

# Nomad

## SERVICE BULLETIN

### FUSELAGE — CENTRE SECTION — INSPECTION OF FRAME STA 212.97(N22)/240.97(N24)

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, 137, 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, 136, 139, 140, 142.

B. **Reason**

Analysis has shown that the major fatigue source for the wing rear spar attachments and the top member of the frame at sta 212.97 (N22) and 240.97 (N24) is engine ground run-up. Lateral gusts are also a major fatigue source for the central fuselage structure between the wing attachment frames, the frame uprights and the top skins.

This service bulletin is issued to require an inspection for possible cracking in the frame at sta 212.97 (240.97) and its surrounding structure, particularly in the centre fuselage structure between the two wing attachment frames, including the frame uprights and the top skins.

**Reason for Revision 1**

To add detailed instructions for the inspection of wing rear spar attachment fitting bolts and boltholes, for corrosion and fretting.

C. **Description**

A detailed visual inspection is to be performed to inspect for possible cracking in the centre fuselage structure in the vicinity of the frame at sta 212.97 (N22) or frame sta 240.97 (N24), where the wing rear spar attachment fittings are located. Inspection of the six bolt holes of the LH and RH wing attachment fittings is to be carried out using a Borescope or Eddy Current Detector.

D. **Compliance**

- (1) Compliance with this Service Bulletin is mandatory.
- (2) Inspection - Accomplishment Instructions are to be carried out on aircraft with more than 5000 Hrs TTIS - within 100 Hrs TIS or within 1 month, whichever occurs first, following receipt of SB NMD-53-20.
- (3) Boeing Aerospace Support - ASTA is to be notified of the results of the inspection if cracks are found in the areas identified by this Service Bulletin. Any damage or defects are to be repaired in accordance with the Structural Repair Manual (SRM), otherwise Boeing Aerospace Support - ASTA is to be contacted.
  - (a) Attached at Annex A is a form which has been designed to assist in the reporting of the inspection results.

|         |   |   |   |   |   |   |   |   |   |
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(4) Additional inspection considerations:

- (a) If the requirements of this Service Bulletin were previously carried out at the original issue and no corrosion was evident and the bolt holes were serviceable, no further action is required.
- (b) If the requirements of this Service Bulletin were previously carried out at the original issue and and corrosion and/or fretting was found, rework bolt holes as per Para 2.A.(7)(c) of this Service Bulletin.
- (c) If bolt hole rework is required, carry out at next 100 hourly inspection or within 3 months of receipt of this Service Bulletin.
- (d) If the bolt holes condition cannot be reliably assessed from the original inspection, the requirements of Para 2.A.(7)(c) of this Service Bulletin must be complied with.

**E. Approval**

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

**F. Manpower**

12 man-hours

**G. Materials—Price and Availability**

The parts listed at Para 3. are available, free of charge, on application to Aerospace Technologies of Australia (A Boeing Australia Company).

**H. Tooling—Price and Availability**

None.

**I. Weight and Balance**

None.

**J. References**

|                                |   |
|--------------------------------|---|
| Maintenance Manual             | Chap 25-20-00, Chap 27-10-00, Chap 27-10-08 |
| Illustrated Parts Catalogue    | Chap 53-16-03                               |
| Inspection Requirements Manual | Part 4                                      |

**K. Publications Affected**

Inspection Requirements Manual

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### 2. ACCOMPLISHMENT INSTRUCTIONS

