



737
NON-DESTRUCTIVE TEST MANUAL

PART 6 - EDDY CURRENT

NUMBER 1, 2, 7 AND 8 OUTBOARD FLAP TRACKS

1. Purpose

- A. Use this procedure to do an eddy-current surface inspection to find cracks in the upper flange of the number 1, 2, 7 and 8 outboard flap tracks (see Figure 1).
- B. This eddy current inspection will examine the flap track for cracks at the outboard surface of the upper flange of the flap track where the flap track is attached to the wing rear spar. The inspection examines the upper and lower edges of the flap track flange in an area that is adjacent to the outboard fastener hole. This procedure will find a 0.050 inch (1.3 mm) corner crack. See Figure 1, Sheet 2.
- C. This inspection uses an unshielded, right angle pencil probe that has a maximum diameter of 0.125 inch (3.18 mm) and an 8 inch (203 mm), flexible handle. A nonconductive guide, which is supplied with the probe, is used to keep the coil a constant distance from the edge of the flange. Detail I in Figure 3 shows the probe with the guide.
- D. Service Bulletin Reference: 737-57-1249, 737-57A1271

2. Equipment

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

- A. All eddy current equipment that can do the calibration instructions of this procedure can be used.
 - (1) Instrument – Use an eddy current instrument with an impedance plane display. These instruments were used to prepare this procedure.
 - (a) Phasec 1.1; Hocking Krautkramer
 - (b) Nortec 19 and 19e; Staveley Instruments
 - (c) MIZ-22; Zetec Inc.
 - (2) Probe - Use an unshielded, right angle pencil probe that has a maximum diameter of 0.125 inch (3.18 mm) and a 8 inch (203 mm) flexible handle. The probe specified below was used to prepare this procedure.
 - (a) NEC-1062; NDT Engineering
 - (3) Probe Guide - Use a nonconductive guide that can be adjusted and removed. The guide is supplied with the probe.
 - (a) NEC-1062G; NDT Engineering
 - (4) Reference Standard - Use reference standard NDT3021. See Figure 2 for data related to reference standard NDT3021.

NOTE: Reference standard NDT3021 is also used in Part 4, 57-50-01, for the ultrasonic inspection of the upper flange.

3. Prepare for the Inspection

- A. Identify the inspection surface. See Figure 1.
- B. Lower the flaps all the way down.
- C. Remove the center outboard fairing.
- D. Clean the inspection surface. Remove sealant if it is on the inspection surface.

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4. Instrument Calibration

- A. Refer to Part 6, 51-00-00, Procedure 24, "Steel Part Surface Inspection (Impedance Plane Display)" for general calibration instructions.
- B. Set the instrument frequency to 50 kHz.
- C. Put approximately 0.006 inch (0.15 mm) of nonconductive shim on the reference standard.
NOTE: The shim simulates the paint on the flap tracks.
- D. Put the probe on reference standard NDT3021 (on the nonconductive shim) without the guide attached.
- E. Set the instrument balance point and the lift-off.
- F. Attach the guide to the probe as shown in Detail I in Figure 3.
- G. Put the probe on reference standard NDT3021 with the coil on the edge of the reference standard that has the 0.050 inch (1.3 mm) corner notch. See Detail II in Figure 3.
NOTE: Make sure the guide is flush with the side of the reference standard.
- H. Follow the calibration instructions of Part 6, 51-00-00, Procedure 24, to calibrate the instrument gain on the notch in the reference standard.
NOTE: Make sure the nonconductive shim is above the notch on the reference standard before the instrument gain is set.

5. Inspection Procedure

NOTE: The flap tracks are plated with cadmium. Refer to NOTES 1 thru 3 in Part 6, 51-00-00, Procedure 24, para. 6.D.(3) for the types of signal changes that can occur from changes in the thickness of the cadmium.

- A. Put the probe, without the guide attached to the probe, on the inspection surface.
- B. Balance the instrument.
- C. Move the probe to the upper edge of the flange. Make sure the probe is the same distance from the edge of the flange as it was from the edge of the reference standard during calibration.
- D. Make a slow scan of the inspection area at the upper edge of the flange. Detail II in Figure 1 shows the inspection area. Use the lower wing skin as a guide to keep the probe a constant distance from the edge of the flap track flange as you make the scan.

NOTE: It is possible that a shim is between the flap track and the wing skin. If there is a shim, tilt the probe as necessary to keep the probe coil away from the shim and on the flap track. A very small change in the probe-to-edge distance can cause an edge effect signal to occur.

- E. As you make a scan, balance the instrument as necessary to keep the balance point on the screen display.
NOTE: It can be necessary to use a vertical to horizontal gain ratio of 4:1 or more to keep the signal on the screen display.
- F. Make a mark at the locations that cause signals that are equal to or more than 100% of the notch signal you got from the reference standard during calibration.
- G. Attach the guide to the probe and put the probe on the lower edge of the flange as shown in Detail III in Figure 1.



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- H. Make a scan of the inspection area at the lower edge of the flap track flange. Detail II in Figure 1 shows the inspection area.
NOTE: Adjust the guide as necessary so the probe can do a complete scan of the inspection area.
- I. Make a mark at the locations that cause signals that are equal to or more than 100% of the notch signal you got from the reference standard during calibration.
- J. Do Paragraph 5.A. thru Paragraph 5.I. again to examine all of the flap tracks (number 1, 2, 7 and 8).

6. Inspection Results

- A. A fast upscale signal that is equal to or more than 100% of the notch signal from the reference standard is a sign of a crack.
- B. Refer to the Inspection Results section in Part 6, 51-00-00, Procedure 24, for conditions that can cause different types of signals to occur and for more analysis of the signals.

NOTE: The flap tracks are plated with cadmium. Refer to the NOTES in the inspection procedure of Part 6, 51-00-00, Procedure 24, for instructions related to parts that are plated with cadmium.

- C. In areas that give signals that are 100% (or more) of the screen display, calibrate the instrument to a frequency of 25 kHz and do the inspection of the area again. Compare the signals you get to the signals with the instrument set at 50 kHz. If the signals are caused from a thickness change in the cadmium, the signal will decrease. If a signal is caused by a crack, there will be no change.

NOTE: Signals caused by thickness changes in the cadmium can cause the signal to look irregular. The signal will go up during the scan as the probe moves into an area where the cadmium gets thinner.

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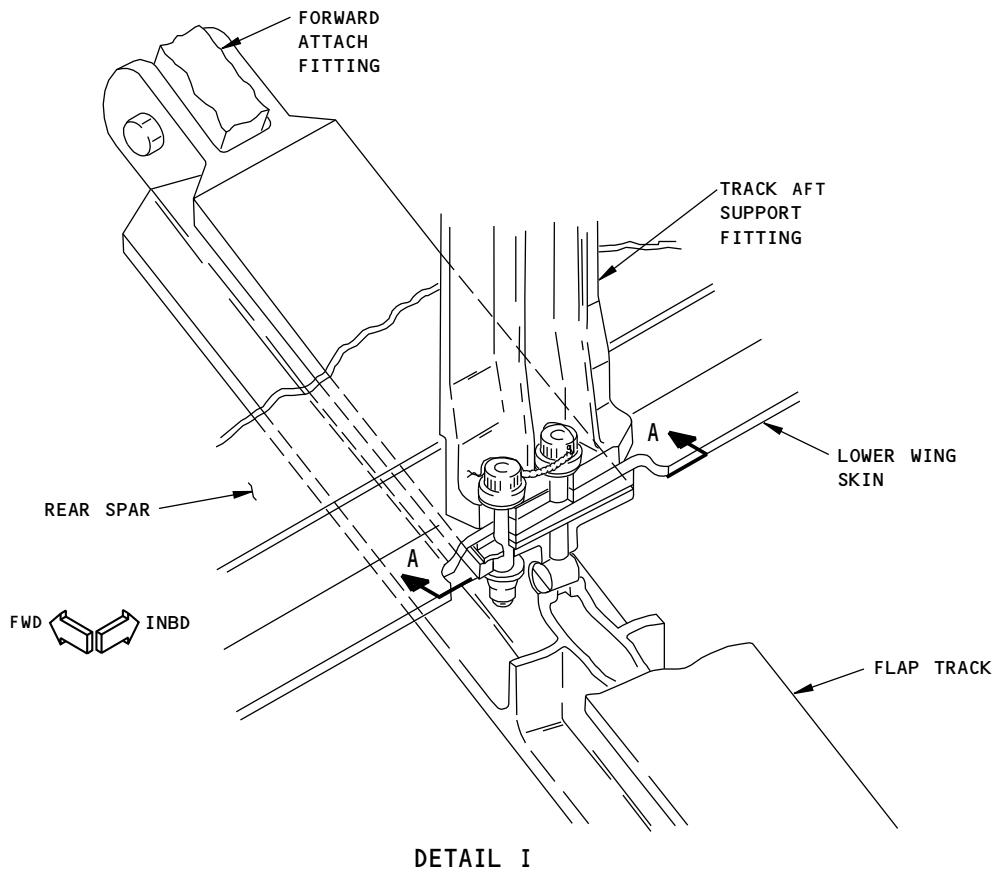
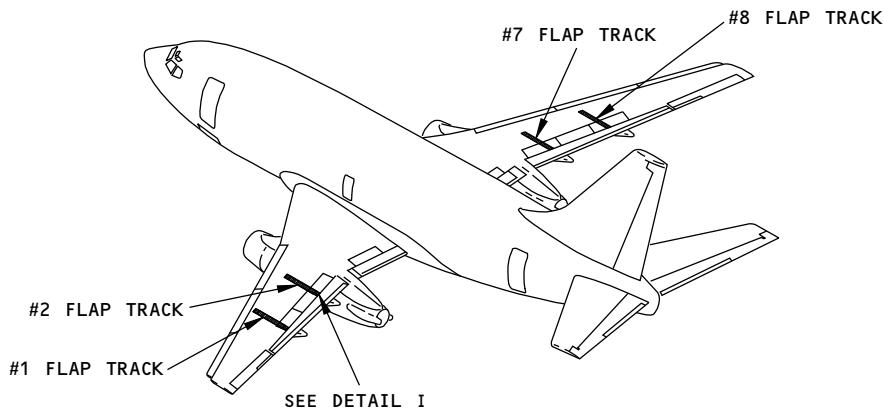
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DETAIL I

LEFT OUTBOARD TRACK SHOWN
RIGHT OUTBOARD OPPOSITE

2163198 S0000473998_V1

Numbers 1, 2, 7 and 8 Outboard Flap Track Inspection Areas
Figure 1 (Sheet 1 of 3)

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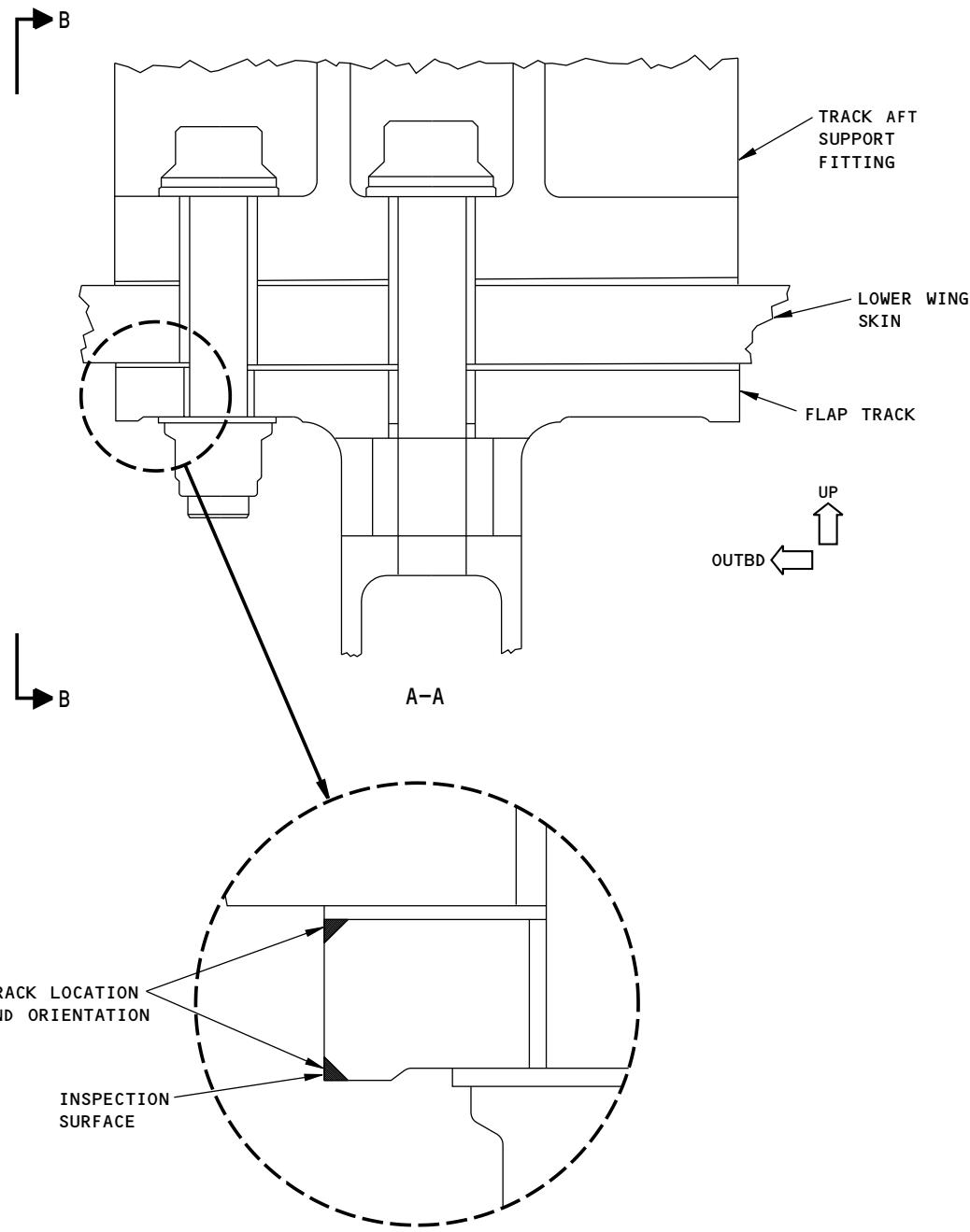
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2163200 S0000473999_V1

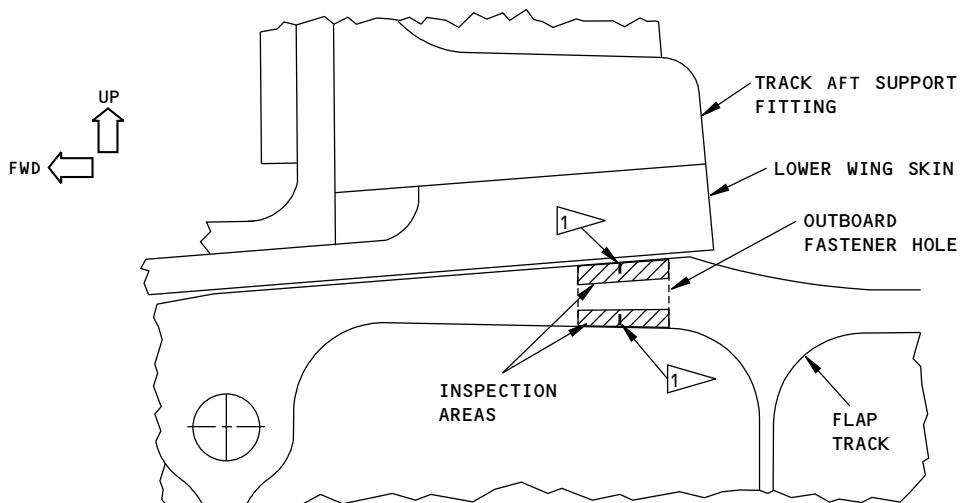
Numbers 1, 2, 7 and 8 Outboard Flap Track Inspection Areas
Figure 1 (Sheet 2 of 3)

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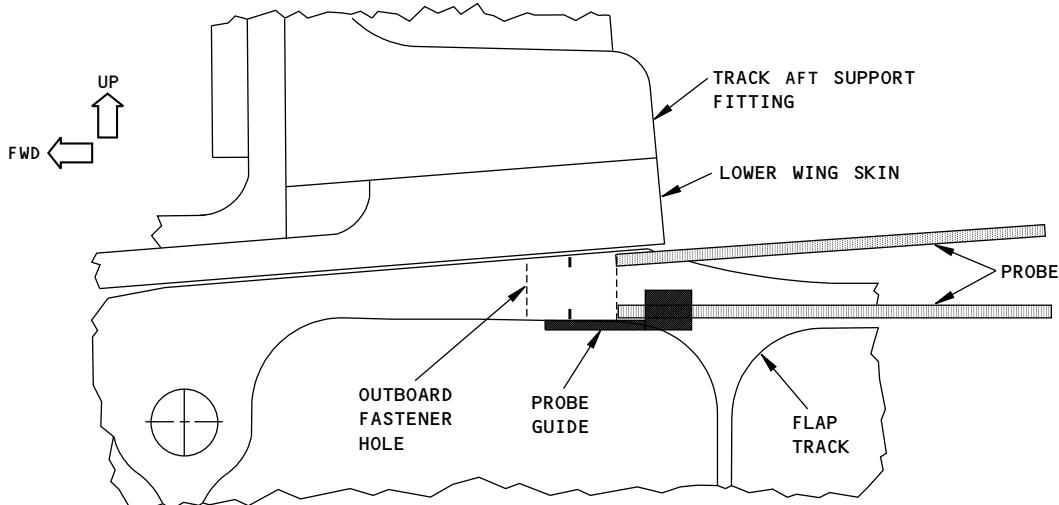
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B-B
INSPECTION AREAS
DETAIL II



B-B
PROBE POSITIONS
DETAIL III

NOTES:



INSPECTION AREA



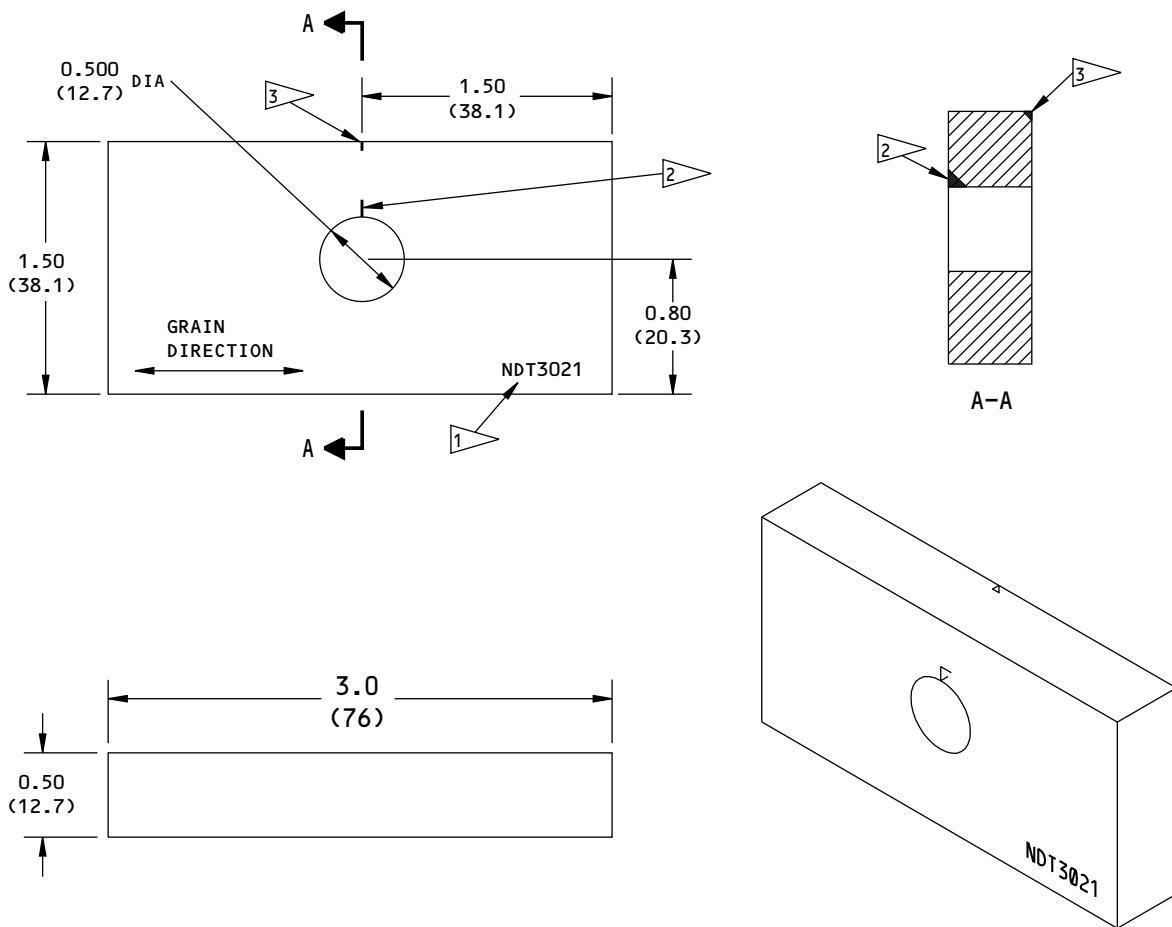
TYPICAL CRACK LOCATIONS ON THE OUTBOARD SURFACE OF THE FLAP TRACK FLANGE

2163202 S0000474000_V1

Numbers 1, 2, 7 and 8 Outboard Flap Track Inspection Areas
Figure 1 (Sheet 3 of 3)

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NOTES:

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

<u>INCHES</u>	<u>MILLIMETERS</u>
X.XXX = ± 0.005	X.XX = ± 0.1
X.XX = ± 0.025	X.X = ± 0.5
X.X = ± 0.050	X = ± 1
- MATERIAL: 4330, 4330M, 4340 OR 4340M STEEL
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- ETCH OR SCRIBE THE REFERENCE STANDARD NUMBER NDT3021

EDM NOTCH - CORNER
WIDTH - 0.005 (0.13) ± 0.002 (0.05)
LENGTH - 0.100 (2.50)
DEPTH - 0.100 (2.50)
THE NOTCH MUST BE WITHIN
 ± 0.005 (0.13) OF THE CENTERLINE
OF THE HOLE AS SHOWN.

THIS NOTCH IS USED FOR THE
INSTRUMENT CALIBRATION IN
PART 4, 57-50-01.

EDM NOTCH - CORNER
WIDTH - 0.005 (0.13) ± 0.002 (0.05)
LENGTH - 0.050 (1.3)
DEPTH - 0.050 (1.3)

2163204 S0000474001_V1

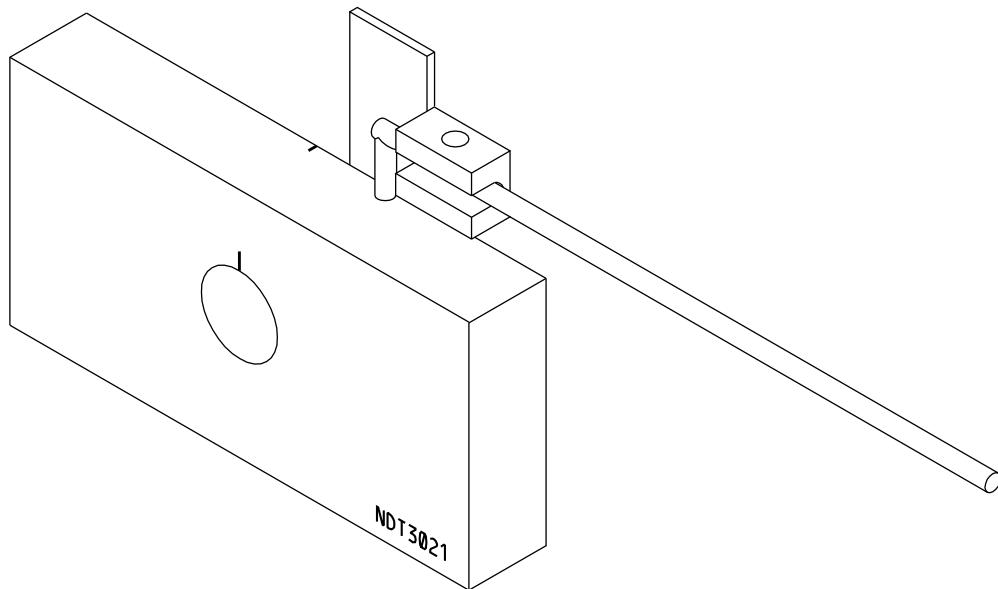
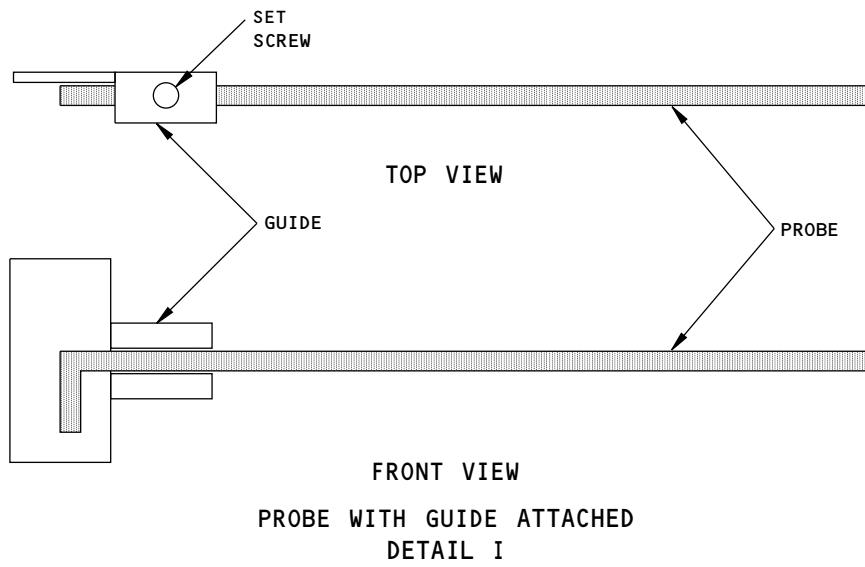
**Reference Standard NDT3021
Figure 2**

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PROBE IN POSITION FOR CALIBRATION
DETAIL II

NOTES:

THE GUIDE IS ADJUSTABLE AND CAN BE REMOVED.

2163205 S0000474003_V1

Probe Position for Instrument Calibration
Figure 3

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PART 6 - EDDY CURRENT

**INBOARD TRAILING EDGE FLAP - TORQUE TUBE OF THE CARRIAGE ASSEMBLIES AT WBL
66.5 AND 191**

1. Purpose

- A. Use this procedure to do an open hole, eddy current inspection to find cracks in the torque tube of the carriage assemblies at WBL 66.5 and 191. The torque tubes are attached to the midflap of the inboard trailing edge flap assembly. See Figure 1 for the location of the carriage assemblies.
- B. There are two configurations of torque tubes:
 - (1) One configuration is for the carriage assembly at WBL 191 for all the -100/200 airplanes.
 - (2) The other configuration is for the carriage assembly at WBL 66.5 for all the -100 thru -500 airplanes and the carriage assembly at WBL 191 for all the -300 thru -500 airplanes.
- C. This inspection procedure will examine the torque tube for cracks at all the fastener locations where the torque tube attaches to three ribs of the midflap. See Figure 1 for the inspection areas.
- D. It is necessary to remove the torque tube from the midflap so that the fastener hole can be examined for 0.030 inch (0.76 mm) corner cracks with a rotating hole probe.

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 with a rotary scanner.
 - (b) Operates at a frequency range of 200 kHz to 1 MHz.
 - (2) The instruments specified below were used to help prepare this procedure.
 - (a) Phasec 2200 (impedance plane display with a rotary scanner); Hocking Krautkramer
 - (b) Nortec 19e (impedance plane display with a rotary scanner); Staveley Instruments
 - (c) Elotest B1 (impedance plane display with a rotary scanner); Rohman GmbH
- C. Probes
 - (1) Refer to Part 6, 51-00-00, Procedure 19, par. 3.C. for the probe(s) to use.
- D. Reference Standard
 - (1) Refer to Part 6, 51-00-00, Procedure 19, par. 3.D. for the reference standard to use.

3. Prepare for the Inspection

- A. Identify all the inspection areas. See Figure 1.
- B. Clean the inspection areas. Remove sealant as necessary. Remove paint only if it is loose.
- C. Refer to Part 6, 51-00-00, Procedure 19, par. 4.C. to prepare the inside surface of the hole.

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4. Instrument Calibration

- A. Calibrate the equipment to do the open hole inspection of the areas identified in Paragraph 1.C. as follows:
 - (1) Refer to par. 5 of Part 6, 51-00-00, Procedure 19, for the equipment calibration instructions.
 - (2) Refer to par. 3.D. of Part 6, 51-00-00, Procedure 19, to identify the reference standard to use.

5. Inspection Procedure

- A. Examine the torque tubes as follows:
 - (1) Calibrate the instrument as specified in Paragraph 4.
 - (2) Examine the fastener holes identified by flagnote 1 in Figure 1 as specified in par. 6 of Part 6, 51-00-00, Procedure 19.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 19, par. 7 to make an analysis of indications that occur during the inspection.

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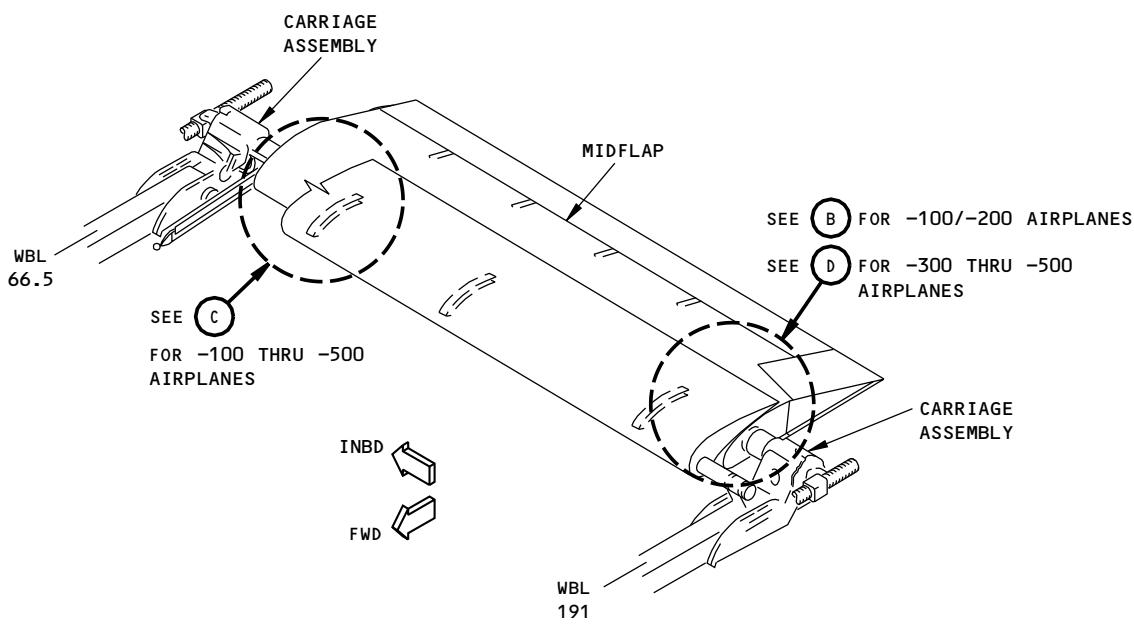
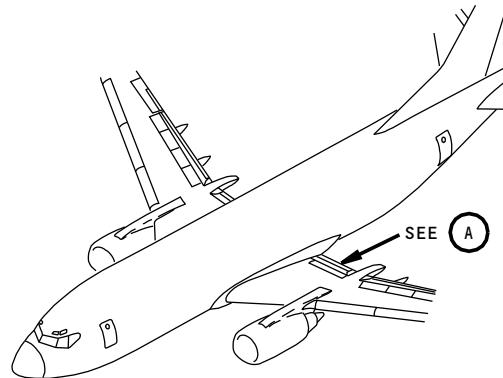
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INBOARD TRAILING EDGE FLAP ASSEMBLY
THE LEFT SIDE IS SHOWN;
THE RIGHT SIDE IS OPPOSITE

2163206 S0000474210_V1

Inboard Trailing Edge Flap - Torque Tube Inspection Areas for the Carriage Assemblies at WBL 66.5 and 191
Figure 1 (Sheet 1 of 4)

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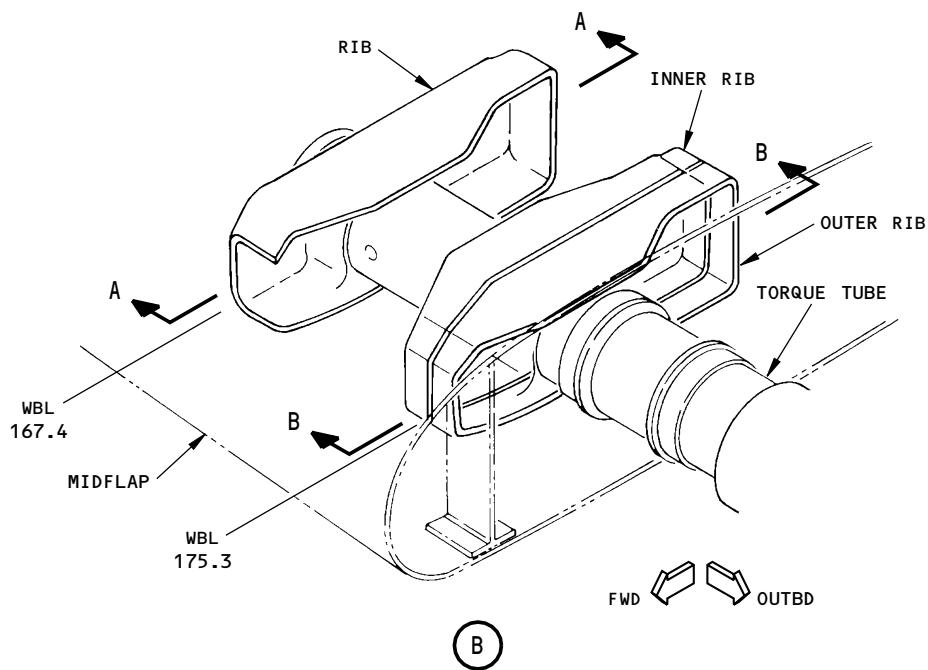
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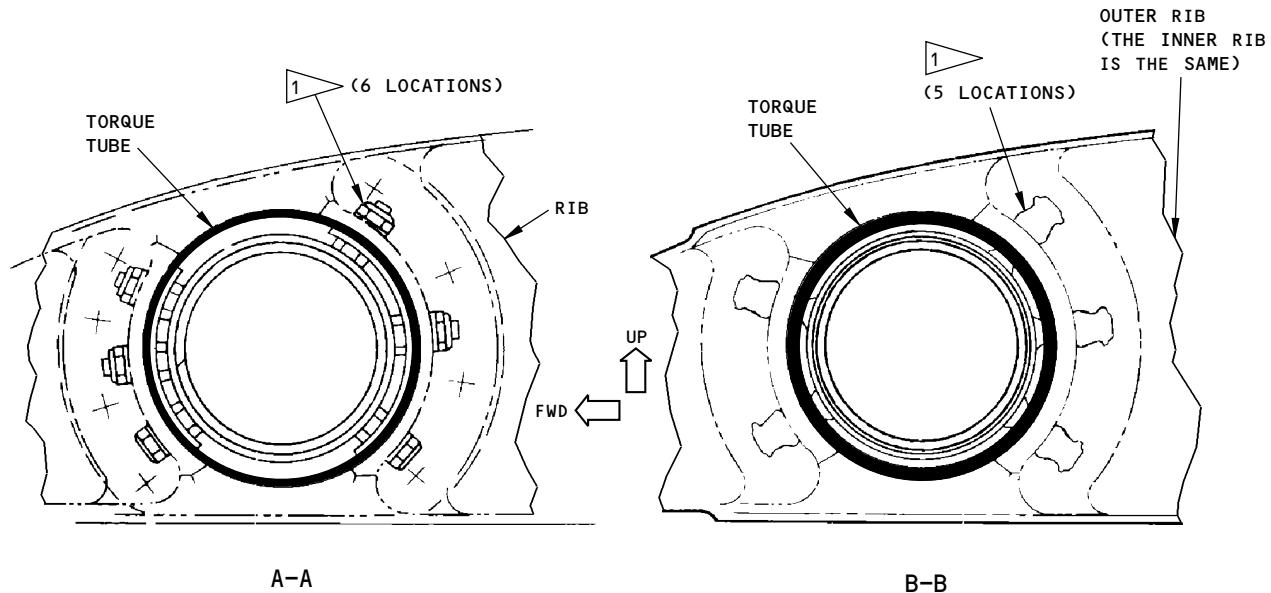
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-100 AND -200 AIRPLANES



NOTES:



2163207 S0000474211_V1

Inboard Trailing Edge Flap - Torque Tube Inspection Areas for the Carriage Assemblies at WBL
66.5 and 191
Figure 1 (Sheet 2 of 4)

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ALL; 737-100/-200/-200C/-300/-400/-500 AIRPLANES

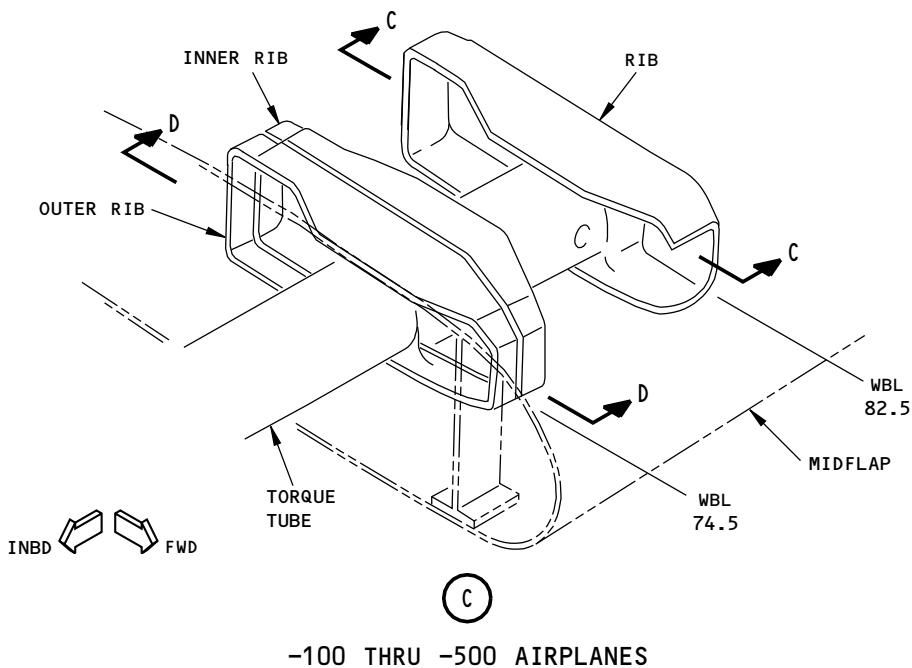
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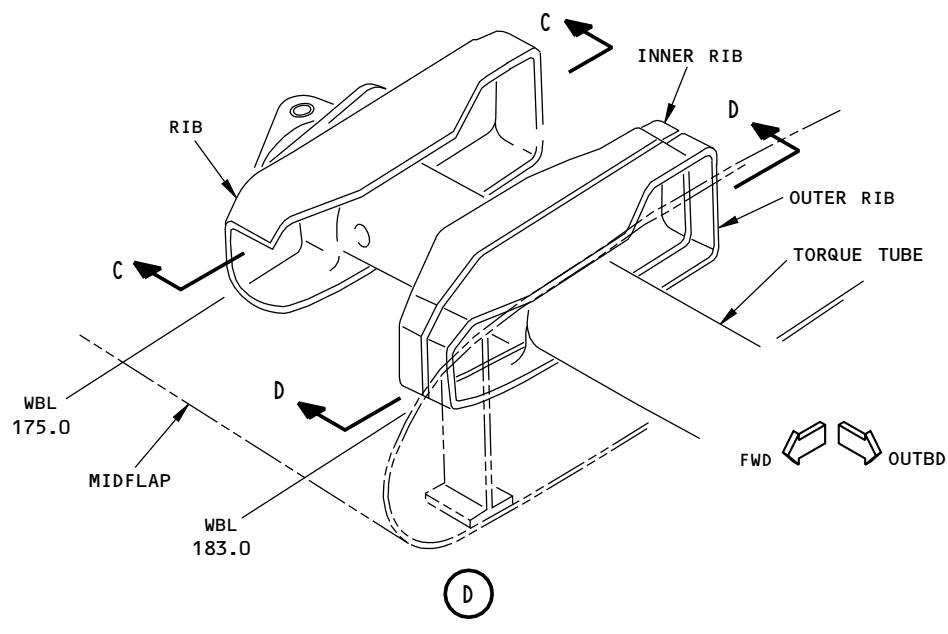
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-100 THRU -500 AIRPLANES



-300 THRU -500 AIRPLANES

NOTES:

- THE TORQUE TUBE USED ON THE WBL 66.5 CARRIAGE ASSEMBLY FOR THE -100 THRU -500 AIRPLANES IS THE SAME AS THE TORQUE TUBE USED ON THE WBL 191 CARRIAGE ASSEMBLY FOR THE -300 THRU -500 AIRPLANES.

2163209 S0000474212_V1

Inboard Trailing Edge Flap - Torque Tube Inspection Areas for the Carriage Assemblies at WBL
66.5 and 191

Figure 1 (Sheet 3 of 4)

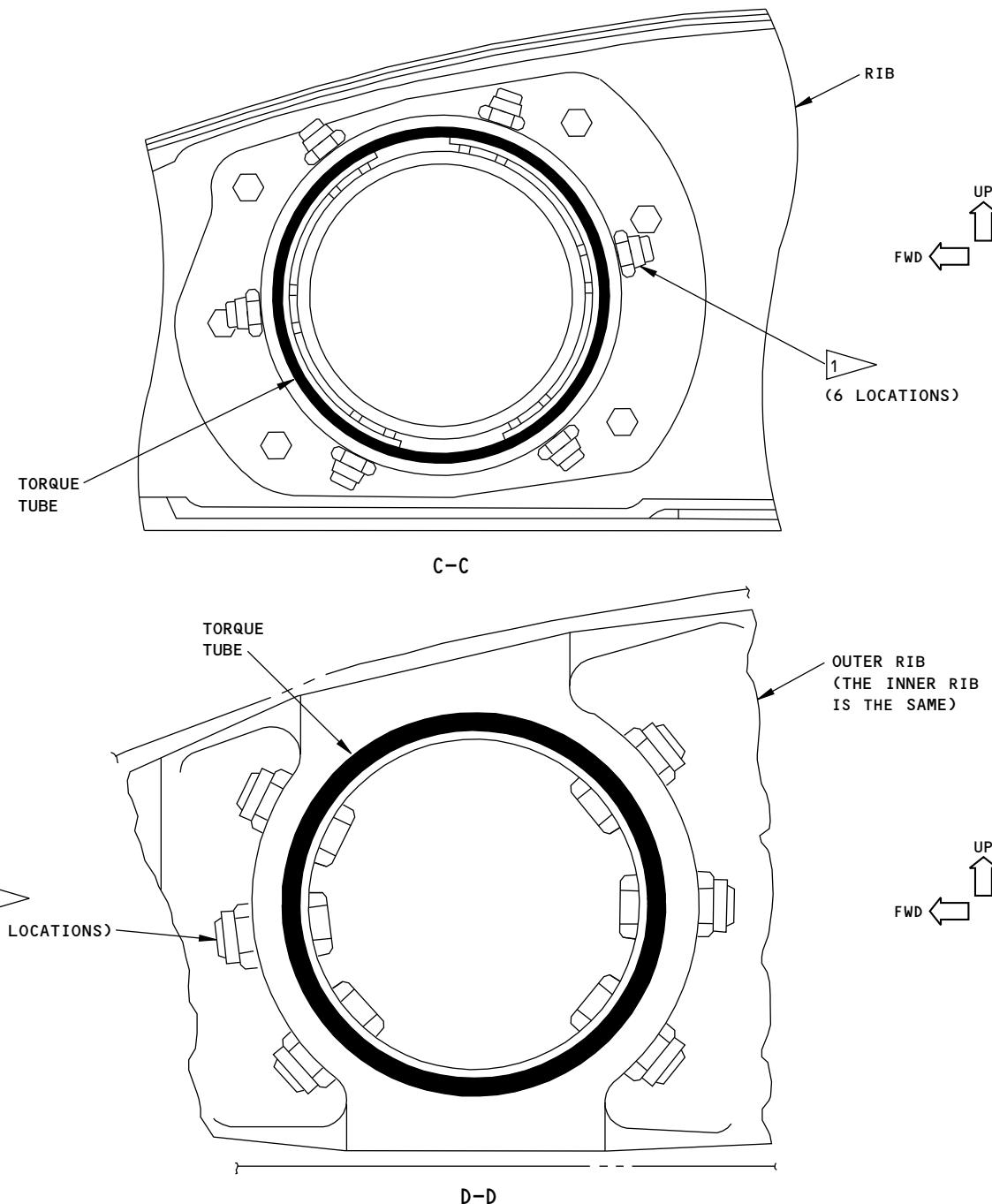
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NOTES:

- SECTIONS C-C AND D-D SHOWN ABOVE ARE VIEWS OF THE OUTBOARD SIDE OF THE OUTBOARD END OF THE MIDFLAP.

FASTENER LOCATION TO EXAMINE

2163210 S0000474213_V1

**Inboard Trailing Edge Flap - Torque Tube Inspection Areas for the Carriage Assemblies at WBL
66.5 and 191**
Figure 1 (Sheet 4 of 4)

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PART 6 - EDDY CURRENT

INBOARD FLAP - OUTBOARD FLAP TRACK AND FORWARD SUPPORT FITTING AT WBL 191

1. Purpose

- A. Use this procedure to do eddy current surface and open hole inspections to find cracks in the outboard flap track and forward support fitting at WBL 191 of the inboard flap. See Figure 1 for the location of the flap track and forward support fitting.

NOTE: The inspections identified in this procedure occur at different maintenance intervals. Refer to the Supplemental Structural Inspection Document (SSID) for the inspections to do at the different inspection intervals.

- B. Use a surface eddy current inspection to examine the inspection areas that follow:

- (1) The full length of the inboard and outboard edges of the lower flange of the flap track. See Figure 1.
- (2) The flap track in the areas around all the fastener heads and nuts of the fasteners that attach the spacer bar to the flap track. See Figure 1.
- (3) The forward and aft edges of the lower flange of the forward support fitting. See Figure 1.

- C. Use an open hole eddy current inspection to examine the inspection areas that follow:

- (1) The three fastener holes in the flap track where it attaches to the forward support fitting. See Figure 1.
- (2) The four fastener holes in the forward support fitting where it attaches to the lower skin of the wing. See Figure 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 with a rotary scanner (for surface and open hole inspections) or a meter display (for surface inspections only).
 - (b) Operates at a frequency range of 50 kHz to 1 MHz.
- (2) The instruments specified below were used to help prepare this procedure.
 - (a) Phasec 2200 (impedance plane display with a rotary scanner); Hocking Krautkramer
 - (b) Nortec 19e (impedance plane display with a rotary scanner); Staveley Instruments
 - (c) Elotest B1 (impedance plane display with a rotary scanner); Rohman GmbH
 - (d) MIZ 10B (meter display); Zetec; Inc.
 - (e) Locator (meter display); Hocking

C. Probes

- (1) Probes to use for the surface inspections:

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- (a) Use a shielded, right angle, pencil probe that has a maximum diameter of 0.13 inch (3.2 mm) and a maximum drop of 0.20 inch (5 mm) to examine the forward support fitting.
 - (b) Use a non-shielded, straight and/or right angle, pencil probe that has a maximum diameter of 0.13 inch (3.2 mm) to examine the flap track.
- NOTE:** It can be necessary to use a straight probe to examine around some of the fastener heads and nuts if it is not easy to get access with a right angle probe.
- (c) Use probes that operate from 50 kHz to 500 kHz.
 - (d) The probes specified below were used to help prepare this procedure.
 - 1) MTF902-50FX; NDT Engineering Corp. (Shielded, right angle)
 - 2) UMTF902-50FX; NDT Engineering Corp. (Non-shielded, right angle)
 - 3) UMTF30; NDT Engineering Corp. (Non-shielded, straight)
- (2) Probes to use for the open hole inspections:
- (a) Refer to Part 6, 51-00-00, Procedure 19, par. 3.C. for the probe(s) to use to examine the hole in the flap track.
 - (b) Refer to Part 6, 51-00-00, Procedure 16, par. 3.B. for the probes to use to examine the holes in the forward support fitting.

D. Reference Standard

- (1) Reference standards to use for the surface inspections:
 - (a) Use reference standard 185 or the equivalent identified in Part 6, 51-00-00, Procedure 24, to examine the edges of the lower flange and around the fasteners that go through the spacer bar of the flap track.
 - (b) Use reference standard 126 or the equivalent identified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, to examine the forward support fitting.
- (2) Reference standards to use for the open hole inspections:
 - (a) Refer to Part 6, 51-00-00, Procedure 19, par. 3.D. for the reference standard to use to examine the flap track.
 - (b) Refer to Part 6, 51-00-00, Procedure 16, par. 3.C. for the reference standard(s) to use to examine the forward support fitting.

E. Nonconductive Guides.

- (1) Make a disk for each diameter of flush-head fastener to be examined. The disk must have the same (approximate) diameter as the head of the flush-head fastener to be used as a guide for the probe during a scan.
- (2) Use a straight edge as a guide for the probe to move along the edge of the lower flanges of the flap track.

3. Prepare for the Inspection

- A. Identify all the inspection areas. See Figure 1.
- B. Clean the inspection area. Remove sealant as necessary. Remove paint only if it is loose.

4. Instrument Calibration

- A. Calibrate the equipment to do the surface inspections of the areas identified in Paragraph 1.B.(1) and Paragraph 1.B.(2) as follows:

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- (1) Refer to par. 5 of Part 6, 51-00-00, Procedure 24, for the calibration instructions of impedance plane display instruments.
- (2) Use reference standard 185, or an equivalent, during calibration.
- B. Calibrate the equipment to do the open hole inspections of the areas identified in Paragraph 1.C.(1) as follows:
 - (1) Refer to par. 5 of Part 6, 51-00-00, Procedure 19, for the calibration instructions of impedance plane display instruments.
 - (2) Refer to par. 3.D. of Part 6, 51-00-00, Procedure 19, for the reference standard to use during calibration.
- C. Calibrate the equipment to do the surface inspections of the areas identified in Paragraph 1.B.(3) as follows:
 - (1) Refer to par. 5 of Part 6, 51-00-00, Procedure 4, for the calibration instructions of meter display instruments or Part 6, 51-00-00, Procedure 23, for the calibration instructions of impedance plane display instruments.
 - (2) Use reference standard 126, or an equivalent, during calibration.
- D. Calibrate the equipment to do the open hole inspections of the areas identified in Paragraph 1.C.(2) as follows:
 - (1) Refer to par. 5 of Part 6, 51-00-00, Procedure 16, for the calibration instructions of impedance plane display instruments.
 - (2) Refer to par. 3.C. of Part 6, 51-00-00, Procedure 16, for the reference standard to use during calibration.

5. Inspection Procedure

- A. Examine the flap track as follows:
 - (1) Do the surface inspection of the areas identified in Paragraph 1.B.(1).
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Make a scan along the edges of the upper, lower, inboard and outboard surfaces of the inboard and outboard lower flanges to examine the lower flanges for corner cracks. See Figure 1, flagnote 1, for the inspection areas.
 - 1) Refer to par. 6 in Part 6, 51-00-00, Procedure 24, for the inspection procedure. Refer to par. 6.D.(3)(e) of Part 6, 51-00-00, Procedure 24, for the instructions to examine near the edges.
 - (2) Do the surface inspection of the areas identified in Paragraph 1.B.(2).
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Make a scan around all the fastener heads and nuts that attach the flap tracks to the spacer bar. Use a nonconductive disk on top of the countersunk heads to make a scan around the fastener. See Figure 1, flagnote 2, for the inspection areas.
 - (3) Do the open hole inspection of the area identified in Paragraph 1.C.(1).
 - (a) Calibrate the instrument as specified in Paragraph 4.B.
 - (b) Remove the fastener from the hole identified as flagnote 3 in Figure 1 and do an inspection of the hole as specified in par. 6 of Part 6, 51-00-00, Procedure 19.
- B. Examine the forward support fitting as follows:

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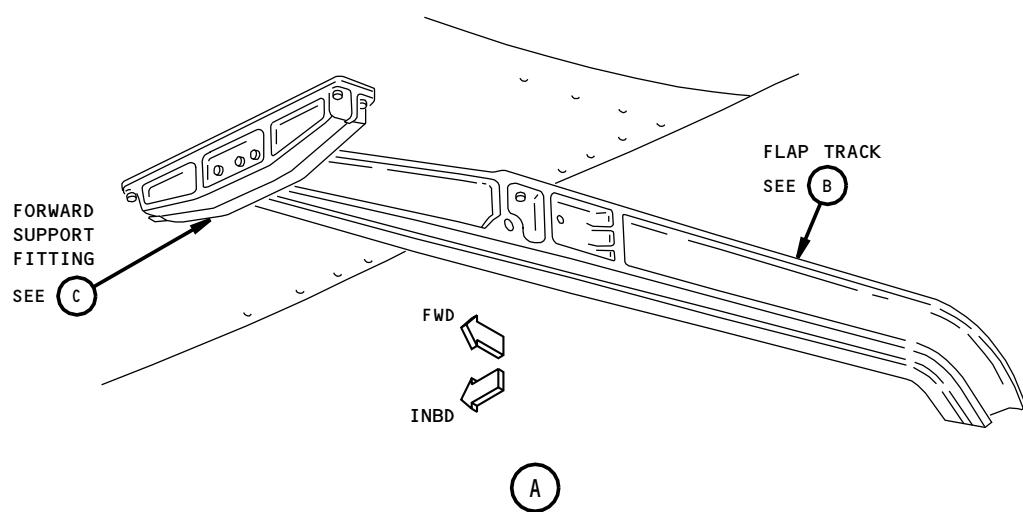
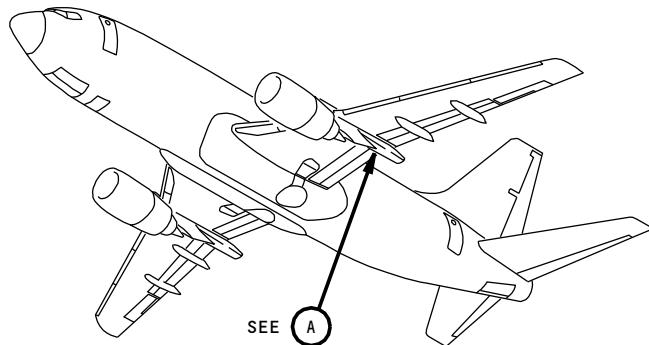
- (1) Do the surface inspection of the areas identified in Paragraph 1.B.(3).
 - (a) Calibrate the instrument as specified in Paragraph 4.C.
 - (b) Make a scan along the edges of the upper, lower, forward and aft surfaces of the forward and aft lower flanges to examine the lower flanges for corner cracks. See Figure 1, flagnote 4, for the inspection areas.
 - 1) For instruments with a meter display, refer to par. 6 of Part 6, 51-00-00, Procedure 4, for the inspection procedure. Refer to par. 6.D.(5) of Part 6, 51-00-00, Procedure 4, for the instructions to examine near the edges.
 - 2) For instruments with an impedance plane display, refer to par. 6 of Part 6, 51-00-00, Procedure 23, for the inspection procedure. Refer to par. 6.E.(3)(e) of Part 6, 51-00-00, Procedure 23, for the instructions to examine near the edges.
- (2) Do the open hole inspection of the area identified in Paragraph 1.C.(2).
 - (a) Calibrate the instrument as specified in Paragraph 4.D.
 - (b) Remove the fasteners from the holes identified as flagnote 5 in Figure 1 and do an inspection of the holes as specified in par. 6 of Part 6, 51-00-00, Procedure 16.

6. Inspection Results

- A. Results of the flap track inspections.
 - (1) For the surface inspections, refer to par. 7 of Part 6, 51-00-00, Procedure 24, to make an analysis of indications that occur during the inspection.
 - (2) For the open hole inspections, refer to par. 7 of Part 6, 51-00-00, Procedure 19, to make an analysis of indications that occur during the inspection.
- B. Results of the forward support fitting inspections.
 - (1) For the surface inspections, refer to par. 7 of Part 6, 51-00-00, Procedure 4, for meter display instruments and Part 6, 51-00-00, Procedure 23, for impedance plane instruments to make an analysis of indications that occur during the inspection.
 - (2) For the open hole inspections, refer to par. 7 of Part 6, 51-00-00, Procedure 16, to make an analysis of indications that occur during the inspection.



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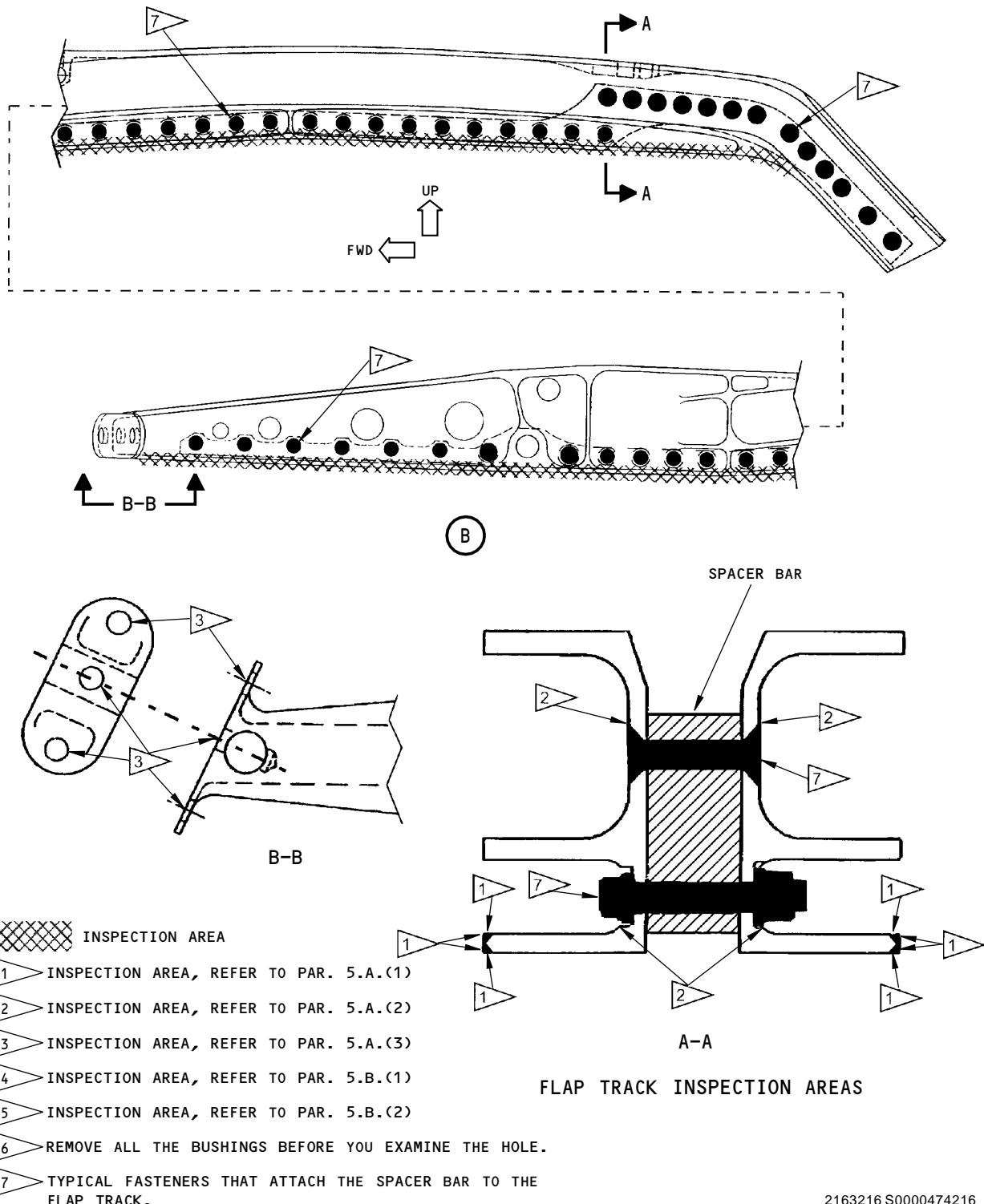
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Inboard Flap - Outboard Flap Track and Forward Support Fitting at WBL 191.0
Figure 1 (Sheet 1 of 3)

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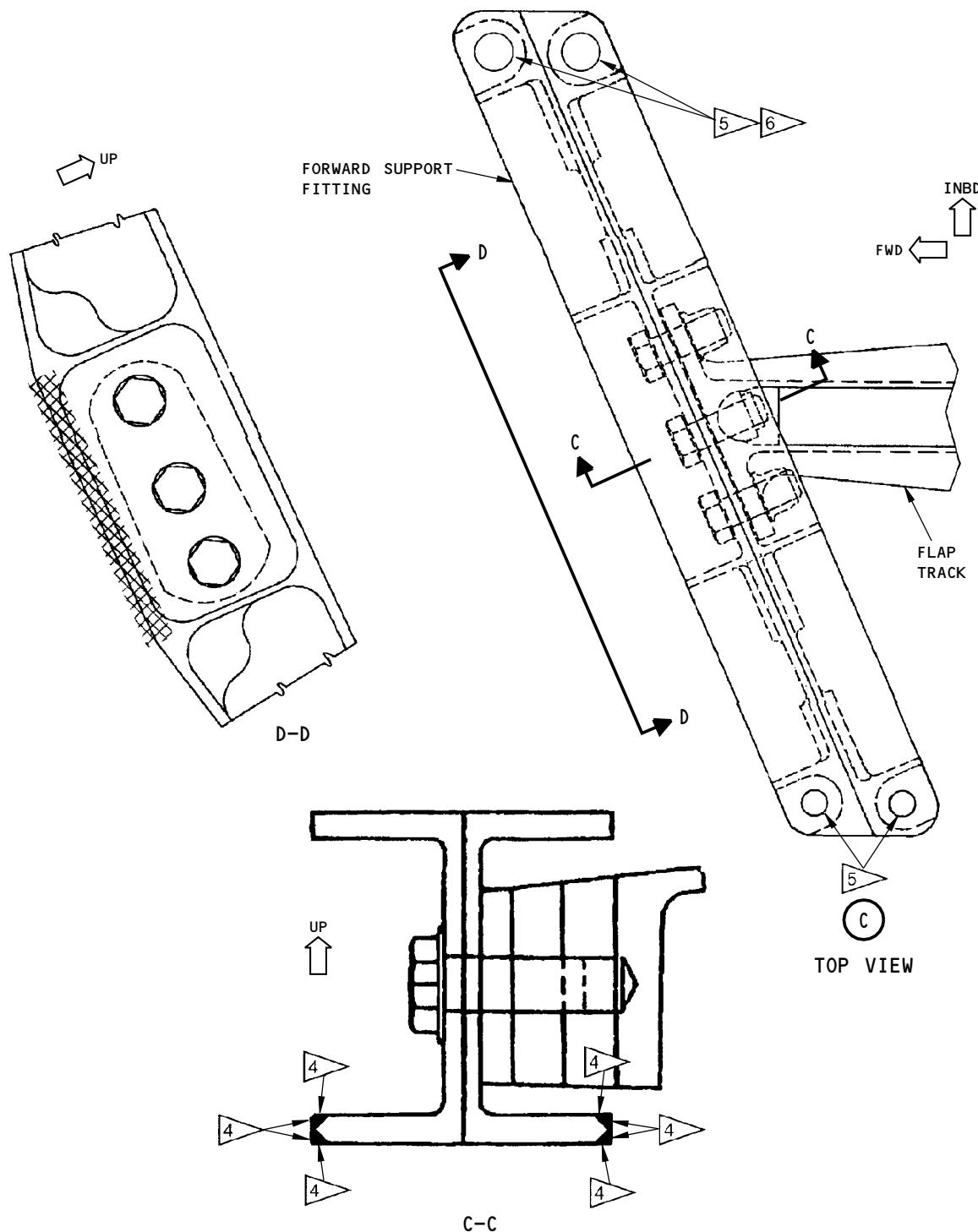
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Inboard Flap - Outboard Flap Track and Forward Support Fitting at WBL 191.0
Figure 1 (Sheet 2 of 3)

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Inboard Flap - Outboard Flap Track and Forward Support Fitting at WBL 191.0
Figure 1 (Sheet 3 of 3)

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PART 6 - EDDY CURRENT

OUTBOARD FLAP - CARRIAGE ASSEMBLIES AT WBL 254 AND 355

1. Purpose

- A. Use this procedure to do eddy current surface and open hole inspections to find cracks in the outboard flap carriage assemblies at WBL 254 and 355. See Figure 1 for the location of the carriage assemblies.

NOTE: The inspections identified in this procedure occur at different maintenance intervals. Refer to the Supplemental Structural Inspection Document (SSID) to identify the inspection that is to be done at the different maintenance intervals.

- B. Use a surface eddy current inspection to examine the inspection areas that are along the aft edges of the carriage assembly (see flagnote 1 in Figure 2).
- C. Use an open hole eddy current inspection to examine the four bolt holes (two on each side of the carriage assembly) for the forward and aft roller bearings (see flagnote 2 in Figure 2).
- D. 737 Supplemental Structural Inspection Document (D6-37089) Reference:
- (1) Item: 57-53-13
 - (2) Item: 57-53-15

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 with a rotary scanner.
 - (b) Operates from 50 to 500 kHz.
- (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 2200 (impedance plane display with a rotary scanner); Hocking Krautkramer
 - (b) Nortec 19e (impedance plane display with a rotary scanner); Staveley Instruments
 - (c) Elotest B1 (impedance plane display with a rotary scanner); Rohman GmbH

C. Probes

- (1) Probe for the surface inspections:
 - (a) Use a non-shielded, straight and/or right angle pencil probe that has a maximum diameter of 0.13 inch (3.2 mm).
 - (b) Operates from 50 kHz to 500 kHz.
 - (c) The probes that follow were used to help prepare this procedure.
 - 1) UMTF902-50FX (Non-shielded, right angle); NDT Engineering Corp.
 - 2) UMTF30 (Non-shielded, straight); NDT Engineering Corp.
- (2) Probes for the open hole inspections:

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- (a) Use a probe that will examine hole diameters of 0.750 inch (19.1 mm) and 0.875 inch (22.2 mm). Refer to Part 6, 51-00-00, Procedure 19, par. 3.C. for data about the probes.

D. Reference Standard

- (1) Reference standard for the surface inspections:
 - (a) Use reference standard 185 or the equivalent identified in Part 6, 51-00-00, Procedure 24, to examine the aft edges of the carriage assembly.
- (2) Reference standard(s) for the open hole inspections:
 - (a) Use reference standard(s) that will examine hole diameters of 0.750 inch (19.1 mm) and 0.875 inch (22.2 mm). Refer to Part 6, 51-00-00, Procedure 19, par. 3.D. for data about the reference standard(s).

E. Nonconductive Guide

- (1) Use a straightedge as a guide for the probe to scan along the aft edges of the carriage assembly.

3. Prepare for the Inspection

- A. Identify all the inspection areas. See Figure 2.
- B. Remove the bolts and bushings from the forward and aft roller bearing holes on the right and left sides of the carriage.
- C. Make sure the inside surfaces of the bolt holes are free from bushing material that can stay on the surface after the bushings are removed. Use approved procedures to remove bushing material found on the inside surfaces of the holes.
- D. Clean all the inspection areas. Remove paint only if it is loose.

