EFFECTIVITY
MODEL: 707-300, -400, -300B, -300C
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 55-A25-03
SSD 55-A35-03
SSD 55-A45-03
SERVICE BULLETIN
REFERENCE: 3313

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

   A. To find cracks in the forward flange of the upper rear spar chord from the inboard edge of the inspar skin to 25.5 inches outboard on the horizontal stabilizers.

2. Equipment

   A. General

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

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

   B. Instruments

      (1) Use an eddy current instrument that:

         (a) has an impedance plane display.

         (b) operates at a frequency of 100 Hz.

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

         (a) NDT 19, NDT 19e; Nortec/Staveley, Inc.

         (b) Phasec 2200; Hocking Krautkramer.

         (c) MIZ-20A; Zetec, Inc.

   C. Probes

      (1) Use a ring probe that:

         (a) has an inner diameter between 0.30 and 0.35 inch (7.6 and 8.9 mm)

         (b) operates at a frequency of 100 Hz

Horizontal Stabilizer Rear Spar Upper Chord - Encircling Probe Inspection
Figure 1 (Sheet 1)

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

(a) RR207-5/TF; NDT Engineering

(b) RR058-1/TF; NDT Engineering

(c) DP 30/77-R; Zetec, Inc.

D. Reference Standard

(1) Make reference standard A181. See Detail I.

3. Preparation

A. Clean the stabilizer surface.

B. It is not necessary to remove paint to do this inspection unless it is necessary to find the fasteners.

4. Instrument Calibration

A. Set the frequency at 100 Hz.

B. Set the low pass filter to 30 Hz or less.

C. Put the probe at position 1 on reference standard A181 as shown in Detail II. Make sure the probe is centered on the fastener head. The probe is centered on the fastener head when the signal from the fastener hole without a notch is at a minimum height.

D. Balance the instrument.

E. Adjust the balance point to 20 percent of full screen height and 60 percent of full screen width. See Detail III.

F. Adjust the phase control so that the lift-off signal moves horizontally to the left when the probe is lifted off of the reference standard. See Detail III.

G. Move the probe to probe position 2 as shown in Fig. 1, Detail II and III. This is the hole with the saw cut. Make sure the probe is centered on this fastener head.

H. Adjust the gain to get a saw cut signal that is at 80 percent of full screen height (60 percent of full screen height above the balance point). See Detail III.

NOTE: If the display dot has noise signals, lower the low pass filter some more.

Horizontal Stabilizer Rear Spar Upper Chord - Encircling Probe Inspection
Figure 1 (Sheet 2)

5. Inspection Procedure

A. Examine the fore and aft rows of fasteners separately. When you examine the aft row, include the single row of four fasteners that is approximately 25 inches outboard of the body.

B. Put the calibrated probe on the most inboard fastener in the aft row at the inboard edge of the inspar skin. If the instrument reading is significantly different from that obtained from the standard, rebalance the instrument on the plane using null and liftoff. Do not change the instrument sensitivity during rebalancing.

C. Center the probe successively on each fastener in the aft row and obtain a minimum meter reading.

NOTE: Crack indications should be measured from a baseline established for the area examined. It can be necessary to use three or four fasteners on either side of the suspect fasteners to establish this baseline.

D. Check the instrument calibration (par. 4) and the forward row of fasteners following par. 5.B. and 5.C. Start with the most inboard fastener.

6. Inspection Results

A. Signals that are 40% of full screen height (or more) above the balance point are possible cracks. See Detail III.

B. Compare the signal that occurs during the inspection with the signal that you got from the saw cut in the reference standard during calibration.

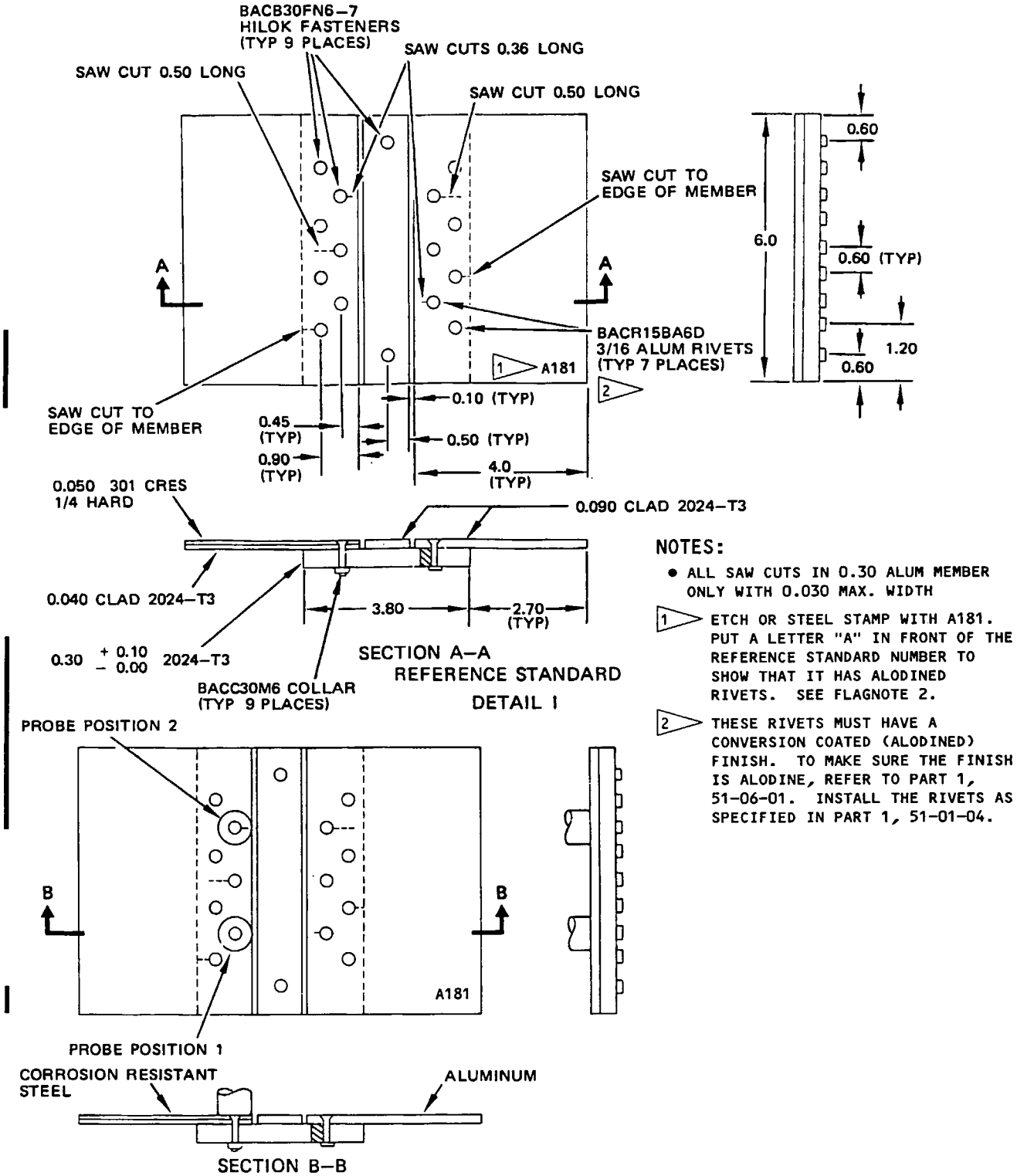
C. The conditions that follow can cause crack-type indications to occur:

(1) If the probe is balanced on a non magnetic fastener and then put on a magnetic steel fastener. Use a magnet to identify which fasteners are non magnetic (or magnetic).

(2) Short edge margin. Make sure you examine one row of fasteners at a time to minimize the effect from short edge margin.

(3) Permeability changes in the 301 stainless steel skin.

Horizontal Stabilizer Rear Spar Upper Chord - Encircling Probe Inspection
Figure 1 (Sheet 3)



NOTES:

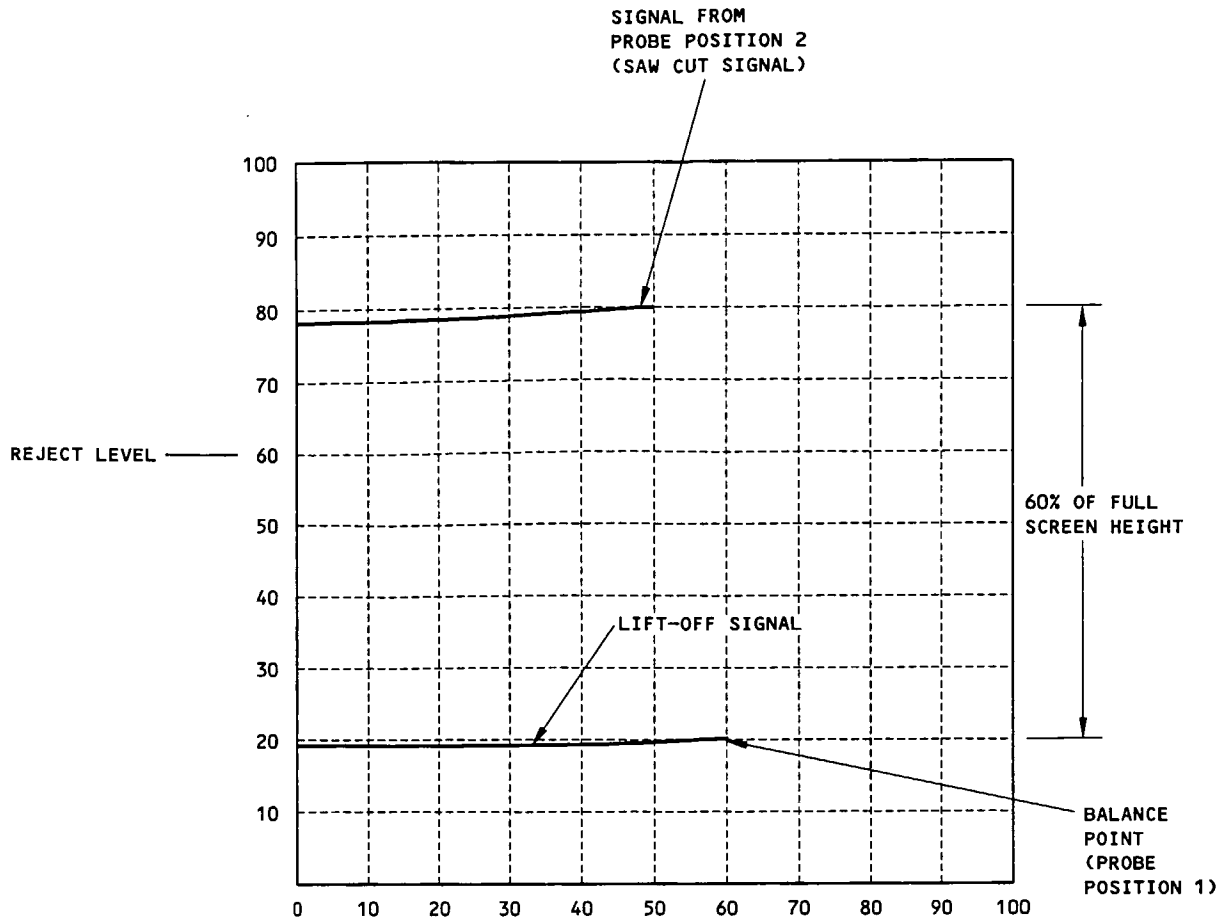
- ALL SAW CUTS IN 0.30 ALUM MEMBER ONLY WITH 0.030 MAX. WIDTH

1 ETCH OR STEEL STAMP WITH A181. PUT A LETTER "A" IN FRONT OF THE REFERENCE STANDARD NUMBER TO SHOW THAT IT HAS ALODINED RIVETS. SEE FLAGNOTE 2.

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

PROBE POSITIONS FOR CALIBRATION AND INSPECTION
DETAIL II

Horizontal Stabilizer Rear Spar Upper Chord - Encircling Probe Inspection
Figure 1 (Sheet 5)



SEE DETAIL II FOR THE PROBE POSITIONS FOR THE CALIBRATION

CALIBRATION SIGNALS ON AN IMPEDANCE PLANE DISPLAY
DETAIL III

Horizontal Stabilizer Rear Spar Upper Chord - Encircling Probe Inspection
Figure 1 (Sheet 6)

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

A. To find cracks in the forward or aft flange of the upper rear spar chord from side of body to Stab. Sta. 92.55 on the horizontal stabilizers.

2. Equipment

A. General

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

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

B. Instruments

(1) Use an eddy current instrument that:

(a) has an impedance plane display.

(b) operates at a frequency between 400 and 500 Hz.

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

(a) NDT 19, NDT 19e; Nortec/Staveley, Inc.

(b) Phasec 2200; Hocking Krautkramer.

(c) MIZ-20A; Zetec, Inc.

C. Probes

(1) Use a spot probe or ring probe that:

(a) has an outer diameter between 0.44 and 0.56 inch (11.2 and 14.2 mm)

(b) operates at a frequency between 400 and 500 Hz

Horizontal Stabilizer Rear Spar Upper Chord - Gap Inspection
Figure 2 (Sheet 1)

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

(a) RS1005-2/TF; NDT Engineering Corp.

(b) SPO-5328 SR/500 Hz-60 KHz/.44; Nortec/Staveley

(c) VMR112 800 Hz-5 KHz; VM Products

D. Reference Standard

(1) Use reference standard A181. See Detail I.

3. Preparation

A. Clean the wing surface.

B. Paint removal is not necessary.

4. Instrument Calibration

A. Instrument Calibration for the forward side of the rear spar chord.

(1) Set the frequency between 400 and 500 Hz.

(2) Set the low pass filter to 30 Hz or more.

(3) Put the probe at position 1 on reference standard A181 as shown in Detail II.

(4) Balance the instrument.

(5) Adjust the balance point to 20 percent of full screen height and 60 percent of full screen width. See Detail III.

(6) Adjust the phase control so that the lift-off signal moves horizontally to the left when the probe is lifted off of the reference standard. See Detail III.

(7) Move the probe to probe position 2 as shown in Detail II. This probe position is at the saw cut location.

(8) Adjust the gain to get a saw cut signal that is at 80 percent of full screen height (60 percent of full screen height above the balance point). See Detail III.

NOTE: If the display dot has noise signals, lower the low pass filter some more.

Horizontal Stabilizer Rear Spar Upper Chord - Gap Inspection
Figure 2 (Sheet 2)

B. Instrument Calibration for the aft side of the rear spar

(1) Set the frequency between 500 Hz and 1 KHz.

(2) Set the low pass filter to 30 Hz or more.

(3) Put the probe at position 3 on reference standard A181 as shown in Detail II.

(4) Balance the instrument.

(5) Adjust the balance point to 20 percent of full screen height and 60 percent of full screen width. See Detail III.

(6) Adjust the phase control so that the lift-off signal moves horizontally to the left when the probe is lifted off of the reference standard. See Detail III.

(7) Move the probe to probe position 4 as shown in Detail II. This probe position is at the saw cut location.

(8) Adjust the gain to get a saw cut signal that is at 80 percent of full screen height (60 percent of full screen height above the balance point). See Detail III.

NOTE: If the display dot has noise signals, lower the low pass filter some more.

5. Inspection Procedure

A. Inspection Procedure for the forward side of the rear spar chord.

(1) Put the probe on the skin gap on the forward side of the upper rear spar chord (of the horizontal stabilizer) as shown in Detail II, Probe Position I.

(2) Put a nonconductive straight edge along the edge of the ring probe so that it is parallel to the forward skin gap.

(3) Balance the instrument.