#### A. Inspection of Frame at sta 212.97 (N22), or 240.97 (N24) and Adjacent Structure

- (1) Remove wall coverings, lower wall lining panel, window lining panels, overhead panel assembly and headlining assembly immediately forward and aft of the fuselage main frame at sta 212.97 (N22) or sta 240.97 (N24) (Ref Fig 1 and MM Chap 25-20-00).
- (2) Remove thermal and sound insulation pads exposed by step (1) except those under the lower wall lining panel.
- (3) Remove the access panels to the LH and RH rear wing attachment fittings on the wing upper fairings.
- (4) Visually inspect for possible cracking, the structure of the frame at sta 212.97(N22)/240.97(N24) and the surrounding structure as follows:
  - (a) The surface of the fuselage corner skin and doubler as visible through the access panels (Ref Fig 3, Item 1).
  - (b) Around rivet holes on the corner plates on both sides of frame (Ref Fig 2 & 3, Item 2).
  - (c) Around rivet holes on the fore, aft and inboard faces of both top diagonal frames (Ref Fig 2 & 3, Item 3).
  - (d) The cleat angles on both sides of frame (Ref Fig 3, Item 4).
  - (e) The skin attachment angles on both sides of the overhead frame (Ref Fig 3, Item 5).
  - (f) The two vertical cleats (and attached longitudinal webs) on the aft side of the overhead frame (Ref Fig 2, Item 6).
  - (g) The fore, aft and lower faces of the overhead frame especially around the fastener locations (Ref Fig 3, Item 7).
  - (h) The overhead and side frame at cut-outs where the top diagonal frame member slots into the side column (Ref Fig 3, Item 8).
  - (i) The top fuselage skins where the stringers terminate on both sides of the overhead member of frame (Ref Fig 3, Item 9).
  - (j) The inside surface of all corner skins on both sides of frame around rivets attached to stringers and doublers.
  - (k) Doublers visible through the lightening hole on both side frames (Ref Fig 3, Item 10).
  - (l) The fore, aft and inboard faces of both side frames (Ref Fig 3, Item 12).
  - (m) Around rivets in the intercostals fore and aft of both side frames (Ref Fig 3, Item 11).
  - (n) The top fuselage skins fore and aft of the frame in the area around the stringers, doublers and cleats from the interior and exterior.

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- (5) Inspect the fuselage skins for cracks aft of the wing front spar attachment frame at sta 182 (N22) or 210 (N24) (i.e. upper corner skins and upper skin including the angle attaching the upper corner skin to the frame at both top corners).

### WARNING

DO NOT OPERATE FLIGHT CONTROLS WITH CONTROL COMPONENTS DISCONNECTED OR WHEN PERSONNEL ARE WORKING IN THE AREA CONCERNED. SERIOUS INJURY TO PERSONNEL OR DAMAGE TO FLIGHT CONTROL COMPONENTS AND STRUCTURE COULD OCCUR.

- (6) Slacken the aileron cable system (Ref MM Chap 27-10-00).
- (7) Access and inspect bolt holes as follows:
- (a) Remove LH aileron primary cable pulley (sta 215.74, bl 23.55 (N22) & sta 243.74, bl 23.55 (N24)) to provide access to the LH wing rear spar attachment fitting and bolt-nut hidden in the forward recess of the pulley attachment fitting (Ref MM Chap 27-10-08).

### WARNING

REPLACE EACH BOLT BEFORE REMOVING THE NEXT ONE. ONLY ONE BOLT AT A TIME SHOULD BE OUT OF THE FITTING.

- (b) Remove the six bolts (one at a time) that secure the wing rear spar attachment fitting to the frame (Ref Fig 2) and retain (or renew if necessary).
- (c) Using a borescope, perform a close visual inspection of the six bolt holes for cracks, corrosion and/or fretting. Alternatively, NDT inspection using eddy current equipment may be used for crack detection. Pay particular attention to the three layers of frame sheeting on either side of the wing attachment fitting for the four outermost bolts and two layers for the two lower bolts.

If cracks are found contact Boeing Aerospace Support - ASTA.

If corrosion or fretting is found, ream hole to 1<sup>st</sup> oversize (as per table below) to remove evidence of corrosion, fretting or ovality. If hole will not clean up with 1<sup>st</sup> oversize, contact Boeing Aerospace Support - ASTA.

| 1st Oversize Holes (Nom H8) |               |               |
|-----------------------------|---------------|---------------|
| Nominal size (Inches)       | Hole (Inches) | Bolt (Inches) |
| 3/8                         | 0.3915        | 0.3901        |
|                             | 0.3906        | 0.3891        |
| 1/4                         | 0.2665        | 0.2651        |
|                             | 0.2656        | 0.2641        |

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On completion of the bolt hole inspection, inspect the bolt for corrosion and/or fretting, to determine the serviceability of each bolt. Serviceable bolts may be refitted (unless hole reamed to 1<sup>st</sup> oversize) with washer and nut (Ref IPC Chap 53-16-03). All bolts to be wet assembled using JC5A jointing compound and torque tightened as follows:

- i. Two outermost bolts - 160 to 190 lb in
  - ii. Four remaining bolts - 50 to 70 lb in.
- (d) Refit the pulley removed in step 2.A.(7)(a) (Ref MM Chap 27-10-08).



