FUSE PIN INSPECTION WITH A ROTARY SCANNER - STRUT-TO-UPPER LINK (P/N 311A1091-1); MID SPAR-TO-STRUT (P/N 311A1092-1 AND -2); DIAGONAL BRACE-TO-WING (P/N 311A1093-1)

1. Purpose

A. Use this procedure to do an inspection for cracks on the internal diameter of the strut-to-upper link (P/N 311A1091-1), mid spar-to-strut (P/N 311A1092-1 and -2) and diagonal brace-to-wing (P/N 311A1093-1) fuse pins.

B. This procedure uses an instrument with an impedance plane display and a rotary scanner. The inspection uses three rotary hole probes with different diameters to examine the four fuse pin part numbers.

C. This inspection will find cracks in the longitudinal direction of the fuse pin. The longitudinal direction is the length of the fuse pin. The inspection will be done with the pins installed on the airplane. See Figure 1 for the inspection locations.

D. Part 6, 54-40-02 is an alternate inspection procedure that uses manual hole probes.

2. Equipment

A. General

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

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

B. Instrument

(1) Use an eddy current instrument that:

(a) Has an impedance plane display and a rotary scanner.

(b) Operates at a frequency range of 50 to 200 kHz.

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

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

(b) Phasec 1.1; Hocking/Krautkramer

(c) Defectoscop 2.831; Foerster Instruments, Inc.

(d) Elotest B1; Rohman GmbH

C. Probes

(1) Three rotary scanner hole probes are necessary to examine the fuse pins specified in this procedure: one with an outer diameter of 0.77 inch (20 mm), one with an outer diameter of 0.85 inch (22 mm) and one with an outer diameter of 1.10 inch (28 mm). The probe length is 4.5 inches (114 mm).

(2) Use probes that are a differential reflection coil or a differential-bridge coil.

(3) The probes must operate in a frequency range of 50 to 200 kHz.

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

(a) Probe with an outer diameter of 0.77 inch (20 mm)

1) NEC-3032; NDT Engineering Corp.

(b) Probe with an outer diameter of 0.85 inch (22 mm)

1) NEC-3014-UX; NDT Engineering Corp.

(c) Probe with an outer diameter of 1.10 inch (28 mm)

1) NEC-3033; NDT Engineering Corp.

NOTE: When you make an order for a probe, specify the instrument and rotary scanner to be used.

D. Reference Standard

(1) Make reference standards NDT3008, NDT3009 and NDT3010 as specified in Figure 2.

3. Prepare for the Inspection

A. To get access to the fuse pin, remove or open the applicable access panels. Refer to the Maintenance Planning Data Document, D6-38278, Section 4, for access panel location data.

B. Remove the bolt and retainer cap from the fuse pins to be examined. See Figure 1.

NOTE: If necessary, remove the link assemblies so that you can remove the bolt used in the mid spar-to-strut fuse pin (P/N 311A1092-1 and -2).

C. Remove all grease and loose dirt from the internal diameter of the fuse pin.

D. If the paint is rough or irregular, make the surface smooth with a light abrasive (Scotch-Brite).

4. Instrument Calibration

A. Calibration for the inspection of the strut-to-upper link (P/N 311A1091-1) fuse pin.

(1) Set the instrument frequency to 200 kHz.

(2) Use a probe with an outer diameter of 1.10 inches (28 mm) for this calibration.

(3) Put the probe in the hole of reference standard NDT3008 and adjust the probe diameter to get the correct fit. Try to get the diameter of the probe to be as near as possible to the diameter of the hole. Make sure the probe does not fit too tightly in the hole to prevent unusual wear to the probe coil.

(4) If it is possible, set the speed of the rotary scanner between 1000 and 1500 RPM. Small cracks may not be found if the scanner speed is set to a slow speed.

(5) Set the display to the X/Y mode (impedance plane mode).

(6) Balance the instrument.

(7) Set the balance point in the center of the screen display as shown in Detail II of Figure 3.

(8) Start the rotary scanner.

(9) Put the probe on the surface of the reference standard as shown in Detail I of Figure 3.

(10) Adjust the instrument phase control to set the lift-off signal to the horizontal position as shown in Detail II of Figure 3.

(11) Set the instrument to the time-base mode or start the sweep function.

(12) Put the probe in the hole and get a maximum signal from the EDM notch as shown in Detail III of Figure 3.

(13) Adjust the gain to get a 40 to 60 percent full screen height signal as shown in Detail IV of Figure 3.

(14) If necessary, adjust the instrument gain and filter controls to get a minimum signal-to-noise ratio of 3:1. See Figure 4 for screen display examples that show different signal-to-noise ratios, one display with filter adjustment and one without filter adjustment. You can get a better signal-to-noise ratio if you add a piece of 0.003 inch (0.08 mm) thick plastic tape to the probe coil area. If necessary, set the filters as follows:

(a) Instruments with a high pass filter:

1) Set the filter to its lowest value.

2) Increase the filter value to get the best signal-to-noise ratio. Do not let the notch signal decrease more than 50 percent of the signal height set in Paragraph 4.A.(13).

(b) Instruments with a low pass filter:

1) Set the filter to its highest value.

2) Decrease the filter value to get a stable dot or until the signal from the notch in the reference standard starts to decrease. Do not decrease the filter value below the value of the high pass filter.

(c) For instruments with only one filter control or that have a bandpass filter, adjust the filter to get the best signal-to-noise ratio.

NOTE: Refer to the instrument operation manual for more filter adjustment instructions, if necessary.

(15) Find the maximum speed that the probe can be moved through the hole. To do this, follow these steps:

(a) Move the probe through the reference standard used to set the screen calibration.

(b) Monitor the signal height on the screen display from the reference standard notch.

(c) Increase the speed the probe is moved through the reference standard hole until the signal from the notch drops to approximately 90 percent of the calibration level. This is the maximum speed that the probe can be moved through the hole to be examined.

(16) The use of an audible or visual alarm is recommended. Set the alarm to operate when a signal is 50 percent of the reference standard notch signal.

(17) Turn the reference standard in relation to the rotary scanner and monitor the location of the notch signal on the screen display to the location of the notch in the reference standard. See Figure 5.

B. Calibration for the inspection of the mid spar-to-strut (P/N 311A1092-1 and -2) fuse pin.

(1) Set the instrument frequency to 200 kHz.

(2) Use a probe with an outer diameter of 0.85 inch (22 mm) for this calibration.

(3) Put the probe in the hole of reference standard NDT3009 and adjust the probe diameter to get the correct fit. Try to get the diameter of the probe to be as near as possible to the diameter of the hole. Make sure the probe does not fit too tightly in the hole to prevent unusual wear to the probe coil.

(4) Do Paragraph 4.A.(4) thru Paragraph 4.A.(17) again.

C. Calibration for the inspection of the diagonal brace-to-wing (P/N 311A1093-1) fuse pin.

(1) Set the instrument frequency to 200 kHz.

(2) Use a probe with an outer diameter of 0.77 inch (20 mm) for this calibration.

(3) Put the probe in the hole of reference standard NDT3010 and adjust the probe diameter to get the correct fit. Try to get the diameter of the probe to be as near as possible to the diameter of the hole. Make sure the probe does not fit too tightly in the hole to prevent unusual wear to the probe coil.

(4) Do Paragraph 4.A.(4) thru Paragraph 4.A.(17) again.

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4.A., Paragraph 4.B. or Paragraph 4.C., as applicable:

(1) For the inspection of the strut-to-upper link (P/N 311A1091-1) fuse pin, calibrate the instrument as specified in Paragraph 4.A.

(2) For the inspection of the mid spar-to-strut (P/N 311A1092-1 and -2) fuse pins, calibrate the instrument as specified in Paragraph 4.B.

(3) For the inspection of the diagonal brace-to-wing (P/N 311A1093-1) fuse pin, calibrate the instrument as specified in Paragraph 4.C.

B. Put the probe into the internal diameter of the fuse pin and, if necessary, adjust the probe outer diameter to get a correct fit.

C. Start the rotary scanner.

D. Move the probe through the length of the fuse pin to be examined (see Figure 1 for the inspection areas). Do not exceed the maximum speed that was found in Paragraph 4.A.(15). Do the steps that follow while you examine the hole:

NOTE: If plastic tape is not used on the probe coil area, use an approved light oil, silicon spray, or grease on the probe when possible to decrease probe wear. If plastic tape is added to the probe after the initial calibration, do a calibration again with the plastic tape on the probe.

(1) Make a mark on the end of the pin at the locations that show crack signals.

(2) If you get a crack signal, examine the location for a crack or scratches or a condition on the internal surface that could cause the crack signal.

E. Do a calibration test as follows at the end of the inspection to compare the signal height from the EDM notch to that set in Paragraph 4.A.(13).

NOTE: Do not make adjustments to the instrument gain or filters.

(1) Put the probe in the hole of the reference standard to get a signal from the notch.

(2) Compare the signal you got from the notch during calibration with the signal you get now.

(3) If the signal from the notch in the reference standard has decreased 10 percent or more, do a calibration and examine the pin again.

6. Inspection Results

A. Signals that are 50 percent or more of the reference standard notch signal are signs of cracks.

B. Noise signals can make it hard to see crack signals. If the signal-to-noise ratio between the reference standard notch and the inspection surface noise level is less than 3:1, examine the surface for conditions that can cause noise signals. If necessary, remove the primer to do a good visual examination.

C. Compare the crack signal to the signal from the EDM notch in the reference standard.

NOTE: Cadmium plating is frequently used on steel parts. If the plating is broken in some locations or the plating thickness changes in an area, a crack signal can occur.

D. If you get a crack signal that is 50 percent or more of the reference standard notch signal, do more analysis as specified below:

NOTE: It is not necessary to do an analysis of signals that are less than the reject level. This is because of the higher rate of false crack signals that can occur below this level. But, you can do an analysis of indications that are less than 50 percent of the reference standard notch signal if you think it is necessary.

(1) Set the instrument frequency to 50 kHz.

NOTE: If your instrument or scanner will not operate at a frequency of 50 kHz, refer to Part 6, 54-40-02, for the fuse pin inspection with a manual probe.

(2) Calibrate the instrument as specified in Paragraph 4.A., Paragraph 4.B., or Paragraph 4.C. as applicable.

(3) Do an inspection of the area again and make an analysis as follows:

(a) If you do not get a signal, there is no crack at this location.

(b) If the signal does not change, do more analysis as follows:

1) Set the instrument display to X/Y mode (impedance plane mode).

2) Start the rotary scanner and put the probe in the area that caused the crack type signal.

3) Do a check of the lift-off signal to make sure that it is in the horizontal position as set during the calibration. If it is not, adjust the instrument phase control.

4) Set the instrument display back to the time base mode or sweep function and examine the area again.

5) If the signal is now less than 50 percent of the reference standard notch signal, the signal was caused by the cadmium plating and not from a crack.

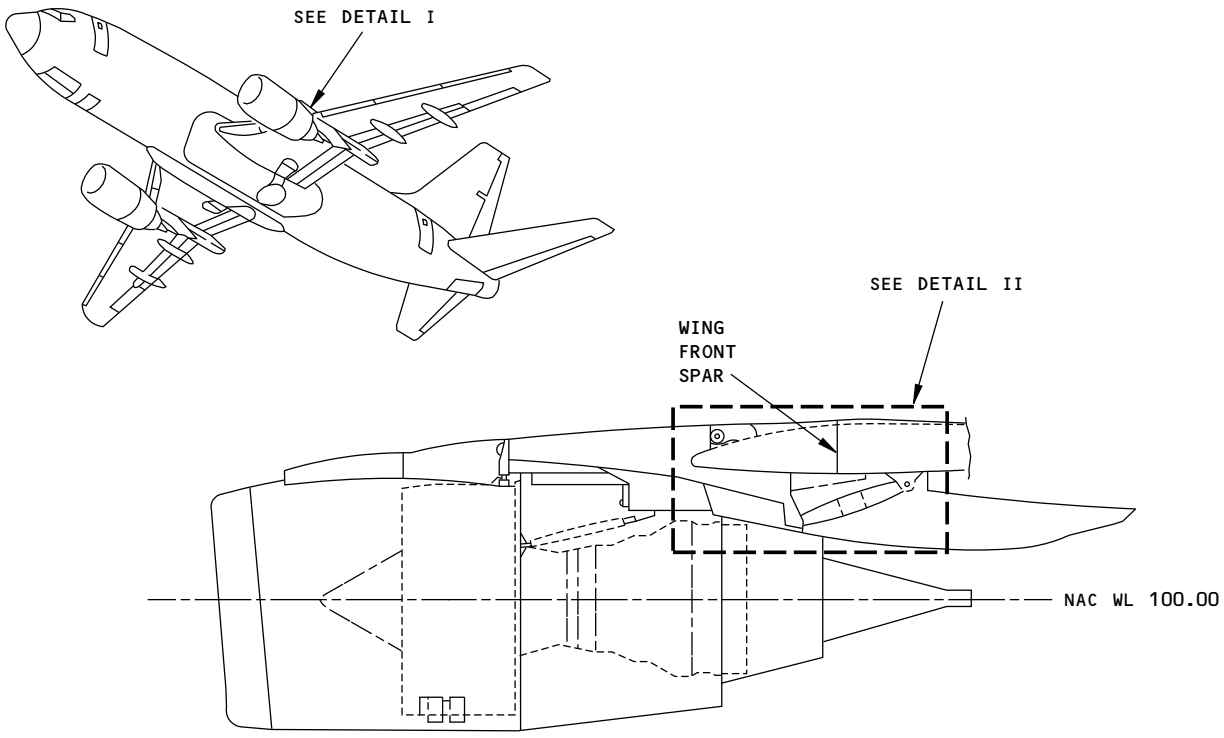
6) If the signal does not change, completely remove the cadmium plating around the full circumference of the bore, in the area of the signal. Do not just remove a small area of cadmium plating from the bore, as this can cause a signal to occur when the probe moves from a plated surface to a bare surface.

7) Do an inspection of the area again and make an analysis as follows:

a) If the signal does not change, or it increases, remove the pin and do Paragraph 6.E.

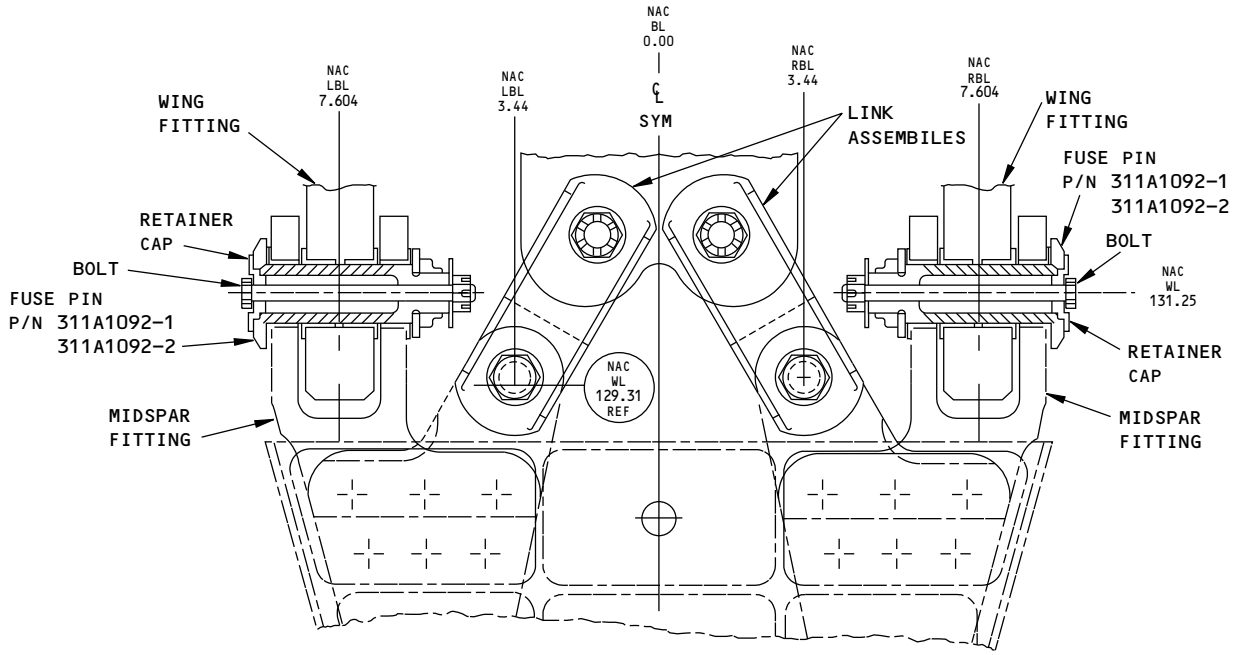
b) If you do not get a signal after the cadmium plating is removed, there is no crack at this location and the pin is serviceable. Apply cadmium and primer back to the bare surface of the bore of the pin. Refer to SOPM 20-42-10 to apply the cadmium.

E. Do a magnetic particle inspection of the removed fuse pin. Refer to the Standard Overhaul Practices Manual, Subject 20-20-01, for the magnetic particle inspection procedure.

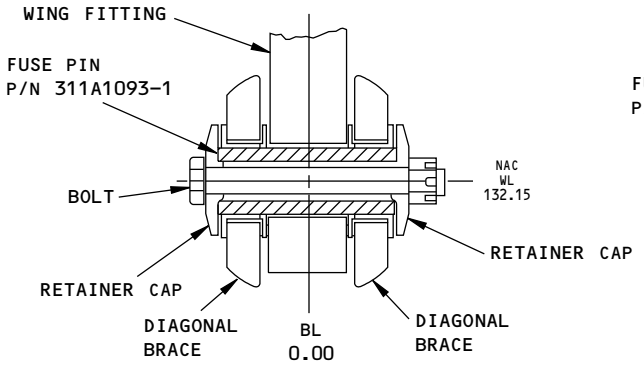


2162060 S0000472997_V1

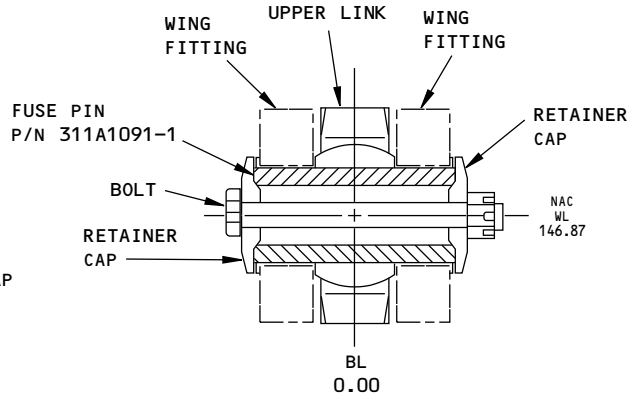
Fuse Pin Locations and Inspection Areas for CFM56-3 Engine
Figure 1 (Sheet 1 of 2)



STRUT ATTACHED TO WING FITTINGS
A-A



DIAGONAL BRACE TO WING FITTING
B-B



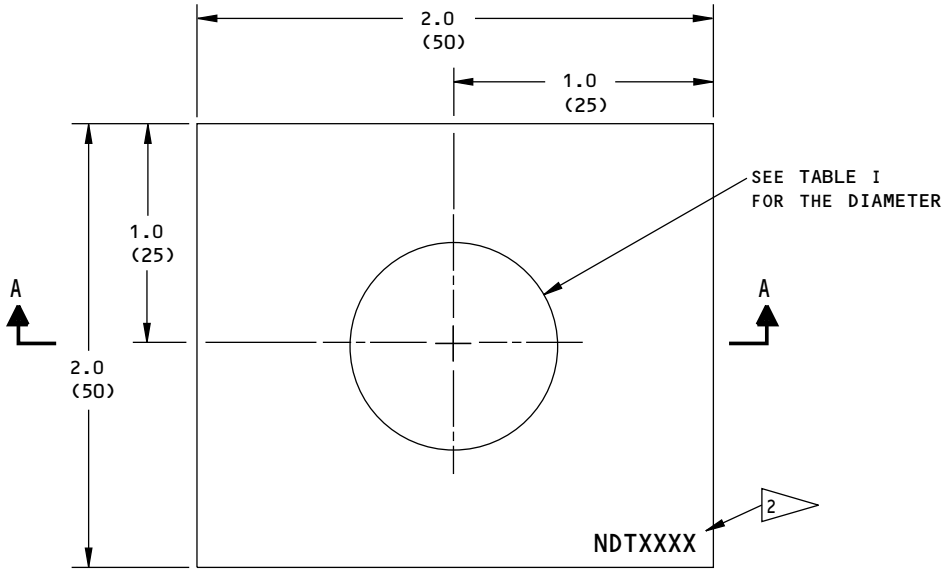
UPPER LINK TO WING FITTING
C-C

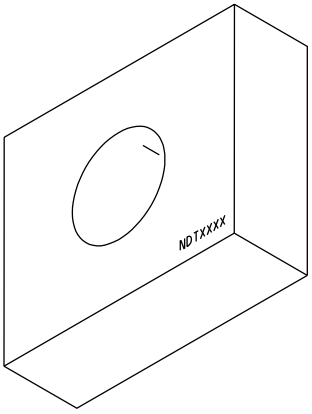
NOTE:

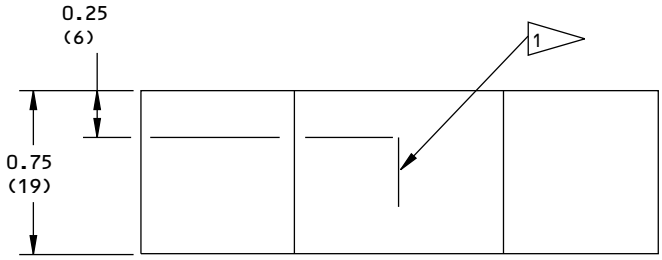
INSPECTION AREA OF THE INTERNAL DIAMETER OF THE FUSE PIN

2162061 S0000472998_V1

Fuse Pin Locations and Inspection Areas for CFM56-3 Engine
Figure 1 (Sheet 2 of 2)







A–A

REFERENCE STANDARD NUMBER	HOLE DIAMETER
NDT3008	1.15 (29)
NDT3009	0.85 (22)
NDT3010	0.80 (20)

TABLE I

NOTES

- DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS IN PARENTHESES).
- DIMENSION TOLERANCES:

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

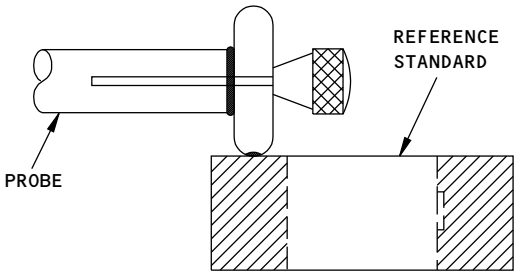
- MATERAL: 4330, 4330M, 4340, 4340M STEEL
- SURFACE ROUGHNESS: 63 Ra OR BETTER

1 EDM NOTCH:
WIDTH - 0.005 (0.13) ±0.002 (0.05)
LENGTH - 0.25 (6) ±10%
DEPTH - 0.040 (1) ±10%

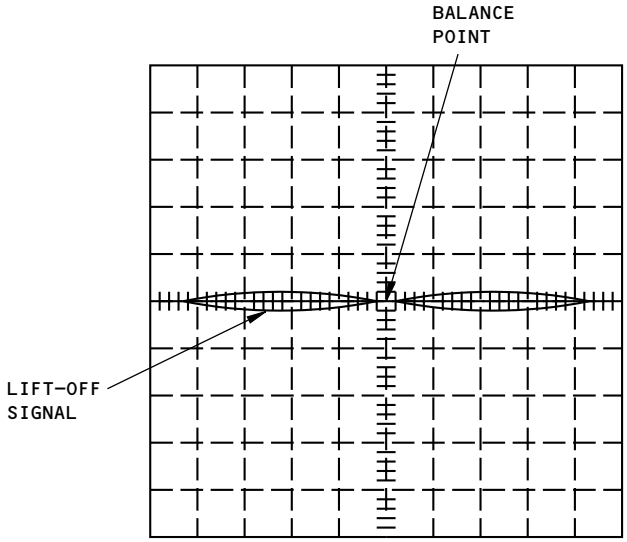
2 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER AS SPECIFIED IN TABLE I

2162062 S0000472999_V1

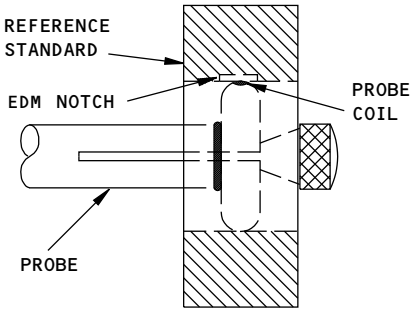
Reference Standards NDT3008, NDT3009 AND NDT3010
Figure 2



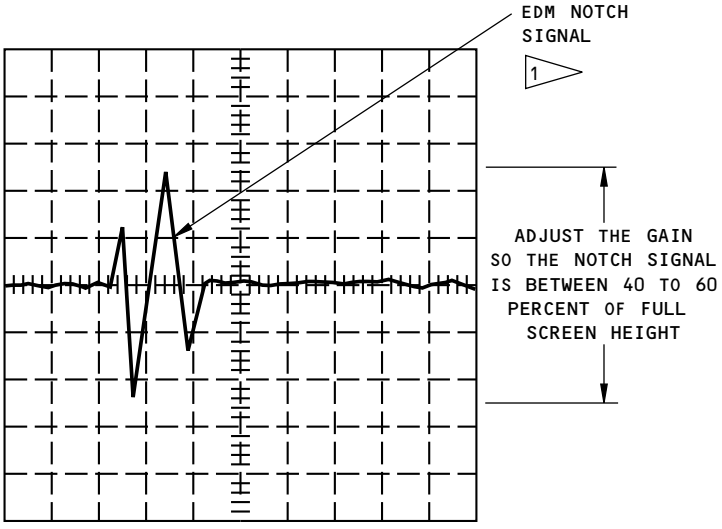
PROBE POSITION FOR ADJUSTMENT OF
INSTRUMENT LIFT–OFF AND BALANCE POINT
DETAIL I



SCREEN DISPLAY OF BALANCE POINT
POSITION AND LIFT–OFF SIGNAL DIRECTION
DETAIL II



PROBE POSITION FOR ADJUSTMENT OF
INSTRUMENT SENSITIVITY
DETAIL III

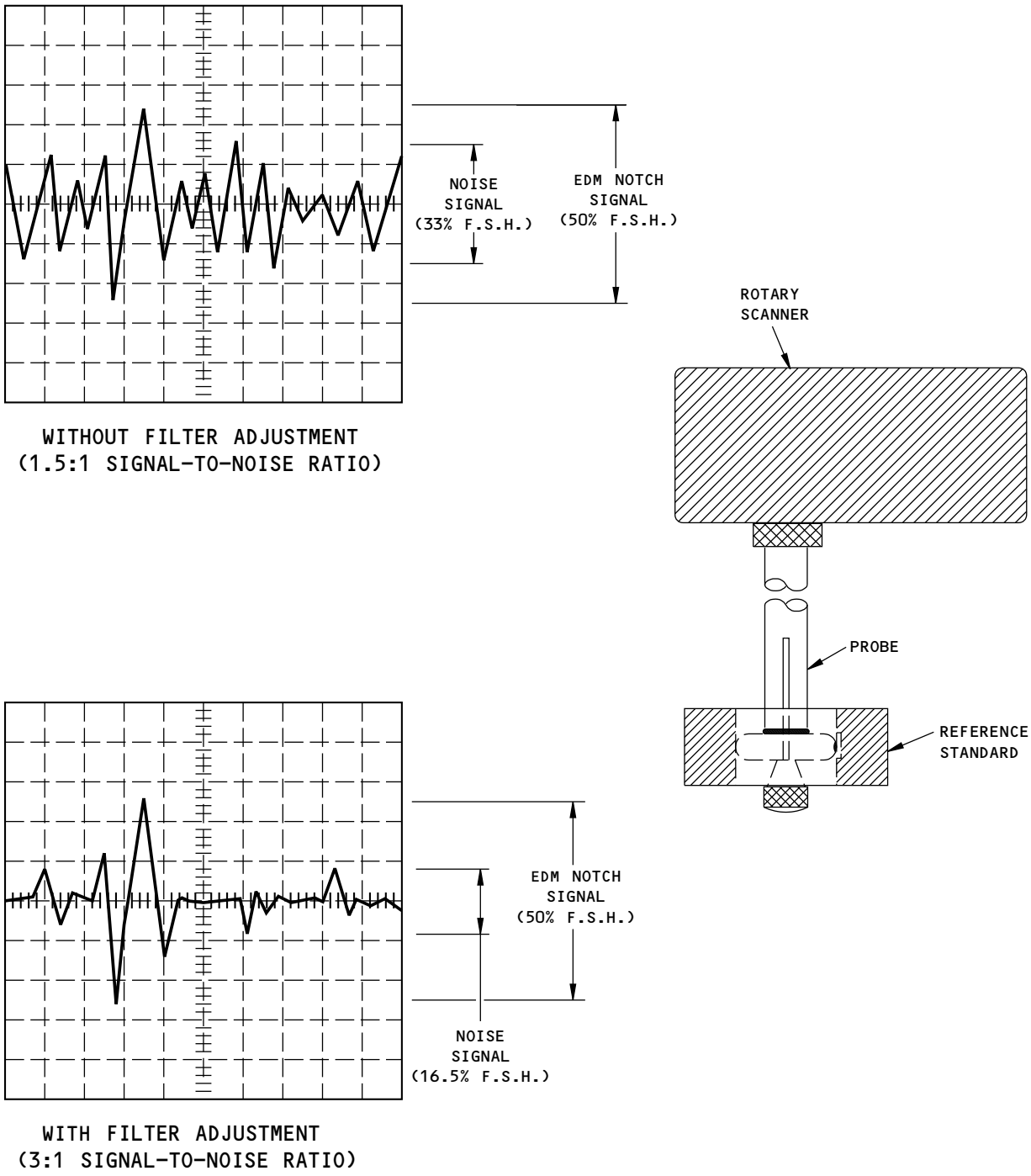


SCREEN DISPLAY OF THE EDM NOTCH SIGNAL
DETAIL IV

1 THE NOTCH SIGNAL POSITION ON THE TIMEBASE IS RELATED TO THE NOTCH POSITION IN THE REFERENCE STANDARD. SEE FIGURE 5.

2162064 S0000473000_V1

Probe Positions and Instrument Displays for Calibration
Figure 3

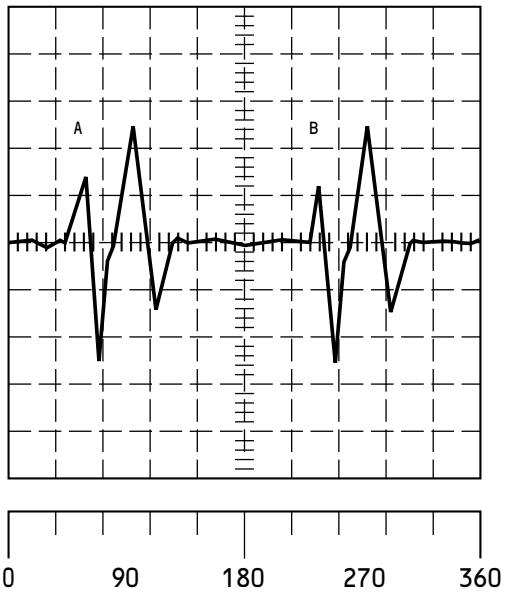


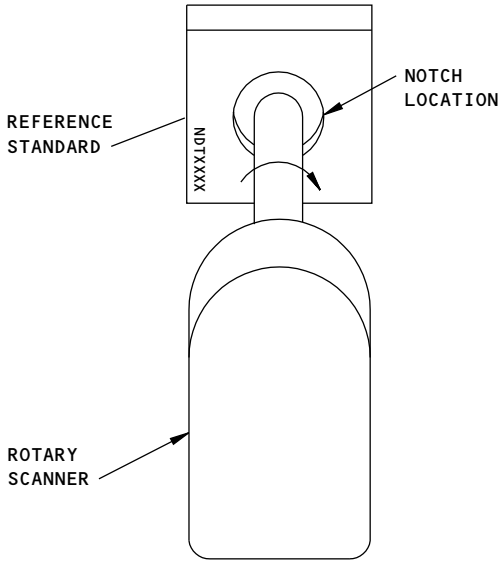
NOTE:

F.S.H. = FULL SCREEN HEIGHT

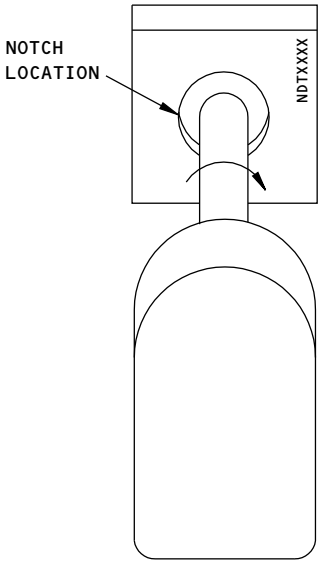
2162066 S0000473001_V1

Screen Display Examples of Signal-To-Noise Ratios
Figure 4





NOTCH LOCATION FOR SIGNAL A



NOTCH LOCATION FOR SIGNAL B

NOTE:

THE LOCATION OF THE NOTCH SIGNAL ON THE SCREEN DISPLAY CAN BE USED TO HELP IDENTIFY THE CRACK LOCATION IN THE INSPECTION PART. DURING CALIBRATION, TURN THE REFERENCE STANDARD IN RELATION TO THE ROTARY SCANNER TO LEARN WHERE THE CRACK ON THE INSPECTION PART WILL BE IN RELATION TO THE CRACK ON THE DISPLAY.