(4) Slowly move the probe along the forward skin gap as you keep the probe against the straight edge. Do this probe scan from the side of body to Stabilizer Station 92.55. Keep the probe on the skin gap during the scan.

Horizontal Stabilizer Rear Spar Upper Chord - Gap Inspection
Figure 2 (Sheet 3)

B. Inspection Procedure for the aft side of the rear spar chord.

(1) Put the probe on the skin gap on the aft side of the upper rear spar chord (of the horizontal stabilizer) as shown in Detail II, Probe Position 3.

(2) Put a nonconductive straight edge along the edge of the ring probe so that it is parallel to the aft skin gap.

(3) Balance the instrument.

(4) Slowly move the probe along the aft skin gap as you keep the probe against the straight edge. Do this probe scan from the side of body to Stabilizer Station 92.55. Keep the probe on the skin gap during the scan.

6. Inspection Results

A. Signals that are 40% of full screen height (or more) above the balance point are possible cracks.

B. Compare the signal that occurs during the inspection with the signal that you got from the saw cut in the reference standard during calibration.

C. The conditions that follow can cause crack-type indications to occur:

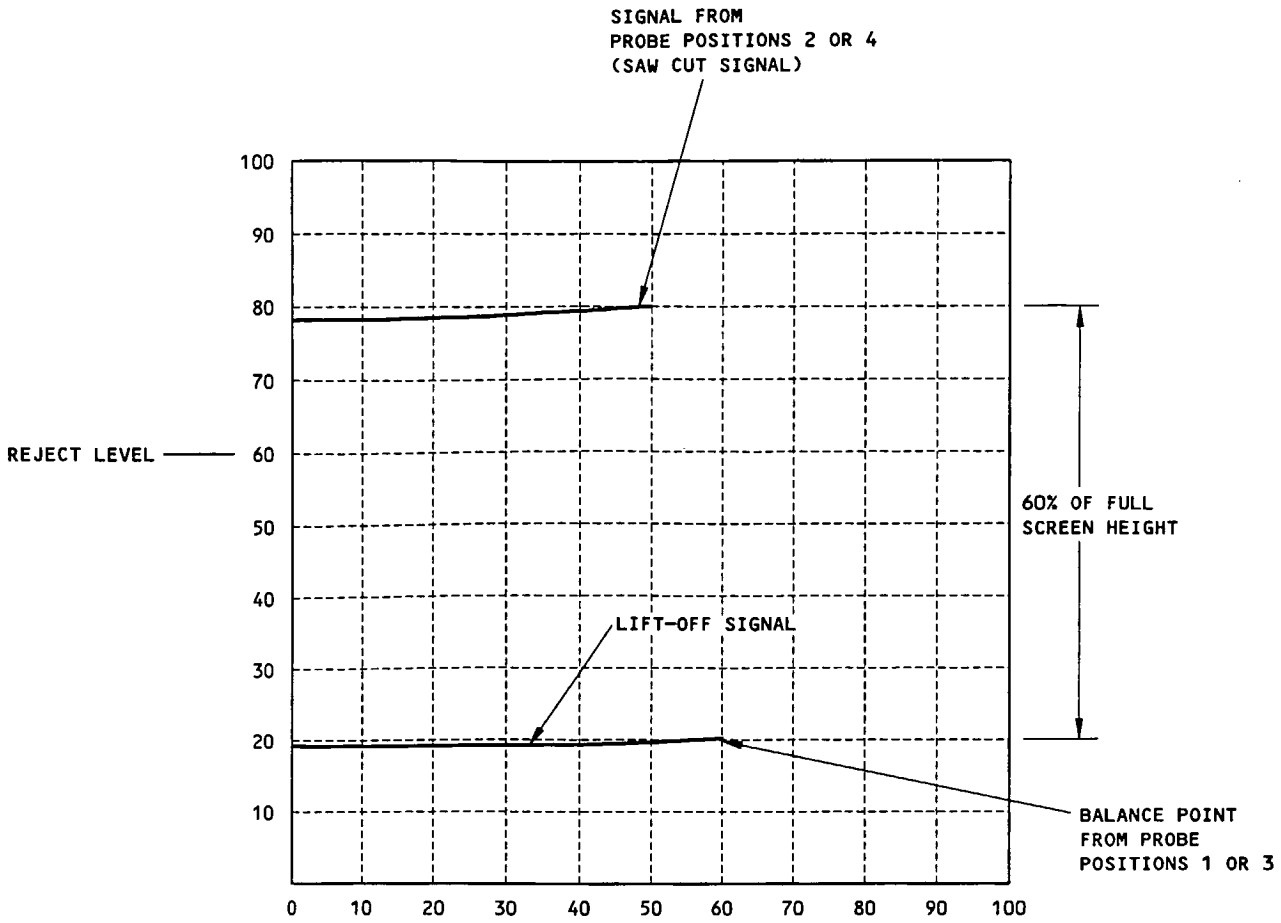
(1) If the probe goes too close to magnetic steel fasteners.

(2) Permeability changes in the 301 stainless steel skin.

(3) Short edge margin. Make sure you examine one row of fasteners at a time to minimize the effect from short edge margin.

(4) A probe that does not move straight (moves to and away from the skin gap) during the scan.

Horizontal Stabilizer Rear Spar Upper Chord - Gap Inspection
Figure 2 (Sheet 4)



SEE DETAIL II FOR THE PROBE POSITIONS FOR THE CALIBRATION

CALIBRATION SIGNALS ON AN IMPEDANCE PLANE DISPLAY
DETAIL III

Horizontal Stabilizer Rear Spar Upper Chord - Gap Inspection
Figure 2 (Sheet 6)

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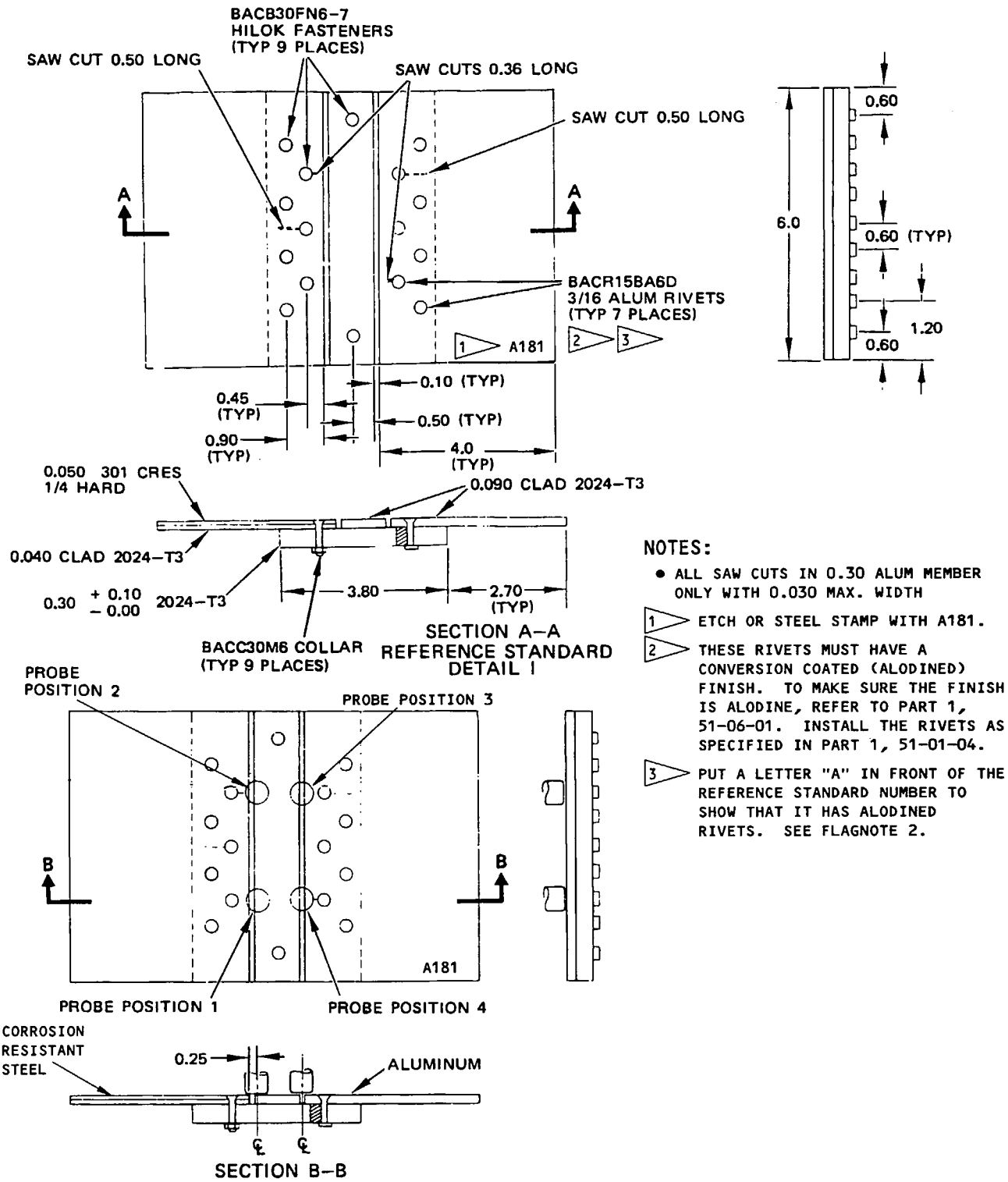


NOTES:

- ALL SAW CUTS IN 0.30 ALUM MEMBER ONLY WITH 0.030 MAX. WIDTH

1 ETCH OR STEEL STAMP WITH A181.

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

3 PUT A LETTER "A" IN FRONT OF THE REFERENCE STANDARD NUMBER TO SHOW THAT IT HAS ALODINED RIVETS. SEE FLAGNOTE 2.

Horizontal Stabilizer Rear Spar Upper Chord - Gap Inspection
Figure 2 (Sheet 7)

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

A. To find cracks in the aft flange of the upper rear spar chord from the inboard edge of the trailing edge skin to 25.5 inches outboard on the horizontal stabilizers.

2. Equipment

A. General

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

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

B. Instruments

(1) Use an eddy current instrument that:

(a) has an impedance plane display.

(b) operates at a frequency of 100 Hz.

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

(a) NDT 19, NDT 19e; Nortec/Staveley, Inc.

(b) Phasec 2200; Hocking Krautkramer.

(c) MIZ-20A; Zetec, Inc.

C. Probes

(1) Use a ring probe that:

(a) has an inner diameter between 0.30 and 0.35 inch (7.6 and 8.9 mm).

(b) operates at a frequency of 100 Hz.

Horizontal Stabilizer Rear Spar Upper Chord Aft Flange
Figure 3 (Sheet 1)

D. Reference Standard

(1) Use reference standard 182. See Detail I.

3. Preparation

A. Clean the stabilizer surface.

B. It is not necessary to remove paint to do this inspection unless it is necessary to find the fasteners.

4. Instrument calibration for the aft side of the rear spar

A. Set the frequency at 100 Hz.

B. Set the low pass filter to 30 Hz or less.

C. Put the probe at position 1 on reference standard 182 as shown in Detail II.

D. Balance the instrument.

E. Adjust the balance point to 20 percent of full screen height and 60 percent of full screen width. See Detail III.

F. Adjust the phase control so that the lift-off signal moves horizontally to the left when the probe is lifted off of the reference standard. See Detail III.

G. Move the probe to probe position 2 as shown in Detail II. This probe position is at the saw cut location.

H. Adjust the gain to get a saw cut signal that is at 80 percent of full screen height (60 percent of full screen height above the balance point). See Detail III.

NOTE: If the display dot has noise signals, lower the low pass filter some more.

Horizontal Stabilizer Rear Spar Upper Chord Aft Flange
Figure 3 (Sheet 2)

5. Inspection Procedure

NOTE: Complete the inspection on the aft row of fasteners in the aft flange before you do the inspection on the forward row of fasteners. The inspection area is from the inboard edge of the skin to 25.5 inches outboard.

A. Put the probe on a fastener in the aft row of fasteners and adjust the probe so that the signal from the fastener is at a minimum.

B. Balance the instrument.

C. Examine the remaining fasteners in the aft row of the aft flange while you monitor the instrument for crack indications. Make sure you adjust the probe on each fastener until the signal is at a minimum.

D. Put the probe on a fastener in the forward row of fasteners and adjust the probe so that the signal from the fastener is at a minimum.

E. Balance the instrument.

F. Examine the remaining fasteners in the forward row of the aft flange while you monitor the instrument for crack indications. Make sure you adjust the probe on each fastener until the signal is at a minimum.

6. Inspection Results

A. Signals that are 40% of full screen height (or more) above the balance point are possible cracks. See Detail III.

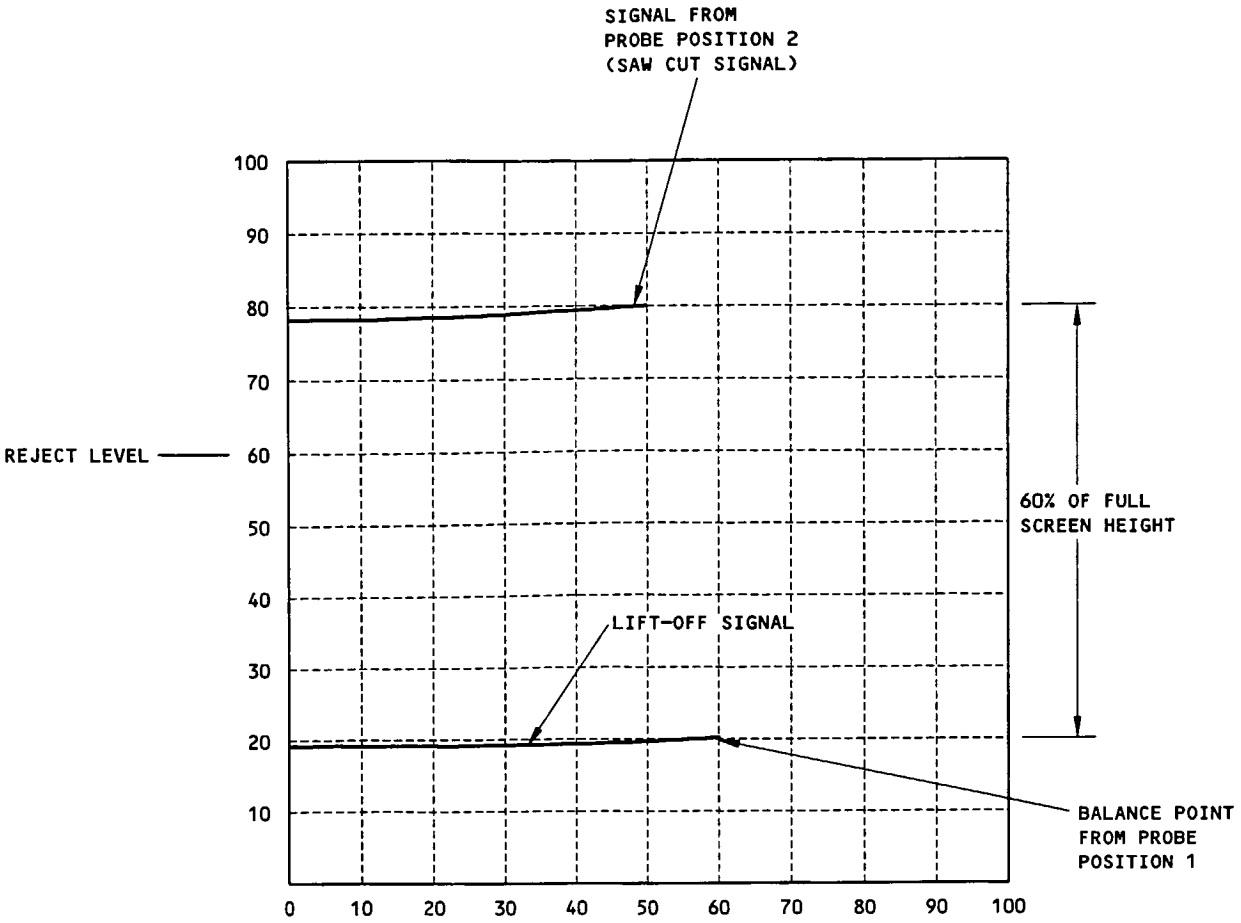
B. Compare the signal that occurs during the inspection with the signal that you got from the saw cut in the reference standard during calibration.