4. Instrument Calibration

- A. Calibrate the equipment to do the surface inspections of the aft edges of the carriage assemblies (see flagnote 1 in Figure 2) as specified in par. 5 of Part 6, 51-00-00, Procedure 24.
 - (1) Use reference standard 185 or an equivalent.
- B. Calibrate the equipment to do the open hole inspection of the bolt holes for the forward and aft roller bearings of the carriage assembly (see flagnote 2 in Figure 2) as specified in par. 5 of Part 6, 51-00-00, Procedure 19.
 - (1) Refer to Paragraph 2.C.(2)(a), of this procedure, for the probe(s) to use to examine the 0.750 inch (19.1 mm) and 0.875 inch (22.2 mm) diameter bolt holes.
 - (2) Refer to Paragraph 2.D.(2)(a), of this procedure, for the reference standard(s) to use to examine the 0.750 inch (19.1 mm) and 0.875 inch (22.2 mm) diameter bolt holes.

5. Inspection Procedure

- A. Examine the carriage assembly as follows:
 - (1) Do the surface inspection of the aft edges of the carriage assemblies (see flagnote 1 in Figure 2).
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Make a scan along the aft edges of the carriage assembly. See Figure 2 for the inspection areas.
 - 1) Refer to Part 6, 51-00-00, Procedure 24, par. 6 "Inspection Procedure". Refer to par. 6.D.(3)(e) to examine near the edges.

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- (2) Do the open hole inspection of the bolt holes for the forward and aft roller bearings of the carriage assembly (see flagnote 2 in Figure 2).
 - (a) Calibrate the instrument as specified in Paragraph 4.B.
 - (b) Remove the four bolts and bushings for the forward and aft roller bearings. See flagnote 2 in Figure 2 for the locations.
 - 1) Prepare the inside surface of the hole as specified in Paragraph 3.C. and Paragraph 3.D.
 - (c) Examine the bore (only) of each hole as specified in Part 6, 51-00-00, Procedure 19, par. 6 "Inspection Procedure".

NOTE: It is not necessary to examine the chamfered edge of the bolt hole.

6. Inspection Results

- A. For the surface inspections, refer to Part 6, 51-00-00, Procedure 24, par. 7, "Inspection Results" to make an analysis of indications that occurred during the inspection.
- B. For the open hole inspections, refer to Part 6, 51-00-00, Procedure 19, par. 7, "Inspection Results" to make an analysis of indications that occurred during the inspection.

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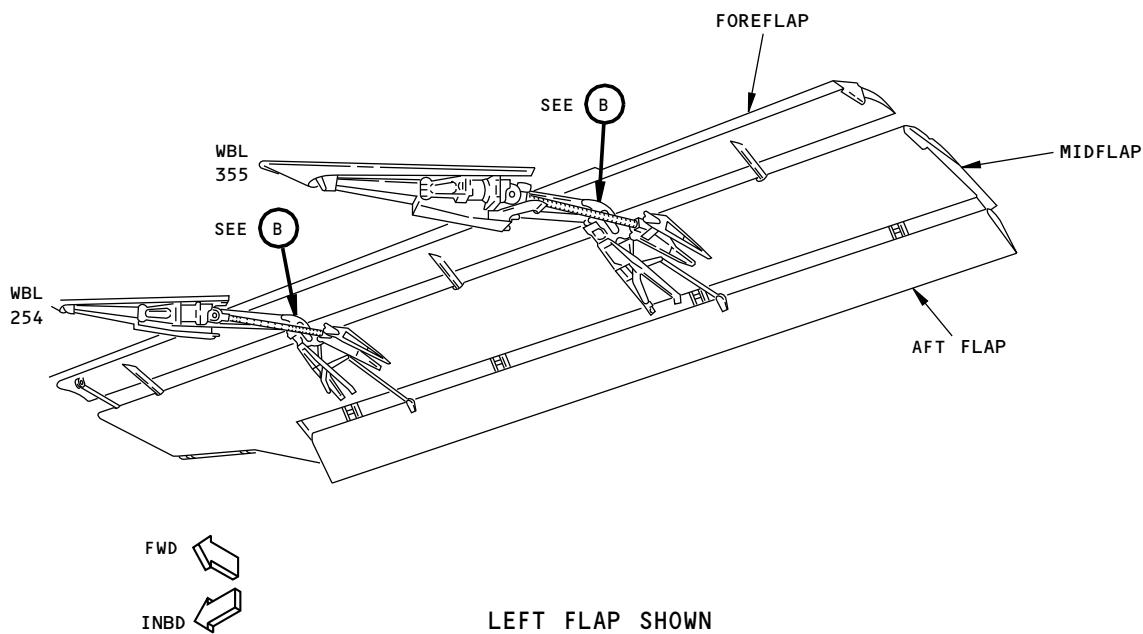
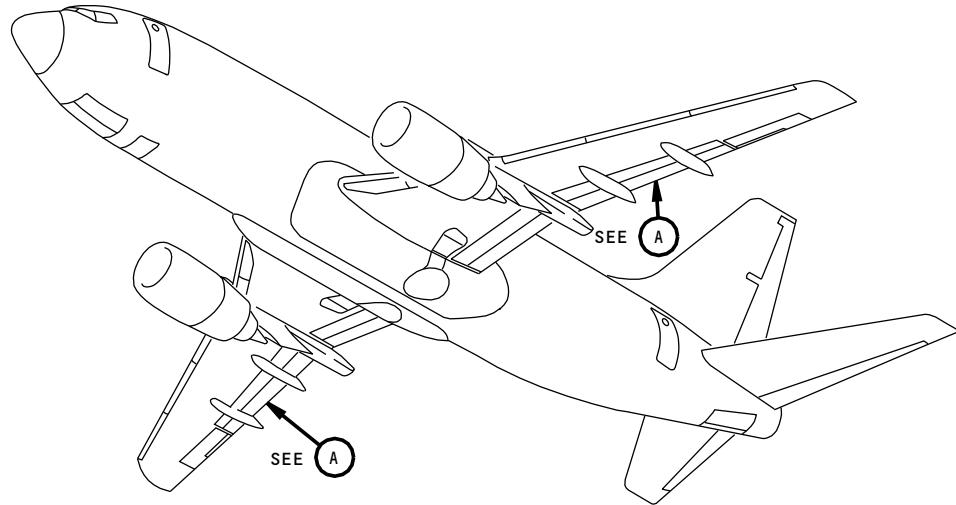
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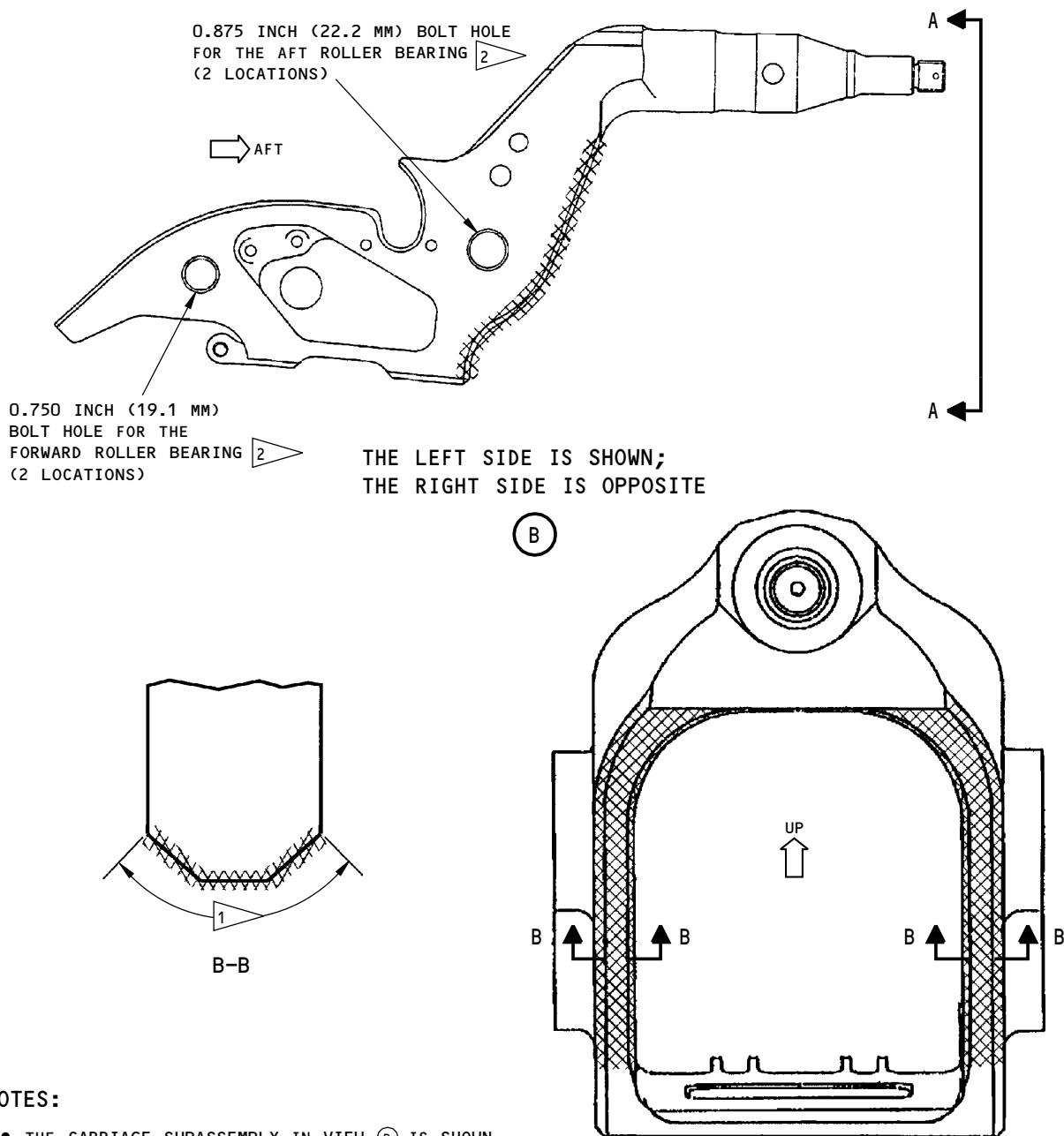
Carriage Assemblies at WBL 254 and 355 - Outboard Flap
Figure 1

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NOTES:

- THE CARRIAGE SUBASSEMBLY IN VIEW **(B)** IS SHOWN WITH ALL THE ATTACHED STRUCTURE REMOVED


INSPECTION AREA

EXAMINE THE SURFACE; REFER TO PAR. 5.A.(1)

EXAMINE THE BORE OF THE HOLE ONLY; REFER TO PAR. 5.A.(2)

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Inspection Area
Figure 2

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PART 6 - EDDY CURRENT

INBOARD FLAP - CARRIAGE ASSEMBLIES AT WBL 66.5 AND 191

1. Purpose

- A. Use this procedure to examine the carriage assemblies at WBL 66.5 and 191 on the inboard flap for cracks. See Figure 1 for the carriage assembly locations.
- B. This procedure uses a surface eddy current inspection to examine the inspection areas of the inboard and outboard carriage halves in the areas that follow:
 - (1) Along the full length of the outer edges of the lower flange. See flagnote 1 in Figure 2.
 - (2) Around the holes for the forward and aft roller pins and the web access hole, from the inner surface of the web. See flagnote 2 in Figure 2.
- C. 737 Supplemental Structural Inspection Document (D6-37089) Reference:
 - (1) Item: 57-53-17
 - (2) Item: 57-53-22

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 instruments that follow were used to help prepare this procedure.
 - (a) Phasec 2200; Hocking Krautkramer
 - (b) Nortec 19e, 1000, 2000; Staveley Instruments
 - (c) Elotest B1; Rohman GmbH
- C. Probes
 - (1) Use a non-shielded, straight and/or right angle, pencil probe that has a maximum diameter of 0.13 inch (3.2 mm).
 - (2) Operates from 50 to 500 kHz.
 - (3) The probes that follow were used to help prepare this procedure.
 - (a) UMTF902-50FX (Non-shielded, right angle); NDT Engineering Corp.
 - (b) UMTF30 (Non-shielded, straight); NDT Engineering Corp.
- D. Reference Standard
 - (1) Use reference standard 185 or the equivalent identified in Part 6, 51-00-00, Procedure 24.
- E. Nonconductive Guide

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- (1) Use a straightedge as a guide for the probe when you do the scan along the edges of the lower flange.
- (2) A circle template on the flat surface of the carriage half or a flexible guide against the inside surface of the holes can be used as probe guides for the scans around the holes.

3. Prepare for the Inspection

- A. Identify all the inspection areas. See Figure 2.
- B. Disassemble the carriage assembly to get access to the inspection areas.
- C. Clean all the inspection areas. Remove paint only if it is loose.

4. Instrument Calibration

- A. Calibrate the equipment as specified in par. 5 of Part 6, 51-00-00, Procedure 24, to do the surface inspections of the areas identified in Paragraph 1.B.(1) and Paragraph 1.B.(2).
 - (1) Use reference standard 185 or an equivalent.

5. Inspection Procedure

- A. Examine the inboard and outboard carriage halves for cracks as follows:
 - (1) Calibrate the instrument as specified in Paragraph 4.A.
 - (2) Make a scan of the inspection areas that follow:
 - (a) Along the edges of the upper, lower, and outer surfaces of the lower flange to examine the lower flange for corner cracks. See flagnote 1 in Figure 2 for the inspection areas.
 - 1) Refer to Part 6, 51-00-00, Procedure 24, par. 6 "Inspection Procedure". Refer to paragraph 6.D.(3)(e) to examine near the edges.
 - (b) Around the holes for the forward and aft roller pins and the web access hole, from the inner surface of the web. This inspection looks for corner cracks along the inner edge of the hole. See flagnote 2 in Figure 2 for the inspection areas.
 - 1) Refer to Part 6, 51-00-00, Procedure 24, par. 6 "Inspection Procedure". Refer to paragraph 6.D.(3)(e) to examine near the edges.

6. Inspection Results

- A. Results of the inboard and outboard carriage half inspections.
 - (1) Refer to Part 6, 51-00-00, Procedure 24, par. 7 "Inspection Results" to make an analysis of indications that occurred during the inspection.

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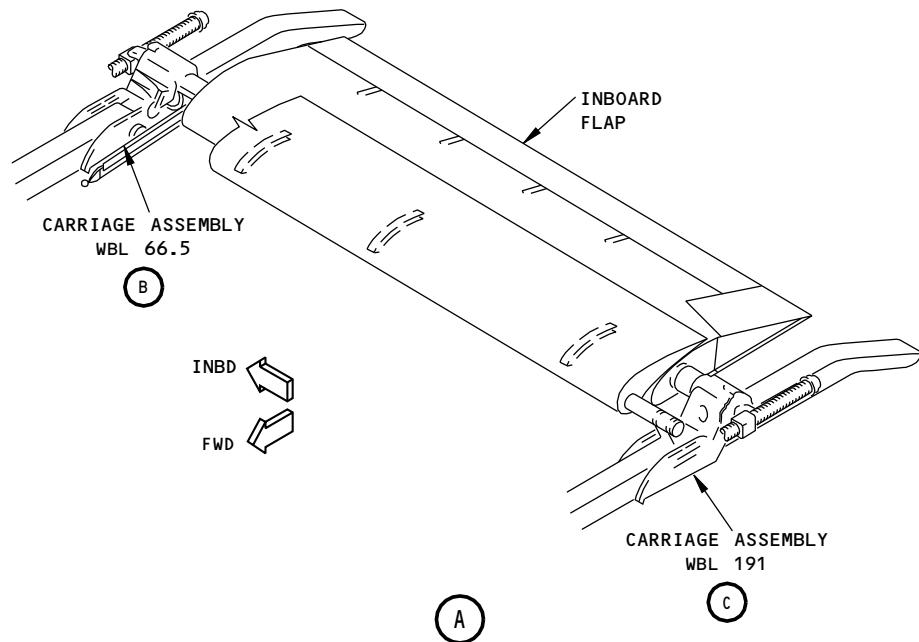
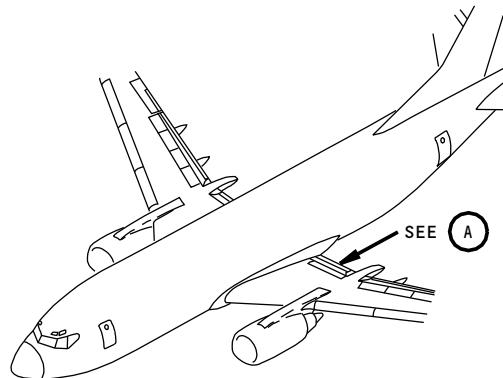
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Inboard Flap - Flap Track Carriage Assemblies at WBL 66.5 and 191
Figure 1 (Sheet 1 of 2)

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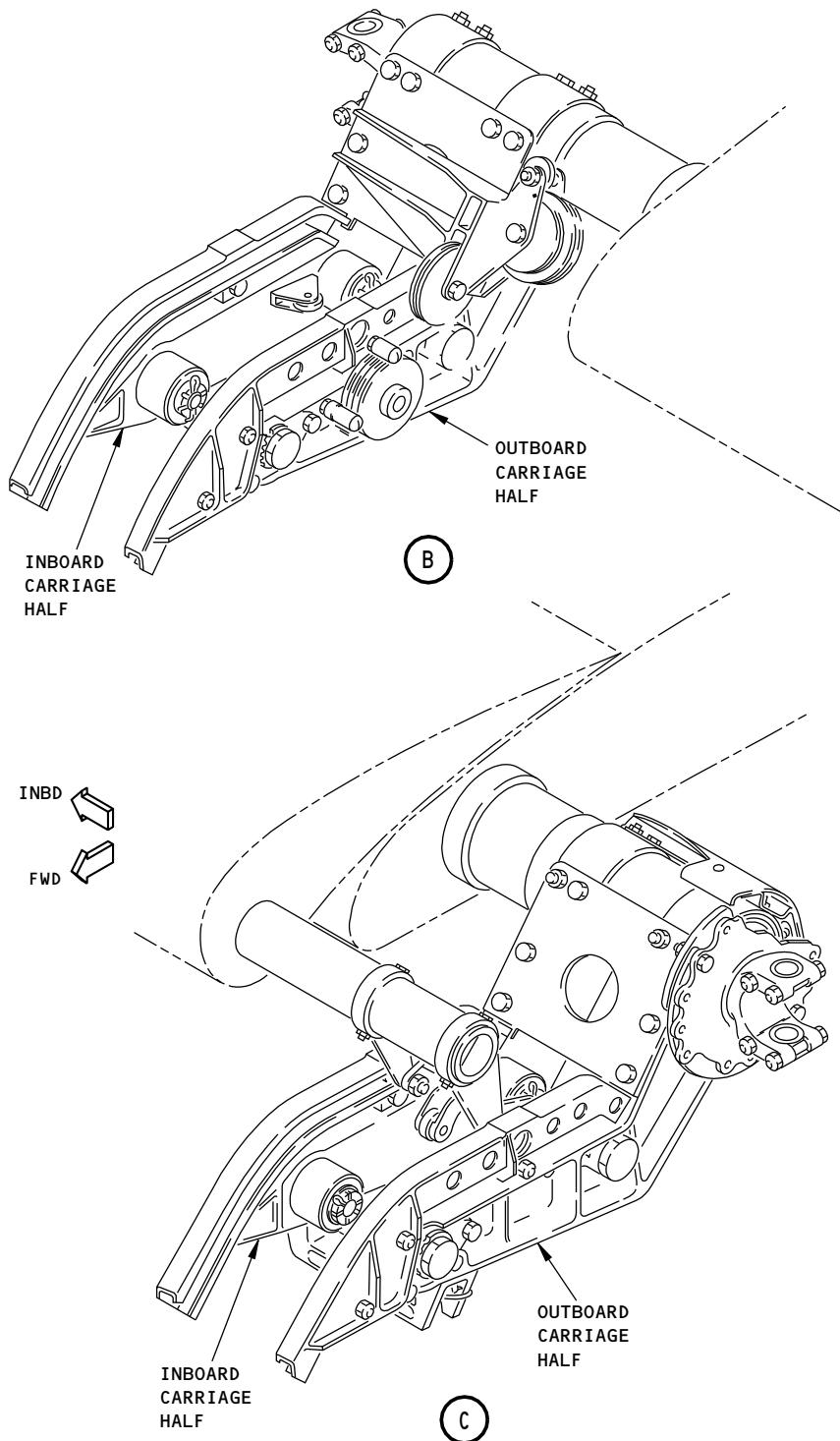
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Inboard Flap - Flap Track Carriage Assemblies at WBL 66.5 and 191
Figure 1 (Sheet 2 of 2)

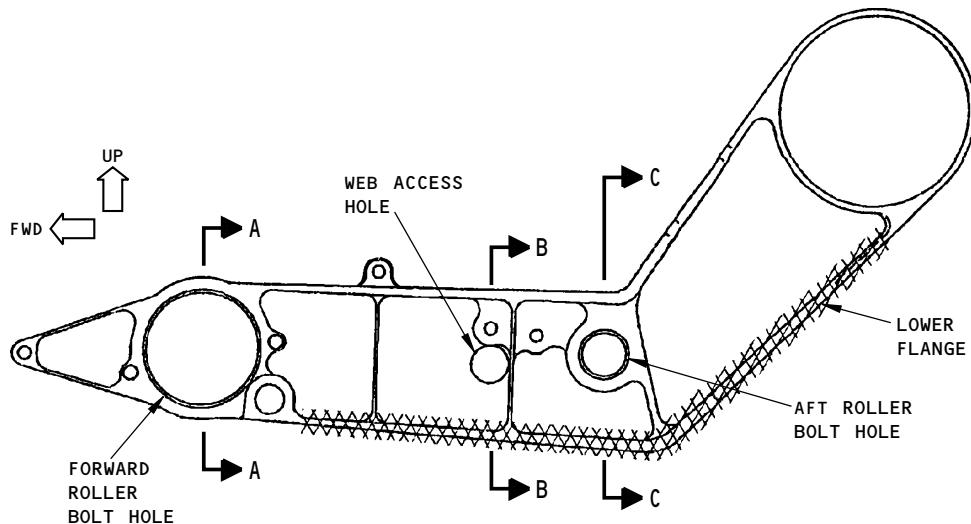
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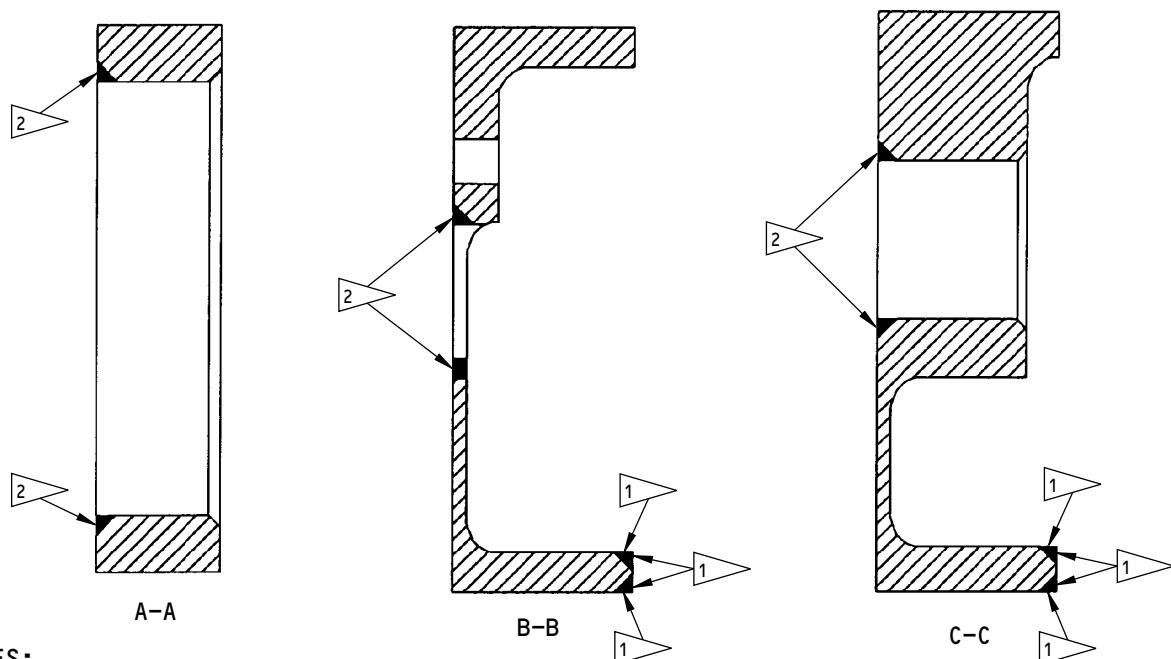
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**OUTBOARD VIEW OF OUTBOARD CARRIAGE HALF
DETAIL I**



NOTES:

- DETAIL I ABOVE SHOWS THE CARRIAGE HALF COMPLETELY DISASSEMBLED



INSPECTION AREA



INSPECTION AREA; REFER TO PAR. 5.A.(2)(a)



INSPECTION AREA; REFER TO PAR. 5.A.(2)(b)

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**Inboard and Outboard Carriage Half Inspection Areas
Figure 2**

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PART 6 - EDDY CURRENT

NUMBER 2 AND 7 FLAP TRACKS AT WBL 254.0

1. Purpose

- A. Use this procedure to do a surface eddy current inspection to find cracks in the number 2 and 7 outboard flap tracks at WBL 254.0 on the left and right sides of the airplane. This inspection examines the inboard and outboard flanges and around the fasteners on the inboard and outboard sides of the track as shown in Figure 1. This procedure will find a 0.100 inch (2.54 mm) corner crack or hole crack.
- B. This inspection uses an unshielded pencil probe that has a maximum diameter of 0.125 inch (3.18 mm). Nonconductive probe guides as shown in Figure 2, can be used to keep the coil a constant distance from the edge of the flush head fasteners and the edges of the flanges.
- C. Service Bulletin Reference: 737-57A1271

2. Equipment

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

- A. All eddy current equipment that can do the calibration instructions of this procedure can be used.
 - (1) Instrument – Eddy current instruments that operate in a frequency range of 25 kHz to 50 kHz are satisfactory for this inspection. The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 1.1; Hocking Krautkramer
 - (b) Nortec 19 and 19e; Staveley Instruments
 - (c) MIZ-22; Zetec Inc.
 - (2) Probe - Use an unshielded, straight and/or right angle, pencil probe that has a maximum diameter of 0.13 inch (3.2 mm). Use probes that operate from 25 kHz to 50 kHz. The probe specified below was used to help prepare this procedure.
 - (a) NEC-1062; NDT Engineering
 - (3) Nonconductive Probe Guides – Use a disk or a circle template as a probe guide for the inspections around the flush-head fasteners. If a disk is used it must have the same (approximate) diameter as the head of the flush-head fastener. The 0.645 inch (16.38 mm) diameter probe guide NDT3020P1, shown in Figure 2 and Figure 4, can be used as a guide for the probe during the scan. A straightedge can be used as a probe guide for the inspections along the edges of the flap track.
 - (4) Reference Standard - Use reference standard 185 or 192. See Part 6, 51-00-00, Procedure 24, for data related to reference standard 185 or 192.

3. Prepare for the Inspection

- A. Identify the inspection surfaces. See Figure 1.
- B. Remove the flap track fairing to get access to the inspection area.
- C. Move the carriage as necessary to get access.
- D. Clean the inspection surface. Remove sealant if it is on the inspection surface.

4. Instrument Calibration

- A. Refer to Part 6, 51-00-00, for general calibration instructions; see Part 6, 51-00-00, Procedure 24, for impedance plane display instruments.

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- B. Set the instrument frequency to 50 kHz.
- C. When areas that are painted are examined, put approximately 0.006 inch (0.15 mm) of a nonconductive shim on the reference standard.
NOTE: The shim simulates the paint on the flap tracks.
- D. Put the probe on the edge of reference standard 185 or 192, away from the notch. Use your fingers or a nonconductive straightedge as a probe guide.
NOTE: Make sure the probe guide is flush with the side of the reference standard.
- E. Set the instrument balance point and the lift-off.
- F. Calibrate the instrument gain on the notch in the reference standard. Follow the calibration instructions of Part 6, 51-00-00, Procedure 24, for impedance plane display instruments.
NOTE: Make sure the nonconductive shim is above the notch on the reference standard before the instrument gain is set.

5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
NOTE: The flap tracks are plated with cadmium. Refer to NOTES 1 thru 3 in Part 6, 51-00-00, Procedure 24, par. 6.D.(3)(e) for the types of signal changes that can occur from changes in the thickness of the cadmium. See Detail I in Figure 3 for screen displays from cadmium thickness changes.
- B. Put the probe on the inspection surface.
- C. Balance the instrument.
- D. Make sure the lift-off signal moves horizontally to the left when the probe is lifted off of the part surface. Adjust the phase control again if necessary.
- E. Put the probe on an area of the track to be examined.
- F. Make a slow scan of the inspection area. Figure 1 shows the inspection areas. Do the steps that follow during the scan:
 - (1) Make sure the probe is the same distance from the edge of the flange or fastener as it was from the edge of the reference standard during calibration.
 - (2) Use your finger or a nonconductive guide to keep the probe a constant distance from the edge of the flap track flange or fastener as you make the scan (see Figure 2).
 - (3) Balance the instrument as necessary to keep the balance point on the screen display.
NOTE: It can be necessary to use a vertical to horizontal gain ratio of 4:1 or more to keep the signal on the screen display.
 - (4) Make a mark at the locations that cause signals that are equal to or more than 100% of the notch signal you got from the reference standard during calibration.
- G. Do Paragraph 5.B. thru Paragraph 5.F. again to examine all the flanges and around the inboard and outboard sides of the web fasteners shown in Figure 1.

6. Inspection Results

- A. A signal that is equal to or more than 100% of the signal from the notch of the reference standard is a sign of a crack. See Figure 3, Detail II, for an example of a signal on an impedance plane display that is caused by a crack.

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- B. Refer to the Inspection Results section in Part 6, 51-00-00, Procedure 24, for conditions that can cause different types of signals to occur and for more analysis of the signals. See Figure 3, Detail I for example screen displays caused by changes in cadmium plating.

NOTE: The flap tracks are plated with cadmium. Refer to the NOTES in the inspection procedure of Part 6, 51-00-00, Procedure 24, for instructions related to parts that are plated with cadmium.

- C. In areas that give signals that are 100% (or more) of the screen display, calibrate the instrument to a frequency of 25 kHz and do the inspection of the area again. Compare the signals that you get to the signals with the instrument set at 50 kHz. If the signals are caused from a thickness change in the cadmium, the signal will decrease. If a signal is caused by a crack, there will be no change.

NOTE: Signals caused by thickness changes in the cadmium can cause the signal to look irregular. The signal will go up during the scan as the probe moves into an area where the cadmium gets thinner.

- D. It is satisfactory to use magnetic particles as specified in SOPM 20-20-01 to make sure of a crack indication for this inspection.
- E. The magnetic particle inspection specified in SOPM 20-20-01 can be used as an alternative to this HFEC inspection procedure.

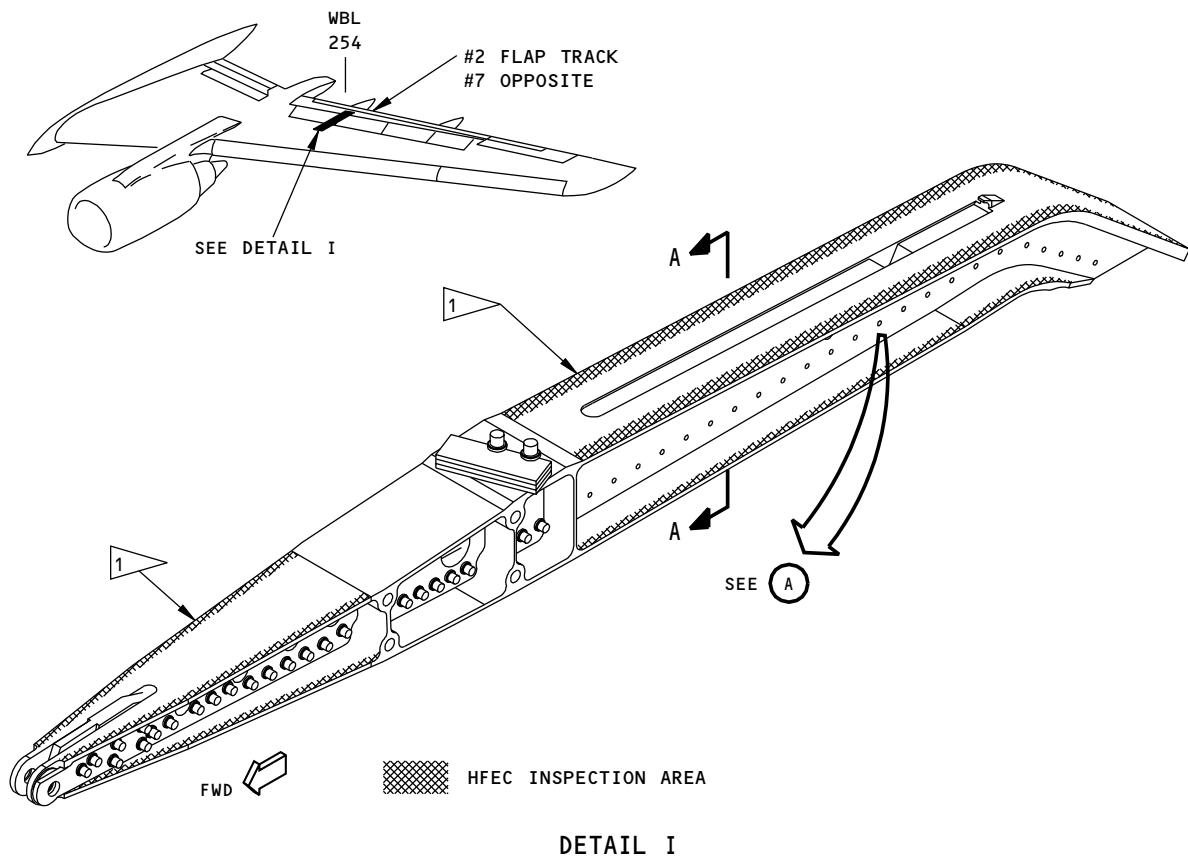
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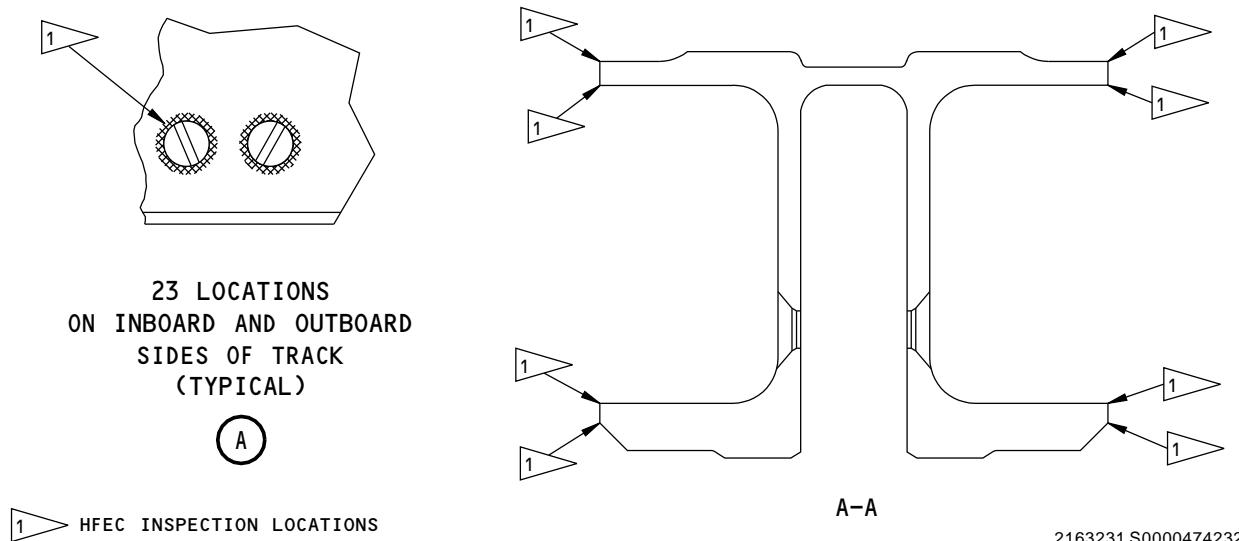
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NON-DESTRUCTIVE TEST MANUAL



DETAIL I



23 LOCATIONS
ON INBOARD AND OUTBOARD
SIDES OF TRACK
(TYPICAL)

HFEC INSPECTION LOCATIONS

A-A

2163231 S0000474232_V1

Flap Track Inspection Areas
Figure 1

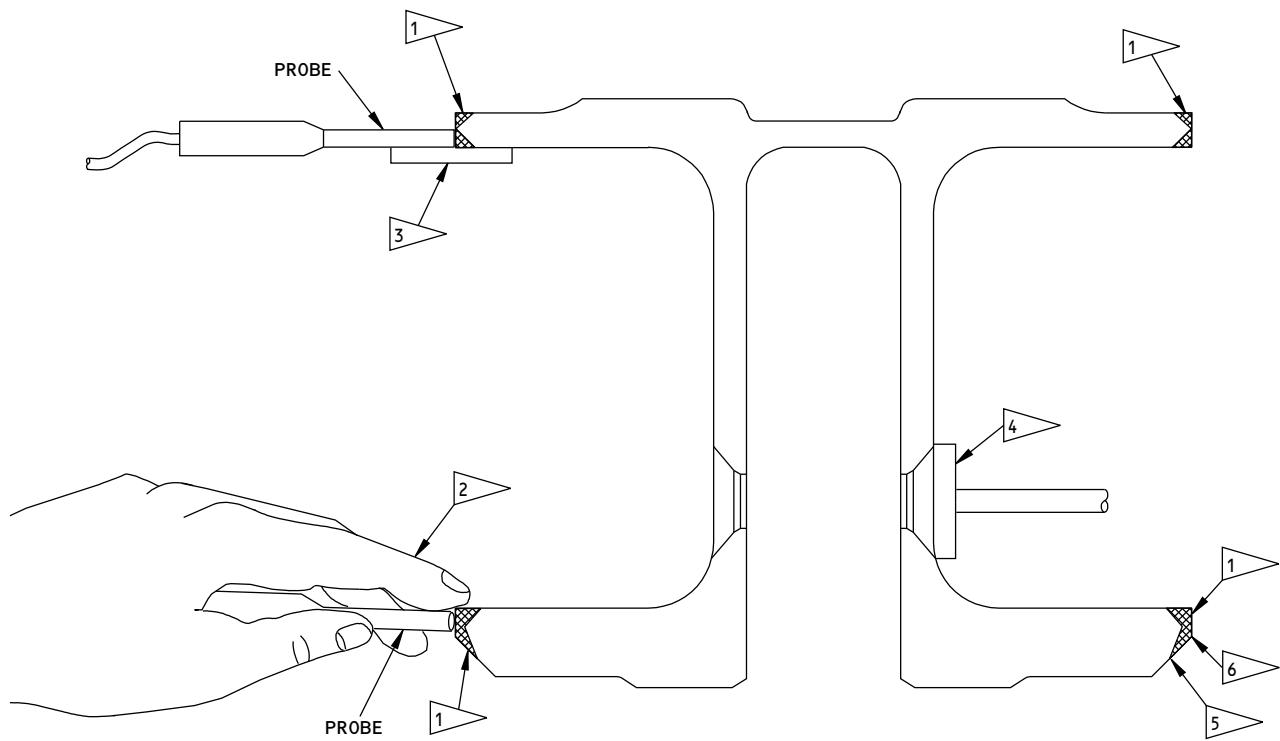
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-  1 POSSIBLE CRACK LOCATIONS
-  2 FINGERS CAN BE USED AS A PROBE GUIDE ON 90° FLANGE EDGES TO KEEP THE PROBE TANGENT TO THE FLANGE EDGE.
-  3 A NONCONDUCTIVE STRAIGHT EDGE CAN BE USED AS A PROBE GUIDE AS AN OPTION TO FINGERS ON 90° FLANGE EDGES TO KEEP THE PROBE TANGENT TO THE FLANGE EDGE.
-  4 USE NONCONDUCTIVE PROBE GUIDE, NDT3020P1, TO KEEP A CONSTANT DISTANCE FROM THE COUNTERSUNK EDGE OF THE HOLE.
-  5 TYPICAL CHAMFER EDGE
-  6 EXAMINE THE LOWEST EDGE ON THE FLANGE EDGES WITH NO CHAMFER.

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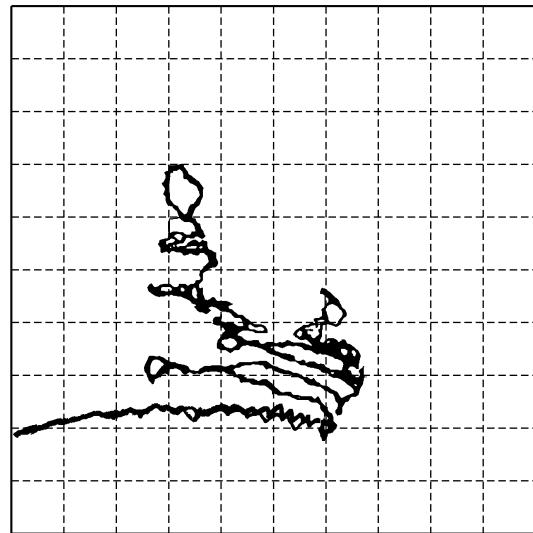
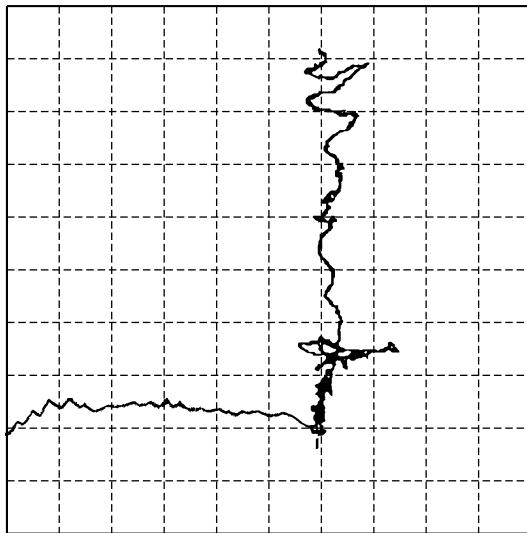
Probe and Guide Positions for Inspection
Figure 2

EFFECTIVITY
ALL; 737-100/-200/-200C/-300/-400/-500 AIRPLANES

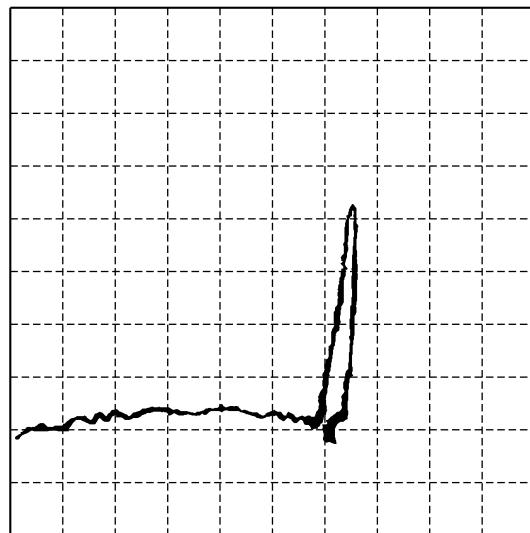
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POSSIBLE SCREEN DISPLAYS FROM CHANGES
IN THE CADMIUM PLATING
DETAIL I [1]



TYPICAL CRACK SIGNAL
DETAIL II [2]

[1] IN THESE EXAMPLES, THE PROBE IS MOVED
APPROXIMATELY 3 TO 5 INCHES.

[2] IN THIS EXAMPLE, THE PROBE IS MOVED A
DISTANCE OF APPROXIMATELY ONE PROBE DIAMETER.

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Instrument Screen Display Examples
Figure 3

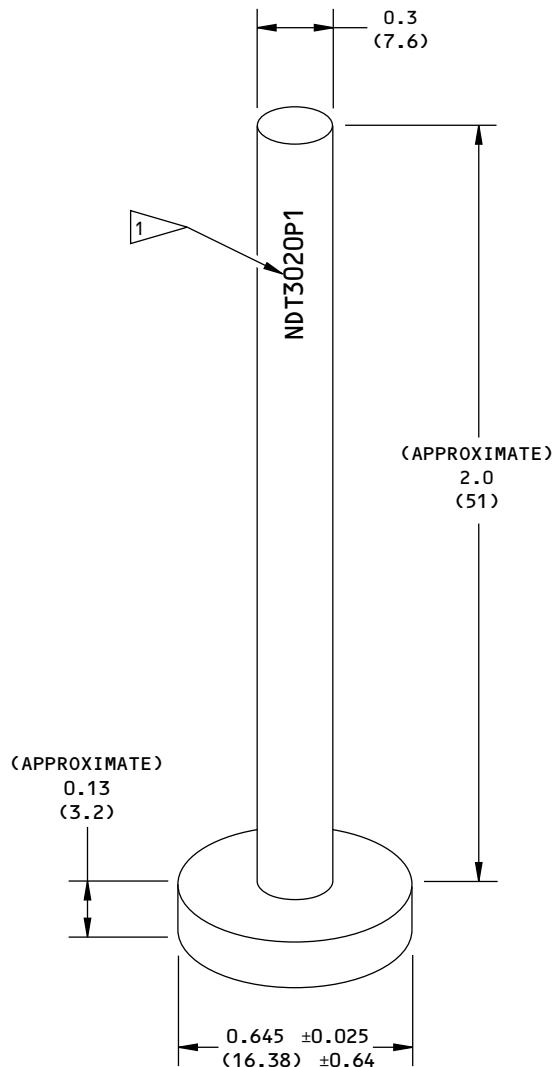
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NOTES:

- MAKE THE DISK FROM A NONCONDUCTIVE MATERIAL
- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)

ETCH OR STAMP PART NUMBER NDT3020P1

2163236 S0000474235_V2

Nonconductive Probe Guide NDT3020P1
Figure 4

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PART 6 - EDDY CURRENT

OUTBOARD MIDFLAP LOWER SKIN PANEL

1. Purpose

- A. Use this procedure to do surface eddy current inspections to find cracks in the lower skin panel of the outboard midflap at the WBL 254 and WBL 355 flap track locations. See Figure 1.
- B. This inspection procedure examines the inner and outer skins for cracks at all fastener locations between WBL 243 to 264 and WBL 345 to 365. See Figure 1.
NOTE: It is necessary to remove the lower skin panel of the outboard midflap to do the inspections.
- C. This procedure examines around open holes (removed fastener) and rivets that hold the inner and outer skins together.
- D. This procedure uses a pencil probe with an impedance plane display or a meter display instrument.

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; Hocking
 - (b) Nortec 19e, 1000, 2000; Staveley Instruments
 - (c) Locator; Hocking
- C. Probes
 - (1) Use a 0.125 inch (3.17 mm) diameter, straight or right-angle, pencil probe. Refer to Part 6, 51-00-00, Procedure 23, par. 3.C for data about probe selection.
 - (2) The probes that follow were used to help prepare this procedure.
 - (a) MP-30; NDT Engineering Corp.
 - (b) MP905-50; NDT Engineering Corp.
- D. Reference Standard
 - (1) Use reference standards NDT1048 and 188A identified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.
- E. Non-conductive circle template

3. Prepare for the Inspection

- A. Identify the inspection location. See Figure 1.
- B. Remove the lower skin panel from the outboard midflap.

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C. Clean the inspection area. Remove grease, dirt and loose paint as necessary.

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.
 - (1) To examine around the open fastener hole and the flush rivet head, calibrate the instrument with reference standard NDT1048 at the aluminum rivet location.
 - (2) To examine around the tail of the installed rivet (bucked end), calibrate the instrument with reference standard 188A at the aluminum rivet location.

5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
- B. Examine all installed and open hole fastener locations on the inner and outer skins of the lower skin panel. See Figure 1 for the inspection area.
 - (1) Refer to the inspection procedure as specified in Part 6, 51-00-00, Procedure 4 (meter display) or Part 6, 51-00-00, Procedure 23 (impedance plane display).
 - (a) Make a scan around the open fastener hole and the flush rivet head with a nonconductive circle template, or put a rivet into the open fastener hole and use the fastener head or tail as a probe guide. See flagnote 1 in Figure 2.
 - (b) Make a scan around the tail of the installed rivet (bucked end). Keep the probe against the rivet during the scan. See flagnote 2 in Figure 2.

6. Inspection Results

- A. For instruments with a meter display, refer to Part 6, 51-00-00, Procedure 4, for data to help make an analysis of the inspection results.
- B. For instruments with an impedance plane display, refer to Part 6, 51-00-00, Procedure 23, for data to help make an analysis of the inspection results.

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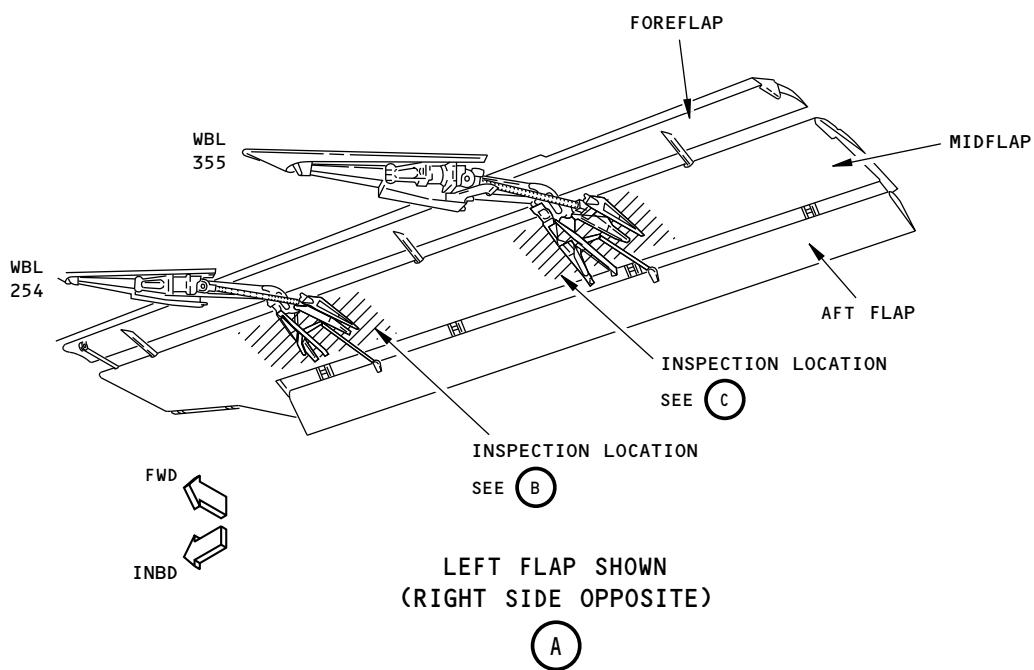
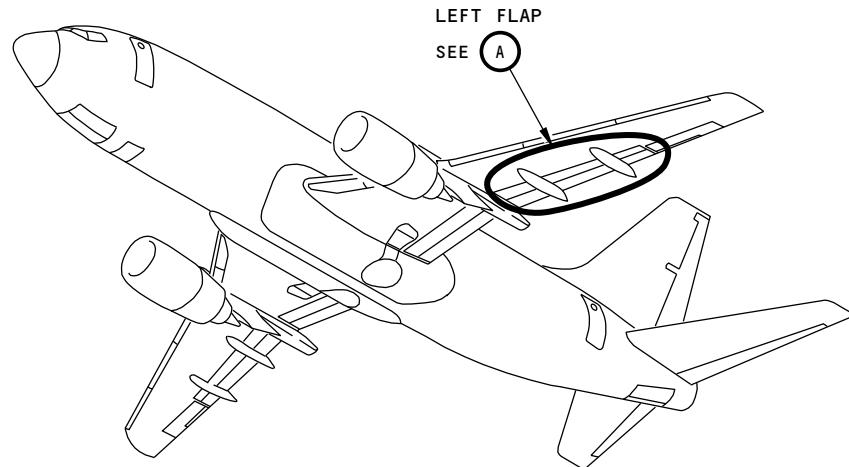
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Inspection Location
Figure 1 (Sheet 1 of 2)

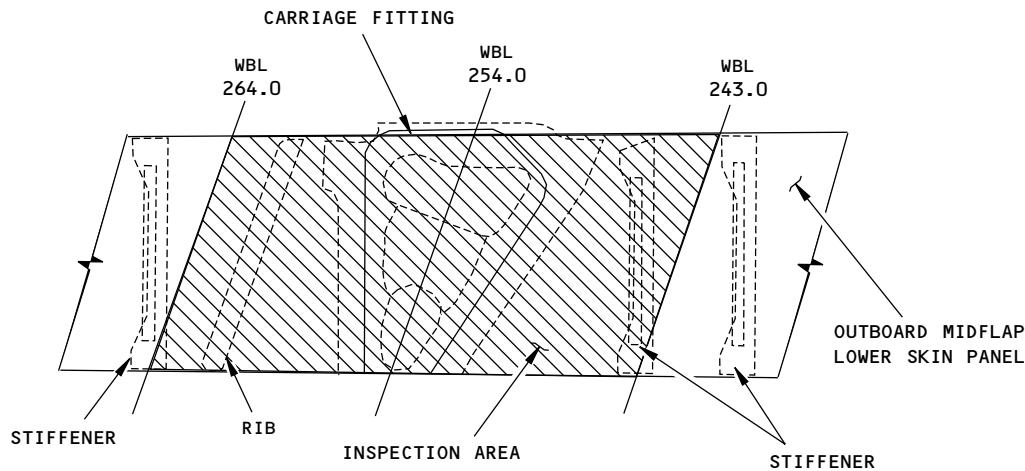
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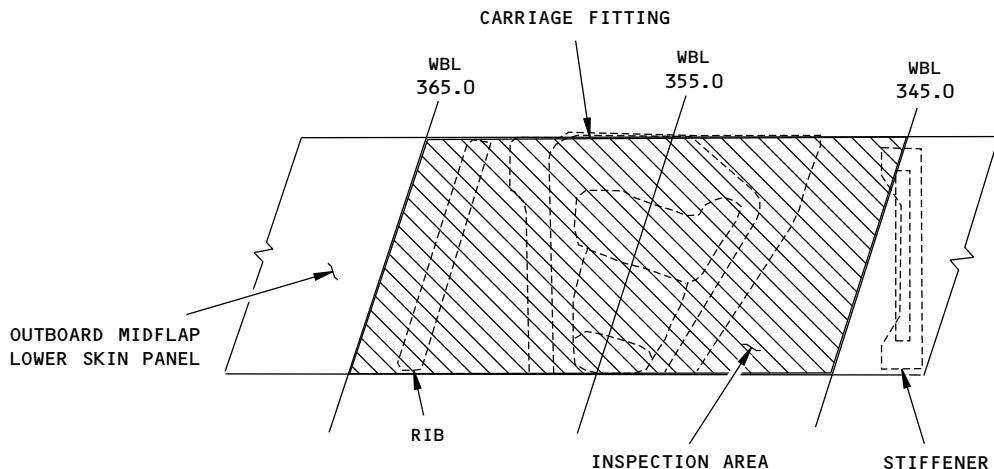


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EXAMINE THE AREAS AROUND THE OPEN HOLES AND RIVETS IN
THE LOWER SKIN BETWEEN WBL 243.0 AND WBL 264.0.
(THE RIGHT SIDE IS SHOWN; THE LEFT SIDE IS OPPOSITE)

(B)



EXAMINE THE AREAS AROUND THE OPEN HOLES AND RIVETS
IN THE LOWER SKIN BETWEEN WBL 345.0 TO WBL 365.0.
(THE RIGHT SIDE IS SHOWN; THE LEFT SIDE IS OPPOSITE)

(C)

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Inspection Location
Figure 1 (Sheet 2 of 2)

EFFECTIVITY
ALL; 737-100/-200/-200C/-300/-400/-500 AIRPLANES

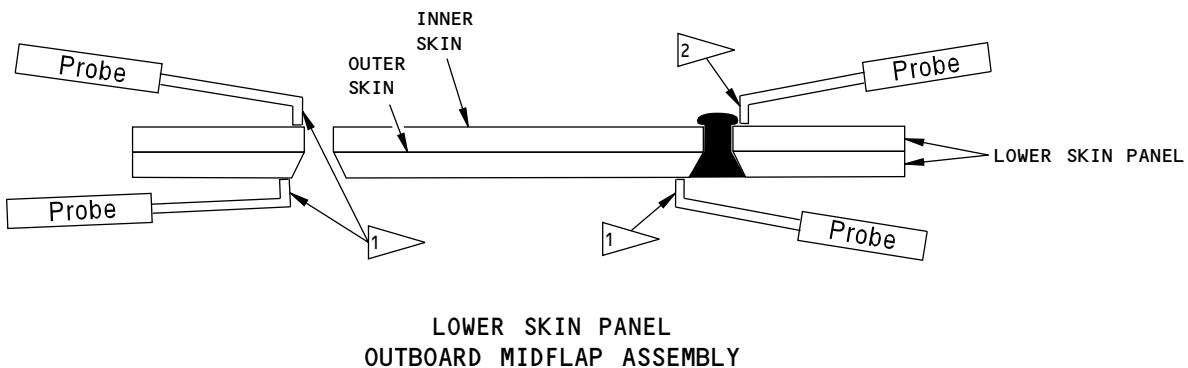
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NOTES:

- 1 ▶ MAKE A SCAN AROUND THE OPEN FASTENER HOLE AND THE FLUSH HEAD RIVET HEAD WITH A NONCONDUCTIVE CIRCLE TEMPLATE, OR PUT A RIVET INTO THE OPEN FASTENER HOLE AND USE THE FASTENER HEAD OR TAIL AS A PROBE GUIDE
- 2 ▶ MAKE A SCAN AROUND THE TAIL OF THE INSTALLED RIVET (BUCKED END). KEEP THE PROBE AGAINST THE RIVET DURING THE SCAN.

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Lower Skin Panel Outboard Midflap Assembly
Figure 2

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PART 6 - EDDY CURRENT

OUTBOARD FLAP - MIDFLAP CARRIAGE FITTING AT WBL 254 AND WBL 355

1. Purpose

- A. Use this procedure to do a surface eddy current inspection to find cracks in the carriage fittings at WBL 254 and WBL 355 of the midflap for the outboard flap. See Figure 1.
- B. This inspection procedure examines the carriage fittings for cracks at open hole fastener locations and around fastener collars as shown in Figure 1.

NOTE: It is necessary to remove the lower skin panel of the outboard midflap for this inspection.

- C. This procedure uses a pencil probe with an impedance plane display instrument and a rotary scanner hole probe with a rotary scanner and an impedance plane display.

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 that:
 - (a) Has an impedance plane display.
 - (b) Operates at a frequency range of 50 to 500 kHz.
 - (c) Operates with a rotary scanner.
- (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 2200, Phasec 2; Hocking (with rotary scanner)
 - (b) Nortec 19e, 1000, 2000; Staveley Instruments (with rotary scanner)

C. Probes

- (1) For the surface inspection, use a 0.125 inch (3.17 mm) diameter straight or right-angle pencil probe. Refer to Part 6, 51-00-00, Procedure 23, par. 3.C for data about probe selection.
- (2) For the open hole inspection, use a rotary scanner hole probe that satisfies the requirements of Part 6, 51-00-00, Procedure 16, par 3.B.
- (3) The probes that follow were used to help prepare this procedure.
 - (a) MP-30; NDT Engineering Corp.
 - (b) MP905-50; NDT Engineering Corp.
 - (c) BXU-20/24; NDT Engineering Corp. (rotary hole probe)

D. Reference Standard

- (1) For the surface inspection, use reference standards NDT1048 and 188A or the equivalent identified in Part 6, 51-00-00, Procedure 23.
- (2) For the open hole inspection, use reference standard NDT1018 or the equivalent identified in Part 6, 51-00-00, Procedure 16.

E. Non-conductive circle template

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3. Prepare for the Inspection

- A. See Figure 1 for the general inspection location.
- B. Remove the lower skin panel from the outboard midflap.
- C. Clean the inspection area. Remove grease, dirt and loose paint as necessary.
- D. Refer to Part 6, 51-00-00, par. 4 for data about preparation for inspection at open hole locations.

4. Instrument Calibration

- A. To do the open hole inspection at locations with fasteners removed, calibrate the instrument as specified in Part 6, 51-00-00, Procedure 16, par. 5 and use reference standard NDT1018.
- B. To do the surface inspection around the open fastener hole and around the fastener collar, calibrate the instrument as specified in Part 6, 51-00-00, Procedure 23, par. 5.
 - (1) Use reference standard NDT1048, or an equivalent, at the aluminum rivet location to examine around the open hole. Use a non-conductive circle template as a probe guide.
 - (2) Use reference standard 188A, or an equivalent, at the aluminum rivet location to examine around the fastener collar.

5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
 - B. Examine the open fastener hole locations on the lower side of the carriage fitting, through the lower chord. See Views B and C in Figure 1 for 737-100/-200 airplanes and Views D and E for 737-300/-400/-500 airplanes.
- NOTE:** Nutplates are on the upper side of the lower flange. The eddy current coil of the rotary probe must stay in the hole to prevent unwanted indications. Crack-type signals can occur when the probe goes out of the end of the hole.
- C. Examine around the fastener collars on the upper side of the lower flange of the carriage fitting. See Views B and C in Figure 1 for 737-100/-200 airplanes and Views D and E for 737-300/-400/-500 airplanes.
 - D. Examine around the open fastener hole locations on the lower side of the carriage fitting. See Views B and C in Figure 1 for 737-100/-200 airplanes and Views D and E for 737-300/-400/-500 airplanes. Use a non-conductive circle template as a probe guide.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 23, for data to help make an analysis of the surface inspection results.
- B. Refer to Part 6, 51-00-00, Procedure 16, for data to help make an analysis of the open hole inspection results.

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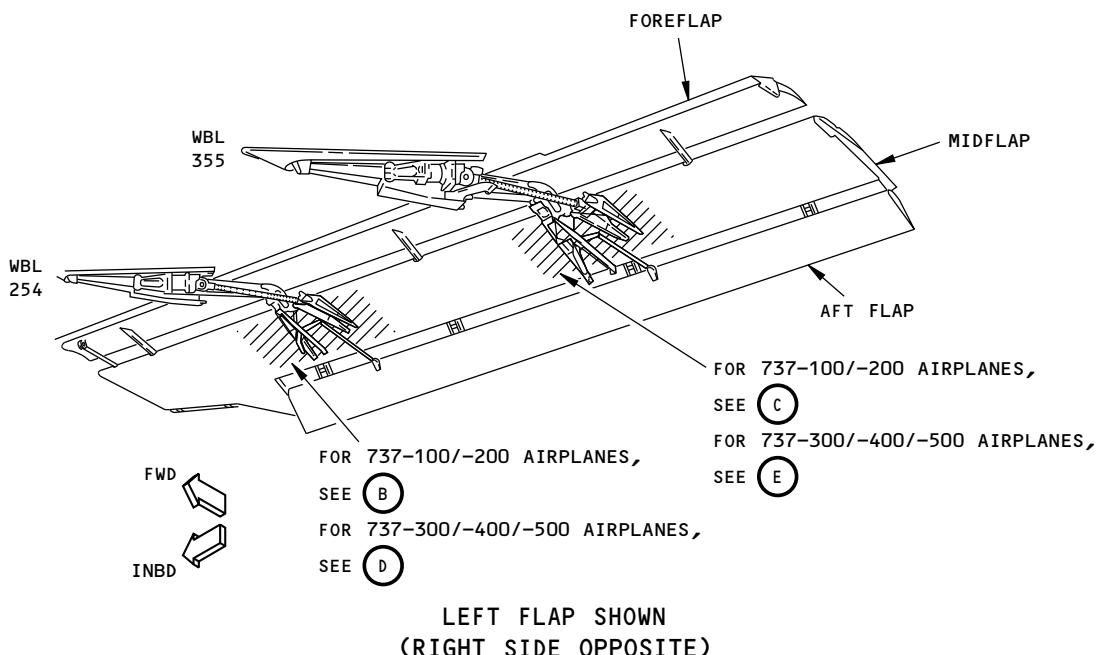
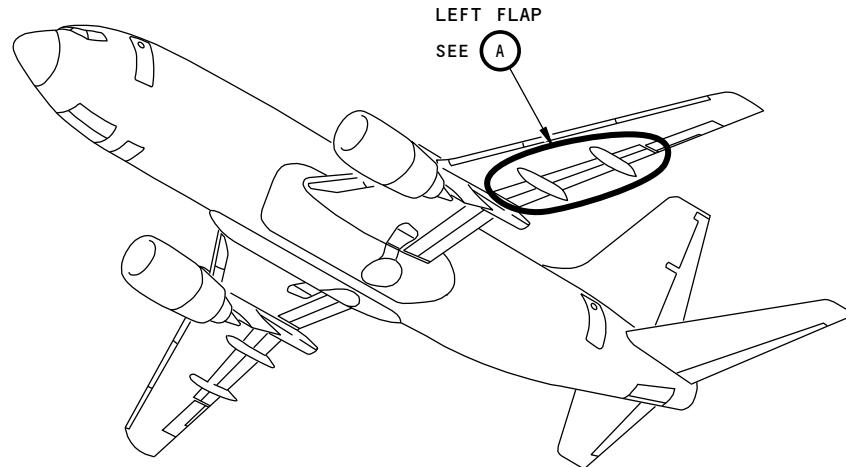
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NOTES:

/// INSPECTION LOCATION

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Inspection Locations
Figure 1 (Sheet 1 of 5)

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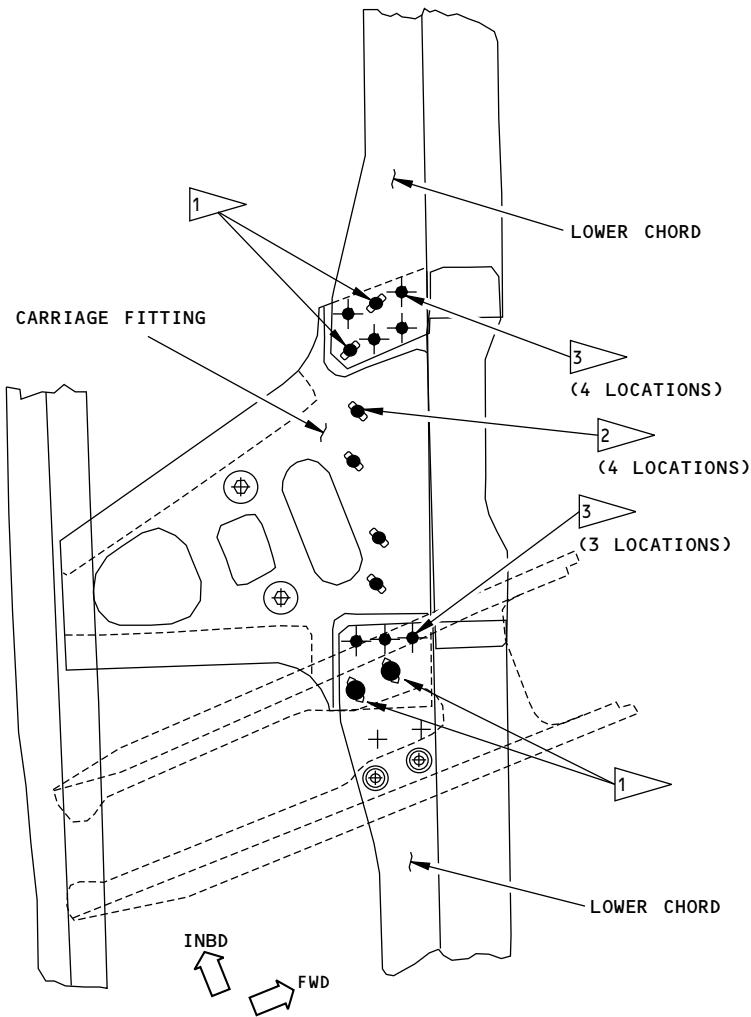
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INSPECTION LOCATION - BOTTOM VIEW
737-100/-200 AIRPLANES AT WBL 254.0

(B)

- 1 REMOVE THE FASTENERS AND DO AN OPEN HOLE SCAN WITH A ROTARY SCANNER. DO THE SCAN FROM THE LOWER SIDE OF THE LOWER CHORD.

