

**MANDATORY****SEL-57-09****TITLE**

WINGS - MODEL 177 CARRY-THRU SPAR ONE-TIME CORROSION INSPECTION

**EFFECTIVITY**

MODEL	SERIAL NUMBERS
177	17700001 thru 17701164
177A	17701165 thru 17701370
177B	17701371 thru 17702752
177RG	177RG0001 thru 177RG1366
F177RG	F177RG0001 thru F177RG0177

**REASON**

The carry-thru spar can develop corrosion and cracks. Corrosion can propagate and lead to crack development. A crack in the carry-thru spar can progress to a point that a structural failure of the carry-thru spar can occur, resulting in loss of airplane control and/or wing separation.

Non-compliance with this service letter may result in undetected corrosion and crack(s) in the carry-thru spar, which can result in structural failure of the carry-thru spar.

**DESCRIPTION**

This service document provides instructions and repair criteria to do a detailed inspection of the carry-thru spar to inspect for corrosion and/or cracks.

**COMPLIANCE**

**WARNING:** The Carry-Thru spar inspection presented in this service letter applies to airplanes listed in the Effectivity Section. The compliance time is for unmodified airplanes, and represents the maximum allowable time. Airplanes that have been modified to alter the airplane design, gross weight, or airplane performance, may need to inspect sooner. Examples include but not limited to the following common supplemental type certificates (STC's) include vortex generators, wing cuffs, STOL kits, wing tips, and add-on wing fuel tanks. Contact the STC holder for revised inspection intervals.

MANDATORY. This service document must be accomplished within 200 flight hours or the next Annual Inspection from date of receipt, whichever occurs first.

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After this service letter is complied with, the inspection outlined in SEL-57-07 does not need to be complied with.

If the inspection form associated with this service letter or SEL-57-07 has not been sent in, send it in whether or not cracks or corrosion were found. Refer to the Carry-Thru Spar Inspection Report for contact information.

November 19, 2019

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**MANDATORY****SEL-57-09**

A service document published by Textron Aviation may be recorded as *completed* in an aircraft log only when the following requirements are satisfied:

- 1) The mechanic must complete all of the instructions in the service document, including the intent therein.
- 2) The mechanic must correctly use and install all applicable parts supplied with the service document kit. Only with written authorization from Textron Aviation can substitute parts or rebuilt parts be used to replace new parts.
- 3) The mechanic or airplane owner must use the technical data in the service document only as approved and published.
- 4) The mechanic or airplane owner must apply the information in the service document only to aircraft serial numbers identified in the *Effectivity* section of the document.
- 5) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service document or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document, unless the maintenance is accomplished at a Textron Aviation-owned Service Center.

**MANDATORY****SEL-57-09****CONSUMABLE MATERIAL**

You must use the consumable materials that follow, or their equivalent, to complete this service document.

NAME	NUMBER	MANUFACTURER	USE
Color Chemical Film Treatment	U074093 (Alodine 1132 Touch n Prep)	Textron Aviation Parts Distribution 7121 Southwest Boulevard Wichita, KS 67215	To prepare bare aluminum surface for intermediate primer.
Corrosion Resistant Primer	K000574 (2oz Kit)	Textron Aviation Parts Distribution	Touch-up primer kit.
Cor-Ban 23	COR-BAN-23 (U074098) (12oz aerosol)	Textron Aviation Parts Distribution	Corrosion Inhibiting Compound coating.
Formit-18 Fan	Formit-18	Textron Aviation Parts Distribution	Nozzle for Cor-Ban 23 application.
Primer, Epoxy Polyamide (Primer)	K000479 (2 Gal Kit)	Textron Aviation Parts Distribution	Large primer kit.
Aluminum oxide paper or cloth (high purity) - 180 or 220, and 320 grit		Commercially Available	For paint/corrosion removal and surface preparation before painting.
Conversion Coating	Bonderite M-CR 600RTU	Commercially available	Conversion Coating of bare metal before intermediate primer.
Extreme Simple Green Aircraft and Precision Cleaner		Commercially Available	Initial cleaning of soiled surface.
Isopropyl Alcohol		Commercially Available	Type I Cleaning Solvent for surface cleaning prior to painting.
Methyl Propyl Ketone		Commercially Available	Cleaning solvent of Corban Corrosion Inhibiting Compound.

**CAUTION:** Do not use any other Simple Green products other than Extreme Simple Green as some have been found to be corrosive.

**NOTE:** Textron Aviation has tested and approved Cor-Ban 35 and ARDROX AV-8. These products may be used in place of Cor-Ban 23 at the owners discretion.

**TOOLING**

NAME	NUMBER	MANUFACTURER	USE
10X Magnifying Lense		Commercially Available	For detailed visual inspection of carry-thru spar.
Micrometer (depth gauge style)		Commercially Available	To measure depth of blended areas of carry thru spar.
Eddy Current Inspection Equipment		Nondestructive Inspection Methods and Requirements, Document 2A-13-01 found in Section 2A Supplemental Inspection Documents in the appropriate Model Service or Maintenance Manual	For Eddy Current inspection of carry-thru spar lower surface.

