

Nomad

SERVICE BULLETIN

WINGS - AILERONS – ONCE-ONLY INSPECTION OF CONDITION AND SERVICEABILITY

1. PLANNING INFORMATION

A. Effectivity

(1) Aircraft affected:

- (a) **N22 Series** line sequence numbers 1 to 9, 11 to 29, 31, 33, 35, 37, 39 to 41, 43, 45, 47 to 59, 61, 63, 65 to 70, 82 to 88, 90 to 95, 97, 100, 102 to 114, 116, 118, 125, 126, 131 to 134, 136 to 138, 141, 143 to 170.
- (b) **N24 Series** line sequence numbers 10, 30, 32, 34, 36, 38, 42, 44, 46, 60, 62, 64, 71 to 81, 89, 96, 98, 99, 101, 115, 117, 119 to 124, 127 to 130, 135, 139, 140, 142.

B. Reason

- (1) Service Bulletin ANMD-57-9 required the inspection of ailerons and the incorporation of a spar strengthening modification (N634) following several incidents where ailerons were damaged in flight. Since then one N24A fitted with N634 has suffered an aileron failure.
- (2) As a precautionary interim measure, whilst investigations were underway, Service Bulletin ANMD-57-11 introduced aileron (and cowl) inspections and operational limitations.
- (3) The investigations are now complete, and the limitations of ANMD-57-11 are to be lifted. However, to ensure all ailerons meet the required standards for safe flight, this Service Bulletin implements a once-only inspection of aileron condition.
- (4) To ensure subsequent safety of flight, ongoing inspection requirements will be added to the Inspection Requirements Manual.
- (5) Refer to ANMD 57-11 Rev 5 for co-ordination of all actions necessary to lift flight limitations.

C. Description

(1) Part 1 - Aileron condition check:

Both LH and RH ailerons are to be inspected for N634 incorporation, damage, distortion, and mass balance security. Any defects are to be repaired by replacement of the defective items.

(2) Part 2 - Backlash check:

Check for overall and local backlash. Correct if excessive.

(3) Part 3 - Balance check:

Check the aileron balancing records and rebalance if necessary. The posted weight limits are not to be exceeded. Rectify if necessary.

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D. **Compliance**

(1) Compliance is mandatory.

(2) Parts 1 and 2 - Condition and backlash checks

To be done at the next 100 hrly check, or within 6 months of receipt of this service bulletin.

(3) Part 3 - Balance Check

To be done at the next 300 hrly check, or within 12 months of receipt of this service bulletin.

NOTE

Compliance with this service bulletin is a prerequisite for removal of flight limitations by ANMD-57-11 Rev 5.

E. **Approval**

The requirement detailed herein has been approved by a person authorised under Civil Aviation Regulation 35 and conforms with the type certificate requirements.

F. **Manpower**

Approximately 5 manhours (not including mass balancing).

G. **Materials, Price and Availability**

None.

H. **Tooling, Price and Availability**

None.

I. **Weight and Balance**

Not applicable.

J. **References**

Service Bulletin ANMD-57-9

Service Bulletin ANMD-57-11

Maintenance Manual 27-00-00

Structural Repair Manual 57-00-00

K. **Publications Affected**

Maintenance Manual

Inspection Requirements Manual

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2. ACCOMPLISHMENT INSTRUCTIONS

A. Part 1 - Aileron Condition Check

- (1) Check that N634 has been incorporated on both ailerons. This will be the case if the Serial Plates are marked 3/N-24-101(LH) and 3/N-24-102(RH). If this is not the case, SB ANMD-57-9 Rev 1 must be complied with before proceeding further.
- (2) Extend the flaps to the landing position (38 degrees) (Ref Maintenance Manual 27-00-00).
- (3) Visually inspect the ailerons, taking particular note of the following:
 - (a) Inter-rivet skin buckling on the spar cap, particularly along the top cap between wsta 240 and wsta 260. This is best done by lightly sliding a finger along the skin.
 - (b) Buckling or cracks in the L/E skin.
 - (c) Loose or working rivets.
 - (d) Corrosion.
 - (e) Dents, nicks or scores in the skins.
- (4) Any defects found, beyond the negligible damage defined in the Structural Repair Manual (Chap 57-00-00) must be corrected.

