TRAILING EDGE WEDGE OF THE LEADING EDGE SLAT

1. Purpose

A. Use this procedure to do an inspection for skin-to-core disbond in the upper and lower surfaces of the trailing edge wedge of the wing leading edge slats. See Figure 1 for the location of the inspection areas.

NOTE: This procedure can also find disbonds below the upper skin and internal doubler, and through the lower external doubler and skin.

B. Service Bulletin reference: 767-57A0039

2. Equipment

A. General

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

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

B. Instrument

(1) Use a bondtester instrument that operates at a frequency range of 20 kHz to 40 kHz and can find a 1.0 inch (2.54 mm) x 1.0 inch (2.54 mm) skin-to-core disbond.

(2) The bondtesters and probes specified below were used to prepare this procedure. These instruments can examine the slat wedge skin-to-core and skin/doubler-to-core structure with one instrument calibration.

(a) S-5, probe part number SP3L or SP3L/DTE with DTE attenuator, Zetec Inc.

(b) S-9, probe part number SP3L/DTE, Zetec Inc.

(c) Bondmaster (impulse mode), probe part number BMP-11, Staveley Instruments Inc.

(d) Bondmaster (MIA mode), probe part numbers S-MP-3 (961991) or probe S-MP-5 (966358).

NOTE: The S-MP-5 probe has an internal adjustable spring. Set the spring tension to number 2.

(e) US 5200, probe part number SF3824, UniWest Inc.

(f) S-3, probe part number SP3L, Zetec Inc.

(3) The bondtester and probe specified below can be used to do this procedure. Two instrument calibrations will be necessary when you use this bondtester to examine the thin and thick honeycomb core areas independently. Make sure other bondtesters are tested on the thick and the thin honeycomb areas of the reference standard for correct and incorrect bond indications.

(a) Bondcheck V-95, probe part number RSP, Rohmann GmbH Inc.

C. Reference Standard

(1) Use reference standard NDT629. See Figure 2 for data about the reference standard.

D. Scan pattern sheet: 11 x 17 inches (279.4 x 431.8 mm). Use a transparent material 0.003-inch (0.07 mm) thick or less, that has 0.5-inch (12.7 mm) spaced lines. Mylar material or some other material almost the same can be used.

3. Preparation for Inspection

A. Extend the wing leading edge slats to get access to the upper and lower sides of the slat trailing edge wedge.

B. Find the inspection areas on the slat trailing edge wedge. See Figure 1.

NOTE: The internal doublers on the upper surface are in the same location as the external doublers on the lower surface. Use the lower external doublers as a guide to identify the location of the internal doublers on the upper surface.

4. Instrument Calibration

NOTE: The instrument calibration for the S-5, S-9, and Bondmaster (impulse and MIA mode) bondtesters are given in this calibration procedure. The calibration for these instruments will identify skin-to-core and skin/doubler-to-core disbonds. For all other bondtester instrument calibrations, refer to the manufacturers instructions.

NOTE: Use a scan pattern sheet on the reference standard to correctly calibrate the instrument and also on the airplane to make sure all inspection areas are examined.

A. S-5 Bondtester instrument calibration for skin-to-core and skin/doubler-to-core structure.

NOTE: Refer to the instrument manufacturers instructions for instrument adjustments.

(1) Put the probe on the reference standard at probe position 5 (Figure 3). This is the skin-to-core bonded area at the thinnest honeycomb area. Position the probe transmit and receive tips so that they are 90 degrees to the wedge trailing edge. See Figure 3, Flagnotes 5 and 9.

(2) Set the amplitude and phase dial controls to the zero position.

(3) Turn the amplitude dial control clockwise until you get a 2.0 dial control indication.

(4) Turn the phase control clockwise and see that the "phase meter" needle goes from zero up to a full scale indication and then returns to a zero meter indication. Continue to turn the phase control clockwise and see that the "phase meter" needle goes up to a full scale indication and then returns to a zero meter indication a second time.

NOTE: Because the amplitude and phase interact with each other, the "amplitude meter" needle must read approximately 7 to 10 after completion of Paragraph 4.A.(4).

(5) Slowly move the probe a short distance (back and forth) above the bonded area on the reference standard and do a check for too much probe movement noise. There is too much probe movement noise when the "phase meter" needle moves from zero to more than 1 on the meter scale while the probe is moved back and forth. If there is too much probe movement noise, continue to move the probe a short distance (back and forth) as you turn the "phase control" clockwise and stop when the "phase meter" needle indication is less than 1.

(6) Move the probe to probe position 4 on the reference standard as shown in Figure 3, Flagnote 2. The "phase meter" needle will go from a zero indication to a meter indication that is approximately 6 or more. This is a disbond indication for this instrument.

NOTE: It is possible to get a stronger disbond indication if one probe tip is above the disbond area and the other tip is on a bonded area.

(7) If the disbond cannot be identified as specified in Paragraph 4.A.(6), set the phase control to zero and do Paragraph 4.A.(1) thru Paragraph 4.A.(6) again.

(8) Move the probe to probe positions 3 and then 2. See Figure 3, Flagnotes 3 and 2. All the disbonds must give disbond indications. If all the disbonds cannot be identified, do Paragraph 4.A.(1) thru Paragraph 4.A.(7) again.

(9) Move the probe on the reference standard in the area without disbonds from the thickest honeycomb area to the thinnest honeycomb area. See Figure 3, Flagnotes 1, 5 and 6. If the instrument identifies a disbond at the thinner area:

(a) Stop the probe at the incorrect disbond indication area. Slowly turn the phase control clockwise and stop when the "phase meter" needle returns to zero (bonded instrument indication). Do Paragraph 4.A.(8) and Paragraph 4.A.(9) again.

NOTE: Make sure the transmit and receiver probe tips are positioned perpendicular (90 degrees) to the wedge trailing edge.

(10) If Paragraph 4.A.(8) and Paragraph 4.A.(9) cannot be done with your instrument and probe, you will have to calibrate your instrument two times to examine the thin and thick honeycomb areas independently.

B. S-9 instrument calibration for skin-to-core and skin/doubler-to-core structure.

NOTE: Refer to the instrument manufacturers instructions for instrument adjustments.

(1) Set the instrument frequency control to 25 kHz and all other controls to the initial adjustments as shown in Figure 4, Detail I.

(2) Put the probe on the reference standard at probe position 1 (Figure 3), which is the skin-to-core bonded area at the thickest honeycomb area. Position the probe transmit and receive tips so that they are 90 degrees to the wedge trailing edge. See Figure 3, Flagnotes 1 and 9.

(3) Adjust the instrument controls to get a YT (waveform) display almost the same as shown in Figure 4, Detail I.

(4) Adjust the gain to put the top of the third complete waveform at approximately 85 percent full screen height. See Figure 4, Detail I, Flagnote 1.

(5) Adjust the delay gates to put the gates on the third complete waveform. See Figure 4, Detail I, Flagnote 2.

(6) Set the instrument display to XY (vector point) and push the balance (BAL) pad to balance the instrument.

(7) Adjust the instrument to put the balance dot at 35 percent full screen height. See Figure 4, Detail II, Flagnote 3.

(8) Move the probe to probe position 2. See Figure 3, Flagnote 2. The instrument balance dot will go up to identify a disbond. This is the disbond indication for this instrument. See Figure 4, Detail III, Flagnote 4 for the disbond indication display.

NOTE: It is possible to get a stronger disbond indication if one probe tip is above the disbond and the other tip is on a bonded area.

NOTE: If the signal does not go up, adjust the delay gates until you get a signal that goes up.

(9) Move the probe to probe positions 3 and 4. See Figure 3, Flagnotes 3 and 4. All disbonds must give disbond indications. See Figure 4, Details III and IV, Flagnotes 4 and 5 for the disbond indication. If all disbonds cannot be identified, increase the instrument gain and do Paragraph 4.B.(2), Paragraph 4.B.(6), Paragraph 4.B.(7), and Paragraph 4.B.(8) again.

(10) Move the probe on the reference standard in the area without disbonds from the thickest honeycomb area to the thinnest honeycomb area. See Figure 3, Flagnotes 1, 5 and 6. If the instrument identifies a disbond, decrease the instrument gain and do Paragraph 4.B.(2), Paragraph 4.B.(6), Paragraph 4.B.(7), Paragraph 4.B.(8) and Paragraph 4.B.(9) again.

NOTE: Make sure the transmit and receiver probe tips are positioned perpendicular (90 degrees) to the wedge trailing edge.

(11) If Paragraph 4.B.(9) and Paragraph 4.B.(10) cannot be done with your instrument and probe, you will have to calibrate your instrument two times to examine the thin honeycomb and the thick honeycomb areas independently.

(12) Adjust the instrument alarm control to put the alarm box at approximately 65 percent to 90 percent full screen height. See Figure 4, Detail IV, Flagnote 6.

C. Bondmaster (impulse mode) instrument calibration for skin-to-core and skin/doubler-to-core structure.

NOTE: Refer to the instrument manufacturers instructions for instrument adjustments.

NOTE: This inspection can be done in the impulse waveform display or in the flying dot display.

(1) Set the instrument to the pitch catch impulse mode.

(2) Set the instrument frequency control to approximately 26.0 kHz and all other controls to the initial adjustments as shown in Figure 5.

(3) Put the probe on the reference standard at probe position 2 (Figure 3). This is the skin-to-core disbond area that has the thickest honeycomb area. See Figure 3, Flagnote 2.

(4) Balance the instrument.

(5) Adjust the frequency controls to get an instrument display indication almost the same as shown in Figure 5, Detail I, Flagnote 1. This is a disbond signal for the disbond at the reference standards thickest honeycomb area.

(6) Adjust the instrument gain to get a signal from the disbond that is almost the same as shown in Figure 5, Detail I, Flagnote 1.

(7) Move the probe to probe position 1. See Figure 3, Flagnote 1. There will be little or no signal on the instrument display as shown in Figure 5, Detail II, Flagnote 2.

(8) Move the probe to probe positions 3 and 4. See Figure 3, Flagnotes 3 and 4. All disbonds must be identified. If all disbonds cannot be identified, increase the instrument gain and do Paragraph 4.C.(3), Paragraph 4.C.(4), Paragraph 4.C.(5), and Paragraph 4.C.(7) again.

(9) Move the probe on the reference standard in the area without disbonds from the thickest honeycomb area to the thinnest honeycomb area. See Figure 3, Flagnotes 1, 5 and 6. If the instrument identifies a disbond, decrease the instrument gain and do Paragraph 4.C.(3), Paragraph 4.C.(4), Paragraph 4.C.(5), Paragraph 4.C.(7) and Paragraph 4.C.(8) again.

(10) If Paragraph 4.C.(8) and Paragraph 4.C.(9) cannot be done with your instrument and probe, you will have to calibrate your instrument two times to examine the thin honeycomb and the thick honeycomb areas independently.

(11) Adjust the instrument alarm control to put the upper alarm line at approximately 75 to 80 percent full screen height. See Figure 5, Detail II, Flagnote 4.