**MANDATORY****SEL-57-09****REFERENCES**

Cessna Model 177 (1968-1978) Service Manual

Cessna Model 177RG (1971-1975) Maintenance Manual

Cessna Model 177RG Series (1976-1978) Service Manual

Inspection Time Limits - Structure, Section 2A-10-00 found in Section 2A Supplemental Inspection Documents in the appropriate Model Service or Maintenance Manual,

Nondestructive Inspection Methods and Requirements, Document 2A-13-01 found in Section 2A Supplemental Inspection Documents in the appropriate Model Service or Maintenance Manual

**NOTE:** To make sure all publications used are complete and current. Refer to [www.txtavsupport.com](http://www.txtavsupport.com).

**PUBLICATIONS AFFECTED**

None

**ACCOMPLISHMENT INSTRUCTIONS**

1. Prepare the airplane for maintenance.
  - A. Make sure that the airplane is electrically grounded.
  - B. Make sure that all switches are in the OFF/NORM position.
  - C. Disconnect electrical power from the airplane.
    - (1) Disconnect external electrical power.
    - (2) Disconnect the airplane battery.
  - D. Attach maintenance warning tags to the battery and external power receptacle that have **"DO NOT CONNECT ELECTRICAL POWER - MAINTENANCE IN PROGRESS"** written on them.
2. Remove the pilot and co-pilot seats if necessary. (Refer to the applicable Model Service or Maintenance Manual.)
3. Get access to all surfaces of the carry-thru spar by removing panels, upholstery, headliner, sealant, and installed utility or oxygen systems as necessary. (Refer to the applicable Model Service or Maintenance Manual.)
4. Remove foam from bottom of carry-thru spar as applicable.
  - A. Clean all adhesive residue from the carry-thru spar with a non-metallic scraper tool.
5. Clean grime or debris from all interior surfaces of the carry-thru spar with special emphasis on lower cap surface.
6. (Refer to Figure 1, Sheets 1-5.) Do a detailed visual inspection of the carry-thru spar with a 10X magnification lens looking for corrosion, nicks, gouges, drill starts, or hardware damage and must include:
  1. The visible surfaces of the Upper cap.
  2. The Spar web (include cap to web radius and outboard feed thru holes).
  3. The Lower cap (include upper and lower surface and cap edge).

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4. The lower surface of the outboard spar to wing attach lugs (include the machined channel surfaces between the lugs).

**NOTE:** The detailed visual inspection should pay particular attention to locations where air ducts, support wires, and upholstery pads contact the lower spar structure as well as lower spar cap lower surface "Kick Area" between BL 9.0 and BL 12.25. (Refer to the figure titled Spar Dimensions after Table 1.)

- A. (Refer to Figure 1, Sheets 4 and 5.) If stress corrosion cracking or exfoliation corrosion (flaking) of the spar is found, contact Textron Aviation Team Structures for evaluation. (Refer to the Carry-Thru Spar Inspection Report for contact information.)

- B. If corrosion is found on the carry-thru spar, the area can be reworked as follows:

**NOTE:** If previous evidence of blending can be determined or is recorded in the aircraft log book for the same location corrosion has been found, contact Textron Aviation Structures.

- (1) Use 180 grit or finer aluminum oxide abrasive paper, cloth or pads to carefully remove corrosion and blend that area locally around the affected region.
- (2) Make sure to only remove the minimum material necessary to blend the corroded surface with the surrounding surface.
- (3) Maintain a minimum of 20:1 blend to depth ratio.
- (4) Leave no sharp edges after blending.
- (5) Finish with a 320 grit or finer grained aluminum oxide sandpaper to 63 micro RA or smoother.

**NOTE:** When 320 grit is properly used, it will produce a 63 micro RA surface finish.

- (6) Use a vacuum to remove dust.
- (7) Use a clean cloth wet with isopropyl alcohol to clean the surface.
- (8) Measure the depth of the blended area mechanically; such as with a straight edge and feeler gauge or a depth gauge micrometer.
  - (a) If material removed is greater than what is listed in the TABLE 1 for the specific spar feature, contact Textron Aviation Team Structures with the dimension of blended area for evaluation. (Refer to the Carry-Thru Spar Inspection Report for contact information.)
  - (b) If material removed is less than 0.010 inch for the specific spar feature in TABLE 1, go to Step 8.
  - (c) If material removed is greater than 0.010 but less than what is listed in TABLE 1 for the specific spar feature, complete the eddy current inspection of the blended areas and the Kick Area from buttock line 9.0 thru 12.25 inch (whether there is or is not presence of corrosion in the Kick Area), go to Step 7.

