

MANDATORY SERVICE BULLETIN**NUMBER:** SB13-06**REVISION:** 00**DATE:** June 8, 2013**SUBJECT:** TEN THOUSAND HOUR LIFE EXTENSION FIELD RETROFIT**EFFECTIVITY:**

KODIAK 100 Series Aircraft Serial Numbers: 100-0001 through 100-0094.

SUMMARY:

The accompanying Field Service Instruction provides guidance for installing the structural upgrades required to extend the aircraft service life of the KODIAK 100 to 10,000 hours.

Service Kit FSI-061 is available for purchase at \$1474.60 (price subject to change). To obtain Service Kit FSI-061, contact Quest Customer Service.

COMPLIANCE:

This Service Bulletin should be complied with in order to operate the KODIAK 100 aircraft past 5,000 service hours.

ATTACHED DOCUMENTS:

Document #:	Revision:	Document Title:
FSI-061	00	TEN THOUSAND HOUR LIFE EXTENSION FIELD RETROFIT

FAA APPROVAL STATUS:

The instructions attached to this Service Bulletin have demonstrated compliance with all applicable Federal Aviation Regulations and are approved by the Federal Aviation Administration.

CREDIT AND WARRANTY INFORMATION:

Quest is not offering reimbursement for labor associated with this bulletin.

Quest Customer Service**Service Bulletin: SB13-06****Phone:** (208)263-1111 Toll Free: 1(866)263-1112**Email:** Customerservice@questaircraft.com**SPECIAL INSTRUCTIONS:**

N/A



FIELD SERVICE INSTRUCTION

TITLE:

Ten Thousand Hour Life Extension Field Retrofit

SERIAL RANGE:

100-0001 thru 100-0094

JASC CODE: 5101

PAGE:

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REPORT NO.:

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SUBJECT

This Field Service Instruction provides guidance for the structural upgrades required to extend the aircraft service life of the KODIAK® 100 to 10,000 hours.

AFFECTED MANUALS AND PUBLICATIONS

None.

INDUSTRY REFERENCES

None.

WEIGHT AND BALANCE

Negligible.

MANPOWER

The estimated man-hours and minimum number of persons required to perform this Field Service Instruction are listed below. The "Minimum Persons" refers only to maintenance personnel or installers, and unless otherwise specified within this instruction does not include additional personnel that may be needed solely to comply with safety requirements (for example, safety observers that are not performing tasks within this instruction). It is the responsibility of maintenance personnel to comply with safety requirements, including having a safety observer available as needed.

Estimated Man-hours: 60 hours

Minimum Persons: 2 persons

If more than the minimum personnel perform this instruction, the actual man-hours required may be reduced due to increased efficiencies. As appropriate, Quest encourages the use of additional personnel; man-hour estimates are based on the minimum personnel required.

RECORD OF COMPLETION

Update the appropriate maintenance log books.

QUEST® Aircraft Company, LLC
1200 Turbine Drive
Sandpoint, ID 83864

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REVISION RECORD

REV	PAGE	CHANGE DESCRIPTION
00	All	Initial Release



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1. Special Safety Instructions

1.1 Warnings

Failure to comply with “Warnings” contained in this instruction may result in financial loss, significant delay in the completion time, and/or serious injury to personnel.

1.2 Cautions

Failure to comply with “Cautions” contained in this instruction may result in the destruction of components, unnecessary complications, the need to reverse completed work, and/or delays in the completion time.

1.3 Notes

“Notes” are provided when additional information may lead to an increase in efficiency.

2. Parts, Tools, and Equipment

The following tables describe the parts, tools, and equipment necessary to successfully complete this instruction. Where applicable, reference to drawings provided with this instruction is provided.

Table 2-1: Parts and Tools Included in the Service Kit

Item #	Part No.	Qty	Description	Drawing No.	Dwg Item #
2-1-1	THRD-REAMER-#20X1/8	1	.161 X .125 1/4-28 Threaded Reamer, 2 1/8 in length	N/A	N/A
2-1-2	100-240-2017	4	Shim	N/A	N/A
2-1-3	HL20PB5-5	2	Hi-Lok Pin	N/A	N/A
2-1-4	HL20PB5-4	2	Hi-Lok Pin	N/A	N/A
2-1-5	HL86-5	4	Hi-Lok Collar	N/A	N/A
2-1-6	HL18PB5-2	4	Hi-Lok Pin	N/A	N/A
2-1-7	HL18PB5-4	4	Hi-Lok Pin	N/A	N/A
2-1-8	HL82-5AW	4	Self-Aligning Collar Assembly (Washer and Collar)	N/A	N/A
2-1-9	100-935-0917	2	Shim	N/A	N/A
2-1-10	100-210-4012	2	Shim	N/A	N/A
2-1-11	100-935-1038	4	Shim	N/A	N/A

