



# FIELD SERVICE BULLETIN



NORTH AMERICAN AVIATION, INC • MUNICIPAL AIRPORT • LOS ANGELES 45, CALIF.

NO. 31  
MAY 9, 1947

MANDATORY  
BY 8-15-47

TO: All Navion Owners

SUBJECT: ENGINE MOUNT FRONT FRAME REINFORCEMENT

The front engine mount frames 143-31901-13, -14, and -17, have been found to develop fatigue cracks near the longeron. The required parts to reinforce these frames are contained in Kit 145-89035.

#### AIRPLANES AFFECTED:

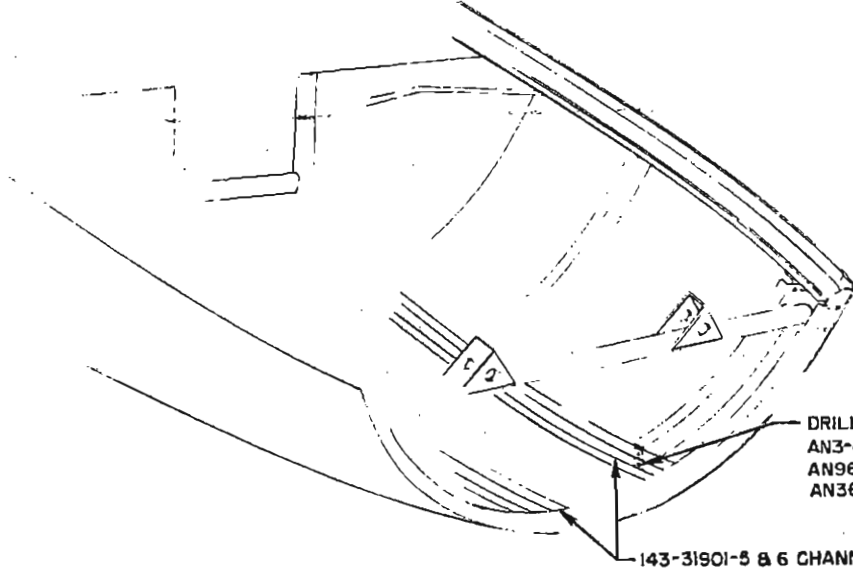
NAV-4-2 through NAV-4-1010. This change will be incorporated at the factory in airplanes NAV-4-1011 and subsequent.

#### INSTALLATION INSTRUCTIONS:

1. Place suitable stand under tail skid and chock the main wheels.
2. Remove the propeller.
3. Remove engine nose cowl and carburetor air scoop.
4. Support the weight of the engine by installing a brace under the propeller shaft or by a chain hoist.
5. Drill out the rivets securing 143-31901-13, and -14 frames and remove from engine section. See figure 1.
6. Remove the front engine mount tubular support.
7. Remove the two 145-31901-49 doubler plates from the aft side of frame 145-31901-17 at bolt hole for engine mount tube.

NOTE: These plates used on later airplanes only.

8. Clamp 143-31901-53 and -54 doublers to the aft side of 143-31901-17 frame aligning the flanges of the doubler against the frame flange and longeron.
9. Drill through the 143-31901-17 frame (on the vertical face) and longeron with a No. 21 (.159) drill. Install rivets



DRILL NO. 12 HOLE 4 REQ.  
 AN3-4 BOLT 4 REQ  
 AN960-DIO WASHER 4 REQ.  
 AN365-1032 NUT 4 REQ.

143-31901-5 & 6 CHANNELS

(AN3-4 BOLT  
 AN960-DIO WASHER  
 AN365-1032 NUT)

MAY BE USED AS SUBSTITUTE ON LEFT SIDE

AN442AD5-6 RIVET 4 REQ.

AN3-4 BOLT 4 REQ.  
 AN960-DIO WASHER 4 REQ.  
 AN365-1032 NUT 4 REQ.

DR-173-16 DUPONT  
 EXPLOSIVE RIVET 1 REQ. (LEFT SIDE ONLY)

AN5-25A BOLT 2 REQ.  
 AN365-524 NUT 2 REQ.

AN960-516 WASHER 2 REQ.

2RIAD5-7 RIVET 12 REQ.

2RIAD5-5 RIVET 18 REQ.

4S3-D516-17  
 SPACER 2 REQ.

AN426AD5-6  
 RIVET 8 REQ.

145-31929-1 & 2 FRAMES  
 (NEW)

145-31901-13 & 14 FRAMES  
 (EXISTING)

143-31901-53 & 54  
 DOUBLER (NEW)

143-31901-17  
 FRAME

DETAIL A

Figure 1. - Engine Mount Reinforcement

and drive. (AN3 bolts may be used as a substitute for the rivets on the longeron).

10. Drill the 5/16 inch bolt hole through the installed doubler.
11. Draw a center line on the outboard flange of the new 145-31929-1 and -2 frames.
12. Position the front engine mount tubular support before installing 145-31929-1 and -2 frames.
13. Clamp the new 145-31929-1 and -2 frames to the longeron and 143-31901-5 and -6 channels, with the flange center line on the existing skin rivet holes.
14. Drill No. 21 (.159) holes through skin rivet holes and 143-31901-13 and -14 frame flanges, being careful not to elongate skin rivet holes.
15. Drill No. 12 (.189) holes through the upper and lower flanges of the 145-31929-1 and -2 frames. Install AN3-4 bolts, AN960-10 washers, and AN365-1032 nuts.

NOTE: At first rivet hole below longeron frame 145-31929-1 install DR-143A-16 Du Pont explosive rivet. If the existing doubler spot welded to the top side of the longeron interferes with the installation of the AN3 bolt, trim a washer and install under the bolt head.

16. Secure the front tubular engine mount cross-rod using two AN5-25A bolts, two 483-D516-17 spacers, two AN960-516 washers and two AN365-524 nuts. Place the spacers between the front frame and the tubular cross-rod.
17. Compliance with this Bulletin must be entered in the airplane log book.

NOTE: Torque the engine load mount bolts to 450-500 inch pounds.

Warranty Adjustments will be based on a Standard Time Allowance of 5.1 hours. If you have sold your Navion, please return this kit to the factory with the name and address of the new owner.

JOHN W. CASEY  
FIELD SERVICE MANAGER