**TABLE 1 REPAIR CRITERIA**

	Carry-thru Spar Feature	Spar Buttock Line (BL) (in)	Blend Limit (in)	Description
1	Lower Cap - Lower Surface (1)	Center Line to 9.0	0.030	Spar Constant Cross Section
		9.0 to 12.25	0.030	Lower Cap Kick Radius
		12.25 to 21.0	0.030	Outboard of Lower Cap Kick Radius
2	Lower Cap - Upper Surface (1)	Center Line to 16.5	0.030	Spar Constant Cross-Section thru Cap Kick

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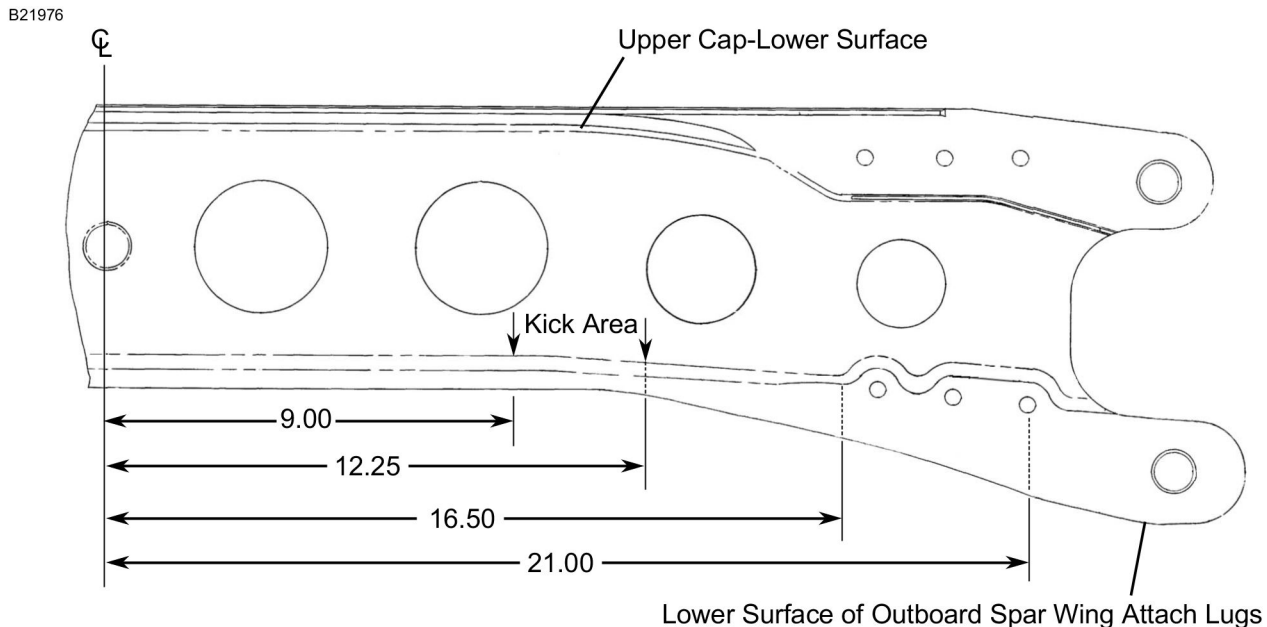
3	Lower Cap - Edge (1)	Center Line to 16.5	0.100	Forward or Aft facing cap edges
4	Lower Cap to Web Radius (1)	Center Line to 16.5	0.030 (2)	Forward or Aft facing web radii
5	Spar Web (1)	Center Line to 16.5	0.050 (2)	Includes areas common to web holes

**NOTE:** Dimensions shown are in Inches.

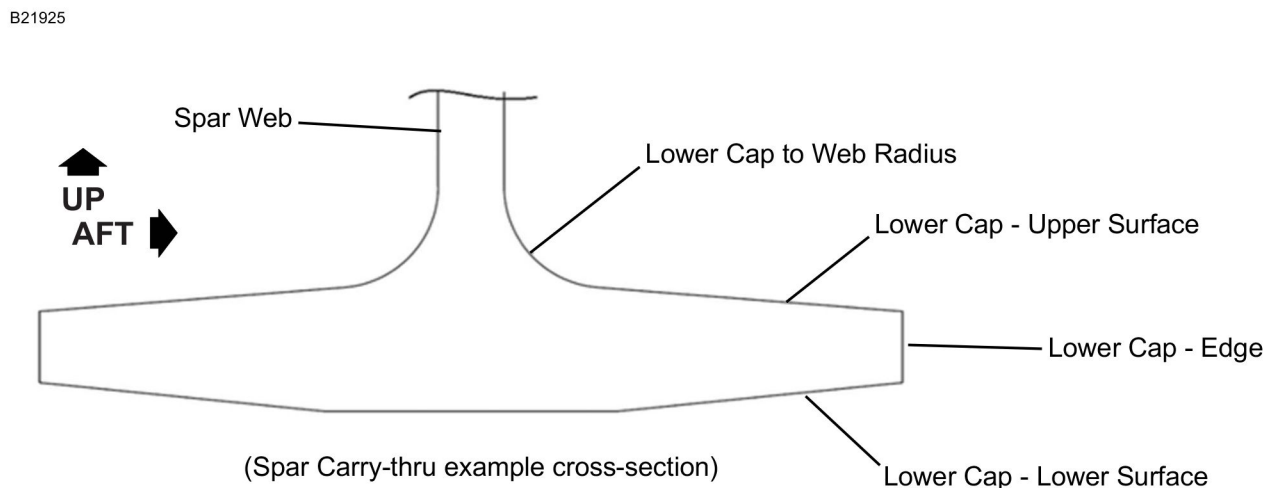
(1) Limits can't be combined at the same Buttock Line location without contacting Textron Aviation. Example: Web blend and a lower spar cap blend cannot be combined at same Buttock Line location without contacting Textron Aviation.

