EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-17
SSD 53-A10-17
SSD 53-A20-17
SSD 53-A30-17
SSD 53-A40-17

PART 4 - ULTRASONIC

FUSELAGE - ATTACH FITTINGS

1. Purpose

   A. To detect cracks in the forward fin terminal fitting clevis hole at BS 1440 (Detail I).

2. Equipment

   A. Any ultrasonic equipment which satisfies the requirement of this procedure may be used. The following equipment was used during the development of this procedure and found acceptable.

      (1) Instrument

         (a) NORTEC NDT-131, NORTEC Corporation, 421 N. Quay, Kennewick, WA 99336

      (2) Transducer

         (a) 5 MHz, 0.25 inch diameter element in a 0.375 inch case.

   B. Transducer Positioning Fixtures 133P1 and 133P2

      (1) Fabricate transducer positioning fixtures as shown in Detail II.

   C. Reference Standard 133

      (1) Fabricate reference standard as shown in Detail III.

   D. Couplant

      (1) Light oil or grease

Forward Fin Terminal Fitting Clevis Hole, BS 1440
Figure 1 (Sheet 1)

3. Preparation for Inspection

   A. This inspection can be performed with the part in place on the airplane.

   B. Remove aft two sections of fin/body fillet fairing to gain access to the terminal fitting.

   C. Remove paint and smooth out inspection surface Detail I, by polishing with a fine grit abrasive cloth.

   D. Clean inspection area thoroughly to remove old grease, grit or other foreign material.

4. Instrument Calibration

   A. Apply a thin film of couplant to the inspection surface of the reference standard (Detail IV).

   B. Firmly seat the transducer in the No. 1 positioning fixture. Place fixture on the area to be inspected so that the sound beam is pointing at the No. 1 notch (Detail III). Move the fixture back and forth to obtain a maximum indication.

   C. Adjust the instrument controls to obtain an 80% of maximum response. Position the response approximately 4/5 of the total screen width away from the initial pulse.

      NOTE: Because of the beam spread, indications due to sound reflection from the edge of the bushing hole may appear on the screen (Detail IV).

5. Inspection Procedure

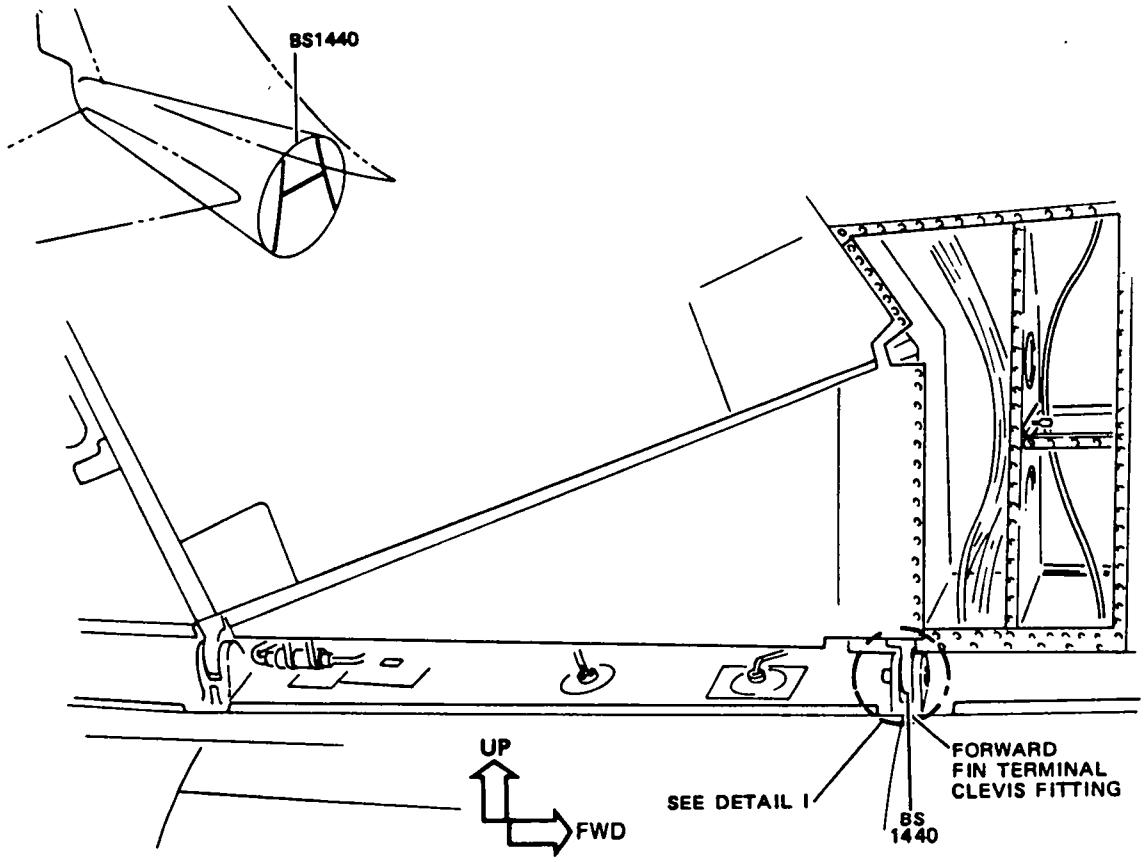
   A. Coat the area to be inspected with a thin film of couplant.

