INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

For

King Air Models 65-90, 65-A90, B90, C90, C90A, C90GT, C90GTi AND E90 With Locker Fuel Tanks Installed Per FAA STC SA10560SC

Document No. 8006-30

Rev. B

NOTICE

This document must be referenced on Block 8 of FAA form 337 and added to the aircraft permanent record as required by 14 CFR Part 91, §91.417(a)(2)(vi) when the reference FAA-STC part is installed on eligible aircraft. This document complies with the requirements of 14 CFR Part 23, §23.1529, in accordance with 14 CFR Part 23, Appendix G.

Aircraft Model No. _____

Aircraft Serial No. _____

Aircraft Registration No. _____

REVISION LOG

REVISION	CHANGE DESCRIPTION	ENGINEER	DATE
IR	INITIAL RELEASE	Mitchell	12/22/2005
A	EO# 1025	M.L.Moore	11/21/07
B	Added C90GTi	A.J. Sutton	12/16/2008

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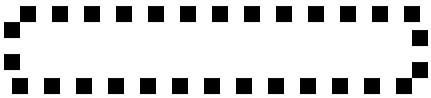
1. Introduction:

This document provides instructions for the continued airworthiness (ICA) for Blackhawk Modifications, Inc. STC SA10560SC. This STC installs one 39.5 U.S. gallon (total) fuel tank in each modified wing nacelle locker.

NOTICE:

Section 16, titled "Airworthiness Limitations" and encircled by the following dash lined box is FAA approved and specifies maintenance required under 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved. To remain in compliance with the STC, the aircraft shall be maintained in accordance with these limitations.



This document supplements or supersedes the applicable King Air 90 Series Maintenance Manual and the Raisbeck Engineering Maintenance Manual, document 85-120C only in those areas listed herein for the appropriate aircraft model and serial number.

2. Description:

The locker fuel tanks are Nitrile rubber, bladder type. Each tank system has the capability of transferring fuel to the existing wing (main) tanks and will not directly feed the engine. Each tank will hold approximately 39.5 U.S. gallons of total fuel. Each fuel bladder nests within an aluminum containment shell. This assembly is installed through the removable locker door. Each bladder is filled with T-30M Filter Foam per MIL-B-83054B to assure that the bladders will be nested evenly against the nacelle surface and to prevent bladder collapse or fuel slosh.

Each fuel bladder is filled through an aircraft filler neck extending through the locker top.

Locker Fuel System Components:

Each tank installation includes vent lines, a fuel sump, fuel drain, fuel strainer, fuel pump, fuel lines, check valve, pressure switch and a cockpit mounted control panel.

A vent line is installed on the forward side of the filler neck and exits the floor of the locker through a hole drilled in the bottom of the aft portion of the nacelle which extends past the trailing edge of the wing.

A fuel sump is installed in the aft, inboard corner of the bladder. The sump exits the floor of the nacelle through a hole drilled in the bottom of the aft portion of the nacelle. A standard F 391-18 flush mounted, twist-locking type drain valve is installed at the bottom aft end of the sump.

An in-line fuel filter is installed in the main line prior to the fuel pump.

A Weldon fuel pump is installed on the nacelle floor to transfer the fuel from the locker tank to the main outboard wing tanks. The nominal pump rate is approximately two times the engine burn rate at maximum continuous power. Nominal current draw is 3.5 Amps. The system and wiring are protected by 7.5 Amp circuit breakers.

Connection is made to the existing aircraft fuel system via a bulkhead tee. This bulkhead tee replaces the existing bulkhead connector between the existing leading edge wing tanks and the aft inboard wing tank. A check valve is installed to prevent the main tank fuel from flowing into the locker tank. No other modifications to the existing aircraft fuel lines, venting system, cross feed system, fuel tanks or fuel gauge systems are made.

The cockpit mounted control panel provides manual control of each pump as well as “LOCKER PUMP ON” and “NO LOCKER XFR” annunciator lights to indicate to the pilot the status of that system. A pressure switch located in each locker senses fuel pump output pressure and when no pressure is sensed in the case of an empty locker tank, failed fuel pump, fuel leak, filter or pump inlet blockage, the “NO LOCKER XFR” light illuminates. When the fuel pressure is sensed and the pump switch is on the “LOCKER PUMP ON” light is illuminated.

All conductive components, including aluminum fuel lines, fuel pumps, tank neck, bulkheads, fuel sump and drain, etc., are electrically grounded to the closest existing aluminum structure in the aircraft.

3. Special Procedures:

Operation of Locker Fuel Tank System:

When more than 39 gallons of usable fuel capacity is available in each main wing tank the pilot operates each of the cockpit mounted locker fuel transfer pump switches to the ‘on’ position. The locker fuel pumps will begin transferring the useable fuel from their respective locker tanks into the respective main wing tanks and the “LOCKER PUMP ON” annunciator lights will illuminate. A 10 second delay timer prevents the no transfer pressure switches from activating the fuel pump relays before normal system pressures can be achieved.

When the fuel transfer is complete, the no transfer pressure switches will close, activating the fuel pump relays which removes power to the fuel pumps, extinguishes the “LOCKER PUMP ON” annunciator lights and illuminates the “NO LOCKER XFR” annunciator lights. At this time the pilot operates the locker fuel transfer pump switches to the off position and all annunciator lights will extinguish.

If at any time during fuel transfer the no transfer pressure switch senses a loss of pressure the fuel pump relay will be activated, turning the fuel pump off and activating the appropriate “NO LOCKER XFR” annunciator light. This loss of pressure could be due to fuel pump failure, fuel line leak, fuel supply blockage or other mechanical failure.