C. The conditions that follow can cause crack-type indications to occur:

(1) Magnetic steel fasteners.

(2) Short edge margin. Make sure you examine one row of fasteners at a time to minimize the effect from short edge margin.

Horizontal Stabilizer Rear Spar Upper Chord Aft Flange
Figure 3 (Sheet 2A)



SEE DETAIL II FOR THE PROBE POSITIONS FOR THE CALIBRATION

CALIBRATION SIGNALS ON AN IMPEDANCE PLANE DISPLAY
DETAIL III

Horizontal Stabilizer Rear Spar Upper Chord Aft Flange
Figure 3 (Sheet 3)

EFFECTIVITY
MODEL: 707-100, 707-200, 720 SERVICE BULLETIN REFERENCE: 3332 SSI DOCUMENT (D6-44860) REFERENCD: SSD 55-A05-03 55-A15-03

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

   A. To find cracks in the forward or aft flange of the upper rear spar chord from SIDE OF BODY to STAB. STA. 120 on the horizontal stabilizers (Detail III).

2. Equipment

   A. General

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

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

   B. Instruments

      (1) Use an eddy current instrument that:

         (a) has an impedance plane display.

         (b) operates at a frequency between 800 Hz and 1 KHz.

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

         (a) NDT 19, NDT 19e; Nortec/Staveley, Inc.

         (b) Phasec 2200; Hocking Krautkramer.

         (c) MIZ-20A; Zetec, Inc.

   C. Probes

      (1) Use a spot probe or ring probe that:

         (a) has an outer diameter between 0.44 and 0.56 inch (11.2 and 14.2 mm)

         (b) operates at a frequency between 800 Hz and 1 KHz

Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 1)

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

(a) RS1005-2/TF; NDT Engineering Corp.

(b) SPO-5328 SR/500 Hz-60 KHz/.44; Nortec/Staveley

(c) VMR112 800 Hz-5 KHz; VM Products

D. Reference Standard

(1) Use reference standard 162. See Detail I.

3. Preparation and Inspection

A. Clean the wing surface.

B. Inspection can be done on painted surfaces, but the paint must not be broken or flaking and must not be thicker than 0.004 inch.

C. Remove vortex generators which interfere with the inspection, if such generators are present.

4. Instrument Calibration

A. Set the frequency between 800 Hz and 1 KHz.

B. Set the low pass filter to 30 Hz or more.

C. Put a nonconductive straight edge on the reference standard as shown in Detail II. Make sure the straight edge is parallel to the edge of the fasteners as shown.

D. Put the probe at probe position 1 on reference standard 182 as shown in Detail II.

E. Balance the instrument.

F. Adjust the balance point to 20 percent of full screen height and 60 percent of full screen width as shown in Detail III.

G. Adjust the phase control so that the lift-off signal moves horizontally to the left when the probe is lifted off of the reference standard. See Detail III.

H. Move the probe to probe position 2 as shown in Detail II. This probe position is at the saw cut location.

I. Adjust the gain to get a saw cut signal that is at 80 percent of full screen height (60 percent of full screen height above the balance point). See Detail III.

Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 2)

J. Do a slow scan along the straight edge to see if there are signals that are 10% of full screen height (or higher) from the fasteners where there is no saw cut.

K. If the signals from the fasteners are less than 10% of full screen height, then the calibration is complete.

L. If the signals from the fasteners (where there is no saw cut) are 10% of full screen height or higher, move the straight edge a small distance from the fastener edges.

M. Do the calibration again as specified in par. 4.D. thru 4.K. at this new straight edge location.

NOTE: If the display dot has noise signals, lower the low pass filter some more.

5. Inspection Procedure

A. Inspection procedure for the forward side of the rear spar (upper chord)

(1) Put a straight edge along the edge of the fasteners in the inspection area as shown in Detail IV.

(2) Put the probe along the straight edge as shown in Detail IV.

(3) Balance the instrument.

(4) Slowly move the probe along the forward skin gap as you keep the probe against the straight edge. Do this probe scan from the side of body to Stabilizer Station 92.55. See Detail IV.

B. Inspection procedure for the aft side of the rear spar chord (upper chord)

(1) Do the steps in par. 5.A.(1) thru (4) but this time do the scan on the aft side of the rear spar. See Detail IV.

6. Inspection Results

A. Signals that are 40% of full screen height (or more) above the balance point are possible cracks. See Detail II.

B. Compare the signal that occurs during the inspection with the signal that you got from the saw cut in the reference standard during calibration.

Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 3)

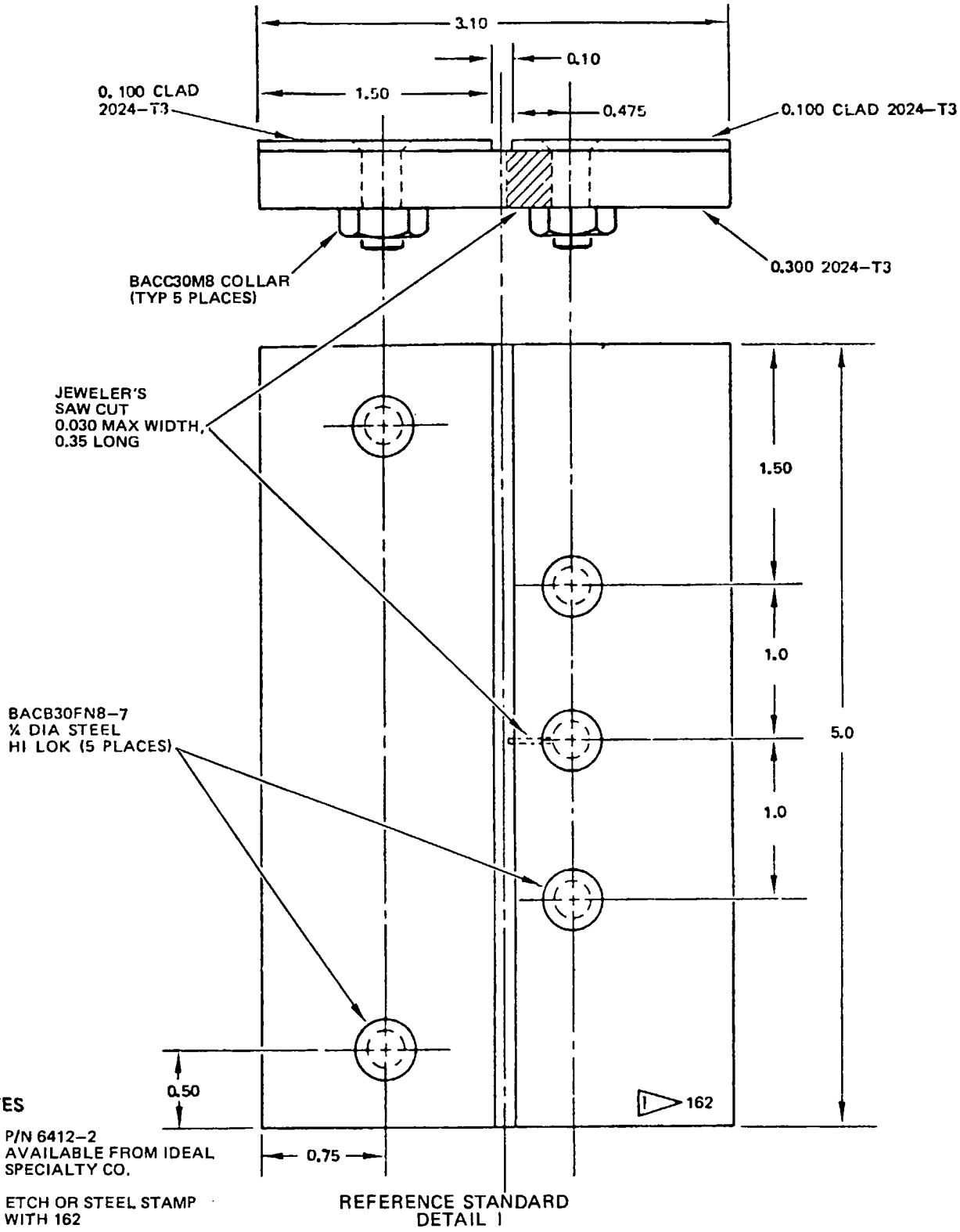
C. The conditions that follow can cause crack-type indications to occur:

(1) If the probe goes too near to magnetic steel fasteners. Make sure that the distance from the straight edge to the fastener edge is the same distance that it was during the calibration. See par. 4 for data on the straight edge adjustment.

(2) A probe that does not move straight during the scan (moves to and away from the skin gap during the scan). This can cause edge effect.

(3) A probe with unsatisfactory shielding. Use a probe with better shielding if you think there is too much magnetic effect from the steel fasteners.

Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 4)

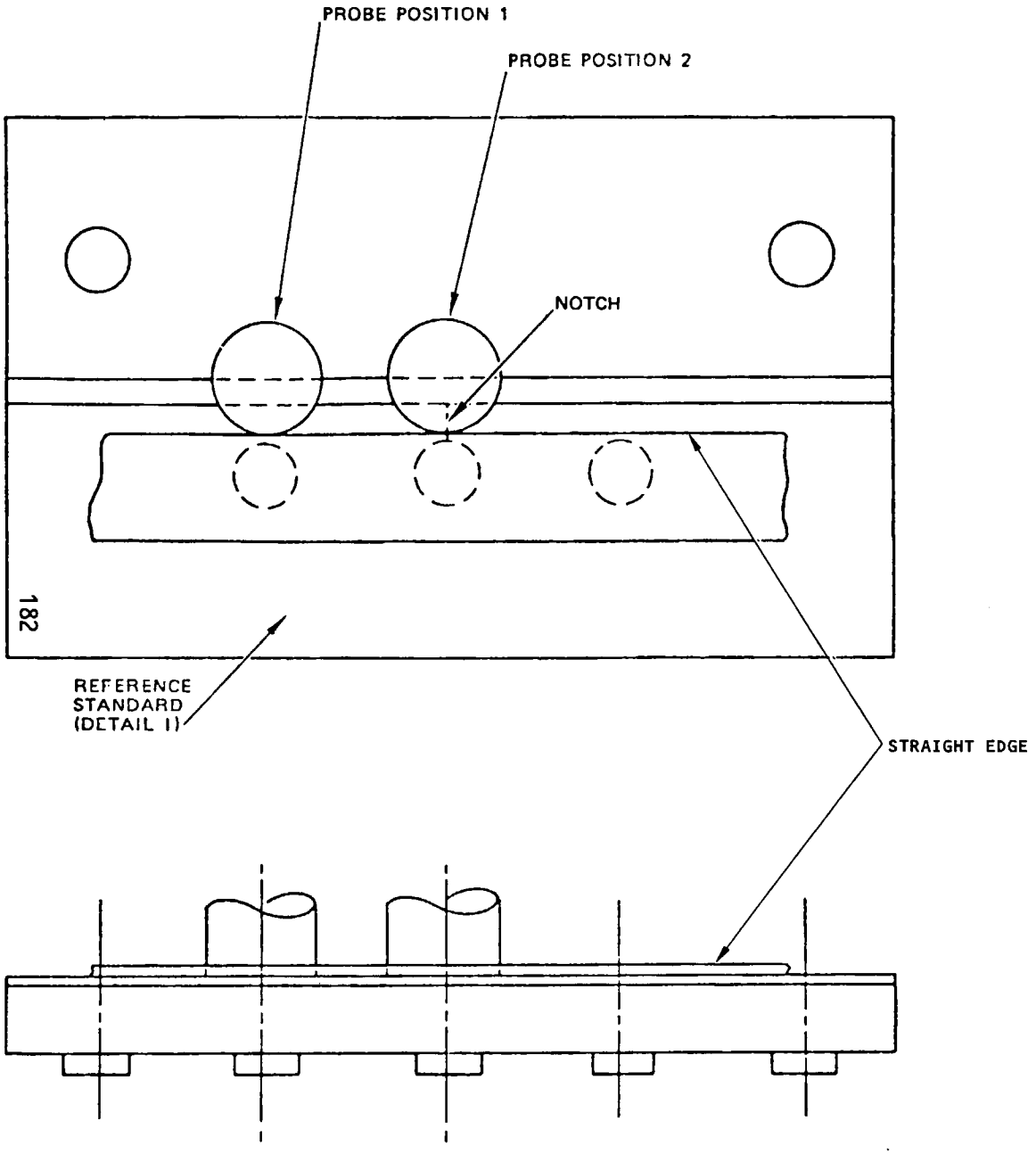


NOTES

- P/N 6412-2 AVAILABLE FROM IDEAL SPECIALTY CO.

1 ETCH OR STEEL STAMP WITH 162

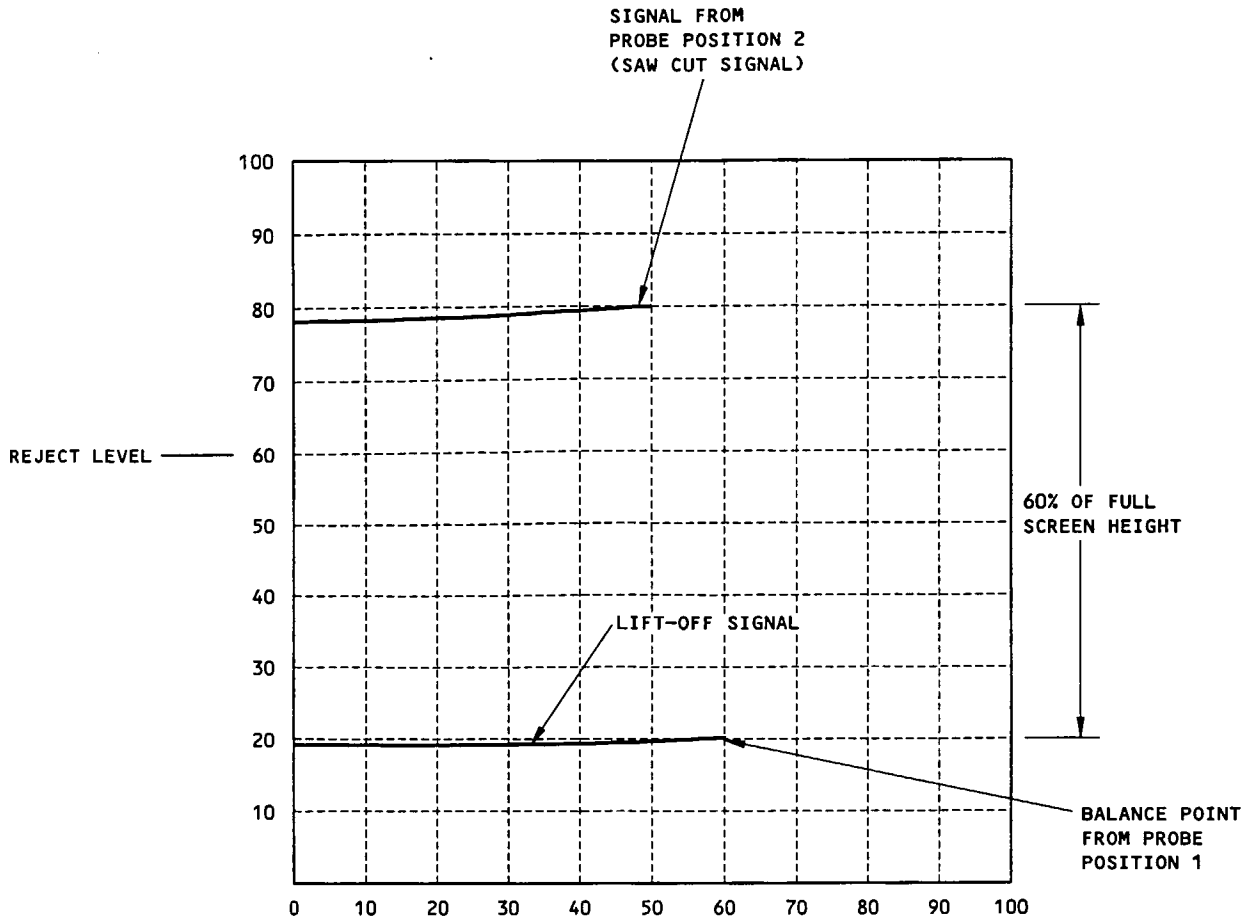
Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 5)