NOTE: NUTPLATES ARE ON THE UPPER SIDE OF THE LOWER FLANGE. THE EDDY CURRENT COIL OF THE ROTARY PROBE MUST STAY IN THE HOLE TO PREVENT UNWANTED INDICATIONS. CRACK TYPE SIGNALS CAN OCCUR WHEN THE PROBE GOES OUT OF THE END OF THE HOLE.

- 2 REMOVE FASTENERS AND DO A SURFACE SCAN AROUND THE OPEN HOLE WITH A NON-CONDUCTIVE CIRCLE TEMPLATE AS A PROBE GUIDE.

- 3 DO A SCAN AROUND THE FASTENER COLLARS ON THE UPPER SIDE OF THE CARRIAGE FITTING FLANGE.

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Inspection Locations
Figure 1 (Sheet 2 of 5)

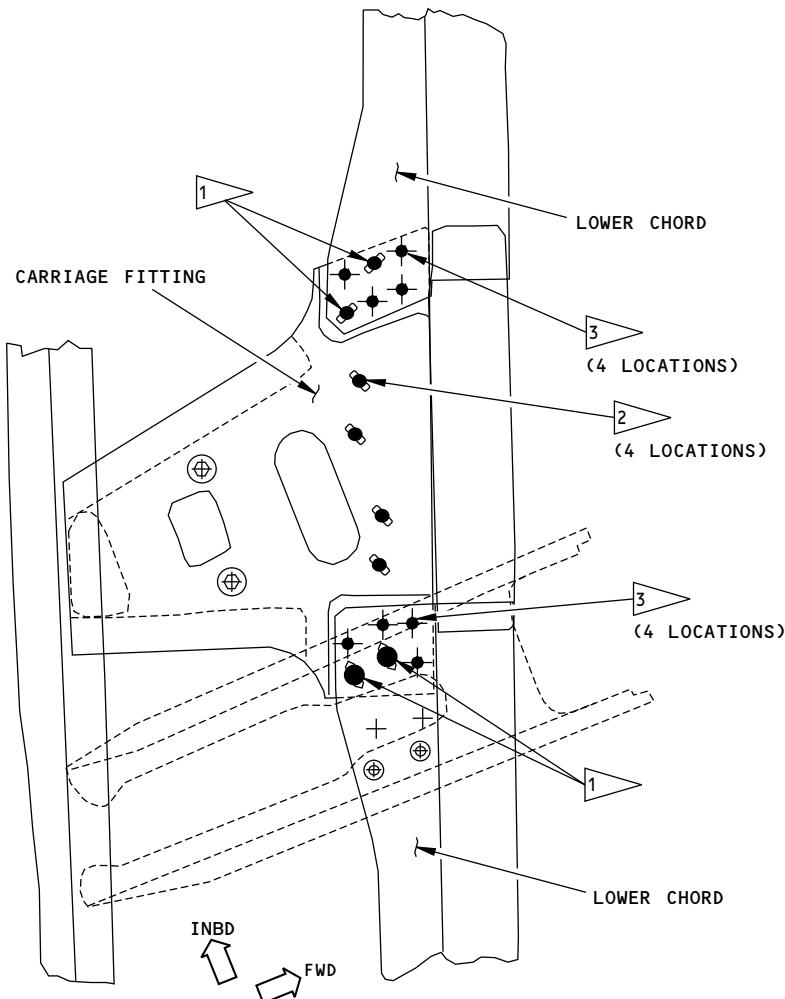
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INSPECTION LOCATION - BOTTOM VIEW
737-100/-200 AIRPLANES AT WBL 355.0

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Inspection Locations
Figure 1 (Sheet 3 of 5)

EFFECTIVITY
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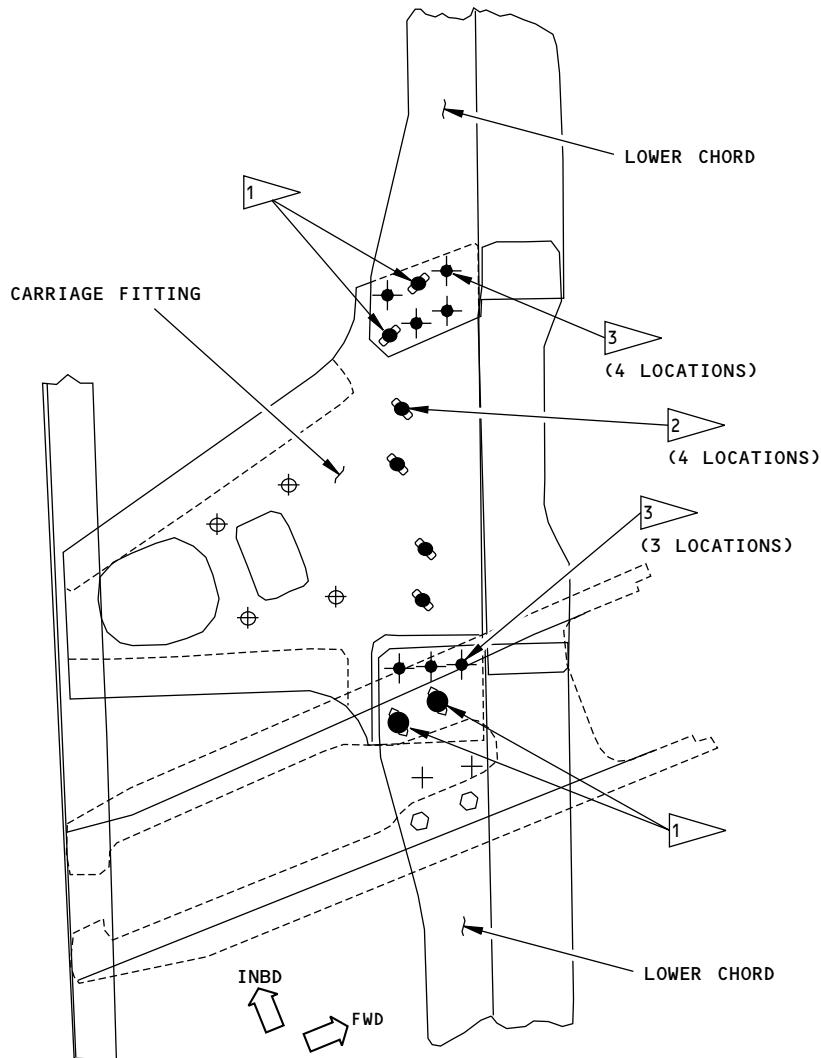
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INSPECTION LOCATION - BOTTOM VIEW
737-300/-400/-500 AIRPLANES AT WBL 254.0

D

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Inspection Locations
Figure 1 (Sheet 4 of 5)

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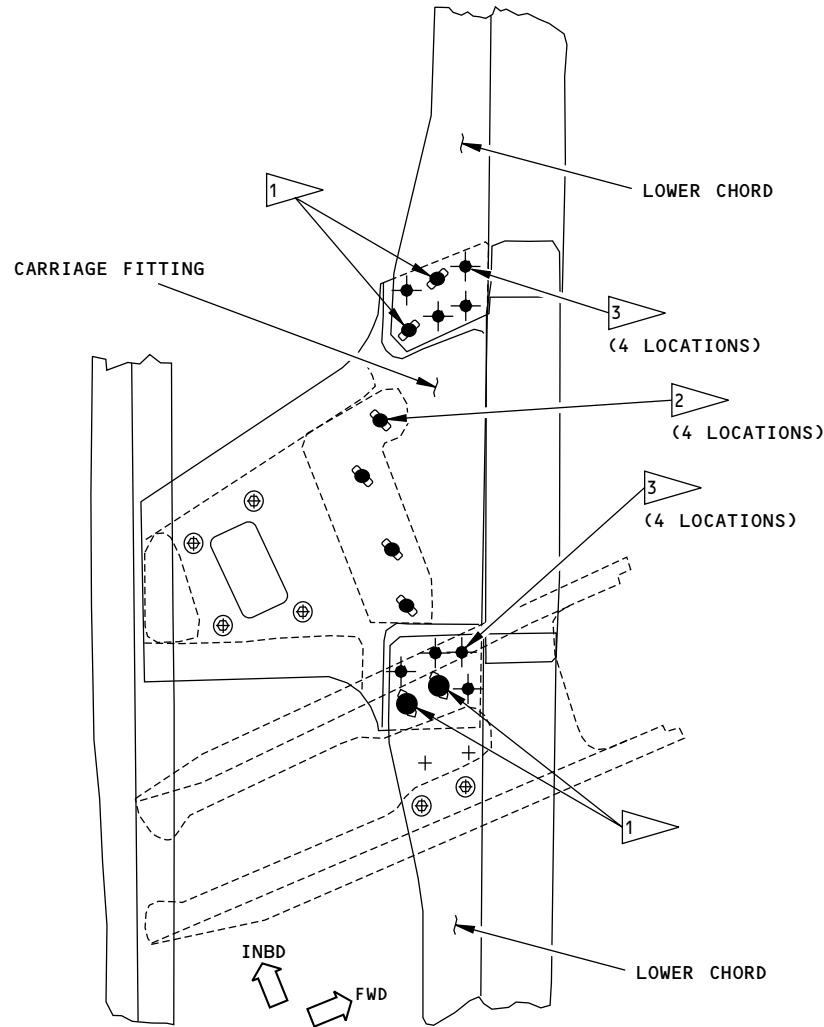
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INSPECTION LOCATION - BOTTOM VIEW
737-300/-400/-500 AIRPLANES AT WBL 355.0

(E)

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Inspection Locations
Figure 1 (Sheet 5 of 5)

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PART 6 - EDDY CURRENT

OUTBOARD FLAP - INBOARD AND OUTBOARD FLAP TRACK AND FORWARD SUPPORT FITTING AT WBL 254 AND WBL 355

1. Purpose

- A. Use this procedure to do eddy current surface inspections to find cracks in the inboard and outboard flap tracks and the forward support fittings at WBL 254 and WBL 355 of the outboard flap. See Figure 1 for the location of the flap tracks and forward support fitting.

NOTE: The inspections identified in this procedure occur at different maintenance intervals. Refer to the Supplemental Structural Inspection Document (SSID) for what inspection is to be done at the applicable inspection interval.

- B. Use this procedure to examine the flap track in the areas that follow:

- (1) The inboard and outboard lower flanges of the flap track. See Detail I in Figure 1.
- (2) Around all the flush-head fasteners that attach the spacer bar to the flap track, on the inboard and outboard sides. See Detail I in Figure 1.
- (3) Around the bolt holes in the forward clevis where it attaches to the forward support fitting. See Detail I in Figure 1.

- C. Use this procedure to examine the forward support fitting in the areas that follow:

- (1) Around the four bolt locations that attach the forward support fitting to the lower wing surface. See Detail II in Figure 1.
- (2) Around the attach bolt bushings, from the inboard and outboard surfaces. See Detail II in Figure 1.

- D. 737 Supplemental Structural Inspection Document (D6-37089 for -100, -200, -200C; D6-82669 for -300, -400, -500) Reference:

- (1) Item: L-1
- (2) Item: L-2
- (3) Item: L-4
- (4) Item: L-5

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 in a frequency range of 25 kHz to 2 MHz.
- (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasel 2200; Hocking Krautkramer

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- (b) Nortec 1000/2000; Staveley Instruments
- (c) Elotest B1; Rohman GmbH
- (d) MIZ-21B; Zetec Inc.

C. Probes

- (1) Use an unshielded, straight, and/or, right angle, pencil probe that has a maximum diameter of 0.13 inch (3.2 mm) and operates in a frequency range of 25 to 50 kHz, to examine all the flap track inspection areas.
- (2) Use a shielded, straight, and/or, right angle, pencil probe that has a maximum diameter of 0.13 inch (3.2 mm) and operates in a frequency range of 1 to 2 MHz, to examine the forward support fitting inspection areas.
- (3) The probes that follow were used to help prepare this procedure.
 - (a) NEC-1062; NDT Engineering Corp. (unshielded)
 - (b) UMTF902-40FX; NDT Engineering Corp. (unshielded)
 - (c) UMTF30; NDT Engineering Corp. (unshielded)
 - (d) MTF905-50/2M; NDT Engineering Corp. (shielded)

D. Reference Standard

- (1) Use reference standard 185 and NDT1061 (or an equivalent) identified in Part 6, 51-00-00, Procedure 24, to examine all the inspection areas on the flap track.
- (2) Use reference standard 1004 (or an equivalent) identified in Part 6, 51-00-00, Procedure 14, to examine all the inspection areas on the forward support fitting.

E. Nonconductive Probe Guides

- (1) Use a disk for the inspections around the flush-head fasteners and a circle template for the inspections around the bolt holes in the forward clevis of the flap track. See Figure 2 for how to make the disk.
- (2) Use a flexible straightedge as a probe guide for the inspections along the edges of the flap track flanges.

3. Prepare for the Inspection

- A. Identify all the inspection areas. See Figure 1.
- B. Remove the flap track fairing to get access to the inspection areas.
- C. It is necessary to remove the flap track and the fail-safe strap to examine the inspection areas on the flap track, the forward clevis, and on the forward support fitting. See Figure 1.
- D. Clean the inspection area and remove sealant as necessary. Remove paint only if it is loose.

4. Instrument Calibration

- A. Calibrate the equipment to examine the flap track areas identified in Paragraph 1.B.(1) thru Paragraph 1.B.(3) for cracks as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 24 (impedance plane display instruments).
 - (a) Set the instrument frequency to 50 kHz.
 - (b) Use reference standard 185 (or an equivalent) to examine the lower flanges and the bolt holes in the forward clevis.

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- (c) Use the steel bolt location of reference standard 1061 (or an equivalent) to examine around the flush-head fasteners.
- B. Calibrate the equipment to examine the forward support fitting in the areas identified in Paragraph 1.C.(1) and Paragraph 1.C.(2) as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 14 (impedance plane display instruments).
 - (2) Use the titanium bolt location of reference standard 1004 (or an equivalent).

5. Inspection Procedure

- A. Examine the flap track inspection areas identified in Paragraph 1.B.(1) thru Paragraph 1.B.(3) for cracks as follows:

NOTE: The flap tracks are made of a high permeability steel and are plated with cadmium. Refer to NOTES 1 thru 3 in Part 6, 51-00-00, Procedure 24, par. 6.D.(3)(e) for the types of signal changes that can occur from changes in the thickness of cadmium and permeability. See Detail I in Figure 3 for some example screen displays from cadmium thickness changes. Changes in permeability can cause the same type of signals to occur.

- (1) Calibrate the instrument as specified in Paragraph 4.A. for the applicable inspection areas.
- (2) Refer to Part 6, 51-00-00, Procedure 24, par. 6, "Inspection Procedure", for the inspection instructions.
 - (a) Refer to par. 6.D.(3)(e) to examine near the edges of the lower flanges and around the bolt holes in the forward clevis. Use the nonconductive straightedge as a probe guide during the scan inspection, as shown in Detail III in Figure 1, to examine the lower flanges. To examine the bolt holes in the clevis, use a circle template with a hole diameter that will keep the probe at the same distance from the edge of the hole that the probe was from the edge of the hole during calibration.
 - (b) Refer to par. 6.D.(3)(b) to examine around the flush-head fasteners. Use the nonconductive disk as a probe guide during the scan inspection as shown in Detail III in Figure 1.
- B. Examine the forward support fitting inspection areas identified in Paragraph 1.C.(1) and Paragraph 1.C.(2) for cracks as follows:
 - (1) Calibrate the instrument as specified in Paragraph 4.B.
 - (2) Refer to Part 6, 51-00-00, Procedure 14, par. 6, "Inspection Procedure", for the inspection instructions.
 - (a) Refer to par. 6.D.(3) to examine around the four fasteners that attach the fitting to the wing and around the inboard and outboard attach bolt bushing flanges. Keep the probe against the bolt washers and bushings during the scan inspection.

6. Inspection Results

- A. Results of the flap track inspections.
 - (1) A signal that is 100% (or more) of the signal you got from the notch of the reference standard during calibration is a sign of a possible crack.
 - (2) Refer to Part 6, 51-00-00, Procedure 24, par. 7, "Inspection Results", to make an analysis of indications that occurred during the inspection. See Detail I in Figure 3 for examples of signals caused by thickness changes in the cadmium plating.



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- (3) In areas that give signals that are 100% (or more) of the signal you got from the notch of the reference standard during calibration, calibrate the instrument to a frequency of 25 kHz and do the inspection of the area again. Compare the signals that you get to the signals with the instrument set at 50 kHz. If signals are caused from a thickness change in the cadmium, the signal will change. If the signal is caused by a crack, there will be no change to the signal.
- B. Results of the forward support fitting inspections.
- (1) Refer to Part 6, 51-00-00, Procedure 14, par. 7, "Inspection Results", to make an analysis of indications that occurred during the inspection.

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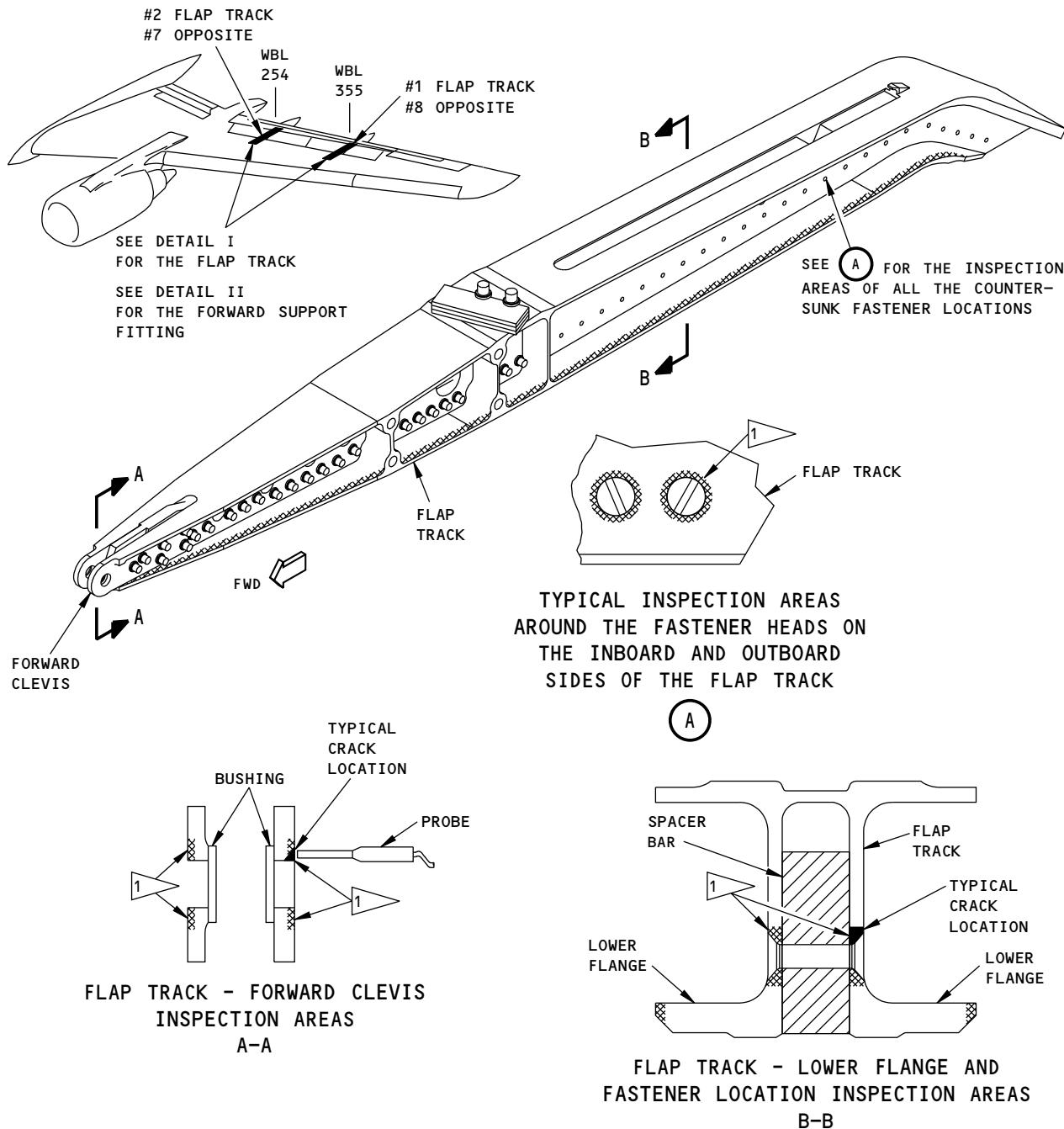
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NOTES:

**FLAP TRACK INSPECTION AREAS
DETAIL I**



INSPECTION AREA



DO A 360 DEGREE SCAN AROUND THE HOLE OR
FASTENER HEAD

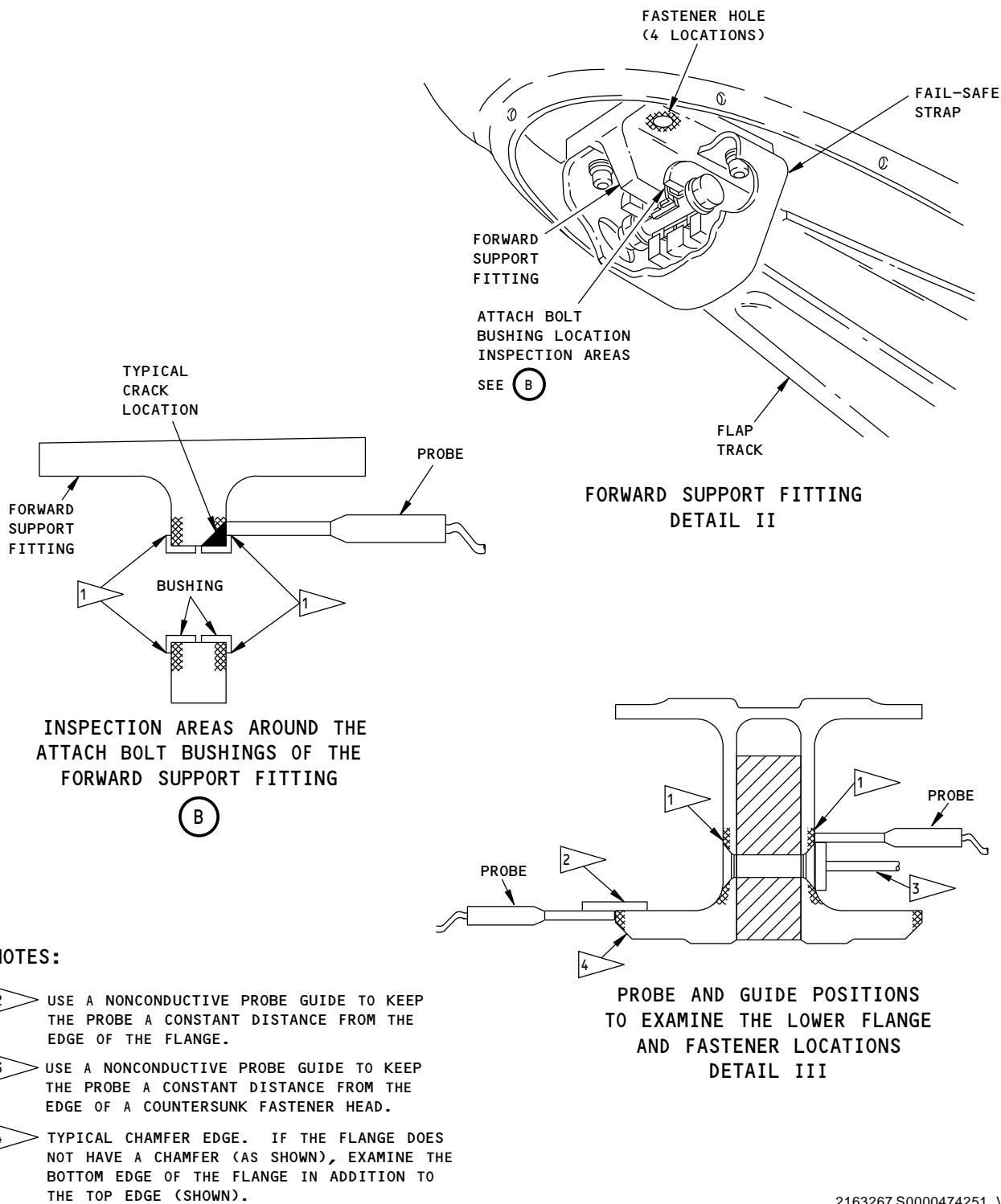
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**Outboard Flap - Outboard Tracks #1, 2, 7 and 8 Inspection Areas
Figure 1 (Sheet 1 of 2)**

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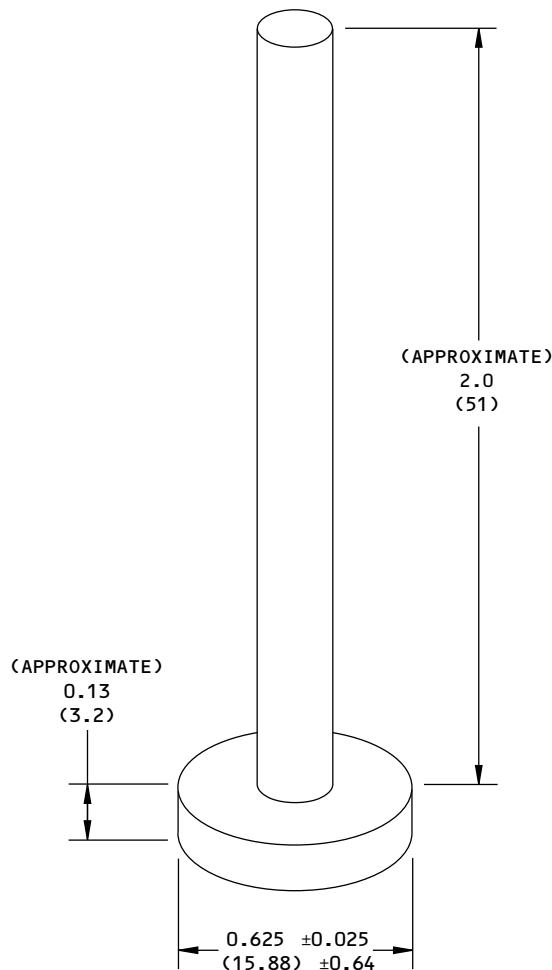
Outboard Flap - Outboard Tracks #1, 2, 7 and 8 Inspection Areas
Figure 1 (Sheet 2 of 2)

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NOTES:

- MAKE THE DISK FROM A NONCONDUCTIVE MATERIAL
- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)

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Nonconductive Probe Guide (Disk)
Figure 2

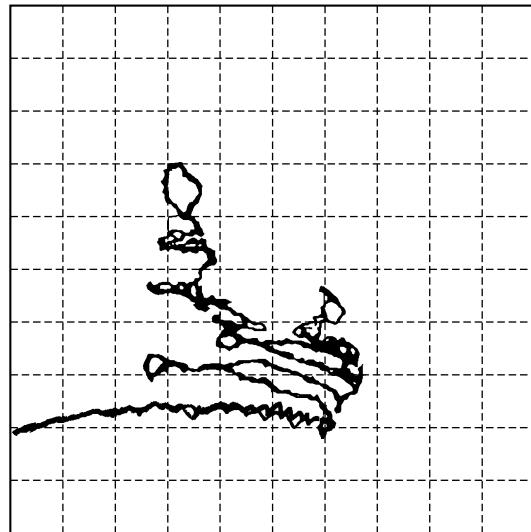
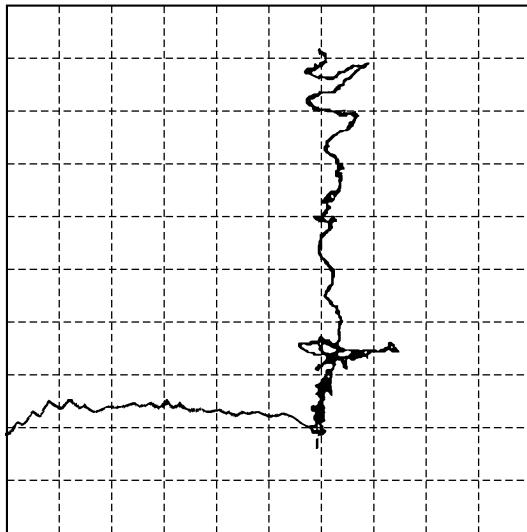
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POSSIBLE SCREEN DISPLAYS FROM CHANGES
IN THE CADMIUM PLATING
DETAIL I

NOTES:

- THE SCREEN DISPLAYS SHOWN IN DETAIL I ARE EXAMPLES OF SIGNALS CAUSED BY CHANGES IN THE THICKNESS OF THE CADMIUM PLATING. CADMIUM PLATING THICKNESS CHANGES CAUSE THE SIGNALS TO CHANGE GRADUALLY AS THE PROBE IS MOVED ALONG THE SURFACE OF THE FLAP TRACK. IF THERE IS A CRACK, THE SIGNAL WILL CHANGE QUICKLY WHEN THE PROBE IS MOVED ONLY A SHORT DISTANCE (ACROSS THE CRACK).

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Instrument Screen Display Examples
Figure 3

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PART 6 - EDDY CURRENT

INBOARD FLAP - INBOARD FLAP TRACK AND FORWARD SUPPORT FITTING AT WBL 66.5

1. Purpose

- A. Use this procedure to do eddy current surface and open hole inspections to find cracks in the inboard flap track and forward support fitting for the inboard flap at WBL 66.5. See Figure 1 for the location of the flap track and the forward support fitting.

NOTE: The inspections identified in this procedure occur at different maintenance intervals. Refer to the Supplemental Structural Inspection Document (SSID) for what inspection is to be done at the appropriate inspection interval.

- B. Use surface eddy current to examine the inspection areas that follow:

- (1) Two locations along the inboard and outboard edges of the lower flange of the flap track . See Figure 1, Sheet 2.
- (2) Along the inboard and outboard edges of the forward attachment lugs of the flap track where it attaches to the forward support fitting. See Figure 1, Sheet 2.
- (3) Around all the fastener heads of the fasteners that attach the spacer bar to the flap track. See Figure 1, Sheet 2.
- (4) The inboard and outboard edges of the aft lug of the forward support fitting. See Figure 1, Sheet 3.

- C. Use an open hole eddy current inspection to examine the inspection areas that follow:

- (1) The two bolt holes in the aft attachment lug (inboard and outboard flange) of the flap track, where it attaches to the main link for the aft support fitting. See Figure 1, Sheet 2.
- (2) The bottom fastener hole in the aft flange of the forward support fitting where it attaches to the main landing gear beam. See Figure 1, Sheet 3.

- D. 737 Supplemental Structural Inspection Document (D6-37089 for -100, -200, -200C; D6-82669 for -300, -400, -500) Reference:

- (1) Item: L-10
- (2) Item: L-11

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 with a rotary scanner.
 - (b) Operates at a frequency range of 50 kHz to 500 kHz.
- (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 2200 (impedance plane display with a rotary scanner); Hocking Krautkramer
 - (b) Nortec 1000/2000 (impedance plane display with a rotary scanner); Staveley Instruments

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- (c) Elotest B1 (impedance plane display with a rotary scanner); Rohman GmbH

C. Probes

- (1) Probe for the surface inspections:
 - (a) Use an unshielded pencil probe that has a maximum diameter of 0.13 inch (3.2 mm) to examine all the flap track inspection areas.
 - (b) Use a shielded pencil probe that has a maximum diameter of 0.13 inch (3.2 mm) to examine the forward support fitting inspection areas.
 - (c) Must operate at a frequency range of 50 to 500 kHz.
 - (d) The probes that follow were used to help prepare this procedure.
 - 1) MTF902-50FX; NDT Engineering Corp. (shielded)
 - 2) UMTF902-40FX; Engineering Corp. (unshielded)
 - 3) UMTF30; Engineering Corp. (unshielded)
- (2) Probes for the open hole inspections:
 - (a) Refer to Part 6, 51-00-00, Procedure 19, par. 3.C. for the probe(s) to use to examine the bolt holes in the aft attachment lug of the flap track.
 - (b) Refer to Part 6, 51-00-00, Procedure 16, par. 3.B. for the probes to use to examine the hole in the forward support fitting.

D. Reference Standard

- (1) Reference standards for the surface inspections:
 - (a) Use reference standard 185 (or the equivalent) identified in Part 6, 51-00-00, Procedure 24, to examine the surface inspection areas on the flap track.
 - (b) Use reference standard 126 (or the equivalent) identified in Part 6, 51-00-00, Procedure 23, to examine the surfaces of the forward support fitting.
- (2) Reference standards for the open hole inspections:
 - (a) Refer to Part 6, 51-00-00, Procedure 19, par. 3.D. for the reference standard to use to examine the bolt holes in the aft attachment lug of the flap track.
 - (b) Refer to Part 6, 51-00-00, Procedure 16, par. 3.C. for the reference standard(s) to use to examine the hole in the forward support fitting.

E. Nonconductive Probe Guides

- (1) Use a disk or a circle template as a probe guide for the inspections around the flush-head fasteners. If a disk is used, it must have the same (approximate) diameter as the head of the flush-head fastener. To make the disk probe guide, see Figure 3.
- (2) Use a flexible straightedge as a probe guide for the inspections along the edges of the flanges and the edges of the forward attachment lugs of the flap track.

3. Prepare for the Inspection

- A. Identify all the inspection areas. See Figure 1.
- B. Remove the bushings from the aft attachment lug of the flap track. See Figure 1, Sheet 2.
- C. Clean the inspection area. Remove sealant as necessary. Remove paint only if it is loose.

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4. Instrument Calibration

- A. Calibrate the equipment to do the surface inspections on the flap track in the areas identified in Paragraph 1.B.(1) thru Paragraph 1.B.(3) as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 24 (impedance plane display instruments).
 - (2) Use reference standard 185 or an equivalent.
- B. Calibrate the equipment to do the open hole inspection on the flap track in the area identified in Paragraph 1.C.(1) as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 19 (impedance plane display instruments).
 - (2) Refer to par. 3.D. of Part 6, 51-00-00, Procedure 19 for the reference standard to use.
- C. Calibrate the equipment to do the surface inspections on the forward support fitting in the areas identified in Paragraph 1.B.(4) as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 23 (impedance plane display instruments).
 - (2) Use reference standard 126 or an equivalent.
- D. Calibrate the equipment to do the open hole inspections on the forward support fitting in the areas identified in Paragraph 1.C.(2) as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 16 (impedance plane display instruments).
 - (2) Refer to par. 3.C. of Part 6, 51-00-00, Procedure 16, for the reference standard to use.

5. Inspection Procedure

- A. Examine the flap track as follows:
 - (1) Do the surface inspection of the lower flanges and the forward attachment lug inspection areas identified in Paragraph 1.B.(1) and Paragraph 1.B.(2).
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Make a slow scan of the inspection areas identified in Figure 1, Sheet 2. Use the nonconductive straightedge to guide the probe during the scan inspection, as shown in Figure 2.
 - 1) Refer to Part 6, 51-00-00, Procedure 24, par. 6, "Inspection Procedure". Refer to paragraph 6.D.(3)(e) to examine near the edges.
 - (2) Do the surface inspection around all the fastener heads identified in Paragraph 1.B.(3).
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Make a slow scan around the fastener heads of the fasteners identified in Figure 1, Sheet 2. Put the nonconductive disk on top of the fastener head to use it as a probe guide during the scan inspection around the fastener, as shown in Figure 2.
 - (3) Do the open hole inspection of the area identified in Paragraph 1.C.(1).
 - (a) Calibrate the instrument as specified in Paragraph 4.B.
 - (b) Do an inspection of the holes as specified in Part 6, 51-00-00, Procedure 19, par. 6, "Inspection Procedure".

NOTE: The chamfer on the outside of the hole is not included in this inspection.

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- B. Examine the forward support fitting as follows:

NOTE: The fitting is a split fitting (two pieces).

- (1) Do a surface inspection of the areas identified in Paragraph 1.B.(4).
 - (a) Calibrate the instrument as specified in Paragraph 4.C.
 - (b) Make a slow scan on the edges of the outer radius of the forward support fitting. Make sure to examine each piece. See Figure 1, Sheet 3, for the inspection areas.
 - 1) Refer to Part 6, 51-00-00, Procedure 23, par. 6, "Inspection Procedure". Refer to paragraph 6.E.(3)(e) to examine near the edges.
- (2) Do the open hole inspection of the area identified in Paragraph 1.C.(2).
 - (a) Calibrate the instrument as specified in Paragraph 4.D.
 - (b) Remove the fastener from the hole identified as flagnote 5 in Figure 1, Sheet 3, and do an inspection of the hole as specified in Part 6, 51-00-00, Procedure 16, par. 6, "Inspection Procedure".

6. Inspection Results

- A. Results of the flap track inspections.

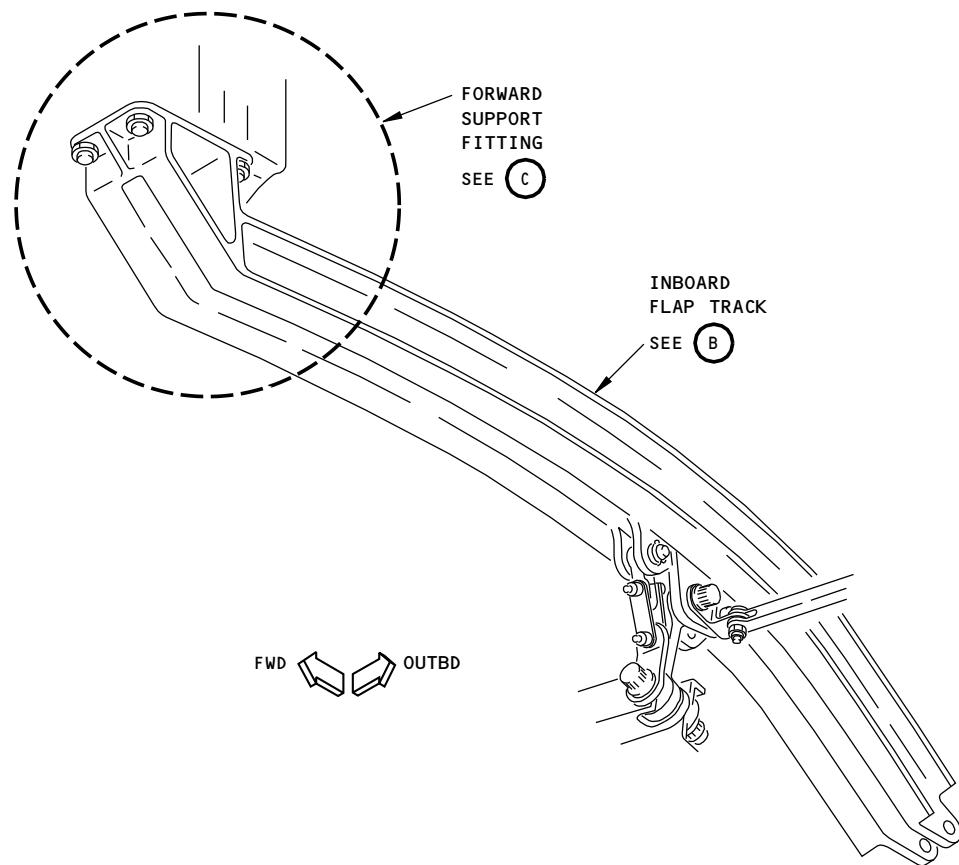
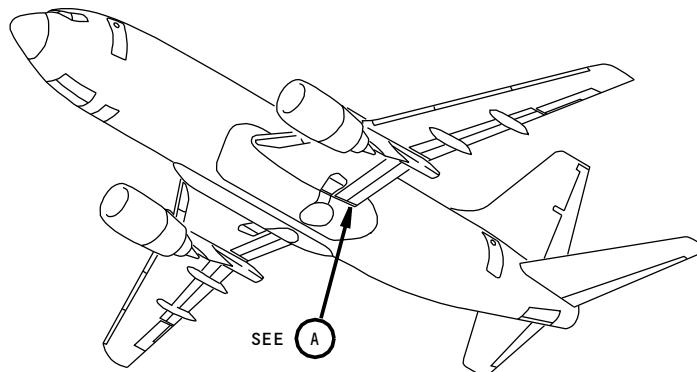
- (1) For the surface inspections, refer to Part 6, 51-00-00, Procedure 24, par. 7, "Inspection Results" to make an analysis of indications that occurred during the inspection.
- (2) For the open hole inspections, refer to Part 6, 51-00-00, Procedure 19, par. 7, "Inspection Results" to make an analysis of indications that occurred during the inspection.

- B. Results of the forward support fitting inspections.

- (1) For the surface inspections, refer to Part 6, 51-00-00, Procedure 23, par. 7, "Inspection Results" (for impedance plane display instruments) to make an analysis of indications that occurred during the inspection.
- (2) For the open hole inspections, refer to Part 6, 51-00-00, Procedure 16, par. 7, "Inspection Results" to make an analysis of indications that occurred during the inspection.



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(LEFT SIDE SHOWN; RIGHT SIDE OPPOSITE)

A

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Inboard Flap - Inboard Flap Track and Forward Support Fitting at WBL 66.5
Figure 1 (Sheet 1 of 3)

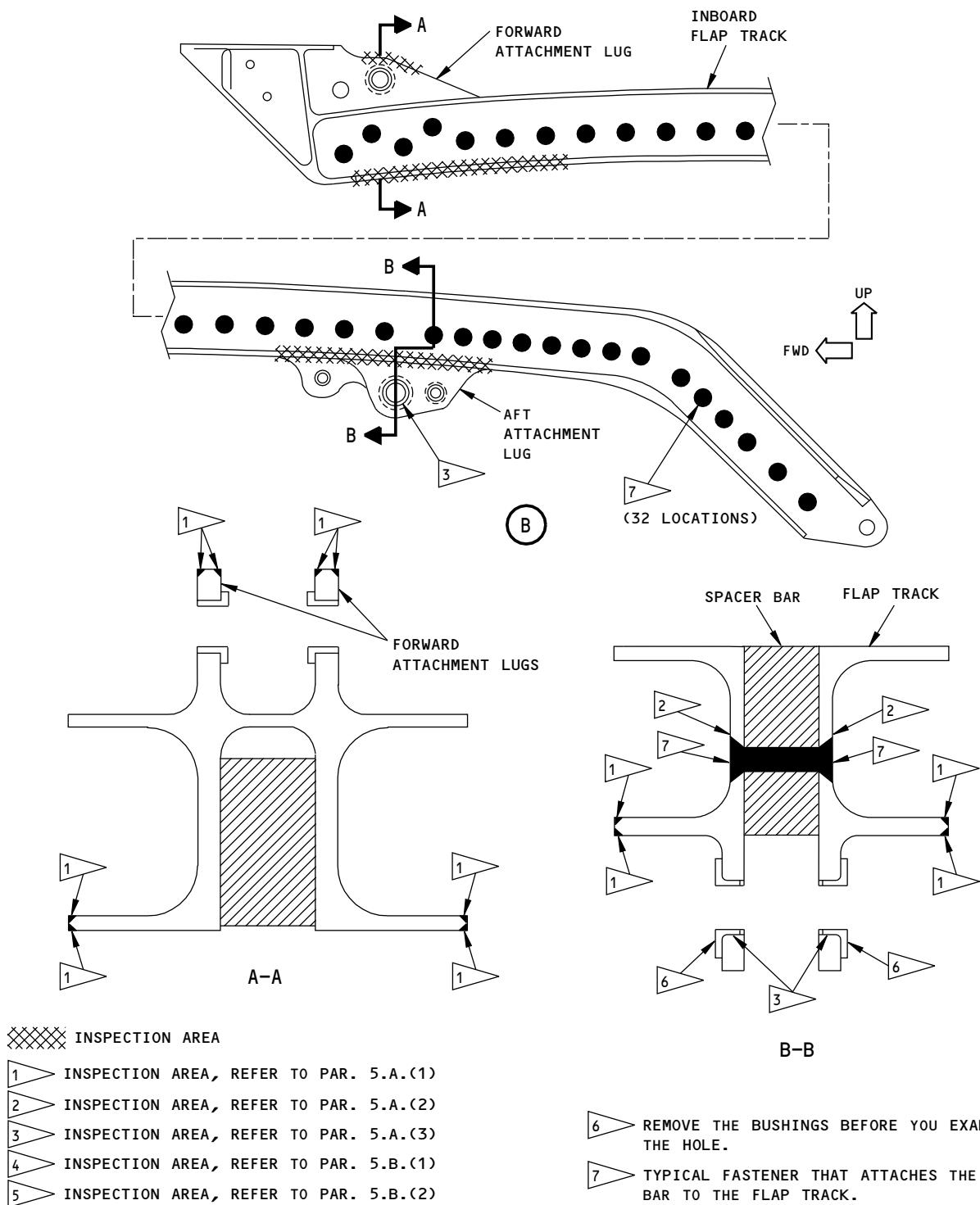
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FLAP TRACK INSPECTION AREAS

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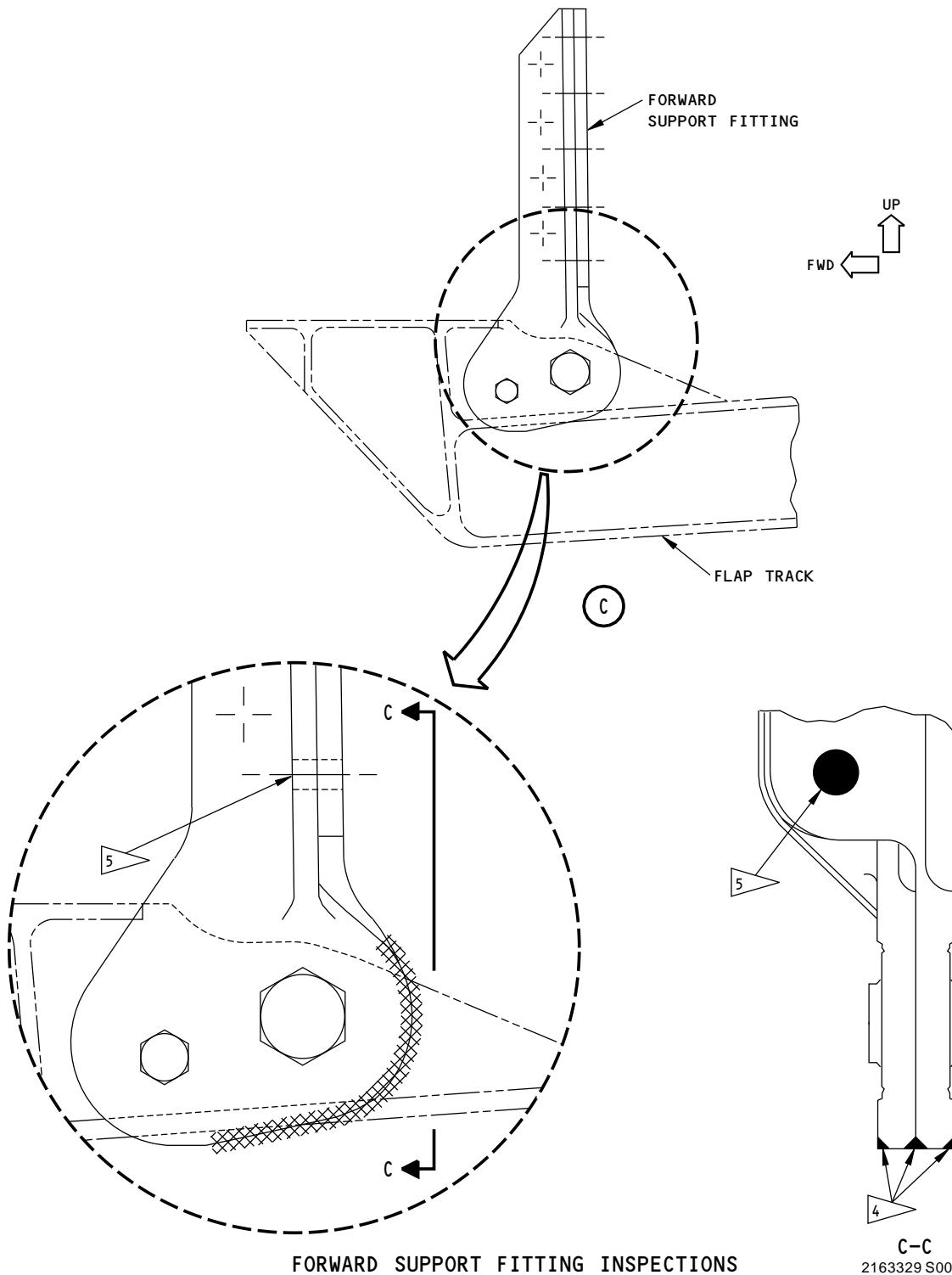
Inboard Flap - Inboard Flap Track and Forward Support Fitting at WBL 66.5
Figure 1 (Sheet 2 of 3)

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Inboard Flap - Inboard Flap Track and Forward Support Fitting at WBL 66.5
Figure 1 (Sheet 3 of 3)

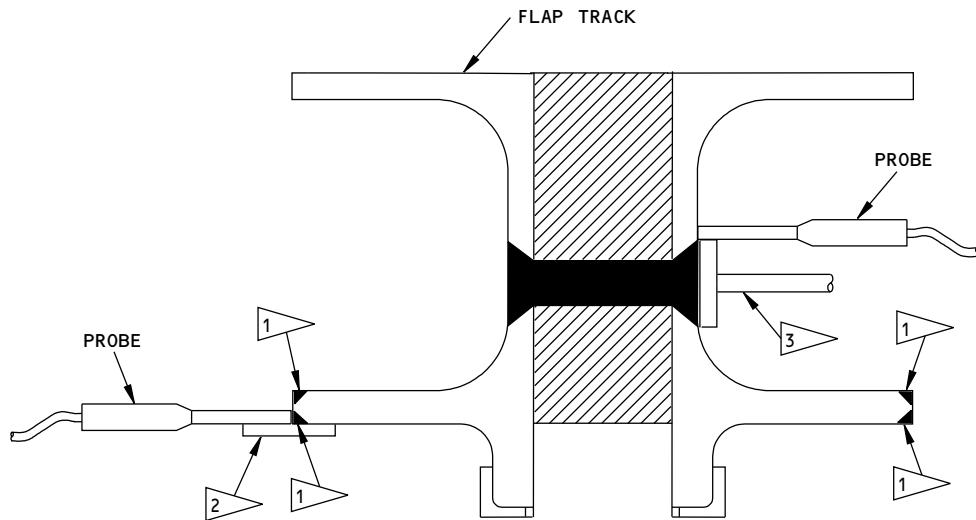
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NOTES:

- 1 TYPICAL CRACK LOCATIONS
- 2 A NONCONDUCTIVE STRAIGHTEDGE USED AS A PROBE GUIDE DURING THE SCAN ALONG THE FLANGE OF THE FLAP TRACK.
- 3 A NONCONDUCTIVE PROBE GUIDE USED DURING THE SCAN AROUND THE FASTENER HEADS.

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Probe and Probe Guide Positions for the Inspections
Figure 2

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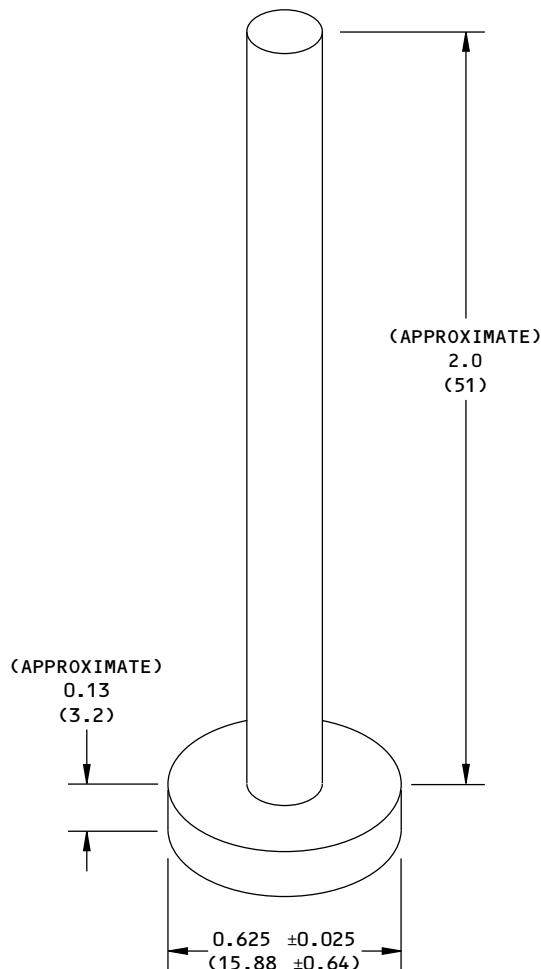
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NOTES:

- MAKE THE DISK FROM A NONCONDUCTIVE MATERIAL
- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)

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Nonconductive Probe Guide (Disk)
Figure 3

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PART 6 - EDDY CURRENT

AFT SUPPORT FITTING AND MAIN LINK FOR THE INBOARD FLAP - INBOARD FLAP TRACK

1. Purpose

- A. Use this procedure to do eddy current surface and open hole inspections to find cracks in the aft support fitting and main link of the inboard flap at the inboard flap track at BS 727 and WL 167.4. See Figure 1 for the location of the aft support fitting and main link.
- B. Use surface eddy current to examine the inspection areas that follow:
 - (1) The outside radius of the clevis lugs of the aft support fitting, where the main link is attached. See Figure 1.
 - (2) The four fastener locations in the lower tension chord of the aft support fitting. See Figure 2.
- C. Use an open hole eddy current inspection to examine the inside diameter of the two lug bores of the main link. See Figure 1.
- D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
 - (1) Item: 57-53-11

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 with a rotary scanner.
 - (b) Operates at a frequency range of 50 kHz to 500 kHz.
- (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 2200 (impedance plane display with a rotary scanner); Hocking Krautkramer
 - (b) Nortec 1000/2000 (impedance plane display with a rotary scanner); Staveley Instruments
 - (c) Elotest B1 (impedance plane display with a rotary scanner); Rohman GmbH

C. Probes

- (1) Probe for the surface inspections:
 - (a) Use a shielded, straight, and/or right angle, pencil probe that has a maximum diameter of 0.13 inch (3.2 mm).
 - (b) Must operate at a frequency range of 50 to 500 kHz.
 - (c) The probes that follow were used to help prepare this procedure.
 - 1) MTF902-50FX; NDT Engineering Corp. (shielded)
 - 2) MTF30; NDT Engineering Corp. (unshielded)
- (2) Probes for the open hole inspections:

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- (a) Use a rotary scanner probe that will examine the 1.19 inch (30.2 mm) inner diameter of the lug bores of the main link. Refer to Part 6, 51-00-00, Procedure 19, par. 3.C.(1) for the probe specifications.
- (b) The probes that follow were used to help prepare this procedure.
 - 1) BXU-72/80; NDT Engineering Corp.
 - 2) VM*101ADJ-1.125/1.250; VM Products

NOTE: The * in the above probe part number identifies the manufacturers rotary scanner. Specify your scanner when you order the probe.

D. Reference Standard

- (1) Reference standards for the surface inspections:
 - (a) Use reference standard 126 and 188A (or the equivalent) identified in Part 6, 51-00-00, Procedure 23, to examine the surfaces of the aft support fitting.
- (2) Reference standard for the open hole inspections:
 - (a) Use a reference standard that will examine the 1.19 inch (30.2 mm) inner diameter of the two lug bores of the main link. Refer to Part 6, 51-00-00, Procedure 19, par. 3.D. for the reference standard specifications.

3. Prepare for the Inspection

- A. Identify all the inspection areas on the aft support fitting (see Figure 2).
- B. Remove the two bearings from the main link.
- C. Clean the inspection area.
 - (1) Remove sealant as necessary.
 - (2) Remove paint only if it is loose.

4. Instrument Calibration

- A. Calibrate the equipment to do the surface inspections identified in Paragraph 1.B. on the aft support fitting as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 23 (impedance plane display instruments). Use the applicable reference standard as follows:
 - (a) Use reference standard 126, or an equivalent, to calibrate for the inspection area identified in Paragraph 1.B.(1).
 - (b) Use reference standard 188A and the steel fastener location to calibrate for the inspection area identified in Paragraph 1.B.(2).
- B. Calibrate the equipment to do the open hole inspection on the main link in the area identified in Paragraph 1.C. as follows:
 - (1) Calibrate the equipment as specified in par. 5, "Instrument Calibration", of Part 6, 51-00-00, Procedure 19 (impedance plane display instruments).
 - (a) Use the reference standard identified in Paragraph 2.D.(2)(a).

5. Inspection Procedure

- A. Examine the aft support fitting as follows:
 - (1) Do the surface inspection of the areas identified in Paragraph 1.B.(1).

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- (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Do surface scans along the outside radius of the clevis lugs. Keep the probe near the edge of the radius during the scan. See Figure 2 for the inspection areas.
 - 1) Refer to Part 6, 51-00-00, Procedure 23, par. 6 "Inspection Procedure". Refer to par. 6.E.(3)(e) for instructions on how to examine near edges.
 - (2) Do the surface inspection of the areas identified in Paragraph 1.B.(2).
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Do scans around the fastener heads and collars shown in Figure 2.
 - 1) Refer to Part 6, 51-00-00, Procedure 23, par. 6, "Inspection Procedure". Refer to par. 6.E.(3)(c) for instructions on how to examine around protruding head fasteners.
- B. Examine the main link as follows:
- (1) Do the open hole inspection of the area identified in Paragraph 1.C.
 - (a) Calibrate the instrument as specified in Paragraph 4.B.
 - (b) Do an inspection of the inside diameter of the two lug bores as specified in Part 6, 51-00-00, Procedure 19, par. 6, "Inspection Procedure".
- NOTE:** Make sure the inside diameter of the bore is free of bearing material that could have remained after the bushing was removed. The chamfers on the outside of the hole are not included in this inspection.

6. Inspection Results

- A. Results of the surface inspections on the aft support fitting.
 - (1) Refer to Part 6, 51-00-00, Procedure 23, par. 7, "Inspection Results", to make an analysis of indications that occurred during the inspection.
- B. Results of the open hole inspections on the main link.
 - (1) Refer to Part 6, 51-00-00, Procedure 19, par. 7, "Inspection Results", to make an analysis of indications that occurred during the inspection.

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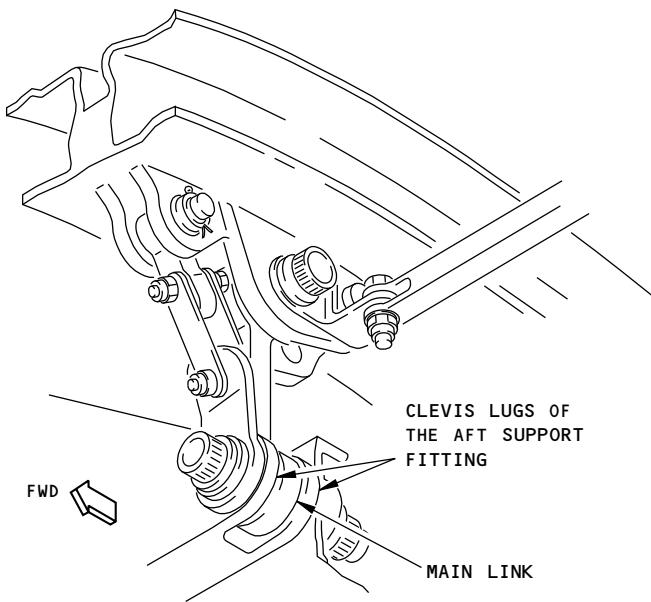
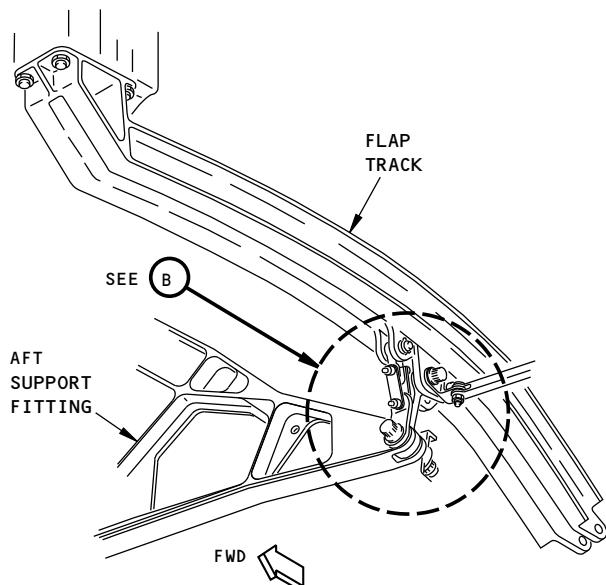
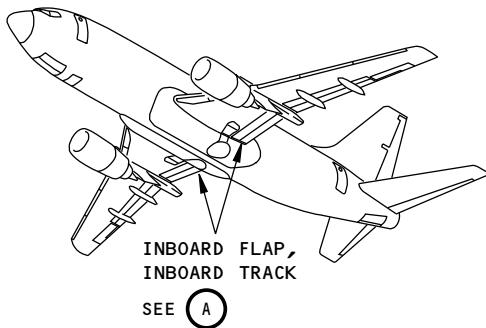
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AFT SUPPORT FITTING AND MAIN LINK

(B)

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Aft Support Fitting and Main Link for the Inboard Flap Track
Figure 1

EFFECTIVITY
ALL; 737-100/-200/-200C/-300/-400/-500 AIRPLANES

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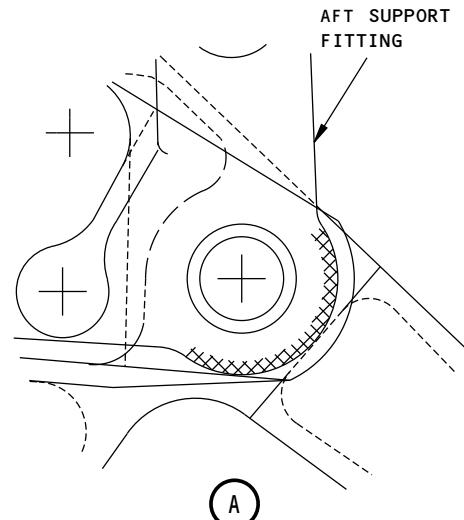
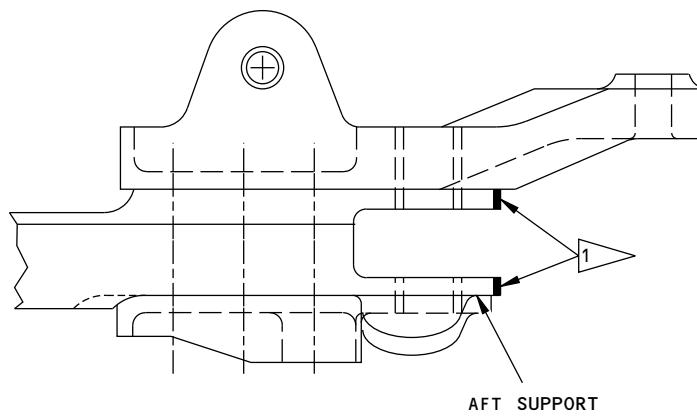
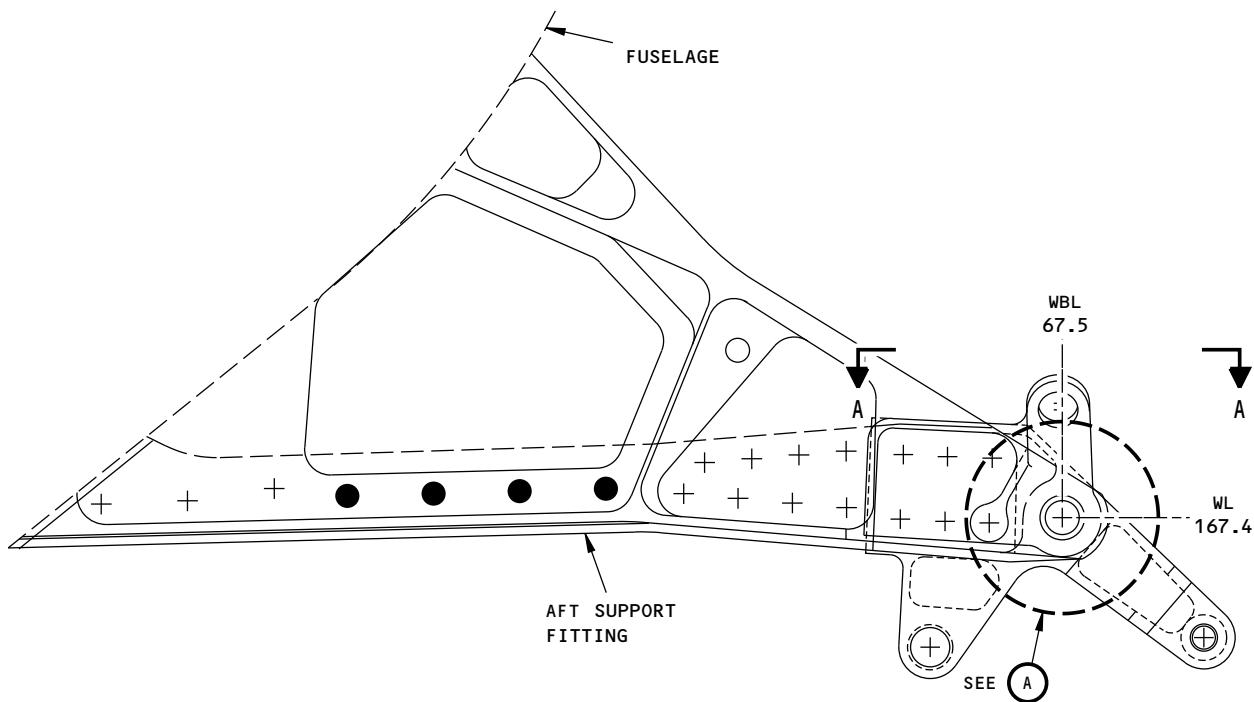
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INSPECTION AREA

INSPECTION AREA, REFER TO PAR. 5.A.(1)

INSPECTION AREA (4 FASTENER LOCATIONS), REFER TO PAR. 5.A.(2)

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Inspection Areas
Figure 2

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PART 6 - EDDY CURRENT

**SURFACE INSPECTION OF THE OUTBOARD MIDFLAP - FRONT SPAR CHORDS BETWEEN WBL
237-273, WBL 301-307.5 AND WBL 338.5-373.5**

1. Purpose

- A. Use this procedure to examine the upper and lower chords in the front spar of the outboard midflap for surface cracks. It is necessary to remove the lower skin panel of the outboard midflap to do this inspection.
- B. The inspection area for the vertical flange of the upper chord is between WBL 301 and 307.5. The inspection is done along the edge of the vertical flange. See Figure 1.
- C. The inspection area for the vertical flange of the lower chord is at the opening in the front spar at WBL 304.3. The inspection is done along the edge of the vertical flange. See Figure 1.
- D. The inspection area for the horizontal flange of the lower chord is between WBL 237 and 273 and between WBL 338.5 and 373.5. The inspection is done around the fastener holes of the horizontal flange of the lower chord. See Figure 1.
- E. This procedure uses an impedance plane display instrument or a meter display instrument.
- F. 737 Supplemental Structural Inspection Document (D6-37089; D6-82669) Reference:
 - (1) Item: L-26A

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 kHz 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) One angled probe is necessary to do the inspection of the lower and upper chord edges from WBL 301 to 307.5. An angled or a straight probe can be used to do the inspection around the fastener holes in the horizontal flange of the lower chord.
 - (2) The angled probe must:

NOTE: The angled probe can be used to examine all of the inspection areas.

 - (a) Operate at a frequency between 50 kHz and 500 kHz.
 - (b) Have a 90-degree angle with a minimum drop of 0.10 inch (2.54 mm).

