

Repair of MRP Sliding Fairing Track Rail Wear Damage

SIKORSKY AIRCRAFT DESIGN RECORD BOOK

Record NO:

Prepared by	Steven Morgan	DRB No:	2018-SA-92-004
Title	Repair of MRP Sliding Fairing Track Rail Wear Damage		
Start Date:	2/28/2018	Detail Dwg	<input type="text"/>
End Date:	<input type="text"/>	Assy Dwg	<input type="text"/>
No. Pages:	<input type="text"/>	Related Documents:	(1) <input type="text"/> (3) <input type="text"/> (2) <input type="text"/> (4) <input type="text"/>
Model:	S92A	Hours:	<input type="text"/>
Keyword: (1)	MRP Sliding Fairing	Model Effectivity:	All S92A
(2)	Track Rail	FEM Analysis:	<input type="text"/>
(3)	Roller Wear Damage	Charge No:	<input type="text"/>
Supersedes:	<input type="text"/>	Superseded By:	<input type="text"/>
Analysis Type	Repair		
Reason for Analysis	Field Support		

Description:

In-flight vibrations of the Main Rotor Sliding Fairing have caused fairing rollers to wear indentations into the sliding fairing tracks on numerous aircraft. The indentations occur under the rollers, in the areas where the rollers rest on the tracks in the closed and latched position.

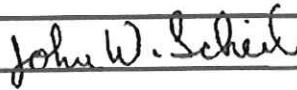
DRB 2007-SA-92-013 or 2007-SA-92-019 have been issued in the past to repair damage by bonding a repair wear strip over it the damaged area, but provide no method of positively retaining the strip in the event that an adhesive separation occurs.

This repair expands on the previous repairs to ensure the strip is permanently attached to the track rail, and also adds additional inspection locations to confirm sliding fairing wear locations are in satisfactory condition.

Results:

The purpose of this DRB is to provide a repair procedure for the worn tracks that includes a retention rivet to prevent separation from the aircraft, and subsequent inspection procedures for other wear locations on the sliding fairing.

The repair procedure is specified in this DRB, and for FAA purposes this repair is considered "MINOR".

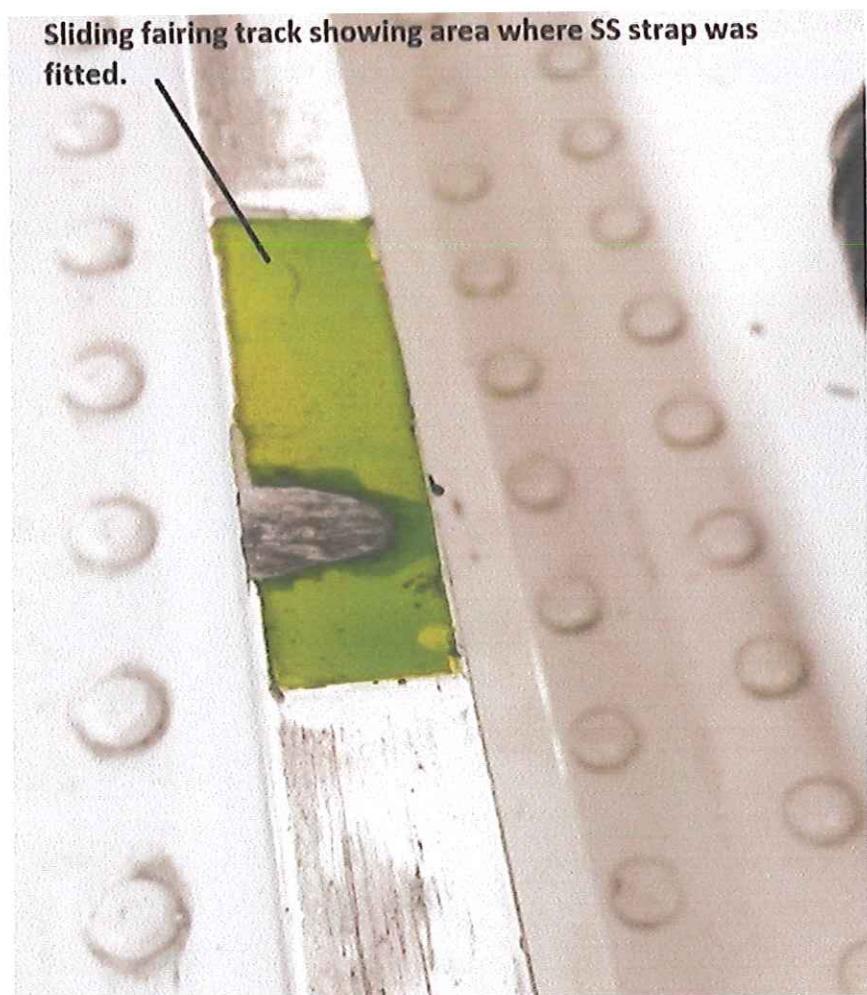
Assigned: John Scheib Approval:  Approve Date: 2/28/2018