4. Inspection Requirements:

In addition to the checks outlined in the applicable King Air 90 Series Maintenance Manual and the Raisbeck Engineering Maintenance Manual, document 85-120C, inspect the following items concurrently with regular King Air Phase 1 - 4 inspections when applicable to fuel tank systems per the procedures defined in Section 5 of this document.

a. Fuel filter
b. All connections, fittings, and hoses
c. Signs of fuel leakage
d. Fuel pump
e. Pressure switch set-point
f. Fuel Cap
g. Fuel Bladder

5. Maintenance Instructions:

a. Inspection Procedures:

Note: Access to the following items is gained by removing the eighteen (18) screws securing the locker door and removing the locker door from the locker.

1) Transfer or drain all fuel out of locker tank.
2) Remove, clean and inspect fuel filter for damage.
3) Check locker drain hole for signs of leakage inside the locker.
4) Check pressure switch set-point and if required, adjust using the following the procedure.

a. Ensure approximately two gallons of fuel is in the locker tank.

b. From the cockpit, turn on the main battery and then the locker fuel pump switch and verify the “LOCKER PUMP ON” light is illuminated on the 8007-EL-001 fuel control panel. If the fuel transfer pump does not begin to audibly cavitate before the pressure switch de-activates the fuel pump then no further adjustment is required. If the fuel pump begins to cavitate or the fuel transfer is incomplete then the pressure switch needs to be re-adjusted per the following procedures:

   1. Ensure the locker fuel pump switch and main battery switch is in the off position. Remove the AN929-4D cap from the 8007-FC-007 fuel pump assembly and install a sensitive pressure gauge in its place (see Figure 1) capable of measuring pressures from 0 to 12 psig.

   2. From the cockpit, turn on the main battery and then the locker fuel pump switch and verify the “LOCKER PUMP ON” light is illuminated on the 8007-EL-001 fuel control panel. Allow normal transfer to take place and record the fuel line pressure for steady state transfer (typically this will be approximately 8 psi).

   3. Allow the fuel transfer to continue:

   4. When the locker tank pump audibly cavitates, record the fuel line pressure at this point (typically this will be approximately 6 psi) then manually turn off the locker fuel pump switch.

   5. Adjust 76061-1.5 pressure switch so that the switch normally closes when the fuel line pressure is halfway between the fuel line pressure during steady state transfer recorded in step 2 and the fuel line pressure at fuel pump cavitation recorded in step 4. Repeated fuel transfers must be conducted until it is verified that the pressure switch closes to shutdown the fuel pump after fuel transfer completion but before the fuel pump cavitates.

c. Once any fuel transfer is completed, verify that the pump did shutdown accordingly and the ”NO LOCKER XFR” light illuminated on the 8007-EL-001 fuel control panel, then manually turn off the fuel pump switch and verify all lights extinguished.

d. Following any transfer, turn the locker fuel pump switch on, verify the “LOCKER PUMP ON” light illuminates then approximately 5-60 seconds later, the “LOCKER PUMP ON” light extinguishes and the “NO LOCKER XFR” light illuminates. If the fuel pump continues to run longer than 60 seconds this indicates an incomplete fuel transfer or a malfunctioning timer, trouble shoot and repair. Turn off the locker pump switch when completed.

e. Remove the fuel pressure gage and re-install the AN929-4D cap.

5) Service locker tank with full fuel and check for any leaks and repair accordingly.
6) Check all connections, fittings, fuel cap, fuel bladder, and hoses for tightness, security, and any sign of leakage, repair as necessary.
7) Check fuel pump overboard drains for excessive fuel leakage through seals.

b. Troubleshooting:

See the following causes for the following problems, otherwise contact Blackhawk Modifications, Inc. or see the Blackhawk Modifications Installation Manual, 8007-00-00 for additional troubleshooting guidance.

1) Problem: With the pump switch in the on position, No fuel transfer and No indicator lights are illuminated.

Possible causes:
a. No battery power to ship bus.
b. Tripped/defective circuit breaker.
c. Power supply to the fuel control panel interrupted.
d. Defective locker transfer fuel control panel.

2) Problem: No fuel transfer and "NO LOCKER XFR" light illuminates 5 to 60 seconds after the fuel pump switch is turned on.

   Possible causes:
   a. No fuel in locker tank.
   b. Clogged pump inlet or filter.
   c. Fuel leak in plumbing.
   d. Defective pump.
   e. Defective locker transfer fuel control panel.

3) Problem: Pump does not shut off when tank is empty and "LOCKER PUMP ON" light illuminated.

   Possible causes:
   a. Improperly adjusted pressure switch.
   b. Defective pressure switch.
   c. Defective locker transfer fuel control panel.

See Blackhawk Modifications Installation Manual, 8007-00-00 for additional troubleshooting guidance.

c. Removal and Replacement:

Refer to the following procedures and section 6 for removal and replacement instructions. If necessary, also reference more detailed instructions contained in Blackhawk Modifications Installation Manual, 8007-00-00 or the Raisbeck Engineering Maintenance Manual, document 85-120C,

NOTE: Removal and replacement of any component requires that the auxiliary fuel tank be empty and electrical power disabled from the system. The following procedures are written for removing and replacing various components of the left wing locker fuel system, the right wing locker is identical to the left except where noted here and throughout the drawings.

1) Locker door removal and replacement:
   a. Remove the eighteen (18) screws from the door and lift the door off the locker.
   b. Replacement is the reverse of removal.

2) Fuel Locker Assembly removal and replacement:
   a. Refer to Blackhawk Modifications drawing 8007-FC-000 or Section 6 figures, and Raisbeck Locker Maintenance Manual 85-120.
   b. Disconnect the fuel hose at the check valve in wheel well and remove all support clamps from the hose.
   c. Disconnect the fuel pump/pressure switch wiring connector located in the main gear wheel well.
   d. Disconnect two (2) ground straps from aft nacelle bulkhead located in the wheel well.
   e. Remove the ten (10) screws from the locker assembly forward retaining flange.
   f. Lower the flaps and from the inboard flap well remove two (2) NAS1004-18H locker assembly mounting bolts
   g. Pull the locker assembly aft far enough to disengage the forward retaining flange.
   h. Lift the locker assembly from the wing.
   i. Replacement is reverse of the above removal.

