

EFFECTIVITY
MODEL: ALL



PART 6 - EDDY CURRENT
FUSELAGE SPOTWELDS

1. Purpose

To detect cracks in fuselage spotwelds. This procedure is recommended as a supplement to visual inspection. It can be used to detect cracks that have not broken clad surface, or through paint, plastic or other surface coating.

2. Equipment

A. The following instruments were used during the development of this procedure and found suitable:

- (1) ED 500, ED 510, ED 520, Magnaflux Corp.
- (2) FC - 2001, Uresco
- (3) EM 1500 Automation Industries, Inc.
- (4) NDT 3 Nortec
- (5) Phasemaster

B. Probes used in this procedure shall have the following characteristics:

- (1) Probes should be designed for inspecting flat or moderately curved surfaces. Spring-loaded surface probes are recommended for flat surfaces.
- (2) Active coil should be of small diameter (not exceeding 1/8 inch).
- (3) A ferrite core is preferred.
- (4) Probe must show sufficient sensitivity at the frequency being used to give adequate meter deflection when tested with the reference standard.
- (5) Some probes supplied by the tested instrument manufacturer as standard and catalog devices are suitable. See Part 6, 51-00-00, Fig. 4, Surface Inspection of Aluminum Parts, for probe source information. See Part 1, 51-06-00, Par. 7 for manufacturer information.

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C. Reference Standard

- (1) Fabricate reference standard as shown in Part 6, 51-00-00, Figure 4, Surface Inspection of Aluminum Parts.

3. Preparation for Inspection

- A. Wipe surface clean.
- B. Paint need not be removed.

4. Instrument Calibration

- A. Attach probe to instrument.
- B. Turn on and allow to warm up per manufacturer's instructions.
- C. Initial Instrument Adjustment
 - (1) Place coil end of probe on flat surface of reference standard to avoid interference effect, place coil at least 1/4 inch away from edge of standard and simulated crack.
 - (2) Adjust instrument controls according to manufacturer's instructions to produce a null indication with high sensitivity.
- D. Adjust Instrument for Lift-Off
 - (1) Place single sheet of ordinary writing paper (approximately 0.003-inch thickness) between probe and reference standard.
 - (2) Again balance instrument as in part C above.
 - (3) Remove paper and note direction and amount of needle deflection.
 - (4) Adjust lift-off and/or balance controls to obtain minimum needle movement when paper is removed. When no needle movement is noted, instrument and probe have been properly adjusted.
- E. Final Instrument Adjustment
 - (1) Place probe on reference standard and slide it over the simulated crack.
 - (2) Note direction and amplitude of needle deflection.



NONDESTRUCTIVE TEST

- (3) Adjust sensitivity control to give a minimum of full scale deflection of the meter when passing over the simulated crack. Repeat of parts C and D may be necessary.
- (4) Final adjustment should be made on the part to be inspected by slightly readjusting balance and lift-off controls such that cracks and a small amount of lift-off give opposite deflection of the needle.

5. Inspection Procedure

- A. Slide the eddy-current probe across each spotweld in a cross pattern.

NOTE: For inspection under rivet heads installed for repairs, slide probe on skin around the head of the rivet.

- B. Cracks will be indicated by meter deflection, varying with size of crack and instrument being used. Individual instrument response characteristics may be checked by inspecting spotwelds that exhibit visible cracks.

NOTE: Subsurface cracks may occur anywhere, but are most likely in areas adjacent to visibly cracked spotwelds.

EFFECTIVITY
MODEL: 707/720
SERVICE BULLETIN
REFERENCE: 2860,2861, 2862,2863,2864,2865, 2866,2867,2869,2872, 2909
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A05-13
53-A15-13
53-A25-13
53-A35-13
53-A45-13

PART 6 - EDDY CURRENT

FUSELAGE STRINGER AND FRAME CRACKS

1. General

- A. This technique is recommended for detection of fatigue cracks originating at or near fastener holes common to fuselage stringers and circumferential frames. These cracks characteristically start at or near fastener holes, and propagate along the faying surfaces before breaking the visible surface of the frame or stringer.

CAUTION: THIS PROCEDURE MUST BE PERFORMED BY HIGHLY EXPERIENCED PERSONNEL ONLY.

2. Equipment

- A. Instrument Set - Any eddy-current unit designed for crack detection which is comparable to those listed below.
- (1) Magnaflux, Magnatest ED-500, ED-510, ED-520
 - (2) Uresco, FC-2001
 - (3) Foerster, Defectometer 2.154
- B. Probe
- (1) Doughnut probe similar to probe shown in Detail I.



C. Tapered Centering Pin

(1) Fabricate centering pin as shown in Detail II.

D. Test Block

(1) Fabricate test block as shown in Detail II.

3. Preparation for Inspection

A. Remove fasteners common to stringer and frame.

B. Remove fasteners common to stringer and frame from one adjacent stringer station (lateral) and one adjacent frame station (circumferential).



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- C. Ream damaged or egg-shaped holes to $1/64$ -inch oversize diameter.
- D. Insert wooden wedges between frame and skin tear straps to create gap of approximately 0.125 inch between stringer and frame.
- E. Remove burrs and debris from holes and faying surfaces with abrasive cloth, No. 200 grit or finer.

4. Instrument Calibration

- A. Attach probe to instrument.
- B. Turn instrument on and allow to warm up per manufacturer's instructions.
- C. Adjust instrument for lift-off.
 - (1) Place sensitive part (coil) of probe on flat surface of type material to be tested. Because of edge effect interference, place coil at least $1/4$ inch away from edge of part.
 - (2) Manipulate probe to obtain maximum eddy-current effect.
 - (3) Place a single sheet of ordinary writing paper (approximate thickness 0.003 inch) between probe and material.
 - (4) Remove paper and note direction and amount of deflection of needle.
 - (5) Adjust lift-off control to obtain minimum needle movement when paper is removed. When no needle movement is noted, instrument and probe have been calibrated.
 - (6) Repeat steps (1) through (5) using other side of probe.
- D. Check sensitivity of system with test block (Detail II). System should detect 0.060-inch crack in test block with approximately 50-microampere deflection (ED-500 instrument).

5. Inspection Procedure

- A. Insert probe between stringer and frame, and pin in position by inserting tapered centering pin through holes to be inspected and center of probe.
- B. Adjust gap between stringer and frame so that probe fits tightly, yet can be rotated by hand.



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C. Rotate probe slowly through 360 degrees. Note meter deflections.

NOTE: A crack response is characterized by rapid deflection of meter needle as probe is rotated through a small arc. An oversize or out-of-round hole is likely to cause a slow meter deflection over a relatively large arc.

D. When a crack is indicated, determine whether crack is in stringer or frame as follows:

- (1) Widen gap between stringer and frame an additional 0.020 to 0.030 inch.
- (2) Place probe against surface of stringer and rotate slowly through 360 degrees. Note meter deflections.
- (3) Place probe against surface of frame and rotate slowly through 360 degrees. Note meter deflections.

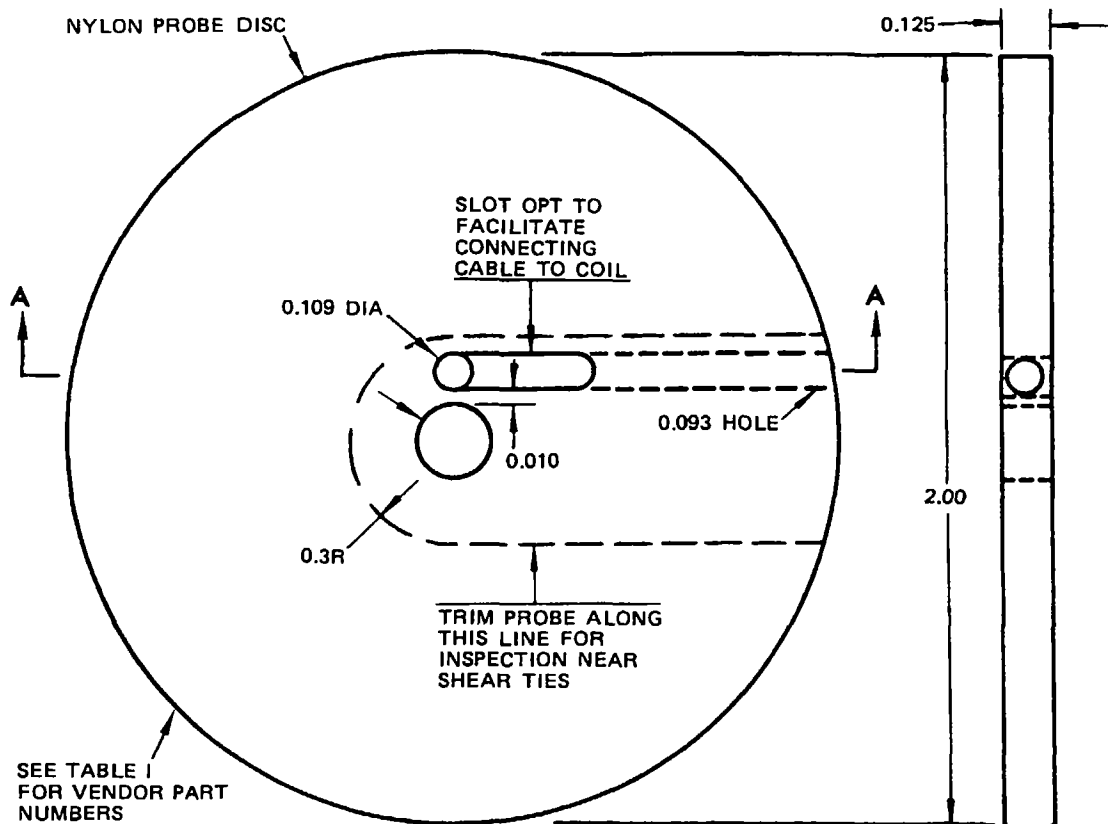
HOLE SIZE	NORTEC INC. PART NO.	USEC LABORATORY PART NO.	IDEAL SPECIALTY CO. PART NO.
PROBES			
3/16	DISC-12, -12A	DP-3	6160-3/16-80MC2M
1/4	DISC-16, -16A	DP-4	6160-1/4-80MC2M
5/16	DISC-20, -20A	DP-5	6160-5/16-80MC2M
TEST BLOCKS			
3/16	TBD-12		
1/4	TBD-16		
5/16	TBD-20		
CENTERING PINS			
3/16	TCP-12		SUPPLIED WITH PROBE
1/4	TCP-16		SUPPLIED WITH PROBE
5/16	TCP-20		SUPPLIED WITH PROBE

VENDOR PART NUMBERS
TABLE I

NOTE: REFER TO PART 1, 51-06-00, PAR 7 FOR MANUFACTURER INFORMATION.



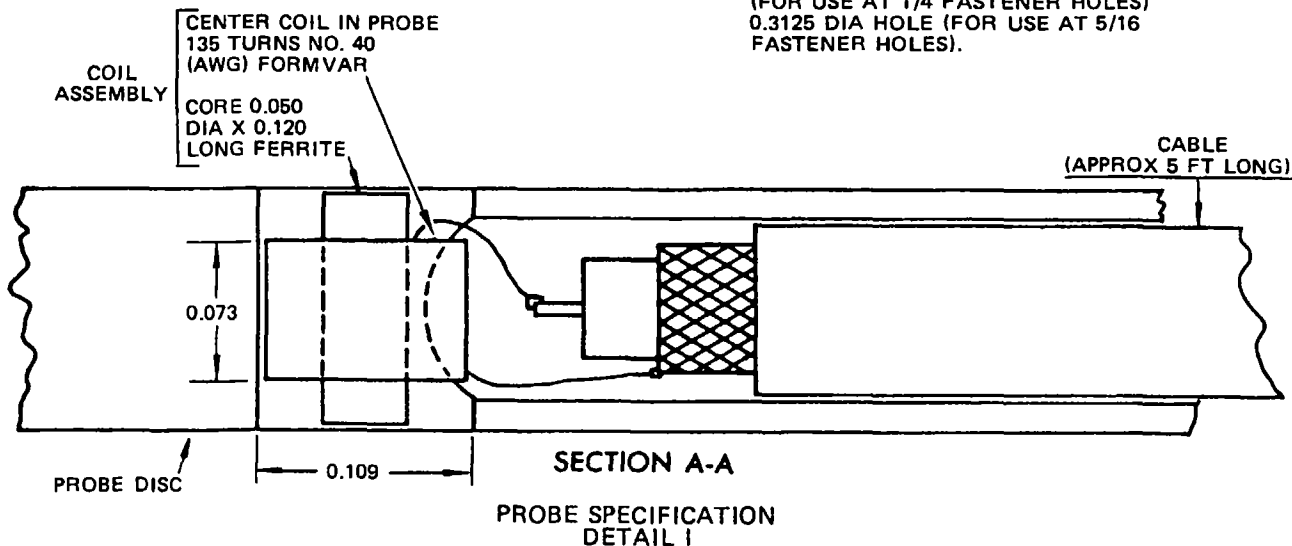
NONDESTRUCTIVE TEST



NOTES

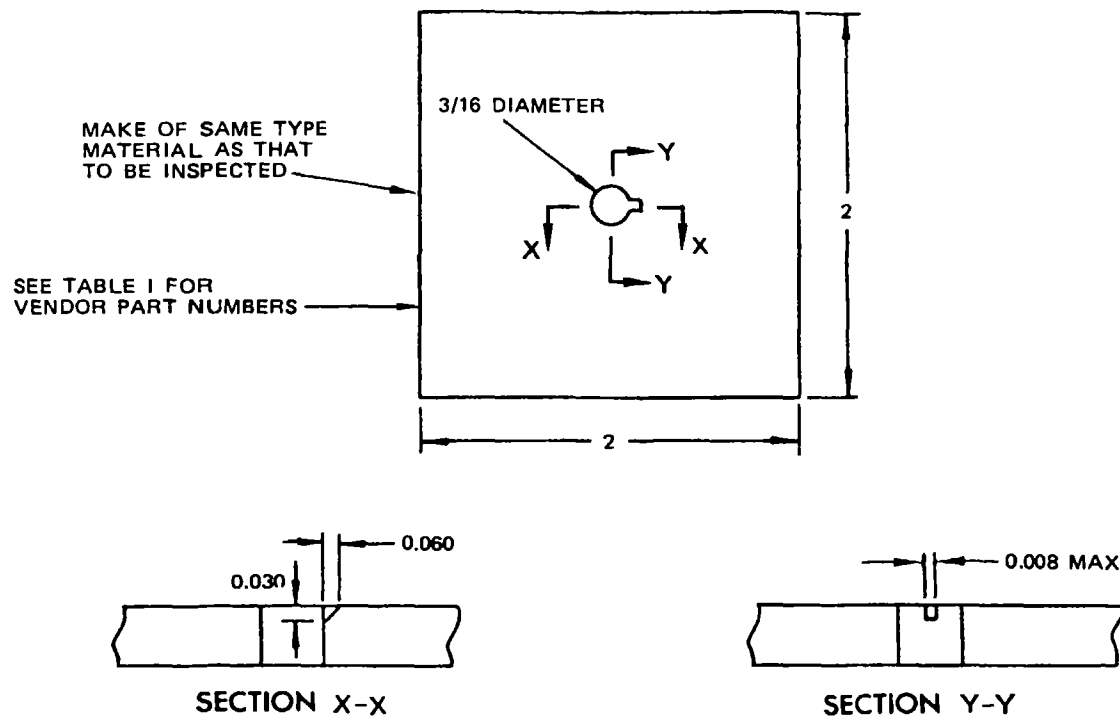
1. MAKE CABLE FROM COAXIAL CABLE AN TYPE RG174/U MAKE 5 FT LONG.
2. CONNECT OTHER END OF CABLE TO AMPHENOL, 80-MC2M, MICROPHONE CONNECTOR. SOLDER CENTER WIRE TO CONN TERMINAL 1. SOLDER SHIELD TO CONN TERMINAL 2.
3. SECURE COIL ASSY AND WIRE TO PROBE DISC WITH SCOTCHWELD STRUCTURAL ADHESIVE 2216
4. ALL DIMENSIONS ARE IN INCHES.

1 0.1875 DIA HOLE (FOR USE AT 3/16 FASTENER HOLES) 0.250 DIA HOLE (FOR USE AT 1/4 FASTENER HOLES) 0.3125 DIA HOLE (FOR USE AT 5/16 FASTENER HOLES).

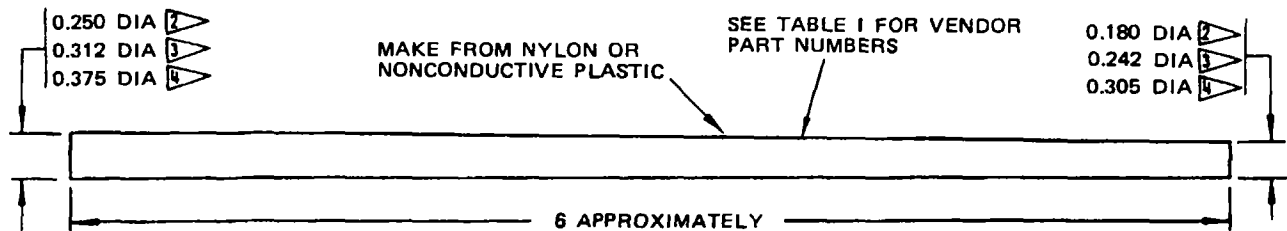




NONDESTRUCTIVE TEST



TEST BLOCK SPECIFICATION



CENTERING PIN

- 2 FOR USE AT 3/16 FASTENER HOLES
- 3 FOR USE AT 1/4 FASTENER HOLES
- 4 FOR USE AT 5/16 FASTENER HOLES

AUXILIARY TEST EQUIPMENT SPECIFICATION

DETAIL II

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-03
53-A10-03
53-A20-03
53-A30-03
53-A40-03

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect cracks out of fastener holes in upper chord of floorbeam at BS 259.5 RBL 20 to LBL 20.

2. Equipment

- A. Instruments and reference standards per Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved surfaces of Aluminum Parts.
- B. Variable extension shielded probe, either of the following are acceptable:
- (1) P/N: PVAE-11 Variable extension with P905-15 probe
NDT Product Engineering
P.O. Box 423
Renton, Wa 98057
- (2) P/N: VM100P-18 Probe
VM Products
7420 Park Ave. No. 20
Tacoma, Wa 98408

3. Preparation for Inspection

- A. Access is through pilot compartment and electronic compartment.
- B. Remove engineer's seat and skid strip at BS 259.

4. Instrument Calibration

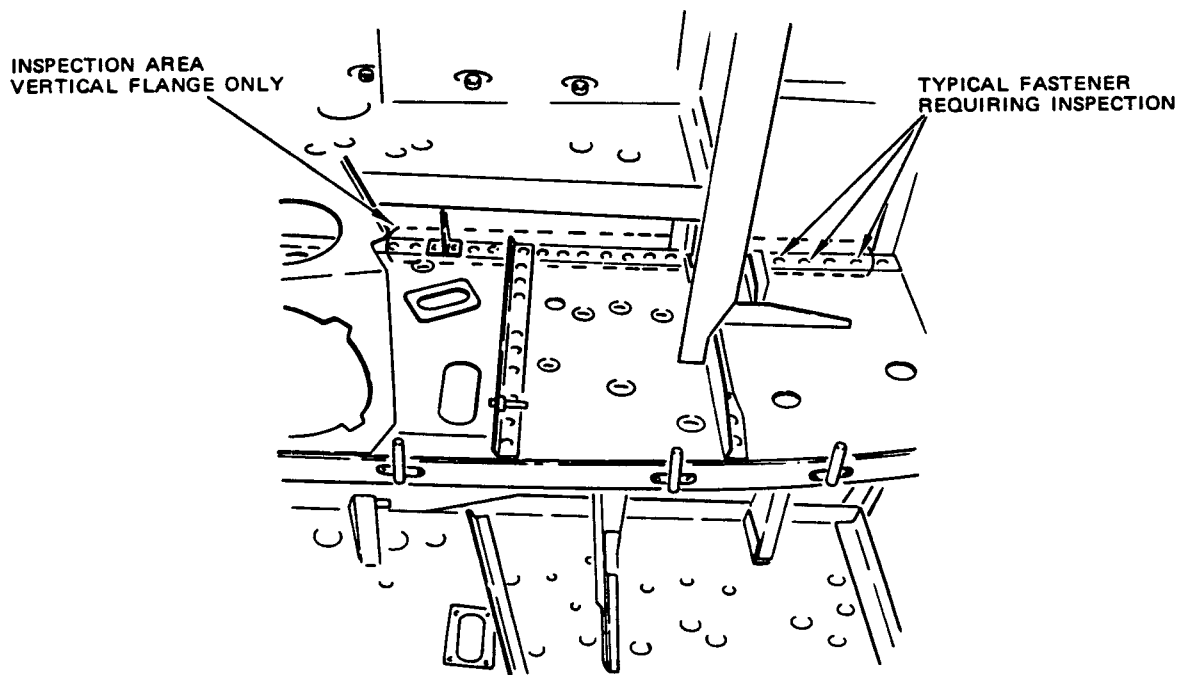
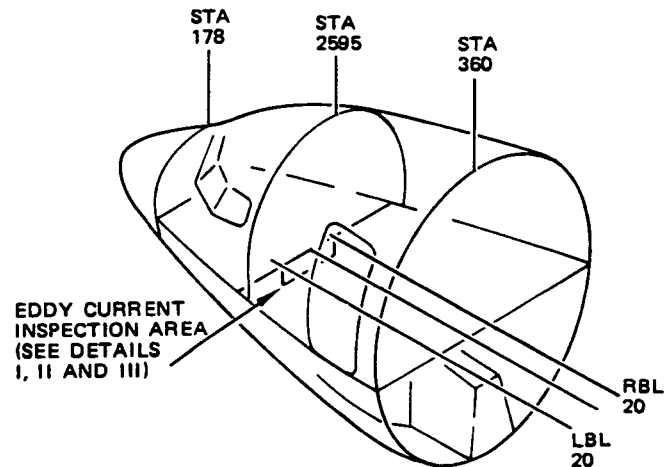
- A. Perform instrument calibration as described in Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

5. Inspection Procedure

- A. With pencil probe placed on the structure scan around both ends of all accessible fasteners common to either the horizontal or vertical flanges of the upper chord on BS 259.5 floor beam from RBL 20 to LBL 20. Pencil probe should be kept as close as possible to fastener to ensure detection of smaller cracks. Cracks will generally initiate at a fastener hole and propagate towards edge of member and/or out of opposite side of hole. See Details I, II and III for inspection area.

Floor Beam - BS 259.5, RBL 20 to LBL 20
Figure 1 (Sheet 1)

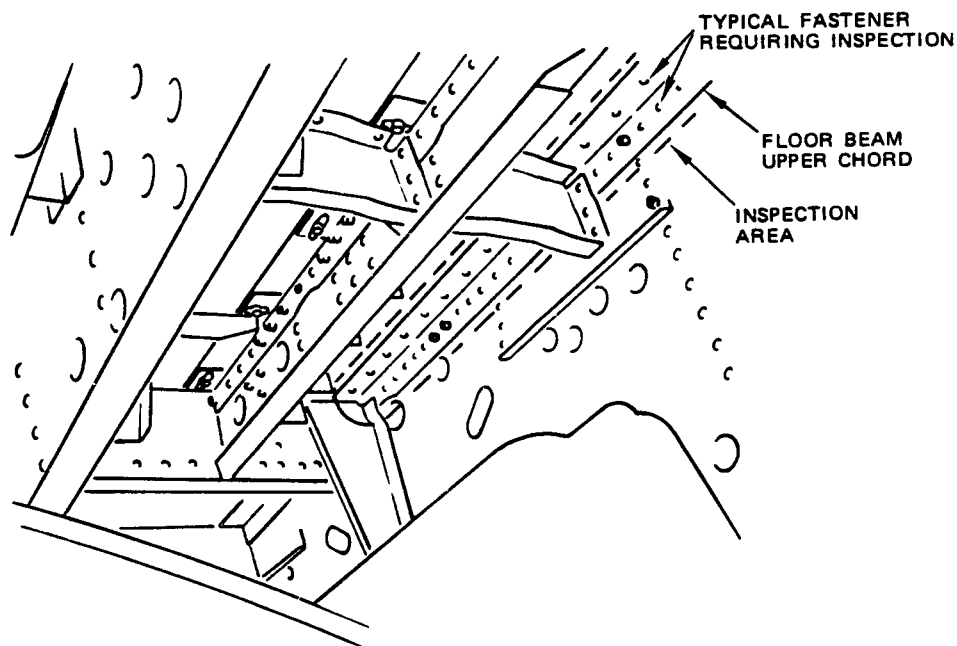
BOEING
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NONDESTRUCTIVE TEST



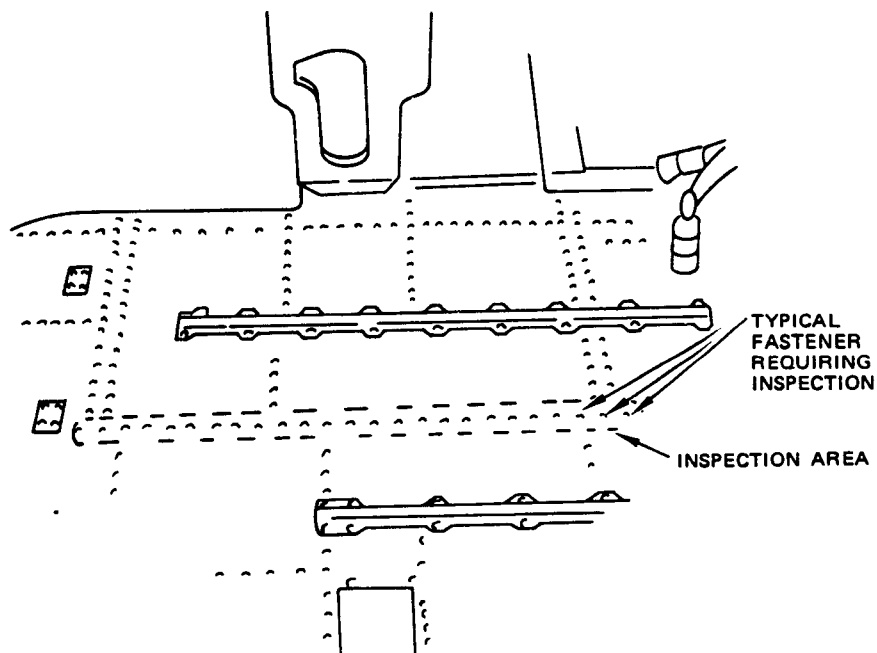
BS259 FLOOR BEAM LH SIDE (RH SIDE
SIMILAR) LOOKING AFT (VIEWED FROM
INSIDE ELECTRONIC COMPARTMENT)
DETAIL I

Floor Beam-BS 259.5, RBL 20 to LBL 20
 Figure 1 (Sheet 2)

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BS259 FLOOR BEAM RH SIDE LOOKING
 FORWARD, LH SIDE SIMILAR (VIEWED FROM
 INSIDE ELECTRONIC COMPARTMENT)
 DETAIL II



BS259 FLOOR PANEL COVERING
 UPPER CHORD OF FLOOR BEAM
 LOOKING FORWARD (VIEWED FROM
 INSIDE PILOT COMPARTMENT)
 DETAIL III

Floor Beam-BS 259.5, RBL 20 to LBL 20
 Figure 1 (Sheet 3)

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EFFECTIVITY	
MODEL:	707/720
SSI DOCUMENT (D6-44860)	
REFERENCE:	
	SSD 53-A00-02
	SSD 53-A10-02
	SSD 53-A20-02
	SSD 53-A30-02
	SSD 53-A40-02

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect cracks, initiating in frame outer chord flange at fastener holes common to the skin and flange at BS 259.5, WL 249 to WL 241, right and left side of body.

2. Equipment

A. Instrument

Any eddy current instrument that will satisfy the performance (frequency, lift-off, and sensitivity) requirements of this procedure is suitable for this inspection. The following instrument was used during the development of this procedure.

- (1) MIZ-10 - Zetec Inc., Issaquah, Washington 98027.

B. Probe

This procedure requires a small diameter encircling probe. Any encircling probe with similar dimensions that will satisfy the performance requirements is acceptable.

- (1) 0.70 inch Outer Diameter Encircling probe.

- (a) Available from Nortec - 421 N. Quay, Kennewick, Washington 99336, P/N SPO-996 (specify connector for Zetec MIZ-10).

C. Standard

- (1) Manufacture reference standard per Detail I.

3. Preparation for Inspection

- A. Inspection is accomplished from outside of the airplane - no removals required.
- B. Wipe skin surface clean.

Frame, Outer Chord Flange - BS 259.5, WL 249 to WL 241
Figure 2 (Sheet 1)

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NONDESTRUCTIVE TEST

4. Instrument Calibration

- A. Set frequency at 1 KHz.
- B. Set probe at Position 1 on reference standard. See Detail II.
- C. Null instrument per manufacturer's instructions.
- D. Adjust instrument for 0.006 inch liftoff per manufacturer's instructions. Adjust liftoff such that crack indications give an upscale meter deflection.
- E. With probe at Position 1 on reference standard, set meter response with balance control at 20% of full meter scale.
- F. Place probe over cracked hole on reference standard. See Detail II Position 2. Adjust sensitivity to obtain a 75% of full meter scale difference between Position 1 and 2.

NOTE: Visually center probe over fastener and adjust position as necessary to obtain a minimum response from cracked and uncracked reference holes.

5. Inspection Procedure

- A. Inspect each fastener location outlined in Detail III and IV.

NOTE: If responses from fastener locations on the airplanes are consistently different than the reference standard, recalibrate instrument per par. 4, leaving sensitivity the same and compare response between same size fasteners with similar spacings.

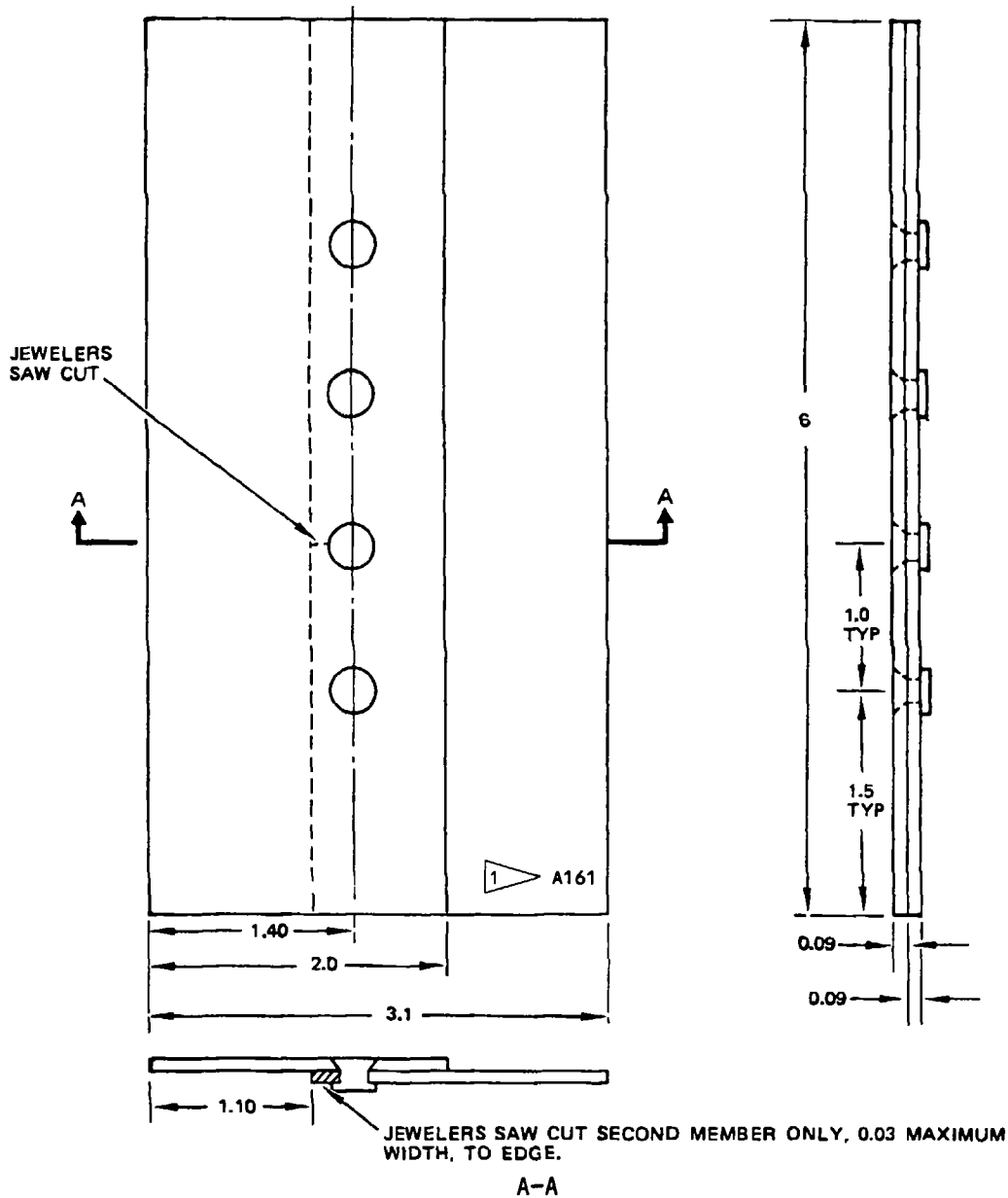
- B. Any change in response greater than 50% of full meter scale should be considered significant and investigated further.

NOTE: The following conditions may give a crack-like indication.

- (1) Steel fasteners - confirm with magnet.
- (2) Short edge margin to edge of skin - compare with similar spaced fasteners.

Frame, Outer Chord Flange - BS 259.5, WL 249 to 241
Figure 2 (Sheet 2)

BOEING NONDESTRUCTIVE TEST



NOTES:

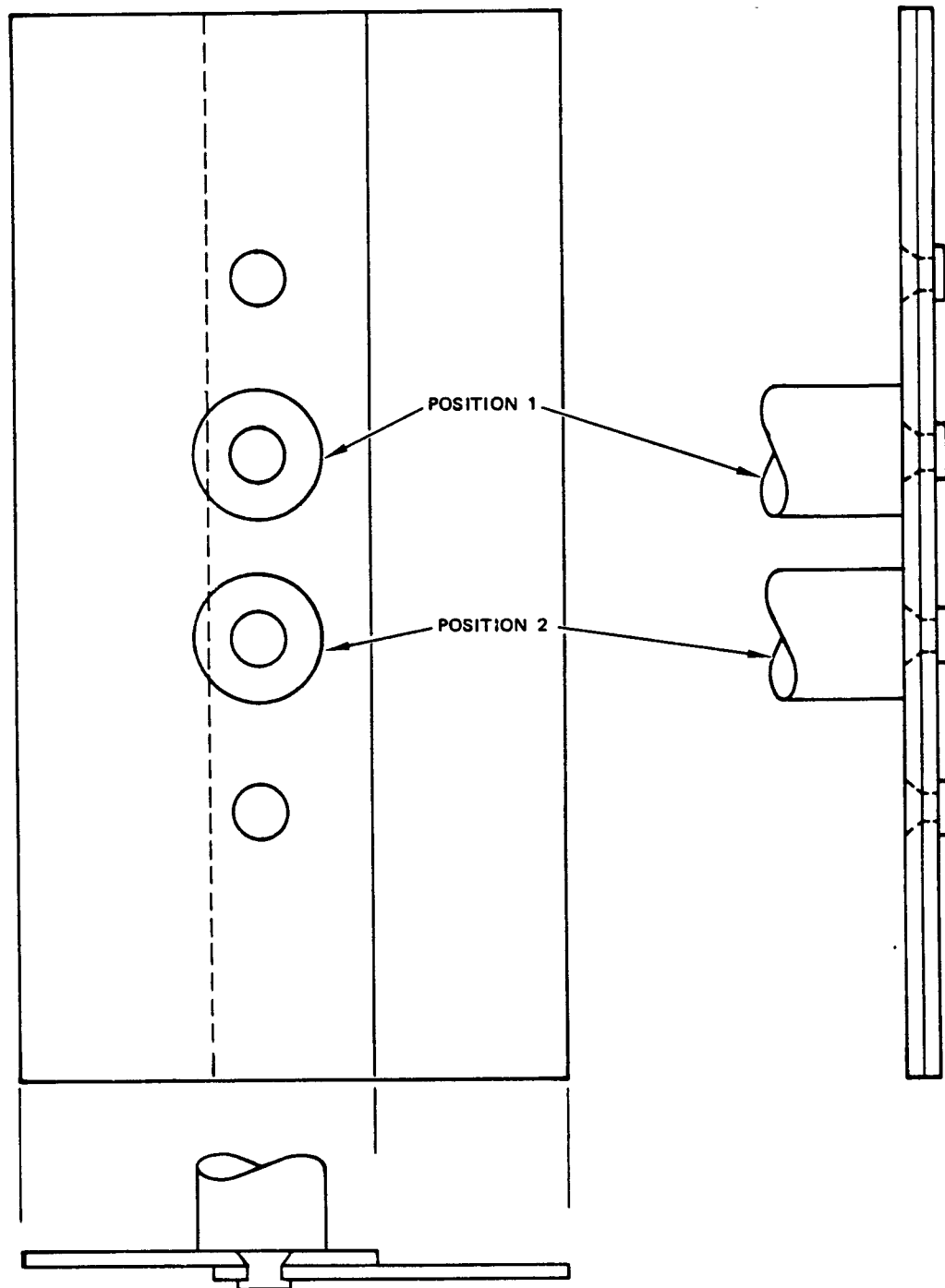
- MATERIAL: TOP MEMBER 2024-T4 CLAD
LWR MEMBER 2024-T4 BARE
- RIVETS: BACR15CE6D 2
- TOLERANCE: $X \pm 0.05$, $X.XX \pm 0.03$, $X.XX \pm 0.01$

- 1 ETCH OR STEEL STAMP WITH A161. 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.

REFERENCE STANDARD DETAIL I

Frame, Outer Chord Flange - BS 259.5, WL 249 to 241
Figure 2 (Sheet 3)

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NONDESTRUCTIVE TEST



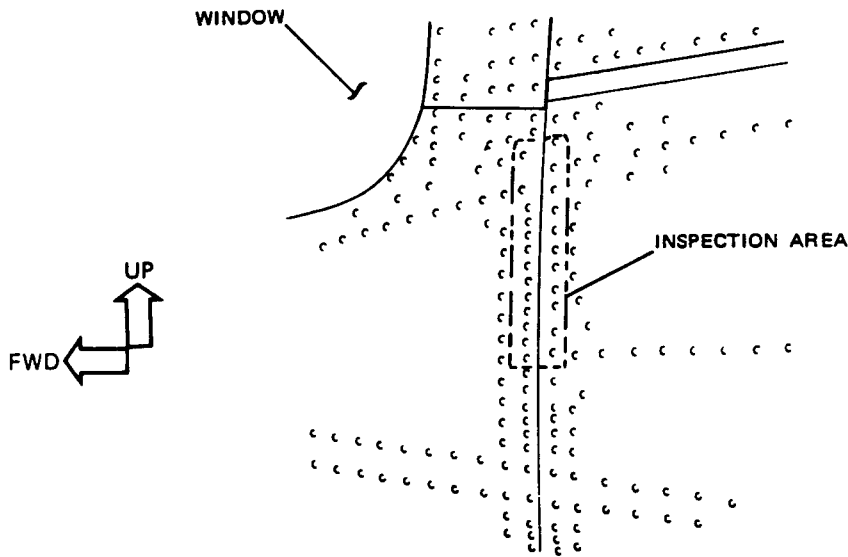
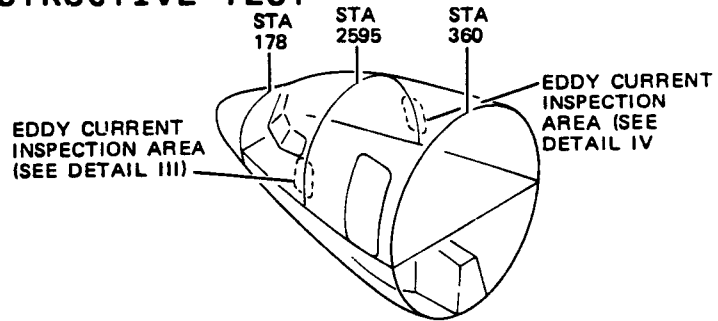
DETAIL II INSTRUMENT CALIBRATION

Frame, Outer Chord Flange-BS 259.5, WL 249 to WL 241
Figure 2 (Sheet 4)

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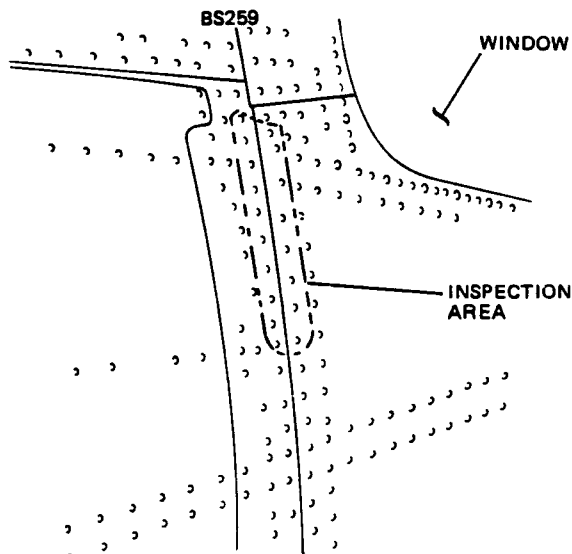
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COMMERCIAL JET
NONDESTRUCTIVE TEST



EDDY CURRENT INSPECTION AREA -
 BS259 LH SIDE WL241 TO WL249
 SKIN JOINT.

DETAIL III



EDDY CURRENT INSPECTION AREA -
 BS259 RH SIDE WL241 TO WL249
 SKIN JOINT.

DETAIL IV

Frame, Outer Chord Flange-BS 259.5, WL 249 to WL 241
 Figure 2 (Sheet 5)

EFFECTIVITY	
MODEL:	707/720
SSI DOCUMENT (D6-44860)	
REFERENCE:	
	SSD 53-A00-02
	SSD 53-A10-02
	SSD 53-A20-02
	SSD 53-A30-02
	SSD 53-A40-02

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT
FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect cracks about installed fasteners and in open holes common to BS 259.5 bulkhead frame inner chord and chord/web above WL 270 (RBL 25 to LBL 25) and between WL 215 and WL 195, right and left side of airplane.

2. Equipment

A. Instrument

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

B. Probes

- (1) Pencil probes per Part 1, 51-06-00, Fig. 1, and Part 6, 51-00-00, Fig. 4.

NOTE: Probes should be less than three inches long or be configured to allow for use at hard to reach fastener locations.

- (2) Bolt hole probes per Part 1, 51-06-00, Fig. 1 and Part 6, 51-00-00, Fig. 1.

C. Reference Standards

- (1) Surface crack standard per Part 6, 51-00-00, Fig. 4.
(2) Bolt hole standard per Part 6, 51-00-00, Fig. 1.

3. Preparation for Inspection

A. Above WL 270 (access is through pilot compartment)

- (1) Remove ceiling panels just fore and aft of BS 259.5, RBL 20 to LBL 20.
(2) Lower aft end of the P5 electronic switch box.
(3) Remove blankets around BS 259.5 bulkhead between RBL 20 and LBL 20.
(4) Remove all removable type fasteners common to inner chord.
Bulkhead, Inner Chord/Web - BS 259.5 Above WL 270,
RBL 25 to LBL 25 and Between WL 215 and WL 195
Figure 3 (Sheet 1)

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NONDESTRUCTIVE TEST

- B. Between WL 215 and WL 195 (above WL 208 access is through pilot compartment, below WL 208 access is through electronics compartment).

- (1) Remove side panels covering WL 208 to WL 215.
- (2) Loosen wire bundles as necessary.
- (3) Remove blankets covering inner chord from WL 195 to WL 215.

4. Instrument Calibration

- A. Surface inspection - attach pencil probe and calibrate instrument per Part 6, 51-00-00, Fig. 4.
- B. Hole inspection - attach bolt hole probe and calibrate instrument per Part 6, 51-00-00, Fig. 1.

5. Inspection Procedure

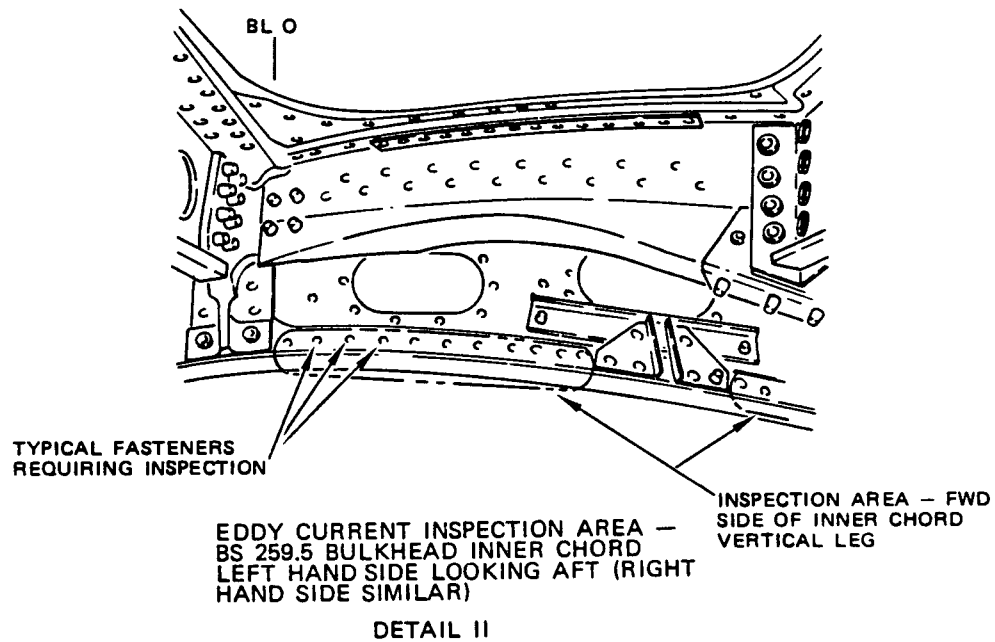
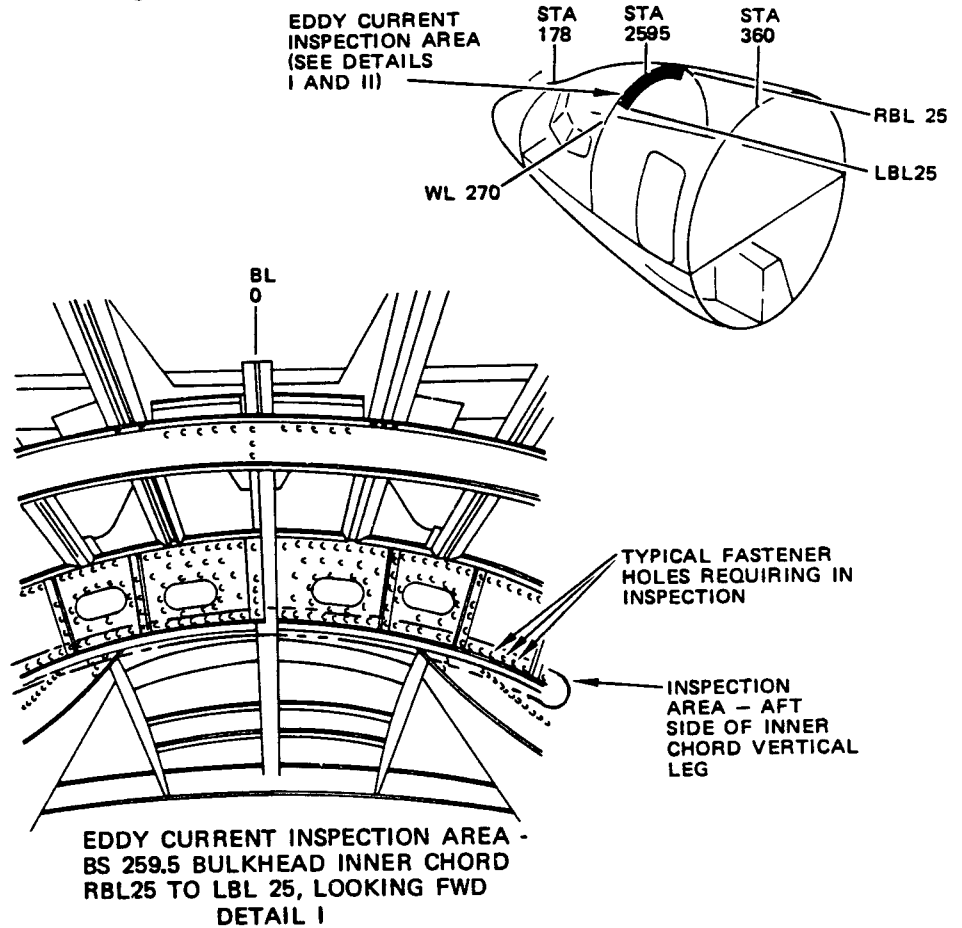
A. Pencil probe inspection

- (1) Use the pencil probe to inspect for surface cracks in structure around both ends of all accessible fasteners common to the inner chord and chord/web above WL 270 (RBL 25 to LBL 25) and on both sides of body between WL 195 and WL 215.
- (2) The probe should be kept as close as possible to fasteners to insure detection of smaller cracks. Cracks will generally initiate at fastener holes and propagate towards edge of member and/or out of opposite side of hole. See Details I, II, III and IV for inspection area.

B. Bolt hole inspection

- (1) Use the bolt hole probe to inspect all open holes common to the inner chord above WL 270. See Details I and II for inspection area.

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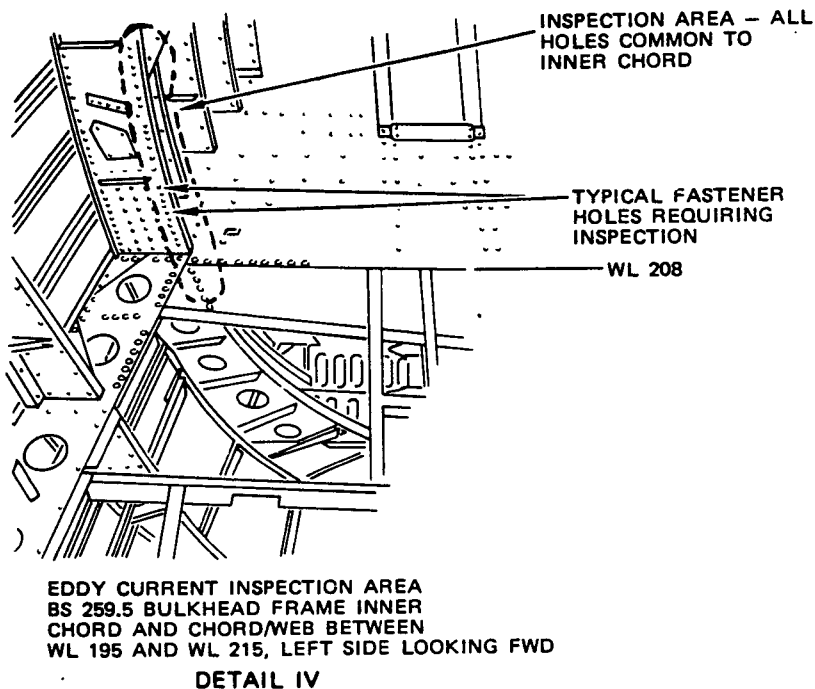
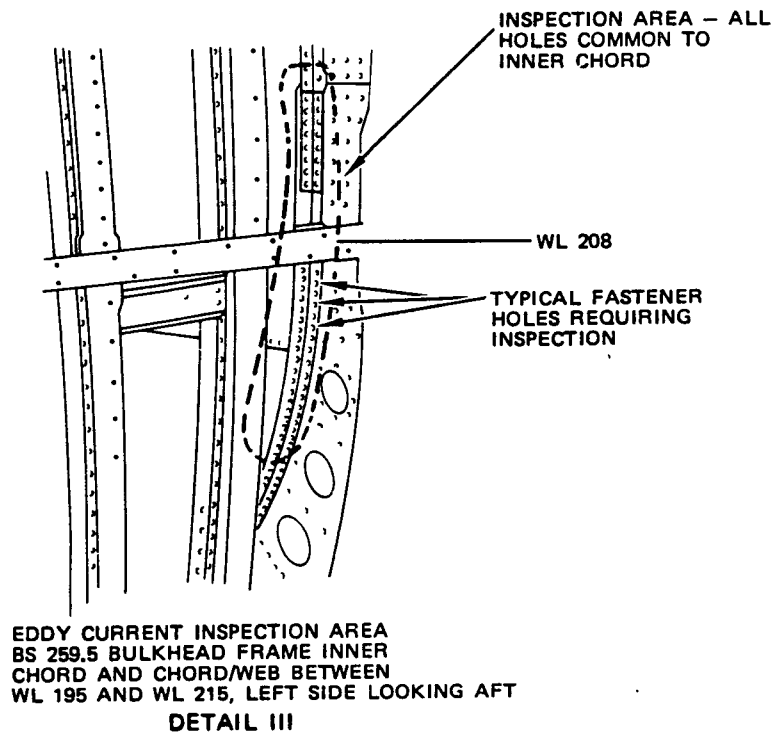


Bulkhead, Inner Chord/Web - BS 259.5 Above WL 270, RBL 25 to LBL 25 and Between WL 215 and 195
 Figure 3 (Sheet 3)

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Bulkhead, Inner Chord/Web - BS 259.5 Above WL 270, RBL 25
 to LBL 25 and Between WL 215 and 195
 Figure 3 (Sheet 4)

EFFECTIVITY	
MODEL:	707/720
SSI DOCUMENT (D6-44860)	
REFERENCE:	
	SSD 53-A00-05
	SSD 53-A10-05
	SSD 53-A20-05
	SSD 53-A30-05
	SSD 53-A40-05

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT
FUSELAGE - MAIN FRAME

1. Purpose

- A. Detect cracks at all fastener holes in strap common to the vertical chord or bulkhead web and sidewall web at BS 312, LBL 10 and RBL 10, from WL 160 to WL 179.

2. Equipment

- A. Instrument and reference standards per Part, 6 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.
- B. Pencil probes per Part 1, 51-06-00, Eddy Current, and Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

3. Preparation for Inspection

- A. Access to inspection area is through nose wheel well and electronic compartment.
- B. Remove Rt 1, Rt 2 radar box and wire terminal box at BS 312, WL 171.5, RBL 15 and LBL 15, respectively.
- C. Remove insulation blankets as necessary from AFT side of BS 312 bulkhead.
- D. Remove sealant from around both ends of fasteners common to vertical chord from WL 160 to WL 179.

4. Instrument Calibration

- A. Perform instrument calibration as described in Part 6, 51-00-00, Fig. 4, Flat or Moderatly Curved Surfaces of Aluminum Parts.

5. Inspection Procedure

- A. With pencil probe in contact with structure scan around both ends of all fasteners common to the vertical chord at BS 312, LBL 10 and RBL 10, from WL 160 to WL 179. Pencil probe should be held as close as possible to fastener to ensure detection of smaller cracks. Cracks will generally initiate at fastener hole and propagate directly towards edge of member and/or out of opposite side of hole.
 - (1) Inspect web around fasteners on forward side of BS 312 bulkhead, see Detail I.

Strap, BS 312, LBL 10 and RBL 10 from WL 160 to WL 179
 Figure 4 (Sheet 1)

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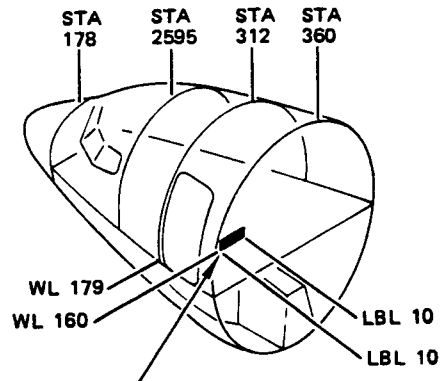
NONDESTRUCTIVE TEST

- (2) Inspection web around fasteners on sidewall at BS 312 bulkhead, see Detail II.
- (3) Inspect around strap and chord fasteners on aft side of BS 312 bulkhead, see Detail III.
- B. The areas listed below have complex structure and should be inspected as follows:
 - (1) Inspection of area around fasteners located at WL 171.5, RBL 11 and LBL 11 are not accessible due to transverse chord covering the web. See Detail I, Zone A.
 - (a) Inspect chord from aft side. Refer to 5.A.3.
 - (2) Inspection of area around fastener common to outboard side of vertical chord LBL 10 and RBL 10 at WL 175, covered by L stiffener. See Detail II, Zone A.
 - (a) Scan pencil probe around periphery of L stiffener.
 - (3) Inspection of area around fastener common to outboard side of vertical chord and Z stiffener LBL 10 and RBL 10 at WL 166. See Detail II, Zone B.
 - (a) Inspect sidewall web from inboard side. Refer to 5.A.2.
 - (4) Inspection of area around fasteners common to sidewall and bracket at RBL 10 and LBL 10, WL 175 to 179. See Detail IV, Zone A.
 - (a) Scan pencil probe around periphery of bracket flange common to sidewall web.