Repair of MRP Sliding Fairing Track Rail Wear Damage**Background:**

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DRB 2007-SA-92-013 or 2007-SA-92-019 have been issued in the past to repair damage by bonding a repair wear strip over it the damaged area, but provide no method of positively retaining the strip in the event that an adhesive separation occurs.

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**Figure 1 – Typical Wear on Sliding Fairing Track Rail
Repaired with a Bonded Doubler per Previous DRB**

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Repair Procedure:

1. Prepare the ship for ground maintenance.
2. Gain access to the repair area.
3. Slide the fairing out of the way to gain access to the worn area.
4. Degrease the worn area by wiping with a low-lint cleaning cloth (conforming to A-A-59323, Type II) using acetone (conforming to ASTM D329) or ethyl alcohol (conforming to A-A-51693). Wash with clean water to a water-break free condition.
5. Measure the depth of the worn area.
 - a. If the depth is less than 10 percent of the flange thickness, blend out the indentation using a smooth (10:1) taper, and proceed to Step 9.
 - b. If the depth of the indentation is greater than 10 percent but less than 40 percent of the flange thickness, blend smooth using a 10:1 taper as described above, and proceed to Step 6 below.
 - c. If the depth of the indentation is greater than 40 percent of the flange thickness, contact Sikorsky for an alternative repair.
6. Mix HySol EA 934 resin in a cup and add chopped fibers of 7781 fiberglass cloth. Add sufficient fibers to thicken the mixture so it has no tendency to "run".
7. Work the mixture into the indentation with a wooden stick. Scrape off any excess mixture to achieve a flush surface and allow to cure.
8. Sand the mixture flush with the track surface after it has cured.
9. Abrade the top surface of the track rail beyond the repair area approximately 3 inches on each side of the indentation as shown in Figure 2, and remove any corrosion. Use a scotch-brite abrasive mat, MIL-A-9962 and abrade down to the clean aluminum substrate underneath. Vacuum the area to remove any loose particles.
10. Degrease the repair area by wiping with a low-lint cleaning cloth (conforming to A-A-59323, Type II) using acetone (conforming to ASTM D329) or ethyl alcohol (conforming to A-A-51693). Wash with clean water to a water-break free condition.
11. Preferred: Brush anodize (chromic or phosphoric acid anodize, ref. MIL-A-8625) the repair area. If brush anodize is not available, use alodine 1200S (MIL-C-81309, Class 1A) or equivalent conversion coating. Again degrease by wiping areas using acetone or ethyl alcohol to a water-break free condition. Wash with clean water.
12. Fabricate a wear strip to cover the repair area.
 - a. Make from .032 thick, 301 1/4 hard stainless steel sheet approximately as shown in Figure 2.
 - b. Extend the strip 3 inches beyond the indentation on each side as shown in Figure 2.
 - c. Make the strip as wide as the track in the area.
 - d. Chamfer the front and aft edges of the strip to allow for the roller to ride up on it more easily. Deburr the edges of the strip.

