

MOONEY AIRCRAFT, INC.  
SERVICE LETTER 20-62

SERVICE BULLETIN M-20-62

(This Service Letter is FAA Approved)

DATE: 4-7-60  
SUBJECT: ALLOWABLE EMPENNAGE FREE PLAY  
MODELS: M-20A AND M-20 - ALL SERIAL NUMBERS  
TIME OF COMPLIANCE: AT EACH PERIODIC INSPECTION

INTRODUCTION

It is recommended that the following inspection be performed once each year to prevent excessive free play which, if allowed to continue, could result in a dangerous situation.

PROCEDURE

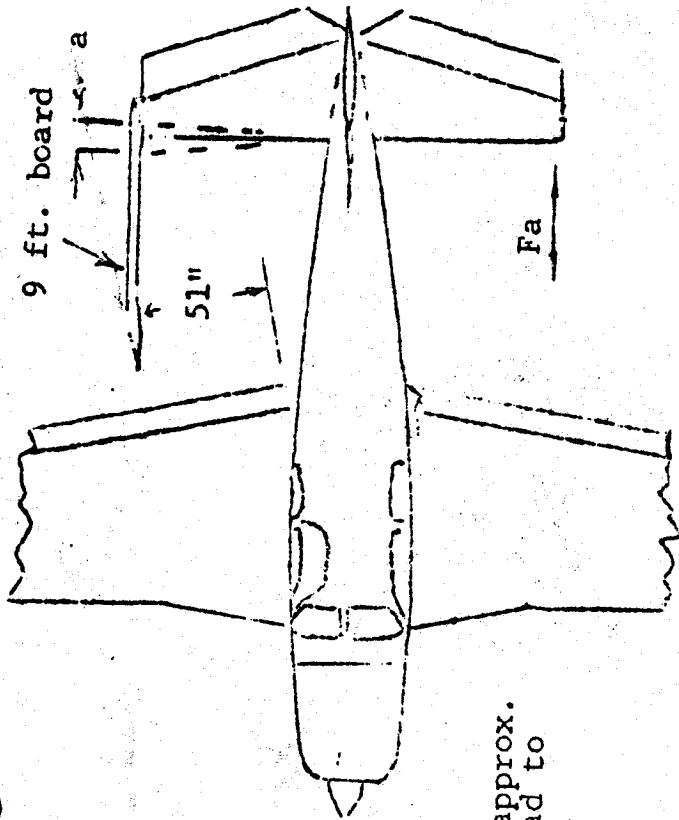
- A. First, inspect all empennage joints and attachment bolts for tightness. All bolts should be tight, since bushings are intended to take the wear. If any bolt is loose, remove bolt and inspect for wear on bolt, bushing, bolt hole in fittings and lugs, and wear of bushing on fittings, lugs or wood. Replace parts as necessary.
- B. Block tail of airplane solidly at tail skid and check for the free play as follows:
  1. Use any available boards having approximately the dimensions specified. Note: Boards must be held rigid during the measurements.
  2. Fore and aft play at stabilizer tip. Place one end of the nine-foot board against the trailing edge of the flap at the flap rib located approximately 51" from the inboard end of flap on the right side of the airplane. Locate other end of board so as to have board lie against tip of stabilizer. (See sketch for details.) While board is held in this position on the right stabilizer tip, apply a rearward force of approximately 40 lbs. at the opposite tip and release slowly. Mark position of right tip with respect to board (choose any reference point on tip and mark board). Apply a forward force of approximately 40 lbs. at opposite tip and release slowly. Mark new position of reference point on board. Measure the distance between the two marks. Maximum allowable play is 3/8 in. total.
  3. Up and down play at stabilizer tip. Place a board (approx. 5 ft. long) on ground and against right stabilizer tip (see sketch). Apply an upward force of approximately 40 lbs. at the opposite tip and release slowly. Mark position of right tip with respect to board. Apply downward force of approximately 40 lbs. at opposite tip and release slowly. Mark new position of right tip on board. Measure distance between the two marks. Maximum allowable free play is 1/2 in. total.

