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FIELD SERVICE BULLETIN 101

21 July 2010

TO: **All Riley & Temco D-16 & D-16A Twin Navion owners**

SUBJECT: **Nose Gear Fork Inspection**

EFFECTIVITY: **All D-16 & D-16A Twin Navion aircraft, Serial numbers TTN-1 and subsequent**

REASON FOR PUBLICATION:

A failure issue with the Navion nose gear fork, part no. 145-34117 has been detected and necessitates action by all Navion owners. Two forks have failed at the four attach point holes resulting in substantial damage to the engine, propeller, and airframe. At one repair facility twenty (20) nose forks were removed and inspected by the dye penetrant method and four (4) had cracks. A significant percentage of the failed or cracked forks were from Navions with prior history of a nose gear collapse and ground contact, which would have placed an aft force on the fork through the nose gear tire and wheel which protrudes below the wheel well when retracted.

Early Aero Commanders models 520 & 560 used a Ryan Navion nose landing gear and experienced failures as early as 1958. Their Service Bulletin No. 49 is an Attachment to this FSB and provided guidelines for the ANS, Ltd. repair/reinforcement in paragraph B.

COMPLIANCE: **Mandatory for FAR Part 135 aircraft.**
Recommended for FAR Part 91 aircraft.

PROCEDURE:

A. INSPECTION:

1. **Following any nose gear collapse or unusual hard contact between the nose wheel tire and the ground or other objects, perform inspection outlined in A. 3. before further flight.**

2. **For Navions with prior history or evidence of a nose gear collapse, complete inspection outlined in A. 3. within next 10 hours time-in-service. Evidence or suspicion of nose gear collapse may be obtained from any of the following:**
   a. **Aircraft records having entries referring to propeller replacement or repair, engine teardown, flap replacement, or inboard flap hinge replacement, or front step replacement.**

   b. **Flaps showing evidence of repairs such as two piece skins rather than original one piece.**

   c. **Lower forward wing mating extrusions showing abrasion damage from ground contact.**

3. **Within next 100 hours time-in-service or at next annual inspection, whichever occurs first, remove nose fork and perform dye penetrant inspection on top and bottom of fork in the area of the four bolt holes. All paint, powder coat, or other coatings must be removed from inspection area. Follow instructions furnished with dye penetrant kit.**

4. **At intervals of 250 hours time-in-service or 36 months, whichever occurs first, repeat inspection in A. 3.**

5. **Any nose fork with cracks must be removed from service and replaced with a new or serviceable fork. There are no approved procedures to repair a cracked fork. Any fork installed as replacement must be inspected in accordance with A. 3 before installation.**

B. REINFORCEMENT REPAIR:

1. **Reinstall fork with 145-34117-1002 reinforcement plate on underside of fork. Lateral edges of plate may have to contoured to fit contour of the nose fork. Install new longer AN bolts to compensate for**

thickness of plate. Reinforcement plate spreads load of bolt heads over a much larger area of the fork than the AN960-5 washers. The plate is a preventative repair measure and not a repair for a cracked fork.

2. **Mud scrapper 145-34153 is installed on underside of reinforcement plate, and may need the curved area radius enlarged with a die grinder for proper clearance of tire, according to tire diameter.**

3. **Plate 145-34117-1002 specifications are shown in Drawing A.**

C. AIRCRAFT RECORDS: Enter in aircraft records date of inspection, aircraft hours, results of the inspection, and hours and/or date next inspection is due.