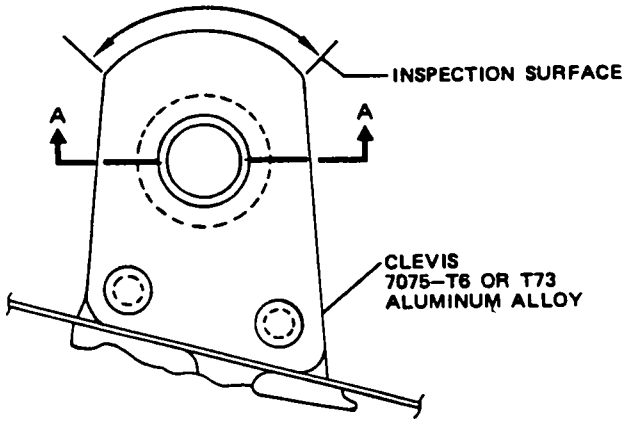
   B. Place the transducer positioning fixture on the inspection area (Detail IV) and move back and forth to cover the entire area to be inspected.

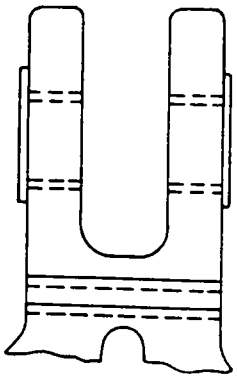
   C. Any indication appearing at approximately the same location on the screen and with an amplitude equal to or greater than the response from the standard notch is a potential defect. Further investigation should be conducted.

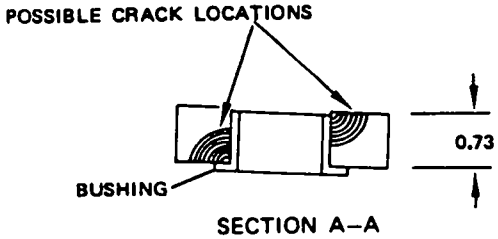
   D. Repeat step 4.B. thru 5.C. using No. 2 transducer position fixture.

Forward Fin Terminal Fitting Clevis Hole, BS 1440
Figure 1 (Sheet 2)



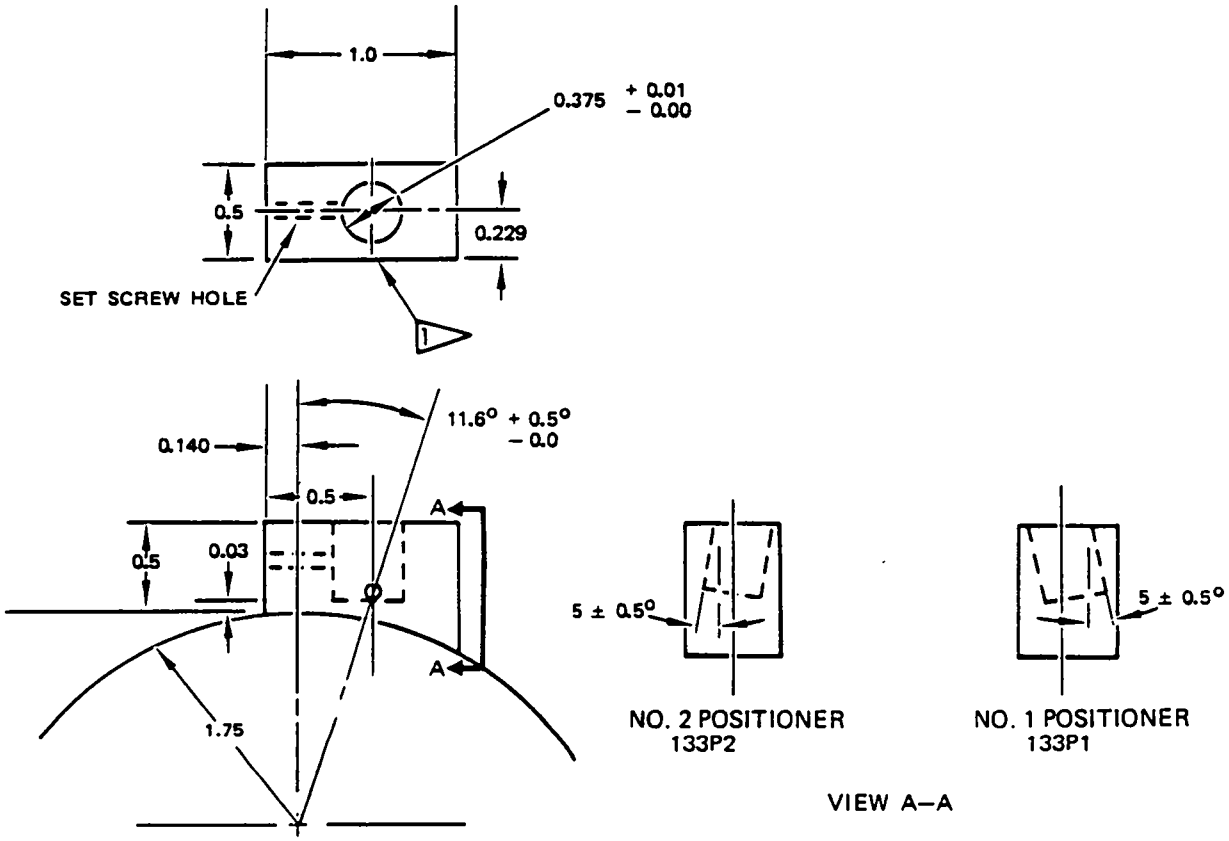






TYPICAL CRACK LOCATION – FORWARD FIN TERMINAL FITTING CLEVIS DETAIL I

Forward Fin Terminal Fitting Clevis Hole, BS 1440
Figure 1 (Sheet 3)