AFTER ALL MAINTENANCE ACTIVITIES INVOLVING FLYING CONTROLS,  
OR WHENEVER FLYING CONTROL SERVICING AND ACCESS PANELS  
ARE REMOVED, ENSURE THAT THE AREAS CONCERNED ARE CLEAN  
AND FREE FROM FOREIGN OBJECTS.

- (e) Repeat steps 2.A.(7)(b) to (7)(d) for RH wing rear spar attachment fitting.
- (8) Tension the aileron cable system (Ref MM Chap 27-10-00).
- (9) On completion of inspection, refit thermal and sound insulation pads and wall coverings removed in steps 2.A.(1) and (2) with the original fasteners that were removed.
- (10) Refit the access panels to the wing rear spar attachment fittings.

### 3. MATERIALS INFORMATION

#### A. Parts Required Per Aircraft.

| New Part No | Qty | Description             | Old Part No | Instruction/Disposition |
|-------------|-----|-------------------------|-------------|-------------------------|
| NAS6206-38  | 2   | Bolt, hex head          | NAS1106-38  | Replace                 |
| NAS6206-38X | 2   | Bolt, hex head, 1st O/S |             | Alternative             |
| NAS6204-34  | 4   | Bolt, hex head          | NAS1104-34  | Replace                 |
| NAS6204-34X | 4   | Bolt, hex head, 1st O/S |             | Alternative             |
| NAS6204-38  | 4   | Bolt, hex head          | NAS1104-38  | Replace                 |
| NAS6204-38X | 4   | Bolt, hex head, 1st O/S |             | Alternative             |
| NAS6206-46  | 2   | Bolt, hex head          | NAS1106-46  | Replace                 |
| NAS6206-46X | 2   | Bolt, hex head, 1st O/S |             | Alternative             |

#### NOTE

New turnbuckle locking clips PN MS21256-2 are required for aileron primary cables 1 and 2.

### 4. SPECIAL TOOLS AND EQUIPMENT

None.

### 5. RECORDING ACTION

Record compliance with Service Bulletin NMD-53-20 Rev 1 in the Airframe Log Book.