PROBE POSITION FOR CALIBRATION
AND INSPECTION

DETAIL II

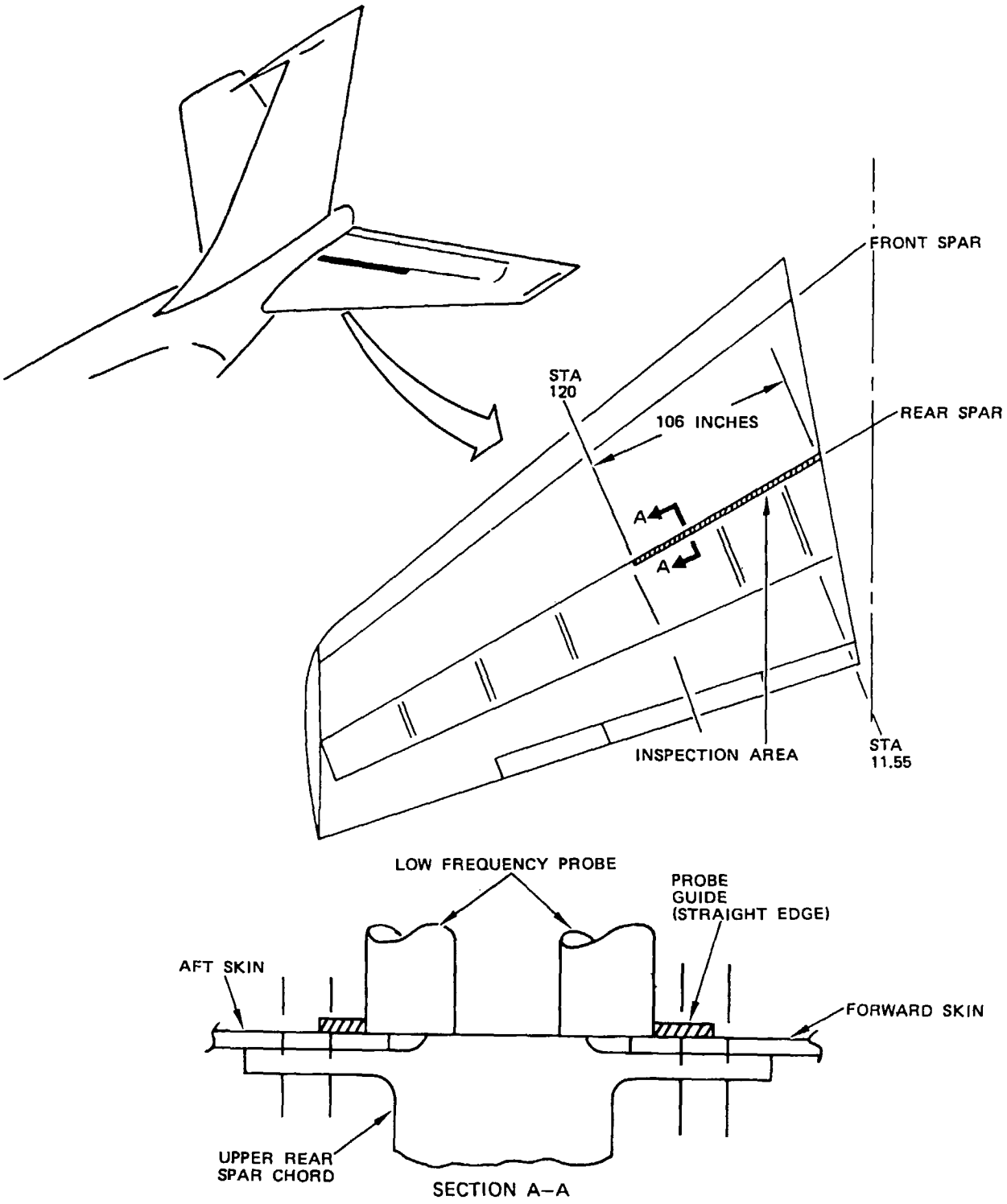
Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 6)



SEE DETAIL II FOR THE PROBE POSITIONS FOR THE CALIBRATION

CALIBRATION SIGNALS ON AN IMPEDANCE PLANE DISPLAY
DETAIL III

Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 6A)



HORIZONTAL STABILIZER REAR SPAR UPPER CHORD INSPECTION
DETAIL IV

Horizontal Stabilizer Rear Spar Upper Chord
Figure 4 (Sheet 6B)

669725

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 55-A00-02
SSD 55-A10-02
SSD 55-A20-02
SSD 55-A30-02
SSD 55-A40-02

PART 6 - EDDY CURRENT HORIZONTAL STABILIZER

1. Purpose

A. To inspect aluminum horizontal stabilizer center section hinge housing and diagonal (thrust) braces for stress corrosion cracks.

2. Equipment

A. Instrument

(1) Any eddy current instrument that will satisfy the performance requirements of this procedure is suitable for this inspection. The following instrument was used during the development of this procedure and found suitable.

(a) Magnaflux Corporation, ED 520

B. Probes

(1) Surface probe per Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

C. Reference standards

(1) Refer to Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

3. Preparation for Inspection

A. Accessible from inside of body.

(1) Remove tail cone and B.S. 1592 bulkhead access panel.

B. Wipe surfaces clean.

C. Paint need not be removed.

4. Instrument Calibration

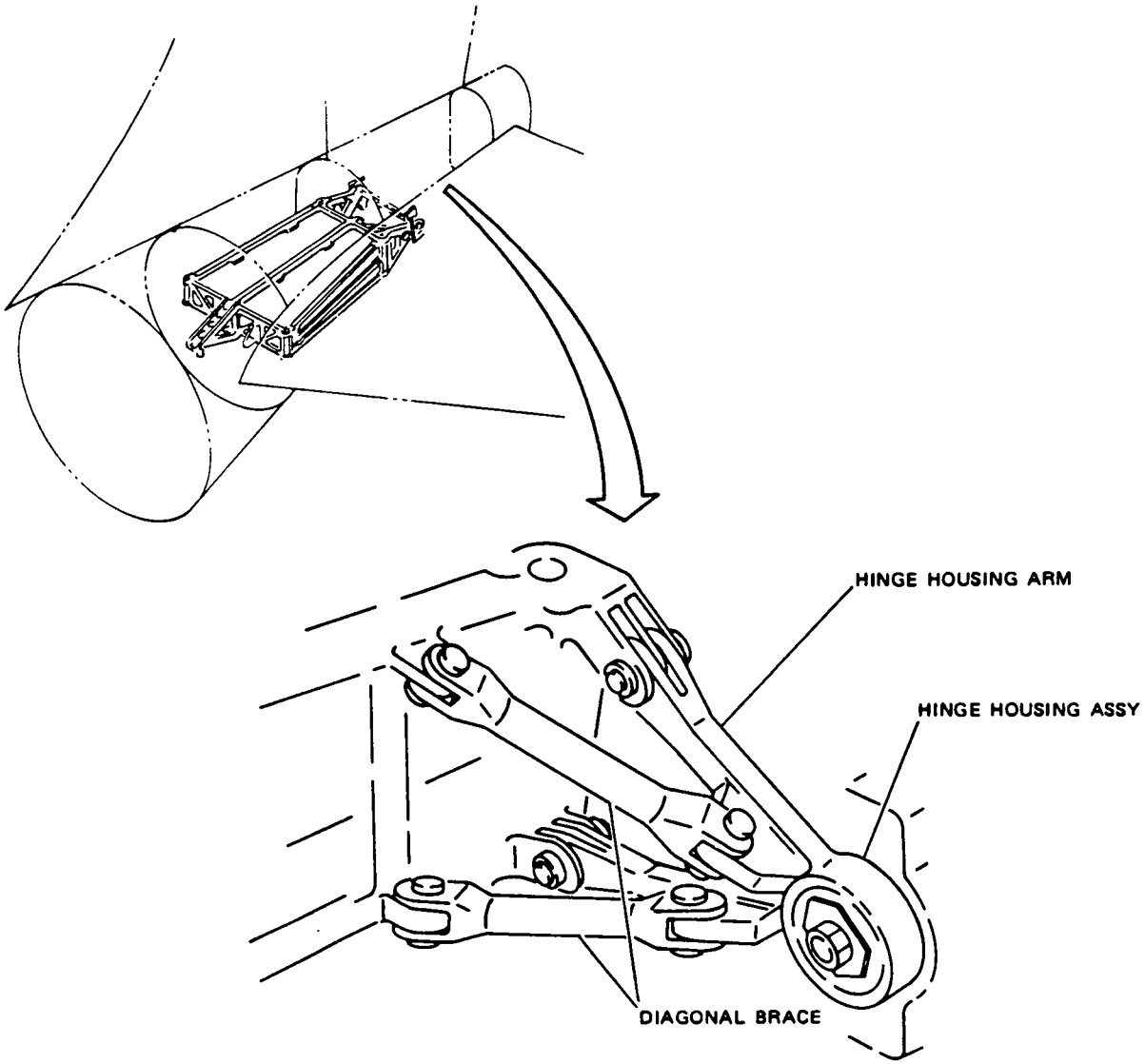
Refer to Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

Horizontal Stabilizer Center Section Hinge Housing and Thrust Brace
Figure 5 (Sheet 1)

5. Inspection Procedure

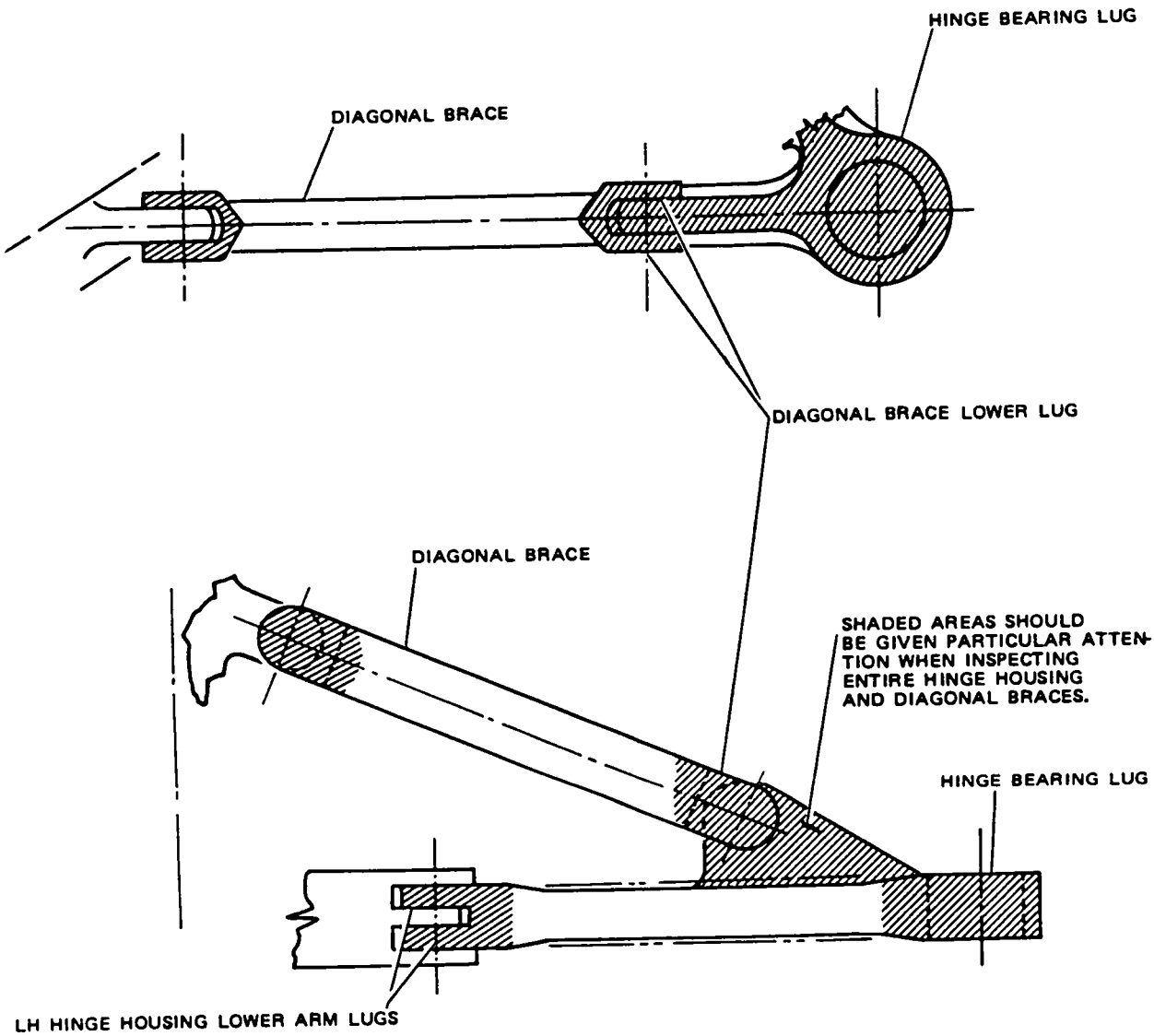
A. Inspect all accessible areas of hinge housing and diagonal braces, left and right sides. See Detail I.

NOTE: Pay particular attention to the hinge housing lower arm lugs, lower diagonal brace lugs and the aft end of the hinge housing from the diagonal brace attachment lug to and including the hinge bearing lug. See Detail II.



R/H HINGE HOUSING AND THRUST BRACE
DETAIL I

Horizontal Stabilizer Center Section Hinge Housing and Thrust Brace
Figure 5 (Sheet 2)



HINGE HOUSING AND THRUST BRACE INSPECTION AREAS
DETAIL II

Horizontal Stabilizer Center Section Housing and Thrust Brace
Figure 5 (Sheet 3)

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose
   A. High frequency eddy current inspection of fastener holes common to the horizontal stabilizer upper rear spar chord terminal fitting to chord splice.

2. Equipment

   A. Instrument: See Part 6, 51-00-00, Fig. 7.

   B. Probes: See Part 6, 51-00-00, Fig. 7.

      NOTE: This procedure requires a 1.0 inch diameter bolt hole probe.

   C. Standards and Fixtures

      (1) Fabricate reference standard per Part 6, 51-00-00, Fig. 7.

         (a) Taper angle 4.5 ±0.25 degrees.

         (b) Taper interface steel/aluminum.

         (c) EDM notch located in aluminum plate.

         (d) Calibration hole 1.00 +0.005/-0.000 inch diameter.