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- (c) Have a shaft length between 2.0 and 3.0 inches (51 and 76 mm).
 - (d) Have a maximum external diameter of 0.130 inch (3.3 mm).
 - (e) Be shielded.
 - (f) Operate as specified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.
- (3) The optional straight probe must:
- NOTE:** The straight probe can only be used to do the scan around the holes of the lower chord.
- (a) Operate at a frequency between 50 kHz and 500 kHz.
 - (b) Have a shaft length between 1.0 and 3.0 inches (25 and 76 mm).
 - (c) Have a maximum external diameter of 0.130 inch (3.3 mm).
 - (d) Be shielded.
 - (e) Operate as specified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.
- (4) The probes that follow were used to help prepare this procedure.
- (a) MTF901-50FX/50-300 kHz; NDT Engineering Corp. Angled probe (for chord edges and around fastener holes).
 - (b) MTF902-50B/50K-300K; NDT Engineering Corp. Angled probe (for chord edges and around fastener holes).
 - (c) MTF30/50-300 kHz; NDT Engineering Corp. Optional straight probe (for around fastener holes only).

D. Reference Standards

- (1) Use reference standard 189 to do a calibration for the inspection of the chord edges between WBL 301 and WBL 307.5. Refer to Figure 7 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, to make this reference standard.
- (2) Use reference standard NDT1048 or 126 to do a calibration for the inspection around the holes in the horizontal flange of the lower chord. Refer to Figure 5 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for reference standard NDT1048. Refer to Figure 4 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for reference standard 126.

E. Special Tools

- (1) An optional nonconductive straightedge can be used during the inspection of the upper and lower chord edges between WBL 301 and WBL 307.5.
- (2) Use a circle template to help do the probe scans around the fastener holes in the horizontal flange of the lower chord.
- (3) A mirror and a flashlight can be used to see the upper chord edge that is inboard and outboard of the front spar opening at WBL 304.3.
- (4) An optional borescope can be used to see the upper chord edge that is inboard and outboard of the front spar opening at WBL 304.3.

3. Prepare for the Inspection

- A. Extend the outboard flaps.
- B. Remove the lower skin on the outboard midflap along the front spar. As an alternative, you can remove the midflap from the airplane and then remove the lower skin on the midflap along the front spar.
- C. Remove the flap track from the opening of the front spar at WBL 304.3.

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- D. Make sure the edges of the upper and lower chords are clean in the inspection area at the front spar opening at WBL 304.3. See Figure 1 for these inspection areas.
- E. Make sure the bottom of the lower chord is clean in the inspection areas. See Figure 1 for these inspection areas.

4. Instrument Calibration

- A. Calibrate the instrument for the inspection of the upper and lower chord edges between WBL 301 and WBL 307.5 as follows:
 - (1) Use reference standard 189 for the calibration. Refer to Figure 7 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for reference standard 189.
 - (2) Do the calibration on the edge of reference standard 189 that is 0.075 to 0.085 inches (1.9 to 2.1 mm) thick.
 - (3) Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for the calibration instructions.
- B. Calibrate the instrument for the inspection of the bottom of the lower chord around the fastener holes as follows:
 - (1) Use reference standard NDT1048 or 126 to do a calibration for the inspection around the holes in the horizontal flange of the lower chord. Refer to Figure 5 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for reference standard NDT1048. Refer to Figure 4 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for reference standard 126.
 - (2) 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. Examine the edges of the upper and lower chords for cracks between WBL 301 and WBL 307.5 as follows:
 - (1) Do the calibration as specified in Paragraph 4.A.
 - (2) Put the probe on the edge of the upper chord in the inspection area between WBL 301 and WBL 307.5 (see Figure 1).
 - (3) Balance the instrument.
 - (4) Do a scan in an inboard to outboard direction on the edge of the upper chord, between WBL 301 and WBL 307.5.
NOTE: A small mirror and light source can help to see the edge of the upper chord that is inboard and outboard of the front spar opening at WBL 304.3. A borescope can also be used to help you see this inspection area.
 - (5) Put the probe on the edge of the lower chord in the inspection area at WBL 304.5 (see Figure 1).
 - (6) Balance the instrument.
 - (7) Do a scan in an inboard to outboard direction on the edge of the lower chord from the lower inboard radius of the front spar opening to the lower outboard radius (see Figure 1).
 - (8) Do Paragraph 5.A.(1) thru Paragraph 5.A.(7) on the outboard midflap on the other side of the airplane.
- B. Examine the lower chord for cracks around the fastener holes as follows:
 - (1) Do the calibration as specified in Paragraph 4.B.

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- (2) Put the probe on the bottom of the horizontal flange of the lower chord in the inspection area (see Figure 1).
- (3) Balance the instrument.
- (4) Do circular scans with a circle template around all of the fastener holes in the inspection area between WBL 237 and 273 and between WBL 338.5 and 373.5. Make sure the circle template and probe are near the fastener hole but will not cause an edge effect. Do a circular scan around the forward and aft areas of the hole. Do not do a scan across the nutplate retainer holes that are on the outboard and inboard sides of the fastener holes. The nutplate retainer holes can give crack indications if the probe moves across them. See Figure 1 for the inspection areas.
- (5) Do Paragraph 5.B.(1) thru Paragraph 5.B.(4) on the outboard midflap on the other side of the airplane.

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.

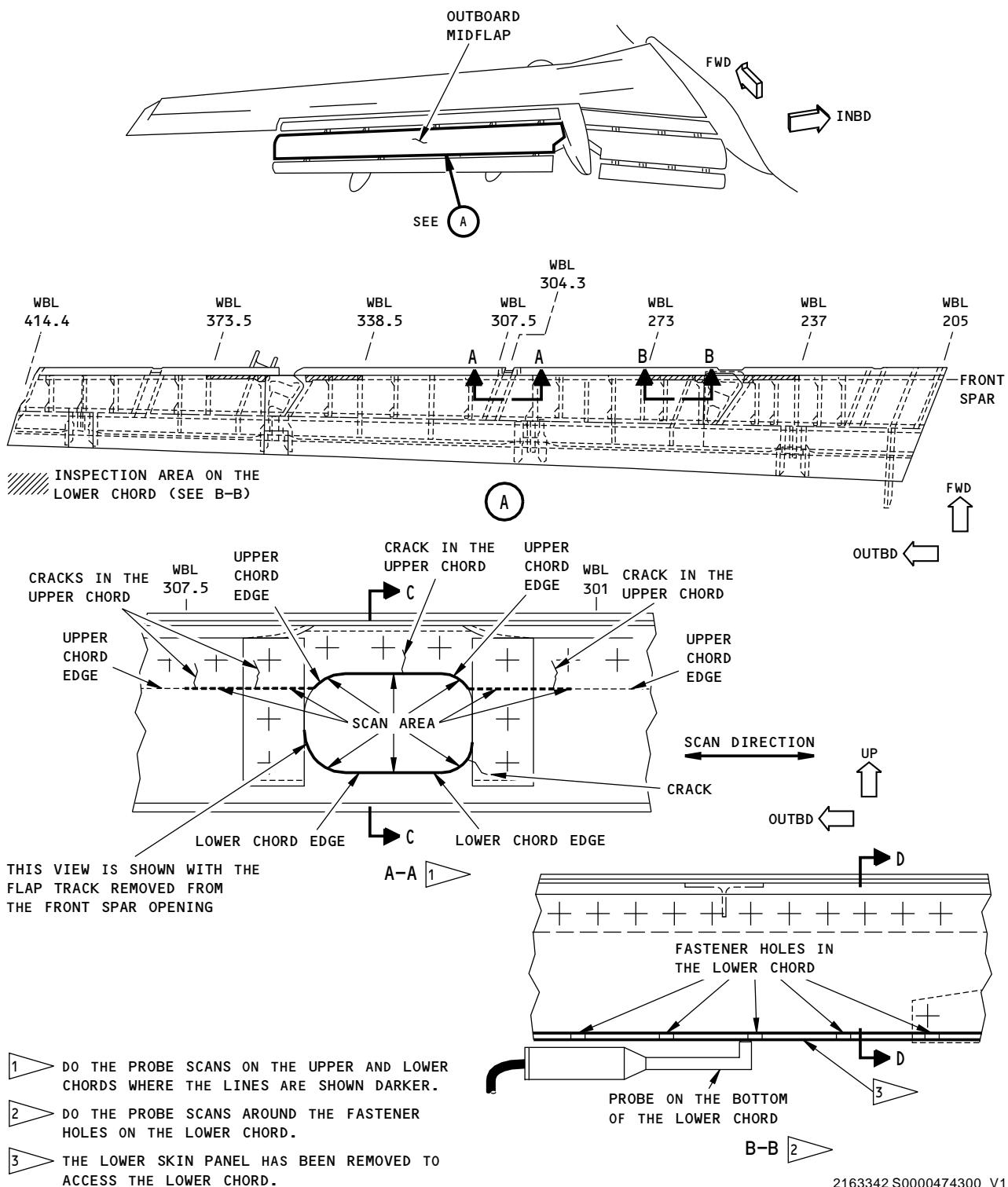
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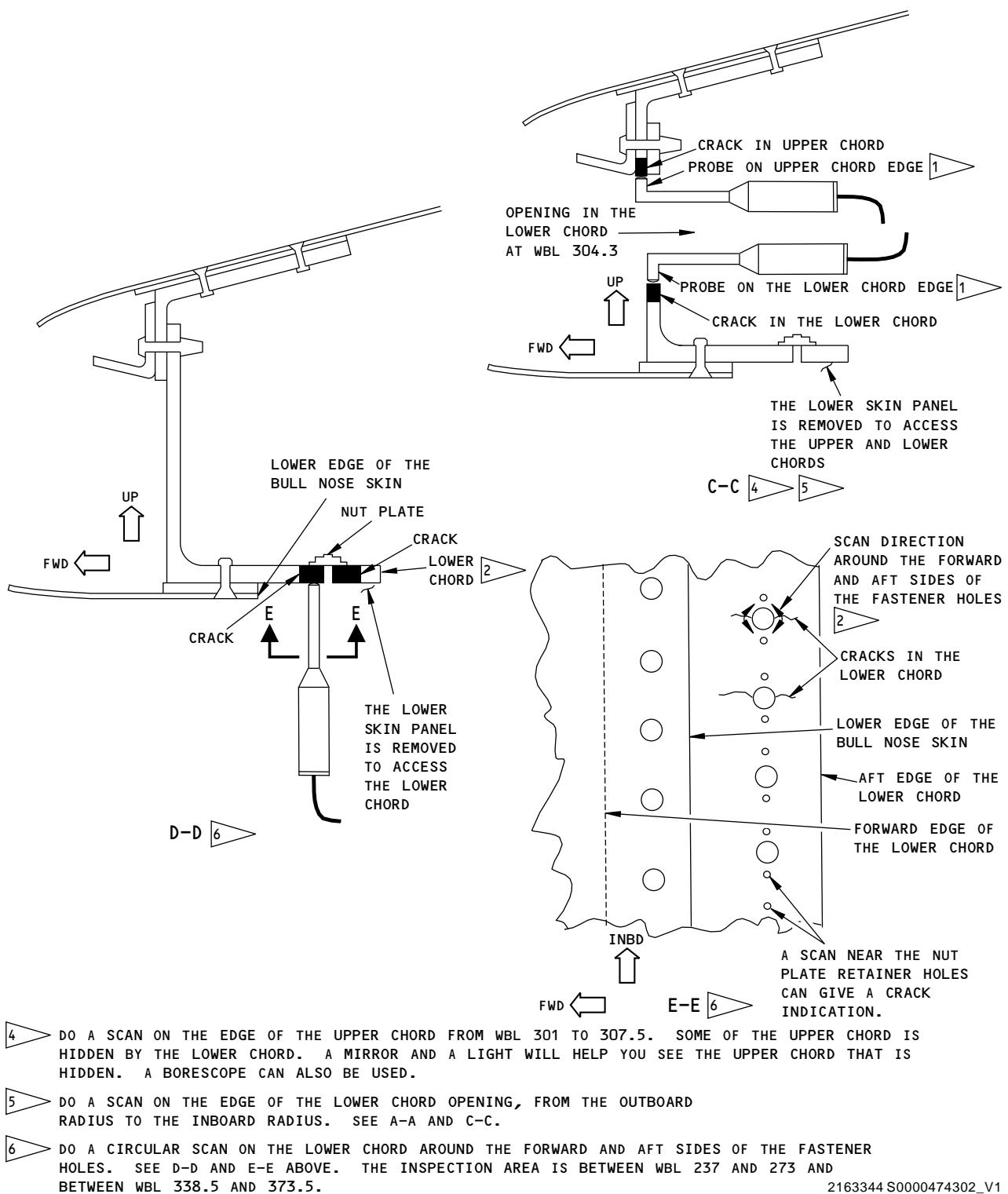


Inspection Areas on the Front Spar of the Outboard Midflap
Figure 1 (Sheet 1 of 2)

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Inspection Areas on the Front Spar of the Outboard Midflap
Figure 1 (Sheet 2 of 2)

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PART 6 - EDDY CURRENT

**SURFACE INSPECTION OF THE INBOARD MIDFLAP - FRONT SPAR CHORDS AT WBL 84.96,
117.10 AND 159.50**

1. Purpose

- A. Use this procedure to examine the upper and lower chords of the front spar in the inboard midflap for cracks. The inspection areas on the upper and lower chords of the front spar are at the web cutouts at WBL 84.96, WBL 117.10 and WBL 159.50. The scan is done along the edges of the upper and lower chords at the web cutouts. See Figure 1 for the inspection areas.
- B. This procedure uses an impedance plane display instrument or a meter display instrument. The possible cracks are at the edges of the upper and lower chords. The probe scans are done in an inboard to outboard direction along the edges of the upper and lower chords at the three WBL inspection locations. The probe scans are also done on the chords in the corner radii of the web openings. See Figure 1 for the inspection areas.
- C. 737 Supplemental Structural Inspection Document (D6-37089; D6-82669) Reference:
 - (1) Item: L-32A

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 kHz 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) The probe used to do this procedure must:
 - (a) Operate at a frequency between 50 kHz and 500 kHz.
 - (b) Have a 90 degree angle with a maximum drop of 0.75 inch (19 mm).
 - (c) Have a maximum external diameter of 0.09 inch (2.3 mm).
 - (d) Be shielded.
 - (e) Operate as specified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.
 - (2) The probes that follow were used to help prepare this procedure.
 - (a) MMTF901-60FX 50-500 kHz; NDT Engineering Corp.
 - (b) MMTF902-45 50-500 kHz; NDT Engineering Corp.
 - (c) SPC-221/50-500K; EC-NDT LLC.

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D. Reference Standards

- (1) Use reference standard 189 to do a calibration for this inspection. Refer to Figure 7 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, to make this reference standard.

E. Special Tools

- (1) A nonconductive straightedge (probe guide) is put on the forward side of the upper and lower chords during the probe scans.
- (2) It is optional to use double faced tape to keep the nonconductive probe guide on the forward side of the upper and lower chord during the inspection.

3. Prepare for the Inspection

- A. Extend the inboard flaps.
- B. Remove the lower skin on the midflap along the front spar. As an alternative, you can remove the midflap from the airplane and then remove the lower skin on the midflap along the front spar.
- C. Get access to the inspection areas on the front spar of the midflap at WBL 84.96, WBL 117.10 and WBL 159.50. There are flap track access holes in the web of the front spar at the three inspection areas.
- D. Make sure the edges of the upper and lower chords are clean at the three web access holes at WBL 84.96, WBL 117.10 and WBL 159.50. See Figure 1 for these inspection areas.

4. Instrument Calibration

- A. Use reference standard 189 for the calibration. Refer to Figure 7 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for data about reference standard 189.
- B. Put a nonconductive straightedge along the edge of the 0.055 to 0.065 inch (1.4 to 1.7 mm) thick skin on reference standard 189. Refer to Figure 13 in Part 6, 51-00-00, Procedure 4 or Figure 11 in Part 6, 51-00-00, Procedure 23, to see how the probe scan is done with a straightedge on reference standard 189.
- C. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, as applicable.

5. Inspection Procedure

- A. Hold the nonconductive straightedge on the forward side of the upper chord in one of the inspection areas shown in Figure 1 at WBL 84.96, WBL 117.10 and WBL 159.50. See Figure 1, Sheet 2 to see where the straightedge goes and where the probe scans are done. If double faced tape is put on the straightedge, it will not be necessary to hold the straightedge on the upper chord with your finger.
- B. Put the probe on the edge of the upper chord along the side of the straightedge. See Figure 1, Sheet 2 to see the probe on the chord edges.
- C. Balance the instrument.
- D. Do the probe scan in an inboard to outboard direction for the full width of the web opening in the inspection area. See Figure 1. Make sure the scan is also done on the chords in the corner radii of the web openings. The scan area is shown in Figure 1, Sheet 1 with dark lines on the upper and lower chords.
- E. Do Paragraph 5.A. thru Paragraph 5.D. on the lower chord in the inspection area.
- F. Do Paragraph 5.A. thru Paragraph 5.E. on the other two inspection areas shown in Figure 1, Sheet 1.
- G. Do Paragraph 5.A. thru Paragraph 5.F. on the other inboard midflap.

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6. Inspection Results

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

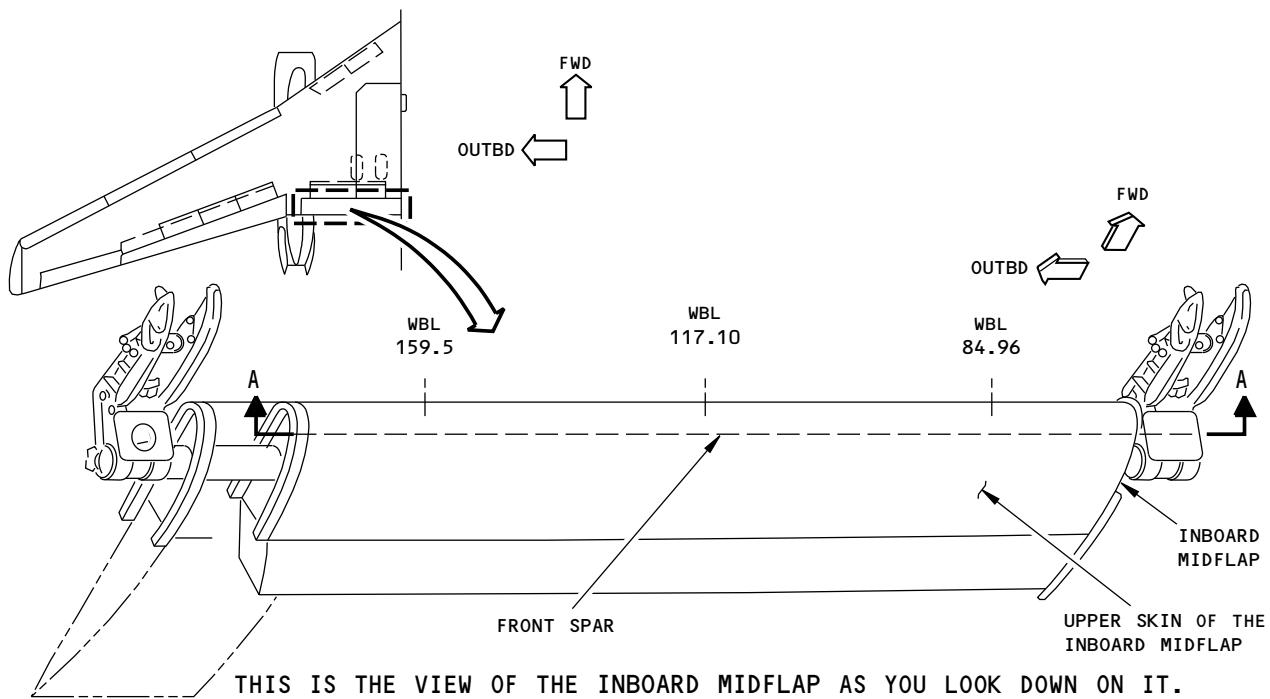
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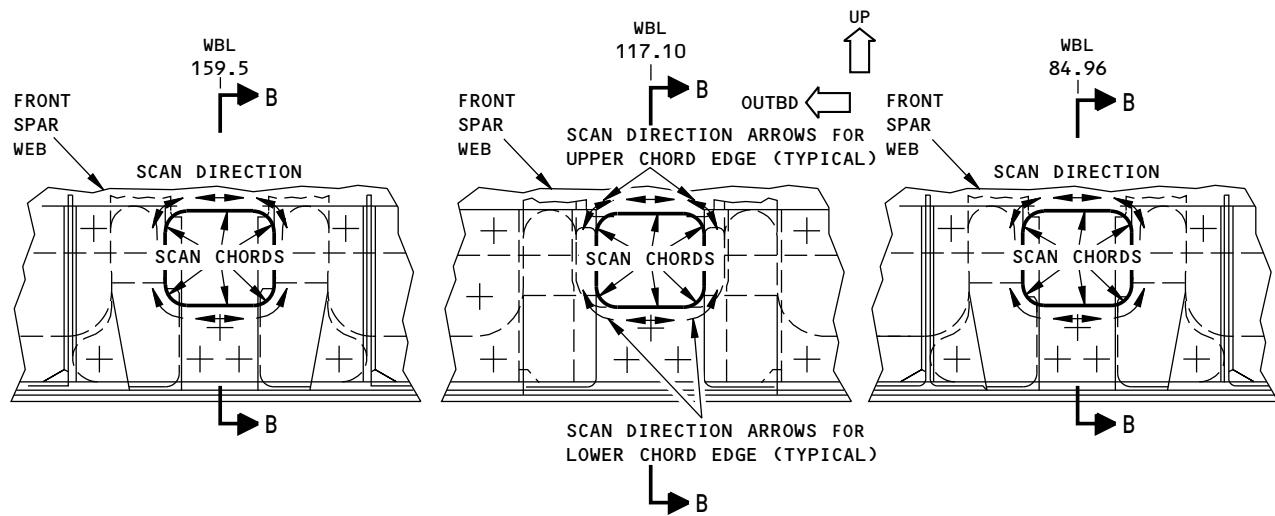
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THIS IS THE VIEW OF THE INBOARD MIDFLAP AS YOU LOOK DOWN ON IT.



VIEW OF THE INSPECTION AREAS ON THE FRONT SPAR
OF THE INBOARD MIDFLAP AS YOU LOOK FORWARD.

NOTES:

A-A

- SEE B-B IN FIGURE 1, SHEET 2 TO SEE A VIEW OF THE INSPECTION AREAS WITH A PROBE SHOWN ON THE EDGE OF THE UPPER AND LOWER CHORDS.
- DO THE PROBE SCAN ON THE CHORDS IN THE DIRECTIONS SHOWN BY THE ARROWS AROUND THE WEB OPENING IN THE FORWARD SPAR. THE CHORD EDGES ARE SHOWN WITH DARK LINES AROUND THE OPENINGS OF THE FRONT SPAR WEB.

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Inspection Areas and Probe Scan
Figure 1 (Sheet 1 of 2)

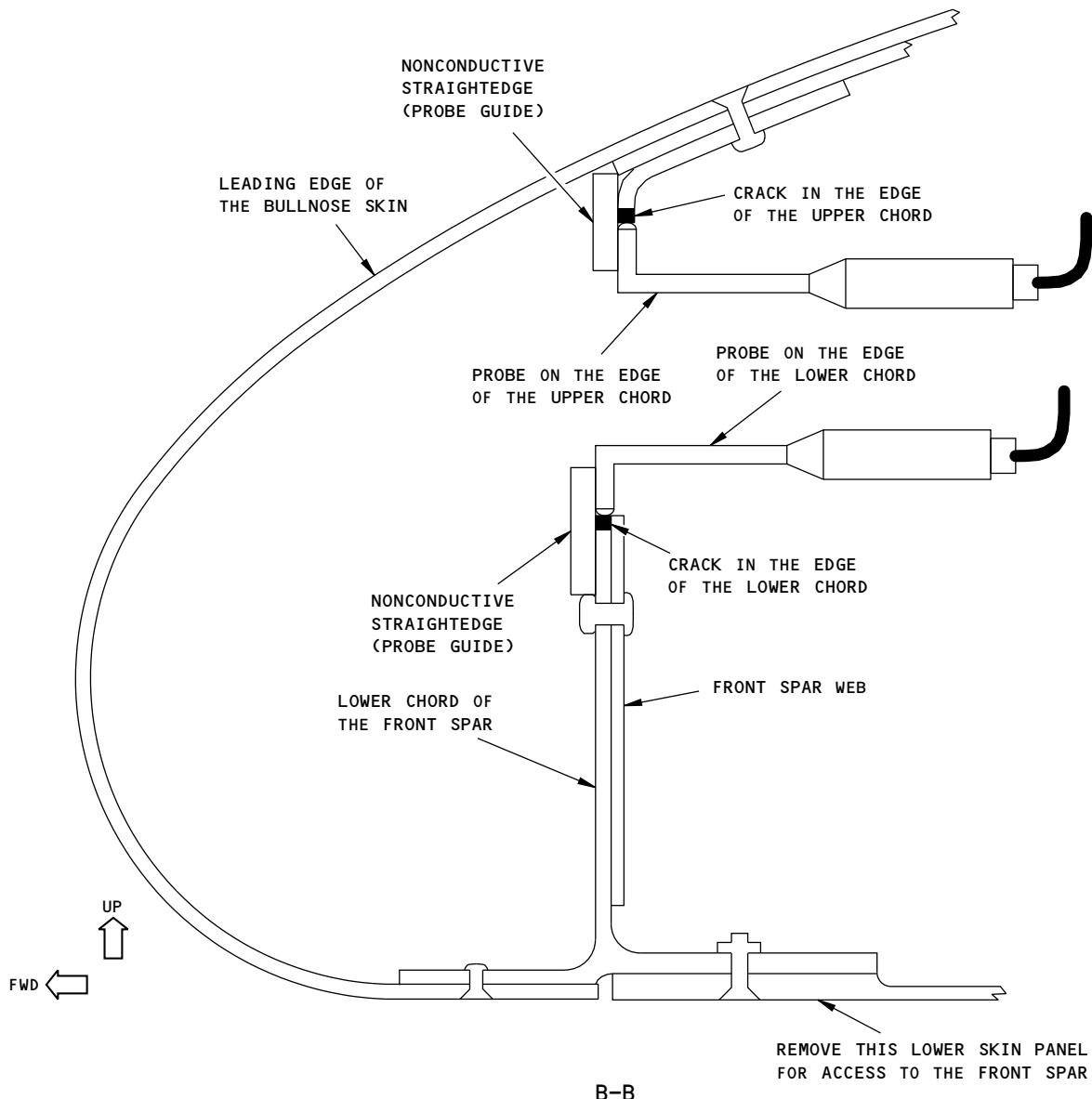
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NOTES:

- THIS VIEW IS TYPICAL FOR WBL 84.96, WBL 117.10 AND WBL 159.5
- PUT THE PROBE ON THE EDGES OF THE UPPER AND LOWER CHORDS AS SHOWN ABOVE. SEE THE SCAN DIRECTION ARROWS AND DARK INSPECTION AREA LINES IN A-A FOR MORE DATA ON THE INSPECTION AREA AND SCAN DIRECTION.

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Inspection Areas and Probe Scan
Figure 1 (Sheet 2 of 2)

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PART 6 - EDDY CURRENT

**SURFACE INSPECTION OF THE INBOARD MIDFLAP - MID SPAR CHORDS AND WEB AT WBL
84.96, 117.10 AND 159.50**

1. Purpose

- A. Use this procedure to examine the upper chords and the web at the web cutouts of the mid spar in the inboard midflap for cracks. The inspection areas on the upper chord are at WBL 84.96, WBL 117.10 and WBL 159.50. The scans on the upper chord are done along the edge of the chord, around the fasteners and along the edge of the stiffener adjacent to WBL 117.10. See Figure 1, for the inspection areas.
- B. The inspection areas on the web are at the web cutouts at WBL 84.96 and WBL 159.5. See Figure 1, for these inspection areas.
- C. This procedure uses an impedance plane display instrument or a meter display instrument.
- D. 737 Supplemental Structural Inspection Document (D6-37089, D6-82669) Reference:
 - (1) Item: L-33B
 - (2) Item: L-33C

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 kHz 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) The probe used to do this procedure must:
 - (a) Operate at a frequency between 50 kHz and 500 kHz.
 - (b) Have a 90 degree angle with a maximum drop of 0.75 inch (19 mm).
 - (c) Have a maximum external diameter of 0.09 inch (2.3 mm).
 - (d) Be shielded.
 - (e) Operate as specified in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23.
 - (2) The probes that follow were used to help prepare this procedure.
 - (a) MMTF901-60FX 50-500 kHz; NDT Engineering Corp.
 - (b) MMTF902-45 50-500 kHz; NDT Engineering Corp.

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(c) SPC-221/50-500K; EC-NDT LLC.

D. Reference Standards

- (1) Use reference standard 188A to do a calibration for the inspection around the fasteners on the upper chord and on the chord along the edge of the stiffener. Refer to Figure 6 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, to make this reference standard.
- (2) Use reference standard 189 to do a calibration for the inspection of the lower edge of the upper chord and on the web at the web cutouts. Refer to Figure 7 in Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, to make this reference standard.

E. Special Tools

- (1) Optional: Use a nonconductive straightedge (probe guide) to do the scan on the bottom edge of the upper chord at WBL 117.10. See flagnote 4 in Figure 1.

3. Prepare for the Inspection

- A. Extend the inboard flaps.
- B. Remove the lower skin that is immediately aft of the mid spar on the midflap. As an alternative, you can remove the midflap from the airplane and then remove the lower skin on the midflap immediately aft of the mid spar.
- C. Get access to the inspection areas on the aft side of the mid spar at WBL 84.96, WBL 117.10 and WBL 159.50. See Figure 1.
- D. Make sure the edges of the upper chord and the web are clean in the scan areas shown in Figure 1.

4. Instrument Calibration

- A. Calibrate for the inspection around the fasteners on the upper chord and on the chord along the edge of the stiffener with reference standard 188A. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, as applicable, for the calibration instructions.
- B. Calibrate for the inspection of the lower edge of the upper chord and on the web at the web cutouts with reference standard 189. Do the calibration on the skin of the reference standard that is 0.100 inch (2.5 mm) thick. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, as applicable, for the calibration instructions.

5. Inspection Procedure

- A. Examine the corners of the web openings for cracks at WBL 84.96 and WBL 159.5 as follows:
 - (1) Do the calibration as specified in Paragraph 4.B.
 - (2) Put the probe on a corner of a web opening in the inspection area as shown by flagnote 1 in Figure 1.
 - (3) Balance the instrument.
 - (4) Do the scans around the corners of the web openings as shown by flagnote 1 in Figure 1.
- B. Examine the upper chord for cracks at the fastener locations as follows:
 - (1) Do the calibration as specified in Paragraph 4.A.
 - (2) Put the probe on the aft side of the upper chord, adjacent to a fastener in the inspection area. See flagnote 2 in Figure 1, for this inspection area.
 - (3) Balance the instrument.
 - (4) Do a scan around the fasteners that are identified by flagnote 2 in Figure 1.

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- C. Examine the upper chord for cracks above the stiffener, immediately inboard of WBL 117.10, as follows:
 - (1) Do the calibration as specified in Paragraph 4.A.
 - (2) Put the probe on the upper chord above the stiffener, immediately inboard of WBL 117.10. See flagnote 3 in Figure 1.
 - (3) Balance the instrument.
 - (4) Do a scan on the upper chord in an inboard to outboard direction. The scan area is shown by flagnote 3 in Figure 1.
- D. Examine the lower edge of the upper chord for cracks at WBL 117.10 as follows:
 - (1) Do the calibration as specified in Paragraph 4.B.
 - (2) Put the probe on the lower edge of the upper chord at WBL 117.10 (see flagnote 4 in Figure 1). An optional straightedge can be used to keep the probe on the edge of the chord.
 - (3) Balance the instrument.
 - (4) Do a scan of the chord edge in an inboard to outboard direction as shown by flagnote 4 in Figure 1.

6. Inspection Results

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

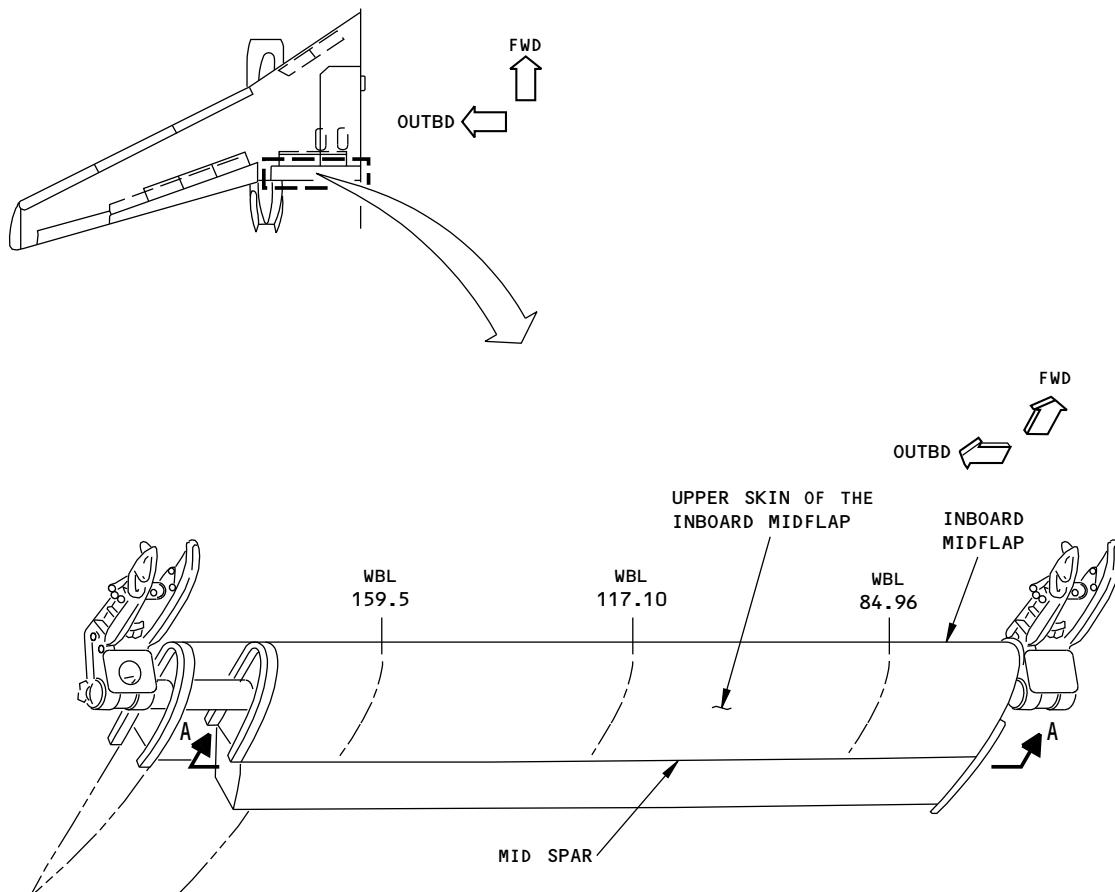
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Inspection Areas on the Mid Spar of the Inboard Midflap
Figure 1 (Sheet 1 of 4)

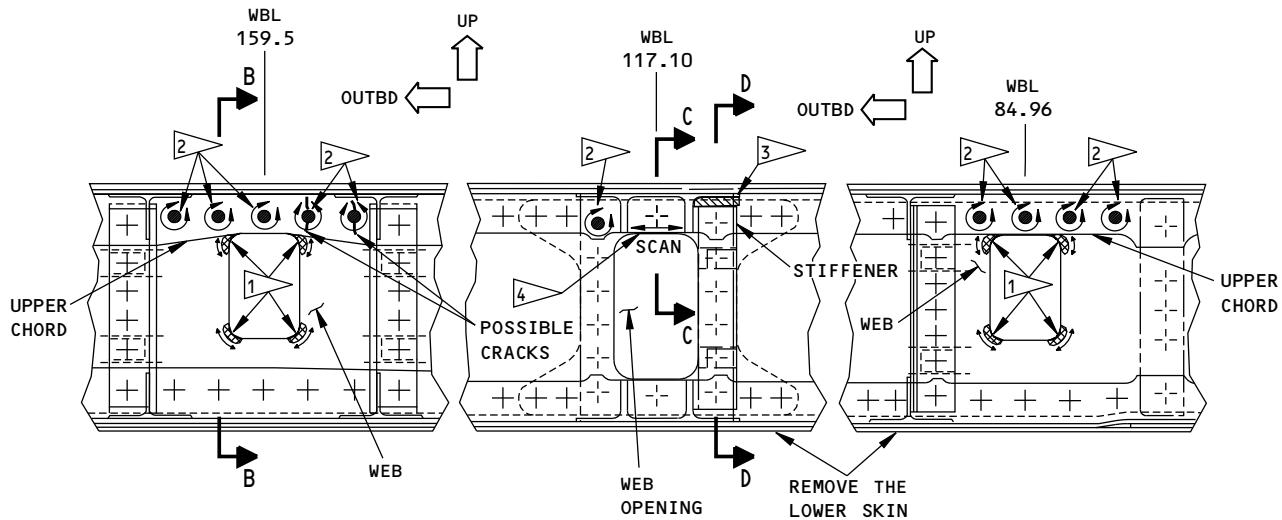
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VIEW OF THE INSPECTION AREAS ON THE MID SPAR OF THE
INBOARD MIDFLAP AS YOU LOOK FORWARD

A-A

NOTES:

= SCAN AREA ON THE WEB CORNERS.

= SCAN AREA ON THE UPPER CHORD AROUND THE FASTENERS.

= SCAN AREA ON THE UPPER CHORD ABOVE THE STIFFENER.

- PUT THE PROBE ON THE AFT SURFACE OF THE WEB ALONG THE EDGE OF THE CORNERS OF THE WEB OPENINGS AT WBL 84.96 AND 159.5. DO THE SCAN IN THE DIRECTION SHOWN BY THE ARROWS ALONG THE SCAN AREA. SEE B-B FOR A SIDE VIEW WITH THE PROBE SHOWN.
- PUT THE PROBE ON THE AFT SURFACE OF THE UPPER CHORD, ADJACENT TO THE FASTENERS. DO A CIRCULAR SCAN AROUND THESE FASTENERS AS SHOWN BY THE ARROWS AROUND THE FASTENERS. SEE B-B FOR A SIDE VIEW WITH THE PROBE SHOWN.
- PUT THE PROBE ON THE AFT SURFACE OF THE UPPER CHORD ALONG THE EDGE OF THE STIFFENER. SEE THE SCAN AREA ON THE CHORD ABOVE THE STIFFENER. USE THE STIFFENER EDGE AS A PROBE GUIDE. DO THE SCAN IN AN INBOARD TO OUTBOARD DIRECTION TO FIND CRACKS IN A VERTICAL DIRECTION. SEE B-B FOR A SIDE VIEW WITH THE PROBE SHOWN.
- PUT THE PROBE ON THE BOTTOM EDGE OF THE UPPER CHORD AT WBL 117.10 AS SHOWN. DO A SCAN IN AN INBOARD TO OUTBOARD DIRECTION AS SHOWN BY THE SCAN DIRECTION ARROW. SEE C-C FOR A SIDE VIEW WITH THE PROBE SHOWN.

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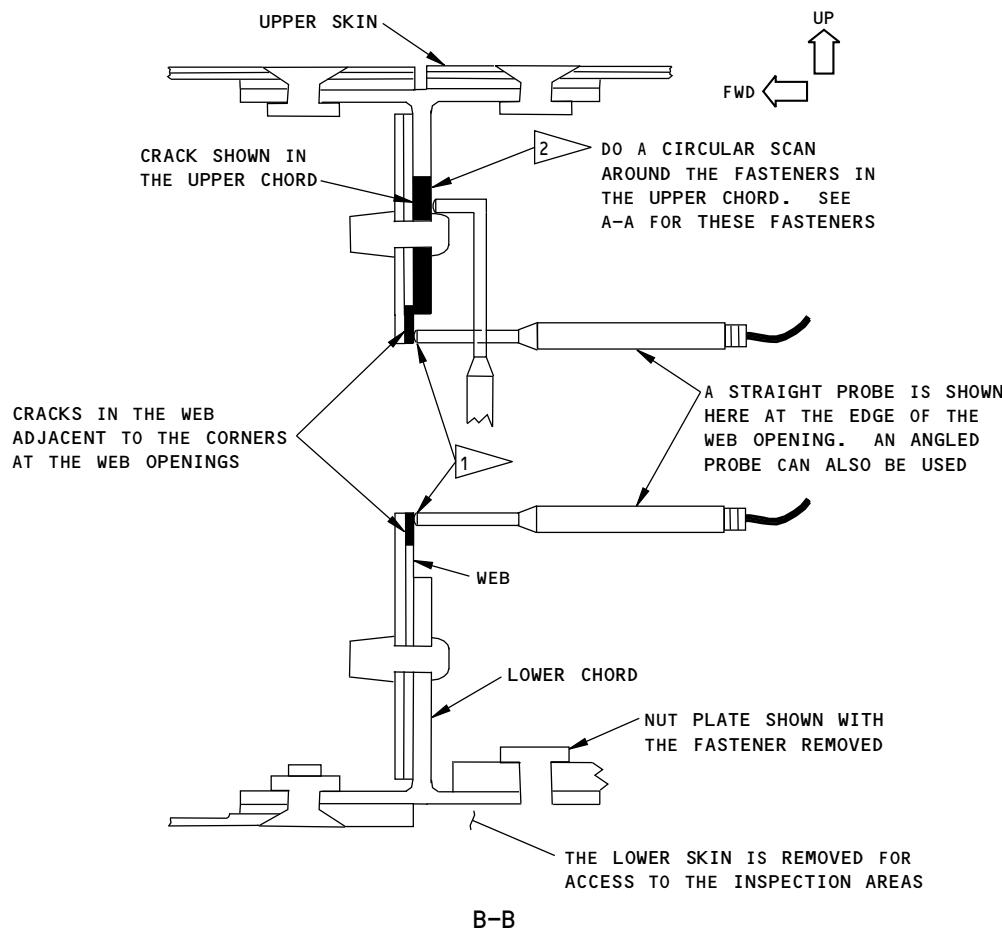
Inspection Areas on the Mid Spar of the Inboard Midflap
Figure 1 (Sheet 2 of 4)

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ALL; 737-200 AIRPLANES

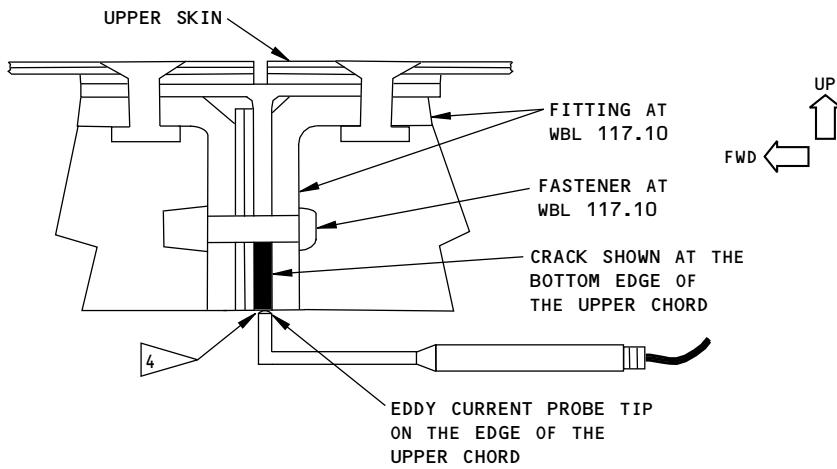
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B-B



C-C

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Inspection Areas on the Mid Spar of the Inboard Midflap
Figure 1 (Sheet 3 of 4)

EFFECTIVITY
ALL; 737-200 AIRPLANES

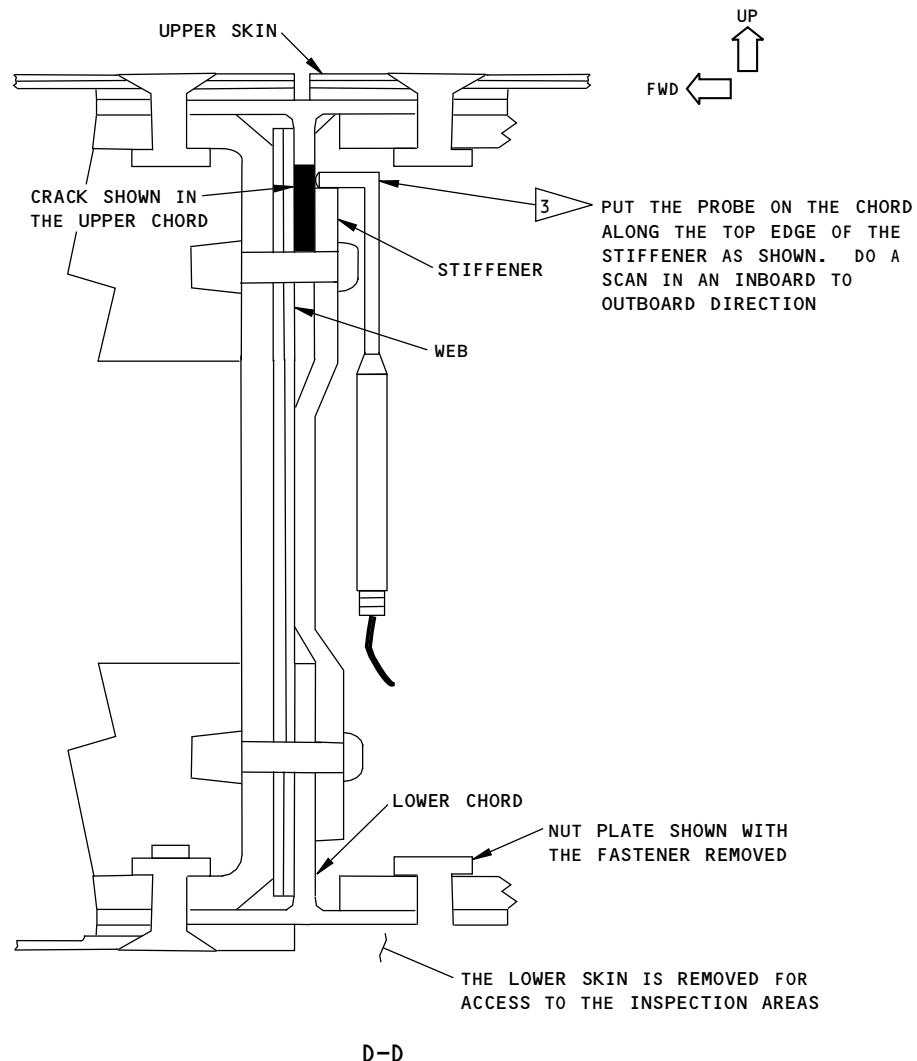
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Inspection Areas on the Mid Spar of the Inboard Midflap
Figure 1 (Sheet 4 of 4)

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PART 6 - EDDY CURRENT

**SUBSURFACE INSPECTION OF THE INBOARD MIDFLAP - MID SPAR CHORDS BETWEEN WBL
73.0 AND 176.0**

1. Purpose

- A. Use this subsurface eddy current procedure to examine the upper chords of the mid spar in the inboard midflap between WBL 73.0 and WBL 176.0 for cracks. This inspection is done through the skin to find cracks in the upper chord that are in a forward to aft direction. The upper chord of the mid spar is at the skin butt splice. See Figure 1.
- B. This procedure uses an impedance plane display instrument. A transparent straightedge is used as a probe guide. A probe is moved along the edges of the fasteners to do a scan in an inboard to outboard direction. See Figure 1, for the inspection locations.
- C. 737 Supplemental Structural Inspection Document (D6-37089, D6-82669) Reference:
 - (1) Item: L-35A

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 between 2 kHz and 3 kHz.
- (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 1.1; Hocking Krautkramer
 - (b) NDT 19e; Staveley Instruments
 - (c) Phasec 2200; Hocking Krautkramer

C. Probes

- (1) The probe used to do this procedure must:
 - (a) Operate at a frequency between 2 kHz and 3 kHz.
 - (b) Be straight or angled.
 - (c) Have a maximum external diameter of 0.31 inch (7.9 mm).
 - (d) Be shielded and it must pass the shielding test shown in Figure 3, to see if the shielding is satisfactory.
- (2) The probes that follow were used to help prepare this procedure.
 - (a) SPC-224; EC-NDT LLC
 - (b) SPO-5327; Nortec

D. Reference Standards

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- (1) Use reference standard NDT3041 to do a calibration for this inspection. Refer to Figure 2, in this inspection procedure to make this reference standard.

E. Special Tools

- (1) Use a transparent, nonconductive straightedge (probe guide) on the forward side of the upper chord during the probe scans.
- (2) Optional: Double faced tape can be used to help keep the nonconductive probe guide on the skin and along the edges of the fasteners.

3. Prepare for the Inspection

NOTE: This inspection can be done with the inboard midflap installed on the airplane or it can be done with the inboard midflap removed.

- A. Make sure the upper skin of the inboard midflap is clean in the probe scan areas along the mid spar. See Figure 1, for the inspection area.
- B. If paint is on the inspection area and you cannot see the fasteners, remove sufficient paint so that the fasteners can be seen. This inspection can be done with paint on the skin only if the fasteners can be seen.

4. Instrument Calibration

A. Calibrate the instrument as follows:

- (1) Put a transparent, nonconductive straightedge along the edge of the lower row of rivets on reference standard NDT3041. Make sure the top edge of the rivets are at the edge of the straightedge as shown in Figure 3.
- (2) Set the instrument frequency between 2 and 3 kHz.
- (3) Put the probe on reference standard NDT3041 at probe position 1 (see Figure 3).
- (4) Balance the instrument.
- (5) Adjust the vertical to horizontal gain so that it is between 2:1 and 4:1.
- (6) Adjust the instrument for lift-off.
- (7) Set the balance point to 20 percent of full screen height as shown Figure 3.
- (8) Move the probe to probe position 2 to get a signal from the notch (see Figure 3).
- (9) Adjust the instrument gain so that the signal from the notch is 50 percent of full screen height as shown in Figure 3.

B. Do a test of the probe shielding as follows:

- (1) Do the calibration as specified in Paragraph 4.A. and Figure 3.
- (2) Do the probe shielding test specified in Figure 3 to make sure the shielding on your probe is satisfactory.
- (3) Identify the area of your probe that has the best shielding as follows:

NOTE: Some probes do not have equal shielding at all areas around the circumference of the probe.

- (a) Use the probe guide and do a minimum of four different scans along the magnetic fasteners on reference standard NDT3041. During each scan:
 - 1) Turn the probe so that a different area of the probe is nearest to the magnetic fasteners.

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- (b) Make a mark on the side of the probe that was nearest to the magnetic fastener when you got the lowest signal from the magnetic fastener. This is the area of your probe that has the best shielding.

NOTE: It is possible that you have a probe that shows no shielding difference around the circumference of the probe. If the shielding is the same around the circumference of the probe, then it is not necessary to make a mark on the probe.

NOTE: During the inspection, make sure the mark on the probe is nearest to the fasteners. This will help keep the magnetic and edge effects from the fasteners to a minimum.

5. Inspection Procedure

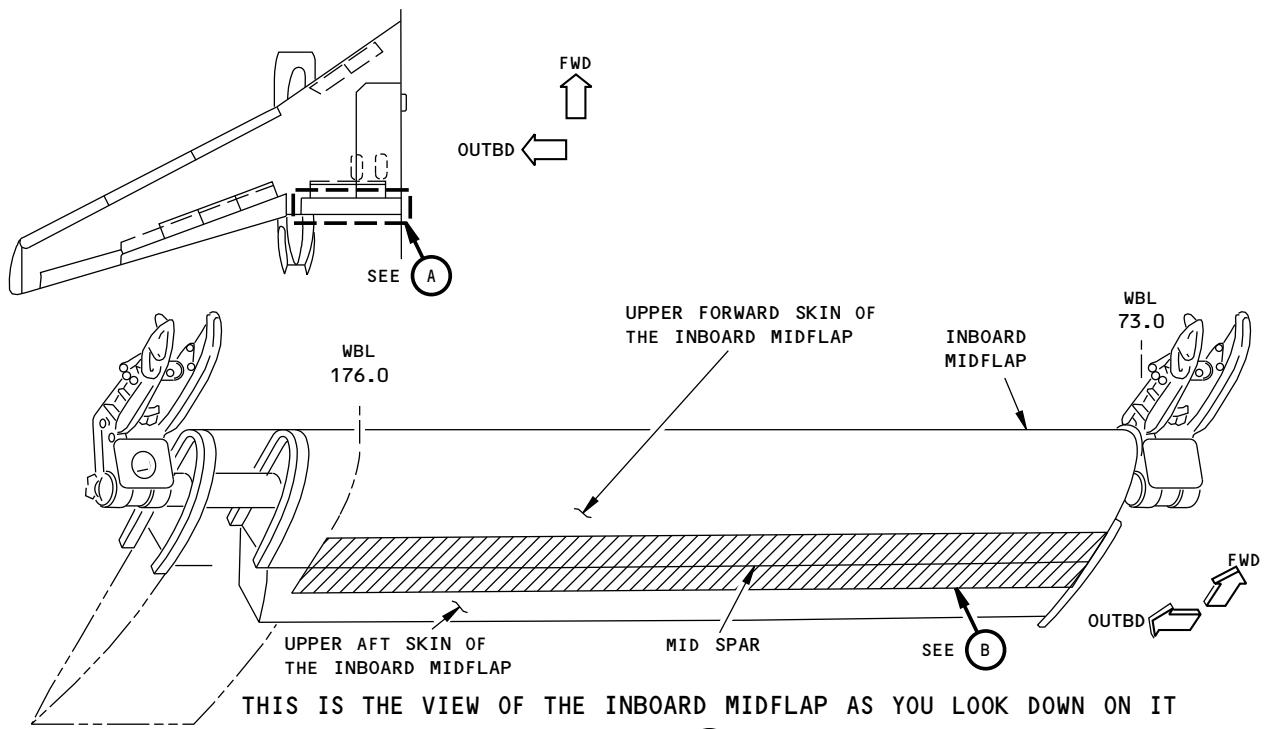
- A. Calibrate the instrument and do the probe shielding test as specified in Paragraph 4.
- B. Put the nonconductive straightedge on the upper skin of the inboard midflap so that it is along the edge of the fasteners in the inspection area. See Figure 1, for the inspection areas and the straightedge locations.
- C. Put the probe on the upper skin of the midflap along the nonconductive straightedge in the inspection area along the mid spar. If you made a mark on the probe as specified in Paragraph 4.B.(3), make sure the mark is along the edge of the fasteners.
- D. Balance the instrument.
- E. Do a scan in an inboard to outboard direction along the edges of the fasteners in the inspection area. Make sure that you adjust the probe guide so that the edge of the probe guide is aligned with the fastener edges (see Figure 1).
- F. Do the scans along the forward and aft sides of the two rows of rivets along the mid spar as shown in Figure 1.
- G. Do the inspection on the inboard midflap on the other side of the airplane.

6. Inspection Results

- A. A signal that is 30 percent (or more) of full screen height above the balance point is a sign of a possible crack. See Figure 3, for the reject level.
- B. Make sure the signal is not from the edge of a fastener or from the magnetic effect of a magnetic fastener. Refer to the probe shielding test in Paragraph 4.B. to see if all was done to make sure the magnetic effect was kept to a minimum.
- C. A probe that goes very near the edge of the skin at the butt splice can give a crack indication. Make sure the indication is not caused by edge effect from the skin edge at the butt splice.
- D. A crack in the skin can also cause a crack indication to occur. Do a surface eddy current inspection around the fastener at the crack indication location. Refer to Part 6, 51-00-00, Procedure 4 or Part 6, 51-00-00, Procedure 23, for the surface inspection procedure for aluminum parts.
- E. To do a different inspection for the cause of the crack indication, remove the lower skin from the inboard midflap and do a surface eddy current inspection on the upper chord from in the midflap. Make sure the scan is done around the tail end of the fastener where the crack indication was found from the outer surface of the upper skin.

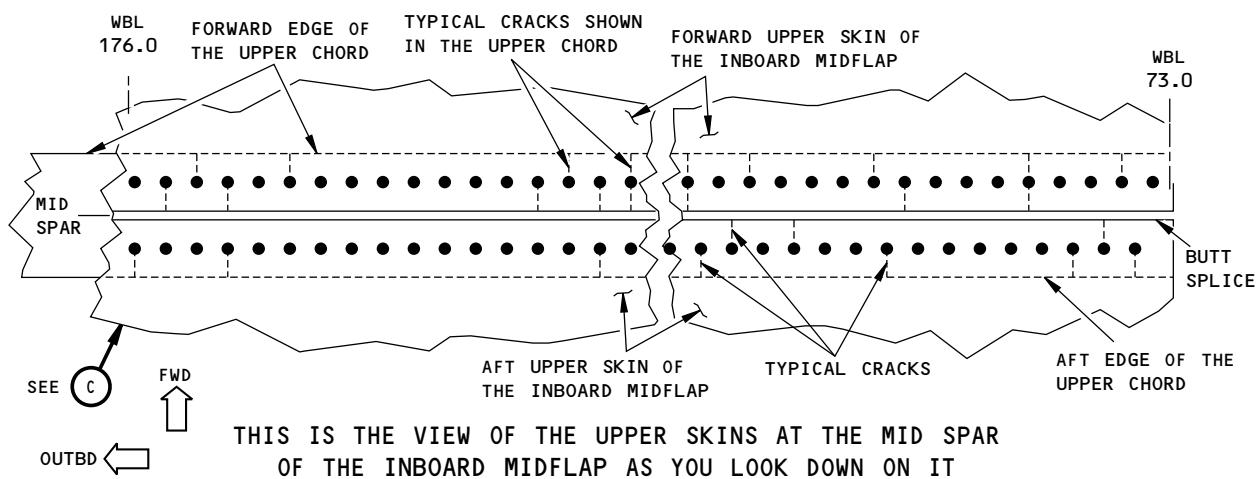


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THIS IS THE VIEW OF THE INBOARD MIDFLAP AS YOU LOOK DOWN ON IT

(A)



THIS IS THE VIEW OF THE UPPER SKINS AT THE MID SPAR
OF THE INBOARD MIDFLAP AS YOU LOOK DOWN ON IT

(B)

NOTES:



INSPECTION AREA

- THE INSPECTION AREA SHOWN ABOVE IS ON THE INBOARD MIDFLAP SKINS. THE INSPECTION IS DONE ALONG THE ROW OF FASTENERS ON EACH SIDE OF THE BUTT SPLICE ALONG THE MID SPAR.
- SEE FIGURE 1 (SHEET 2) FOR MORE DATA ON THE INSPECTION AREA AND THE PROBE SCANS.

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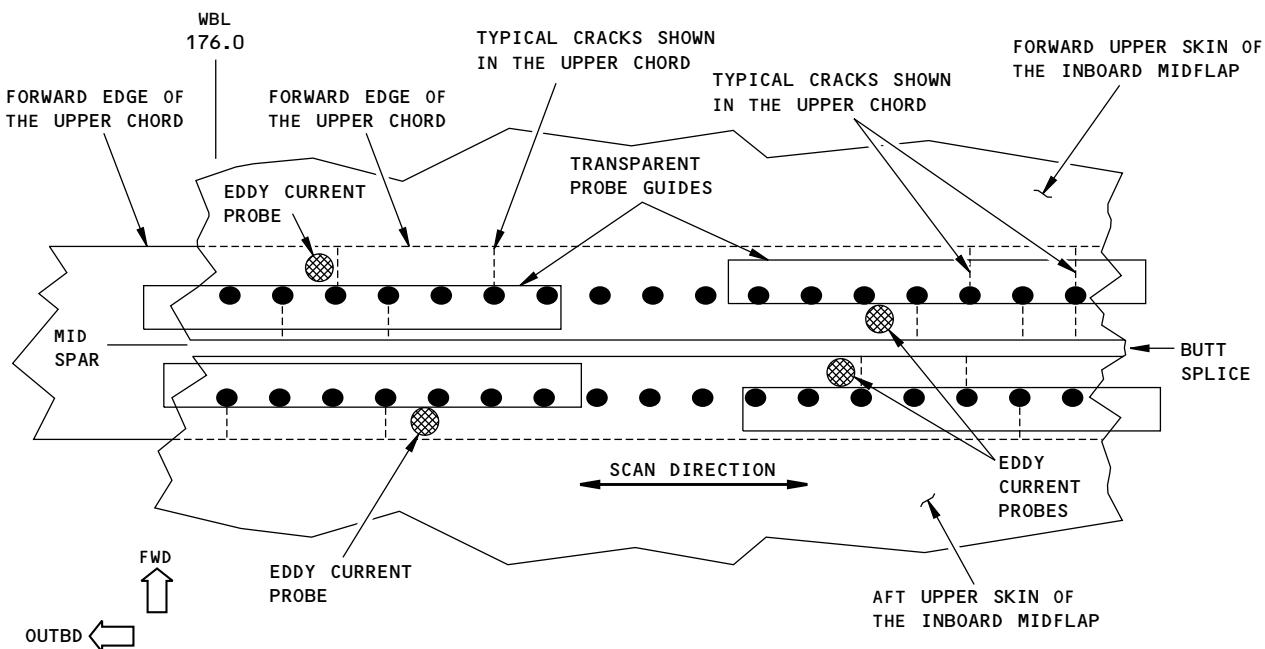
Inspection Areas
Figure 1 (Sheet 1 of 2)

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THIS IS A SMALL SECTION OF THE INSPECTION AREA ON THE
INBOARD MIDFLAP THAT SHOWS THE PROBE SCANS

(C)

NOTES:

- PUT THE TRANSPARENT PROBE GUIDE ALONG THE EDGES OF THE FASTENERS AS SHOWN ABOVE. MAKE SURE THE EDGE OF THE FASTENERS DO NOT EXTEND OUT FROM THE EDGE OF THE PROBE GUIDE.
- DO PROBE SCANS IN AN OUTBOARD TO INBOARD DIRECTION ALONG THE EDGE OF THE PROBE GUIDE ON EACH SIDE OF A FASTENER ROW AS SHOWN ABOVE.
- MAKE SURE THE PROBE SCANS ARE DONE IN THE TOTAL INSPECTION AREA SHOWN IN FIGURE 1 (SHEET 1). THE INSPECTION AREA IS BETWEEN WBL 73.0 AND WBL 176.0 FOR THE INBOARD MIDFLAPS ON THE LEFT AND RIGHT SIDES OF THE AIRPLANE.

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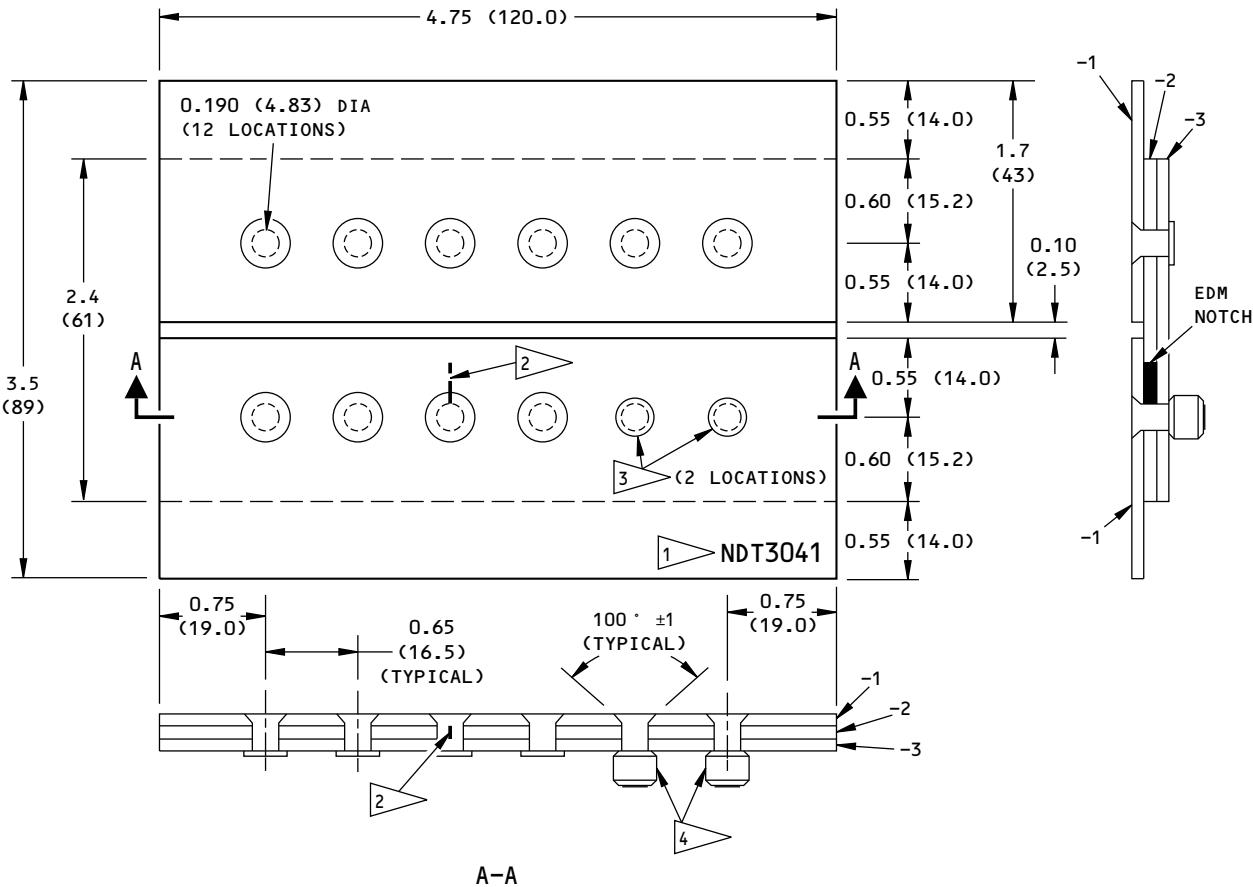
**Inspection Areas
Figure 1 (Sheet 2 of 2)**

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NOTES:

- 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
- SURFACE ROUGHNESS = 125 Ra OR BETTER
- MATERIAL: 2024-T3 ALUMINUM; CLAD OR BARE
 - 1 0.080 x 1.7 x 4.75 (2.03 x 43 x 120)
(2 LOCATIONS)
 - 2 0.100 x 2.4 x 4.75 (2.54 x 61 x 120)
 - 3 0.080 x 2.4 x 4.75 (2.03 x 61 x 120)
- RIVETS: BACR15BA6D4C OR BACR15BA6AD4C
(10 LOCATIONS)

1 ▲ ETCH OR STEEL STAMP THE REFERENCE
STANDARD NUMBER NDT3041

2 ▲ EDM NOTCH: (MAKE 1 NOTCH IN THE -2 PART)
LENGTH: 0.28 (7.1) ±0.028 (0.71)
DEPTH: 0.100 (2.54)
WIDTH: 0.025 (0.64) MAXIMUM

3 ▲ BOLTS: BACB30GY6-4 OR BACB30GY6D4
(2 LOCATIONS)

4 ▲ COLLARS: BACC30K6 (2 LOCATIONS)

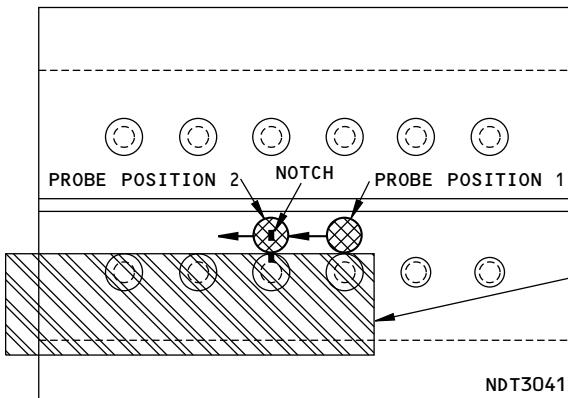
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Reference Standard NDT3041
Figure 2

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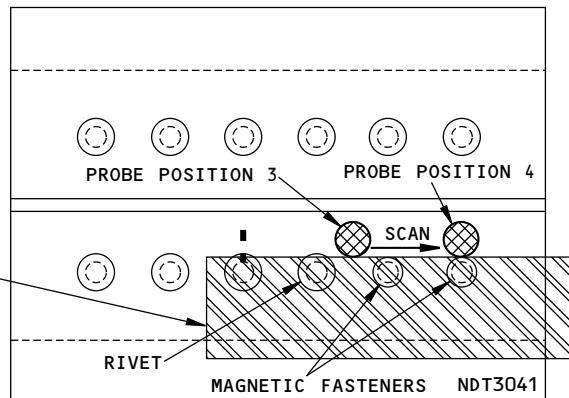
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PROBE POSITIONS FOR THE CALIBRATION

- 1) BALANCE THE PROBE AT PROBE POSITION 1.
- 2) MOVE THE PROBE ALONG THE PROBE GUIDE ACROSS PROBE POSITION 2.
- 3) ADJUST THE GAIN AND LIFT-OFF SO THE SIGNALS LOOK ALMOST THE SAME AS THE SIGNALS SHOWN IN **(A)**.