Table 2-2: Consumables Included in the Service Kit

Item #	Part No.	Qty	Description	Drawing No.	Dwg Item #
2-2-1	N/A	-	N/A	N/A	N/A

Table 2-3: Serial-Number-Specific Parts Included in the Service Kit

Item #	Part No.	Qty	Description	Drawing No.	Dwg Item #
2-3-1	N/A	-	N/A	N/A	N/A



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Table 2-4: Parts and Tools NOT Included in the Service Kit

Item #	Part No.	Qty	Description	Drawing No.	Dwg Item #
2-4-1	Commercially Available	1	#30 Drill	N/A	N/A
2-4-2	Commercially Available	1	# 24 Drill	N/A	N/A
2-4-3	Commercially Available	1	#21 Drill	N/A	N/A
2-4-4	Commercially Available	A/R	Par-al-Ketone	N/A	N/A
2-4-5	Commercially Available	1	Pulled Fastener Riveting Tool	N/A	N/A
2-4-6	MS20470AD4	24	Rivet (Various Lengths)	N/A	N/A
2-4-7	MS20470AD5	4	Rivet (Various Lengths)	N/A	N/A
2-4-8	CR3213-5	4	Cherryman Rivet (Various Lengths)	N/A	N/A
2-4-9	Commercially Available	A/R	Alumiprep Acid Etch (or equivalent)	N/A	N/A
2-4-10	Commercially Available	A/R	Alodine 1201 (or equivalent)	N/A	N/A
2-4-11	Commercially Available	A/R	High Quality Epoxy Primer	N/A	N/A
2-4-12	Commercially Available	A/R	Sealant (AMS-S8802, Class B-2)	N/A	N/A
2-4-13	Commercially Available	A/R	Topcoat to match current paint scheme	N/A	N/A



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3. General

This Field Service Instruction defines structural modifications that are required in order to extend the aircraft service life of the KODIAK[®] 100 to 10,000 hours.

4. Preparation

4.1 Crew and Passenger Seat Removal

Remove the Crew and Passenger seats in accordance with the *KODIAK[®] 100 Maintenance Manual*, Chapter 25.

▲ NOTE ▲

In order to safely reach the modification area, it is only necessary to remove the crew seats and first row of passenger seats. However, further passenger seats may be removed in order to create an adequate work area.

4.2 Headliner Removal

Remove the following headliners in accordance with the *KODIAK[®] 100 Maintenance Manual*, Chapter 25.

1. Aft cockpit headliner.
2. Main cabin headliners.

4.3 Aft Cabin Bulkhead Removal

Remove the aft cabin bulkhead for access to the aft fuselage.

4.4 Tailcone Removal

Remove the tailcone by removing the screws securing the tailcone to the aft fuselage. Unplug the aft navigation light and set the tailcone aside.

4.5 Upper Wing Root Fairing Removal

Remove the upper wing root fairing on both sides of the aircraft by removing the screws securing the wing root faring to the main fuselage and wings.

4.6 Rudder Removal

Remove the rudder in accordance with the *KODIAK[®] 100 Maintenance Manual*, Chapter 27.

4.7 Vertical Stabilizer Removal

1. If installed, remove the sealant that fills the gaps on each side of the vertical stabilizer forward spar.
2. Remove the vertical stabilizer in accordance with the *KODIAK[®] 100 Maintenance Manual*, Chapter 55.

5. Instructions

5.1 Hi-Lok and Tapered Shim Installation

▲ NOTE ▲

All detail figures show the left side of the aircraft.

▲ NOTE ▲

Hi-Loks and shims are to be installed on both the left and right side of the aircraft.

