PART 2 - X-RAY

AILERON TAB - CONTROL ROD BARREL INSPECTION

1. Purpose

A. Use this procedure to find the location of the internal thread relief groove that is machined in the control rod barrel for the aileron tab. Figure 1 and Figure 2 show the control rod barrels and the inspection areas.

B. This inspection procedure uses an end anode or side emission X-ray tube and a fine grain film with lead screens.

C. Only one exposure is necessary to examine the two control rod barrels for each aileron.

D. Service Bulletin Reference: 737-27-1223, 737-27-1224

2. Equipment

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

A. X-ray Generator - Use a generator that will go through approximately 0.25 inches (6 mm) of steel and can do this procedure. A Phillips 160 kV constant potential generator was used to help prepare this procedure.

NOTE: It is not recommended to use a 360 degree emission generator.

B. Film - Use a low speed, high contrast, very fine grain film. This procedure was prepared with Kodak MX125Pb film which is a pre-packaged film cassette with lead oxide screens. Use an approximate film dimension of 8 inches (203 mm) X 10 inches (254 mm) to do the X-ray of the 737-100 thru 500 airplanes. Use a film dimension of 4 inches (102 mm) X 4 inches (102 mm) to do the X-ray of the 737-600 thru 800 airplanes.

NOTE: If pre-packaged film is not used, use 0.002 - 0.005 inches (0.05 - 0.13 mm) thick lead screens in a film cassette. Lead screens are used to help intensify the film.

C. Processor - Manual or automatic.

D. Image Quality Indicator (IQI) - It is not necessary to use an IQI for this inspection.

3. Prepare for the Inspection

A. Put the aileron and the tab in a position that is parallel to the ground or the platform.

B. To examine the 737-600 thru 800 airplanes, remove the forward and aft fairings that cover the control rod barrels.

4. Inspection Procedure

A. Identify the inspection areas to be examined. See Figure 1 for the inspection areas of the 737-100 thru 500 airplanes and Figure 2 for the 737-600 thru 800 airplanes.

B. Prepare the X-ray equipment and do the inspection as follows:

(1) For the 737-100 thru 500 airplanes, put the X-ray film on the upper surface of the aileron as shown in Figure 1, Sheet 2. For the 737-600 thru 800 airplanes, put the X-ray film behind the control rod barrels as shown in Figure 1, Sheet 2.

(2) Put the X-ray tube under the aileron with the tube emission window positioned at the area of the control rod barrels.

(3) Set the distance from the emission window of the tube to the lower surface of the aileron to 60 inches (152 cm).

(4) Make sure the X-ray beam is positioned between the two barrels and is 90 degrees with the lower surface of the aileron in the forward and aft direction and also in the inboard and outboard direction.

NOTE: It is very helpful to use a laser pointer or a small flashlight on the emission window of the tube to identify the position of the X-ray beam.

(5) For the initial X-ray generator controls, set the KV to 160 and use a MAS (Milliamp Seconds) of 450. It is necessary to get an exposure density of 2.5 - 3.0 in the threaded relief groove area.

(6) Operate the X-ray generator to take the exposure.

C. Do Paragraph 4.B.(1) thru Paragraph 4.B.(6) again on the opposite side of the airplane.

5. Inspection Results

A. Identify the location of the internal threaded relief groove as follows:

(1) Measure the length of the barrel on the X-ray film, with a caliper that can measure to an accuracy of 0.001 inch (0.03 mm). Do not include the jamnuts when you measure the length.

NOTE: This measurement is critical. If necessary, use magnification to view the barrel to make sure you make a measurement that is as accurate as possible.

(2) Compare the measurement of the barrel on the X-ray film to the actual dimension of the barrel identified in Figure 1 and Figure 2 to determine the percentage of distortion. Example: (the measurement from the X-ray film X.XX (X.X mm)) divided by (the measurement of the actual barrel 2.09 (53.1 mm)) = the percentage of distortion X.XX%.

(3) Measure the distance on the X-ray film from the end of the barrel (the end with the larger diameter) to the far edge of the thread relief groove. See Figure 1 and Figure 2 for a cross-section of the barrel.