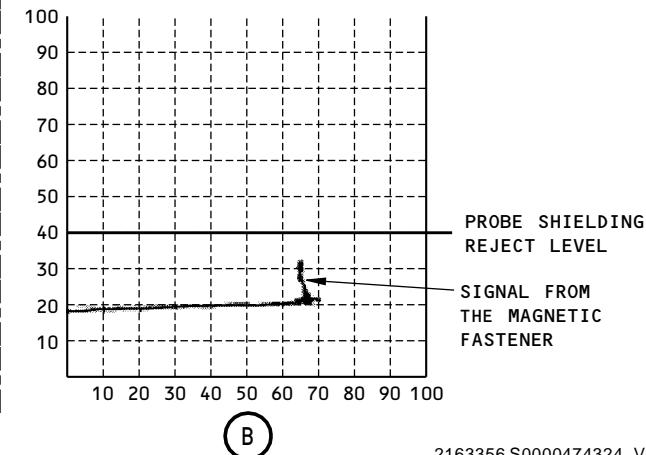
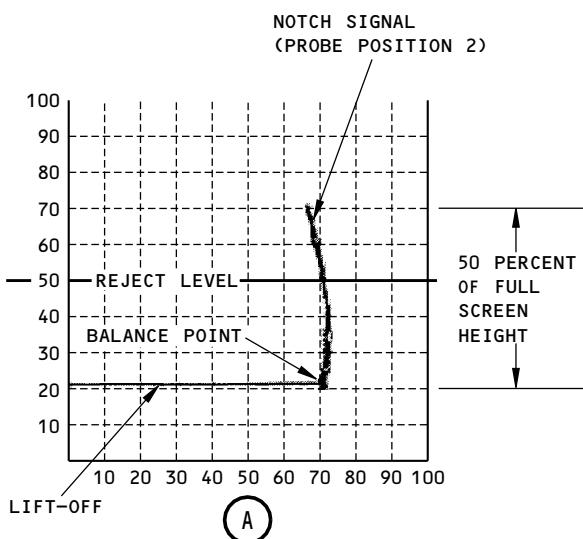
PROBE SHIELDING TEST

NOTE:

IF THE SHIELDING ON THE PROBE IS NOT SUFFICIENT, MAGNETIC FASTENERS CAN GIVE CRACK-TYPE INDICATIONS THAT ARE HIGHER THAN 20 PERCENT OF FULL SCREEN HEIGHT. THIS SHIELDING TEST WILL TELL YOU IF THE SHIELDING ON YOUR PROBE IS SATISFACTORY. SEE PAR. 4.B FOR MORE DATA ON THE SHIELDING TEST.

- 1) DO THE CALIBRATION AS SPECIFIED IN PAR. 4.A AND IN THE VIEW SHOWN ON THE LEFT SIDE OF THIS SHEET (VIEW A).
- 2) PUT THE PROBE GUIDE AT THE POSITION SHOWN ABOVE SO THAT THE EDGE OF THE PROBE GUIDE IS ALIGNED WITH THE EDGE OF THE TWO MAGNETIC FASTENERS.
- 3) MOVE THE PROBE TO PROBE POSITION 3 AND BALANCE THE INSTRUMENT.
- 4) KEEP THE PROBE ON THE REFERENCE STANDARD AND MOVE IT TO PROBE POSITION 4.
- 5) IF THE MAGNETIC FASTENERS GIVE AN INDICATION OF 20 PERCENT OR MORE OF FULL SCREEN HEIGHT, THE PROBE IS NOT SATISFACTORY FOR THIS INSPECTION. TRY A DIFFERENT PROBE FOR THIS CALIBRATION AND SHIELDING TEST.

NOTE: THE EXAMPLE SIGNAL BELOW SHOWS THAT THE SHIELDING IS SATISFACTORY BECAUSE IT IS LESS THAN 20 PERCENT OF FULL SCREEN HEIGHT.



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**Calibration and Probe Shielding Test
Figure 3**

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PART 6 - EDDY CURRENT

OUTBOARD TRAILING EDGE FLAP - FORE-FLAP SEQUENCING CARRIAGE

1. Purpose

- A. Use this procedure to do a surface eddy current inspection to find cracks in fastener holes of the fore-flap sequencing carriage.
- B. This inspection procedure examines the fore-flap sequencing carriage for cracks at the open fastener holes of the lug attach fitting and the aft rollers as shown in Figure 1.
NOTE: It is necessary to remove the lug attach fitting and the aft roller bolts to do this inspection.
- C. This procedure uses an impedance plane display instrument with a rotary scanner.
- D. 737 Supplemental Structural Inspection Document (D6-37089 for -100, -200, -200C; D6-82669 for -300, -400, -500) Reference:
 - (1) Item: L-39

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 that:
 - (a) Has an impedance plane display.
 - (b) Operates in a frequency range of 200 kHz to 1 MHz.
 - (c) Operates with a rotary scanner.
 - (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phaselc 2200, Phaselc 2; Hocking (with rotary scanner)
 - (b) Nortec 19e, 1000, 2000; Staveley Instruments (with rotary scanner)
- C. Probes
 - (1) Use a probe that has the properties identified in Part 6, 51-00-00, Procedure 19, Par. 3.C.
 - (2) The probes that follow were used to help prepare this procedure.
 - (a) BXU-12/16; NDT Engineering Corp. (aft roller holes)
 - (b) BXU-20/24; NDT Engineering Corp. (lug attach holes)
- D. Reference Standard
 - (1) Use reference standard NDT1041 to examine the aft roller holes or use a reference standard that has the properties identified in Part 6, 51-00-00, Procedure 19.
 - (2) Use reference standard NDT1042 to examine the lug attach holes or use a reference standard that has the properties identified in Part 6, 51-00-00, Procedure 19.

3. Prepare for the Inspection

- A. See Figure 1 for the inspection locations.

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- B. Remove the outboard trailing edge fore-flaps as necessary.
- C. Remove the four fasteners of the lug attach fitting on top of the sequencing carriage.
- D. Remove the two aft roller bolts on the right and left sides of the sequencing carriage.
- E. Refer to Part 6, 51-00-00, Procedure 19, Par. 4 for more inspection preparation instructions at open holes.

4. Instrument Calibration

- A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 19, Par. 5.
 - (1) Use reference standard NDT1042 (or an equivalent) to calibrate the instrument for the inspection at the hole locations of the lug attach fittings.
 - (2) Use reference standard NDT1041 (or an equivalent) to calibrate the instrument for the inspection at the hole locations of the aft rollers.

5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
- B. Examine the four holes on the top of the sequencing carriage (where the lug attach fittings attach) for cracks as specified in Part 6, 51-00-00, Procedure 19, par. 6.
- C. Examine the two holes at the aft roller locations on the left and right sides of the sequencing carriage for cracks as specified in Part 6, 51-00-00, Procedure 19, par. 6.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 19, for data to help make an analysis of the open hole inspection results.

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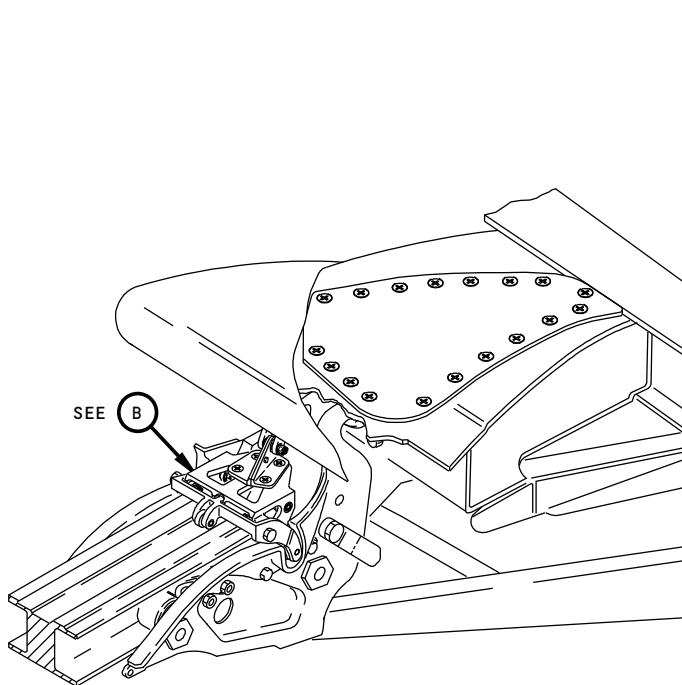
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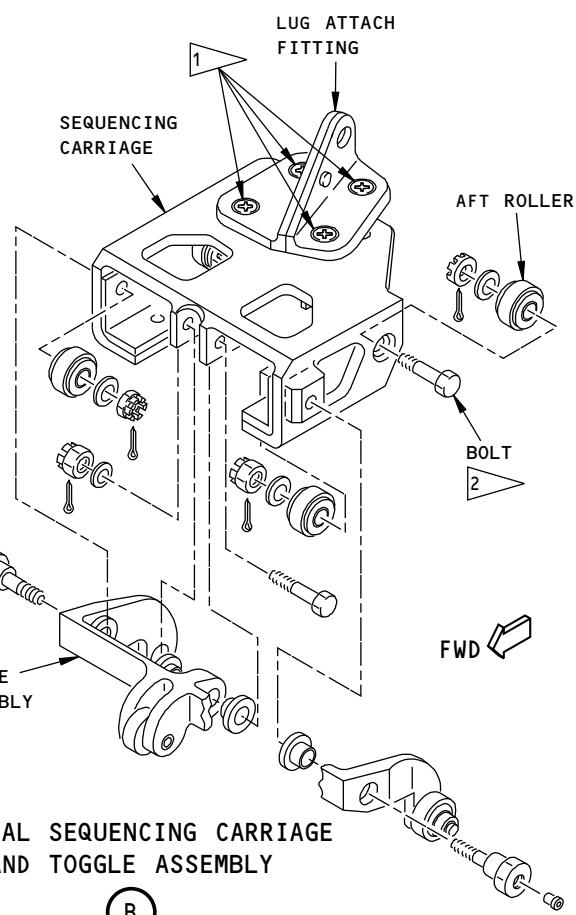
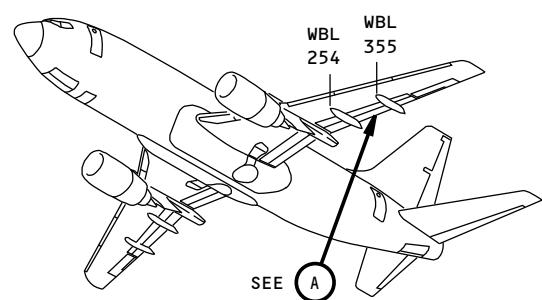


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TYPICAL FORE-FLAP
CARRIAGE ASSEMBLY
(2 LOCATIONS)

A



TYPICAL SEQUENCING CARRIAGE
AND TOGGLE ASSEMBLY

B

NOTES

- 1 REMOVE THE LUG ATTACH FITTING FASTENERS AND EXAMINE THE FOUR OPEN HOLES
- 2 REMOVE THE AFT ROLLER BOLTS AND EXAMINE THE OPEN HOLES ON THE RIGHT AND LEFT SIDES OF THE SEQUENCING CARRIAGE

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Inspection Location
Figure 1

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PART 6 - EDDY CURRENT

**FORE-FLAP HINGE FITTING OF THE OUTBOARD TRAILING EDGE FLAP AT WBL 254 AND WBL
355**

1. Purpose

- A. Use this procedure to do a surface eddy current inspection to find cracks in the fore-flap hinge fitting of the outboard trailing edge flap at WBL 254 and WBL 355.
- B. This inspection examines the bore of the two lower fastener holes of the fore-flap hinge fitting. It is necessary to remove all, or part of, the upper and lower skins of the outboard fore-flap to do this procedure. See Figure 1 for the inspection areas.
- C. This procedure uses an impedance plane display instrument with a rotary scanner.
- D. 737 Supplemental Structural Inspection Document (D6-37089 for -100, -200, -200C; D6-82669 for -300, -400, -500) Reference:
 - (1) Item: L-39E

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 in a frequency range of 200 kHz to 1 MHz.
 - (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 2200, Phasec 2; Hocking
 - (b) Nortec 19e, 1000, 2000; Staveley Instruments
- C. Probes
 - (1) Use a probe that has the properties identified in Part 6, 51-00-00, Procedure 19, Par. 3.C.
 - (2) The probe that follows was used to help prepare this procedure.
 - (a) BXU-24/28; NDT Engineering Corp.
- D. Reference Standard
 - (1) Use reference standard NDT1043 or a reference standard that has the properties identified in Part 6, 51-00-00, Procedure 19, Par. 3.D.

3. Prepare for the Inspection

- A. Identify all of the inspection areas. See Figure 1.
- B. Remove necessary structure to get access to the inspection area.
NOTE: It is necessary to remove all, or part of, the upper and lower skin of the outboard fore-flap.
- C. Remove the two lower fasteners in the fore-flap hinge fitting. See Figure 1.

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- D. Clean the inspection area. Remove sealant as necessary. Remove paint only if it is loose.
- E. Refer to Part 6, 51-00-00, Procedure 19, Par. 4 for more instructions to prepare for inspections at open hole locations.

4. Instrument Calibration

- A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 19, Par. 5.
 - (1) Use reference standard NDT1043, or a reference standard that has the properties identified in Part 6, 51-00-00, Procedure 19, Par. 3.D.

5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
- B. Do a rotary scan of each fastener hole from the inboard and outboard sides of the hinge fittings. See Figure 1.
- C. Refer to the inspection instructions in Part 6, 51-00-00, Procedure 19.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 19, Par. 7, for data to help make an analysis of the open hole inspection results.

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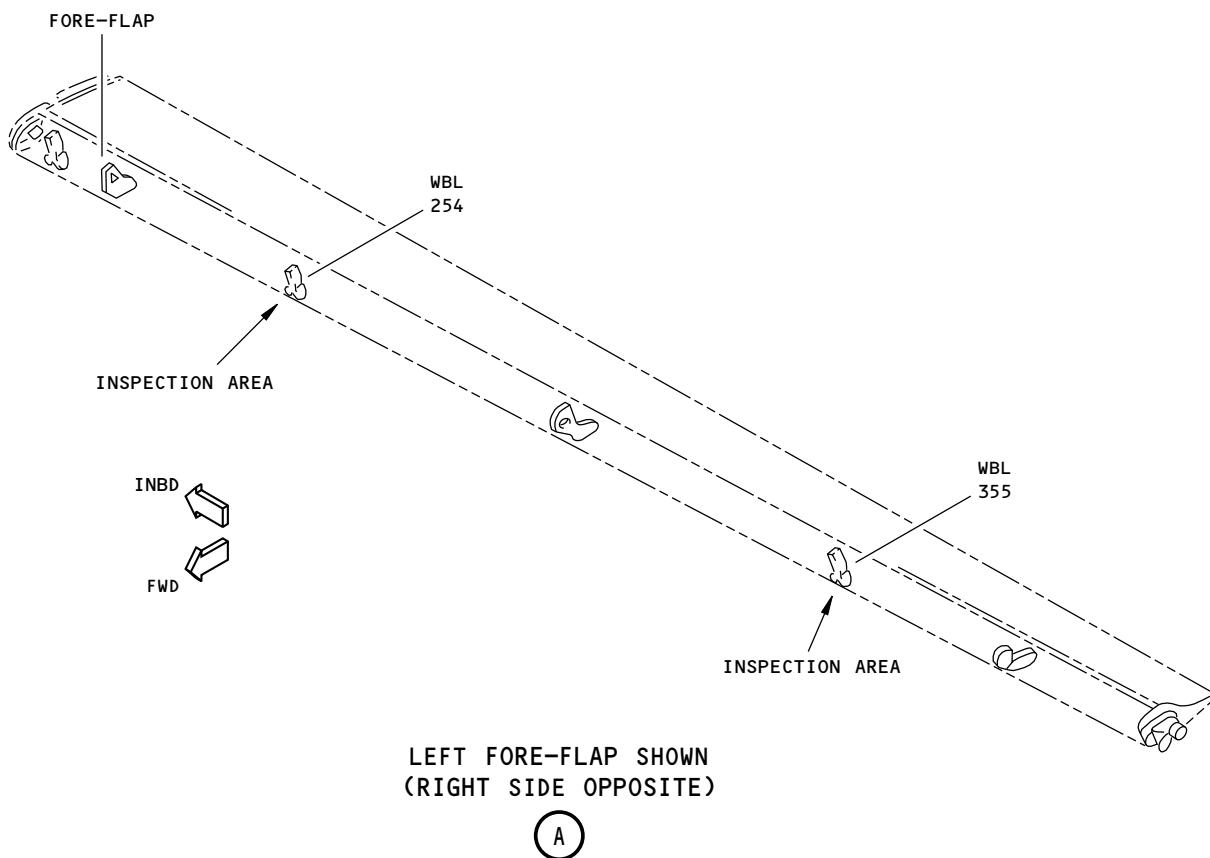
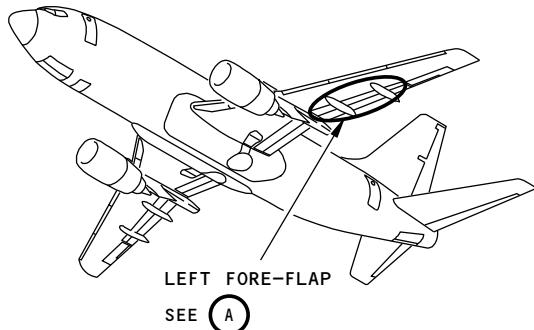
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LEFT FORE-FLAP SHOWN
(RIGHT SIDE OPPOSITE)

A

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Outboard Trailing Edge Flap - Fore-flap Hinge Fitting Inspection Locations
Figure 1 (Sheet 1 of 2)

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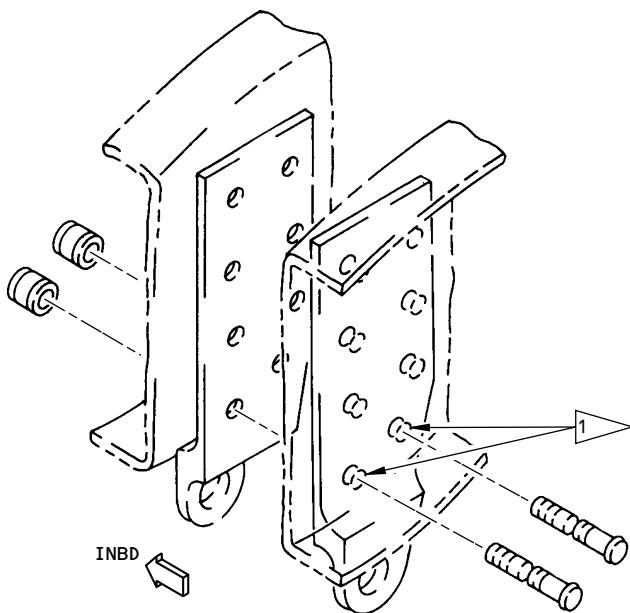
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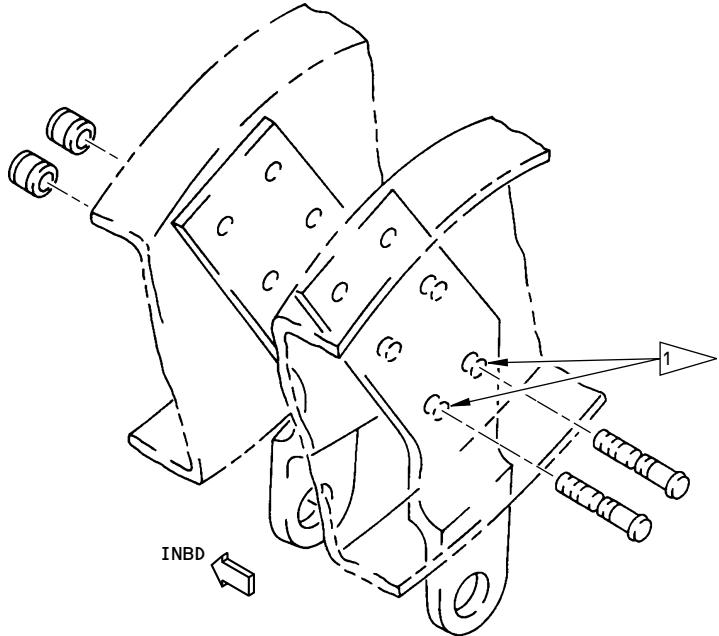
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FORE-FLAP HINGE FITTING AT WBL 254



NOTES

- REMOVE THE LOWER TWO FASTENERS OF THE FORE-FLAP HINGE FITTING
- DO A ROTARY SCAN OF THE FASTENER HOLES FROM THE INBOARD AND OUTBOARD SIDES OF THE HINGE FITTING

FORE-FLAP HINGE FITTING AT WBL 355

2163360 S0000474340_V1

Outboard Trailing Edge Flap - Fore-flap Hinge Fitting Inspection Locations
Figure 1 (Sheet 2 of 2)

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PART 6 - EDDY CURRENT

SUBSURFACE INSPECTION OF THE OUTBOARD MIDFLAP - UPPER CHORD OF THE REAR SPAR BETWEEN WBL 301 AND 307.5

1. Purpose

- A. Use this subsurface eddy current procedure to examine the upper chord of the rear spar in the outboard midflap between WBL 301 and WBL 307.5. A spot probe is used on the upper skin to find cracks in the upper chord that are in a forward to aft direction. See Figure 1.
- B. This procedure uses an impedance plane display instrument. The probe scans are done in an inboard to outboard direction along the fastener edges in the inspection area. See Figure 1.
- C. 737 Supplemental Structural Inspection Document (D6-37089; D6-82669) Reference:
 - (1) Item: L-27A

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 between 2 kHz and 4 kHz.
 - (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 1.1; Hocking Krautkramer
 - (b) NDT 19e; Staveley Instruments
 - (c) Phasec 2200; Hocking Krautkramer
- C. Probes
 - (1) One spot probe is necessary to use to do this procedure. The probe must:
 - (a) Operate at a frequency between 2 kHz and 4 kHz.
 - (b) Have a maximum external diameter of 0.25 inch (6.35 mm).
 - (c) Be shielded.
 - (2) The probes that follow were used to help prepare this procedure.
 - (a) SPO-5164; Nortec, Staveley
 - (b) NEC-1087; NDT Engineering Corporation
- D. Reference Standards
 - (1) Use reference standard NDT3045 to do a calibration for this inspection. Refer to Figure 2 to make this reference standard.
- E. Nonconductive straightedge

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3. Prepare for the Inspection

NOTE: This inspection can be done with the outboard midflap installed on the airplane or it can be done with the outboard midflap removed.

- A. Make sure the skin of the outboard midflap is clean in the inspection area. See Figure 1 for the inspection area.
- B. If paint is on the inspection area and you cannot see the fasteners, remove sufficient paint so that the fasteners can be seen. This inspection can be done with paint on the skin only if the fasteners can be seen.

4. Instrument Calibration

- A. Set the instrument frequency between 2 and 4 kHz.
- B. Adjust the vertical to horizontal gain so it is between 2:1 and 3:1.
- C. Put the straightedge on the reference standard as shown by flagnote 1 in Figure 3.
- D. Put the probe on reference standard NDT3045 at probe position 1. See Figure 3.
- E. Balance the instrument.
- F. Adjust the instrument lift-off as shown in Figure 3.
- G. Set the balance point to 20 percent of full screen height as shown in Figure 3.
- H. Move the probe to probe position 2 to get a signal from the notch. See flagnote 3 in Figure 3.
- I. Adjust the instrument gain and do Paragraph 4.H. to get a signal from the notch that is 60 percent of full screen height as shown in Figure 3.
- J. Do the edge effect "probe to rivet distance" test shown by flagnote 5 in Figure 3.
 - (1) Record the distance from the probe edge to the rivet edge when the edge effect signal is at approximately 5% of full screen height.

NOTE: The probe edge to rivet edge distance that you recorded will be used to put the straightedge on the midflap when you do the inspection.

- (2) Continue to move the probe on the rivet as shown by flagnote 5 in Figure 3. This is done to get the edge effect signal as shown by flagnote 5 in Figure 3. This will show you how this edge effect signal will occur if you accidentally do a scan on a fastener during the inspection.
- K. Adjust the straightedge so that the distance from the edge of the straightedge to the edge of the rivet (with the notch) is the same distance that you recorded in Paragraph 4.J.(1). It is possible that the distance that you used in Paragraph 4.C. is the same as the distance you recorded in Paragraph 4.J.(1).
- L. Put the probe on the reference standard at probe position 1.
- M. Balance the instrument.
- N. Move the probe to probe position 2 to get a signal from the notch. See flagnote 3 in Figure 3.
 - (1) If the signal height from the notch is the same as the notch signal shown by flagnote 3 in Figure 3, then no more gain adjustment is necessary.
 - (2) If the signal height from the notch is at a different signal height than the signal shown by flagnote 3 in Figure 3, then adjust the gain to get a notch signal height as shown in flagnote 3.

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5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
- B. Put the straightedge in the inspection area so that the distance from the straightedge and fastener edge is at the distance that you recorded in Paragraph 4.J.(1).
- C. Put the probe on the skin of the outboard midflap adjacent to a fastener in the inspection area. See Figure 1 for the inspection area that shows the probe locations.
- D. Balance the instrument.
- E. Do a probe scan along the edge of the fasteners in the inspection area as follows:
 - (1) Move the probe in an inboard to outboard direction.
 - (2) Move the probe along the forward and aft sides of the fasteners.
 - (3) Make sure the probe edge does not go above the edges of the fasteners.
 - (4) See Figure 1 for the probe scan locations in the inspection area.

NOTE: Some of the probe scans are very short because of interference from the adjacent row of fasteners. Some of the probe scans are continuous (in a straight line) from WBL 301 to 307.5. See Figure 1 for the two different scan types.

- F. Do the inspection on the outboard midflap on the other side of the airplane.

6. Inspection Results

- A. A signal that is 20 percent of full screen height above the balance point is a crack indication. See Figure 3 for the screen display with the reject level.
- B. Make sure the signal is not from an edge effect when the probe goes above a rivet edge or too near the edge of a rivet. See flagnote 5 in Figure 3 to see an edge effect signal from a rivet edge compared to a notch signal.
- C. A signal that is almost the same as the edge effect signal shown in flagnote 5, but occurs when the probe does not go on a fastener edge, could be from a surface crack in the skin. Make sure the signal is not from an edge effect. Then do a surface eddy current scan as shown in Part 6, 51-00-00, Procedure 23.
- D. At all locations where crack type signals occur, remove the fasteners and do an eddy current bolt hole inspection as specified in Part 6, 51-00-00, Procedure 16.

ALL

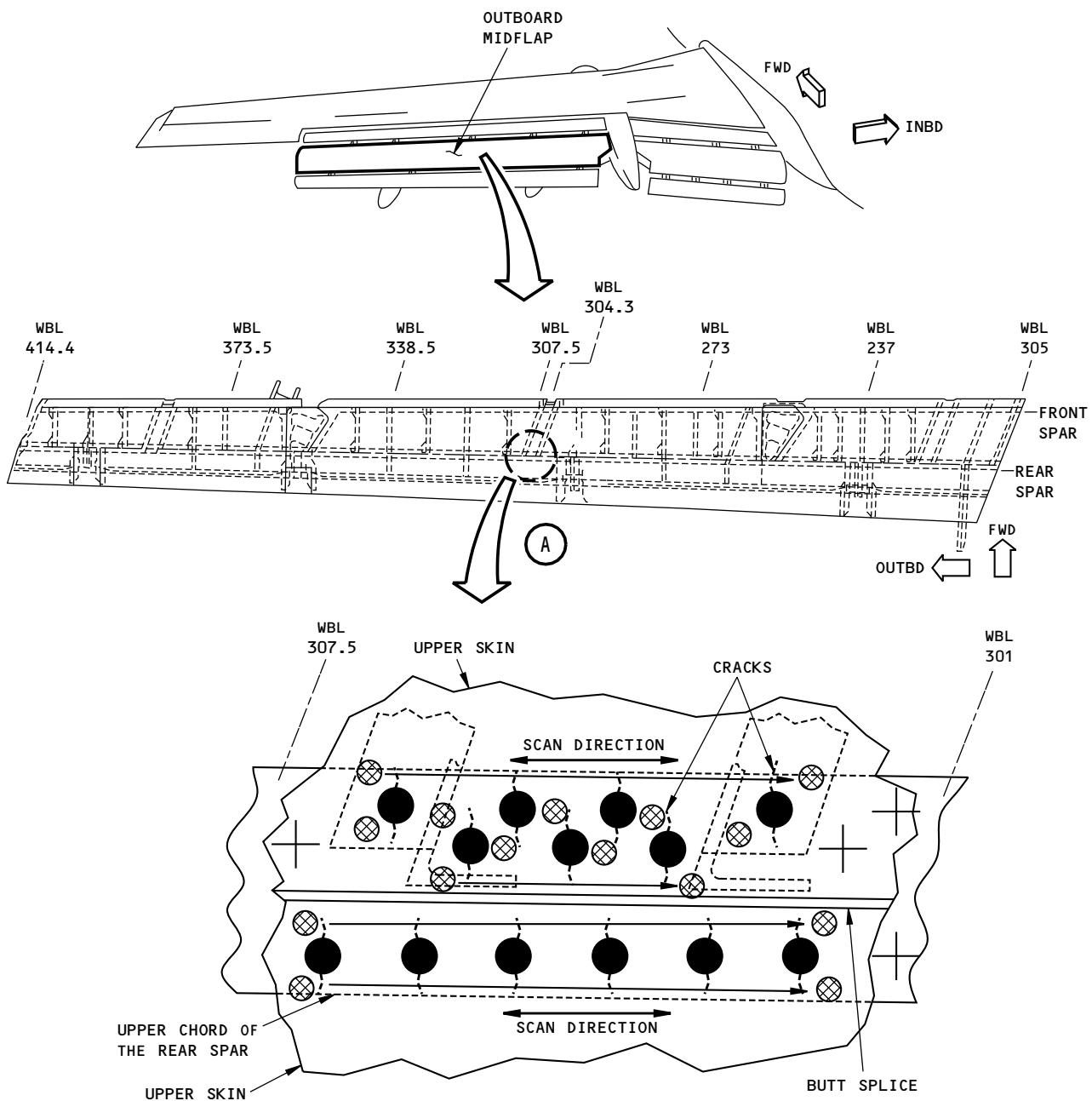
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NOTES:

= EDDY CURRENT PROBE

= FASTENERS

- DO THE SCANS AS SHOWN ABOVE TO FIND CRACKS IN THE UPPER CHORD OF THE REAR SPAR

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Inspection Areas
Figure 1

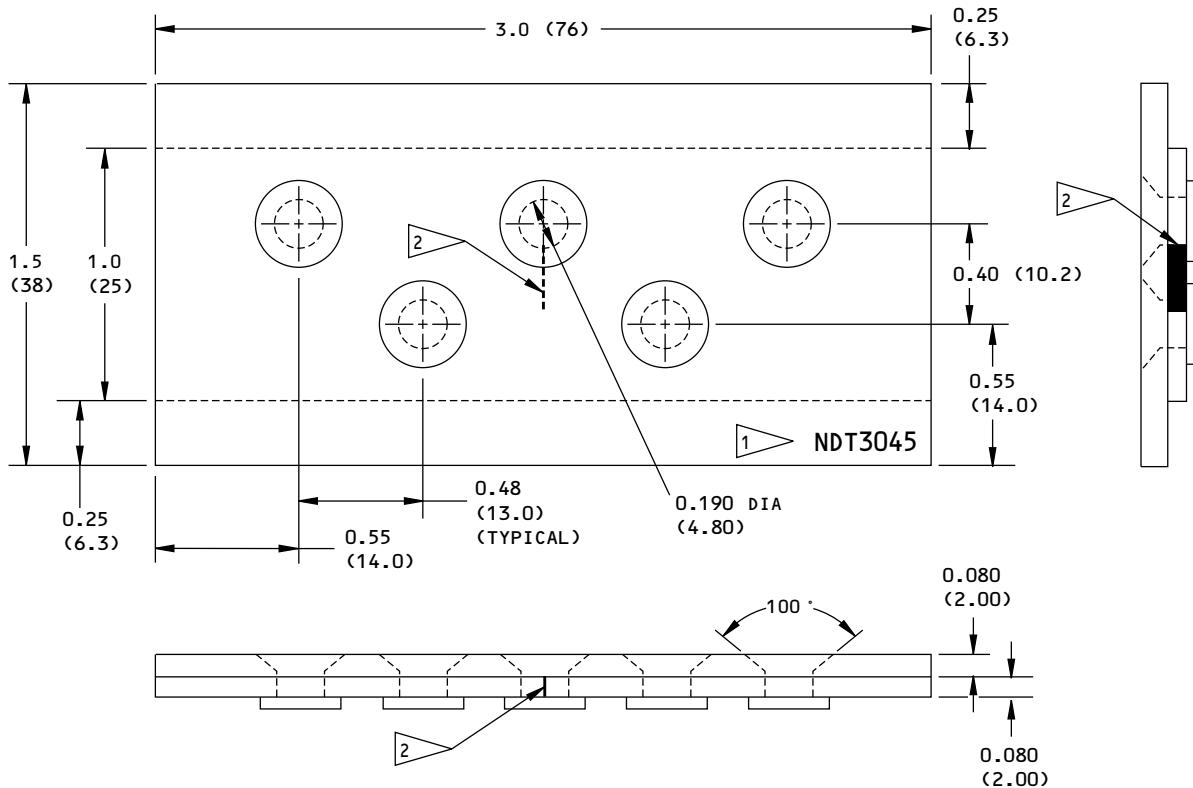
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NOTES:

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

<u>INCHES</u>	<u>MILLIMETERS</u>
X.XXX = ± 0.005	X.XX = ± 0.1
X.XX = ± 0.025	X.X = ± 0.5
X.X = ± 0.050	X = ± 1
- RIVETS: BACR15BA6AD6 (5 EACH)
NOTE: THE MATERIAL CODES A, B, D, DD AND KE CAN BE USED AS AN ALTERNATIVE TO THE "AD" CODE SHOWN IN THE RIVET PART NUMBER.
- SURFACE ROUGHNESS: 125 Ra OR BETTER
- MATERIAL: 2024-T3 ALUMINUM; CLAD OR BARE

- 1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER NDT3045
 2 EDM NOTCH:
 LENGTH: 0.25 (6.4)
 DEPTH: 0.080 (2.00) THROUGH NOTCH
 WIDTH: 0.020 (0.51) MAXIMUM

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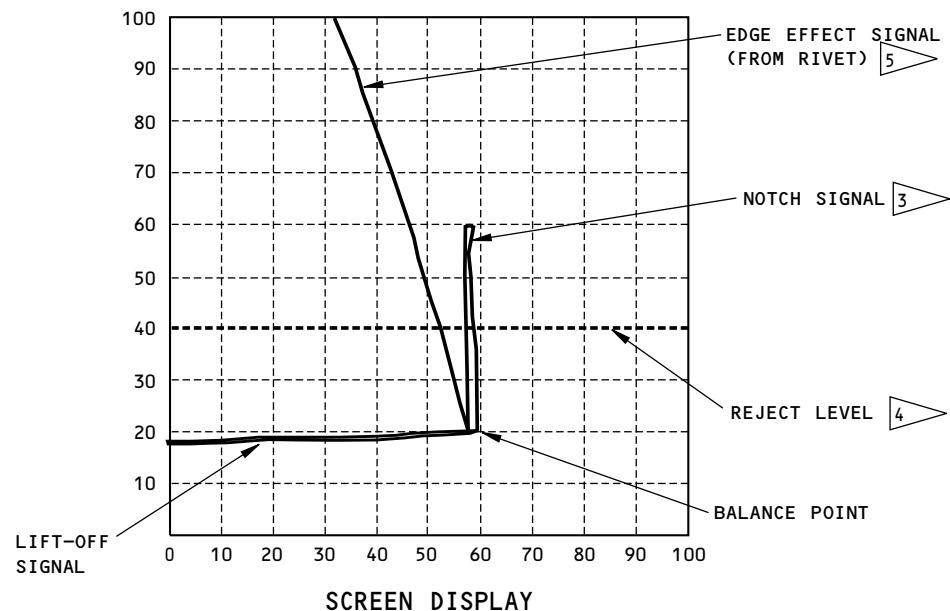
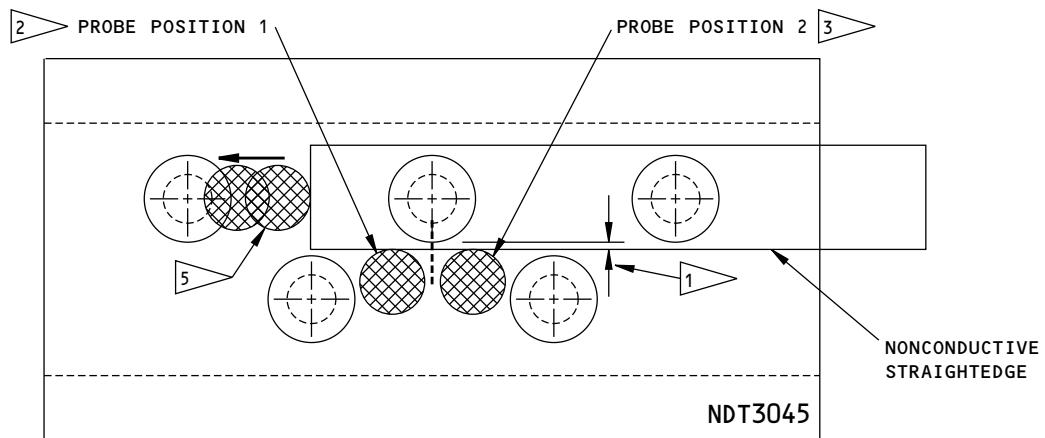
Reference Standard NDT3045
Figure 2

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NOTES:

- [1] PUT THE STRAIGHTEDGE 0.010 TO 0.025 INCH (0.25 TO 0.65 mm) FROM THE EDGE OF THE RIVET EDGE. THIS PROBE TO RIVET DISTANCE IS USED SO THE EDGE EFFECT IS AT A MINIMUM.
- [2] PROBE POSITION TO SET LIFT-OFF AND BALANCE THE INSTRUMENT.
- [3] THE NOTCH SIGNAL OCCURS WHEN THE PROBE GOES FROM PROBE POSITION 1 TO PROBE POSITION 2.
- [4] THE REJECT LEVEL SHOWN ABOVE IS SET AT 20% OF FULL SCREEN HEIGHT (FSH) HIGHER THAN THE BALANCE POSITION.

[5] AFTER THE CALIBRATION, SLOWLY MOVE THE PROBE TO THE EDGE OF A RIVET AS SHOWN AND MONITOR THE DISPLAY FOR THE START OF AN EDGE EFFECT SIGNAL. THIS IS DONE TO SHOW THE "PROBE TO RIVET DISTANCE" WHERE THE EDGE EFFECT SIGNAL STARTS TO OCCUR. RECORD THE DISTANCE WHERE THE EDGE EFFECT SIGNAL IS AT 5% OF FSH. SEE PAR. 4 FOR THE EDGE EFFECT MEASUREMENT THAT YOU RECORDED. CONTINUE TO MOVE THE PROBE ON THE EDGE OF THE RIVET AS SHOWN ABOVE. THIS IS DONE TO SHOW THE DIFFERENCE BETWEEN A RIVET EDGE EFFECT SIGNAL AND A CRACK SIGNAL. THE RIVET EDGE EFFECT SIGNAL IS AT AN ANGLE TO THE LEFT OF THE NOTCH SIGNAL.

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Instrument Calibration
Figure 3

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PART 6 - EDDY CURRENT

**SUBSURFACE INSPECTION OF THE UPPER CHORD OF THE FORWARD SPAR BETWEEN WBL
301 AND WBL 307.5 OF THE OUTBOARD MID FLAP**

1. Purpose

- A. Use this subsurface eddy current procedure to examine the upper chord of the forward spar in the outboard mid flap between WBL 301 and WBL 307.5. A spot probe is used on the upper skin to find cracks in the upper chord that are in an aft to forward direction. See Figure 1.
- B. This procedure uses an impedance plane display instrument. The probe scans are done in an inboard to outboard direction along the fastener edges in the inspection area. See Figure 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 a frequency between 2 kHz and 4 kHz.
 - (2) The instruments that follow were used to help prepare this procedure.
 - (a) Phasec 1.1; Hocking Krautkramer
 - (b) NDT 19e; Staveley Instruments
 - (c) Phasec 2200; Hocking Krautkramer
- C. Probes
 - (1) One spot probe is necessary:
 - (2) The probe must:
 - (a) Operate at a frequency between 2 kHz and 4 kHz.
 - (b) Have a maximum external diameter of 0.25 inch (6.4 mm).
 - (c) Be shielded.
 - (3) The probes that follow were used to help prepare this procedure.
 - (a) SPO-5164; Nortec, Staveley
 - (b) NEC-1087; NDT Engineering Corporation
- D. Reference Standards
 - (1) Use reference standard NDT3045 to do a calibration for this inspection. Refer to Figure 2, in this inspection procedure to make this reference standard.
- E. Nonconductive straightedge

3. Prepare for the Inspection

NOTE: This inspection can be done with the outboard mid flap installed on the airplane or it can be done with the outboard mid flap removed.

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- A. Make sure the skin of the outboard mid flap is clean in the inspection area. See Figure 1, for the inspection area.
- B. If paint is on the inspection area and you cannot see the fasteners, remove sufficient paint so that the fasteners can be seen. This inspection can be done with paint on the skin only if the fasteners can be seen.

4. Instrument Calibration

- A. Set the instrument frequency between 2 and 4 kHz.
- B. Adjust the vertical to horizontal gain between 2:1 and 3:1.
- C. Put the straightedge on the reference standard as shown by flagnote 1 in Figure 3.
- D. Put the probe on reference standard NDT3045 at probe position 1. See Figure 3.
- E. Balance the instrument
- F. Adjust the instrument lift-off so it is as shown in Figure 3.
- G. Set the balance point to 20 percent of full screen height as shown in Figure 3.
- H. Move the probe to probe position 2 to get a signal from the notch. See flagnote 3 in Figure 3.
- I. Adjust the instrument gain to get a signal from the notch that is 60 percent of full screen height as shown in Figure 3.
- J. Do the edge effect "probe to rivet distance" test shown by flagnote 5 in Figure 3.
- K. Make a record of the distance from the probe edge to the rivet edge when the edge effect signal is at approximately 5% of full screen height.

NOTE: The probe edge to rivet edge distance that you recorded will be used to put the straightedge on the mid flap when you do the inspection.

- L. Continue to move the probe on the rivet as shown by flagnote 5 in Figure 3. This is done to get the edge effect signal as shown by flagnote 5 in Figure 3. This will show you how this edge effect signal will occur if you accidentally do a scan on a fastener during the inspection.
- M. Adjust the straightedge so the edge of the distance from the straightedge to the rivet edge (with the notch), is the distance that you recorded from Paragraph 4.K. It is possible that the distance you recorded is the same as the distance that you used in Paragraph 4.C.
- N. Put the probe on the reference standard at probe position 1.
- O. Balance the instrument.
- P. Move the probe to probe position 2 to get a signal from the notch. See flagnote 3 in Figure 3.
- Q. If the signal height from the notch is the same as the notch signal shown by flagnote 3 in Figure 3, then no more gain adjustment is necessary.
- R. If the signal height from the notch is at a different signal height than the signal shown by flagnote 3 in Figure 3, then adjust the gain to get a notch signal height as shown in flagnote 3.

5. Inspection Procedure

- A. Calibrate the instrument as specified in Paragraph 4.
- B. Put the straightedge in the inspection area so that the distance from the straightedge and fastener edge is at the distance that you recorded in Paragraph 4.K.

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C. Put the probe on the skin of the outboard mid flap, adjacent to a fastener in the inspection area. See Figure 1 for the inspection area that shows the probe locations.

D. Balance the instrument.

NOTE: The probe scans are very short because of interference from the adjacent row of fasteners. See Figure 1 to see the short probe scans.

E. Do a probe scan in an inboard to outboard direction along the edge of the fasteners in the inspection area. The probe scans are done along the forward side of the aft fasteners and along the aft side of the forward fasteners. Make sure the probe edge does not go across the edges of the fasteners. See Figure 1 for the probe scan locations in the inspection area.

F. Do the inspection on the outboard mid flap on the other side of the airplane.

6. Inspection Results

A. A signal that is 20 percent of full screen height above the balance point is a crack indication. See Figure 3 for the screen display with the reject level.

B. Make sure the signal is not from edge effect when the probe goes across a rivet edge or too near the edge of a rivet. See flagnote 5 in Figure 3 to see an edge effect signal from a rivet edge compared to a notch signal.

C. A signal that occurs almost the same as the edge effect signal shown by flagnote 5 in Figure 3, but occurs when the probe does not go on a fastener edge, could be from a surface crack in the skin. Make sure the signal is not from edge effect. Then do a surface eddy current scan as shown in Part 6, 51-00-00, Procedure 23.

D. At all locations where crack type signals occur, remove the fasteners and do an eddy current bolt hole inspection as specified in Part 6, 51-00-00, Procedure 16.

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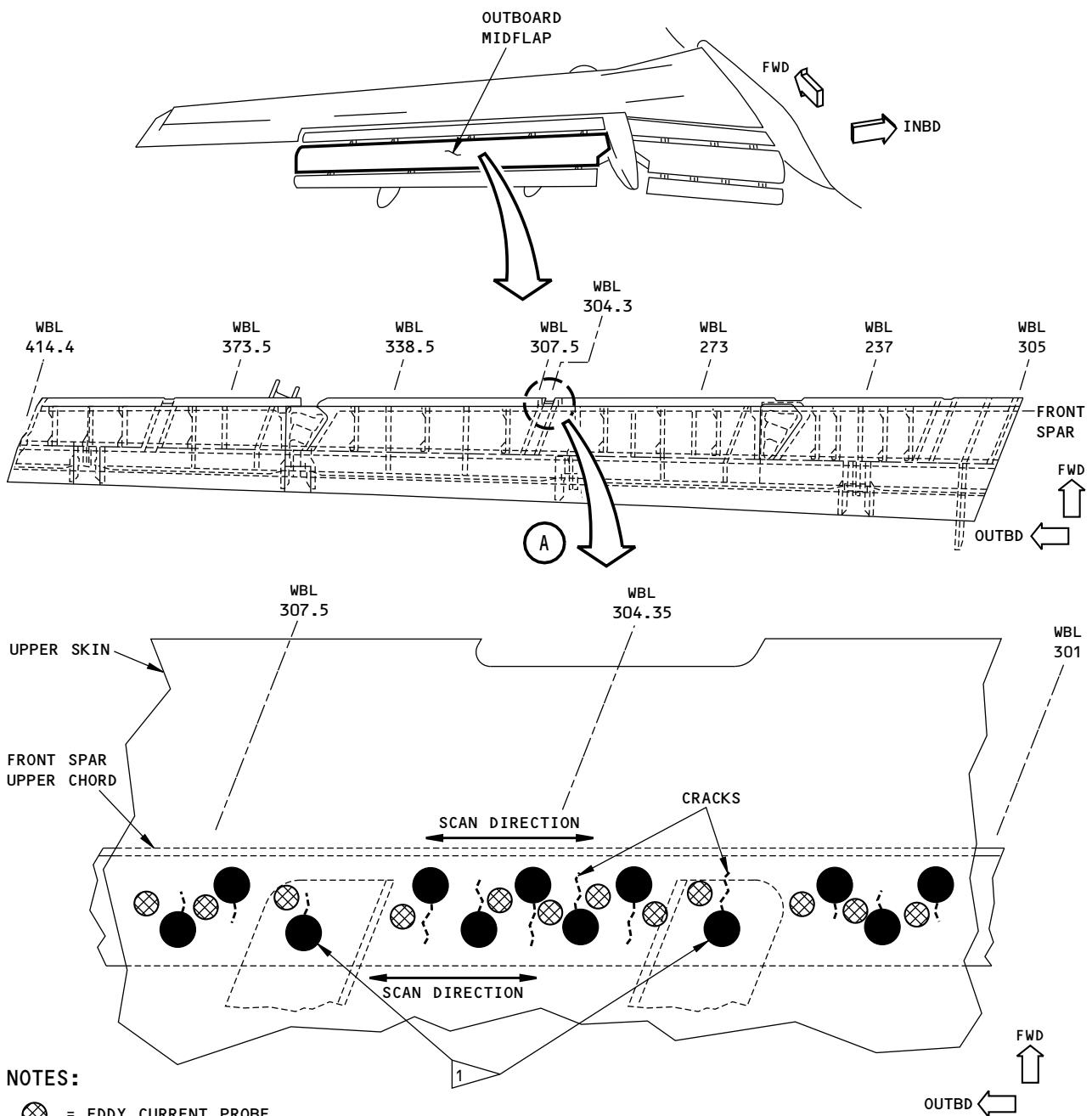
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NOTES:

○ = EDDY CURRENT PROBE

● = FASTENERS

1 ▶ THESE TWO FASTENERS ARE TITANIUM BOLTS. THE REMAINING 10 FASTENERS IN THE INSPECTION AREA ARE BLIND RIVETS.

- DO THE SCANS AS SHOWN ABOVE TO FIND CRACKS IN THE UPPER CHORD OF THE FRONT SPAR

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Inspection Areas
Figure 1

ALL

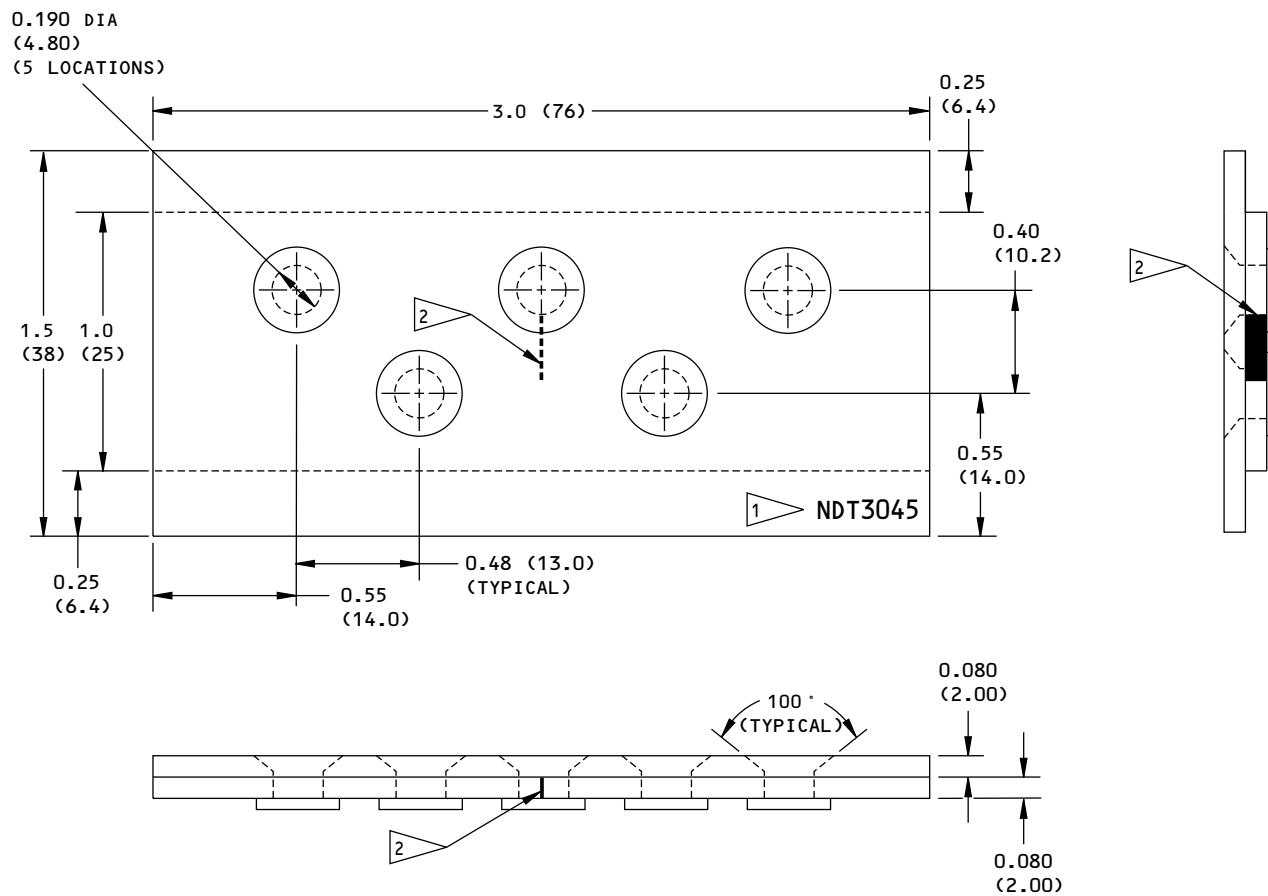
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**NOTES:**

- 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
- SURFACE ROUGHNESS = 125 Ra OR BETTER.
- MATERIAL: 2024-T3 ALUMINUM; CLAD OR BARE
- RIVETS: QUANTITY 5 BACR15BA6AD6

NOTE: THE MATERIAL CODES A, B, D, DD AND KE CAN BE USED AS AN ALTERNATIVE TO THE AD CODE SHOWN IN THE RIVET PART NUMBER
- 1 ▶ ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER, NDT3045.
- 2 ▶ EDM NOTCH:
LENGTH: 0.25 (6.4)
DEPTH: 0.080 (2.00) THROUGH THICKNESS
WIDTH: 0.020 (0.51) MAXIMUM

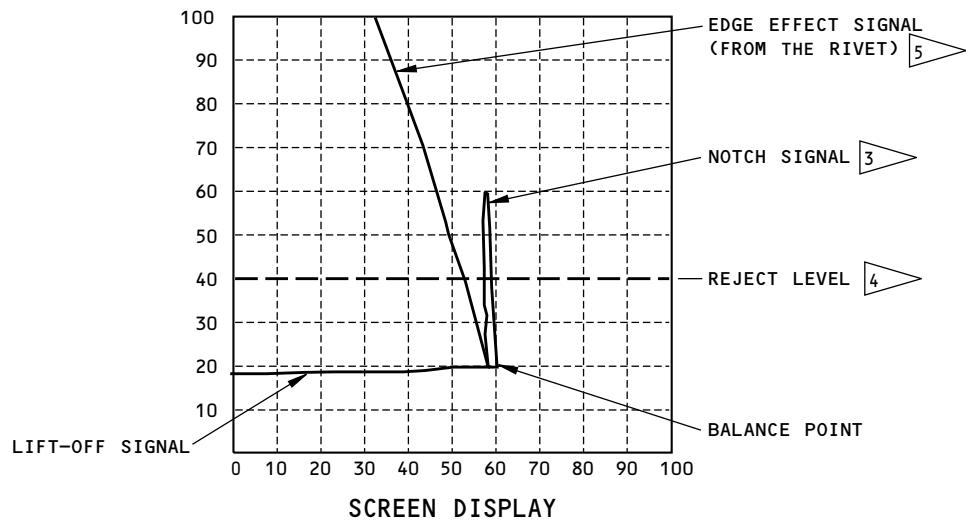
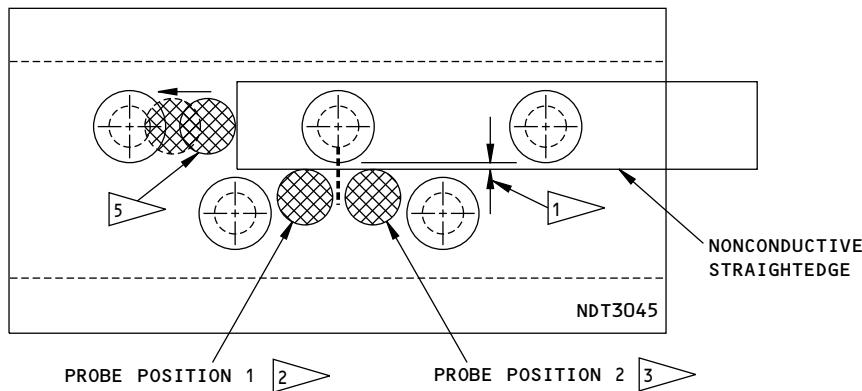
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Reference Standard NDT3045
Figure 2

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NOTES:

- [1] PUT THE STRAIGHTEDGE 0.010 INCH (0.25 mm) TO 0.025 INCH (0.65 mm) FROM THE EDGE OF THE RIVET. THIS PROBE TO RIVET DISTANCE IS USED SO THE EDGE EFFECT IS AT A MINIMUM.
- [2] PROBE POSITION TO SET LIFT-OFF AND BALANCE THE INSTRUMENT
- [3] THE NOTCH SIGNAL OCCURS WHEN THE PROBE GOES FROM PROBE POSITION 1 TO PROBE POSITION 2.
- [4] THE REJECT LEVEL IS SET SO IT IS 20% OF FULL SCREEN HEIGHT (FSH) HIGHER THAN THE BALANCE POSITION.
- [5] AFTER THE CALIBRATION, SLOWLY MOVE THE PROBE TO THE EDGE OF A RIVET AS SHOWN AND MONITOR THE DISPLAY FOR THE START OF AN EDGE EFFECT SIGNAL. THIS IS DONE TO SHOW THE "PROBE TO RIVET DISTANCE" WHERE THE EDGE EFFECT SIGNAL STARTS TO OCCUR. MAKE A RECORD OF THIS DISTANCE WHERE THE EDGE EFFECT SIGNAL OCCURS AT 5% OF FSH. SEE PAR. 4 FOR DATA ON THIS MEASUREMENT THAT YOU RECORDED. CONTINUE TO MOVE THE PROBE ON THE EDGE OF THE RIVET AS SHOWN ABOVE. THIS IS DONE TO SHOW THE DIFFERENCE BETWEEN THE RIVET EDGE EFFECT SIGNAL AND A CRACK SIGNAL. NOTICE HOW THE RIVET EDGE EFFECT SIGNAL IS AT AN ANGLE TO THE LEFT OF THE NOTCH SIGNAL.

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Instrument Calibration
Figure 3

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PART 6 - EDDY CURRENT

PRIMARY LUG OF THE FITTING ASSEMBLY AT THE INBOARD TRACK OF THE INBOARD MAIN FLAP (HFEC)

1. Purpose

- A. Use this procedure to help find surface cracks in the primary lug of the forward fitting assembly at the inboard track of the inboard main flap. See Figure 1 for the inspection area.
- B. The forward fitting assembly is made of titanium.
- C. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-11

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 990 kHz to 2 MHz.
 - (2) The instruments that follow were used to help prepare this procedure.
 - (a) Nortec 1000; Staveley
 - (b) Locator 2d; Hocking
- C. Probes
 - (1) A shielded pencil or right-angle probe with a maximum drop of 0.5 inch (13 mm) is necessary to do this inspection.
 - (2) Refer to Part 6, 51-00-00, Procedure 14, paragraph 3.B, for data about probe selection.
 - (3) The probe that follows was used to help prepare this procedure.
 - (a) MTF 902-50/B 2M; NDT Engineering Corporation
- D. Reference Standards
 - (1) Use reference standard 1002, or an equivalent, as given in Part 6, 51-00-00, Procedure 14, paragraph 3.C.

3. Prepare for the Inspection

- A. Identify the inspection areas shown in Figure 1.
- B. Remove the inboard track.
- C. Lightly smooth rough surfaces and sharp edges of chipped paint.
- D. Fully clean the inspection area.

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4. Instrument Calibration

- A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 14, paragraph 5. Use reference standard 1002, or an equivalent, to do the calibration.

5. Inspection Procedure

- A. Examine the primary lug of the forward fitting assembly for cracks at the locations identified in Figure 1 as follows:
- (1) Refer to Part 6, 51-00-00, Procedure 14, paragraph 6, for the inspection procedure.
 - (2) Do the probe scans in increments that are not more than 0.150 inch (3.81 mm). Make sure the scans are perpendicular to the typical crack direction shown in Figure 1.

NOTE: The primary lug must be examined with the track removed.

- B. Do Paragraph 5.A. again to examine the primary lug of the forward fitting assembly for cracks on the other side of the airplane.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 14, paragraph 7, for instructions to help make an analysis of indications that occur during the inspection.

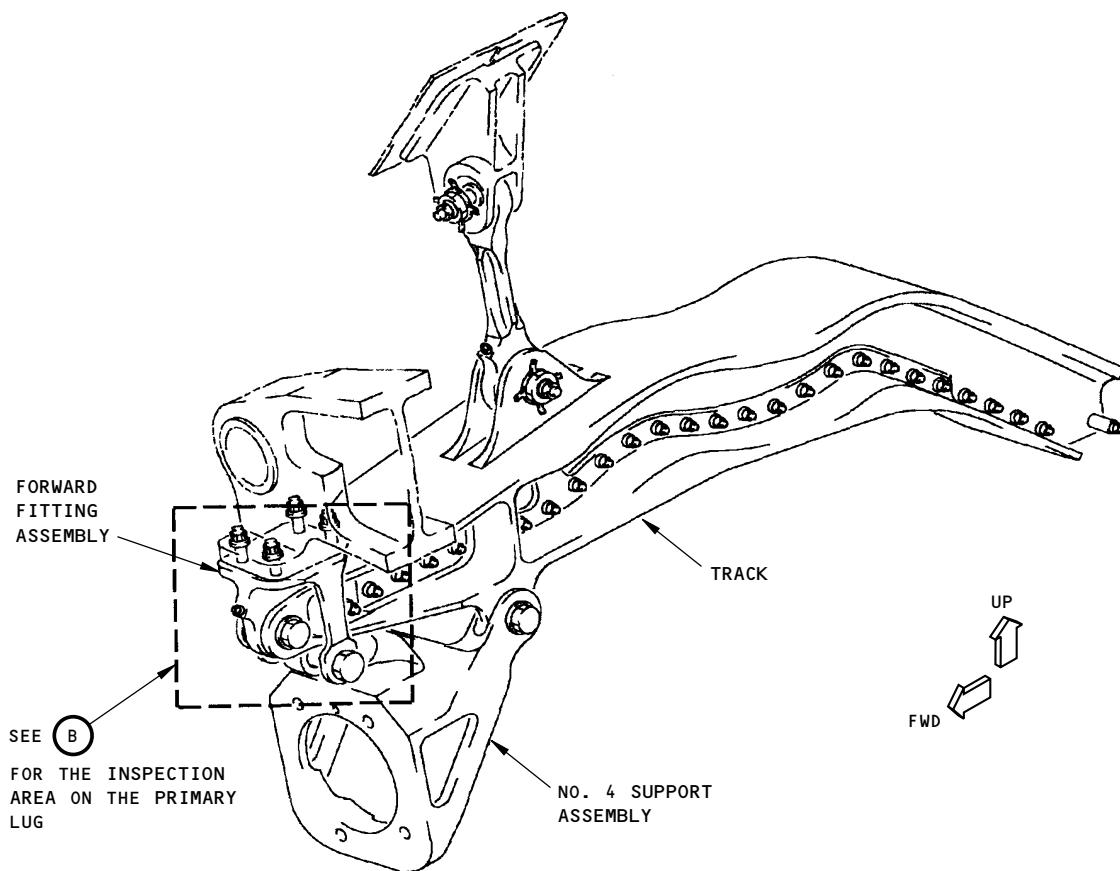
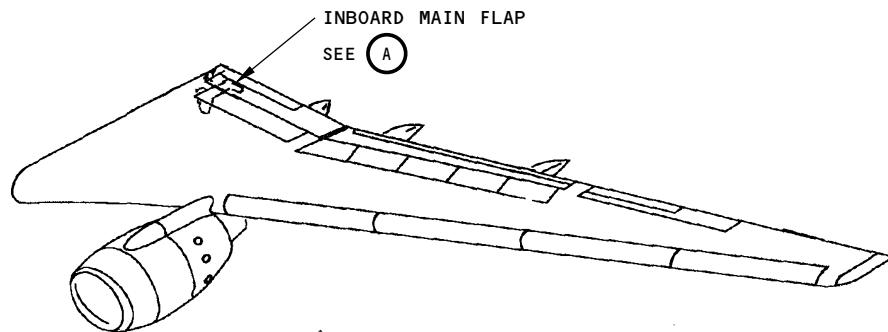
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A

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Inspection Areas
Figure 1 (Sheet 1 of 2)

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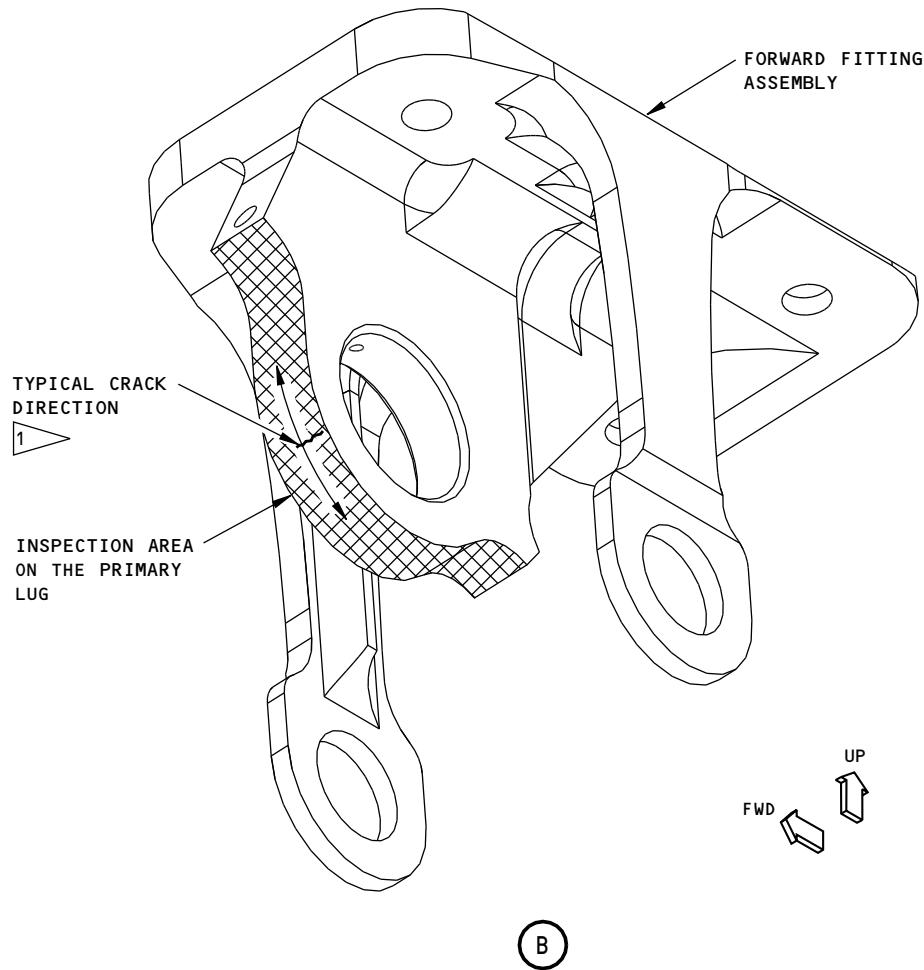
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NOTES:



INSPECTION AREA

- EXAMINE THE PRIMARY LUG ALONG THE SURFACE SHOWN.
- EXAMINE THE PRIMARY LUG WITH THE INBOARD TRACK REMOVED.



