PART 6 - EDDY CURRENT

WING CENTER SECTION REAR SPAR LOWER CHORD (HFEC)

1. **Purpose**

   A. To detect cracks emanating from the fastener holes of both the vertical and horizontal flanges in the rear spar lower chord of the wing center section. This procedure uses high frequency eddy current.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering tank with an eddy current instrument. The eddy current instrument must be battery powered.

      NOTE: Approval for operating eddy current equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

   C. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

      (1) Item: W-1

   D. 737 Maintenance Planning Document (D6-17594; D6-38278) Reference:

      (1) 6-57-32

      (2) S57-32-A

2. **Equipment**

   A. Instrument - Any eddy current instrument that satisfies the requirements of this procedure is acceptable. Refer to Part 6, 51-00-00, Procedure 4.

   B. Probe - Straight, shielded, pencil probe per Part 6, 51-00-00, Procedure 4 and Part 1, 51-06-00, Figure 1.

   C. Reference Standard - Refer to Part 6, 51-00-00, Procedure 4.

3. **Prepare for the Inspection**

   A. Defuel center section integral fuel tank per Chapter 28 of the Maintenance Manual.

   B. For those aircraft with fuel bladders, defuel and remove the bladder.

   C. Gain access to the inspection area through the access panel in the left lower skin of the center section. Access to that panel is gained through left air conditioning access panel No. 3303.

   D. Remove sealant as necessary to inspect. See Figure 1 for sealant removal locations.

   E. Wipe inspection area clean.

4. **Instrument Calibration**

   A. Calibrate per Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.

5. **Inspection Procedure**

   A. See Figure 1 for the inspection instructions.

   WARNING: PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE MAINTENANCE MANUAL MUST BE FOLLOWED BY PERSONNEL ENTERING ANY TANK THAT HAS CONTAINED FUEL. POSSIBILITY OF EXPLOSION AND TOXIC DANGER EXISTS IN VICINITY OF FUEL TANKS WHICH HAVE CONTAINED FUEL.

   B. Scan inspection areas RBBL 65.52 thru BBL 0.00 to LBBL 65.52. See Figure 1.

6. **Inspection Results**

A. A rapid meter movement occurring as probe is moved over a short distance is a potential crack indication and further investigation is required.

B. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.

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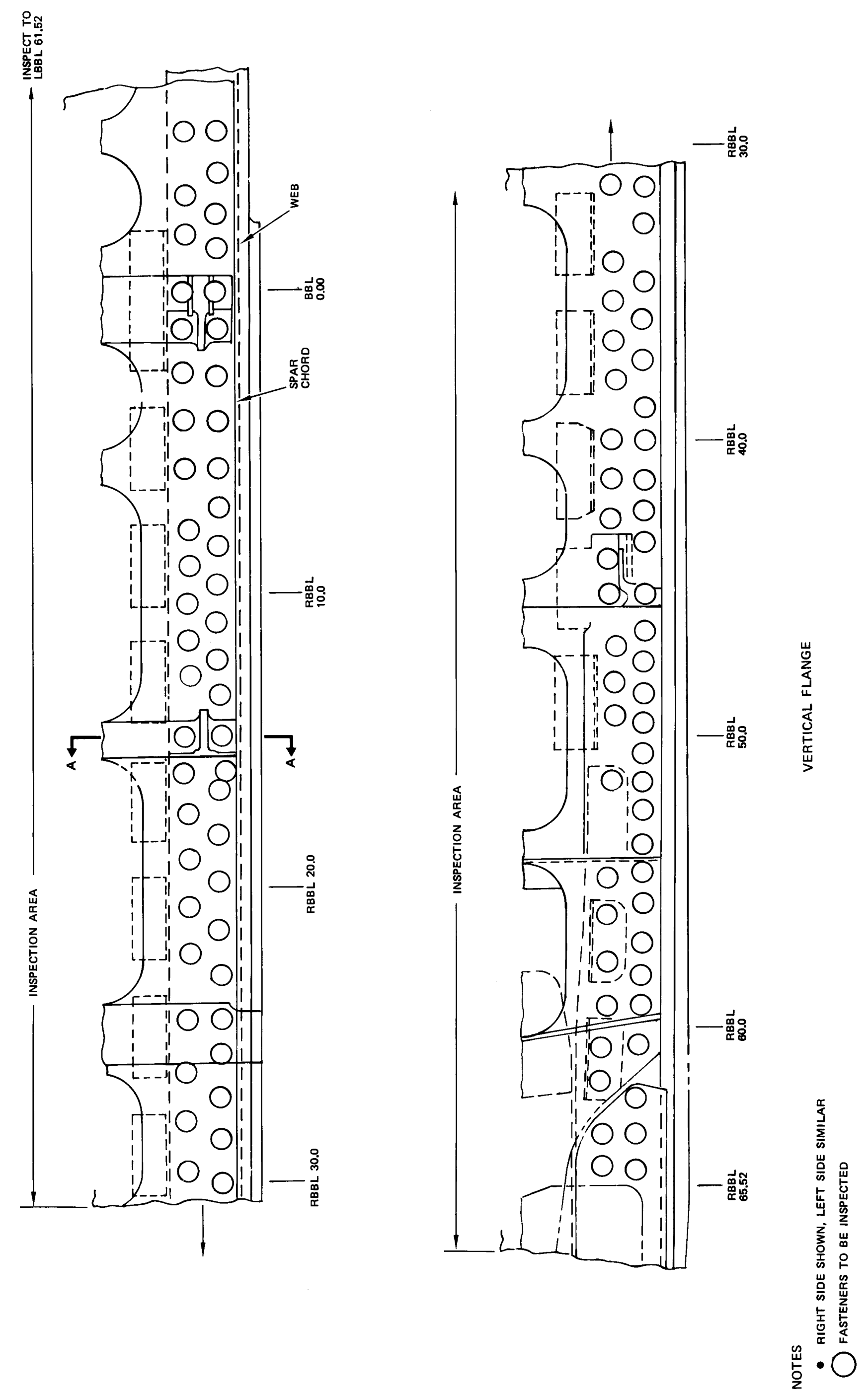
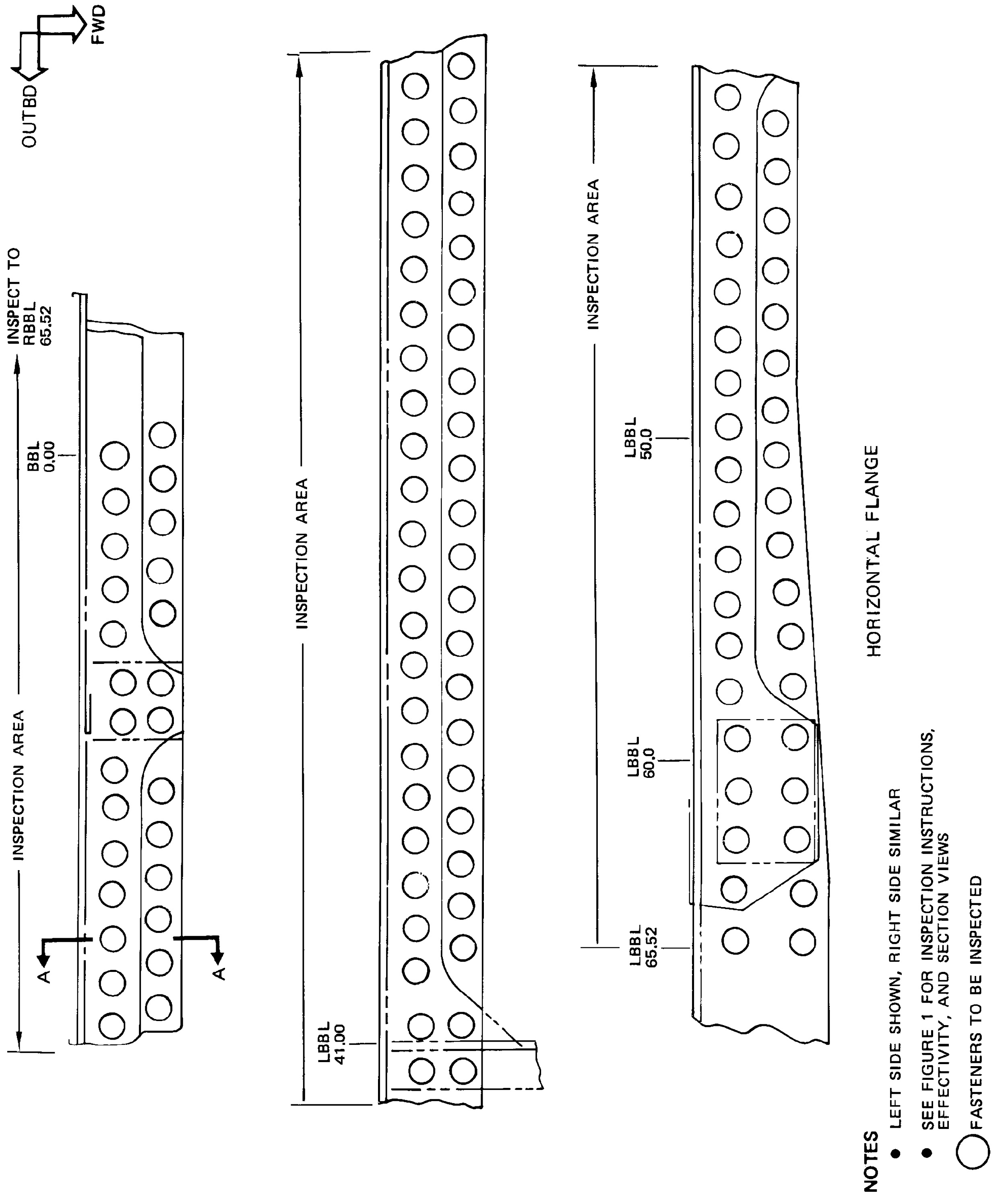


Center Section Lower Rear Spar Chord
Figure 1 (Sheet 1 of 3)



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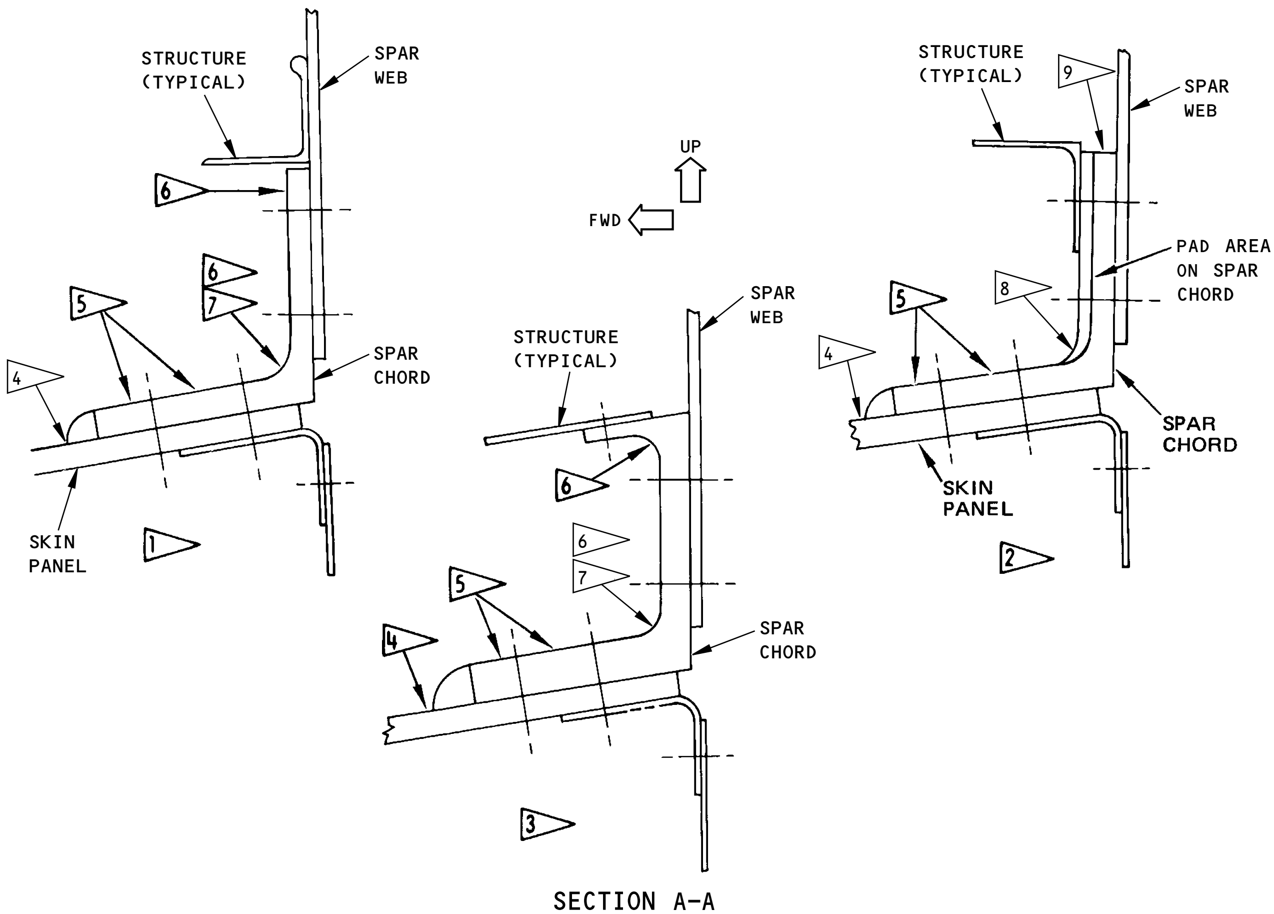
Center Section Lower Rear Spar Chord
Figure 1 (Sheet 2 of 3)



NOTES:

- THE RIGHT SIDE IS SHOWN, THE LEFT SIDE IS SIMILAR
- REMOVE SEALANT EXTENDING BEYOND 0.3 INCH FROM EDGE OF HORIZONTAL FLANGE
- REMOVE SEALANT THAT EXTENDS BEYOND 0.2 INCH (MINIMUM) FROM THE EDGE OF A FASTENER OR COLLAR
- REMOVE SEALANT FROM THE RADIUS OF AN INSPECTION AREA

1 2 3 TYPICAL STRUCTURAL INSPECTION AREAS

4 PLACE PROBE ON THE UPPER SURFACE OF THE LOWER SKIN AND SCAN USING THE SEALANT BEAD AT THE EDGE OF THE HORIZONTAL FLANGE AS A GUIDE

5 PLACE PROBE ON THE UPPER SURFACE OF THE LOWER CHORD HORIZONTAL FLANGE AND SCAN IN AN INBOARD AND OUTBOARD DIRECTION BETWEEN THE FORWARD EDGE AND THE FORWARD FASTENER ROW, AND BETWEEN THE FORWARD AND AFT FASTENER ROWS.

6 PLACE PROBE ON THE FORWARD SURFACE OF THE LOWER CHORD VERTICAL FLANGE AND SCAN IN AN INBOARD AND OUTBOARD DIRECTION. SCAN PER 7 AND 8

7 SCAN LOWER CHORD RADIUS AND THE AREA BETWEEN THE UPPER MOST FASTENER ROW AND THE EDGE OF THE FLANGE.

8 SCAN THE LOWER RADIUS.

9 WHERE THE FORWARD UPPER SURFACE OF THE VERTICAL FLANGE IS OBSTRUCTED BY TYPICAL STRUCTURE, PLACE PROBE ON THE UPPER EDGE OF THE CHORD AND SCAN USING THE WEB OF THE SPAR AS A GUIDE. REMOVE SEALANT FROM THE INSPECTION AREA.

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Center Section Lower Rear Spar Chord
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

WING CENTER SECTION LOWER STRINGERS AND SKIN (HFEC)

1. **Purpose**

   A. To detect cracks which emanate from fastener holes in the wing center section lower stringers and skin using high frequency eddy current.

   B. This inspection requires wing tank entry. Fuel tank must be drained and purged to a "health safe" condition (as defined by Chapter 28 of the Maintenance Manual) before entering tank with an eddy current instrument. The eddy current instrument must be battery powered.

   NOTE: Approval for operating eddy current equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

   C. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

   (1) Item: W-6

   (2) Item: W-8

2. **Equipment**

   A. Instrument, standard - Refer to Part 6, 51-00-00, Procedure 4.

   B. Probes

   (1) Straight shielded pencil probe per Part 6, 51-00-00, Procedure 4 or,

   (2) Right angle shielded pencil probe per Part 6, 51-00-00, Procedure 4.

   NOTE: Refer to Part 6, 51-00-00, Procedure 4 for nomenclature on probe size. Shielded pencil probes are available as follows:

   (a) P/N MP-905-50B; NDT Product Engineering
   DIA = 0.125 inch, A = 0.50 inch,
   B = 0.625 inch, C = 5.00 inches
   (Handle bent at 30 degrees, 2.5 inches from end.)

   (b) P/N MP-902-50B; NDT Product Engineering
   DIA = 0.125 inch, A = 0.20 inch
   B = 0.325 inch, C = 5.00 inches
   (Handle bent at 30 degrees, 2.5 inches from end.)

3. **Prepare for the Inspection**

   A. Defuel center section integral fuel tank per Chapter 28 of the Maintenance Manual.

   B. For those aircraft with fuel bladders, defuel and remove the bladder.

   C. Gain access to the inspection area through the access panel in the left lower skin of wing center section. Access to that panel is gained through left air conditioning access panel No. 3303.

   D. Remove excess sealant and corrosion inhibitor as necessary to perform inspection. See Figure 1.

4. **Instrument Calibration**

   A. Refer to Part 6, 51-00-00, Procedure 4.

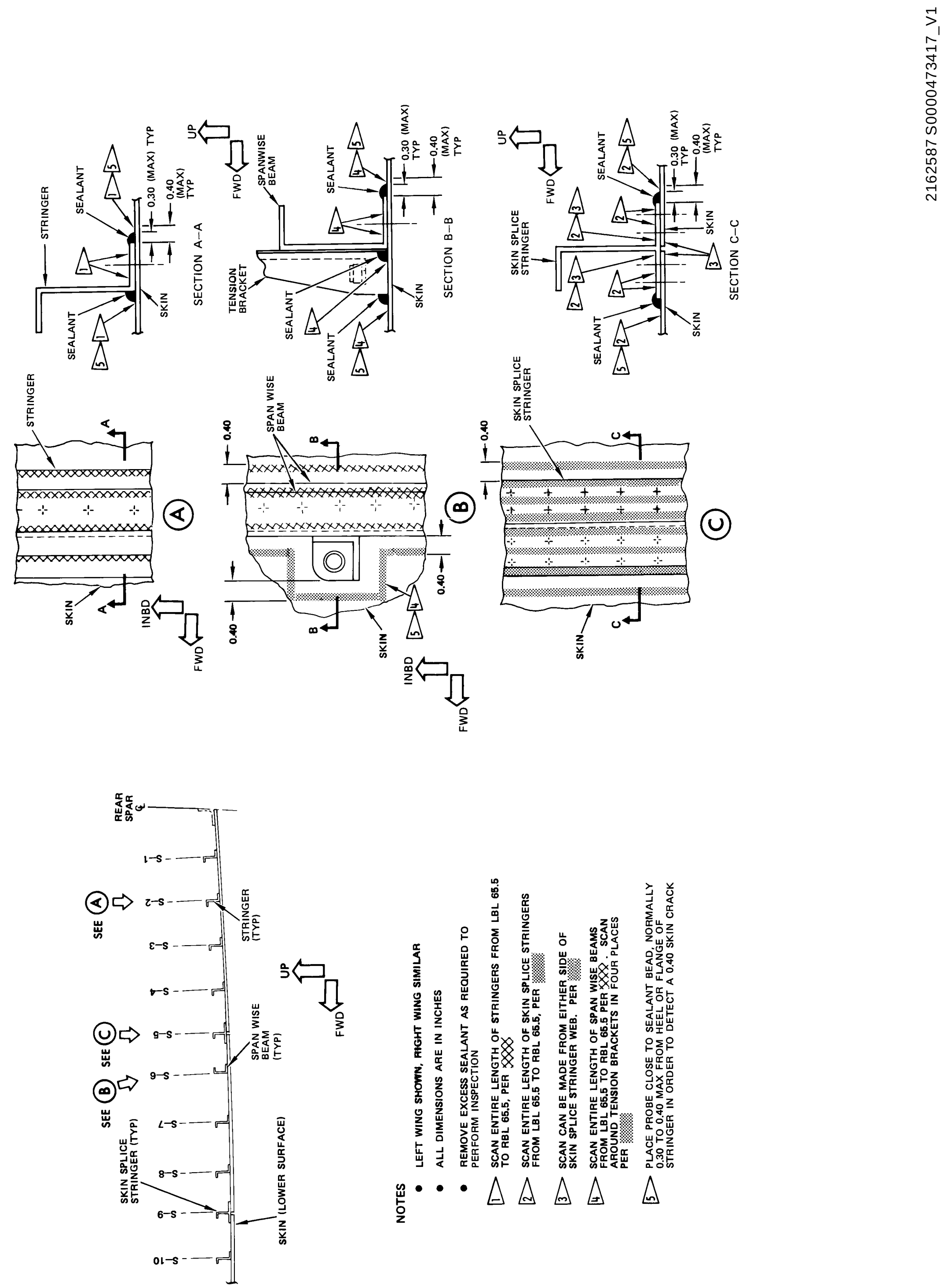
5. **Inspection Procedure**

   A. Inspect skin and stringers S-1 thru S-10 from LBL 65.5 to RBL 65.5. See Figure 1 for inspection location. Scans to be performed per Part 6, 51-00-00, Procedure 4.

6. **Inspection Results**

   A. A rapid meter movement occurring as probe is moved over a short distance is a potential crack indication and further investigation is required.

   B. Refer to Part 6, 51-00-00, Procedure 4.



Wing Center Section Lower Stringers and Skin
Figure 1

PART 6 - EDDY CURRENT

WING LOWER SURFACE HORIZONTAL FLANGE SPANWISE SPLICE AT STRINGERS S-5 AND S-9 (LFEC)

1. **Purpose**

   A. To detect cracks in the horizontal flange of the wing lower surface spanwise splice stringers S-5 and S-9 using low frequency eddy current.

   B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

      (1) Item: W-27

2. **Equipment**

   NOTE: Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   A. Instrument - Any eddy current instrument that will satisfy performance requirements of this procedure is suitable for this inspection. The following instrument was used for development of this procedure.

      (1) MIZ-10A; Zetec Inc.

   B. Probe - This procedure uses one probe; any probe of similar size that will satisfy performance requirements of this procedure is acceptable. The following probe was used in development of this procedure.

      (1) Spot probe with 1.0 inch OD shielding, usable at 300 Hz; P/N SPO 1153; Nortec Inc.

      NOTE: Specify instrument with which probe is to be used or instrument connector required when ordering probes.

   C. Reference Standard - Use reference standard A306. See Figure 1.

3. **Prepare for the Inspection**

   A. Inspection Code A

      (1) Remove nacelle, flap tracks and all related hardware sufficient to obtain access to inspection areas.

   B. Inspection Code B

      (1) Remove any sealant that prevents probe placement over gap.

   C. Wipe skin surface clean in inspection areas.

4. **Instrument Calibration**

   A. Connect probe and set frequency to 300 Hz.

   B. Visually center probe on skin gap. See Position 1 in Figure 2.

   C. Balance instrument per manufacturer's instructions.

   D. Adjust liftoff control per manufacturer's instructions to obtain the same response when the probe is on the bare standard as with the probe lifted off the part by 0.006 inch (approximately the thickness of two sheets of paper).

   NOTE: Probe is visually centered over the skin gap at an unnotched area during liftoff calibration. Once probe is calibrated for liftoff, centering is usually accomplished by scanning the probe across the gap to obtain a maximum meter response.

E. With the probe centered over the gap at Position 1, adjust meter response to read 20% of full scale with meter position control.

F. Scan the probe along the skin gap over the notched location. See Position 2 in Figure 2. Response should be upscale.

G. Adjust instrument sensitivity to obtain a 50% of full scale meter deflection as the probe is passed over the notch. (Position 1 reads 20% per Paragraph 4.E., Position 2 reads 70%).

H. Recheck null and liftoff. If readjustments are made, recheck sensitivity per Paragraph 4.G.

I. Cracks will be indicated by a rapid upscale meter deflection as the probe is scanned along the gap, similar to that obtained from reference standard notch.

5. Inspection Procedure

A. Inspection Code A.

(1) Nacelle and flap tracks removed.

(a) Calibrate instrument per Paragraph 4.A. through Paragraph 4.I.

(b) Center probe on skin gap per Figure 3.

(c) Set meter on 20 percent of full scale with meter position control.

NOTE: Do not change instrument sensitivity.

(d) Scan along skin gap per Inspection Code A, see Figure 3.

B. Inspection Code B.

(1) Scan per Inspection Code B only, see Figure 3.

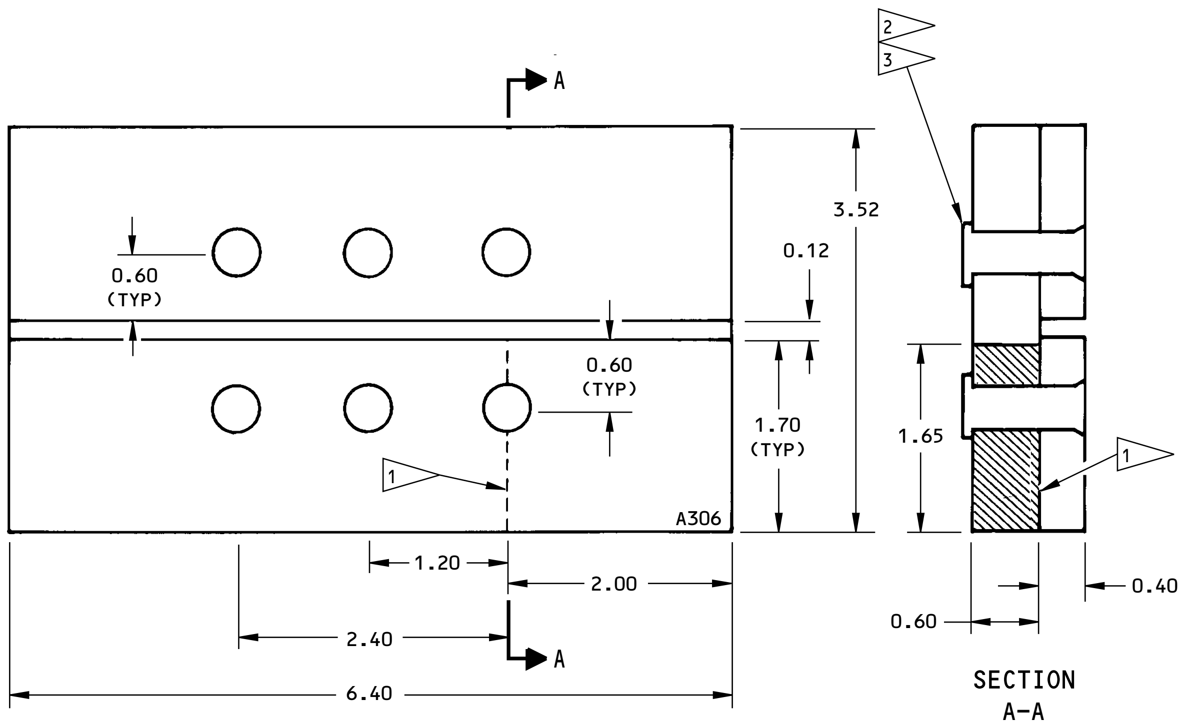
NOTE: Outboard of WBL 92.5 the skin thickness tapers gradually causing a gradual change in meter position as probe is scanned along skin gap. Readjust meter position control to maintain needle on scale (10 percent min).

Do not change meter sensitivity.

C. Cracks will be indicated by a sharp upscale meter deflection of 30 percent or greater and should be investigated further.

NOTE: Probe too close to or overlapping the head of a fastener may cause meter deflection. Compare with similar locations elsewhere on aircraft.

Metal chips in sealant may cause meter deflection. Remove sealant and reinspect.



NOTES

- ALL DIMENSIONS ARE IN INCHES
- TOLERANCES: X.XX ± 0.01
- MAKE FROM 2024-T3 OR -T4 ALUMINUM
- ETCH OR STEEL STAMP WITH A306. PUT A LETTER "A" IN FRONT OF THE REFERENCE STANDARD NUMBER TO SHOW THAT IT HAS ALODINED RIVETS. SEE FLAGNOTE 2.

1 JEWELER'S SAWCUT 0.06 INCH MAXIMUM WIDTH.

2 INSTALL 5/16 INCH BACR15DG10DD RIVETS (6 LOCATIONS). THESE RIVETS MUST HAVE A CONVERSION COATED (ALODINED) FINISH. TO MAKE SURE THE FINISH IS ALODINE, REFER TO PART 1, 51-06-01. INSTALL THE RIVETS AS SPECIFIED IN PART 1, 51-01-04.

3 REFERENCE STANDARD 306 CAN BE USED AS AN ALTERNATIVE TO REFERENCE STANDARD A306. REFERENCE STANDARD 306 IS THE SAME AS A306 OTHER THAN REFERENCE STANDARD 306 DOES NOT USE RIVETS WITH A CONVERSION COATED (ALODINED) FINISH.

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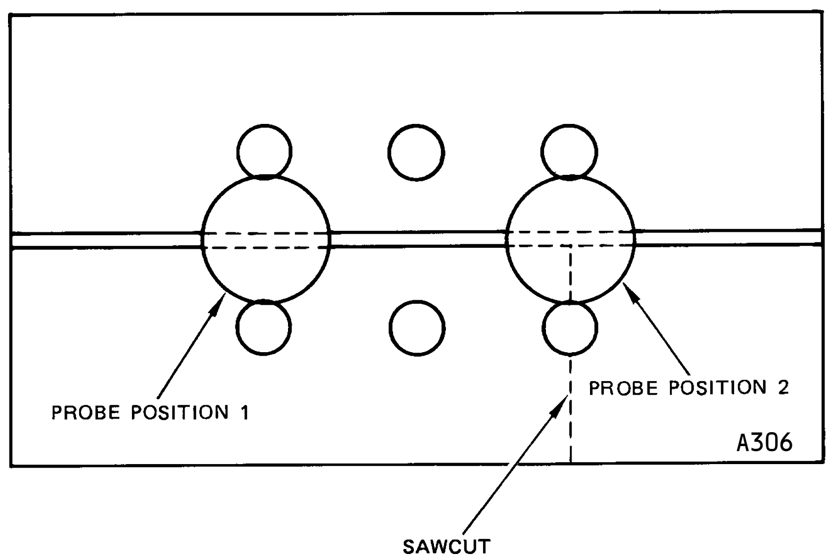
Reference Standard A306
Figure 1



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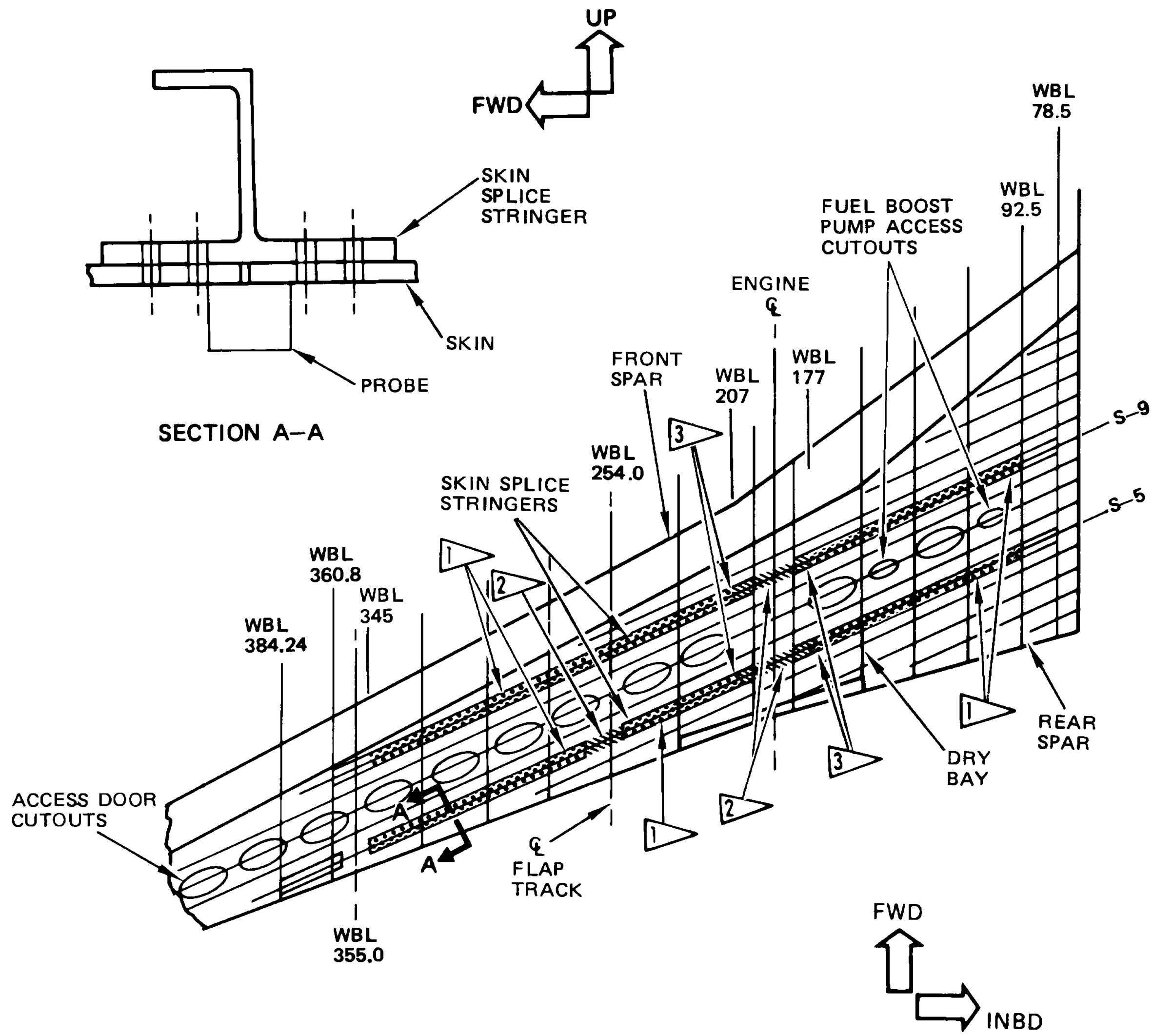
Probe Calibration Positions on Reference Standard A306
Figure 2



NOTES

- RIGHT SIDE SHOWN, LEFT SIDE SIMILAR
- VIEW LOOKING UP

1 CODE B INSPECTION – SCAN SKIN GAP AT STRINGERS S–5 AND S–9 PER MAINTAIN PROBE CENTERING BY MAXIMIZING METER DEFLECTION. USE OF NONCONDUCTIVE STRAIGHT EDGE WILL AID IN GUIDING PROBE ALONG GAP. SKIN THICKNESS VARIATIONS WILL CAUSE METER TO SLOWLY DRIFT UPSCALE (THINNING) AND DOWNSCALE (THICKENING)

2 CODE A INSPECTION – SCAN INSPECTION AREAS PER AND 1 ONLY IF NACELLE AND APPLICABLE FLAP TRACKS HAVE BEEN REMOVED. SEE PAR. 3 OF TEXT

3 DO NOT INSPECT IF NACELLE FAIRING ATTACH ANGLE COVERS INSPECTION AREAS

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Horizontal Flange of Wing Lower Surface Spanwise Splice Stringers S-5 and S-9
Figure 3

PART 6 - EDDY CURRENT

WING LOWER SURFACE SKIN SPLICE STRINGER HORIZONTAL FLANGES AT STRINGERS S-5 AND S-9 (HFEC)

1. Purpose

A. To detect cracks in the horizontal flanges of the wing lower skin splice stringers S-5 and S-9 using high frequency eddy current.

NOTE: This inspection requires wing tank entry. Refer to Paragraph 5.

B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

(1) Item: W-27

2. Equipment

NOTE: Refer to Part 1, 51-01-00, for information on equipment manufacturers.

A. Any eddy current instrument and probe combination that satisfies the performance requirements of this procedure is suitable for this inspection. The following equipment was used in the development of this procedure.

(1) Instrument and Reference Standard - Refer to Part 6, 51-00-00, Procedure 4.

(2) Probe - Shielded, right angle pencil probe per Part 6, 51-00-00, Procedure 4.

(a) P/N MP 902-40B; NDT Product Engineering

3. Prepare for the Inspection

A. Drain and purge the appropriate fuel tanks for entry with eddy current test equipment.

B. Remove upper wing skin dry bay access panels 7215L, 7216L, 7217L, 7415R, 7416R and 7417R at engine nacelles.

C. Remove lower wing skin access doors 7204L thru 7207L and 7404R thru 7407R.

D. Remove excess sealant and corrosion inhibitor as necessary from horizontal flanges of wing skin splice stringer.

E. Clean surfaces at inspection areas. See Figure 1.

4. Instrument Calibration

A. Refer to Part 6, 51-00-00, Procedure 4.

5. Inspection Procedure

WARNING: THIS PROCEDURE REQUIRES WING TANK ENTRY. FUEL TANK MUST BE DRAINED AND PURGED TO HEALTH SAFE CONDITION, AS DEFINED BY CHAPTER 28 OF MAINTENANCE MANUAL, BEFORE ENTERING TANK WITH EDDY CURRENT INSTRUMENT. EDDY CURRENT INSTRUMENT MUST BE BATTERY POWERED.

NOTE: Approval for operating eddy current equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

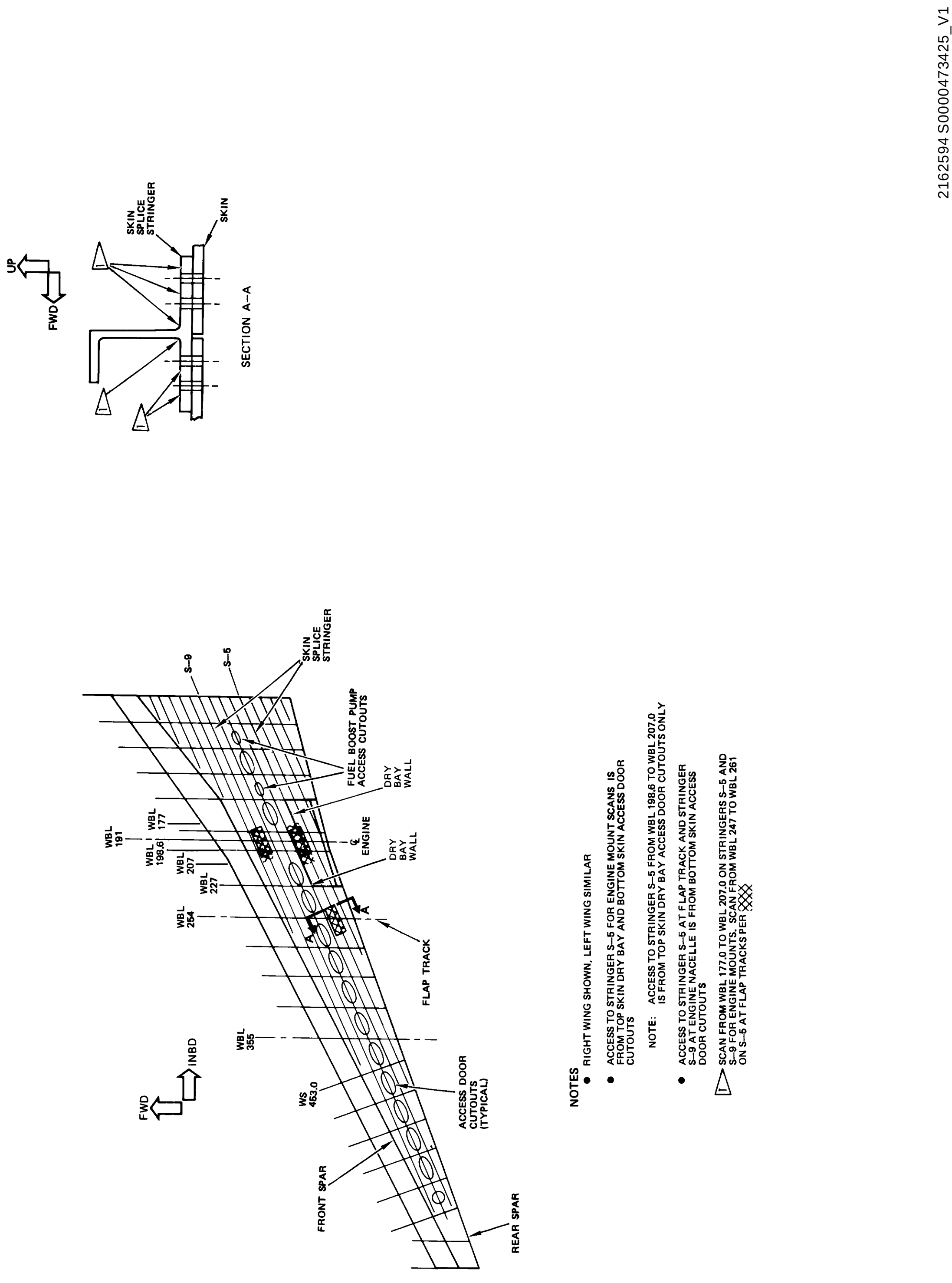
A. Inspect per Figure 1.

B. Perform inspection scans per Part 6, 51-00-00, Procedure 4.

6. **Inspection Results**

A. A rapid meter movement occurring as probe is moved over a short distance is a potential crack indication and further investigation is required.

B. Refer to Part 6, 51-00-00, Procedure 4.



Wing Lower Surface Skin Splice Stringers S-5 and S-9 at Engine Mounts and Flap Tracks
Figure 1

PART 6 - EDDY CURRENT

WING REAR SPAR LOWER CHORD VERTICAL AND HORIZONTAL FLANGES AT FLAP TRACK ATTACHMENTS AND DRY BAY (HFEC)

1. **Purpose**

   A. To detect cracks in the wing rear spar lower chord and skin at the flap track attachments at WBL 254, and in the rear spar chord and skin common to the dry bay from WBL 177 to WBL 207 using high frequency eddy current.

   NOTE: This inspection requires wing tank entry. Refer to Paragraph 5.

   B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

   (1) Item: W-17

2. **Equipment**

   A. Any eddy current instrument and probe combination that satisfies the performance requirements of this procedure is suitable for this inspection. The following equipment was used in the development of this procedure.

   (1) Instrument - ED520; Magnaflux Corp. - Refer to Part 6, 51-00-00, Procedure 4.

   (2) Probe - Shielded, right angle pencil probe per Part 6, 51-00-00, Procedure 4, with the following dimensions:

   (a) P/N MP 905-50B; NDT Production Engineering

   A = 0.5 inch, B = 0.625 inch, C = 5.0 inches, C1 = 2.0 inches

   (b) P/N MP-9003-70FX; NDT Product Engineering

   A = 0.030 inch, B = 0.155 inch, C = 5.0 inches

   B. Reference Standard - Refer to Part 6, 51-00-00, Procedure 4.

   NOTE: Refer to Part 1, 51-01-00, for information on equipment manufacturers.

3. **Prepare for the Inspection**

   A. Drain and purge the appropriate fuel tanks for entry with eddy current test equipment (Refer to Paragraph 5.).

   B. Gain access to the rear spar lower chord horizontal flanges as follows:

   (1) Remove panels 7215L, 7216L, 7217L, 7415R, 7416R and 7417R for access to area between WBL 177 and WBL 207.

   (2) Remove panels 7206L and 7406R or 7207L and 7407R for access to WBL 254.

   C. Gain access to the rear spar lower chord vertical flanges as follows:

   (1) Lower the trailing edge flaps to the full down position. This will permit access at WBL 254.

   (2) Access at WBL 191 is through the top of the engine nacelle through panels 5139L and 5239R.

   D. Remove sealant where required per flagnote 4 of Figure 1.

   E. Clean surfaces at inspection areas. See Figure 1.

4. **Instrument Calibration**

   A. Refer to Part 6, 51-00-00, Procedure 4.

5. **Inspection Procedure**

WARNING: THIS PROCEDURE REQUIRES WING TANK ENTRY. FUEL TANK MUST BE DRAINED AND PURGED TO HEALTH SAFE CONDITION, AS DEFINED BY CHAPTER 28 OF MAINTENANCE MANUAL, BEFORE ENTERING TANK WITH EDDY CURRENT INSTRUMENT. EDDY CURRENT INSTRUMENT MUST BE BATTERY POWERED.

NOTE: Approval for operating eddy current equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

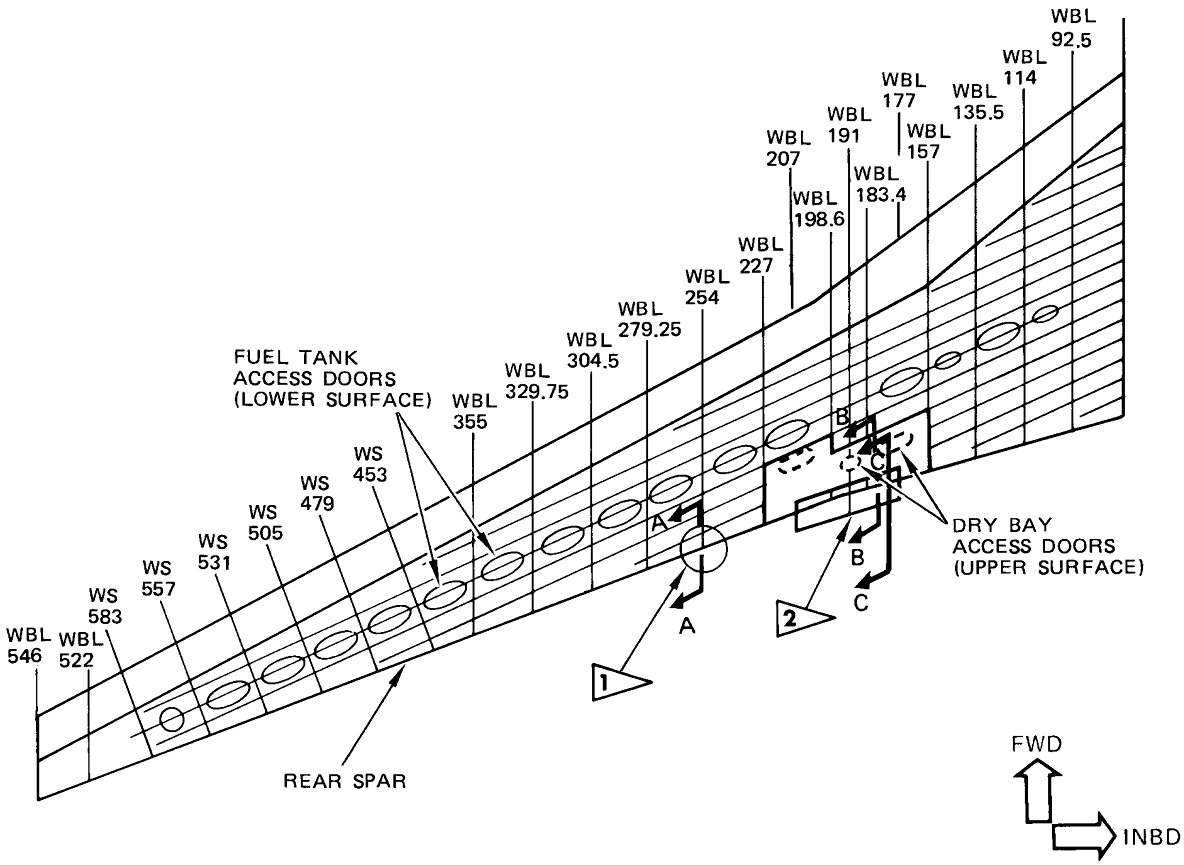
A. Inspect per Figure 1.

B. Perform inspection scans per Part 6, 51-00-00, Procedure 4.

6. **Inspection Results**

A. A rapid meter movement occurring as probe is moved over a short distance is a potential crack indication and further investigation is required.

B. Refer to Part 6, 51-00-00, Procedure 4.



NOTES

- RIGHT SIDE SHOWN, LEFT SIDE SIMILAR
- VIEW LOOKING UP

[1] a.) INSPECT THE HORIZONTAL FLANGE OF THE REAR SPAR LOWER CHORD 6 INCHES INBOARD AND 12 INCHES OUTBOARD OF THE FLAP TRACK MOUNT LOCATION PER SECTION A–A

b.) INSPECT THE VERTICAL FLANGE OF THE REAR SPAR LOWER CHORD FOR THE LENGTH OF THE FLAP TRACK MOUNT ONLY, PER SECTION A–A

[2] a.) INSPECT THE HORIZONTAL FLANGE OF THE REAR SPAR LOWER CHORD FROM WBL 177 TO WBL 207 PER SECTION C–C

b.) INSPECT THE VERTICAL FLANGE OF THE REAR SPAR LOWER CHORD FOR THE LENGTH OF THE MOUNT ASSY AT WBL 191, PER SECTION B–B

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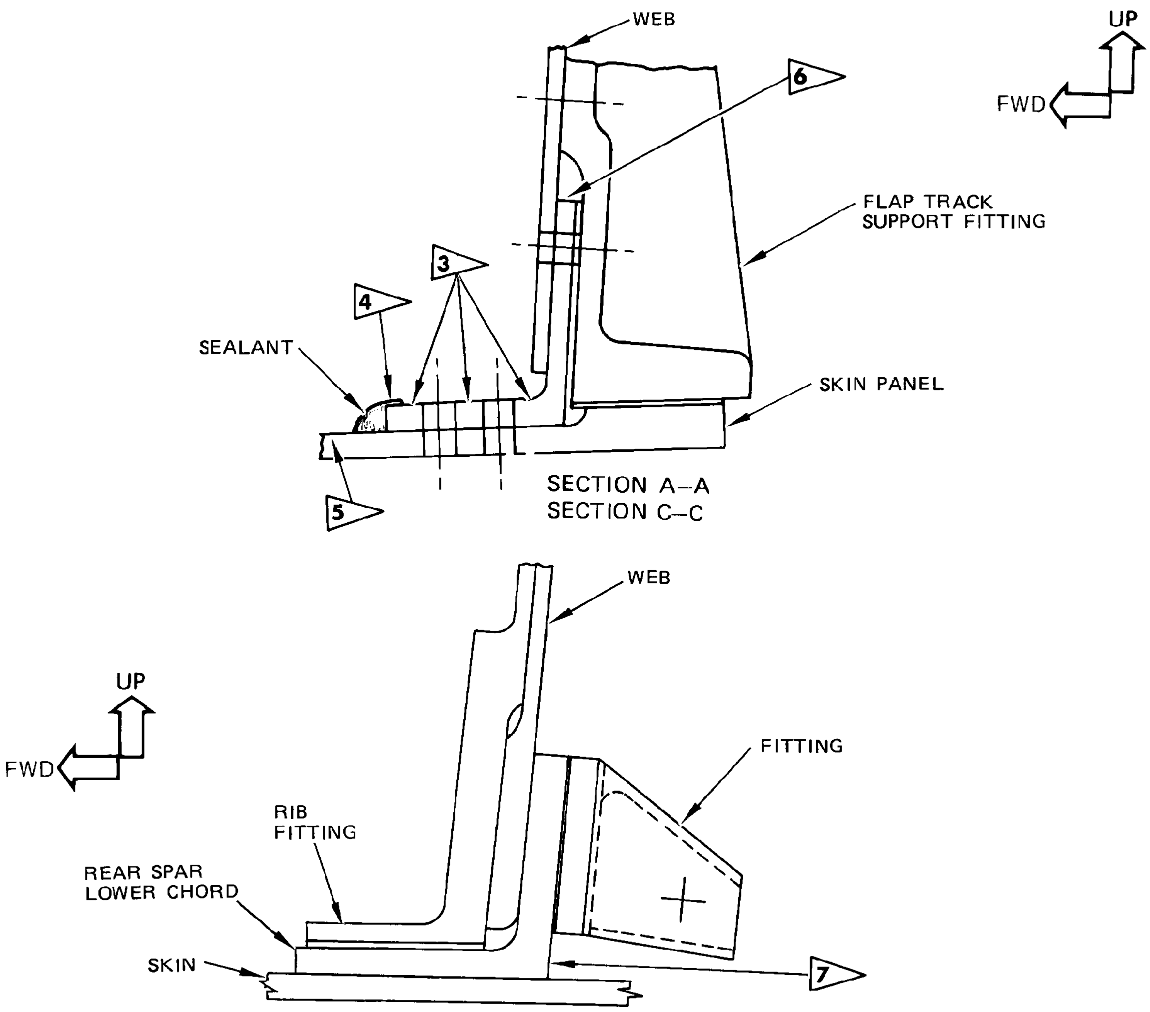
Wing Rear Spar Lower Chord at Flap Track Mounts and Dry Bay
Figure 1 (Sheet 1 of 2)



NOTES

3. PLACE PROBE ON UPPER SURFACE OF HORIZONTAL FLANGE AND SCAN IN AN INBOARD–OUTBOARD DIRECTION

4. WHERE SEALANT OBSTRUCTS UPPER SURFACE OF HORIZONTAL FLANGE, REMOVE A NARROW STRIP OF SEALANT FOR SCANNING THE LENGTH OF OBSTRUCTED AREA.

5. SCAN ALONG SKIN USING SEALANT BEAD AS A GUIDE.

6. WHERE FLAP TRACK OR ENGINE MOUNTS OBSCURE VISUAL INSPECTION, USE PROBE P/N MP–9003–50FX BY PLACING PROBE ON UPPER EDGE OF VERTICAL FLANGE AND SLIDING UNDER OBSTRUCTING FITTING.

7. WHERE REAR SPAR LOWER CHORD HORIZONTAL FLANGE IS OBSCURED BY RIBS AT WBL 183.4 AND WBL 198.6, PLACE PROBE ON HEEL OF CHORD AND SCAN 3 INCHES INBOARD AND OUTBOARD OF RIB CENTERLINES

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Wing Rear Spar Lower Chord at Flap Track Mounts and Dry Bay
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

WING FRONT SPAR LOWER CHORD - WBL 177 THRU WBL 207

1. **Purpose**

   A. To detect cracks which intersect fastener holes or break through to the edge in the front spar lower chord from WBL 177 thru WBL 207 using high frequency eddy current.

   NOTE: This inspection requires wing tank entry. Refer to Paragraph 3.

   B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

   (1) Item: W-19

2. **Equipment**

   A. Any eddy current instrument and probe combination that satisfies the performance requirements of this procedure is suitable for this inspection. The following equipment was used in the development of this procedure.

   (1) Instrument - Refer to Part 6, 51-00-00, Procedure 4.

   (2) Probes - This procedure uses two probes. Any probes of similar size satisfying the requirements of this procedure are acceptable. The following probes were used in the development of this procedure:

   (a) Shielded, bent handled, right angle pencil probe per Part 6, 51-00-00, Procedure 4 with the following dimensions: A = 0.03 inch, B = 0.155 inch, C = 6.0 inches; P/N MP 9003-60B(A); NDT Product Engineering. Refer to Figure 2 for additional dimensions.

   (b) Straight shielded pencil probe; P/N MP 50; NDT Product Engineering.

   B. Reference Standard - Refer to Part 6, 51-00-00, Procedure 4.

   NOTE: Refer to Part 1, 51-01-00, for information on equipment manufacturers.

3. **Prepare for the Inspection**

   A. Forward Radius Inspection

   (1) Gain access to forward radius of the lower chord at FSS 226.63 and FSS 243.78 through panels 6301L and 6401R.

   (2) Clean surfaces at inspection area. See Figure 1.

   NOTE: Corrosion preventative sealer may have to be removed from the radii.

   B. Horizontal Flange Inspection

   (1) Drain and purge the appropriate fuel tanks for entry with eddy current test equipment. Refer to Paragraph 5.

   (2) Gain access to inspection area by removing access panels as follows:

   (a) Remove wing panels 7204L and 7404R.

   (b) Remove access panel in the inboard inspar rib.

   (3) Clean surfaces at inspection areas. See Figure 1.

4. **Instrument Calibration**

   A. Refer to Part 6, 51-00-00, Procedure 4.

5. **Inspection Procedure**

WARNING: THIS PROCEDURE REQUIRES WING TANK ENTRY. FUEL TANK MUST BE DRAINED AND PURGED TO HEALTH SAFE CONDITION, AS DEFINED BY CHAPTER 28 OF MAINTENANCE MANUAL, BEFORE ENTERING TANK WITH EDDY CURRENT INSTRUMENT. EDDY CURRENT INSTRUMENT MUST BE BATTERY POWERED.

NOTE: Approval for operating eddy current equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

A. Inspect per Figure 1.

B. Perform inspection scans per Part 6, 51-00-00, Procedure 4.

6. **Inspection Results**

A. A rapid meter movement occurring as probe is moved over a short distance is a potential crack indication and further investigation is required.

B. Refer to Part 6, 51-00-00, Procedure 4.

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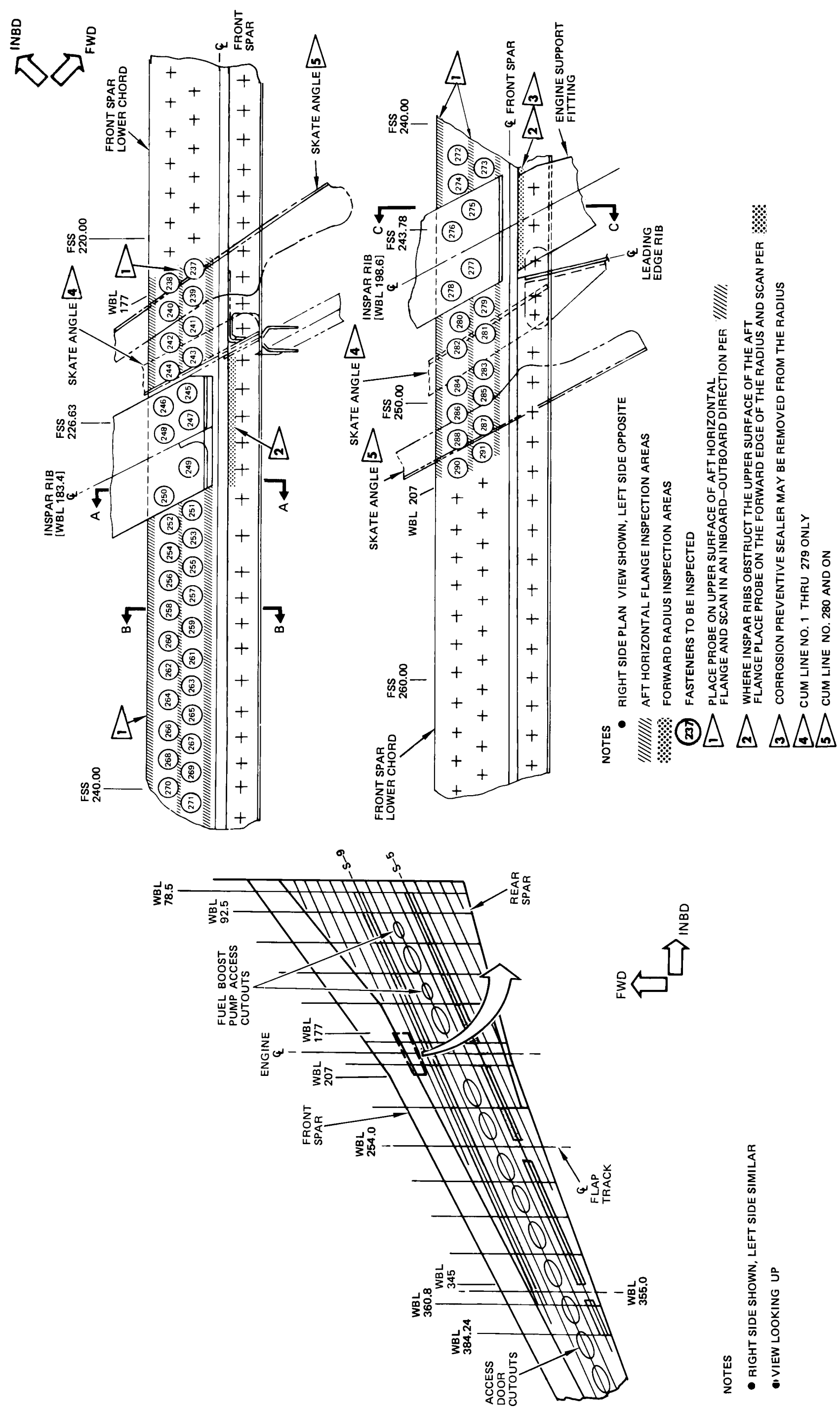
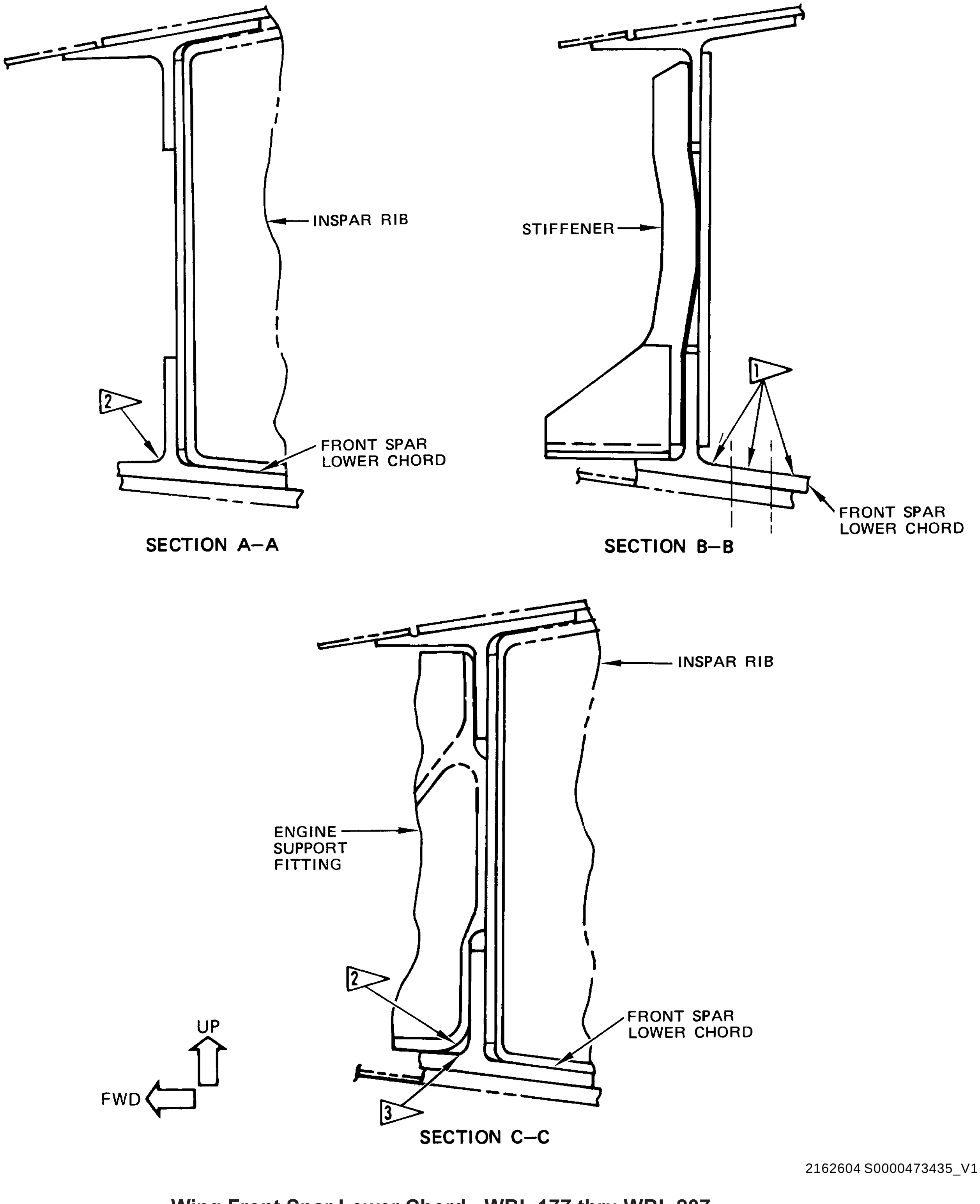
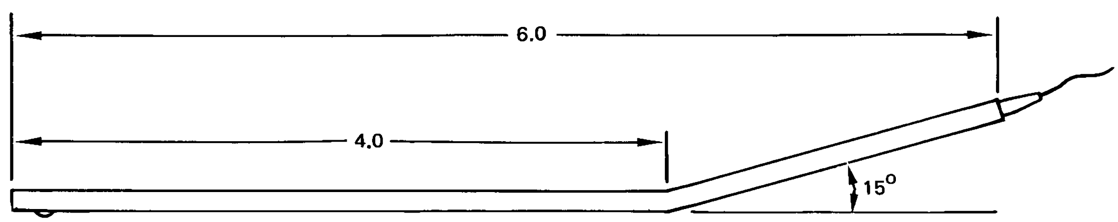


Wing Front Spar Lower Chord - WBL 177 thru WBL 207
Figure 1 (Sheet 1 of 2)



Wing Front Spar Lower Chord - WBL 177 thru WBL 207
Figure 1 (Sheet 2 of 2)



NOTES

- DIMENSIONS ARE IN INCHES EXCEPT AS NOTED
- REFER TO TEXT PARA 2.A.(2) FOR OTHER DIMENSIONS

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Wing Front Spar Lower Chord Probe Configuration
Figure 2

PART 6 - EDDY CURRENT

FRONT AND REAR SPAR UPPER AND LOWER CHORD, TERMINAL FITTINGS AND SPLICE PLATES (HFEC)

1. **Purpose**

   A. To detect cracks in the upper and lower wing spar chords, terminal fittings, and internal and external splice plates, inboard and outboard of BBL 70.85 using high frequency eddy current.

   NOTE: This procedure requires fuel tank entry with an eddy current instrument. Refer to Paragraph 5.

   B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

   (1) Item: W-13

   (2) Item: W-14

2. **Equipment**

   A. Any eddy current instrument and probe combination that satisfies the performance requirements of this procedure is suitable for this inspection. The following equipment was used in the development of this procedure.

   (1) Instrument - ED520; Magnaflux Corp. - Refer to Part 6, 51-00-00, Procedure 4.

   (2) Probes - This procedure uses three shielded pencil probes per Part 6, 51-00-00, Procedure 4 with the following dimensions:

   (a) A = 0.2 inch (0.50 cm), B = 0.325 inch (0.81 cm), C = 5.0 inches (12.7 cm) mitered right angle probe with bent handle, available from: P/N MP 902-50B; NDT Product Engineering.

   (b) A = 0.5 inch (1.27 cm), B = 0.625 inch (1.59 cm), C = 5.0 inches (12.7 cm) mitered right angle probe with bent handle, available from: P/N MP 905-50B; NDT Product Engineering.

   (c) C = 5.0 inches (12.7 cm) with curved 45° angle handle, available from: P/N MP 45-50C; NDT Product Engineering.

   B. Reference Standard - Refer to Part 6, 51-00-00, Procedure 4.

   NOTE: Refer to Part 1, 51-01-00, for information on equipment manufacturers.

3. **Prepare for the Inspection**

   A. External Inspection.

   (1) Refer to Figure 1, Figure 4, Figure 6, Figure 8 and Figure 11 of this procedure.

   (2) External access is with wing-to-body fairing removed.

   (3) It may be necessary to remove corrosion inhibitor from the surface of the splice plate between the inboard and outboard skin panels if it appears to interfere with the inspection.

   (4) For access to external rear spar upper chord horizontal flange inboard of BBL 70.85, remove cabin seats, carpet and floor panels above area of interest. Refer to Paragraph 5.A.(5) and Figure 11.

   B. Internal Inspection.

   (1) Refer to Figure 2, Figure 3, Figure 5, Figure 7, Figure 9 and Figure 10.

   (2) Obtain access to wing tank and center section through left air conditioning access panel No. 3303 and through access panel in the left lower corner of wing center section. Some airplanes require fuel bladder removal.

C. Wipe all inspection areas clean, remove sealant when necessary.

4. Instrument Calibration

A. Refer to Part 6, 51-00-00, Procedure 4.

5. Inspection Procedure

WARNING: THIS PROCEDURE REQUIRES WING TANK ENTRY. FUEL TANK MUST BE DRAINED AND PURGED TO HEALTH SAFE CONDITION, AS DEFINED BY CHAPTER 28 OF MAINTENANCE MANUAL, BEFORE ENTERING TANK WITH EDDY CURRENT INSTRUMENT. EDDY CURRENT INSTRUMENT MUST BE BATTERY POWERED.

NOTE: Approval for operating eddy current equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

NOTE: Perform inspection scans per Part 6, 51-00-00, Procedure 4.

A. External Inspection.

(1) Front spar lower chord horizontal flange inboard and outboard of BBL 70.85. See Figure 1.

(a) Lower surface of external splice plate adjacent to fastener locations.

(b) Lower skin surface, fore and aft of external splice plate. Remove sealant adjacent to splice plate.

(c) Lower edge of outboard spar chord. Some sealant removal may be required.

(2) Rear spar lower chord vertical flange inboard and outboard of BBL 70.85.

(a) Splice fitting and outboard and inboard spar chord. See Figure 4.

(3) Rear spar lower chord horizontal flange inboard and outboard of BBL 70.85. See Figure 6.

(a) External splice plate and lower skin surface adjacent to splice plate.

(b) Lower edge of inboard spar chord.

(4) Rear spar upper chord vertical flange outboard of BBL 70.85, see Figure 8.

(a) Splice fitting.

(b) Vertical surface of spar chord above splice fitting.

(c) Lower edge of spar chord below splice fitting.

(5) Rear spar upper chord horizontal flange inboard and outboard of BBL 70.85.

(a) External splice plate, see Figure 11.

NOTE: The external splice plate is not found on all airplanes. If your airplane does not have it, disregard it on Figure 11.

B. Internal Inspection.

(1) Front spar lower chord vertical flange inboard and outboard of BBL 70.85.

(a) Inboard terminal fitting and internal splice plate, see Figure 2.

(b) Outboard terminal fitting, see Figure 3.

(2) Rear spar lower chord vertical flange inboard and outboard of BBL 70.85.

(a) Inboard terminal fitting above splice fitting as shown in Figure 5.

(b) Outboard terminal fitting as shown in Figure 7.

(3) Rear spar lower chord horizontal flange inboard and outboard of BBL 70.85.

(a) Splice fitting, see Figure 5.

(b) Splice plate, see Figure 5 and Figure 7.

(4) Rear spar upper chord vertical flange inboard and outboard of BBL 70.85. See Figure 9 and Figure 10.

(a) Terminal fitting.

(b) Spar chord.

(5) Rear spar upper chord horizontal flange inboard and outboard of BBL 70.85, see Figure 9 and Figure 10.

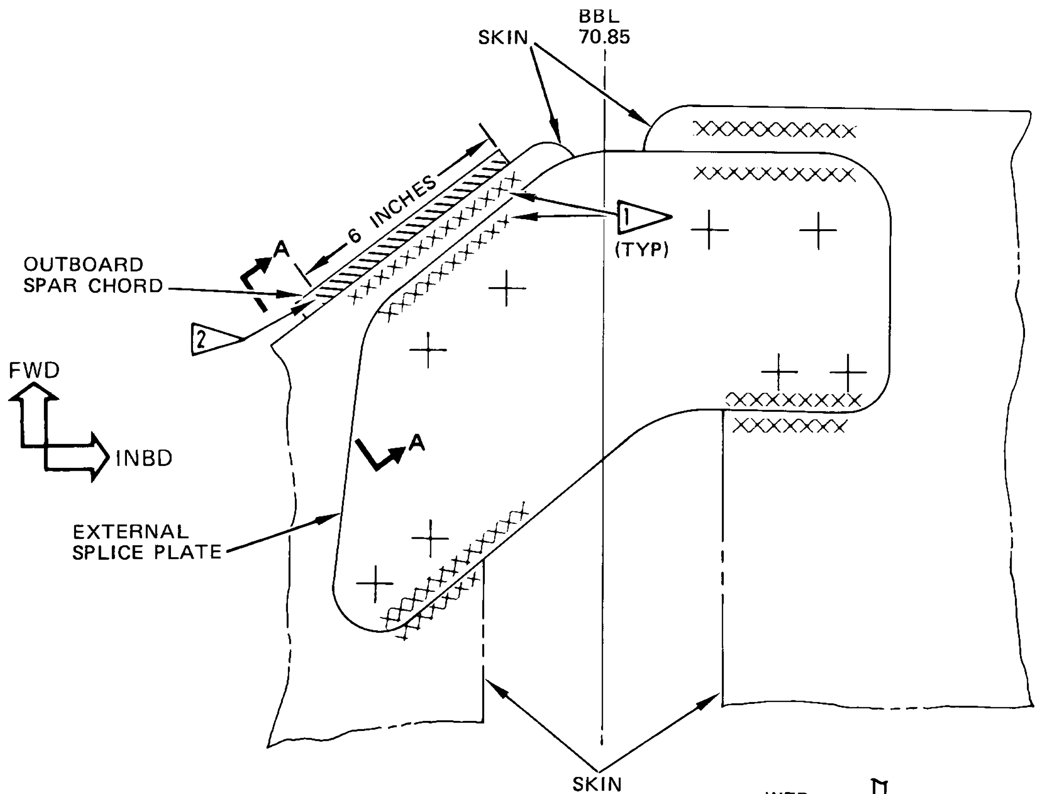
(a) Splice plate.

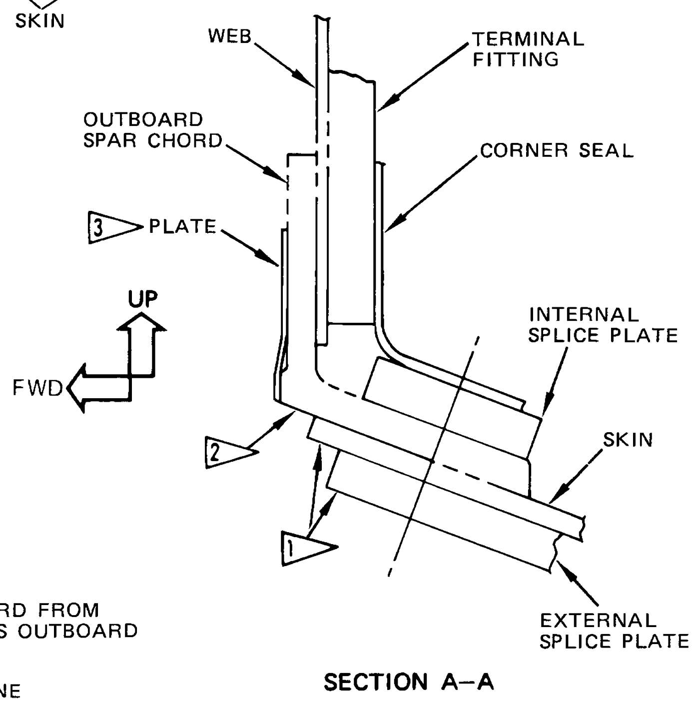
(b) Spar chord.

6. Inspection Results

A. A rapid meter movement occurring as probe is moved over a short distance is a potential crack indication and further investigation is required.

B. Refer to Part 6, 51-00-00, Procedure 4.





SECTION A–A

NOTES

- RIGHT SIDE SHOWN, LEFT SIDE OPPOSITE
- VIEW LOOKING UP

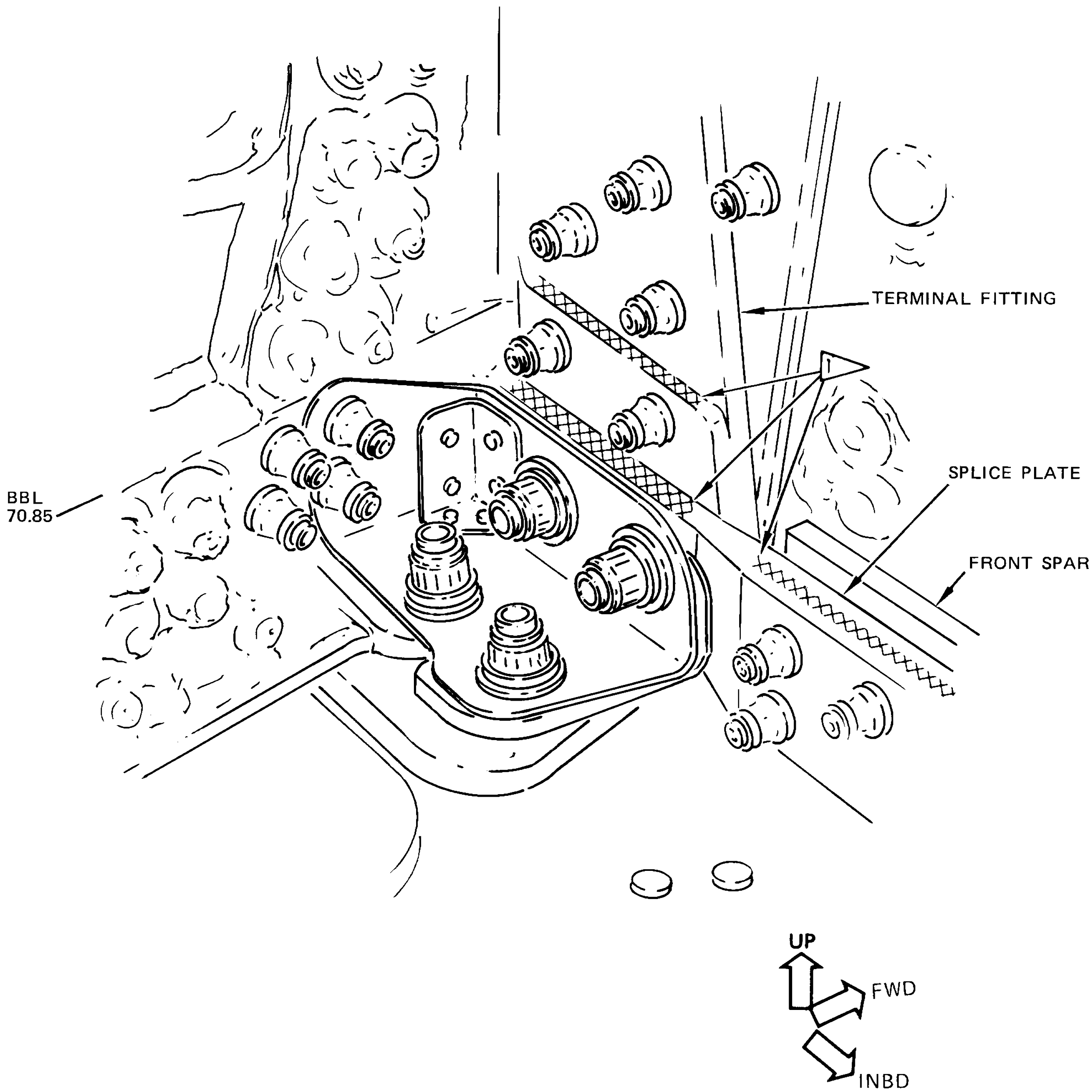
1 SCAN LOWER SURFACE OF SKIN AND LOWER SURFACE OF EXTERNAL SPLICE PLATE AS SHOWN PER XXXX AND PAR 5.A.

2 SCAN LOWER EDGE OF OUTBOARD SPAR CHORD FROM END OF CHORD TO APPROXIMATELY 6 INCHES OUTBOARD PER \\\\\\\\ AND PAR. 5.A.

3 P/N 65–45400–65 PLATE ON AIRPLANE CUM LINE NUMBERS 1 THRU 27 ONLY

2162607 S0000473440_V1

Front Spar Lower Chord Horizontal Flange Lower Surface Inboard and Outboard of BBL 70.85 - External
Figure 1



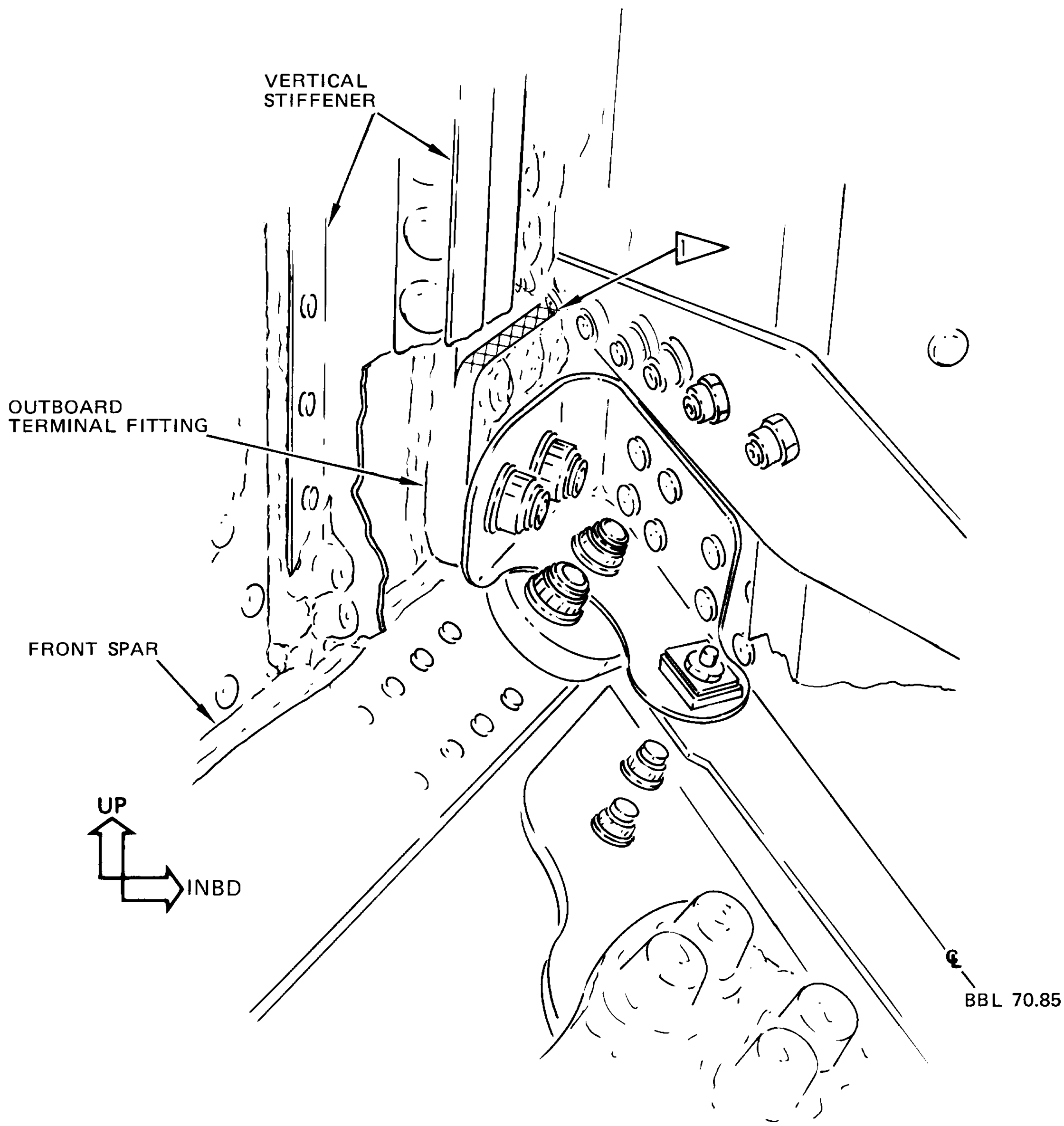
NOTES

- LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE

1 REMOVE SEALANT AS REQUIRED
AND SCAN AREAS PER XXXX
AND PAR. 5.B.

2162609 S0000473441_V1

Front Spar Lower Chord Vertical Flange Inboard of BBL 70.85 - Internal
Figure 2

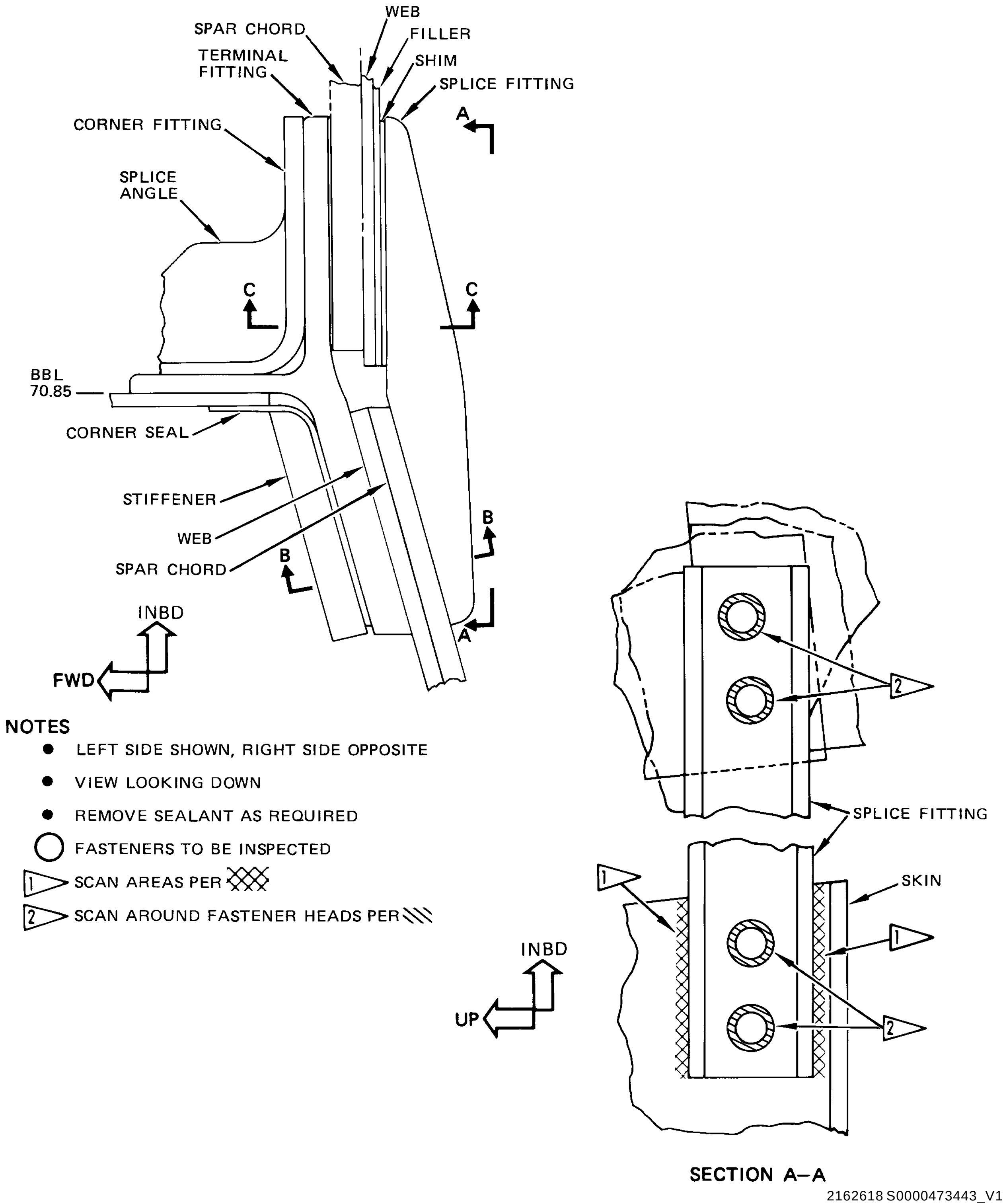


NOTES
- LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE
- VERTICAL STIFFENERS AND SEALANT ARE NOT SHOWN FOR CLARITY

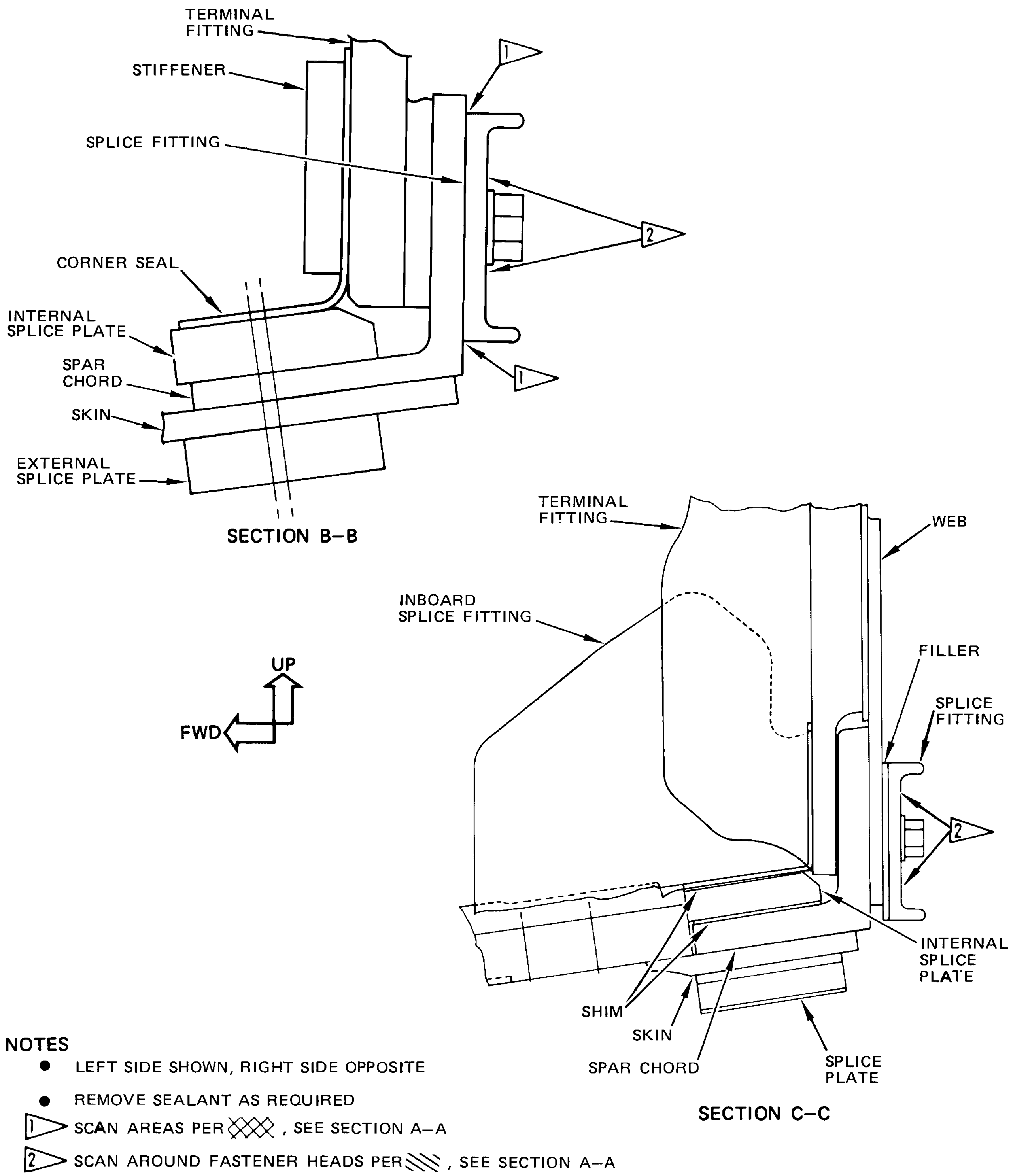
1 REMOVE SEALANT AS NECESSARY AND SCAN RADIUS OF TERMINAL FITTING AS SHOWN PER XXXXX

2162616 S0000473442_V1

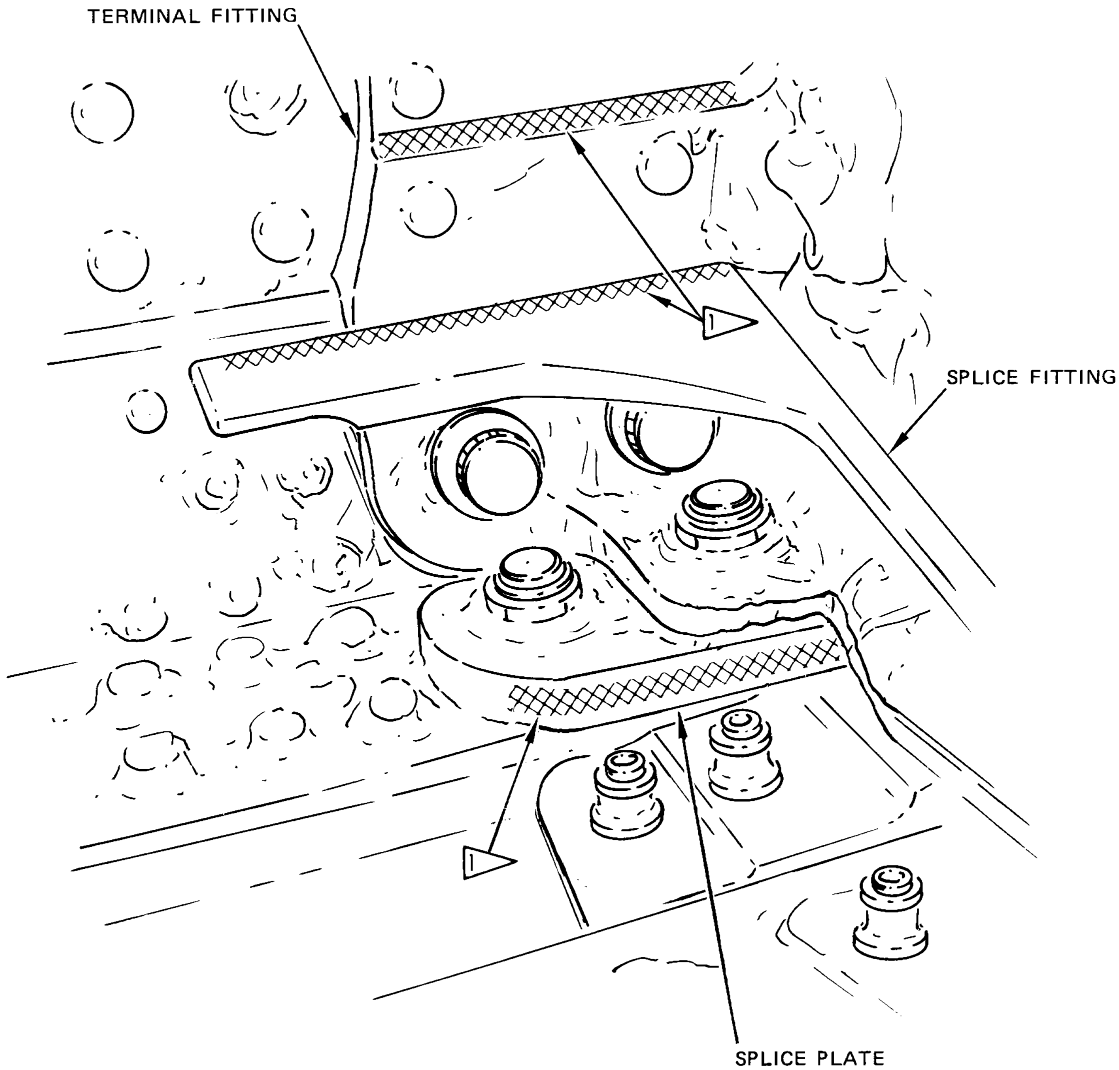
Front Spar Lower Chord Vertical Flange Outboard of BBL 70.85 - Internal
Figure 3

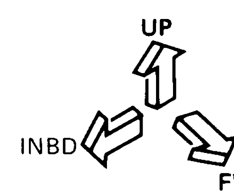


Rear Spar Lower Chord Vertical Flange - External
Figure 4 (Sheet 1 of 2)



Rear Spar Lower Chord Vertical Flange - External
Figure 4 (Sheet 2 of 2)





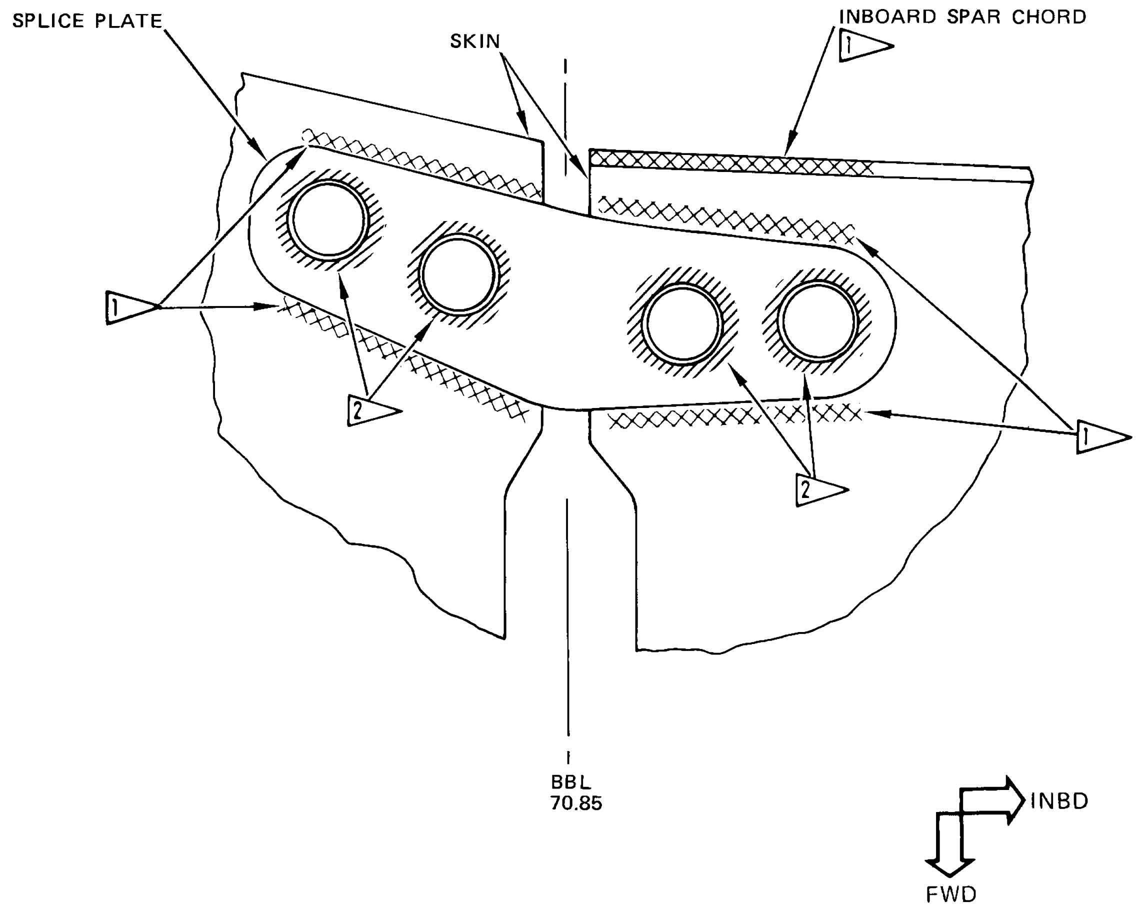
NOTES

- LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE

1 REMOVE SEALANT AS REQUIRED AND SCAN RADIUS OF TERMINAL FITTING, UPPER SURFACE OF SPLICE FITTING AND EDGE OF SPLICE PLATE PER

2162620 S0000473445_V1

Rear Spar Lower Chord Inboard of BBL 70.85 - Internal
Figure 5



NOTES

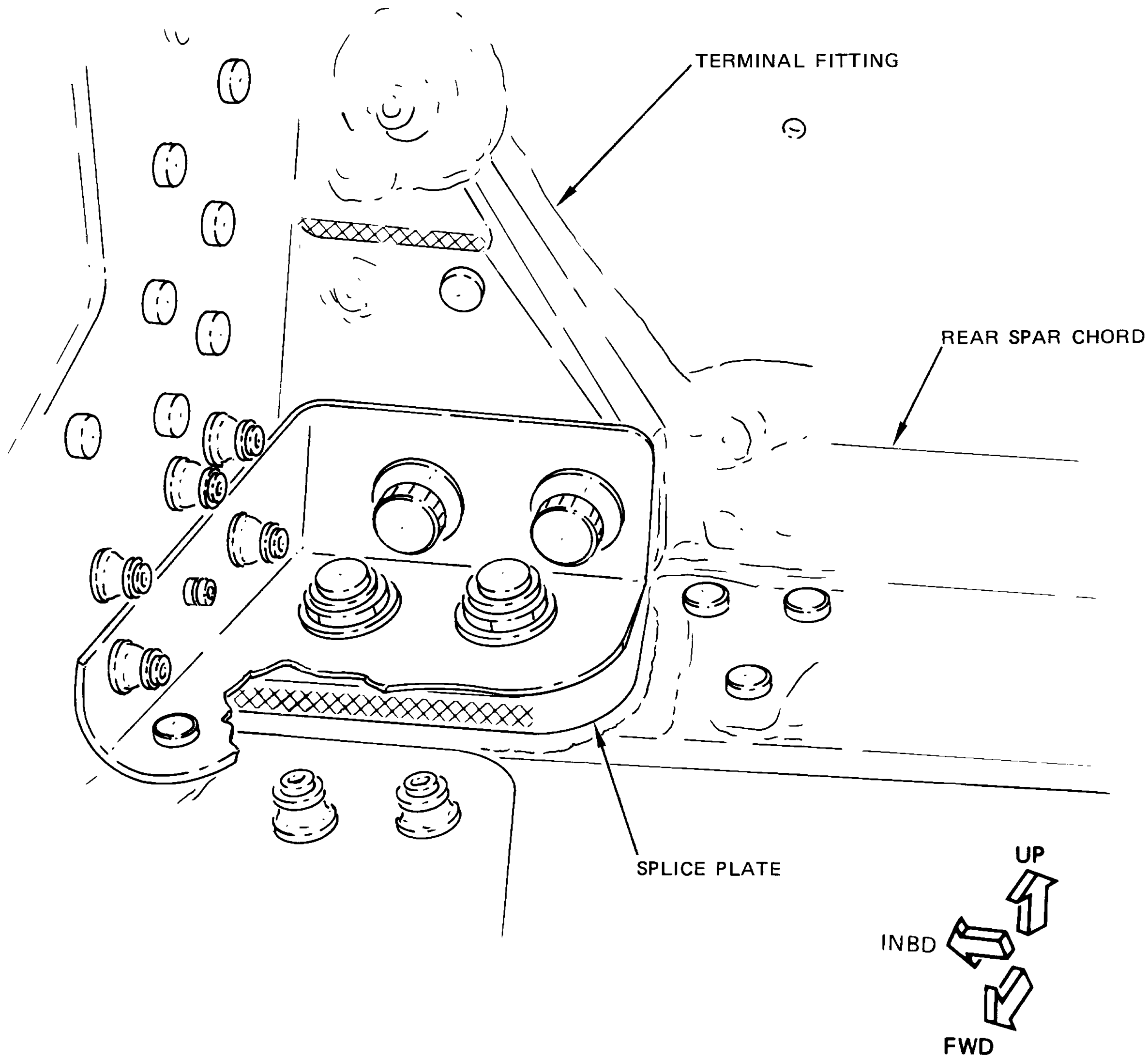
- LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE
- VIEW LOOKING UP

1 SCAN EXTERNAL SKIN SURFACE ALONG FORE AND AFT EDGES OF SPLICE PLATE AND LOWER EDGE OF INBOARD SPAR CHORD PER AND PAR. 5.A.

2 SCAN AROUND FASTENERS PER

2162621 S0000473446_V1

Rear Spar Lower Chord Horizontal Surface Inboard and Outboard of BBL 70.85 - External
Figure 6



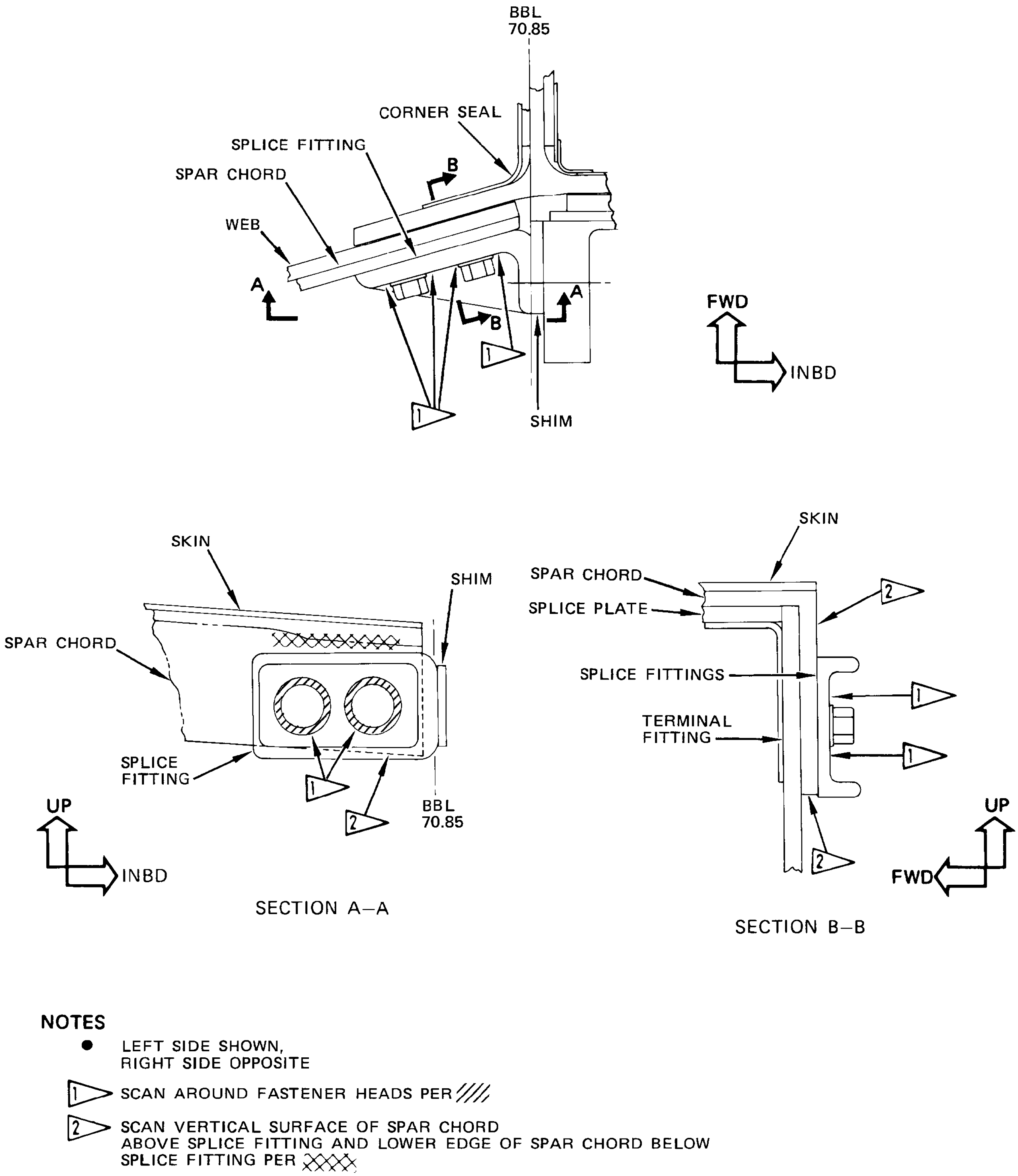
NOTES

- LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE

1 REMOVE SEALANT AS REQUIRED, SCAN RADIUS OF TERMINAL FITTING AND SPLICE PLATE

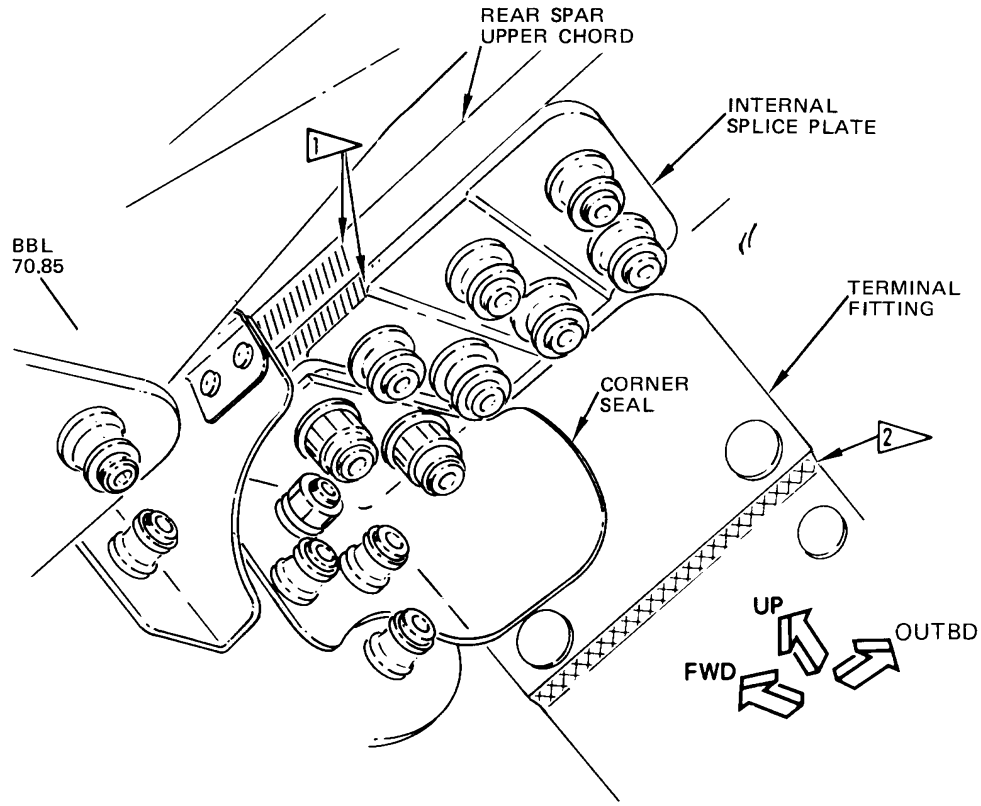
2162623 S0000473447_V1

Rear Spar Lower Chord Vertical Flange Outboard of BBL 70.85 Internal
Figure 7



2162624 S0000473448_V1

Rear Spar Upper Chord Vertical Flange Outboard of BBL 70.85 - External
Figure 8



NOTES

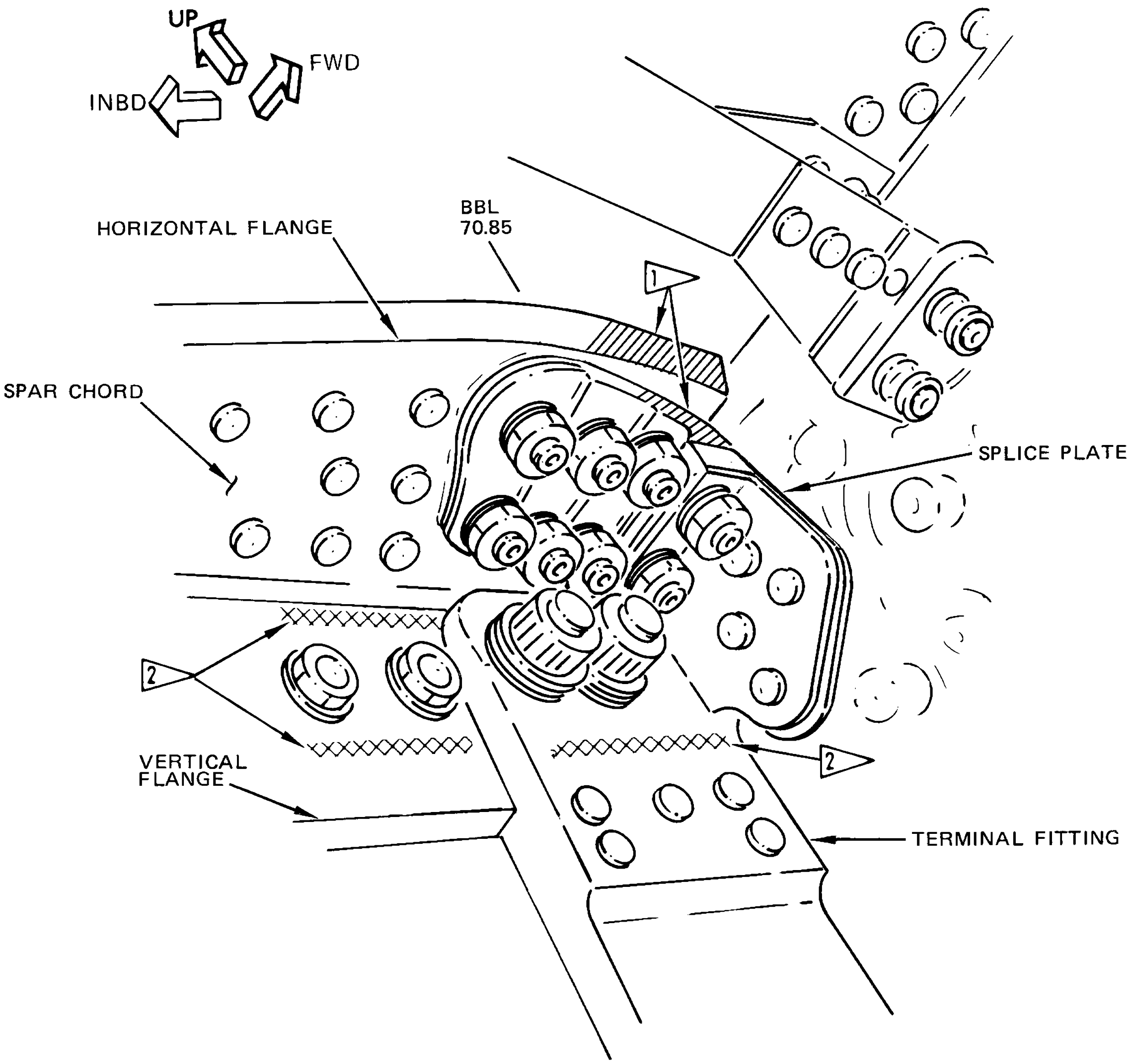
- LEFT SIDE SHOWN,
  RIGHT SIDE OPPOSITE
- REMOVE SEALANT AS REQUIRED

[1] SCAN EDGE OF REAR SPAR UPPER CHORD AND EDGE OF INTERNAL SPLICE PLATE PER //////

[2] REMOVE SEALANT AND SCAN RADIUS OF TERMINAL FITTING PER XXXXX

2162625 S0000473449_V1

Rear Spar Upper Chord Outboard of BBL 70.85 - Internal
Figure 9



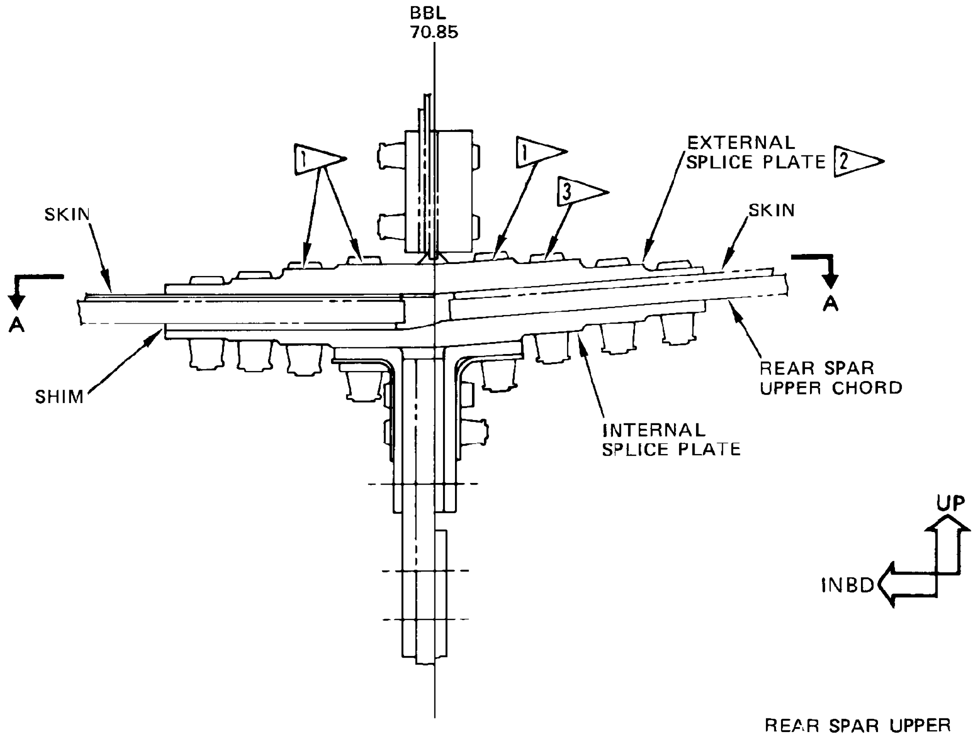
NOTES
- LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE

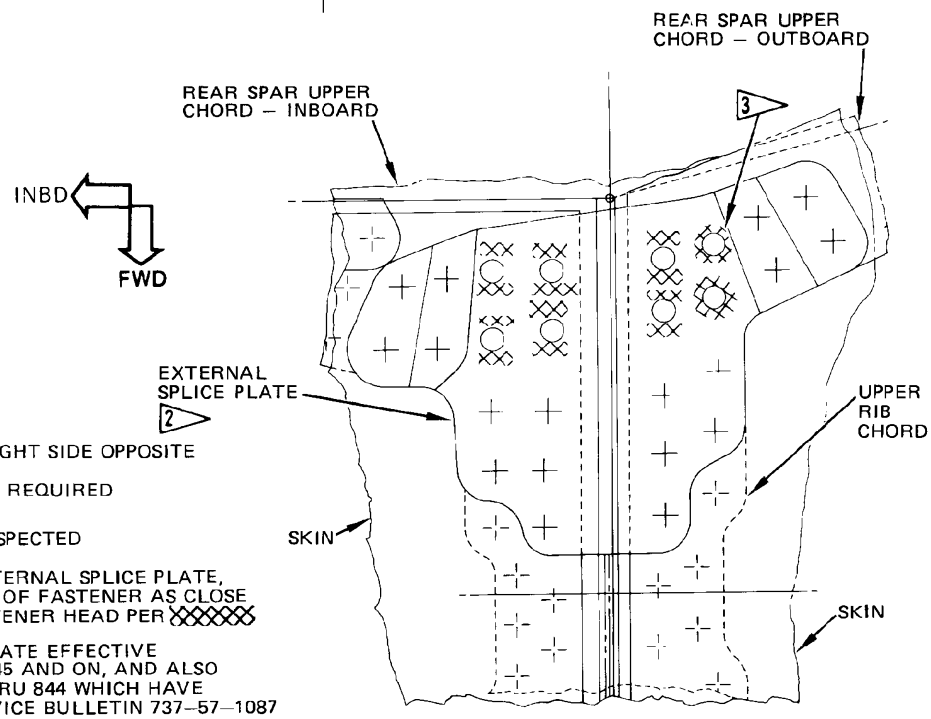
1 REMOVE SEALANT AS REQUIRED AND SCAN EDGE OF HORIZONTAL FLANGE AND SPLICE PLATE PER

2 REMOVE SEALANT AS REQUIRED AND SCAN SURFACE OF VERTICAL FLANGE AND TERMINAL FITTING PER

2162626 S0000473450_V1

Rear Spar Upper Chord Inboard of BBL 70.85 - Internal
Figure 10





NOTES

- LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE
- REMOVE SEALANT AS REQUIRED

○ FASTENERS TO BE INSPECTED

[1] PLACE PROBE ON EXTERNAL SPLICE PLATE, SCAN FORE AND AFT OF FASTENER AS CLOSE AS POSSIBLE TO FASTENER HEAD PER XXXXXX

[2] EXTERNAL SPLICE PLATE EFFECTIVE FOR CUM LINE NO. 845 AND ON, AND ALSO FOR LINE NO. 434 THRU 844 WHICH HAVE INCORPORATED SERVICE BULLETIN 737–57–1087

[3] SCAN CLOSE TO FASTENER HEAD, SCAN RADIUS AS REQUIRED.

2162633 S0000473452_V1

Rear Spar Upper Chord Horizontal Flange - External
Figure 11

PART 6 - EDDY CURRENT

WING LOWER SKIN AND STRINGERS FORWARD OF DRY BAY (HFEC)

1. **Purpose**

   A. To detect cracks in the wing lower skin and typical stringers, forward of the dry bay, from WBL 177.0 to WBL 207.0 or WBL 175.0 to WBL 208.0 depending on effectivity, using high frequency eddy current.

   NOTE: This inspection requires wing tank entry. Refer to Paragraph 5.

   B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

   (1) Item: W-42

2. **Equipment**

   NOTE: Refer to Part 1, 51-01-00, for information on equipment manufacturers.

   A. Any eddy current instrument and probe combination that satisfies the performance requirements of this procedure is suitable for this inspection. The following equipment was used in the development of this procedure.

   (1) Instrument - ED520; Magnaflux Corp. - Refer to Part 6, 51-00-00, Procedure 4.

   (2) Probe - Shielded, right-angle pencil probe per Part 6, 51-00-00, Procedure 4, with the following dimensions: A = 0.2 inch (0.5 cm), B = 0.325 inch (0.81 cm), C = 5.0 inches (12.7 cm).

   (a) P/N MP 902-50B; NDT Product Engineering

   B. Reference Standard - Refer to Part 6, 51-00-00, Procedure 4.

3. **Prepare for the Inspection**

   A. Drain and purge the appropriate fuel tanks for entry with eddy current test equipment.

   B. Gain access by removing lower wing access panels 7204L, 7205L, 7404R and 7405R inboard and outboard of nacelle fairing.

   C. Clean surfaces at inspection areas. See Figure 1, Figure 2 and Figure 3.

   D. Remove sealant where necessary to allow probe placement. See Figure 1.

4. **Instrument Calibration**

   A. Refer to Part 6, 51-00-00, Procedure 4.

5. **Inspection Procedure**

   WARNING: THIS PROCEDURE REQUIRES WING TANK ENTRY. FUEL TANK MUST BE DRAINED AND PURGED TO HEALTH SAFE CONDITION, AS DEFINED BY CHAPTER 28 OF MAINTENANCE MANUAL, BEFORE ENTERING TANK WITH EDDY CURRENT INSTRUMENT. EDDY CURRENT INSTRUMENT MUST BE BATTERY POWERED.

   NOTE: Approval for operating eddy current equipment in a fuel tank with the conditions stated above must be obtained from local Airline/Airport fire department.

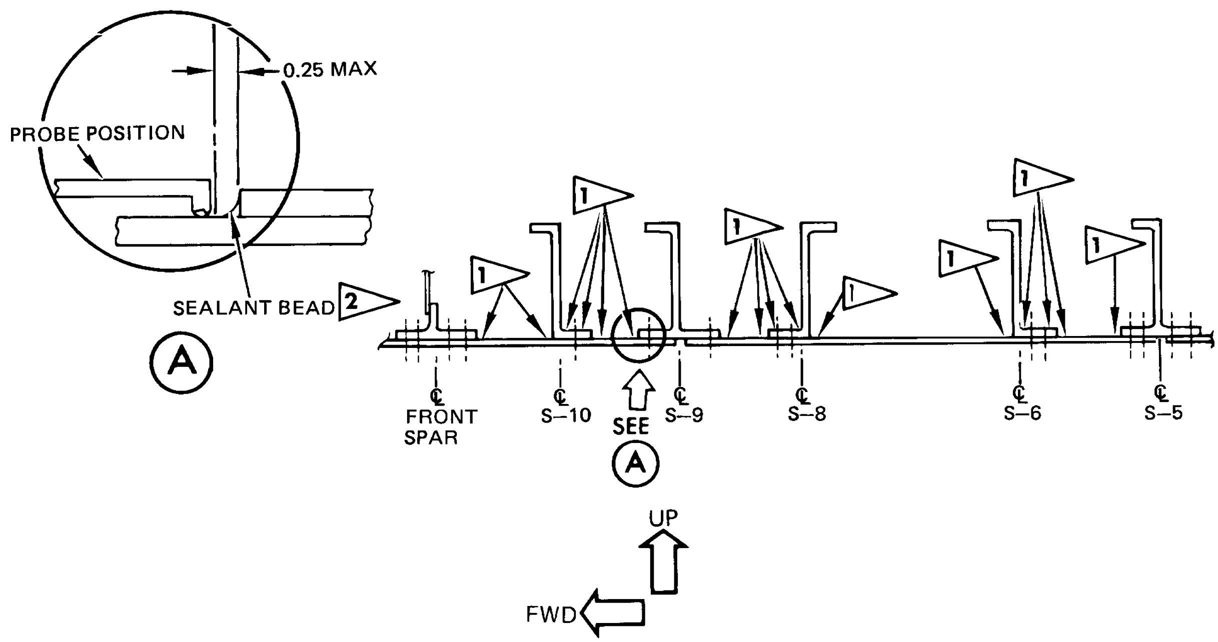
   A. Inspect per Figure 1, Figure 2 and Figure 3. See Figure 2 and Figure 3 for effectivities.

   B. Perform inspection scans per Part 6, 51-00-00, Procedure 4.

6. **Inspection Results**

A. A rapid meter movement occurring as probe is moved over a short distance is a potential crack indication and further investigation is required.

B. Refer to Part 6, 51-00-00, Procedure 4.



NOTES

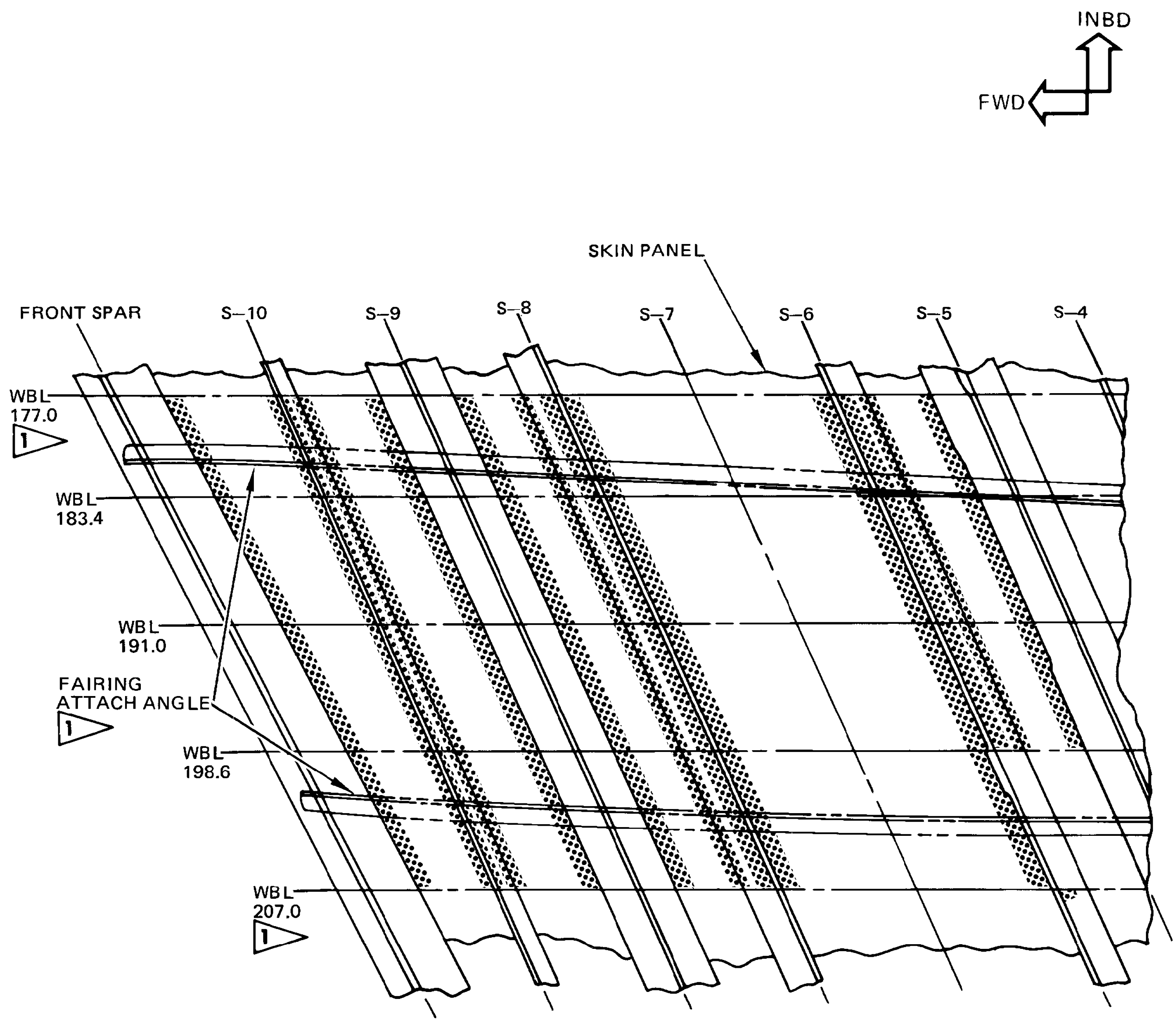
- ALL DIMENSIONS ARE IN INCHES

1 THE INSPECTION AREA SHALL BE CONTINUOUS BETWEEN WBL'S NOTED ON FIGURE 2 AND 3

2 **REMOVE ONLY** ENOUGH SEALANT TO PERMIT INSPECTION TO WITHIN 0.25 INCH OF THE SPAR CHORD

2162641 S0000473454_V1

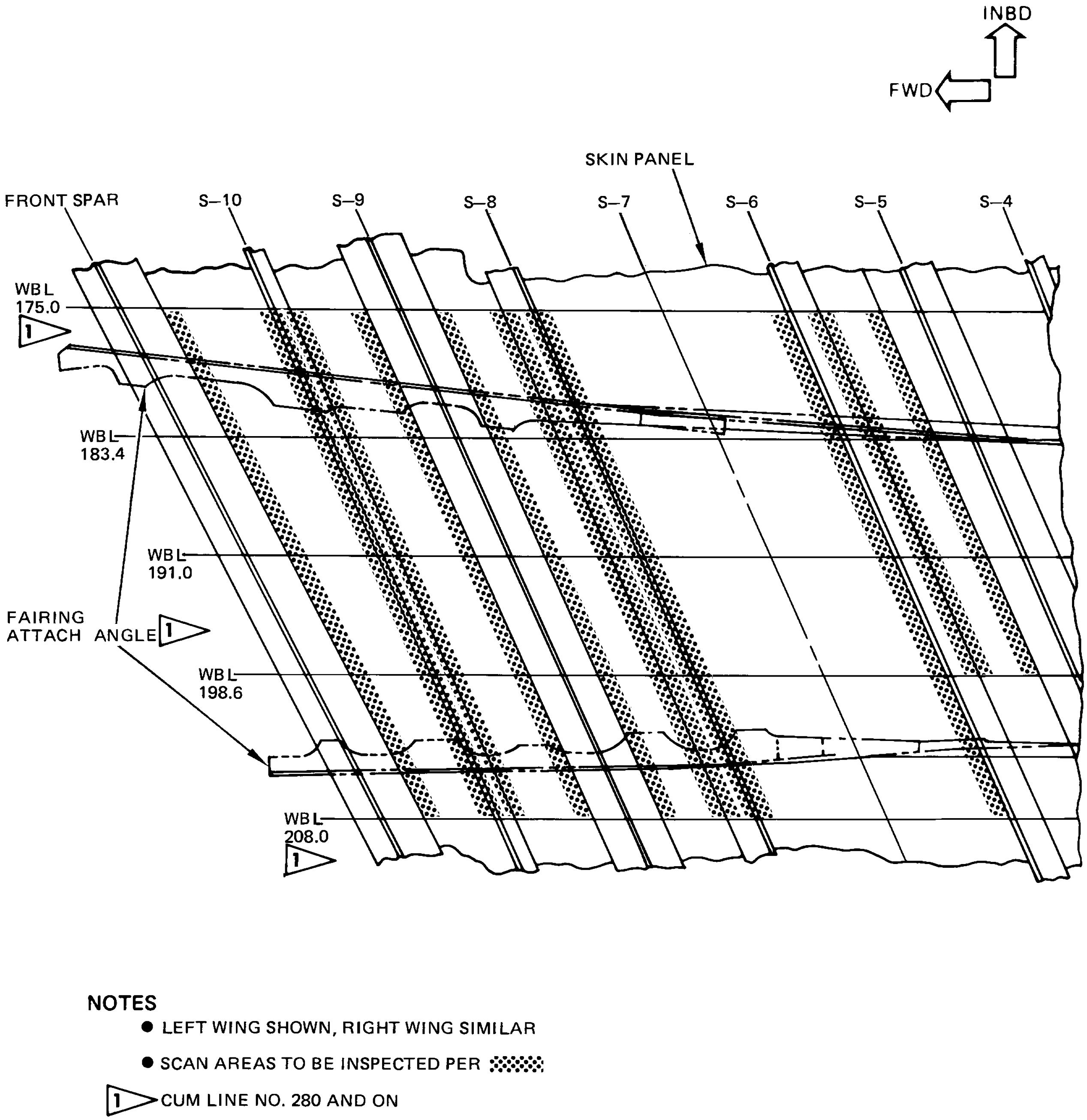
Wing Lower Skin and Stringers Forward of Dry Bay
Figure 1



NOTES
- LEFT WING SHOWN, RIGHT WING SIMILAR
- SCAN AREAS TO BE INSPECTED PER
- 1 CUM LINE NUMBERS 1 THRU 279

2162642 S0000473455_V1

Wing Lower Skin and Stringers Forward of Dry Bay
Figure 2



2162645 S0000473456_V1

Wing Lower Skin and Stringers Forward of Dry Bay
Figure 3

PART 6 - EDDY CURRENT

WING FRONT SPAR LOWER CHORD AND SKIN - WBL 142 TO WBL 278 (LFEC)

1. **Purpose**

   A. To detect cracks in wing front spar lower chord and skin from WBL 142 to WBL 278 using low frequency eddy current.

   NOTE: To satisfy the requirements of SSID item W-19, inspection of fasteners from WBL 177 to WBL 207 only is required.

   B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

   (1) Item: W-19

2. **Equipment**

   NOTE: Refer to Part 1, 51-01-00, for information on equipment manufacturers.

   A. Instrument - MIZ-10; Zetec Inc.

   B. Probe - This procedure uses one probe. Any probe of similar size that will satisfy the performance requirements of this procedure are acceptable. The following probe was used in development of this procedure.

   (1) Low frequency encircling probe with 1.1-inch (2.79 cm) OD and 0.625-inch (1.56 cm) ID shielding, usable at 100 Hz; P/N SPO 1154; Nortec, Inc.

   NOTE: Refer to Part 1, 51-06-00, for a general description of low frequency probe configuration. Specify instrument with which probe is to be used or connector required when ordering probe.

   C. Reference Standard - Manufacture Reference Standard 305 per Figure 1.

3. **Prepare for the Inspection**

   A. Remove engine, engine nacelle and any related hardware that obstructs the inspection areas.

   B. Clean inspection surface.

   C. Remove 3.0-inch wide strip of paint as required from lower skin beneath front spar from WBL 142.00 to WBL 177.00 and from WBL 207.00 to WBL 278.00.

   NOTE: It is not necessary to remove primer if fastener heads are clearly visible.

   D. Use a water washable crayon, felt tip pen, or other marking implement to identify fastener numbers on skin.

4. **Instrument Calibration**

   A. Set instrument frequency to 100 Hz.

   B. Visually center probe over unnotched reference standard hole, see Position 1, Figure 2.

   C. Balance instrument per manufacturer's instructions.

D. Adjust liftoff control per manufacturer's instructions to obtain same response when probe is on bare standard as with probe lifted off part by 0.006 inch (approximately the thickness of two sheets of paper).

NOTE: Probe is visually centered over unnotched hole during liftoff calibration. Once probe is calibrated for liftoff, centering is usually accomplished by manipulating probe to obtain a minimum meter response.

E. Keep probe centered over unnotched hole and adjust meter response to read 20% of full scale with meter position control.

F. Center probe over notched reference standard hole, Position 2. Response should be upscale.

G. Adjust instrument sensitivity to obtain 60% of full scale meter response difference between the notched and unnotched holes (total 80% meter reading).

H. Recheck null and liftoff. If readjustments are made, recheck sensitivity per Paragraph 4.G.

5. Inspection Procedure

A. Inspect fastener holes for cracks using a probe centered on each fastener. Ensure all fastener heads are visible in inspection area, see Figure 3.

NOTE: It is recommended that forward and aft rows of fasteners be inspected separately because of baseline differences.

(1) Calibrate instrument per Paragraph 4. and Figure 2.

(2) Mark location on airplane of those fasteners requiring inspection. See Figure 3 for fastener numbers.

NOTE: Microshaved rivets which cannot be located visually can usually be located by manipulating probe to find a minimum meter response.

(3) Use several fasteners to establish airplane baseline response for an acceptable fastener.

(a) Select a representative fastener from this group and set its response to 20% of full meter scale. Do not change instrument sensitivity when establishing airplane baseline response.

(b) Refer back to this fastener periodically to ensure that instrument response is same as originally recorded. (Changes in meter response may occur as a result of instrument drift or probe temperature change).

(4) Inspect each fastener by centering probe on fastener and manipulating to obtain a minimum response. Note meter readings.

NOTE: (a) It is suggested that a copy of Figure 3 be made and used to record instrument responses at each fastener location. This is helpful in maintaining continuity between the groups of fasteners during inspection.

(b) As skin and spar chord thicknesses vary, so will baseline. When baseline moves plus or minus 10%, readjust meter to 20%.

(c) The meter response will move 10% to 20% down scale from established baseline at fasteners common to inspar ribs and internal clips. It is recommended that all flagnote 1 fasteners be inspected as a group due to their common baseline. See Figure 3.

(5) Indications with an upscale meter response of 30% above baseline are potential crack indications and require further investigation.

6. **Inspection Results**

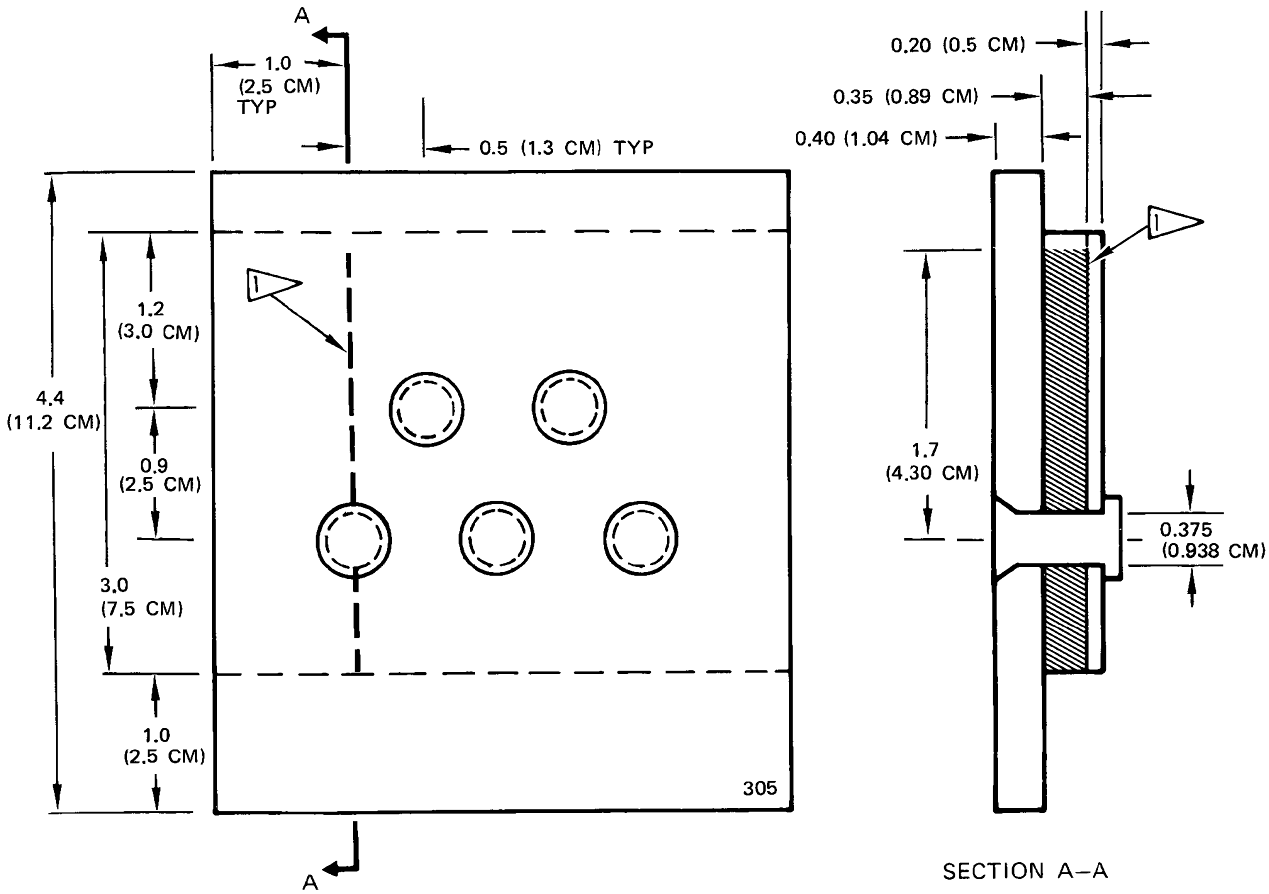
A. Fastener locations which give a response 30% of full meter scale higher than established baseline are potential crack indications and further investigation is required.

B. The following conditions may cause meter reading changes similar to crack indications:

(1) A decrease in fastener spacing. Compare with similarly spaced fasteners on airplane.

(2) A fastener that is different in countersink depth. Compare with similar fasteners in standard raised to same height.

(3) A fastener closer to the edge of the front spar chord. Compare with similar fastener on airplane.



NOTES

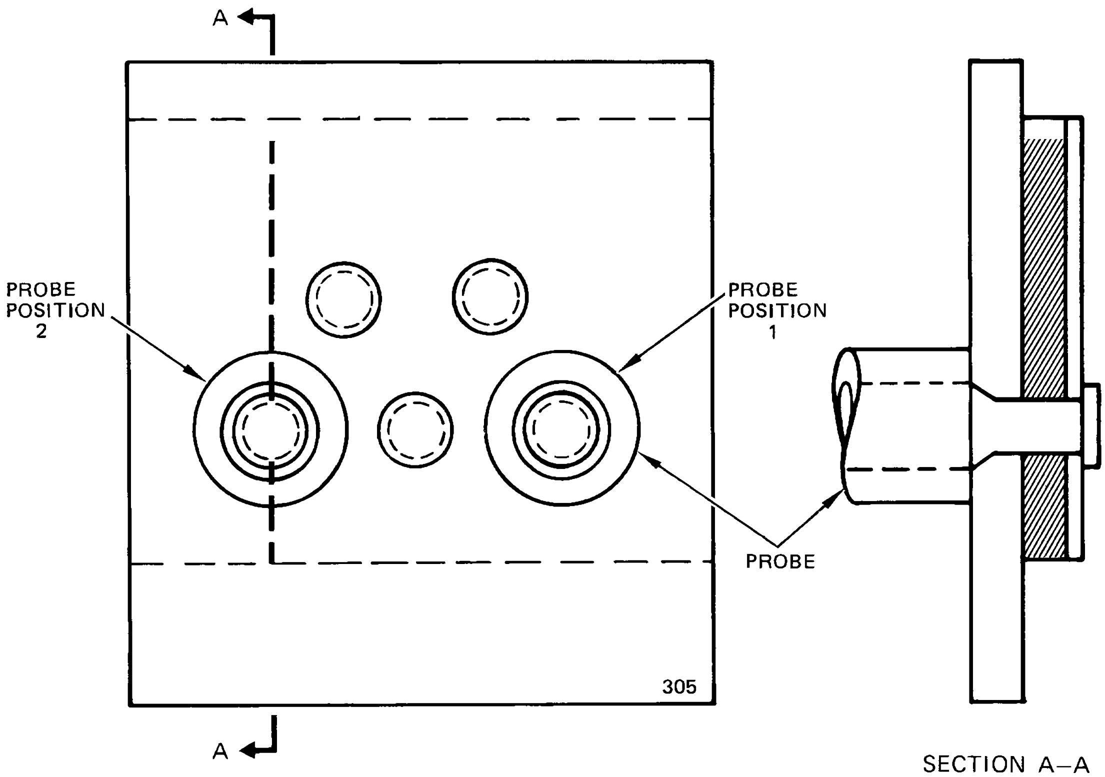
- ALL DIMENSIONS ARE IN INCHES (CENTIMETERS IN PARENTHESES)
- TOLERANCE: X.X ± 0.05 (0.13 CM), X.XX ± 0.02 (0.05 CM), X.XXX ± 0.005 (0.013 CM)
- MATERIAL: 2024–T3 OR –T4 ALUMINUM
- FASTENERS: BACR15BA12AD–20 RIVETS (5 PLACES)
- ETCH OR STEEL STAMP WITH 305
- P/N 6412–246 AVAILABLE FROM IDEAL SPECIALTY CO.

  NOTE: REFERENCE STANDARD 305 ALSO USED BY PART 6, 57–30–03

1 JEWELER'S SAWCUT 0.030 (0.080 CM) MAX WIDTH

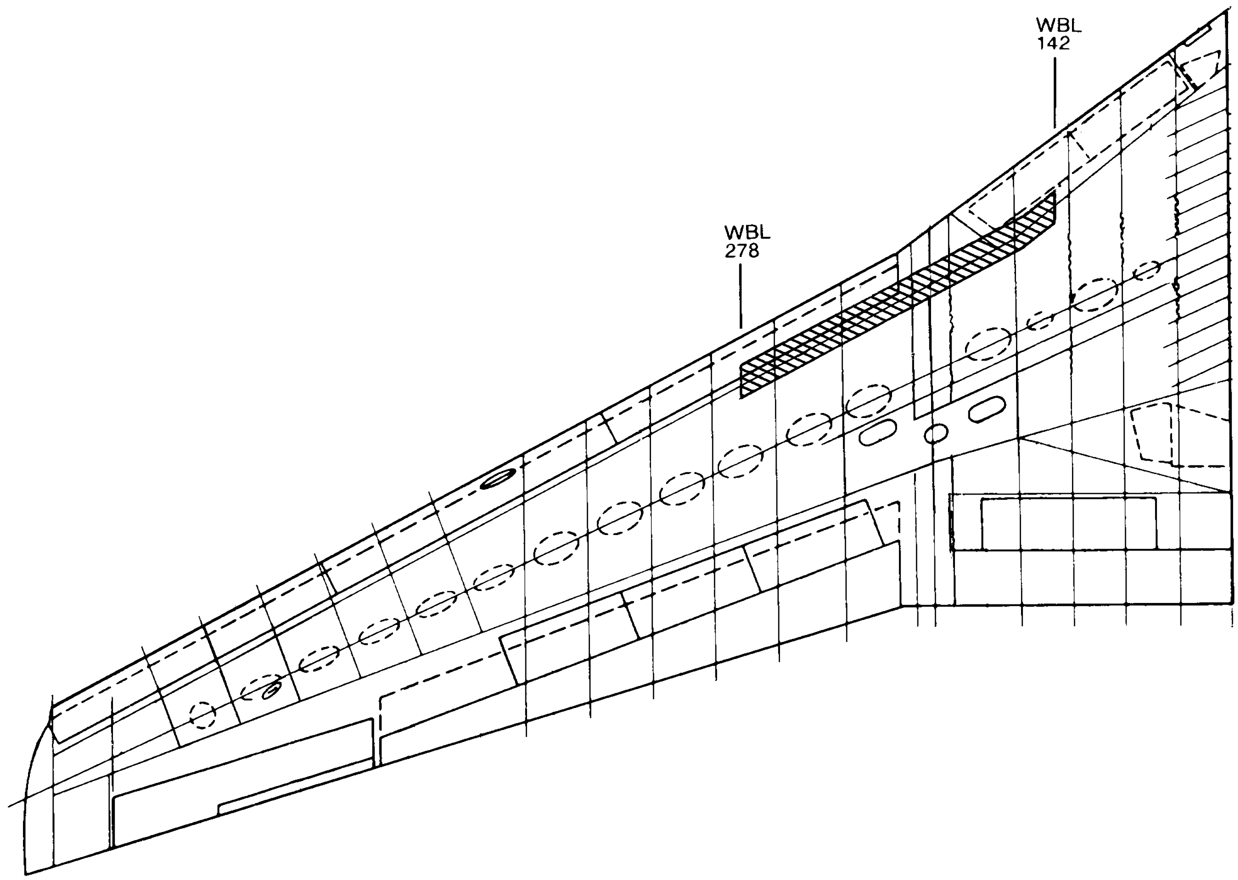
2162656 S0000473458_V1

Reference Standard 305
Figure 1



2162657 S0000473459_V1

Probe Calibration Positions for Reference Standard 305
Figure 2



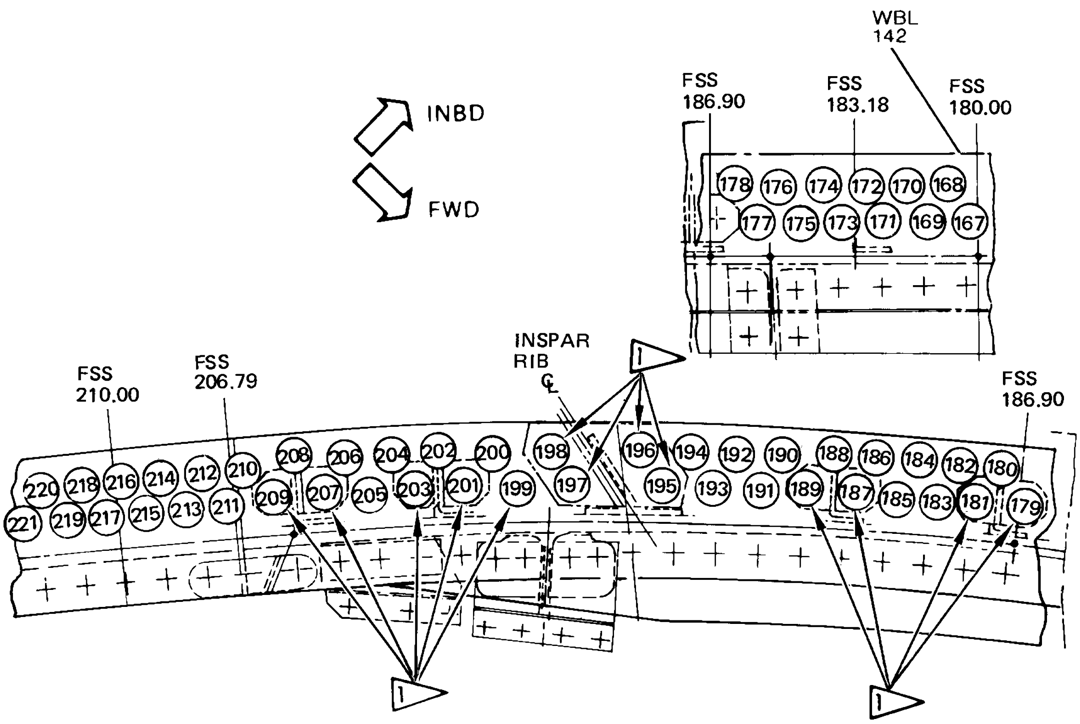
NOTES

- LEFT WING SHOWN, RIGHT WING OPPOSITE
- INSPECTION LOCATION

737–100, –200

2162658 S0000473461_V1

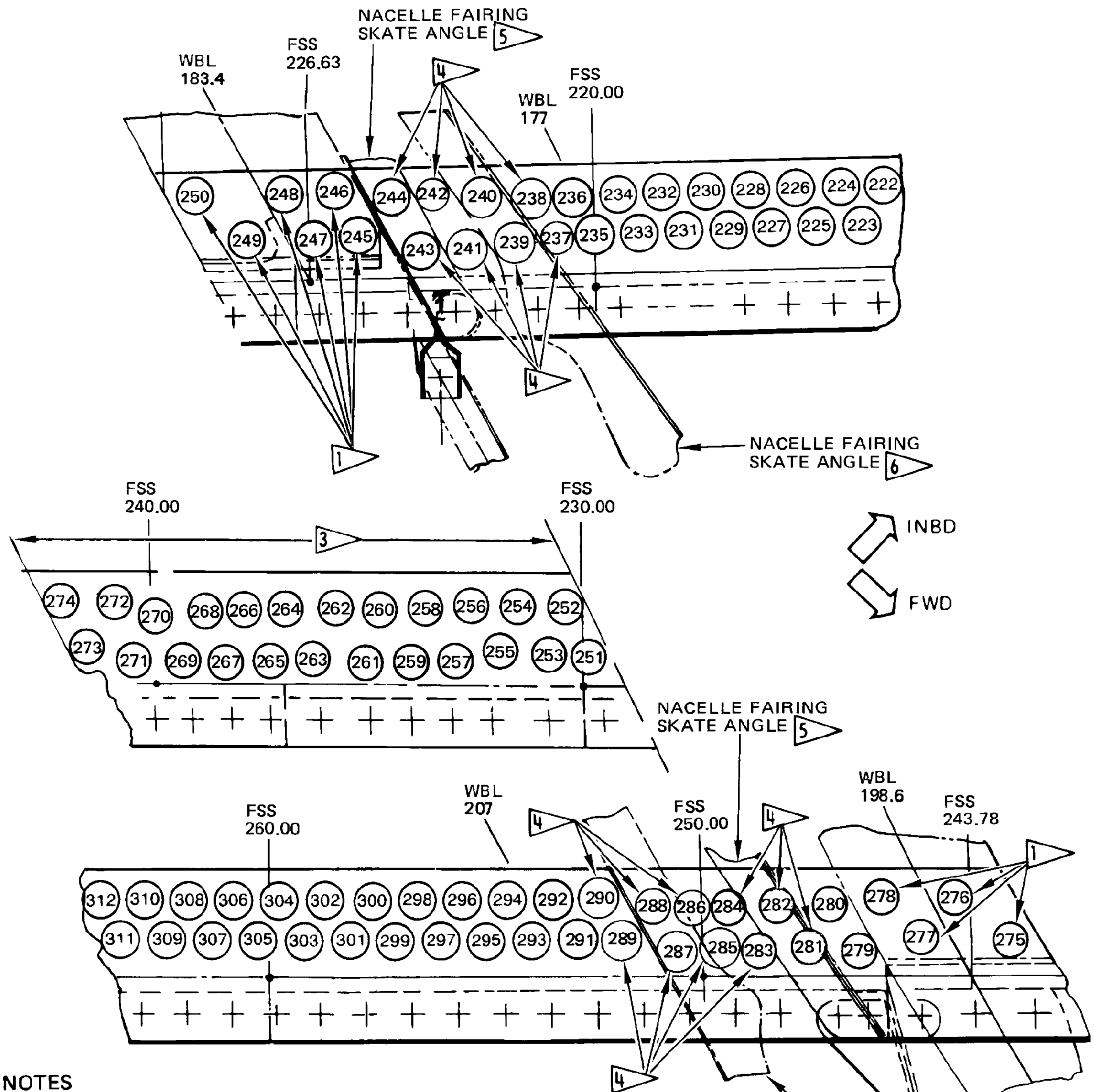
Wing Upper Surface
Figure 3



NOTES
- LEFT WING SHOWN, RIGHT WING OPPOSITE
- VIEW LOOKING UP
- FASTENERS TO BE INSPECTED
- 1 METER RESPONSE WILL MOVE 10% TO 20% DOWNSCALE AT THESE FASTENER LOCATIONS. REFER TO PAR. 5.A.(4), NOTE (C) OF TEXT

2162660 S0000473462_V1

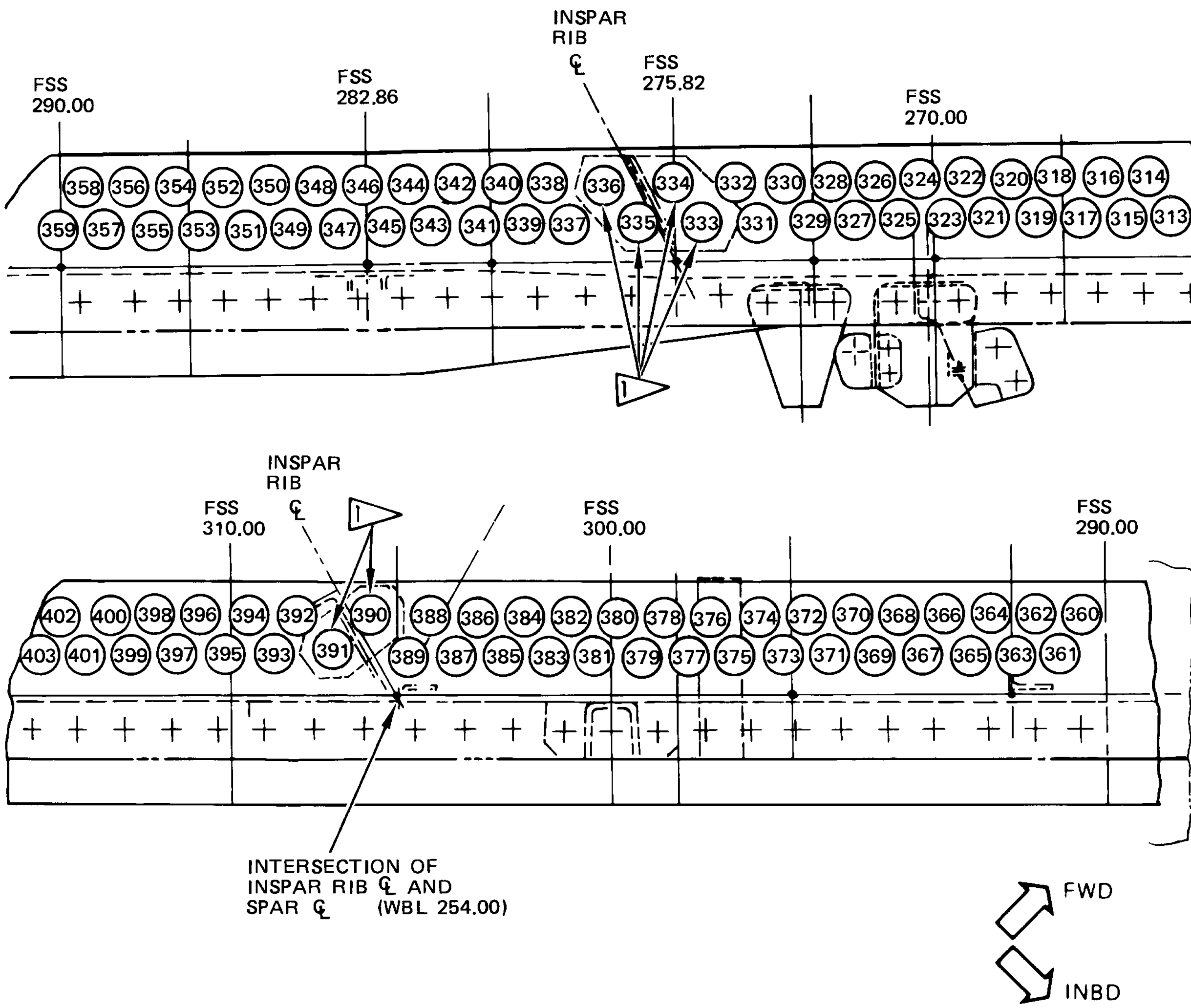
Wing Front Spar Lower Chord and Skin
Figure 4 (Sheet 1 of 4)



NOTES
- LEFT WING SHOWN, RIGHT WING OPPOSITE
- VIEW LOOKING UP
- ◯ FASTENERS TO BE INSPECTED
- 1 METER RESPONSE WILL MOVE 10% TO 20% DOWNSCALE AT THESE FASTENER LOCATIONS. REFER TO PAR. 5.A.(4), NOTE (C) OF TEXT
- 3 FASTENERS 251 THROUGH 274 ARE BUTTONHEAD FASTENERS AND ARE INSPECTED BY CENTERING PROBE ON FASTENER HEAD. PROBE NOT TO CONTACT SKIN
- 4 SOME FASTENERS CANNOT BE INSPECTED DEPENDING ON SKATE ANGLE CONFIGURATION. INSPECT SUCH FASTENERS PER SEPARATE HIGH FREQUENCY EDDY CURRENT PROCEDURE, PART 6, 57–10–14
- 5 CUM LINE NO. 1 THRU 279 ONLY
- 6 CUM LINE NO. 280 AND ON

2162661 S0000473463_V1

Wing Front Spar Lower Chord and Skin
Figure 4 (Sheet 2 of 4)

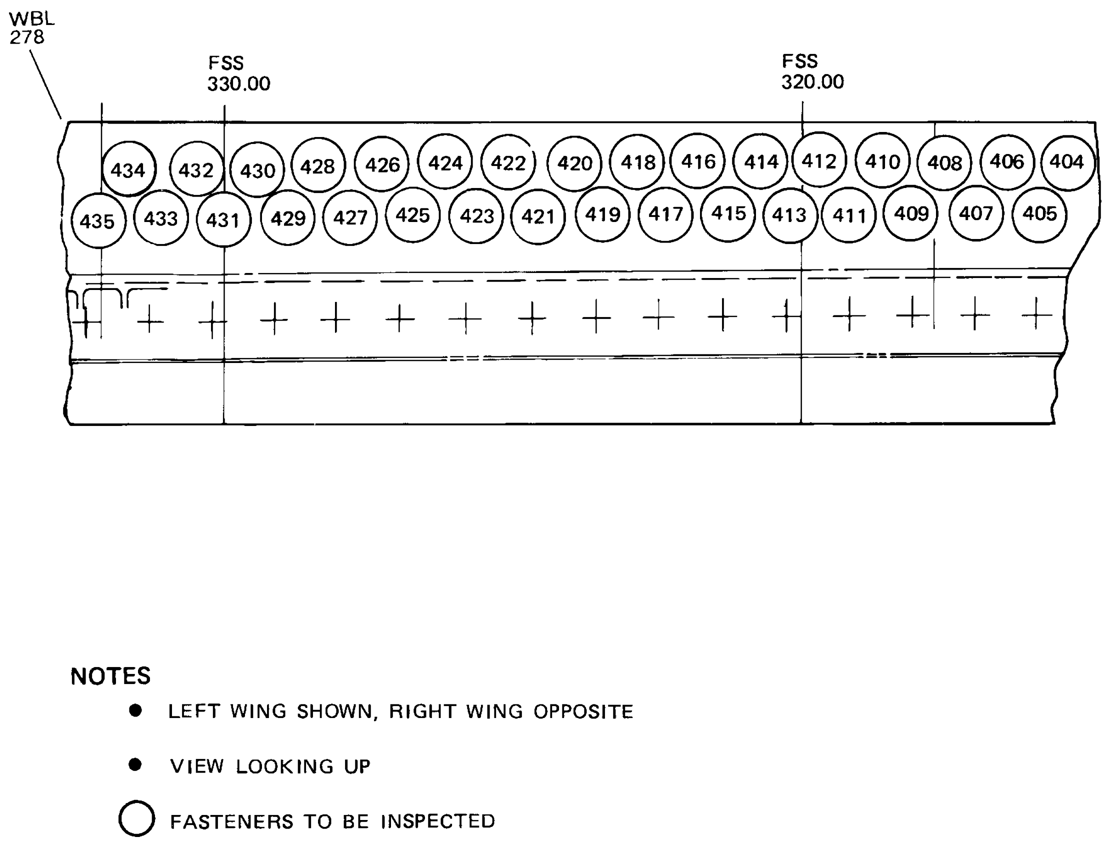


NOTES

- LEFT WING SHOWN, RIGHT WING OPPOSITE
- VIEW LOOKING UP
- ◯ FASTENERS TO BE INSPECTED
- [1] METER RESPONSE WILL MOVE 10% TO 20% DOWNSCALE AT THESE FASTENER LOCATIONS. REFER TO PAR.5.A.(4), NOTE (C) OF TEXT

2162662 S0000473464_V1

Wing Front Spar Lower Chord and Skin
Figure 4 (Sheet 3 of 4)



2162666 S0000473465_V1

Wing Front Spar Lower Chord and Skin
Figure 4 (Sheet 4 of 4)

PART 6 - EDDY CURRENT

LOWER CHORDS OF THE FRONT AND REAR WING SPARS - FSS 148 THRU FSS 402.5 AND RSS 157.5 THRU RSS 327

1. **Purpose**

   A. This surface eddy current inspection procedure can find cracks in the lower chords of the front and rear wing spars. The cracks that can be found start at the fastener hole locations where the stiffeners or fittings are attached to the vertical flange of the lower chords. The crack direction in the vertical flange is vertical.

   B. The inspection areas on the rear spar are between Rear Spar Station (RSS) 157.5 and RSS 327. See Figure 1, Figure 2, Figure 4 and Paragraph 3. (Prepare for the Inspection) for more detail on all of the inspection areas.

   C. The inspection areas on the front spar are between Front Spar Station (FSS) 148 and FSS 402.5. See Figure 1, Figure 3, Figure 4 and Paragraph 3. (Prepare for the Inspection) for more detail on all of the inspection areas.

   D. Some operators have had problems with access to the upper edge of the lower wing chord at FSS 296 because of a shim stock interference. If this occurs, use the alternative inspection procedure, Part 4, 57-10-01, in that area.

   E. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

      (1) Item: W-17

      (2) Item: W-19

2. **Equipment**

   NOTE: Refer to Part 1, 51-01-00, for data on the manufacturers of the equipment.

   A. Instrument

      (1) All eddy current instruments that have meter display or impedance plane display are permitted for use if they:

         (a) Can operate at frequencies between 100 kHz and 500 kHz.

         (b) Can find the reference notch in the reference standard.

      (2) The instruments specified below operated satisfactorily when this procedure was made. Other instruments can be used that operate satisfactorily and agree with the conditions of this procedure:

         (a) MIZ 10A/B; Zetec

         (b) NDT 19E; Nortec/Staveley

         (c) Phasec 1.1; Hocking/Krautkramer

         (d) Locator UH and UHB; Hocking/Krautkramer

   B. Probes - Shielded pencil probes that are flexible that can operate between 100 kHz and 500 kHz can be used if they can be calibrated as specified in this procedure. The probes must also have a configuration as follows:

      (1) The flexible shaft must be a minimum of 6 inches (152 mm) long. (Most of the areas can be examined with a 5 inch (127 mm) long shaft, but some of the areas makes it necessary to use a 6 inch (152 mm) long shaft. See Figure 5.

(2) The maximum diameter of the shaft must be 0.125 inch (3.2 mm). See Figure 5.

(3) The probes specified below were used to make this procedure and they satisfactorily examined the inspection areas. Other probes with the same specifications can be used if they agree with the conditions of this procedure.

(a) MTF9003-85FX/60K-300K; NDT Engineering

(b) P/100-500KHZ/A/90.03/8FX; Staveley

NOTE: These probes have an internal balance coil and a special cable is necessary.

C. Reference Standards - Use reference standard 126. Refer to Figure 4 in Part 6, 51-00-00, Procedure 4 for details about reference standard 126.

3. Prepare for the Inspection

A. Prepare for the inspection of the vertical chord flanges as follows:

(1) Remove the access panels along the front spar to show the lower chords of the front spar.

(2) Extend the flaps to show the lower chord of the rear spar.

(3) Loosen the anti-icing duct attach points on the front spar where it could prevent access with a probe.

(4) Loosen the hydraulic line attach points on the front and rear spar where it could prevent access with a probe.

(5) Remove any sealant, contamination, or objects that prevent a probe scan at the areas on the lower chords that follow:

NOTE: Refer to Figure 1 thru Figure 4 for views of these inspection areas.

(a) Rear Spar Inspection Areas

1) RSS 157 - Clean the vertical flange immediately below the support bracket.

2) RSS 168.5 - Clean the vertical flange immediately below the bumper trunnion.

3) RSS 179.5 - Clean the top edge of the vertical flange immediately above the fitting.

4) RSS 186.5 - Clean the vertical flange immediately below the stiffener.

5) RSS 193.5 - Clean the vertical flange immediately below the stiffener.

6) RSS 202 - Clean the vertical flange immediately below the fitting.

7) RSS 211.5 - Clean the vertical flange below the stiffener.

8) RSS 224 - Clean the top edge of the vertical flange behind the fitting.

9) RSS 252 - Clean the vertical flange below the fitting.

10) RSS 272 - Clean the top edge of the vertical flange behind the fitting.

11) RSS 327 - Clean the top edge of the vertical flange behind the support fitting.

(b) Front Spar Inspection Areas

1) FSS 148 - Clean the vertical flange immediately below the clip.

2) FSS 175.5 - Clean the top edge of the vertical flange above the fitting.

3) FSS 205.5 - Clean the vertical flange below the fitting.

4) FSS 227 - Clean the vertical flange immediately below the bracket

5) FSS 244 - Clean the top edge of the vertical flange behind the fitting.

6) FSS 270 - Clean the vertical flange below the stiffener. Remove the engine hoist fitting that is inboard of FSS 270.
7) FSS 273 - Clean the vertical flange below the stiffener.
8) FSS 281 - Clean the vertical flange below the stiffener.
9) FSS 296 - Clean the top edge of the vertical flange.

NOTE: Some airplanes do not have a stiffener at this station.

10) FSS 318 - Clean the chord flange immediately below the fitting.

NOTE: Some airplanes do not have a fitting installed at this station.

11) FSS 342 - Clean the vertical flange below the stiffener.
12) FSS 345 - Clean the vertical flange below the stiffener.
13) FSS 386 - Clean the vertical flange below the stiffener.
14) FSS 389 - Clean the vertical flange below the stiffener.
15) FSS 402.5 - Clean the vertical flange immediately below the support bracket.

(6) Make sure that the instrument, probe, reference standard, and the inspection areas are at the same temperature.

4. Instrument Calibration

NOTE: Refer to the equipment instruction manual as necessary for operation instructions.

A. Calibration of Instruments

(1) Calibrate the equipment as specified in the instrument calibration instructions of Part 6, 51-00-00, Procedure 4.

5. Inspection Procedure

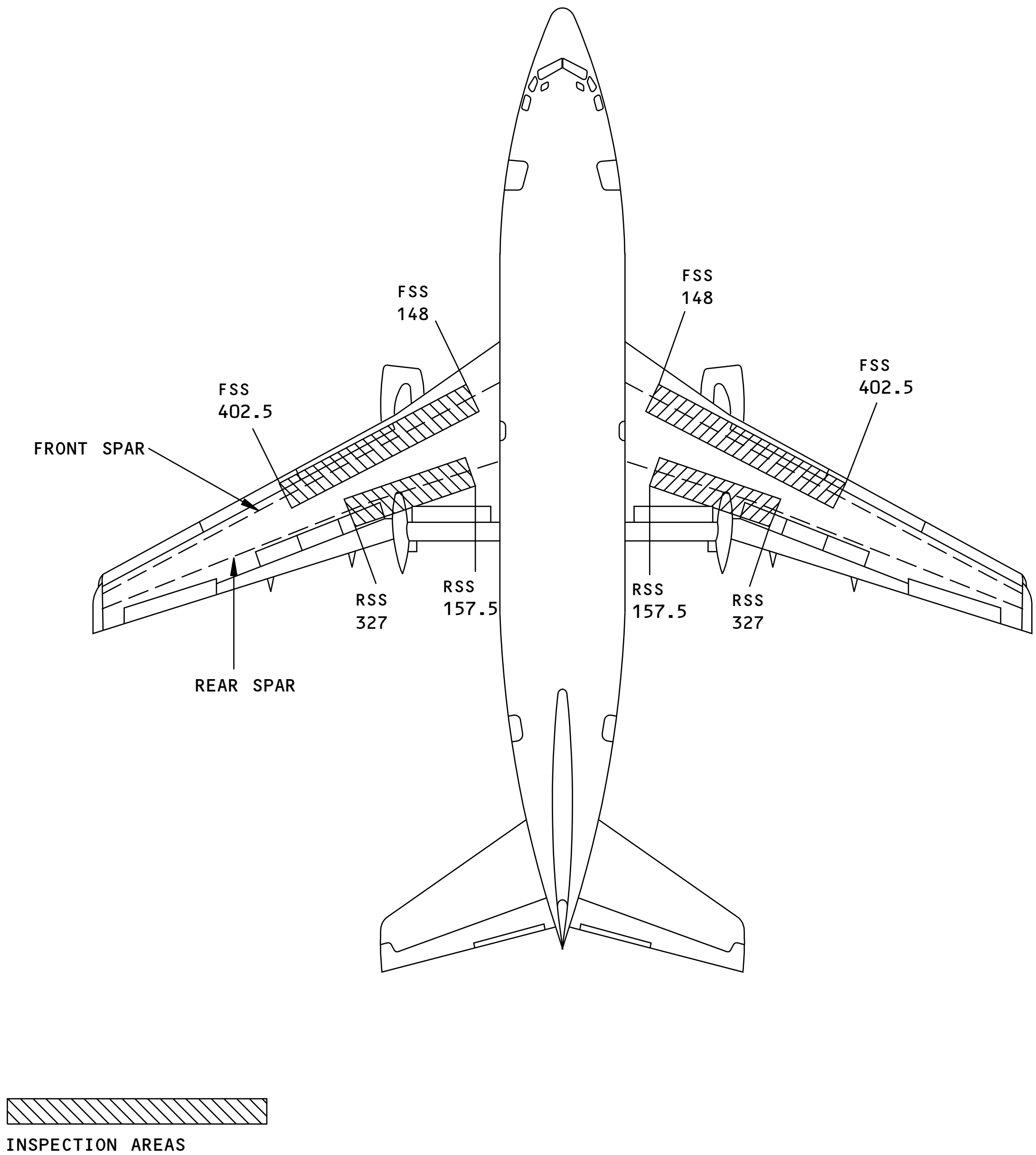
A. Calibrate the equipment as specified in Paragraph 4.

B. Put the probe on the chord at the areas specified in Paragraph 3. Also, refer to Figure 1 thru Figure 4 for these areas.

C. Do a probe scan in an inboard-to-outboard direction to find cracks in the chord that are in a vertical direction. See Figure 1 thru Figure 4 for more detail of the inspection areas. Make sure the scan distance is the width of the stiffener or fitting.

6. Inspection Results

A. Refer to the "Inspection Result" instructions in Part 6, 51-00-00, Procedure 4 to help make an analysis of the inspection results you get when you do this procedure.

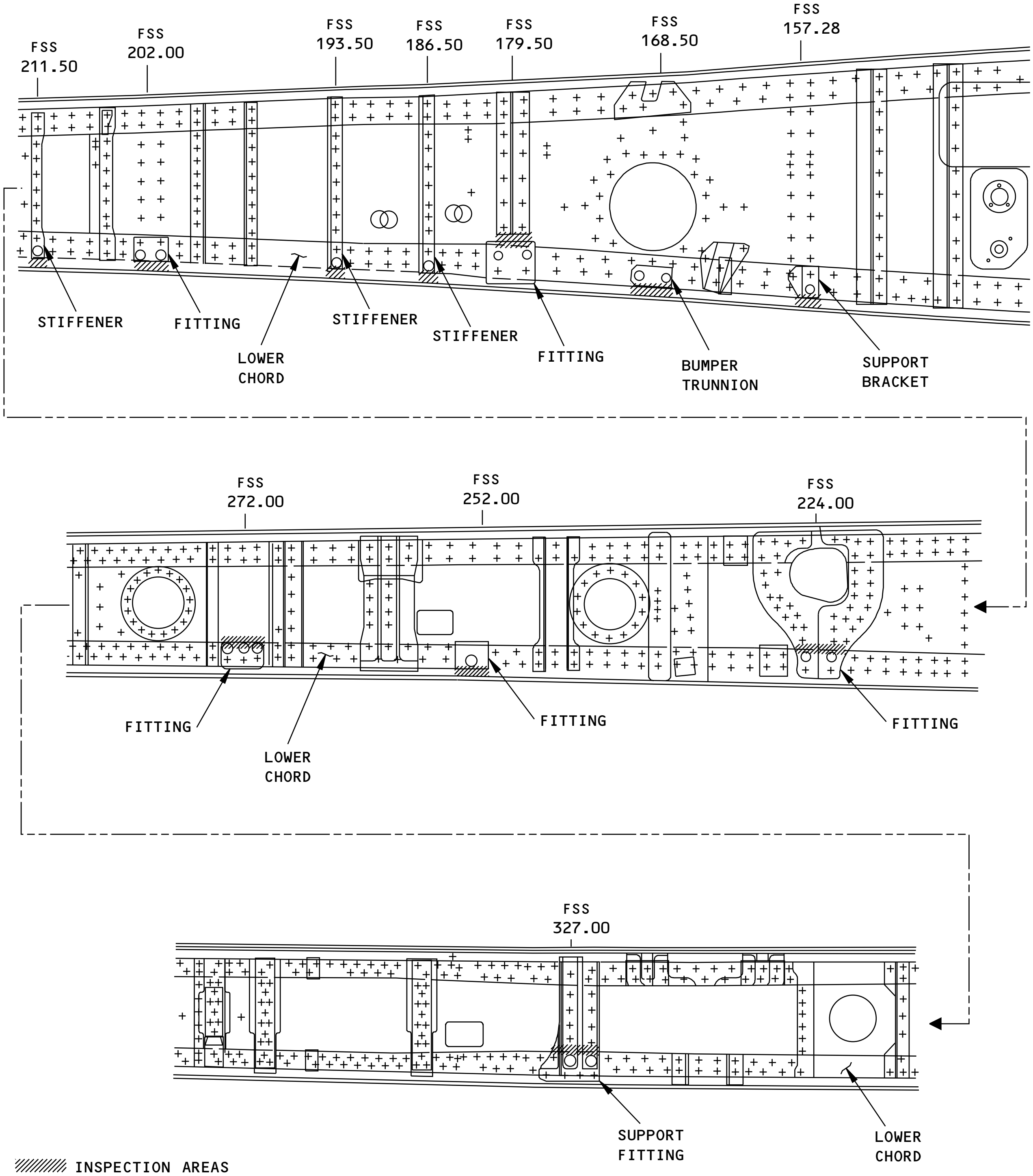


NOTES:

- SEE FIGURE 2 FOR MORE DETAIL ON THE LOWER CHORD OF THE WINGS REAR SPARS.
- SEE FIGURE 3 FOR MORE DETAIL ON THE LOWER CHORD OF THE WINGS FRONT SPARS.