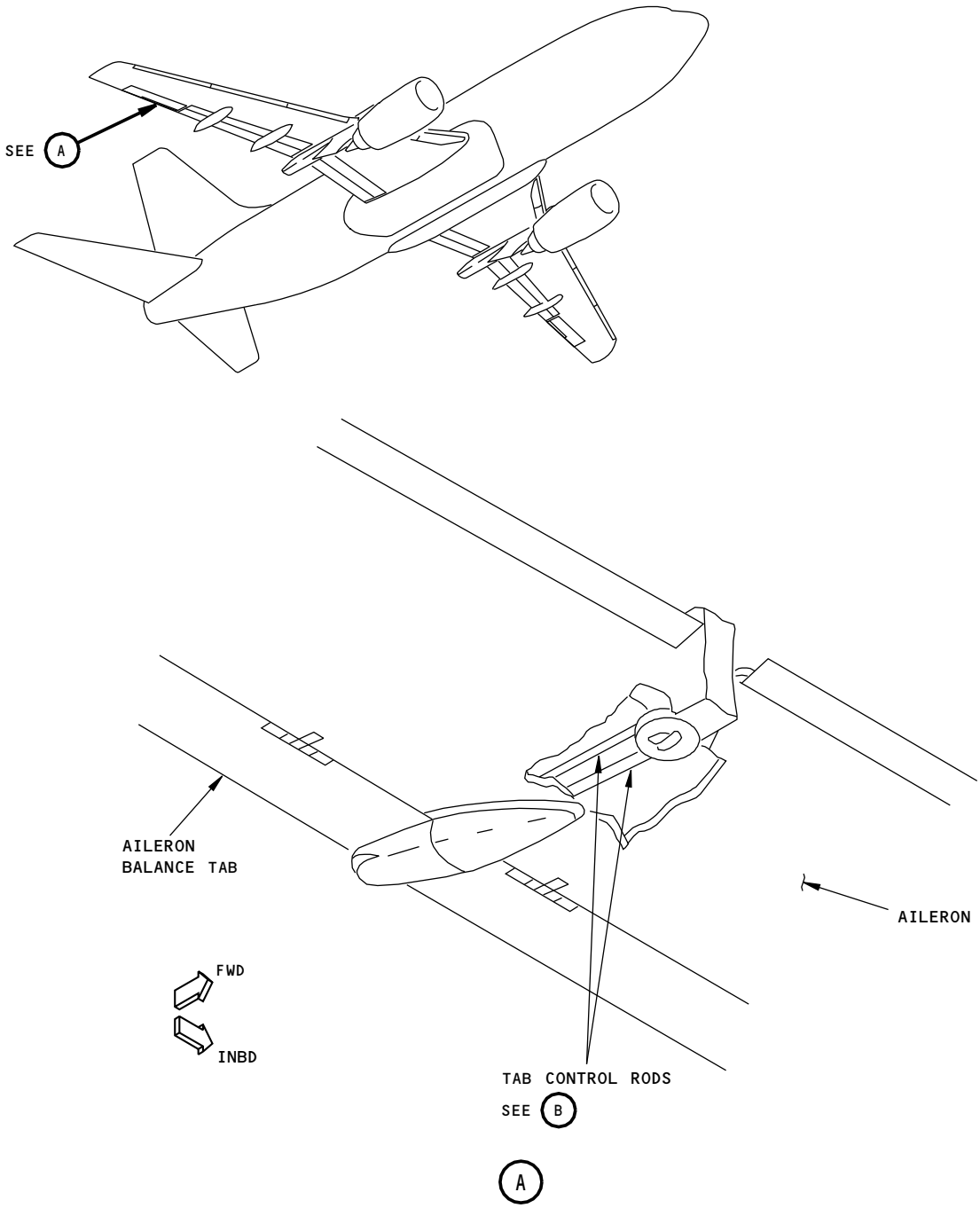
NOTE: This measurement is critical. If necessary, use magnification to view the barrel to make sure you make a measurement that is as accurate as possible.

(4) Compare the measurement of the distance to the thread relief groove, as found in Paragraph 5.A.(3), to the percentage of distortion identified in Paragraph 5.A.(2). Example: (the measurement from the X-ray film X.XX (X.X mm)) divided by (the percentage of distortion X.XX%).

(5) The barrel is acceptable if the calculated distance to the far edge of the thread relief groove is less than or equal to the maximum dimension identified in Figure 1 and Figure 2.

(6) If the calculated dimension measured on the X-ray film is outside of the limit, refer to the Service Bulletin for instructions.