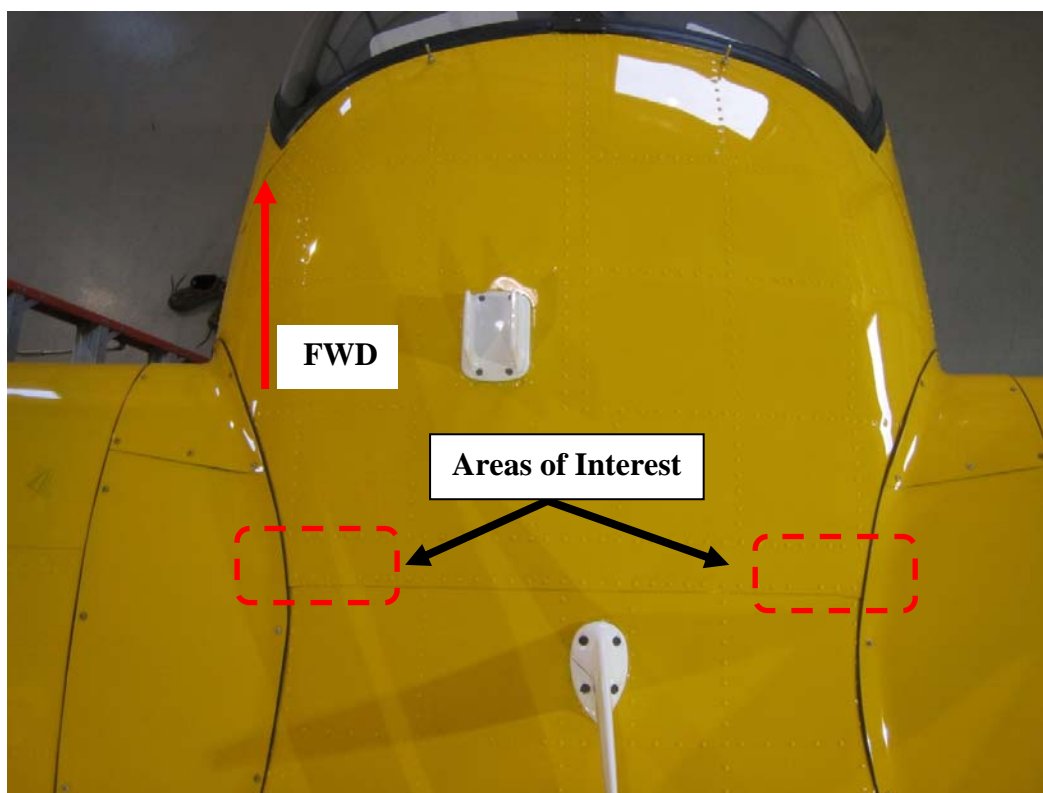


Figure 5-1: View Looking Down on the Forward Fuselage

1. Drill out the rivets shown in the **Figure 5-2**.

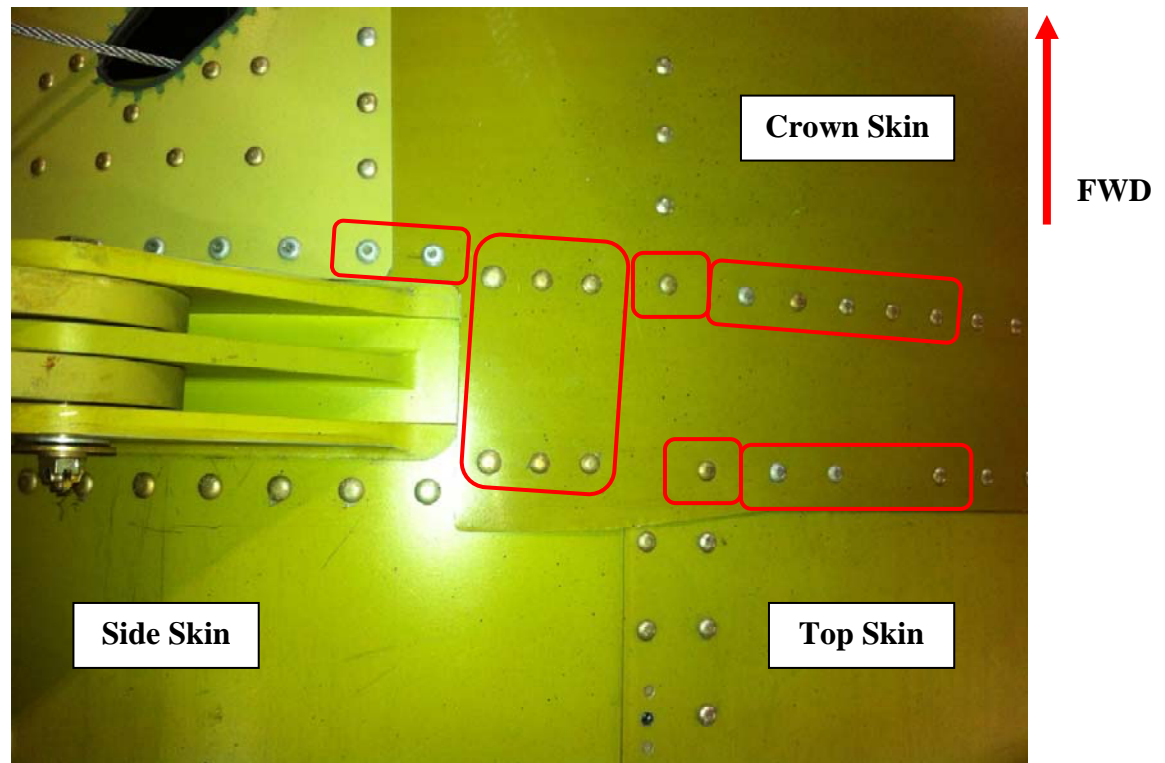


Figure 5-2: Detail View of Figure 5-1 (Left Side) With Fairing Removed

2. Correctly position the shims (P/N 100-935-0917, 100-210-4012, and 100-935-1038) as shown in **Figure 5-2** through **Figure 5-5**, and backdrill to match existing rivet holes.
3. Remove and deburr shims.
4. Install the shim (P/N 100-935-0917) in the location indicated in **Figure 5-3** and **Figure 5-4** using rivets (P/N CR3213-5). Shim is to fill the skin lap gap between the crown skin and frame.
5. Install the shim (P/N 100-210-4012) in the location indicated in **Figure 5-3** using rivets (P/N MS20470AD5) in the two outboard holes, and rivets (P/N MS20470AD4) in the four inboard holes. The shim is to fill the skin lap gap between the crown skin and side skin.