NOTES

- MATERIAL – LUCITE
- ALL DIMENSIONS ARE IN INCHES
- TOLERANCE: ± 0.01 EXCEPT AS NOTED
- VENT HOLE FLUSH WITH BOTTOM OF 0.375 DIA. HOLE
- DRILL AND TAP SET SCREW HOLE FOR 10–32 SCREW.
- FABRICATE TWO POSITIONERS. THE TWO POSITIONERS ARE IDENTICAL EXCEPT THE VERTICAL AXIS OF THE 0.375 DIA . HOLE IS TILTED IN THE OPPOSITE DIRECTION .
- P/N 6410–3
  IDEAL SPECIALTY CO.
  2531 E. INDEPENDENCE ST.
  TULSA, OKLAHOMA 74110

1 ETCH WITH 133P1 AND 133P2

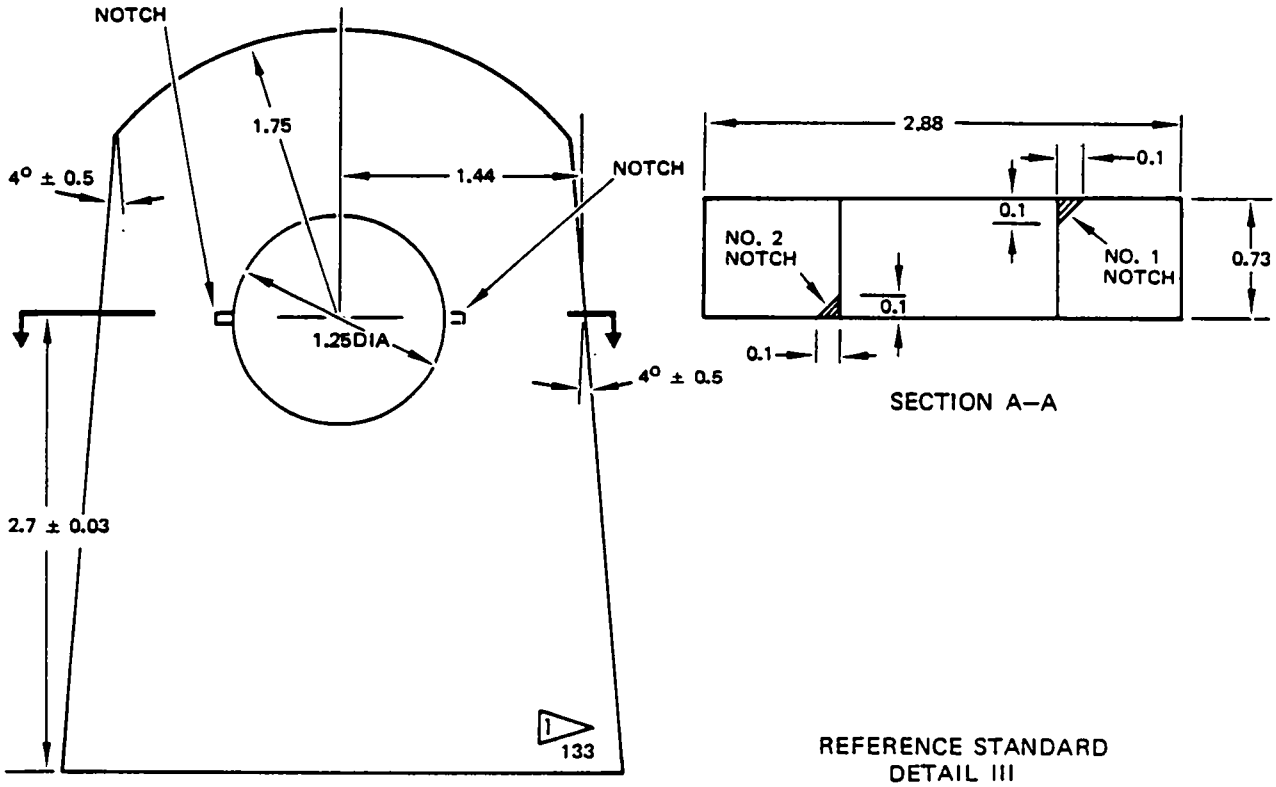
TRANSDUCER POSITIONING FIXTURE
DETAIL II

Forward Fin Terminal Fitting Clevis Hole, BS 1440
Figure 1 (Sheet 4)

NOTES

- MATERIAL: 7075–T6 ALUMINUM ALLOY
- TOLERANCE: ± 0.010 EXCEPT AS NOTED
- NOTCH WIDTH: 0.020 ± 0.005
- P/N 6411–3
  IDEAL SPECIALTY CO.
  2531 E. INDEPENDENCE ST.
  TULSA, OKLAHOMA 74110