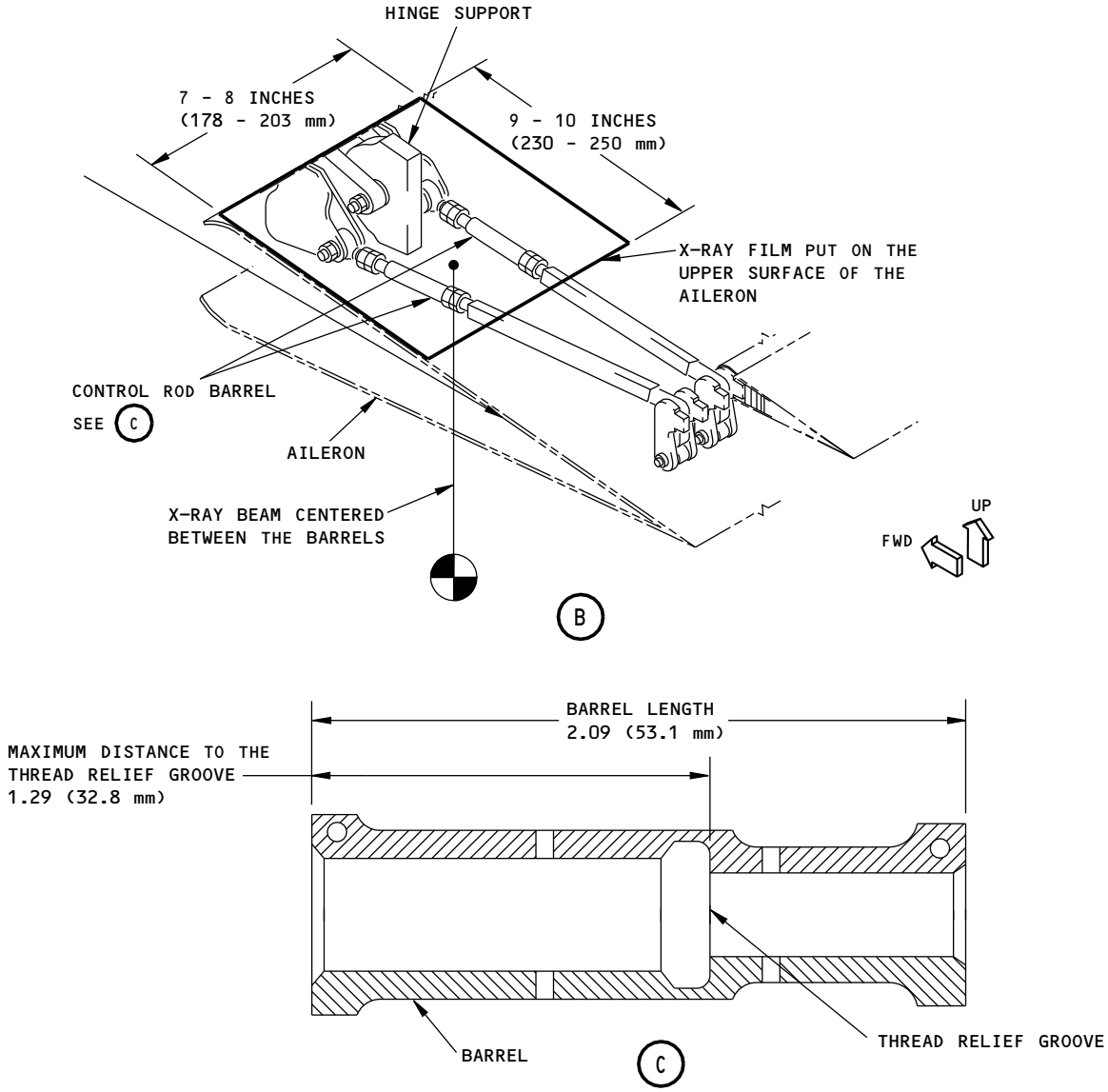
NOTE: Allow a tolerance of ± 0.005 inches (0.13 mm) of the measurement because of the unsharpness of the film.



VIEW FROM THE LOWER SURFACE
RIGHT SIDE SHOWN;
LEFT SIDE OPPOSITE

2157047 S0000470904_V1

737-100/200/300/400/500 Aileron Tab - Control Rod Barrel Inspection
Figure 1 (Sheet 1 of 2)



NOTES:

- PUT THE FILM ON THE UPPER SURFACE OF THE AILERON. ALIGN THE EDGE OF THE FILM WITH THE CUTOUT IN THE UPPER SURFACE AND CENTERED WITH THE HINGE SUPPORT.
- CENTER THE X-RAY BEAM WITH THE HINGE SUPPORT AND APPROXIMATELY 4 INCHES (102 MM) AFT OF THE CUTOUT IN THE LOWER SURFACE.
- MAKE SURE THE X-RAY BEAM IS 90 DEGREES IN EACH DIRECTION (INBD-OUTBD AND FWD-AFT) TO THE LOWER SURFACE OF THE AILERON.
- DIMENSIONS ARE IN INCHES UNLESS SPECIFIED DIFFERENTLY.