(12) To do this inspection in a flying dot display, push the run control and lower the instrument gain to approximately 11 dB. Adjust the instrument alarm box so it is set as shown (approximately) in Figure 6, Flagnote 6.

(13) Make the necessary instrument adjustments with the gain, rotation and alarm box controls to put the disbond signal outside the alarm box. See Figure 6, Flagnotes 1 thru 6.

D. Bondmaster (MIA mode) instrument calibration for skin-to-core and skin-to-doubler structure.

NOTE: Refer to the manufacturers instructions for instrument adjustments.

(1) Connect the MIA probe to the bondtester and energize the instrument.

NOTE: Do not put the probe holder on the probe.

(2) Push the SPCL pad to show Special 1 menu.

(3) Adjust the horizontal position (H-POS) window to read 40% and the vertical position (V-POS) window to read 80%.

NOTE: The screen display dot will now come into view at 40% of full screen width and 80% of full screen height when the null pad is pushed.

(4) Set the Phase REF pad to read 90 degrees and the Drive pad to read High.

(5) Push the Alarm pad.

(6) Set the alarm box position and dimensions so that it is almost the same as shown in Figure 7, flagnote 3. Set the alarm for polarity in.

(7) Push the SET pad.

(8) Put the probe on the reference standard at probe position 6 as shown in Figure 3, flagnote 10.

NOTE: When you use the MIA probe, make sure to:

(1) Keep a constant light pressure on the probe. The probe is pressure sensitive.

(2) Keep the probe at a right angle to the inspection surface.

(9) Push the Good Part pad.

(10) Move the probe above the reference standard disbond area at probe position 3. See Figure 3, flagnote 3.

(11) Push the Bad Part pad.

(12) Push the Display Amplitude/Phase pad to read Display AMPL. The instrument AMPL frequency must read between 2.7 kHz and 5.0 kHz. If you cannot get an AMPL frequency between 2.7 kHz and 5.0 kHz, do as follows:

(a) Push the FREQ pad.

(b) Turn the SMART control knob so the vertical frequency line is between 2.7 and 5.0 kHz and is where the distance between the GOOD PART frequency scan line and the BAD PART frequency scan line is the largest. Use this frequency as the AMPL test frequency. See Figure 8.

(13) Push the Run pad.

(14) Put the probe on the reference standard at probe position 6. See Figure 3, flagnote 10.

(15) Push the Null pad. The active dot will go to the top of the screen display at approximately 60% full screen width and 80% full screen height. See Figure 7, flagnote 1.

(16) Move the probe above the disbond area at probe position 3 (Figure 3) and stop. The dot will go down.

(17) Push the V-Gain pad and adjust the gain so that the dot goes down to approximately 10% full screen height. See Figure 7, Flagnote 2.

(18) Move the probe above the bonded area at probe position 6 (Figure 3, Flagnote 10) and push the Null pad.

(19) Do Paragraph 4.D.(16) again. Look at the screen display to make sure the dot goes down to approximately 10% full screen height as shown in Figure 7, Flagnote 2.

(20) Do Paragraph 4.D.(14) thru Paragraph 4.D.(19) again at a lower or higher gain if the dot does not go down to approximately 10% full screen height.

(21) Put the probe at probe position 6 and push the Null pad. See Figure 3, Flagnote 10.

(22) Slowly move the probe on the reference standard from probe position 1 to probe position 5. See Figure 3, Flagnotes 1, 5 and 6.

(23) If the instrument displays a disbond signal when you do Paragraph 4.D.(22), lower the instrument gain and do Paragraph 4.D.(14) thru Paragraph 4.D.(22) again.

(24) Put the probe at probe position 6 and press the Null pad. See Figure 3, Flagnote 10.

(25) Move the probe above the disbond area at probe positions 2, 3 and 4 shown in Figure 3. Disbond signals must occur at each probe position. See Figure 3, Flagnotes 2, 3, 4, and 6.

(26) Do Paragraph 4.D.(14) thru Paragraph 4.D.(25) again at a higher instrument gain if disbond signals do not occur during Paragraph 4.D.(25).

5. Inspection Procedure

A. Inspection procedure for the skin-to-core and skin-to-doubler structure of the trailing edge wedge for the wing leading edge slat.

(1) Identify the inspection area. See Figure 1, Flagnote 1.

NOTE: It is not necessary to examine the surface of the lower skin where the bulb seal retainers are attached. See Figure 9, Flagnotes 6 thru 9, for more areas that are not examined.

(2) Refer to Paragraph 4. for the S-5, S-9 or Bondmaster (impulse and MIA mode) instrument calibrations. For all other bondtester instrument calibrations, refer to the manufacturers instructions.

(3) Put the scan pattern sheet on the number 1 slat wedge or the upper surface, adjacent to the end of the wedge as shown in Figure 9, Flagnote 1.

(4) Put the probe on the scan line of the scan pattern sheet and slowly move the probe outboard the length of the scan pattern sheet. Index the probe 0.5 inch (1.27 mm) to the adjacent scan line and move the probe inboard the length of the sheet. See Figure 9, Detail I and Flagnotes 2 and 3.

NOTE: The probe can be moved in a forward and aft direction if the instrument and probe were satisfactorily used in that direction during calibration.

(5) Do Paragraph 5.A.(4) at all 0.5 (12.7 mm) index marks on the scan pattern sheet.

(6) Do Paragraph 5.A.(4) and Paragraph 5.A.(5) again at all upper and lower skin-to-core structure on the number 1 slat trailing edge wedge.

(7) Do Paragraph 5.A.(4), Paragraph 5.A.(5) and Paragraph 5.A.(6) on all slat trailing edge wedges on the left and right wings.

(8) Make a record of all areas that give the same skin-to-core disbond indication you got when you calibrated the instrument.

6. Inspection Results

A. Compare all disbond indications on the slat wedge with the disbond indication from the reference standard. Make sure the reference standard structure is the same as the wedge structure when you make the comparison.

(1) The Bondmaster (impulse mode) disbond waveform indication for a disbond below the skin doubler structure can go above the null line opposite of Figure 5, Detail I indication.

B. Possible causes of incorrect disbond indications are as follows:

(1) When you make a scan from a thick honeycomb area to a thin honeycomb area.

(a) What to do? -- Calibrate the instrument two times to examine the thin honeycomb and the thick honeycomb areas independently.

(2) When you make a scan above the edge of an internal doubler.

(a) What to do? -- Use the lower external doubler as a guide to identify the location of the internal doubler on the upper surface. The internal doublers on the upper surface are in the same location as the external doublers on the lower surface.

(3) If you move the probe too fast.

(a) What to do? -- Slowly move the probe.

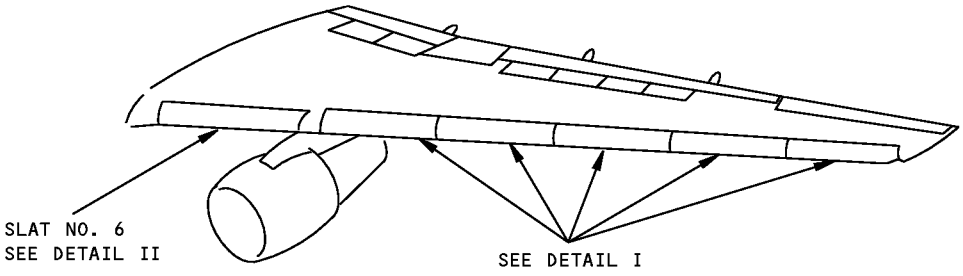
(4) S-5 and S-9 Bondtesters - A constant disbond indication occurs when the scan is done with the probe at approximately 3.0 inches (7.6 mm) from the edge of the wedge.

(a) Possible cause: probe tips are positioned parallel to wedge trailing edge.

(b) What to do? -- Turn the probe to position the tips perpendicular (90 degrees) to the edge and examine the inspection area again.

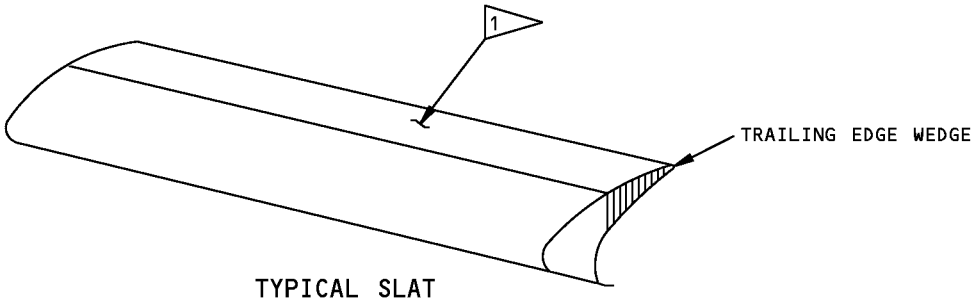
(5) The S-5 Bondtester identifies the far side of the wedge at some constant distance from the wedge trailing edge when a scan is made from the thick honeycomb core area to the thin honeycomb core area.

(a) What to do? -- Stop the probe at the incorrect disbond indication area. Slowly turn the phase control clockwise and stop when the "phase meter" needle returns to zero (bonded instrument indication). Do Paragraph 4.A.(8) and Paragraph 4.A.(9) again.

