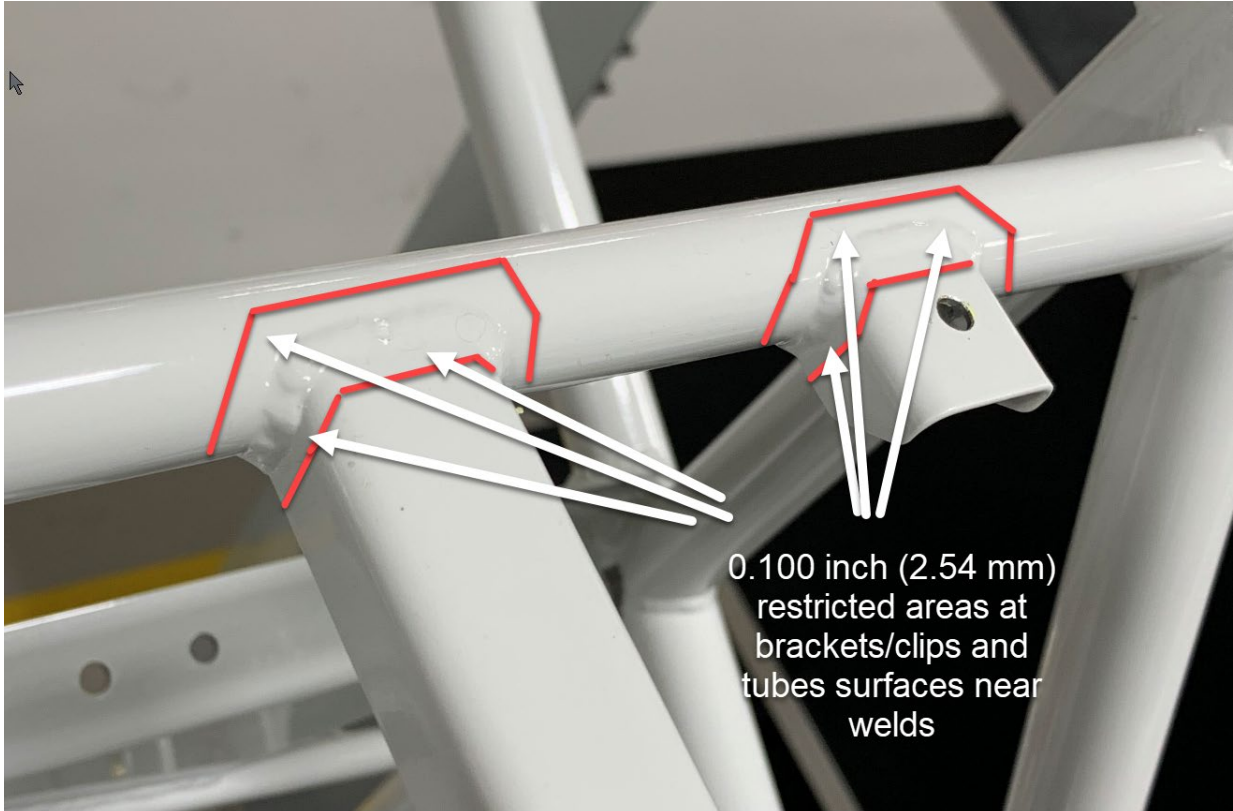
- 9) If extensive corrosion to truss metal surfaces beyond 0.005 inch (0.127 mm) deep or in a restricted area is found, report findings to Product Support Engineering at [productsupport@bellflight.com](mailto:productsupport@bellflight.com) for assistance for a repair . Include the following information;
- a) Complete and submit the form found in General Information Letter GEN-18-141.
  - b) Give precise location of damage.
  - c) Report type, size, depth and exact location of damage affecting the metal surface.
  - d) If known, indicate also if the affected area was repaired in the past as indicated by the Historical Service Record (HSR) of the truss assembly. Provide all the details of what actions were taken at that time.
  - e) Include pictures for each affected area. First, take one or more pictures a few feet away from the affected area and then include additional close-up pictures with dimensions and details.
- 10) Include the intent of this bulletin as part of the scheduled maintenance program.



