Service Bulletin SB-0063

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

Subject: E1000 Starlink Retrofit

ATA-Code: 23-30

Labor: 10 hours

Effectivity: K003,K004 with SB-0017 And K011-K085 (excluding K014)

Affected Model(s): E1000 GX

Due: Upon request

Compliance: Optional

Recurrence: No

1 BACKGROUND AND PURPOSE:

This service bulletin was written to explain how to install Starlink on an E1000 GX.

2 REFERENCES:

Epic E1000 Aircraft Maintenance Manual, PN SK05000000
Aircraft, Top Level, Starlink Retrofit, PN FK23300001

3 WARRANTY:

Parts and labor costs for this service bulletin are at the owner's expense.

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 REVISION:

Original Release.

6 TOOLS:

No.	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	Common hand tools	A/R	☐	☒
2.	11/16” diamond hole saw with ¼” shank	A/R	☒	☐
3.	¼” carbide dagger drill bit	A/R	☒	☐
4.	#7 (.201”) carbide dagger drill bit.	A/R	☒	☐
5.	#40 (.098”) carbide dagger drill bit	A/R	☒	☐
6.	#21 (.159”) carbide dagger drill bit	A/R	☒	☐
7.	100° multiflute countersink	A/R	☒	☐
8.	Rotary tool and diamond cutting wheel	A/R	☐	☒

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7 PARTS/MATERIALS:

No.	Part Number	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	AK23300001	Starlink Mounting Tray Assy	1	☒	☐
2.	AK23300002	Starlink Mounting Tray Fairing Assy	1	☒	☐
3.	AK23501001	Bose Headset Connector Assy, Pilot, Co Pilot	1	☒	☐
4.	PK21202111	Starlink Antenna Access Panel	1	☒	☐
5.	PK25121019	Bezel, Crew Headset	1	☒	☐
6.	PK99008187	Starlink Switch	1	☒	☐
7.	PK39104004	Light Plate, Right Circuit Breaker, GX	1	☒	☐
8.	PK24602001	Circuit Breaker Plug W/ Label Cover	3	☒	☐
9.	PK99007093	Hole Plug, 7/16" Dia Hole, .062" Thk, Nylon, Black	6	☒	☐
10.	HK25100085	Starlink Harness	1	☒	☐
11.	HK25100084	Starlink Main Cabin Harness	1	☒	☐
12.	PK99231501	Starlink Mini Antenna	1	☒	☐
13.	7277-2-5	Circuit Breaker, 5a, Klixon	1	☒	☐
14.	EHRJ45P6AS	Ethernet Connector RJ45 CAT 6A	1	☒	☐
15.	AN525-832R10	Screw, Washer Head, .164x.625	4	☒	☐
16.	AN3-5A	Bolt, 10-32 x 21/32" Undrilled	2	☒	☐
17.	MS51957-28	Screw, Pan Head, .138 x .375 lg., CRES	7	☒	☐
18.	MS51957-25	Screw, Pan Head, .138 X .188 lg., CRES	1	☒	☐
19.	MS24693-6B	Screw, Machine, C'sunk, Cres Ø .112 x 0.500 (BLK)	2	☒	☐
20	NAS620C4L	Washer, Reduced O.D., CRES, .115 I.D x .209 O.D.	2	☒	☐
21.	AN970-3	Washer, Flat #10 x .063	2	☒	☐
22.	NAS1149F0316P	Washer, Flat #10 x .016	2	☒	☐
23.	NAS1149FN632P	Washer, Flat #6 X .032	A/R	☒	☐
24.	NAS620C4L	Washer, Reduced O.D., CRES, .115 I.D x .209 O.D.	2	☒	☐
25.	MS35338-136	Washer, Lock-Spring, CRES, Ø.138	A/R	☒	☐
26.	MS21083N08	Nut, Self-Locking, Non-Metallic Insert .164-32	2	☒	☐

27.	MS21042L04	Nut, Self-Locking, 450°, Reduced #4-40	2	☒	☐
28.	CCR244CS-3-02	Cherry Pull-Thru Rivet, C'sunk, Cres, Ø 3/32 x .193	14	☒	☐
29.	MS21059L06	Nutplate, Self-Locking, Floating Ø .138-32	7	☒	☐
30.	MIL-A-46106B	RTV 100 SERIES	A/R	☒	☐
31.	SL4-0025-ER0201	Grommet Edging/.069-.090 Thick, .277 Wide	A/R	☒	☐
32.	M22759/16-12-9	Wire, 12 AWG, White	A/R	☒	☐
33.	M22759/16-20-9	Wire, 20 AWG, White	A/R	☒	☐
34.	M22759/16-22-9	Wire, 22 AWG	A/R	☒	☐
35.	MS25036-102	Terminal, Ring, 22-18 AWG, #6 Stud	1	☒	☐
36.	MS25036-111	Terminal, Ring, 10 GA, #6 Stud	2	☒	☐
37.	M39029/56-351	Contacts, Electrical Connector, Socket, Crimp	1	☒	☐
38.	ROUNDIT® 2000NX 13-5	Sleeving, Self Wrapping, Heat & Fluid Resistant, 1/2"	A/R	☒	☐
39.	0460-202-20141	Contact, Pin, Sz. 20, Nickel/Copper	2	☒	☐
40.	M39029/57-354	Socket Contact, Crimp Snap-In, 22d	9	☒	☐
41.	JAN1N3613	Diode, Silicon Rectifier, 1a, 600vm (Per Mil-Prf-19500/228t)	2	☒	☐
42.	M81824/1-2	Sealed In-Line Crimp Splice, 20-16 Awg, Blue	A/R	☒	☐
43.	ATM06-2S-KIT01	Connector Kit, Plug, #20-2 Pos, Skt & Wedgelock	1	☒	☐
44.	0462-201-20141	Contact, Socket, Sz. 20, Nickel/Copper	2	☒	☐
45.	201580-1	Contact, Socket, 24-20 AWG	1	☒	☐
46.	M39029/58-363	Pin Contact 20-24 AWG Size 20 Crimp Gold	1	☒	☐
47.	SK05001502	Operating Handbook and Airplane Flight Manual Supplement for Starlink Antenna	1	☒	☐

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8 INSTRUCTIONS:

CAUTION
READ ALL INSTRUCTIONS BEFORE BEGINNING ANY WORK.