Strap, BS 312, LBL 10 and RBL 10 from WL 160 to WL 179

Figure 4 (Sheet 2)

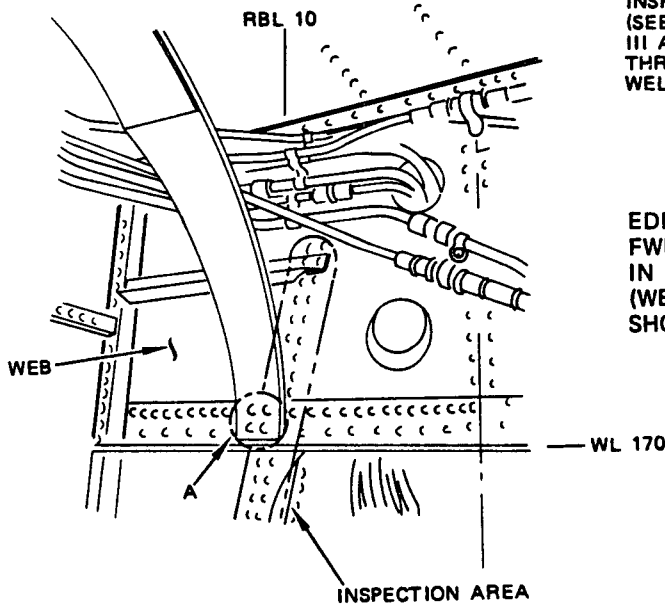
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



EDDY CURRENT
 INSPECTION AREA
 (SEE DETAILS I, II,
 III AND IV) - ACCESS
 THROUGH NOSE WHEEL
 WELL)

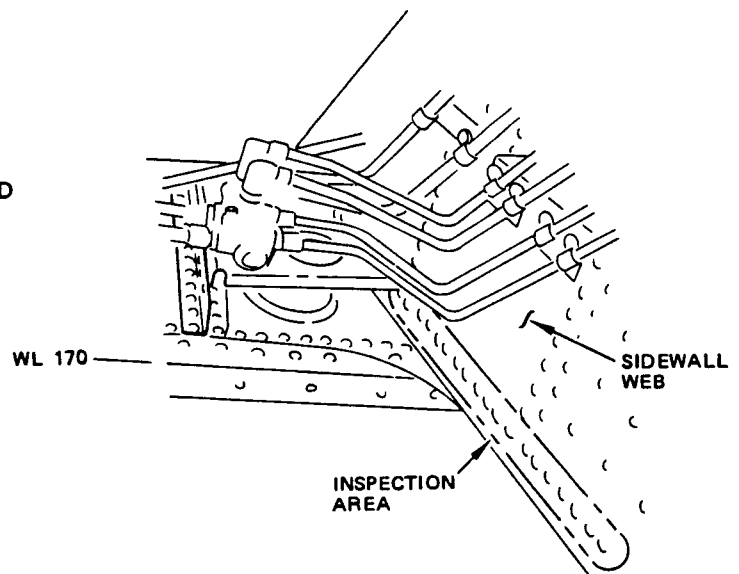
EDDY CURRENT INSPECTION AREA -
 FWD SIDE OF BS 312 BULKHEAD
 IN NOSE WHEEL WELL LOOKING AFT.
 (WEB & VERTICAL CHORD AT RBL 10
 SHOWN, LEFT HAND SIDE SIMILAR)

DETAIL I



EDDY CURRENT INSPECTION
 AREA - BS 312 VERTICAL CHORD
 AT RBL 10 (COVERED BY SIDE-
 WALL WEB) IN NOSE WHEEL-
 WELL LOOKING FWD (LEFT
 HAND SIDE SIMILAR)

DETAIL II

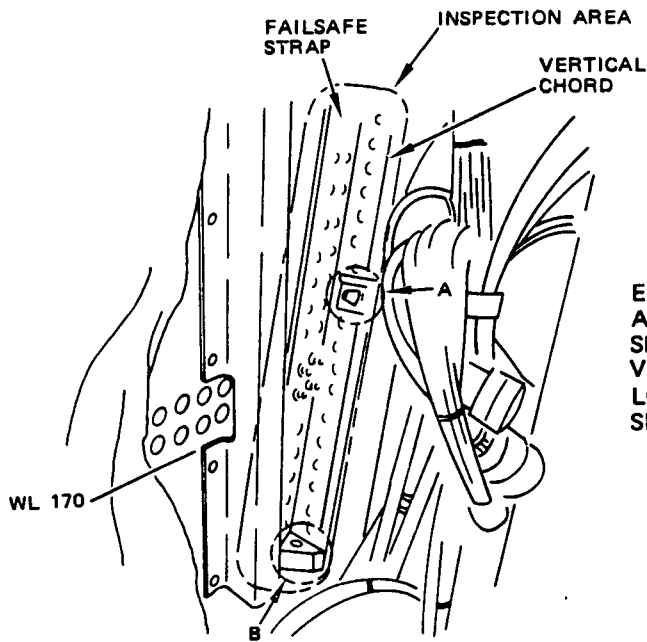


Strap, BS 312, LBL 10 and RBL 10 From WL 160 to WL 179
 Figure 4 (Sheet 3)

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Part 6
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 Page 13

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

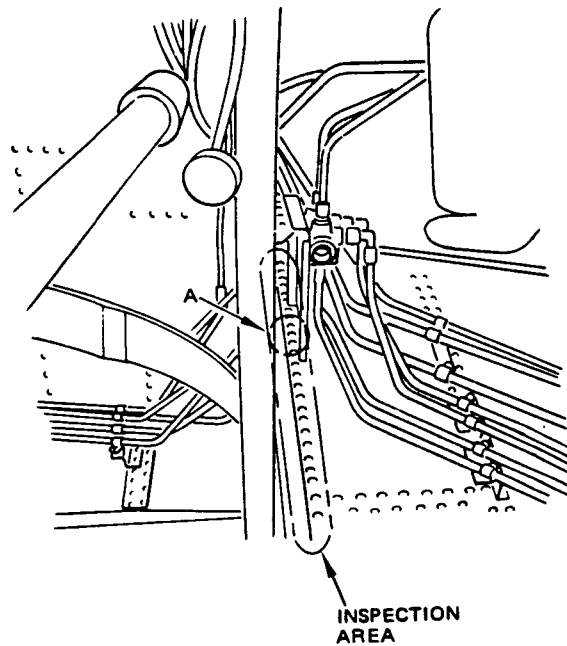


EDDY CURRENT INSPECTION AREA -
 AFT SIDE OF BS 312 BULKHEAD
 SHOWING VERTICAL CHORD AT LBL 10.
 VIEWED FROM ELECTRONIC COMPARTMENT
 LOOKING FWD (RIGHT HAND SIDE
 SIMILAR).

DETAIL III

EDDY CURRENT INSPECTION
 AREA - BS 312 VERTICAL
 CHORD AT RBL 10 NOSE
 WHEELWELL LOOKING
 UP.

DETAIL IV



Strap, BS 312, LBL 10 and RBL 10 From WL 160 to WL 179
 Figure 4 (Sheet 4)

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-04
SSD 53-A10-04
SSD 53-A20-04
SSD 53-A30-04
SSD 53-A40-04

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect cracks in transverse chord and attached web at all fastener holes through cord or chord/web at BS 312, WL 171.5, from RBL 20 to LBL 20.

2. Equipment

- A. Instruments and reference standards per Part 5 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.
- B. Pencil probes per Part 1, 51-06-00, Eddy Current, and Part 6 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

3. Preparation for Inspection

- A. Access to inspection area is through nose wheel well and electronic compartment.
- B. Remove radar RT 1 and RT 2 units and wire terminal box at BS 312, WL 171.5, RBL 15 and LBL 15 respectively.
- C. Remove insulation blankets for access to aft side of BS 312 bulkhead and fasteners common to web and transverse chord at WL 171.5.
- D. Remove sealant from around edge of all fastener heads and shanks.

4. Instrument Calibration

- A. Perform instrument calibration per Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

Transverse Chord at BS 312, WL 171.5, RBL 20 to LBL 20
Figure 5 (Sheet 1)

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BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

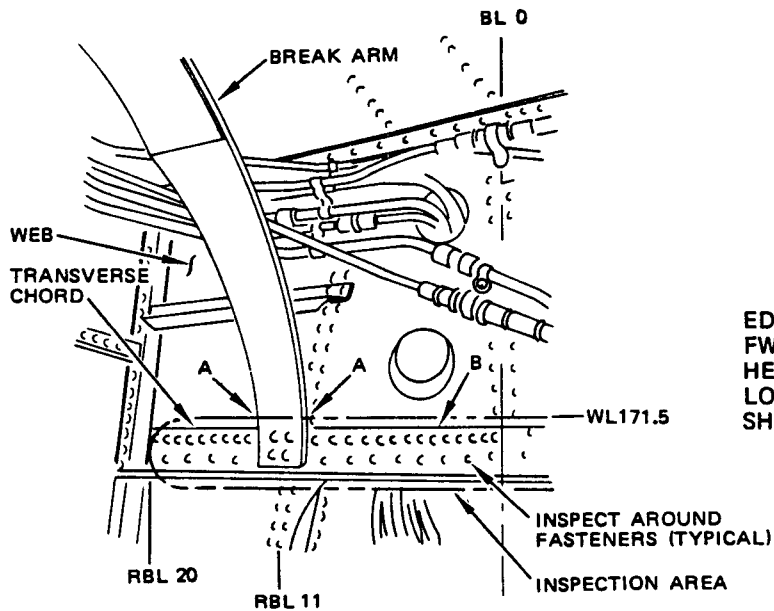
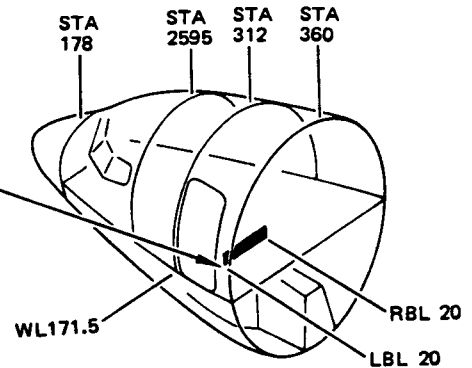
5. Inspection Procedure

- A. With pencil probe placed on the structure scan around both ends of the fasteners common to the transverse chord or chord/web at BS 312, WL 171.5 from RBL 20 to LBL 20, See Details I, II and III. Pencil probe should be held as close as possible to fastener to ensure detection of smaller cracks. Cracks will generally initiate at a fastener hole and propagate towards edge of the member and/or out of the opposite side of the hole.
- B. The areas listed below have complex structure and should be inspected as follows:
 - (1) Inspection of area where break arm attaches to forward side of vertical flange of transverse chord at BS 312, WL 171.5, RBL 11 and LBL 11. See Detail I.
 - (a) Scan pencil probe on edges of the two vertical flanges common to the chord, Detail I, Zone A.
 - (b) Scan pencil probe along web adjacent to edge of vertical flange, Detail I, Zone A.
 - (2) Inspection of area around fastener at BS 312, WL 171.5, common to vertical angle and transverse chord.
 - (a) Scan pencil probe along forward side of web adjacent to vertical flange of transverse chord, Detail I, Zone B.
 - (b) Scan pencil probe along aft side of vertical flange of transverse chord adjacent to edge of web, Detail II, Zone A.

Transverse Chord at BS 312, WL 171.5, RBL 20 to LBL 20
Figure 5 (Sheet 1)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

EDDY CURRENT INSPECTION AREA -
 (SEE DETAILS I, II AND III) -
 ACCESS THROUGH NOSE WHEEL
 WELL AND ELECTRONIC COMPARTMENT



EDDY CURRENT INSPECTION AREA -
 FWD SIDE OF BS 312 BULK -
 HEAD IN NOSE WHEEL WELL
 LOOKING AFT. RIGHT SIDE
 SHOWN, LEFT SIDE SIMILAR.

DETAIL I

Transverse Chord at BS 312, WL 171.5, RBL 20 to LBL 20
 Figure 5 (Sheet 3)

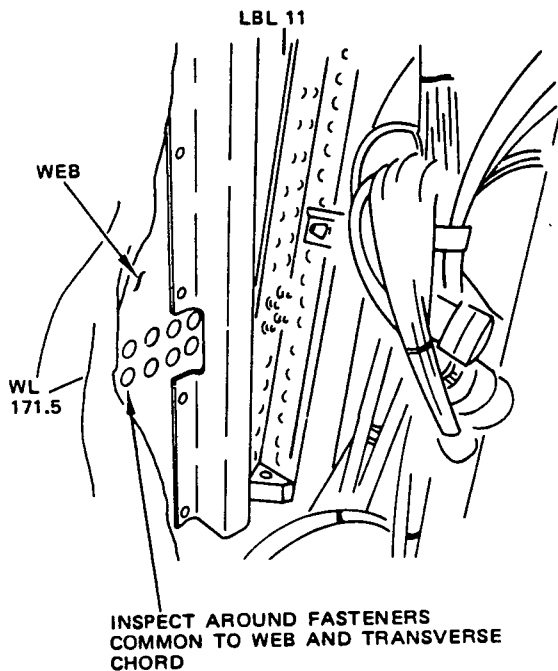
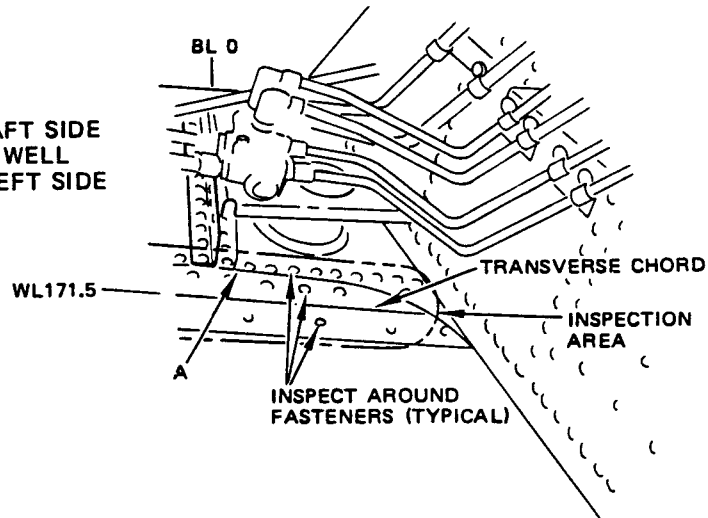
Nov 1/78

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 53-10-07
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BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

EDDY CURRENT INSPECTION AREA - AFT SIDE
 OF BS 312 BULKHEAD IN NOSE WHEEL WELL
 LOOKING FWD. RIGHT SIDE SHOWN, LEFT SIDE
 SIMILAR.

DETAIL II



EDDY CURRENT INSPECTION AREA
 AFT SIDE OF BS312 BULKHEAD
 ELECTRICAL COMPARTMENT LOOKING
 FWD, LEFT SIDE SHOWN. RIGHT SIDE
 SIMILAR.

DETAIL III

Transverse Chord at BS 312, WL 171.5, RBL 20 to LBL 20
 Figure 5 (Sheet 4)

EFFECTIVITY	
MODEL:	707/720
SERVICE BULLETIN	
REFERENCE:	3284
SSI DOCUMENT (D6-44860)	
REFERENCE:	
	SSD 53-A05-02
	SSD 53-A15-02
	SSD 53-A25-02
	SSD 53-A35-02
	SSD 53-A45-02

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT
FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect cracks, initiating in fastener holes common to BS 259.5 bulkhead lower chord, web and exterior skin, from RBL 32 to LBL 32 and below WL 160.

2. Equipment

- A. Instrument per Part 6, 51-00-00, Fig. 4.
- B. Probes - Pencil probes per Part 1, 51-06-00, Fig. 1 and Part 6, 51-00-00, Fig. 4.
- C. Reference Standard per Part 6, 51-00-00, Fig. 4.

3. Preparation for Inspection

NOTE: Area accessible through nose gear wheel well and doppler cavity.

- A. Open door on doppler cavity.
- B. Wipe area clean.

4. Instrument Calibration

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

5. Inspection Procedure

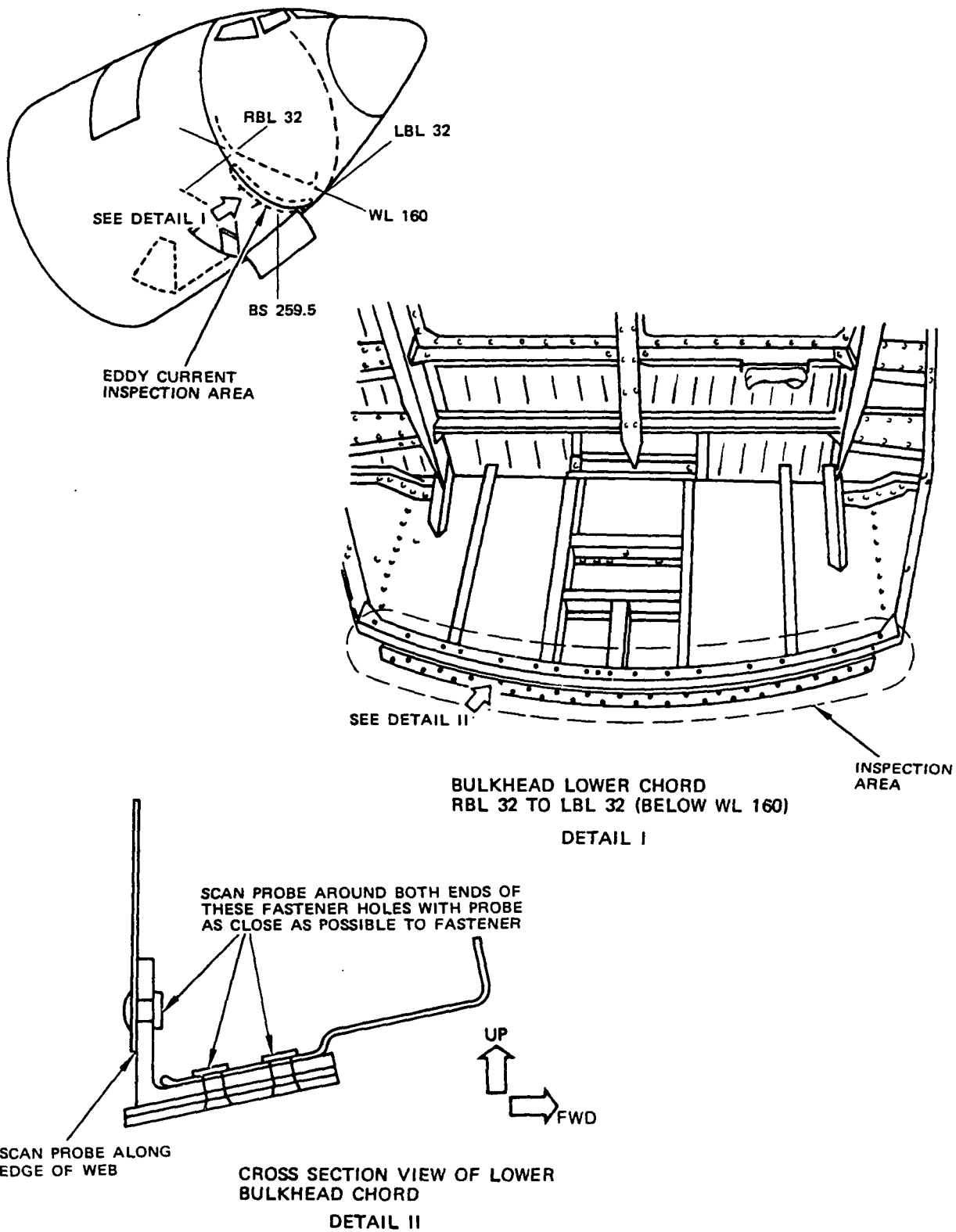
- A. Use the pencil probe to inspect for surface cracks in structure around all fasteners and locations marked in Detail I, from RBL 32 to LBL 32 (below WL 160). Probe should be kept as close as possible to fastener to insure detection of smaller cracks.

Mar 15/79

Bulkhead Lower Chord, Web and Exterior Skin -
 BS 259.5 Below WL 160, RBL 32 to LBL 32
 Figure 6 (Sheet 1)

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 53-10-07
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BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



Bulkhead Lower Chord, Web and Exterior Skin - BS 259.5,
 Below WL 160, RBL 32 to LBL 32
 Figure 6 (Sheet 2)

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-11
SSD 53-A10-11
SSD 53-A20-11
SSD 53-A30-11
SSD 53-A40-11

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To inspect aluminum bulkhead outer chord, BS620/600K, S-14 to S-25, left and right, for cracks between fastener holes and for cracks between edge fastener holes and edge of chord.

2. Equipment

- A. Instrument: Refer to Part 6, 51-00-00, Fig. 4.
- B. Probe: Shielded Pencil Probe per Part 1, 51-06-00, Fig. 1.
- C. Reference standards per Part 6, 51-00-00, Fig. 4.

3. Preparation for Inspection

- A. Access above floor remove floor and sidewall panels as necessary, below floor gain access through forward cargo compartment equipment bay and air conditioning compartment.
- B. Sealant - remove sealant only where necessary to perform inspection.

4. Instrument Calibration

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

5. Inspection Procedure

- A. Inspect forward and aft sides of 600K/620 bulkhead outer chords, from W1202 to S-14, and forward sides of chords below W1202 to S-25.

Bulkhead Outer Chord - BS 620/600K, S-14 to S-25
Figure 7 (Sheet 1)

Jun 15/79

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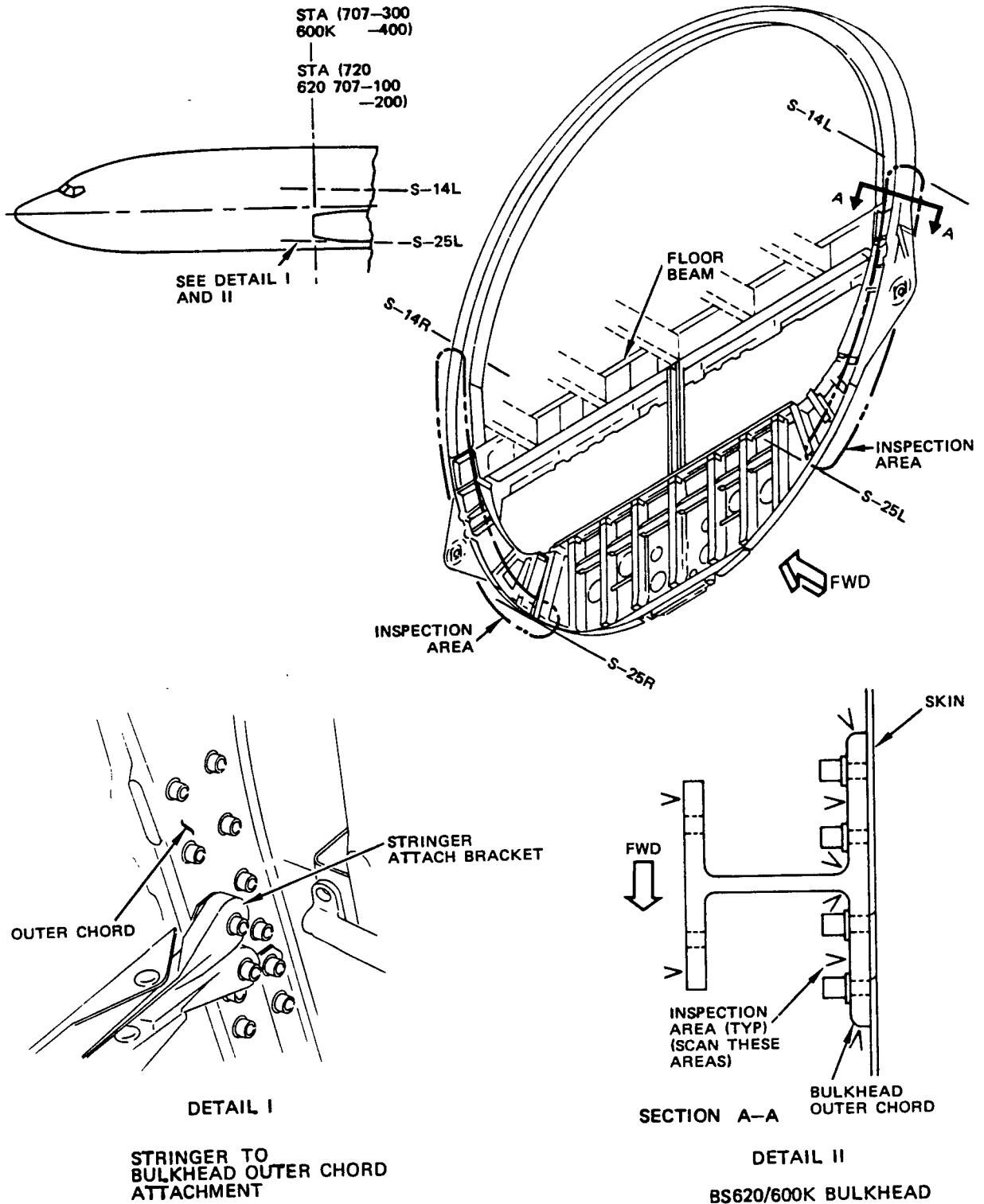
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

- B. Scan along chord edge, between fasteners, and between inner row of fasteners and chord center section, to detect through cracks between fastener holes and edge (Detail II).

- NOTE: (1) Due to the irregular inspection conditions, i.e., edge effect, close proximity to steel fasteners, some instrument adjustment may be necessary.
- (2) In areas such as where fasteners are closely spaced to stringer attachment brackets (detail 1), or where contour of forging interferes with the inspection, inspect as close to these areas as possible.

Bulkhead Outer Chord - BS 620/600K, S-14 to S-25
Figure 7 (Sheet 2)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



Bulkhead Outer Chord, - BS 620/600K, S-14 to S-25
 Figure 7 (Sheet 3)

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Part 6
 53-10-07
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COMMERCIAL JET
NONDESTRUCTIVE TEST

EFFECTIVITY
MODEL: 707
SERVICE BULLETIN
REFERENCE:
2860 THRU 2867
2949 THRU 2952

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. General

- A. This inspection procedure is recommended for the detection of fatigue cracks originating at fastener holes common to fuselage stringers and circumferential frames. The cracks characteristically start at or near the fastener holes and propagate along the faying surfaces before breaking the visible surface of the frame or stringer.
- B. This procedure uses a power driven rotating eddy current probe. This procedure is optional to and preferred over the procedure described in 53-10-00 Fig. 2.

NOTE: This procedure does not require the separation of the stringer and frame.

2. Equipment

- A. Instrument - The following two portable eddy current instruments using power driven probes have been evaluated and found suitable for this inspection.
- (1) Rechii I or Rechii II Nortec Inc.
421 N. Quay
Kennewick, Washington, U.S.A. 99336
- (2) Rototest
ESR (Elektro-Spezial-Rohmann GmbH)
Königsberger Strasse 13
6711 Beindersheim
West Germany
- B. Probes - Both of the above instruments use power-driven stainless steel bolt hole probes that are available in a variety of diameters and lengths.
- (1) Standard Probes
- (a) 0.250-inch nominal diameter. Active diameter is 0.245 inch to fit 0.250-inch hole.
- 1) Nortec P/N RA - 0.250
- 2) ESR P/N - information not available.

Fuselage Stringer and Frame Cracks at Fastener Holes
Figure 8 (Sheet 1)

NONDESTRUCTIVE TEST

(b) 0.3125-inch nominal diameter. Actual diameter is 0.3075 inch.

1) Nortec P/N RA - 0.3125

2) ESR P/N - information not available

(2) Short Probes

NOTE: Clearance is very limited in the fuselage lower lobe. The Rechil instruments have a 90-degree probe driver unit that permits inspection of this area using a short probe. The ESR rototest instrument has a flexible shaft probe attachment permitting use in limited clearance locations.

(a) Short probes with 0.250-inch nominal diameter

1) Nortec P/N RA - 0.250 short

2) ESR P/N - information not available

(b) Short probes with 0.3125-inch nominal diameter

1) Nortec P/N RA - 0.3125 short

2) ESR P/N - information not available

C. Reference Standard

(1) Aluminum reference standards with 0.030-inch corner notch at faying surface. Reference: Part 6, 51-00-00, Fig. 1, Detail I.

(2) Two reference standards are required; 0.250-inch and 0.3125-inch hole diameter.

3. Preparation for Inspection

A. Refer to the applicable service bulletin for areas requiring inspection.

B. Drill out 3/16 rivets connecting fuselage stringer flanges to the flanges of the circumferential frames. In the lower lobe of the aircraft the stringers are riveted to a fail safe chord which is attached to the circumferential frame.

NOTE: To obtain a satisfactory hole inspection, it is important that the holes in the stringer and frame (or chord) remain lined up. It is suggested that a limited number of holes be opened at one time to prevent the structure from moving.

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

- C. Ream each hole to be inspected to 0.250-inch diameter.

NOTE: Separation of the stringer and frame is not required.

4. Instrument Calibration

- A. Attach the 0.250-inch probe to the driving head.
- B. Turn on the instrument and insert the probe in the 0.250-inch reference standard.
- C. Adjust the instrument to obtain a clear readable signal from the 0.030-inch faying surface corner notch. Instrument calibration is satisfactory if no interference signal is obtained which is greater than 20% of the calibration notch signal.

5. Test Procedure

- A. Inspect each reamed hole in the stringer/frame structure.
- B. Holes with crack indications - ream to 0.3125 diameter and reinspect with a 0.3125-inch probe.
 - (1) If the crack indication is still obtained repair the structure per the service bulletin.
 - (2) If no crack indication is obtained, install a rivet and modify per the service bulletin.
- C. Crack Confirmation

Fatigue cracks at the stringer to frame connections are very tight and typically propagate along the hidden faying surfaces. There is no alternative nondestructive inspection method that can be recommended for detecting the smaller cracks.

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-19
53-A10-19
53-A20-19
53-A30-19
53-A40-19
SERVICE BULLETIN
REFERENCE: 3419

NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect cracks in the horizontal stabilizer aluminum hinge fitting on the upper flange at BS 1592 right and left sides using high frequency eddy current.
- B. To detect cracks in the bulkhead aluminum upper chord at BS 1592 right and left sides using high frequency eddy current.

2. Equipment

- A. Instrument and Reference Standards - Refer to Part 6, 51-00-00, Fig. 1.
- B. Probe - Shielded bolt hole probes per Part 6, 51-00-00, Fig. 1, and Part 1, 51-06-00, Fig. 2, Typical Eddy Current Bolt Hole Probe.

3. Preparation for Inspection

- A. Gain access by removing tailcone and BS 1592 bulkhead access door.
- B. Remove affected fasteners at inspection areas per Detail I.
- C. Clean loose dirt and paint from inside and around fastener holes.

4. Instrument Calibration

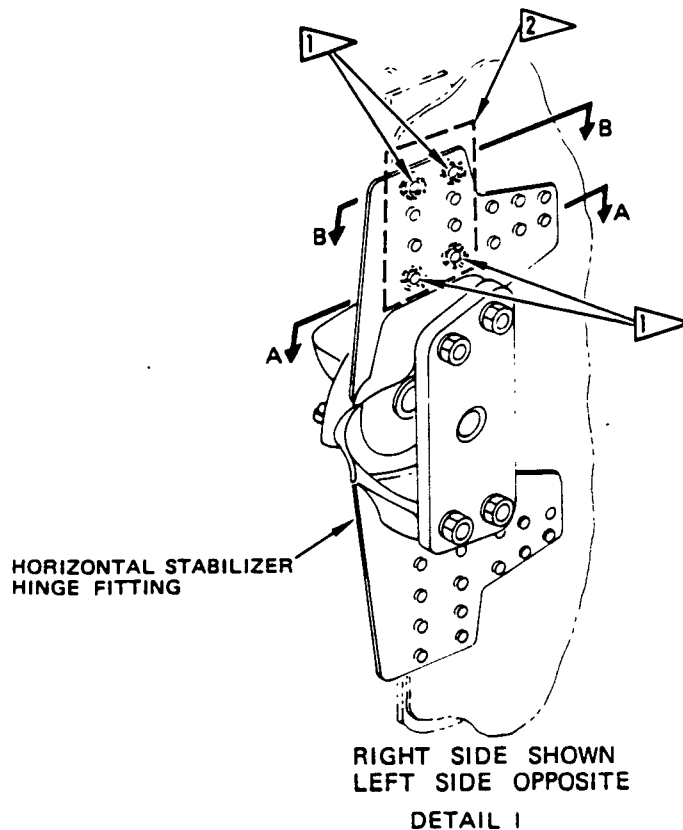
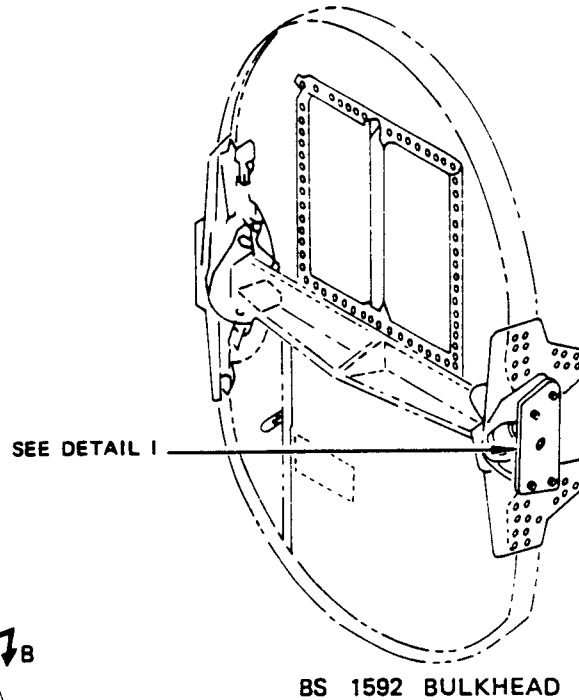
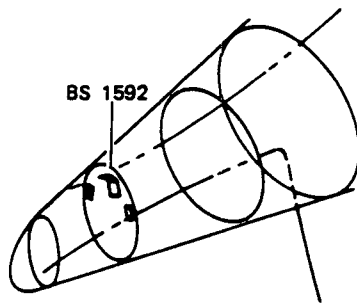
Refer to Part 6, 51-00-00, Fig. 1.

5. Inspection Procedure

- A. Inspect open fastener holes designated in Sections A-A and B-B. Be sure to closely inspect the areas at the faying surfaces between the bulkhead upper chord and the hinge fitting.
- B. Perform inspection scans per Part 6, 51-00-00, Fig. 1.

BS 1592 Upper Chord and Horizontal Stabilizer Hinge
Figure 9 (Sheet 1)

NONDESTRUCTIVE TEST

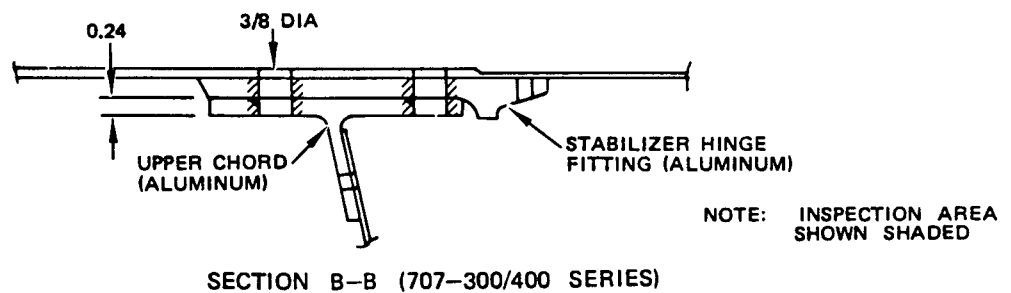
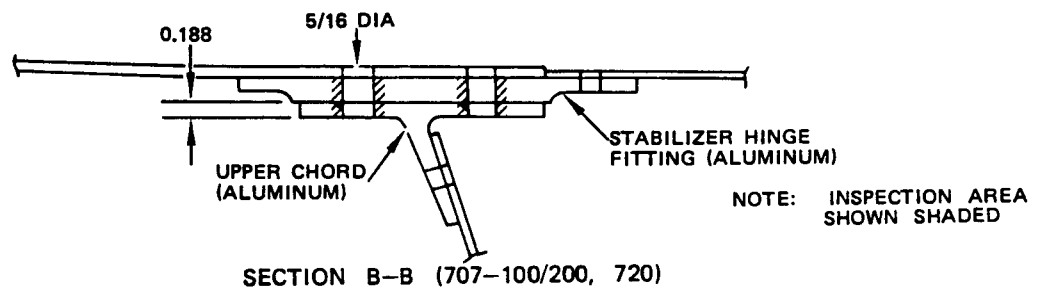
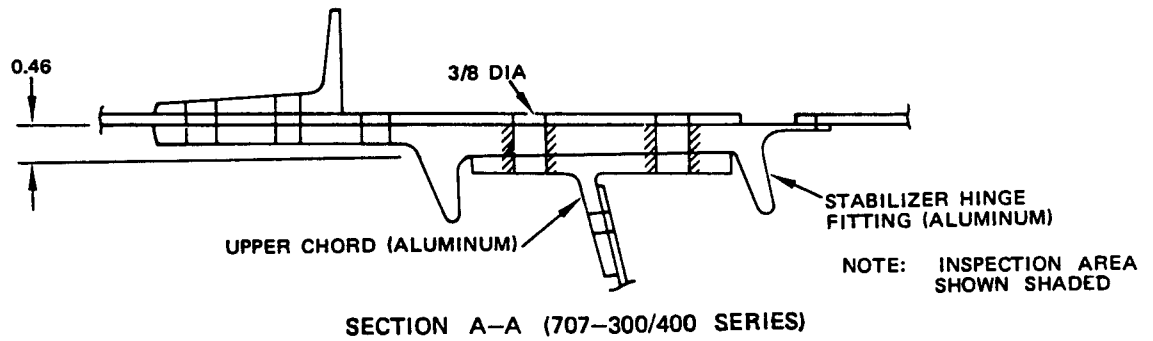
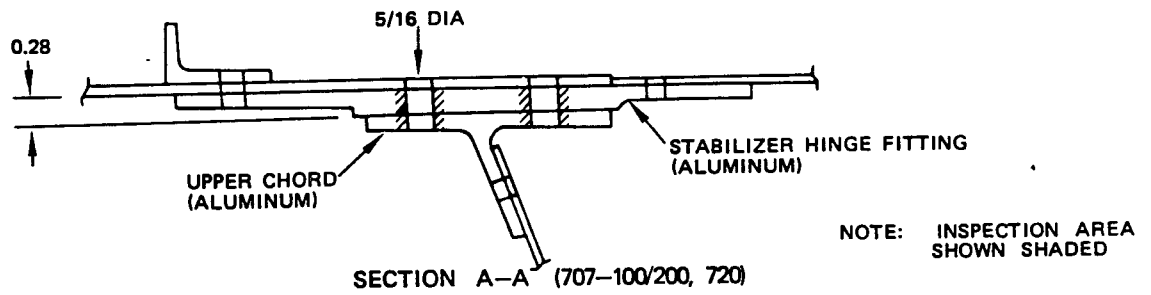


NOTES

- 1 INSPECTION OF THE OUTER FOUR BOLTHOLES ONLY, IS REQUIRED WHEN INSPECTING PER THE REQUIREMENTS OF THE SSI DOCUMENT. IF CRACKS ARE FOUND REFER TO SERVICE BULLETIN.
- 2 INSPECTION OF ALL EIGHT BOLTHOLES IS REQUIRED WHEN INSPECTING PER THE REQUIREMENTS OF THE REFERENCE SERVICE BULLETIN.

BS 1592 Upper Chord and Horizontal Stabilizer Hinge
Figure 9(Sheet 2)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



BS 1592 Upper Chord and Horizontal Stabilizer Hinge
 Figure 9 (Sheet 3)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

EFFECTIVITY

MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-12
SSD 53-A10-12
SSD 53-A20-12
SSD 53-A30-12
SSD 53-A40-12

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect surface cracks in BS 820 bulkhead outer chord aluminum forging from Stringer 14 to the bottom of the forging, right and left sides.

2. Equipment

- A. Instruments and reference standards per Part 6, 51-00-00, Fig. 4.
- B. Shielded pencil probes per Part 1, 51-06-00, Fig. 1. Use of low profile pencil probe (less than one inch in length) or right angle pencil probe is required in some areas.

3. Preparation for Inspection

A. Access

- (1) Remove local outboard floor panels and sidewall lining and insulation above WL 202, forward and aft of BS 820, left and right sides.
- (2) Access to lower lobe is through the main landing gear wheel wells.

- B. Remove Part Number 69-36729-13, Bracket, that attaches forward end of the hydraulic surge tank to the wheel well (left side only).

- C. Remove sealant from around fasteners as necessary to permit pencil probe scan around fasteners.

- D. Wipe surface clean.

4. Instrument Calibration

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

BS 820 Bulkhead Outer Chord Forging Below Stringer S-14
Figure 10 (Sheet 1)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

5. Inspection Procedure

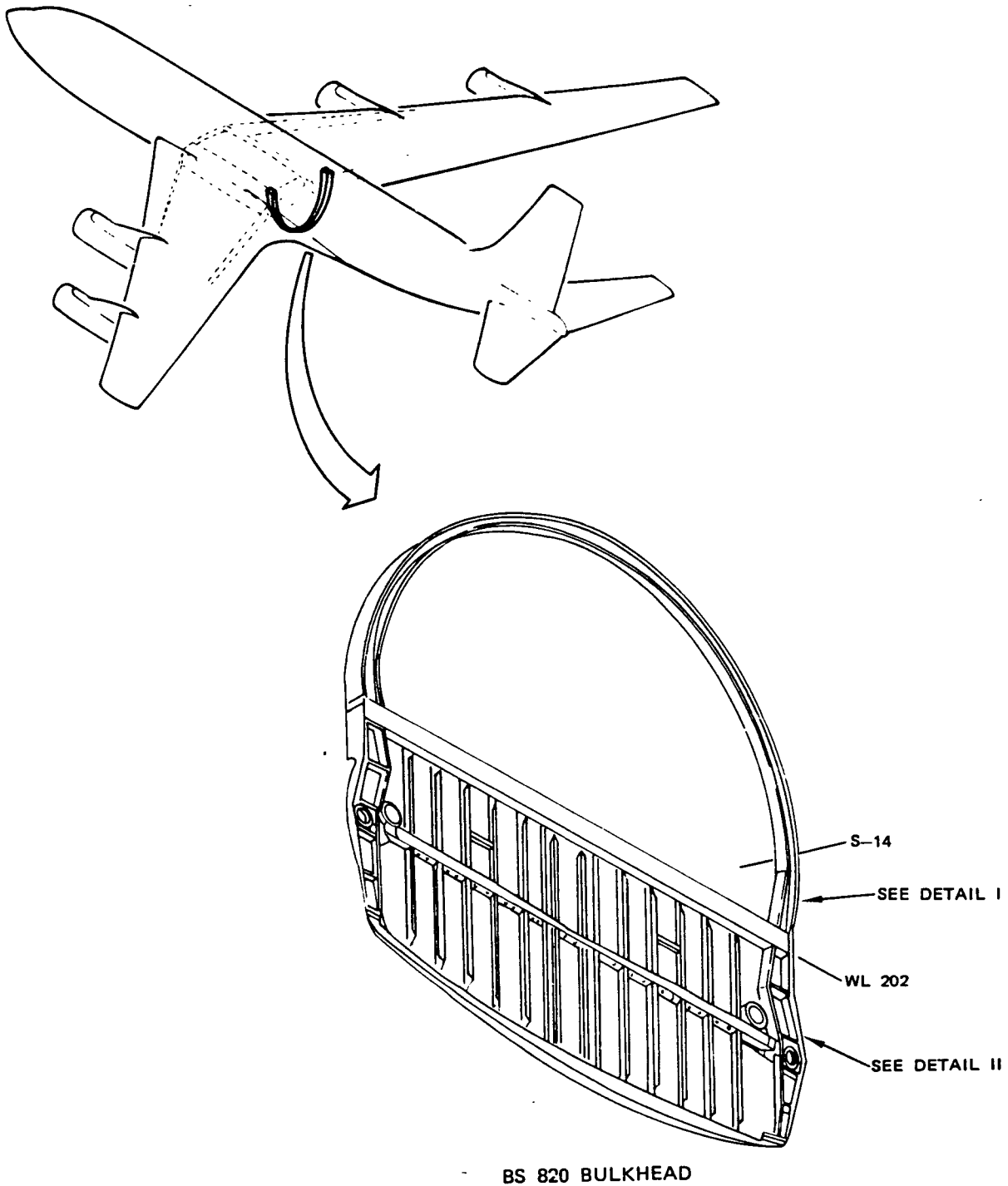
- A. From inside the cabin, inspect the accessible area of the chord forging outboard flange below Stringer 14, by scanning the probe between the fasteners and also between the edge fasteners and the edge of the chord, left and right sides (Detail I, Section A-A).
- B. At stringer to chord fittings, scan closely around the base of the fittings, paying particular attention to the edge of the chord flange (Detail I).
- C. Inspect the aft side of the outer chord forging from WL 202 to the bottom of the forging, left and right sides. Scan around all fastener holes common to the chord and web, and around fastener holes in the chord outer flange (Detail II).

BS 820 Bulkhead Outer Chord Forging Below Stringer S-14
Figure 10 (Sheet 2)

Sep 15/79

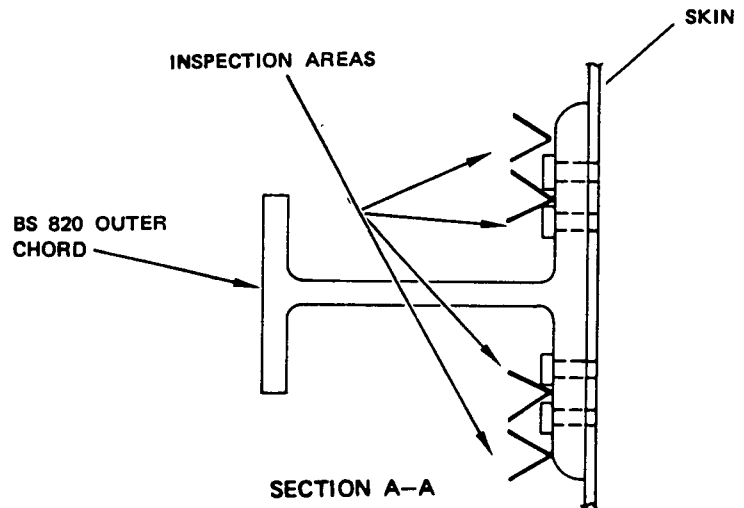
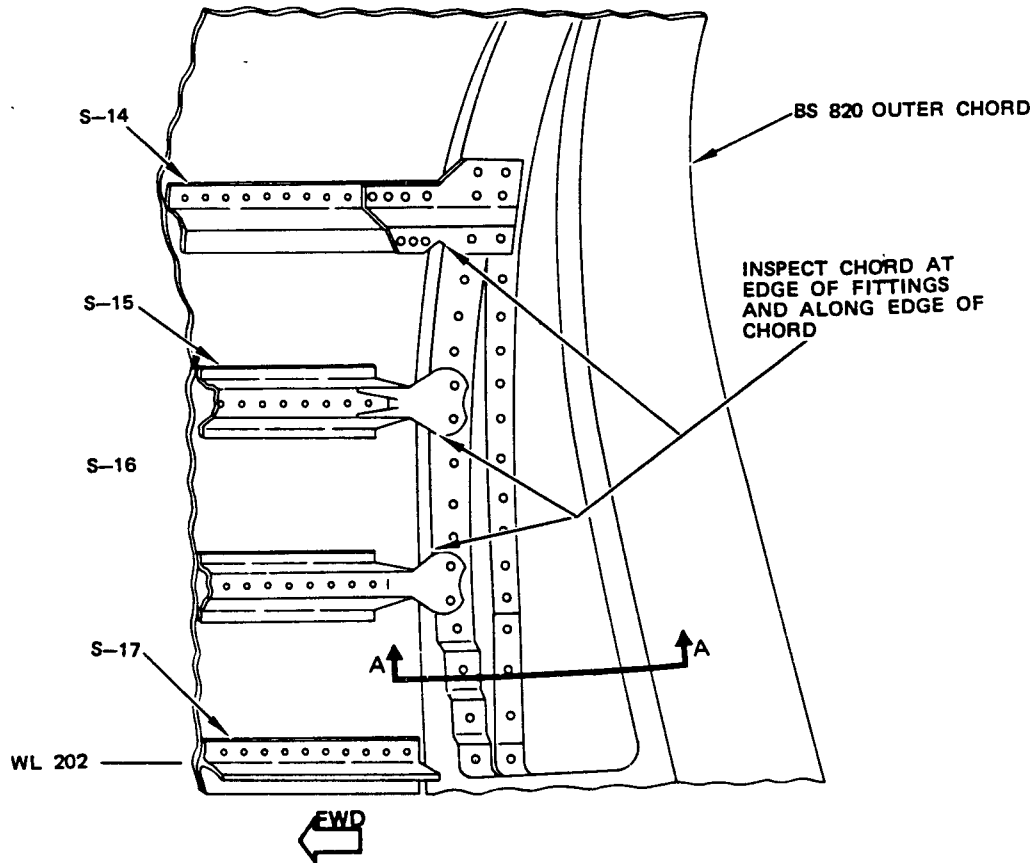
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53-10-07
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COMMERCIAL JET
NONDESTRUCTIVE TEST



BS 820 Bulkhead Outer Chord Forging Below Stringer S-14
Figure 10 (Sheet 3)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

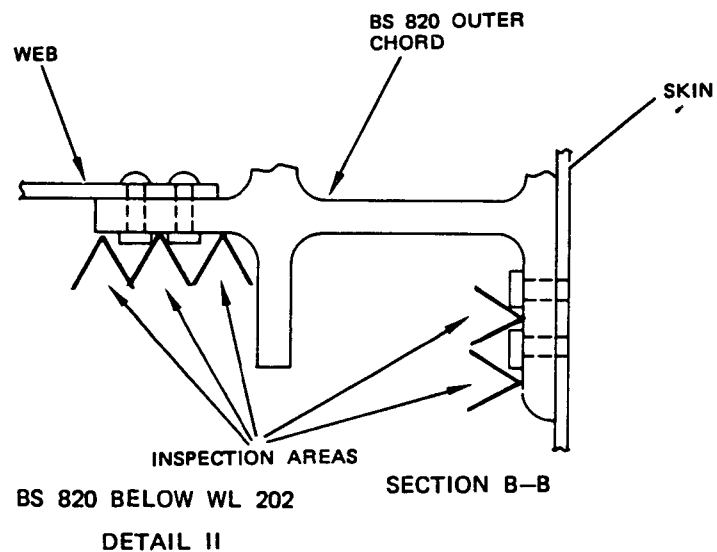
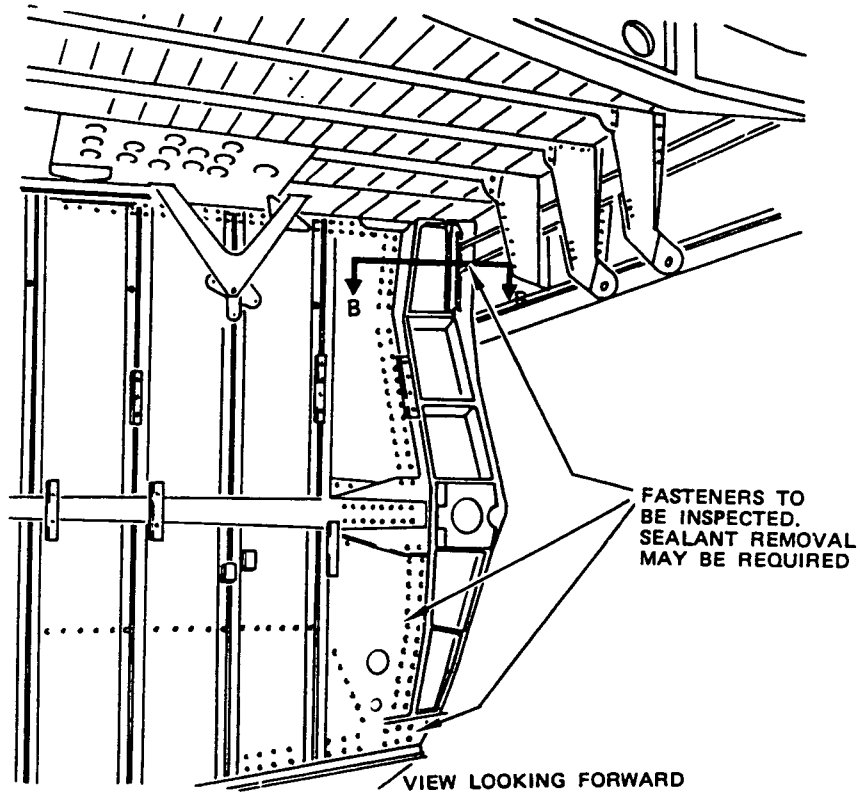


BS 820 OUTER CHORD ABOVE WL 202

DETAIL I

BS 820 Bulkhead Outer Chord Forging Below Stringer S-14
 Figure 10 (Sheet 4)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



BS 820 Bulkhead Outer Chord Forging Below Stringer S-14
Figure 10 (Sheet 5)

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-16
SSD 53-A10-16
SSD 53-A20-16
SSD 53-A30-16
SSD 53-A40-16

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect cracks in BS 960 bulkhead outer chord and bulkhead fitting flanges below the floor beam (WL 202) in area surrounding attachment fasteners.
- B. To inspect BS 960 bulkhead failsafe strap for cracks between BBL 11 and BBL 20, left and right sides, in area surrounding attachment fasteners.
- C. Eddy current inspection of BS 960 bulkhead outer chord and strap between BBL 11 and BBL 20, left and right sides, is necessary because of unsatisfactory access for ultrasonic inspection in this area. See Part 4, 53-10-07, Fig. 4, for ultrasonic inspection of applicable areas of the BS 960 bulkhead outer chord and failsafe strap.

2. Equipment

- A. Eddy current instrument per Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.
- B. Right angle shielded pencil probe per Part 1, 51-06-00, Fig. 1, Typical Eddy Current Probes. The following instruments are suitable:
 - (1) Part Number P-90.11.14-4
 NDT Product Engineering
 P.O. Box 423
 Renton, WA 98057
 - (2) Part Number VM-100-AS
 VM Products
 7420 Park Ave. No. 20
 Tacoma, WA 98408
- C. Reference standard per Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

BS 960 Bulkhead Outer Chord and Bulkhead Fitting
 Figure 11 (Sheet 1)

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BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

3. Preparation for Inspection

A. Forward side of BS 960 bulkhead.

- (1) The area is accessible from main landing gear wheel well.
- (2) Remove sealant from around indicated fastener ends in bulkhead fitting and from edge of bulkhead fitting outer flange that contacts the strap splice angle (Detail II).

B. Aft side of BS 960 bulkhead.

- (1) The area is accessible from the aft cargo compartment.
- (2) Remove air conditioning duct and outflow valve cover on aft side of BS 960 bulkhead between LBL 10 and RBL 10, and hardware interfering with access to bulkhead chord and strap (Detail I).
- (3) Remove insulation and bulkhead, sidewall, and floor panels as necessary to expose BS 960 bulkhead outer chord below WL 202.
- (4) Wipe inspection surface clean.

4. Instrument Calibration

- A. Perform instrument calibration per Part 6, 51-00-00, Fig. 4, Flat or Moderately Curved Surfaces of Aluminum Parts.

5. Inspection Procedure

A. Forward side of BS 960 bulkhead below WL 202 (Detail II).

- (1) Inspect bulkhead fitting outer flange about fastener ends common to chord and skin.
- (2) Inspect bulkhead fitting flange and web around edge of stringer ties.
- (3) Inspect bulkhead fitting about fastener ends common to chord inner tang and bulkhead web.
- (4) Inspect edge of bulkhead fitting outer flange adjacent to splice angle.

NOTE: When adjacent structure does not permit inspection about a fastener end, inspect the member as closely as possible around the fastener hole.

BS 960 Bulkhead Outer Chord and Bulkhead Fitting
Figure 11 (Sheet 2)

NONDESTRUCTIVE TEST

B. Aft side of BS 960 bulkhead below WL 202 (Detail I).

- (1) Inspect bulkhead fitting outer flange and horizontal and vertical flanges of chord about fastener ends.
- (2) Inspect about fastener ends in strap between left BBL 20 and right BBL 20.
- (3) Inspect chord flanges, bulkhead fitting flange, and web around edge of stringer ties.

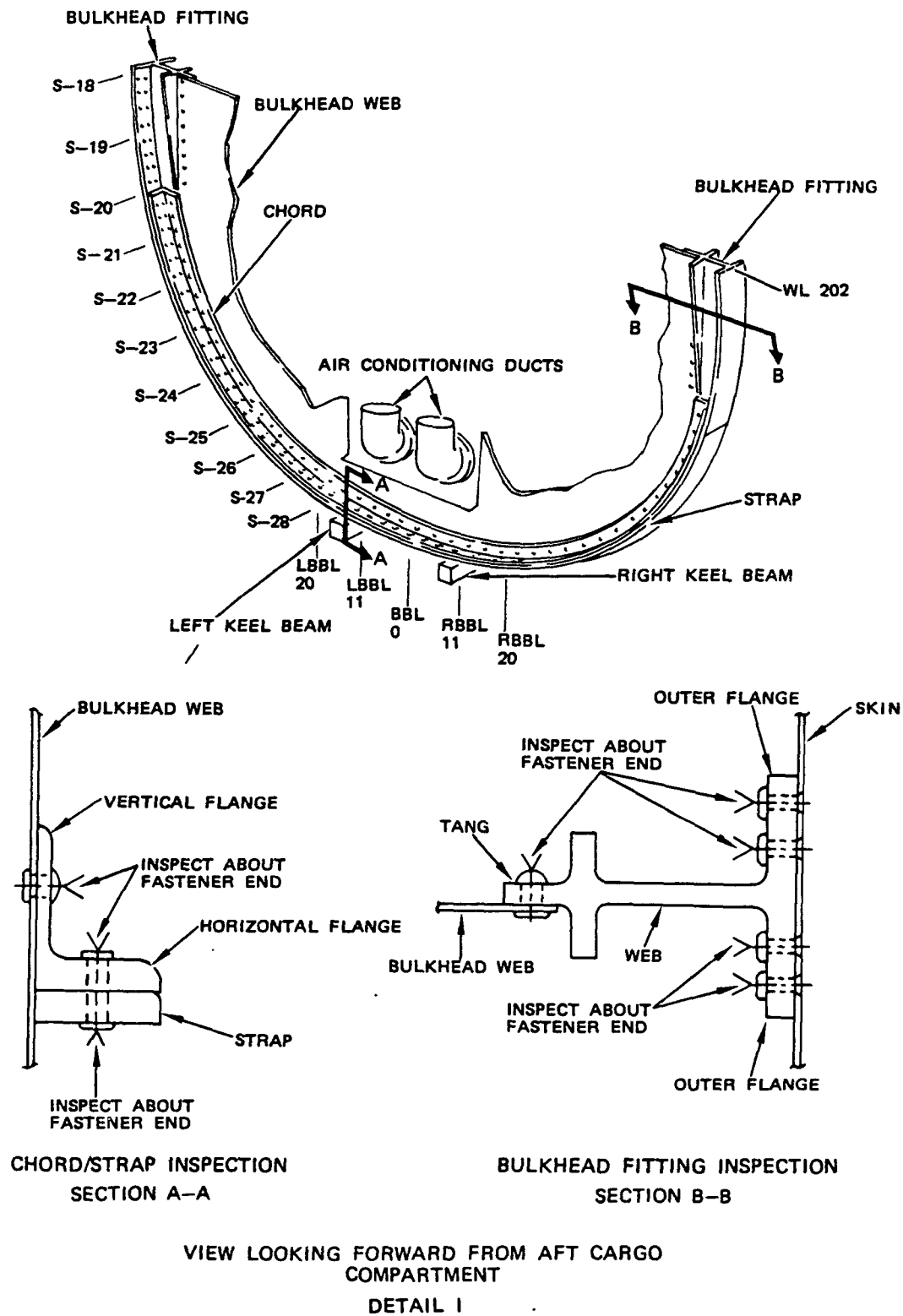
NOTE: When adjacent structure does not permit inspection about a fastener end, inspect the member as closely as possible around the fastener hole.