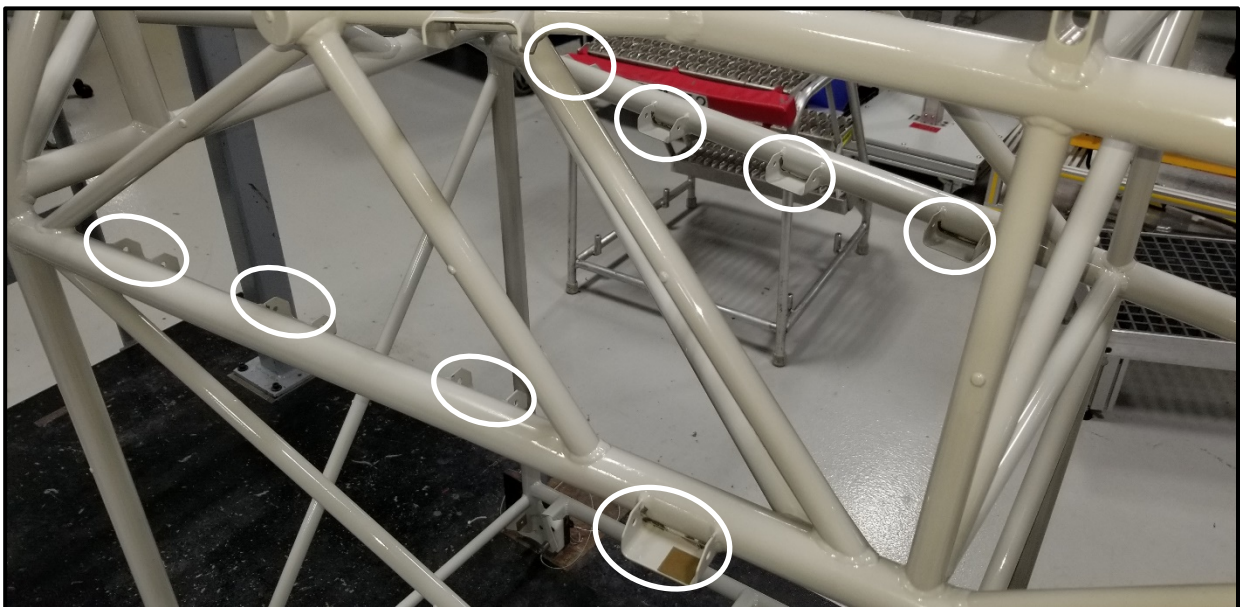
**Figure 1 – Restricted Areas at Tube-to-Tube Welds (Typical)**



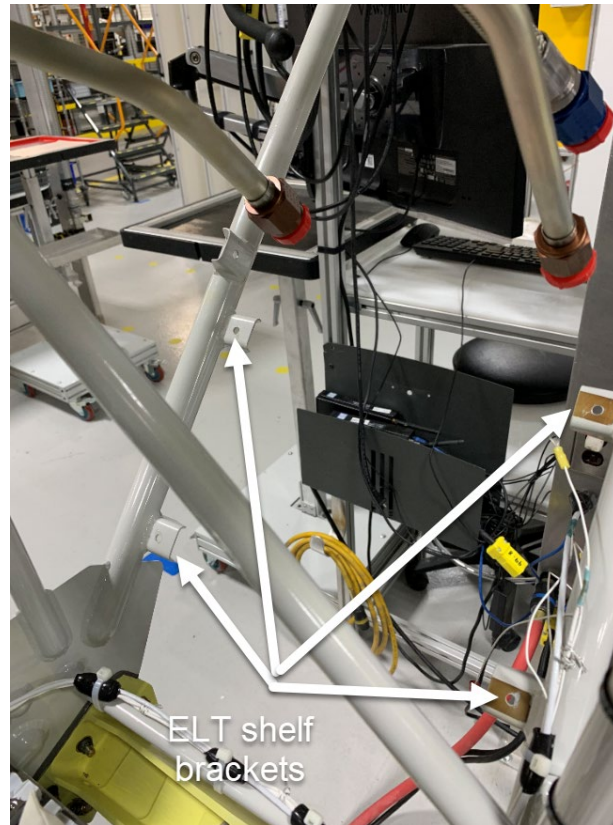
**Figure 2 – Restricted Areas at Tube Vent Rivets (Typical)**