ATTACHMENTS:

A. Drawing A, plate 145-34117-1002

B. Aero Commander Service Bulletin No. 49, dated September 15, 2009

REFERENCES:

A. Navion Parts Catalog, Fourth Ryan Edition, September 1, 1952, page 50 & 51.

B. Rangemaster Parts Catalog, page 76 thru 80.

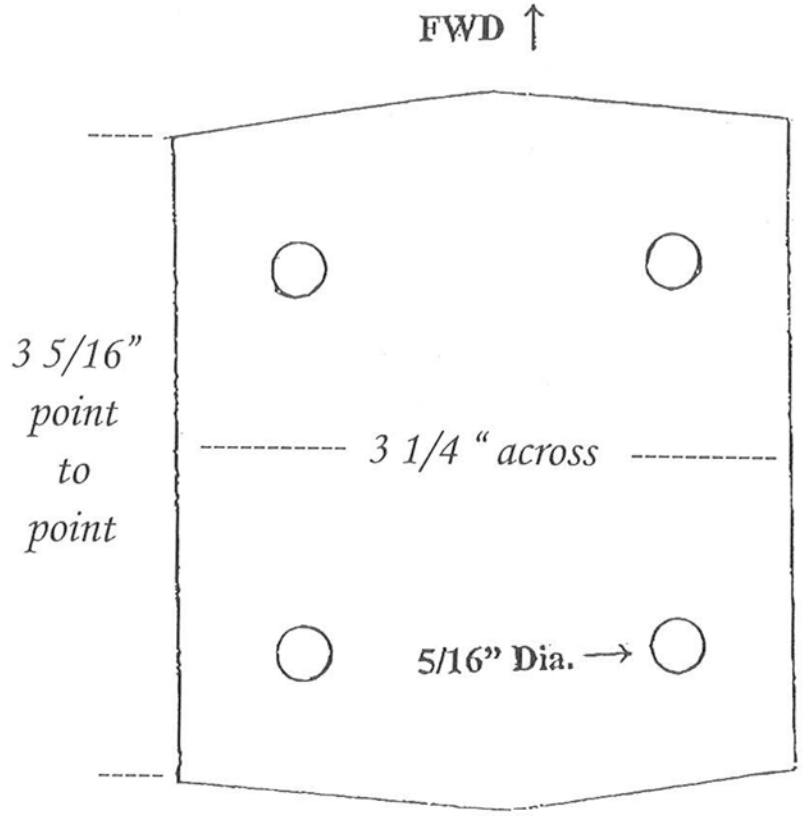
SERVICE AND TECHNICAL SUPPORT:

A. ANS, Ltd. Office: 360-833-9921

B. ANS, Ltd. Parts Department: 970-835-5096

DRAWING A
PLATE 145-34117-1003

Scale: 1" = 1"



¼" 2024-T3 Plate

Contour upper surface of plate to mate with contoured surface of fork

Twin Navion Nose Gear Fork Reinforcement Field Service Bulletin 101 7-21-2010	Part Number: 145-34117-1003
American Navion Society, Ltd.	Drawing No. A

AERO COMMANDER

SERVICE BULLETIN

SERVICE BULLETIN NO. 49 DATE: September 15, 1958

EFFECTIVITY: MODEL 520 & 560 AERO COMMANDERS EQUIPPED WITH RYAN NOSE LANDING GEAR.

SUBJECT: NOSE LANDING GEAR FORK - FIELD INSPECTION.

COMPLIANCE: IMMEDIATELY. NOT LATER THAN 30 DAYS AFTER RECEIPT OF THIS BULLETIN.

APPROVED: D. J. Long DER 8-3-128 For CAA — L. A. Fuller For Engr. Dept.

Jim Watson For Service Dept.

NOTE: This Bulletin rescinds Service Bulletin No. 8 and Service Letter No. 37.

PURPOSE: To provide inspection procedure and maintenance information to owners and operators of Model 520 and 560 Aero Commanders equipped with the Ryan Nose Landing Gear. Service reports indicate that cracking and elongation may occur in and around the nose gear fork attach bolt holes. A reinforcing plate has been designed by Aero Design & Engineering Co., and may be purchased through any Aero Commander Distributor. The list price of this plate and the necessary attaching hardware is $13.96. The purpose of the plate is to distribute the clamping load over a larger area, thereby relieving the bearing loads under the attach bolt heads.

INSTRUCTIONS: The inspection involves the removal of the Ryan nose landing gear fork to permit inspection of the attach bolt holes for evicence of cracking and elongation. It is recommended that a dye-check process be used to determine whether or not the fork is cracked.

a. Jack aircraft until wheels are clear of ground.

b. Remove four bolts attaching fork to landing gear strut and remove fork from strut.

c. Inspect attach bolt holes for evidence of elongation and cracking. Use dye-check method to detect cracks.