1. Set the BATT 1 and BATT 2 switches to OFF.
2. Disconnect external electrical power from the airplane (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, chapter 24-40).
3. It is recommended to remove crew and passenger seats for protection of the seats and ease of access to work area (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000 chapter 25-10 and 25-20).

8.1 Overhead Panel and Fuselage Modifications

4. Remove overhead finish panels (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000 chapter 25-20).

CAUTION
WHEN CUTTING OR DRILLING, ONLY USE TOOLS SPECIFIED IN THIS DOCUMENT. FAILURE TO DO SO WILL RESULT IN DAMAGE TO THE AIRCRAFT

5. Using a rotary tool with a diamond cutting wheel, cut the access panel hole in the aft most air conditioning duct (refer to Figure 1). It is permitted to use a rotary sanding wheel to achieve a .25 radius per Figure 1.

CAUTION
WHEN DRILLING HOLES FOR ACCESS PANEL RIVETS AND NUT PLATES, THE USE OF A DRILL STOP IS RECCOMENDED IN ORDER TO PREVENT DAMAGE TO FUSELAGE.

6. Drill holes for nutplates and rivets (refer to Figure 1).
7. Install (7) MS21059L06 nutplates with (14) CCR244CS-3-03 rivets (refer to Figure 2).
8. From the exterior of the aircraft, drill the mounting and connector holes for the Starlink antenna.
9. Locate the two (2) mounting holes and one (1) connector hole (refer to Figure 4).
    a. Using the ¼” dagger bit from the tool list, drill a pilot hole for the antenna connector (refer to Figure 4).
    b. Using the 11/16 diamond hole saw, open the ¼” hole to .688” +.030/-0”.
    c. Using the #7 dagger drill bit, drill the two mounting holes (refer to Figure 4).
    d. Vacuum up all FOD from interior of aircraft and clean holes with isopropyl alcohol on a lint free cloth.

8.2 Installation of Starlink Antenna and Wiring Harnesses

10. Apply RTV 100 series to flange of J906 bulkhead connector and install/torque 30-36 in-lbs connector into .688 hole, while RTV is still wet (for orientation of connector refer to Figure 5).

11. Remove excess RTV squeeze out as necessary.

12. Connect P906 of the Starlink harness (HK25100085) to bulkhead connector.

13. Install SL4-0025-ER0201 grommet edging to the corners of the Starlink mounting tray.

Note:
Connect and route Starlink harness (HK25100085) through the Starlink mounting tray before installation.

14. Before installing the Starlink mounting tray, apply RTV 100 series to the face of AN970 flat washers prior to installation of AN3-5 bolts.

15. Install the Starlink mounting tray using (2) AN3-5A bolts, (2) AN970-3 washers (exterior side of aircraft), (2) NAS1149F0316P washers (interior side of aircraft), and (2) MS21083N08 nuts (interior side of aircraft) (refer to Figure 5).

16. Remove excess RTV as necessary.

17. Torque MS21083N08 nuts to 20-25 in-lbs.

18. Connect the Starlink harness (HK25100085) power and ethernet cables to the Starlink antenna and install the antenna in the mounting tray.

19. From the inside of the aircraft, Plug in J906 of the Starlink cabin harness (HK25100084) into the bulkhead connector (refer to Figure 5).

20. Route Starlink cabin harness (refer to Figure 6 and Figure 7).

Note:
Route Starlink cabin harness adjacent to existing harness bundles where possible.

8.3 Midrow Bucket Panel Ethernet Port Modification

21. Modify midrow bucket panel to allow for installation of the Starlink ethernet cable as follows:

- **a.** Remove the RH midrow bucket panel, from the interior of the fuselage (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 25-20 and FK23300001).
- **b.** Drill holes in Midrow Bucket Panel per Figure 8. Ensure that holes are drilled from non-upholstered side of bucket panel.

c. Install EHRJ45P6AS using Qty. 2 MS24693-6B screws, Qty. 2 NAS620C4L washers, and Qty. 2 MS21042L04 nuts per the Fastener Spec, SX51400001. See Figure 9 for detail.

d. Connect Ethernet connector, P909, to the Ethernet port.

e. Reinstall RH Closeout Large Panel Assy.

8.4 Instrument Panel Retrofit

22. Verify SB-0062 has not been performed before continuing with this section. If SB-0062 has been performed, skip to step 32.

23. Disconnect ground wires from both batteries (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 24-30).

WARNING:
MAKE SURE POWER IS DISCONNECTED FROM BUS-BARS BEFORE ANY WORK IS DONE ON THE AIRCRAFT.

24. Remove right hand upper switch panel bezel (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 25-10).

25. Remove right hand kick panel to access circuit breaker cannon plugs (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 25-10).

26. Disconnect P108, P397, J398, and P191 connectors (refer to Figure 10) from aircraft wiring harness.

27. Remove right hand crew headset bezel.

Note:
Bose Headset Connector Assembly replacement will be provided with updated light plate.

28. Remove the (3) screws attaching the right-hand circuit breaker cover and remove the cover.

29. Remove the right-hand circuit breaker light plate.

a. Remove the screws attaching the circuit breaker overlay and backing plates to the instrument panel.

b. Remove and place the right-hand circuit breaker assembly on work bench.

c. Identify the power and ground wires for the light plate.

i. red (x1) and black (x1) wires.

