PART 2 - X-RAY

FASTENER EDGE DISTANCE FOR SKIN CHEM-MILL POCKETS

1. Purpose

A. To determine edge distances of fasteners adjacent to edge of chem-mill pockets, in fuselage skin panel, from BS 1016 to BS 1088 (see Figure 2). This inspection applies to only those pocket edges concealed by stringers whose fastener edge distances cannot be determined by visual inspection.

B. Service Bulletin Reference: 737-53-1106

2. Equipment

A. X-Ray Generator -- Any equipment which will effectively penetrate 0.125 inches of aluminum structure and effectively operate at 50 kV. This procedure was developed using a Sperry 160 kV, 5 mA, side emission X-ray generator.

B. Film -- Any low speed, fine grain, high contrast (ASTM Class I) film may be used. This procedure was developed using Kodak Type M film.

NOTE: Film was developed by automatic processor.

3. Prepare for the Inspection

A. Clean inspection area and remove loose paint.

B. Observe standard radiation safety procedures.

4. Inspection Procedure

A. Position X-ray film per Figure 1 and Figure 2.

B. Position X-ray generator, perpendicular to airplane exterior at inspection location per Figure 1 and Figure 2.

C. Adjust generator exposure settings per Figure 1.

NOTE: Generator settings will vary according to X-ray equipment and film processing conditions.

WARNING: X-RAY RADIATION IS A POTENTIAL HEALTH HAZARD. CARRY OUT STANDARD RADIATION SAFETY PRECAUTIONS.

D. Expose the film to obtain a density of 2.0 to 3.0 in areas common to skin and stringers.

E. Repeat Paragraph 4.A. thru Paragraph 4.D. for all subsequent exposures.

5. Inspection Results

A. Evaluate film paying particular attention to the distance from the center of the fastener hole to the edge of the chem-milled pocket. Minimum distance to be 0.125 inch for 5/32 inch diameter rivets and 0.150 inch for 3/16 inch diameter rivets (3/16 diameter rivets located at lap joints).

NOTE: The head diameter of the fasteners can be used as a gauge. Any edge that does not cut through a fastener head is acceptable (see Figure 3).

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X-RAY PARAMETERS							
EXPOSURE NUMBER	BODY STATION	STRINGER POSITIONS [2]	FILM ASTM CLASS	FILM SIZE	SFD	GENERATOR SETTINGS [1] KV	GENERATOR SETTINGS [1] MAS
1	1016-1040	S-6R	I	4.5x17	36	50	240
2	1016-1040	S-7R	I	4.5x17	36	50	240
3	1016-1040	S-8R	I	4.5x17	36	50	240
4	1040-1064	S-12L	I	4.5x17	36	50	240
5	1040-1064	S-13L	I	4.5x17	36	50	240
6	1040-1064	S-14L	I	4.5x17	36	50	240
7	1040-1064	S-15L	I	4.5x17	36	50	240
8	1040-1064	S-16L	I	4.5x17	36	55	240
9	1064-1088	S-13L	I	4.5x17	36	50	240
10	1064-1088	S-14L	I	4.5x17	36	50	240
11	1064-1088	S-15L	I	4.5x17	36	50	240
12	1064-1088	S-16L	I	4.5x17	36	55	240

NOTES

- ALL DIMENSIONS ARE IN INCHES
- DENSITY OF BETWEEN 2.0 AND 3.0 IS REQUIRED IN AREAS OF RADIOGRAPHIC INTEREST

[1] GENERATOR SETTING SHOULD ONLY BE USED AS A GUIDE. EQUIPMENT, FILM AND PROCESSING DIFFERENCES CAN SIGNIFICANTLY AFFECT GENERATOR SETTINGS. APPROXIMATE THICKNESS OF ALUMINUM PENETRATED IS 0.125.