USE A SCAN PATTERN THAT WILL MOVE THE PROBE PERPENDICULAR TO THE TYPICAL CRACK DIRECTION. FULLY EXAMINE THE PRIMARY LUG IN SCAN INCREMENTS THAT WILL FIND A 0.2 INCH (5 mm) LONG CRACK.

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Inspection Areas
Figure 1 (Sheet 2 of 2)

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PART 6 - EDDY CURRENT

OUTBOARD FLAP CUTOUTS AT THE REAR SPAR WEB FOR AFT FLAP TRACKS 2 AND 3
(HFEC)

1. Purpose

- A. Use this surface eddy current procedure to examine the rear spar web of the outboard flap for cracks. The rear spar web is examined at the cutouts that are for the support fittings of aft flap tracks 2 and 3. See Figure 1 for the inspection areas.
- B. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-27

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 with an impedance plane display that can:

- (a) operate between 50 and 500 kHz.

- (b) be calibrated as specified in the calibration instructions of this procedure. The instrument that follows was used to help prepare the procedure.

- 1) Nortec 2000D; Olympus NW NDT Inc.

C. Probes

- (1) Use a shielded, right-angle, pencil probe, that has a 0.20 inch (5.1 mm) drop, a length of 6.0 inches (152 mm), and a maximum diameter of 0.125 inches (3.17 mm). The probe that follows was used to help prepare this procedure.

- (a) TPEN92-6; Techna NDT

NOTE: If you make an order for this probe, make sure you tell the probe manufacturer the eddy current instrument you will use. The TPEN92-6 probe has a Triax connector. A probe cable will have to be ordered separately.

D. Reference Standard

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

3. Prepare for the Inspection

- A. Identify the inspection areas shown in Figure 1.
- B. Put the flaps in the down position.
- C. Remove the upper access panel from the outboard flap to get access to the cutouts of the rear spar web for aft tracks 2 and 3. See Figure 1.
- D. Lightly sand the rough surfaces caused by chipped paint to make the inspection surfaces smooth.
- E. Fully clean the inspection areas that the probe will touch.

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4. Instrument Calibration

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

5. Inspection Procedure

- A. Examine the outboard flaps for cracks at the cutouts for the aft track 2 and 3 support fittings (see Figure 1) as follows:
- (1) Calibrate the instrument as specified in Paragraph 4.
 - (2) Get access to the cutout for aft track 2 (at approximately OTEF 182.0) at the rear spar web of the outboard flap on the left side of the airplane (see Figure 1).
 - (3) Put the probe on the inner edge of the cutout as shown in Figure 1.
NOTE: The upper access panel must be removed to put the probe on the cutout of the rear spar web.
 - (4) Balance the instrument.
NOTE: Do not change the instrument sensitivity after you balance the instrument.
 - (5) Make a 360 degree scan for cracks around the edge of the cutout. Refer to Part 6, 51-00-00, Procedure 23, paragraph 6.E.(3)(e).
 - (a) Record the cutout locations that cause signals to occur that are 50% (or more) of full screen height.
 - (6) Do Paragraph 5.A.(2) thru Paragraph 5.A.(5) again to examine the cutout for aft track 3 at the rear spar web (at approximately OTEF 123.0).
 - (7) Do Paragraph 5.A.(2) thru Paragraph 5.A.(6) again to examine the outboard flap on the right wing for cracks.

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.

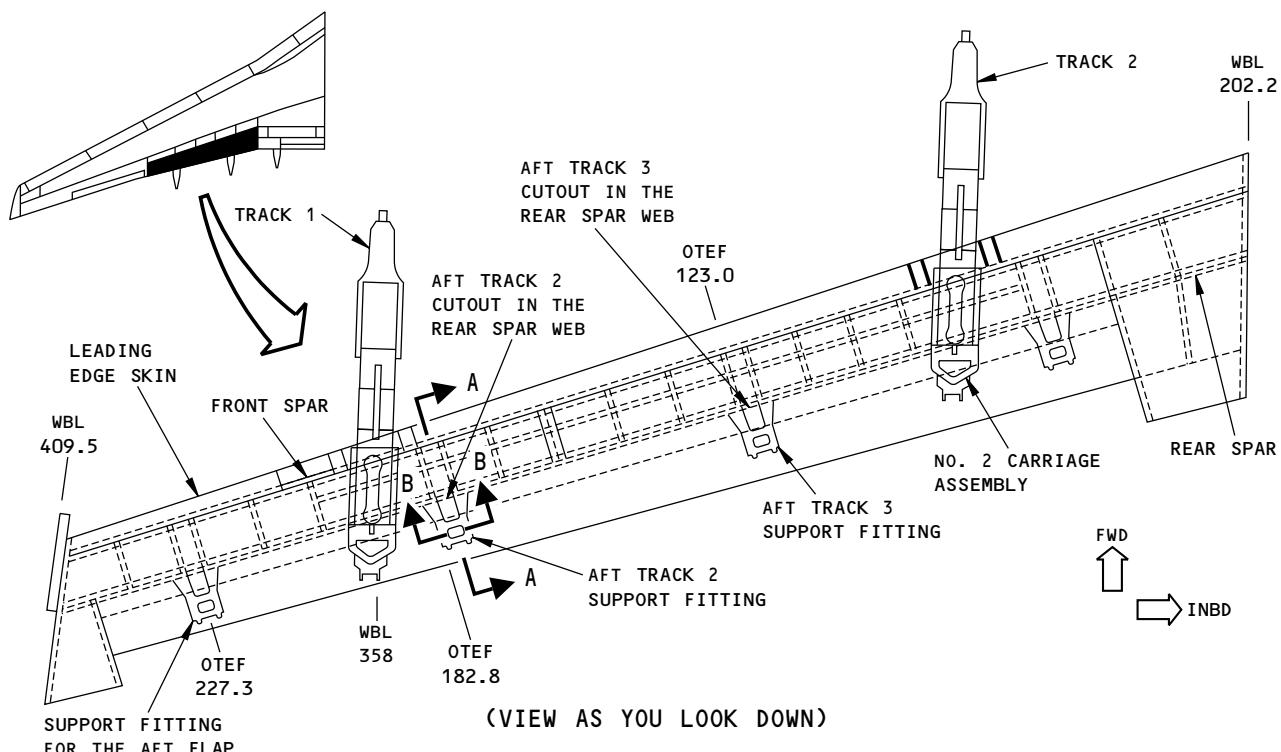
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SUPPORT FITTING FOR THE AFT FLAP TRACK (TYP)

THE UPPER ACCESS PANEL IS REMOVED FOR ACCESS

PROBE

REAR SPAR WEB

AFT TRACK CUTOUT 2

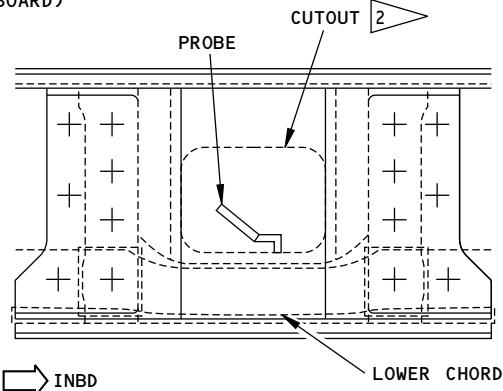
FRONT SPAR

A-A

(VIEW AS YOU LOOK INBOARD)

NOTES:

- THE LEFT OUTBOARD FLAP IS SHOWN; THE RIGHT OUTBOARD FLAP IS ALMOST THE SAME.
 - THE TOP OF THE FLAP IS SHOWN; THE BOTTOM OF THE FLAP IS ALMOST THE SAME.
 - THE AFT FLAP IS NOT SHOWN
- 1 ▶ THE CUTOUT AT AFT TRACK 2 IS SHOWN; THE CUTOUT AT AFT TRACK 3 IS ALMOST THE SAME. THE AFT TRACK SUPPORT FITTING IS NOT SHOWN FOR YOU TO SEE THE CUTOUT IN THE REAR SPAR WEB.
- 2 ▶ MAKE A 360 DEGREE SCAN AROUND THE EDGE OF THE CUTOUT IN THE REAR SPAR WEB FOR AFT TRACK 2 AND 3.



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**Inspection Areas
Figure 1**

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PART 6 - EDDY CURRENT

OUTBOARD MAIN FLAP - FLAP TRACKS 1 AND 2 (HFEC)

1. Purpose

- A. Use this procedure to examine flap tracks 1 (WBL 357.7) and 2 (WBL 254) at the locations (see Figure 1) that follow:
 - (1) Examine the inboard and outboard sides of the webs around the fastener locations shown in Figure 1.
 - (2) Examine along the edges of the upper and lower flanges of the flap tracks.
- B. This procedure uses an impedance plane display instrument.
- C. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-01-1b
 - (2) Item: 57-53-03-1b

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 24, 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 NDT1062, or an equivalent, as shown in Part 6, 51-00-00, Procedure 24, to help calibrate the instrument to examine around fastener heads.

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- (2) Use reference standard 185, or an equivalent, as shown in Part 6, 51-00-00, Procedure 24, to help calibrate the instrument to examine the edges of the upper and lower flanges.

E. Special Tools

- (1) Nonconductive straightedge.

3. Prepare for the Inspection

- A. Get access to the inspection area.
B. Remove dirt, loose paint, and sealant as necessary.

4. Instrument Calibration

- A. Calibrate the instrument to examine around fasteners in the flap track web (see Figure 1) as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.
(1) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument.
B. Calibrate the instrument to examine the edges of the upper and lower flanges of the flap tracks (see Figure 1) as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.
(1) Use reference standard 185, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

- A. Examine flap tracks 1 and 2 for cracks as specified in Part 6, 51-00-00, Procedure 24, paragraph 5, and the steps that follow:
(1) Examine the webs of flap tracks 1 and 2 for cracks as follows:
(a) Calibrate the instrument as specified in Paragraph 4.A.
(b) Move the probe around the fasteners shown in Figure 1 that go through the webs of flap tracks 1 and 2. Cracks can occur in the up and down (vertical) direction.
(2) Examine the edges of the upper and lower flanges of flap tracks 1 and 2 for cracks as follows:
(a) Calibrate the instrument as specified in Paragraph 4.B.
(b) Use a nonconductive straightedge to help move the probe along the edges of the upper and lower flanges that are shown in Figure 1 for cracks that occur in a direction that is toward the web.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 24, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

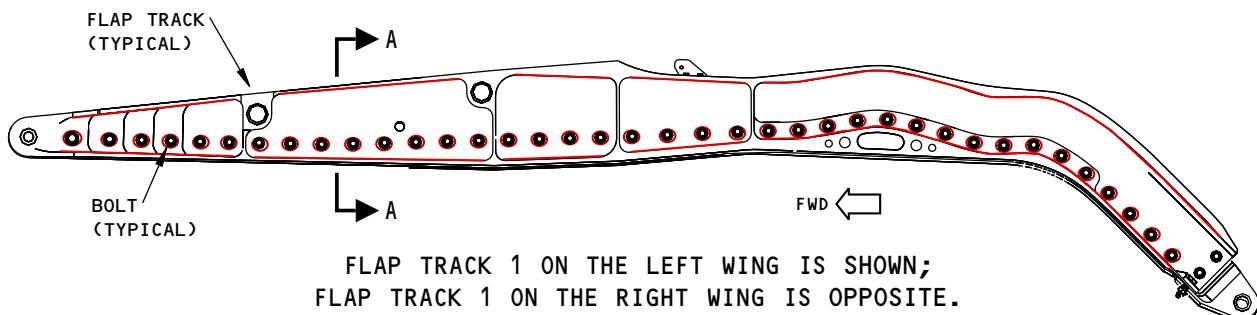
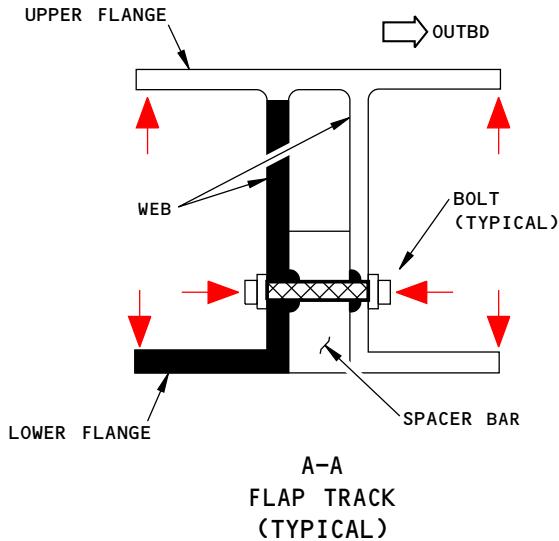
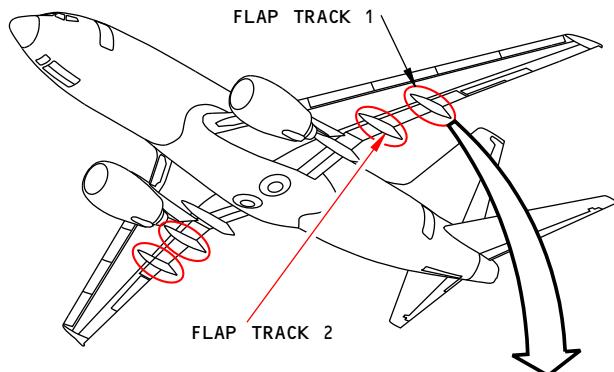
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FLAP TRACK 1 ON THE LEFT WING IS SHOWN;
 FLAP TRACK 1 ON THE RIGHT WING IS OPPOSITE.
 FLAP TRACK 2 IS ALMOST THE SAME AS FLAP TRACK 1
 (VIEW AS YOU LOOK INBOARD)
 THE OUTBOARD SIDE IS SHOWN;
 THE INBOARD SIDE IS OPPOSITE

NOTES

- INSPECTION AREA
- INSPECTION FASTENER LOCATIONS
- REMOVE SEALANT AS NECESSARY
- MOVE THE PROBE AROUND THE INSPECTION FASTENER LOCATIONS TO EXAMINE THE WEBS FOR CRACKS THAT ARE IN THE UP AND DOWN (VERTICAL) DIRECTION
- MOVE THE PROBE ALONG THE UPPER AND LOWER FLANGES TO EXAMINE THE EDGES FOR CRACKS THAT ARE TOWARD THE WEBS

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**Inspection Area
Figure 1**
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PART 6 - EDDY CURRENT

**FORWARD AND AFT ROLLER BOSSES AND AFT BRIDGE SUPPORT HOLES OF THE
OUTBOARD CARRIAGE FITTING (HFEC)**

1. Purpose

- A. This procedure uses high frequency eddy current (HFEC) to examine the outboard carriage fitting at WBL 357.7 on the main outboard trailing edge flap for cracks. The flaps must be extended, the aft flap track fairing removed and the roller pin assemblies must be removed to get access for this inspection. See Figure 1 for the inspection areas.
- B. This procedure uses surface inspections to examine the outboard carriage fitting for cracks at the areas that follow:
 - (1) The areas around the holes of the aft and forward roller bosses. These areas are identified in Figure 1 as "edges" with flagnotes 1 and 2.
 - (2) The areas around the fastener holes used to attach the aft bridge fitting. These areas are identified in Figure 1 as "edges" with flagnote 3.
- C. This procedure uses open hole inspections to examine the outboard carriage fitting for cracks at the holes that follow:
 - (1) The holes of the forward and aft roller bosses. These holes are identified in Figure 1 as "holes" with flagnotes 1 and 2. There are a total of four of these holes to be examined, two on each side of the outboard carriage fitting.
 - (2) The two bolt holes in the outboard carriage fitting that are used to attach the aft bridge fitting. These holes are identified in Figure 1 as "fastener holes" with flagnote 3.
- D. This procedure uses an impedance plane display instrument. A rotary scanner is used to help examine the holes.
- E. The outboard carriage fitting is titanium.
- F. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-24-1 (forward and aft roller bosses of the outboard carriage)
 - (2) Item: 57-53-24-2 (aft bridge support of the outboard carriage)

2. Equipment

- A. General
 - (1) Use inspection equipment that can be calibrated 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 with a rotary scanner.
 - (b) Operates from 990 kHz to 2 MHz.
- C. Probes
 - (1) For the surface inspections, use a pencil probe (or probes) that:
 - (a) is shielded.

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- (b) is straight and/or right-angle.
- (c) operates from 990 kHz to 2 MHz.
- (2) For the open hole inspections, use a probe that can examine hole diameters of 0.439 inch (11.16 mm), 1.375 inch (34.94 mm), and 1.438 inch (36.52 mm).
 - (a) Refer to Part 6, 51-00-00, Procedure 17, paragraph 3.B, for more data about the probes.

D. Reference Standard

- (1) For the surface inspections:
 - (a) Use reference standard 1002, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 14, paragraph 3.C, for data about reference standard 1002.
- (2) For the open hole inspections:
 - (a) Use reference standards that have hole diameters of approximately 0.439 inch (11.16 mm), 1.375 inch (34.94 mm), and 1.438 inch (36.52 mm).
 - (b) Refer to Part 6, 51-00-00, Procedure 17, paragraph 3.C. for reference standard instructions.

E. Nonconductive Probe Guide

- (1) For the surface inspections in the areas around the open holes:
 - (a) Use a circle template or a flexible probe guide to help make a scan in the areas around the holes.

3. Prepare for the Inspection

- A. Extend the flaps.
- B. Remove the aft flap track fairing.
- C. Identify the inspections areas shown in Figure 1.
- D. Disassemble the outboard carriage assembly to get access to the inspection areas.
 - (1) Remove the pins, rollers and bushings from the forward and aft roller bosses on each side of the outboard carriage assembly.
 - (2) Remove the aft bridge fitting.
- E. Clean the inspection areas.
 - (1) Remove dirt or grease from the inspection surfaces.
 - (2) Remove paint only if it is loose.
 - (3) Remove sealant from the areas that the probe will touch.
- F. Refer to Part 6, 51-00-00, Procedure 14, paragraph 4, for more instructions on how to prepare for the surface inspection.
- G. Refer to Part 6, 51-00-00, Procedure 17, paragraph 4, for more instructions on how to prepare for an open hole inspection.

4. Instrument Calibration

- A. For the surface inspections:
 - (1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.
 - (a) Use reference standard 1002, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 14, paragraph 3.C, for data about reference standard 1002.

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B. For the open hole inspections:

- (1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 17, paragraph 5.
 - (a) Use reference standards as specified in Part 6, 51-00-00, Procedure 17, paragraph 3.C.

5. Inspection Procedure

A. Examine the outboard carriage fitting for cracks in the areas shown in Figure 1 as follows:

- (1) Examine the side and edge surfaces:
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Make a scan of the inspection areas that follow:
 - 1) Make a 360 degree scan around the hole on each side of the forward and aft roller bosses and on each side of the fastener holes for the aft bridge fitting. See Figure 1, flagnotes 1 thru 3, for the "edge" inspection areas.
 - 2) Refer to Part 6, 51-00-00, Procedure 14, paragraph 6.D, for more instructions for inspections near the edges.
- (2) Examine the holes of the forward and aft roller bosses and the holes in the support for the aft bridge fitting:
 - (a) Calibrate the instrument as specified in Paragraph 4.B.
 - (b) Examine each hole as specified in Part 6, 51-00-00, Procedure 17, paragraph 6.
 - 1) See Figure 1, flagnotes 1 thru 3, for the "hole" inspection areas.

6. Inspection Results

- A. For the surface inspections, refer to Part 6, 51-00-00, Procedure 14, paragraph 7, for instructions to help with the analysis of the indications that occur during the inspection.
- B. For the open hole inspections, refer to Part 6, 51-00-00, Procedure 17, paragraph 7, for instructions to help with the analysis of the indications that occur during the inspection.

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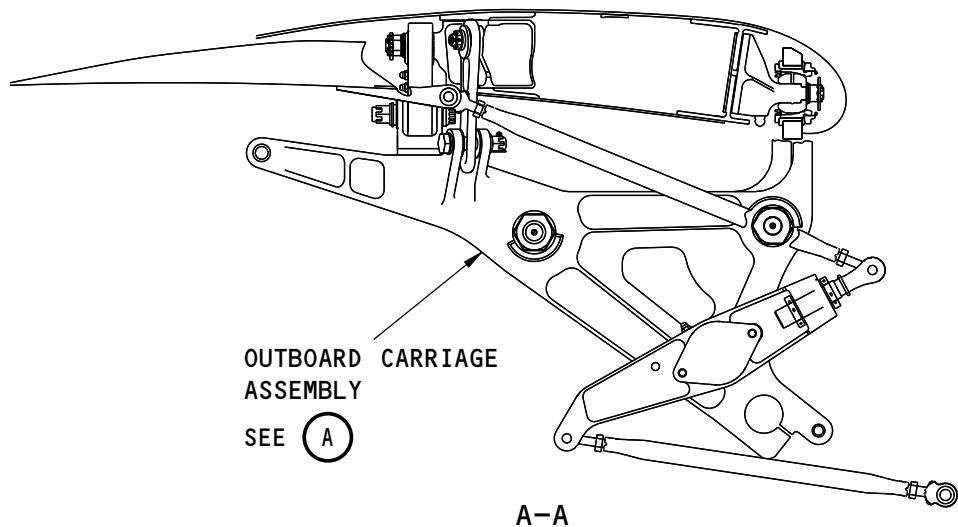
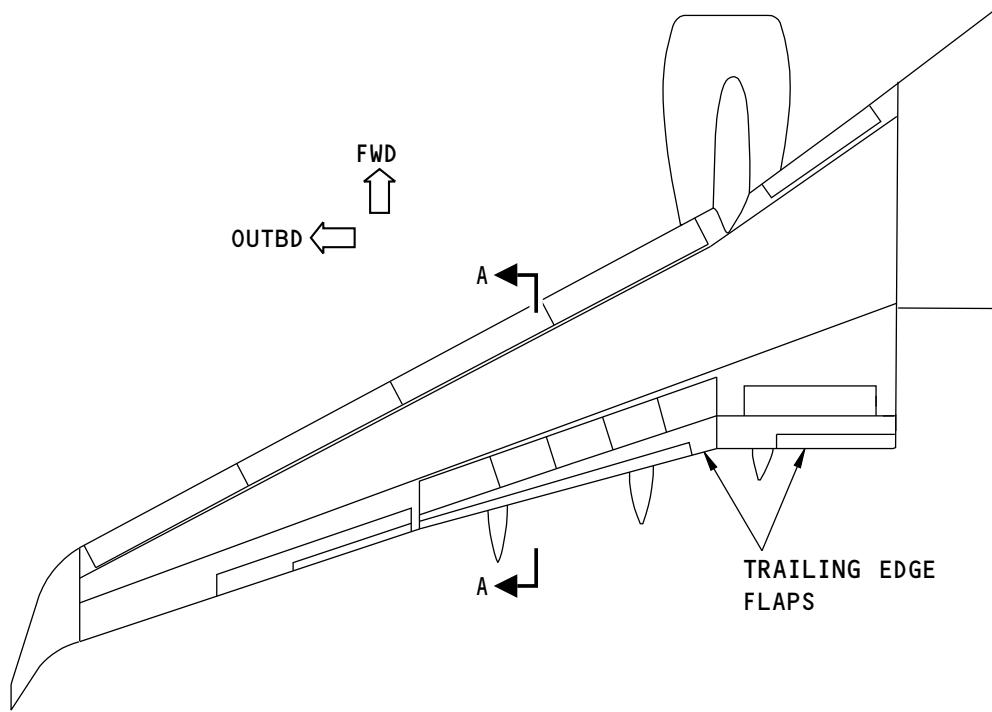
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NOTE:

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE

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Inspection Area
Figure 1 (Sheet 1 of 4)

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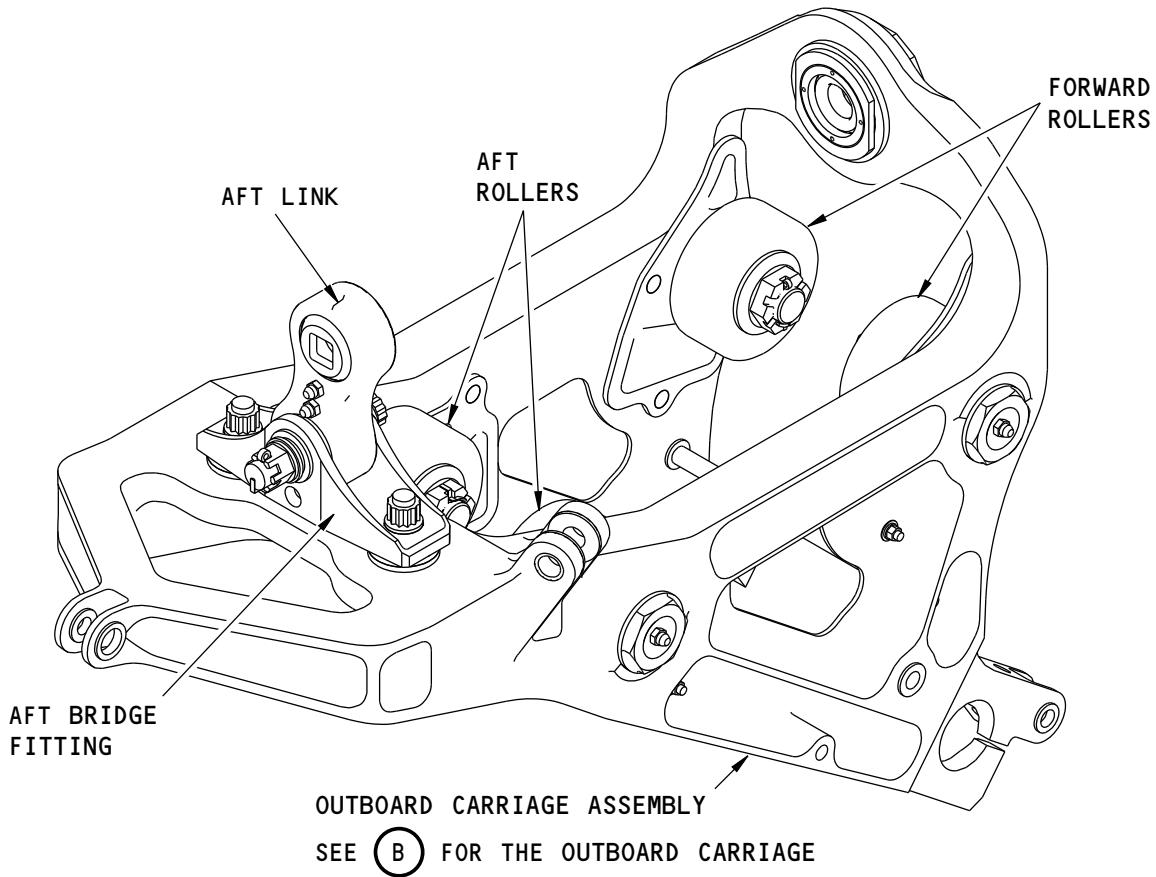
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(A)

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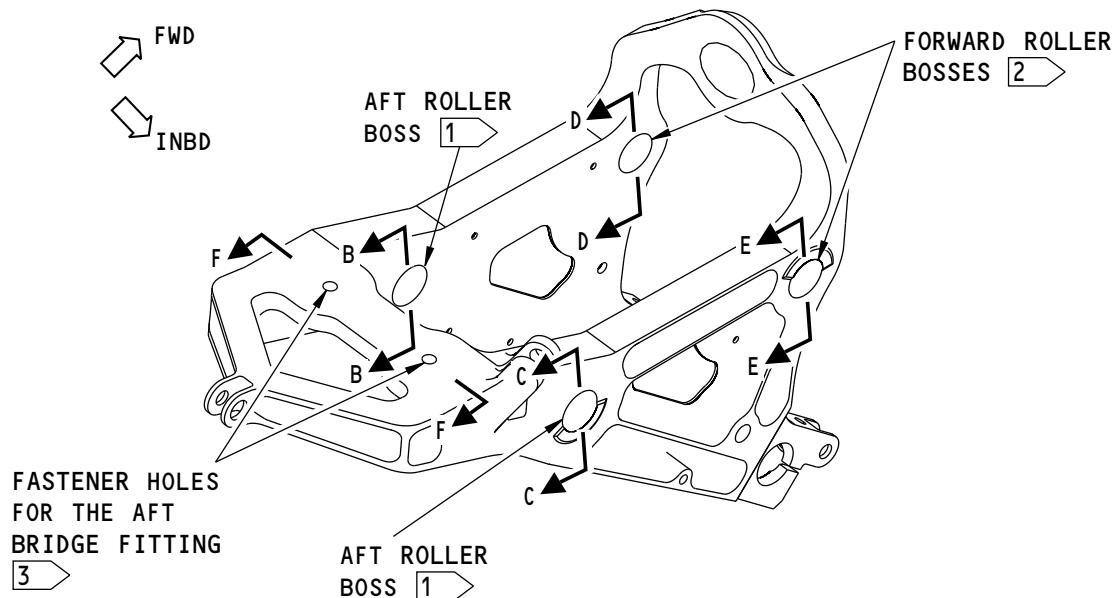
Inspection Area
Figure 1 (Sheet 2 of 4)

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OUTBOARD CARRIAGE INSPECTION AREAS

(B)

NOTES:

- [1] EXAMINE THE EDGES AND THE HOLE OF EACH AFT ROLLER BOSS. IT IS NECESSARY TO EXAMINE EACH SIDE OF EACH HOLE. SEE SECTION VIEWS B-B AND C-C.
- [2] EXAMINE THE EDGES AND THE HOLE OF EACH FORWARD ROLLER BOSS. IT IS NECESSARY TO EXAMINE EACH SIDE OF EACH HOLE. SEE SECTION VIEWS D-D AND E-E.
- [3] EXAMINE THE EDGES AND THE HOLE OF EACH FASTENER HOLE. IT IS NECESSARY TO EXAMINE EACH SIDE OF EACH HOLE. SEE SECTION VIEW F-F.

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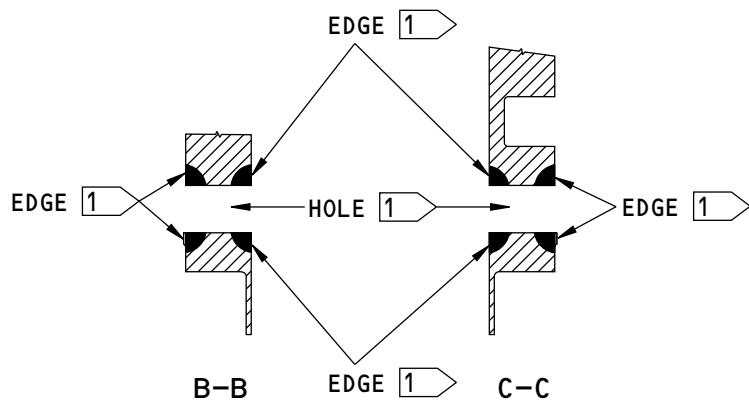
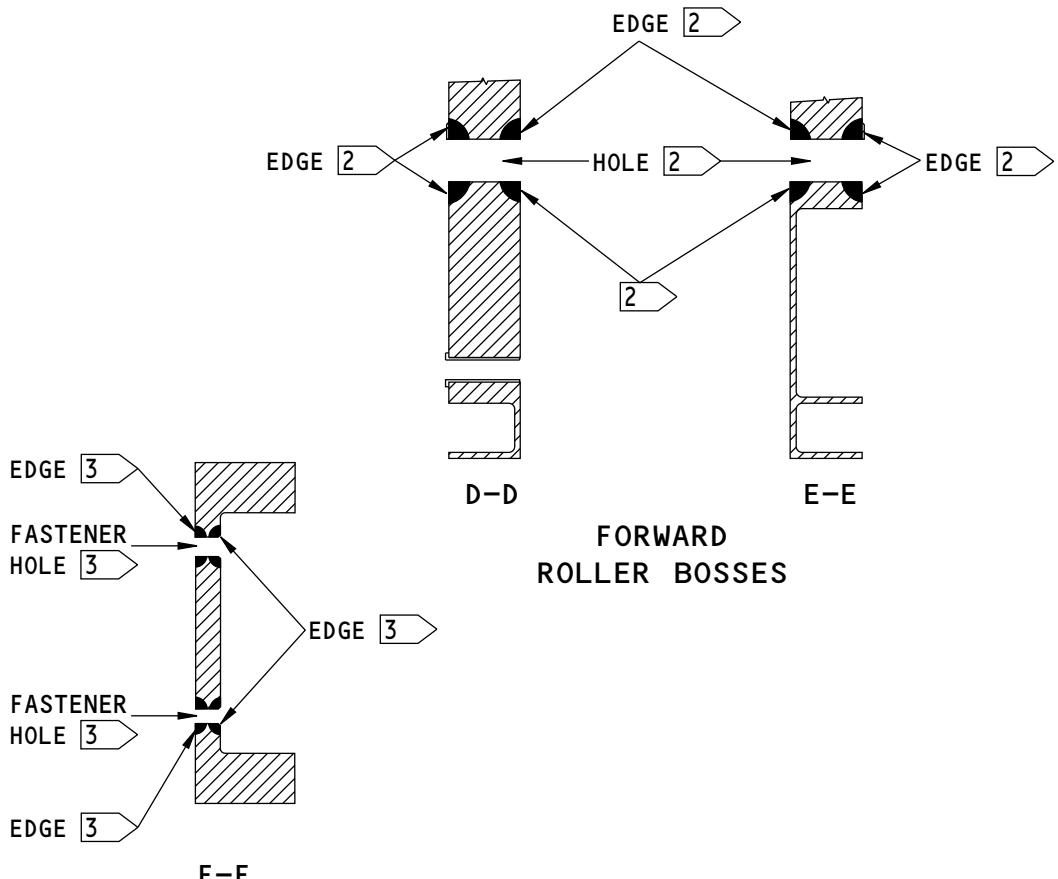
Inspection Area
Figure 1 (Sheet 3 of 4)

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AFT ROLLER BOSSES


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**Inspection Area
Figure 1 (Sheet 4 of 4)**

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PART 6 - EDDY CURRENT

FORWARD AND AFT ROLLER BOSSES AND AFT BRIDGE SUPPORT HOLES OF THE INBOARD CARRIAGE FITTING (HFEC)

1. Purpose

- A. This procedure uses high frequency eddy current (HFEC) to examine the inboard carriage fitting at WBL 254.0 on the main outboard trailing edge flap for cracks. The flaps must be extended, the aft flap track fairing removed and the roller pin assemblies must be removed to get access for this inspection. See Figure 1 for the inspection areas.
- B. This procedure uses surface inspections to examine the inboard carriage fitting for cracks at the areas that follow:
 - (1) The areas around the holes of the aft and forward roller bosses. These areas are identified in Figure 1 as "edges" with flagnotes 1 and 2.
 - (2) The areas around the fastener holes used to attach the aft bridge fitting. These areas are identified in Figure 1 as "edges" with flagnote 3.
- C. This procedure uses open hole inspections to examine the inboard carriage fitting for cracks at the holes that follow:
 - (1) The holes of the forward and aft roller bosses. These holes are identified in Figure 1 as "holes" with flagnotes 1 and 2. There are a total of four of these holes to be examined, two on each side of the inboard carriage fitting.
 - (2) The two bolt holes in the inboard carriage fitting that are used to attach the aft bridge fitting. These holes are identified in Figure 1 as "fastener holes" with flagnote 3.
- D. This procedure uses an impedance plane display instrument. A rotary scanner is used to help examine the holes.
- E. The inboard carriage fitting is titanium.
- F. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-25-1 (forward and aft roller bosses of the inboard carriage)
 - (2) Item: 57-53-25-2 (aft bridge support of the inboard carriage)

2. Equipment

- A. General
 - (1) Use inspection equipment that can be calibrated 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 with a rotary scanner.
 - (b) Operates from 990 kHz to 2 MHz.
- C. Probes
 - (1) For the surface inspections, use a pencil probe (or probes) that:
 - (a) is shielded.

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- (b) is straight and/or right-angle.
- (c) operates from 990 kHz to 2 MHz.
- (2) For the open hole inspections, use a probe that can examine hole diameters of 0.439 inch (11.16 mm) and 1.500 inches (38.11 mm).
 - (a) Refer to Part 6, 51-00-00, Procedure 17, paragraph 3.B., for more data about the probes.

D. Reference Standard

- (1) For the surface inspections:
 - (a) Use reference standard 1002, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 14, paragraph 3.C, for data about reference standard 1002.
- (2) For the open hole inspections:
 - (a) Use reference standards that have hole diameters of approximately 0.439 inch (11.16 mm) and 1.500 inch (38.11 mm).
 - (b) Refer to Part 6, 51-00-00, Procedure 17, paragraph 3.C, for reference standard instructions.

E. Nonconductive Probe Guide

- (1) For the surface inspections in the areas around the open holes:
 - (a) Use a circle template or a flexible probe guide to help make a scan in the areas around the holes.

3. Prepare for the Inspection

- A. Extend the flaps.
- B. Remove the aft flap track fairing.
- C. Identify all of the inspection areas shown in Figure 1.
- D. Disassemble the inboard carriage assembly to get access to the inspection areas.
 - (1) Remove the pins, rollers and bushings from the forward and aft roller bosses on each side of the inboard carriage fitting.
 - (2) Remove the aft bridge fitting.
- E. Clean the inspection areas.
 - (1) Remove dirt or grease from the inspection surfaces.
 - (2) Remove paint only if it is loose.
 - (3) Remove sealant from the areas that the probe will touch.
- F. Refer to Part 6, 51-00-00, Procedure 14, paragraph 4, for more instructions on how to prepare for the surface inspection.
- G. Refer to Part 6, 51-00-00, Procedure 17, paragraph 4 for more instructions on how to prepare for an open hole inspection.

4. Instrument Calibration

- A. For the surface inspections:
 - (1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.
 - (a) Use reference standard 1002, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 14, paragraph 3.C, for data about reference standard 1002.

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B. For the open hole inspections:

- (1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 17, paragraph 5.
 - (a) Use reference standards as specified in Part 6, 51-00-00, Procedure 17, paragraph 3.C.

5. Inspection Procedure

A. Examine the inboard carriage fitting for cracks in the areas shown in Figure 1 as follows:

- (1) Examine the side and edge surfaces:
 - (a) Calibrate the instrument as specified in Paragraph 4.A.
 - (b) Make a scan of the inspection areas that follow:
 - 1) Make a 360 degree scan around the hole on each side of the forward and aft roller bosses and on each side of the fastener holes for the aft bridge fitting. See Figure 1, flagnotes 1 thru 3, for the "edge" inspection areas.
 - 2) Refer to Part 6, 51-00-00, Procedure 14, paragraph 6.D, for more instructions for inspections near the edges.
 - (2) Examine the holes of the forward and aft roller bosses and the holes in the support for the aft bridge fitting:
 - (a) Calibrate the instrument as specified in Paragraph 4.B.
 - (b) Examine each hole as specified in Part 6, 51-00-00, Procedure 17, paragraph 6.
 - 1) See Figure 1, flagnotes 1 thru 3, for the "hole" inspection areas.

6. Inspection Results

- A. For the surface inspections, refer to Part 6, 51-00-00, Procedure 14, paragraph 7, for instructions to help with the analysis of the indications that occur during the inspection.
- B. For the open hole inspections, refer to Part 6, 51-00-00, Procedure 17, paragraph 7, for instructions to help with the analysis of the indications that occur during the inspection.

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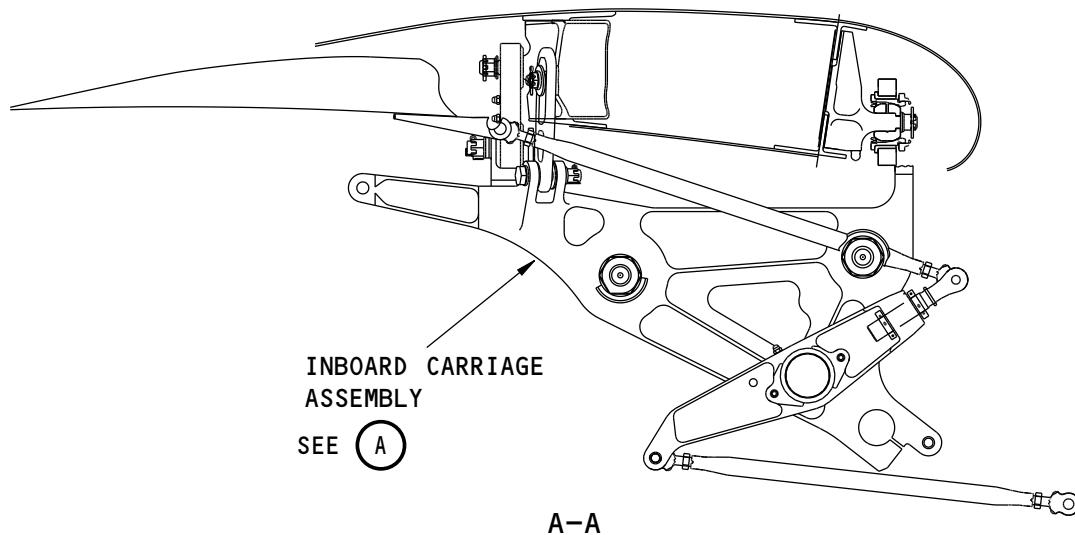
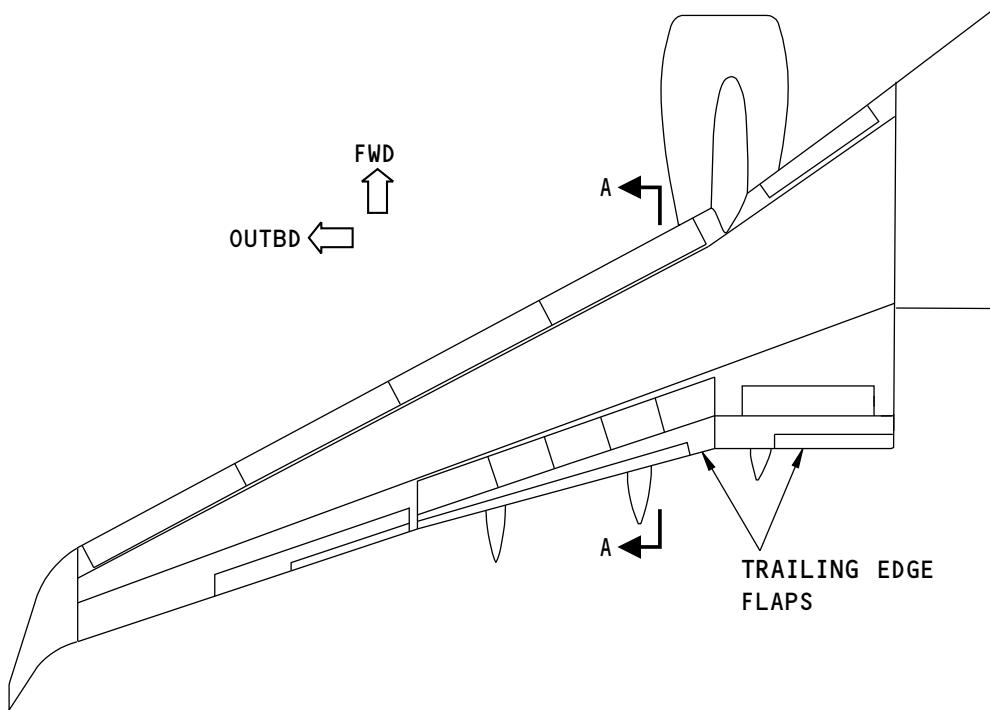
EFFECTIVITY

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NOTE

- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE

2293705 S0000519617_V1

Inspection Area
Figure 1 (Sheet 1 of 4)

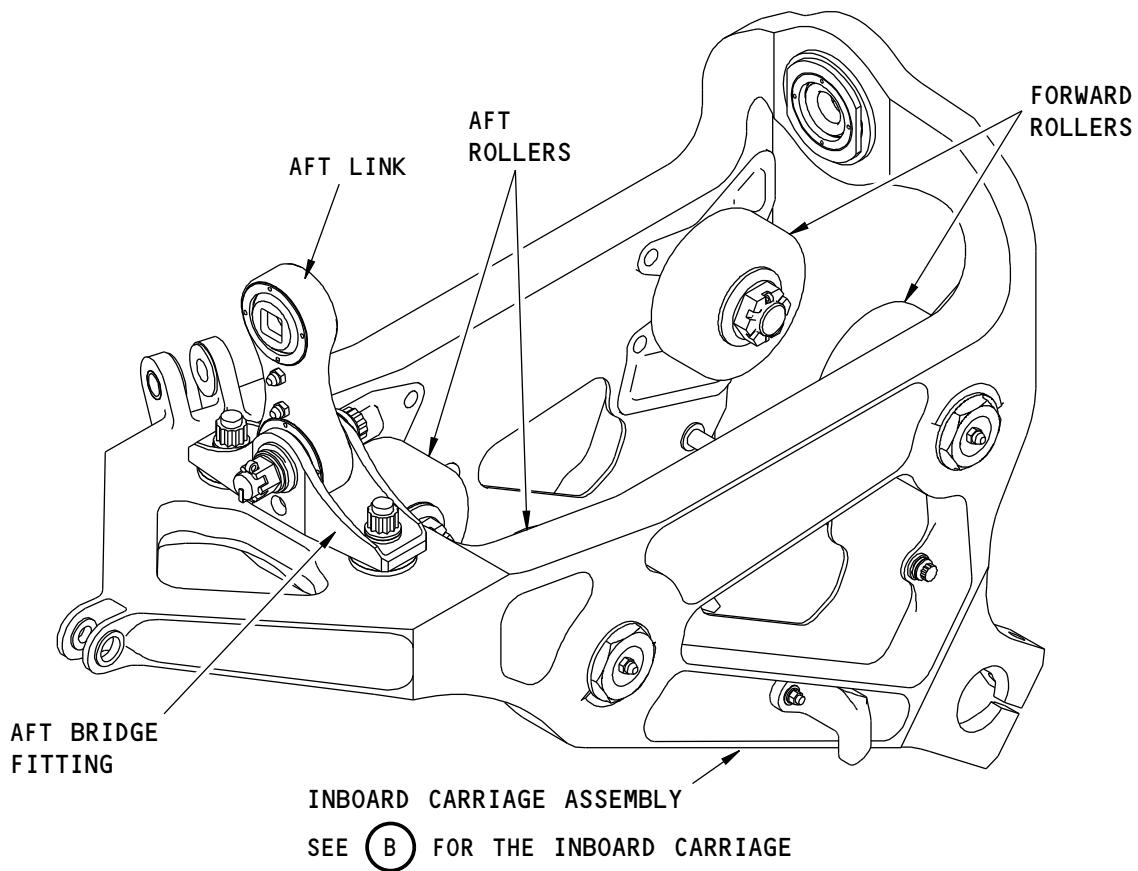
ALL	EFFECTIVITY
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(A)

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Inspection Area
Figure 1 (Sheet 2 of 4)

EFFECTIVITY
ALL

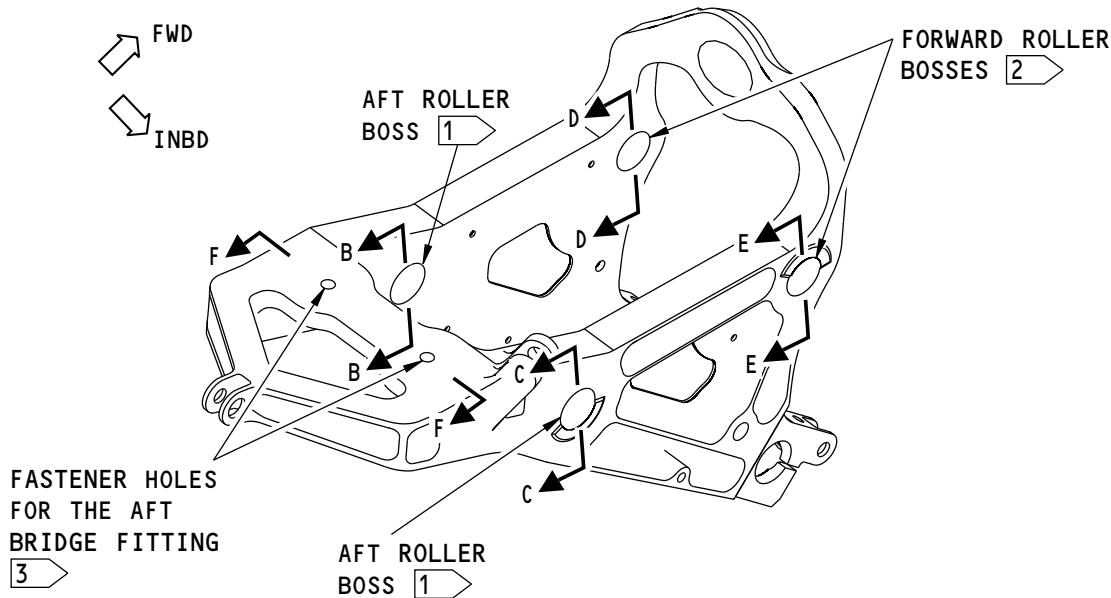
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INBOARD CARRIAGE INSPECTION AREAS

B

NOTES

- 1 EXAMINE THE EDGES AND THE HOLE OF EACH AFT ROLLER BOSS. IT IS NECESSARY TO EXAMINE EACH SIDE OF EACH HOLE. SEE SECTION VIEWS B-B AND C-C.
 - 2 EXAMINE THE EDGES AND THE HOLE OF EACH FORWARD ROLLER BOSS. IT IS NECESSARY TO EXAMINE EACH SIDE OF EACH HOLE. SEE SECTION VIEWS D-D AND E-E.
 - 3 EXAMINE THE EDGES AND THE HOLE OF EACH FASTENER HOLE. IT IS NECESSARY TO EXAMINE EACH SIDE OF EACH HOLE. SEE SECTION VIEW F-F.

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Inspection Area
Figure 1 (Sheet 3 of 4)

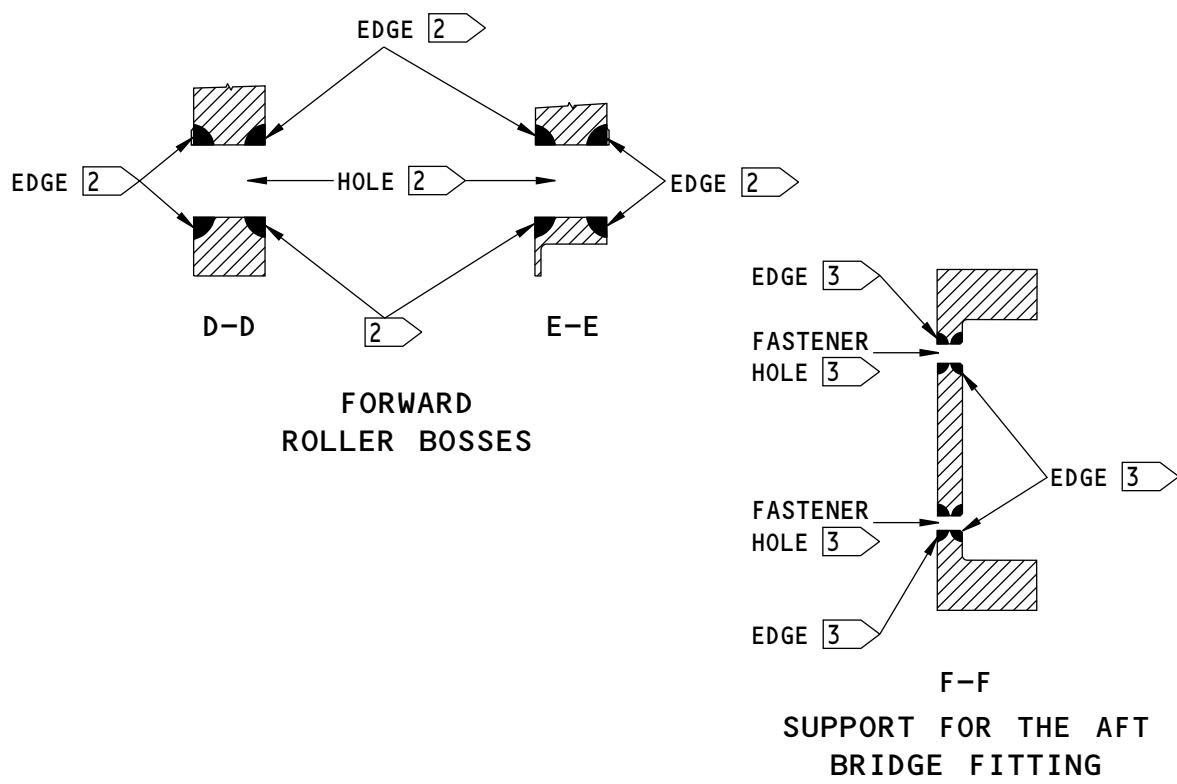
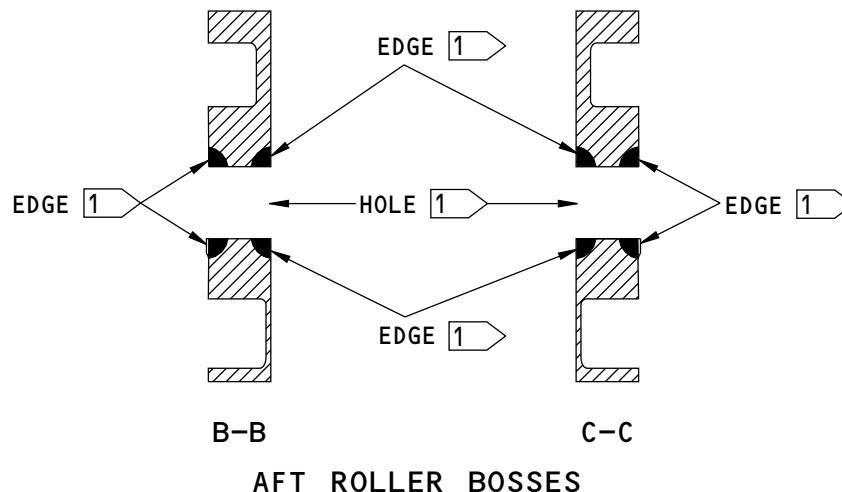
ALL EFFECTIVITY

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Inspection Area
Figure 1 (Sheet 4 of 4)

EFFECTIVITY
ALL

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PART 6 - EDDY CURRENT

INBOARD MAIN FLAP - FLAP TRACK 4 (HFEC)

1. Purpose

- A. Use this procedure to examine flap track 4 (at WBL 64) of the inboard main flap for cracks at the locations that follow. See Figure 1 for the inspection areas.
 - (1) Examine the webs in the areas around the fasteners that go through the webs from the inboard and outboard sides of the flap track.
 - (2) Examine the edges of the upper and lower flanges.
- B. This procedure uses an impedance plane display instrument.
- C. Flap track 4 is titanium.
- D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-10-1B

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 14, 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 1004, or an equivalent, to help calibrate the instrument to examine the web of flap track 4 in the area around the fasteners. Refer to Part 6, 51-00-00, Procedure 14, for data about reference standard 1004.

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- (2) Use reference standard 1002, or an equivalent, to help calibrate the instrument to examine the edges of the upper and lower flanges of flap track 4. Refer to Part 6, 51-00-00, Procedure 14, for data about reference standard 1002.

E. Special Tools

- (1) Nonconductive straightedge.

3. Prepare for the Inspection

- A. Get access to the inspection area.

NOTE: The side-of-body fairing must be removed to get access to flap track 4.

- B. Remove dirt, loose paint, and sealant, if necessary.

4. Instrument Calibration

- A. Calibrate the instrument to examine the webs of flap track 4 in the areas around the fasteners (see Figure 1) as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.

- (1) Use reference standard 1004, or an equivalent, to help calibrate the instrument.

- B. Calibrate the instrument to examine the edges of the upper and lower flanges of flap track 4 (see Figure 1) as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.

- (1) Use reference standard 1002, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

- A. Refer to Part 6, 51-00-00, Procedure 14, paragraph 6, for general instructions about surface eddy current inspections.

- B. Examine the webs of flap track 4 for cracks as follows:

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

- (2) Move the probe on the web in the areas that are around the fasteners that go through the web. See Figure 1 for the fastener locations. Cracks can occur in the up and down direction.

- C. Examine the edges of the upper and lower flanges of flap track 4 for cracks as follows:

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

- (2) Use a nonconductive straightedge to help move the probe along the edges of the upper and lower flanges of flap track 4. See Figure 1 for the inspection areas. Cracks can occur in the inboard and outboard direction.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 14, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

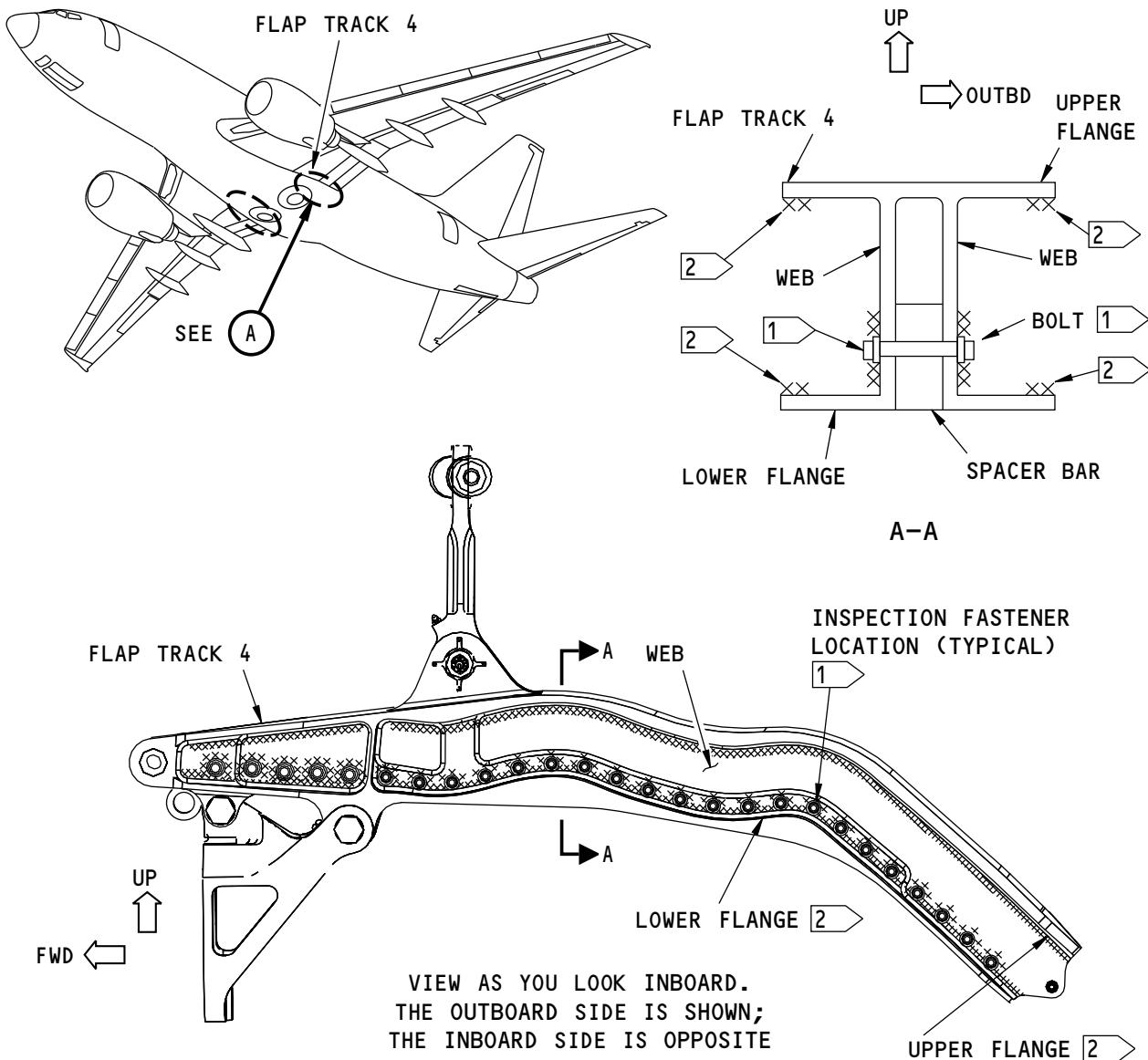
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NOTES:
XXXXX INSPECTION AREAS

- REMOVE SEALANT FROM THE INSPECTION AREAS AS NECESSARY
- 1 ➤ EXAMINE THE WEB AT THE FASTENER LOCATIONS SHOWN FOR CRACKS THAT ARE IN THE UP AND DOWN DIRECTION
- 2 ➤ EXAMINE THE EDGES OF THE LOWER AND UPPER FLANGES FOR CRACKS THAT ARE IN THE INBOARD TO OUTBOARD DIRECTION

2292945 S0000519273_V1

**Inspection Area
Figure 1**

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PART 6 - EDDY CURRENT

INBOARD MAIN FLAP - FLAP TRACK 3 (HFEC)

1. Purpose

- A. Use this procedure to examine flap track 3 (at WBL 164) of the inboard main flap for cracks at the locations that follow. See Figure 1 for the inspection areas.
 - (1) Examine the webs in the areas around the fasteners that go through the webs from the inboard and outboard sides of the flap track.
 - (2) Examine the edges of the upper and lower flanges.
- B. This procedure uses an impedance plane display instrument.
- C. Flap track 3 is 15-5 PH CRES.
- D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-06-1B

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 24, 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 NDT1062, or an equivalent, to help calibrate the instrument to examine the web of flap track 3 in the area around the fasteners. Refer to Part 6, 51-00-00, Procedure 24, for data about reference standard NDT1062.

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- (2) Use reference standard 185, or an equivalent, to help calibrate the instrument to examine the edges of the upper and lower flanges of flap track 3. Refer to Part 6, 51-00-00, Procedure 24, for data about reference standard 185.

E. Special Tools

- (1) Nonconductive straightedge.

3. Prepare for the Inspection

- A. Get access to the inspection area.

NOTE: The transmission support structure must be removed, the aft fairing must be disconnected, and the carriage must be cycled to get access to the inspection area.

- B. Remove dirt, loose paint, and sealant, if necessary.

4. Instrument Calibration

- A. Calibrate the instrument to examine the webs of flap track 3 in the areas around the fasteners (see Figure 1) as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

- (1) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument.

- B. Calibrate the instrument to examine the edges of the upper and lower flanges of flap track 3 (see Figure 1) as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

- (1) Use reference standard 185, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

- A. Refer to Part 6, 51-00-00, Procedure 24, paragraph 6, for general instructions about surface eddy current inspections.

- B. Examine the webs of flap track 3 for cracks as follows:

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

- (2) Move the probe on the web in the areas that are around the fasteners that go through the web. See Figure 1 for the fastener locations. Cracks can occur in the up and down direction.

- C. Examine the edges of the upper and lower flanges of flap track 3 for cracks as follows:

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

- (2) Use a nonconductive straightedge to help move the probe along the edges of the upper and lower flanges of flap track 3. See Figure 1 for the inspection areas. Cracks can occur in the inboard and outboard direction.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 24, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

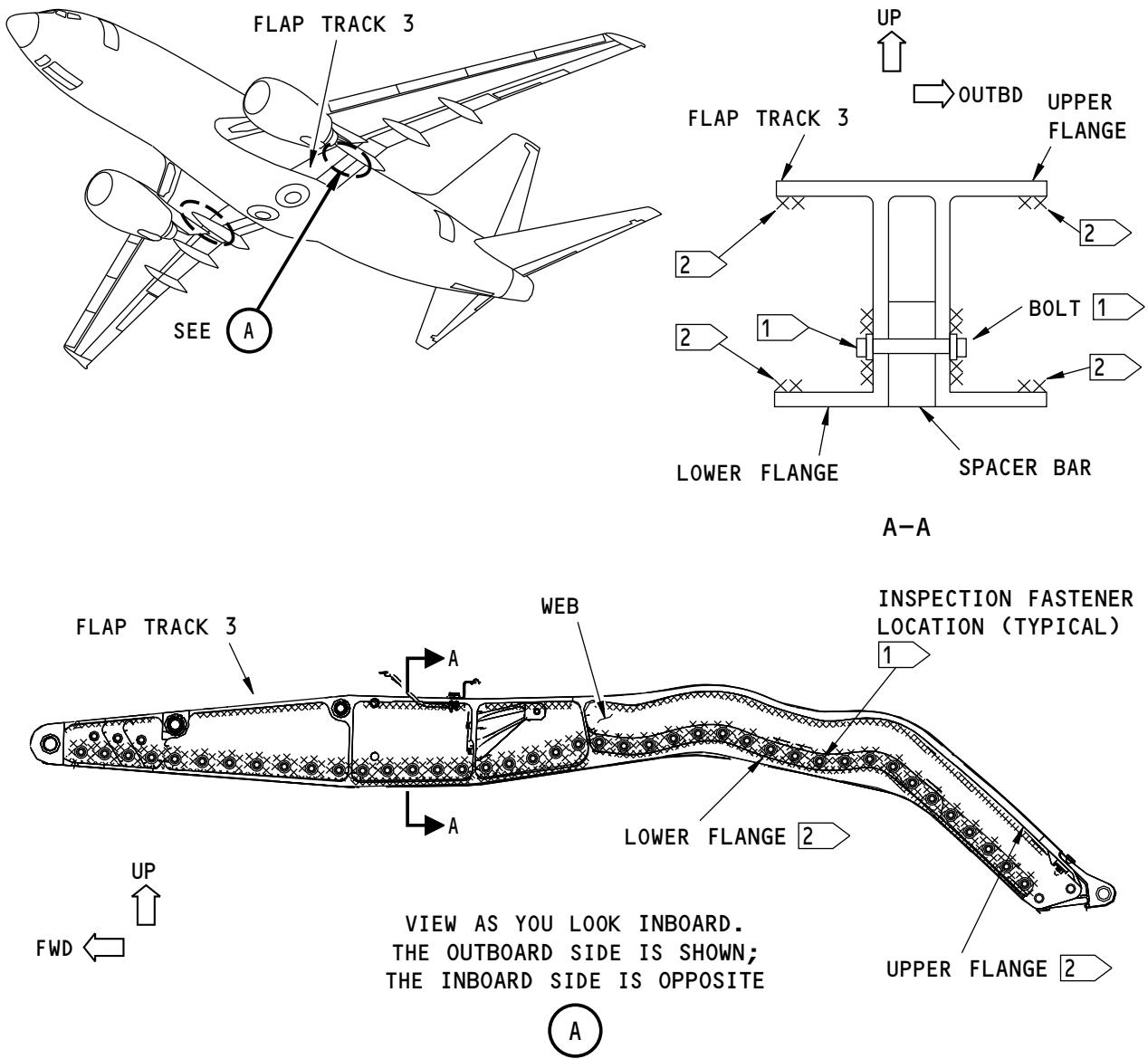
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NOTES:
XXXXX INSPECTION AREAS

- REMOVE SEALANT FROM THE INSPECTION AREAS AS NECESSARY
- 1** EXAMINE THE WEB AT THE FASTENER LOCATIONS SHOWN FOR CRACKS THAT ARE IN THE UP AND DOWN DIRECTION
- 2** EXAMINE THE EDGES OF THE LOWER AND UPPER FLANGES FOR CRACKS THAT ARE IN THE INBOARD TO OUTBOARD DIRECTION

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Inspection Area
Figure 1

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PART 6 - EDDY CURRENT

INBOARD MAIN FLAP - LOWER CHORD OF THE INBOARD TORQUE TUBE RIB (HFEC)

1. Purpose

- A. Use this procedure to help find surface cracks in the lower chord of the inboard torque tube rib on the inboard main flap. See Figure 1 for the inspection areas.
- B. The torque tube rib is titanium.
- C. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
 - (1) Item: 57-53-17

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 990 kHz to 2 MHz.
 - (2) The instruments that follow were used to help prepare this procedure.
 - (a) Nortec 1000; Staveley
 - (b) NDT 19; Nortec, Staveley, Inc.
 - (c) Locator 2d; Hocking
- C. Probes
 - (1) A shielded, straight or right-angle probe is necessary to do this inspection.
 - (2) Refer to Part 6, 51-00-00, Procedure 14, paragraph 3.B, for data about probe selection.
 - (3) The probe that follows was used to help prepare this procedure.
 - (a) MP-905-70/1 MHz; Olympus NDT
- D. Reference Standards
 - (1) Use reference standard 1002, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 14, paragraph 3.C, for data about reference standard 1002.