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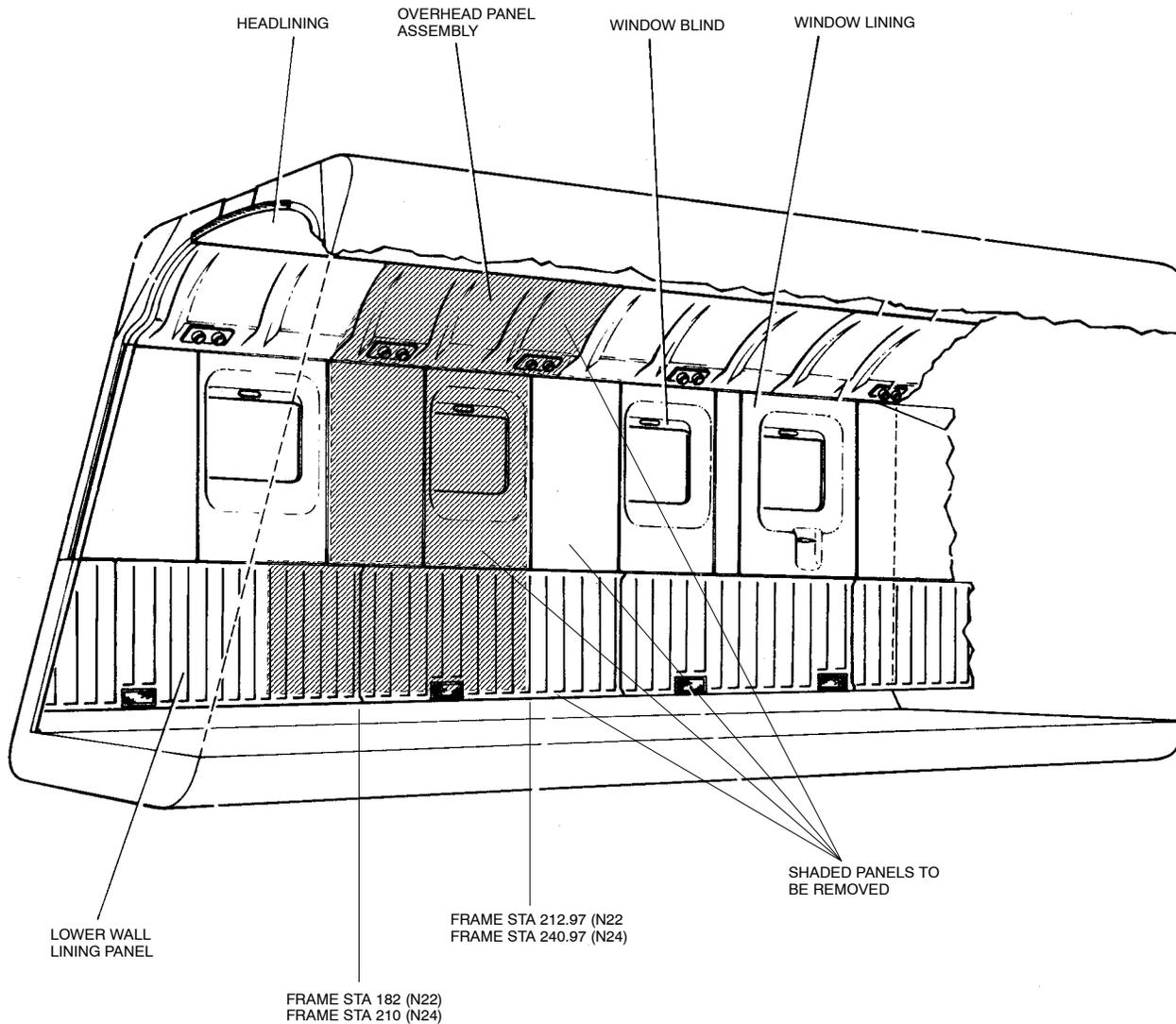