      (2) Fabricate probe guide per Part 6, 51-00-00, Fig. 7. Taper angle 4.5 ±0.25 degrees.

3. Preparation for Inspection

   A. Gain access to inspection area per operator's standard procedure.

   B. Remove fasteners from designated locations (detail I).

   C. Provide smooth bearing surface around hole for probe guide.

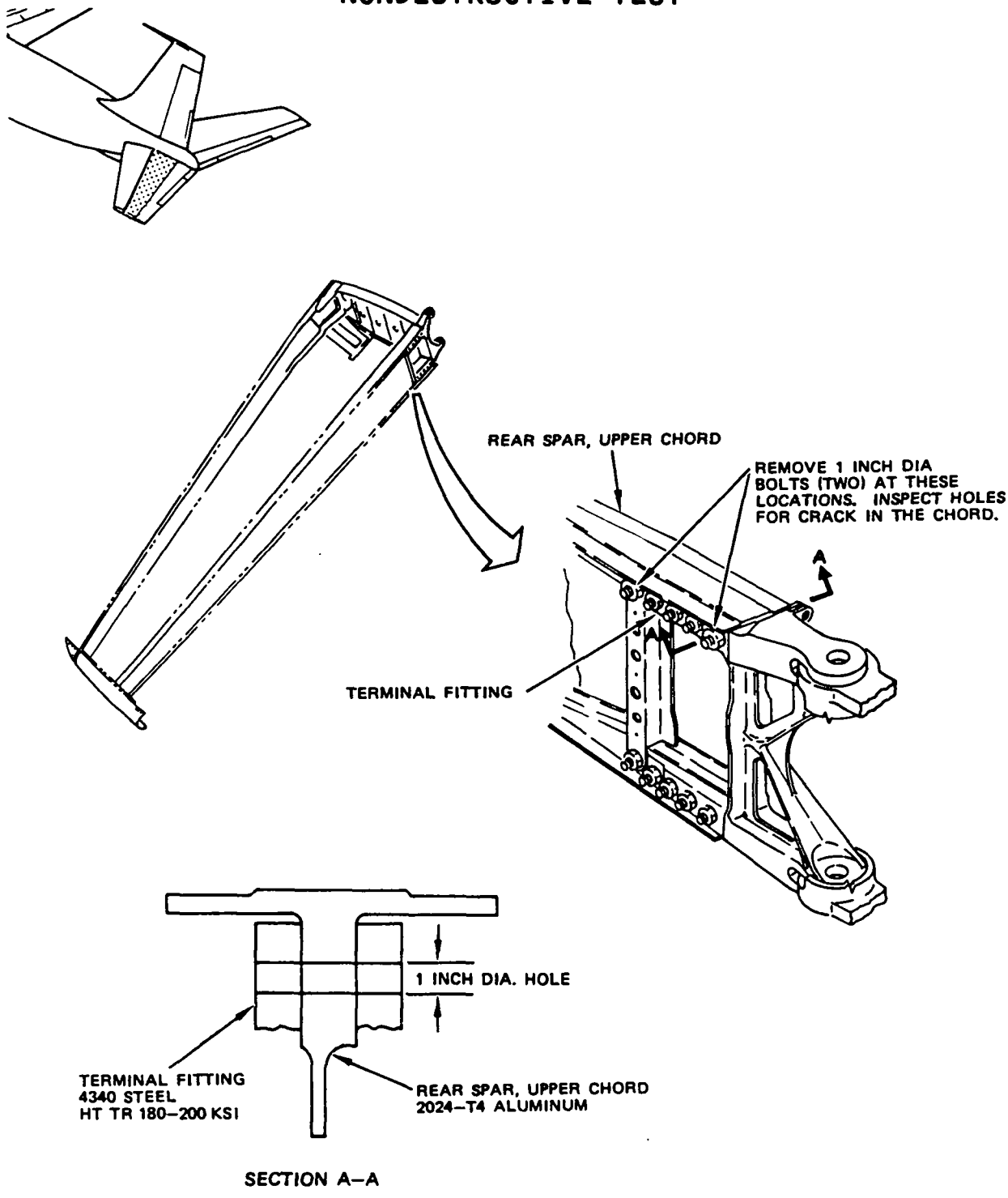
4. Instrument Calibration

A. Refer to Part 6, 51-00-00, Fig. 7. Calibrate for the inspection of an aluminum member at a steel/aluminum interface.

5. Test Procedure

A. Refer to Part 6, 51-00-00, Fig. 7.

B. Inspect designated fastener holes in aluminum upper rear spar chord.



HORIZONTAL STABILIZER REAR SPAR UPPER CHORD SPLICE TO TERMINAL FITTING

DETAIL I

Horizontal Stabilizer Rear Spar Upper Chord - to - Terminal Fitting
Figure 6 (Sheet 3)

EFFECTIVITY
MODEL: 707/720 SERVICE BULLETIN REFERENCE: 3332, 3313 SSI DOCUMENT (D6-44860) REFERENCE: SSD 55-A05-03 SSD 55-A15-03 SSD 55-A25-03 SSD 55-A35-03 SSD 55-A45-03

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

   A. To detect cracks at the exposed edges of the horizontal stabilizer upper rear spar chord (Detail I).

2. Equipment

   A. Instrument set, probe, and reference standard per Part 6, 51-00-00, Fig. 4.

3. Preparation for Inspection

   A. Access - Inspection area is accessible from outside the airplane.

   B. Wipe inspection surface clean.

   C. Smooth paint by sanding lightly or remove paint only if rough or chipped paint causes irregular eddy current response.

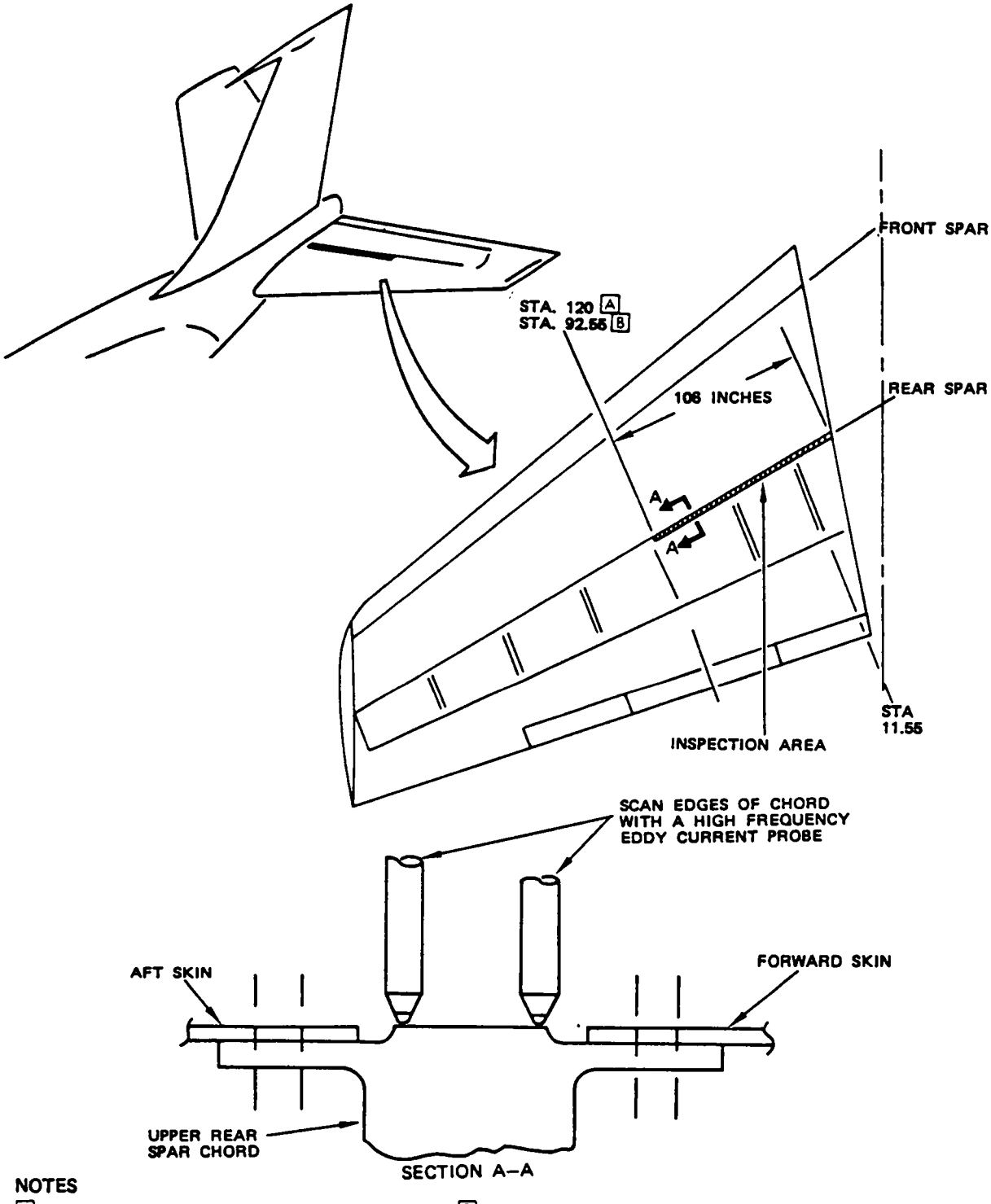
4. Instrument Calibration

   A. Calibrate instrument per Part 6, 51-00-00, Fig. 4.

5. Inspection Procedure

   A. Inspection procedure per Part 6, 51-00-00, Fig. 4. Scan with eddy current surface probe along edges of upper rear spar chord as shown in Detail I.

Horizontal Stabilizer Rear Spar Upper Chord
Figure 7 (Sheet 1)



NOTES

[A] FOR 707–100/200 AND 720 AIRPLANES [B] FOR 707–300/400 SERIES AIRPLANES

HORIZONTAL STABILIZER REAR SPAR UPPER CHORD INSPECTION
DETAIL I

Horizontal Stabilizer Rear Spar Upper Chord
Figure 7 (Sheet 2)

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

   A. To detect cracks running in an inboard-outboard direction between fastener holes in the flanges of the horizontal stabilizer spar chords. The inspection is applicable to the following spar chord locations:

      (1) The forward flange of the upper forward spar chord from the inboard edge of the inspar skin outboard to stabilizer station 11.55.

      (2) The forward flange of the upper rear spar chord outboard of stabilizer sta. 92.55.

      (3) All of the rear flange of the upper rear spar chord.

      (4) The forward and rear flanges of all of the lower rear spar chord.

2. Equipment

   A. Instrument

      Any eddy current instrument that will satisfy the performance requirements of this procedure is suitable for this inspection. The following instrument was used during development of this procedure:

      Miz-10
      Zetec, Inc.
      1320 N.W. Mall
      Issaquah, Washington 98027

   B. Probes

      Any probe of similar size which will satisfy the performance requirements of this procedure is acceptable. The following probe was used in the development of this procedure:

      Low frequency probe with 0.45-inch OD case, 0.35-inch OD active element. Usable at 1 kHz. P/N SPO-1402, Nortec Inc.

Horizontal Stabilizer Upper and Lower Forward and Rear Spar Chord Flanges
Figure 8 (Sheet 1)

Available from:

(1) Automation Industries, Inc.
Sperry Products Division
Shelter Rock Road
Danbury, CT 06810
(206) 748-3581

P/N 44B001-1 with reference module P/N 448002-1

(2) Nortec Inc.
421 N. Quay
Kennewick, Washington 99336

NOTE: When ordering probes specify instruments with which probe is to be used or instrument connector required.

C. Fabricate reference standard per Detail I.

NOTE: Reference Standard 182 is available from NDT Product Engineering, 1108 Industry Drive, Tukwila, Washington 98188.

3. Preparation

A. Wipe stabilizer surface clean.

B. Paint removal not required for inspection but local paint removal may be necessary to locate fasteners.

4. Instrument Calibration

A. Set frequency at 1 kHz.

B. Position probe between fasteners over an unnotched area of reference standard, Position 1, Detail II.

C. Null instrument per manufacturer's instructions.

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

E. Position probe between fasteners over the notched area of the reference standard, Position 2, Detail II.

F. Adjust sensitivity so that a difference of 60% of full meter scale exists between the notched and unnotched areas.

G. Position probe over unnotched area (Position 1) and set meter at 20% of full meter scale with meter position control.

H. Cracks should be indicated by a higher meter response.

5. Inspection Procedure

A. Inspect the flanges of the spar chords by placing the probe immediately adjacent to the inbd or outbd side of each fastener head.

B. Any response 30% of full meter scale higher than the established baseline for a good response should be investigated further.

NOTE: Crack indications should be measured from a baseline established for the area being inspected. It may be necessary to use three or four fasteners on either side of the suspect fasteners to establish this baseline.

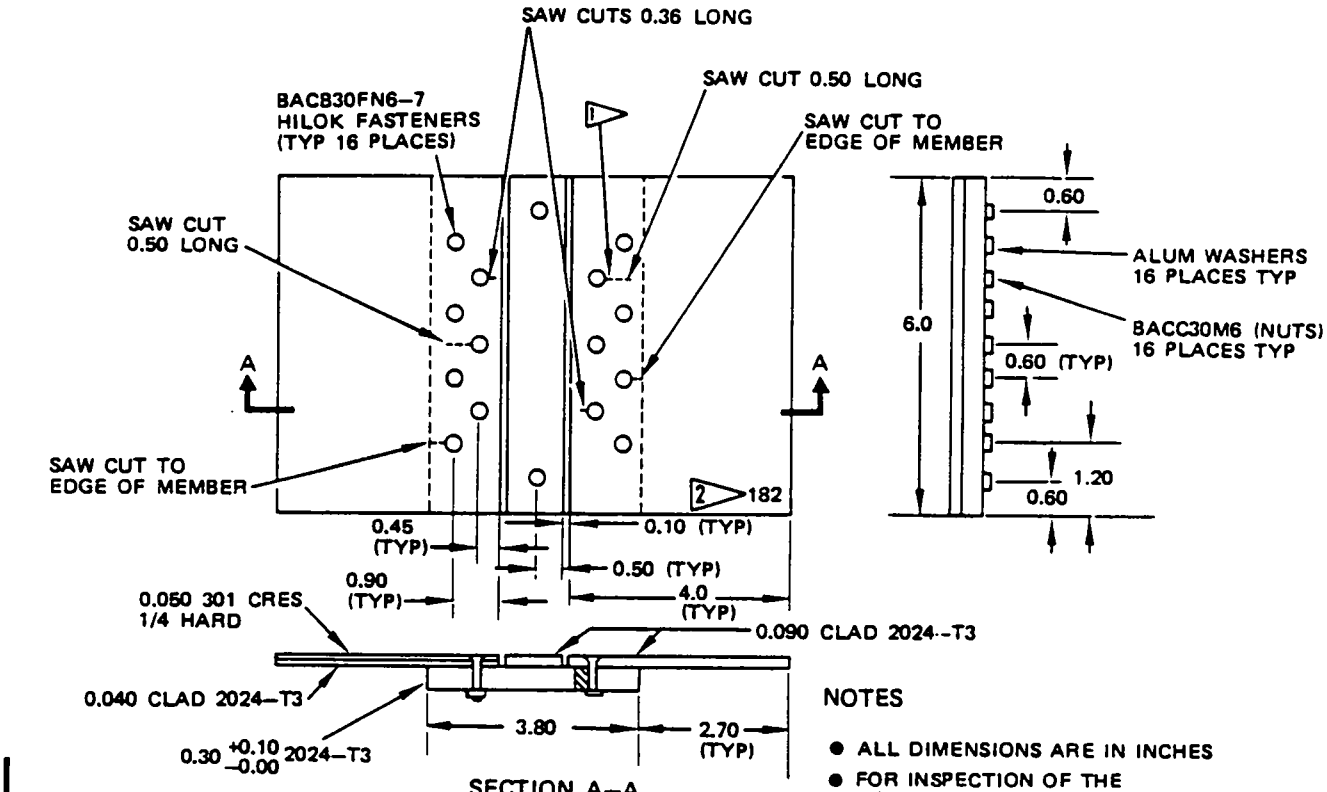
6. Conditions Which Could Cause Crack-Life Indications