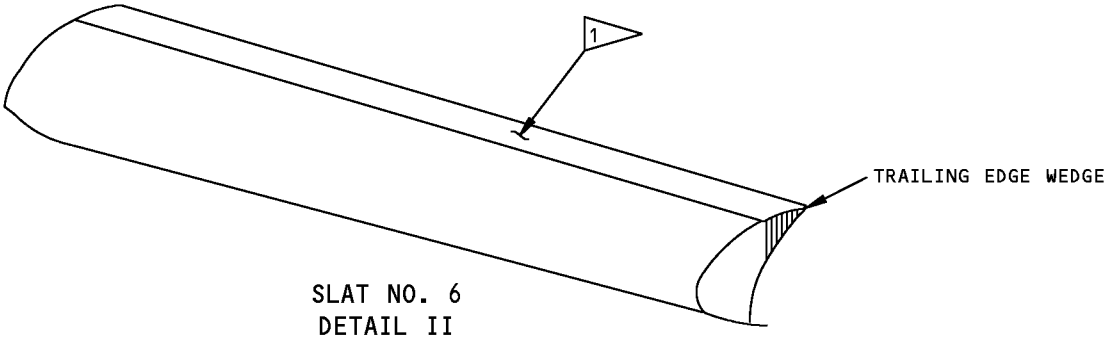


LEFT SIDE SHOWN
RIGHT SIDE OPPOSITE

OUTBD



TYPICAL SLAT
DETAIL I



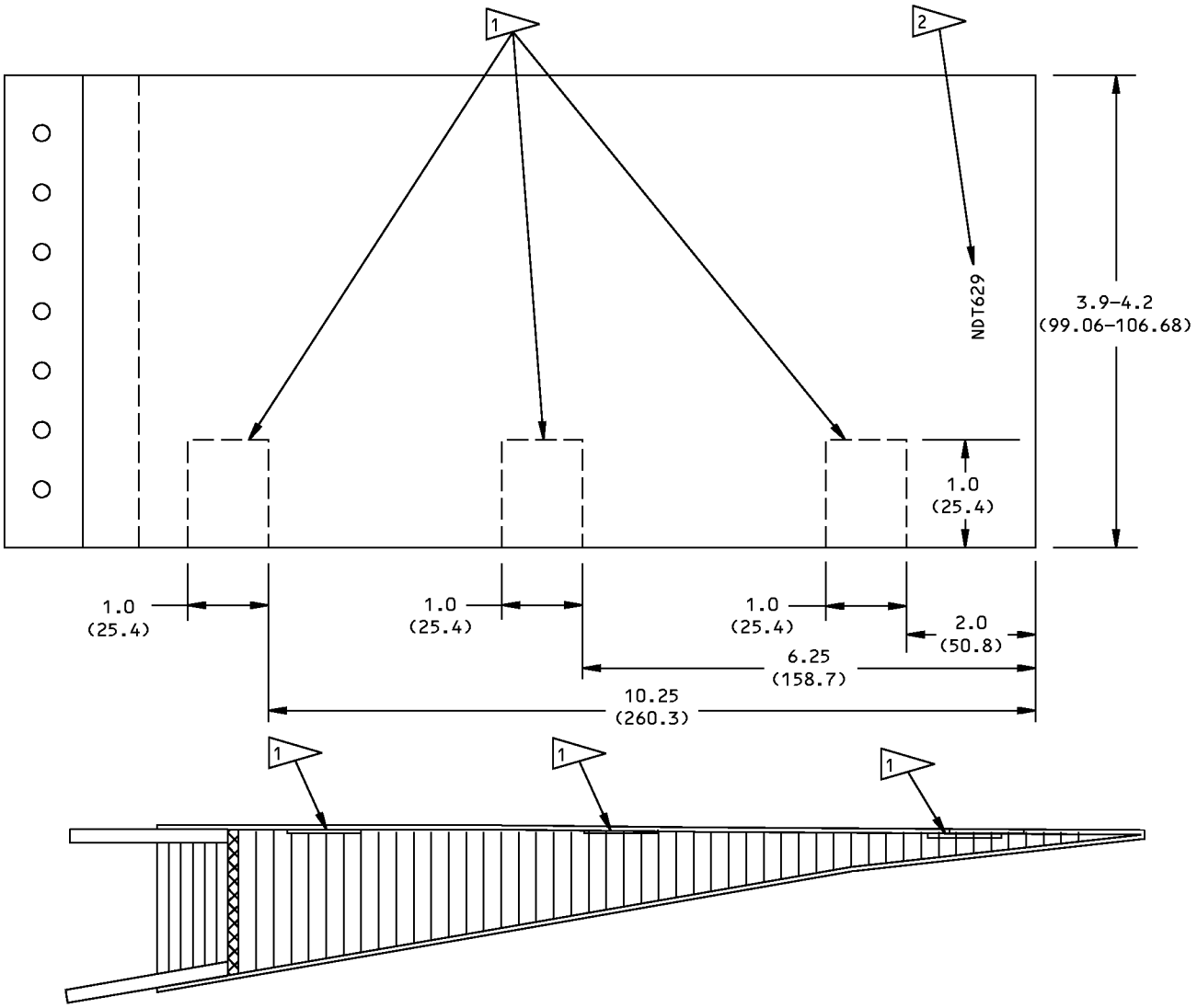
SLAT NO. 6
DETAIL II

NOTES

- UPPER SLAT TRAILING WEDGE INSPECTION SURFACE SHOWN. LOWER SURFACE ALMOST THE SAME.

1 EXAMINE THE UPPER AND LOWER SKIN-TO-CORE STRUCTURE OF THE SLAT TRAILING EDGE WEDGE.

Wing Leading Edge Skin-to-Core Inspection of the Slat Trailing Edge Wedge
Figure 1



NOTES

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

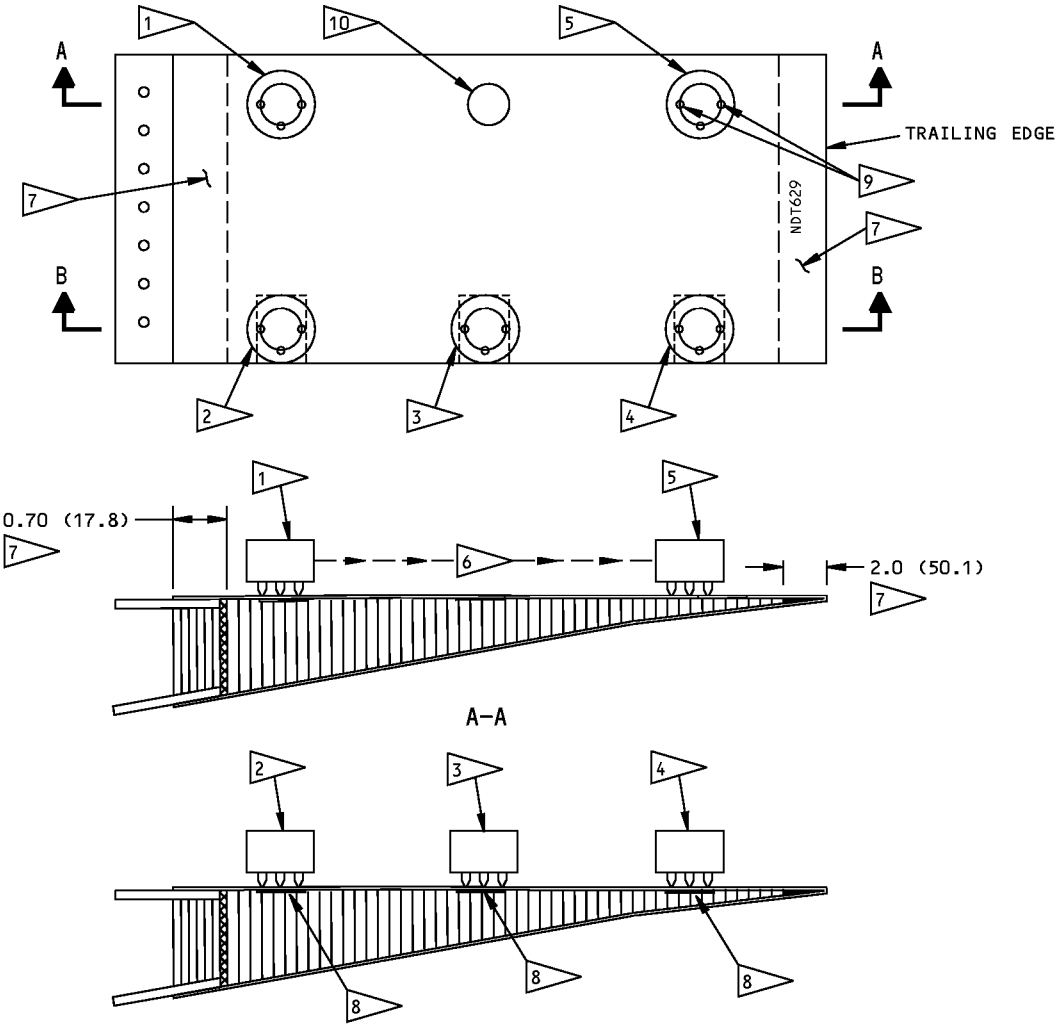
INCHES	MILLIMETERS
X.XXX = ± 0.005	X.XX = ± 0.10
X.XX = ± 0.025	X.X = ± 0.5
X.X = ± 0.050	X = ± 1

- REFERENCE STANDARD MADE FROM THE 767 SLAT TRAILING EDGE WEDGE
- ALL KNIFE CUTS ARE MADE BETWEEN THE SKIN AND THE HONEYCOMB CORE

1 KNIFE CUT - 1.0 (25.4) X 1.0 (25.4)

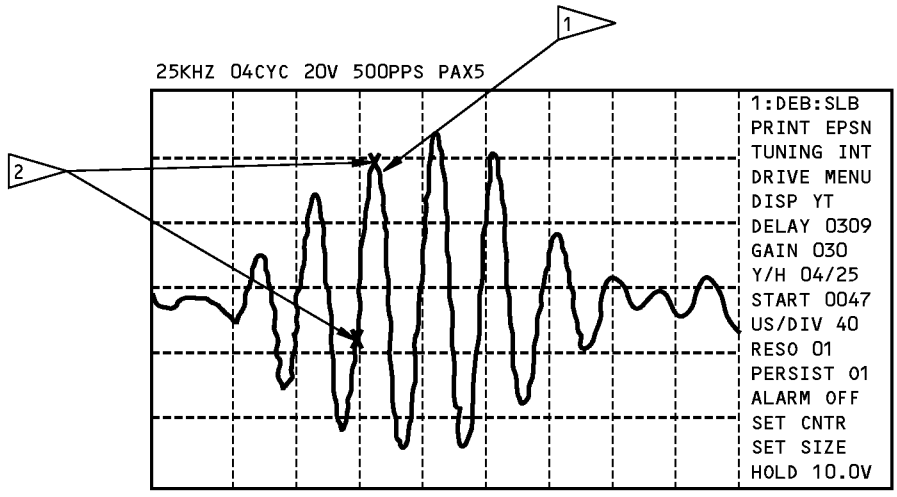
2 MARK THE REFERENCE STANDARD WITH NDT629

Reference Standard NDT629
Figure 2

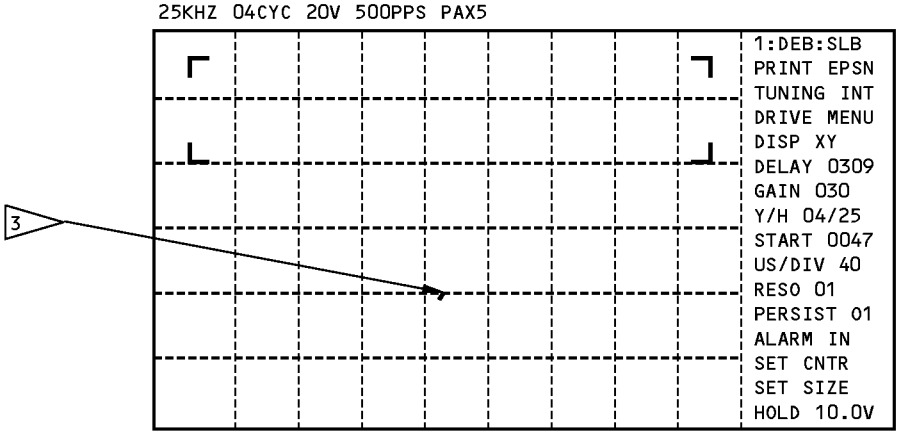


1. PROBE POSITION 1. PROBE ON THE BONDED AREA WITH THE THICKEST HONEYCOMB CORE STRUCTURE BELOW.
2. PROBE POSITION 2. PROBE ON THE DISBOND AREA WITH THE THICKEST HONEYCOMB CORE STRUCTURE BELOW.
3. PROBE POSITION 3. PROBE ON THE DISBOND AREA BETWEEN THE THICKEST AND THE THINNEST HONEYCOMB SECTIONS.
4. PROBE POSITION 4. PROBE ON THE DISBOND AREA WITH THE THINNEST HONEYCOMB CORE BELOW.
5. PROBE POSITION 5. PROBE ON THE BONDED AREA WITH THE THINNEST HONEYCOMB CORE BELOW.
6. MOVE THE PROBE FROM THE THICKEST HONEYCOMB CORE AREA TO THE THINNEST HONEYCOMB CORE AREA.
7. NO INSPECTION IS NECESSARY IN THESE AREAS
8. KNIFE CUT (DISBOND AREA)
9. S-5 AND S-9 BONDTESTERS TRANSMIT AND RECEIVER TIPS MUST BE 90 DEGREES TO THE REFERENCE STANDARD WEDGE TRAILING EDGE.
10. PROBE POSITION 6. PUT THE BONDMASTER MIA PROBE ON THE BONDED AREA BETWEEN THE THICKEST AND THINNEST AREAS OF THE HONEYCOMB CORE.