2162067 S0000473002_V1

Crack Location
Figure 5

PART 6 - EDDY CURRENT

FUSE PIN INSPECTION WITH A MANUAL PROBE - STRUT-TO-UPPER LINK (P/N 311A1091-1); MID SPAR-TO-STRUT (P/N 311A1092-1 AND -2); DIAGONAL BRACE-TO-WING (P/N 311A1093-1)

1. Purpose

A. This surface eddy current inspection will find cracks on the internal diameter of the strut-to-upper link (P/N 311A1091-1), mid spar-to-strut (P/N 311A1092-1 and -2), and diagonal brace-to-wing (P/N 311A1093-1) fuse pins.

B. This procedure uses an instrument with an impedance plane display or a meter display. The inspection uses three manual hole probes with different diameters to examine the four fuse pin part numbers.

C. This inspection will find cracks in the longitudinal direction of the fuse pin. The longitudinal direction is the length of the fuse pin. The inspection will be done with the fuse pins installed on the airplane. See Figure 1 for the inspection locations.

D. Part 6, 54-40-01 is an alternative inspection procedure that uses a rotary scanner.

2. Equipment

A. General

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

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

B. Instrument

(1) Use an eddy current instrument that:

(a) Has an impedance plane display or a meter display.

(b) Operates at a frequency of 25 kHz.

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

(a) MIZ-10A, MIZ-10B; Zetec, Inc.

(b) MIZ-20A, MIZ-22; Zetec, Inc.

(c) NDT-19, NDT-19E; Nortec/Staveley, Inc.

(d) Phasec 1.1; Hocking/Krautkramer

C. Probes

(1) Three manual hole probes are necessary to examine the fuse pins specified in this procedure: one with an outer diameter of 0.77 inch (20 mm); one with an outer diameter of 0.85 inch (22 mm); and one with an outer diameter of 1.10 inch (28 mm). The probe length is 6 inches (150 mm).

(2) Use probes that are unshielded.

(3) The probe must operate at a frequency of 25 kHz.

(4) The probes specified below were used to help prepare this procedure:

(a) Probes with an outer diameter of 0.77 inch (20 mm):

1) SPO-5849; Nortec/Staveley, Inc.

2) NEC-3014-1; NDT Engineering Corp.

3) MB-.77 x 6F/25K; Tyvin, Inc.

(b) Probes with an outer diameter of 0.85 inch (22 mm)

1) SPO-5794; Nortec/Staveley, Inc.

2) NEC-3014; NDT Engineering Corp.

3) MB-.82 x 6F/25K; Tyvin, Inc.

(c) Probes with an outer diameter of 1.10 inch (28 mm)

1) SPO-5850; Nortec/Staveley, Inc.

2) NEC-3016-1; NDT Engineering Corp.

3) MB-1.1 x 6F/25K; Tyvin, Inc.

NOTE: When you make an order for a probe, specify the instrument to be used.

D. Reference Standard

(1) Make reference standards NDT3008, NDT3009, and NDT3010 as specified in Figure 2.

3. Prepare for the Inspection

A. To get access to the fuse pin, remove or open the applicable access panels. Refer to the Maintenance Planning Data Document, D6-38278, Section 4, for access panel location data.

B. Remove the bolt and retainer cap from the fuse pins to be examined. See Figure 1.

NOTE: If necessary, remove the link assemblies so that you can remove the bolt used in the mid spar-to-strut fuse pins (P/N 311A1092-1 and -2).

C. Remove all grease and loose dirt from the internal diameter of the fuse pin.

D. To keep the instrument drift to a minimum, the temperature of the airplane and equipment must be approximately the same.

4. Instrument Calibration

A. Calibration for the inspection of the strut-to-upper link (P/N 311A1091-1) fuse pin.

(1) Set the instrument frequency to 25 kHz.

(2) Use a probe with an outside diameter of 1.10 inch (28 mm) for this calibration.

(3) Put the probe in the hole of reference standard NDT3008 and adjust the probe diameter to get the correct fit. Try to get the diameter of the probe to be as near as possible to the diameter of the hole. Make sure the probe does not fit too tightly in the hole to prevent unusual wear to the probe coil.

(4) Remove the probe from the reference standard hole and put the probe coil on a flat surface of the reference standard. Make sure the probe is at least 0.25 inch (6 mm) away from all edges. See Detail IV in Figure 3.

(5) Balance the instrument.

(6) Turn the probe so the probe coil is at a position on the flat surface of the reference standard to get a maximum signal. Balance the instrument when necessary.

(7) Adjust the instrument lift-off with the probe on the flat surface of the reference standard (see Detail IV in Figure 3) as follows:

(a) 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 0.006 inch (0.15 mm) (approximately). This is equivalent to the thickness of two sheets of paper.

(b) If an impedance plane instrument is used, adjust the phase control so that the signal moves horizontally from right to left when the probe is lifted off of the part surface.

(8) Set the instrument balance point.

(a) If a meter display instrument is used, set the meter needle to 30 percent of full scale. See Detail II in Figure 3.

(b) If an impedance plane instrument is used, set the balance point in the lower center area of the screen at 30 percent full screen height. See Detail I in Figure 3.

(9) Adjust the probe collar so the probe coil will be at a depth of 0.38 inch (10 mm) when the probe is put into the hole of the reference standard. This depth will put the probe coil at the center of the EDM notch in the reference standard. Make sure the collar setscrew is aligned with the probe coil. The setscrew identifies the circumferential position of the coil during the inspection.

(10) Put the probe into the reference standard hole so the probe coil is at least 0.25 inch (6 mm) away from the EDM notch and balance the instrument.

(11) Turn the probe so the probe coil is in the center of the EDM notch to get a maximum signal. See Detail III in Figure 3. There must be an upscale needle movement on the meter display instrument and a higher vertical signal on the impedance plane instrument.

(12) Adjust the instrument sensitivity.

(a) If a meter display instrument is used, set the meter needle to 80 percent full scale. This is a 50 percent full scale difference between the instrument balance point and the signal from the EDM notch. See Detail II in Figure 3.

(b) If an impedance plane instrument is used, adjust the vertical signal to 80 percent full screen height. This is a 50 percent full screen height difference between the instrument balance point and the signal from the EDM notch. See Detail I in Figure 3.

(13) Make a scan of the EDM notch of the reference standard. During the scan of the EDM notch, measure the necessary distance the probe must turn to display the full EDM notch signal. This distance will be referred to as the angular scan distance in this procedure. Start the measurement from the probe position where the EDM notch signal starts to move from the balance position to go to the maximum signal position. End the measurement at the point the probe was turned where the EDM notch signal returned to the balance position. During the fuse pin inspection, the angular scan distance necessary to display a fuse pin crack signal will be approximately the same as the angular scan distance necessary to display the full EDM notch signal from the reference standard.

B. Calibration for the inspection of the mid spar-to-strut (P/N 311A1092-1 and -2) fuse pin.

(1) Set the instrument frequency to 25 kHz.

(2) Use a probe with an outside diameter of 0.85 inch (22 mm) for this calibration.

(3) Put the probe in the hole of reference standard NDT3009 and adjust the probe diameter to get the correct fit. Try to get the diameter of the probe to be as near as possible to the diameter of the hole. Make sure the probe does not fit too tightly in the hole to prevent unusual wear to the probe coil.

(4) Do Paragraph 4.A.(4) thru Paragraph 4.A.(12) again.

C. Calibration for the inspection of the diagonal brace-to-wing (P/N 311A1093-1) fuse pin.

(1) Set the instrument frequency to 25 kHz.

(2) Use a probe with an outside diameter of 0.77 inch (20 mm) for this calibration.

(3) Put the probe in the hole of reference standard NDT3010 and adjust the probe diameter to get the correct fit. Try to get the diameter of the probe to be as near as possible to the diameter of the hole. Make sure the probe does not fit too tightly in the hole to prevent unusual wear to the probe coil.

(4) Do Paragraph 4.A.(4) thru Paragraph 4.A.(12) again.

5. Inspection Procedure

A. Calibrate the instrument as specified in Paragraph 4.A., Paragraph 4.B., or Paragraph 4.C. as applicable:

(1) For the inspection of the strut-to-upper link (P/N 311A1091-1) fuse pin, calibrate the instrument as specified in Paragraph 4.A.

(2) For the inspection of the mid spar-to-strut (P/N 311A1092-1 and -2) fuse pins, calibrate the instrument as specified in Paragraph 4.B.

(3) For the inspection of the diagonal brace-to-wing (P/N 311A1093-1) fuse pin, calibrate the instrument as specified in Paragraph 4.C.

B. Put the probe into the internal diameter of the fuse pin and, if necessary, adjust the probe diameter to get a correct fit.

C. Adjust the probe collar so the probe coil will be at a depth of 0.10 inch (2.5 mm) when the probe is put into the internal diameter of the fuse pin.

D. Put the probe into the internal diameter of the fuse pin with the probe collar against the end of the pin and balance the instrument.

E. Slowly do a complete inspection of the fuse pin as follows:

NOTE: Fuse pins that have cadmium plating and primer on the internal diameter surface can cause the instrument balance point to move during the scan inspection. The cadmium plating is conductive and changes in the thickness will affect the balance point (an up or down movement of the balance point on impedance plane display instruments or an upscale or downscale movement of the needle on the meter display instruments). The balance point movement increases as the change in the thickness increases. Primer thickness changes will show as a lift-off signal. Balance the instrument as necessary.

(1) Slowly move the probe around the internal diameter of the fuse pin.

(2) Make a mark on the end of the pin at the locations that show crack signals.

(3) If you get a crack signal, examine the location for a crack or scratches or a condition on the internal surface that could cause the crack signal.

(4) Increment the depth of the probe coil in relation to the end of the fuse pin or collar by 0.10 inch (2.5 mm). Keep the collar setscrew aligned with the coil at all times

(5) Continue to do Paragraph 5.E.(1) thru Paragraph 5.E.(4) for the length of the fuse pin. See Figure 1 for the fuse pin inspection area.

F. Do a calibration test as follows at the end of the inspection of each fuse pin to compare the signal height from the EDM notch to that set in Paragraph 4.A.(12).

NOTE: Do not make adjustments to the instrument gain.

(1) Put the probe in the hole of the reference standard to get a signal from the notch.

(2) Compare the signal you got from the notch during calibration with the signal you get now.

(3) If the signal from the notch in the reference standard has decreased 10 percent or more, do a calibration and examine the pin again.

6. Inspection Results

A. For meter display instruments: A fast, upscale needle movement that occurs when the probe is turned a short angular distance is a sign of a possible crack if the signal is 30 percent (or more) more than the balance position. Examine possible cracks as specified in Paragraph 6.C.

NOTE: It is not necessary to do an analysis of signals that are less than the reject level. This is because of the higher rate of false crack signals that can occur below this level. But, you can do an analysis of indications with less than a 30 percent upscale meter movement if you think it is necessary.

B. For impedance plane instruments: A signal that is 30 percent (or more) of full-screen height higher than the balance point that occurs when the probe is turned a short angular distance is a sign of a possible crack. Examine possible cracks as specified in Paragraph 6.C.

NOTE: It is not necessary to do an analysis of signals that are less than the reject level. This is because of the higher rate of false crack signals that can occur below this level. But, you can do an analysis of indications that cause signals that are less than 30 percent of full screen height if you think it is necessary.

C. Examine possible cracks as follows:

(1) Compare the angular scan distance that is necessary to complete the possible crack signal from the fuse pin to the signal from the reference standard notch. The angular scan distance necessary to display the full signal of the EDM notch in the reference standard was measured in Paragraph 4.A.(13). Compare the angular scan distance as follows:

(a) A crack signal from the fuse pin will have approximately the same angular scan distance as the reference standard notch. Magnetic poles (domains) in the fuse pin material can cause signals that are almost the same as a crack signal. The angular scan distances are longer and some can be as much as 90 degrees to complete the signal display. Do not reject fuse pins because of signals from magnetic domains.

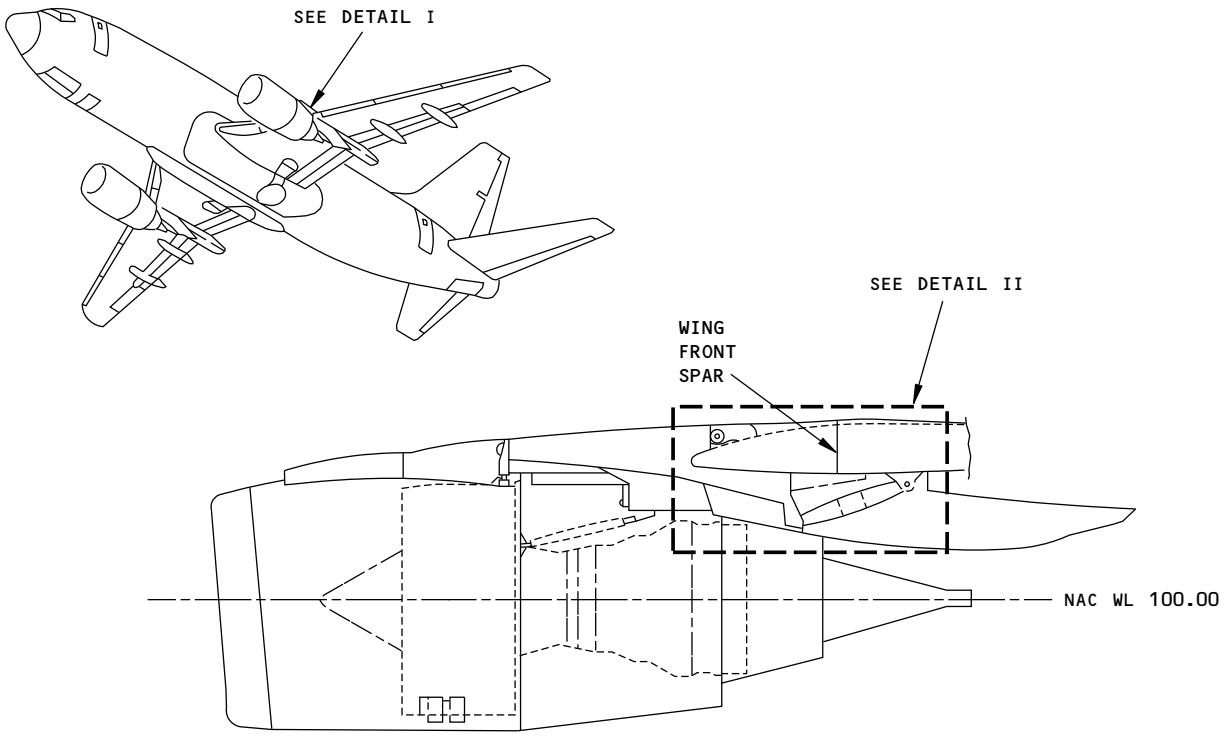
(b) If the angular scan distance from the possible crack is approximately the same as the angular scan distance from the reference standard notch, remove the pin and do Paragraph 6.C.(2).

(2) Completely remove the cadmium plating around the full circumference of the internal diameter of the pin, in the area of the signal. Do not just remove a small area, as this can cause a signal to occur when the probe moves from a plated surface to a bare surface. Do an inspection of the area again and make an analysis as follows:

(a) If the signal does not change, or it increases, remove the pin and do Paragraph 6.C.(3).

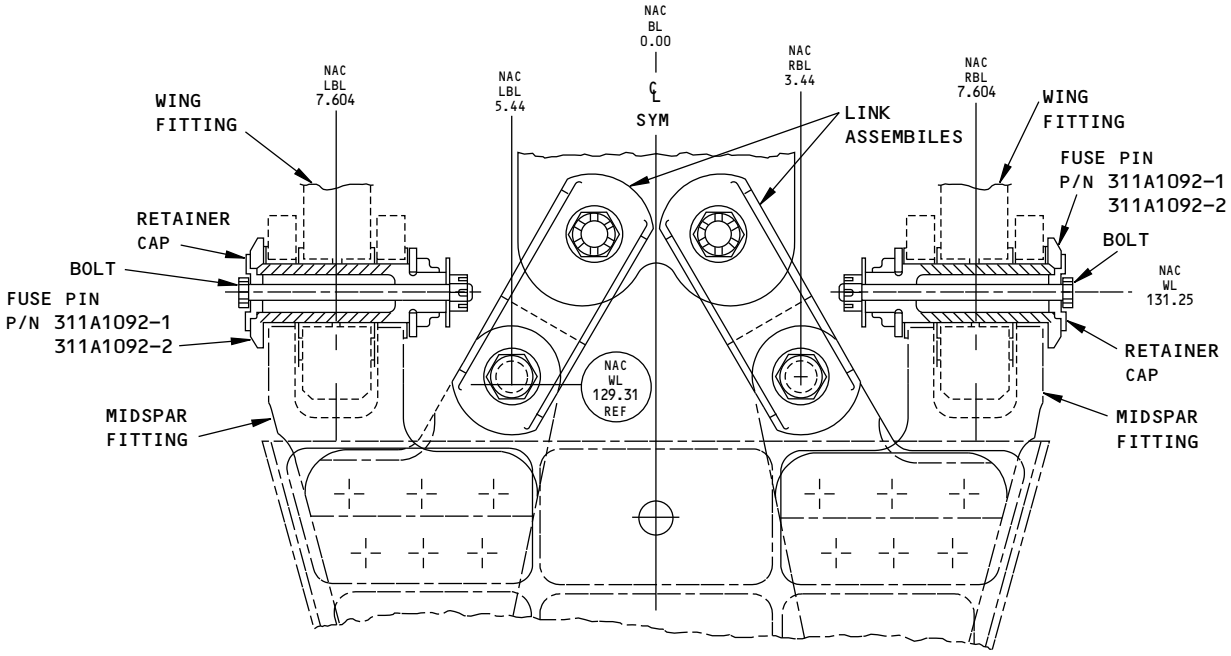
(b) If you do not get a signal after the cadmium plating is removed, there is no crack at this location and the pin is serviceable. Apply cadmium and primer back to the bare surface. Refer to SOPM 20-42-10 to apply the cadmium.

(3) Do a magnetic particle inspection of the removed fuse pin. Refer to the Standard Overhaul Practices Manual, Subject 20-20-01, for the magnetic particle inspection procedure.

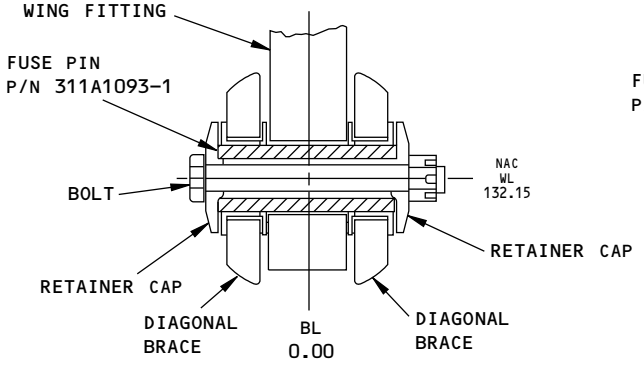


2162068 S0000473004_V1

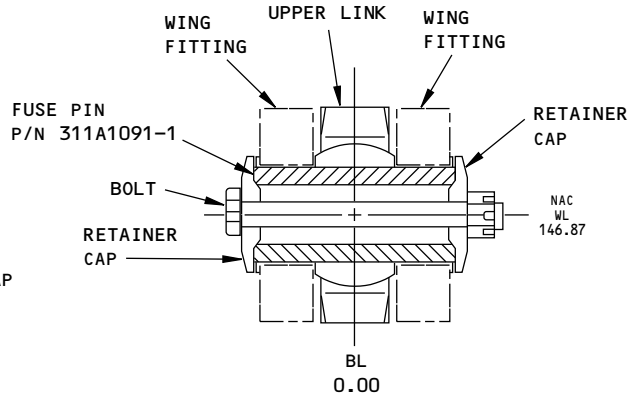
Fuse Pin Locations and Inspection Areas for CFM56-3 Engine
Figure 1 (Sheet 1 of 2)



STRUT ATTACHED TO WING FITTINGS
A-A



DIAGONAL BRACE TO WING FITTING
B-B



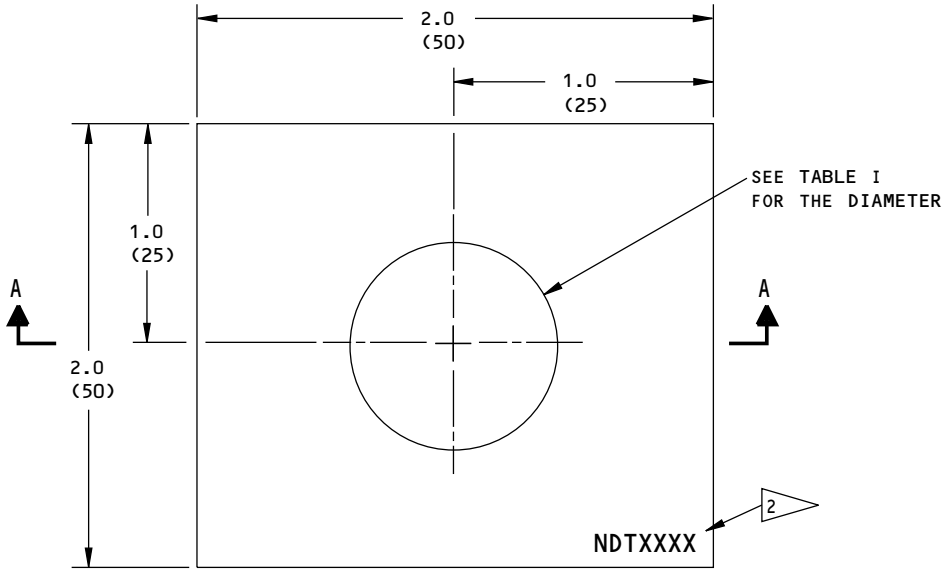
UPPER LINK TO WING FITTING
C-C

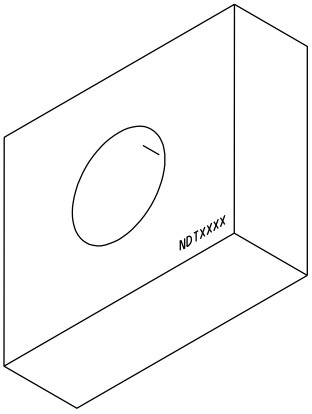
NOTE:

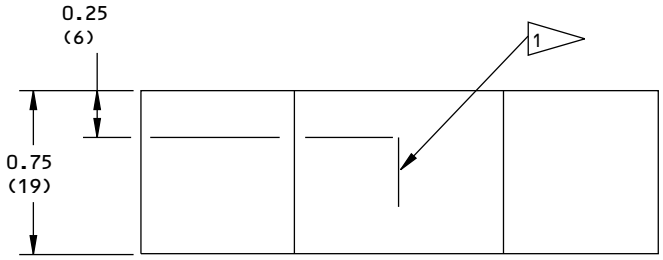
INSPECTION AREA OF THE INTERNAL DIAMETER OF THE FUSE PIN

2162069 S0000473006_V1

Fuse Pin Locations and Inspection Areas for CFM56-3 Engine
Figure 1 (Sheet 2 of 2)







A–A

REFERENCE STANDARD NUMBER	HOLE DIAMETER
NDT3008	1.15 (29)
NDT3009	0.85 (22)
NDT3010	0.80 (20)

TABLE I

NOTES

- DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS IN PARENTHESES).
- DIMENSION TOLERANCES:

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.1
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

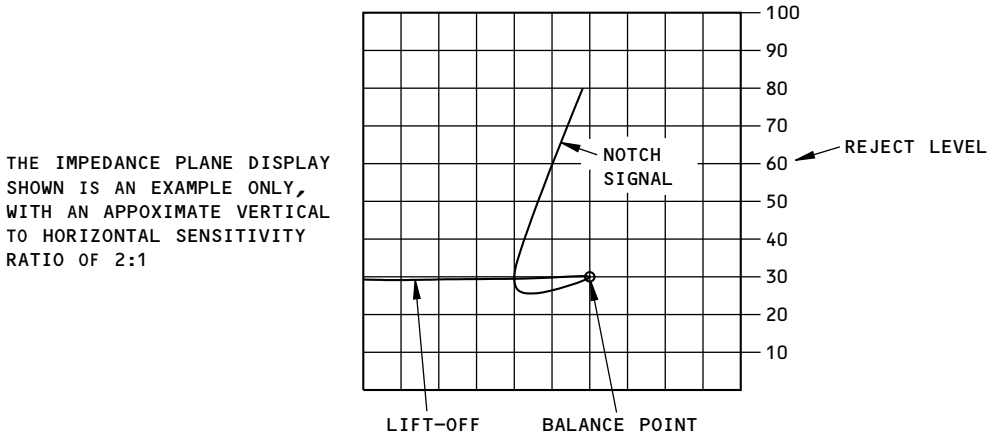
- MATERAL: 4330, 4330M, 4340, 4340M STEEL
- SURFACE ROUGHNESS: 63 Ra OR BETTER

1 EDM NOTCH:
WIDTH - 0.005 (0.13) ±0.002 (0.05)
LENGTH - 0.25 (6) ±10%
DEPTH - 0.040 (1) ±10%

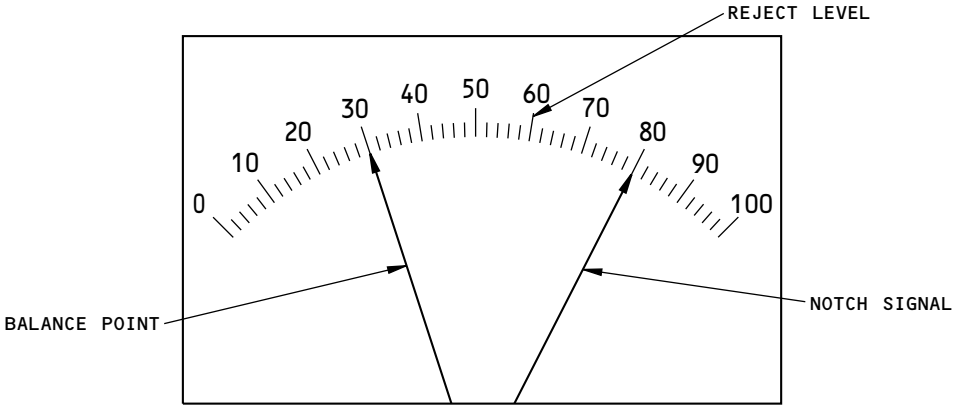
2 ETCH OR STEEL STAMP THE REFERENCE STANDARD NUMBER AS SPECIFIED IN TABLE I

2162072 S0000473007_V1

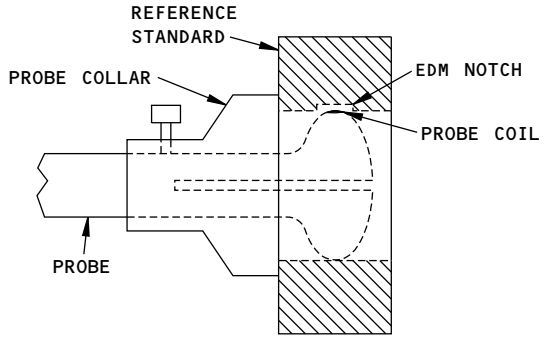
Reference Standards NDT3008, NDT3009 AND NDT3010
Figure 2



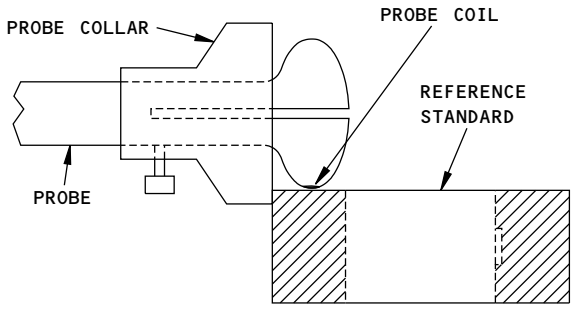
IMPEDANCE PLANE INSTRUMENT DISPLAY
DETAIL I



METER INSTRUMENT DISPLAY
DETAIL II



PROBE POSITION FOR ADJUSTMENT
OF INSTRUMENT SENSITIVITY
DETAIL III



PROBE POSITION FOR ADJUSTMENT OF INSTRUMENT
LIFT-OFF AND BALANCE POINT
DETAIL IV

2162074 S0000473008_V1

Probe Positions and Instrument Displays For Calibration
Figure 3

PART 6 - EDDY CURRENT

ENGINE STRUT - FORWARD ENGINE MOUNT BULKHEAD AND LOWER SPAR CHORDS AT THE AFT ENGINE MOUNT BULKHEAD

1. Purpose

A. Use this open hole surface eddy current procedure to find cracks in the forward engine mount bulkhead and the lower spar chords at the aft engine mount bulkhead of the engine strut torque box.