Figure 1 Equipment and Furnishings Centre Fuselage

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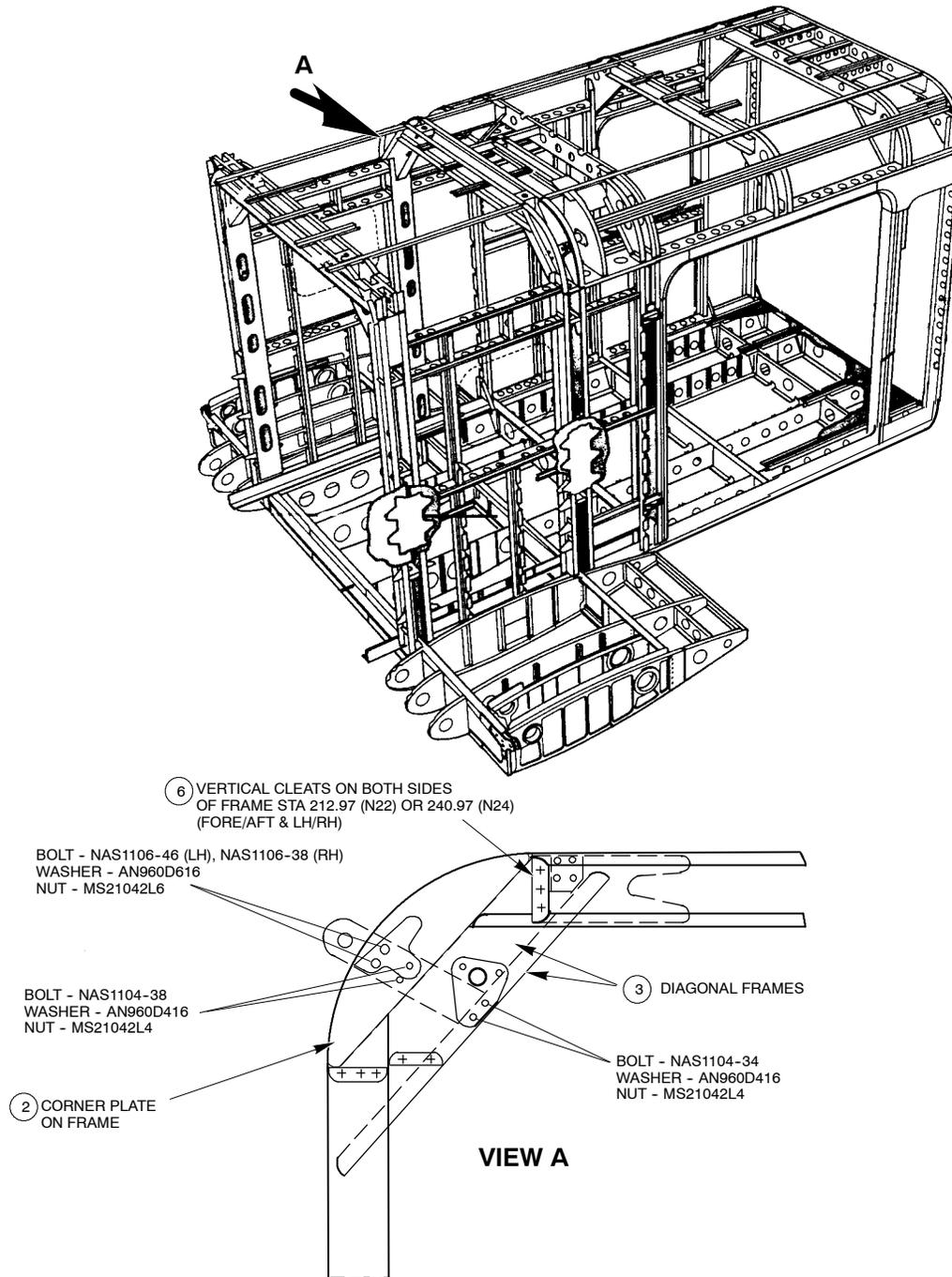