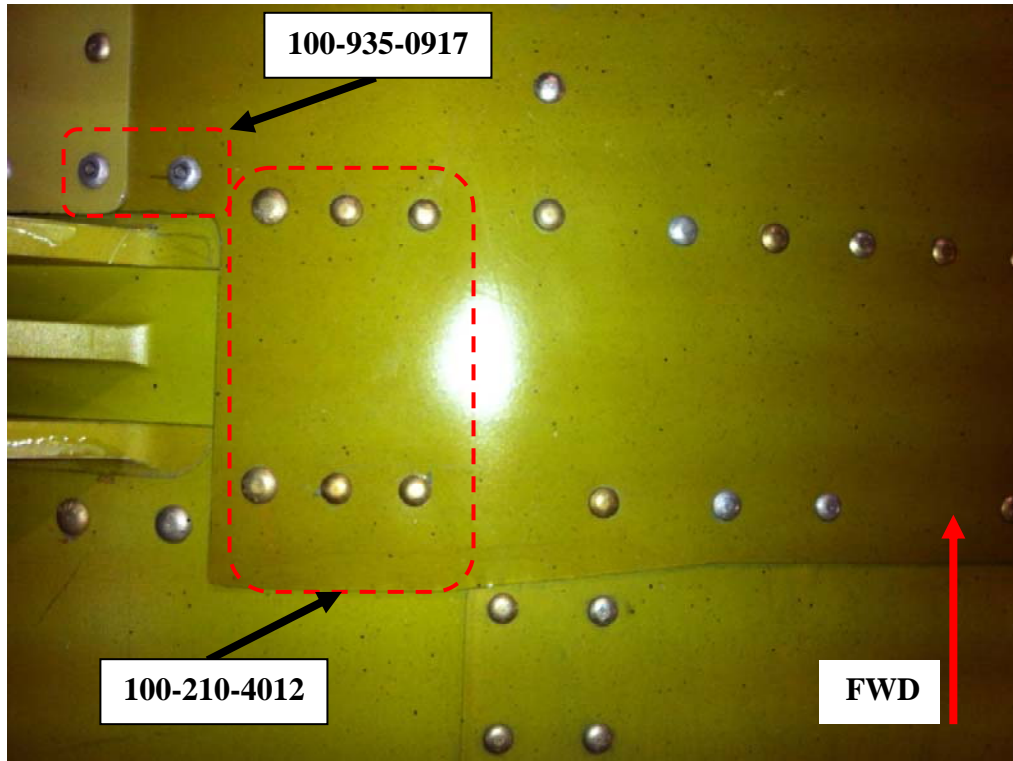


Figure 5-3: View Looking Down on Exterior Shim Location

6. Install the shims (P/N 100-935-1038) in the locations indicated in **Figure 5-4** and **Figure 5-5** using rivets (P/N MS20470AD4). The shim is to fill the skin lap gap between the top skin and frame.
7. Inspect between the crown skin and top skin in the four (4) locations where the shims (P/N 100-935-1038) have been installed:
 - a. If a gap of less than or equal to 0.032" exists between the crown skin and the top skin, proceed to **Step 8**.
 - b. If a gap greater than 0.032" exists between the crown skin and the top skin, fabricate a tapered shim to fill the gap to within 0.010". The shim material is to be 2024-T3. Acid etch, alodine, and prime shim per AC 43.13-1B, Chapter 6.