B. The inspection areas are as follows

(1) The four fastener holes in the forward engine mount bulkhead where the forward engine hanger fitting attaches. The fitting is made from titanium. See View B of Figure 1.

(2) The four fastener holes in the lower spar chords where the aft engine mount bulkhead attaches to the aft engine hanger fitting. The lower spar chords are made from 15-5 PH magnetic steel. See View C of Figure 1.

C. It is necessary to remove the engine to do this inspection.

D. 737 Damage Tolerance Rating (D626A001-DTR):

(1) Item: 54-51-10

(2) Item: 54-51-11

2. Equipment

A. General

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

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

B. Instrument

(1) Use an eddy current instrument that:

(a) Has an impedance plane display.

(b) Operates at a frequency range of 200 kHz to 2 MHz.

(c) Has rotary scanner function.

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

(a) Phasec 2d/2s; GE Inspection Technologies

(b) Nortec 1000/2000; Olympus NDT

(c) Elotest B1; Rohmann GmbH

C. Probes

(1) Two probes are necessary to examine the fastener hole locations identified in Paragraph 1.B.

(a) To examine the fastener holes identified in Paragraph 1.B.(1), use a probe that will examine the four 0.660 inch (16.76 mm) diameter holes. Refer to Part 6, 51-00-00, Procedure 17, paragraph 3.B, for data about probe selection.

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

a) BYU-40/48; Olympus NDT - NDT Engineering Corp.

b) URY.625-.750/2M; Techna NDT

(b) To examine the fastener holes identified in Paragraph 1.B.(2), use the specially designed probe identified below to examine the four 0.936 inch (23.77 mm) diameter holes.

1) TEK-3038; Techna NDT

D. Reference Standard

(1) Two reference standards are necessary to examine the fastener hole locations identified in Paragraph 1.B.

(a) To examine the fastener holes identified in Paragraph 1.B.(1), use NDT1089 with a hole diameter of 0.656 inch (16.67 mm). Refer to Part 6, 51-00-00, Procedure 17, paragraph 3.C, for data about the reference standard.

(b) To examine the fastener holes identified in Paragraph 1.B.(2), use NDT3117. Make or buy the reference standard. See Figure 2.

3. Prepare for the Inspection

A. Refer to Figure 1 for the inspection areas.

B. Remove the engine and forward and aft engine hanger fittings, to get access to the holes to be examined.

C. Clean and if necessary, remove sealant from inside the fastener holes.

D. Visually examine the inner surface of the holes for surface conditions that can cause crack type signals during the inspection. Borescopes, endoscopes or other optical aids can be used to help with the visual inspection. These are the conditions to look for:

(1) Burrs

(2) Galling

(3) Corrosion

(4) Out-of-round holes

E. If one or more of the conditions given in Paragraph 3.D. are seen, it can be necessary to do a 0.016 inch (0.41 mm) cleanup ream before the hole is examined.

(1) Before you do a cleanup ream, look at the hole to see if it will damage the probe. If the hole will not damage the probe, you can do the inspection.

(2) A 125 RHR (or better) surface finish is necessary after a cleanup ream.

4. Instrument Calibration

A. Two instrument calibrations are necessary to examine the fastener hole locations identified in Paragraph 1.B.

(1) Calibrate the instrument to examine the fastener holes identified in Paragraph 1.B.(1) as specified in Part 6, 51-00-00, Procedure 17, paragraph 5.

(2) Calibrate the instrument to examine the fastener holes identified in Paragraph 1.B.(2), as specified in Part 6, 51-00-00, Procedure 19, paragraph 5.

5. Inspection Procedure

A. To examine the fastener holes identified in Paragraph 1.B.(1), do the steps that follow:

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 17, paragraph 5.A.(1).

(a) Use reference standard NDT1089 to calibrate the instrument.

(2) Examine the four fastener holes identified in View B of Figure 1 as specified in Part 6, 51-00-00, Procedure 17, paragraph 6.

B. To examine the fastener holes identified in Paragraph 1.B.(2), do the steps that follow:

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 19, paragraph 5.A.(2).

(a) Use reference standard NDT3117 to calibrate the instrument.

(2) Examine the four fastener holes identified in View C of Figure 1 as specified in Part 6, 51-00-00, Procedure 19, paragraph 6.

6. Inspection Results

A. Refer to Part 6, 51-00-00, Procedure 17, paragraph 7, for instructions to help make an analysis of all signals that occur during the inspection of the fastener holes identified in Paragraph 1.B.(1).

B. Refer to Part 6, 51-00-00, Procedure 19, paragraph 7, for instructions to help make an analysis of all signals that occur during the inspection of the fastener holes identified in Paragraph 1.B.(2).

C. Think about the conditions that follow during the inspection and during an analysis of possible crack signals:

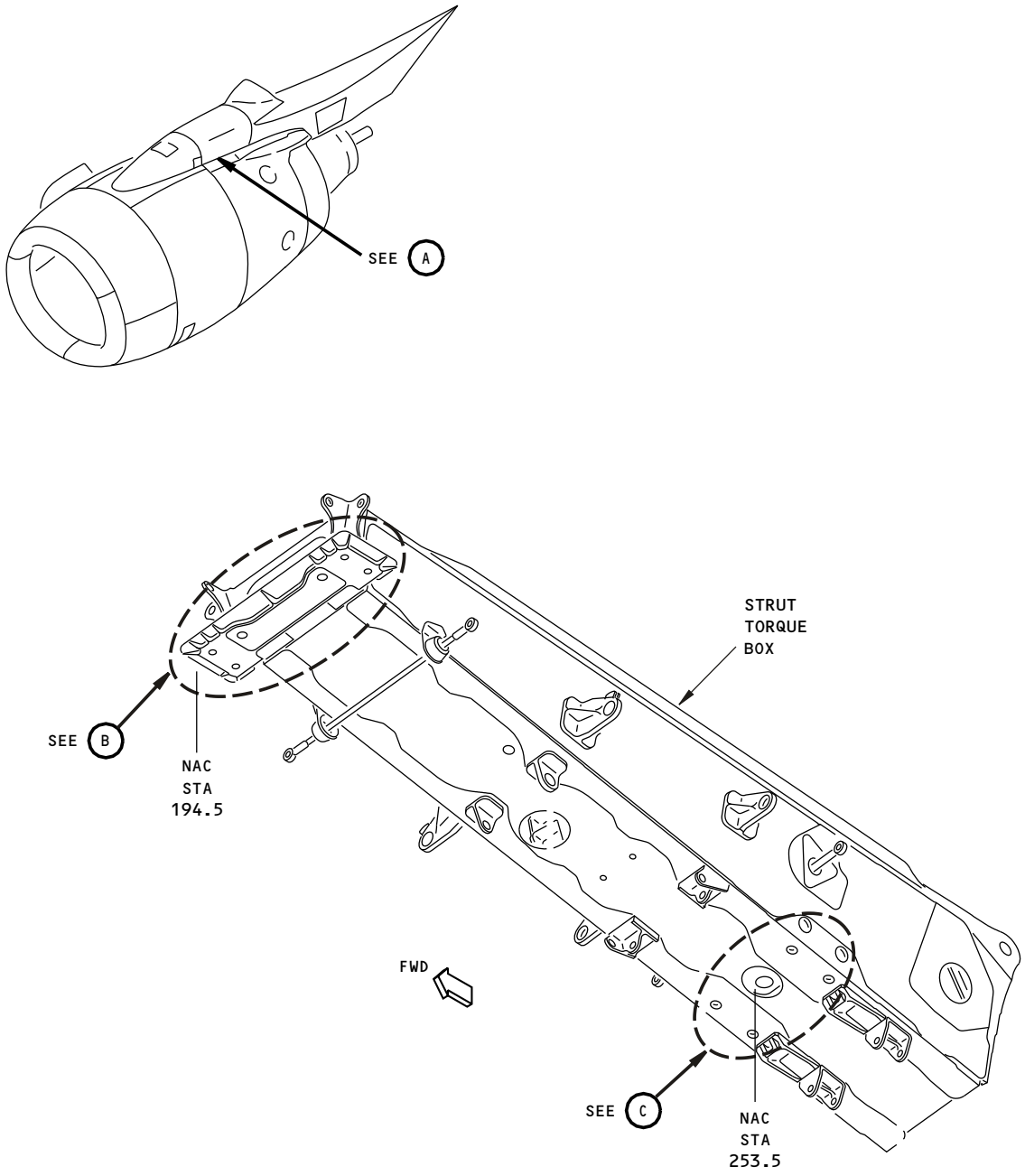
(1) Do an inspection before the first ream if the condition of the hole will not damage the probe. Holes with no signals above the reject level can be accepted.

(2) Monitor and record the dimensions and locations of all signals that are above the reject level. Do a visual check and record all surface conditions that can be the cause of the signals.

(3) In subsequent inspections, look for new signals to occur on the screen display at different locations. These can be caused by the ream process or by material particles that stay in the hole. These signals can be ignored. Do a visual examination of the hole surface and record applicable data after every ream.

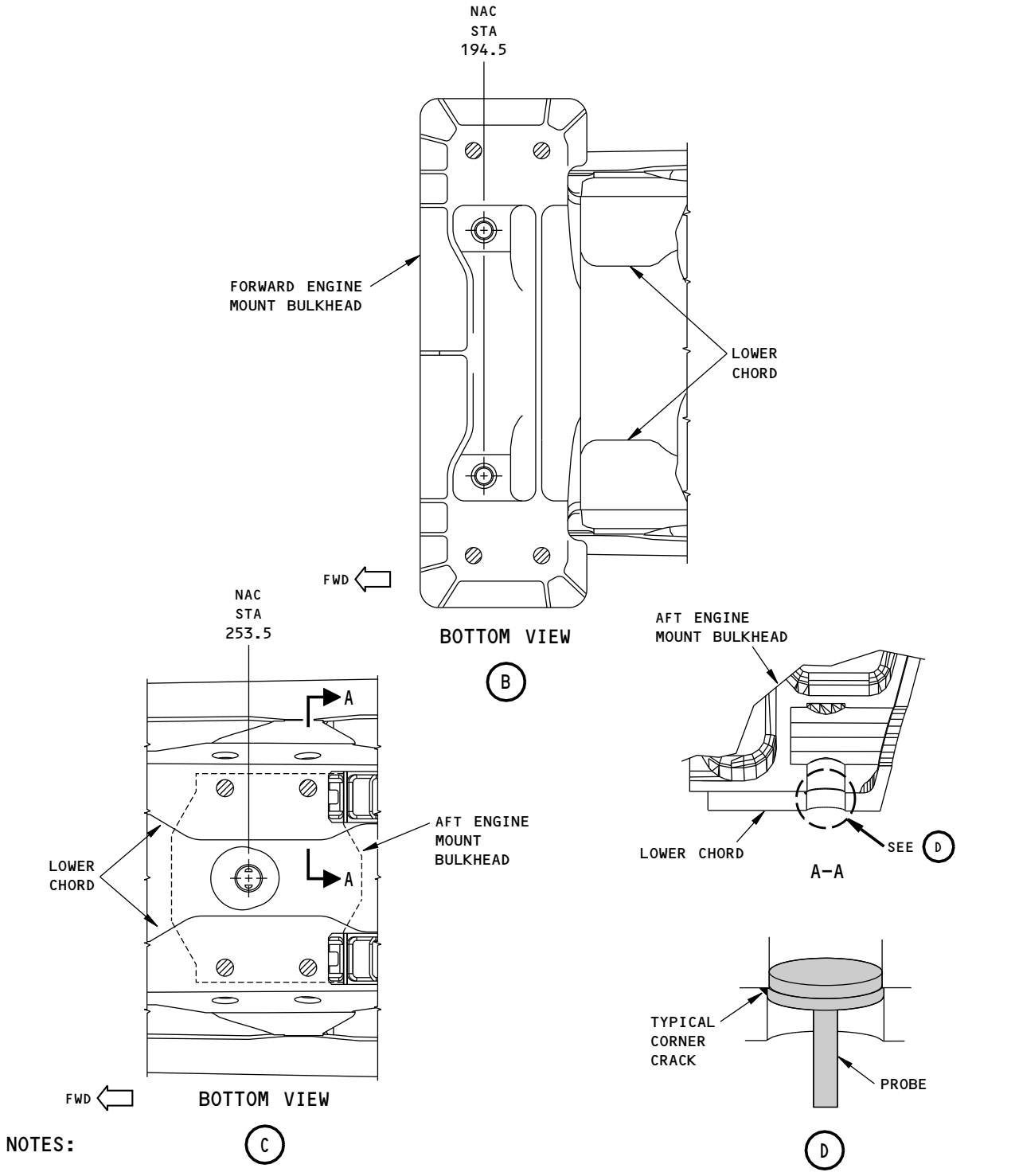
(4) Look for signals that stay at the same location after you do a cleanup ream, even if the signal decreases or increases in full screen height. These are possible crack signals.

(5) If possible, use an adjustable type probe so that the same probe can be used during all subsequent inspections.

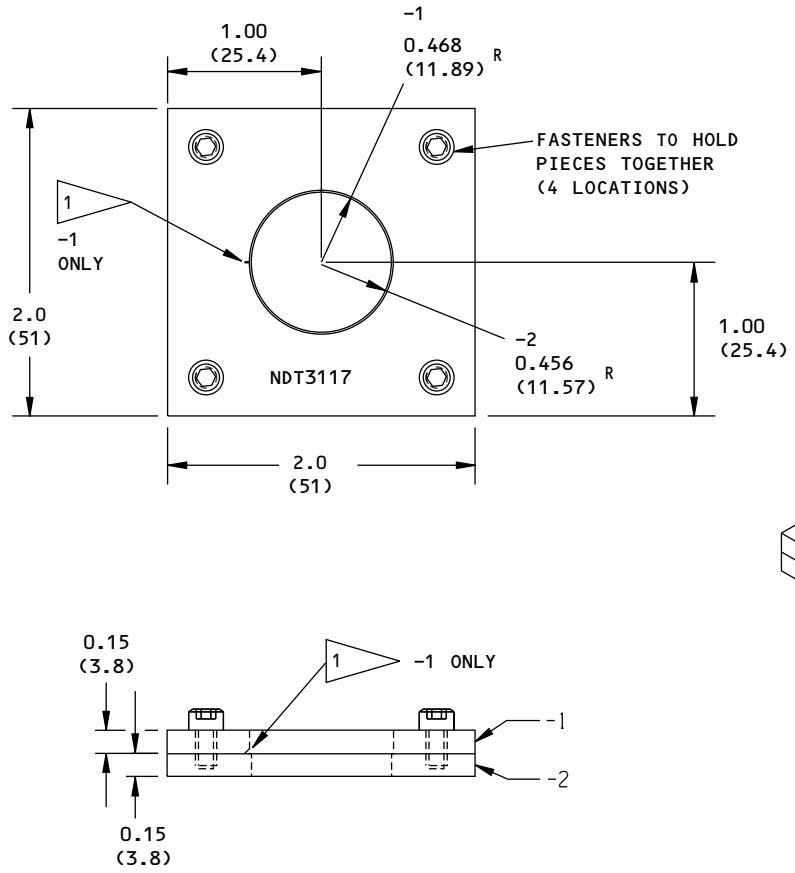


2162075 S0000473011_V1

Forward Engine Mount Bulkhead and Lower Spar Chord at Aft Engine Mount Bulkhead
Figure 1 (Sheet 1 of 2)



Forward Engine Mount Bulkhead and Lower Spar Chord at Aft Engine Mount Bulkhead
Figure 1 (Sheet 2 of 2)



NOTES:

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

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ±0.13
X.XX = ±0.025	X.X = ±0.5
X.X = ±0.050	X = ±1

- MATERIAL: -1 4330M OR 4340M STEEL
  -2 6AL-4V TITANIUM
- SURFACE ROUGHNESS: 63 Ra OR BETTER

1 EDM NOTCH LOCATION AND TOLERANCE:
THE NOTCH MUST BE WITHIN ± 0.005 (±0.10) OF THE CENTERLINE OF THE HOLE AS SHOWN.

CORNER NOTCH DIMENSIONS AND TOLERANCE:
WIDTH - 0.005 ±0.002 (0.13 ±0.05)
LENGTH - 0.030 ±0.002 (0.76 ±0.05)
DEPTH - 0.030 ±0.002 (0.76 ±0.05)

2162077 S0000473013_V1

Reference Standard NDT3117
Figure 2

PART 6 - EDDY CURRENT

ENGINE STRUT - R3 AND R4 FITTING INSPECTIONS AT THE FIRST FASTENER ROW (HFEC AND OHEC)

1. Purpose

A. Use this procedure to examine the R3 and R4 fittings of the engine struts for cracks. The vertical part of the R3 and R4 fittings are examined for cracks at the first row of fasteners shown in Figure 1 by the procedures that follow:

(1) A high frequency eddy current (HFEC) inspection is done to look for surface cracks at all of the areas of the R3 and R4 fittings that you can get access to that are around the four fasteners in the first fastener row.

(2) The four fasteners in the first fastener row are removed to do open hole eddy current (OHEC) inspections.

B. Use an impedance plane display instrument to do this procedure.

C. The R3 and R4 fittings are 15-5PH corrosion resistant steel (CRES).

D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-17

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate in the frequency range of 50 kHz to 1 MHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) For the surface inspection:

(a) Use a probe that is not shielded that operates from 50 to 500 kHz.

(b) The probe used to help prepare this procedure was UMTF-40/50-500 kHz, which is made by Olympus NDT.

(2) For the open hole inspection:

(a) Use a bolt hole probe that can be adjusted to examine a 0.50 inch (12.7 mm) diameter hole that operates in the range of 200 kHz to 1 MHz.

(b) The probe used to help prepare this procedure was BXU-32/40, which is made by Olympus NDT.

D. Reference Standards

(1) Use reference standard 185, or an equivalent, to help calibrate the instrument to do the surface inspections. Refer to Part 6, 51-00-00, Procedure 24, paragraph 3, for data about reference standard 185.

(2) Use reference standard NDT1045, or an equivalent, to help calibrate the instrument to do the open hole inspections. Refer to Part 6, 51-00-00, Procedure 19, paragraph 3, for data about reference standard NDT1045.

3. Prepare for the Inspection

A. Identify the inspection area shown in Figure 1.

B. Get access to the inspection area.

C. Clean the inspection area.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5, to do the surface inspections.

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

B. Calibrate the instrument to do open hole inspections for 0.50 inch (12.7 mm) diameter holes with a rotary scanner as specified in Part 6, 51-00-00, Procedure 19, paragraph 5.

(1) Use reference standard NDT1045, or an equivalent, to help calibrate the instrument.

5. Inspection Procedure

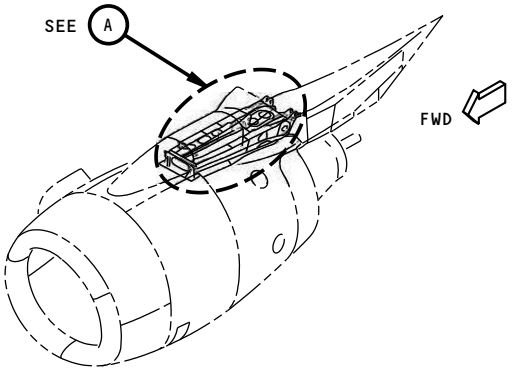
A. Examine all of the areas of the R3 and R4 fittings that you can get access to that are around the four fasteners in the first fastener row shown in Figure 1 for surface cracks. Do these inspections as specified in Part 6, 51-00-00, Procedure 24, paragraph 6.

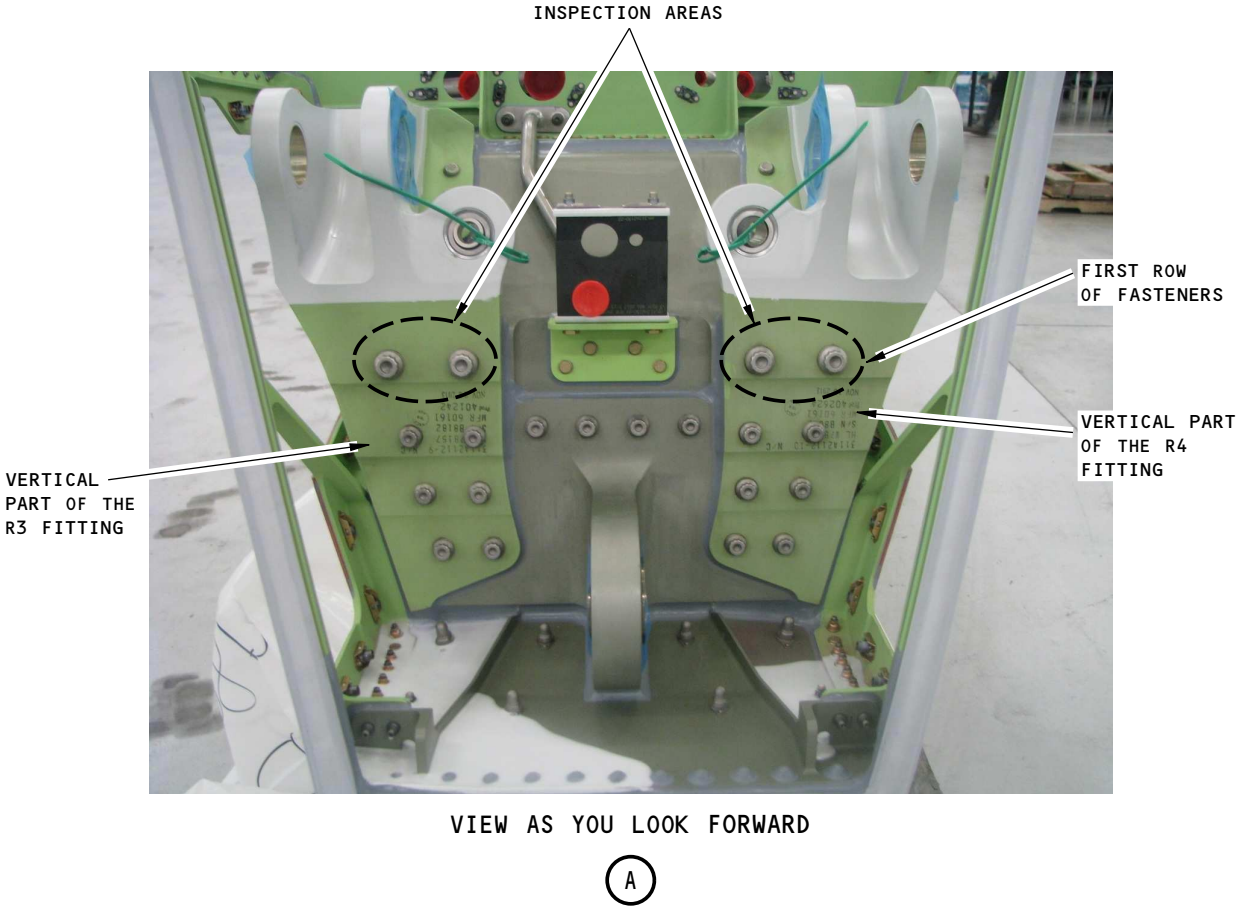
B. Remove the fasteners from the first fastener row shown in Figure 1 and do open hole inspections as specified in Part 6, 51-00-00, Procedure 19, paragraph 6.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the R3 and R4 fittings of the other engine strut for cracks.

6. Inspection Results

A. Refer to paragraph 7 in Part 6, 51-00-00, Procedure 24 or Part 6, 51-00-00, Procedure 19, as applicable, for instructions to help make an analysis of the indications that occur during the inspection.





2382720 S0000546976_V1

Inspection Area
Figure 1

PART 6 - EDDY CURRENT

LEFT AND RIGHT UPPER SPAR CHORDS AT NSTA 210.6, NSTA 222.6, NSTA 235.1 AND NSTA 256.5 (HFEC)

1. Purpose

A. Use this procedure to examine the left and right upper spar chords for surface cracks at NSTA 210.6, NSTA 222.6, NSTA 235.1, and NSTA 256.5. The edges, radii, and fastener holes are the areas of the upper spar chords that are examined for the surface cracks. See Figure 1 for the inspection areas.

B. Use an impedance plane display instrument to do this procedure.

C. The upper spar chords are 15-5PH corrosion resistant steel (CRES).

D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-17

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate in the frequency range of 50 to 500 kHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use a probe that operates from 50 to 500 kHz.

(2) The probe that follows was used to help prepare this procedure.

(a) UMTF-40/50-500 kHz; Olympus NDT

D. Reference Standards

(1) Use reference standard 185 and NDT1062, or their equivalents, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 24, paragraph 3, for data about these reference standards.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection areas.

(1) For the left engine strut:

(a) Remove access panels 433AT, 433BT, and 433CT on the top of the strut to get access to the inspection area.

(2) For the right engine strut:

(a) Remove access panels 443AT, 443BT, and 443CT on the top of the strut to get access to the inspection area.

C. Clean the inspection areas.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

(1) Use reference standard 185, or an equivalent, to help calibrate the instrument to examine edges and radii.

(2) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument to examine the fastener locations.

5. Inspection Procedure

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

B. Examine the edges and radii of the left and right upper spar chords of the strut for surface cracks at NSTA 210.6, NSTA 222.6, NSTA 235.1, and NSTA 256.5 as specified in Part 6, 51-00-00, Procedure 24, paragraph 6. See Figure 1 for the inspection areas.

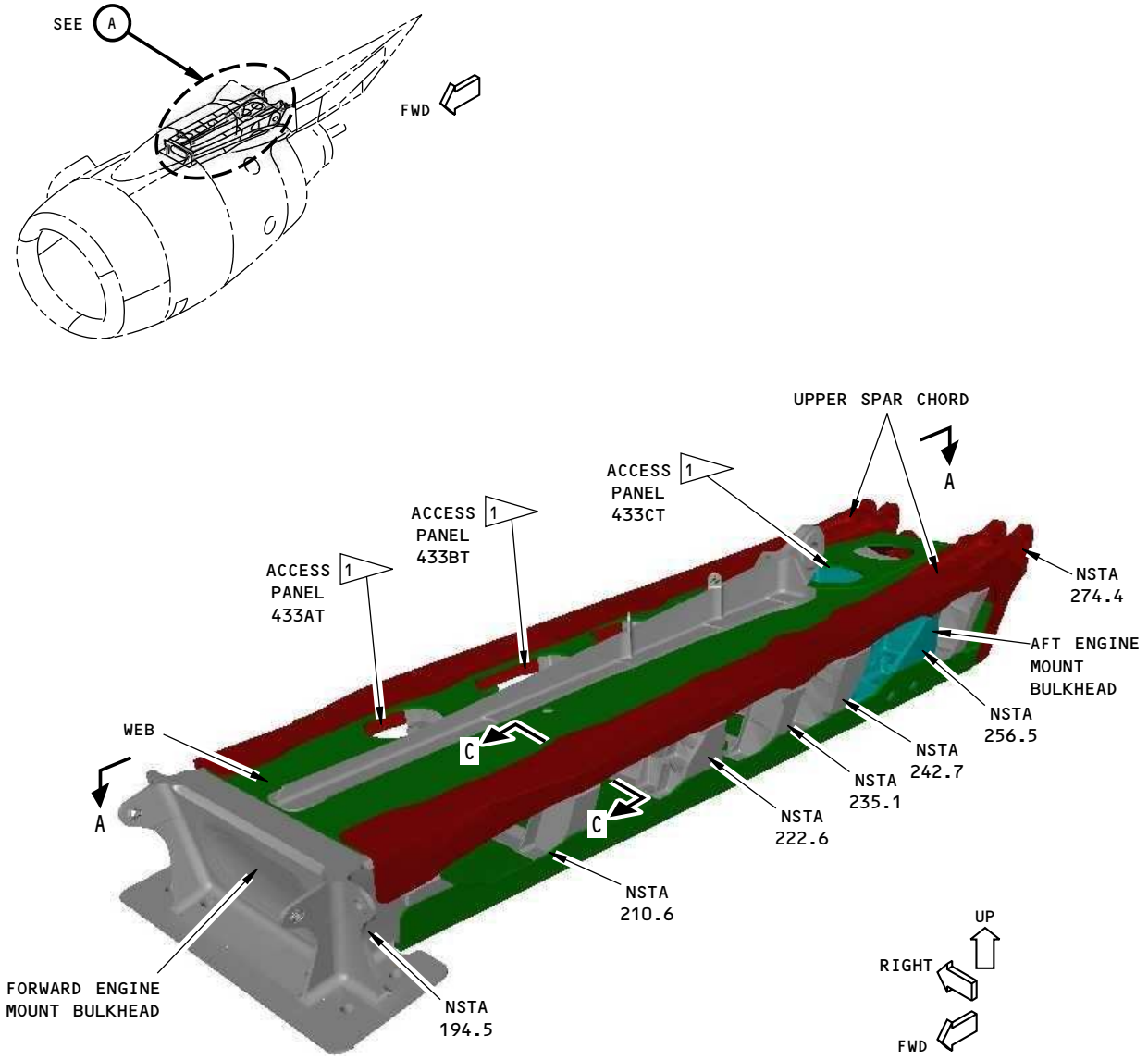
C. Calibrate the instrument as specified in Paragraph 4.A.(2).

D. Examine the fastener locations of the left and right upper spar chords of the strut for surface cracks at NSTA 210.6, NSTA 222.6, NSTA 235.1, and NSTA 256.5 as specified in Part 6, 51-00-00, Procedure 24, paragraph 6. See Figure 1 for the inspection areas.

E. Do Paragraph 5.A. thru Paragraph 5.D. again to examine the left and right upper spar chords of the engine strut on the other side of the airplane.

6. Inspection Results

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



THE SIDE SCREEN IS NOT SHOWN;
THE LEFT SIDE STRUT IS SHOWN;
THE RIGHT SIDE STRUT IS OPPOSITE.