[2] X-RAY ONLY THOSE STRINGERS WHICH CONCEAL THE EDGE OF THE CHEM-MILL POCKET

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X-Ray Generator and Film Positioning
Figure 1

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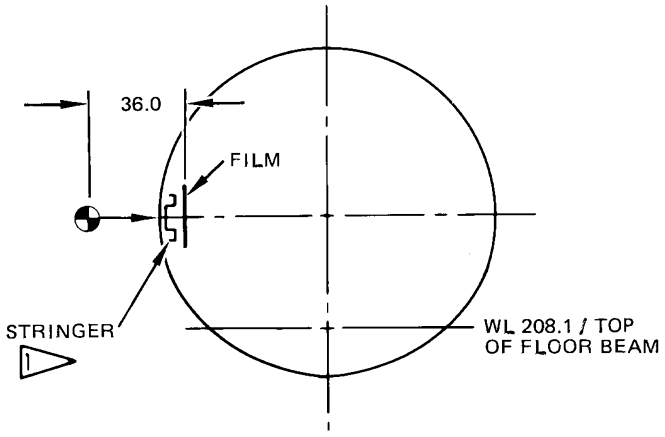
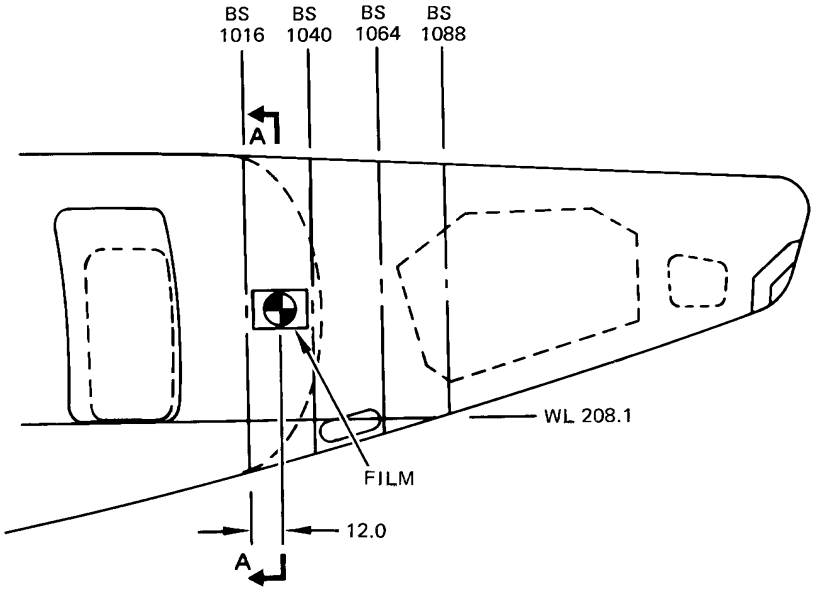


SECTION A–A



NOTES

- ALL DIMENSIONS ARE IN INCHES
- TYPICAL INSPECTION LOCATION
- GENERATOR POSITION - PERPENDICULAR TO AIRPLANE EXTERIOR AT INSPECTION LOCATION
- 1 SEE FIGURE 1 FOR LIST OF INSPECTION STRINGERS

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X-Ray Generator and Film Positioning
Figure 2