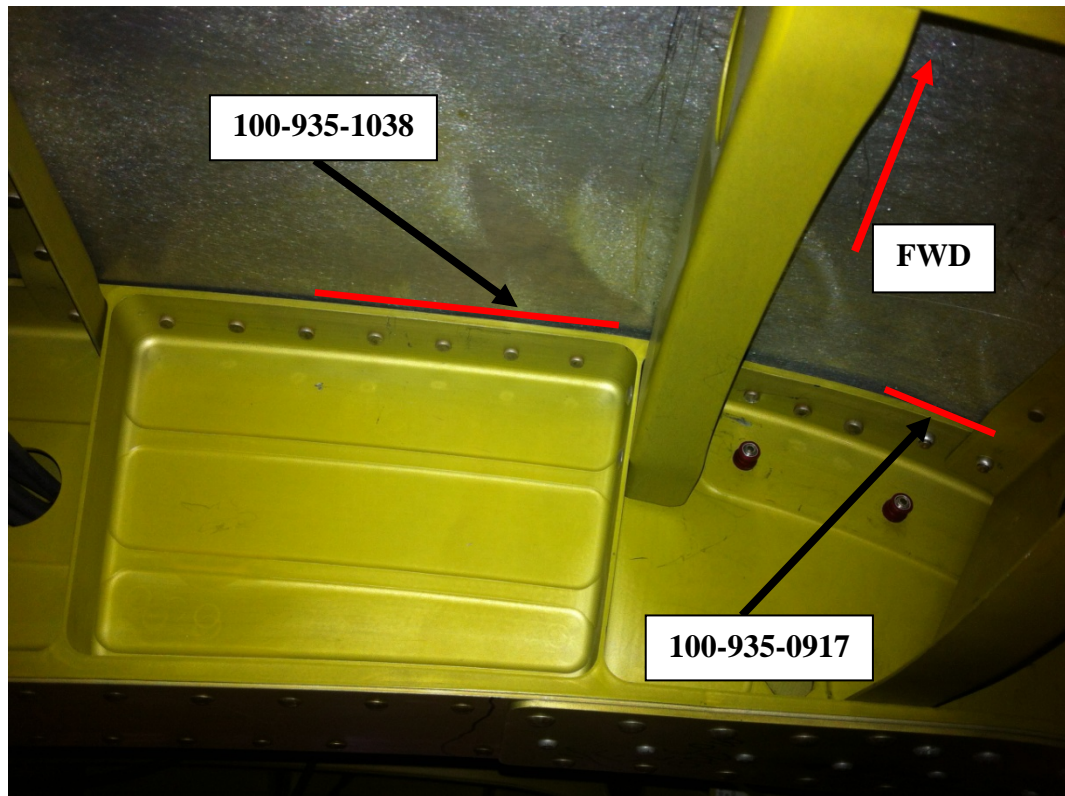


Figure 5-4: View Looking Aft and Up Inside Cabin at Forward Carrythru Frame

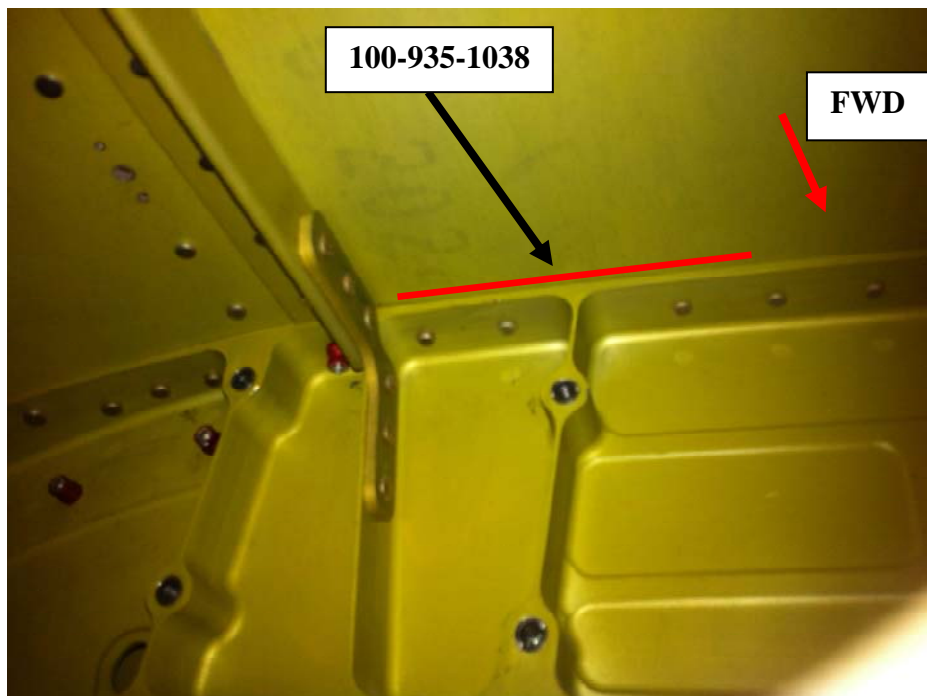


Figure 5-5: View Looking Forward Inside Cabin at Forward Carrythru Frame

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8. Up-size the holes identified in **Figure 5-6** to 0.1610" – 0.1640" (#24 drill bit and 0.1610 reamer).
9. Install Hi-Lok pins (P/N HL20PB5-5) and Hi-Lok collars (P/N HL86-5) in the forward location,
