



Service Instruction SI-0037

Epic Aircraft, LLC ♦ 22590 Nelson Road ♦ Bend OR 97701
Phone: 541-318-8849 ♦ Fax: 541-382-5125 ♦ Web: www.epicaircraft.com

Subject: K027 Wing Tip Leading Edge Repair

ATA-Code: 57-30

Labor: ___ Hours

Effectivity: K027

Affected Model(s): E1000 GX etc.

Due: Before Next Flight

Compliance: Recommended ☐ Mandatory ☒

Recurrence: No

1 **BACKGROUND AND PURPOSE:**

Recent annual inspection of the Right-Hand Wing Tip on Serial Number K027 found a cracked region on the leading edge approximately 2.25" long as shown in Figure 1.

It should be noted that the crack is between the Top and Bottom Co-Cured Wing Tip components and is isolated to the resin matrix without affecting the laminate. Further, the three carbon BID plies which span the top and bottom components on the IML Surface are unaffected by the damaged condition.

This Service Instruction provides repair instructions for the condition described above.

2 **REFERENCES:**

Epic E1000 Airframe Maintenance Manual, PN SK0500000.

3 **WARRANTY:**

For aircraft under warranty, parts and labor will be covered by Epic Aircraft, LLC if the work is performed within the compliance period and at an Authorized E1000 Service Center.

4 **APPROVAL:**

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

5 **TOOLS:**

<u>No.</u>	<u>Description</u>	<u>Qty</u>	<u>Epic Aircraft Supplied</u>	<u>Customer Supplied</u>
1.	Common Hand Tools	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Thermocouples J or K Type	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	Portable Bonding and repair controller and heaters	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	Vacuum pump	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Vacuum gauge, calibrated to ± 2 inHg	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 1 of 8



Service Instruction SI-0037

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6 PARTS/MATERIALS:

No.	Part Number	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	-	Aluminum Oxide, 80-220 Grit Sandpaper	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	7447 3M	Scotch-Brite General Purpose Pad	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	Imron AF740	Clearcoat	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	Imron AF700, color Epic White 4192016	Basecoat	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.	Imron 8989S	Accelerator	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Imron 13100S	Activator	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.	-	Isopropyl Alcohol, 99%	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.	Kimtech P2 or DuPont Sontara AC9165A	Wiping Cloth	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.	-	Paper, Non-lined or Plastic Mixing Cups	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10.	1220S AXALTA	Primer	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11.	-	Stir Sticks	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12.	416 Evercoat	Metal Glaze	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13.	Vacuum sealant tape	Pucky Tape	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14.	Vacuum bag	Polyolefin film	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15.	3CU7-100FA, CU040CX36, or CU195F	Expanded Copper Foil	A/R	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 2 of 8



Service Instruction SI-0037

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7 INSTRUCTIONS:

Repair Instructions:

1. Set the BATT 1 and BATT 2 switches to OFF.
2. Remove all external electrical power from the airplane (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, chapter 24-40).
3. Remove the Damaged Wing Tip from the airframe and place on a suitable work surface (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, chapter 57-30, Section 2-A).
4. Sand to remove paint, body work, and LSP Protection for a minimum of 1.5" all around the cracked region. See Figure 2 for location. Take care not to damage underlying laminate during material removal.
5. Clean and Surface Prep the material removal region as described below:
 - a. Wash the surface with isopropyl alcohol.
 - b. Abrade the surface with 80 - 150 grit sandpaper.
 - c. Remove abrading dust with a vacuum before dry-wiping the surface with a clean, dry, lint-free cloth.
 - d. Final clean the surface by thoroughly wetting the surface with isopropyl alcohol then immediately wiping with a clean, dry, lint-free cloth in a single stroke. After each wipe, turn the drying cloth to a clean surface.
6. Mix Rhino 1307-LV Resin with 3176 Hardener at a ratio of 4:1 by volume. Mix for 3-5 minutes. Take care to scrape the sides of the container and mix such that air bubbles are not introduced into the paste.
7. Using the resin mixture from step 6, layup 2 plies of ACGP193-P 3K carbon cloth over the surface prepped region at the location at a +/-45° fiber orientation per the following steps:
 - a. Wet out the repair region by applying a thin layer of resin to the surface prepped region.
 - b. Layup one ply of carbon cloth over the resin. It is acceptable to use a roller, brush, or squeegee as needed to ensure proper resin impregnation and remove entrapped air.
 - c. Apply resin to wetout the repair ply from step b.
 - d. Layup an additional ply of carbon cloth over the repair region. It is acceptable to use a roller, brush, or squeegee as needed to ensure proper resin impregnation and remove entrapped air.