CAUTION:

LIGHTPLATE WIRE CONNECTION IS VERY FRAGILE, PUT AS LITTLE STRAIN ON THEM AS POSSIBLE.

d. De-pin red and black wires from P108 cannon plug (red in position n and black in position s).

e. Carefully remove depinned wires from harness and remove light plate.

Note:

Lacing may be snipped and replaced as needed for ease of removal.

30. Once removed, send light plate to Epic Aircraft for rework:
Epic Flight Support Parts
22550 Nelson Road
Bend, OR 97701

31. Upon receiving reworked light plate, reinstall and rewire as follows:

a. Carefully feed light plate wires back through Roundit® sleeving.

b. Re-pin wires into P108 cannon plug (red in position n and black in position s).

c. Replace sleeving and tie new lacing in places it was snipped in disassembly.

32. Install 5A circuit breaker into hole labeled “STARLINK”

a. Tighten circuit breaker MS25082-B18 mounting collar nut to 10-12 in-lbs.

b. Assemble Starlink circuit breaker jumper per FK23300001.

c. Attach circuit breaker to ACC 2 bus bar via jumper (refer to FK23300001).

33. Install PK24602001 circuit breaker plugs into the WIN DIM, SAT PHONE, and WEATHER RADAR holes (if features are not installed).

34. For all unlabeled holes, install PK99007093 hole plugs with a small amount of RTV 100 series to help retain the plugs. Remove excess RTV.

35. Reinstall the right-hand circuit breaker panel onto the aircraft (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 24-60).

36. Reconnect P108, P397, J398, and P191 connectors (as seen in Figure 10) to aircraft wiring harness.

37. Uninstall Climate Control Panel (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 21-60).

38. Assemble and install the Starlink switch and wiring harness.

a. Wire the Starlink switch per FK23300001.

b. Solder the supplied diode in line per FK23300001.

c. Install the Starlink Switch into the Climate Control Panel (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 24-60).

d. Update Instrument Panel Wiring Harness per FK23300001.

39. Reinstall the Climate Control Panel (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 21-60).

40. Reinstall right hand kick panel (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 25-10).

41. Install Starlink access panel with (7) MS51957-28 screws (torque to 2-6 in-lbs) per Figure 3.

42. Install the Overhead Finish panel (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 25-20).

43. Install the Starlink fairing to the mounting tray with (4) AN525-832R10 screws. Torque screws to 12-15 in-lbs.

44. Perform Starlink Operational Check (refer to Epic E1000 Aircraft Maintenance Manual, PN SK05000000, Chapter 23-30).

45. Add Operating Handbook and Airplane Flight Manual Supplement for Starlink Antenna, SK05001502 to the aircraft POH/AFM.

46. Incorporate the Epic E1000 Aircraft Maintenance Manual, PN SK05000000 at revision I or later FAA-accepted revision for essential maintenance, inspections and procedures for this system.