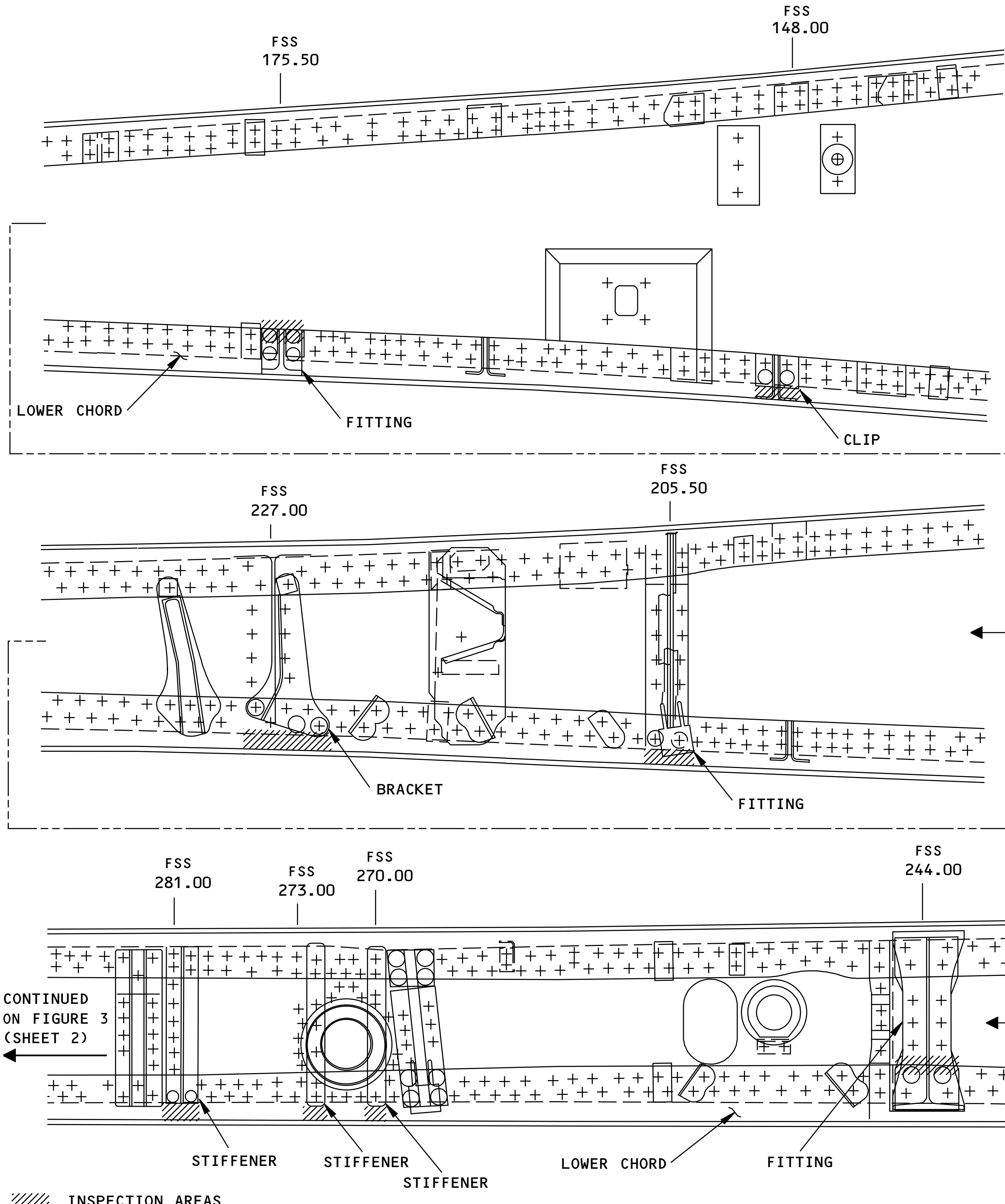
2162691 S0000473469_V1

Inspection Areas on the Front and Rear Wing Spars
Figure 1



2162693 S0000473470_V1

Inspection Areas on the Rear Wing Spar
Figure 2



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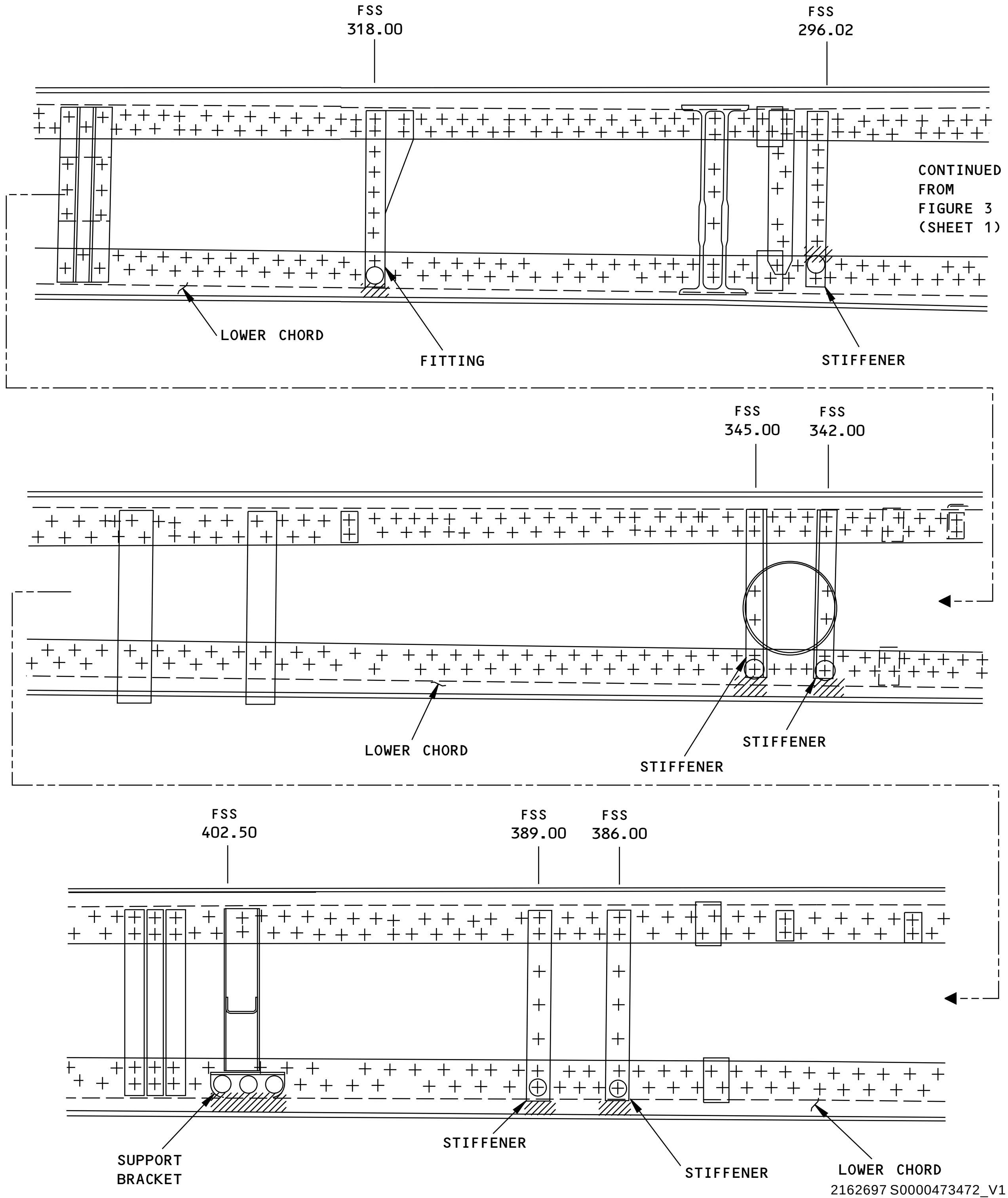
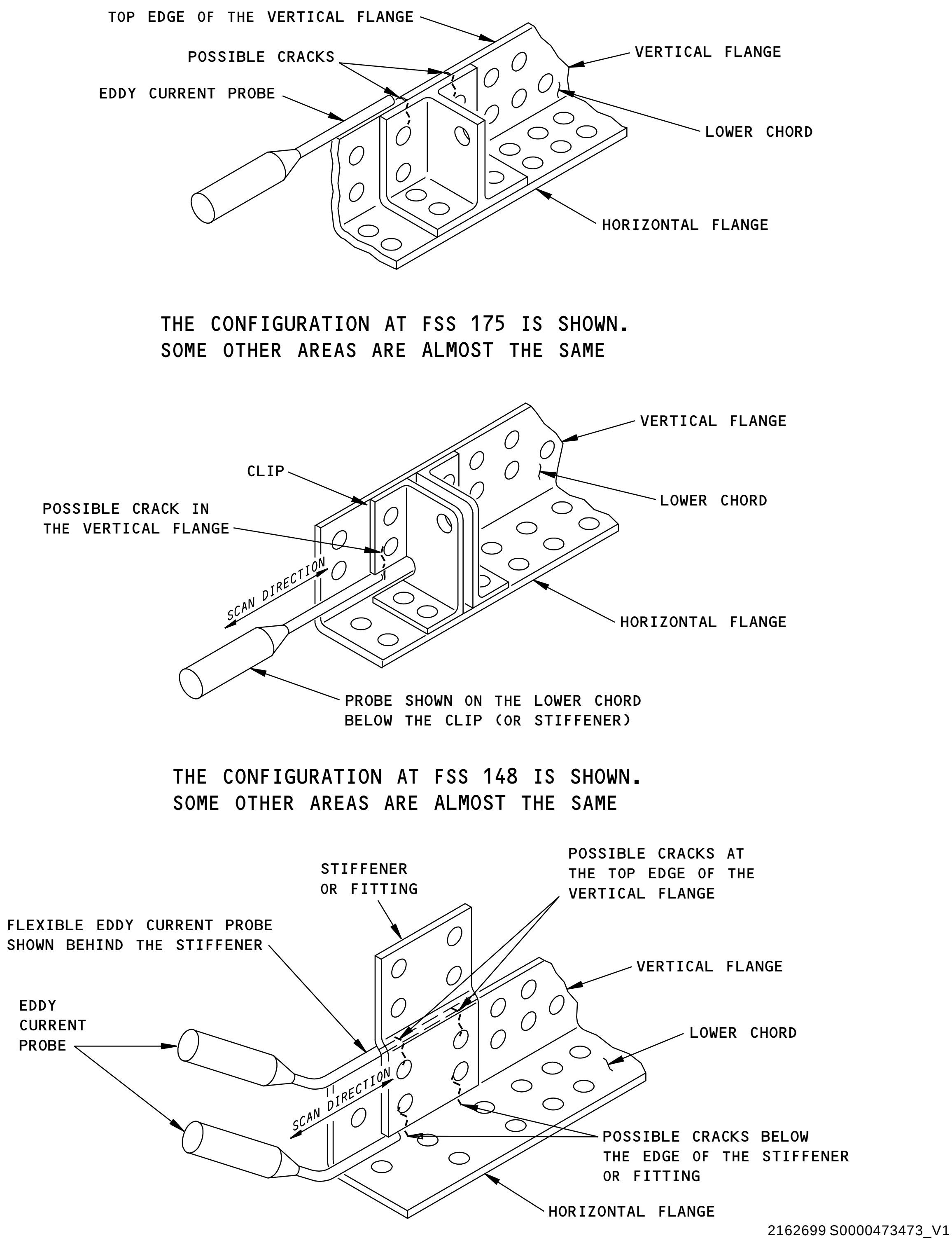
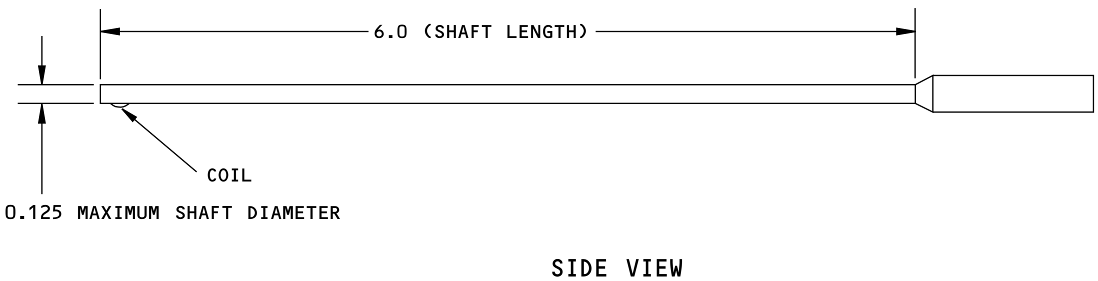
Inspection Areas on the Front Wing Spar
Figure 3 (Sheet 1 of 2)

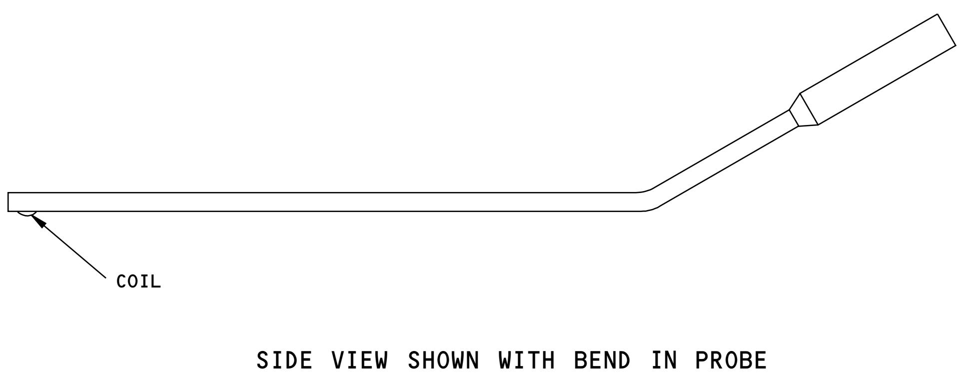


Inspection Areas on the Front Wing Spar
Figure 3 (Sheet 2 of 2)



Examples of Some Inspection Areas on the Vertical Flanges of the Lower Chord
Figure 4





NOTE:

- IT CAN BE NECESSARY TO BEND THE PROBE DIFFERENTLY THAN WHAT IS SHOWN ABOVE BECAUSE OF THE DIFFERENT STIFFENER AND FITTING CONFIGURATIONS ON THE LOWER CHORD.

2162708 S0000473474_V1

Flexible Probe Dimensions
Figure 5

PART 6 - EDDY CURRENT

WING FRONT SPAR - LOWER CHORD AT SIDE OF BODY BBL 70.85

1. **Purpose**

   A. Use this procedure to examine the lower chords of the front spar of the wing center section and outboard wing at the BBL 70.85 side of body splice. See Figure 1.

   B. Examine the horizontal flange of the lower chords for cracks that can start at the four fastener locations where the BBL 70.85 splice plate attaches to the wing center section and the outboard wing.

   C. Examine the outer edge (toe) of the horizontal flange of the lower chord of the wing center section from the internal side of the wing tank. See Figure 2.

   D. Examine the heel of the horizontal flange of the lower chord of the outboard wing from the external side of the wing tank. See Figure 3.

   E. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

      (1) Item: W-14A

      (2) Item: W-14B

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at a frequency range of 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 1000/2000; Staveley

         (b) Locator 2d; Hocking

   C. Probe

      (1) Use a 0.13 inch (3.3 mm) diameter, shielded, right angle pencil probe with a maximum drop of 0.030 inch (7.6 mm), a minimum length of 6 inches (152 mm) and a flexible shaft.

         (a) Refer to Part 6, 51-00-00, Procedure 23, paragraph 3.C, for data about probe selection.

         (b) The probes that follow were used to help prepare this procedure.

            1) MTF-9003-60FX; Olympus NDT

            2) TPEN903-6; Techna NDT

   D. Reference Standard

      (1) Use reference standard 126 (or an equivalent) as given in Part 6, 51-00-00, Procedure 23, paragraph 3.D.

3. **Prepare for the Inspection**

   A. Remove the right and left wing to body fairings to get access to the outboard wing inspection area from the external side of the wing tank. See Figure 3 for the inspection area.

   B. Remove the access panel on the lower wing of the wing center section to get access to the wing center section inspection area from the internal side of the wing tank. See Figure 2 for the inspection area.

   C. Remove sealant and clean the inspection area.

   D. Lightly smooth rough surfaces and sharp edges of chipped paint.

4. **Instrument Calibration**

   A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 23, paragraph 5. Use reference standard 126 (or an equivalent) for the calibration.

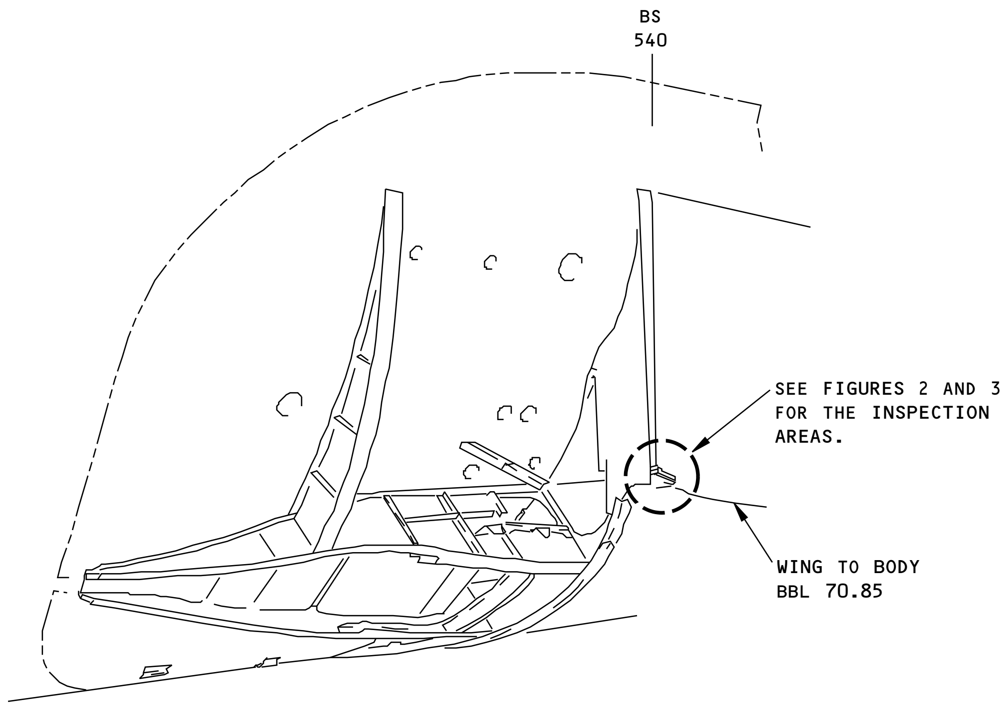
5. **Inspection Procedure**

   A. Make scans to completely examine the inspection area identified in Figure 2 and Figure 3. Refer to Part 6, 51-00-00, Procedure 23, paragraph 6, for the inspection procedure.

   B. Do Paragraph 5.A. on the opposite side of the airplane.

6. **Inspection Results**

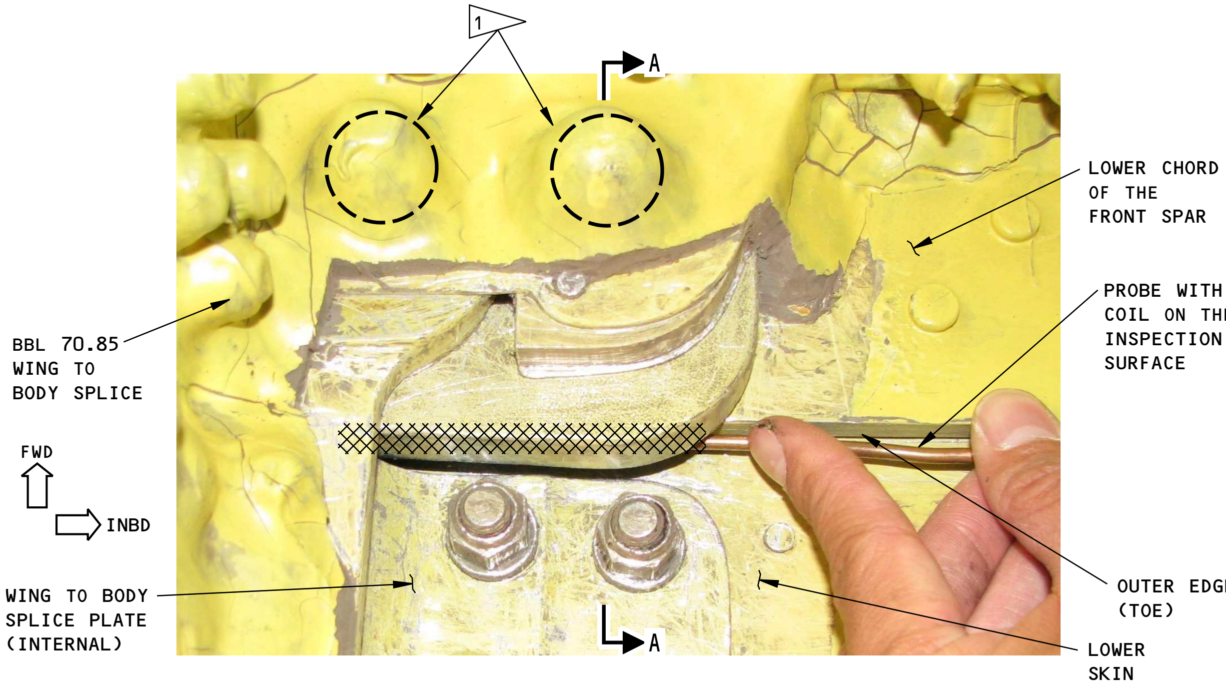
   A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of indications that occur during the inspection.



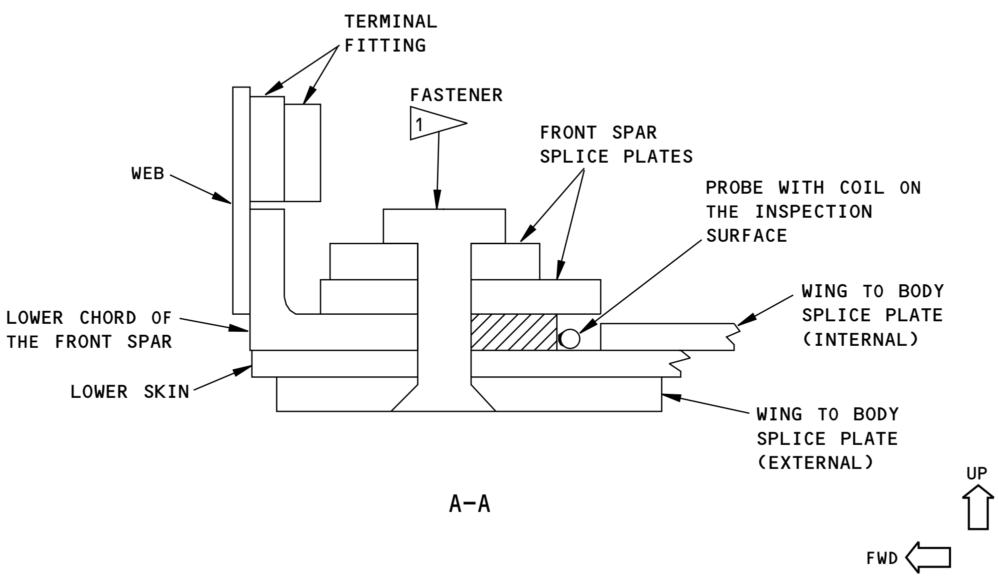
THE LEFT SIDE IS SHOWN;
THE RIGHT SIDE IS OPPOSITE

2162709 S0000473476_V1

Wing Front S - Lower Chord at Side of Body - BBL 70.85
Figure 1



WING CENTER SECTION INSPECTION AREA
(VIEW INSIDE THE WING TANK)



A-A

NOTES:

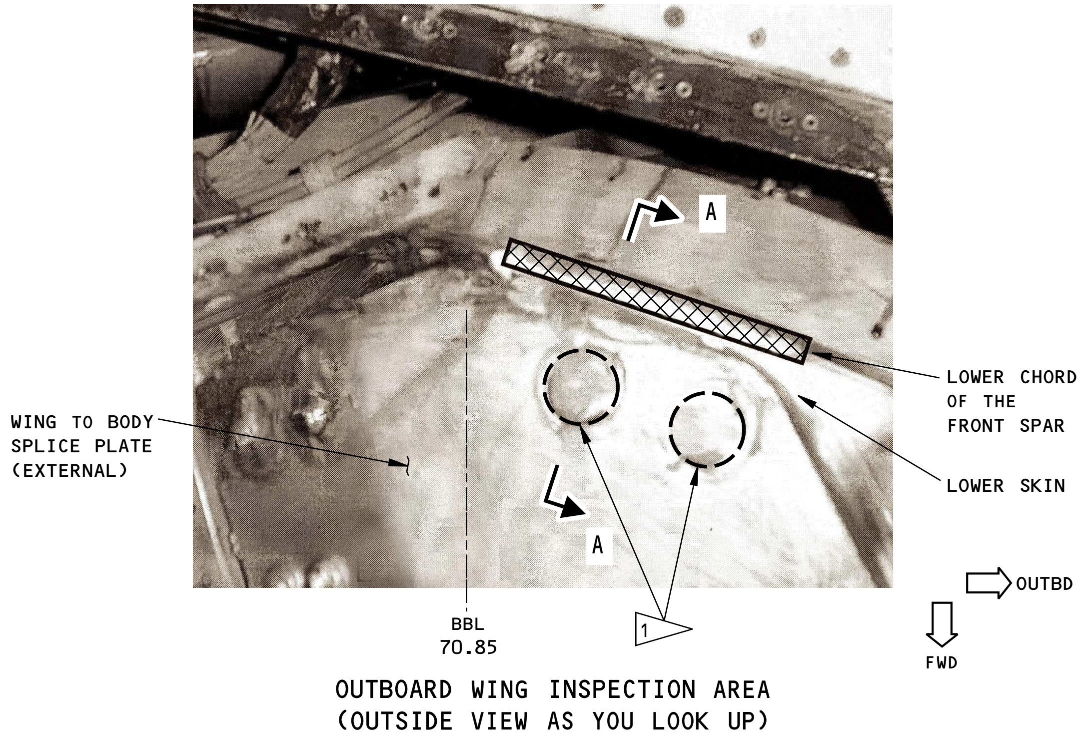
INSPECTION AREA

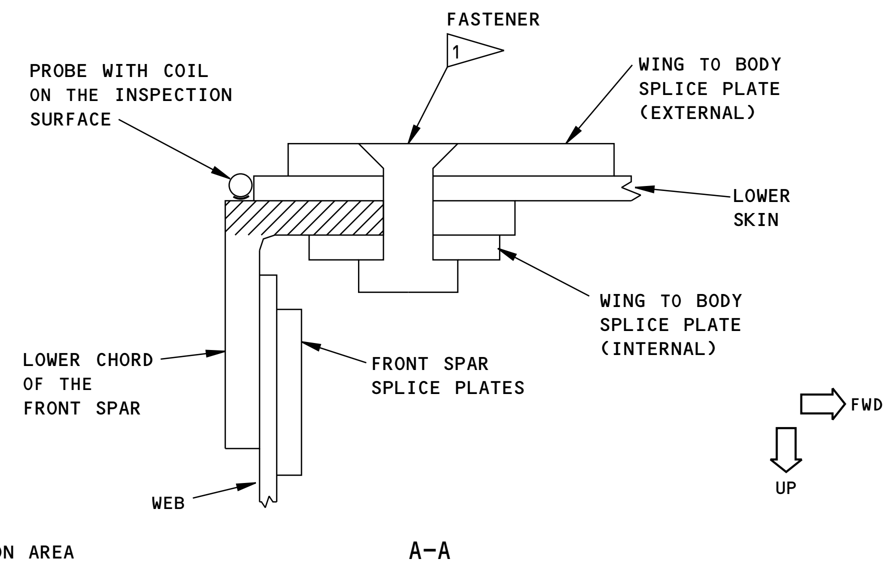
POSSIBLE CRACK

1 FASTENER LOCATIONS TO EXAMINE

2162710 S0000473477_V1

Inspection Area for the Wing Center Section - Lower Chord
Figure 2





NOTES:

INSPECTION AREA

POSSIBLE CRACK

1 FASTENER LOCATIONS TO EXAMINE

2162713 S0000473478_V1

Inspection Area for the Outboard Wing - Lower Chord
Figure 3

PART 6 - EDDY CURRENT

INSPECTION OF THE RADIUS OF THE PLUS CHORD FLANGE AT THE WING TO BODY JOINT

1. **Purpose**
   A. This procedure can be used to find longitudinal cracks in the radius of the upper plus chord at the wing to body joint. The inspection area is from the front spar at BS 540 to BS 639. This high frequency eddy current inspection is done from the outboard surface of the upper splice at BBL 70.85. See Figure 1 for the inspection area.
   B. The recommended procedure, Part 6, 51-00-00, Procedure 23, uses an instrument with an impedance plane display. Part 6, 51-00-00, Procedure 4 is an alternative procedure that uses a meter display.
   C. 737 Supplemental Structural Inspection Document (D6-82669) Reference:
      (1) Item: W-12

2. **Equipment**
   A. General
      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.
      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   B. Instrument
      (1) Use eddy current instrument that:
         (a) Has an impedance plane display or a meter display.
         (b) Operates in the frequency range of 50 kHz to 500 kHz.
      (2) The instruments that follow were used to help prepare this procedure.
         (a) Phasec 1.1 SD; Hocking/Krautkramer (impedance plane display)
         (b) Elotest B1; Rohman (meter display)
         (c) MIZ 10, MIZ 10A, MIZ 10B; Zetec, Inc. (meter display)
   C. Probes - Refer to Part 6, 51-00-00, Procedure 23 or Part 6, 51-00-00, Procedure 4, for data on the probes that are acceptable to use.
   D. Reference Standard
      (1) Refer to Part 6, 51-00-00, Procedure 23 or Part 6, 51-00-00, Procedure 4, for reference standard data.

3. **Prepare for the Inspection**
   A. Identify the inspection areas shown in Figure 1 and get access to that area.
   B. Get access to the outboard side of the plus chord.
      (1) Remove the upper wing to body fairings, as necessary, to get to the plus chord.
      (2) Remove sealant from the inspection area.
      (3) Make sure the area is clean and free of loose paint, sealant, dirt, and other unwanted materials.

4. **Instrument Calibration**

   A. For instruments that have an impedance plane display, calibrate the equipment as specified in the calibration instructions of Part 6, 51-00-00, Procedure 23, par. 5, “Instrument Calibration”.

   B. For instruments that have a meter display, calibrate the equipment as specified in the calibration instructions of Part 6, 51-00-00, Procedure 4, par. 5, “Instrument Calibration”.

5. **Inspection Procedure**

   A. Examine the radius of the upper splice from the outboard side. Use a scan pattern as follows:

      (1) For instruments with an impedance plane display, refer to par. 6 and Figure 13 of Part 6, 51-00-00, Procedure 23 for the inspection procedure.

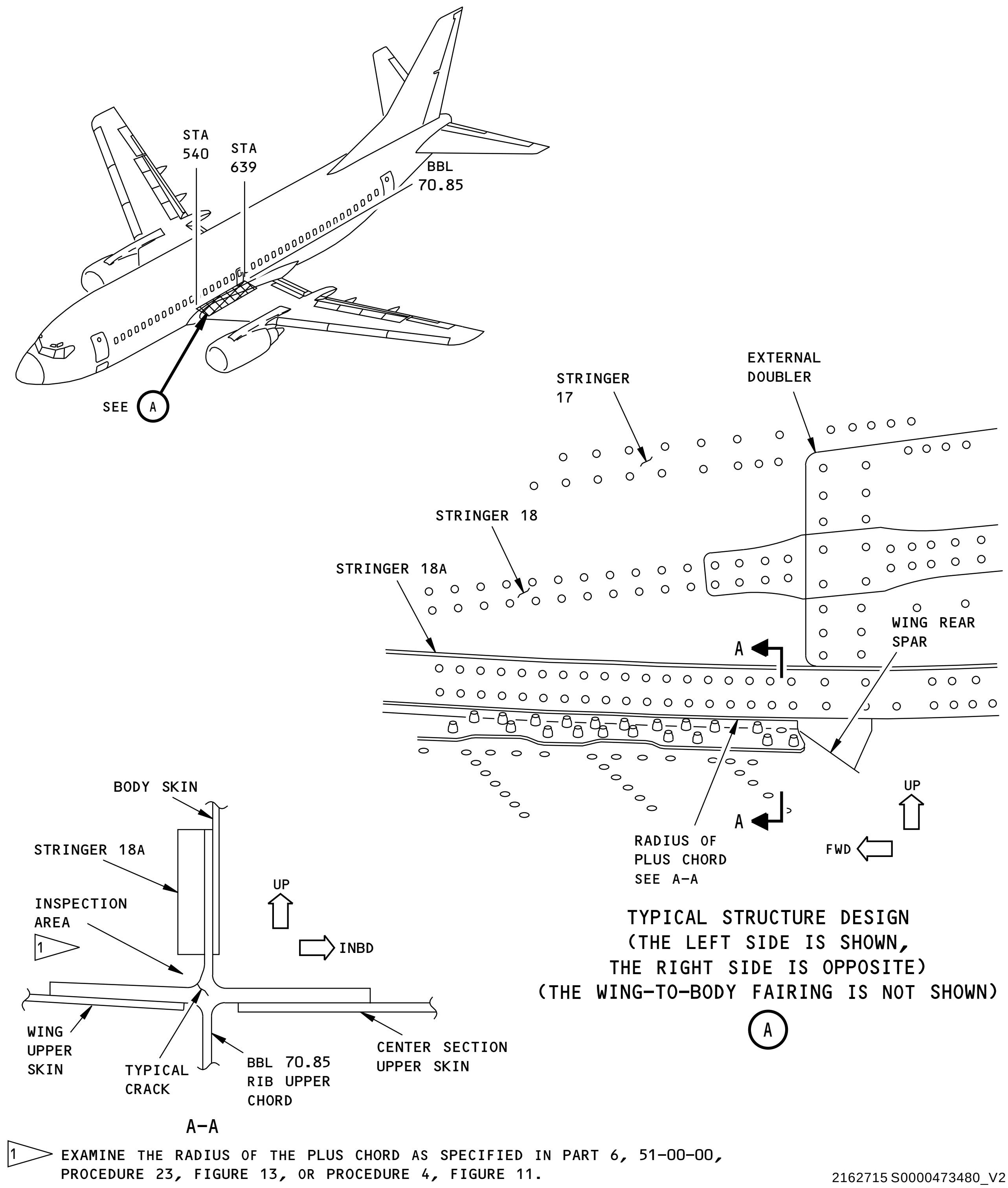
      (2) For meter display instruments, refer to par. 6 and Figure 11 of Part 6, 51-00-00, Procedure 4 for the inspection procedure.

   B. Do Paragraph 5.A. again for the other wing to body upper splice.

6. **Inspection Results**

   A. For instruments with an impedance plane display, refer to par. 7, in Part 6, 51-00-00, Procedure 23 to make an analysis of the crack signals that were found during the inspection.

   B. For meter display instruments, refer to par. 7, in Part 6, 51-00-00, Procedure 4 to make an analysis of the crack signals that were found during the inspection.



Inspection Area of the Upper Splice of the Wing to Body Joint
Figure 1

PART 6 - EDDY CURRENT

FRONT SPAR - LOWER CHORD - WBL 114 TO WBL 355

1. Purpose

A. Use this procedure to do a surface eddy current inspection to find cracks in the lower chord of the front spar from WBL 114 to WBL 355. This inspection is done inside the wing fuel tank. See Figure 1 for the inspection areas.

B. Use this procedure to examine the aft horizontal flange of the lower chord at the locations that follow:

(1) Along the forward edge of the three stiffener shear ties between WBL 149 to WBL 162.

(2) Along the forward edge of the rib shear ties at WBL 114, 135.5, 157, 227, 279.2, 304.5, 329.7 and 355.

C. This procedure uses an instrument with an impedance plane display or a meter display.

D. 737 Supplemental Structural Inspection Document (D6-82669) Reference:

(1) Item: W-19D

2. Equipment

A. General

(1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

(2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

B. Instrument

(1) Use an eddy current instrument that:

(a) Has an impedance plane display or a meter display.

(b) Operates at a frequency range of 50 to 500 kHz.

(2) The instruments that follow were used to help prepare this procedure.

(a) Phasec 2200, Phasec 2 (impedance plane display); Hocking Krautkramer

(b) Nortec 19e, 1000, 2000 (impedance plane display); Staveley Instruments

(c) Elotest B1 (impedance plane display); Rohman GmbH

(d) MIZ 10B (meter display); Zetec, Inc.

(e) Locator (meter display); Hocking

C. Probes

(1) Use a shielded, right angle, 0.13 inch (3.2 mm) diameter pencil probe with a drop length that is not more than 0.030 inch (0.76 mm). Refer to Part 6, 51-00-00, Procedure 4, paragraph 3.B for data about probe selection.

(2) A probe with a flexible shaft is recommended to get access to all the inspection areas.

(3) The probe that follows was used to help prepare this procedure.

(a) MTF9003-50FX; NDT Engineering Corp.

D. Reference Standard

(1) Use reference standard 126 (or the equivalent) identified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.

3. **Prepare for the Inspection**

A. Identify all the inspection areas. See Figure 1.

B. Remove the lower wing access panels to get access to the inspection areas.

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

C. Clean the inspection area.

(1) Remove a sufficient amount of sealant in the inspection area.

(2) Remove paint only if it is loose.

4. **Instrument Calibration**

A. Refer to Part 6, 51-00-00, Procedure 4, for the calibration instructions if a meter display instrument is used or Part 6, 51-00-00, Procedure 23, if an impedance plane display instrument is used.

5. **Inspection Procedure**

A. Calibrate the instrument as specified in Paragraph 4.

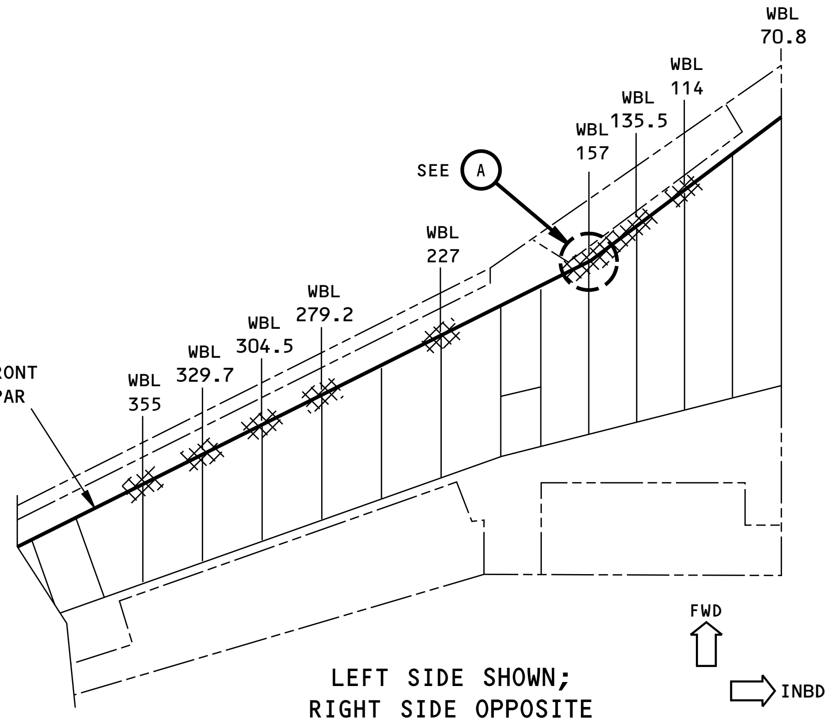
B. Make a scan inspection of all the inspection areas identified in Figure 1, on the left and right sides of the airplane.

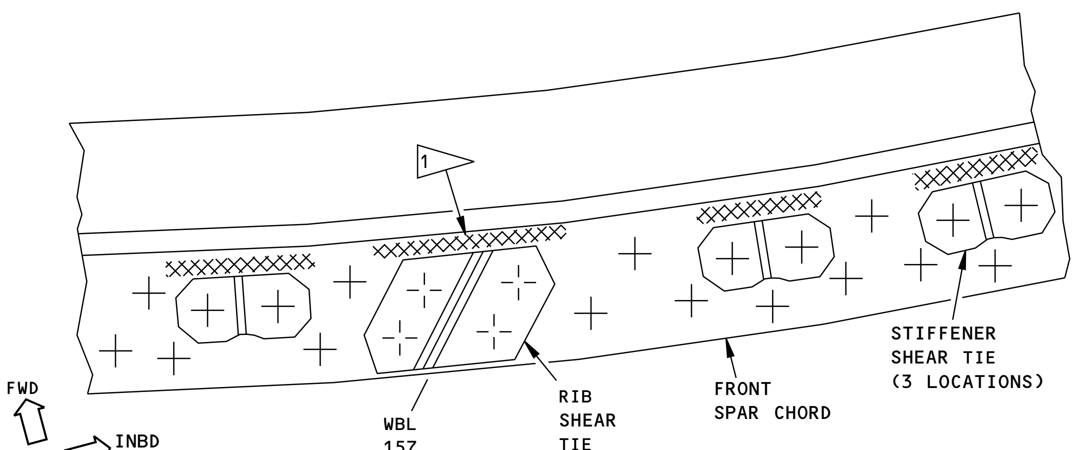
(1) For instruments with a meter display, refer to Part 6, 51-00-00, Procedure 4, paragraph 6 for the inspection procedure.

(2) For instruments with an impedance plane display, refer to Part 6, 51-00-00, Procedure 23, paragraph 6 for the inspection procedure.

6. **Inspection Results**

A. Refer to the applicable inspection procedure for data to help make an analysis of the inspection results.





TOP VIEW OF THE LOWER CHORD

A

NOTES:

INSPECTION AREA

1 TYPICAL INSPECTION AREA FOR ALL THE RIB SHEAR TIE LOCATIONS AT WBL 114, 135.5, 157, 227, 279.2, 304.5, 329.7 AND 355.

2162721 S0000473482_V1

Front Spar - Lower Chord - WBL 114 Thru WBL 355
Figure 1

PART 6 - EDDY CURRENT

SURFACE INSPECTION OF THE LOWER CHORD OF THE REAR SPAR FROM LBL 70.5 TO RBL 70.5

1. **Purpose**

   A. Use this procedure to examine the lower chord of the rear spar in the wing center section for cracks from LBL 70.5 to RBL 70.5. The inspection area is the horizontal flange of the lower chord. See Figure 1.

   B. This procedure uses an impedance plane display instrument or a meter display instrument to find surface cracks in the horizontal flange of the lower chord. The cracks start at the fastener holes and can be found adjacent to the collars. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for more inspection data.

   C. 737 Supplemental Structural Inspection Document (D6-82669) Reference:

      (1) Item: W-1A

      (2) Item: W-1B

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display or a meter display.

         (b) Operates at a frequency between 50 and 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 1.1; Hocking Krautkramer

         (b) NDT 19; Staveley Instruments

         (c) Locator UHB; Hocking Inc.

   C. Probes

      (1) Two angled probes are necessary to do this procedure.

         (a) One probe must have a maximum diameter of 0.13 inch (3.3 mm).

         (b) One probe must have a maximum diameter of 0.06 inch (1.5 mm).

      (2) Each probe must:

         (a) Operate at a frequency between 50 and 500 kHz.

         (b) Have a maximum length of 10 inches (254 mm).

         (c) Be shielded.

         (d) Operate as specified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.

         (e) Have a minimum drop of 0.40 inch (10 mm) if an angled probe is used.

      (3) The probes that follow were used to help prepare this procedure.

(a) MTF905-50B/50k-500k; NDT Engineering

(b) PAB90C505, 50-500k; EC-NDT (0.13 inch (3.3 mm) diameter)

(c) MMTF305-50, 50-500k; NDT Engineering (0.06 inch (1.5 mm) diameter)

(d) TSPEN35-5; 50-500k; Techna NDT (0.06 inch (1.5 mm) diameter)

D. Reference Standards

(1) Use reference standard 188A to do a calibration for this inspection. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, to make this reference standard.

3. Prepare for the Inspection

WARNING: ALL OF THE CONDITIONS THAT FOLLOW MUST BE DONE BEFORE YOU CAN GO INTO A FUEL TANK WITH AN EDDY CURRENT INSTRUMENT:

1. ALL REMAINING FUEL MUST BE REMOVED FROM THE TANK TO BE EXAMINED.

2. AN AIR PURGE SYSTEM AS SPECIFIED IN CHAPTER 28 OF THE AIRPLANE MAINTENANCE MANUAL (AMM) MUST BE USED TO REMOVE FUEL FUMES FROM THE TANK. THE AIR PURGE SYSTEM MUST REMAIN ON DURING THE INSPECTION. PRECAUTIONS MUST BE DONE TO MAKE SURE FUEL FUMES DO NOT TRAVEL FROM ADJACENT FUEL TANKS THROUGH THE VENT SYSTEM AND INTO THE TANK TO BE EXAMINED. PLUG THE VENTS OR KEEP A POSITIVE PRESSURE IN THE TANK TO BE EXAMINED TO KEEP FUEL FUMES OUT OF THE TANK.

3. FUEL FUME LEVELS IN THE TANK MUST BE DECREASED TO A VAPOR CONCENTRATION OF 160 PARTS PER MILLION OR LESS (OR LESS THAN 2.6 PERCENT OF THE LOWER EXPLOSIVE LIMIT (LEL)). THESE VALUES AGREE WITH THE HEALTH-SAFE CONDITION VALUES IDENTIFIED IN CHAPTER 28 OF THE AMM.

4. THE EDDY CURRENT INSTRUMENT MUST BE ENERGIZED BY BATTERIES.

5. YOU MUST GET APPROVAL TO OPERATE AN EDDY CURRENT INSTRUMENT IN A FUEL TANK THAT IS PREPARED AS SPECIFIED IN STEPS 1 THRU 4 FROM THE LOCAL AIRLINE (OR AIRPORT) SAFETY OFFICER OR FIRE DEPARTMENT.

A. Defuel the center section fuel tank. Use safe procedures while you defuel the fuel tank.

B. Get access to the rear spar of the wing center section through the access panel that is on the lower panel of the wing center section. This access panel is immediately aft of the front spar chord. See Figure 1.

C. Go aft through the spanwise beam access holes to get to the inspection area on the horizontal flange of the lower chord of the rear spar. See Figure 1.

D. Remove the sealant on the horizontal flange of the chord around the collars so that a probe can do a scan around the collars.

NOTE: The probe scans can not be done through the sealant.

4. Instrument Calibration

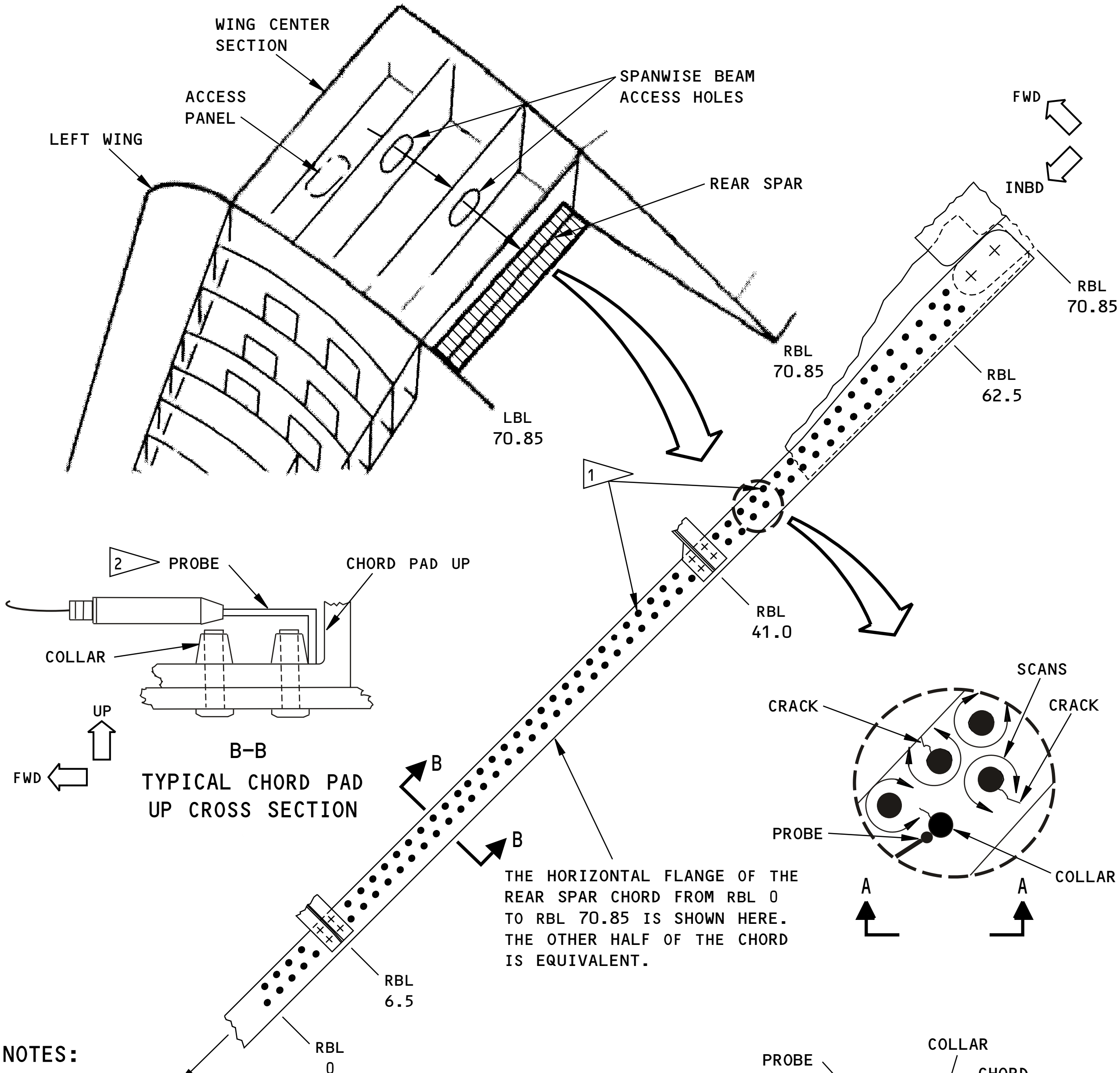
A. Do the calibration on reference standard 188A for the inspection of the aft chord shown in Figure 1. Do the calibration around the rivet on the reference standard. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23 for the calibration instructions.

5. **Inspection Procedure**

   A. Do a scan around all of the collars shown as dark circles in Figure 1 on the horizontal flange of the lower rear spar chord. It is possible that some fasteners could be installed with their heads on the top of the chord. Also, do a scan around these fastener heads if they are seen on the top of the lower chord in the wing center section.

6. **Inspection Results**

   A. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, par. 7, to make an analysis of possible crack signals.



NOTES:

INSPECTION AREA

- GET ACCESS TO THE INSPECTION AREA THROUGH THE ACCESS PANEL SHOWN ABOVE.
- REMOVE SEALANT ON THE CHORD FROM AROUND THE COLLARS SO THAT A PROBE SCAN CAN BE DONE AROUND THE COLLARS.

1 DO A PROBE SCAN ON THE CHORD AROUND ALL OF THE COLLARS THAT ARE IDENTIFIED BY DARK CIRCLES.

2 0.06 INCH (1.5 mm) DIAMETER PROBE USED FOR TYPICAL CHORD PAD UP LOCATIONS AS SHOWN IN B-B

2162726 S0000473485_V1

Inspection Areas on the Rear Spar
Figure 1

PART 6 - EDDY CURRENT

FRONT SPAR - LOWER SKIN AT WBL 183.4, 191 AND 198.6

1. **Purpose**

   A. Use this procedure to do a surface eddy current inspection to find cracks in the lower wing skin at the fastener locations where the nacelle fittings at WBL 183.4, 191 and 198.6 are attached to the front spar.

   B. This inspection procedure examines the skin for possible cracks that are on the aft side of the fastener holes and are perpendicular to the edge of the lower spar chord. See Figure 1 for typical cracks.

   C. This inspection is done inside the wing fuel tank to get access to the inspection areas shown in Figure 1.

   D. This procedure uses a right angle pencil probe with an impedance plane display or a meter display instrument.

   E. 737 Supplemental Structural Inspection Document (D6-82669) Reference:

      (1) Item: W-19B

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display or a meter display.

         (b) Operates at a frequency range of 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2200, Phasec 2 (impedance plane display); Hocking Krautkramer

         (b) Nortec 19e, 1000, 2000 (impedance plane display); Staveley Instruments

         (c) Elotest B1 (impedance plane display); Rohman GmbH

         (d) MIZ 10B (meter display); Zetec Inc.

         (e) Locator (meter display); Hocking

   C. Probes

      (1) Use a shielded, right angle, 0.125 inch (3.17 mm) diameter pencil probe with a shaft length of 7 inches (178 mm) and a drop length of 0.030 inch (0.5 mm). Refer to Part 6, 51-00-00, Procedure 4, par. 3.B. for data about probe selection.

      (2) A probe with a flexible shaft is recommended.

      (3) The probe that follows was used to help prepare this procedure.

         (a) MTF9003-95FX; NDT Engineering Corp.

   D. Reference Standard

(1) Use reference standard 126, or an equivalent, which is identified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.

3. **Prepare for the Inspection**

A. Identify all the inspection areas. See Figure 1.

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

B. Get access into the wing fuel tank through access panels 7204L/7404R and 7205L/7405R. Remove the inspar rib access panel 7224L/7424R attached to the WBL 183.4 rib installation to get access to the inspection area at WBL 191.

C. Remove the tubing that is on the outboard side of the WBL 198.6 rib, to get access to the inspection area.

D. Clean the inspection area.

CAUTION: DO NOT USE A METAL TOOL TO REMOVE SEALANT OR LOOSE MATERIAL. IT IS POSSIBLE FOR A METAL TOOL TO CAUSE DAMAGE TO THE STRUCTURE.

(1) Remove sealant from the inspection area and along the edge of the lower chord.

(2) Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 4 (if a meter display instrument is used) or Part 6, 51-00-00, Procedure 23 (if an impedance plane display instrument is used).

5. **Inspection Procedure**

A. Calibrate the instrument as specified in Paragraph 4.

B. Do a complete scan inspection of all the inspection areas identified in Figure 1, on the left and right sides of the airplane. Keep the probe against the edge of the lower chord as much as possible during the scan.

(1) Examine the inspection area at WBL 183.4 from the inboard side of the nacelle fitting.

(2) Examine the inspection area at WBL 191 from the inboard side of the WBL 198.6 rib, through the access hole in the WBL 183.4 rib.

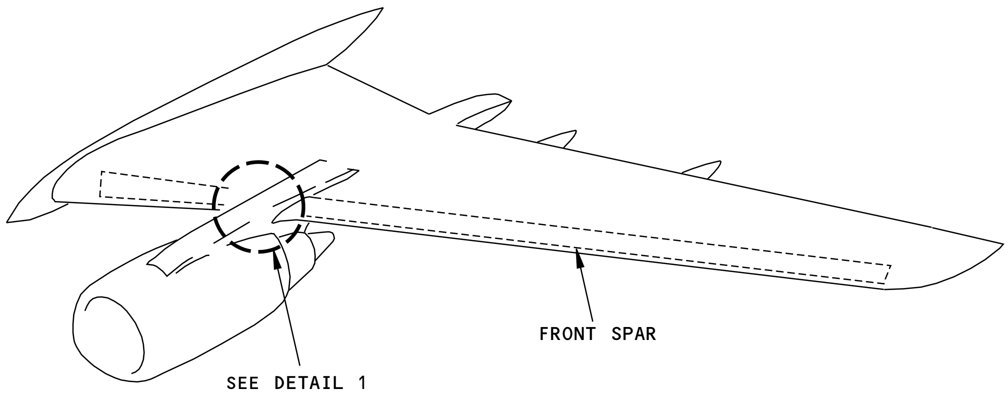
(3) Examine inspection area at WBL 198.6 from the outboard side of the nacelle fitting.

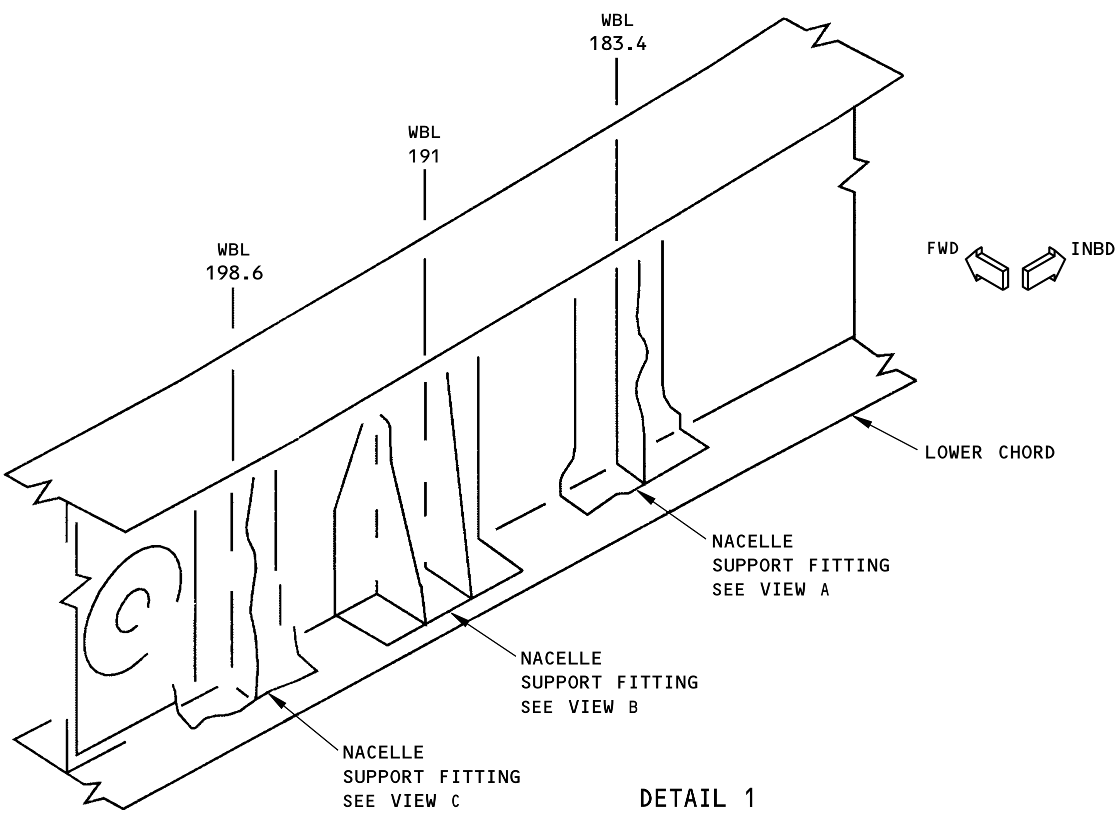
C. For instruments with a meter display, refer to Part 6, 51-00-00, Procedure 4, par. 6 for the inspection procedure.

D. For instruments with an impedance plane display, refer to Part 6, 51-00-00, Procedure 23, par. 6 for the inspection procedure.

6. **Inspection Results**

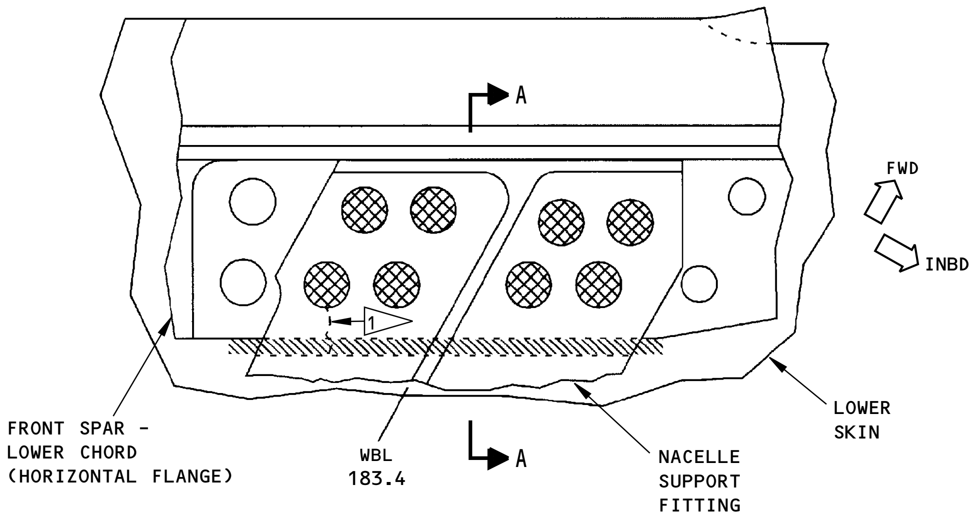
A. Refer to the applicable inspection procedure for data to help make an analysis of the inspection results.



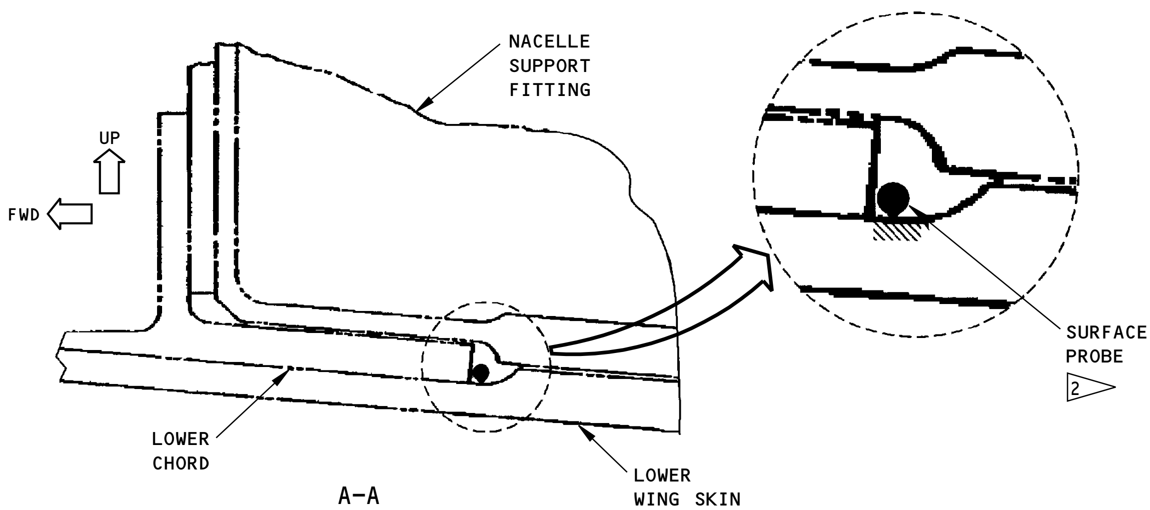


2162728 S0000473487_V1

Front Spar - Lower Wing Skin - WBL 183.4, 191, 198.6
Figure 1 (Sheet 1 of 4)



VIEW A
TOP VIEW OF THE LOWER CHORD



A-A
TURNED 90 DEGREES
COUNTERCLOCKWISE (CCW)

NOTES:

FASTENER LOCATIONS WHERE POSSIBLE CRACKS CAN OCCUR

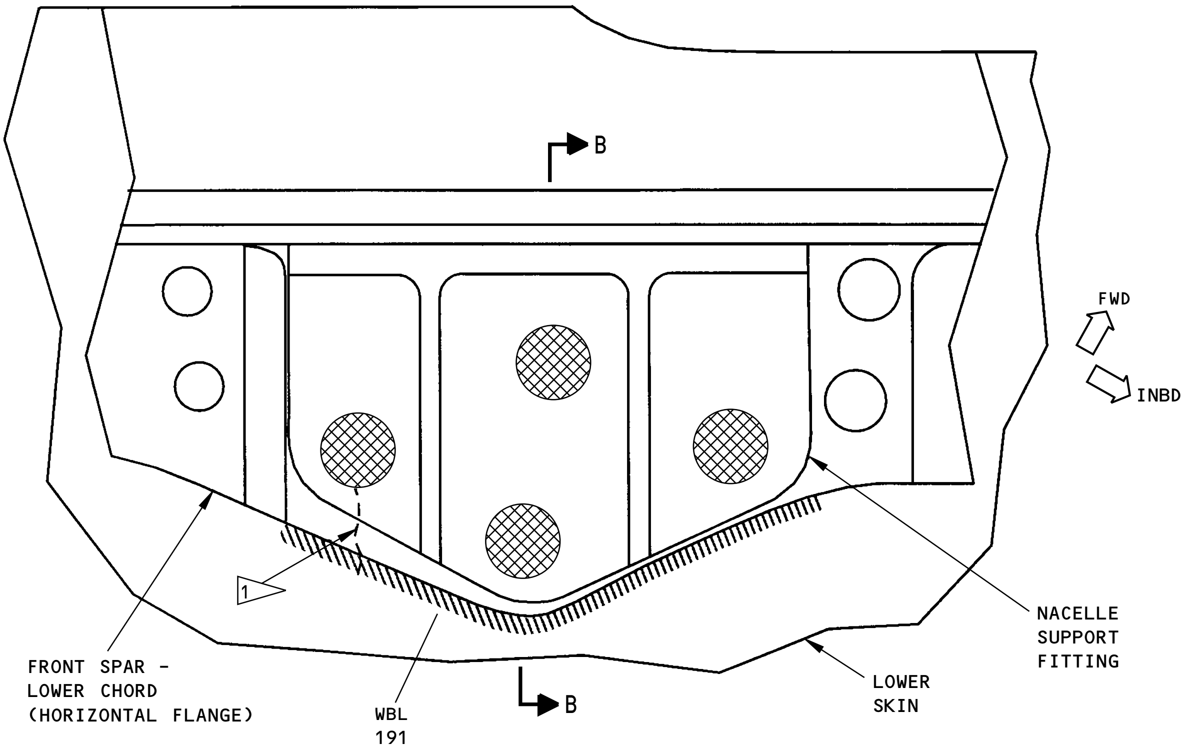
INSPECTION AREA OF THE LOWER SKIN SURFACE

1 TYPICAL CRACK DIRECTION AND LOCATION THAT CAN OCCUR ON THE AFT SIDE OF THE FASTENER HOLES IN THE LOWER SKIN.

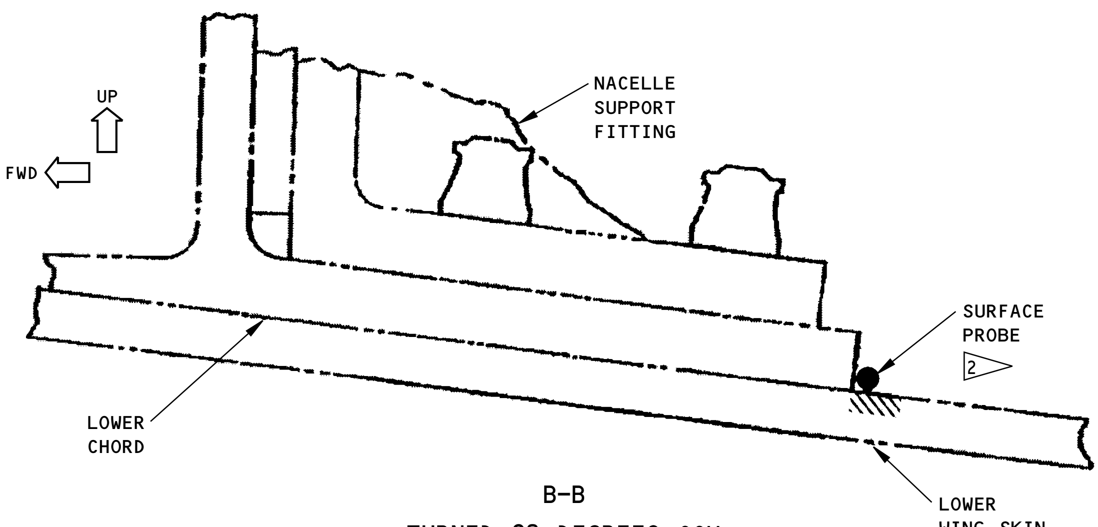
2 USE THE EDGE OF THE LOWER CHORD AS A GUIDE AS YOU SCAN THE INSPECTION AREA.

2162729 S0000473488_V1

Front Spar - Lower Wing Skin - WBL 183.4, 191, 198.6
Figure 1 (Sheet 2 of 4)



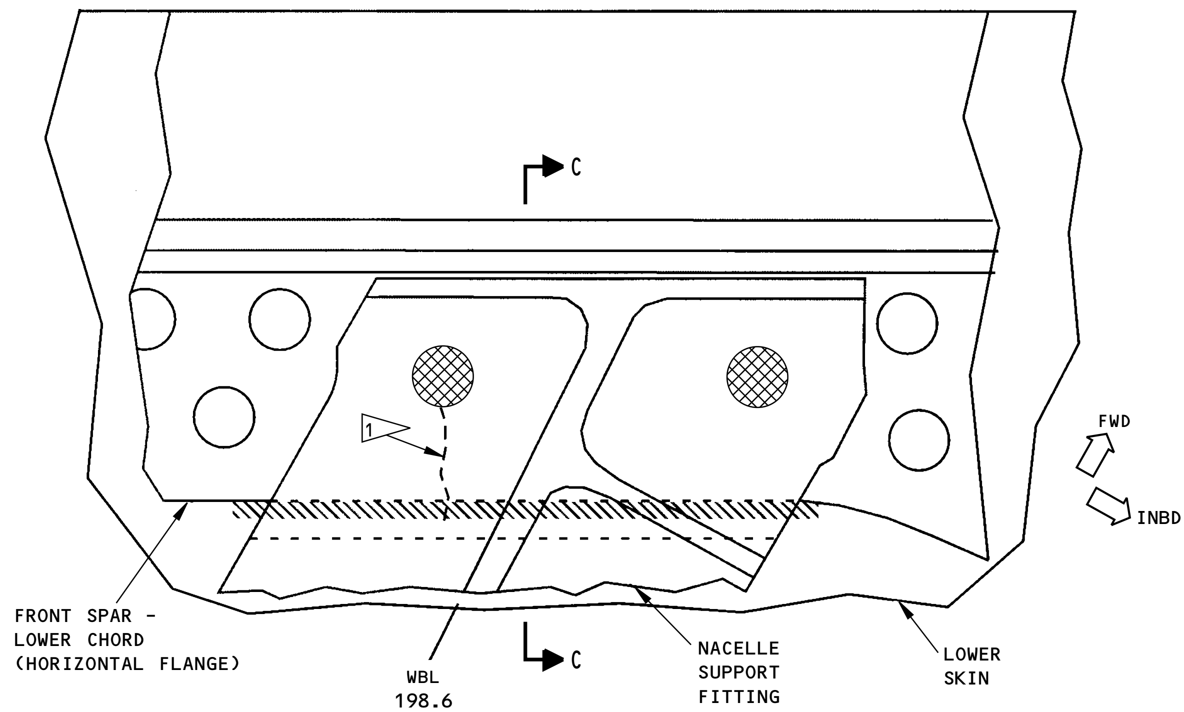
VIEW B
TOP VIEW OF THE LOWER CHORD



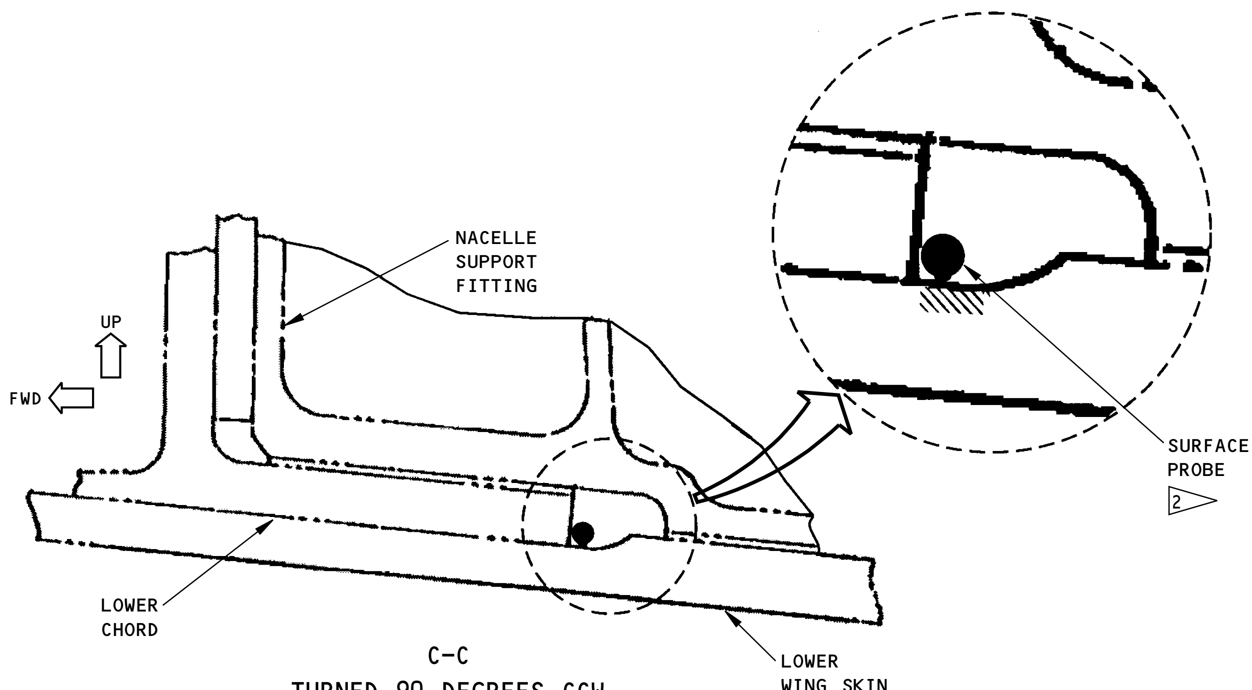
B-B
TURNED 90 DEGREES CCW

2162731 S0000473489_V1

Front Spar - Lower Wing Skin - WBL 183.4, 191, 198.6
Figure 1 (Sheet 3 of 4)



VIEW C
TOP VIEW OF THE LOWER CHORD



C-C
TURNED 90 DEGREES CCW

2162734 S0000473490_V1

Front Spar - Lower Wing Skin - WBL 183.4, 191, 198.6
Figure 1 (Sheet 4 of 4)

PART 6 - EDDY CURRENT

REAR SPAR - LOWER CHORD - RSS 145.6 TO 157.3, RSS 168.7 AND RSS 186.9 TO 353

1. **Purpose**

   A. Use this procedure to do a subsurface eddy current inspection to find cracks in the lower chord of the rear spar from RSS 145.6 to RSS 157.3, at RSS 168.7, and from RSS 186.9 to RSS 353. See Figure 1 for the RSS locations.

   B. Use this procedure to examine the horizontal flange of the lower chord at the fastener locations, shown in Figure 1, that follow:

      (1) Where the rib and the stiffener shear ties are attached to the lower chord.

      (2) Adjacent to the rib and stiffener shear ties.

   C. Use this procedure to examine the horizontal flange of the lower chord for cracks in the forward and aft direction from the fastener locations. See Figure 1 for the fastener locations to be examined.

   D. This procedure uses a ring probe (reflection recommended) and an impedance plane display or a meter display instrument.

   E. Fastener locations that cannot be examined because of the nacelle skate angles at WBL 183 and 200 will be examined with an alternate procedure. See Figure 1 for the fastener locations, inspection areas and the alternate inspection.

   F. 737 Supplemental Structural Inspection Document (D6-82669) Reference:

      (1) Item: W-17B

      (2) Item: W-17C

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an impedance plane display or a meter display instrument that can operate at a frequency of 150 Hz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) NDT 19e, Nortec 1000, 2000; Staveley Instruments

         (b) MIZ 10B; Zetec, Inc.

   C. Probes

      (1) Use a ring probe that can operate at a frequency of 150 Hz and has an inner diameter of 0.50 inches (13 mm). A reflection type probe is recommended.

         (a) The probes that follow were used to help prepare this procedure.

            1) NEC 4028-2; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 0.84 inch (21 mm) height; NDT Engineering Corp.

            2) VMRR4-32.500; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 1.5 inch (38 mm) height; VM Products.

3) SPO-6087; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 0.90 inch (23 mm) height; Staveley Instruments.

D. Reference Standard

(1) Make or buy reference standard NDT3052 as specified in Figure 2. This reference standard is also used in Part 6, 57-10-26.

3. Prepare for the Inspection

A. Identify all the fastener locations to be examined. See Figure 1.

B. Clean the inspection surface.

(1) Remove sealant as necessary. Use care to prevent damage to the surface of the skin if sealant removal is necessary. Refer to the Airplane Maintenance Manual for more instructions if necessary.

(2) Remove paint only if it is loose.

NOTE: If the fastener heads can not be clearly seen through the paint, it will be necessary to remove a sufficient quantity of paint to clearly identify the fastener head.

4. Instrument Calibration

A. To examine all the inspection locations identified as A, A1 and B, B1 in Figure 1, it is necessary to do two calibrations.

(1) Calibration for the “A” and “A1” fastener locations.

(a) Set the instrument frequency to 150 Hz.

(b) Put the probe at position 1 (fastener location without a notch) of location “A” on the reference standard. See Detail I in Figure 3.

NOTE: Make sure the probe is centered above the fastener head. To make sure the probe is centered, move the probe around the fastener until you get a minimum signal.

(c) Balance the instrument.

1) If an impedance plane display instrument is used, set the balance point at 20 percent of full screen height and 50 percent of full screen width. See Detail II in Figure 3.

2) If a meter display instrument is used, set the needle at 20 percent of the display as shown in Detail III in Figure 3.

(d) Adjust the instrument for lift-off.

1) If an impedance plane display instrument is used, adjust the phase control so that the signal moves horizontally to the left when the probe is lifted off of the reference standard.

2) If a meter display instrument is used, adjust the phase control so that the signal is the same when the probe is on a bare surface as it is when the probe is lifted off the part by 0.006 inch (0.15 mm).

(e) Put the probe at position 2 (fastener location with a notch) of location “A” of the reference standard. See Detail I in Figure 3.

NOTE: Make sure the probe is centered above of the fastener head.

1) If an impedance plane display instrument is used, adjust the gain to get a signal that is 80 percent of full screen height (60 percent higher than the balance point). See Detail II in Figure 3.

2) If a meter display instrument is used, adjust the instrument gain to get a signal that is 80 percent of full scale (60 percent higher than the balance point). See Detail III in Figure 3.

(2) Calibration for “B” and ”B1” fastener locations.

(a) Set the instrument frequency to 150 Hz.

(b) Do Paragraph 4.A.(1)(b) thru Paragraph 4.A.(1)(e) again, but use location “B” of the reference standard. See Detail I in Figure 3.

5. **Inspection Procedure**

A. Identify the inspection locations shown in Figure 1 and all the fastener locations (A, A1, B and B1) to be examined shown in Figure 1.

(1) Calibrate the instrument as specified in Paragraph 4.

(2) Do an inspection of three or more fasteners to get an average signal to use as a baseline signal. Use the fastener location that gives the average baseline signal and balance the instrument.

NOTE: Because of baseline differences, fastener codes “A”, ”A1”, “B”, and “B1” must be examined separately.

(3) Do an inspection of all the fastener locations identified in Figure 1. Do the steps that follow during the inspection:

(a) Make a mark at the locations where signals occur that are 50 percent (or more) of the signal you got from the notch in the reference standard.

(b) Frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Put the probe on the reference standard to get the maximum signal from the notch.

2) Compare the signal you got from the notch during calibration with the signal you get now.

3) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

(4) Do Paragraph 5.A.(1) thru Paragraph 5.A.(3) again on the opposite wing.

6. **Inspection Results**

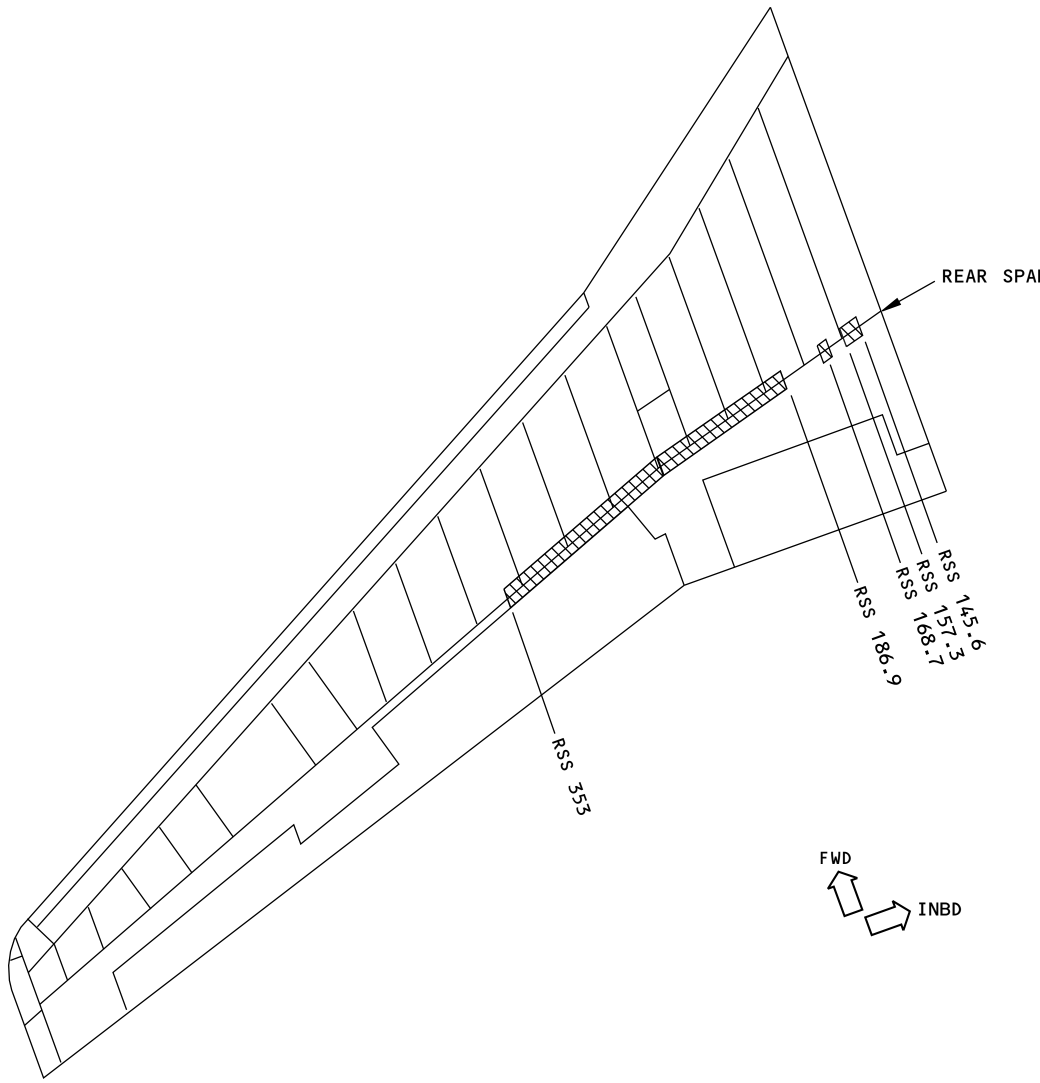
A. Signals that are 50% (or more) above the balance point and look almost the same as the notch signal from the reference standard, are signs of a possible crack.

B. If you want to make sure of the results, do as follows:

(1) Make sure that the signal is not caused from a change in structure (fastener edge margin distance) and/or the skin/chord thickness. Do a check of the same location on the opposite wing.

(2) For the fastener location(s) away from the rib or stiffener shear tie, do a surface eddy current scan inspection around the fastener, on the inside surface of the chord. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.

(3) For the fastener location(s) at the rib or stiffener shear tie, remove the fastener and do a open hole eddy current inspection. Refer to Part 6, 51-00-00, Procedure 16.



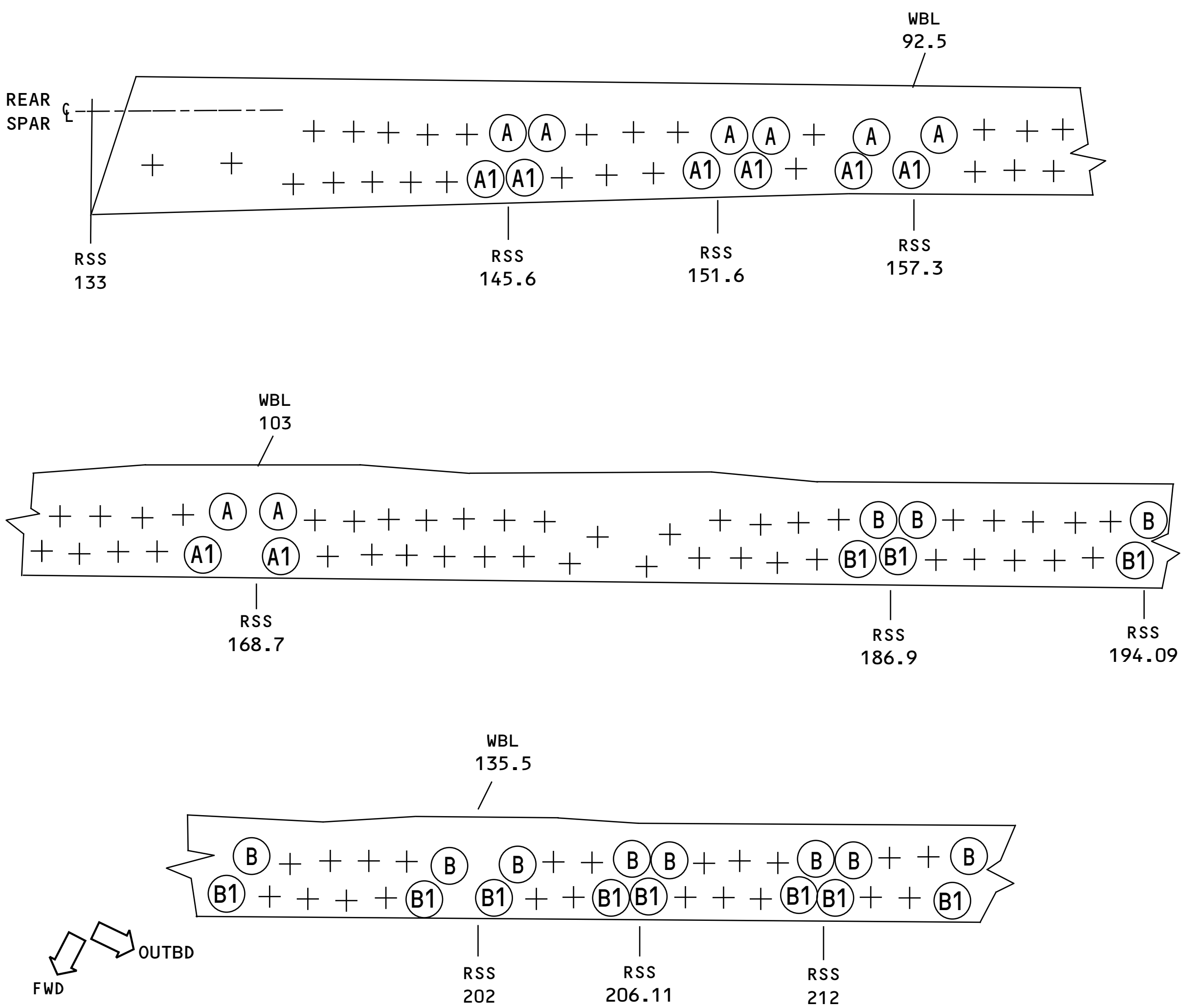
NOTES:

- THE LEFT SIDE IS SHOWN, THE RIGHT SIDE IS ALMOST THE SAME

[hatched symbol] = INSPECTION LOCATIONS

2162736 S0000473492_V1

Lower Chord of the Rear Spar - Inspection Areas
Figure 1 (Sheet 1 of 5)

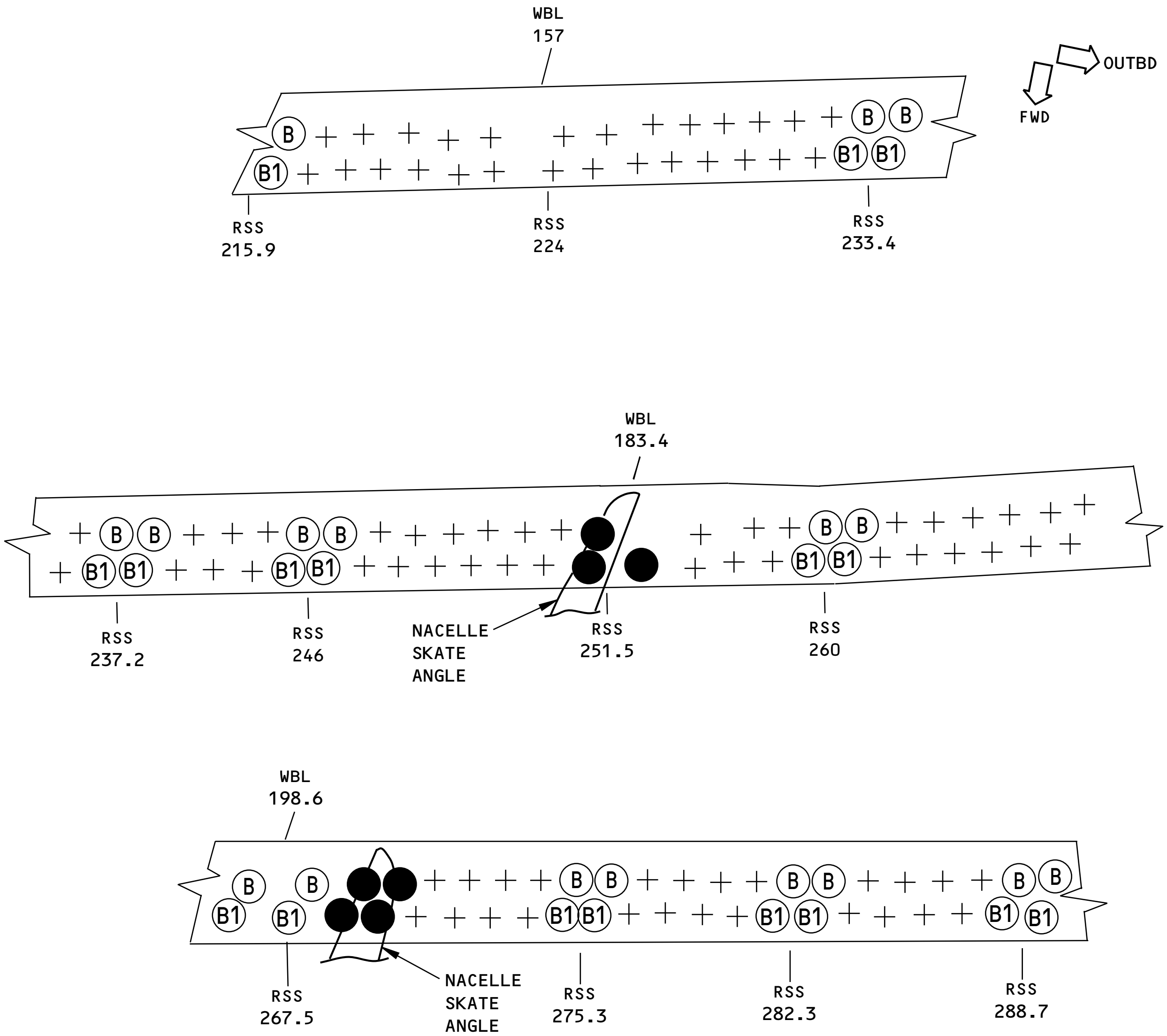


NOTES:

- VIEW AS YOU LOOK UP
- THE RIGHT WING IS SHOWN; THE LEFT WING IS ALMOST THE SAME

2162738 S0000473493_V1

Lower Chord of the Rear Spar - Inspection Areas
Figure 1 (Sheet 2 of 5)

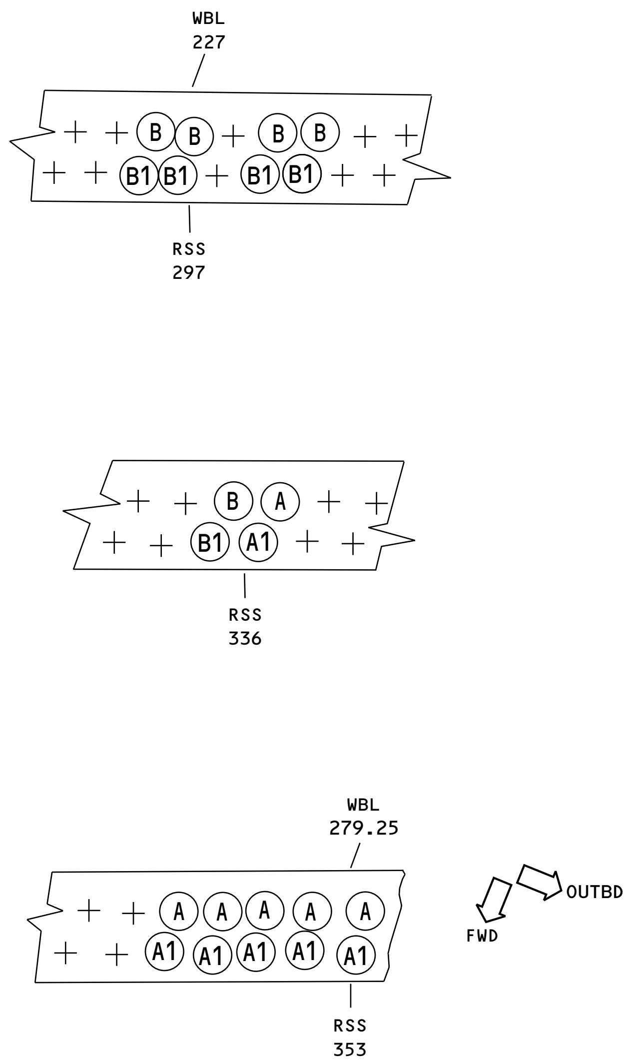


NOTES:

● FASTENER LOCATION THAT CANNOT BE EXAMINED BECAUSE OF THE NACELLE SKATE ANGLE. DO A SURFACE EDDY CURRENT INSPECTION ON THE CHORD AS SPECIFIED IN PART 6, 57-10-19, ON THE TOP EDGE OF THE VERTICAL FLANGE (AFT SIDE OF THE REAR SPAR) AND THE FORWARD EDGE ON THE HORIZONTAL FLANGE (FORWARD SIDE OF THE REAR SPAR). SEE FIGURE 1 (SHEET 5) FOR THE INSPECTION AREAS.

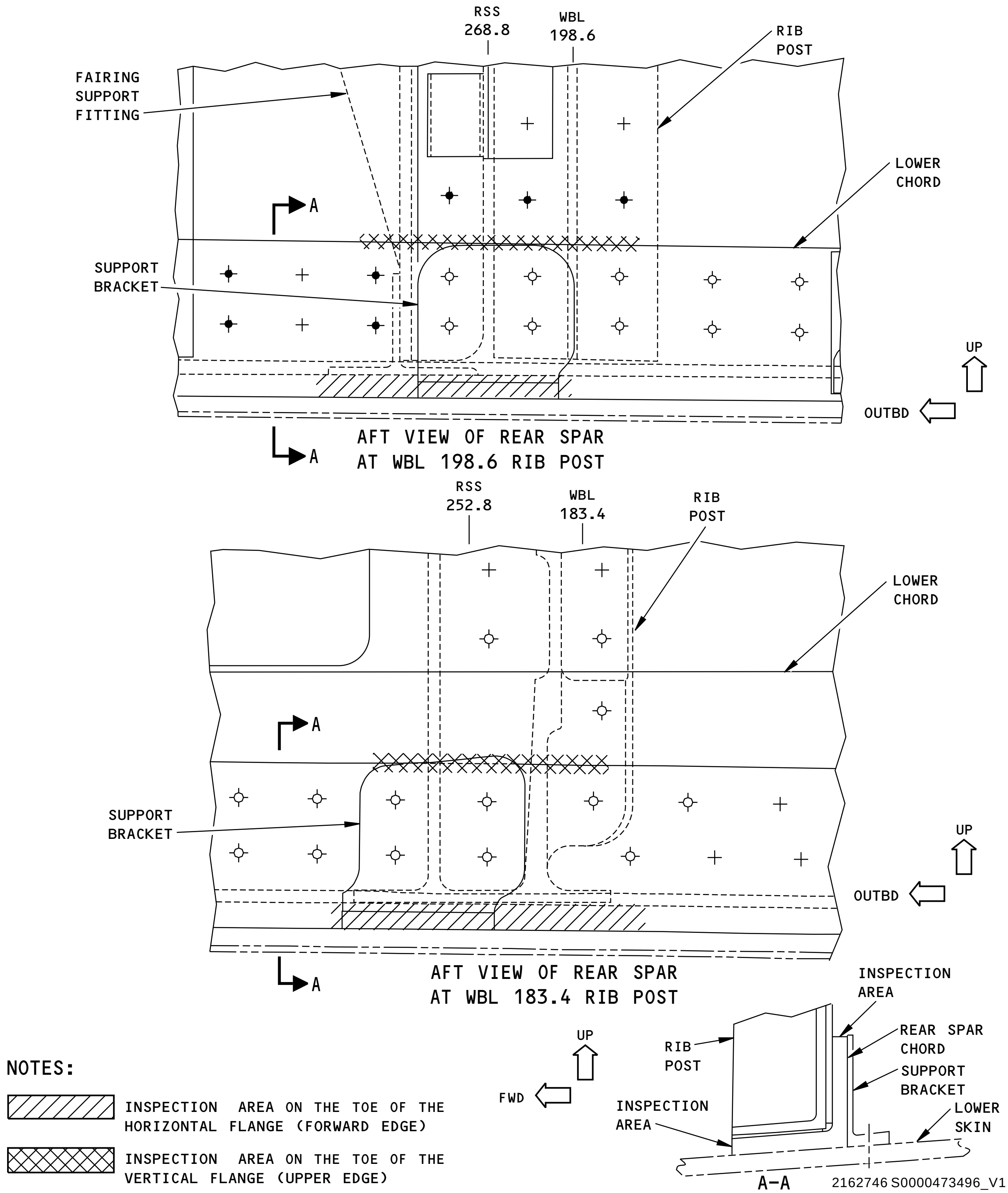
2162742 S0000473494_V1

Lower Chord of the Rear Spar - Inspection Areas
Figure 1 (Sheet 3 of 5)

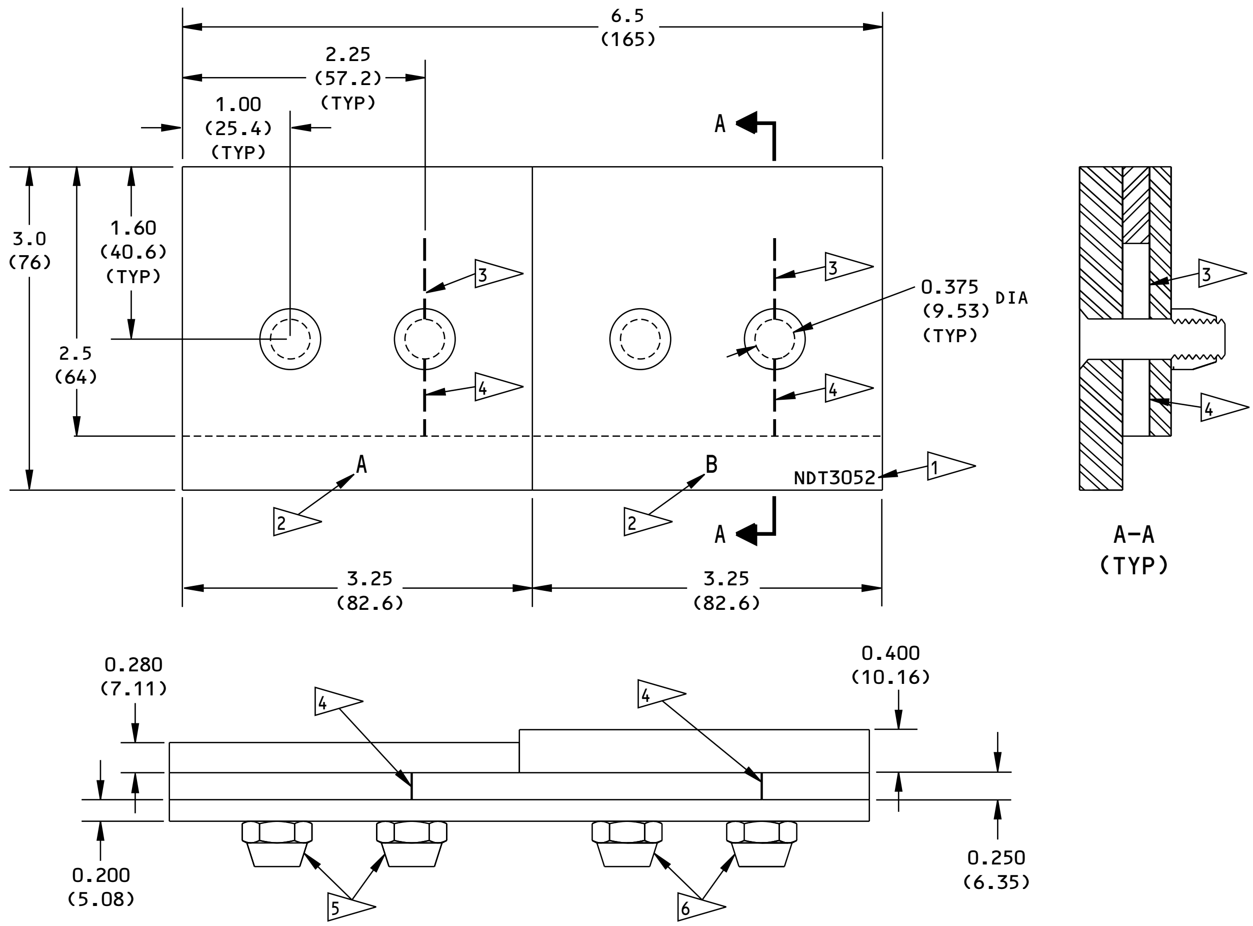


2162743 S0000473495_V1

Lower Chord of the Rear Spar - Inspection Areas
Figure 1 (Sheet 4 of 5)



Lower Chord of the Rear Spar - Inspection Areas
Figure 1 (Sheet 5 of 5)



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCE:

  THE NOTCH LOCATION MUST BE WITHIN ±0.005 (±0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 2024-T3 OR T4 OR 7075-T6 ALUMINUM (CLAD OR BARE)

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER NDT3052

2 ETCH OR STEEL STAMP THE LETTER SHOWN TO IDENTIFY THE LOCATION TO USE FOR THE INSTRUMENT CALIBRATION.

3 EDM NOTCH:
LENGTH: 0.70 (17.8) ±0.010 (0.25)
DEPTH: THROUGH THICKNESS
WIDTH: 0.010 (0.18) ±0.002 (0.05)

4 EDM NOTCH:
LENGTH: EDGE OF HOLE TO EDGE OF PART
DEPTH: THROUGH THICKNESS
WIDTH: 0.010 (0.18) ±0.002 (0.05)

5 FASTENER: BACB30YP12K12
COLLAR: BACC30M12

6 FASTENER: BACB30YP12K14
COLLAR: BACC30M12

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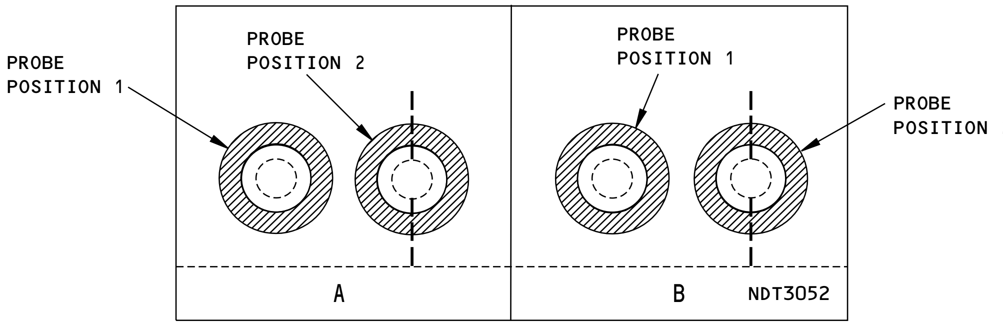
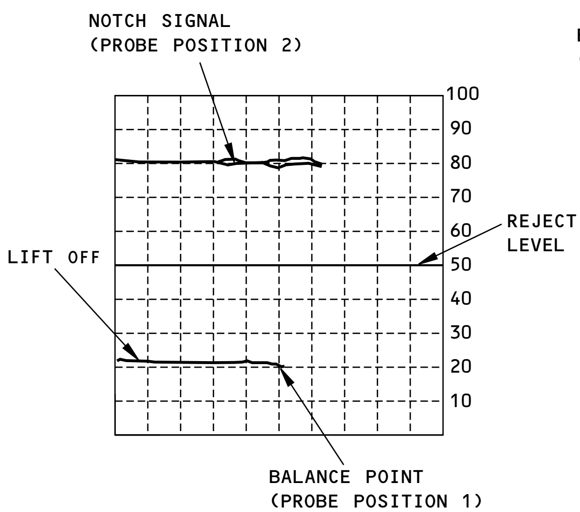
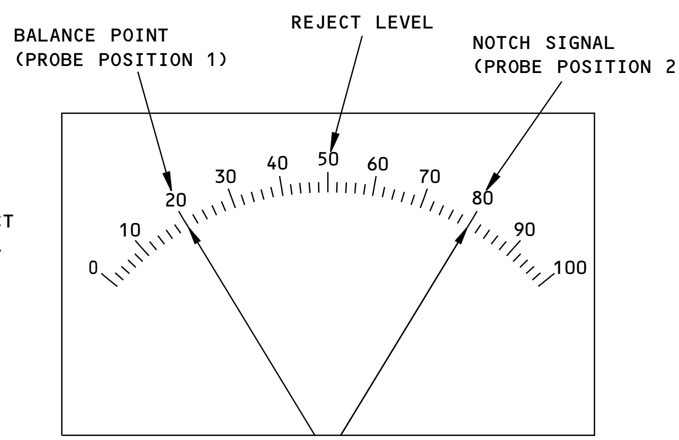
Reference Standard NDT3052
Figure 2



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II



METER DISPLAY
DETAIL III

NOTES:

- USE LOCATION "A" OF THE REFERENCE STANDARD FOR THE CALIBRATION OF ALL "A" AND "A1" FASTENER LOCATIONS.
- USE LOCATION "B" OF THE REFERENCE STANDARD FOR THE CALIBRATION OF ALL "B" AND "B1" FASTENER LOCATIONS.

2162750 S0000473499_V1

Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

REAR SPAR - LOWER CHORD AT WBL 114, 157 AND 254

1. **Purpose**

   A. Use this procedure to do a subsurface eddy current inspection to find cracks in the lower chord of the rear spar at WBL 114, 157 and 254. See Figure 1 for the WBL locations.

   B. Use this procedure to examine the horizontal flange of the lower chord at the fastener locations that follow (see Figure 1 for the fastener locations):

      (1) Where the rib and the stiffener shear ties are attached to the lower chord.

      (2) Adjacent to the rib and stiffener shear ties.

   C. This procedure uses a ring probe (reflection recommended) and an impedance plane display or a meter display instrument.

   D. 737 Supplemental Structural Inspection Document (D6-82669) Reference:

      (1) Item: W-17D

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an impedance plane display or a meter display instrument that can operate at a frequency of 150 Hz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) NDT 19e, Nortec 1000, 2000; Staveley Instruments

         (b) MIZ 10B; Zetec, Inc.

   C. Probes

      (1) Use a ring probe that can operate at frequencies of 150 Hz and has an inner diameter of 0.50 inches (13 mm). A reflection type probe is recommended.

         (a) The probes that follow were used to help prepare this procedure.

            1) NEC 4028-2; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 0.84 inch (21 mm) height; NDT Engineering Corp.

            2) VMRR4-32.500; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 1.5 inch (38 mm) height; VM Products.

            3) SPO-6087; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 0.90 inch (23 mm) height; Staveley Instruments.

   D. Reference Standard

      (1) Make or buy reference standard NDT3052 as specified in Figure 2. This reference standard is also used in Part 6, 57-10-25.

3. Prepare for the Inspection

A. Identify all the fastener locations to be examined. See Figure 1.

B. Clean the inspection surface.

(1) Remove sealant as necessary. Use care to prevent damage to the surface of the skin if sealant removal is necessary. Refer to the Airplane Maintenance Manual for more instructions if necessary.

(2) Remove paint only if it is loose.

NOTE: If the fastener heads can not be clearly seen through the paint, it will be necessary to remove a sufficient quantity of paint to clearly identify the fastener head.

4. Instrument Calibration

A. To examine all the inspection locations identified as (B and B1) in Figure 1, do as follows:

(1) Set the instrument frequency to 150 Hz.

(2) Put the probe at position 1 (fastener location without a notch) of location “B” on the reference standard. See Detail I in Figure 3.

NOTE: Make sure the probe is centered above the fastener head. To make sure the probe is centered, move the probe around the fastener until you get a minimum signal.

(3) Balance the instrument

(a) If an impedance plane display instrument is used, set the balance point at 20 percent of full screen height and 50 percent of full screen width. See Detail II in Figure 3.

(b) If a meter display instrument is used, set the needle at 20 percent of the display as shown in Detail III in Figure 3.

(4) Adjust the instrument for lift-off.

(a) If an impedance plane display instrument is used, adjust the phase control so that the signal moves horizontally to the left when the probe is lifted off of the reference standard.

(b) If a meter display instrument is used, adjust the phase control so that the signal is the same when the probe is on a bare surface as it is when the probe is lifted off the part by 0.006 inch (0.15 mm).

(5) Put the probe at position 2 (fastener location with a notch) of location “B” of the reference standard. See Detail I in Figure 3.

NOTE: Make sure the probe is centered above of the fastener head.

(a) If an impedance plane display instrument is used, adjust the gain to get a signal that is 80 percent of full screen height (60 percent higher than the balance point). See Detail II in Figure 3.

(b) If a meter display instrument is used, adjust the instrument gain to get a signal that is 80 percent of full scale (60 percent higher than the balance point). See Detail III in Figure 3.

5. Inspection Procedure

A. Identify the inspection locations shown in Figure 1 and all the fastener locations (B and B1) to be examined shown in Figure 1.

(1) Calibrate the instrument as specified in Paragraph 4.

(2) Do an inspection of three or more fasteners to get an average signal to use as a baseline signal. Use the fastener location that gives the average baseline signal and balance the instrument.

(3) Do an inspection of all the fastener locations identified in Figure 1. During the inspection, do the steps that follow:

(a) Make a mark at the locations where signals occur that are 50 percent (or more) of the signal you got from the notch in the reference standard.

(b) Frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Put the probe on the reference standard to get the maximum signal from the notch.

2) Compare the signal you got from the notch during calibration with the signal you get now.

3) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

(4) Do Paragraph 5.A.(1) thru Paragraph 5.A.(3) again on the opposite wing.

6. Inspection Results

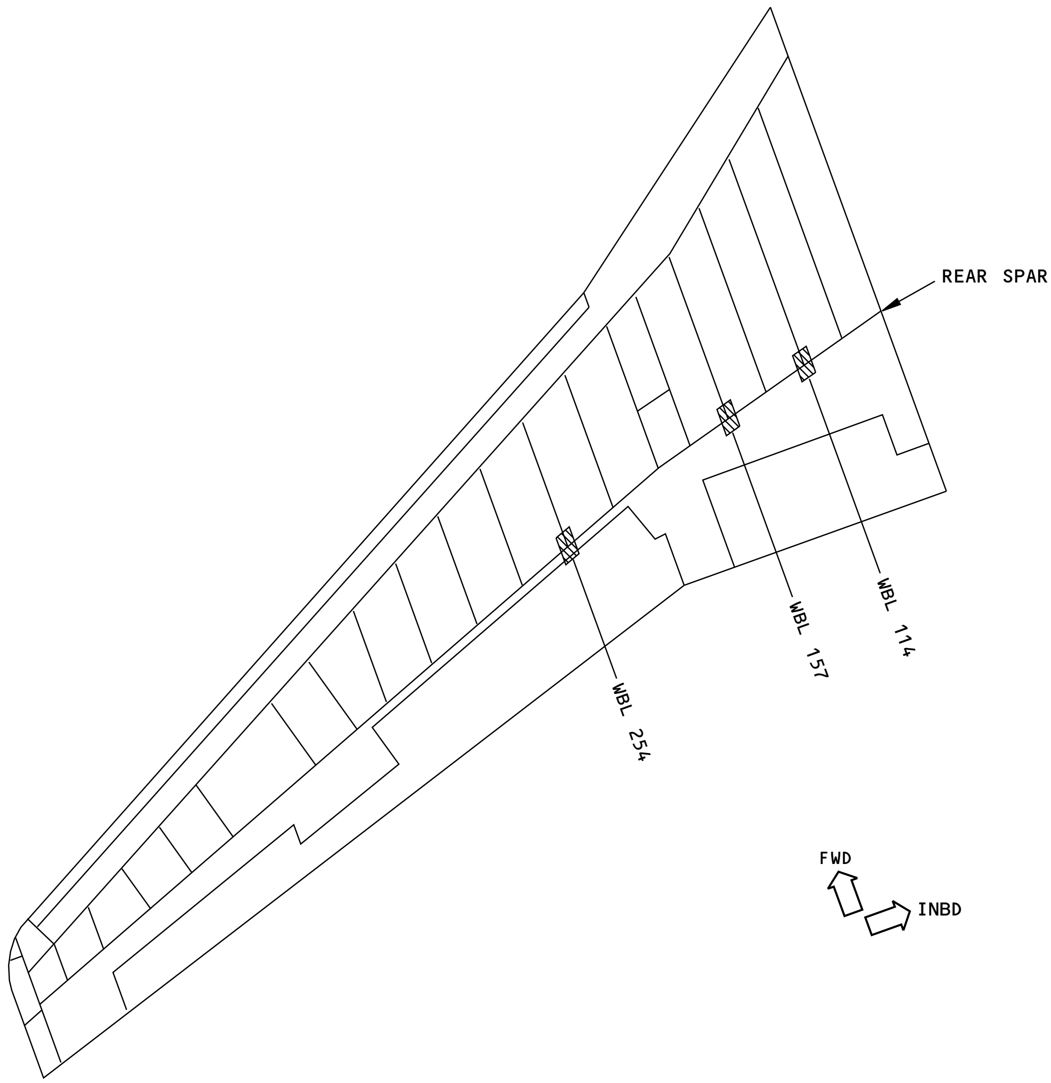
A. Signals that are 50% (or more) above the balance point and look almost the same as the notch signal from the reference standard, are signs of a possible crack.

B. If you want to make sure of the results, do as follows:

(1) Make sure that the signal is not caused from a change in structure (fastener edge margin distance) and/or the skin/chord thickness. Do a check of the same location on the opposite wing.

(2) For the fastener location(s) away from the rib or stiffener shear tie, do a surface eddy current scan inspection around the fastener, on the inside surface of the chord. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.

(3) For the fastener location(s) at the rib or stiffener shear tie, remove the fastener and do a open hole eddy current inspection. Refer to Part 6, 51-00-00, Procedure 16.



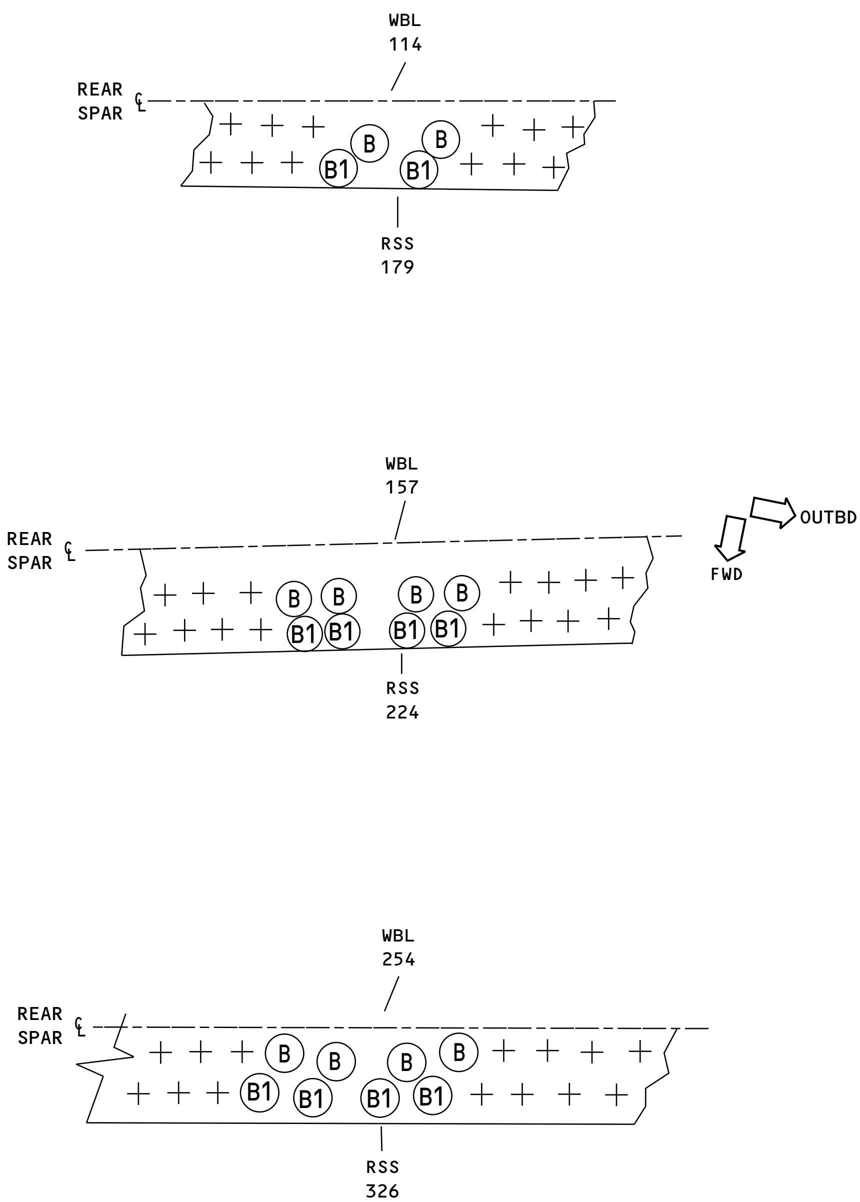
NOTES:

- THE LEFT SIDE IS SHOWN, THE RIGHT SIDE IS ALMOST THE SAME

= INSPECTION LOCATIONS

2162753 S0000473507_V1

Lower Chord of the Rear Spar - Inspection Areas
Figure 1 (Sheet 1 of 2)

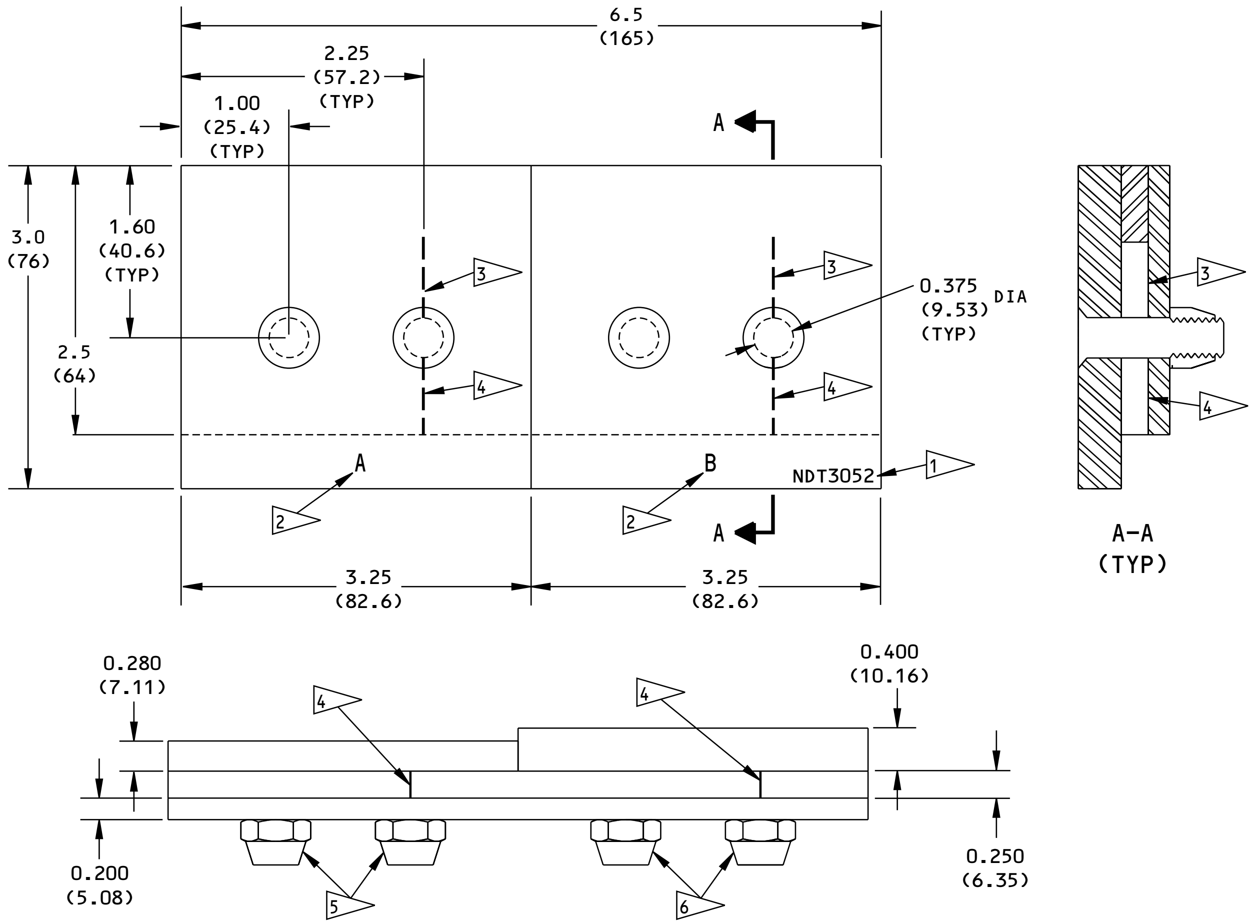


NOTES:

- THE RIGHT WING IS SHOWN; THE LEFT WING IS ALMOST THE SAME
- VIEW AS YOU LOOK UP

2162755 S0000473508_V1

Lower Chord of the Rear Spar - Inspection Areas
Figure 1 (Sheet 2 of 2)



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

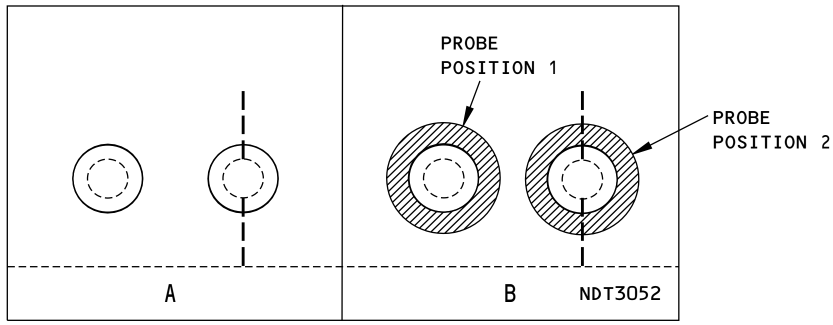
INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCE:
  THE NOTCH LOCATION MUST BE WITHIN ±0.005 (±0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 2024-T3 OR T4 OR 7075-T6 ALUMINUM (CLAD OR BARE)

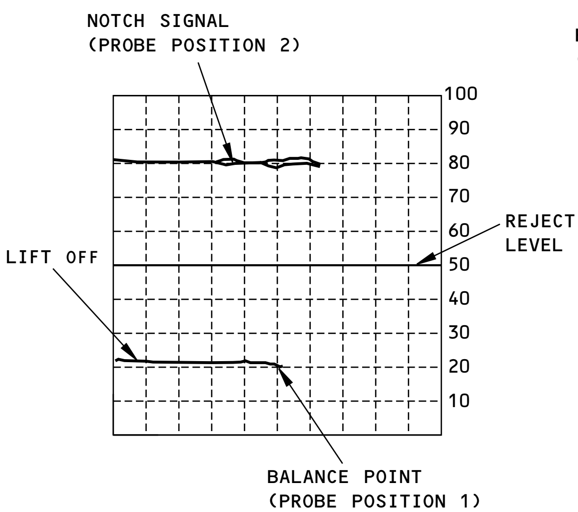
1. ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER NDT3052
2. ETCH OR STEEL STAMP THE LETTER SHOWN TO IDENTIFY THE LOCATION TO USE FOR THE INSTRUMENT CALIBRATION.
3. EDM NOTCH:
   LENGTH: 0.70 (17.8) ±0.010 (0.25)
   DEPTH: THROUGH THICKNESS
   WIDTH: 0.010 (0.18) ±0.002 (0.05)
4. EDM NOTCH:
   LENGTH: EDGE OF HOLE TO EDGE OF PART
   DEPTH: THROUGH THICKNESS
   WIDTH: 0.010 (0.18) ±0.002 (0.05)
5. FASTENER: BACB30YP12K12
   COLLAR: BACC30M12
6. FASTENER: BACB30YP12K14
   COLLAR: BACC30M12

2162761 S0000473510_V1

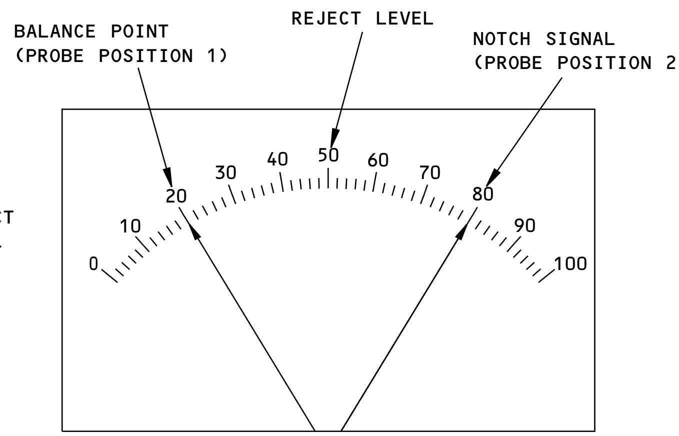
Reference Standard NDT3052
Figure 2



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II



METER DISPLAY
DETAIL III

NOTES:

- USE LOCATION "B" OF THE REFERENCE STANDARD FOR THE CALIBRATION OF ALL "B" AND "B1" LOCATIONS.

2162762 S0000473514_V1

Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

WING LOWER SURFACE SPLICE AT BBL 70.85

1. Purpose

A. Use this procedure to find cracks that start at the fastener holes in the splice plates of the wing lower-surface-splice at BBL 70.85. Cracks can occur at the fastener holes in the lower splice plates and will grow in the forward or aft direction. See Figure 1 for the location of this inspection.

B. Figure 2 identifies the areas of the lower splice plates that are examined for each DTR Check Form Item.

C. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

(1) Item: W-10A

(2) Item: W-10B

2. Equipment

A. General

(1) Use impedance plane display inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

(2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

B. Instrument

(1) Use an eddy current instrument that:

(a) Has an impedance plane display.

(b) Operates at a frequency between 50 kHz and 500 kHz.

(2) The instruments specified below were used to help prepare this procedure.

(a) Phasec 1.1; Hocking Krautkramer

(b) Locator 2; Hocking Inc.

(c) NDT 19; Staveley Instruments

C. Probes

(1) Use a straight or right angle surface probe.

(2) Each probe must:

(a) Operate at a frequency between 50 kHz and 500 kHz.

(b) Have a maximum external diameter of 0.13 inch (3.3 mm).

(c) Be shielded.

(d) Operate as specified in Part 6, 51-00-00, Procedure 23.

D. Reference Standards

(1) Use reference standard 126 or an equivalent surface crack reference standard. Refer to Part 6, 51-00-00, Procedure 23, to make reference standard 126.

3. **Prepare for the Inspection**

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

A. Make sure that the fuel tanks are satisfactory for entry.

B. Get access to the inspection areas as follows:

(1) Get access to the wing center section inspection areas identified in DTR Check Form Item W-10A through the access panel that is on the lower surface of the wing center section. This access panel is immediately aft of the front spar chord.

(2) Get access to the outboard wing inspection areas identified in DTR Check Form Item W-10B through the lower wing access panels 7202L (left wing) and 7402R (right wing).

C. Remove the sealant along the forward and aft edges of the splice fittings where an inspection is necessary.

4. **Instrument Calibration**

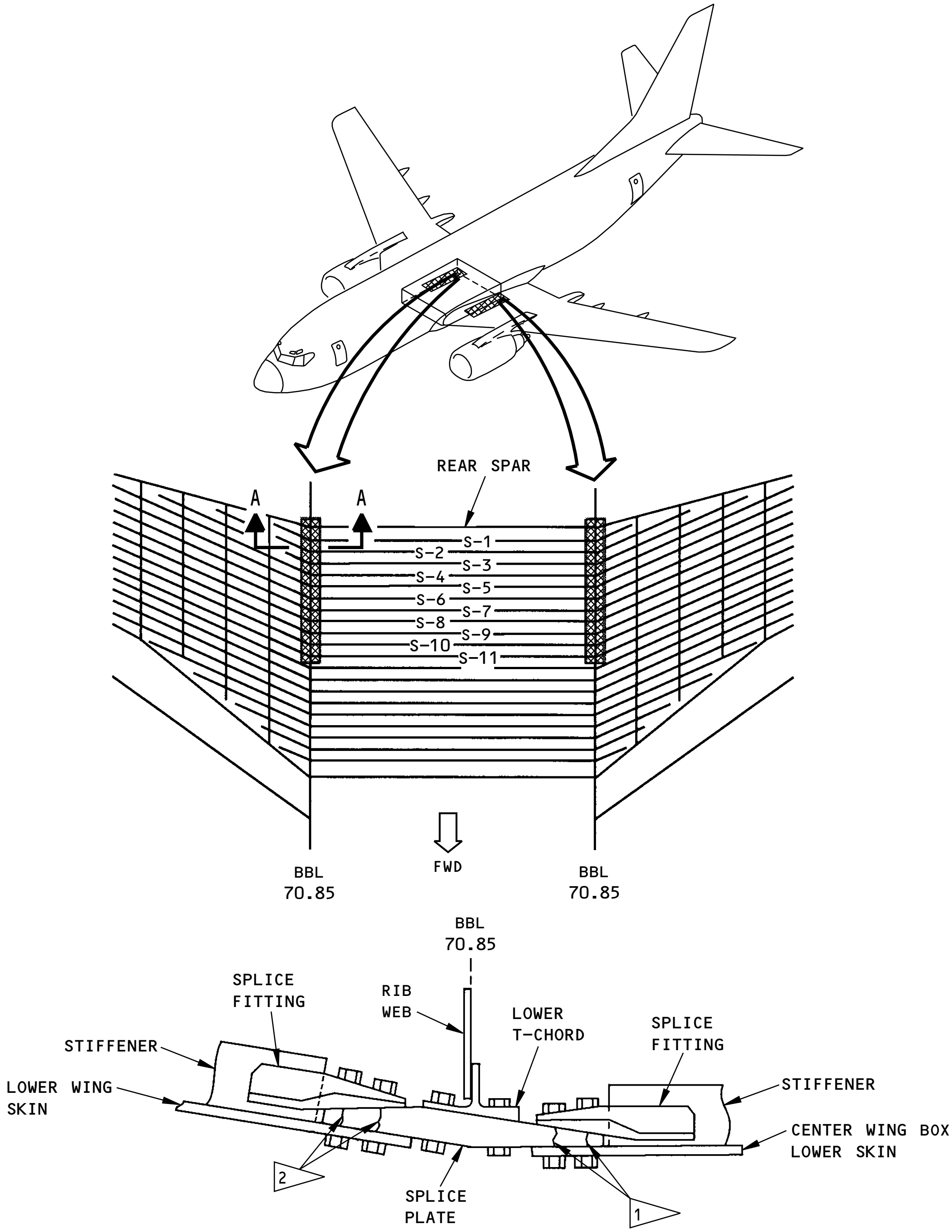
A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 5 for the calibration instructions.

5. **Inspection Procedure**

A. Do a scan along the forward and aft edges of each splice fitting from stringer S-1 thru S-11. See Figure 2 for the areas to examine. Refer to Part 6, 51-00-00, Procedure 23, paragraph 6 for more instructions.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, par. 7 to make an analysis of possible crack signals.



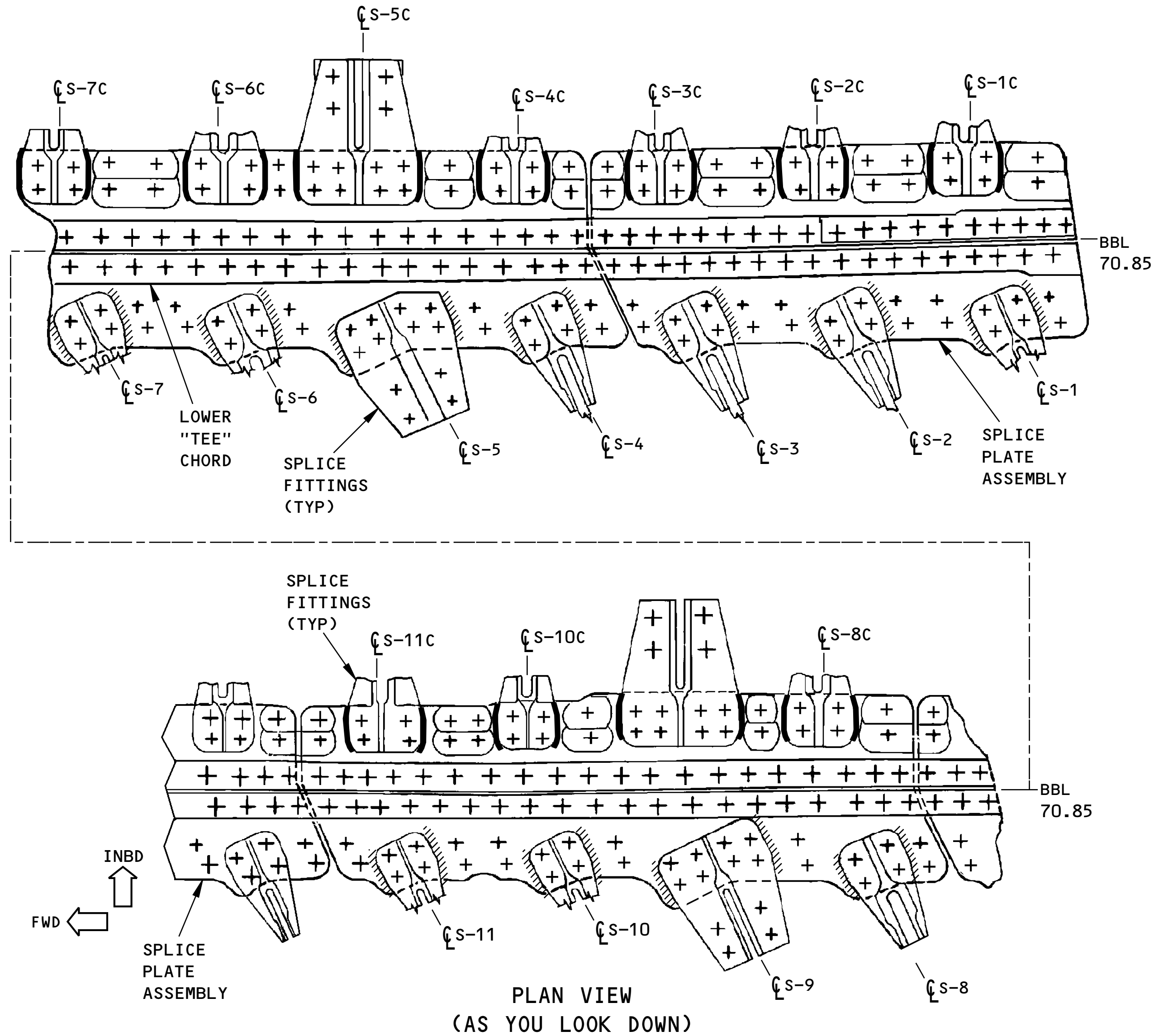
NOTES:

1 LOCATIONS WHERE CRACKS CAN OCCUR. SEE SSID ITEM W-10A.

2 LOCATIONS WHERE CRACKS CAN OCCUR. SEE SSID ITEM W-10B.

2162772 S0000473517_V1

Inspection Locations
Figure 1



NOTES:

- THE LEFT SIDE IS SHOWN; THE RIGHT SIDE IS OPPOSITE
- REMOVE THE SEALANT ALONG THE EDGE OF THE SPLICE FITTINGS AT ALL INSPECTION AREAS
- THE LOCATIONS TO EXAMINE ARE IDENTIFIED BY THESE SYMBOLS:
- CRACK GROWTH DIRECTION IS FORWARD AND AFT ALONG THE FASTENER CENTERLINES

AT THESE LOCATIONS ON THE WING CENTER SECTION MAKE A SCAN ALONG THE EDGE OF THE SPLICE FITTINGS FROM STRINGER S-1C THRU S-11C. THESE LOCATIONS ARE IDENTIFIED IN SSID ITEM W-10A.

AT THESE LOCATIONS ON THE OUTBOARD WING MAKE A SCAN ALONG THE EDGE OF THE SPLICE FITTINGS FROM STRINGER S-1 THRU S-11. THESE LOCATIONS ARE IDENTIFIED IN SSID ITEM W-10B.

2162774 S0000473518_V1

Inspection Details
Figure 2

PART 6 - EDDY CURRENT

REAR SPAR UPPER AND LOWER CHORD, TERMINAL FITTING SPLICE AT SIDE OF BODY AT BBL 70.85

1. **Purpose**

   A. Use this procedure to examine the upper and lower chords and terminal fittings of the rear spar of the wing center section and outboard wing at the BBL 70.85 side of body splice (see Figure 1). The inspection areas are as follows:

      (1) The lower chords of the wing center section and outboard wing, below the bathtub splice fitting, inboard and outboard sides of BBL 70.85. The inspection is done on the aft side (external) of the rear spar. See Figure 2.

      (2) The terminal fitting, above the corner seal at the lower chord, outboard side of BBL 70.85. The inspection is done on the forward side (internal) of the rear spar. See Figure 3.

      (3) The terminal fitting, above the splice angle at the lower chord, inboard side of BBL 70.85. The inspection is done on the forward side (internal) of the rear spar. See Figure 4.

      (4) The upper chord of the outboard wing, above the bathtub splice fitting, outboard side of BBL 70.85. The inspection is done on the aft side (external) of the rear spar. See Figure 5.

      (5) The upper chord of the wing center section, aft of the edge of the upper skin, inboard side of BBL 70.85. The inspection is done inside the fuselage, on top of the upper skin. See Figure 6.

   B. 737 Supplemental Structural Inspection Document (D6-37089) Reference:

      (1) Item: W-13A

      (2) Item: W-13B

      (3) Item: W-13C

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at a frequency range of 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 1000/2000; Staveley

         (b) Locator 2d; Hocking

   C. Probe

      (1) Use a 0.13 inch (3.3 mm) diameter, shielded, right angle pencil probe with a probe drop of 0.25 (6.4 mm) or less. A flexible shaft is recommended.

         (a) Refer to Part 6, 51-00-00, Procedure 23, paragraph 3.C for data about probe selection.

(b) The probes that follow were used to help prepare this procedure.

1) MTF-9003-60FX; Olympus NDT

2) TPEN925-6; Techna NDT

D. Reference Standard

(1) Use reference standard 126 (or an equivalent) as given in Part 6, 51-00-00, Procedure 23, paragraph 3.D.

3. Prepare for the Inspection

A. Remove the right and left wing to body fairings to get access to the lower chords of the wing center section and the outboard wing in the inspection areas on the aft side of the rear spar. See Figure 2.

B. Remove the access panel on the lower wing skin of the outboard wing to get access to the terminal fitting inspection area from the internal side of the wing tank. See Figure 3.

C. Remove the access panel on the lower wing skin of the wing center section to get access to the terminal fitting inspection area from the internal side of the wing tank. See Figure 4.

D. Remove the floor panel, inside the fuselage, above the upper chord at the rear spar inspection area. See Figure 6.

E. Remove sealant and clean the inspection areas identified in Figure 1 thru Figure 6 and Paragraph 1.A.

F. Lightly smooth rough surfaces and sharp edges of chipped paint.

4. Instrument Calibration

A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 23, paragraph 5. Use reference standard 126 (or an equivalent) for the calibration.

5. Inspection Procedure

WARNING: IT IS NECESSARY TO GO INTO THE FUEL TANK TO DO THIS INSPECTION. FUEL TANKS MUST BE DRAINED AND PURGED TO A HEALTH SAFE CONDITION AS SPECIFIED IN CHAPTER 28 OF THE AIRCRAFT MAINTENANCE MANUAL BEFORE YOU GO INTO THEM WITH AN EDDY CURRENT INSTRUMENT. THE EDDY CURRENT INSTRUMENT MUST BE BATTERY OPERATED. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

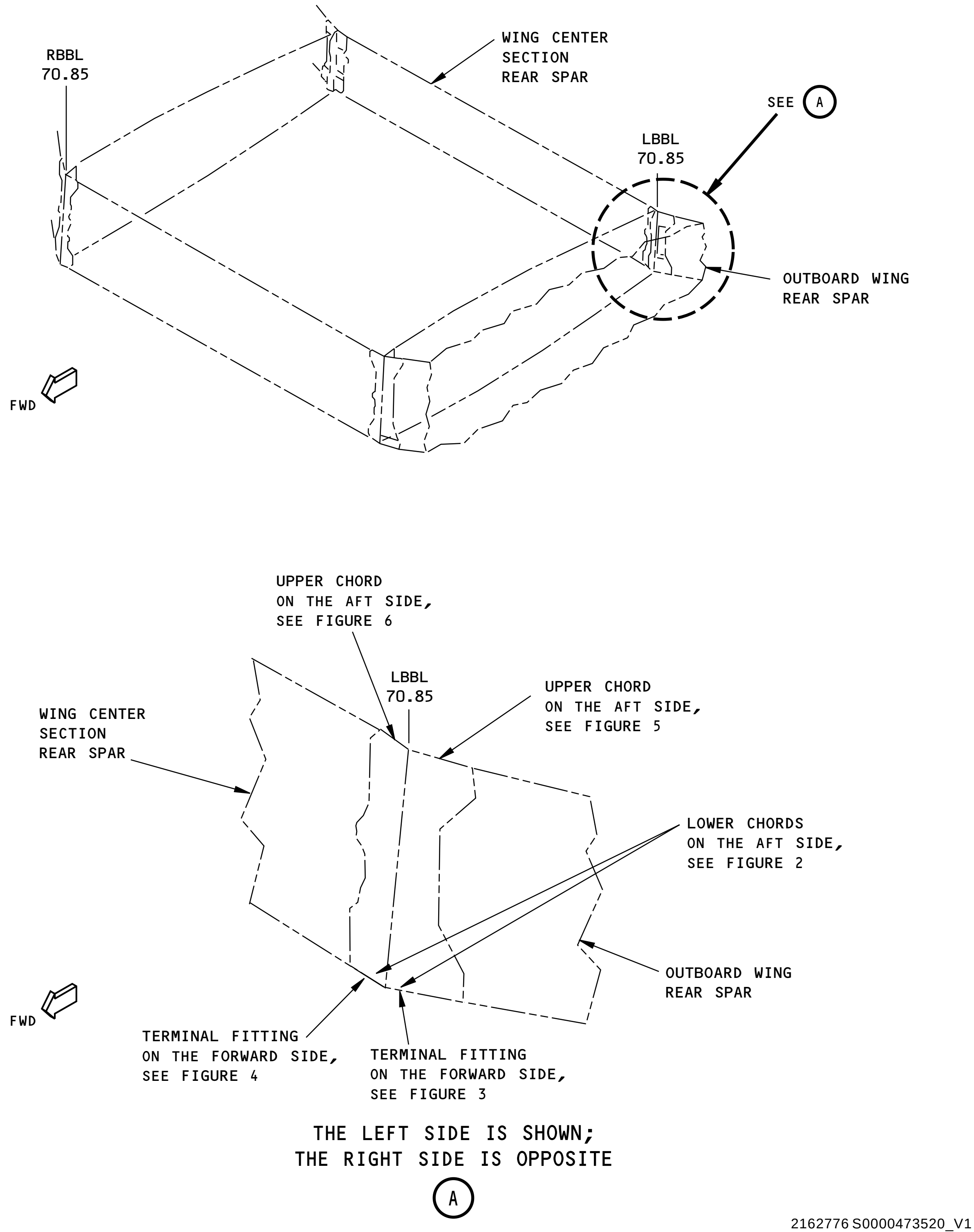
NOTE: You must get approval from your local airline/airport fire department before you operate the eddy current equipment in a fuel tank with the conditions stated above.

A. Make scans to completely examine the inspection areas identified in Figure 2 thru Figure 6. Refer to Part 6, 51-00-00, Procedure 23, paragraph 6, for the inspection procedure.

B. Do Paragraph 5.A. on the opposite side of the airplane.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of indications that occur during the inspection.



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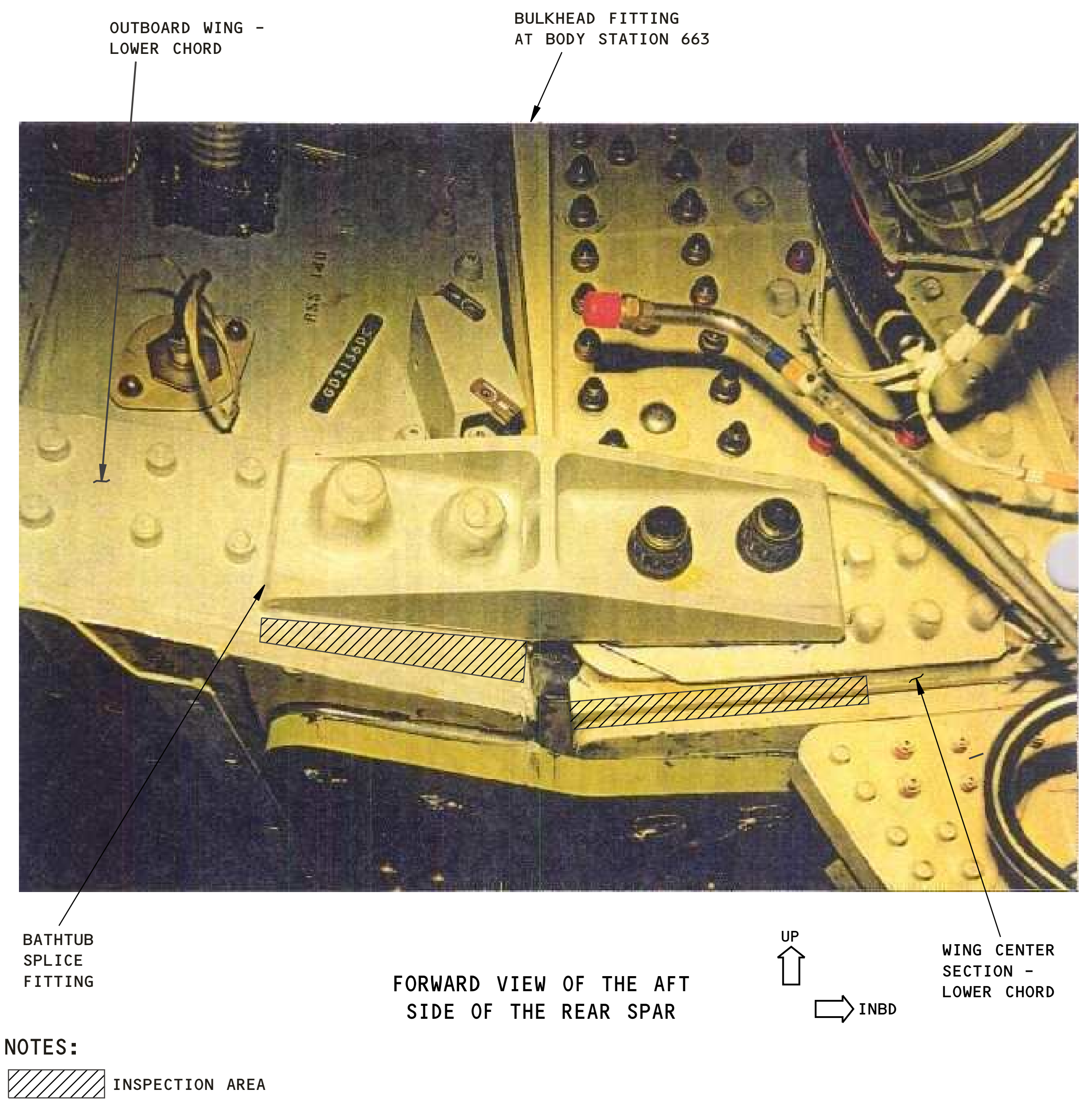
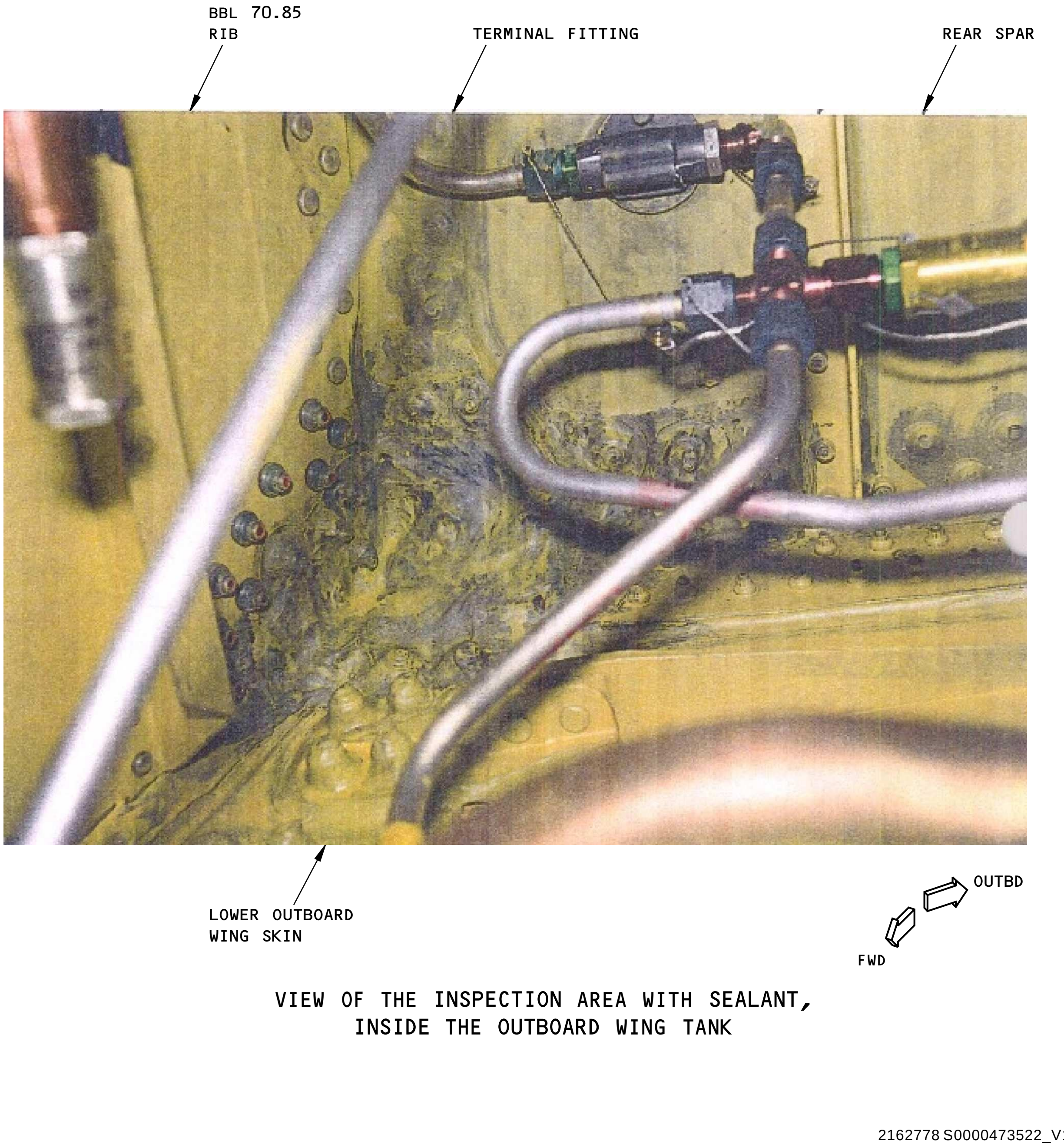
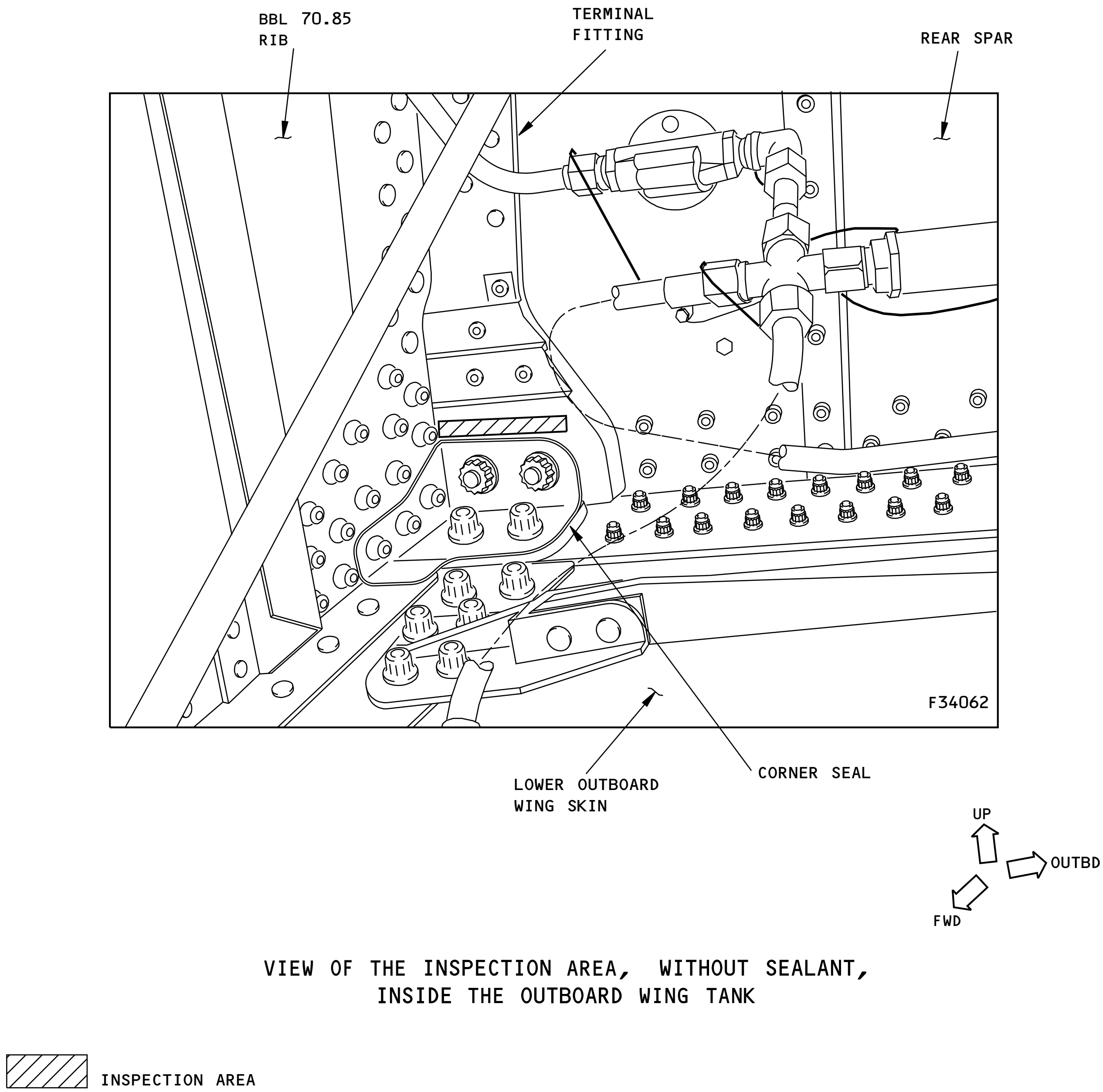
Rear Spar - Upper and Lower Chord, Terminal Fitting at Side of Body Splice BBL 70.85
Figure 1



Outboard Wing and Wing Center Section - Lower Chord of the Rear Spar Inspection
Figure 2



Terminal Fitting Inspection - Outboard of BBL 70.85
Figure 3 (Sheet 1 of 2)



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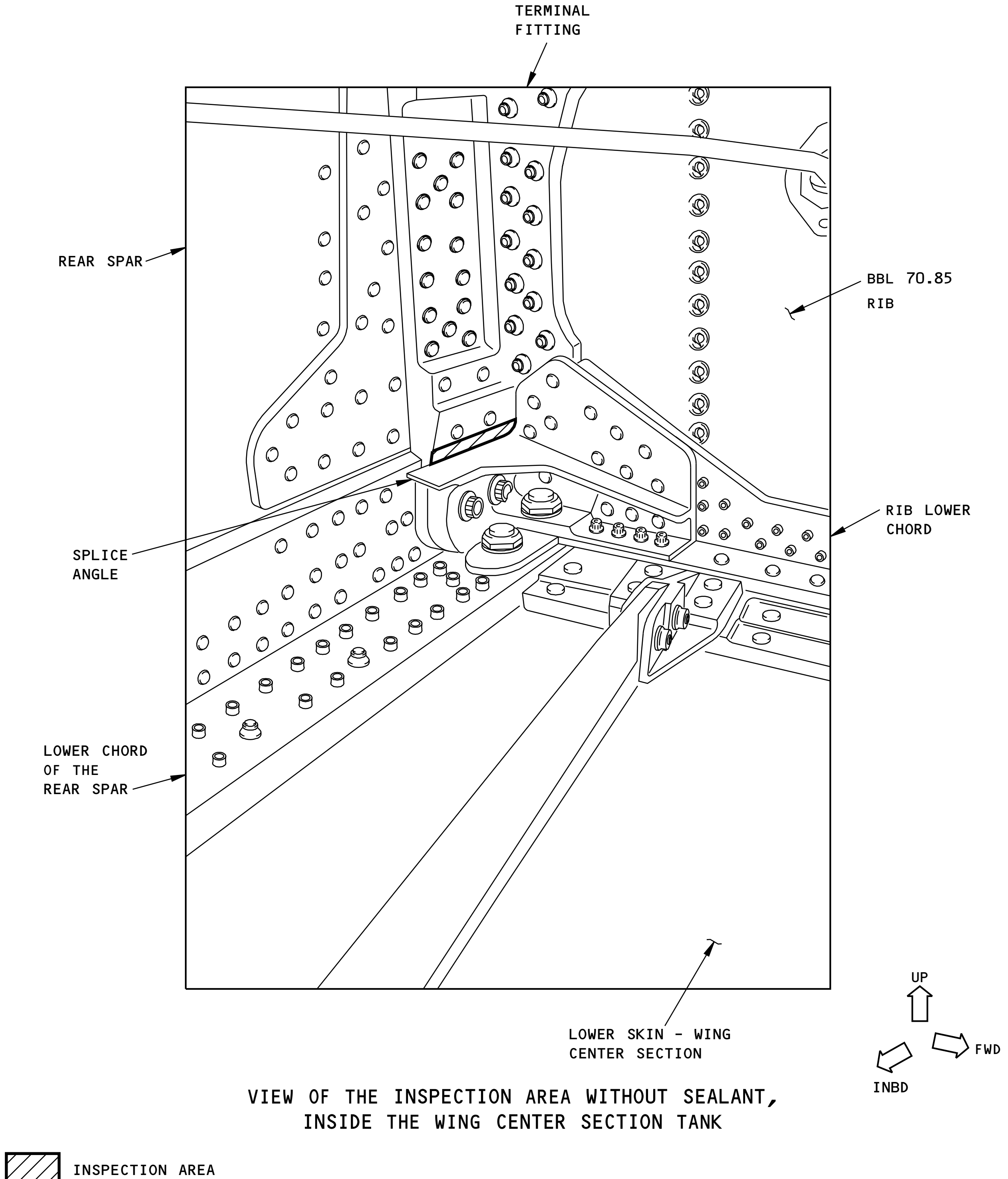
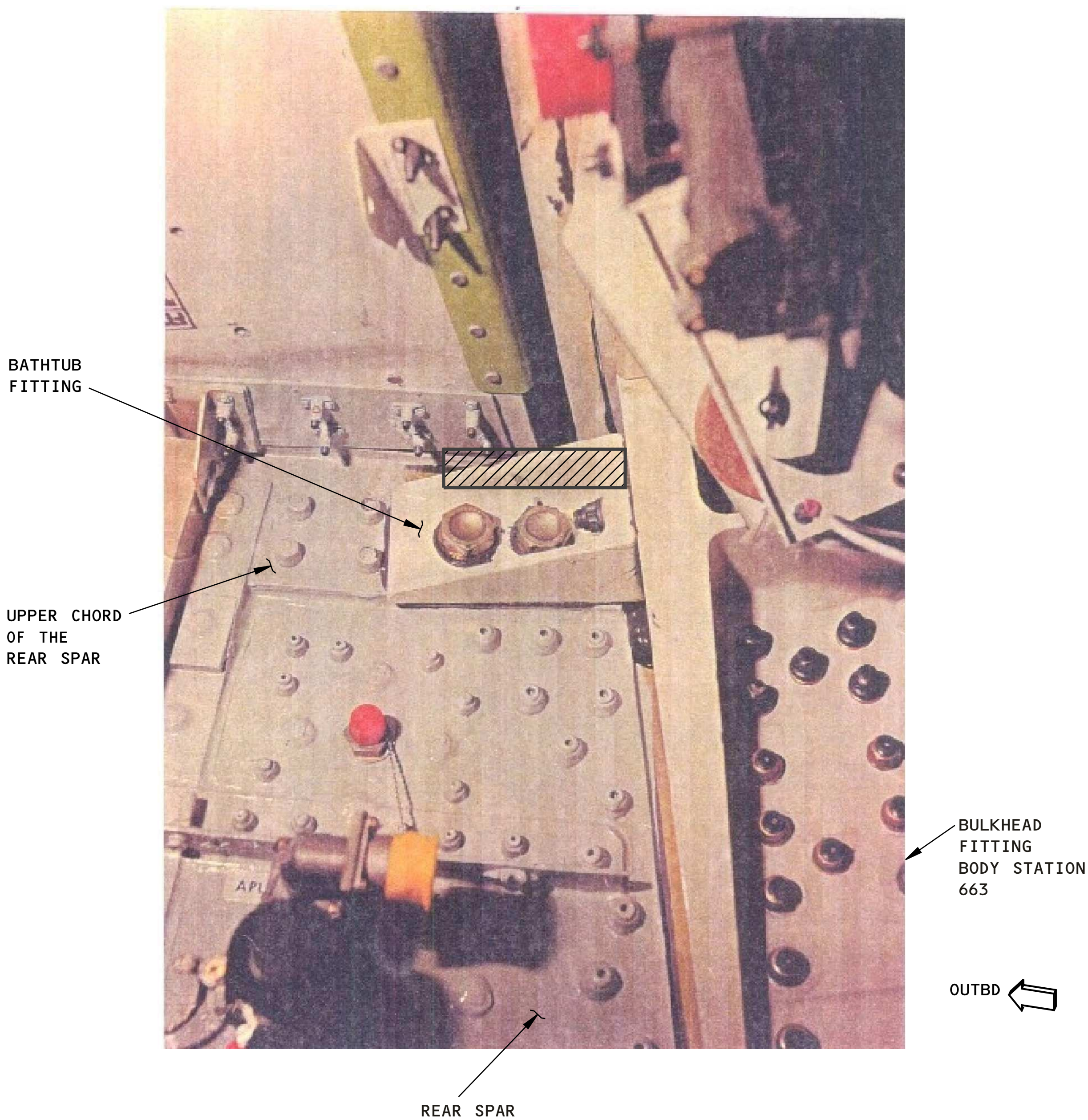
Terminal Fitting Inspection - Outboard of BBL 70.85
Figure 3 (Sheet 2 of 2)



Terminal Fitting Inspection - Inboard of BBL 70.85
Figure 4



FORWARD VIEW OF THE AFT SIDE OF THE REAR SPAR

NOTES:

INSPECTION AREA (ABOVE BATHTUB FITTING)

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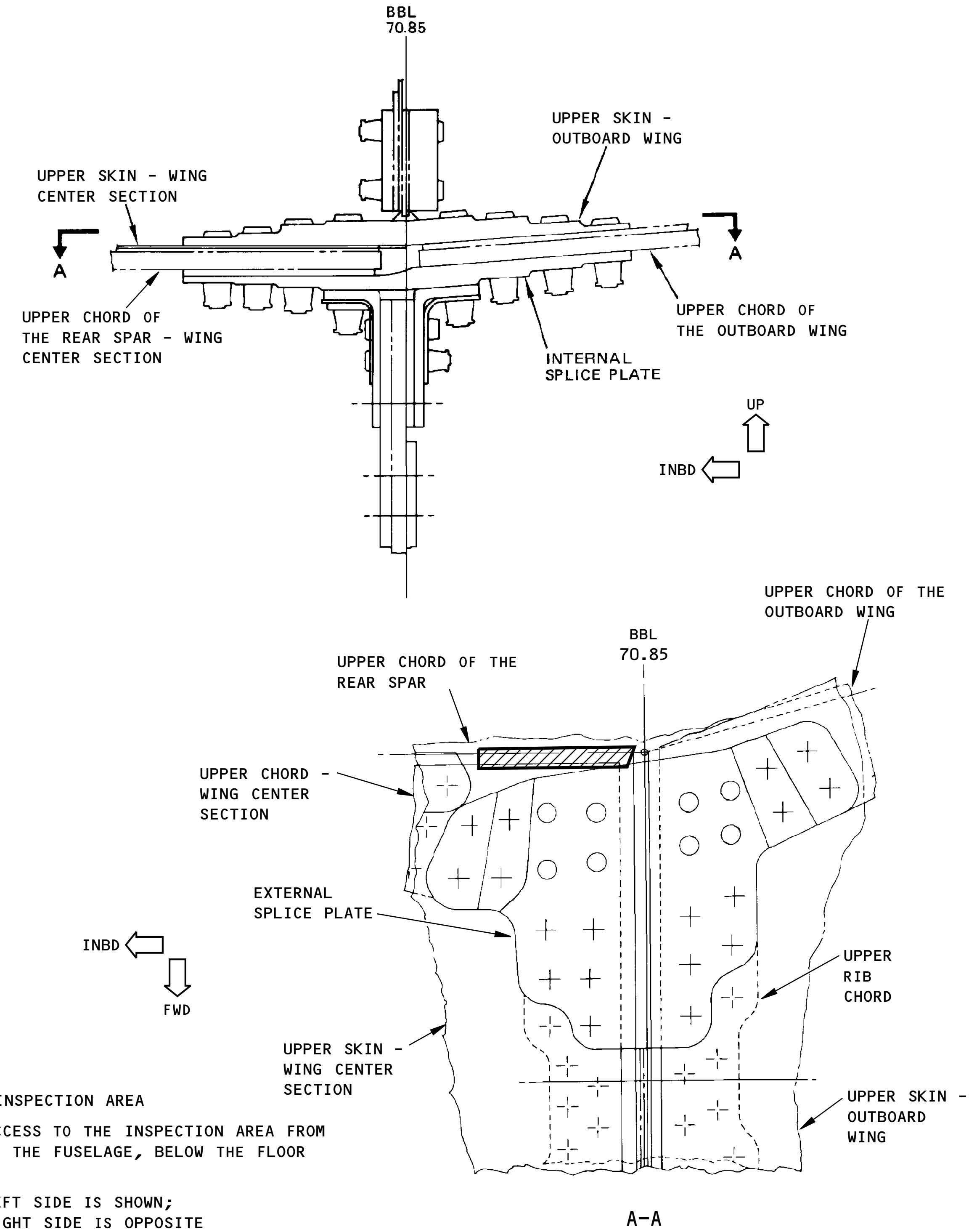
Outboard Wing - Upper Chord of the Rear Spar Inspection
Figure 5



NOTES:

INSPECTION AREA

- GET ACCESS TO THE INSPECTION AREA FROM INSIDE THE FUSELAGE, BELOW THE FLOOR PANEL.
- THE LEFT SIDE IS SHOWN; THE RIGHT SIDE IS OPPOSITE
- REMOVE SEALANT AS NECESSARY

2162786 S0000473526_V1

Horizontal Flange of the Upper Chord of the Rear Spar - External
Figure 6

PART 6 - EDDY CURRENT

SUBSURFACE INSPECTION OF WING STRINGERS 5 AND 9

1. **Purpose**

   A. Use this subsurface eddy current procedure to examine wing stringers 5 and 9 for cracks. This inspection is done from the external surface of the lower skin to find cracks in the horizontal flange of wing stringers 5 and 9.

      (1) The inspection area on stringer 5 is from WBL 150 to WBL 261.

      (2) The inspection area on stringer 9 is from WBL 170 to WBL 194.

   B. This procedure uses an impedance plane display instrument and a ring probe. The ring probe is put around the fastener heads in the inspection area. There are 4 rows of fasteners to be examined along each of the inspection areas specified in Paragraph 1.A.(1) and Paragraph 1.A.(2). Stringers 5 and 9 are at a skin splice. See Figure 1 for the inspection areas.

   C. 737 Supplemental Structural Inspection Document (D6-82669) Reference:

      (1) Item: W-27B

      (2) Item: W-27C

2. **Equipment**

   A. General

      (1) All eddy current equipment that can do the calibration instructions of this procedure can be used.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates in the frequency range of 100 Hz to 150 Hz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 1.1; Hocking Krautkramer

         (b) NDT 19e; Staveley Instruments

   C. Probes

      (1) One ring probe is necessary. The ring probe must:

         (a) Operate in the frequency range of 100 Hz to 150 Hz.

         (b) Have a minimum internal diameter of 0.50 inch (12.7 mm).

         (c) Have a maximum internal diameter of 0.58 inch (14.7 mm).

         (d) Operate as specified in Part 6, 51-00-00, Procedure 9.

      (2) The probes that follow were used to help prepare this procedure.

         (a) LFRR - .55/1.0; 50 Hz–5 kHz; EC/NDT

         (b) RR0111-5/TF; NDT Engineering

   D. Reference Standards

(1) Use reference standard NDT3070 during calibration for this inspection. Refer to Figure 2 to make this reference standard.

3. **Prepare for the Inspection**

A. Remove the aft strut fairing at WBL 194 to get access to the fasteners in this area.

B. Make sure the inspection area on the lower wing skin is clean. See Figure 1 for the inspection area along the skin splices at wing stringers 5 and 9.

C. If necessary, remove paint so you can see the fastener heads in the inspection area.

4. **Instrument Calibration**

A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 9, par. 5. Ignore the data on metered instruments; use the impedance plane display data only.

(1) Use reference standard NDT3070 for the calibration.

(2) Refer to Figure 3 in this procedure for the probe positions on reference standard NDT3070.

5. **Inspection Procedure**

A. Examine wing stringers 5 and 9 for cracks as specified in Part 6, 51-00-00, Procedure 9, par. 6.

(1) Do the inspection on the lower wing skin in the S-5 and S-9 inspection areas shown in Figure 1.

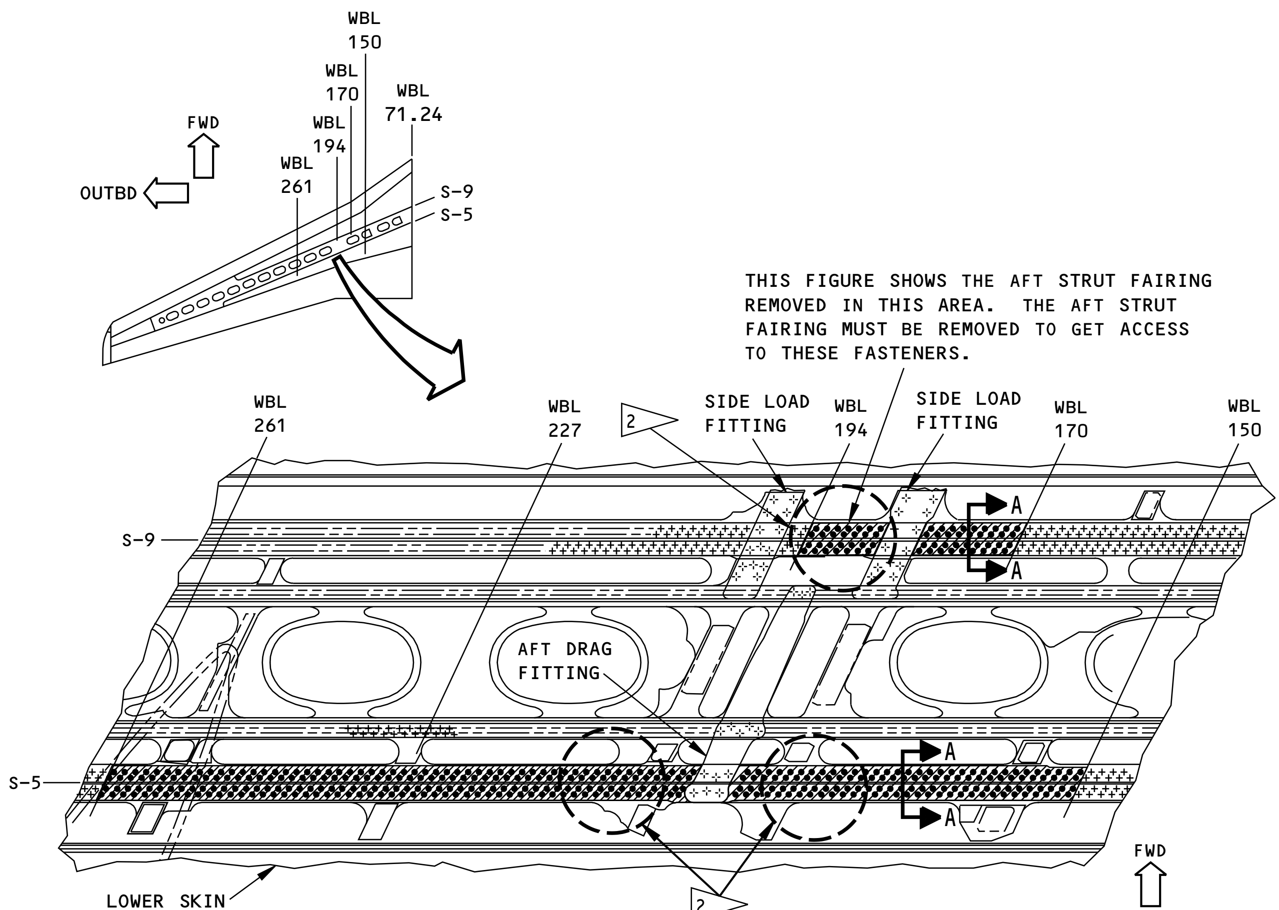
(2) Make sure that you balance the probe on a fastener in the row of fasteners to be examined before you start the inspection in that row.

(3) Do the complete inspection in one fastener row before you start the inspection in a different row.

B. Examine wing stringers 5 and 9 for cracks as specified in Part 6, 51-00-00, Procedure 9, par. 6 on the other wing.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 9, par. 7 to make an analysis of possible crack signals.



THE LEFT WING IS SHOWN; THE RIGHT SIDE IS OPPOSITE AND EQUIVALENT

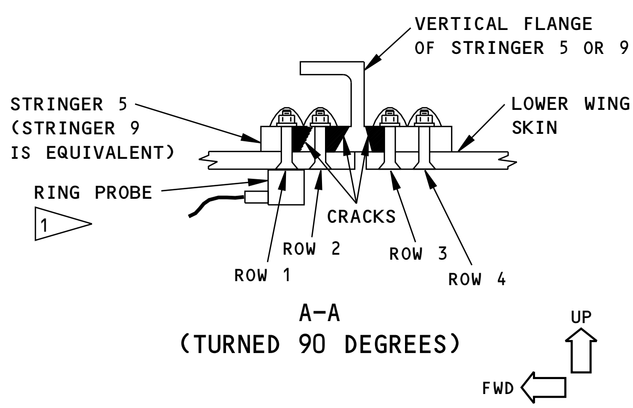
NOTES:

▨ = INSPECTION AREAS

• = INSPECTION FASTENER

1 DO THE INSPECTION ON ONE COMPLETE ROW OF FASTENERS BEFORE YOU DO THE INSPECTION ON A DIFFERENT FASTENER ROW.

2 FASTENER LOCATIONS BLOCKED BY STRUCTURE, SUCH AS FAIRING SKATE ANGLES AT S-5 AND TUBING BRACKET AT S-9. DO A HFEC INSPECTION AS SPECIFIED IN PART 6, 57-30-07.



A-A
(TURNED 90 DEGREES)

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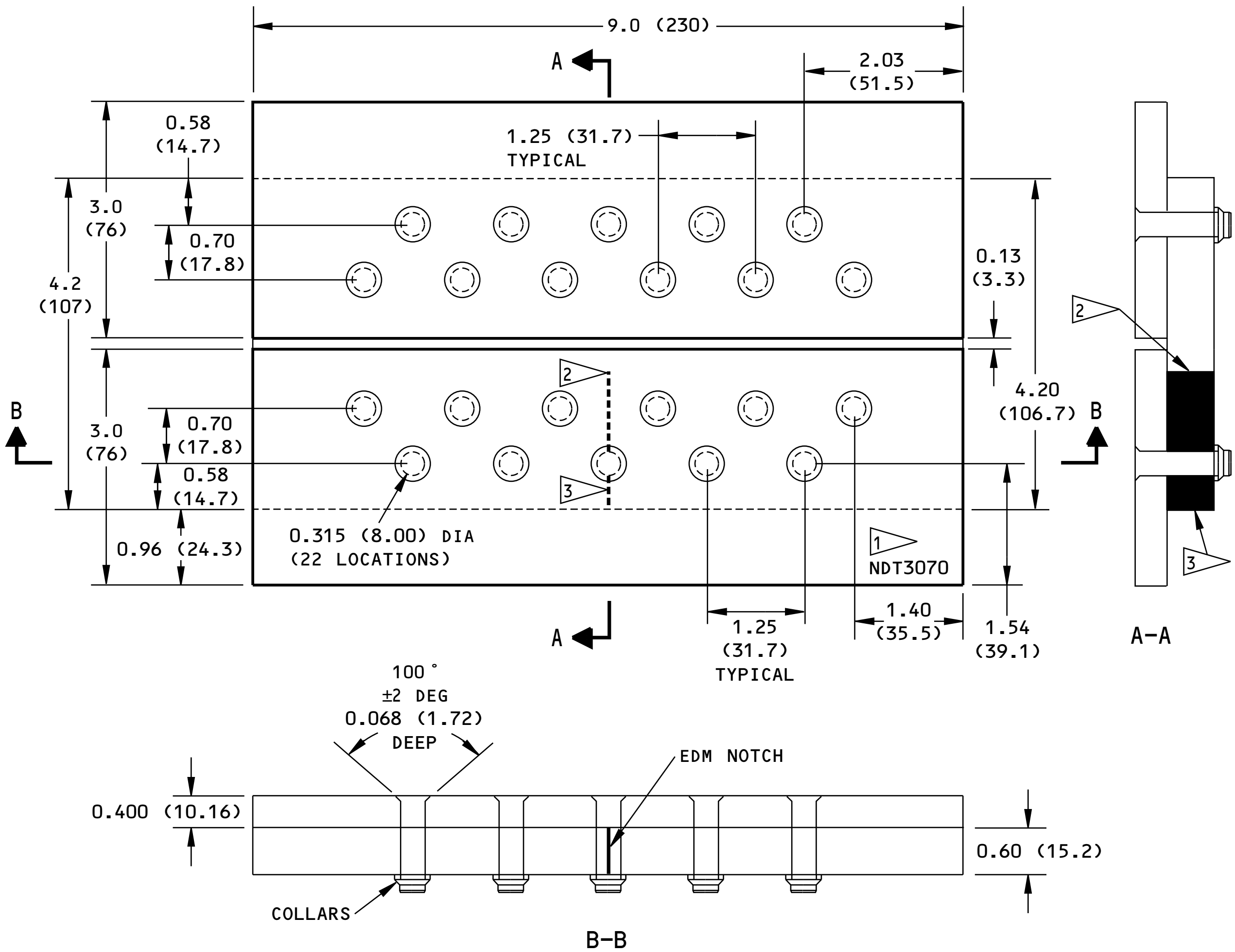
Inspection Areas
Figure 1



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES).
- TOLERANCES (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- MATERIAL: 2024-T3 BARE OR 2024-T3511 BARE
- BOLTS: BACB30VU10K16 (OR BACB30YP10K16) (22 LOCATIONS)
- COLLARS: BACC30BP10 (22 LOCATIONS)
- SURFACE ROUGHNESS = 125 Ra OR BETTER.