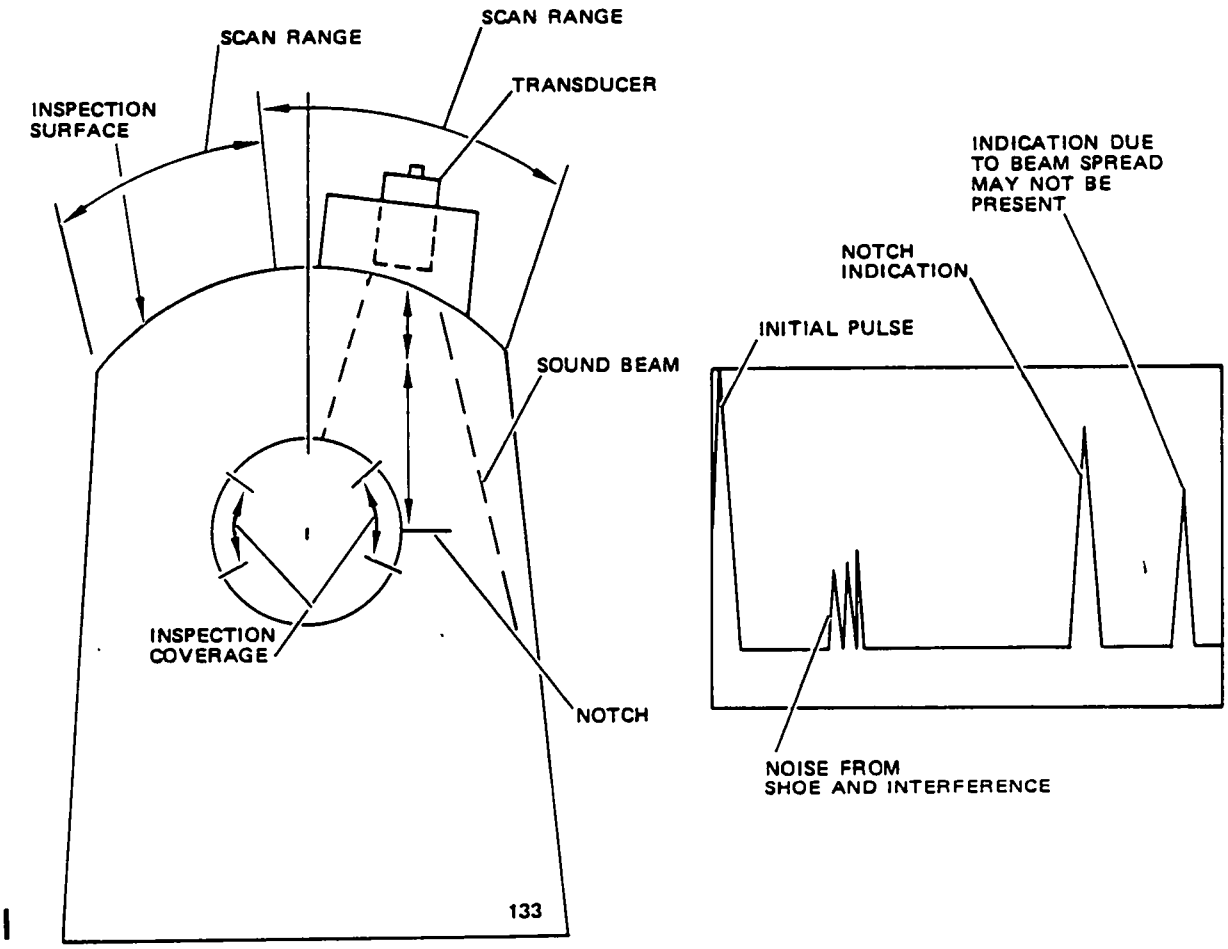
(1) ETCH OR STEEL STAMP WITH 133



SECTION A–A

REFERENCE STANDARD
DETAIL III

Forward Fin Terminal Fitting Clevis Hole, BS 1440
Figure 1 (Sheet 5)



RESPONSE PATTERN FROM REFERENCE STANDARD
DETAIL IV

Forward Fin Terminal Fitting Clevis Hole, BS 1440
Figure 1 (Sheet 6)

EFFECTIVITY
MODEL: 707/720
SSI DOCUMENT (D6-44860)
REFERENCE:
SSD 53-A00-18
SSD 53-A10-18
SSD 53-A20-18
SSD 53-A30-18
SSD 53-A40-18

PART 4 - ULTRASONIC

FUSELAGE - ATTACH FITTINGS

1. Purpose

A. To detect cracks in the outboard side of the aft fin terminal fitting clevis hole at BS 1505 (Detail I).

2. Equipment

A. Any ultrasonic equipment which satisfies the requirements of this procedure may be used. The following equipment was used during the development of this procedure and found acceptable.

(1) Instrument

(a) NORTEC NDT-131, pulse-echo ultrasonic instrument capable of operating between 4 and 10 MHz, Nortec Corporation, 421 N. Quay, Kennewick, WA 99336

(2) Transducer

(a) 10 MHz, 0.25 inch diameter element in a 0.375-inch cylindrical case.

(3) Transducer Positioners 134P1 and 134P2

(a) Fabricate transducer positioners as shown in Detail II.

NOTE: Two positioners are needed to direct the sound beam at the clevis hole edge forward and aft sides.

(4) Reference Standard 134

(a) Fabricate reference standard as shown in Detail III.