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13. Position the wear strip on the aircraft. Layout fastener locations on opposite ends of the strip for retention rivets. Position the rivets diagonally on opposite corners of strip as shown in Figure 3. Standard practices for 2D edge distance are waived at these locations. Transfer drill two .098" holes through the stackup and countersink the wear strip for NAS1097AD3 flush rivets. Disassemble and deburr holes.
14. Degrease the repair strip by wiping with a low-lint cleaning cloth (conforming to A-A-59323, Type II) using acetone (conforming to ASTM D329) or ethyl alcohol (conforming to A-A-51693). Wash with clean water to a water-break free condition.
15. Brush cadmium plate the wear strip per MIL-STD-865.
16. Bond the wear strip into place with HySol EA9309.3NA or EA9359.3 adhesive and install two NAS1097AD3 retention rivets and allow to cure.
 - a. Use clamps and / or weights to positively hold the wear strips to the track during cure.
 - b. Cut rivets shorter than standard to ensure the manufactured buck tail of the retention rivets are reduced in height to avoid interference. Buck rivets to approximately .030-.050" height.
17. Apply one coat of MIL-P-23377 epoxy primer to the wear strip and the repair area, and allow to cure.
18. Repeat Steps 4 thru 17 for the remaining indentations. Note: Steps 4 thru 17 may be performed concurrently for all the indentations.
19. Visually inspect all engagement (dagger) pins on the sliding fairing and their respective airframe bracket receptacles and wear blocks. Refer to Figure 5 for an extreme case of damage for an airframe receptacle. Figure 6 shows frame station locations and installation hardware for the replaceable wear blocks and the airframe bracket receptacles. Bushing part numbers and their acceptable alternative replacement parts are listed below.