Instrument Calibration for Skin-to-Core Disbond
Figure 3



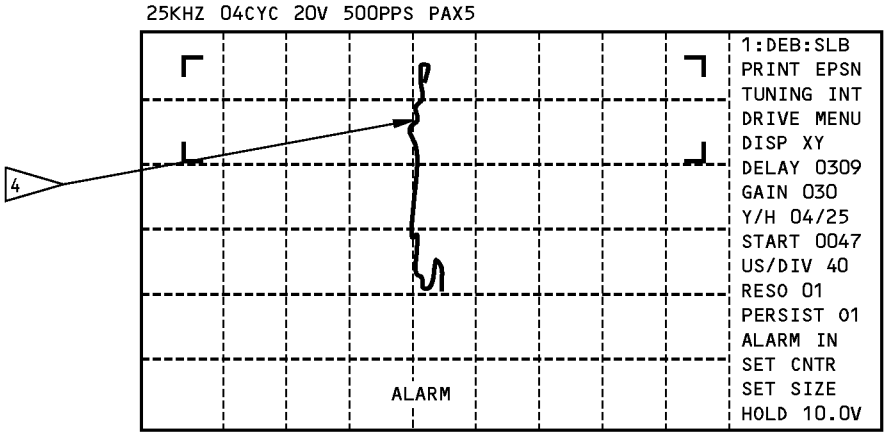
DETAIL I



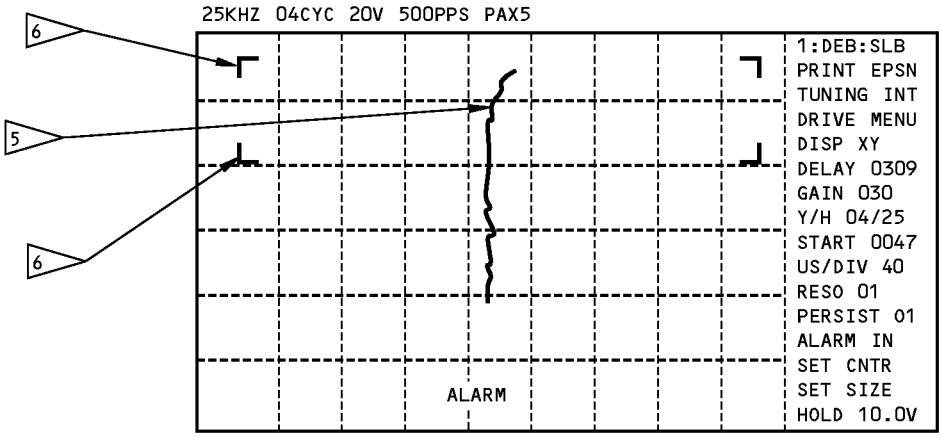
DETAIL II

1. PUT THE THIRD COMPLETE WAVEFORM AT APPROXIMATELY 85 PERCENT OF FULL SCREEN HEIGHT
2. PUT THE FIRST DELAY GATE ON THE LEADING EDGE OF THE THIRD COMPLETE WAVEFORM AND THE SECOND DELAY GATE AT THE TOP OF THE THIRD COMPLETE WAVEFORM
3. BALANCE DOT POSITION FOR THE BONDED AREA
4. DISBOND INDICATION AT THE THICKEST HONEYCOMB CORE AREA
5. DISBOND INDICATION AT THE THINNEST HONEYCOMB CORE AREA
6. ALARM BOX SCREEN POSITION

S-9 Bondtester Instrument Bond/Disbond Display
Figure 4 (Sheet 1 of 2)

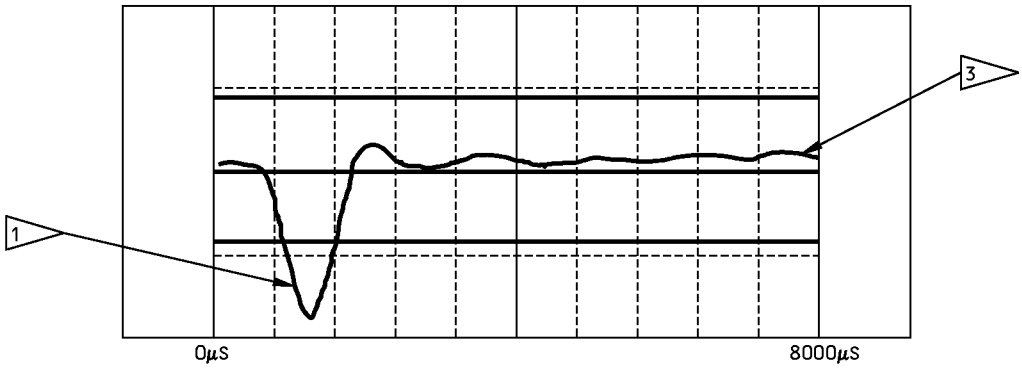


DETAIL III

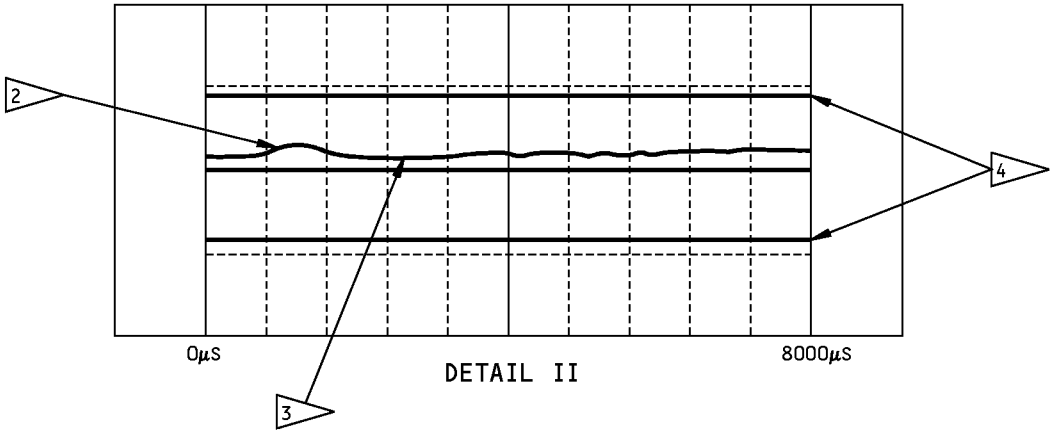


DETAIL IV

S-9 Bondtester Instrument Bond/Disbond Display
Figure 4 (Sheet 2 of 2)



DETAIL I



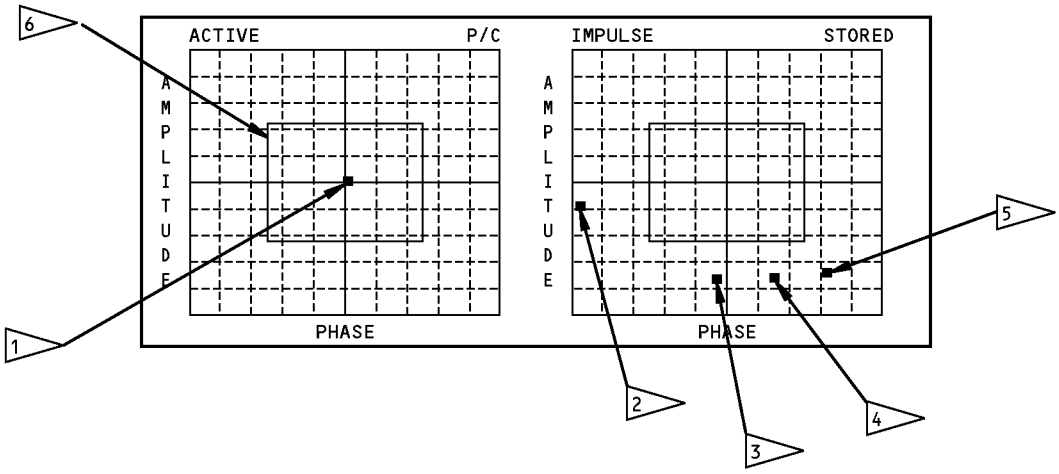
DETAIL II

INSTRUMENT SETTINGS

SETUP		RUN		ALARM			
PROBE	P/C-1	H-GAIN	18.5 DB	ALARM	ON	HEIGHT	74
OP. MODE	SETUP	V-GAIN	18.5 DB	VOLUME	OFF	WIDTH	N/A
FREQUENCY	26.3 KHZ	H-POSITION	50	LATCH	OFF	VERT POS	28
ROTATION	0	V-POSITION	50	POLARITY	OUT	HORZ POS	N/A
GATE START	320µS	IMPULSE	ON				
		FILTER	25 HZ				
		PROBE DRIVE	HIGH				

1. DISBOND AREA INDICATION FOR THICKEST AND THINNEST HONEYCOMB CORE AREAS
2. BONDED AREA INDICATION FOR SKIN-TO-CORE STRUCTURE
3. NULL LINE
4. ALARM LINES

