Service Instruction SI-0030

Epic Aircraft, LLC ◆ 22590 Nelson Road ◆ Bend OR 97701

Phone: 541-318-8849 ◆ Fax: 541-382-5125 ◆ Web: www.epicaircraft.com

Subject: K014 Cracked Paint Repair

ATA-Code: 51-20

Labor: 8 Hours **Effectivity:** K014

Affected Model(s): E1000 GX **Due:** Before next flight.

Compliance: Recommended ☐ Mandatory ☒ **Recurrence:** N/A

1 BACKGROUND AND PURPOSE:

Recent inspection of the K014 Fuselage found paint cracking in the regions surrounding the wing fairing, in addition to the top bond seam of the fuselage. This cracking is believed to be caused by excessive body work in high displacement areas and is limited to the paint system without affecting the underlying carbon substrate.

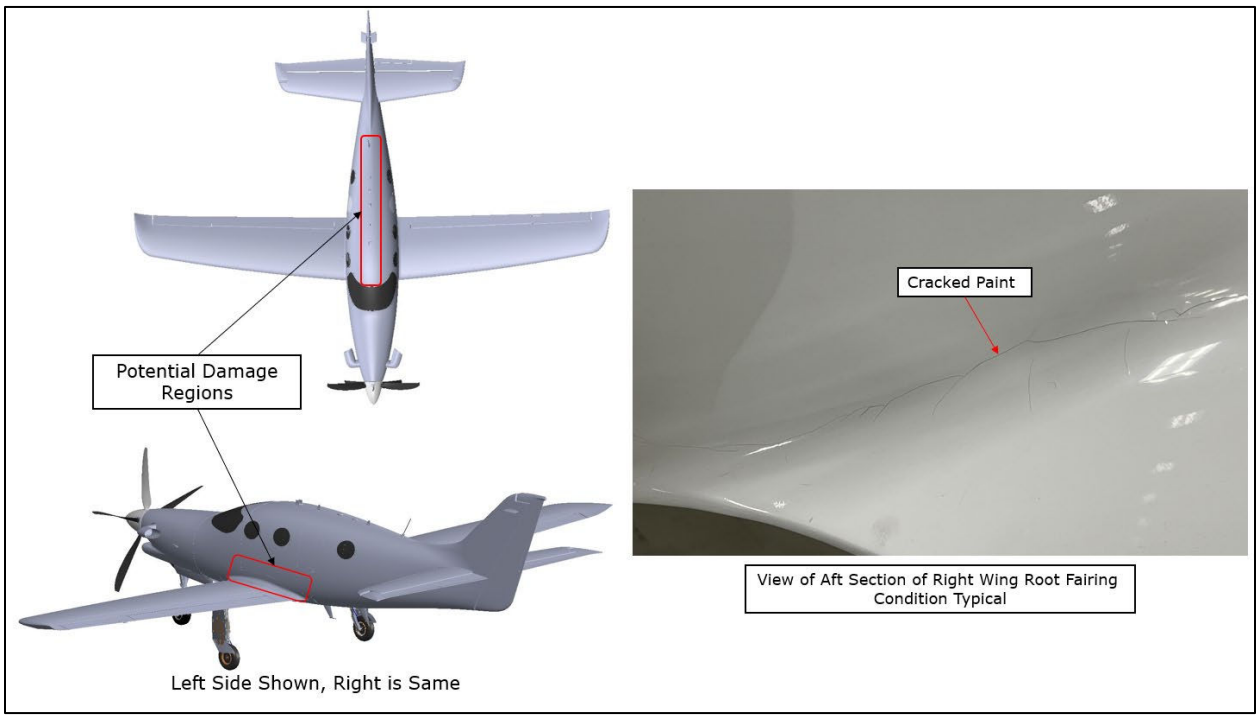

Figure 1: Damaged Region and Condition

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2 REFERENCES:

Epic E1000 Airframe Maintenance Manual, PN SK05000000, Rev. F

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:

No.	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	Common Hand Tools	A/R	☐	☒
2.	Thermocouples J or K Type	1	☐	☒
3.	Portable Bonding and repair controller and heaters	1	☐	☒
4.	Vacuum pump	1	☐	☒
5.	Vacuum gauge, calibrated to ± 2inHg	1	☐	☒