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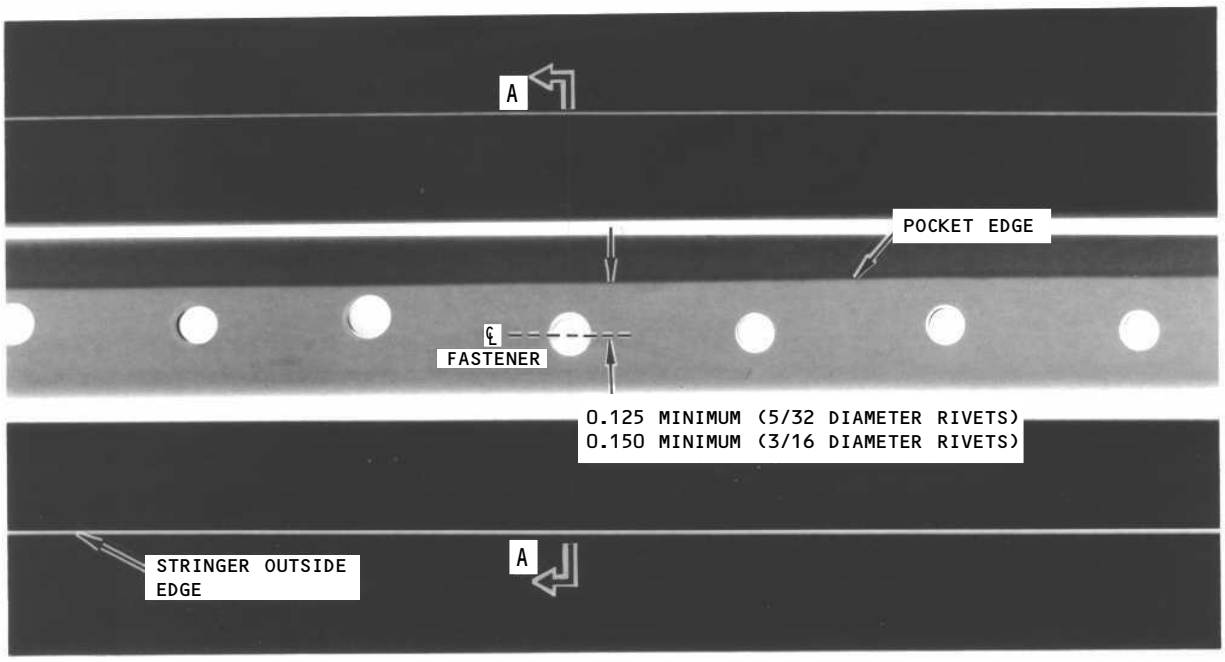
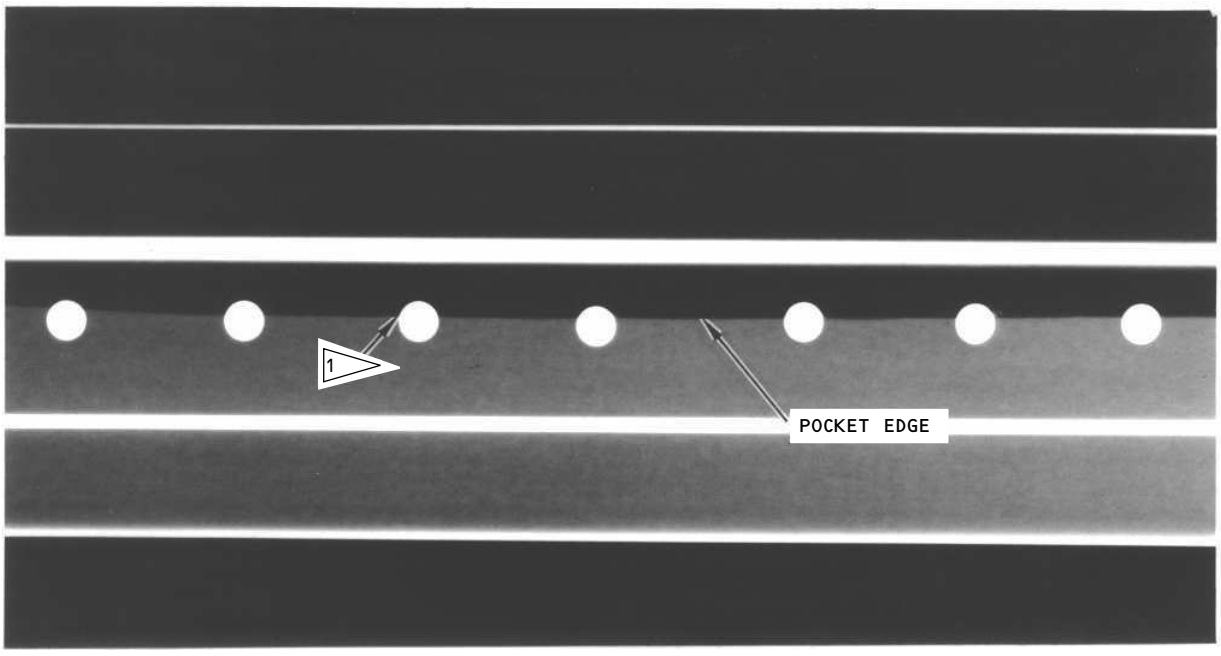