Airframe Bracket Receptacle

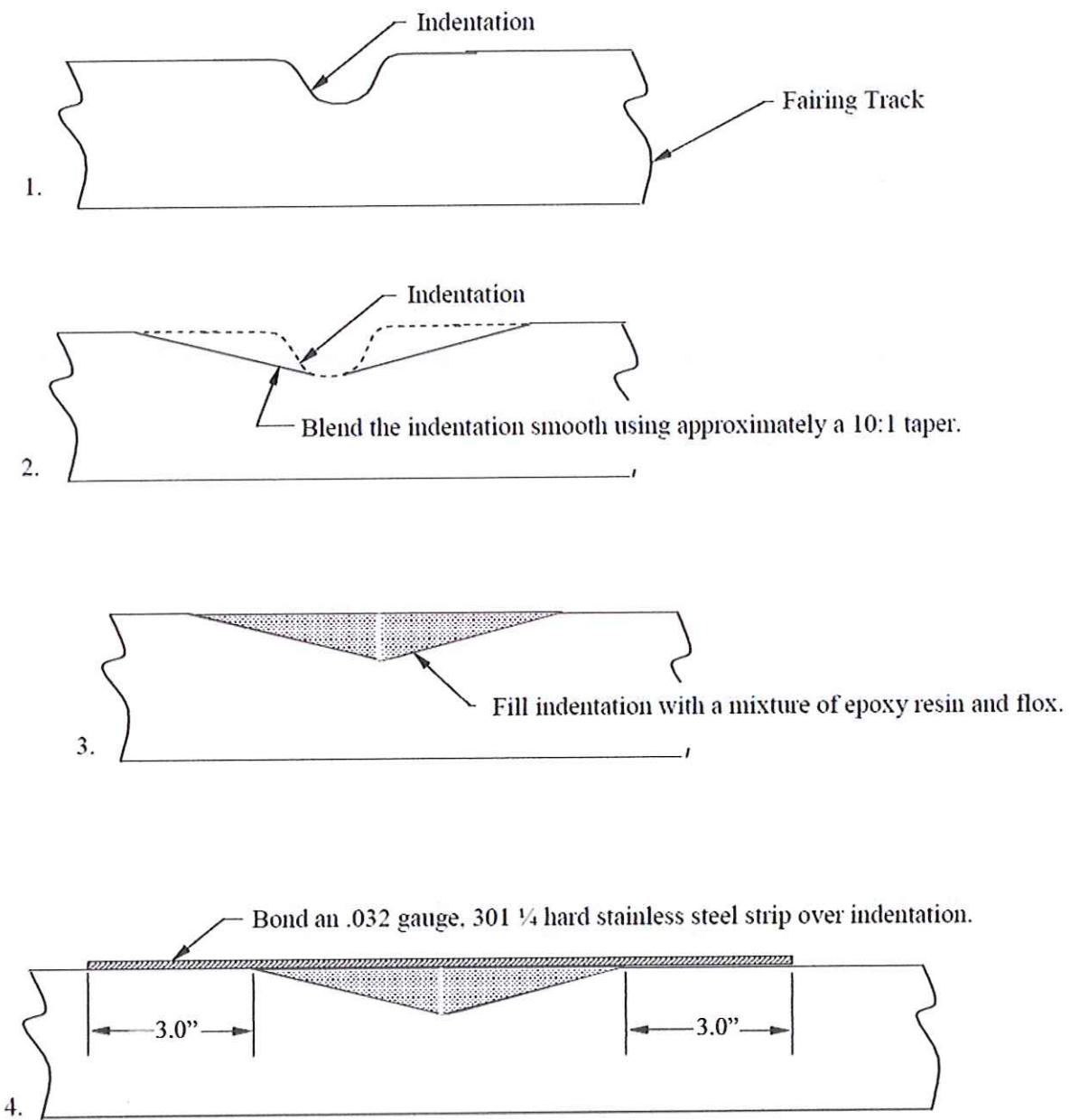
- a. STA 270.8: 92304-02100-106, 92308-02105-113, or 92308-02105-116
- b. STA 237.5: 92304-02100-107, 92308-02105-114, or 92308-02105-117
- c. STA 221.5: 92304-02100-108, 92308-02105-115, or 92308-02105-118

Wear Blocks

- d. STA 270.8: 92308-02117-105 (bronze) replaces 92308-02117-101 (delrin)
- e. STA 237.5: 92308-02117-105 (bronze) replaces 92308-02117-101 (delrin)
- f. LHS STA 221.5: 92308-02117-107 (bronze) replaces 92308-02117-103 (delrin)
- g. RHS STA 221.5: 92308-02117-108 (bronze) replaces 92308-02117-104 (delrin)

20. "Test-slide" the fairing to ensure freedom of movement and no binding. Ensure all alignment pins engage the wear blocks properly.
21. Adjust sliding fairing rollers per AMM procedure to achieve adequate fit.
22. Visually inspect wear strips every 75hrs to ensure no disbonding or further chafing has occurred in the repair area. Any disbonding or chafing greater than .020" at any wear strips requires removal of the discrepant strip and Steps 4 thru 17 must be performed again.

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**Figure 2 – Repair Blendout and Bonding Layout**