**Figure 3 – Restricted Areas at Tube-to- Brackets/Clips Welds (Typical)**



**Figure 4 – Upper Avionic Shelf Brackets (8 places)**

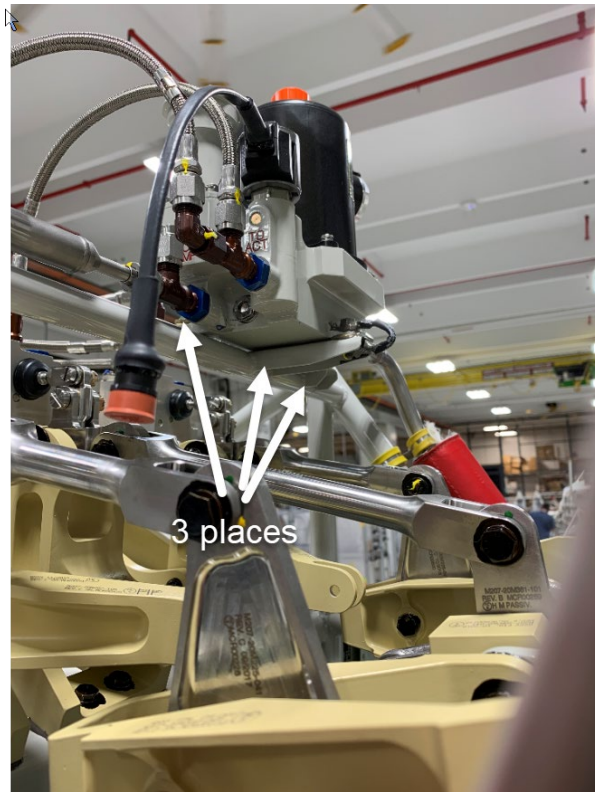


**Figure 5 – Emergency Locator Transmitter (ELT) Shelf Brackets (4 places)**

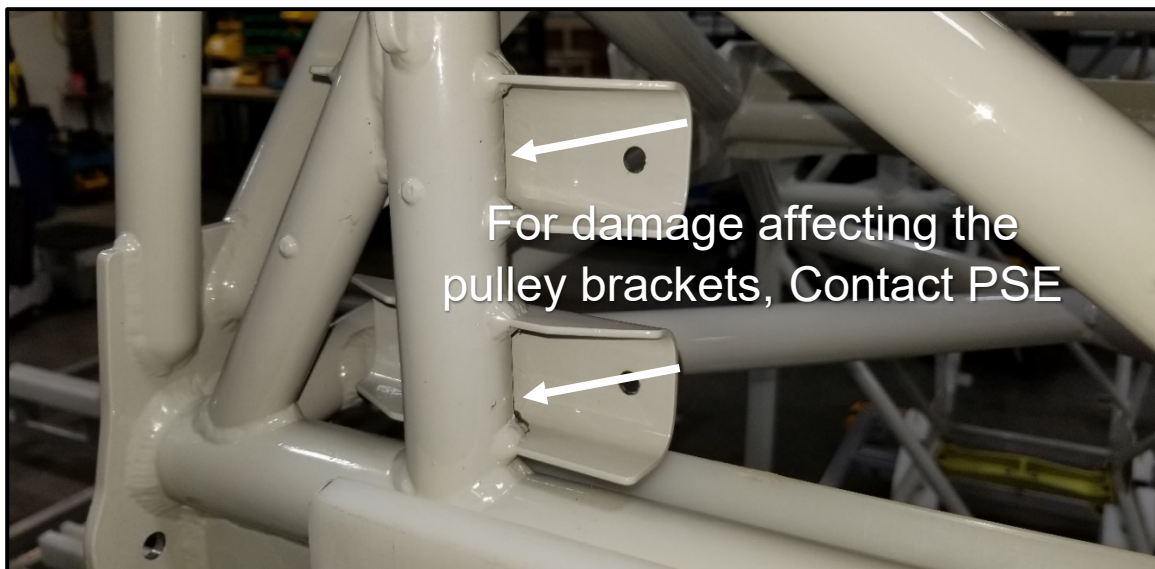


**Figure 6– Oil Cooler Support Brackets (4 places-2 shown)**





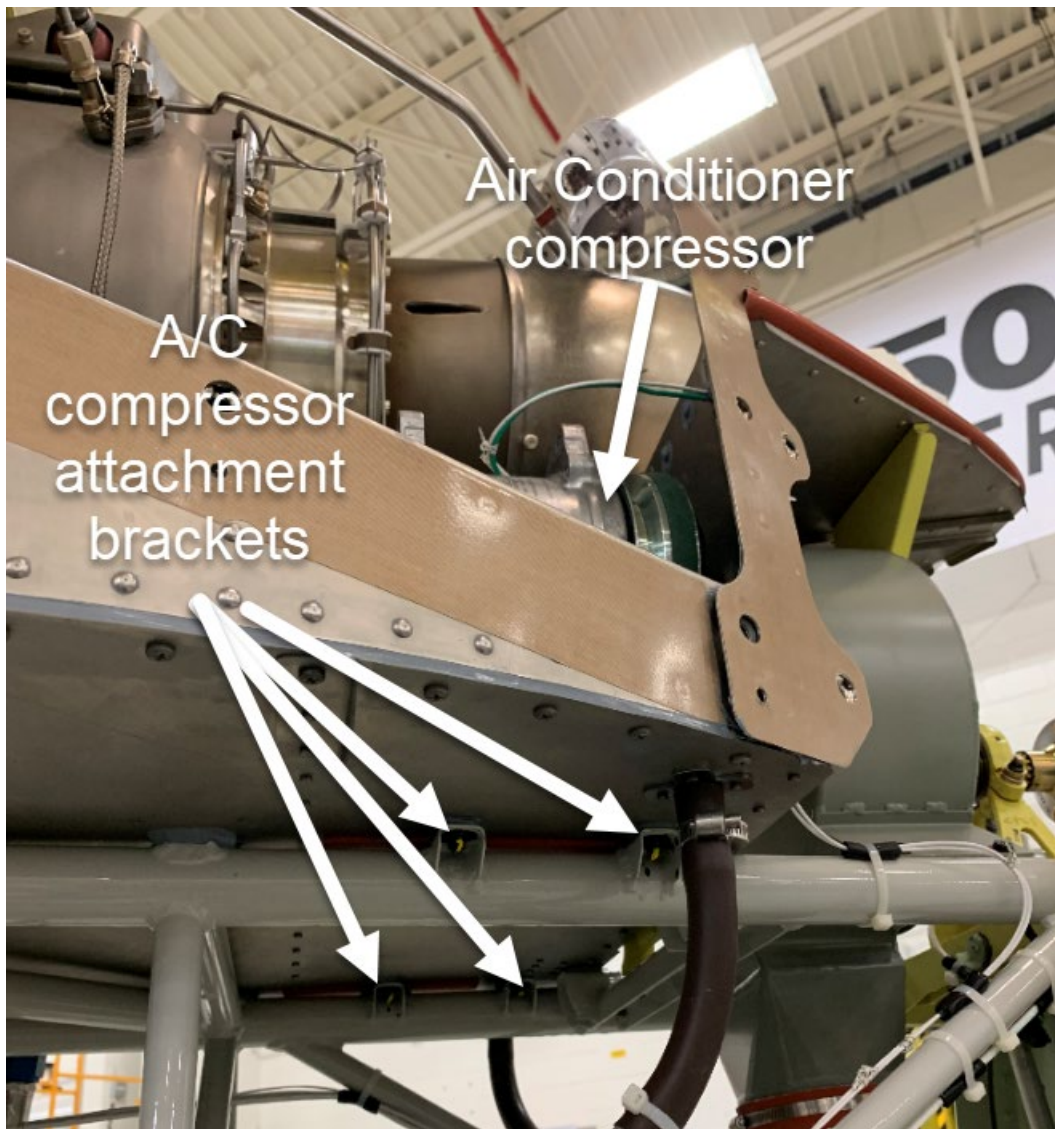
**Figure 7 – Hydraulic Reservoir Support Brackets (3 places)**