3. Prepare for the Inspection

- A. Identify the inspection area shown in Figure 1.
- B. Remove the lower skin of the flap, as necessary, to get access to the inspection area.
- C. Lightly sand rough surfaces and sharp edges of chipped paint to get a smooth inspection surface.
- D. Fully clean the inspection area.

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4. Instrument Calibration

- A. Calibrate the equipment as specified in Part 6, 51-00-00, Procedure 14, paragraph 5. Use reference standard 1002, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

- A. Examine the lower chord of the inboard torque tube rib on the inboard main flap as follows:
- (1) Refer to Part 6, 51-00-00, Procedure 14, paragraph 6, for surface inspection instructions near edges.
 - (2) Make a scan in the forward to aft directions along the edges of the lower chord. See Figure 1 for the inspection areas.
- B. Do Paragraph 5.A. again to examine the inboard torque tube rib for cracks on the opposite wing.

6. Inspection Results

- A. Refer to Part 6, 51-00-00, Procedure 14, paragraph 7, for instructions to help make an analysis of indications that occur during the inspection.

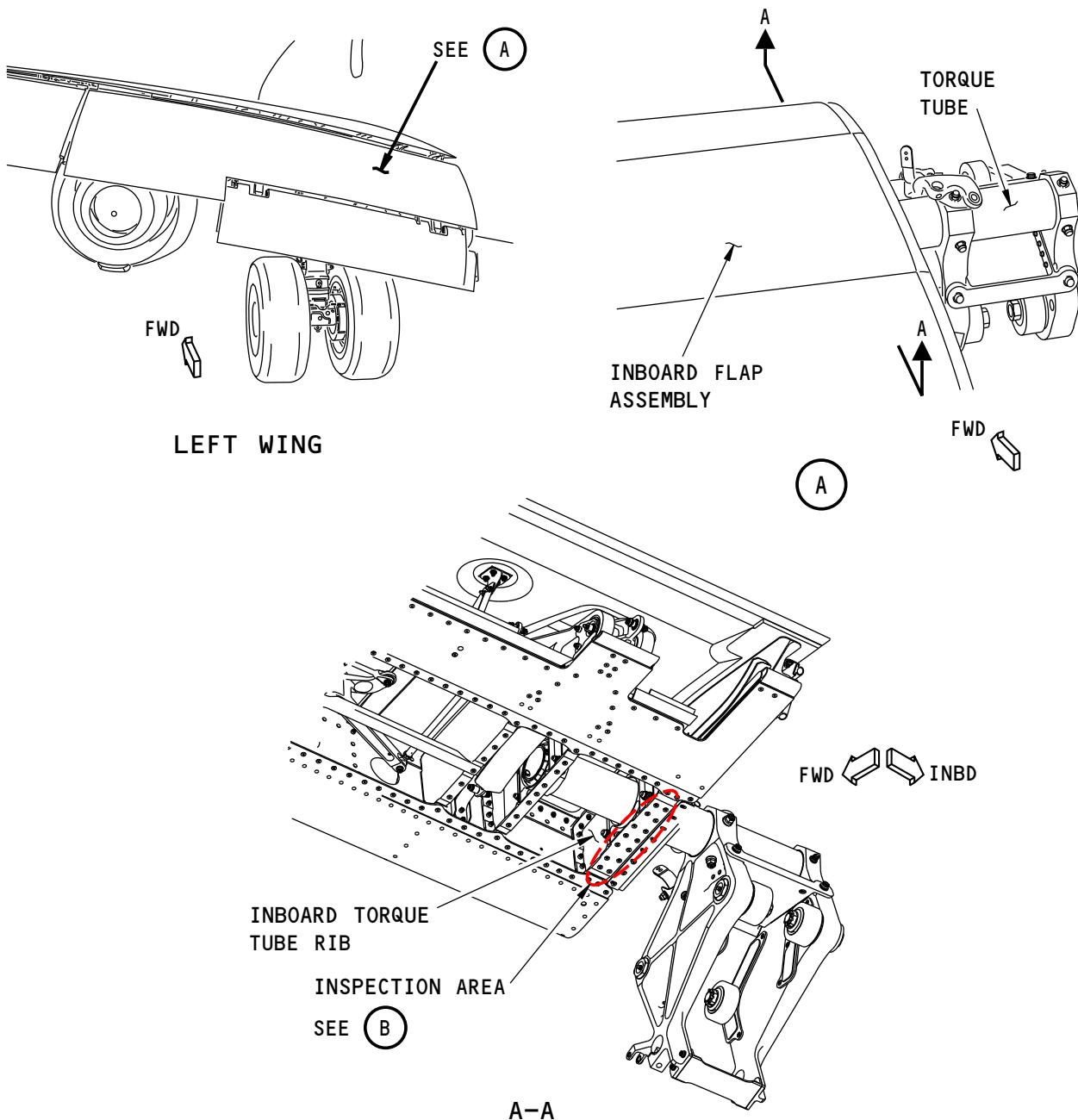
ALL

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**NOTES**

- THE MAIN FLAP OF THE LEFT WING IS SHOWN; THE MAIN FLAP OF THE RIGHT WING IS OPPOSITE.
- REMOVE THE LOWER SKIN FROM THE INBOARD FLAP TO DO THIS INSPECTION

2293359 S0000519417_V1

Inspection Area
Figure 1 (Sheet 1 of 2)

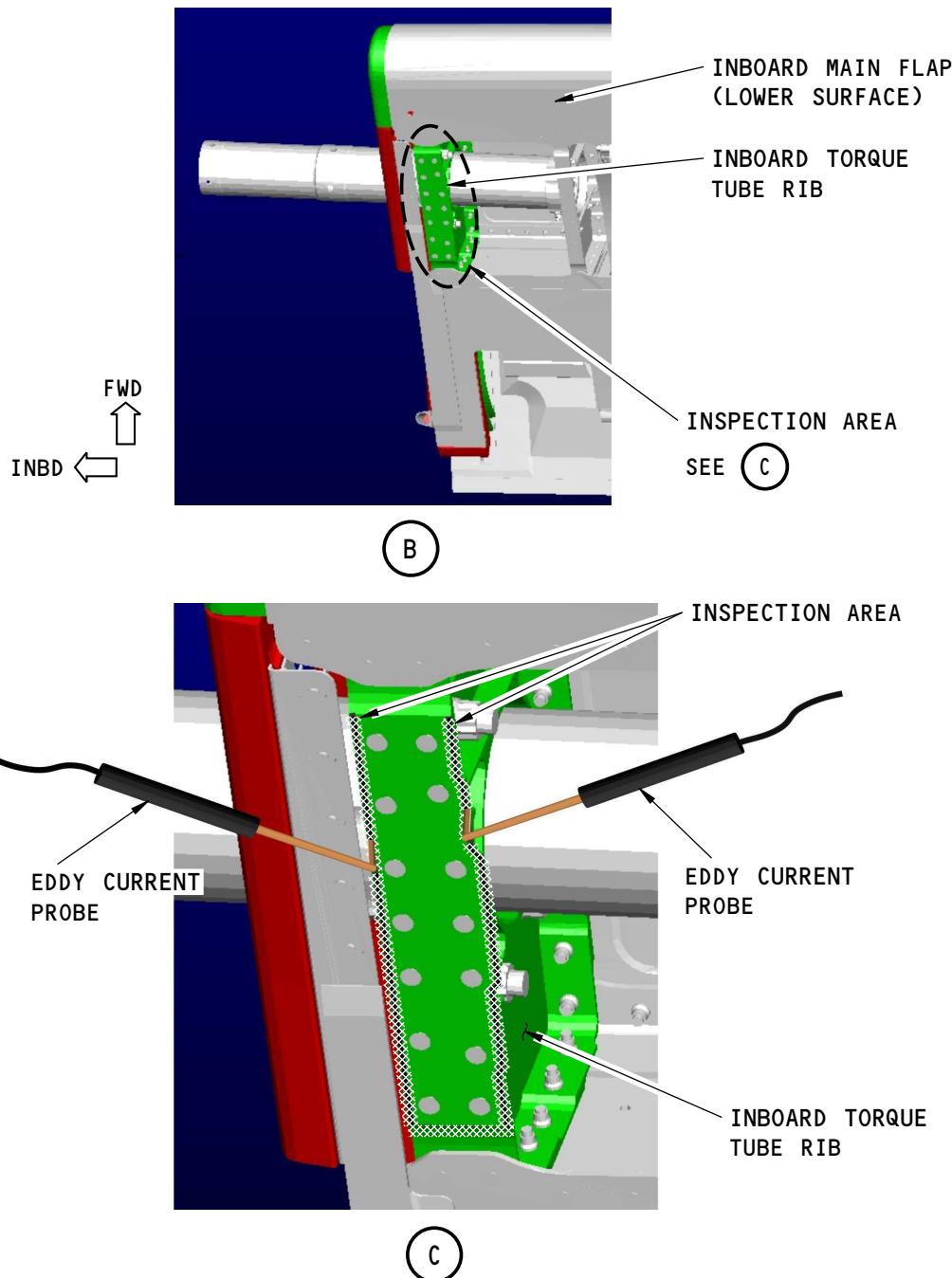
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**NOTES:**

- EXAMINE THE LOWER CHORD OF THE INBOARD TORQUE TUBE RIB FOR CRACKS ALONG THE INBOARD AND OUTBOARD EDGES.

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Inspection Area
Figure 1 (Sheet 2 of 2)

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PART 6 - EDDY CURRENT

**REAR SPAR OF THE INBOARD MAIN FLAP - SUPPORT FITTINGS FOR THE AFT FLAP TRACKS
(HFEC)**

1. Purpose

- A. Use this procedure to help find surface cracks at the edges of the support fittings for the aft flap tracks at the cutouts in the rear spar of the inboard main flap. See Figure 1 for the inspection areas.
- B. Use an impedance plane display instrument to do this procedure.
- C. The skin is 7075-T7451 aluminum.
- D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
 - (1) Item: 57-53-21

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 in the frequency range of 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.
 - (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. Get internal access to the inspection area.
 - (1) Remove the lower skin panel and disconnect the aft flap track pushrods to extend the aft flap tracks to their stops.
- C. Clean the inspection area.

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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 to examine the edges of the support fittings at the cutouts.

5. Inspection Procedure

- A. Examine the edges of the inboard support fitting at the cutout for the aft flap track, as shown in Figure 1, as specified in Part 6, 51-00-00, Procedure 23, paragraph 6. Use a nonconductive straightedge as a probe guide.
- B. Do Paragraph 5.A. to examine the edges of the outboard support fitting for cracks.
- C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the edges of the support fittings 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.

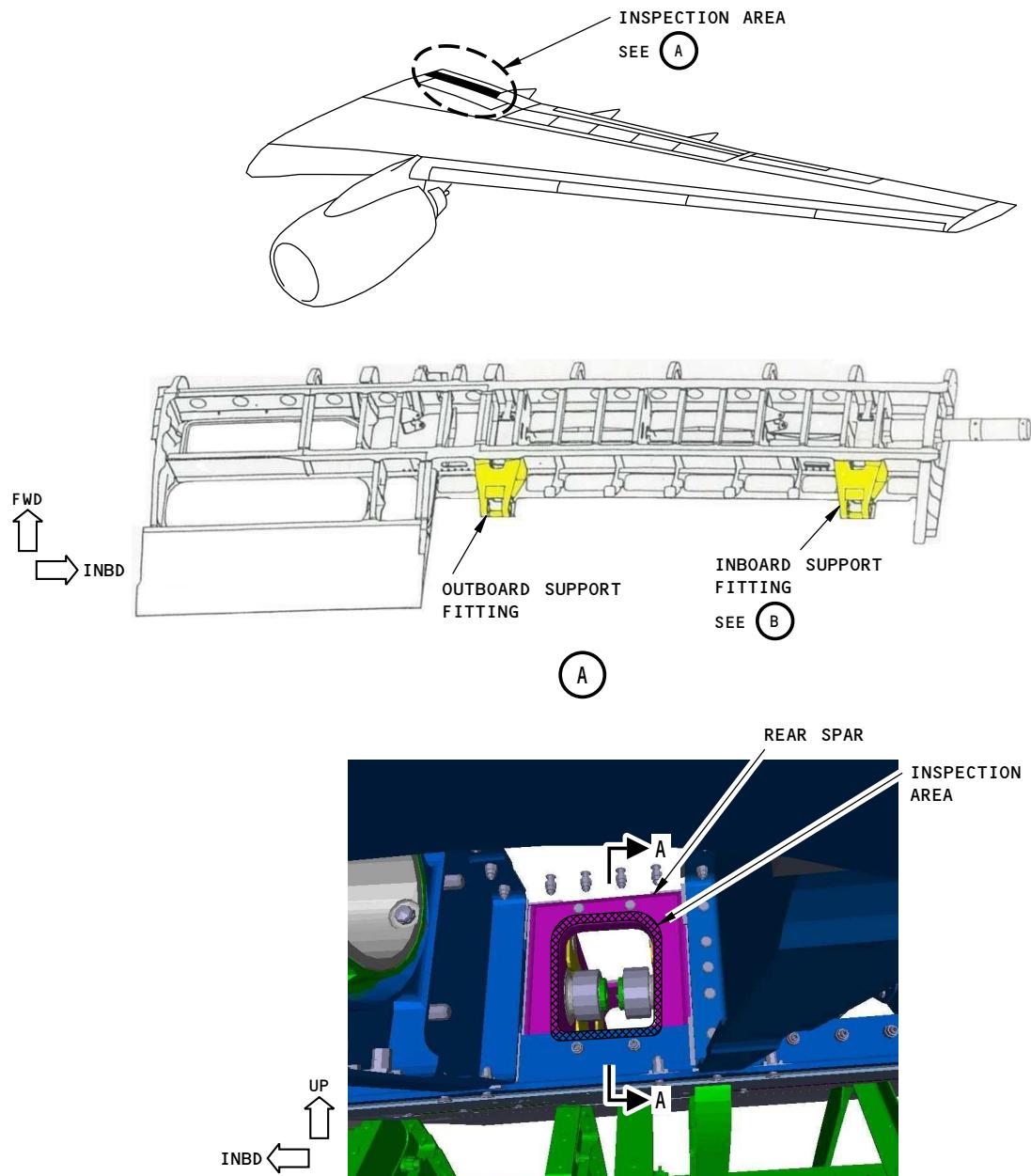
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THE INBOARD FITTING IS SHOWN;
THE OUTBOARD FITTING IS
ALMOST THE SAME
(VIEW AS YOU LOOK AFT)

NOTES

- THE LEFT SIDE IS SHOWN; THE
RIGHT SIDE IS OPPOSITE

B

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Inspection Area
Figure 1 (Sheet 1 of 2)

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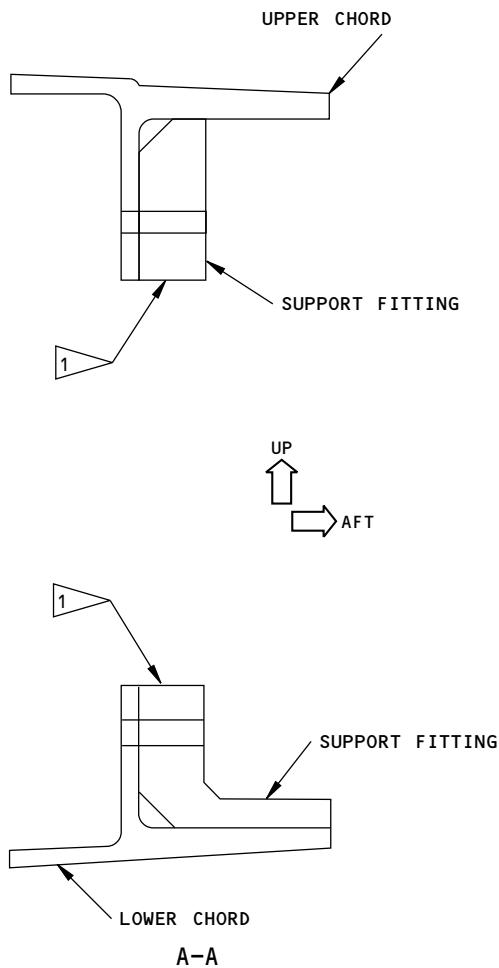
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NOTES

- 1 FULLY EXAMINE THE EDGES OF THE SUPPORT FITTINGS AT THE CUTOUTS FOR THE AFT FLAP TRACKS.

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Inspection Area
Figure 1 (Sheet 2 of 2)

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PART 6 - EDDY CURRENT

LOWER SKIN OF THE OUTBOARD MAIN FLAP (LFEC)

1. Purpose

- A. Use this procedure to examine the inspar lower skin of the outboard main flap for cracks. The inspar lower skin is examined at the skin-to-chord fastener locations at the front and rear spars of the outboard main flap between WBL 254 and OTEF 101.9 and between OTEF 183 and WBL 358. See Figure 1 for the inspection area.
- B. This procedure uses an impedance plane display instrument.
- C. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:
 - (1) Item: 57-53-29

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.
 - (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 NDT1048, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 23, for data about reference standard NDT1048.

3. Prepare for the Inspection

NOTE: It can be necessary to deploy or remove the aft support fairing to get access to the inspection areas.

- A. Remove all dirt, loose paint, and sealant if necessary.

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4. Instrument Calibration

- A. Calibrate the instrument to examine the inspar lower skin for cracks around the skin-to-chord fasteners as specified in Part 6, 51-00-00, Procedure 23, paragraph 5.
 - (1) Use reference standard NDT1048, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

- A. Examine the inspar lower skin of the outboard main flap for cracks at the areas shown in Figure 1 as specified in Part 6, 51-00-00, Procedure 23, paragraph 6, and the step that follows.
 - (1) Move the probe around all of the skin-to-chord fasteners from the external surface of the inspar lower skin at the front and rear spars. As shown in Figure 1, the inspection areas are from WBL 254.0 to OTEF 101.9 and from OTEF 183 to 358. Cracks in the lower skin will occur in the 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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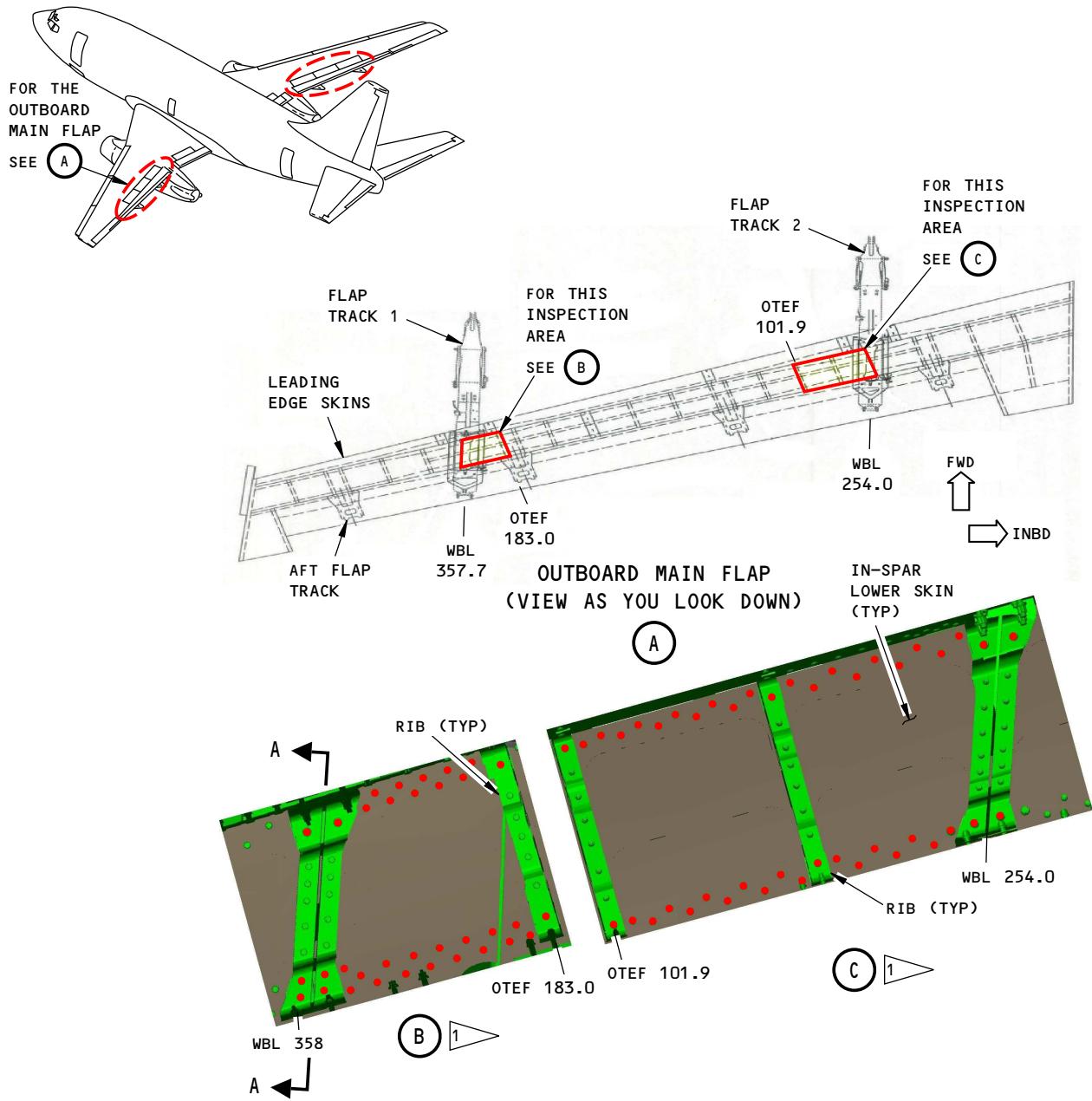
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NOTES

- FASTENER LOCATIONS TO BE EXAMINED
- THE LEFT WING IS SHOWN; THE RIGHT WING IS OPPOSITE
- IT CAN BE NECESSARY TO DEPLOY OR REMOVE THE AFT SUPPORT FAIRING TO GET ACCESS TO THE INSPECTION AREAS.

VIEWS B AND C ARE INTERNAL VIEWS OF THE INSPECTION AREAS. THE RIBS CANNOT BE SEEN FROM THE INSPECTION SURFACE.

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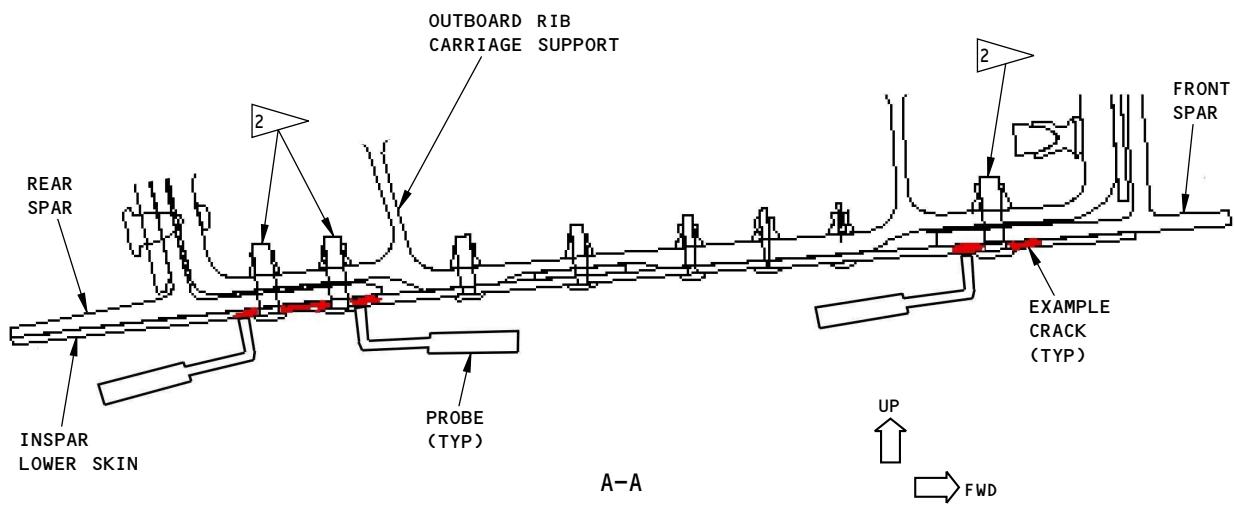
Inspection Areas
Figure 1 (Sheet 1 of 2)

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THE OUTBOARD SIDE OF WBL 357.7 IS SHOWN;
THE OTHER INSPECTION AREAS ARE ALMOST THE SAME

NOTES

- REMOVE SEALANT AS NECESSARY TO LET THE PROBE TOUCH THE INSPECTION SURFACE.

2 ▶ MAKE A SCAN AROUND THE FASTENERS SHOWN TO FIND CRACKS IN THE LOWER SKIN OF THE OUTBOARD MAIN FLAP

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Inspection Areas
Figure 1 (Sheet 2 of 2)

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PART 6 - EDDY CURRENT

UPPER AND LOWER CHORDS OF THE FRONT AND REAR SPARS OF THE OUTBOARD FLAP

1. Purpose

- A. Use this subsurface eddy current procedure to examine the upper and lower chords of the front and rear spars of the outboard flaps for cracks. The upper and lower chords are examined for cracks at the fastener holes that are at the flap rib locations. See Figure 1, Figure 4 and Figure 5 for the inspection areas.
- B. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
 - (1) Item: 57-53-26-1
 - (2) Item: 57-53-27-2

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

- (1) Use an eddy current instrument with an impedance plane display that can:
 - (a) Operate at a frequency between 1 and 5 kHz.
 - (b) Be calibrated as specified in the calibration instructions of this procedure. The instrument that follows was used to help prepare the procedure.
 - 1) Nortec 2000D; Olympus NW NDT Inc.

C. Probes

- (1) The reflection probes that follow are necessary to use to do this inspection.
 - (a) A ring probe that can operate between 1 and 5 kHz that has a 0.30 to 0.32 inch (7.6 to 8.1 mm) inner diameter. The probe that follows was used to help prepare this procedure.
 - 1) TEK-4065; Techna NDT
 - (b) A ring probe that can operate between 1 and 5 kHz that has a 0.45 to 0.47 inch (11.4 to 11.9 mm) inner diameter. The probe that follows was used to help prepare this procedure.
 - 1) TEK-RDP .8-1K; Techna NDT

NOTE: If you order these probes make sure you tell the probe manufacturer which eddy current instrument you will use. The TEK-RDP .8-1K probe has a Triax connector. A probe cable will have to be ordered separately.

- D. Reference Standard – Make reference standard NDT3137 as specified in Figure 2.

3. Prepare for the Inspection

- A. Identify the inspection locations shown in Figure 1, Figure 4 and Figure 5.
- B. Put the flaps in the down position.
- C. Lightly smooth the rough surfaces of chipped paint.
- D. Fully clean the inspection areas that the probe will touch.

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4. Instrument Calibration

NOTE: There are three instrument calibrations.

- A. Calibrate the instrument to examine the fastener holes in the upper chord of the outboard flap for cracks as follows:
 - (1) Connect the TEK-4065 probe to the instrument, energize the instrument and set the instrument frequency to a frequency between 1 and 5 kHz.
 - (2) Put the probe at Probe Position 1 as shown in Figure 3. Move the probe to put the fastener in the center of the probe.
 - (3) Balance the instrument as specified by the manufacturer's instructions.
 - (4) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum and then balance the instrument.
 - (5) Set the balance point at approximately 20% of full screen height (FSH) and 80% of full screen width (FSW) as shown in Figure 3, Screen Display 1.
 - (6) Adjust the phase control so that the lift-off signal moves horizontally from right to left as shown in Figure 3 when the probe is lifted off the reference standard.
 - (7) Put the probe on the reference standard at Probe Position 2, above the fastener hole with a notch. See Figure 3.
 - (8) Adjust the instrument controls to put the notch signal at 80% of FSH as shown Figure 3, Screen Display 1.
- B. Calibrate the instrument to examine the countersunk head fastener locations in the lower chord of the outboard flap for cracks as follows:

NOTE: There are two types of fastener heads at the lower chord of the outboard flap inspection locations to be examined; countersunk head and button head fasteners.

 - (1) Connect the TEK-4065 probe to the instrument to examine the lower chord at the countersunk head fastener locations, energize the instrument and set the instrument frequency to 2 kHz.
 - (2) Do Paragraph 4.A. (2) thru (6) again but put the probe at Probe Position 3 as shown in Figure 3.
 - (3) Do Paragraph 4.A. (7) and (8) again but put the probe at Probe Position 4 as shown in Figure 3.
- C. Calibrate the instrument to examine the button head fastener locations in the lower chord of the outboard flap for cracks as follows:
 - (1) Connect the TEK-RDP .8-1K probe to the instrument to examine the lower chord at the button head fastener locations, energize the instrument and set the instrument frequency to 2 kHz.
 - (2) Do Paragraph 4.A. (2) thru (6) again but put the probe at Probe Position 5 as shown in Figure 3.
 - (3) Do Paragraph 4.A. (7) and (8) again but put the probe at Probe Position 6 as shown in Figure 3.

5. Inspection Procedure

- A. Examine the upper chords at the front and rear spars of the outboard flap in the left wing for cracks at the rib location fasteners. See Figure 4 for the inspection areas.
 - (1) Calibrate the instrument as specified in Paragraph 4.A.
 - (2) Get access to the upper chord areas of the front and rear spars of the left outboard flap at flap station OTEF 92.7. See Figure 4.



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(3) Put the probe above the fastener hole in the upper chord of the front spar at the OTEF 92.7 rib location. Make sure the center of the probe is above the center of the fastener hole. See Figure 4 for the fastener location.

(4) Balance the instrument to put the signal from the fastener hole at 20% of FSH.

NOTE: Do not change the instrument sensitivity after you balance the instrument.

(5) Put the probe above the fastener hole in the upper chord of the rear spar at the OTEF 92.7 rib location. Make sure that the center of the probe is above the center of the fastener hole. The signal will occur at approximately 20% of FSH. See Figure 4 for the fastener location.

NOTE: If the signal from the fastener hole in upper chord of the rear spar at OTEF 92.7 is not approximately 20% of FSH, you will have to get a baseline for the upper chord at the rear spar and examine the front and rear spar chords separately.

NOTE: It is possible that the fastener hole you put the probe on to balance the instrument has a crack. If this occurs, all of the fastener holes that do not have cracks will have screen signals that are below the balance point. Put the probe on a different inspection fastener hole if you think that you balanced the probe on a fastener hole with a crack.

(6) Examine all of the inspection fastener holes shown in Figure 4 that are in the front and rear spar upper chords at rib locations OTEF 92.7, 102.4, 112.0, 120.9, 125.3, 135.2, 147.5 and OTEF 158.7 for cracks.

(7) Record the fastener locations that cause signals to occur that are 50% (or more) of FSH.

(8) Do Paragraph 5.A. (2) thru (7) again to examine the upper chords of the outboard flap on the right wing for cracks.

B. Examine the lower chords at the front and rear spars of the outboard flap in the left wing for cracks at the rib location fasteners. See Figure 5 for the inspection areas.

NOTE: There are two types of fastener heads at the lower chord of the outboard flap inspection locations to be examined; countersunk head and button head fasteners.

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

(2) Get access to the lower chords of the front and rear spars of the left outboard flap at flap station OTEF 92.7. See Figure 5.

NOTE: The fasteners at these locations have countersunk heads.

(3) Do Paragraph 5.A. (3) thru (5) but at the lower chords of the front and rear spars at the rib fastener locations that follow. See Figure 5 for the inspection locations.

(a) Examine all of the inspection fastener holes shown in Figure 5 in the front and rear spar lower chords at rib locations OTEF 92.7, 104.4, 112.0, 120.9, 125.3, 135.2, 147.5, 158.7, 170.0, 178.5, and OTEF 182.3.

(4) Record the fastener locations that cause signals to occur that are 50% (or more) of FSH.

(5) Do Paragraph 5.B. (2) thru (5) again to examine the lower chords of the outboard flap on the right wing for cracks.

C. Examine the lower chords at the front and rear spars of the outboard flap in the left wing for cracks at the rib carriage support locations. See Figure 5, WBL 254 and WBL 358, for these fastener locations.

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



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- (2) Get access to the lower chords of the front and rear spars of the left outboard flap at WBL 254 and WBL 358. See Figure 5.

NOTE: The fasteners at these locations have button heads.
 - (3) Put the probe above one of the fastener holes in the lower chord of the front spar at the WBL 254 rib carriage support location. Make sure that the center of the probe is above the center of the fastener hole.
 - (4) Balance the instrument to put the signal from the fastener hole at 20% of FSH.
 - (5) Put the probe above the fastener hole in the lower chord of the rear spar at WBL 254 carriage rib location. Make sure that the center of the probe is above the center of the fastener hole. The signal will occur at approximately 20% of FSH.
- NOTE:** If the signal from the fastener hole at the WBL 254 carriage rib location is not approximately 20% of FSH, you will have to get a baseline for the lower chord at the rear spar and examine the front and rear spar chords separately.
- NOTE:** It is possible that the fastener hole you put the probe on to balance the instrument has a crack. If this occurs, all of the fastener holes that do not have cracks will have screen signals that are below the balance point. Put the probe on a different inspection fastener hole if you think that you balanced the probe on a fastener hole with a crack.
- (6) Examine all of the inspection fastener holes shown in Figure 5 that are at the front and rear spar lower chords at the WBL 254 and WBL 358 rib carriage support locations for cracks.
 - (7) Record the fastener locations that cause signals to occur that are 50% (or more) of FSH.
 - (8) Do Paragraph 5.C. (2) thru (7) again to examine the lower chords of the outboard flap on the right wing for cracks.

6. **Inspection Results**

- A. Locations that cause signals to occur that are 50% (or more) of FSH are locations of possible cracks. These locations must be examined more fully as follows:
 - (1) Calibrate the instrument and do the inspections again.
 - (2) Compare the signal that occurs during the inspection to the signal you got from the reference standard during calibration.
- B. To make sure that the fastener hole has a crack, remove the fastener and do an open fastener hole inspection as specified in Part 6, 51-00-00, Procedure 16.

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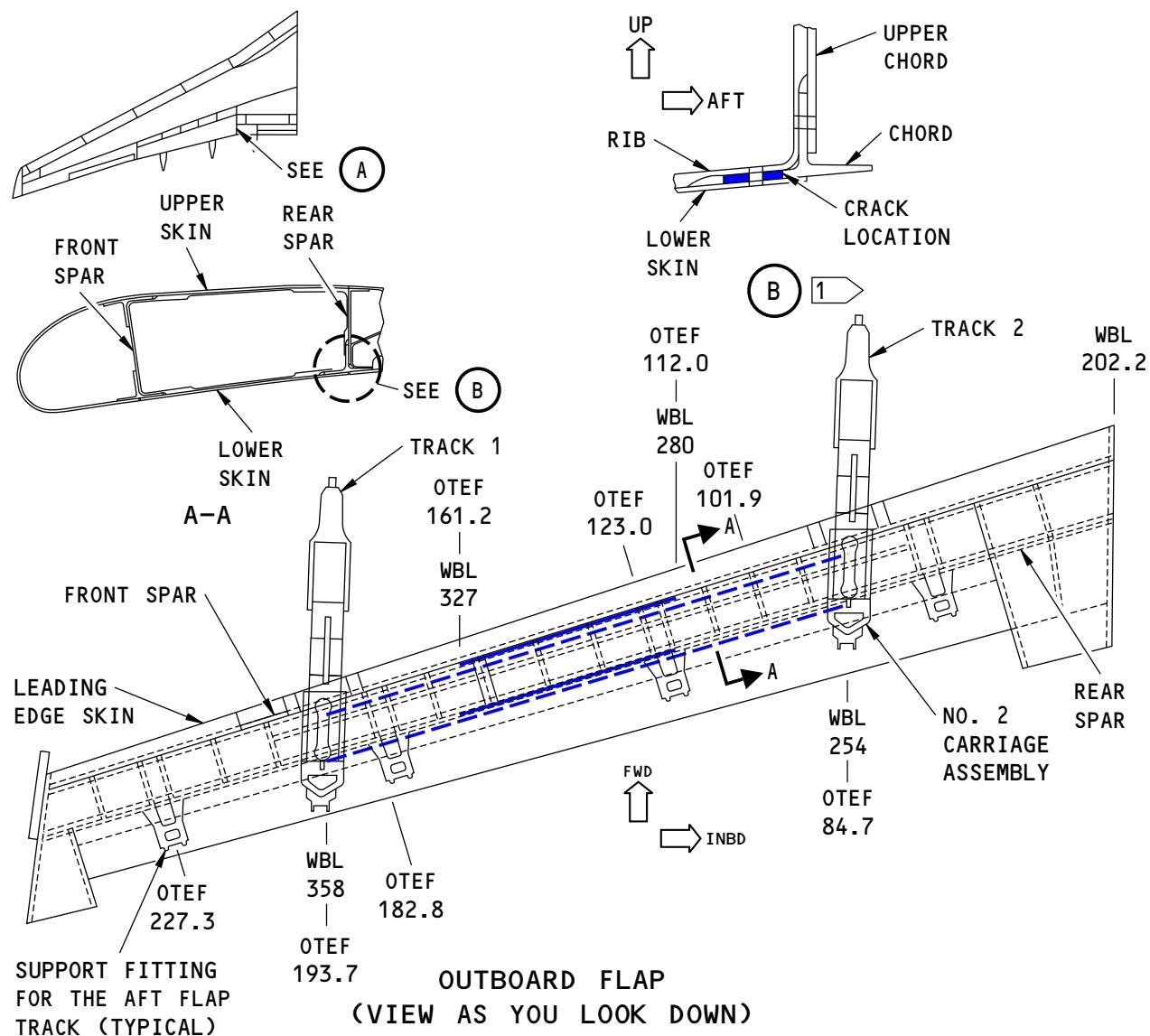
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**NOTES:**

- THE LEFT OUTBOARD FLAP IS SHOWN; THE RIGHT OUTBOARD FLAP IS ALMOST THE SAME.
- THE TOP OF THE FLAP IS SHOWN; THE BOTTOM OF THE FLAP IS ALMOST THE SAME.
- EXAMINE THE UPPER CHORDS OF THE FRONT AND REAR SPARS AT THE RIBS FROM WBL 280 TO WBL 358 (OTEF 112.0 TO OTEF 161.0).
- EXAMINE THE LOWER CHORDS OF THE FRONT AND REAR SPARS AT THE RIBS FROM WBL 254 TO WBL 358 (OTEF 84.7 TO OTEF 193.7).

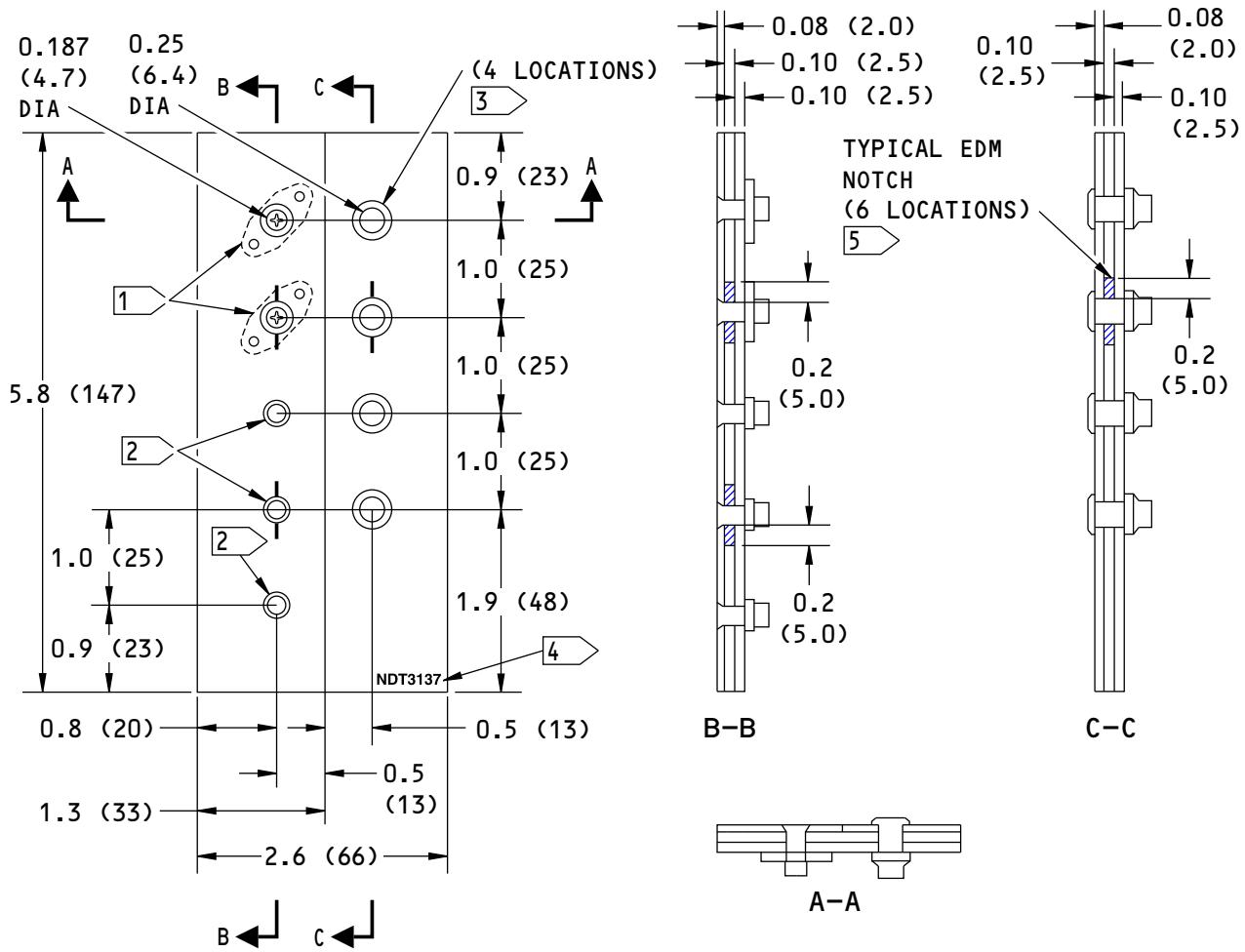
[1] THE LOWER CHORD IS SHOWN, THE UPPER CHORD IS ALMOST THE SAME

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Inspection Areas
Figure 1

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NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
 - MATERIAL: ALUMINUM 2024-T3 OR T4 (CLAD OR BARE)
 - SURFACE ROUGHNESS: 63 Ra OR BETTER. INCLUDES THE FASTENER HOLES
 - 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** FASTENER: BACB30XD3K3 (2 LOCATIONS)
NUTPLATE: BACN10YF32 (2 LOCATIONS)
- 2** FASTENER: BACB30VU6K5 (3 LOCATIONS)
COLLAR: BACC30BL6 (3 LOCATIONS)
- 3** FASTENER: BACB30VT8K5 (4 LOCATIONS)
COLLAR: BACC30BL8 (4 LOCATIONS)
- 4** ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3137, APPROXIMATELY WHERE SHOWN
- 5** EDM NOTCH (6 LOCATIONS):
LENGTH: 0.2 (5.0)
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.010 ± 0.002 (0.18 ± 0.05)

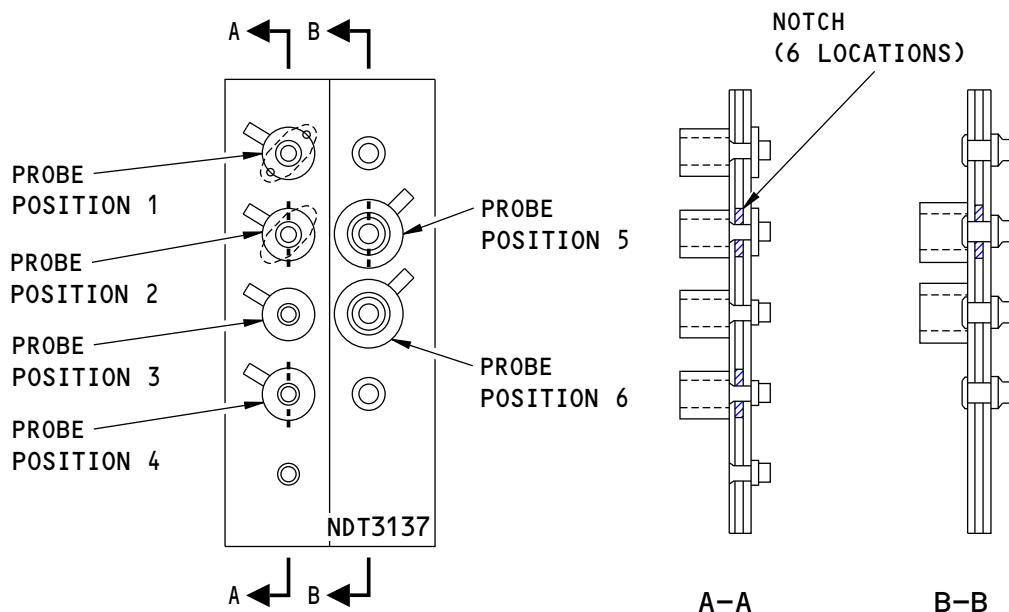
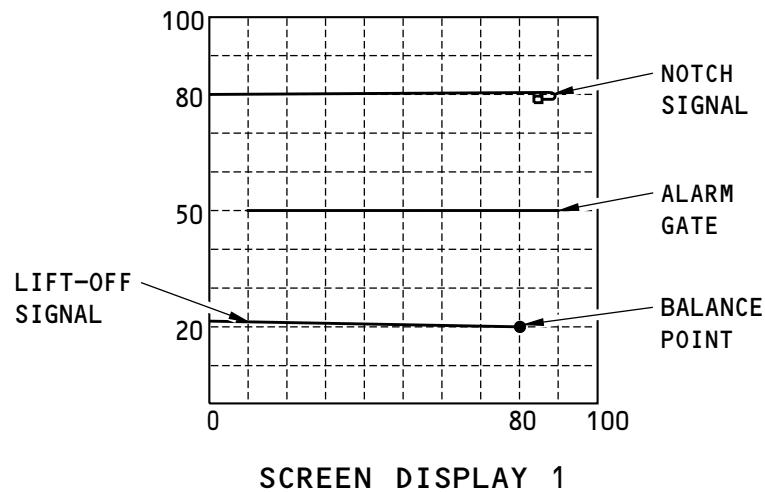
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Reference Standard NDT3137
Figure 2
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NOTES:

- INSTRUMENT CALIBRATION TO EXAMINE THE UPPER AND LOWER CHORDS OF THE FRONT AND REAR SPARS OF THE OUTBOARD FLAP FOR CRACKS AT THE RIB LOCATIONS.
- MOVE THE PROBE ABOVE EACH FASTENER HOLE AS NECESSARY UNTIL THE HEIGHT OF THE SIGNAL IS AT ITS MINIMUM.

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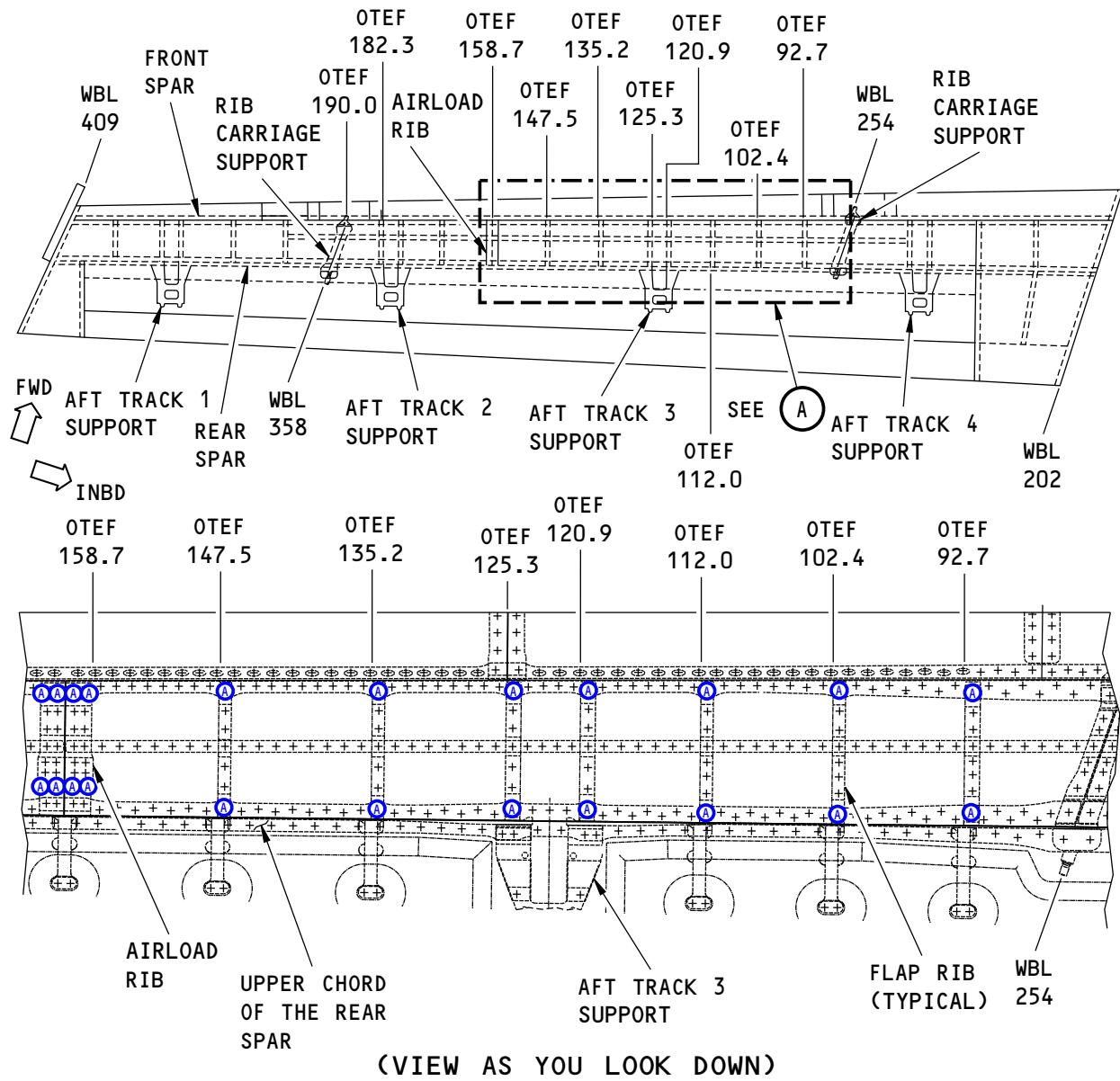
Instrument Calibration
Figure 3

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**NOTES:**

- THE UPPER CHORDS AT THE FRONT AND REAR SPARS OF THE LEFT OUTBOARD FLAP ARE SHOWN; THE RIGHT OUTBOARD FLAP IS ALMOST THE SAME
- THE UPPER INSPECTION SURFACE OF THE OUTBOARD FLAP IS SHOWN
- ④ INSPECTION FASTENERS - EXAMINE THE UPPER CHORDS OF THE FRONT AND REAR SPARS FOR CRACKS AT THE 22 COUNTERSUNK FASTENER HEADS AT THE RIB LOCATIONS.

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Upper Chord Inspection Fastener Locations
Figure 4

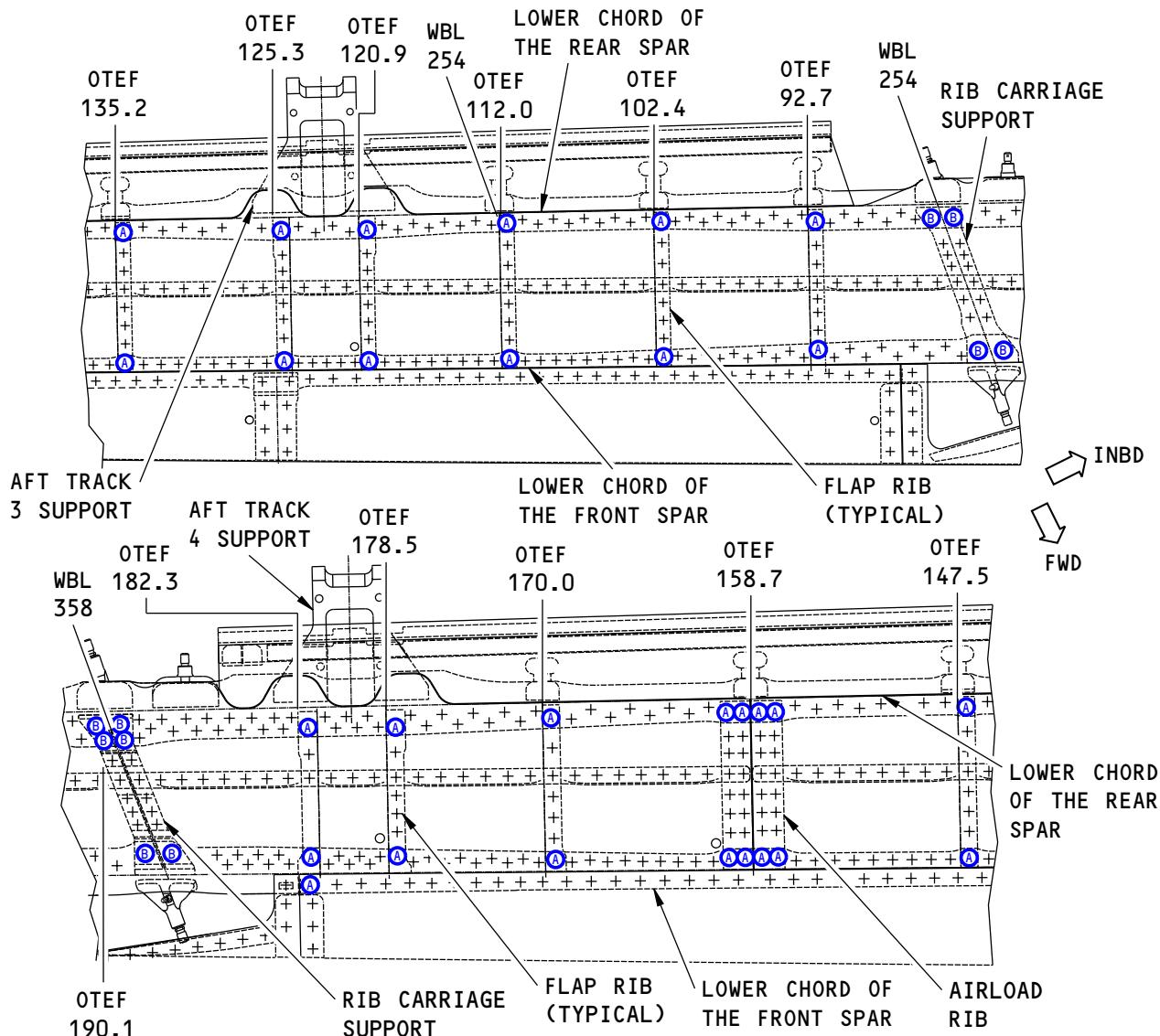
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NOTES: (VIEW AS YOU LOOK UP AND FORWARD)

- THE LOWER CHORDS AT THE FRONT AND REAR SPARS OF THE LEFT OUTBOARD FLAP ARE SHOWN; THE RIGHT OUTBOARD FLAP IS ALMOST THE SAME
- THE LOWER INSPECTION SURFACE OF THE OUTBOARD FLAP IS SHOWN
- **(A)** INSPECTION FASTENERS - EXAMINE THE LOWER CHORDS OF THE FRONT AND REAR SPARS FOR CRACKS AT THE 24 COUNTERSUNK FASTENER HEADS AT THE RIB LOCATIONS.
- **(B)** INSPECTION FASTENERS - EXAMINE THE LOWER CHORDS OF THE FRONT AND REAR SPARS FOR CRACKS AT THE 10 BUTTON FASTENER HEADS AT THE RIB CARRIAGE SUPPORT LOCATIONS.

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Lower Chord Inspection Fastener Locations
Figure 5

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PART 6 - EDDY CURRENT

**UPPER CHORD OF THE REAR SPAR OF THE INBOARD MAIN FLAP AT THE RIB LOCATIONS
FROM MF STA 73 TO 167 (LFEC)**

1. Purpose

- A. Use this procedure to examine the upper chord of the rear spar in the inboard main flap for cracks at the rib locations from MF STA 73 to 167. See Figure 1 for the inspection area.
- B. This inspection is done through two different skin thicknesses to find cracks in the upper chord.
 - (1) The upper inboard skin (from MF STA 73 to 146) is 0.080 inch (2.03 mm) thick.
 - (2) The upper middle skin (from MF STA 146 to 167) is 0.125 inch (3.17 mm) thick.
- C. The skins and the upper chord are aluminum.
- D. 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 on the two skin thicknesses. See Figure 1 for the inspection area.
- E. This procedure uses an impedance plane display instrument.
- F. Two reference standards are necessary to use to help calibrate the equipment to do this inspection procedure.
- G. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
 - (1) Item: 57-53-13-4

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:
 - (a) Operates at a frequency between 900 Hz and 2.5 KHz.
 - (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 that is between 0.330 and 0.350 inch (8.40 and 8.90 mm) that can operate at a frequency between 900 Hz and 2.5 KHz.
 - (2) The ring probes that follow were used to help prepare this procedure.
 - (a) ARP .330-.750; Aerofab NDT (reflection probe)
 - (b) RDP.8-.34/2K; Techna NDT (reflection probe)
- D. Reference Standard

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- (1) Make reference standard NDT3261 to help calibrate the equipment to examine the upper inboard skin areas. See Figure 2 for data about reference standard NDT3261.
- (2) Make reference standard NDT3263 to help calibrate the equipment to examine the upper middle skin areas. See Figure 3 for data about reference standard NDT3263.

3. Prepare for the Inspection

- A. Clean the upper skin of the inboard main flap from MF STA 73 to 167 at the rib locations along the upper chord of the rear spar.
- B. Identify and mark the bolts in the inspection area that have the Phillips heads on them. These removable bolts are easily identified by the "+" on the bolt head. See Figure 1 for the bolts that are at the ribs along the upper chord of the rear spar.
- C. Identify and mark the bolts in the inspection area that do not have Phillips heads. Make sure the marks at these bolt locations are different from the marks you made at the Phillips head bolt locations.

4. Instrument Calibration

- A. Calibrate the equipment to examine the upper chord at the rear spar of the inboard main flap for cracks from MF STA 73 to 146 as follows:

NOTE: This inspection is done through the upper inboard skin that is 0.080 inch (2.00 mm) thick.

- (1) Set the instrument frequency between 1.5 and 2.5 KHz.
- (2) Put the probe on reference standard NDT3261 at probe position 1 as shown in Detail II of Figure 4.
- (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 I of Figure 4.
- (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 4.
- (7) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 4.

NOTE: Make sure that the fastener is in the center of the probe.

- (8) Move the probe lightly above the fastener until the notch 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 I of Figure 4. If necessary, set the horizontal gain from 6 to 12 dB lower than the vertical gain to keep the signal on the screen display.

- B. Calibrate the equipment to examine the upper chord at the rear spar of the inboard main flap for cracks from MF STA 146 to 167 as follows:

NOTE: This inspection is done through the upper middle skin that is 0.125 inch (3.17 mm) thick.

- (1) Set the instrument frequency between 900 Hz and 1 kHz.
- (2) Put the probe on reference standard NDT3263 at probe position 1 as shown in Detail II of Figure 4.
- (3) Balance the instrument.



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- (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 FSH and approximately 60 percent of FSW as shown in Detail I of Figure 4.
- (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 4.
- (7) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 4.
NOTE: Make sure that the fastener is in the center of the probe.
- (8) Move the probe lightly above the fastener until the notch 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 I of Figure 4. If necessary, set the horizontal gain from 6 to 12 dB lower than the vertical gain to keep the signal on the screen display

5. Inspection Procedure

- A. Examine the upper chord at the rear spar of the inboard main flap for cracks through the upper inboard skin (this skin is 0.080 inch (2.00 mm) thick), at the rib locations from MF STA 73 to 146 as follows:

NOTE: There are two rows of bolts on the upper chord of the rear spar of the inboard main flap. Only the forward row of bolt locations are examined with the ring probe at the rib locations.

- (1) Calibrate the equipment as specified in Paragraph 4.A.
- (2) Identify all of the Phillips fastener heads (+) along the upper chord of the rear spar that were marked in Paragraph 3.B. See Figure 1 for the fastener locations.
- (3) Put the ring probe on one of the Phillips head fasteners on the inboard skin at the upper chord of the rear spar at one of the rib locations in the inspection area. Make sure the bolt is in the center of the ring probe and move the ring probe a small quantity to get the minimum signal to occur on the instrument display. See Figure 1 and Figure 4.
- (4) Balance the instrument.
- (5) Put the ring probe on a different Phillips head fastener in the inspection area. Make sure the fastener is in the center of the ring probe and monitor the instrument display for crack indications.
NOTE: Do not examine the fastener locations that are not Phillips heads while you examine the Phillips heads fastener locations.
- (6) Do Paragraph 5.A.(5) again and again until all of the Phillips head fastener locations in the inspection area are examined.
- (7) Identify all of the fastener heads along the upper chord of the rear spar that do not have Phillips head fasteners that were marked in Paragraph 3.C.
- (8) Put the probe on one of the fasteners without a Phillips head in the inspection area on the inboard skin at the upper chord of the rear spar at one of the rib locations. Make sure the bolt is in the center of the ring probe and move the ring probe a small quantity to get the minimum signal to occur on the instrument display. See Figure 1 and Figure 4.
- (9) Balance the instrument.



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- (10) Put the probe on a different fastener without a Phillips head in the inspection area. Make sure the fastener is in the center of the ring probe and monitor the instrument display for crack indications.

NOTE: Do not examine the fastener locations that have the Phillips heads while you examine the fastener locations without the Phillips heads.

- (11) Do Paragraph 5.A.(10) again and again until all of the fasteners without the Phillips heads in the inspection area are examined. See Figure 1.

- B. Examine the upper chord at the rear spar of the inboard main flap for cracks through the upper middle skin (this skin is 0.125 inch (3.17 mm) thick) from MF STA 146 to 167 as follows:

NOTE: There are Phillips head fasteners in the inspection area from MF STA 146 to 167. It is satisfactory to calibrate the equipment on reference standard NDT3263 although its fasteners are not Phillips head fasteners and then do the inspection on the Phillips head fastener locations.

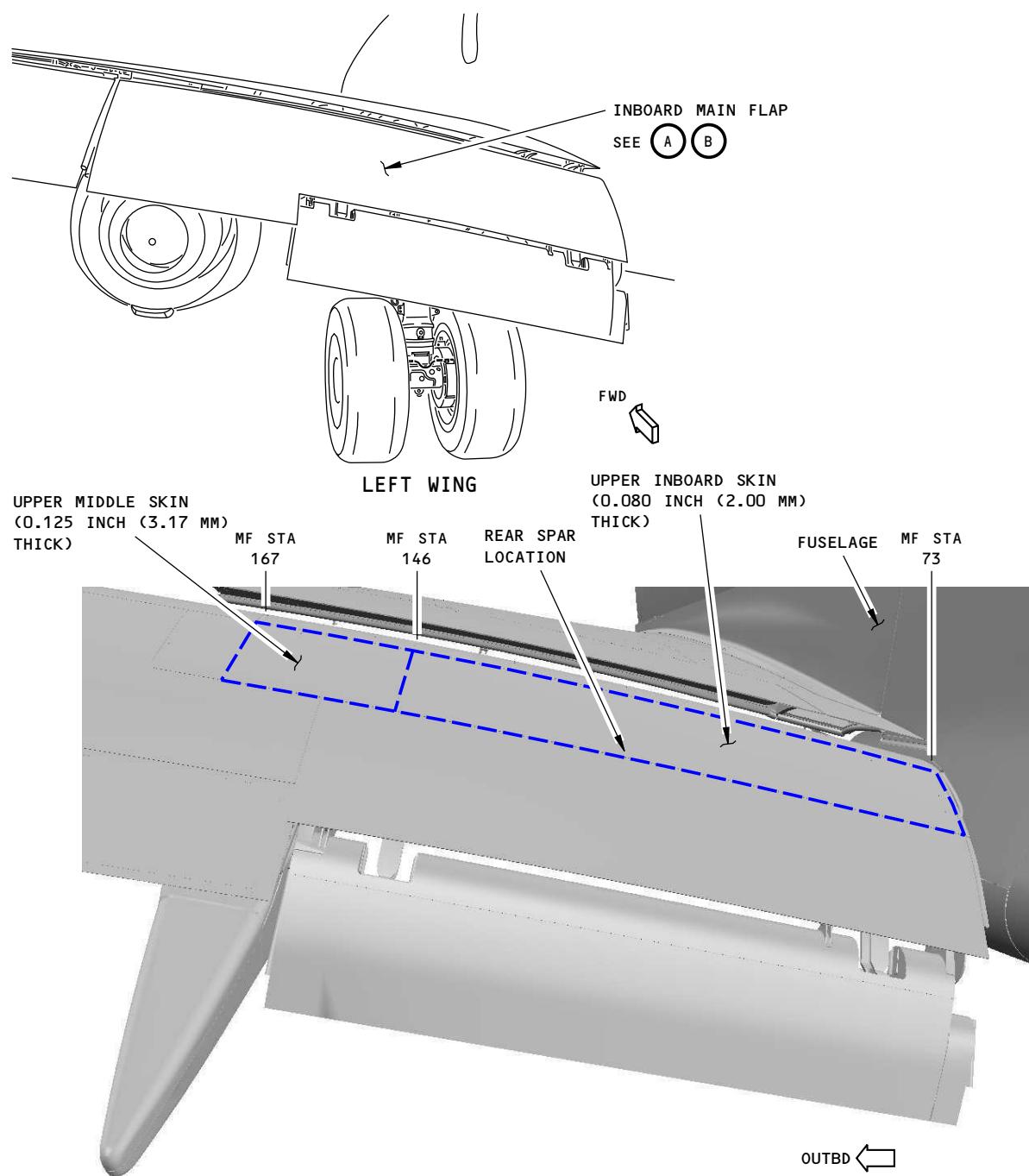
- (1) Calibrate the equipment as specified in Paragraph 4.B.
- (2) Put the ring probe on one of the fastener heads on the upper chord of the rear spar at one of the rib locations in the inspection area.
- (3) Balance the instrument.
- (4) Put the ring probe on a different fastener in the inspection area. Make sure the fastener is in the center of the ring probe and monitor the instrument display for crack indications. See Figure 1.
- (5) Do Paragraph 5.B.(4) again and again until all of the fastener locations in the inspection area are examined. See Figure 1.

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. and Figure 4.
- C. 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 to make sure there is a crack.