(2) The carry-thru spar must be replaced if the blend limit is exceeded in this area.

### SPAR DIMENSIONS



### SPAR DETAIL



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- C. If no corrosion is found on the carry-thru spar but previous evidence of blending can be determined or is recorded in the aircraft log book, contact Textron Aviation Structures.
- D. If no corrosion is found on the carry-thru spar, go to Step 8.
7. (Refer to Figure 1, View A-A.) (If corrosion was found and blended.) Do an eddy current inspection of the blended area as follows: (Refer to 2A-13-01, Nondestructive Inspection Methods and Requirements in the appropriate Model Service or Maintenance Manual.)
- A. Plan out the inspection process to cover the items listed as follows:
- If the eddy current inspection is performed by qualified personnel that are not representing an FAA Certified Repair Station, an A&P Mechanic may supervise the inspection and make the appropriate logbook entry.
  - Technician must be at least Level 2 certified.
  - Eddy current inspection will cover the carry-thru spar where corrosion was blended and extend 1 Inch beyond the blended area and will also cover the lower cap spar Kick Area from Buttock Line 9.0 thru 12.25.
  - Eddy current inspection will be with a 0.125 Inch probe.
  - Technician should use an inspection approach that ensures the entire blended surface is inspected without gaps and inspection area should extend 1 Inch beyond the blended area in all directions.
  - Limit the inspection area to no wider than 4 square inches at a time, depending on size of blended area. Once an area is complete, move to any additional rework location and repeat the eddy current inspection.
  - Inspect one section at time and overlap each section by 0.25 Inch overlap between each section and identify when each section is complete.
  - Identify when each section is complete to help keep track of progress.
- B. Review the General Requirements and Eddy Current Inspection sections of 2A-13-01 Nondestructive Inspection Methods and Requirements.
- C. Calibrate the eddy current instrument - Impedance Plane. (Refer to 2A-13-01, Nondestructive Inspection Methods and Requirements, Section 2. Eddy Current Inspection.)
- D. Eddy current scan the blended surface with an 0.125 Inch diameter surface pencil probe at 200 kHz.
- Scan direction must be with an inboard to outboard direction.
  - Use of a non-metallic straight edge as a guide will help ensure there is not a fore-aft motion of the probe.
  - Probe one small section of only a couple of inches at a time, recommend no wider than 4 Inches.
  - Move the probe in 0.125 inch increments.
  - Overlap each section by 0.25 Inch.
  - Extend 1 Inch beyond the blended area.
- (1) Look for a sharp response of 10-percent screen height or more which may indicate corrosion or fatigue cracking or both.
- E. If you find one or more cracks, further flight is **NOT** permitted. You must replace the carry-thru spar before further flight.
8. Provide the results of the detailed visual and eddy current inspections to Textron Aviation, Team Structures. Use the Carry-Thru Spar Inspection Report form and pictures as applicable. Telephone number and email address are provided on the form.

**NOTE:** The Carry-Thru Spar Inspection Report form must be sent to Textron Aviation Team Structures to report all conditions, cracks, corrosion, or no cracks, no corrosion.



## MANDATORY

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9. Apply protective coatings to the carry-thru spar as follows:

**NOTE:** The steps that follow are for the carry-thru spar located inside the fuselage. Rework can be from the removal and/or blending of corrosion, nicks, gouges, drill starts, or hardware damage, anything that would result in the exposure of bare metal by removal of the coatings.

- A. If there has been rework and the carry-thru spar was not entirely primed before the inspection:

- (1) Wipe the entire surface with clean wiping cloths wet with isopropyl alcohol.
  - (a) Let the surface dry.
- (2) Apply Conversion coating (Bonderite M-CR 600RTU) to the entire carry-thru spar surface following the manufacture directions for application and dry time.
- (3) Apply a epoxy primer (primer coat) to the entire surface following the manufacture directions for application and dry time.
- (4) Go to Step 10.