A. Fasteners of different material - compare with similar fasteners.

B. Short edge margin - compare with fasteners with similar edge margins.

C. Steel chips trapped in paint - remove paint and reinspect.

D. Loose fasteners causing separation between skin and chord - press skin down and reinspect.

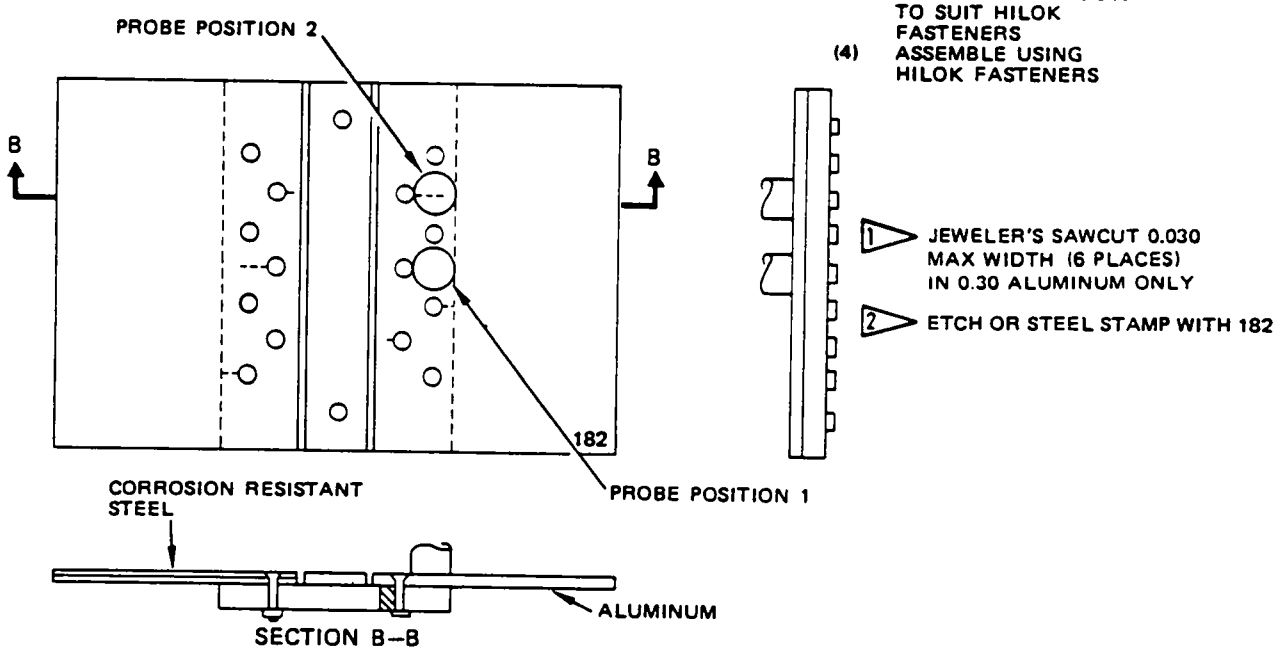


SECTION A–A

REFERENCE STANDARD
DETAIL I

NOTES

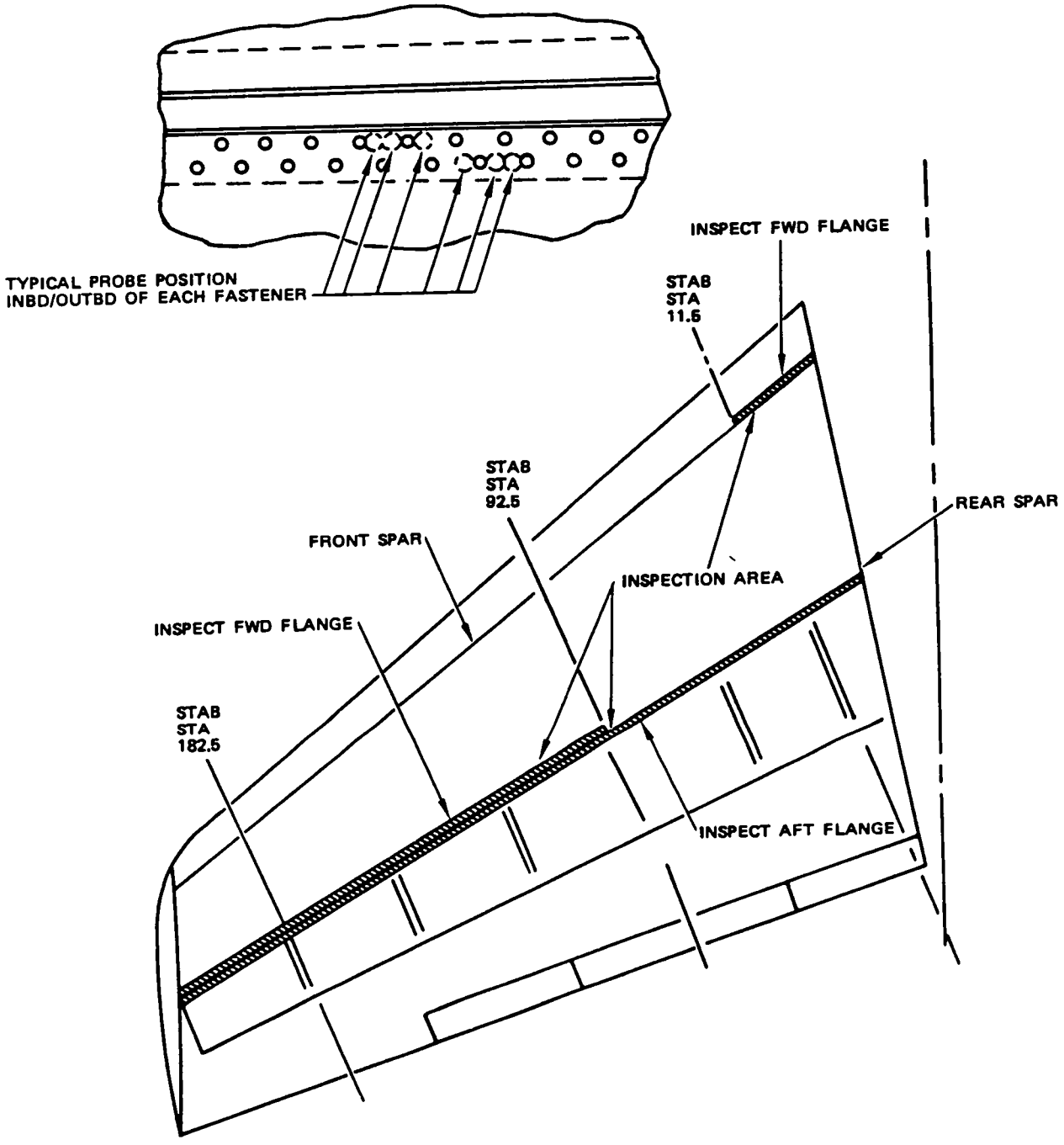
- ALL DIMENSIONS ARE IN INCHES
- FOR INSPECTION OF THE AFT FLANGE MODIFY THE STANDARD AS FOLLOWS:
  (1) REMOVE THE ALUMINUM RIVETS
  (2) ROTATE ALUMINUM PLATE AND DRILL NEW HOLES TO MATCH EXISTING HOLES IN LOWER PLATE
  (3) COUNTERSINK HOLES TO SUIT HILOK FASTENERS
  (4) ASSEMBLE USING HILOK FASTENERS



SECTION B–B

PROBE POSITIONS FOR CALIBRATION AND INSPECTION
DETAIL II

Horizontal Stabilizer Upper and Lower Forward and Rear Spar Chord Flanges
Figure 8 (Sheet 4)



DETAIL III INSPECTION AREA

Horizontal Stabilizer Upper and Lower Forward and Rear Spar Chord Flanges
Figure 8 (Sheet 5)

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

To detect cracks in the horizontal stabilizer rear spar beneath the fail-safe fitting using high frequency eddy current.

A. Horizontal stabilizer rear spar upper terminal clevis upper lug.

B. Horizontal stabilizer center section rear spar upper lug.

NOTE: Only airplanes that are modified to incorporate the fail-safe fitting per Service Bulletin 3313 and 3331 are affected by this procedure.

2. Equipment

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

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

(1) ED520, Magnaflux Corp.

B. Probe - Shielded, right angle pencil probe per Part 6, 51-00-00, Fig. 4 with the following dimensions:

A = 0.10 inch (0.25 cm)
B = 0.225 inch (0.57 cm)
C = 6.0 inches (15.2 cm)

(1) Probe P/N MP 901-60, NDT Product Engineering.

C. Reference Standard -

(1) For aluminum lug, refer to Part 6, 51-00-00, Fig. 4.

(2) For steel lug, fabricate reference standard per Detail II.

Horizontal Stabilizer Rear Spar Upper Terminal Attachment Lugs
Figure 9 (Sheet 1)

3. Preparation for Inspection

A. Position horizontal stabilizer leading edge in the down position.

B. Gain access thru jackscrew access door and over top of stabilizer center section. See Detail I.

C. Identify the inspection area and wipe surface clean.

NOTE: A mirror may be used to view inspection area.

4. Instrument Calibration

Two instrument calibrations are required.

A. Calibration for horizontal stabilizer rear spar terminal clevis upper aluminum lug.

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

B. Calibration for horizontal stabilizer center section rear spar upper steel lug.

(1) Balance instrument per manufacturer's instructions using steel reference standard fabricated per Detail II.

(2) Adjust instrument sensitivity to obtain a minimum of 50% of full scale meter deflection when passing over notch.

5. Inspection Procedure

Perform the following inspection on the horizontal stabilizer rear spar beneath the fail-safe fitting.

A. Inspect horizontal stabilizer rear spar upper terminal clevis upper aluminum lug.

(1) Calibrate instrument per par. 4.A.

(2) Inspect lug per Detail III, flagnote 1.

(3) Perform inspection scans per Part 6, 51-00-00, Fig. 4.

Horizontal Stabilizer Rear Spar Upper Terminal Attachment Lugs
Figure 9 (Sheet 2)

B. Inspect horizontal stabilizer center section rear spar upper steel lug.

(1) Calibrate instrument per par. 4.B.

(2) Inspect lug per Detail III, flagnote 2.

NOTE: When probe is placed on lug, meter position control may require readjustment to obtain an onscale reading. Response difference is due to cadmium plating.

(3) Any rapid deflection 50% of full scale or greater requires further investigation.

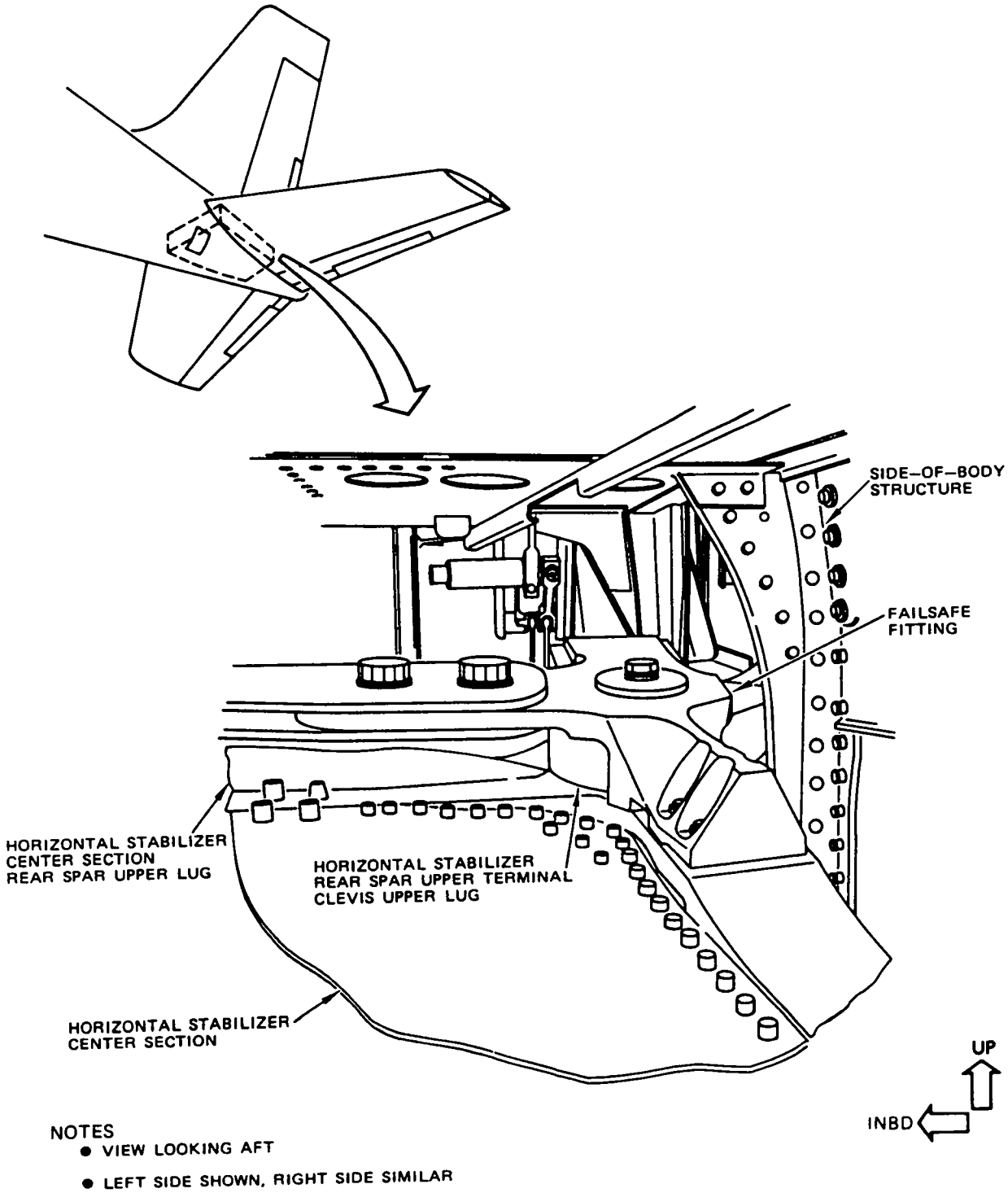
NOTE: Erratic instrument responses may result if cadmium plating has been worn away. This type of response usually occurs over a longer scan path and is not representative of a crack indication.