10. Install Hi-Lok pins (P/N HL20PB5-4) and Hi-Lok collars (P/N HL86-5) in the aft location.

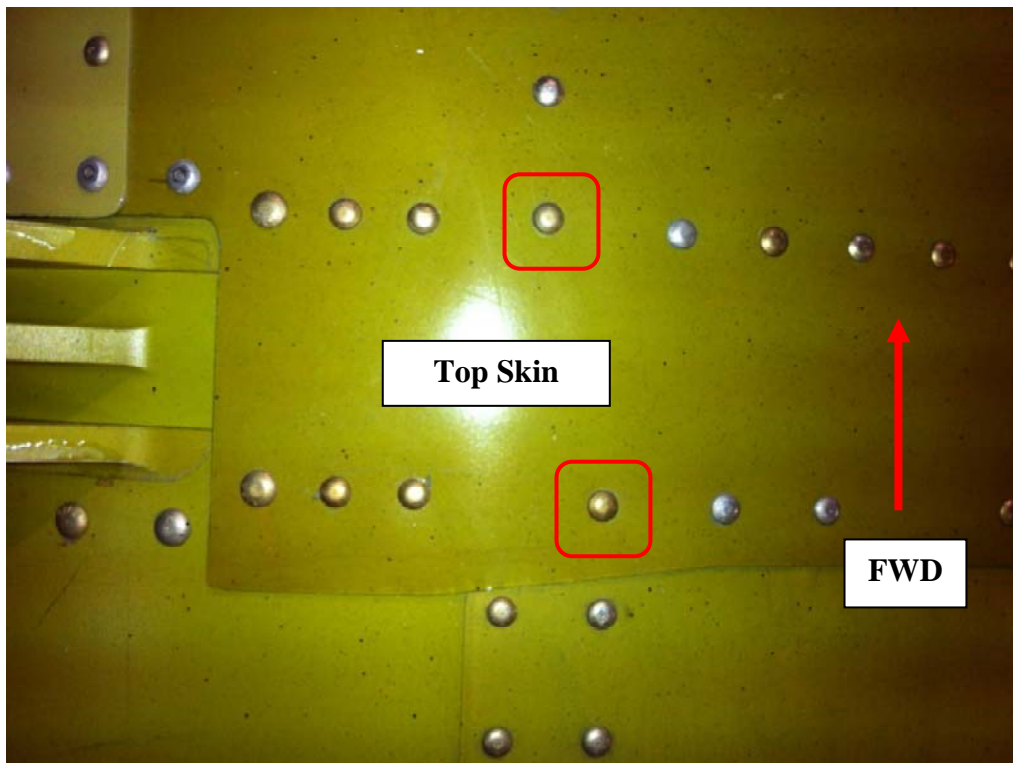


Figure 5-6: View Looking Down on Hi-Lok Locations

11. Touch up the primer and paint on the aircraft exterior, as needed, in accordance with the *KODIAK[®] 100 Airplane Maintenance Manual*, Chapter 12.

5.2 Replace 100-240-2016 Shear Clip Rivets

1. Inspect the rivets holding the left and right shear clips to the adjacent stringer, as shown in **Figure 5-7** through **Figure 5-9**.