- B. If there has been rework and the carry-thru spar was entirely primed before the inspection:

- (1) Wipe the areas with bare metal surface with clean wiping cloths wet with isopropyl alcohol.
  - (a) Let the parts dry.
- (2) Apply Chemical Film Treatment (Alodine 1132) to the areas with bare metal surface following the manufacture directions for application and dry time.
- (3) Apply a epoxy primer (primer coat) to the bare metal surface following the manufacture directions for application and dry time.
- (4) Go to Step 10.

- C. If there was not rework and the carry-thru spar was not entirely primed before the inspection:

- (1) Wipe the entire surface with clean wiping cloths wet with isopropyl alcohol.
  - (a) Let the surface dry.
- (2) Apply Conversion coating (Bonderite M-CR 600RTU) to the entire surface following the manufacture directions for application and dry time.
- (3) Apply a epoxy primer (primer coat) to the entire surface following the manufacture directions for application and dry time.
- (4) Go to Step 10.

- D. If there was not rework and the carry-thru spar was entirely primed before the inspection:

- (1) Go to Step 10.

10. Apply Corrosion Inhibiting Compound (CIC) to the entire surface of the carry-thru spar that is accessible in the fuselage as follows: (Refer to SEL-51-01 Standard Practices - Structures - Use of Corrosion Inhibiting Compounds.)

**NOTE:** SEL-51-01 is a resource that provides additional detailed information about the application process of CIC such as equipment, facility, cleaning, masking, and application processes.

- A. Mask areas around the carry-thru spar areas to prevent over spray of the CIC.
- B. Spray aerosol with extension tube to minimize over spray.
- C. Apply the CIC in one full wet coat.
- D. Some sag/run is acceptable. A spot of significant sag/run needs to be cleaned by MPK (methyl propyl ketone) wiping and the CIC shall be reapplied.



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E. Wet film thickness of CIC is approximately 1 to 2 mils for Cor-Ban 23.

**NOTE:** The coating should be tack-free after two to three hours.

F. After the CIC coating is tack-free, remove the masking from around the application area.

G. Let the CIC coating cure with a minimum cure temperature no less than 50 degrees F.

11. Install removed utility systems, oxygen systems, headliner and upholstery that was removed to access the carry-thru spar. (Refer to the applicable Model Service or Maintenance Manual.)

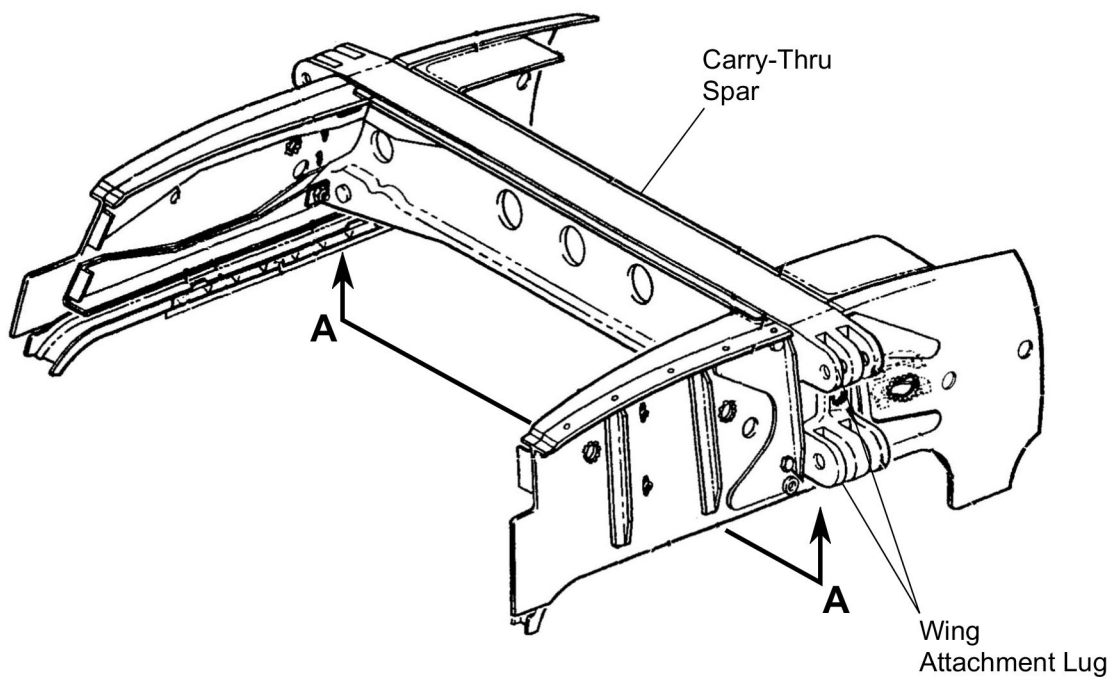
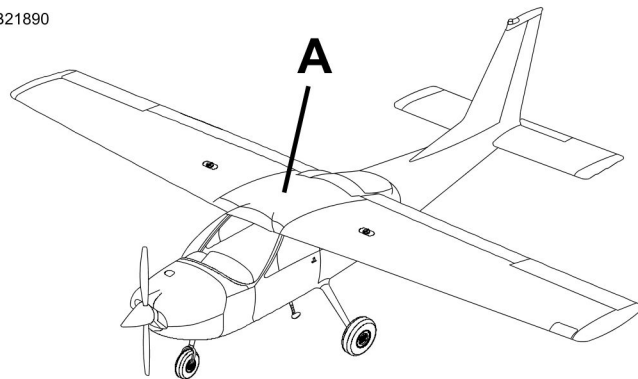
**NOTE:** The installation of the foam padding to the bottom of the carry-thru spar is optional however; the headliner final fit may differ if the foam padding is not installed.

