

MANDATORY SERVICE BULLETIN

NUMBER: SB-022

REVISION: B

DATE: 10/30/2009

SUBJECT: PITOT STATIC SYSTEM; MANDATORY MODIFICATION

SUMMARY

RECURRENT REQUIREMENTS

No recurrent requirements associated with this Mandatory Service Bulletin.

BACKGROUND

Quest has identified four potential low spots in the pitot static routing. Quest is mandating a one time modification to eliminate the potential for a low spots in the pitot static system.

ACTION

Perform the re-routing according to the attached work instructions.

LOG OF REVISIONS		
REVISION	DATE	DESCRIPTION OF CHANGES
A	9/23/2009	Initial Release
B	10/22/2009	SB Cover Sheet- Log of Revisions Added. Pg. 2- Click Bond Part Information Added. Pg. 3- Task 3 added. Pg. 4- Note added to Task 9. Pg. 7- Note added to Task 14. Pg. 7- Figure Numbers updated in Task 15 and 16 Pg. 8- New Figure 10 Added Pg. 9- Figure number increased to 11 Pg. 9- Figure number increased to 12 Pg. 10- Figure number increased to 13 Pg. 11- Figure number increased to 14 Pg. 12- "Reinstall Center Garmin Display" added

EFFECTIVITY

KODIAK 100 Series Aircraft, Serial Numbers 100-0001 through 100-0022

AFFECTED PARTS

KODIAK PART AFFECTED:

- 100-210-1604

ADDED PARTS FOR AIRCRAFT RECORDS:

- N/A

COMPLIANCE

This Mandatory Service Bulletin must be completed no later than the next 100 flight hours or next annual inspection, whichever comes first. This Service Bulletin must be complied with prior to operating in freezing temperatures.

INDUSTRY SUPPORT INFORMATION

None

MANPOWER

This procedure will take approximately 3 hours to complete.

COMPLETION

Update the KODIAK Maintenance Log Books.

WARRANTY INFORMATION

This modification is warranty reimbursable for the manpower listed above after Quest Aircraft has been notified of your completion.

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IMPORTANT SERVICE BULLETIN

Pitot Static System; Mandatory Modification

FIELD RETROFIT INSTRUCTIONS

1.1 Overview

This document provides instructions on how to re-route the pitot static tubes so that proper drainage is achieved.

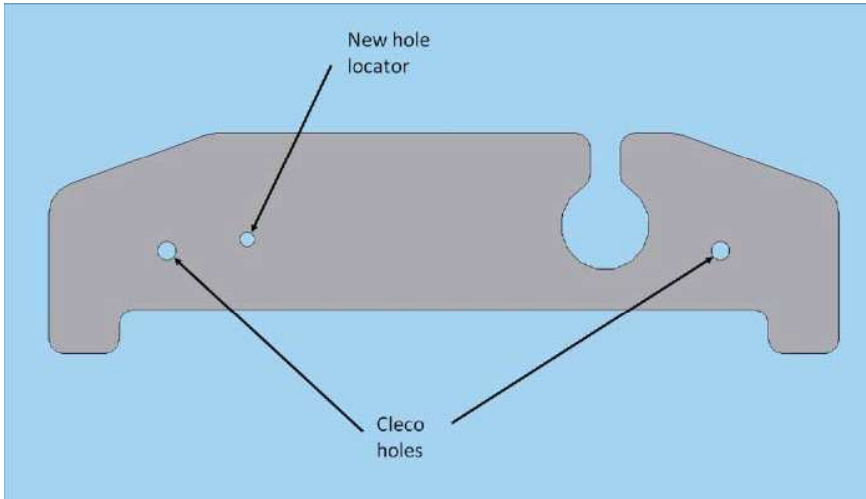
Estimated Time to Complete: 3 hours

Parts and Tools Included in the Service Kit:

Part Number	Description	Quantity
	SERVICE BULLETIN AND WORK INSTRUCTIONS	1
262N04	Tube Union	4
259N04	Insert Stabilizer	8
FRN0.50TB	Expandable Sleeving	8"
88N	1/2" OD Tubing	6"
440N	1/4" OD Tubing	108"
CB9120V5	Zip Tie Click-Bond	3
CB200	Click-Bond Adhesive	1
T18R0M4	Zip Tie	6
MS35489-149	Rubber Grommet	1

Tools Required:

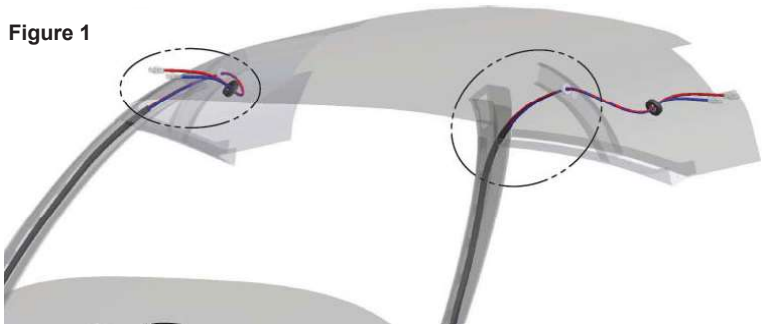
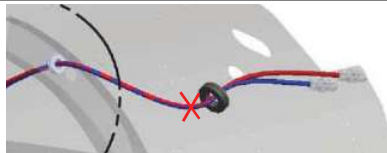
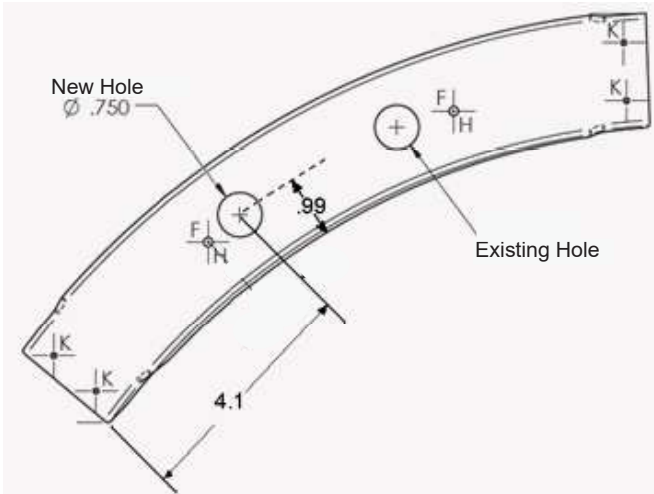
Tool Name	Tool Duty
Pitot Static Re-Route Drill Plate (See Figure Below)	Finds the correct position in order to drill the new hole.



