

# SERVICE LETTER



*Navion*



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**RYAN AERONAUTICAL COMPANY, LINDBERGH FIELD, SAN DIEGO 12, CALIFORNIA**

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SERVICE LETTER NO. 78  
FEBRUARY 1, 1951

TO: ALL NAVION DISTRIBUTORS, DEALERS AND OWNERS

SUBJECT: FUEL SYSTEM ACCUMULATOR TANK MAINTENANCE AND MODIFICATION

An investigation prompted by reports from the field has revealed that some cases of accumulator tank leakage have been caused by corrosion on the inside of the tank bottom. A series of small pin holes will appear on the bottom of any tank subject to this corrosion; therefore, frequent (at least every 30 days) inspection of all Navion accumulator tanks is recommended so that the difficulty will be detected before leakage reaches any serious proportions. The presence of a red stain on the bottom of the tank is one of the early signs of fuel seepage.

The corrosion, referred to above, can be effectively prevented by regular periodic draining of all water and foreign matter from the accumulator by opening the drain cock adjacent to the outlet on the bottom of the tank. At least one quart of fuel should be allowed to run out the drain, or fuel should be allowed to run until all water bubbles disappear. Daily draining of both the accumulator tank and main fuel strainer has long been considered good service practice and in no case should an airplane be permitted to set idle over 48 hours without draining these two items before the next flight. Tank corrosion is almost certain to occur on any airplane that is held out of commission for long periods of time without periodic draining of the accumulator tank. Keeping the main fuel tanks full at all times when the airplane is not in use is also very effective in keeping condensation within the tanks to a minimum.

To improve the draining efficiency of the accumulator tank on the Navion, all future replacement accumulator tanks shipped by Ryan will have the drain fitting located at the back of the tank. This places the drain outlet at the lowest point in the tank when the airplane is at rest on the ground. It will be necessary to cut a 2 inch diameter hole in the lower wing skin for access to this relocated drain valve whenever one of these replacement tanks is installed.

#### NOTE

The new type tank will pass through the lightening hole in the front spar of the left wing located in the aft end of the nosewheel well. Remove all hydraulic lines passing through this hole to permit passage of the tank. It is therefore unnecessary to remove and separate the wings when making an accumulator tank change.