**Figure 8 – Forward Pulley Support Brackets (Restricted, 2 places)**



**Figure 9 – Aft Pulley Support Brackets (2 places)**



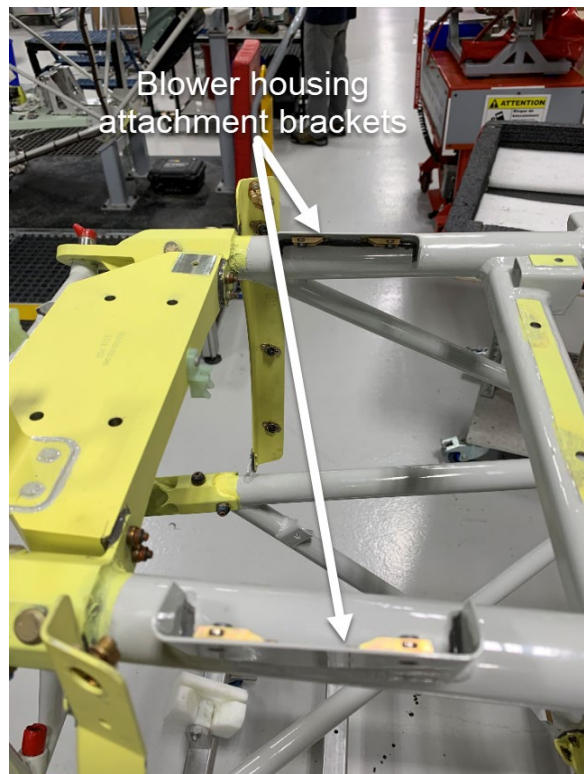
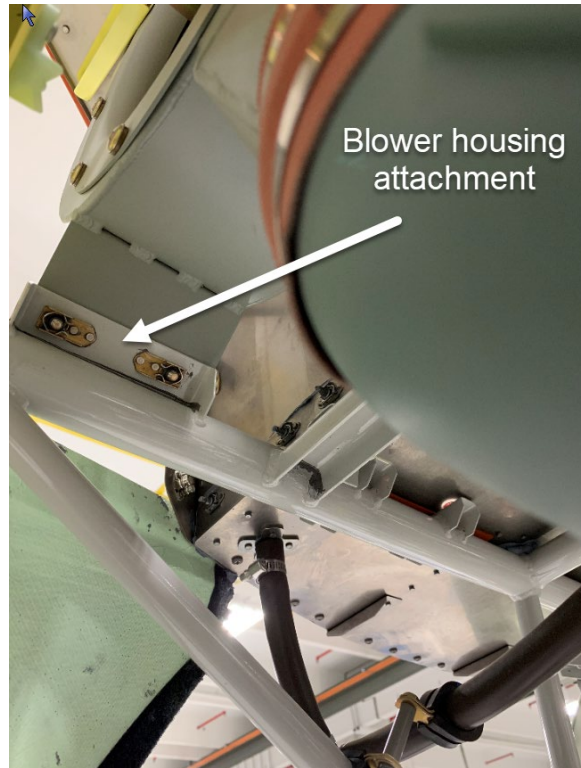
**Figure 10 – Air Conditioning Compressor Attachment Brackets (8 places)**