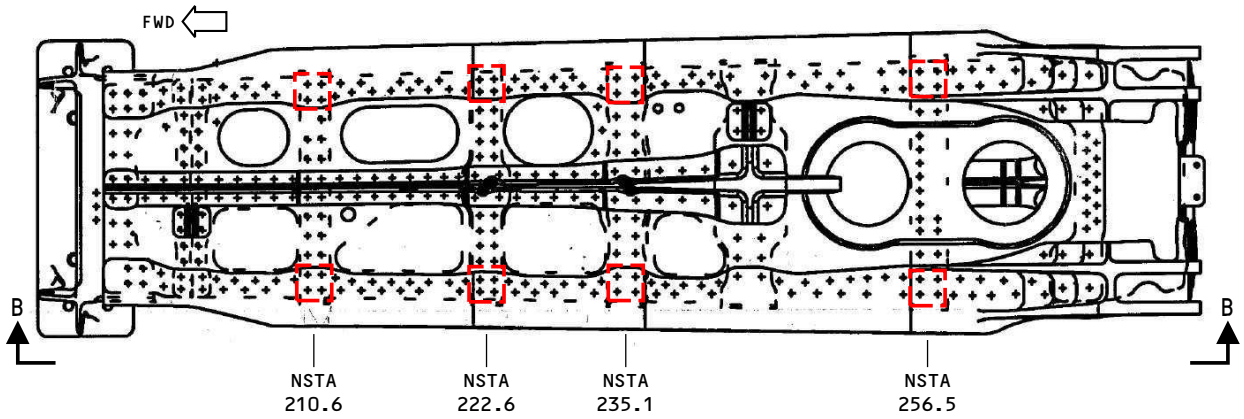
A

NOTES

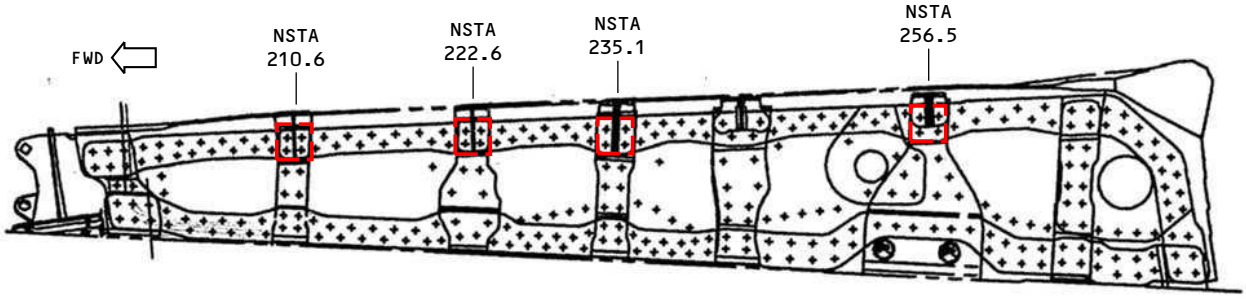
1 REMOVE ACCESS PANELS 433AT, 433BT, AND 433CT TO GET ACCESS

2380040 S0000545917_V1

Inspection Areas
Figure 1 (Sheet 1 of 3)



A–A



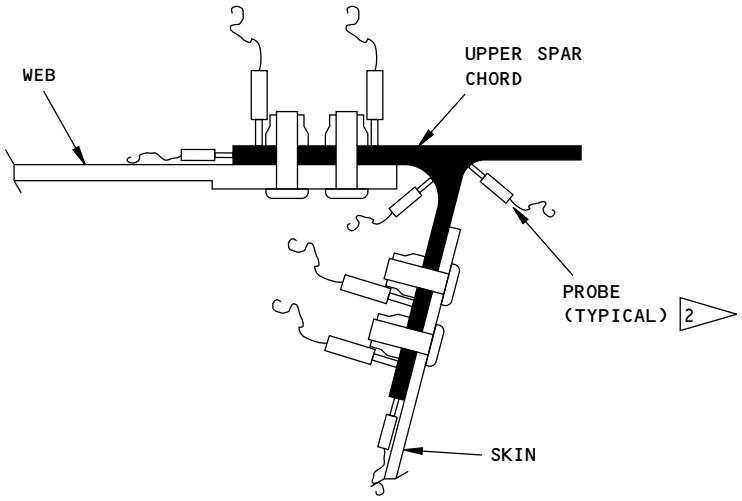
B–B

NOTES

INSPECTION AREA. THERE ARE 8 FASTENER LOCATIONS TO EXAMINE IN EACH INSPECTION AREA.

2380051 S0000545918_V1

Inspection Areas
Figure 1 (Sheet 2 of 3)



THE LEFT UPPER SPAR CHORD IS SHOWN
THE RIGHT UPPER SPAR CHORD IS OPPOSITE
(VIEW AS YOU LOOK AFT)
C-C

NOTES

2 HOLD THE PROBE PERPENDICULAR TO THE SURFACE. MOVE THE PROBE IN INCREMENTS THAT ARE NOT MORE THAN ONE HALF A PROBE DIAMETER FOR EACH SCAN

2380090 S0000545919_V1

Inspection Areas
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

LEFT AND RIGHT UPPER SPAR CHORDS AT NSTA 242.7 (HFEC)

1. Purpose

A. Use this procedure to examine the left and right upper spar chords of the nacelle struts at NSTA 242.7 for surface cracks. See Figure 1 for the inspection areas.

B. Use an impedance plane display instrument to do this procedure.

C. The upper spar chords are 15-5PH corrosion resistant steel (CRES).

D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-17

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate in the frequency range of 50 to 500 kHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use a probe that operates from 50 to 500 kHz.

(2) The probe that follows was used to help prepare this procedure.

(a) UMTF-40/50-500 kHz; Olympus NDT

D. Reference Standards

(1) Use reference standard 185, or an equivalent, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 24, paragraph 3, for data about reference standard 185.

E. Special Tools

(1) A nonconductive straightedge can be necessary to use to help do the scan.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection areas.

C. Clean the inspection areas.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

5. Inspection Procedure

A. Examine the left and right upper spar chords of the nacelle strut at NSTA 242.7 for surface cracks as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, and the steps that follow. See Figure 1 for the inspection areas.

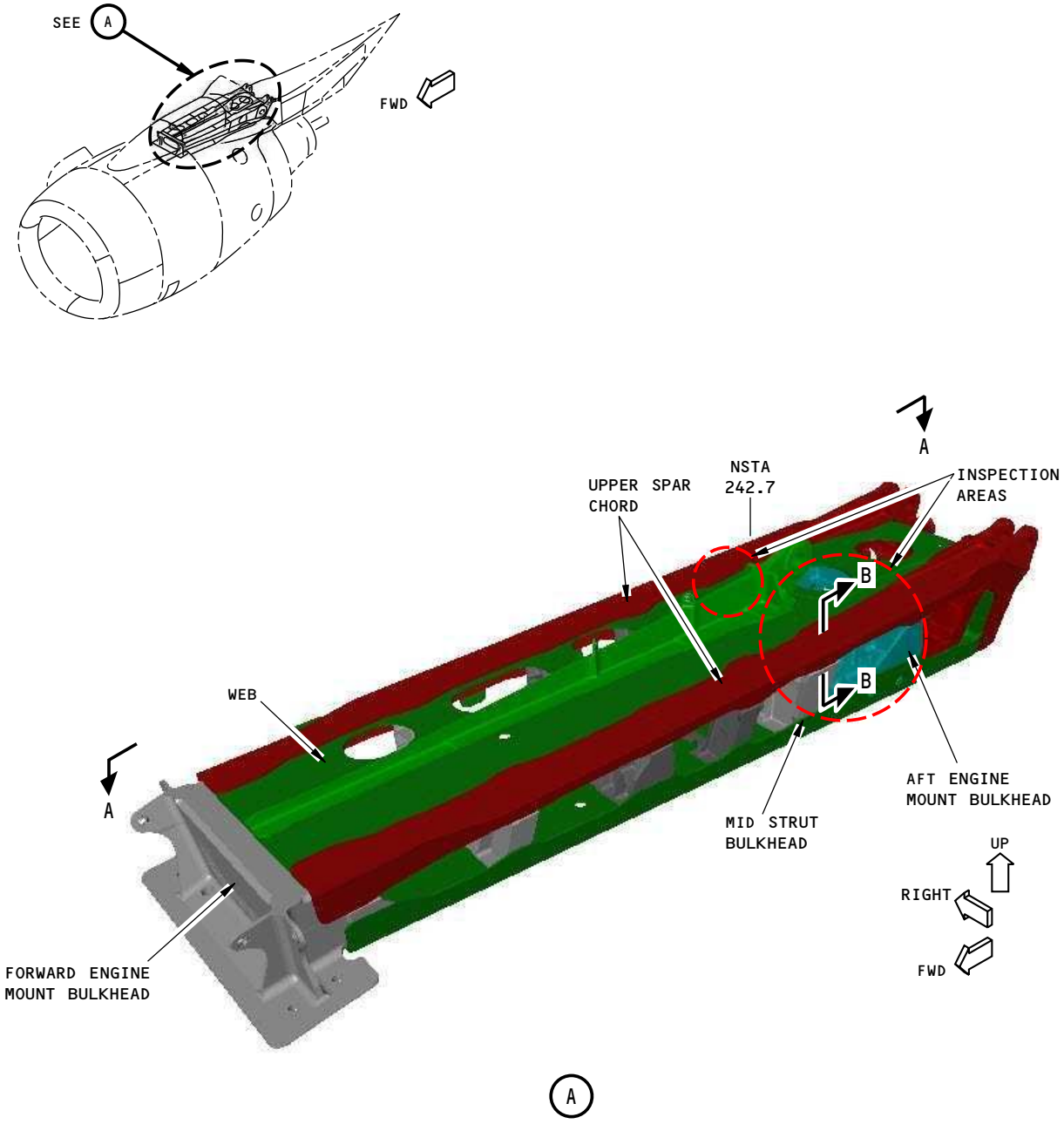
(1) Do the scans of the left and right upper spar chords in the areas that you can see. These areas are shown in Figure 1 and extend approximately two inches forward and two inches aft of NSTA 242.7.

(2) Use a nonconductive straightedge as a probe guide to help make a scan of the upper spar chords.

B. Do Paragraph 5.A. again to examine the upper spar chords for cracks at the strut on the other side of the airplane.

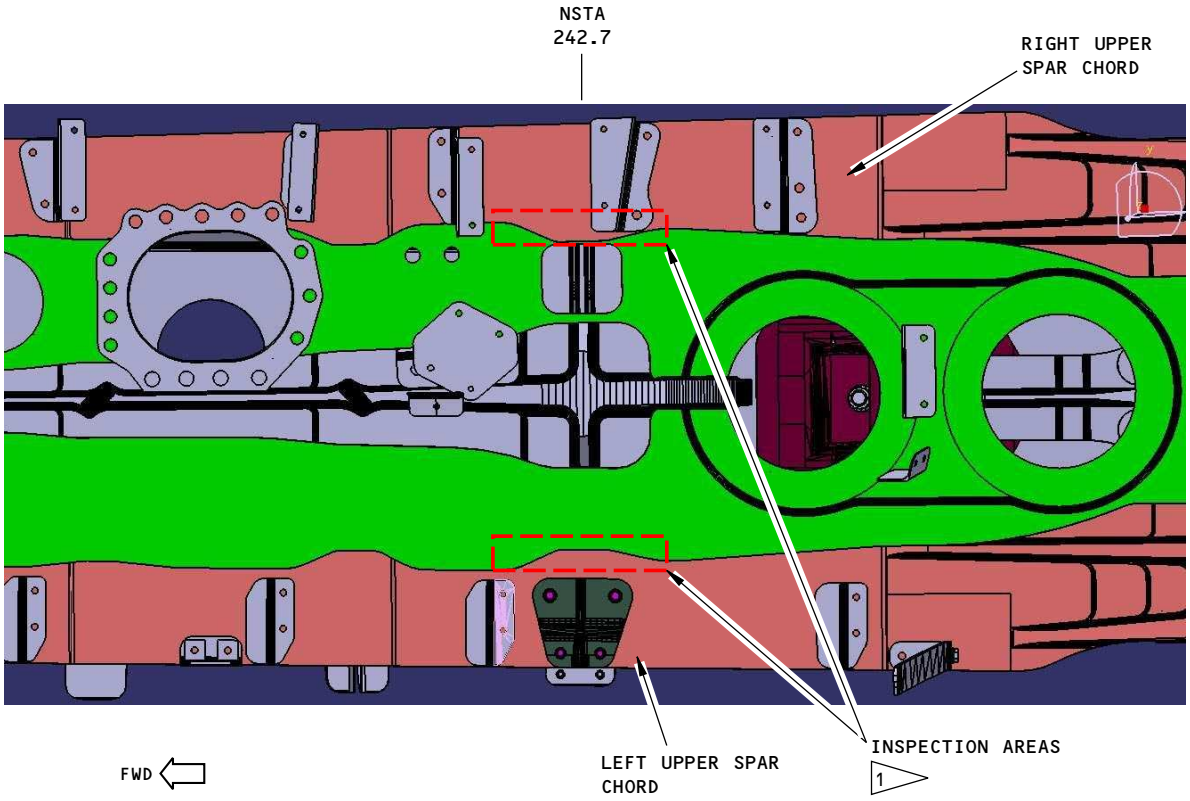
6. Inspection Results

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



2378757 S0000545623_V1

Inspection Area
Figure 1 (Sheet 1 of 3)



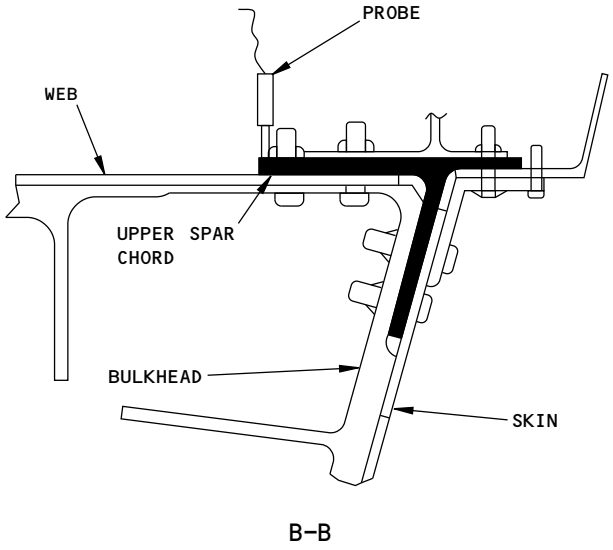
A-A

NOTES

1 EXAMINE THE UPPER SPAR CHORDS FOR CRACKS IN THE AREAS SHOWN. THE INSPECTION AREA EXTENDS APPROXIMATELY 2 INCHES FORWARD AND AFT OF NSTA 242.7.

2378767 S0000545624_V1

Inspection Area
Figure 1 (Sheet 2 of 3)



2378769 S0000545625_V1

Inspection Area
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

UPPER SPAR CHORDS BETWEEN THE FORWARD AND AFT ENGINE MOUNTS (HFEC)

1. Purpose

A. Use this procedure to examine the upper spar chords for surface cracks at the edges and fastener locations between the forward and aft engine mounts. See Figure 1 for the inspection areas.

(1) For the left upper spar chord, the areas from NSTA 200.9 to 211.5, NSTA 213.6 to 225.2, NSTA 226.1 to 233.6, and NSTA 236.3 to 241.8 are examined.

(2) For the right upper spar chord, only the area from NSTA 236.3 to 241.8 is examined.

B. Use an impedance plane display instrument to do this procedure.

C. The upper spar chords are 15-5PH corrosion resistant steel (CRES).

D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-17

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate in the frequency range of 50 to 500 kHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use a probe that is not shielded that operates from 50 to 500 kHz.

(2) The probe that follows was used to help prepare this procedure.

(a) UMTF-40/ 50-500 kHz; Olympus NDT

D. Reference Standards

(1) Use reference standards 185 and NDT1062, or their equivalents, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 24, paragraph 3, for data about these reference standards.

E. Special Tools

(1) Use a nonconductive straightedge to help examine the upper spar chord.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection areas.

(1) For the left engine strut:

(a) Remove access panels 433AT, 433BT, and 433CT on the top of the strut to get access to the inspection areas.

(2) For the right engine strut:

(a) Remove access panels 443AT, 443BT, and 443CT on the top of the strut to get access to the inspection areas.

C. Clean the inspection area.

(1) Remove loose paint, dirt and sealant from the surface of the inspection area.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

(1) Use reference standard 185, or an equivalent, to help calibrate the instrument to examine edges and radii.

(2) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument to examine the areas at the fastener locations.

5. Inspection Procedure

A. Examine the upper spar chords of the strut for surface cracks at the edges and the radii between the forward and aft engine mounts. Use a nonconductive straightedge as a probe guide and do these inspections as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, for the areas that follow (see Figure 1 for the inspection areas):

(1) Examine the left upper spar chords from NSTA 200.9 to 211.5, NSTA 213.6 to 225.2, NSTA 226.1 to 233.6, and NSTA 236.3 to 241.8.

(2) Examine the right upper spar chords from NSTA 236.3 to 241.8.

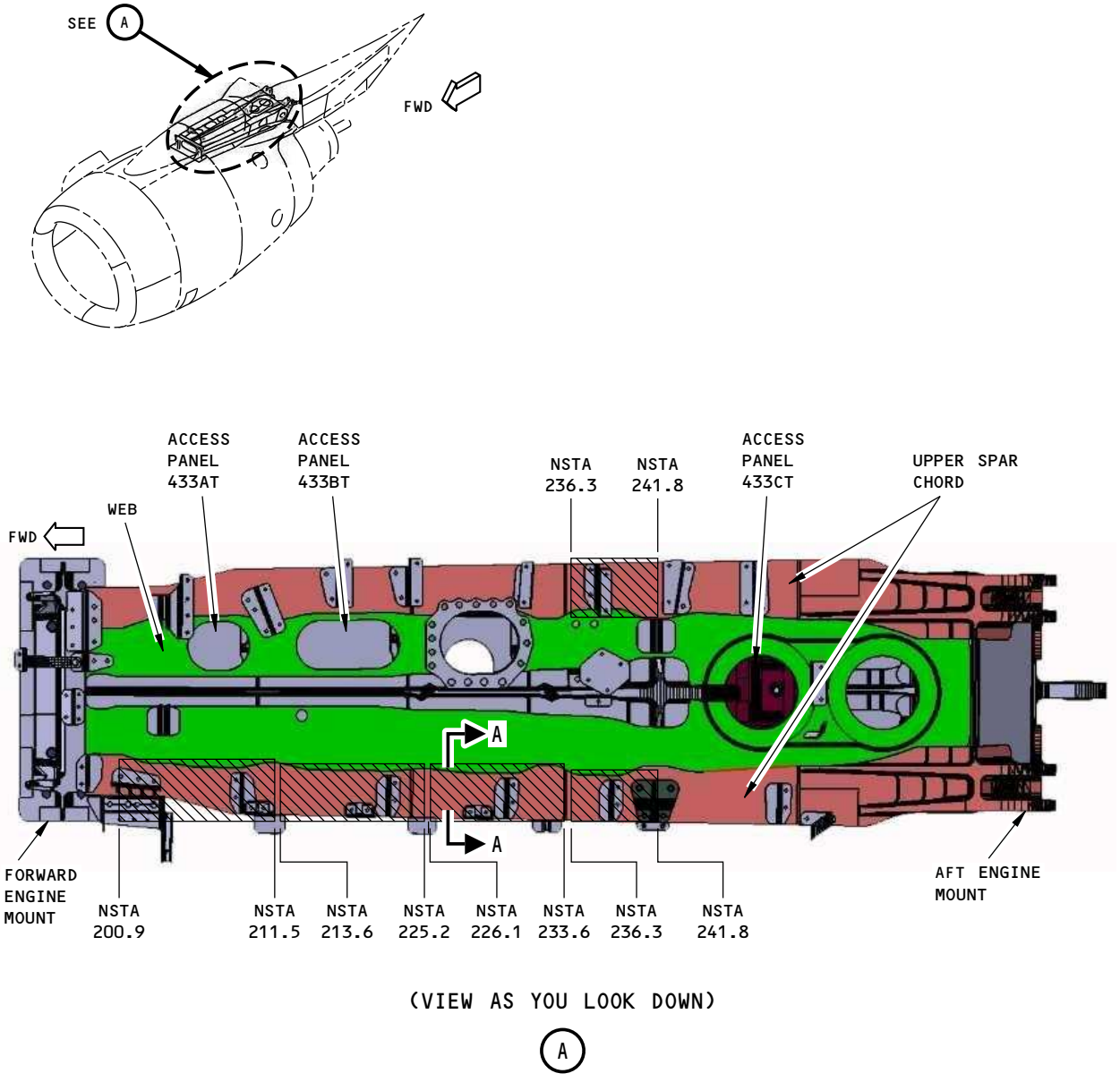
B. Examine the upper spar chords of the strut for surface cracks at the fastener locations between the forward and aft engine mounts. Do this inspection as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, for the same areas identified in Paragraph 5.A.(1) and Paragraph 5.A.(2) (see Figure 1 for the inspection areas).

(1) Use the fastener heads as a probe guide during these inspections of the upper spar chord.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the left and right upper spar chords of the engine strut on the other side of the airplane.

6. Inspection Results

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



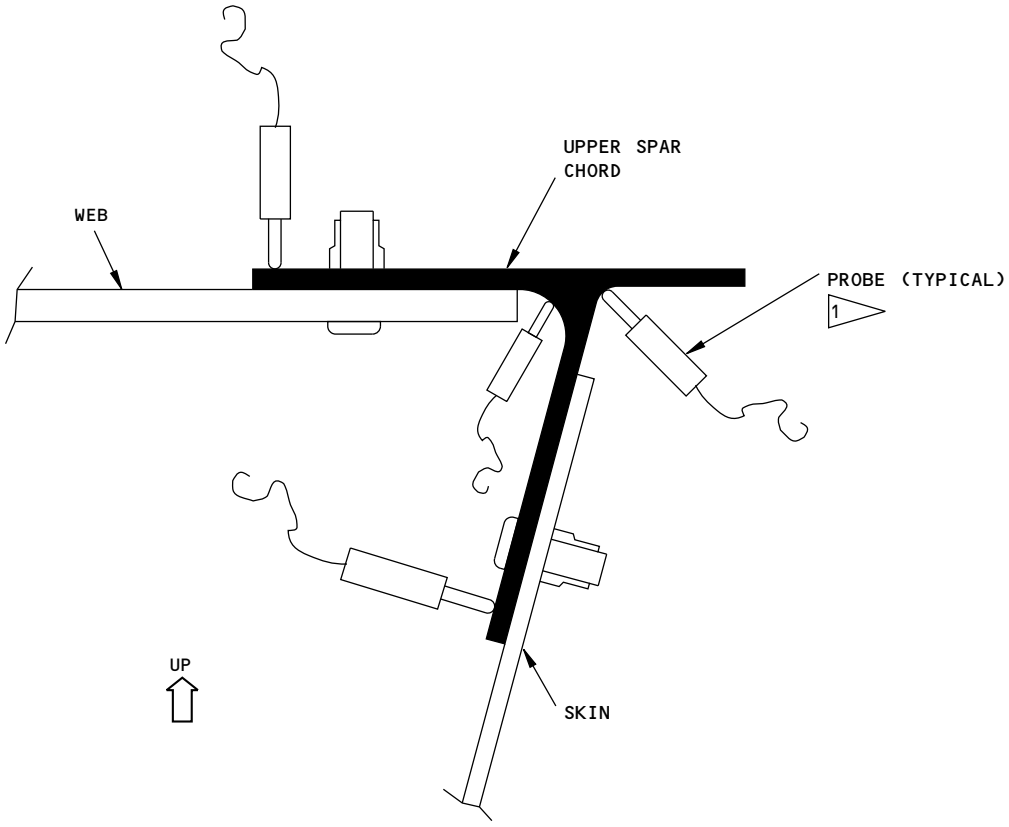
NOTES

INSPECTION AREA

- REMOVE ACCESS PANELS 433AT, 433BT, AND 433CT TO GET ACCESS

2379322 S0000545790_V1

Inspection Areas
Figure 1 (Sheet 1 of 2)



THE LEFT UPPER SPAR CHORD IS SHOWN;
THE RIGHT UPPER SPAR CHORD IS OPPOSITE
(VIEW AS YOU LOOK AFT)

A-A

NOTES

1 HOLD THE PROBE PERPENDICULAR TO THE SURFACE OF THE RADIUS. THE SCAN INCREMENTS MUST BE HALF (OR LESS) OF THE PROBE DIAMETER

2379329 S0000545791_V1

Inspection Areas
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

LOWER SPAR CHORD AND WEB ON THE RIGHT SIDE OF THE ENGINE STRUT BETWEEN NSTA 224.7 AND NSTA 231.8 (HFEC)

1. Purpose

A. Use this procedure to examine the lower spar chord of the engine strut for surface cracks around all of the fastener locations between NSTA 224.7 and NSTA 231.8. Also examine the the lower spar web for surface cracks along the inner edge of the strap between NSTA 224.7 and NSTA 231.8. See Figure 1 for the inspection areas.

B. The lower spar chord is 15-5PH steel.

C. The lower spar web is Ti-6Al-4V titanium.

D. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

(1) Item: 54-51-10

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) For steel (the lower spar chord):

(a) Use an eddy current instrument that has an impedance plane display and can operate from 50 to 500 kHz.

(2) For titanium (the lower spar web):

(a) Use an eddy current instrument that has an impedance plane display and can operate from 900 kHz to 2 MHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technologies

C. Probes

(1) For steel (the lower spar chord):

(a) Use a probe that is not shielded and can operate from 50 to 500 kHz.

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

1) UMTF-40/ 50-500 kHz; Olympus NDT

2) TPEN-4/50-500 kHz; Techna NDT

(2) For titanium (the lower spar web):

(a) Use a shielded probe that operates from 900 kHz to 2 MHz.

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

1) MTF-40/ 1-3 MHz; Olympus NDT

2) TPENU-5/2M 1-3MHz; Techna NDT

D. Reference Standards

(1) For steel (the lower spar chord):

(a) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 24, paragraph 3, for data about reference standard NDT1062.

(2) For titanium (the lower spar web):

(a) Use reference standard 1002, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 14, paragraph 3, for data about reference standard 1002.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection area.

(1) For the left engine strut:

(a) Remove panel 433BT from the top of the strut to get access to the inspection area.

(2) For the right engine strut:

(a) Remove panels 443BT from the top of the strut to get access to the inspection area.

C. Clean the inspection area.

(1) Remove loose paint, dirt and sealant from the surface of the inspection area.

4. Instrument Calibration

A. For steel (the lower spar chord):

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

(a) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument to examine the lower spar chord at the fastener locations. Use the fastener heads as a probe guide.

B. For titanium (the lower spar web):

(1) Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.

(a) Use reference standard 1002, or an equivalent, to help calibrate the instrument to examine the lower spar web.

5. Inspection Procedure

A. For steel (the lower spar chord):

(1) Examine the lower spar chord on the right side of the engine strut for surface cracks at the fastener locations from NSTA 224.7 to NSTA 231.8. Do the inspection as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, and as shown in Figure 1. Use the fasteners as a probe guide.

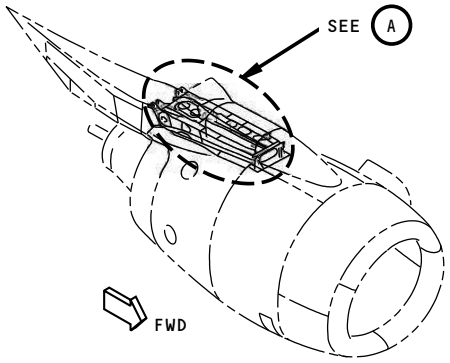
B. For titanium (the lower spar web):

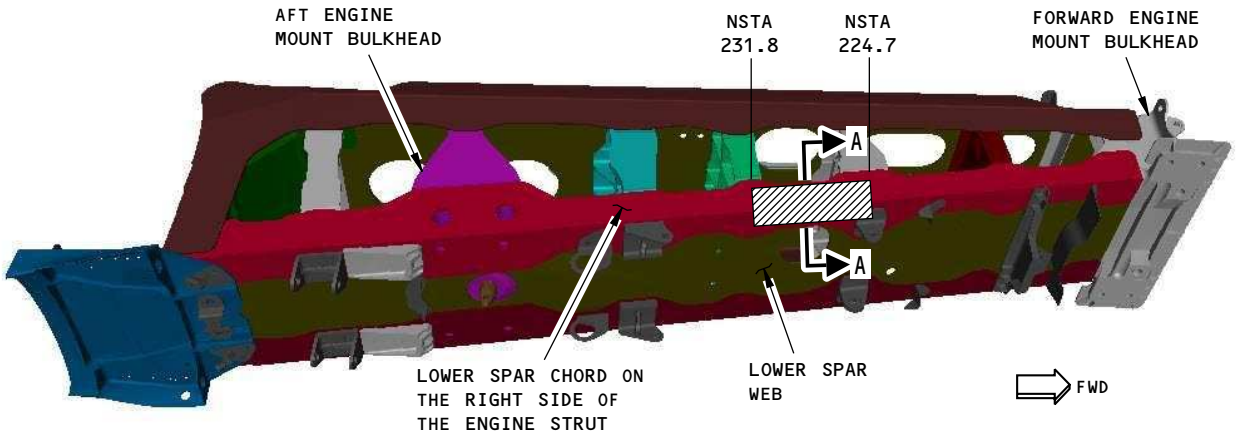
(1) Examine the lower spar web on the right side of the engine strut for surface cracks along the inner edge of the strap between NSTA 224.7 and NSTA 231.8. Do the inspection as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, and as shown in Figure 1.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the lower spar web and chord for cracks on the engine strut on the opposite side of the airplane.