Pitot Static Re-Route Drill Plate (P/N 100-210-1604-0015)

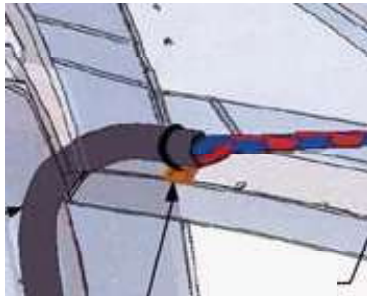
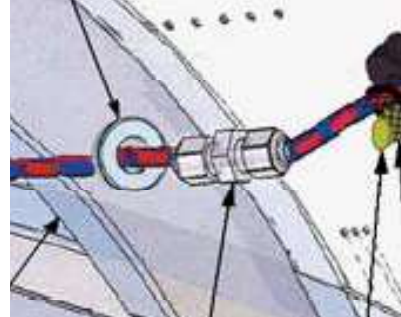
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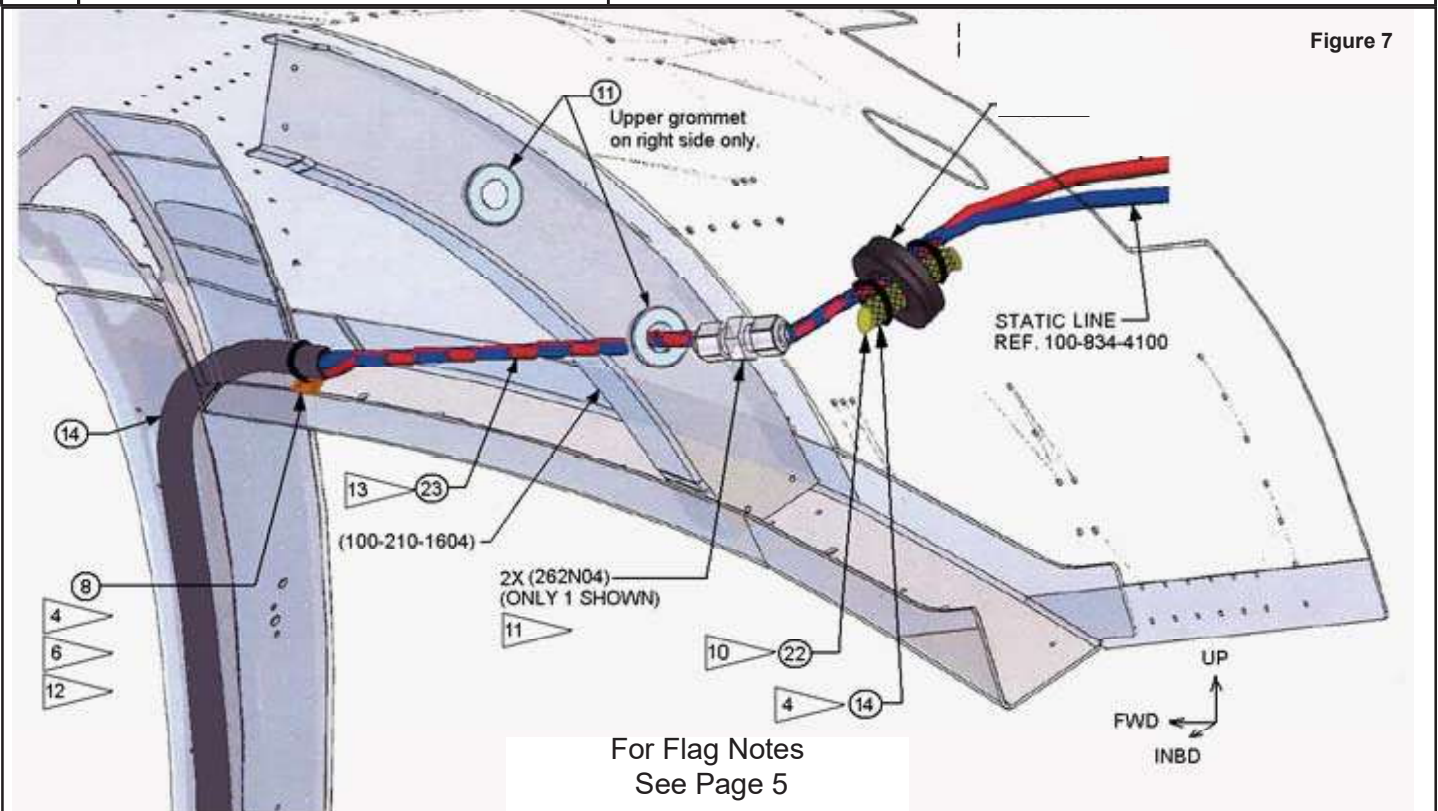
Pitot Static Low Point Mitigation