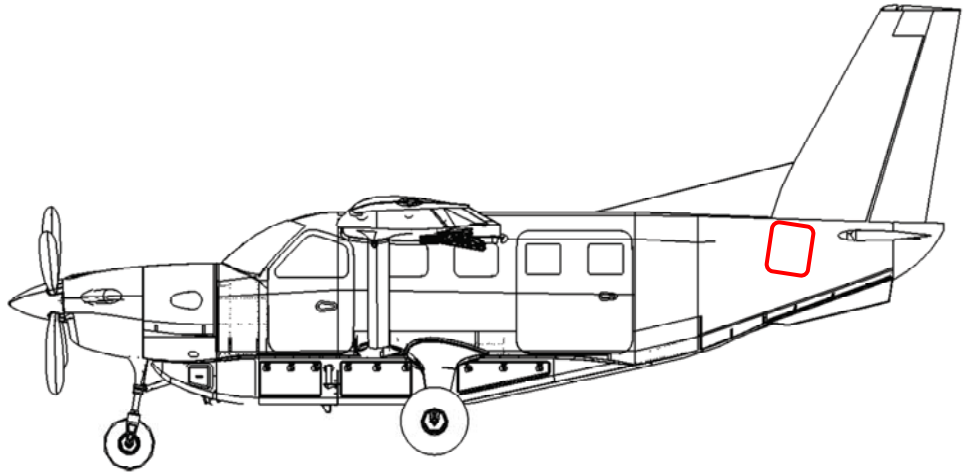


Figure 5-7: View of General Clip Location

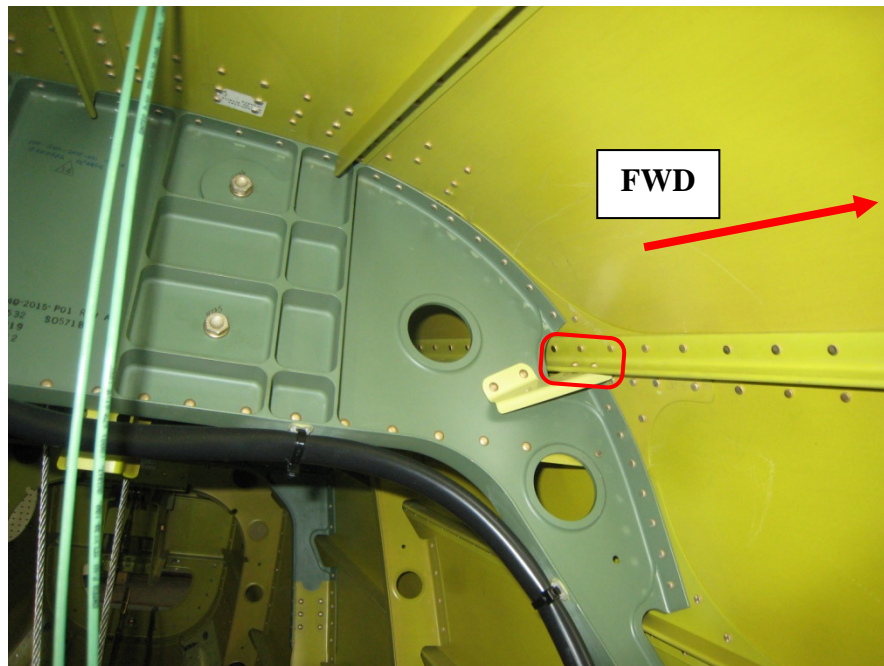


Figure 5-8: View Looking Aft, Inside Aft Fuselage, at the 100-240-2015 Frame and Left 100-240-2016 Clip

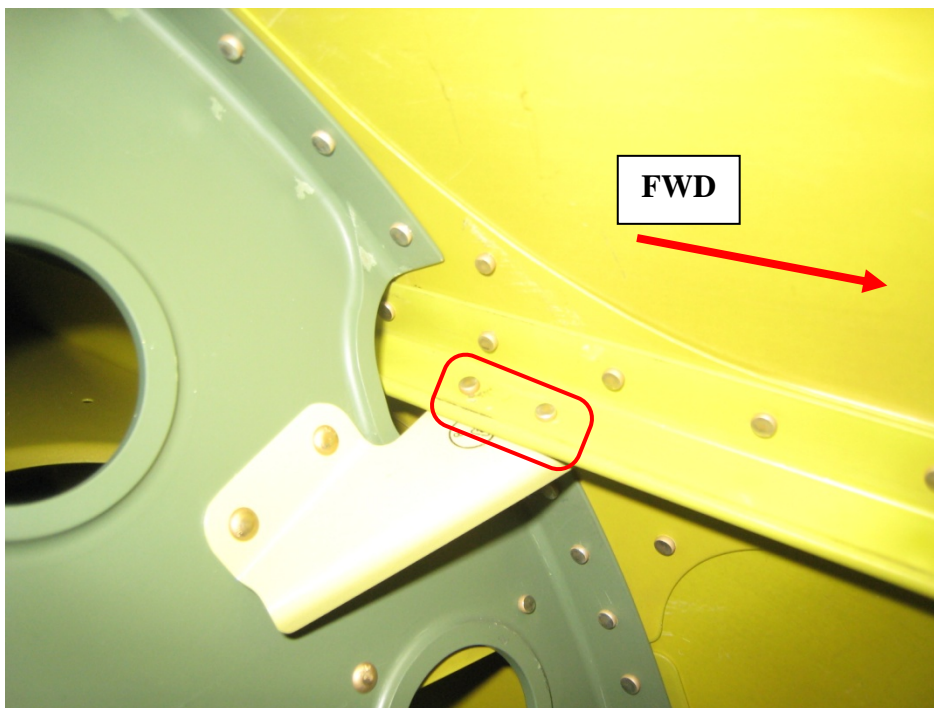


Figure 5-9: Close-Up Showing Location of the Rivets to be Replaced

2. If the rivets are MS20470AD4 solid rivets, the installation is acceptable; proceed to **Section 5.3**; if CherryMAX blind rivets are installed, proceed with the following steps:
3. Remove the rivets holding each shear clip to the adjacent stringer.