**Figure 11 – Aft Firewall Attachment Brackets (2 places)**



**Figure 12– Center Firewall Attachment Brackets (2 places)**

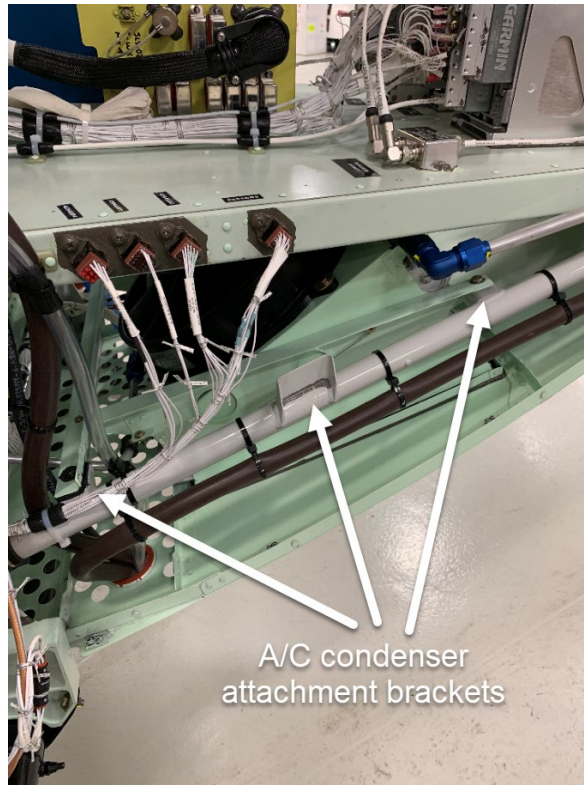


**Figure 13– Oil Cooler Blower Housing Attachment Brackets (2 places)**

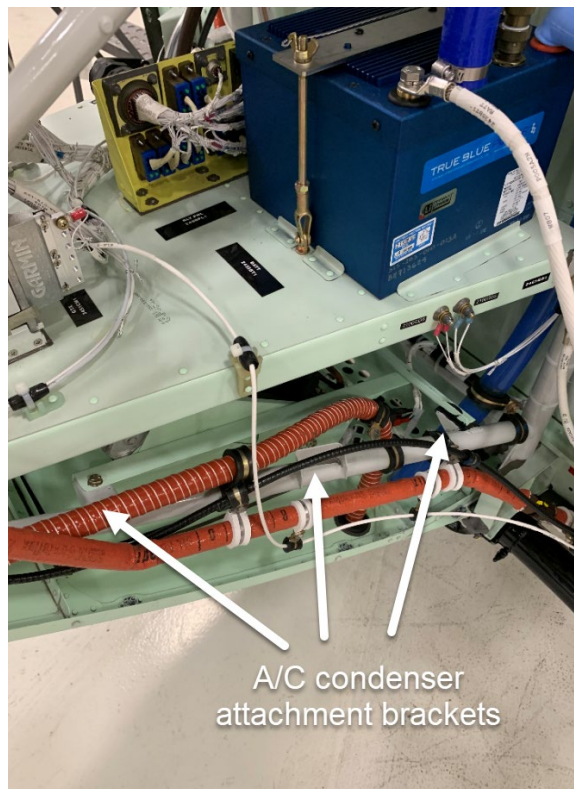


**Figure 14– Blower Forward and Aft Hanger Bearing Attachment Brackets (2 places)**



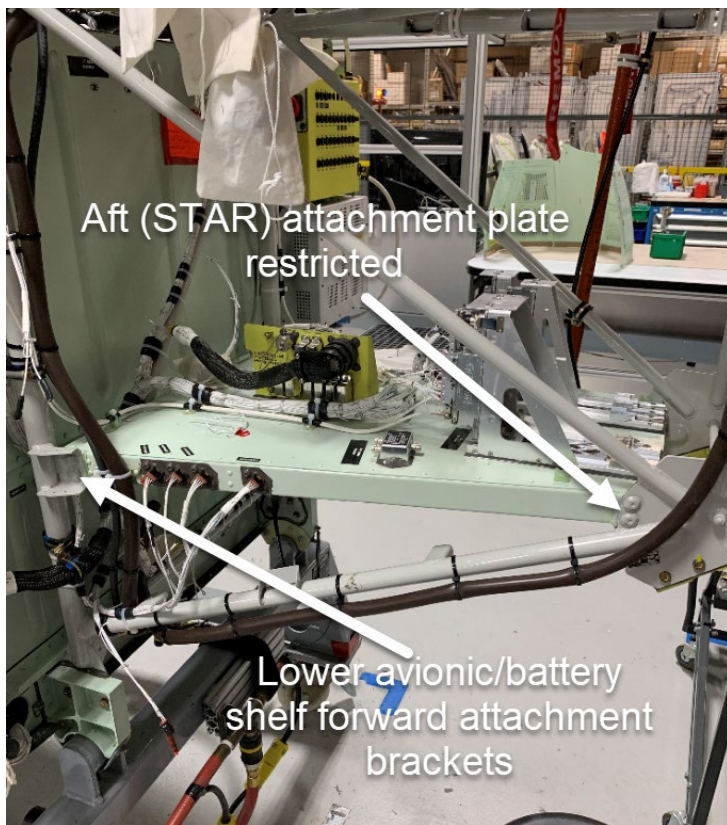
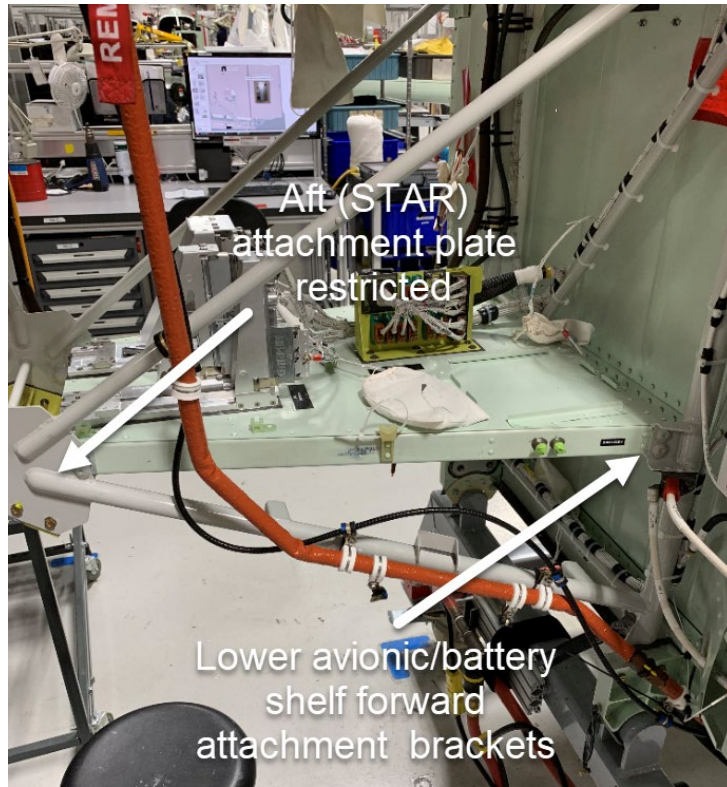