Figure 2 Centre Fuselage Section

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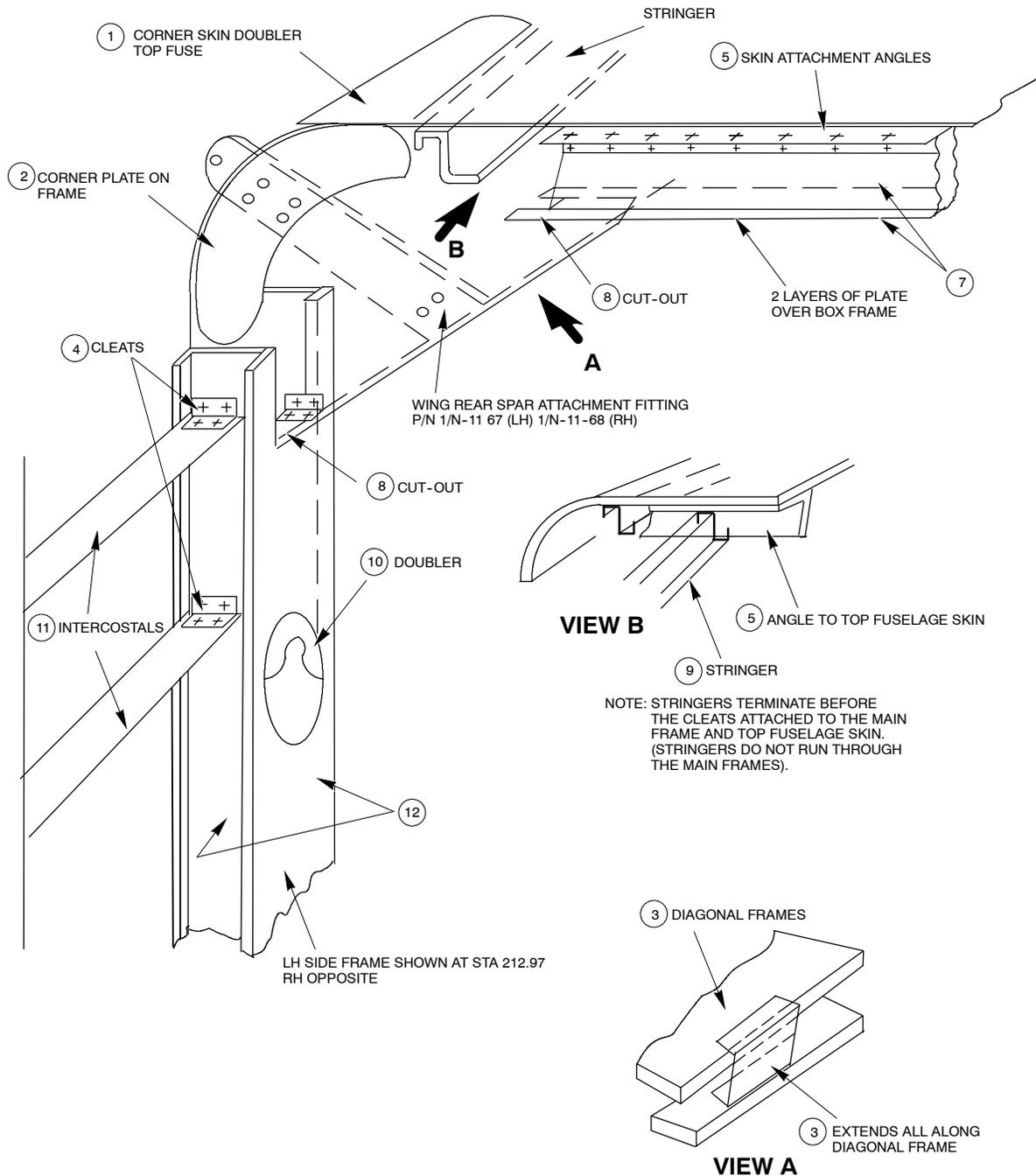


Figure 3 Frame Assembly, STA 212.97 (N22) or STA 240.97 (N24)

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ANNEX A

TECHNICAL SERVICES MANAGER  
 BOEING AEROSPACE SUPPORT – ASTA  
 363 Adelaide Street  
 Brisbane  
 QLD 4000  
 Australia  
 Fax: +61 7 3306 3111

### RESULTS OF INSPECTION

Owner/Operator: \_\_\_\_\_

Aircraft Serial No: \_\_\_\_\_ Model: \_\_\_\_\_

Type of Operation: \*Commuter/Military/Freight/Surveillance/Medical/Utility \* Circle as appropriate

Other (Specify) \_\_\_\_\_

Total Time in Service: \_\_\_\_\_

| PART                                  | CRACKING<br>YES/NO | DESCRIPTION OF CRACK |
|---------------------------------------|--------------------|----------------------|
| CORNER SKIN DOUBLER                   |                    |                      |
| CORNER PLATES                         |                    |                      |
| DIAGONAL FRAMES                       |                    |                      |
| CLEAT ANGLES                          |                    |                      |
| SKIN ATTACHMENT ANGLES                |                    |                      |
| TWO VERTICAL CLEATS                   |                    |                      |
| LOWER FACES OF OVERHEAD FRAME         |                    |                      |
| SIDE FRAME CUT-OUTS                   |                    |                      |
| STRINGERS                             |                    |                      |
| CORNER SKINS                          |                    |                      |
| DOUBLERS                              |                    |                      |
| INBOARD FACES OF SIDE FRAMES          |                    |                      |
| INTERCOSTALS                          |                    |                      |
| TOP FUSELAGE SKINS                    |                    |                      |
| FUSELAGE SKINS AFT OF WING ATTACHMENT |                    |                      |

Please provide a sketch of cracks and attach to this form.

Remarks:

Approval Signature

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