6. Inspection Results

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

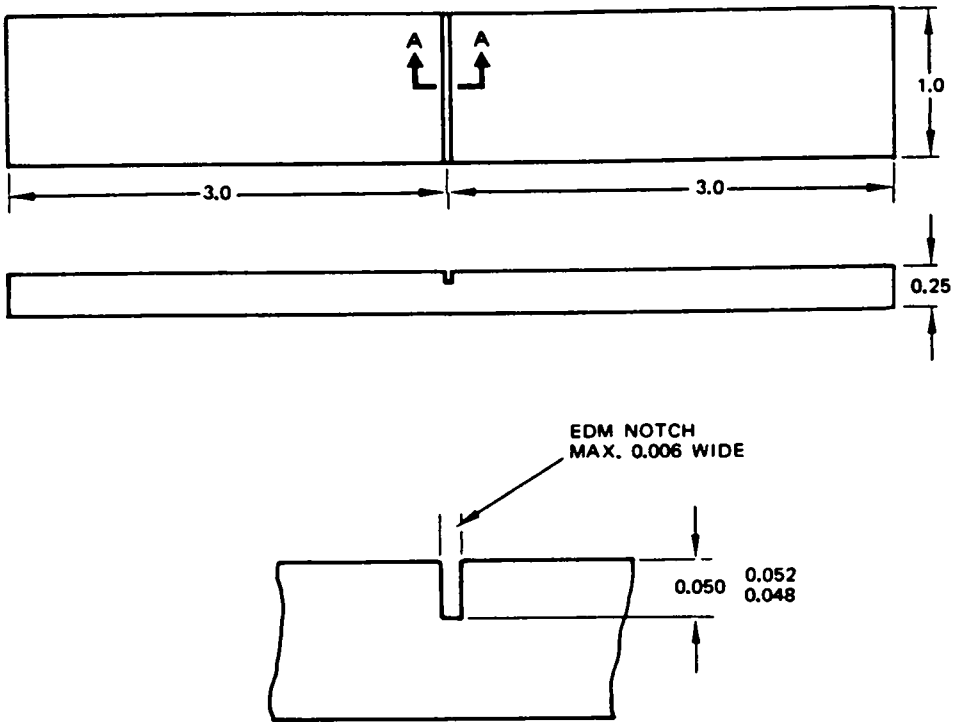
B. Refer to Part 6, 51-00-00, Fig. 4.

Horizontal Stabilizer Rear Spar Upper Terminal Attachment Lugs
Figure 9 (Sheet 3)



DETAIL I

Horizontal Stabilizer Rear Spar Upper Terminal
Attachment Lugs
Figure 9 (Sheet 4)



SECTION A–A

NOTES

- ALL DIMENSIONS ARE IN INCHES
- TOLERANCE ± 0.050 ON ALL DIMENSIONS EXCEPT AS NOTED
- MATERIAL:

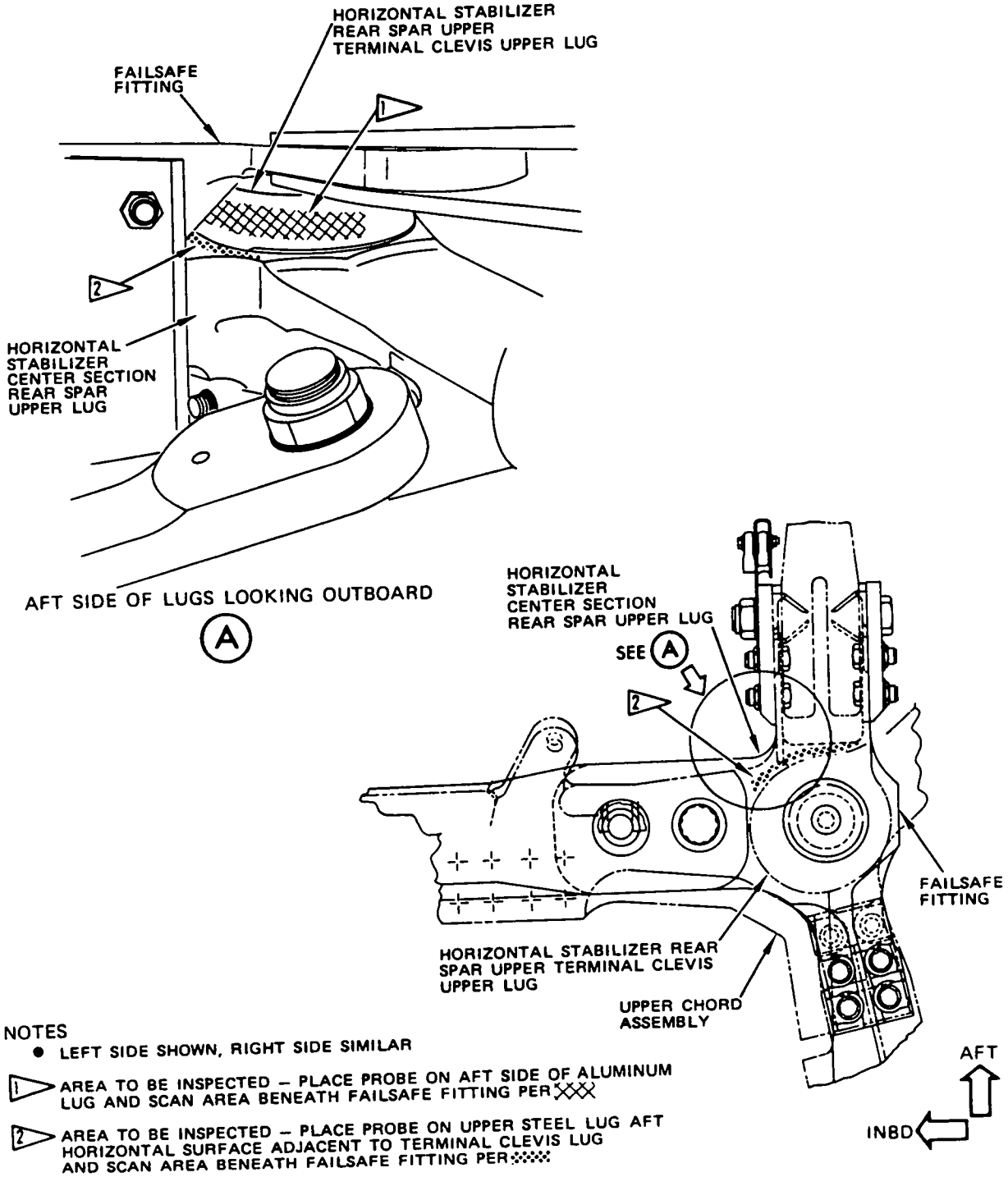
  4140 200–220 STEEL
  4330 150–170 STEEL
  4130 180–220 STEEL

- P/N 6412–66
  AVAILABLE FROM IDEAL SPECIALTY CO.
  2531 E. INDEPENDENCE ST.
  TULSA, OKLAHOMA 74110

REFERENCE STANDARD FOR CALIBRATION

DETAIL II

Horizontal Stabilizer Rear Spar Upper Terminal
Attachment Lugs
Figure 9 (Sheet 5)



CENTER SECTION REAR SPAR UPPER LUG (TOP VIEW) DETAIL III

Horizontal Stabilizer Rear Spar Upper Terminal Attachment Lugs
Figure 9 (Sheet 6)

PART 6 - EDDY CURRENT

HORIZONTAL STABILIZER

1. Purpose

A. To find cracks at the terminal hole of the upper safety strap that is installed at the front spar of the horizontal stabilizer. See Detail I.

NOTE: The terminal hole diameter can be different for different safety straps if 707 Service Bulletin's 2330 or 3067 have been done. Check the airplane's records to find the terminal hole diameter of the safety straps. See paragraph 2.B.

2. Equipment

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

All eddy current equipment that can do this procedure is satisfactory for use.

A. Instrument - All eddy current instruments that can operate between 100 KHz and 200 KHz are satisfactory.

The instrument specified below was used to make this procedure.

(1) Locator UHB, Hocking

NOTE: This procedure is written for an instrument with a meter. An impedance plane instrument can be used.

B. Probe - It is necessary to use a shielded bolthole probe that will operate between 100 KHz to 200 KHz. It is recommended that you get a probe that can be expanded to do an inspection of different diameter holes. The coil, to be in the correct position to find a crack during this inspection, must be near the bottom of the probe. (See Detail II or III for the location of the example crack in the reference standard.)

The bolthole probes specified below were used to make this procedure. These probes were made with a triaxial, right angle, connector (Fischer) that turns so that the probe will turn freely in the hole. Use the correct probe for the terminal hole diameter in the safety strap.

(a) BPMF 1.12/BCA - To do an inspection of hole diameters from 1.12 inches (28.4 mm) to 1.2 inches (30.4 mm). NDT Engineering Corp.

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 1)

(b) BPMF 1.2/BCA - To do an inspection of hole diameters from 1.2 inches (30.4 mm) to 1.29 inches (32.7 mm). NDT Engineering Corp.

NOTE: When you make an order for the probe, specify what instrument will be used with the probe.

(c) Probe Cable - You must also make an order for a probe cable. Make an order for the probe cable for a specific instrument from the probe manufacturer.

C. Reference Standards

(1) Make reference standard 1000A or 1000B:

(a) Reference standard 1000A is used to calibrate the instrument for hole diameters 1.12 inches (28.4 mm) to 1.2 inches (30.4 mm). See Detail II.

(b) Reference standard 1000B is used to calibrate the instrument for hole diameters 1.2 inches (30.4 mm) to 1.29 inches (32.7 mm). See Detail III.

3. Preparation for the Inspection

A. If the horizontal stabilizer has not been removed:

(1) Get access through the jackscrew access panel to the front spar of the horizontal stabilizer center-section. See Detail I.

(2) Remove the access panels at water line 272.5 (approximately) from the bulkhead at body station 1505 for access to the upper lugs of the front spar. See Detail I and Part 1, 51-01-07, Figure 1.

WARNING: DO THE PRECAUTIONS NECESSARY TO PREVENT ACCIDENTAL MOVEMENT OF THE HORIZONTAL STABILIZER. ACCIDENTAL MOVEMENT OF THE HORIZONTAL STABILIZER DURING THE INSPECTION CAN CAUSE INJURY TO PERSONNEL.

B. Remove the terminal bolt and the bushing from the upper safety strap.

CAUTION: MAKE SURE THE HORIZONTAL STABILIZER IS STABLE AND WILL NOT MOVE WHEN THE TERMINAL BOLT IS REMOVED.

C. Make sure the terminal hole in the safety strap is clean.

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 2)

4. Instrument Calibration

Instrument calibration for the terminal hole inspection.

A. Set the instrument frequency between 100 KHz and 200 KHz.

B. Put the probe in the reference standard hole. See Detail IV, flagnote 1 and 2.

C. Adjust the collar on the probe so that the probe touches the lower plate. See Detail IV, flagnote 3.

D. Balance the instrument as specified in the manufacturer's instructions.

E. Adjust the instrument's lift-off as specified in the manufacturer's instructions and Part 6, 51-00-00, paragraph 4.F.

F. Slowly turn the probe coil by the reference standard notch and monitor the response of the instrument meter needle.

G. Set the instrument sensitivity and alarm for a 40 percent notch signal indication. See Detail IV, flagnote 4.

H. Do a check of the balance and lift-off of the instrument.

5. Inspection Procedure

Inspection of the terminal hole in the upper safety strap at the front spar of the horizontal stabilizer. See Detail V.

A. Calibrate the equipment as specified in paragraph 4.

B. Put the probe in the terminal hole to do an inspection of the upper safety strap. See Detail V, flagnote 1.

NOTE: Make sure the probe fits tightly in the hole but turns easily.

C. Slowly do a scan inspection 360° around the terminal hole and monitor the response of the instrument meter needle. See Detail V.

D. Look for a response from the instrument meter needle that is almost the same as the response from the reference standard during calibration (when the coil of the probe went by the notch).

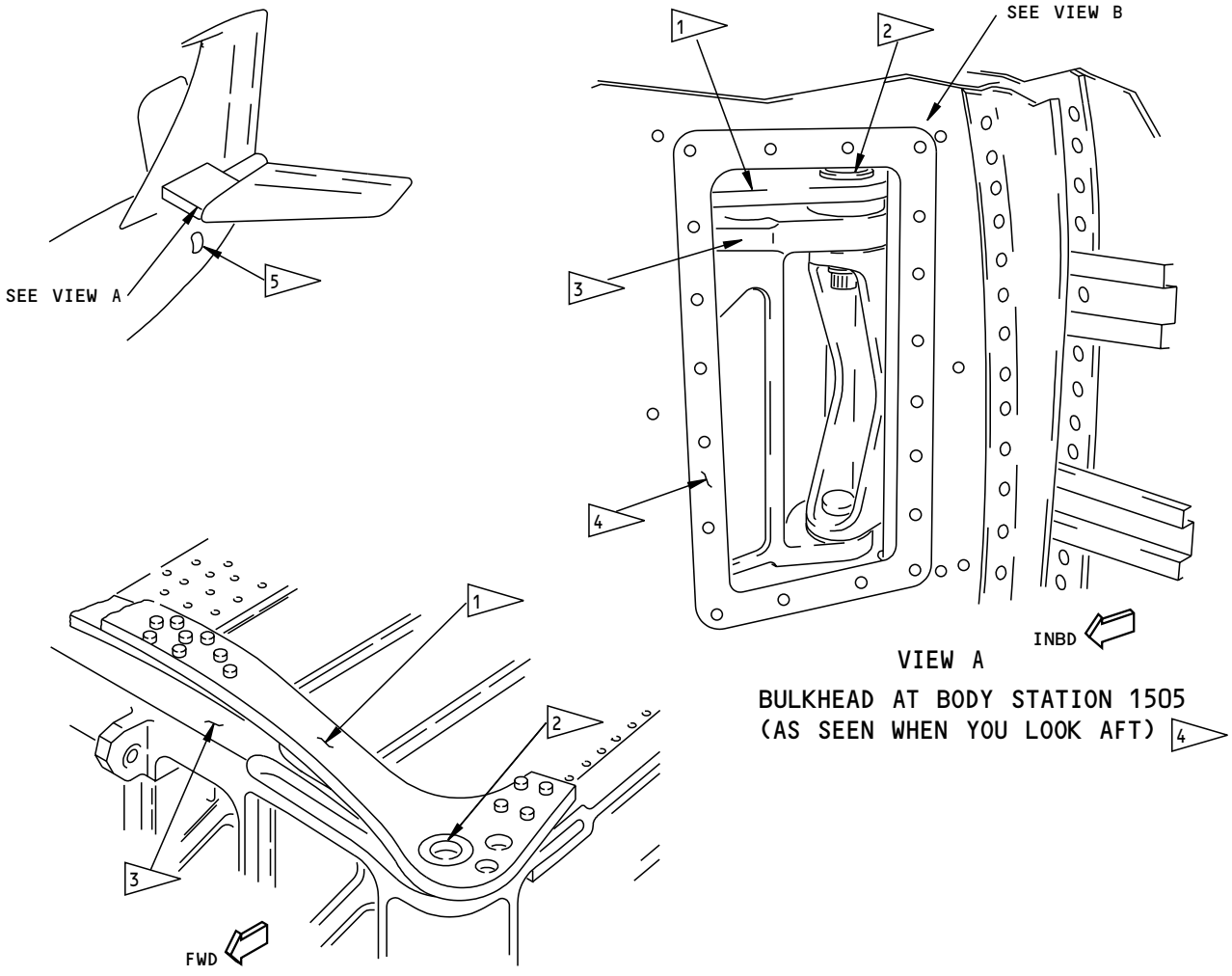
NOTE: It is not necessary to do an inspection of the full length of the terminal hole in the safety strap. The crack starts in the terminal hole of the upper safety strap at the aluminum washer interface.

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 3)

6. Inspection Results

A. An upscale, fast movement of the instrument meter needle of 40 percent or more of the full meter scale (that occurs during a short scan distance) is an indication of a possible crack.