A/C condenser attachment brackets



A/C condenser attachment brackets

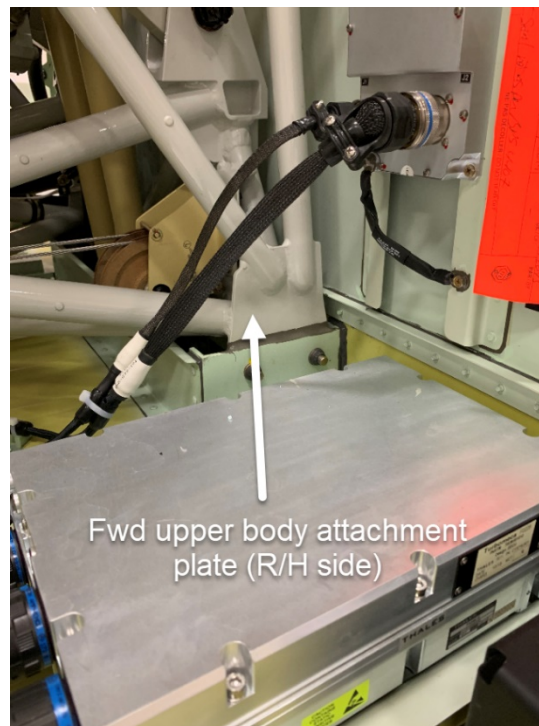
**Figure 15– Air Conditioning Condenser Attachment Brackets (6 places)**



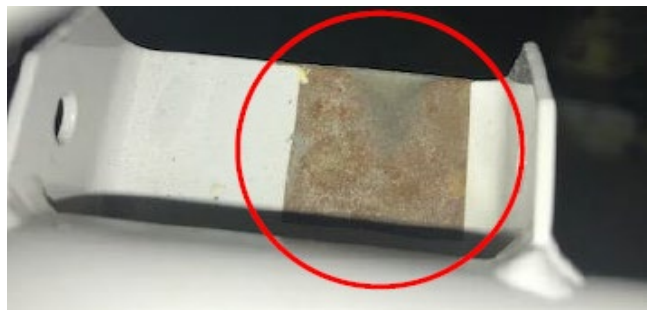
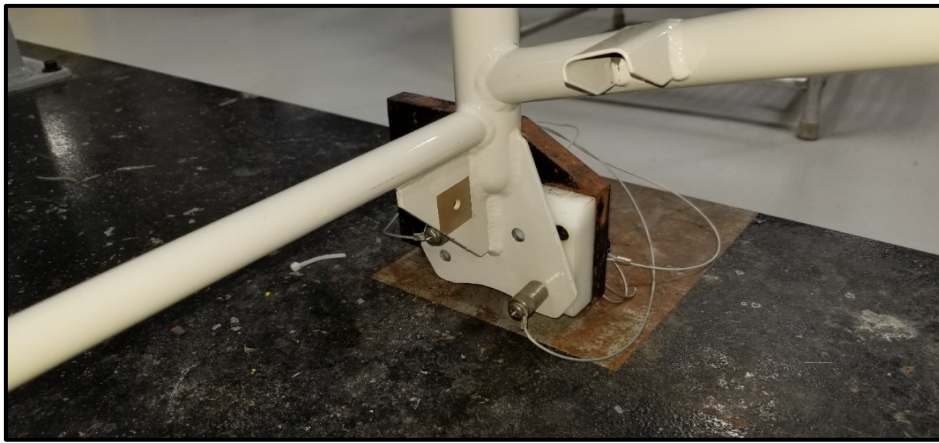
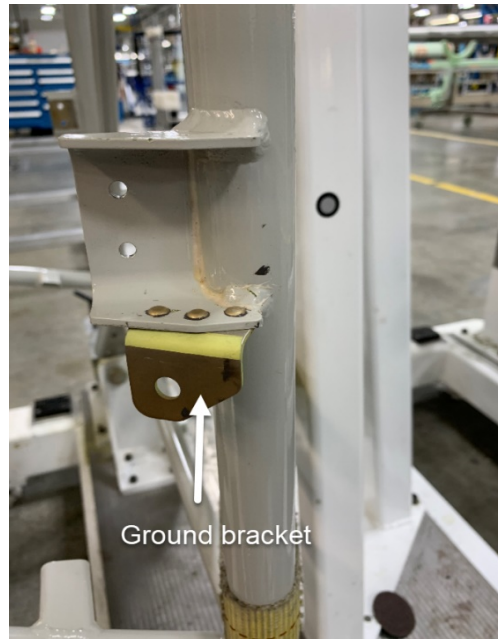
**Figure 16– Lower Avionic/Battery Shelf Attachment Brackets (2 places)**