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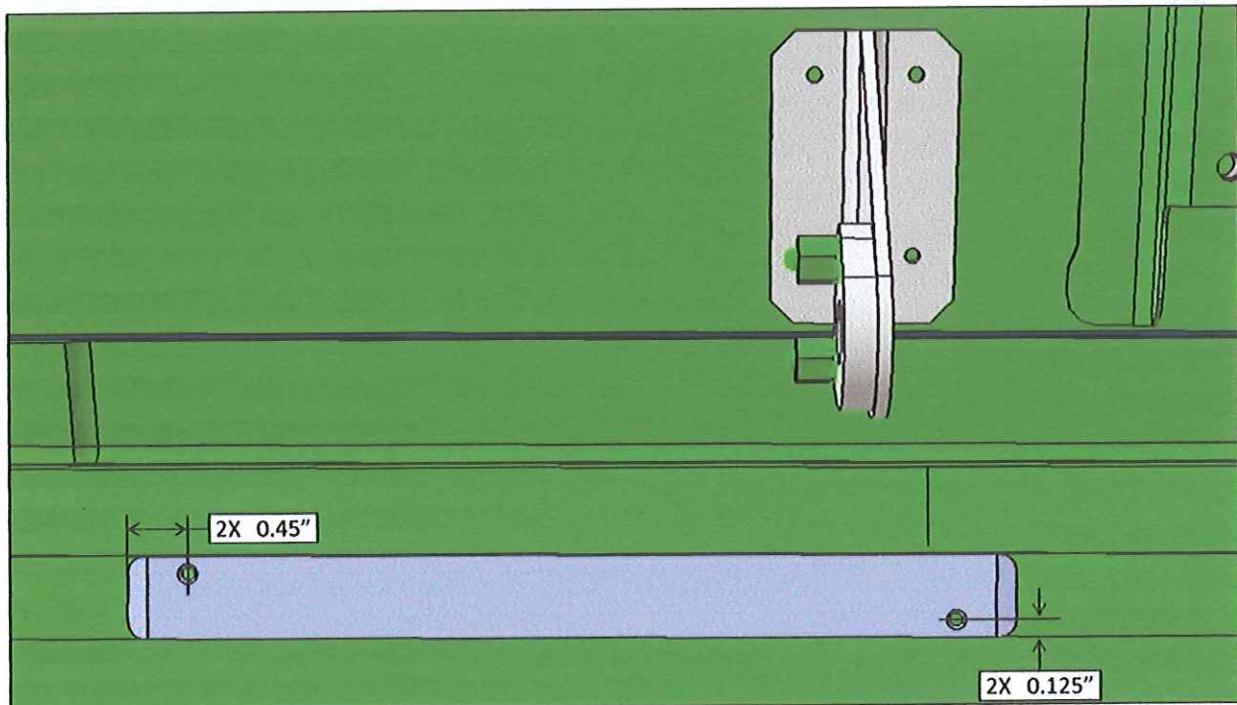
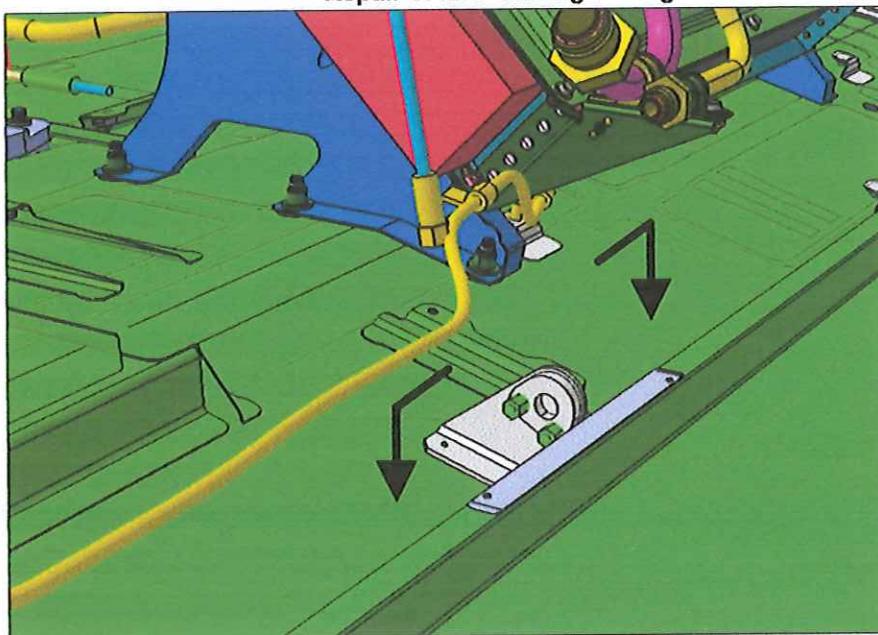