Bondmaster (Impulse Mode) Instrument Bond/Disbond Display
Figure 5



INSTRUMENT SETTINGS

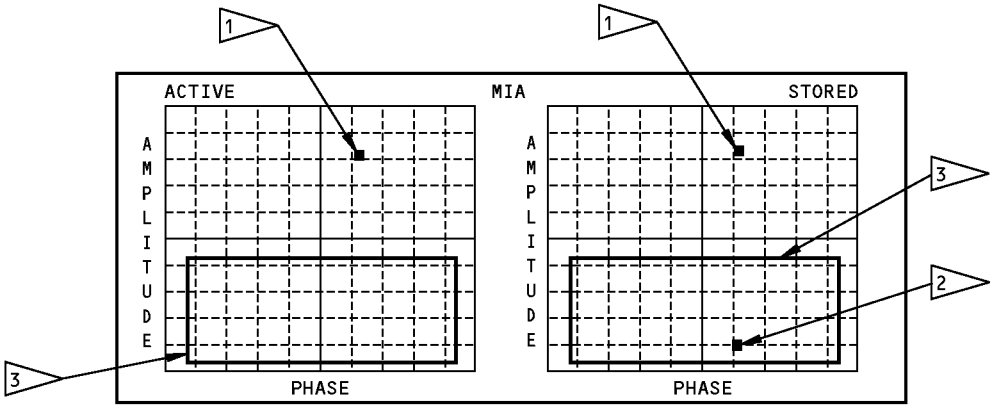
SETUP	
PROBE	P/C-1
OP. MODE	RUN
FREQUENCY	26.3 KHZ
ROTATION	0
GATE START	320μS

RUN	
H-GAIN	11.0 DB
V-GAIN	11.0 DB
H-POSITION	50
V-POSITION	50
IMPULSE	ON
FILTER	25 HZ
PROBE DRIVE	HIGH

ALARM			
ALARM	ON	HEIGHT	44
VOLUME	OFF	WIDTH	49
LATCH	OFF	VERT POS	28
POLARITY	OUT	HORZ POS	25

1. BONDED AREA INDICATION FOR SKIN-TO-CORE STRUCTURE
2. DISBOND AREA INDICATION FOR DISBOND BELOW DOUBLER
3. DISBOND AREA INDICATION FOR DISBOND AT THE THICKEST HONEYCOMB CORE STRUCTURE
4. DISBOND AREA INDICATION FOR DISBOND BETWEEN THICKEST AND THINNEST HONEYCOMB CORE STRUCTURE
5. DISBOND AREA INDICATION FOR DISBOND AT THE THINNEST HONEYCOMB CORE STRUCTURE
6. ALARM BOX

Bondmaster (Impulse Mode) Instrument Bond/Disbond Flying Dot Display
Figure 6



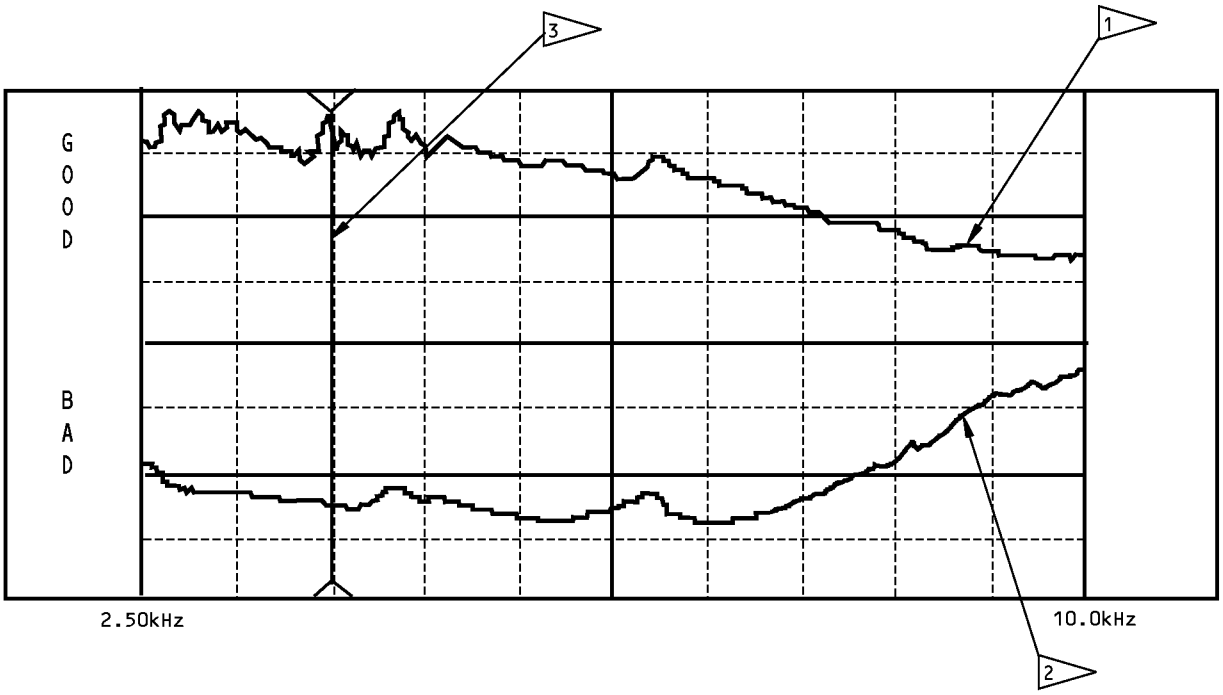
INSTRUMENT SETTINGS

SETUP		RUN		ALARM			
PROBE	MIA-1	FREQUENCY	3.72kHz	ALARM	ON	HEIGHT	40
OP MODE	RUN	V-GAIN	12.5 dB	VOLUME	OFF	WIDTH	85
SHOW	GOOD/BAD	PHASE REF	90	LATCH	OFF	VERT POS	2
SIG DISPLAY	AMPL.	H-POSITION	40	POLARITY	IN	HORZ POS	8
PROBE DRIVE	HIGH	V-POSITION	80				

NOTES

1. BONDED AREA
2. DISBOND AREA
3. ALARM BOX

Bondmaster (Mia Mode) Instrument Bond/Disbond Display
Figure 7



INSTRUMENT SETTINGS

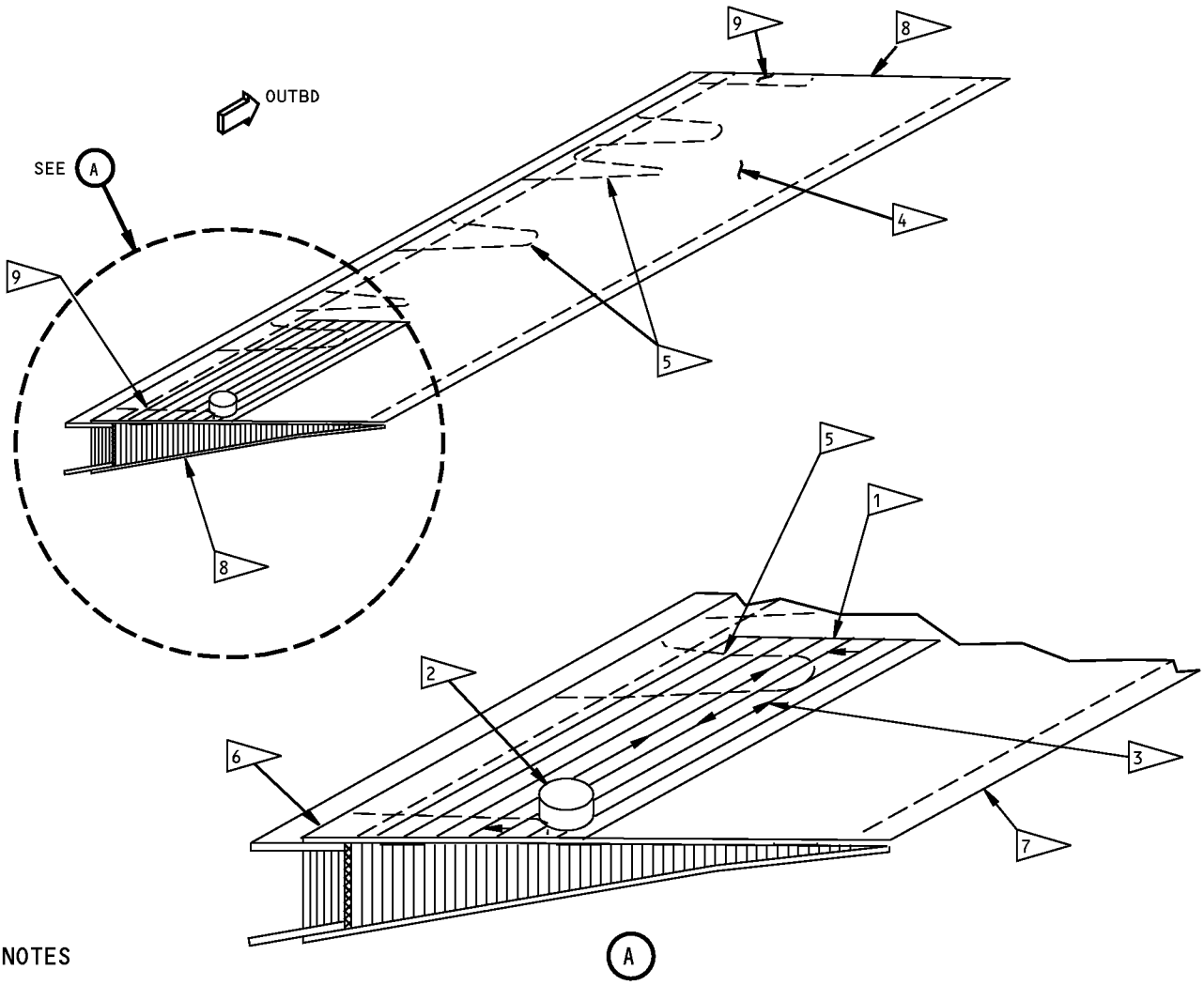
SETUP		RUN		ALARM			
PROBE	MIA-1	FREQUENCY	3.90kHz	ALARM	ON	HEIGHT	40
OP MODE	SETUP	V-GAIN	18.0 dB	VOLUME	OFF	WIDTH	85
SHOW	GOOD/BAD	PHASE REF	90	LATCH	OFF	VERT POS	2
SIG DISPLAY	AMPL.	H-POSITION	40	POLARITY	IN	HORZ POS	8
PROBE DRIVE	HIGH	V-POSITION	80				

1 GOOD PART (BONDED) SCAN LINE FOR THE AMPLITUDE FREQUENCY BAND

2 BAD PART (DISBONDED) SCAN LINE FOR THE AMPLITUDE FREQUENCY BAND

3 MOVE THE VERTICAL FREQUENCY LINE ON THE SCREEN DISPLAY TO THE FREQUENCY WITH THE LARGEST SPACE BETWEEN THE GOOD AND BAD PART SCAN LINES

Bondmaster (Mia Mode) Instrument Set Display
Figure 8



NOTES

- UPPER SIDE OF WEDGE SHOWN. LOWER SIDE IS ALMOST THE SAME.

1. SCAN PATTERN SHEET WITH 0.5 INCH (12.7 MM) INDEX LINES
2. PROBE POSITION
3. SCAN DIRECTION
4. EXAMINE ALL UPPER AND LOWER SKIN-TO-CORE STRUCTURE AREAS
5. THE INTERNAL DOUBLERS ON THE UPPER SURFACE ARE IN THE SAME LOCATION AS THE EXTERNAL DOUBLERS ON THE LOWER SURFACE. USE THE LOWER EXTERNAL DOUBLER TO FIND THE UPPER DOUBLER.
6. NO INPECTION IS NECESSARY FROM THE FORWARD SKIN EDGE TO APPROXIMATELY 0.70 INCH (17.8 MM) AFT
7. NO INSPECTION IS NECESSARY FROM THE AFT EDGE OF THE WEDGE TO APPROXIMATELY 2.0 INCH (51 MM) FORWARD.
8. NO INSPECTION IS NECESSARY FROM THE WEDGE ENDS TOWARD THE CENTER OF THE WEDGE 1.0 INCH (25 MM)
9. NO INSPECTION IS NECESSARY AT THE ENDS OF THE SLAT WEDGE WHERE THE UPPER AND LOWER 0.040 INCH (1 MM) THICK DOUBLERS ARE. THE INTERNAL DOUBLER ON THE UPPER SURFACE IS IN THE SAME LOCATION AS THE EXTERNAL DOUBLER ON THE LOWER SURFACE. USE THE LOWER EXTERNAL DOUBLER TO FIND THE UPPER DOUBLER.