BS 960 Bulkhead Outer Chord and Bulkhead Fitting
Figure 11 (Sheet 3)

Sep 15/79

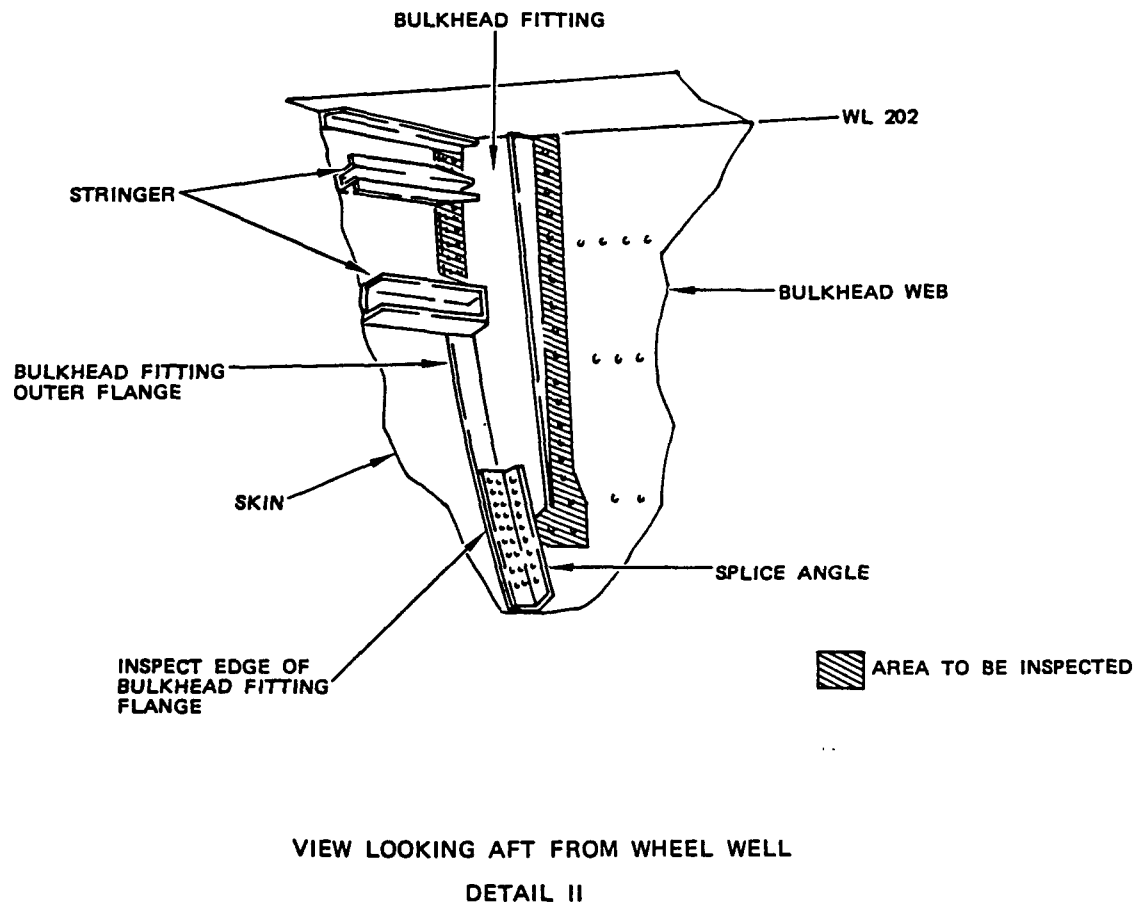
Part 6
53-10-07
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COMMERCIAL JET
NONDESTRUCTIVE TEST



BS 960 Bulkhead Outer Chord and Bulkhead Fitting
 Figure 11 (Sheet 4)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



BS 960 Bulkhead Outer Chord and Bulkhead Fitting
Figure 11 (Sheet 5)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

EFFECTIVITY
Model 707/720
SSI Document
(D6-44860)
REFERENCE:
SSD 53-A00-22
53-A10-22
53-A20-22
53-A30-22
53-A40-22

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

To detect cracks in the BS 1505.87 bulkhead outer chord from S1 to S10 (left and right) using high frequency eddy current.

2. Equipment

A. Instruments

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

B. Probes

- (1) Two probe types are required:
 - (a) Shielded pencil probe per Part 1, 51-06-00, Figure 1.
 - (b) Bolt hole probe per Part 6, 51-00-00, Figure 1.

C. Reference Standards

- (1) Bolt hole with aluminum/steel interface:
 - (a) Manufacture per Detail I.
- (2) Flat or moderately curved surface:
 - (a) Refer to Part 6, 51-00-00, Figure 4.

3. Prepare for Inspection

- A. Gain access to BS 1505.87 bulkhead through the horizontal stabilizer jackscrew access door.

BS 1505.87 Bulkhead Outer Chord S1 to S10
Figure 12 (Sheet 1)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

B. Remove end fasteners in bulkhead outer chord splice plates, LH and RH sides. Bolt holes may require a clean-up ream to remove gouges and corrosion. See Detail II.

C. Wipe surfaces clean.

4. Calibrate Instrument

A. Bolt hole Inspection

- (1) Calibrate instrument per Part 6, 51-00-00, Figure 1. Except; adjust probe collar to position center of probe coil in the aluminum member 0.060 inch below the aluminum/steel interface of the reference standard per Detail I.

B. Surface inspection with a shielded pencil probe.

- (1) Calibrate per Part 6, 51-00-00, Figure 4.

C. Inspection using a bolt hole probe as a surface probe.

- (1) Calibrate per Part 6, 51-00-00, Figure 4. Except; use 0.006 inch liftoff compensation (equivalent to two sheets of paper).

5. Inspection Procedure

A. Bolt hole inspection at the splice plate end fastener holes. See Detail II.

- (1) Calibrate instrument per 4.A.
- (2) Inspect per Part 6, 51-00-00, Figure 1. Except; make hole scans in the aluminum chord with probe coil 0.060 inch from inner and outer steel splice plates.

B. Surface crack inspection. See Detail II.

- (1) Calibrate per 4.B.
- (2) Scan chord around designated fastener ends per Part 6, 51-00-00, Figure 6. Where chord vertical flange is covered by structure scan in vertical flange radius adjacent to fastener.
- (3) Scan chord at all other designated locations.

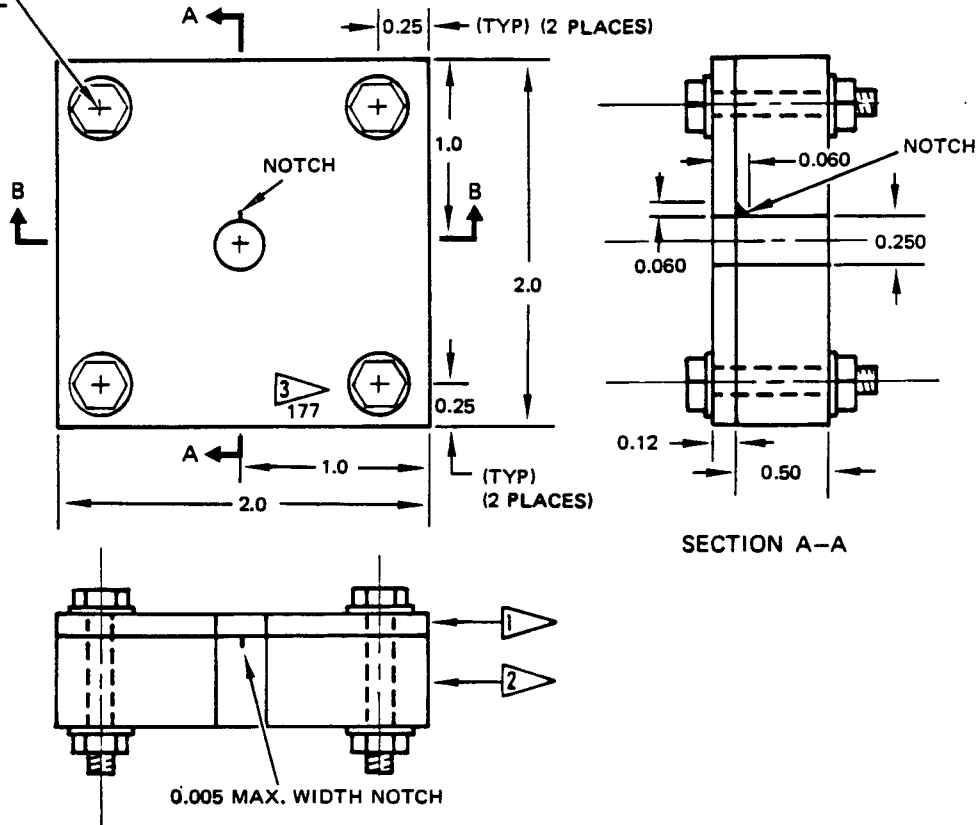
NONDESTRUCTIVE TEST

C. Surface crack inspection using a bolt hole probe. See Detail III.

- (1) Calibrate per 4.C.
- (2) Position probe coil at the center of the upper chord vertical flange and adjust probe collar to ride against splice strap. See Detail III, Section A-A.
- (3) Manipulate probe to obtain optimum coil orientation to edge of chord vertical flange.
- (4) Adjust balance/meter position control to bring needle to mid scale.
- (5) Scan upper chord vertical flange from splice gap to end of splice strap.
- (6) Cracks will be indicated by a rapid meter response as probe coil crosses over the crack.

NONDESTRUCTIVE TEST

3/16 BOLTS (4 PLACES)
FASTENER AND NUT TYPE
NOT CRITICAL



SECTION B-B

NOTES

- ALL DIMENSIONS ARE IN INCHES
- TOLERANCE: X.X. $\pm .05$ X.XX $\pm .02$ X.XXX $\pm .005$ (EXCEPT NOTCH)
- NOTCH TOLERANCE: $\pm .002$, $-.000$
- FINISH REAM HOLE AND DO NOT DEBURR
- P/N 6412-93
AVAILABLE FROM IDEAL SPECIALTY CO.

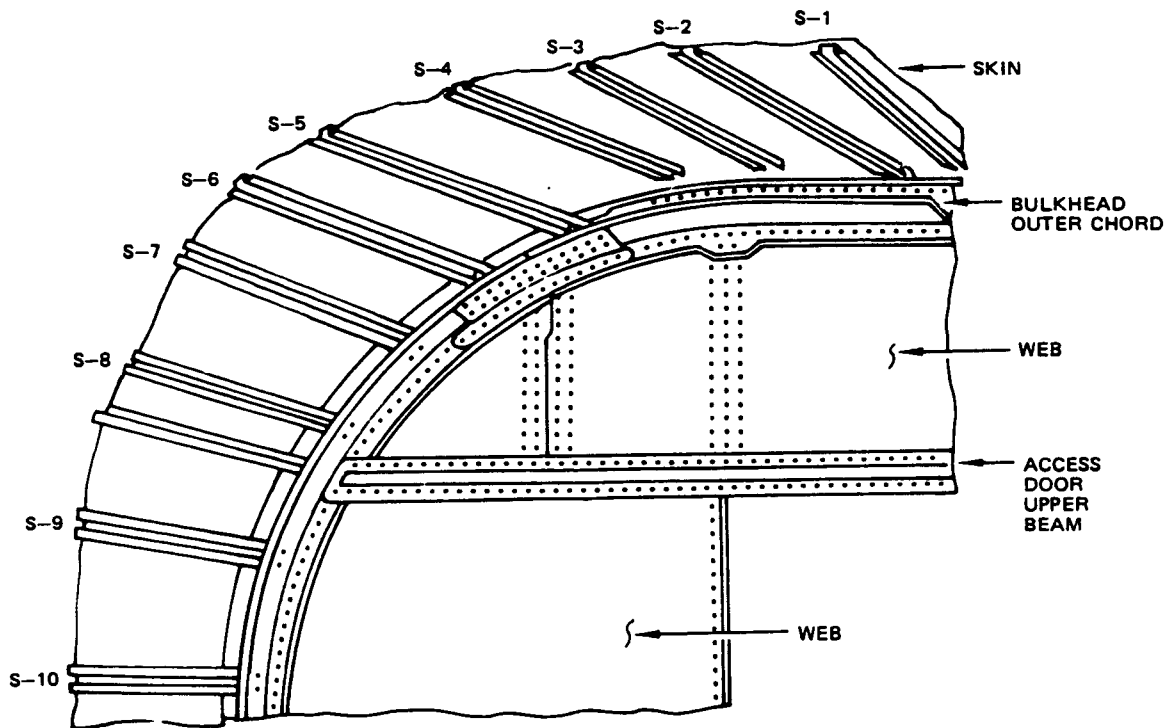
- 1 MATERIAL: 4130 STEEL
- 2 MATERIAL: 7075-T6 ALUMINUM
- 3 ETCH OR STEEL
STAMP WITH 177

REFERENCE STANDARD FOR
FASTENER HOLE INSPECTION
B S 1505.87 CHORD SPLICE

DETAIL I

BS 1505.87 Bulkhead Outer Chord S1 to S10
Figure 12 (Sheet 4)

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COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTE

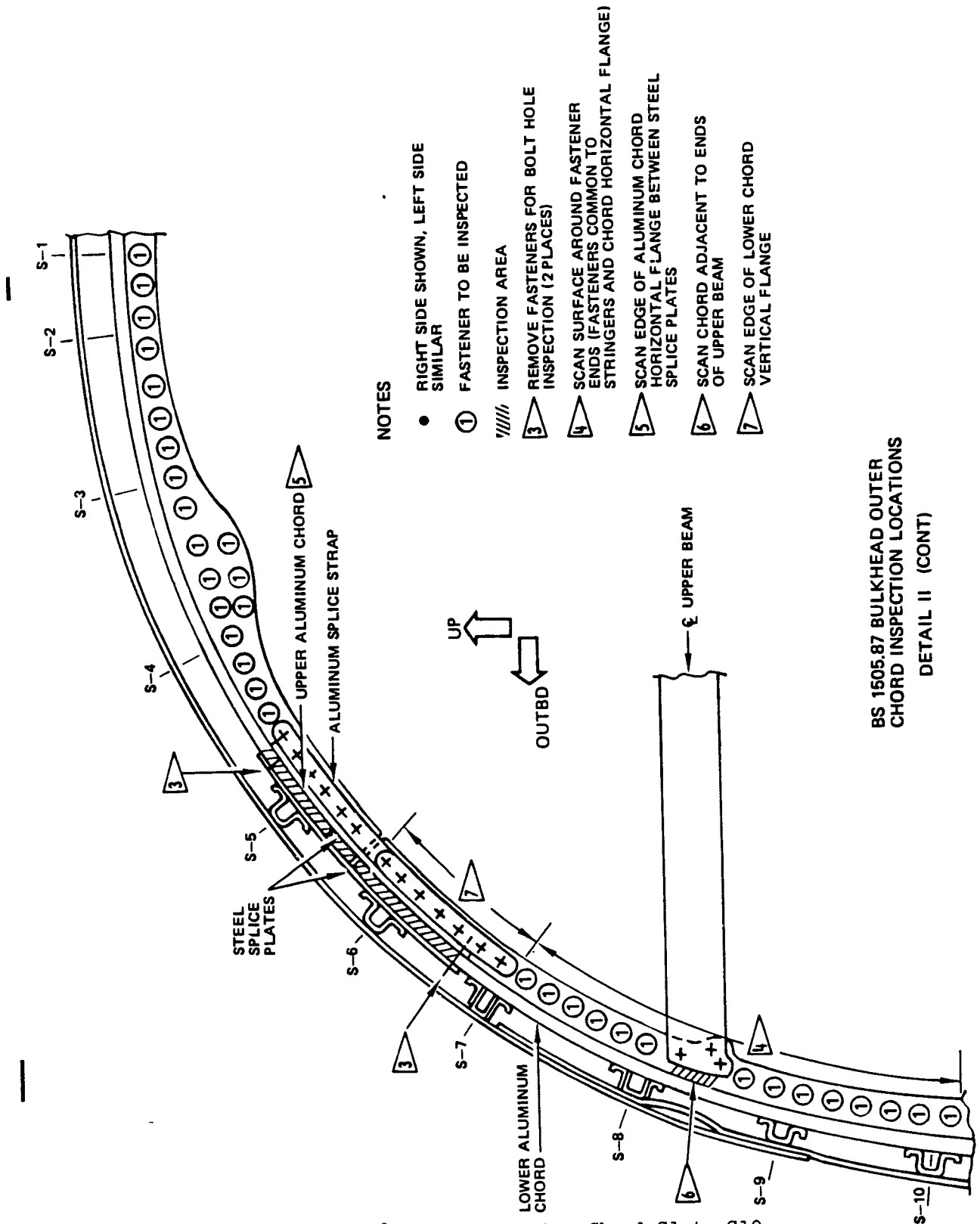
- RIGHT SIDE SHOWN, LEFT SIDE SIMILAR

**BS 1505.87 BULKHEAD OUTER
CHORD INSPECTION LOCATIONS**

DETAIL II

BS 1505.87 Bulkhead Outer Chord S1 to S10
Figure 12 (Sheet 5)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

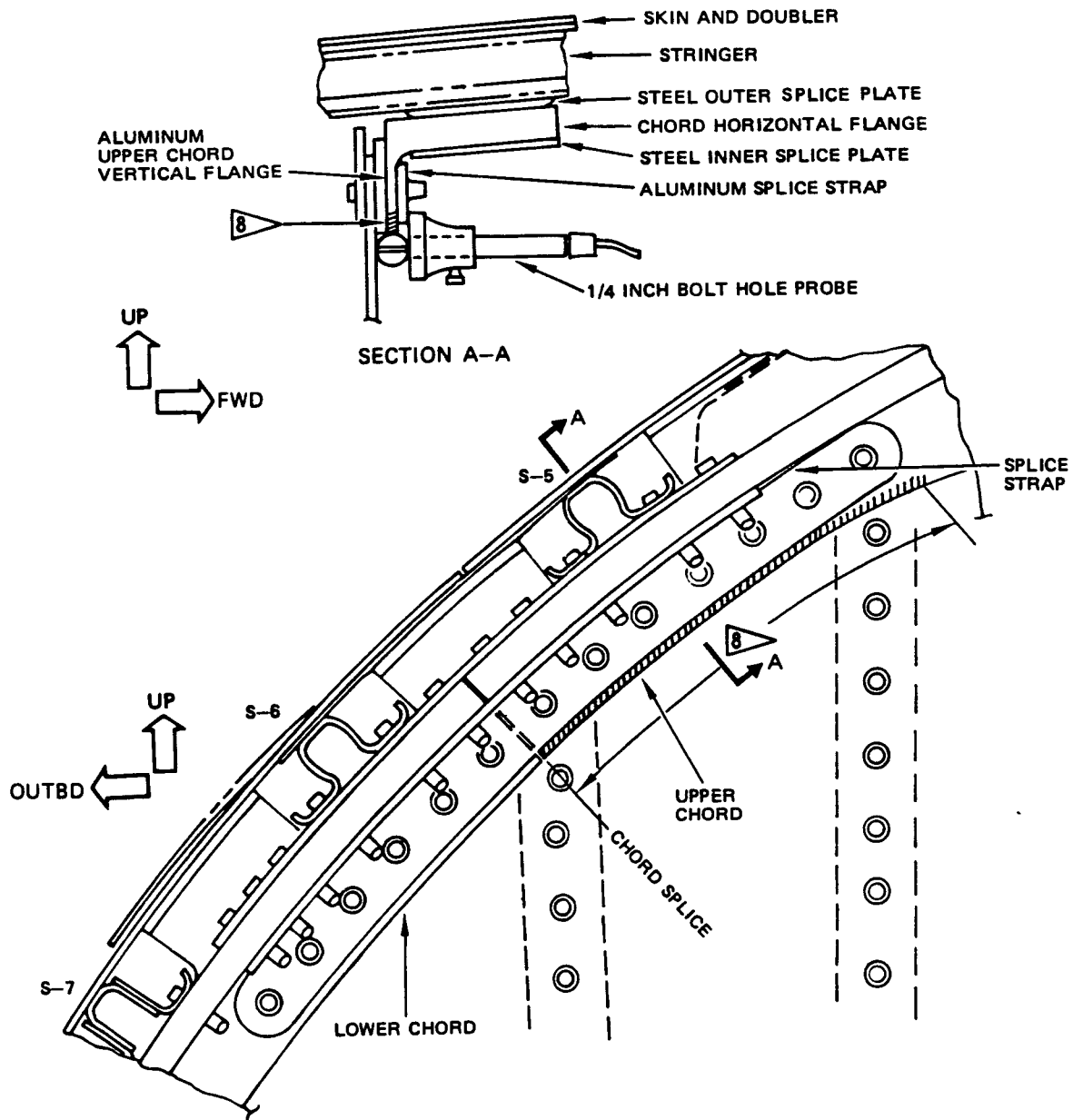


BS 1505.87 BULKHEAD OUTER
 CHORD INSPECTION LOCATIONS
 DETAIL II (CONT)

BS 1505.87 Bulkhead Outer Chord S1 to S10
 Figure 12 (Sheet 6)

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NONDESTRUCTIVE TEST



NOTES

- RIGHT SIDE SHOWN, LEFT SIDE SIMILAR
- ▨ INSPECTION AREA
- 8 SCAN EXPOSED EDGE OF UPPER CHORD VERTICAL FLANGE WITH BOLT HOLE PROBE

BS 1505.87 BULKHEAD OUTER UPPER CHORD VERTICAL FLANGE INSPECTION

DETAIL III

BS 1505.87 Bulkhead Outer Chord S1 to S10
 Figure 12 (Sheet 7)

EFFECTIVITY
MODEL: 720/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-22
53-A10-22
53-A20-22
53-A30-22
53-A40-22

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To detect surface cracks in the BS 1505.87 bulkhead outer chord steel splice plates using high frequency eddy current.

2. Equipment

- A. Any instrument that will satisfy requirements of this procedure is suitable. The following instrument was used during the development of this procedure:

MIZ 10
Zetec Inc.
1320 N.E. Mall
Issaquah, WA 98027

B. Probes

- (1) This procedure uses a probe that meets the following requirements:
- (a) Probe must be usable at 1 kHz.
 - (b) Probe must be right angle type with no more than 0.60-inch total height from coil surface to top of shank.
 - (c) Probe case (at coil) approximately 5/16 inch OD.
 - (d) Probe handle length 3.5 to 4.0 inches.

BS 1505.87 Bulkhead Outer Chord Splice Plates
Figure 13 (Sheet 1)

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NONDESTRUCTIVE TEST

(2) Probes that meet above requirements are available as follows:

(a) Part No. L32-35-1.0 K
NDT Product Engineering
P.O. Box 423
Renton, WA 98057

(b) Part NO. SPO-1305
Nortec Inc.
421 N. Quay
Kennewick, WA 99336

C. Refer to Part 6, 57-30-07, Fig. 6, Detail I, for Reference Standard.

3. Preparation for Inspection

A. Wipe surface clean.

4. Instrument Calibration

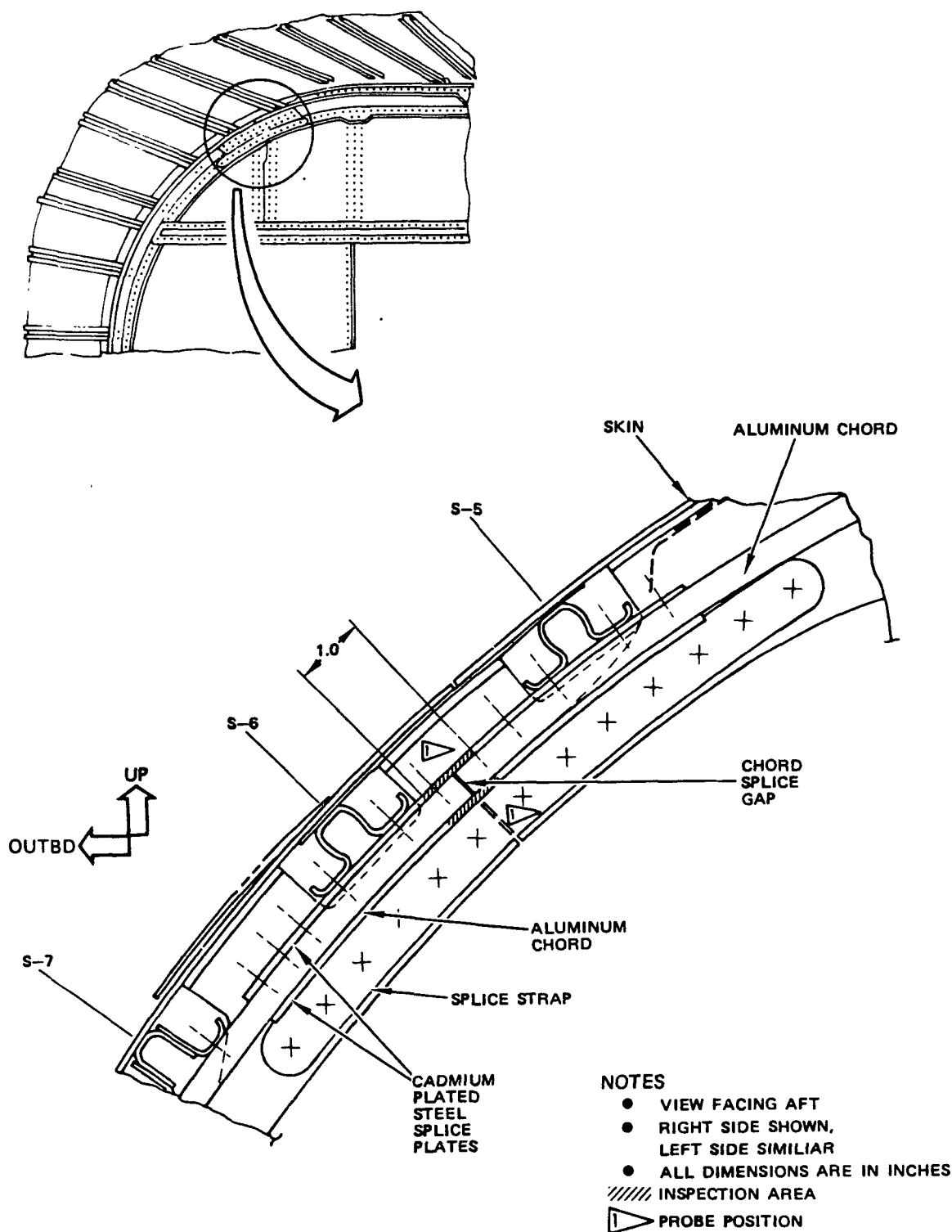
A. Calibrate per Part 6, 57-30-07, Fig. 6, Calibration for Inspection of Steel External Splice Plate.

5. Inspection Procedure

- A. Place probe on steel splice plate over splice gap. See Detail I.
- B. Scan across splice gap for approximately one inch from aft edge of plate to forward edge, inboard and outboard plates, L.H. and R.H. sides.
- C. Any location which gives a crack-like response of 20% or more requires further investigation.

BS 1505.87 Bulkhead Outer Chord Splice Plates
Figure 13 (Sheet 2)

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COMMERCIAL JET
NONDESTRUCTIVE TEST



**BS 1505.87 BULKHEAD OUTER CHORD
 STEEL SPLICE PLATE INSPECTION
 DETAIL I**

BS 1505.87 Bulkhead Outer Chord Splice Plates
 Figure 13 (Sheet 3)

EFFECTIVITY
MODEL: ALL 707 A/P'S AND 720 CUM LINE NO.'S
SEE ☒ SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-09
53-A10-09
53-A20-09
53-A30-09
53-A40-09

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NONDESTRUCTIVE TEST

- ☒ 120, 143, 149, 150, 156 thru 158, 165, 166, 172 thru 174, 177, 180 thru 182, 187 thru 190, 193 thru 199, 202 thru 204, 206 thru 208, 210, 211, 213 thru 215, 218 thru 224, 226, 230, 231, 237, 238, 243 thru 245, 249 thru 251, 256 thru 258, 262, 263, 273, 279, 281, 285, 288 thru 290, 295, 300, 304, 307, 310, 314, 319, 321, 322, 324, 377 thru 340, 347, 351, 361, 374, 380 thru 382, 384, 390, 401, 410, 414, 423, 427, 429, 433, 442, 470, 473, 474, 481, 512, 514, 581, 597, 615, 621 and 624

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To perform a high-frequency eddy current inspection of the small aft galley door cutout. To detect surface cracks in the inner and outer chords of the first frame forward and aft of the door cutout, in the inner and outer chords of the upper and lower sills and in the skin and skin doublers about the edge of door corners and hinge cutouts.

2. Equipment

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

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

- (a) P/N ED520
Magnaflux Corporation
6800 East Washington Blvd
Los Angeles, CA 90049

B. Probes -

- (1) Shielded right angle pencil probe with 0.50-inch minimum clearance. Either of the following shielded probes is acceptable:

- (a) P/N P905-50
NDT Product Engineering
P. O. Box 423
Renton, WA 98057

Fuselage - Aft Galley Door Cutout, Sills and Frames
Figure 14 (Sheet 1)

NONDESTRUCTIVE TEST

- (b) P/N VM103AS-.50
VM Products
7420 Park Ave. No. 20
Tacoma, WA 98408
- (2) Straight sheilded micro-pencil probe 0.125-inch dia. per Part 1,
51-06-00, Fig. 1. The following probes are acceptable:
 - (a) P/N MP-50
NDT Product Engineering
P.O. Box 423
Renton, WA 98057
 - (b) P/N VM200-6
VM Products
- (3) Variable extension probe. Either of the following probes is
acceptable:
 - (a) P/N PVAE-11; Variable extension with P905-15 probe NDT
Product Engineering
 - (b) P/N VM100P-18 probe
VM Products

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. Access

- (1) Skin doubler frame and sill chords inspection require galley side
panels, lining, insulation, scuff plate, top side inner reveal and
floor panels removal.

4. Instrument Calibration

A. Inspection of Aluminum Parts

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

5. Inspection Procedure

- A. Refer to Detail I for the location of specific inspection areas and to
table I for related inspection Detail number.

Fuselage - Aft Galley Door Cutout, Sills and Frames
Figure 14 (Sheet 2)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

DETAIL NO.	INSPECTION AREA
DETAIL II	DOOR FRAME AT BS 1286, UPPER LEFT-HAND CORNER OF DOOR CUTOUT
DETAIL III	DOOR FRAME AT BS 1286, LOWER LEFT-HAND CORNER OF DOOR CUTOUT <u>NOTE:</u> VARIABLE EXTENSION PROBE IS REQUIRED TO INSPECT BS 1286 FRAME LOWER INNER CHORD STRAP. ACCESS IS GAINED THROUGH FORWARD LOWER DOOR CORNER INNER FAIRING ACCESS HOLE.
DETAIL IV	DOOR FRAME AT BS 1320, UPPER RIGHT-HAND CORNER OF DOOR CUTOUT <u>NOTE:</u> IF ALTERNATE PROBE POSITION IS USED TO INSPECT THE EDGE OF THE FRAME OUTER CHORD, CARE SHOULD BE TAKEN TO PREVENT CRACK-LIKE INDICATION FROM PROBE CONTACT WITH CORROSION RESISTANT GUSSET PLATE BETWEEN S-10 AND S-11.
DETAIL V	DOOR FRAME AT BS 1320, LOWER RIGHT-HAND CORNER OF DOOR CUTOUT
DETAIL VI	DOOR FRAME AT BS 1286, UPPER SILL LEFT-HAND CORNER OF DOOR CUTOUT <u>NOTE:</u> USE MICRO STRAIGHT PROBE TO INSPECT UPPER SILL OUTER CHORD.
DETAIL VII	DOOR SILL AT BS 1320, UPPER SILL RIGHT-HAND CORNER OF DOOR CUTOUT <u>NOTE:</u> USE MICRO STRAIGHT PROBE TO INSPECT UPPER SILL OUTER CHORD.

INSPECTION DETAILS
TABLE I

Fuselage - Aft Galley Door Cutout, Sills and Frames
Figure 14 (Sheet 3)

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Page 53

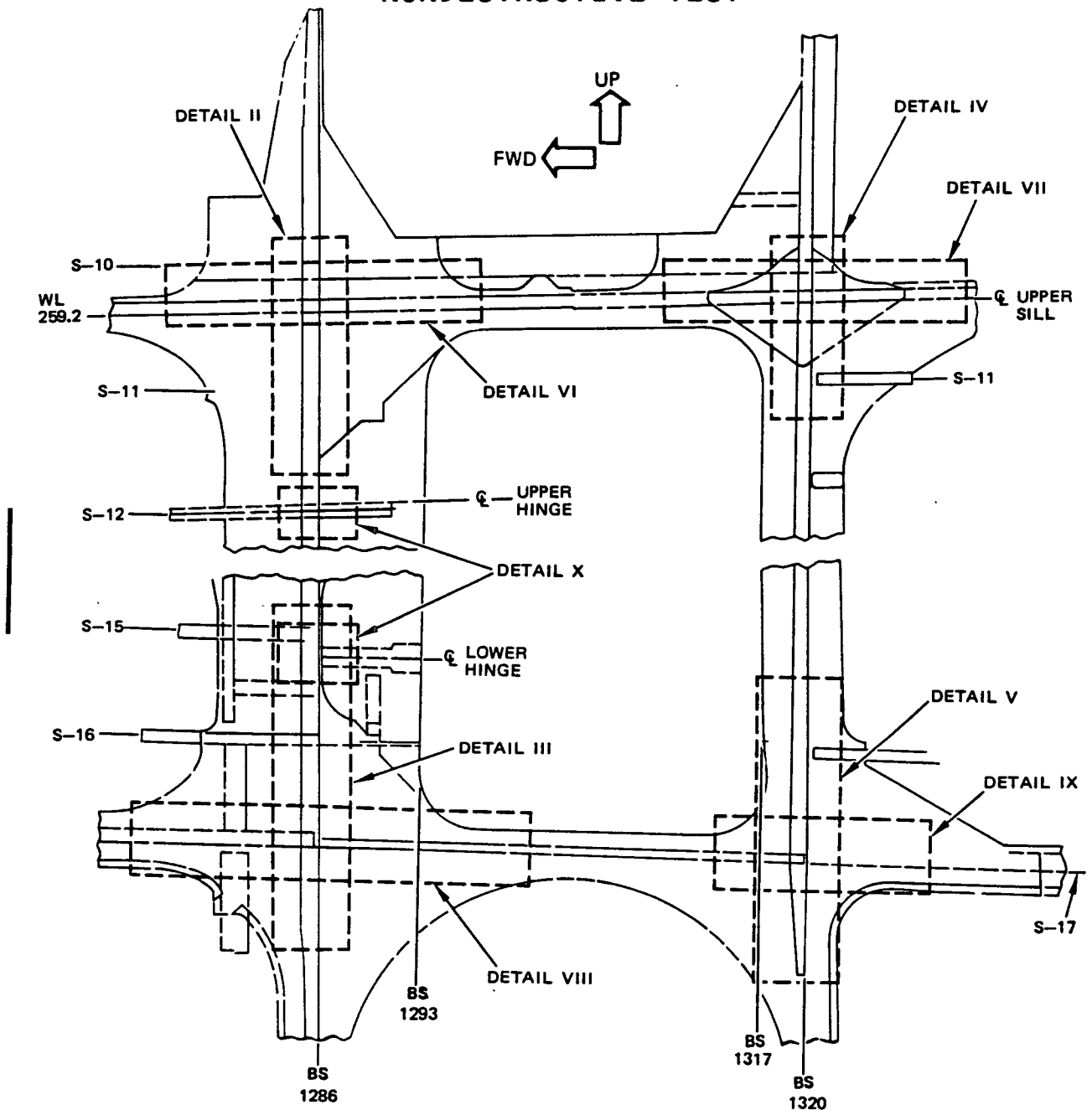
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

DETAIL NO.	INSPECTION AREA
DETAIL VIII	DOOR SILL AT BS 1286, LOWER LEFT-HAND CORNER OF DOOR CUTOUT
DETAIL IX	DOOR SILL AT BS 1320, LOWER RIGHT-HAND CORNER OF DOOR CUTOUT <u>NOTE:</u> NO INSPECTION REQUIRED OF LOWER SILL INNER CHORD OR CHORD STRAP AT BS 1320.
DETAIL X	UPPER AND LOWER HINGE CUTOUT

INSPECTION DETAILS
TABLE I (CONT)

- B. Select the shielded pencil probe configuration which permits the best access to the inspection area. Maintain perpendicularity of probe to the inspection surface within 20 degrees.
- C. Scan inspection area with probe noting all needle deflections. A crack will be indicated by a rapid deflection of the needle as the crack is passed over.

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NONDESTRUCTIVE TEST



VIEW LOOKING OUT

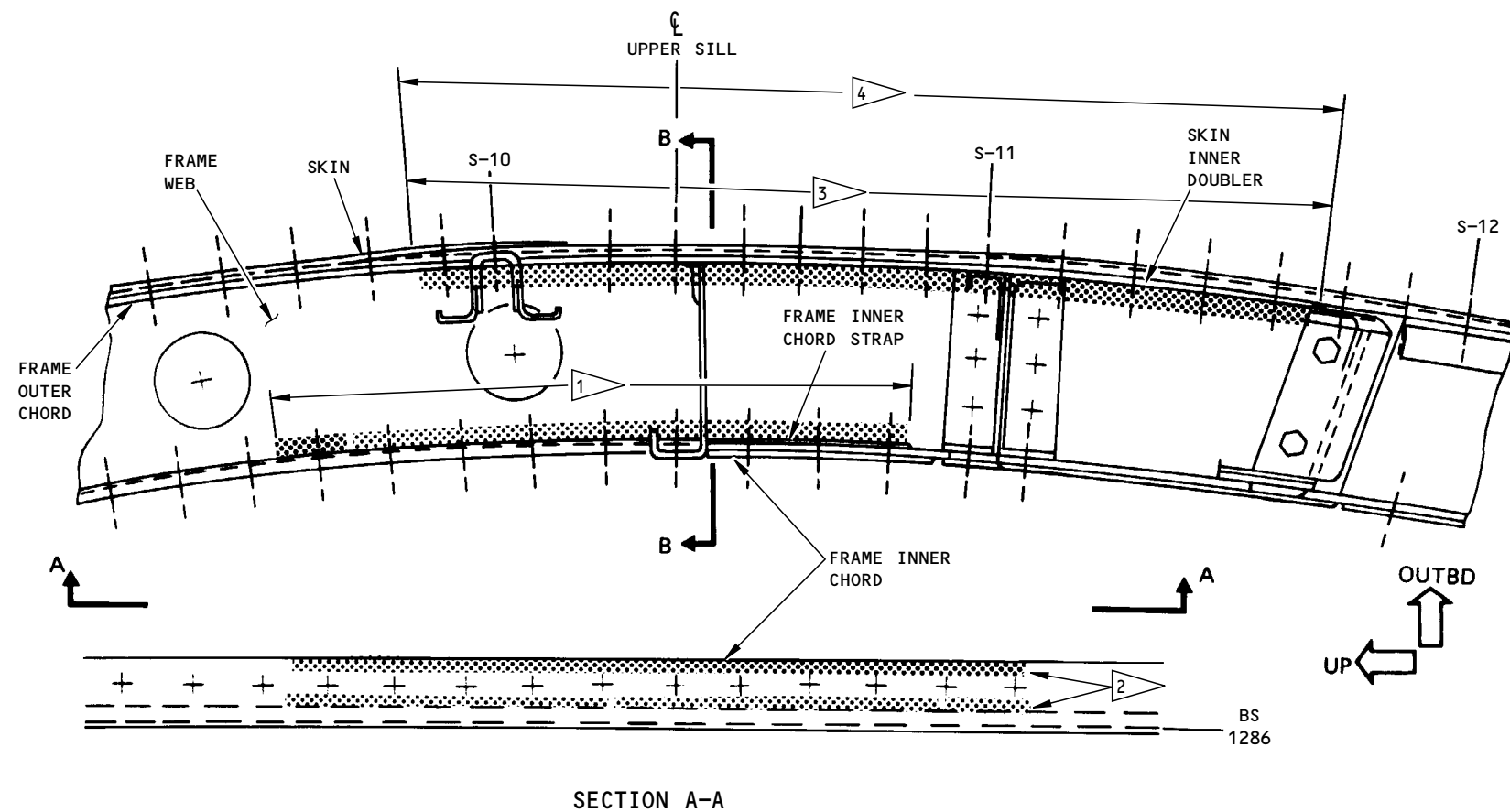
AFT GALLEY DOOR CUTOUT
 LOCATION OF INSPECTION DETAILS

DETAIL I

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 14 (Sheet 5)

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NOTES

FRAME INNER CHORD AND STRAP

- 1 INSPECT BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 2 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS

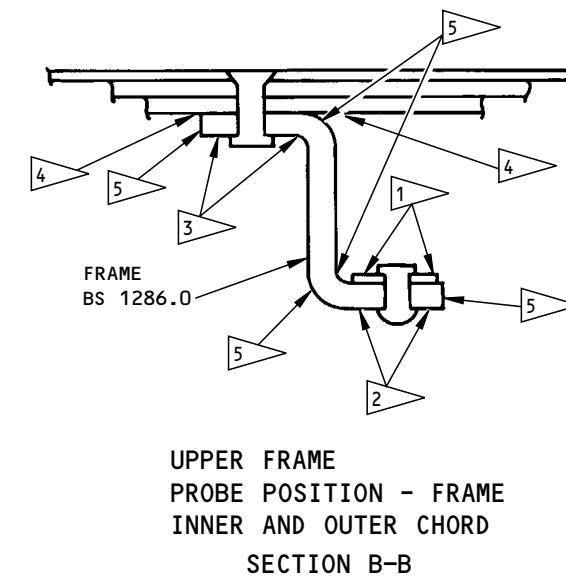
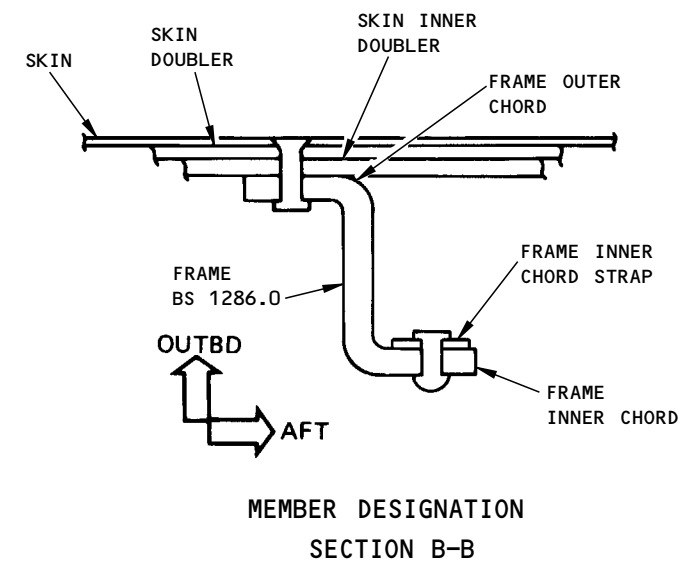
FRAME OUTER CHORD AND SKIN INNER DOUBLER

- 3 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS
- 4 SCAN BOTH SIDES OF FRAME OUTER CHORD ON SKIN INNER DOUBLER AT DESIGNATED AREAS
- 5 ALTERNATE PROBE POSITION IF ACCESS IS OBSTRUCTED. SCAN BOTH SIDES OF FASTENERS.

INSPECTION AREA

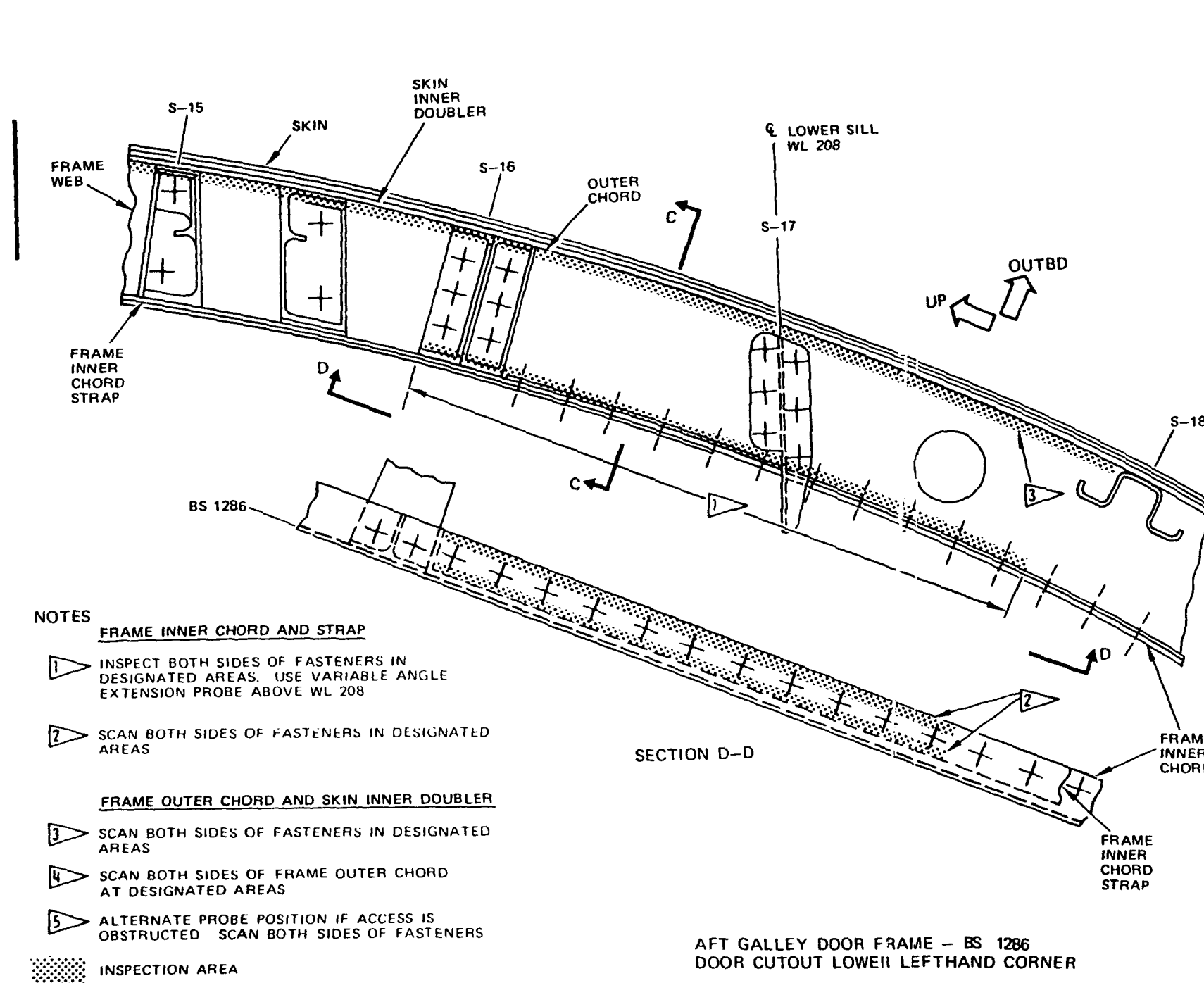
AFT GALLEY DOOR FRAME - BS 1286
DOOR CUTOUT UPPER
LEFT HAND CORNER

DETAIL II

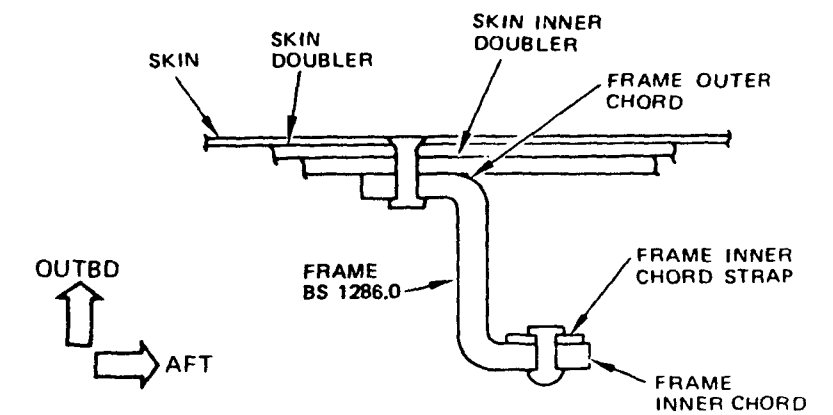


Fuselage - Aft Galley Door Cutout, Sills and Frames
Figure 14 (Sheet 6)

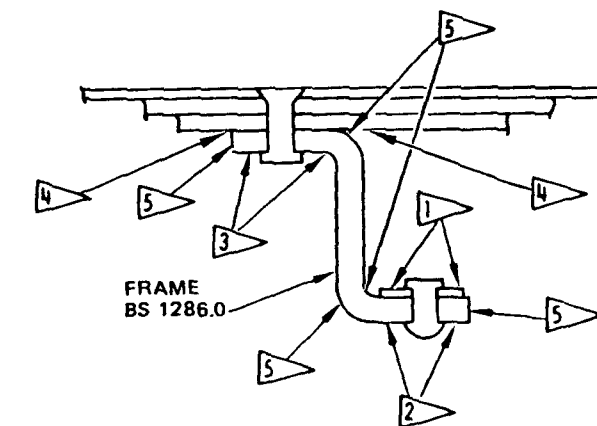
BOEING
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NONDESTRUCTIVE TEST



DETAIL III



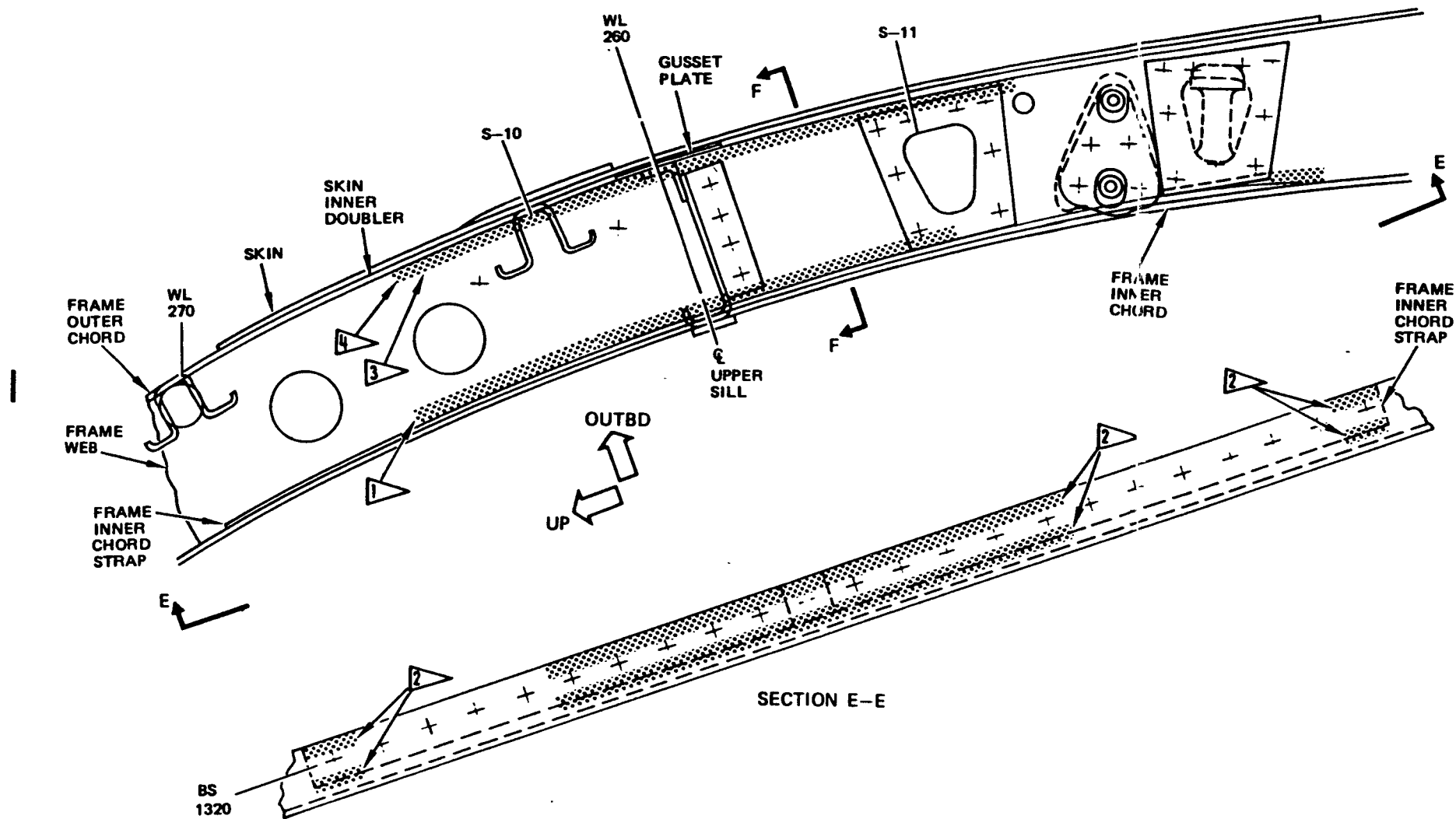
MEMBER DESIGNATION
 SECTION C-C



UPPER FRAME
 PROBE POSITION - FRAME
 INNER & OUTER CHORD

SECTION C-C

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

FRAME INNER CHORD AND STRAP

- 1 INSPECT BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 2 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS

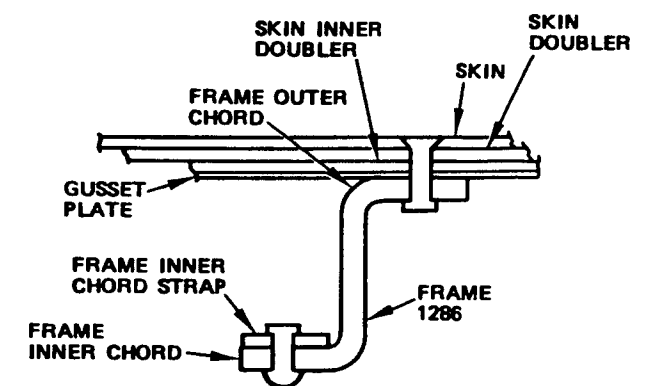
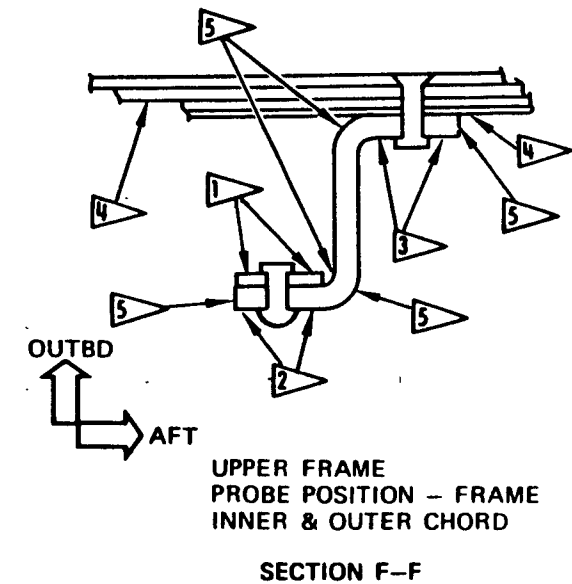
FRAME OUTER CHORD AND SKIN INNER DOUBLER

- 3 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS
- 4 SCAN BOTH SIDES OF FRAME OUTER CHORD AT DESIGNATED AREAS
- 5 ALTERNATE PROBE POSITION IF ACCESS IS OBSTRUCTED. SCAN BOTH SIDES OF FASTENERS

INSPECTION AREA

AFT GALLEY DOOR FRAME - BS 1:20
 DOOR CUTOUT UPPER RIGHTHAND CORNER

DETAIL IV



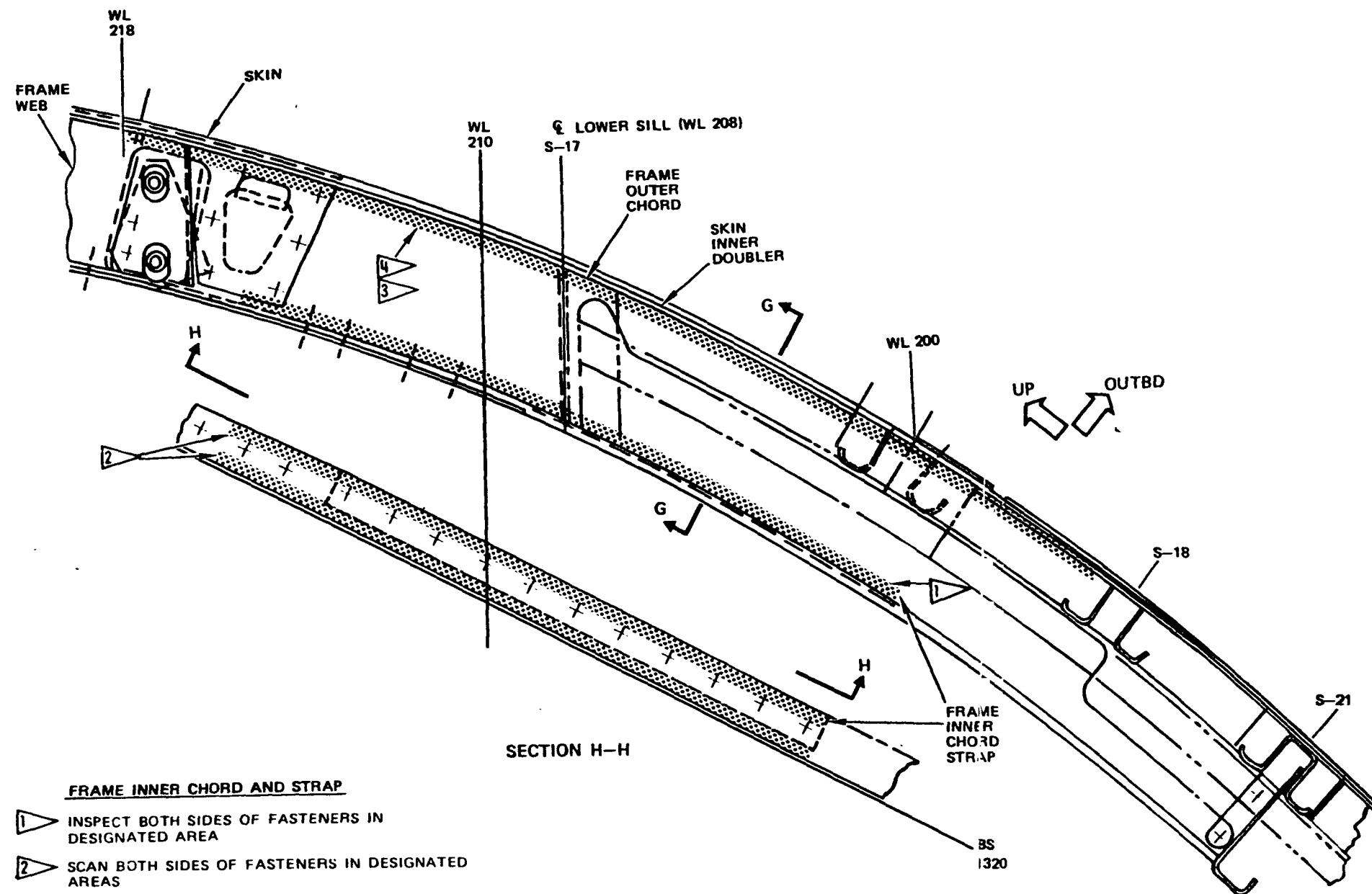
MEMBER DESIGNATION
 SECTION F-F

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 14 (Sheet 8)

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COMMERCIAL JET
NONDESTRUCTIVE TEST