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER NDT3070

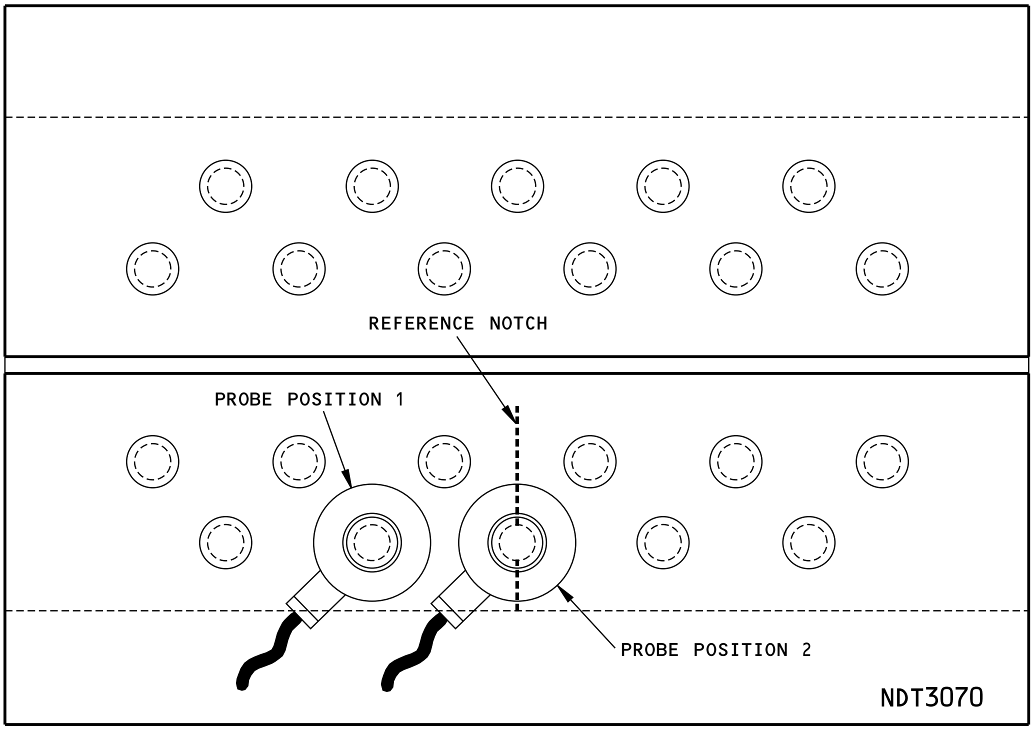
- EDM NOTCHES OR SAW CUTS (THROUGH NOTCHES):

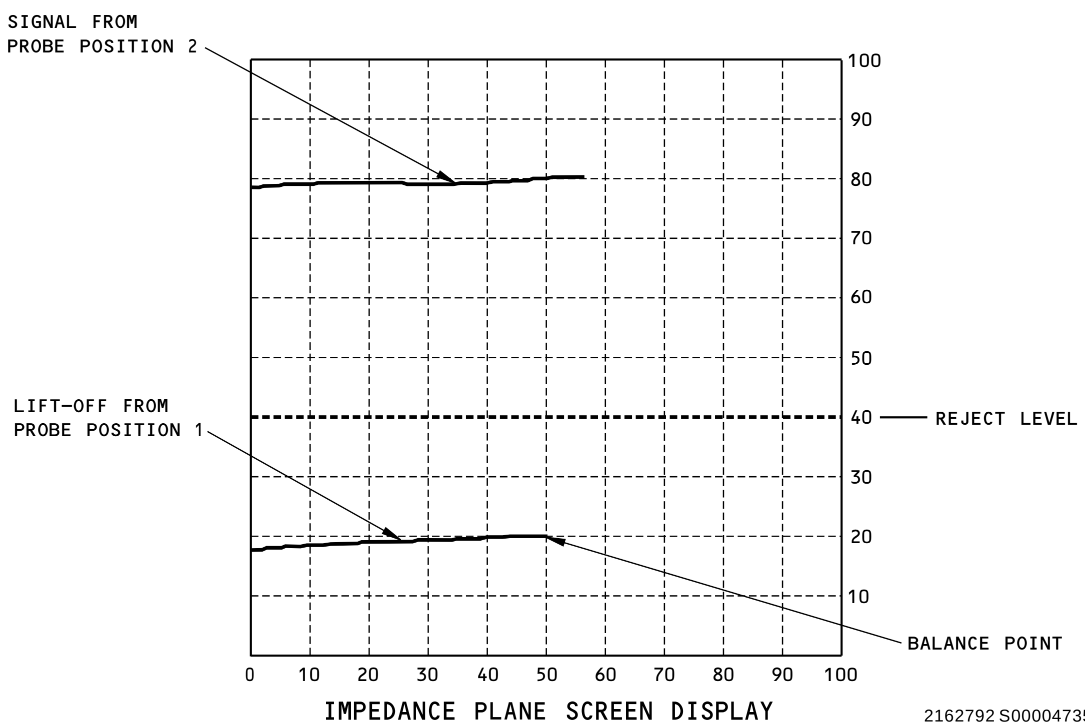
2 1.0 (25) LONG THROUGH THE THICKNESS 0.60 (15.2) DEEP; 0.020 (0.51) MAXIMUM WIDTH

3 NOTCH FROM THE HOLE TO THE END OF THE PART THROUGH THE THICKNESS; 0.020 (0.51) MAXIMUM WIDTH

2162790 S0000473529_V1

Reference Standard NDT3070
Figure 2





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Calibration and Probe Positions
Figure 3

PART 6 - EDDY CURRENT

FRONT SPAR - LOWER CHORD - WBL 114 TO WBL 355

1. **Purpose**

   A. Use this procedure to do a subsurface eddy current inspection to find cracks in the lower chord of the front spar from WBL 114 to WBL 355. This inspection is done from the outside, lower surface of the wing skin. See Figure 1 for the WBL locations.

   B. Use this procedure to examine the horizontal flange of the lower chord at the fastener locations that follow:

      (1) Where the rib and the stiffener shear ties are attached to the lower chord.

      (2) Adjacent to the rib and stiffener shear ties.

      (3) See Figure 1 for the fastener locations to be examined at all the WBL locations.

   C. This procedure uses a ring probe (reflection recommended) and an impedance plane display instrument.

   D. 737 Supplemental Structural Inspection Document (D6-82669) Reference:

      (1) Item: W-19

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at frequencies of 200 and 300 Hz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Elotest B1; Rohmann GMBH

         (b) NDT-19e, Nortec 1000, 2000; Staveley Instruments

         (c) Phasec 2200, Phasec 2; Hocking

   C. Probes

      (1) Use a ring probe that can operate at frequencies of 200 and 300 Hz and has an inner diameter of 0.50 inches (13 mm). A reflection type probe is recommended.

         (a) The probes that follow were used to help prepare this procedure.

            1) NEC 4028-2; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 0.84 inch (21 mm) height; NDT Engineering Corp.

            2) VMRR4-32.500; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter, 1.5 inch (38 mm) height; VM Products.

            3) SPO-6087; 0.50 inch (13 mm) inner diameter, 1.0 inch (25 mm) outer diameter , 0.90 inch (23 mm) height; Staveley Instruments.

D. Reference Standard

(1) Make or buy reference standard NDT3073 as specified in Figure 2.

3. **Prepare for the Inspection**

A. Identify all the fastener locations to be examined. See Figure 1.

B. Clean the inspection surface.

(1) Remove sealant as necessary. Use care to prevent damage to the surface of the skin if sealant removal is necessary. Refer to the Airplane Maintenance Manual for more instructions if necessary.

(2) Remove paint only if it is loose.

NOTE: If the fastener heads are not clearly seen through the paint, it will be necessary to remove a sufficient quantity of paint to clearly identify the fastener head.

4. **Instrument Calibration**

A. To examine all the fastener locations identified in the Figure 1 inspection areas, it is necessary to do three calibrations. Refer to the Calibration Table, Detail III in Figure 3, for the instrument frequency and the fastener location on the reference standard to use during calibration to examine the applicable fastener locations.

(1) Set the instrument frequency to the frequency specified in the Calibration Table, Detail III in Figure 3.

(2) Put the probe on the reference standard at position 1 (fastener location without a notch) at the applicable fastener location that is specified in the Calibration Table. See Detail I in Figure 3.

NOTE: Make sure the probe is centered above the fastener head. To make sure the probe is centered, move the probe around the fastener until you get a minimum signal.

(3) Balance the instrument.

(4) Set the balance point in the lower center area of the screen display as shown in Detail II of Figure 3.

(5) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left on the screen display. See Detail II in Figure 3.

(6) Put the probe on the reference standard at position 2 (fastener location with a notch). See Detail I in Figure 3. The notch signal must be above the balance point.

NOTE: Make sure the probe is centered above of the fastener head.

(7) Adjust the instrument sensitivity to get the notch signal to be 40% of full screen height (FSH) higher than the balance point. See Detail II in Figure 3. Use a higher vertical gain than the horizontal gain to get the signal to look almost the same as shown in Detail II.

5. **Inspection Procedure**

A. Identify all the inspection areas and fastener locations on the airplane that are shown in Figure 1. Do the steps that follow to examine all the fastener locations for each fastener code A, B and C.

(1) Calibrate the instrument as specified in Paragraph 4.

(2) Do an inspection of three or more fasteners adjacent to the fasteners to be examined at each WBL location to get an average signal to use as a baseline signal. This is necessary because the lower wing skin and the horizontal flange of the lower chord change in thickness.

(3) Identify a fastener from Paragraph 5.A.(2) to use as the baseline balance point and balance the instrument at that fastener location.

(4) Do an inspection of all the fastener locations identified in Figure 1 that have the same fastener code. Do not balance the instrument again at these fastener locations.

NOTE: Monitor the balance point movement on the screen display at all times. Small thickness changes of the skin and lower chord, and the fastener edge margin distance, can cause the balance point to move.

(5) Before you examine the fasteners at a different WBL location, make sure that the instrument balance point is stable as follows:

(a) Put the probe on the fastener location that was used to set the baseline balance point. If the balance point location on the screen display has not moved more than 10% of FSH, go to the subsequent step. If the balance point movement is more than 10% of FSH, balance the instrument again and examine all the fastener locations at that WBL location.

(6) Make a mark at the locations where you get signals that are 50% (or more) of the notch signal you got from the reference standard.

(7) During the inspection, frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

(a) Put the probe on the reference standard to get the maximum signal from the notch.

(b) Compare the signal you got from the notch during calibration with the signal you get now.

(c) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

(8) Do Paragraph 5.A.(1) thru Paragraph 5.A.(7) on the opposite wing.

6. Inspection Results

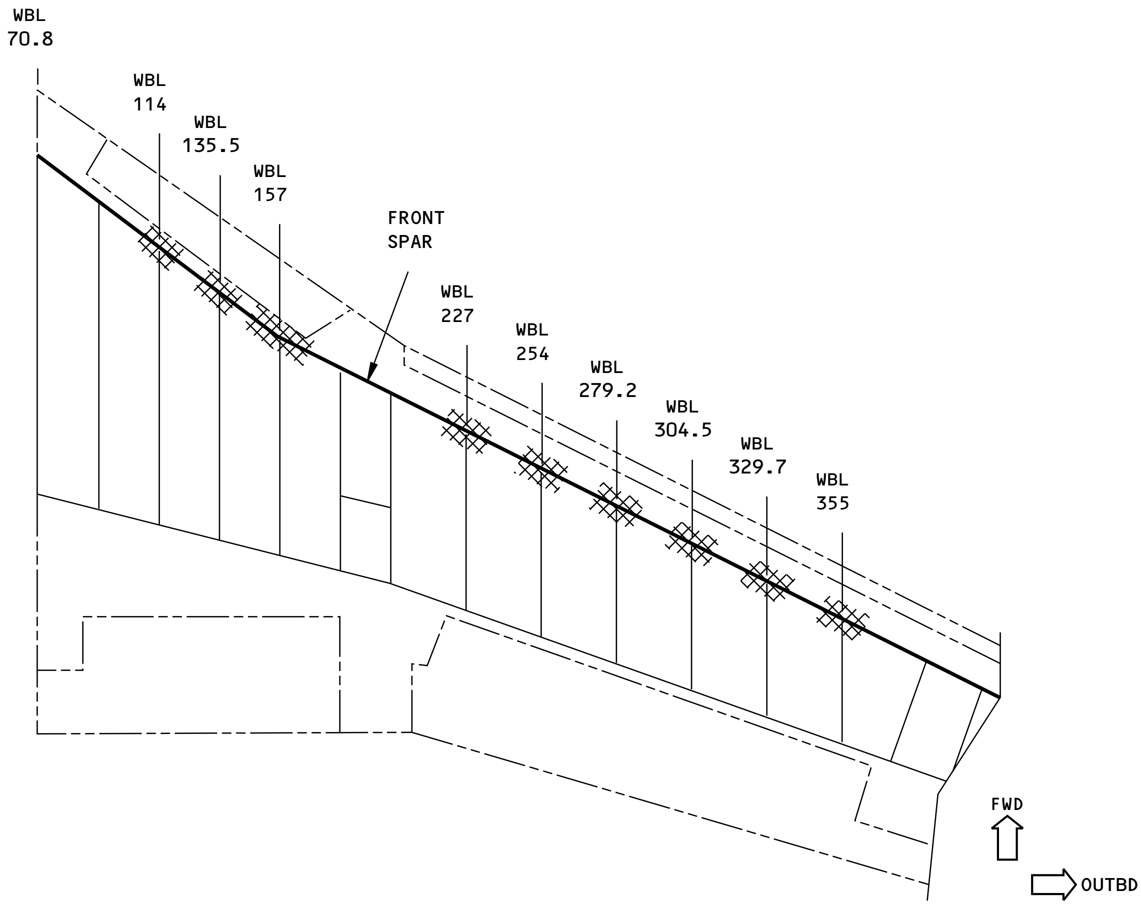
A. Signals that are 20% of full screen height (or more) above the balance point and look almost the same as the notch signal from the reference standard, are signs of a possible crack.

B. If you want to make sure of the results, do as follows:

(1) Make sure that the signal is not caused from a change in structure (fastener edge margin distance) and/or the skin/chord thickness. Do a check of the same location on the opposite wing.

(2) For the fastener location(s) away from the rib or stiffener shear tie, do a surface eddy current scan inspection around the fastener, on the inside surface of the chord. Refer to Part 6, 51-00-00, Procedure 23.

(3) For the fastener location(s) at the rib or stiffener shear tie, remove the fastener and do an open hole eddy current inspection. Refer to Part 6, 51-00-00, Procedure 16.



NOTES:

INSPECTION AREA. SEE THE RELATED VIEWS OF EACH WBL STATION FOR THE FASTENER LOCATIONS TO EXAMINE WITHIN THE INSPECTION AREAS IDENTIFIED ABOVE.

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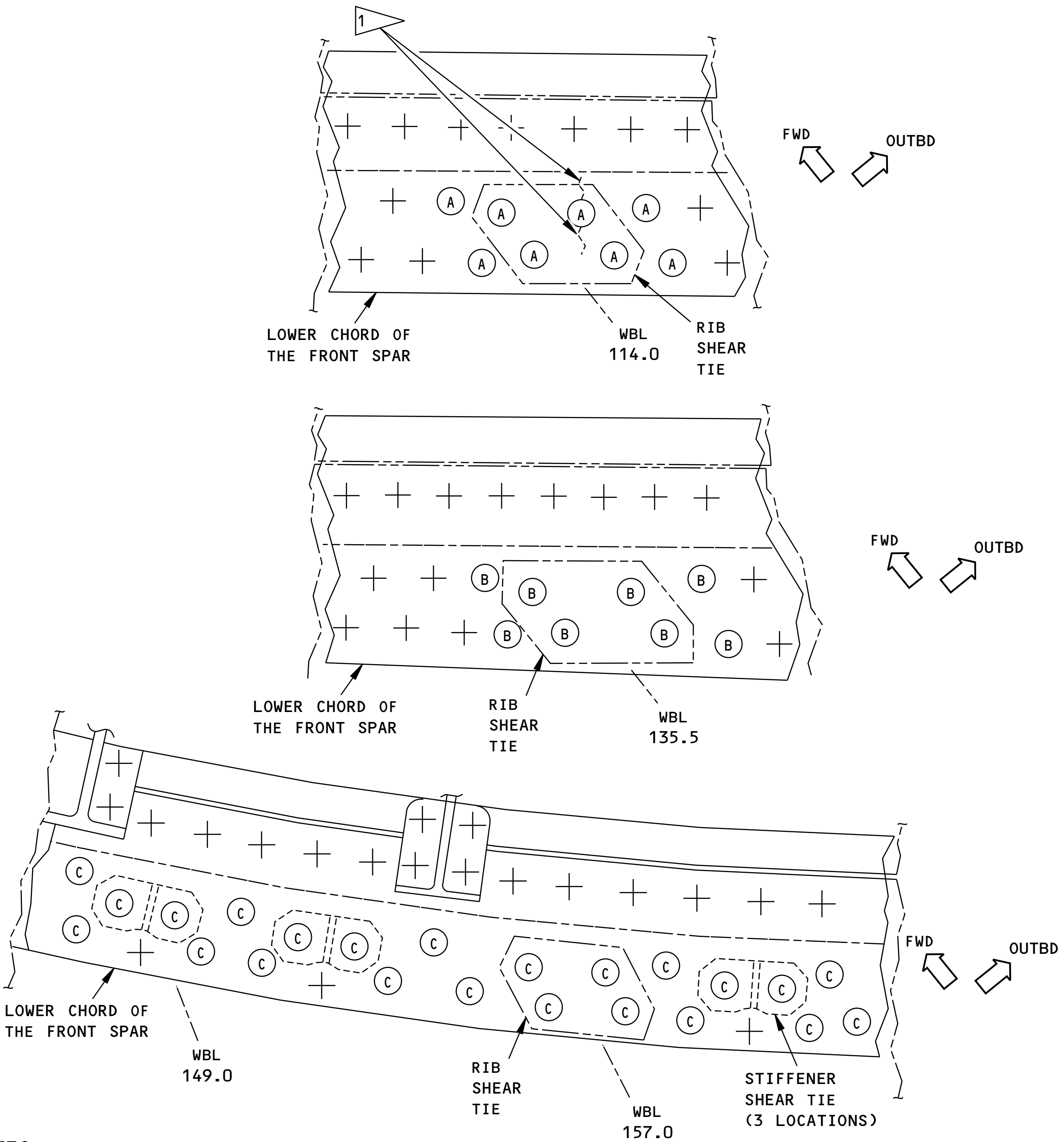
Front Spar - Lower Chord - WBL 114 thru WBL 355 Inspection Areas
Figure 1 (Sheet 1 of 4)



NOTES:

◯ FASTENER LOCATION TO EXAMINE. THE LETTER IS USED TO IDENTIFY THE CALIBRATION INSTRUCTIONS IN THE CALIBRATION TABLE IN FIGURE 3, DETAIL III.

1 TYPICAL CRACK

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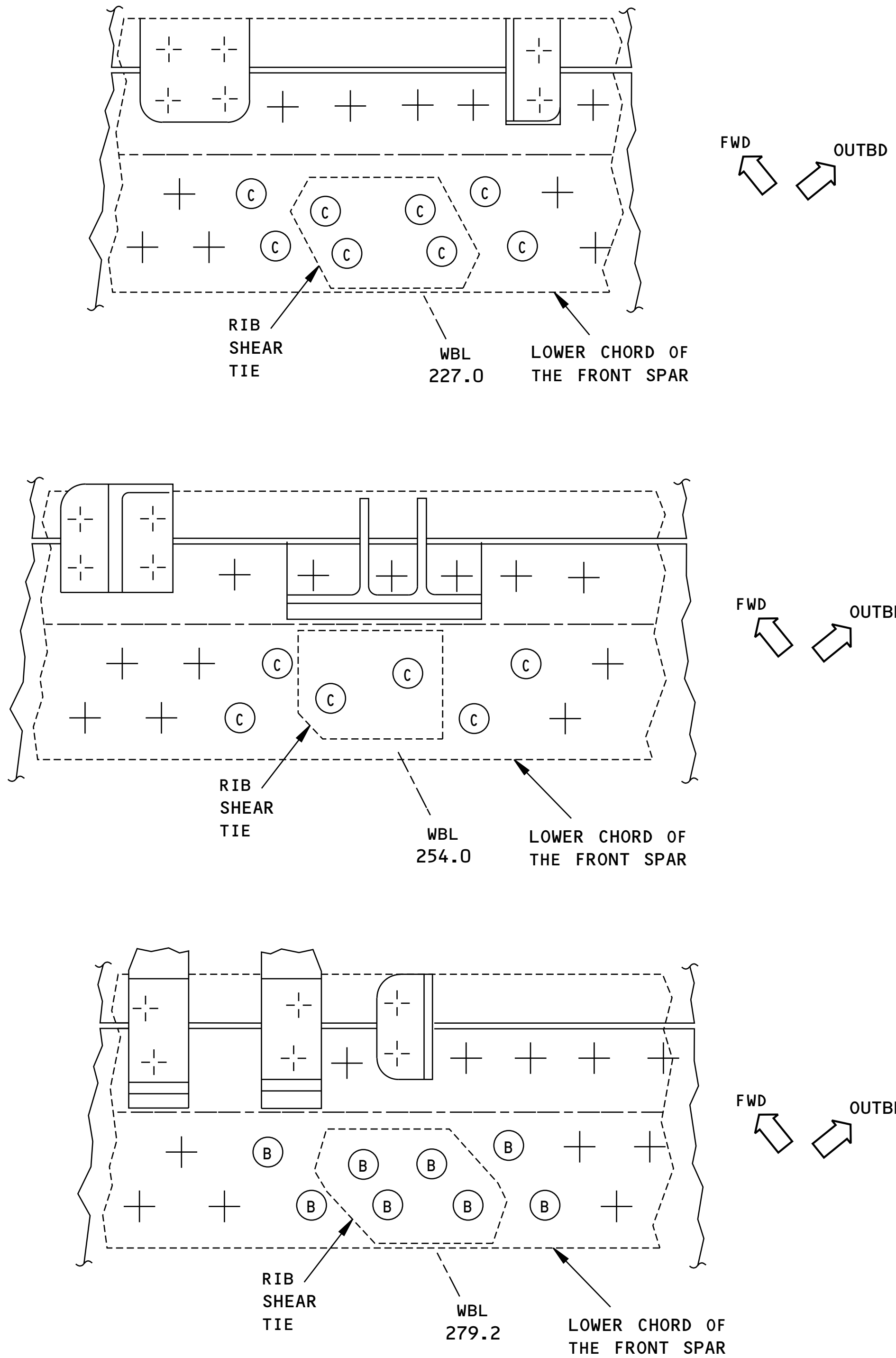
Front Spar - Lower Chord - WBL 114 thru WBL 355 Inspection Areas
Figure 1 (Sheet 2 of 4)



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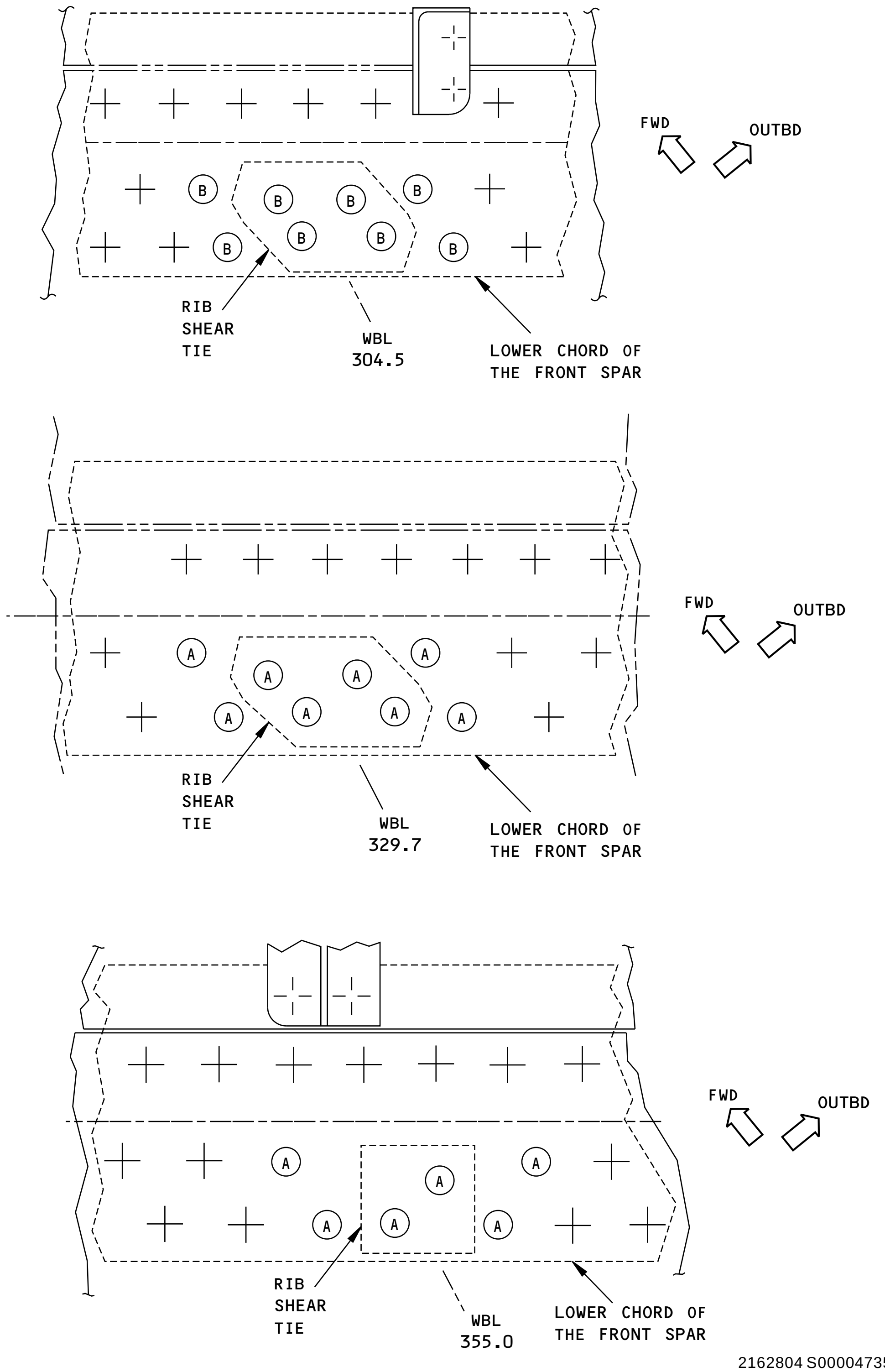
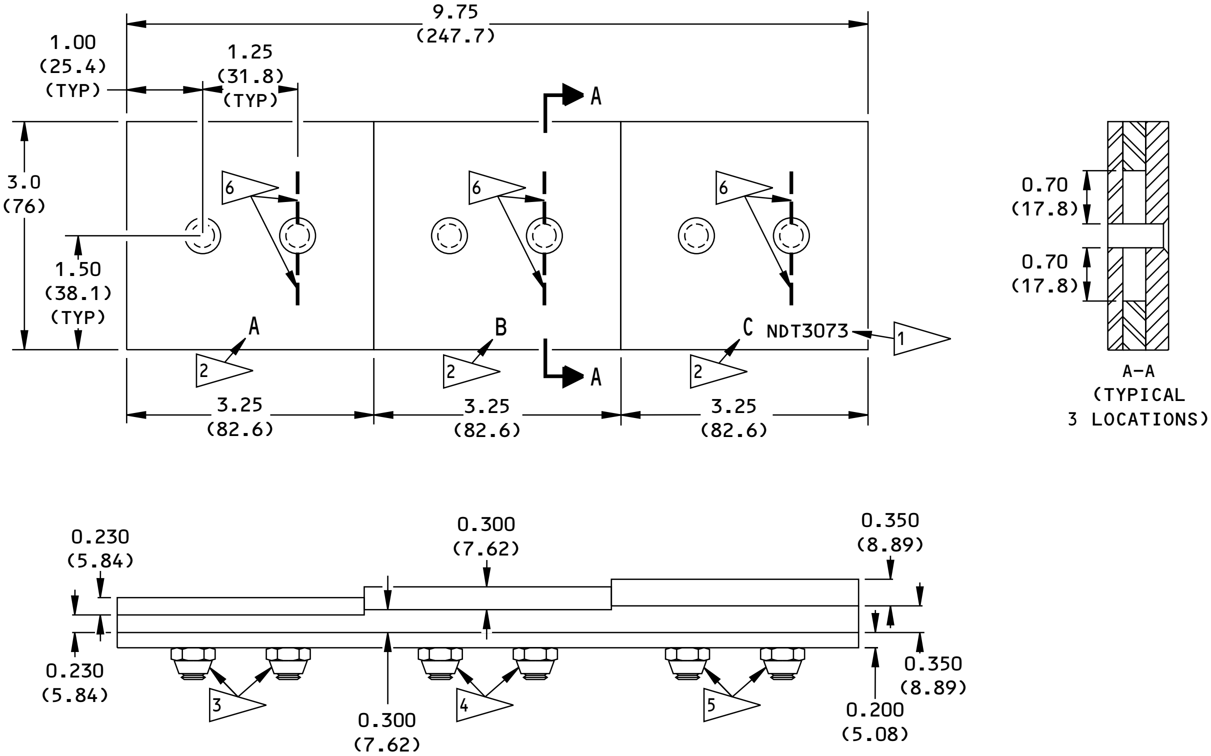
Front Spar - Lower Chord - WBL 114 thru WBL 355 Inspection Areas
Figure 1 (Sheet 3 of 4)



Front Spar - Lower Chord - WBL 114 thru WBL 355 Inspection Areas
Figure 1 (Sheet 4 of 4)



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES).
- TOLERANCES (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCES: THE NOTCH LOCATION MUST BE WITHIN ±0.005 (±0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS = 63 Ra OR BETTER
- MATERIAL: 2024-T3 OR T4 OR 7075-T6 ALUMINUM (CLAD OR BARE).

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER NDT3073.

2 ETCH OR STEEL STAMP THE LETTER SHOWN TO IDENTIFY THE LOCATION TO USE FOR THE INSTRUMENT CALIBRATION.

3 FASTENER: BACB30YP10K11
COLLAR: BACC30M10

4 FASTENER: BACB30YP10K13
COLLAR: BACC30M10

5 FASTENER: BACB30YP10K15
COLLAR: BACC30M10

6 EDM NOTCH:
LENGTH: 0.70 (17.8) ±0.010 (0.25)
DEPTH: THROUGH THICKNESS
WIDTH: 0.010 (0.18) ±0.002 (0.05)

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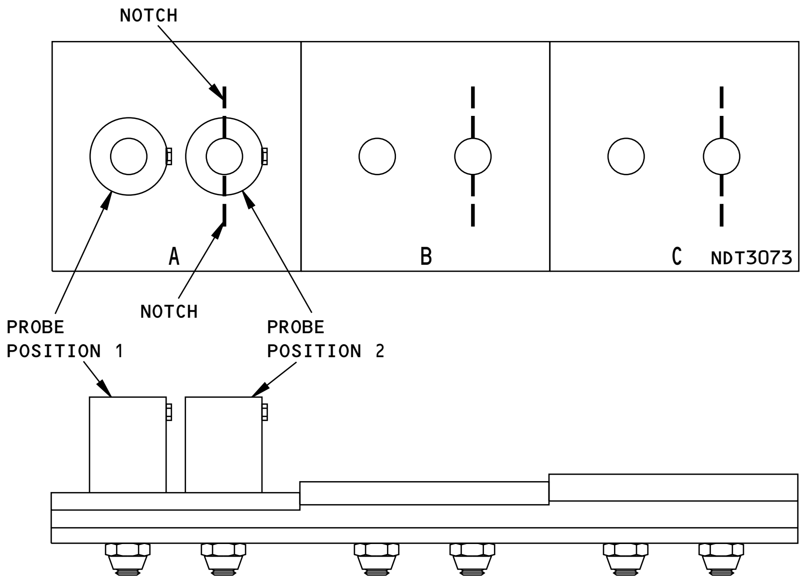
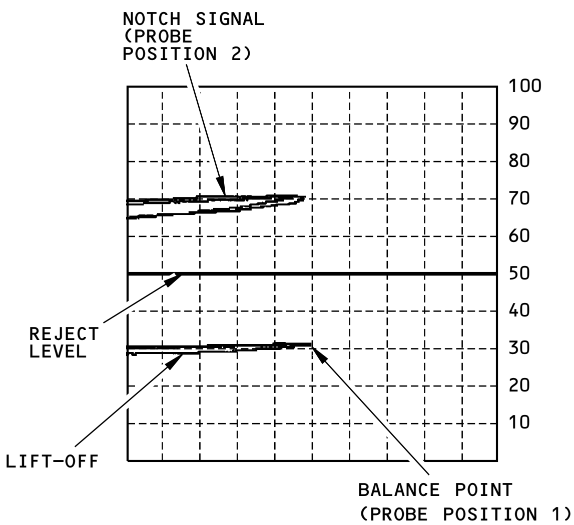
Reference Standard NDT3073
Figure 2



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II

FASTENER LOCATION TO EXAMINE (FASTENER CODE)	FASTENER LOCATION ON THE REFERENCE STANDARD	INSTRUMENT FREQUENCY (KHz)
A	A	0.3
B	B	0.2
C	C	0.2

CALIBRATION TABLE
DETAIL III

NOTES:

- PROBE POSITIONS 1 AND 2 ARE TYPICAL LOCATIONS FOR THE INSTRUMENT CALIBRATION AT EACH OF THE FASTENER LOCATIONS "A", "B" AND "C".

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Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

SPLICE PLATES AT THE SIDE OF BODY BBL 70.85 - S-1 THRU S-11

1. **Purpose**
   - A. Use this subsurface eddy current procedure to examine the lower splice plates immediately inboard and outboard of (Side of Body) BBL 70.85 for cracks from stringers 1 to 11. This inspection is done from the external surface of the center section and wing lower skins. See Figure 1 for the inspection locations.
   - B. This procedure uses an impedance plane display instrument and a ring probe. The ring probe is put around the fastener heads of the wing in the area that is outboard BBL 70.85. The ring probe is put around the collars of the center section in the area that is inboard of BBL 70.85. See Figure 1.
   - C. 737 Supplemental Structural Inspection Document (D6-37089) Reference:
     - (1) Item: W-10A
     - (2) Item: W-10B
2. **Equipment**
   - A. General
     - (1) All eddy current equipment that can do the calibration instructions of this procedure can be used.
     - (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   - B. Instrument
     - (1) Use an eddy current instrument that:
       - (a) Has an impedance plane display.
       - (b) Operates in the frequency range of 100 Hz to 350 Hz.
     - (2) The instruments that follow were used to help prepare this procedure.
       - (a) Phasec 1.1; Hocking Krautkramer
       - (b) NDT 19e; Staveley Instruments
   - C. Probes
     - (1) One ring probe is necessary.
     - (2) The probe must:
       - (a) Operate in the frequency range of 100 Hz to 350 Hz.
       - (b) Have a minimum internal diameter of 0.750 inch (19.0 mm).
       - (c) Have a maximum internal diameter of 0.770 inch (19.6 mm).
       - (d) Have a maximum height of 0.90 inch (22.9 mm).
       - (e) Be able to be calibrated as specified in Paragraph 4. of this procedure.
     - (3) The probes that follow were used to help prepare this procedure.
       - (a) TEK-4062 (Reflection); Techna NDT
       - (b) SPO-6987 (Reflection); NDT Engineering
   - D. Reference Standards

(1) Use reference standards NDT3086A, B, and C to examine the splice plates behind the skin of the center section (inboard side of BBL 70.85). See Figure 2.

(2) Use reference standards NDT3085A, B and C to examine the splice plates behind the lower wing skin (outboard side of BBL 70.85). See Figure 3.

3. Prepare for the Inspection

A. Remove the wing to body fairings at BBL 70.85 below the wings on the left and right side of the airplane. See Figure 1 for the inspection areas.

B. Remove the sealant caps from around the fastener heads and collars in the inspection area identified by the black dots in Figure 1. The inspection area is the external surface of the center section and lower wing skins.

(1) The splice plate inspection locations are aligned with the stringers.

(2) Make sure sufficient sealant is removed so the sealant will not cause the ring probe to lift-off the inspection surface.

(3) It is not necessary to remove the paint and/or primer for this inspection.

4. Instrument Calibration

A. Calibrate the instrument to examine the splice plates behind the skin of the center section (inboard side of BBL 70.85) for cracks around the collars as follows:

(1) Set the instrument frequency for the inspection area (stringer locations) to be examined.

(a) Table 1 identifies the reference standard and instrument frequency to use for the area to be examined.

(2) Set the vertical to horizontal gain to 1:1.

(3) Set the high-pass filter to zero Hz.

(4) Set the low pass filter between 10 Hz and 30 Hz.

(5) Put the probe around the collar at probe position 1 (see Figure 4) on the reference standard and balance the instrument.

(a) Table 1 identifies the reference standard to use for the area to be examined.

(6) Adjust the balance point position as shown in Figure 4.

(7) Set the lift-off signal as shown in Figure 4.

(8) Put the probe at probe position 2 (see Figure 4).

(9) Adjust the gain so the notch signal is at 70% of full screen height as shown in Figure 4. If necessary, decrease the horizontal gain 3 to 6 dB to keep the notch signal on the display.

B. Calibrate the instrument to examine the splice plates behind the skin of the wing (outboard side of BBL 70.85) for cracks around the fasteners that are nearest to the edge of the wing skin as follows:

(1) Set the instrument frequency for the inspection area (stringer locations) to be examined.

(a) Table 1 identifies the reference standard and instrument frequency to use for the area to be examined.

(2) Set the vertical to horizontal gain to 1:1.

(3) Set the high-pass filter to zero Hz.

(4) Set the low pass filter between 10 Hz and 30 Hz.

(5) Put the probe around the fastener head at probe position 3 and lightly move the probe until the signal is at a minimum. See Figure 5.

(6) Balance the instrument.

(7) Adjust the balance point position as shown in Figure 5.

(8) Set the lift-off signal as shown in Figure 5.

(9) Put the probe at probe position 4 (see Figure 5) and lightly move the probe so the notch signal is at a minimum.

(10) Adjust the gain so the notch signal is at 70% of full screen height as shown in Figure 5. If necessary, decrease the horizontal gain 3 to 6 dB to keep the notch signal on the display.

C. Calibrate the instrument to examine the splice plates behind the skin of the wing (outboard side of BBL 70.85) for cracks around the fasteners that are farther from the edge of the wing skin than the fasteners in Paragraph 4.B. as follows:

(1) Do Paragraph 4.B.(1) thru Paragraph 4.B.(10) but this time use probe positions 5 and 6.

5. Inspection Procedure

A. Examine the splice plates behind the skin of the center section (inboard side of BBL 70.85) for cracks around the inspection location fasteners (collars) identified in Figure 1 (at each splice fitting location) as follows:

(1) Calibrate the instrument as specified in Paragraph 4.A.

(2) Put the probe on a collar identified in Figure 1 as an inspection location (black dot).

(3) Lightly move the probe until the balance point is at a minimum and balance the instrument.

(4) Put the probe on an adjacent collar identified in Figure 1 as an inspection location (black dot) and monitor the instrument for crack indications. At each collar, lightly move the probe to get a minimum signal on the display.

(5) Do Paragraph 5.A.(2) thru Paragraph 5.A.(4) on the other side of the airplane.

B. Examine the splice plates behind the skin of the wing (outboard side of BBL 70.85) for cracks around the inspection location fasteners identified in Figure 1 (at each splice fitting location) that are nearest to the edge of the wing skin as follows:

NOTE: Refer to Figure 1 and the inspection area on the airplane to see how the inspection locations for the fasteners at each splice fitting are different distances from the skin edge. It is important to know this because all of the fasteners at each splice fitting that are nearer to the wing skin edge are to be examined before all of the fasteners at each splice fitting that are farther from the wing skin edge. Examination of one row at a time is done to decrease edge effect.

(1) Calibrate the instrument as specified in Paragraph 4.B.

(2) Put the probe on a fastener identified in Figure 1 as an inspection location (black dot) that is nearer the wing skin edge at a splice fitting location.

(3) Lightly move the probe until the balance point is at a minimum and balance the instrument.

(4) Put the probe at an adjacent splice fitting location at a fastener that is identified in Figure 1 as an inspection location (black dot) and is also nearer to the edge of the wing skin than the other inspection location fastener at that splice fitting location.

(5) Lightly move the probe until the signal is at a minimum.

(6) Do Paragraph 5.B.(4) and Paragraph 5.B.(5) for the remaining fasteners in the inspection area that are nearest to the wing skin edge.

(7) Do Paragraph 5.B.(2) thru Paragraph 5.B.(6) on the other side of the airplane.

C. Examine the splice plates behind the skin of the wing (outboard side of BBL 70.85) for cracks around the inspection location fasteners that are identified in Figure 1 (at each splice fitting location) as farther from the edge of the wing skin than the fasteners that were examined in Paragraph 5.B. as follows:

(1) Calibrate the instrument as specified in Paragraph 4.C.

(2) Put the probe on a fastener identified in Figure 1 as an inspection location (black dot) that is farther from the wing skin edge at a splice fitting location.

(3) Lightly move the probe until the balance point is at a minimum and balance the instrument.

(4) Put the probe at an adjacent splice fitting location at a fastener that is identified in Figure 1 as an inspection location (black dot) and is also farther from the edge of the wing skin than the other inspection location fastener at that splice fitting location.

(5) Lightly move the probe until the signal is at a minimum.

(6) Do Paragraph 5.C.(4) and Paragraph 5.C.(5) for the remaining fasteners in the inspection area that are farther from the wing skin edge.

(7) Do Paragraph 5.C.(2) thru Paragraph 5.C.(6) on the other side of the airplane.

6. Inspection Results

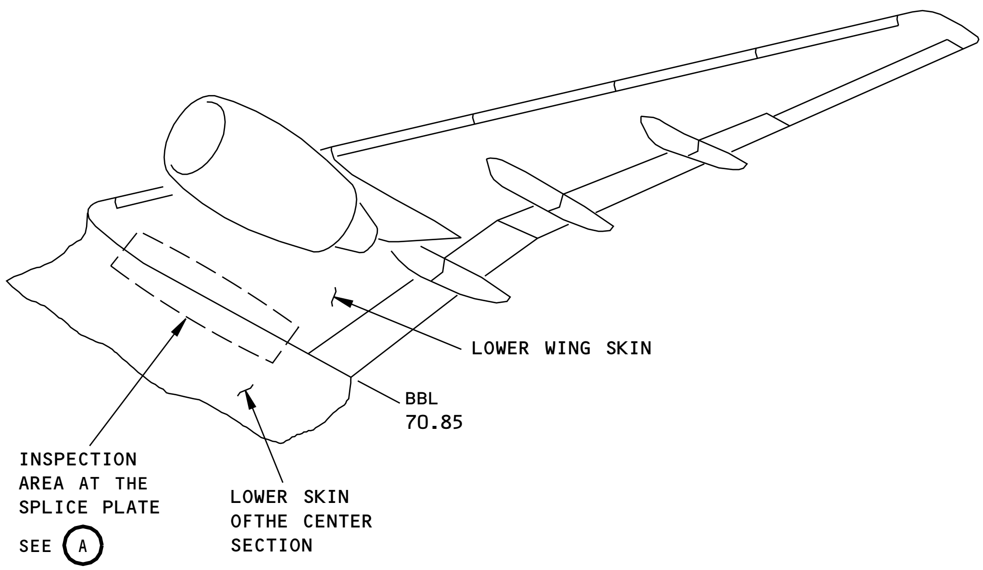
A. Signals that are 25 percent (or more) above the balance point and look almost the same as the notch signal from the reference standard are signs of a possible crack. See Figure 4 or Figure 5 for the reject level.

B. Compare the signals that occur during the inspection to the signals you got from the applicable reference standard during calibration.

C. Use the surface eddy current inspection, Part 6, 57-10-27, to examine the splice plate from inside the airplane if there are crack indications during the inspection.

Table 1: Reference Standard and Frequency Selection for the Inspection Locations

	SPLICE PLATE LOCATION	REFERENCE STANDARD NUMBER	INSTRUMENT FREQUENCY
LOWER WING SKIN INSPECTION AREA (COLLARS OUTBOARD OF BBL 70.85)	S-1 THRU S-4 S-6 AND S-7 S-8, S-10, S-11	NDT3085A NDT3085B NDT3085C	100 Hz to 150 Hz 150 Hz to 170 Hz 200 Hz to 220 Hz
CENTER SECTION SKIN (FASTENER HEADS INBOARD OF BBL 70.85)	S-1C THRU S-4C S-6C AND S-7C S-8C AND S-10C	NDT3086A NDT3086B NDT3086C	150 Hz to 170 Hz 150 Hz to 200 Hz 300 Hz to 350 Hz



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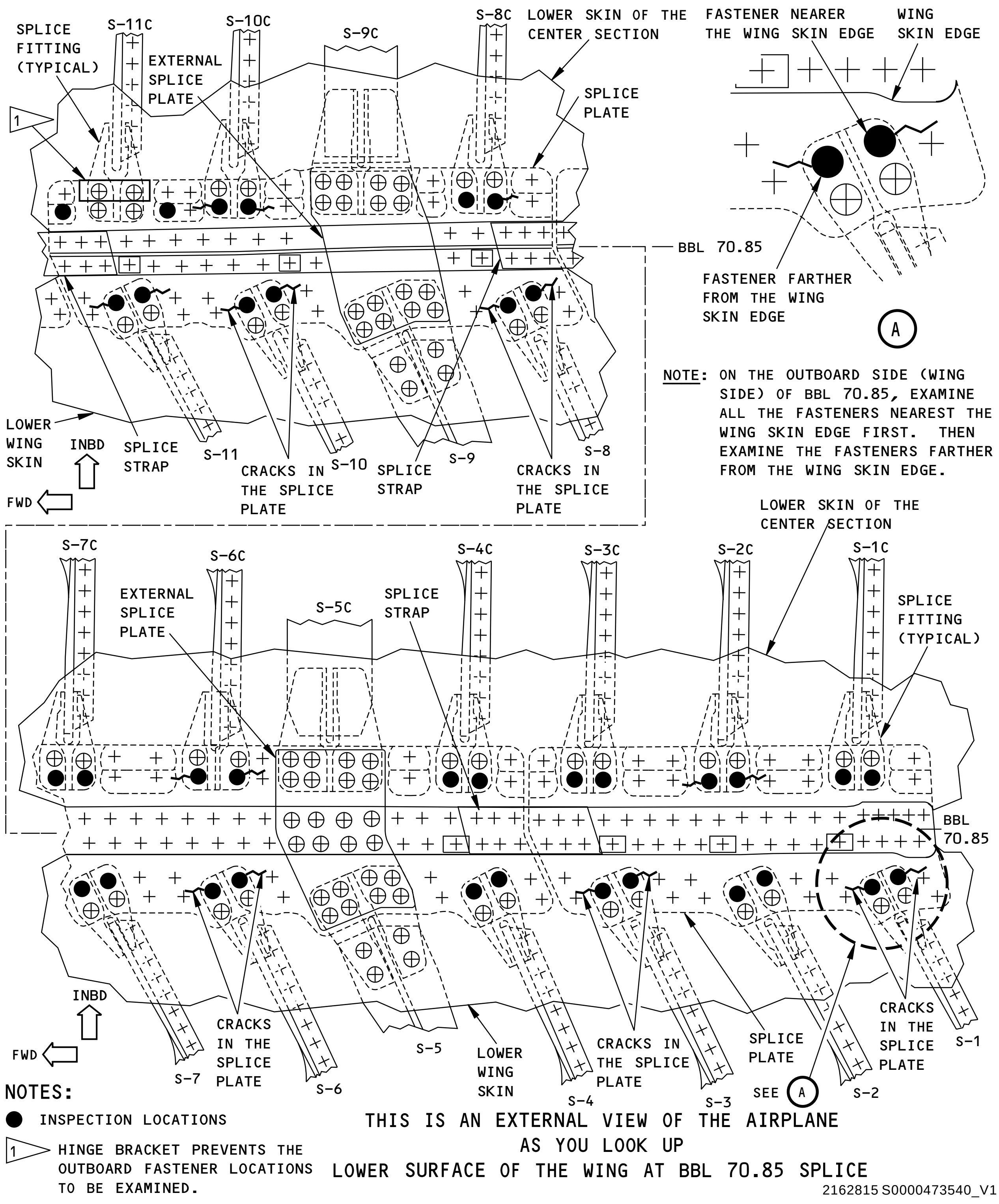
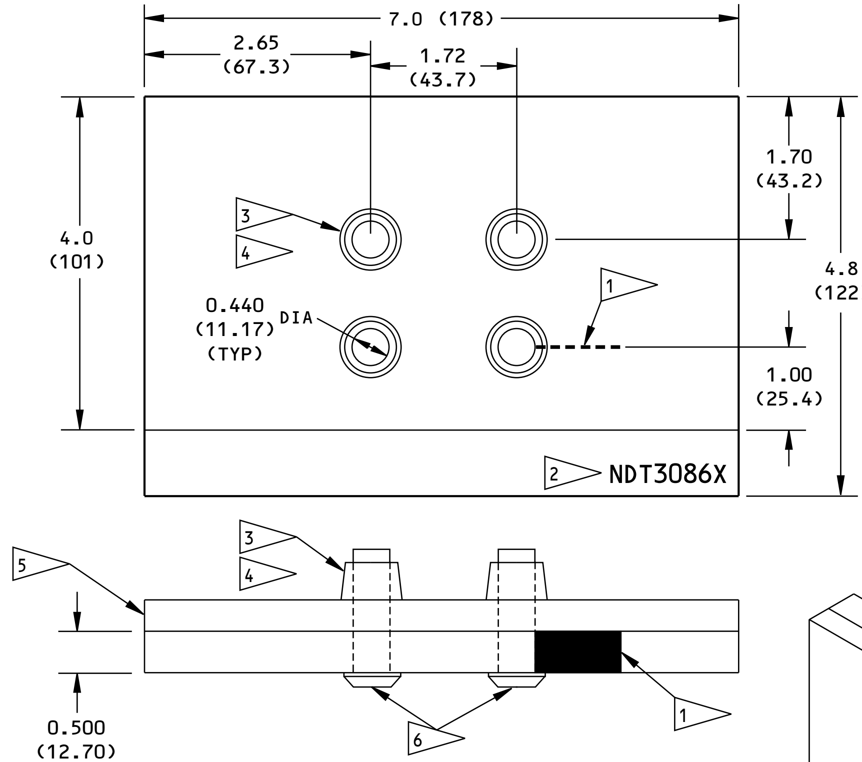
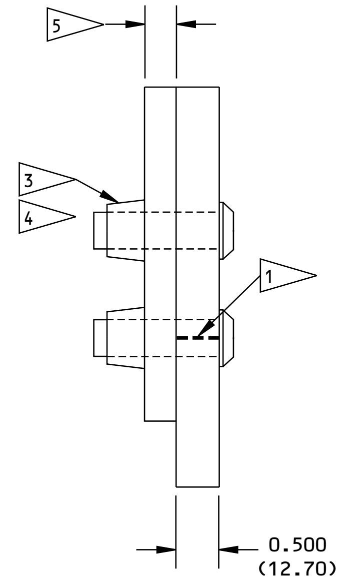
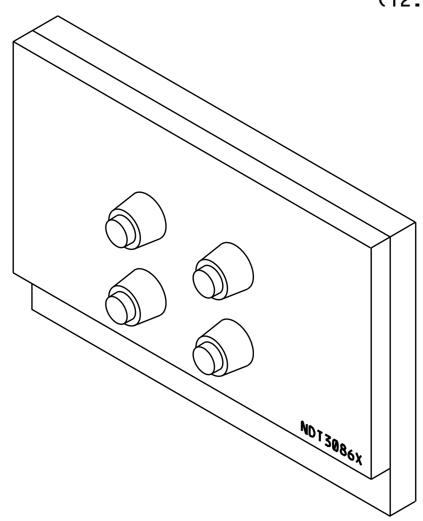
Inspection Locations
Figure 1 (Sheet 1 of 2)



Inspection Locations
Figure 1 (Sheet 2 of 2)







NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS IN PARENTHESES).
- TOLERANCES (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- SURFACE ROUGHNESS = 125 Ra OR BETTER.
- MATERIAL: 2324-T39 OR 2024-T3; CLAD OR BARE

1 EDM NOTCH:
LENGTH: 1.00 (25.4)
DEPTH: 0.50 (12.7)
MAXIMUM WIDTH: 0.020 (0.50)

2 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBERS AS SHOWN IN TABLE 1

3 COLLARS (4 LOCATIONS): BACC30BH14 OR BACC30X14

4 AN ALTERNATIVE BOLT AND COLLAR CAN BE USED ONLY IF:
- THE BOLT AND COLLAR IS NONMAGNETIC AND IS LOW CONDUCTIVITY (LESS THAN 10% IACS)
- THE MAXIMUM OUTER DIAMETER OF THE COLLAR IS 0.740 (18.8)
- THE MINIMUM OUTER DIAMETER OF THE COLLAR IS 0.730 (18.5)

REFERENCE STANDARD	STRINGER LOCATION	THICKNESS	BOLTS (4 LOCATIONS)
		5	6
NDT3086A	S-1 THRU S-4	0.370 (9.40)	BACB30NX14K14
NDT3086B	S-6 AND S-7	0.318 (8.10)	BACB30NX14K13
NDT3086C	S-8, S-10 AND S-11	0.216 (5.50)	BACB30NX14K11

K = BOLT COAT. AN ALTERNATIVE CAN BE USED.

TABLE 1

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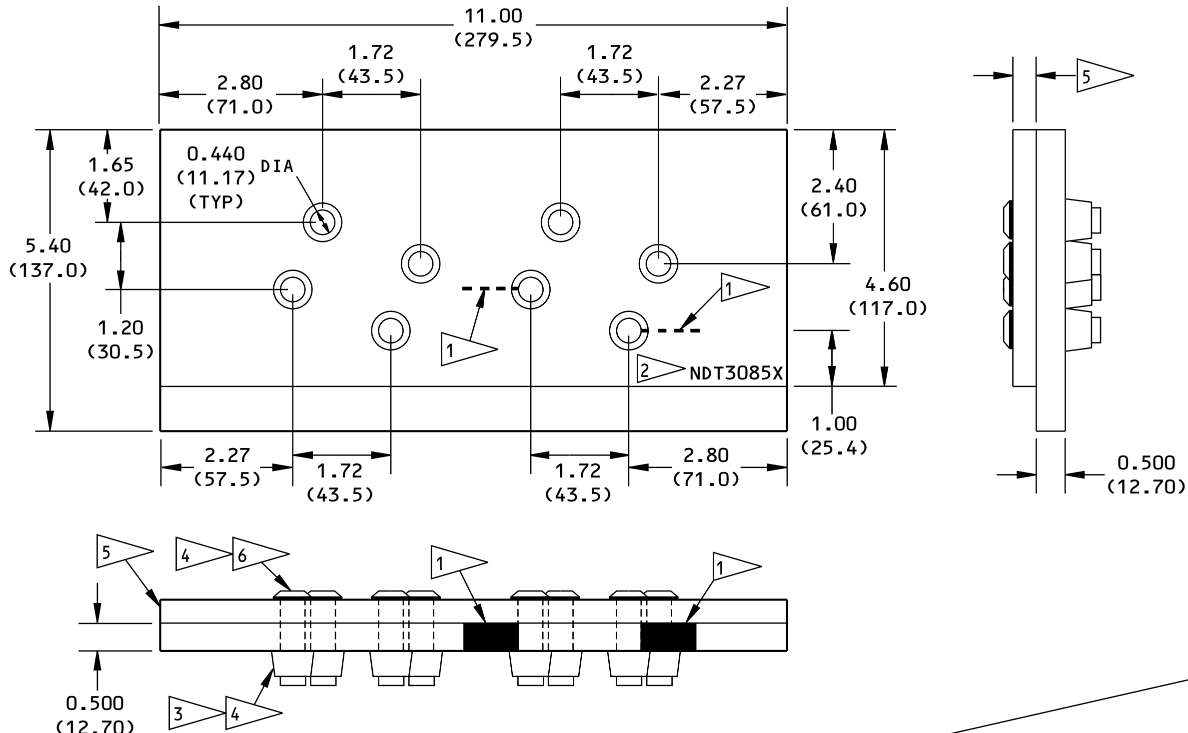
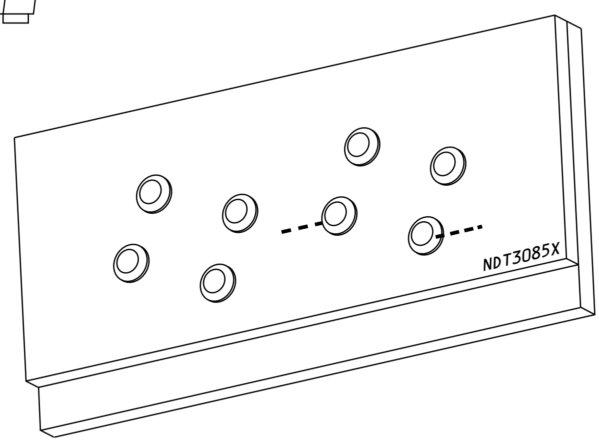
Reference Standard NDT3086X
Figure 2





NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS IN PARENTHESES).
- TOLERANCES (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- SURFACE ROUGHNESS = 125 Ra OR BETTER.
- MATERIAL: 2324-T39 OR 2024-T3; CLAD OR BARE

1. EDM NOTCHS (2 LOCATIONS):
   LENGTH: 1.00 (25.4)
   DEPTH: 0.50 (12.7)
   MAXIMUM WIDTH: 0.020 (0.50)
2. ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBERS AS SHOWN IN TABLE 1
3. COLLARS (8 LOCATIONS): BACC30BH14 OR BACC30X14
4. AN ALTERNATIVE BOLT AND COLLAR CAN BE USED ONLY IF:
   - THE BOLT AND COLLAR IS NONMAGNETIC AND IS LOW CONDUCTIVITY (LESS THAN 10% IACS)
   - THE MAXIMUM DIAMETER OF THE FASTENER HEAD IS 0.680 (17.3)
   - THE MINIMUM DIAMETER OF THE FASTENER HEAD IS 0.650 (16.5)

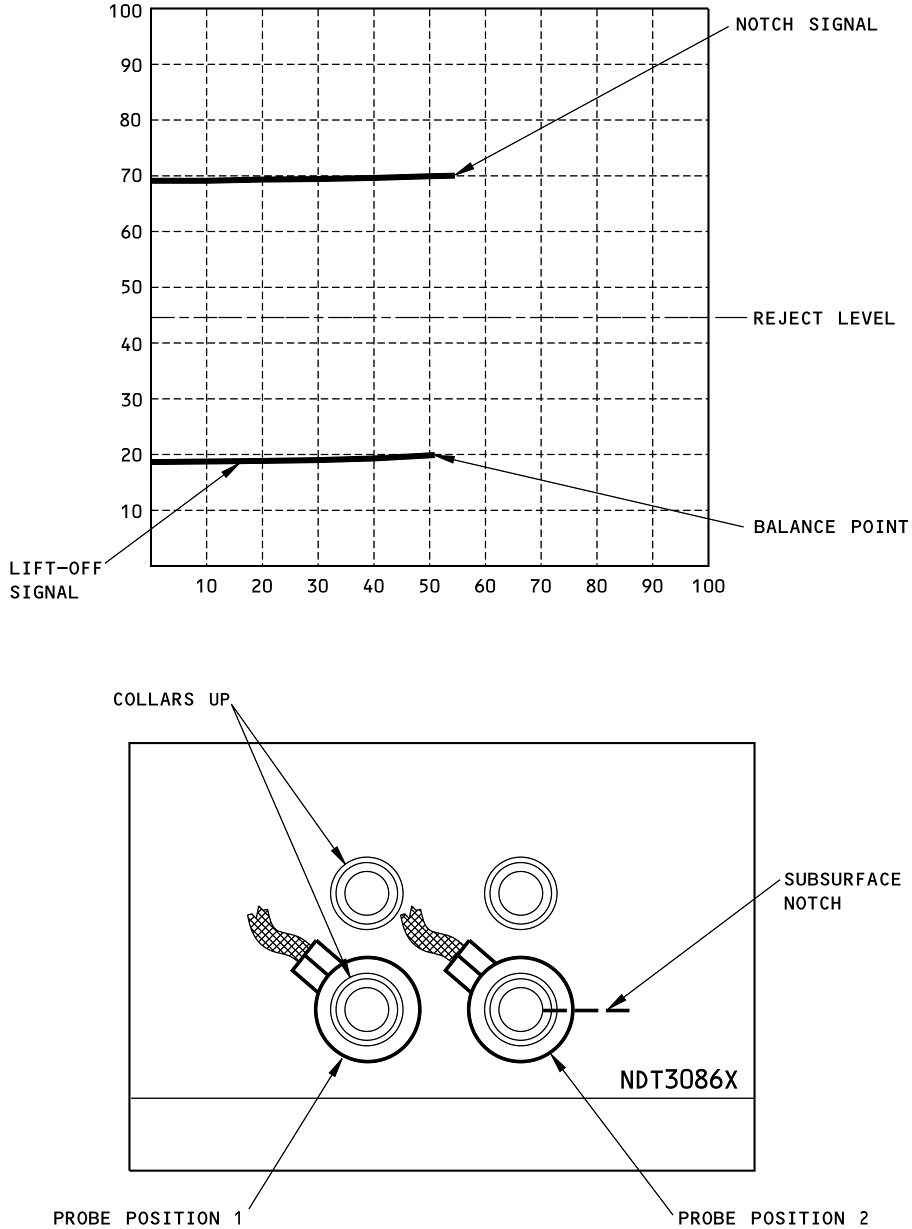
REFERENCE STANDARD	STRINGER LOCATION	THICKNESS	BOLTS (8 LOCATIONS)
		5	6
NDT3085A	S-1 THRU S-4	0.420 (10.70)	BACB30NX14K14
NDT3085B	S-6 AND S-7	0.365 (9.27)	BACB30NX14K13
NDT3085C	S-8, S-10 AND S-11	0.325 (8.25)	BACB30NX14K13

K = BOLT COAT. AN ALTERNATIVE CAN BE USED.

TABLE 1

2162846 S0000473542_V1

Reference Standard NDT3085X
Figure 3

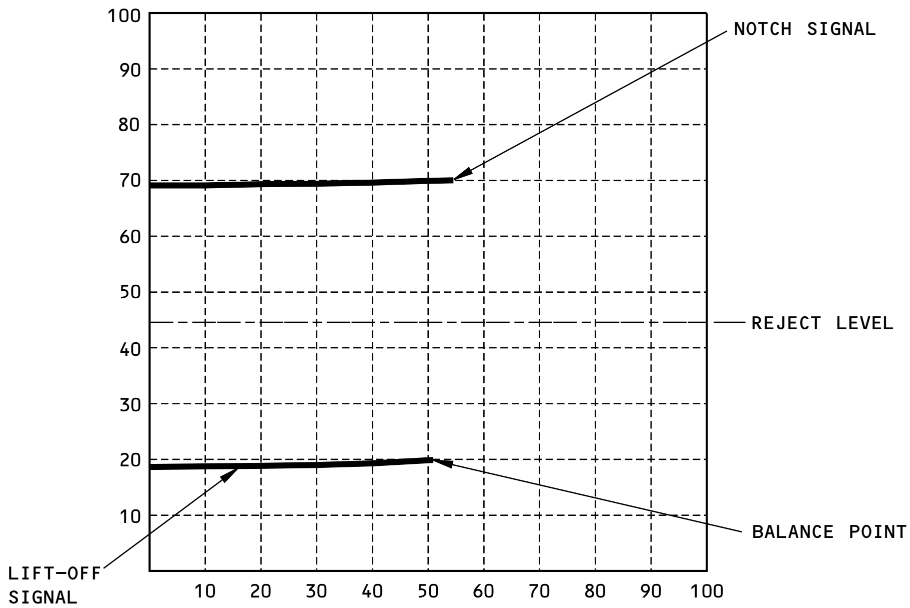


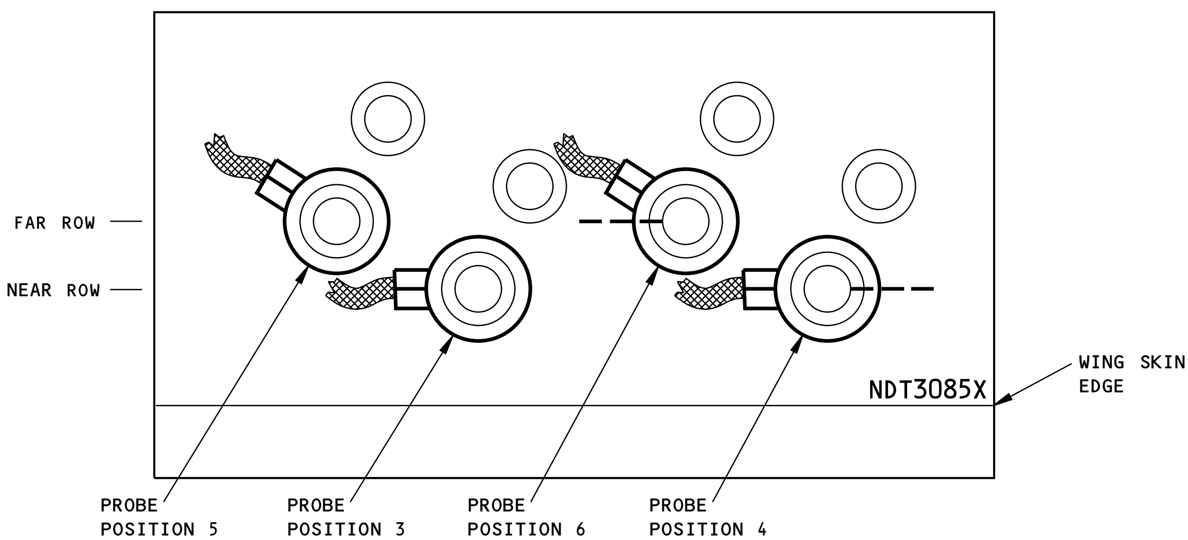
NOTES:

- SEE TABLE 1 FOR THE INSTRUMENT FREQUENCY FOR REFERENCE STANDARDS NDT3086A, NDT3086B AND NDT3086C.

2162847 S0000473543_V1

Calibration to Examine the Splice Plates Behind the Skin of the Center Section (Inboard Side of BBL 70.85)
Figure 4





NOTES:

- SEE TABLE 1 FOR THE INSTRUMENT FREQUENCY FOR REFERENCE STANDARDS NDT3085A, NDT3085B AND NDT3085C.

2162850 S0000473544_V1

Calibration to Examine the Splice Plates Behind the Skin of the Wing (Outboard Side of BBL 70.85)
Figure 5

PART 6 - EDDY CURRENT

LOWER WING PANEL - SPLICE STRINGERS 5 AND 9 (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine splice stringers 5 and 9 of the lower wing panel for cracks. Splice stringer 5 is examined from the side-of-body to rib 20. Splice stringer 9 is examined from the side-of-body to rib 19. The splice stringers are examined for cracks at the forward radius and at all fastener locations but those that are blocked by rib posts, stiffeners, or brackets. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The splice stringers are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-03-1

      (2) Item: 57-20-03-2

      (3) Item: 57-20-03-4

      (4) Item: 57-20-03-5

      (5) Item: 57-20-03-6

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

(1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

A. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual (AMM)) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. It is necessary to remove sealant if it extends more than 0.20 inch (5 mm) from the fastener heads or collars, or if it is more than 0.01 inch (0.25 mm) thick in the radius of the splice stringer.

(1) Refer to AMM 51-31-00-100-802 for instructions on removal of sealant.

D. Clean the inspection surfaces.

E. Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the forward radius of the splice stringers and all the fasteners from ribs 1 to 19 as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine splice stringer 5 from the side-of-body to rib 20 and splice stringer 9 from the side-of-body to rib 19 for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Inspection is not necessary where the splice stringer is blocked by rib posts, stiffeners, or brackets. Examine the areas that follow:

(1) Examine splice stringers 5 and 9 at the forward radius of the splice stringers and at all of the fastener locations from BBL 70.85 to WS 564.5.

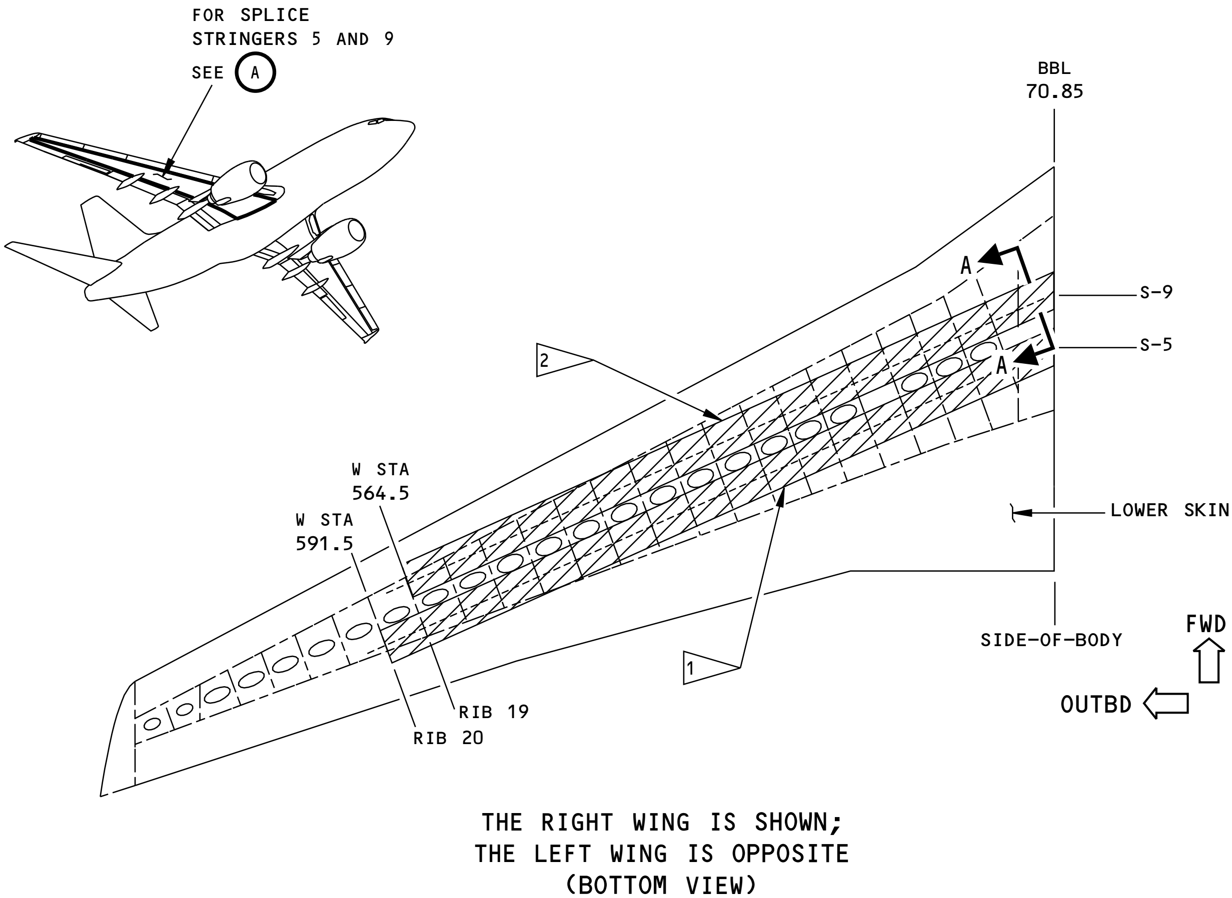
(a) Use the splice stringer as a probe guide while you make a scan along the forward radius.

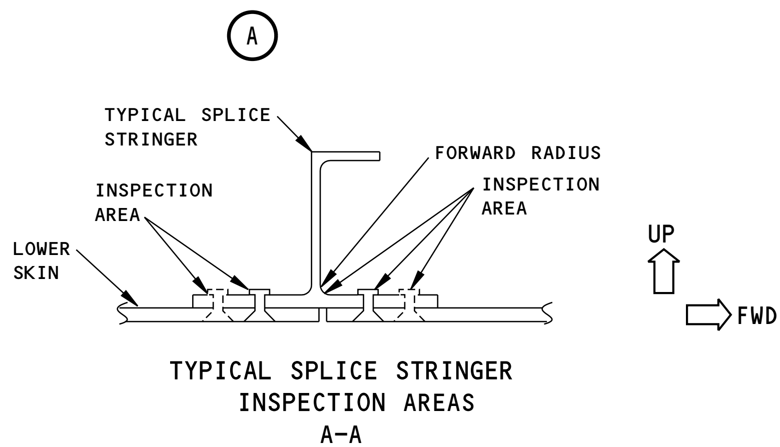
(b) Use the rivet tails as a probe guide while you make a scan around the fasteners.

B. Do Paragraph 5.A. again to examine splice stringers 5 and 9 on the other side of the airplane.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.





NOTES

INSPECTION AREA

1 EXAMINE SPLICE STRINGER 5 AT THE FORWARD RADIUS AND AT ALL FASTENERS FROM THE SIDE-OF-BODY TO RIB 20

2 EXAMINE SPLICE STRINGER 9 AT THE FORWARD RADIUS AND AT ALL FASTENERS FROM THE SIDE-OF-BODY TO RIB 19

2162853 S0000474624_V2

Inspection Areas
Figure 1

PART 6 - EDDY CURRENT

UPPER SKIN OF THE WING AT THE BBL 70.85 SIDE OF BODY PLUS CHORD (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the upper skin for cracks in the areas that are adjacent to the paddle fittings and between all fasteners at BBL 70.85, from the front spar to the rear spar. This inspection is done on each side of the airplane. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, for inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick.

   D. Use the HFEC procedure specified in Part 6, 51-00-27, for inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick.

   E. The upper skin is aluminum.

   F. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Items: 57-20-13/14/15/16/17-1

      (2) Items: 57-20-13/14/15/16/17-2

2. **Equipment**

   A. General

      (1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

         (a) Use inspection equipment that can be calibrated on a reference standard as specified in Part 6, 51-00-27, paragraph 4.

      (3) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a maximum diameter of 0.35 inch (8.9 mm).

(2) The probes that follow were used to help prepare this procedure.

NOTE: Shielded probes are recommended.

(a) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

1) Use probes as specified in Part 6, 51-00-00, Procedure 23, paragraph 3.C.

(b) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

1) Use probes as specified in Part 6, 51-00-27, paragraph 2.C.

D. Reference Standards

(1) To examine inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(a) Use reference standard 126, or an equivalent, as specified in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

(2) To examine inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(a) Use a reference standard, or an equivalent, as specified in Part 6, 51-00-27, paragraph 2.D, to help calibrate the instrument.

3. Prepare for the Inspection

A. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Clean the inspection surfaces.

D. Sealant removal can be necessary. Refer to AMM task 51-31-00-100-802 for sealant removal instructions.

E. Remove paint only if it is loose.

4. Instrument Calibration

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(a) Use reference standard 126, or an equivalent, to help calibrate the instrument.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-27, paragraph 4.

(a) Use the reference standard specified in Part 6, 51-00-27, paragraph 2.D., or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the upper skin for cracks from inside the wing center section as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27, paragraph 5. Examine the areas that follow:

(1) Examine the upper skin for cracks along each edge of the stringers that are attached to the plus chord at BBL 70.85, from the front spar to the rear spar, as shown in Figure 1.

(a) Use the stringer edge and the remaining sealant, if applicable, as a probe guide to make a scan along the stringer edges.

(b) Examine the upper skin at the stringer edges on the other side of the airplane.

(2) Examine the upper skin for cracks between the fasteners and the stringers at BBL 70.85, from the front spar to the rear spar, as shown in Figure 1.

(a) Use the fasteners and the remaining sealant, if applicable, as a probe guide to make a scan between the fasteners.

(b) Examine the upper skin between the fasteners on the other side of the airplane.

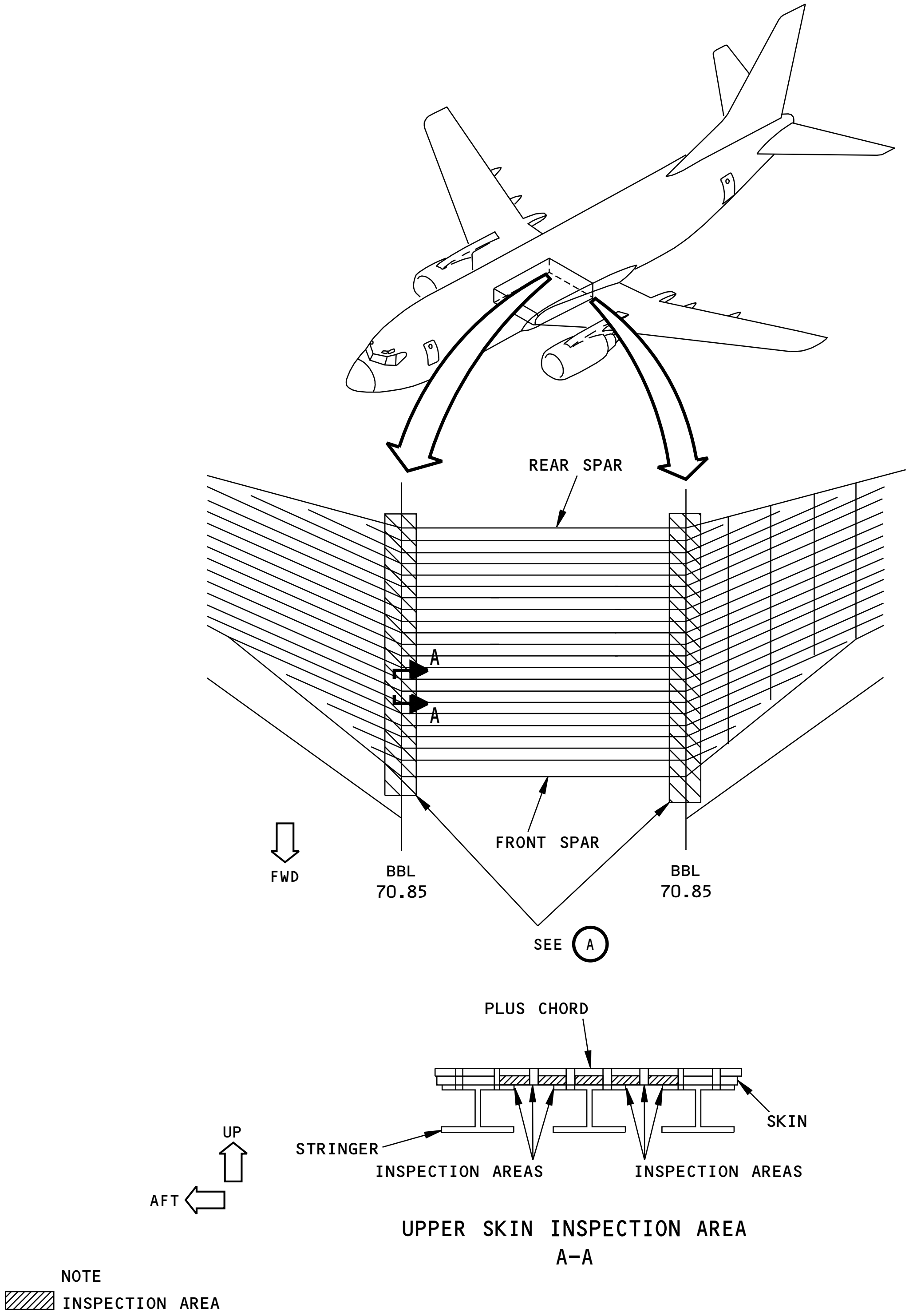
6. **Inspection Results**

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(1) Refer to Part 6, 51-00-27, paragraph 6, for instructions to help make an analysis of the indications that occur during the inspection.



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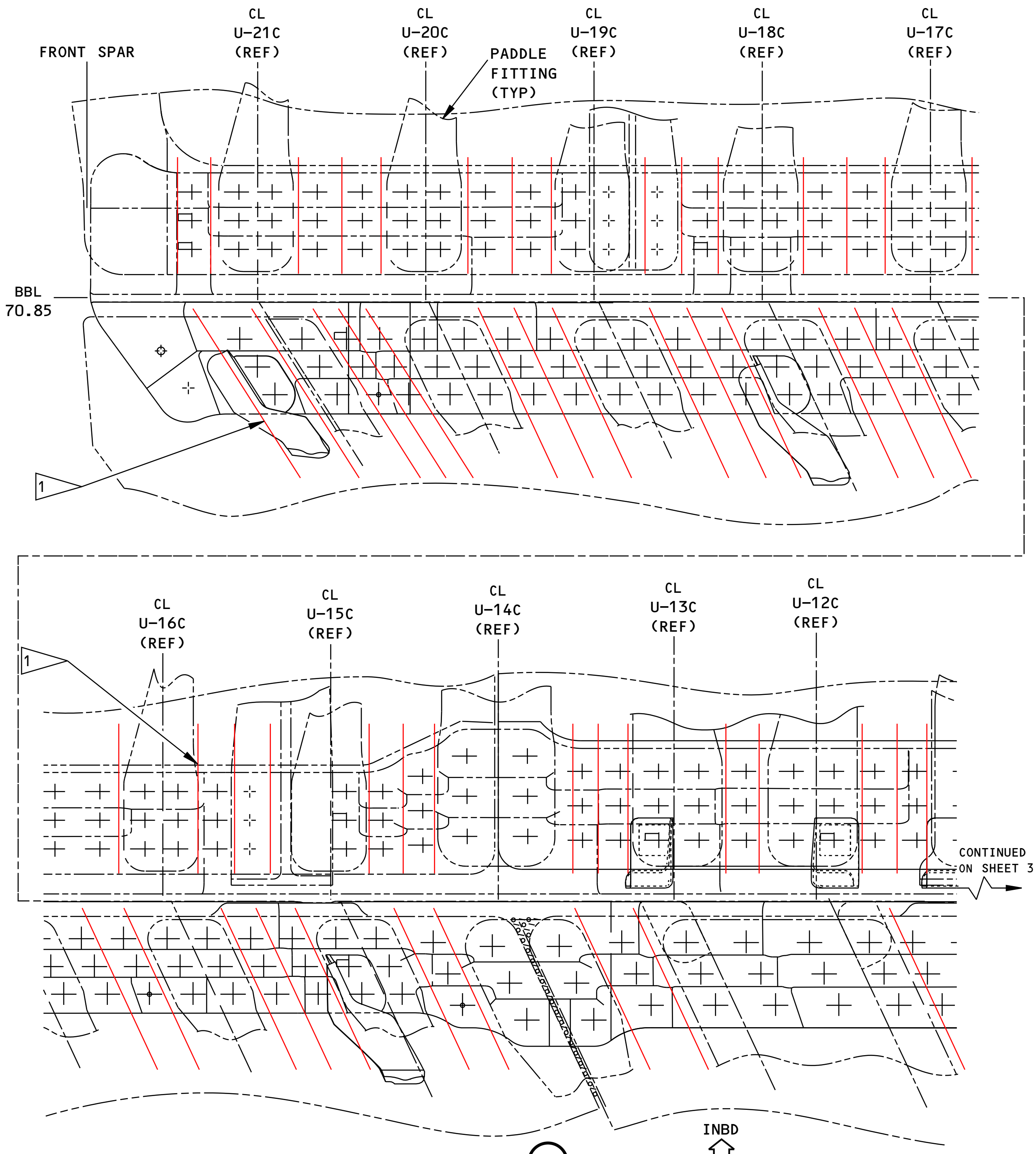
Inspection Area
Figure 1 (Sheet 1 of 3)



NOTE

1 TYPICAL INSPECTION AREAS. IF NECESSARY REMOVE THE SEALANT AT THE LOCATIONS SHOWN BY THE RED LINES

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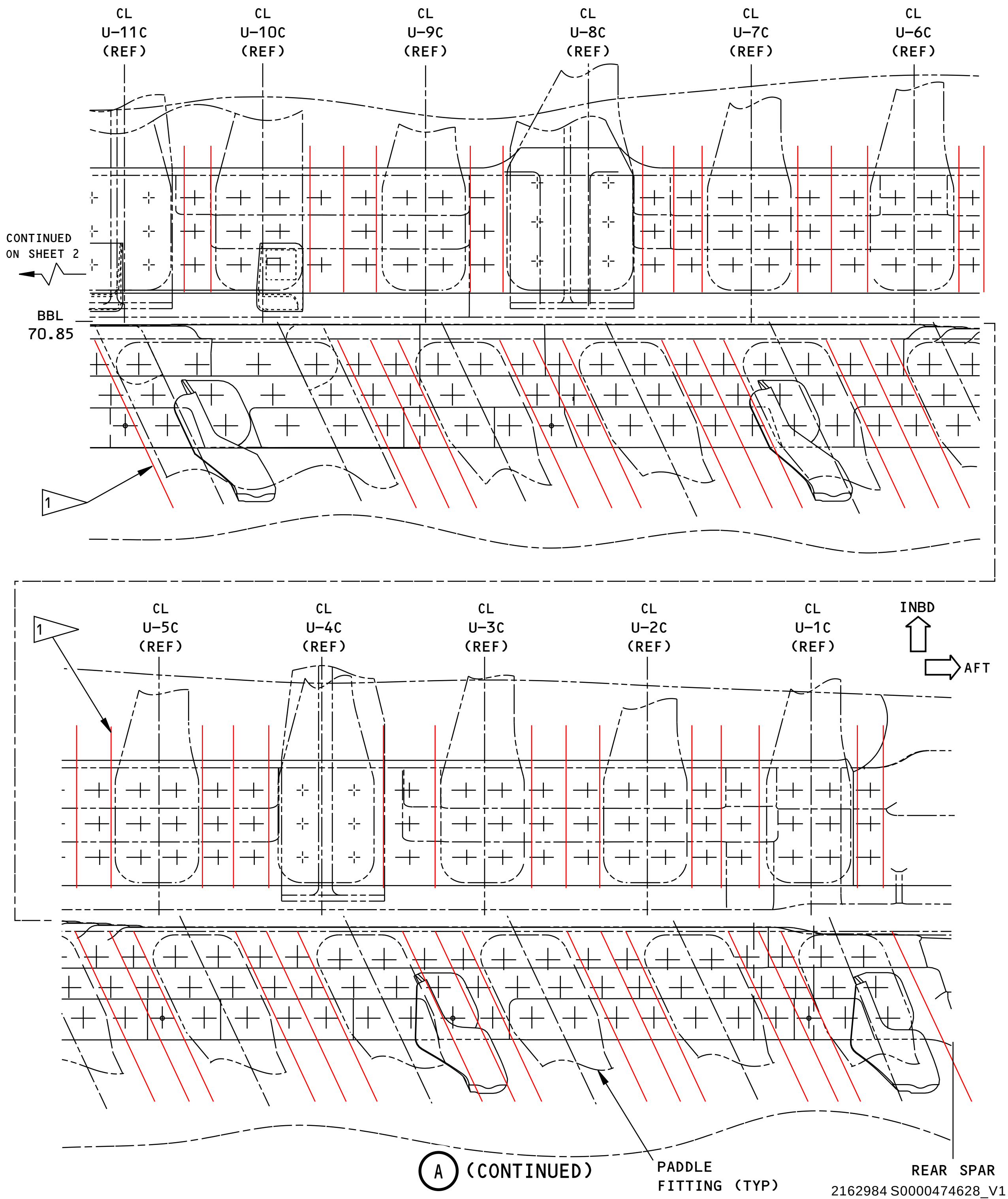
Inspection Area
Figure 1 (Sheet 2 of 3)



Inspection Area
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

LOWER T-CHORD AT THE BL 70.85 SIDE OF BODY SPLICE (HFEC)

1. **Purpose**
   A. Use this high frequency eddy current (HFEC) procedure to examine the lower T-chord for cracks at all cap sealed fasteners that are between the paddle fittings that are attached to the T-chord, from the front spar to the rear spar at BL 70.85. See Figure 1 for the inspection areas.
   B. This procedure uses an impedance plane display instrument.
   C. The T-chord is aluminum.
   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
      (1) Item: 57-10-11-1
2. **Equipment**
   A. General
      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.
         (a) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   B. Instrument
      (1) Use an eddy current instrument that:
         (a) Has an impedance plane display.
         (b) Operates between 50 and 500 kHz.
      (2) The instruments that follow were used to help prepare this procedure.
         (a) Phasec 2D/3D; GE Inspection Technologies
         (b) Nortec 500/2000D; Staveley/Olympus
   C. Probes
      (1) Use a probe that:
         (a) Operates between 50 and 500 kHz.
         (b) Has a maximum diameter of 0.13 inch (3.3 mm).
      (2) The probes that follow were used to help prepare this procedure.
         NOTE: Shielded probes are recommended.
         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus
         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus
   D. Reference Standards
      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.
3. **Prepare for the Inspection**
   A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Clean the inspection surfaces.

D. Remove paint only if it is loose.

E. It is necessary to remove sealant if it extends more than 0.20 inch (5 mm) from the fastener heads or collars.

4. Instrument Calibration

A. Calibrate the instrument to examine the lower T-chord as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

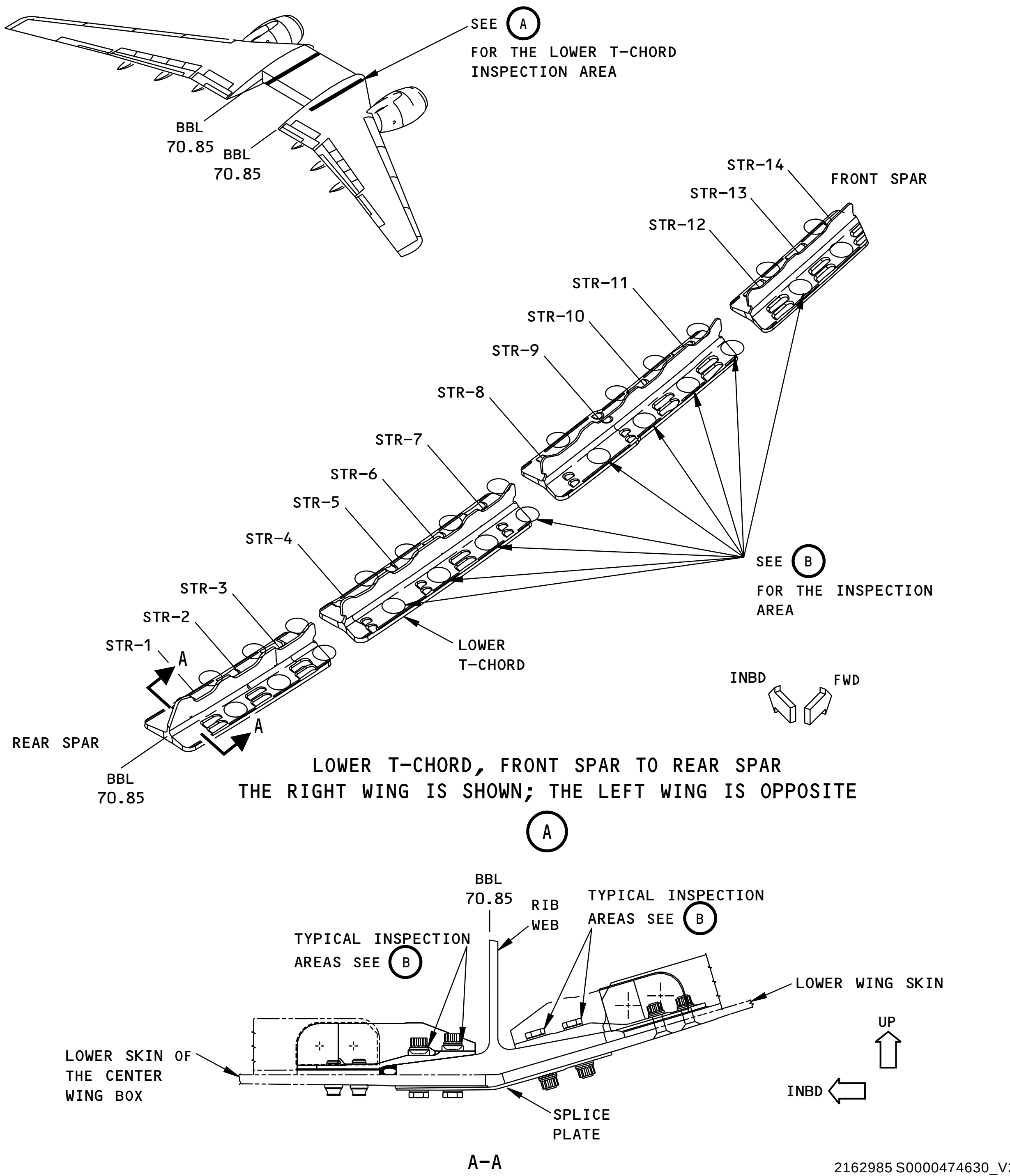
A. Examine the lower T-chord for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Make a probe scan between and around the cap sealed fasteners that are attached to the lower T-chord at BL 70.85 and are between the paddle fittings at stringers 1 thru 14.

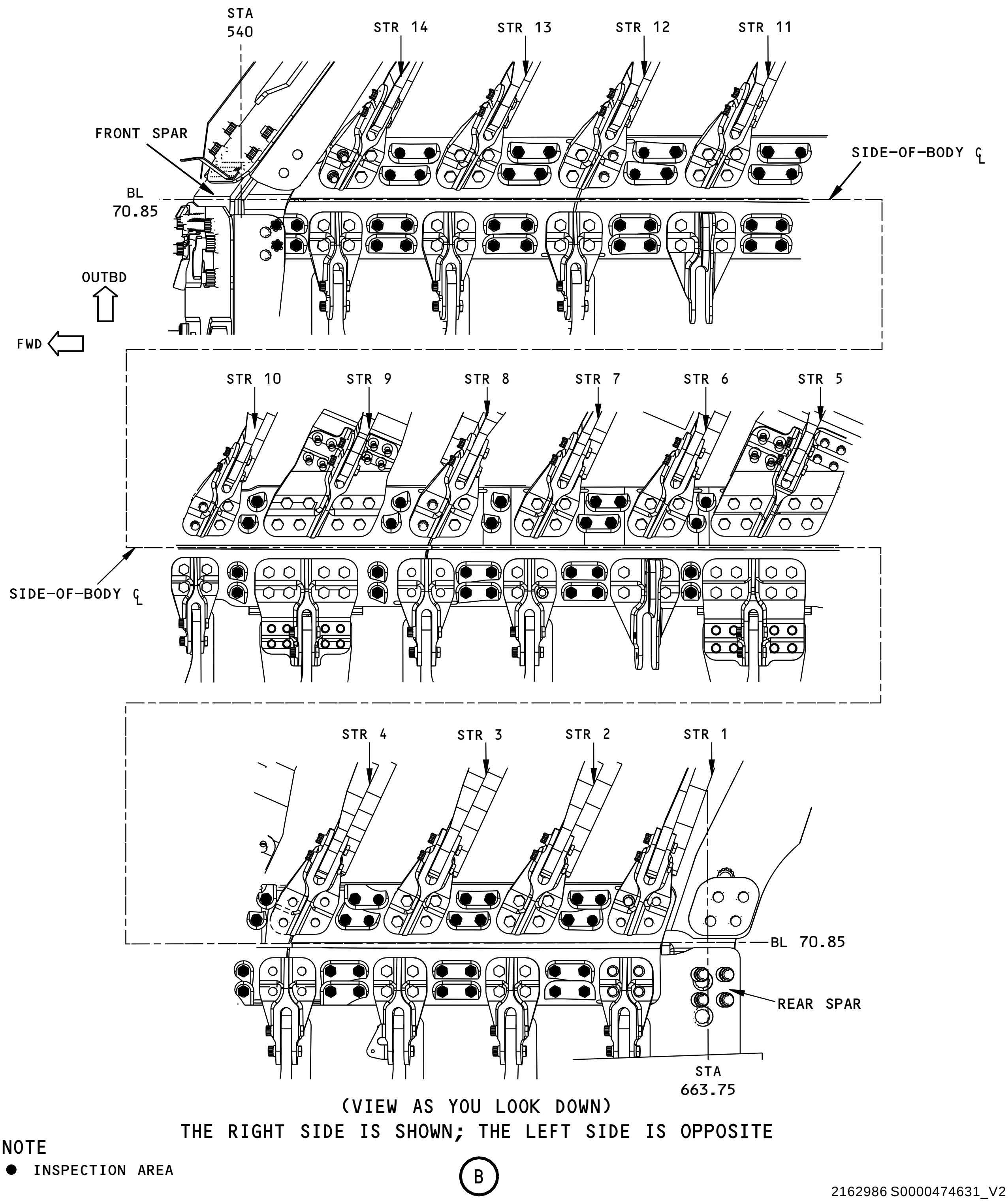
(a) Use the fastener heads as a probe guide while you make a scan around the cap sealed fasteners that are attached to the T-chord.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Area
Figure 1 (Sheet 1 of 2)



Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

WING CENTER SECTION - REAR SPAR - LOWER CHORD (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the lower chord of the rear spar at the wing center section for cracks from RBL 67.0 to LBL 67.0. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, for inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick.

   D. Use the HFEC procedure specified in Part 6, 51-00-27, for inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick on the inspection area.

   E. The lower chord is aluminum.

   F. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-09

2. **Equipment**

   A. General

      (1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-27, paragraph 4.

      (3) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a maximum diameter of 0.35 inch (8.9 mm).

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

(a) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

1) Use the probes specified in Part 6, 51-00-00, Procedure 23, paragraph 3.C.

(b) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

1) Use the probes specified in Part 6, 51-00-27, paragraph 2.C.

D. Reference Standards

(1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(a) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

(2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(a) Use a reference standard, or an equivalent, as shown in Part 6, 51-00-27, paragraph 2.D, to help calibrate the instrument.

3. Prepare for the Inspection

A. It is necessary to get access to the center wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Remove sealant that is more than 0.10 inch (2.5 mm) thick in the radius of the lower chord.

(1) Refer to AMM task 51-31-00-100-802 for sealant removal instructions.

D. Remove cap or brush sealant that extends more than 0.20 inch (5 mm) from the fastener heads or collars.

(1) Refer to AMM task 51-31-00-100-802 for sealant removal instructions.

E. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

4. Instrument Calibration

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(a) Use reference standard 126, or an equivalent, to help calibrate the instrument.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-27, paragraph 4.

(a) Use the reference standard shown in Part 6, 51-00-27, paragraph 2.D, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the lower chord for cracks at the forward side of the rear spar as follows:

(1) Examine the lower chord at all fasteners that go through the horizontal skin flange from RBL 67.0 to LBL 67.0 (see Figure 1).

(a) Use the fastener or the edge of the remaining sealant as a probe guide while you make a scan of the horizontal skin flange.

1) Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27, paragraph 5, to examine the horizontal skin flange.

(2) Examine the lower chord radius from RBL 67.0 to LBL 67.0.

(a) Use the lower chord radius as a probe guide while you make a scan along the lower chord radius of the rear spar.

1) Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27, paragraph 5, to examine the lower chord radius.

(3) Examine the vertical web flange from RBL 67.0 to LBL 67.0.

(a) Use the edge of the sealant as a probe guide while you make a scan of the vertical web flange.

1) Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27, paragraph 5, to examine the vertical web flange.

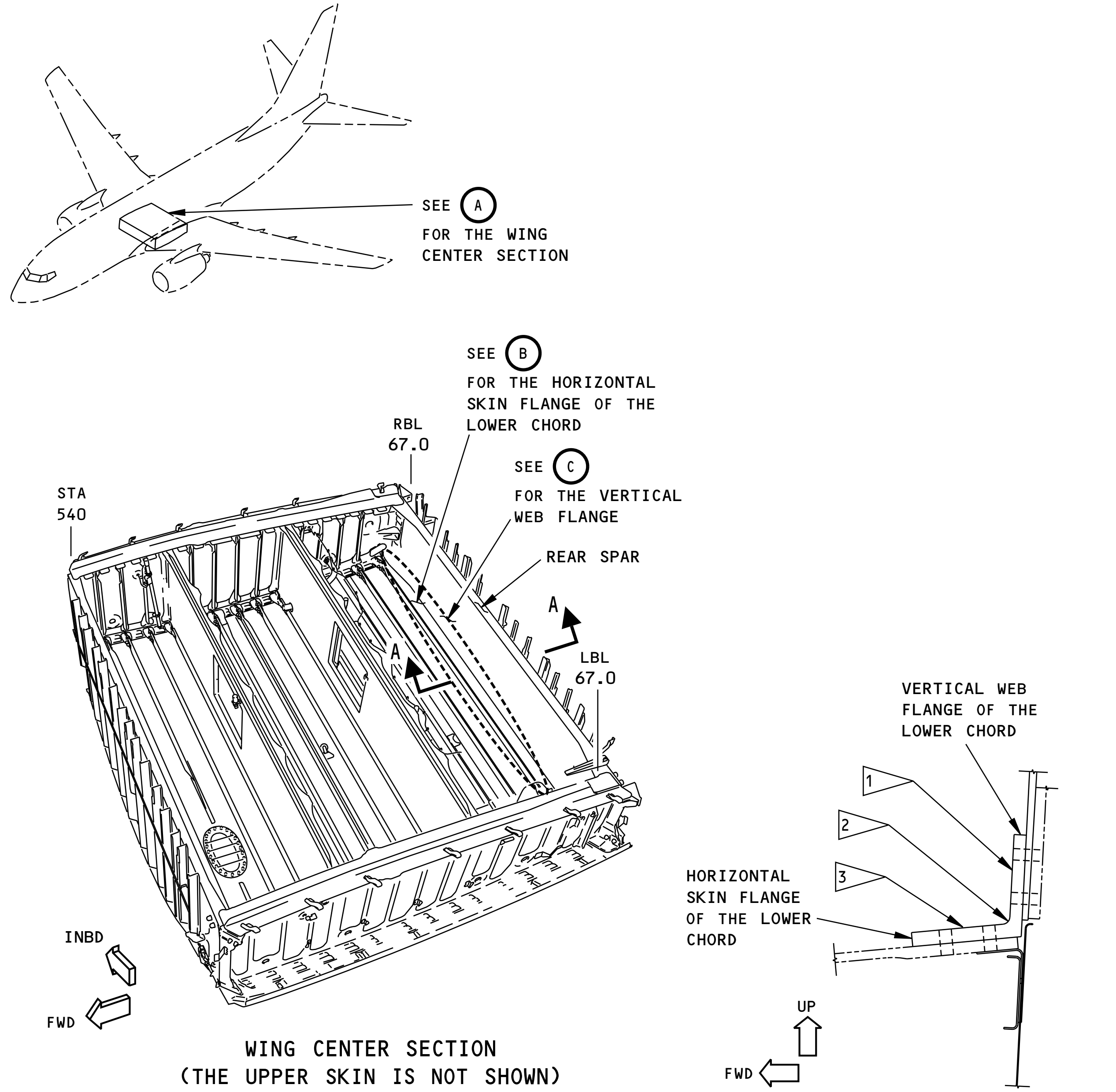
6. **Inspection Results**

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(1) Refer to Part 6, 51-00-27, paragraph 6, for instructions to help make an analysis of the indications that occur during the inspection.



WING CENTER SECTION
(THE UPPER SKIN IS NOT SHOWN)

A

LOWER CHORD OF THE
REAR SPAR
A-A

NOTES:

1 MAKE AN INSPECTION BETWEEN THE FASTENERS OF THE WEB FLANGE FROM RBL 67.0 TO LBL 67.0

2 MAKE AN INSPECTION ALONG THE RADIUS OF THE LOWER CHORD FROM LBL 67.0 TO RBL 67.0

3 MAKE AN INSPECTION BETWEEN THE FASTENERS OF THE SKIN FLANGE FROM RBL 67.0 TO LBL 67.0

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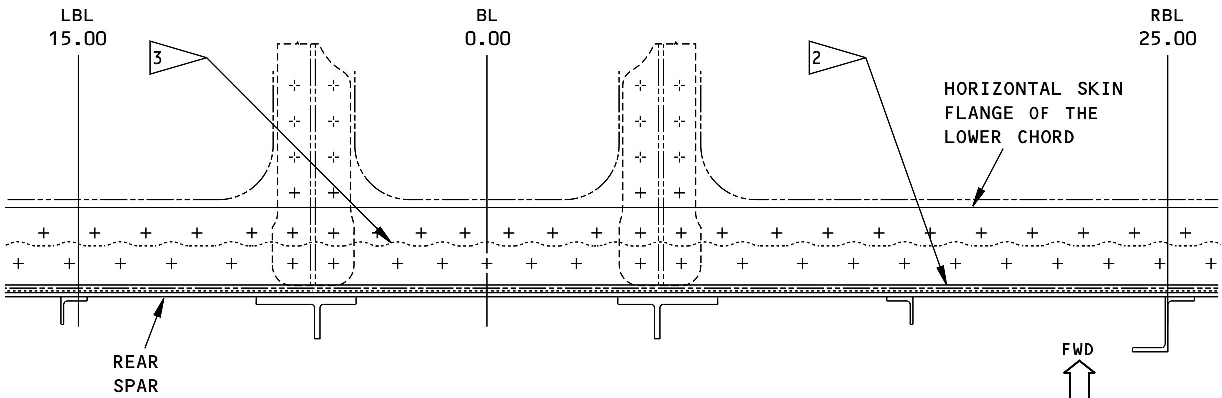
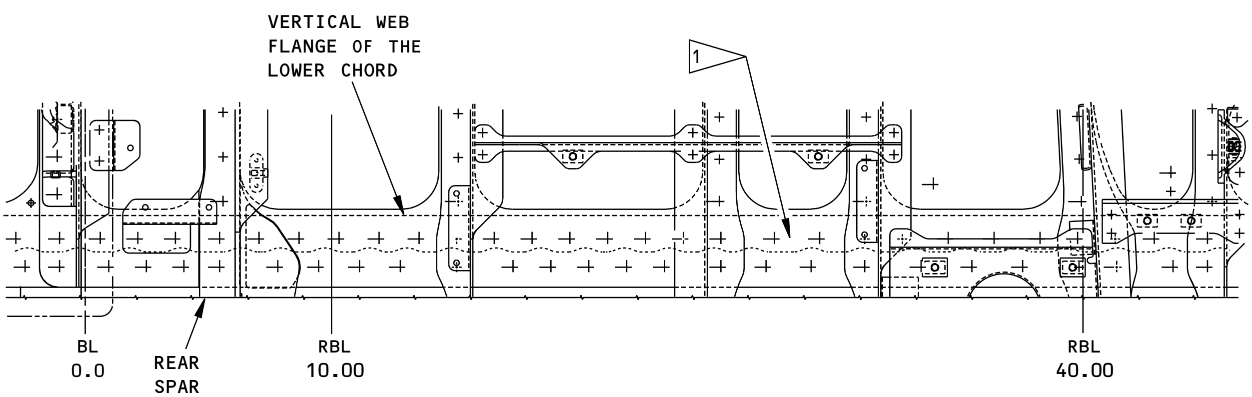
Inspection Area
Figure 1 (Sheet 1 of 2)



TYPICAL REAR SPAR INSPECTION AREA OF
THE HORIZONTAL SKIN FLANGE OF
THE LOWER CHORD

B



TYPICAL REAR SPAR INSPECTION AREA OF THE
VERTICAL WEB FLANGE OF THE LOWER CHORD

C

2162990 S0000474635_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

WING REAR SPAR - LOWER CHORD - RIBS 1 THRU 22 (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the lower chord in the rear spar of the wing for cracks at all fasteners in the skin and web flanges, from rib 1 to rib 22. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower chord is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-05-1

      (2) Item: 57-20-05-2

      (3) Item: 57-20-05-4

      (4) Item: 57-20-05-6

      (5) Item: 57-20-05-7

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. It is necessary to get access to the outer wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

   NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

   B. Identify and get access to all of the inspection areas shown in Figure 1.

   C. Remove cap or brush sealant that extends more than 0.20 inch (5 mm) from the fastener heads or collars.

      (1) Refer to PSD6-227 of BAC5000 for sealant removal instructions, or

      (2) Refer to AMM task 51-31-00-100-802 for sealant removal instructions.

   D. Clean the inspection surfaces.

      (1) Remove paint only if it is loose.

4. **Instrument Calibration**

   A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

   A. Examine the lower chord of the rear spar for cracks at all fasteners that go through the lower chord from rib 1 to rib 22 as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

      (1) Examine the lower chord at all fasteners that go through the skin flange from rib 1 (WBL 71.24) to rib 22 (WS 643.00).

         (a) Use the cap or brush sealant edge as a probe guide while you make a scan around the fastener heads.

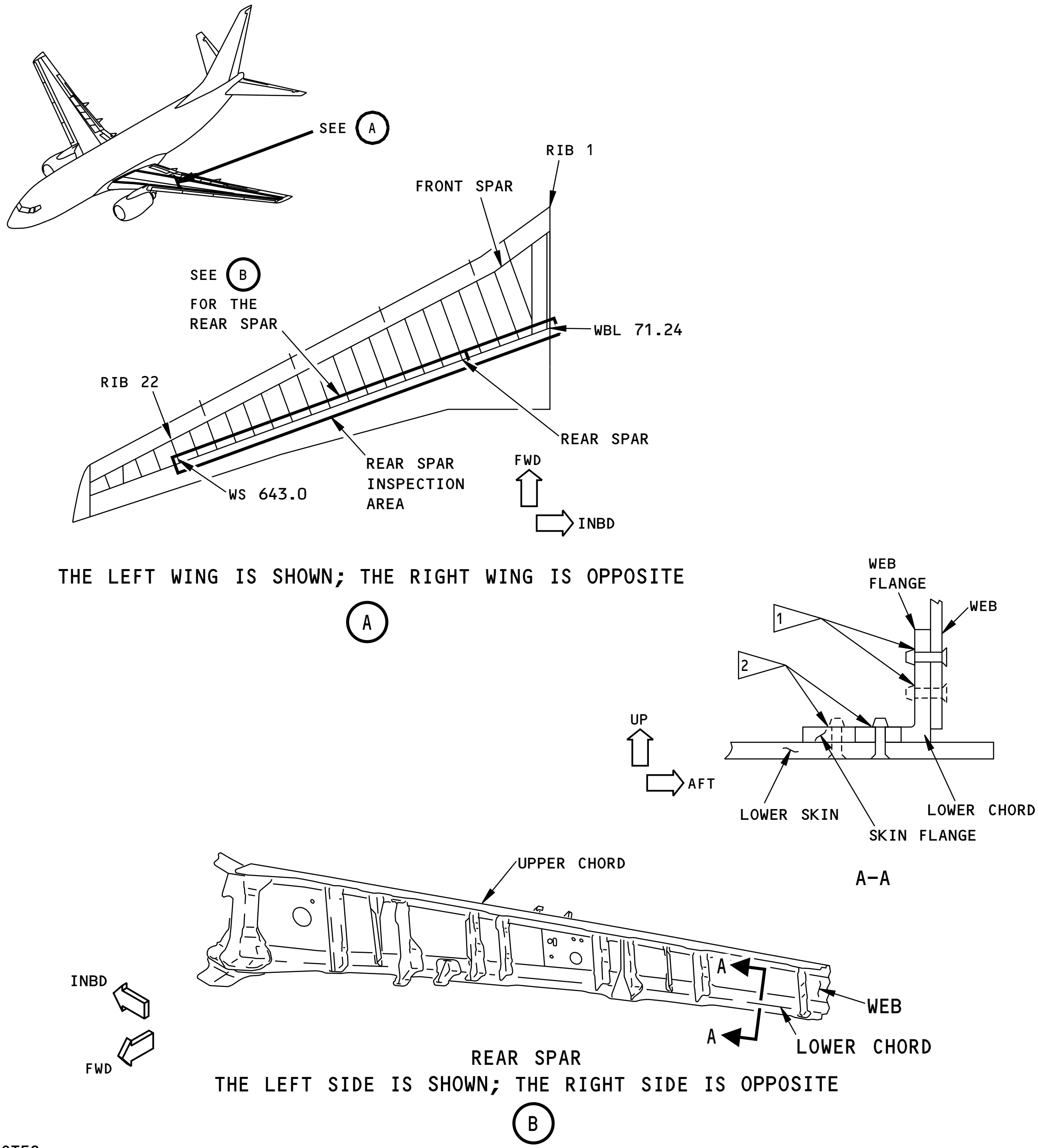
      (2) Examine the lower chord around all fasteners that go through the web flange from rib 1 (WBL 71.24) to rib 22 (WS 643.00).

         (a) Use the cap or brush sealant edge as a probe guide while you make a scan around the fasteners.

   B. Examine the lower chord for cracks at the rear spar on other side of the airplane.

6. **Inspection Results**

   A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

- THE INSPECTION IS FOR ALL AREAS OF THE LOWER CHORD THAT CAN BE SEEN

1 EXAMINE AROUND ALL FASTENERS THAT GO THROUGH THE LOWER CHORD WEB FLANGE

2 EXAMINE AROUND ALL FASTENERS THAT GO THROUGH THE LOWER CHORD SKIN FLANGE

2163005 S0000474637_V1

Inspection Area
Figure 1

PART 6 - EDDY CURRENT

WING CENTER SECTION - SPLICE STRINGERS 5 AND 9 AT THE LOWER SKIN PANEL (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine splice stringers 5 and 9 from RBL 67.0 to LBL 67.0 for cracks. The splice stringers are examined for cracks at the skin flange and the radius. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The splice stringers are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-08

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

   C. The instruments that follow were used to help prepare this procedure.

      (1) Phasec 2D/3D; GE Inspection Technologies

      (2) Nortec 500/2000D; Staveley/Olympus

   D. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probe that follows was used to help prepare this procedure.

      NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; Olympus

   E. Reference Standards

      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the center wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Clean the inspection surfaces

D. Remove sealant that extends more than 0.25 inch (6.35 mm) from the fastener heads or collars.

E. Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Examine splice stringers 5 and 9 from RBL 67.0 to LBL 67.0 for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine the splice stringers around all fasteners that go through the skin flange of splice stringers 5 and 9 from LBL 67.0 to RBL 67.0.

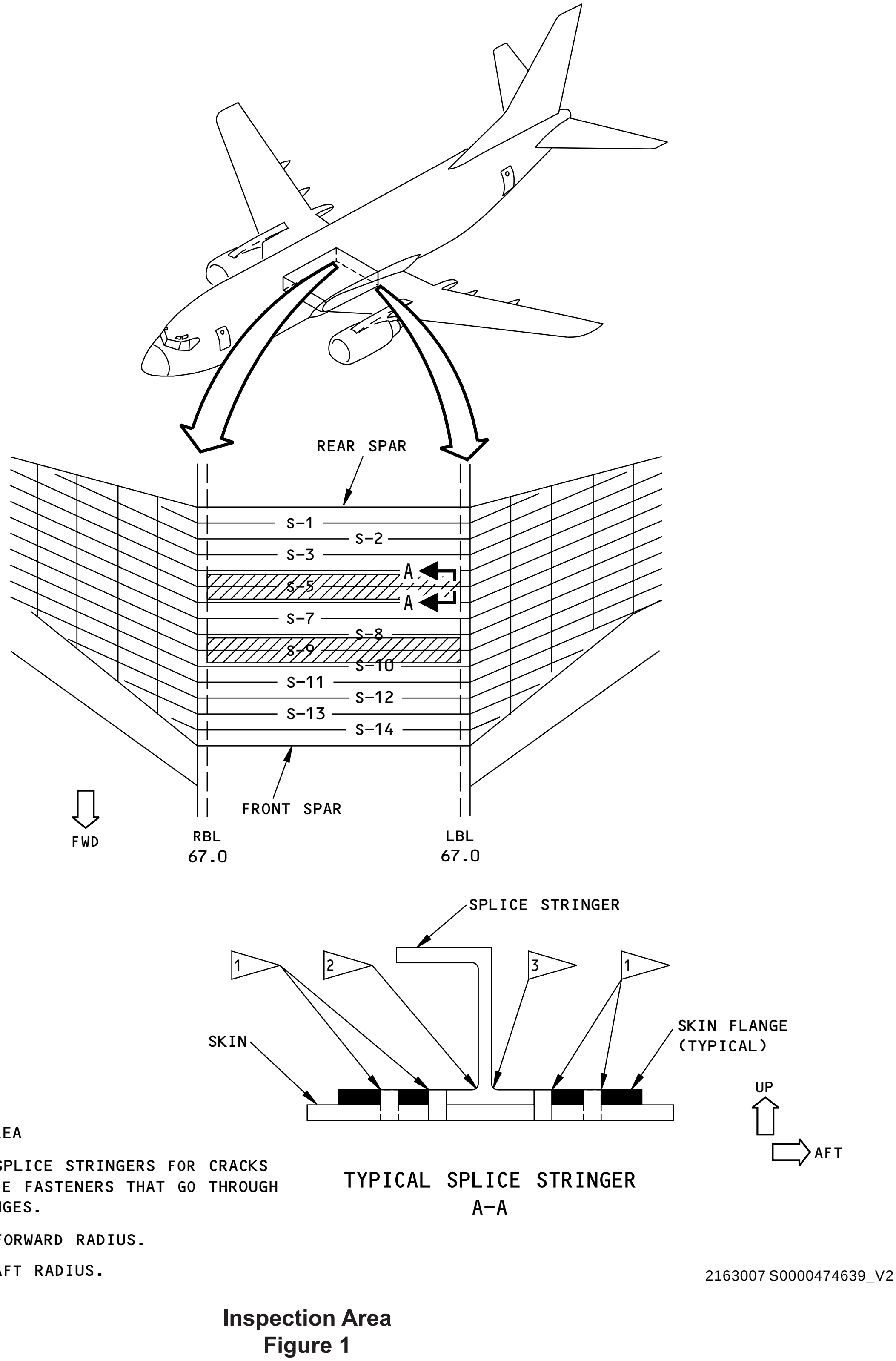
(a) Use the fastener or the remaining sealant edge as a probe guide to make the scans around the fasteners.

(2) Examine the radius on the forward and aft sides of splice stringers 5 and 9 from LBL 67.0 to RBL 67.0.

(a) Use the radius as a probe guide during the scans.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

INSPECTION AREA

1 EXAMINE THE SPLICE STRINGERS FOR CRACKS AROUND ALL THE FASTENERS THAT GO THROUGH THE SKIN FLANGES.

2 EXAMINE THE FORWARD RADIUS.

3 EXAMINE THE AFT RADIUS.

2163007 S0000474639_V2

Inspection Area
Figure 1

PART 6 - EDDY CURRENT

SIDE OF BODY SPLICE - LOWER SKIN AT BBL 70.85 (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the lower skin of the side of body splice at BBL 70.85 for cracks. The inspection areas are from the front spar to the rear spar. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower skin is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-11-2

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

      NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas shown in Figure 1.

   B. It is necessary to remove the wing to body fairing to get access to the inspection area.

   C. Remove cap or brush sealant that extends more than 0.2 inches (5 mm) from around the fastener heads or collars.

D. Clean the inspection surfaces.

E. Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument to examine the lower skin of the side of body splice at BBL 70.85 for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

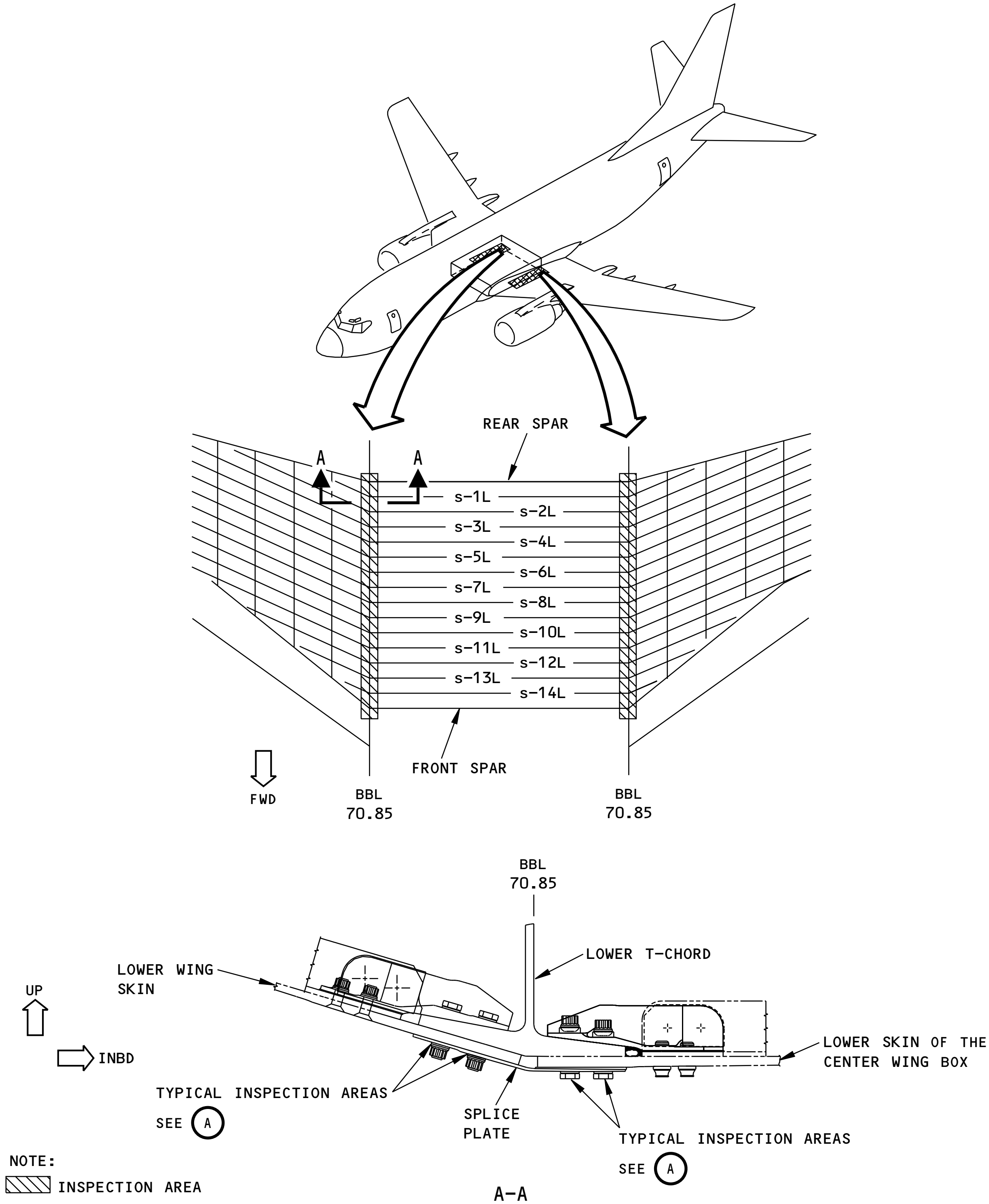
5. Inspection Procedure

A. Examine the lower skin of the side of body splice at BBL 70.85 for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine the lower skin at all fasteners that go through the side of body splice plate shown in Figure 1. Use the fastener or sealant edge as a probe guide while you make a scan of the lower skin.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



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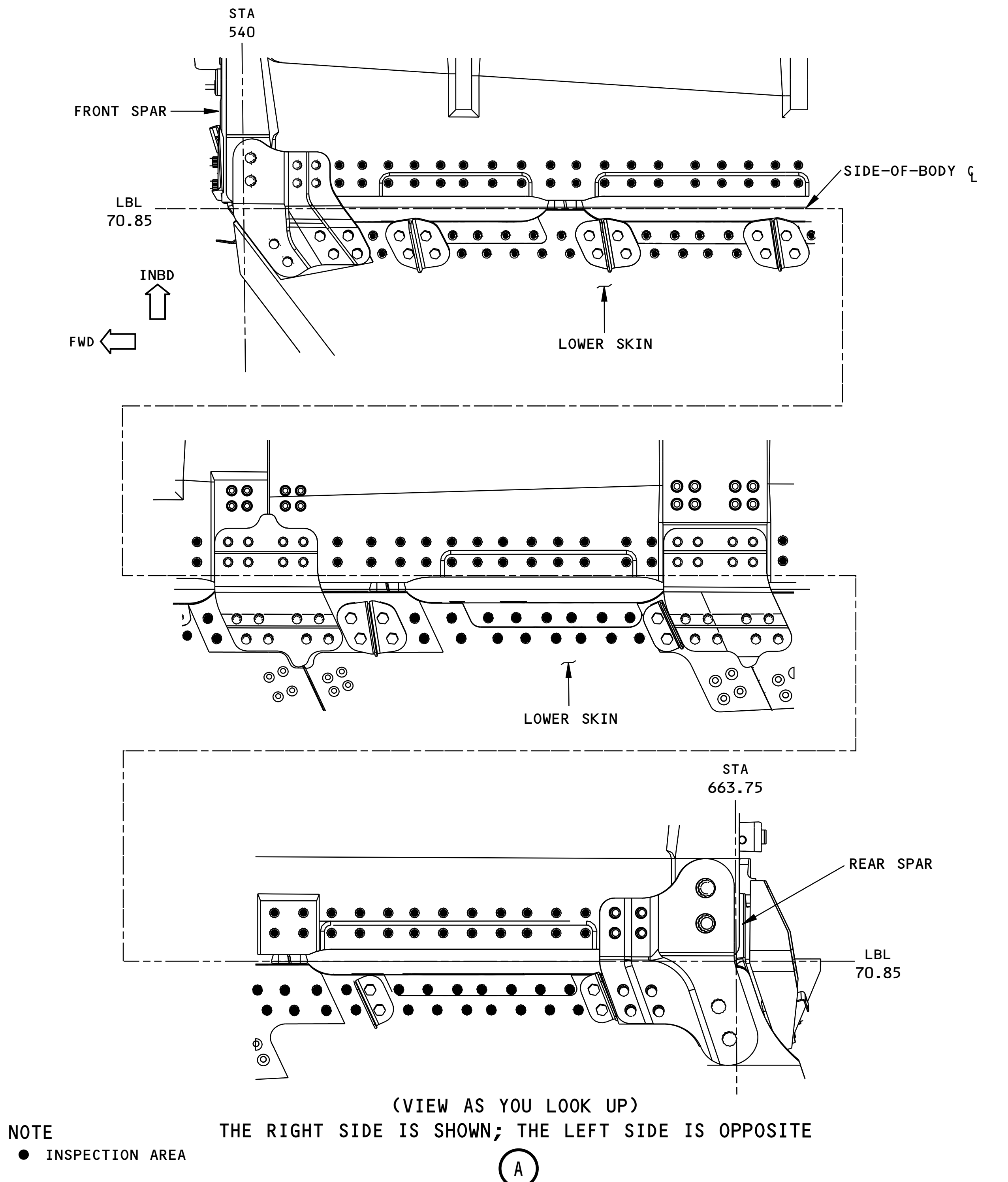
Inspection Area
Figure 1 (Sheet 1 of 2)



Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

RIB 25 UPPER AND LOWER SKIN FLANGES (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine rib 25 (WBL 616.75) for cracks at the fasteners in the upper and lower skin flanges. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. Rib 25 is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-29

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

   C. The instruments that follow were used to help prepare this procedure.

      (1) Phasec 2D/3D; GE Inspection Technologies

      (2) Nortec 500/2000D; Staveley/Olympus

   D. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

      NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   E. Reference Standards

      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas shown in Figure 1.

   B. Clean the inspection surfaces.

      (1) Remove all cap or brush sealant from the fastener heads or collars.

      (2) Remove dirt or grease from the inspection surfaces.

      (3) Remove paint only if it is loose.

4. **Instrument Calibration**

   A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

   A. Examine the upper and lower flanges of rib 25 (WBL 616.75) for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

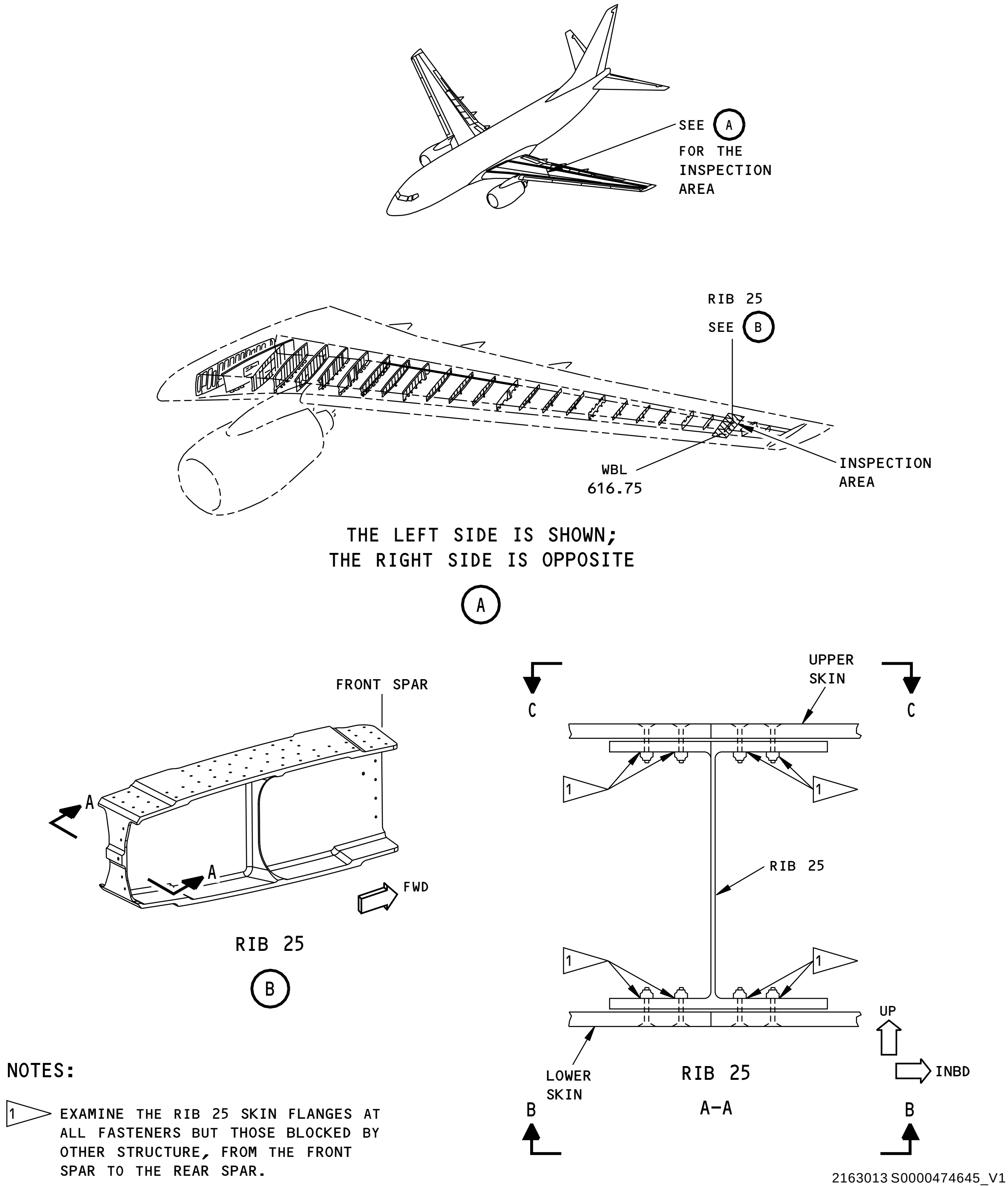
      (1) Make a probe scan around all the fasteners in the upper and lower skin flanges on the inboard and outboard sides of rib 25, from the front spar to the rear spar (see Figure 1).

         (a) Use the fastener heads or the remaining sealant edge as a probe guide while you make a probe scan of the rib 25 skin flanges.

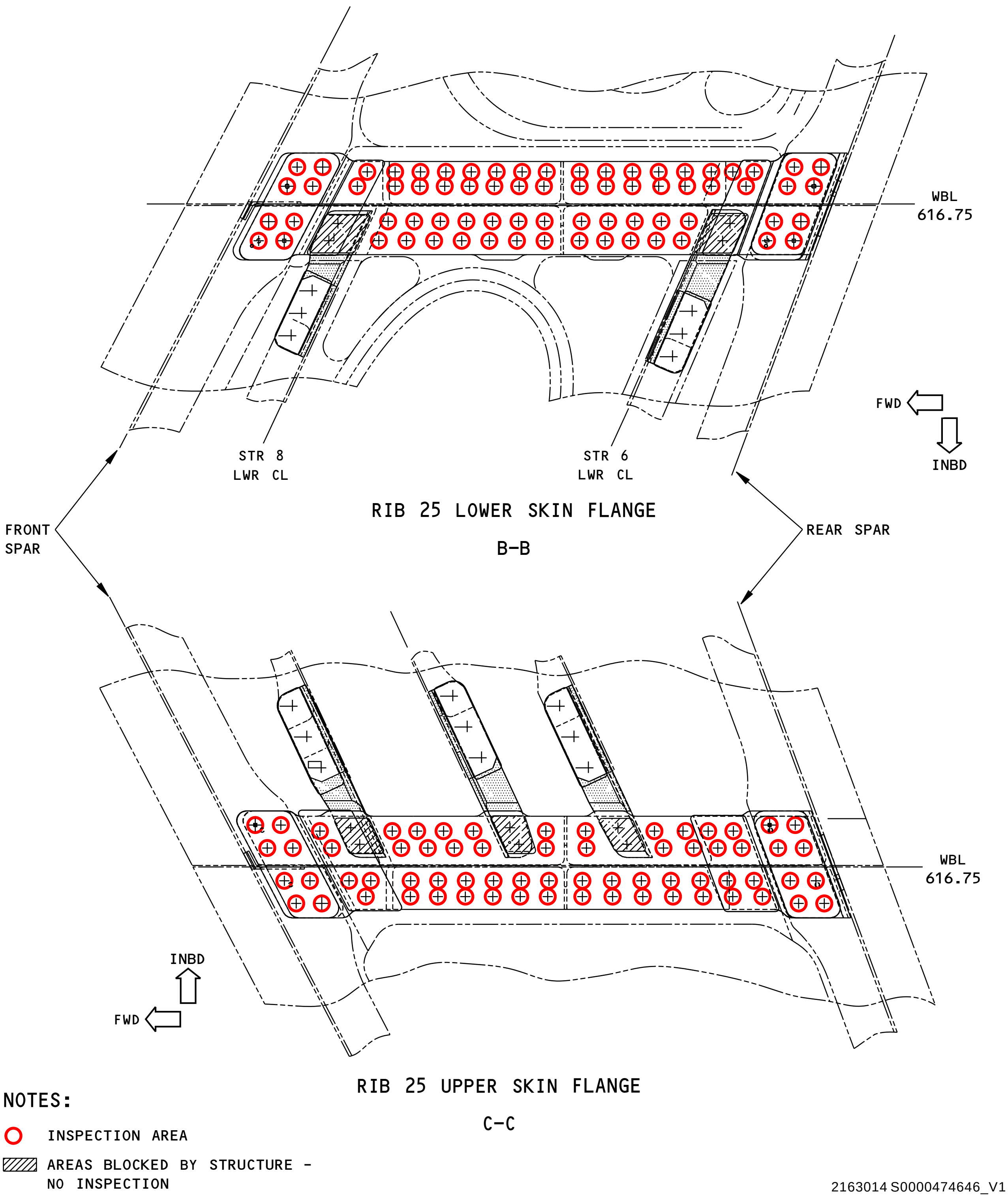
   B. Do Paragraph 5.A. again to examine the upper and lower flanges of rib 25 (WBL 616.75) for cracks on the opposite side of the airplane.

6. **Inspection Results**

   A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Area
Figure 1 (Sheet 1 of 2)



Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

WING CENTER SECTION - LOWER SKIN (HFEC)

1. **Purpose**

A. Use this high frequency eddy current (HFEC) procedure to examine the lower skin of the wing center section for cracks. The lower skin is examined at the fasteners that go through the lower skin and the fuselage drag angles at LBL 50.0 and RBL 50.0. See Figure 1 for the inspection areas.

B. This procedure uses an impedance plane display instrument.

C. The lower skin is aluminum.

D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 57-10-07/-08

2. **Equipment**

A. General

(1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

B. Instrument

(1) Use an eddy current instrument that:

(a) Has an impedance plane display.

(b) Operates from 50 to 500 kHz.

C. The instruments that follow were used to help prepare this procedure.

(1) Phasec 2D/3D; GE Inspection Technologies

(2) Nortec 500/2000D; Olympus

D. Probes

(1) Use a probe that operates from 50 to 500 kHz.

(2) The probes that follow were used to help prepare this procedure.

NOTE: Shielded probes are recommended.

(a) MTF905-60FX 50-500 kHz; Olympus

(b) MTF-40/50-500 kHz; NDT Engineering/Olympus

E. Reference Standards

(1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

A. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Clean the inspection surfaces.

(1) Remove the sealant from around the fasteners.

(2) Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the lower skin of the wing center section as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the lower skin of the wing center section for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

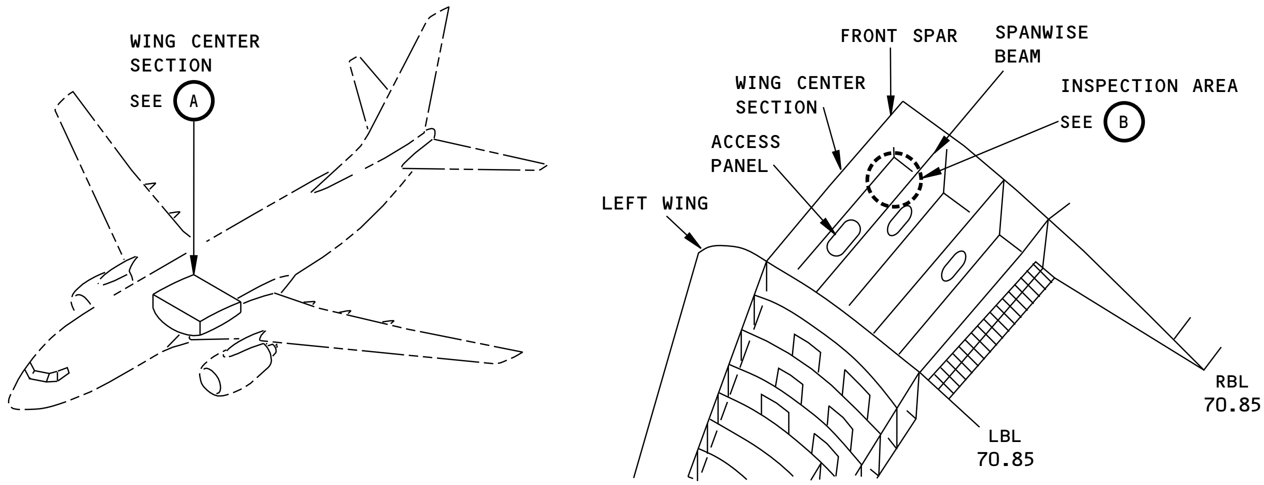
(1) Make a probe scan around the five fasteners that go through the lower skin and the fuselage drag angle that is aft of the front spar and forward of stringer 14 (see Figure 1, View B).

(a) Use the fasteners as a probe guide while you make a scan of the skin.

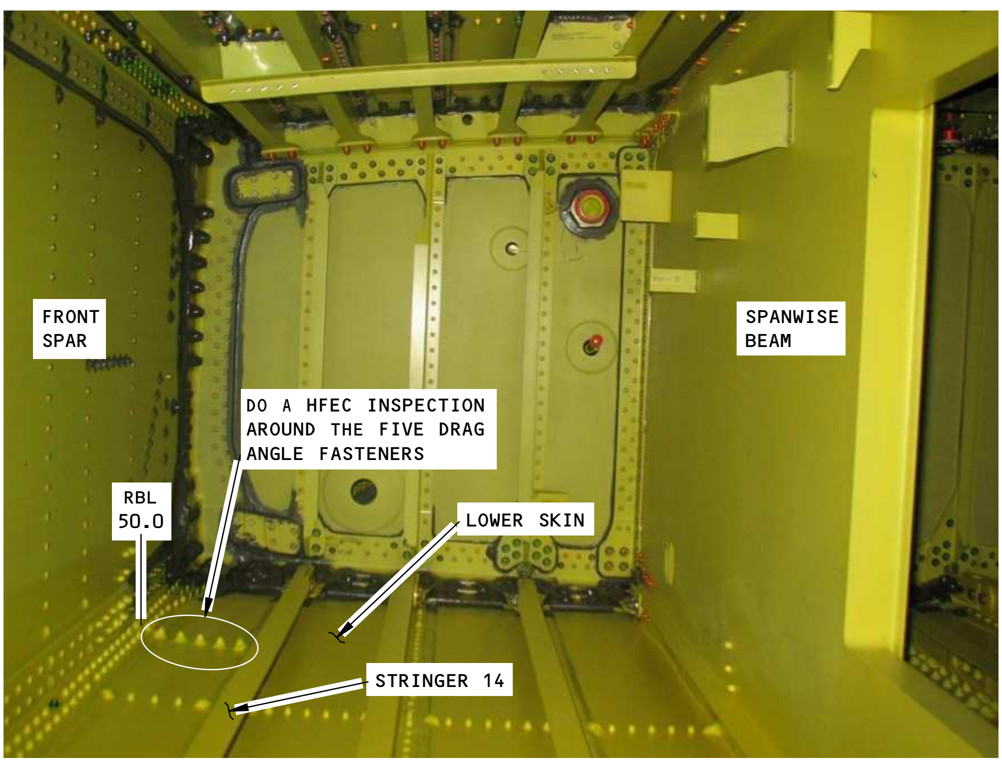
(2) Examine the lower skin for cracks at the drag angle fasteners on the other side of the wing center section.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



WING CENTER SECTION
A



FWD

WING CENTER SECTION INSPECTION AREA
THE RIGHT SIDE IS SHOWN; THE LEFT SIDE IS ALMOST THE SAME
B

2175798 S0000477673_V1

Inspection Area
Figure 1

PART 6 - EDDY CURRENT

UPPER CHORD OF THE REAR SPAR (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the upper chord of the rear spar for cracks. The upper chord is examined from the side-of-body (WBL 71.24) to rib 13 (WS 405.5). The skin and web flanges of the upper chord are examined at all fastener locations but those blocked by rib posts, stiffeners, or brackets. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The upper chord is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-17-3

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Remove cap or brush sealant that extends more than 0.20 inch (5 mm) from the fastener heads or collars.

(1) Refer to PSD6-227 of BAC5000 for sealant removal instructions or,

(2) Refer to AMM task 51-31-00-100-802 for sealant removal instructions.

D. Clean the inspection surfaces.

E. Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument to examine the upper chord of the rear spar for cracks at all fasteners in the upper skin and web flanges from rib 1 (WBL 71.24) to rib 13 (WS 405.5) as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Examine the upper chord of the rear spar for cracks at all fasteners in the upper skin and web flanges from rib 1 (WBL 71.24) to rib 13 (WS 405.5) as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Inspection is not necessary where the upper chord is blocked by rib posts, stiffeners, or brackets. Examine the areas that follow:

(1) Examine the upper chord at all fasteners in the skin flange from rib 1 (WBL 71.24) to rib 13 (WS 405.5).

(a) Use the cap or brush sealant edge as a probe guide while you make a scan around the fasteners of the skin flange.

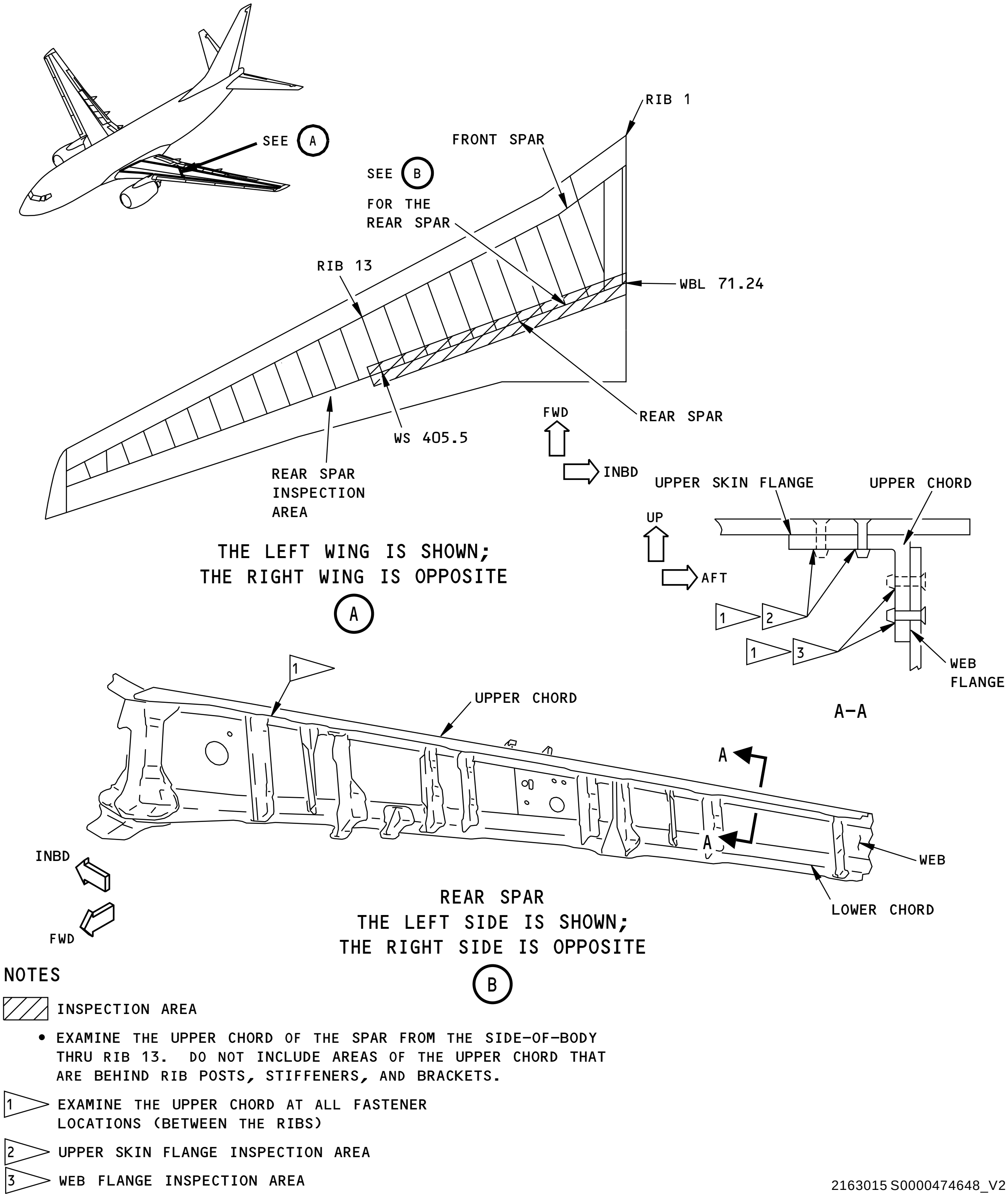
(2) Examine the upper chord at all fasteners in the web flange from rib 1 (WBL 71.24) to rib 13 (WS 405.5).

(a) Use the cap or brush sealant edge as a probe guide while you make a scan around the fasteners of the web flange.

B. Do Paragraph 5.A. again to examine the upper chord of the rear spar on the other side of the airplane.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Area
Figure 1

PART 6 - EDDY CURRENT

UPPER HORIZONTAL FLANGE OF THE DOUBLE PLUS CHORD (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the upper horizontal flange of the double plus chord for cracks at BBL 70.85 from BSTA 540 to 663. The double plus chord is examined for cracks at all the fasteners that go through the double plus chord but those fasteners blocked by stub beams. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The double plus chord is aluminum.

   D. Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, for inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick.

   E. Use the HFEC procedure specified in Part 6, 51-00-27, for inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick.

   F. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-05-4

      (2) Item: 57-10-05-5

2. **Equipment**

   A. General

      (1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-27, paragraph 4.

      (3) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a maximum diameter of 0.35 inch (8.9 mm).

(2) The probes that follow were used to help prepare this procedure.

NOTE: Shielded probes are recommended.

(a) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

1) Use a probe as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(b) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

1) Use a probe as specified in Part 6, 51-00-27, paragraph 4.

D. Reference Standards

(1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(a) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

(2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(a) Use a reference standard, or an equivalent, as specified in Part 6, 51-00-27, paragraph 2.D, to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

(1) It is necessary to remove the floor panels to get access to the inspection area.

(2) It is necessary to remove the wing-to-body fairing to examine the inspection area.

B. Clean the inspection surfaces.

C. Remove cap or brush sealant that is more than 0.090 inch (2.28 mm) thick in the inspection area between the fasteners.

(1) Refer to the instructions that follow to remove the sealant:

(a) BAC5000 Departure 6-227 (section 5.14, paragraph C), or

(b) AMM Task 51-31-00-100-802 (paragraph E ‘procedures’, step 1), or

(c) AMM Task 28-11-00-300-803 (paragraph E ‘procedures’, step 4).

D. Remove dirt or grease from the inspection surfaces.

E. Remove paint only if it is loose.

4. Instrument Calibration

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(a) Use reference standard 126, or an equivalent, to help calibrate the instrument.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-27, paragraph 4.

(a) Use the reference standard shown in Part 6, 51-00-27, paragraph 2.D, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the inboard side of the upper horizontal flange of the double plus chord for cracks at BBL 70.85 from BSTA 540 to 663 as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27. Examine the areas that follow:

(1) Make a probe scan between the fasteners from BSTA 540 to 663, but not at areas blocked by stub beams. See Figure 1 for the inspection areas.

(a) Use the fastener heads or the remaining sealant as a probe guide while you make a scan between the fasteners.

B. Do Paragraph 5.A. again to examine the inboard side of the upper horizontal flange of the double plus chord on the opposite side of the airplane.

C. Examine the outboard side of the upper horizontal flange of the double plus chord for cracks at BBL 70.85 from BSTA 540 to 663 as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27. Examine the areas that follow:

(1) Make a probe scan between the fasteners from BSTA 540 to 663 but not at areas blocked by stub beams. See Figure 1 for the inspection areas.

(a) Use the fastener heads or the removed sealant as a probe guide while you make a scan between the fasteners.

D. Do Paragraph 5.C. again to examine the outboard side of the upper horizontal flange of the double plus chord on the opposite side of the airplane.

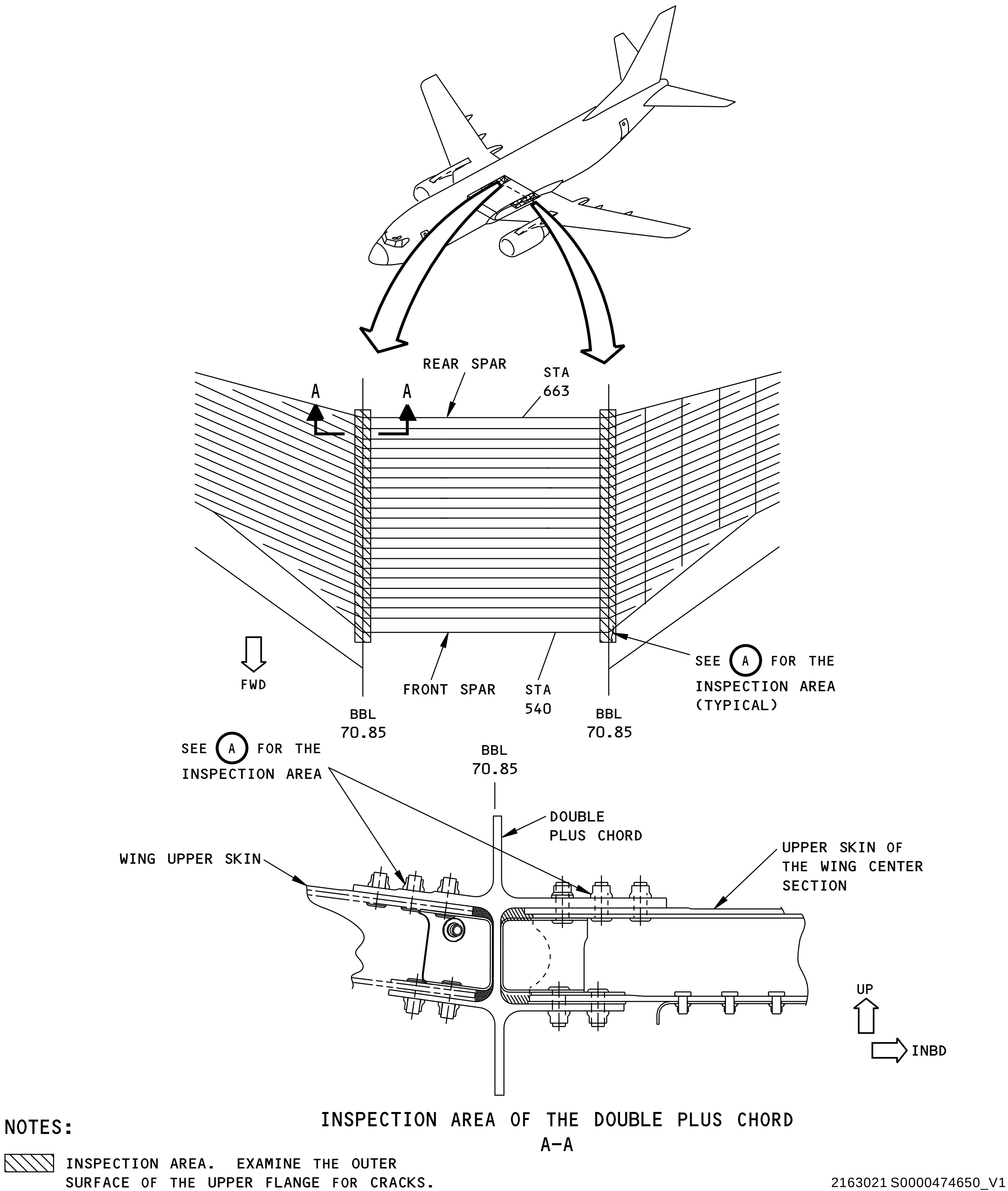
6. **Inspection Results**

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

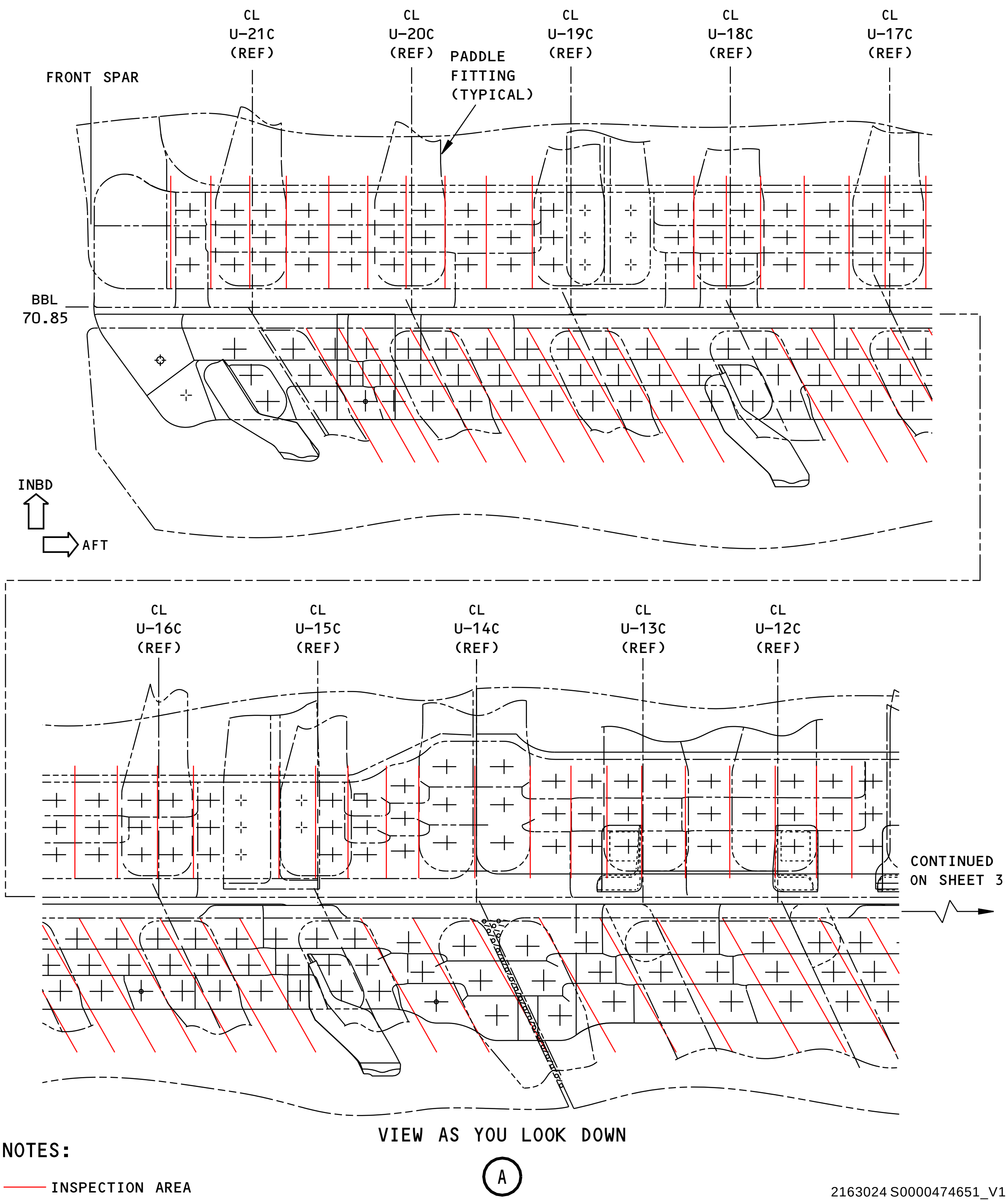
(1) Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inches (0.28 and 2.29 mm) thick:

(1) Refer to Part 6, 51-00-27, paragraph 6, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Area
Figure 1 (Sheet 1 of 3)



NOTES:

INSPECTION AREA

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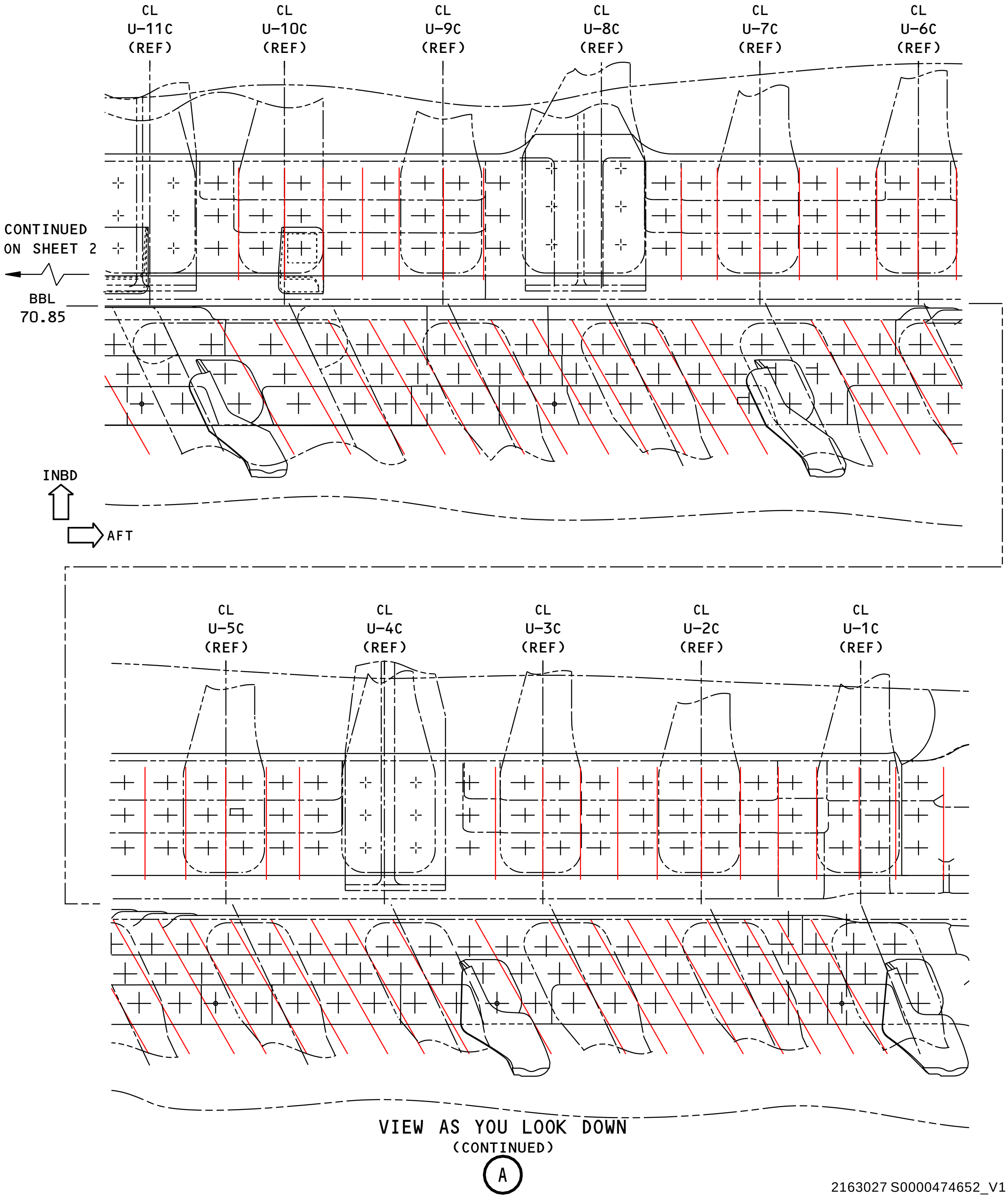
Inspection Area
Figure 1 (Sheet 2 of 3)



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Inspection Area
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

WING FRONT SPAR - LOWER CHORD WEB FLANGE (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the web flange of the lower chord for cracks at the front spar of the wing. The lower chord is examined for cracks at all of the fasteners that go through the web flange, from rib 1 to rib 22 (BBL 70.85 to WS 643.5), and along the radius from rib 1 to rib 19. Inspection is not necessary where the lower chord is blocked by rib posts, stiffeners, or brackets. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower chord is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-04-5

      (2) Item: 57-20-04-6

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus.

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus.

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

A. It is necessary to get access to the outer wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Remove sealant that extends more than 0.20 inches (5 mm) around the fastener heads or collars.

(1) Remove sealant as specified in PSD6-227 of BAC5000, or

(2) Remove sealant as specified in AMM task 51-00-100-802.

D. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the lower chord of the front spar as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the lower chord of the front spar for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Inspection is not necessary where the lower chord is blocked by rib posts, stiffeners, or brackets. Examine the areas that follow:

(1) Examine around the fasteners that go through the web flange on the lower chord from rib 1 to rib 22 (BBL 70.85 to WS 643.50).

(a) Use the sealant edge as probe guide to make a scan around the fasteners that go through the web flange.

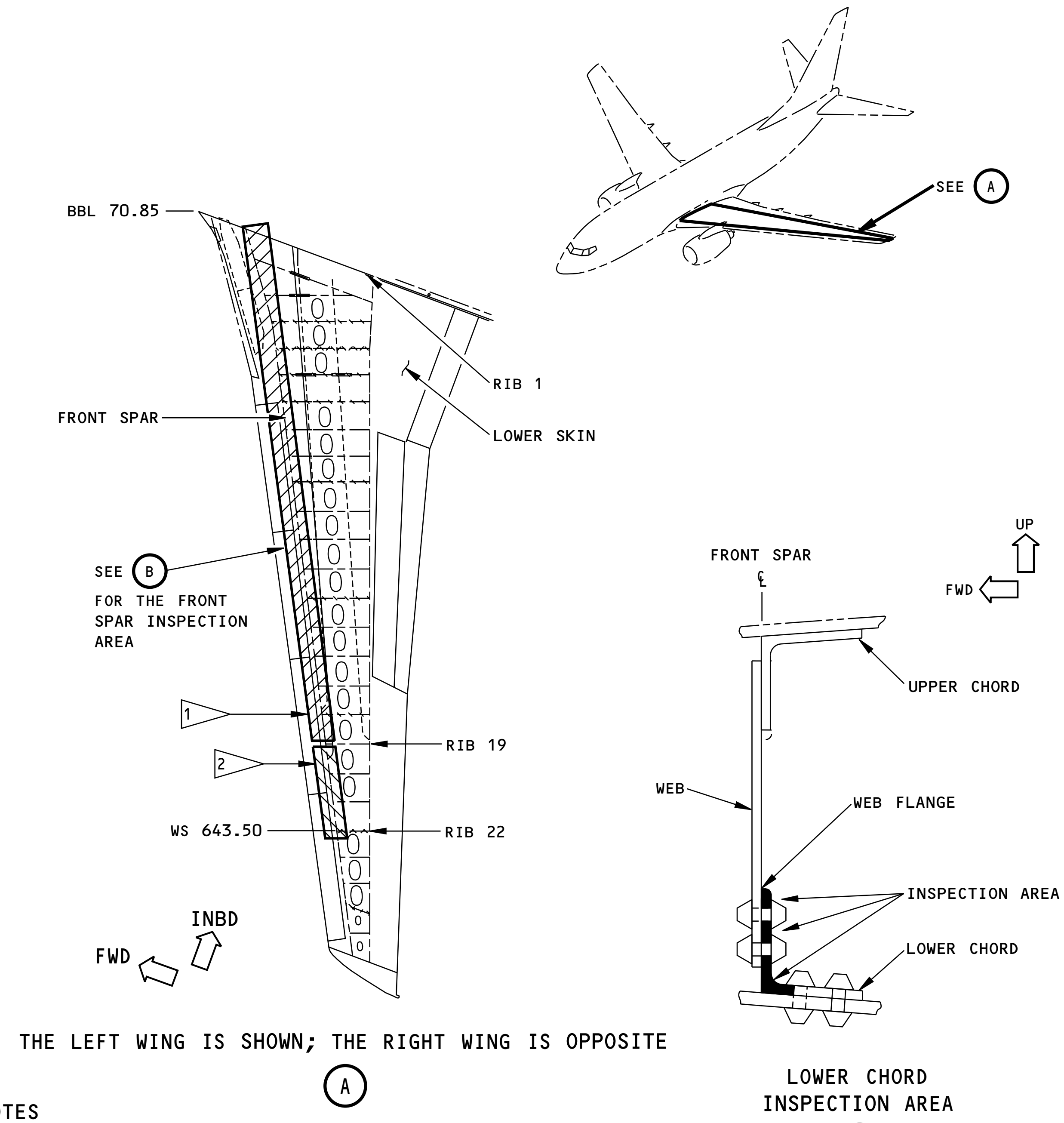
(2) Examine the radius of the lower chord from rib 1 to rib 19.

(a) Use the radius as a probe guide to make a scan along the lower chord.

B. Do Paragraph 5.A. again to examine the lower chord of the front spar for cracks on the other side of the airplane.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

- INSPECTION AREA
- 1 EXAMINE THE LOWER CHORD OF THE FRONT SPAR AROUND EACH FASTENER AND ALONG THE RADIUS BETWEEN THE SIDE-OF-BODY AND RIB 19. IT IS NOT NECESSARY TO EXAMINE AREAS OF THE LOWER CHORD THAT ARE BEHIND RIB POSTS, STIFFENERS, AND BRACKETS.
- 2 EXAMINE THE LOWER CHORD OF THE FRONT SPAR AROUND EACH FASTENER BETWEEN RIBS 19 AND 22. IT IS NOT NECESSARY TO EXAMINE AREAS OF THE LOWER CHORD THAT ARE BEHIND RIB POSTS, STIFFENERS, AND BRACKETS.

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

STRINGERS AT THE UPPER SKIN OF THE WING (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine stringers 1 thru 9 and 15 thru 21 for cracks from inside the wing. The stringers attached to the upper skin of the wing are examined at the web flange of the stringers, from ribs 1 thru 21 and 22 thru 25. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The stringers are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-13-2

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that:

         (a) operates between 50 and 500 kHz.

         (b) has a maximum diameter of 0.13 inch (3.3 mm).

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-30/50-300 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. Prepare for the Inspection

A. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Clean the inspection surfaces.

D. Remove the fillet seal if it extends more than 0.50 inch (12.7 mm) from the skin.

E. Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument to examine the stringers attached to the upper skin as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Examine the stringer web for cracks from inside the wing as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine stringers 1 thru 9 and 15 thru 21 from ribs 1 thru 21 and ribs 22 thru 25 on the left and right wings.

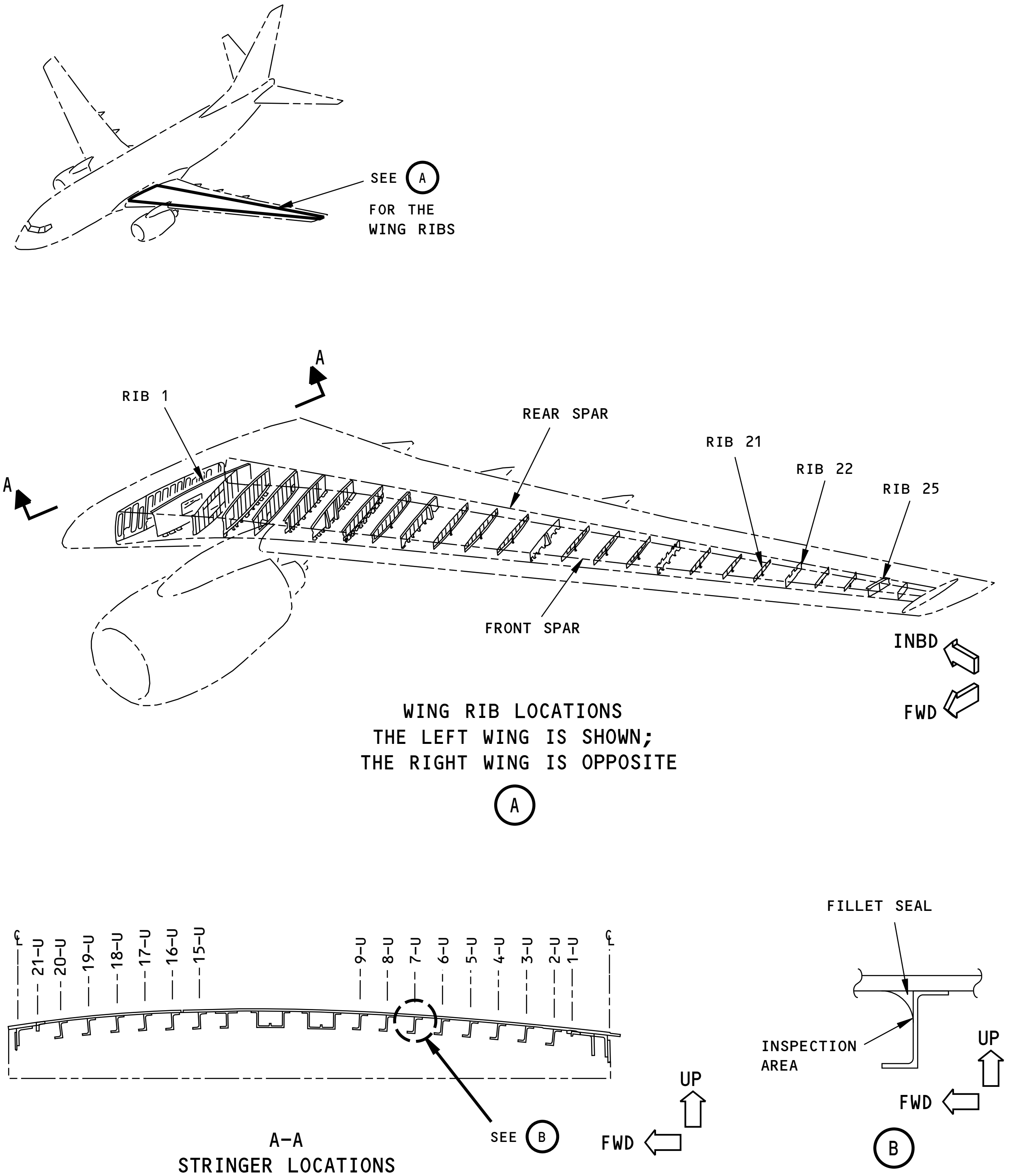
NOTE: Remove the fillet seal if it is more than 0.50 inch (12.7 mm) from the skin.

(a) Use the fillet seal or the inner skin surface as a probe guide to make a scan of the forward side of the stringer.

(b) Examine the forward side of all stringers identified in Paragraph 5.A.(1) and Figure 1.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

STRINGER 14 ATTACHED TO THE UPPER SKIN OF THE WING (HFEC)

1. **Purpose**
   A. Use this high frequency eddy current (HFEC) procedure to examine stringer 14 for cracks from rib 12 to rib 20 at the radius of the web-to-skin flange. See Figure 1 for the inspection areas.
   B. This procedure uses an impedance plane display instrument.
   C. Stringer 14 is aluminum.
   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
      (1) Item: 57-20-15
2. **Equipment**
   A. General
      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.
      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   B. Instrument
      (1) Use an eddy current instrument that:
         (a) Has an impedance plane display.
         (b) Operates between 50 and 500 kHz.
      (2) The instruments that follow were used to help prepare this procedure.
         (a) Phasec 2D/3D; GE Inspection Technologies
         (b) Nortec 500/2000D; Staveley/Olympus
   C. Probes
      (1) Use a probe that operates between 50 and 500 kHz.
      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.
         (a) MTF905-60fx 50-500 kHz; NDT Engineering/Olympus
         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus
   D. Reference Standards
      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.
3. **Prepare for the Inspection**
   A. It is necessary to go into the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

      NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument to examine stringer 14 from rib 12 to rib 20 as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine stringer 14 for cracks from rib 12 to rib 20 as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine the stringer 14 web-to-skin flange radius from wing station 378.50 to wing station 591.50.

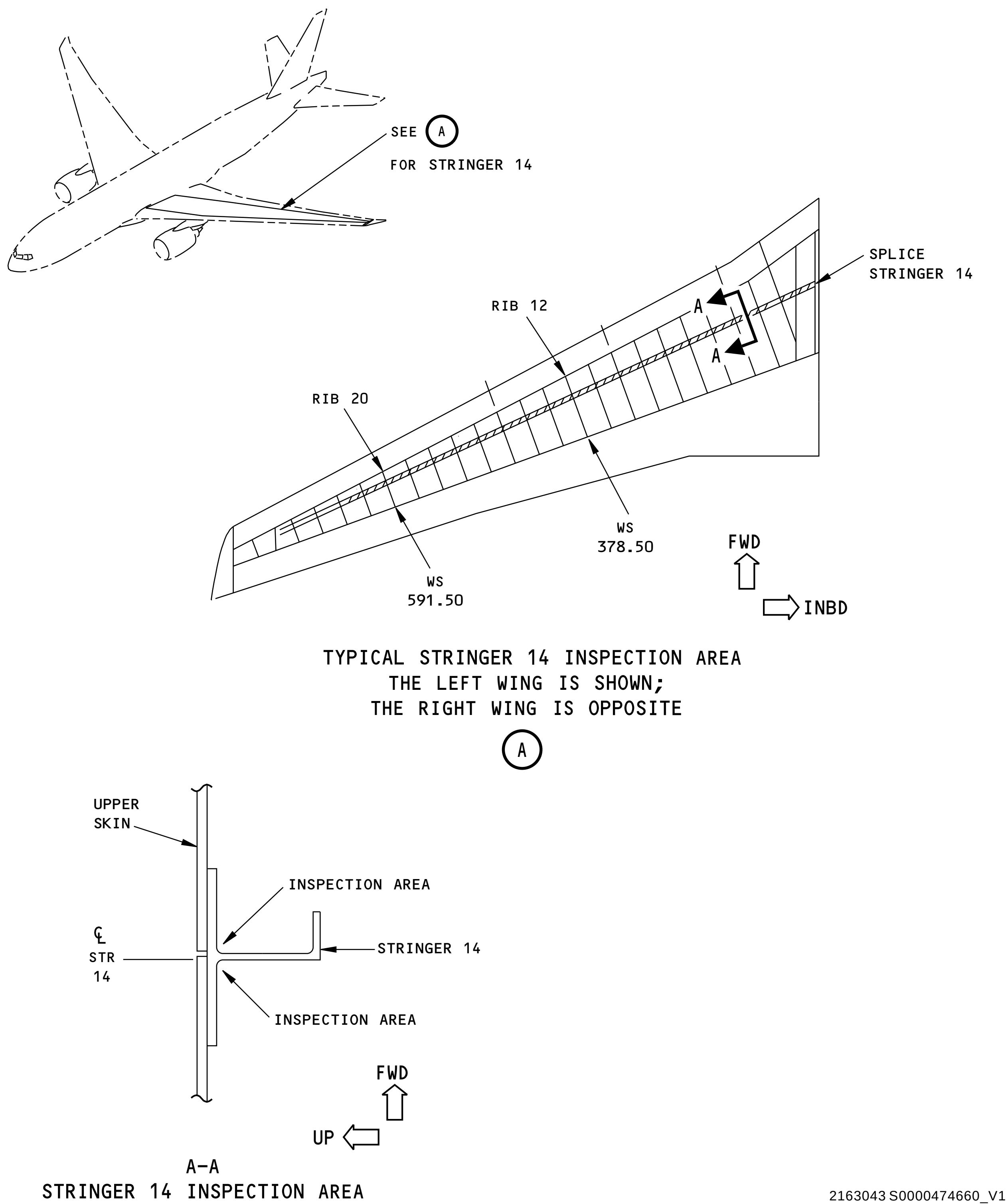
(a) Use the stringer as a probe guide while you make a scan around the forward side of the radius.