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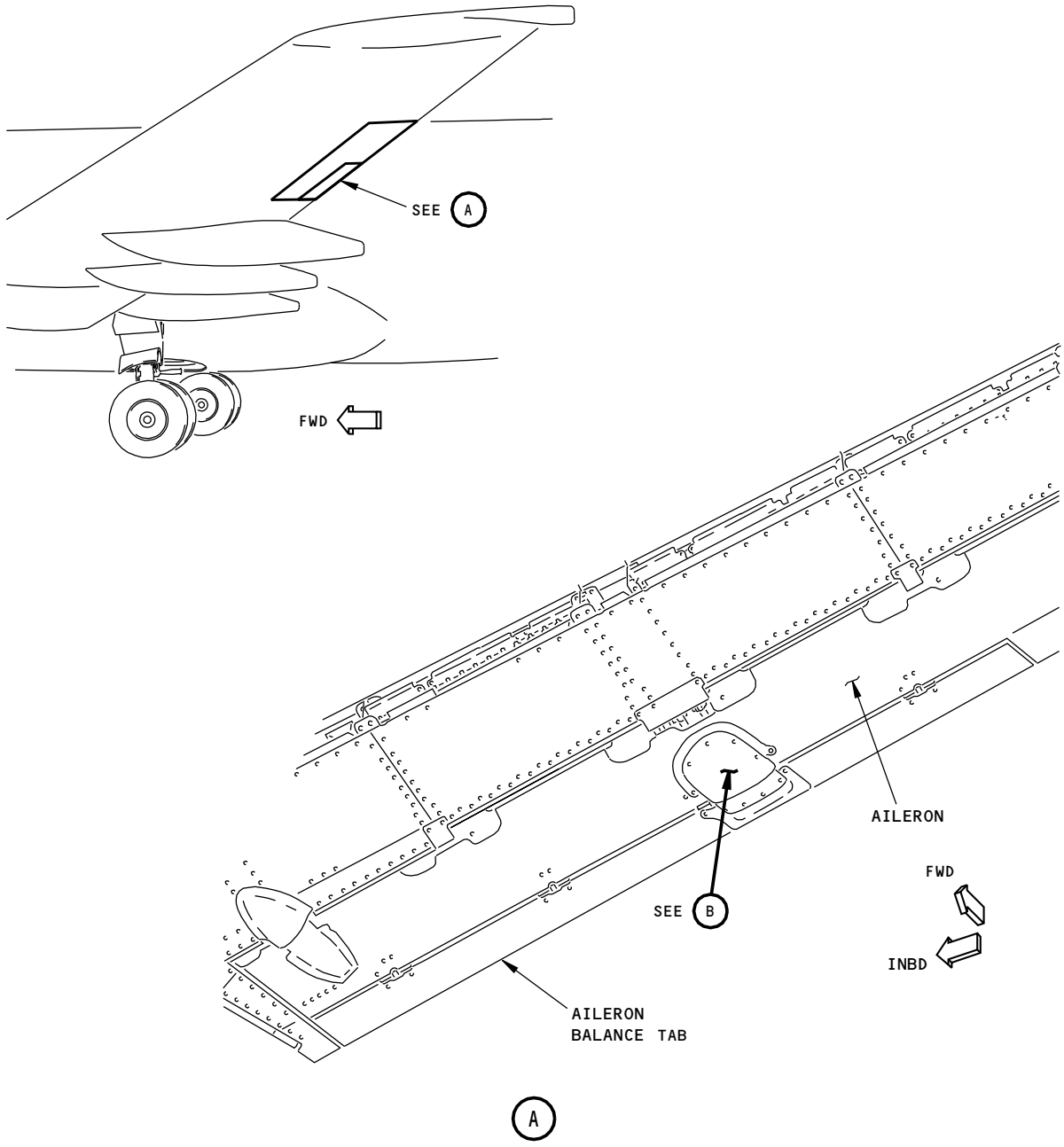
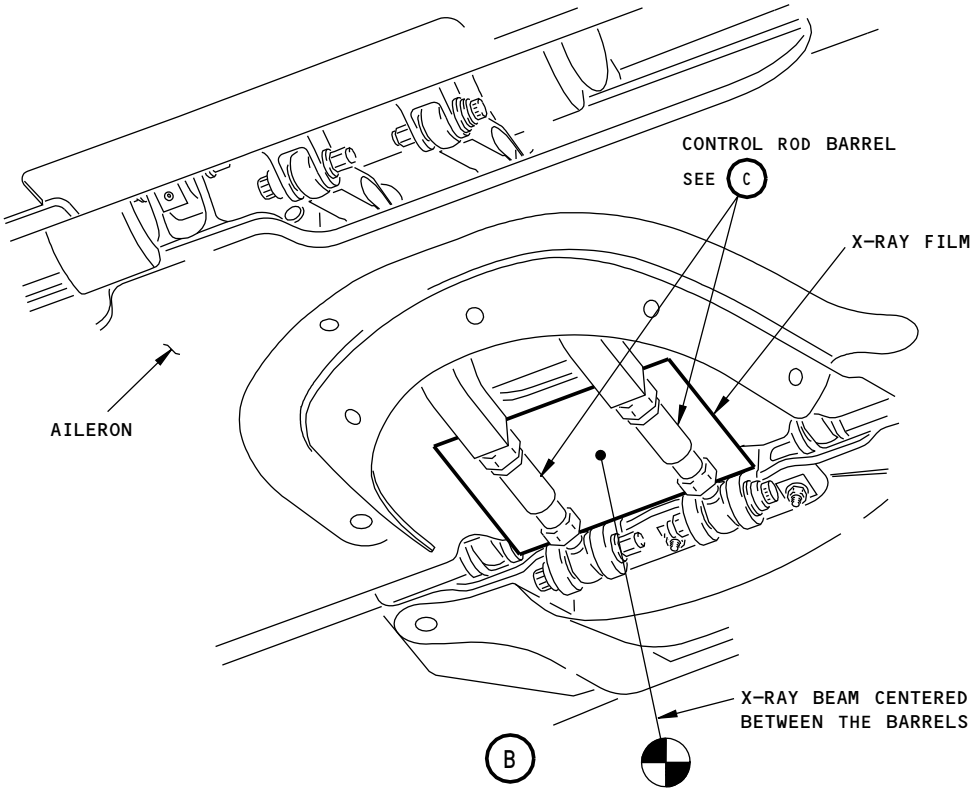
737-100/200/300/400/500 Aileron Tab - Control Rod Barrel Inspection
Figure 1 (Sheet 2 of 2)