3) Fuel Filter Assembly removal and replacement:
   a. Drain fuel from locker tank.
   b. Remove fuel line from filter outlet. Cap line to prevent contamination.
   c. Remove from filter inlet. Cap line to prevent contamination.
   d. Loosen breeze clamps on fuel pump bracket assembly and remove fuel filter from bracket.
   e. Disassemble filter and thoroughly clean screen and filter body with isopropyl alcohol and blow dry.
   f. Reverse procedure for reassembly and installation.

4) Check valve assembly removal and replacement:
   a. Drain enough fuel from the aircraft main fuel tanks to prevent fuel movement between the leading edge fuel cell and the aft wing fuel cell.
   b. Loosen the fuel line B-nut, make sure to hold the check valve body to keep from turning.
   c. Loosen the support clamp and remove the check valve.
   d. Installation is the reverse order. Insure the direction of flow is into the wing tanks upon installation.

5) Auxiliary fuel bladder removal and replacement:
   a. Remove the locker assembly per procedure 2 above.
   b. Remove the fuel pump/filter assembly. Disconnect the fuel lines and wiring, then removing the mounting hardware and lifting the assembly from the locker.
   c. Remove the sump drain assembly. Remove the support clamp then loosen the attaching clamp and remove the assembly from the bladder nipple.
   d. Remove the bladder access panel form the aft containment housing. Remove the foam from inside the bladder, bag the foam to prevent contamination.
   e. Remove the screws which attach the aft containment housing to the forward containment housing and all screws which attach both containment housings to the locker floor.
   f. Remove the aft containment housing from the locker taking care not to damage the bladder.
   g. Remove the screws that attach the fuel filler neck to the locker.
   h. Slide the forward containment housing aft in the locker to access the filler neck. Remove the screws attaching the filler neck to the forward containment housing.
   i. Remove the bladder from the forward containment housing, take care not to damage the bladder.
   j. Installation is the reverse order. Perform an operational and leak check after re-installation.

d. Patching and Painting:

Follow the guidance provided in Raisbeck Engineering Maintenance Manual, document 85-120C for any patch, repair, or painting of locker.

e. Recommended Overhaul Period:

Remove pumps for overhaul when there are signs of excessive seal leakage or at 2000 hours of airframe operation time since installation.

f. Replacement Parts:

Refer to Section 6 and the part list below for part definition and contact applicable Vendor for replacement parts or Blackhawk Modifications.

Blackhawk Modifications, Inc.
7601 Karl May Dr.
Waco, TX 76708
254-755-6711

Airframe Modification Parts List

Part No.	Description	Vendor	Qty
8007-EL-001	FUEL CONTROL PANEL ASSY	Blackhawk	1
812-1030-09-506	LIGHTS, ANNUNCIATOR, BASE	DiaLight	2
812-0973	LIGHTS, ANNUNCIATOR, CAP	DiaLight	2
327	LIGHTS, ANNUNCIATOR, LAMP	Dialight	2
MS24658-22D	SWITCH, LOCKER PUMP		2
MS26574-7.5	CIRCUIT BREAKER, FUEL PUMP		2
8007-FC-001	HOUSING - FWD	Blackhawk	2
8007-FC-002	HOUSING - AFT	Blackhawk	2
8007-FC-003L	BULKHEAD - L	Blackhawk	1
8007-FC-003R	BULKHEAD - R	Blackhawk	1
8007-FC-004	DOUBLER - FWD	Blackhawk	4
8007-FC-005	DOUBLER - AFT	Blackhawk	4
8007-FC-006L	FUEL CELL - L	Eagle Technologies	1
8007-FC-006R	FUEL CELL - R	Eagle Technologies	1
8007-FC-007	COVER PLATE, ACCESS PORT	Blackhawk	2
G5X10-24	GASKET, ACCESS PORT	Blackhawk	4
8007-FC-008	FILLER NECK & CAP	Blackhawk	2
G475-12	GASKET, FILLER NECK	Blackhawk	4
8007-FC-009	VENT HOSE	Blackhawk	2
8007-FC-011	GROUNDING STRAP, Small	Blackhawk	2
8007-FC-013-3	MOD. LOCKER - L	Blackhawk	1
8007-FC-014-3	MOD. LOCKER - R	Blackhawk	1

Airframe Modification Parts List

Part No.	Description	Vendor	Qty
8007-FC-015	DOUBLER - Center	Blackhawk	2
8007-FC-016	GROUNDING STRAP, Large	Blackhawk	2
8007-PL-001	DRAIN ASSEMBLY	Blackhawk	2
8007-PL-002L	FUEL LINE - L	Blackhawk	1
8007-PL-002R	FUEL LINE - R	Blackhawk	1
8007-PL-003	FUEL FILTER	Blackhawk	2
8007-PL-004	FUEL LINE	Blackhawk	2
8007-PL-005	DRAIN LINE	Blackhawk	2
8007-PL-006L	BRACKET ASSY - L	Blackhawk	1
8007-PL-006R	BRACKET ASSY - R	Blackhawk	1
8007-PL-007	PUMP ASSEMBLY	Blackhawk	2
8007-PL-008L	FUEL LINE - L	Blackhawk	1
8007-PL-008R	FUEL LINE - R	Blackhawk	1
8007-PL-009	HOSE ASSEMBLY	Blackhawk	2
8007-PL-010	VALVE ASSEMBLY	Blackhawk	2
8007-EL-001-2	PLACARD, FUEL CONTROL PANEL	Blackhawk	1
8008-EL-003	PANEL, LIGHTED FUEL CONTROL	Blackhawk	1

6. Diagrams:

If available see Blackhawk Drawing Number 8007-00-00 for guidance otherwise refer to the following figures.