Task	Instruction
1	Remove the forward Cabin Ceiling Panels (2) over crew doors in accordance with the KODIAK Maintenance Manual.
2	Locate the frames (P/N 100-210-1604) that the pitot static lines run through, on the left and right sides of the cabin. 
3	Remove the Zip Tie Click-Bond (P/N CB9120V5) from its holder. Install Zip Tie Click-Bond (Item #8 see Figure 7) on the crew door frame structure above both pilot and copilot doors using Click-Bond Adhesive (P/N CB200). Use tape to temporarily apply positive pressure to the Zip Tie Click-Bond while the adhesive cures.
4	At the lowest location of the pitot static tubes, mark where to cut the tubes. Label the tubes on both sides of the mark (one red, one blue) in order to correctly connect them again. Cut the tubes at the marks. 
5	Pull the tubes forward out of the frame (P/N 100-210-1604) from above the crew door and remove the rubber grommet from the frame. NOTE: On the right side of the cabin, simply remove the rubber grommet from the frame and slide it up the electrical wires.
6	Cleco the Pitot Static Re-Route Drill Plate tool (P/N 100-210-1604-0015) to the frame (P/N 100-210-1604) and drill a 1/8" hole. This will locate the new 3/4" hole per Figure 3. Remove clecos and Pitot Static Re-Route Drill Plate. Upsize the hole to 0.750" +/- 0.010" 
7	Install a rubber grommet (P/N MS35489-149) (Item #11 see Figure 7) in the new hole. NOTE: On the right side of the cabin, slide rubber grommet back into existing hole to protect the wiring.
8	Feed the pitot static tubes aft through the new hole.

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Pitot Static Low Point Mitigation

Task	Instruction	
9	Install a zip tie around the pitot static tubes, cinching them down to the Click-Bond (Figure 4). NOTE: Zip tie should not create a localized low point. If needed install a Zip Tie around the Zip Tie under the pitot static tubes and on top of the Zip Tie Click Bond to raise the level of the tubing. Slide approximately 3" of Expandable Sleeveing over the pitot static tubes (Item #14 see Figure 7) through the cabin penetration and insert approximately 3" of ½" OD Tubing (Figure 5, Item #22 Figure 7) through the expandable sleeveing and zip tie both sides to secure.	Figure 4  Figure 5 
10	Install one end of the Tube Unions (P/N 262N04) and Insert Stabilizers (P/N 259N04) on to the pitot static tubes from the wing.	Figure 6 
11	Pull the pitot static tubes from forward cabin toward aft and trim them so that the tubes run straight along their path and do not have any loops which may result in a low point and hinder positive drainage.	
12	Install the Insert Stabilizers (P/N 259N04) on to the pitot static tubes from the instruments and attach the Tube Unions (P/N 262N04) to complete the pitot static tubing.	



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Pitot Static Low Point Mitigation

Part and Flag Listing

- 3) APPROXIMATE LENGTHS LISTED IN PARTS LIST. TRIM ON ASSEMBLY TO FIT.
- 4) TIE WRAP IN LOCATION INDICATED. ENSURE THAT NO TIE WRAPS ARE DIRECTLY SECURED ON NYLON TUBING. USE EXPANDABLE SLEEVING OVER NYLON TUBING.
- 6) ATTACH TO COMPONENT(S) IN APPROXIMATE AREA SHOWN USING CLICK-BOND ADHESIVE CB200 (ITEM #15) FOLLOWING MANUFACTURER'S INSTRUCTIONS FOR ADHESION.
- 9) ALL NPT THREADS APPLY (3) WRAPS ¼ INCH WIDE TEFLON TAPE, PER MIL-T-27730A, AROUND NPT THREADS. NO TAPE OR STRINGERS ALLOWED OFF END OF THREADED AREA OF FITTING.
- 10) FIT 3 INCHES +/-0.5" OF 1/2" TUBING UNDER THE PITOT & STATIC TUBING SECURING THEM TOGETHER WITH ZIP TIE ON BOTH SIDES IN ORDER TO KEEP PITOT STATIC TUBING TO THE TOP OF THE FUSELAGE PENETRATION. 1/2" TUBING IS NOT NEEDED ON AIRPLANES WHERE ANTI-ICING TUBE IS INSTALLED THROUGH THIS PENETRATION.
- 11) TUBE UNIONS MUST BE LOCATED MID WAY BETWEEN FUSELAGE PENETRATION AND FRAME +/- 1.0". ENSURE TUBE ROUTING IS STRAIGHT BETWEEN GROMMETS AND CLICK BOND BY PULLING THE TUBE SNUG FROM THE FORWARD CREW DOOR AREA.
- 12) LOCATE CLICK BOND APPROXIMATELY AS SHOWN AND AS FAR FORWARD ON THE DOOR FRAME AS POSSIBLE WHILE AVOIDING RIVETS.

LIST OF MATERIALS OR PARTS LISTS

ITEM NO.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NUMBER
1	MOUNT, DRAIN VALVE	100-834-4355
2	INSERT STABILIZER	259N04
3	UNION TEE	264N04
4	MALE CONNECTOR	268N04X02
5	1/4" OD X .170" NYLON II TUBING	440N
6	AIRMETER SWITCH	AS9300-603-A
7	FLOW RESTRICTOR, AIRMETER SWITCH	AVAK-R1
8	CLICK-BOND, ZIP TIE	CB9120V5
9	DRAIN VALVE	CCA-36150
10	SCREW	AN525-832R14
11	GROMMET	MS35489-149
12	GROMMET	MS35489-22
13	WASHER	NAS1149FN616P
14	EXPANDABLE SLEEVING	XPF-1/2
15	CLICKBOND ADHESIVE	CB200
16	EDGING	M22529-1R-25
17	SCREW	AN525-832R7
18	WASHER	NAS1149F0316P
19	1/4" RUBBER HOSE, 1.5" LONG	MIL-H-5593 1/4
20	HOSE CLAMP, SPRING TYPE, .5 INCH	5324K42

Pitot Static Low Point Mitigation

Task

Instruction

13

Identify and remove the pitot static tubing indicated in **Figure 8** (LH Side).