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9 TABLES AND FIGURES

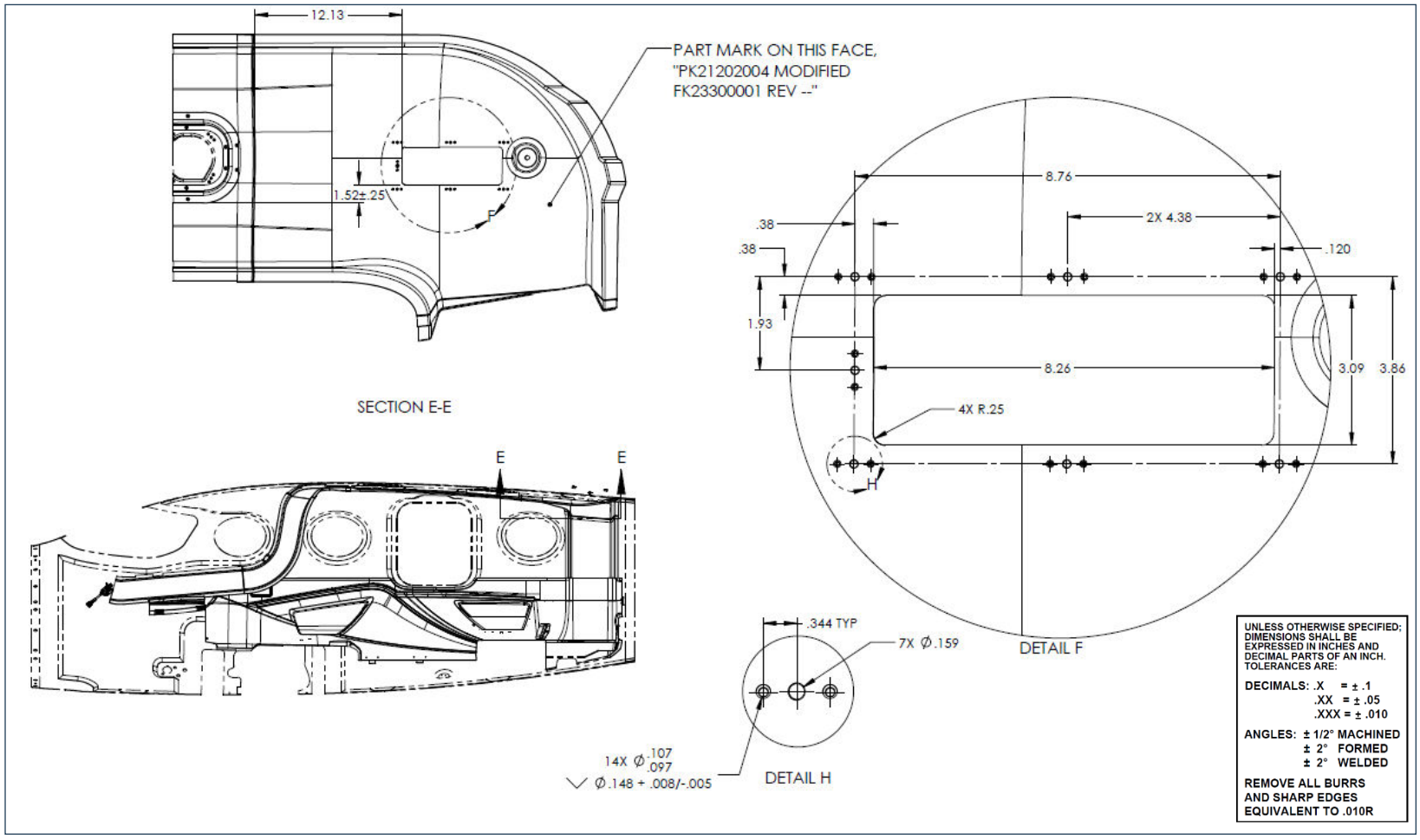


Figure 1:Starlink Access Panel Hole

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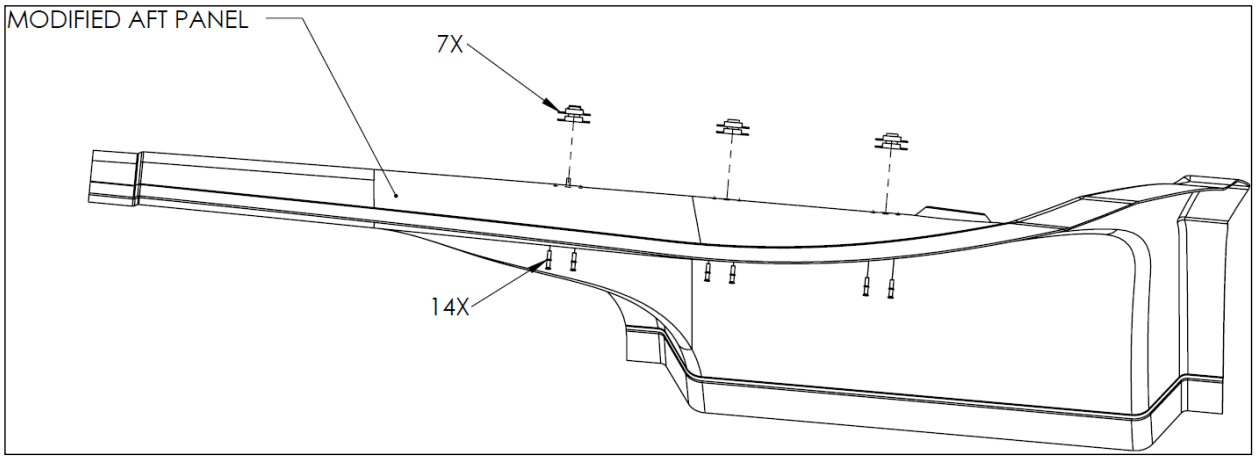