FRAME INNER CHORD AND STRAP

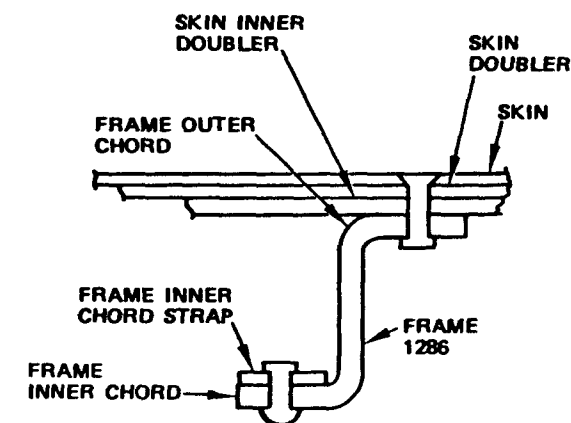
- 1 INSPECT BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 2 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS

FRAME OUTER CHORD AND SKIN INNER DOUBLER

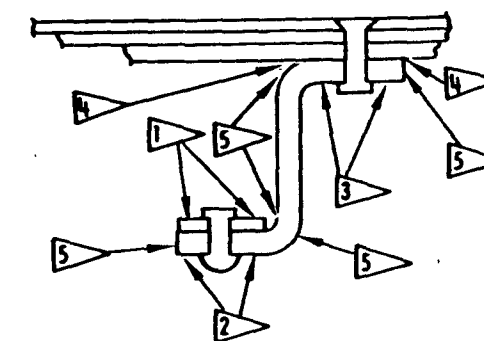
- 3 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS
- 4 SCAN BOTH SIDES OF FRAME OUTER CHORD ON SKIN INNER DOUBLER AT DESIGNATED AREAS
- 5 ALTERNATE PROBE POSITION IF ACCESS IS OBSTRUCTED. SCAN BOTH SIDES OF FASTENERS

INSPECTION AREA

AFT GALLEY DOOR FRAME — ES 1320
DOOR CUTOUT LOWER Righthand CORNER
DETAIL V



MEMBER DESIGNATION
SECTION G-G



UPPER FRAME
PROBE POSITION — FRAME
INNER & OUTER CHORD

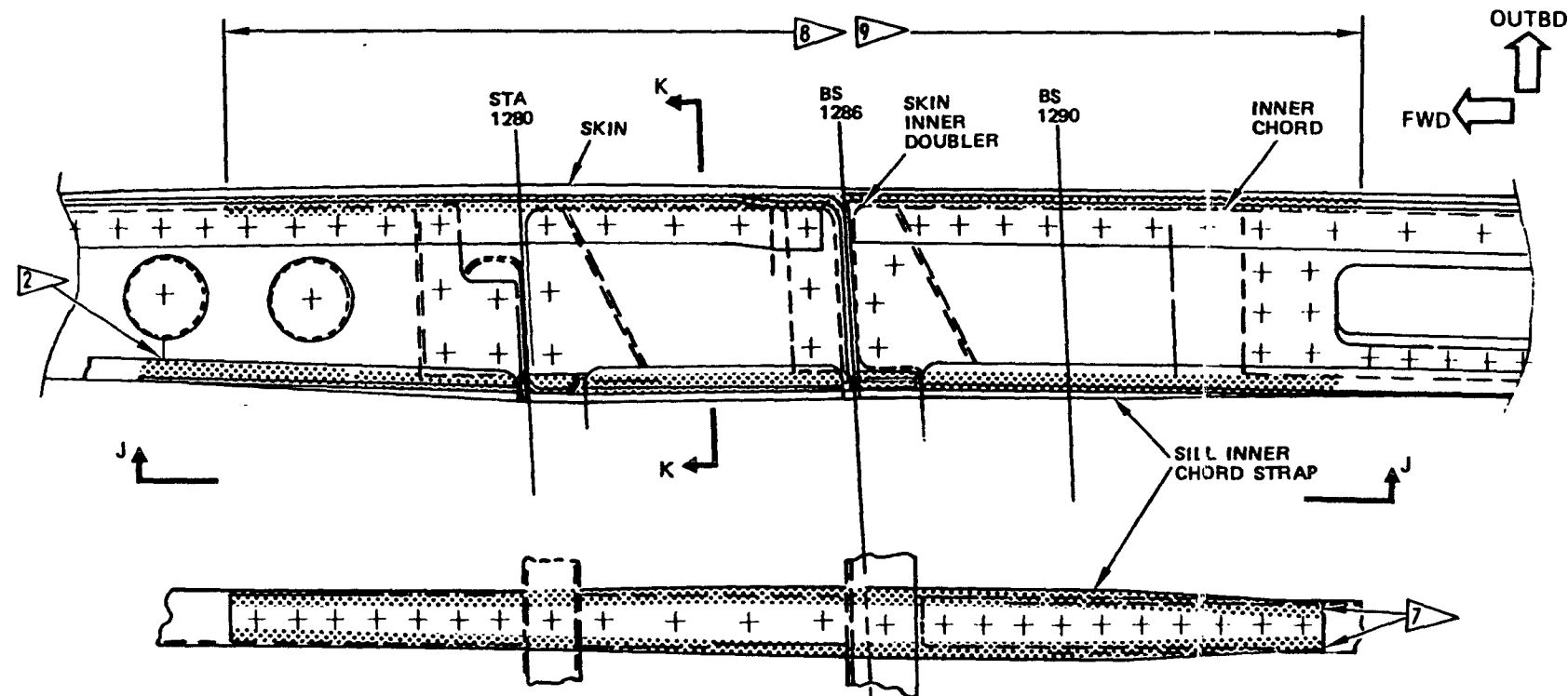
SECTION G-G

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 14 (Sheet 9)

Jun 15/81

Part 6
 53-10-07
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BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

SILL INNER CHORD AND STRAP

- 2 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS
- 5 ALTERNATE PROBE POSITION IF ACCESS IS OBSTRUCTED. SCAN BOTH SIDES OF FASTENERS
- 7 INSPECT BOTH SIDES OF FASTENERS COMMON TO INNER CHORD STRAP

SILL OUTER CHORD AND SKIN INNER DOUBLER

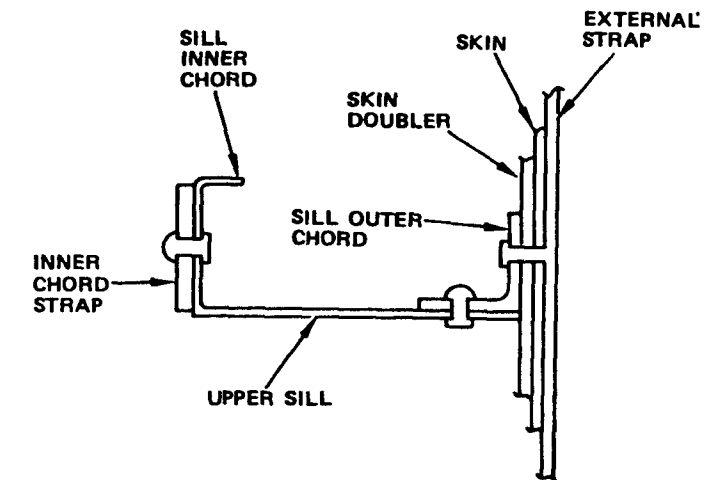
- 8 USE MICRO STRAIGHT PROBE & SCAN SILL OUTER CHORD
- 9 SCAN ADJACENT TO BOTH SIDES OF SILL OUTER CHORD WITH PROBE ON SKIN INNER DOUBLER

INSPECTION AREA

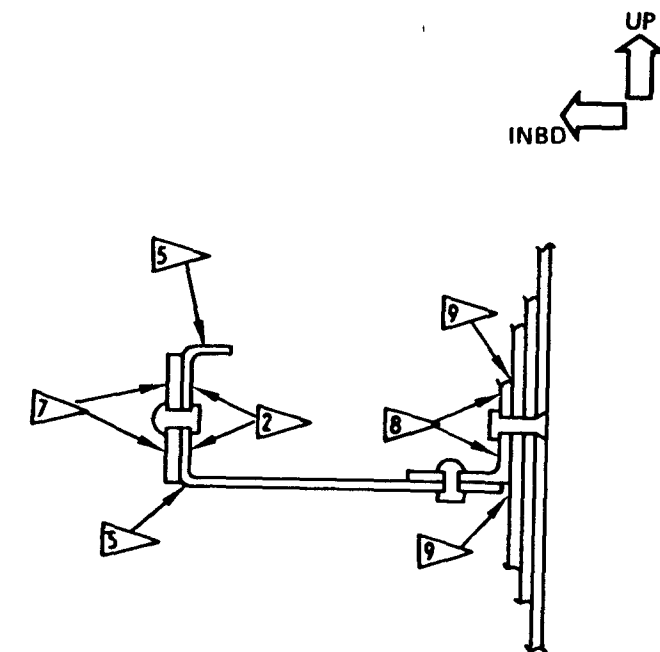
SECTION J-J

AFT GALLEY DOOR FRAME - BS 1286
 DOOR CUTOUT UPPER SILL LEFTHAND CORNER

DETAIL VI



MEMBER DESIGNATION
 SECTION K-K

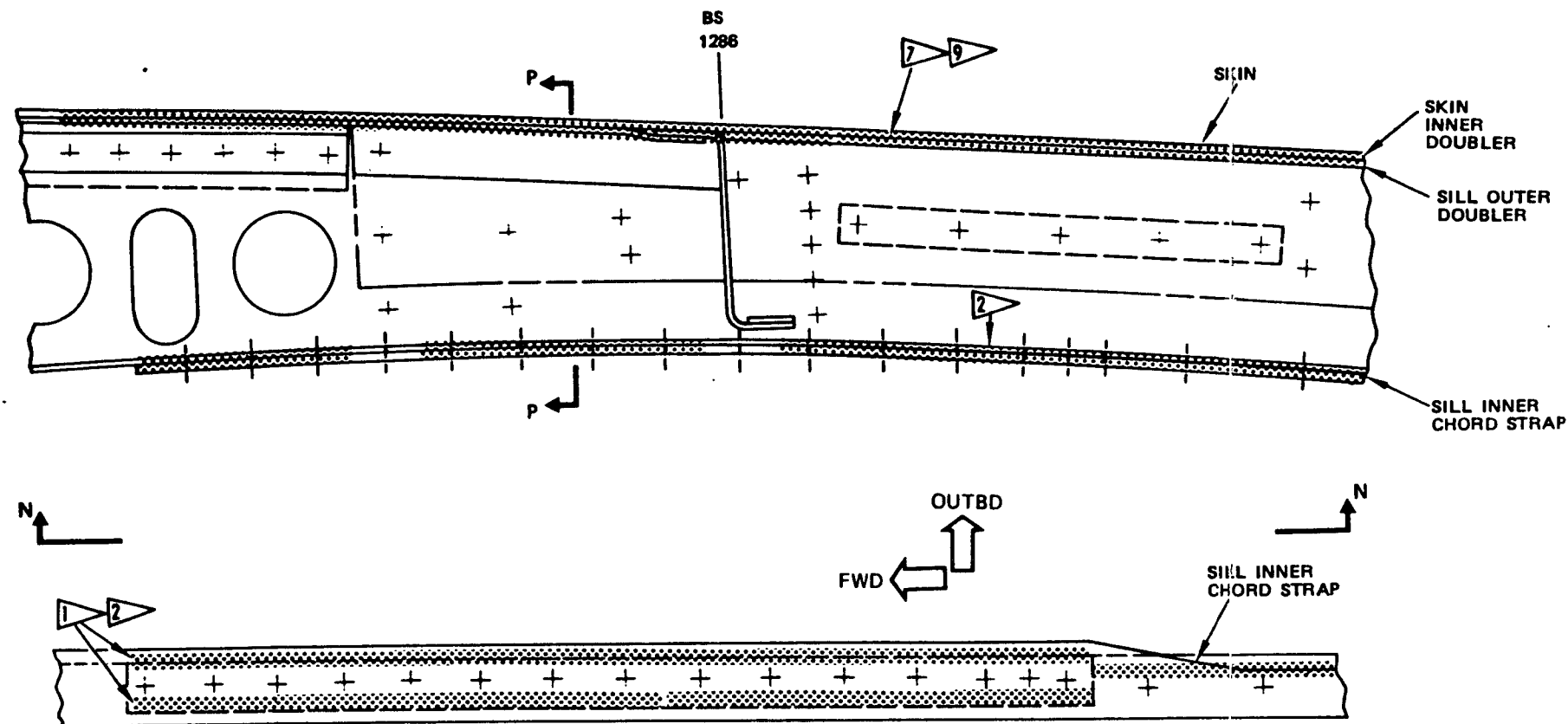


UPPER SILL PROBE POSITION -
 INNER & OUTER CHORDS

SECTION K-K

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 14 (Sheet 10)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



SECTION N-N

NOTES

SILL INNER CHORD AND STRAP

- 1 INSPECT BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 2 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS
- 5 ALTERNATE PROBE POSITION IF ACCESS IS OBSTRUCTED. SCAN BOTH SIDES OF FASTENERS

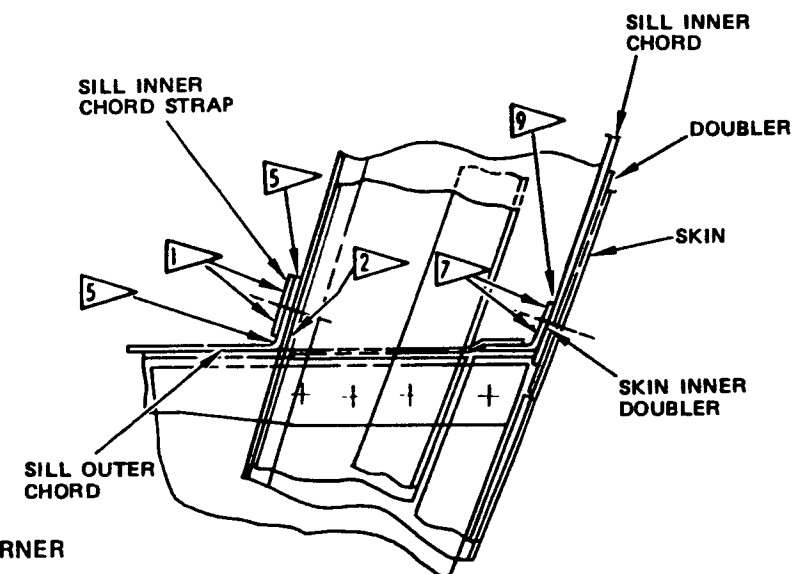
SILL OUTER CHORD AND SKIN INNER DOUBLER

- 7 INSPECT BOTH SIDES OF FASTENERS COMMON TO INNER CHORD STRAP
- 9 SCAN ADJACENT TO BOTH SIDES OF SILL OUTER CHORD WITH PROBE ON SKIN INNER DOUBLER

INSPECTION AREA

AFT GALLEY DOOR SILL - BS 1286
 DOOR CUTOUT LOWER SILL LEFTHAND CORNER

DETAIL VIII

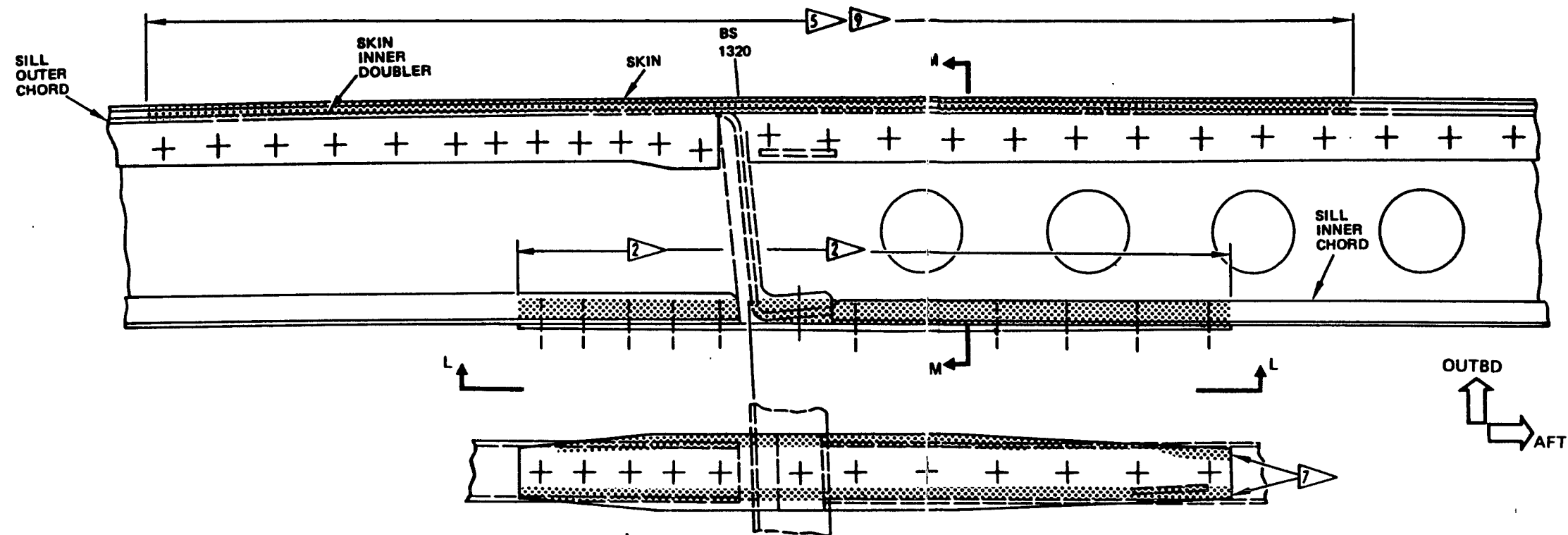


PROBE POSITION
 INNER & OUTER CHORD

SECTION P-P

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 14 (Sheet 11)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

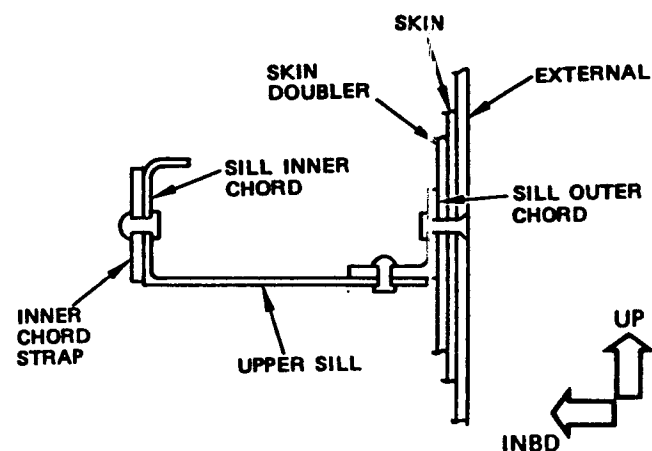
SILL INNER CHORD AND STRAP

- 2 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREAS
- 5 ALTERNATE PROBE POSITION IF ACCESS IS OBSTRUCTED. SCAN BOTH SIDES OF FASTENERS
- 7 INSPECT BOTH SIDES OF FASTENERS COMMON TO INNER CHORD STRAP

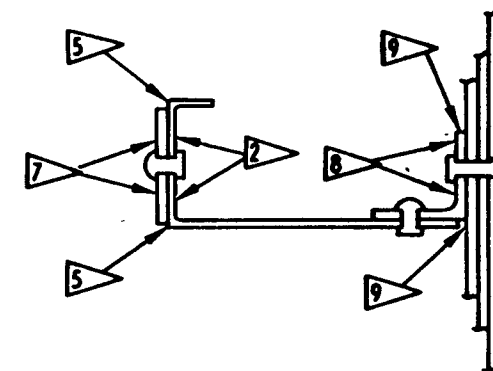
SILL OUTER CHORD AND SKIN INNER DOUBLER

- 8 USE MICRO STRAIGHT PROBE & SCAN SILL OUTER CHORD
- 9 SCAN ADJACENT TO BOTH SIDES OF SILL OUTER CHORD WITH PROBE ON SKIN INNER DOUBLER

INSPECTION AREA



**MEMBER DESIGNATION
SECTION M-M**



**UPPER SILL PROBE POSITION -
INNER & OUTER CHORDS**

SECTION M-M

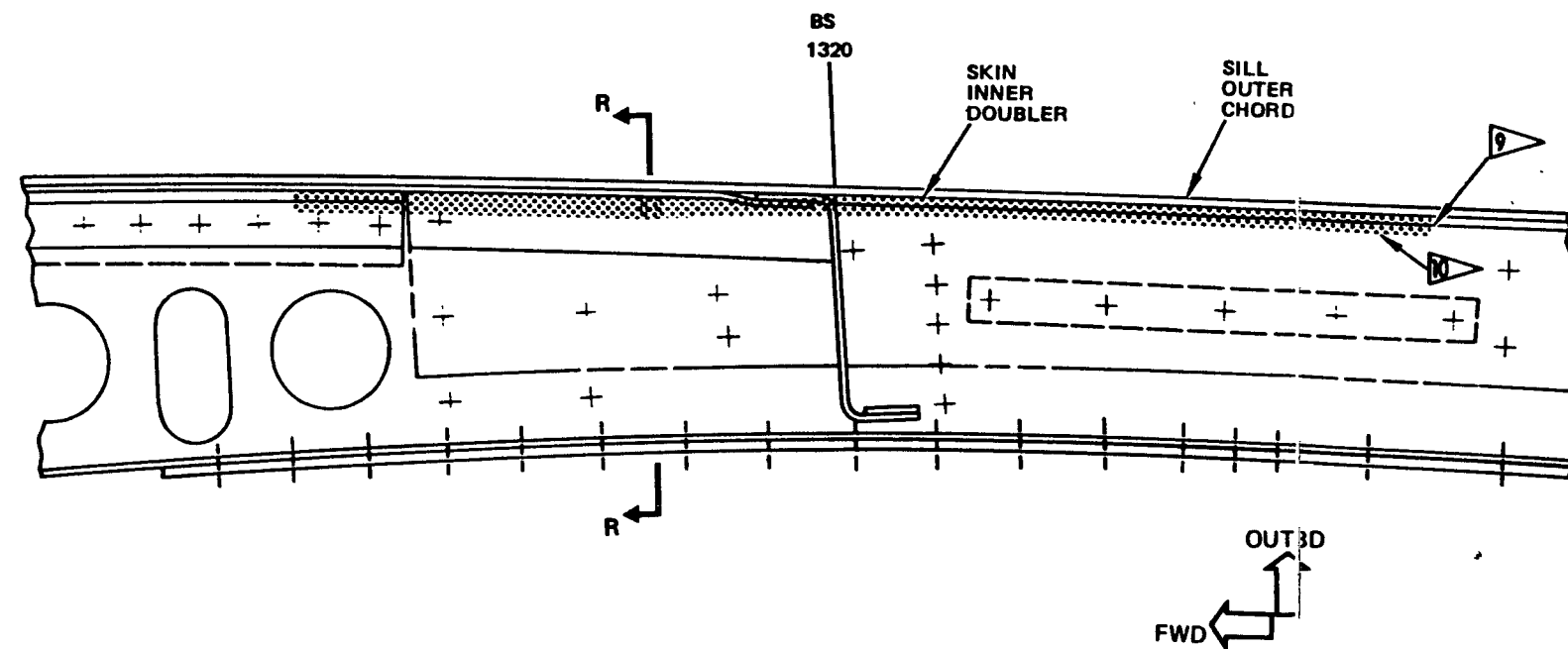
**AFT GALLEY DOOR SILL -- BS 1320
DOOR CUTOUT UPPER SILL LEFTHAND CORNER
DETAIL VII**

Fuselage - Aft Galley Door Cutout, Sills and Frames
Figure 14 (Sheet 12)

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BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

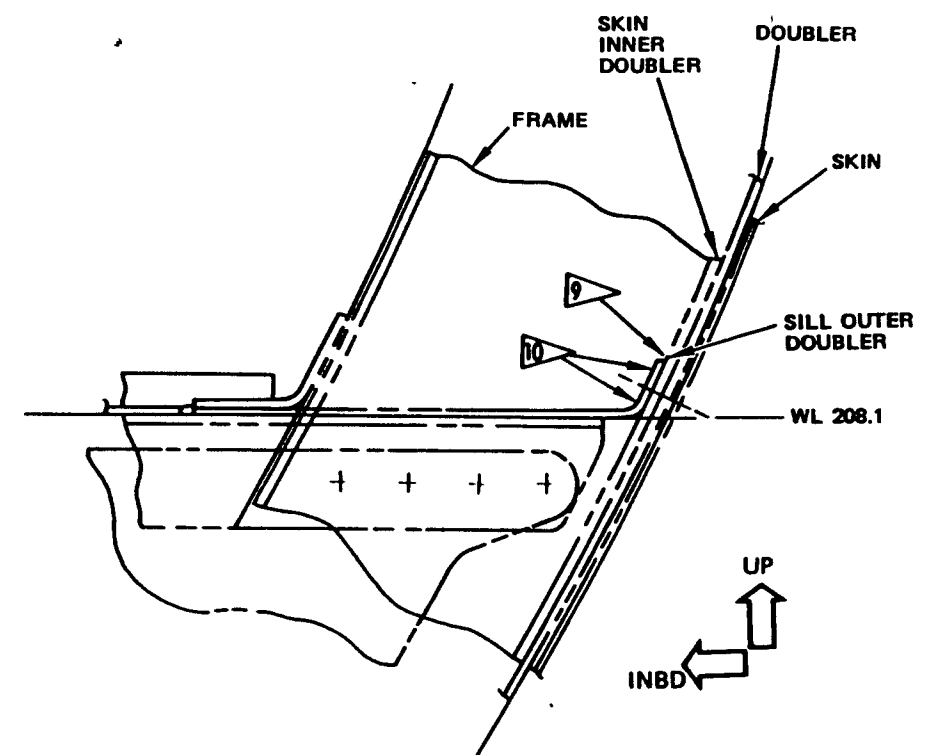
SILL OUTER CHORD AND SKIN INNER DOUBLER

- 9 SCAN ADJACENT TO SILL OUTER CHORD WITH PROBE ON SKIN INNER DOUBLER
- 10 SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA

INSPECTION AREA

AFT GALLEY DOOR SILL - BS 1320
 DOOR CUTOUT LOWER RIGHT HAND
 CORNER

DETAIL IX



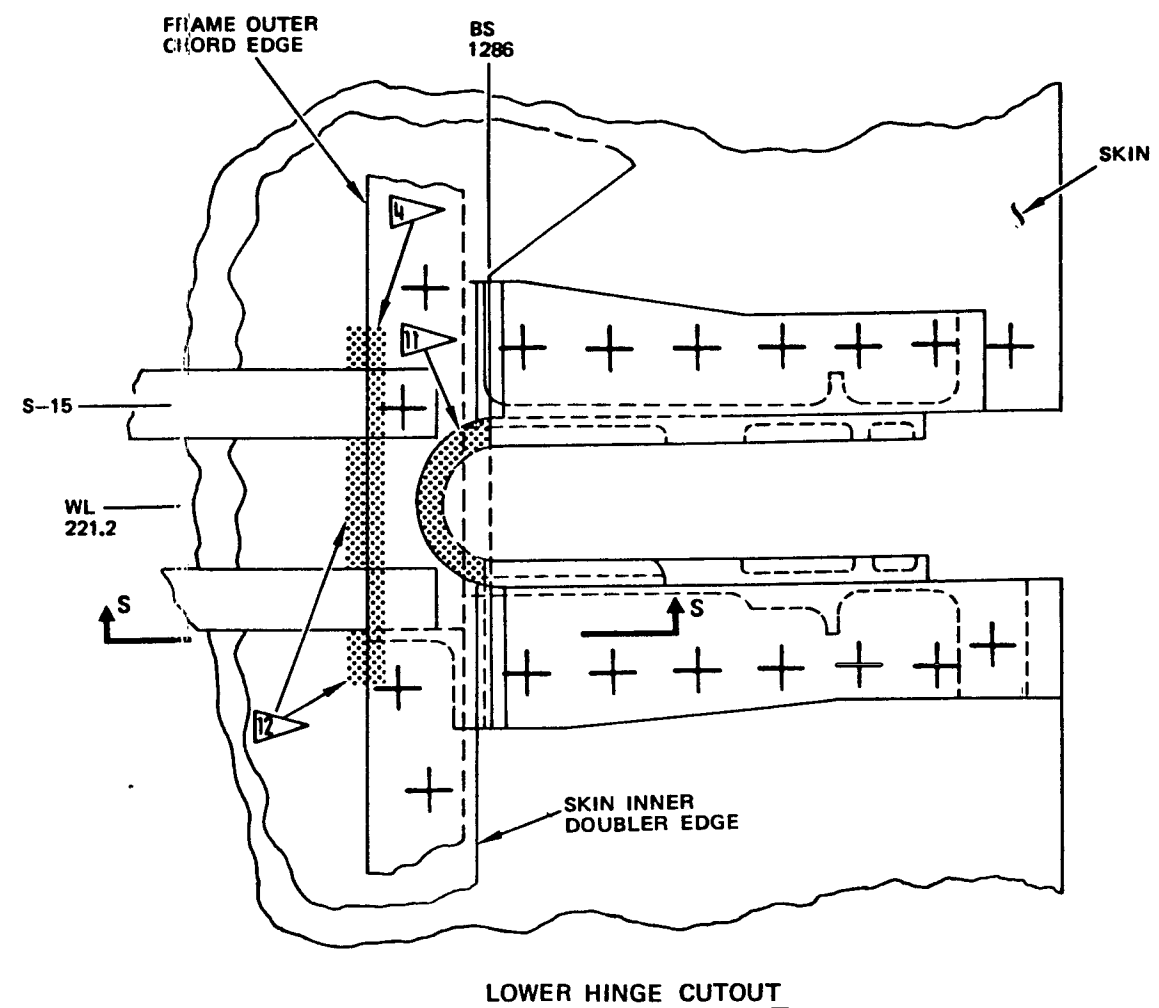
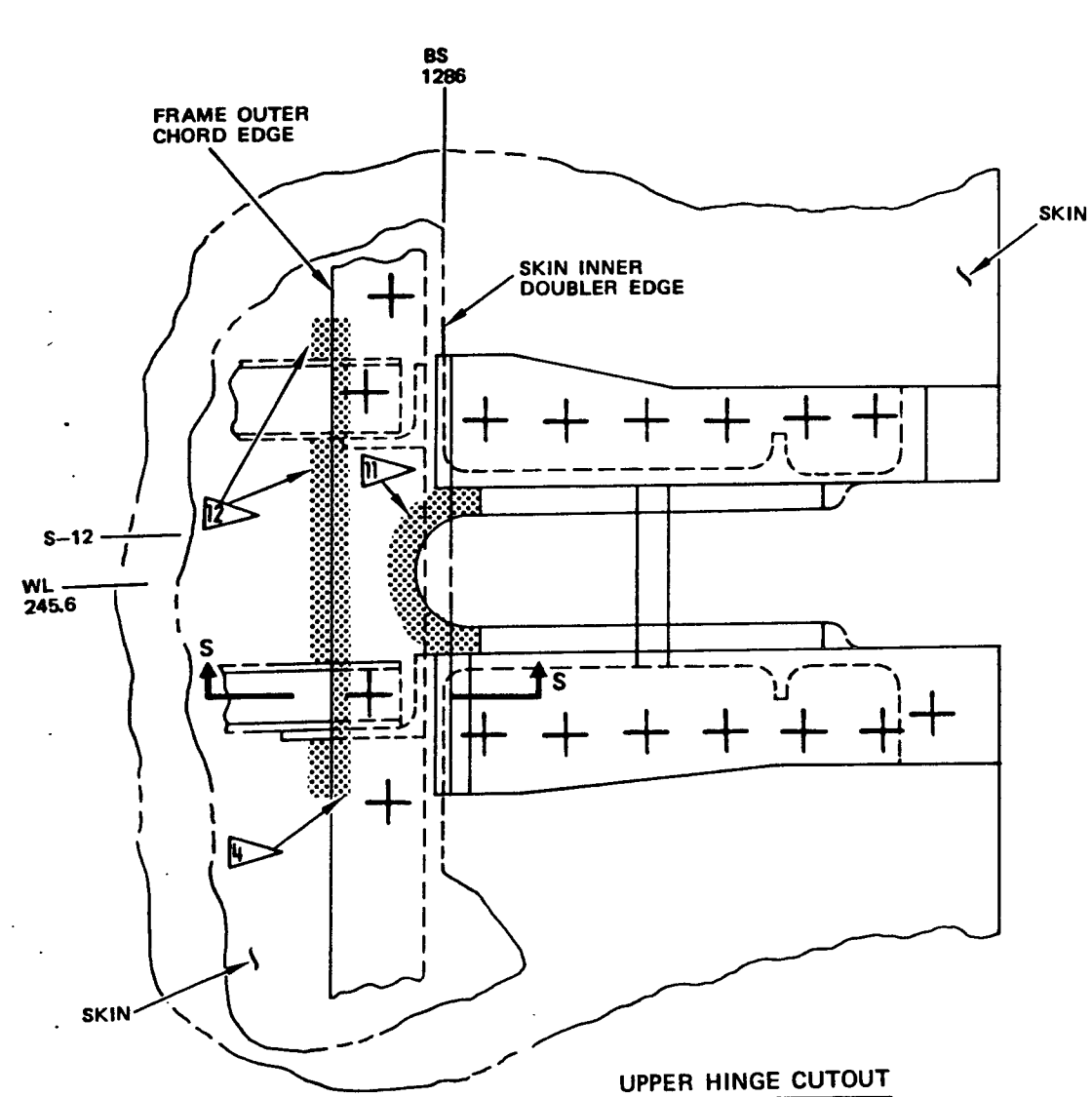
SECTION R-R

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 14 (Sheet 13)

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NOTES

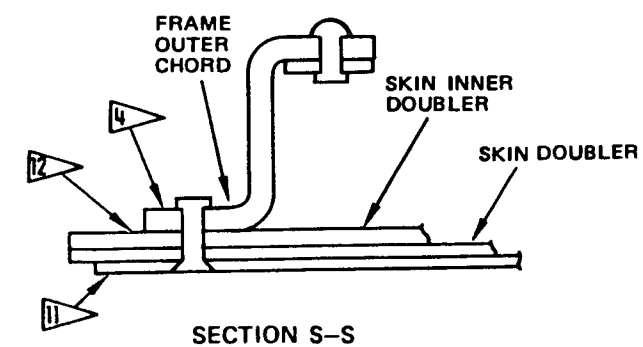
UPPER AND LOWER HINGE

- 14 SCAN ON FRAME OUTER CHORD AT DESIGNATED AREA
- 11 SCAN AROUND CUTOUT WITH PROBE ON SKIN
- 12 SCAN SKIN DOUBLER ADJACENT TO FRAME OUTER CHORD AT DESIGNATED AREAS

INSPECTION AREA

AFT GALLEY DOOR CUTOUT
 UPPER & LOWER HINGE

DETAIL X



Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 14 (Sheet 14)

EFFECTIVITY
MODEL: 720 SEE TABLE II, FOR AIRPLANE EFFECTIVITY SSI DOCUMENT (D6-44860)
REFERENCE: SSD 53-A00-09

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE MAIN FRAME

1. Purpose

- A. To perform a high-frequency eddy current inspection of the large aft galley door cutout to detect surface cracks as follows:
- (1) In the inner and outer chords of the first frame fwd and aft of the door cutout.
 - (2) In the inner and outer chords of the upper and lower sills.
 - (3) In the skin and skin doublers about the edge of door corners and hinge cutouts.

2. Equipment

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

- (1) Any eddy current instrument that will satisfy the requirements of this procedure is suitable for this inspection. The following instrument was used during the development of this procedure.
 - (a) P/N ED520
Magnaflux Corporation
6800 E. Washington Blvd.
Los Angeles, CA 90049

B. Probes -

- (1) Shielded right-angle pencil probe with 0.50 minimum clearance. Either of the following shielded probes is acceptable:
 - (a) P/N P905-50
NDT Product Engineering
P. O. Box 423
Renton, WA 98057
 - (b) P/N VM103AS-.50
VM PRODUCTS
7630 Pacific Avenue
Tacoma, WA 98408

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 1)

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COMMERCIAL JET
NONDESTRUCTIVE TEST

(2) Straight Shielded pencil micro probe 0.125 dia. Part 1, 51-06-00, Fig. 1. The following probes are acceptable.

(a) P/N P-50M
NDT Product Engineering

(b) P/N VM200-6
VM PRODUCTS

(3) Variable extension probe. Either of the following probes is acceptable.

(a) P/N PVAE-11, Variable extension with P905-15 probe NDT Product Engineering

(b) P/N VM100P-18 Probe
VM PRODUCTS

Note: Variable extension probes are used in Detail III

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. Access: Internal

(1) Remove galley side panels, lining, insulation, scuff plate, top side inner reveal and floor panels per Maintenance Manual for the skin doubler frame and sill chord inspection.

4. Instrument Calibration

A. Inspection of Aluminum Parts

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

5. Inspection Procedure

A. See Detail I and Table I for the location of specific inspection area and related inspection Detail.

B. See individual Details for specific inspection requirements.

NOTE: Select the shielded-pencil probe configuration which permits the best access to the inspection area. Maintain perpendicularity of probe to the inspection surface within 20 degrees.

C. Scan inspection area with probe noting all needle deflections. A crack will be indicated by a rapid deflection of the needle as the crack is passed over.

Fuselage - Aft Galley Door Cutout, Sills and Frames
Figure 15 (Sheet 2)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

DETAIL NO.	INSPECTION AREA
II	DOOR FRAME AT BS 1280, UPPER RIGHT-HAND CORNER OF DOOR CUTOUT
III	DOOR FRAME AT BS 1280, LOWER RIGHT-HAND CORNER OF DOOR CUTOUT <u>NOTE:</u> VARIABLE EXTENSION PROBE MAY BE REQUIRED TO INSPECT BODY STATION 1280 FRAME LOWER INNER CHORD STRAP. ACCESS IS GAINED THROUGH FORWARD LOWER DOOR CORNER INNER FAIRING ACCESS HOLE.
IV	DOOR FRAME AT BS 1323.5 UPPER LEFT-HAND CORNER OF DOOR CUTOUT
V	DOOR FRAME AT BS 1323.5 LOWER LEFT-HAND CORNER OF DOOR CUTOUT
VI	DOOR FRAME AT BS 1280 AND 1323.5 LOWER SILL OUTER CHORD
VII	DOOR FRAME AT BS 1280 AND 1323.5 LOWER SILL INNER CHORD
VIII	DOOR FRAME AT BS 1280 AND 1323.5 UPPER SILL OUTER CHORD <u>NOTE:</u> USE STRAIGHT MICRO PROBE.
IX	DOOR FRAME AT BS 1280 AND 1323.5 UPPER SILL INNER CHORD
X	UPPER AND LOWER HINGE CUTOUT
XI ☐	DOOR FRAME AT BS 1280, UPPER RIGHT-HAND CORNER OF RE-WORKED DOOR CUTOUT
XII ☐	DOOR FRAME AT BS 1280 AND 1323.5 UPPER LEFT-HAND CORNER INNER CHORD SILL OF RE-WORKED DOOR

INSPECTION DETAILS
TABLE I

☐ DETAILS XI AND XII APPLY TO LINE NO. 85 ONLY. A 4130 ANNEALED STEEL STRAP AND A CORROSION RESISTANT STEEL STRAP WILL BOTH BE PRESENT ON THE REWORKED DOOR WHICH WILL REQUIRE A CLOSE VISUAL INSPECTION. USE DETAIL I, II THEN VIII, X, XI AND XII IN CONJUNCTION WHEN INSPECTING THIS AIRPLANE. ONLY ONE AIRPLANE WITH THIS CONFIGURATION EXISTS.

Fuselage - Aft Galley Door Cutout, Sills and Frames
Figure 15 (Sheet 3)

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NONDESTRUCTIVE TEST

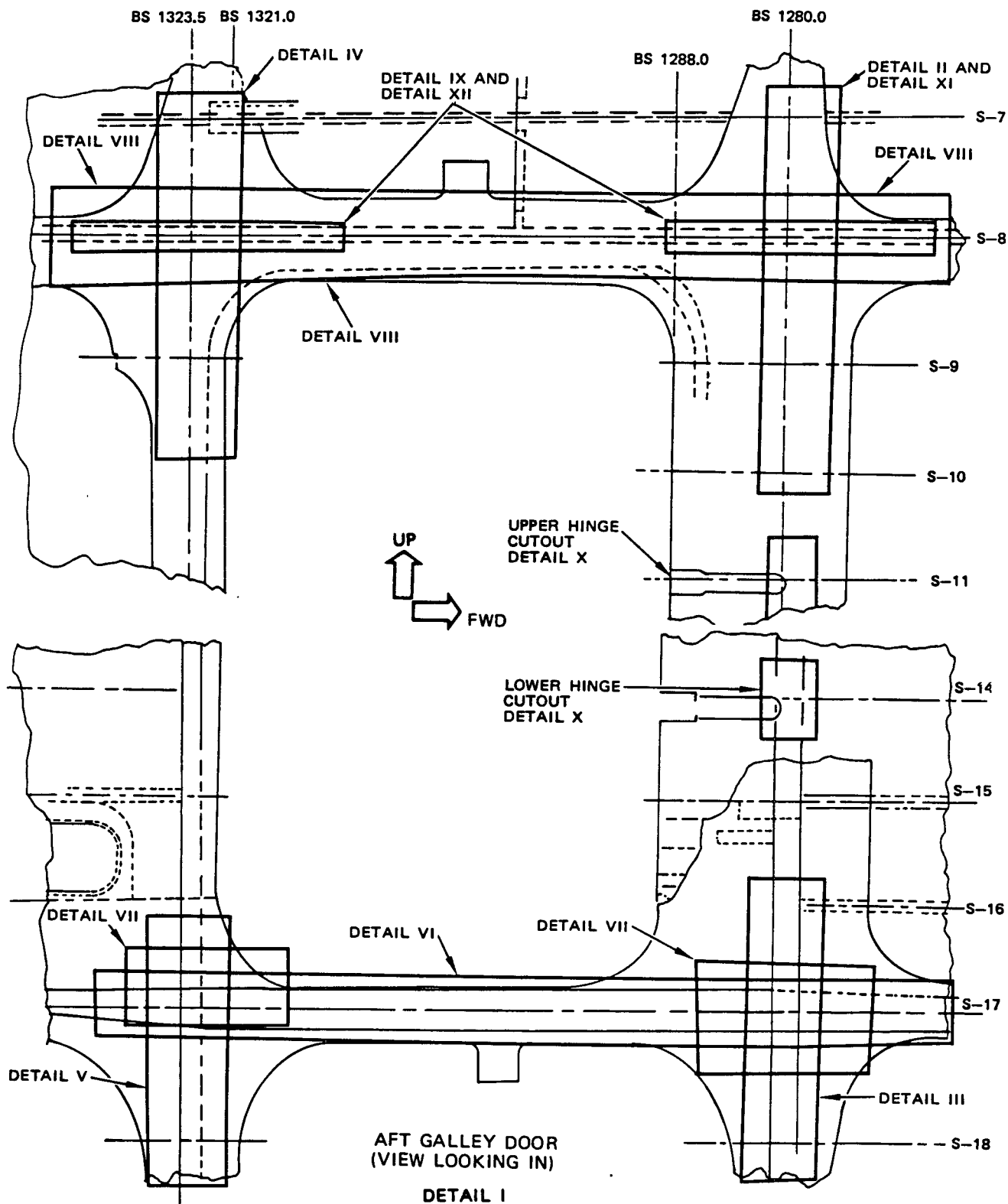
A/P EFFECTED	DETAIL NOS.
1	I, II AND IV THRU VII AND TABLE II.
2	I, III, AND VIII THRU XIII AND TABLE II.

AIRPLANE EFFECTIVITY
TABLE II

1 85, 95, 109, 130 THRU 132, 141, 142, 146 THRU 148, 178, 179, 183 THRU 186, 191, 225, 232 THRU 236, 239 THRU 242, 246 THRU 248, 252 THRU 255, 259 THRU 261, 265, 267, 278, 284, 297, 298.

2 85 ONLY.

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NONDESTRUCTIVE TEST

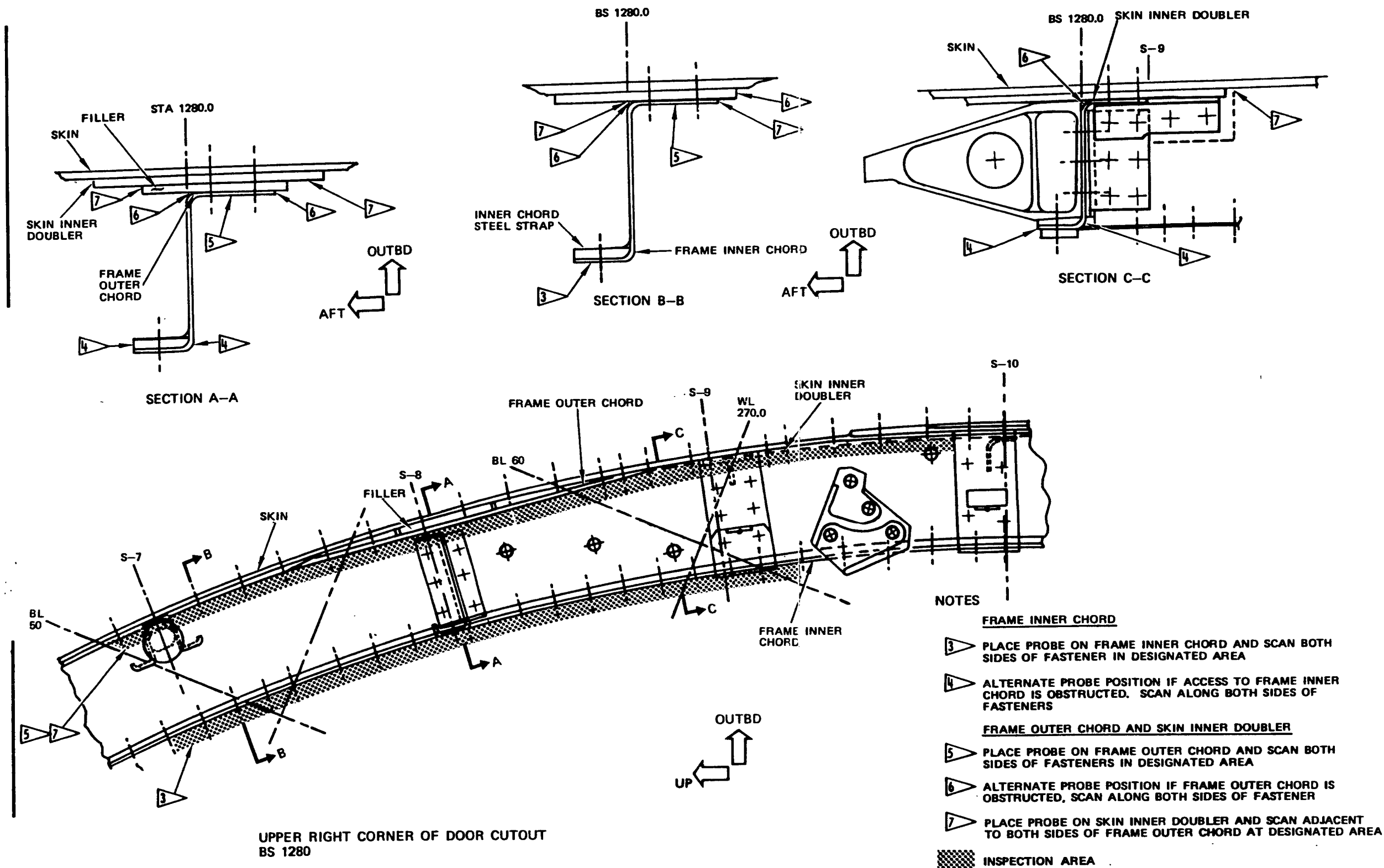


Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 5)

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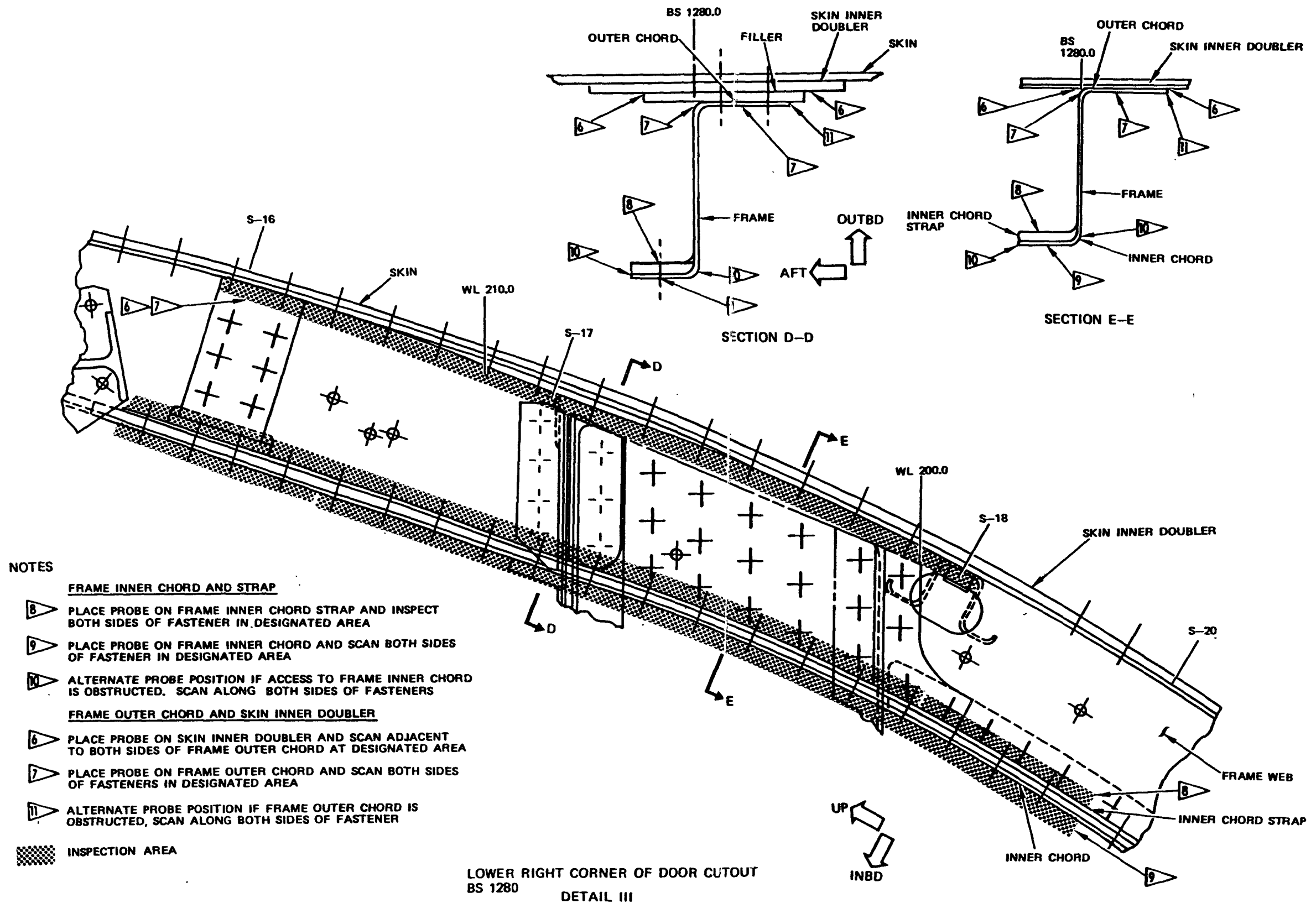
Part 6
 53-10-07
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COMMERCIAL JET
NONDESTRUCTIVE TEST



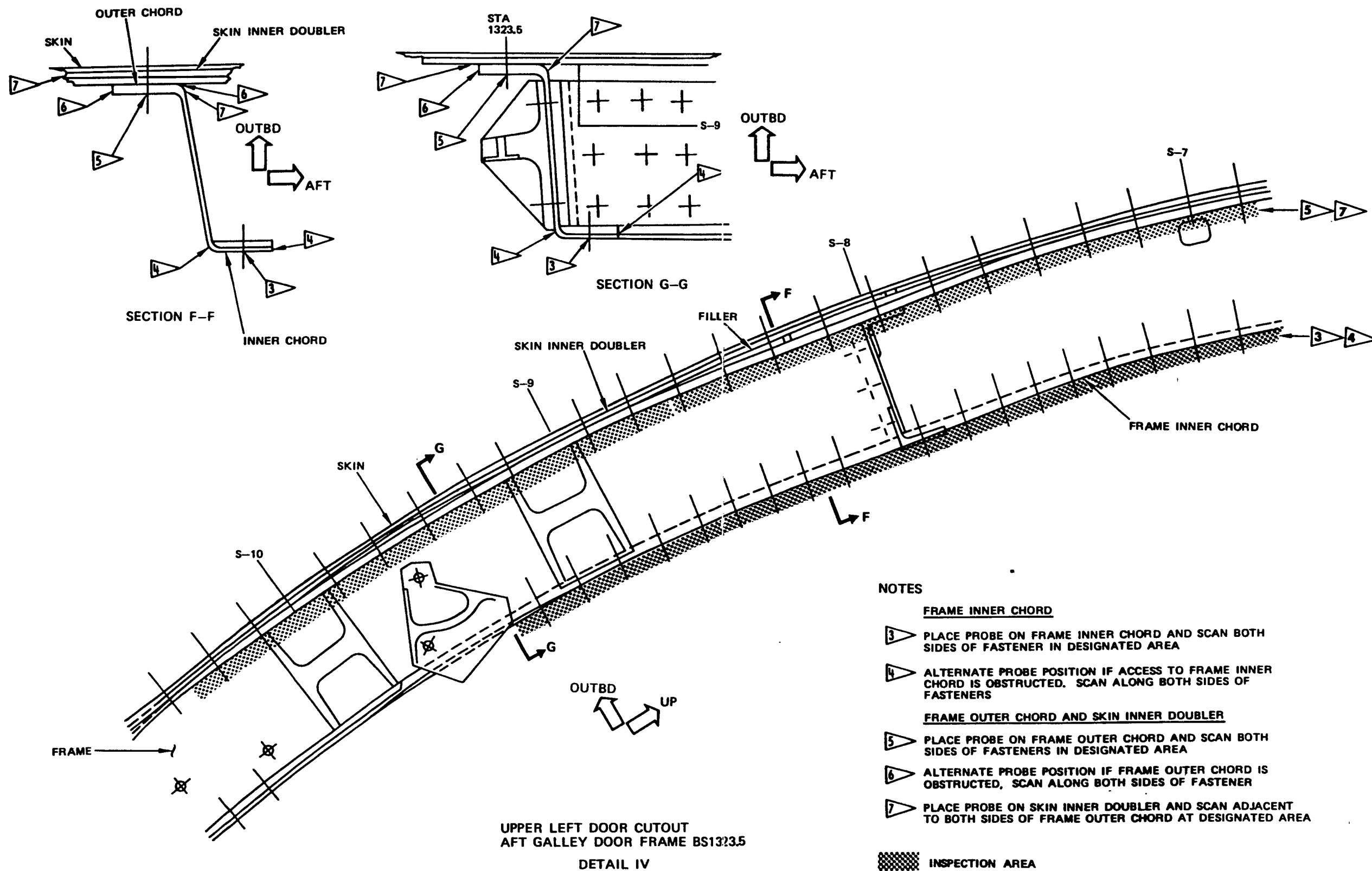
Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 6)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



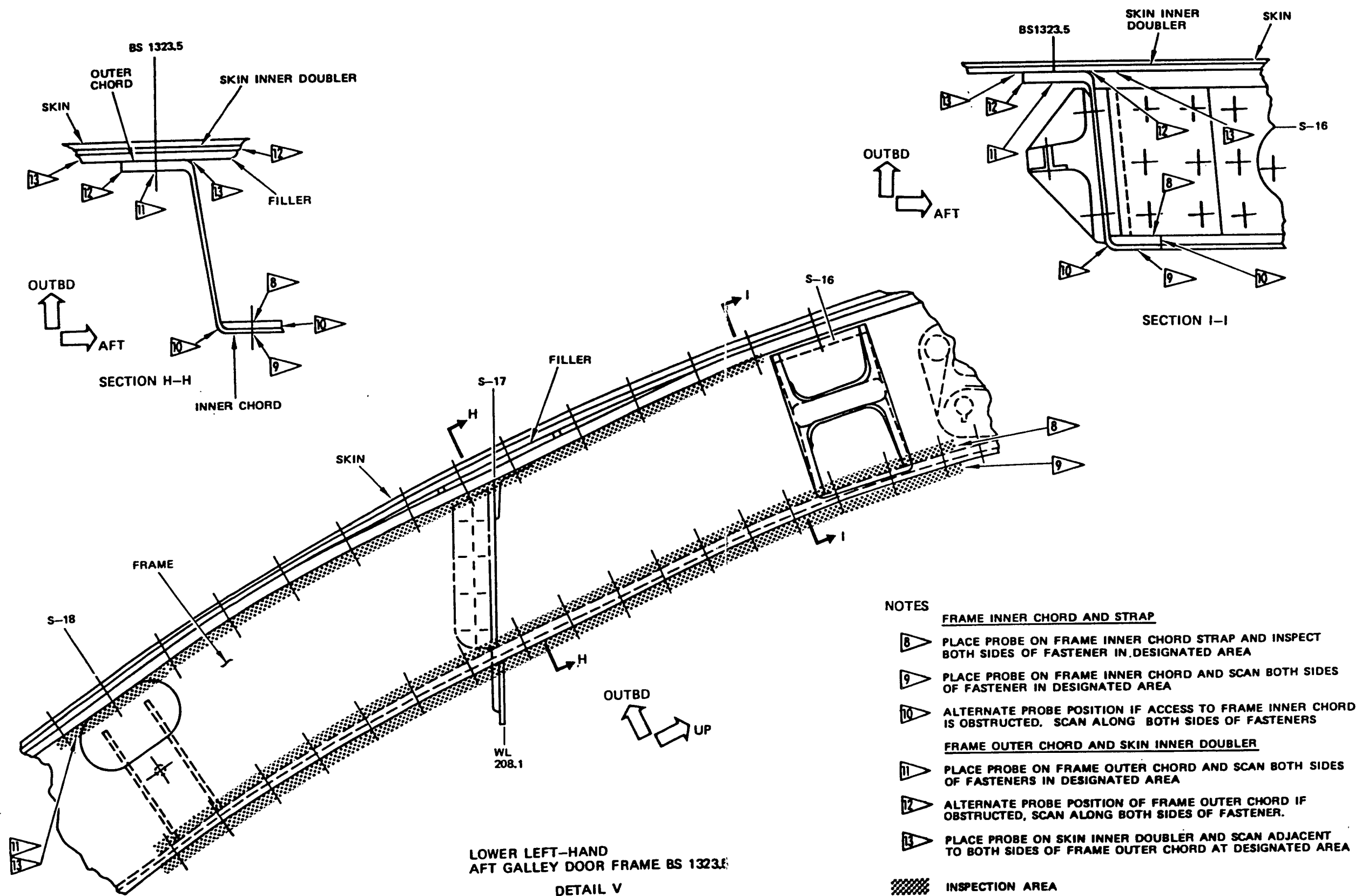
Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 7)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