NOTE: Be sure to remove the insert stabilizers from the removed tubing and reuse at each connection.

(LH) SIDE ROUTING SHOWN

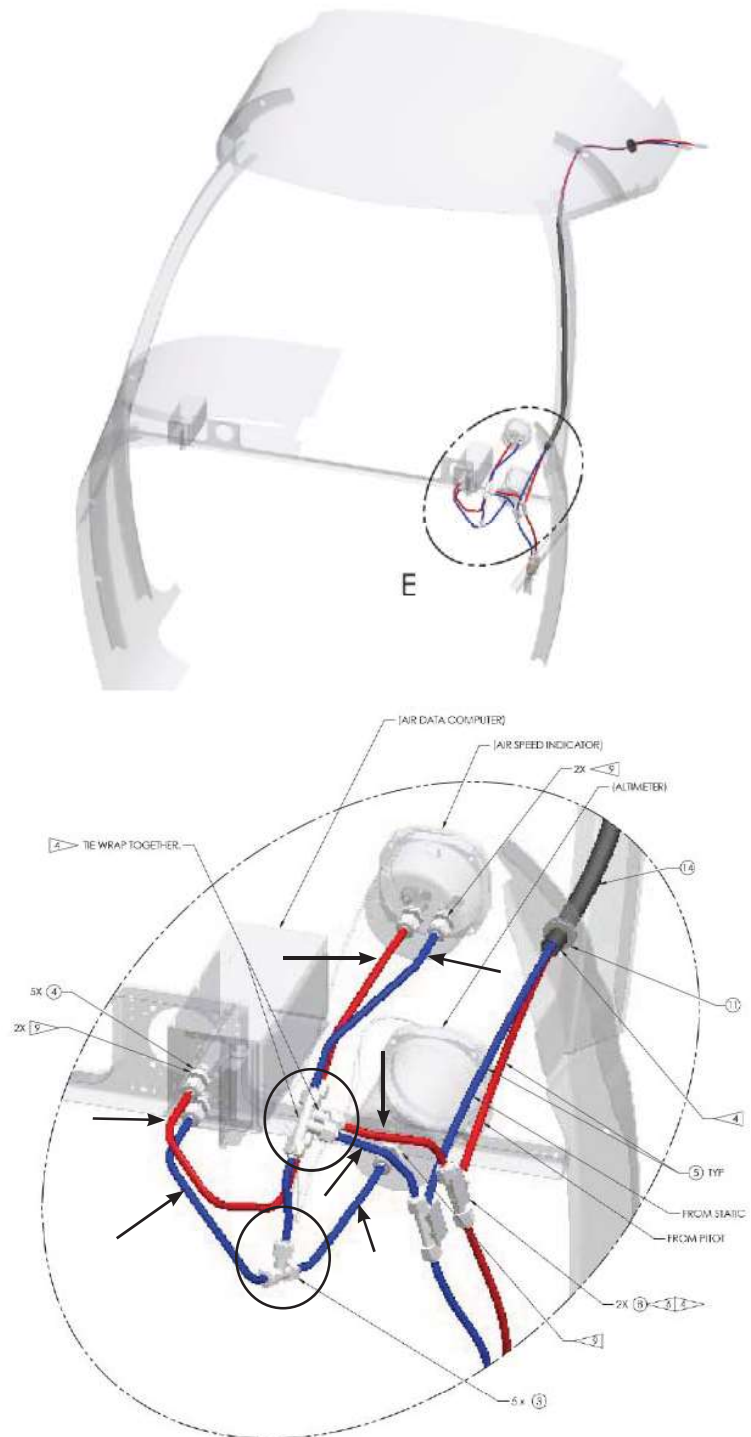
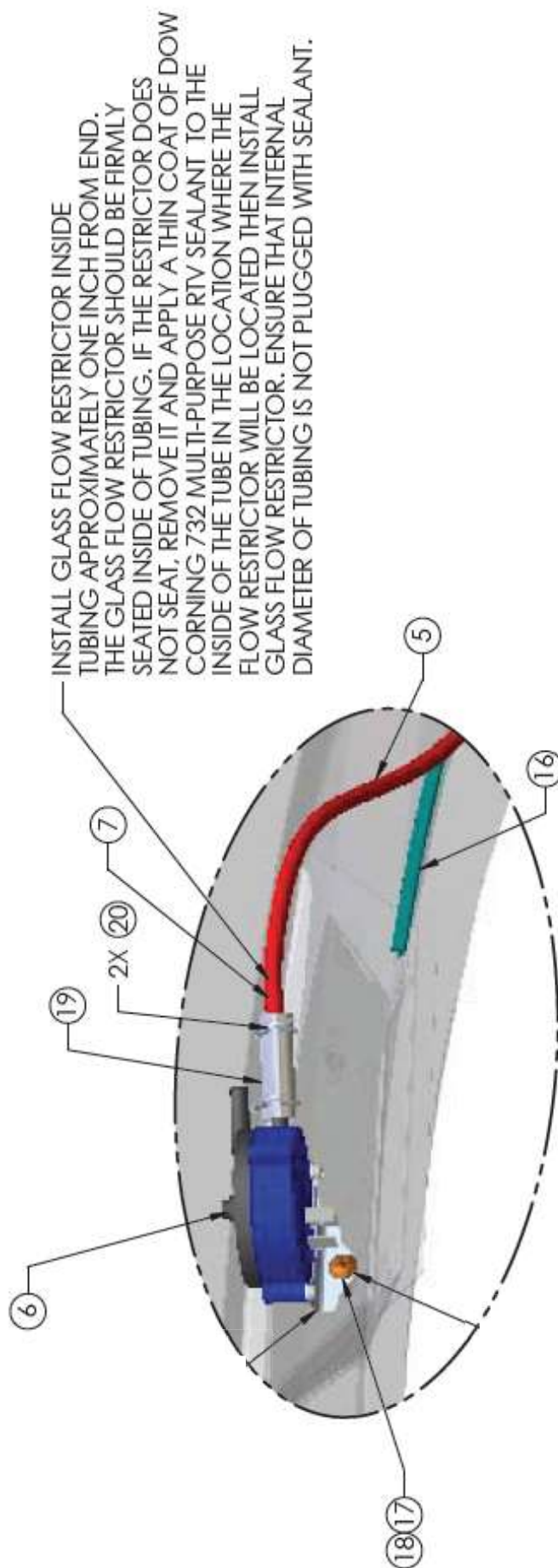