Figure 2: Aft Panel Rivet/Nutplate Install

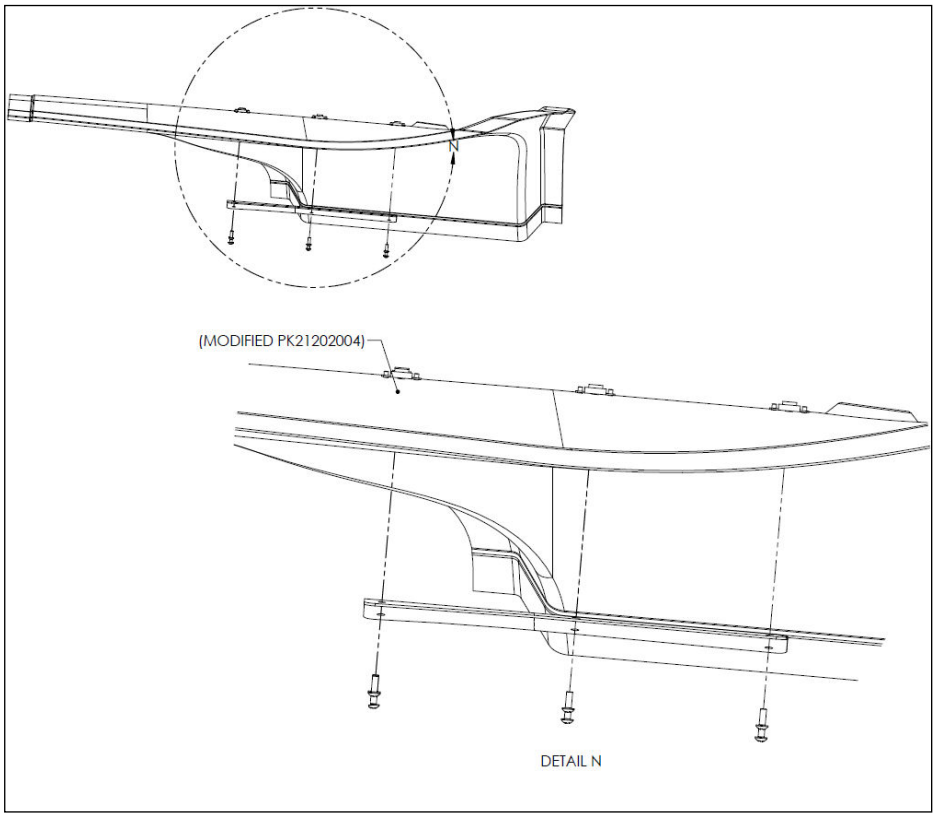


Figure 3: Starlink Access Panel Installation

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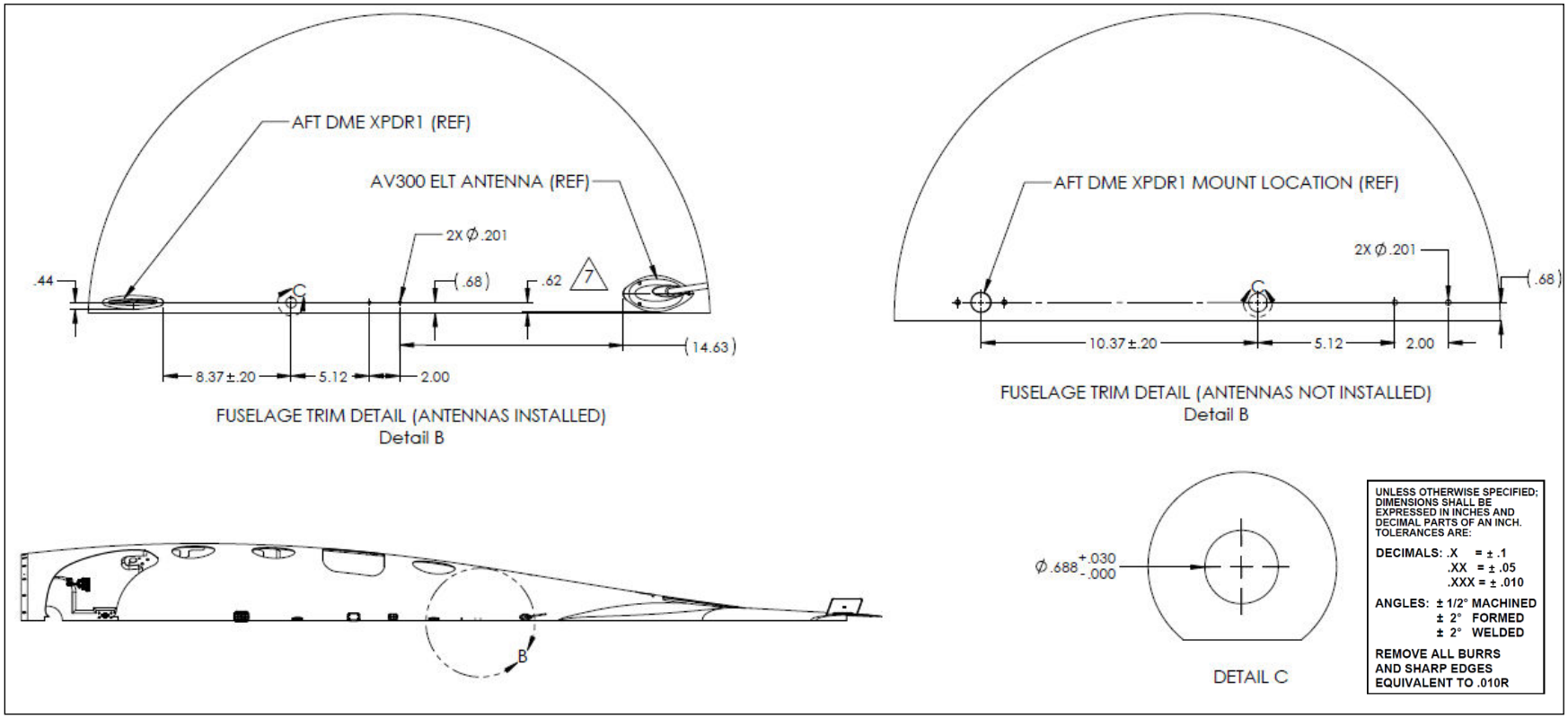


Figure 4: Starlink Antenna Fuselage Hole Locations

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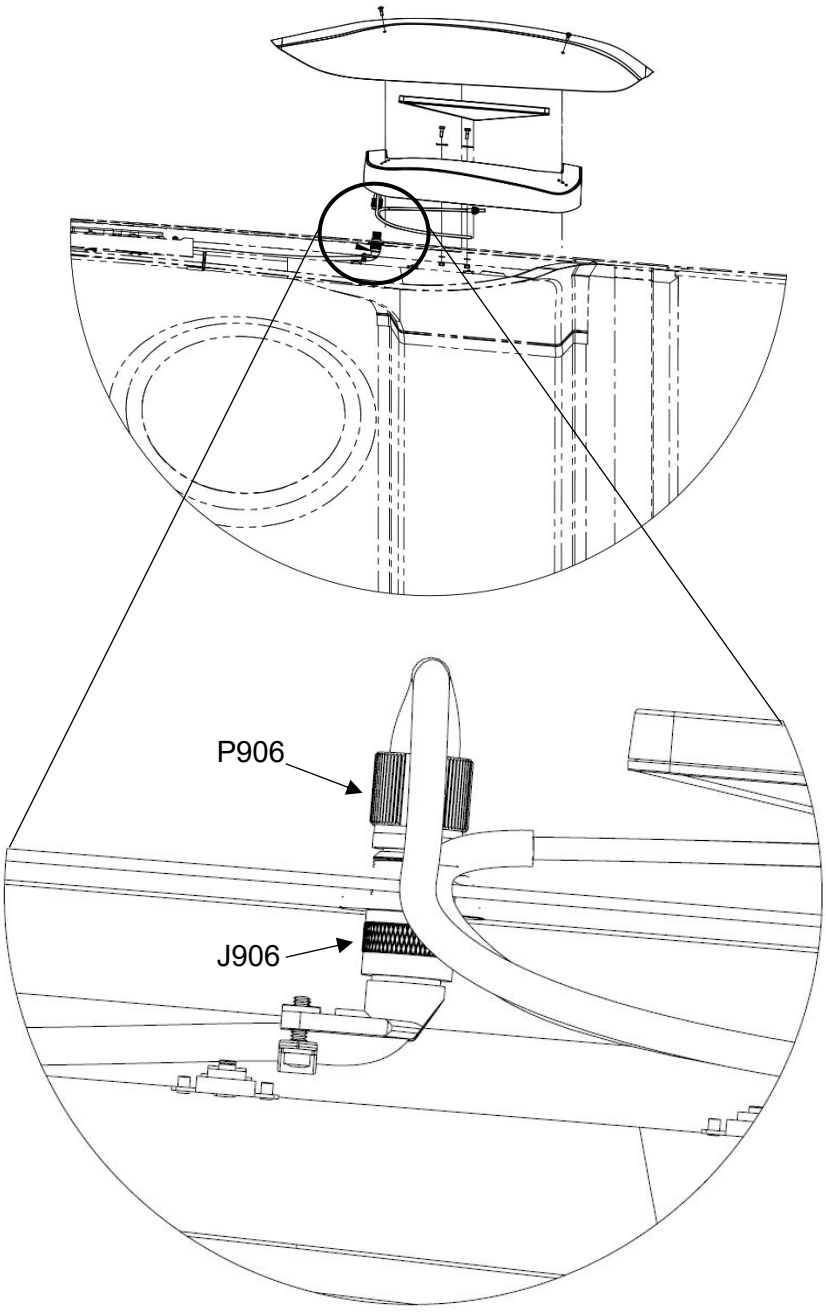