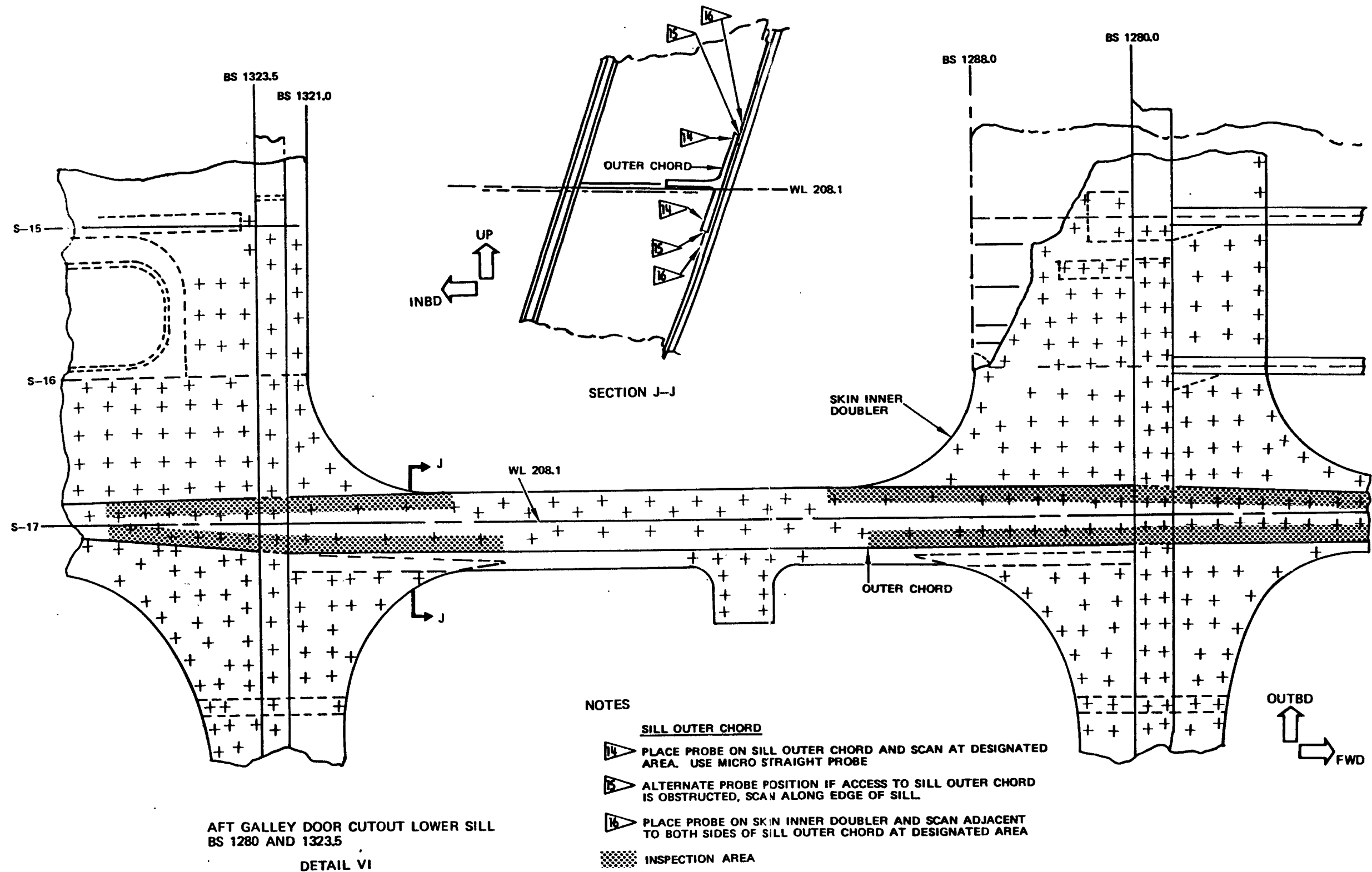
Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 8)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



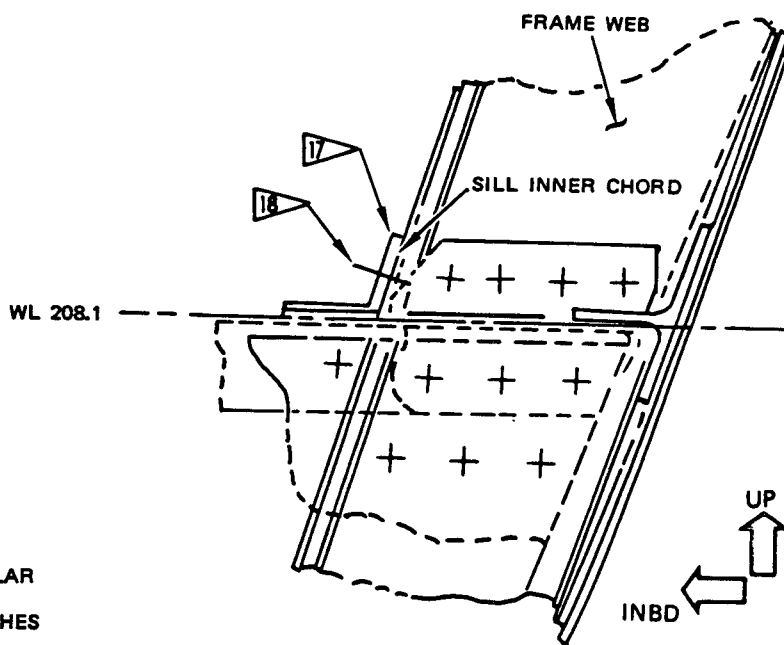
Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 9)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 10)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

SILL INNER CHORD

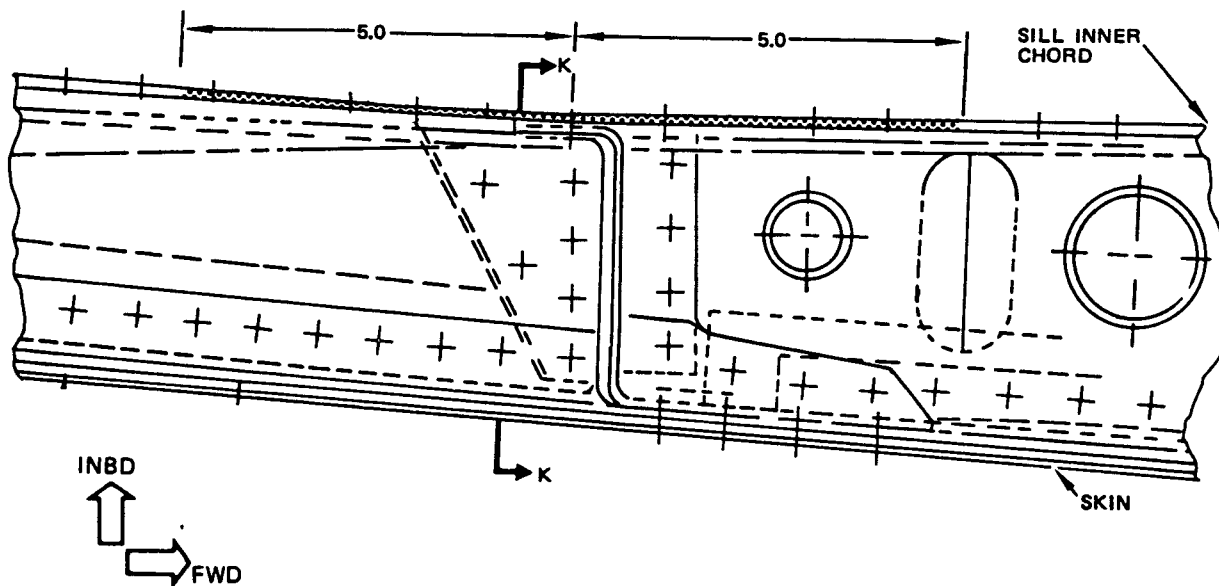
- BS 1280 SHOWN, BS1323.5 SIMILAR
- ALL DIMENSIONS ARE IN INCHES

17 PLACE PROBE ON SILL INNER CHORD AND INSPECT BOTH SIDES OF FASTENERS IN DESIGNATED AREA

18 ALTERNATE PROBE POSITION IF CHORD IS OBSTRUCTED, SCAN ALONG BOTH SIDES OF FASTENER

▨ INSPECTION AREA

SECTION K-K



AFT GALLEY DOOR LOWER SILL INNER CHORD
 STA 1280 AND 1323.5

DETAIL VII

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 11)

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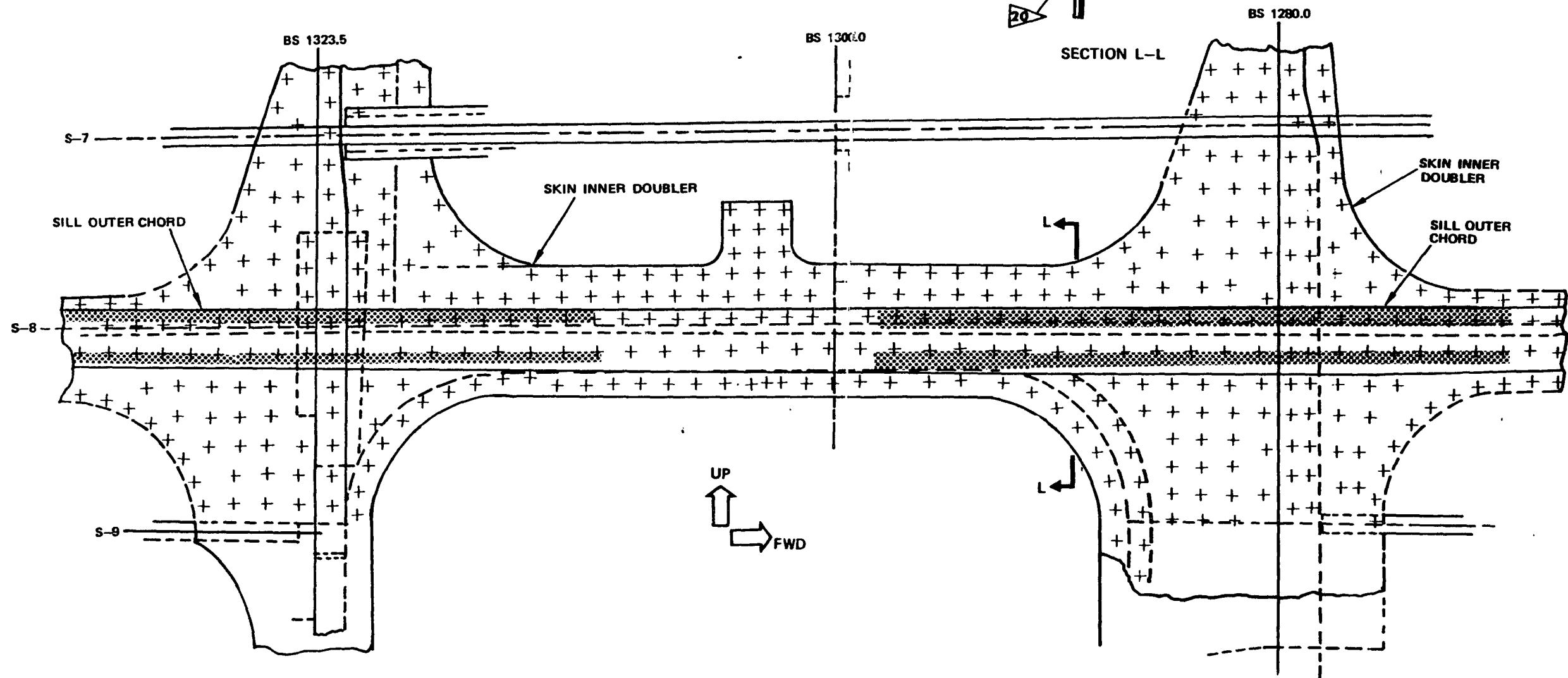
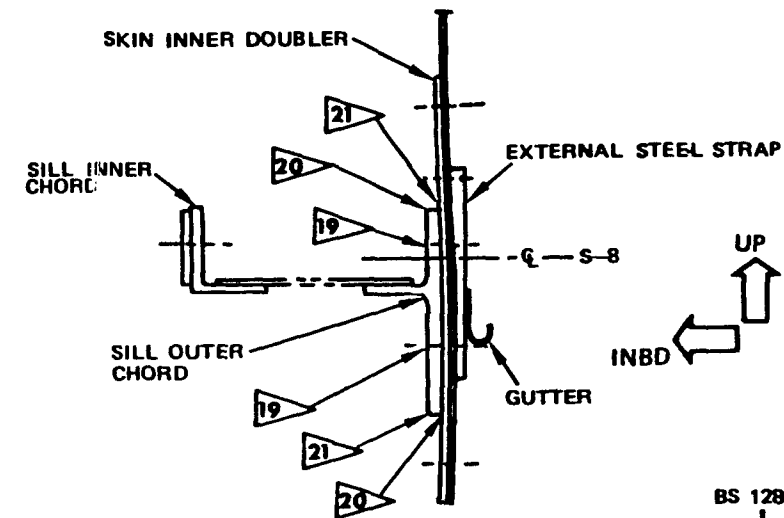
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

NOTES

SILL OUTER CHORD

- 19** PLACE PROBE ON SILL OUTER CHORD AND SCAN AT DESIGNATED AREA. USE STRAIGHT MICRO PROBE
- 20** ALTERNATE PROBE POSITION IF ACCESS TO SILL OUTER CHORD IS OBSTRUCTED, SCAN ALONG EDGE OF SILL
- 21** PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF SILL OUTER CHORD AT DESIGNATED AREA

 INSPECTION AREA



**AFT GALLEY DOOR CUTOUT UPPER SILL
 STA 1280 AND 1323.5**

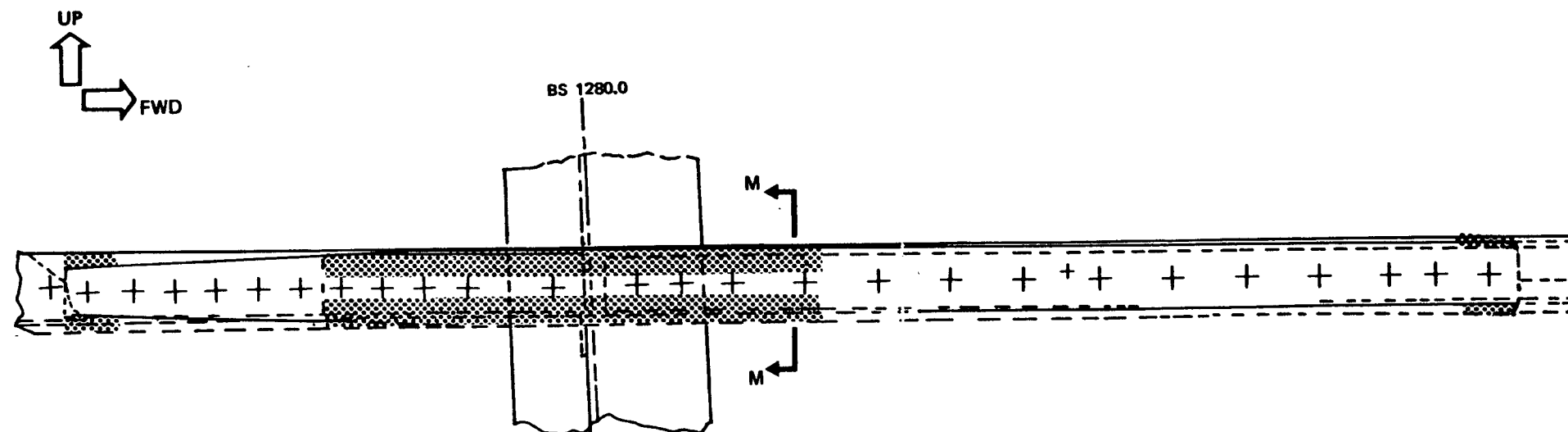
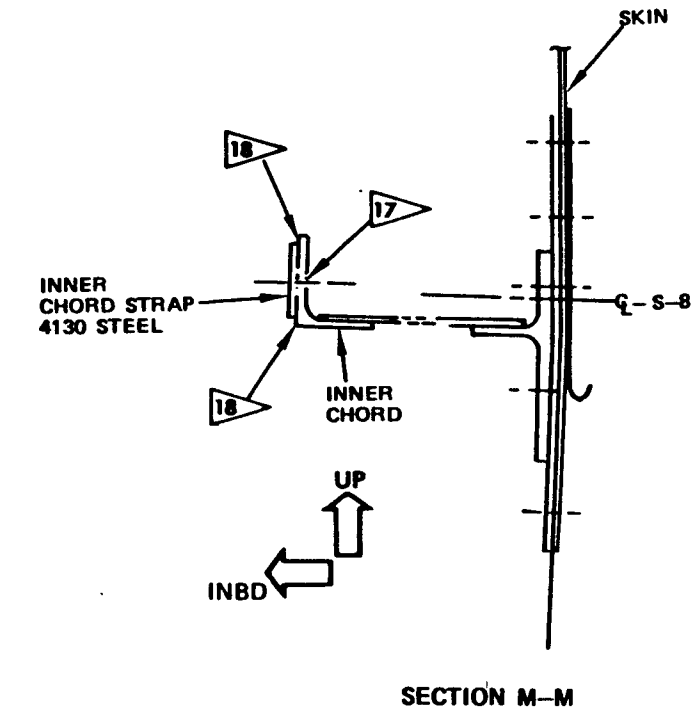
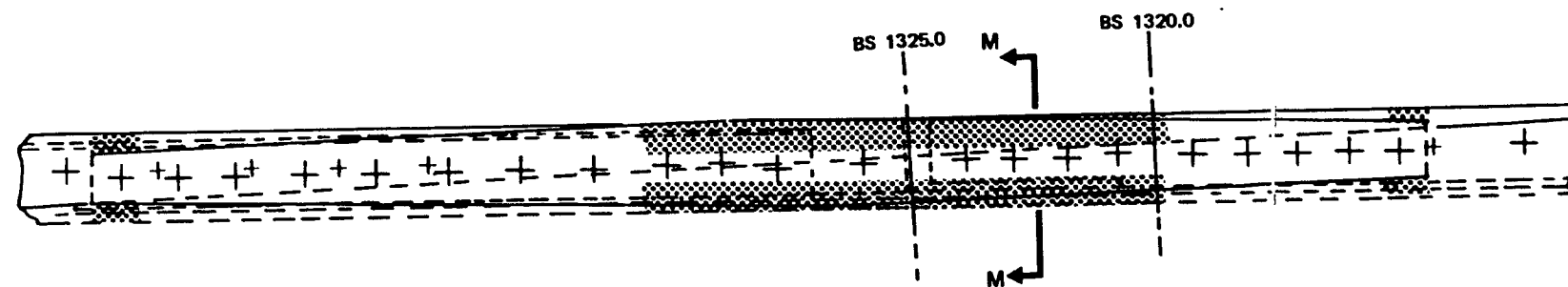
DETAIL VIII

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 12)

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BOEING
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NONDESTRUCTIVE TEST



UPPER SILL INNER CHORD
 BS 1280 AND 1325.5

DETAIL IX

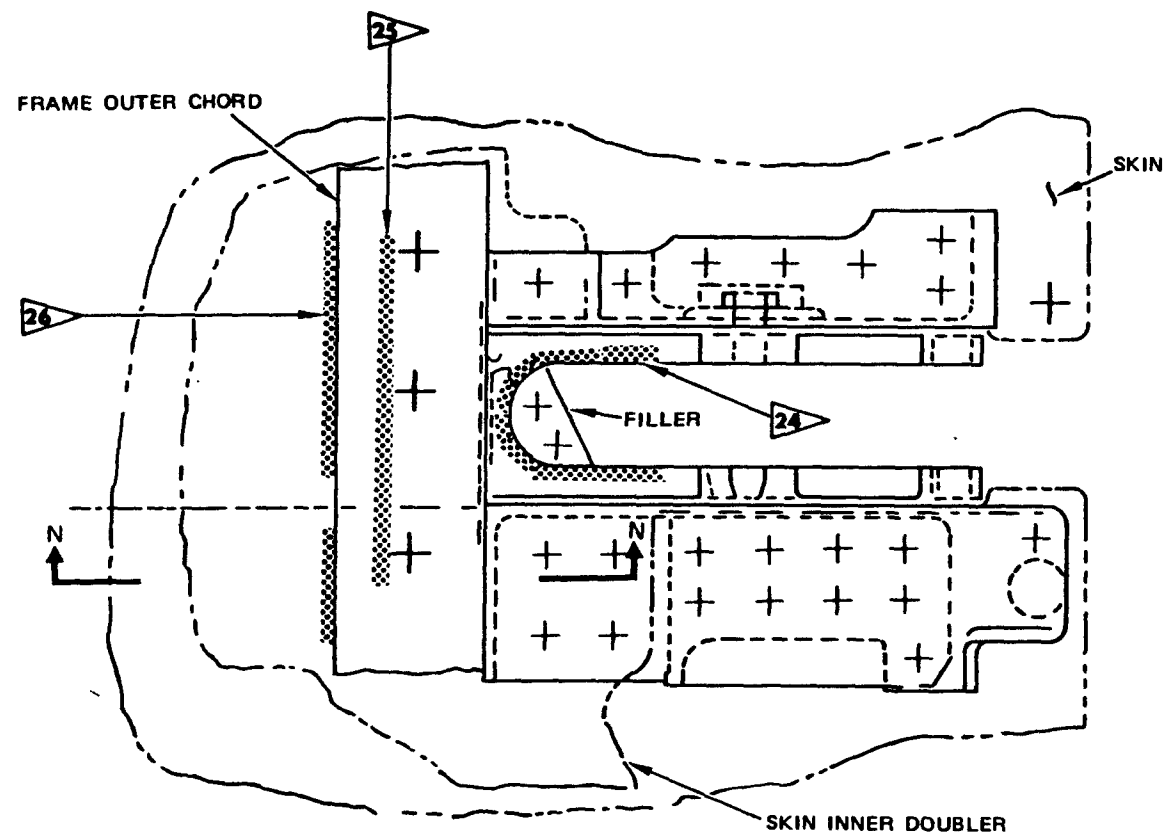
NOTES

SILL INNER CHORD

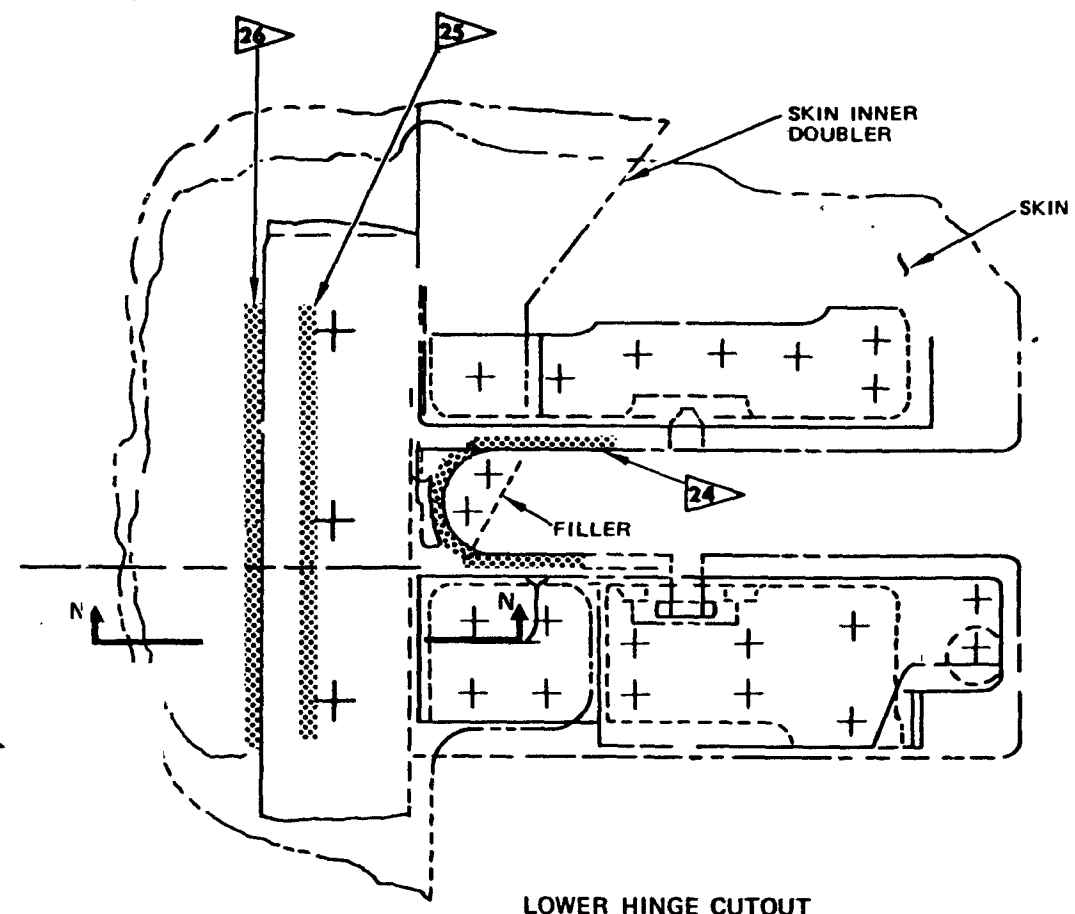
-  PLACE PROBE ON SILL INNER CHORD AND INSPECT BOTH SIDES OF FASTENERS IN DESIGNATED AREA
-  ALTERNATE PROBE POSITION IF CHORD IS OBSTRUCTED, SCAN ALONG BOTH SIDES OF FASTENER

 INSPECTION AREA

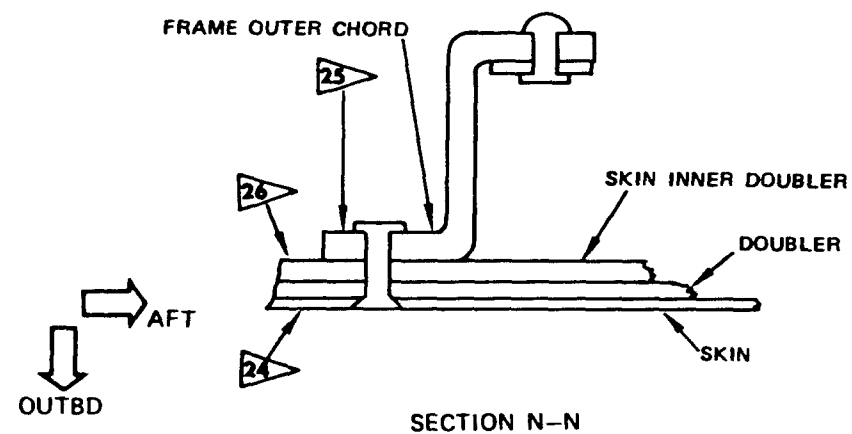
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



UPPER HINGE CUTOUT



LOWER HINGE CUTOUT



SECTION N-N

UPPER AND LOWER HINGE CUTOUTS

DETAIL X

NOTES

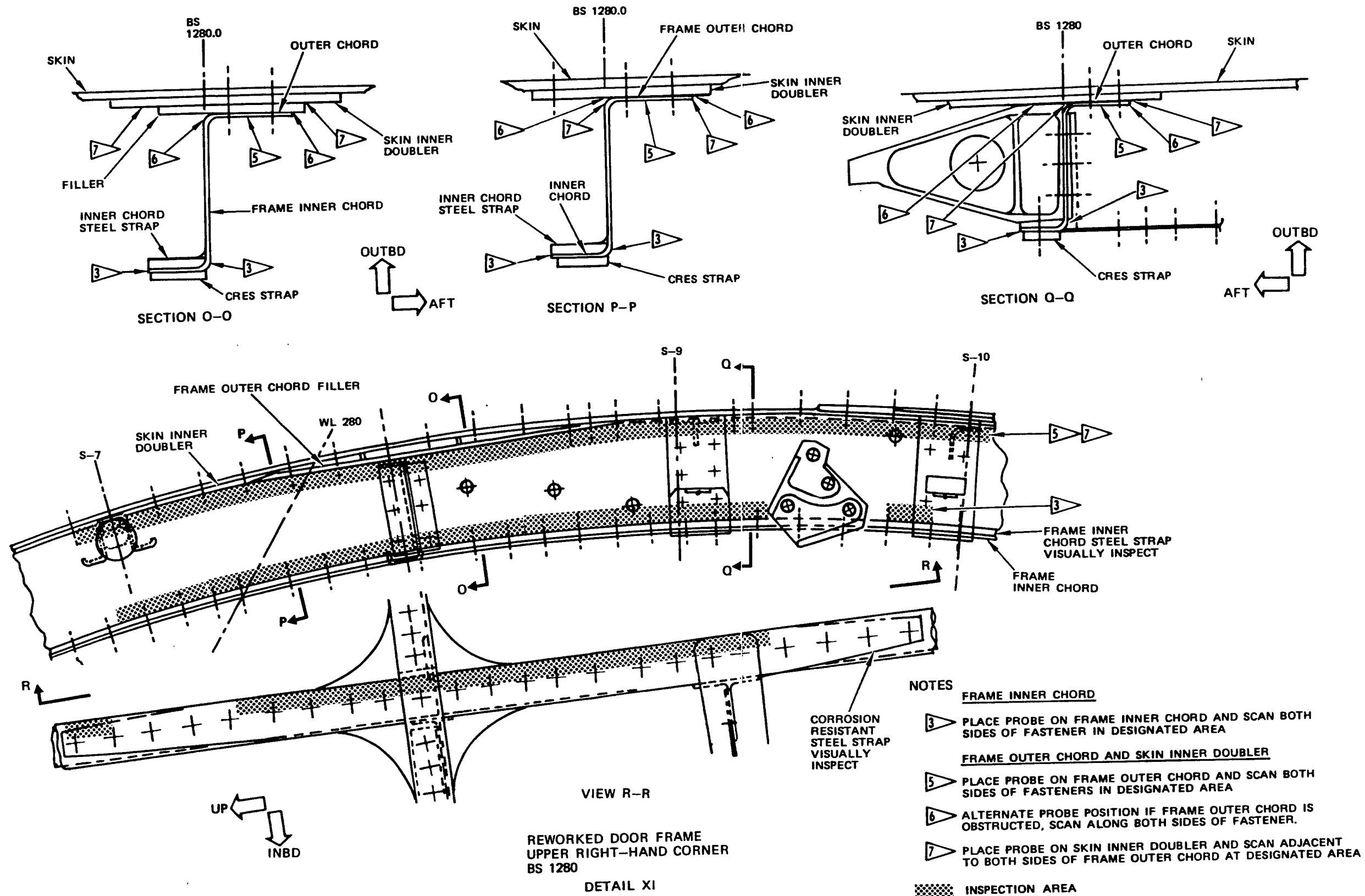
UPPER AND LOWER HINGE CUTOUTS

- 24 PLACE PROBE ON AIRPLANE SKIN, SCAN AT DESIGNATED AREA AROUND HINGE CUTOUT
- 25 PLACE PROBE ON FRAME OUTER CHORD. SCAN AT DESIGNATED AREA
- 26 PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO FRAME OUTER CHORD AT DESIGNATED AREA

INSPECTION AREA

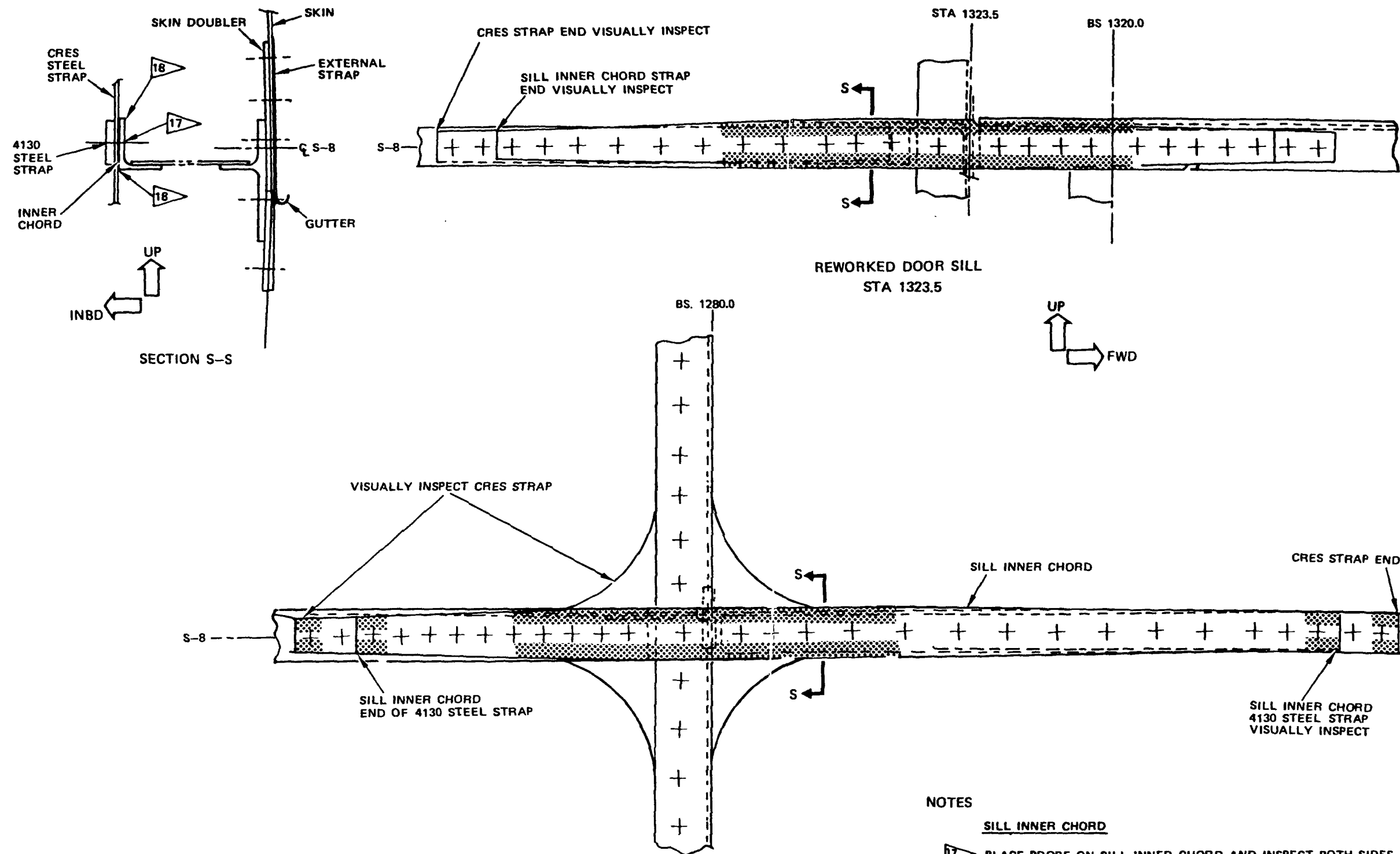
Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 14)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 15)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

SILL INNER CHORD

- 17** PLACE PROBE ON SILL INNER CHORD AND INSPECT BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 18** ALTERNATE PROBE POSITION IF CHORD IS OBSTRUCTED, SCAN ALONG BOTH SIDES OF FASTENER

INSPECTION AREA

REWORKED DOOR UPPER LEFT-HAND CORNER INNER CHORD
 SILL BS 1280 AND BS 1323.5

DETAIL XII

Fuselage - Aft Galley Door Cutout, Sills and Frames
 Figure 15 (Sheet 16)

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EFFECTIVITY	
MODEL:	ALL
• SSI DOCUMENT (D6-44023)	
REFERENCE:	
SSD 53-A00-06	
53-A10-06	
53-A20-06	
53-A30-06	
53-A40-06	

BOEING
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NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT

FUSELAGE - MAIN FRAME

1. Purpose

- A. To perform a high-frequency eddy current inspection of the aft entry door cutout to detect surface cracks in the inner and outer chords of the first frame forward and aft of the door cutout, in the inner and outer chords of the upper and lower sills, and in the skin and inner skin doublers about the edge of the hinge cutouts.

2. Equipment

- A. Instrument - Any eddy current instrument satisfying the requirements of this procedure is acceptable. The following instrument was used during the development of this procedure:

(1) P/N ED520
Magnaflux Corporation
6800 East Washington Blvd.,
Los Angeles, CA 90049

B. Probes -

- (1) Straight shielded pencil probe with a maximum case diameter of 0.125 in. Refer to Part 1, 51-06-00, Fig. 1. The following probes are acceptable.

(a) P/N MP-50
NDT Product Engineering
P.O. Box 423
Renton, WA 98057

(b) P/N VM200-6
VM Products
7420 Park Ave. No. 20
Tacoma, WA 98408

Aft Entry Door Cutout
Figure 16 (Sheet 1)

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NONDESTRUCTIVE TEST

- (2) Shielded right angle pencil probe with a maximum case diameter of 0.125 inch and a 0.50-minimum clearance. Refer to Part 1, 51-06-00, Fig. 1.

(a) P/N P905-50
NDT Product Engineering

(b) P/N VM 202 RA-0.50
VM Products

NOTE: Specify dimensions required when ordering right angle probe.

C. Reference Standards

- (1) For aluminum parts refer to Part 6, 51-00-00, Fig. 5, flat or moderately curved surfaces of aluminum parts.
- (2) For inspection of corrosion resistance steel sill inner chord strap manufacture Reference Standard per Detail I.

3. Preparation for Inspection

Internal Access - Skin doubler, frame and sill chords inspection require galley, side panels, lining, insulation, scuff plate, top and side inner reveal removal.

4. Instrument Calibration

- A. Inspection of Aluminum Parts - Refer to Part 6, 51-00-00, Fig. 4.
- B. Inspection of Corrosion Resistance Steel Strap - Balance instrument per manufacturer's instructions with steel standard manufactured per Detail I.

5. Inspection Procedure

- A. Refer to Table I for airplane effectivity and related inspection Details.
- B. Refer to Detail II for overview of inspection locations.
- C. Perform inspections to requirements identified in individual inspection Details III thru X and Part 6, 51-00-00, Fig. 5.

Aft Entry Door Cutout
Figure 16 (Sheet 2)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

INSPECTION AREA	AIRPLANE EFFECTIVITY	INSPECTION DETAIL
LOWER DOOR SECTION	ALL	III THRU V
UPPER DOOR SECTION		VIII THRU X
		VIII THRU X
		VI AND VII

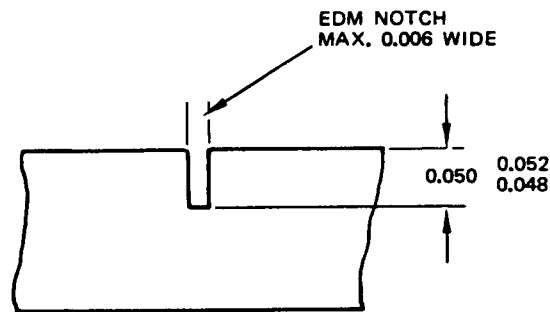
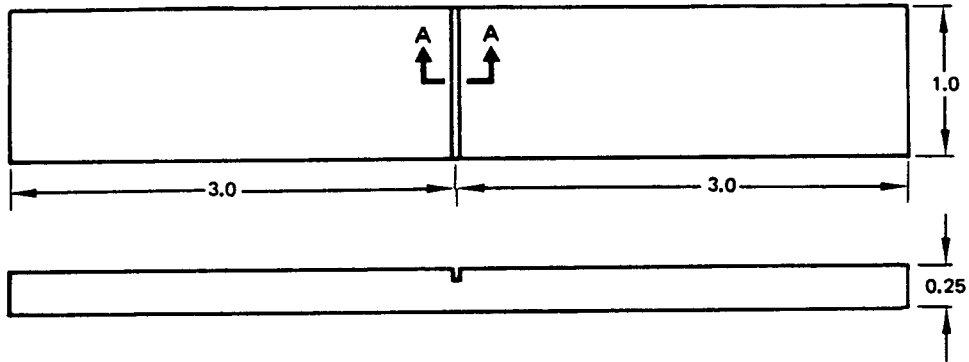
EFFECTIVITY TABLE
TABLE I

NOTES

-  1 THRU 34, 35 THRU 84, 86 THRU 94, 96 THRU 100, 102 THRU 107, 110, 111, 115 THRU 118, 121 THRU 125
-  35, 85, 95, 101, 108, 109, 112 THRU 115, 119, 120, 126 THRU 158, 160 THRU 179
-  180 THRU 199, 201 THRU 211, 213 THRU 278, 280 THRU 284, 286 THRU 550, 552 THRU 588, 590 THRU 679, 681 THRU 750, 752 AND ON

Aft Entry Door Cutout
Figure 16 (Sheet 3)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



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
ON STEEL SILL/FRAME INNER CHORD STRAP
DETAIL I

Aft Entry Door Cutout
Figure 16 (Sheet 4)

BS 1375.2

BS 1330.9

LOWER HINGE
DETAIL X

DETAIL III

DETAIL V

DETAIL IV

S-14

S-16

S-17

S-22

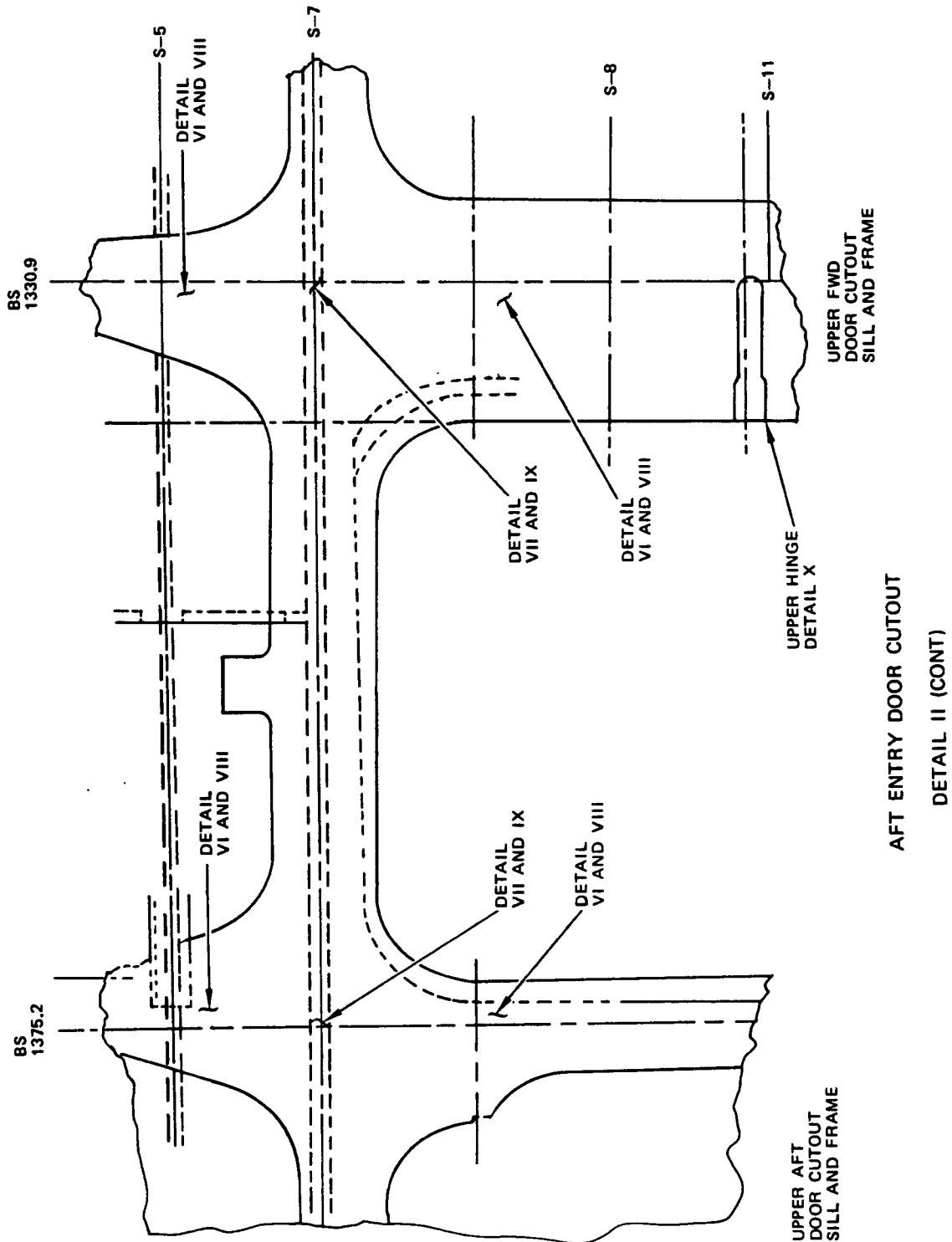
UP

FWD

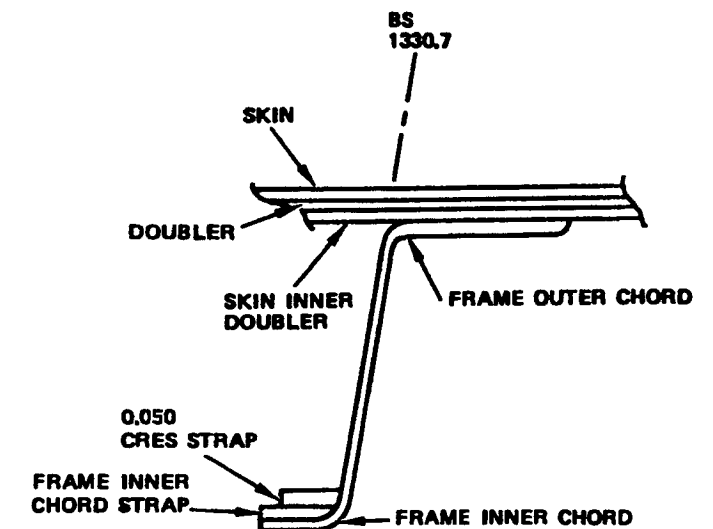
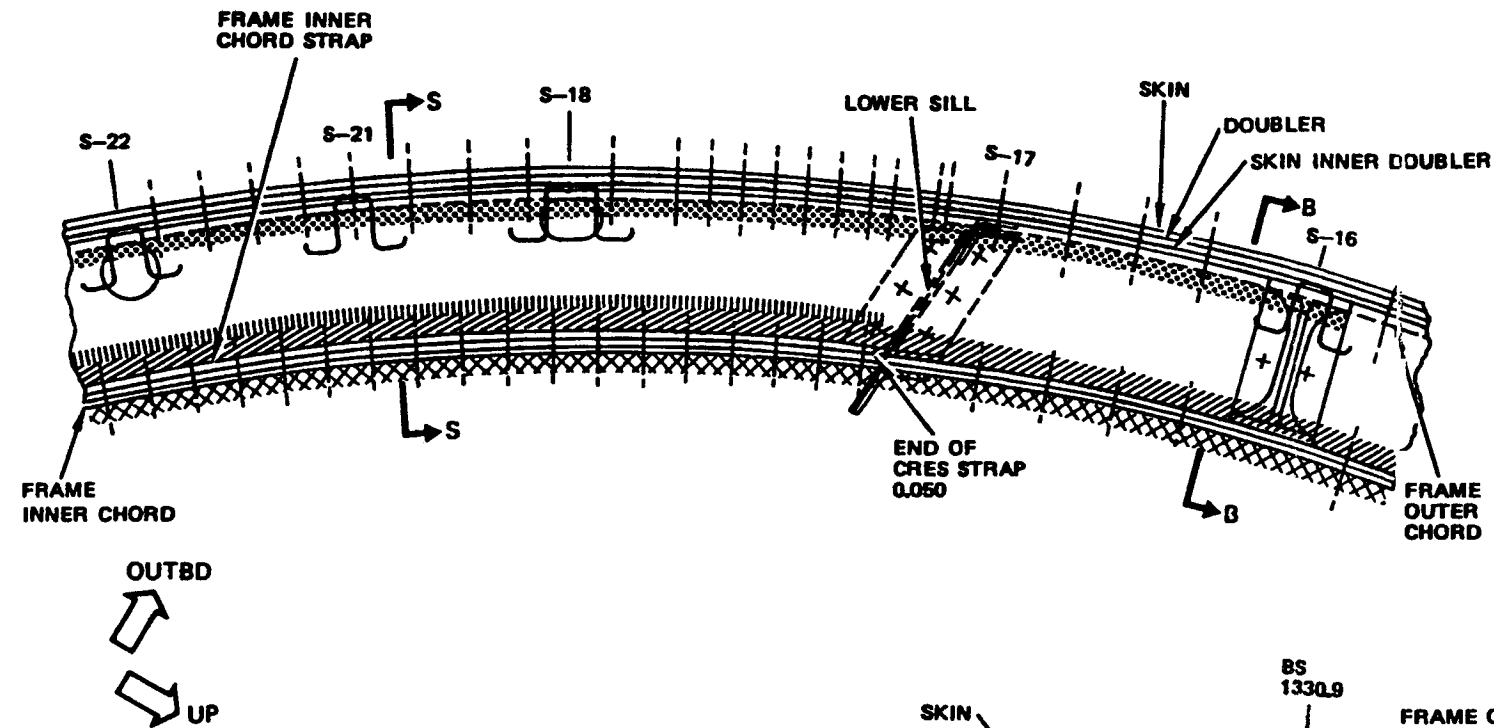
AFT ENTRY DOOR CUTOUT

DETAIL II

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



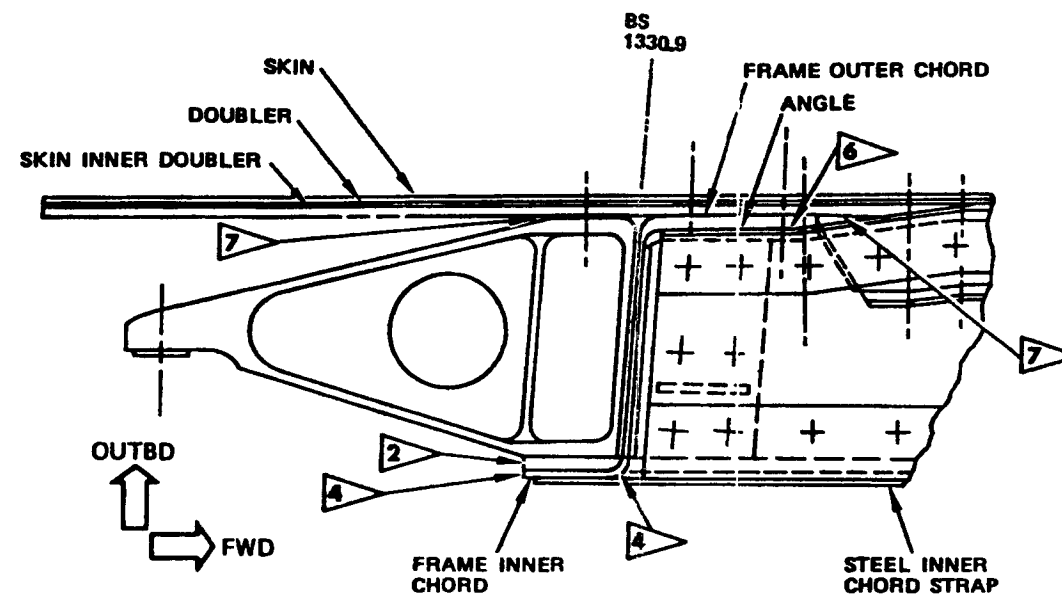
Aft Entry Door Cutout
 Figure 16 (Sheet 6)



FRAME MEMBERS
SECTION S-S

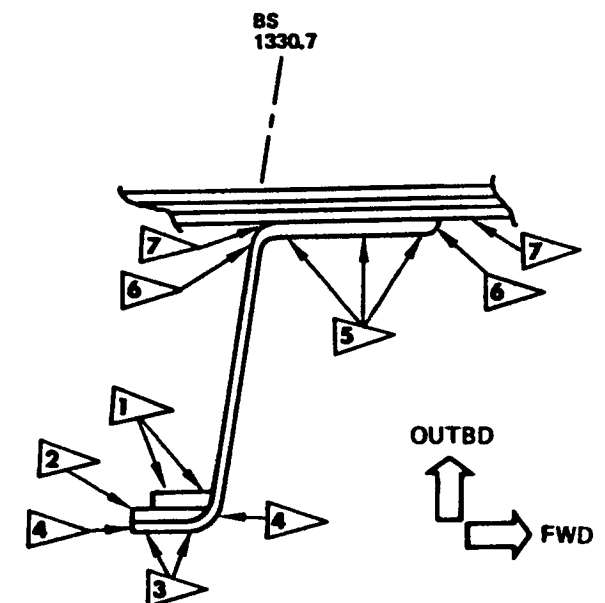
NOTES

- APPLIES TO ALL AIRPLANES
- 1 PLACE PROBE ON INNER CHORD CRES STRAP AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 2 PLACE PROBE ON FRAME INNER CHORD ALUMINUM STRAP EDGE AND SCAN IN DESIGNATED AREA
- 3 PLACE PROBE ON FRAME INNER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 4 ALTERNATE PROBE POSITION IF ACCESS TO FRAME INNER CHORD IS OBSTRUCTED
- 5 PLACE PROBE ON FRAME OUTER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 6 ALTERNATE PROBE POSITIONS IF FRAME OUTER CHORD IS OBSTRUCTED
- 7 PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF FRAME OUTER CHORD AT DESIGNATED AREA BETWEEN STRINGERS.