6 PARTS/MATERIALS:

No.	Part Number	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	Sandpaper	Aluminum Oxide, 80-220 Grit	A/R	☒	☐
2.	Scotch-Brite	General Purpose Pad 7447	A/R	☒	☐
3.	Imron AF740	Clearcoat	A/R	☒	☐
4.	Imron AF700 color to match existing paint	Basecoat	A/R	☒	☐
5.	8989S	Accelerator	A/R	☒	☐
6.	13100S	Activator	A/R	☒	☐
7.	-	Isopropyl Alcohol, 99%	A/R	☒	☐
8.	Hermitex 300 or Kimtech P2 or DuPont Sontara AC9165A	Wiping Cloth	A/R	☒	☐
9.	-	Paper, non-lined or plastic mixing cups	A/R	☒	☐
10.	1220S	Primer	A/R	☒	☐
11.	-	Stir sticks	A/R	☒	☐
12.	416	Metal Glaze	A/R	☒	☐
13.	Vacuum sealant tape	Pucky Tape	A/R	☒	☐
14.	Vacuum bag	Polyolefin film	A/R	☒	☐
15.	Expanded Copper Foil	3CU7-100FA, CU040CX36, or CU195F	A/R	☒	☐
16.	Bleeder Lease B	Nylon, .011 cm, 450°F maximum use temperature	A/R	☒	☐
17.	Breather Cloth	Polyester mat (non-woven), 4 to 10 oz/sq. yd, with a minimum use temperature of 350°F	A/R	☒	☐
18.	Rhino 1307-LV Resin	Repair Resin	A/R	☒	☐
19.	Rhino 3176 Medium Hardener	Repair Resin Hardener	A/R	☒	☐
20.	ACGP193-P	3K Hexcel Carbon Cloth	A/R	☒	☐
21.	K20 Glass Beads	Micro	A/R	☒	☐

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7 INSTRUCTIONS:

The following sections cover the non-structural repair to be completed at each cracked paint location on the fuselage. Take care to control FOD at all points during the repair process and ensure all mixed resins are applied within the allowable pot life of the resin system.

7.1 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. In any region exhibiting cracked paint, sand to remove all damaged body work. Material removal region is to extend 0.25” +/- 0.125” all around the crack and shall extend to the underlying composite.

Note: During material removal process, take care not to introduce damage to surrounding structure. Any damage found which extends past the body work into the underlying structure shall be reported to EPIC for disposition.

4. Clean and surface prep the material removal region per Section 7.2 of this document.

Note: The pot life of Rhino 1307-LV Resin with 3176 Hardener is 12 minutes, ensure resin is applied within the allowable timeframe.

5. 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. Transfer the resin mixture to a second cup and mix in K20 glass bubbles until a toothpaste like consistency is reached.
6. Fill the material removal region with the paste mixed in step 5.
7. Handle cure at room temperature for a minimum of 3 hours.
8. Sand the repair region to match existing fuselage contour as needed.

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

9. Clean and surface prep the repair region and a minimum of 1.5” all around per Section 7.2 of this document.

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10. 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.

11. Using the resin mixture from step 10, layup 1 to 2 plies of ACGP193-P 3K carbon cloth over the surface prepped region at each repair location at the +/-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. If completing a 2-ply layup, apply resin to wetout the repair ply from step b. Otherwise skip to step e.

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.

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.

12. Vacuum Bag the repair region per Section 7.3 of this document

13. Handle Cure at room temperature for a minimum of 3 hours.

14. 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.

15. Remove the vacuum bagging material and peel ply.

16. Sand repair region to match existing fuselage contour. It is acceptable to introduce sand through damages up to 1 ply around the periphery of the repair and up to ½ a ply to the center of the exterior repair ply.

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

17. 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 Section 7.3 of this document.

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18. 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 fuselage surface.

7.2 Surface Prep Instructions

1. Wash the surface with isopropyl alcohol.
2. Abrade the surface with 80 - 150 grit sandpaper.
3. Remove abrading dust with a vacuum before dry-wiping the surface with a clean, dry, lint-free cloth.
4. 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.

7.3 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.
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.

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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.

8 WEIGHT AND BALANCE:

Negligible

9 PUBLICATIONS AFFECTED:

N/A

10 RECORD COMPLIANCE:

Make appropriate entry in airplane maintenance records.

Service Instruction SI-0030

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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: _____