Figure 8

Pitot Static Low Point Mitigation		
Task	Instruction	
14	Identify and remove the pitot static tubing indicated in Figure 9 (RH Side). Remove Center Garmin display and set aside. This will allow access to the Air Meter Switch. NOTE: Be sure to remove the insert stabilizers from the removed tubing and reuse at each connection. NOTE: Be careful not to lose or damage the glass Flow Restricter within the tube near the Air Meter Switch (see Figure 10).	(RH) SIDE ROUTING SHOWN Figure 9
15	Reroute the pitot static tubing under the Left Hand dash per Figure 11 and Figure 13. NOTE: For a detailed schematic of routing see Figure 12.	
16	Reroute the pitot static tubing under the Right Hand dash per Figure 10, Figure 12 and Figure 14. NOTE: For a detailed schematic of routing see Figure 14.	

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Figure 10



Left Hand Side Routing

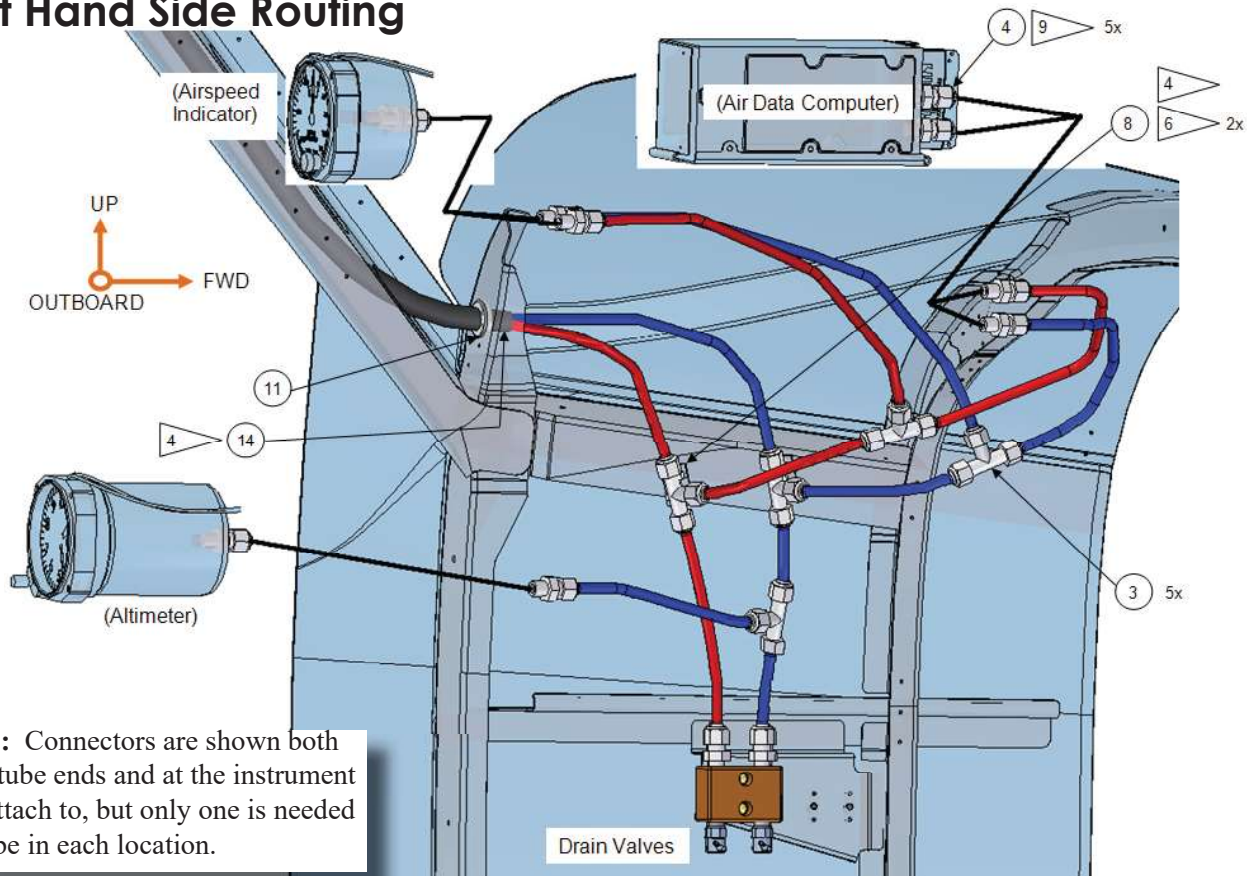


Figure 11

Right Hand Side Routing

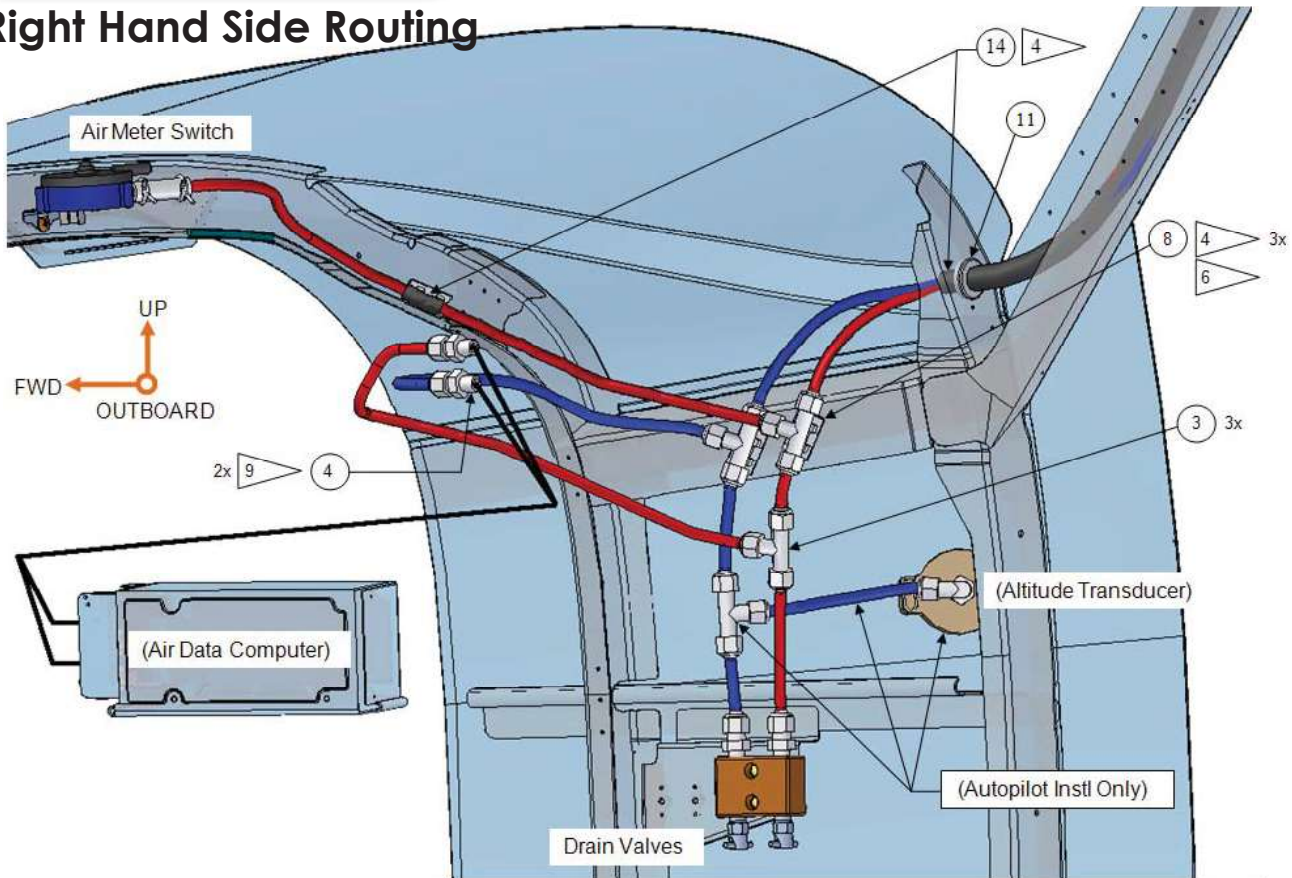


Figure 12

Figure 13

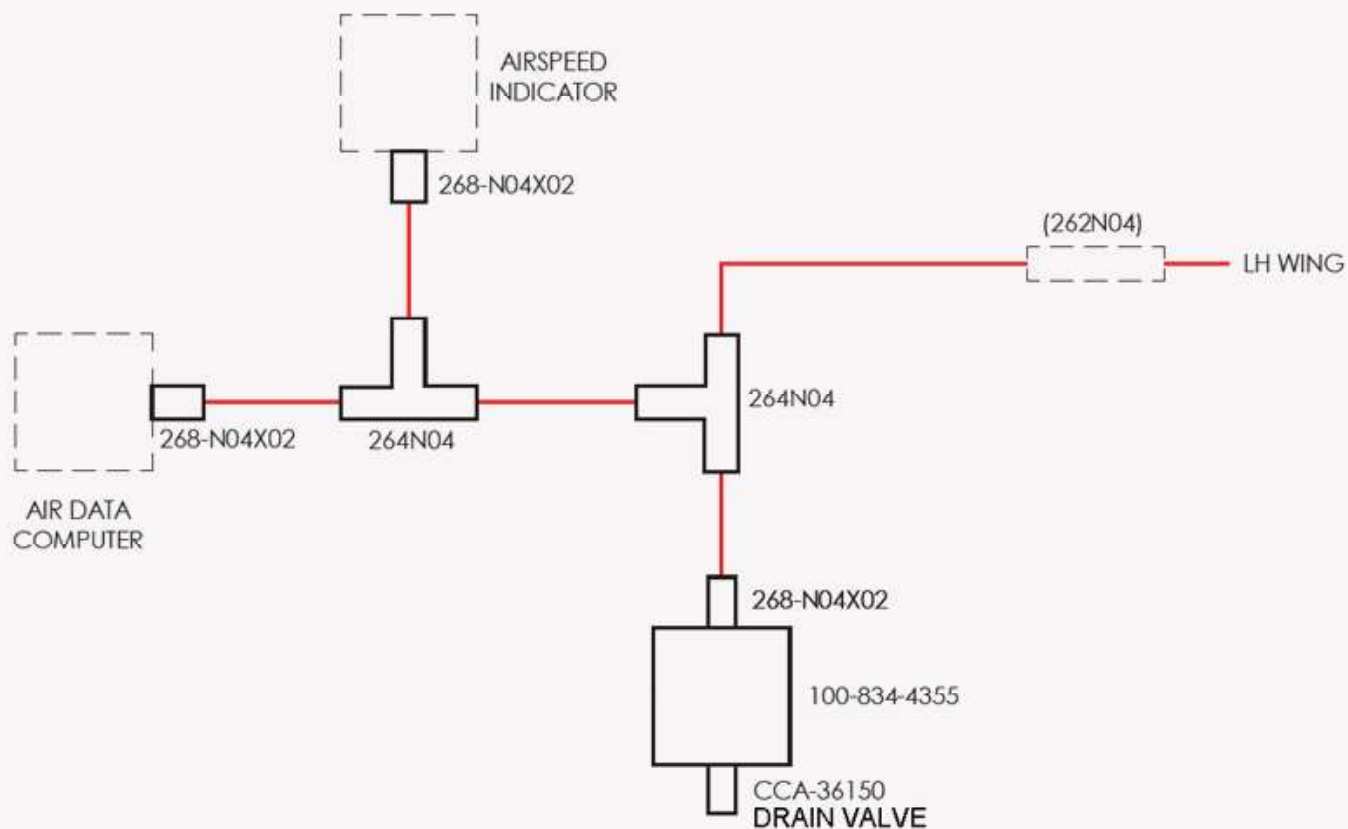
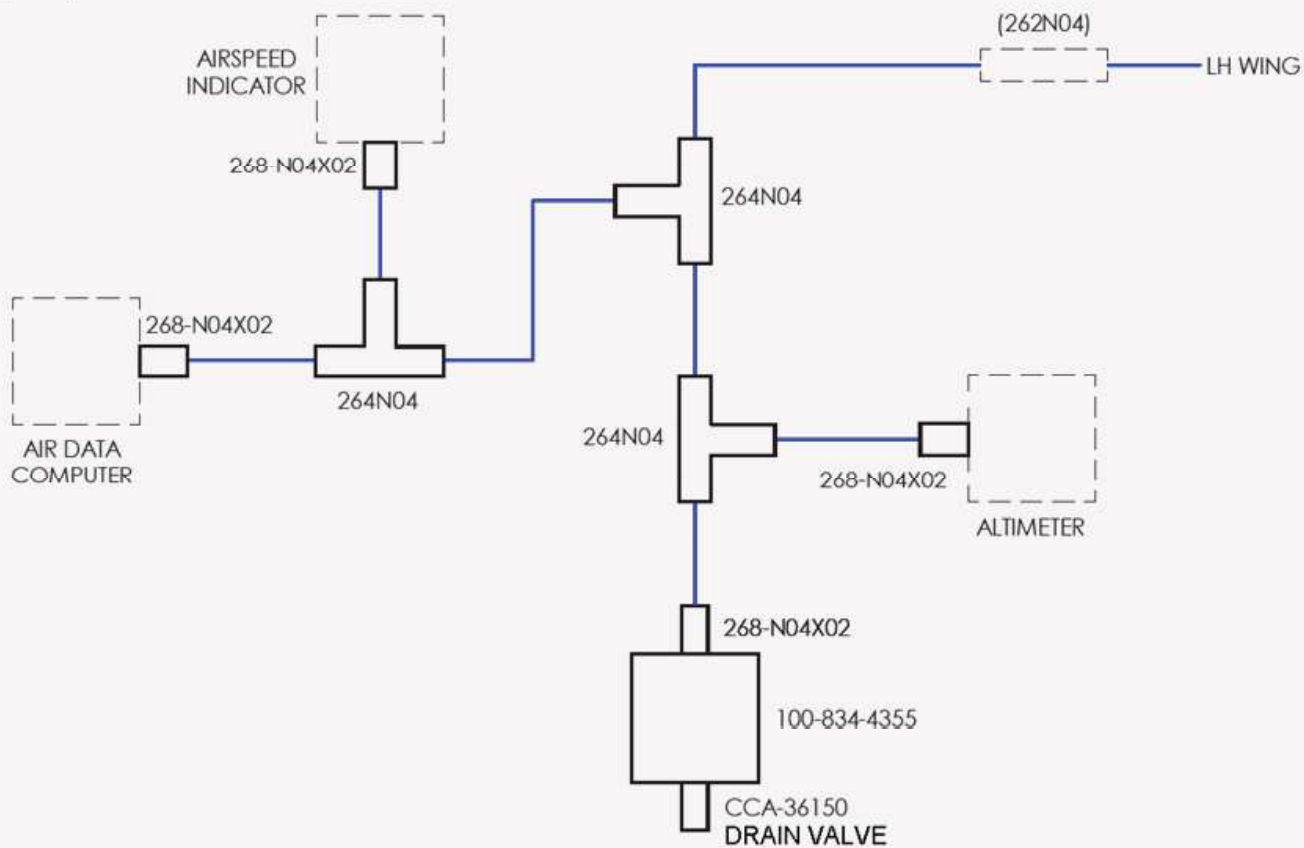
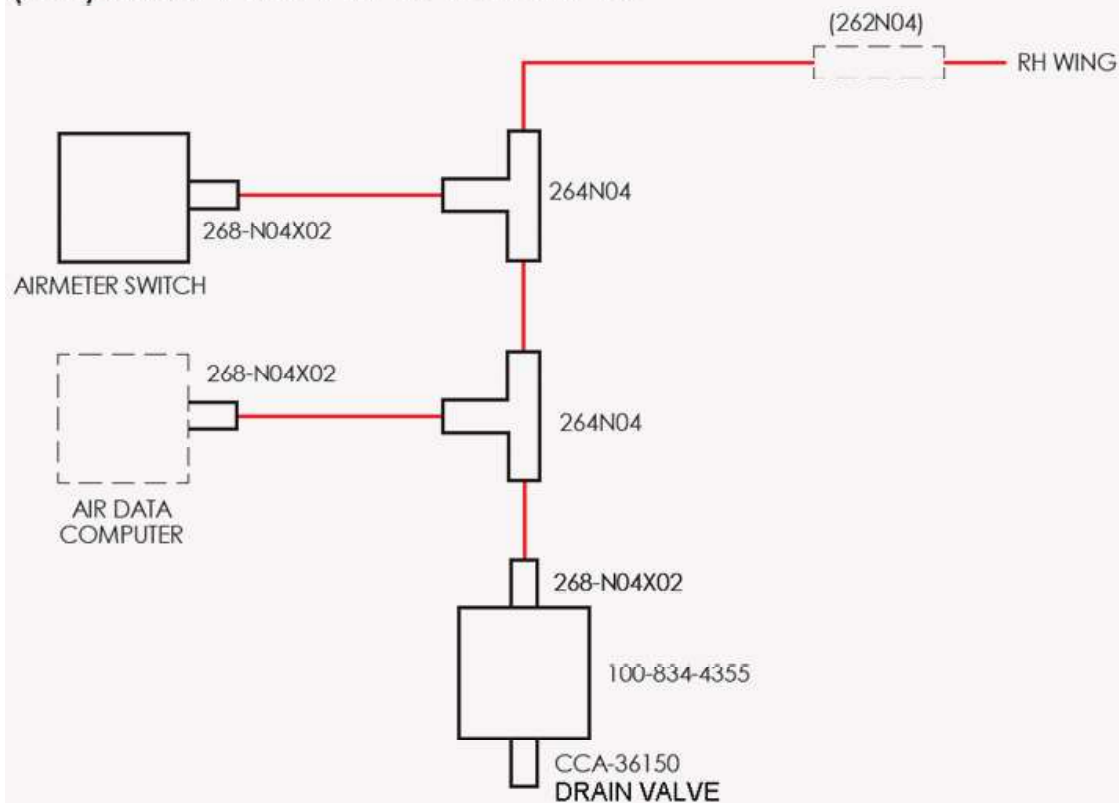