(b) Use the stringer as a probe guide while you make a scan around the aft side of the radius.

B. Do Paragraph 5.A. again to examine stringer 14 for cracks on the other side of the airplane.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Stringer 14 Inspection Area
Figure 1

PART 6 - EDDY CURRENT

WING CENTER SECTION - UPPER PANEL - SPLICE STRINGER 14 (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine splice stringer 14 for cracks at the fasteners from RBL 67.0 to LBL 67.0. See Figure 1 for the inspection area.

   B. This procedure uses an impedance plane display instrument.

   C. Stringer 14 is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-02

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates between 50 and 500 kHz.

   C. The instruments that follow were used to help prepare this procedure.

      (1) Phasec 2D/3D; GE Inspection Technologies

      (2) Nortec 500/2000D; Staveley/Olympus

   D. Probes

      (1) Use a probe that:

         (a) Operates between 50 and 500 kHz.

         (b) Has a maximum diameter of 0.13 inch (3.3 mm).

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   E. Reference Standards

      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

A. It is necessary to go into the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Clean the inspection surfaces.

D. Remove cap or brush sealant that extends more than 0.20 inch (5.08 mm) around the fastener heads or collars.

E. Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument to examine splice stringer 14 as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

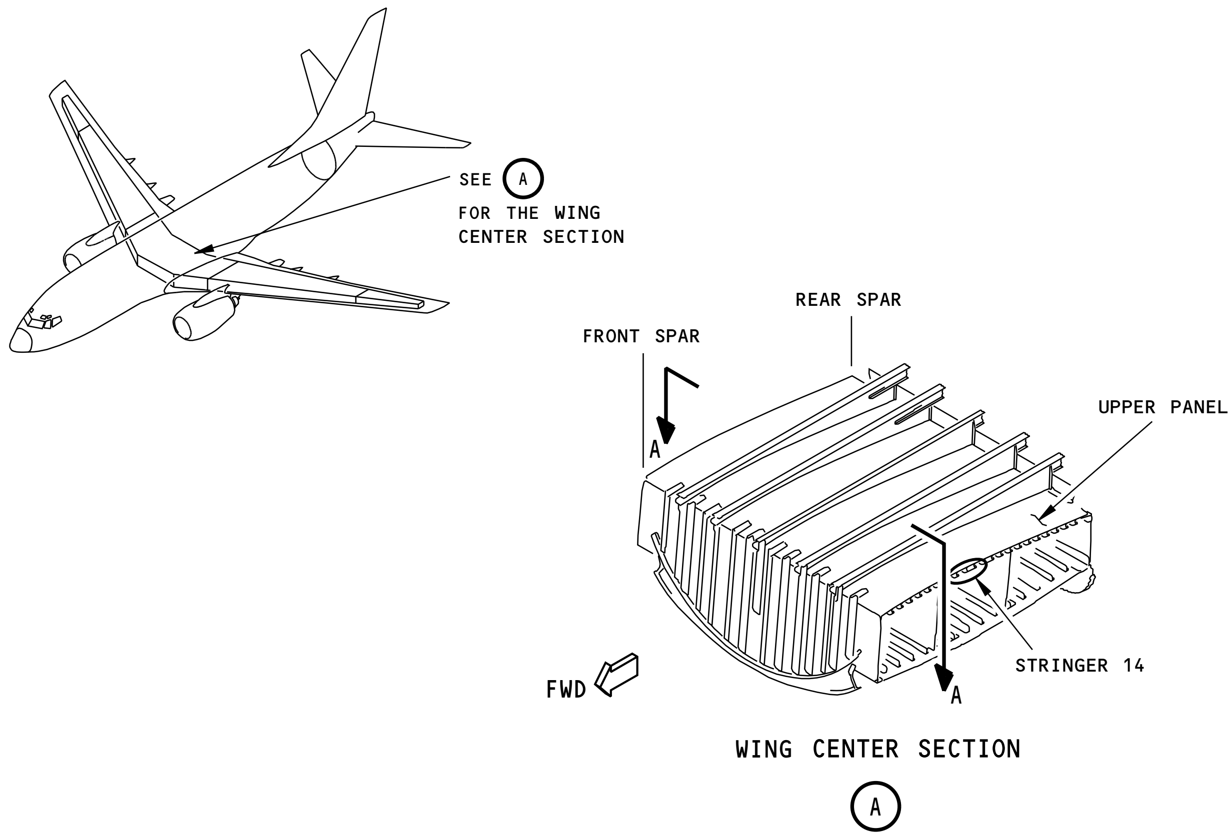
5. **Inspection Procedure**

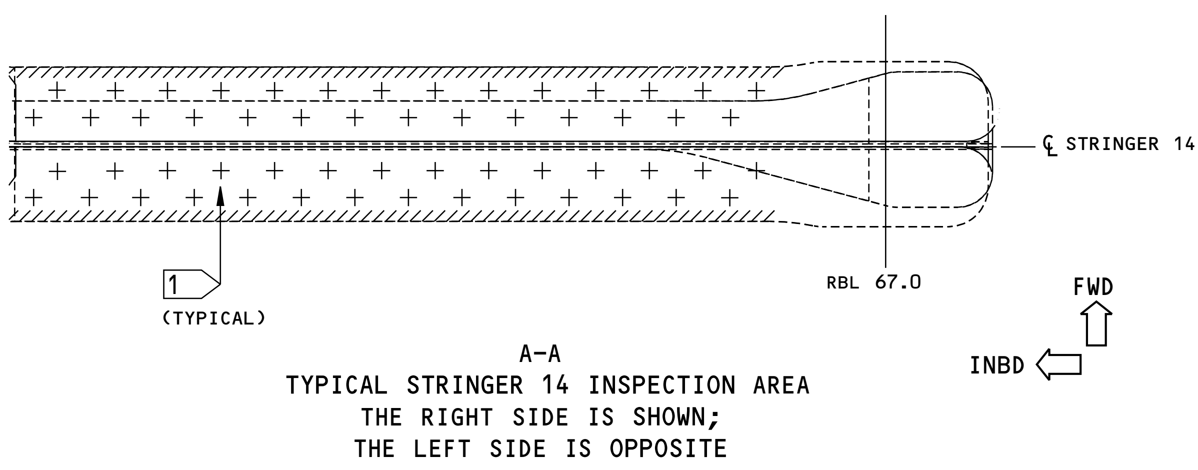
A. Examine splice stringer 14 for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Make a probe scan around all the fasteners of splice stringer 14 from RBL 67.0 to LBL 67.0.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.





NOTES:

1 THE INSPECTION AREA IS AT ALL THE FASTENERS OF STRINGER 14 FROM RBL 67.0 TO LBL 67.0

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Stringer 14 Inspection Area
Figure 1

PART 6 - EDDY CURRENT

RIB 27 TO SKIN ATTACHMENT AT WBL 658.17 (LFEC)

1. **Purpose**

   A. Use this subsurface eddy current procedure to examine the upper and lower horizontal flanges of the rib 27 to skin attachment for cracks. See Figure 1 for the inspection area.

   B. The inspection is done externally from the upper and lower skins along the flange of rib 27 from the front to the rear spars.

   C. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-29-2

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument - Use an eddy current instrument with an impedance plane display that can:

      (1) Operate in the frequency range of 800 Hz to 1.0 kHz.

      (2) Be calibrated as specified in the calibration instructions of this procedure.

   C. Probes - Use a spot probe that operates in a frequency range of 800 Hz to 1.0 kHz.

      (1) The probe that follows was used to help prepare this procedure.

         (a) SDP.35-500H-1; Techna NDT

   D. Reference Standard - Use reference standard NDT3169 as shown in Figure 2 to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. Identify the inspection area as shown in Figure 1.

   B. Get access to the inspection areas.

   C. Clean the inspection surface if necessary.

      (1) Remove paint only if it is loose.

      (2) Remove all sealant from the area that the probe touches.

4. **Instrument Calibration**

   A. Set the instrument frequency between 800 Hz and 1.0 kHz.

   B. If there is paint on the inspection area, put a nonconductive shim on the reference standard. The thickness of the shim must be equivalent (± 0.003 inch (0.08 mm)) to the paint thickness on the airplane.

   C. Put a nonconductive circle template around the fastener head you will examine.

   D. Put the probe against the circle template to keep it equal distance from the edge of the fastener head.

   E. Put the probe on the reference standard at probe position 1 as shown in Figure 3.

F. Balance the instrument as specified in the manufacturer's instructions.

G. Set the balance point at approximately 20 percent of full screen height (FSH) and 60 percent of full screen width (FSW).

H. Adjust the phase control so that the lift-off signal moves horizontally from right to left when the probe is lifted off the reference standard.

I. Move the probe to position 2 to get a maximum signal from the reference notch as shown in Figure 3.

J. Adjust the gain to set the signal from the reference notch to 60 percent of FSH.

5. Inspection Procedure

A. Identify the inspection areas shown in Figure 1.

B. Get access to the upper skin surface.

C. Put a nonconductive circle template around the fastener location you will examine.

D. Put the probe against the circle template to keep it equal distance from the edge of the fastener head.

E. Balance the instrument as specified in the manufacturer's instructions.

F. Make a full scan around the fastener head as shown in Figure 3. Make an analysis of all the locations that cause a signal to occur that is 40 percent (or more) of FSH. See Paragraph 6. for data on signal analysis.

G. Do Paragraph 5.C. thru Paragraph 5.E. again to examine each fastener on the rib flange that goes through the skin.

H. Do Paragraph 5.C. thru Paragraph 5.G. again for the lower skin surface.

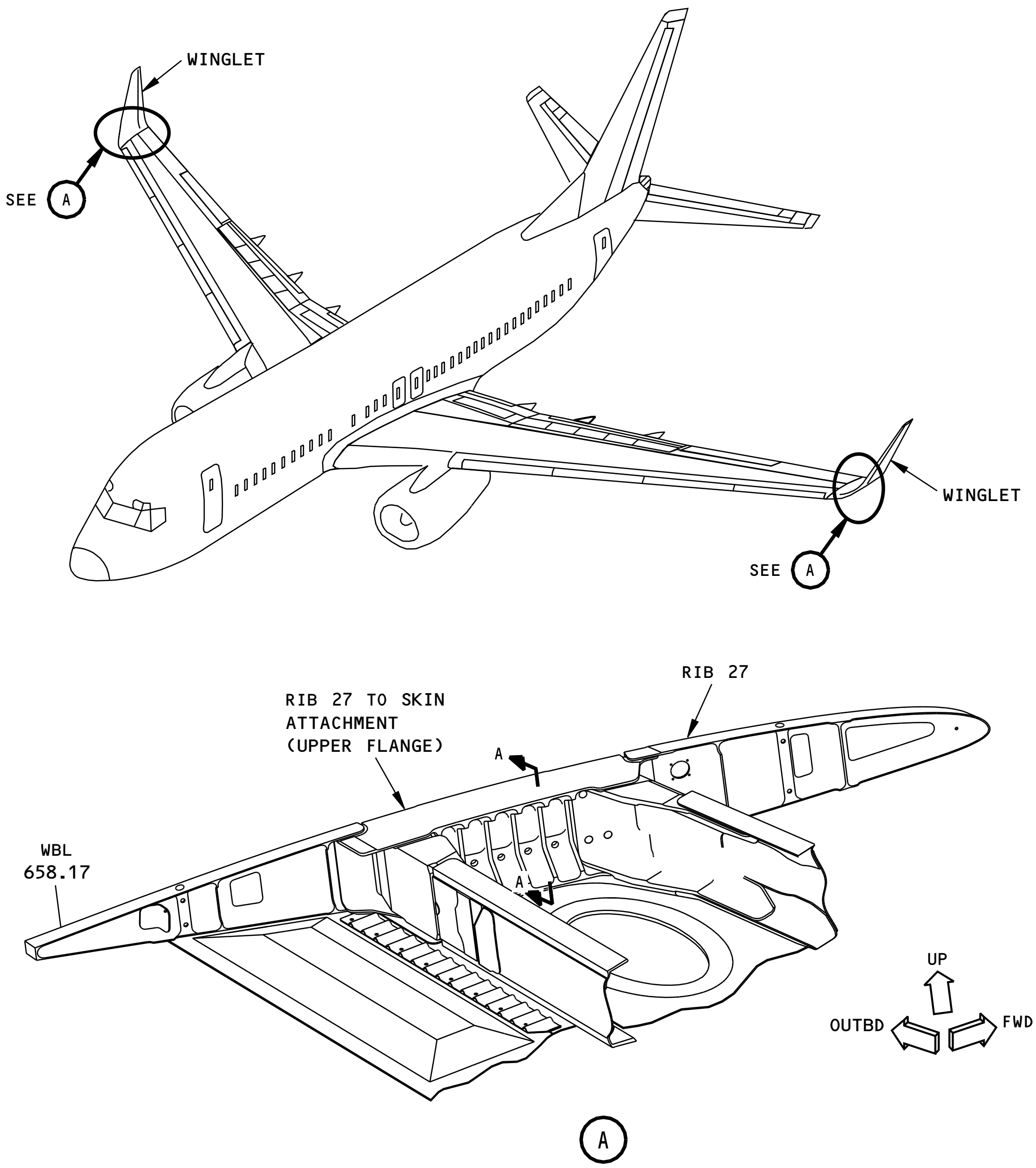
I. Do Paragraph 5.B. thru Paragraph 5.H. again to examine the skin for cracks at rib 27 on the other side of the airplane.

6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. To make sure that there is a crack, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



NOTES:

- THE UPPER FLANGE OF THE RIB 27 TO SKIN ATTACHMENT ON THE LEFT SIDE OF THE AIRPLANE IS SHOWN.
- THE LOWER RIB 27 FLANGE AND THE RIB 27 UPPER AND LOWER FLANGES ON THE RIGHT SIDE OF THE AIRPLANE ARE ALMOST THE SAME.
- EXAMINE THE FASTENER LOCATIONS THAT GO THROUGH THE SKIN AND THE HORIZONTAL FLANGES.

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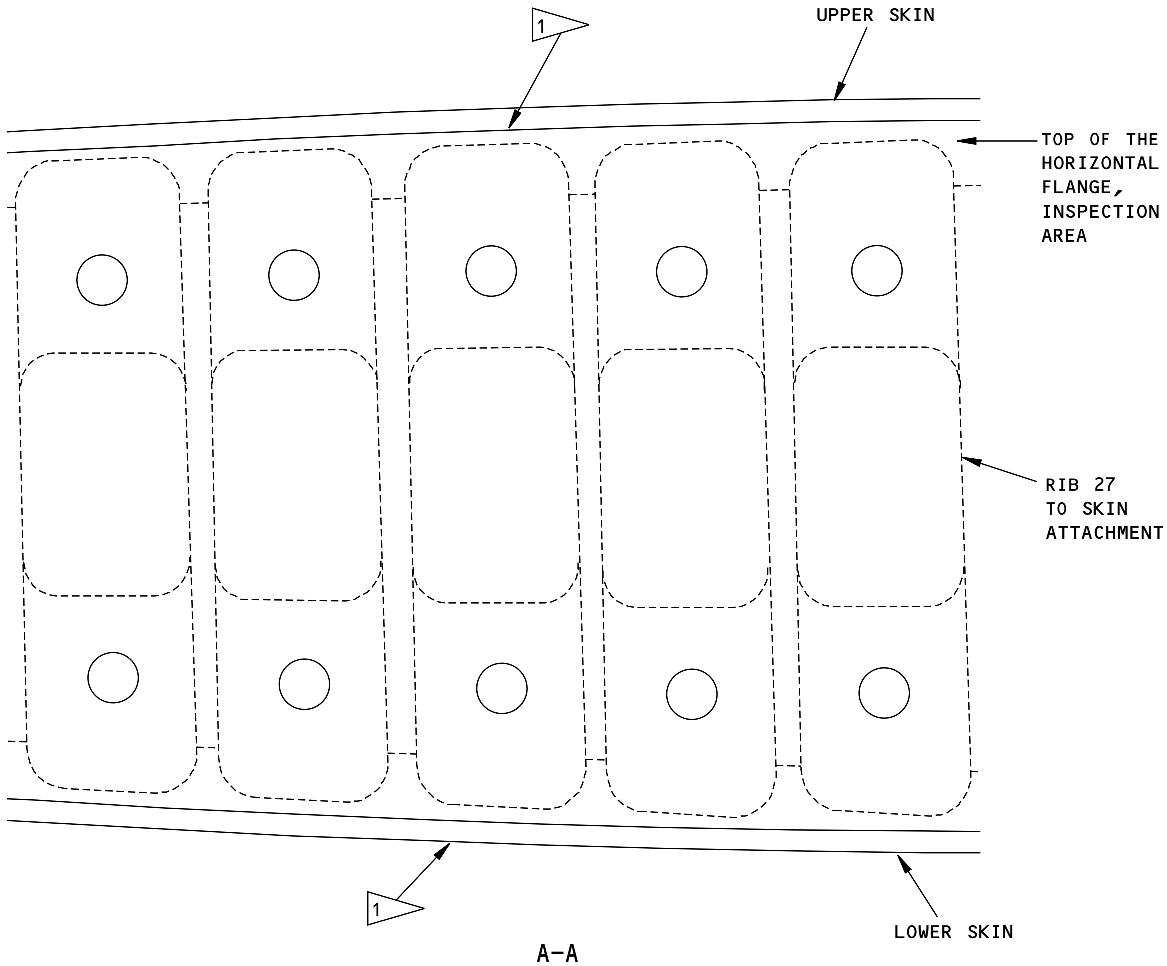
Inspection Area
Figure 1 (Sheet 1 of 2)



NOTES:

1 EXAMINE THE UPPER AND LOWER HORIZONTAL FLANGES OF THE RIB 27 TO SKIN ATTACHMENT FOR CRACKS THROUGH THE UPPER AND LOWER SKINS.

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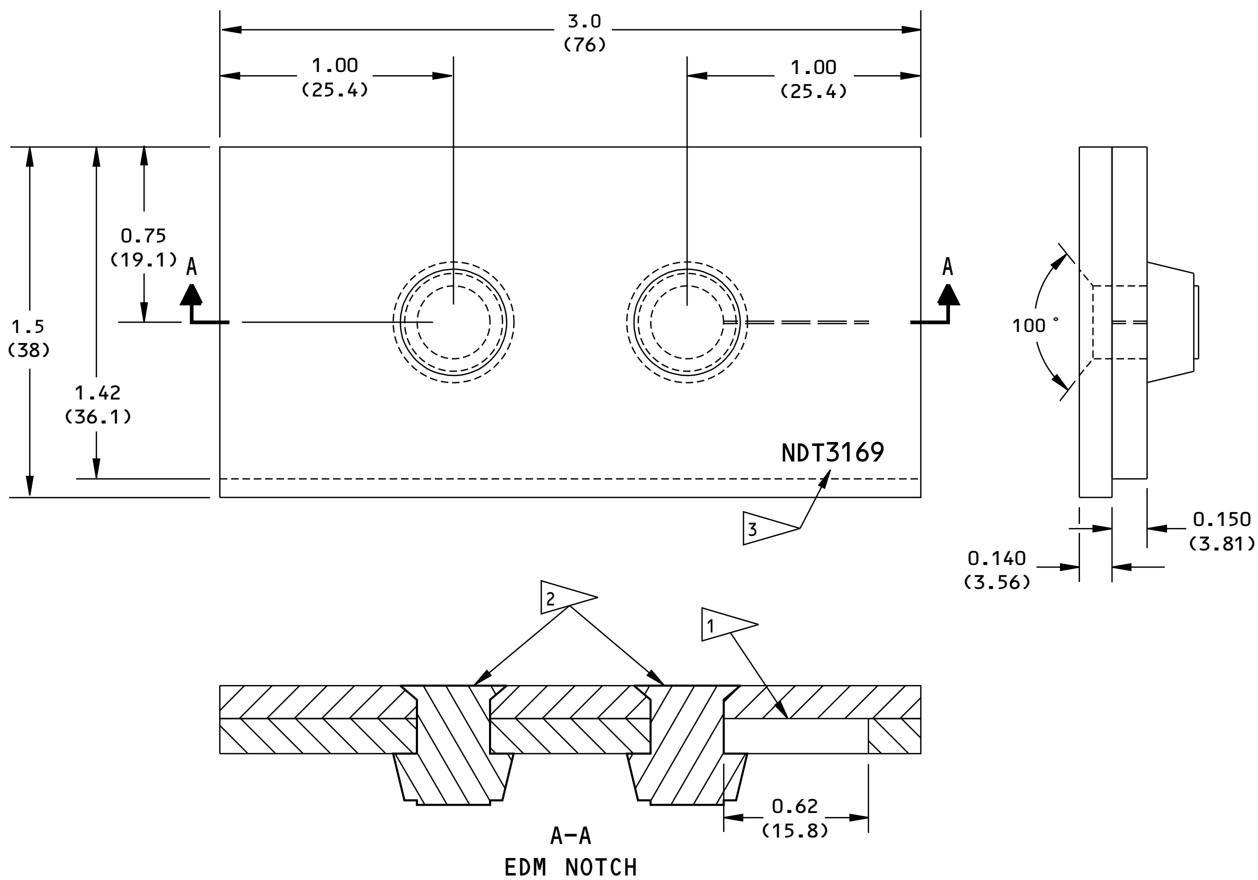
Inspection Area
Figure 1 (Sheet 2 of 2)



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS	ANGULAR
X.XXX = ±0.005	X.XX = ±0.010	±2 °
X.XX = ±0.025	X.X = ±0.05	
X.X = ±0.050	X = ±1	

- MATERIAL: 2024-T3 OR 7050-T7541 CLAD AIRCRAFT ALUMINUM
- SURFACE ROUGHNESS: 63 Ra OR BETTER

1 EDM NOTCH:

WIDTH: 0.010 (0.25) MAXIMUM
LENGTH: 0.62 (15.8) (MEASURED FROM THE RIVET SHANK)
DEPTH: THROUGH THE THICKNESS

2 FASTENERS:

BACB30YP10 BOLTS WITH BACC30BL COLLARS AT ALL LOCATIONS

3 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3169, AT APPROXIMATELY THIS LOCATION.

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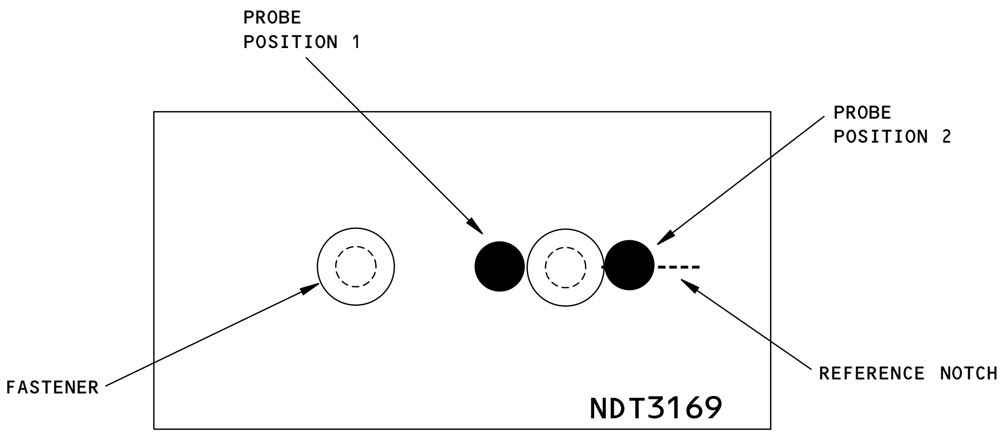
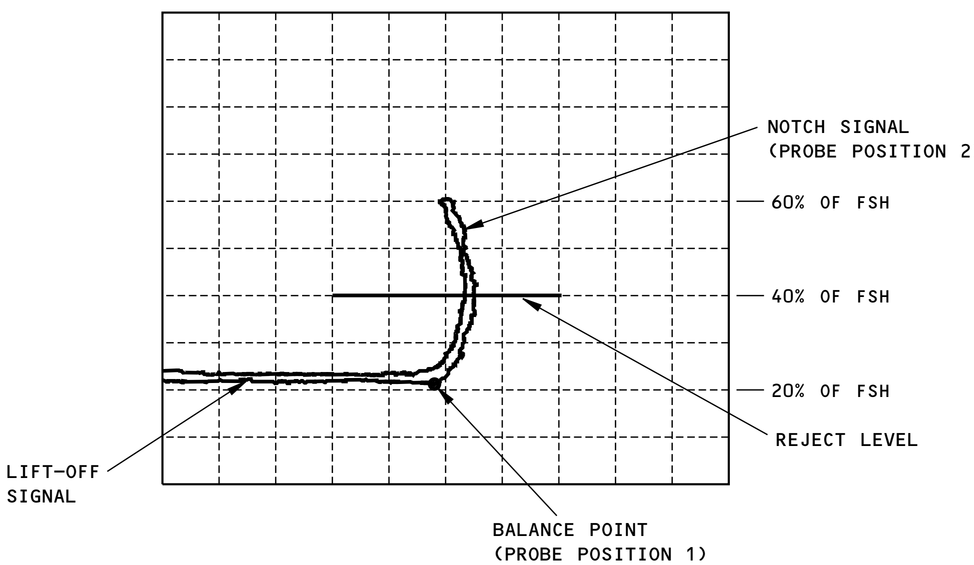
Reference Standard NDT3169
Figure 2





2163054 S0000474666_V1

Calibration
Figure 3

PART 6 - EDDY CURRENT

WING CENTER SECTION - FRONT SPAR - RADIUS OF THE LOWER CHORD (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the radius of the lower chord for cracks at the front spar of the wing center section from RBL 67.0 to LBL 67.0. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower chord is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-10

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

      NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

   NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

   B. Identify and get access to all of the inspection areas shown in Figure 1.

   C. Remove sealant that is more than 0.01 inch (2.5 mm) thick in the radius of the lower chord. Refer to AMM task 51-31-00-100-802 for sealant removal instructions.

   D. Clean the inspection surfaces.

   (1) Remove dirt or grease from the inspection surfaces.

4. **Instrument Calibration**

   A. Calibrate the instrument to examine the lower chord of the front spar for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

   (1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

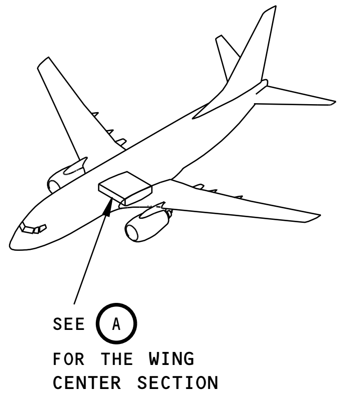
   A. Examine the lower chord for cracks at the front spar of the wing center section as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

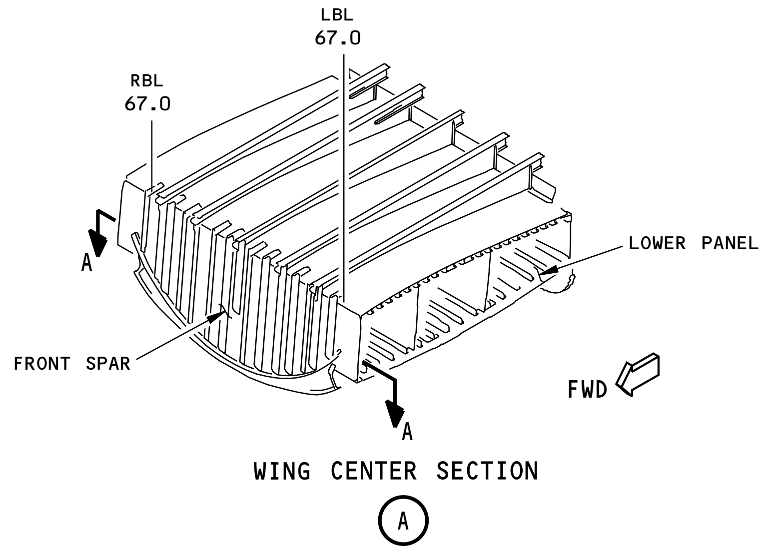
   (1) Examine the aft side of the front spar at the lower chord radius between the skin and web flanges from RBL 67.0 to LBL 67.0.

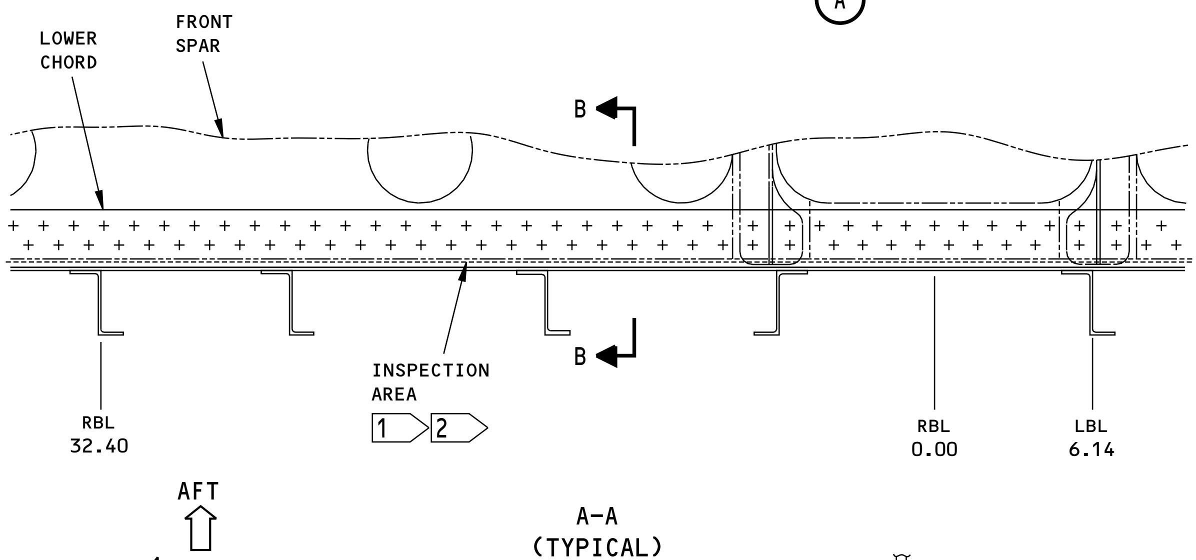
   (a) Use the lower chord radius, or the trough as a probe guide to make a scan along the front spar.

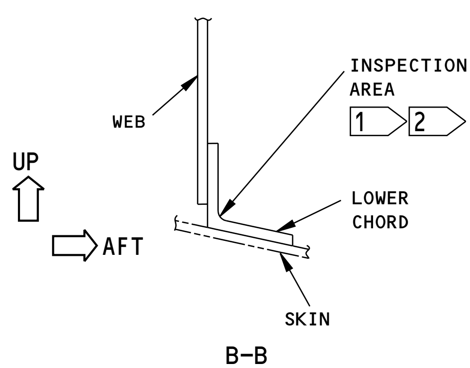
6. **Inspection Results**

   A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.









NOTES:

1 EXAMINE THE RADIUS OF THE LOWER CHORD AT THE FRONT SPAR FROM LBL 67.0 TO RBL 67.0.

2 REMOVE SEALANT THAT IS MORE THAN 0.10 INCH (2.5 MM) THICK IN THE RADIUS OF THE LOWER CHORD.

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

REAR SPAR WEB AT THE TRAILING EDGE FITTINGS (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the upper and lower edges of the rear spar web for cracks at the trailing edge fittings. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The rear spar web is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-24

      (2) Item: 57-20-25

      (3) Item: 57-20-26

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a maximum diameter of 0.13 inch (3.3 mm).

         (c) Has a maximum drop of 0.30 inch (7.6 mm).

      (2) The probes that follow were used to help prepare this procedure.

         (a) TPENFLX91-6 50-500 kHz; Techna NDT

         (b) UMTF9025-60FX 50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas shown in Figure 1.

(1) Remove the trailing edge panels.

B. Clean the inspection surfaces.

(1) Remove the fillet seal from the inspection areas.

(2) Remove dirt or grease from the inspection surfaces.

(3) Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument to examine the edges of the rear spar web as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Examine the upper and lower edges of the rear spar web for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine the lower edge of the rear spar web at the hinge fitting for spoiler number 1 at approximately RSS 500.

(a) Use the lower chord of the rear spar as a probe guide while you make a scan of the rear spar web.

(2) Examine the lower edge of the rear spar web at the hinge fitting for spoiler number 1 at approximately RSS 453.

(a) Use the lower chord of the rear spar as a probe guide while you make a scan of the rear spar web.

(3) Examine the lower edge of the rear spar web at the hinge fitting for spoiler number 2 at approximately RSS 448.

(a) Use the lower chord of the rear spar as a probe guide while you make a scan of the rear spar web.

(4) Examine the lower edge of the rear spar web at the hinge fitting for spoiler number 3 at approximately RSS 405.

(a) Use the lower chord of the rear spar as a probe guide while you make a scan of the rear spar web.

(5) Examine the lower edge of the rear spar web at the hinge fitting for spoiler number 3 at approximately RSS 370.

(a) Use the lower chord of the rear spar as a probe guide while you make a scan of the rear spar web.

(6) Examine the lower edge of the rear spar web at the hinge fitting for spoiler number 5 at approximately RSS 323.

(a) Use the lower chord of the rear spar as a probe guide while you make a scan of the rear spar web.

(7) Examine the upper edge of the rear spar web at the flap support fitting that is outboard of rib 15 at approximately RSS 443.5.

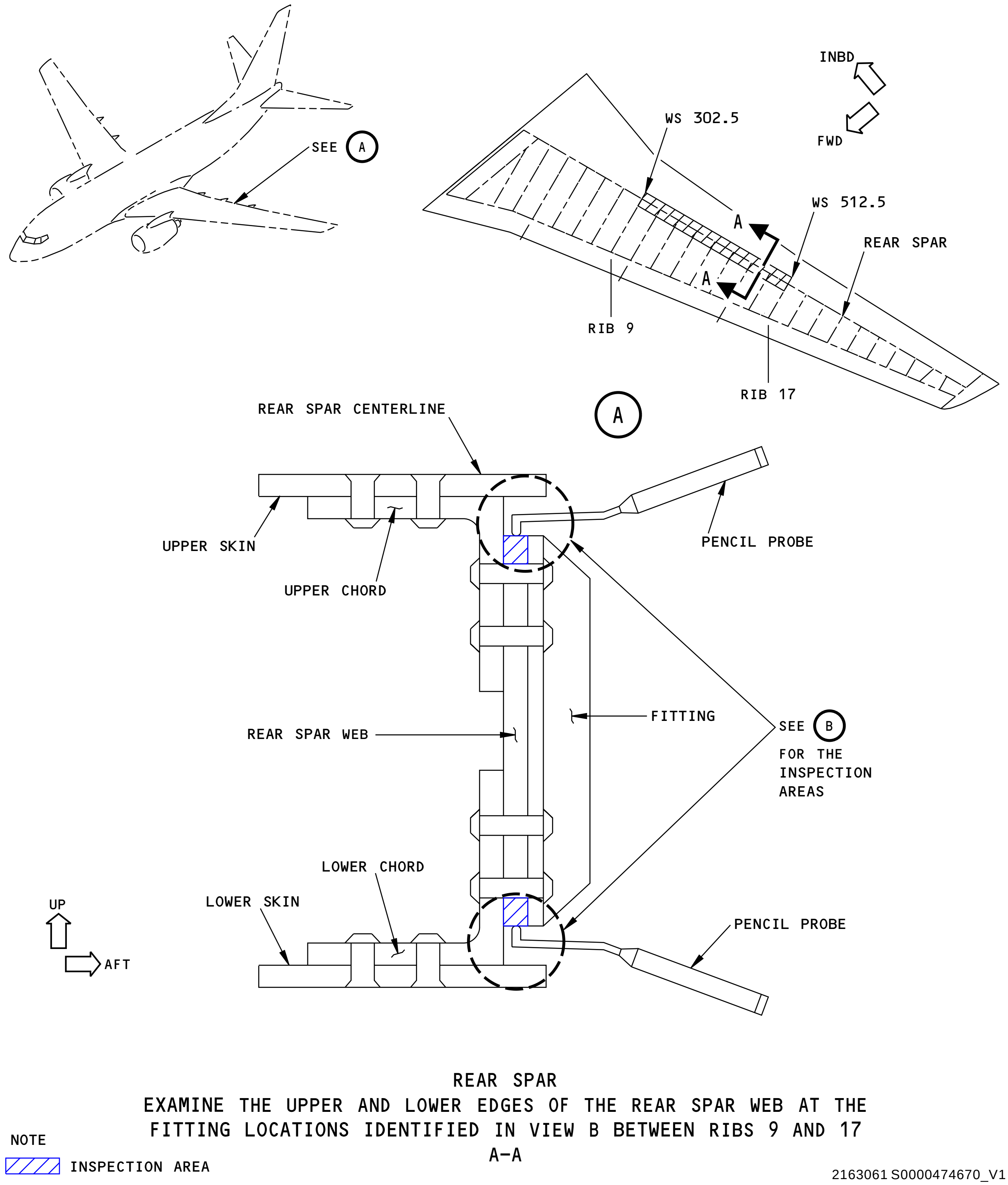
(a) Use the upper chord of the rear spar as a probe guide while you make a scan of the rear spar web.

(8) Examine the upper edge of the rear spar web at the flap support fitting that is outboard of rib 10 at approximately RSS 333.

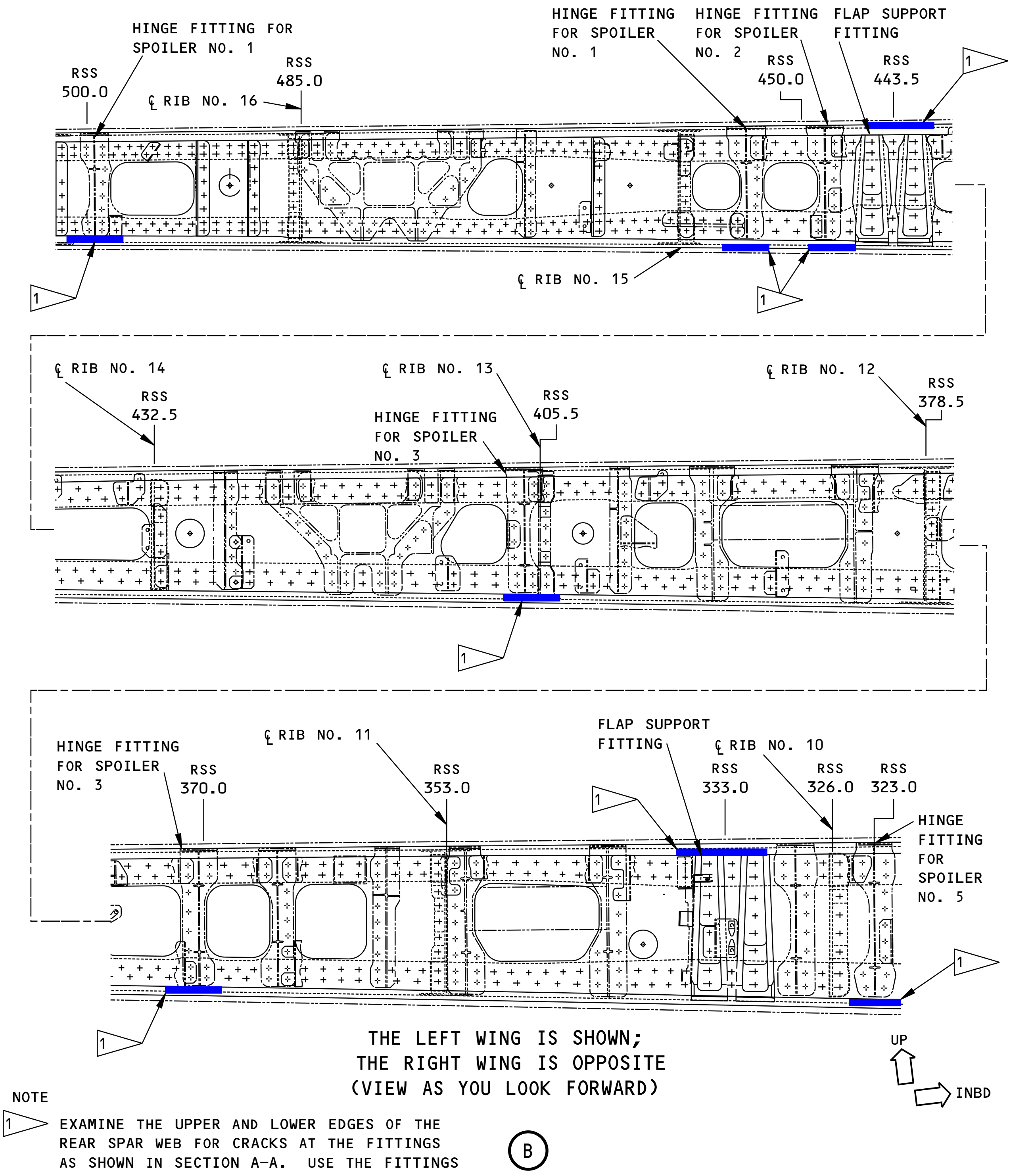
(a) Use the upper chord of the rear spar as a probe guide while you make a scan of the rear spar web.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Areas
Figure 1 (Sheet 1 of 2)



NOTE

1 EXAMINE THE UPPER AND LOWER EDGES OF THE REAR SPAR WEB FOR CRACKS AT THE FITTINGS AS SHOWN IN SECTION A-A. USE THE FITTINGS AS A PROBE GUIDE.

Inspection Areas
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

LOWER SKIN AND LOWER CHORD OF THE FRONT SPAR OF THE WING AT THE R7/R8 NACELLE FITTING (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the:

      (1) Lower surface of the lower skin of the wing for cracks in the area that is adjacent to the R7/R8 nacelle fittings. See Figure 1 for the inspection areas.

      (2) Lower chord of the front spar of the wing for cracks at the R1 backup fitting between ribs 6 and 7 (WSTA 228 and WSTA 253). See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower skin and lower chord are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-04-9

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Staveley/Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      NOTE: Shielded probes are recommended.

      (2) The probes that follow were used to help prepare this procedure.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

A. It is necessary to get access to the fuel tank to do this inspection. The fuel tank must be drained and purged to a "health safe" condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Remove sealant from the inspection areas.

D. Clean the inspection surfaces.

E. Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the lower skin behind the R7/R8 nacelle fittings and the lower chord of the front spar as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 189, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the lower chord of the front spar for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine the lower chord of the front spar at the fastener that is immediately inboard of the R1 backup fitting shown by flagnote 1 in Figure 1.

(a) Use the fastener as a probe guide while you make a scan of the lower chord.

(2) Examine the edge of the lower chord at the front spar in the area shown by flagnote 2 in Figure 1.

(a) Use the upper surface of the lower skin as a probe guide while you make a scan of the lower chord.

B. Examine the lower skin for cracks in the area that is adjacent to the R7/R8 nacelle fitting as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine the lower surface of the lower skin around the R7/R8 nacelle fitting as shown by flagnote 3 in Figure 1.

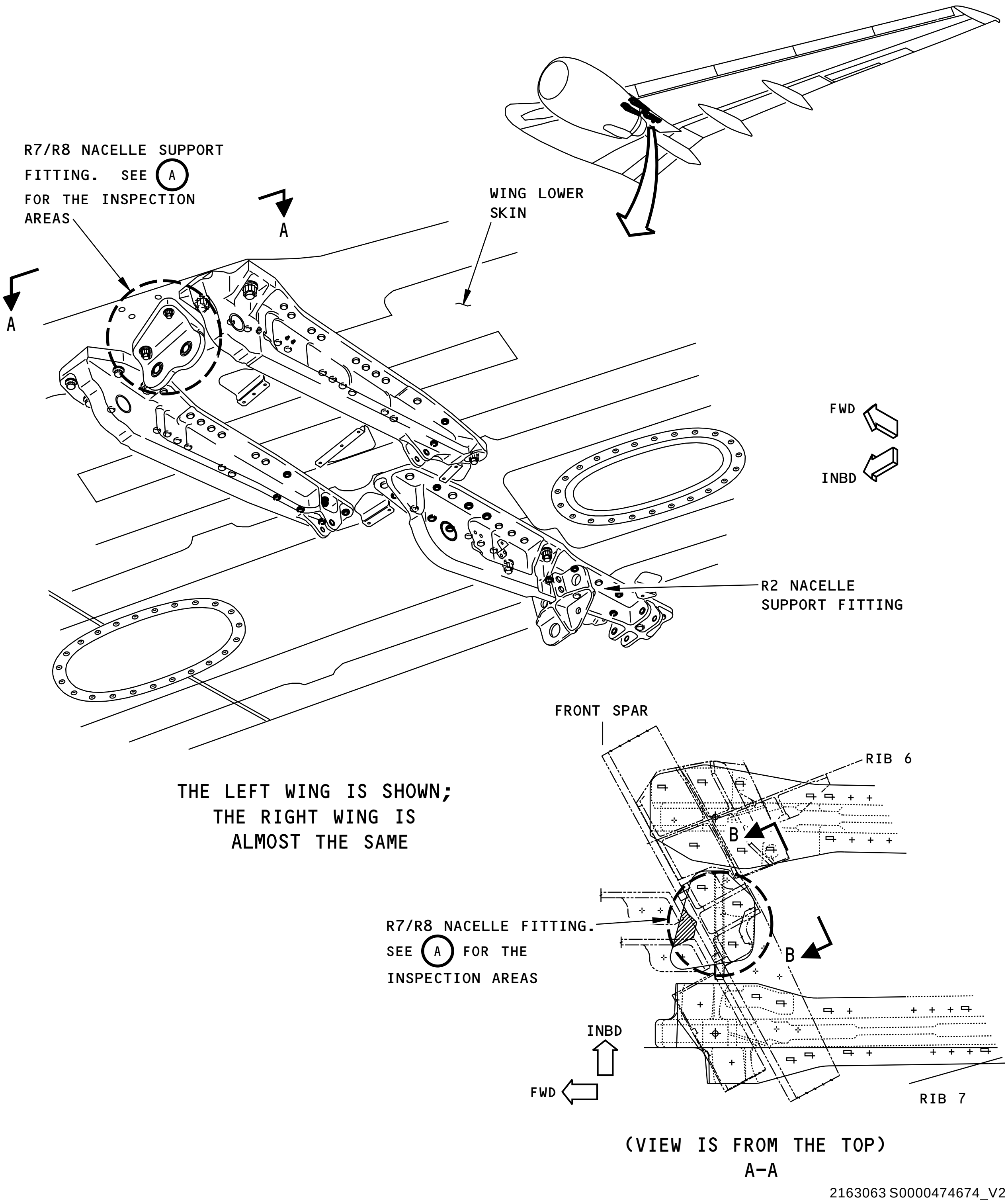
(a) Use the edge of the R7/R8 nacelle fitting as a probe guide while you make a scan of the lower surface of the lower skin.

(2) Examine the lower surface of the lower skin at the two fasteners that are forward of the R7/R8 nacelle fitting as shown by flagnote 4 in Figure 1.

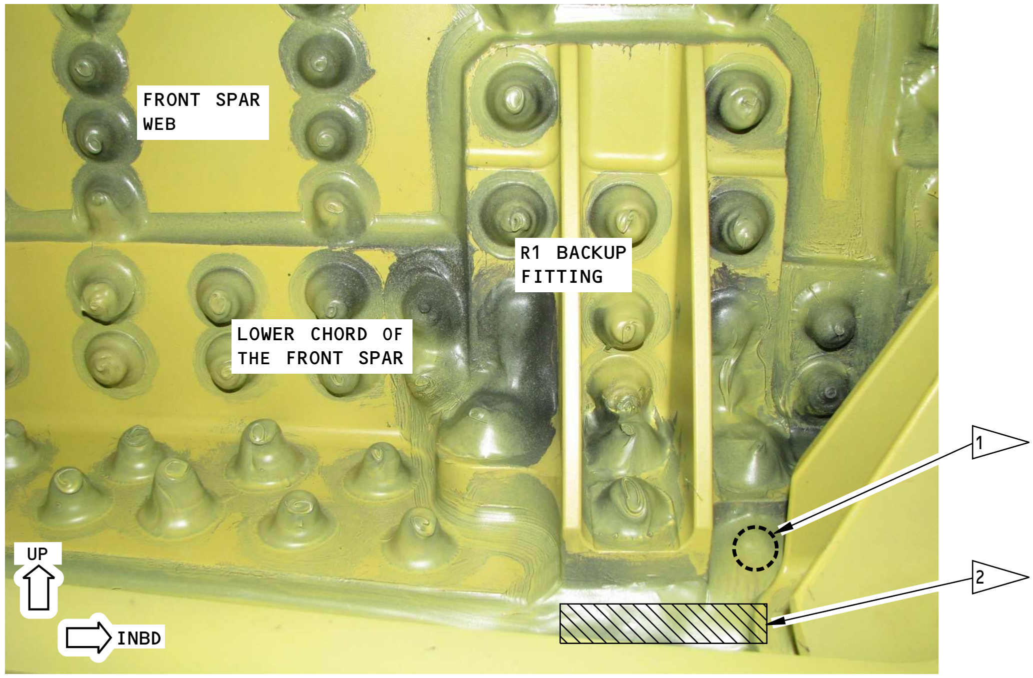
(a) Use the fastener as a probe guide while you make a scan of the lower surface of the lower skin.

6. **Inspection Results**

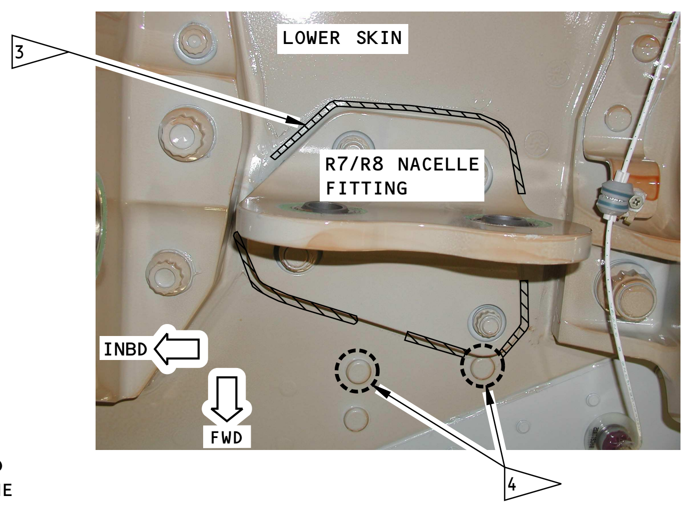
A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Area
Figure 1 (Sheet 1 of 2)



LOWER CHORD OF THE FRONT SPAR INSPECTION AREAS
THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
B-B



R7/R8 NACELLE FITTING INSPECTION AREAS
THE LEFT WING IS SHOWN;
THE RIGHT WING IS OPPOSITE
A

NOTES

- INSPECTION AREA (hatched)
- INSPECTION AREA (dashed circle)
- 1 EXAMINE THE LOWER CHORD OF THE FRONT SPAR. USE THE FASTENER AS A PROBE GUIDE.
- 2 EXAMINE THE EDGE OF THE LOWER CHORD AT THE FRONT SPAR AS SHOWN. USE THE LOWER SKIN AS A PROBE GUIDE.
- 3 EXAMINE THE LOWER SURFACE OF THE LOWER SKIN. USE THE R7/R8 NACELLE FITTING AS A PROBE GUIDE.
- 4 EXAMINE THE LOWER SURFACE OF THE LOWER SKIN. USE THE FASTENERS AS A PROBE GUIDE.

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Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

OUTER WING - REAR SPAR WEB (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the edge of the rear spar web for cracks. The web is examined in the areas that you can get access to that are adjacent to the brackets, fittings, and stiffeners between rib 1 and rib 27. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The rear spar web is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-24-2

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a maximum diameter of 0.13 inch (3.3 mm).

         (c) Has a maximum drop of 0.30 inch (7.6 mm).

         (d) Has a flexible shaft.

   D. The probe that follows was used to help prepare this procedure.

      (1) UMTF9025-60FX 50 to 500 kHz; NDT Engineering/Olympus

   E. Reference Standards

      (1) Use reference standard 189, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas shown in Figure 1.

   B. Remove the fillet seal from the edge of the rear spar web to be examined, or that extends more than 0.25 inch (6.35 mm) from the edge of the stiffener.

C. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5, to examine the web in the areas you can access that are adjacent to brackets, fittings and stiffeners.

(1) Use reference standard 189 to help calibrate the instrument.

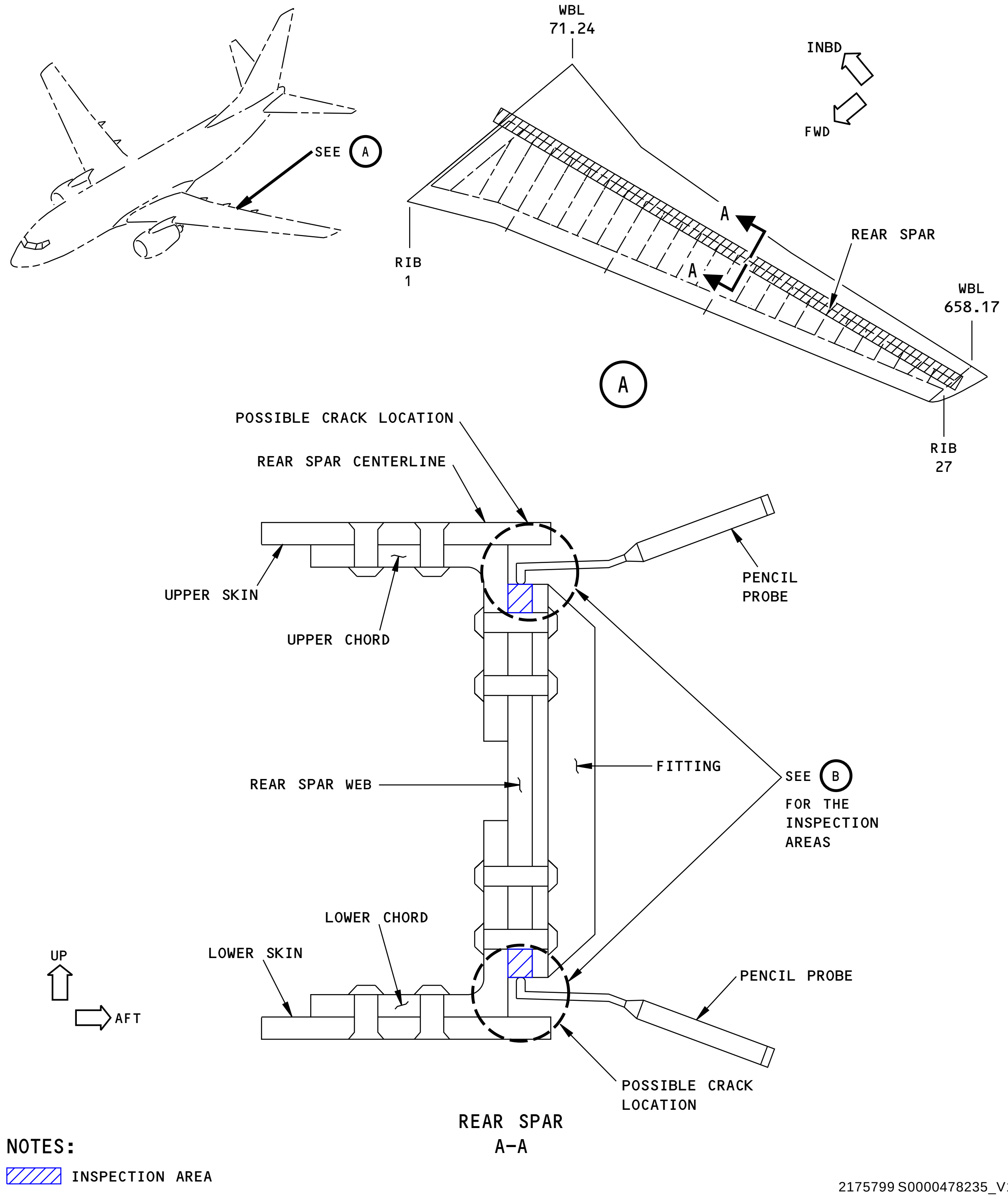
5. Inspection Procedure

A. Examine the web for cracks in the areas you can access that are adjacent to brackets, fittings and stiffeners as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

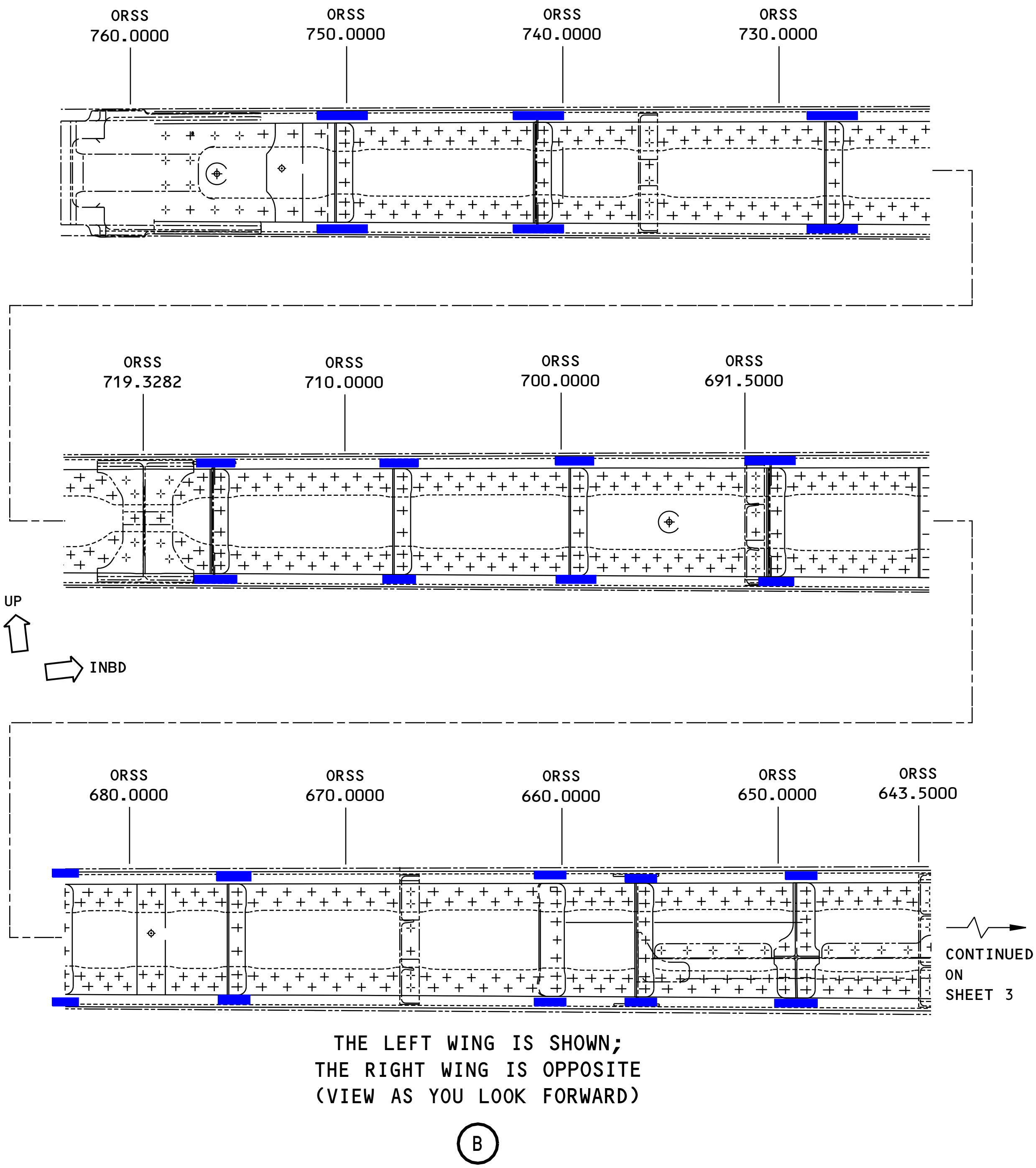
(1) Examine the rear spar web at the upper and lower edges in the areas you can access that are adjacent to brackets, fittings, and stiffeners between rib 1 and rib 27. See Figure 1 for the inspection areas.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Areas
Figure 1 (Sheet 1 of 7)



NOTES:

EXAMINE THE EDGE OF THE CENTER WEB ADJACENT TO FITTINGS, STIFFENERS, AND BRACKETS.

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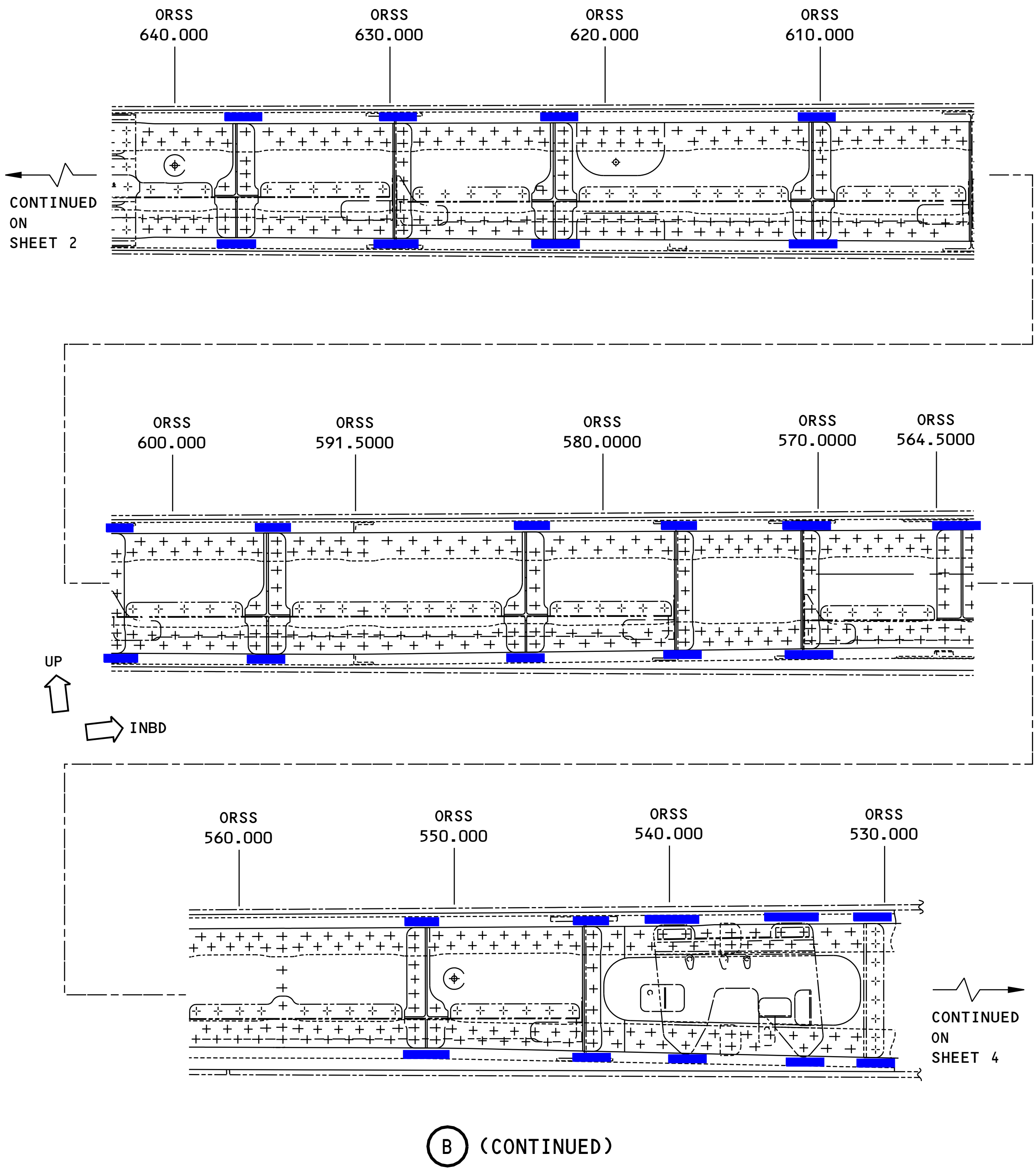
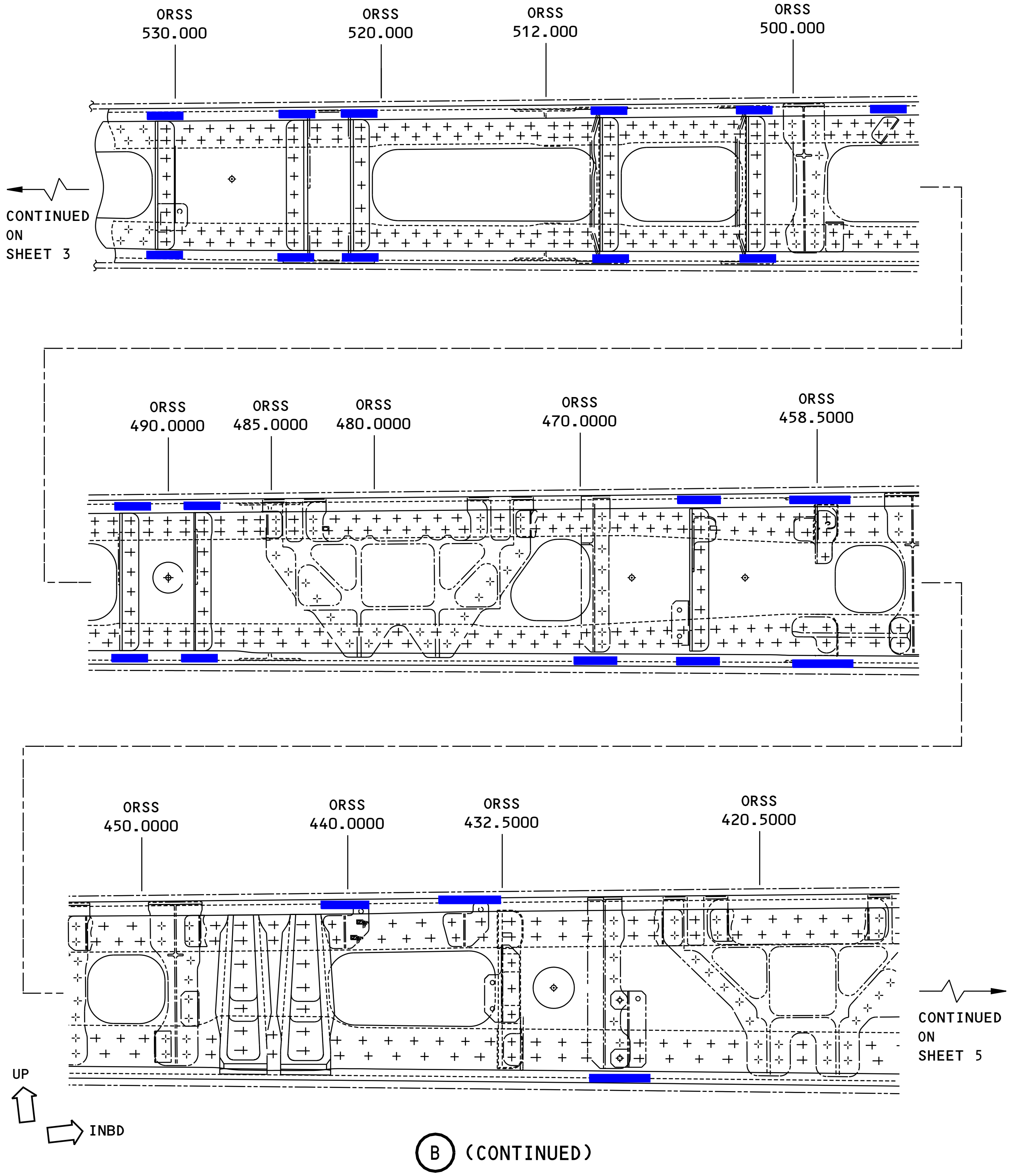
Inspection Areas
Figure 1 (Sheet 2 of 7)



Inspection Areas
Figure 1 (Sheet 3 of 7)



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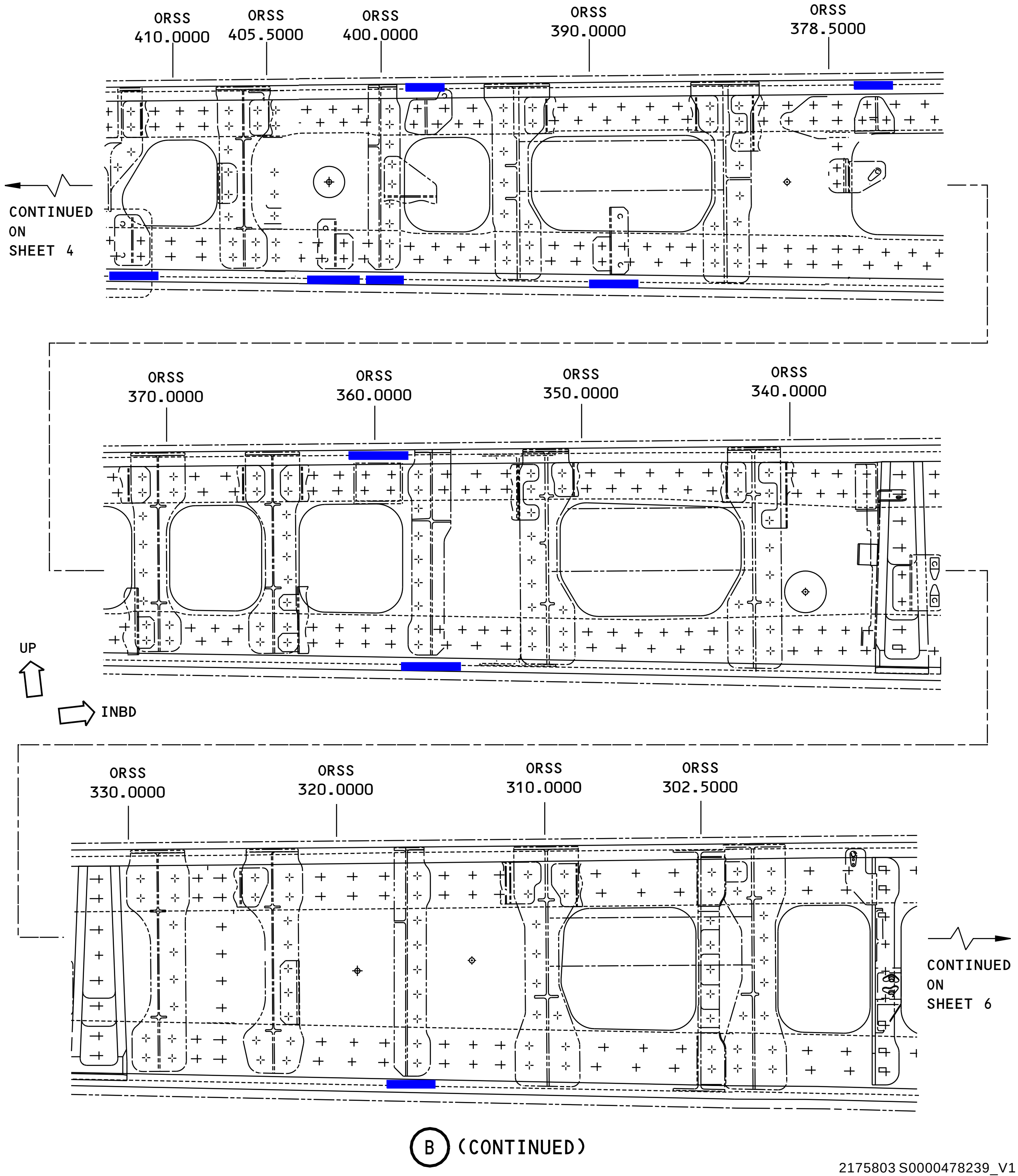
Inspection Areas
Figure 1 (Sheet 4 of 7)



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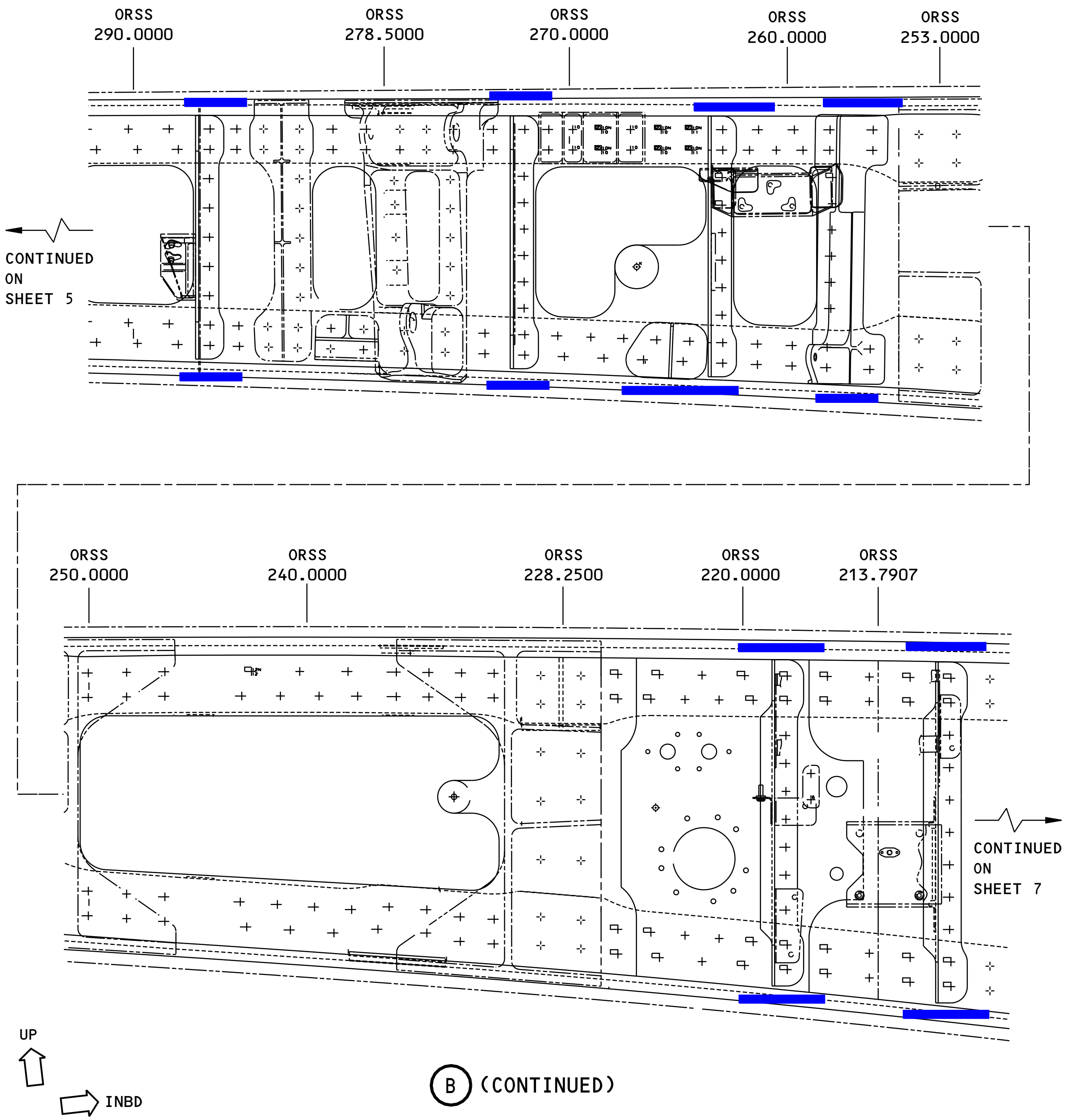
Inspection Areas
Figure 1 (Sheet 5 of 7)



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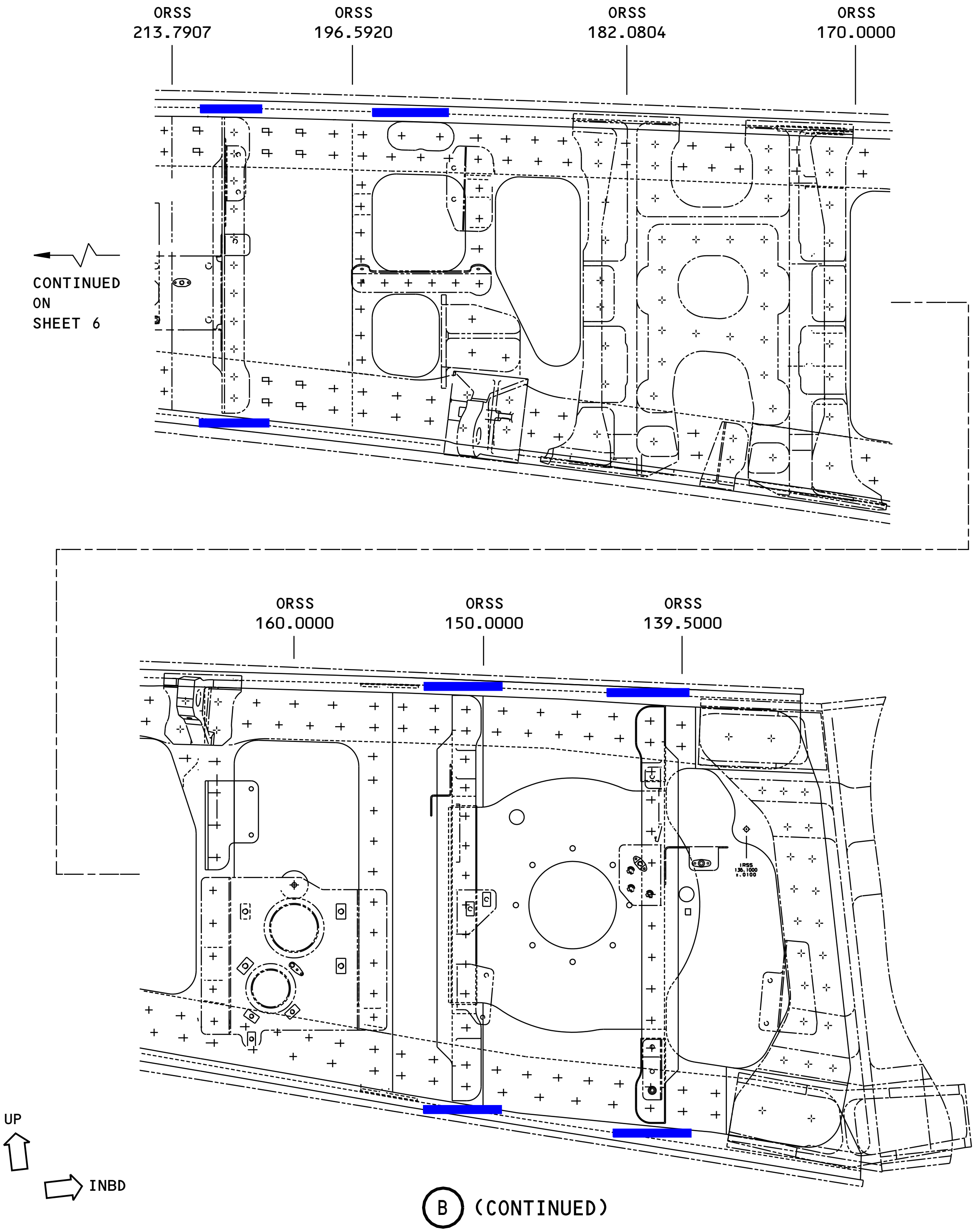
Inspection Areas
Figure 1 (Sheet 6 of 7)



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Inspection Areas
Figure 1 (Sheet 7 of 7)

PART 6 - EDDY CURRENT

WING UPPER SKIN AT THE SIDE-OF-BODY PLUS CHORD (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the wing upper skin for cracks at the side-of-body plus chord at stringer 14. The inspection is at six fastener locations that are outboard of BBL 70.85 and six fastener locations that are inboard of BBL 70.85 that attach the stringer to the plus chord. It is necessary to examine the fastener locations from inside the wing and the center section. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The wing skin is aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-13/14/15/16/17-2

   E. It is necessary to go into the fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into tank with an eddy current instrument. The eddy current instrument must be battery powered.

      NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 100 to 500 Hz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

   C. Probes

      (1) Use a reflection type ring probe that:

         (a) Operates from 100 to 500 Hz.

         (b) Has a minimum inner diameter of 0.75 inch (19.1 mm).

         (c) Has a maximum inner diameter of 0.80 inch (20.3 mm).

      (2) The probe that follows was used to help prepare this procedure.

         NOTE: Other probes can be used if they can be calibrated on the reference standard specified in Paragraph 2.D.

         NOTE: Shielded probes are recommended.

(a) RDP1.25-.75/300H; Techna NDT

D. Reference Standard

(1) Use reference standard NDT3168 as shown in Figure 2 to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Set the instrument frequency between 200 and 400 Hz.

B. Put the ring probe on the reference standard at probe position 1 as shown in Detail II of Figure 3. Adjust the center of the probe so it is above the center of the fastener hole.

C. Balance the instrument.

D. Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

E. Set the balance point at approximately 20% of full screen height (FSH) and 60% of full screen width (FSW) as shown in Detail I of Figure 3.

F. Set the lift-off (phase) so that the signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Detail I of Figure 3.

G. Put the ring probe at probe position 2 as shown by Detail II in Figure 3. Make sure the center of the probe is above the center of the fastener hole.

H. Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

I. Adjust the instrument gain to get a notch signal that is approximately 60% of FSH as shown in Detail I of Figure 3.

J. Make sure the instrument is calibrated correctly:

(1) Put the probe on the reference standard at probe position 1 as shown in Detail II of Figure 3.

(2) Move the probe above the fastener hole as necessary until the height of the hole signal is at its minimum.

(3) Balance the instrument.

(4) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 3.

(5) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

K. If the minimum signal from the notch is not 60% of FSH then do the calibration again.

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4.

B. Move the center of the probe above the center of the first fastener in the inspection area to be examined. Move the probe above the fastener to get the minimum signal from the instrument.

C. Balance the instrument.

D. Put the probe above each fastener in the inspection area and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(1) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(2) Do a calibration check as follows if the equipment is changed or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

(a) Put the probe on the reference standard at probe position 1 as shown in Detail II of Figure 3.

(b) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(c) Balance the instrument.

(d) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(e) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

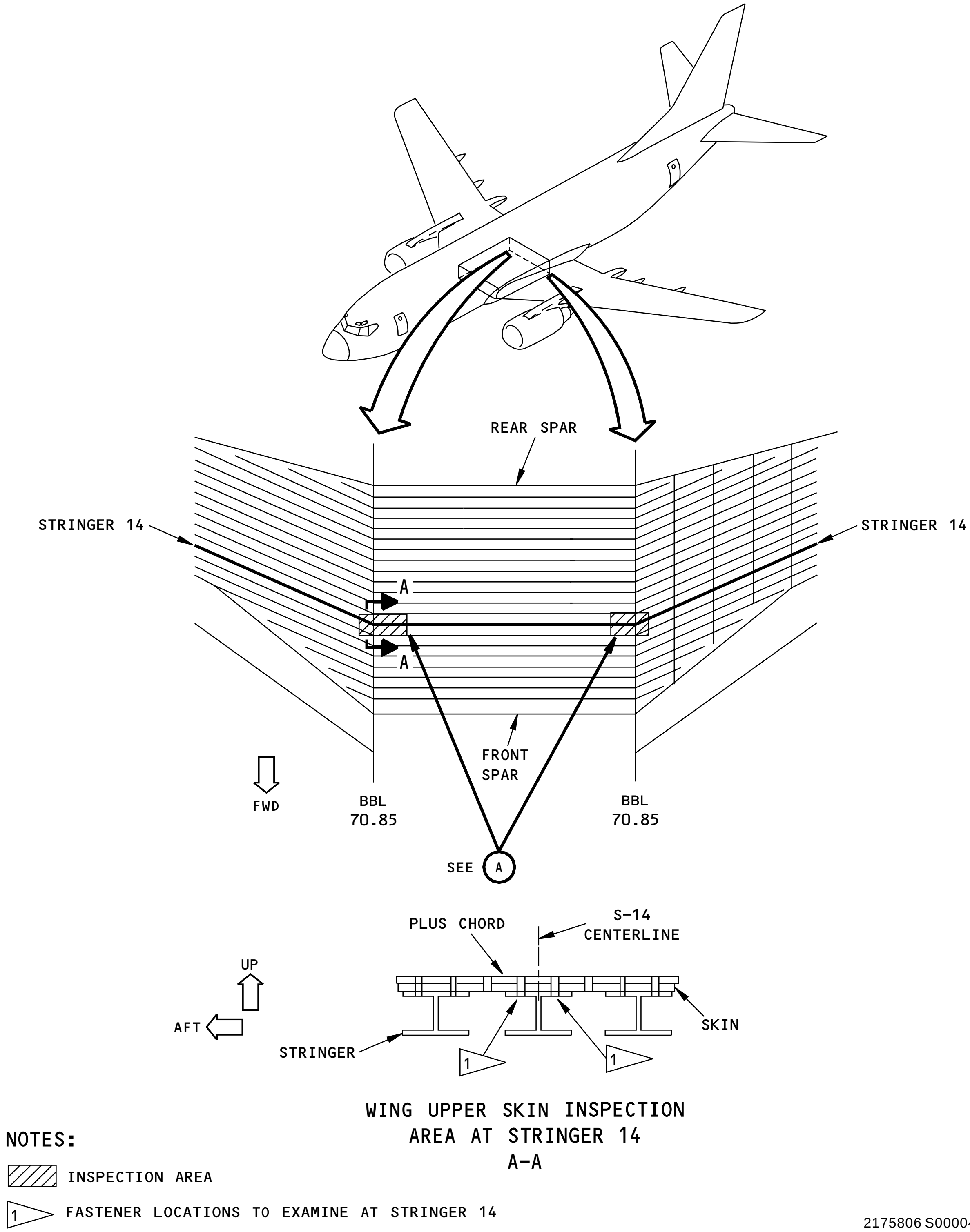
E. Do Paragraph 5. again at the fastener locations on the opposite side of the airplane.

6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack. The location must be rejected and more analysis is necessary.

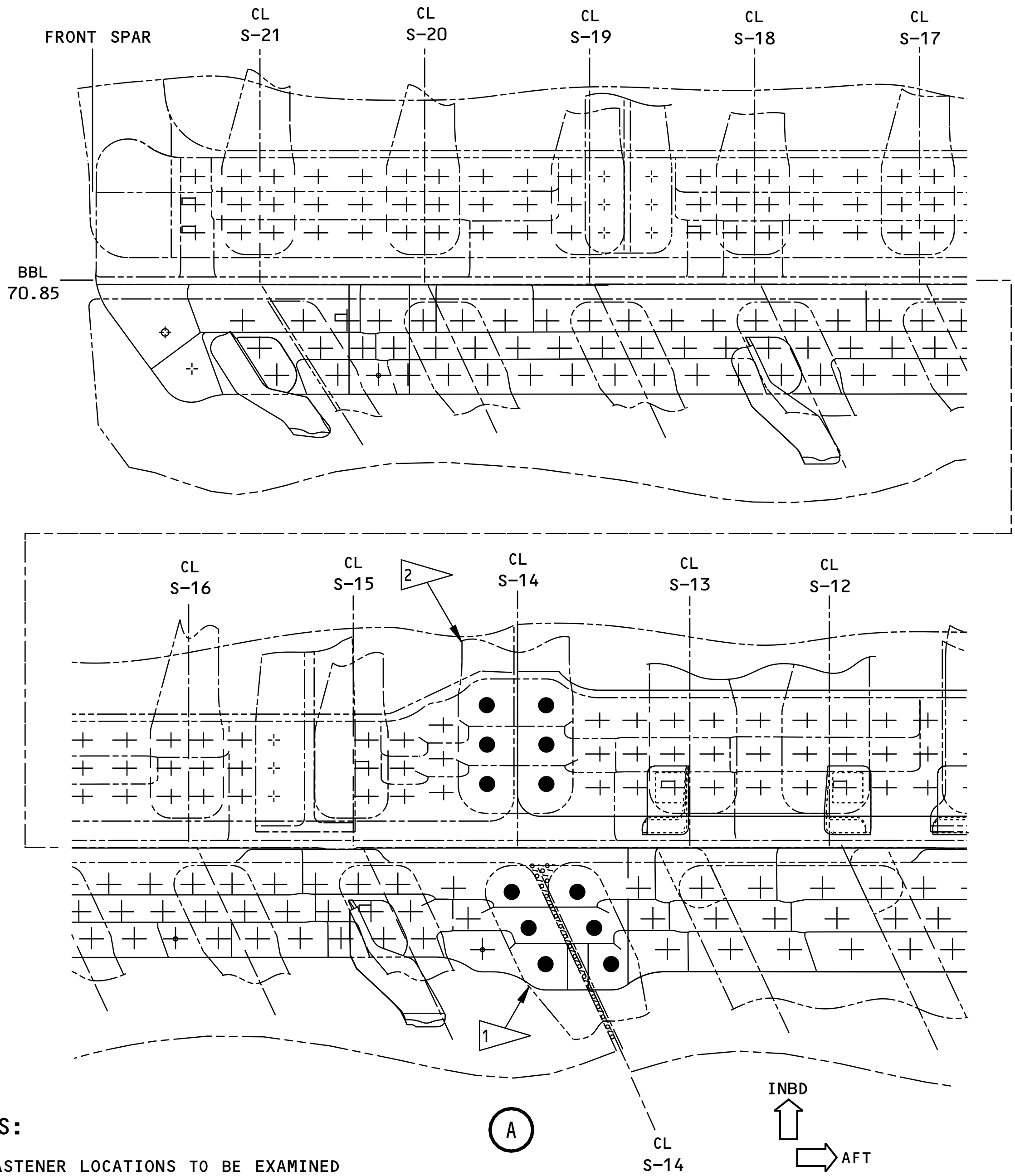
B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. If crack indications are found, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



2175806 S0000478164_V1

Inspection Areas
Figure 1 (Sheet 1 of 2)



NOTES:

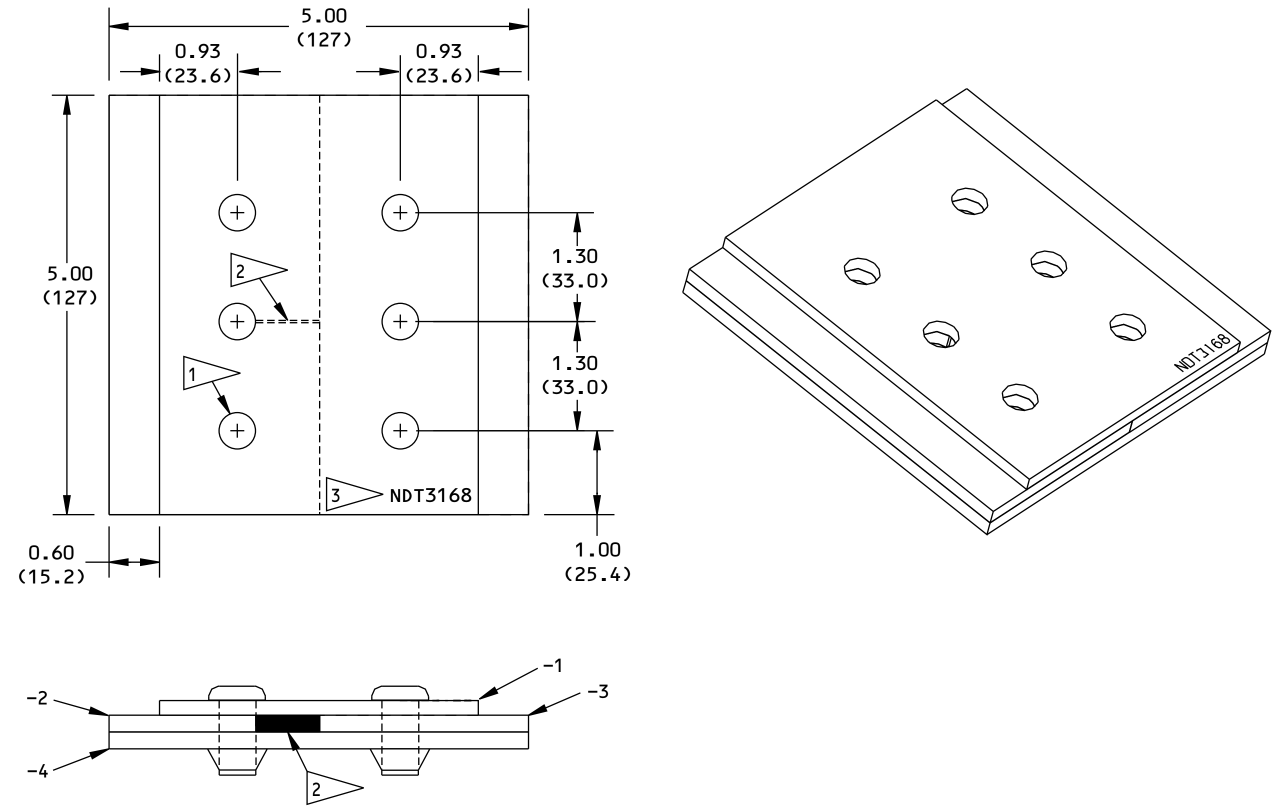
- ● FASTENER LOCATIONS TO BE EXAMINED
- • THE INSPECTION AREA FOR THE LEFT SIDE OF THE AIRPLANE IS SHOWN; THE RIGHT SIDE IS OPPOSITE

1 FASTENER LOCATIONS TO BE EXAMINED THAT ARE OUTBOARD OF BBL 70.85 WILL BE EXAMINED FROM INSIDE THE WING.

2 FASTENER LOCATIONS TO BE EXAMINED THAT ARE INBOARD OF BBL 70.85 WILL BE EXAMINED FROM INSIDE THE WING CENTER TANK.

2175807 S0000478165_V1

Inspection Areas
Figure 1 (Sheet 2 of 2)



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- MATERIAL:
  MAKE ALL 4 PLATES FROM 7055-T77511 OR 7150-T77511 OR 7075-T7351 (CLAD OR BARE)
  DIMENSIONS: -1 PLATE: 5.00 (127) X 3.80 (96.5) X 0.177 (4.5)
  -2 AND -3 PLATES: 5.00 (127) X 2.50 (63.5) X 0.200 (5.10)
  -4 PLATE: 5.00 (127) X 5.00 (127) X 0.200 (5.10)
  PUT THE EDGES OF THE -2 AND -3 PLATES TOGETHER

1. DRILL SIX 0.440 (11.20) DIAMETER HOLES.

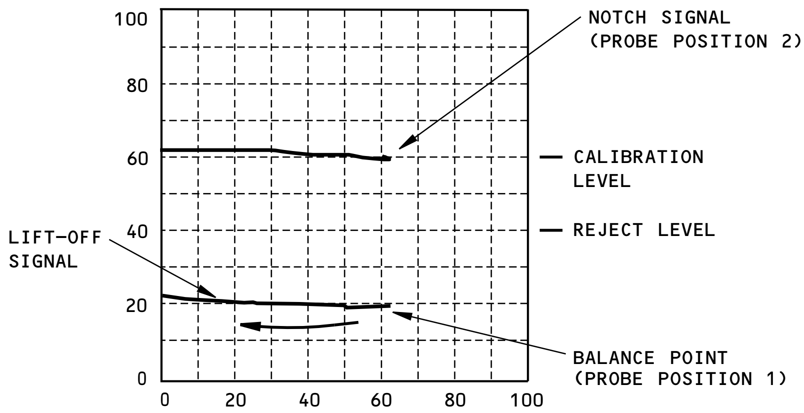
2. EDM NOTCH OR SAWCUT IN PLATE -2: FROM THE EDGE OF THE HOLE TO THE EDGE OF THE PLATE; THE MAXIMUM WIDTH IS 0.025 (0.63)

   INSTALL SIX BACB30MY14K9 BOLTS WITH BACC30M14 COLLARS. INSTALL WITH THE BOLT HEADS ON THE TOP SURFACE.

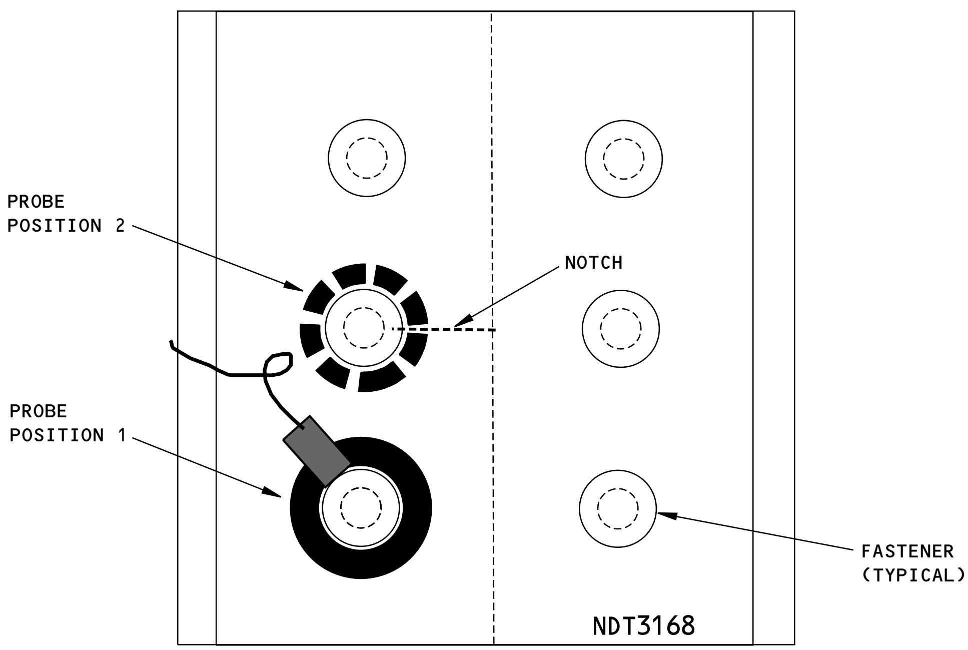
3. ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3168, AT APPROXIMATELY THIS LOCATION.

2175808 S0000478166_V1

Reference Standard NDT3168
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3168
DETAIL II

2175809 S0000478167_V1

Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

OUTER WING - LOWER CHORD OF THE FRONT SPAR (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the lower chord at the front spar of the outer wing for cracks. The skin and web flanges of the lower chord are examined from the side-of-body (SOB) to rib 27 at the fastener locations that go through the skin (horizontal) flange of the lower chord that are not externally blocked by rub strips or nacelle fittings. Fastener locations that are externally blocked by rub strips or nacelle fittings are examined internally with an ultrasonic procedure. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. It can be necessary to remove the nacelle fairing to do this inspection.

   D. The lower chord is aluminum.

   E. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

   NOTE: This inspection is done from the skin (horizontal) flange side of the lower chord to find cracks in the skin flange, but it will also find longer cracks that are in the web flange of the lower chord. Thus, this procedure also examines the web flange of the lower chord for cracks as specified by 737 MPD DTR Items 57-20-04-6, -7, and -10.

   (1) Item: 57-20-04-1

   (2) Item: 57-20-04-4

   (3) Item: 57-20-04-6

   (4) Item: 57-20-04-7

   (5) Item: 57-20-04-10

2. **Equipment**

   A. General

   (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

   (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

   (1) Use an eddy current instrument that:

   (a) Has an impedance plane display.

   (b) Operates from 50 Hz to 1.5 kHz.

   (2) The instrument that follows was used to help prepare this procedure.

   (a) Phasec 2D/3D; GE Inspection Technologies

   C. Probes

   NOTE: Two different ring probes are necessary to do this inspection. It is necessary to change the ring probe inner diameter when the fastener diameter changes in the inspection area. See Table I in Figure 3 to identify the ring probe to use for the different rib locations.

   (1) Use reflection type ring probes that:

(a) Operate from 50 Hz to 1.5 kHz.

(b) Have the diameters that follow (identified as PROBE 1):

1) Has a minimum inner diameter of 0.55 inch (14.0 mm).

2) Has a maximum inner diameter of 0.67 inch (17.0 mm).

(c) Have the diameters that follow (identified as PROBE 2):

1) Has a minimum inner diameter of 0.38 inch (9.7 mm).

2) Has a maximum inner diameter of 0.50 inch (12.7 mm).

(2) The ring probes that follow were used to help prepare this procedure.

NOTE: Other probes can be used if they can be calibrated with the reference standard specified in Paragraph 2.D.

NOTE: Shielded probes are recommended.

(a) PROBE 1:

1) RDP1.2-100H-7; Techna NDT

2) RR0112-5/TF; NDT Engineering Inc.

(b) PROBE 2:

1) RDP.75-500H-5; Techna NDT

2) RR019-5/TF; NDT Engineering Inc.

D. Reference Standards

(1) Use reference standards NDT3153-X as shown in Figure 2 to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

(1) Remove the nacelle fairing if necessary to get access.

B. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Identify the applicable reference standard and probe to use from Table I in Figure 3 for the area on the airplane to be examined.

B. Set the instrument frequency to the frequency identified in Table II of Figure 3 for the reference standard to be used.

C. Put the ring probe on the applicable reference standard at probe position 1 as shown in Detail II in Figure 3. Adjust the center of the probe so it is above the center of the fastener hole.

D. Balance the instrument.

E. Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

F. Set the balance point at approximately 20% of full screen height (FSH) and 60% of full screen width (FSW) as shown in Detail I in Figure 3.

G. Set the lift-off (phase) so that the signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Detail I in Figure 3.

H. Put the ring probe at probe position 2 as shown in Detail II in Figure 3. Make sure the center of the probe is above the center of the fastener hole.

I. Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

J. Adjust the instrument gain to get a notch signal that is approximately 60% of FSH as shown in Detail I in Figure 3.

K. Make sure the instrument is calibrated correctly:

(1) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(2) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(3) Balance the instrument.

(4) Put the probe on the reference standard at probe position 2 as shown in Detail II in Figure 3.

(5) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

L. If the minimum signal from the notch is not 60% of FSH then do the calibration again.

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4. for the fastener location to be examined. See Table I in Figure 3 for the reference standard and probe to use during calibration for the rib bay to be examined.

NOTE: There are three conditions that make it necessary to balance the instrument:

(1) When you start the inspection in a new rib bay.

(2) When the balance point moves upscale or downscale by 10% of full screen height (FSH) because of a change in the material thickness.

(3) When the location of the inspection changes from a forward row fastener to an aft row fastener, or from an aft row fastener to a forward row fastener.

NOTE: Make sure to balance the instrument each time you examine fastener locations in a different row. Figure 1 identifies the aft and forward row fastener locations.

NOTE: The lower chord thickness changes that occur in the inspection area will cause the balance point to gradually increase or decrease. Monitor the balance point carefully during the inspection. It is necessary to examine the fasteners that are adjacent to each other to be able to see the balance point gradually change. Start the inspection at the side-of-body and move outboard. If the balance point increases or decreases by 10% of FSH, it is necessary to balance the instrument again.

NOTE: Use Part 4, 57-10-09 to examine the DTR 57-20-04-1 inspection locations where the skin flange of the lower chord is hidden.

B. Move the center of the probe above the center of the first fastener in the row of the rib bay to be examined. Move the probe above the fastener to get the minimum signal from the instrument.

C. Balance the instrument.

D. Put the ring probe above each fastener in the forward row of the rib bay and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(1) Monitor your location along the lower chord of the front spar to identify when it is necessary to change reference standards, probes, frequencies and when to calibrate the instrument again. Table I and Table II in Figure 3 identify the rib locations, reference standards, probes and frequencies.

(2) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(3) Do a calibration check as follows if the equipment is changed or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

(a) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(b) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(c) Balance the instrument.

(d) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(e) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

E. Do Paragraph 5.A. thru Paragraph 5.D. again for the fasteners in the aft row of the rib bay.

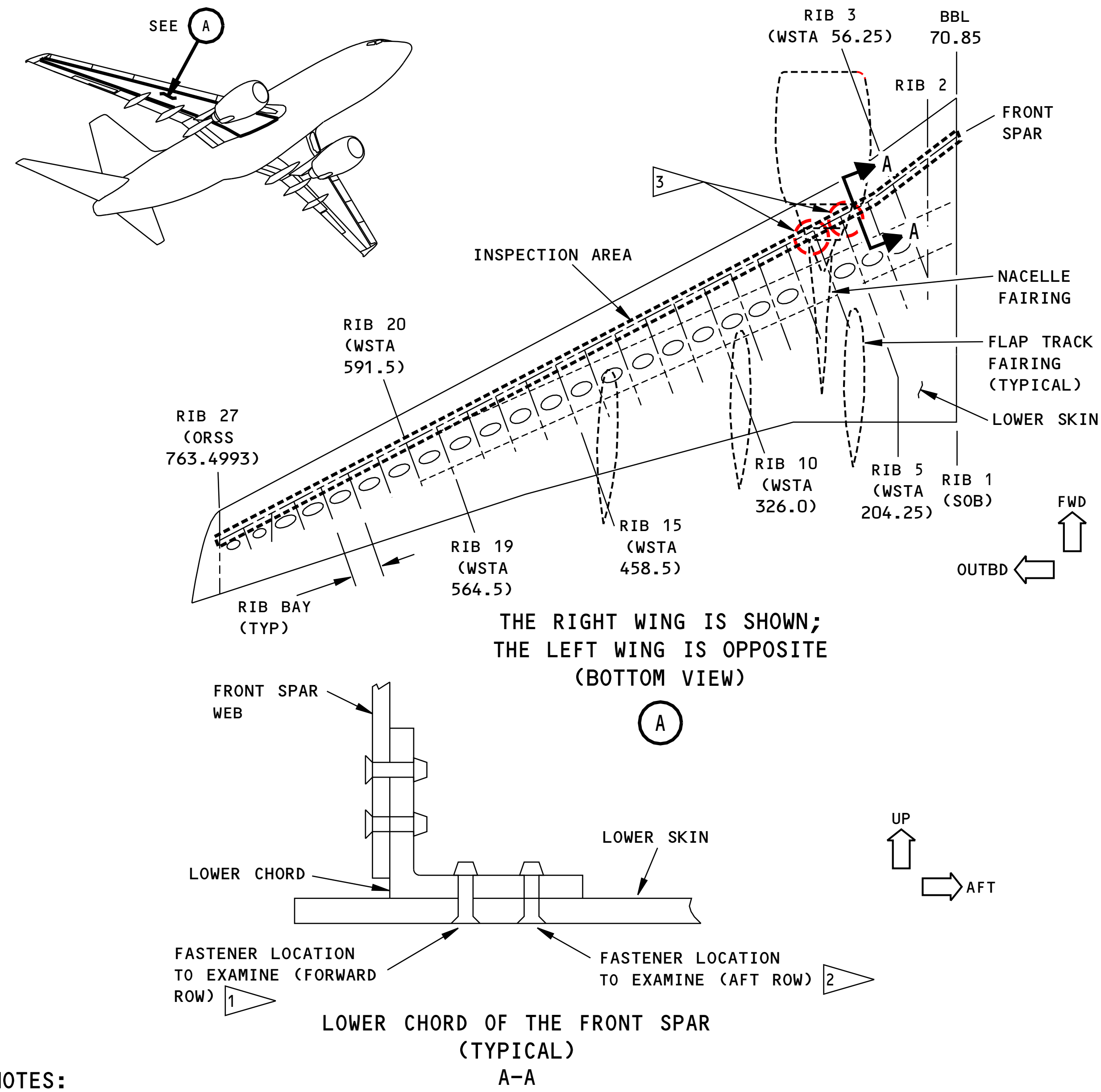
F. Do Paragraph 5.A. thru Paragraph 5.E. again for each rib bay to be examined.

6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack. The location must be rejected and more analysis is necessary.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. If crack indications are found, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



NOTES:

- THE RIGHT WING IS SHOWN; THE LEFT WING IS OPPOSITE
- THE INSPECTION AREA IS FROM THE SIDE-OF-BODY (SOB) TO RIB 27. START THE INSPECTION AT THE SOB AND MOVE OUTBOARD.

1 EXAMINE THE LOWER CHORD AT THE FORWARD ROW OF FASTENERS. IT IS NECESSARY TO BALANCE THE INSTRUMENT AT A FASTENER IN THE FORWARD ROW TO ADJUST FOR NO EDGE EFFECT.

2 EXAMINE THE LOWER CHORD AT THE AFT ROW OF FASTENERS. IT IS NECESSARY TO BALANCE THE INSTRUMENT AT A FASTENER IN THE AFT ROW TO ADJUST FOR EDGE EFFECT.

3 FASTENER LOCATIONS THAT ARE EXTERNALLY BLOCKED BY RUB STRIPS OR NACELLE FITTINGS ARE EXAMINED INTERNALLY WITH AN ULTRASONIC PROCEDURE.

2175810 S0000478145_V2

Inspection Area
Figure 1

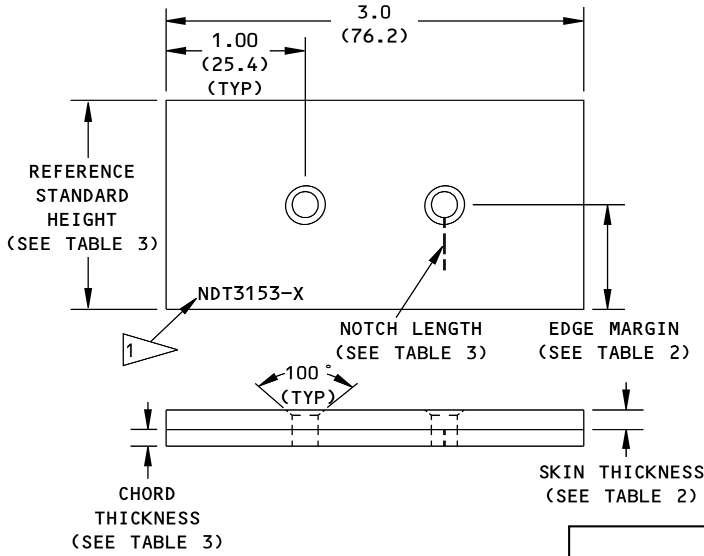


TABLE 1 - REFERENCE STANDARD CONFIGURATIONS		
PART NUMBER	CHORD (TABLE 3)	SKIN (TABLE 2)
NDT3153-A	CHORD-01	LWRWINGSKIN-01
NDT3153-B	CHORD-02	LWRWINGSKIN-02
NDT3153-C	CHORD-03	LWRWINGSKIN-03
NDT3153-D	CHORD-04	LWRWINGSKIN-04
NDT3153-E	CHORD-05	LWRWINGSKIN-05
NDT3153-F	CHORD-06	LWRWINGSKIN-06
NDT3153-G	CHORD-07	LWRWINGSKIN-07
NDT3153-H	CHORD-08	LWRWINGSKIN-08
NDT3153-J	CHORD-09	LWRWINGSKIN-09

TABLE 2 - SKIN DATA			
PART NUMBER	SKIN THICKNESS	BOLT DIAMETER	EDGE MARGIN
LWRWINGSKIN-01	0.140 (3.56)	#6	0.750 (19.05)
LWRWINGSKIN-02	0.200 (5.08)	#6	0.750 (19.05)
LWRWINGSKIN-03	0.250 (6.35)	#6	0.750 (19.05)
LWRWINGSKIN-04	0.290 (7.37)	#8	0.625 (15.88)
LWRWINGSKIN-05	0.350 (8.89)	#8	0.625 (15.88)
LWRWINGSKIN-06	0.400 (10.16)	#8	0.625 (15.88)
LWRWINGSKIN-07	0.430 (10.92)	#10	0.780 (19.81)
LWRWINGSKIN-08	0.550 (13.97)	#10	0.780 (19.81)
LWRWINGSKIN-09	0.280 (7.11)	#12	0.937 (23.80)

TABLE 3 - CHORD DATA			
PART NUMBER	CHORD THICKNESS	NOTCH LENGTH	REFERENCE STANDARD HEIGHT
CHORD-01	0.120 (3.05)	0.375 (9.53)	1.5 (38)
CHORD-02	0.120 (3.05)	0.375 (9.53)	1.5 (38)
CHORD-03	0.145 (3.68)	0.375 (9.53)	1.5 (38)
CHORD-04	0.195 (4.95)	TO EDGE	1.5 (38)
CHORD-05	0.200 (5.08)	TO EDGE	1.5 (38)
CHORD-06	0.230 (5.84)	TO EDGE	1.5 (38)
CHORD-07	0.265 (6.73)	TO EDGE	2.0 (51)
CHORD-08	0.300 (7.62)	TO EDGE	2.0 (51)
CHORD-09	0.245 (6.22)	TO EDGE	2.0 (51)

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

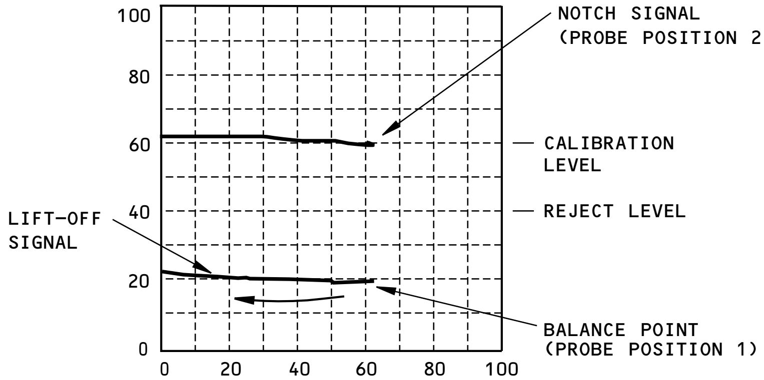
INCHES	MILLIMETERS	ANGULAR
X.XXX = ±0.005	X.XX = ±0.010	±2°
X.XX = ±0.025	X.X = ±0.05	
X.X = ±0.050	X = ±1	

- MATERIAL: 2024-T3 CLAD OR BARE AIRCRAFT ALUMINUM
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- EDM NOTCH:
  WIDTH: 0.010 (0.25) MAXIMUM
  LENGTH: SEE TABLE 3 FOR THE NOTCH LENGTH (MEASURED FROM THE BOLT SHANK)
  DEPTH: THROUGH THE THICKNESS
- FASTENERS
  SEE TABLE 2 FOR THE BOLT DIAMETERS. USE BACB30NW BOLTS (WITH BACC30M COLLARS) OR BACB30XT BOLTS (WITH BACC30BK COLLARS) OR BACB30YR BOLTS (WITH BACC30BR COLLARS).
  USE THE SAME FASTENERS AT THE TWO LOCATIONS. (THE FASTENERS ARE NOT SHOWN)

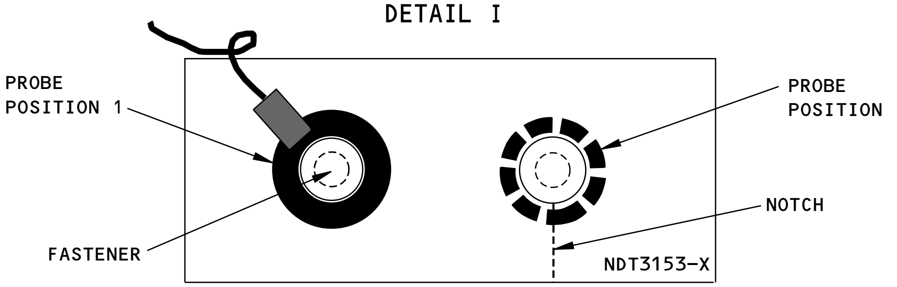
1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER AT APPROXIMATELY THIS LOCATION.

2175811 S0000478146_V1

Reference Standard NDT3153-X
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3153-X
DETAIL II

RIB LOCATIONS	SOB TO RIB 3	RIB 3 TO 4 [1]	RIB 4 TO 9 [1]	RIB 9 TO 11	RIB 11 TO 14	RIB 14 TO 16	RIB 16 TO 18	RIB 18 TO 20	RIB 20 TO 23	RIB 23 TO 27
REFERENCE STANDARD NDT3153-() TO USE	J	G	H	G	F	E	D	C	B	A
RING PROBE TO USE (SEE PARAGRAPH 2.C.(2))	PROBE 1	PROBE 1	PROBE 1	PROBE 1	PROBE 2	PROBE 2	PROBE 2	PROBE 2	PROBE 2	PROBE 2

REFERENCE STANDARD DASH NUMBER (NDT3153-X)
TO USE AT DIFFERENT RIB LOCATIONS
TABLE I

NDT3153-() REFERENCE STANDARD	-A	-B	-C	-D	-E	-F	-G	-H	-J
FREQUENCY	800 Hz	550 Hz	380 Hz	250 Hz	200 Hz	170 Hz	130 Hz	100 Hz	230 Hz

FREQUENCY SETTINGS FOR DIFFERENT REFERENCE STANDARDS
TABLE II

[1] THE BALANCE POINT AT THESE FASTENER LOCATIONS CAN CHANGE QUICKLY BECAUSE OF MATERIAL THICKNESS CHANGES. IT IS NECESSARY TO MONITOR THE BALANCE POINT CAREFULLY AT THESE LOCATIONS.

2175812 S0000478147_V1

Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

OUTER WING - SPLICE STRINGERS ALONG THE WING LOWER SKIN (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the horizontal flanges of splice stringers 5 and 9 at the wing lower skin for cracks. Stringer 9 is examined from Rib 1 to 19 and Stringer 5 is examined from Rib 1 to Rib 20 at all fastener locations that are not blocked by fittings or rub strips. It is necessary to remove the nacelle, flap track and wing-to-body fairings to do this inspection. It can be necessary to remove some wing-to-body fairing brackets to do this inspection. See Figure 1 for the inspection areas.

   NOTE: It is necessary to examine fastener locations that are blocked by fittings or rub strips with a different high frequency eddy current (HFEC) procedure, Part 6, 57-10-33. See Figure 4 for instructions about how to examine fastener locations at fittings and rub strips.

   B. This procedure uses an impedance plane display instrument.

   C. The splice stringers are aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-03-1

      (2) Item: 57-20-03-2

      (3) Item: 57-20-03-3

      (4) Item: 57-20-03-4

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 100 to 850 Hz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

   C. Probes

      (1) Use a reflection type ring probe that:

         (a) Operates from 100 to 850 Hz.

         (b) Has a minimum inner diameter of 0.50 inch (12.7 mm).

      (2) The probe that follows was used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) RDP1.0-100H-6; Techna NDT

D. Reference Standards

(1) Use reference standards NDT3152-X as shown in Figure 2 to help calibrate the instrument.

NOTE: The reference standards necessary for each wing configuration can be found in Table I of Figure 3. It is only necessary to get the reference standards applicable to the wing configuration to be examined.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

NOTE: Fastener locations blocked by fittings or rub strips are examined with a different procedure. See Figure 4 for instructions about how to examine fastener locations at fittings and rub strips.

B. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Identify the applicable reference standard to use during calibration from Table I in Figure 3 for the area on the airplane to be examined.

B. Set the instrument frequency to the frequency identified in Table II in Figure 3 for the reference standard to be used.

C. Put the ring probe on the applicable reference standard at probe position 1 as shown in Detail II in Figure 3. Adjust the center of the probe so it is above the center of the fastener hole.

D. Balance the instrument.

E. Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

F. Set the balance point at approximately 20% of full screen height (FSH) and 60% of full screen width (FSW) as shown in Detail I in Figure 3.

G. Set the lift-off (phase) so that the signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Detail I in Figure 3.

H. Put the ring probe at probe position 2 as shown in Detail II in Figure 3. Make sure the center of the probe is above the center of the fastener hole.

I. Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

J. Adjust the instrument gain to get a notch signal that is approximately 60% of FSH as shown in Detail I in Figure 3.

K. Make sure the instrument is calibrated correctly:

(1) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(2) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(3) Balance the instrument.

(4) Put the probe on the reference standard at probe position 2 as shown in Detail II in Figure 3.

(5) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

L. If the minimum signal from the notch is not 60% of FSH then do the calibration again.

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4. for the fastener location to be examined. See Table I in Figure 3 for the reference standard to use during calibration for the rib bay to be examined.

NOTE: There are three conditions that make it necessary to balance the instrument:

(1) When you start the inspection in a new rib bay.

(2) When the balance point moves upscale or downscale by 10% of full screen height because of skin thickness changes.

(3) When the location of the inspection changes from an inner row fastener to an outer row fastener, or from an outer row fastener to an inner row fastener.

NOTE: The instrument must be calibrated differently to examine the fastener locations in the outer rows than the inner rows to adjust for edge effect. Make sure to balance the instrument each time you change from an inner row of fasteners to an outer row of fasteners. Figure 1 identifies the inner and outer row fastener locations.

NOTE: The splice stringer thickness changes that occur in the inspection area will cause the balance point to gradually increase or decrease. Monitor the balance point carefully during the inspection. It is necessary to examine the fasteners in the sequence shown in View D in Figure 1 to be able to see the balance point gradually change. Start the inspection at the side-of-body and move outboard. If the balance point increases or decreases by 10% of FSH, it is necessary to balance the instrument again.

NOTE: It is necessary to examine fastener locations that are blocked by fittings or rub strips with a different high frequency eddy current (HFEC) procedure, Part 6, 57-10-33. See Figure 4 for instructions about how to examine fastener locations at fittings and rub strips.

B. Set the airplane baseline signal for a satisfactory fastener signal as follows:

(1) Move the center of the probe above the center of one of the fasteners in the area to be examined. Move the probe above the fastener to get the minimum signal from the instrument.

(2) Balance the instrument.

(3) Compare the signal from three or more adjacent fasteners in the same row with the signal from the first fastener.

NOTE: Do not change the instrument gain when you set the airplane baseline signal.

(4) Use the fastener from this area that has the smallest signal as the baseline signal of the airplane.

NOTE: Examine this fastener frequently during the inspection to make sure the instrument baseline has not changed.

C. Balance the instrument on the fastener which has the smallest signal that was identified in Paragraph 5.B.(4).

D. Move the probe above the fastener as necessary until the height of the signal is at its minimum and balance the instrument.

E. Put the ring probe above each fastener in the inspection area and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(1) Move the ring probe from the aft outer row to the forward outer row of fasteners as shown in View D of Figure 1 to examine the outer fastener rows in the inspection area. Move the ring probe from the aft inner row to the forward inner row of fasteners as shown in View D of Figure 1 to examine the inner fastener rows.

(2) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(3) Monitor your location along the stringer to identify when it is necessary to change reference standards, frequencies and to calibrate the instrument again. Table I and Table II in Figure 3 identify the rib locations, reference standards, and frequencies.

(4) Do a calibration check as follows if the equipment is changed or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

(a) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(b) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(c) Balance the instrument.

(d) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(e) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

F. Do Paragraph 5.A. thru Paragraph 5.E. again to examine splice stringers 5 and 9 for cracks in all rib bays in the wing.

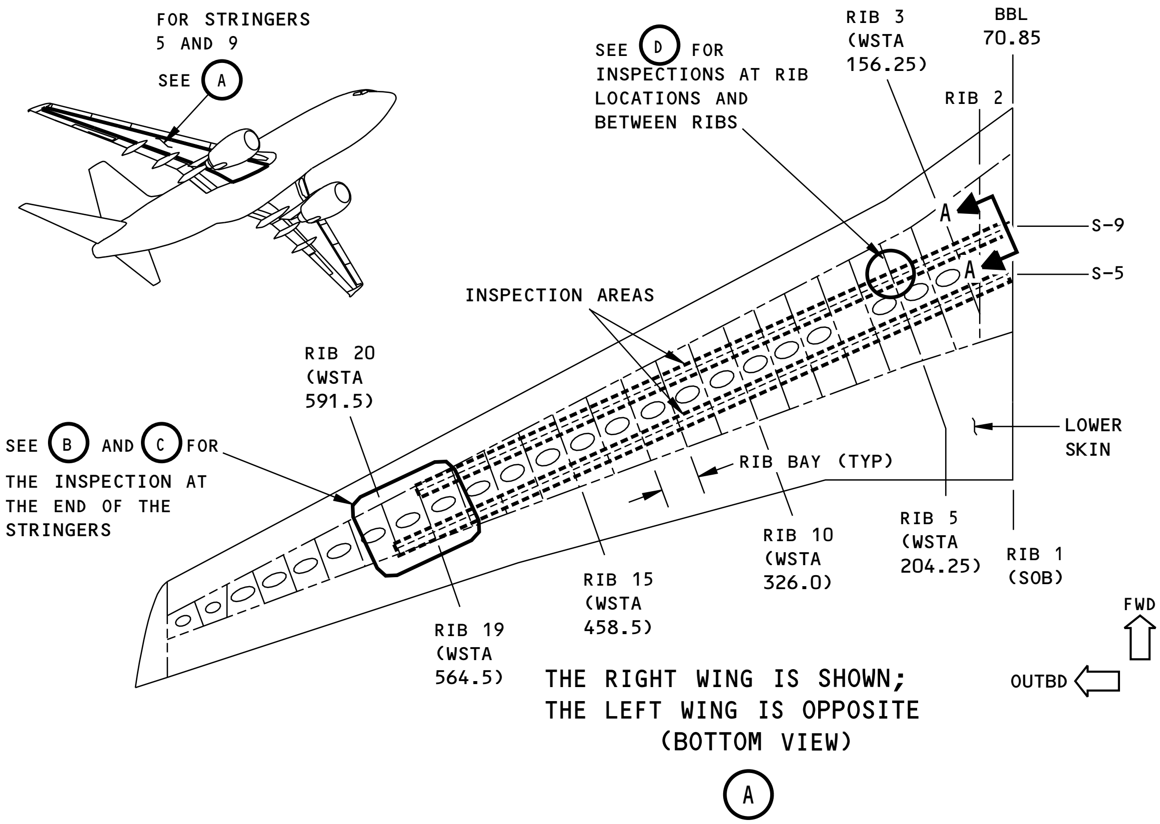
G. Do Paragraph 5.A. thru Paragraph 5.F. again to examine splice stringers 5 and 9 for cracks in all rib bays in the other wing.

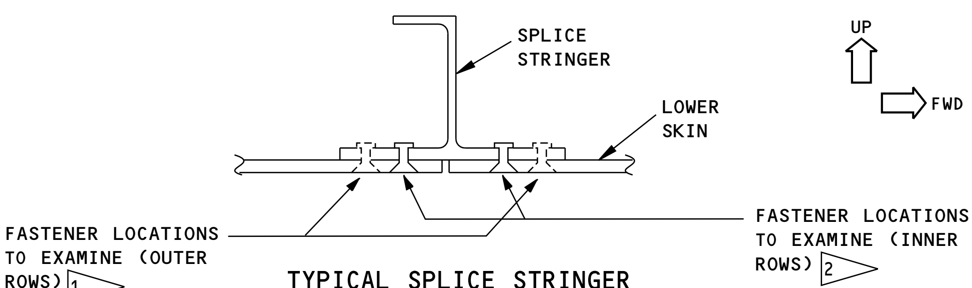
6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack. The location must be rejected and more analysis is necessary.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. If crack indications are found, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.





TYPICAL SPLICE STRINGER
INSPECTION AREA
A-A

NOTES:

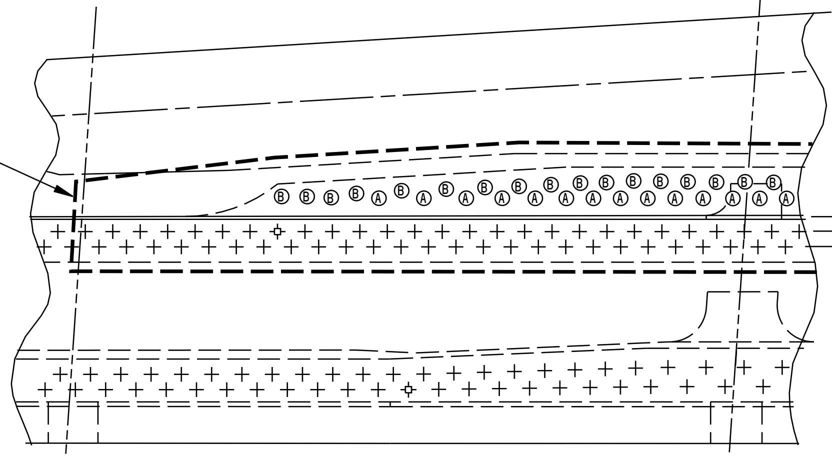
- THE RIGHT WING IS SHOWN; THE LEFT WING IS OPPOSITE
- THE INSPECTION AREA IS FROM RIB 1 TO RIB 19 FOR STRINGER 9 AND FROM RIB 1 TO RIB 20 FOR STRINGER 5. START THE INSPECTION AT THE SIDE-OF-BODY (SOB) AND MOVE OUTBOARD. USE THE INSPECTION SEQUENCE SHOWN IN SHEET 3.

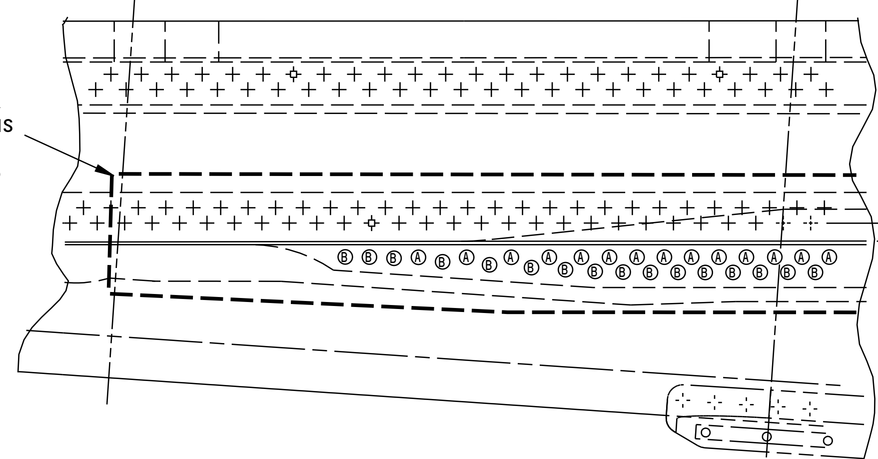
1 EXAMINE THE OUTER ROW OF FASTENER LOCATIONS. IT IS NECESSARY TO BALANCE THE INSTRUMENT AT A FASTENER IN THE OUTER ROW TO ADJUST FOR EDGE EFFECT. SEE VIEWS B AND C FOR INSPECTIONS AT FASTENER LOCATIONS WHERE THE FLANGE IS TAPERED. SEE SHEET 3 FOR THE TYPICAL INSPECTION SEQUENCE TO FOLLOW.

2 EXAMINE THE INNER ROW OF FASTENER LOCATIONS. IT IS NECESSARY TO BALANCE THE INSTRUMENT AT A FASTENER IN THE INNER ROW TO ADJUST FOR NO EDGE EFFECT. SEE VIEWS B AND C FOR INSPECTIONS AT FASTENER LOCATIONS WHERE THE FLANGE IS TAPERED. SEE SHEET 3 FOR THE TYPICAL INSPECTION SEQUENCE TO FOLLOW.

2175938 S0000478170_V1

Inspection Areas
Figure 1 (Sheet 1 of 3)





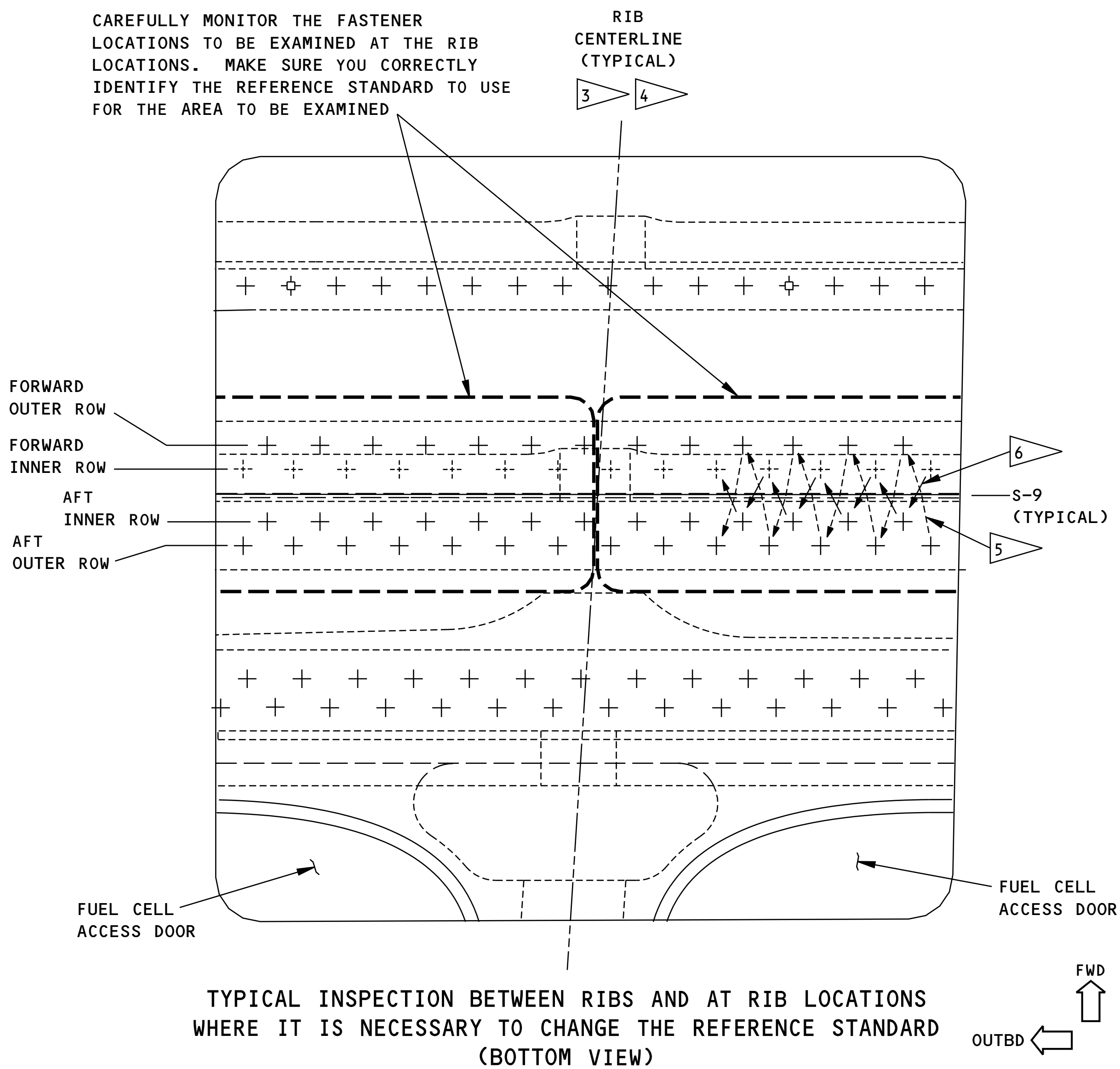
NOTES:

Ⓐ EXAMINE THESE FASTENER LOCATIONS WITH THE INSTRUMENT CALIBRATED TO EXAMINE THE INNER ROW FASTENER LOCATIONS (NO EFFECT FROM EDGE MARGIN).

Ⓑ EXAMINE THESE FASTENER LOCATIONS WITH THE INSTRUMENT CALIBRATED TO EXAMINE THE OUTER ROW FASTENER LOCATIONS (EFFECT FROM EDGE MARGIN).

2175943 S0000478171_V1

Inspection Areas
Figure 1 (Sheet 2 of 3)



TYPICAL INSPECTION BETWEEN RIBS AND AT RIB LOCATIONS WHERE IT IS NECESSARY TO CHANGE THE REFERENCE STANDARD
(BOTTOM VIEW)

D

NOTES:

3 RIB CENTERLINES ARE TYPICALLY AT THE CENTER OF THE SPACE BETWEEN THE FUEL CELL ACCESS DOORS.

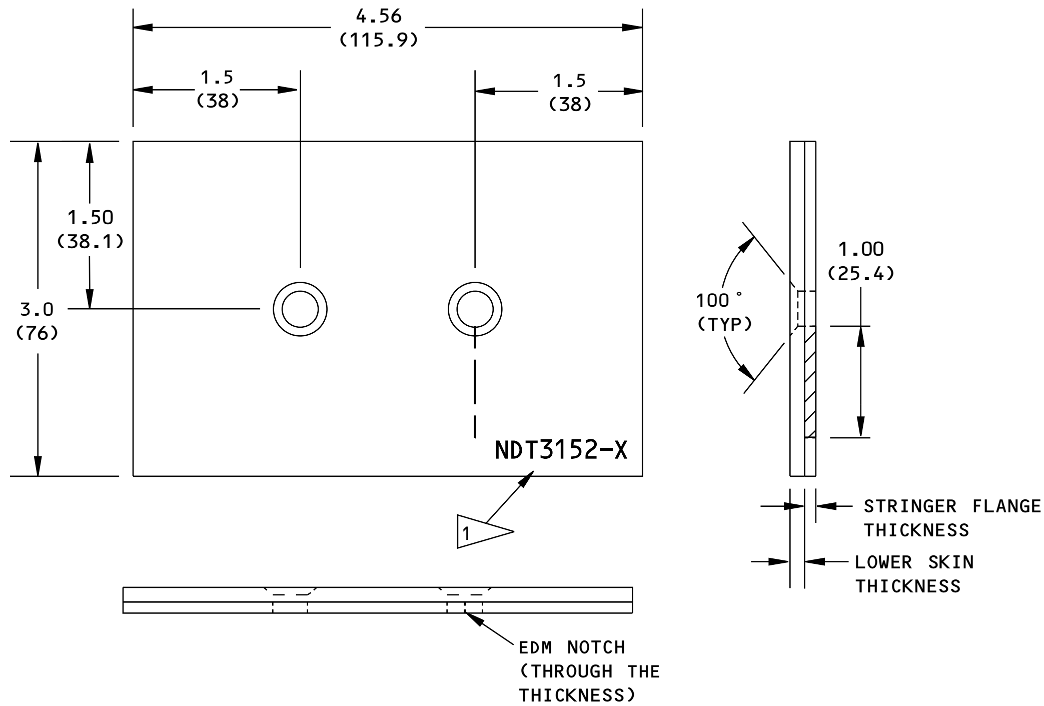
4 TYPICAL RIB LOCATION WHERE IT IS NECESSARY TO CHANGE THE REFERENCE STANDARD

5 EXAMINE THE OUTER ROW OF FASTENER LOCATIONS IN THE SEQUENCE AS SHOWN. EXAMINE THE OUTER ROW OF FASTENER LOCATIONS SEPARATE FROM THE INNER ROW. BALANCE THE INSTRUMENT ON THE MOST INBOARD FASTENER OF THE OUTER ROW OF THE RIB BAY.

6 EXAMINE THE INNER ROW OF FASTENER LOCATIONS IN THE SEQUENCE AS SHOWN. EXAMINE THE INNER ROW OF FASTENER LOCATIONS SEPARATE FROM THE OUTER ROW. BALANCE THE INSTRUMENT ON THE MOST INBOARD FASTENER OF THE INNER FOW OF THE RIB BAY.

2175956 S0000478172_V1

Inspection Areas
Figure 1 (Sheet 3 of 3)



NDT3152-X ASSEMBLY		
PART NUMBER	LOWER SKIN THICKNESS	STRINGER FLANGE THICKNESS
NDT3152-A	0.150	0.120
NDT3152-B	0.200	0.110
NDT3152-C	0.200	0.195
NDT3152-D	0.250	0.200
NDT3152-E	0.300	0.200
NDT3152-F	0.300	0.295
NDT3152-G	0.350	0.195
NDT3152-H	0.350	0.295
NDT3152-I	0.400	0.210
NDT3152-J	0.450	0.210
NDT3152-K	0.490	0.265

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS	ANGULAR
X.XXX = ±0.005	X.XX = ±0.010	±2 °
X.XX = ±0.025	X.X = ±0.05	
X.X = ±0.050	X = ±1	

- MATERIAL: 2024-T3 AIRCRAFT ALUMINUM
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- EDM NOTCH:

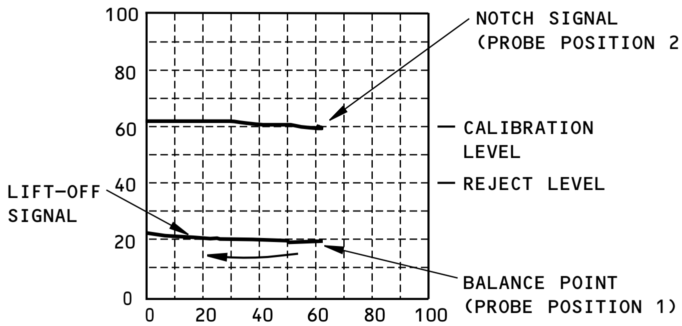
  WIDTH: 0.010 (0.25) MAXIMUM
  LENGTH (MEASURED FROM THE BOLT SHANK): 1.00 (25.4)
  DEPTH: THROUGH THE THICKNESS
- FASTENERS:

  BACB30XT10 BOLTS WITH BACC30BK10 COLLARS OR BACB30YP10 BOLTS WITH BACC30BP10 COLLARS AT ALL LOCATIONS (THE FASTENERS ARE NOT SHOWN)

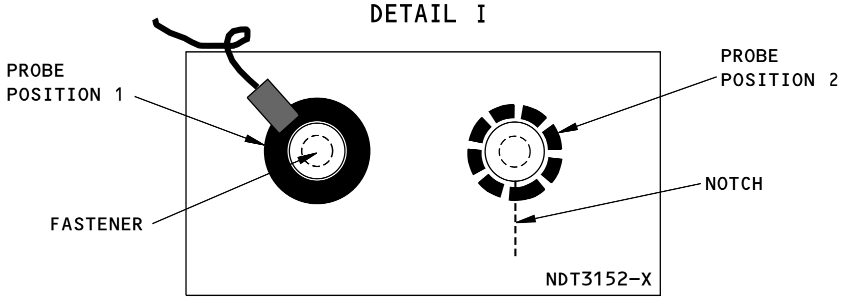
1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER AT APPROXIMATELY THIS LOCATION.

2175958 S0000478173_V2

Reference Standard NDT3152-X
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3152-X
DETAIL II

Wing Models	Rib Locations [1]																		
	Rib 1 to 2	Rib 2 to 3	Rib 3 to 4	Rib 4 to 5	Rib 5 to 6	Rib 6 to 7	Rib 7 to 8	Rib 8 to 9	Rib 9 to 10	Rib 10 to 11	Rib 11 to 12	Rib 12 to 13	Rib 13 to 14	Rib 14 to 15	Rib 15 to 16	Rib 16 to 17	Rib 17 to 18	Rib 18 to 19	Rib 19 to 20
737-600 / S-5	I	G	D	E	G	G	G	E	E	E	D	D	D	C	B	B	B	B	B
737-600 / S-9	G	C	D	E	G	G	G	E	E	E	D	D	D	C	B	B	B	B	B
737-700 / S-5	J	G	E	E	G	H	H	H	F	F	E	D	D	D	C	B	A	A	A
737-700 / S-9	I	D	E	G	G	H	H	H	F	F	E	D	D	D	C	B	A	A	A
737-700WS / S-5	J	G	E	G	G	H	H	H	F	E	E	D	D	D	B	B	A	A	A
737-700WS / S-9	I	D	E	E	G	H	H	H	F	E	E	D	D	D	B	B	A	A	A
737-700P / S-5	J	I	D	E	G	H	H	H	F	F	E	E	D	D	D	B	B	A	A
737-700P / S-9	I	I	D	E	G	H	H	H	F	F	E	E	D	D	D	B	B	A	A
737-800 / S-5	K	I	D	G	H	H	H	H	F	F	E	E	D	D	D	B	B	A	A
737-800 / S-9	I	I	D	G	H	H	H	H	F	F	E	E	D	D	D	B	B	A	A
737-800WS / S-5	K	I	D	G	H	H	H	H	F	F	E	E	D	D	D	B	B	A	A
737-800WS / S-9	I	I	D	G	H	H	H	H	F	F	E	E	D	D	D	B	B	A	A
737-800P / S-5	K	I	D	G	H	H	H	H	F	F	F	E	D	D	D	B	B	A	A
737-800P / S-9	I	I	D	G	H	H	H	H	F	F	F	E	D	D	D	B	B	A	A
737-900ER / S-5	K	I	D	F	H	H	H	H	F	F	F	E	D	D	D	B	B	A	A
737-900ER / S-9	I	I	E	F	H	H	H	H	F	F	F	E	D	D	D	B	B	A	A

REFERENCE STANDARD DASH NUMBER (NDT3152-X)
TO USE AT THE DIFFERENT RIB LOCATIONS
TABLE I [2]

REFERENCE STANDARD NDT3152-()	-A	-B	-C	-D	-E	-F	-G	-H	-I	-J	-K
FREQUENCY	650 Hz	400 Hz	360 Hz	260 Hz	230 Hz	190 Hz	170 Hz	150 Hz	130 Hz	110 Hz	100 Hz

FREQUENCY SETTINGS FOR DIFFERENT REFERENCE STANDARDS
TABLE II

2175967 S0000478175_V3

Calibration
Figure 3 (Sheet 1 of 2)

737 AIRPLANE MODEL	LINE NUMBER AIRPLANE	WING MODEL
737-600	ALL	ALL
737-700	1-20	BASIC
	21-1544	WS
	1545 AND ON	P
737-700APB RETROFIT	1-20	BASIC
	21-1544	WS
737-700 BBJ1	779 AND ON	800P
737-800	7,8 & 9	BASIC
	36-777	WS
	778 AND ON	P
	4977 & 5064 AND ON	P + BWR
737-800APB RETROFIT	36-777	WS
737-800 BBJ2	778 AND ON	800P
737-900	596,683,774	800WS
	802-1980	800P
	1981 AND ON	900ER W/LAS
737-900ER BBJ3	1981 AND ON	900ER

WING MODEL CONFIGURATIONS
TABLE III [2] [3]

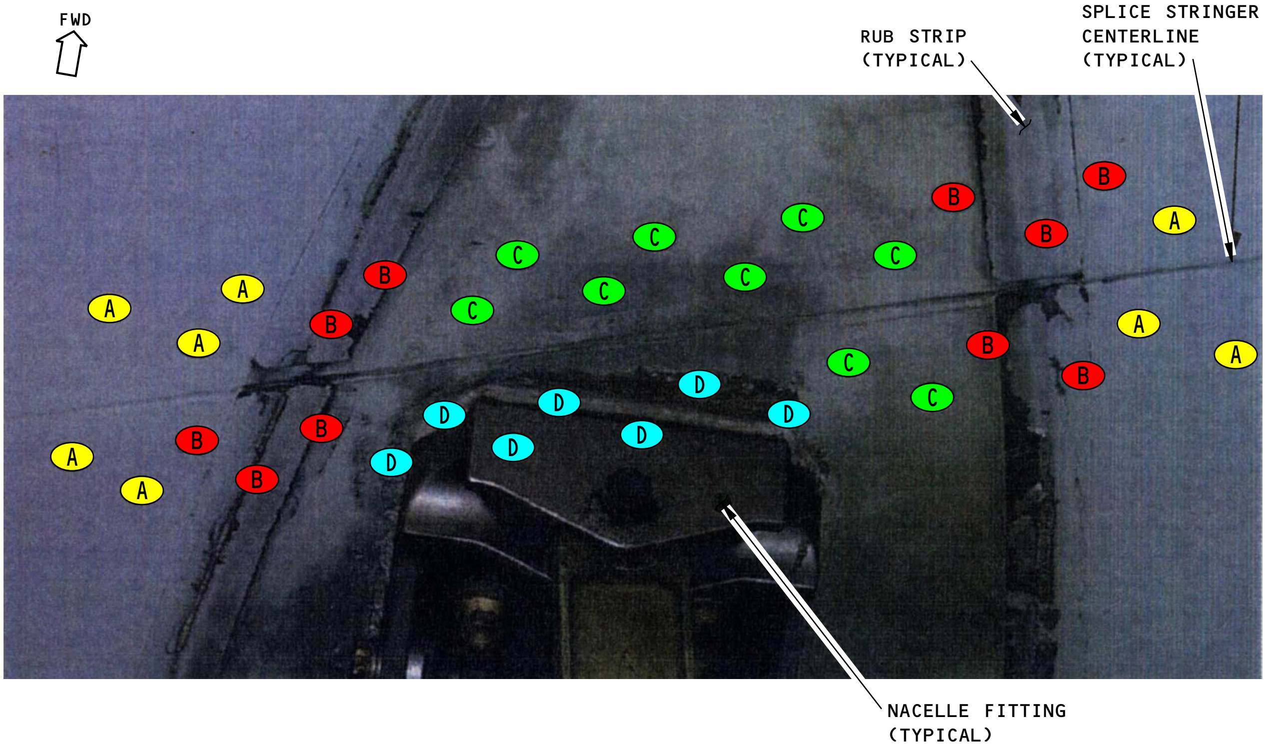
[1] THE BALANCE POINT AT THESE FASTENER LOCATIONS CAN CHANGE QUICKLY BECAUSE OF THICKNESS CHANGES IN THE STRINGER FLANGE. IT IS NECESSARY TO MONITOR THE BALANCE POINT CAREFULLY AT THESE LOCATIONS.

[2] ABBREVIATIONS IN TABLE I AND TABLE III: P IS AN ABBREVIATION FOR "PROVISIONAL"; WS IS AN ABBREVIATION FOR "WEIGHT SAVINGS".

[3] ABBREVIATIONS IN TABLE III: P + BWR IS AN ABBREVIATION FOR "PROVISIONAL WITH BALLAST WEIGHT REMOVED"; USE THE SAME FREQUENCY AND REFERENCE STANDARD AS THE P CODE WING IN TABLE I. W/LAS IS AN ABBREVIATION FOR "WITH LOAD ALLEVIATION SYSTEM". AIRPLANE LINE NUMBER 1981 WAS THE FIRST 737-900ER. ALL 737-900ER AIRPLANES HAVE LAS.

2479844 S0000582633_V3

Calibration
Figure 3 (Sheet 2 of 2)



TYPICAL INSPECTION AREA AT FITTINGS AND RUB STRIPS
(A FLAP TRACK FITTING IS SHOWN; A NACELLE FITTING IS ALMOST THE SAME)

NOTES

- A TYPICAL FASTENER LOCATIONS TO BE EXAMINED WITH THIS PROCEDURE.
- B TYPICAL FASTENER LOCATIONS THAT ARE BLOCKED BY THE RUB STRIP. THESE LOCATIONS ARE EXAMINED WITH HFEC PROCEDURE PART 6, 57-10-33.
- C TYPICAL FASTENER LOCATIONS BEHIND THE FAIRING THAT CAN BE EXAMINED WITH THIS PROCEDURE OR WITH HFEC PROCEDURE PART 6, 57-10-33.
- D TYPICAL FASTENER LOCATIONS THAT ARE BLOCKED BY THE FITTING. THE LOCATIONS THAT ARE NOT HIDDEN ARE EXAMINED WITH HFEC PROCEDURE PART 6, 57-10-33.

2219424 S0000495948_V2

Inspection Areas at Fittings and Rub Strips
Figure 4

PART 6 - EDDY CURRENT

OUTER WING - LOWER CHORD OF THE FRONT SPAR (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the lower chord of the front spar for cracks between ribs 5 and 7 and between ribs 22 and 25. The lower chord between ribs 5 and 7 (WS 204.25 to WS 253.00) is examined at all the fasteners that go through the skin flange and along the radius (but not the areas of the skin flange and radius that are blocked by the rib posts). The lower chord between ribs 22 and 25 (WS 643.5 to WBL 616.75) is examined at all the fasteners that go through the web flange (but not the areas blocked by the rib posts). See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower chord is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-04-2

      (2) Item: 57-20-04-8

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus.

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus.

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. **Prepare for the Inspection**

A. It is necessary to get access to the outer wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Remove sealant that extends more than 0.20 inch (5 mm) from the fastener heads or collars.

(1) Remove sealant as specified in PSD6-227 of BAC5000 or AMM Chapter 51.

D. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the lower chord of the front spar for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the lower chord of the front spar for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

(1) Examine the lower chord between ribs 5 and 7 (WS 204.25 to WS 253.00) at all the fasteners that go through the skin flange (see Figure 1) but not at the areas blocked by the rib posts.

(a) Use the fasteners heads or the sealant edge as a probe guide while you make a scan around the fasteners.

(2) Examine the lower chord between ribs 5 and 7 (WS 204.25 to WS 253.00) along the radius shown in Figure 1.

(a) Use the radius as a probe guide while you make the scan.

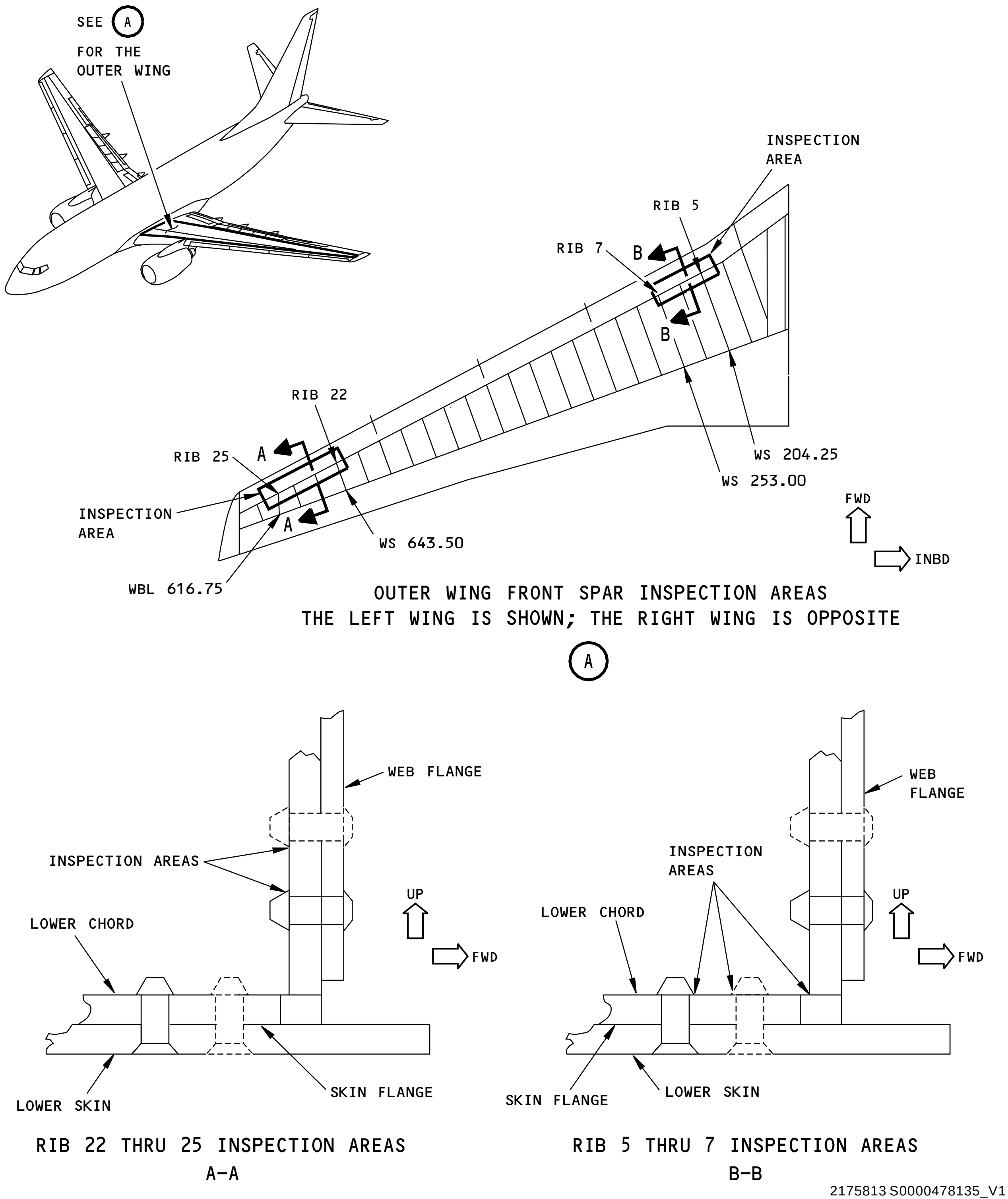
(3) Examine the lower chord between ribs 22 and 25 (WS 643.5 to WBL 616.75) at all the fasteners that go through the web flange (see Figure 1) but not at the areas blocked by the rib posts.

(a) Use the fastener heads or the sealant edge as a probe guide while you make a scan around the fasteners.

B. Do Paragraph 5.A. again to examine the lower chord for cracks on the other side of the airplane.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



Inspection Areas
Figure 1

PART 6 - EDDY CURRENT

OUTER WING - SPAR CHORDS AT THE CHORDWISE SKIN SPLICES (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the spar chords for cracks at the chordwise skin splice locations shown in Figure 1. The inspection areas are as follows:

      (1) The skin flange of the upper chord at the front spar of the chordwise skin splice between ribs 19 and 20.

      (2) The skin flange of the lower chord at the front spar of the chordwise skin splice between ribs 17 and 18.

      (3) The skin flange of the lower chord at the rear spar of the chordwise skin splice between ribs 18 and 19.

   B. This procedure uses an impedance plane display instrument.

   C. The upper and lower chords are aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-04

      (2) Item: 57-20-05

      (3) Item: 57-20-16

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500D; Olympus

         (c) Phasec 2200; Hocking

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a 90 or a 45 degree angle with a minimum drop of 0.5 inch (13 mm).

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

(a) MP905; NDT Engineering

(b) TSPEN95-6; Techna NDT

D. Reference Standards

(1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. Clean the inspection surfaces.

(1) Remove dirt, grease or sealant from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126 or an equivalent to help calibrate the instrument.

5. Inspection Procedure

A. Examine the upper and lower chords for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the upper and lower chords at the locations shown in Figure 1 as follows:

(1) Examine the skin flange of the upper chord at the front spar between ribs 19 and 20 in the areas that follow:

(a) Examine the radius of the upper chord for approximately 3 inches (76 mm) on each side of the skin splice (see Figure 1 for the inspection area).

(b) Examine the upper chord at the edge of the seal plate (see Figure 1 for the inspection area).

1) Use the seal plate as a probe guide.

(c) Examine the upper chord around the two fasteners between the radius and the seal plate (see Figure 1 for the inspection area).

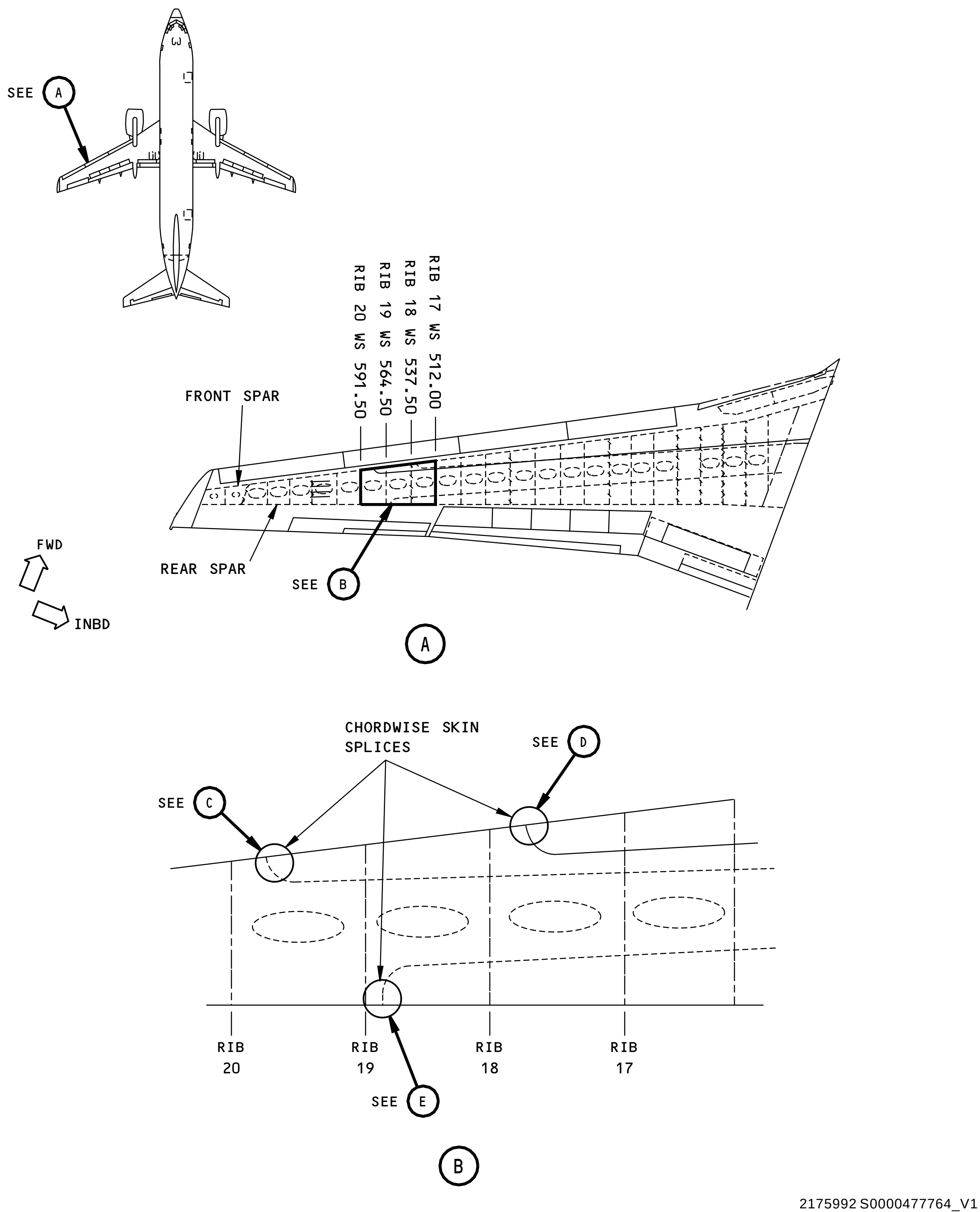
B. Do Paragraph 5.A. again but examine the skin flange of the lower chord for cracks at the front spar between ribs 17 and 18.

C. Do Paragraph 5.A. again but examine the skin flange of the lower chord for cracks at the rear spar between ribs 18 and 19.

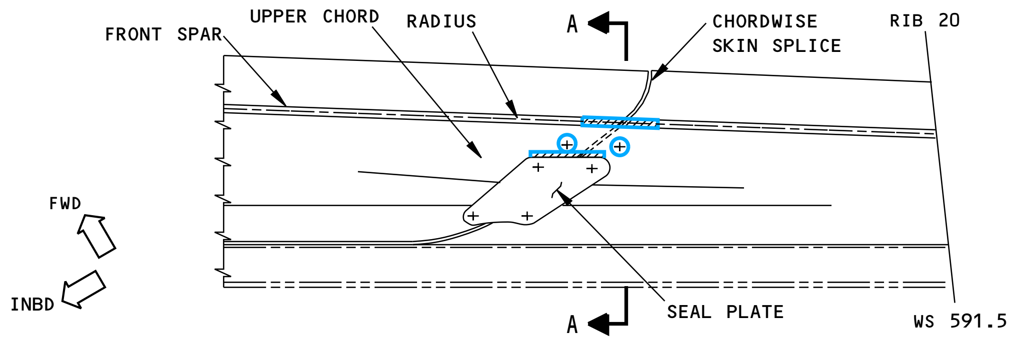
D. Do Paragraph 5.A. thru Paragraph 5.C. again to examine the upper and lower chords for cracks at the chordwise skin splices on the other wing.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

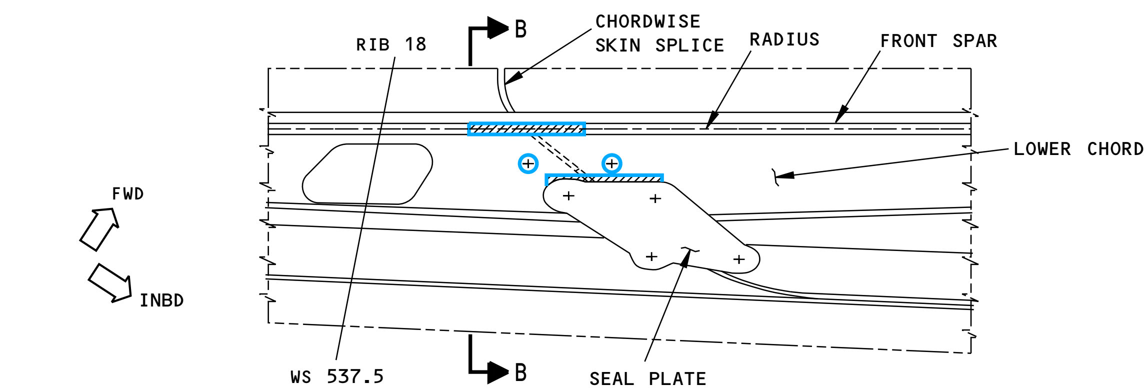


Inspection Areas
Figure 1 (Sheet 1 of 3)



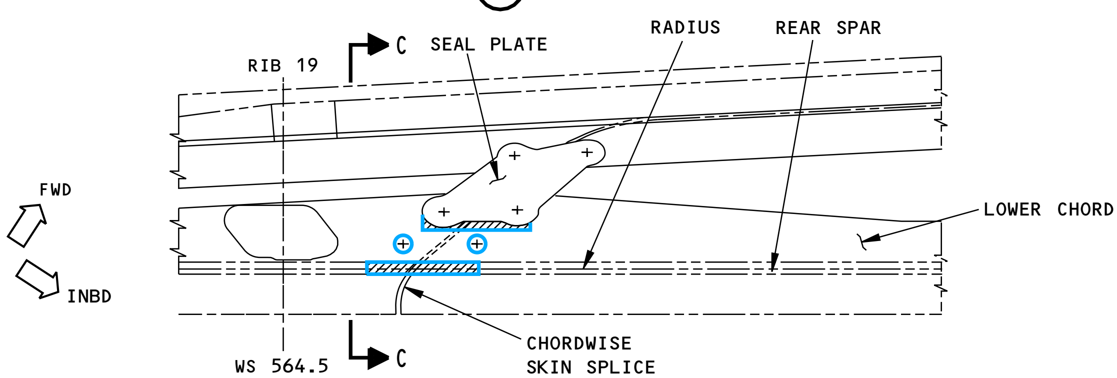
VIEW AS YOU LOOK UP AT THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
UPPER CHORD OF THE FRONT SPAR

C



VIEW AS YOU LOOK DOWN ON THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
LOWER CHORD OF THE FRONT SPAR

D



VIEW AS YOU LOOK DOWN ON THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
LOWER CHORD OF THE REAR SPAR

E

NOTES:

INSPECTION AREA

FASTENER INSPECTION AREAS

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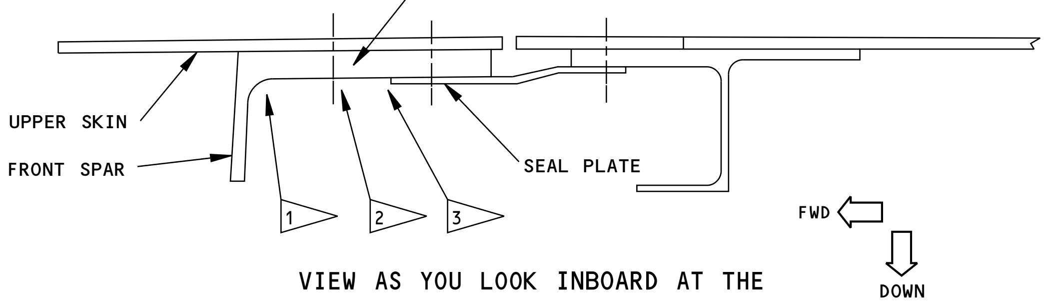
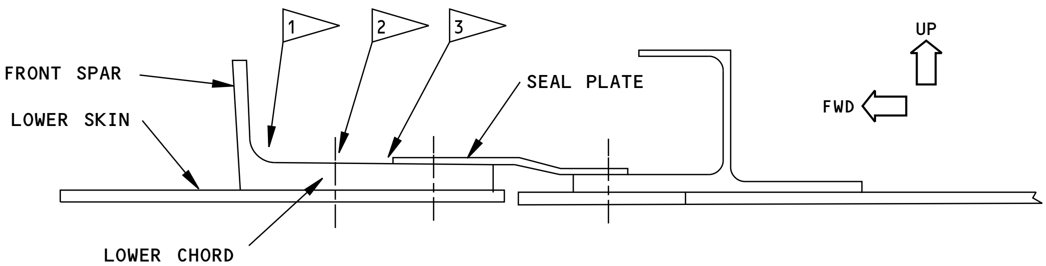
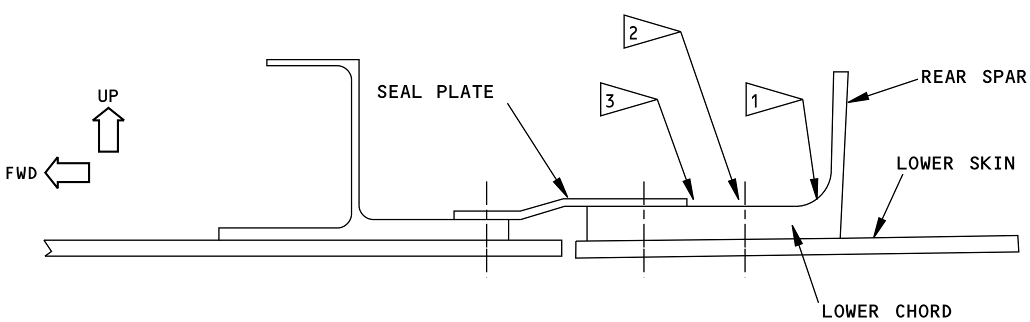
Inspection Areas
Figure 1 (Sheet 2 of 3)



VIEW AS YOU LOOK INBOARD AT THE
UPPER CHORD OF THE REAR SPAR
A-A



VIEW AS YOU LOOK INBOARD AT THE
LOWER CHORD OF THE FRONT SPAR
B-B



VIEW AS YOU LOOK INBOARD AT THE
LOWER CHORD OF THE REAR SPAR
C-C

NOTES:

1. EXAMINE THE RADIUS OF THE CHORD AT THE SKIN SPLICE AND APPROXIMATELY 3 INCHES (76 MM) ON EACH SIDE OF THE SKIN SPLICE. SEE FIGURE 1 (SHEET 2).

2. EXAMINE AROUND THE TWO FASTENERS BETWEEN THE RADIUS AND THE SEAL PLATE. SEE FIGURE 1 (SHEET 2).

3. EXAMINE THE CHORD AT THE EDGE OF THE SEAL PLATE. SEE FIGURE 1 (SHEET 2).

2175997 S0000477766_V1

Inspection Areas
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

OUTER WING - LOWER CHORD OF THE REAR SPAR - SIDE-OF-BODY TO RIB 27 (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the lower chord for cracks at the rear spars of the outer wings. The skin and web flanges of the lower chord are examined at the fastener locations that go through the skin (horizontal) flange from the side-of-body (SOB) to rib 27 that are not externally blocked by rub strips or flap track fittings. Fasteners that are externally blocked by rub strips or flap track fittings are examined internally by a different procedure. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. It can be necessary to remove the nacelle fairing and the flap track fairings to do this inspection.

   D. The lower chord is aluminum.

   E. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      NOTE: This inspection is done from the skin (horizontal) flange side of the lower chord to find cracks in the skin flange, but it will also find longer cracks that are in the web flange of the lower chord. Thus, this procedure also examines the web flange of the lower chord for cracks as specified by 737 MPD DTR Items 57-20-05-2, -3, -7, and -10.

      (1) Item: 57-20-05-1

      (2) Item: 57-20-05-2

      (3) Item: 57-20-05-3

      (4) Item: 57-20-05-4

      (5) Item: 57-20-05-5

      (6) Item: 57-20-05-6

      (7) Item: 57-20-05-7

      (8) Item: 57-20-05-10

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 Hz to 1.5 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

C. Probes

NOTE: Two different probes are necessary to do this inspection. It is necessary to change the ring probe diameters because of changes in the fastener diameters in the inspection area. Table I in Figure 3 identifies the probe to use.

(1) Use reflection type ring probes that:

(a) Operate from 50 Hz to 1.5 kHz.

(b) Have the diameters that follow (identified as PROBE 1):

1) Has a minimum inner diameter of 0.55 inch (14.0 mm).

2) Has a maximum inner diameter of 0.67 inch (17.0 mm).

(c) Have the diameters that follow (identified as PROBE 2):

1) Has a minimum inner diameter of 0.38 inch (9.7 mm).

2) Has a maximum inner diameter of 0.50 inch (12.7 mm).

(2) The ring probes that follow were used to help prepare this procedure.

NOTE: Other probes can be used if they can be calibrated with the reference standard specified in Paragraph 2.D.

NOTE: Shielded probes are recommended.

(a) PROBE 1:

1) RDP1.2-100H-7; Techna NDT

2) RR0112-5/TF; NDT Engineering Inc.

(b) PROBE 2:

1) RDP.75-500H-5; Techna NDT

2) RR019-5/TF; NDT Engineering Inc.

D. Reference Standards

(1) Use reference standards NDT3167-X as shown in Figure 2 to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

(1) Remove the nacelle fairing and the flap track fairings as necessary to get access to do this inspection.

B. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Identify the inspection area to be examined from Figure 1. Then identify the applicable reference standard and probe to use during calibration from Table I in Figure 3.

B. Set the instrument frequency to the frequency identified in Table I of Figure 3 for the reference standard to be used.

C. Put the ring probe on the applicable reference standard at probe position 1 as shown in Detail II of Figure 3. Adjust the center of the probe so it is above the center of the fastener hole.

D. Balance the instrument.

E. Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

F. Set the balance point at approximately 20% of full screen height (FSH) and 60% of full screen width (FSW) as shown in Detail I of Figure 3.

G. Set the lift-off (phase) so that the signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Detail I of Figure 3.

H. Put the ring probe at probe position 2 as shown in Detail II of Figure 3. Make sure the center of the probe is above the center of the fastener hole.

I. Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

J. Adjust the instrument gain to get a notch signal that is approximately 60% of FSH as shown in Detail I of Figure 3.

K. Make sure the instrument is calibrated correctly:

(1) Put the probe on the reference standard at probe position 1 as shown in Detail II of Figure 3.

(2) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(3) Balance the instrument.

(4) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 3.

(5) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

L. If the minimum signal from the notch is not 60% of FSH then do the calibration again.

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4. for the fastener location to be examined.

NOTE: There are three conditions that make it necessary to balance the instrument:

(1) When you start the inspection in a new rib bay.

(2) When the balance point moves upscale or downscale by 10% of FSH because of lower chord thickness changes.

(3) When the location of the inspection changes from a forward row fastener to an aft row fastener, or from an aft row fastener to a forward row fastener.

NOTE: Make sure to balance the instrument each time you examine fastener locations in a different row. Figure 1 identifies the aft and forward row fastener locations.

NOTE: The lower chord thickness changes that occur in the inspection area will cause the balance point to gradually increase or decrease. Monitor the balance point carefully during the inspection. It is necessary to examine the fasteners that are adjacent to each other in a fastener row to be able to see the balance point gradually change. Start the inspection at the side-of-body and move outboard. If the balance point increases or decreases by 10% of FSH, it is necessary to balance the instrument again.

NOTE: Use Part 4, 57-10-18 to examine the DTR 57-20-05-5 inspection locations where the skin flange of the lower chord is hidden.

B. Move the center of the probe above the center of the first fastener in the forward row of the rib bay to be examined. Move the probe above the fastener to get the minimum signal from the instrument.

C. Balance the instrument.

D. Put the ring probe above each fastener in the forward row of the rib bay and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(1) Monitor your location along the lower chord to identify when it is necessary to change the reference standard and calibrate the instrument again. View B in Figure 1 identifies the locations at the rib posts where the reference standard must change. Table I in Figure 3 identifies the correct reference standard to use for each rib bay.

(2) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(3) Do a calibration check as follows if the equipment is changed or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

(a) Put the probe on the reference standard at probe position 1 as shown in Detail II of Figure 3.

(b) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(c) Balance the instrument.

(d) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(e) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

E. Do Paragraph 5.A. thru Paragraph 5.D. again to examine the fasteners in the aft row of the rib bay.

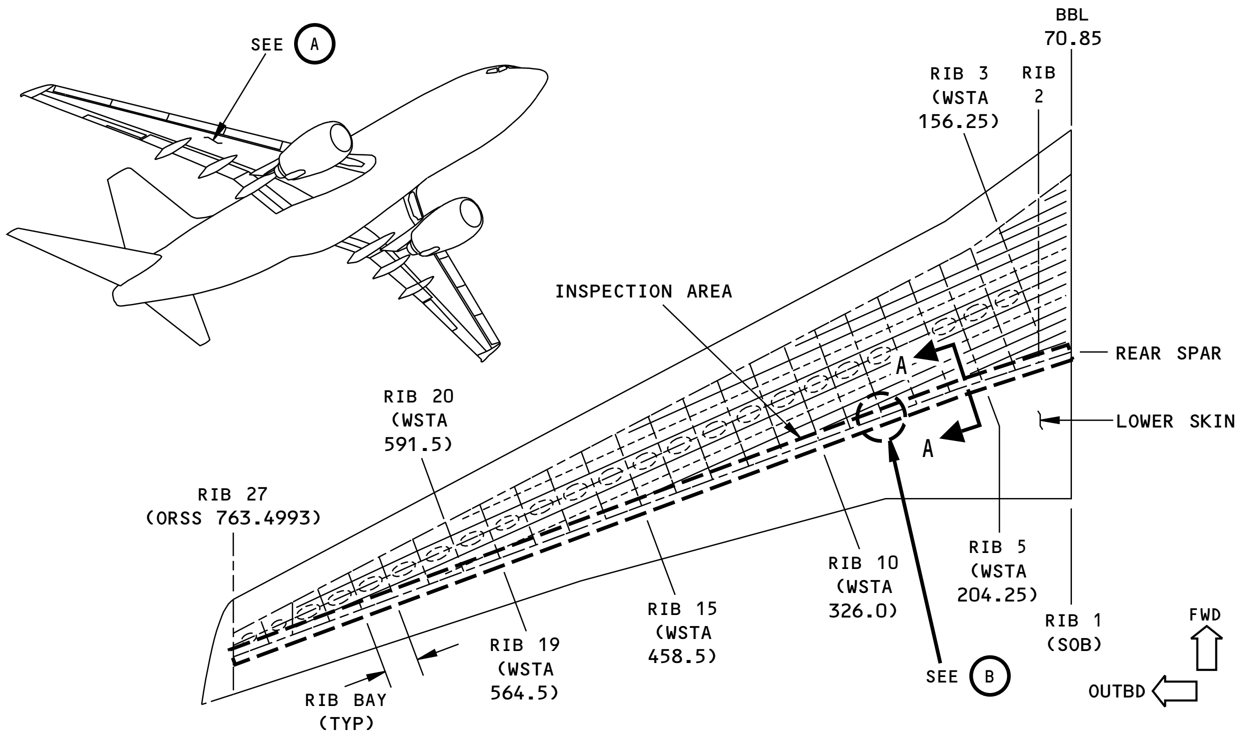
F. Do Paragraph 5.A. thru Paragraph 5.E. for each rib bay to be examined.