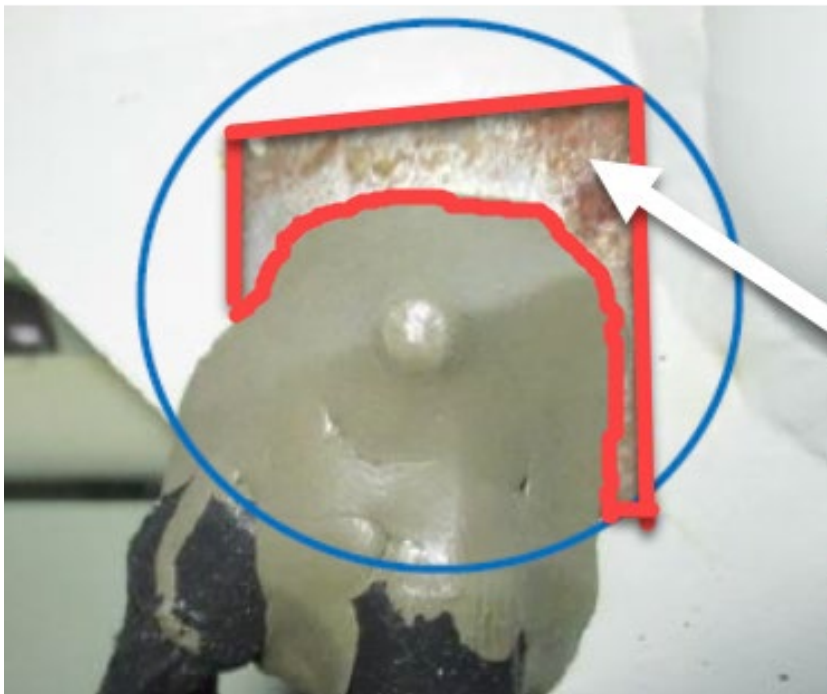
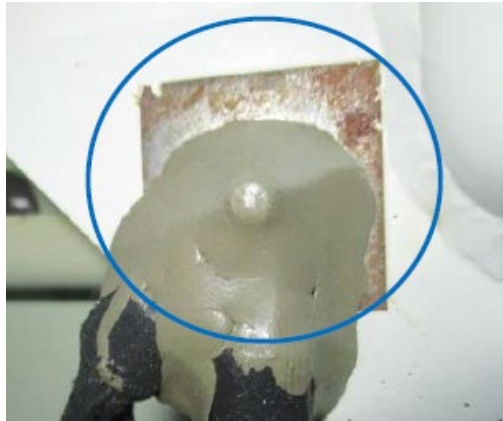
**Figure 17– Fuselage Panels Aft Frames Attachment Clips (2 places)**