Inspection Areas on the Upper and Lower Sides of the Slat Trailing Wedge
Figure 9

WING FRONT SPAR - PITCH LOAD FITTING INSPECTION

1. Purpose

A. Use this procedure to do an inspection for corner cracks at the inner diameter (edge) of the fuse pin hole (bore) in the pitch load fittings.

B. Only the inner edge of the hole is examined with this procedure. The outer edge is examined with a surface eddy current procedure after the retaining bolt and retainer caps are removed.

C. See Figure 1 for the location of the inspection areas. See Figure 6 for details of the inspection.

D. Service Bulletin reference: 767-57-0053

2. Equipment

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

A. General

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

(2) Refer to Part 1, 51-04-00 for more data about ultrasonic inspection.

B. Instrument

(1) Use an ultrasonic instrument that:

(a) Can do pulse echo inspection.

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

(a) Sonic 136; Staveley, Inc.

(b) USN 50; Krautkramer-Branson, Inc.

C. Transducer

(1) The transducer used to help prepare this procedure was made by KB Aerotech. The KB Aerotech part number is 113-224-591. It is a miniature quick-change transducer, style MSW-QC. It operates at 5 MHz and has a 0.25 inch (6.35 mm) diameter.

NOTE: Other 5 MHz transducers with threads that will fit transducer positioners NDT638PL and NDT638PR can be used if you can do a satisfactory calibration as specified in Paragraph 4.

D. Reference Standard

(1) Use reference standard NDT638. See Figure 2 for data about the reference standard.

E. Transducer Positioners

(1) Use transducer positioners NDT638PR and NDT638PL. See Figure 3 for data about the transducer positioners.

F. Transducer Positioner Guide

(1) Use transducer positioner guide NDT638G. See Figure 4 for data about the transducer positioner guide.

G. Couplant

(1) Use an ultrasonic couplant that will not cause corrosion or other damage to the airplane.

3. Preparation for Inspection

A. Refer to Service Bulletin 767-57-0053 to prepare the airplane for inspection.

B. Get access to the pitch load fittings on the left wing through wing/pylon access panels 511PT and 511ST (611PT and 611ST for the right wing). Refer to the Service Bulletin for the access panel locations.

C. Clean the inspection surface of loose paint, dirt and sealant. If the painted surface is rough, lightly sand the paint to make a smooth surface for the transducer positioners to scan on.

4. Instrument Calibration

NOTE: Two calibrations and two inspections (counterclockwise and clockwise) are necessary to make sure the lug is fully examined.

A. Calibration for the Counterclockwise Inspection

(1) If the instrument frequency is adjustable, set it at 5 MHz.

(2) Put couplant in the threaded hole of transducer positioner NDT638PR and then lightly screw the transducer into the hole.

(3) Put transducer positioner guide NDT638G into the hole of reference standard NDT638 on the side that is opposite the EDM reference notch.

(4) Put a sufficient amount of couplant on the reference standard at position 1 as shown in Figure 5, Flagnote 1.

(5) Put the transducer positioner at position 1 on the reference standard and lightly against the transducer positioner guide.

(6) While you keep the transducer positioner against the transducer positioner guide, move the transducer positioner to get a maximum signal from the reference notch.

(7) Set the initial pulse signal at 0% of full screen range and the signal from the reference notch at 80% of full screen range as shown in Figure 5.

(8) Adjust the gain to put the maximum signal from the reference notch at 80% full screen height.

B. Calibration for the Clockwise Inspection

(1) If available on your instrument, set the frequency to 5 MHz.

(2) Put couplant in the threaded hole of transducer positioner NDT638PL and then lightly screw the transducer into the hole.

(3) Put transducer positioner guide NDT638G into the hole of reference standard NDT638 on the side that is opposite the EDM reference notch.

(4) Put a sufficient amount of couplant on the reference standard at position 2 as shown in Figure 5, Flagnote 2.

(5) Put the transducer positioner at position 2 on the reference standard and lightly against the transducer positioner guide.

(6) While you keep the transducer positioner against the transducer positioner guide, move the transducer positioner to get a maximum signal from the reference notch.

(7) Set the initial pulse signal at 0% of full screen range and the signal from the reference notch at 80% of full screen range as shown in Figure 5.

(8) Adjust the gain to put the maximum signal from the reference notch at 80% full screen height.

5. Inspection Procedure

A. Inspection In Counterclockwise Direction

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

(2) Put a sufficient quantity of couplant on the inspection surface of the inboard and outboard pitch load fittings. See Figure 6 for the location of the inspection surface.

(3) Put the transducer (positioner NDT638PR) on the inspection surface and against the retainer cap of the fuse pin as shown in Figure 6, Flagnote 1.

(4) While you hold the transducer lightly against the retainer cap of the fuse pin, make a full scan around the retainer cap. To fully examine the inner edge of the hole, make sure you overlap the location where you started the scan.

NOTE: As you make a scan, monitor the baseline for noise signals. You can be more sure that sound goes into the part if you see baseline noise signals while you scan.

(5) Refer to Paragraph 6. to make an analysis of the signals that can occur during this inspection.

B. Inspection In Clockwise Direction

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

(2) Put a sufficient quantity of couplant on the inspection surface of the inboard and outboard pitch load fittings as shown in Figure 6.

(3) Put the transducer (positioner NDT638PL) on the inspection surface and against the retainer cap of the fuse pin as shown in Figure 6, Flagnote 1.

(4) While you hold the transducer lightly against the retainer cap of the fuse pin, make a full scan around the retainer cap. To fully examine the inner edge of the hole, make sure you overlap the location where you started the scan.

NOTE: As you make a scan, monitor the baseline for noise signals. You can be more sure that sound goes into the part if you see baseline noise signals while you scan.

(5) Refer to Paragraph 6. to make an analysis of the signals that can occur during this inspection.

6. Inspection Results

A. An ultrasonic signal that is equal to or more than 40% full screen height and occurs between 70% and 90% full screen width, is an indication of a possible crack and must be examined more fully.

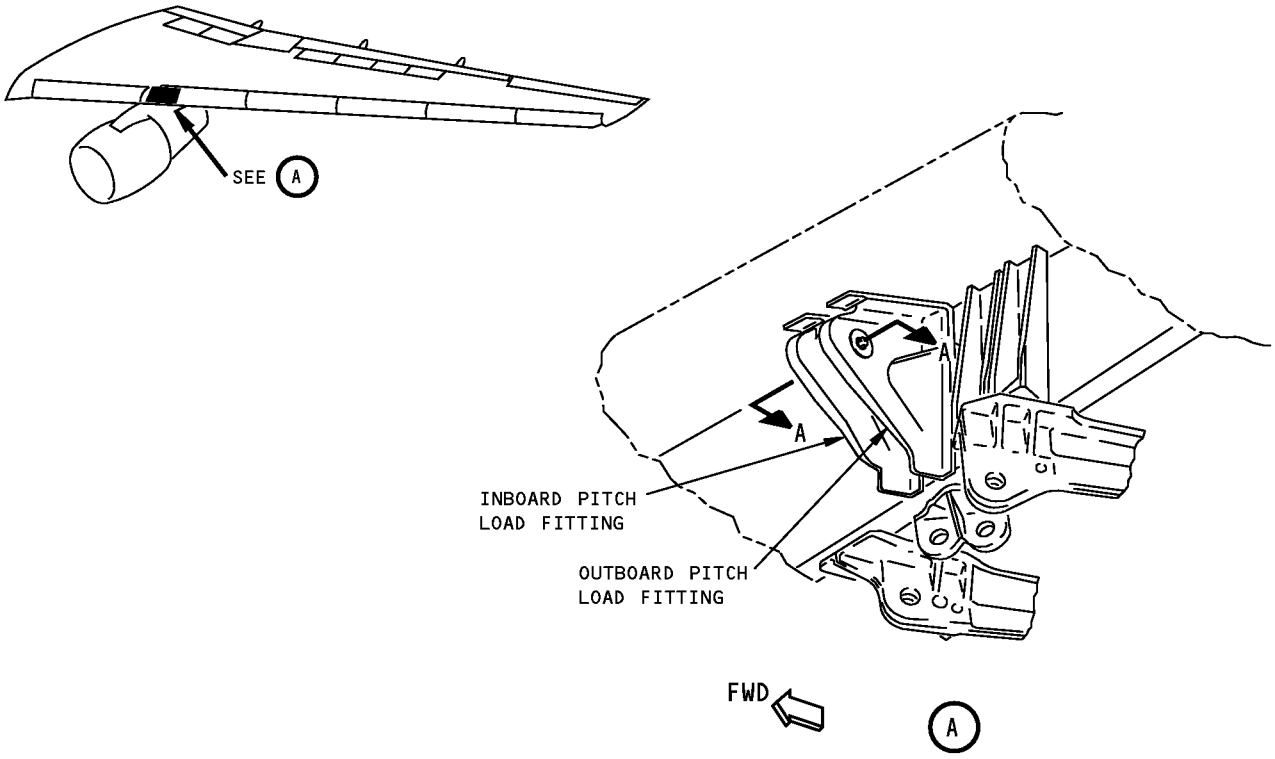
B. To examine the pitch load fitting more fully, do the steps that follow:

(1) Remove all couplant from the surfaces of the pitch load fitting.

(2) Put couplant only on the surface of the pitch load fitting that the transducer will touch and do the inspection again.

(3) If the indication is still above the reject level, go to Paragraph 6.C.