6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack. The location must be rejected and more analysis is necessary.

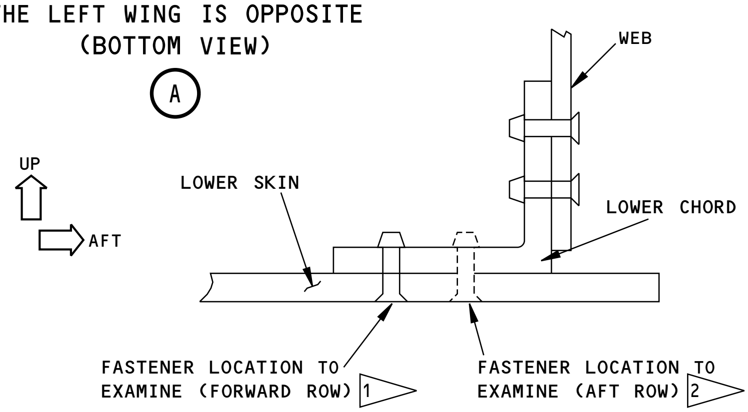
B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. If crack indications are found, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



THE RIGHT WING IS SHOWN;
THE LEFT WING IS OPPOSITE
(BOTTOM VIEW)

A



LOWER CHORD OF THE
REAR SPAR (TYPICAL)
A-A

NOTES

- THE RIGHT WING IS SHOWN; THE LEFT WING IS OPPOSITE
- THE LOWER CHORD OF THE REAR SPAR IS EXAMINED FOR CRACKS FROM THE SIDE-OF-BODY (SOB) TO RIB 27. START THE INSPECTION AT THE SOB AND MOVE OUTBOARD.

1 EXAMINE THE FORWARD ROW OF FASTENER LOCATIONS. IT IS NECESSARY TO BALANCE THE INSTRUMENT AT A FASTENER IN THE FORWARD ROW TO ADJUST FOR EDGE EFFECT.

2 EXAMINE THE AFT ROW OF FASTENER LOCATIONS. IT IS NECESSARY TO BALANCE THE INSTRUMENT AT A FASTENER IN THE AFT ROW TO ADJUST FOR NO EDGE EFFECT.

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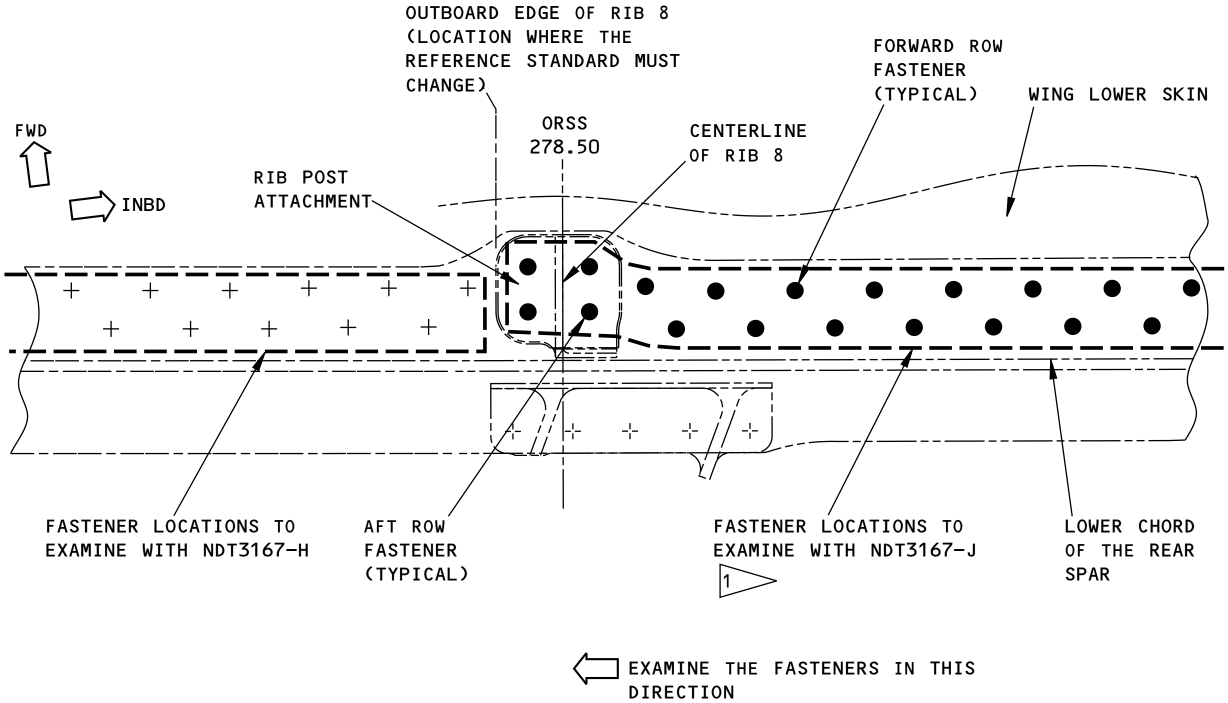
Inspection Area
Figure 1 (Sheet 1 of 2)



TYPICAL RIB LOCATIONS WHERE THE REFERENCE STANDARD MUST CHANGE. RIB LOCATION 8 IS SHOWN; OTHER LOCATIONS ARE THE SAME

B

NOTES:

1 THE REFERENCE STANDARD MUST BE CHANGED AT THE OUTBOARD EDGE OF THE APPLICABLE RIB POST ATTACHMENT. IT IS NECESSARY TO EXAMINE THE FASTENER LOCATIONS THAT GO THROUGH THE RIB POST WITH THE REFERENCE STANDARD THAT IS USED IN THE RIB BAY THAT IS INBOARD OF THE RIB.

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Inspection Area
Figure 1 (Sheet 2 of 2)

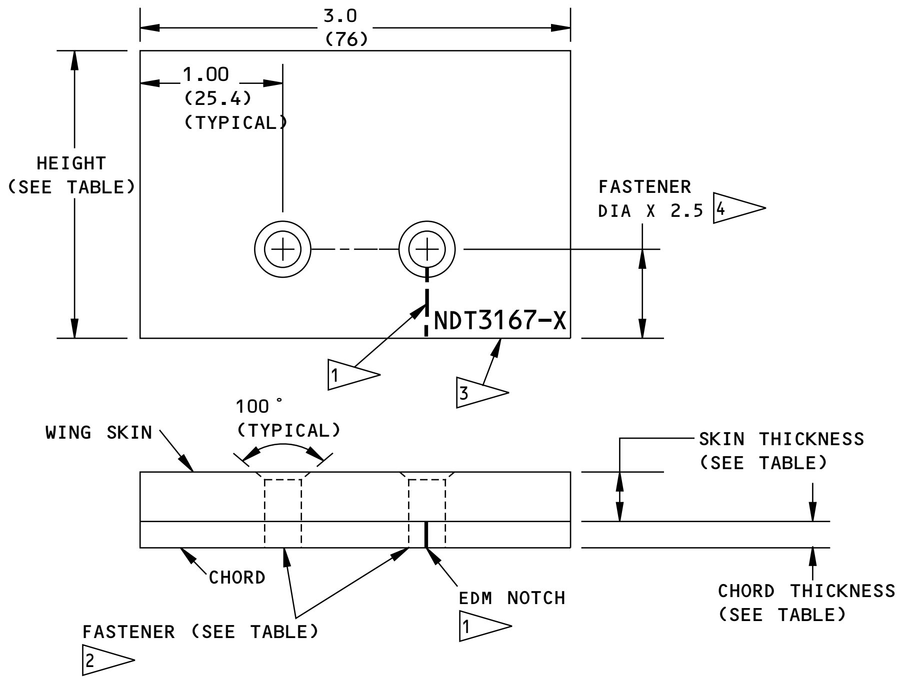


TABLE: REFERENCE STANDARD NDT3167-X PROPERTIES					
REFERENCE STANDARD	HEIGHT	SKIN THICKNESS	CHORD THICKNESS	FASTENER DIAMETER	GRIP LENGTH
NDT3167-A	1.5 (38)	0.100 (2.54)	0.120 (3.05)	6	3
NDT3167-B	1.5 (38)	0.190 (4.83)	0.120 (3.05)	6	5
NDT3167-C	1.5 (38)	0.240 (6.10)	0.120 (3.05)	6	6
NDT3167-D	2.5 (64)	0.290 (7.37)	0.160 (4.06)	10	7
NDT3167-E	2.0 (51)	0.350 (8.89)	0.170 (4.32)	8	8
NDT3167-F	2.5 (64)	0.340 (8.64)	0.360 (9.14)	12	11
NDT3167-G	2.0 (51)	0.390 (9.91)	0.230 (5.84)	8	10
NDT3167-H	2.5 (64)	0.460 (11.68)	0.275 (6.99)	10	12
NDT3167-J	2.5 (64)	0.540 (13.72)	0.330 (8.38)	10	14

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS	ANGULAR
X.XXX = ±0.005	X.XX = ±0.010	±2°
X.XX = ±0.025	X.X = ±0.05	
X.X = ±0.050	X = ±1	

- MATERIAL: 2024-T3 ALUMINUM (CLAD OR BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER

1 EDM NOTCH:

WIDTH: 0.010 (0.25) MAXIMUM
DEPTH: THROUGH THE THICKNESS
LENGTH: FROM THE HOLE TO THE EDGE OF THE REFERENCE STANDARD

2 FASTENERS:

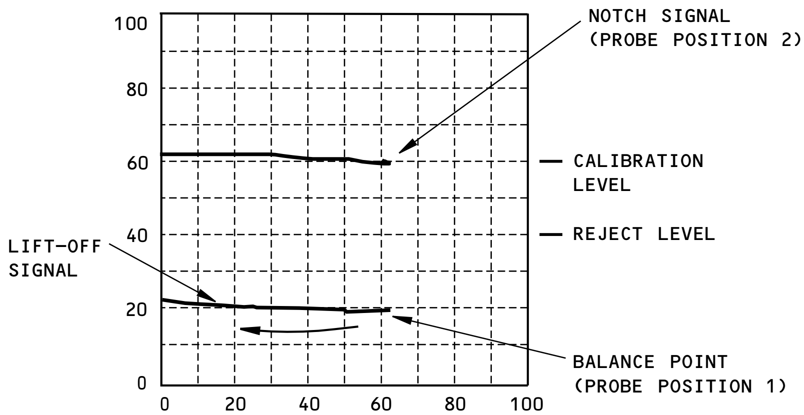
- USE BACB30XT BOLTS WITH BACC30BK COLLARS OR BACB30YP BOLTS WITH BACC30BP COLLARS AT ALL LOCATIONS (THE FASTENERS ARE NOT SHOWN)
- ALTERNATE BOLTS AND COLLARS CAN BE USED IF THEY ARE MADE OF THE SAME MATERIAL AND HAVE THE SAME CONFIGURATION AS THE FASTENER SPECIFIED.
- SATISFACTORY GRIP LENGTHS ARE SPECIFIED IN THE TABLE BUT OTHER GRIP LENGTHS CAN BE USED IF THEY CAN SATISFACTORILY ATTACH TO THE COLLAR.

3 ETCH OR STAMP THE REFERENCE STANDARD NUMBER AT APPROXIMATELY THIS LOCATION

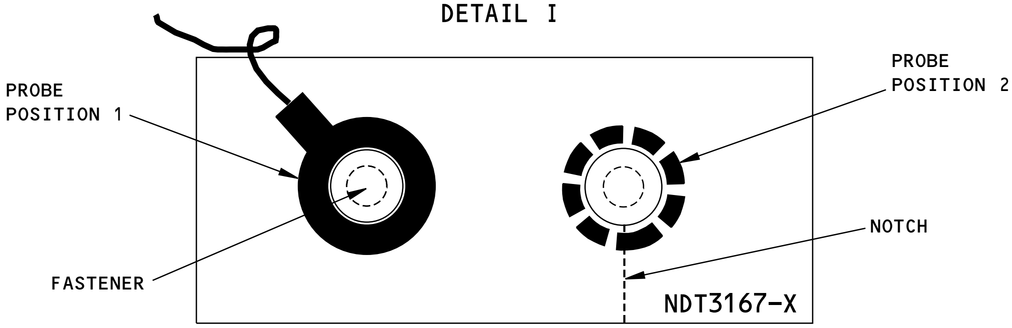
4 THIS DISTANCE IS EQUAL TO 2.5 X THE FASTENER DIAMETER.

2176044 S0000478225_V2

Reference Standard NDT3167-X
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3167-X
DETAIL II

RIB LOCATIONS	SOB TO RIB 3	OUTBD OF RIB 3 TO RIB 8 [1]	OUTBD OF RIB 8 TO RIB 12	OUTBD OF RIB 12 TO RIB 14	OUTBD OF RIB 14 TO RIB 17	OUTBD OF RIB 17 TO RIB 19 [1]	OUTBD OF RIB 19 TO RIB 21 [1]	OUTBD OF RIB 21 TO RIB 23	OUTBD OF RIB 23 TO RIB 27
REFERENCE STANDARD	NDT3167-F	NDT3167-J	NDT3167-H	NDT3167-G	NDT3167-E	NDT3167-D	NDT3167-C	NDT3167-B	NDT3167-A
FREQUENCY	180 Hz	130 Hz	160 Hz	190 Hz	250 Hz	300 Hz	700 Hz	900 Hz	1.1 kHz
RING PROBE TO USE	PROBE 1	PROBE 1	PROBE 1	PROBE 2	PROBE 2	PROBE 2	PROBE 2	PROBE 2	PROBE 2

REFERENCE STANDARD, PROBE AND FREQUENCY TO USE AT THE
DIFFERENT RIB LOCATIONS

TABLE I

NOTES:

[1] THE BALANCE POINT AT THESE FASTENER LOCATIONS CAN CHANGE QUICKLY BECAUSE OF MATERIAL THICKNESS CHANGES. IT IS NECESSARY TO MONITOR THE BALANCE POINT CAREFULLY AT THESE LOCATIONS.

2176046 S0000478226_V1

Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

UPPER CHORD OF THE REAR SPAR - SIDE-OF-BODY TO RIB 13 (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the upper chord of the rear spar for cracks at the skin (horizontal) flange of the upper chord. This inspection examines the upper chord from the side-of-body (SOB) to rib 13. The inspection is done at the fastener locations that go through the wing upper skin, the upper chord of the rear spar, and the stiffeners, rib posts and fittings. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The upper chord is aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-17-1 (non-hidden)

      (2) Item: 57-20-17-2 (hidden)

      NOTE: Two DTR forms identify two separate inspection areas. Although the inspection areas look the same from outside the wing, “hidden” inspection areas have a third layer that can cause the balance point to change. The hidden areas must be examined independently from the non-hidden areas.

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 Hz to 1.0 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

   C. Probes

      NOTE: Two different ring probes are necessary to do this inspection. It is necessary to change the ring probe diameters because of changes in the fastener diameters in the inspection area. See Table I in Figure 3 to identify the ring probe to use.

      (1) Use reflection type ring probes that:

         (a) Operate from 50 Hz to 1.0 kHz.

         (b) Have the diameters that follow (identified as PROBE 1):

            1) Has a minimum inner diameter of 0.55 inch (14.0 mm).

            2) Has a maximum inner diameter of 0.67 inch (17.0 mm).

         (c) Have the diameters that follow (identified as PROBE 2):

1) Has a minimum inner diameter of 0.38 inch (9.7 mm).

2) Has a maximum inner diameter of 0.50 inch (12.7 mm).

(2) The ring probes that follow were used to help prepare this procedure.

NOTE: Other probes can be used if they can be calibrated with the reference standard specified in Paragraph 2.D.

NOTE: Shielded probes are recommended.

(a) PROBE 1:

1) RDP1.2-100H-7; Techna NDT

2) RR0112-5/TF; NDT Engineering Inc.

(b) PROBE 2:

1) RDP.75-500H-5; Techna NDT

2) RR019-5/TF; NDT Engineering Inc.

D. Reference Standards

(1) Use reference standards NDT3176-X as shown in Figure 2 to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Identify the inspection area and fastener code to be examined from Figure 1.

B. Identify the applicable reference standard and probe to use during calibration from Table I in Figure 3.

C. Set the instrument frequency to the frequency identified in Table II of Figure 3 for the reference standard to be used.

D. Put the ring probe on the applicable reference standard at probe position 1 as shown in Detail II in Figure 3. Adjust the center of the probe so it is above the center of the fastener hole.

E. Balance the instrument.

F. Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

G. Set the balance point at approximately 20% of full screen height (FSH) and 60% of full screen width (FSW) as shown in Detail I in Figure 3.

H. Set the lift-off (phase) so that the signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Detail I in Figure 3.

I. Put the ring probe at probe position 2 as shown in Detail II in Figure 3. Make sure the center of the probe is above the center of the fastener hole.

J. Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

K. Adjust the instrument gain to get a notch signal that is approximately 60% of FSH as shown in Detail I in Figure 3.

L. Make sure the instrument is calibrated correctly:

(1) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(2) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(3) Balance the instrument.

(4) Put the probe on the reference standard at probe position 2 as shown in Detail II in Figure 3.

(5) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

M. If the minimum signal from the notch is not 60% of FSH then do the calibration again.

5. Inspection Procedure

NOTE: There are two types of inspection areas. Hidden areas are where fasteners attach the rib posts, stiffeners or fittings to the upper chord and skin. All other fastener locations in the inspection area are non-hidden. It is necessary to examine the non-hidden areas independently from the hidden areas.

A. Examine the non-hidden fastener locations as follows:

(1) Calibrate the instrument as specified in Paragraph 4. for the non-hidden fastener location to be examined.

NOTE: There are two conditions that make it necessary to balance the instrument:

(1) At the first fastener in the inspection area with a new fastener code.

(2) When the inspection location changes from a forward row fastener to an aft row fastener, or from an aft row fastener to a forward row fastener.

(2) Move the probe above the center of the first fastener in the inspection area to be examined. Move the probe above the fastener to get the minimum signal from the instrument.

(3) Balance the instrument.

(4) Put the ring probe above the remaining fasteners that have the same fastener code in the same fastener row and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(a) Examine non-hidden fasteners that are adjacent to each other.

(b) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(c) Monitor the screen display for a possible downscale signal. A downscale signal can occur if you balance the instrument on a crack. If you get a downscale signal from a fastener location, balance the instrument on an adjacent fastener with the same fastener code in the same row and examine the fasteners again.

(d) Do a calibration check as follows if the equipment is changed (a different reference standard is used, for example) or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

1) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

2) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

3) Balance the instrument.

4) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

5) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

(5) Do Paragraph 5.A.(1) thru Paragraph 5.A.(4) again to examine the upper chord of the rear spar for cracks at the non-hidden fastener locations that have the same code in the other row.

NOTE: It will be necessary to adjust the balance point because the fastener row is different.

(6) Do Paragraph 5.A.(1) thru Paragraph 5.A.(5) again to examine the upper chord of the rear spar for cracks at the non-hidden fastener locations that have different fastener codes.

B. Examine the hidden fastener locations as follows:

NOTE: Hidden inspection areas contain fastener locations that attach the rib posts, stiffeners and fittings to the upper chord and skin. Each hidden inspection area has four fastener locations (two in the forward row and two in the aft row).

(1) Calibrate the instrument as specified in Paragraph 4. for the hidden fastener location to be examined.

NOTE: There are two conditions that make it necessary to balance the instrument:

(1) At the first fastener in the hidden inspection area. See Figure 1 for the hidden inspection areas.

(2) When the fastener location to be examined changes from a forward row fastener to an aft row fastener, or from an aft row fastener to a forward row fastener.

(2) Move the center of the probe above the center of the first fastener in the hidden inspection area to be examined. Move the probe above the fastener to get the minimum signal from the instrument.

(3) Balance the instrument.

(4) Put the ring probe above the other fastener in the same fastener row that has the same fastener code and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(a) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(b) Monitor the screen display for a possible downscale signal. A downscale signal can occur if you balance the instrument on a crack. If you get a downscale signal, balance the instrument on the other fastener with the same fastener code in the same row and examine the fastener that gave the downscale signal again.

(c) Do a calibration check as follows if the equipment is changed (a different reference standard is used, for example) or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

1) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

2) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

3) Balance the instrument.

4) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

5) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

(5) Do Paragraph 5.B.(1) thru Paragraph 5.B.(4) again to examine the upper chord of the rear spar for cracks at each hidden inspection area.

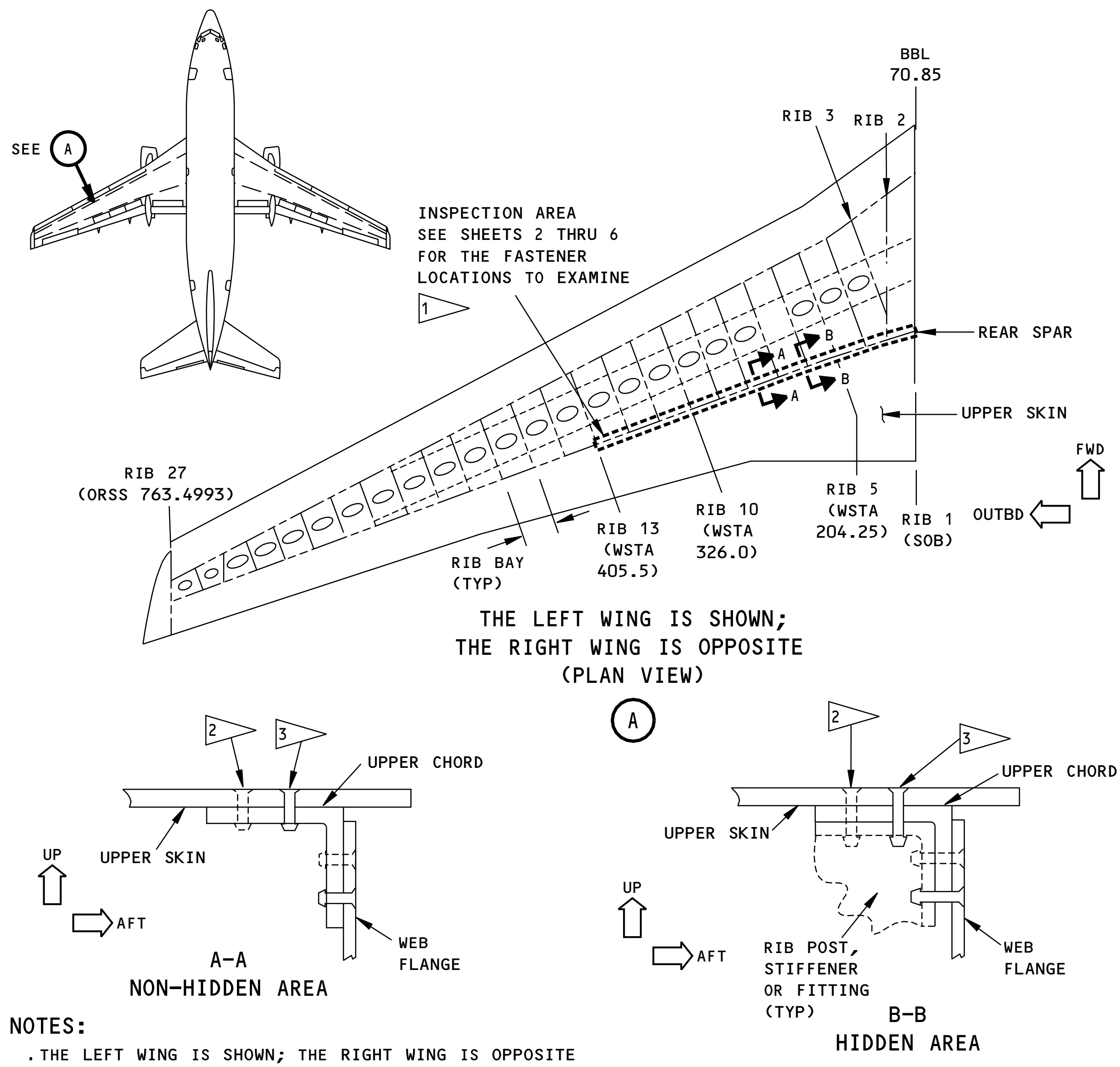
(6) Do Paragraph 5.A. and Paragraph 5.B. again to examine the upper chord of the rear spar for cracks on the opposite side of the airplane.

6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack. The location must be rejected and more analysis is necessary.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. If crack indications are found, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



NOTES:

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
- THE INSPECTION AREA IS FROM THE SIDE-OF-BODY (SOB) TO RIB 13.

1. EXAMINE THE FASTENER LOCATIONS SPECIFIED IN SHEETS 2 THRU 6. FIGURE 1, SHEET 2 IDENTIFIES THE FOUR DIFFERENT INSPECTION AREAS.
2. FASTENER LOCATIONS TO EXAMINE IN THE FORWARD ROW. IT IS NECESSARY TO BALANCE THE INSTRUMENT AGAIN WHEN THE INSPECTION CHANGES FROM AN AFT ROW FASTENER TO A FORWARD ROW FASTENER TO ADJUST FOR THE DIFFERENT EDGE EFFECTS.
3. FASTENER LOCATIONS TO EXAMINE IN THE AFT ROW. IT IS NECESSARY TO BALANCE THE INSTRUMENT AGAIN WHEN THE INSPECTION CHANGES FROM A FORWARD ROW FASTENER TO AN AFT ROW FASTENER TO ADJUST FOR THE DIFFERENT EDGE EFFECTS.

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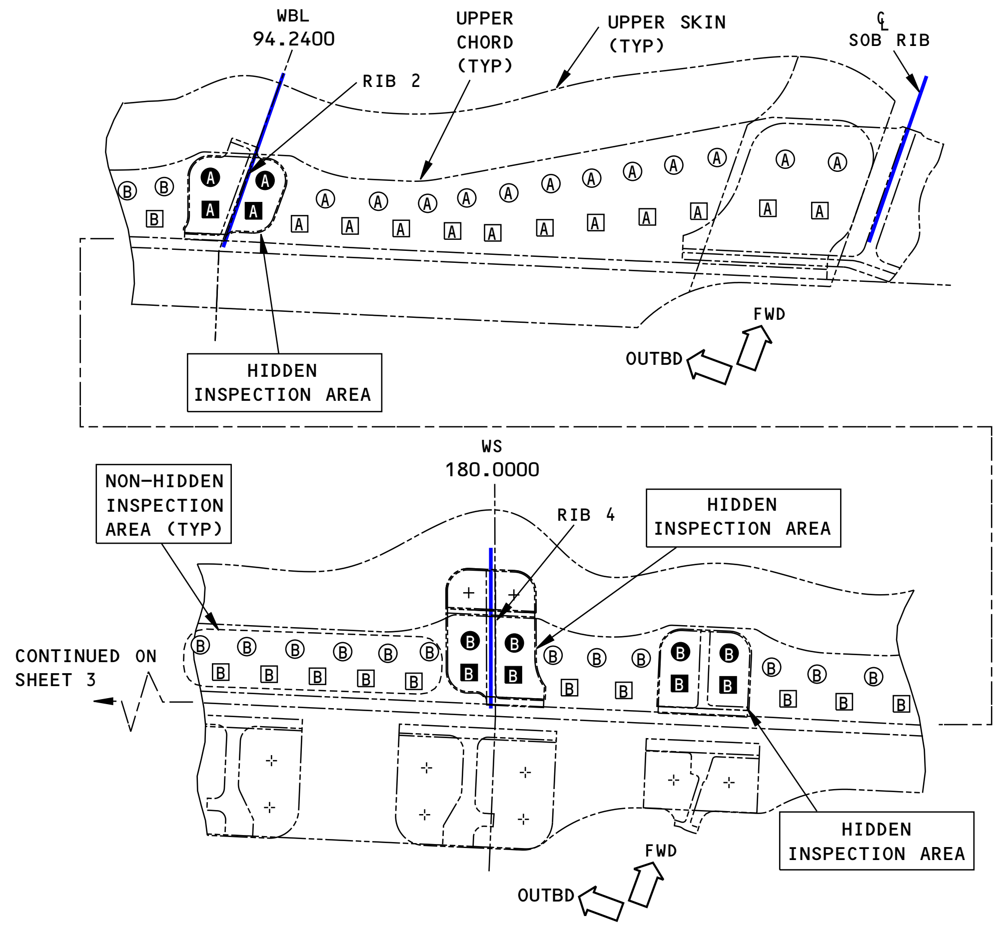
Inspection Area
Figure 1 (Sheet 1 of 6)



NOTES:

- HIDDEN INSPECTION AREAS ARE FASTENER LOCATIONS THAT ATTACH THE RIB POSTS, STIFFENERS AND FITTINGS TO THE UPPER CHORD AND SKIN. EACH HIDDEN INSPECTION AREA HAS FOUR FASTENERS (2 IN THE FORWARD ROW AND 2 IN THE AFT ROW)
- NON-HIDDEN FASTENER AREAS ARE ALL FASTENER LOCATIONS THAT ARE NOT HIDDEN FASTENER LOCATIONS

FOUR DIFFERENT TYPES OF INSPECTION AREAS (WHERE "X" IDENTIFIES THE FASTENER CODE) ARE IDENTIFIED AS FOLLOWS:

Ⓧ FASTENER LOCATIONS TO EXAMINE IN THE FORWARD ROW AT NON-HIDDEN INSPECTION AREAS. IT IS NECESSARY TO BALANCE THE INSTRUMENT EACH TIME THE INSPECTION CHANGES FROM AN AFT ROW FASTENER LOCATION TO A FORWARD ROW FASTENER LOCATION TO ADJUST FOR DIFFERENT EDGE EFFECTS.

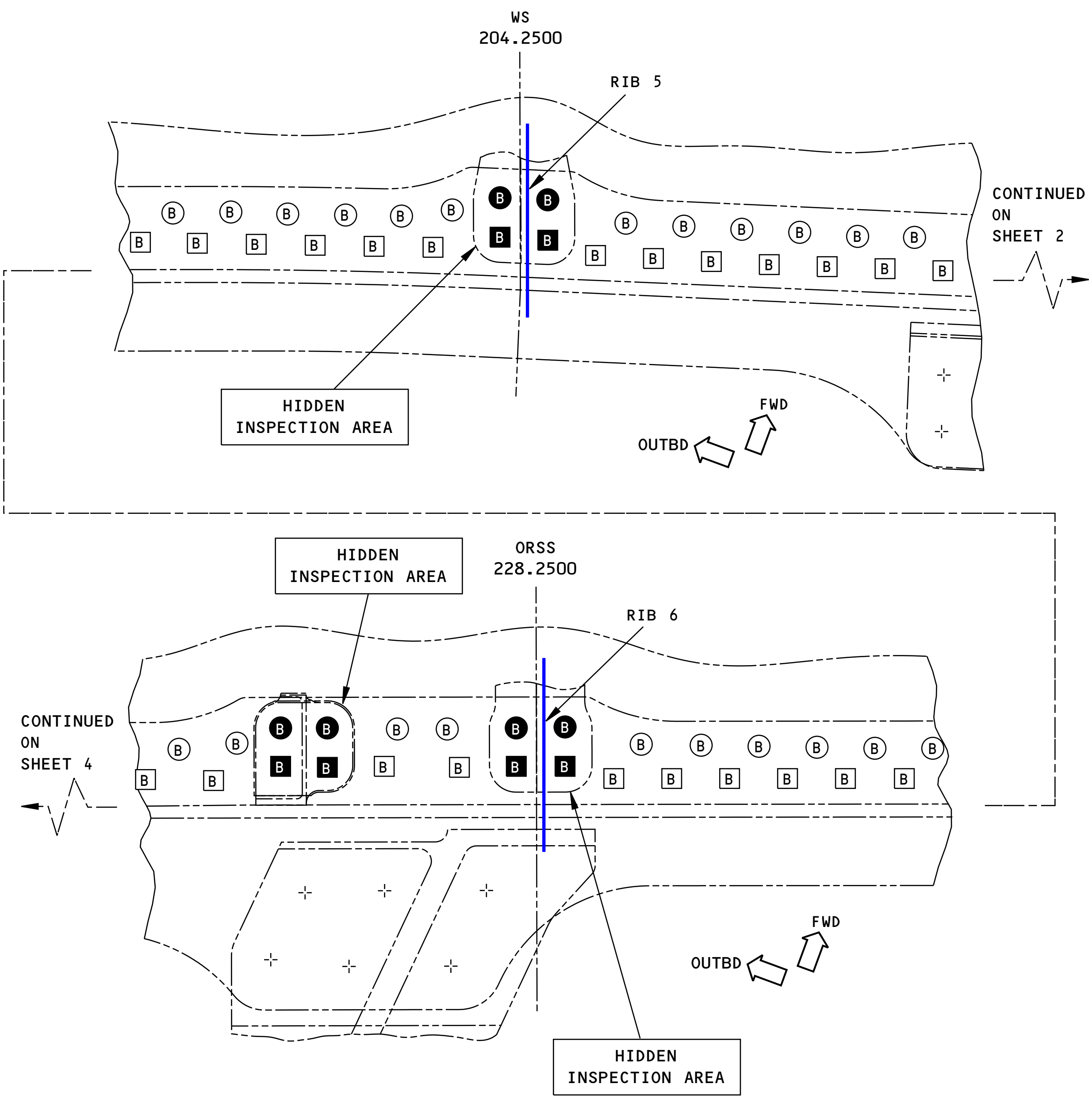
☒ FASTENER LOCATIONS TO EXAMINE IN THE AFT ROW AT NON-HIDDEN INSPECTION AREAS. IT IS NECESSARY TO BALANCE THE INSTRUMENT EACH TIME THE INSPECTION CHANGES FROM A FORWARD ROW FASTENER LOCATION TO AN AFT ROW FASTENER LOCATION TO ADJUST FOR DIFFERENT EDGE EFFECTS.

X FASTENER LOCATIONS TO EXAMINE IN THE FORWARD ROW AT HIDDEN INSPECTION AREAS. IT IS NECESSARY TO BALANCE THE INSTRUMENT EACH TIME THE INSPECTION CHANGES FROM A FORWARD ROW FASTENER LOCATION TO AN AFT ROW FASTENER LOCATION TO ADJUST FOR DIFFERENT EDGE EFFECTS.

X FASTENER LOCATIONS TO EXAMINE IN THE AFT ROW AT HIDDEN INSPECTION AREAS. IT IS NECESSARY TO BALANCE THE INSTRUMENT EACH TIME THE INSPECTION CHANGES FROM A FORWARD ROW FASTENER LOCATION TO AN AFT ROW FASTENER LOCATION TO ADJUST FOR DIFFERENT EDGE EFFECTS.

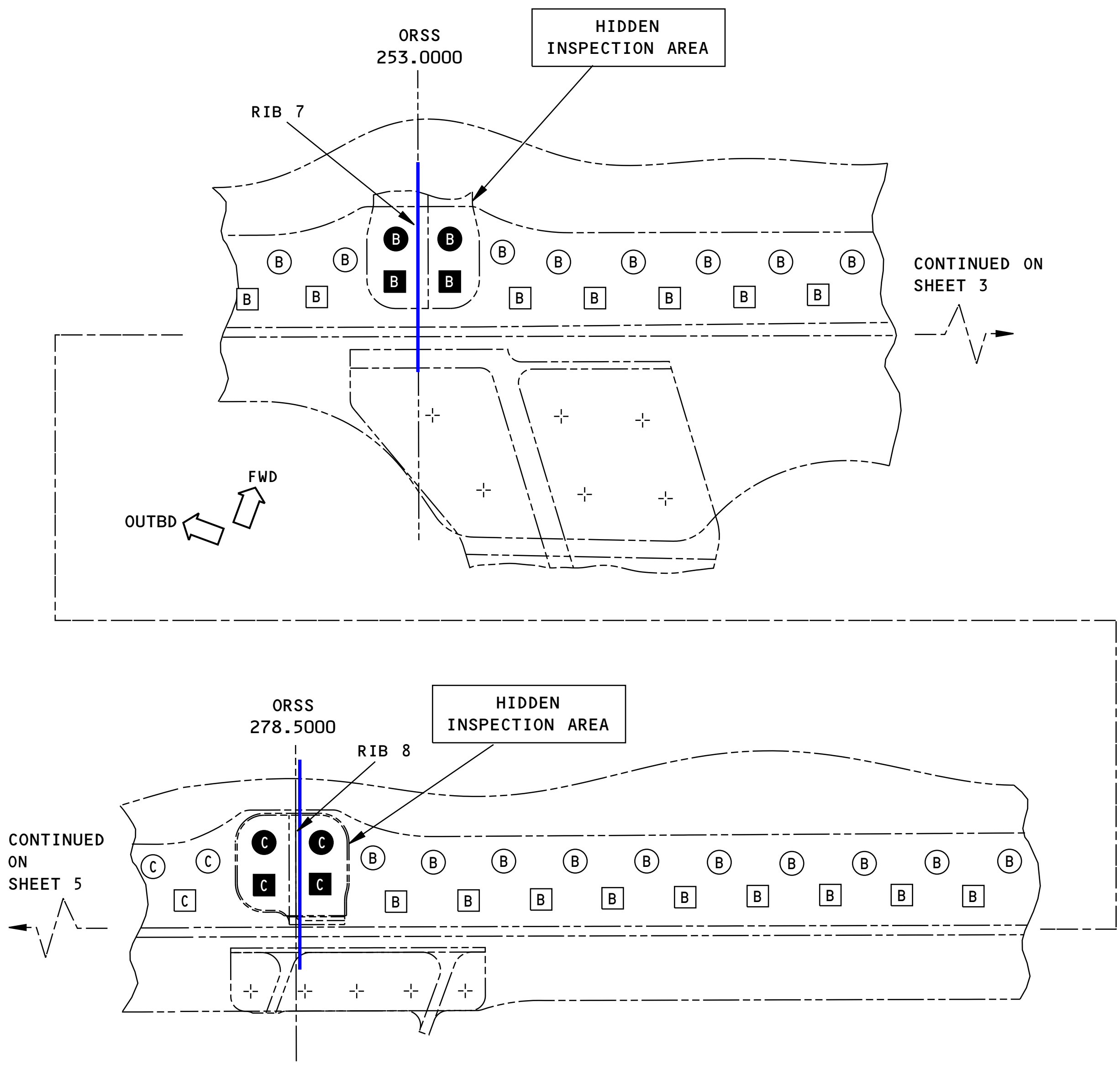
2176052 S0000478868_V1

Inspection Area
Figure 1 (Sheet 2 of 6)



2176132 S0000478869_V1

Inspection Area
Figure 1 (Sheet 3 of 6)



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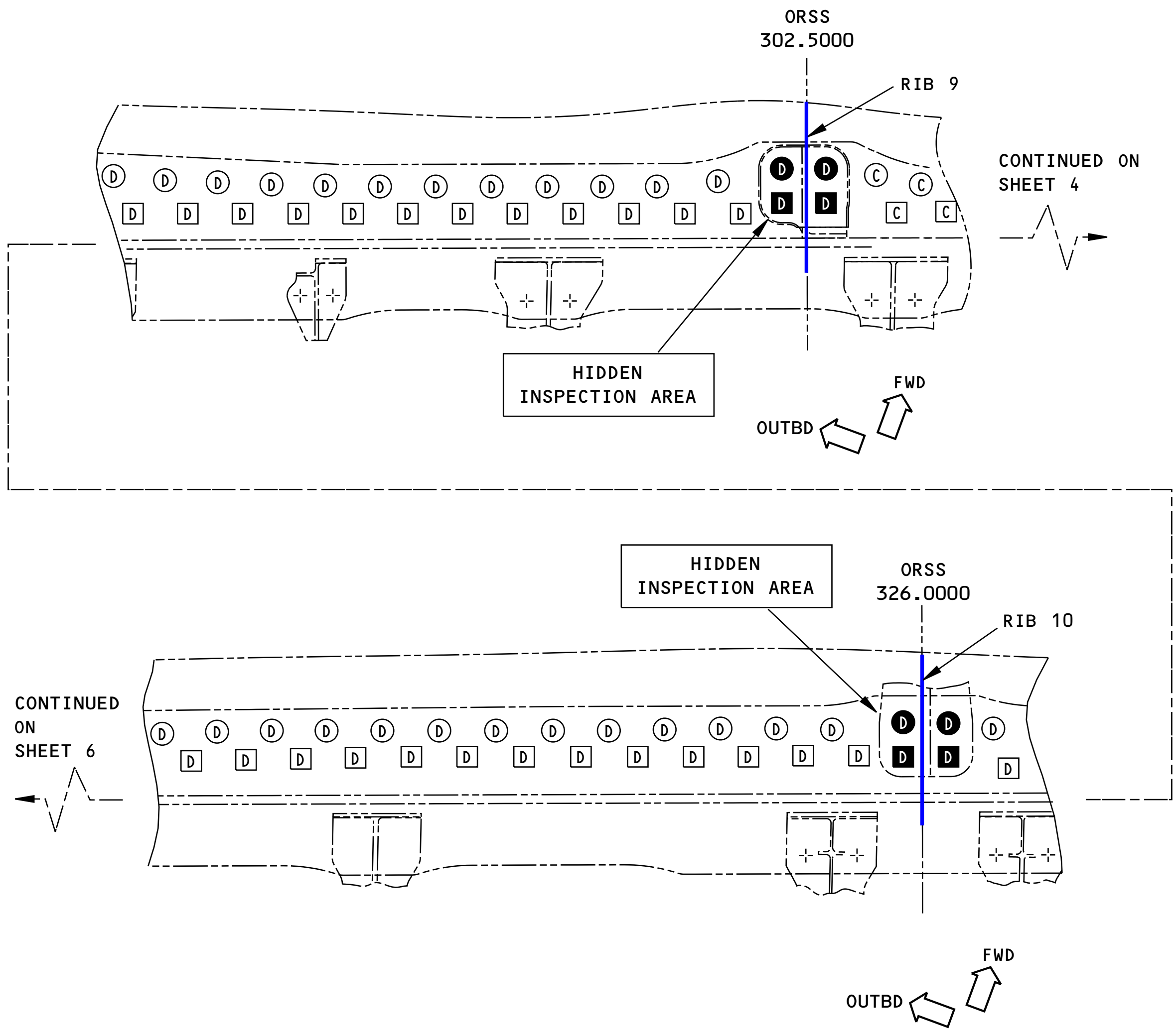
Inspection Area
Figure 1 (Sheet 4 of 6)



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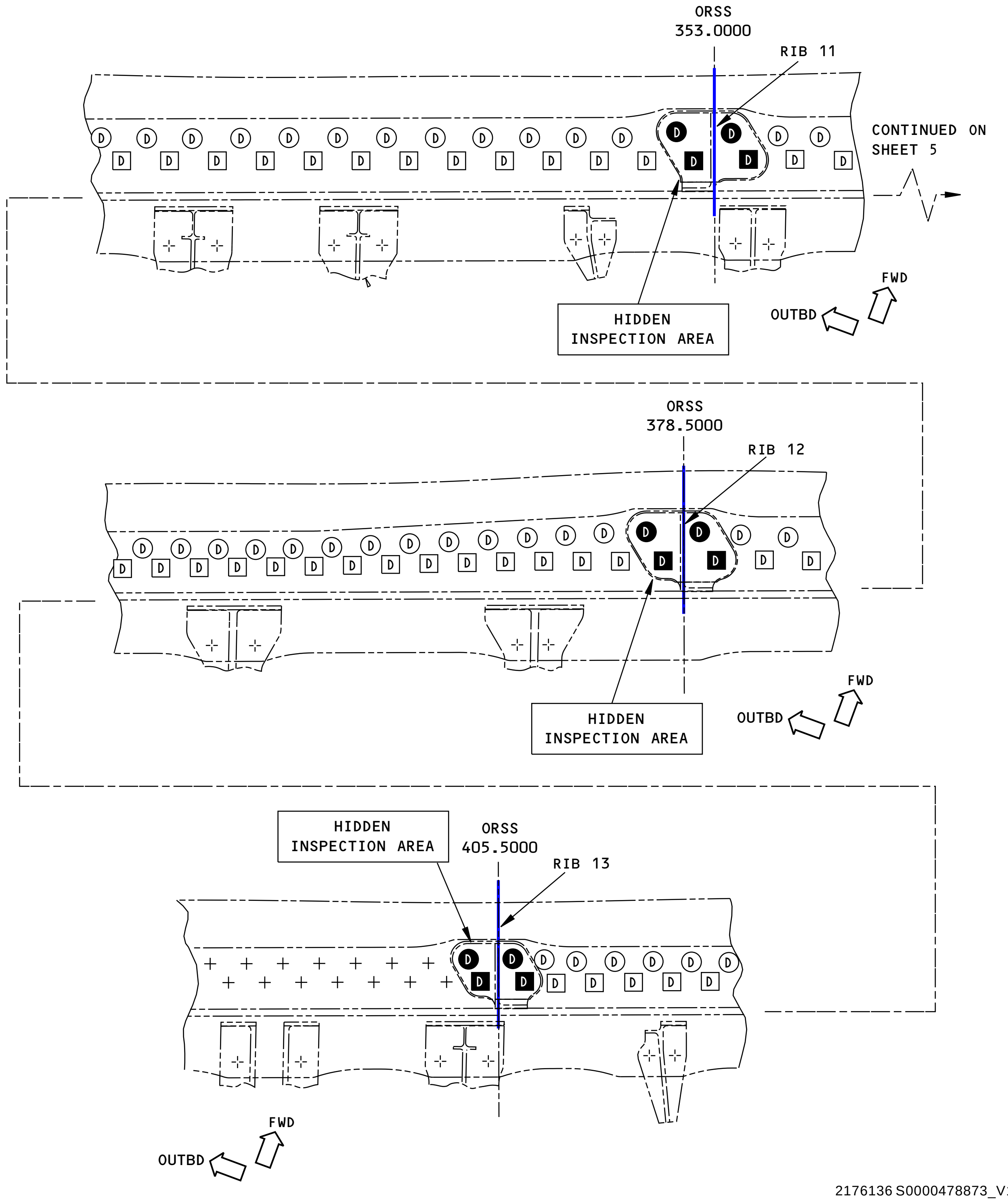
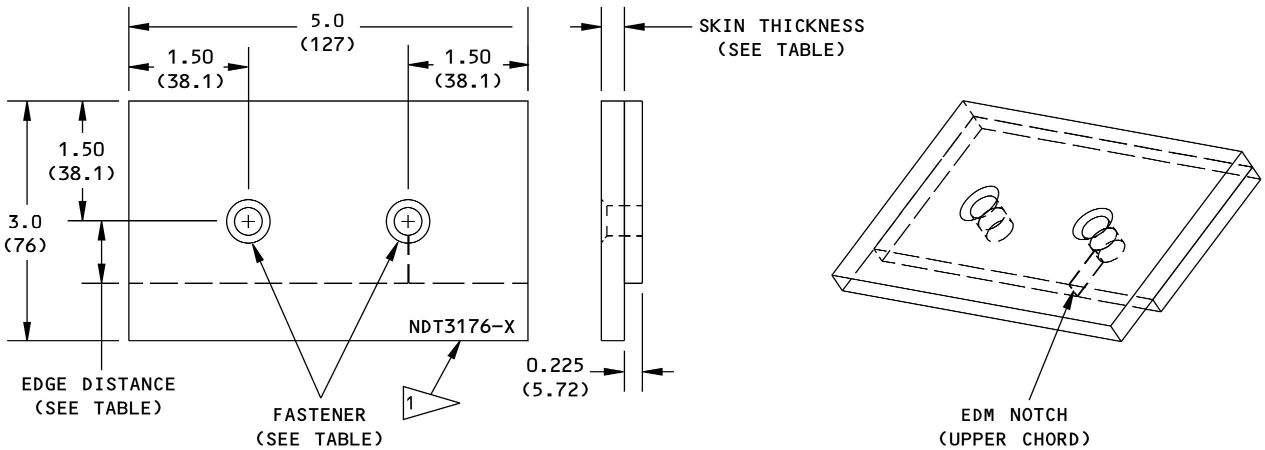
Inspection Area
Figure 1 (Sheet 5 of 6)



Inspection Area
Figure 1 (Sheet 6 of 6)



NDT3176-X ASSEMBLY			
REFERENCE STANDARD NUMBER	SKIN THICKNESS	EDGE DISTANCE	FASTENER
NDT3176-A	0.288 (7.32)	0.938 (23.81)	BACB30YP12*8
NDT3176-B	0.480 (12.19)	0.938 (23.81)	BACB30YP12*11
NDT3176-C	0.400 (10.16)	0.781 (19.84)	BACB30YP10*10
NDT3176-D	0.320 (8.13)	0.625 (15.88)	BACB30YP8*9

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

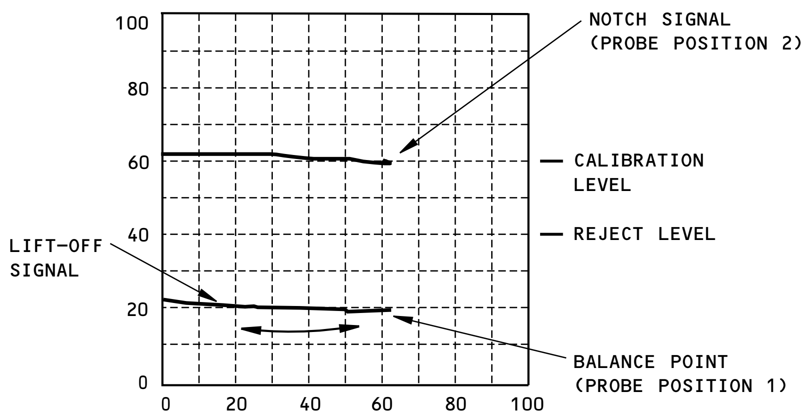
INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.010
X.XX = ±0.025	X.X = ±0.05
X.X = ±0.050	X = ±1

- MATERIAL: 7150-T77511 OR 2024-T3 ALUMINUM (CLAD OR BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- EDM NOTCH:
  WIDTH: 0.010 (0.25) MAXIMUM
  DEPTH: THROUGH THE THICKNESS
  LENGTH: CRACK TO EDGE
- FASTENERS:
  BACB30YP BOLTS USE BACC30BP COLLARS (SEE THE TABLE FOR THE BOLT DIMENSIONS).
  (THE BOLTS ARE NOT SHOWN)
  ALTERNATIVE BOLTS AND COLLARS CAN BE USED IF THEY ARE THE SAME MATERIAL AND HAVE THE SAME CONFIGURATION AS THE BOLTS AND COLLARS SPECIFIED.

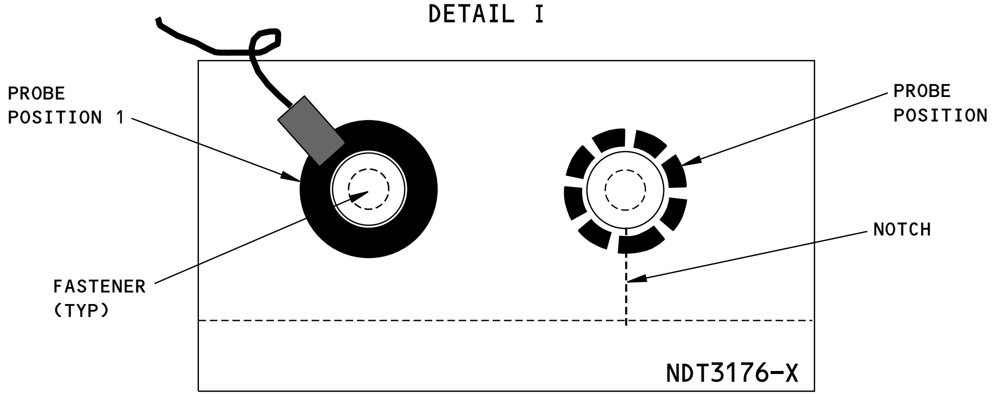
1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER AT APPROXIMATELY THIS LOCATION.

2176138 S0000478874_V1

Reference Standard NDT3176-X
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3176-X
DETAIL II

FIGURE 1 FASTENER CODE	CODE A	CODE B	CODE C	CODE D
REFERENCE STANDARD TO USE	NDT3176-A	NDT3176-B	NDT3176-C	NDT3176-D
PROBE TO USE AS SPECIFIED IN PARAGRAPH 2.C.(2)	PROBE 1	PROBE 1	PROBE 2	PROBE 2

REFERENCE STANDARD DASH NUMBER (NDT3176-X) AND PROBE
TO USE AT THE DIFFERENT INSPECTION AREAS
TABLE I

REFERENCE STANDARD	NDT3176-A	NDT3176-B	NDT3176-C	NDT3176-D
FREQUENCY	240 Hz	150 Hz	170 Hz	220 Hz

FREQUENCY SETTINGS FOR THE DIFFERENT REFERENCE STANDARDS
TABLE II

2176144 S0000478875_V1

Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

OUTER WING - SPAR CHORDS AND WING SPLICE STRINGERS 5, 9 AND 14 AT THE CHORDWISE SKIN SPLICES (LFEC)

1. **Purpose**

   A. Use this subsurface inspection procedure to examine the wing splice stringers and chord flanges at the chordwise skin splices for cracks. This is an external inspection that is done through the upper and lower wing skins. The wing skins, stringers and chords are made from aluminum. See Figure 1 for the inspection areas.

   NOTE: The chordwise skin splices are where the skin splice changes direction from an inboard-to-outboard direction to an aft-to-forward direction. See Figure 1.

   B. Inspection areas for the splice stringers at the chordwise skin splices:

   (1) Splice stringer 5 on the lower skin panel near WS 559.

   (2) Splice stringer 9 on the lower skin panel near WS 535.

   (3) Splice stringer 14 on the upper skin panel near WS 579.

   C. Inspection areas for the spar chords at the chordwise skin splices:

   (1) The rear spar chord on the lower skin panel near WS 559.

   (2) The front spar chord on the lower skin panel near WS 535.

   (3) The front spar chord on the upper skin panel near WS 579.

   D. A ring probe is used on the wing skin fasteners to find cracks in the wing stringers and chords. See Figure 1 for the inspection areas.

   E. An impedance plane display instrument is used to do this inspection.

   F. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

   (1) Item: 57-20-03/15 (for the splice stringers)

   (2) Item: 57-20-04/05/16 (for the spar chords)

2. **Equipment**

   A. General

   (1) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instruments

   (1) Use an impedance plane instrument for this inspection procedure. The instruments that follow were used to help prepare this procedure.

   (a) Nortec 500D; Olympus NDT

   (b) Hocking Phasec 2d; GE Inspection Technologies

   C. Probes

   (1) Two ring probes with two different inner diameters are necessary for this inspection. One ring probe is for the larger fasteners installed on the chords, the other ring probe is for the smaller fasteners installed on the splice stringers.

   (2) Use two reflection ring probes:

(a) That can operate between 250 and 650 Hz.

(b) The ring probe for the splice stringer inspection has a maximum outer diameter of 0.80 inch (20 mm) and an inner diameter of 0.40 inch (10 mm) ±0.05 inch (1.3 mm).

(c) The ring probe for the spar chord inspection has a maximum outer diameter of 1.0 inch (25 mm) and an inner diameter of 0.50 inch (13 mm) ±0.05 inch (1.3 mm).

(d) That are shielded.

(3) The probes that follow were used to help prepare this procedure.

(a) RDP .8/.4-200H; Techna NDT (for smaller fasteners at splice stringers)

(b) RDP 1.0/.5-200H; Techna NDT (for larger fasteners at the spar chords)

(4) Other ring probes can be used if they have the characteristics specified in Paragraph 2.C.(2) and can be calibrated with the applicable reference standard.

D. Reference Standard

(1) Table 1 in Figure 4 identifies the reference standards that are necessary to use for the wing model to be examined with this inspection. Make only the reference standards shown in Table 1 that are necessary for the calibration. See Figure 2 for the reference standard drawing.

3. Prepare for the Inspection

A. Make sure the inspection areas are clean on the upper and lower skin panels. See Figure 1 for the inspection areas where the ring probe will be put on the fasteners. It is important to make sure there is no thick dirt or sealant on the wing skins that could cause the ring probe to lift-off of the wing skins.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 9, but use an impedance plane display instrument and set the notch signal at 60 percent of full screen height as shown in Figure 3 in this inspection procedure. Also, see Tables 1 and 2 in Figure 4 for the calibration data (reference standard for the calibrations, ring probe diameter, and instrument frequency).

5. Inspection Procedure

A. Refer to Part 6, 51-00-00, Procedure 9, paragraph 6, for general data on subsurface inspections with a ring probe.

B. Examine the fastener locations at splice stringer 5 on the lower skin panel near WS 559.

(1) See Figure 1, Sheet 2 and Figure 4 for data for this inspection area. Make sure the fastener locations in the inspection area are examined in the correct order shown in Figure 1, Sheet 2.

C. Examine the fastener locations at the rear spar chord of the lower skin panel near WS 559.

(1) See Figure 1, Sheet 3 and Tables 1 and 2 in Figure 4 for data for this inspection area. Make sure the fastener locations in the inspection area are examined in the correct order shown in Figure 1, Sheet 3.

D. Examine the fastener locations at splice stringer 9 on the lower skin panel at WS 535.

(1) See Figure 1, Sheet 4 and Tables 1 and 2 in Figure 4 for data for this inspection area. Make sure the fastener locations in the inspection area are examined in the correct order shown in Figure 1, Sheet 4.

E. Examine the fastener locations at the front spar chord of the lower skin panel near WS 535.

(1) See Figure 1, Sheet 5 and Tables 1 and 2 in Figure 4 for data for this inspection area. Make sure the fastener locations in the inspection area are examined in the correct order shown in Figure 1, Sheet 5.

F. Examine the fastener locations at splice stringer 14 of the upper skin panel near WS 579.

(1) See Figure 1, Sheet 6 and Tables 1 and 2 in Figure 4 for data for this inspection area. Make sure the fasteners in the inspection area are examined in the correct order shown in Figure 1, Sheet 6.

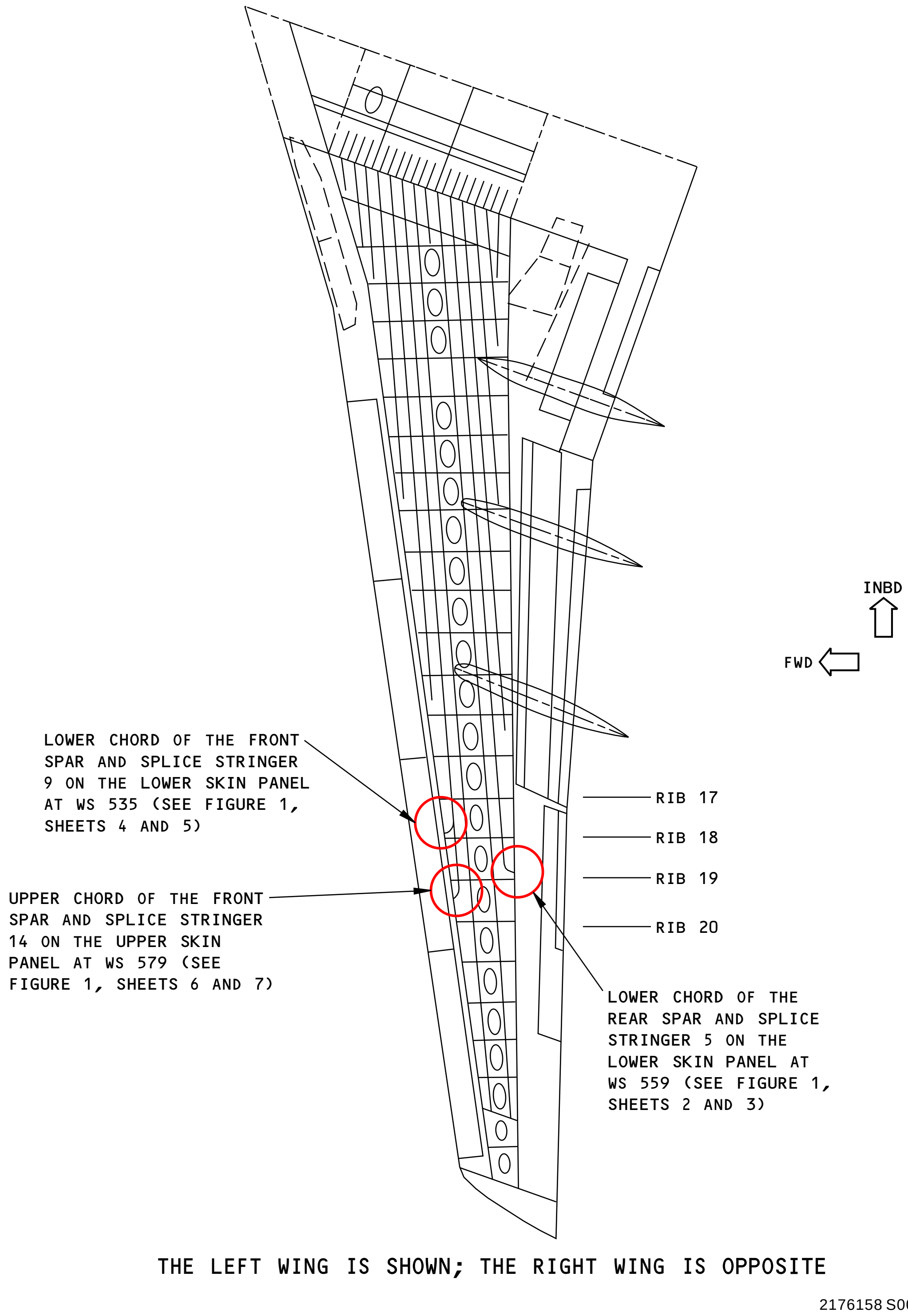
G. Examine the fastener locations at the front spar chord of the upper skin panel near WS 579.

(1) See Figure 1, Sheet 7 and Tables 1 and 2 in Figure 4 for data for this inspection area. Make sure the fasteners in the inspection area are examined in the correct order shown in Figure 1, Sheet 7.

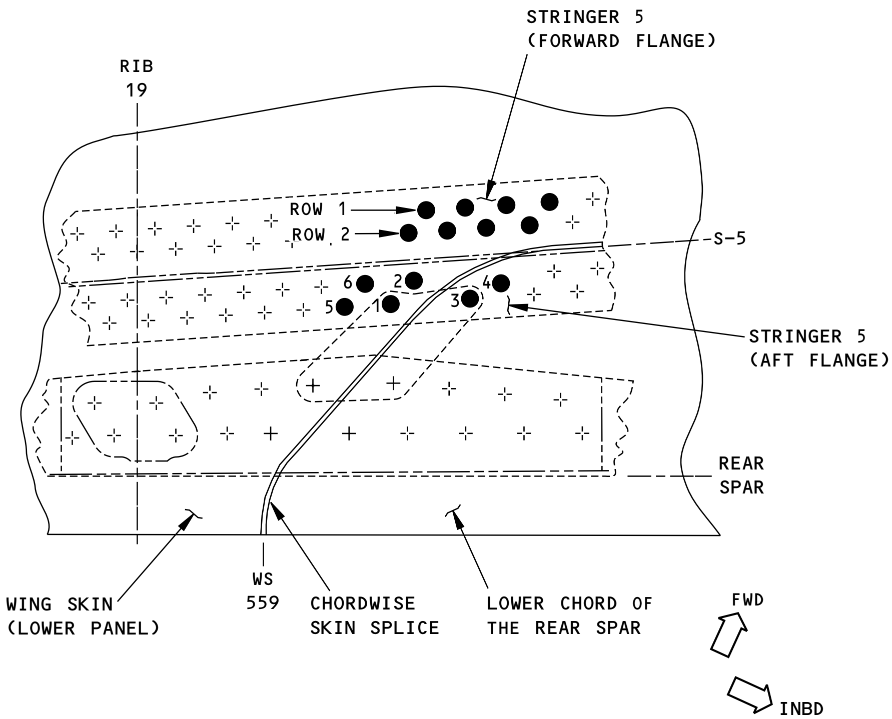
6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 9, paragraph 7, for instructions to help make an analysis of possible crack indications.

B. Signals that are 40 percent of full screen height or higher are possible crack indications. See Figure 3 for the reject level.



Inspection Areas at the Chordwise Skin Splices
Figure 1 (Sheet 1 of 7)



NOTES:

- THIS IS A VIEW OF THE INSPECTION AREA AT STRINGER 5 ON THE LOWER SKIN AT THE CHORDWISE SKIN SPLICE NEAR WS 559. THE FASTENER LOCATIONS TO EXAMINE ARE SHOWN BY BLACK CIRCLES.
- SEE FIGURE 4 FOR THE CORRECT REFERENCE STANDARD TO USE FOR THE CALIBRATION TO EXAMINE THE FASTENER LOCATIONS SHOWN ABOVE.

1) PUT THE RING PROBE ON A FASTENER IN ROW 1 AND BALANCE THE INSTRUMENT.
2) DO THE INSPECTION ON THE REMAINING FASTENERS IN ROW 1.
3) PUT THE RING PROBE ON A FASTENER IN ROW 2 AND BALANCE THE INSTRUMENT.
4) DO THE INSPECTION ON THE REMAINING FASTENERS IN ROW 2.
5) PUT THE PROBE ON FASTENER 1 ON THE AFT FLANGE OF STRINGER 5 AND BALANCE THE INSTRUMENT.
6) DO THE INSPECTION ON THE REMAINING FASTENERS IN THE ORDER SHOWN ABOVE ON THE AFT FLANGE OF STRINGER 5 (FASTENERS 2 THRU 6).

SPLICE STRINGER 5 ON THE LOWER SKIN PANEL NEAR WS 559

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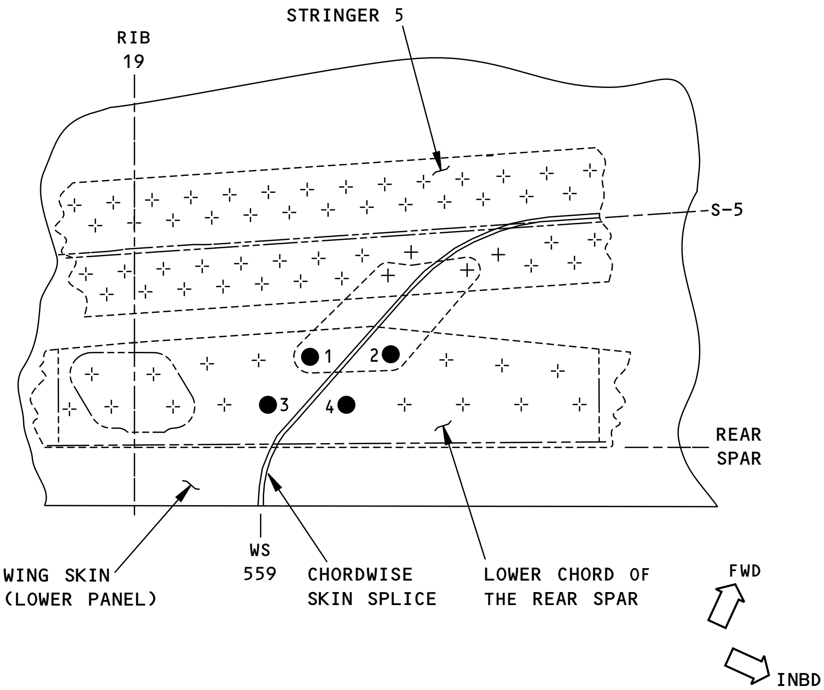
Inspection Areas at the Chordwise Skin Splices
Figure 1 (Sheet 2 of 7)



NOTES:

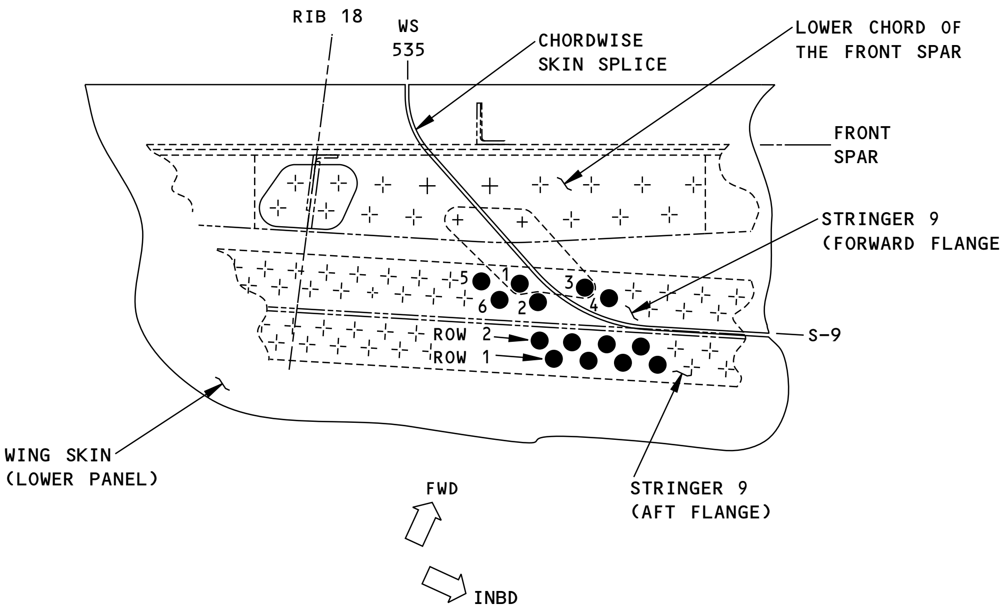
- THIS IS A VIEW OF THE INSPECTION AREA ON THE LOWER SKIN AT THE LOWER CHORD OF THE REAR SPAR NEAR WS 559. THE INSPECTION FASTENERS ARE BLACK CIRCLES.
- SEE FIGURE 4 FOR THE CORRECT REFERENCE STANDARD TO USE FOR THE CALIBRATION TO EXAMINE THE FASTENER LOCATIONS SHOWN ABOVE.

1) PUT THE RING PROBE ON FASTENER NUMBER 1 ON THE LOWER SKIN AND BALANCE THE INSTRUMENT (SEE FASTENER 1 ABOVE ON THE LOWER CHORD OF THE REAR SPAR).
2) PUT THE PROBE ON FASTENER NUMBERS 2, 3 AND 4 (IN THIS ORDER) AND MONITOR THE INSTRUMENT DISPLAY WHEN THE PROBE IS AT EACH FASTENER LOCATION.

REAR SPAR CHORD OF THE LOWER SKIN PANEL NEAR WS 559

2176164 S0000478450_V1

Inspection Areas at the Chordwise Skin Splices
Figure 1 (Sheet 3 of 7)



NOTES:

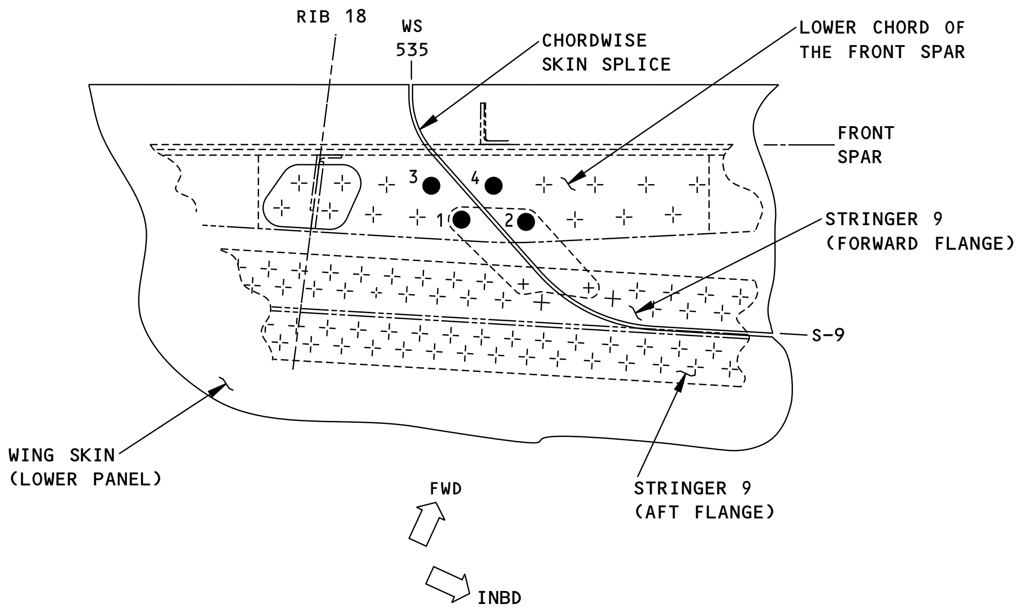
- THIS IS A VIEW OF THE INSPECTION AREA ON STRINGER 9 ON THE LOWER SKIN AT THE CHORDWISE SKIN SPLICE NEAR WS 535. THE INSPECTION FASTENERS ARE BLACK CIRCLES.
- SEE FIGURE 4 FOR THE CORRECT REFERENCE STANDARD TO USE FOR THE CALIBRATION TO EXAMINE THE FASTENERS SHOWN ABOVE.

1) PUT THE RING PROBE ON A FASTENER IN ROW 1 AND BALANCE THE INSTRUMENT.
2) DO THE INSPECTION ON THE REMAINING FASTENERS IN ROW 1.
3) PUT THE RING PROBE ON A FASTENER IN ROW 2 AND BALANCE THE INSTRUMENT.
4) DO THE INSPECTION ON THE REMAINING FASTENERS IN ROW 2.
5) PUT THE PROBE ON FASTENER 1 ON THE FORWARD FLANGE OF STRINGER 9 AND BALANCE THE INSTRUMENT.
6) DO THE INSPECTION ON THE REMAINING FASTENERS IN THE ORDER SHOWN ABOVE ON THE FORWARD FLANGE OF STRINGER 9 (FASTENERS 2 THRU 6).

SPLICE STRINGER 9 ON THE LOWER SKIN PANEL NEAR WS 535

2176165 S0000478451_V1

Inspection Areas at the Chordwise Skin Splices
Figure 1 (Sheet 4 of 7)



NOTES:

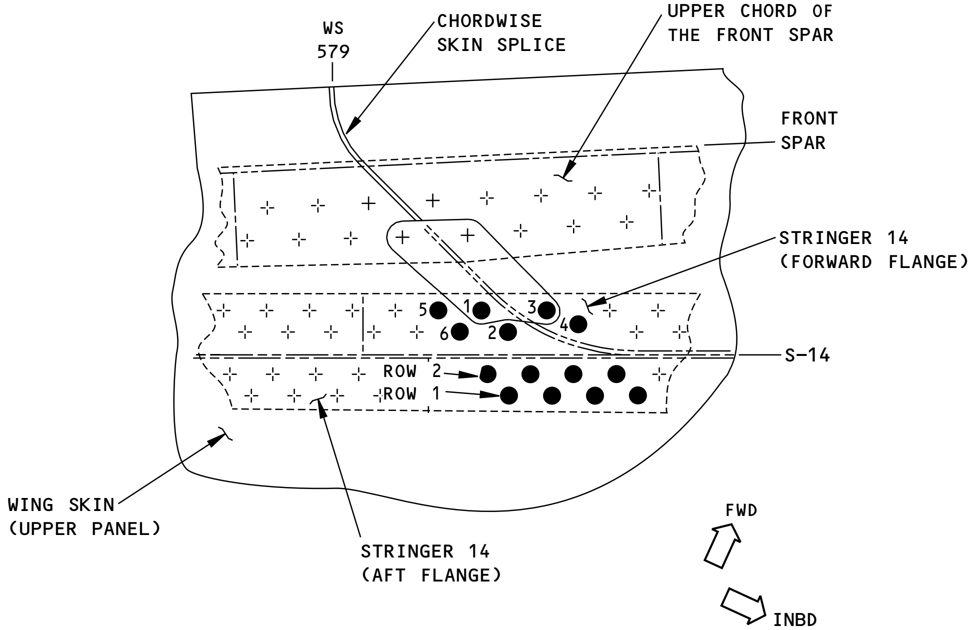
- THIS IS A VIEW OF THE INSPECTION AREA ON THE LOWER SKIN AT THE LOWER CHORD OF THE FRONT SPAR NEAR WS 535. THE INSPECTION FASTENER LOCATIONS ARE SHOWN BY BLACK CIRCLES.
- SEE FIGURE 4 FOR THE CORRECT REFERENCE STANDARD TO USE FOR THE CALIBRATION TO EXAMINE THE FASTENERS SHOWN ABOVE.

1) PUT THE RING PROBE ON FASTENER NUMBER 1 ON THE LOWER SKIN AND BALANCE THE INSTRUMENT (SEE FASTENER 1 ABOVE ON THE LOWER CHORD OF THE FRONT SPAR).
2) PUT THE PROBE ON FASTENER NUMBERS 2, 3 AND 4 (IN THIS ORDER) AND MONITOR THE INSTRUMENT DISPLAY WHEN THE PROBE IS AT EACH FASTENER LOCATION.

FRONT SPAR CHORD OF THE LOWER SKIN PANEL NEAR WS 535

2176167 S0000478452_V1

Inspection Areas at the Chordwise Skin Splices
Figure 1 (Sheet 5 of 7)



NOTES:

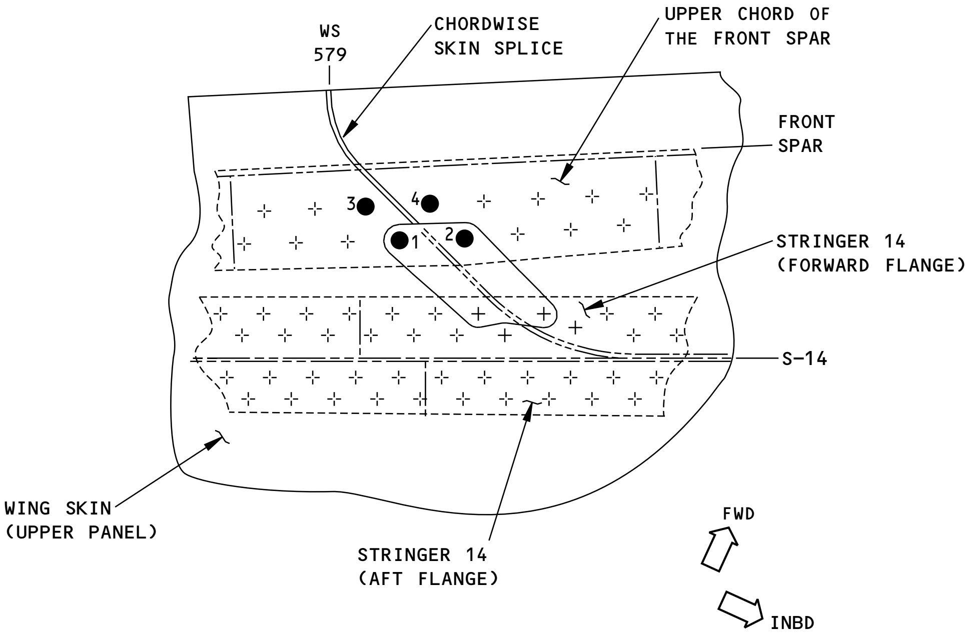
- THIS IS A VIEW OF THE INSPECTION AREA ON STRINGER 14 ON THE UPPER SKIN AT THE CHORDWISE SKIN SPLICE NEAR WS 579. THE INSPECTION FASTENER LOCATIONS ARE SHOWN IN BLACK CIRCLES.
- SEE FIGURE 4 FOR THE CORRECT REFERENCE STANDARD TO USE FOR THE CALIBRATION TO EXAMINE THE FASTENERS SHOWN ABOVE.

1) PUT THE RING PROBE ON A FASTENER IN ROW 1 AND BALANCE THE INSTRUMENT.
2) DO THE INSPECTION ON THE REMAINING FASTENERS IN ROW 1.
3) PUT THE RING PROBE ON A FASTENER IN ROW 2 AND BALANCE THE INSTRUMENT.
4) DO THE INSPECTION ON THE REMAINING FASTENERS IN ROW 2.
5) PUT THE PROBE ON FASTENER 1 ON THE FORWARD FLANGE OF STRINGER 14 AND BALANCE THE INSTRUMENT.
6) DO THE INSPECTION ON THE REMAINING FASTENERS IN THE ORDER SHOWN ABOVE ON THE FORWARD FLANGE OF STRINGER 14 (FASTENERS 2 THRU 6).

SPLICE STRINGER 14 OF THE UPPER SKIN PANEL NEAR WS 579

2176168 S0000478453_V2

Inspection Areas at the Chordwise Skin Splices
Figure 1 (Sheet 6 of 7)



NOTES:

- THIS IS A VIEW OF THE INSPECTION AREA ON THE UPPER SKIN AT THE UPPER CHORD OF THE FRONT SPAR AT THE CHORDWISE SKIN SPLICE NEAR WS 579.
- SEE FIGURE 4 FOR THE CORRECT REFERENCE STANDARD TO USE FOR THE CALIBRATION TO EXAMINE THE FASTENER LOCATIONS SHOWN ABOVE.

1) PUT THE RING PROBE ON FASTENER NUMBER 1 ON THE UPPER SKIN AND BALANCE THE INSTRUMENT (SEE FASTENER 1 ABOVE AT THE CHORD OF THE FRONT SPAR).
2) PUT THE PROBE ON FASTENER NUMBERS 2, 3 AND 4 (IN THIS ORDER) AND MONITOR THE INSTRUMENT DISPLAY WHEN THE PROBE IS AT EACH FASTENER LOCATION.

FRONT SPAR CHORD OF THE UPPER SKIN PANEL NEAR WS 579

2176169 S0000478454_V1

Inspection Areas at the Chordwise Skin Splices
Figure 1 (Sheet 7 of 7)

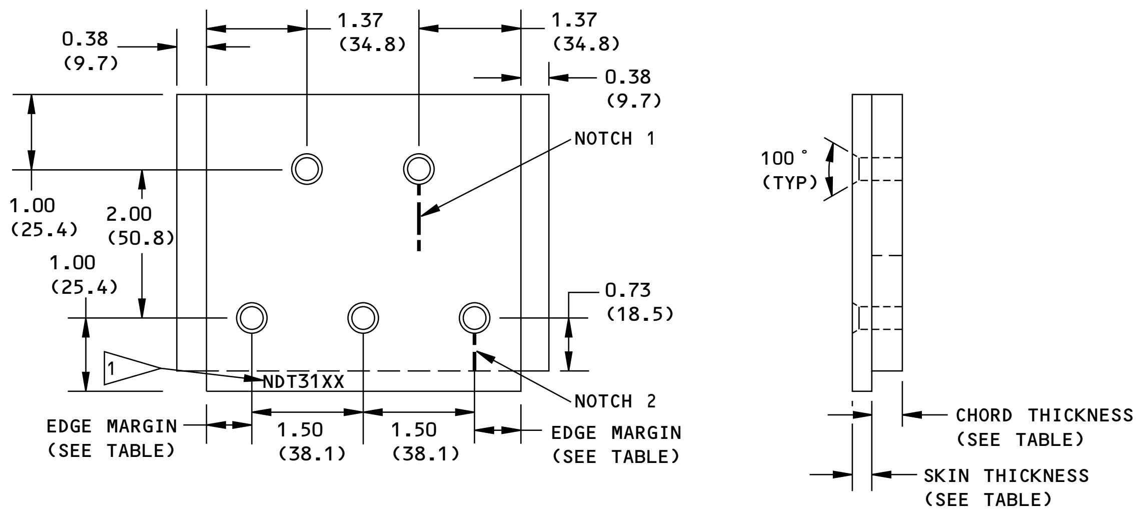


TABLE					
REFERENCE STANDARD	SKIN THICKNESS	CHORD THICKNESS	EDGE MARGIN	FASTENER	MATERIAL (EACH PLATE)
NDT3156	0.245 (6.22)	0.400 (10.16)	0.620 (15.75)	BACB30YP10*10	MATERIAL 1
NDT3157	0.220 (5.59)	0.400 (10.16)	0.620 (15.75)	BACB30YP10*10	MATERIAL 2
NDT3159	0.150 (3.81)	0.300 (7.62)	0.500 (12.70)	BACB30YP8*7	MATERIAL 1
NDT3161	0.190 (4.83)	0.300 (7.62)	0.500 (12.70)	BACB30YP8*7	MATERIAL 1
NDT3162	0.145 (3.68)	0.350 (8.89)	0.500 (12.70)	BACB30YP8*8	MATERIAL 2
NDT3163	0.170 (4.32)	0.350 (8.89)	0.500 (12.70)	BACB30YP8*8	MATERIAL 2
NDT3164	0.220 (5.59)	0.350 (8.89)	0.500 (12.70)	BACB30YP8*9	MATERIAL 2

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS	ANGULAR
X.XXX = ±0.005	X.XX = ±0.010	±2 °
X.XX = ±0.025	X.X = ±0.05	
X.X = ±0.050	X = ±1	

- MATERIAL: MATERIAL 1 - 2024-T3, 2224-T3511 OR 2324-T39 ALUMINUM (CLAD OR BARE)
  MATERIAL 2 - 7055-T7751, 7150-T77511, 7075-T76, 7075-T7351 OR ALL OTHER ALUMINUM ALLOYS THAT HAVE A CONDUCTIVITY RANGE FROM 38 TO 46% IACS. (BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- EDM NOTCH:
  WIDTH: 0.010 (0.25) MAXIMUM
  DEPTH: THROUGH THE THICKNESS
  LENGTH OF NOTCH 1: 1.00 (25.4)
  LENGTH OF NOTCH 2: TO EDGE
- FASTENERS:

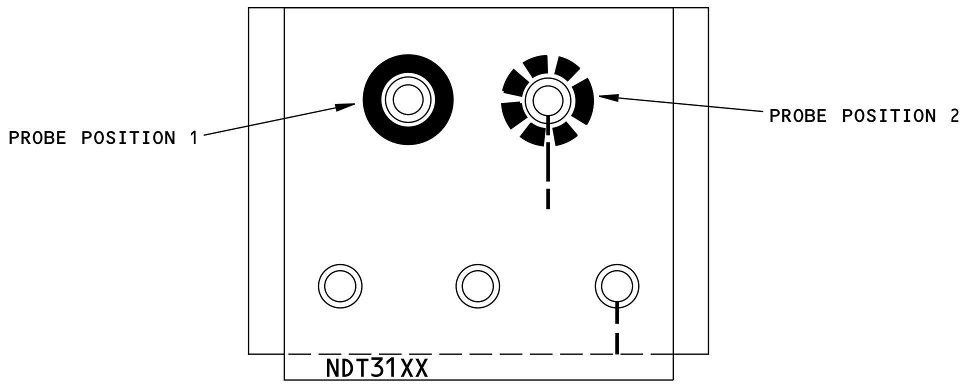
  SEE THE TABLE FOR THE BOLTS TO USE (BACB30YP* BOLTS USE BACC30BP* COLLARS). ALTERNATIVE BOLTS AND COLLARS CAN BE USED IF THEY ARE THE SAME MATERIAL AND THE SAME CONFIGURATION AS THOSE SPECIFIED (BACB30XT* BOLTS WITH BACC30BK* COLLARS ARE ALTERNATIVES)

  SATISFACTORY GRIP LENGTHS ARE GIVEN. ALTERNATIVE GRIP LENGTHS CAN BE USED IF THEY CAN SATISFACTORILY ATTACH TO THE NUT.

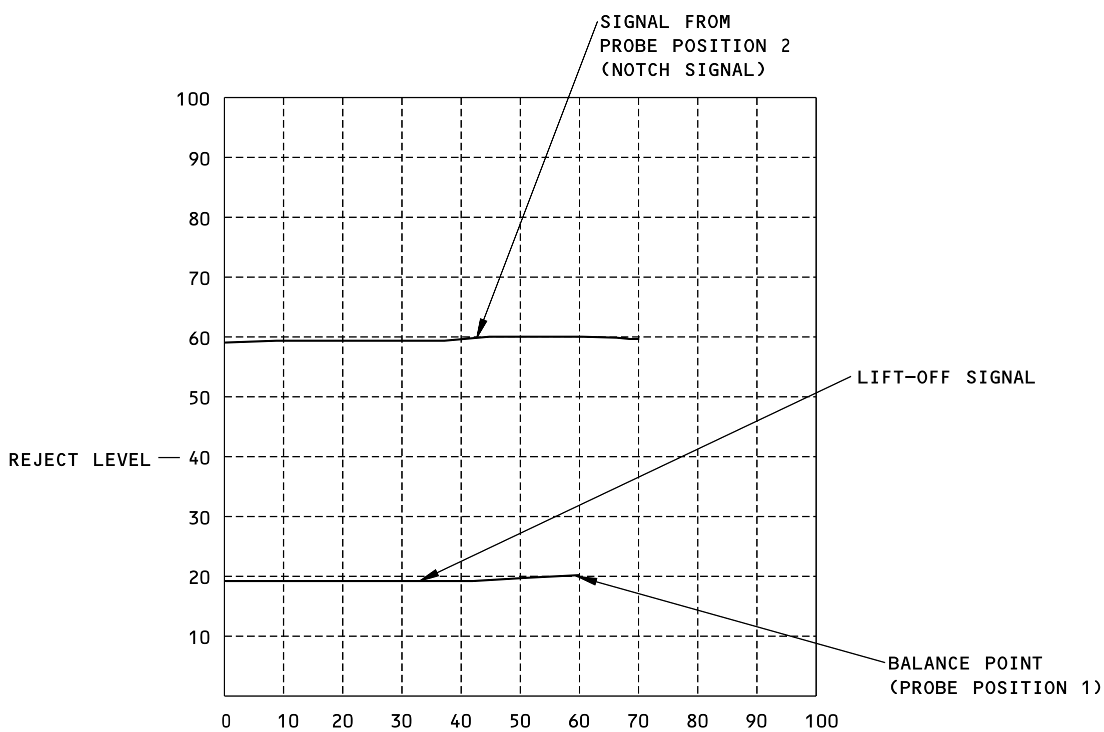
1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER AT APPROXIMATELY THIS LOCATION.

2176171 S0000478455_V2

Reference Standards NDT3156 Thru NDT3164
Figure 2



SEE FIGURE 4, TABLES 1 AND 2 FOR DATA ABOUT THE REFERENCE STANDARD, PROBE DIAMETER AND FREQUENCY TO USE.



2176177 S0000478456_V1

Instrument Calibration
Figure 3

REFERENCE STANDARD TO USE FOR THE CALIBRATION FOR EACH 737NG WING MODEL AND EACH INSPECTION AREA

INSPECTION AREAS AT SKIN SPLICES	WING -600	WING -700	WING -700 PROV	WING -700WS	WING -800	WING -800WS	WING -800 PROV	WING -900ER
SPLICE STRINGER 5 ON THE LOWER SKIN PANEL NEAR WS 559	NDT3161	NDT3159	NDT3159	NDT3159	NDT3159	NDT3159	NDT3159	NDT3161
REAR SPAR CHORD OF THE LOWER SKIN PANEL NEAR WS 559	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156
SPLICE STRINGER 9 ON THE LOWER SKIN PANEL NEAR WS 535	NDT3161	NDT3159	NDT3159	NDT3159	NDT3159	NDT3159	NDT3159	NDT3161
FRONT SPAR CHORD OF THE LOWER SKIN PANEL NEAR WS 535	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156	NDT3156
SPLICE STRINGER 14 ON THE UPPER SKIN PANEL NEAR WS 579	NDT3164	NDT3162	NDT3162	NDT3162	NDT3162	NDT3162	NDT3162	NDT3163
FRONT SPAR CHORD ON THE UPPER SKIN PANEL NEAR WS 579	NDT3157	NDT3157	NDT3157	NDT3157	NDT3157	NDT3157	NDT3157	NDT3157

TABLE 1

RING PROBES AND FREQUENCIES FOR EACH REFERENCE STANDARD

REFERENCE STANDARD	NDT3156	NDT3157	NDT3159	NDT3161	NDT3162	NDT3163	NDT3164
PROBE CODE	B	B	A	A	A	A	A
FREQUENCY RANGE (Hz)	250-300	300-350	650-700	400-450	700-750	500-550	300-350

TABLE 2

RING PROBE CODES WITH DIAMETERS:
A=OUTER DIAMETER: 0.80 INCH (20 mm); INNER DIAMETER: 0.40 INCH (10 mm)
B=OUTER DIAMETER: 1.0 INCH (25 mm); INNER DIAMETER: 0.50 INCH (13 mm)

2176181 S0000478457_V2

Tables 1 and 2 for the Calibration and Inspection
Figure 4

PART 6 - EDDY CURRENT

SIDE-OF-BODY SPLICE - LOWER SKIN (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the lower skin for cracks at the side-of-body splice. The inspection is between the rear spar and the front spar at the fastener locations that go through the splice plates and brackets. See Figure 1 for the inspection areas.

   B. It can be necessary to remove fairing brackets at some locations to get access to the fastener to be examined.

   C. This procedure uses an impedance plane display instrument.

   D. The lower skin is aluminum.

   E. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-10-11-3

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 Hz to 1.5 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

   C. Probes

      NOTE: Two different ring probes are necessary to do this inspection. It is necessary to change the ring probe diameters because of changes in the fastener diameters in the inspection area. See Table I in Figure 3 to identify the ring probe to use.

      (1) Use reflection type ring probes that:

         (a) Operate from 50 Hz to 1.5 kHz.

         (b) Have the diameters that follow (identified as PROBE 1):

            1) Has a minimum inner diameter of 0.77 inch (19.6 mm).

            2) Has a maximum outer diameter of 1.40 inches (35.6 mm).

         (c) Have the diameters that follow (identified as PROBE 2):

            1) Has a minimum inner diameter of 0.85 inch (21.6 mm).

            2) Has a maximum outer diameter of 1.50 inches (38.1 mm).

(2) The ring probes that follow were used to help prepare this procedure.

NOTE: Other probes can be used if they can be calibrated with the reference standard specified in Paragraph 2.D.

NOTE: Shielded probes are recommended.

(a) PROBE 1:

1) RDP1.25-.77/300H; Techna NDT

(b) PROBE 2:

1) RDP1.40-.85-200H; Techna NDT

D. Reference Standards

(1) Use reference standards NDT3180-X as shown in Figure 2 to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

NOTE: It can be necessary to remove fairing brackets at some locations to get access to the fastener to be examined.

B. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Identify the applicable reference standard and probe to use during calibration from Table I in Figure 3 for the fastener code identified in Figure 1 for the area to be examined.

B. Set the instrument frequency to the frequency identified in Table I in Figure 3 for the reference standard to be used.

C. Put the ring probe on the applicable reference standard at probe position 1 as shown in Detail II in Figure 3. Adjust the center of the probe so it is above the center of the fastener hole.

D. Balance the instrument.

E. Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

F. Set the balance point at approximately 20% of full screen height (FSH) and 60% of full screen width (FSW) as shown in Detail I in Figure 3.

G. Set the lift-off (phase) so that the signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Detail I in Figure 3.

H. Put the ring probe at probe position 2 as shown in Detail II in Figure 3. Make sure the center of the probe is above the center of the fastener hole.

I. Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

J. Adjust the instrument gain to get a notch signal that is approximately 60% of FSH as shown in Detail I in Figure 3.

K. Make sure the instrument is calibrated correctly:

(1) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(2) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(3) Balance the instrument.

(4) Put the probe on the reference standard at probe position 2 as shown in Detail II in Figure 3.

(5) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

L. If the minimum signal from the notch is not 60% of FSH then do the calibration again.

5. **Inspection Procedure**

A. Calibrate the instrument as specified in Paragraph 4. for the fastener code location to be examined. Figure 1 identifies the fastener codes for each area. Use the fastener codes to identify the calibration data specified in Table I of Figure 3.

B. Move the center of the probe above the center of the first fastener with the applicable fastener code to be examined. Move the probe above the fastener to get the minimum signal from the instrument.

C. Balance the instrument.

D. Put the ring probe above each fastener in the inspection area with the same fastener code and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(1) Monitor your location on the side-of-body splice to identify when it is necessary to change the reference standard and calibrate the instrument again. Figure 1 identifies the fastener codes at each fastener location to be examined. Table I in Figure 3 identifies the reference standard to use for each fastener code.

(2) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(3) Do a calibration check as follows if the equipment is changed or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

(a) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(b) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(c) Balance the instrument.

(d) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(e) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

E. Do Paragraph 5.A. thru Paragraph 5.D. again for each fastener code in the inspection area.

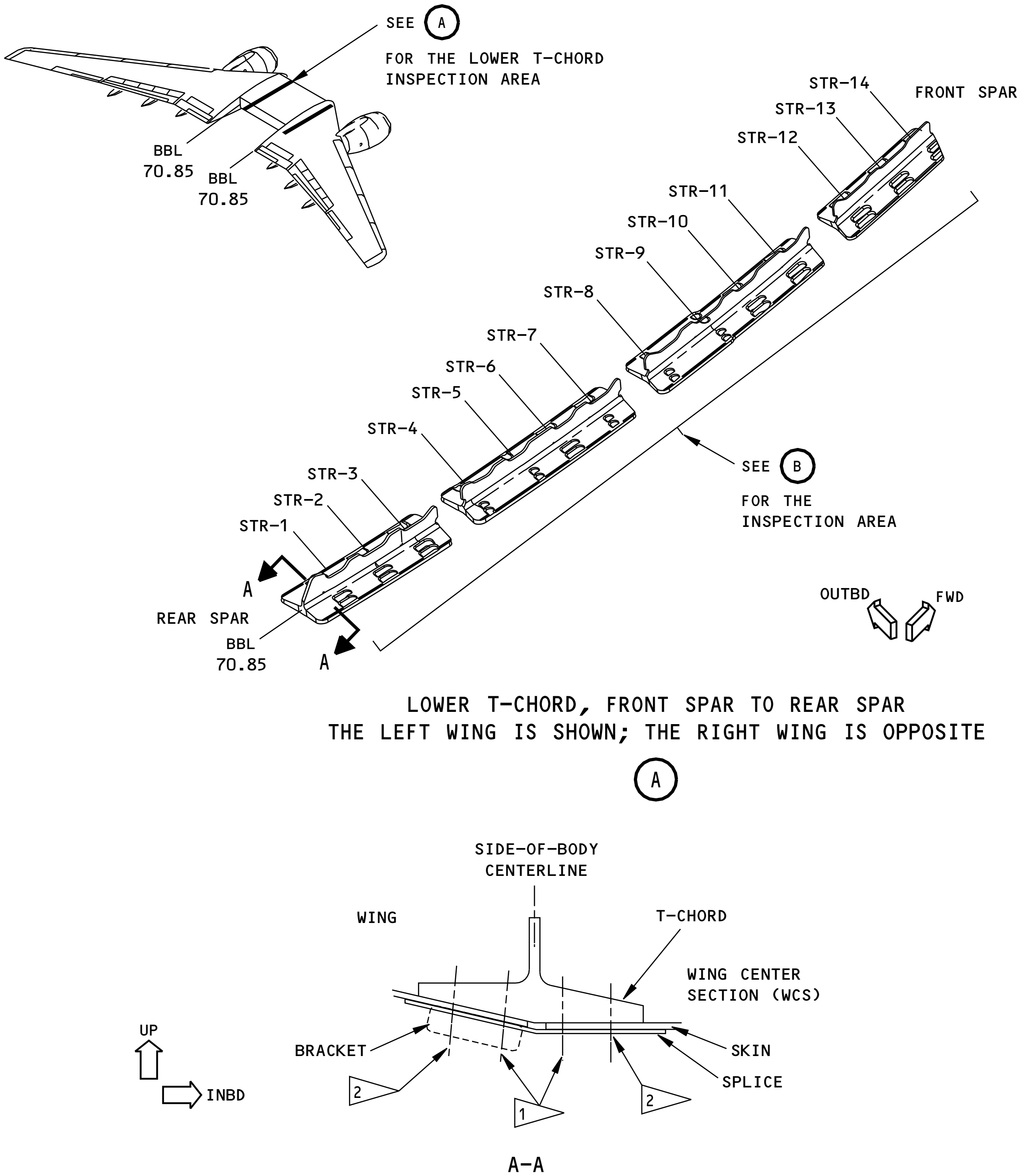
F. Do Paragraph 5.A. thru Paragraph 5.E. again to examine the lower skin for cracks on the other side of the airplane.

6. **Inspection Results**

A. A signal that is more than 40 percent of FSH is a sign of a crack. The location must be rejected and more analysis is necessary.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. If crack indications are found, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.

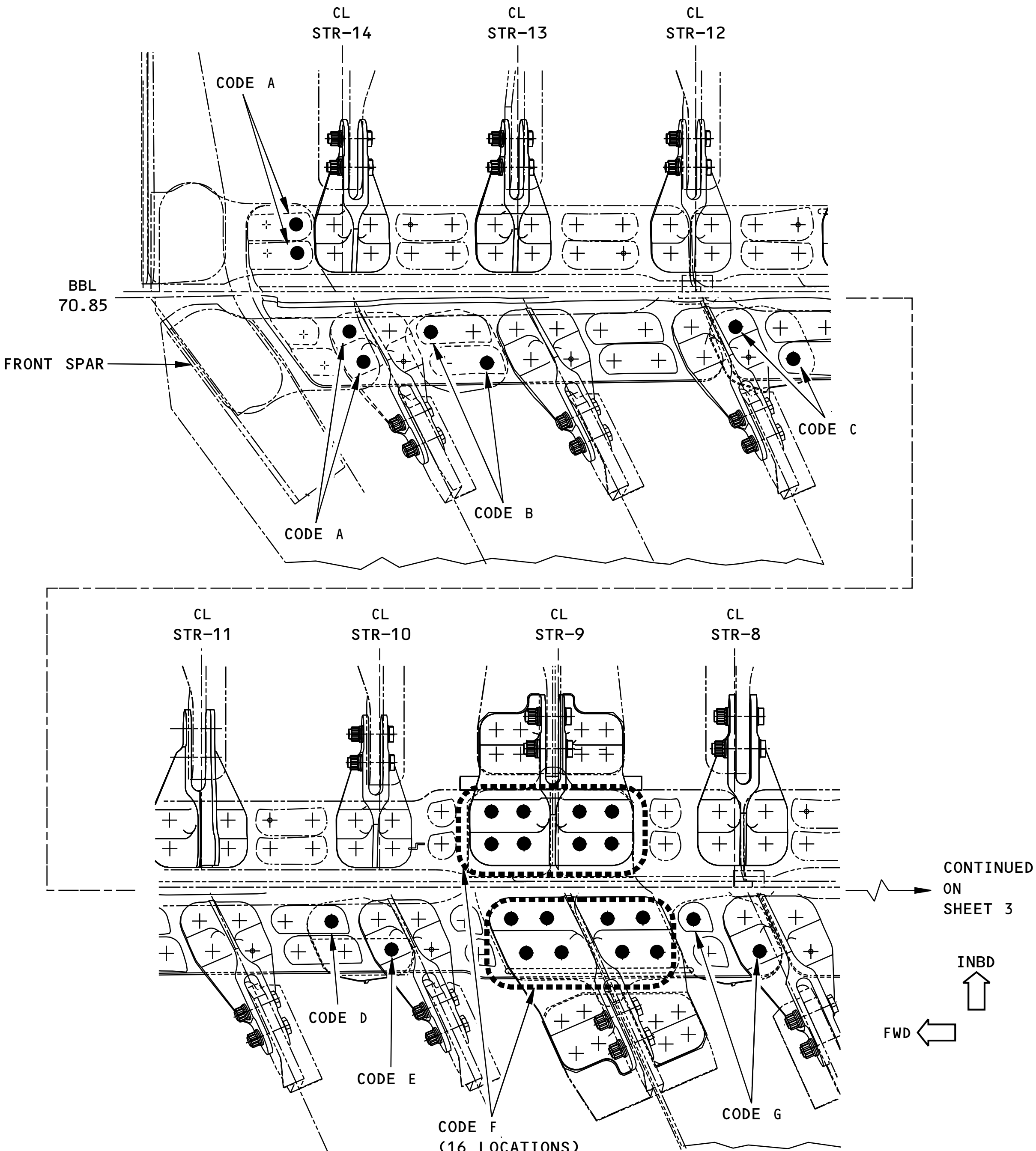


NOTES:

1. FASTENER LOCATIONS IN THE INNER FASTENER ROW
2. FASTENER LOCATIONS IN THE OUTER FASTENER ROW

2176185 S0000478252_V1

Inspection Area
Figure 1 (Sheet 1 of 3)

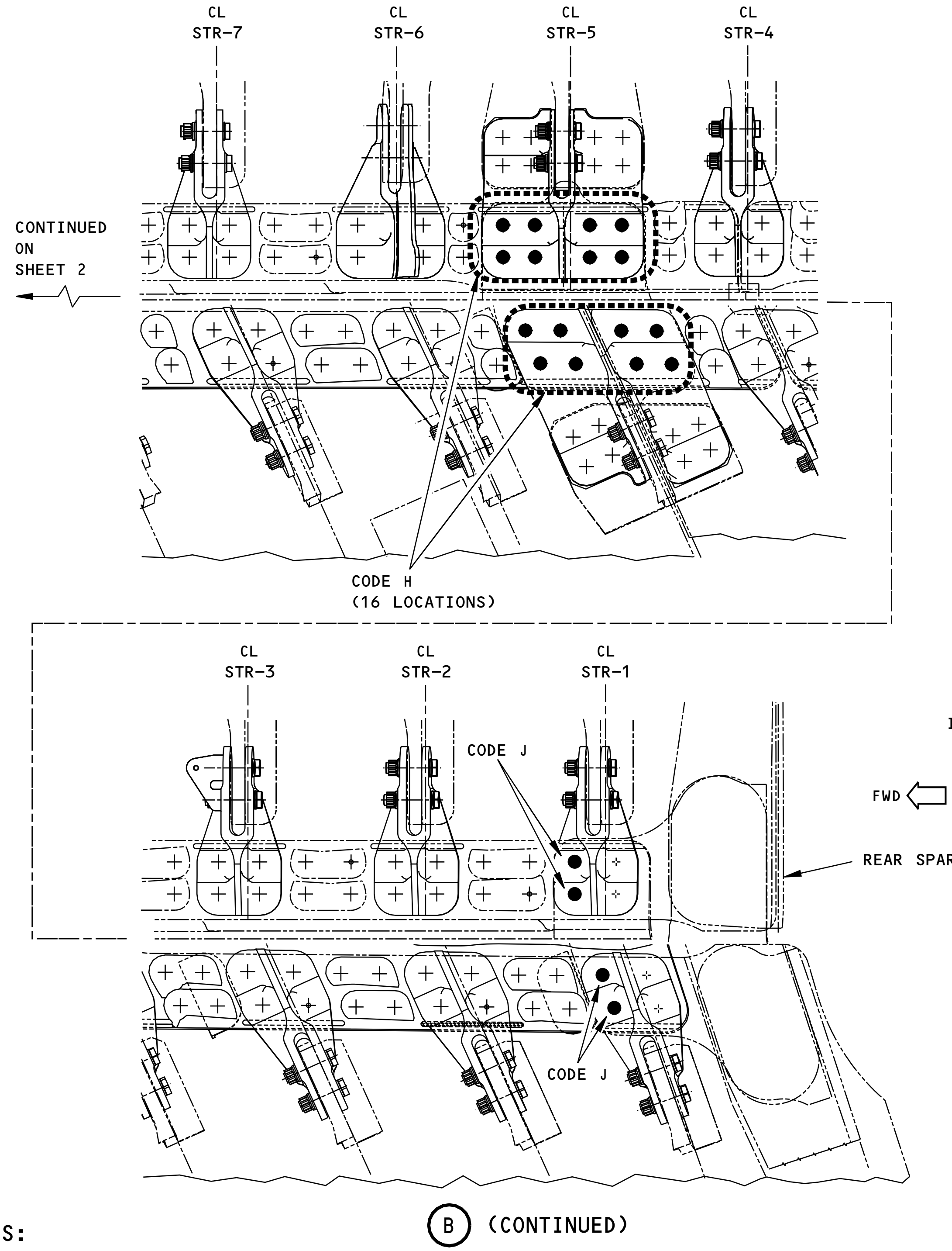


NOTES:

- ● FASTENER LOCATIONS TO EXAMINE
- • THE LEFT SIDE-OF-BODY SPLICE IS SHOWN; THE RIGHT SIDE IS OPPOSITE

2176186 S0000478253_V1

Inspection Area
Figure 1 (Sheet 2 of 3)



NOTES:

- ● FASTENER LOCATIONS TO EXAMINE
- THE LEFT SIDE-OF-BODY SPLICE IS SHOWN; THE RIGHT SIDE IS OPPOSITE

2176188 S0000478255_V1

Inspection Area
Figure 1 (Sheet 3 of 3)

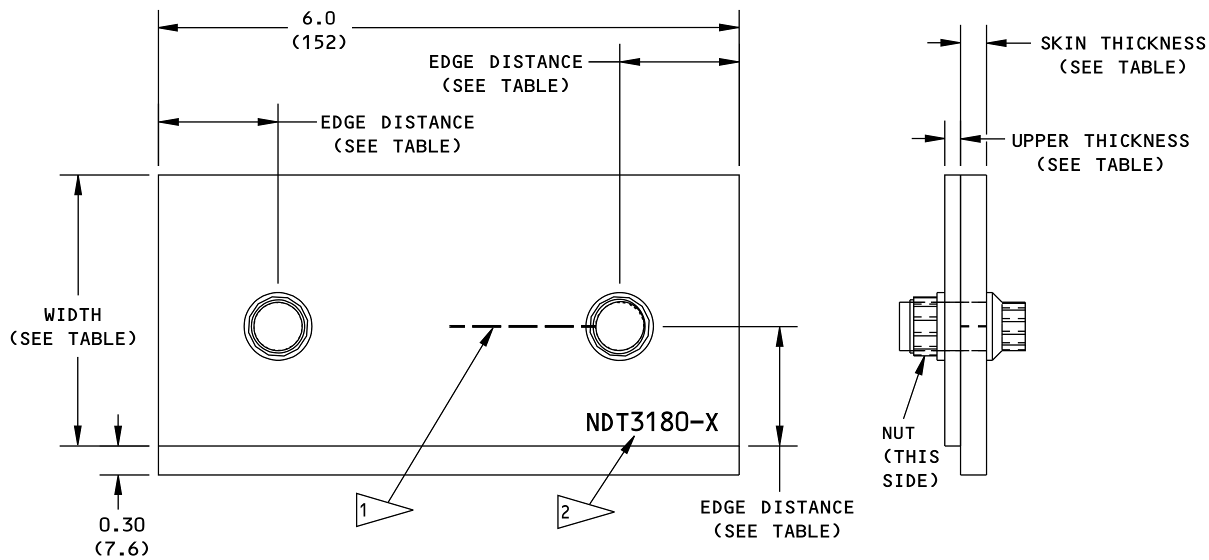


TABLE: NDT3180-X ASSEMBLY						
REFERENCE STANDARD	WIDTH	BOLTS	EDGE DISTANCE	UPPER THICKNESS	SKIN THICKNESS	GRIP LENGTH
NDT3180-A	2.8 (71)	BACB30NM7K	1.22 (31.0)	0.170 (4.32)	0.200 (5.08)	6
NDT3180-B	2.4 (61)	BACB30NM7K	1.05 (26.7)	0.200 (5.08)	0.160 (4.06)	6
NDT3180-C	2.4 (61)	BACB30NM7K	1.05 (26.7)	0.170 (4.32)	0.160 (4.06)	5
NDT3180-D	2.4 (61)	BACB30NM7K	1.05 (26.7)	0.240 (6.10)	0.170 (4.32)	6
NDT3180-E	2.4 (61)	BACB30NM7K	1.05 (26.7)	0.130 (3.30)	0.300 (7.62)	7
NDT3180-F	2.8 (71)	BACB30NM8K	1.235 (31.4)	0.110 (2.80)	0.300 (7.62)	6
NDT3180-G	2.4 (61)	BACB30NM7K	1.05 (26.7)	0.160 (4.06)	0.300 (7.62)	7
NDT3180-H	2.8 (71)	BACB30NM8K	1.235 (31.4)	0.163 (4.14)	0.270 (6.86)	7
NDT3180-J	2.4 (61)	BACB30US8K	1.22 (31.0)	0.300 (7.62)	0.270 (6.86)	9

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.010
X.XX = ±0.025	X.X = ±0.05
X.X = ±0.050	X = ±1

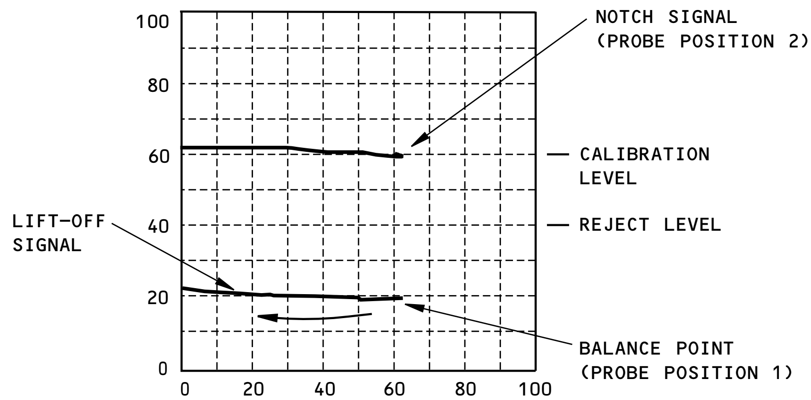
- MATERIAL: 2024-T3, 2024-T4 OR 2324-T39 ALUMINUM (CLAD OR BARE) WITH A CONDUCTIVITY BETWEEN 28-32 IACS
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- FASTENERS:
  SEE THE TABLE FOR THE BOLTS TO USE.
  FOR BACB30NM* BOLTS, USE BACN11Z7 NUTS WITH BACW10BP*CD AND BACW10BP*DP WASHERS.
  FOR BACB30US* BOLTS, USE BACN10HR NUTS WITH BACW10BP*CD AND BACW10BP*DP WASHERS.
  ALTERNATE FASTENERS AND NUTS CAN BE USED IF THEY ARE THE SAME MATERIAL AND HAVE THE SAME CONFIGURATION AS THE FASTENER SPECIFIED. SATISFACTORY GRIP LENGTHS ARE GIVEN. ALTERNATE GRIP LENGTHS CAN BE USED IF THEY CAN SATISFACTORILY ATTACH TO THE NUT.

1 EDM NOTCH:
WIDTH: 0.010 (0.25) MAXIMUM
LENGTH: 1.50 (38.1)
DEPTH: THROUGH THE THICKNESS

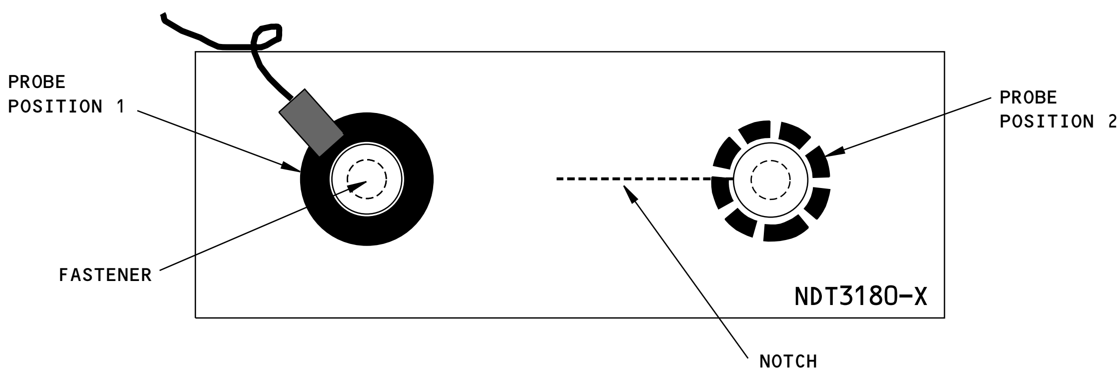
2 ETCH OR STAMP THE REFERENCE STANDARD NUMBER AT APPROXIMATELY THIS LOCATION

2176190 S0000478256_V1

Reference Standard NDT3180-X
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3180-X
DETAIL II

FASTENER CODE LOCATIONS	CODE A	CODE B	CODE C	CODE D	CODE E	CODE F	CODE G	CODE H	CODE J
REFERENCE STANDARD	NDT3180-A	NDT3180-B	NDT3180-C	NDT3180-D	NDT3180-E	NDT3180-F	NDT3180-G	NDT3180-H	NDT3180-J
FREQUENCY	600 Hz	400 Hz	600 Hz	240 Hz	1.0 kHz	1.1 kHz	650 Hz	650 Hz	220 Hz
RING PROBE TO USE	PROBE 1	PROBE 1	PROBE 1	PROBE 1	PROBE 1	PROBE 2	PROBE 2	PROBE 1	PROBE 2

REFERENCE STANDARD, PROBE AND FREQUENCY
TO USE AT THE DIFFERENT RIB LOCATIONS
TABLE I

2176192 S0000478257_V1

Inspection Calibration
Figure 3

PART 6 - EDDY CURRENT

SIDE-OF-BODY SPLICE - LOWER T-CHORD (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the side-of-body splice for cracks in the lower T-chord. The inspection is at the fastener locations that go through the wing lower skin and the lower T-chord from the front spar to the rear spar. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The T-chord is aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-10-11-1

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 100 Hz to 1.2 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

   C. Probes

      (1) Use a reflection type ring probe that:

         (a) Operates from 100 Hz to 1.2 kHz.

         (b) Has the properties that follow when used to examine the T-chord at #7 fastener diameter locations:

            1) Has an inner diameter that is between 0.77 and 0.85 inches (19.6 and 21.6 mm).

            2) Has a maximum outer diameter of 1.25 inches (31.8 mm).

         (c) Has the properties that follow when used to examine the T-chord at #8 fastener diameter locations:

            1) Has an inner diameter that is between 0.85 and 0.88 inches (21.6 and 22.4 mm).

            2) Has a maximum outer diameter of 1.35 inches (34.3 mm).

      (2) The probes that follow were used to help prepare this procedure:

         NOTE: Other probes can be used if they can be calibrated with the reference standard specified in Paragraph 2.D.

         NOTE: Shielded probes are recommended.

         (a) For #7 diameter fastener locations: RDP1.25-.77/300h; Techna NDT

(b) For #8 diameter fastener locations: RDP1.35-.850/500h; Techna NDT

D. Reference Standards

(1) Use reference standards NDT3178-X as shown in Figure 2 to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. Clean the inspection surfaces.

(1) Remove dirt, grease and sealant from the inspection surfaces. It is necessary to clean the surface to make sure the probe fully touches the T-chord during the inspection.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Identify the reference standard to use during calibration from Tables 1 or 2 in Figure 3 for the fastener locations on the airplane to be examined. The fastener locations are identified in Figure 1.

B. Set the instrument frequency to the frequency specified in Table 3 in Figure 3 for the reference standard to be used.

C. Put the ring probe on the reference standard at probe position 1 as shown in Detail II in Figure 3. Adjust the center of the probe so it is above the center of the fastener hole.

D. Balance the instrument.

E. Move the center of the probe above the fastener hole as necessary until the height of the signal is at its minimum.

F. Set the balance point at approximately 20% of full screen height (FSH) and 60% of full screen width (FSW) as shown in Detail I in Figure 3.

G. Set the lift-off (phase) so that the signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Detail I in Figure 3.

H. Put the ring probe at probe position 2 as shown in Detail II in Figure 3. Make sure the center of the probe is above the center of the fastener hole.

I. Move the center of the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

J. Adjust the instrument gain to get a notch signal that is approximately 60% of FSH as shown in Detail I in Figure 3.

K. Make sure the instrument is calibrated correctly:

(1) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(2) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(3) Balance the instrument.

(4) Put the probe on the reference standard at probe position 2 as shown in Detail II in Figure 3.

(5) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

L. If the minimum signal from the notch is not 60% of FSH then do the calibration again.

5. **Inspection Procedure**

A. Calibrate the instrument as specified in Paragraph 4. for the fastener locations to be examined. Figure 1 identifies the fastener locations and Tables 1 and 2 in Figure 3 identify the reference standards to use during calibration to examine the different fastener locations.

NOTE: There are three conditions that make it necessary to balance the instrument:

(1) When the balance point moves upscale or downscale by 10% of FSH because of a change in the material thickness.

(2) When the location of the inspection changes from an inner row fastener to an outer row fastener, or from an outer row fastener to an inner row fastener.

(3) When you start the inspection at the first fastener location after you do a new calibration with a new reference standard.

NOTE: Material thickness changes in the inspection area will cause the balance point to gradually increase or decrease. Monitor the balance point carefully during the inspection. It is necessary to examine the fasteners that are adjacent to each other to be able to see the balance point gradually change. If the balance point increases or decreases by 10% of FSH, it is necessary to balance the instrument again.

B. Move the center of the probe above the center of the first fastener to be examined for which the instrument has been calibrated to examine.

C. Move the probe above the fastener to get the minimum signal from the instrument.

D. Balance the instrument.

E. Put the ring probe above each fastener in the same row that the instrument has been calibrated to examine and monitor the instrument for crack signals. See Figure 1 for the inspection area. During the inspection:

(1) Make a mark at all fastener locations where signals occur that are 40 percent (or more) of FSH.

(2) Do a calibration check as follows if the equipment is changed or when the inspection is completed.

NOTE: Do not adjust the instrument gain.

(a) Put the probe on the reference standard at probe position 1 as shown in Detail II in Figure 3.

(b) Move the center of the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(c) Balance the instrument.

(d) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(e) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on the fastener locations you have examined since the last calibration check.

F. Do Paragraph 5.A. thru Paragraph 5.E. again to examine the lower T-chord for cracks at the other fastener locations in the same row.

G. Do Paragraph 5.A. thru Paragraph 5.F. again to examine the lower T-chord for cracks at the fastener locations in the other rows.

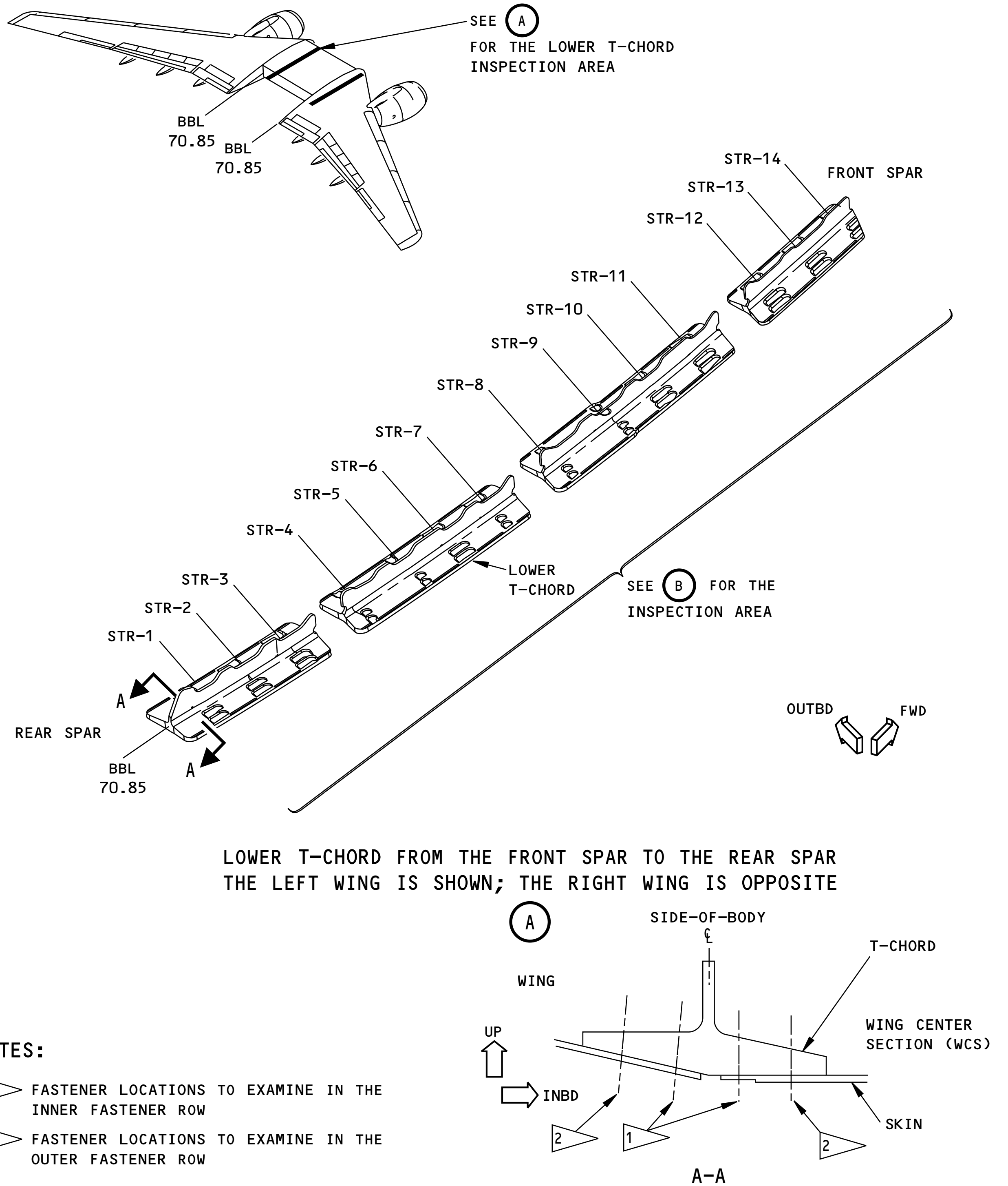
H. Do Paragraph 5.A. thru Paragraph 5.G. to examine the lower T-chord for cracks at the fastener locations on the opposite side of the airplane.

6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack. The location must be rejected and more analysis is necessary.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. If crack indications are found, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



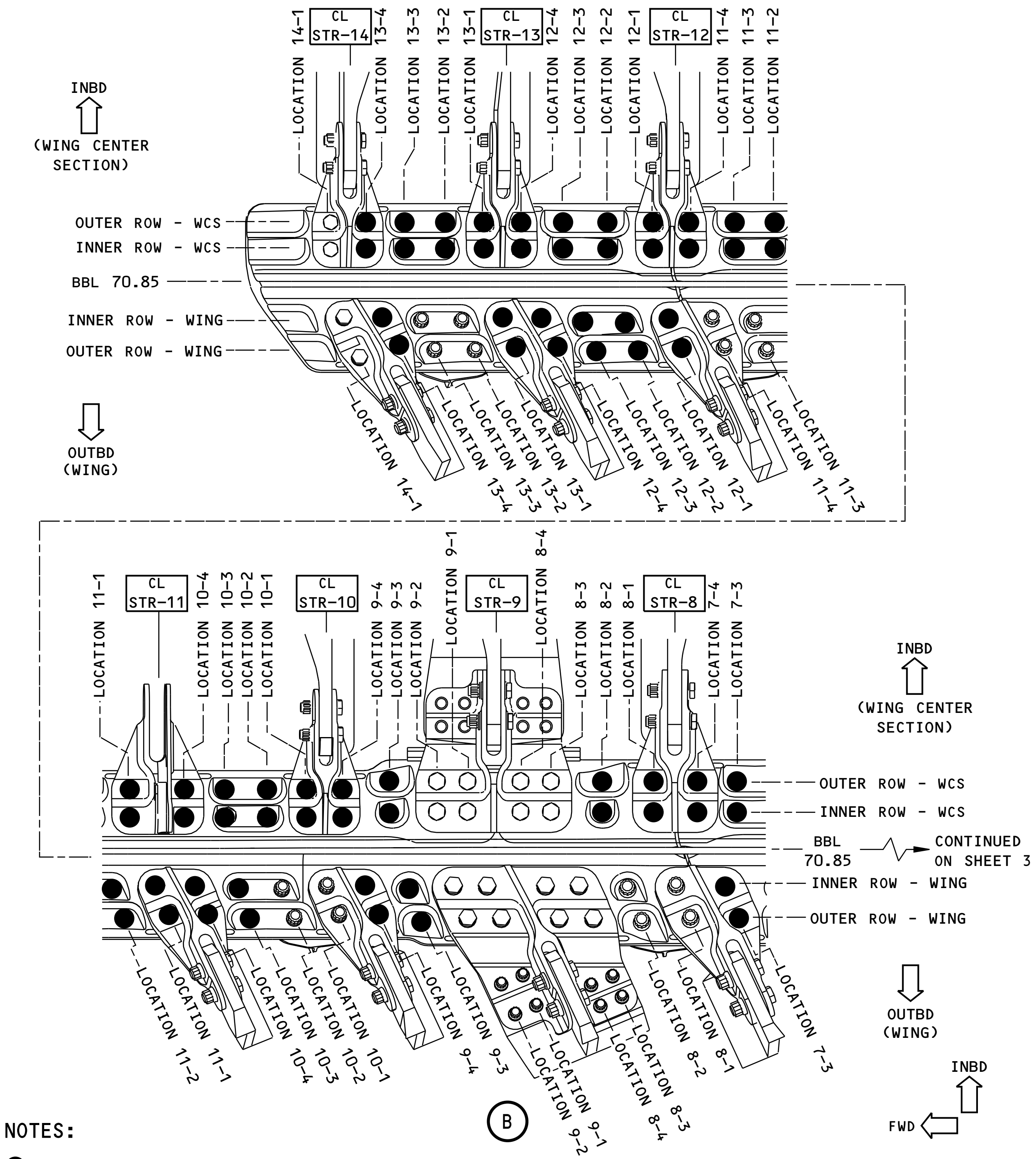
NOTES:

1 FASTENER LOCATIONS TO EXAMINE IN THE INNER FASTENER ROW

2 FASTENER LOCATIONS TO EXAMINE IN THE OUTER FASTENER ROW

2175707 S0000479260_V1

Inspection Area
Figure 1 (Sheet 1 of 3)



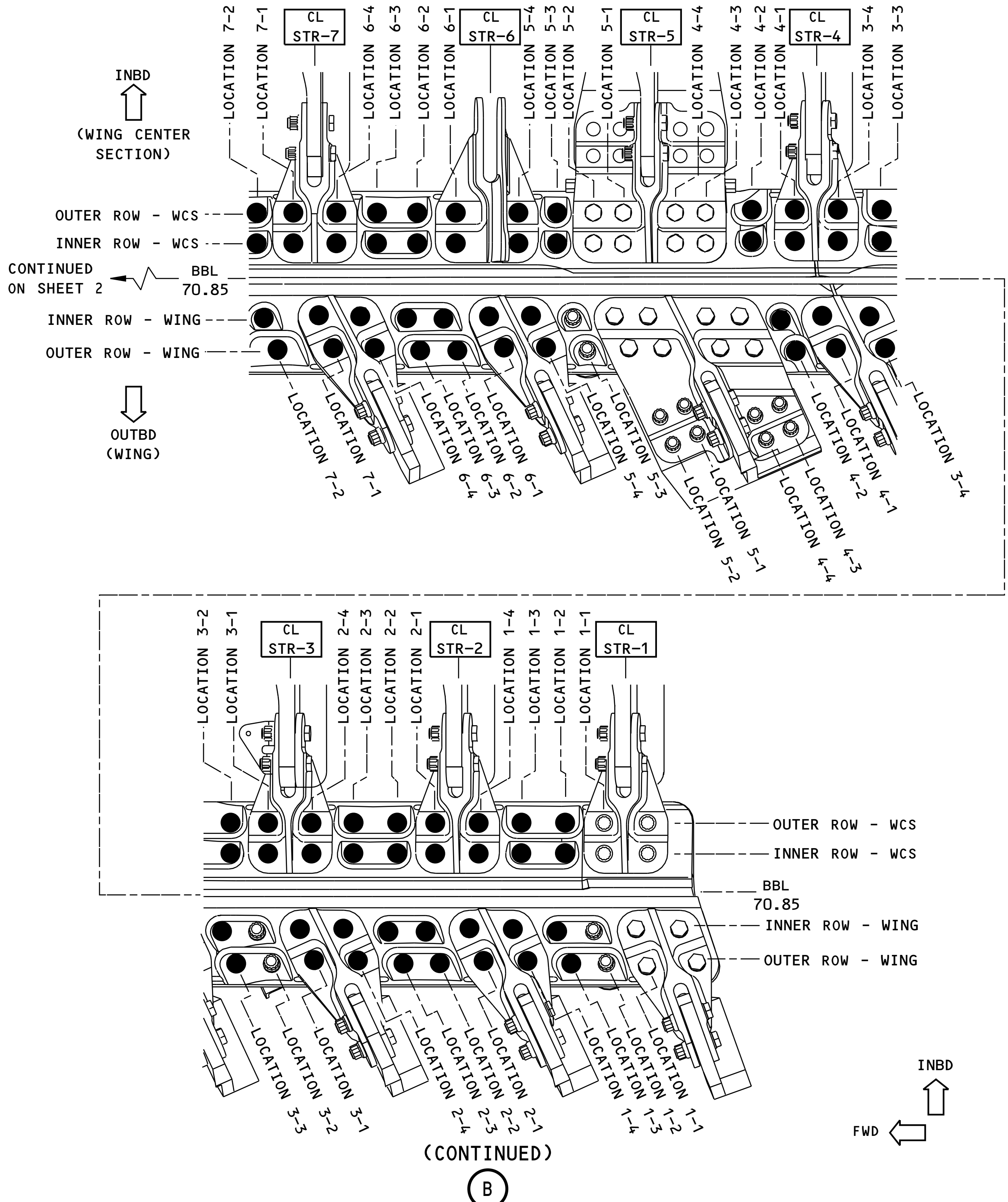
NOTES:

● FASTENER LOCATIONS TO BE EXAMINED. SEE FIGURE 3, TABLES 1 AND 2, TO IDENTIFY THE REFERENCE STANDARD TO USE TO CALIBRATE THE INSTRUMENT TO DO THE INSPECTION AT EACH LOCATION.

• THIS VIEW IS AN INTERNAL VIEW OF THE AIRPLANE. THE INSPECTION IS DONE FROM THE EXTERNAL SIDE OF THE AIRPLANE.

2175709 S0000479261_V2

Inspection Area
Figure 1 (Sheet 2 of 3)



2175711 S0000479262_V1

Inspection Area
Figure 1 (Sheet 3 of 3)

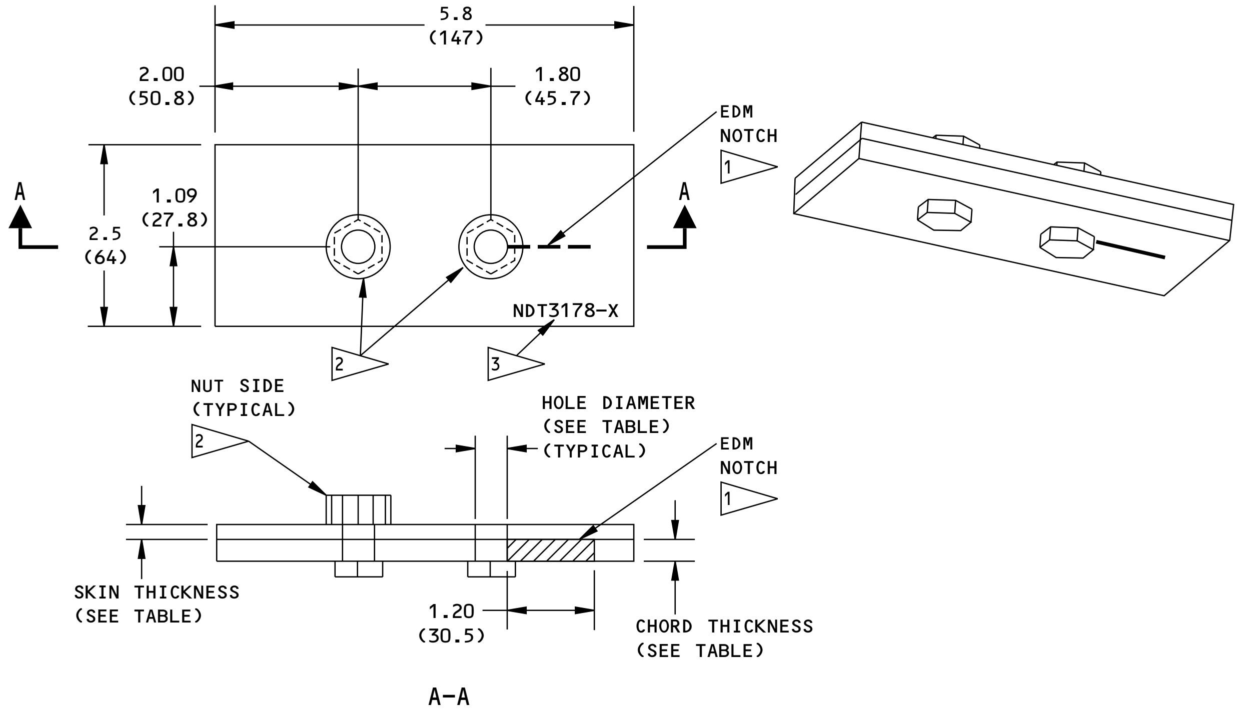


TABLE: NDT3178-X ASSEMBLY					
REFERENCE STANDARD	SKIN THICKNESS	HOLE DIAMETER	CHORD THICKNESS	BOLT GRIP LENGTH	FASTENER DIAMETER
NDT3178-A	0.200 (5.08)	0.4375 (11.11)	0.300 (7.62)	8	7
NDT3178-B	0.250 (6.35)	0.4375 (11.11)	0.300 (7.62)	8	7
NDT3178-C	0.305 (7.75)	0.4375 (11.11)	0.300 (7.62)	9	7
NDT3178-D	0.400 (10.16)	0.4375 (11.11)	0.300 (7.62)	11	7
NDT3178-E	0.455 (11.56)	0.4375 (11.11)	0.300 (7.62)	12	7
NDT3178-F	0.500 (12.70)	0.4375 (11.11)	0.300 (7.62)	12	7
NDT3178-G	0.540 (13.72)	0.5000 (12.70)	0.500 (12.70)	16	8

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- MATERIAL: 2024-T4 OR 2024-T3 ALUMINUM (CLAD OR BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER

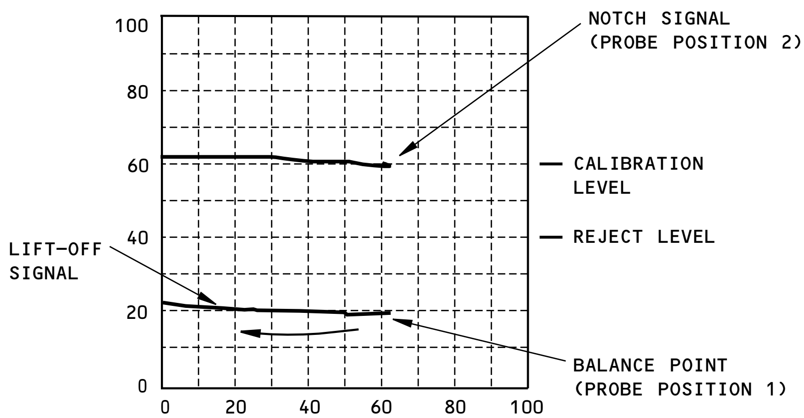
1 EDM NOTCH:
WIDTH: 0.010 (0.25) MAXIMUM
DEPTH: THROUGH THE THICKNESS
LENGTH: 1.20 (30.5)

2 FASTENERS:
- USE BACB30NM* BOLTS WITH BACN11Z* NUTS AT ALL LOCATIONS (SEE THE TABLE FOR THE BOLT DIAMETERS AND GRIP LENGTHS). THE GRIP LENGTHS SPECIFIED ARE SATISFACTORY. OTHER GRIP LENGTHS CAN BE USED IF THE NUT CAN BE SATISFACTORILY ATTACHED TO THE BOLT.
- ALTERNATIVE BOLTS MADE FROM NONCONDUCTIVE NON-METAL MATERIAL SUCH AS NYLON, ABS AND PVC CAN BE USED IF THE NUT CAN BE SATISFACTORILY ATTACHED TO THE BOLT.
- ALTERNATIVE MATERIALS FOR THE NUT ARE NOT PERMITTED.

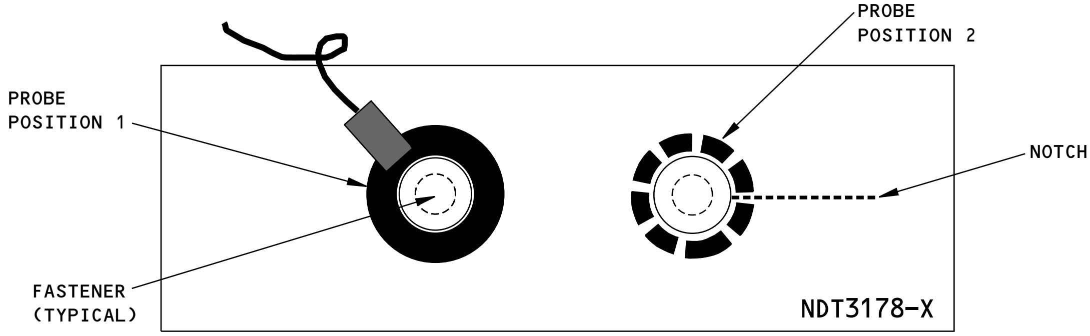
3 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3178-X, AT APPROXIMATELY THIS LOCATION

2175712 S0000479263_V3

Reference Standard NDT3178-X
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3178-X

DETAIL II

2175716 S0000479264_V2

Instrument Calibration
Figure 3 (Sheet 1 of 5)

REFERENCE STANDARD NDT3178-[1] TO USE DURING CALIBRATION TO EXAMINE THE INNER AND OUTER FASTENER ROWS OF THE WING CENTER SECTION (WCS)

STRINGER CL 14 | STRINGER CL 13 | STRINGER CL 12 | STRINGER CL 11 | STRINGER CL 10

OUTER ROW LOCATION	13-4	13-3	13-2	13-1	12-4	12-3	12-2	12-1	11-4	11-3	11-2	11-1	10-4	10-3	10-2	10-1
-600	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-700P	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-700IGW,-700C	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-800,-900	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-900ER	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C

STRINGER CL 14 | STRINGER CL 13 | STRINGER CL 12 | STRINGER CL 11 | STRINGER CL 10

INNER ROW LOCATION	13-4	13-3	13-2	13-1	12-4	12-3	12-2	12-1	11-4	11-3	11-2	11-1	10-4	10-3	10-2	10-1
-600	B	A	A	A	A	A	A	B	B	A	A	A	B	B	B	B
-700P	B	A	A	A	A	A	A	B	B	A	A	A	B	B	B	B
-700IGW,-700C	B	A	A	A	A	A	A	B	B	A	A	B	B	B	B	B
-800,-900	B	A	A	A	A	A	A	B	B	A	A	A	B	B	B	B
-900ER	B	A	A	A	A	A	A	B	B	A	A	B	B	B	B	B

REFERENCE STANDARD NDT3178-[1] TO USE DURING CALIBRATION TO EXAMINE THE INNER AND OUTER FASTENER ROWS OF THE WING CENTER SECTION (WCS)

STRINGER CL 10 | STRINGER CL 9 | STRINGER CL 8 | STRINGER CL 7 | STRINGER CL 6 | STRINGER CL 5

OUTER ROW LOCATION	9-4	9-3	9-2	9-1	8-4	8-3	8-2	8-1	7-4	7-3	7-2	7-1	6-4	6-3	6-2	6-1	5-4	5-3	5-2	5-1
-600	C	C	NA	NA	NA	NA	D	D	D	D	D	D	D	D	D	D	D	D	NA	NA
-700P	C	C	NA	NA	NA	NA	D	D	D	D	D	D	D	D	D	D	D	D	NA	NA
-700IGW,-700C	C	C	NA	NA	NA	NA	D	D	D	D	D	D	D	D	D	D	D	D	NA	NA
-800,-900	C	C	NA	NA	NA	NA	D	D	D	D	D	D	D	D	D	D	D	D	NA	NA
-900ER	C	C	NA	NA	NA	NA	D	D	D	D	D	D	D	D	D	D	D	D	NA	NA

STRINGER CL 10 | STRINGER CL 9 | STRINGER CL 8 | STRINGER CL 7 | STRINGER CL 6 | STRINGER CL 5

INNER ROW LOCATION	9-4	9-3	9-2	9-1	8-4	8-3	8-2	8-1	7-4	7-3	7-2	7-1	6-4	6-3	6-2	6-1	5-4	5-3	5-2	5-1
-600	B	C	NA	NA	NA	NA	D	D	D	C	C	C	C	C	C	C	C	C	NA	NA
-700P	B	C	NA	NA	NA	NA	D	D	D	C	C	C	C	C	C	C	C	C	NA	NA
-700IGW,-700C	B	C	NA	NA	NA	NA	D	D	D	D	C	C	C	C	C	C	C	D	NA	NA
-800,-900	B	C	NA	NA	NA	NA	D	D	D	D	C	C	C	C	C	C	C	D	NA	NA
-900ER	B	C	NA	NA	NA	NA	D	D	D	D	C	C	C	C	C	C	C	D	NA	NA

FASTENER LOCATIONS AND REFERENCE STANDARDS FOR THE INBOARD SIDE OF THE T-CHORD

TABLE 1

NOTES:

NA = NOT APPLICABLE. IT IS NOT NECESSARY TO DO A LFEC INSPECTION AT THIS FASTENER LOCATION.

[1] THE LETTER THAT COMPLETES THIS REFERENCE STANDARD NUMBER IS IDENTIFIED IN EACH CELL OF THIS TABLE.

2175718 S0000479265_V2

Instrument Calibration
Figure 3 (Sheet 2 of 5)

REFERENCE STANDARD NDT3178-[1] TO USE DURING CALIBRATION TO EXAMINE THE INNER AND OUTER FASTENER ROWS OF THE WING CENTER SECTION (WCS)

STRINGER CL 5 | STRINGER CL 4 | STRINGER CL 3 | STRINGER CL 2 | STRINGER CL 1

OUTER ROW LOCATION	4-4	4-3	4-2	4-1	3-4	3-3	3-2	3-1	2-4	2-3	2-2	2-1	1-4	1-3	1-2	1-1
-600	NA	NA	D	E	E	D	D	D	D	D	D	E	E	E	E	NA
-700P	NA	NA	D	E	E	D	D	D	D	D	D	E	E	E	E	NA
-700IGW,-700C	NA	NA	E	E	E	E	E	E	E	E	E	E	E	E	E	NA
-800,-900	NA	NA	E	E	E	E	E	E	E	E	E	E	E	E	E	NA
-900ER	NA	NA	E	E	E	E	E	E	E	E	E	E	E	E	E	NA

STRINGER CL 5 | STRINGER CL 4 | STRINGER CL 3 | STRINGER CL 2 | STRINGER CL 1

INNER ROW LOCATION	4-4	4-3	4-2	4-1	3-4	3-3	3-2	3-1	2-4	2-3	2-2	2-1	1-4	1-3	1-2	1-1
-600	NA	NA	D	E	E	C	C	C	C	C	C	C	C	C	C	NA
-700P	NA	NA	D	E	E	C	C	C	C	C	C	C	C	C	C	NA
-700IGW,-700C	NA	NA	E	E	E	E	E	E	E	E	E	E	E	E	E	NA
-800,-900	NA	NA	E	E	E	E	E	E	E	E	E	E	E	E	E	NA
-900ER	NA	NA	E	E	E	E	E	E	E	E	E	E	E	E	E	NA

FASTENER LOCATIONS AND REFERENCE STANDARDS FOR THE INBOARD SIDE OF THE T-CHORD

TABLE 1 (CONTINUED)

REFERENCE STANDARD NDT3178-[1] TO USE DURING CALIBRATION TO EXAMINE THE INNER AND OUTER FASTENER ROWS OF THE WING

STRINGER CL 14 | STRINGER CL 13 | STRINGER CL 12 | STRINGER CL 11 | STRINGER CL 10

INNER ROW LOCATION	14-1	13-4	13-3	13-2	13-1	12-4	12-3	12-2	12-1	11-4	11-3	11-2	11-1	10-4	10-3	10-2	10-1
-600	NA	B	NA	NA	A	A	A	A	B	NA	NA	A	A	A	A	NA	NA
-700P	NA	B	NA	NA	A	A	A	A	C	NA	NA	B	B	B	B	NA	NA
-700IGW,-700C	NA	B	NA	NA	A	A	A	A	C	NA	NA	B	B	B	B	NA	NA
-800,-900	NA	B	NA	NA	A	A	A	A	C	NA	NA	B	B	B	B	NA	NA
-900ER	NA	B	NA	NA	A	A	A	A	C	NA	NA	B	B	B	B	NA	NA

STRINGER CL 14 | STRINGER CL 13 | STRINGER CL 12 | STRINGER CL 11 | STRINGER CL 10

OUTER ROW LOCATION	14-1	13-4	13-3	13-2	13-1	12-4	12-3	12-2	12-1	11-4	11-3	11-2	11-1	10-4	10-3	10-2	10-1
-600	NA	B	NA	NA	B	B	B	B	B	NA	NA	B	B	C	C	NA	NA
-700P	NA	B	NA	NA	B	B	B	B	B	NA	NA	C	C	C	C	NA	NA
-700IGW,-700C	NA	B	NA	NA	B	B	B	B	B	NA	NA	C	C	C	C	NA	NA
-800,-900	NA	B	NA	NA	B	B	B	B	B	NA	NA	C	C	C	C	NA	NA
-900ER	NA	B	NA	NA	B	B	B	B	B	NA	NA	C	C	C	C	NA	NA

FASTENER LOCATIONS AND REFERENCE STANDARDS FOR THE OUTBOARD SIDE OF THE T-CHORD

TABLE 2

NOTES:

NA = NOT APPLICABLE. IT IS NOT NECESSARY TO DO A LFEC INSPECTION AT THIS FASTENER LOCATION.

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Instrument Calibration
Figure 3 (Sheet 3 of 5)

REFERENCE STANDARD NDT3178- [1] TO USE DURING CALIBRATION TO EXAMINE THE INNER AND OUTER FASTENER ROWS OF THE WING

STRINGER CL 10 | STRINGER CL 9 | STRINGER CL 8 | STRINGER CL 7 | STRINGER CL 6 | STRINGER CL 5

INNER ROW LOCATION	9-4	9-3	9-2	9-1	8-4	8-3	8-2	8-1	7-3	7-2	7-1	6-4	6-3	6-2	6-1	5-4	5-3	5-2	5-1
-600	A	C	NA	NA	NA	NA	NA	NA	C	B	B	B	B	B	B	B	NA	NA	NA
-700P	B	D	NA	NA	NA	NA	NA	NA	D	B	B	B	B	B	B	B	NA	NA	NA
-700IGW,-700C	B	D	NA	NA	NA	NA	NA	NA	D	C	C	C	C	C	C	C	NA	NA	NA
-800,-900	B	D	NA	NA	NA	NA	NA	NA	D	C	C	C	C	C	C	C	NA	NA	NA
-900ER	B	D	NA	NA	NA	NA	NA	NA	D	C	C	C	C	C	C	C	NA	NA	NA

STRINGER CL 10 | STRINGER CL 9 | STRINGER CL 8 | STRINGER CL 7 | STRINGER CL 6 | STRINGER CL 5

OUTER ROW LOCATION	9-4	9-3	9-2	9-1	8-4	8-3	8-2	8-1	7-3	7-2	7-1	6-4	6-3	6-2	6-1	5-4	5-3	5-2	5-1
-600	C	C	NA	NA	NA	NA	NA	NA	D	D	D	D	D	D	D	D	NA	NA	NA
-700P	D	D	NA	NA	NA	NA	NA	NA	D	D	D	D	D	D	D	D	NA	NA	NA
-700IGW,-700C	D	D	NA	NA	NA	NA	NA	NA	D	D	D	D	D	D	D	D	NA	NA	NA
-800,-900	D	D	NA	NA	NA	NA	NA	NA	D	D	D	D	D	D	D	D	NA	NA	NA
-900ER	D	D	NA	NA	NA	NA	NA	NA	D	D	D	D	D	D	D	D	NA	NA	NA

REFERENCE STANDARD NDT3178- [1] TO USE DURING CALIBRATION TO EXAMINE THE INNER AND OUTER FASTENER ROWS OF THE WING

STRINGER CL 5 | STRINGER CL 4 | STRINGER CL 3 | STRINGER CL 2 | STRINGER CL 1

INNER ROW LOCATION	4-4	4-3	4-2	4-1	3-4	3-3	3-2	3-1	2-4	2-3	2-2	2-1	1-4	1-3	1-2	1-1	0-4
-600	NA	NA	D	D	D	D	NA	C	C	C	C	C	C	C	NA	NA	NA
-700P	NA	NA	E	E	E	D	NA	C	C	D	D	C	C	C	NA	NA	NA
-700IGW,-700C	NA	NA	F	F	F	E	NA	C	C	C	C	C	C	C	NA	NA	NA
-800,-900	NA	NA	F	F	F	E	NA	C	C	C	C	C	C	C	NA	NA	NA
-900ER	NA	NA	F	F	F	E	NA	C	C	C	C	C	C	C	NA	NA	NA

STRINGER CL 5 | STRINGER CL 4 | STRINGER CL 3 | STRINGER CL 2 | STRINGER CL 1

OUTER ROW LOCATION	4-4	4-3	4-2	4-1	3-4	3-3	3-2	3-1	2-4	2-3	2-2	2-1	1-4	1-3	1-2	1-1	0-4
-600	NA	NA	D	D	D	D	NA	D	D	D	D	D	D	D	NA	NA	NA
-700P	NA	NA	E	E	E	D	NA	D	D	E	E	E	E	E	NA	NA	NA
-700IGW,-700C	NA	NA	F	F	F	E	NA	E	E	E	E	E	E	E	NA	NA	NA
-800,-900	NA	NA	F	F	F	E	NA	E	E	E	E	E	E	E	NA	NA	NA
-900ER	NA	NA	F	F	F	E	NA	E	E	E	E	E	E	E	NA	NA	NA

FASTENER LOCATIONS AND REFERENCE STANDARDS FOR THE OUTBOARD SIDE OF THE T-CHORD
TABLE 2 (CONTINUED)

NOTES:

NA = NOT APPLICABLE. IT IS NOT NECESSARY TO DO A LFEC INSPECTION AT THIS FASTENER LOCATION.

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Instrument Calibration
Figure 3 (Sheet 4 of 5)

REFERENCE STANDARD NDT3178	-A	-B	-C	-D	-E	-F	-G
FREQUENCY	350 Hz	225 Hz	200 Hz	90 Hz	140 Hz	60 Hz	100 Hz

FREQUENCIES FOR THE DIFFERENT REFERENCE STANDARDS
TABLE 3

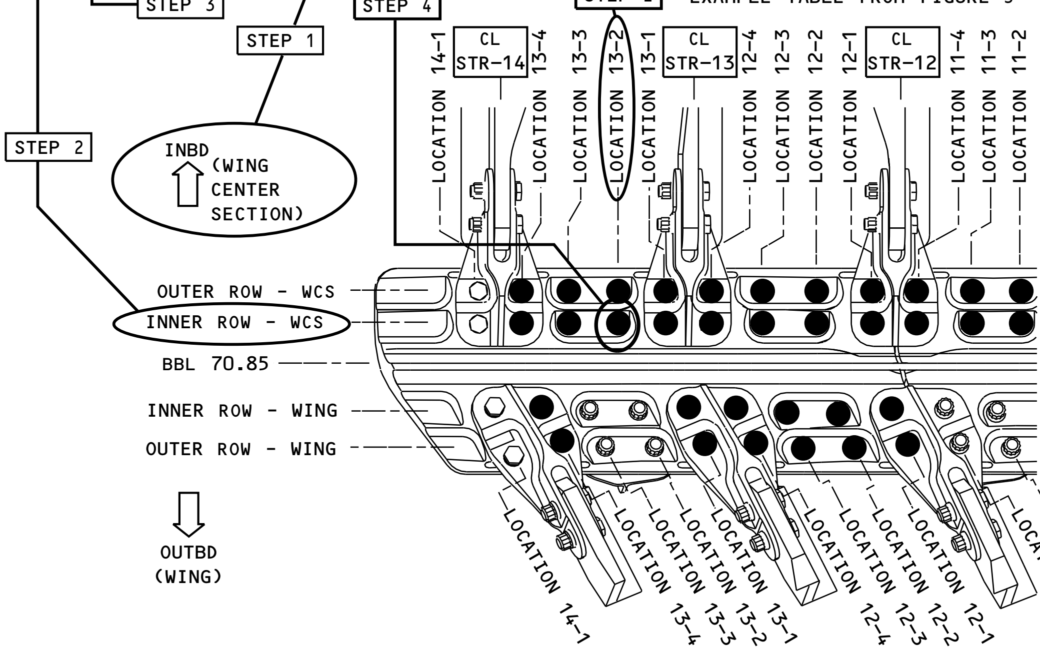
INNER AND OUTER ROW - WING CENTER SECTION (WCS)

STRINGER CL 14 — STRINGER CL 13 — STRINGER CL 12 — STRINGER CL 11 — STRINGER CL 10

INNER ROW LOCATION			14-1	13-4	13-3	13-2	13-1	12-4	12-3	12-2	12-1	11-4	11-3	11-2	11-1	10-4	10-3	10-2	10-1
-600	NA	NA	NA	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-700P	NA	NA	NA	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-700IGW,-700C	NA	NA	NA	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-800,-900	NA	NA	NA	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C
-900ER	NA	NA	NA	B	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C

STEP 3 STEP 4 STEP 2 EXAMPLE TABLE FROM FIGURE 3

STEP 1



EXAMPLE OF HOW TO IDENTIFY THE CORRECT REFERENCE STANDARD TO USE TO CALIBRATE THE INSTRUMENT TO EXAMINE THE DIFFERENT FASTENER LOCATIONS (MODEL 737-700P SHOWN)

NOTES:

STEP 1 - MAKE SURE TO USE THE CORRECT TABLE IN FIGURE 3 FOR THE FASTENER LOCATION TO BE EXAMINED. FOR FASTENER LOCATIONS THAT ARE INBOARD OF BBL 70.85, TABLE 1 FOR THE WING CENTER SECTION IS USED. FOR FASTENER LOCATIONS THAT ARE OUTBOARD OF BBL 70.85, TABLE 2 FOR THE WING IS USED. IN THIS EXAMPLE THE FASTENER LOCATION TO BE EXAMINED IS INBOARD OF BBL 70.85, SO TABLE 2 FOR THE WING CENTER SECTION IS USED.

STEP 2 - IDENTIFY IF THE FASTENER LOCATION TO BE EXAMINED IS AT AN INNER ROW LOCATION OR AN OUTER ROW LOCATION. IN THIS EXAMPLE, THE FASTENER LOCATION IS 13-2 (THE SECOND FASTENER LOCATION BETWEEN STRINGER 13 AND STRINGER 14). SO THE FASTENER LOCATION IS 13-2 AND THE INNER FASTENER ROW WILL BE EXAMINED.

STEP 3 - GO TO THE ROW OF THE TABLE THAT IS FOR THE TYPE OF 737 AIRPLANE TO BE EXAMINED. IN THIS EXAMPLE THE AIRPLANE IS A 737-700P.

STEP 4 - IDENTIFY THE REFERENCE STANDARD THAT MUST BE USED FOR INSTRUMENT CALIBRATION FROM THE CORRECT CELL. IN THIS EXAMPLE, THE REFERENCE STANDARD NECESSARY TO USE TO CALIBRATE THE INSTRUMENT TO EXAMINE THE 13-2 FASTENER LOCATION IS NDT3178-B.

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Instrument Calibration
Figure 3 (Sheet 5 of 5)

PART 6 - EDDY CURRENT

UPPER AND LOWER SKINS AT THE INTERSECTION OF THE FRONT AND REAR SPARS OF THE WINGS WITH THE SIDE-OF-BODY SPLICES AT BBL 70.85

1. **Purpose**

   A. Use this procedure to examine the upper and lower skins for cracks at the intersection of the front and rear spars of the wings with the side-of-body splice joints at BBL 70.85. See Figure 1 for the inspection areas.

   B. Examine the outer and center section wing skins for cracks that can occur at the fastener locations where the lower splice plates and the upper rib chord attach to the front and rear spar chords. Examine the fastener locations identified as code “A” and “B” at the inspection areas that follow:

      (1) The four fastener locations at the front spar of the wing and the upper splice joint as shown in View C of Figure 1.

      (2) The eight fastener locations at the rear spar of the wing and the upper splice joint as shown in View D of Figure 1.

      (3) The four fastener locations at the front spar of the wing and the lower splice joint as shown in View E of Figure 1.

      (4) The four fastener locations at the rear spar of the wing and the lower splice joint as shown in View F of Figure 1.

   C. This procedure uses four reflection ring probes and an impedance plane display instrument. Refer to Paragraph 2.C. for the probes to be used.

   D. This procedure uses eight reference standards. Use the reference standards that follow for the applicable airplane:

      (1) Reference standard NDT3181-A for 737-600 airplanes only.

      (2) Reference standard NDT3181-B for 737-700/-800/-900 airplanes only.

      (3) Reference standard NDT3182-A for 737-600/-700 airplanes only.

      (4) Reference standard NDT3182-B for 737-800/-900 airplanes only.

      (5) Reference standards NDT3183, NDT3184, NDT3185-A and NDT3185-B for all the 737-600/-700/-800/-900 airplanes.

   E. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-20

      (2) Item: 57-10-21

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument - Use an eddy current instrument that:

      (1) Has an impedance plane display.

(2) Operates at frequencies between 50 and 500 Hz.

(3) Can be calibrated as specified in the calibration instructions of this procedure. The instruments that follow were used to help prepare this procedure.

(a) Nortec 2000D, Nortec 500; Olympus NDT

(b) Phasec 2d, Phasec 3d; GE Inspection Technologies

C. Probes - Use the reflection ring probes that follow:

(1) Use a reflection ring probe that operates at a frequency between 50 and 500 Hz, has an inner diameter of 0.85 inches (21.6 mm), an outer diameter of 1.35 inches (34.3 mm) and a height of no more than 1.5 inches (38 mm). The probe that follows was used to help prepare this procedure.

(a) RDP1.35-.850/500H; Techna NDT

(2) Use a reflection ring probe that operates at a frequency between 50 and 500 Hz, has an inner diameter of 0.96 inches (24.4 mm), an outer diameter of 1.45 inches (36.8 mm) and a height of no more than 1.5 inch (38 mm). The probe that follows was used to help prepare this procedure.

(a) RDP1.45-.960/500H; Techna NDT

(3) Use a reflection ring probe that operates at a frequency between 50 and 500 Hz, has an inner diameter of 1.07 inches (27.2 mm), an outer diameter of 1.57 inches (39.9 mm) and a height of 1.0 inch (25 mm). The probe that follows was used to help prepare this procedure.

(a) RDP1.57-1.07/500H; Techna NDT

(4) Use a reflection ring probe that operates at a frequency between 40 and 500 Hz, has an inner diameter of 1.50 inches (38.1 mm), an outer diameter of 2.00 inches (50.1 mm) and a height of no more than 1.5 inch (38 mm). The probe that follows was used to help prepare this procedure.

(a) RDP2.0-1.50/100H; Techna NDT

D. Reference Standard - Use the reference standards that follow:

(1) Use reference standard NDT3181-A for 737-600 airplanes only. See Figure 2 for the reference standard drawing.

(2) Use reference standard NDT3181-B for 737-700/-800/-900 airplanes only. See Figure 2 for the reference standard drawing.

(3) Use reference standard NDT3182-A for 737-600/-700 airplanes only. See Figure 3 for the reference standard drawing.

(4) Use reference standard NDT3182-B for 737-800/-900 airplanes only. See Figure 3 for the reference standard drawing.

(5) Use reference standard NDT3183 for 737-600/-700/-800/-900 airplanes. See Figure 4 for the reference standard drawing.

(6) Use reference standard NDT3184 for 737-600/-700/-800/-900 airplanes. See Figure 5 for the reference standard drawing.

(7) Use reference standard NDT3185-A for 737-600/-700/-800/-900 airplanes. See Figure 6 for the reference standard drawing.

(8) Use reference standard NDT3185-B for 737-600/-700/-800/-900 airplanes. See Figure 6 for the reference standard drawing.

E. Probe Guides - Use the probe guides that follows:

(1) Use probe guide NDT3181G with reference standards NDT3181-A and NDT3181-B. See Figure 7 for the probe guide drawing.

(2) Use probe guide NDT3182G with reference standards NDT3182-A and NDT3182-B. See Figure 7 for the probe guide drawing.

(3) Use probe guide NDT3183G/NDT3184G with reference standards NDT3183 and NDT3184. See Figure 7 for the probe guide drawing.

(4) Use probe guide NDT3185G with reference standards NDT3185-A and NDT3185-B. See Figure 7 for the probe guide drawing.

3. Prepare for the Inspection

A. Remove the wing-to-body fairings at BBL 70.85, above and below the wings on the left and right sides of the airplane to get access to the inspection areas on the outside of the airplane. Remove the necessary interior floor panels above the upper skins of the center section and wings to get access to the inspection areas on the inside of the airplane. See Figure 1 for the inspection areas.

B. Remove sealant as necessary from around the fastener heads or collars, and from the surface of the splice plates and the upper rib chords, to make sure the probe will be flat against the inspection surface during the inspection. Be careful to prevent damage to the surface if sealant removal is necessary. Refer to the Airplane Maintenance Manual for more instructions if necessary.

4. Instrument Calibration

A. This procedure uses eight calibrations to examine all the fastener locations identified as code “A” and “B” in Figure 1 for all 737-600/-700/-800/-900 airplanes. The paragraphs that follow give the instructions for all eight calibrations.

(1) To examine fastener codes “A” and “B” at the upper splice joint of the front spar, as shown in Figure 1, View C, calibrate the instrument for the applicable airplane as follows:

(a) To examine the 737-600 airplanes, use reference standard NDT3181-A, probe guide NDT3181G and probe RDP1.35-.850/500H.

(b) To examine the 737-700/-800/-900 airplanes, use reference standard NDT3181-B, probe guide NDT3181G and probe RDP1.35-.850/500H.

(c) Set the instrument frequency to the frequency identified in the Calibration Table for the fastener locations to be examined with the applicable reference standard and step. See Detail III in Figure 8.

(d) Put the probe on the reference standard at probe position 1 (fastener location without a notch) as shown in Detail I in Figure 8.

(e) Balance the instrument.

(f) Set the balance point at approximately 30% of full screen height (FSH) and 50% of full screen width (FSW) as shown in Detail II in Figure 8.

(g) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left as shown Detail II in Figure 8.

(h) Put the probe on the reference standard at probe position 2 (fastener location with a notch) as shown in Detail I in Figure 8. The notch signal must be above the balance point.

(i) Adjust the instrument sensitivity to get the notch signal to 70% of FSH as shown in Detail II in Figure 8. Use a vertical gain that is higher than the horizontal gain to get the signal to look almost the same as shown in Detail II.

(j) Do Paragraph 4.A.(1)(d) thru Paragraph 4.A.(1)(i) again to make sure the calibration is correct. If necessary, make adjustments to the instrument gain if the calibration is not correct.

(2) To examine fastener codes “A” and “B” at the upper splice joint of the rear spar, as shown in View D of Figure 1, calibrate the instrument for the applicable airplane as follows:

(a) To examine the 737-600/-700 airplanes, use reference standard NDT3182-A, probe guide NDT3182G and probe RDP1.57-1.07/500H.

(b) To examine the 737-800/-900 airplanes, use reference standard NDT3182-B, probe guide NDT3182G and probe RDP1.57-1.07/500H.

(c) Do Paragraph 4.A.(1)(c) thru Paragraph 4.A.(1)(j) again, but use Figure 9, not Figure 8.

(3) To examine fastener codes “A” and “B” at the lower splice joint of the front spar, as shown in View E of Figure 1, calibrate the instrument as follows:

(a) To examine the code “A” fasteners for all the 737-600/-700/-800/-900 airplanes, use reference standard NDT3183, probe guide NDT3183G/NDT3184G and probe RDP1.45-.960/500H.

(b) To examine the code “B” fasteners for all the 737-600/-700/-800/-900 airplanes, use reference standard NDT3184, probe guide NDT3183G/NDT3184G and probe RDP1.45-.960/500H.

(c) Do Paragraph 4.A.(1)(c) thru Paragraph 4.A.(1)(j) again, but use Figure 10, not Figure 8.

(4) To examine the code “A” and “B” fasteners at the lower splice joint of the rear spar, as shown in View F of Figure 1, calibrate the instrument as follows:

(a) To examine the code “A” fasteners for all the 737-600/-700/-800/-900 airplanes, use reference standard NDT3185-A, probe guide NDT3185G and probe RDP2.0-1.50/100H.

(b) To examine the code “B” fasteners for all the 737-600/-700/-800/-900 airplanes, use reference standard NDT3185-B, probe guide NDT3185G and probe RDP2.0-1.50/100H.

(c) Do Paragraph 4.A.(1)(c) thru Paragraph 4.A.(1)(j) again, but use Figure 11, not Figure 8.

5. Inspection Procedure

A. Examine the wing skins for cracks at the code “A” and “B” fastener locations in the four inspection areas identified in Paragraph 1.B. and shown in Figure 1 as follows:

(1) Examine the code “A” and “B” fastener locations at the upper splice joint of the front spar, on the left and right sides of the airplane, as shown in View C of Figure 1, as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(1) for the code “A” or “B” fastener location to be examined.

(b) Put the probe on the airplane at one of the fastener locations that has the applicable code.

(c) Do not balance the instrument.

(d) Monitor the screen display for the balance point signal and do the paragraphs that follow:

1) If the balance point signal is between 0 and 50% of FSH, balance the instrument and examine the remaining fastener locations that are the same code.

2) If the balance point signal is above 50% of FSH, put the probe at a different fastener location that has the same code on the opposite side of the airplane and monitor the screen display for a balance point signal to occur. If the balance point signal at the two fastener locations are almost the same, balance the instrument and examine the remaining fastener locations that are the same code.

NOTE: Small thickness changes of the splice plates, upper rib chord and/or skin can cause the balance point to move.

3) If the balance point signals at the two fastener locations are different by more than 20% of FSH, it is possible that the difference is caused by a crack or a small configuration change in the structure. Go to Paragraph 6. for instructions for more analysis.

(e) Examine all remaining fastener locations that have the same code and make a mark at the locations where you get signals that are 50% of FSH (or more).

(f) During the inspection, frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Put the probe on the reference standard to get the maximum signal from the notch.

2) Compare the signal you got from the notch during calibration with the signal you get now.

3) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

(g) Do Paragraph 5.A.(1)(a) thru Paragraph 5.A.(1)(f) to examine the fastener locations with the other code.

(2) Examine the code “A” and “B” fastener locations at the upper splice joint of the rear spar, on the left and right sides of the airplane, as shown in View D of Figure 1, as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(2) for the applicable code “A” or “B” fastener locations to be examined.

(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(g) to examine the fastener locations with the other code.

(3) Examine the code “A” and “B” fastener locations at the lower splice joint of the front spar, on the left and right sides of the airplane, as shown in View E of Figure 1, as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(3) for the code “A” or “B” fastener locations to be examined.

(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(g) to examine the fastener locations with the other code.

(4) Examine the code “A” and “B” fastener locations at the lower splice joint of the rear spar, on the left and right sides of the airplane, as shown in View F of Figure 1, as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(4) for the code “A” or “B” fastener locations to be examined.

(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(g) to examine the fastener locations with the other code.

6. Inspection Results

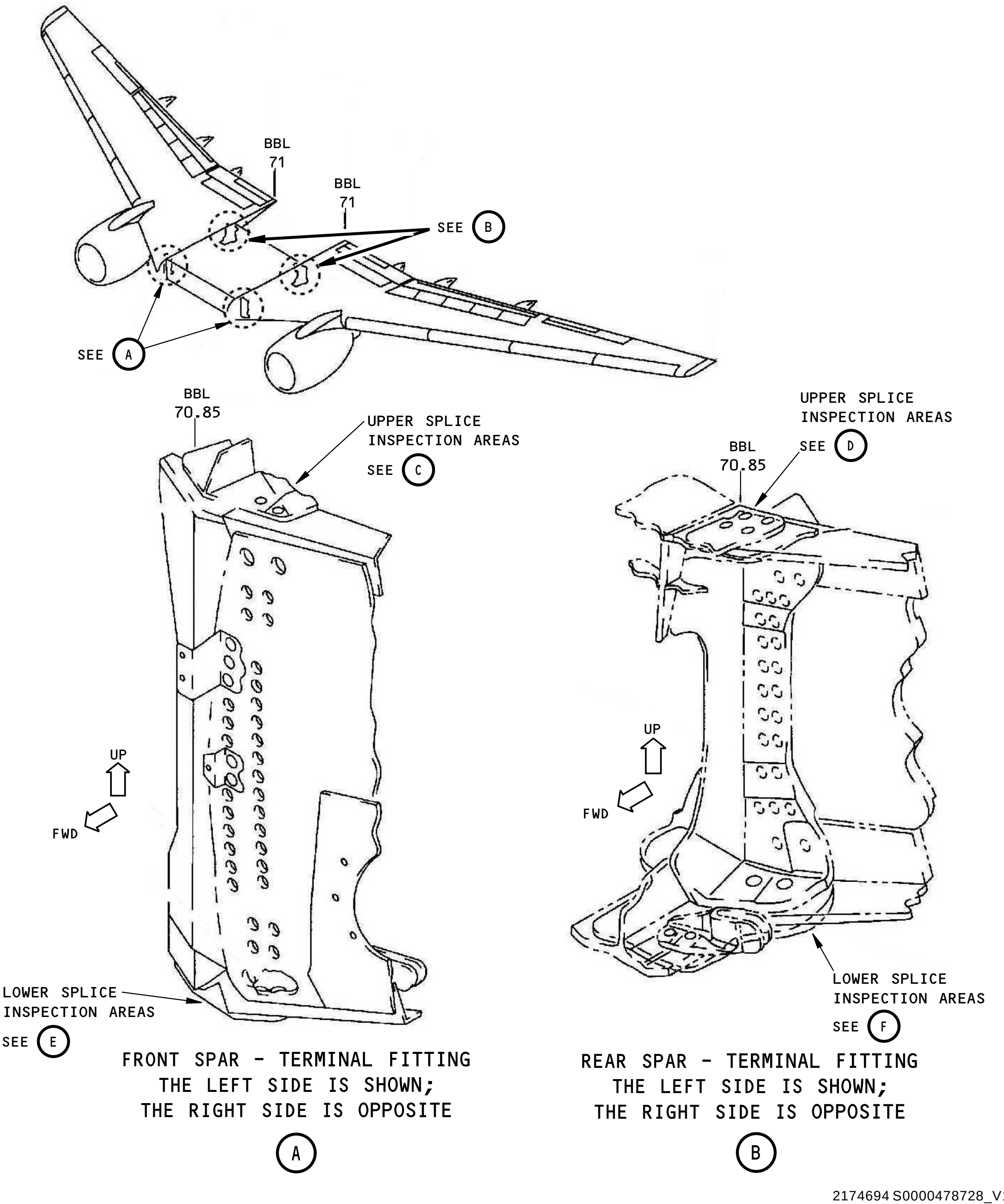
A. Signals that are 50% of FSH (or more) and look almost the same as the notch signal from the reference standard, are signs of a possible crack.

B. If you want to make sure of the results, do the paragraphs that follow:

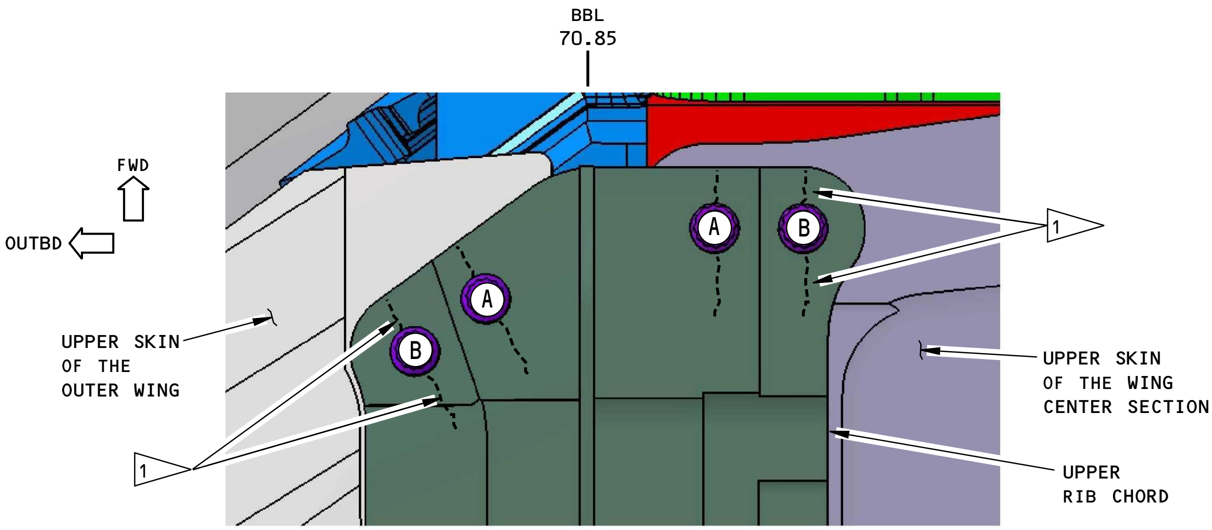
(1) Make sure that the signal is not caused from a change in structure (fastener edge margin distance) and/or the skin/chord thickness. Do a check of the same location on the opposite wing.

(2) Do a surface eddy current inspection on the skin that is adjacent to the edge of the splice plates or rib chord and the outer wing or center section spar chords. Refer to Part 6, 51-00-00, Procedure 23.

(3) Remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.