4. Up and down play at bottom of rudder trailing edge. Place five-foot board on ground and against rudder at bottom of trailing edge, (see sketch for details). (Slight rudder deflection may be applied for convenience). Apply a rearward force of approximately 40 lbs. at vertical fin tip (use stepladder) and release slowly. Mark position of root rib at rudder trailing edge with respect to board. Apply a forward force of approximately 40 lbs. at fin tip and release slowly. Mark new position of trailing edge of root rib of rudder. Measure distance between marks. Maximum allowable free play is 5/16 in. total.

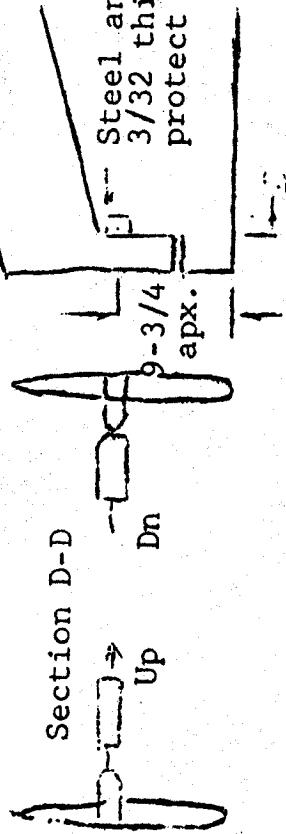
C. Further Discussion

If the maximum free play limits are exceeded, inspect for movement at applicable bolted joints. Up and down movement at bottom of rudder trailing edge is affected by play in the trim system. Where observed movement at a joint seems to be excessive, check parts as specified in paragraph A. Replace parts as necessary.

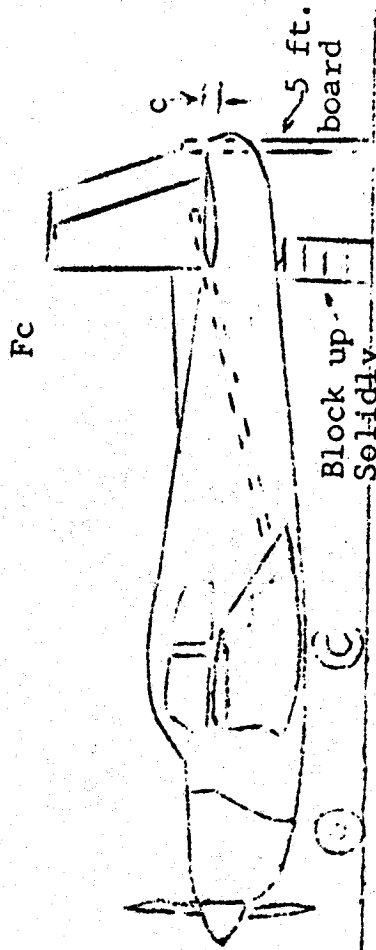
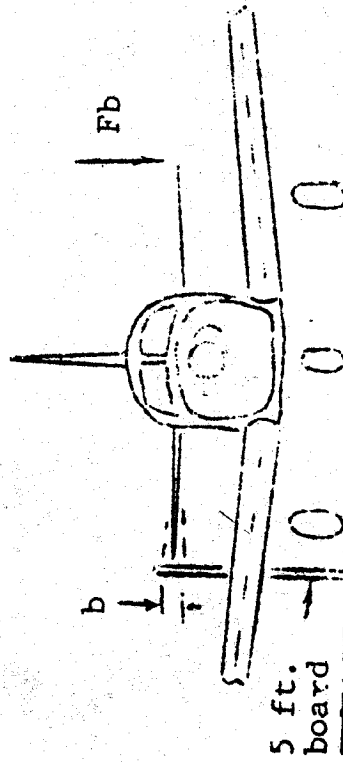
SUGGESTED METHOD OF APPLYING FORCES



FORE AND AFT ON FIN AND STABILIZER



UP AND DOWN ON STABILIZER



- Fa - Fore & Aft Force Applied at Tip of Stab.\*
- Fb - Up & Down Force Applied at Tip of Stab.\*
- Fc - Fore & Aft Force Applied at Tip of Fin\*

- a - Fore & Aft Play at Tip of Stab. (3/8 Max. allow)
- b - Up & Down Play at Tip of Stab. (1/2 max. allow)
- c - Up & Down Play at Rudder T.E. (5/16 max. allow)

\* - Force Approximately 40 lb.