Figure 5: Starlink Bulkhead Connector

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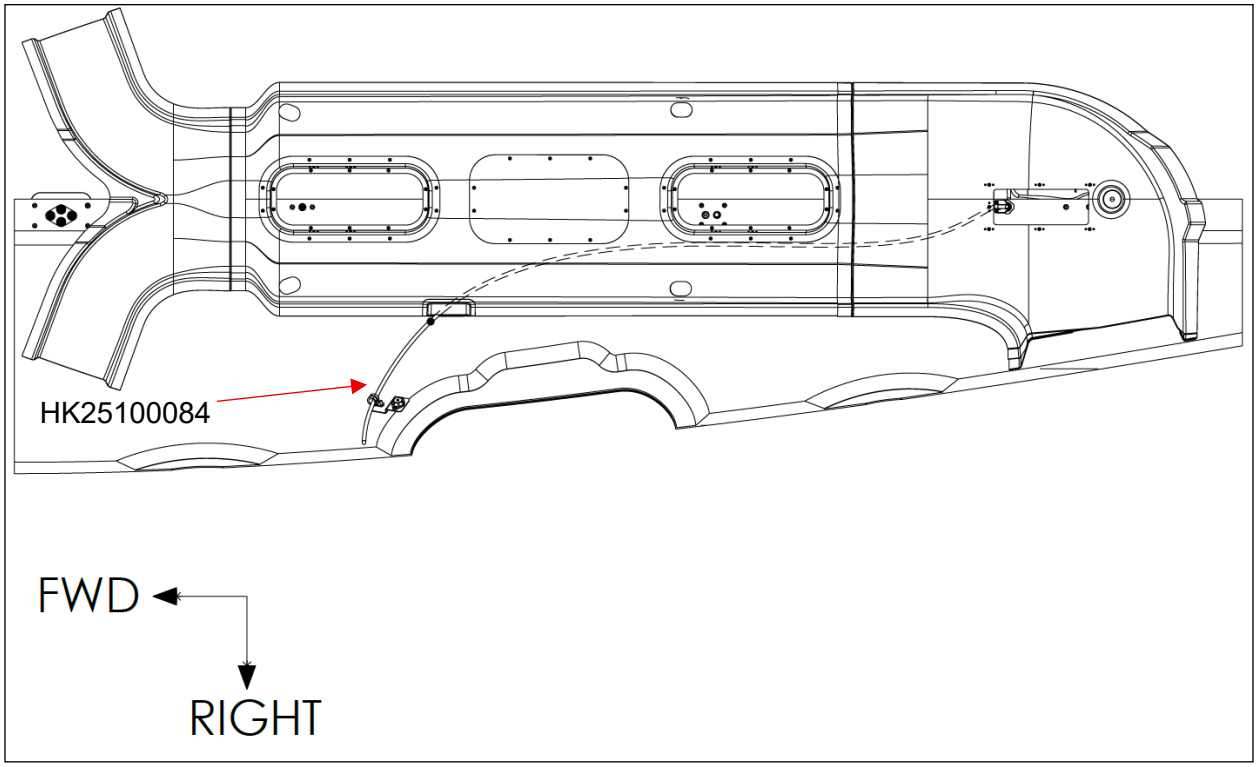