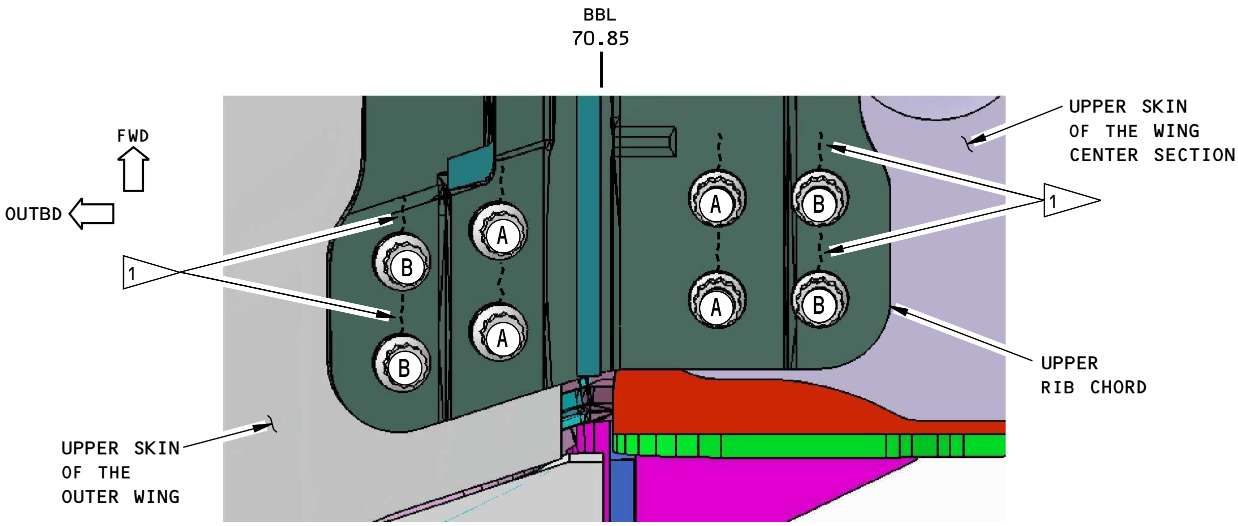


Inspection Areas
Figure 1 (Sheet 1 of 3)



FRONT SPAR - UPPER SPLICE INSPECTION AREAS

C



REAR SPAR - UPPER SPLICE INSPECTION AREAS

D

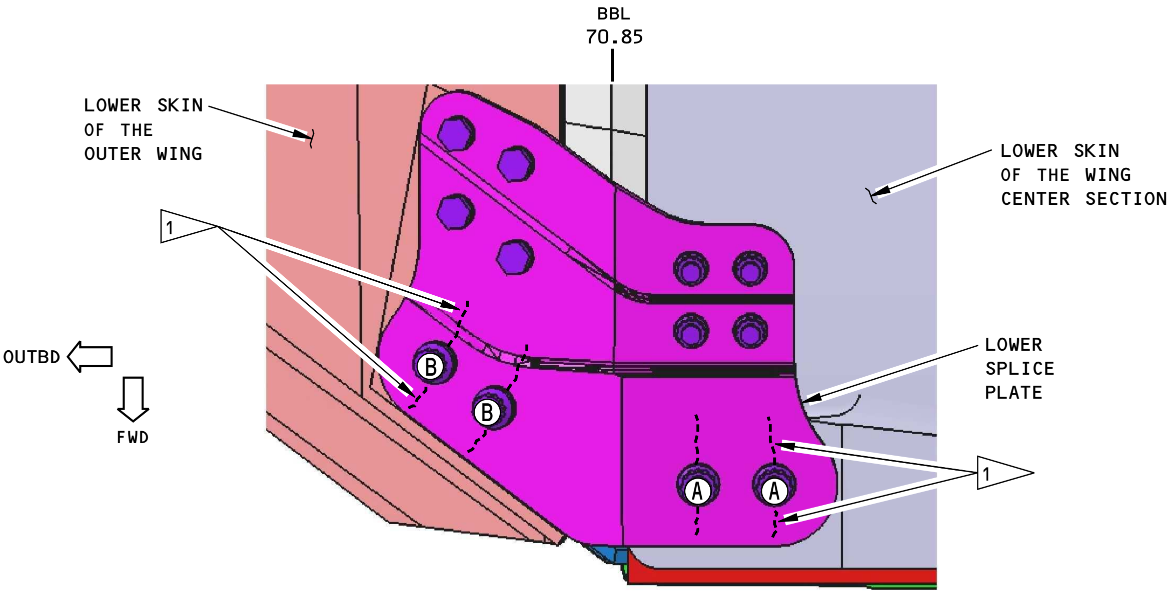
NOTES:

1 TYPICAL CRACK THAT CAN OCCUR IN THE WING SKINS AT THE FORWARD AND AFT SIDES OF THE FASTENER HOLE

- THE FASTENER LOCATIONS TO BE EXAMINED ARE IDENTIFIED AS CODE "A" AND "B" AS SHOWN.
- TO EXAMINE THE FASTENER LOCATIONS AT THE FRONT SPAR SPLICE AS SHOWN IN VIEW C, CALIBRATE THE INSTRUMENT AS SPECIFIED IN PARAGRAPH 4.A.(1) AND FIGURE 8.
- TO EXAMINE THE FASTENER LOCATIONS AT THE LOWER SPLICE AS SHOWN IN VIEW D, CALIBRATE THE INSTRUMENT AS SPECIFIED IN PARAGRAPH 4.A.(2) AND FIGURE 9.

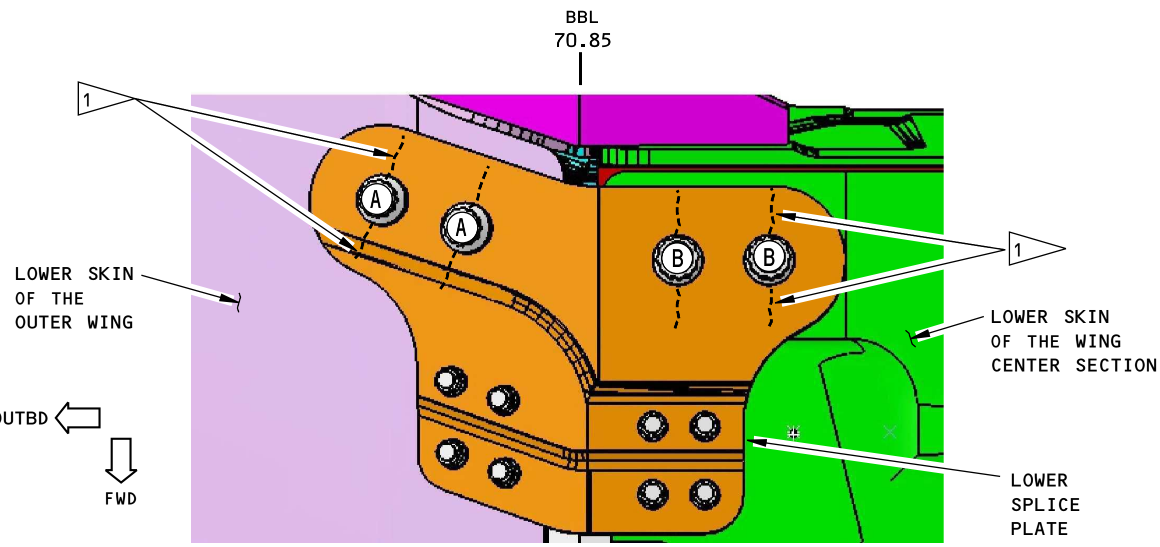
2174725 S0000478729_V1

Inspection Areas
Figure 1 (Sheet 2 of 3)



FRONT SPAR - LOWER SPLICE INSPECTION AREAS

E



REAR SPAR - LOWER SPLICE INSPECTION AREAS

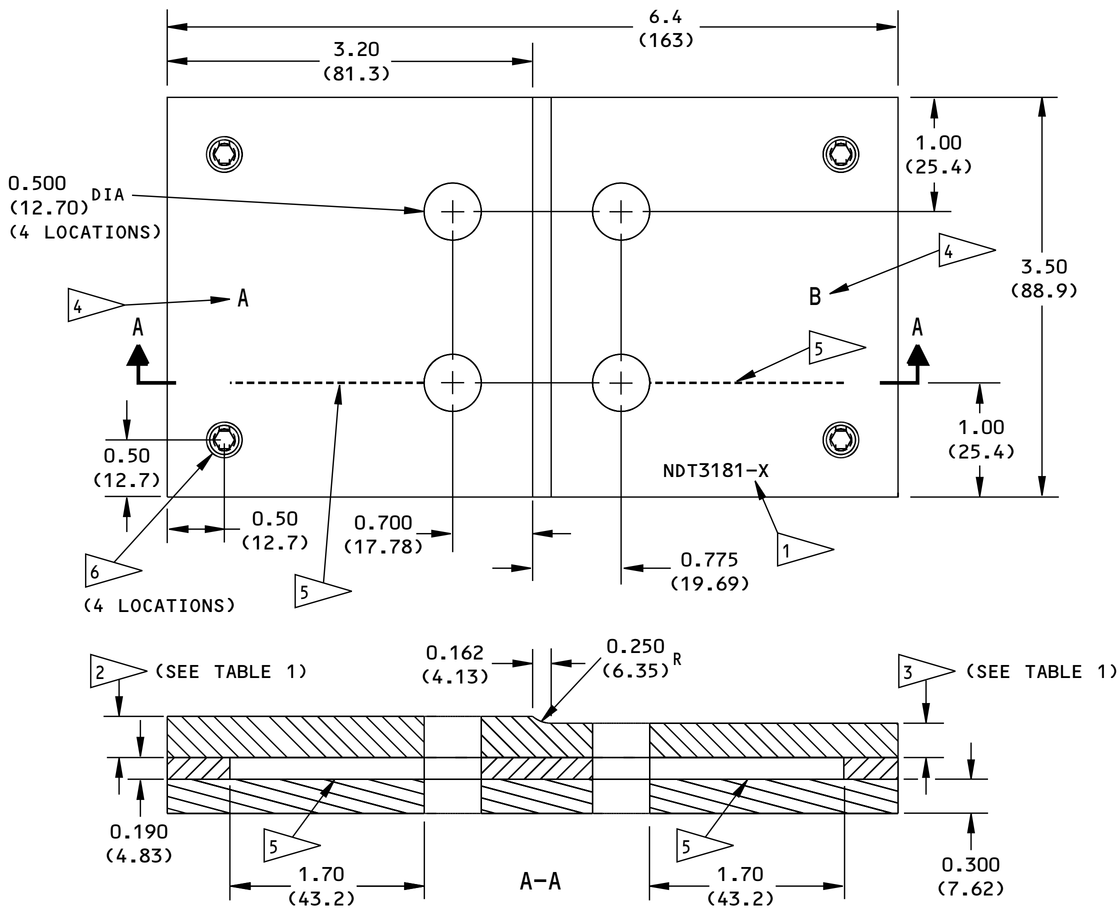
F

NOTES:

- TO EXAMINE THE FASTENER LOCATIONS AT THE FRONT SPAR SPLICE AS SHOWN IN VIEW E, CALIBRATE THE INSTRUMENT AS SPECIFIED IN PARAGRAPH 4.A.(3) AND FIGURE 10.
- TO EXAMINE THE FASTENER LOCATIONS AT THE REAR SPAR SPLICE AS SHOWN IN VIEW F, CALIBRATE THE INSTRUMENT AS SPECIFIED IN PARAGRAPH 4.A.(4) AND FIGURE 11.

2174728 S0000478730_V1

Inspection Areas
Figure 1 (Sheet 3 of 3)



REFERENCE STANDARD	STEP A THICKNESS 2	STEP B THICKNESS 3
NDT3181-A	0.360 (9.14)	0.300 (7.62)
NDT3181-B	0.400 (10.16)	0.320 (8.13)

TABLE 1

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCE: THE NOTCH MUST BE WITHIN ±0.005 (0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 7075-T73 ALUMINUM (BARE)

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER AS SHOWN IN TABLE 1.

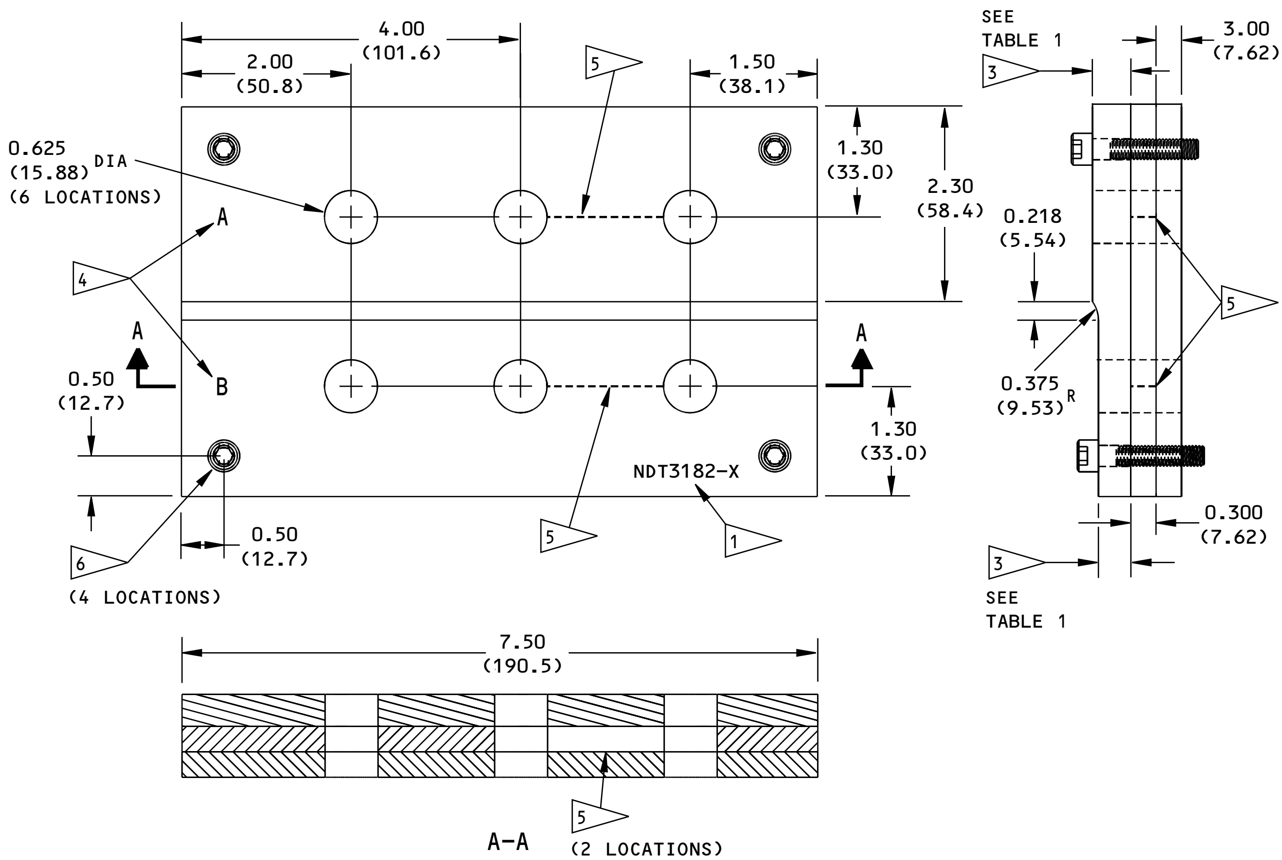
4 ETCH THE LETTER SHOWN AT APPROXIMATELY THIS LOCATION TO IDENTIFY THE STEP TO USE FOR THE INSTRUMENT CALIBRATION.

5 EDM NOTCH:
LENGTH: 1.70 (43.2)
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.25)

6 USE 0.250 (6.35) DIAMETER, NON-MAGNETIC BOLTS AND NUTS TO HOLD ALL THE PIECES TOGETHER.

2174729 S0000478731_V1

Reference Standard NDT3181-X
Figure 2



REFERENCE STANDARD	STEP A THICKNESS 2	STEP B THICKNESS 3
NDT3182-A	0.400 (10.16)	0.330 (8.38)
NDT3182-B	0.450 (11.43)	0.370 (9.40)

TABLE 1

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCE: THE NOTCH MUST BE WITHIN ±0.005 (0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 7075-T73 ALUMINUM (BARE)

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER AS SHOWN IN TABLE 1.

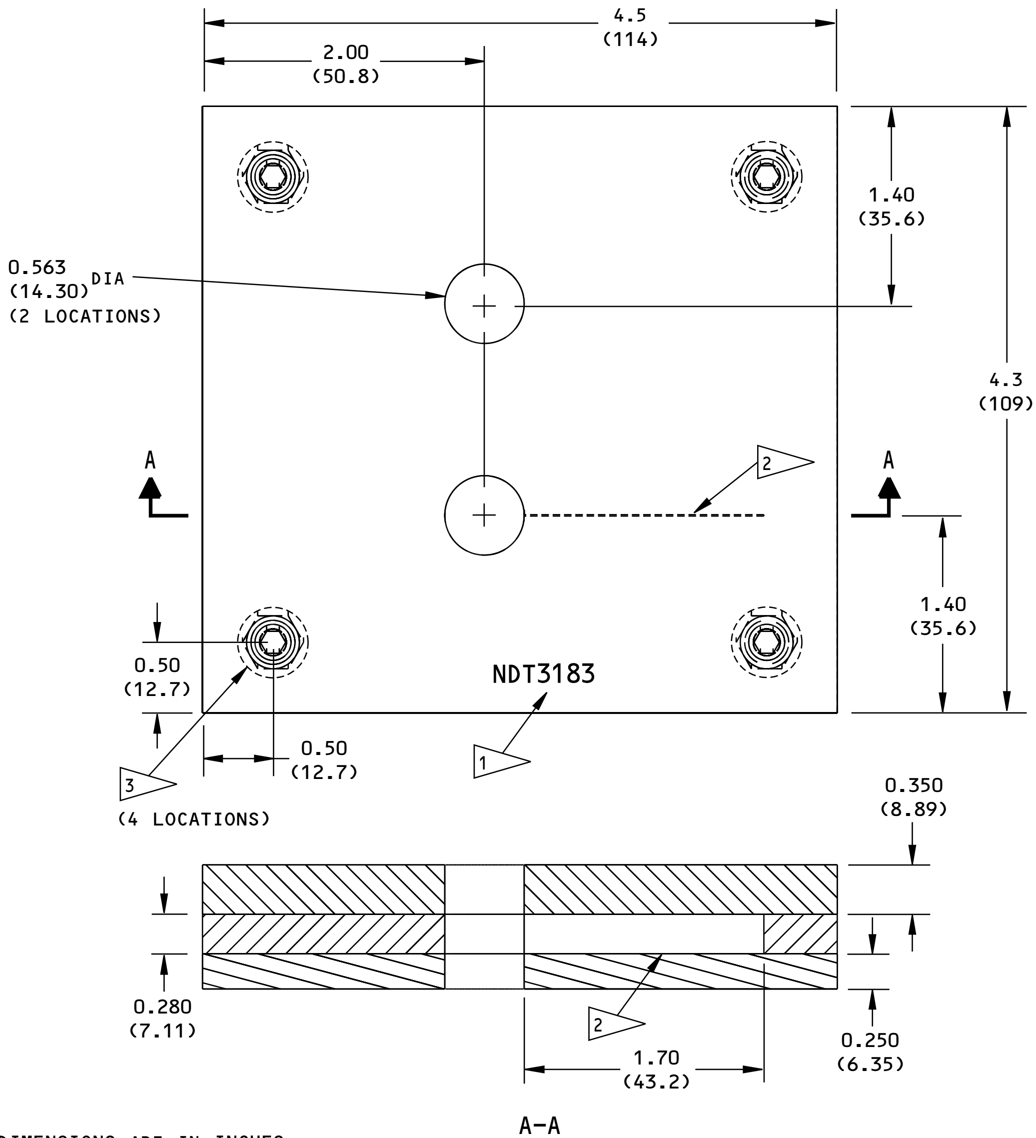
4 ETCH THE LETTER SHOWN AT APPROXIMATELY THIS LOCATION TO IDENTIFY THE STEP TO USE FOR THE INSTRUMENT CALIBRATION.

5 EDM NOTCH:
LENGTH: HOLE TO HOLE
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.18)

6 USE 0.250 (6.35) DIAMETER, NON-MAGNETIC BOLTS AND NUTS TO HOLD ALL THE PIECES TOGETHER.

2174732 S0000478732_V1

Reference Standard NDT3182-X
Figure 3



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCE: THE NOTCH MUST BE WITHIN ±0.005 (0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 2024-T3 ALUMINUM (BARE)

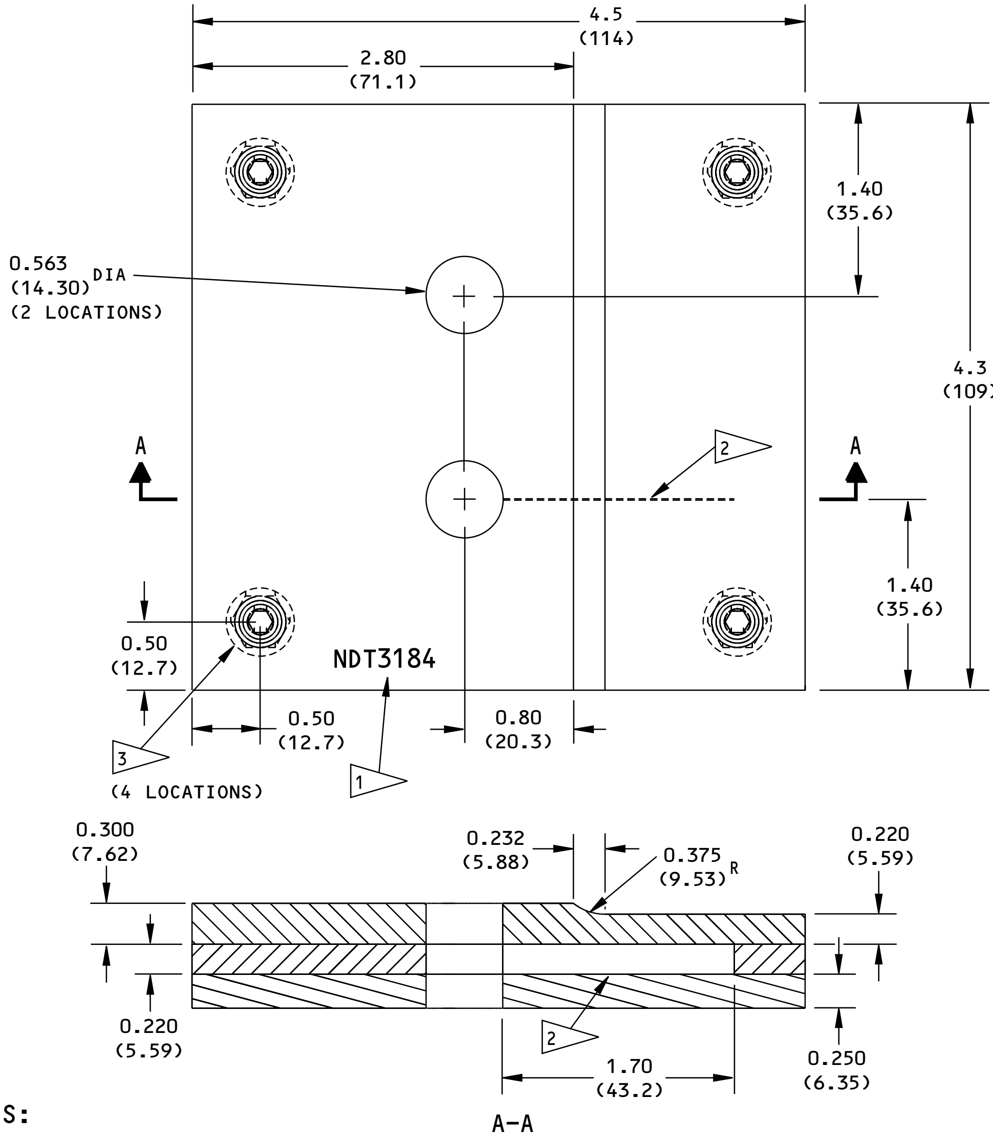
1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3183, AT APPROXIMATELY THIS LOCATION.

2 EDM NOTCH:
LENGTH: 1.70 (43.2)
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.25)

3 USE 0.250 (6.35) DIAMETER, NON-MAGNETIC BOLTS AND NUTS TO HOLD ALL THE PIECES TOGETHER.

2174746 S0000478733_V1

Reference Standard NDT3183
Figure 4



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCE: THE NOTCH MUST BE WITHIN ±0.005 (0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 2024-T3 ALUMINUM (BARE)

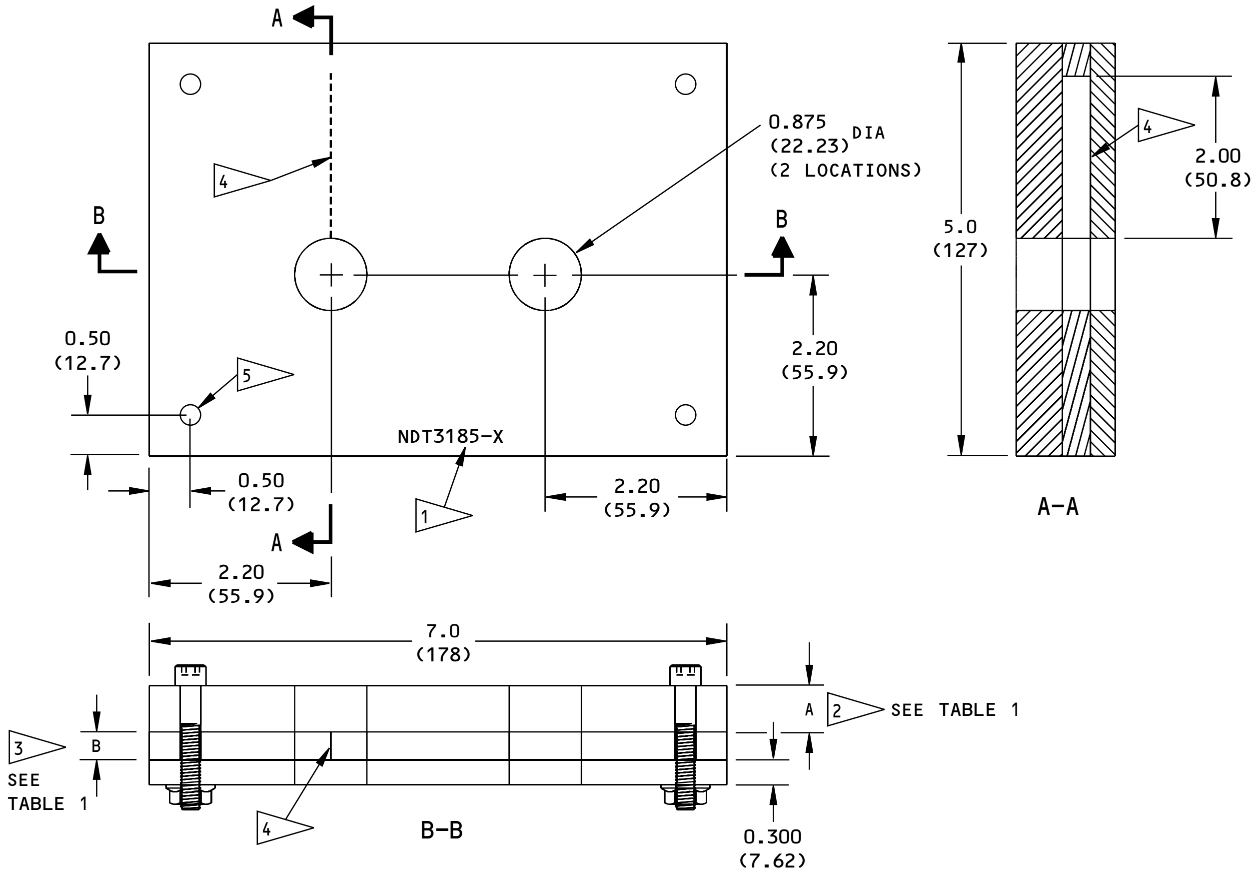
1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3184, AT APPROXIMATELY THIS LOCATION.

2 EDM NOTCH:
LENGTH: 1.50 (38.1) ±0.010 (0.25)
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.18)

3 USE 0.250 (6.35) DIAMETER, NON-MAGNETIC BOLTS AND NUTS TO HOLD ALL THE PIECES TOGETHER.

2174747 S0000478734_V1

Reference Standard NDT3184
Figure 5



REFERENCE STANDARD	INSPECTION AREAS	THICKNESS "A" (2)	THICKNESS "B" (3)
NDT3185-A	OUTER WING	0.560 (14.22)	0.340 (8.64)
NDT3185-B	WING CENTER SECTION	0.660 (16.76)	0.520 (13.21)

TABLE 1

NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

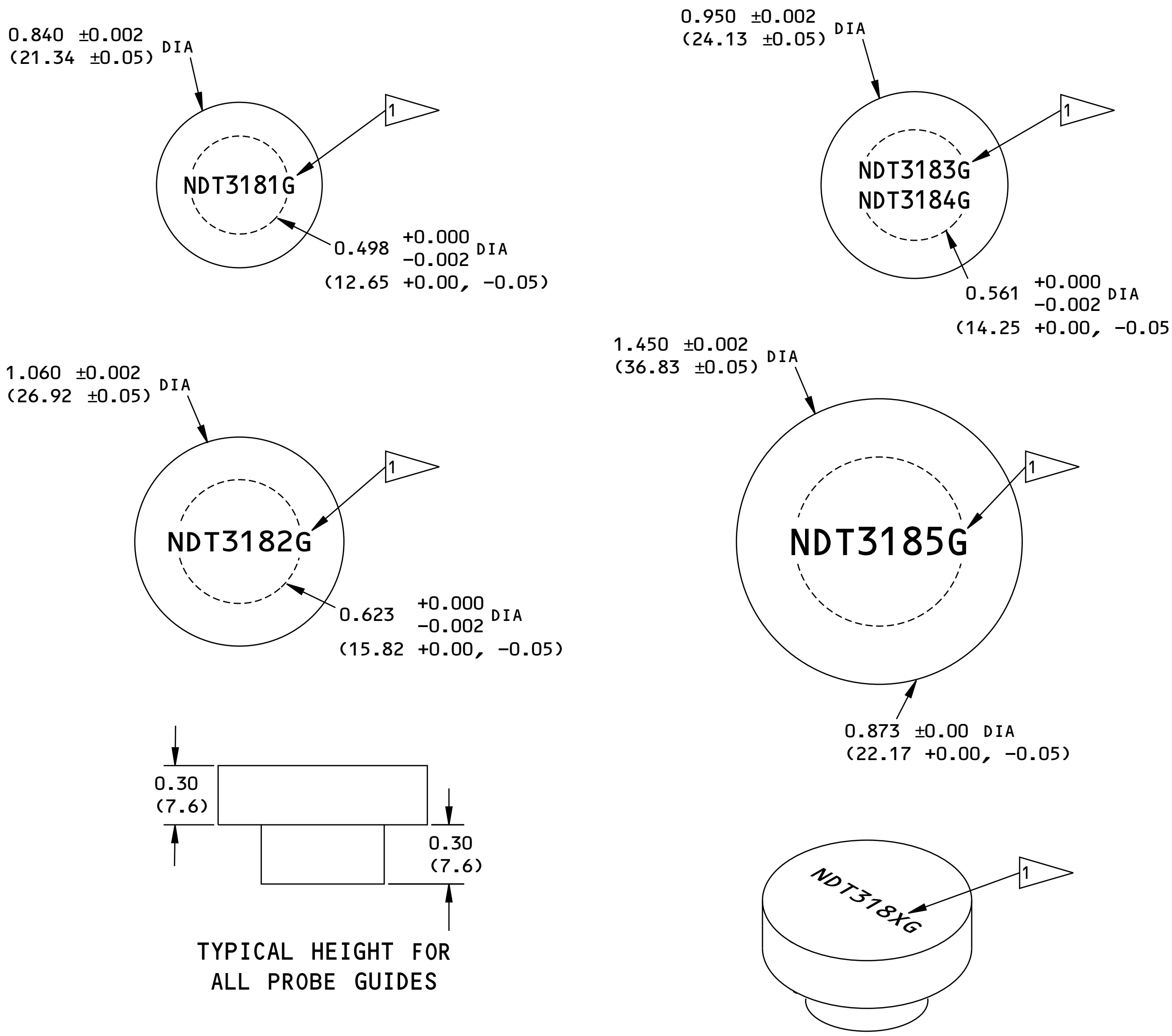
INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- NOTCH LOCATION TOLERANCE: THE NOTCH MUST BE WITHIN ±0.005 (0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 2024-T3 ALUMINUM (BARE)

1. ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER AS SHOWN IN TABLE 1.
4. EDM NOTCH:
   LENGTH: 2.00 (50.8)
   DEPTH: THROUGH THE THICKNESS
   WIDTH: 0.010 (0.25)
5. USE 0.250 (6.35) DIAMETER, NON-MAGNETIC BOLTS AND NUTS TO HOLD ALL THE PIECES TOGETHER.

2174749 S0000478735_V1

Reference Standard NDT3185-X
Figure 6



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

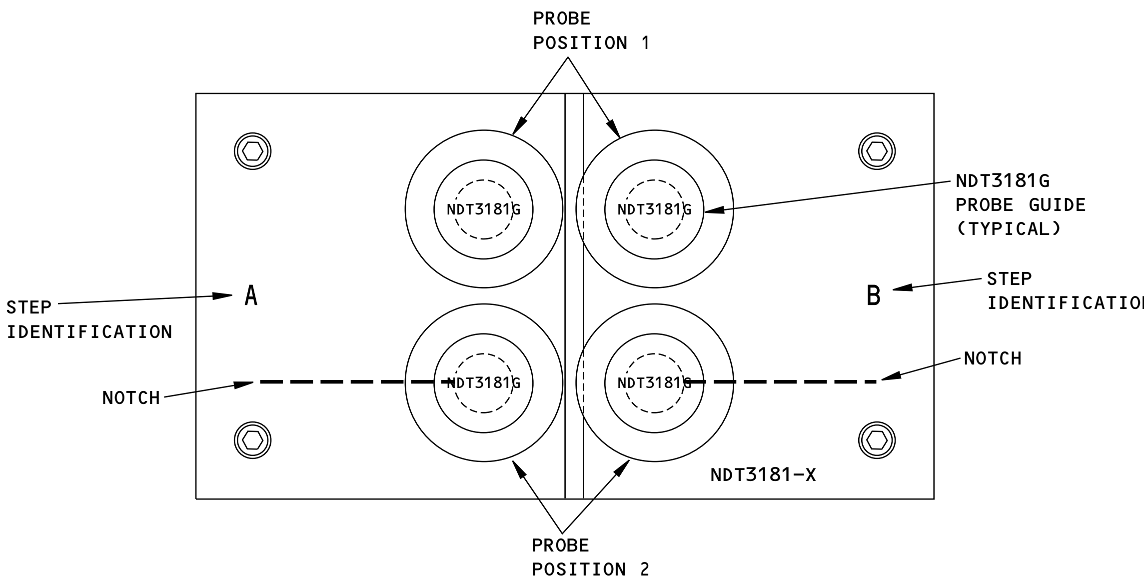
INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.13
X.XX = ±0.010	X.X = ±0.3
X.X = ±0.020	X = ±0.5

- MATERIAL: PLASTIC OR EQUIVALENT
- SURFACE ROUGHNESS: 63 Ra OR BETTER

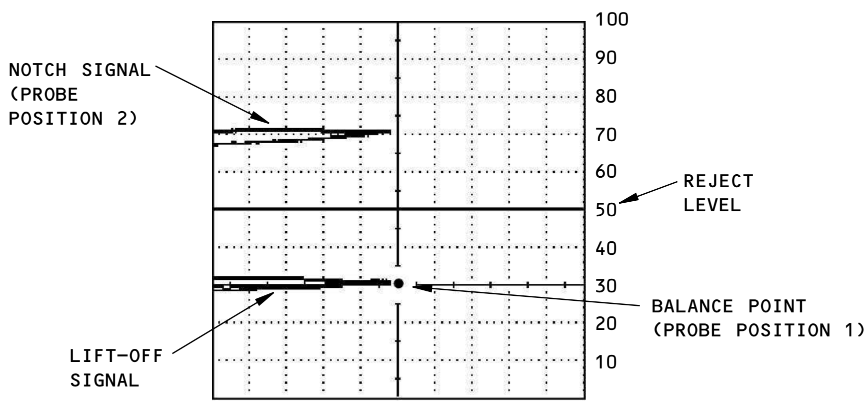
1 ETCH OR ENGRAVE THE APPLICABLE PROBE GUIDE NUMBER AT APPROXIMATELY THIS LOCATION.

2174752 S0000478737_V1

Probe Guides NDT3181G, NDT3182G, NDT3183G/NDT3184G, NDT3185G
Figure 7



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



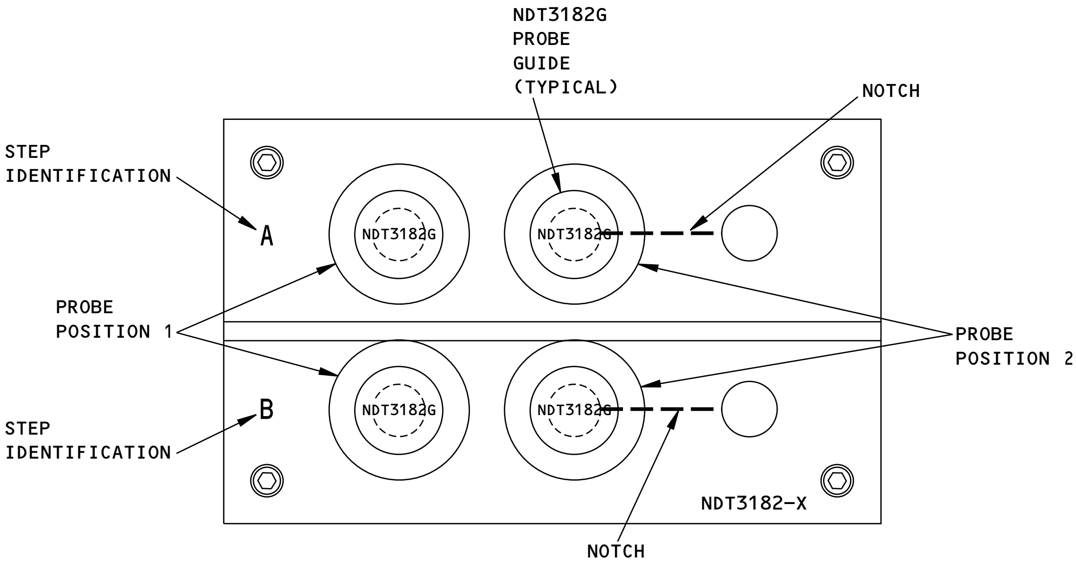
IMPEDANCE PLANE DISPLAY
DETAIL II

737 AIRPLANE MODEL	FASTENER LOCATION TO EXAMINE (FASTENER CODE)	REFERENCE STANDARD AND STEP	INSTRUMENT FREQUENCY (kHz)
-600	A	NDT3181-A, STEP A	120 Hz
-600	B	NDT3181-A, STEP B	160 Hz
-700/-800/-900	A	NDT3181-B, STEP A	90 Hz
-700/-800/-900	B	NDT3181-B, STEP B	130 Hz

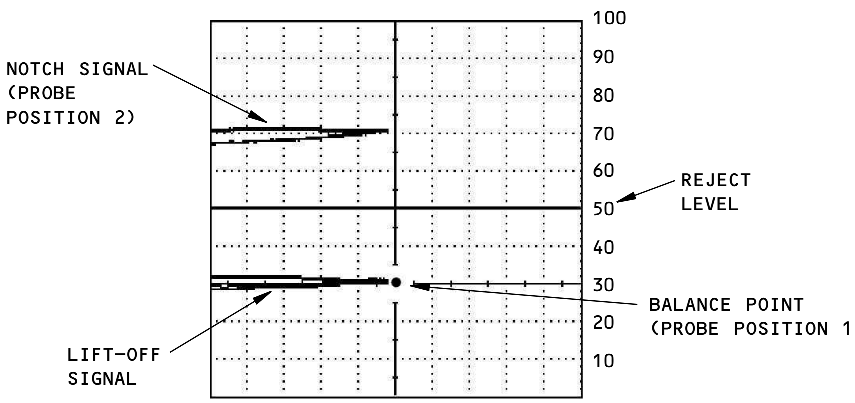
CALIBRATION TABLE
DETAIL III

2174753 S0000478738_V1

Instrument Calibration to Examine the Upper Splice Inspection Areas of the Front Spar
Figure 8



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



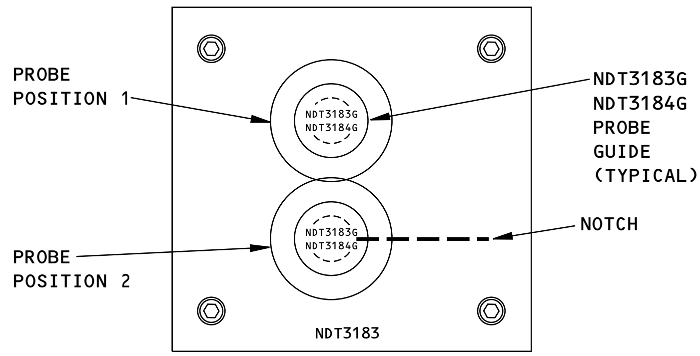
IMPEDANCE PLANE DISPLAY
DETAIL II

737 AIRPLANE MODEL	FASTENER LOCATION TO EXAMINE (FASTENER CODE)	REFERENCE STANDARD AND STEP	INSTRUMENT FREQUENCY (kHz)
-600/-700	A	NDT3182-A, STEP A	80 Hz
-600/-700	B	NDT3182-A, STEP B	100 Hz
-800/-900	A	NDT3182-B, STEP A	60 Hz
-800/-900	B	NDT3182-B, STEP B	80 Hz

CALIBRATION TABLE
DETAIL III

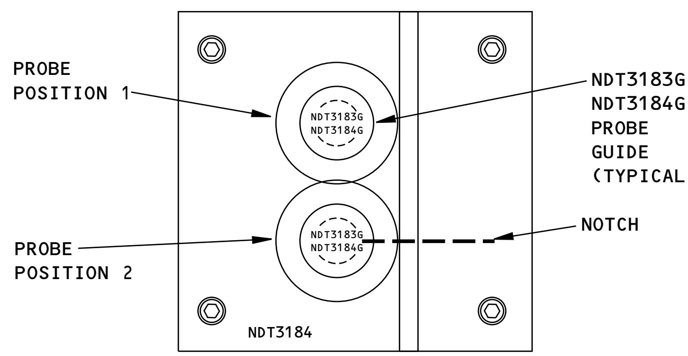
2174754 S0000478739_V1

Instrument Calibration to Examine the Upper Splice Inspection Areas of the Rear Spar
Figure 9



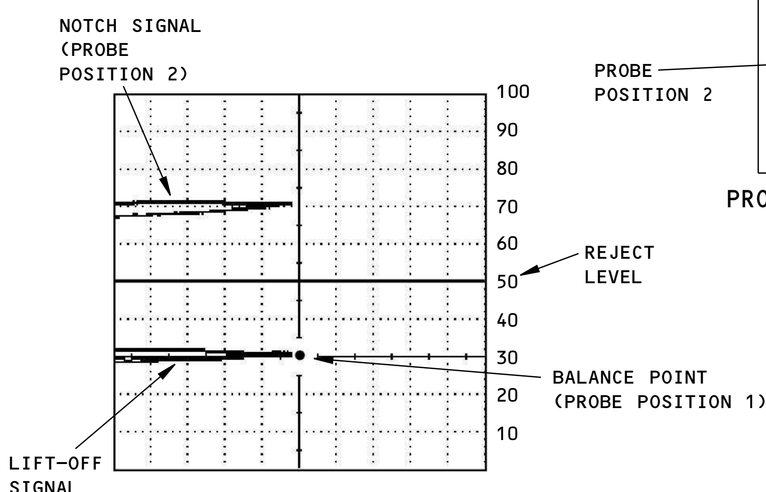
PROBE POSITIONS ON REFERENCE STANDARD NDT3183

DETAIL I



PROBE POSITIONS ON REFERENCE STANDARD NDT3184

DETAIL II



IMPEDANCE PLANE DISPLAY

DETAIL III

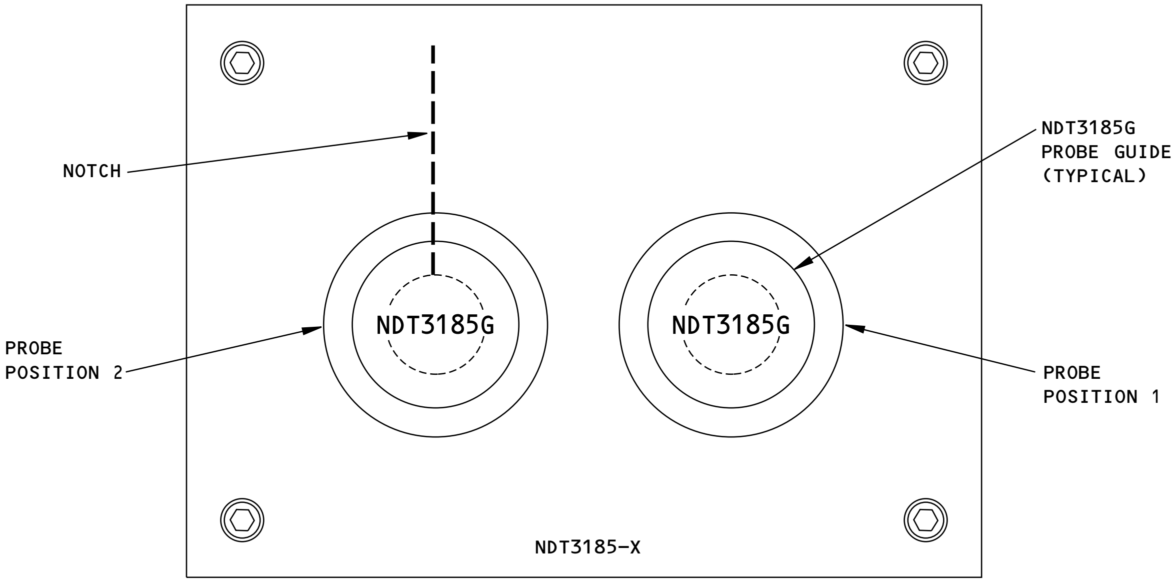
WING SKIN TO EXAMINE	FASTENER LOCATION TO EXAMINE (FASTENER CODE)	REFERENCE STANDARD	INSTRUMENT FREQUENCY (kHz)
CENTER SECTION	A	NDT3183	120 Hz
OUTER	B	NDT3184	140 Hz

CALIBRATION TABLE

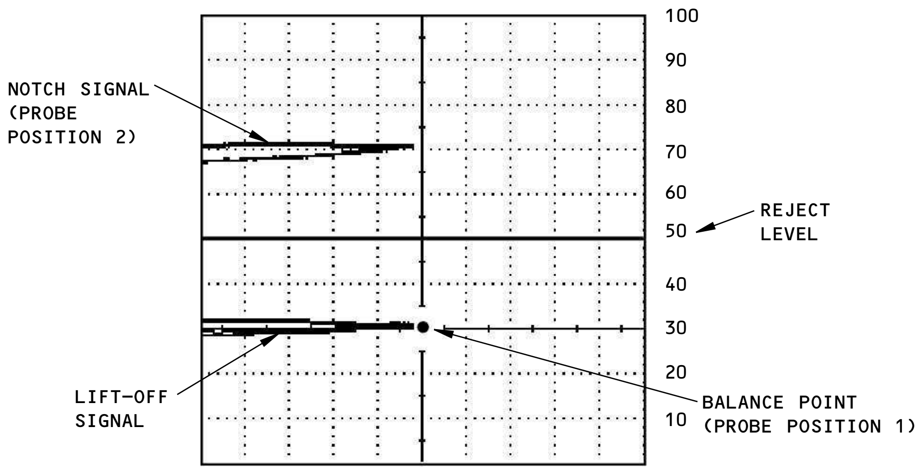
DETAIL IV

2174755 S0000478740_V1

Instrument Calibration to Examine the Lower Splice Inspection Areas of the Front Spar
Figure 10



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II

WING SKIN TO EXAMINE	FASTENER LOCATION TO EXAMINE (FASTENER CODE)	REFERENCE STANDARD	INSTRUMENT FREQUENCY (kHz)
OUTER	A	NDT3185-A	50 Hz
CENTER SECTION	B	NDT3185-B	40 Hz

CALIBRATION TABLE
DETAIL III

2174756 S0000478741_V1

Instrument Calibration to Examine the Lower Splice Inspection Areas of the Rear Spar
Figure 11

PART 6 - EDDY CURRENT

LOWER WING PANEL - SKIN AT THE SHEAR TIED RIB ATTACHMENTS AT RIB 14 (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the lower wing skin at the shear tied rib attachments at rib 14 for cracks. The inspection area is at all fastener locations from the front to rear spar that are not covered by the rub strip or the flap track fittings. The flap track fairing must be removed for this inspection. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower wing skin is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-10

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

   C. Probes

      (1) Use a shielded probe that:

         (a) Operates from 50 to 500 kHz.

      (2) The probe that follows was used to help prepare this procedure.

         (a) TPEN92-5B; Techna NDT

   D. Reference Standard

      (1) Use reference standard 188A, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

   E. Special Tools

      (1) Nonconductive circle template.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas. See Figure 1.

   B. Remove the flap track fairing that is above the inspection area near rib 14.

   C. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surfaces.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument to examine the lower wing skin at the shear tied rib attachments at rib 14 (see Figure 1) for cracks as specified in Part 6, 51-00-00, Procedure 23.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

(2) Use a nonconductive circle template to keep the probe coil at a constant distance from the edge of the fastener.

5. Inspection Procedure

A. Examine the lower wing skin at the shear tied rib attachments at rib 14 for cracks as specified in Part 6, 51-00-00, Procedure 23. Examine the locations that follow:

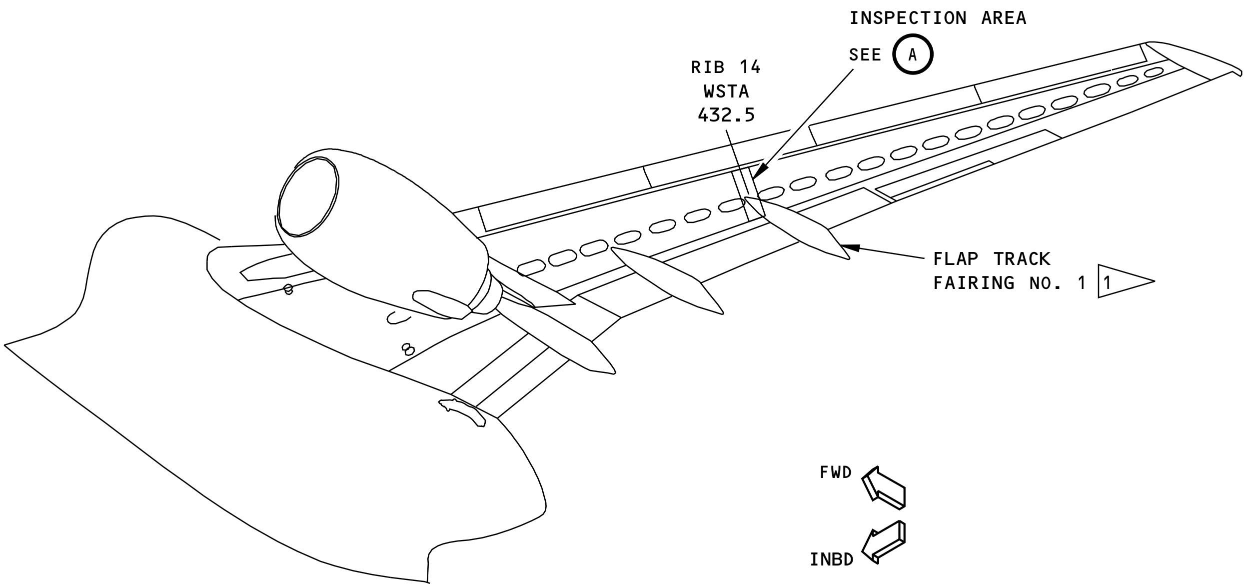
(1) The inspection area is at all fastener locations from the front to rear spar that are not covered by the rub strip or the flap track fittings. See Figure 1.

(2) Use a nonconductive circle template to keep the probe coil at a constant distance from the edge of the fastener.

B. Do Paragraph 5.A. again to examine the lower wing skin for cracks on the other side of the airplane.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23 for instructions to help make an analysis of the indications that occur during the inspection.



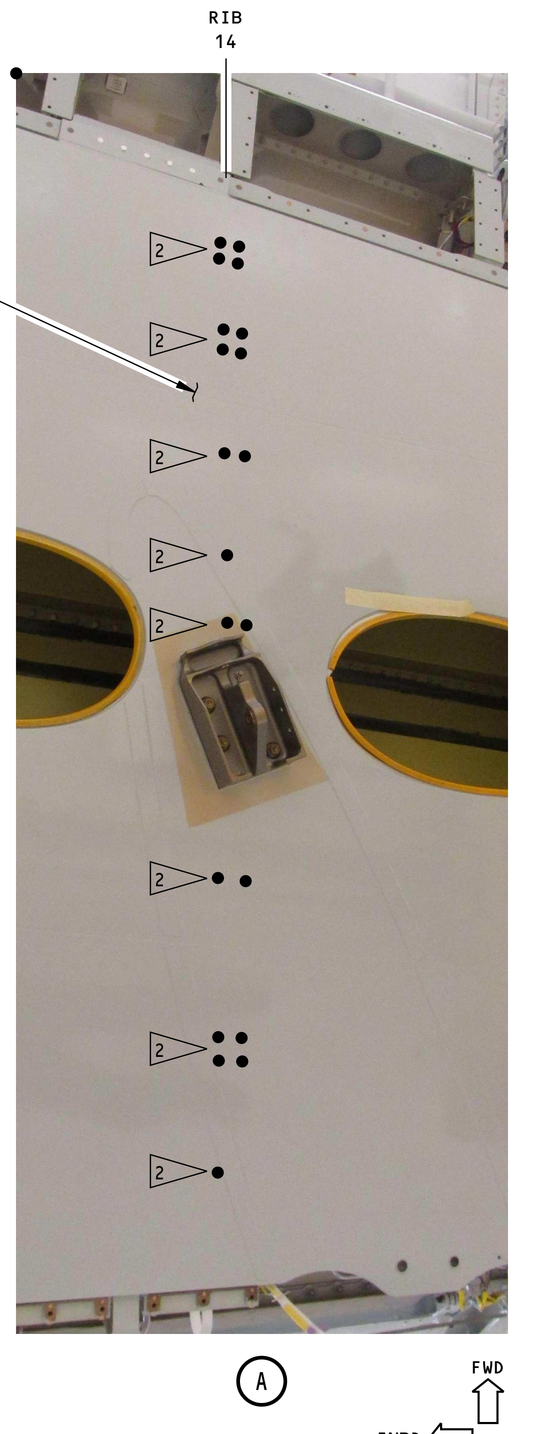
NOTES:

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE

1 REMOVE FLAP TRACK FAIRING NO. 1 TO GET ACCESS TO THE INSPECTION AREA ON THE LOWER SKIN OF THE LEFT WING AT RIB 14. REMOVE FLAP TRACK FAIRING NO. 8 FROM THE RIGHT WING TO GET ACCESS TO THE INSPECTION AREA ON THE RIGHT WING

2179060 S0000481125_V2

Inspection Areas
Figure 1 (Sheet 1 of 2)



NOTES:
- ● INSPECTION FASTENER LOCATIONS
- • THIS VIEW IS SHOWN WITH THE FLAP TRACK REMOVED. IT IS NOT NECESSARY TO REMOVE THE FLAP TRACK TO DO THIS INSPECTION
- • THIS IS THE VIEW OF THE INSPECTION AREA ON THE LOWER SKIN OF THE LEFT WING AT RIB 14 AS YOU LOOK UP; THE RIGHT WING IS OPPOSITE
- 2 DO CIRCULAR PROBE SCANS AROUND THESE FASTENERS ON THE LOWER SKIN OF THE WING. USE A CIRCLE TEMPLATE DURING EACH SCAN. IF IT IS NOT EASY TO SEE THESE FASTENER HEADS, MAKE A MARK ON THESE FASTENERS TO MAKE THE INSPECTION EASIER

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Inspection Areas
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

LOWER PANEL STRINGERS 1 THRU 4, 6 THRU 8, AND 9 THRU 14 OF THE WING CENTER SECTION (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the wing center section at lower panel stringers 1 thru 4, 6 thru 8, and 9 thru 14, from RBL 67.0 to LBL 67.0. Examine the forward side of the stringers for cracks with the probe 0.25 to 0.50 inch (6.4 to 12.7 mm) from the lower corner of the stringers. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower panel stringers are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-07-1

      (2) Item: 57-10-07-2

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60fx 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

   E. Special Tools

(1) Use a straightedge or other nonconductive material as a probe guide if the fillet seal cannot be used as a probe guide. During each scan, the probe must be 0.25 to 0.50 inch (6.4 to 12.7 mm) from the lower corner of the stringer.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the center wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Remove the fillet seal that extends more than 0.50 inch (12.7 mm) from the lower corner of the stringers.

(1) Refer to the instructions that follow to remove the sealant:

(a) BAC5000 Departure 6-227 (section 5.14, paragraph C), or

(b) AMM Task 51-31-00-100-802 (paragraph E ‘procedures’, step 1), or

(c) AMM Task 28-11-00-300-803 (paragraph E ‘procedures’, step 4).

D. Remove paint only if it is loose.

E. Clean the inspection surfaces.

4. Instrument Calibration

A. Calibrate the instrument to examine the lower panel stringers for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Examine the forward side of the lower panel stringers for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, as follows:

(1) Examine stringers 1 thru 4, 6 thru 8, and 10 thru 14 from RBL 67.0 to LBL 67.0. See Figure 1.

(2) The probe must be from 0.25 to 0.50 inch (6.4 to 12.7 mm) from the lower corner of each stringer during each scan. See Figure 1 for the inspection areas.

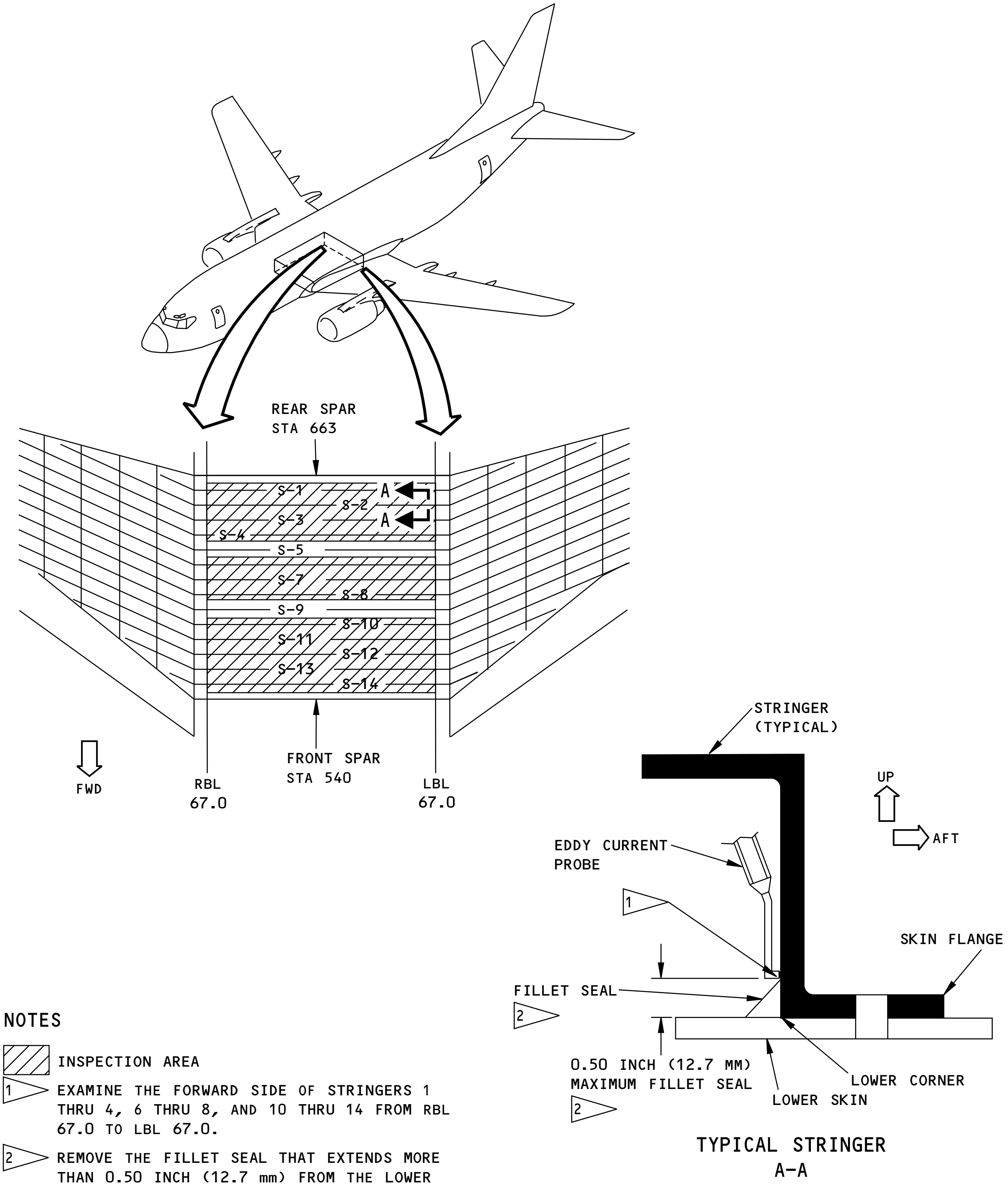
(a) Sealant that extends more than 0.50 inch (12.7 mm) from the lower corner of the stringer must be removed.

(b) Use the fillet seal or the removed sealant edge as a probe guide while you make the scan along the forward side of the stringer.

1) Use a straightedge or other nonconductive material as a probe guide if the fillet seal or sealant edge cannot be used as a probe guide. During each scan, the probe must be from 0.25 to 0.50 inch (6.4 to 12.7 mm) from the lower corner of the stringer.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

INSPECTION AREA

1 EXAMINE THE FORWARD SIDE OF STRINGERS 1 THRU 4, 6 THRU 8, AND 10 THRU 14 FROM RBL 67.0 TO LBL 67.0.

2 REMOVE THE FILLET SEAL THAT EXTENDS MORE THAN 0.50 INCH (12.7 mm) FROM THE LOWER CORNER OF THE STRINGER.

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

UPPER CHORD AT THE FRONT SPAR OF THE WING CENTER SECTION (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the upper chord at the front spar of the wing center section at BS 540 from LBL 67.0 to RBL 67.0 for cracks. The upper chord is examined for cracks between the two rows of fasteners that go through the web and skin flanges of the upper chord. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The upper chord is aluminum.

   D. Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23 to examine areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick.

   E. Use the HFEC procedure specified in Part 6, 51-00-27 to examine areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick.

   F. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-03

2. **Equipment**

   A. General

      (1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-27, paragraph 4.

      (3) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a maximum diameter of 0.35 inch (8.9 mm).

(2) The probes that follow were used to help prepare this procedure.

NOTE: Shielded probes are recommended.

(a) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

1) Use a probe as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(b) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

1) Use a probe as specified in Part 6, 51-00-27, paragraph 4.

D. Reference Standards

(1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(a) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

(2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

(a) Use a reference standard, or an equivalent, as specified in Part 6, 51-00-27, paragraph 2.D, to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the center wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Clean the inspection surfaces.

D. Remove cap or brush sealant that is more than 0.090 inch (2.28 mm) thick in the inspection area between the fasteners.

(1) Refer to the instructions that follow to remove the sealant:

(a) BAC5000 Departure 6-227 (section 5.14, paragraph C), or

(b) AMM Task 51-31-00-100-802 (paragraph E ‘procedures’, step 1), or

(c) AMM Task 28-11-00-300-803 (paragraph E ‘procedures’, step 4).

E. Remove dirt or grease from the inspection surfaces.

F. Remove paint only if it is loose.

4. Instrument Calibration

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(a) Use reference standard 126, or an equivalent, to help calibrate the instrument.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-27, paragraph 4.

(a) Use the reference standard shown in Part 6, 51-00-27, paragraph 2.D, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the aft side of the upper chord for cracks at BS 540 from LBL 67.0 to RBL 67.0 as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27, paragraph 5, as follows:

(1) Make a probe scan between the two rows of fasteners that go through the web and skin flanges of the upper chord from LBL 67.0 to RBL 67.0. See Figure 1 for the inspection areas.

(a) Use the fastener rows or the remaining sealant as a probe guide while you make a scan between the fastener rows.

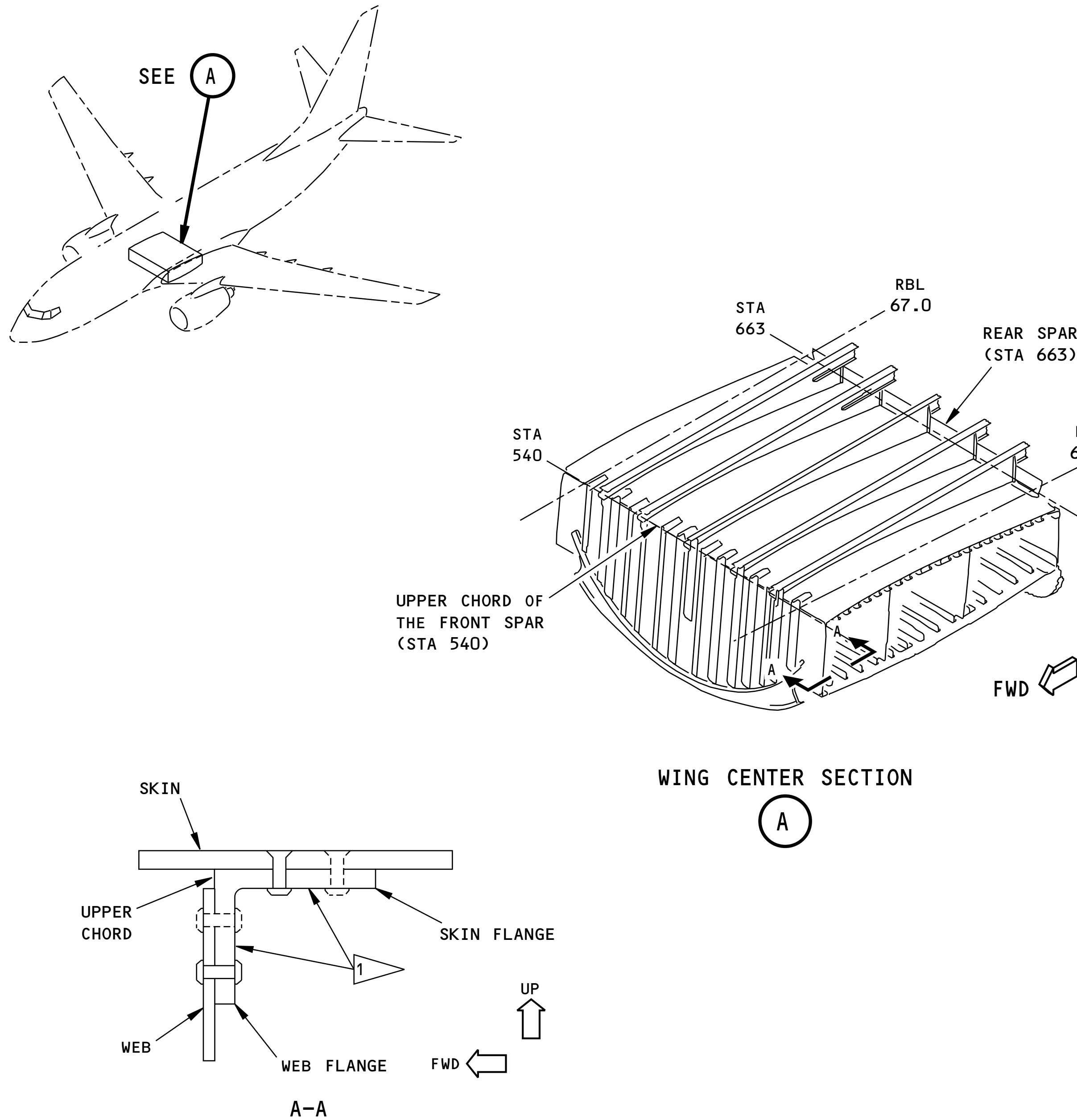
6. **Inspection Results**

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

(1) Refer to Part 6, 51-00-27, paragraph 6, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

1 EXAMINE THE UPPER CHORD OF THE FRONT SPAR FOR CRACKS BETWEEN THE FASTENERS ON THE SKIN AND WEB FLANGES FROM LBL 67.0 TO RBL 67.0

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

UPPER PANEL STRINGER 14 OF THE WING CENTER SECTION (HFEC)

1. **Purpose**
   A. Use this high-frequency eddy current (HFEC) procedure to examine the upper panel of the wing center section for cracks at splice stringer 14, from RBL 67.0 to LBL 67.0. Examine splice stringer 14 between the forward and aft fastener rows on each side of the skin flange. See Figure 1 for the inspection areas.
   B. This procedure uses an impedance plane display instrument.
   C. Splice stringer 14 is aluminum.
   D. Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, for inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick.
   E. Use the HFEC procedure specified in Part 6, 51-00-27, for inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick.
   F. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
      (1) Item: 57-10-02

2. **Equipment**
   A. General
      (1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:
         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.
      (2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:
         (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-27, paragraph 4.
      (3) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   B. Instrument
      (1) Use an eddy current instrument that:
         (a) Has an impedance plane display.
         (b) Operates from 50 to 500 kHz.
      (2) The instruments that follow were used to help prepare this procedure.
         (a) Phasec 2D/3D; GE Inspection Technologies
         (b) Nortec 500/2000D; Olympus
   C. Probes
      (1) Use a probe that:
         (a) Operates from 50 to 500 kHz.
         (b) Has a maximum diameter of 0.35 inch (8.9 mm).

(2) The probes that follow were used to help prepare this procedure.

NOTE: Shielded probes are recommended.

(a) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

1) Use a probe as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(b) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

1) Use a probe as specified in Part 6, 51-00-27, paragraph 4.

D. Reference Standards

(1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(a) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

(2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

(a) Use a reference standard, or an equivalent, as specified in Part 6, 51-00-27, paragraph 2 D, to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the center wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Remove cap or brush sealant that is more than 0.090 inch (2.28 mm) thick in the inspection area between the fasteners.

(1) Refer to the instructions that follow to remove the sealant:

(a) BAC5000 Departure 6-227 (section 5.14, paragraph C), or

(b) AMM Task 51-31-00-100-802 (paragraph E ‘procedures’, step 1), or

(c) AMM Task 28-11-00-300-803 (paragraph E ‘procedures’, step 4).

D. Remove paint only if it is loose.

E. Clean the inspection surfaces.

4. Instrument Calibration

A. Calibrate the instrument to examine splice stringer 14 at the upper panel of the wing center section for cracks as specified in Part 6, 51-00-00, Procedure 23, or Part 6, 51-00-27.

(1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(a) Use reference standard 126, or an equivalent, to help calibrate the instrument.

(2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.90 inch (0.28 and 2.29 mm) thick:

(a) Use a reference standard as specified in Part 6, 51-00-27, paragraph 2.D.

5. Inspection Procedure

A. Examine splice stringer 14 for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27, paragraph 5. Examine the areas that follow:

(1) Make a probe scan of the forward side of splice stringer 14 between the two fastener rows at the skin flange from RBL 67.0 to LBL 67.0. See Figure 1 for the inspection areas.

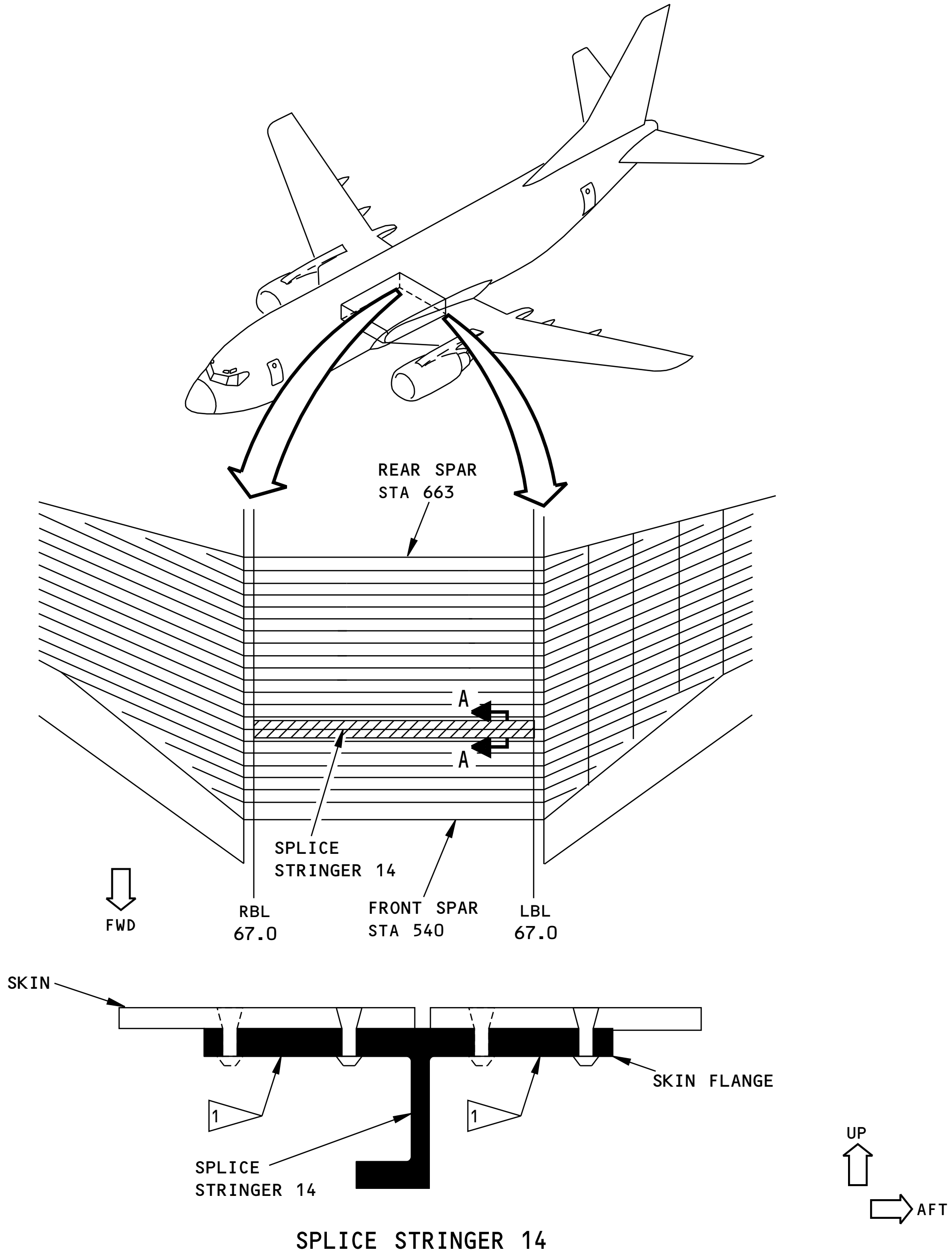
(a) Use the fastener rows or the sealant edge as a probe guide while you make a scan between the fasteners.

(2) Make a probe scan of the aft side of splice stringer 14 between the two fastener rows at the skin flange from RBL 67.0 to LBL 67.0. See Figure 1 for the inspection areas.

(a) Use the fastener rows or the sealant edge as a probe guide while you make a scan between the fasteners.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, or Part 6, 51-00-27, paragraph 6, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

1 EXAMINE SPLICE STRINGER 14 FOR CRACKS BETWEEN THE FORWARD AND AFT FASTENER ROWS ON THE SKIN FLANGE FROM RBL 67.0 TO LBL 67.0. REMOVE SEALANT THAT IS MORE THAN 0.09 INCH (2.3 mm) THICK IN THE INSPECTION AREA. EXAMINE THE FORWARD AND AFT FLANGES OF THE STRINGER.

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

UPPER PANEL STRINGERS 1 THRU 13 AND 15 THRU 21 OF THE WING CENTER SECTION (HFEC)

1. **Purpose**

   A. Use this high-frequency eddy current (HFEC) procedure to examine the wing center section for cracks at upper panel stringers 1 thru 13 and 15 thru 21, from RBL 67.0 to LBL 67.0. Examine the forward side of the stringers for cracks with the probe 0.25 to 0.50 inch (6.4 to 12.7 mm) from the upper corner of the stringers. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The upper panel stringers are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-01

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60fx 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

   E. Special Tools

      (1) Use a straightedge or other nonconductive material as a probe guide if the fillet seal cannot be used as a probe guide. During each scan, the probe must be 0.25 to 0.50 inch (6.4 to 12.7 mm) from the upper corner of the stringer.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the center wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Remove the fillet seal that extends more than 0.50 inch (12.7 mm) from the upper corner of the stringers.

(1) Refer to the instructions that follow to remove the sealant:

(a) BAC5000 Departure 6-227 (section 5.14, paragraph C), or

(b) AMM Task 51-31-00-100-802 (paragraph E ‘procedures’, step 1), or

(c) AMM Task 28-11-00-300-803 (paragraph E ‘procedures’, step 4).

D. Remove paint only if it is loose.

E. Clean the inspection surfaces.

4. Instrument Calibration

A. Calibrate the instrument to examine the upper panel stringers for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Examine the forward side of the upper panel stringers for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, as follows:

(1) Examine stringers 1 thru 13, and 15 thru 21 from RBL 67.0 to LBL 67.0. See Figure 1.

(2) The probe must be from 0.25 to 0.50 inch (6.4 to 12.7 mm) from the upper corner of each stringer during each scan. See Figure 1 for the inspection areas.

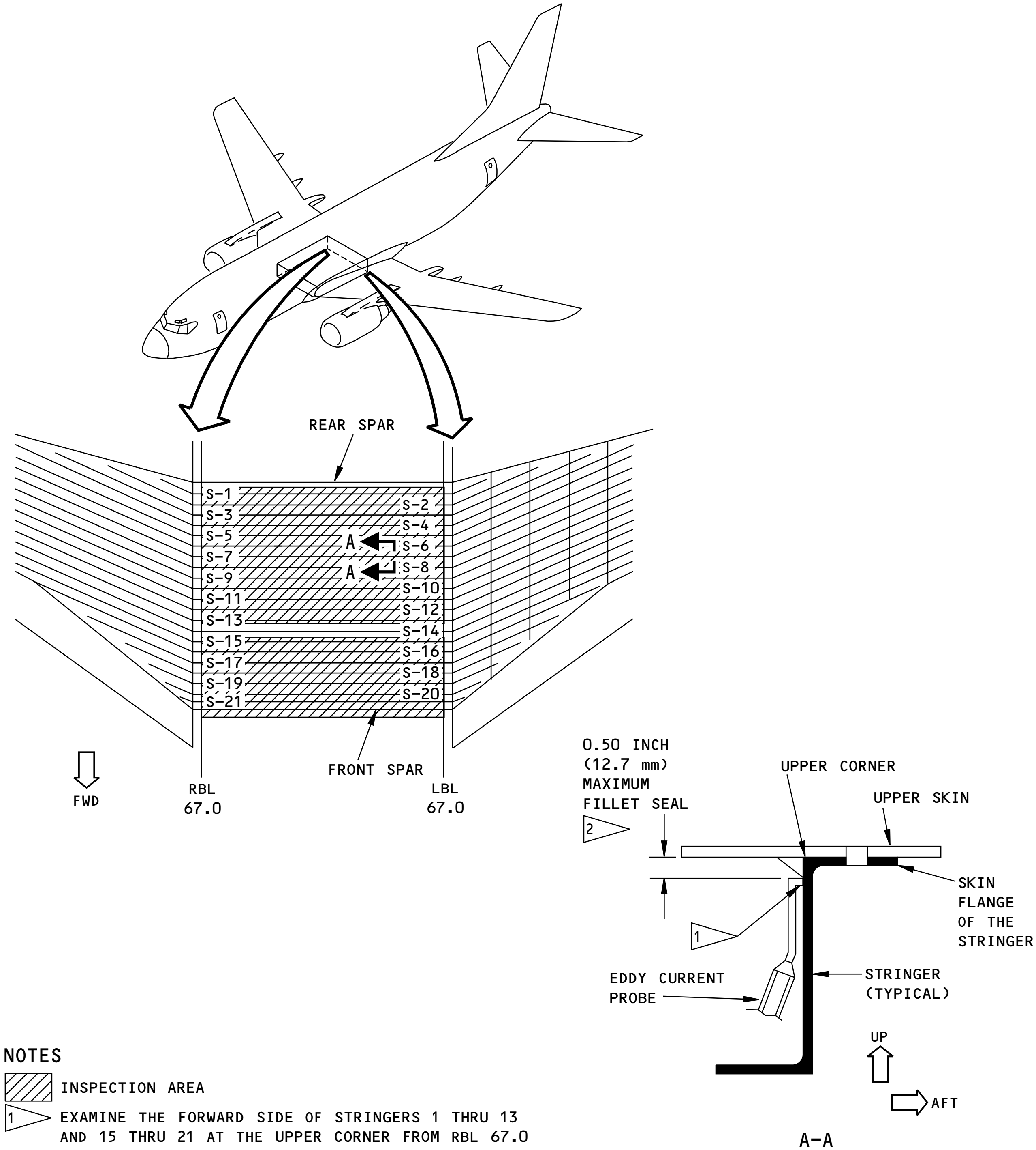
(a) Sealant that extends more than 0.50 inch (12.7 mm) from the upper corner of the stringer must be removed.

(b) Use the fillet seal or the removed sealant edge as a probe guide while you make the scan along the forward side of the stringer.

1) Use a straightedge or other nonconductive material as a probe guide if the fillet seal or sealant edge cannot be used as a probe guide. During each scan, the probe must be from 0.25 to 0.50 inch (6.4 to 12.7 mm) from the upper corner of the stringer.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

INSPECTION AREA

1 EXAMINE THE FORWARD SIDE OF STRINGERS 1 THRU 13 AND 15 THRU 21 AT THE UPPER CORNER FROM RBL 67.0 TO LBL 67.0.

2 REMOVE THE FILLET SEAL THAT EXTENDS MORE THAN 0.50 INCH (12.7 mm) FROM THE UPPER CORNER OF THE STRINGER

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

UPPER CHORD AT THE REAR SPAR OF THE WING CENTER SECTION (HFEC)

1. **Purpose**

    A. Use this high frequency eddy current (HFEC) procedure to examine the upper chord of the rear spar of the wing center section at BS 663, from LBL 67.0 to RBL 67.0, for cracks. The upper chord is examined for cracks between the two rows of fasteners that go through the web and skin flanges of the upper chord. See Figure 1 for the inspection areas.

    B. This procedure uses an impedance plane display instrument.

    C. The upper chord is aluminum.

    D. Use the HFEC procedure specified in Part 6, 51-00-00, Procedure 23, to examine areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick.

    E. Use the HFEC procedure specified in Part 6, 51-00-27, to examine areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick.

    F. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

        (1) Item: 57-10-04

2. **Equipment**

    A. General

        (1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

            (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

        (2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

            (a) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-27, paragraph 4.

        (3) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

    B. Instrument

        (1) Use an eddy current instrument that:

            (a) Has an impedance plane display.

            (b) Operates from 50 to 500 kHz.

        (2) The instruments that follow were used to help prepare this procedure.

            (a) Phasec 2D/3D; GE Inspection Technologies

            (b) Nortec 500/2000D; Olympus

    C. Probes

        (1) Use a probe that:

            (a) Operates from 50 to 500 kHz.

            (b) Has a maximum diameter of 0.35 inch (8.9 mm).

(2) The probes that follow were used to help prepare this procedure.

NOTE: Shielded probes are recommended.

(a) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

1) Use a probe as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(b) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

1) Use a probe as specified in Part 6, 51-00-27, paragraph 4.

D. Reference Standards

(1) For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(a) Use reference standard 126, or an equivalent, as shown in Part 6, 51-00-00, Procedure 23, to help calibrate the instrument.

(2) For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

(a) Use a reference standard, or an equivalent, as specified in Part 6, 51-00-27, paragraph 2.D, to help calibrate the instrument.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. It is necessary to get access to the center wing fuel tank to do this inspection. The fuel tank must be drained and purged to a “health safe” condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

C. Clean the inspection surfaces.

D. Remove cap or brush sealant that is more than 0.090 inch (2.28 mm) thick in the inspection area between the fasteners.

(1) Refer to the instructions that follow to remove the sealant:

(a) BAC5000 Departure 6-227 (section 5.14, paragraph C), or

(b) AMM Task 51-31-00-100-802 (paragraph E ‘procedures’, step 1), or

(c) AMM Task 28-11-00-300-803 (paragraph E ‘procedures’, step 4).

E. Remove dirt or grease from the inspection surfaces.

F. Remove paint only if it is loose.

4. Instrument Calibration

A. For inspection areas that have a nonconductive layer (sealant) that is less than 0.011 inch (0.28 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(a) Use reference standard 126, or an equivalent, to help calibrate the instrument.

B. For inspection areas that have a nonconductive layer (sealant) that is between 0.011 and 0.090 inch (0.28 and 2.29 mm) thick:

(1) Calibrate the instrument as specified in Part 6, 51-00-27, paragraph 4.

(a) Use the reference standard shown in Part 6, 51-00-27, paragraph 2.D, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

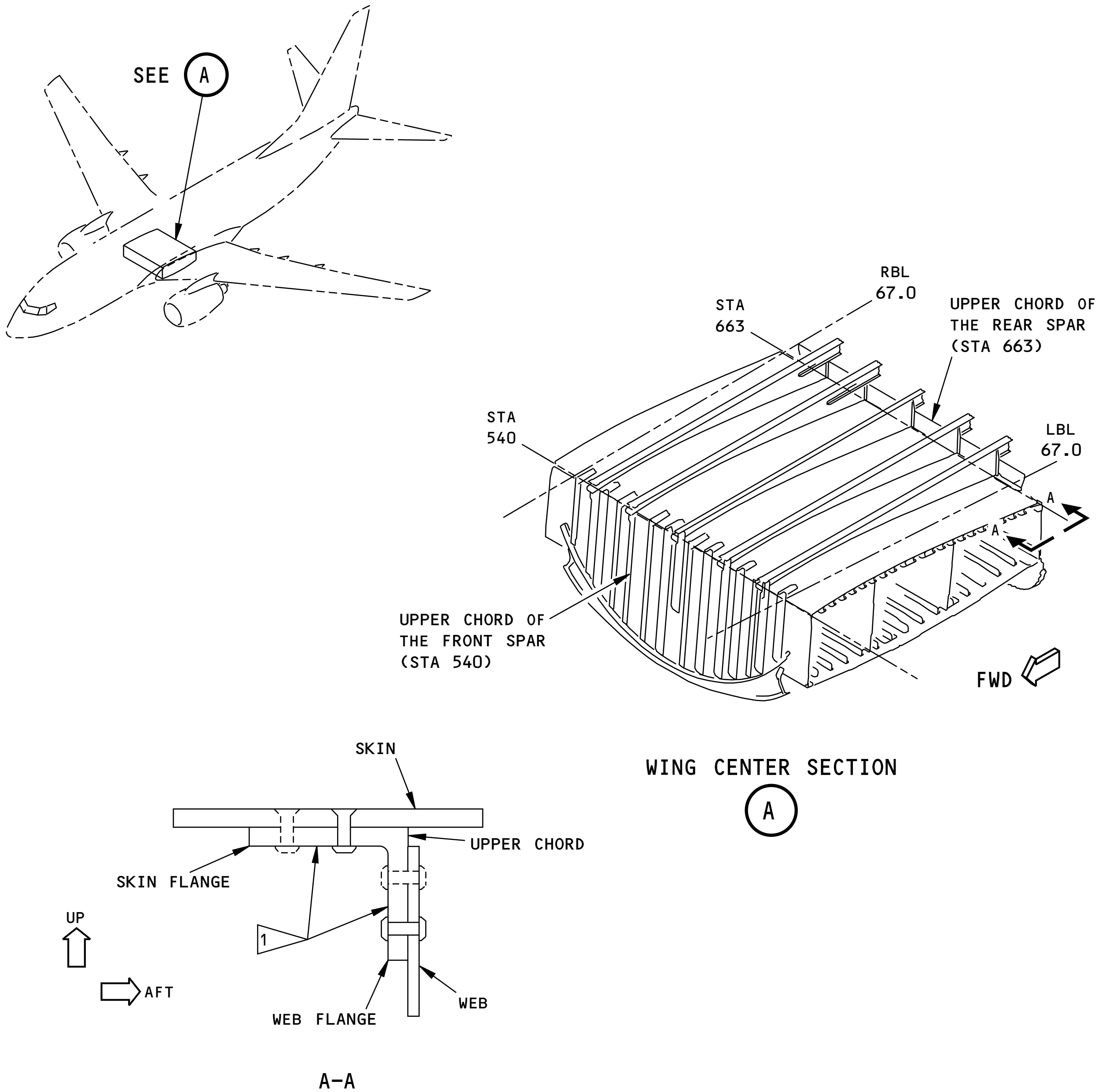
A. Examine the forward side of the upper chord for cracks at BS 663 from LBL 67.0 to RBL 67.0 as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, or Part 6, 51-00-27, as follows:

(1) Make a probe scan between the two rows of fasteners from LBL 67.0 to RBL 67.0. See Figure 1 for the inspection areas.

(a) Use the fastener rows or the remaining sealant as a probe guide while you make a scan between the fastener rows.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

1 EXAMINE THE UPPER CHORD OF THE REAR SPAR FOR CRACKS BETWEEN THE FASTENER ROWS ON THE SKIN AND WEB FLANGES FROM LBL 67.0 TO RBL 67.0.

2219314 S0000495204_V1

Inspection Area
Figure 1

PART 6 - EDDY CURRENT

SIDE-OF-BODY SPLICE - LOWER SKIN (HFEC)

1. **Purpose**
   A. Use this high frequency eddy current (HFEC) procedure to examine the lower skins for cracks at the side-of-body splice. The inspection is between the front and rear spars at the edges of the splice plates and brackets. See Figure 1 for the inspection areas.
   B. This procedure uses an impedance plane display instrument.
   C. The lower skins are aluminum.
   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
      (1) Item: 57-10-11-3
2. **Equipment**
   A. General
      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.
      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   B. Instrument
      (1) Use an eddy current instrument that:
         (a) Has an impedance plane display.
         (b) Operates from 50 to 500 kHz.
      (2) The instrument that follows was used to help prepare this procedure.
         (a) Phasec 2D/3D; GE Inspection Technologies
   C. Probes
      (1) Use a shielded pencil probe that:
         (a) Operates from 50 to 500 kHz.
         (b) Has a diameter of 0.125 inches (3.18 mm).
      (2) The probe that follows was used to help prepare this procedure.
         (a) TPEN95 - 6B; Techna NDT
   D. Reference Standards
      (1) Use reference standard 126, or an equivalent, to help calibrate the instrument.
3. **Prepare for the Inspection**
   A. Identify and get access to all of the inspection areas shown in Figure 1.
      NOTE: It is necessary to remove the lower wing-to-body fairing to get access to the area to be examined. It can also be necessary to remove the fairing bracket at stringer S-9 to get access for the probe.
   B. Clean the inspection surfaces.
   C. Remove sealant, dirt or grease from the inspection surfaces that the probe will touch.

D. Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the lower skins for cracks at the side-of-body splice as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

5. **Inspection Procedure**

A. Calibrate the instrument as specified in Paragraph 4.

B. Examine the lower skins for cracks at the fairing brackets and splice plates as specified in Part 6, 51-00-00, Procedure 23, paragraph 6.

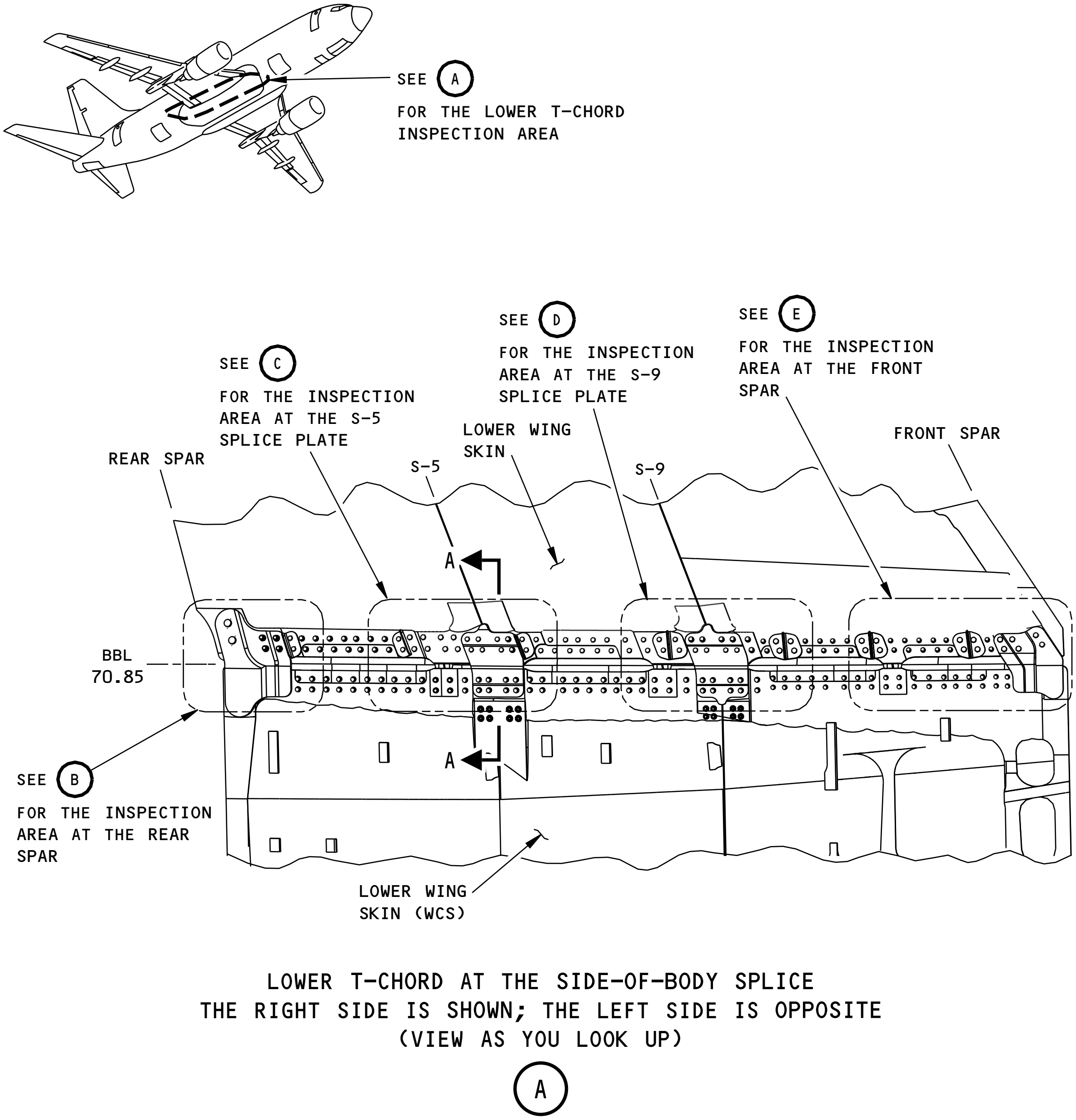
(1) Examine the lower wing skin in the area that is outboard of BBL 70.85 at the fairing brackets and splice plates as shown in Figure 1. Use the fairing brackets and splice plates as a probe guide.

(2) Examine the lower wing skin of the wing center section in the area that is inboard of BBL 70.85 at the splice plates shown in Figure 1. Use the splice plates as a probe guide.

C. Do Paragraph 5.B. again on the other side of the airplane.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



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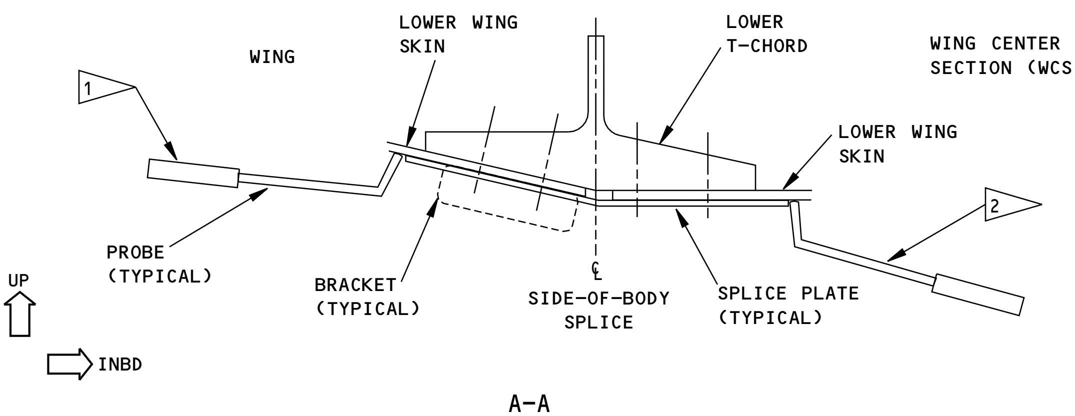
Inspection Areas
Figure 1 (Sheet 1 of 4)



NOTES

1 PUT THE PROBE TIP ON THE LOWER WING SKIN FOR THE INSPECTION LOCATIONS THAT ARE OUTBOARD OF BBL 70.85.

2 PUT THE PROBE TIP ON THE LOWER WING SKIN FOR THE INSPECTION LOCATIONS THAT ARE INBOARD OF BBL 70.85.

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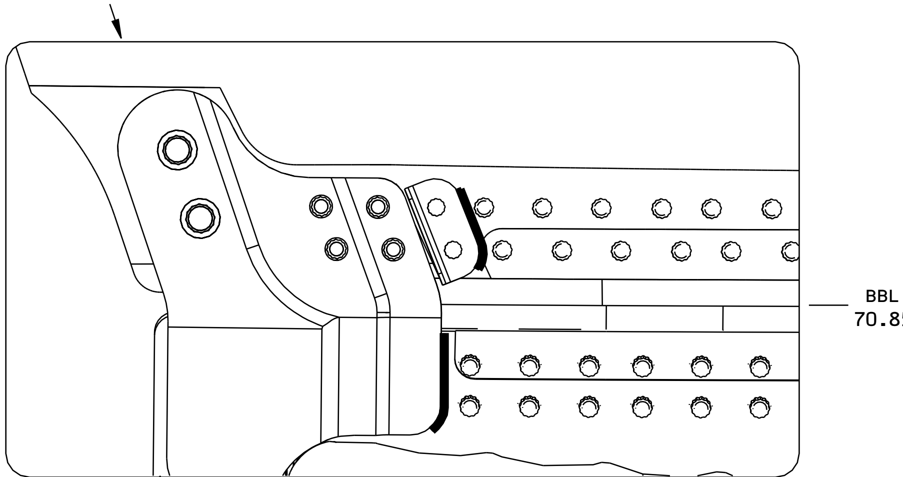
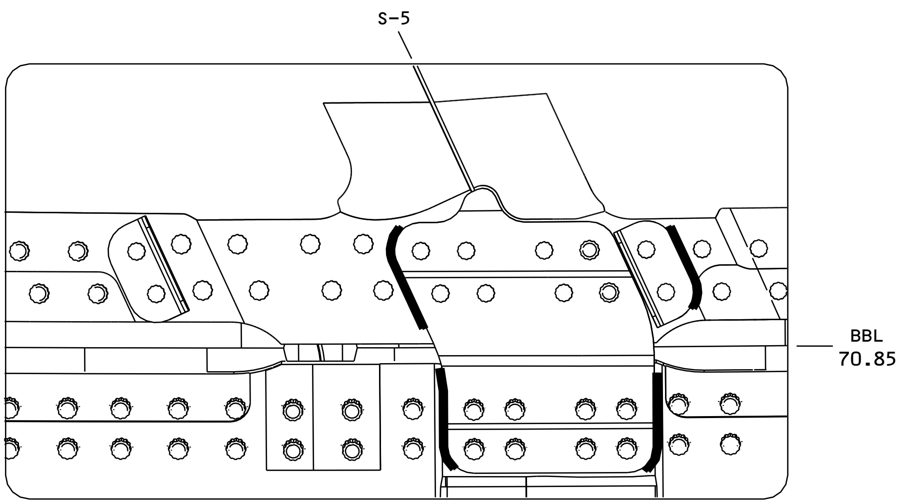
Inspection Areas
Figure 1 (Sheet 2 of 4)



INSPECTION AREAS AT THE REAR SPAR

B



INSPECTION AREAS AT THE S-5 SPLICE PLATE

C

NOTES

LOCATIONS TO EXAMINE AT THE EDGES OF BRACKETS AND SPLICE PLATES. USE THE EDGE OF THE BRACKET OR SPLICE PLATE AS A PROBE GUIDE.

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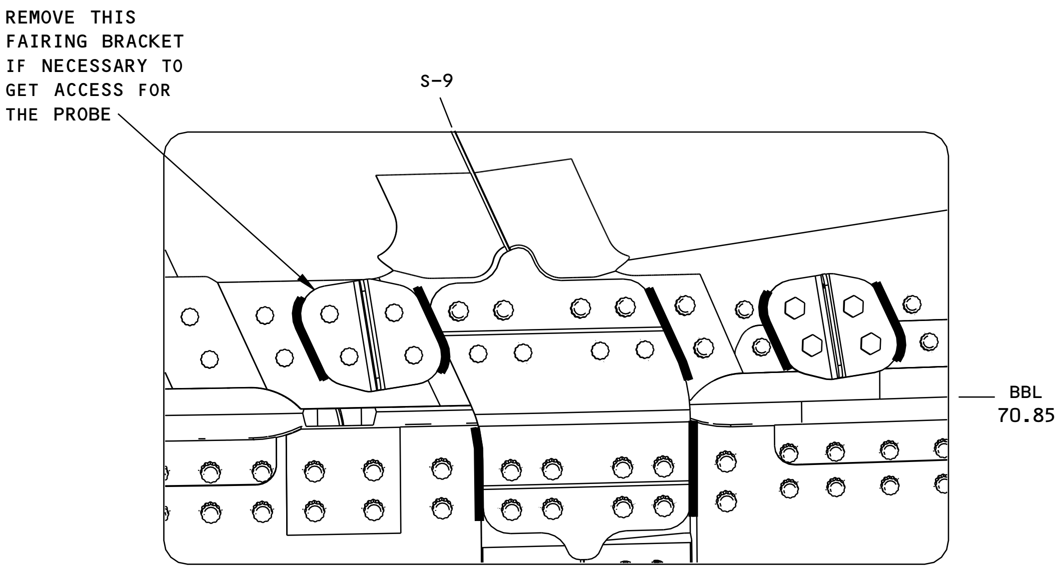
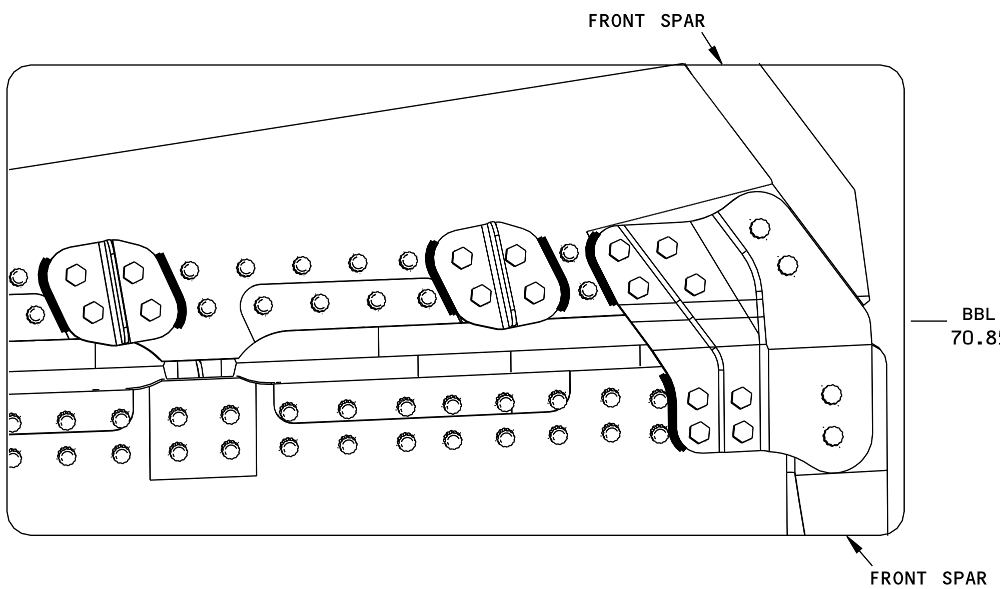
Inspection Areas
Figure 1 (Sheet 3 of 4)



INSPECTION AREAS AT THE S-9 SPLICE PLATE

D



INSPECTION AREAS AT THE FRONT SPAR

E

2206529 S0000492357_V2

Inspection Areas
Figure 1 (Sheet 4 of 4)

PART 6 - EDDY CURRENT

TENSION BOLT HOLES AT RIB 0 OF THE WINGLET (OHEC)

1. **Purpose**

   A. Use this open hole eddy current (OHEC) procedure to examine the bore of the 18 tension bolt holes for cracks at rib 0 of the winglet. See Figure 1 for the inspection area.

   B. This procedure uses an impedance plane display instrument with a rotary scanner.

   C. Rib 0 of the winglet is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-31-02-1

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 16, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) 500D with Minimite; Olympus NDT

         (b) Phasec 2D/3D; GE Inspection Technologies, with Hocking mini drive.

         (c) 2000D with Minimite; Olympus NDT

   C. Probes

      (1) The probes that follow were used to help prepare this procedure.

         (a) BXEM-32/40 1/2-5/8; Olympus NDT

         (b) SPO-5965 .468-.500; Olympus NDT

   D. Reference Standard

      (1) Two reference standards are necessary to examine the 18 tension bolt holes for cracks at rib 0 of the winglet.

         (a) To examine the eight 0.5 inch (12.7 mm) diameter bolt holes shown in Figure 1, use reference standard NDT1021, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 16, for data about reference standard NDT1021.

         (b) To examine the ten 0.4375 inch (11.1 mm) diameter bolt holes shown in Figure 1, use reference standard NDT1020, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 16, for data about reference standard NDT1020.

3. **Prepare for the Inspection**

   A. Remove the winglet.

B. Prepare the fastener holes for inspection as specified in Part 6, 51-00-00, Procedure 16, paragraph 4.

4. Instrument Calibration

A. Two instrument calibrations are necessary to examine the 18 tension bolt holes for cracks at rib 0 of the winglet.

(1) Calibrate the instrument to examine the eight 0.5 inch (12.7 mm) diameter bolt holes shown in Figure 1 as specified in Part 6, 51-00-00, Procedure 16, paragraph 5.

(2) Calibrate the instrument to examine the ten 0.4375 inch (11.1 mm) diameter bolt holes shown in Figure 1 as specified in Part 6, 51-00-00, Procedure 16, paragraph 5.

5. Inspection Procedure

A. Examine the 18 tension bolt holes for cracks at rib 0 of the winglets as follows:

(1) Examine the eight 0.5 inch (12.7 mm) diameter bolt holes shown in Figure 1 as follows:

(a) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 16, paragraph 6.

1) Use reference standard NDT1021, or an equivalent, to help calibrate the instrument.

(b) Examine the eight 0.5 inch (12.7 mm) diameter bolt holes shown in Figure 1 as specified in Part 6, 51-00-00, Procedure 16, paragraph 6.

(2) Examine the ten 0.4375 inch (11.1 mm) diameter bolt holes shown in Figure 1 as follows:

(a) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 16, paragraph 6.

1) Use reference standard NDT1020, or an equivalent, to help calibrate the instrument.

(b) Examine the ten 0.4375 inch (11.1 mm) diameter bolt holes shown in Figure 1 as specified in Part 6, 51-00-00, Procedure 16, paragraph 6.

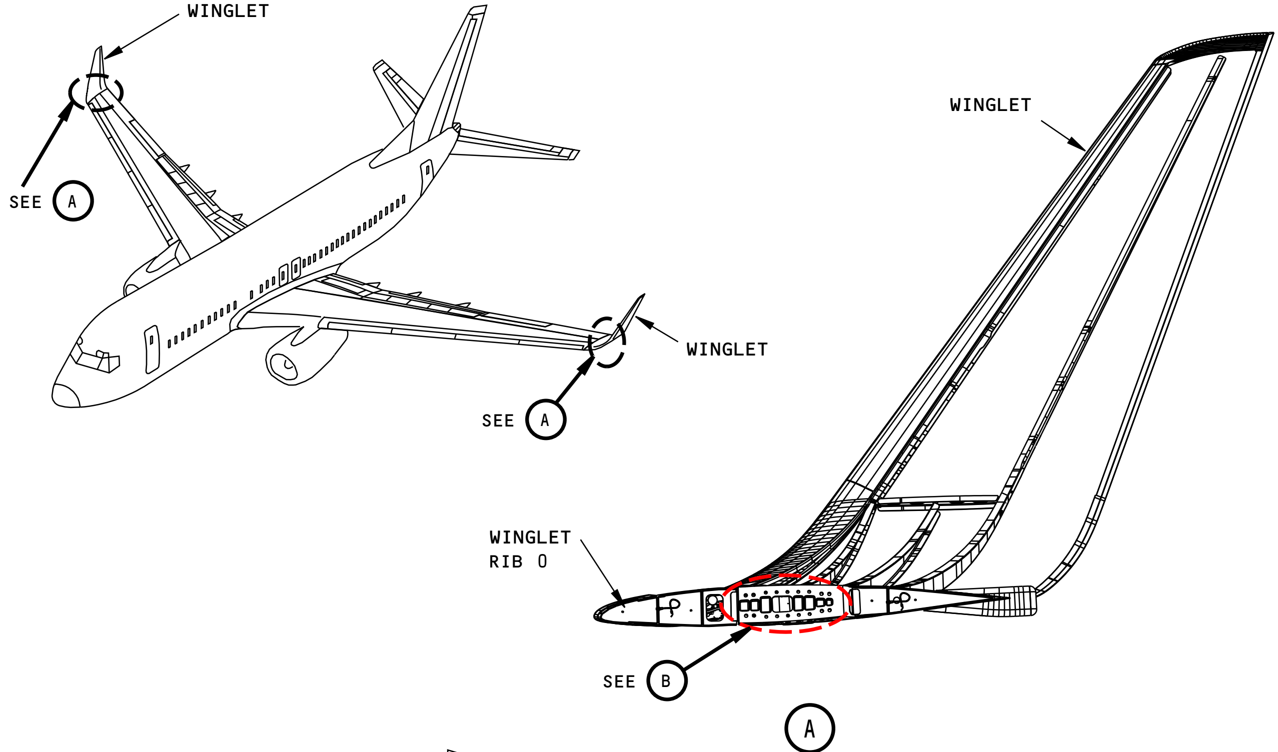
B. Do Paragraph 5.A. again to examine the winglet for cracks at rib 0 on the other side of the airplane.

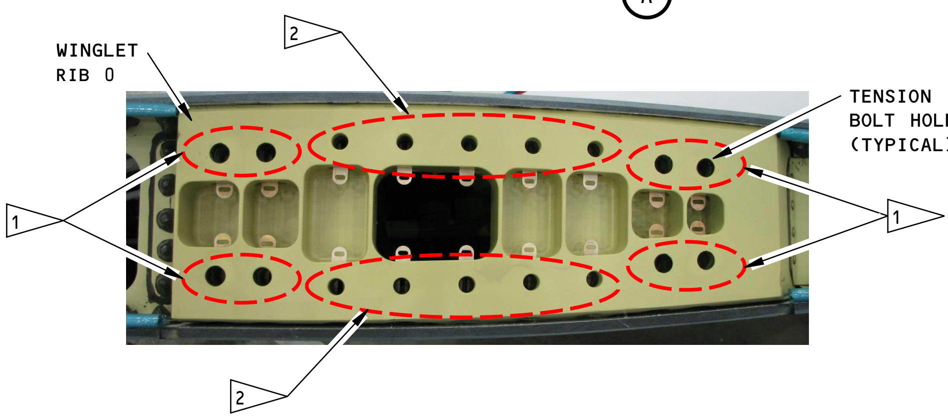
6. Inspection Results

A. A crack signal will look almost the same as the signal you got from the notch of the reference standard. See Part 6, 51-00-00, Procedure 16, paragraph 7.

(1) Record all locations that cause crack indications to occur.

B. Refer to Part 6, 51-00-00, Procedure 16, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.





WINGLET RIB 0 INSPECTION AREA
(VIEW AS YOU LOOK OUTBOARD)

B

NOTES

- THE RIGHT WINGLET IS SHOWN; THE LEFT WINGLET IS OPPOSITE

1 USE REFERENCE STANDARD NDT1021 TO HELP EXAMINE THE EIGHT 0.5 INCH (12.7 mm) DIAMETER TENSION BOLT HOLES FOR CRACKS

2 USE REFERENCE STANDARD NDT1020 TO HELP EXAMINE THE TEN 0.4375 INCH (11.1 mm) DIAMETER TENSION BOLT HOLES FOR CRACKS

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

LOWER FLANGE OF RIB 0 OF THE WINGLET (OHEC)

1. **Purpose**

   A. Use this open hole eddy current (OHEC) procedure to examine the lower flange of rib 0 of the winglet for cracks. The lower flange of rib 0 is examined for cracks at the two fastener holes that are immediately forward of the front spar. See Figure 1 for the inspection area.

   B. This procedure uses an impedance plane display instrument with a rotary scanner.

   C. Rib 0 is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-31-02-2

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 16, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) 500D with Minimite; Olympus NDT

         (b) Phasec 2D/3D; GE Inspection Technologies, with Hocking mini drive.

         (c) 2000D with Minimite; Olympus NDT

   C. Probes

      (1) The probe that follows was used to help prepare this procedure.

         (a) SPO-5965 .312-.375; Olympus NDT

   D. Reference Standard

      (1) Use reference standard NDT1019, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 16, for data about reference standard NDT1019.

3. **Prepare for the Inspection**

   A. Remove the winglet.

   B. Remove the access panel that is adjacent to the inspection area from the winglet. See Figure 1.

   C. Remove the two fasteners immediately forward of the front spar at rib 0 of the winglet. See Figure 1 for the fastener locations.

   D. Prepare the fastener holes for inspection as specified in Part 6, 51-00-00, Procedure 16, paragraph 4.

4. **Instrument Calibration**

   A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 16, paragraph 5.

      (1) Use reference standard NDT1019, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

   A. Examine the lower flange of rib 0 of the winglets for cracks as follows:

      (1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 16, paragraph 6.

      (2) Examine the two fastener holes shown in Figure 1 for cracks as specified in Part 6, 51-00-00, Procedure 16, paragraph 7.

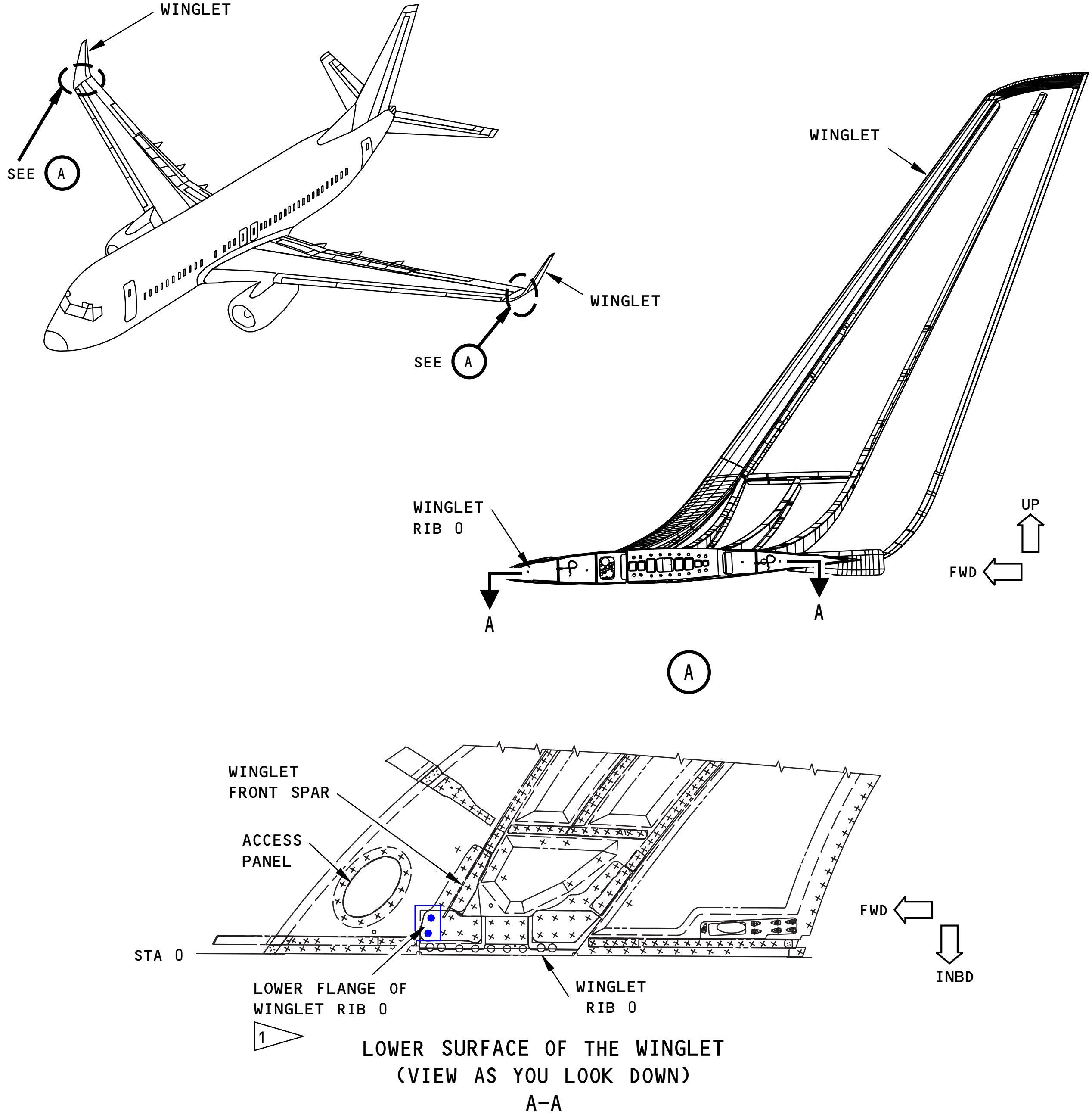
   B. Do Paragraph 5.A. again to examine the winglet for cracks at rib 0 on the other side of the airplane.

6. **Inspection Results**

   A. A crack signal will look almost the same as the signal you got from the notch of the reference standard. See Part 6, 51-00-00, Procedure 16, paragraph 7.

      (1) Record all locations that cause crack indications to occur.

   B. Refer to Part 6, 51-00-00, Procedure 16, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

- ● INSPECTION AREA
- • THE RIGHT WINGLET IS SHOWN; THE LEFT WINGLET IS OPPOSITE
- 2 USE REFERENCE STANDARD NDT1019 TO HELP EXAMINE THE LOWER FLANGE OF WINGLET RIB 0 FOR CRACKS AT THE TWO 0.375 INCH (9.52 mm) DIAMETER FASTENER HOLES

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

RAIL STRINGERS 6 AND 8 ALONG THE LOWER PANEL OF THE WING (HFEC)

1. **Purpose**
   A. Use this procedure to examine rail stringers 6 and 8 for cracks at the fastener locations you can see between ribs 1 and 19 (WBL 71.24 to WSTA 564.5). Rail stringers 6 and 8 are along the lower panel of the wing. See Figure 1 for the inspection areas.
   B. This procedure uses an impedance plane display instrument.
   C. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
      (1) Item: 57-20-02-1
2. **Equipment**
   A. General
      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.
      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   B. Instrument
      (1) Use an eddy current instrument that:
         (a) Has an impedance plane display.
         (b) Operates from 50 to 500 kHz.
      (2) The instruments that follow were used to help prepare this procedure.
         (a) Phasec 2D; GE Inspection Technologies
         (b) Phasec 3D; GE Inspection Technologies
   C. Probes
      (1) Use a probe that:
         (a) Operates from 50 to 500 kHz.
         (b) Has a maximum diameter of 0.13 inch (3.3 mm).
      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MP907-60; NDT Engineering
         (b) TSPEN95-6; Techna NDT
   D. Reference Standards
      (1) Use reference standard 188A, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 23, for data about reference standard 188A.

3. **Prepare for the Inspection**

WARNING: PERSONNEL WHO GO INTO A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION OCCUR IN FUEL TANKS.

A. Remove the fuel tank access doors to get access to the inspection areas.

B. Remove all dirt, loose paint, and sealant from the inspection area, if necessary.

4. **Instrument Calibration**

A. Calibrate the instrument to examine around the fasteners in stringers 6 and 8 as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine rail stringers 6 and 8 for cracks at all of the fastener locations that you can see from rib 1 to rib 19 as follows:

(1) Refer to Part 6, 51-00-00, Procedure 23, paragraph 6, for general instructions about surface eddy current inspections.

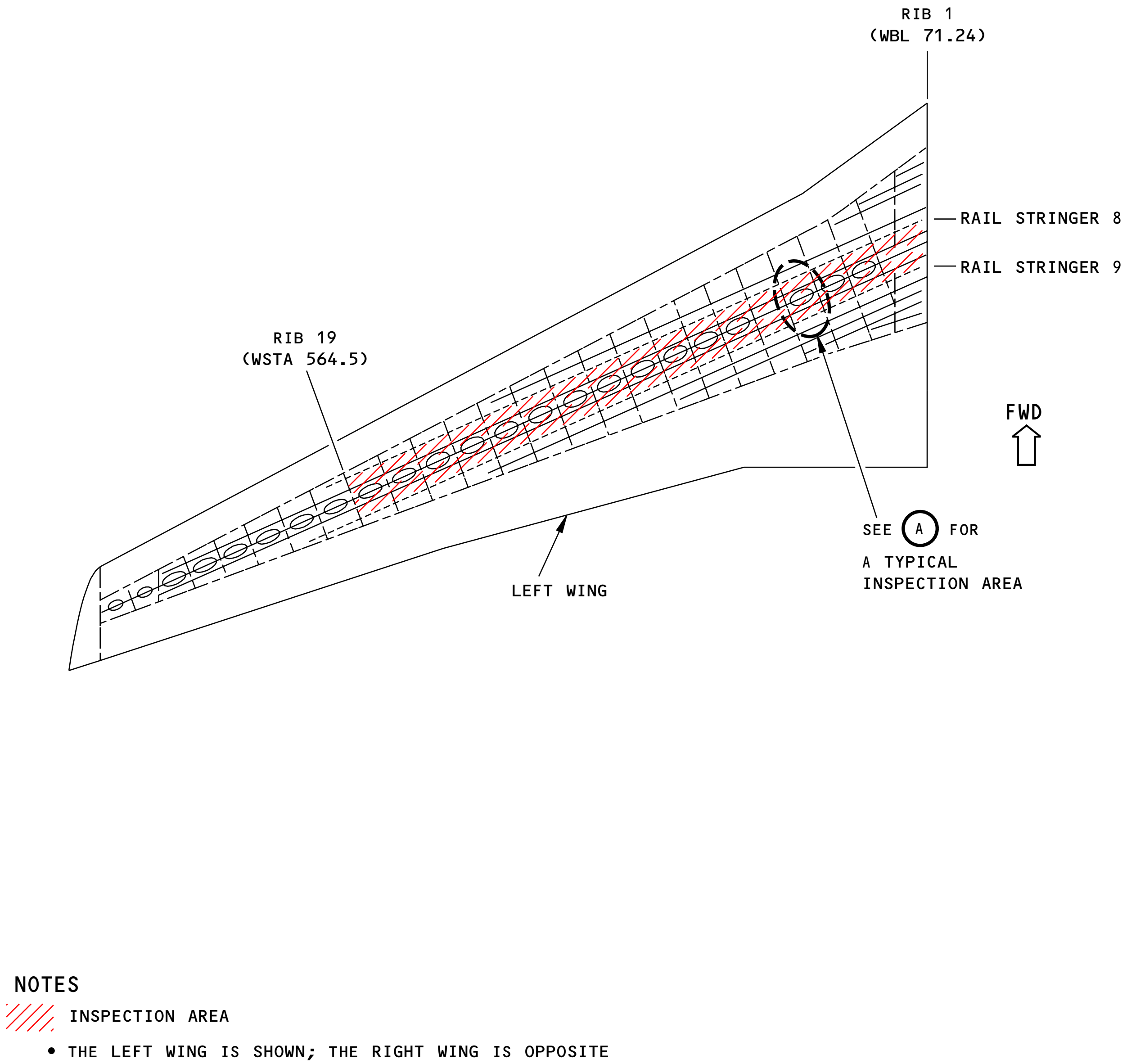
(2) Move the probe to examine the area for cracks around all the fastener collars on stringers 6 and 8, from rib 1 to rib 19. See Figure 1 for the areas to be examined.

(a) Only do this inspection at the fastener locations that you can see between the ribs.

(b) Cracks in the stringers will occur in a forward to aft direction.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



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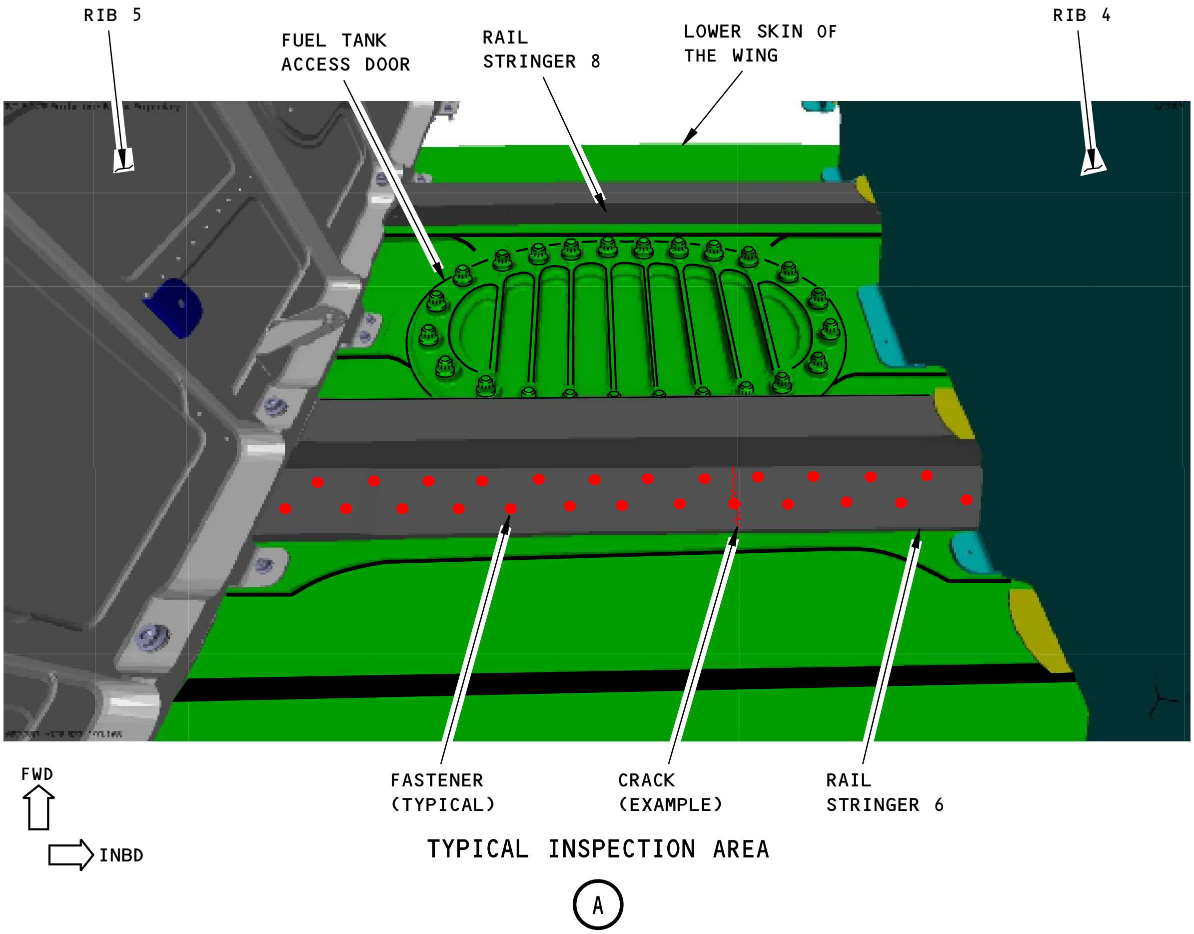
Inspection Area
Figure 1 (Sheet 1 of 2)



NOTES

- FASTENER LOCATIONS TO BE EXAMINED
  - REMOVE SEALANT FROM THE INSPECTION AREA AS NECESSARY
  - MAKE SCANS AROUND THE FASTENERS SHOWN TO LOOK FOR CRACKS IN RAIL STRINGERS 6 AND 8 THAT ARE ATTACHED TO THE LOWER SKIN OF THE WING. DO THIS INSPECTION ONLY AROUND THE FASTENERS THAT YOU CAN SEE

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Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

WING CENTER SECTION - REAR SPAR - KEEL BEAM STIFFENERS AT LBL 6.2 AND RBL 6.2 (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine the keel beam stiffeners for cracks. The keel beam stiffeners are at LBL 6.2 and RBL 6.2 and are attached to the rear spar of the wing center section. Each keel beam stiffener is examined for cracks at two fasteners that are immediately below WL 167. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The keel beam stiffeners are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-18

2. **Equipment**

   A. Purpose

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Olympus

   C. Probes

      (1) Use a probe that:

         (a) Operates from 50 to 500 kHz.

         (b) Has a maximum diameter of 0.13 inch (3.3 mm).

      (2) The probes that follow were used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF905-60FX 50-500 kHz; NDT Engineering/Olympus

         (b) MTF-40/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 188A, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 23, for data about reference standard 188A.

3. **Prepare for the Inspection**

   A. Identify and get access to all of the inspection areas shown in Figure 1.

B. Remove dirt or grease from the inspection surfaces.

C. Remove sealant from around the collars in the inspection area.

D. Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the instrument to examine the keel beam stiffeners for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

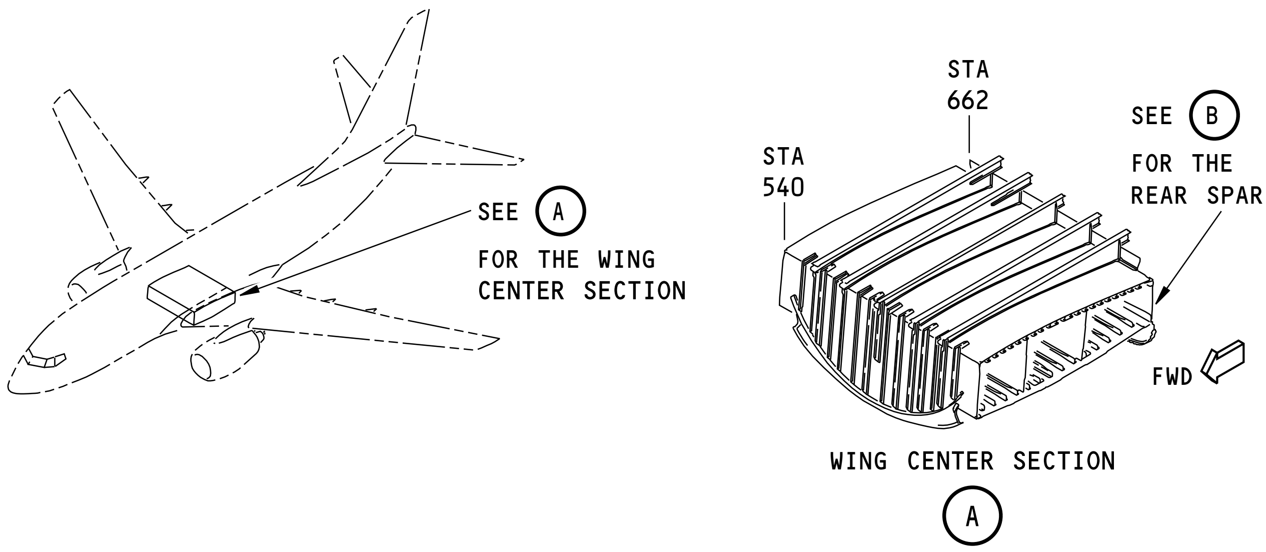
A. Examine the keel beam stiffeners that are attached to the rear spar of the wing center section for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Examine the areas that follow:

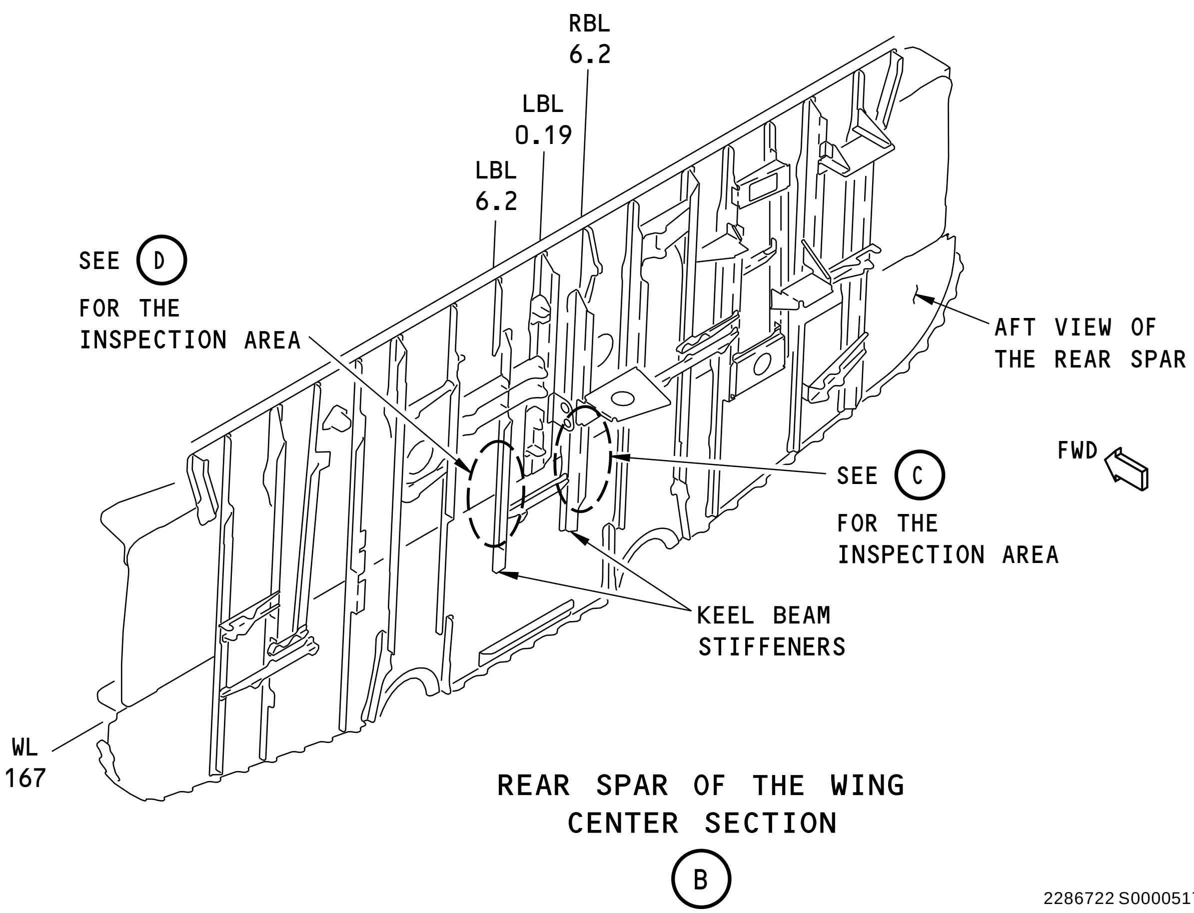
(1) Make a scan around the two fastener locations shown in Figure 1 at LBL 6.2.

(2) Make a scan around the two fastener locations shown in Figure 1 at RBL 6.2.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.





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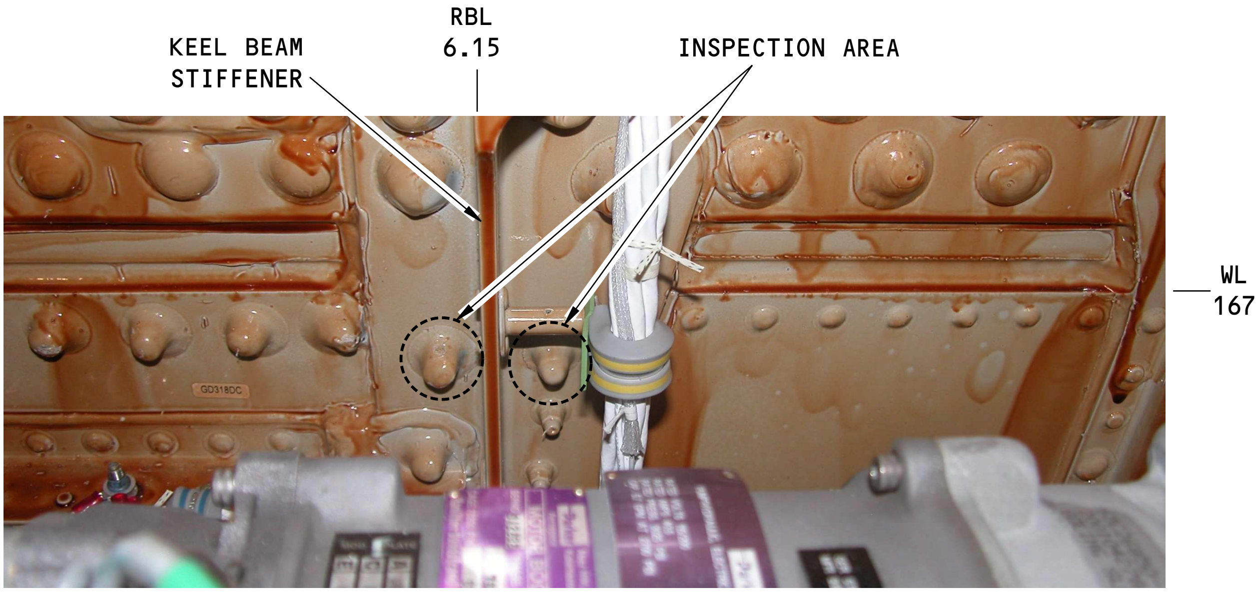
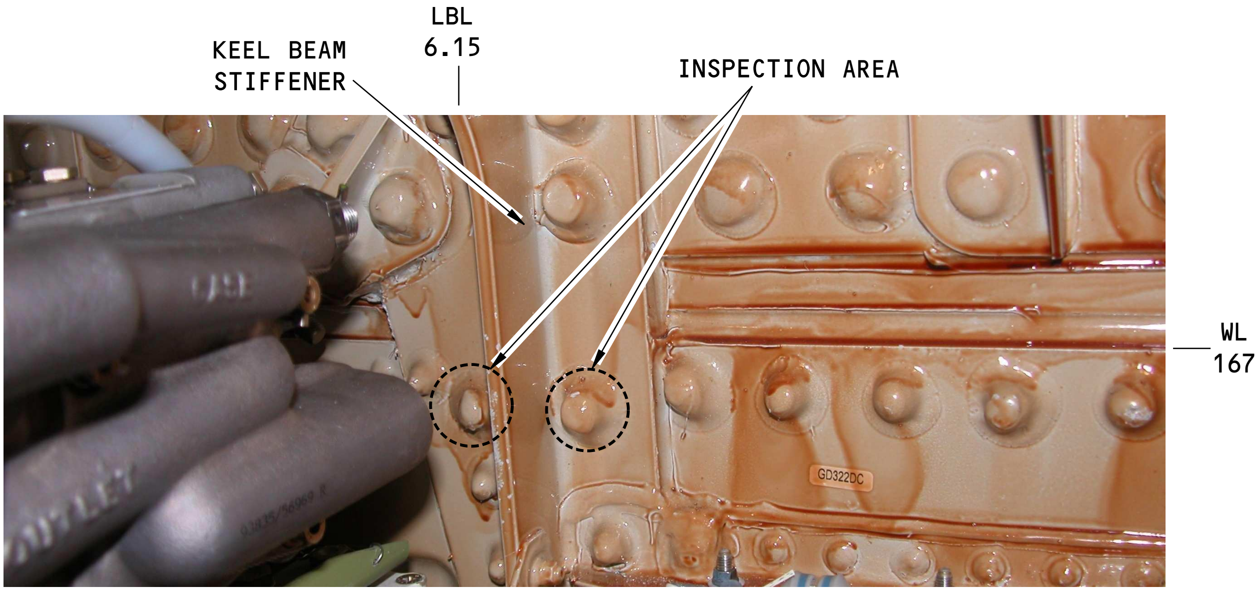
Inspection Area
Figure 1 (Sheet 1 of 2)



AFT VIEW OF THE REAR SPAR

C



AFT VIEW OF THE REAR SPAR

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Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

WING CENTER SECTION - LOWER PANEL SKIN AT THE SUMP DRAIN BUSHING (HFEC)

1. **Purpose**

   A. Use this procedure to examine the lower panel skin of the wing center section for cracks at the sump drain bushing. The sump drain bushing is at BS 599 and LBBL 3.5, between stringers S-7 and S-8. See Figure 1 for the inspection area.

   B. This procedure does a surface inspection to examine the lower panel skin that is adjacent to the sump drain bushing for cracks that are through the thickness. Use a circle template as a probe guide to make sure a 0.20 inch (5.1 mm) long crack can be found around the sump drain bushing.

   C. 737 Damage Tolerance Rating DTR (D626A001-DTR):

      (1) Item: 57-10-13

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at a frequency range between 50 and 500 kHz.

      (2) The instrument that follows was used to help prepare this procedure.

         (a) Phasec 3d; GE Inspection Technologies

   C. Probes

      (1) Use a shielded, right-angle or straight, pencil probe that has a maximum diameter of 0.125 inch (3.2 mm). Refer to Part 6, 51-00-00, Procedure 23, paragraph 3.C, for data about probe selection.

         (a) The probe that follows was used to help prepare this procedure.

            1) TPEN9120-6B; Techna NDT (right-angle with drop)

   D. Reference Standard

      (1) Use reference standard NDT1048, or an equivalent, as given in Part 6, 51-00-00, Procedure 23, paragraph 3.D.

3. **Prepare for the Inspection**

   A. Identify the inspection area shown in Figure 1.

   B. Clean the inspection area.

      (1) Remove sealant as necessary to put the probe adjacent to the sump drain bushing.

      (2) It is not necessary to remove paint.

4. **Instrument Calibration**

A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 23, paragraph 5. Use reference standard NDT1048, or an equivalent, during calibration.

5. **Inspection Procedure**

A. Do the surface inspection to examine the lower panel skin for cracks around the sump drain bushing as follows:

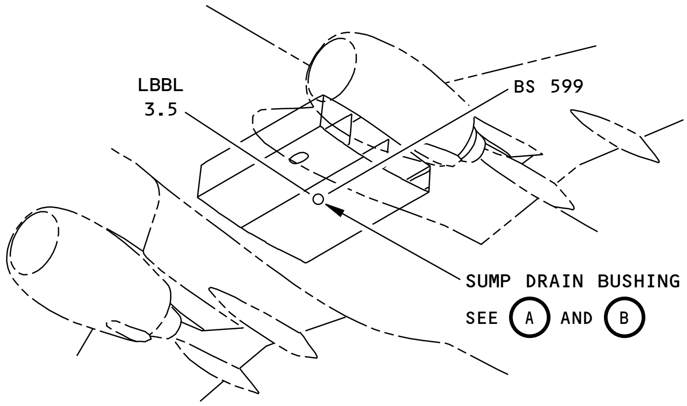
(1) Calibrate the instrument as specified in Paragraph 4.

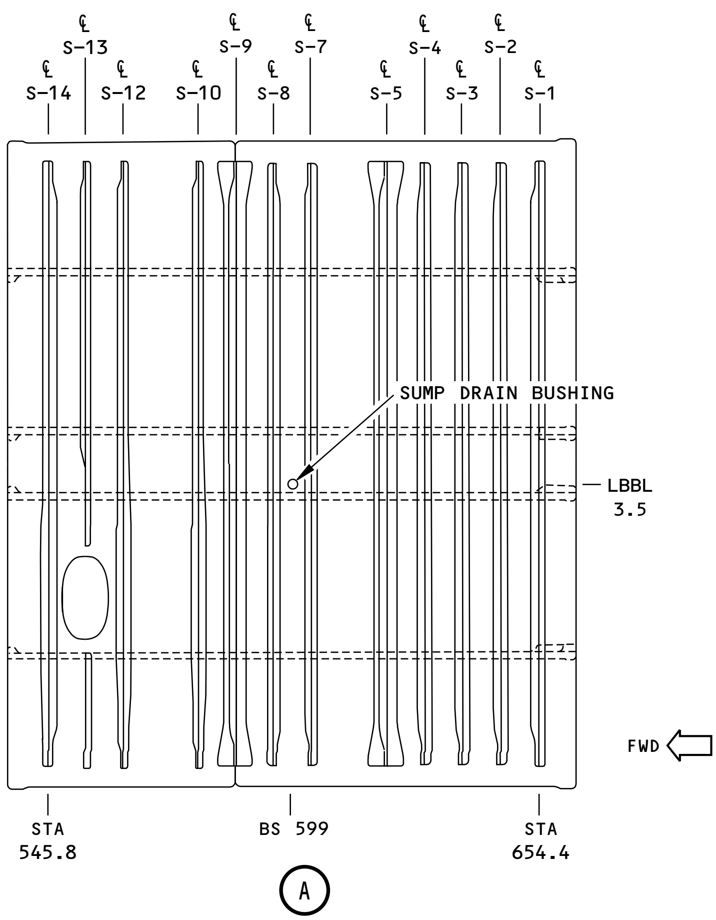
(2) Use a circle template to help align the eddy current probe with the edge of the skin that is adjacent to the sump drain bushing. See Figure 1 for the inspection area.

(a) Refer to Part 6, 51-00-00, Procedure 23, paragraph 6, for the inspection procedure. Refer to paragraph 6.E.(3)(b) to examine around the sump drain bushing.

6. **Inspection Results**

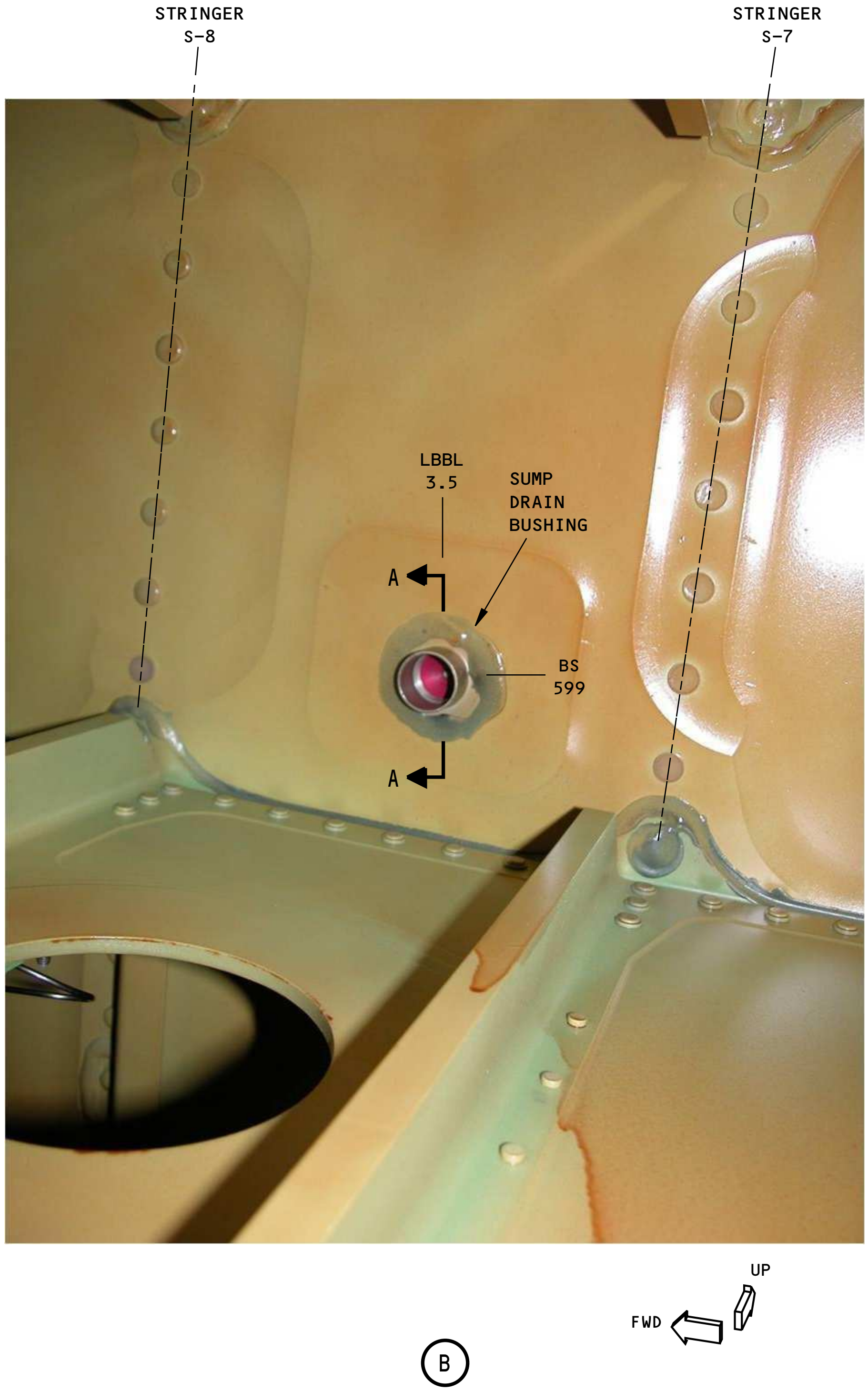
A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of indications that occur during the inspection.





2264357 S0000508022_V1

Inspection Area
Figure 1 (Sheet 1 of 3)



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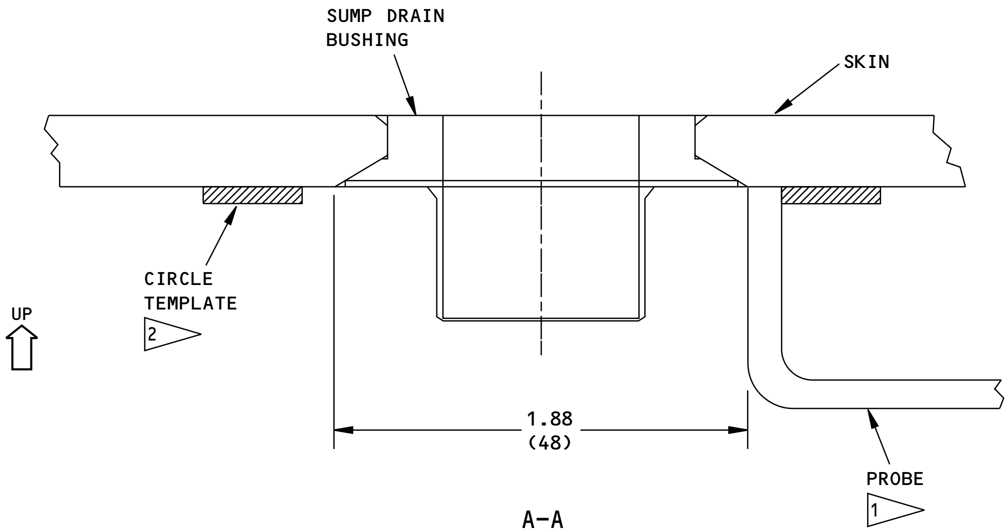
Inspection Area
Figure 1 (Sheet 2 of 3)



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)

1. DO A SCAN AROUND THE SUMP DRAIN BUSHING
2. USE A CIRCLE TEMPLATE WITH AN INNER DIAMETER OF APPROXIMATELY 2.13 (54) AS A PROBE GUIDE

2264574 S0000508024_V1

Inspection Area
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

FRONT SPAR WEB OF THE WING (HFEC)

1. **Purpose**

   A. Use this procedure to help find cracks in the front spar web of the wing. The web is examined for cracks between ribs 1 thru 6 and ribs 7 thru 27 in areas that are adjacent to stiffeners, fittings, and brackets. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The front spar web is aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-22

2. **Equipment**

   A. General

      (1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 20 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 500D; Olympus NDT

         (b) Phasec 3D; GE Inspection Technologies

   C. Probe

      (1) Use a probe that operates from 20 to 500 kHz.

      (2) The probe that follows was used to help prepare this procedure.

         (a) MTF-40/50-500 kHz; NDT Engineering/Olympus

            NOTE: Shielded probes are recommended.

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 23, for data about reference standard 126.

3. **Prepare for the Inspection**

   A. Identify and get access to the inspection areas shown in Figure 1.

   B. Remove the part of all fillet seals that is wider than 0.25 inch (6.35 mm) from the inspection area.

   C. Clean the inspection surfaces.

      (1) Remove dirt or grease from the inspection surfaces.

4. Instrument Calibration

A. Calibrate the equipment to examine the front spar web for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use the reference standard 126, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Get access to the forward side of the front spar web of the wing.

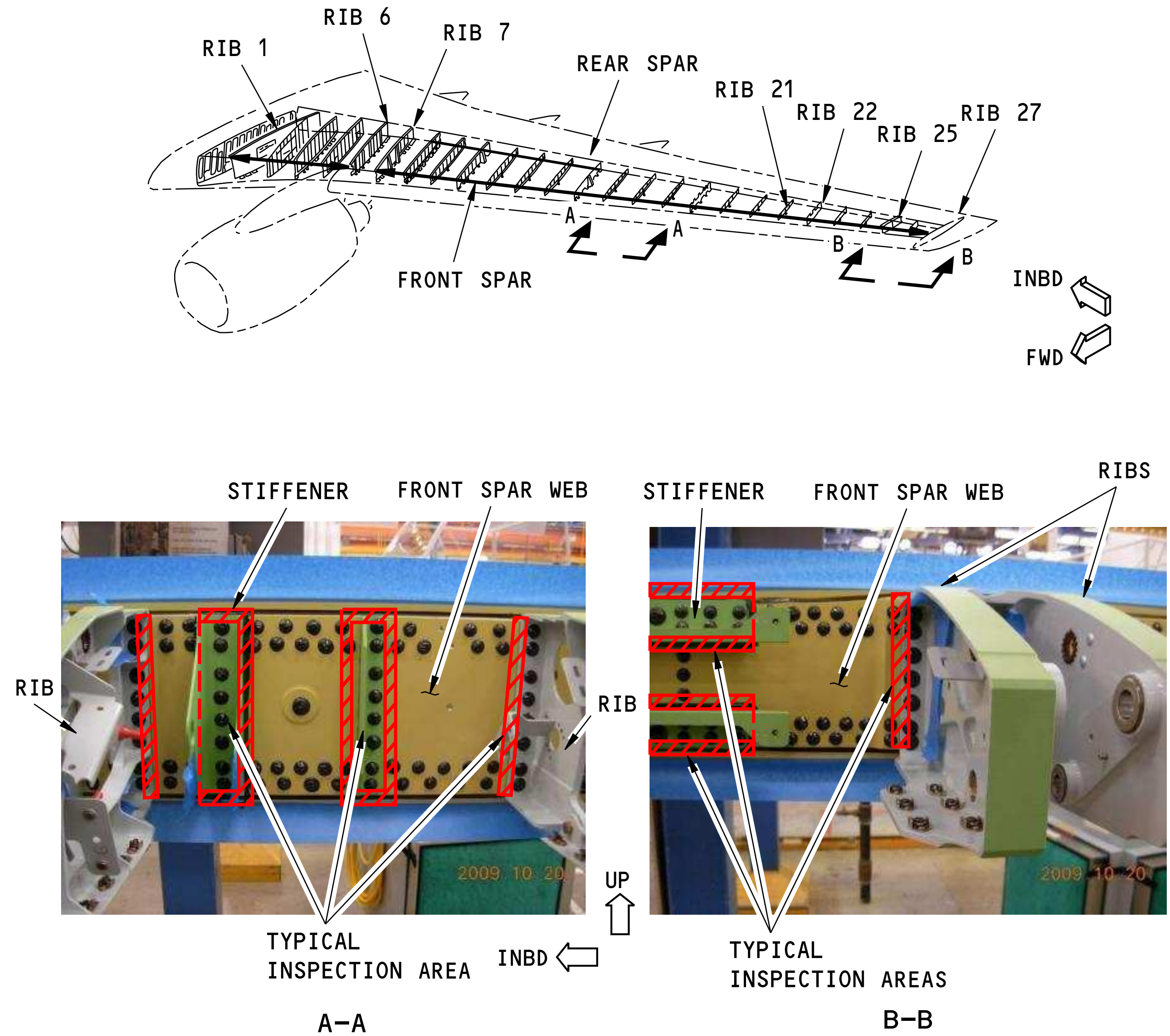
B. Examine the front spar web for cracks at all areas that are adjacent to the stiffeners, fittings and brackets as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. See Figure 1 for some example inspection areas.

NOTE: Do not adjust the gain. If you adjust the gain, it will be necessary to calibrate the instrument again.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the front spar web for cracks on the opposite wing.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



EXAMPLE INSPECTION AREAS
(VIEW AS YOU LOOK AFT)

NOTES:

WEB INSPECTION AREA

WEB INSPECTION AREA THAT IS BEHIND THE PART SHOWN

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE.
- EXAMINE THE WEB IN THE AREAS THAT ARE ADJACENT TO ALL STIFFENERS, FITTINGS AND BRACKETS BETWEEN RIBS 1 AND 6 AND BETWEEN RIBS 7 AND 27. IT IS NOT NECESSARY TO DO THIS INSPECTION BETWEEN RIBS 6 AND 7.

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Inspection Area
Figure 1

PART 6 - EDDY CURRENT

UPPER VERTICAL FLANGE OF THE DOUBLE PLUS CHORD AT THE SIDE-OF-BODY (SOB) - BS 540 TO BS 639 (HFEC)

1. **Purpose**

   A. This procedure is used to examine the upper vertical flange of the double plus chord for cracks. The upper vertical flange is examined for cracks around the fasteners that go through the upper vertical flange and the stub beam, between BS 540 and BS 639. This procedure does not examine the upper vertical flange at the fastener locations that cannot be seen because they are behind other parts. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The double plus chord is aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-10-05-6

2. **Equipment**

   A. General

      (1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 500D; Olympus NDT

         (b) Phasec 3D; GE Inspection Technologies

   C. Probe

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probe that follows was used to help prepare this procedure.

         (a) MTF-40/50-500 kHz; NDT Engineering/Olympus

            NOTE: Shielded probes are recommended.

   D. Reference Standards

      (1) Use reference standard 188A, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 23, paragraph 5, for data about reference standard 188A.

3. **Prepare for the Inspection**

   A. Identify the inspection areas shown in Figure 1.

   B. Get access to the inspection area.

C. Clean the inspection area if necessary.

(1) Remove dirt or grease from the inspection surfaces.

D. Remove cap or brush sealant only if it extends more than 0.35 inch (8.9 mm) from around the head or collar of an inspection fastener.

(1) Try to remove the minimum quantity of sealant necessary to do this inspection.

4. Instrument Calibration

A. Calibrate the instrument to examine the upper vertical flange of the double plus chord for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

A. Examine the upper vertical flange of the double plus chord for cracks as follows:

(1) Do the inspection as specified in Part 6, 51-00-00, Procedure 23, paragraph 6.

(2) Do the inspection from the outboard side of the upper vertical flange.

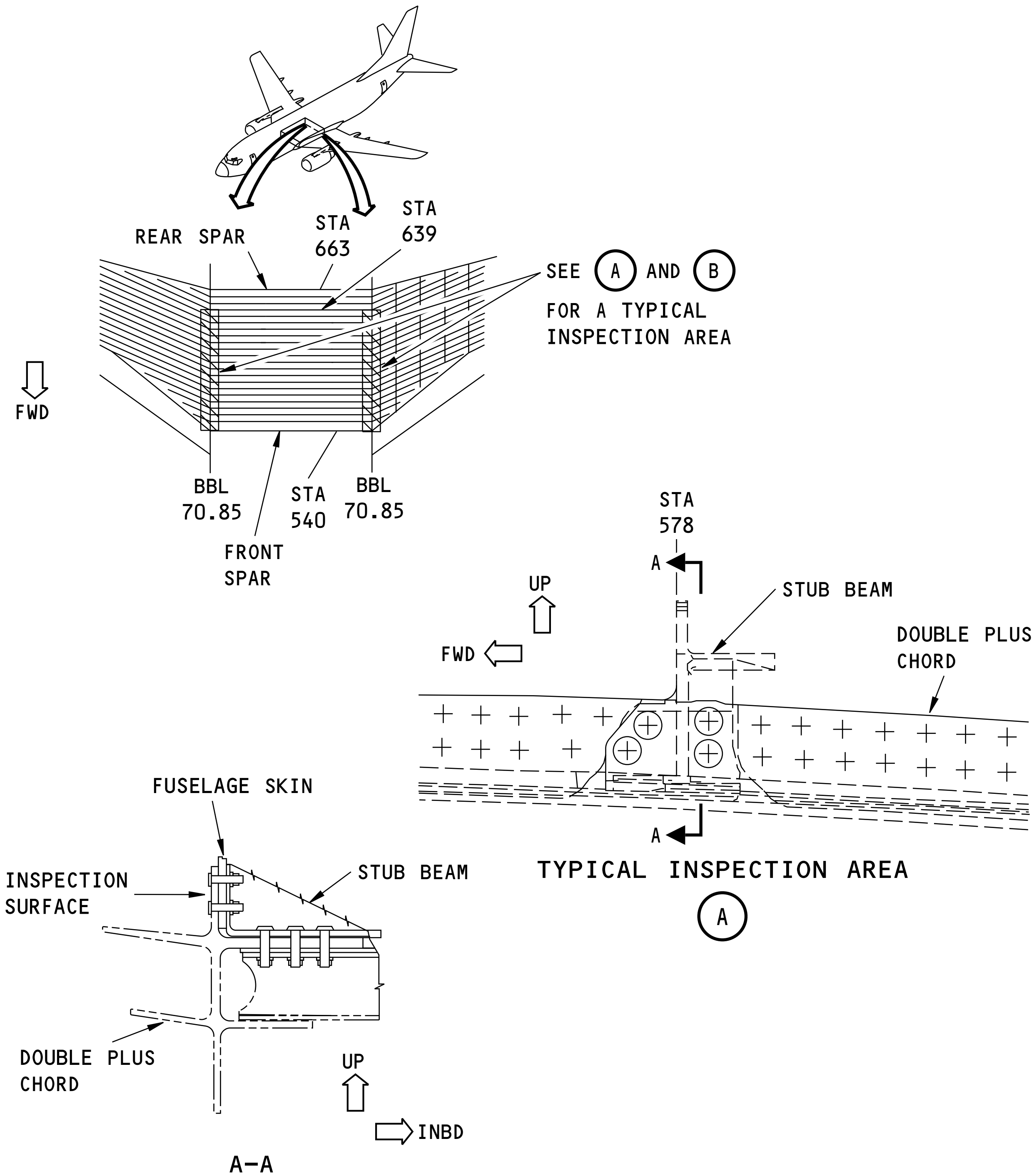
(3) Do the inspection around all of the fastener locations that can be seen that go through the stub beam and the upper vertical flange, between BS 540 and BS 639. See Figure 1 for the inspection areas.

(a) Use the inspection fasteners or the sealant that is around the inspection fasteners as a probe guide.

B. Do Paragraph 5.A. again to examine the double plus chord for cracks on the other side of the airplane.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

⊕ INSPECTION FASTENER LOCATIONS

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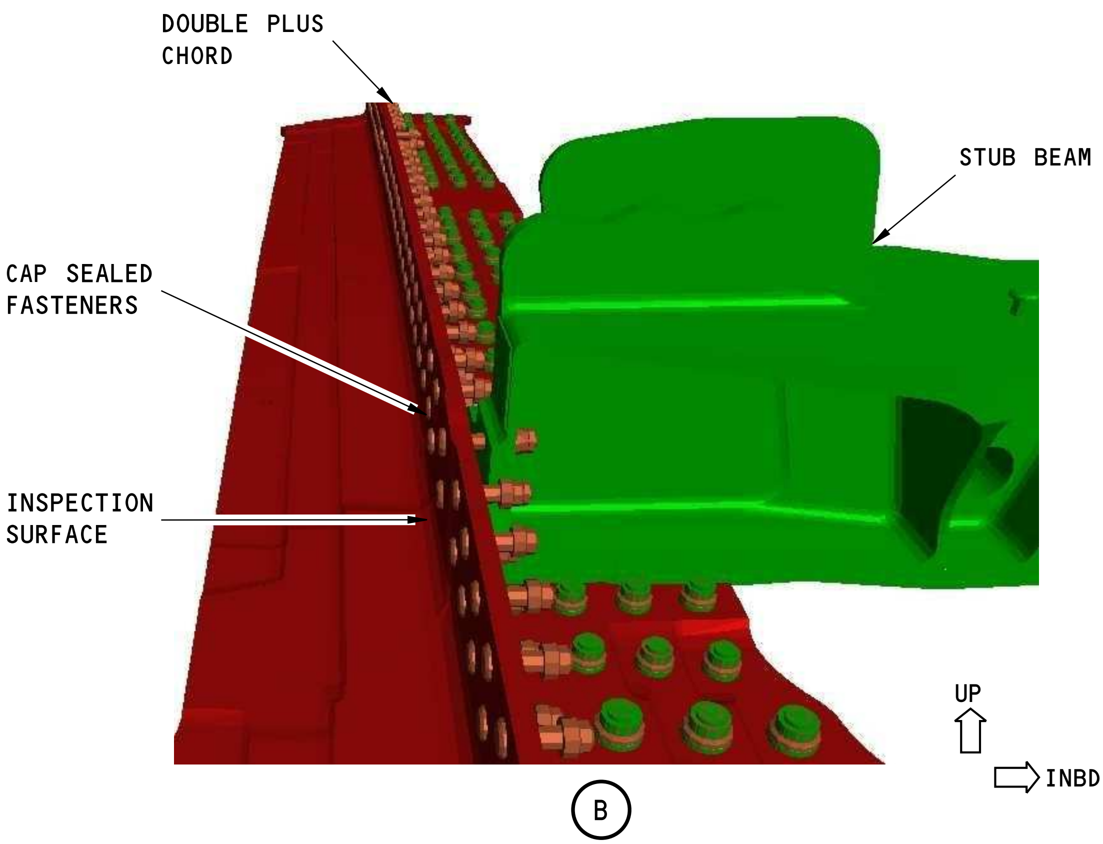
Inspection Areas
Figure 1 (Sheet 1 of 2)



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Inspection Areas
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

SKIN FLANGE OF THE LOWER CHORD AT THE REAR SPAR OF THE WING (HFEC)

1. **Purpose**

   A. This procedure is used to examine the skin flange of the lower chord at the rear spar of the wing for cracks. The skin flange of the lower chord is examined at the forward and aft edges for cracks that are in the forward and aft direction. The lower chord is examined between ribs 1 and 25 at areas where the lower chord is hidden by a stiffener, rib post or fitting. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The lower chord is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-05-5

2. **Equipment**

   A. Purpose

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2D/3D; GE Inspection Technologies

         (b) Nortec 500/2000D; Olympus

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probes that follow were used to help prepare this procedure.

      NOTE: Shielded probes are recommended.

         (a) MTF905-60fx 50-500 kHz; NDT Engineering/Olympus

         (b) TPENFLX-10 50-500 kHz; Techna NDT

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 23, for data about reference standard 126.

3. **Prepare for the Inspection**

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. Clean the inspection surface if necessary.

(1) Remove sealant as necessary to fully examine the edges of the lower chord.

(2) Remove dirt or grease from the inspection surfaces.

(3) Remove paint only if it is loose.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the lower chord as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine the skin flange of the lower chord for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, and the steps that follow:

(1) Do this inspection at the rear spar of the wing, between ribs 1 and 25. See Figure 1 for the inspection area.

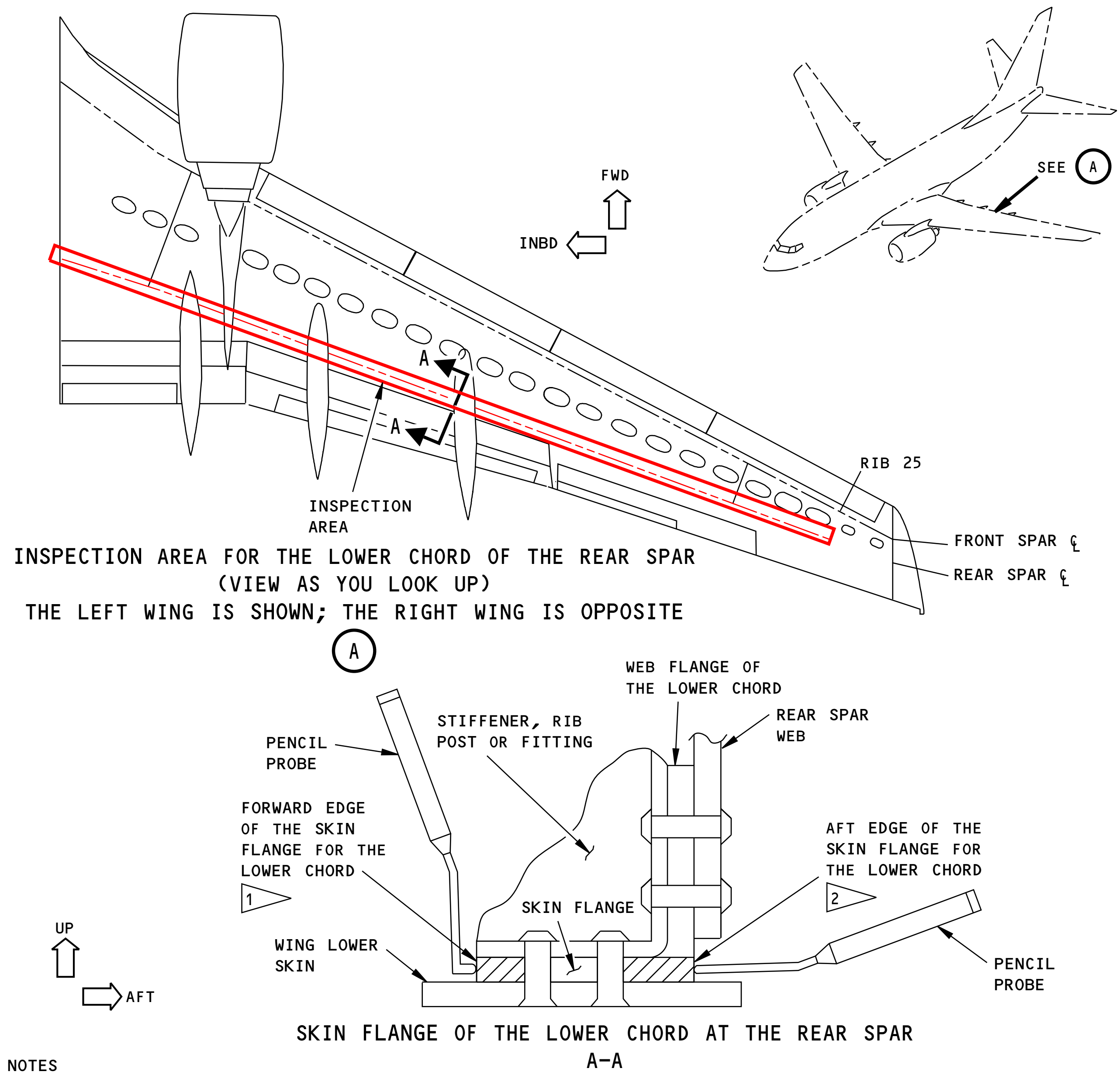
(2) Do the scans in the inboard and outboard direction along the forward and aft edges of the lower chord in scan increments that are less than 0.10 inch (2.5 mm) apart. Use the lower skin and/or a straightedge as a probe guide. See flagnotes 1 and 2 in Figure 1.

(3) Look for cracks in the skin flange of the lower chord that are in the forward and aft direction.

B. Do Paragraph 5.A. again to examine the other side of the airplane.

6. **Inspection Results**

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES

INSPECTION AREA

1 EXAMINE THE EDGE OF THE LOWER CHORD OF THE REAR SPAR FOR CRACKS AT THE FORWARD EDGE OF THE SKIN FLANGE. MAKE THE SCANS IN INCREMENTS THAT ARE LESS THAN 0.10 INCH (2.5 MM) APART ALONG THE FORWARD EDGE OF THE SKIN FLANGE. USE THE LOWER SKIN AND/OR A STRAIGHTEDGE AS A PROBE GUIDE WHILE YOU MOVE THE PROBE ALONG THE FORWARD EDGE IN THE INBOARD AND OUTBOARD DIRECTIONS.

2 EXAMINE THE EDGE OF THE LOWER CHORD OF THE REAR SPAR FOR CRACKS AT THE AFT LOWER EDGE OF THE SKIN FLANGE. MAKE THE SCANS IN INCREMENTS THAT ARE LESS THAN 0.10 INCH (2.5 MM) APART ALONG THE AFT LOWER EDGE. USE THE LOWER SKIN AND/OR A STRAIGHTEDGE AS A PROBE GUIDE WHILE YOU MOVE THE PROBE ALONG THE AFT EDGE IN THE INBOARD AND OUTBOARD DIRECTIONS.

2321741 S0000526630_V2

Inspection Area
Figure 1

WING LOWER PANEL - INSPECTION OF TYPICAL STRINGERS 2, 3, 4, 10 AND 11 AT RIBS 5 AND 8 (LFEC)

1. Purpose

A. Use this low frequency eddy current (LFEC) procedure to examine typical stringers 2, 3, 4, 10 and 11 at ribs 5 and 8 of the wing lower panel. See Figure 1 for the inspection areas.

B. Examine the lower (skin) flange of the stringers for cracks that can occur at the fastener locations where the fasteners are hidden by the seal pans and sealant inside the wing tank. See Figure 1 for the inspection areas and fastener locations to be examined.

C. This procedure examines the lower (skin) flange of the stringer through the lower skin from the external surface of the wing lower panel.

D. It is not necessary for all 737 airplane models to use the two reference standards identified in Paragraph 2.D. The Calibration Table in Figure 3 identifies the reference standard and calibration data for the applicable airplane to be examined.

E. This procedure uses a reflection ring probe and an impedance plane display instrument. See Paragraph 2.C. for the probe to be used.

F. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 57-20-01-3

2. Equipment

A. General

(1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

(2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

B. Instrument - Use an eddy current instrument that:

(1) Has an impedance plane display.

(2) Operates at frequencies of 100 and 400 Hz.

(3) Can be calibrated as specified in the calibration instructions of this procedure. The instruments that follow were used to help prepare this procedure.

(a) Nortec 2000D, Nortec 500; Olympus NDT

(b) Phasec 2d, Phasec 3d; GE Inspection Technologies

C. Probe

(1) Use a reflection ring probe that operates at a frequency between 50 and 500 Hz, has an inner diameter of 0.60 inches (15.2 mm) and an outer diameter of 1.2 inches (31 mm). The probes that follow were used to help prepare this procedure.

(a) RDP1.2-.6/50 Hz - 3 kHz; Techna NDT

(b) RR0112-5/TF, 50 Hz - 3 kHz; Olympus NDT

D. Reference Standard

(1) Use reference standard NDT3217-A and NDT3217-B to examine all the inspection areas identified in Figure 1. Go to the Calibration Table in Figure 3 for the applicable reference standard(s) to be used to examine the applicable airplane. See Figure 2 for the reference standard drawing.

3. **Prepare for the Inspection**

A. Identify and get access to all of the inspection areas shown in Figure 1.

B. Clean the inspection areas and remove sealant from around the fastener heads, to make sure the probe will be flat against the inspection surface during the inspection. Be careful to prevent damage to the surface if sealant removal is necessary. Refer to the Airplane Maintenance Manual for more instructions if necessary.

4. **Instrument Calibration**

A. This procedure uses two calibrations to examine all the fastener locations identified in Figure 1 for all 737-600/-700/-800/-900 airplanes. Go to the Calibration Table in Figure 3 for the applicable airplanes, rib locations and reference standard. The paragraphs that follow give the instructions for the two calibrations.

(1) Calibrate the instrument with reference standard NDT3217-A, as follows:

(a) Set the instrument frequency to 320 Hz.

(b) Put the probe on reference standard NDT3217-A at probe position 1 (the fastener location without a notch) as shown in Figure 3, Detail I.

(c) Balance the instrument.

(d) Set the balance point at approximately 30% of full screen height (FSH) and 50% of full screen width (FSW) as shown in Figure 3, Detail II.

(e) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left as shown Figure 3, Detail II.

(f) Put the probe on the reference standard at probe position 2 (the fastener location with a notch) as shown in Figure 3, Detail I.

(g) Adjust the instrument sensitivity to get the notch signal to 70% of FSH as shown in Figure 3, Detail II. Use a higher vertical gain than the horizontal gain to get the signal to look almost the same as shown in Detail II.

(h) Do Paragraph 4.A.(1)(b) thru Paragraph 4.A.(1)(g) again to make sure the calibration is correct. If necessary, make adjustments to the instrument gain if the calibration is not correct.

(2) Calibrate the instrument with reference standard NDT3217-B, as follows:

(a) Set the instrument frequency to 270 Hz.

(b) Do Paragraph 4.A.(1)(b) thru Paragraph 4.A.(1)(h) again, but use reference standard NDT3217-B.

5. **Inspection Procedure**

A. Examine the typical stringers for cracks at the inspection areas identified in Figure 1 as follows:

(1) Examine the stringers at the rib locations specified in the Calibration Table of Figure 3 with equipment that has been calibrated with reference standard NDT3217-A as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(1).

(b) Balance the instrument on the airplane as follows:

1) Make a selection of two fasteners in the inspection area.

2) Put the center of the probe on the center of each of the fasteners and monitor the display. Move the probe at each fastener location to get a minimum signal.

3) Put the center of the probe on the center of the fastener that had the lowest signal.

4) Balance the instrument.

(c) Examine all of the other fastener locations and make a mark at the locations that cause signals to occur that are 50% (or more) of FSH.

(d) During the inspection, frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Put the probe on the reference standard to get the maximum signal from the notch.

2) Compare the signal you got from the notch during calibration with the signal you get now.

3) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all of the fasteners examined since the last calibration test.