Figure 3 – Wear Strip Retention Rivet Layout

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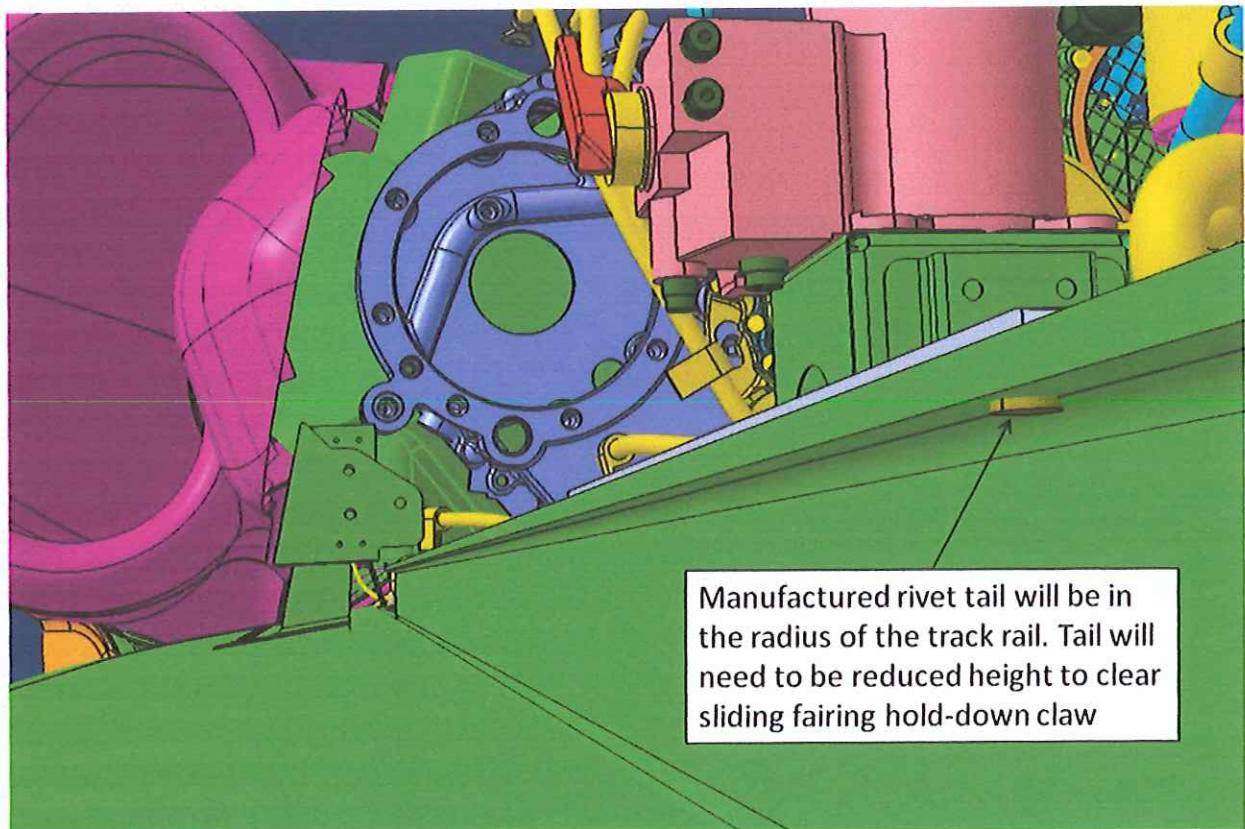


Figure 4 – Retention Rivet Clearance

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Figure 5 – Extreme Wear on Sliding Fairing Engagement Pin