⚠ CAUTION ⚠

Due to the rivet's proximity to the outer skin, it is very easy to damage the stringer when drilling or upsizing these holes. Make sure the drill bit is travelling straight through the center of the rivet. Short length angle drill bits will likely be needed for this operation.

4. Up-size each hole to 0.1610" – 0.1640" using a #24 drill bit and 0.1610" reamer (#20).
5. Inspect each hole to verify a minimum distance of 0.25" from the center of the hole to the edge of the stringer flange.
 - a. If this minimum edge distance is not maintained, contact Quest for further instructions.
6. Install Hi-Lok fasteners (P/N HL18PB5-2) and Hi-Lok collars(P/N HL82-5AW) in each hole with the collar facing up.
 - a. If a Hi-Lok collar will not sit flush, install shim (P/N 100-240-2017) using Hi-Lok fasteners (P/N HL18PB5-4) and Hi-Lok collars (P/N HL82-5AW). Clamp the shim in place, nested on the stringer flange under the Hi-Lok collar, such that the fastener hole is centered in the shim, backdrill, and ream to match.

5.3 Replace Rivets on Vertical Stabilizer

1. Drill out the lower eight (8) forward spar rivets on each side of the aircraft, as shown in **Figure 5-11**.

▲ NOTE ▲

There are two (2) rows of rivets on each side of the forward spar. The lower four (4) rivets of each row must be replaced (Eight rivets total per side).

2. Drill out the lower nine (9) rear spar rivets on each side of the aircraft, as shown in **Figure 5-12**.



Figure 5-10: Overview of Vertical Stabilizer Rivet Locations




Figure 5-11: Forward Spar Rivets to be Replaced



Figure 5-12: Aft Spar Rivets to be Replaced

3. Up-size each hole to 0.159" – 0.164" (#21 drill bit) and deburr.
4. Install rivets (P/N MS20470AD5).
5. Touch up the primer and paint on the aircraft exterior, as needed, in accordance with the *KODIAK[®] 100 Airplane Maintenance Manual*, Chapter 12.
6. Vacuum the interior of the vertical stabilizer and verify that all rivet debris and shavings have been removed.

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6. Completion

6.1 Vertical Stabilizer Installation

1. Reinstall the vertical stabilizer in accordance with the *KODIAK® 100 Maintenance Manual*, Chapter 55.
2. Install bolts with Par-AL-Ketone per AC 43.13-1B, paragraph 6-207.

▲ NOTE ▲

The NAS6605D9 bolts are used to attach the aft spar to the attach frame. The NAS6605D10 bolts are used to attach the forward spar to the attach frame.

3. Torque all nuts in accordance with the *KODIAK® 100 Maintenance Manual*, Chapter 20.
4. Fill the gaps on each side of the vertical stabilizer forward spar with sealant (AMS-S-8802, Class B-2), Refer to Quest Service Bulletin SB11-08 for further details.

6.2 Rudder Installation

1. Install the rudder in accordance with the *KODIAK® 100 Maintenance Manual*, Chapter 27.
2. Torque all nuts in accordance with the *KODIAK® 100 Maintenance Manual*, Chapter 20.
3. Check the aircraft control rigging in accordance with the *Kodiak 100 Maintenance Manual*, Chapter 27.

6.3 Tailcone Installation

1. Connect the navigation light plug to the aircraft wiring harness plug.
2. Correctly position the tailcone and secure into position using the corresponding screws.

6.4 Upper Wing Root Fairing Installation

Correctly position the upper wing root fairings and secure into position using the corresponding screws.

6.5 Headliner Installation

Install the headliners in accordance with the *KODIAK® 100 Maintenance Manual*, Chapter 25.

6.6 Aft Cabin Bulkhead Installation

Install the aft cabin bulkhead.

6.7 Crew and Passenger Seat Installation

Install the Crew and Passenger seats in accordance with the *KODIAK® 100 Maintenance Manual*, Chapter 25.

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6.8 Record Work Performed

Record all work performed in the appropriate aircraft log book.

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