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THIS IS A VIEW OF THE INBOARD MAIN FLAP ON THE LEFT SIDE OF THE AIRPLANE;
THE RIGHT SIDE IS OPPOSITE

A

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Inboard Main Flap Inspection Areas
Figure 1 (Sheet 1 of 4)

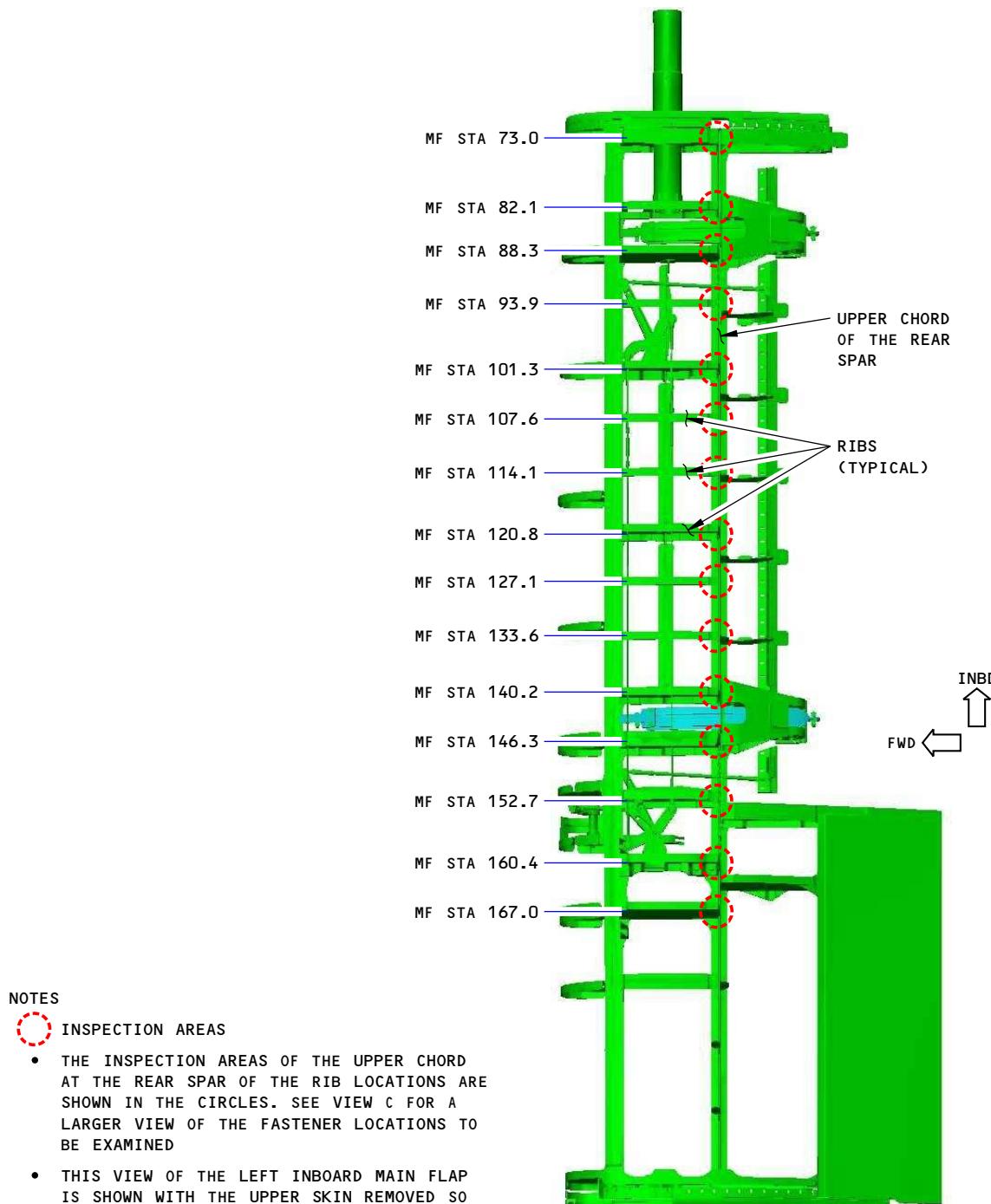
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(B)

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Inboard Main Flap Inspection Areas
Figure 1 (Sheet 2 of 4)

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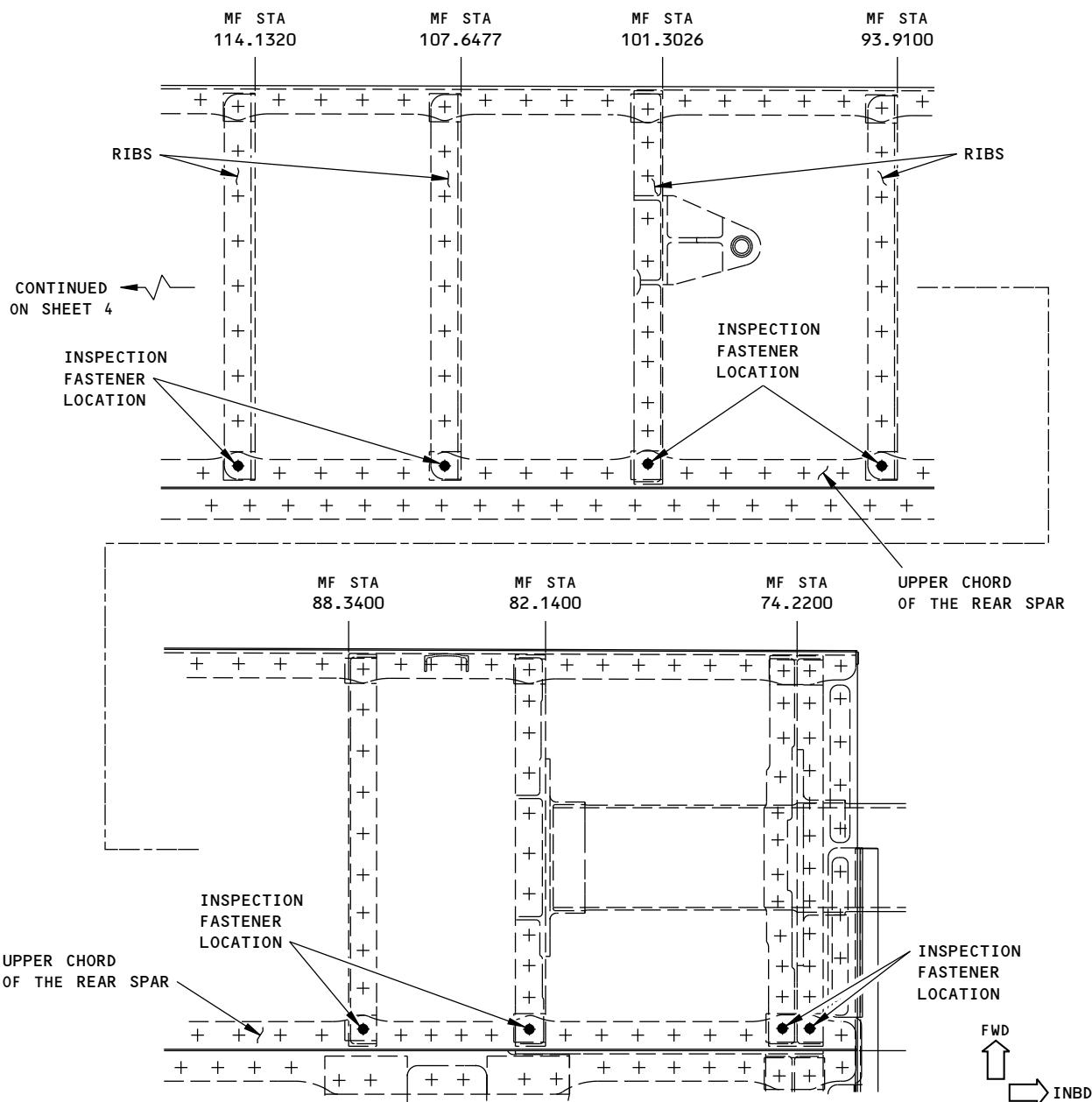
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NON-DESTRUCTIVE TEST MANUAL



THIS IS A VIEW OF THE LEFT INBOARD MAIN FLAP AS YOU LOOK DOWN ON THE UPPER SKIN;
THE RIGHT INBOARD MAIN FLAP IS OPPOSITE

(C)

2501040 S0000585763_V1

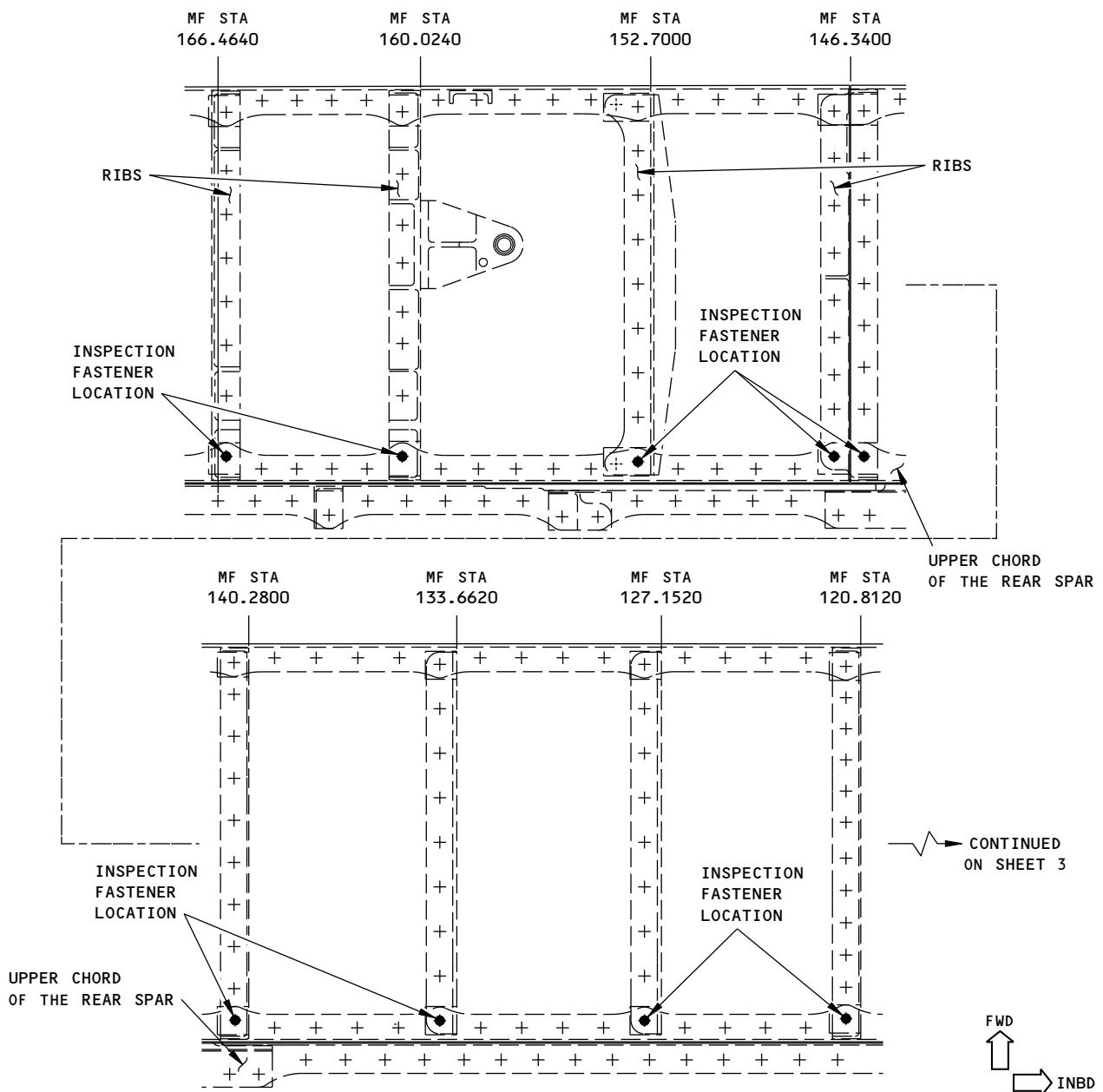
Inboard Main Flap Inspection Areas
Figure 1 (Sheet 3 of 4)

EFFECTIVITY
ALL; 737-600/700/800/900 AIRPLANES

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NON-DESTRUCTIVE TEST MANUAL



THIS IS A VIEW OF THE LEFT INBOARD MAIN FLAP AS YOU LOOK DOWN ON THE UPPER SKIN;
THE RIGHT INBOARD MAIN FLAP IS OPPOSITE

(C) (CONTINUED)

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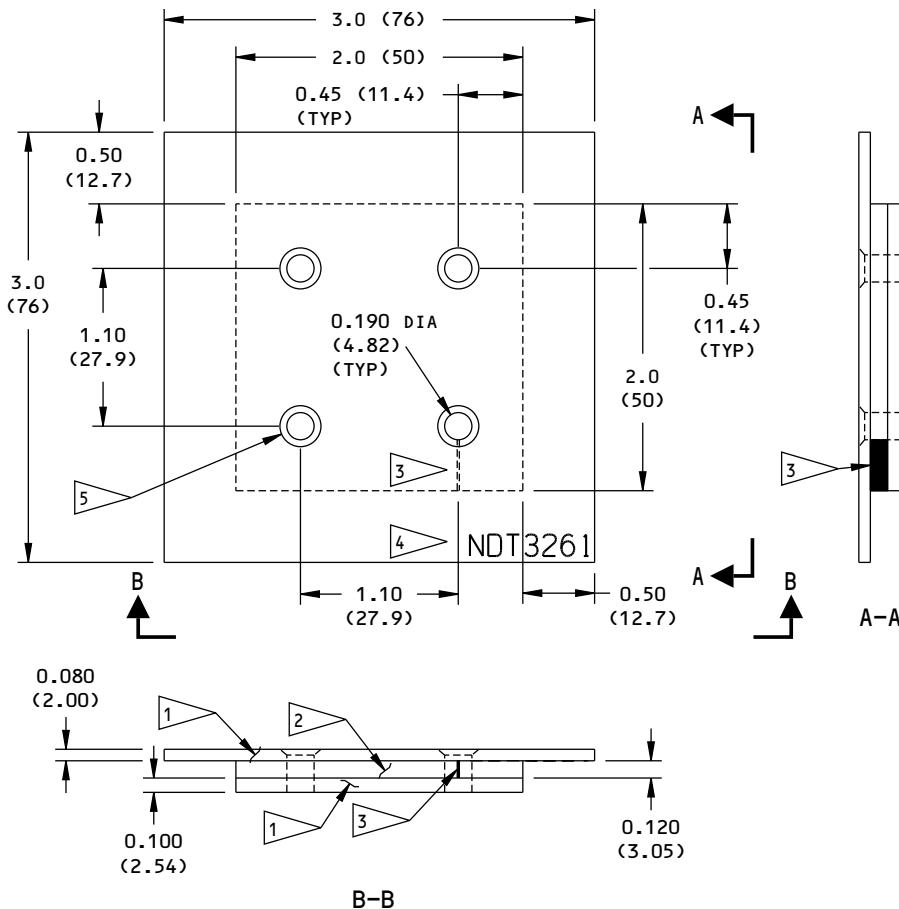
Inboard Main Flap Inspection Areas
Figure 1 (Sheet 4 of 4)

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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

- SURFACE ROUGHNESS: 63 Ra OR BETTER

- 1 ▶ 2024-T3 ALUMINUM (CLAD OR BARE)
 2 ▶ 7050-T7451, 7075-T73XX, OR 7055-T7751X
 ALUMINUM (CLAD OR BARE)

- 3 ▶ EDM NOTCH:
 LENGTH: EDGE OF THE HOLE TO THE EDGE
 OF THE PART
 DEPTH: THROUGH THE THICKNESS
 WIDTH: 0.020 (0.50) MAXIMUM

4 ▶ ETC OR STEEL STAMP THE REFERENCE
 STANDARD NUMBER, NDT3261, AT
 APPROXIMATELY THIS LOCATION

5 ▶ INSTALL BACB30YP6K4 BOLTS AND BACC30BL6
 (OR EQUIVALENT) ALUMINUM COLLARS
 (4 LOCATIONS)

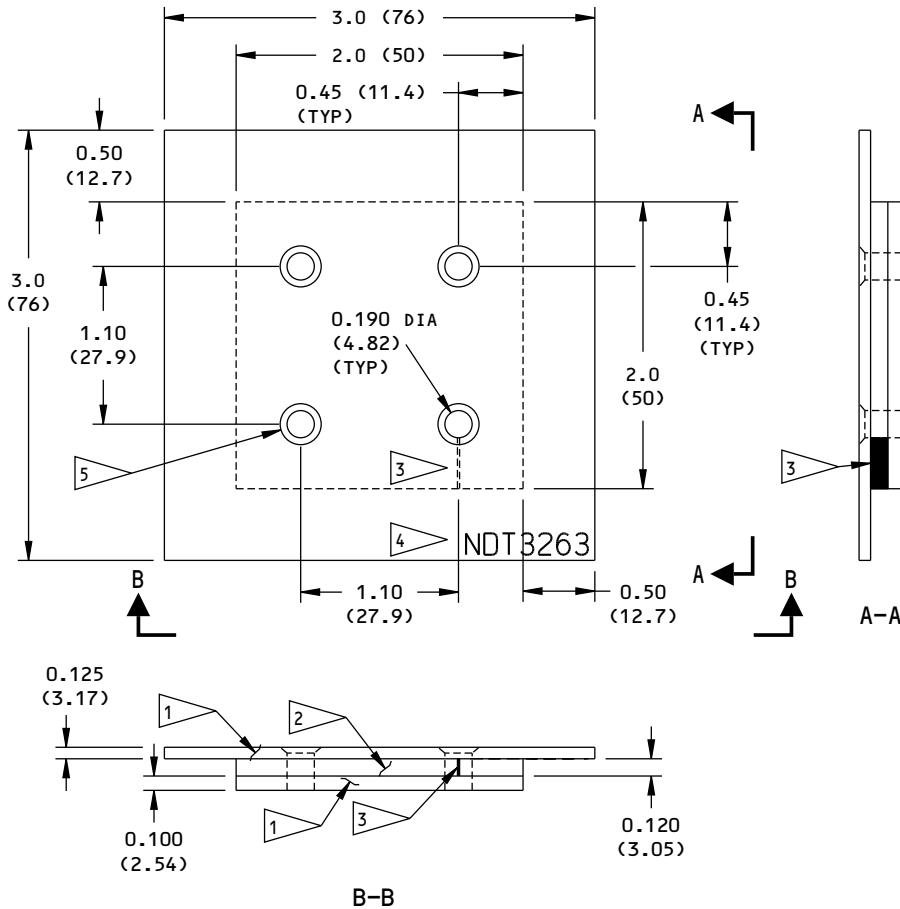
2501048 S0000585757_V1

Reference Standard NDT3261
Figure 2

EFFECTIVITY
ALL; 737-600/700/800/900 AIRPLANES

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NON-DESTRUCTIVE TEST MANUAL

**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

- SURFACE ROUGHNESS: 63 Ra OR BETTER

- 1 2024-T3 ALUMINUM (CLAD OR BARE)
2 7050-T7451, 7075-T73XX, OR 7055-T7751X
ALUMINUM (CLAD OR BARE)

- 3 EDM NOTCH:
LENGTH: EDGE OF THE HOLE TO THE EDGE
OF THE PART
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.020 (0.50) MAXIMUM

4 △ ETCH OR STEEL STAMP THE REFERENCE
STANDARD NUMBER, NDT3263, AT
APPROXIMATELY THIS LOCATION

5 △ INSTALL BACB30YP6K5 BOLTS AND BACC30BL6
(OR EQUIVALENT) ALUMINUM COLLARS
(4 LOCATIONS)

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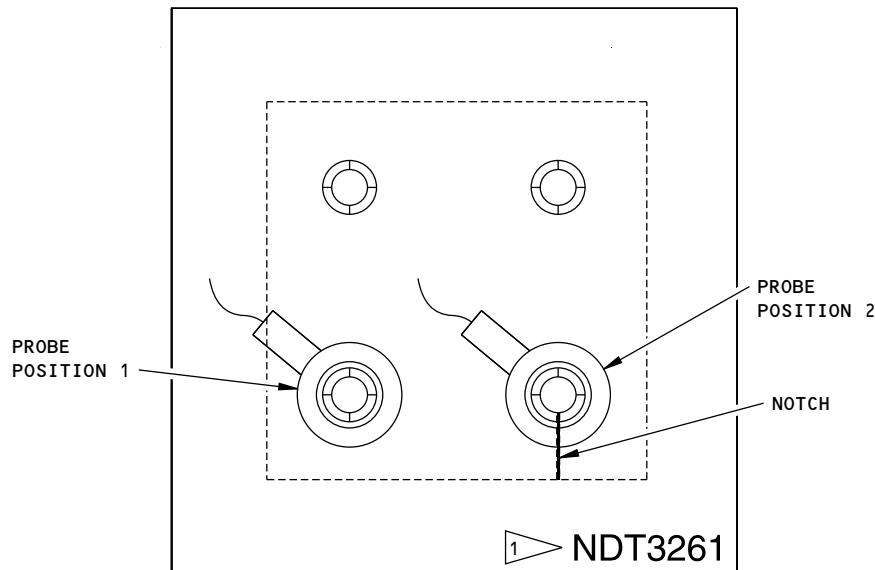
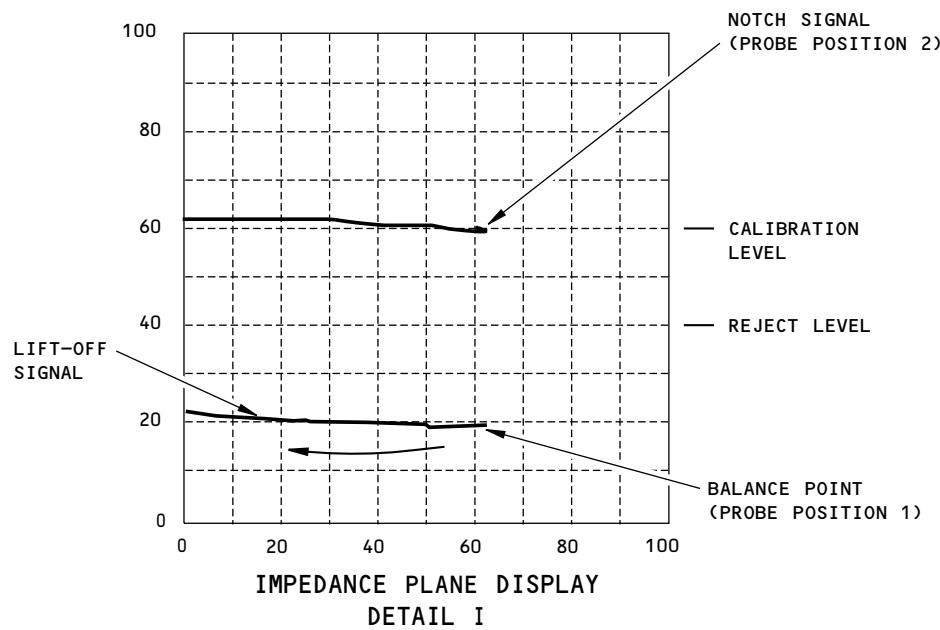
Reference Standard NDT3263
Figure 3

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CALIBRATION PROBE POSITIONS ON REFERENCE STANDARDS NDT3261 AND NDT3263
DETAIL II

- 1 ▶ REFERENCE STANDARD NDT3261 IS SHOWN.
THE CALIBRATION PROCEDURE WITH NDT3263 IS
EQUIVALENT BUT A DIFFERENT INSTRUMENT
FREQUENCY IS USED. SEE PARAGRAPHS 4.A AND
4.B FOR THE INSTRUMENT FREQUENCIES TO USE
WITH EACH REFERENCE STANDARD

2501052 S0000585752_V1

Instrument Calibration Figure 4

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PART 6 - EDDY CURRENT

**LOWER CHORD OF THE FRONT SPAR OF THE INBOARD MAIN FLAP AT THE RIB LOCATIONS
FROM MF STA 73 TO 168 (LFEC AND HFEC)**

1. Purpose

- A. This procedure uses low and high frequency eddy current (LFEC and HFEC) to examine the lower chord of the front spar in the inboard main flap for cracks at the rib locations from MF STA 73 to 168. See Figure 1 for the inspection area.
 - (1) A LFEC inspection is done through two different skin thicknesses to find cracks in the lower chord.
 - (a) The lower inboard skin (from MF STA 73 to 146) is 0.125 inch (3.17 mm) thick.
 - (b) The lower outboard skin (from MF STA 146 to 152) is 0.080 inch (2.00 mm) thick.
 - NOTE:** A LFEC inspection cannot be done in the area of the number 3 flap track carriage from MF STA 158 to 168.
 - (2) For the HFEC inspection, the upper skin is removed to get access to the lower chord of the inboard main flap from MF STA 158 to 168. Four bolts of the number 3 flap track carriage are removed to do a HFEC open hole inspection. See Figure 1, Views A, B, C and D for the inspection area.
- B. The skins and the lower chord are aluminum.
- C. This procedure uses an impedance plane display instrument.
- D. Only one diameter of ring probe is used to do the LFEC inspections. Only one diameter of rotating probe is used to do the HFEC inspection.
- E. Two reference standards are necessary to use to help calibrate the equipment to do the LFEC inspections. Only one reference standard with one diameter hole is necessary to use to help calibrate the equipment to do the HFEC bolt hole inspections.
- F. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:
 - (1) Item: 57-53-12-2

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) Operates at a frequency between 900 Hz and 2.5 kHz.
 - (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

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- (1) For the LFEC inspection, use a ring probe with an inner diameter that is between 0.330 and 0.350 inch (8.40 and 8.90 mm) that can operate at a frequency between 900 Hz and 2.5 KHz. The ring probes that follow were used to help prepare this procedure.
 - (a) ARP .330-.750; Aerofab NDT (reflection probe)
 - (b) RDP .8 -.34/2K; Techna NDT (reflection probe)
- (2) For the HFEC inspection of the four open holes, use a rotating probe for a hole diameter that is 0.3125 inch (7.90 mm). The rotating probe that follows was used to help prepare this procedure.
 - (a) URX .312-.375; Techna NDT

D. Reference Standard

- (1) For the LFEC inspections:
 - (a) Make reference standard NDT3261 to help calibrate the equipment to examine the lower outboard skin areas. See Figure 2 for data about reference standard NDT3261.
 - (b) Make reference standard NDT3263 to help calibrate the equipment to examine the lower inboard skin areas. See Figure 3 for data about reference standard NDT3263.
- (2) For the HFEC open hole inspections, refer to Part 6, 51-00-00, Procedure 16, Figure 3, for the reference standard to use.

3. Prepare for the Inspection

- A. For the LFEC inspection, clean the lower skin of the inboard main flap from MF STA 73 to 152.7 at the rib locations along the lower chord of the front spar. See Figure 1.
- B. For the HFEC (open hole) inspection from MF STA 158 to 168, remove the upper skin and the four bolts of the flap track carriage shown in Figure 1, Views A, B, C and D.

4. Instrument Calibration

- A. Calibrate the equipment to examine the lower chord at the front spar of the inboard main flap for cracks from MF STA 73 to 146.3 as follows:

NOTE: This inspection is done through the lower inboard skin that is 0.125 inch (3.17 mm) thick.

- (1) Set the instrument frequency between 900 Hz and 1 kHz.
- (2) Put the probe on reference standard NDT3263 at probe position 1 as shown in Detail II of Figure 4.
- (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 I of Figure 4.
- (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 4.
- (7) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 4.
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.



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- (9) Adjust the instrument gain to put the maximum signal from the notch at 60 percent of FSH as shown in Detail I of Figure 4. If necessary, set the horizontal gain from 6 to 12 dB lower than the vertical gain to keep the signal on the screen display.
- B. Calibrate the equipment to examine the lower chord at the front spar of the inboard main flap for cracks from MF STA 146.3 to 152.7 as follows:
- NOTE:** This inspection is done through the lower outboard skin that is 0.080 inch (2.00 mm) thick.
- (1) Set the instrument frequency between 1.5 and 2.5 kHz.
 - (2) Put the probe on reference standard NDT3261 at probe position 1 as shown in Detail II of Figure 4.
 - (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 FSH and approximately 60 percent of FSW as shown in Detail I of Figure 4.
 - (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 4.
 - (7) Put the probe on the reference standard at probe position 2 as shown in Detail II of Figure 4.
- NOTE:** Make sure the fastener is in the center of the probe.
- (8) Move the probe lightly above the fastener until the notch 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 I of Figure 4. If necessary, set the horizontal gain from 6 to 12 dB lower than the vertical gain to keep the signal on the screen display.
- C. Calibrate the equipment to do the HFEC open hole inspection of the lower chord at the four open holes between MF STA 158 and 168 as follows:
- (1) Calibrate the instrument with a rotary scanner as specified in Part 6, 51-00-00, Procedure 16, paragraph 5,
 - (2) Use a rotating probe that fits in the 0.312 inch (7.90 mm) diameter holes.

5. Inspection Procedure

NOTE: There are two fastener rows on the lower chord of the front spar of the inboard main flap. Only examine the aft fastener row at the rib locations with the ring probe. See Figure 1.

- A. Examine the lower chord at the front spar of the inboard main flap for cracks through the lower inboard skin (this skin is 0.125 inch (3.17 mm) thick), at the rib locations from MF STA 73 to 146.3 as follows:

NOTE: The fasteners in the inspection area on the lower inboard skin have Phillip heads. It is permitted to calibrate the equipment on reference standard NDT3263 although its fasteners are not Phillip head fasteners.

- (1) Calibrate the equipment as specified in Paragraph 4.A.
- (2) Put the ring probe on one of the fasteners on the lower inboard skin of the front spar at a rib location in the inspection area. Make sure the fastener is in the center of the ring probe and move the ring probe a small quantity to get the minimum signal to occur on the instrument display. See the signals in Figure 4.
- (3) Balance the instrument.



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- (4) Put the ring probe on a different fastener in the inspection area at a rib location. Make sure the fastener is in the center of the ring probe and monitor the instrument display for crack indications.
 - (5) Do Paragraph 5.A.(4) again and again until all of the fasteners in the inspection area are examined. See Figure 1 and Figure 4.
 - (6) Do Paragraph 5.A.(2) thru Paragraph 5.A.(4) again to examine the inboard main flap on the other side of the airplane for cracks at these locations.
- B. Examine the lower chord at the front spar of the inboard main flap for cracks through the lower outboard skin (this skin is 0.080 inch (2.00 mm) thick) at the rib locations from MF STA 146.3 to 152.7 as follows:
- NOTE:** There are only two rib post locations to be examined with the ring probe on the lower outboard skin.
- (1) Calibrate the equipment as specified in Paragraph 4.B.
 - (2) Put the ring probe on the fastener at the MF STA 152.7 rib location, that is shown in Figure 1. Make sure the fastener is in the center of the ring probe.
 - (3) Balance the instrument.
 - (4) Put the ring probe on the fastener at the MF STA 146.3 rib location, that is shown in Figure 1. Make sure the ring probe is on the thinner (0.080 inch (2.00 mm) thick) skin at this butt splice. Make sure the fastener is in the center of the ring probe and monitor the instrument display for crack indications.
 - (5) Do Paragraph 5.B.(2) thru Paragraph 5.B.(4) again to examine the inboard main flap on the other side of the airplane for cracks at these locations.
- C. Examine the lower chord at the front spar of the inboard main flap for cracks at the four open holes between MF STA 158 and 168 as follows:
- (1) Calibrate the equipment as specified in Paragraph 4.C.
 - (2) Examine the lower chord for cracks with a rotary scanner at the four open holes shown in Figure 1 as specified in Part 6, 51-00-00, Procedure 16, paragraph 6.
 - (3) Do Paragraph 5.C.(2) again to examine the inboard main flap on the other side of the airplane for cracks at these locations.

6. Inspection Results

- A. For the LFEC inspection with a ring probe:
 - (1) 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.
 - (2) 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. and Figure 4.
 - (3) 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 to make sure there is a crack.
- B. For the HFEC Inspection:
 - (1) 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.

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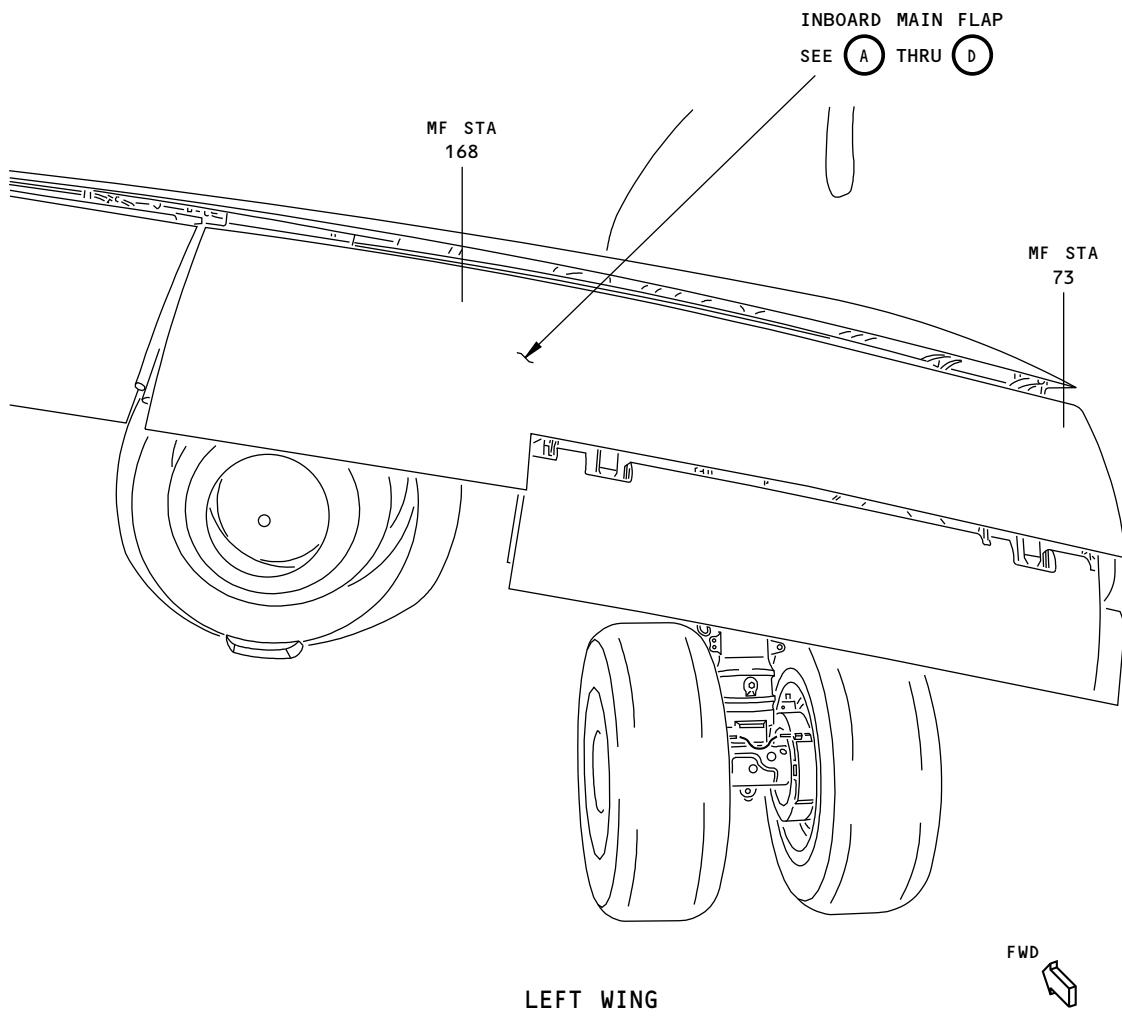
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**NOTES:**

- THE UPPER SURFACE OF THE INBOARD MAIN FLAP IS SHOWN. THE LOWER CHORD OF THE FRONT SPAR IS EXAMINED THROUGH THE LOWER SKIN WITH A LFEC RING PROBE AT THE RIB LOCATIONS FROM MF STA 73 TO 152.
- A HFEC ROTARY PROBE INSPECTION IS DONE AT 4 OPEN HOLES IN THE LOWER CHORD BETWEEN MF STA 158 AND 168.
- SEE VIEWS A THRU D FOR THE INSPECTION AREAS ON THE LOWER CHORD OF THE INBOARD MAIN FLAP.

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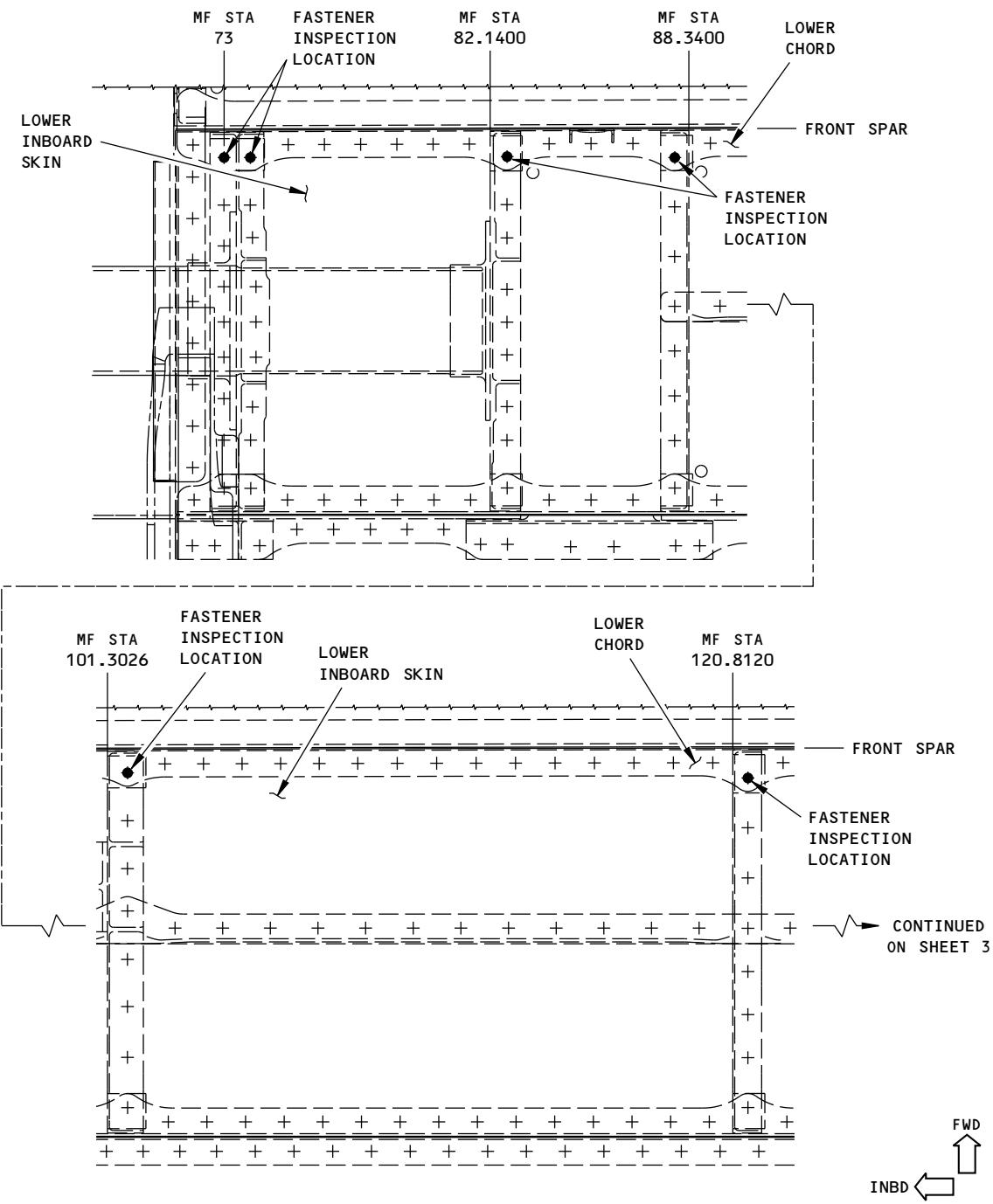
Inspection Area
Figure 1 (Sheet 1 of 6)

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THIS IS A VIEW OF THE INBOARD MAIN FLAP AS YOU LOOK UP

(A)

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Inspection Area
Figure 1 (Sheet 2 of 6)

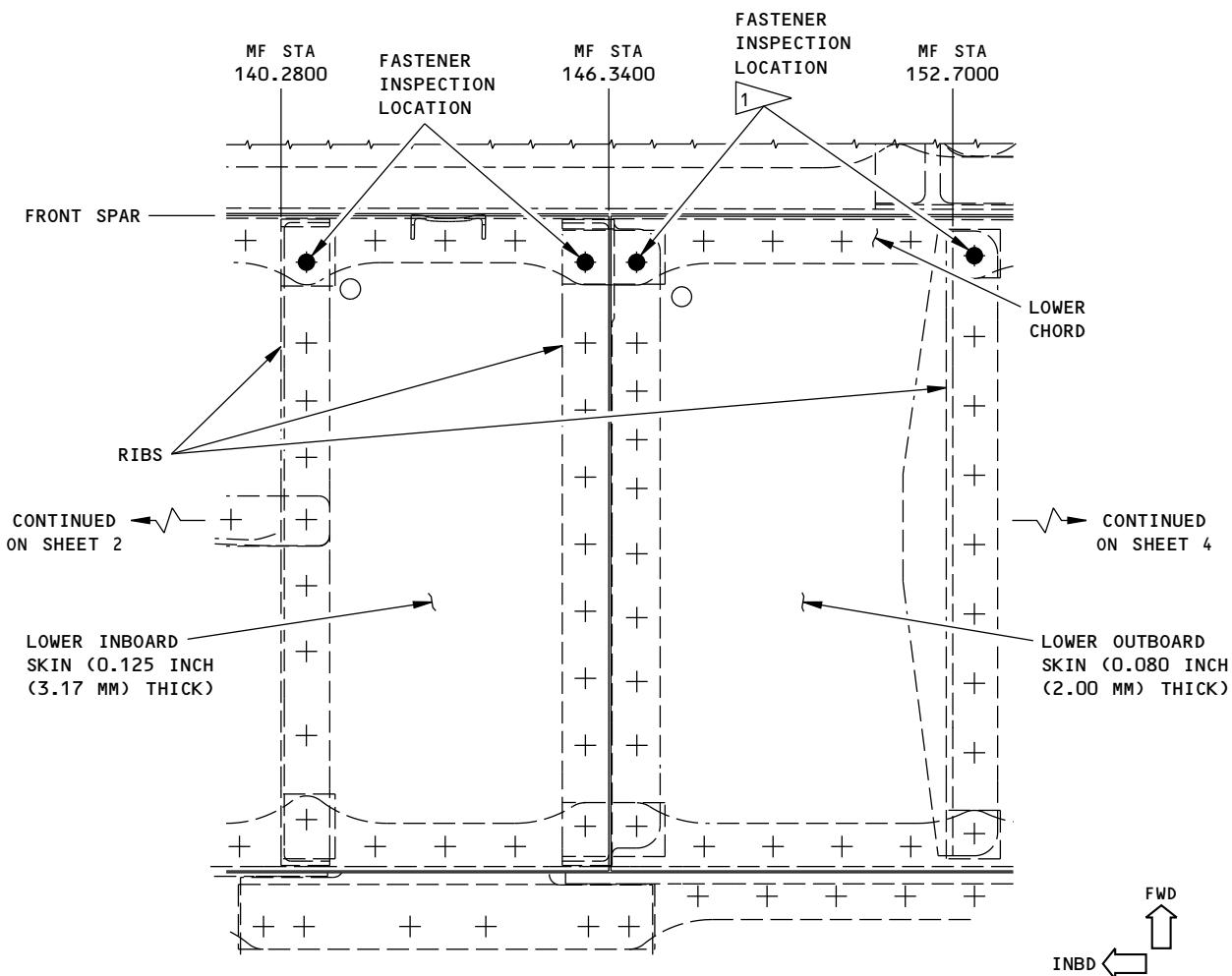
EFFECTIVITY
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THIS IS A VIEW OF THE INBOARD MAIN FLAP AS YOU LOOK UP

(A) (CONTINUED)

1 USE REFERENCE STANDARD NDT3261 TO CALIBRATE
THE EQUIPMENT FOR THIS FASTENER LOCATION

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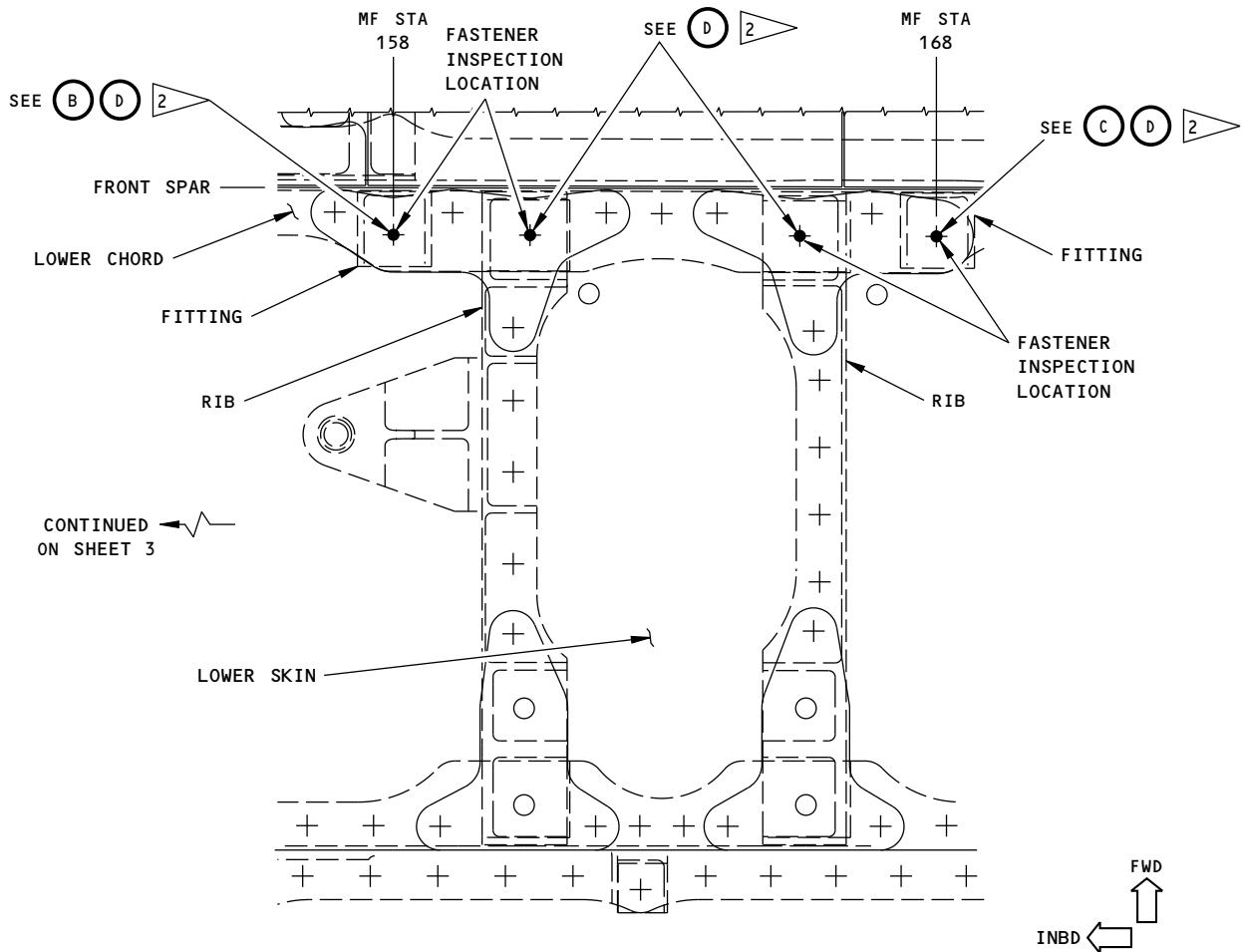
Inspection Area
Figure 1 (Sheet 3 of 6)

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THIS IS A VIEW OF THE INBOARD MAIN FLAP AS YOU LOOK UP

(A) (CONTINUED)

2 REMOVE THIS BOLT AND USE A ROTARY SCANNER TO DO AN OPEN HOLE HFEC INSPECTION OF THE LOWER CHORD AS SPECIFIED IN PART 6, 51-00-00, PROCEDURE 16. IT IS NECESSARY TO REMOVE THE UPPER SKIN TO GET ACCESS BUT IT IS NOT NECESSARY TO REMOVE THE FLAP TRACK CARRIAGE ASSEMBLY (NOT SHOWN IN THIS VIEW). SEE VIEWS B, C AND D.

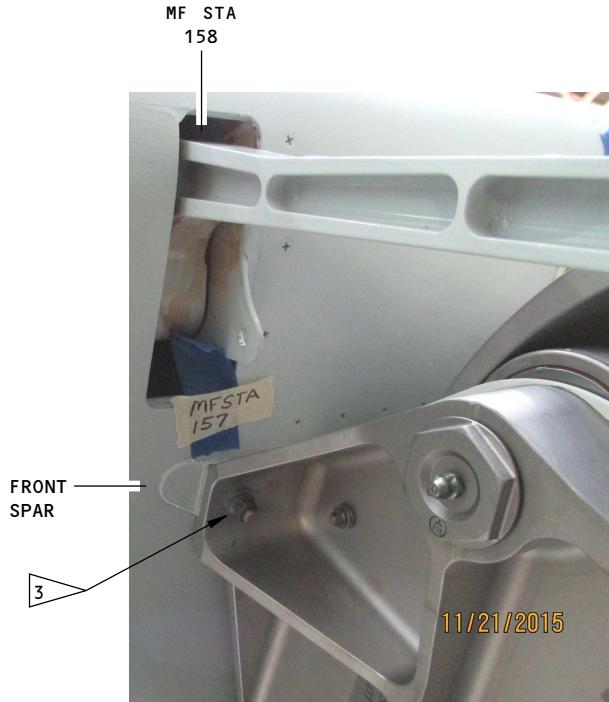
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Inspection Area
Figure 1 (Sheet 4 of 6)

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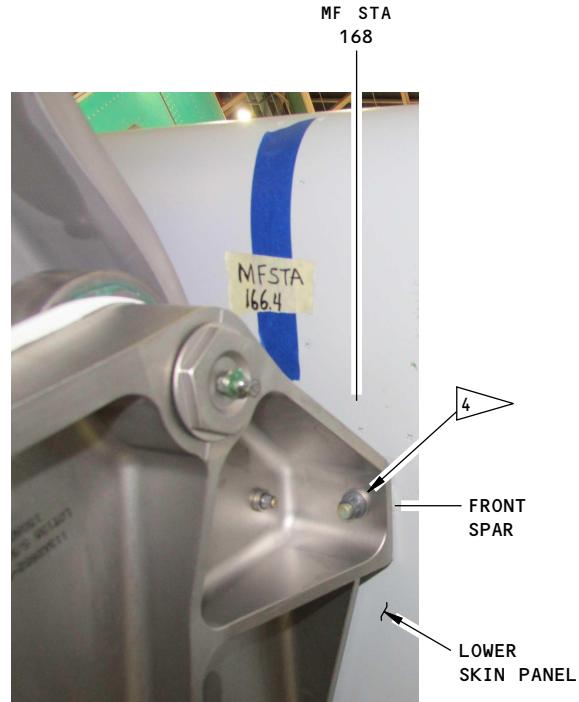
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VIEW OF THE INBOARD SIDE OF THE
OUTBOARD CARRIAGE ASSEMBLY

(B)



VIEW OF THE OUTBOARD SIDE OF
THE OUTBOARD CARRIAGE ASSEMBLY

(C)

THE FLAP TRACK CARRIAGE ASSEMBLY OF THE LEFT INBOARD MAIN FLAP IS SHOWN;
THE FLAP TRACK CARRIAGE ASSEMBLY ON THE RIGHT INBOARD MAIN FLAP IS OPPOSITE

- 3 ➤ REMOVE THE UPPER SKIN FROM THE INBOARD MAIN FLAP TO GET ACCESS TO THIS BOLT FOR REMOVAL. ALSO, REMOVE THE NUT AND BOLT (NOT SHOWN HERE) IMMEDIATELY OUTBOARD OF THIS BOLT. SEE VIEW D FOR ALL 4 BOLTS TO REMOVE ON THE CARRIAGE ASSEMBLY TO DO THE OPEN HOLE HFEC INSPECTION ON THE LOWER CHORD
- 4 ➤ REMOVE THE UPPER SKIN FROM THE INBOARD MAIN FLAP TO GET ACCESS TO THIS BOLT FOR REMOVAL. ALSO, REMOVE THE NUT AND BOLT (NOT SHOWN HERE) IMMEDIATELY INBOARD OF THIS BOLT. SEE VIEW D FOR ALL 4 BOLTS TO REMOVE ON THE CARRIAGE ASSEMBLY

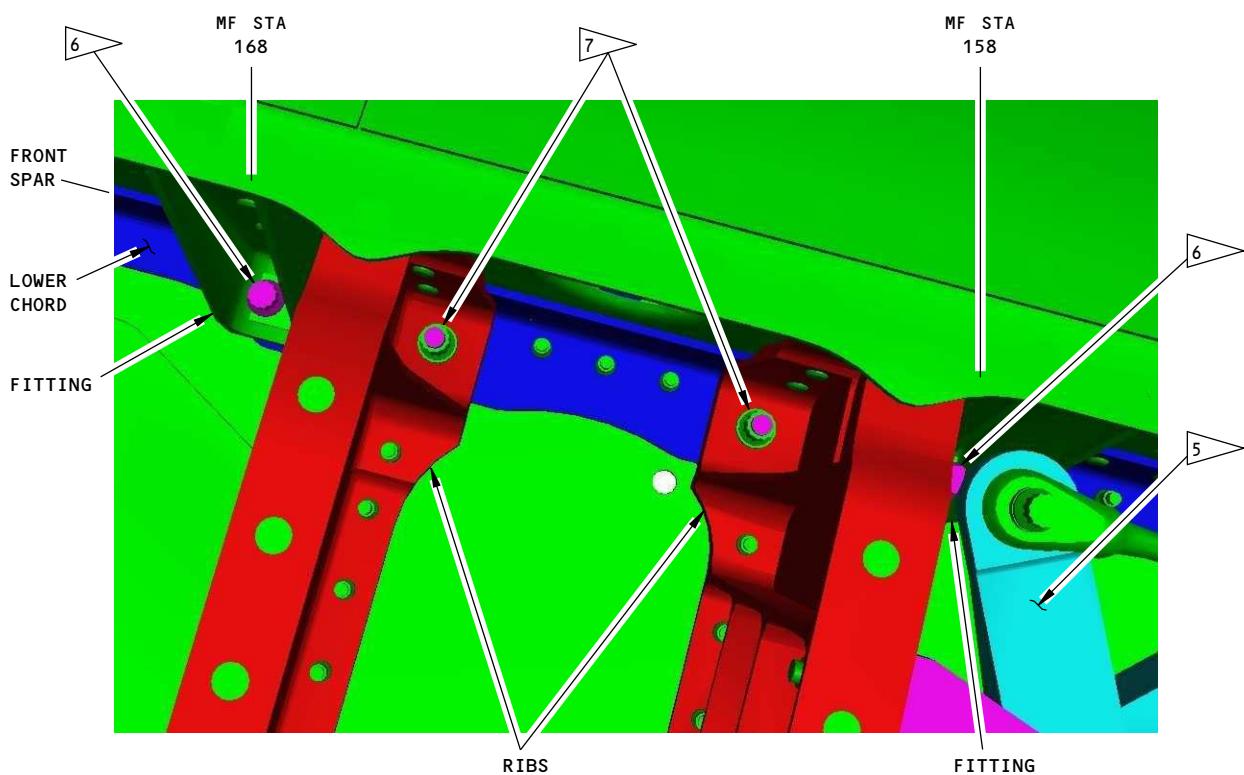
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Inspection Area
Figure 1 (Sheet 5 of 6)

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THIS IS A VIEW OF THE LOWER CHORD OF THE INBOARD MAIN FLAP WITH THE UPPER SKIN REMOVED BETWEEN MF STA 158 AND 168. THIS VIEW IS WHILE YOU LOOK DOWN

INSPECTION AREA FOR HFEC OPEN HOLE INSPECTION

(D)

NOTES:

- DO AN OPEN HOLE INSPECTION OF THE LOWER CHORD AT THE **6** AND **7** LOCATIONS AS SPECIFIED IN PART 6, 51-00-00, PROCEDURE 16. MAKE SURE THE PROBE COIL TOUCHES THE LOWER CHORD DURING THE INSPECTION

5 REMOVE THE UPPER SKIN AND ADJUST THE FLAP POSITION SO THAT THIS BELL CRANK ASSEMBLY WILL GIVE CLEARANCE TO REMOVE THE BOLT IDENTIFIED BY **6**

6 REMOVE THESE BOLTS AT THE FITTING LOCATIONS

7 REMOVE THESE BOLTS AT THE RIB LOCATIONS. THE BOLT HEADS ARE IMMEDIATELY ABOVE FLAP TRACK NUMBER 3

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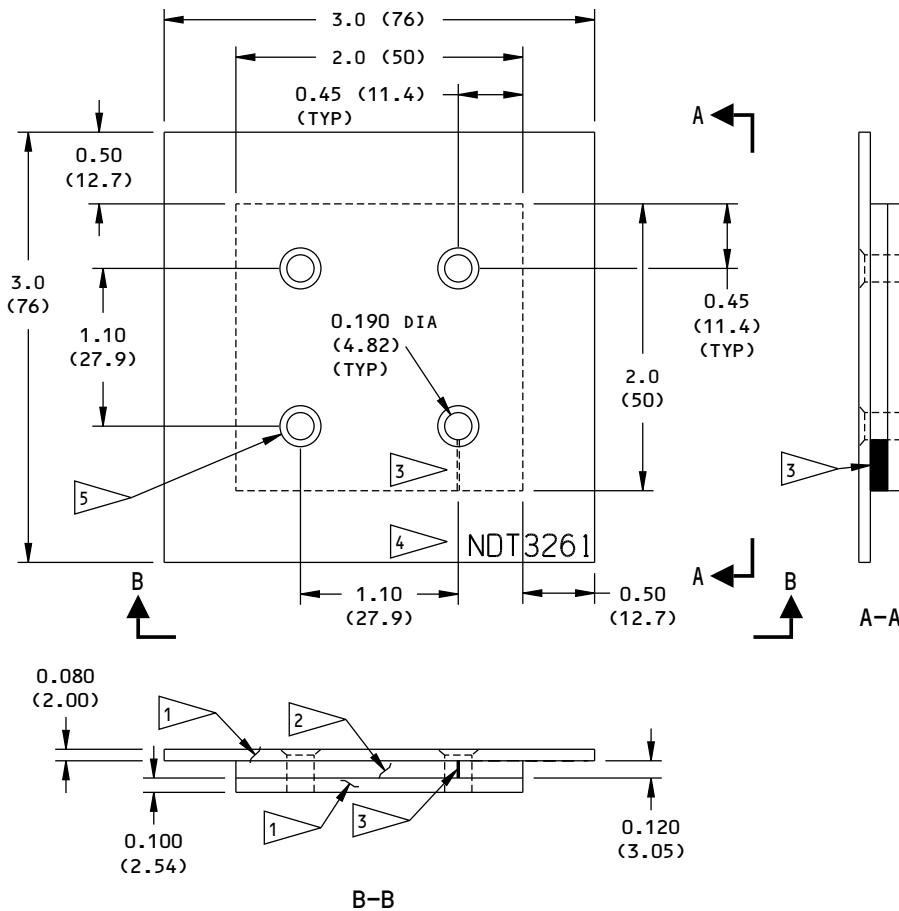
Inspection Area
Figure 1 (Sheet 6 of 6)

EFFECTIVITY
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**NOTES:**

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(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

- SURFACE ROUGHNESS: 63 Ra OR BETTER

- 1 ▶ 2024-T3 ALUMINUM (CLAD OR BARE)
2 ▶ 7050-T7451, 7075-T73XX, OR 7055-T7751X
ALUMINUM (CLAD OR BARE)

- 3 ▶ EDM NOTCH:
LENGTH: EDGE OF THE HOLE TO THE EDGE
OF THE PART
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.020 (0.50) MAXIMUM

- 4 ▶ ETC OR STEEL STAMP THE REFERENCE
STANDARD NUMBER, NDT3261, AT
APPROXIMATELY THIS LOCATION
5 ▶ INSTALL BACB30YP6K4 BOLTS AND BACC30BL6
(OR EQUIVALENT) ALUMINUM COLLARS
(4 LOCATIONS)

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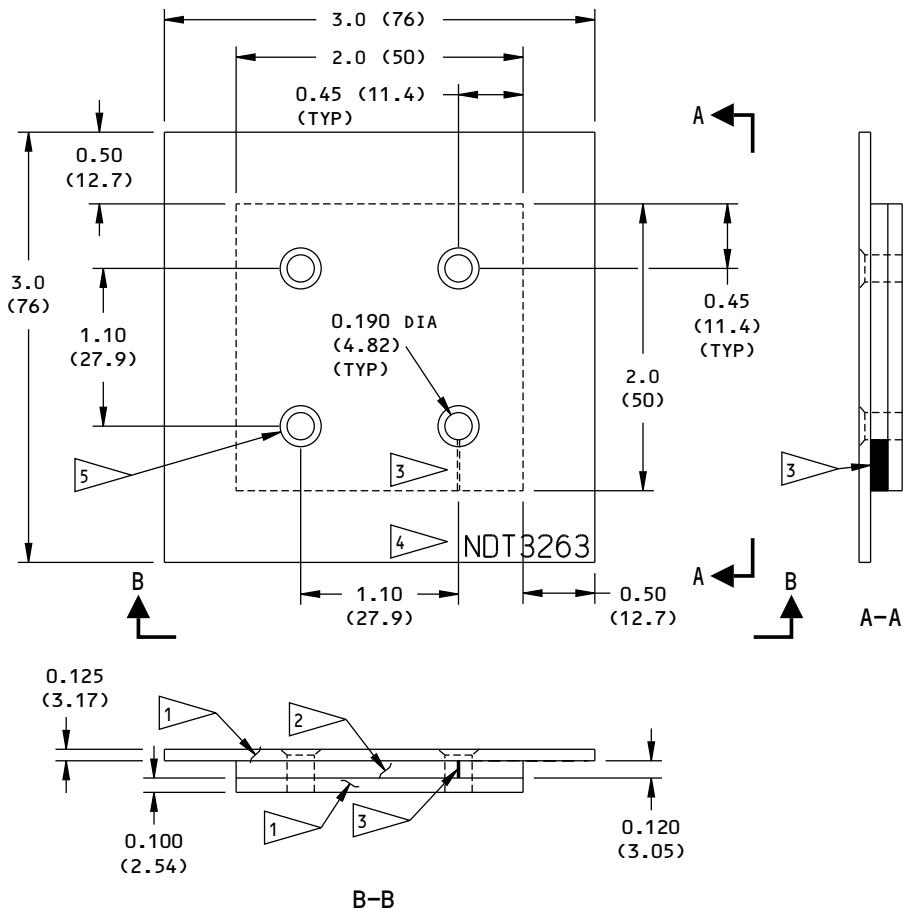
Reference Standard NDT3261
Figure 2

EFFECTIVITY
ALL; 737-600/700/800/900 AIRPLANES

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NOTES:

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

<u>INCHES</u>	<u>MILLIMETERS</u>
X.XXX = ± 0.005	X.XX = ± 0.1
X.XX = ± 0.025	X.X = ± 0.5
X.X = ± 0.050	X = ± 1

- SURFACE ROUGHNESS: 63 Ra OR BETTER

1 ▶ 2024-T3 ALUMINUM (CLAD OR BARE)

2 7050-T7451, 7075-T73XX, OR 7055-T7751X
ALUMINUM (CLAD OR BARE)

3 EDM NOTCH:
LENGTH: EDGE OF THE HOLE TO THE EDGE
OF THE PART
DEPTH: THROUGH THE THICKNESS
WIDTH: 0.020 (0.50) MAXIMUM

 4 ETCH OR STEEL STAMP THE REFERENCE
STANDARD NUMBER, NDT3263, AT
APPROXIMATELY THIS LOCATION

5 △ INSTALL BACB30YP6K5 BOLTS AND BACC30BL6
(OR EQUIVALENT) ALUMINUM COLLARS
(4 LOCATIONS)

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Reference Standard NDT3263 Figure 3

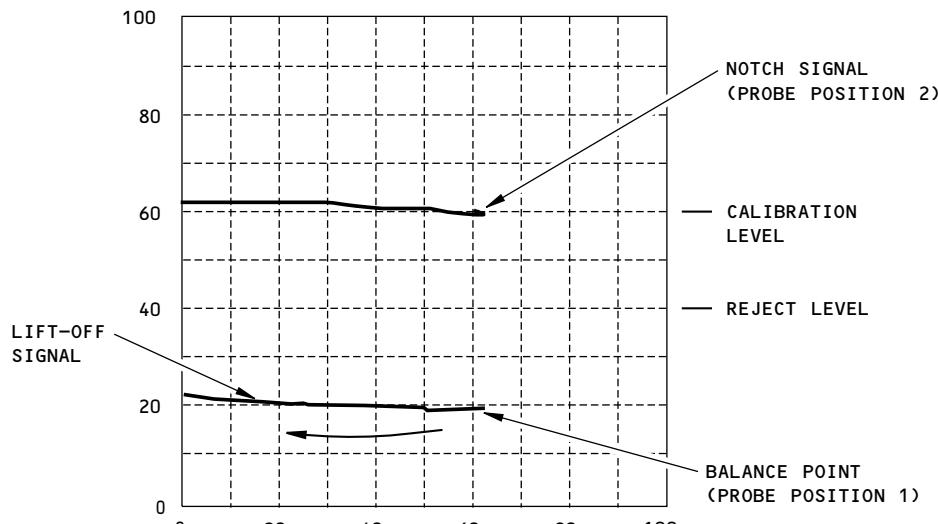
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ALL; 737-600/700/800/900 AIRPLANES

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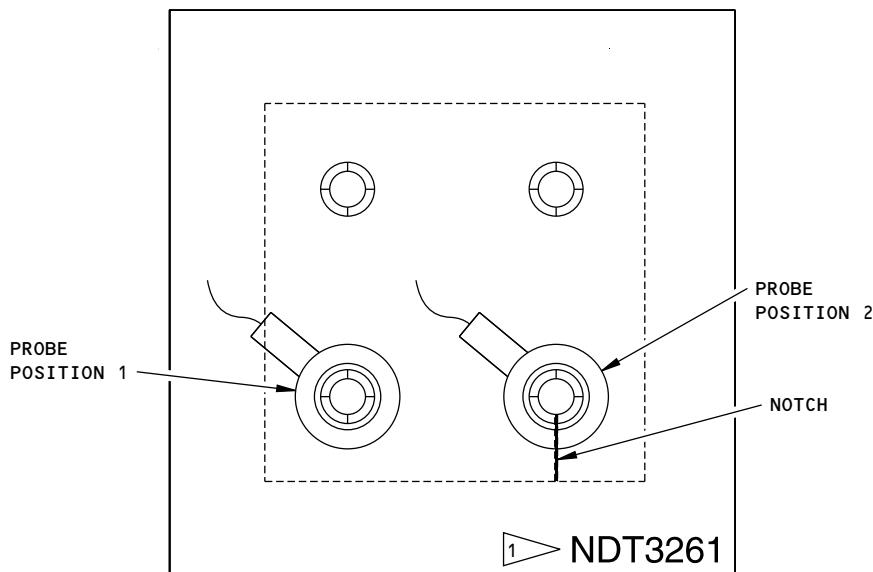
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IMPEDANCE PLANE DISPLAY
DETAIL I



CALIBRATION PROBE POSITIONS ON REFERENCE
STANDARDS NDT3261 AND NDT3263
DETAIL II

1 ▶ REFERENCE STANDARD NDT3261 IS SHOWN.
THE CALIBRATION PROCEDURE WITH NDT3263 IS
EQUIVALENT BUT A DIFFERENT INSTRUMENT
FREQUENCY IS USED. SEE PARAGRAPHS 4.A AND
4.B FOR THE INSTRUMENT FREQUENCIES TO USE
WITH EACH REFERENCE STANDARD

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Instrument Calibration
Figure 4

EFFECTIVITY
ALL; 737-600/700/800/900 AIRPLANES

PART 6 57-50-33

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