PROBE POSITION AT S-16 STOP FITTING
SECTION B-B

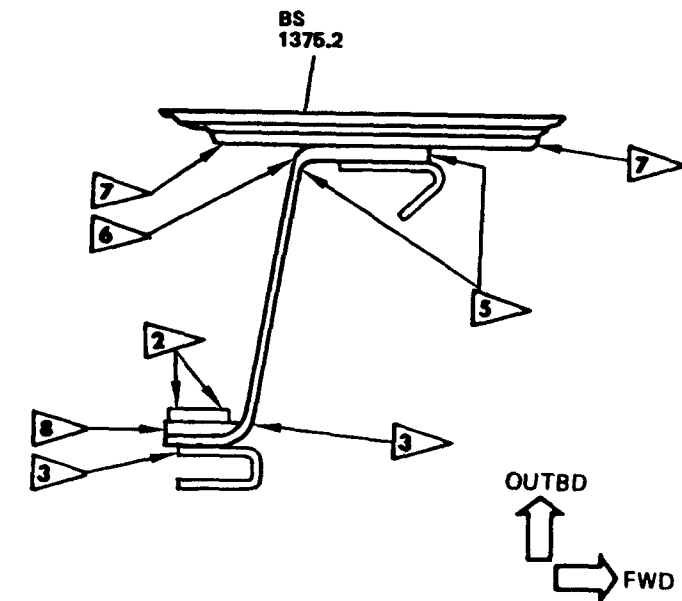
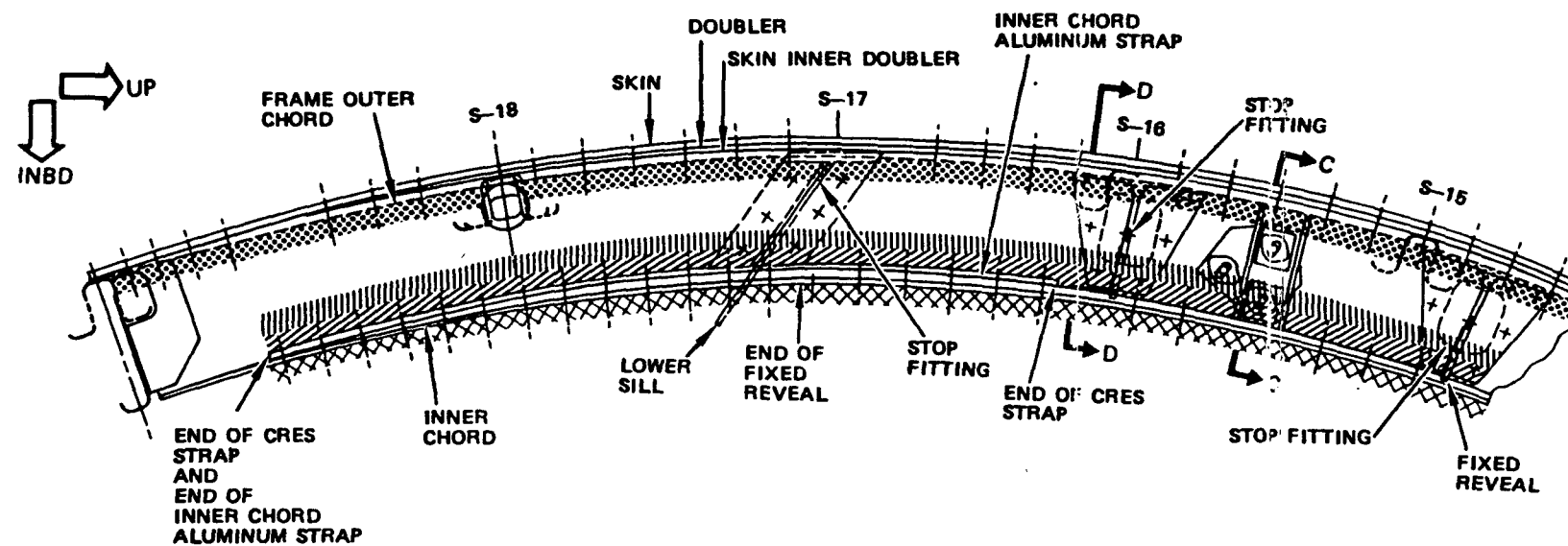
AFT ENTRY DOOR FRAME, LOWER
RIGHT-HAND CORNER OF C DOOR CUTOUT - BS 1330.9
DETAIL III



PROBE POSITION FOR FRAME
INNER AND OUTER CHORDS
SECTION S-S

Aft Entry Door Cutout
Figure 16 (Sheet 7)

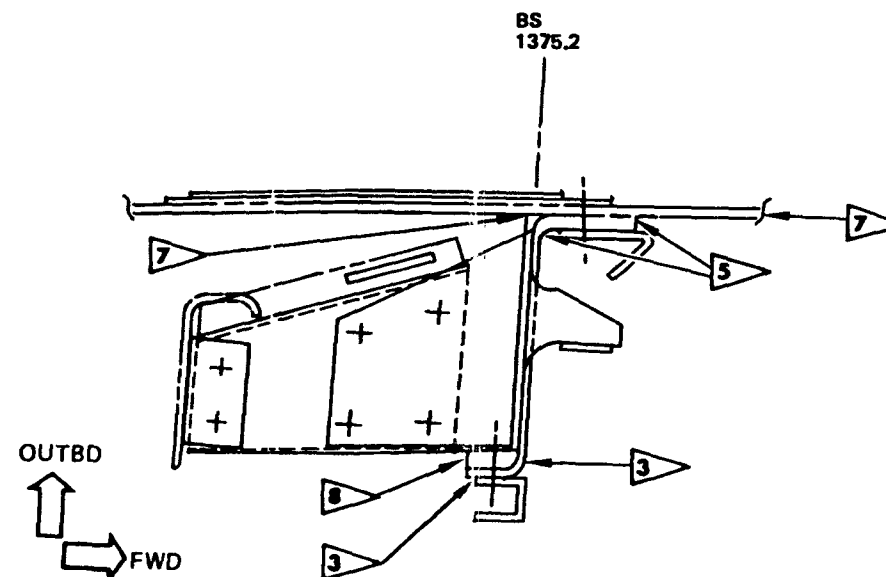
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



PROBE POSITION FOR FRAME INNER AND
OUTER CHORDS
SECTION C-C

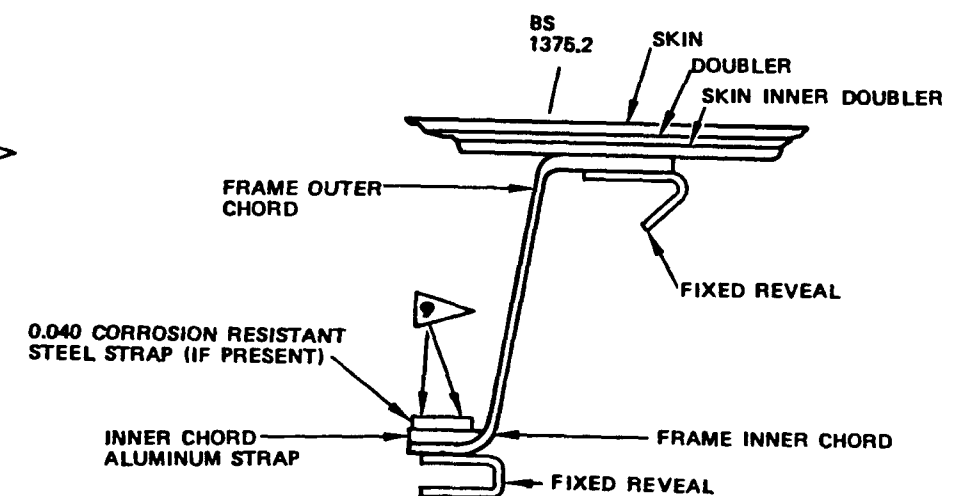
NOTES

- APPLIES TO ALL AIRPLANES
- 2 PLACE PROBE ON FRAME INNER CHORD ALUMINUM STRAP EDGE AND SCAN IN DESIGNATED AREA
- 3 PLACE PROBE ON FRAME INNER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 5 PLACE PROBE ON FRAME OUTER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 6 ALTERNATE PROBE POSITIONS IF FRAME OUTER CHORD IS OBSTRUCTED
- 7 PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF FRAME OUTER CHORD AT DESIGNATED AREA BETWEEN STRINGERS
- 8 ALTERNATE PROBE POSITION IF ACCESS TO FRAME INNER CHORD ALUMINUM STRAP IS OBSTRUCTED
- 9 IF STEEL STRAP IS PRESENT PLACE PROBE ON CRES STRAP AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA



PROBE POSITION AT STOP FITTING
SECTION D-D

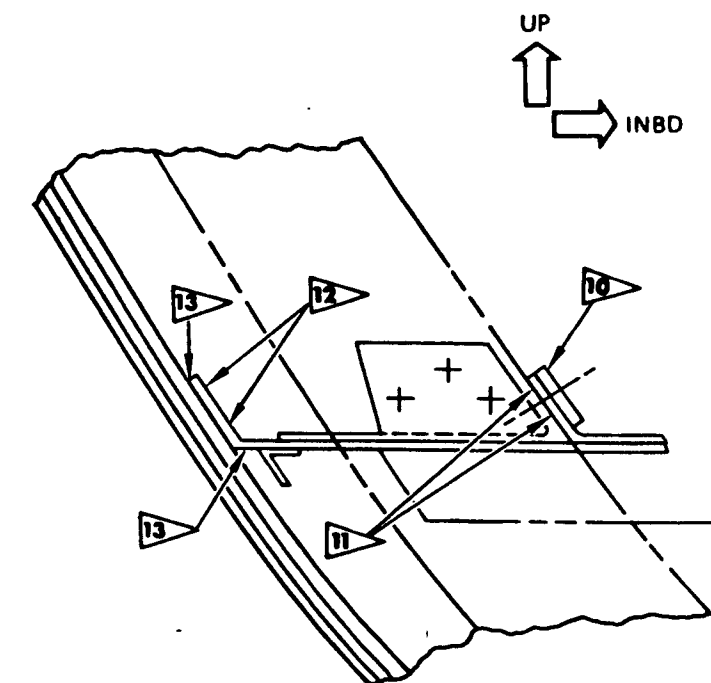
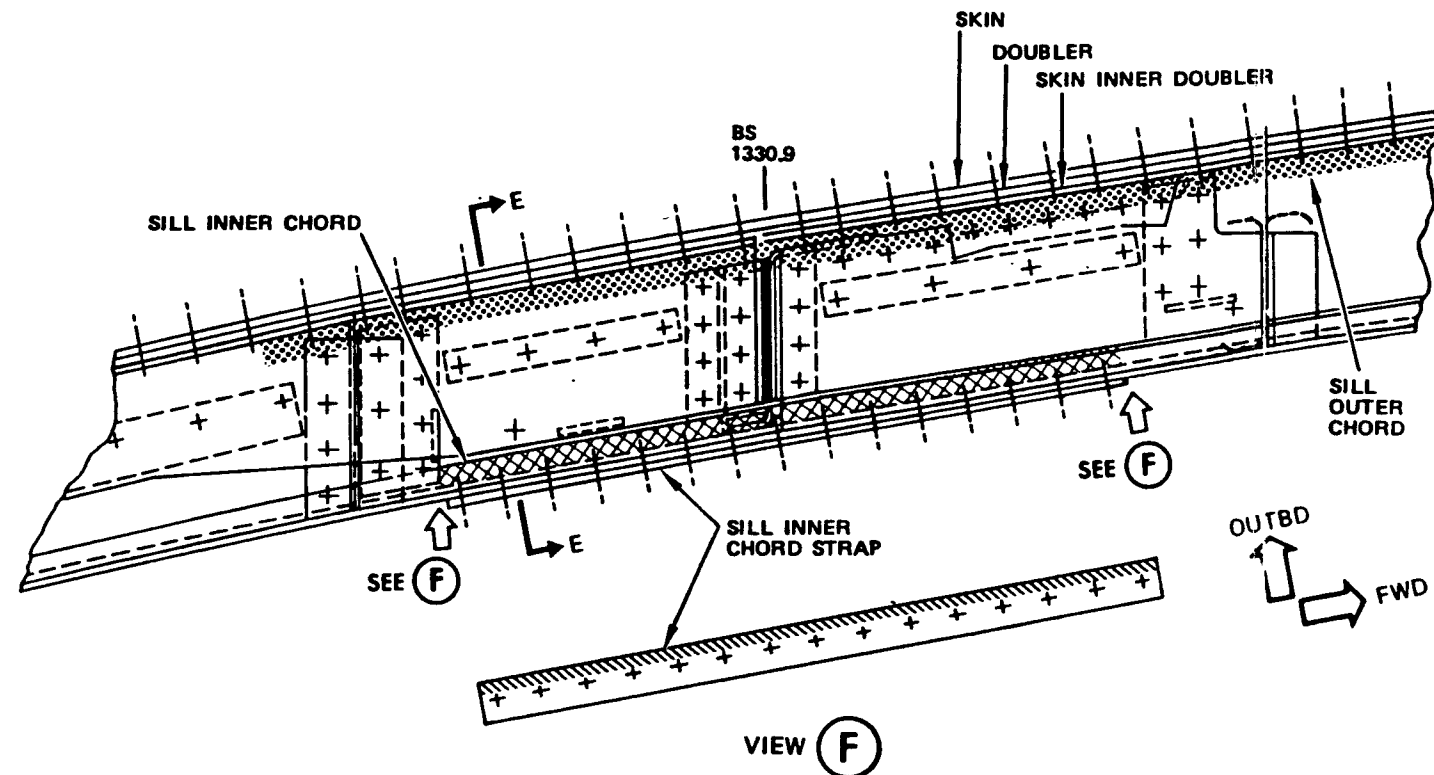
AFT ENTRY DOOR FRAME, LOWER LEFT-HAND
CORNER OF DOOR CUTOUT - BS 1375.2
DETAIL IV



MEMBER DESIGNATION AND PROBE POSITION FOR
CORROSION RESISTANT STEEL STRAP
SECTION C-C

Aft Entry Door Cutout
Figure 16 (Sheet 8)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

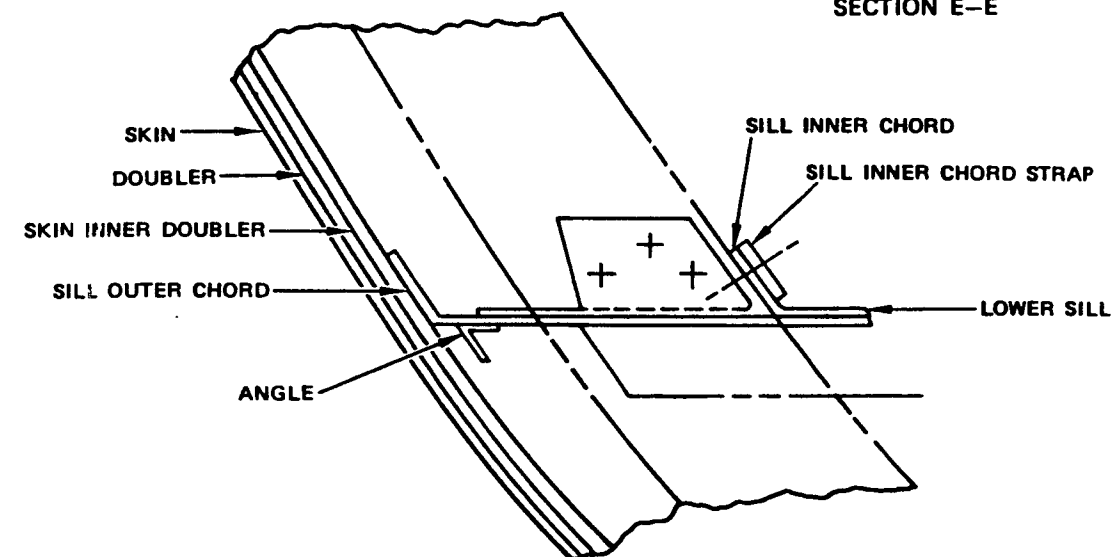


PROBE POSITION FOR SILL
 INNER AND OUTER CHORD
 SECTION E-E

NOTES

- BS 1330.9 LOWER SILL SHOWN, BS 1375.2 LOWER SILL SIMILAR
- APPLIES TO ALL AIRPLANES
- VIEW LOOKING DOWN

- 10 PLACE PROBE ON SILL INNER CHORD STRAP AND SCAN ABOVE FASTENERS IN DESIGNATED AREA. INSPECT THE SAME DESIGNATED AREA IF SHORTER STRAP IS PRESENT
- 11 PLACE PROBE ON SILL INNER CHORD AND SCAN BOTH SIDES OF FASTENER IN DESIGNATED AREA.
- 12 PLACE PROBE ON SILL OUTER CHORD AND SCAN BOTH SIDES OF FASTENER IN DESIGNATED AREA AT FIRST TWO FASTENERS FORWARD OF FRAME BLOCK BY ANGLE. SCAN ABOVE FASTENER ON SILL OUTER CHORD ONLY
- 13 PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF SILL OUTER CHORD AT DESIGNATED AREA. SCAN LOWER PORTION OF SILL OUTER CHORD FROM UNDER AIRPLANE FLOOR.

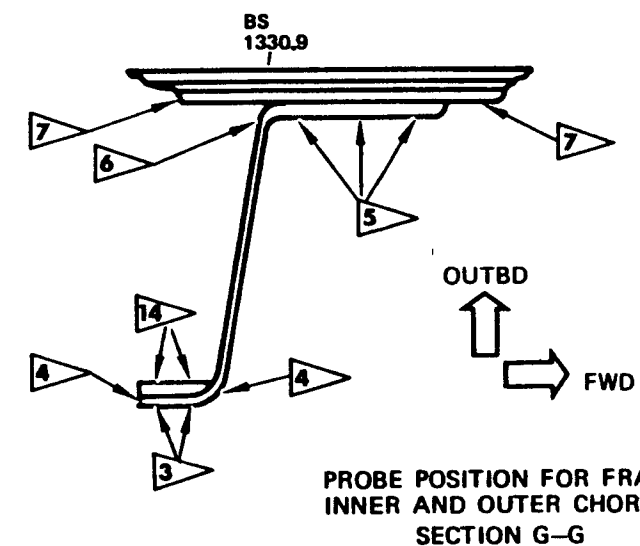
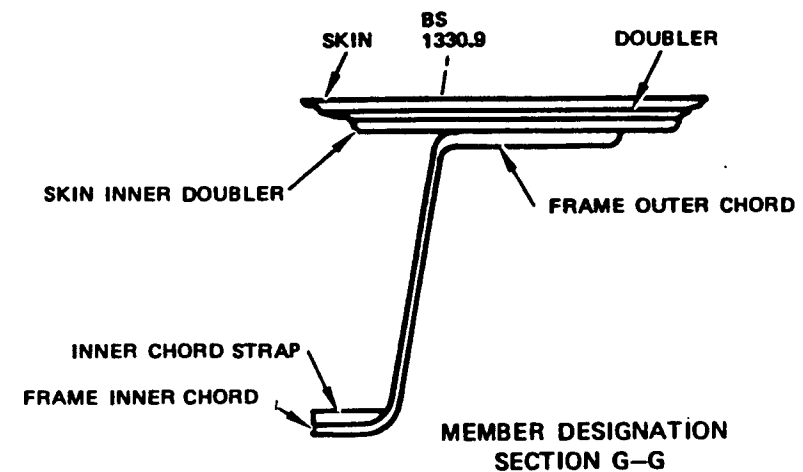
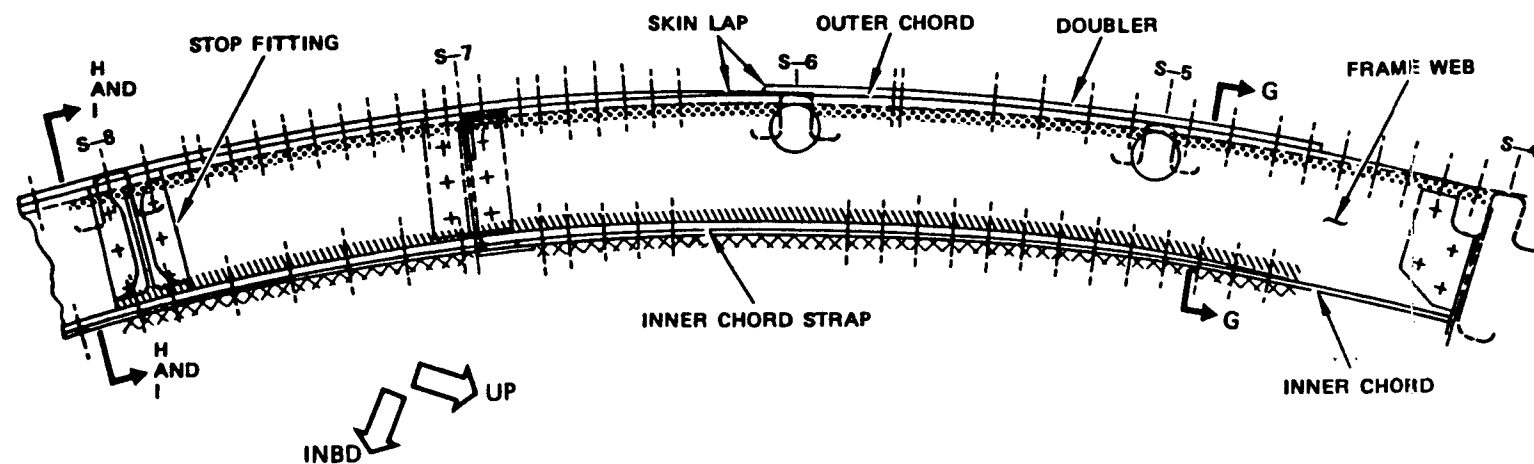


MEMBER DESIGNATION
 SECTION E-E

AFT ENTRY DOOR SILL, LOWER RIGHT HAND
 CORNER OF DOOR CUTOUT BS 1330.9
 DETAIL V

Aft Entry Door Cutout
 Figure 16 (Sheet 9)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

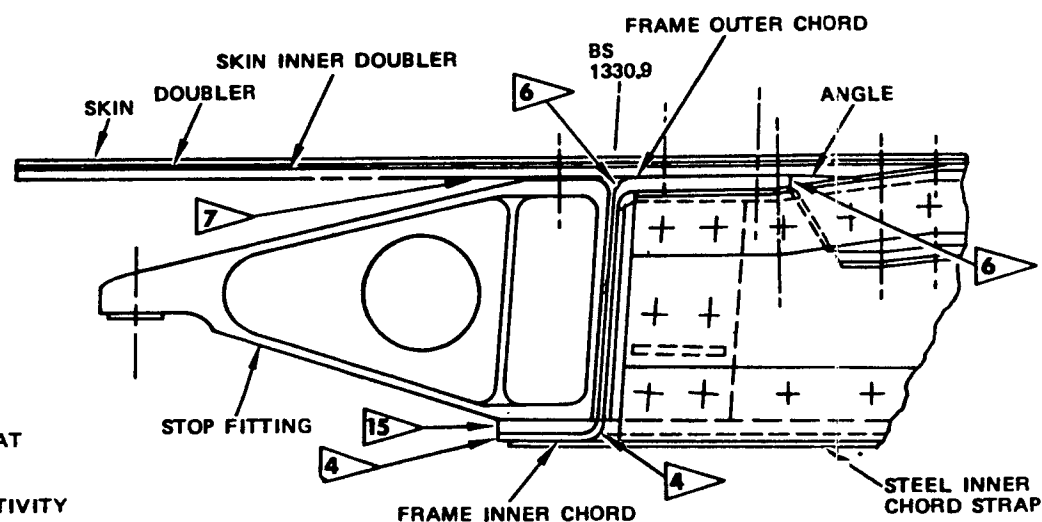


NOTES

- BS 1330.9 UPPER FRAME SHOWN. BS 1375.2 FRAME SIMILAR EXCEPT AT STOP FITTING. SEE SECTION I-I

- SEE TABLE I FOR AIRPLANE EFFECTIVITY

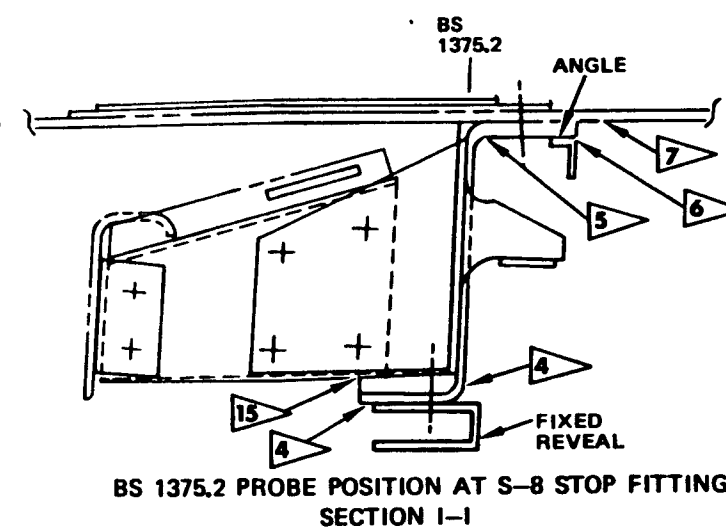
- 3 PLACE PROBE ON FRAME INNER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 4 ALTERNATE PROBE POSITION IF ACCESS TO FRAME INNER CHORD IS OBSTRUCTED
- 5 PLACE PROBE ON FRAME OUTER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 6 ALTERNATE PROBE POSITIONS IF FRAME OUTER CHORD IS OBSTRUCTED.
- 7 PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF FRAME OUTER CHORD AT DESIGNATED AREA BETWEEN STRINGERS
- 14 PLACE PROBE ON FRAME INNER CHORD STRAP AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 15 ALTERNATE PROBE POSITION IF ACCESS TO INNER CHORD STRAP IS OBSTRUCTED.



BS 1330.9 PROBE POSITION
AT S-8 STOP FITTING
SECTION H-H

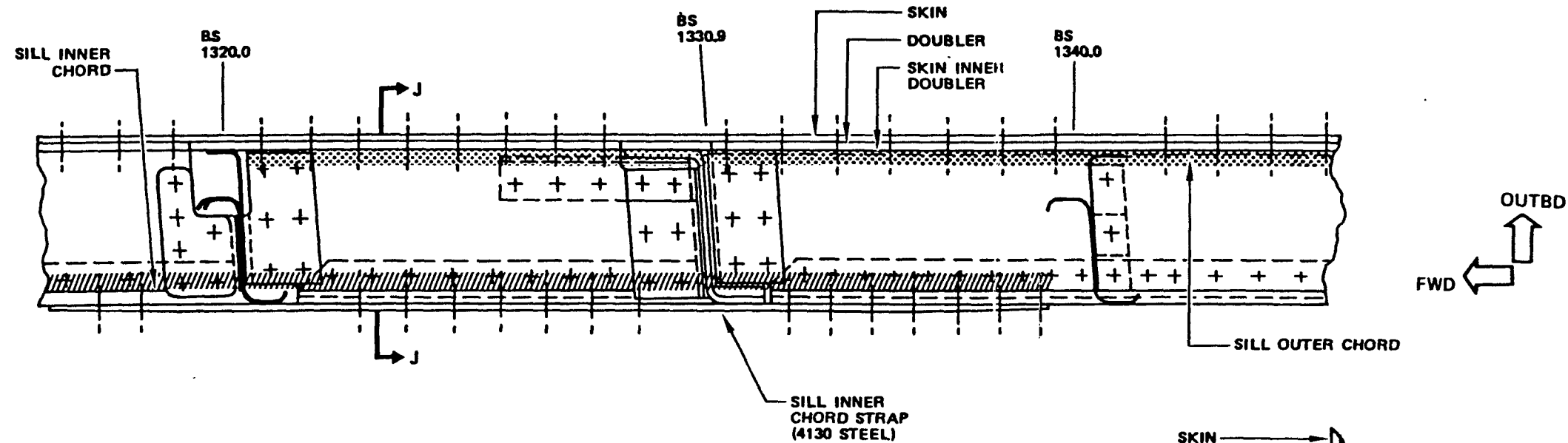
OUTBD
FWD

AFT ENTRY DOOR FRAME, UPPER RIGHT
HAND CORNER OF DOOR CUTOUT - BS 1330.9
DETAIL VI



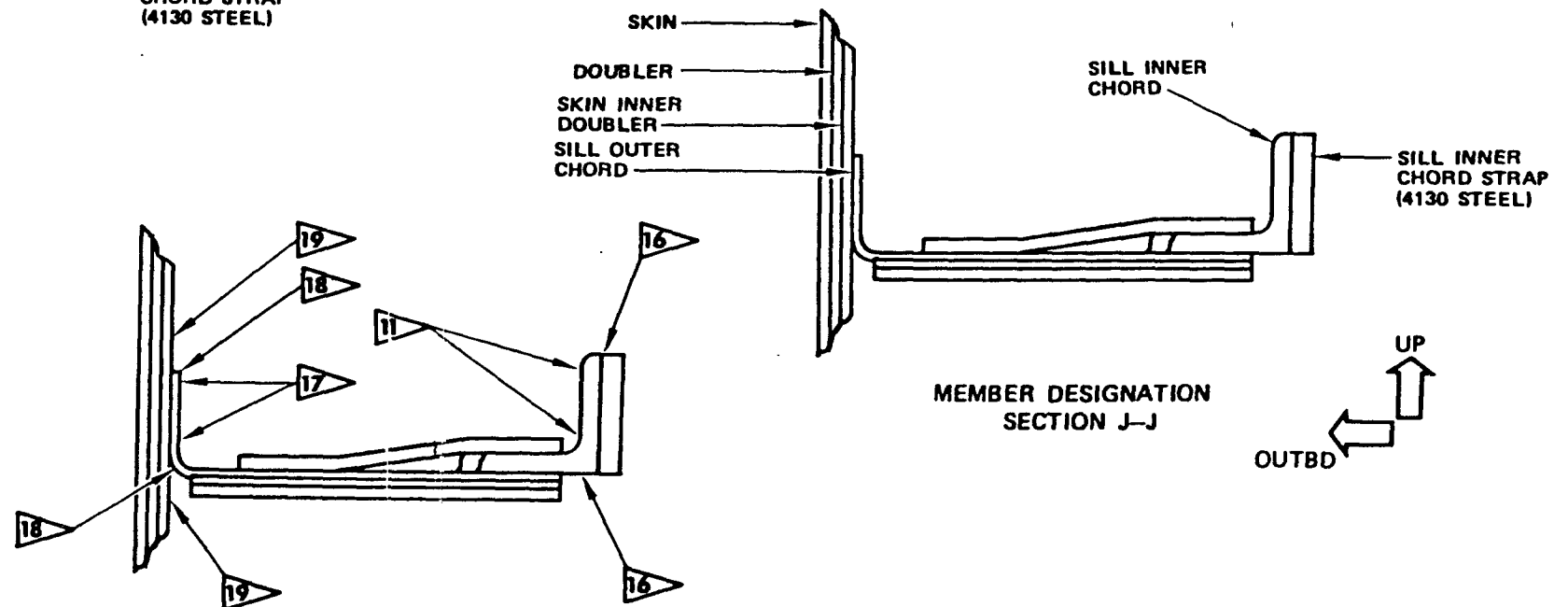
Aft Entry Door Cutout
Figure 16 (Sheet 10)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

- BS 1330.9 UPPER SILL SHOWN.
BS 1375.2 UPPER SILL SIMILAR.
- SEE TABLE I FOR AIRPLANE EFFECTIVITY
- 11 PLACE PROBE ON SILL INNER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 16 ALTERNATE PROBE POSITION IF ACCESS TO SILL INNER CHORD IS OBSTRUCTED
- 17 PLACE PROBE ON SILL OUTER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 18 ALTERNATE PROBE POSITION IF SILL OUTER CHORD IS OBSTRUCTED
- 19 PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF SILL OUTER CHORD AT DESIGNATED AREA

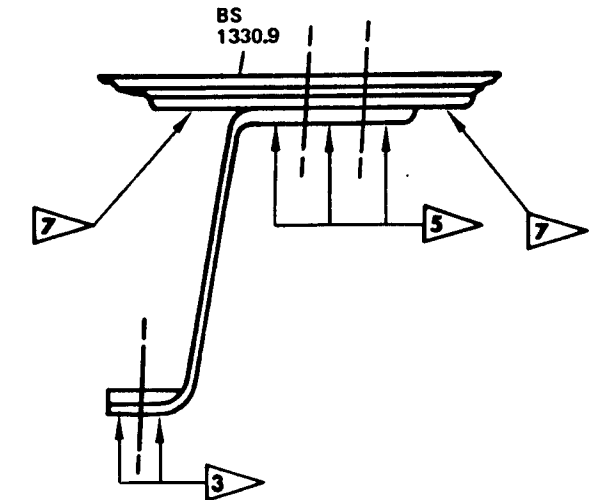
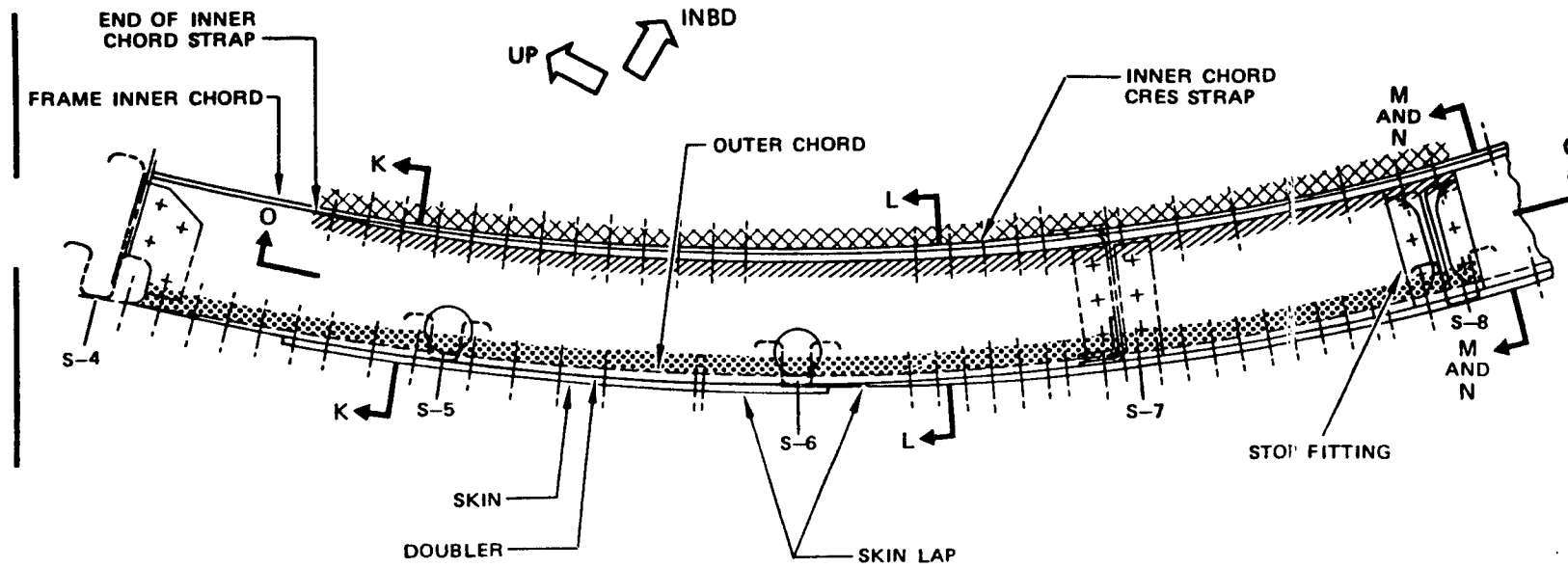


PROBE POSITION FOR SILL INNER
AND OUTER CHORDS
SECTION J-J

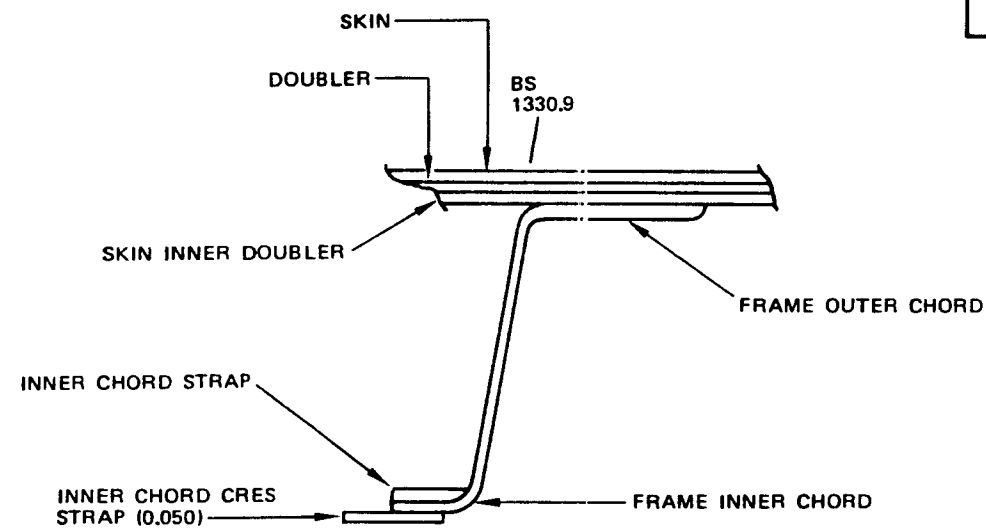
AFT ENTRY DOOR UPPER SILL RIGHT-HAND CORNER
DOOR CUTOUT - BS 1330.9
DETAIL VII

Aft Entry Door Cutout
Figure 16 (Sheet 11)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

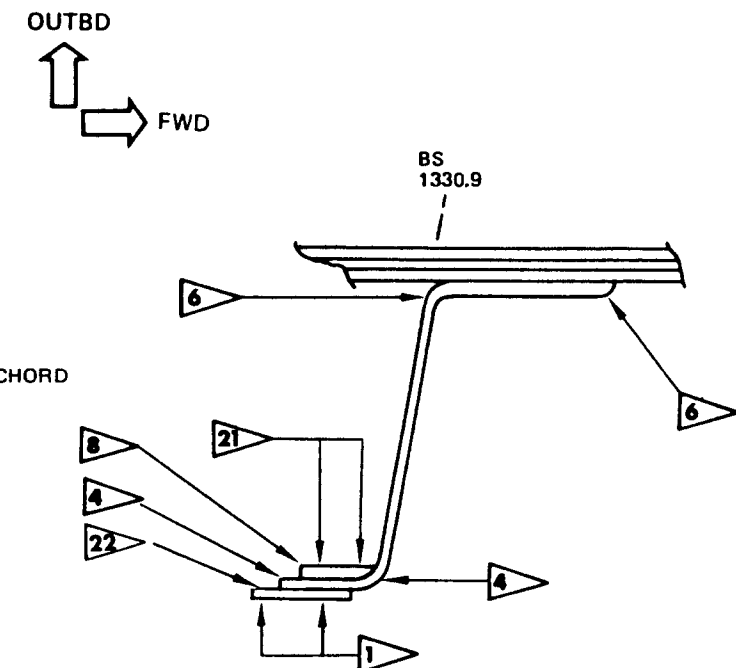


PROBE POSITION FOR INNER AND OUTER CHORDS
 SECTION K-K



MEMBER DESIGNATION
 SECTION L-L

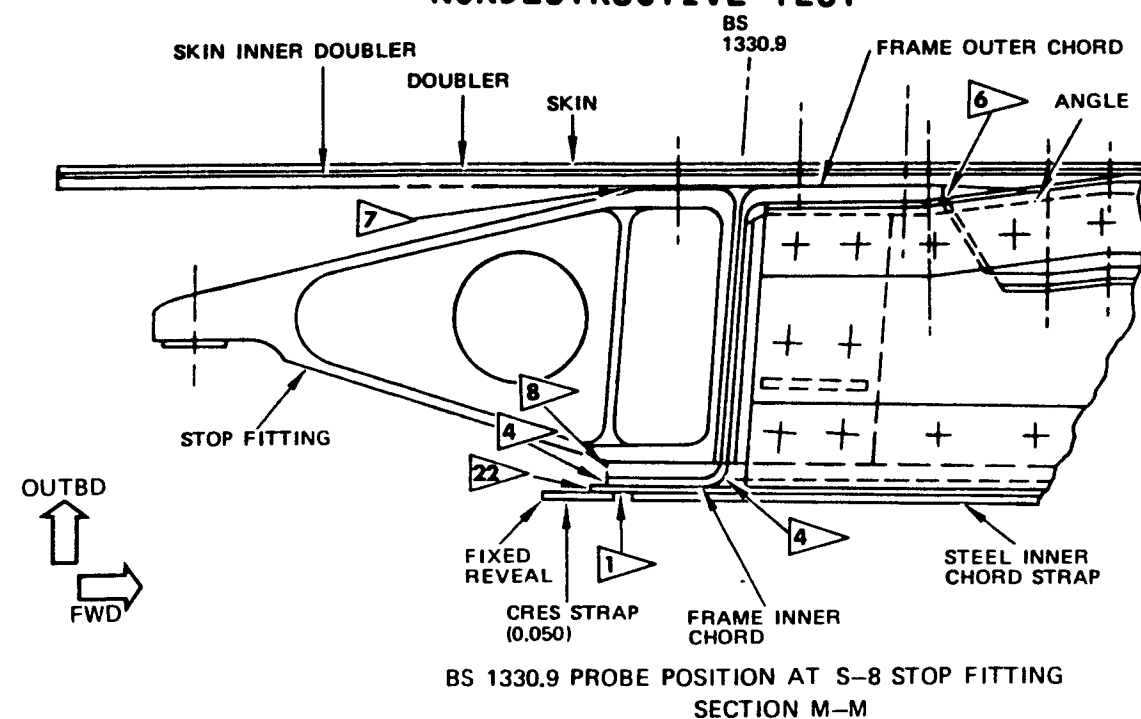
AFT ENTRY DOOR FRAME,
 UPPER RIGHT-HAND CORNER
 OF DOOR CUTOUT - BS 1330.9
 DETAIL VIII



PROBE POSITION FOR INNER AND OUTER CHORDS
 SECTION L-L

Aft Entry Door Cutout
 Figure 16 (Sheet 12)

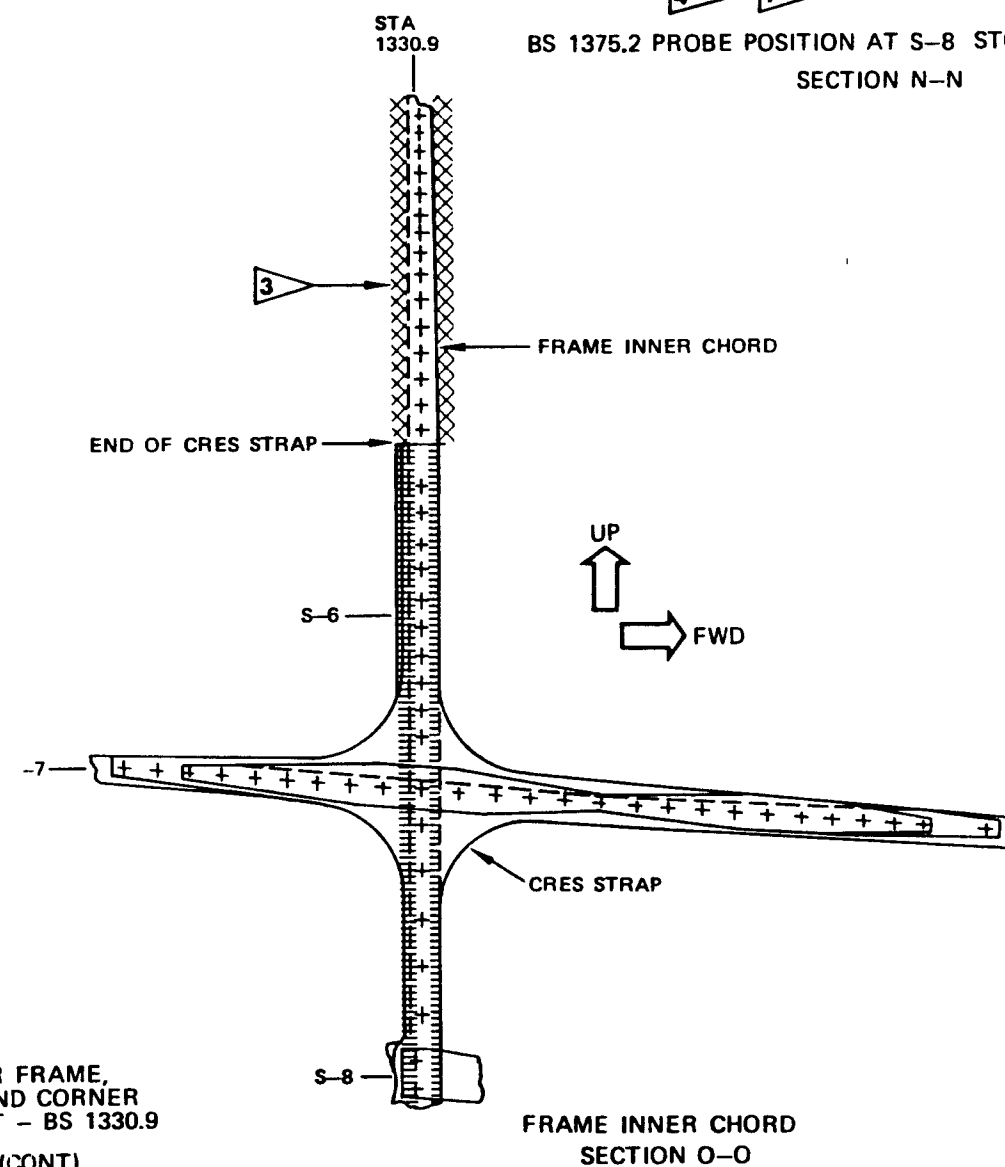
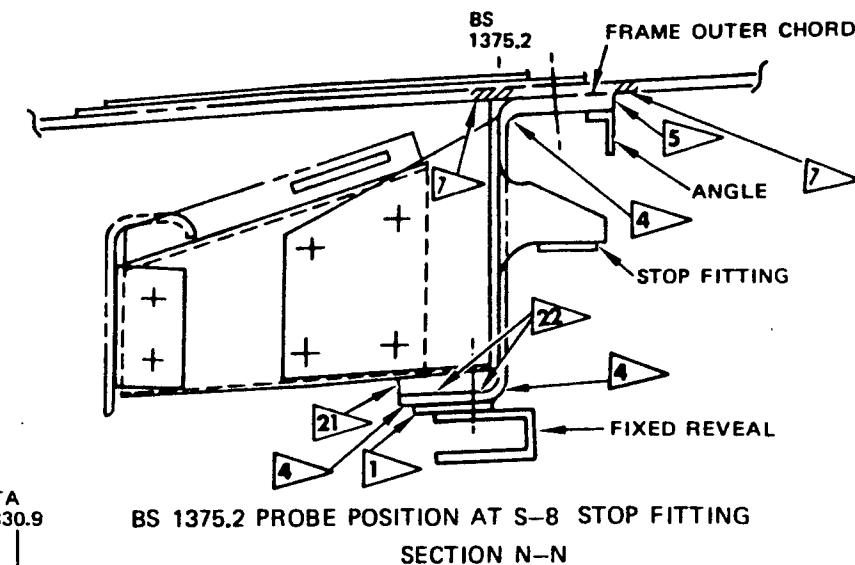
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



NOTES

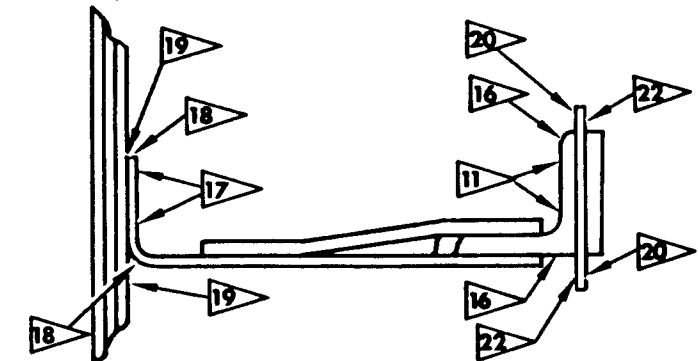
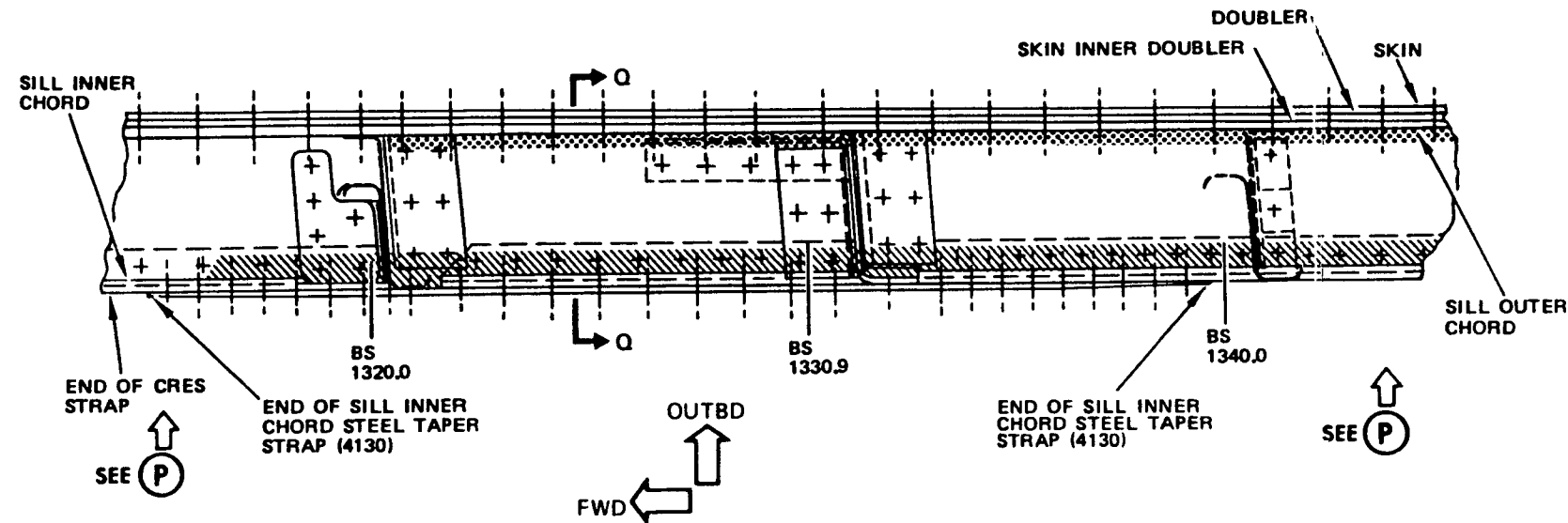
- BS 1330.9 UPPER FRAME SHOWN.
BS 1375.2 UPPER FRAME SIMILAR EXCEPT AT
STOP FITTING. SEE SECTION N-N.
- SEE TABLE I FOR AIRPLANE EFFECTIVITY

- 1** PLACE PROBE ON INNER CHORD CRES STRAP AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA. AT BS 1375.2 NO SCAN IS REQUIRED AT FIXED REVEAL BETWEEN S-7 & S-8 FWD SIDE.
- 3** PLACE PROBE ON FRAME INNER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA
- 4** ALTERNATE PROBE POSITION IF ACCESS TO FRAME INNER CHORD IS OBSTRUCTED.
- 5** PLACE PROBE ON FRAME OUTER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA.
- 6** ALTERNATE PROBE POSITION IF FRAME OUTER CHORD IS OBSTRUCTED
- 7** PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF FRAME OUTER CHORD IN DESIGNATED AREA.
- 8** ALTERNATE PROBE POSITION IF ACCESS TO INNER CHORD ALUMINUM STRAP IS OBSTRUCTED.
- 21** PLACE PROBE ON INNER CHORD ALUMINUM STRAP AND SCAN BOTH SIDES OF FASTENER IN DESIGNATED AREA.
- 22** ALTERNATE PROBE POSITION IF ACCESS TO CRES STRAP IS OBSTRUCTED.



Aft Entry Door Cutout
Figure 16 (Sheet 13)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

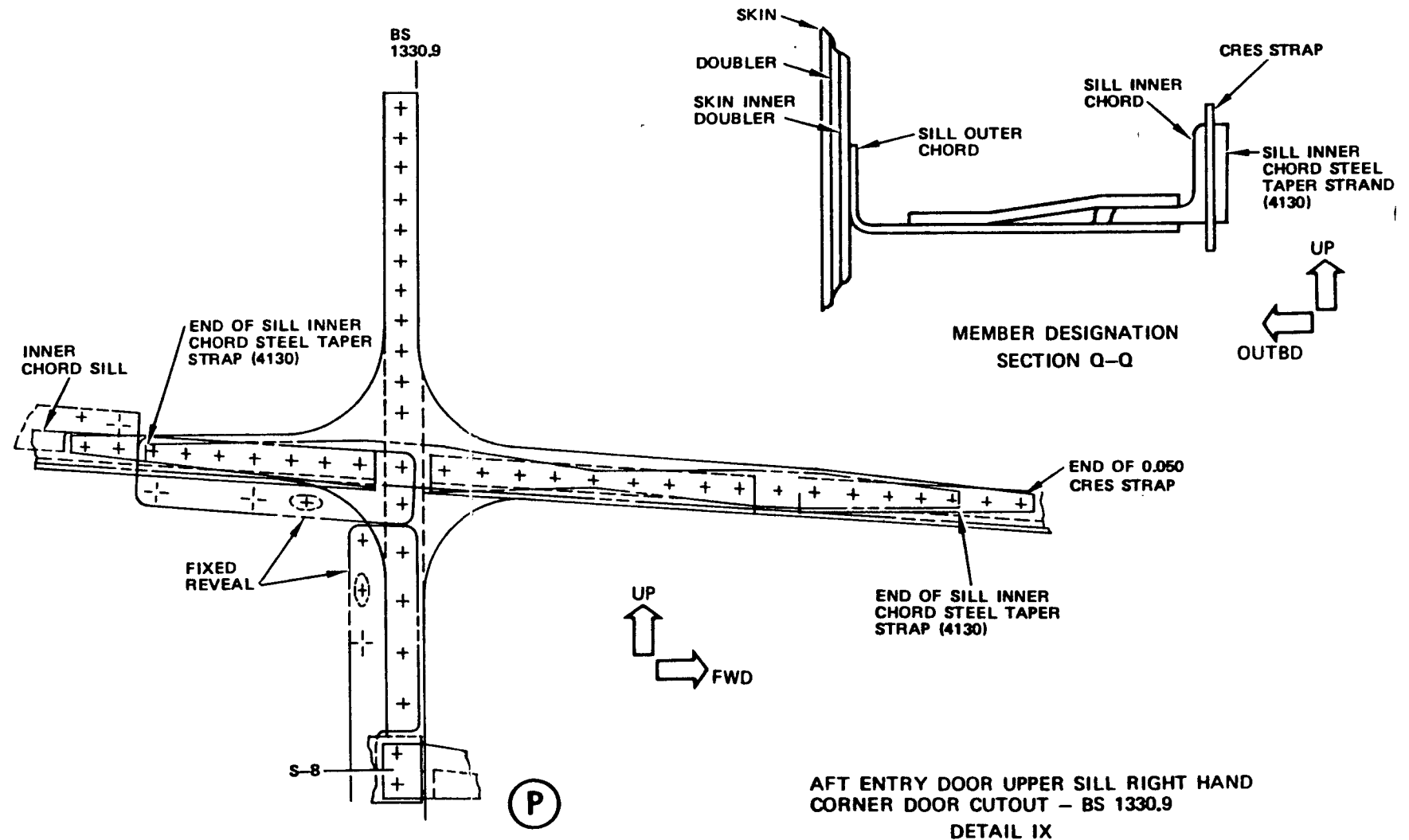


PROBE POSITION FOR SILL INNER AND OUTER CHORD
 SECTION Q-Q

NOTES

- BS 1330.0 UPPER SILL SHOWN, BS 1375.2 UPPER SILL SIMILAR.
- SEE TABLE I FOR AIRPLANE EFFECTIVITY.

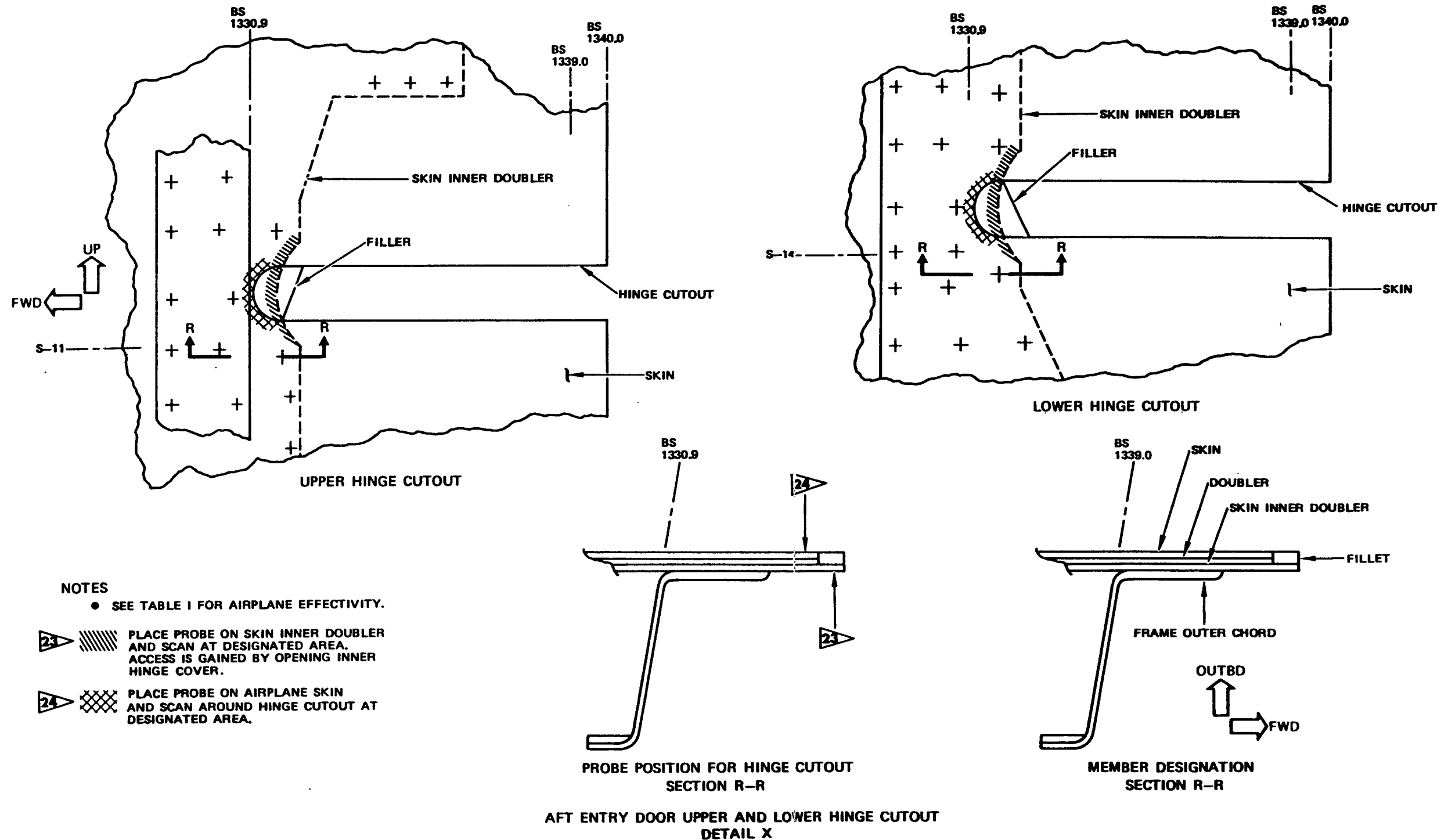
- 11 PLACE PROBE ON SILL INNER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA.
- 16 ALTERNATE PROBE POSITION IF ACCESS TO SILL INNER CHORD IS OBSTRUCTED.
- 17 PLACE PROBE ON SILL OUTER CHORD AND SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA.
- 18 ALTERNATE PROBE POSITION IF SILL OUTER CHORD IS OBSTRUCTED.
- 19 PLACE PROBE ON SKIN INNER DOUBLER AND SCAN ADJACENT TO BOTH SIDES OF SILL OUTER CHORD AT DESIGNATED AREA.
- 20 PLACE PROBE ON SILL INNER CHORD CRES STRAP, SCAN BOTH SIDES OF FASTENERS IN DESIGNATED AREA. USE SHIELDED PROBE WITH ED 520 INSTRUMENT.
- 22 ALTERNATE PROBE POSITION IF ACCESS TO CRES STRAP IS OBSTRUCTED.



AFT ENTRY DOOR UPPER SILL RIGHT HAND
 CORNER DOOR CUTOUT - BS 1330.9
 DETAIL IX

Aft Entry Door Cutout
 Figure 16 (Sheet 14)

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



Aft Entry Door Cutout
 Figure 16 (Sheet 15)

NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENTFUSELAGE - MAIN FRAME1. Purpose

- A. To perform a surface eddy current inspection to detect vertical cracks in the nose wheel well sidewall pressure web behind vertical stiffener reinforcing straps from BS 277.0 through BS 303.2 left side only.

2. Equipment

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

NOTE: Refer to Part 1, 51-06-00, par. 1 for information on equipment manufacturers.

- (1) Instrument - Refer to Part 6, 51-00-00, Fig. 4.
- (2) Probe - Straight non-shielded pencil probe per Part 6, 51-00-00, Fig. 4 with 0.187-inch (0.475 cm) diameter.
 - (a) P/N UP40, NDT Product Engineering
- (3) Reference Standard -
 - (a) Refer to Part 6, 51-00-00, Fig. 4, para. 2.C.
 - (b) Fabricate per Detail II.

NOTE: This reference standard is used to verify calibration performed per step 4.A.

- (4) Probe Positioning Guide - Fabricate per Detail III.

3. Preparation for Inspection

- A. Gain access to inspection area through the nose gear wheel well. See Detail I.
- B. Lightly sand inspection area to remove loose paint and foreign material.
- C. Wipe surface clean.

Nose Gear Wheel Well Sidewall Pressure Web
Figure 17 (Sheet 1)

NONDESTRUCTIVE TEST

4. Instrument Calibration

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

B. Calibration Verification

- (1) Place probe in probe positioning guide on reference standard Position 1. See Detail IV.
- (2) Reposition meter needle with balance control for an on-scale reading.
- (3) Slide probe/positioning guide to Position 2 and note instrument response. See Detail IV. Adjust sensitivity control to give a minimum meter response difference between notch and unnotched area of 50% of full scale.
- (4) Recheck balance and liftoff. If readjustments are made, recheck sensitivity.
- (5) Slide probe/positioning guide from an unnotched area to Positions 3 and 4 and note meter response. See Detail IV.

5. Inspection Procedure

A. Inspect per Detail V.

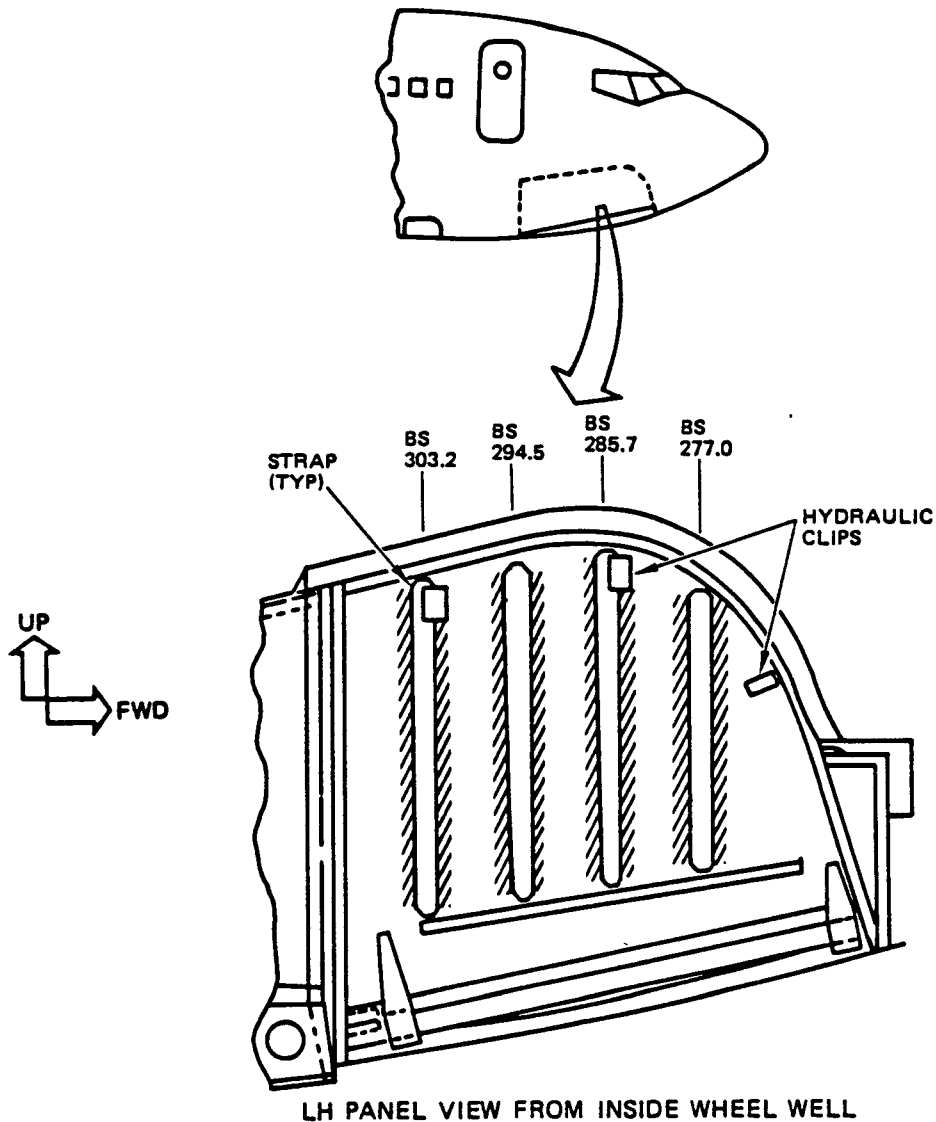
NOTE: Tubing and tubing brackets obstruct a portion of the upper inspection area at all reinforcing straps. To minimize noninspectable areas, remove probe from positioning guide and scan area, maintaining a 60 degree to 65 degree probe inclination to the web.