ACCEPTABLE CHEM-MILL
POCKET EDGE MARGINS



UNACCEPTABLE CHEM-MILL
POCKET EDGE MARGINS

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Skin Chem-Mill Pockets
Figure 3 (Sheet 1 of 2)

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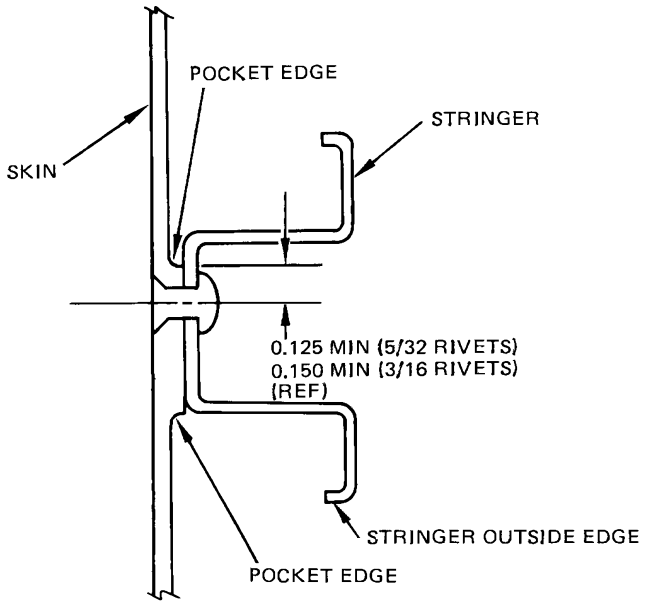

SECTION A–A

NOTES

- ALL DIMENSIONS ARE IN INCHES
- (1) POCKET EDGE THAT CUTS THROUGH FASTENER HEAD INDICATES UNACCEPTABLE POCKET EDGE MARGIN

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Skin Chem-Mill Pockets
Figure 3 (Sheet 2 of 2)

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PART 2 - X-RAY

FASTENER EDGE DISTANCE FOR LOWER SKIN PANEL EDGE

1. Purpose

A. To determine edge distances of the fasteners adjacent to the edge of the lower skin panel at stringer 10R lap splice, from BS 597 to BS 663.75 (see Figure 1).

B. Service Bulletin Reference: 737-53-1118

2. Equipment

A. X-ray Generator -- Any equipment which will effectively penetrate 0.200 inches of aluminum structure and effectively operate at 80 kV. This procedure was developed using a Sperry 160 kV, 5 mA, side emission X-ray generator.

B. Film -- Any low speed, fine grain, high contrast (ASTM Class I) film may be used. This procedure was developed using Kodak Type M film.

3. Prepare for the Inspection

A. Clean the inspection area and remove the loose paint.

B. Observe standard radiation safety procedures.

4. Inspection Procedure

A. Position the X-ray film per Figure 1.

B. Position the X-ray generator, perpendicular to the airplane exterior at the inspection locations per Figure 1.

C. Adjust the generator exposure settings per Table 1.

NOTE: The generator settings will vary according to the X-ray equipment and the film processing conditions.

WARNING: X-RAY RADIATION IS A POTENTIAL HEALTH HAZARD. CARRY OUT STANDARD RADIATION SAFETY PRECAUTIONS.

D. Expose the film to obtain a film density of 2.0 to 3.0 H. and D. in areas common to skin and stringers.

E. Repeat Paragraph 4.A. thru Paragraph 4.D. for all exposures.

5. Inspection Results

A. Evaluate the film paying particular attention to the distance from the center of the fastener hole to the edge of the lower skin panel. Refer to the service bulletin for the minimum allowable edge margin distance.

B. If short edge margins are detected, refer to the service bulletin for corrective action.

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Table 1: Exposure Parameters

All Locations				
FILM *[1]		FFD *[2]	GENERATOR SETTINGS *[3]	
ASTM CLASS	SIZE *[2]		KV	MAS
I	4-1/2 x 17	65	80	900

*[1] Density of between 2.0 and 3.0 H. and D. required in areas of radiographic interest.