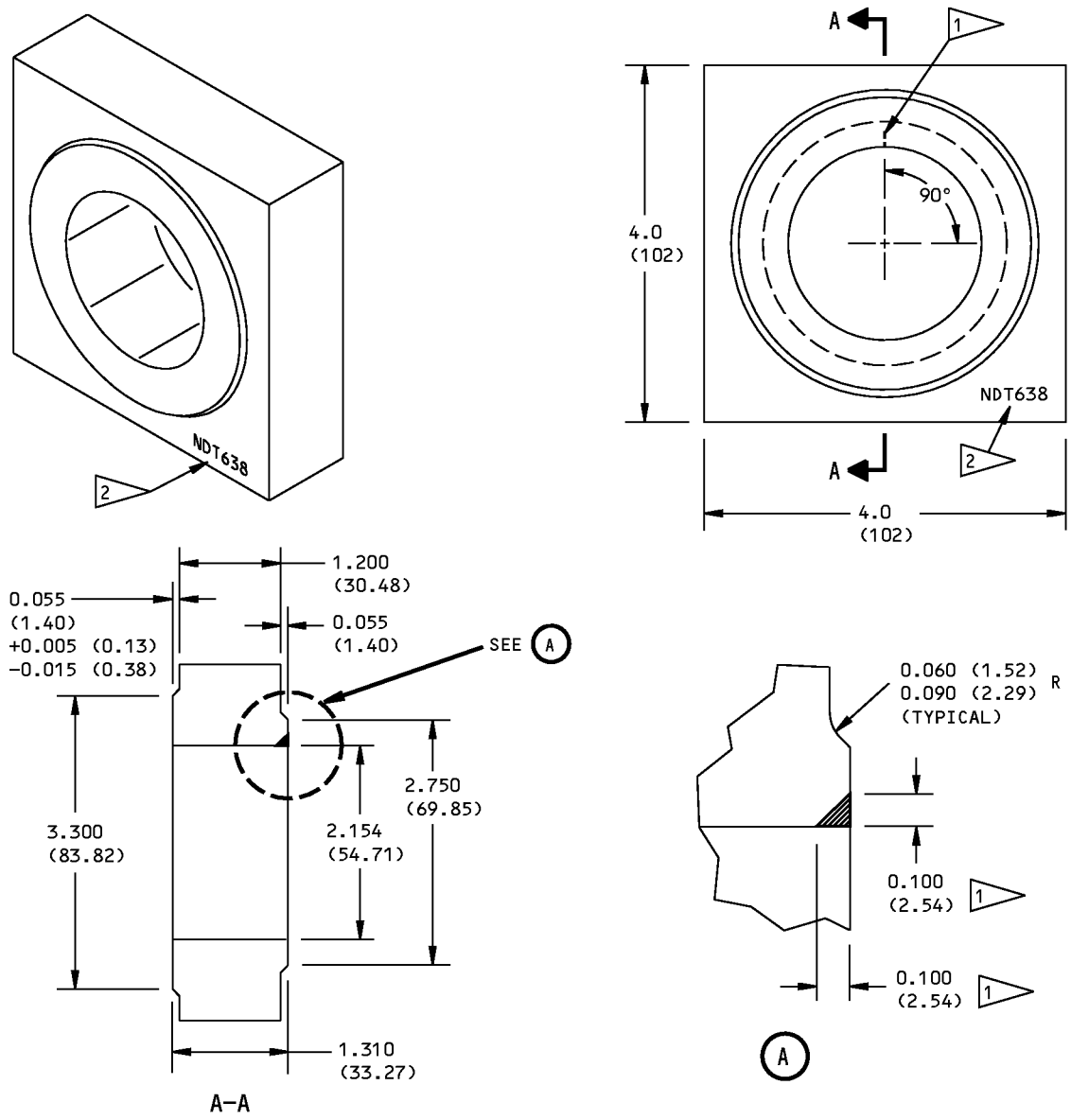
C. To make sure of a crack indication, remove the upper link from the pitch load fitting, remove the bushing from the pitch load fitting and visually examine the inner diameter of the hole (bore). If necessary, do a surface eddy current inspection of the hole (bore).



1 INSPECTION AREA - EXAMINE THE INNER DIAMETER OF THE PITCH LOAD FITTINGS FOR CRACKS (SEE FIG. 6 FOR DETAILS).

2 EXAMPLE OF WHERE CRACKS CAN OCCUR.

Inspection Locations
Figure 1



NOTES

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

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

- MATERIAL: 7175–T5, 7075–T6, 2024–T3, –T4
- SURFACE ROUGHNESS: 125 MICROINCHES OR BETTER

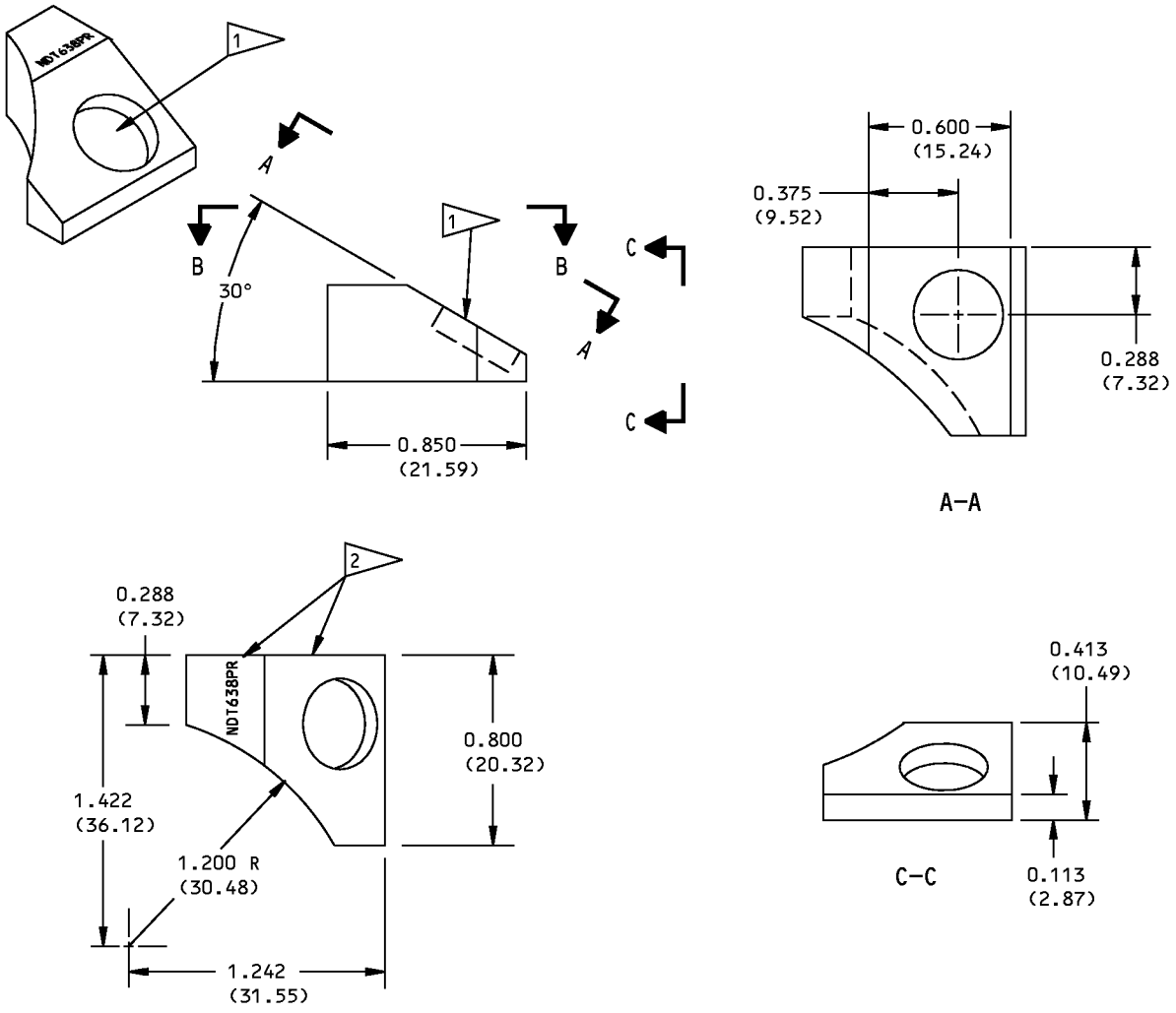
1 CORNER EDM NOTCH DIMENSIONS:

0.100 (2.54) LENGTH
0.100 (2.54) DEPTH
0.010 (0.25) MAXIMUM WIDTH

NOTE: THE EDM NOTCH IS ON THE FAR SIDE OF THE REFERENCE STANDARD IN RELATION TO THE SURFACE WITH THE REFERENCE STANDARD NUMBER.

2 ETCH OR ENGRAVE THE REFERENCE STANDARD NUMBER NDT638 AT THIS LOCATION

Reference Standard NDT638
Figure 2



NOTES

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

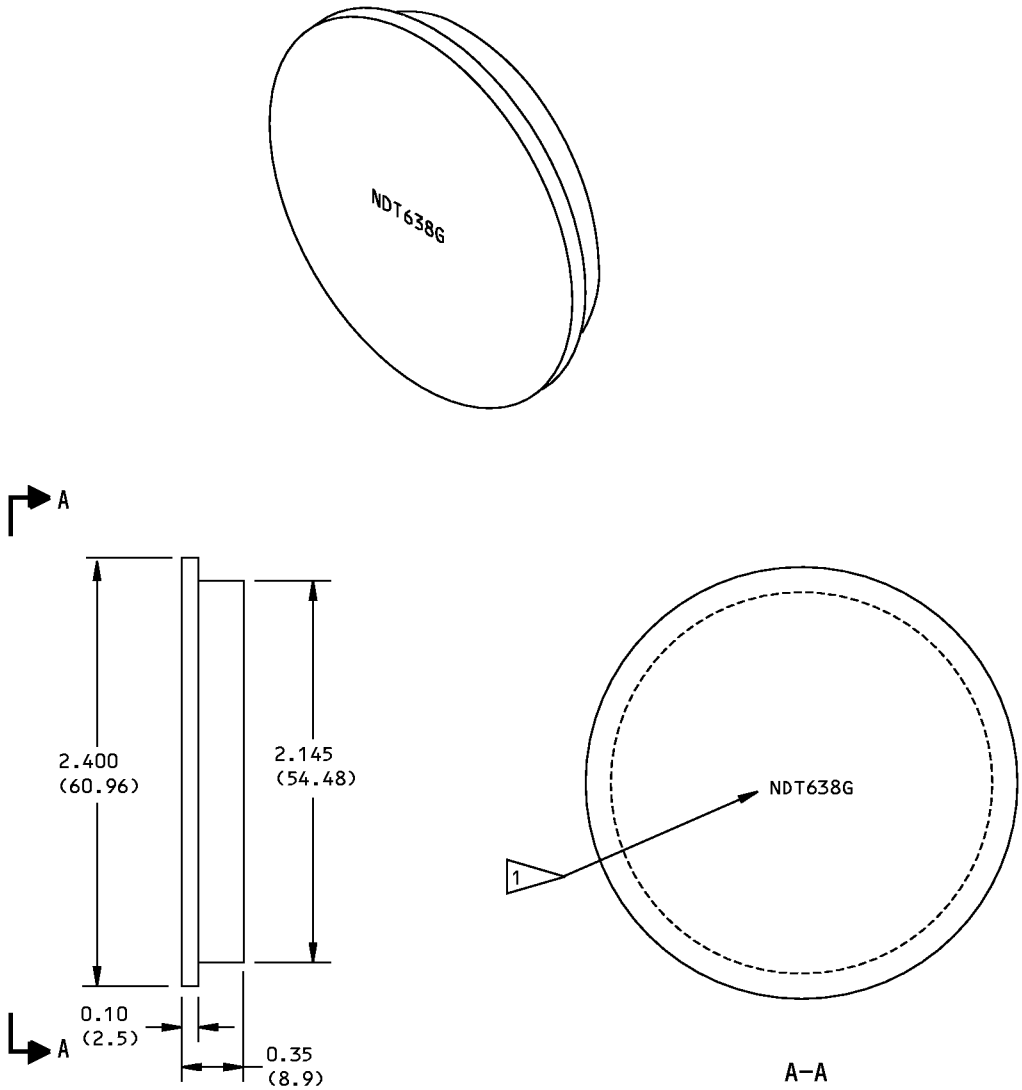
INCHES	MILLIMETERS	ANGLE
X.XXX = ± 0.005	X.XX = ± 0.10	± 1°
X.XX = ± 0.025	X.X = ± 0.5	
X.X = ± 0.050	X = ± 1	