NOTE:

- (a) NO DENTS OR BUCKLES are allowed on the skin directly over the spar caps (The Structural Repair Manual will be amended accordingly). If any damage is present here, the aileron must be opened up and the spar inspected for damage (see ANMD-57-9 Rev. 1 para 2.B). If there is any damage to the spar, contact Boeing Aircraft Systems - ASTA.
- (b) In general, patch repairs are not permitted on the aileron, unless specifically authorised by Boeing Aircraft Systems - ASTA. Damaged parts must be replaced with new parts.
- (5) Inspect for local T/E distortion by sliding a 12 inch straightedge along the T/E just aft of the fluted stiffeners. The maximum gap at any point must not exceed 0.10 inch.
- (6) Inspect for overall bowing by holding a straightedge at least 144 inch in length against the T/E just aft of the fluted stiffeners, with its outboard end level with the inboard edge of the tip fairing. The maximum gap must not exceed 0.30 inch.

NOTE:

- (a) The limits above are only applicable to smooth deformations, sharp kinks are not allowed.
- (b) The term 'gap' is defined as the gap between the straightedge and the skin, measured normal to the skin surface.
- (c) If a straight edge which is as long as the control surface is not available, the same measurements may be made using a taut string held between the tip ribs of the control surface.

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- (7) Check the security of the mass balance arm by pushing inboard and outboard at the balance weight and feeling for play or looseness.

B. Part 2 – Backlash Check

Backlash is detrimental to the aileron control system as it accelerates wear and possible damage to the linkages. Backlash should be controlled to as low a level as can reasonably be achieved. Backlash in the range 0.1 inch to 0.15 inch is acceptable and fleet experience indicates this can be achieved.

Excessive backlash must be rectified.

Based on fleet experience, excessive backlash is any backlash greater than 0.25 inch when measured as described below.

- (1) Lower the flaps to 38 degrees, then open the wing trailing edge doors.
- (2) Remove the fairing on the flap hinge bracket at wsta 172.75, to expose the aileron rod and lever.
- (3) Insert the rigging pin P/N 1/N-88-83 in the mechanical stop lever to lock it at neutral (Ref N22 MM 27-10-00 Fig 204) (Ref N24 MM 27-10-06 Fig 201).
- (4) Determine backlash by applying light finger pressure alternately up and down on the aileron trailing edge at the inboard end. Use sufficient force to take up any free play, without putting any strain on the linkages.
- (5) Measure the backlash by reference to the outboard end of the adjacent inboard rear flap. If total movement is more than 0.25 inch, the linkage must be examined and worn components replaced as required to correct the problem.
- (6) Lightly push the aileron up and down and look at each individual bearing and rod end in the linkage. Any appreciable movement should be investigated by dismantling that pivot and checking for bolt wear, bearing play, etc. Replace any part or bearing showing signs of excessive wear.

NOTE:

This corrective action should also be taken if the measured backlash is below the figure of 0.25 inch but might approach it before backlash is next checked.

- (7) Remove the rigging pin P/N 1/N-88-83.

C. Part 3 – Balance Check

- (1) Inspect the records of the last balancing of both the LH and RH ailerons. If the data conforms to the limits of Structural Repair Manual chap 57-50-21, no further action is necessary.
- (2) If the records show that the results of balancing are not within the Structural Repair Manual limits, or if the records are unavailable, or any work (including painting) has been done to the aileron since its last balancing, or if any doubt exists; then remove the aileron and weigh and balance it as described in Structural Repair Manual chap 57-50-21.

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3. **SPECIAL TOOLS AND EQUIPMENT**

Aileron Balancing Fixture (Part No 1600-0003) or locally manufactured Aileron Balancing Jig (Ref ANMD-57-9 Rev 1 Fig 7).

4. **RECORDING ACTION**

Record compliance with Service Bulletin NMD-57-17 para 2.A., 2.B. and/or 2.C. as appropriate in the Airframe Log Book.