**Figure 18– Aft Body Frame Attachment Plates (Restricted, 4 places)**

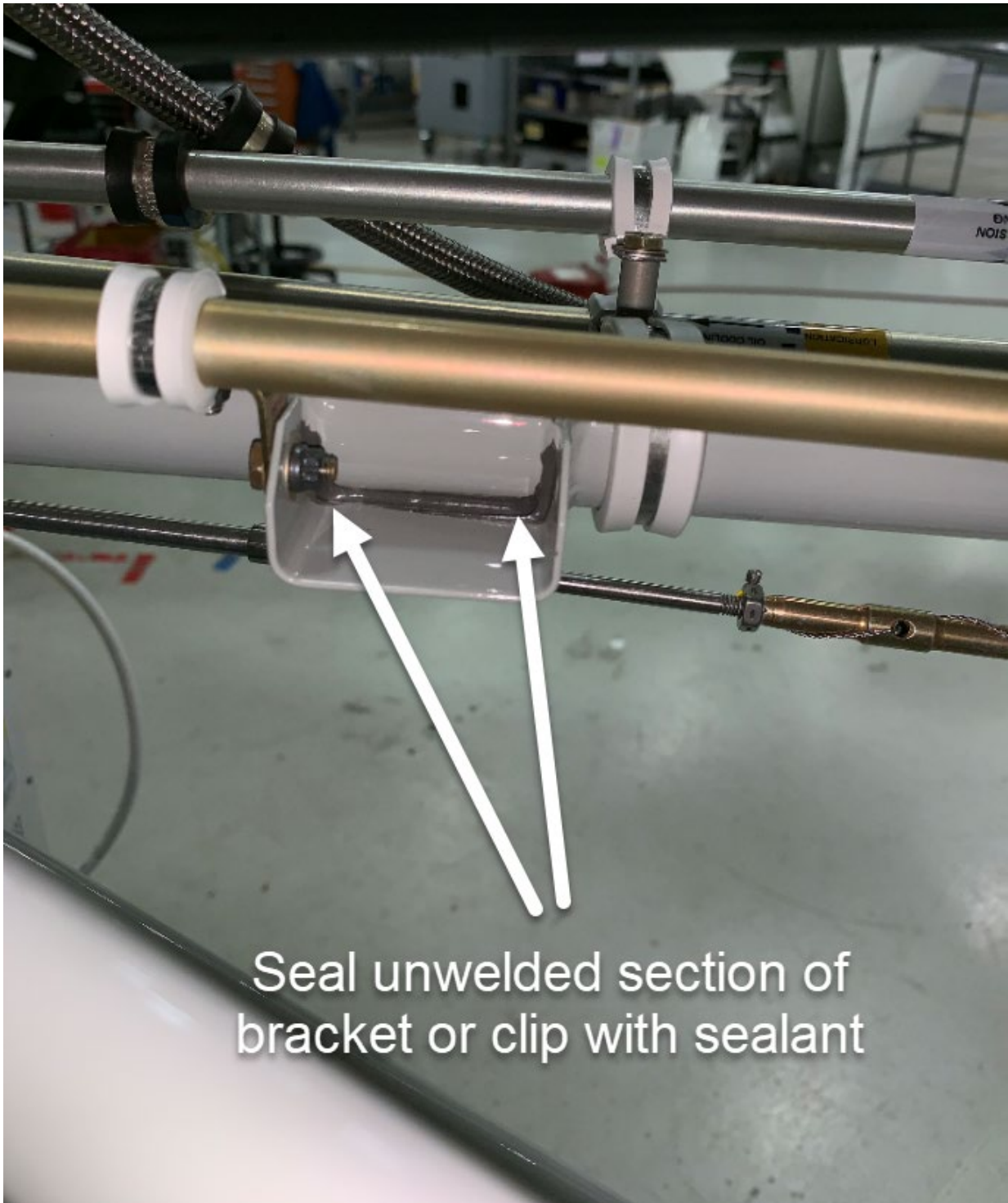


**Figure 19 – Example of Unprimed/Unpainted Areas of Truss**



Rework  
corroded  
area  
around  
ground  
lug only

**Figure 20 – Rework Around Ground Terminal Lug**



Seal unwelded section of  
bracket or clip with sealant

**Figure 21 – Protection of Unwelded Section of Brackets/Clips**

SOCOPAC 65H

Manufacturer:  
SOCOMORE  
Zone Industrielle du Prat, RP 3707, 56037, VANNES CEDEX, France  
Europe: +33 297 437 690  
Asia: +86 021 58131133  
Canada: 1 450 641 8500  
USA: 1 817 335 1826  
[www.socomore.com](http://www.socomore.com)

TYPE	SPRAY (RECOMMENDED)	AEROSOL
<b>APPLICATION</b>		
Additional features	Provides a more homogenous film.  Type of spray applicator: <ul style="list-style-type: none"> <li>• Classic spray gun</li> <li>• Airless/airmix system</li> <li>• Low pressure spray system</li> </ul>	Recommended for touchup/repair or area difficult to reach.  Higher thickness (10%) is necessary to reach same performance.
Thickness of film applied	0.6 mil.	
Drying time to handle	Requires at least 24 hours before handling. Film remains waxy and potentially distorted when handled.	
Removal	<ol style="list-style-type: none"> <li>1. Apply MIL-PRF-680, Type II.</li> <li>2. Allow a few minutes for solvent to act.</li> <li>3. Wipe up the CPC with a rag or mop soaked in the solvent.</li> </ol>	
<b>STORAGE</b>		
Conditions	Store at 14 to 122°F (-10 to 50°C). If possible bring the product to approximately 68°F (20°C) before application. Always shake well before use.	
Shelf life	Spray can have a shelf life of 24 months.  Liquid bulk has a shelf life of 36 months.	

**Figure 22 – Corrosion Inhibitor, Socopac 65H, (C-075)  
(Referenced in CSSD-PSE-87-001)**