12. Install the pilot and co-pilot seats if removed. (Refer to the applicable Model Service or Maintenance Manual.)
13. Remove the maintenance warning tags and connect the airplane battery.
14. Make an entry in the airplane logbook that states compliance and method of compliance with this service document.

**MANDATORY**

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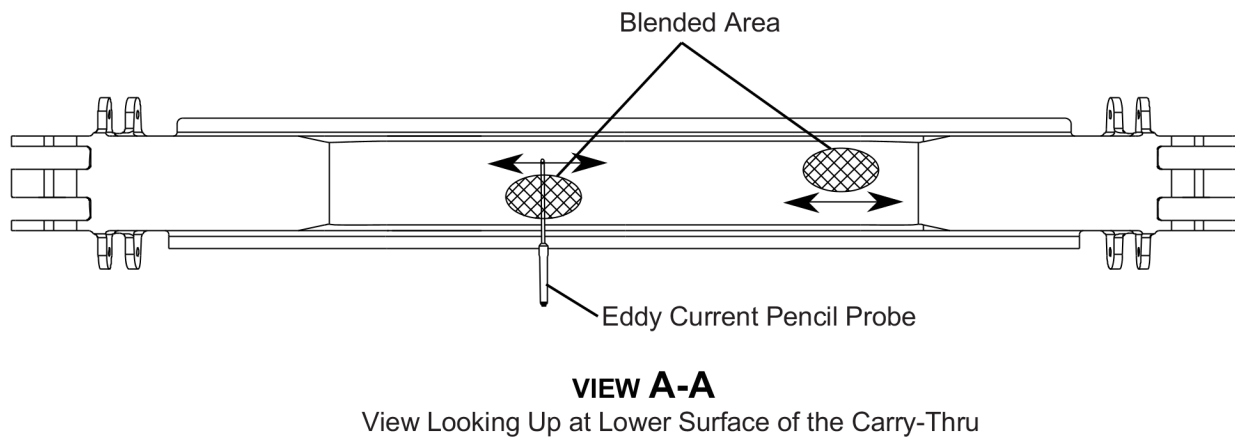
**DETAIL A**

Figure 1. CARRY-THRU SPAR INSPECTION (Sheet 1)

0510T1035  
A1210X1037

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B21891



**NOTE:** Eddy Current Pencil Probe motion of travel is center to outboard while working small equally spaced overlapping sections. Eddy current inspection will cover the lower service of the carry-thru spar where corrosion was blended and extend 1 Inch beyond the blended area. This inspection technique also applies to the Kick area.

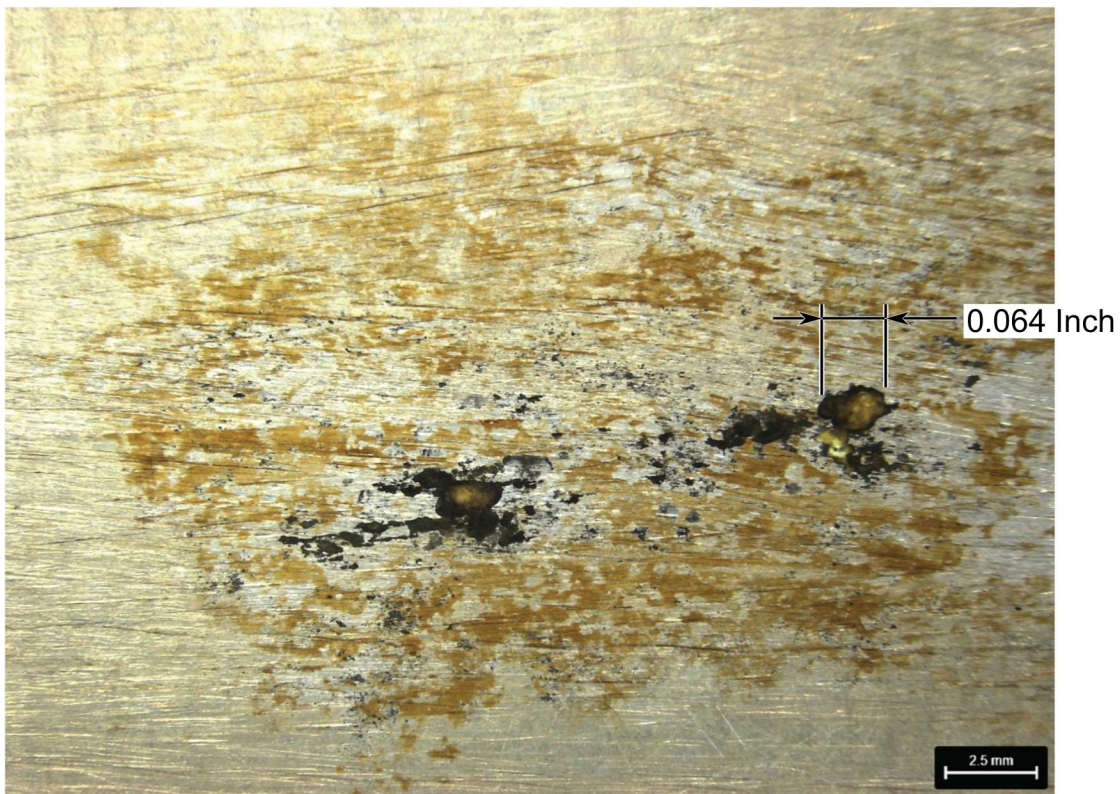
Figure 1. CARRY-THRU SPAR INSPECTION (Sheet 2)