(5) Couplant

(a) Light oil or grease

Aft Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 1)

3. Preparation for Inspection

A. This inspection can be performed with the aft fin terminal fitting in place on the airplane. Part removal is not required.

B. Remove access panels on right and left side of dorsal fin to gain access to the terminal fitting.

C. Remove paint and smooth out inspection surface (Detail I) by polishing with fine grit abrasive cloth.

D. Clean inspection area thoroughly to remove old grease, grit or other foreign material.

4. Instrument Calibration

NOTE: Two instrument calibrations and both transducer positioners are required to inspect the forward and aft edge of each clevis lug.

A. Calibrate for inspecting the aft edge of the left hand clevis lug holes (Detail I and IV).

(1) Select the transducer positioner that will direct the sound to the aft edge of the left hand clevis lug hole (Details I, II and V).

NOTE: The transducer positioner for inspecting the aft edge of the left hand clevis lug holes is used to inspect the *forward edge of the right hand clevis lug holes.* A similar situation exists for the positioner used to inspect the opposite hole edge.

(2) Put a small amount of couplant in the positioner transducer hole. Firmly seat transducer in the positioner hole.

(3) Connect the transducer to the instrument and make initial adjustments.

(4) Apply a thin film of couplant to inspection surface of the reference standard (Detail IV).

(5) Put the transducer positioner on the reference standard inspection area so that the sound beam is directed at the notch (Detail IV).

(6) Scan transducer positioner within the inspection surface area to get a maximum notch response.

NOTE: Turn the transducer in the positioner to maximize notch response.

Aft Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 2)

(7) Adjust sensitivity to get a 90 percent of full scale height response from the notch. Put response at 70 percent of full screen width (Detail IV).

B. Calibrate for inspecting the forward edge of left hand clevis lug holes.

(1) Calibrate instrument per par. A(1) thru (7) except select the transducer positioner that will direct the sound to the forward edge of the left hand clevis lug hole (Details I and II).

5. Inspection Procedure

A. Identify the clevis and lug hole edge to be inspected. Apply a thin coat of couplant to the inspection area.

B. Calibrate instrument per par. 4.

NOTE: Select transducer positioner and calibrate to inspect the identified lug hole edge.

C. Put the transducer positioner on the clevis inspection surface area (Detail V).

NOTE: Visually check that the transducer positioner directs the sound beam to the outboard side of the clevis hole.

D. Scan the transducer positioner to cover the clevis lug hole edge (Details I and V).

E. Identify any ultrasonic response that is equal to or greater than 40 percent of full screen height within the inspection area (Details IV and V).

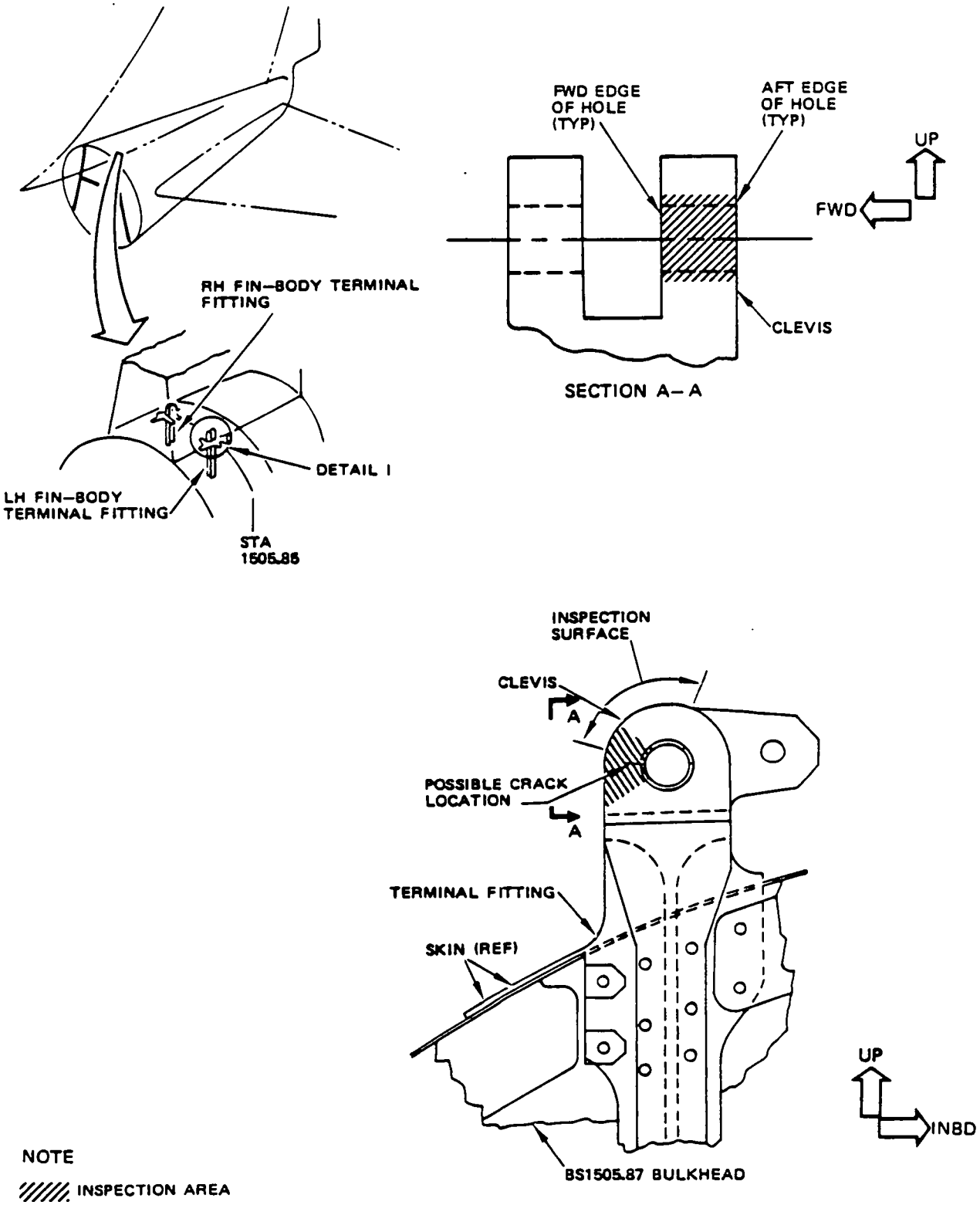
F. Repeat the inspection on the forward and aft edge of each lug hole on the left hand and right hand clevises.