Figure 6: Overhead Harness Routing

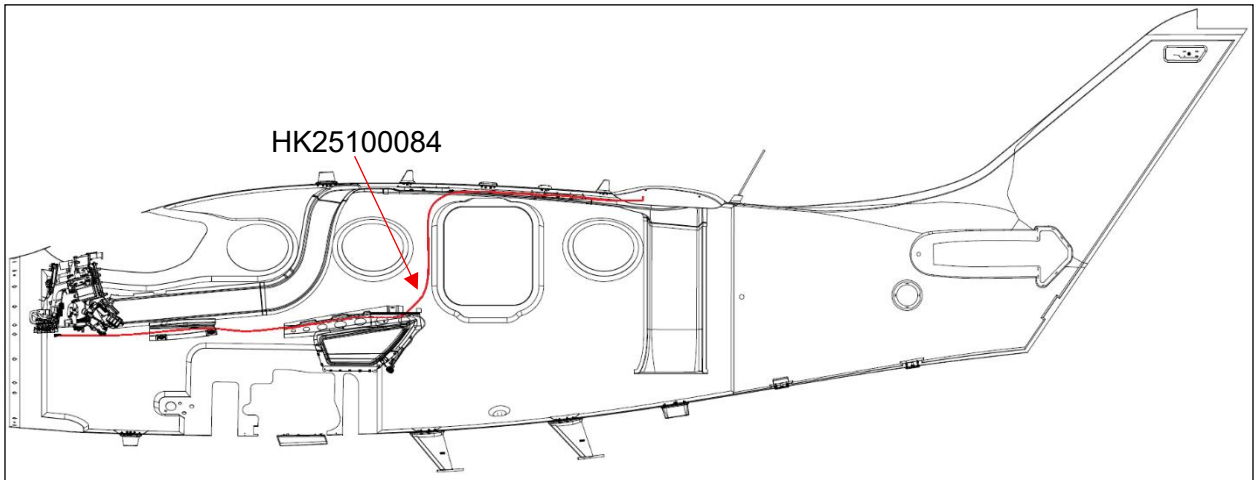


Figure 7: Starlink Antenna Install and Cable Routing Overview

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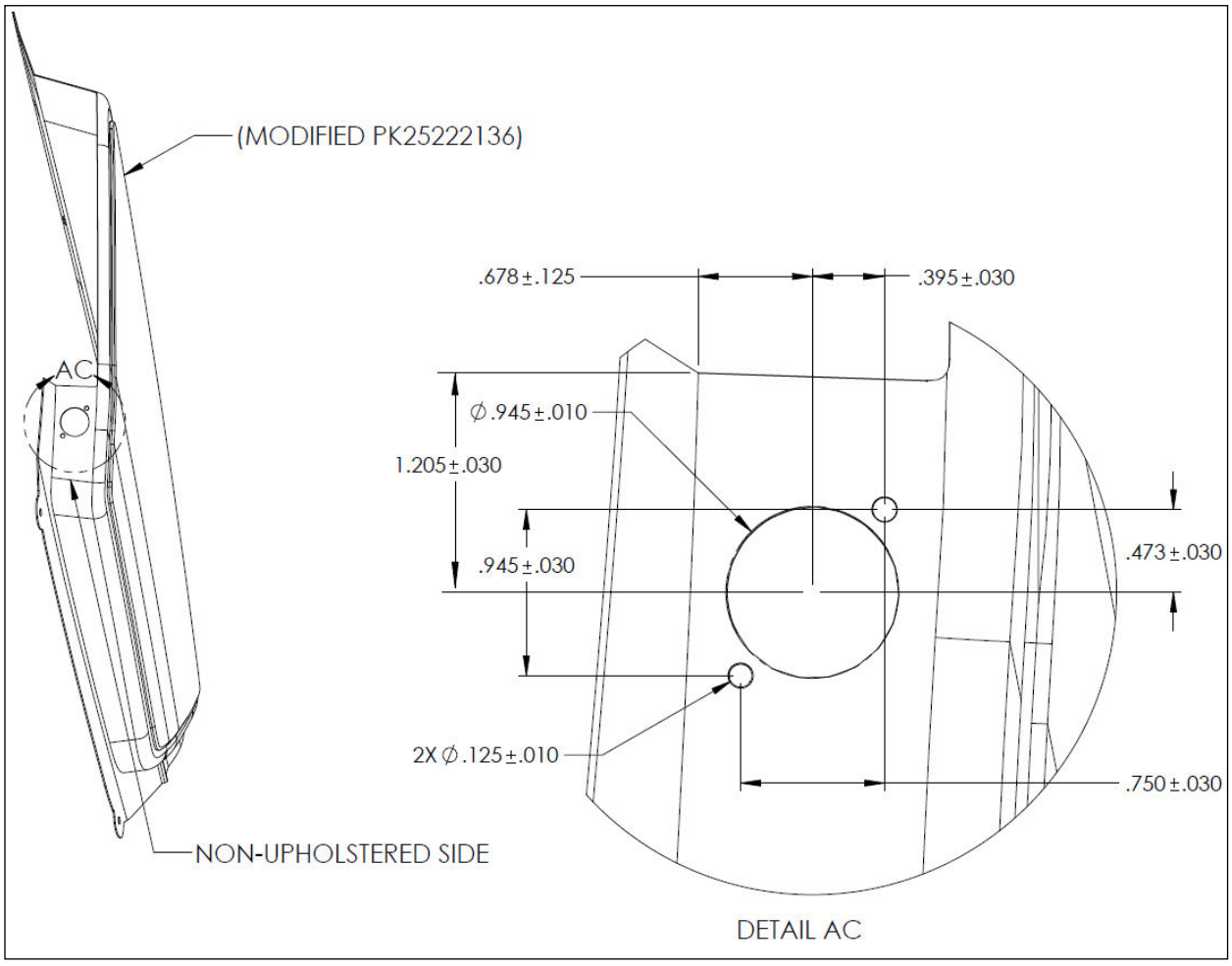