6. Inspection Results

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





ENGINE STRUT
A

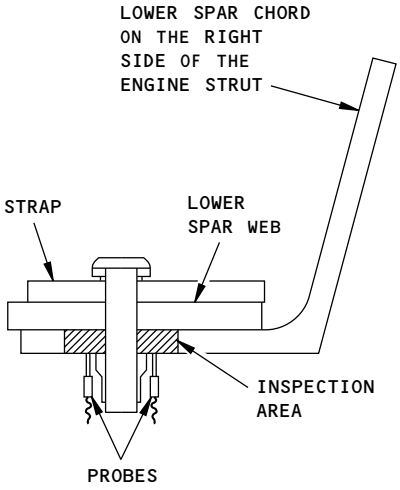
NOTES:

INSPECTION AREA

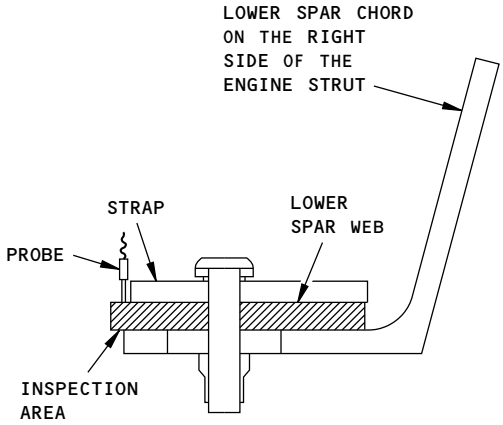
- THE RIGHT SIDE OF THE ENGINE STRUT IS SHOWN; THE LEFT SIDE OF THE ENGINE STRUT IS NOT EXAMINED BY THIS PROCEDURE

2404736 S0000556335_V1

Inspection Area
Figure 1 (Sheet 1 of 2)



LOWER SPAR CHORD INSPECTION
(VIEW AS YOU LOOK IN THE FORWARD DIRECTION)
A-A



LOWER SPAR WEB INSPECTION
(VIEW AS YOU LOOK IN THE FORWARD DIRECTION)
A-A

2404737 S0000556336_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

LOWER SPAR CHORDS BETWEEN THE FORWARD AND AFT ENGINE MOUNTS (HFEC)

1. Purpose

A. Use this procedure to examine the lower spar chords for surface cracks between the forward and aft engine mounts. See Figure 1 for the inspection areas.

(1) The left and right lower spar chords are examined around all of the fastener locations from NSTA 203.6 to NSTA 209.9, NSTA 212.3 to NSTA 222.0, NSTA 234.4 to NSTA 240.4, and NSTA 243.5 to NSTA 250.6.

(2) The lower spar chord on the left side of the engine strut is also examined around all of the fastener locations between NSTA 224.7 and NSTA 231.8.

B. The lower spar chords are 15-5PH steel.

C. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

(1) Item: 54-51-10

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate from 50 to 500 kHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use an unshielded probe that operates from 50 to 500 kHz.

(2) The probe that follows was used to help prepare this procedure.

(a) UMTF-40/ 50-500 kHz; Olympus NDT

D. Reference Standards

(1) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 24, paragraph 3, for data about reference standard NDT1062.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection area.

(1) For the left engine strut:

(a) Remove panels 433AT, 433BT, and 433CT on the top of the strut to get access to the inspection area.

(2) For the right engine strut:

(a) Remove panels 443AT, 443BT, and 443CT on the top of the strut to get access to the inspection area.

C. Clean the inspection area.

(1) Remove loose paint, dirt and sealant from the surface of the inspection area.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

(1) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument to examine the lower spar chords for cracks at the fastener locations. Use the fasteners as a probe guide.

5. Inspection Procedure

A. Examine the lower surface of the lower spar chords of the engine strut for surface cracks as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, and as shown in Figure 1. Use the fasteners as a probe guide. Do the inspection at the areas that follow:

(1) Do the inspection on the left and right lower spar chords at the fastener locations from NSTA 203.6 to NSTA 209.9, NSTA 212.3 to NSTA 222.0, NSTA 234.4 to NSTA 240.4, and NSTA 243.5 to NSTA 250.6.

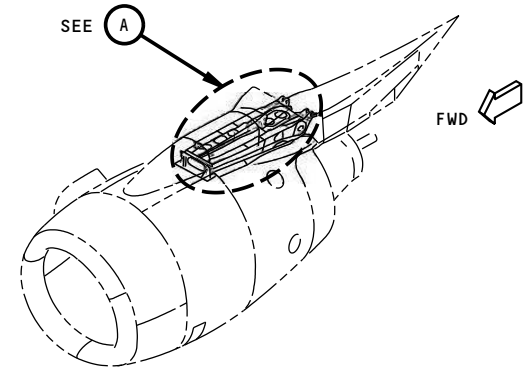
(2) Do the inspection on the lower spar chord on the left side (only) of the engine strut around all of the fasteners from NSTA 224.7 to NSTA 231.8.

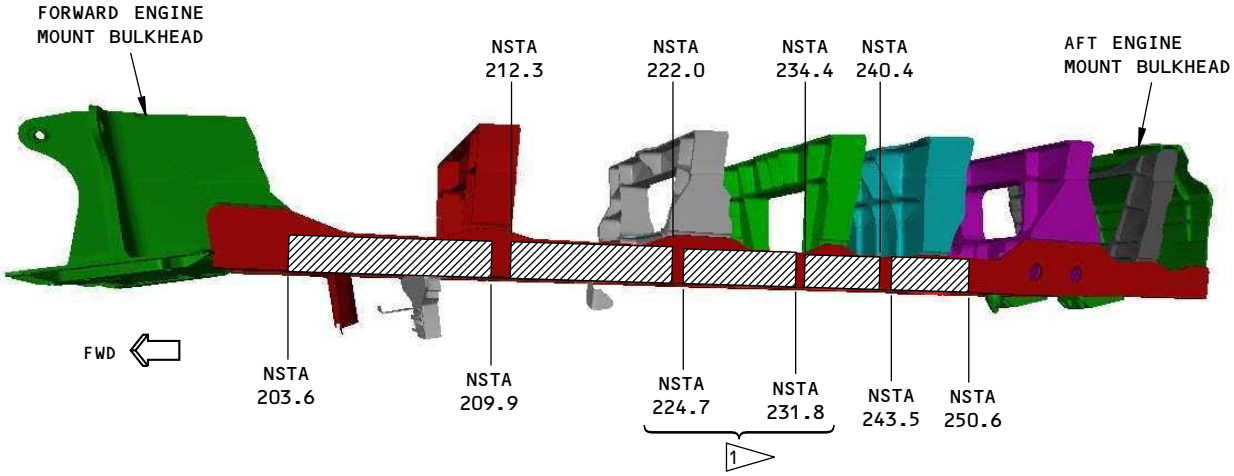
B. Examine the inner surface of the lower spar chords for cracks at the fastener locations specified in Paragraph 5.A. Do this inspection as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, and as shown in Figure 1. Use the fasteners as a probe guide.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the lower spar chords for cracks at the engine strut on the opposite side of the airplane.

6. Inspection Results

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





ENGINE STRUT

A

NOTES:

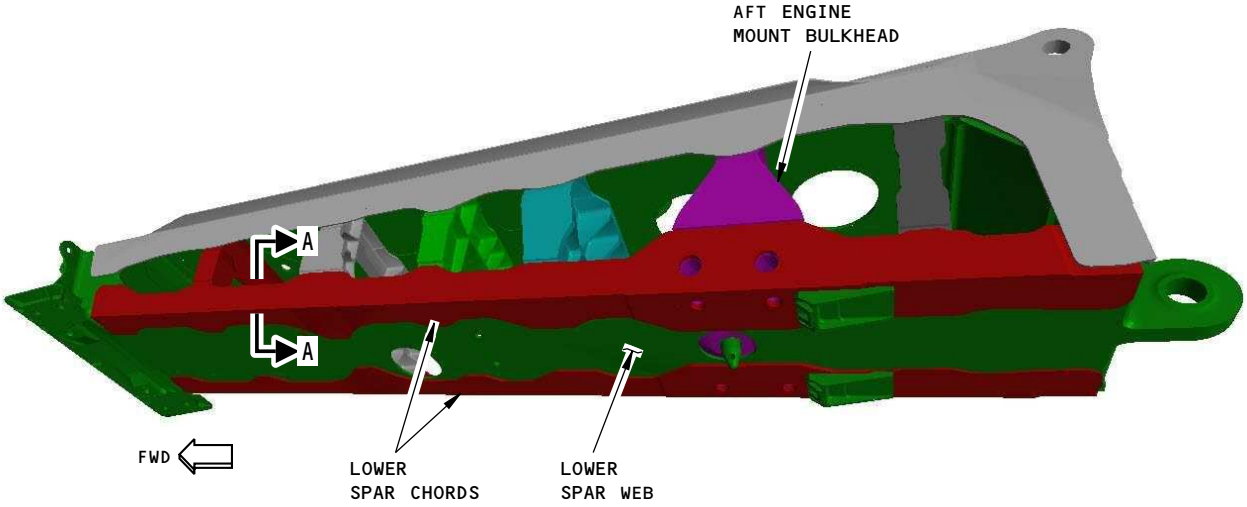
INSPECTION AREA. EXAMINE THIS AREA ON THE LEFT AND RIGHT LOWER CHORDS UNLESS SHOWN BY 1.

- THE LEFT SIDE OF THE STRUT IS SHOWN; THE RIGHT SIDE OF THE STRUT IS ALMOST THE SAME.

1 EXAMINE THE LOWER SPAR CHORD ONLY ON THE LEFT SIDE OF THE ENGINE STRUT FROM NSTA 224.7 TO NSTA 231.8.

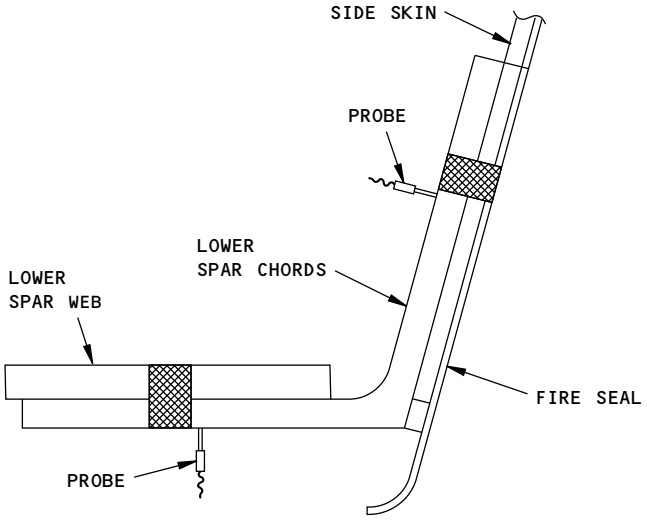
2404979 S0000556353_V1

Inspection Area
Figure 1 (Sheet 1 of 2)



ENGINE STRUT
(THE SIDE SKIN AND THE FIRE SEAL ARE NOT SHOWN)

A



(VIEW AS YOU LOOK AFT)
A–A

2405064 S0000556354_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

LOWER SPAR CHORDS AT THE FIRE SEAL AND THE DEPRESSOR BRACKETS (HFEC)

1. Purpose

A. Use this procedure to examine the lower spar chords for surface cracks at the fire seal and the depressor brackets of the engine strut. This inspection examines the left and right lower spar chords at the fasteners at NSTA 203.4 and NSTA 207.8. See Figure 1 for the inspection area.

B. The lower spar chords are 15-5PH steel.

C. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

(1) Item: 54-51-10

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate from 50 to 500 kHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use an unshielded probe that operates from 50 to 500 kHz.

(2) The probe that follows was used to help prepare this procedure.

(a) UMTF-40/ 50-500 kHz; Olympus NDT

D. Reference Standards

(1) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 24, paragraph 3, for data about reference standard NDT1062.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection area.

(1) For the left engine strut:

(a) Remove access panel 433AT from the top of the engine strut to get access to the inspection area.

(2) For the right engine strut:

(a) Remove access panel 443AT from the top of the engine strut to get access to the inspection area.

C. Clean the inspection area.

(1) Remove loose paint, dirt and sealant from the inspection area.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

(1) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument to examine the lower spar chords at the fastener locations.

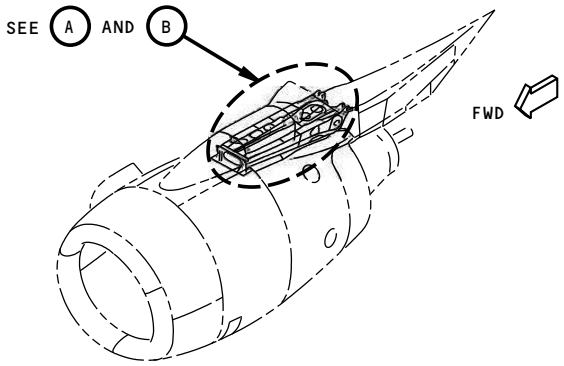
5. Inspection Procedure

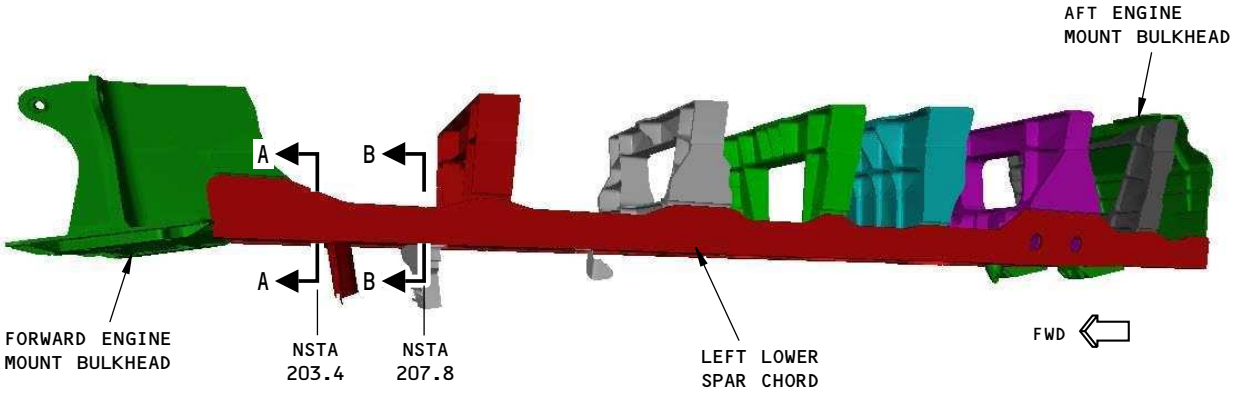
A. Examine the lower spar chords of the engine strut for cracks as specified in Part 6, 51-00-00, Procedure 24, paragraph 6, and as shown in Figure 1. Do this inspection from the inner surface of the left and right lower spar chords at NSTA 203.4 and NSTA 207.8. These locations are adjacent to the fire seal and the depressor brackets. There are two fasteners at each NSTA 203.4 location and one fastener at each NSTA 207.8 location. Use each fastener as a probe guide.

B. Do Paragraph 5.A. again to examine the left and right lower chords of the engine strut on the other side of the airplane.

6. Inspection Results

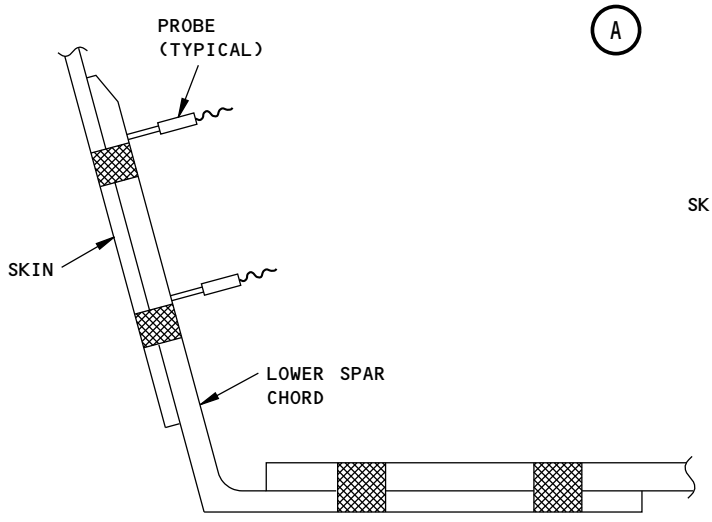
A. Refer to Part 6, 51-00-00, Procedure 24, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.



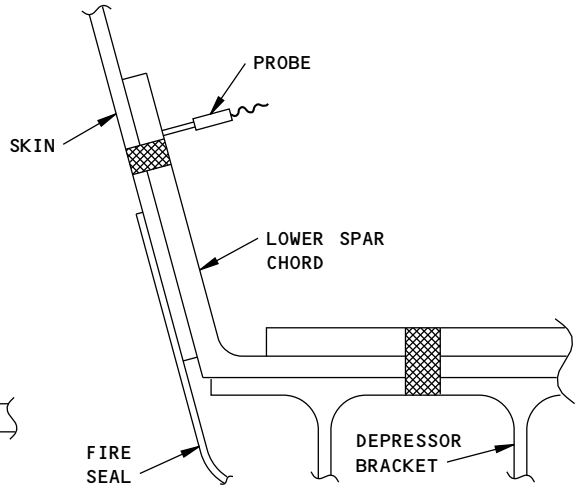


ENGINE STRUT

A



A–A



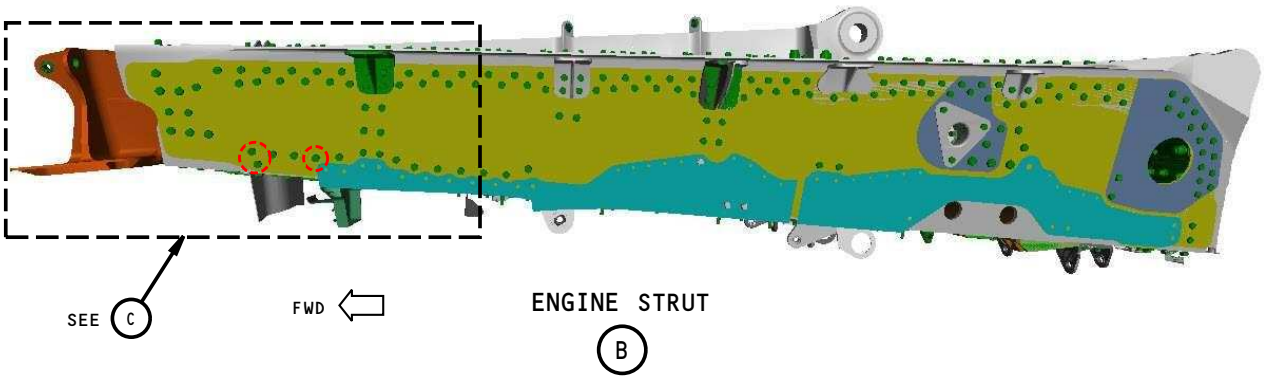
B–B

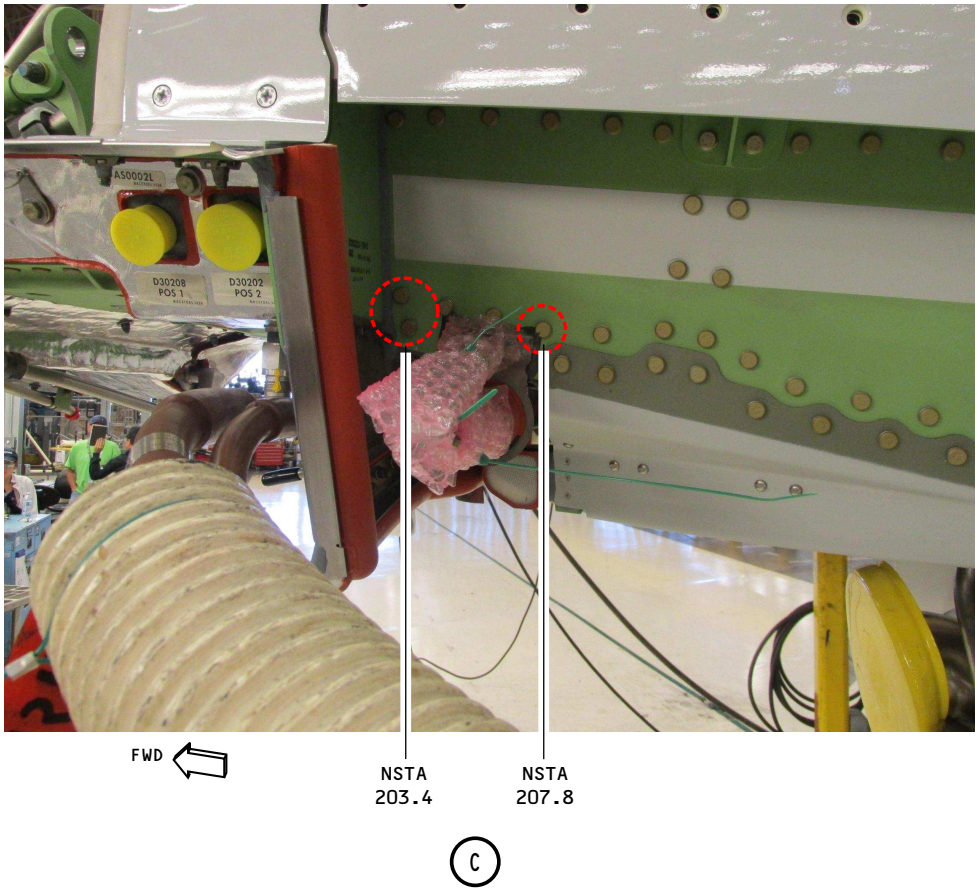
NOTES

- THE LEFT SIDE OF THE ENGINE STRUT IS SHOWN; THE RIGHT SIDE OF THE ENGINE STRUT IS ALMOST THE SAME.

2405234 S0000556357_V1

Inspection Area
Figure 1 (Sheet 1 of 2)





NOTES

FASTENER LOCATIONS TO BE EXAMINED.

2405260 S0000556358_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

ENGINE STRUT - SIDE SKINS AT THE NSTA 252 AND NSTA 270 CUTOUTS (HFEC)

1. Purpose

A. Use this procedure to examine the left and right side skin surfaces of the engine strut for surface cracks. The side skin surfaces are examined within 4.5 inches (114 mm) of the cutout edges at NSTA 252 and NSTA 270. See Figure 1 for the inspection areas.

B. The side skin is Ti-6Al-4V.

C. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-16

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate from 990 kHz to 2 MHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use a shielded probe that operates from 1 to 2 MHz.

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

(a) MTF-30-1-60/1-6MHz; Olympus NDT

(b) TPENU-3/2M, 1-3MHz; Techna NDT

D. Reference Standards

(1) Use reference standards 1002, 1004, or equivalents, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 14, paragraph 3, for data about the reference standards.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection area.

(1) Remove access panels 433AL and 433AR from the left engine strut.

(2) Remove access panels 443AL and 443AR from the right engine strut.

C. Clean the inspection area.

(1) Remove loose paint and dirt from the inspection surface.

(2) Remove sealant that is wider than 0.100 inch (2.54 mm) and within a 4.5 inch (114.3) radius of the cutouts shown in Figure 1.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.

(1) Use reference standard 1002, 1004, or equivalents, to help calibrate the instrument to examine the side skin of the engine strut for cracks.

5. Inspection Procedure

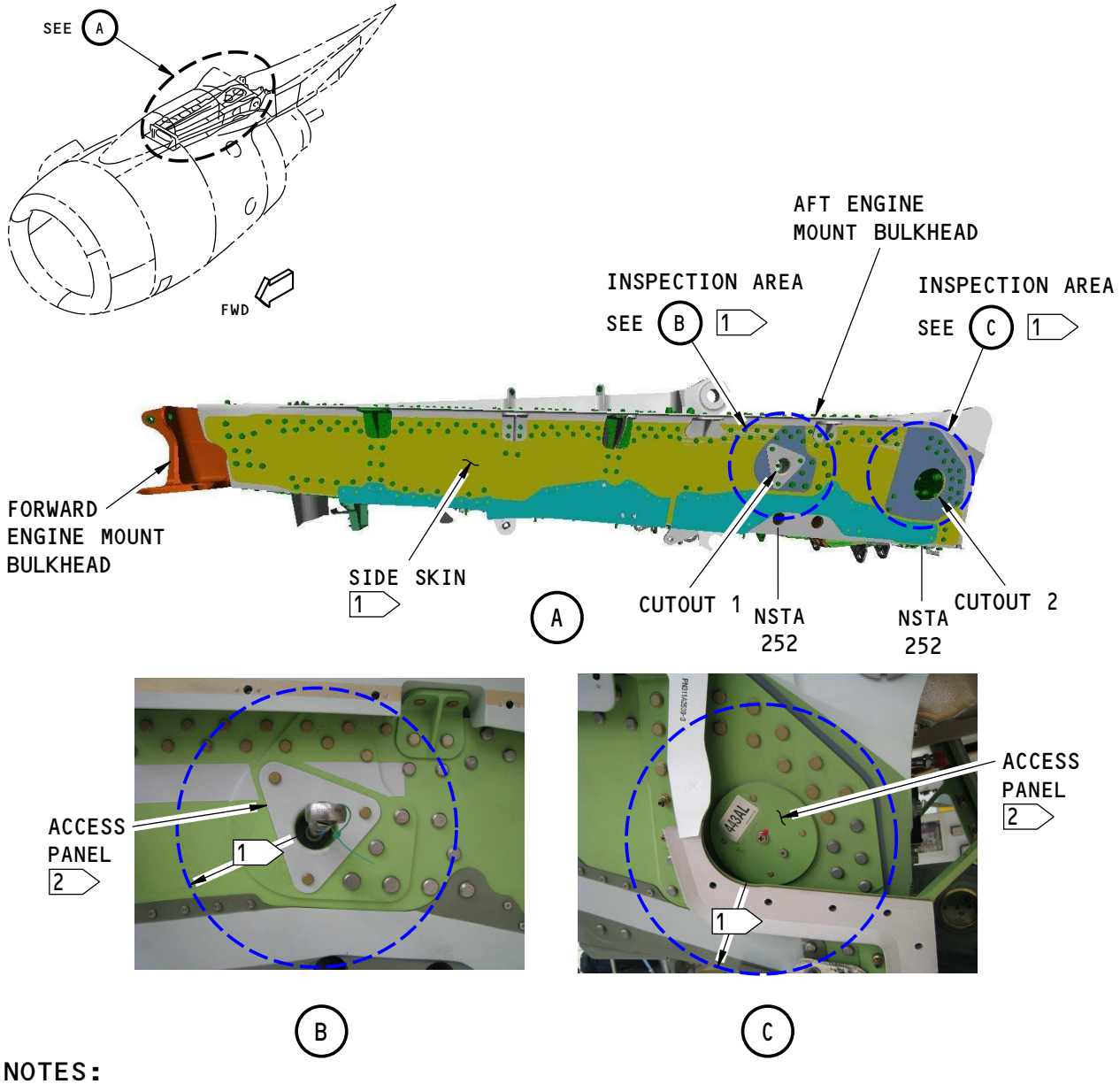
A. Examine the side skin of the engine strut for cracks within 4.5 inches (114 mm) of the cutouts at NSTA 252 and NSTA 270 as specified in Part 6, 51-00-00, Procedure 14, paragraph 6.

B. Do Paragraph 5.A. again to examine the side skin for cracks on the opposite side of the engine strut.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the engine strut for cracks on the opposite side of the airplane.

6. Inspection Results

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



NOTES:

- THE LEFT SIDE OF THE ENGINE STRUT IS SHOWN; THE RIGHT SIDE OF THE ENGINE STRUT IS ALMOST THE SAME.

1 EXAMINE THE SIDE SKINS FOR CRACKS WITHIN A 4.5 INCH (114 mm) RADIUS OF THE CUTOUTS ON THE LEFT AND RIGHT SIDES OF EACH ENGINE STRUT. REMOVE SEALANT THAT IS MORE THAN 0.100 INCH (2.54 mm) WIDE BEFORE YOU DO THE INSPECTION.

2 REMOVE THE ACCESS PANEL TO EXAMINE THE SIDE SKIN OF THE ENGINE STRUT FOR CRACKS.

2477101 S0000581236_V1

Inspection Area
Figure 1

PART 6 - EDDY CURRENT

MID STRUT BULKHEAD AT NACELLE STATION 241.5 - END PAD (HFEC)

1. Purpose

A. Use this procedure to examine the end pad of the mid strut bulkhead at NAC STA 241.5. The end pads are at the forward and aft sides of the mid strut bulkhead. The edges and area around the fasteners are examined for surface cracks. See Figure 1 for the inspection areas.

B. Use an impedance plane display instrument to do this procedure.

C. The mid strut bulkhead is titanium (Ti-6Al-4V).

D. 737 Maintenance Planning Document (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-14

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate between 990 kHz and 2 MHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use a probe that operates from 990 kHz to 2 MHz.

(2) The probe that follows was used to help prepare this procedure.

(a) ATPN-93-5B/2M; Aerofab NDT

D. Reference Standards

(1) Use reference standard 1002 or 1004, or their equivalents, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 14, paragraph 3, for data about these reference standards.

E. Special Tools

(1) Use a mirror, borescope or video probe to see the inspection areas. It will be difficult to see these inspection areas without these tools.

3. Prepare for the Inspection

A. Remove the fairing above the strut torque box. See Figure 1, flagnote 1.

B. Get access to the forward side of the mid strut bulkhead through the access hole on the upper panel that is forward of the frame fitting. See Figure 1, flagnotes 4 and 8.

(1) Clean the forward edge of the end pad of the mid strut bulkhead and the area around the two inspection fastener locations. See Figure 1, flagnotes 10 and 11.

C. Get access to the aft side of the mid strut bulkhead through the access door on the upper panel that is aft of the mid strut bulkhead. See Figure 1, flagnotes 3 and 5.

(1) Clean the aft edge of the end pad of the mid strut bulkhead and the area around the two inspection fastener locations. See Figure 1, flagnotes 10 and 11.

4. Instrument Calibration

A. Calibrate the instruments as specified in Part 6, 51-00-00, Procedure 14, paragraph 5.

(1) Use reference standard 1002 or 1004, or an equivalent, to help calibrate the instrument.

5. Instrument Procedure

A. Calibrate the instrument as specified in Paragraph 4.

B. Examine the edge of the end pad on the forward side of the mid strut bulkhead for cracks. Do the probe scan in the inboard to outboard directions. See Figure 1 for access to the inspection area.