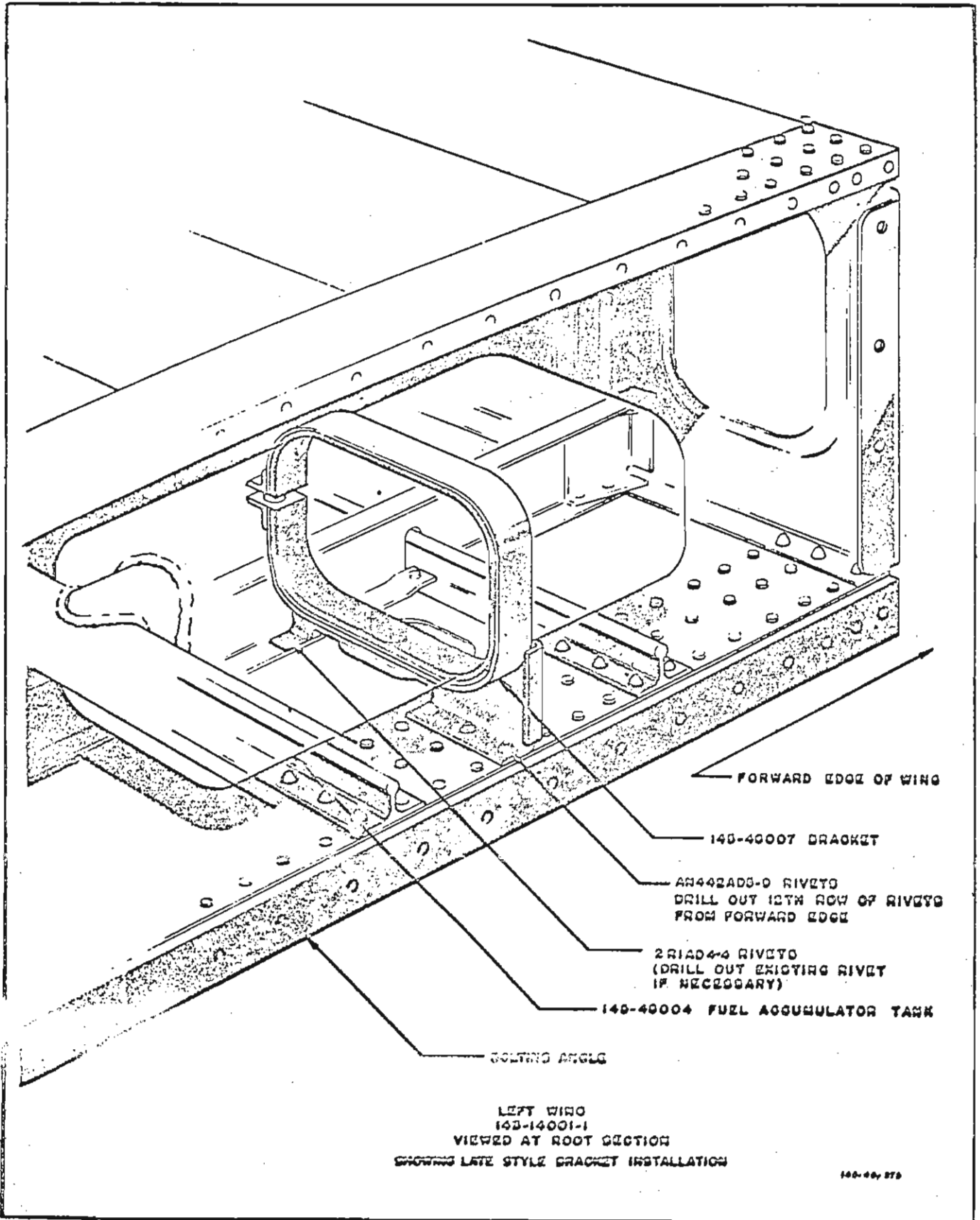


Figure 1 - Accumulator Tank Bracket

PROCEDURE FOR CHANGING FUEL SYSTEM ACCUMULATOR TANK IN A NAVION -

WITHOUT SEPARATING THE WINGS

FOR USE WITH SERVICE LETTER NO. 78

Shop experience has proven that it is possible by the following procedure to remove the accumulator tank from within the wings of a Navion and install a late type replacement tank without removing or separating the two wing panels.

1. Drain fuel system.
2. Remove curtain or metal cover from back wall of nose wheel well.
3. Remove fuel strainer from righthand wall of nosewheel well.
4. Remove all hydraulic lines passing through lightening hole in front spar of right wing. (This is the large hole to a mechanic left as he looks at the aft end of the nosewheel well.
5. Remove the two micarta fairleads that support the right rudder cable through the wing.
6. Loosen all hose connections to tank and detach tank from support bracket.
7. Work tank toward front of wing and try getting it out through right wing lightening hole by rotating tank to several positions. (On all North American built Navions and on early Ryan models it will be necessary to saw off the tank inlet tubes and the small tube at the top of the tank before it will come out through the hole. The tanks on late 49 models and all subsequent Navions should come out without any cutting on the tank.
8. Insert late type tank through same wing lightening holes and connect into fuel system as before. Reconnect all hydraulic lines that were disconnected; reinstall cable fairleads using small bolts and nuts instead of rivets and reinstall fuel strainer in place on right nosewheel well wall.
9. Check system for leaks after fuel tanks have been serviced with fuel.

NOTE

It will be necessary to install a new type tank mounting bracket on some of the older Navions in order to accommodate the later type accumulator tank - refer to your latest Navion parts Catalog for details.

*Restoration  
Made 3-2-65*

**Navion** AIRCRAFT CORPORATION  
P. O. Box 16116, San Antonio, Texas

S.I.L. NO.
REVISION
MODEL <i>NOTED</i>
DATE <i>2-20-65</i>
PAGE <i>1</i>
PREPARED <i>CRK</i>
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MANDATORY

Ref: Navion Ryan Service Letter #78

**SERVICE**

# Information

**LETTER**

SUBJECT	Fuel Accumulator Tank - Replacement
EFFECTIVITY	All Navions
DRAWING	Tanks experienced corroding Item # 2307 P/N 145-48004 Replacement tanks - Item # 2307-10 P/N 145-48006

1. REASON FOR PUBLICATION      Early model tanks have corroded thereby creating a hazardous condition.

2. PARTS REQUIRED                      (Refer to work instructions)

3. TECHNICAL INSTRUCTION AND DATA

FUEL SYSTEM ACCUMULATOR TANK MAINTENACE AND MODIFICATION

An investigation prompted by reports from the field has revealed that some cases of accumulator tank leakage have been caused by corrosion on the inside of the tank bottom. A series of small pin holes will appear on the bottom of any tank

subject to this corrosion; therefore, frequent (at least every 30 days) inspection of all Navion accumulator tanks is recommended so that the difficulty will be detected before leakage reaches any serious proportions. The presence of a red stain on the bottom of the tank is one of the early signs of fuel seepage.