6. Inspection Results

A. Ultrasonic responses equal to or greater than 40 percent of full screen height which occur in the inspection area (approximately 70 percent of full screen width) that travel with transducer movement are potential cracks and should be investigated further.

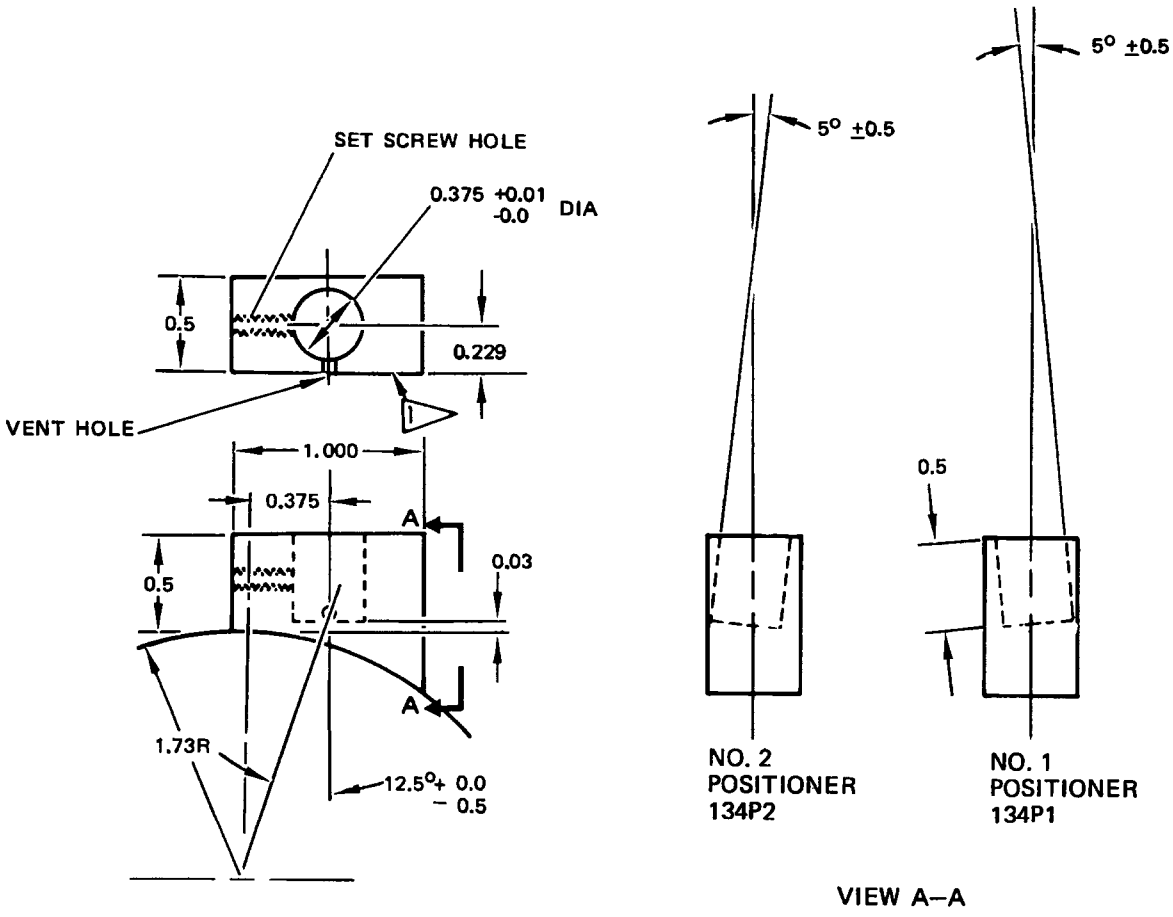
B. Compare crack responses with notch response from reference standard.