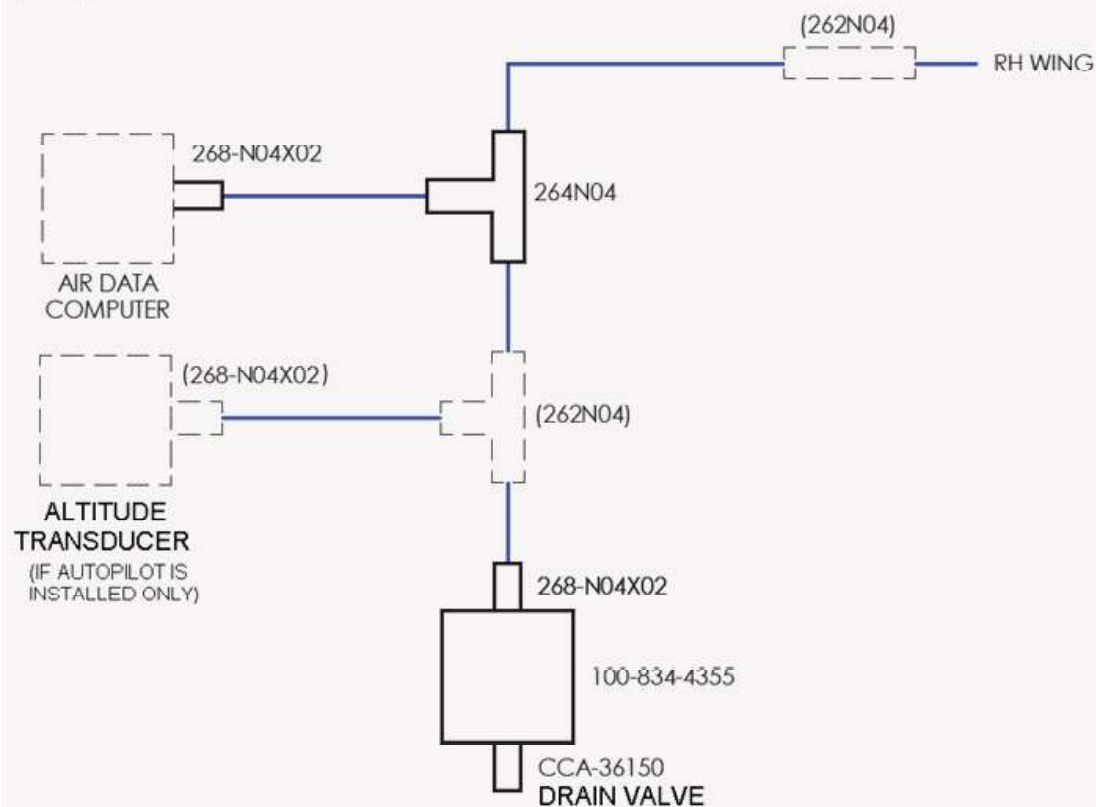
(LH) SIDE PITOT LINE ROUTING**(LH) SIDE STATIC LINE ROUTING**

Figure 14

(RH) SIDE PITOT LINE ROUTING**(RH) SIDE STATIC LINE ROUTING**

17	Reinstall Center Garmin Display. Perform a pitot static system leak test as outlined in Chapter 34 of the KODIAK 100 Maintenance Manual.	
18	Note the work performed in the KODIAK 100 Log Books.	