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 4)



VIEW A
BULKHEAD AT BODY STATION 1505
(AS SEEN WHEN YOU LOOK AFT)

VIEW B
(BULKHEAD NOT SHOWN)

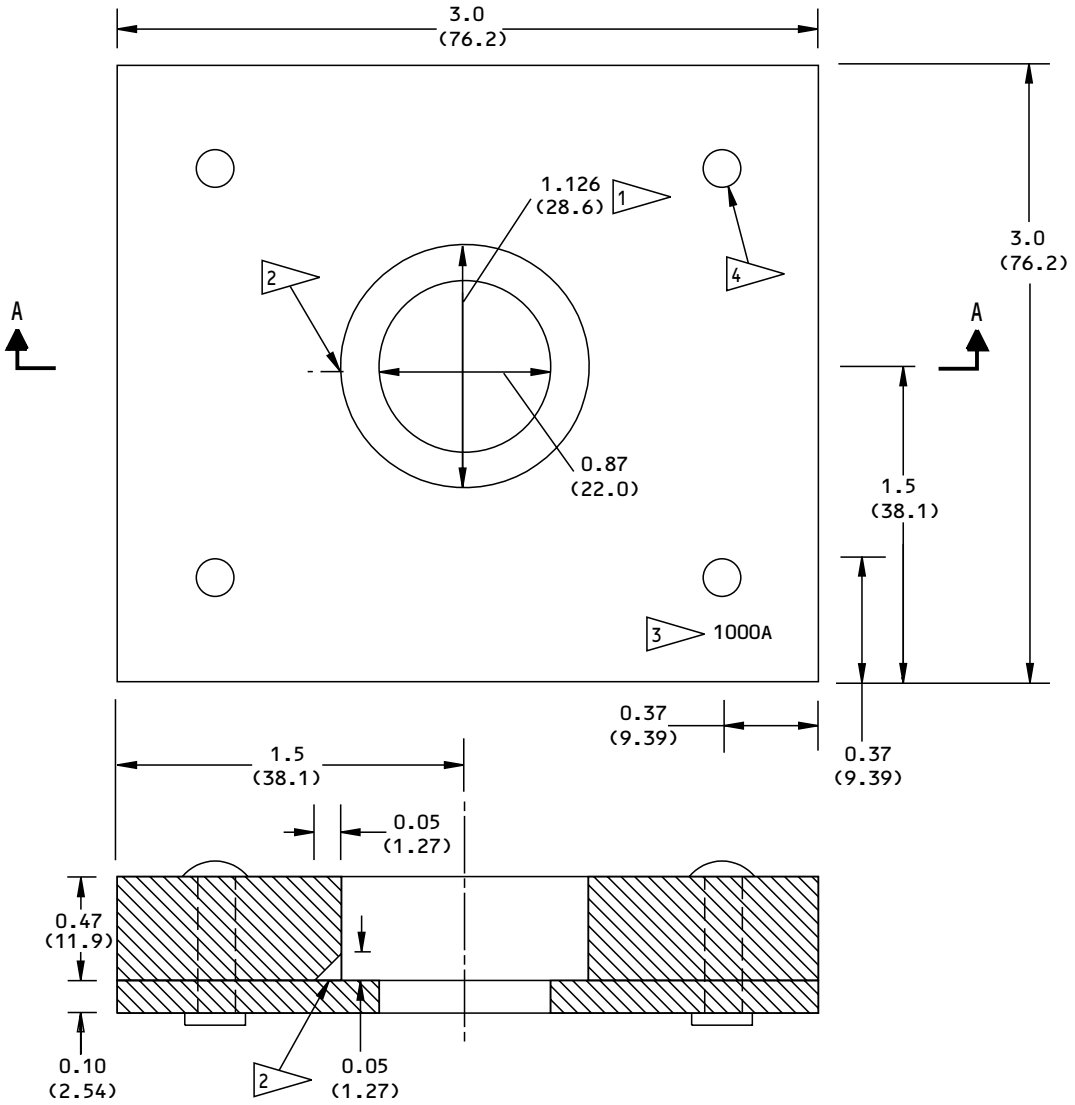
NOTES

- ● LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE
- 1 UPPER SAFETY STRAP
- 2 TERMINAL HOLE OF THE INSPECTION
- 3 UPPER FRONT SPAR OF THE HORIZONTAL STABILIZER CENTER-SECTION
- 4 ACCESS PANEL (REMOVED) TO INSPECTION AREA (BODY STATION 1505)
- 5 JACKSCREW ACCESS PANEL

DETAIL I

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 5)

970478



SECTION A–A

NOTES

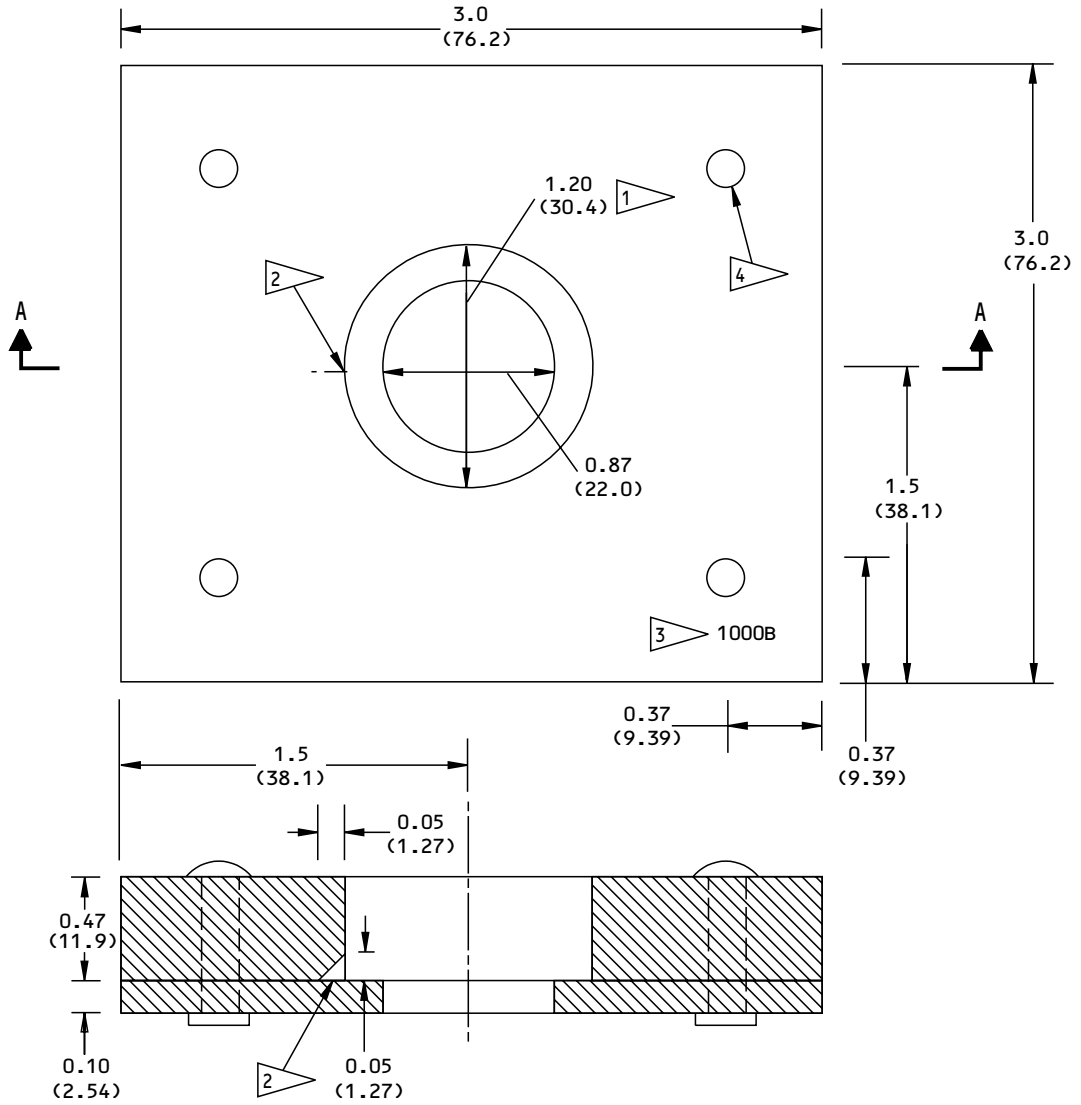
- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL - 7075–T6 ALUMINIUM
- TOLERANCE - X.X = ±0.05 (1.27),
  X.XX = ±0.010 (25.4), X.XXX = ±0.005 (0.127)

1. HOLE TOLERANCE –0.000, +0.005 (0.127)
2. EDM NOTCH: THE MAXIMUM WIDTH IS 0.005 (0.127)
3. ETCH OR STEEL STAMP WITH NUMBER 1000B AS SHOWN
4. SCREW/NUT –DIAMETER 8/32 FOUR PLACES

DETAIL II - REFERENCE STANDARD 1000A

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 6)

970769



SECTION A-A

NOTES

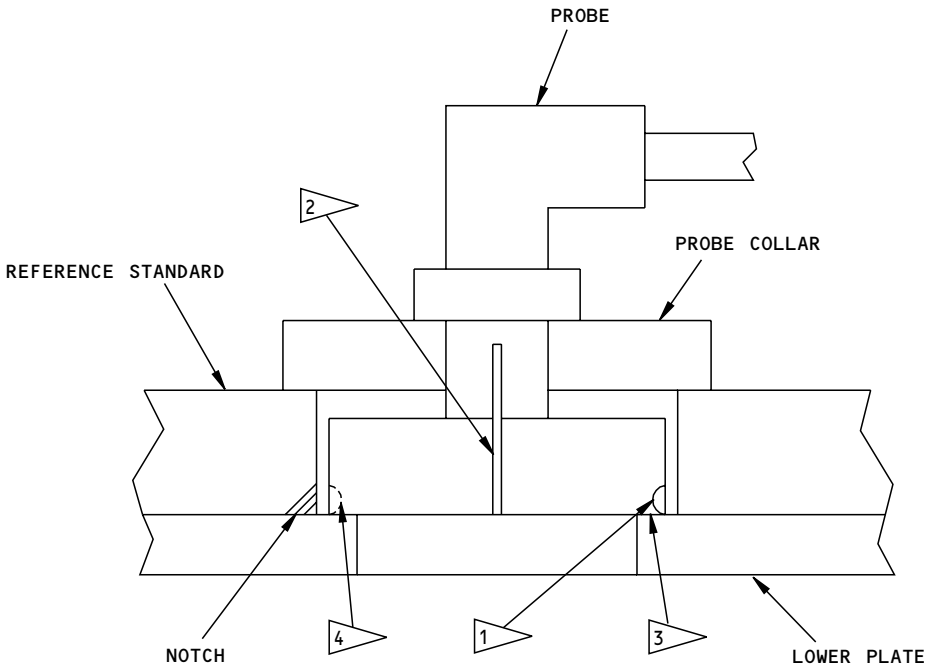
- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL - 7075-T6 ALUMINIUM
- TOLERANCE - X.X = ±0.05 (1.27),
  X.XX = ±0.010 (25.4), X.XXX = ±0.005 (0.127)

1. HOLE TOLERANCE -0.000, +0.005 (0.127)
2. EDM NOTCH: THE MAXIMUM WIDTH IS 0.005 (0.127)
3. ETCH OR STEEL STAMP WITH NUMBER 1000B AS SHOWN
4. SCREW/NUT -DIAMETER 8/32 FOUR PLACES

DETAIL III - REFERENCE STANDARD 1000B

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 7)

970702



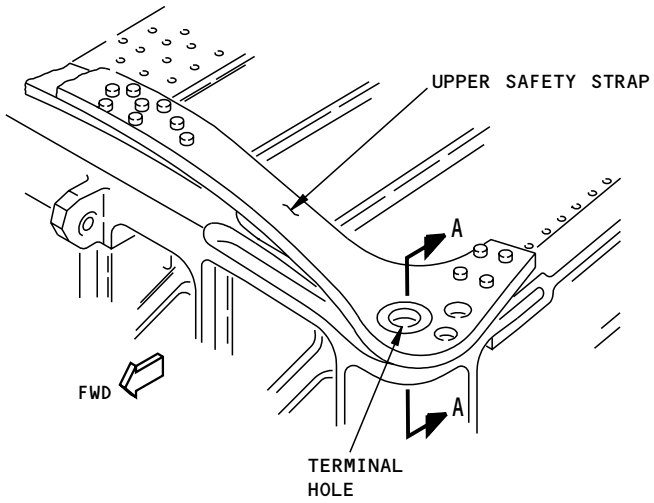
NOTES

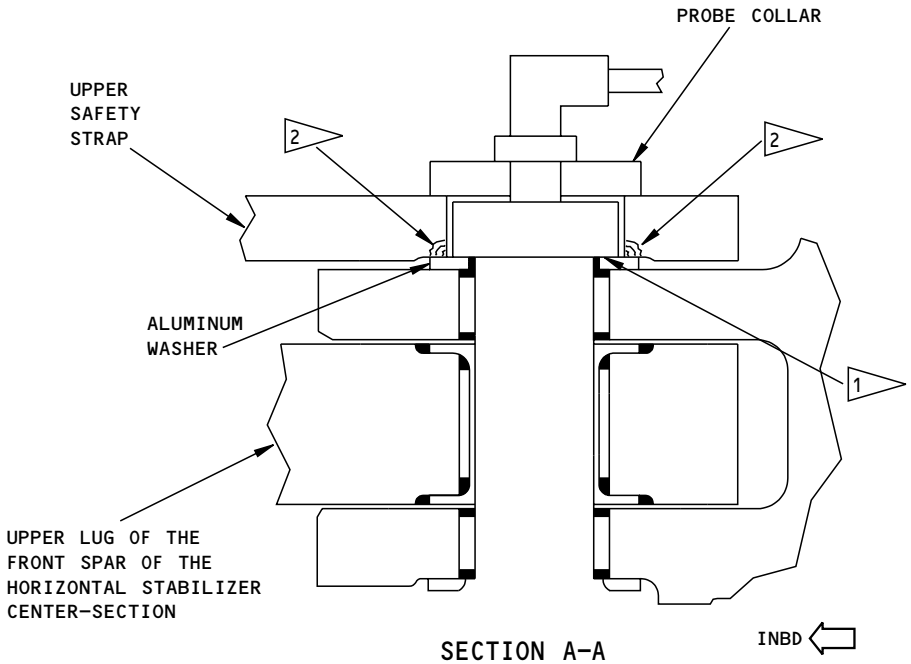
1. PUT THE PROBE IN THE HOLE WITH THE SENSING COIL OPPOSITE THE NOTCH. MAKE SURE THAT THE BOTTOM OF THE PROBE TOUCHES THE LOWER PLATE
2. EXPAND THE PROBE WITH A NON-CONDUCTIVE SHIM TO GET A TIGHT FIT. THE PROBE MUST FIT TIGHT IN THE HOLE TO PREVENT WOBBLE BUT NOT SO TIGHT AS TO CAUSE MORE THAN USUAL WEAR OF THE PROBE COIL
3. THE AREA OF THE PROBE WITH THE COIL MUST FULLY TOUCH THE LOWER PLATE
4. SLOWLY TURN THE PROBE SO THAT THE PROBE COIL GOES BY THE NOTCH

DETAIL IV - INSTRUMENT CALIBRATION

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 8)

970346





SECTION A-A

VIEW LOOKS AFT AT THE
TERMINAL FITTING OF THE
HORIZONTAL STABILIZER

NOTES

- ● LEFT SIDE SHOWN, RIGHT OPPOSITE
- 1 PUT THE PROBE IN THE TERMINAL HOLE SO THAT THE PROBE FULLY TOUCHES THE ALUMINUM WASHER. THEN TIGHTEN THE PROBE COLLAR
- 2 POSSIBLE CRACK LOCATION

DETAIL V

Horizontal Stabilizer - Terminal Hole of the Upper Safety Strap
Figure 10 (Sheet 9)

970365