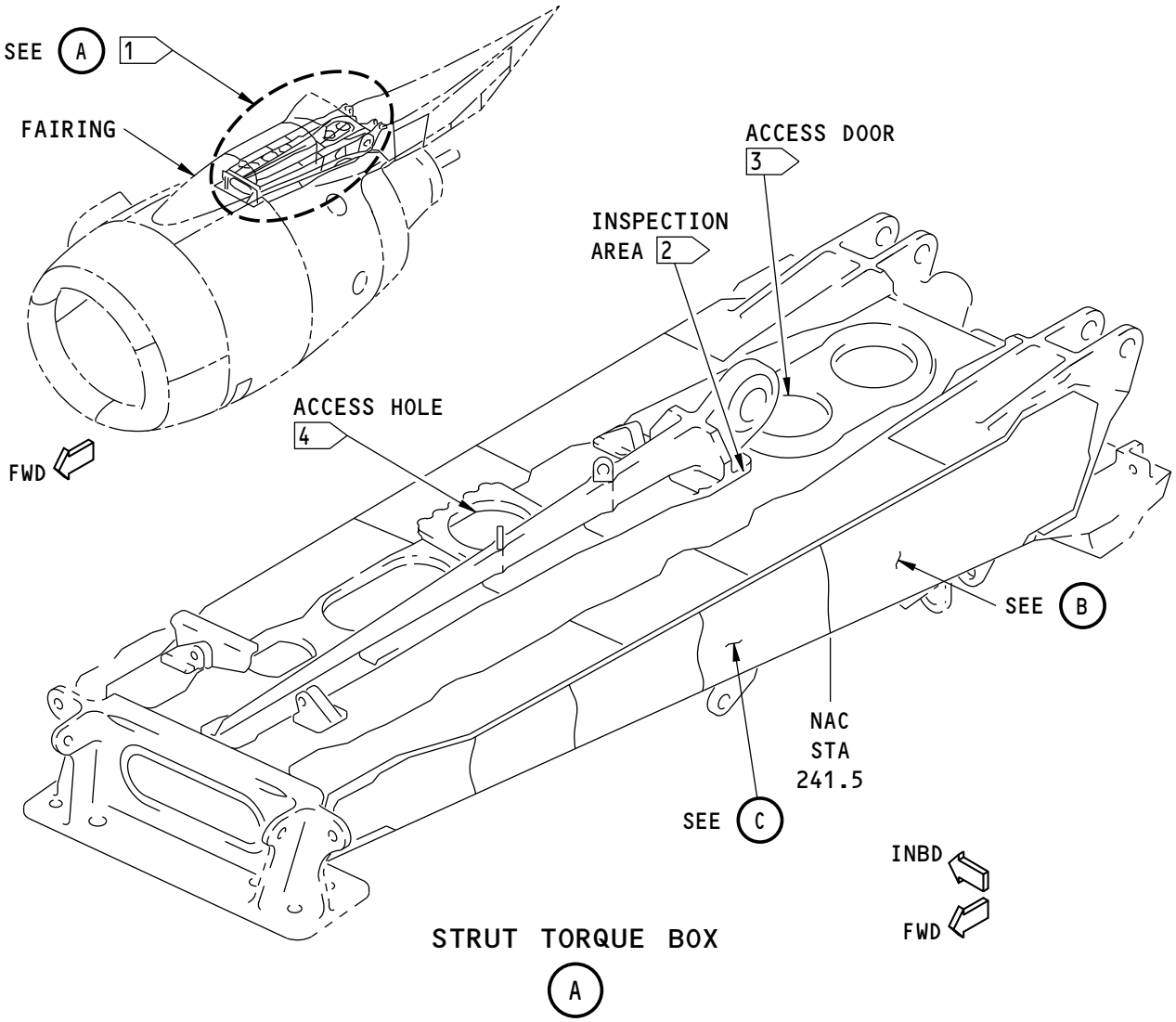
C. Do a 360 degree probe scan around the two fasteners on the forward side of the end pad of the mid strut bulkhead. See Figure 1 for access to the inspection area.

D. Examine the edge of the end pad on the aft side of the mid strut bulkhead for cracks. Do the probe scan in the inboard to outboard directions. See Figure 1 for access to the inspection area.

E. Do a 360 degree probe scan around the two fasteners on the aft side of the end pad of the mid strut bulkhead. See Figure 1 for access to the inspection area.

6. Inspection Results

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

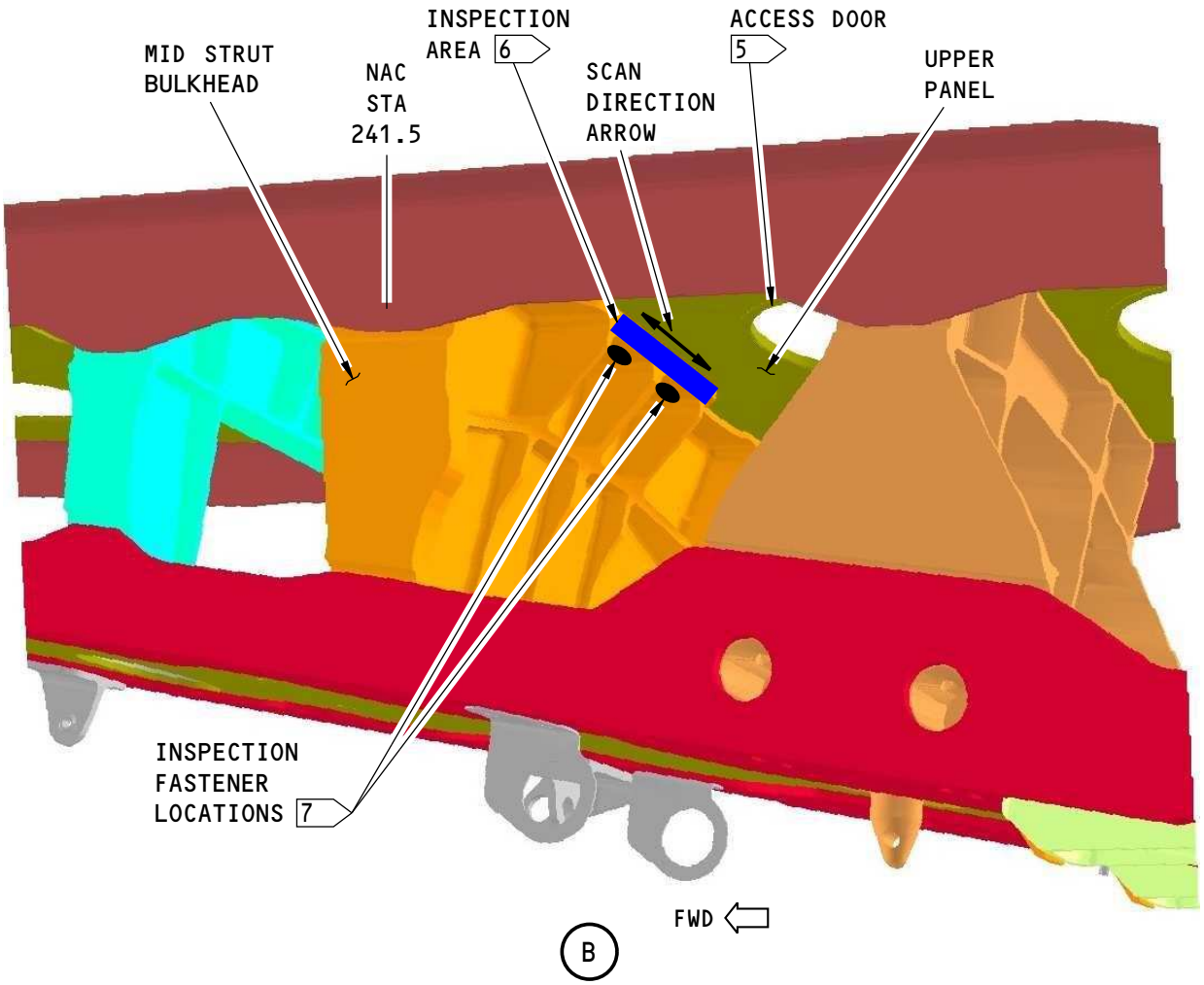


NOTES:

1. REMOVE THE FAIRING ABOVE THE STRUT TO GET ACCESS TO THE STRUT TORQUE BOX
2. THIS IS THE APPROXIMATE LOCATION OF THE INSPECTION AREA AT NAC STA 241.5 ON THE MID STRUT BULKHEAD. THE MID STRUT BULKHEAD IS NOT SHOWN IN THIS VIEW. SEE VIEWS "B" AND "C" FOR THE INSPECTION AREAS ON THE FORWARD AND AFT SIDES OF THE MID STRUT BULKHEAD
3. ACCESS DOOR TO GET ACCESS TO THE INSPECTION AREA ON THE AFT SIDE OF THE MID STRUT BULKHEAD. SEE VIEW "B" FOR A VIEW OF THIS INSPECTION AREA
4. ACCESS HOLE TO GET ACCESS TO THE INSPECTION AREA ON THE FORWARD SIDE OF THE MID STRUT BULKHEAD. SEE VIEW "C" FOR THIS INSPECTION AREA

2486993 S0000585083_V1

Inspection Area
Figure 1 (Sheet 1 of 3)



NOTES:

- THIS VIEW IS WITH THE SIDE PANEL REMOVED FROM THE STRUT TORQUE BOX
- THIS IS A VIEW OF A SECTION OF THE ENGINE STRUT TORQUE BOX AS YOU LOOK UP AND FORWARD. THE INSPECTION AREA ON THE AFT SIDE OF THE MID STRUT BULKHEAD IS SHOWN. SEE VIEW "C" FOR THE INSPECTION AREA AND ACCESS ON THE FORWARD SIDE OF THE MID STRUT BULKHEAD

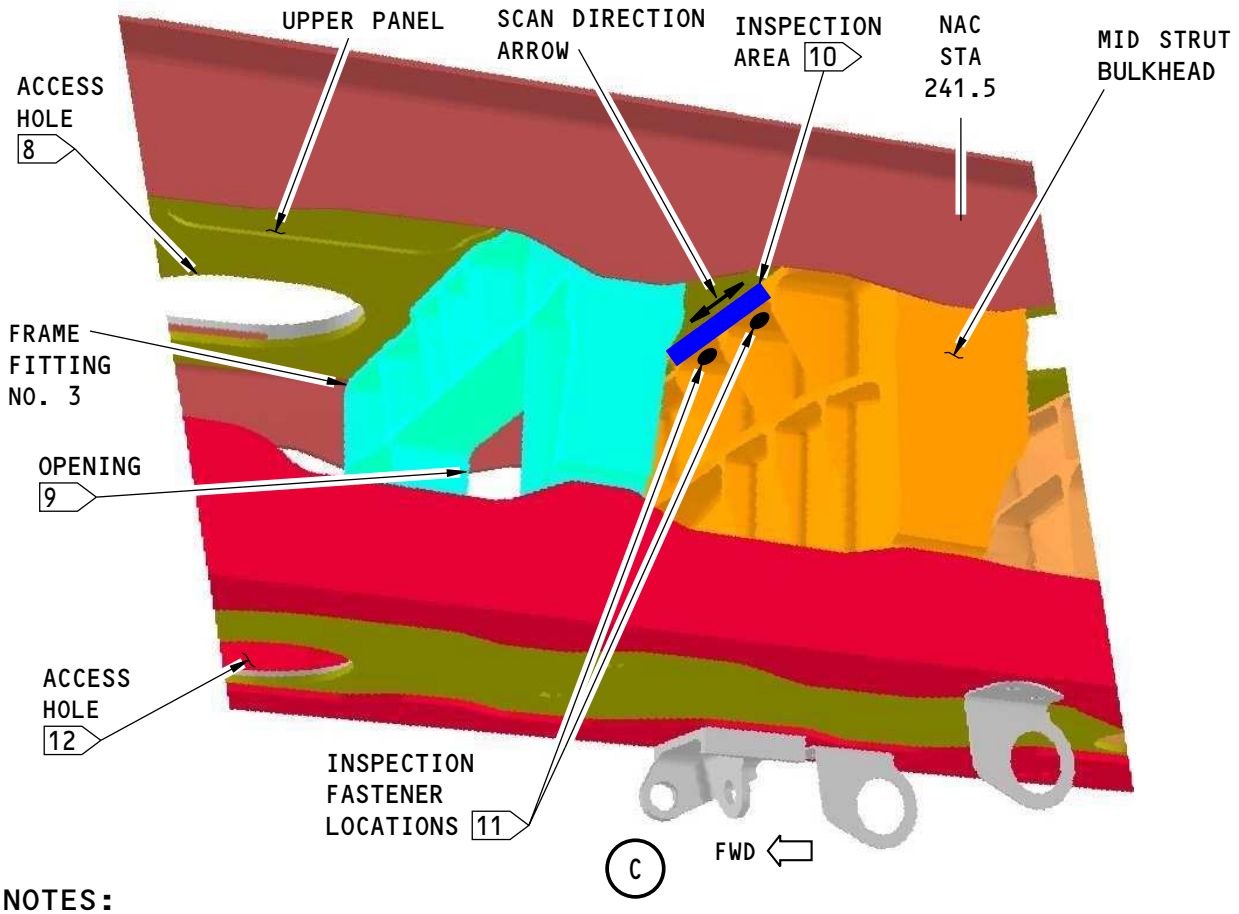
5 ACCESS DOOR (ON THE UPPER PANEL) FOR THE INSPECTION AREA ON THE AFT SIDE OF THE MID STRUT BULKHEAD AT NAC STA 241.5

6 DO A PROBE SCAN IN THE INBOARD TO OUTBOARD DIRECTIONS ON THIS AFT EDGE OF THE END PAD OF THE MID STRUT BULKHEAD AS SHOWN BY THE SCAN DIRECTION ARROW

7 DO A 360 DEGREE PROBE SCAN AROUND THESE TWO FASTENERS ON THE AFT SIDE OF THE END PAD OF THE MID STRUT BULKHEAD

2486994 S0000585084_V1

Inspection Area
Figure 1 (Sheet 2 of 3)



NOTES:

- THIS VIEW IS WITH THE SIDE PANEL REMOVED FROM THE STRUT TORQUE BOX
- THIS IS A VIEW OF A SECTION OF THE ENGINE STRUT TORQUE BOX AS YOU LOOK UP AND AFT. THE INSPECTION AREA ON THE FORWARD SIDE OF THE MID STRUT BULKHEAD IS SHOWN. SEE VIEW "B" FOR THE INSPECTION AREA AND ACCESS ON THE AFT SIDE OF THE MID STRUT BULKHEAD

8 ACCESS HOLE (ON THE UPPER PANEL) FOR THE INSPECTION AREA ON THE FORWARD SIDE OF THE MID STRUT BULKHEAD AT NAC STA 241.5

9 GET ACCESS TO THE INSPECTION AREA ON THE FORWARD SIDE OF THE END PAD OF THE MID STRUT BULKHEAD THROUGH THE OPENING IN FRAME FITTING NO. 3

10 DO A PROBE SCAN IN THE INBOARD TO OUTBOARD DIRECTIONS ON THIS FORWARD EDGE OF THE END PAD OF THE MID STRUT BULKHEAD AS SHOWN BY THE SCAN DIRECTION ARROW

11 DO A 360 DEGREE PROBE SCAN AROUND THESE TWO FASTENERS ON THE FORWARD SIDE OF THE END PAD OF THE MID STRUT BULKHEAD

12 ALTERNATIVE ACCESS HOLE ON THE LOWER PANEL

2486995 S0000585085_V1

Inspection Area
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

UPPER CHORD ON THE RIGHT SIDE OF THE NACELLE STRUT BETWEEN THE FORWARD AND AFT ENGINE MOUNTS (HFEC)

1. Purpose

A. Use this procedure to examine the upper chord on the right side of the nacelle strut for surface cracks. The upper chord is examined at the edges, radii and at the fastener locations near the cutouts between the forward and aft engine mounts. The inspection areas are from NSTA 200.9 to 211.5, 213.6 to 225.2, and 226.1 to 233.6. See Figure 1 for the inspection areas.

B. The upper chord is 15-5PH steel.

C. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

(1) Item: 54-51-17

2. Equipment

A. General

(1) Use an eddy current instrument that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

(1) Use an eddy current instrument that has an impedance plane display and can operate at a frequency range of 50 to 500 kHz.

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

(a) Nortec 500D; Olympus NDT

(b) Phasec 3D; GE Inspection Technology

C. Probes

(1) Use an unshielded probe that operates at a frequency in the range of 50 to 500 kHz.

(2) The probe that follows was used to help prepare this procedure.

(a) UMTF-40/ 50-500 kHz; Olympus NDT

D. Reference Standards

(1) Use reference standards 185 and NDT1062, or their equivalents, to help calibrate the instrument. Refer to Part 6, 51-00-00, Procedure 24, paragraph 3, for data about these reference standards.

E. Special Tools

(1) Use a nonconductive straightedge to help as a probe guide during the inspection of the upper chord.

3. Prepare for the Inspection

A. Identify the inspection areas shown in Figure 1.

B. Get access to the inspection area.

(1) For the left engine strut, remove access panels 433AT and 433BT from the top of the nacelle strut to get access to the inspection area.

(2) For the right engine strut, remove access panels 443AT and 443BT from the top of the nacelle strut to get access to the inspection area.

C. Clean the inspection area.

(1) Remove loose paint, dirt and sealant from the surface of the inspection area.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

(1) Use reference standard 185, or an equivalent, to help calibrate the instrument to examine the edges and radii of the upper chord.

(2) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument to examine the fastener locations of the upper chord.

5. Inspection Procedure

A. Examine the upper chord on the right side of the nacelle strut for surface cracks at the edges and radii between the forward and the aft engine mounts from NSTA 200.9 to 211.5, 213.6 to 225.2, and 226.1 to 233.6 as specified in Part 6, 51-00-00, Procedure 24, paragraph 6. See Figure 1 for the inspection areas.

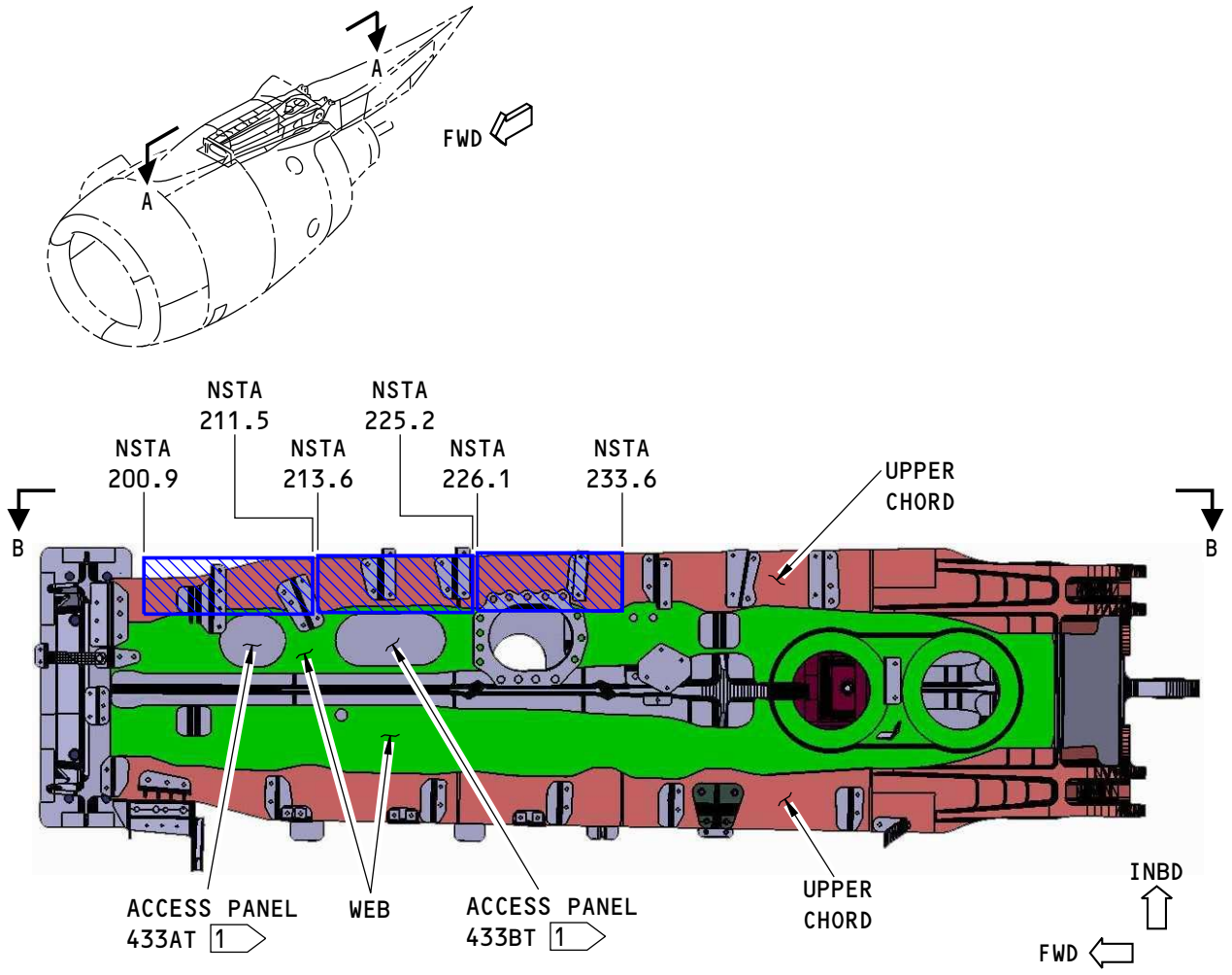
(1) Use a nonconductive straightedge as a probe guide.

B. Examine the upper chord on the right side of the nacelle strut for surface cracks at the fastener locations between the forward and the aft engine mounts from NSTA 200.9 to 211.5, 213.6 to 225.2, and 226.1 to 233.6 as specified in Part 6, 51-00-00, Procedure 24, paragraph 6. See Figure 1 for the inspection areas.

C. Do Paragraph 5.A. and Paragraph 5.B. again to examine the upper chord on the right side of the nacelle strut for cracks on the opposite wing.

6. Inspection Results

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



THE NACELLE STRUT ON THE LEFT SIDE OF THE AIRPLANE IS SHOWN; THE NACELLE STRUT ON THE RIGHT SIDE OF THE AIRPLANE IS THE SAME
A–A

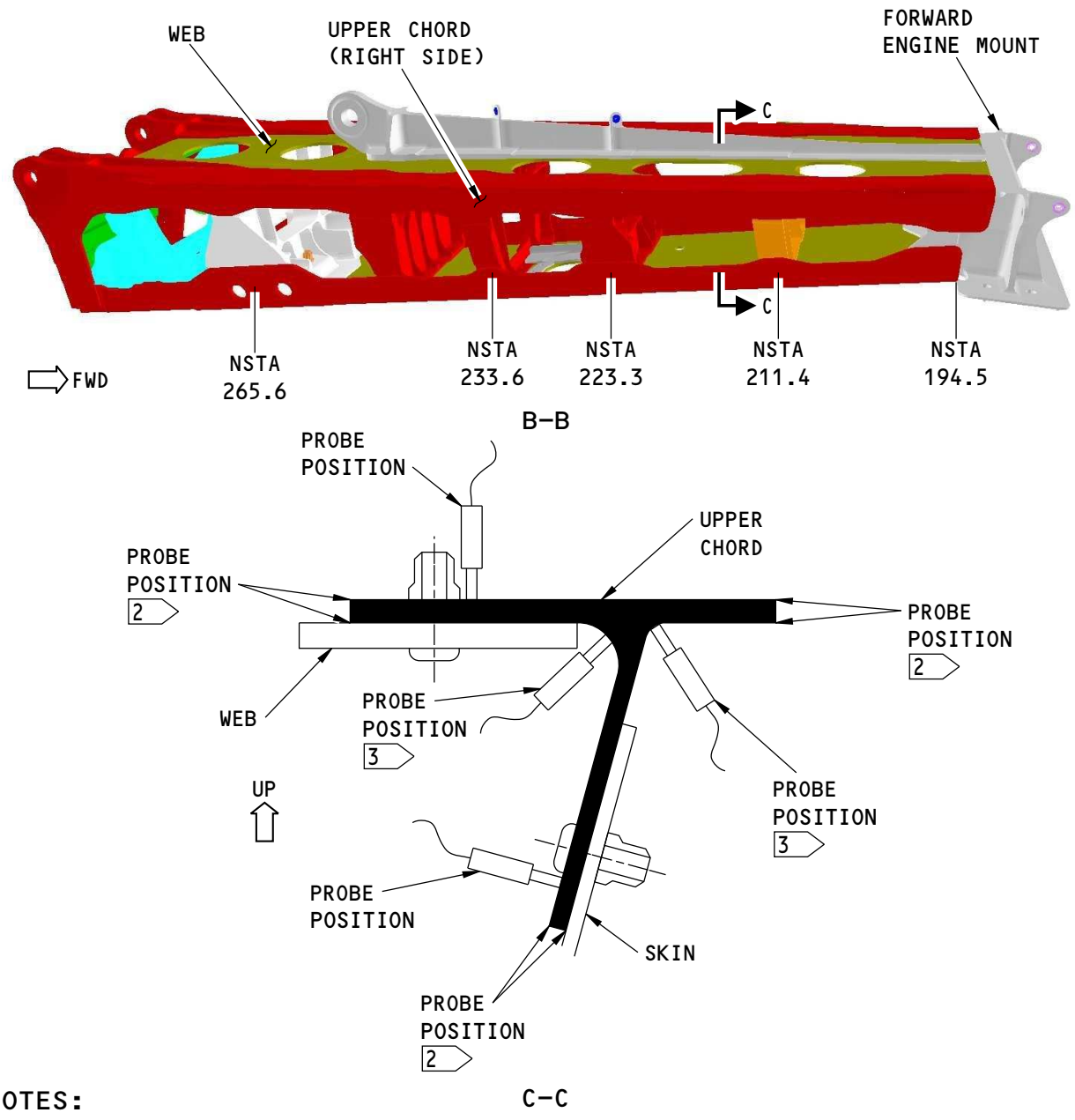
NOTES:

INSPECTION AREA

1 FOR THE LEFT ENGINE STRUT, REMOVE ACCESS PANELS 433AT AND 433BT TO GET ACCESS TO THE INSPECTION AREA. FOR THE RIGHT ENGINE STRUT, REMOVE ACCESS PANELS 443AT AND 443BT TO GET ACCESS TO THE INSPECTION AREA.

2505982 S0000589952_V1

Inspection Area
Figure 1 (Sheet 1 of 2)



NOTES:

- THE SCAN INCREMENTS MUST BE HALF OF THE PROBE DIAMETER OR LESS.

2 EXAMINE ALONG THE EDGES

3 HOLD THE PROBE PERPENDICULAR TO THE RADIUS OF THE SURFACE

2505983 S0000589953_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

HORIZONTAL AND VERTICAL LEGS OF THE LOWER CHORDS OF THE NACELLE STRUT (HFEC)

1. Purpose

A. Use this high frequency eddy current (HFEC) procedure to examine the horizontal and vertical legs of the lower chord of the nacelle strut for cracks. See Figure 1 for the inspection area.

B. This procedure uses an impedance plane display instrument.

C. The lower chords are 15–5PH CRES.

D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-10

2. Equipment

A. General

(1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

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

(a) 500D; Olympus NDT

(b) Phasec 2D/3D; GE Inspection Technologies

(c) 2000D; Olympus NDT (Nortec)

(d) Nortec 600; Olympus NDT

C. Probes

(1) The probe that follows was used to help prepare this procedure.

(a) TPEN95-6B; Techna NDT

D. Reference Standard

(1) Use reference standard NDT1062, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 24, for data about reference standard NDT1062.

3. Prepare for the Inspection

A. Identify and get access to the inspection areas shown in Figure 1 for the lower chords of the nacelle strut.

(1) The lower chord inspection areas are at NSTA 244.9.

B. Clean the inspection area.

(1) Remove paint only if it is loose.

(2) Remove sealant to do this inspection, if necessary. Replace the sealant after the inspection is done.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

5. Inspection Procedure

A. Examine the horizontal and vertical legs of the lower chords of the nacelle strut for cracks at NSTA 244.9 as shown in Figure 1 and as specified in Part 6, 51-00-00, Procedure 24, paragraph 6.

(1) Make a complete scan around each fastener location on the vertical leg of the lower chord as shown in Figure 1.

(2) Make a complete scan around the compression pad bracket as shown in Figure 1. Use the compression pad bracket as a probe guide.

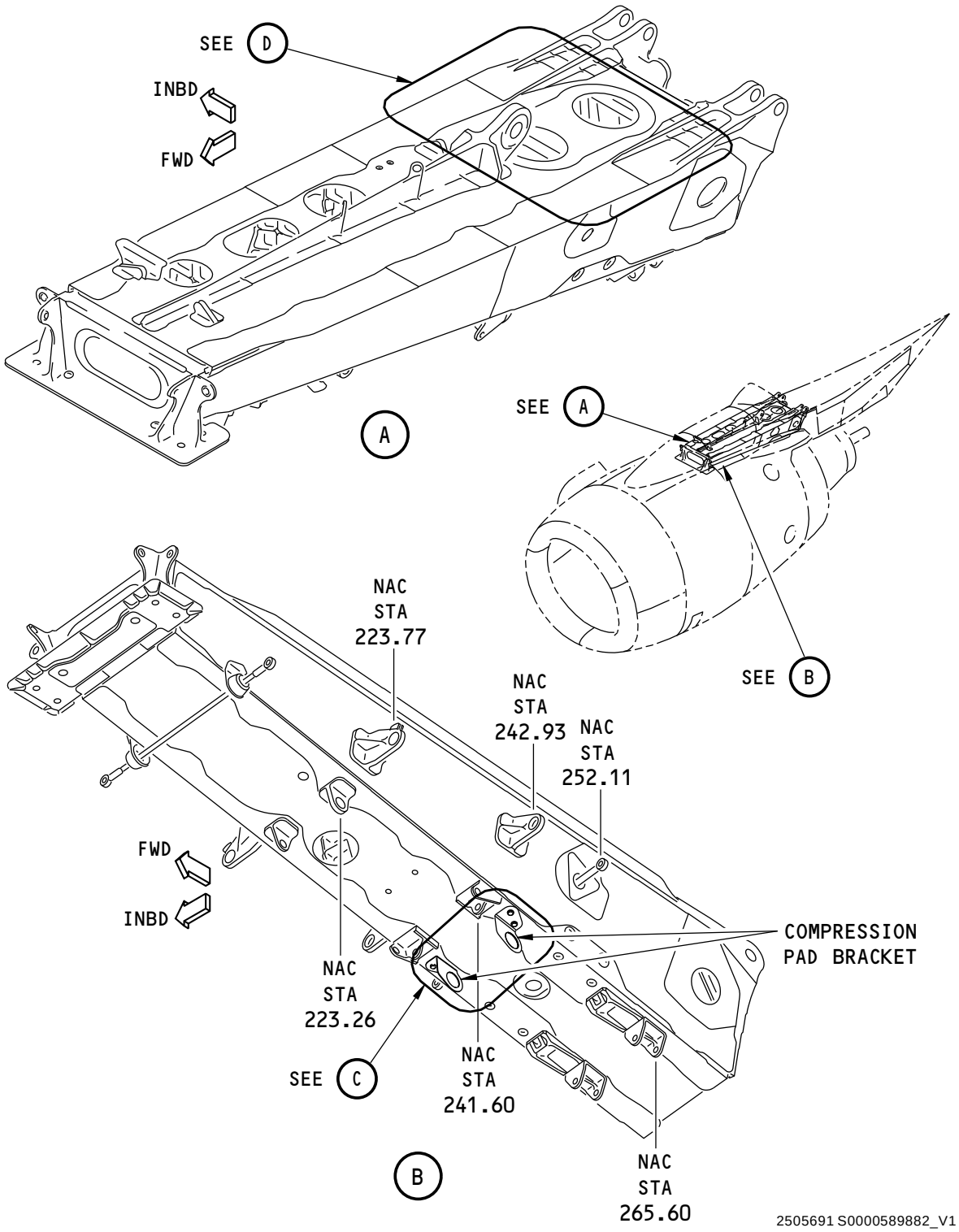
B. Do paragraph 5.A. again to examine the lower chords of the nacelle strut on the opposite wing for cracks.