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**MANDATORY**

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B21892



Corrosion Pitting on Lower Surface of Carry-Thru Spar

**NOTE:** Image not to scale.

Figure 1. CARRY-THRU SPAR INSPECTION (Sheet 3)

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Stress Corrosion Cracking on Spar Cap

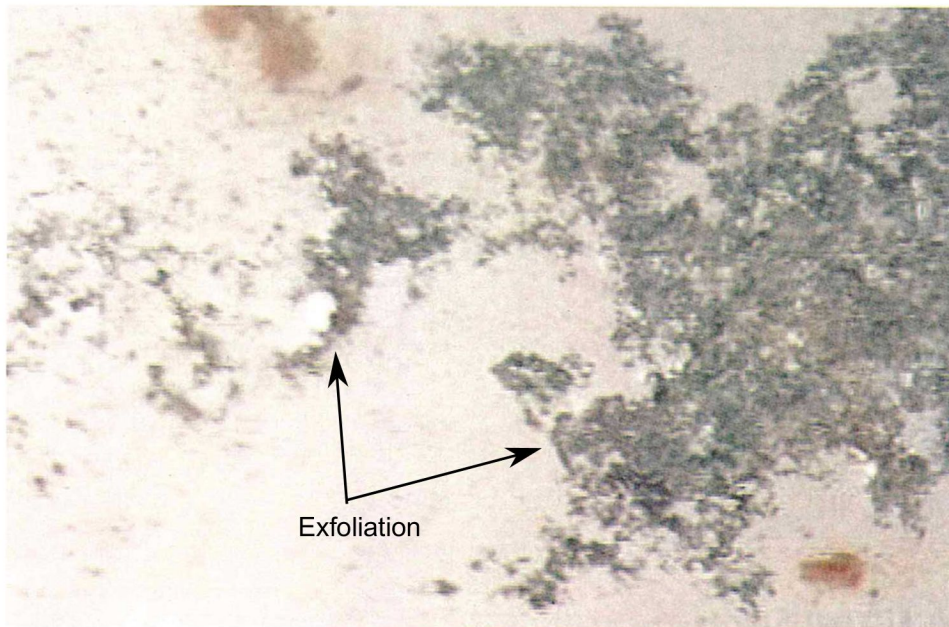
Figure 1. CARRY-THRU SPAR INSPECTION (Sheet 4)



**MANDATORY**

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Exfoliation Corrosion on Spar Cap

Figure 1. CARRY-THRU SPAR INSPECTION (Sheet 5)