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 3 of 8



Service Instruction SI-0037

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- e. Cover any surface prepped regions outside of the repair ply with resin and cover the repair with one layer of VP-204 Peel Ply.
8. Apply pressure intensifiers such as shot bags or clamps to the repair region or vacuum bag per "Vacuum Bagging Instructions" section of this document.
9. Handle Cure at room temperature for a minimum of 3 hours.
10. Final cure for 168 hours (7 days) at 77°F, 24 hours at 110°F, 12 hours at 130°F, or 2 hours at 212°F.
11. Remove the vacuum bagging material and peel ply as applicable.
12. Sand repair region as needed to match existing part contour.

Note: The repair region shall match the existing part contour at the completion of the repair. Material to be added in future repair steps shall be accounted for during sanding operations.

13. Repair lightning strike mesh in the repair region. (Refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, chapter 51-20, Section C. (2)). During mesh repair, apply vacuum as needed per "Vacuum Bagging Instructions" section of this document.
14. Prep, prime and paint the repair region (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, chapter 51-20). Ensure repair region is blended smooth to surrounding part surface.

Vacuum Bagging Instructions:

1. Place one layer of perforated release film over the laminate. Extend the film beyond the repair region.
2. Released or Teflon taped caul plates may be directly applied to the surface of the part. Pressure intensifiers are to be placed on top of the release film.
3. Place synthetic breather over the entire part. Extend the breather material to just inside where the vacuum bag sealant tape will be located.
4. Prepare vacuum port pads for inclusion into the bagging material stack-up using the following guidelines. The vacuum port pads should be roughly four by four inches and two to four plies of synthetic breather. Place vacuum pad ports on top of the breather material. Place the bottom portion of the vacuum port on the port pads. Vacuum ports can float in a pleat as long as the port is far enough above the part to prevent suction down on the part.

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 4 of 8



Service Instruction SI-0037

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5. Place vacuum bag sealant tape around the periphery of the lay-up. Do not remove the paper release layer from the sealant tape at this time.
6. Place a vacuum bag over the top of the entire lay-up. Extend the bag beyond the perimeter of the vacuum bag sealant tape. Tack the bag to top of the vacuum bag sealant tape on one side of the lay-up. Pleat the bag to allow the bag to fit in the contours and corners of the part.
7. Attach the upper portion of the vacuum port to the lower portion by cutting a hole through the bagging film directly over the bottom portion at both locations. Attach a static vacuum gage at one of the ports and a vacuum line to the other vacuum port(s) and slowly evacuate the bagged lay-up, making sure to minimize wrinkles in the bagging film. Once the vacuum stabilizes at a minimum of 22 inches of mercury, perform a leak check.
8. Perform the leak check as follows:
 - a. Pull a minimum of 22 inches of mercury vacuum.
 - b. Isolate the system, wait two minutes, and record the initial vacuum level.
 - c. Wait five additional minutes and record the change (drop) in vacuum.
 - d. Acceptable leakage rate is 3.0 inches of mercury or less in five minutes.
 - e. If the leakage rate is greater than 3.0 inches of mercury in five minutes, locate the leak and repair as required.
 - f. Repeat the leak check, until the acceptable leakage rate is achieved.

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 5 of 8

Service Instruction SI-0037

Epic Aircraft, LLC ♦ 22590 Nelson Road ♦ Bend OR 97701
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8 FIGURES:

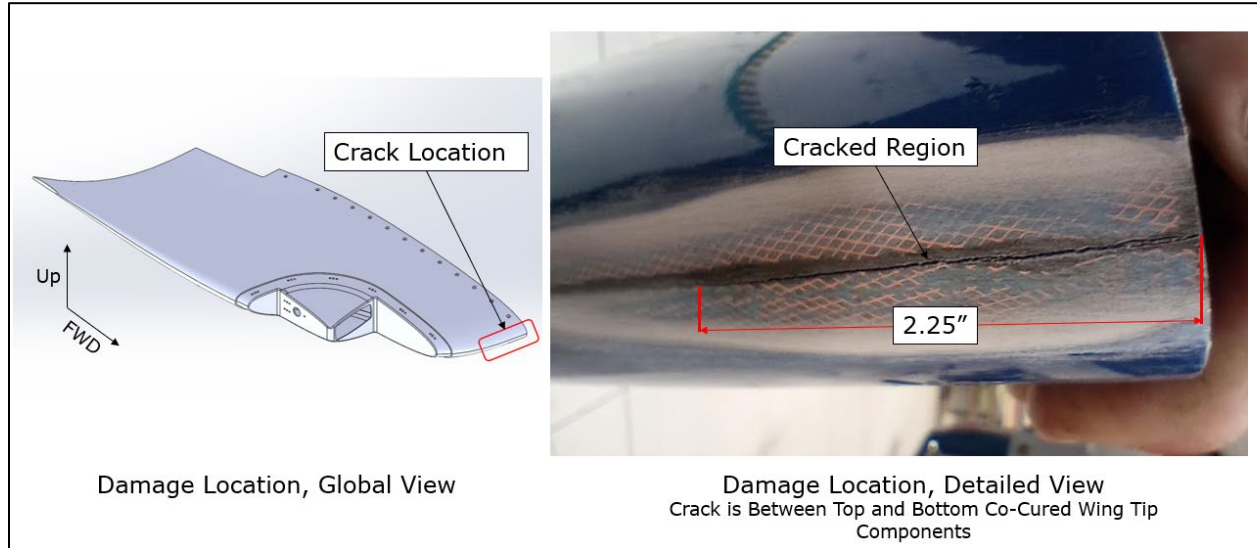


Figure 1: Damage Location and Condition

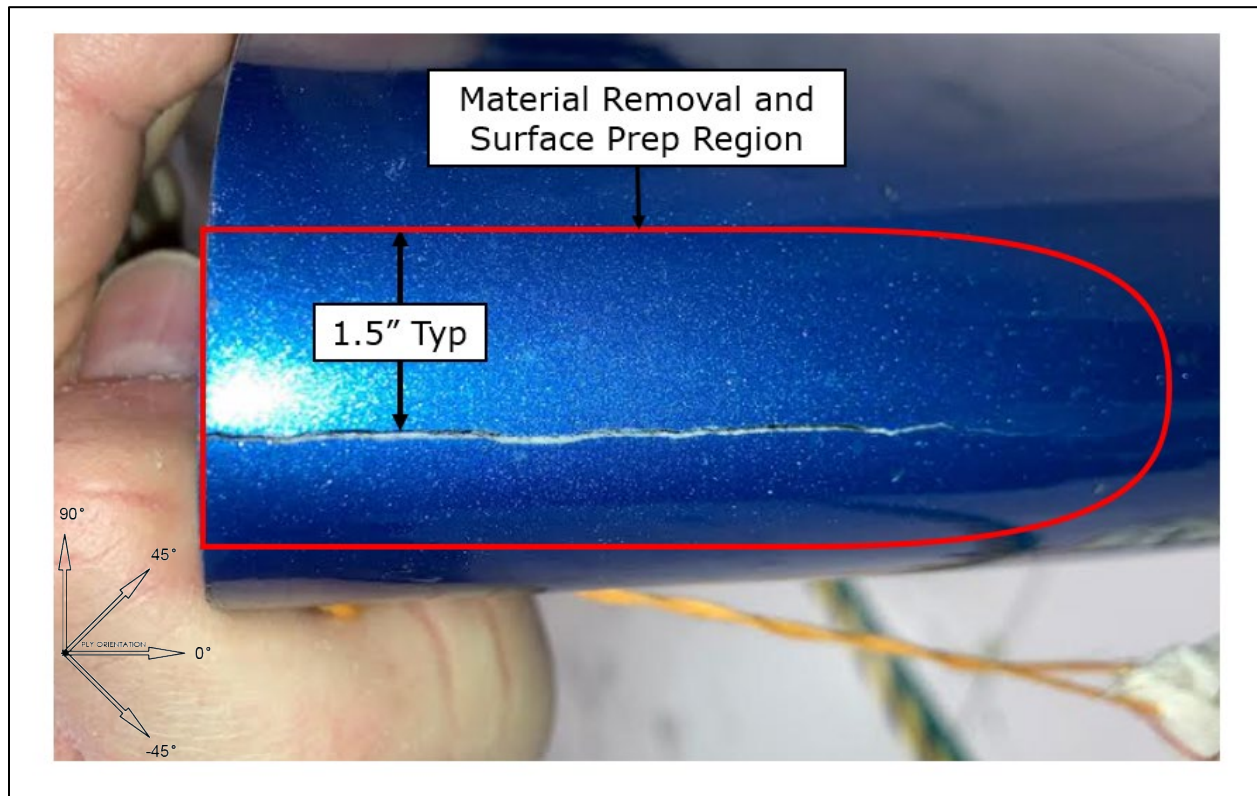


Figure 2: Material Removal and Surface Prep Detail

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 6 of 8



Service Instruction SI-0037

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9 WEIGHT AND BALANCE:

Negligible

10 PUBLICATIONS AFFECTED:

N/A

11 RECORD COMPLIANCE:

Make appropriate entry in airplane maintenance records.

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 7 of 8



Service Instruction SI-0037

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Appendix A: Compliance Letter

Please complete and mail this form to Customersupport@epicaircraft.com

This is to certify that I have completed the work in accordance with the Epic Aircraft, LLC Service Instruction.

Aircraft Owner Information:

Date: _____ Aircraft Serial Number: _____ Aircraft Reg. Number: _____

Owner's Name: _____

Maintenance Entity Information

Name of Shop Performing the work: _____

Name of Person(s) Performing inspection and/or work: _____

Phone Number: _____ Email: _____

Issued	Revised	Revision	Page
07-05-2023	-	Original Revision	Page 8 of 8