- MATERIAL: UVAII PLEXIGLASS OR LUCITE
- SURFACE ROUGHNESS: 63 MICROINCHES OR BETTER
- RIGHT HAND POSITIONER SHOWN; LEFT HAND POSITIONER IS OPPOSITE

1 DRILL AND TAP A 0.375–32 (9.53) DIAMETER FLAT–BOTTOM–HOLE, 0.10 (2.54) DEEP

2 ETCH OR ENGRAVE THE TRANSDUCER POSITIONER NUMBER NDT638PR OR NDT638PL (LOCATION IS OPTIONAL)

Transducer Positioners NDT638PR and NDT638PL
Figure 3



NOTES

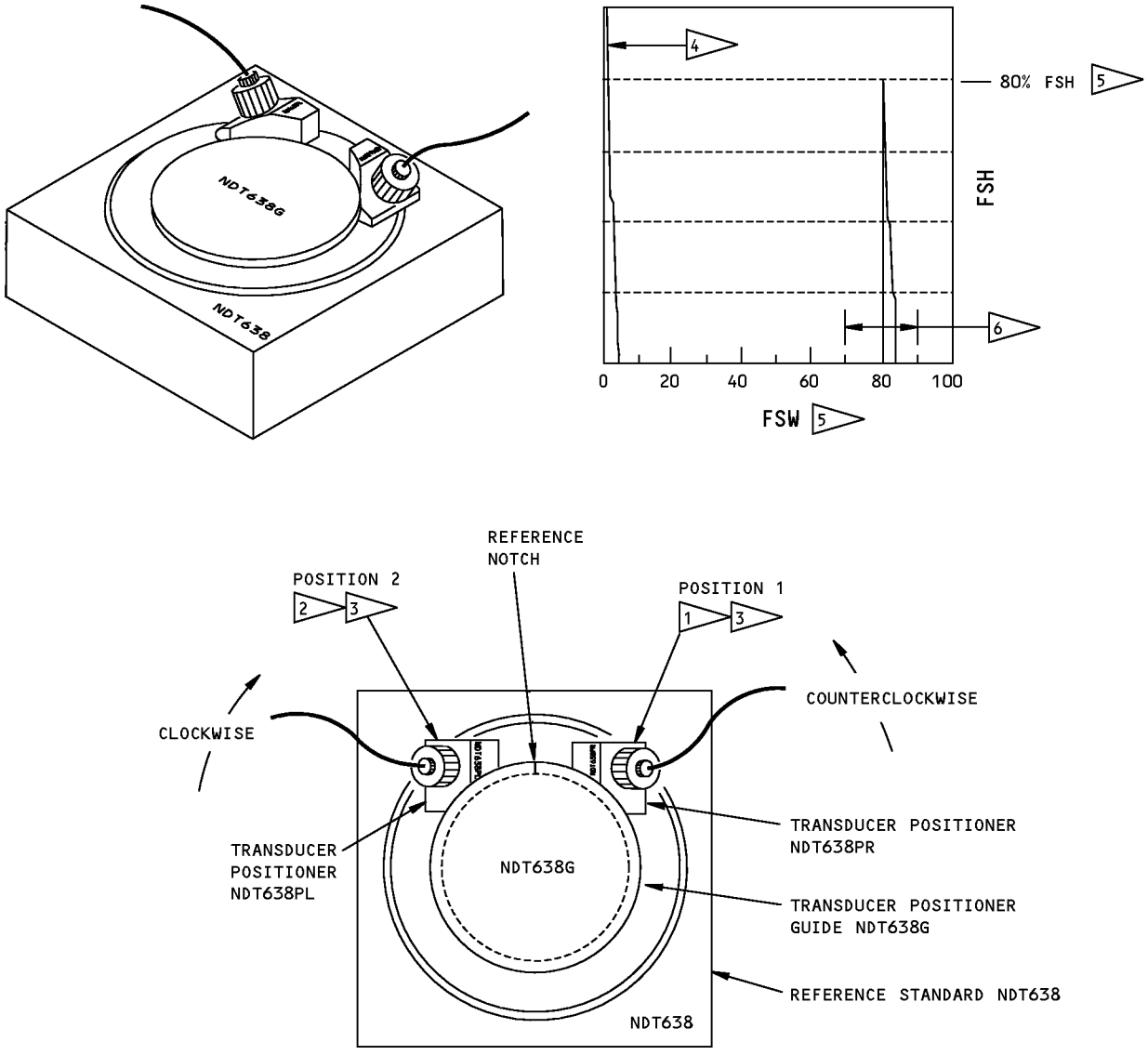
- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

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

- MATERIAL: UVAII PLEXIGLASS OR LUCITE
- SURFACE ROUGHNESS: 250 MICROINCHES OR BETTER

1 ETCH OR ENGRAVE THE TRANSDUCER POSITIONER GUIDE NUMBER NDT638G AT THIS LOCATION.

Transducer Positioner Guide NDT638G
Figure 4



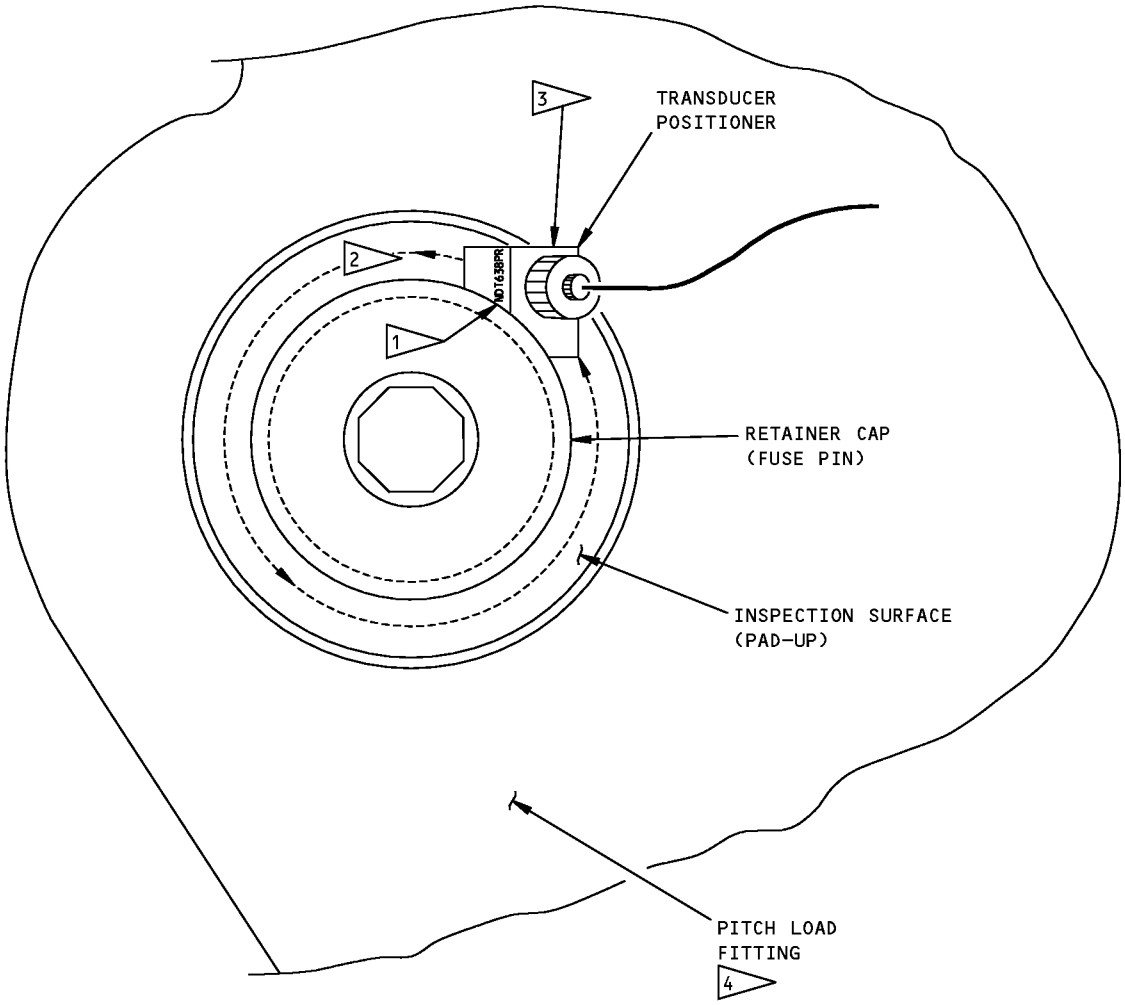
NOTES

1. POSITION 1 - APPROXIMATE POSITION FOR NDT638PR TO GET AN ULTRASONIC SIGNAL FROM THE REFERENCE NOTCH.
2. POSITION 2 - APPROXIMATE POSITION FOR NDT638PL TO GET AN ULTRASONIC SIGNAL FROM THE REFERENCE NOTCH.
3. KEEP THE POSITIONER LIGHTLY AGAINST NDT638G DURING CALIBRATION.

   NOTE: THE OUTER DIAMETER OF NDT638G IS EQUAL TO THE OUTER DIAMETER OF THE FUSE PIN RETAINER CAPS THAT ARE USED ON THE PITCH LOAD FITTINGS.

4. SET THE INITIAL PULSE SIGNAL AT 0% FULL SCREEN RANGE.
5. SET THE SIGNAL FROM THE REFERENCE NOTCH AT 80% OF FULL SCREEN HEIGHT (FSH) AND 80% FULL SCREEN WIDTH (FSW).
6. SIGNALS THAT OCCUR IN THIS AREA ARE POSSIBLE CRACK SIGNALS AND MORE INSPECTION WILL BE NECESSARY.

Instrument Calibration
Figure 5



1. KEEP THE TRANSDUCER POSITIONER LIGHTLY AGAINST THE RETAINER CAP AS YOU MAKE A SCAN.
2. AT EACH PITCH LOAD FITTING, DO ONE 360° COUNTERCLOCKWISE SCAN WITH TRANSDUCER POSITIONER NDT638PR, AND ONE 360° CLOCK–WISE SCAN WITH TRANSDUCER POSITIONER NDT638PL.
3. TRANSDUCER POSITIONER NDT638PR IN THE CORRECT POSITION FOR A COUNTERCLOCKWISE SCAN.
4. THE INSPECTION DETAILS ARE THE SAME FOR THE INBOARD AND THE OUTBOARD PITCH LOAD FITTINGS.

Inspection Details
Figure 6