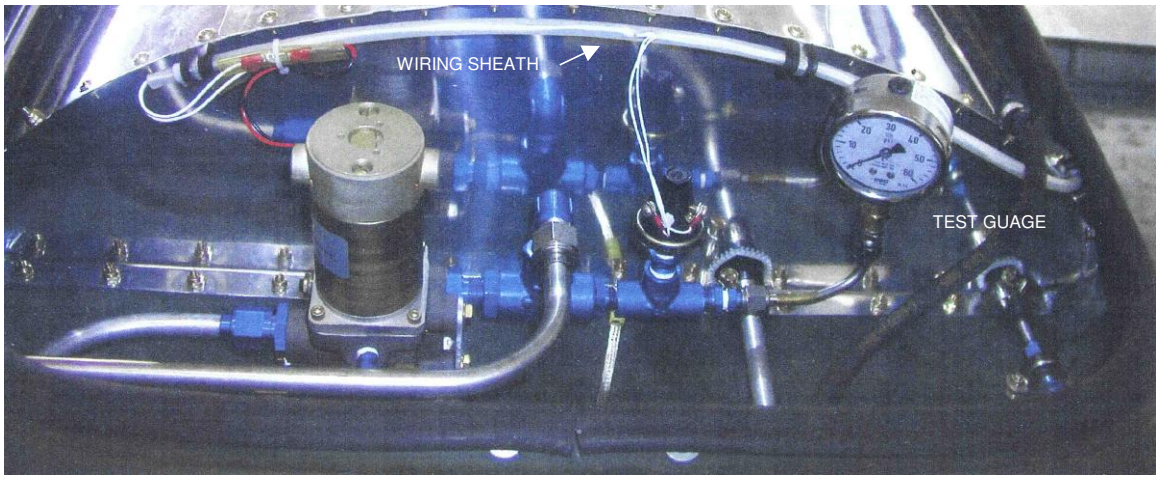


Figure 1. Pressure Switch Setup
(AN929-4D cap removed and Test Gauge Installed)

Figure 2. Containment Housing Assembly Installation

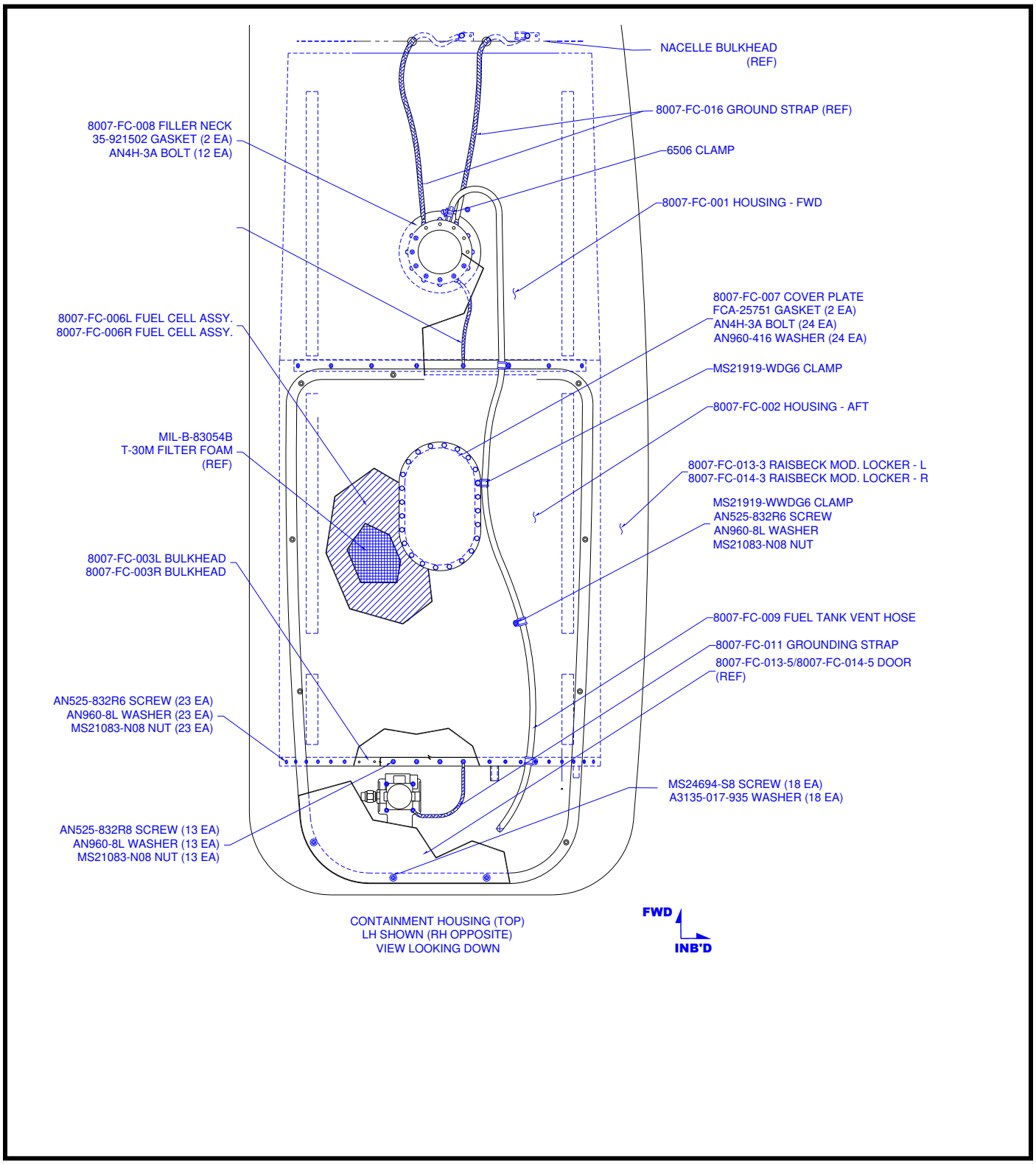


Figure 2a. Containment Housing Assembly Installation (Bottom View)