Aft Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 3)



AFT VIEW OF LH FIN AFT FITTING
RH SIDE OPPOSITE
DETAIL I

Aft Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 4)



NOTES

- ALL DIMENSIONS ARE IN INCHES
- MATERIAL: LUCITE
- TOLERANCE: ± 0.01 EXCEPT AS NOTED.
- VENT HOLE DIA. IS 0.04 INCHES AND FLUSH WITH BOTTOM OF 0.375 INCH DIA HOLE.
- SET SCREW SIZE: 10–32
- FABRICATE TWO POSITIONERS. THESE TWO POSITIONERS ARE IDENTICAL EXCEPT THE ANGLE OF THE 0.375 INCH DIA INCH DIA HOLE TO THE VERTICAL AXIS TILTED IN THE OPPOSITE DIRECTION. THIS ANGLE FACILITATES INSPECTION OF CLEVIS HOLE EDGE.
- REFER TO PT. 1, 51–00–00 FOR MANUFACTURING AND ORDERING INFORMATION

1 ETCH WITH 134P1 AND 134P2

TRANSDUCER POSITIONERS
DETAIL II

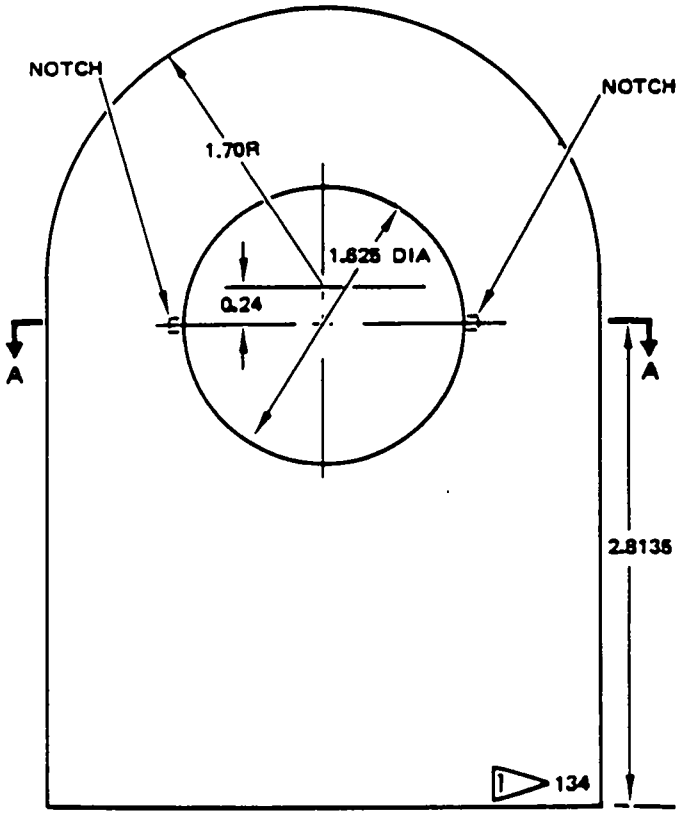
Aft Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 5)

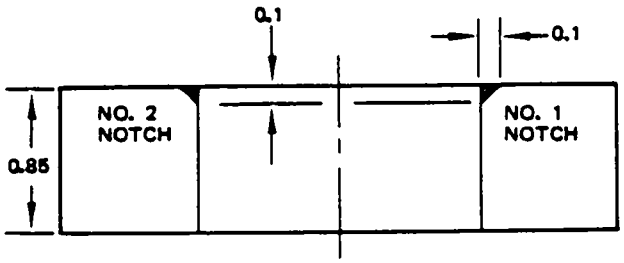
G65999

NOTES

- MATERIAL: 4330M OR EQUIVALENT
- TOLERANCES: ± 0.01 EXCEPT AS NOTED
- NOTCH WIDTH 0.0200 ± 0.005
- REFER TO PT. 1, 51–00–00 FOR MANUFACTURING AND ORDERING INFORMATION