MANDATORY

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B21975

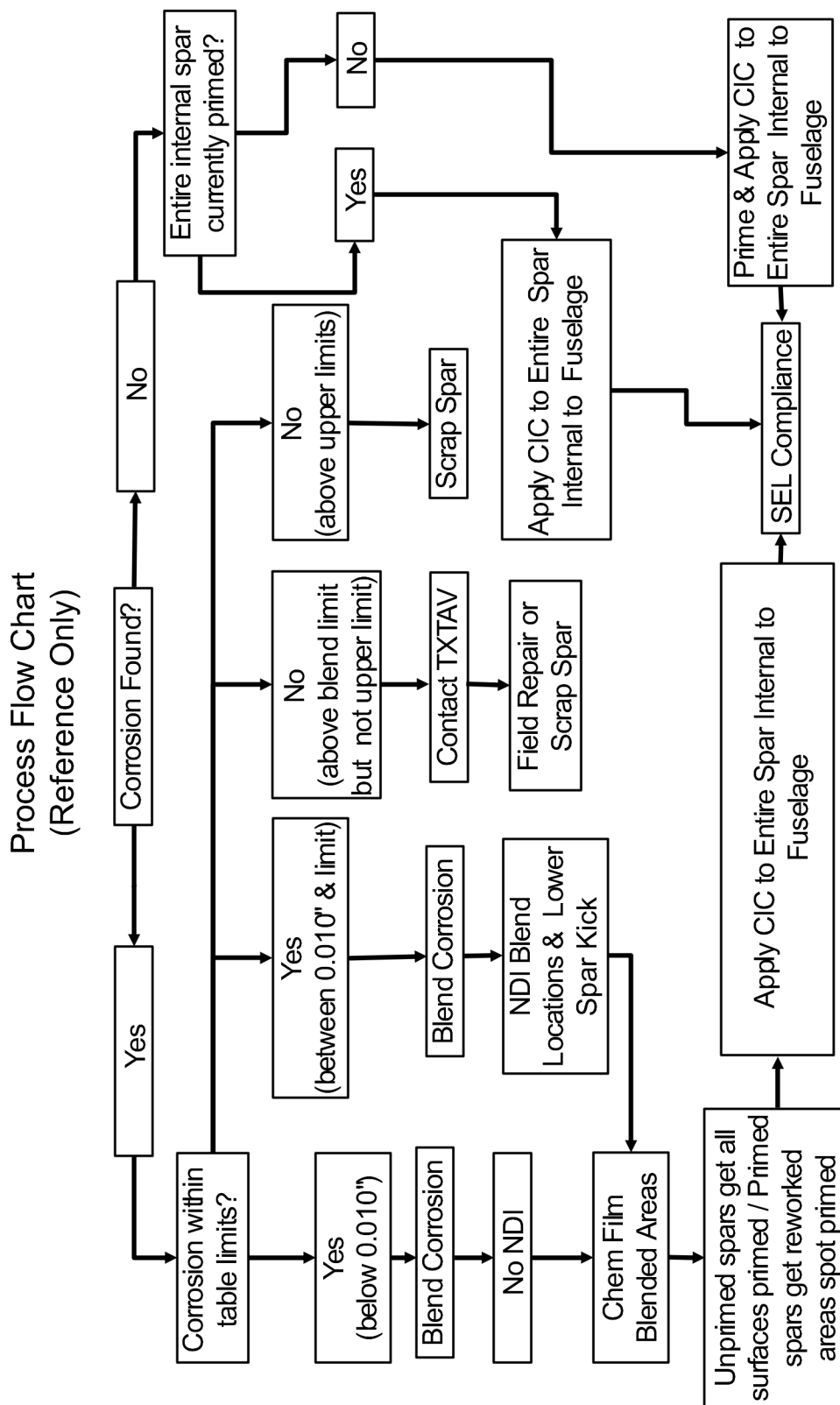


Figure 2. PROCESS FLOW CHART (REFERENCE) (Sheet 1)



**MANDATORY**

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## MATERIAL INFORMATION

No parts are required to complete this service document.

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CARRY-THRU SPAR INSPECTION REPORT	
To:	Page: 1 of ____ Pages
Wichita Citation Service Center	Includes this cover sheet
Attn: Textron Aviation Team Structures	
2121 S. Hoover Rd	Registration No.:
Wichita, Kansas 67209	Total Time in Service (Hrs.):
Phone Number: 316-517-6061	
email: structures@txtav.com	Facility Name:
	Facility Address:
From:	
Date:	
Airplane Serial Number:	
Owner's Name:	Phone Number of Facility:
Owner's Address:	Fax Number of Facility:
Owner's Phone Number:	
Owner's Fax Number:	
Please provide detailed and dimensioned descriptions of any crack(s) or corrosion. Attach pictures to this form as necessary.	
Comments/Notes:	Cracks: Yes No (Circle One)
	Corrosion: Yes No (Circle One)
	Airplane Operation:
	Severe: Yes No (Circle One)
	Typical: Yes No (Circle One)
	Unknown: Yes No (Circle One)
Any previously known or recorded blending or material removal on the carry-thru spar? Yes No (Circle One)	
List any Structural Supplemental Type Certificates (STC's) Installed:	



**TITLE**

WINGS - MODEL 177 CARRY-THRU SPAR ONE-TIME CORROSION INSPECTION

**TO:**

Cessna Model 177 Aircraft Owner

**REASON**

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**LABOR HOURS**

For planning purposes only:

**WORK PHASE**

Inspection

**LABOR-HOURS**

As Necessary

**MATERIAL AVAILABILITY**

No part are required to complete this service document.

November 19, 2019

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## WARRANTY

None

**NOTE:** As a convenience, service documents are now available online to all our customers through a simple, free-of-charge registration process. If you would like to sign up, please visit the Customer Access link at [www.txtavsupport.com](http://www.txtavsupport.com) to register.