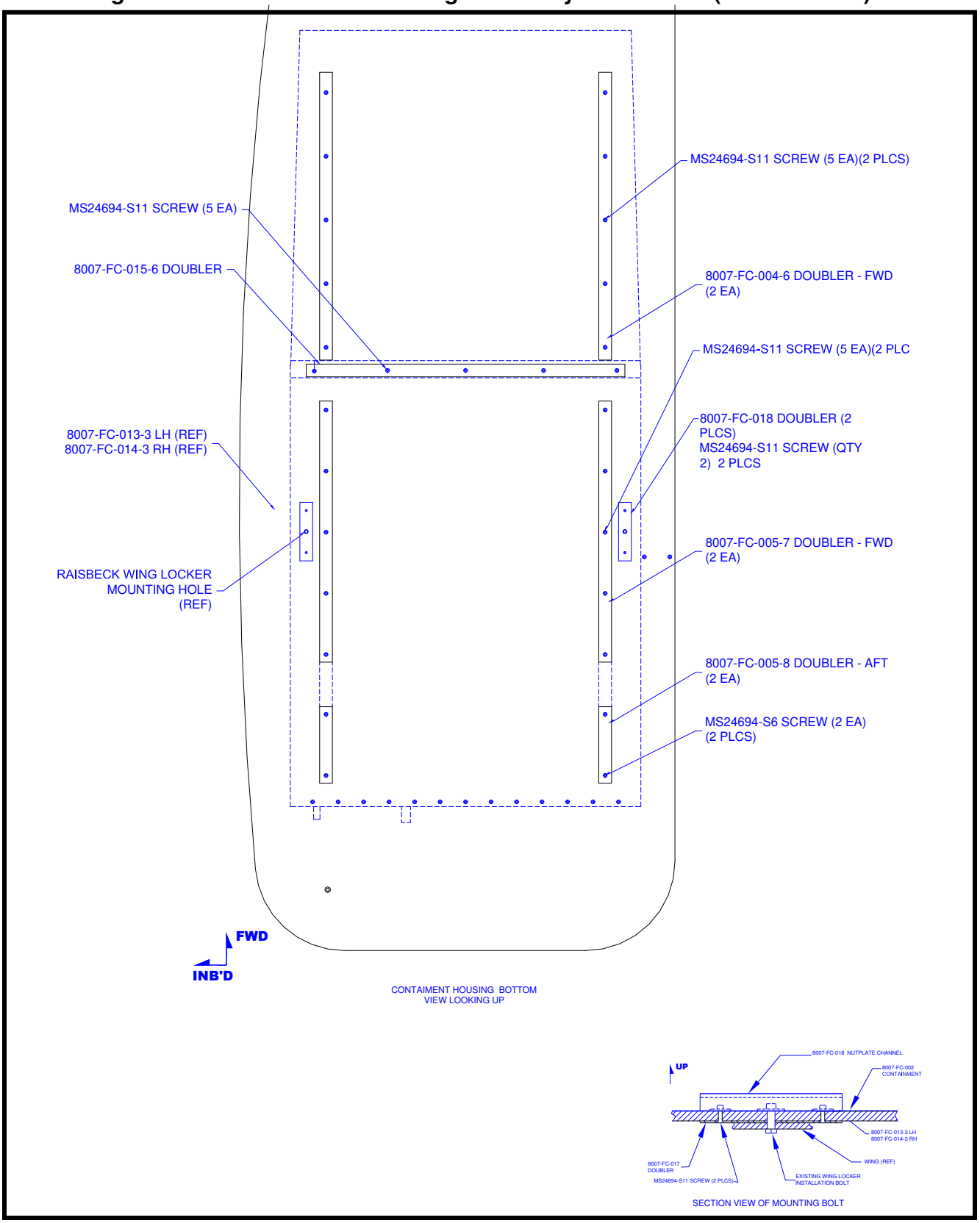


Figure 3. Plumbing and Fuel Pump Installation

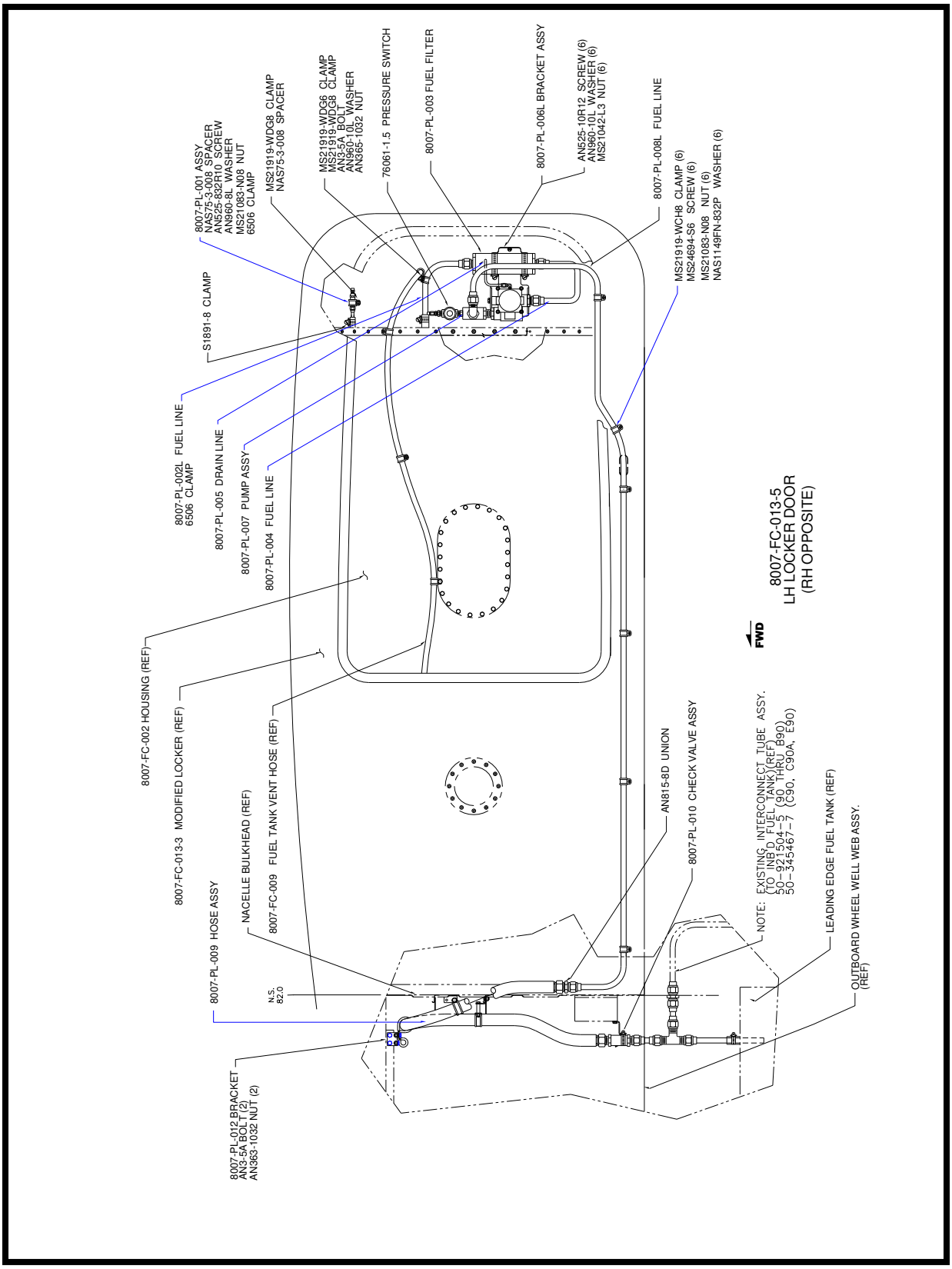


Figure 4. Fuel Pump Assembly 8007-PL-007

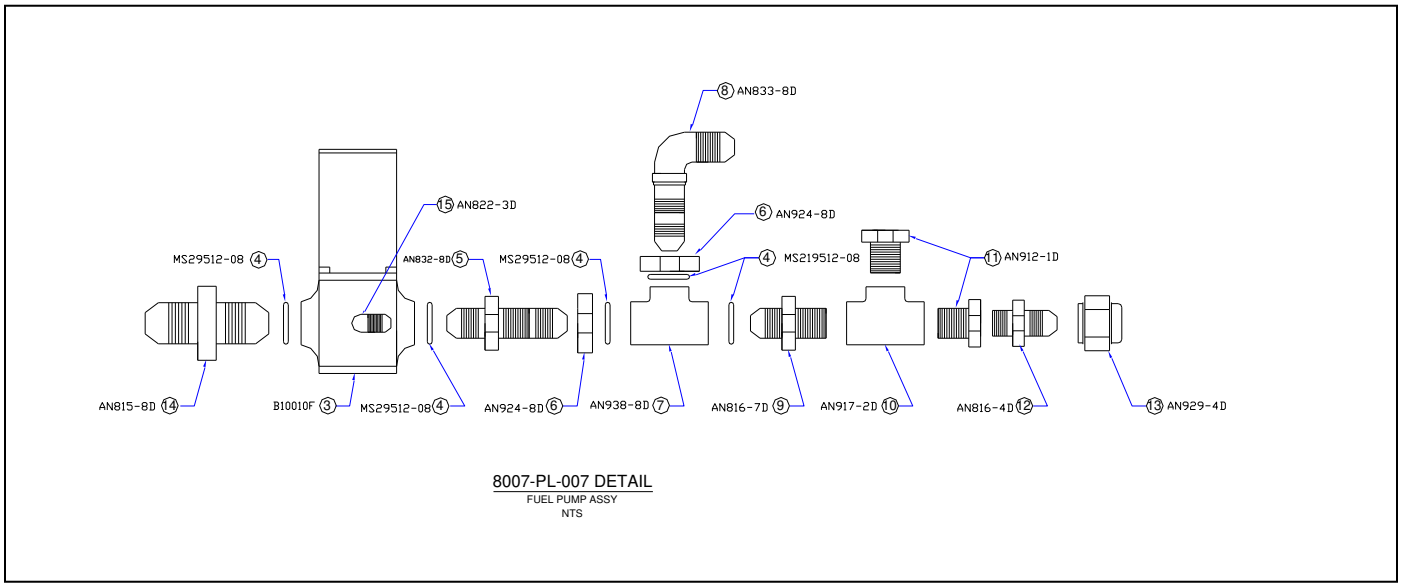


Figure 5. Check Valve Assembly 8007-PL-010

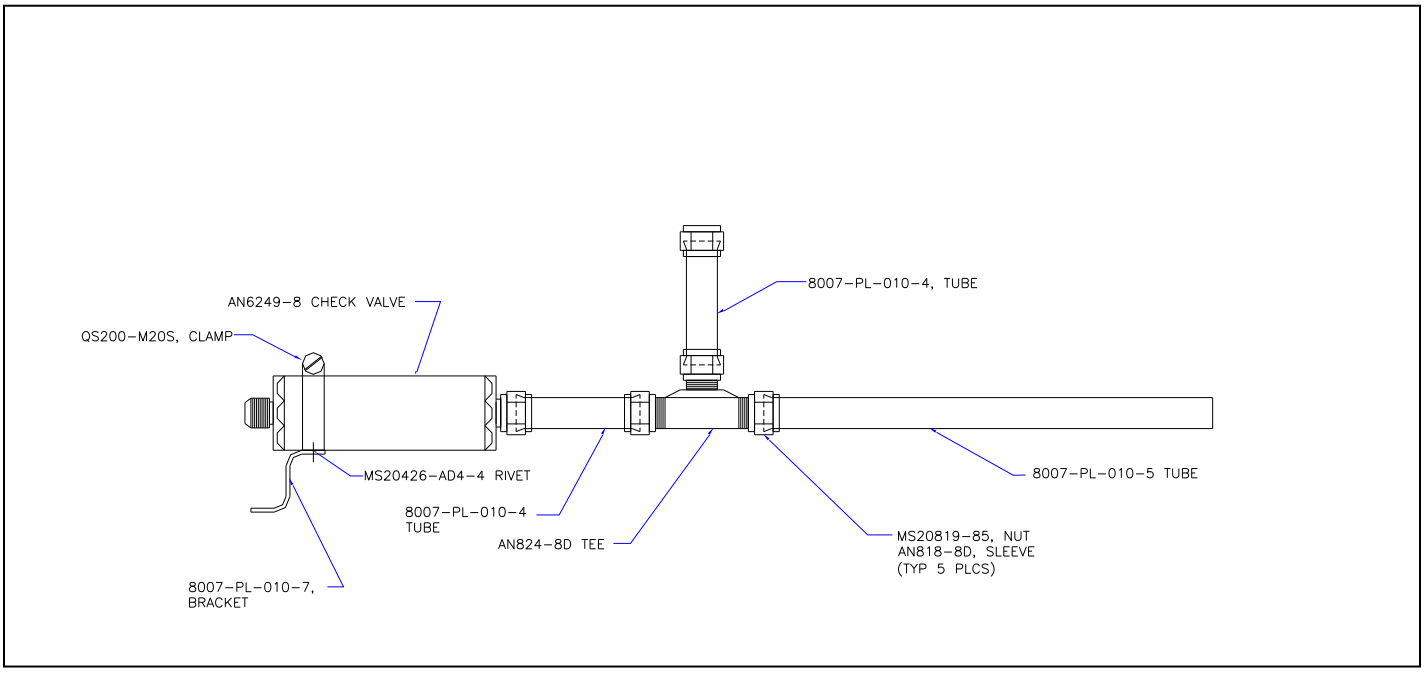


Figure 6. Electrical Wiring Installation

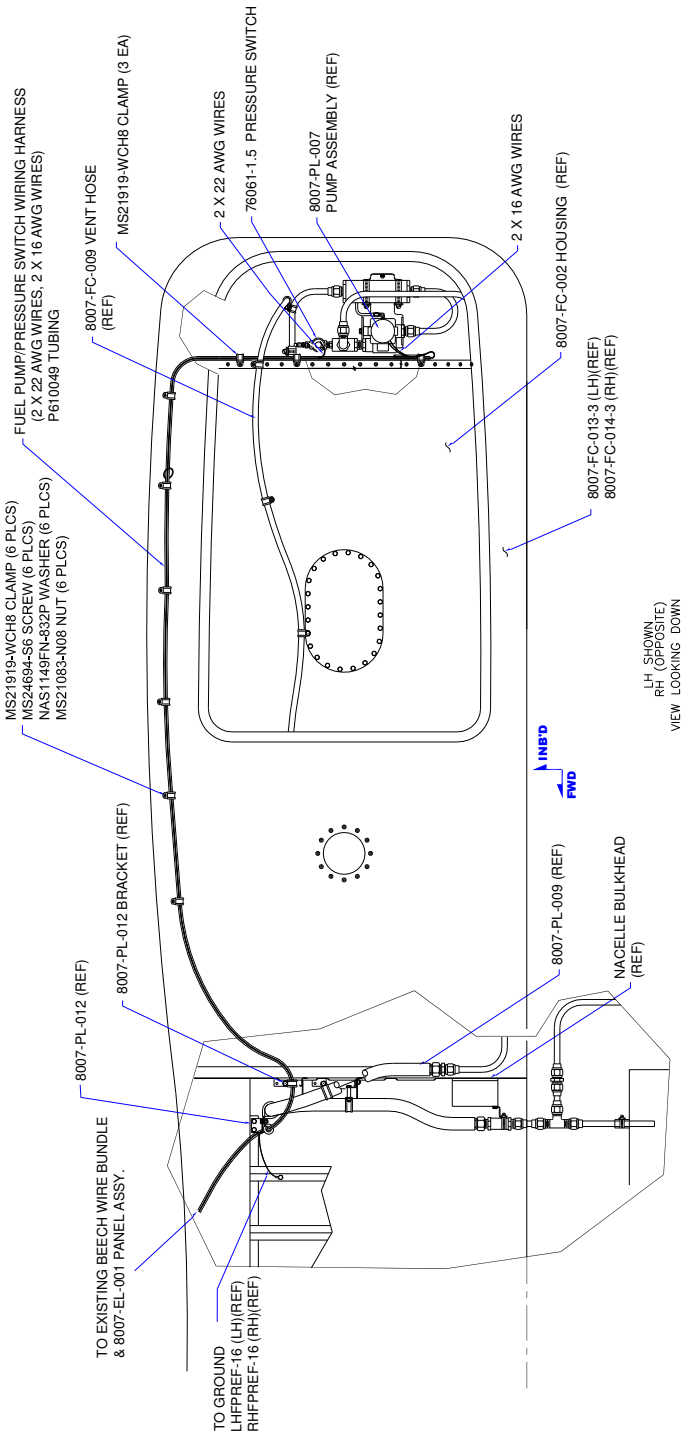
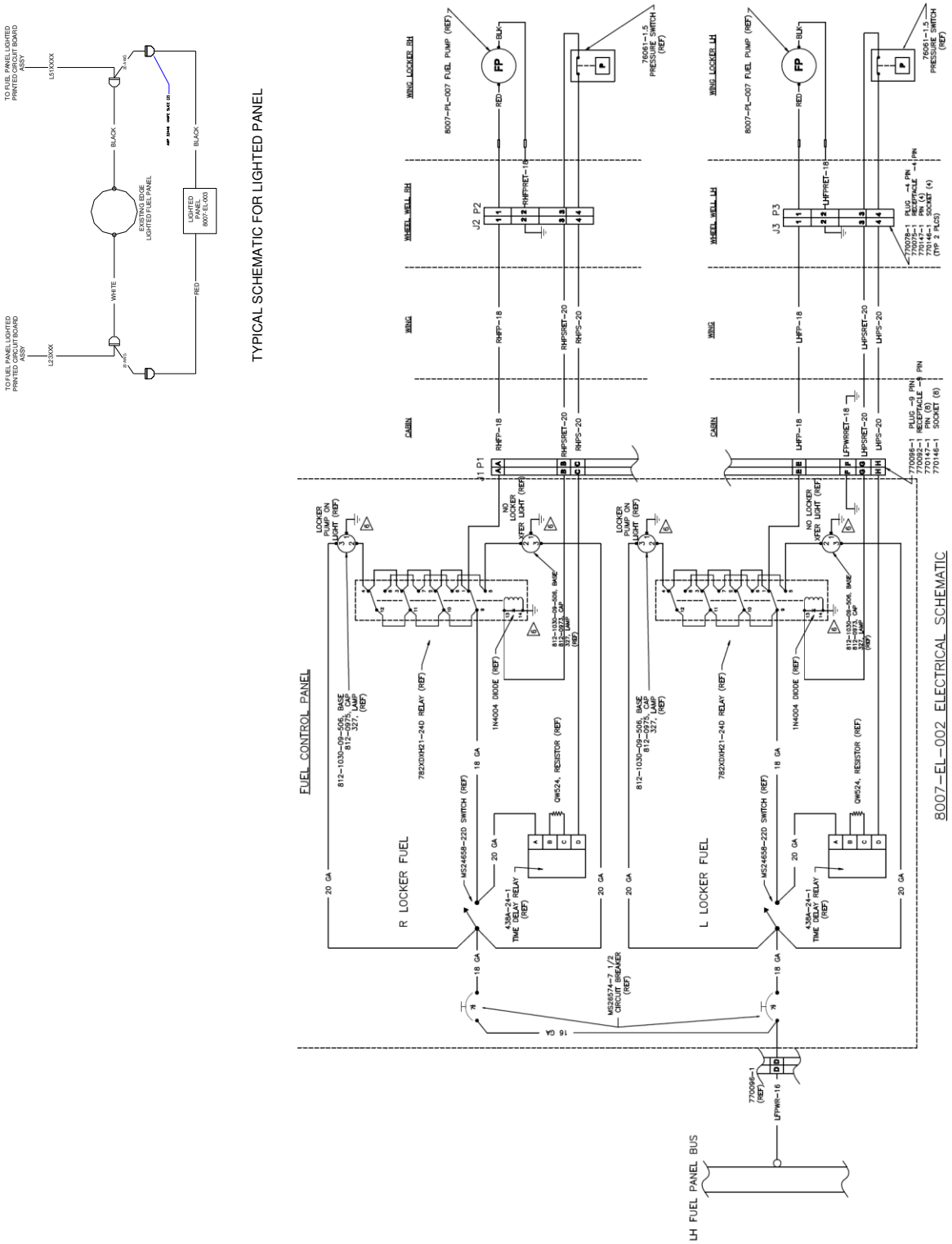


Figure 7. Electrical Wiring Schematic



7. Application of Special Treatments:

None

8. Data:

None

9. Special Tools:

None.

10. Additional Information for Commuter Category Aircraft:

Not Applicable.

11. Airworthiness Limitations:

The limitations included in this section are approved by the federal aviation administration and must be followed to ensure safe operation of this aircraft.

There are no life limited components in this installation.

Fuel Management

Do not transfer fuel from either locker fuel tank when there is less than 39.5 gallons (150 liters) of available fuel space in each respective wing.

Do not takeoff unless both locker fuel tanks are either full or empty.

Fuel Quantity

Added total capacity:……..……79 U.S. gallons (299 liters)
Added total usable fuel:……78 U.S. gallons (295 liters)

Fuel Imbalance

Maximum lateral imbalance with combined wing and locker fuel:……..200 lbs

12. Revision:

Each time this ICA is revised or reissued, the revised ICA will be distributed to operators using a Service Letter/Bulletin by Blackhawk Modifications, Inc. This revision will include a new Log of Revisions page along with the revised pages. The upper right hand corner of each revised page will reflect the revision letter. That portion of text or an illustration, which has been revised by the addition of, or change in, information is denoted by a solid revision bar located adjacent to the area of change, and placed along the outside margin of a page. Revision bars show only information changed within latest revision.

13. Assistance:

For assistance with ICA issues not addressed herein, contact Blackhawk Modifications at the following address or phone number.

Blackhawk Modifications, Inc.
7601 Karl May Dr.
Waco, TX 76708
254-755-6711