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.

Nose Gear Wheel Well Sidewall Pressure Web
Figure 17 (Sheet 2)

NONDESTRUCTIVE TEST



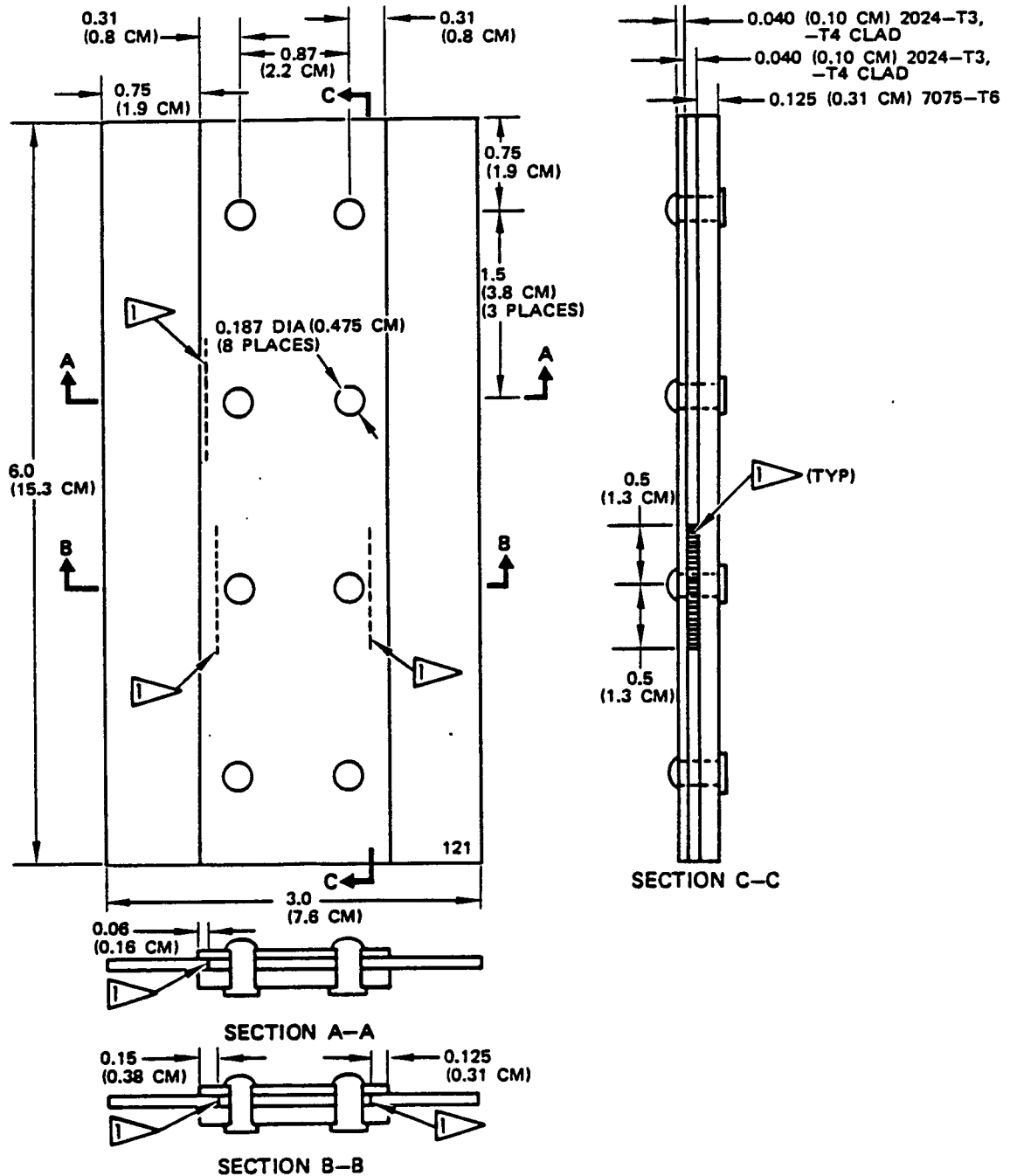
NOTE

////, INSPECTION AREA — INSPECT WHEEL WELL PRESSURE WEB ADJACENT TO REINFORCING STRAPS AT BODY STATION 277.0, 285.7, 294.5, AND 303.2, LEFT SIDE ONLY

**INSPECTION AREA
DETAIL I**

Nose Gear Wheel Well Sidewall Pressure Web
Figure 17 (Sheet 3)

NONDESTRUCTIVE TEST



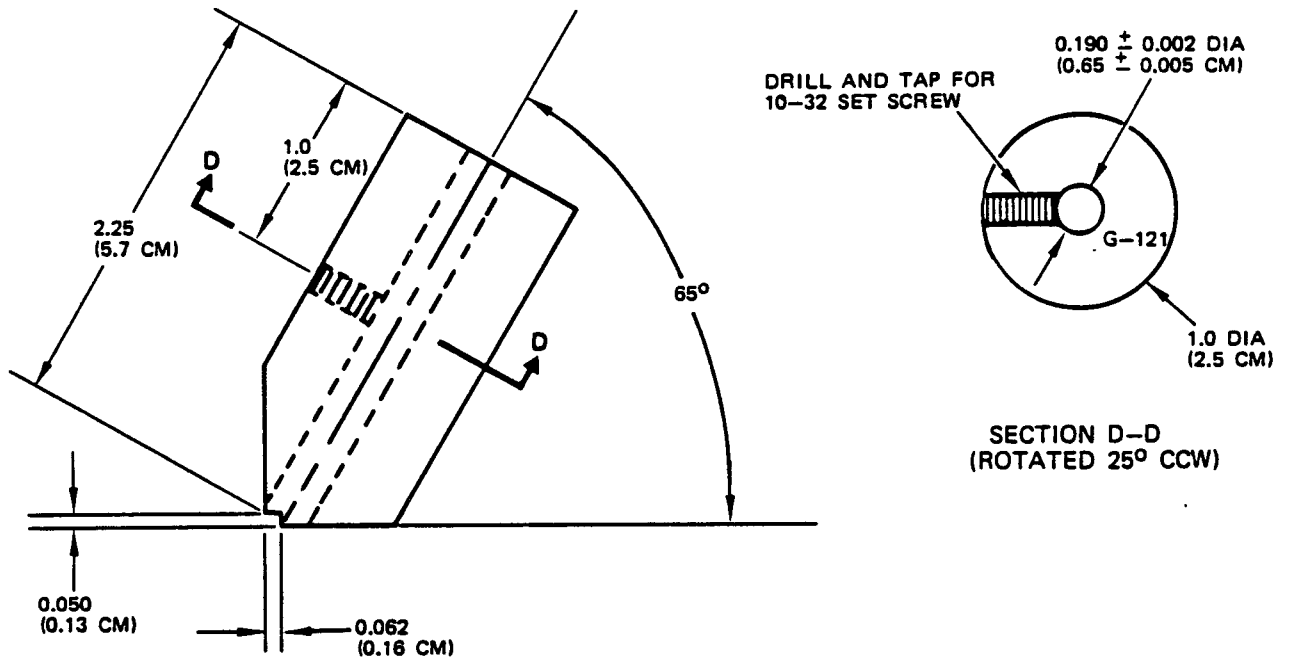
NOTES

- ALL DIMENSIONS ARE IN INCHES (CENTIMETERS IN PARENTHESES)
- TOLERANCE: $X.X \pm 0.05$ (0.13 CM), $X.XX \pm 0.010$ (0.03 CM), $X.XXX \pm 0.005$ (0.01 CM)
- MATERIAL: 2024-T3 OR -T4, 7075-T6 ALUMINUM AS NOTED
- FASTENERS: BACR15BB6D5 RIVETS (8 PLACES)
- ETCH OR STEEL STAMP WITH 121
- ▶ JEWELER'S SAWCUT 0.030 (0.08 CM) MAX WIDTH (TYP 3 PLACES) DRILL SMALL HOLE TO START SAWCUT

REFERENCE STANDARD 121
DETAIL II

Nose Gear Wheel Well Sidewall Pressure Web
Figure 17 (Sheet 4)

NONDESTRUCTIVE TEST



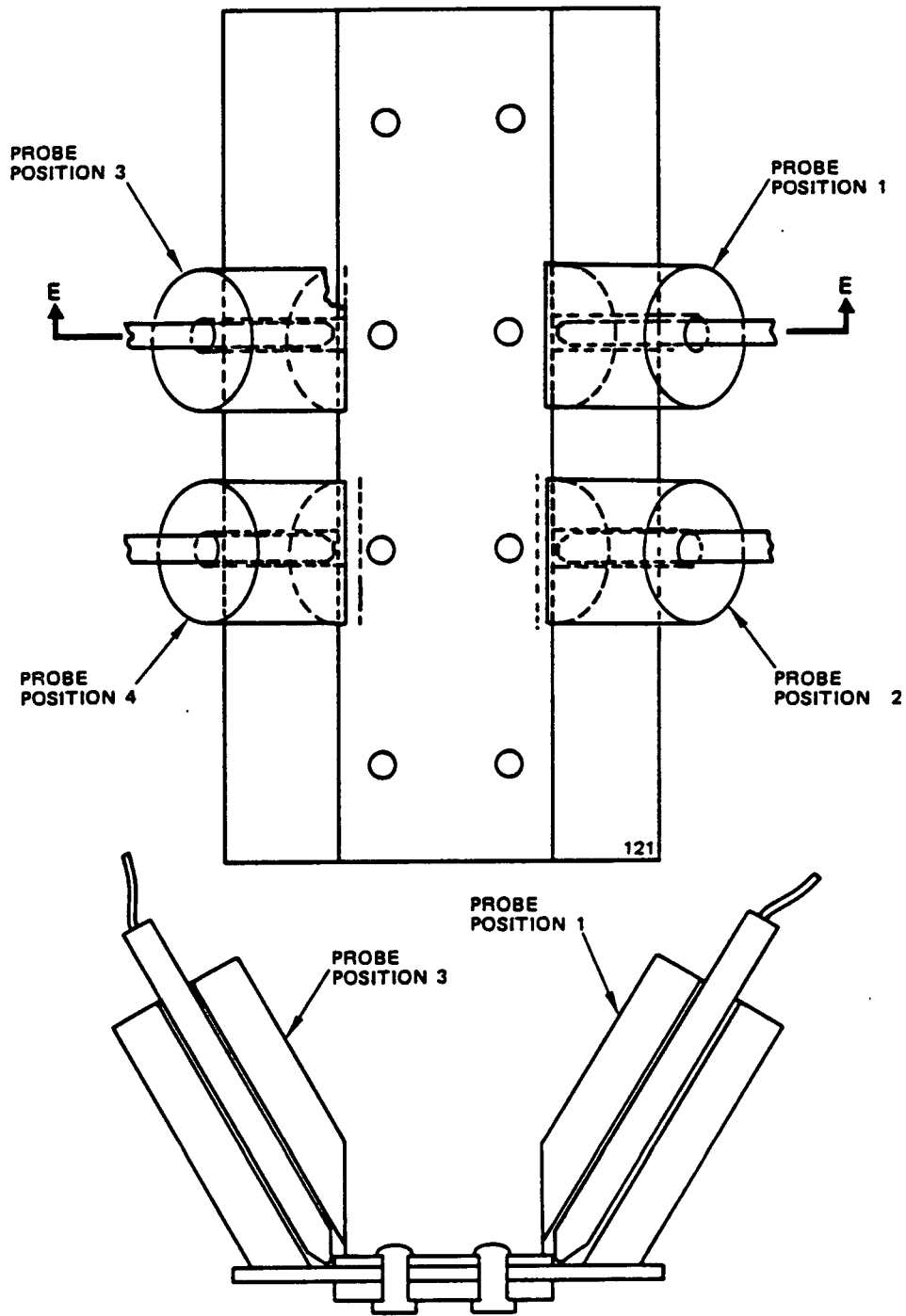
NOTES

- ALL DIMENSIONS ARE IN INCHES (CENTIMETERS IN PARENTHESES) EXCEPT AS NOTED
- TOLERANCE: $X.X \pm 0.05$ (0.13 CM), $X.XX \pm 0.010$ (0.03 CM), $X.XXX \pm 0.005$ (0.013 CM) EXCEPT AS NOTED
- MATERIAL: NYLON ROD OR ANY NONCONDUCTIVE MATERIAL
- ETCH WITH G-121

PROBE POSITION GUIDE
 DETAIL III

Nose Gear Wheel Well Sidewall Pressure Web
 Figure 17 (Sheet 5)

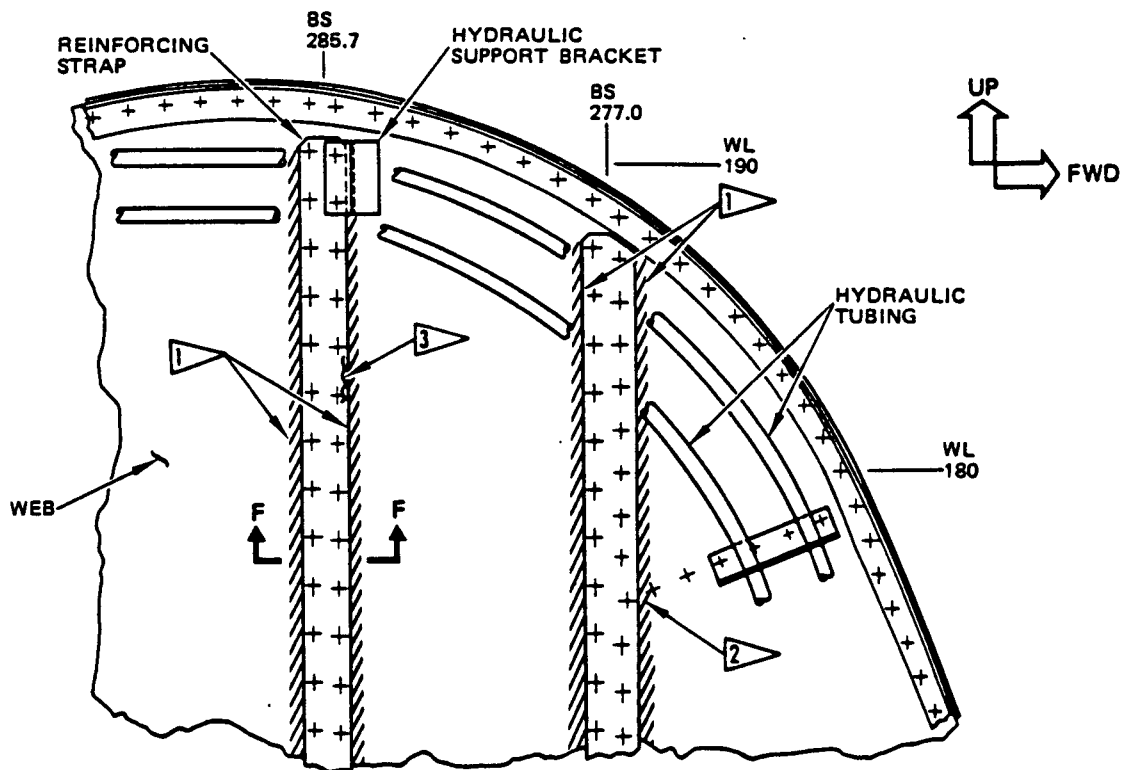
BOEING
COMMERCIAL JET
 NONDESTRUCTIVE TEST



SECTION E-E

PROBE CALIBRATION POSITION ON REFERENCE STANDARD 121
 DETAIL IV

NONDESTRUCTIVE TEST

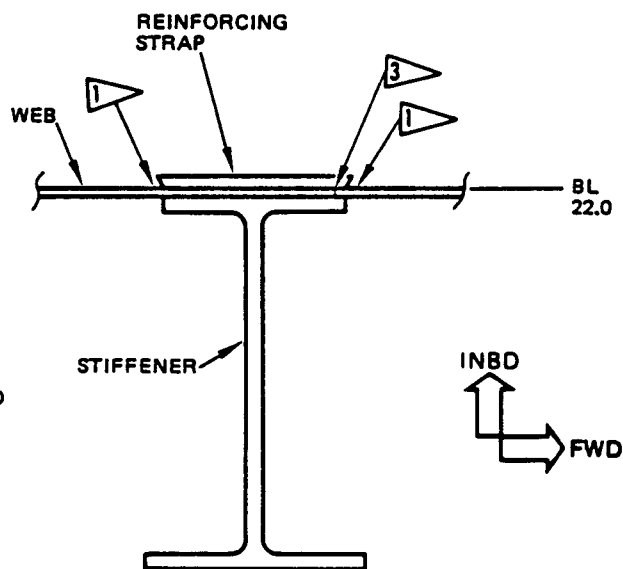


VIEW LOOKING OUTBOARD

NOTES

- LEFT SIDE SHOWN

- 1 PLACE PROBE AND PROBE POSITIONING GUIDE ON WHEEL WELL WEB ADJACENT TO REINFORCING STRAP AND SCAN ALONG ENTIRE LENGTH OF VERTICAL STRAP PER//////, INSPECT BOTH SIDES OF REINFORCING STRAPS AT BODY STATION 277.0, 285.7, 294.5 AND 303.2
- 2 REMOVE PROBE FROM POSITIONING GUIDE TO INSPECT APPROX 1 INCH (2.5 CM) IN AREA OF INTERFERING FASTENER. MAINTAIN A 60° TO 65° PROBE INCLINATION TO WEB
- 3 POTENTIAL CRACK LOCATION (TYPICAL)



SECTION F-F

**TYPICAL INSPECTION AREA
DETAIL V**

Nose Gear Wheel Well Sidewall Pressure Web
Figure 17 (Sheet 7)

EFFECTIVITY
MODEL: ALL
SSI DOCUMENT (D6-44023)
REFERENCE: 53-A00-27,
53-A10-27, 53-A20-27,
53-A30-27, 53-A40-27



PART 6 EDDY CURRENT
WEB OF THE AFT PRESSURE BULKHEAD - BS 1440

1. Purpose

- A. This subsurface eddy current procedure can find cracks in the web of the aft pressure bulkhead.
- B. This inspection can find subsurface cracks that start at fastener holes at these locations:
 - (1) In the web below the outer circumferential tear strap. The crack direction is circumferential. See Detail I, flagnote 1.
 - (2) In the web below the splice of the outer circumferential tear strap. The crack direction is circumferential. See Detail I, flagnote 2.
 - (3) In the web lap splices below the outer and inner circumferential tear straps. The crack direction can be in all directions in this area. See Detail I, flagnote 3.
 - (4) In the web lap splices. The crack direction is radial. See Detail I, flagnote 4.

2. Equipment

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

A. Instruments

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

- (1) Can operate at frequencies of 2 KHz, 6 KHz, and 10 KHz.
- (2) Can find the reference notches in the reference standard.

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

- (a) MIZ 10A/B, Zetec
- (b) NDT 19E, Nortec/Staveley
- (c) Phasec 1.1, Hocking/Krautkramer

Web of the Aft Pressure Bulkhead -BS 1440
Figure 18 (Sheet 1)

BOEING
NONDESTRUCTIVE TEST

- B. Probes - Shielded spot probes that can operate at 2 KHz, 6 KHz, and 10 KHz and have an end diameter of 0.55 inch (14 mm) or less can be used. Some fastener edge-to-edge distances make it necessary to use a probe with a diameter of 0.31 inch (7.8 mm) or less. The probes can be straight or at an angle. Some areas will make it necessary to use an angle probe.

NOTE: For this inspection procedure a reflection spot probe will operate best. More gain will be necessary with a bridge probe, thus more signal drift will occur.

The probes specified below were used to help prepare this procedure.

- (1) VMR112, VM Products
- (2) SPO-5328, Nortec/Staveley
- (3) SPO-5329, Nortec/Staveley
- (4) SPO-5514, 0.31 inch diameter (angle), Nortec/Staveley

C. Reference Standards

- (1) Make reference standard ANDT1028 as shown in Detail II.

3. Prepare for the Inspection

A. Prepare for the subsurface inspection of the bulkhead webs as follows:

- (1) Get access to the inspection areas through the access panel immediately aft of the aft pressure bulkhead.
- (2) Loosen the hydraulic line hangers near the bottom of the bulkhead to get access to the outer tear strap and web in this area.
- (3) Make sure that the instrument, probe, reference standard, and the inspection areas are at the same temperature.
- (4) Make sure that the aft side of the pressure bulkhead is clean at the inspection areas. See Detail I for the inspection areas.

4. Calibration

NOTE: Refer to the manufacturer's instructions to prepare the equipment for use.

A. Calibration of instruments that have meters:

- (1) See Detail III for the applicable frequency and location on the reference standard and set the instrument to the applicable frequency.

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 2)

NONDESTRUCTIVE TEST

- (2) See Detail I for the applicable inspection location.
- (3) Put the probe away from the edge at position 1 on the applicable reference standard location. Position 1 does not have the reference notch adjacent to the fastener. See Detail III.
- (4) Balance the instrument.
- (5) Set lift-off at position 1 on the applicable reference standard location. See Detail III. Set lift-off so that the meter needle moves no more than 5 percent of full scale for probe to part distances of up to 0.006 inch (the thickness of 2 sheets of paper).
- (6) Adjust the meter position control to set the meter needle to 20 percent of full scale.
- (7) Put the probe at position 2 on the applicable reference standard location. See Detail III.
- (8) Move the probe around this fastener to make a scan as shown by the arrows in Detail III. Adjust the instrument sensitivity to get a meter response from the reference notch that is 60 percent of full scale (40 percent higher than the balance position). See Detail IV.

NOTE: Do not do a scan near the edge of the reference standard. The edge effect can cause an upscale signal on the meter.

- (9) Balance the instrument again and make sure the lift-off is set as specified in paragraph 4.A.5.

B. Calibration of instruments that have an impedance plane display:

NOTE: The vertical gain can be higher than the horizontal gain. This will make the signal more stable and give a more vertical signal on the screen.

NOTE: The high pass filters (HP) must be set to off (0 Hz). Low pass filters (LP) must be set to the minimum value that does not decrease the signals at normal scan speeds.

- (1) See Detail III for the applicable frequency and location on the reference standard and set the instrument to the applicable frequency.
- (2) See Detail I for the applicable inspection location.
- (3) Put the probe at position 1 on the applicable reference standard location. See Detail III.

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 3)

NONDESTRUCTIVE TEST

- (4) Use the instructions of the instrument to balance the instrument.
- (5) Set lift-off at position 1 on the applicable reference standard location. See Detail III. Set lift-off so that the signal goes horizontally to the left.
- (6) Put the probe at position 1 and adjust the position of the balanced signal so that it is at 20 percent full screen height.
- (7) Put the probe at position 2 on the applicable reference standard location. See Detail III.
- (8) Move the probe around this fastener to make a scan as shown by the arrows in Detail III. Adjust the instrument sensitivity to get a vertical indication from the notch that is 60 percent of full screen height (40 percent higher than the balance position). See Detail IV.
- (9) Balance the instrument again and make sure the lift-off goes horizontally to the left.

5. Inspection Procedures

A. Inspection procedure with instruments that have meters:

- (1) Calibrate the equipment as specified in paragraph 4.A with the applicable reference standard location for the applicable area to be examined. See Details I and III.
- (2) Put the probe on the applicable inspection area adjacent to a fastener and balance the instrument.
- (3) Do a scan with the probe around the applicable fasteners as shown in Detail I.

NOTES: (1) Make sure the center of the probe goes across the centerline of the fasteners.

(2) Do not do a probe scan near the edge of the tear strap or the edge of the web lap splice.

(3) Do not do a scan on the tear strap joggle as shown in Detail I.

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 4)

NONDESTRUCTIVE TEST

- (4) For the web lap splice inspection do a scan only around the row of fasteners along the edge of the upper web. See Detail I.
- (5) Do the scan no faster than the speed that was used during the calibration.

B. Inspection procedure with an impedance plane display.

- (1) Calibrate the equipment as specified in paragraph 4.B with the applicable reference standard location for the applicable area to be examined. See Details I and III.
- (2) Put the probe on the applicable inspection area adjacent to a fastener and balance the instrument.
- (3) Do a scan with the probe around the applicable fasteners as shown in Detail I.

NOTES: (1) Make sure the center of the probe goes across the centerline of the fasteners.

- (2) Do not do a probe scan near the edge of the tear strap or the edge of the web lap splice.
- (3) Do not do a scan on the tear strap joggle as shown in Detail I.
- (4) For the web lap splice inspection do a scan only around the row of fasteners along the edge of the upper web. See Detail I.
- (5) Do the scan no faster than the speed that was used during the calibration.

6. Inspection Results

A. Inspection results for instruments that have meters:

- (1) Indications that are 20 percent or more of full scale higher than the balance position are crack indications. These upscale crack indications occur during a short scan.

NOTES: (1) Make sure that crack-like indications are not caused because the probe is near the edge of a surface layer or subsurface layer.

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 5)

NONDESTRUCTIVE TEST

- (2) A slow upscale indication can be caused by a large separation between the layers. This type of indication shows on the meter during a long scan. Compare these indications to the reference notch indications that show quickly on the meter during a short scan.

B. Inspection results for instruments that have impedance plane display.

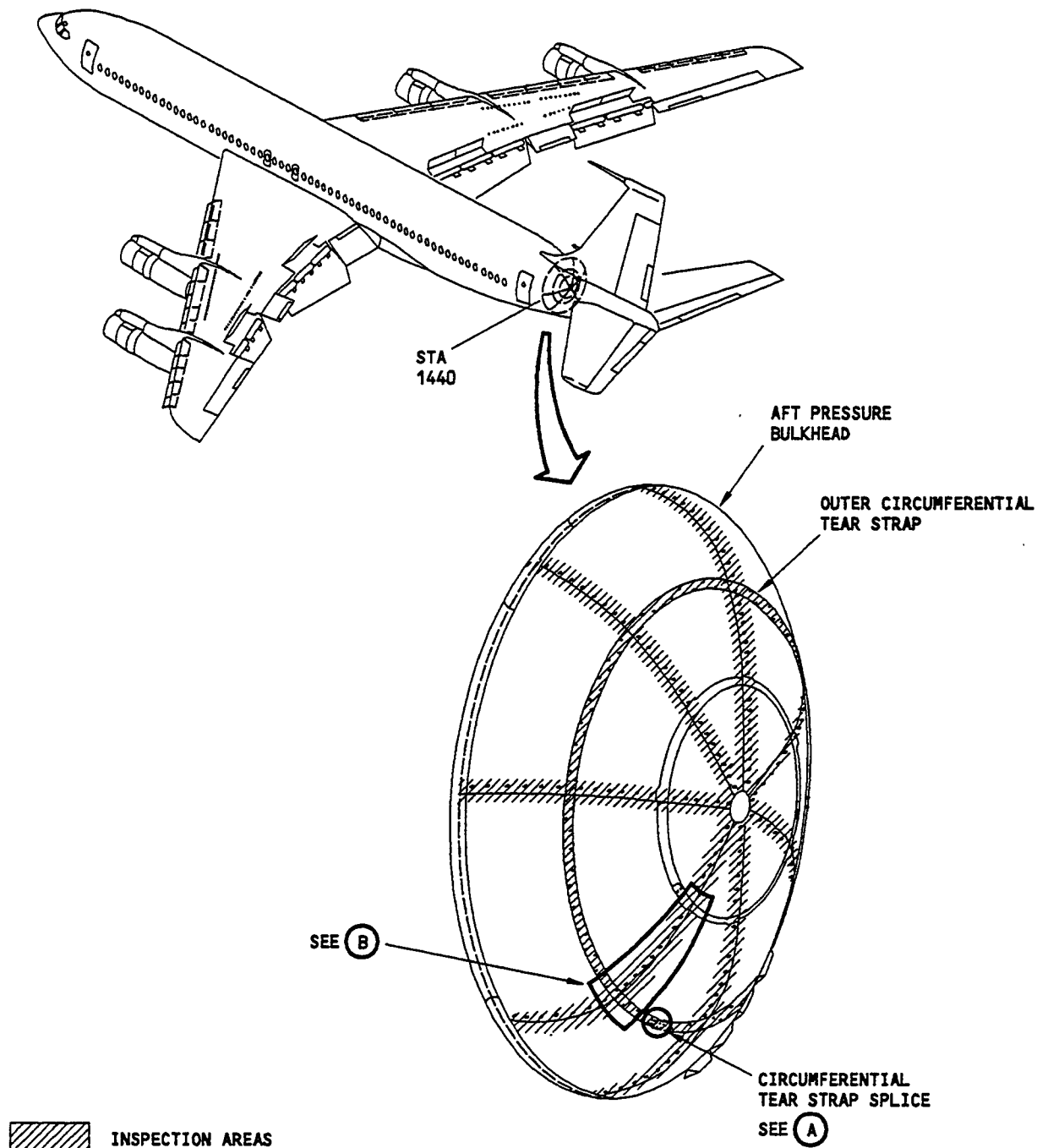
- (1) Vertical indications that are 20 percent or more of full screen height higher than the balance position are crack indications. These vertical crack indications occur during a short scan.

NOTES: (1) Make sure that crack-like indications are not caused because the probe is near the edge of a surface layer or subsurface layer.

- (2) A slow vertical indication can be caused by a large separation between the layers. This type of indication shows on the impedance plane screen during a long scan. Compare these indications to the reference notch indications that show quickly on the screen during a short scan.

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 6)

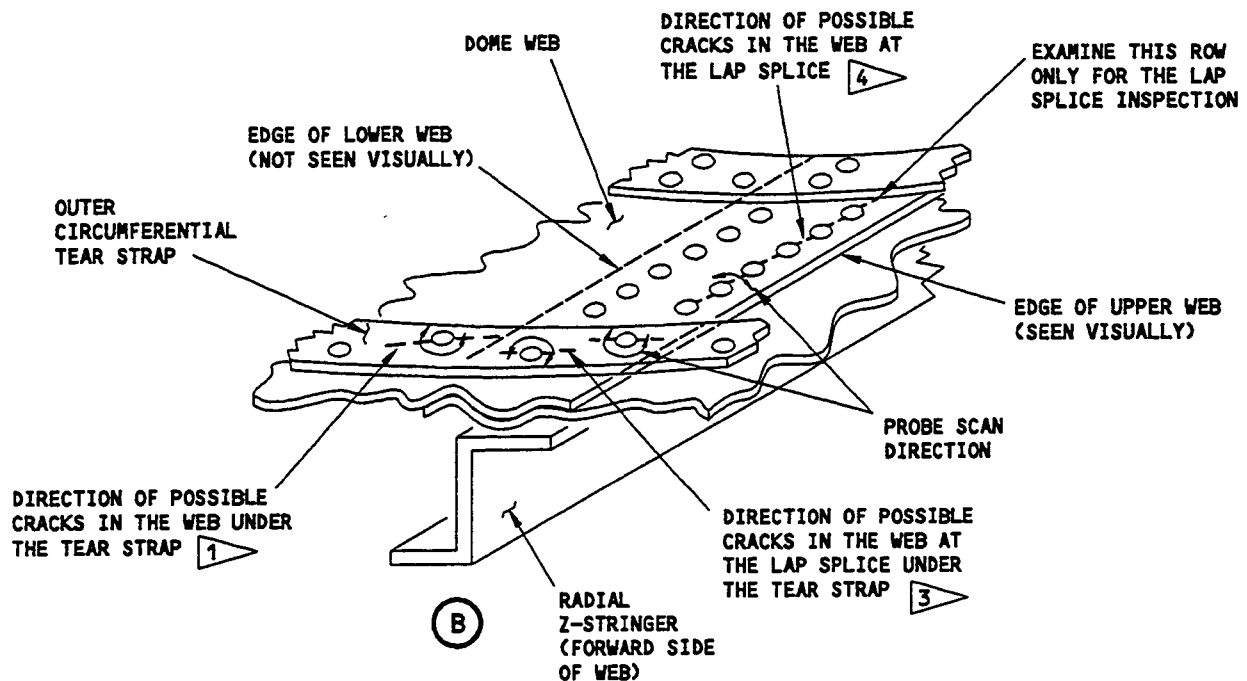
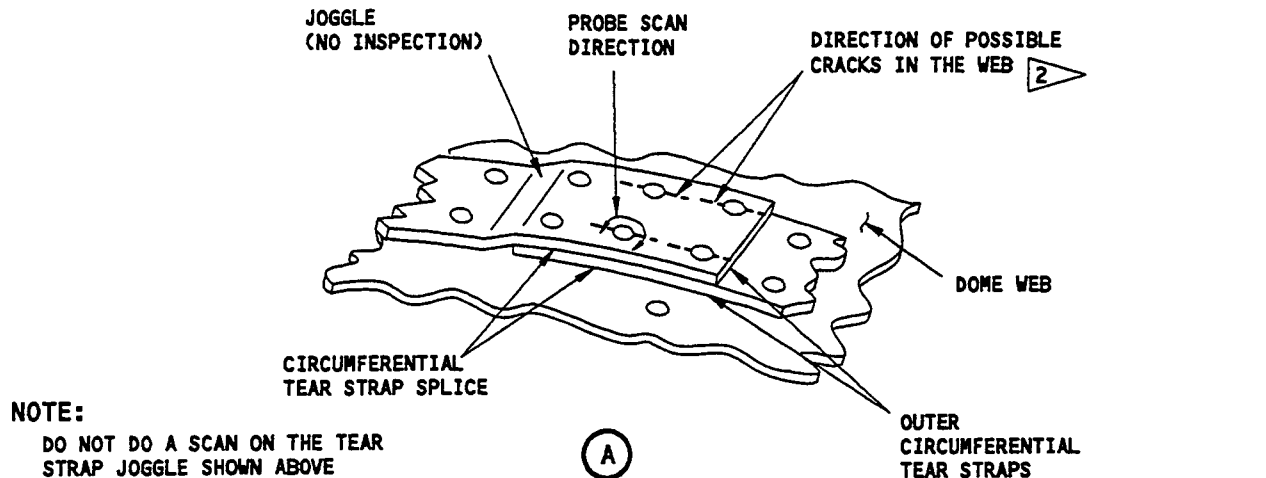
BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST



INSPECTION AREAS ON THE AFT SIDE
OF THE AFT PRESSURE BULKHEAD
DETAIL I

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 7)

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COMMERCIAL JET
NONDESTRUCTIVE TEST



1 CALIBRATE ON REFERENCE STANDARD NDT1028A TO FIND CRACKS IN THE WEB UNDER THE OUTER TEAR STRAP.

2 CALIBRATE ON REFERENCE STANDARD NDT1028B TO FIND CRACKS IN THE WEB UNDER THE OUTER TEAR STRAP SPLICE.

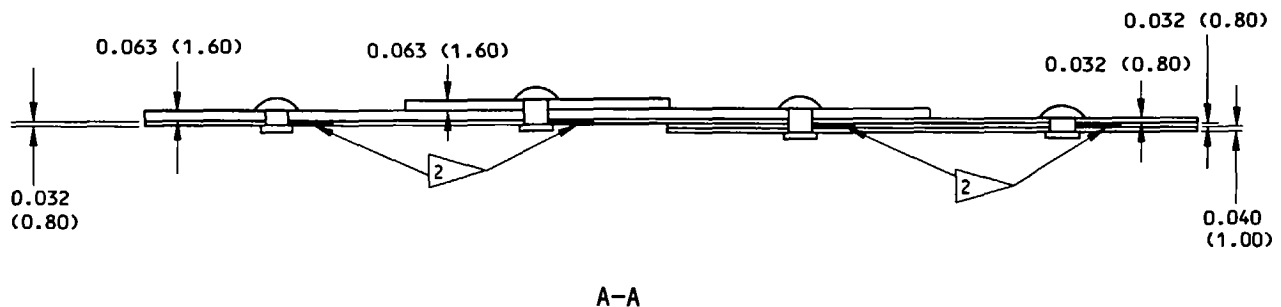
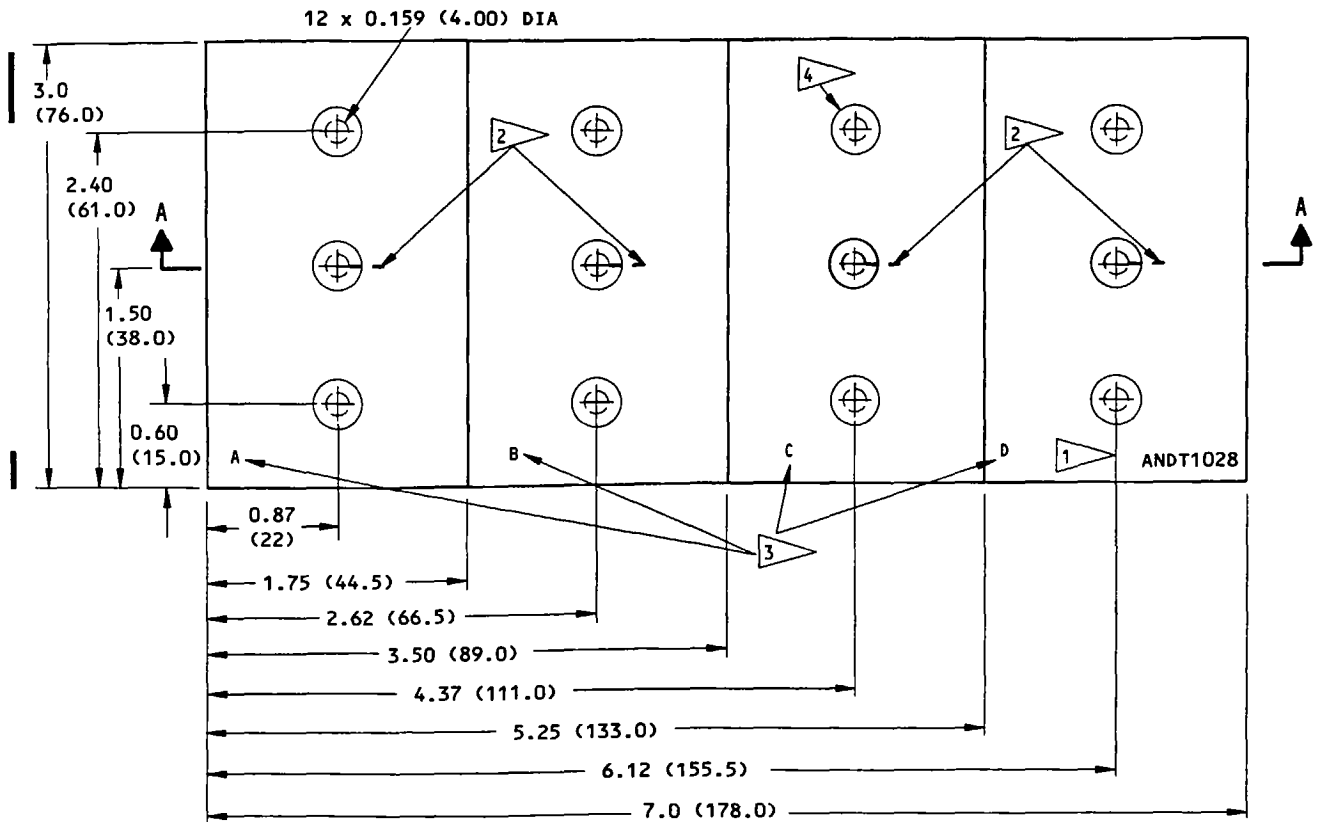
3 CALIBRATE ON REFERENCE STANDARD NDT1028C TO FIND CRACKS IN THE WEB LAP SPLICES UNDER THE OUTER AND INNER TEAR STRAPS.

4 CALIBRATE ON REFERENCE STANDARD NDT1028D TO FIND CRACKS IN THE WEB LAP SPLICES.

**INSPECTION AREAS ON THE AFT SIDE
 OF THE AFT PRESSURE BULKHEAD
 DETAIL I (CONTINUED)**

**Web of the Aft Pressure Bulkhead - BS 1440
 Figure 18 (Sheet 8)**

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REFERENCE STANDARD ANDT1028
DETAIL II

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 9)

BOEING NONDESTRUCTIVE TEST

NOTES:

- ALL DIMENSIONS ARE IN INCHES
(MILLIMETERS IN PARENTHESES)

- TOLERANCES:

<u>INCHES</u>	<u>MILLIMETERS</u>
X.XXX = ± 0.005	X.XX = ± 0.10
X.XX = ± 0.025	X.X = ± 0.5
X.X = ± 0.050	X = ± 1
ANGULAR = ± 1.0 DEGREE	

NOTCH LOCATION AND TOLERANCES:
THE NOTCH IS TO BE LOCATED
WITHIN ± 0.005 (± 0.010)
OF THE CENTER OF THE HOLE.

SURFACE ROUGHNESS = 125 Ra OR BETTER

1 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER.
PUT A LETTER "A" IN FRONT OF THE REFERENCE
STANDARD NUMBER TO SHOW THAT IT HAS ALODINED
RIVETS. SEE FLAGNOTE 4.

2 EDM NOTCH OR SAWCUT: LENGTH: 0.30 (7.6)
DEPTH: THRU THICKNESS
WIDTH: MAXIMUM WIDTH 0.025 (0.63)

3 ETCH OR STAMP A, B, C, D, AS SHOWN ABOVE.

4 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.

MATERIAL:

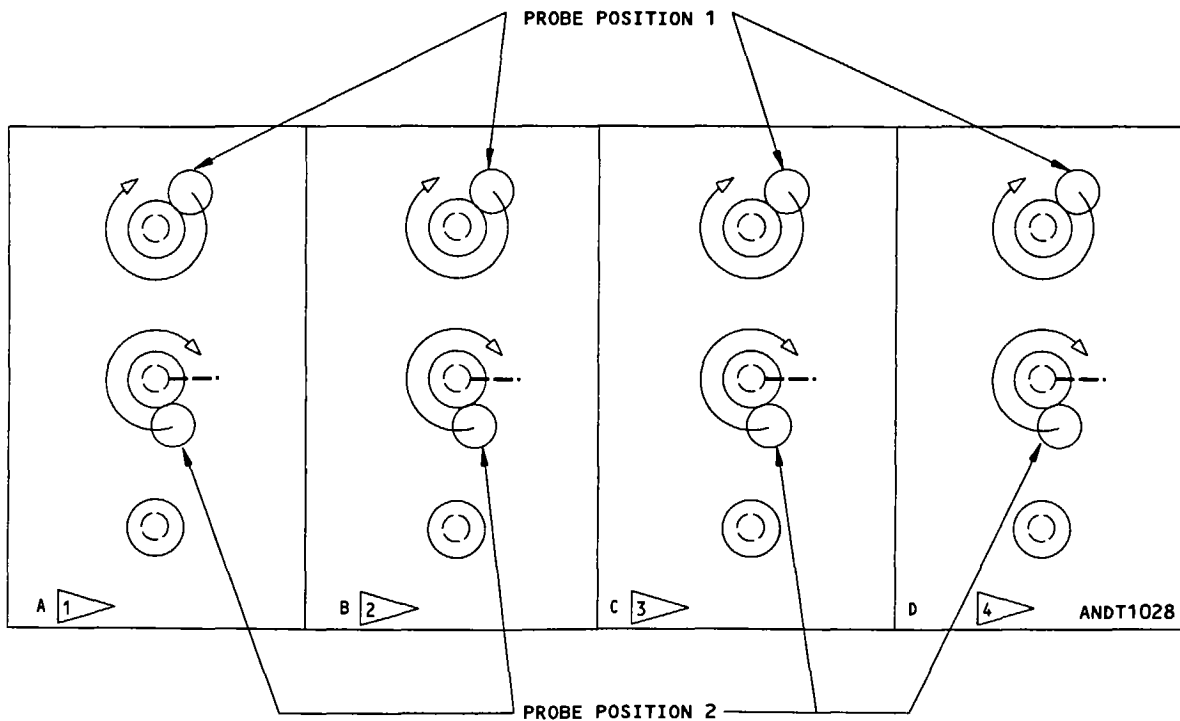
QUANTITY	DESCRIPTION	DIMENSION
1	2024-T3 OR T4 CLAD	1.75 (44.5) X 3.0 (76.0) X 0.063 (1.60)
1	2024-T3 OR T4 CLAD	5.25 (133.0) X 3.0 (76.0) X 0.063 (1.60)
1	2024-T3 OR T4 CLAD	7.00 (178.0) X 3.00 (76.0) X 0.032 (0.80)
1	2024-T3 OR T4 CLAD	3.50 (89.0) X 3.0 (76.0) X 0.032 (0.80)
1	2024-T3 OR T4 CLAD	3.50 (89.0) X 3.0 (76.0) X 0.040 (1.00)
3	BACR15BB5D4 ALUMINUM RIVETS (*)	0.156 (4.00) DIAMETER
3	BACR15BB5D5 ALUMINUM RIVETS (*)	0.156 (4.00) DIAMETER
6	BACR15BB5D6 ALUMINUM RIVETS (*)	0.156 (4.00) DIAMETER

(*) ALTERNATIVE MATERIAL CODES: A OR B OR AD OR DD.
ALTERNATIVE MATERIAL CODES ARE APPLICABLE TO
ALL FASTENERS FOR THIS STANDARD.

REFERENCE STANDARD ANDT1028
DETAIL II (CONTINUED)

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 10)

BOEING
NONDESTRUCTIVE TEST



NOTES:

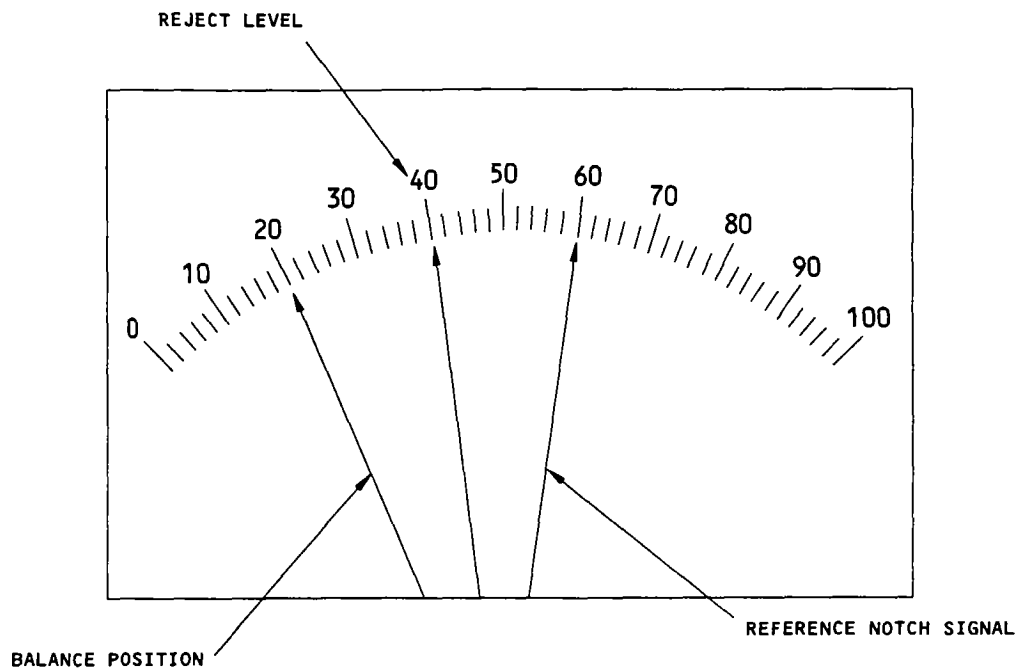
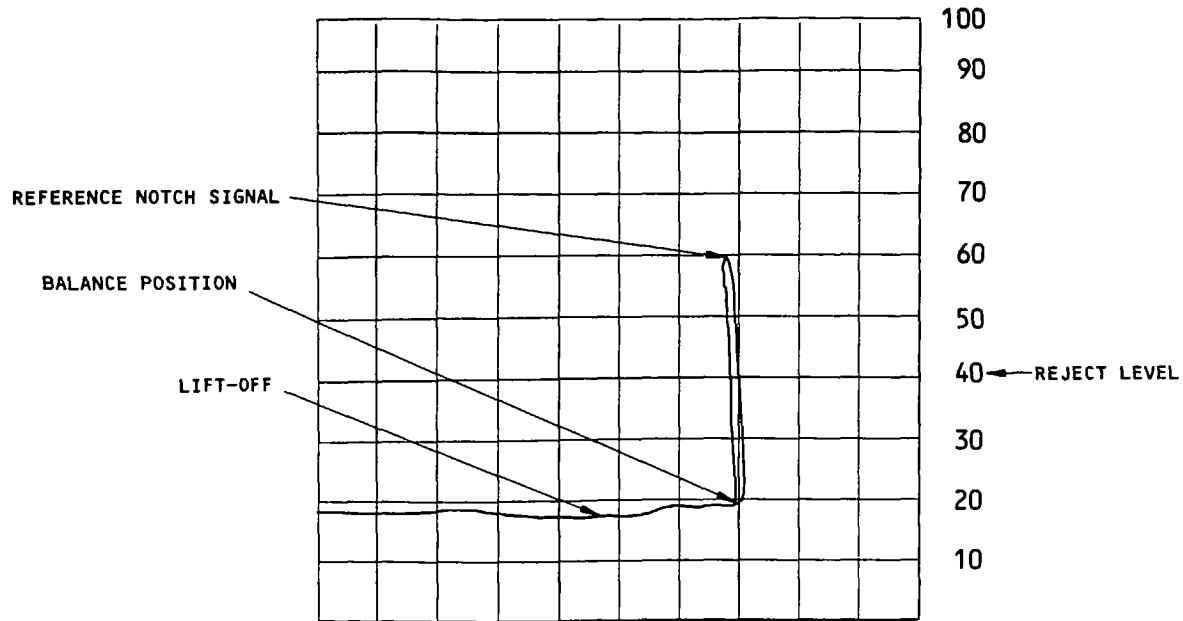
- 1 TO CALIBRATE ON REFERENCE STANDARD ANDT1028, IN THE AREA IDENTIFIED WITH LETTER "A" SET THE FREQUENCY TO 6 KHZ. REFER TO FLAGNOTE 1 IN DETAIL I FOR THE INSPECTION AREA.
- 2 TO CALIBRATE ON REFERENCE STANDARD ANDT1028, IN THE AREA IDENTIFIED WITH LETTER "B" SET THE FREQUENCY TO 2 KHZ. REFER TO FLAGNOTE 2 IN DETAIL I FOR THE INSPECTION AREA.
- 3 TO CALIBRATE ON REFERENCE STANDARD ANDT1028, IN THE AREA IDENTIFIED WITH LETTER "C" SET THE FREQUENCY TO 2 KHZ. REFER TO FLAGNOTE 3 IN DETAIL I FOR THE INSPECTION AREA.
- 4 TO CALIBRATE ON REFERENCE STANDARD ANDT1028, IN THE AREA IDENTIFIED WITH LETTER "D" SET THE FREQUENCY TO 10 KHZ. REFER TO FLAGNOTE 4 IN DETAIL I FOR THE INSPECTION AREA.

- MAKE SURE THE CALIBRATION IS DONE ON THE REFERENCE STANDARD LOCATION THAT AGREES WITH THE INSPECTION LOCATION.

**CALIBRATION PROBE POSITION
DETAIL III**

Web of the Aft Pressure Bulkhead - BS 1440
Figure 18 (Sheet 11)

BOEING NONDESTRUCTIVE TEST



METER DISPLAY
 INSTRUMENT DISPLAYS OF NOTCH SIGNALS

DETAIL IV

Web of the Aft Pressure Bulkhead - BS 1440
 Figure 18 (Sheet 12)

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
ITEMS: 53-A00-29
53-A10-29
53-A20-29
53-A30-29
53-A40-29

BOEING
COMMERCIAL JET
NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT
FORWARD BODY FRAMES AT STRINGER 17
BETWEEN BS 400 AND BS 600K/620

1. Purpose

- A. This procedure uses surface eddy current to examine the inboard edge of the forward body frames at stringer 17. This inspection is for each body frame between BS 400 and BS 600K/620, on both the left and right sides of the airplane.
- B. Cracks can start at the fastener holes of the body frames where the body frames are attached to the floor beam and grow in the horizontal direction. The crack must extend at least 0.10 inch (2.5 mm) away from the surface of the attached structure. See Detail I for the inspection area.

NOTE: Do not use this procedure on the structure below the cargo doors. The frame structure below the cargo doors is different than the frame structure shown in this procedure.

2. Equipment

NOTE: Refer to Part 1, 51-01-00, paragraph 6 for data about the equipment manufacturers.

- A. Instrument - All eddy current instruments with a meter display or an impedance plane display are permitted for use if they:
 - (1) Can operate at a frequency between 100 and 500 kHz.
 - (2) Can be calibrated as specified in the calibration instructions of this procedure. We used the instruments specified below to help prepare this procedure.
 - (a) Meter display instruments:
 - 1) MIZ-10A, MIZ-10B - Zetec, Inc.
 - 2) Locator UH - Hocking/Krautkramer

Forward Body Frames at Stringer 17 Between
BS 400 and BS 600K/620
Figure 19 (Sheet 1)

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NONDESTRUCTIVE TEST

(b) Impedance plane display instruments;

- 1) MIZ-22 - Zetec, Inc.
- 2) NDT-19, NDT-19E - Nortec/Staveley, Inc.
- 3) Phasec 1.1 - Hocking/Krautkramer

- B. Probe - Use a shielded pencil probe that can operate at a frequency between 100 and 500 kHz. Use a probe with a maximum diameter of 0.125 inch (3.18 mm). Refer to Part 6, 51-00-00, Figure 4 for more probe data.
- C. Reference Standard - Refer to Part 6, 51-00-00, Figure 4 for the surface crack reference standard; part number 126.

3. Preparation for Inspection

- A. Clean the inspection area for each body frame between BS 400 and BS 600K/620. See Detail I for the inspection area.

4. Instrument Calibration

- A. Set the frequency between 100 and 500 kHz.
- B. If the inspection area is painted, make all instrument adjustments with a nonconductive shim on the surface of the reference standard. The shim must be the same thickness as the paint within ± 0.003 inch (0.07 mm).
- C. Put the probe on the reference standard surface. Make sure the probe is at least 0.50 inch (13.0 mm) away from the edge of the reference standard and the notch of the reference standard.
- D. Balance the instrument as specified in the manufacturers' instructions.
- E. Adjust the instrument for lift-off.

NOTE: One sheet of regular writing paper, approximately 0.003-inch (0.07 mm) thick, can be used for a nonconductive shim.

- (1) Adjust a meter display instrument for lift-off as follows:
Adjust the instrument so the meter needle moves no more than 5 percent of full scale when the probe is moved from the surface of the reference standard on to a 0.002 to 0.004 inch (0.05 to 0.10 mm) nonconductive shim.

Forward Body Frames at Stringer 17 Between
BS 400 and BS 600K/620
Figure 19 (Sheet 2)



NONDESTRUCTIVE TEST

- (2) Adjust an impedance plane display instrument for lift-off as follows: Adjust the phase rotation control so that the signal moves horizontally from right to left when the probe is lifted off the surface.

F. Set the instrument baseline.

- (1) Adjust a meter display instrument as follows: Set the meter needle to 20 percent of full scale. See Detail II, View II for an instrument display example.
- (2) Adjust an impedance plane display as follows: Set the balance point in the lower right area of the screen. See Detail II, View I for an instrument display example.

G. Move the probe across the reference standard notch and adjust the gain control to get the maximum signal as follows:

NOTES: (1) The signal-to-noise ratio must be 3:1 or better for each type of instrument used.

- (2) Filters will affect signals. Do not use the High Pass Filter (HPF = 0). Make sure the Low Pass Filter is set as high as possible but so that the noise is kept to a minimum.

- (1) Adjust a meter display instrument as follows: Adjust the gain control to get the meter needle to 50 to 60 percent of full scale. See Detail II, View II for an instrument display example.
- (2) Adjust an impedance plane display instrument as follows: Adjust the gain control to get a vertical signal that is between 50 to 60 percent of full screen height and a horizontal signal that stays on the display screen. See Detail II, View I for an example screen display with a horizontal to vertical gain ratio of 1:2.

H. We recommend you use instruments that have an audible and/or a visual alarm. The alarm can help you to increase the speed at which you can do the inspection.

- (1) Adjust a meter display instrument as follows: Set the alarm to start at 50 percent of the signal you got from the reference standard notch.
- (2) Adjust an impedance plane display instrument as follows: Set the alarm to start at 50 percent of the vertical signal you got from the reference standard notch.

Forward Body Frames at Stringer 17 Between
BS 400 and BS 600K/620
Figure 19 (Sheet 3)

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NONDESTRUCTIVE TEST

- I. To find the maximum speed to do an inspection scan, move the probe across the reference standard notch and increase the scan speed until the results below occur.

(1) If a meter display instrument is used:

(a) Instruments without an alarm:

The needle movement is less than 80 percent of the calibration signal.

(b) Instruments with an alarm:

The alarm will not operate.

(2) If an impedance plane display instrument is used:

(a) Instruments without an alarm:

The vertical signal is less than 80 percent of the calibration signal.

(b) Instruments with an alarm:

The alarm will not operate.

5. Inspection Procedure

- A. Calibrate the instrument as specified in paragraph 4.
- B. Identify the inspection areas of the body frames between BS 400 and BS 600K/620 as shown in Detail I.
- C. Put the probe on the inspection surface of the body frame.
- D. Balance the instrument and do a check for the lift-off. If necessary, make instrument adjustments with the probe on the part surface.

NOTE: Do not adjust the gain.

- E. Do a vertical scan of all the inspection areas. The best response will occur when the probe is moved across a crack. The maximum speed to do a scan inspection must be no faster than that found in paragraph 4.I.

NOTE: Be careful to keep the probe as vertical to the part surface as possible during the inspection.