*[2] All dimensions are in inches.

*[3] The generator settings should only be used as a guide. Equipment, film and processing differences can significantly affect generator settings. Approximate thickness of aluminum penetrated is 0.200 inch.

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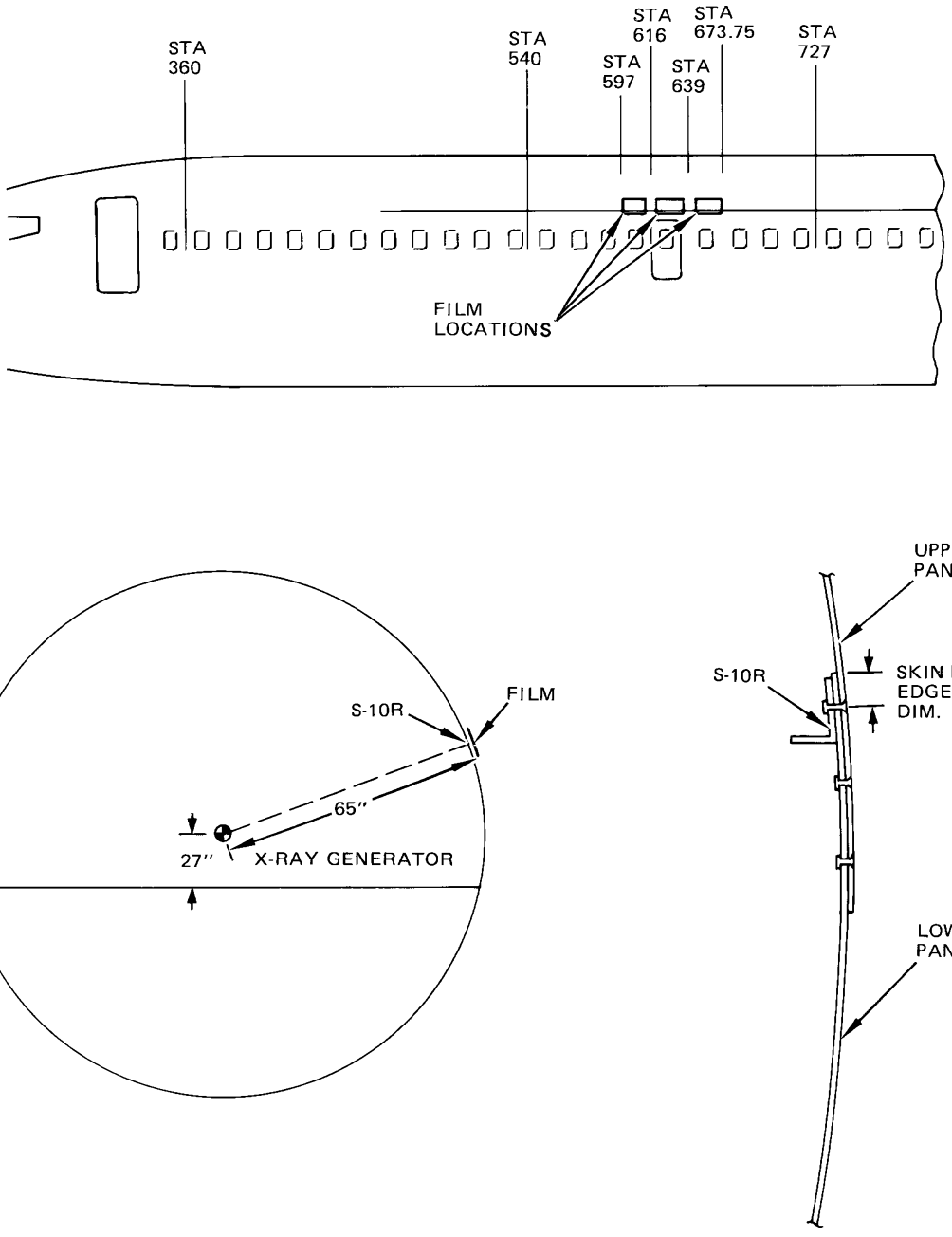

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X-Ray Generator and Film Positioning
Figure 1

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