The corrosion, referred to above, can be effectively prevented by regular periodic draining of all water and foreign matter from the accumulator by opening the drain cock adjacent to the outlet on the bottom of the tank. At least one quart of fuel should be allowed to run out the drain, or fuel should be allowed to run until all water bubbles disappear. Daily draining of both the accumulator tank and main fuel strainer has long been considered good service practice and in no case should an airplane be permitted to set idle over 48 hours without draining these two items before the next flight. Tank corrosion is almost certain to occur on any airplane that is held out of commission for long periods of time without periodic draining of the accumulator tank. Keeping the main fuel tanks full at all times when the airplane is not in use is also very effective in keeping condensation within the tanks to a minimum.

To improve the draining efficiency of the accumulator tank on the Navion, all future replacement accumulator tanks shipped by Navion will have the drain fitting located at the back of the tank. This places the drain outlet at the lowest point in the tank when the airplane is at rest on the ground. It will be necessary to cut a 2 inch diameter hole in the lower wing skin for access to this relocated drain valve whenever one of these replacement tanks is installed.

#### NOTE

The new type tank will pass through the lightening hole in the front spar of the left wing located in the aft end of the nosewheel well. Remove all hydraulic lines passing through this hole to permit passage of the tank. It is therefore unnecessary to remove and separate the wings when making an accumulator tank change.

#### PROCEDURE FOR CHANGING FUEL SYSTEM ACCUMULATOR TANK IN A NAVION WITHOUT SEPARATING THE WINGS

Shop experience has proven that it is possible by the following procedure to remove the accumulator tank from within the wings of a Navion and install a late type replacement tank without removing or separating the two wing panels.

1. Drain fuel system.
2. Remove curtain or metal cover from back wall of nose wheel well.
3. Remove fuel strainer from right hand wall of nosewheel well.
4. Remove all hydraulic lines passing through lightening hole in front spar of right wing. (This is the large hole to a mechanics left as he looks at the aft end of the nosewheel well.)

5. Remove the two micarta fairleads that support the right rudder cable through the wing.
6. Loosen all hose connections to tank and detach tank from support bracket.
7. Work tank toward front of wing and try getting it out through right wing lightening hole by rotating tank to several positions. (On all North American built Navions and on early Ryan models, it will be necessary to saw off the tank inlet tubes and the small tube at the top of the tank before it will come out through the hole.) The tanks on late 49 models and all subsequent Navions should come out without any cutting on the tank.
8. Insert late type tank, P/N 145-48006, through same wing lightening holes and connect into fuel system as before. Reconnect all hydraulic lines that were disconnected; reinstall cable fairleads using small bolts and nuts instead of rivets and reinstall fuel strainer in place on right nosewheel well wall.
9. Check system for leaks after fuel tanks have been serviced with fuel.

#### NOTE

It will be necessary to install a new type tank mounting bracket on some of the older Navions in order to accommodate the later type accumulator tank - refer to your latest Navion parts Catalog for details.

### INSPECTION AND REWORK OF REPLACEMENT WING ACCUMULATOR TANK

#### BRACKETS

Navion airplanes prior to factory serial number NAV-4-1251 have the fuel accumulator tank supported by two 145-48008 brackets riveted to the 143-14010-20 center rib. Airplanes subsequent to NAV-4-1251 have the fuel accumulator tank supported by one 145-48007 bracket, riveted to the bolting angle of the left wing.

SEE FIGURE 1

#### A. Airplanes NAV-4-2 through NAV-4-1250

1. Inspect inside the root section to see if fuel accumulator tank bracket 145-48007 is installed. If the 145-48007 bracket is installed, remove it from the wing as follows:
  - a. Drill out the three AN442AD5-9 rivets which attach one end of 145-48007 bracket to the wing bolting angle. This is the 12th row of rivets aft of forward edge of the wing.

- b. Drill out one 2R1AD4-4 rivet attaching the outboard end of the 145-48007 bracket, and remove bracket from wing.
- c. Replace the first three removed rivets with AN442AD5-8 rivets. Replace the removed outboard rivet with one 2R1AD4-3 rivet.

B. Airplanes NAV-4-1251 and subsequent

1. Inspect the inside root section of left wing to see if the 145-48007 fuel accumulator tank bracket is installed. If bracket is not present, install the new 145-48007 bracket, received as a loose part, as follows:
  - a. Drill out three AN442AD5-8 rivets which run spanwise in the bolting angle. This is the 12th row of rivets aft of the forward edge of wing.
  - b. Clamp 145-48007 bracket in the wing with the flange of bracket over holes just drilled. Drill through bolting angle holes and bracket flange with a No. 21 (.159) drill.

CAUTION: Do not elongate holes in bolting angle.
  - c. Attach bracket to bolt angle with three AN442AD5-9 rivets.
  - d. Drill through rib, wing skin, and pilot hole on outboard flange of bracket with No. 30 (.128) drill, and install one 2R1AD4-4 rivet.