Forward Body Frames at Stringer 17 Between
BS 400 and BS 600K/620
Figure 19 (Sheet 4)

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NONDESTRUCTIVE TEST

- F. Do a check of the instrument/probe calibration responses regularly. For balance and lift-off responses, refer to paragraph 5.C and 5.D. For gain responses refer to paragraph 4.G. If the above responses are unsatisfactory, do a calibration again and make an inspection again of all areas that were examined since the last calibration.
- G. Identify all locations that give a response almost the same as the response you got from the reference standard notch.
 - (1) For a meter display instrument, look for a meter needle response where the needle moves upscale fast.
 - (2) For an impedance plane display instrument, look for a vertical signal response that is almost the same as the response shown in Detail II, View I.

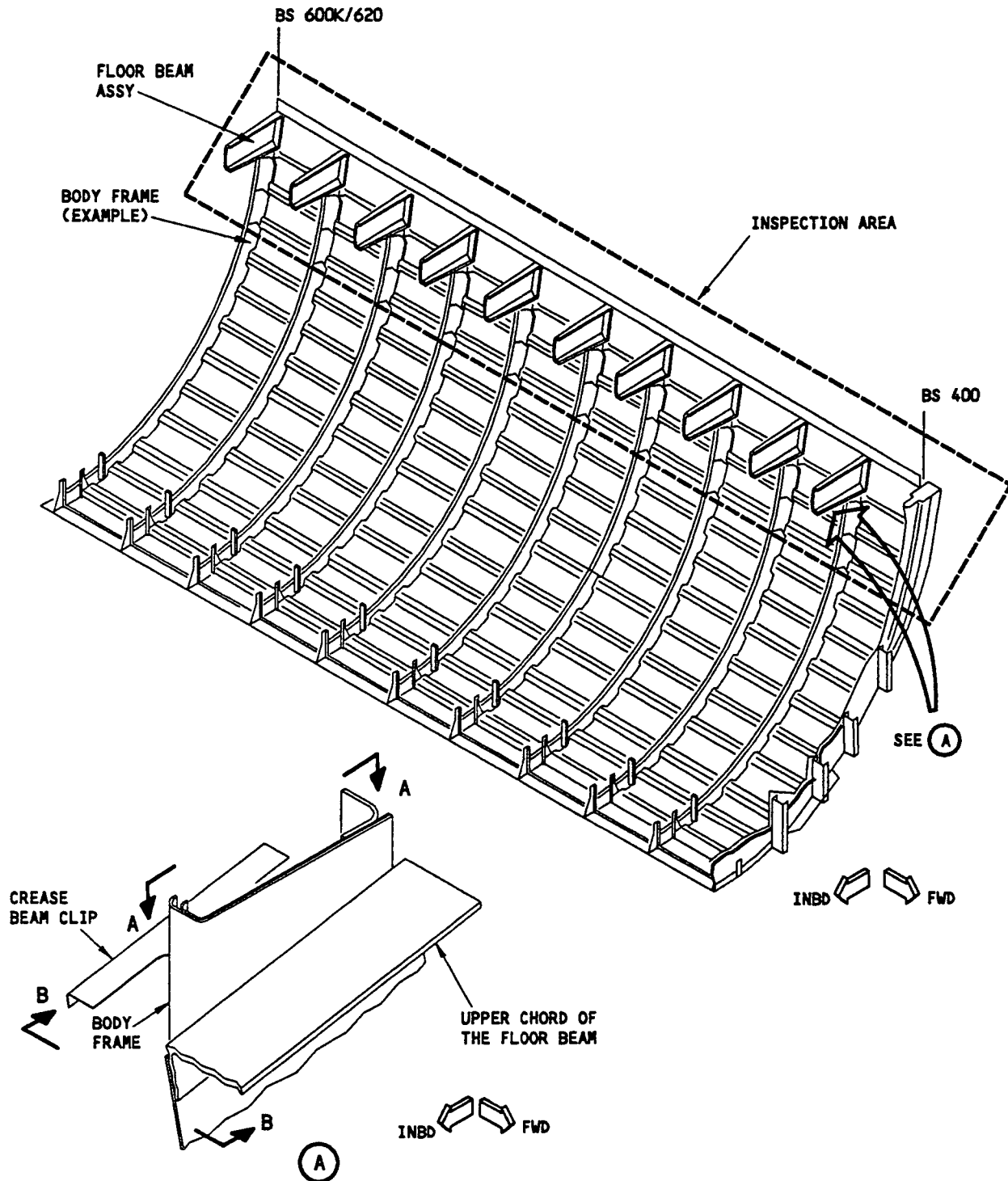
6. Inspection Results

- A. Meter display instrument: A fast, upscale, meter needle movement that is 50 percent (or more) of the meter needle movement you got from the reference standard notch is a possible crack.
- B. For an impedance plane display instrument: A vertical signal on the screen display that is 50 percent or more of the vertical signal you got from the reference standard notch is a possible crack. See Detail VI for an example of a crack signal.
- C. Compare the crack signal to the signal you get from the reference standard notch. Make sure the probe is moved at the same speed for each scan inspection.
- D. Do one of the nondestructive examinations specified below in the areas where you found crack indications.
 - (1) Do a visual examination of the bare surface of the body frame at 10 to 25 times magnification with sufficient light. If a crack is found during visual examination, no other inspection is necessary.
 - (2) Do a high gain, fluorescent penetrant inspection. Refer to the Standard Overhaul Practices Manual Subject 20-20-02, "Penetrant Methods of Inspection."

NOTE: To make penetrant results show better on areas with metal smear or on tight fatigue cracks, do a chemical etch on the surface. To do an etch, local engineering approval is necessary.

Forward Body Frames at Stringer 17 Between
BS 400 and BS 600K/620
Figure 19 (Sheet 5)

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COMMERCIAL JET
 NONDESTRUCTIVE TEST

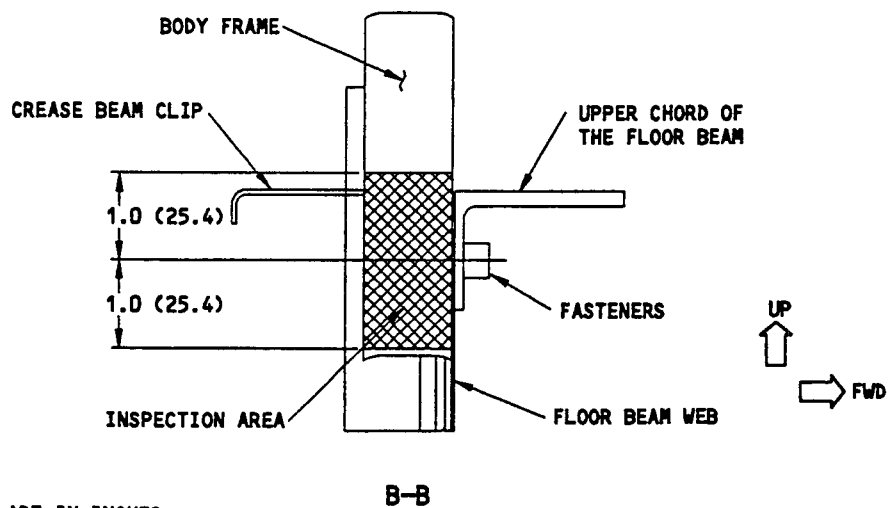
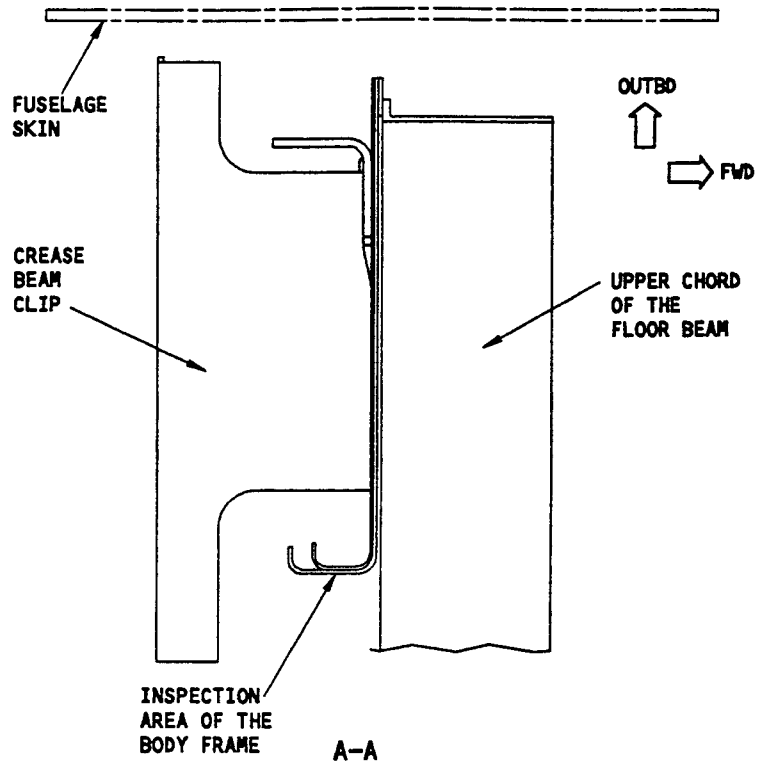


NOTES:

- LEFT SIDE SHOWN; RIGHT SIDE ALMOST THE SAME

Detail I - Inspection Area of the Body Frames Between BS 400 and BS 600K/620
Figure 19 (Sheet 6)

BOEING
COMMERCIAL JET
 NONDESTRUCTIVE TEST

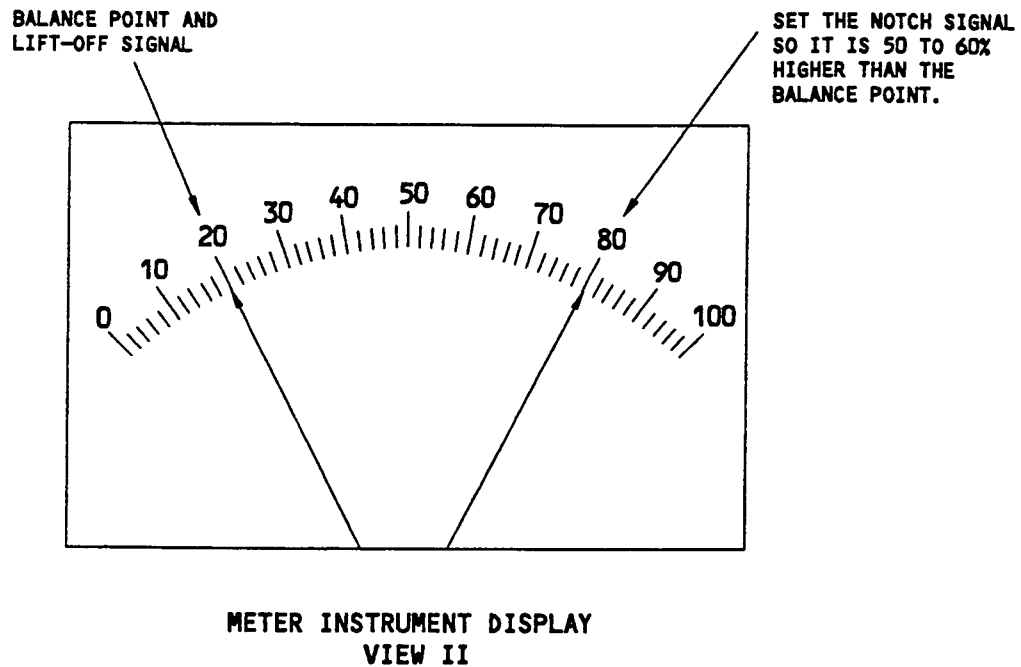
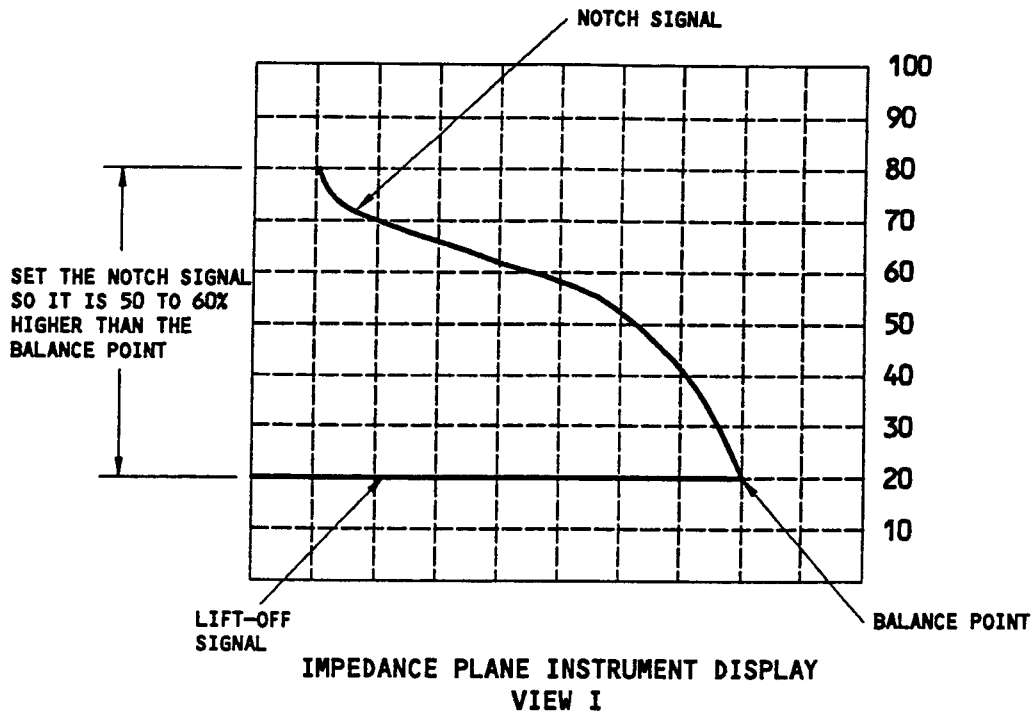


NOTES:

- ALL DIMENSIONS ARE IN INCHES
(MILLIMETERS ARE IN PARENTHESES)
- THE LEFT SIDE OF THE AIRPLANE IS
SHOWN; THE RIGHT SIDE OF THE AIRPLANE
IS ALMOST THE SAME.

Detail I - Inspection Area of the Body Frames Between BS 400 and BS 600K/620
 Figure 19 (Sheet 7)

NONDESTRUCTIVE TEST



**Detail II - Calibration Notch Signals
Figure 19 (Sheet 8)**

EFFECTIVITY
MODEL: 707
SERVICE BULLETIN
REFERENCE: 707-2983



NONDESTRUCTIVE TEST

PART 6 - EDDY CURRENT CONTROL CABIN - "F-N" WINDOW POST

1. Purpose

A. Use this procedure to do an inspection for cracks identified at the fastener locations in the F-N window posts. The locations for the inspections are as follows:

- (1) Outer skin surface around the countersunk holes
- (2) Inside hole surface of the internal steel doubler
- (3) Countersunk surface of the internal steel doubler
- (4) Inside hole surface of the windshield frame and sills

See Detail I for the fastener locations to be examined.

B. This procedure references four inspection procedures that use an impedance plane display instrument with a hand-held pencil probe and a rotary scanner. The inspection procedures are as follows:

- (1) "Aluminum Part Surface Inspection (Impedance Plane Display)", Part 6, 51-00-00, Fig. 23, to examine around the countersunk fastener holes on the outer skin surface.
- (2) "Open Hole Inspection in Steel with a Rotary Scanner", Part 6, 51-00-00, Fig. 19, to examine the fastener holes of the internal doubler (CRES steel 17-7 PH).
- (3) "Open Countersunk Hole Inspection in Steel with a Rotary Scanner", Part 6, 51-00-00, Fig. 22, to examine the countersunk surfaces of the fastener holes in the internal doubler (CRES steel 17-7 PH).
- (4) "Aluminum Part Fastener Hole Inspection (Rotary Scanner)", Part 6, 51-00-00, Fig. 16, to examine the fastener holes of the windshield frame and sill.

C. Inspection of the corrosion resistant steel gusset, below the skin surface, is not included in this inspection procedure. It is not easy to examine the gusset because the thickness is only 0.025 inch (0.64 mm).

2. Equipment

Refer to the applicable inspection procedure for the data on the instrument, probes, and reference standard to use.

Control Cabin - "F-N" Window Post
Figure 20 (Sheet 1)

NONDESTRUCTIVE TEST

3. Preparation For Inspection

- A. Get access to the inspection areas.
- B. Look in all the holes and the countersunk surface for surface conditions that can cause noise signals to occur during the inspection. Look for these conditions:
 - (1) a rough edge (burr)
 - (2) metal smears and/or rough surface (galling)
 - (3) grooves caused by a tool or fastener (gouge)
 - (4) an out-of-round hole
- C. Do a cleanup ream for the hole surface, if necessary, to remove one or more of the conditions specified in paragraph 3.B.
- D. Clean the countersunk surface to make it smooth if it is rough. Be careful not to damage the countersunk surface.

4. Instrument Calibration

- A. Calibrate the instrument as specified in the calibration instructions for the applicable inspection procedure. Refer to the applicable inspection procedures specified below to do the complete inspection of the "F-N" window post.
 - (1) Refer to "Aluminum Part Surface Inspection (Impedance Plane Display)", Part 6, 51-00-00, Fig. 23 to examine around the countersunk fastener holes on the outer skin surface. Use the flush-head fastener reference standard 187A to calibrate the instrument.
 - (2) Refer to "Open Hole Inspection in Steel with a Rotary Scanner", Part 6, 51-00-00, Fig. 19, to examine the fastener holes of the internal doubler (CRES steel 17-7 PH).
 - (3) Refer to "Open Countersunk Hole Inspection in Steel with a Rotary Scanner", Part 6, 51-00-00, Fig. 22, to examine the countersunk surfaces of the fastener holes in the internal doubler (CRES steel 17-7 PH).
 - (4) Refer to "Aluminum Part Fastener Hole Inspection (Rotary Scanner)", Part 6, 51-00-00, Fig. 16, to examine the fastener holes of the windshield frame and sill.

Control Cabin - "F-N" Window Post
Figure 20 (Sheet 2)

NONDESTRUCTIVE TEST

5. Inspection Procedure

A. Examine the outer skin surface for cracks.

- (1) Calibrate the instrument as specified in paragraph 4.A.(1).
- (2) Examine the outer skin surface for cracks around the countersunk holes. Refer to the instructions in Part 6, 51-00-00, Fig. 23 for the inspection around flush-head fasteners.

B. Examine the internal steel doubler for cracks. Detail I shows the usual structure configurations at the different fastener hole inspection locations of the steel doubler.

NOTE: Some fastener locations will have different fastener head diameters and countersunk hole depths but the same structure configuration. Do a careful visual inspection of the fastener location to identify the correct inspection procedure to use to examine the steel doubler.

- (1) When the countersunk hole depth does not go into the doubler or when it does and the thickness remaining is 0.020 inch (0.51 mm) or more, do as follows:
 - a) Calibrate the instrument as specified in paragraph 4.A.(2).
 - b) Examine the fastener holes of the doubler as specified in Part 6, 51-00-00, Fig. 19.
- (2) When the countersunk hole depth goes into the doubler and the thickness remaining is less than 0.020 inch (0.51 mm) do as follows:
 - a) Calibrate the instrument as specified in paragraph 4.A.(3).
 - b) Do an inspection of the countersunk surface of the doubler as specified in Part 6, 51-00-00, Fig. 22.

C. Examine the windshield frame and sill for cracks.

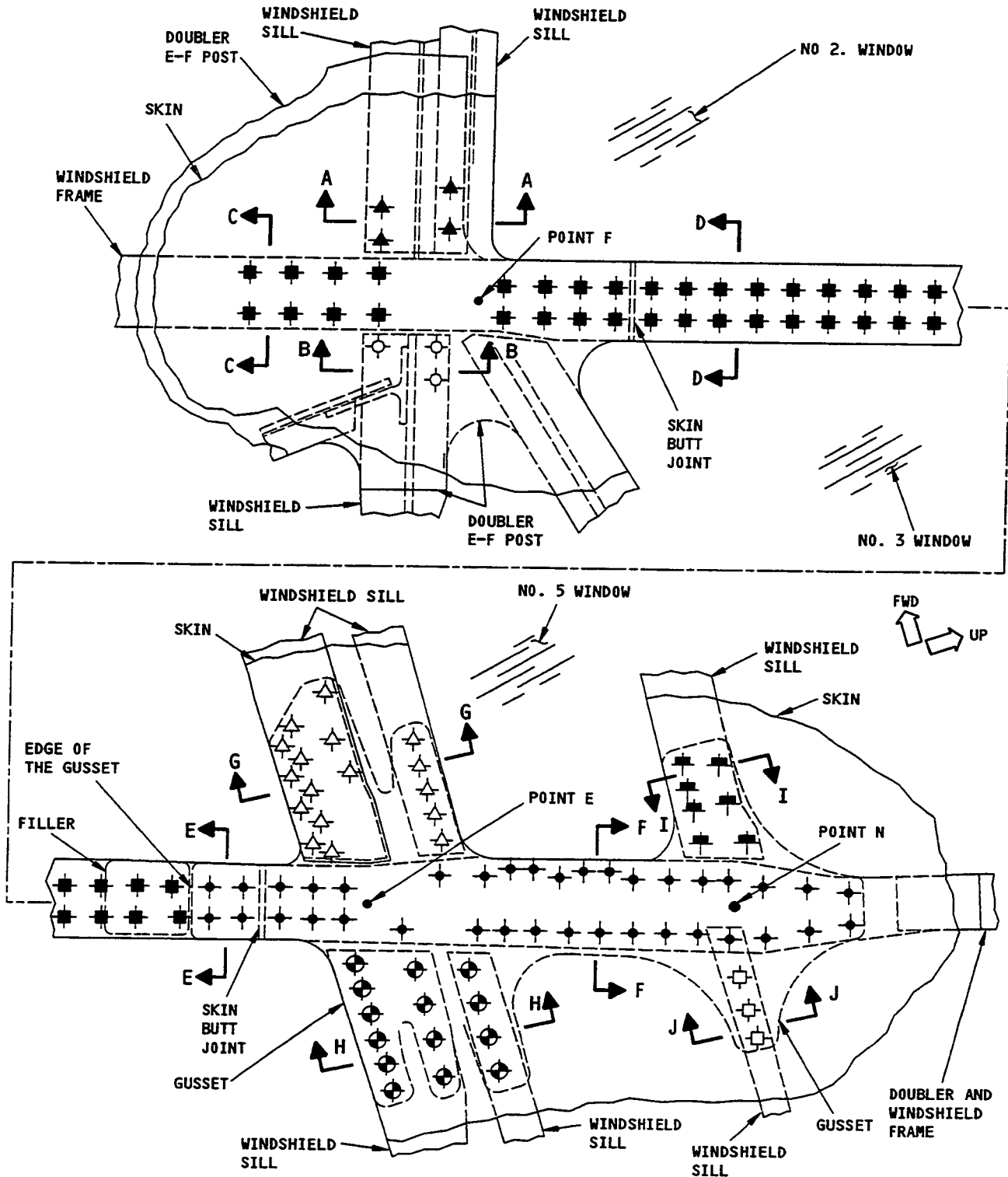
- (1) Calibrate the instrument as specified in paragraph 4.A.(4).
- (2) Examine the fastener holes of the windshield frame and sill as specified in Part 6, 51-00-00, Fig. 16.

6. Inspection Results

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

Control Cabin - "F-N" Window Post
Figure 20 (Sheet 3)

NONDESTRUCTIVE TEST



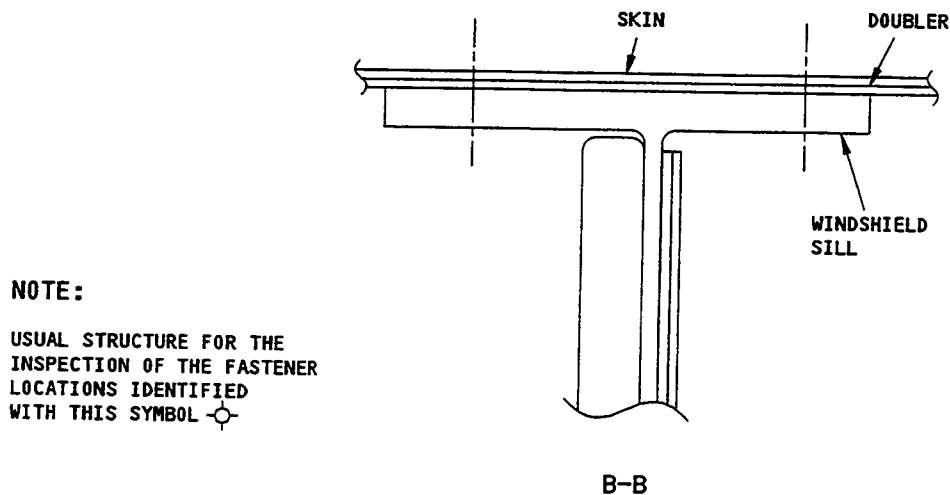
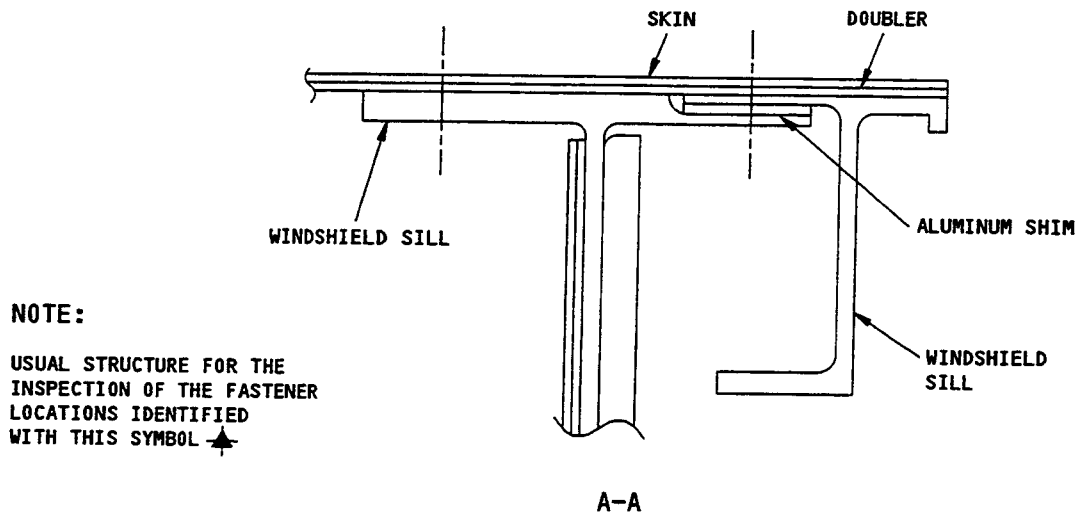
INSPECTION AREAS OF THE WINDOW POST STRUCTURE

DETAIL I (SHEET 1)

Control Cabin - "F-N" Window Post

Figure 20 (Sheet 4)

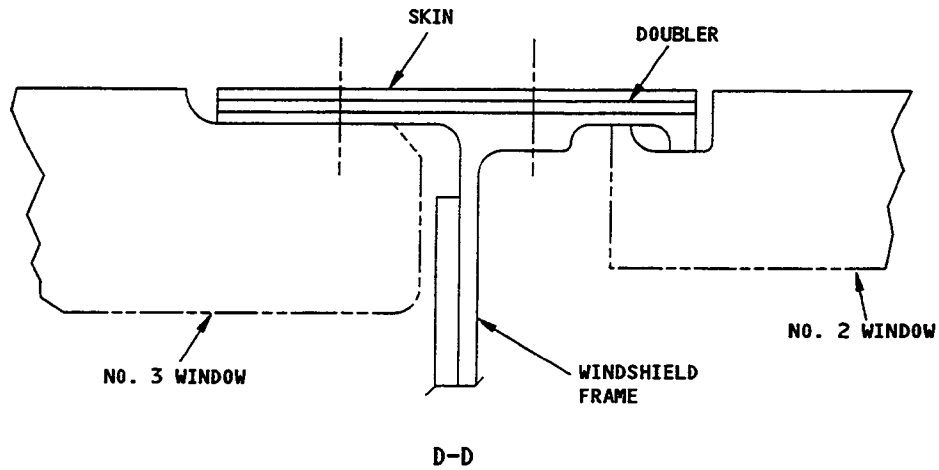
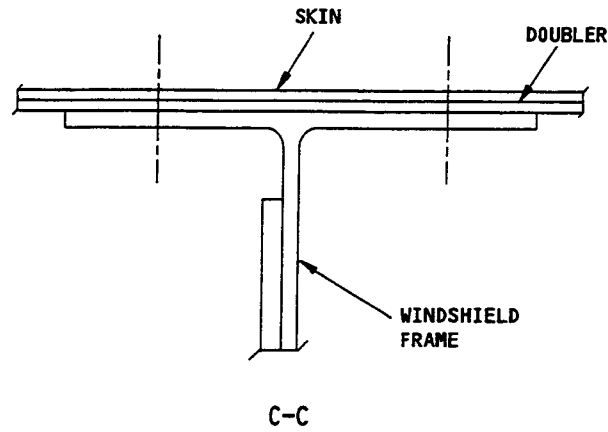
BOEING
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NONDESTRUCTIVE TEST



**INSPECTION AREAS OF THE WINDOW POST STRUCTURE
 DETAIL I (SHEET 2)**

Control Cabin - "F-N" Window Post
 Figure 20 (Sheet 5)

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COMMERCIAL JET
NONDESTRUCTIVE TEST



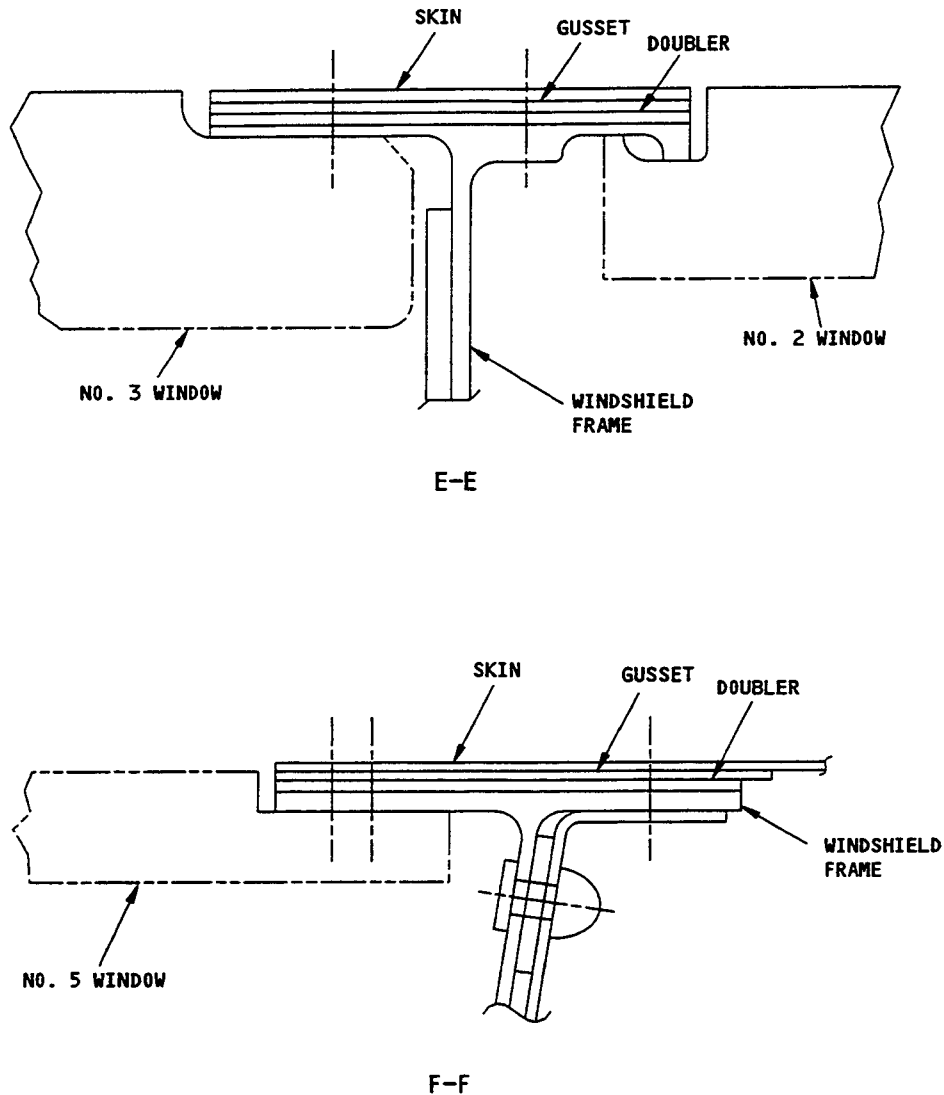
NOTE:

USUAL STRUCTURE FOR THE
INSPECTION OF THE FASTENER
LOCATIONS IDENTIFIED WITH
THIS SYMBOL 

**INSPECTION AREAS OF THE WINDOW POST STRUCTURE
DETAIL I (SHEET 3)**

Control Cabin - "F-N" Window Post
Figure 20 (Sheet 6)

NONDESTRUCTIVE TEST



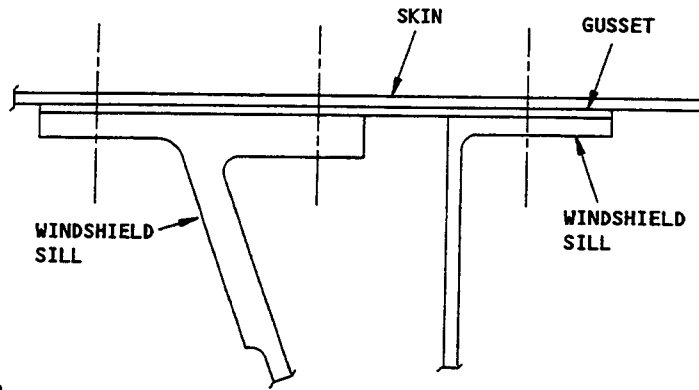
NOTE:

USUAL STRUCTURE FOR THE
INSPECTION OF THE FASTENER
LOCATIONS IDENTIFIED WITH
THIS SYMBOL 

**INSPECTION AREAS OF THE WINDOW POST STRUCTURE
DETAIL I (SHEET 4)**

Control Cabin - "F-N" Window Post
Figure 20 (Sheet 7)

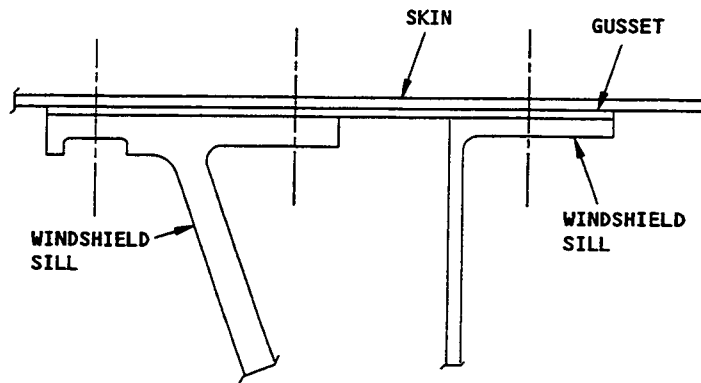
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COMMERCIAL JET
 NONDESTRUCTIVE TEST



NOTE:

USUAL STRUCTURE FOR THE
 INSPECTION OF THE FASTENER
 LOCATIONS IDENTIFIED WITH
 THIS SYMBOL 

G-G



NOTE:

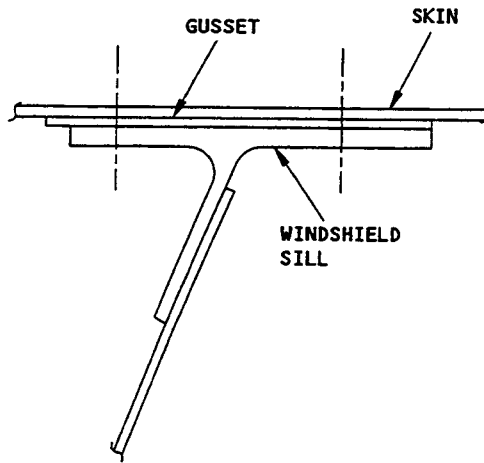
USUAL STRUCTURE FOR THE
 INSPECTION OF THE FASTENER
 LOCATIONS IDENTIFIED WITH
 THIS SYMBOL 

H-H

**INSPECTION AREAS OF THE WINDOW POST STRUCTURE
 DETAIL I (SHEET 5)**

Control Cabin - "F-N" Window Post
 Figure 20 (Sheet 8)

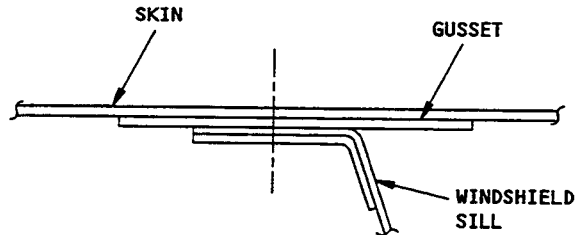
BOEING
COMMERCIAL JET
 NONDESTRUCTIVE TEST



NOTE:

USUAL STRUCTURE FOR THE
 INSPECTION OF THE FASTENER
 LOCATIONS IDENTIFIED WITH
 THIS SYMBOL 

I-I



NOTE:

USUAL STRUCTURE FOR THE
 INSPECTION OF THE FASTENER
 LOCATIONS IDENTIFIED WITH
 THIS SYMBOL 

J-J

**INSPECTION AREAS OF THE WINDOW POST STRUCTURE
 DETAIL I (SHEET 6)**

Control Cabin - "F-N" Window Post
 Figure 20 (Sheet 9)

EFFECTIVITY
MODEL: ALL
SERVICE BULLETIN
REFERENCE: 707-53A3498



PART 6 – EDDY CURRENT

BS 1440 AFT PRESSURE BULKHEAD WEB AT THE "Y" CHORD SPLICE CHANNEL

1. Purpose

- A. This inspection examines the BS 1440 pressure bulkhead web for cracks that start at fastener holes and go in the inboard and outboard direction. The inspection area of the web is at the aft row of fasteners that go through the splice channel, the web, and the "Y" chord, between stringers 16 and 17, on the left and right sides of the airplane. See Detail I for the inspection areas.

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. Instrument

- (1) Use an eddy current instrument that:
 - (a) Has an impedance plane or meter display.
 - (b) Operates in a frequency range of 2 to 4 kHz.
- (2) The instruments specified below were used to help prepare this procedure.
 - (a) Miz 10A (Meter display); Zetec, Inc.
 - (b) Phasec 2200 (Impedance plane display); Hocking/Krautkramer
 - (c) Phasec 1.1 (Impedance plane display); Hocking/Krautkramer
 - (d) NDT 19e (Impedance plane display); Staveley, Inc.

BS 1440 Aft Pressure Bulkhead Web at the "Y" Chord Splice Channel
Figure 21 (Sheet 1)

BOEING
NONDESTRUCTIVE TEST

C. Probes

(1) Use a spot probe with these properties:

- (a) A diameter from 0.30 inch (7.6 mm) to 0.32 inch (8.1 mm)
- (b) Operates at a frequency of 3 kHz
- (c) Is flat at the end.

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

NOTE: Probes different from those identified below can be used if they have the properties identified in paragraph 2.C.(1) above.

- (a) RS053-1/2, 0.31 inch (8 mm) diameter, 1.0 inch (25 mm) height; NDT Engineering
- (b) SPO-5327, 0.31 inch (8 mm) diameter; 1.5 inch (38 mm) height; Nortec/Staveley
- (c) 910-5850-006, 0.30 inch (7.6 mm) diameter; 1.75 inch (44.5 mm) height; Zetec, Inc.

D. Reference Standard

(1) Use reference standard ANDT1068. See Detail II for data about the reference standard.

3. Preparation for Inspection

- A. Get access to the forward side of the aft pressure bulkhead.
- B. Clean the inspection area; remove loose materials if necessary. Do not remove the corrosion inhibiting compound.

4. Instrument Calibration

NOTE: Refer to the instrument instruction manual for operation instructions.

- A. Set the instrument frequency to 3 kHz.
- B. Put the probe at probe position 1 on the area of reference standard ANDT1068 that does not have a notch as shown in Detail III, View A.
- C. Balance the instrument.
- D. Set the lift-off as follows:
 - (1) If a meter display instrument is used: adjust the phase control so that the meter needle moves no more than 5 percent of full scale for probe-to-part distances of up to 0.006 inch (0.15 mm). This is the thickness of two sheets of paper (approximately).

BS 1440 Aft Pressure Bulkhead Web at the "Y" Chord Splice Channel
Figure 21 (Sheet 2)



NONDESTRUCTIVE TEST

- (2) If an impedance plane instrument is used: adjust the phase control so that the lift-off signal moves horizontally to the left as shown in Detail III, View C.
- E. Adjust the balance point to the position shown in Detail III. See View B for the meter display and View C for the impedance plane display.
- F. Adjust the instrument sensitivity as follows:
 - (1) Put the probe above the notch at probe position 2 on reference standard NDT1068 to get a maximum signal. See Detail III, View A.
 - (2) If a meter instrument is used: adjust the instrument sensitivity to get a meter crack signal that is 60 percent of full scale (40 percent of full scale higher than the balance point). See Detail III, View B.
 - (3) If an impedance plane instrument is used: adjust the instrument sensitivity to put the crack signal at 60 percent of full screen height (40 percent higher than the balance point). See Detail III, View C.

5. Inspection Procedure

- A. Examine the four aft row fasteners at the splice channel of the "Y" chord for cracks as follows:

NOTE: Do not examine the sides of the fasteners that are nearest to the ends of the splice channel.

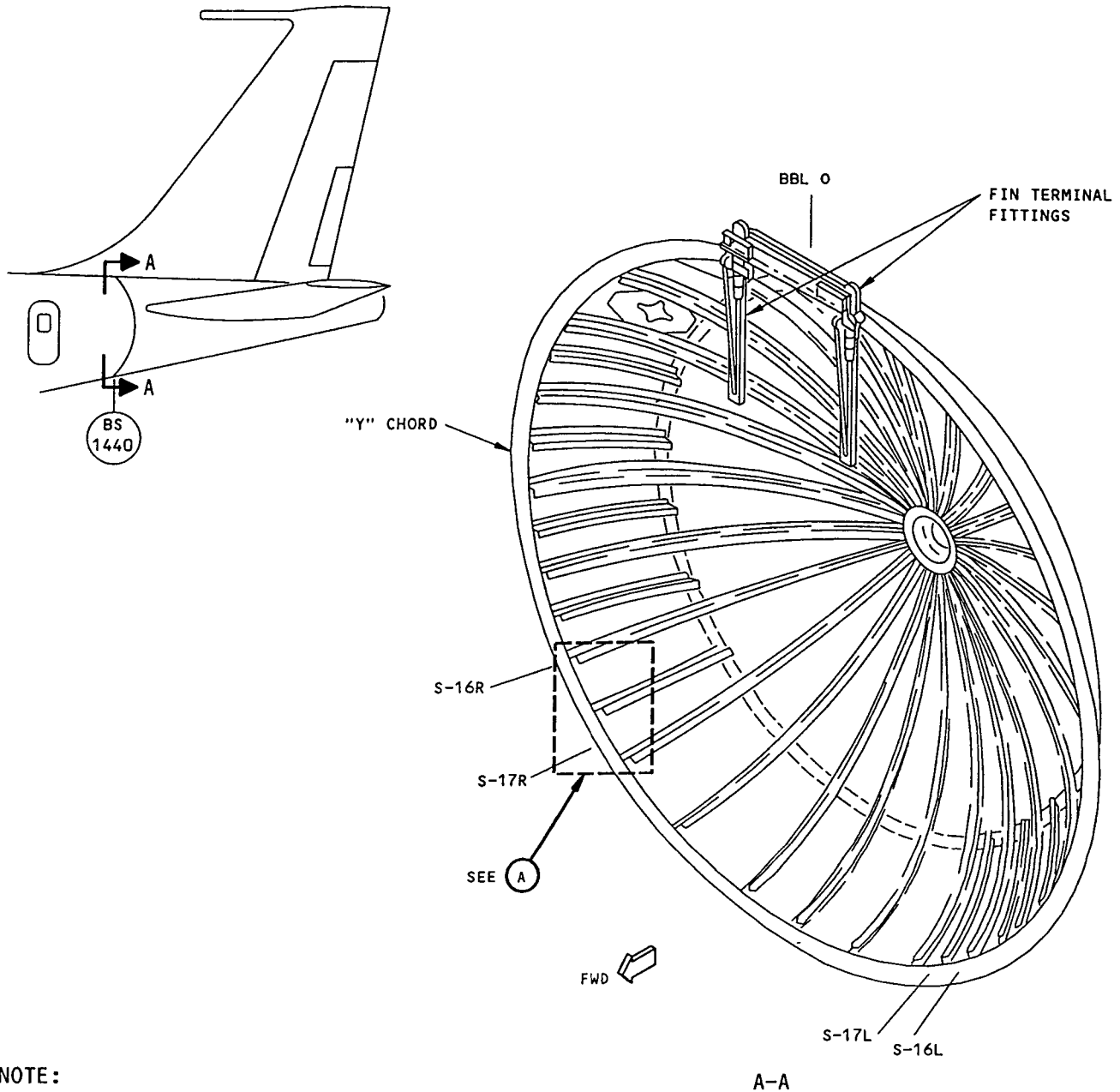
- (1) Calibrate the instrument as specified in par. 4.
- (2) Put the probe on the surface of the splice channel, adjacent to a forward row fastener.
- (3) Balance the instrument.
- (4) Move the probe to the aft row fasteners and do a scan around each of the four fasteners as much as possible within the inspection area shown in Detail I. As you do the scan, monitor the instrument display for crack signals.

NOTE: The distance between the fastener and the flange of the splice channel is not sufficient to permit the inspection to be done in this area.

6. Inspection Results

- A. Signals that are 20 percent higher than the balance point are indications of possible cracks. The inspection locations that cause these signals must be examined some more.
- B. Compare the signals you get during the inspection to the signals you got from the reference standard during calibration.
- C. To make sure you have a crack, remove the fastener at the location of the crack indication and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Fig. 1, 11 or 16.

BS 1440 Aft Pressure Bulkhead Web at the "Y" Chord Splice Channel
Figure 21 (Sheet 3)



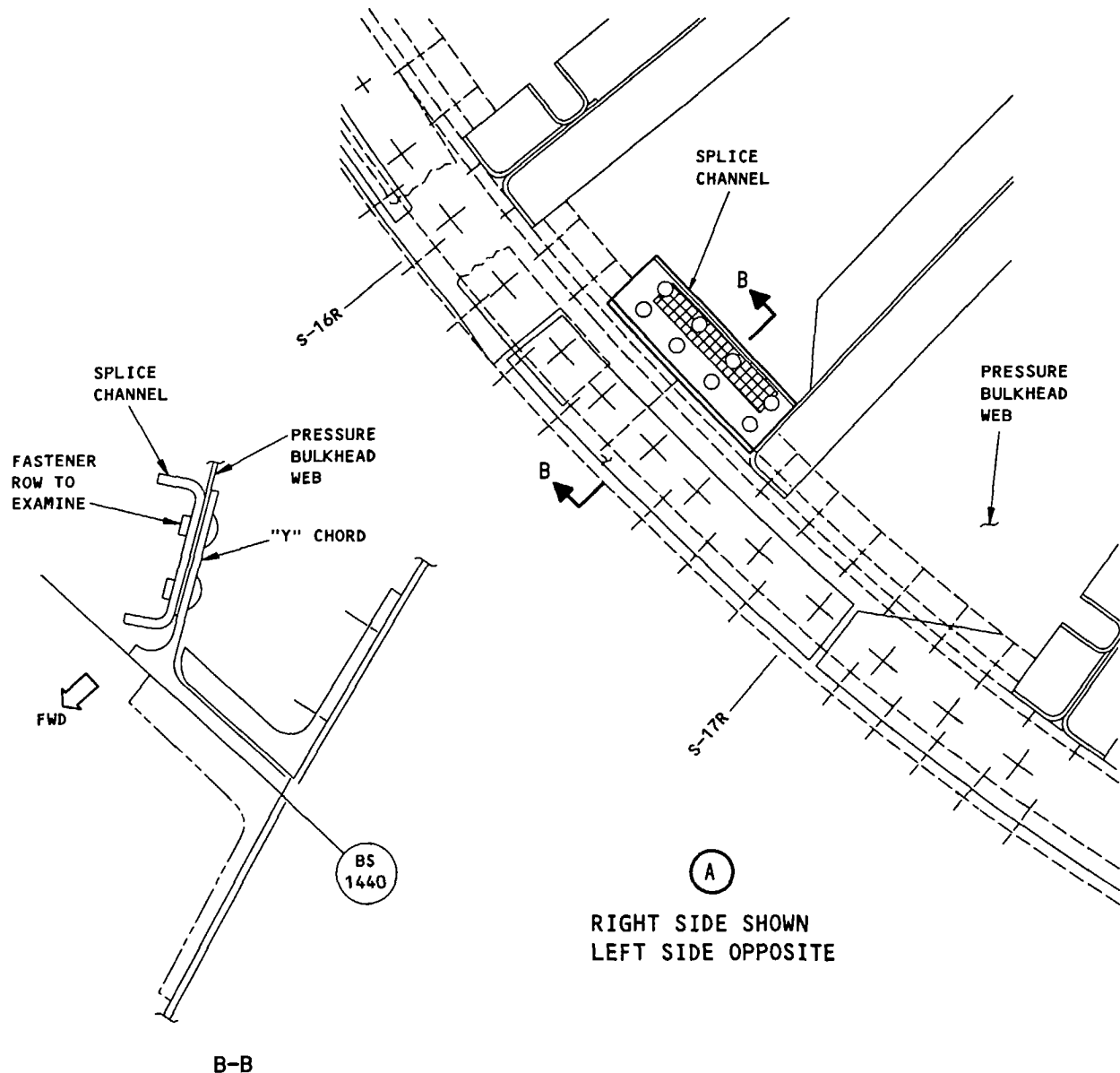
NOTE:

- THE LOCATION OF THE SPLICE CHANNELS ARE BETWEEN STRINGERS 16 AND 17, LEFT AND RIGHT.

**PRESSURE BULKHEAD - BS 1440
DETAIL I (SHEET 1)**

**BS 1440 Aft Pressure Bulkhead Web at the "Y" Chord Splice Channel
Figure 21 (Sheet 4)**

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NONDESTRUCTIVE TEST



NOTE:

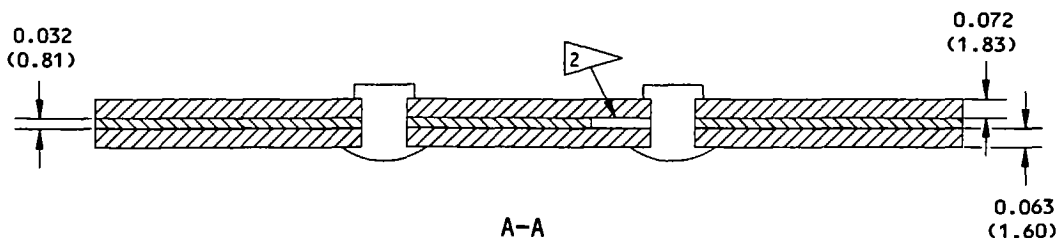
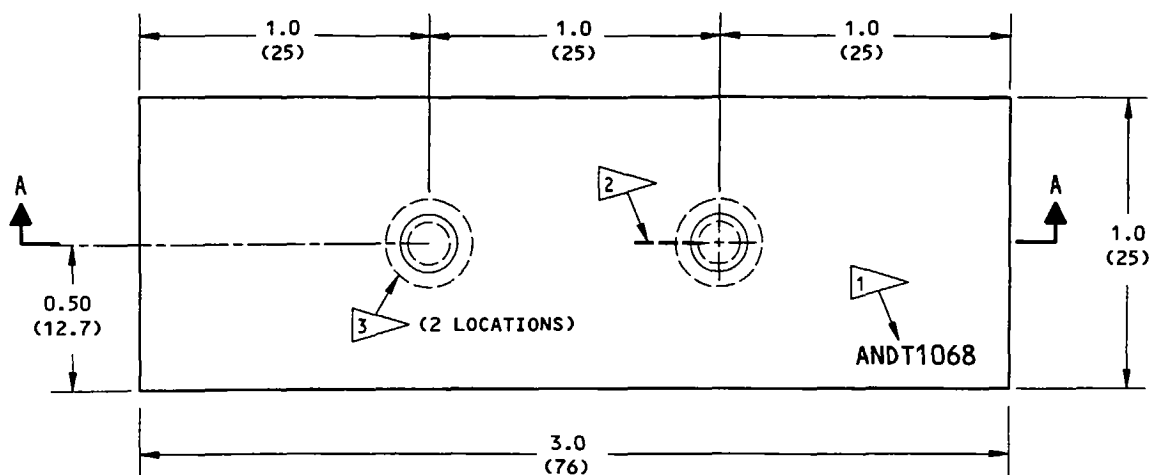


INSPECTION AREA (MAKE A SCAN BETWEEN THE AFT FASTENERS AND AROUND THE FASTENER, AS MUCH AS POSSIBLE). DO NOT SCAN THE SIDE OF THE FASTENER THAT IS NEAREST TO THE ENDS OF THE SPLICE CHANNEL.

PRESSURE BULKHEAD - BS 1440
DETAIL I (SHEET 2)

BS 1440 Aft Pressure Bulkhead Web at the "Y" Chord Splice Channel
Figure 21 (Sheet 5)

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NOTES:

- ALL DIMENSIONS ARE IN INCHES
(MILLIMETERS ARE IN PARENTHESES)
- DIMENSIONAL TOLERANCES:

<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 = ± 1.0
- MATERIAL: 2024-T3 OR T4 CLAD ALUMINUM
- SURFACE ROUGHNESS: 125 Ra OR BETTER

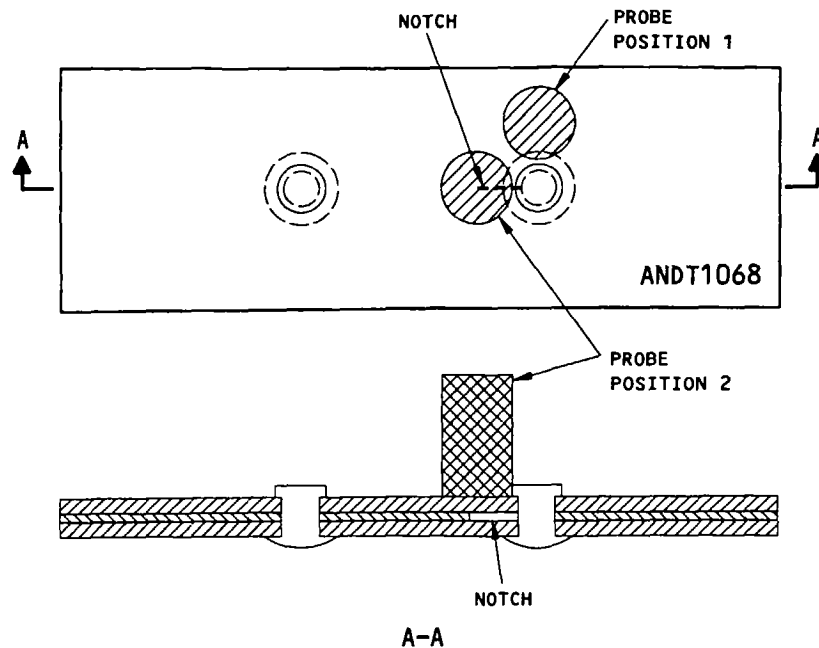
- 1 STAMP OR SCRIBE THE REFERENCE STANDARD NUMBER ANDT1068. PUT A LETTER "A" IN FRONT OF THE REFERENCE STANDARD NUMBER TO SHOW THAT IT HAS ALODINED RIVETS. SEE FLAGNOTE 2
- 2 EDM NOTCH:
 WIDTH - 0.020 (0.51) MAXIMUM
 LENGTH - 0.200 (5.08)
 DEPTH - THRU THICKNESS
 THE NOTCH MUST BE WITHIN ± 0.005 (± 0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.
- 3 BACR15BB5D-5 ALUMINUM PROTRUDING-HEAD RIVET (MS20470D5 OPTIONAL). 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.

NOTE: THE DRIVEN BUTTON DIAMETER MUST BE A MINIMUM OF 0.200 (5.08)

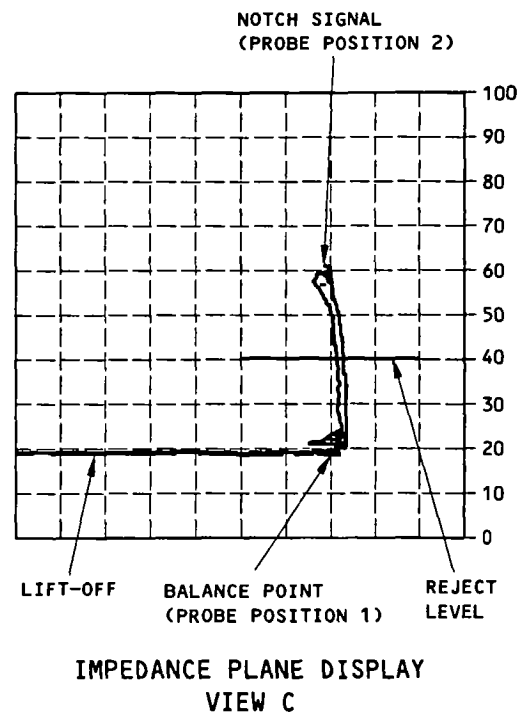
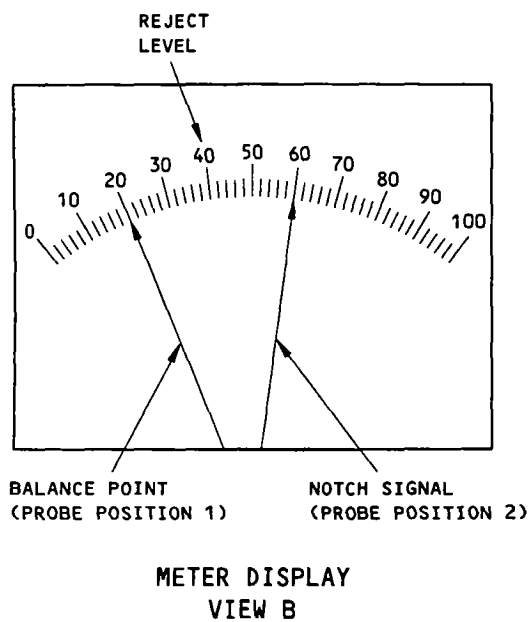
REFERENCE STANDARD ANDT1068 DETAIL II

BS 1440 Aft Pressure Bulkhead Web at the "Y" Chord Splice Channel
Figure 21 (Sheet 6)

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PROBE POSITIONS ON THE REFERENCE STANDARD
VIEW A



INSTRUMENT CALIBRATION
DETAIL III

BS 1440 Aft Pressure Bulkhead Web at the "Y" Chord Splice Channel
Figure 21 (Sheet 7)