6. Inspection Results

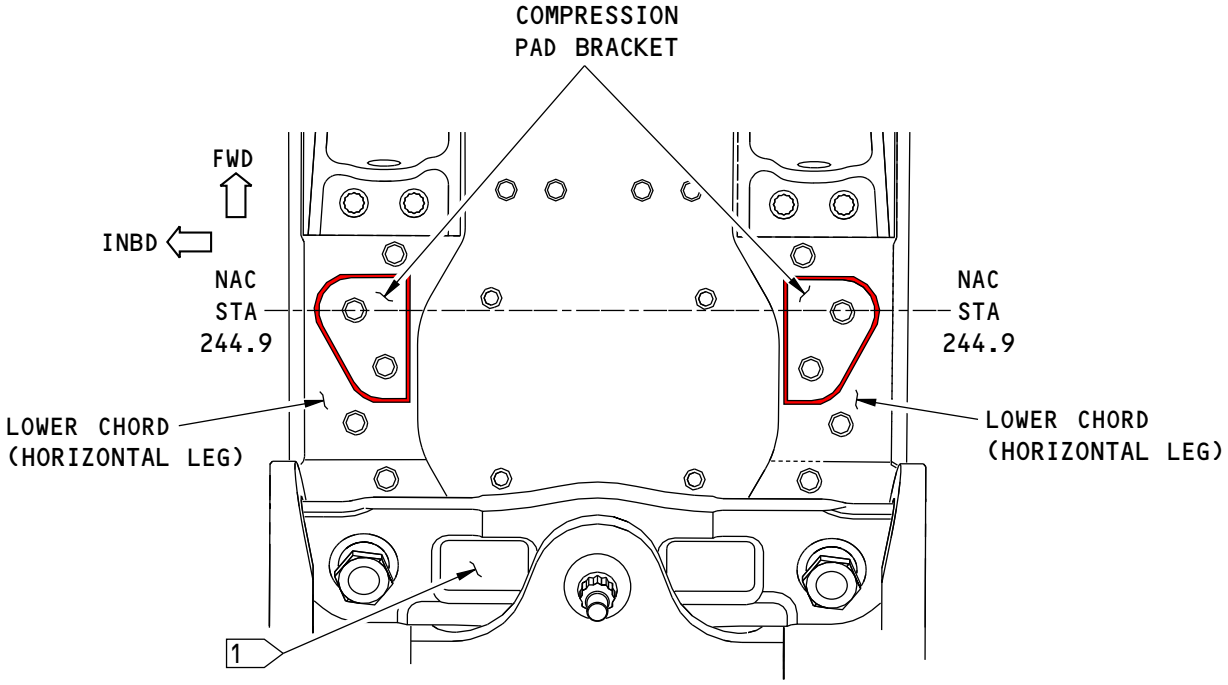
A. A crack signal from the surface inspection will look almost the same as the notch signal from the reference standard.

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

B. To make sure a crack signal is from a crack, remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 19.



Inspection Area
Figure 1 (Sheet 1 of 3)



VIEW AS YOU LOOK UP AT THE NACELLE STRUT
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

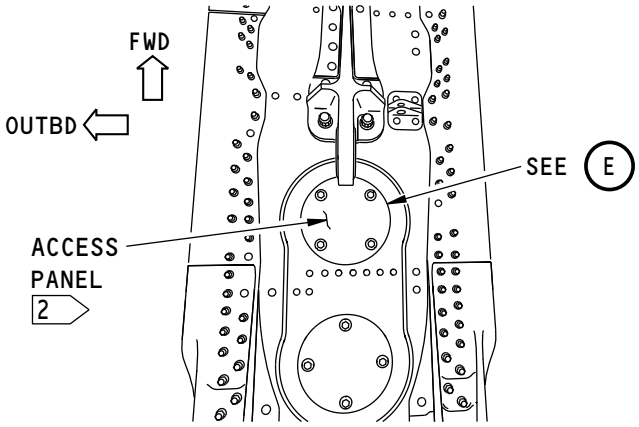
C

INSPECTION AREA. MAKE A SCAN TO EXAMINE THE HORIZONTAL LEG OF THE LOWER CHORD FOR CRACKS AROUND THE COMPRESSION PAD BRACKET. USE THE BRACKET AS A PROBE GUIDE

1 SOME ASSEMBLIES ARE NOT SHOWN TO GET A CLEAR VIEW OF THE INSPECTION AREA

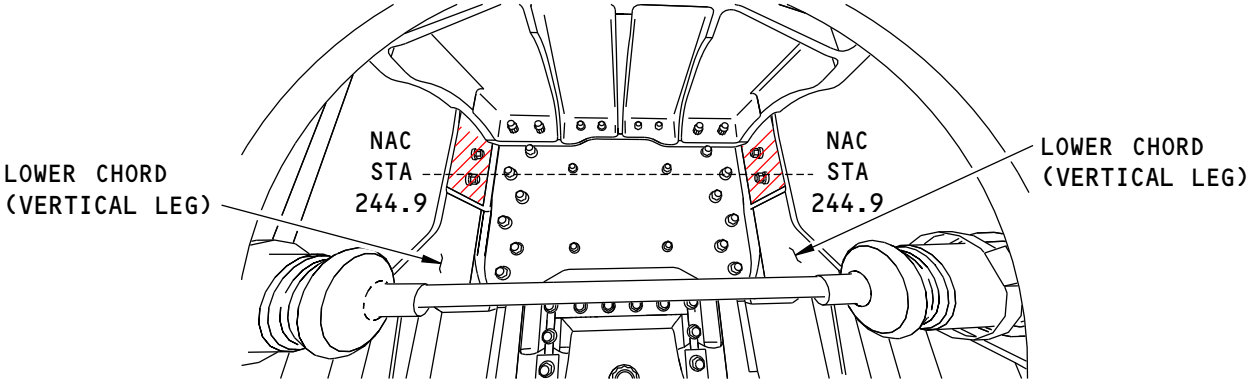
2505702 S0000589884_V1

Inspection Area
Figure 1 (Sheet 2 of 3)



VIEW AS YOU LOOK DOWN
ON THE NACELLE STRUT

D



VIEW AS YOU LOOK INTO THE NACELLE STRUT
WHEN THE ACCESS PANEL IS REMOVED
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

E

2 REMOVE THE ACCESS PANEL TO GET ACCESS INTO THE NACELLE STRUT

INSPECTION AREA. MAKE A SCAN TO EXAMINE THE VERTICAL LEG OF THE LOWER CHORD FOR CRACKS AROUND EACH FASTENER IN THE INSPECTION AREA.

2505740 S0000589885_V1

Inspection Area
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

HORIZONTAL LEG OF THE LOWER CHORD ON THE RIGHT SIDE OF THE NACELLE STRUT (HFEC)

1. Purpose

A. Use this high frequency eddy current (HFEC) procedure to examine the horizontal leg of the lower chord on the right side of the nacelle strut for cracks. See Figure 1 for the inspection area.

B. This procedure uses an impedance plane display instrument.

C. The lower chord is steel.

D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-10

2. Equipment

A. General

(1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

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

(a) 500D; Olympus NDT

(b) Phasec 2D and 3D; GE Inspection Technologies

(c) 2000D; Olympus NDT (Nortec)

(d) Nortec 600; Olympus NDT

C. Probes

(1) The probe that follows was used to help prepare this procedure.

(a) TPEN95-6B; Techna NDT

D. Reference Standard

(1) Use reference standard NDT1074, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 24, for data about reference standard NDT1074.

3. Prepare for the Inspection

A. Identify and get access to the lower chords on the right side of the nacelle strut.

(1) The inspection area of the lower chord is from NSTA 224.7 to 231.8 as shown in Figure 1.

B. Remove the insulation to do this inspection, if necessary.

C. Clean the inspection area.

(1) Remove paint only if it is loose.

(2) Remove sealant to do this inspection, if necessary. Replace the sealant after the inspection is done.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

5. Inspection Procedure

A. Examine the horizontal leg of the lower chord on the right side of the nacelle strut for cracks at the seven fasteners from NSTA 224.9 to 231.8 and as specified in Part 6, 51-00-00, Procedure 24, paragraph 6. See Figure 1 for the inspection area.

(1) Make a complete scan around each fastener shown in Figure 1.

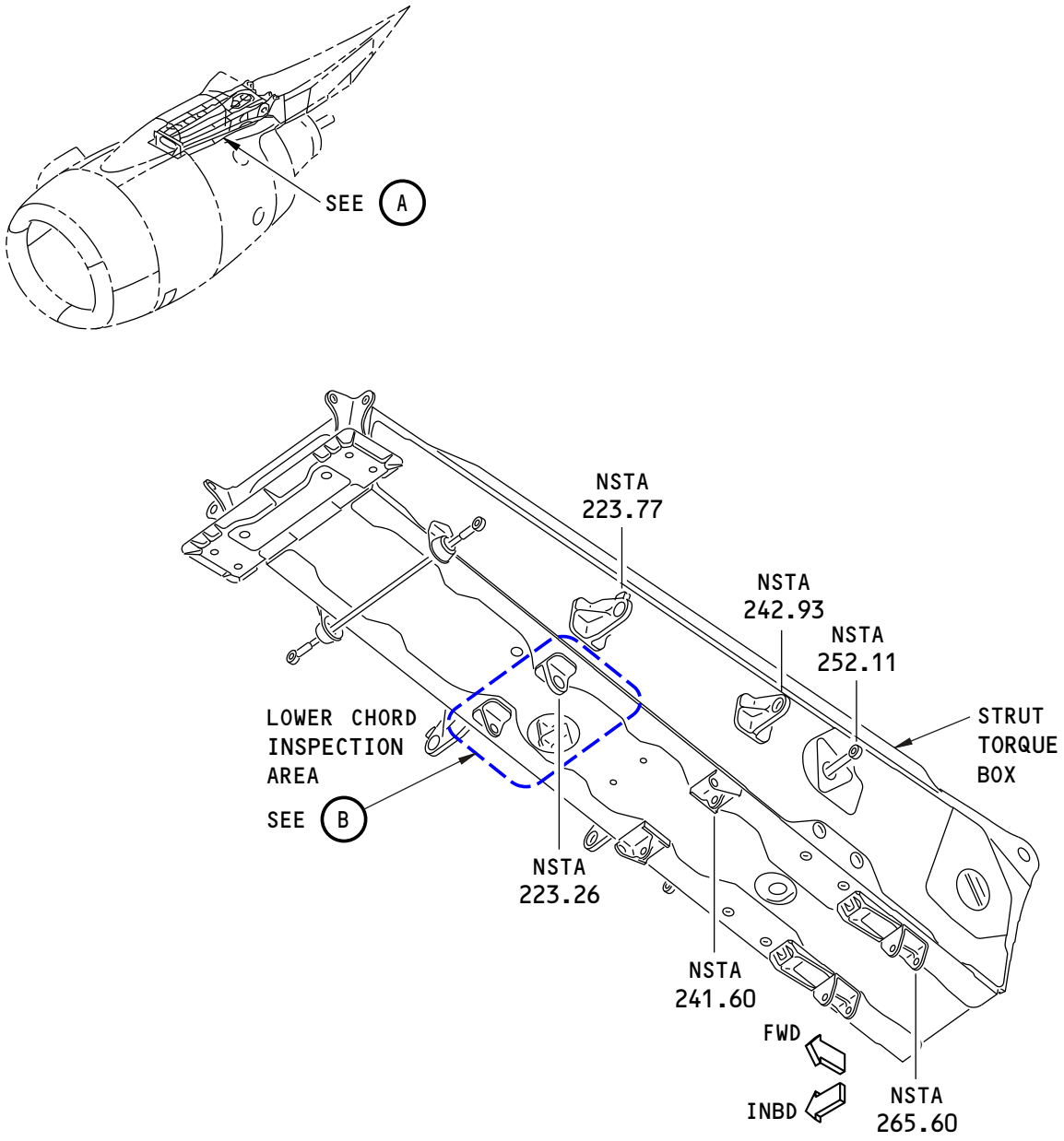
B. Do Paragraph 5.A. again to examine the lower chord on the right side of the nacelle strut for cracks on the opposite wing.

6. Inspection Results

A. A crack signal from the surface inspection will look almost the same as the notch signal from the reference standard.

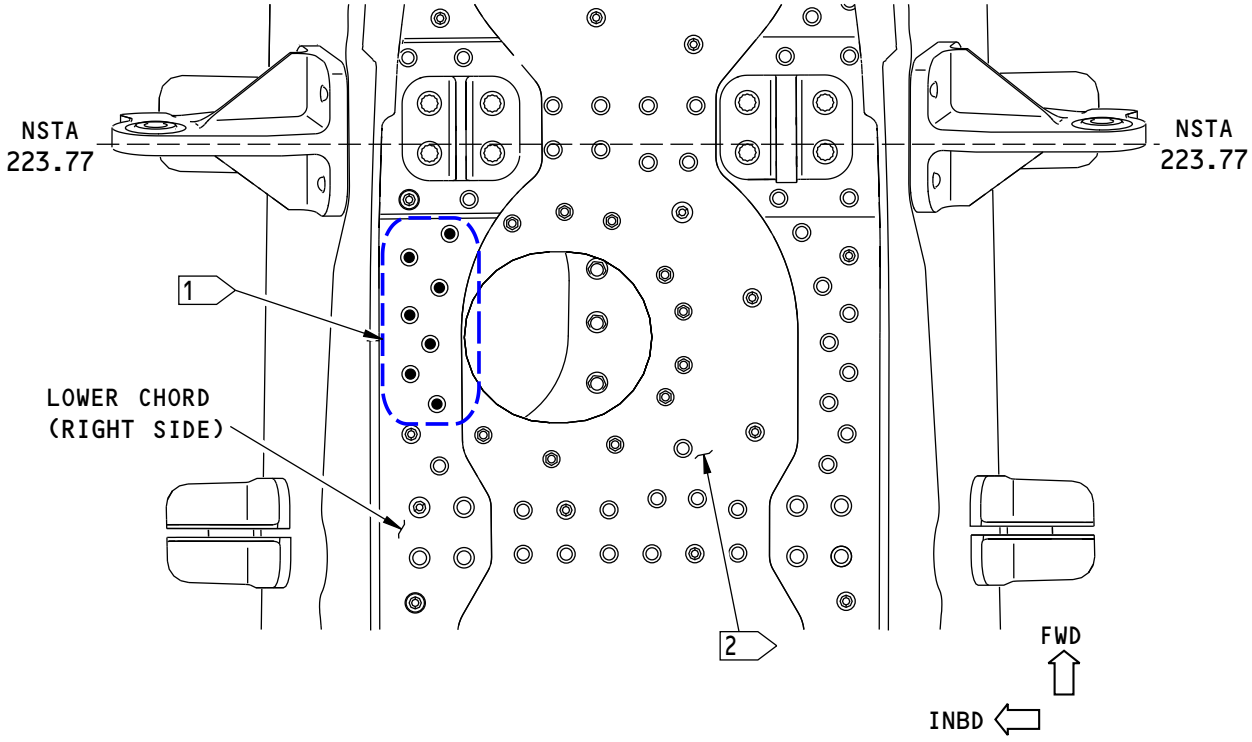
(1) Refer to Part 6, 51-00-00, Procedure 24, paragraph 7, for instructions to help make an analysis of the indications that occur during the inspection.

B. To make sure a crack signal is from a crack, remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 19.



2505988 S0000589330_V1

Inspection Area
Figure 1 (Sheet 1 of 2)



VIEW AS YOU LOOK UP
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

B

1 INSPECTION AREA. THERE ARE 7 FASTENER LOCATIONS TO BE EXAMINED IN THE LOWER CHORD ON THE RIGHT SIDE OF THE NACELLE STRUT. MAKE A SCAN AROUND EACH FASTENER LOCATION.

2 INSULATION AND PRECOOLER ASSEMBLIES ARE NOT SHOWN FOR A BETTER VIEW OF THE INSPECTION AREA.

2505989 S0000589332_V1

Inspection Area
Figure 1 (Sheet 2 of 2)

PART 6 - EDDY CURRENT

HORIZONTAL LEG OF THE LOWER CHORDS OF THE NACELLE STRUT AT NSTA 211 AND NSTA 233 (HFEC)

1. Purpose

A. Use this high frequency eddy current (HFEC) procedure to examine the horizontal leg of the lower chords of the nacelle strut for cracks. See Figure 1 for the inspection area.

B. This procedure uses an impedance plane display instrument.

C. The lower chords are steel.

D. 737 Maintenance Planning Data (MPD) Damage Tolerance Rating (DTR) Check Form Reference:

(1) Item: 54-51-10

2. Equipment

A. General

(1) Use inspection equipment that can be calibrated on the reference standard as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

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

B. Instrument

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

(a) 500D; Olympus NDT

(b) Phasec 2D and 3D; GE Inspection Technologies

(c) 2000D; Olympus NDT (Nortec)

(d) Nortec 600; Olympus NDT

C. Probes

(1) The probe that follows was used to help prepare this procedure.

(a) TPEN95-6B; Techna NDT

D. Reference Standard

(1) Use reference standard NDT1074, or an equivalent, to help calibrate the instrument. See Part 6, 51-00-00, Procedure 24, for data about reference standard NDT1074.

3. Prepare for the Inspection

A. Identify and get access to the inspection areas shown in Figure 1 for the lower chords of the nacelle strut.

(1) The lower chord inspection areas are from NSTA 209.0 to 212.3 and NSTA 231.8 to 234.4.

B. Clean the inspection area.

(1) Remove paint only if it is loose.

(2) Remove sealant to do this inspection, if necessary. Replace the sealant after the inspection is done.

4. Instrument Calibration

A. Calibrate the instrument as specified in Part 6, 51-00-00, Procedure 24, paragraph 5.

5. Inspection Procedure

A. Examine the horizontal leg of the lower chords of the nacelle strut for cracks from NSTA 209.0 to 212.3 and NSTA 231.8 to 234.4 as shown in Figure 1 and as specified in Part 6, 51-00-00, Procedure 24, paragraph 6.

(1) Make a complete scan around each inspection fastener location shown in Figure 1 to examine the horizontal leg of the lower chord for cracks.

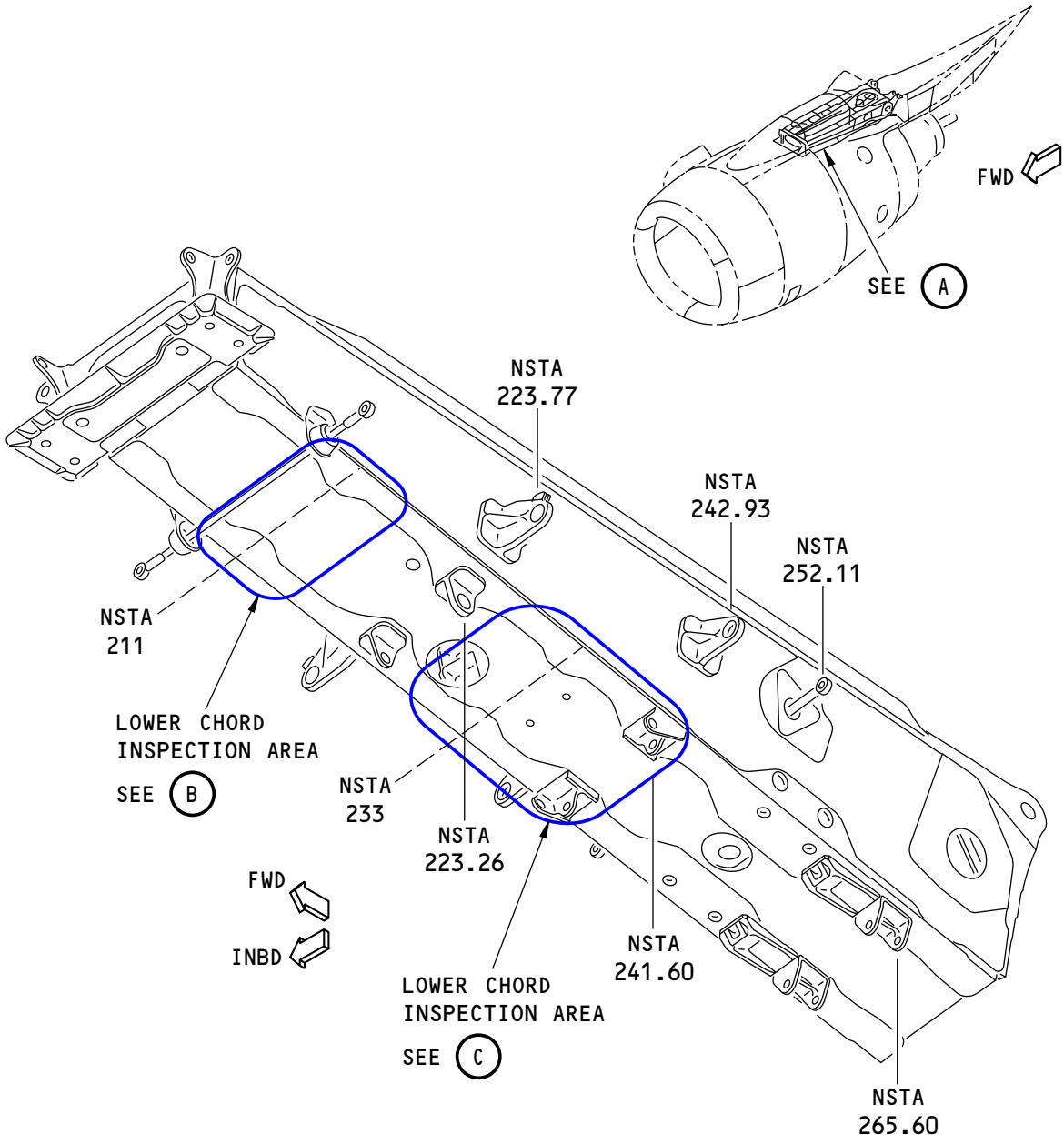
B. Do Paragraph 5.A. again to examine the lower chords of the nacelle strut on the opposite wing for cracks.

6. Inspection Results

A. A crack signal from the surface inspection will look almost the same as the notch signal from the reference standard.

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

B. To make sure a crack signal is from a crack, remove the fastener and do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 19.

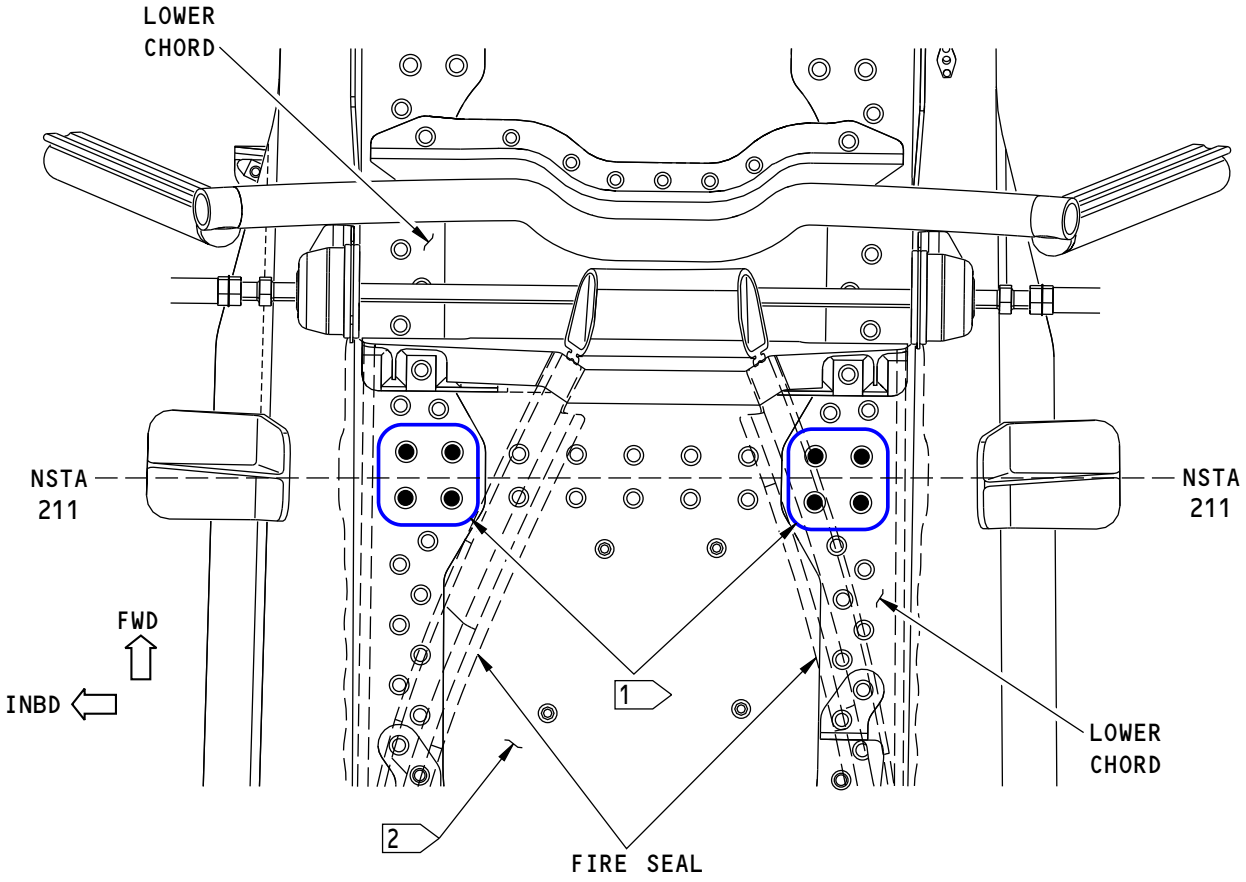


VIEW AS YOU LOOK UP
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

A

2505833 S0000587707_V1

Inspection Areas
Figure 1 (Sheet 1 of 3)



VIEW AS YOU LOOK UP
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

B

NOTES:

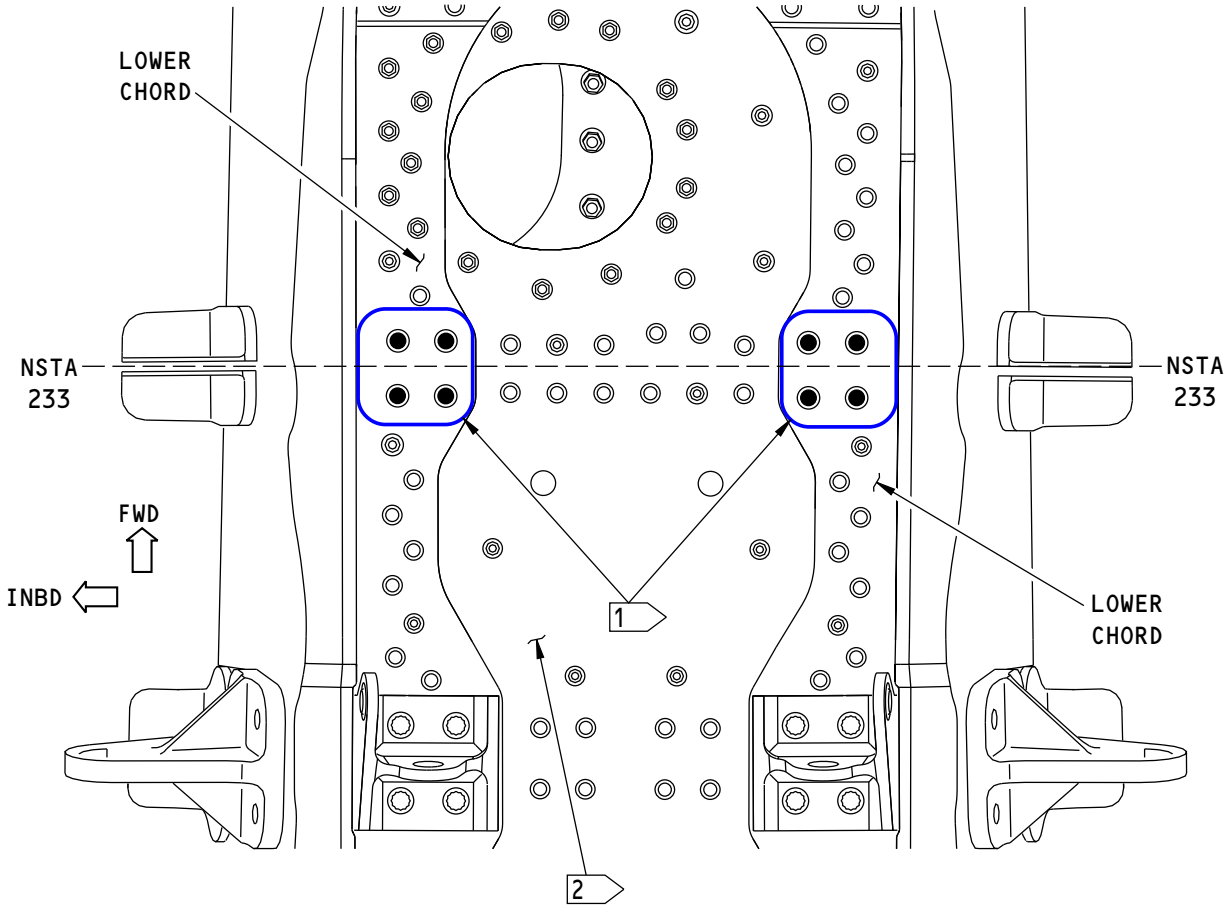
● INSPECTION FASTENER LOCATION

1 INSPECTION AREAS. THERE ARE 4 FASTENER LOCATIONS TO BE EXAMINED IN THE LOWER CHORD AT EACH INSPECTION AREA. MAKE A SCAN AROUND EACH FASTENER LOCATION.

2 INSULATION AND OTHER ASSEMBLIES ARE NOT SHOWN FOR A BETTER VIEW OF THE INSPECTION AREA

2505885 S0000587709_V1

Inspection Areas
Figure 1 (Sheet 2 of 3)



VIEW AS YOU LOOK UP
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

C

2505932 S0000587710_V1

Inspection Areas
Figure 1 (Sheet 3 of 3)

PART 6 - EDDY CURRENT

VERTICAL LEG OF THE LOWER CHORD OF THE NACELLE STRUT (LFEC)

1. Purpose

A. Use this procedure to examine the vertical leg of the lower chord of the nacelle strut for cracks. The lower chord is examined at flush-head and protruding-head fastener locations. The flush-head fasteners are magnetic steel and are installed in the frame 3 inspection areas. The protruding-head fasteners are titanium and are installed in the frame 1 inspection areas. See Figure 1 for the inspection areas.