(2) Examine the stringers at the rib locations specified in the Calibration Table of Figure 3 with equipment that has been calibrated with reference standard NDT3217-B as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(2).

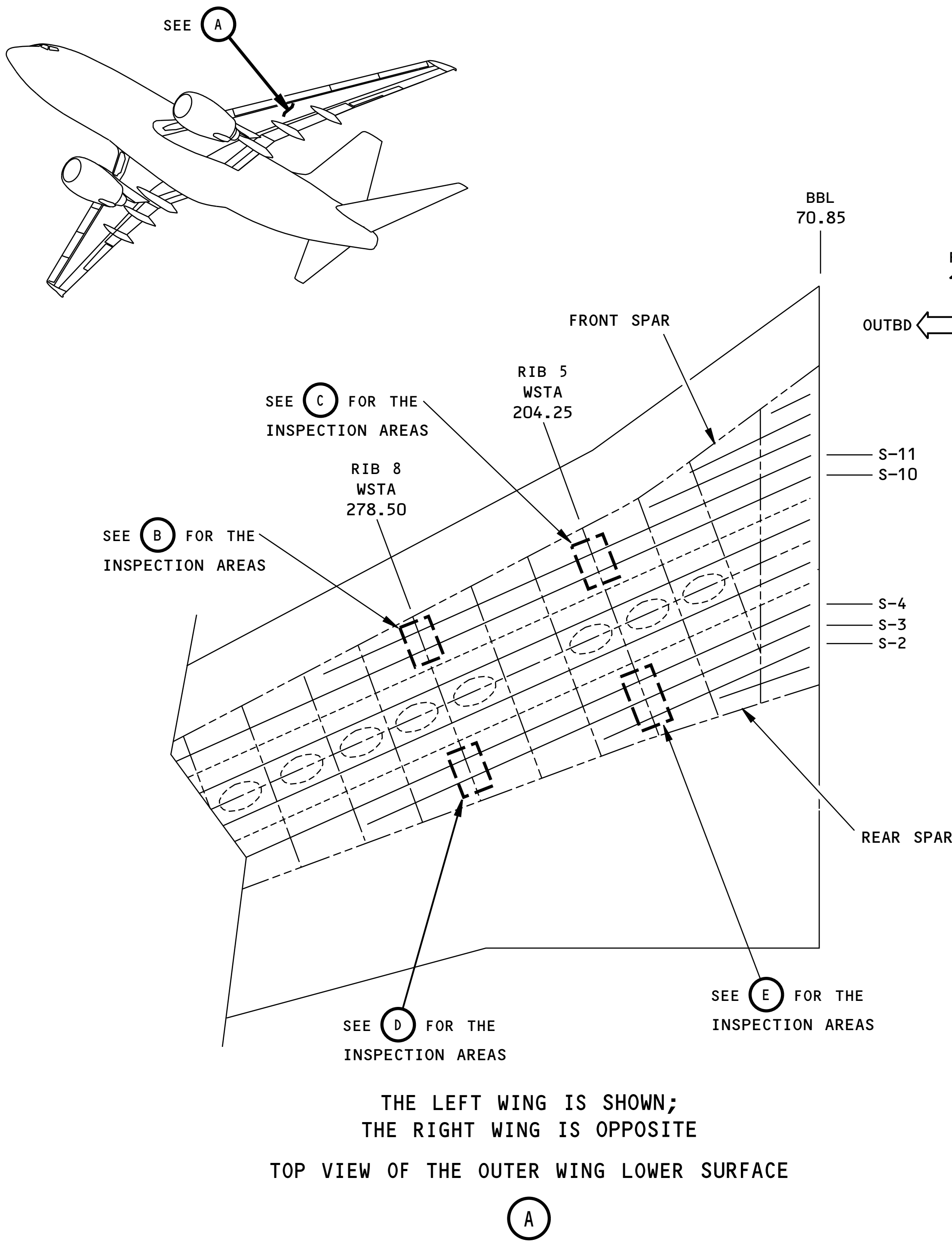
(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(d) again.

B. Do Paragraph 5.A. again to examine typical stringers 2, 3, 4, 10 and 11 for cracks at ribs 5 and 8 on the other wing.

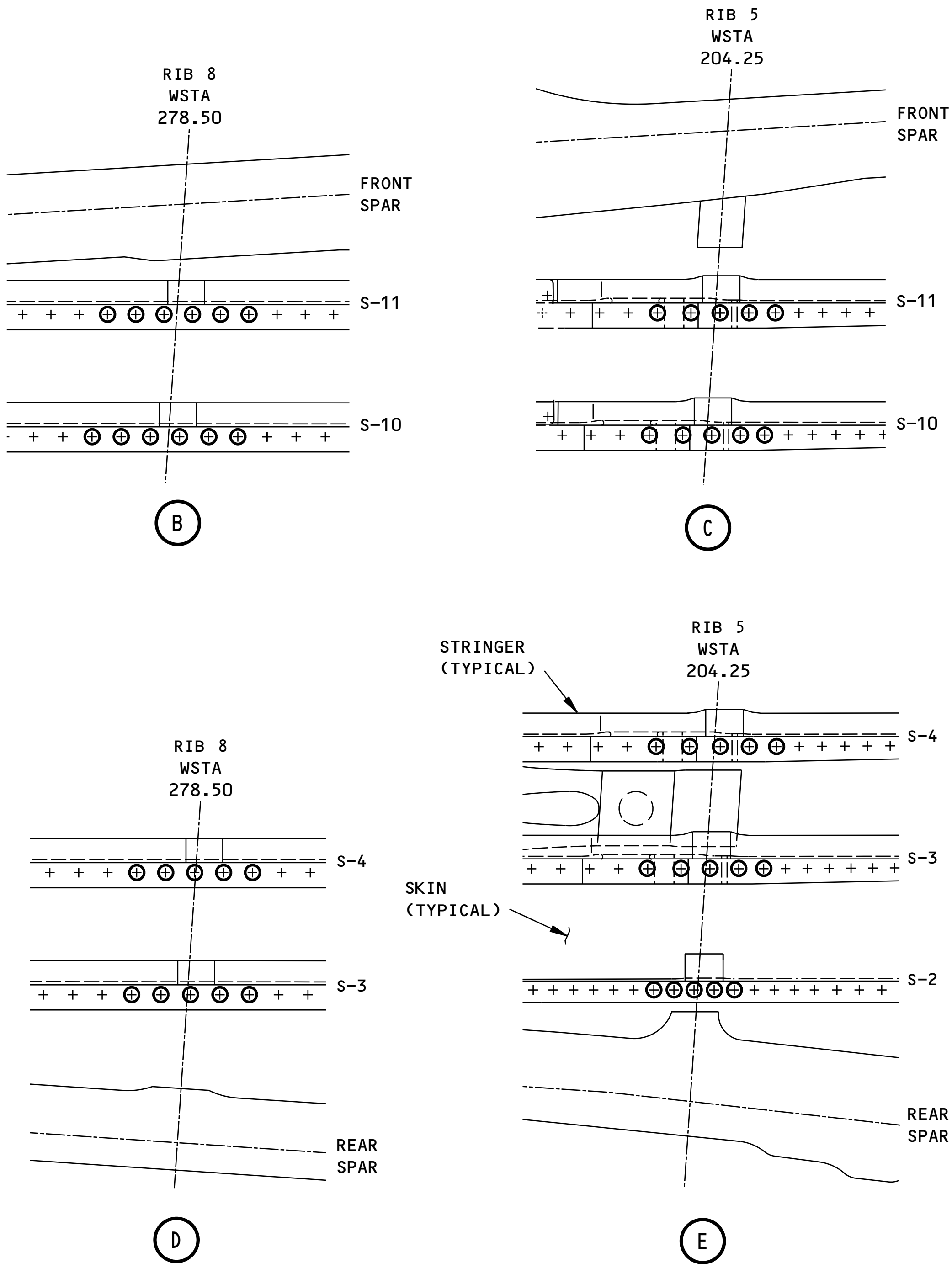
6. Inspection Results

A. Signals that are 50% (or more) of FSH that look almost the same as the notch signal you get from the reference standard are signs of a possible crack.

B. If you want to make sure of the results, do a surface eddy current inspection on the upper surface of the stringer flange and around the fastener as specified in Part 6, 51-00-00, Procedure 23. It will be necessary to go into the wing tank and remove sealant from around the tail of the fastener.



Inspection Areas
Figure 1 (Sheet 1 of 2)



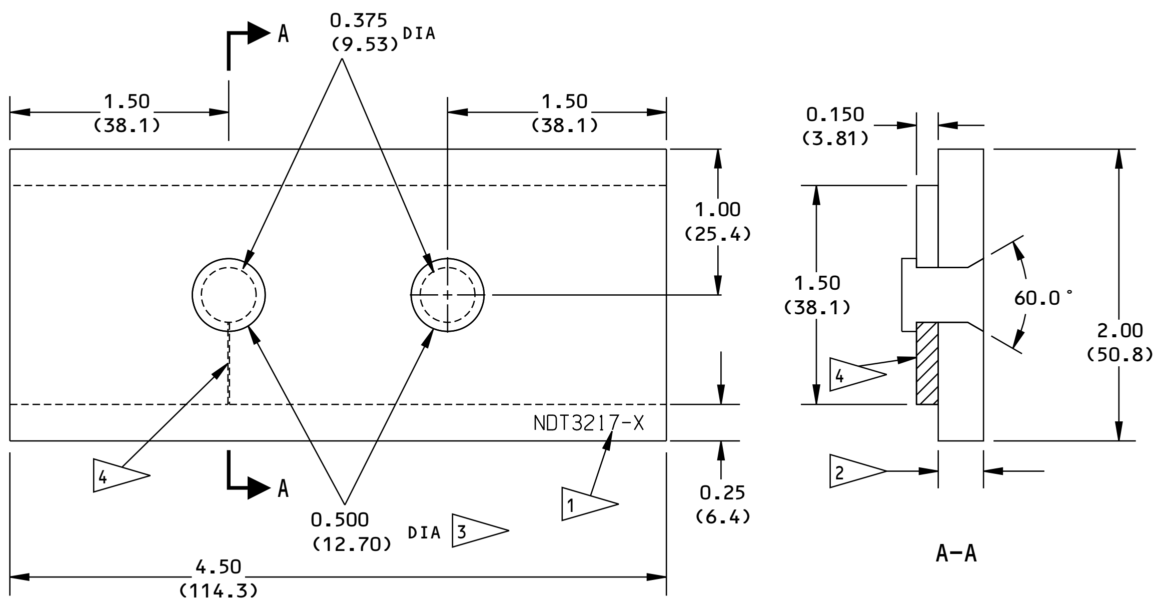
NOTES

- VIEWS B THRU D ABOVE ARE TOP VIEWS OF THE WING LOWER SKIN.

⊕ FASTENER LOCATIONS TO BE EXAMINED

2352379 S0000537045_V1

Inspection Areas
Figure 1 (Sheet 2 of 2)



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

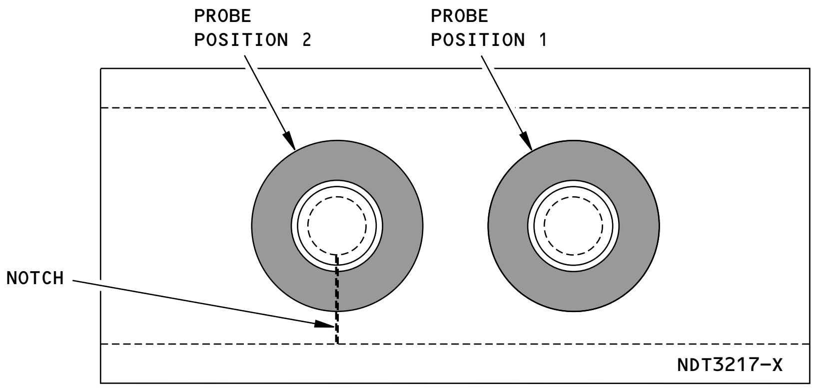
INCHES	MILLIMETERS	ANGULAR
X.XXX = ±0.005	X.XX = ±0.1	±2°
X.XX = ±0.025	X.X = ±0.5	
X.X = ±0.050	X = ±1	

- MATERIAL: 2024-T3 ALUMINUM (BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER

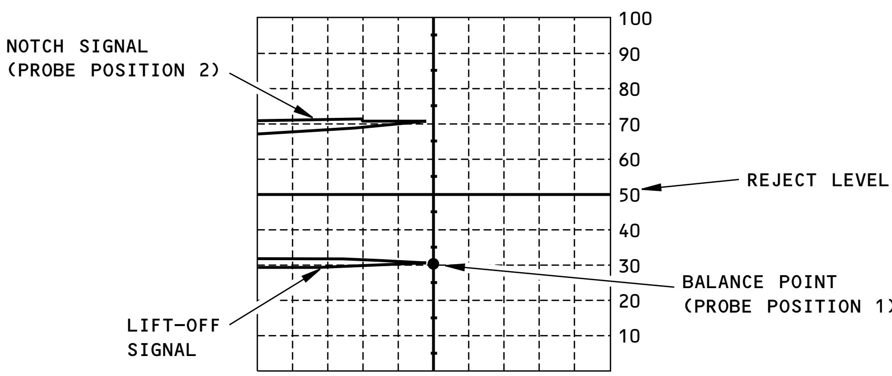
1. ETCH OR STEEL STAMP THE APPLICABLE REFERENCE STANDARD NUMBER AS IDENTIFIED IN FLAGNOTE 2.
2. 0.270 (6.86) FOR NDT3217-A
   0.320 (8.13) FOR NDT3217-B
3. MACHINE THE TWO COUNTERSUNK FASTENERS FROM 2024-T3 ALUMINUM AND INSTALL THE FASTENERS SUFFICIENTLY TO HOLD THE TWO PIECES TOGETHER.
4. EDM NOTCH:
   LENGTH: HOLE TO THE EDGE OF THE PART
   DEPTH: THROUGH THE THICKNESS
   WIDTH: 0.010 (0.25)
   NOTCH LOCATION TOLERANCE:
   THE NOTCH LOCATION MUST BE WITHIN ± 0.005 (0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.

2352404 S0000537046_V1

Reference Standard NDT3217-X
Figure 2



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II

737 AIRPLANES TO EXAMINE	RIB LOCATION TO EXAMINE	REFERENCE STANDARD	INSTRUMENT FREQUENCY
ALL -600	5 AND 8	NDT3217-A	320 Hz
-700 1	5 AND 8	NDT3217-B	270 Hz
-700 2	5	NDT3217-A	320 Hz
-700 2	8	NDT3217-B	270 Hz
ALL -800,900	5 AND 8	NDT3217-B	270 Hz

CALIBRATION TABLE
DETAIL III

NOTES

1 737-700 AIRPLANE VARIABLE NUMBERS YA001-YA008, YA201, YA202, YA231-YA235, YA251, YA301 AND ALL 737-700C,-700BJ AND -700ER AIRPLANES.

2 ALL 737-700 AIRPLANES BUT THOSE SPECIFIED IN FLAGNOTE 1.

2352475 S0000537048_V1

Instrument Calibration
Figure 3

PART 6 - EDDY CURRENT

OUTER WING - INSPECTION OF RAIL STRINGER 8 IN RIB BAY 6 (HFEC)

1. **Purpose**

   A. Use this high frequency eddy current (HFEC) procedure to examine rail stringer 8 for cracks in rib bay 6 at the strut attach fitting for the nacelle support. Rail stringer 8 is along the lower panel of the wing. See Figure 1 for the inspection area.

   B. Rail stringer 8 is aluminum.

   C. 737 Maintenance Planning Data (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-02-3

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at a frequency range of 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 2; Olympus

         (b) Nortec 500; Olympus

   C. Probes

      (1) Use a straight or a right-angle probe.

      (2) Refer to Part 6, 51-00-00, Procedure 23, paragraph 3.C, for data about probe selection.

      (3) The probe that follows was used to help prepare this procedure.

         (a) MP-30; NDT Engineering Corp

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, as given in Part 6, 51-00-00, Procedure 23, paragraph 5.B.(1).

3. **Prepare for the Inspection**

   WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

   A. Get access to rib bay 6 through the necessary access door in the lower wing.

   B. Remove sealant from the vertical flange of rail stringer 8 that extends more than 0.5 inch (12.7 mm) above the lower skin of the wing.

C. Put marks on the vertical flange of rail stringer 8 to identify the inspection area. See Figure 1 for the location and dimensions of the inspection area.

4. Instrument Calibration

A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 23, paragraph 5. Use reference standard 126, or an equivalent, as specified in paragraph 5.B.(1) of Part 6, 51-00-00, Procedure 23.

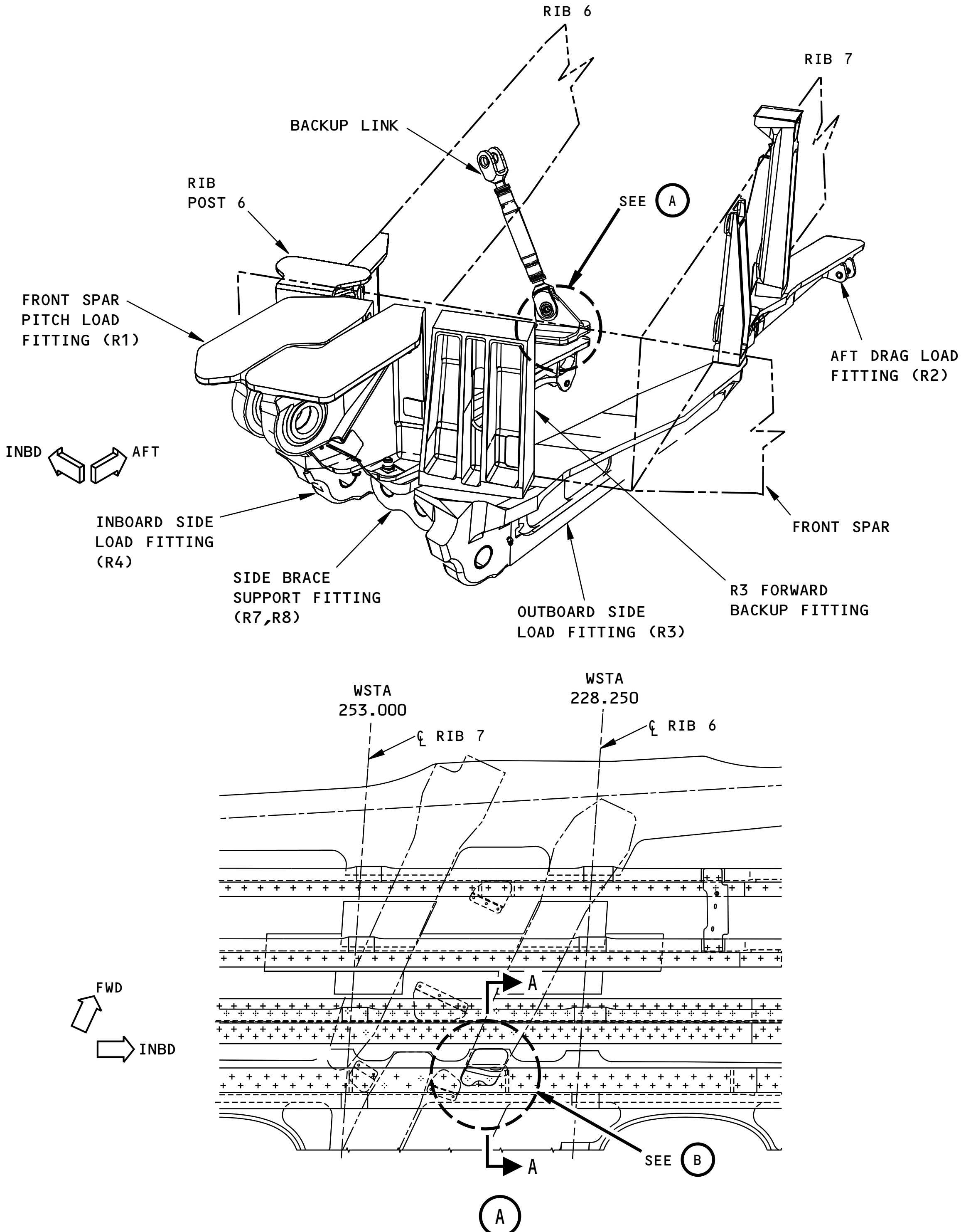
5. Inspection Procedure

A. Examine the vertical flange of rail stringer 8 for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, and as follows:

(1) Make a scan along the vertical edge of the fillet seal for the full length of the inspection area shown by flagnote 2 in Figure 1.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of indications that occur during the inspection.



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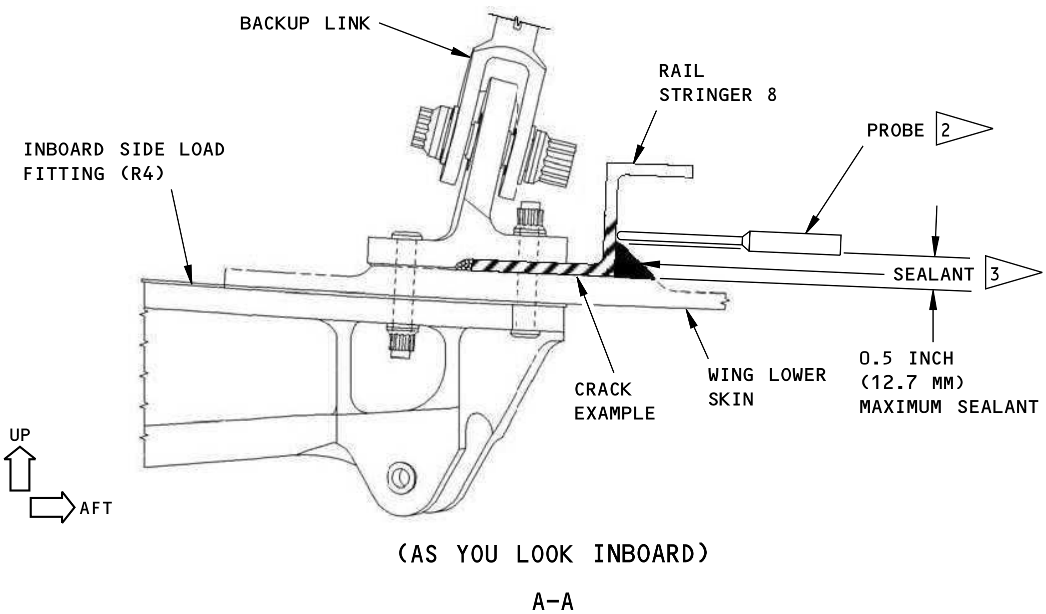
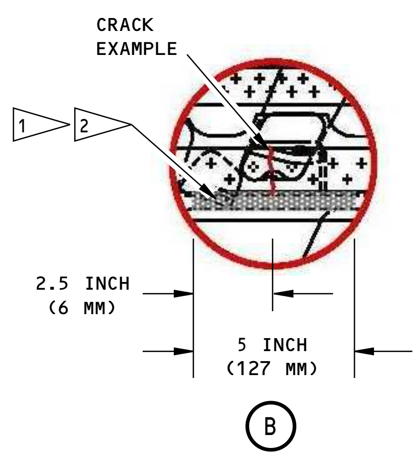
Inspection Area
Figure 1 (Sheet 1 of 2)





NOTES

1 INSPECTION AREA

2 MAKE A SCAN ALONG THE UPPER EDGE OF THE FILLET SEAL FOR THE FULL LENGTH OF THE INSPECTION AREA

3 REMOVE SEALANT FROM THE VERTICAL FLANGE OF THE STRINGER THAT IS MORE THAN 0.5 INCH (127 MM) ABOVE THE SURFACE OF THE WING LOWER SKIN

2352868 S0000537735_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

REAR SPAR WEB OF THE WING CENTER SECTION AT THE LOWER CHORD BETWEEN LBBL 70.85 AND RBBL 70.85 (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the rear spar web of the wing center section for cracks at all the fastener locations where the web is attached to the lower spar chord. See Figure 1 for the inspection areas.

   B. Examine the web for cracks that can occur at all of the fastener locations between LBBL 70.85 and RBBL 70.85 identified as code “A” thru “E” in Figure 1. The inspection area does not include the fastener locations at the terminal fittings.

   C. This procedure examines the rear spar web through the vertical flange of the lower chord, from inside the wing center section tank. The lower chord and web are aluminum.

   D. This procedure uses a reflection ring probe and an impedance plane display instrument. See Paragraph 2.C. for the probe to be used.

   E. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-17-1

      (2) Item: 57-10-17-2

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument - Use an eddy current instrument that:

      (1) Has an impedance plane display.

      (2) Operates at frequencies of 50 and 500 Hz.

      (3) Can be calibrated as specified in the calibration instructions of this procedure. The instruments that follow were used to help prepare this procedure.

         (a) Nortec 2000D, Nortec 500; Olympus NDT

         (b) Phasec 2d, Phasec 3d; GE Inspection Technologies

   C. Probes

      (1) Use a reflection ring probe that operates at a frequency between 50 and 500 Hz, has an inner diameter of 0.74 inches (18.8 mm), an outer diameter of 1.25 inches (31.8 mm) and a height of no more than 1.5 inches (38 mm). The probe that follows was used to help prepare this procedure.

         (a) RDP1.25-.74/50H; Techna NDT

   D. Reference Standards

      (1) Use reference standard NDT3210 to examine the code “A” and “B” fastener locations identified in Figure 1. See Figure 2 for the reference standard drawing.

(2) Use reference standard NDT3211 to examine the code “C” and “D” fastener locations identified in Figure 1. See Figure 3 for the reference standard draw

(3) Use reference standard NDT3212 to examine the code “E” fastener locations identified in Figure 1. See Figure 4 for the reference standard drawing.

3. Prepare for the Inspection

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

A. It is necessary to get access into the fuel tank of the wing center section to do this inspection. The fuel tank must be drained and purged to a ‘‘health safe’’ condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas shown in Figure 1.

C. Remove sealant as necessary from around the fastener heads or collars, and from the surface of the lower chord, to make sure the probe will be flat against the inspection surface during the inspection. Be careful to prevent damage to the surface if sealant removal is necessary. Refer to the Airplane Maintenance Manual for more instructions if necessary.

4. Instrument Calibration

A. This procedure uses five calibrations to examine all of the fastener locations identified as code “A” thru “E” in Figure 1 for all 737-600/-700/-800/-900 airplanes. The paragraphs that follow give the instructions for all five calibrations.

(1) Calibrate the instrument to examine the code “A” fasteners locations as follows:

(a) Set the instrument frequency to 100 Hz.

(b) Put the probe on reference standard NDT3210, calibration position “A”, probe position 1 (the fastener location without a notch) as shown in Figure 5, Detail I.

(c) Balance the instrument.

(d) Set the balance point at approximately 30% of full screen height (FSH) and 50% of full screen width (FSW) as shown in Figure 5, Detail II.

(e) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left as shown Figure 5, Detail II.

(f) Put the probe on the reference standard at probe position 2 (the fastener location with a notch) as shown in Figure 5, Detail I. The notch signal must be above the balance point.

(g) Adjust the instrument sensitivity to get the notch signal to 70% of FSH as shown in Figure 5, Detail II. Use a higher vertical gain than the horizontal gain to get the signal to look almost the same as shown in Detail II.

(h) Do Paragraph 4.A.(1)(b) thru Paragraph 4.A.(1)(g) again to make sure the calibration is correct. If necessary, make adjustments to the instrument gain if the calibration is not correct.

(2) Calibrate the instrument to examine the code “B” fastener locations as follows:

(a) Do Paragraph 4.A.(1)(a) thru Paragraph 4.A.(1)(h) again, but use calibration position “B“ of reference standard NDT3210.

(3) Calibrate the instrument to examine the code “C” fastener locations as follows:

(a) Set the instrument frequency to 130 Hz.

(b) Put the probe on reference standard NDT3211, calibration position “A”, probe position 1 (the fastener location without a notch) as shown in Figure 6, Detail I.

(c) Balance the instrument.

(d) Set the balance point at approximately 30% of full screen height (FSH) and 50% of full screen width (FSW) as shown in Figure 6, Detail II.

(e) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left as shown Figure 6, Detail II.

(f) Put the probe on the reference standard at probe position 2 (the fastener location with a notch) as shown in Figure 6, Detail I. The notch signal must be above the balance point.

(g) Adjust the instrument sensitivity to get the notch signal to 70% of FSH as shown in Figure 6, Detail II. Use a higher vertical gain than the horizontal gain to get the signal to look almost the same as shown in Detail II.

(h) Do Paragraph 4.A.(3)(b) thru Paragraph 4.A.(3)(g) again to make sure the calibration is correct. If necessary, make adjustments to the instrument gain if the calibration is not correct.

(4) Calibrate the instrument to examine the code “D” fastener locations as follows:

(a) Set the instrument frequency to 170Hz.

(b) Do Paragraph 4.A.(3)(b) thru Paragraph 4.A.(3)(h) again, but use calibration position “B“ of reference standard NDT3211.

(5) Calibrate the instrument to examine the code “E” fastener locations as follows:

(a) Set the instrument frequency to 270 Hz.

(b) Put the probe on reference standard NDT3212 at probe position 1 (the fastener location without a notch) as shown in Figure 7, Detail I.

(c) Balance the instrument.

(d) Set the balance point at approximately 30% of full screen height (FSH) and 50% of full screen width (FSW) as shown in Figure 7, Detail II.

(e) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left as shown Figure 7, Detail II.

(f) Put the probe on the reference standard at probe position 2 (the fastener location with a notch) as shown in Figure 7, Detail I. The notch signal must be above the balance point.

(g) Adjust the instrument sensitivity to get the notch signal to 70% of FSH as shown in Figure 7, Detail II. Use a higher vertical gain than the horizontal gain to get the signal to look almost the same as shown in Detail II.

(h) Do Paragraph 4.A.(5)(b) thru Paragraph 4.A.(5)(g) again to make sure the calibration is correct. If necessary, make adjustments to the instrument gain if the calibration is not correct.

5. Inspection Procedure

A. Examine the rear spar web for cracks at the code “A” thru “E” fastener locations in the five inspection areas identified in Paragraph 1.B. and shown in Figure 1 as follows:

(1) Examine the code “A” fastener locations on the left and right sides of the airplane as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(1).

(b) Put the probe on the airplane at one of the fastener locations that has the applicable code.

(c) Do not balance the instrument.

(d) Monitor the screen display for the balance point signal and do the paragraphs that follow:

1) If the balance point signal is between 0 and 50% of FSH, balance the instrument and examine the remaining fastener locations that are the same code.

2) If the balance point signal is above 50% of FSH, put the probe at a different fastener location that has the same code on the opposite side of the airplane and monitor the screen display for a balance point signal to occur.

a) If the balance point signal at the two fastener locations are almost the same, balance the instrument and examine the remaining fastener locations that are the same code.

NOTE: Small thickness changes of the splice plates, upper rib chord and/or skin can cause the balance point to move.

b) If the balance point signals at the two fastener locations are different by more than 20% of FSH, it is possible that the difference is caused by a crack or a small configuration change in the structure. Go to Paragraph 6. for instructions for more analysis.

(e) Examine all remaining fastener locations that have the same code and make a mark at the locations where you get signals that are 50% (or more) of FSH.

(f) During the inspection, frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Put the probe on the applicable reference standard to get the maximum signal from the notch.

2) Compare the signal you got from the notch during calibration with the signal you get now.

3) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

(2) Examine the code “B” fastener locations on the left and right sides of the airplane as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(2).

(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(f) again to examine the code “B” fastener locations.

(3) Examine the code “C” fastener locations on the left and right sides of the airplane as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.(3).

(b) Make a selection of two to three of the applicable fastener locations to get a typical signal to use as a baseline signal. Use the fastener location that gives the best baseline signal and balance the instrument.

(c) Examine all remaining fastener locations that have the same code and make a mark at the locations where you get signals that are 50% (or more) of FSH.

(d) During the inspection, frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Put the probe on the applicable reference standard to get the maximum signal from the notch.
2) Compare the signal you got from the notch during calibration with the signal you get now.
3) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

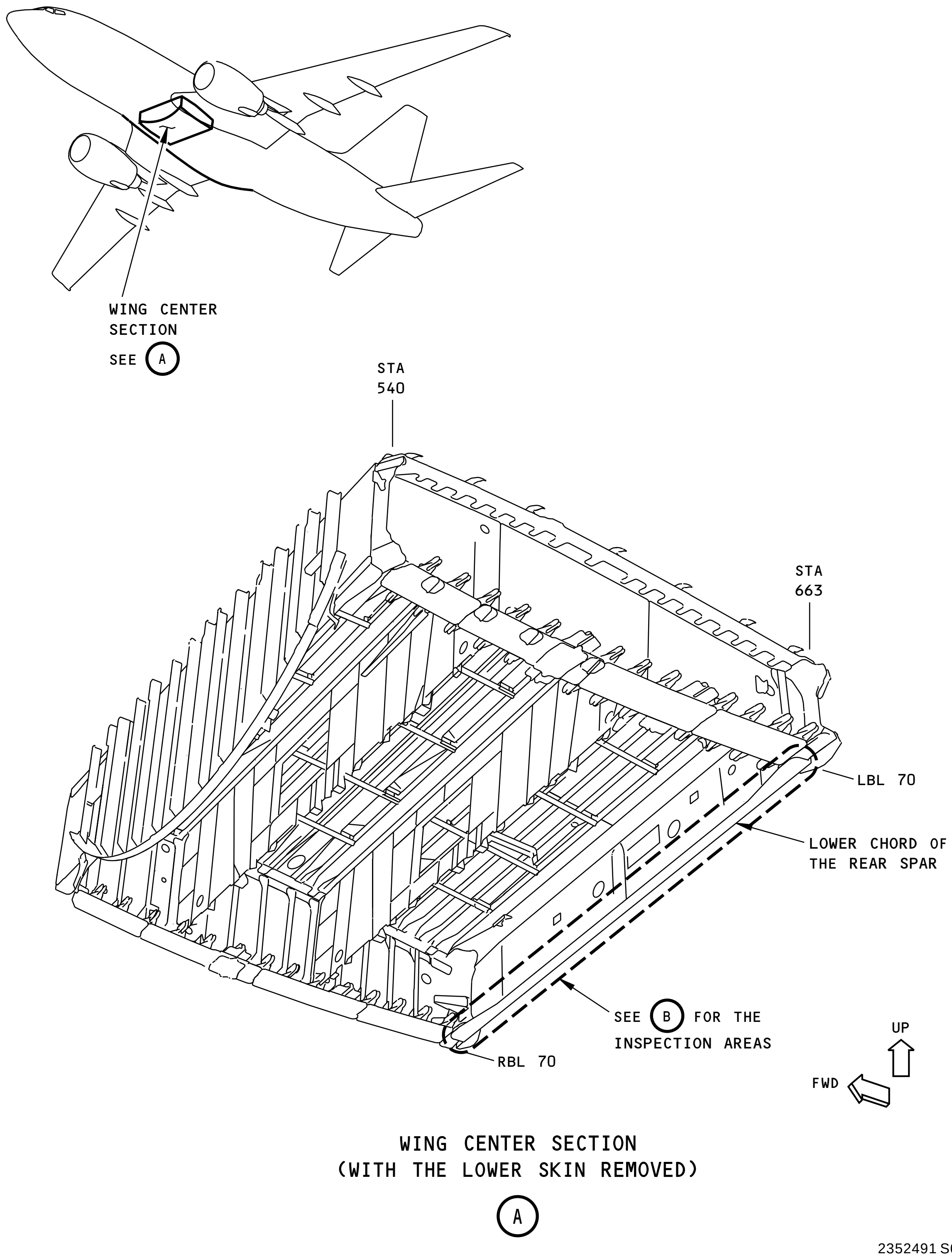
(4) Examine the code “D” fastener locations on the left and right sides of the airplane as follows:
(a) Calibrate the instrument as specified in Paragraph 4.A.(4).
(b) Do Paragraph 5.A.(3)(b) thru Paragraph 5.A.(3)(d) again to examine the code “D” fastener locations.

(5) Examine the code “E” fastener locations on the left and right sides of the airplane as follows:
(a) Calibrate the instrument as specified in Paragraph 4.A.(5).
(b) Do Paragraph 5.A.(3)(b) thru Paragraph 5.A.(3)(d) again to examine the code “E” fastener locations.

6. Inspection Results

A. Signals that are 50% (or more) of FSH and look almost the same as the notch signal from the reference standard, are signs of a possible crack.

B. If you want to make sure of the results, do the paragraphs that follow:
(1) Make sure that the signal is not caused from a change in structure (fastener edge margin distance) and/or the skin/chord thickness. Do a check of the same location on the opposite wing.
(2) Do a surface eddy current inspection on the aft side of the rear spar web, around the fastener, if you can get access to the surface. Refer to Part 6, 51-00-00, Procedure 23, for the inspection procedure.
(3) Remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



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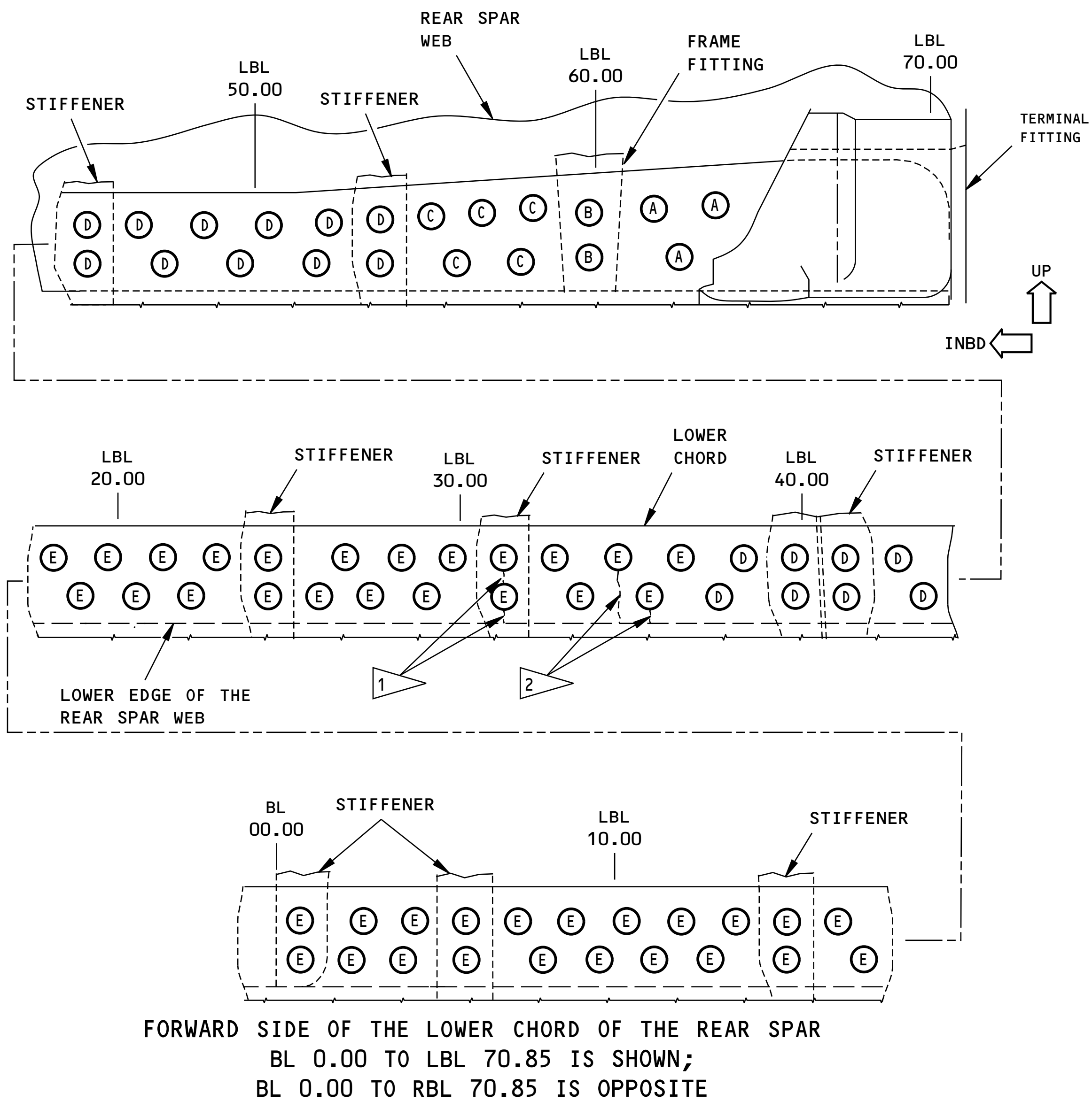
Inspection Areas
Figure 1 (Sheet 1 of 2)



NOTES

- (X) FASTENER LOCATIONS TO BE EXAMINED. THE "X" IDENTIFIES THE CODE SPECIFIED IN THE INSTRUMENT CALIBRATION INSTRUCTIONS.
- 1 TYPICAL CRACK AND DIRECTION THAT CAN OCCUR IN THE REAR SPAR WEB AT THE UPPER AND/OR LOWER SIDES OF THE FASTENER HOLES AT THE STIFFENER LOCATIONS.
- 2 TYPICAL CRACK AND DIRECTION THAT CAN OCCUR IN THE REAR SPAR WEB AT THE UPPER AND/OR LOWER SIDES OF THE FASTENER HOLES IN THE AREAS OF THE LOWER CHORD THAT ARE AWAY FROM THE STIFFENER LOCATIONS.

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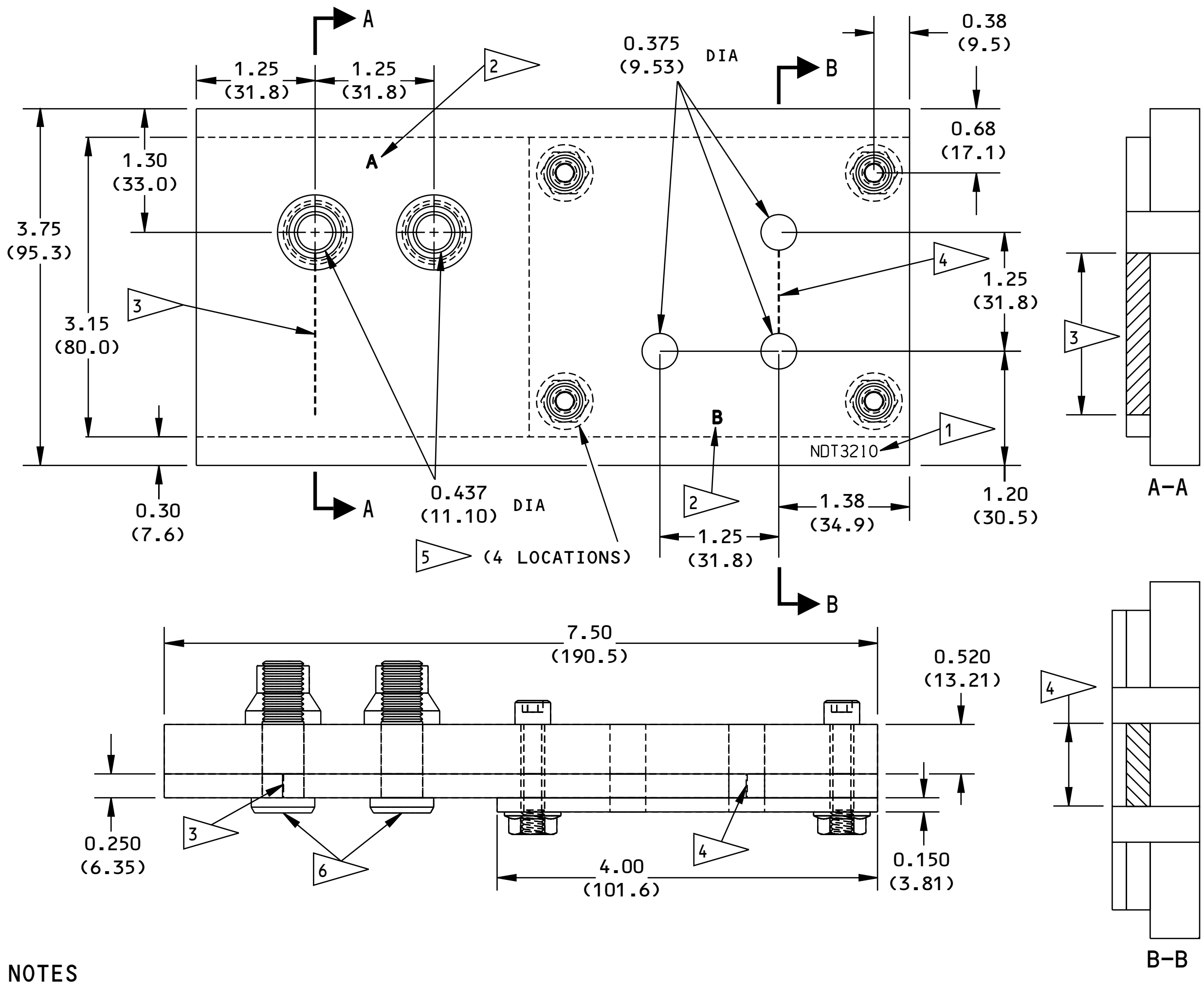
Inspection Areas
Figure 1 (Sheet 2 of 2)



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- MATERIAL: 2024-T3 ALUMINUM (BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- NOTCH LOCATION TOLERANCE: THE NOTCH LOCATION MUST BE WITHIN ±0.005 (±0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3210, AT APPROXIMATELY THIS LOCATION.

2 ETCH OR STEEL STAMP THE LETTER SHOWN AT APPROXIMATELY THIS LOCATION TO IDENTIFY THE LOCATION TO USE DURING THE INSTRUMENT CALIBRATION.

3 EDM NOTCH:
LENGTH: 1.70 (43.2)
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.25)

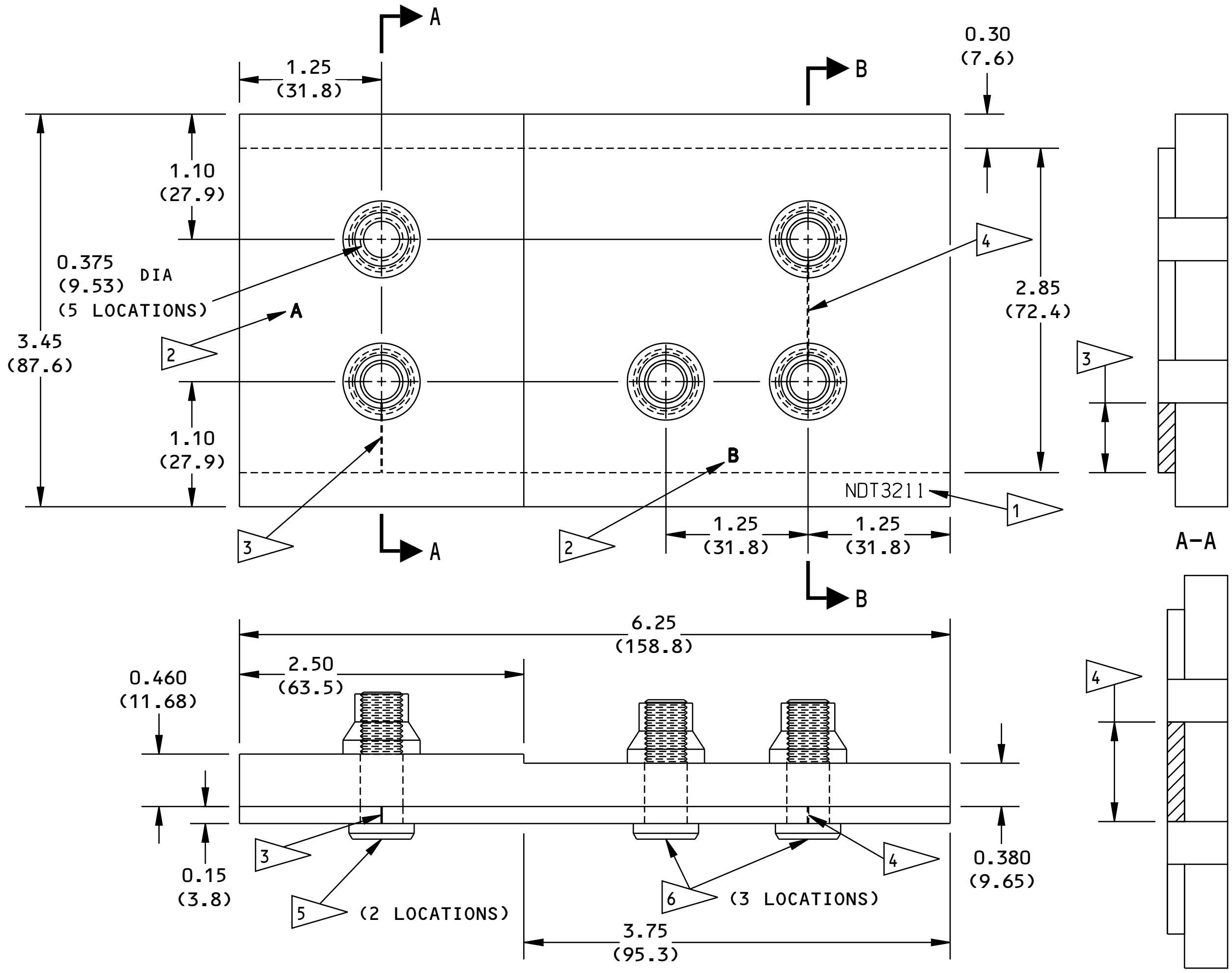
4 EDM NOTCH:
LENGTH: HOLE TO HOLE
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.25)

5 USE 0.188 (4.78) DIAMETER BOLTS AND NUTS THAT ARE NOT MAGNETIC TO HOLD ALL THE PIECES TOGETHER.

6 BACB30NX14K12 TITANIUM BOLT AND BACC30BH14 CRES COLLAR

2352678 S0000537106_V1

Reference Standard NDT3210
Figure 2



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- MATERIAL: 2024-T3 ALUMINUM (BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- NOTCH LOCATION TOLERANCE: THE NOTCH LOCATION MUST BE WITHIN ±0.005 (±0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3211, AT APPROXIMATELY THIS LOCATION.

2 ETCH OR STEEL STAMP THE LETTER SHOWN AT APPROXIMATELY THIS LOCATION TO IDENTIFY THE LOCATION TO USE DURING THE INSTRUMENT CALIBRATION.

3 EDM NOTCH:
LENGTH: HOLE TO EDGE
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.25)

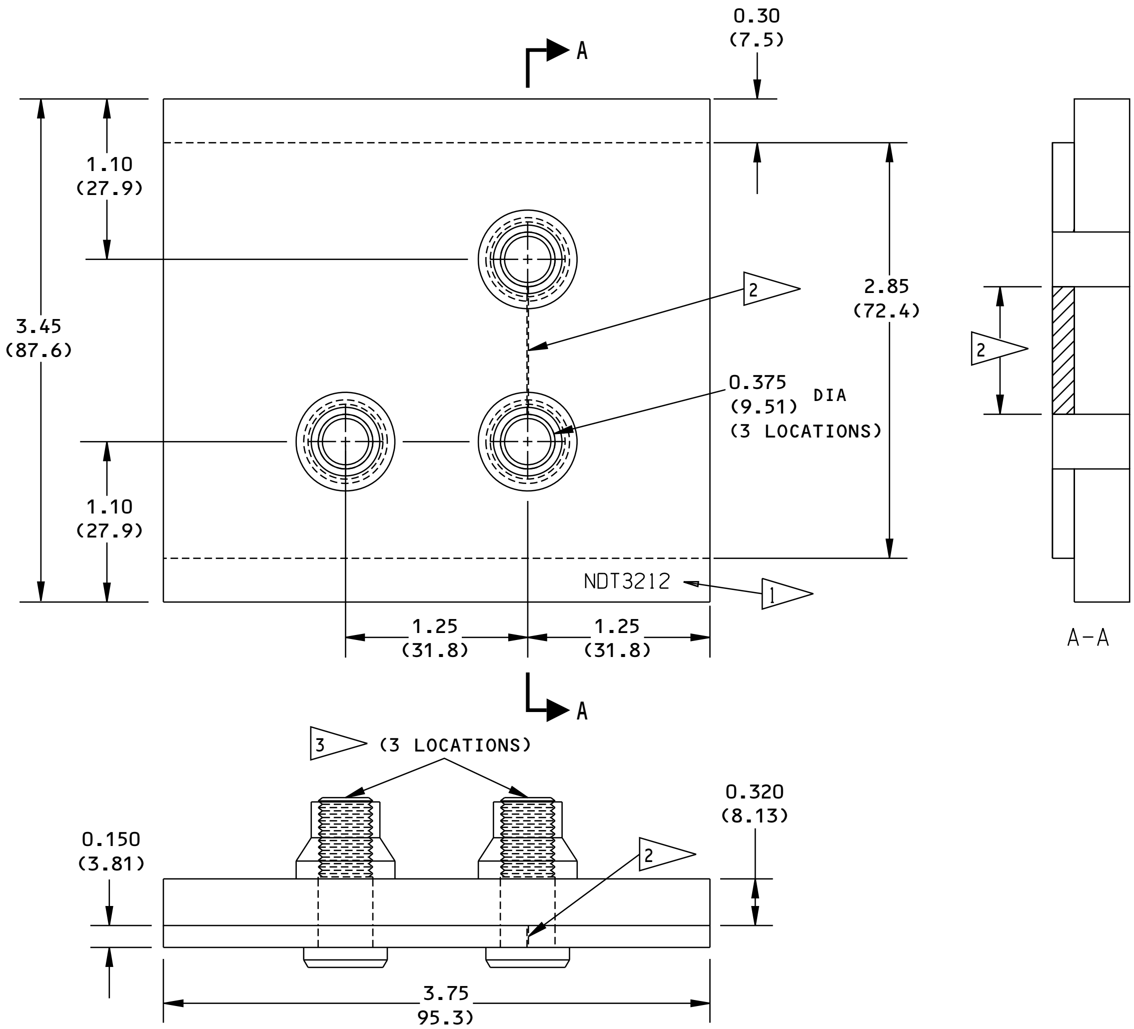
4 EDM NOTCH:
LENGTH: HOLE TO HOLE
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.25)

5 BACB30VT12K10 TITANIUM BOLT AND BACC30M12 ALUMINUM COLLAR

6 BACB30VT12K8 TITANIUM BOLT AND BACC30M12 ALUMINUM COLLAR

2352700 S0000537107_V1

Reference Standard NDT3211
Figure 3



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- MATERIAL: 2024-T3 ALUMINUM (BARE)
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- NOTCH LOCATION TOLERANCE: THE NOTCH LOCATION MUST BE WITHIN ±0.005 (±0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.

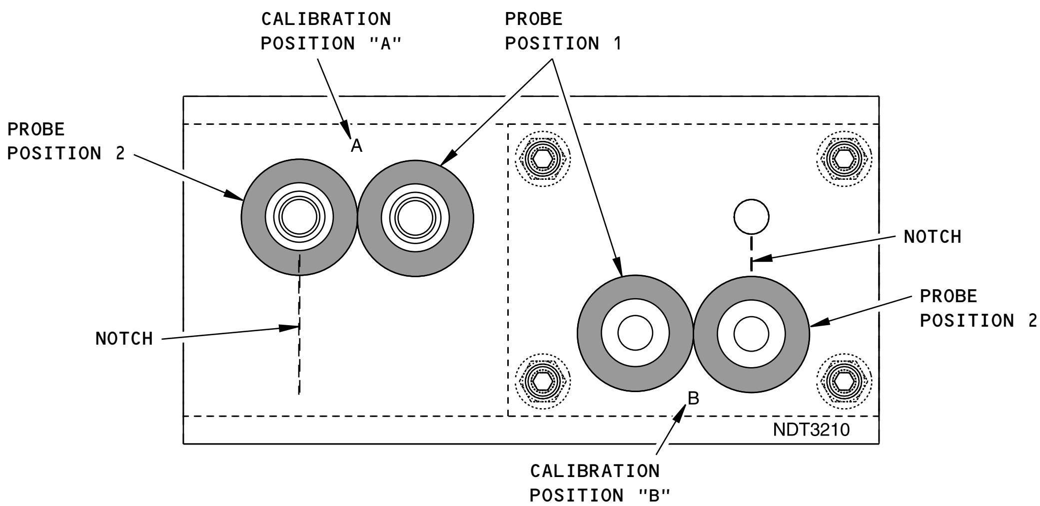
1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3212, AT APPROXIMATELY THIS LOCATION.

2 EDM NOTCH:
LENGTH: HOLE TO EDGE
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 (0.25)

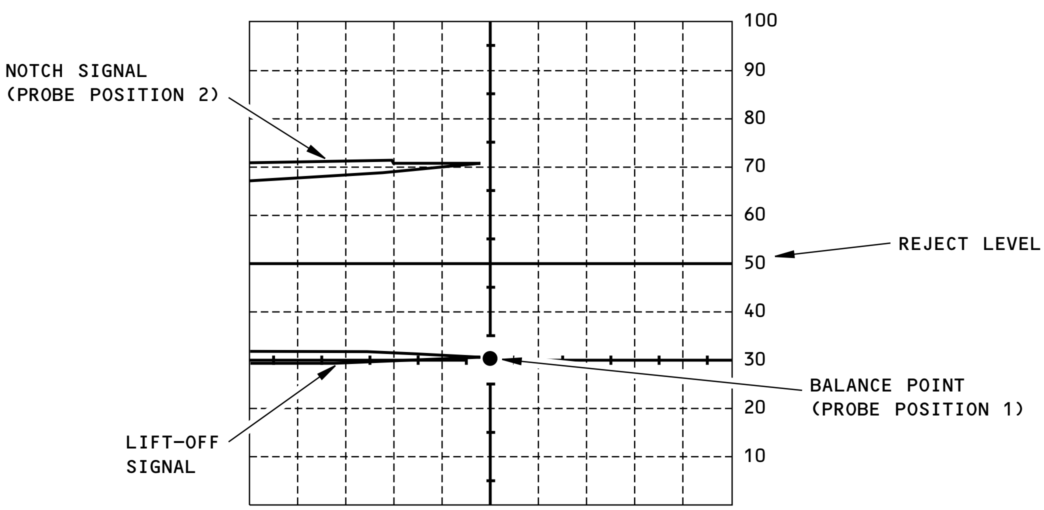
3 BACB30VT12K8 TITANIUM BOLT AND BACC30M12 ALUMINUM COLLAR

2352712 S0000537108_V1

Reference Standard NDT3212
Figure 4



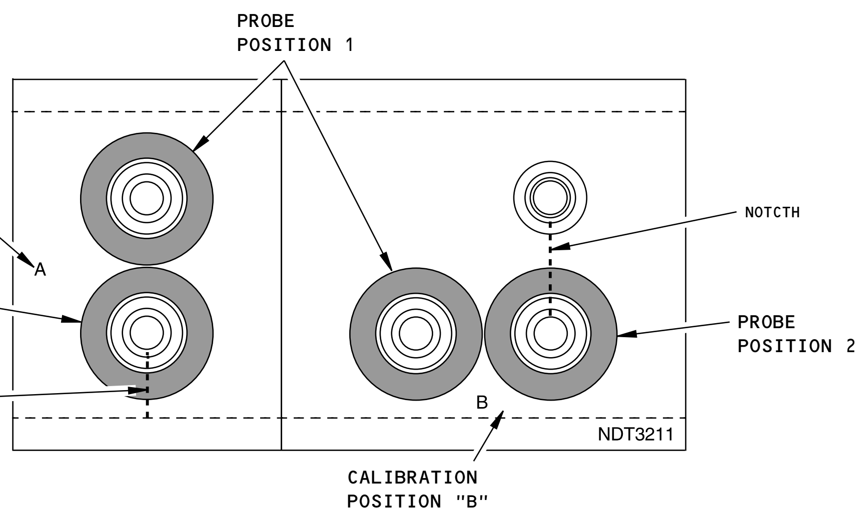
PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



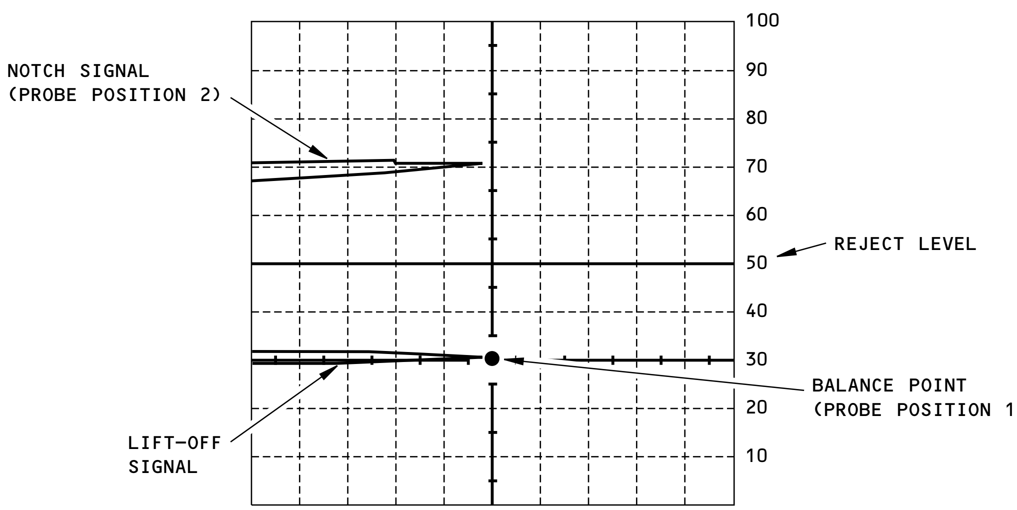
IMPEDANCE PLANE DISPLAY
DETAIL II

2352722 S0000537109_V1

Instrument Calibration to Examine the Code "A" and "B" Fastener Locations
Figure 5



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



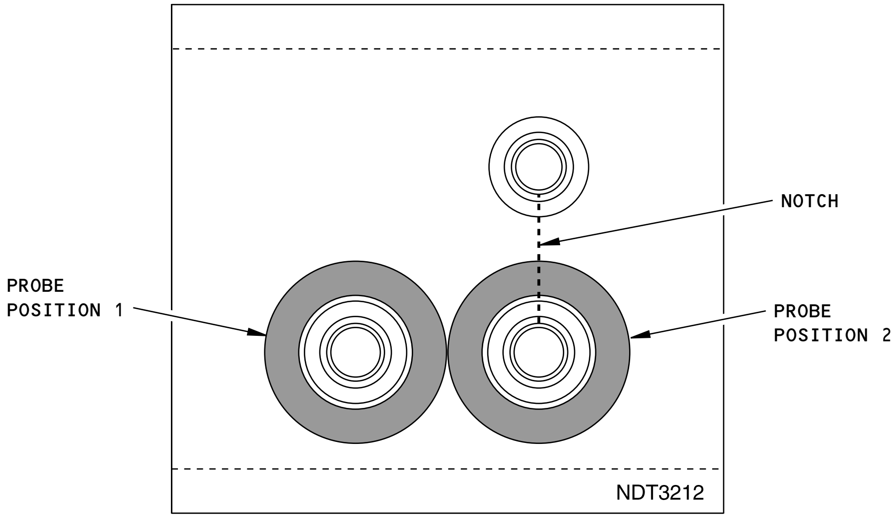
IMPEDANCE PLANE DISPLAY
DETAIL II

FASTENER LOCATION TO EXAMINE (FASTENER CODE)	REFERENCE STANDARD CALIBRATION POSITION	INSTRUMENT FREQUENCY (Hz)
C	A	130
D	B	170

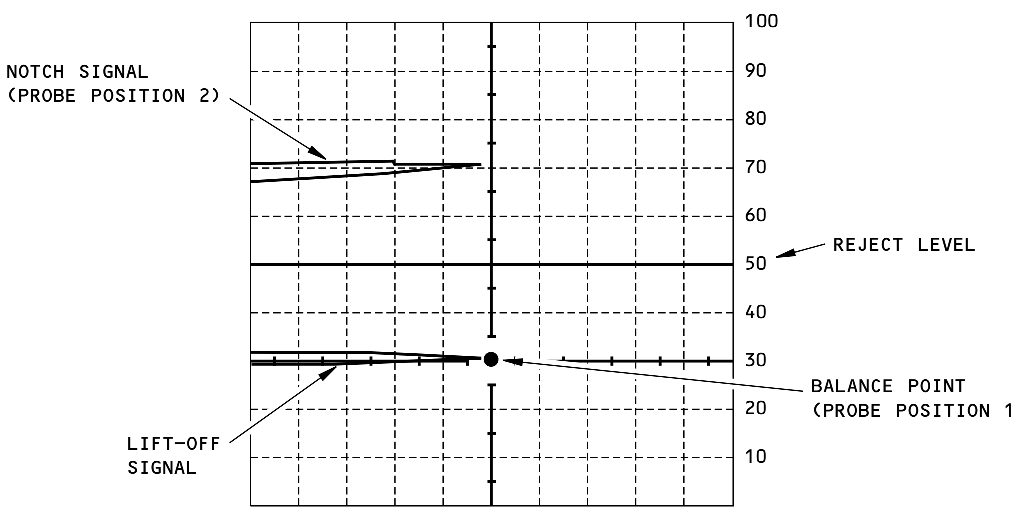
CALIBRATION TABLE
DETAIL III

2352746 S0000537110_V1

Instrument Calibration to Examine the Code "C" and "D" Fastener Locations
Figure 6



PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II

2352751 S0000537112_V1

Instrument Calibration to Examine the Code "E" Fastener Locations
Figure 7

PART 6 - EDDY CURRENT

WING LOWER SKIN - INSPECTION OF STRINGERS 1 THRU 4 AND 10 THRU 14 BETWEEN RIBS 1 AND 15 (HFEC)

1. **Purpose**

   A. Use this procedure to help find surface cracks in stringers 1 thru 4 and 10 thru 14 in the areas that are between ribs 1 and 15. The stringers are on the lower skin of the wing. See Figure 1 for the inspection areas.

   B. Use an impedance plane display instrument to do this procedure.

   C. The stringers are 2224-T3511 aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

      (1) Item: 57-20-01-1

      (2) Item: 57-20-01-2

2. **Equipment**

   A. General

      (1) All eddy current instruments that have an impedance plane display are permitted for use if they can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that has an impedance plane display and can operate from 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 500; Olympus NDT

         (b) Phasec 3D; GE Inspection Technology

   C. Probes

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probe that follows was used to help prepare this procedure.

         NOTE: Shielded probes are recommended.

         (a) MTF-30/50-500 kHz; NDT Engineering/Olympus

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 23, paragraph 3, for data about reference standard 126.

   E. Special Tools

      (1) Use a nonconductive straightedge to help guide the probe during this inspection.

3. **Prepare for the Inspection**

   A. Identify the inspection areas shown in Figure 1.

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

B. Get access to the inspection area.

C. Clean the inspection area if necessary.

NOTE: It is not necessary to remove sealant to do this inspection.

4. **Instrument Calibration**

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. **Inspection Procedure**

A. Examine stringers 1 thru 4 and 10 thru 14 between ribs 1 and 15 for surface cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, and the steps that follow.

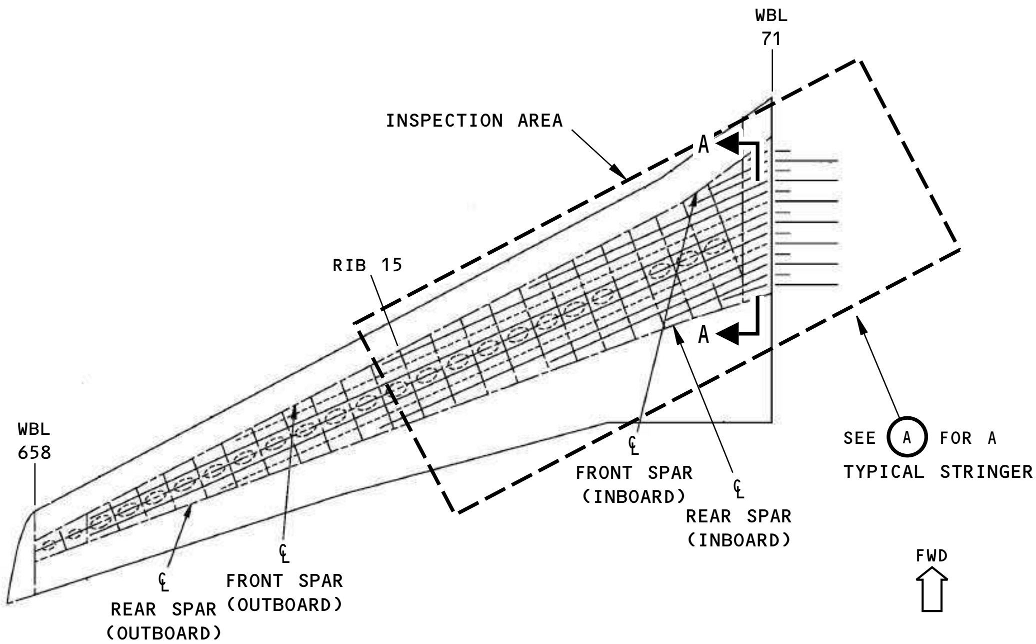
(1) See Figure 1 for the inspection areas.

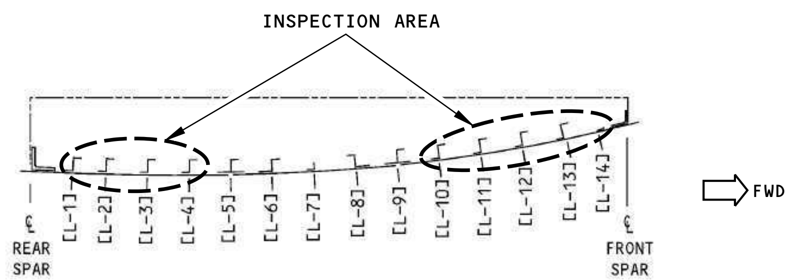
(2) Use a nonconductive straightedge to help guide the probe.

B. Do Paragraph 5.A. again to examine the inspection area on the other wing.

6. **Inspection Results**

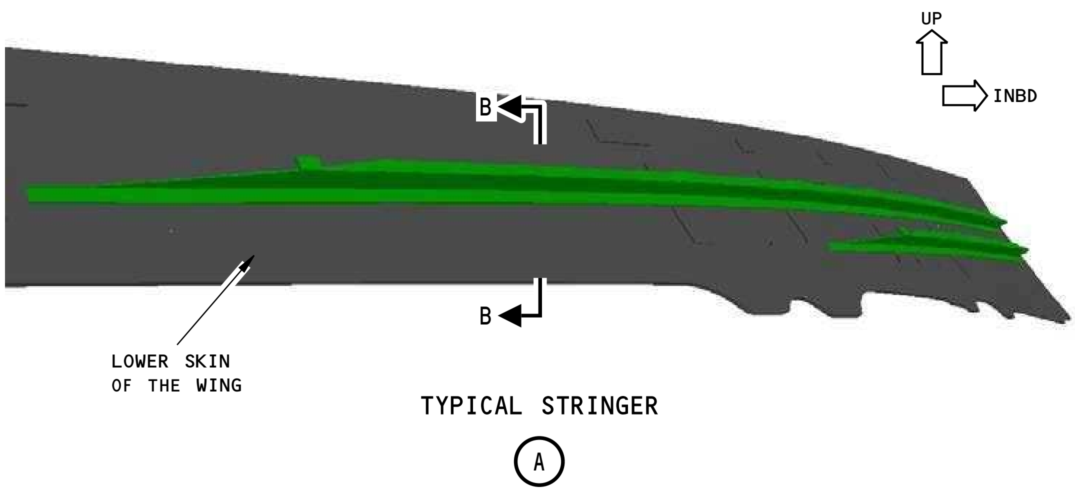
A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

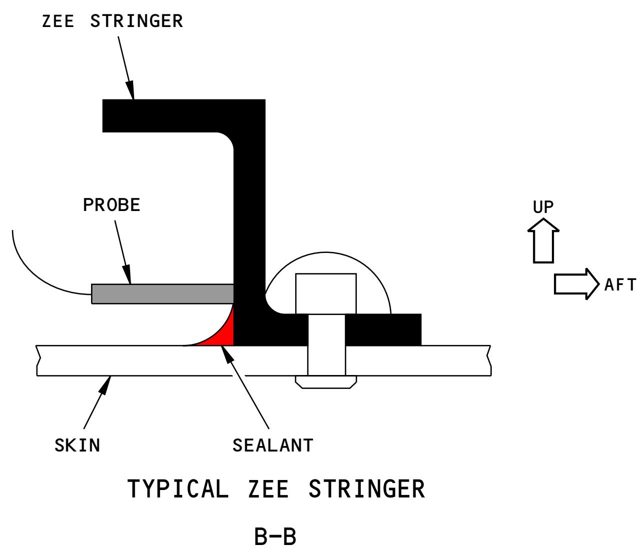




2352871 S0000537458_V1

Inspection Area
Figure 1 (Sheet 1 of 2)





2352874 S0000537459_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

WING CENTER SECTION - UPPER AND LOWER CHORDS OF THE FLOOR BEAMS AT BL 0, BL 25, AND BL 45, FROM BS 540 TO BS 727B (HFEC)

1. **Purpose**

   A. Use this procedure to look for cracks in the upper and lower chords of the floor beams at the wing center section. Figure 1 shows the upper and lower chord inspection areas at BL 0, BL 25, and BL 45, from BS 540 to BS 727B. The inspection areas are:

      (1) The seat track fastener locations in the upper chord at BL 25 and BL 45.

      (2) The web-to-upper chord fastener locations at BL 0.

      (3) The radius areas of the lower chords.

   B. This procedure uses an impedance plane display instrument.

   C. The upper chord and the aft lower chord are 7150-T77511 aluminum. The forward lower chord is 7075-T73 aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-23-1

      (2) Item: 57-10-23-3

      (3) Item: 57-10-23-4

      (4) Item: 57-10-23-5

2. **Equipment**

   A. General

      (1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Use an eddy current instrument that:

      (1) has an impedance plane display.

      (2) operates at a frequency range of 50 to 500 kHz.

   C. Instruments

      (1) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 500D; Olympus NDT

         (b) Phasec 3D; GE Inspection Technologies

   D. Probe

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probe that follows was used to help prepare this procedure.

         (a) MTF-40/50-500 kHz; NDT Engineering/Olympus NDT

            NOTE: Shielded probes are recommended.

   E. Reference Standards

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument to examine the area around the fasteners. Refer to Part 6, 51-00-00, Procedure 23, paragraph 3, for data about reference standard 188A.

(2) Use reference standard 126, or an equivalent, to help calibrate the instrument to examine the radius areas of the lower chords. Refer to Part 6, 51-00-00, Procedure 23, paragraph 3, for data about reference standard 126.

3. **Prepare for the Inspection**

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection area.

C. Clean the inspection area.

(1) Remove dirt or grease from the inspection surfaces.

D. Remove all sealant from the radius of the lower chord inspection areas.

4. **Instrument Calibration**

A. Calibrate the instrument to examine the floor beams as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument to examine the areas around the fastener locations.

(2) Use reference standard 126, or an equivalent, to help calibrate the instrument to examine the radius of the lower chords.

5. **Inspection Procedure**

A. Examine all upper chord fastener locations shown by Figure 1, flagnotes 1 and 2, for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6.

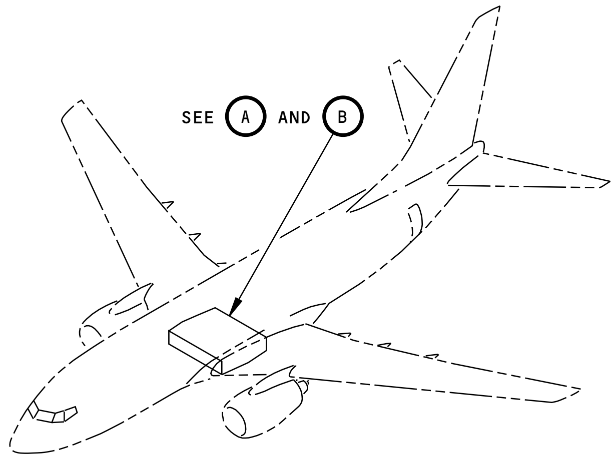
NOTE: BL 0 does not have upper flange panel attach fasteners or seat track bolts, thus, only examine the web-to-chord fastener locations.

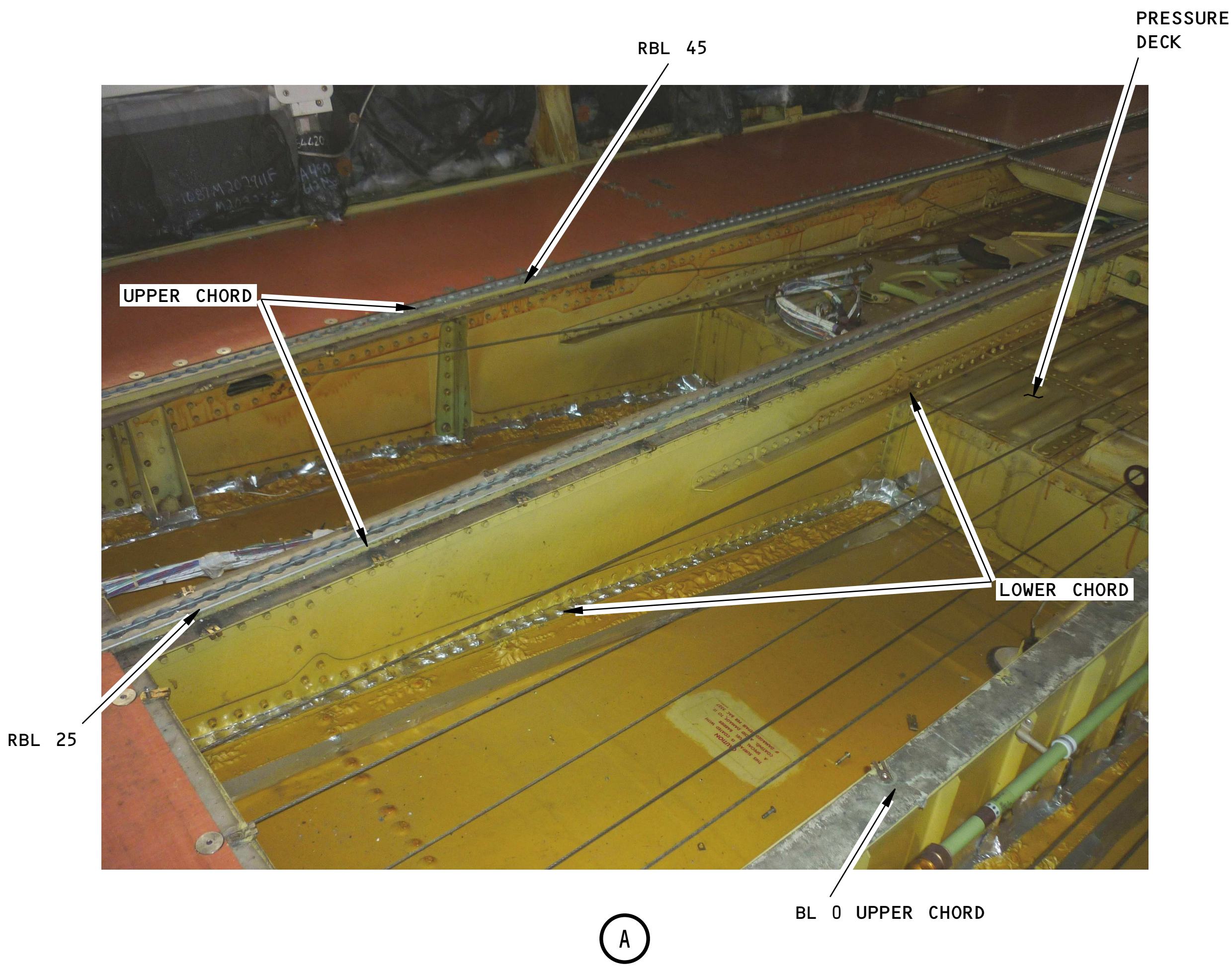
B. Examine the radius of the lower chords at BL 0, BL 25, and BL 45 from BS 540 to BS 727B as shown by Figure 1, flagnotes 3 thru 5, for cracks as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Remove sealant from the radius of the lower chords to do complete inspections.

(1) Make sure to examine the radii on each side of the lower chord on the pressure deck at BL 0 between BS 664 and BS 727B.

6. **Inspection Results**

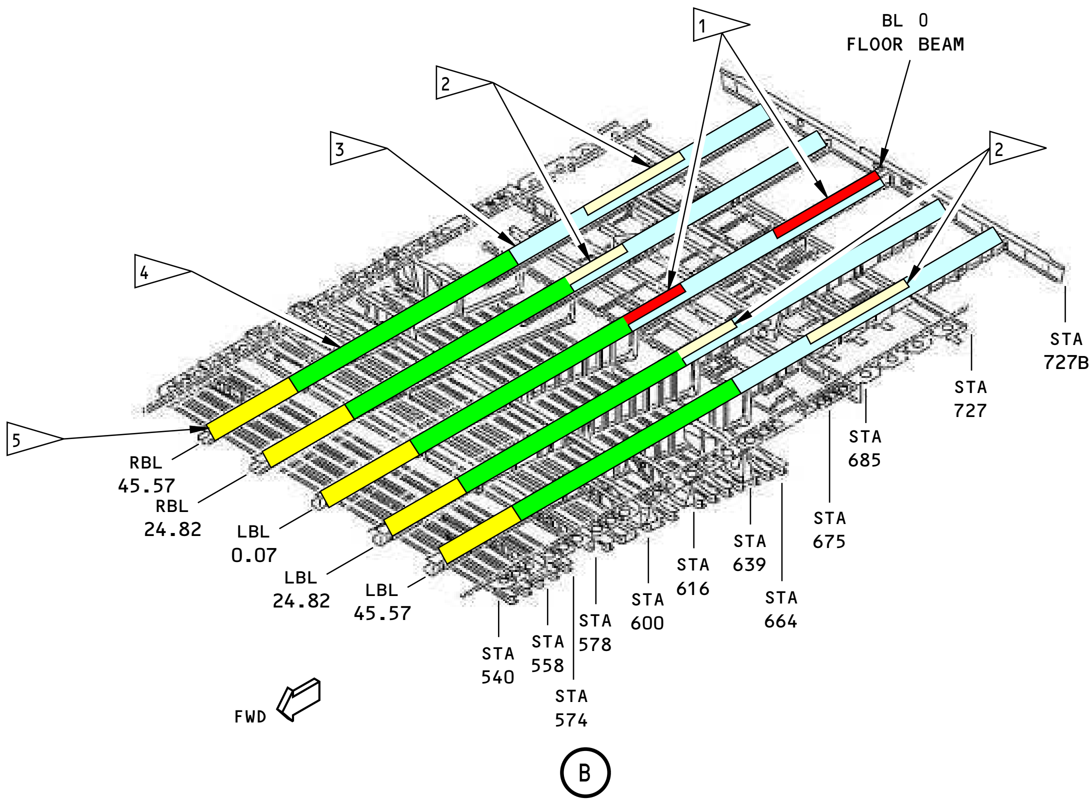
A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.





2380917 S0000546094_V1

Inspection Areas
Figure 1 (Sheet 1 of 6)



NOTES

1 EXAMINE THE WEB-TO-CHORD FASTENER LOCATIONS AT BL 0 FROM BS 655 TO BS 675 AND BS 716 TO BS 727B.

SEE C FOR THE INSPECTION AREAS.

2 EXAMINE THE UPPER CHORD FASTENER LOCATIONS AT BL 25 FROM BS 655 TO BS 675 AND AT BL 45 FROM BS 685 TO BS 716.

SEE C FOR THE INSPECTION AREAS.

3 EXAMINE THE RADIUS OF THE LOWER CHORD AT BL 0, BL 25, AND BL 45 FROM BS 664 TO BS 727B.

SEE D FOR THE INSPECTION AREAS.

4 EXAMINE THE RADIUS OF THE LOWER CHORD AT BL 0, BL 25, AND BL 45 FROM BS 574 TO BS 664.

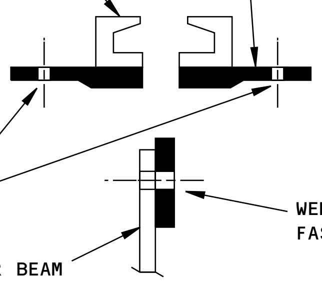
SEE E FOR THE INSPECTION AREAS.

5 EXAMINE THE RADIUS OF THE LOWER CHORD AT BL 0, BL 25, AND BL 45 FROM BS 540 TO BS 574.

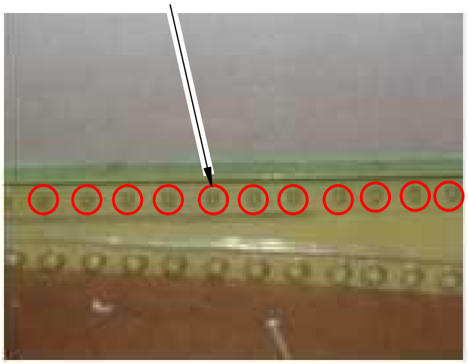
SEE F FOR THE INSPECTION AREAS.

2380950 S0000546096_V1

Inspection Areas
Figure 1 (Sheet 2 of 6)



TYPICAL FLOOR PANEL ATTACHMENT
TO THE UPPER CHORD



BL 0 OVERWING FLOOR BEAM
(SIDE VIEW)

WEB TO CHORD AND UPPER CHORD INSPECTION AREA

C

NOTES

1. EXAMINE ALL WEB-TO-UPPER CHORD FASTENER LOCATIONS AT BL 0 FROM BS 655 TO BS 675 AND FROM BS 716 TO BS 727B (SEE FIGURE 1, SHEET 2, FLAGNOTE 1).
2. EXAMINE THE UPPER CHORD FASTENER LOCATIONS AT BL 25 FROM BS 655 TO BS 675, AND AT BL 45 FROM BS 685 TO BS 716 (SEE FIGURE 1, SHEET 2, FLAGNOTE 2).

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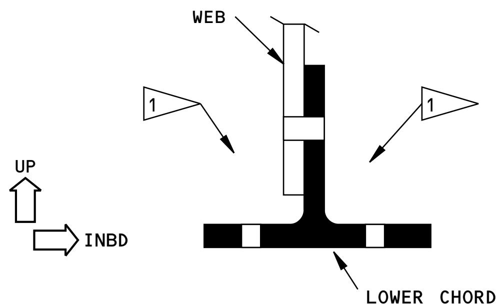
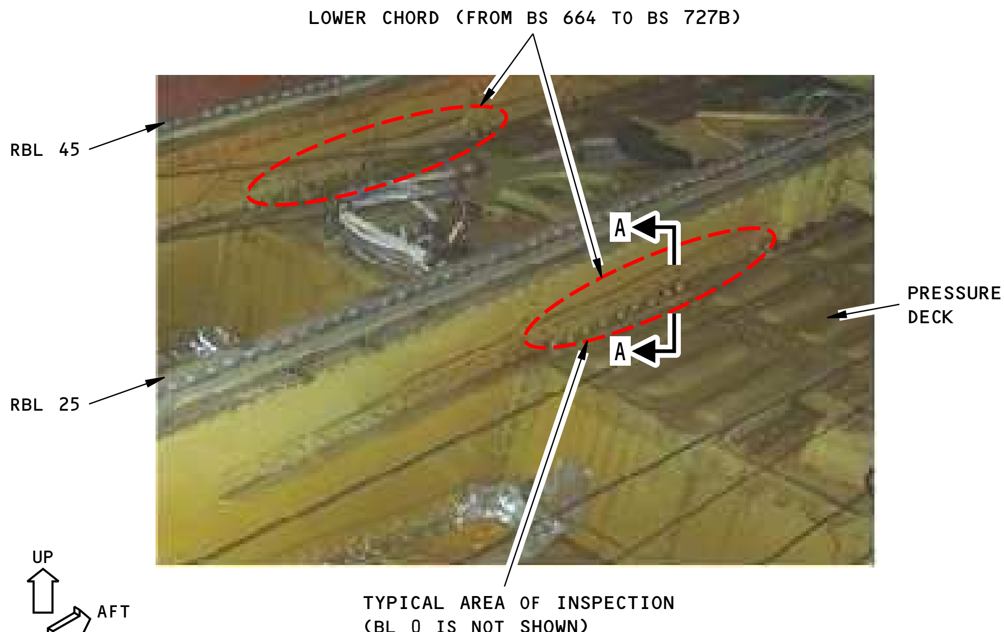
Inspection Areas
Figure 1 (Sheet 3 of 6)



A-A



RADIUS OF THE LOWER CHORD INSPECTION AREA

D

NOTES

1 EXAMINE THE RADIUS OF THE LOWER CHORD ON THE PRESSURE DECK AT BL 0, BL 25, AND BL 45 FROM BS 664 TO BS 727B (SEE FIGURE 1, SHEET 2, FLAGNOTE 3).

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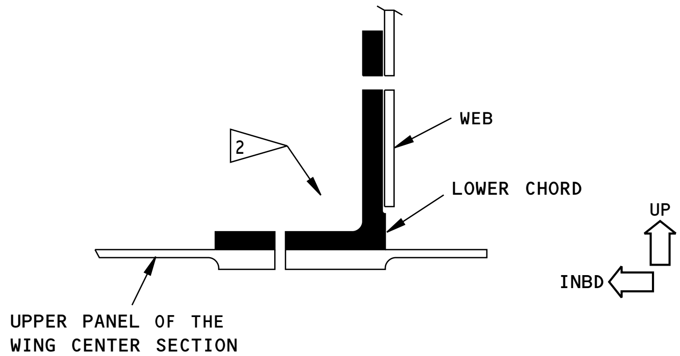
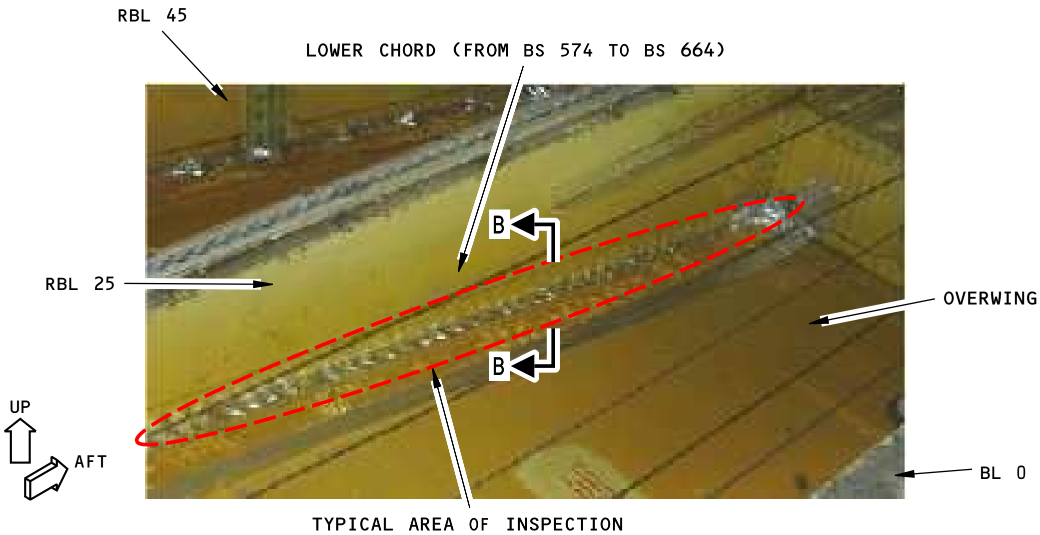
Inspection Areas
Figure 1 (Sheet 4 of 6)



B-B



RADIUS OF THE LOWER CHORD INSPECTION AREA

E

NOTES

2 EXAMINE THE RADIUS OF THE LOWER CHORD AT BL 0, BL 25, AND BL 45 FROM BS 574 TO BS 664. REMOVE SEALANT FROM THE RADIUS OF THE LOWER CHORD (SEE FIGURE 1, SHEET 2, FLAGNOTE 4).

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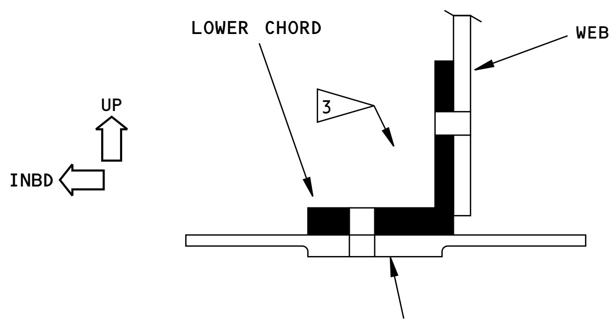
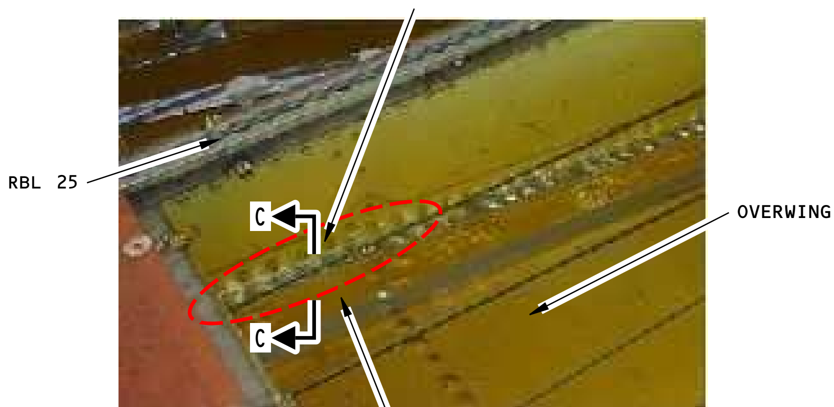
Inspection Areas
Figure 1 (Sheet 5 of 6)



C-C



RADIUS OF THE LOWER CHORD INSPECTION AREA

F

NOTES

3 EXAMINE THE RADIUS OF THE LOWER CHORD AT BL 0, BL 25, AND BL 45 FROM BS 540 TO BS 574 (SEE FIGURE 1, SHEET 2, FLAGNOTE 5). REMOVE SEALANT FROM THE RADIUS OF THE LOWER CHORD.

2381032 S0000546100_V1

Inspection Areas
Figure 1 (Sheet 6 of 6)

PART 6 - EDDY CURRENT

RADIUS OF THE UPPER VERTICAL FLANGE OF THE DOUBLE PLUS CHORD AT THE STRINGER 18A INTERFACE (HFEC)

1. **Purpose**

   A. Use this procedure to examine the radius of the upper vertical flange of the double plus chord for cracks at the stringer 18A interface between BS 639 and BS 663. This inspection looks for cracks in the radius of the double plus chord that are in the forward and aft direction. See Figure 1 for the inspection area.

   B. This procedure uses an impedance plane display instrument.

   C. The double plus chord is 7075-T73 aluminum.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-10-05-2

2. **Equipment**

   A. General

      (1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at a frequency range of 50 to 500 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 500D; Olympus NDT

         (b) Phasec 3D; GE Inspection Technologies

   C. Probe

      (1) Use a probe that operates from 50 to 500 kHz.

      (2) The probe that follows was used to help prepare this procedure.

         (a) MTF-40/50-500 kHz; NDT Engineering/Olympus

         NOTE: Shielded probes are recommended.

   D. Reference Standards

      (1) Use reference standard 126, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 23, paragraph 3, for data about reference standard 126.

3. **Prepare for the Inspection**

   A. Identify the inspection areas shown in Figure 1.

   B. Remove the wing-to-body fairing to get access to the inspection area.

   C. Clean the inspection area.

      (1) Remove dirt or grease from the inspection surfaces.

(2) Remove cap and brush sealant from the radius area of the double plus chord in the area to be examined. Only remove the minimum quantity of sealant that is necessary to do the radius inspection. See Figure 1 for the radius inspection area.

4. Instrument Calibration

A. Calibrate the instrument to examine the radius of the upper vertical flange of the double plus chord as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

(1) Use reference standard 126, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

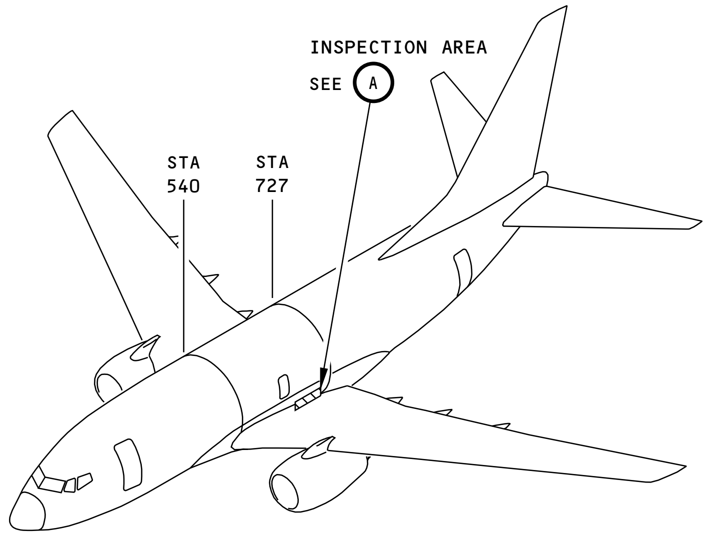
A. Examine the radius of the upper vertical flange of the double plus chord for cracks at the stringer 18A interface between BS 639 and BS 663. Do the inspection as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. See Figure 1 for the inspection area.

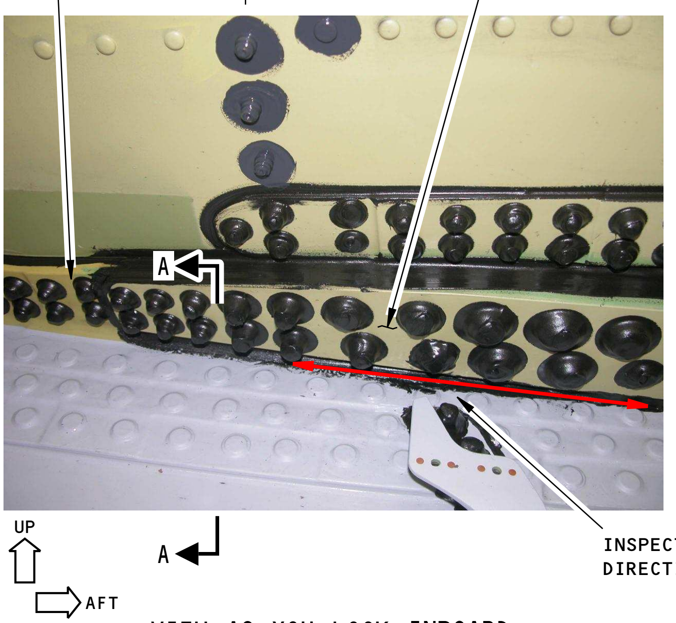
B. Do Paragraph 5.A. again to examine the double plus chord for cracks on the other side of the airplane.

C. Replace all sealant that was removed.

6. Inspection Results

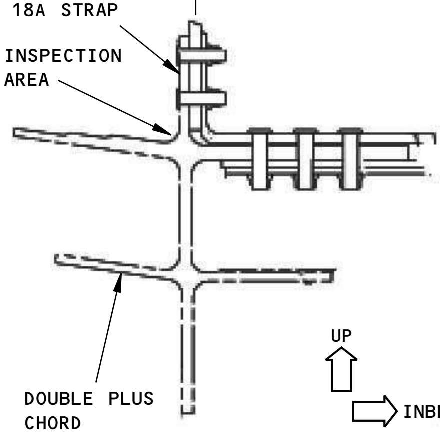
A. Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.





VIEW AS YOU LOOK INBOARD

A



A-A

NOTES

1 THE LEFT SIDE IS SHOWN;
THE RIGHT SIDE IS OPPOSITE

2381111 S0000546214_V1

Inspection Area
Figure 1

PART 6 - EDDY CURRENT

WING CENTER SECTION - VERTICAL WEB OF THE UPPER VENT STRINGERS (S-10 AND S-12) AT SRM STRINGER REPAIR LOCATIONS (LFEC)

1. **Purpose**

   A. Use this procedure to do an inspection for cracks in the vertical web of the upper vent stringers of the wing center section where there are Structural Repair Manual (SRM) stringer repairs. The two vent stringers to be examined are stringers 10 and 12. The inspection is done internally where the repair angles are installed. The cracks that can occur in the vent stringer webs are in a vertical direction. See Figure 1 for an example of where the stringer repairs can be. The repair records will tell you where the stringer repairs were made on the upper vent stringers (10 and 12).

   B. The repair angles and upper vent stringers are aluminum. See Figure 1 for data about the repair angles and the probe scans.

   C. This procedure uses low frequency eddy current (LFEC) with a spot probe that is put adjacent to each fastener (bolt head) in the inspection area. Only one spot probe is necessary to examine all bolt locations.

   D. This procedure uses an impedance plane display instrument.

   E. One reference standard with two sections (“A” and “B”) that have two different thicknesses is used for the calibration.

   F. 737 Maintenance Planning Data (MPD) Primary Structural Element (PSE) Reference:

      (1) 57-10-01

   G. 737 Structural Repair Manual (SRM) Reference:

      (1) 57-10-03, Repairs 2 and 3

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standards as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument with an impedance plane display that can operate at a frequency between 1 and 5 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 3D; GE Inspection Technologies

         (b) Nortec 2000; Olympus NDT

   C. Probes

      (1) Use a spot probe that:

         (a) Can operate in a frequency range of 1 to 5 kHz.

         (b) Has a maximum diameter of 0.40 inch (10.2 mm).

         (c) Is shielded.

      (2) The probes that follow were used to help prepare this procedure.

(a) AF-4057 (Reflection Probe); Aerofab NDT

(b) SDP.375-8K (Reflection Probe); Techna NDT

D. Reference Standard

(1) Make reference standard NDT3236 as specified in Figure 2.

3. Prepare for the Inspection

A. Defuel the fuel tanks. Refer to Aircraft Maintenance Manual (AMM) 28-26-00/201 for instructions to defuel the fuel tanks.

WARNING: MAKE SURE THAT YOU REMOVE ALL THE FUEL FROM THE TANKS. MAKE SURE THAT THE TANKS HAVE GOOD FLOW OF CLEAN AIR. IF YOU DO NOT OBEY, YOU CAN CAUSE AN EXPLOSION AND INJURY TO PERSONS ON, OR NEAR THE AIRPLANE.

B. Look at the repair records for the airplane to be examined to identify the repair locations on the vertical webs of the upper vent stringers (stringers 10 and 12) in the wing center section.

C. Get access to the repair areas in the wing center section through the access panel in the lower skin panel of the wing center section. See Figure 1 for the access panel location.

D. Clean the inspection surface on the repair angles that are installed on the vertical webs of the upper vent stringers (stringers 10 and 12). Remove paint if it is loose. See Figure 1 for an example of an inspection area on a vent stringer.

4. Instrument Calibration

A. Calibrate the equipment on the A section of reference standard NDT3236 as follows to examine the vertical web of a vent stringer for cracks through two repair angles. See Figure 1, Figure 3 and Paragraph 5.A.

(1) Set the instrument frequency between 1 and 2 kHz.

(2) Put the probe on the A section of reference standard NDT3236 at probe position 1 as shown in Detail II of Figure 3.

(3) Balance the instrument.

(4) Set the balance point at approximately 20 percent of full screen height (FSH) and 50 to 70 percent of full screen width (FSW) as shown in Detail I of Figure 3.

(5) Adjust the phase control so that the lift-off signal moves horizontally from right to left when the probe is lifted off of the reference standard. See Detail I in Figure 3.

(6) Move the probe on the reference standard to probe position 2 as shown in Detail II of Figure 3. Monitor the reference notch signal during this probe scan.

(7) Adjust the instrument gain so the maximum signal from the reference notch is 60 percent of FSH as shown in Detail I of Figure 3. If necessary, it is permitted to set the horizontal gain 6 to 12 dB lower than the vertical gain to keep the signals on the display.

(8) Do Paragraph 4.A.(2) thru Paragraph 4.A.(7) again, as necessary, to make sure the notch signal is at 60 percent of FSH.

B. Calibrate the equipment on the B section of reference standard NDT3236 as follows to examine the vertical web of a vent stringer for cracks through one repair angle. See Figure 1, Figure 3 and Paragraph 5.B.

(1) Do Paragraph 4.A.(1) thru Paragraph 4.A.(8), but this time use the B section of reference standard NDT3236 and set the frequency between 4 and 5 kHz. See Figure 3, Details I and II for this calibration.

5. Inspection Procedure

A. Examine the vertical web of the vent stringer for cracks where two repair angles are installed as follows.

(1) Do the calibration on the A section of reference standard NDT3236 as specified in Paragraph 4.A.

(2) Put the probe on the 0.080 inch (2.03 mm) thick repair angle, adjacent to one of the fasteners in the inspection area. Make sure the probe is on the right or left side of the fastener. See flagnote 1 in Figure 1.

(3) Balance the instrument.

(4) Do half circle scans around the fasteners in the upper and lower fastener rows as shown by flagnote 1 in Figure 1 and monitor the instrument for crack signals. Flagnote 3 in Figure 1 shows subsurface butt splices that can cause crack type indications to occur.

B. Examine the vertical web of the vent stringers for cracks where one repair angle is installed as follows.

(1) Do the calibration on the B section of reference standard NDT3236 as specified in Paragraph 4.B.

(2) Put the probe on the 0.063 inch (1.60 mm) thick repair angle, adjacent to one of the fasteners in the inspection area. Make sure the probe is on the right or left side of the fastener. See flagnote 2 in Figure 1.

(3) Balance the instrument.

(4) Do half circle scans around the fasteners in the upper and lower fastener rows as shown by flagnote 2 in Figure 1 and monitor the instrument for crack signals.

C. Do Paragraph 5.A. and Paragraph 5.B. to examine the vertical web of the vent stringer for cracks from the repair angles on the opposite side of the vent stringer.

D. Do Paragraph 5.A. thru Paragraph 5.C. again to examine the other vent stringer for cracks if it has repair angles installed on it.

6. Inspection Results

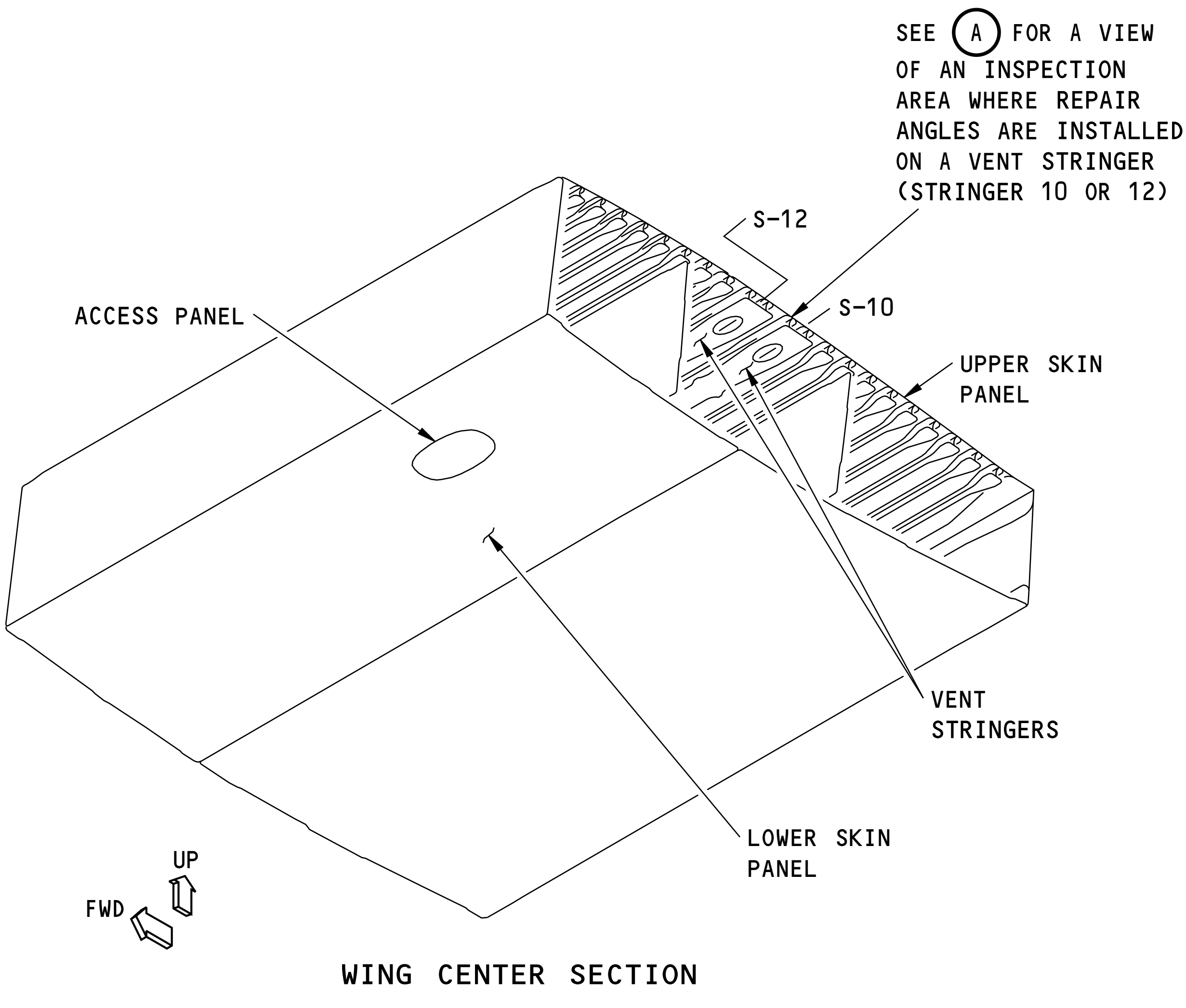
A. A signal that is 40% (or more) of FSH is a sign of a crack and the location must be rejected. More analysis is necessary at locations that cause crack type signals to occur.

B. Compare signals that occur during the inspection to the signal that you got from the notch in the reference standard during calibration. See Paragraph 4. for calibration data.

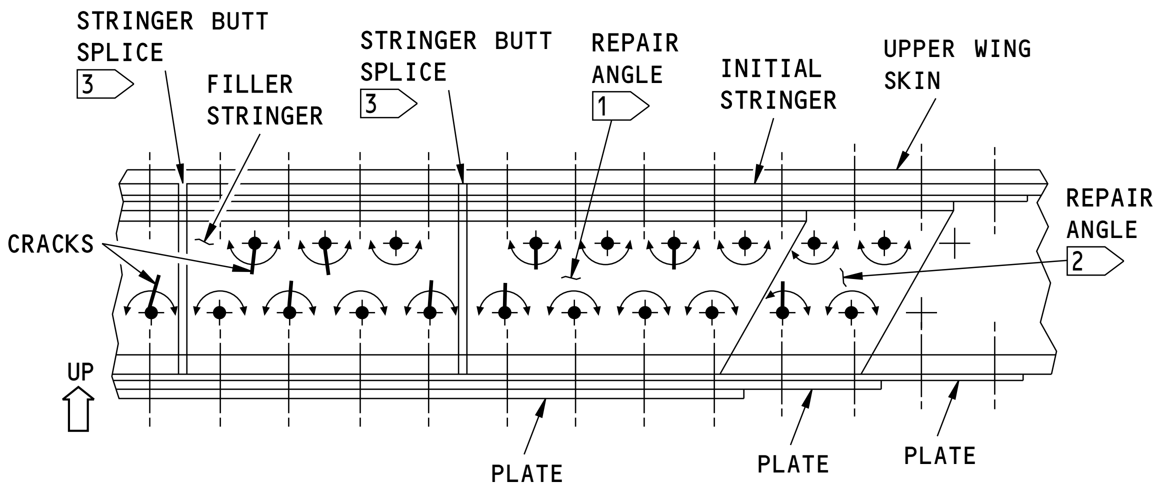
C. An incorrect crack signal can occur if the probe moves across a stringer butt splice. See flagnote 3 in Figure 1 to see examples of stringer butt splices.

D. An incorrect crack signal can occur if the probe goes near the edge of a repair angle. Make sure a crack signal is not caused by an edge effect.

E. To make sure a crack indications is from a crack, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



Inspection Area
Figure 1 (Sheet 1 of 2)



THIS IS A VIEW OF THE FORWARD OR AFT SIDE OF A VENT STRINGER (STRINGER 10 OR 12) WITH TWO REPAIR ANGLES INSTALLED. THE COMPLETE REPAIR AREA IS NOT SHOWN. THE FAR SIDE OF THE STRINGER REPAIR IS OPPOSITE AND EQUIVALENT.

A

NOTES

- AT THE STRINGER REPAIR LOCATIONS, MAKE SURE YOU DO THE INSPECTION ON THE FORWARD AND AFT SIDES OF THE STRINGER WHERE THE ANGLES ARE INSTALLED.

1 THIS REPAIR ANGLE IS 0.080 INCH (2.03 mm) THICK. DO THE CALIBRATION ON REFERENCE STANDARD NDT3236 ON THE PLATE WITH THE "A" LABEL (ON THE LEFT SIDE OF THE REFERENCE STANDARD). DO HALF CIRCLE SCANS AROUND THE FASTENERS ON THIS ANGLE AS SHOWN ABOVE.

2 THIS REPAIR ANGLE IS 0.063 INCH (1.60 mm) THICK. DO THE CALIBRATION ON REFERENCE STANDARD NDT3236 ON THE PLATE WITH THE "B" LABEL (ON THE RIGHT SIDE OF THE REFERENCE STANDARD). DO HALF CIRCLE SCANS AROUND THE FASTENERS ON THIS ANGLE AS SHOWN ABOVE.

3 THE SUBSURFACE BUTT SPLICE CAN CAUSE A CRACK-TYPE INDICATION TO OCCUR IF THE PROBE GOES NEAR IT. IF YOU SEE A CRACK-TYPE SIGNAL, MAKE SURE IT IS NOT CAUSED BY THE BUTT SPLICE.

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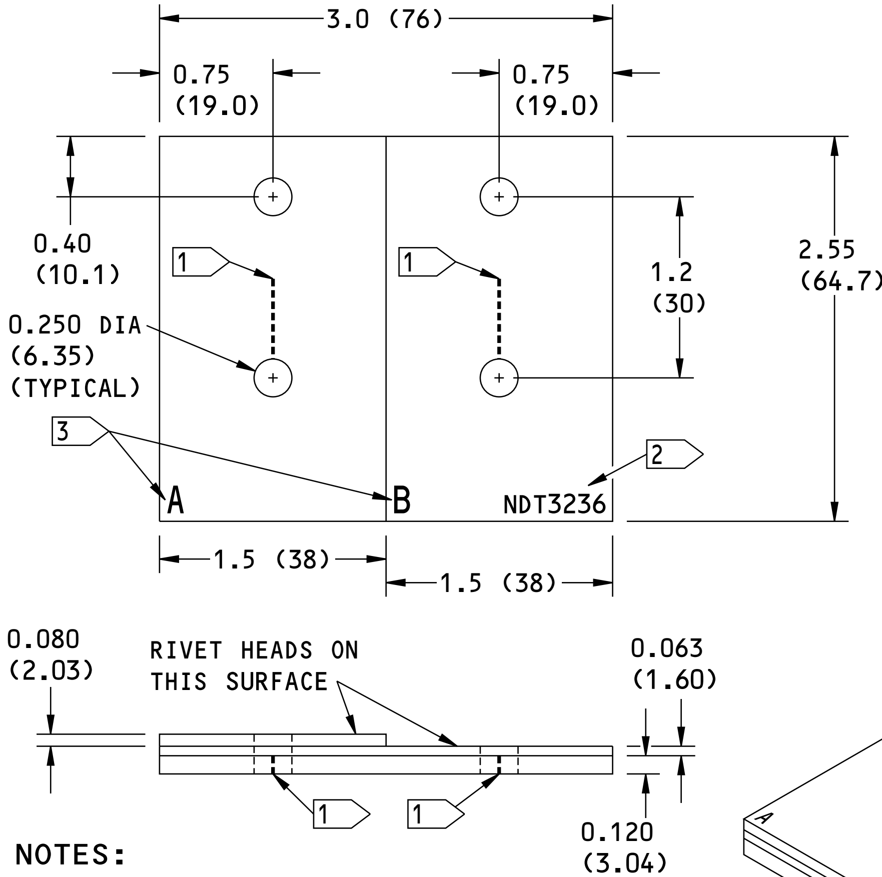
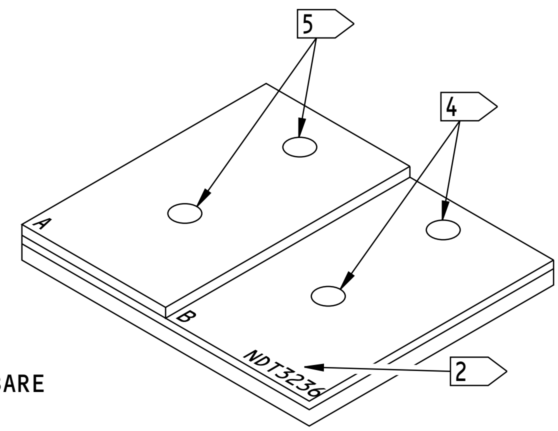
Inspection Area
Figure 1 (Sheet 2 of 2)





NOTES:

- DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL: 2024-T3, -T6 OR 7075-T6 CLAD OR BARE
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

1 EDM NOTCHES: 0.625 (15.87) LONG X 0.020 (0.51) MAXIMUM WIDTH; THROUGH THE THICKNESS IN THE LOWER PLATE.

2 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3236, WHERE SHOWN

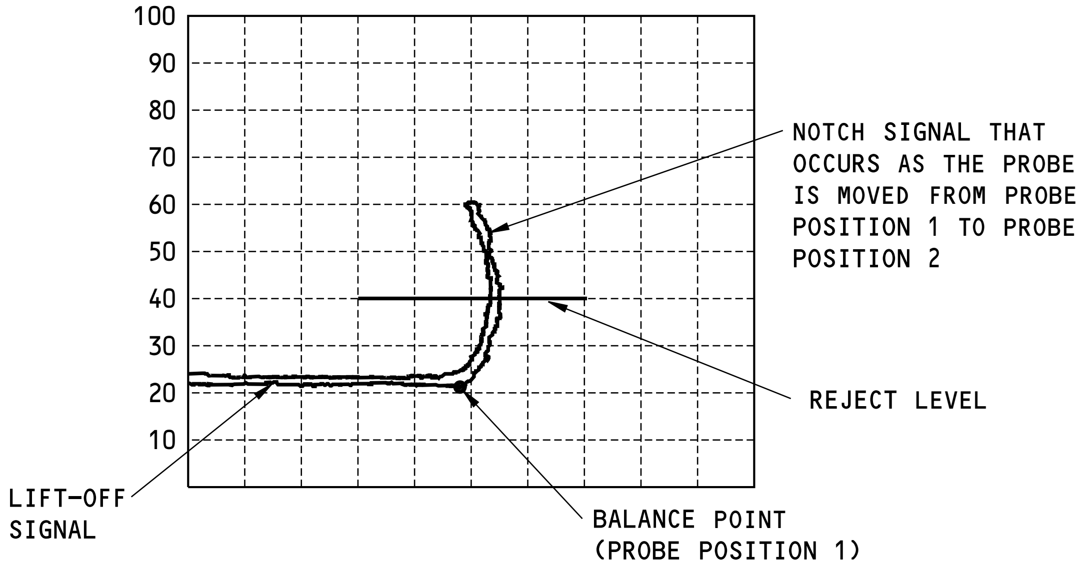
3 ETCH OR STAMP "A" AND "B" WHERE SHOWN

4 BACR15FT8D3C RIVETS (2 LOCATIONS)

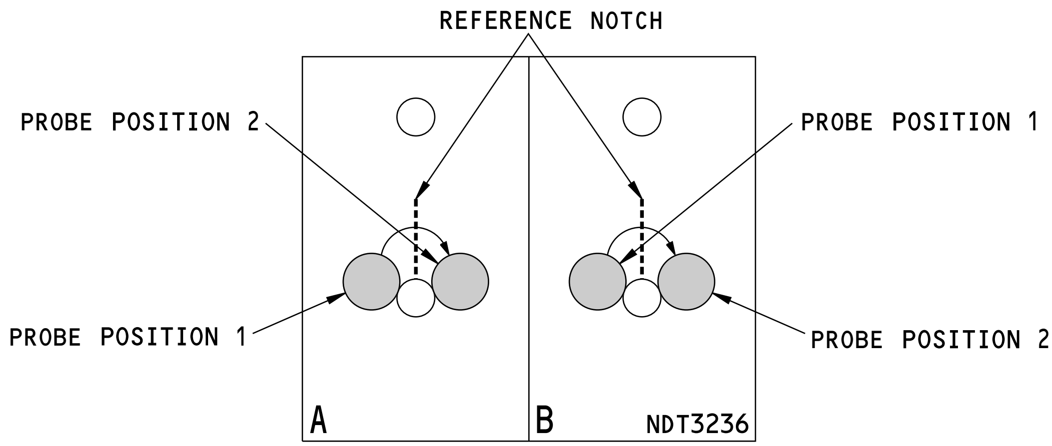
5 BACR15FT8D4C RIVETS (2 LOCATIONS)

2405920 S0000556426_V1

Reference Standard NDT3236
Figure 2



DETAIL I



DETAIL II

NOTES

- DO THE CALIBRATION ON SECTION "A" OF THE REFERENCE STANDARD TO DO THE INSPECTION THROUGH TWO REPAIR ANGLES. SEE FIGURE 1, FLAGNOTE 1
- DO THE CALIBRATION ON SECTION "B" OF THE REFERENCE STANDARD TO DO THE INSPECTION THROUGH ONE REPAIR ANGLE. SEE FIGURE 1, FLAGNOTE 2
- THE NOTCH SIGNAL CAN LOOK DIFFERENT WITH DIFFERENT PROBES AND INSTRUMENTS

2405922 S0000556427_V1

Calibration Probe Positions
Figure 3

PART 6 - EDDY CURRENT

UPPER SPLICE STRINGER (S-14) FLANGES OF THE UPPER WING SKIN AT SRM STRINGER REPAIR LOCATIONS (LFEC)

1. **Purpose**

A. Use this procedure to examine the flanges of splice stringer S-14 at the upper skin of the outer wing for cracks where there are Structural Repair Manual (SRM) stringer repairs. The inspection is done from the external side of the upper wing skin where titanium bolts are installed. The cracks in the splice stringer flanges can be in a forward and aft direction. See Figure 1 for a stringer repair example. The repair records will identify where the stringer repairs were made.

B. The skin and splice stringers are aluminum.

C. This procedure uses low frequency eddy current (LFEC) with a ring probe. The ring probe is put on each fastener (bolt head) in the inspection area. Only one ring probe is necessary to examine all bolts in the inspection areas.

D. This procedure uses an impedance plane display instrument.

E. This procedure identifies three reference standards. Each reference standard has a different top plate thickness that is used to simulate the thickness of the upper wing skin. The upper wing skin thickness changes along the length of the wing. An ultrasonic thickness measurement of the wing skin in the inspection area is done to identify the correct reference standard to use during calibration.

F. 737 Maintenance Planning Data (MPD) Primary Structural Element (PSE) Reference:

(1) 57-20-15

G. 737 Structural Repair Manual (SRM) Reference:

(1) 57-20-03, Repair 1

2. **Equipment**

A. General

(1) Use inspection equipment that can be calibrated on the reference standards as specified in Paragraph 4.

(2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

B. Instrument

(1) Use an eddy current instrument with an impedance plane display that can operate at a frequency between 240 and 750 Hz.

(2) The instruments that follow were used to help prepare this procedure.

(a) Phasec 3D; GE Inspection Technologies

(b) Nortec 2000; Olympus NDT

C. Probes

(1) Use a ring probe with an inner diameter of 0.45 to 0.50 inch (11.4 to 12.7 mm) that can operate at a frequency between 240 and 750 Hz.

(2) The probes that follow were used to help prepare this procedure.

(a) RDP.9-100H-5, Inner Diameter 0.45 inch (11.4 mm), Reflection; Techna NDT

(b) RDP.9-100H-2, Inner Diameter 0.50 inch (12.7 mm), Reflection; Techna NDT

D. Reference Standard

(1) Make reference standard(s) NDT3232-X as specified in Figure 2, as necessary. There are three reference standards and each reference standard has a different top plate thickness. Paragraph 3. tells how to find the skin thickness in the inspection areas to identify how many reference standards you will have to use.

3. Prepare for the Inspection

A. From the external, top surface of the wing, identify the inspection area(s) along splice stringer 14. The inspection areas are where splice stringer repairs were done. Refer to the repair records to identify where the splice stringer repairs were done. Refer to Structural Repair Manual 57-20-03, Repair 1, for data about the repairs.

NOTE: The fasteners installed at the repair locations are titanium. Aluminum rivets are installed at locations that have not been repaired. A conductivity test can be done on the fasteners to identify the repair locations for this inspection. Titanium fasteners will give a much lower conductivity (1 to 7% IACS) than the aluminum rivets (25% IACS or higher).

B. Clean the upper wing skin where the ring probe will touch (at the fastener locations) in the inspection area(s). Remove paint if it is loose or if the fastener heads cannot be seen. See Figure 1 for the inspection area.

C. Measure the skin thickness in the inspection areas as specified in Part 4, 51-00-00, Procedure 2, and record the skin thicknesses. The skin thickness will tell you the correct reference standard (NDT3232-A, NDT3232-B, or NDT3232-C) to use during calibration.

4. Instrument Calibration

NOTE: Table 1 identifies the reference standard and instrument frequency to use for the skin thickness to be examined.

A. Calibrate the equipment on reference standard NDT3232-A to examine wing skins between 0.105 and 0.160 inch (2.66 and 4.06 mm) thick.

(1) Set the instrument frequency between 700 and 750 Hz.

(2) Put the probe on reference standard NDT3232-A at probe position 1 as shown in Detail II of Figure 3.

(3) Balance the instrument.

(4) Move the probe lightly above the fastener as necessary until the height of the signal is at a minimum and balance the instrument again.

(5) Set the balance point at approximately 20 percent of full screen height (FSH) and 60 percent of full screen width (FSW) as shown in Detail I of Figure 3.

(6) Adjust the phase control so that the lift-off signal moves horizontally from right to left when the probe is lifted off of the reference standard. See Detail I in Figure 3.

(7) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 3.

NOTE: Make sure the fastener is in the center of the probe.

(8) Move the probe lightly above the fastener as necessary until the height of the signal is at its minimum.

(9) Adjust the instrument gain to put the maximum signal from the reference notch at 60 percent of FSH as shown in Detail I of Figure 3. If necessary, it is permitted to set the horizontal gain 6 to 12 dB lower than the vertical gain to keep the signals on the display.

(10) Do Paragraph 4.A.(2) thru Paragraph 4.A.(9) again, as necessary, to make sure the notch signal is at 60 percent of FSH.

B. Calibrate the equipment on reference standard NDT3232-B to examine wing skins between 0.161 and 0.230 inch (4.09 and 5.84 mm) thick.

(1) Do Paragraph 4.A. again, but this time use reference standard NDT3232-B and set the frequency between 400 and 450 Hz. See Figure 3, Details I and II for this calibration.

C. Calibrate the equipment on reference standard NDT3232-C to examine wing skins between 0.231 and 0.290 inch (5.86 and 7.36 mm) thick.

(1) Do Paragraph 4.A. again, but this time use reference standard NDT3228-C and set the frequency between 240 and 270 Hz. See Figure 3, Details I and II for this calibration.

Table 1: Calibration Data

SKIN THICKNESS RANGE	REFERENCE STANDARD	FREQUENCY RANGE
0.105 TO 0.160 INCH (2.66 TO 4.06 mm)	NDT3232-A	700 TO 750 Hz
0.161 TO 0.230 INCH (4.09 TO 5.84 mm)	NDT3232-B	400 TO 450 Hz
0.231 TO 0.290 INCH (5.86 TO 7.36 mm)	NDT3232-C	240 TO 270 Hz

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4. Make sure the correct reference standard is used during calibration as specified in Paragraph 4.

B. Put the probe on one of the bolts in the inspection area. With the bolt in the center of the ring probe, move the probe a small quantity to get the minimum signal from the instrument.

C. Balance the instrument.

D. Put the probe on an adjacent bolt in the inspection area that is on the same stringer flange as the bolt that you used to balance the instrument. Make sure the bolt is in the center of the ring probe and monitor the instrument display. See Figure 1 to see the stringer flanges that are below the upper wing skin.

E. Do Paragraph 5.D. for all of the bolts installed in one flange that are in the inspection area. Make sure you do not put the ring probe on a rivet. Rivets are not in the inspection areas. See Figure 1

F. Do Paragraph 5.B. thru Paragraph 5.E. on the opposite stringer flange that is in the same inspection area that you examined in Paragraph 5.E.

G. If there were repairs done on the splice stringer on the opposite wing, do Paragraph 5.A. thru Paragraph 5.F. for that splice stringer.

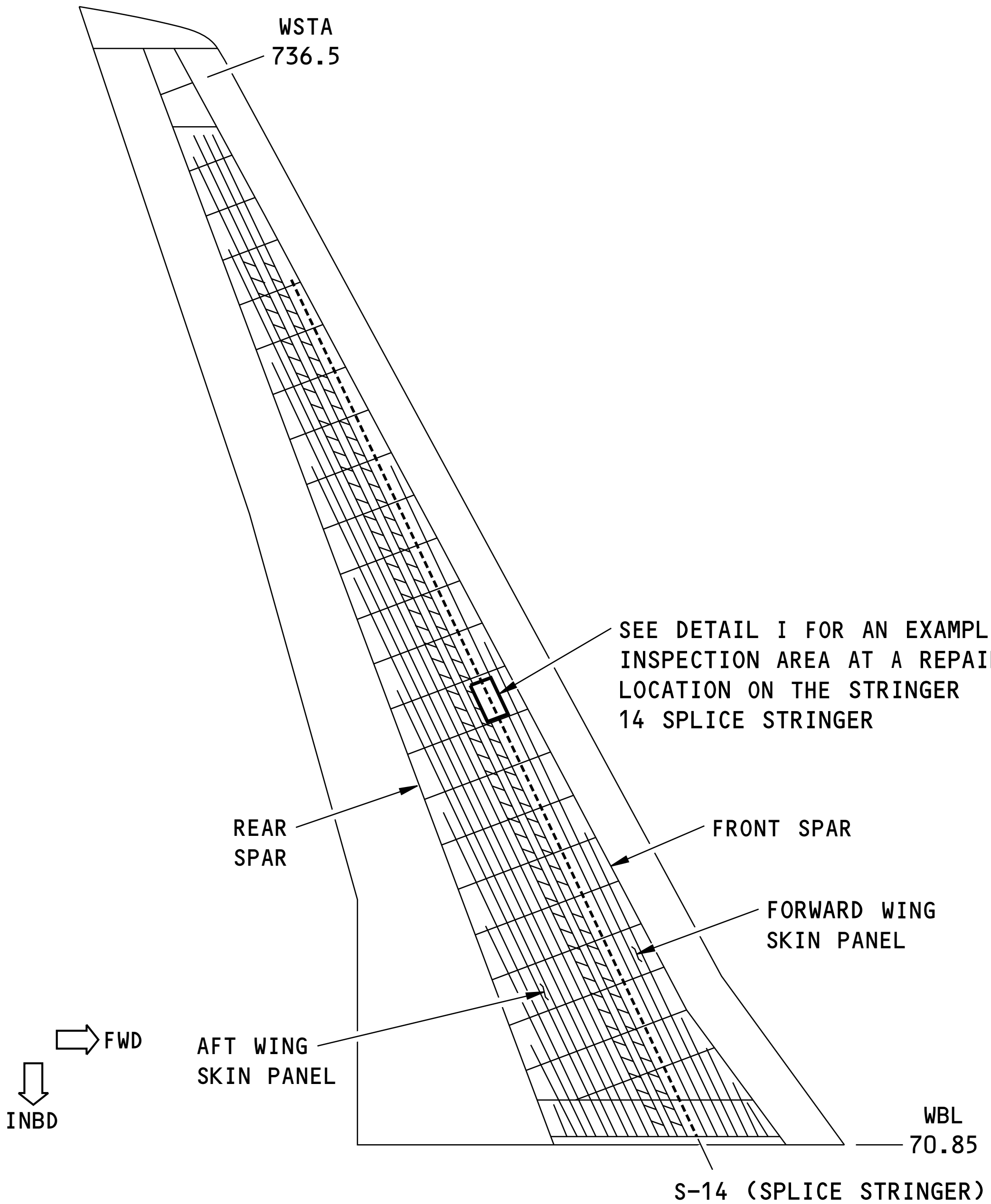
6. Inspection Results

A. A signal that is 40% (or more) of FSH is a sign of a crack and the location must be rejected. More analysis is necessary at locations that cause crack type signals to occur.

B. Compare signals that occur during the inspection to the signals that you got from the notch in the reference standard during calibration. See Paragraph 4.A., Paragraph 4.B. and Paragraph 4.C. for calibration data.

C. An incorrect result can occur if the probe is put on a rivet during the inspection. Rivets are not in the inspection areas and must not be examined. To see if a rivet was examined, do the conductivity test on the fastener and compare the results to the conductivity of a known titanium bolt. See the note in Paragraph 3.A. for the conductivities of aluminum and titanium fasteners.

D. To make sure a crack indication is from a crack, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.

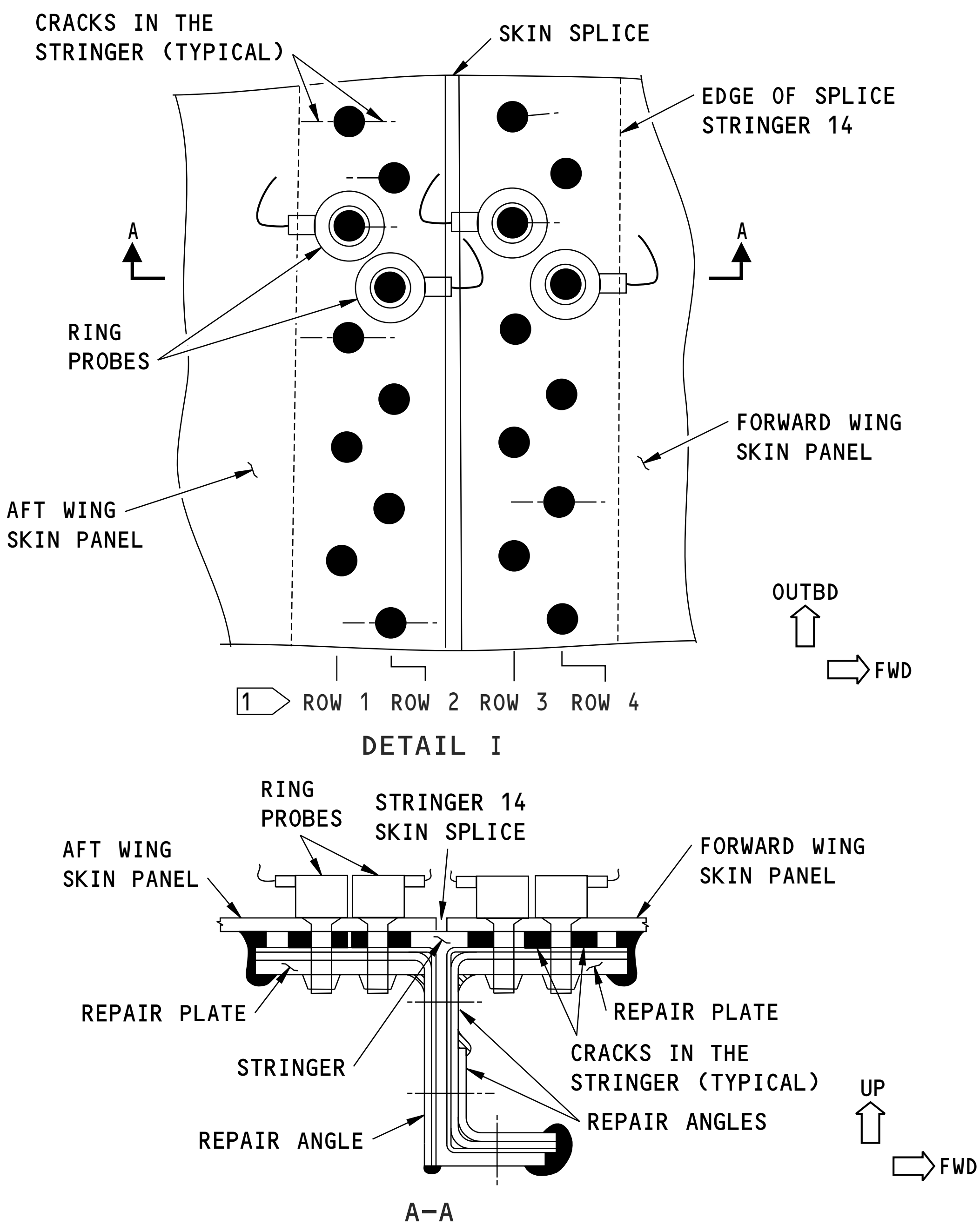


NOTES

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
- VIEW OF THE UPPER WING SKINS. THE INSPECTION AREAS ARE THE AREAS ALONG STRINGER 14 (SPLICE STRINGER) WHERE THERE ARE REPAIRS ON THE STRINGER.

2405167 S0000556442_V1

Inspection Area
Figure 1 (Sheet 1 of 2)



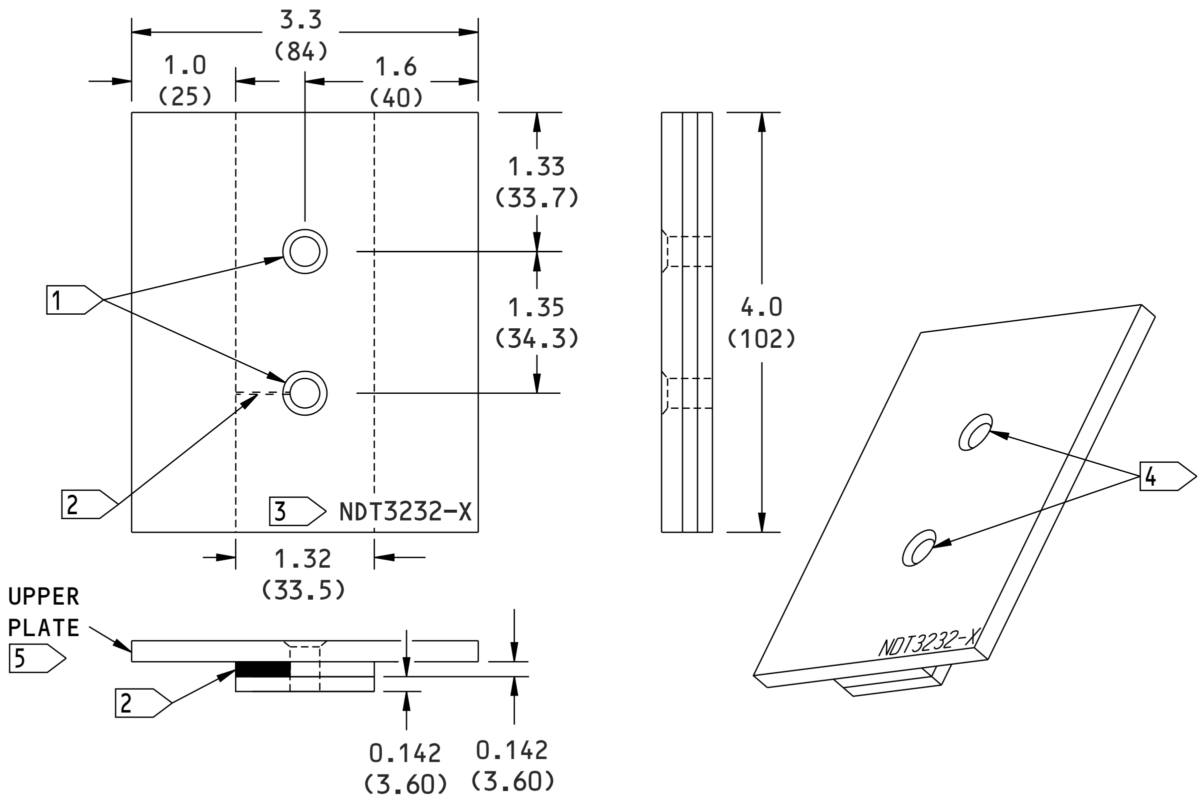
NOTES

1 EXAMINE ONE ROW OF FASTENERS BEFORE YOU EXAMINE THE ADJACENT ROW. BALANCE THE INSTRUMENT WITH THE RING PROBE ON A FASTENER IN A ROW BEFORE YOU EXAMINE THAT ROW.

- THE INSPECTION AREAS ARE WHERE THE VENT STRINGERS ARE REPAIRED.

2405274 S0000556444_V1

Inspection Area
Figure 1 (Sheet 2 of 2)



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- ALL PLATES ARE 7055-T77511, 7150-T651, 2024-T3 OR 2024-T62, CLAD OR BARE
- TOLERANCE:

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

3 REFERENCE STANDARD NUMBER	5 UPPER PLATE THICKNESS	4 BOLT LENGTH
NDT3232-A	0.160 (4.06)	7
NDT3232-B	0.225 (5.72)	8
NDT3232-C	0.290 (7.40)	9

TABLE 1

1 0.283 (7.18) DIAMETER HOLES WITH 100° COUNTERSINKS

2 NOTCH IN THE MIDDLE PLATE:
LENGTH: FROM THE HOLE TO THE EDGE OF THE PLATE.
WIDTH: 0.020 (0.50) MAXIMUM
DEPTH: THROUGH THE THICKNESS.

3 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3232-X, AT APPROXIMATELY THIS LOCATION. "X" CAN BE A, B OR C AND IS A FUNCTION OF THE UPPER PLATE THICKNESS. SEE TABLE 1 FOR THE REFERENCE STANDARD NUMBERS.

4 INSTALL BACB30NW8K_Y BOLTS WITH BACC30R8 COLLARS. SEE TABLE 1 FOR THE BOLT LENGTH.

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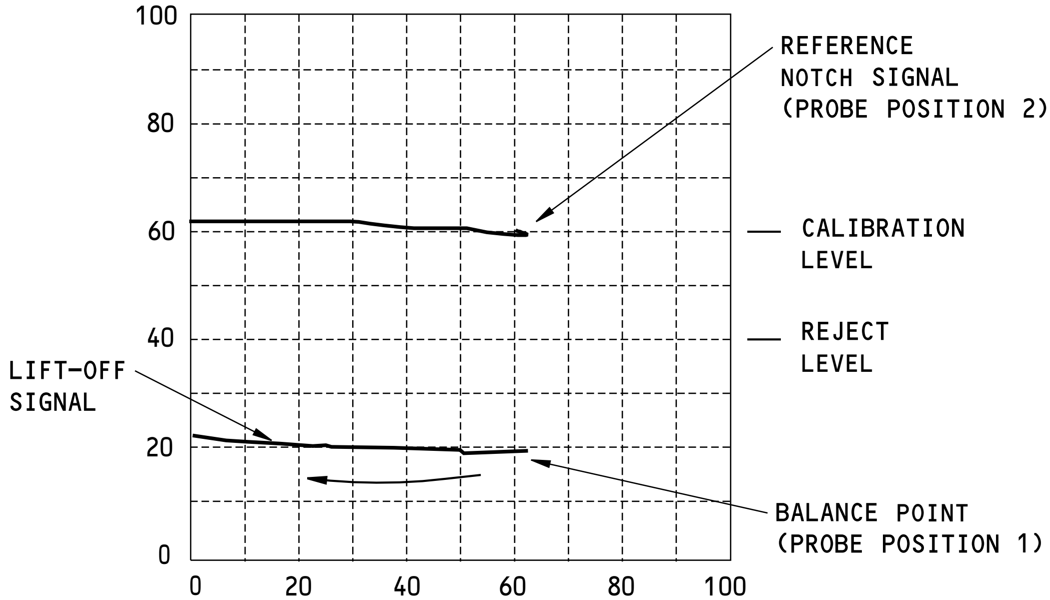
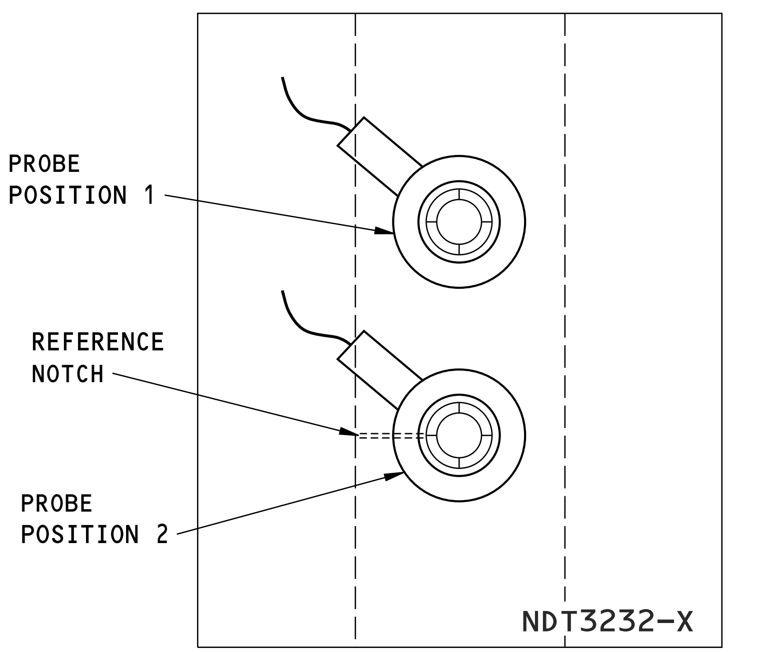
Reference Standard NDT3232
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION ON REFERENCE STANDARD NDT3232-X
DETAIL II

2405283 S0000556446_V1

Calibration Probe Positions
Figure 3

PART 6 - EDDY CURRENT

VENT STRINGER (S-10 AND S-12) FLANGES OF THE UPPER WING SKIN AT SRM STRINGER REPAIR LOCATIONS (LFEC)

1. **Purpose**

   A. Use this procedure to examine the flanges of the vent stringers at the upper skin of the outer wing for cracks where there are Structural Repair Manual (SRM) stringer repairs. The two vent stringers to be examined are stringers 10 and 12. The inspection is done from the external side of the upper wing skin where titanium bolts are installed. The cracks in the vent stringer flanges can be in a forward and aft direction. See Figure 1 for a stringer repair example. The repair records will identify where the stringer repairs were made.

   B. The skin and vent stringers are aluminum.

   C. This procedure uses low frequency eddy current (LFEC) with a ring probe. The ring probe is put on each fastener (bolt head) in the inspection area. Only one ring probe is necessary to examine all bolts in the inspection areas.

   D. This procedure uses an impedance plane display instrument.

   E. This procedure identifies three reference standards. Each reference standard has a different top plate thickness that is used to simulate the thickness of the upper wing skin. The upper wing skin thickness changes along the length of the wing. An ultrasonic thickness measurement of the wing skin in the inspection area is done to identify the correct reference standard to use during calibration.

   F. 737 Maintenance Planning Data (MPD) Primary Structural Element (PSE) Reference:

      (1) 57-20-14

   G. 737 Structural Repair Manual (SRM) Reference:

      (1) 57-20-03, Repairs 3 and 4

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standards as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument with an impedance plane display that can operate at a frequency between 200 and 720 Hz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 3D; GE Inspection Technologies

         (b) Nortec 2000; Olympus NDT

   C. Probes

      (1) Use a ring probe with an inner diameter of 0.65 inch (16.5 mm) that can operate at a frequency between 200 and 720 Hz.

      (2) The probes that follow were used to help prepare this procedure.

         (a) ARP-.65/1.1/200Hz, (reflection); Aerofab NDT

(b) RDP1.1 - .655 / 500H – CFRP (reflection); Techna NDT

D. Reference Standard

(1) Make reference standard NDT3228-X as specified in Figure 2, as necessary. There are three reference standards and each reference standard has a different top plate thickness. Paragraph 3. tells how to find the skin thickness in the inspection areas to identify how many reference standards you will have to use.

E. Special Tools

(1) Conductivity meter. A conductivity meter is optional and can be used to see the conductivity difference when you compare a rivet (not in the inspection areas) with a titanium bolt (found in the inspection areas). This is done to make sure you examine only bolts.

3. Prepare for the Inspection

A. From the external, top surface of the wing, identify the inspection area(s) along vent stringers 10 and 12. The inspection areas are where vent stringer repairs were done. Refer to the repair records to identify where the vent stringer repairs were done. Refer to Structural Repair Manual 57-20-03, Repairs 3 and 4, for data about the repairs.

NOTE: The fasteners installed at the repair locations are titanium. Aluminum rivets are installed at locations that have not been repaired. A conductivity test can be done on the fasteners to identify the repair locations for this inspection. Titanium fasteners will give a much lower conductivity (1 to 7% IACS) than the aluminum rivets (25% IACS or higher).

B. Clean the upper wing skin where the ring probe will touch (at the fastener locations) in the inspection area(s). Remove paint if it is loose or if the fastener heads cannot be seen. See Figure 1 for the inspection area.

C. Measure the skin thickness in the inspection areas as specified in Part 4, 51-00-00, Procedure 2, and record the skin thicknesses. The skin thickness will tell you the correct reference standard (NDT3228-A, NDT3228-B, or NDT3228-C) to use during calibration.

4. Instrument Calibration

NOTE: Table 1 identifies the reference standard and instrument frequency to use for the skin thickness to be examined.

A. Calibrate the equipment on reference standard NDT3228-A to examine wing skins between 0.100 and 0.160 inch (2.54 and 4.06 mm) thick.

(1) Set the instrument frequency between 680 and 720 Hz.

(2) Put the probe on reference standard NDT3228-A at probe position 1 as shown in Detail II of Figure 3.

(3) Balance the instrument.

(4) Move the probe lightly above the fastener as necessary until the height of the signal is at a minimum and balance the instrument again.

(5) Set the balance point at approximately 20 percent of full screen height (FSH) and 60 percent of full screen width (FSW) as shown in Detail I of Figure 3.

(6) Adjust the phase control so that the lift-off signal moves horizontally from right to left when the probe is lifted off of the reference standard. See Detail I in Figure 3.

(7) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 3.

NOTE: Make sure the fastener is in the center of the probe.

(8) Move the probe lightly above the fastener as necessary until the height of the signal is at its minimum.

(9) Adjust the instrument gain to put the maximum signal from the reference notch at 60 percent of FSH as shown in Detail I of Figure 3. If necessary, it is permitted to set the horizontal gain 6 to 12 dB lower than the vertical gain to keep the signals on the display.

(10) Do Paragraph 4.A.(2) thru Paragraph 4.A.(9) again, as necessary, to make sure the notch signal is at 60 percent of FSH.

B. Calibrate the equipment on reference standard NDT3228-B to examine wing skins between 0.161 and 0.225 inch (4.09 and 5.70 mm) thick.

(1) Do Paragraph 4.A. again, but this time use reference standard NDT3228-B and set the frequency between 340 and 360 Hz. See Figure 3, Details I and II for this calibration.

C. Calibrate the equipment on reference standard NDT3228-C to examine wing skins between 0.226 and 0.290 inch (5.74 and 7.36 mm) thick.

(1) Do Paragraph 4.A. again, but this time use reference standard NDT3228-C and set the frequency between 200 and 230 Hz. See Figure 3, Details I and II for this calibration.

Table 1: Calibration Data

SKIN THICKNESS RANGE	REFERENCE STANDARD	FREQUENCY RANGE
0.100 TO 0.160 INCH (2.54 TO 4.06 mm)	NDT3228-A	680 TO 720 Hz
0.161 TO 0.225 INCH (4.09 TO 5.70 mm)	NDT3228-B	340 TO 360 Hz
0.226 TO 0.290 INCH (5.74 TO 7.36 mm)	NDT3228-C	200 TO 230 Hz

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4. Make sure the correct reference standard is used for the calibration as specified in Paragraph 4.

B. Put the probe on one of the bolts in the inspection area. With the bolt in the center of the ring probe, move the probe a small quantity to get the minimum signal from the instrument.

C. Balance the instrument.

D. Put the probe on an adjacent bolt in the inspection area that is on the same stringer flange as the bolt that you used to balance the instrument. Make sure the bolt is in the center of the ring probe and monitor the instrument display. See Figure 1 to see the stringer flanges that are below the upper wing skin.

E. Do Paragraph 5.D. for all of the bolts installed in one flange that are in the inspection area. Make sure you do not put the ring probe on a rivet. Rivets are not in the inspection areas. See Figure 1.

F. Do Paragraph 5.B. thru Paragraph 5.E. on the opposite stringer flange that is in the same inspection area that you examined in Paragraph 5.E.

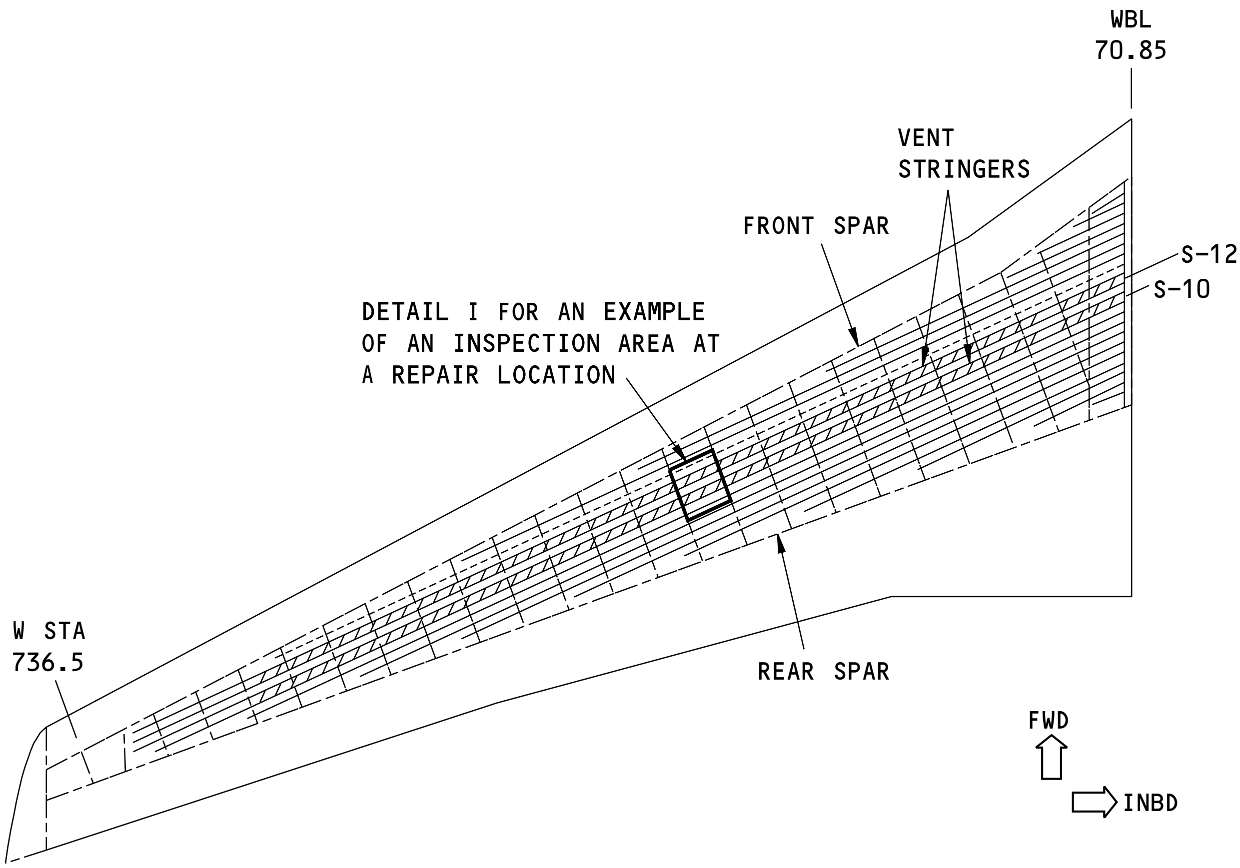
6. Inspection Results

A. A signal that is 40% (or more) of FSH is a sign of a crack and the location must be rejected. More analysis is necessary at locations that cause crack type signals to occur.

B. Compare signals that occur during the inspection to the signals that you got from the notch in the reference standard during calibration. See Paragraph 4.A., Paragraph 4.B. and Paragraph 4.C. for calibration data.

C. An incorrect result can occur if the probe is put on a rivet during the inspection. Rivets are not in the inspection areas and must not be examined. To identify if a rivet was examined, do the conductivity test on the fastener and compare the results to the conductivity of a known titanium bolt. See the note in Paragraph 3.A. for the conductivities of aluminum and titanium fasteners.

D. To make sure a crack indication is from a crack, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.

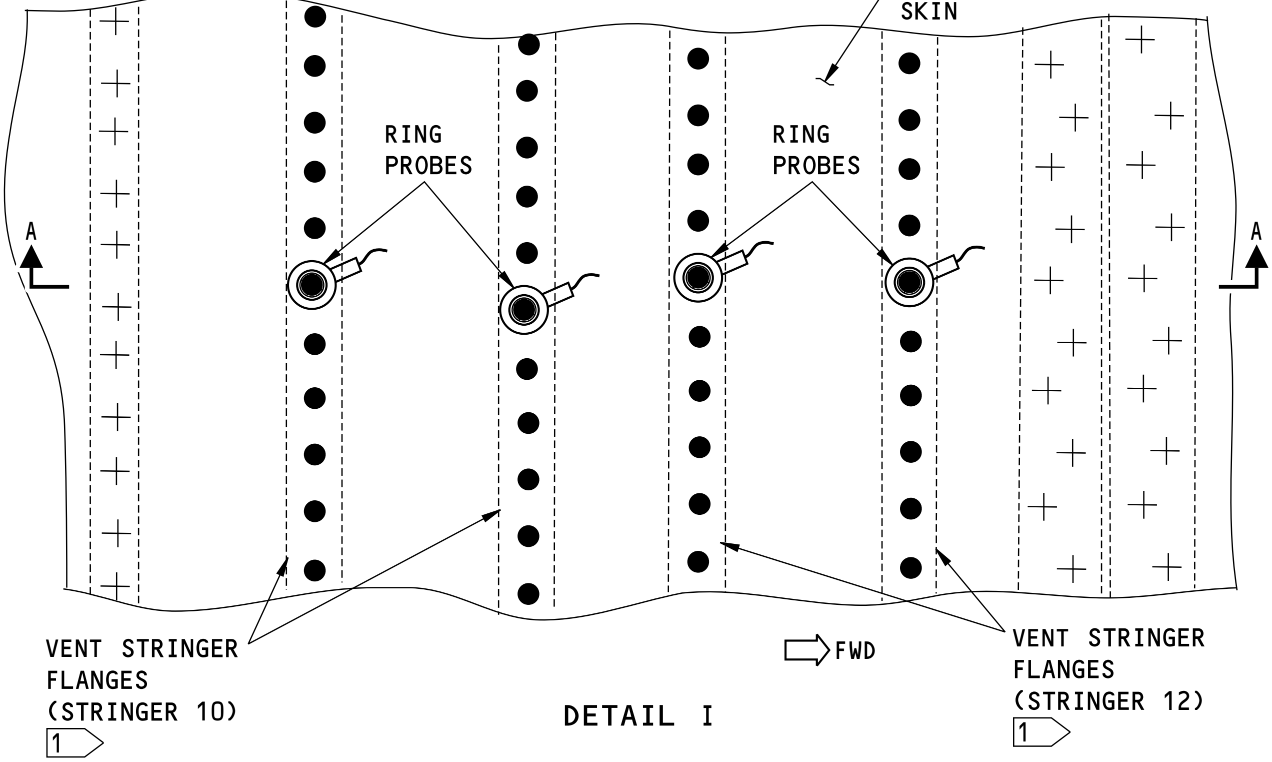


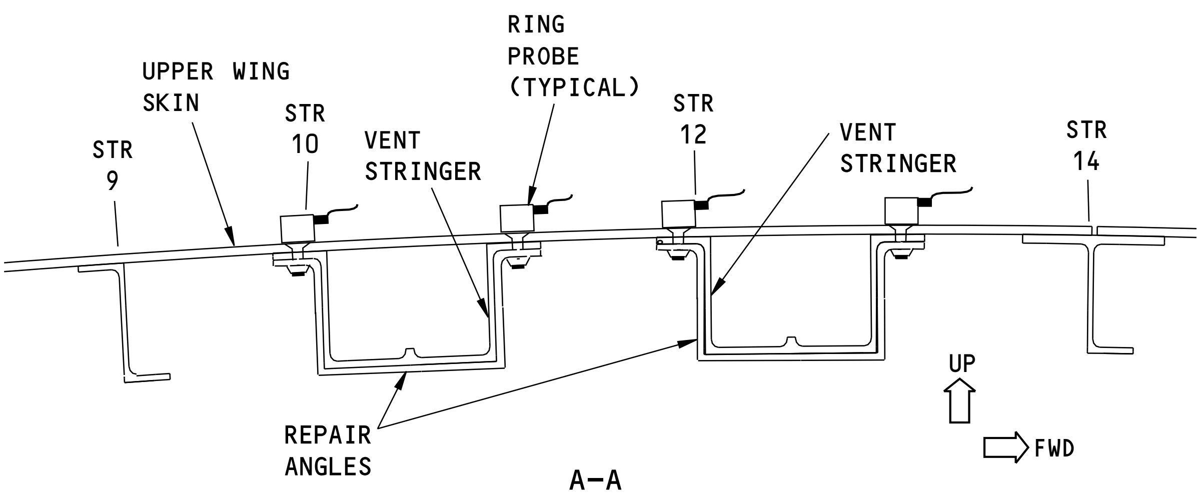
NOTES:

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
- VIEW OF THE UPPER WING SKIN. THE INSPECTION AREAS ARE ALONG VENT STRINGERS S-10 AND S-12 WHERE THERE ARE REPAIRS ON THE STRINGERS.

2404877 S0000556459_V1

Inspection Area
Figure 1 (Sheet 1 of 2)





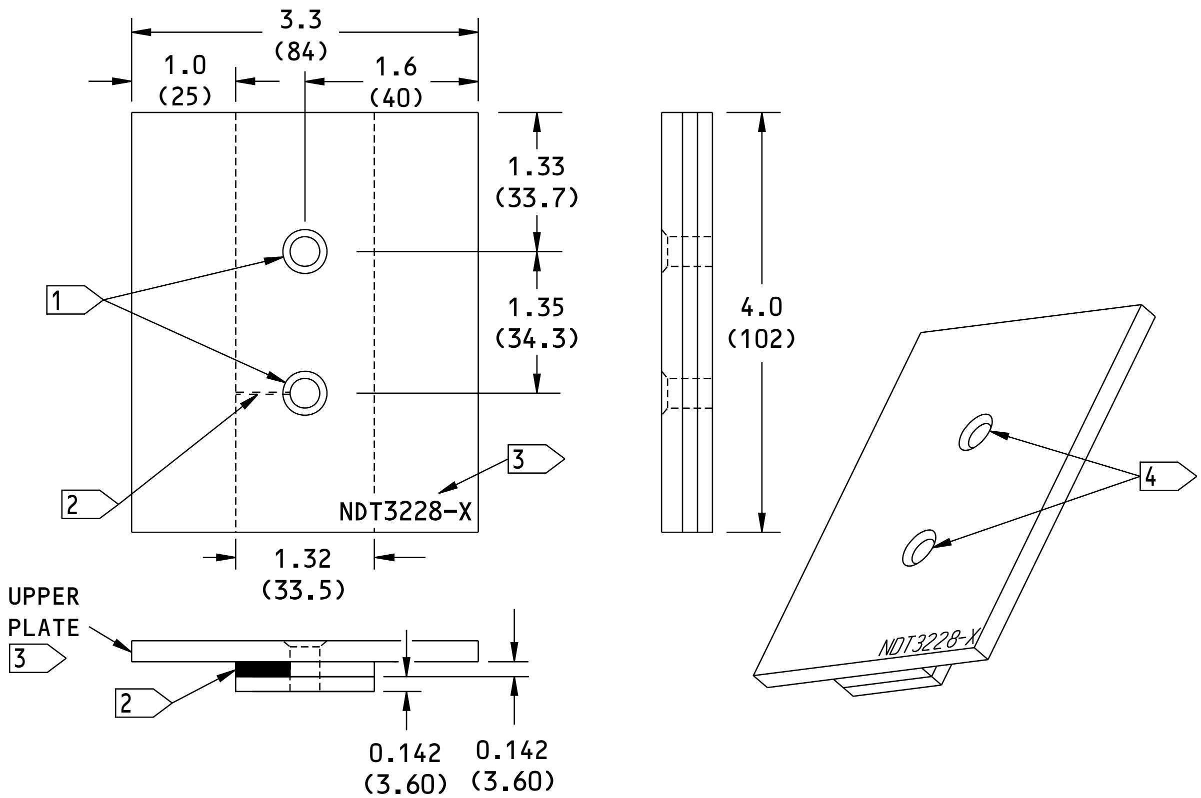
NOTES:

- THE INSPECTION AREAS ARE WHERE THE VENT STRINGERS ARE REPAIRED.

1 COMPLETE THE INSPECTION ON ONE STRINGER FLANGE BEFORE YOU DO THE INSPECTION ON THE ADJACENT FLANGE.

2404905 S0000556461_V1

Inspection Area
Figure 1 (Sheet 2 of 2)



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- ALL PLATES ARE 7055-T77511, 7150-T651, OR 2024-T62, CLAD OR BARE
- TOLERANCE:

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

REFERENCE STANDARD NUMBER	UPPER PLATE THICKNESS [3]	BOLT LENGTH [4]
NDT3228-A	0.160 (4.06)	7
NDT3228-B	0.225 (5.72)	8
NDT3228-C	0.290 (7.40)	9

TABLE 1

[1] 0.344 (8.74) DIAMETER HOLES WITH 100° COUNTERSINKS

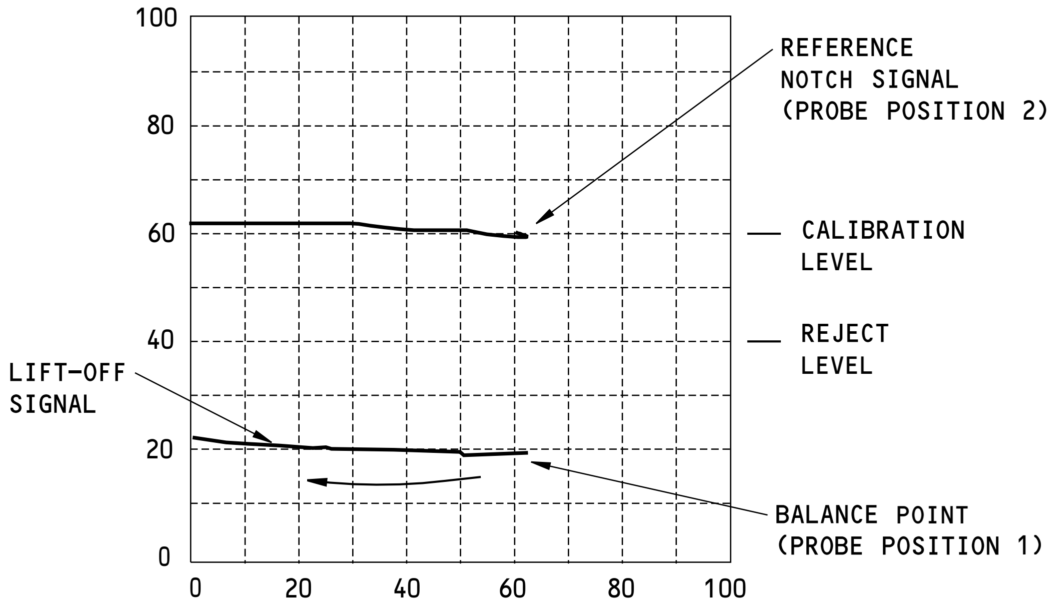
[2] NOTCH IN THE MIDDLE PLATE:
LENGTH: FROM THE HOLE TO THE EDGE OF THE PLATE.
WIDTH: 0.020 (0.50) MAXIMUM
DEPTH: THROUGH THE THICKNESS

[3] ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3228-X, AT APPROXIMATELY THIS LOCATION. "X" CAN BE A, B OR C AND IS A FUNCTION OF THE UPPER PLATE THICKNESS AS SPECIFIED IN TABLE 1

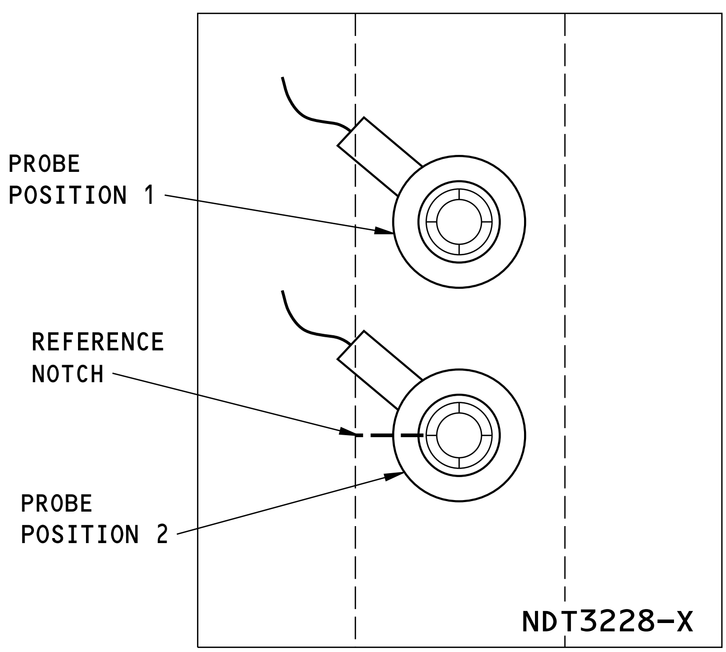
[4] INSTALL BACB30NY10K_Y BOLTS WITH BACC30AC10 COLLARS. SEE TABLE 1 FOR THE BOLT LENGTH

2405616 S0000556463_V1

Reference Standard NDT3228
Figure 2



IMPEDANCE PLANE DISPLAY
DETAIL I



PROBE POSITIONS FOR CALIBRATION
ON REFERENCE STANDARD NDT3228-X
DETAIL II

2405625 S0000556464_V1

Calibration Probe Positions
Figure 3

PART 6 - EDDY CURRENT

WING CENTER SECTION - LOWER SPLICE STRINGERS (S-5 AND S-9) AT SRM STRINGER REPAIR LOCATIONS (LFEC)

1. **Purpose**

   A. Use this procedure to examine the vertical web of the lower splice stringers in the wing center section for cracks where there are Structural Repair Manual (SRM) stringer repairs. The two splice stringers to be examined are stringers 5 and 9. The inspection is done internally where the repair angles and channels are installed. The cracks that can occur in the splice stringer webs are in a vertical direction. See Figure 1 for an example of where the stringer repairs can be. The repair records will tell you where the stringer repairs were made on the lower splice stringers (5 and 9).

   B. The repair angles, channels and lower splice stringers are aluminum. See Figure 1 for data about the repair angles, repair channels and probe scans.

   C. This procedure uses low frequency eddy current (LFEC) with a spot probe that is put adjacent to each fastener (bolt head) in the inspection area. Only one spot probe is necessary to examine all bolt locations.

   D. This procedure uses an impedance plane display instrument.

   E. One reference standard with two levels (“A” and “B”) that have two different thicknesses is used for the calibration.

   F. 737 Maintenance Planning Data (MPD) Primary Structural Element (PSE) Reference:

      (1) 57-10-08

   G. 737 Structural Repair Manual (SRM) Reference:

      (1) 57-10-03, Repairs 4 and 5

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standards as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument with an impedance plane display that can operate at a frequency between 1 and 5 kHz.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Phasec 3D; GE Inspection Technologies

         (b) Nortec 2000; Olympus NDT

   C. Probes

      (1) Use a spot probe that:

         (a) Can operate in a frequency range of 1 to 5 kHz.

         (b) Has a maximum diameter of 0.40 inch (10.2 mm).

         (c) Is shielded.

      (2) The probes that follow were used to help prepare this procedure.

(a) AF-4057 (Reflection Probe); Aerofab NDT

(b) SDP.375-8K (Reflection Probe); Techna NDT

D. Reference Standard

(1) Make reference standard NDT3236 as specified in Figure 2.

3. Prepare for the Inspection

A. Defuel the fuel tanks. Refer to Aircraft Maintenance Manual (AMM) 28-26-00/201 for instructions to defuel the fuel tanks.

WARNING: MAKE SURE THAT YOU REMOVE ALL THE FUEL FROM THE TANKS. MAKE SURE THAT THE TANKS HAVE GOOD FLOW OF CLEAN AIR. IF YOU DO NOT OBEY, YOU CAN CAUSE AN EXPLOSION AND INJURY TO PERSONS ON, OR NEAR THE AIRPLANE.

B. Look at the repair records for the airplane to be examined to identify the repair locations on the vertical webs of the lower splice stringers (stringers 5 and 9) in the wing center section.

C. Get access to the repair areas in the wing center section through the access panel in the lower skin panel of the wing center section. See Figure 1 for the access panel location.

D. Clean the inspection surface (if necessary) on the repair angles or repair channels that are installed on the vertical webs of the lower splice stringers (stringers 5 and 9). Remove paint if it is loose. See Figure 1 for an example of an inspection area on a lower splice stringer.

4. Instrument Calibration

A. Calibrate the equipment on level A of reference standard NDT3236 as follows to examine the vertical web of a lower splice stringer for cracks through two repair angles or channels. See Figure 1, Figure 3, and Paragraph 5.A.

(1) Set the instrument frequency between 1 and 2 kHz.

(2) Put the probe on level A of reference standard NDT3236 at probe position 1 as shown in Detail II of Figure 3.

(3) Balance the instrument.

(4) Set the balance point at approximately 20 percent of full screen height (FSH) and 50 to 70 percent of full screen width (FSW) as shown in Detail I of Figure 3.

(5) Adjust the phase control so that the lift-off signal moves horizontally from right to left when the probe is lifted off of the reference standard. See Detail I in Figure 3.

(6) Move the probe on the reference standard to probe position 2 as shown in Detail II of Figure 3. Monitor the reference notch signal during this probe scan.

(7) Adjust the instrument gain so the maximum signal from the reference notch is 60 percent of FSH as shown in Detail I of Figure 3. If necessary, it is permitted to set the horizontal gain 6 to 12 dB lower than the vertical gain to keep the signals on the display.

(8) Do Paragraph 4.A.(2) thru Paragraph 4.A.(7) again, as necessary, to make sure the notch signal is at 60 percent of FSH.

B. Calibrate the equipment on level B of reference standard NDT3236 as follows to examine the vertical web of a lower splice stringer for cracks through one repair angle or one repair channel. See Figure 1, Figure 3, and Paragraph 5.B.

(1) Do Paragraph 4.A.(1) thru Paragraph 4.A.(8), but this time use level B of reference standard NDT3236 and set the frequency between 4 and 5 kHz. See Figure 3, Details I and II for this calibration.

5. Inspection Procedure

NOTE: In the lower stringer repair locations (stringer 5 and 9), there are two repair angles installed on one side of the vertical stringer web and two repair channels installed on the other side of the web. Do the probe scans on one side of the vertical stringer web. Figure 1 shows repair angles on one side of the stringer web and repair channels on the other side of the stringer web.

A. Examine the vertical web of the lower splice stringer for cracks through two repair angles or two repair channels as follows.

(1) Do the calibration on level A of reference standard NDT3236 as specified in Paragraph 4.A.

(2) Put the probe on the 0.080 inch (2.03 mm) thick repair angle or repair channel, adjacent to one of the fasteners in the inspection area. Make sure the probe is to the right or left side of the fastener. See flagnote 1 in Figure 1.

(3) Balance the instrument.

(4) Do half circle scans around the fasteners in the upper and lower fastener rows as shown by flagnote 1 in Figure 1 and monitor the instrument for crack signals. Flagnote 3 in Figure 1 shows a subsurface butt splice that could cause a crack-type indication to occur.

B. Examine the vertical web of the lower splice stringers through one repair angle or one repair channel as follows.

(1) Do the calibration on level B of reference standard NDT3236 as specified in Paragraph 4.B.

(2) Put the probe on the 0.063 inch (1.60 mm) thick repair angle, adjacent to one of the fasteners in the inspection area. Make sure the probe is on the right or left side of the fastener. See flagnote 2 in Figure 1.

(3) Balance the instrument.

(4) Do half circle scans around the fasteners in the upper and lower fastener rows as shown by flagnote 2 in Figure 1 and monitor the instrument for crack signals.

C. Do Paragraph 5.A. and Paragraph 5.B. on the other lower splice stringer if repair angles and repair channels are installed.

6. Inspection Results

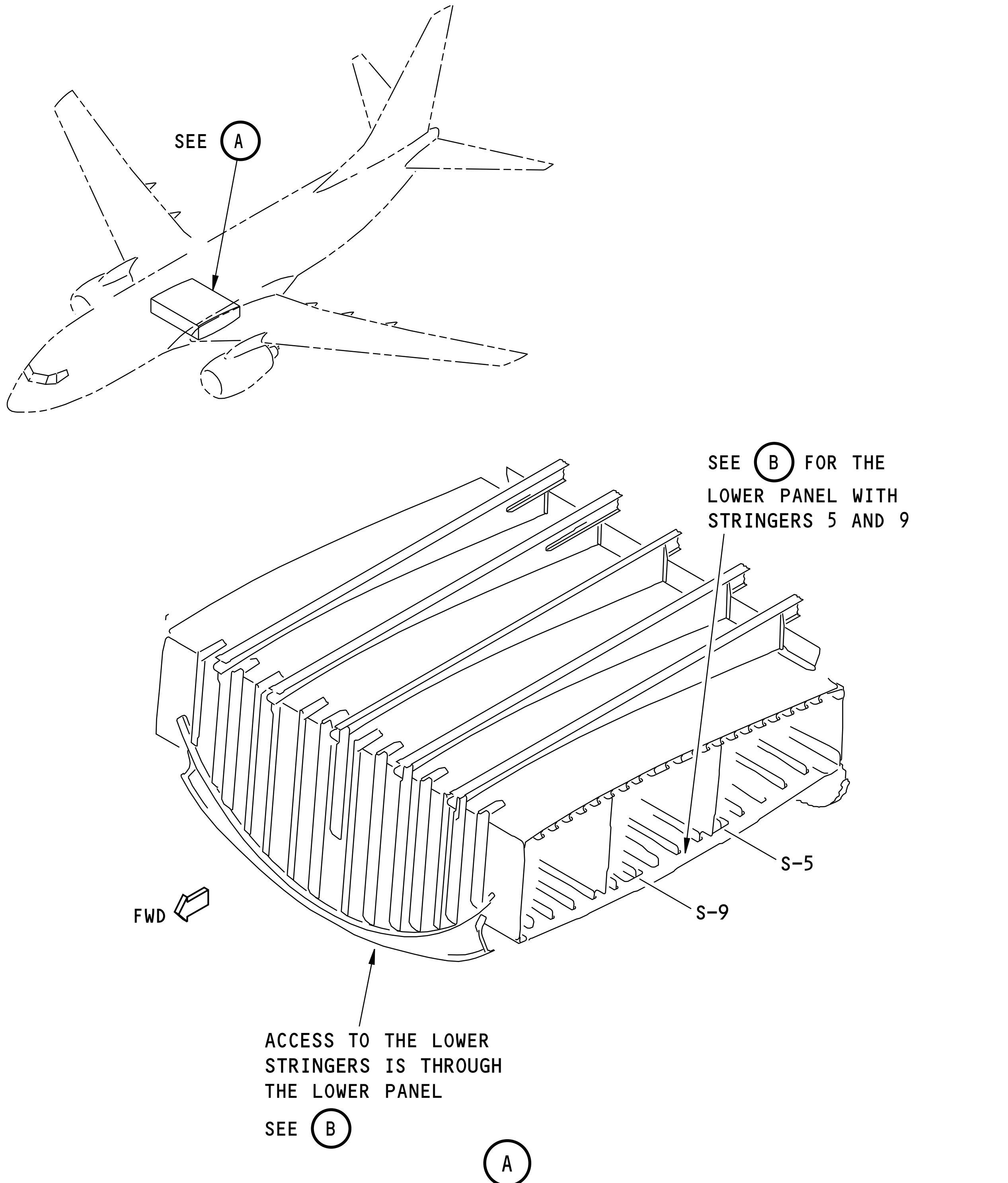
A. A signal that is 40% (or more) of FSH is a sign of a crack and the location must be rejected. More analysis is necessary at locations that cause crack type signals to occur.