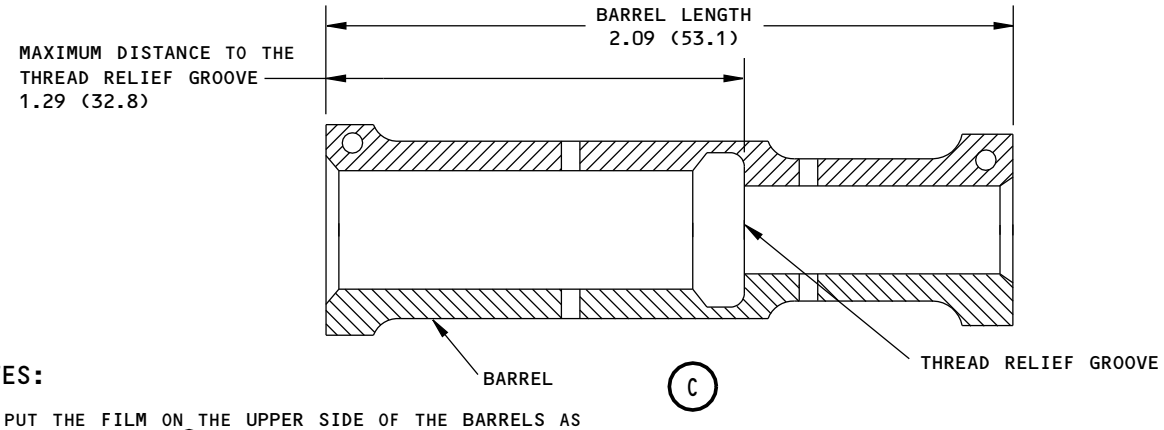
VIEW FROM THE LOWER SURFACE
LEFT SIDE SHOWN;
RIGHT SIDE OPPOSITE

2157054 S0000470906_V1

737-600/700/800 Aileron Tab - Control Rod Barrel Inspection
Figure 2 (Sheet 1 of 2)



VIEW OF THE CONTROL RODS
WITH THE FAIRINGS REMOVED



NOTES:

- PUT THE FILM ON THE UPPER SIDE OF THE BARRELS AS SHOWN IN VIEW (B).
- MAKE SURE THE X-RAY BEAM IS 90 DEGREES IN EACH DIRECTION (INBD-OUTBD AND FWD-AFT) TO THE LOWER SURFACE OF THE AILERON.
- DIMENSIONS ARE IN INCHES (MILLIMETERS ARE IN PARENTHESES)

2157056 S0000470907_V1

737-600/700/800 Aileron Tab - Control Rod Barrel Inspection
Figure 2 (Sheet 2 of 2)