B. This procedure is done from the external side of the engine strut.

C. This procedure uses a reflection ring probe and an impedance plane display instrument that can operate at a low frequency. This inspection cannot be done through the fire seal strip which is made of steel. It is necessary to remove the fire seal strip to get access to the titanium skin to do the inspection.

D. This procedure applies to many airplane models. The Figures used in this procedure are from the 737-800 model, but the configuration for other 737 models will be almost the same.

E. 737 Maintenance Planning Document (MPD) Damage Tolerance Record (DTR) Check Form Reference:

(1) Item: 54-51-10

2. Equipment

A. General

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

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

B. Instrument

(1) Use an eddy current instrument that:

(a) Has an impedance plane display.

(b) Operates at a frequency between 1 and 5 kHz.

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

(a) Phasec 2D and 3D; GE Inspection Technologies

(b) Mentor; GE inspection Technologies

(c) Olympus 500D/600D; Olympus NDT

C. Probes

(1) Use a reflection type ring probe that:

(a) Operates at a frequency between 1 and 5 kHz.

(b) Has a minimum inner diameter of 0.44 inch (11.2 mm).

(c) Has a maximum outer diameter of 1.00 inch (25.4 mm).

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

NOTE: Other probes can be used if they can be calibrated with the reference standard as specified in this procedure.

NOTE: Shielded probes are recommended.

(a) AF-4109/Ti 100Hz-5kHz; Aerofab NDT

(b) TEK-1005 3 kHz -10kHz; Techna NDT

D. Reference Standard

(1) Use reference standards NDT3259 and NDT3260 to help calibrate the instrument. See Figure 2 and Figure 3 for data about reference standards NDT3259 and NDT3260.

3. Prepare for the Inspection

A. Identify and get access to all of the inspection areas shown in Figure 1.

(1) It is necessary to remove the inboard and outboard fire seals on each strut.

B. Clean the inspection surfaces.

(1) Remove dirt or grease from the inspection surface.

(2) Remove paint only if it is loose.

4. Instrument Calibration

A. Calibrate the equipment to examine the inspection area at frame 1, from NSTA 209.0 to 212.3. See Figure 1.

(1) Set the instrument frequency between 1 and 5 kHz.

(2) Put the ring probe on reference standard NDT3259 at probe position 1 as shown in Figure 4, Detail I. Adjust the center of the probe so that it is above the center of the fastener hole.

(3) Balance the instrument.

(4) Move the center of the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(5) Set the balance point at approximately 20 percent of full screen height (FSH) and 60 percent of full screen width (FSW) as shown in Figure 4, Detail II.

(6) Adjust the phase control so that the lift-off signal moves horizontally from right to left when the probe is lifted off the reference standard as shown in Figure 4, Detail II.

(7) Put the ring probe at probe position 2 as shown in Figure 4, Detail I. Make sure the center of the probe is above the center of the fastener hole.

(8) Move the center of the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(9) Adjust the instrument gain to get a notch signal that is approximately 60 percent of FSH as shown in Figure 4, Detail II.

(10) Make sure the instrument is calibrated correctly:

(a) Put the probe on the reference standard at probe position 1 as shown in Figure 4, Detail I.

(b) Move the probe above the fastener hole as necessary until the height of the notch signal is at its minimum.

(c) Balance the instrument.

(d) Put the probe on the reference standard at probe position 2 as shown in Figure 4, Detail I.

(e) Move the probe above the fastener hole as necessary until the height of the signal is at its minimum.

(f) If the minimum signal from the notch is not 60 percent of FSH, then do the calibration again.

B. Calibrate the equipment to examine the inspection area at frame 3, from NSTA 231.8 to 234.4. See Figure 1.

(1) Do Paragraph 4.A. again, but use reference standard NDT3260.

5. Inspection Procedure

A. Examine the vertical leg of the lower chord of the nacelle strut for cracks from NSTA 209.0 to 212.3.

NOTE: NSTA 211 is the centerline of frame 1 of the nacelle strut. See Figure 1.

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

(2) Put the probe above the center of a fastener in the inspection area and balance the instrument.

NOTE: Do not adjust the gain. Gain adjustments will make the instrument calibration unsatisfactory.

(3) Put the probe above the center of each of the other fasteners in the same inspection area and monitor the instrument for crack signals. See Paragraph 6. to make an analysis of the signals that occur.

NOTE: It is possible that the first fastener location used to balance the instrument has a crack. If this occurs, all the fastener holes that do not have cracks will cause the signal to move below the balance point. If you think you balanced the probe at a fastener location that has a crack, then put the probe on a different fastener in this inspection area and balance the instrument again.

(4) Do a check of the instrument calibration as follows (do not adjust the gain when you do this check):

(a) Put the probe on reference standard NDT3259 at probe position 1 as shown in Figure 4, Detail I.

(b) Move the center of the probe above the fastener hole as necessary until the height of the signal is at its minimum and balance the instrument.

(c) Put the probe on reference standard NDT3259 at probe position 2 and make sure that the fastener is in the center of the probe. Compare the signal you got from the notch during calibration with the signal that you get now.

(d) If the signal you get from the notch has decreased in FSH by 10 percent or more, do the calibration and the inspection again on all fastener locations you have examined since the last calibration check.

(5) Do Paragraph 5.A.(2) thru Paragraph 5.A.(4) at the inspection area on the opposite side of the strut.

(6) Do Paragraph 5.A.(2) thru Paragraph 5.A.(5) for the same inspection areas on the strut on the other side of the airplane.

B. Examine the vertical leg of the lower chord of the nacelle strut for cracks from NSTA 231.8 to 234.4.

NOTE: NSTA 233 is the centerline of frame 3 of the nacelle strut. See Figure 1.

(1) Calibrate the instrument as specified in Paragraph 4.B. to examine the inspection area from NSTA 231.8 to 234.4.

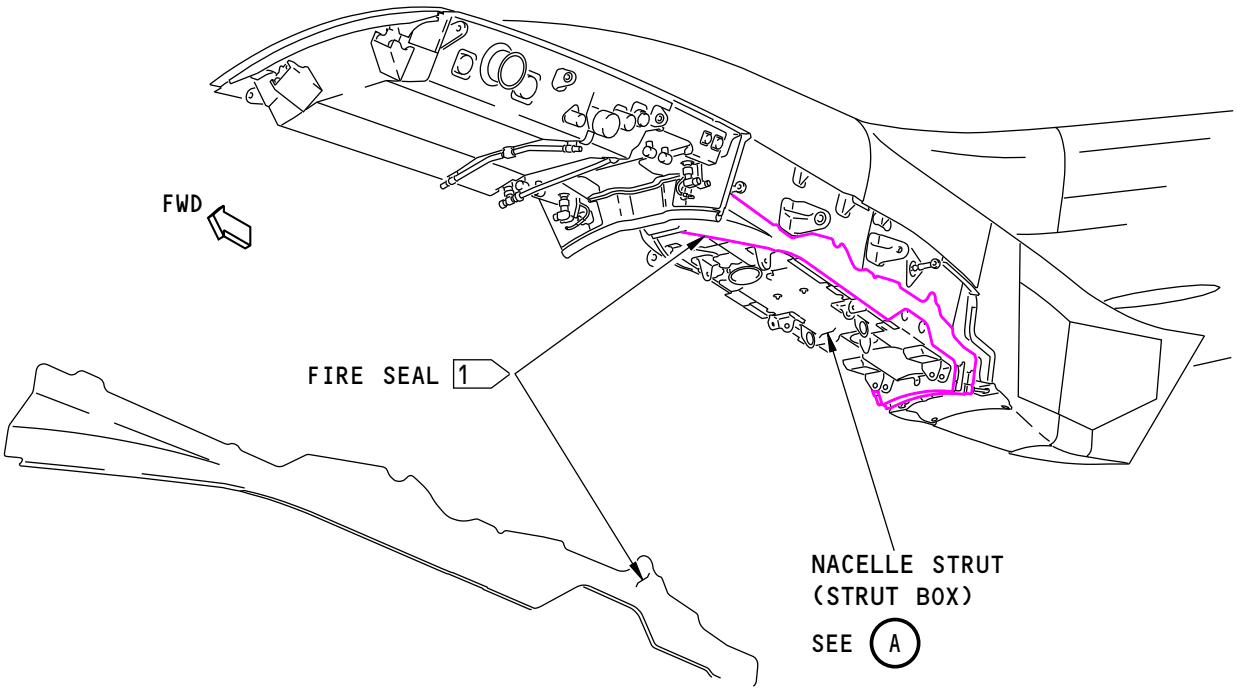
(a) Do Paragraph 5.A.(2) thru Paragraph 5.A.(6) again to examine the inspection area at NSTA 231.8 to 234.4. But, during the calibration check specified in Paragraph 5.A.(4), use reference standard NDT3260.

6. Inspection Results

A. A signal that is more than 40 percent of FSH is a sign of a crack. An area that causes this signal to occur must be rejected and more analysis is necessary.

B. Compare the signal that occurs during the inspection to the signal you got from the notch in the reference standard during calibration.

C. To make sure a crack signal is from a crack, do an open hole eddy current inspection as specified in Part 6, 51-00-00, Procedure 19.

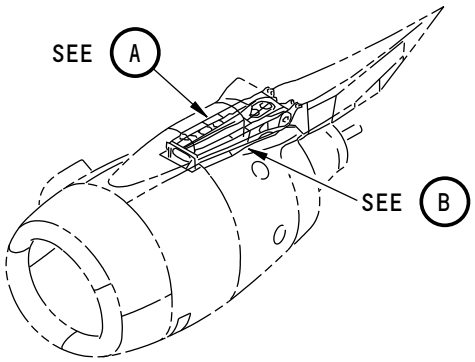


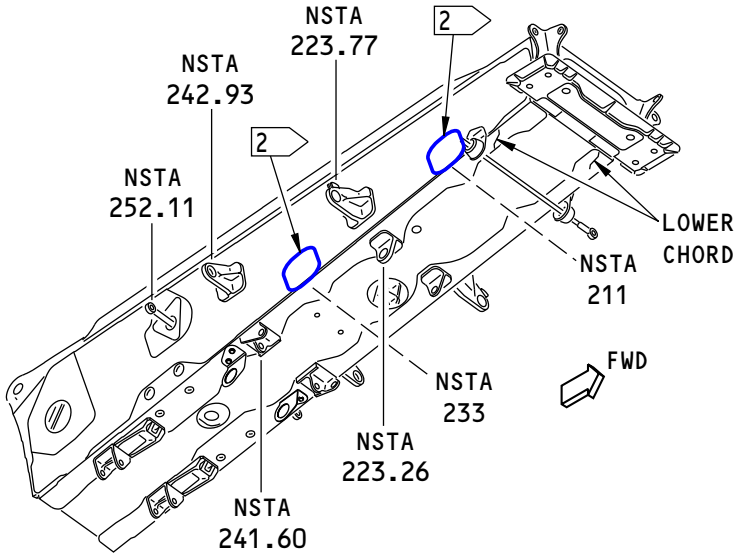
FIRE SEAL LOCATION
VIEW AS YOU LOOK UP AND INBOARD
THE LEFT ENGINE PYLON AND NACELLE STRUT ARE SHOWN;
THE RIGHT SIDE IS ALMOST THE SAME

1 REMOVE THIS PART OF THE FIRE SEAL ASSEMBLY FROM THE LEFT AND RIGHT SIDES OF THE NACELLE STRUT. THE INSPECTION AREAS ARE BEHIND THE FIRE SEAL.

2501664 S0000587608_V1

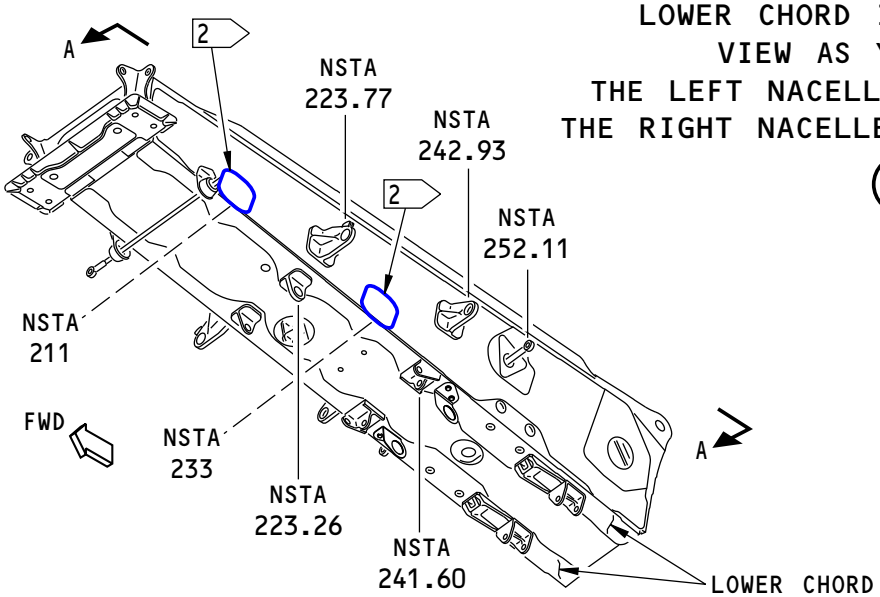
Inspection Area
Figure 1 (Sheet 1 of 3)





LOWER CHORD INSPECTION AREA
VIEW AS YOU LOOK UP
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

A



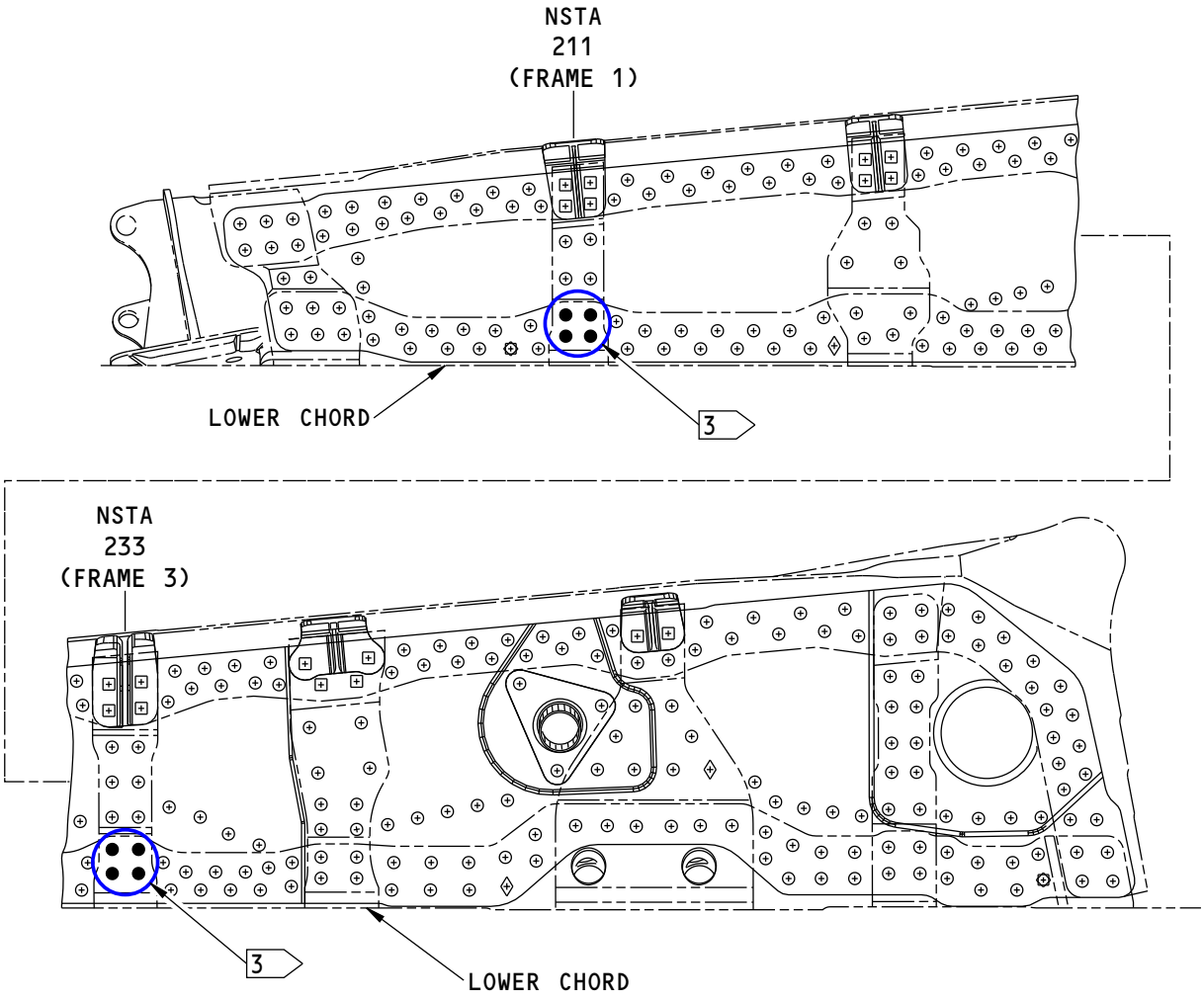
LOWER CHORD INSPECTION AREA
VIEW AS YOU LOOK UP
THE LEFT NACELLE STRUT IS SHOWN;
THE RIGHT NACELLE STRUT IS THE SAME

B

2 INSPECTION AREAS. THERE ARE 4 FASTENERS IN THE VERTICAL LEG OF THE LOWER CHORD AT EACH INSPECTION AREA. THERE ARE A TOTAL OF 16 FASTENER LOCATIONS TO BE EXAMINED AT EACH NACELLE STRUT.

2501676 S0000587609_V1

Inspection Area
Figure 1 (Sheet 2 of 3)

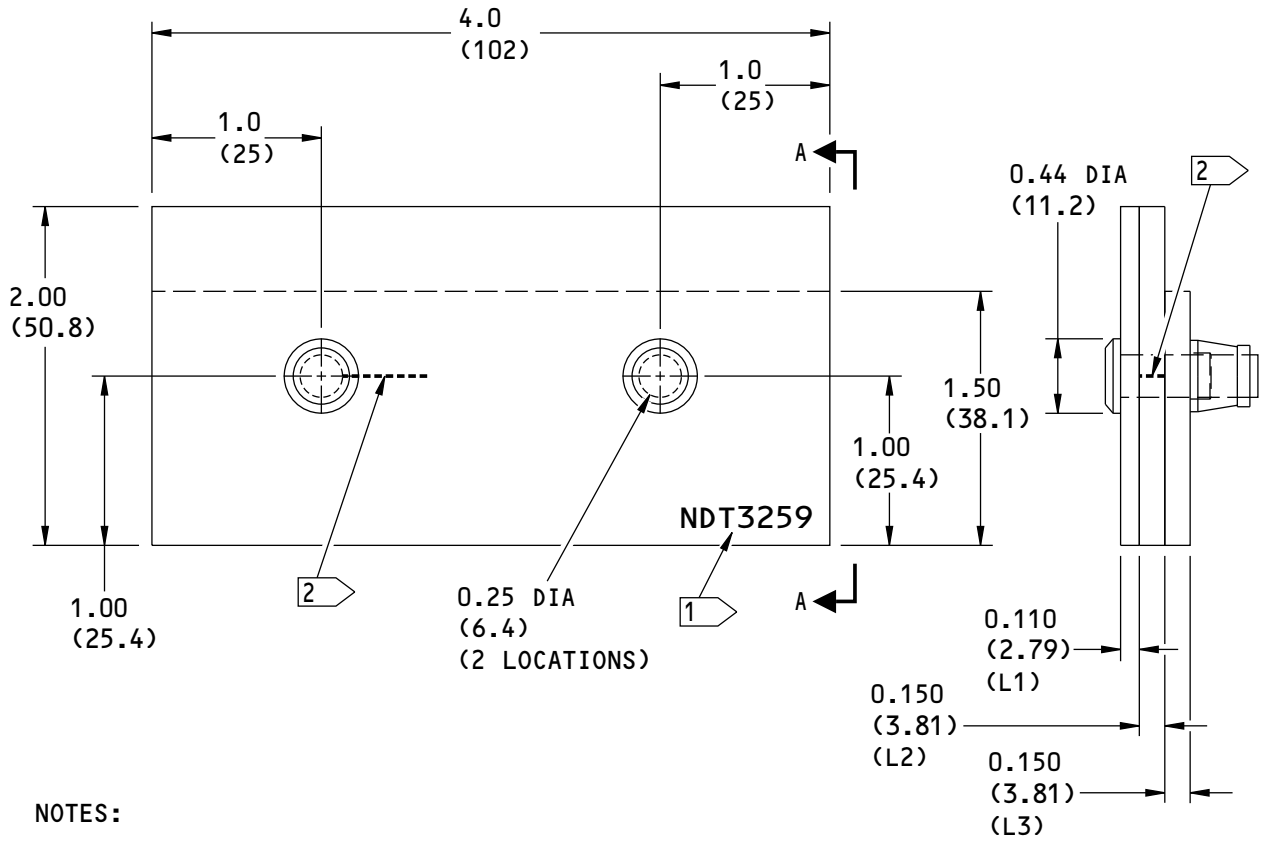


A–A

3 EXAMINE THESE FASTENER LOCATIONS ON THE INBOARD AND OUTBOARD SIDES OF THE NACELLE STRUT. THE FIRE SEAL IS NOT SHOWN TO GET A BETTER VIEW OF THE INSPECTION AREA.

2502016 S0000587610_V1

Inspection Area
Figure 1 (Sheet 3 of 3)



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL:
  TOP LAYER (L1) - 6AL-4V TITANIUM
  SECOND LAYER (L2) - 15-5 PH STEEL
  THIRD LAYER (L3) - 2024-T3 ALUMINUM
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ± 0.1
X.XX = ±0.025	X.X = ± 0.5
X.X = ±0.050	X = ± 1

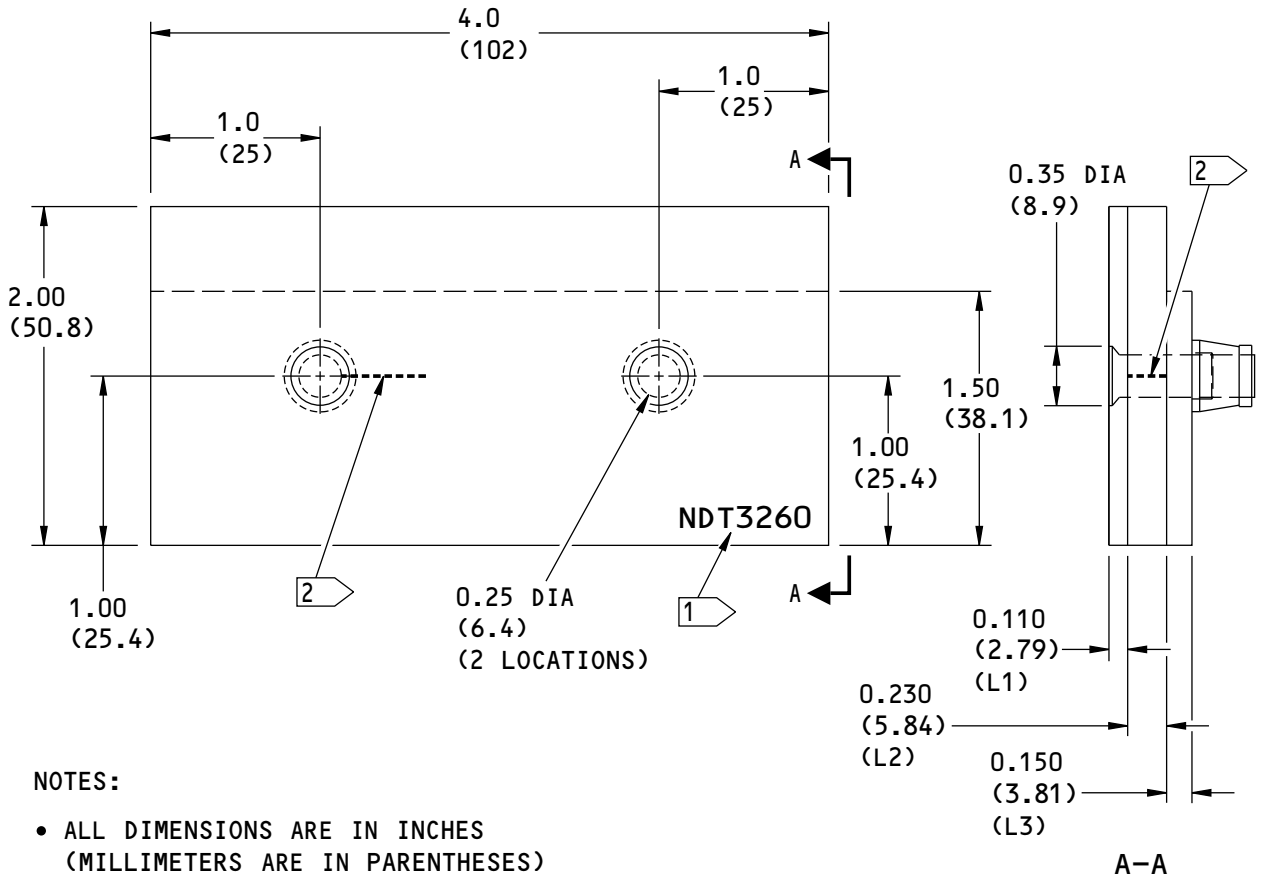
- FASTENERS:
  USE BACB30NX8 BOLTS WITH BACC30M COLLARS (NONCONDUCTIVE FASTENERS AND COLLARS CAN BE USED IF THEY HAVE ALMOST THE SAME GEOMETRY AS THE BOLT AND COLLAR SPECIFIED)

1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3259, AT APPROXIMATELY THIS LOCATION

2 EDM NOTCH:
WIDTH: 0.010 (0.25) MAXIMUM
DEPTH: THROUGH THE THICKNESS
LENGTH: 0.500 (12.70)

2502262 S0000587611_V1

Reference Standard NDT3259
Figure 2



NOTES:

- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)
- MATERIAL:
  TOP LAYER (L1) - 6AL-4V TITANIUM
  SECOND LAYER (L2) - 15-5 PH STEEL
  THIRD LAYER (L3) - 2024-T3 ALUMINUM
- SURFACE ROUGHNESS: 63 Ra OR BETTER
- TOLERANCE (UNLESS SPECIFIED DIFFERENTLY):

INCHES	MILLIMETERS
X.XXX = ±0.005	X.XX = ± 0.1
X.XX = ±0.025	X.X = ± 0.5
X.X = ±0.050	X = ± 1

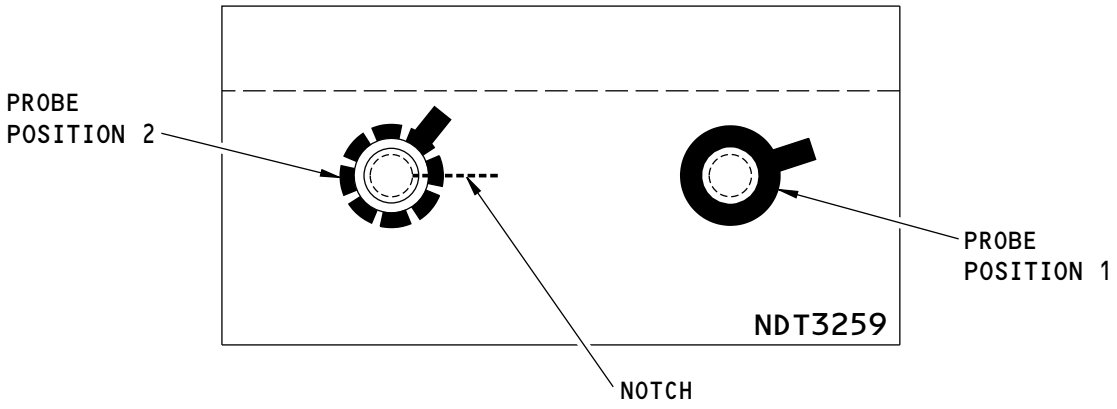
- FASTENERS:
  USE BACB30FN8 BOLTS WITH BACC30M COLLARS (FASTENERS AND COLLARS CAN BE USED IF THEY ARE THE SAME MATERIAL AND HAVE ALMOST THE SAME GEOMETRY AS THE BOLT AND COLLAR SPECIFIED)

1 ETCH OR STAMP THE REFERENCE STANDARD NUMBER, NDT3260, AT APPROXIMATELY THIS LOCATION

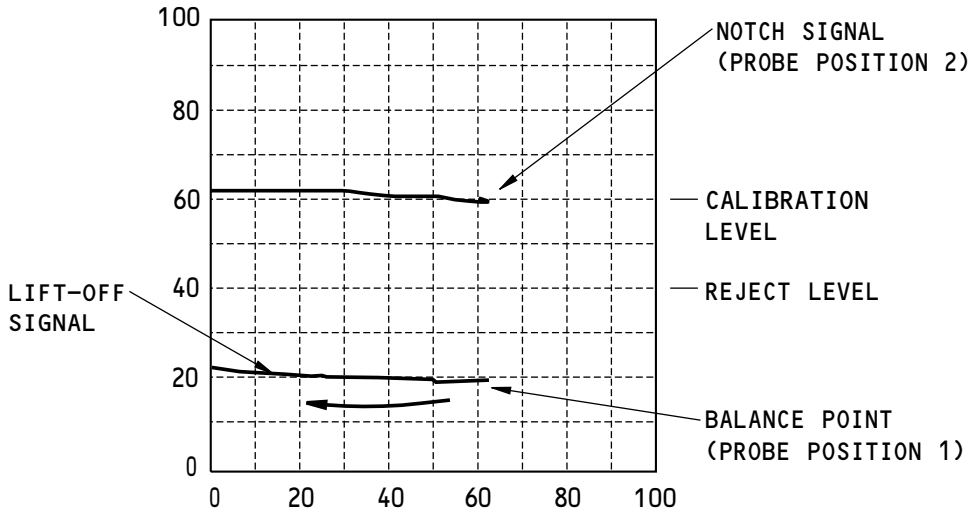
2 EDM NOTCH:
WIDTH: 0.010 (0.25) MAXIMUM
DEPTH: THROUGH THE THICKNESS
LENGTH: 0.500 (12.70)

2502266 S0000587612_V1

Reference Standard NDT3260
Figure 3



CALIBRATION PROBE POSITIONS FOR REFERENCE
STANDARDS NDT3259 AND NDT3260
DETAIL I



IMPEDANCE PLANE DISPLAY
DETAIL II

2502394 S0000587613_V1

Instrument Calibration
Figure 4