NOTE

Any evidence of cracking, elongation or fretting is sufficient cause for rejection of the fork.

d. If the fork is deemed serviceable or a new fork is being installed, the retaining bolts and nuts should be torqued to a value of 100/140 in/lbs. It is recommended that the original AN365-524 fork retainer nuts be replaced. In the event the new 2750056-3 plate is being installed the same torque value will apply and the plate should be installed as shown in Figure I.

NOTE

It will not be possible to use a mud scraper when the 2750056-3 plate is installed.

This inspection must be repeated every 500 hours. After each 100 hours of flying, the fork should be inspected visually for evidence of cracking around the attach bolt holes and the bolts checked for tightness. The following preventive maintenance and operating recommendations will assist in reducing nose gear fork failure:

a. Maintain nose gear tire pressure at 30 psi.

b. Nose gear wheel and tire assembly must be dynamically balanced.

c. Nose gear scissor links and bushings must be maintained in a snug condition.

d. Nose gear collar must be checked periodically for proper adjustment.

To Adjust Collar:

1. Remove lock screw from collar jam nut and adjust until some friction is felt when gear is operated by hand from right limit to left limit. Nose gear must be off the ground and if airplane is equipped with hydraulic steering, the cylinder should be disconnected.

2. With collar properly adjusted, make seat for lock screw by cutting out a small amount of metal with a No. 40 twist drill inserted in the jam nut lock screw hole.

3. Reinstall lock screw, tighten and safety.

4. Reinstall nose steering cylinder.

e. Nose wheel bearings must be kept in proper adjustment and nose gear axle retainers in good condition.

f. During take-off and landing operations, do not allow the nose wheel tire to remain in contact with the runway surface at speeds in excess of 85 mph.

g. Do not exceed the turning limit marks painted on the nose of the aircraft.

h. Allow the airplane to roll forward before executing turns.

The Electrol nose gear which is used on Aero Commander Serial No. 191 and subsequent is also available in kit form for use on Commanders with Serial No's 1 thru 190. Owners desiring to convert their airplanes to the Electrol gear should order Service Change Kit No. SC 32 from their nearest Commander Distributor.

WEIGHT & BALANCE INFORMATION:

The addition of the 2750056-3 plate will have no effect on the weight & balance of the airplane.

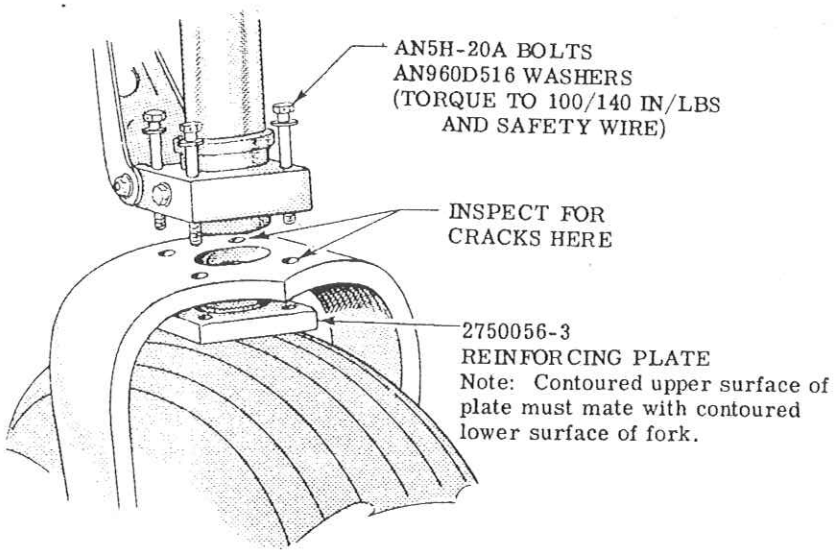


FIG. 1