B. Compare signals that occur during the inspection to the signal that you got from the notch in the reference standard during calibration. See Paragraph 4. for calibration data.

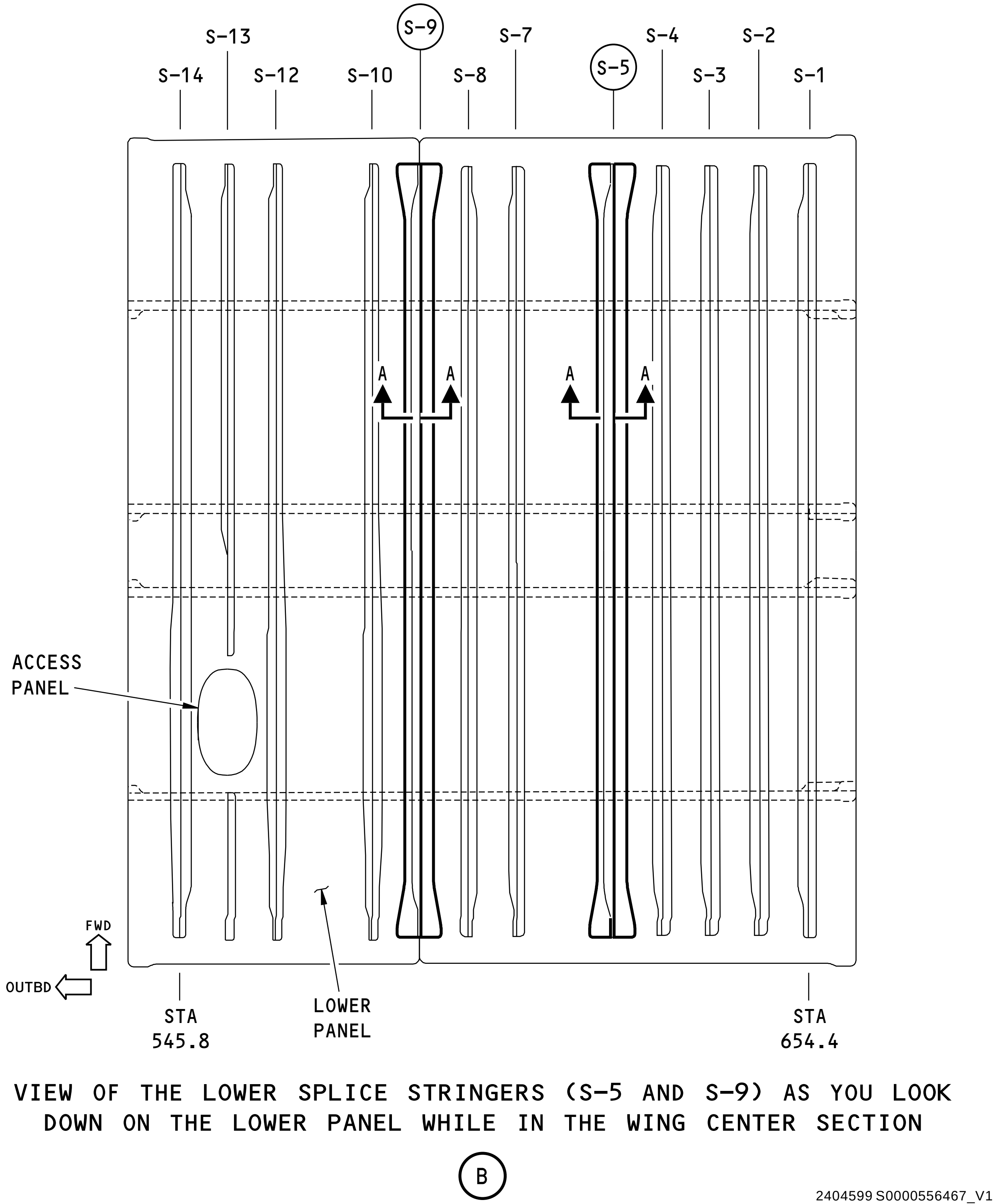
C. An incorrect crack signal can occur if the probe moves across a stringer butt splice. See flagnote 3 in Figure 1 to see the stringer butt splice.

D. An incorrect crack signal can occur if the probe goes near the edge of a repair angle. Make sure a crack signal is not caused by an edge effect.

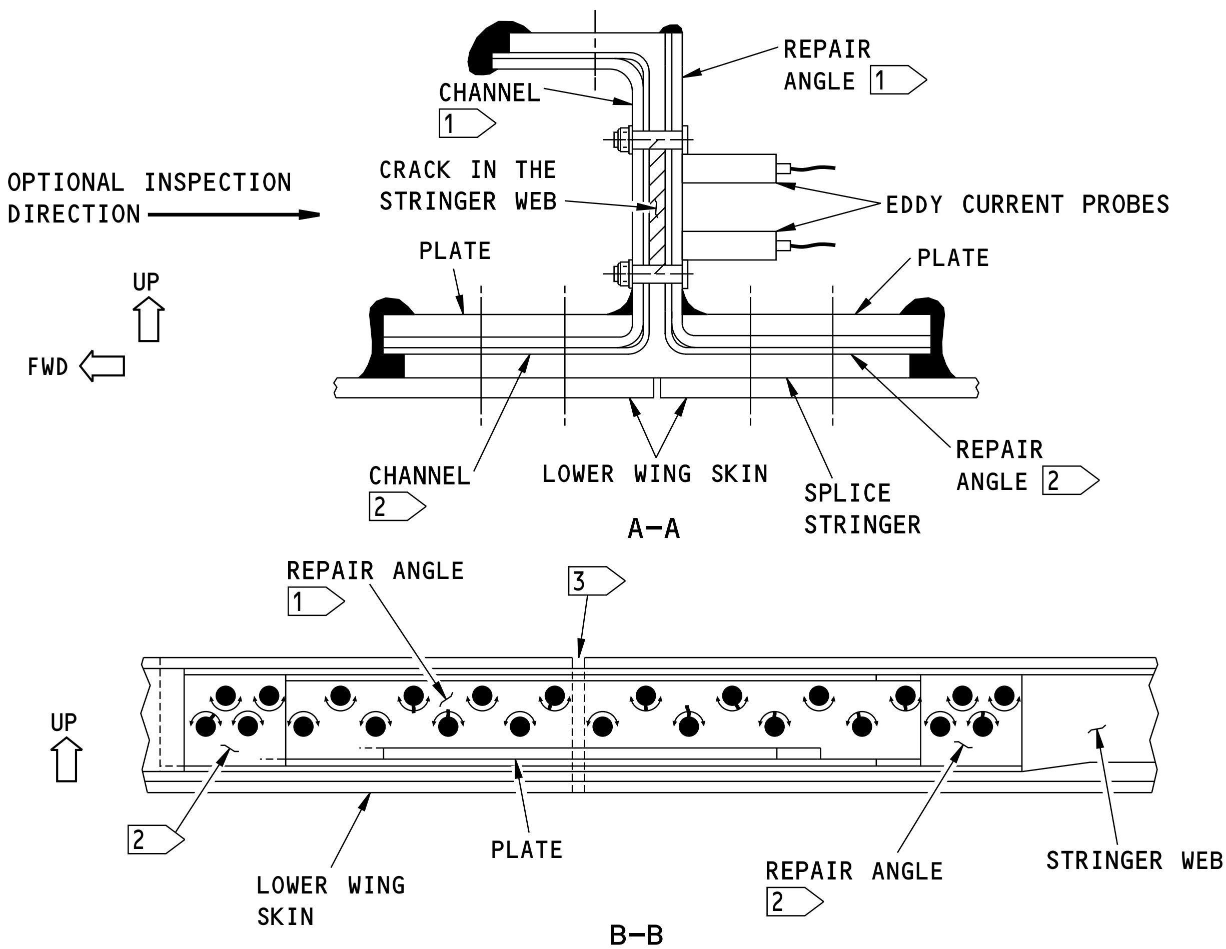
E. To make sure a crack indication is from a crack, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



Inspection Area
Figure 1 (Sheet 1 of 3)



Inspection Area
Figure 1 (Sheet 2 of 3)



VIEW OF LOWER SPLICE STRINGERS S-5 AND S-9 AS YOU LOOK FORWARD OR AFT. LOWER SPLICE STRINGERS S-5 AND S-9 ARE EQUIVALENT

NOTES

- THE PROBE SCANS CAN BE DONE FROM THE FORWARD OR AFT SIDES OF THE STRINGER. IT IS NOT NECESSARY TO DO THE PROBE SCANS ON EACH SIDE OF THE STRINGER.

1 THESE REPAIR ANGLES AND CHANNELS ARE 0.080 INCH (2.03 MM) THICK. DO THE CALIBRATION ON REFERENCE STANDARD NDT3236 ON THE PLATE WITH THE "A" LABEL. DO HALF CIRCLE SCANS AROUND THE FASTENERS ON THE REPAIR ANGLE (OR CHANNEL) AS SHOWN

2 THIS REPAIR ANGLE OR CHANNEL IS 0.063 INCH (1.60 MM) THICK. DO THE CALIBRATION ON REFERENCE STANDARD NDT3236 ON THE PLATE WITH THE "B" LABEL. DO HALF CIRCLE SCANS AROUND THE FASTENERS ON THE REPAIR ANGLE (OR CHANNEL) AS SHOWN

3 THE SUBSURFACE BUTT SPLICE CAN CAUSE A CRACK TYPE INDICATION TO OCCUR IF THE PROBE GOES NEAR IT. IF YOU SEE A CRACK TYPE SIGNAL, MAKE SURE IT IS NOT CAUSED BY THE BUTT SPLICE

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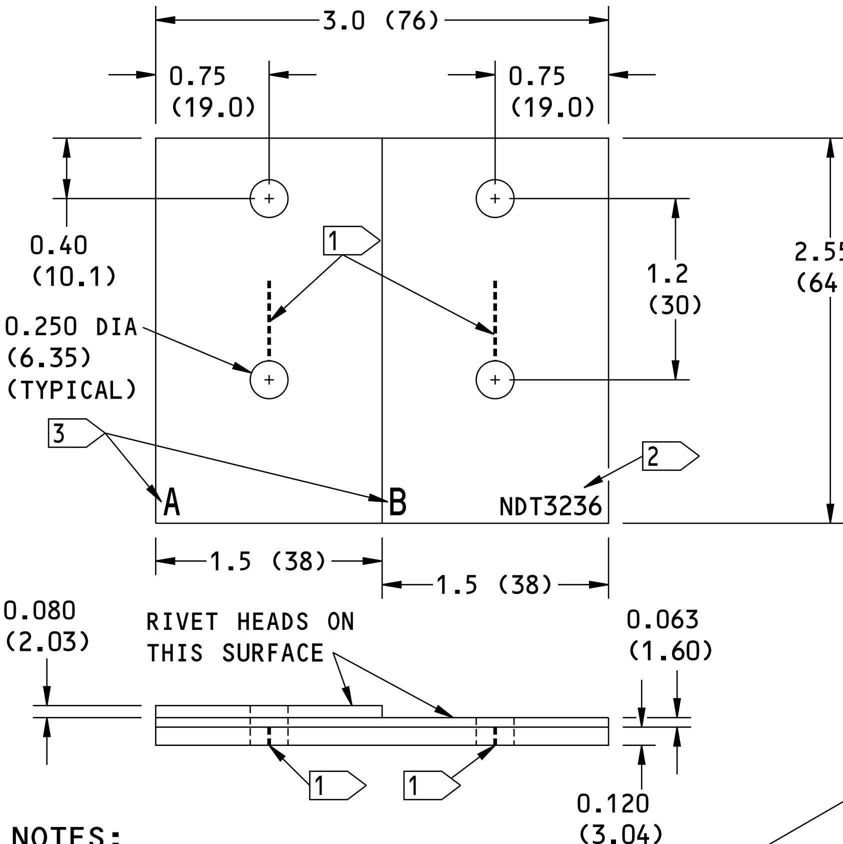
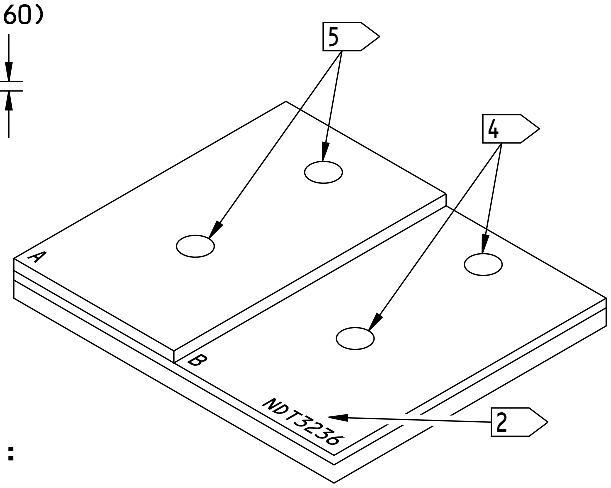
Inspection Area
Figure 1 (Sheet 3 of 3)





NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL: 2024-T3, -T6, OR 7075-T6 CLAD OR BARE
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

1 EDM NOTCH: 0.625 (15.87) LONG X 0.020 (0.51) MAXIMUM WIDTH; THROUGH THE THICKNESS IN THE LOWER PLATE

2 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3236, WHERE SHOWN

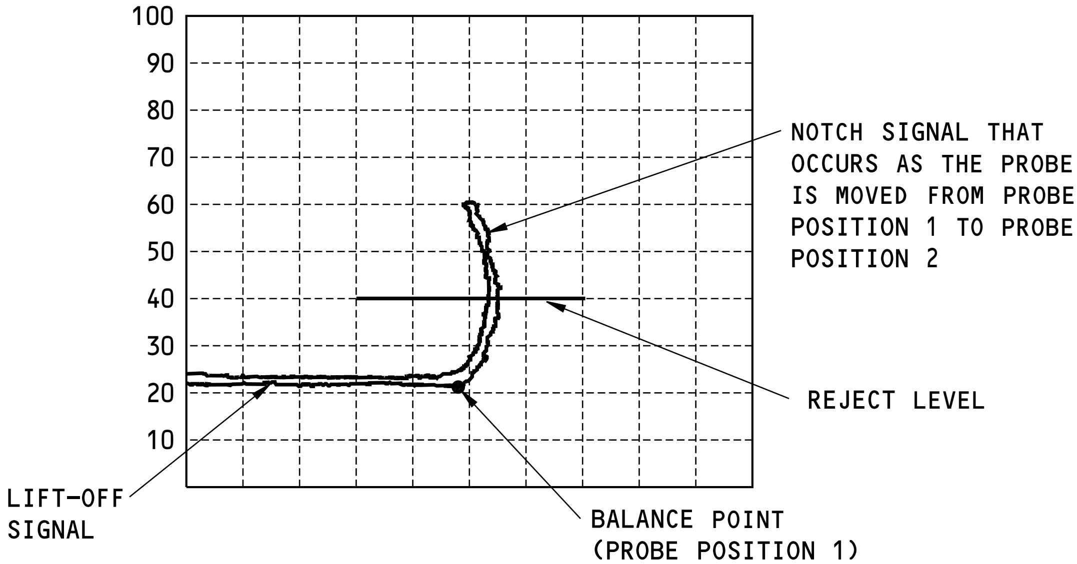
3 ETCH OR STAMP "A" AND "B" WHERE SHOWN

4 BACR15FT8D3C RIVETS (2 LOCATIONS)

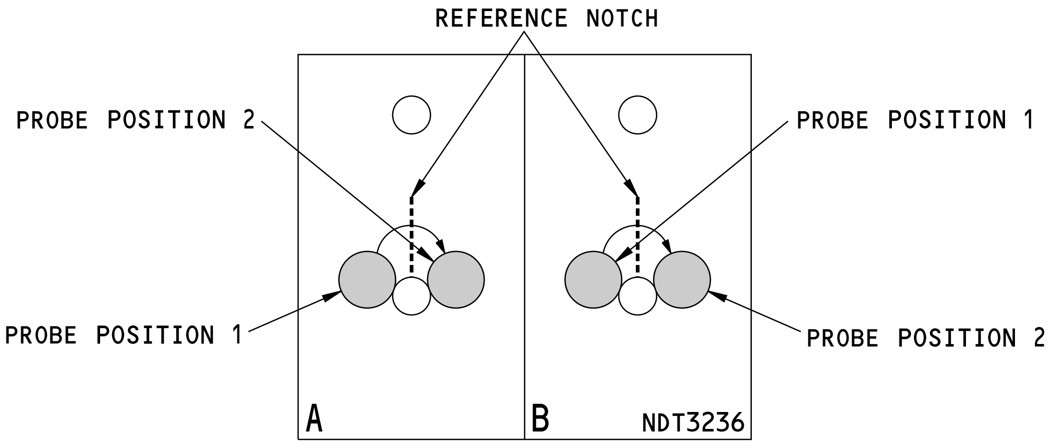
5 BACR15FT8D4C RIVETS (2 LOCATIONS)

2404728 S0000556469_V1

Reference Standard NDT3236
Figure 2



DETAIL I



DETAIL II

NOTES

- DO THE CALIBRATION ON SECTION "A" OF THE REFERENCE STANDARD WHEN THE INSPECTION IS DONE THROUGH TWO REPAIR ANGLES OR CHANNELS. SEE FIGURE 1, FLAGNOTE 1
- DO THE CALIBRATION ON SECTION "B" OF THE REFERENCE STANDARD WHEN THE INSPECTION IS DONE THROUGH ONE REPAIR ANGLE OR CHANNEL. SEE FIGURE 1, FLAGNOTE 2
- THE NOTCH SIGNAL CAN LOOK DIFFERENT WITH DIFFERENT PROBES AND INSTRUMENTS

2404744 S0000556470_V1

Calibration Probe Positions
Figure 3

PART 6 - EDDY CURRENT

WING CENTER SECTION - LOWER ZEE STRINGER INSPECTION AT SRM 57-10-03 REPAIR 6 AND 7 AREAS (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to find cracks in the lower zee stringer of the wing center section in areas where SRM 57-10-03, Repairs 6 and/or 7 have been done. See Figure 1 for the lower zee stringer locations.

   B. Use this procedure to examine the vertical web flange of the lower zee stringer for cracks that can occur at the fastener locations in the repaired areas. See Figure 2 for examples of the Repair 6 and 7 inspection areas.

   C. This procedure examines the lower zee stringer through the repair angles from inside the wing center section. The lower zee stringer and repair angles are made of aluminum. The thickness of the repair angles are the same on each side of the stringer web for Repairs 6 and 7.

   D. This procedure uses a reflection ring probe and an impedance plane display instrument. See Paragraph 2.C. for the probe to be used.

   E. This procedure uses one reference standard to examine the lower zee stringer for cracks in the Repair 6 and 7 areas. The reference standard is made to make it possible to calibrate the instrument on each side of the reference standard (fastener head or collar side).

   F. 737-600/700/800/900 Structural Repair Manual (SRM) References:

      (1) 57-10-03, Repair 6

      (2) 57-10-03, Repair 7

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at frequencies between 450 Hz and 3 kHz.

         (c) Can be calibrated as specified in the calibration instructions of this procedure.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 2000D, Nortec 500; Olympus NDT

         (b) Phasec 2d, Phasec 3d; GE Inspection Technologies

   C. Probe

      (1) Use a reflection ring probe that operates at a frequency between 450 Hz and 3 kHz, has an inner diameter of 0.45 inches (11.4 mm) and a maximum outer diameter of 0.70 inches (17.8 mm).

      (2) The probe that follows was used to help prepare this procedure.

         (a) ARP-.45/.700/500HZ; AeroFab NDT

D. Reference Standard

(1) Use reference standard NDT3234 to help calibrate the instrument. See Figure 3 for the reference standard drawing.

3. Prepare for the Inspection

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

A. It is necessary to get access into the fuel tank of the wing center section to do this inspection. The fuel tank must be drained and purged to a ‘‘health safe’’ condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas. See Figure 1 and Figure 2.

C. Remove sealant from the stringer as necessary to make sure the probe can be set flat against the inspection surface during the inspection. Be careful not to damage the stringer surface during sealant removal. Refer to the Airplane Maintenance Manual for more instructions if necessary.

4. Instrument Calibration

NOTE: This procedure uses three calibrations to examine the fastener locations identified in Figure 2 as code “A”, “B” and “C” for all 737-600/700/800/900 airplanes. The paragraphs that follow give the instructions for all three calibrations.

A. Calibrate the instrument to examine the code “A” fastener locations as follows:

(1) Set the instrument frequency to 450 Hz.

(2) Put the probe on level “A” of reference standard NDT3234 at probe position 1 (the fastener location without a notch) as shown in Figure 4, Detail I. Use the side of the reference standard that has the same fastener end (fastener head or collar) as the inspection area.

(3) Balance the instrument.

(4) Set the balance point at approximately 30% of full screen height (FSH) and 50% of full screen width (FSW) as shown in Figure 4, Detail II.

(5) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left as shown in Figure 4, Detail II.

(6) Put the probe on the reference standard at probe position 2 (the fastener location with a notch) as shown in Figure 4, Detail I.

(7) Adjust the instrument sensitivity to put the notch signal at 70% of FSH as shown in Figure 4, Detail II. If necessary use a higher vertical gain than the horizontal gain to get the signal to look almost the same as shown in Detail II.

(8) Do Paragraph 4.A.(1) thru Paragraph 4.A.(7) again to make sure the calibration is correct. Make adjustments to the instrument gain if the calibration is not correct.

B. Calibrate the instrument to examine the code “B” fastener locations as follows:

(1) Set the instrument frequency to 800 Hz.

(2) Do Paragraph 4.A.(1) thru Paragraph 4.A.(8), but use level “B” on the reference standard.

C. Calibrate the instrument to examine the code “C” fastener locations as follows:

(1) Set the instrument frequency to 2.5 kHz.

(2) Do Paragraph 4.A.(1) thru Paragraph 4.A.(8), but use level “C” on the reference standard.

5. Inspection Procedure

A. Examine the lower zee stringer for cracks at the code “A”, “B”, and “C” fastener locations identified in Figure 2 as follows. See Detail I for the Repair 6 inspection areas and Detail II for the Repair 7 inspection areas.

(1) Examine the code “A” fastener locations as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.

(b) Put the probe at one of the fastener locations near the outer edge of the repair angle and balance the instrument.

(c) Put the probe at a different fastener location near the edge of the repair angle and monitor the signal as follows:

1) If the signal is between 0 and 50% of FSH, examine the remaining fastener locations that have the same code.

2) If the signal is above 50% of FSH, put the probe near the edge of the repair angle at a different fastener location (that has the same code), but on the opposite side of the repair and monitor the screen display for the signal to occur. If the signal at the two fastener locations are almost the same, balance the instrument and examine the remaining fastener locations that have the same code.

NOTE: Small changes in the hole to edge distance (edge margin) can cause the balance point to move. Make sure the edge margin distance agrees with the SRM instructions.

NOTE: The edge of a shim that is used between the repair angles can cause the balance point to move up, if the edge of the shim is near the probe.

3) If the signals at the two fastener locations are different by more than 20% of FSH, it is possible that the difference is caused by a crack or a small configuration change in the structure. See Paragraph 6. for instructions.

(d) Examine all other fastener locations that have the same code and make a mark at the locations where you get signals that are 50% of FSH (or more). If a skin fastener does not let the probe fully touch the inspection surface at a fastener location, examine the fastener location from the other side of the stringer.

(e) During the inspection, frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Balance the instrument with the probe at position 1 on the applicable level of reference standard NDT3234 as shown in Figure 4.

2) Put the probe at position 2 on the applicable level of reference standard NDT3234 to get the maximum signal from the notch (see Figure 4).

3) Compare the signal you got from the notch during calibration with the signal you get now.

4) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

(2) Examine the code “B” fastener locations as follows:

(a) Calibrate the instrument as specified in Paragraph 4.B.

(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(e) again.

(3) Examine the code “C” fastener locations as follows:

(a) Calibrate the instrument as specified in Paragraph 4.C.

(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(e) again.

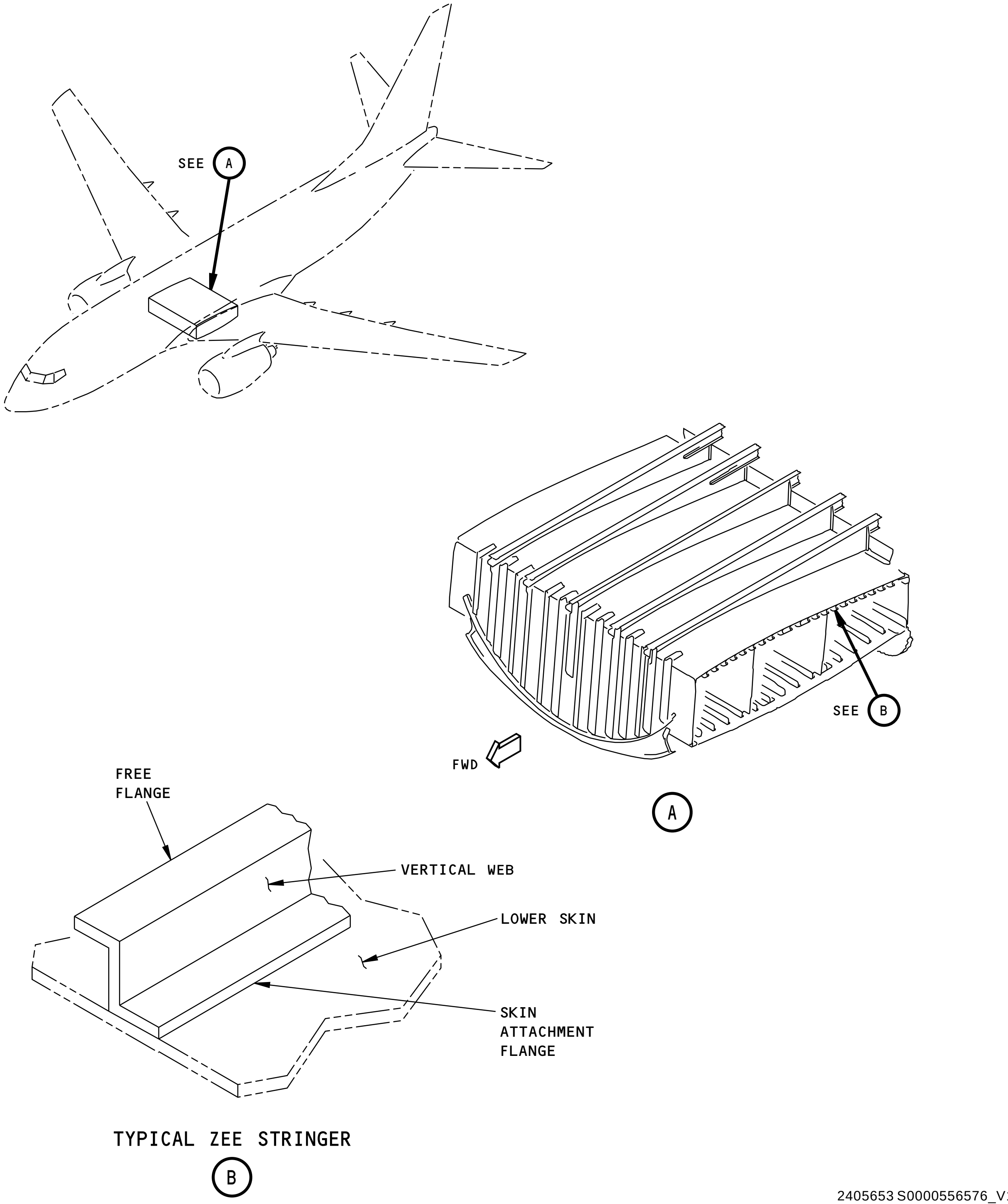
6. Inspection Results

A. Signals that are 50% (or more) of FSH and look almost the same as the notch signal from the reference standard are signs of a possible crack.

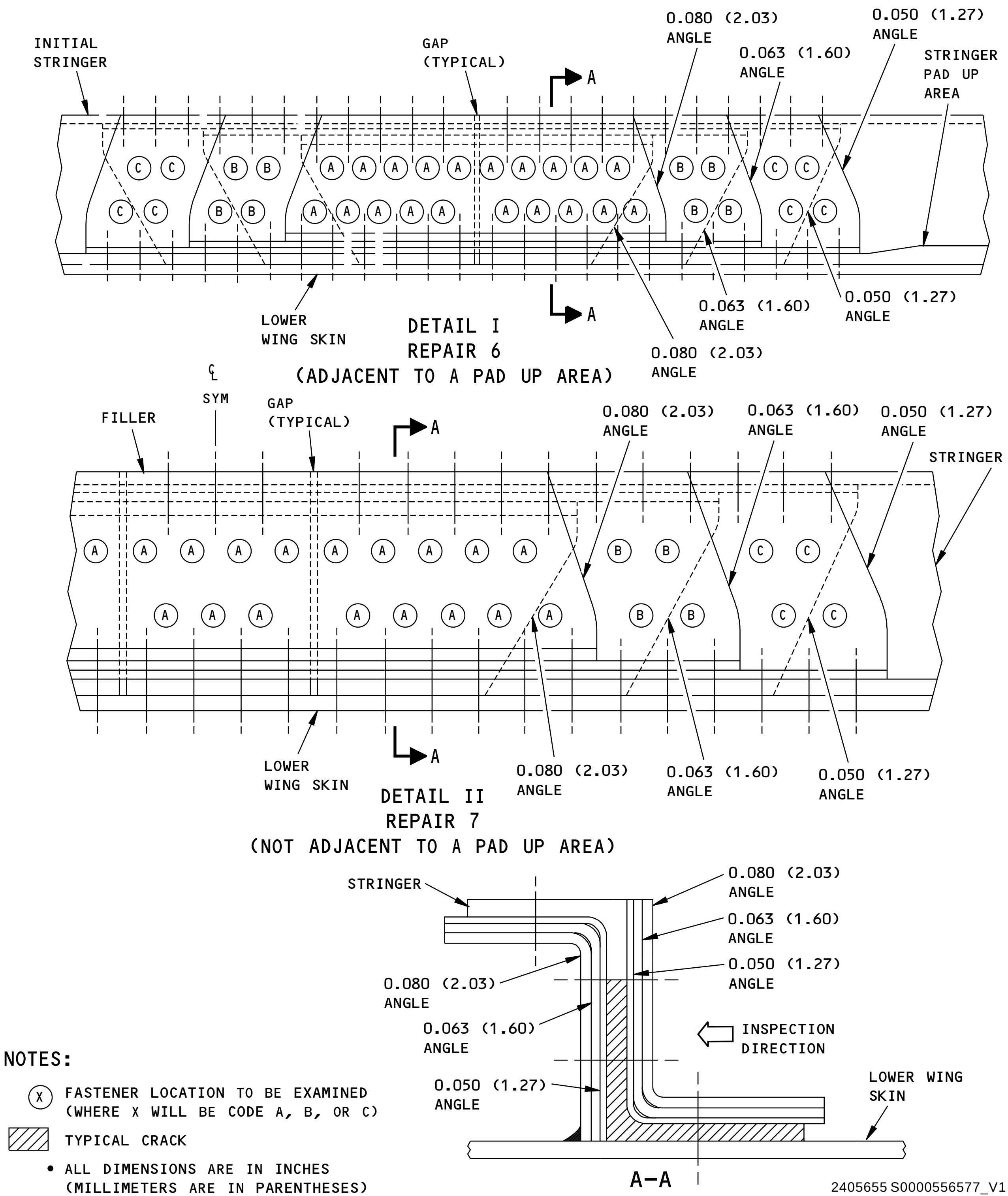
B. If you want to make sure of the results, do the paragraphs that follow:

(1) Make sure that the signal is not caused from a change in structure (fastener edge margin distance). Do a check at the same location from the opposite side of the repair.

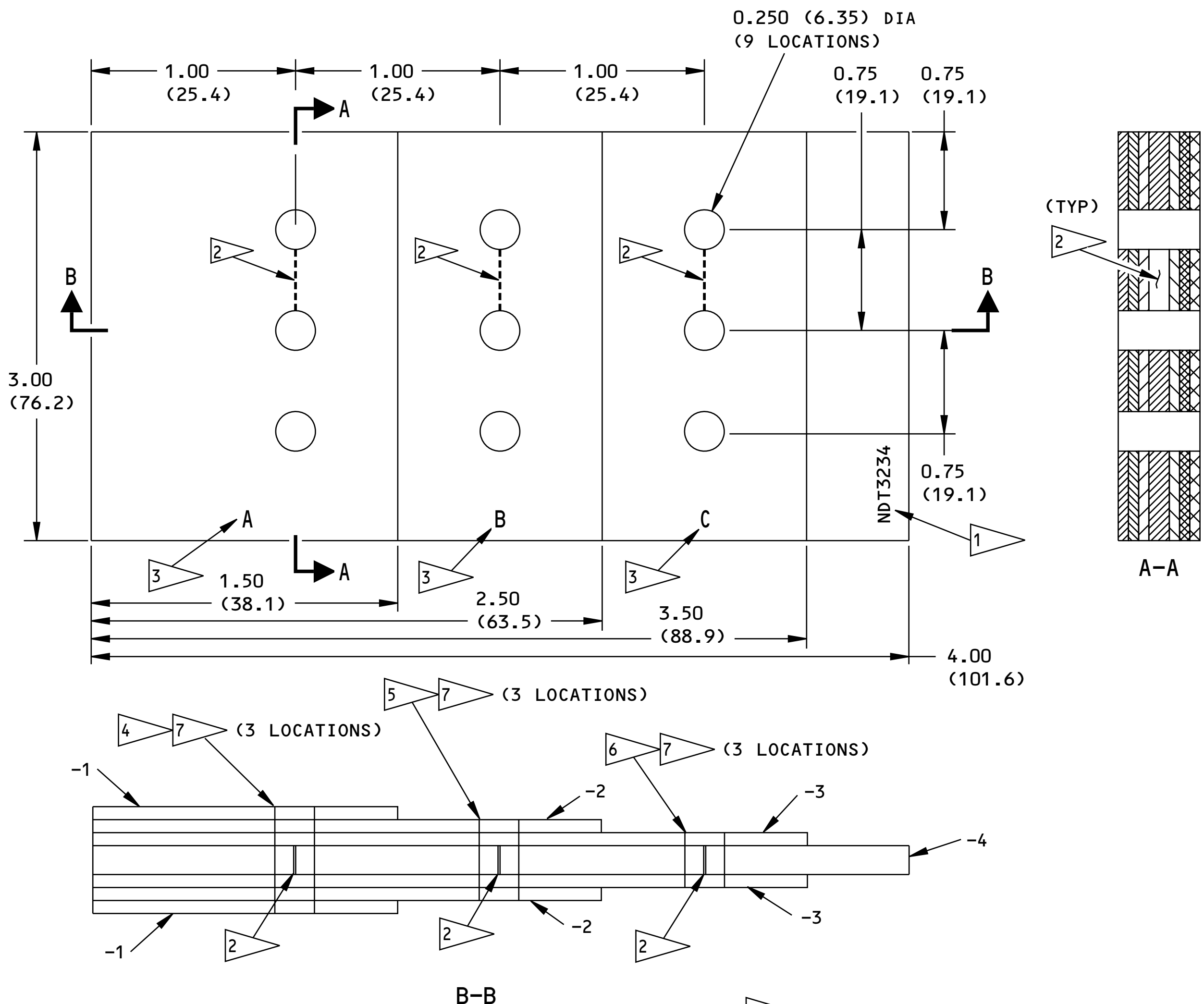
(2) Remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



Inspection Area
Figure 1



SRM 57-10-03 Repair 6 and 7 Inspection Area Examples
Figure 2



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- SURFACES ROUGHNESS: 63 Ra OR BETTER
- MATERIAL: 2024-T3 OR -T4 (BARE OR CLAD)

PARTS:
-1 0.080 (2.03) X 1.50 (38.1) X 3.00 (76.2)
-2 0.063 (1.60) X 2.50 (63.5) X 3.00 (76.2)
-3 0.050 (1.27) X 3.50 (88.9) X 3.00 (76.2)
-4 0.120 (3.05) X 4.00 (101.6) X 3.00 (76.2)

1 ETCH OR ENGRAVE THE REFERENCE STANDARD NUMBER, NDT3234, AT APPROXIMATELY THIS LOCATION.

2 EDM NOTCH:
LENGTH: HOLE TO HOLE
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.020 (0.51) MAXIMUM

3 ETCH OR ENGRAVE THE LETTER AT APPROXIMATELY THIS LOCATION.

4 BACB30NX8K8 BOLT (3 LOCATIONS)
BACC30BH8 COLLAR (3 LOCATIONS)

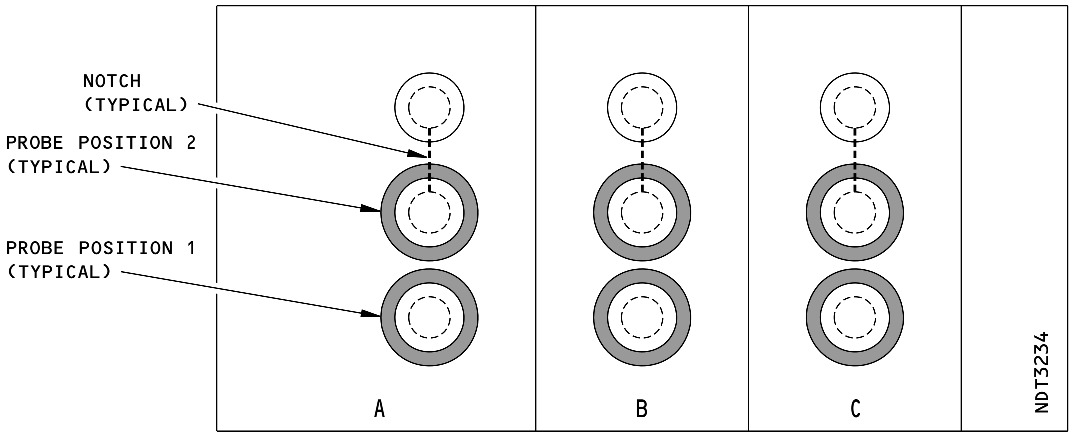
5 BACB30NX8K5 BOLT (3 LOCATIONS)
BACC30BH8 COLLAR (3 LOCATIONS)

6 BACB30NX8K3 BOLT (3 LOCATIONS)
BACC30BH8 COLLAR (3 LOCATIONS)

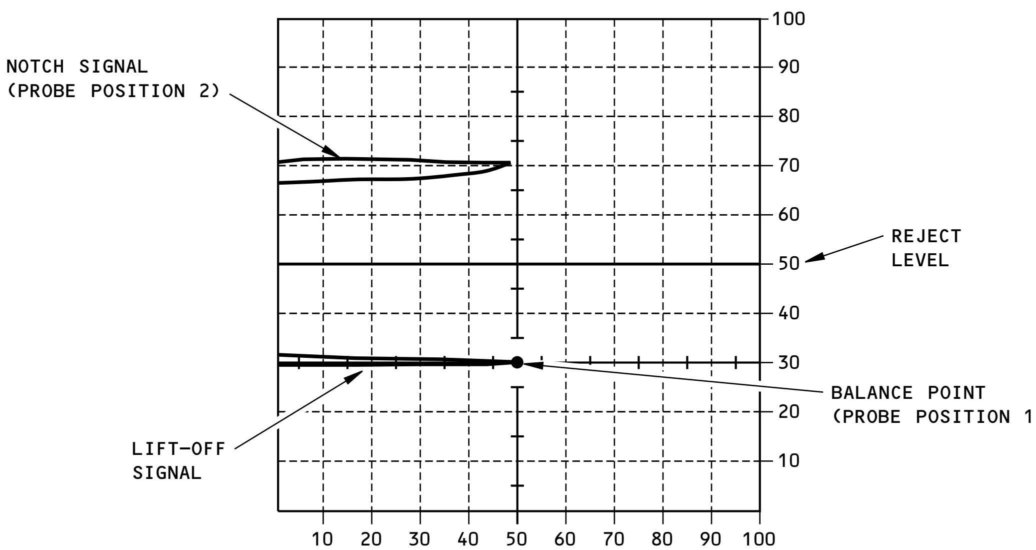
7 INSTALL THE BOLTS WITH THE HEAD ON THE TOP SIDE (THE SIDE THAT HAS THE REFERENCE STANDARD NUMBER) OF THE REFERENCE STANDARD

2405966 S0000556578_V1

Reference Standard NDT3234
Figure 3



CALIBRATION PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE SCREEN DISPLAY
DETAIL II

FASTENER LOCATION TO BE EXAMINED (FASTENER CODE)	REFERENCE STANDARD LEVEL	INSTRUMENT FREQUENCY
A	A	450 Hz
B	B	800 Hz
C	C	2.5 kHz

CALIBRATION DATA

2405972 S0000556579_V1

Instrument Calibration
Figure 4

PART 6 - EDDY CURRENT

WING CENTER SECTION - UPPER ZEE STRINGER INSPECTION AT SRM 57-10-03 REPAIR 1 AREAS (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to find cracks in the upper zee stringer of the wing center section in the areas where SRM 57-10-03, Repair 1 has been done. See Figure 1 for the upper zee stringer locations.

   B. Use this procedure to examine the vertical web flange of the upper zee stringer for cracks that can occur at the fastener locations in the repaired areas. See Figure 2 for the inspection areas.

   C. This procedure examines the upper zee stringer through the repair angles from inside the wing center section. The upper zee stringer and repair angles are aluminum. The thickness of the repair angles are the same on each side of the stringer web for Repair 1.

   D. This procedure uses a reflection spot probe and an impedance plane display instrument. See Paragraph 2.C. for the probe to be used.

   E. 737-600/700/800/900 Structural Repair Manual (SRM) Reference:

      (1) 57-10-03, Repair 1

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at frequencies between 1.5 and 7.0 kHz.

         (c) Can be calibrated as specified in the calibration instructions of this procedure.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) Nortec 2000D, Nortec 500; Olympus NDT

         (b) Phasec 2d, Phasec 3d; GE Inspection Technologies

   C. Probe

      (1) Use a reflection spot probe that operates at a frequency between 1.5 and 7.0 kHz and has an outer diameter of 0.35 inches (8.9 mm). The probes that follow were used to help prepare this procedure.

         (a) AF-4059; AeroFab NDT

         (b) SDP.35-500H-1; Techna NDT

   D. Reference Standard

      (1) Use reference standard NDT3240 to help calibrate the instrument. See Figure 3 for the reference standard drawing.

3. **Prepare for the Inspection**

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

A. It is necessary to get access into the fuel tank of the wing center section to do this inspection. The fuel tank must be drained and purged to a ‘‘health safe’’ condition (as specified in Chapter 28 of the Aircraft Maintenance Manual) before you go into the tank with an eddy current instrument. The eddy current instrument must be battery powered.

NOTE: It is necessary to get approval from your local airline/airport fire department to go into the fuel tank and operate eddy current equipment.

B. Identify and get access to all of the inspection areas. See Figure 1 and Figure 2.

C. Remove sealant from the stringer as necessary to make sure the probe can be set flat against the inspection surface during the inspection. Be careful not to damage the stringer surface during sealant removal. Refer to the Airplane Maintenance Manual for more instructions if necessary.

4. **Instrument Calibration**

NOTE: This procedure uses two calibrations to examine the fastener locations identified in Figure 2 as code “A” and “B” for all 737-600/700/800/900 airplanes. The paragraphs that follow give the instructions for the two calibrations.

A. Calibrate the instrument to examine the code “A” fastener locations as follows:

(1) Set the instrument frequency to 1.5 kHz.

(2) Put the probe on level “A” of reference standard NDT3240 at probe position 1 (adjacent to the collar and away from the notch) as shown in Figure 4, Detail I.

(3) Balance the instrument.

(4) Set the balance point at approximately 30% of full screen height (FSH) and 50% of full screen width (FSW) as shown in Figure 4, Detail II.

(5) Tilt the probe and adjust the instrument phase control so that the lift-off signal goes from right to left as shown in Figure 4, Detail II.

(6) Move the probe on the reference standard to probe position 2 (adjacent to the collar and above the notch) as shown in Figure 4, Detail I.

(7) Move the probe a small quantity clockwise and counterclockwise to get a maximum signal and adjust the instrument sensitivity to put the notch signal at 70% of FSH as shown in Figure 4, Detail II. If necessary use a higher vertical gain than the horizontal gain to get the signal to look almost the same as shown in Figure 4, Detail II.

(8) Do Paragraph 4.A.(1) thru Paragraph 4.A.(7) again to make sure the calibration is correct. Make adjustments to the instrument gain if the calibration is not correct.

B. Calibrate the instrument to examine the code “B” fastener locations as follows:

(1) Set the instrument frequency to 7.0 kHz.

(2) Do Paragraph 4.A.(2) thru Paragraph 4.A.(8), but use level “B” on the reference standard.

5. **Inspection Procedure**

A. Examine the upper zee stringer for cracks at the code “A” and “B” fastener locations identified in Figure 2 as follows.

(1) Examine the code “A” fastener locations as follows:

(a) Calibrate the instrument as specified in Paragraph 4.A.

(b) Put the probe at one of the fastener locations, at a typical balance position shown in Figure 2, and balance the instrument.

(c) Make a scan around the fastener head/collar as shown in Figure 2. Examine all other fastener locations that have the same code and make a mark at the locations where you get signals that are 50% (or more) of FSH.

(d) During the inspection, frequently do a calibration test of the instrument as follows:

NOTE: Do not adjust the instrument gain.

1) Balance the instrument with the probe at position 1 on the applicable level of reference standard NDT3240 as shown in Figure 4.

2) Put the probe at probe position 2 on the applicable level of reference standard NDT3240 to get the maximum signal from the notch (see Figure 4).

3) Compare the signal you got from the notch during calibration with the signal you get now.

4) If the signal from the notch in the reference standard has changed 10% or more from the signal you got during calibration, do the calibration and inspection again for all the fasteners examined since the last calibration test.

(2) Examine the code “B” fastener locations as follows:

(a) Calibrate the instrument as specified in Paragraph 4.B.

(b) Do Paragraph 5.A.(1)(b) thru Paragraph 5.A.(1)(d) again.

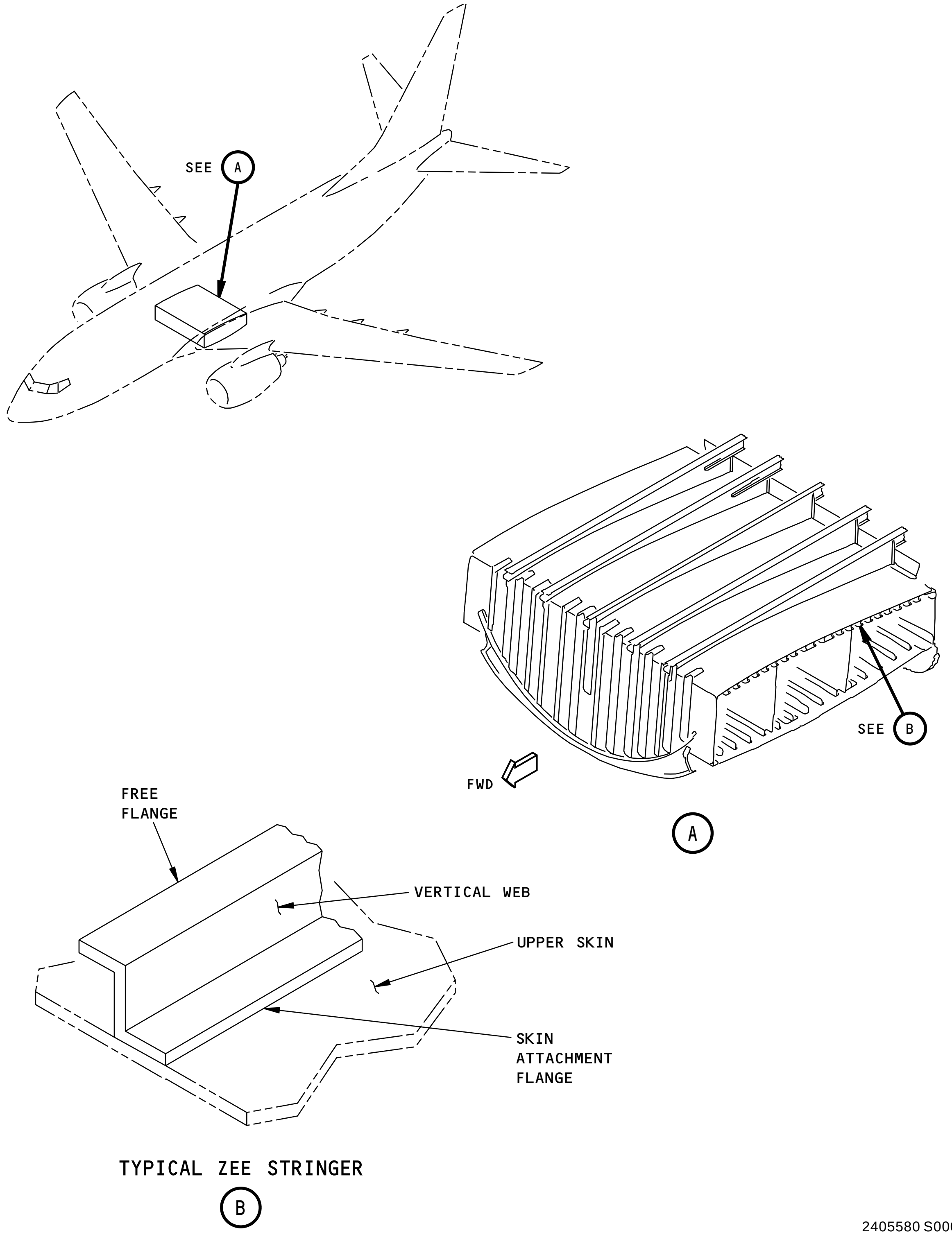
6. **Inspection Results**

A. Signals that are 50% (or more) of FSH and look almost the same as the notch signal from the reference standard are signs of a possible crack.

B. If you want to make sure of the results, do the paragraphs that follow:

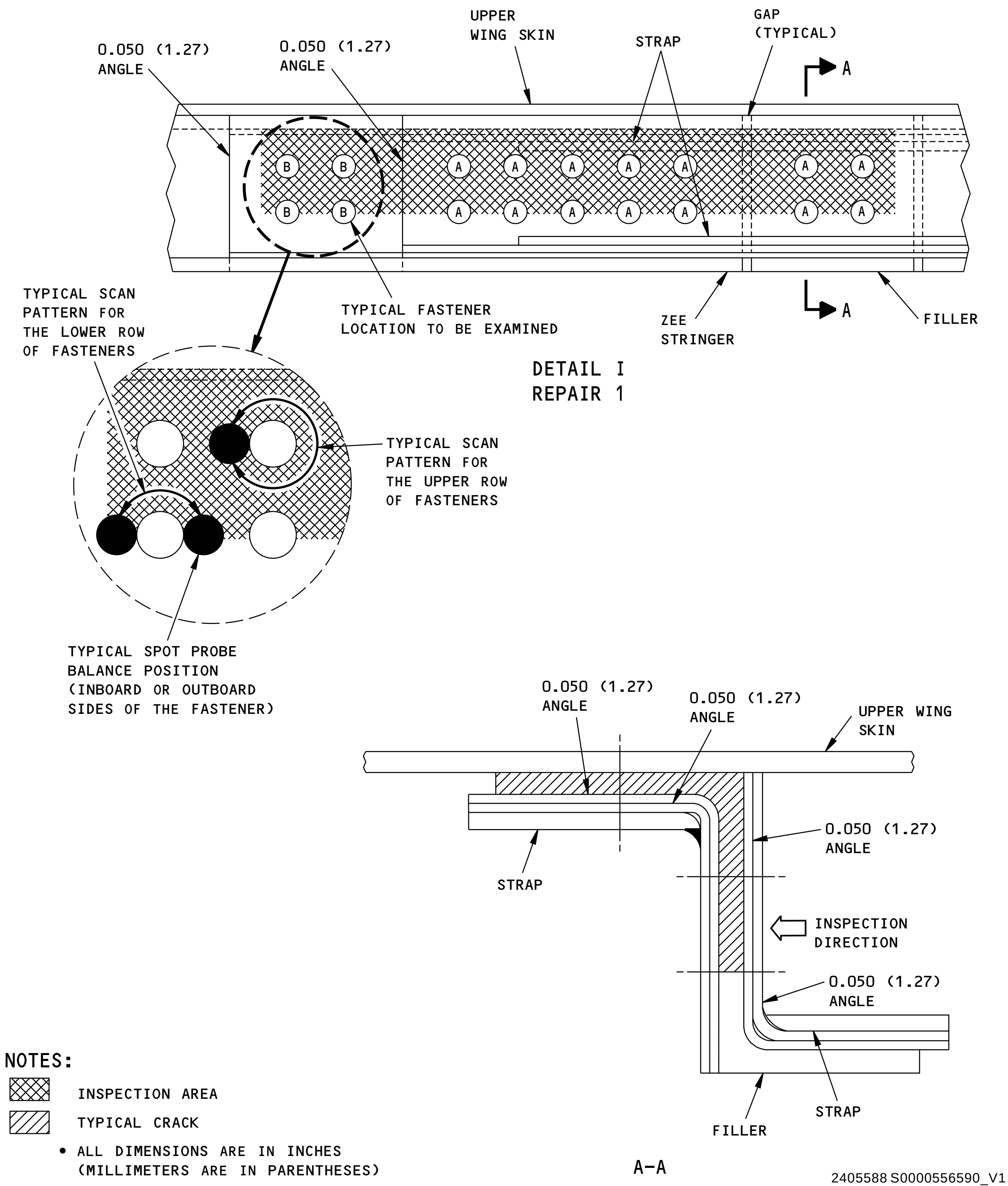
(1) Make sure that the signal is not caused from a change in structure (fastener edge margin distance). Do a check at the same location from the opposite side of the repair.

(2) Remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.

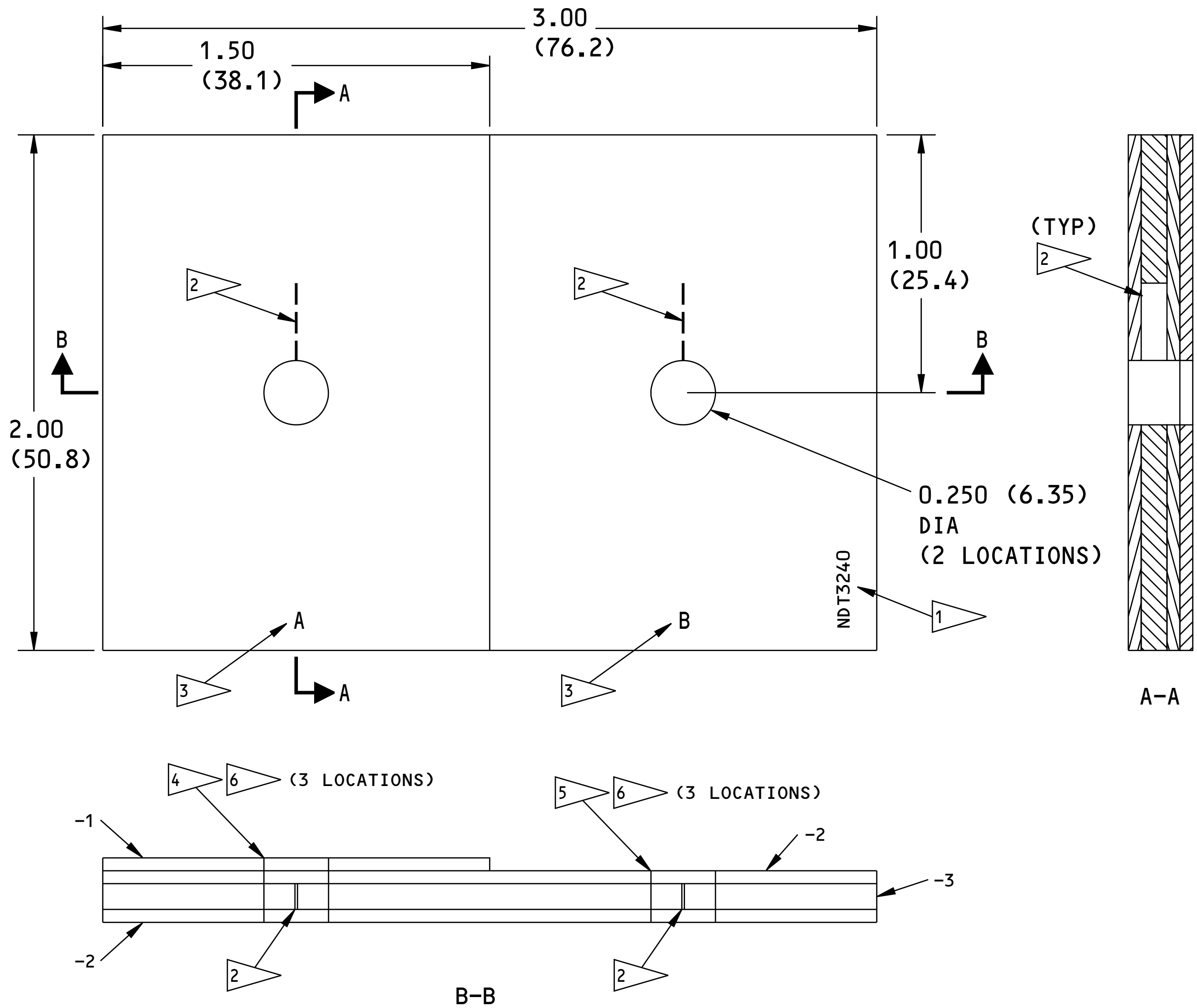


2405580 S0000556589_V1

Inspection Area
Figure 1



SRM 57-10-03 Repair 1 Area Example
Figure 2



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- SURFACES ROUGHNESS 64 Ra OR BETTER
- MATERIAL: 7075-T6 (BARE OR CLAD)

PARTS: -1 0.050 (1.27) X 1.50 (38.1) X 2.38 (60.5)
-2 0.050 (1.27) X 3.00 (76.2) X 2.38 (60.5)
-3 0.100 (2.54) X 3.00 (76.2) X 2.38 (60.5)

1 ETCH OR ENGRAVE THE REFERENCE STANDARD NUMBER, NDT3240, AT APPROXIMATELY THIS LOCATION.

2 EOM NOTCH:
LENGTH: 0.500 (12.7)
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.020 (0.51) MAXIMUM

3 ETCH OR ENGRAVE THE LETTER AT APPROXIMATELY THIS LOCATION

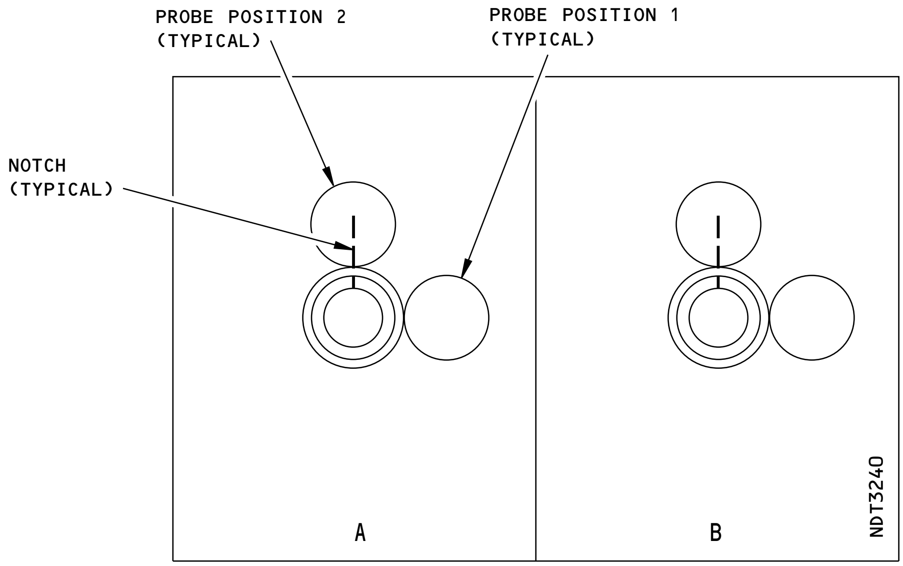
4 BACB30NX8K4 BOLT
BACC30M8 COLLAR

5 BACB30NX8K3 BOLT
BACC30M8 COLLAR

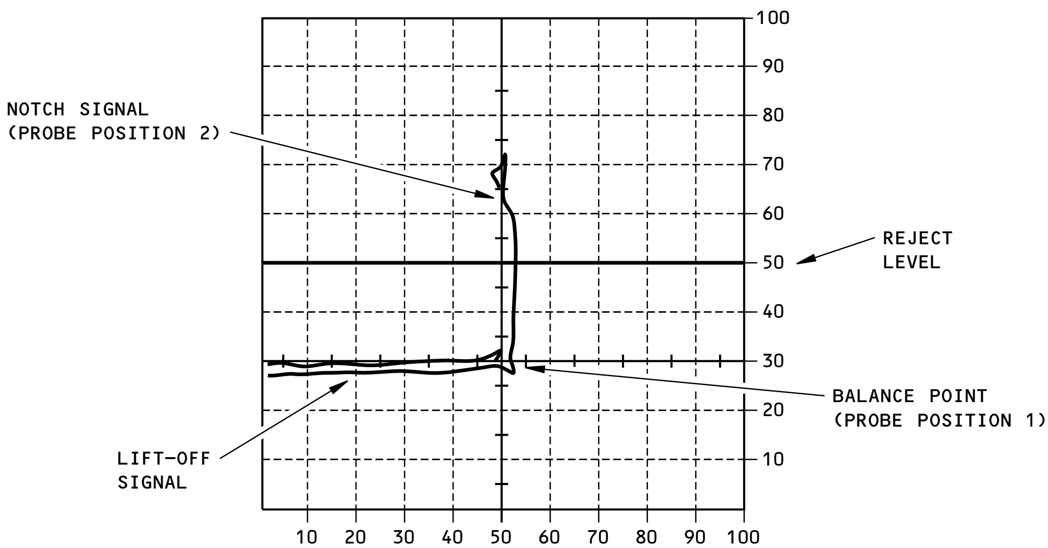
6 INSTALL THE BOLTS WITH THE HEAD ON THE BOTTOM SIDE OF THE REFERENCE STANDARD

2405612 S0000556591_V1

Reference Standard NDT3240
Figure 3



CALIBRATION PROBE POSITIONS ON THE REFERENCE STANDARD
DETAIL I



IMPEDANCE PLANE SCREEN DISPLAY
DETAIL II

FASTENER LOCATION TO BE EXAMINED (FASTENER CODE)	REFERENCE STANDARD LEVEL	INSTRUMENT FREQUENCY
A	A	1.5 kHz
B	B	7.0 kHz

CALIBRATION DATA

2405644 S0000556592_V1

Instrument Calibration
Figure 4

PART 6 - EDDY CURRENT

OUTER WING - ZEE STRINGERS S-1 THRU S-6 AND S-15 THRU S-21 THAT ARE ATTACHED TO THE UPPER SKIN OF THE WING AND ARE SRM 57-20-03, REPAIR 2 AREAS (LFEC)

1. Purpose

A. Use this procedure to examine the skin flanges of the zee stringers that are attached to the upper skin of the outer wing for cracks. This inspection only examines zee stringers 1 thru 6 and 15 thru 21 that have been repaired as specified in Structural Repair Manual (SRM) 57-20-03, Repair 2. This inspection is done from the external side of the upper skin of the wing at the titanium bolt locations. Cracks in the zee stringer flanges can occur in the forward and aft directions. See Figure 1 for the possible inspection areas. The repair records will identify the stringer repair locations.

B. The skin and zee stringers are aluminum.

C. This procedure uses low frequency eddy current (LFEC) with a ring probe that is put on each titanium bolt head that is in the inspection area. Only one ring probe is necessary to examine all of the titanium bolt locations.

D. This procedure uses an impedance plane display instrument.

E. This inspection procedure identifies three reference standards that can be used to help calibrate the equipment for the different upper skin thicknesses along the length of the wing. An ultrasonic thickness measurement of the wing skin in the inspection area is done to identify the reference standard to use during calibration.

F. 737 Maintenance Planning Data (MPD) Primary Structural Element (PSE) Reference:

(1) 57-20-13

G. 737-600/700/800/900 Structural Repair Manual (SRM) Reference:

(1) 57-20-03, Repair 2

2. Equipment

A. General

(1) Use inspection equipment that can be calibrated on the reference standards as specified in Paragraph 4.

(2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

B. Instrument

(1) Use an eddy current instrument with an impedance plane display that:

(a) can operate at a frequency between 200 and 720 Hz.

(b) can be calibrated as specified in the calibration instructions of this procedure.

(2) The instruments that follow were used to help prepare this procedure.

(a) Phasec 3D; GE Inspection Technologies

(b) Nortec 2000; Olympus NDT

C. Probes

(1) Use a ring probe with an inner diameter of 0.60 inch (15.2 mm) that can operate at a frequency between 200 and 720 Hz.

(2) The ring probes that follow were used to help prepare this procedure.

(a) ARP-.60-1.0/100Hz; Aerofab NDT (reflection probe)

(b) RDP1.2 -100H-7; Techna NDT (reflection probe)

D. Reference Standard

(1) Make reference standard NDT3228-X, where X identifies a letter for one of three different top layer thicknesses, as specified in Figure 2. It is possible that only one of the reference standards will be necessary to use during calibration. To see if one, two or all three of the reference standards will be necessary, see Paragraph 3.C. for an ultrasonic thickness inspection procedure that can be used to find the skin thicknesses in the inspection areas.

E. Special Tools

(1) Conductivity meter. A conductivity meter is optional to compare the conductivity of a rivet (rivets are not in the inspection areas) with a titanium bolt (titanium bolts are in the inspection areas). This is done to make sure that you only examine the areas around titanium bolts.

3. Prepare for the Inspection

A. Refer to the repair records to identify if zee stringers 1 thru 6 and 15 thru 21 have been repaired as specified in Structural Repair Manual (SRM) 57-20-03, Repair 2. Then, from the external surface of the upper skin of the wing, identify the zee stringer inspection area(s). Also refer to SRM 57-20-03, Repair 2, for data about the zee stringer repairs.

NOTE: The fasteners installed at the repair locations are made from titanium. The fasteners installed at locations that have not been repaired are aluminum rivets. An optional conductivity test on the fasteners can be done to identify if you are at a repair location. Titanium fasteners will give a much lower conductivity (1 to 7% IACS) than the aluminum (25% IACS or higher).

B. Clean the upper skin of the wing at the titanium bolt locations where the ring probe will be used to do the inspections. Remove paint if it is loose or if the titanium bolt heads cannot be seen. See Figure 1 for the inspection area.

C. Measure and record the thickness of the wing skin at each titanium bolt as specified in Part 4, 51-00-00, Procedure 2. The skin thickness will tell you the correct reference standard (NDT3228-A, NDT3228-B, or NDT3228-C) to use during calibration.

4. Instrument Calibration

NOTE: Refer to Table 1 for the reference standard and instrument frequency to use for the different skin thickness ranges.

A. Calibrate the instrument to examine wing skins that are between 0.100 and 0.160 inch (2.54 and 4.06 mm) thick.

(1) Set the instrument frequency between 680 and 720 Hz.

(2) Put the probe on reference standard NDT3228-A at probe position 1 as shown in Detail I of Figure 3.

(3) Balance the instrument.

(4) Move the probe lightly above the fastener until the signal is at its minimum height and balance the instrument again.

(5) Set the balance point at approximately 20 percent of full screen height (FSH) and approximately 60 percent of full screen width (FSW) as shown in Detail II of Figure 3.

(6) Adjust the phase control so that the signal moves horizontally from right to left when the probe is lifted off of the reference standard. See Detail II in Figure 3.

(7) Put the probe on the reference standard at probe position 2 as shown in Detail I of Figure 3.

NOTE: Make sure the fastener is in the center of the probe.

(8) Move the probe lightly above the fastener until the signal is at its minimum height.

(9) Adjust the instrument gain to put the maximum signal from the notch at 60 percent of FSH as shown in Detail II of Figure 3. If necessary, set the horizontal gain from 6 to 12 dB lower than the vertical gain to keep the signal on the display.

(10) Do Paragraph 4.A.(2) thru Paragraph 4.A.(9) again, as many times as is necessary to make sure the notch signal is at 60 percent of FSH.

B. Calibrate the instrument to examine wing skins that are between 0.161 and 0.225 inch (4.09 and 5.70 mm) thick.

(1) Do Paragraph 4.A.(1) thru Paragraph 4.A.(10), but use reference standard NDT3228-B and set the frequency between 340 and 360 Hz. See Figure 3, Details I and II for this calibration.

C. Calibrate the instrument to examine wing skins between 0.226 and 0.290 inch (5.74 and 7.36 mm).

(1) Do Paragraph 4.A.(1) thru Paragraph 4.A.(10), but use reference standard NDT3228-C and set the frequency between 200 and 230 Hz. See Figure 3, Details I and II for this calibration.

Table 1:

SKIN THICKNESS RANGE	REFERENCE STANDARD	FREQUENCY RANGE
0.100 TO 0.160 INCH (2.54 TO 4.06 mm)	NDT3228-A	680 TO 720 Hz
0.161 TO 0.225 INCH (4.09 TO 5.70 mm)	NDT3228-B	340 TO 360 Hz
0.226 TO 0.290 INCH (5.74 TO 7.36 mm)	NDT3228-C	200 TO 230 Hz

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4. Make sure to use the reference standard that is applicable to the thickness of the wing skin in the inspection area as specified in Paragraph 4.

NOTE: The titanium bolt heads in an inspection area can have two different diameters. During the inspection, do not move the probe from one diameter bolt head to a different diameter bolt head. You must balance the instrument on a smaller bolt head to examine the areas around smaller bolt heads. Also, you must balance the instrument on a larger bolt head to examine the areas around larger bolt heads.

B. Put the probe on one of the bolts in an inspection area at a zee stringer location. Make sure the bolt is in the center of the ring probe and move the probe a small quantity to get the minimum signal to occur on the instrument display. See Figure 1.

C. Balance the instrument.

D. Put the probe on an adjacent bolt in the inspection area. Make sure that this bolt has the same diameter as the bolt that the ring probe was balanced on in Paragraph 5.C. Make sure the bolt is in the center of the ring probe and monitor the instrument display for crack indications. See Figure 1 for the zee stringer locations.

E. Do Paragraph 5.D. again at each of the bolts that have the same diameter in one inspection area. Make sure you do not put the ring probe on a rivet. Rivets are not in the inspection areas.

F. If applicable, do Paragraph 5.B. thru Paragraph 5.E. again to examine the zee stringers for cracks in the same inspection area but at locations where the titanium bolt head has a different diameter.

G. Do Paragraph 5.B. thru Paragraph 5.F. again to examine the zee stringers for cracks at other inspection areas that have the same wing skin thickness.

H. Do Paragraph 5.B. thru Paragraph 5.G. again to examine the zee stringers (that have been repaired as specified in SRM 57-20-03, Repair 2) for cracks on the other wing in inspection areas that have the same wing skin thickness.

I. Do Paragraph 5.A. thru Paragraph 5.H. again until you have examined all of the zee stringers (that have been repaired as specified in SRM 57-20-03, Repair 2) for cracks at each of the wing skin thickness ranges that apply to your airplane.

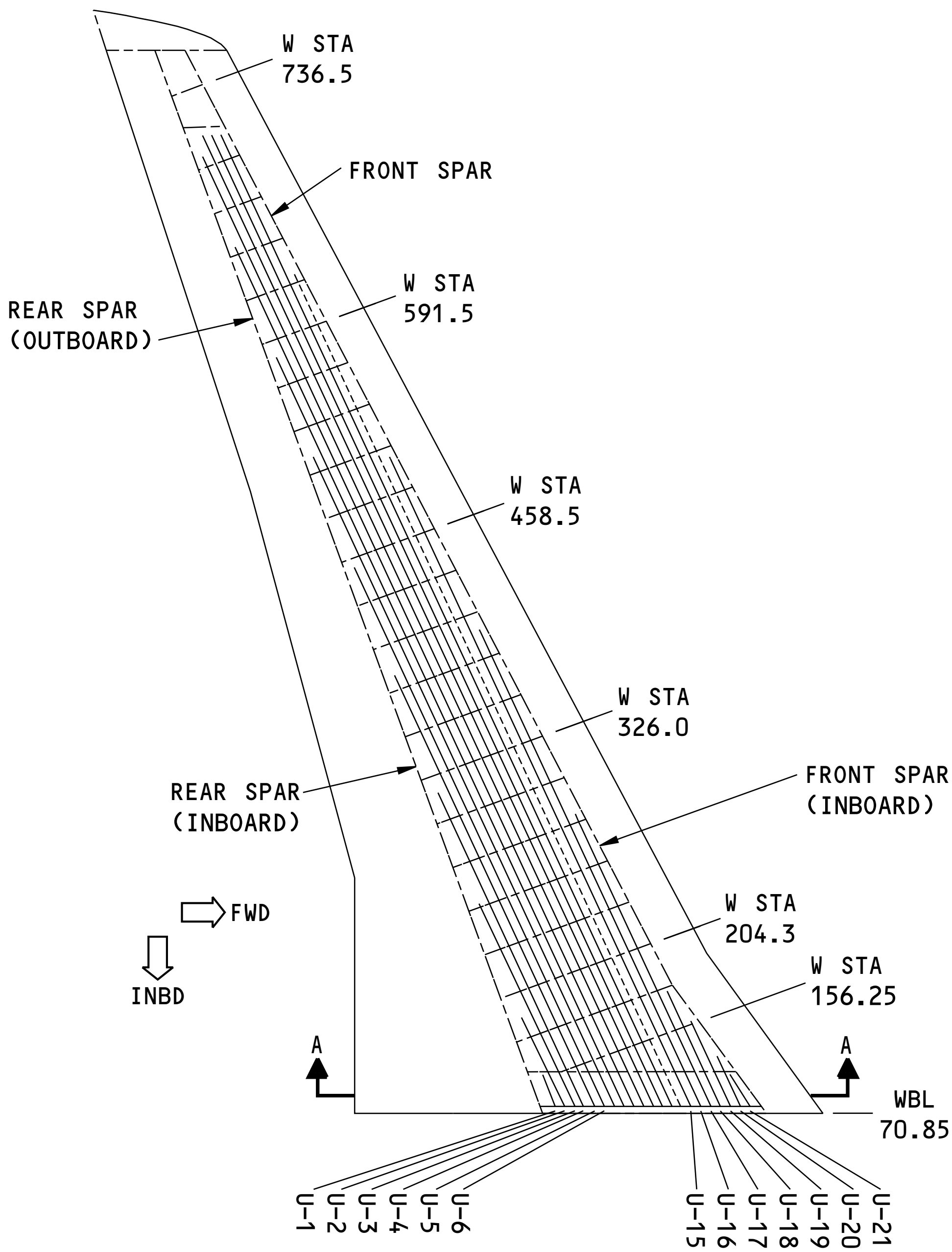
6. Inspection Results

A. A signal that is 40% (or more) of FSH is a sign of a crack and the location that causes this signal to occur must be rejected. More analysis is necessary at locations that cause crack type signals to occur.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration. See Paragraph 4.A., Paragraph 4.B. and Paragraph 4.C. for calibration data.

C. An incorrect result can occur if the probe is put on a rivet during the inspection. Rivets are not in the inspection areas and must not be examined. To see if a rivet was examined accidentally, do the conductivity test on the fastener and compare the results to the conductivity of a known titanium bolt. See the note in Paragraph 3.A. for more data about the fastener conductivity tests.

D. Do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16, at all locations that cause crack signals to occur.

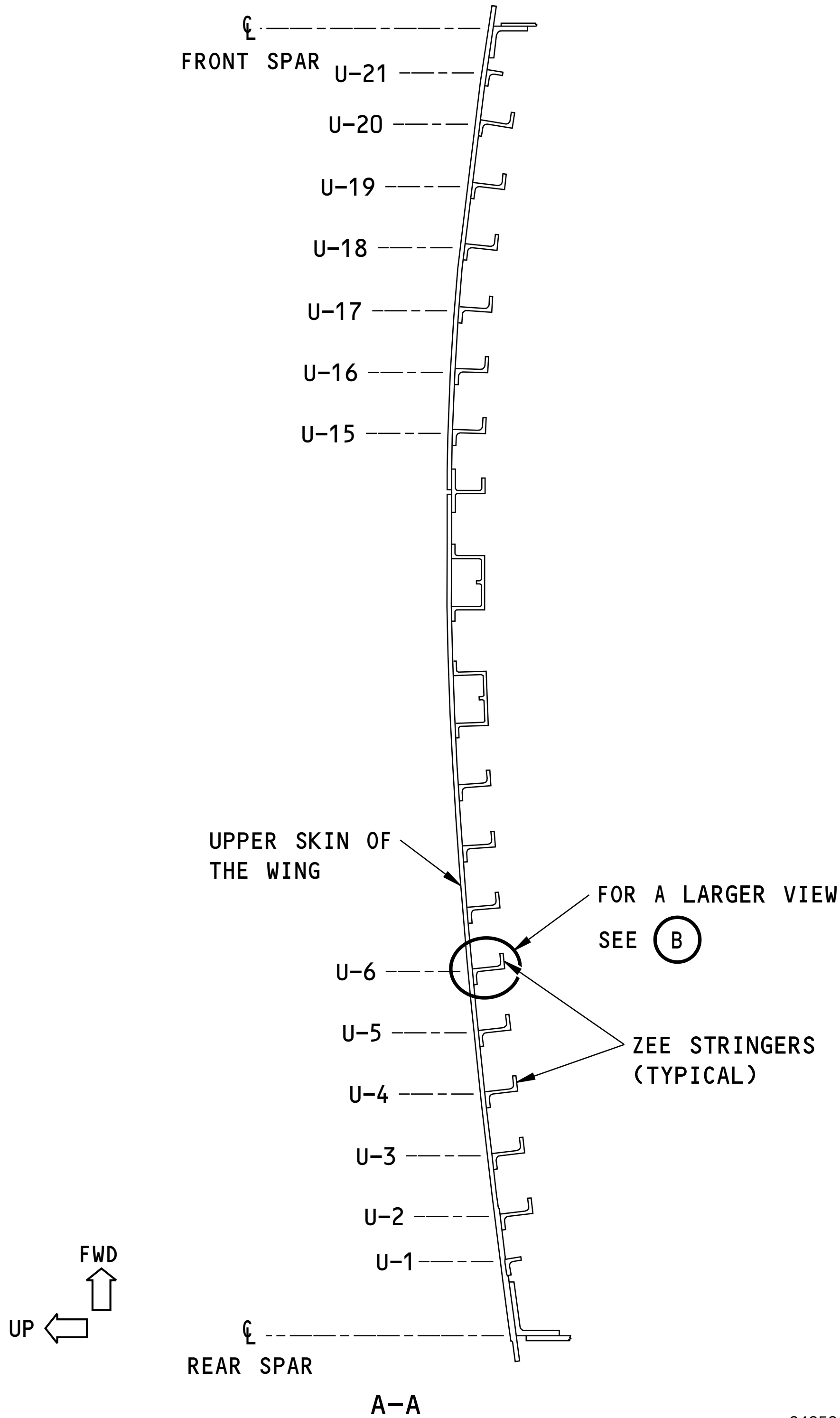


NOTES

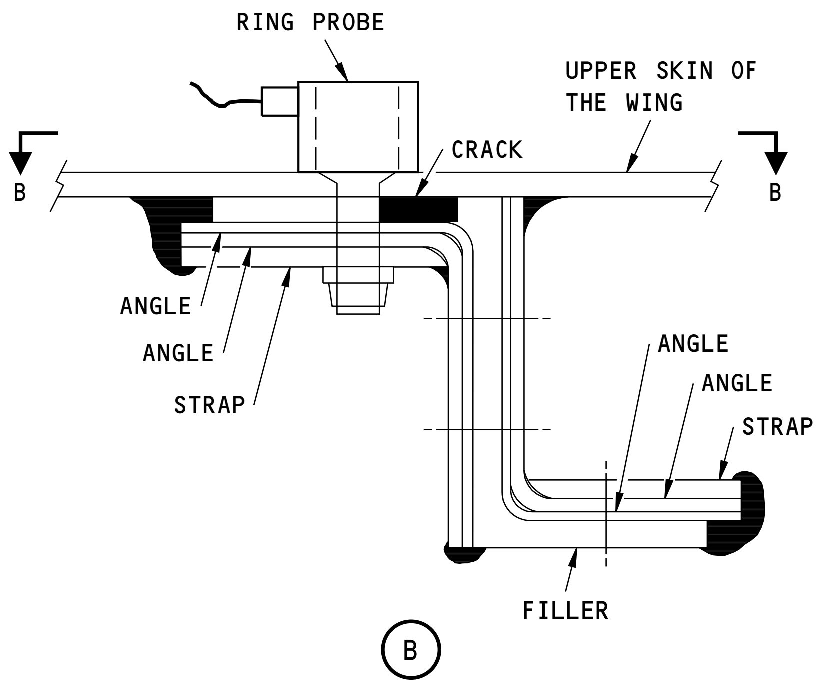
- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
- ONLY DO THIS INSPECTION AT ZEE STRINGERS 1 THRU 6 AND 15 THRU 21 THAT HAVE BEEN REPAIRED AS SPECIFIED IN SRM 57-20-03 REPAIR 2

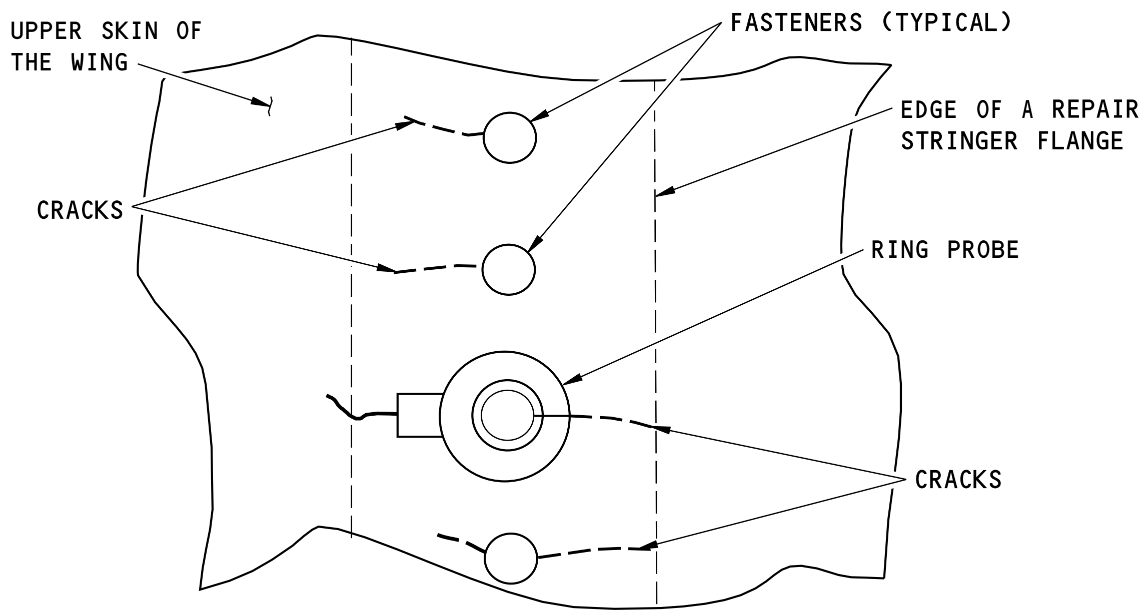
2435310 S0000564368_V1

Inspection Areas
Figure 1 (Sheet 1 of 3)



Inspection Areas
Figure 1 (Sheet 2 of 3)

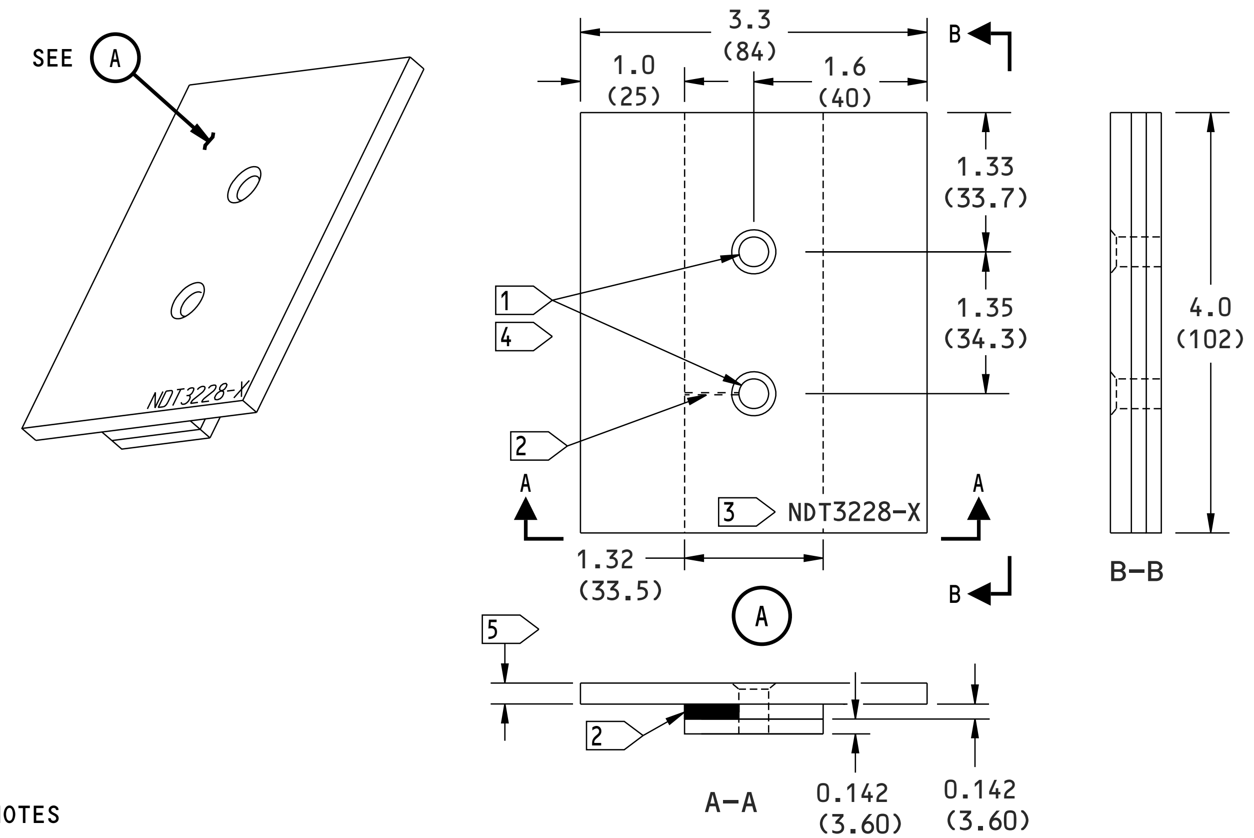




(VIEW AS YOU LOOK DOWN ON THE UPPER SKIN OF THE WING)
B-B

2435652 S0000564370_V1

Inspection Areas
Figure 1 (Sheet 3 of 3)



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- ALL PLATES ARE 7055-T77511, 7150-T651, 2024-T3, OR 2024-T62 ALUMINUM (CLAD OR BARE)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.10
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

REFERENCE STANDARD NUMBER	5 UPPER PLATE THICKNESS	BOLT LENGTH
NDT3228-A	0.160 (4.06)	7
NDT3228-B	0.225 (5.72)	8
NDT3228-C	0.290 (7.40)	9

TABLE 1

1 0.344 (8.74) DIAMETER HOLES WITH 100 DEGREE COUNTERSINKS.

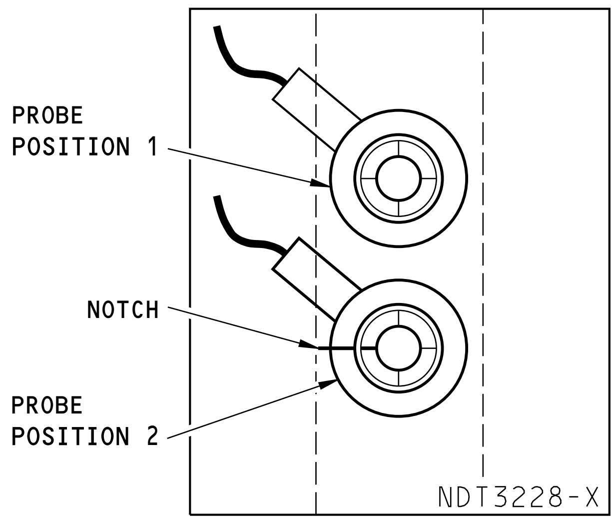
2 NOTCH FROM THE HOLE TO THE EDGE OF THE MIDDLE PLATE. THE MAXIMUM NOTCH WIDTH IS 0.020 (0.50).

3 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER AT APPROXIMATELY THIS LOCATION. SEE TABLE 1 FOR THE REFERENCE STANDARD NUMBERS.

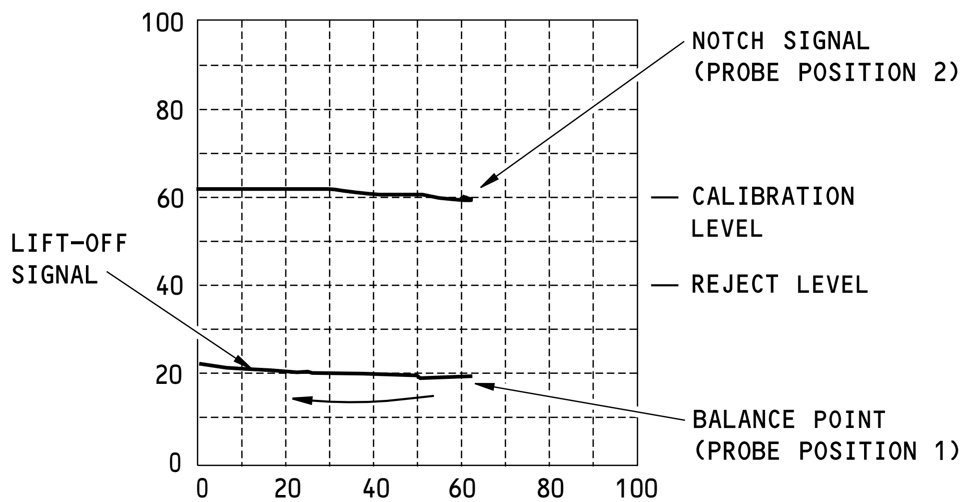
4 THE REFERENCE STANDARDS ARE SHOWN WITHOUT THE BOLTS AND COLLARS INSTALLED. INSTALL BACB30NY10K()Y BOLTS WITH BACC30AC10 COLLARS. SEE TABLE 1 TO IDENTIFY THE BOLT LENGTH TO USE.

2435666 S0000564371_V1

Reference Standard NDT3228-X
Figure 2



CALIBRATION PROBE POSITIONS
ON REFERENCE STANDARD NDT3228-X
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II

2435686 S0000564372_V1

Calibration Probe Positions
Figure 3

PART 6 - EDDY CURRENT

FRONT AND REAR SPAR TENSION FITTINGS AT RIB 27

1. **General**
   A. Use this high frequency eddy current procedure to help find cracks in the front and rear spar tension fittings at rib 27. See Figure 1 for the inspection areas.
   B. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
      (1) Item: 57-20-29-3
2. **Equipment**
   A. General
      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.
      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.
   B. Instrument
      (1) Use an eddy current instrument that:
         (a) Has an impedance plane display.
         (b) Operates at a frequency range of 300 to 500 kHz.
         (c) Has a rotary scanner function.
   C. Probes
      (1) Refer to Part 6, 51-00-00, Procedure 16, Paragraph 3.B, for probe data. Use a probe that can expand to a 0.5 inch (12 mm) diameter.
   D. Reference Standard
      (1) Refer to Part 6, 51-00-00, Procedure 16, Paragraph 3.C, for reference standard data.
         (a) Use reference standard NDT1027 to examine the 0.5 inch (12 mm) diameter fastener holes.

         NOTE: Reference standard NDT1027 has two corner notches of different dimensions. Use the 0.030 inch (0.76 mm) corner notch for this inspection.
3. **Prepare for the Inspection**
   A. Get access to the front and rear spar tension fittings at rib 27.
   B. Remove only one fastener at a time from the tension fittings during the inspection.
   C. Clean loose dirt and sealant from inside the fastener holes.
   D. Visually examine the inner surface of each hole for surface conditions that can cause crack type signals to occur during the inspection. Borescopes, endoscopes or other optical aids can be used to help with the visual inspection. These are the conditions to look for:
      (1) Burrs
      (2) Galling
      (3) Corrosion
      (4) Out-of-round holes

E. If one or more of the conditions given in Paragraph 3.D. are seen, it can be necessary to do a 0.016 inch (0.41 mm) cleanup ream before you examine the hole for cracks.

(1) Before you do a cleanup ream:

(a) Look at the hole to see if it will damage the probe. If the hole will not damage the probe, you can do the inspection.

(b) Make sure you have the correct oversized fastener to install before you do a cleanup ream.

(2) A 125 RHR or better surface finish is necessary after a cleanup ream.

4. Instrument Calibration

A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 16, Paragraph 5.

5. Inspection Procedure

A. Examine the front and rear spar tension fittings at rib 27 for cracks as specified in Part 6, 51-00-00, Procedure 16, Paragraph 6, and the steps that follow:

(1) Remove and do the inspection for only one fastener location at a time. Install the fastener before you remove and examine a different fastener location. If a cleanup ream was necessary, install the correct oversized fastener.

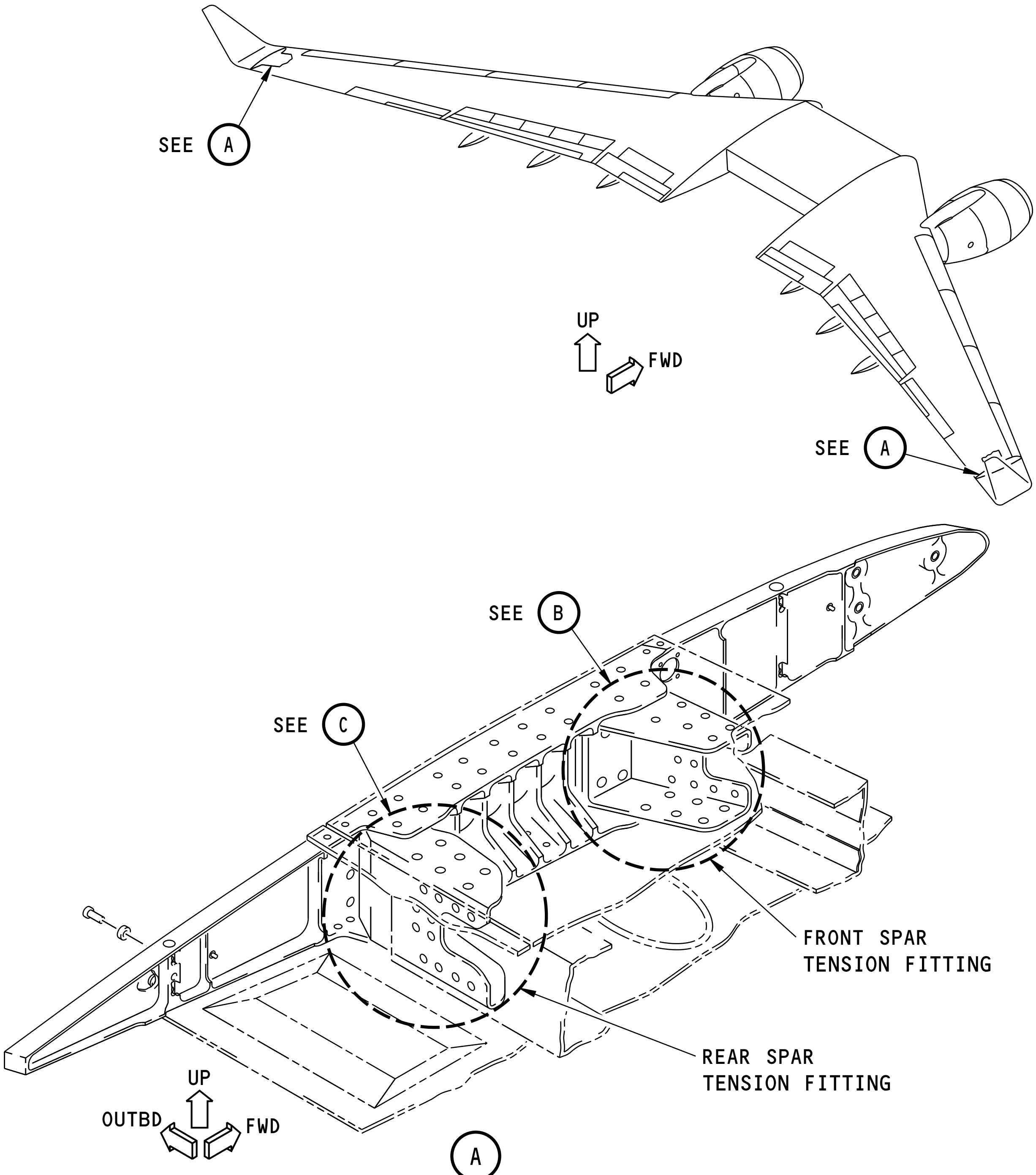
(2) See Figure 1 for the hole locations to be examined.

(3) Examine the rib and tension fitting holes for cracks.

(4) Do this inspection at rib 27 for the left and right wings

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 16, Paragraph 7, for instructions to help make an analysis of all signals that occur during the inspection of the fastener holes.

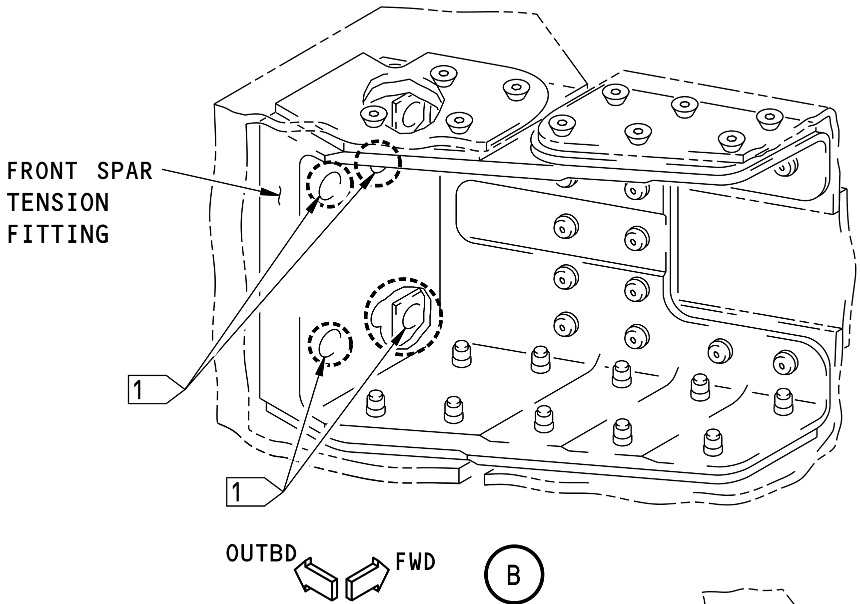


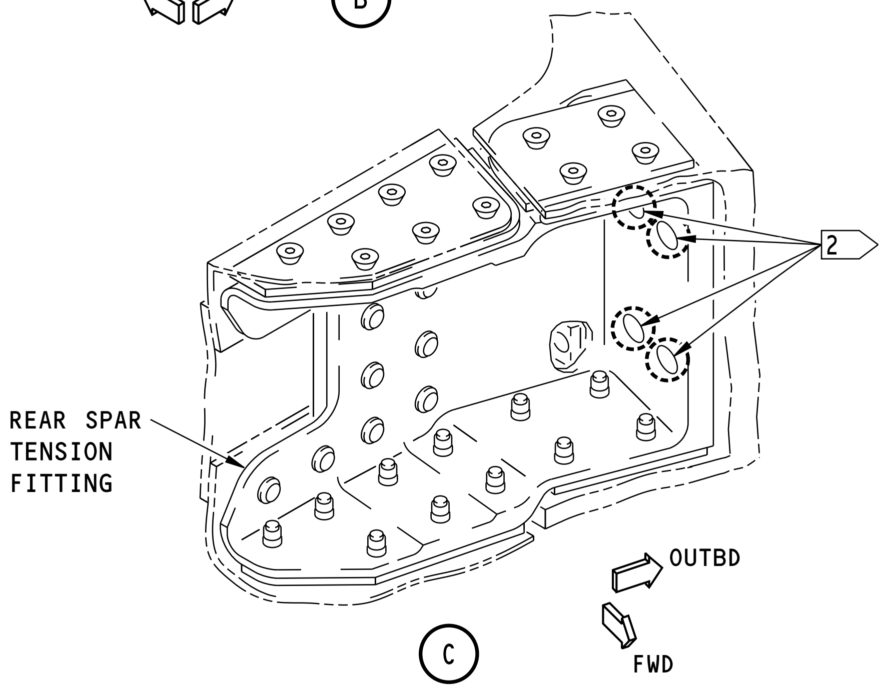
NOTES:

- THE TENSION FITTINGS FOR RIB 27 ON THE LEFT SIDE OF THE AIRPLANE IS SHOWN. THE RIGHT SIDE OF THE AIRPLANE IS OPPOSITE.

2478959 S0000581174_V1

Inspection Area
Figure 1 (Sheet 1 of 2)





NOTES:

- HOLES TO BE EXAMINED FOR CRACKS.
- EXAMINE THE RIB AND TENSION FITTING HOLES FOR CRACKS.

1 EXAMINE THE 4 HOLES IN THE OUTBOARD SIDE OF THE FRONT SPAR TENSION FITTING FOR CRACKS.

2 EXAMINE THE 4 HOLES IN THE OUTBOARD SIDE OF THE REAR SPAR TENSION FITTING FOR CRACKS.

2478960 S0000581175_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

SURFACE INSPECTION OF THE RADII IN SPLICE STRINGER 14 OF THE UPPER SKIN PANEL FROM RIB 12 TO RIB 21 (HFEC)

1. Purpose

   A. Use this procedure to help find surface cracks in the radii of splice stringer 14 of the upper skin panel from rib 12 to rib 21. This inspection looks for cracks in the radii of splice stringer 14 (S-14) that are in the forward and aft direction. The probe scans are done in the inboard and outboard directions along the forward and aft sides of S-14. See Figure 1 for the inspection areas.

   B. The complete inspection area can be done with one pencil probe if the sealant is removed from the radius (forward and aft sides) of S-14 from rib 12 to rib 21.

   C. A special reflection probe can be used as an alternative to the pencil probe if there is sealant on the radius and the vertical web of S-14 and you make a decision not to remove the sealant. The inspection area immediately below the radius of the S-14 web can be examined with the special probe on the sealant. This special probe can be used only if:

      (1) The sealant is 0.090 inch (2.29 mm) thick or less. See the inspection procedure in Part 6, 51-00-27, for more data about the special probes. Also see Figure 1, Sheet 3 to see the inspection locations for the special reflection probe.

      NOTE: The inspection with the pencil probe in the radius is a more sensitive inspection compared to the inspection with the optional special reflection probe. The pencil probe will find smaller cracks compared to the optional special reflection probe.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-15

2. Equipment

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at a frequency range of 50 to 500 kHz.

   C. Probes

      (1) Surface Probe:

         (a) A shielded, right-angled pencil probe is necessary to use to do this inspection.

         (b) The probe diameter at the coil must be 0.130 inch (3.3 mm) or less.

         (c) Refer to Part 6, 51-00-00, Procedure 23, Paragraph 3.C, for instructions about probe selection.

      (2) Optional Special Reflection Probe (to examine S-14 at the vertical web immediately below the radius):

         (a) VM2502RAFX-P325-1/4 X 7; VM Products

(b) PRED - .325 – 90N – 1.5; VM Products

(c) Predator - .325 – 90W – 1.5; VM Products

(d) VM250RAFX – P325 – ½ X 7; VM Products

D. Reference Standards

(1) Use reference standard 126, or an equivalent, to help calibrate the equipment to examine the radius of S-14 with a pencil probe. Refer to Part 6, 51-00-00, Procedure 23, Paragraph 3.D, for more data about reference standard 126.

(2) Use the reference standards (or their equivalents) specified in Part 6, 51-00-27, to do the optional inspection with the special reflection probe.

3. Prepare for the Inspection

WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

A. Identify the inspection areas shown in Figure 1.

B. Drain the fuel from the wings and remove the access doors from the lower skin panel between ribs 12 thru 21. The access doors in the lower skin panel are between wing stringers 6 and 8.

C. If you make a decision to use the pencil probe, remove sealant that is on the forward and aft radii of S-14 from rib 12 to rib 21. See Figure 1 for the radii where the probe scans are done. If necessary, lightly sand rough surfaces and sharp edges of chipped paint to make the inspection surfaces smooth. Fully clean the radius.

D. If you make a decision to use the special reflection probe, see Part 6, 51-00-27, Paragraph 3, for instructions on how to measure the sealant thickness on the web that is immediately below the radius of S-14. If the sealant is thicker than 0.090 inch (2.29 mm), this optional inspection with the special probe cannot be done.

4. Instrument Calibration

A. Calibrate the equipment to examine the radii of S-14 for cracks with a pencil probe as specified in Part 6, 51-00-00, Procedure 23, Paragraph 5. Use reference standard 126, or an equivalent, to help calibrate the equipment.

B. Calibrate the equipment to examine the radii of S-14 for cracks with the optional special reflection probe as specified in Part 6, 51-00-27, Paragraph 4.

5. Inspection Procedure

A. Examine the radius of S-14 for cracks if a decision is made to use a pencil probe to do the inspection as follows:

(1) Get access to the S-14 inspection area through the open access doors in the lower skin panel of the wing.

(2) Examine the radius of S-14 of the upper skin panel from rib 12 to rib 21 as specified in Part 6, 51-00-00, Procedure 23, Paragraph 6 and Figure 13. Use the instructions that tell how to do a scan along the length of a radius. Do the scan in the inboard and outboard directions to find cracks that are in the forward and aft direction.

(3) Do the probe scans on the forward and aft sides of the S-14 radius from rib 12 to rib 21.

(4) Do the probe scans on the radius of S-14 from rib 12 to rib 21 for the other wing.

B. Examine the radius of S-14 for cracks if a decision is made to use the special reflection probe on the web immediately below the radius of S-14 as follows:

(1) Get access to the S-14 inspection area through the open access doors in the lower skin panel of the wing.

(2) (Examine the radius of S-14 of the upper skin panel from rib 12 to rib 21 as specified in Part 6, 51-00-27, Paragraph 5.

(3) Do the probe scans on the sealant that is on the web immediately below the radius of S-14. Make sure the sealant is not more than 0.090 inch (2.29 mm) thick. See Figure 1, Sheet 3 for this optional inspection area.

(4) Do the probe scans on the forward and aft sides of the S-14 web from rib 12 to rib 21.

(5) Do the probe scans on the web of S-14 from rib 12 to rib 21 for the other wing.

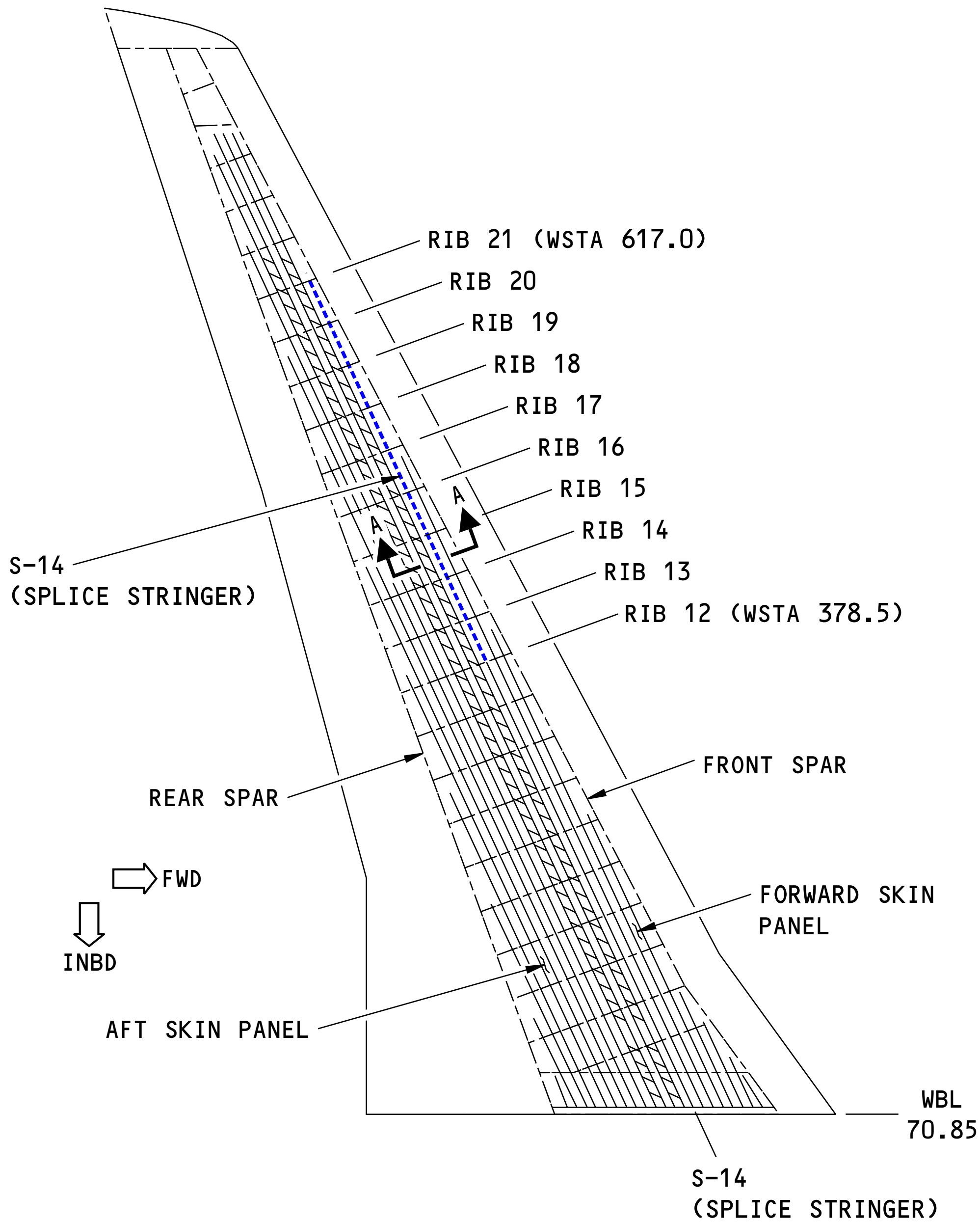
6. Inspection Results

A. For Inspection results when the inspection is done in the radius of Stringer 14 with a pencil probe:

(1) Refer to Part 6, 51-00-00, Procedure 23, Paragraph 7, for instructions to help make an analysis of indications that occur during the inspection.

B. For inspection results when the inspection is done with the optional special reflection probe:

(1) Refer to Part 6, 51-00-27, Paragraph 6, for instructions to help make an analysis of indications that occur during the inspection.



NOTES:

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
- THIS VIEW SHOWS THE UPPER SKINS OF THE LEFT WING. THE INSPECTION AREA IS THE RADII OF S-14, FROM RIB 12 TO RIB 21. SEE SECTION A-A FOR A CROSS SECTION OF THE INSPECTION AREA ON S-14. THERE ARE TWO SECTION A-A VIEWS; ONE IS WHEN THERE IS NO SEALANT ON THE RADIUS AND WEB OF S-14 AND THE OTHER IS WHEN THERE IS SEALANT ON THE RADIUS AND WEB OF S-14.

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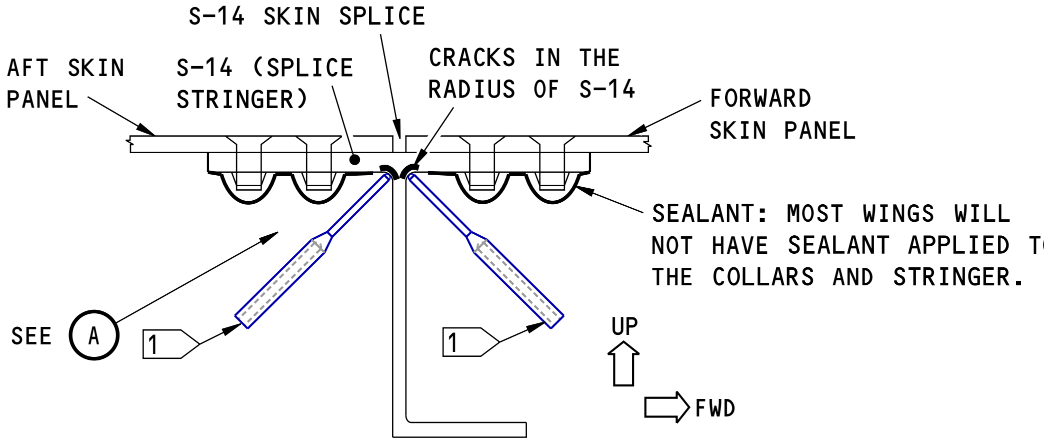
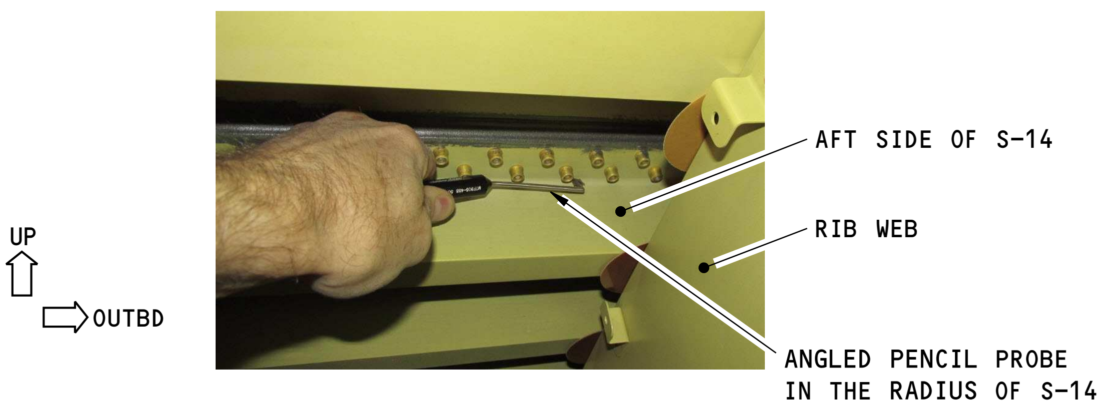
Inspection Area
Figure 1 (Sheet 1 of 3)



THIS IS A VIEW OF THE INSPECTION AREA ON S-14 WHILE IN THE WING AS YOU LOOK OUTBOARD
(NO SEALANT ON THE RADIUS AND WEB OF S-14)
A-A



PENCIL PROBE IN THE RADIUS
A

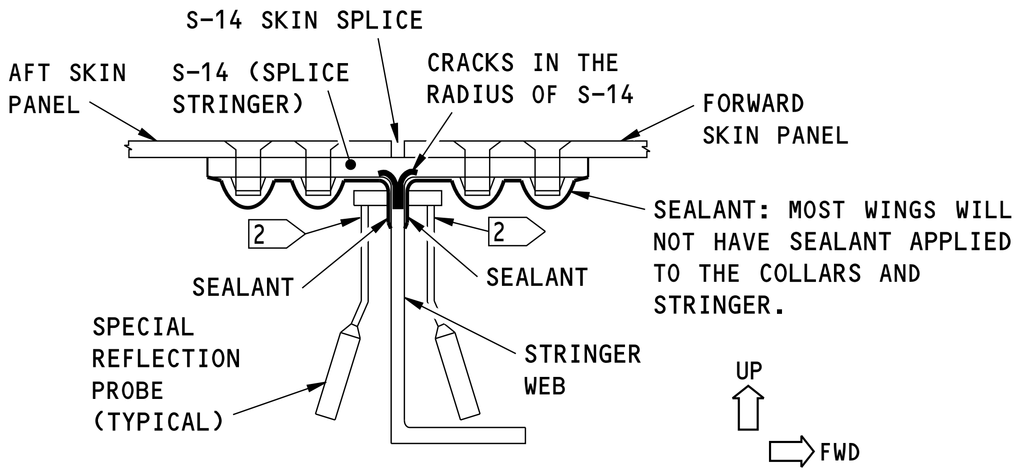
NOTES:

- THE INSPECTION ON S-14 IS FROM RIB 12 TO RIB 21.
- REFER TO PART 6, 51-00-00, PROCEDURE 23, FIGURE 13, FOR INSTRUCTIONS ON HOW TO DO PARALLEL PROBE SCANS ON A RADIUS.
- DO THE INSPECTION IN THE RADII OF S-14 ON THE FORWARD AND AFT SIDES OF THE STRINGER AS SHOWN.

1 THE INSPECTION IS DONE IN THE WING. PUT THE PROBE ON THE RADIUS OF S-14 AND DO A PROBE SCAN IN THE INBOARD AND OUTBOARD DIRECTIONS TO FIND CRACKS THAT ARE IN THE FORWARD AND AFT DIRECTIONS.

2477442 S0000581188_V1

Inspection Area
Figure 1 (Sheet 2 of 3)



(SEALANT ON THE RADIUS AND WEB OF S-14)
A-A

THIS IS A VIEW OF THE INSPECTION AREA ON S-14 WHILE IN THE WING AS YOU LOOK OUTBOARD. THIS SHOWS THE SPECIAL REFLECTION PROBE ON THE WEB OF S-14. THIS PROBE CAN BE USED IF YOU MADE A DECISION NOT TO REMOVE SEALANT FROM THE RADIUS AND STRINGER WEB AND NOT TO USE THE PENCIL PROBE IN THE RADIUS.

NOTES:

- MEASURE THE SEALANT THICKNESS ON THE WEB BEFORE YOU DO THE CALIBRATION AND INSPECTION. THE INSPECTION CANNOT BE DONE WITH THE SPECIAL REFLECTION PROBE IF THE SEALANT IS MORE THAN 0.090 INCH (2.29 mm) THICK.
- THE INSPECTION AREA WITH THE OPTIONAL SPECIAL REFLECTION PROBE IS ON THE WEB OF S-14, FROM RIB 12 TO RIB 21. DO THE SCAN IN THE INBOARD TO OUTBOARD DIRECTIONS.
- DO THE INSPECTION OF S-14 ON THE FORWARD AND AFT SIDES OF THE STRINGER AS SHOWN.

2 THE OPTIONAL SPECIAL REFLECTION PROBE IS SHOWN ON SEALANT THAT IS ON THE WEB OF S-14. MAKE SURE THE PROBE IS NOT MORE THAN ONE PROBE DIAMETER AWAY FROM THE RADIUS TANGENT POINT AS SHOWN.

2477495 S0000581189_V1

Inspection Area
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

RAIL STRINGERS 6 AND 8 OF THE LOWER SKIN PANEL FROM RIB 19 TO RIB 25 (HFEC)

1. **Purpose**

   A. Use this procedure to help find surface cracks in rail stringers 6 and 8 of the lower skin panel from rib 19 to rib 25. The horizontal flanges of the rail stringers are examined for cracks that are around the fasteners and are in a forward and aft direction. This inspection is done in the wing fuel tank. See Figure 1 for the inspection areas.

   B. The rail stringers are aluminum.

   C. This inspection can be done with one angled pencil probe.

   D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (D626A001-DTR) Reference:

      (1) Item: 57-20-02-4

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that:

         (a) Has an impedance plane display.

         (b) Operates at a frequency range of 50 to 500 kHz.

   C. Probes

      (1) Surface Probe:

         (a) A shielded, right-angled pencil probe is necessary to use to do this inspection.

         (b) The probe diameter at the coil must be 0.130 inch (3.3 mm) or less.

         (c) Refer to Part 6, 51-00-00, Procedure 23, Paragraph 3.C, for instructions about probe selection.

   D. Reference Standards

      (1) Use reference standard 188A to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 23, Paragraph 3.D, for data about reference standard 188A.

   E. Special Tools

      (1) A mirror can be used to help you see the inspection area.

3. **Prepare for the Inspection**

   WARNING: PERSONNEL WHO ENTER A FUEL TANK MUST KNOW THE PRECAUTIONS AND SAFETY PROCEDURES CONTAINED IN CHAPTER 28 OF THE BOEING AIRCRAFT MAINTENANCE MANUAL. DANGEROUS FUMES AND THE POSSIBILITY OF AN EXPLOSION EXIST IN THE FUEL TANKS.

   A. Identify the inspection areas shown in Figure 1.

B. Drain the fuel from the wings and remove the access doors that are between ribs 19 and 25 from the lower skin panel. The access doors are between wing rail stringers 6 and 8.

C. Remove sealant that is around the fasteners in the horizontal flanges of rail stringers 6 and 8 in the area from rib 19 to rib 25. If necessary, lightly sand rough surfaces and sharp edges of chipped paint to make the inspection surfaces smooth. Fully clean the surface of the rail stringers in the areas that are immediately around the fasteners.

4. Instrument Calibration

A. Calibrate the equipment with a pencil probe on reference standard 188A, or an equivalent, as specified in Part 6, 51-00-00, Procedure 23, Paragraph 5.

5. Inspection Procedure

A. Get access to the inspection areas shown in Figure 1 through the open access doors in the lower skin panel of the wing.

B. Examine the horizontal flange of rail stringers 6 and 8 on the lower skin panels with circular probe scans around the fasteners. The fasteners to be examined on the rail stringers are from ribs 19 to 25. Refer to Part 6, 51-00-00, Procedure 23, Paragraph 5 and Figure 12, for instructions on how to do a probe scan around a fastener.

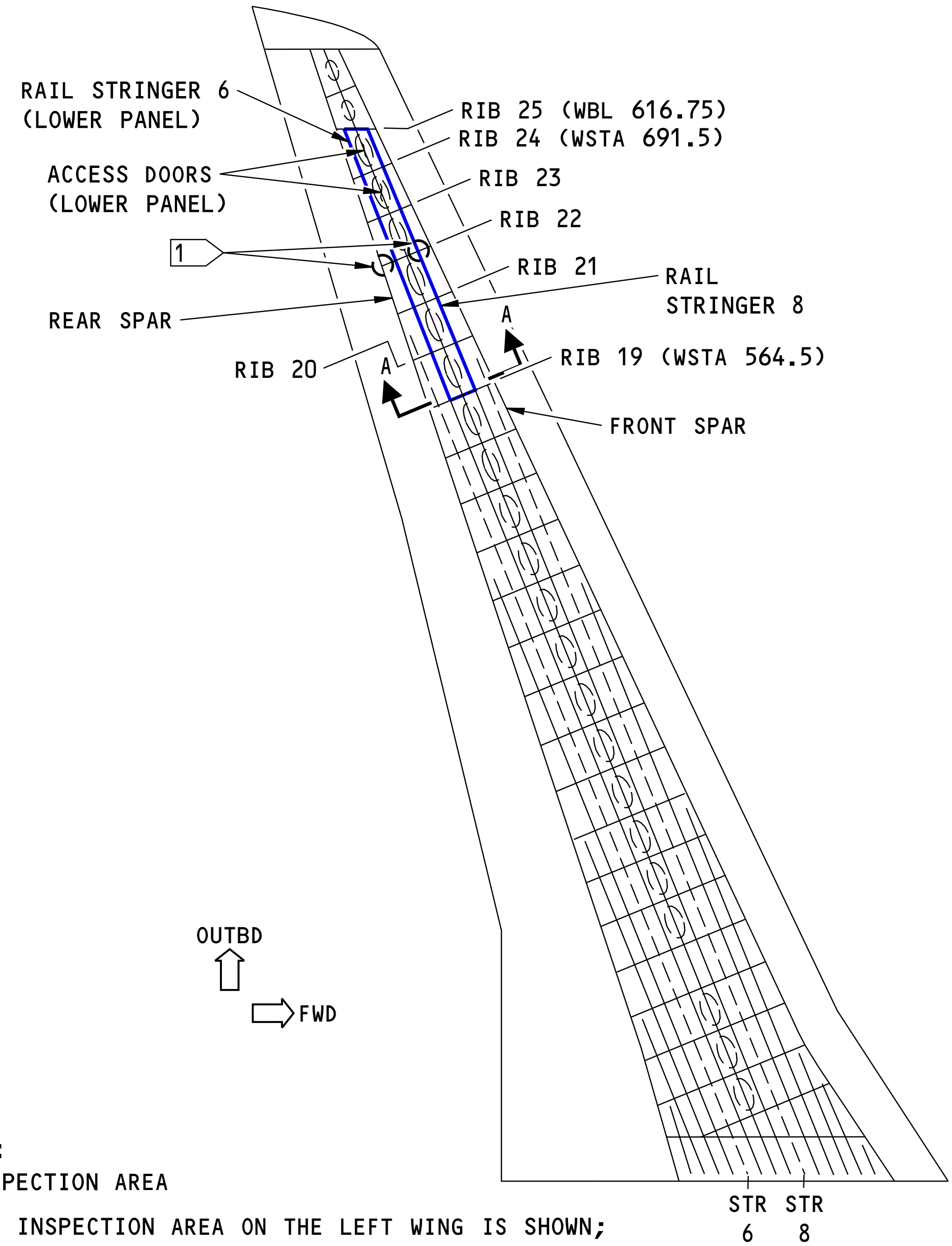
NOTE: Some airplanes will have rivets installed in the inspection area on rail stringers 6 and 8 and some airplanes will have collars installed.

NOTE: Do not examine the areas on rail stringers 6 and 8 at rib 22 during this inspection. These areas will be examined during a different inspection.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine rail stringers 6 and 8 for cracks from ribs 19 to 25 in the other wing.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 23, Paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



NOTES:

INSPECTION AREA

- THE INSPECTION AREA ON THE LEFT WING IS SHOWN; THE INSPECTION AREA ON THE RIGHT WING IS OPPOSITE

1 DO NOT EXAMINE RAIL STRINGERS 6 AND 8 AT RIB 22 DURING THIS INSPECTION. THESE AREAS WILL BE EXAMINED DURING A DIFFERENT INSPECTION.

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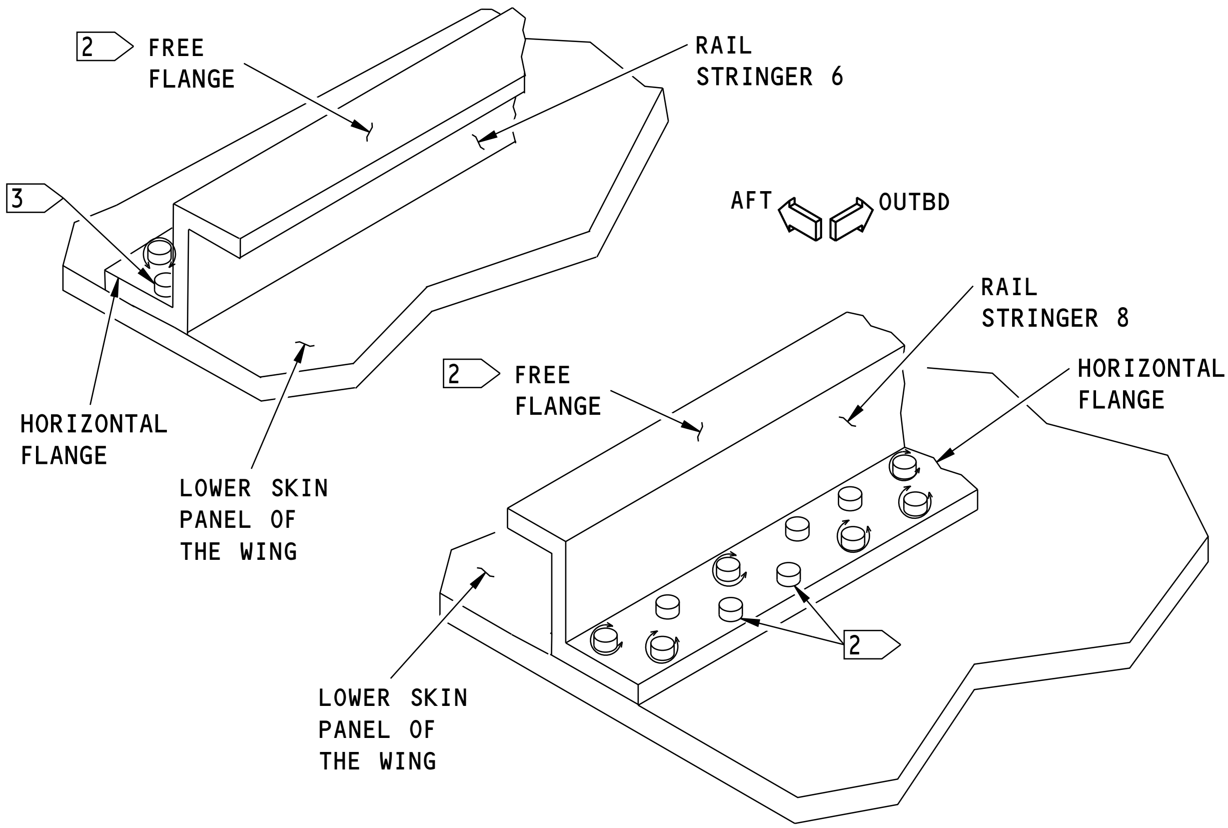
Inspection Areas
Figure 1 (Sheet 1 of 2)



(TURNED TO SHOW THE RIVETS ON THE HORIZONTAL FLANGES OF THE RAIL STRINGERS)

A-A

NOTES:

- THIS VIEW SHOWS A SMALL SECTION OF THE INSPECTION AREA.
- DO CIRCULAR PROBE SCANS AROUND THE FASTENERS ON RAIL STRINGERS 6 AND 8 AS SHOWN ABOVE.
- THE INSPECTION AREA ON RAIL STRINGERS 6 AND 8 IS FROM RIB 19 TO RIB 25.

2 THERE IS NO FREE FLANGE ON RAIL STRINGERS 6 AND 8 FROM RAIL STRINGER 22 TO 25.

3 THIS VIEW SHOWS RIVETS INSTALLED ON THE RAIL STRINGERS. SOME AIRPLANES WILL HAVE RIVETS INSTALLED AND SOME AIRPLANES WILL HAVE COLLARS INSTALLED ON RAIL STRINGERS 6 AND 8.

2476593 S0000580674_V1

Inspection Areas
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

OUTER WING - FORWARD BACKUP FITTING AT RIBS 10 AND 14 OF THE TRAILING EDGE FLAP TRACK (OHEC)

1. **Purpose**

   A. Use this open hole eddy current (OHEC) procedure to examine the forward backup fittings of the trailing edge flap tracks at ribs 10 and 14 in the wing for cracks. The backup fittings are examined for cracks at the lowest row of fastener holes. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument with a rotary scanner.

   C. The backup fitting is aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-33

      (2) Item: 57-20-34

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 16, paragraph 5.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) The instruments that follow were used to help prepare this procedure.

         (a) 500D with minimite; Olympus NDT

         (b) Nortec 600 with minimite; Olympus NDT

         (c) Phasec 2D/3D with Hocking mini drive; GE Inspection Technologies

         (d) 2000D with minimite; Olympus NDT (Nortec)

   C. Probes

      (1) The probes that follow were used to help prepare this procedure.

         (a) BXU-20/24; NDT Engineering

         (b) BXU-16/20; NDT Engineering

   D. Reference Standard

      (1) Use reference standards NDT1017 and NDT1018, or their equivalents, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 16, for data about reference standards NDT1017 and NDT1018.

3. **Prepare for the Inspection**

   A. Get access to the inboard and outboard sides of ribs 10 and 14 and remove the lowest row of fasteners from the forward backup fittings. See figure 1 for the fastener locations.

   B. Prepare the fastener hole for inspection as specified Part 6, 51-00-00, Procedure 16, paragraph 4.

4. **Instrument Calibration**

   A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 16, paragraph 5.

5. **Inspection Procedure**

A. Examine the lowest row of open fastener holes at the forward backup fittings for the trailing edge flap tracks at ribs 10 and 14 for cracks as specified in Part 6, 51-00-00, Procedure 16, paragraph 6. See Figure 1 for the fastener hole locations.

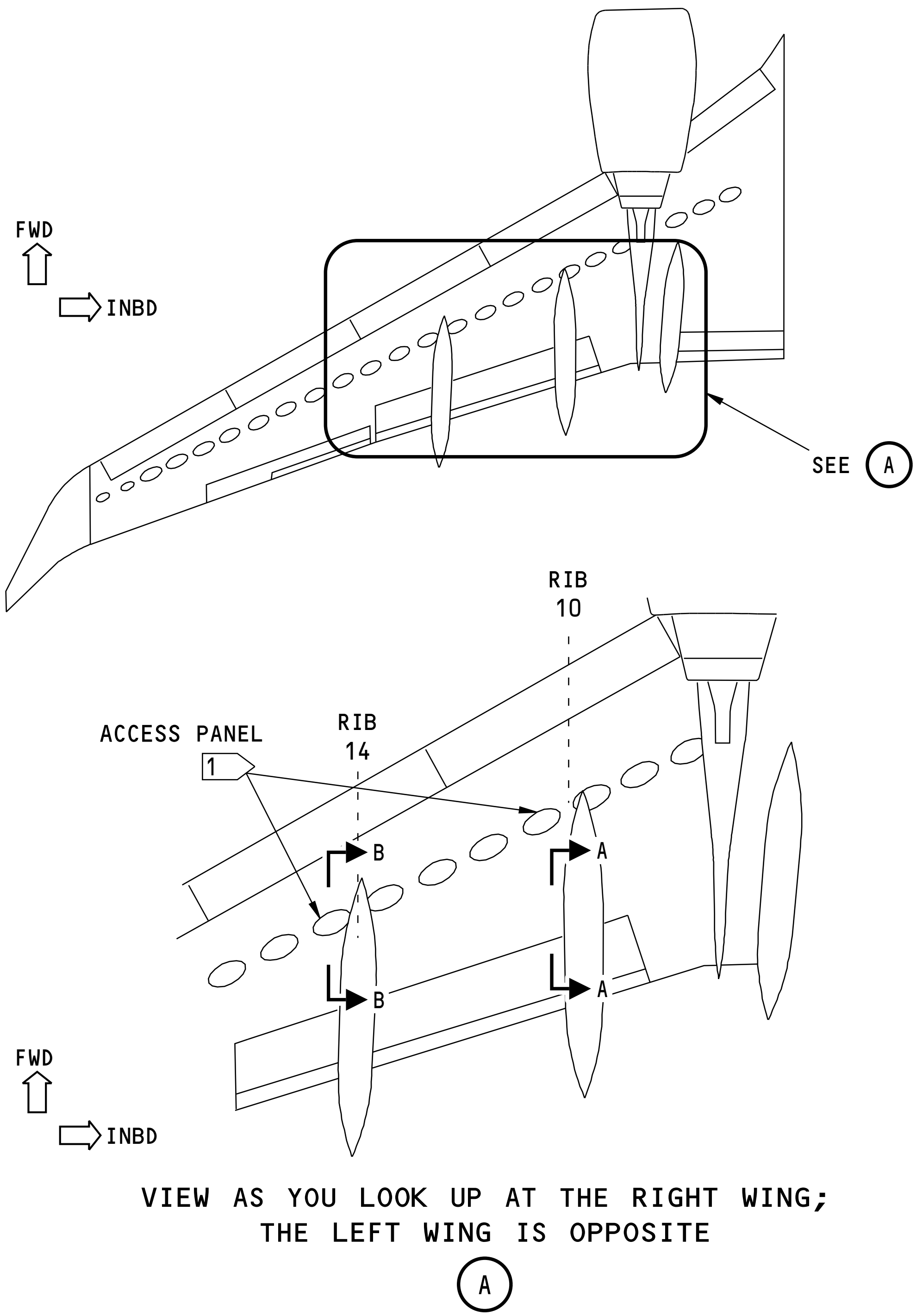
B. Do Paragraph 5.A. again to examine the forward backup fittings of the trailing edge flap tracks for cracks in the opposite wing.

6. **Inspection Results**

A. A crack signal will look almost the same as the notch signal that you got during calibration from the reference standard.

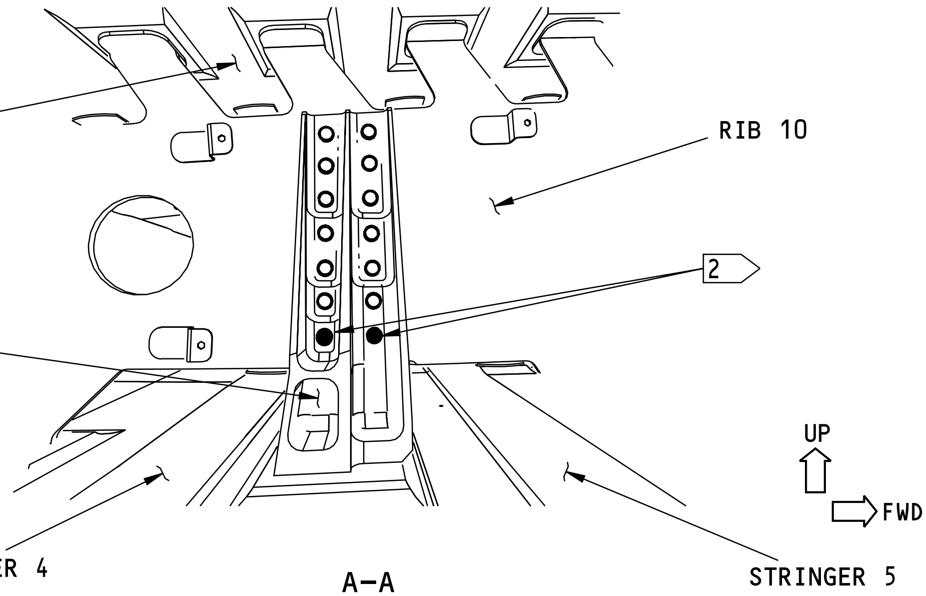
(1) Record the location of all crack indications.

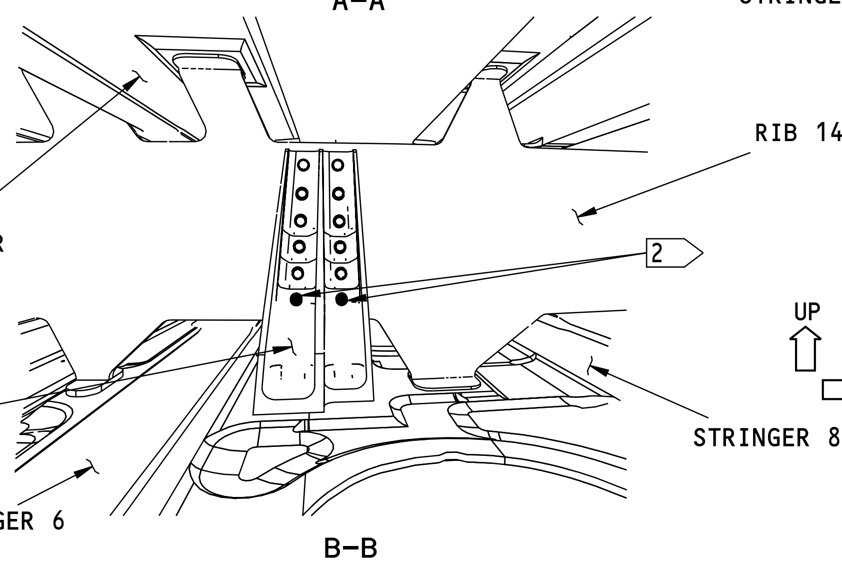
B. Refer to Part 6, 51-00-00, Procedure 16, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



2505646 S0000589441_V1

Inspection Area
Figure 1 (Sheet 1 of 2)





VIEWS A-A AND B-B ARE AS YOU LOOK INBOARD INSIDE THE WING. THE RIGHT SIDE IS SHOWN; THE LEFT SIDE IS ALMOST THE SAME

NOTES

1 REMOVE THESE ACCESS PANELS TO GET ACCESS TO THE INSPECTION AREAS

2 FASTENER LOCATIONS TO BE EXAMINED. EXAMINE THE BACKUP FITTING FOR CRACKS AT THE OPEN FASTENER HOLE LOCATIONS

2505648 S0000589442_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

OUTER WING - FORWARD BACKUP FITTING AT RIBS 10 AND 14 OF THE TRAILING EDGE FLAP TRACK (LFEC)

1. **Purpose**

   A. Use this low frequency eddy current (LFEC) procedure to examine the forward backup fittings of the trailing edge flap tracks at ribs 10 and 14 in the wing for subsurface cracks. The backup fittings are examined for subsurface cracks at the lowest row of fastener holes. See Figure 1 for the inspection areas.

   B. This procedure uses an impedance plane display instrument.

   C. The ribs and the backup fittings are aluminum.

   D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

      (1) Item: 57-20-33

      (2) Item: 57-20-34

2. **Equipment**

   A. General

      (1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

      (2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

   B. Instrument

      (1) Use an eddy current instrument that has an impedance plane display.

      (2) The instruments that follow were used to help prepare this procedure.

         (a) 500D; Olympus NDT

         (b) Phasec 2D/3D; GE Inspection Technologies

         (c) Nortec 600; Olympus NDT

         (d) Mentor EM; GE Inspection Technologies

   C. Probes

      (1) To examine the backup fitting at rib 10, use a reflection ring probe with a minimum inner diameter of 0.53 inch (13.4 mm) and maximum outer diameter of 1.0 inch (25.4 mm) that can operate between 100 and 500 Hz.

      (2) To examine the backup fitting at rib 14, use a reflection ring probe with a minimum inner diameter of 0.42 inch (10.6 mm) and a maximum outer diameter of 1.0 inch (25.4 mm) that can operate between 100 and 500 Hz.

      (3) The probes that follow were used to help prepare this procedure.

         (a) AF-4060; AeroFab NDT

         (b) NEC-4028-3; NDT Engineering

         (c) TEK-1005; Techna NDT

         (d) RDP.9-1K; Techna NDT

   D. Reference Standard

(1) Use reference standards NDT3257 and NDT3266, to help calibrate the instrument. See Figure 2 for data about reference standard NDT3257. See Figure 3 for data about reference standard NDT3266.

3. Prepare for the inspection

WARNING: THIS AREA OF THE WING IS A CONFINED SPACE AREA. FOLLOW ALL CONFINED SPACE ENTRY PROCEDURES BEFORE YOU GO INTO THE WING.

A. Get access to the inboard side of rib 10 and rib 14.

B. Identify the inspection area shown in Figure 1.

C. Clean the inspection area.

D. Remove sealant that is around the fastener tail, if necessary. Replace the sealant after the inspection is completed, when necessary

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 9, paragraph 5, to examine the backup fitting at rib 10.

(1) Set the instrument frequency between 200 and 300 Hz.

(2) Use reference standard NDT3257.

B. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 9, paragraph 5, to examine the backup fitting at rib 14.

(1) Set the instrument frequency between 150 and 350 Hz.

(2) Use reference standard NDT3266.

5. Inspection Procedure

A. Examine the forward backup fittings of the trailing edge flap tracks for cracks at rib 10 of the wing. Examine the forward backup fittings at the lowest fastener row as specified Part 6, 51-00-00, Procedure 9, paragraph 6, and the instructions that follow. See Figure 1 for the fastener locations.

(1) Put the center of the probe above the center of one of the two fasteners in the inspection area and balance the instrument.

NOTE: Do not adjust the gain. Gain adjustments will make the instrument calibration unsatisfactory.

(2) Put the center of the probe above the center of the other fastener in this inspection area and monitor the instrument for crack signals. See Paragraph 6. to make an analysis of the signals that occur.

NOTE: It is possible that the first fastener location that was used to balance the instrument has a crack. If this occurs, all the fastener holes that do not have cracks will cause the signal to move below the balance point. If you think you balanced the probe at a fastener location that has a crack, then put the probe on the other fastener in this inspection area and balance the instrument again.

(3) Do a check of the instrument calibration as follows (do not adjust the gain when you do this check):

(a) Put the probe on the reference standard at probe position 1 as shown in Figure 4, Detail I.

(b) Move the center of the probe above the fastener hole as necessary until the height of the signal is at its minimum and balance the instrument.

(c) Put the probe on the reference standard at probe position 2 as shown in Figure 4 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(d) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on all fastener locations you have examined since the last calibration check.

(4) Do Paragraph 5.A.(2) and Paragraph 5.A.(3) to examine the forward backup fitting at rib 10 for cracks on the opposite wing.

B. Examine the forward backup fittings of the trailing edge flap tracks for cracks at rib 14 of the wing. Examine the forward backup fittings at the lowest fastener row as specified Part 6, 51-00-00, Procedure 9, paragraph 6, and the instructions that follow. See Figure 1 for the fastener locations.

(1) Put the center of the probe above the center of one of the two fasteners in the inspection area and balance the instrument.

NOTE: Do not adjust the gain. Gain adjustments will make the instrument calibration unsatisfactory.

(2) Put the center of the probe above the center of the other fastener in this inspection area and monitor the instrument for crack signals. See Paragraph 6. to make an analysis of the signals that occur.

NOTE: It is possible that the first fastener location that was used to balance the instrument has a crack. If this occurs, all the fastener holes that do not have cracks will cause the signal to move below the balance point. If you think you balanced the probe at a fastener location that has a crack, then put the probe on the other fastener in this inspection area and balance the instrument again.

(3) Do a check of the instrument calibration as follows (do not adjust the gain when you do this check):

(a) Put the probe on the reference standard at probe position 1 as shown in Figure 4, Detail I.

(b) Move the center of the probe above the fastener hole as necessary until the height of the signal is at its minimum and balance the instrument.

(c) Put the probe on the reference standard at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(d) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on all fastener locations you have examined since the last calibration check.

(4) Do Paragraph 5.B.(2) and Paragraph 5.B.(3) to examine the forward backup fitting at rib 14 for cracks on the opposite wing.

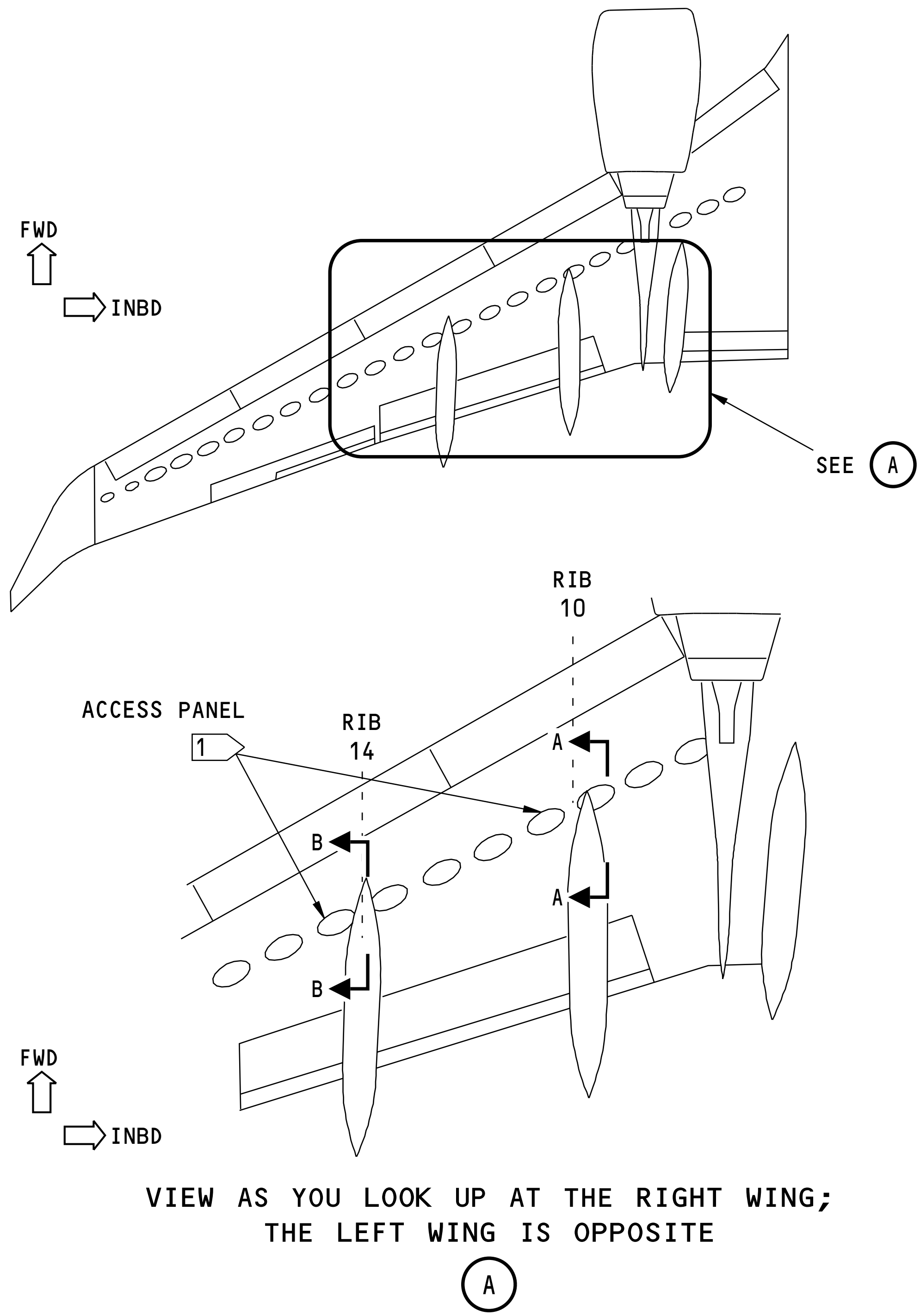
6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 9, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

B. Compare the signals that you get during the inspection with the signals that you get from the reference standard.

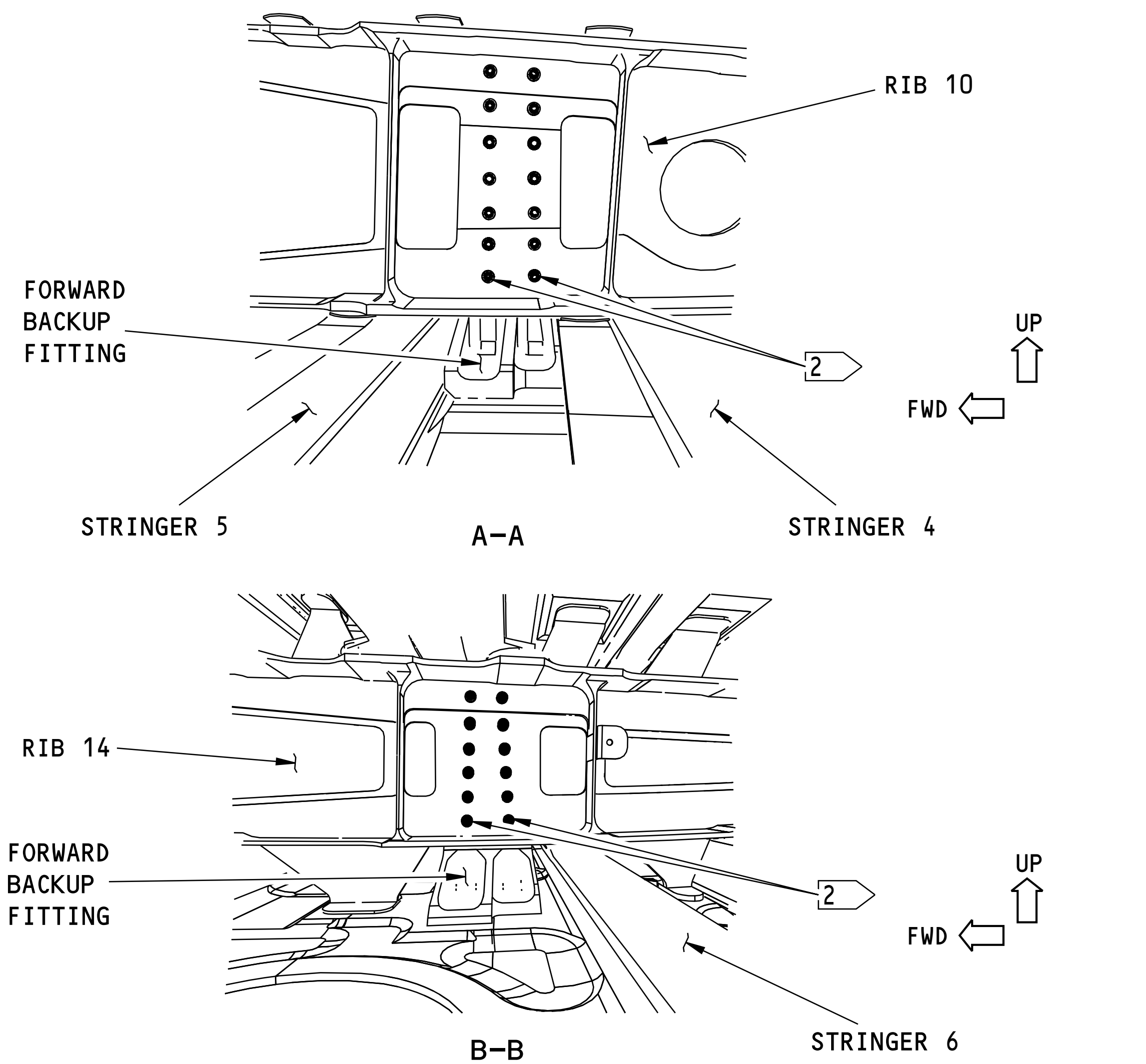
C. Compare the signal that you get during the inspection to the signal from the same fastener location on the same backup fitting in the opposite wing.

D. To make sure a crack indication is from a crack, you can remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



2505663 S0000589833_V1

Inspection Area
Figure 1 (Sheet 1 of 2)



VIEWS A-A AND B-B ARE AS YOU LOOK OUTBOARD IN THE RIGHT WING;
THE LEFT WING IS THE SAME

NOTES

1 REMOVE THESE WING ACCESS PANELS TO GET ACCESS TO THE INSPECTION AREAS

2 FASTENER LOCATIONS TO BE EXAMINED. EXAMINE THE BACKUP FITTING FOR CRACKS AT THE LOWEST FASTENER LOCATIONS FROM THE INBOARD SIDE OF THE RIB.

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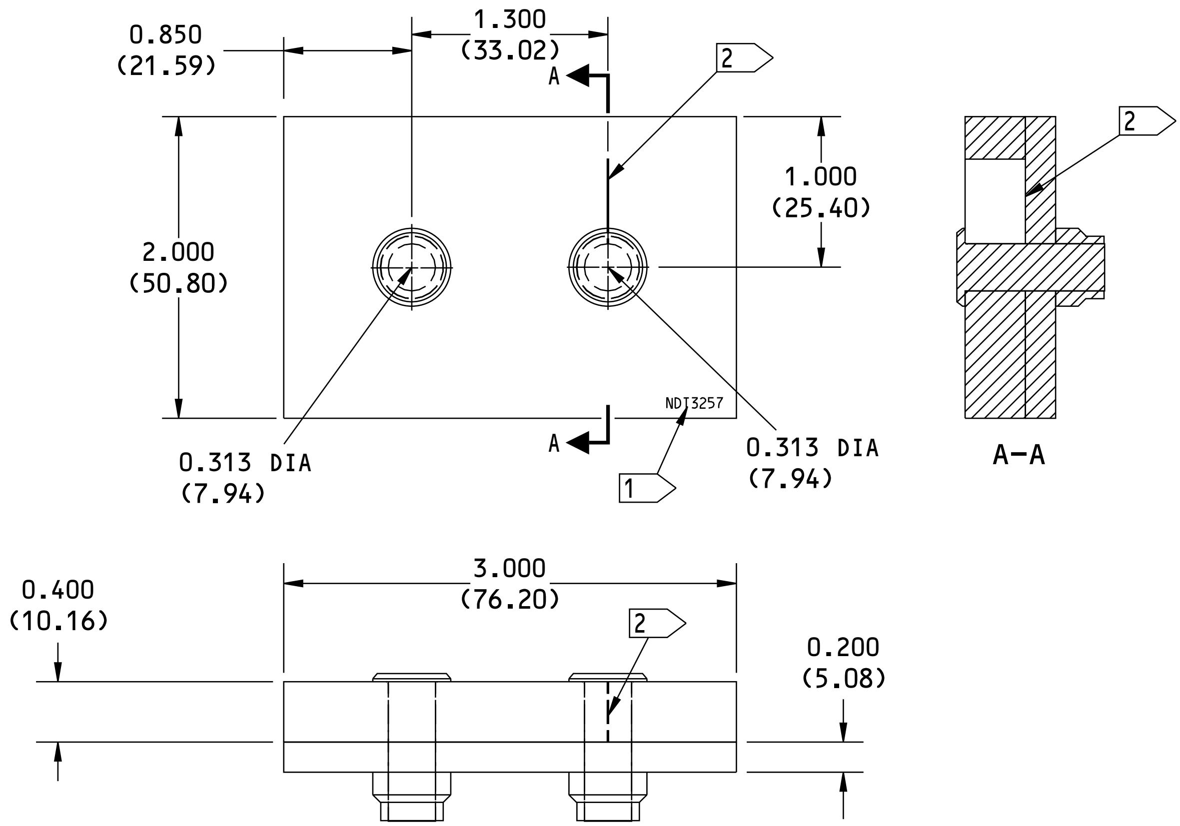
Inspection Area
Figure 1 (Sheet 2 of 2)



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL: 7050-T7 (OR EQUIVALENT) AIRCRAFT GRADE ALUMINUM
- FASTENERS: BACB30VT, BACC30BL; ALTERNATIVE FASTENERS CAN BE USED IF THEY HAVE THE SAME CONFIGURATION AS THE FASTENERS SPECIFIED
- SURFACE ROUGHNESS: 63 RA OR BETTER
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

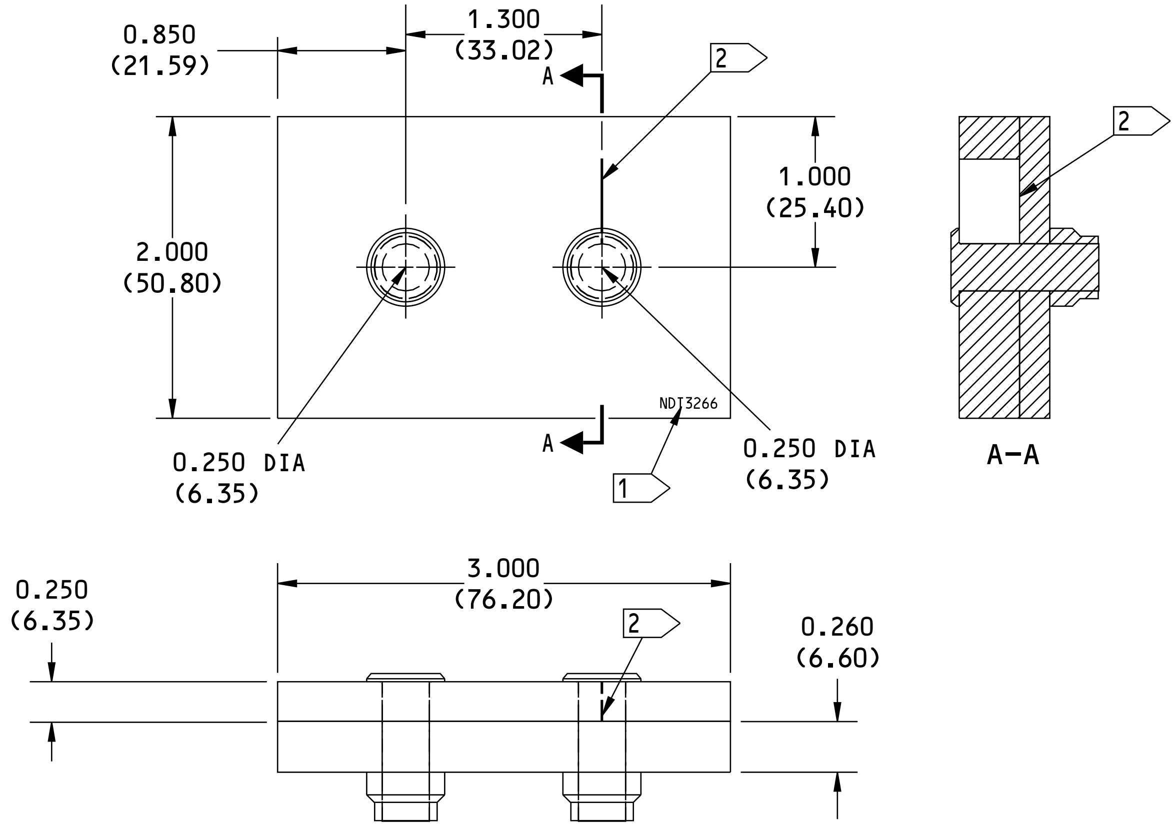
INCHES	MILLIMETERS
X.XXX= ±0.005	X.XX= ±0.10
X.XX= ±0.025	X.X= ±0.5
X.X= ±0.050	A= ±1

1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3257, AT APPROXIMATELY THIS LOCATION

2 EDM NOTCH:
LENGTH: 0.56 (14.2)
WIDTH: 0.007 (0.18)
DEPTH: THROUGH THE THICKNESS

2505809 S0000589835_V1

Reference Standard NDT3257
Figure 2



NOTES

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL: 7050-T7 (OR EQUIVALENT) AIRCRAFT GRADE ALUMINUM
- FASTENERS: BACB30VT, BACC30BL; ALTERNATIVE FASTENERS CAN BE USED IF THEY HAVE THE SAME CONFIGURATION AS THE FASTENERS SPECIFIED
- SURFACE ROUGHNESS: 63 RA OR BETTER
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX= ±0.005	X.XX= ±0.10
X.XX= ±0.025	X.X= ±0.5
X.X= ±0.050	A= ±1

1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3266, AT APPROXIMATELY THIS LOCATION

2 EDM NOTCH:
LENGTH: 0.56 (14.2)
WIDTH: 0.007 (0.18)
DEPTH: THROUGH THE THICKNESS

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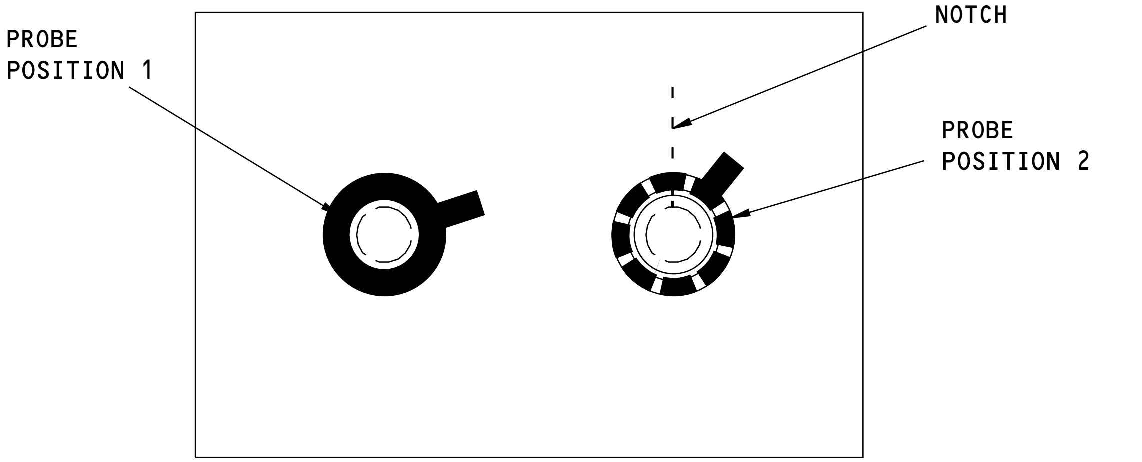
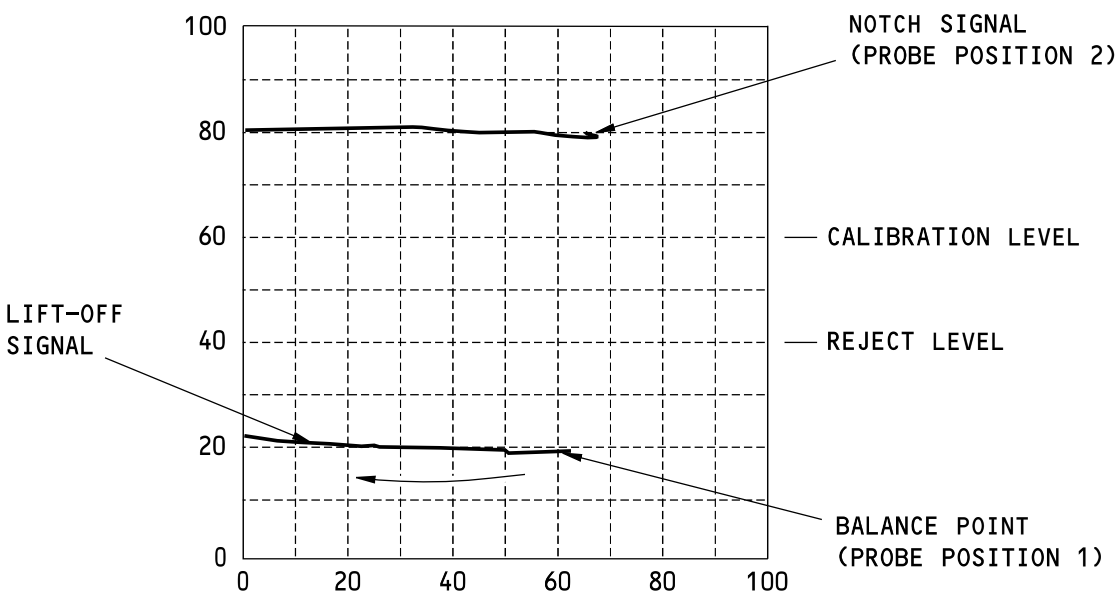
Reference Standard NDT3266
Figure 3



CALIBRATION PROBE POSITIONS FOR REFERENCE STANDARDS NDT3257 AND NDT3266
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II

	RIB 10	RIB 14
REFERENCE STANDARD	NDT3257	NDT3266

REFERENCE STANDARDS TO USE AT THE DIFFERENT RIB STATIONS
TABLE I

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Instrument Calibration
Figure 4

PART 6 - EDDY CURRENT

OUTER WING - FORWARD BACKUP FITTING AT RIBS 10 AND 14 OF THE TRAILING EDGE FLAP TRACK (HFEC)

1. Purpose

A. Use this high frequency eddy current (HFEC) procedure to examine the forward backup fittings of the trailing edge flap tracks at ribs 10 and 14 in the wing for cracks. The backup fittings are examined for cracks at the lowest row of fastener holes. See Figure 1 for the inspection areas.

B. This procedure uses an impedance plane display instrument.

C. The ribs and the backup fittings are aluminum.

D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 57-20-33

(2) Item: 57-20-34

2. Equipment

A. General

(1) Use inspection equipment that can be calibrated on the reference standard as specified in Paragraph 4.

(2) Refer to Part 1, 51-01-00, for data about the equipment manufacturers.

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display.

(2) The instruments that follow were used to help prepare this procedure.

(a) 500D; Olympus NDT

(b) Phasec 2D/3D; GE Inspection Technologies

(c) 2000D; Olympus NDT (Nortec)

(d) Nortec 600; Olympus NDT

C. Probes

(1) The probe that follows was used to help prepare this procedure.

(a) TPEN95-6B; Techna NDT

D. Reference Standard

(1) Use reference standard 188A, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 23, for data about reference standard 188A.

3. Prepare for the Inspection

WARNING: THIS AREA OF THE WING IS A CONFINED SPACE AREA. FOLLOW ALL CONFINED SPACE ENTRY PROCEDURES BEFORE YOU GO INTO THE WING.

A. Get access to the outboard side of ribs 10 and 14. See Figure 1.

B. Identify the inspection area shown in Figure 1.

C. Clean the inspection area.

(1) Remove paint only if it is loose.

(2) Remove sealant that is around the fastener heads, if necessary. Replace the sealant after the inspection is completed, when necessary.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.

5. Inspection Procedure

WARNING: KNOWLEDGE OF AMM CHAPTER 28 SAFETY PROCEDURES IS NECESSARY BEFORE FUEL TANK ENTRY. DANGEROUS FUMES OR A POSSIBLE EXPLOSION CAN CAUSE INJURY OR DEATH.

A. Examine the forward backup fittings of the trailing edge flap tracks for cracks at ribs 10 and 14 of the wing. Examine the forward backup fittings at the lowest fastener row as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, and the step that follows. See Figure 1 for the fastener locations.

(1) Make a complete scan around each fastener location in the inspection area. Use the fastener head as a probe guide.

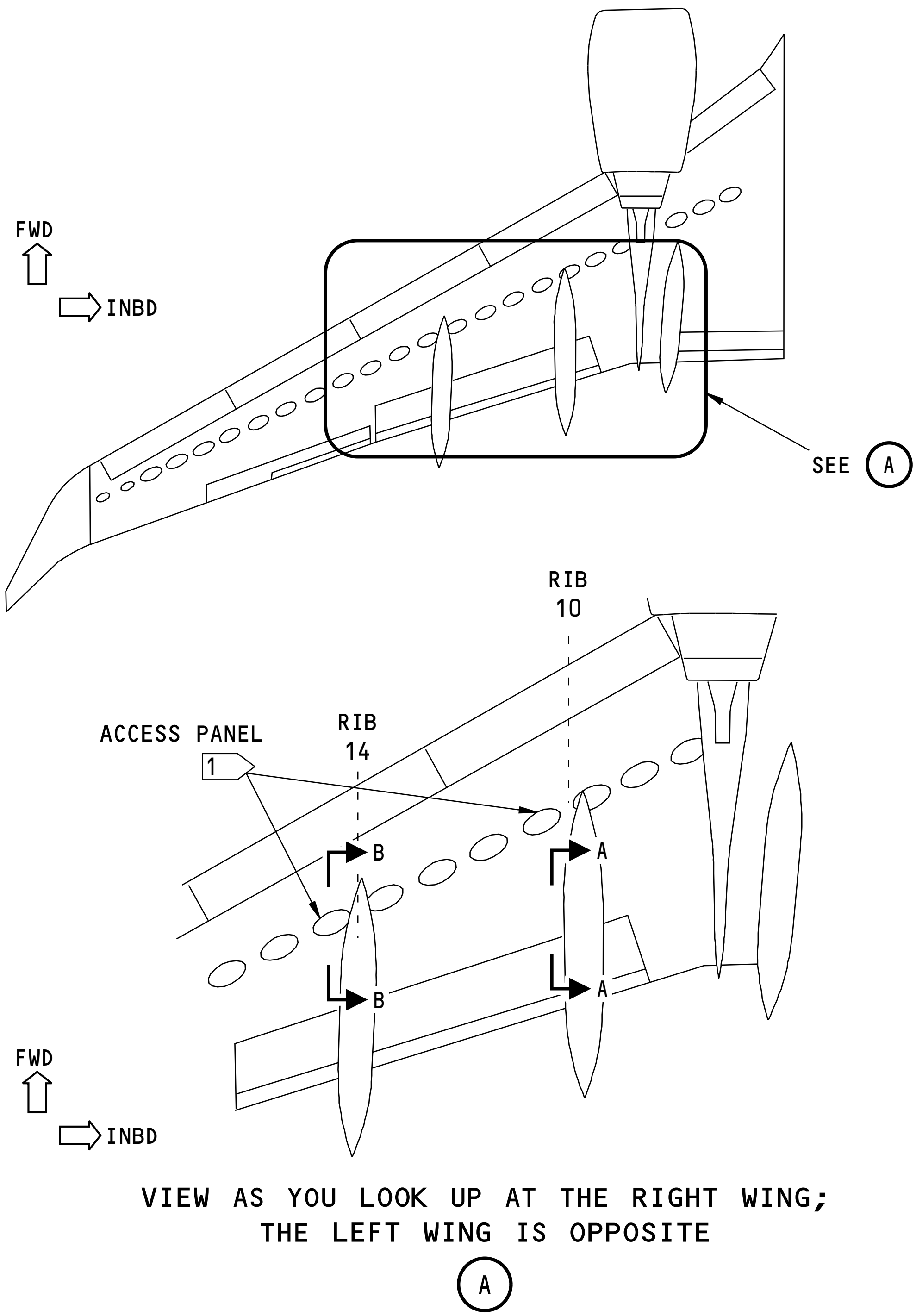
B. Do Paragraph 5.A. again to examine the forward backup fittings of the trailing edge flap tracks for cracks on the opposite wing.

6. Inspection Results

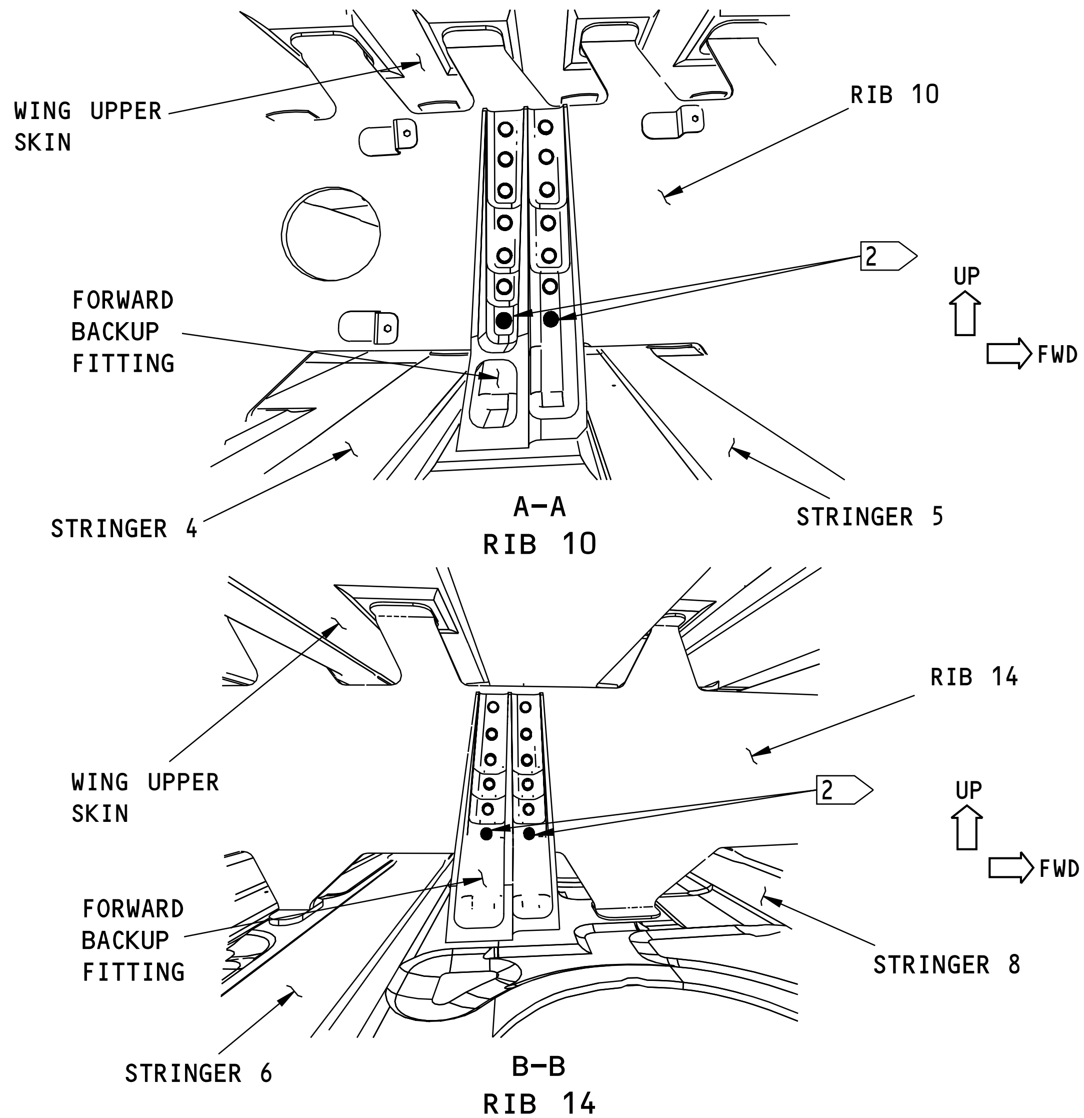
A. A crack signal from the surface inspection will look almost the same as the notch signal from the reference standard.

(1) Refer to Part 6, 51-00-00, Procedure 23, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

B. To make sure a crack indication is from a crack, you can remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 16.



Inspection Area
Figure 1 (Sheet 1 of 2)



VIEWS A-A AND B-B ARE AS YOU LOOK INBOARD IN THE WING.
THE RIGHT SIDE IS SHOWN; THE LEFT SIDE IS ALMOST THE SAME

1 REMOVE THESE ACCESS PANELS TO GET ACCESS TO THE INSPECTION AREAS

2 MAKE A SCAN AROUND THE FASTENER HEADS AT THESE FASTENER LOCATIONS TO EXAMINE THE BACKUP FITTING FOR CRACKS. USE THE FASTENER HEADS AS A PROBE GUIDE.

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Inspection Area
Figure 1 (Sheet 2 of 2)