Figure 8: Midrow Bucket Panel Modification for Ethernet Connector

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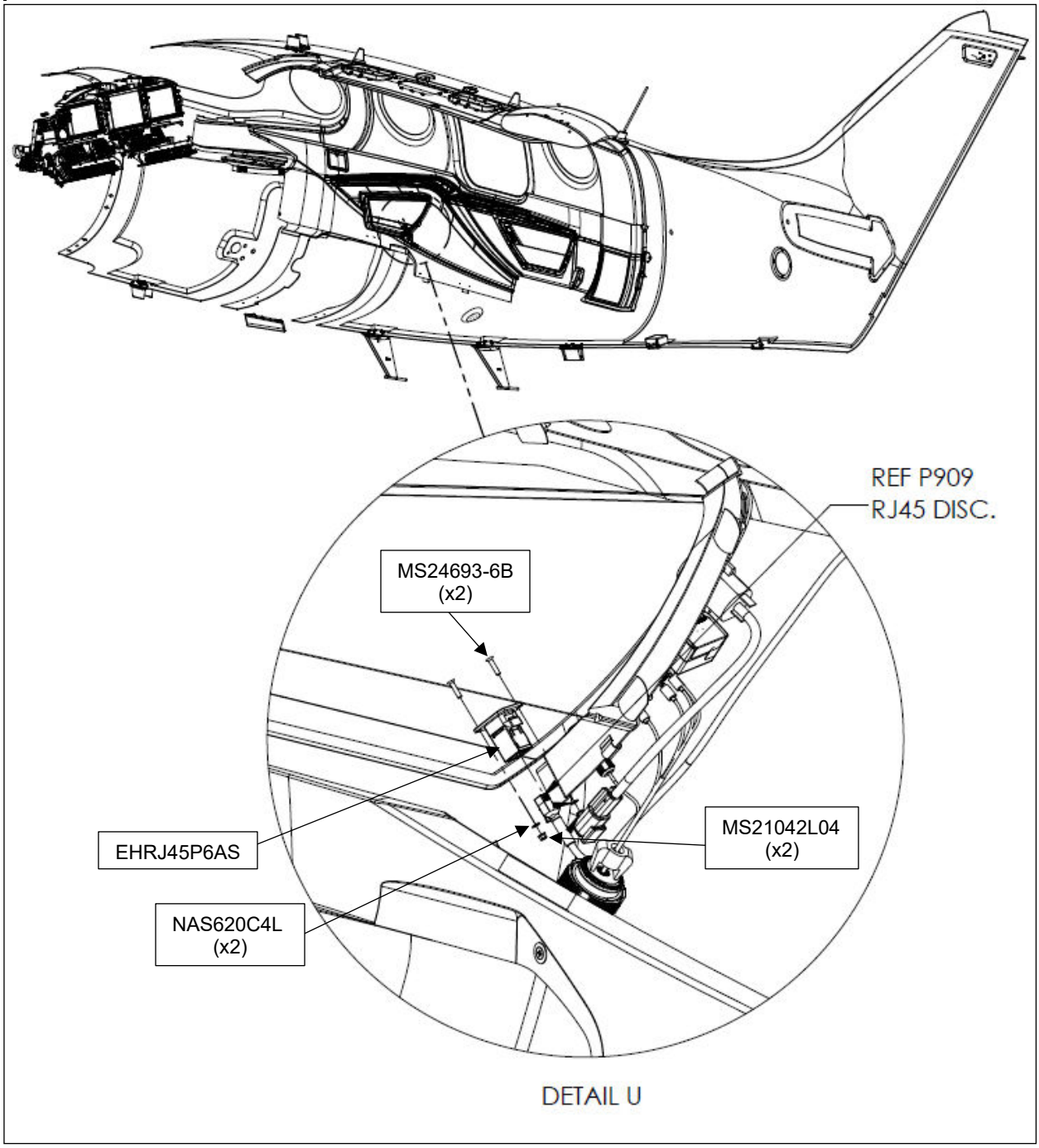


Figure 9: Midrow Bucket Panel Ethernet Port Install

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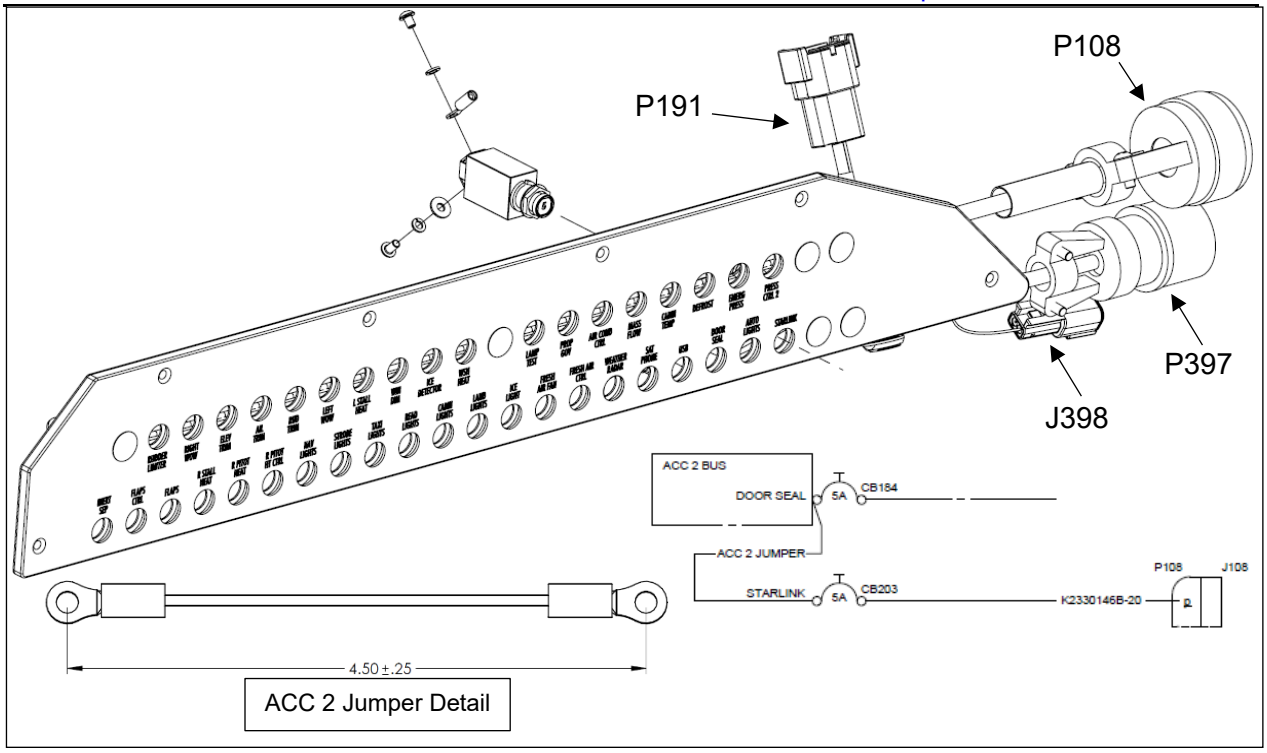


Figure 10: Starlink Circuit Breaker Install

10 WEIGHT AND BALANCE:

Perform weight and balance.

11 PUBLICATIONS AFFECTED:

- Epic E1000 Pilot's Operating Handbook and Aircraft Flight Manual, PN SK05001001

12 RECORD COMPLIANCE:

Make appropriate entry in airplane maintenance records.

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

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: _____