1 ETCH OR STEEL STAMP WITH 134

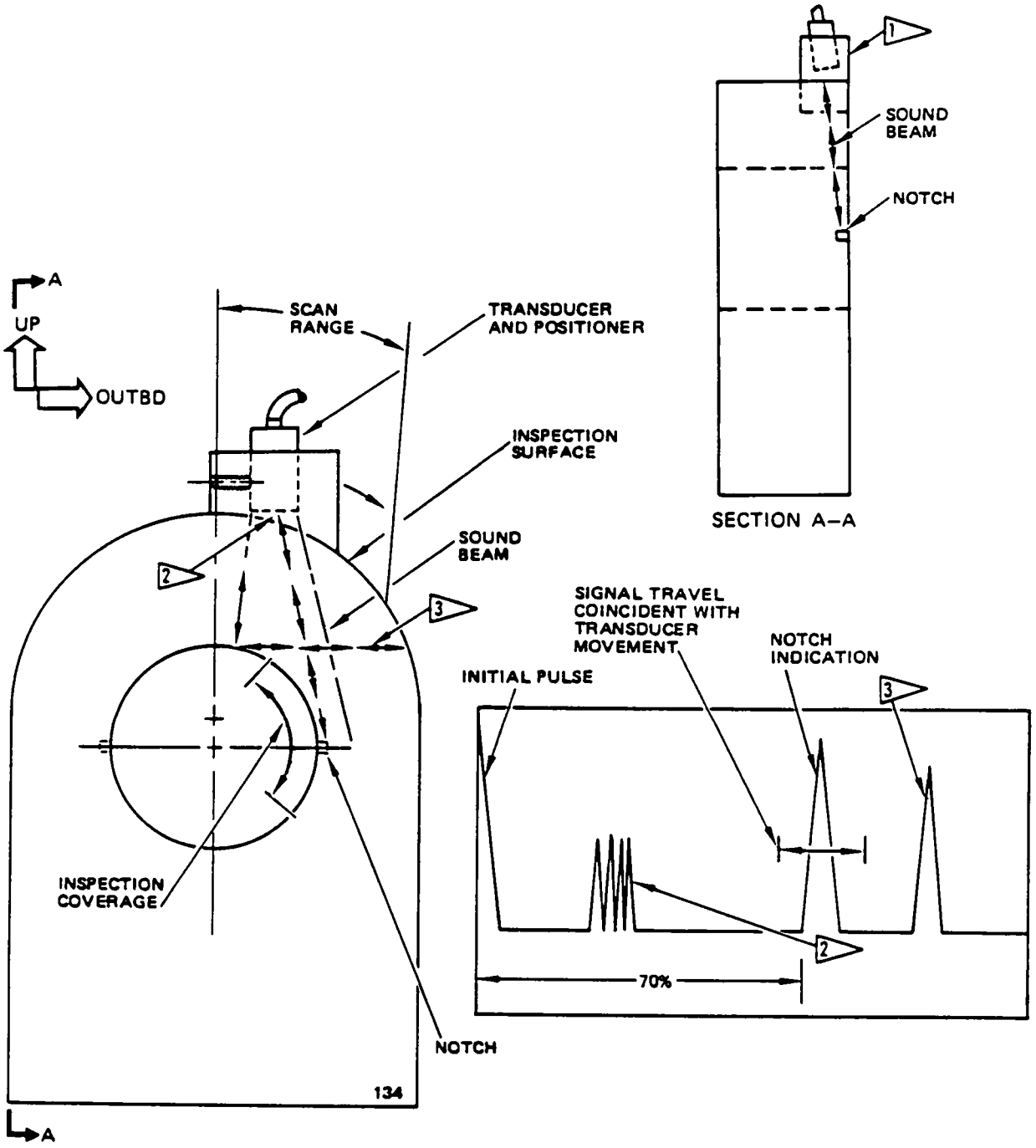




SECTION A–A

REFERENCE STANDARD
DETAIL III

AFT Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 6)

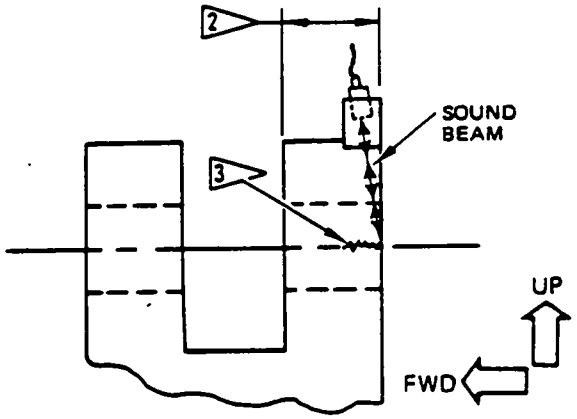


RESPONSE PATTERN FROM REFERENCE STANDARD
DETAIL IV

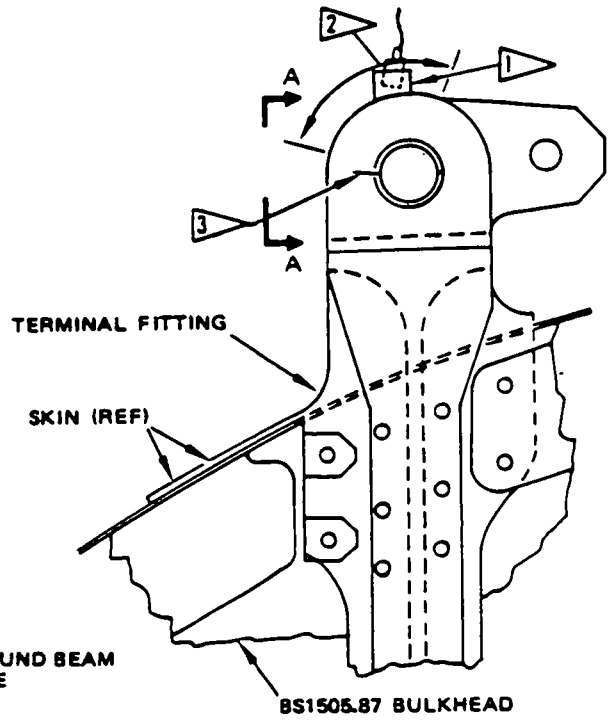
NOTES

1. USE POSITIONER THAT DIRECTS SOUND TO THE REFERENCE STANDARD HOLE EDGE
2. NOISE FROM POSITIONER AND INTERFACE
3. INTERNAL BEAM SPREAD REFLECTION (MAY NOT BE PRESENT)

Aft Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 7)



SECTION A–A



NOTES

1. POSITIONER MUST DIRECT SOUND BEAM TO CLEVIS HOLE OUTBD EDGE
2. INSPECTION SCAN RANGE
3. POTENTIAL CRACK LOCATION

AFT VIEW OF LH FIN AFT FITTING
RH SIDE OPPOSITE
DETAIL V

Aft Fin Terminal Fitting Clevis Hole, BS 1505
Figure 2 (Sheet 8)