

CHAPTER

56

WINDOWS



**767-300
STRUCTURAL REPAIR MANUAL**

**CHAPTER 56
WINDOWS**

Subject/Page	Date	Subject/Page	Date	Subject/Page	Date
EFFECTIVE PAGES		56-30-02 ALLOWABLE DAMAGE 1			
1	Aug 15/2009	101	Dec 15/2006		
2	BLANK	102	Apr 01/2005		
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1	Apr 01/2005	104	BLANK		
2	BLANK				
56-00-00 GENERAL					
1	Dec 15/2007				
2	Aug 15/2007				
56-10-02 IDENTIFICATION 1					
1	Aug 15/2007				
2	Apr 01/2005				
3	Apr 01/2005				
4	BLANK				
56-10-02 ALLOWABLE DAMAGE 1					
101	Apr 01/2005				
102	Apr 15/2005				
103	Apr 15/2005				
104	Apr 15/2005				
56-10-02 REPAIR 1					
201	Dec 15/2008				
202	BLANK				
56-20-02 IDENTIFICATION 1					
1	Apr 01/2005				
2	Apr 01/2005				
3	Apr 01/2005				
4	BLANK				
56-20-02 ALLOWABLE DAMAGE 1					
101	Aug 15/2006				
102	Aug 15/2006				
103	Aug 15/2006				
104	Dec 15/2007				
105	Aug 15/2006				
106	Aug 15/2006				
107	Aug 15/2006				
108	BLANK				
56-30-02 IDENTIFICATION 1					
1	Apr 01/2005				
2	Apr 01/2005				

A = Added, R = Revised, O = Overflow, D = Deleted

56-EFFECTIVE PAGES



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CHAPTER 56
WINDOWS

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>
<u>WINDOWS - GENERAL</u>	56-00-00
GENERAL - Windows	
<u>FLIGHT COMPARTMENT WINDOW STRUCTURE</u>	56-10-02
IDENTIFICATION 1 - Flight Compartment Window Structure	
ALLOWABLE DAMAGE 1 - Flight Compartment Window Frames	
REPAIR 1 - Flight Compartment Window Frames	
<u>CABIN WINDOW STRUCTURE</u>	56-20-02
IDENTIFICATION 1 - Cabin Window Frames	
ALLOWABLE DAMAGE 1 - Cabin Window Frames	
<u>DOOR WINDOW STRUCTURE</u>	56-30-02
IDENTIFICATION 1 - Door Window Structure	
ALLOWABLE DAMAGE 1 - Door Window Structure	

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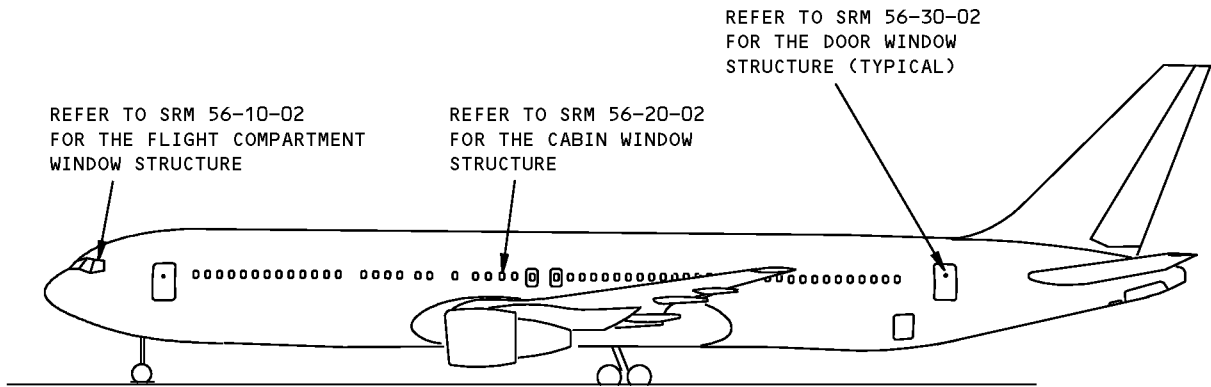
GENERAL - WINDOWS

1. General

- A. This chapter contains information regarding structural components of flight compartment, cabin, door, inspection and observation window frames.
- B. For information pertinent to window panes, refer to AMM 56-00-00.



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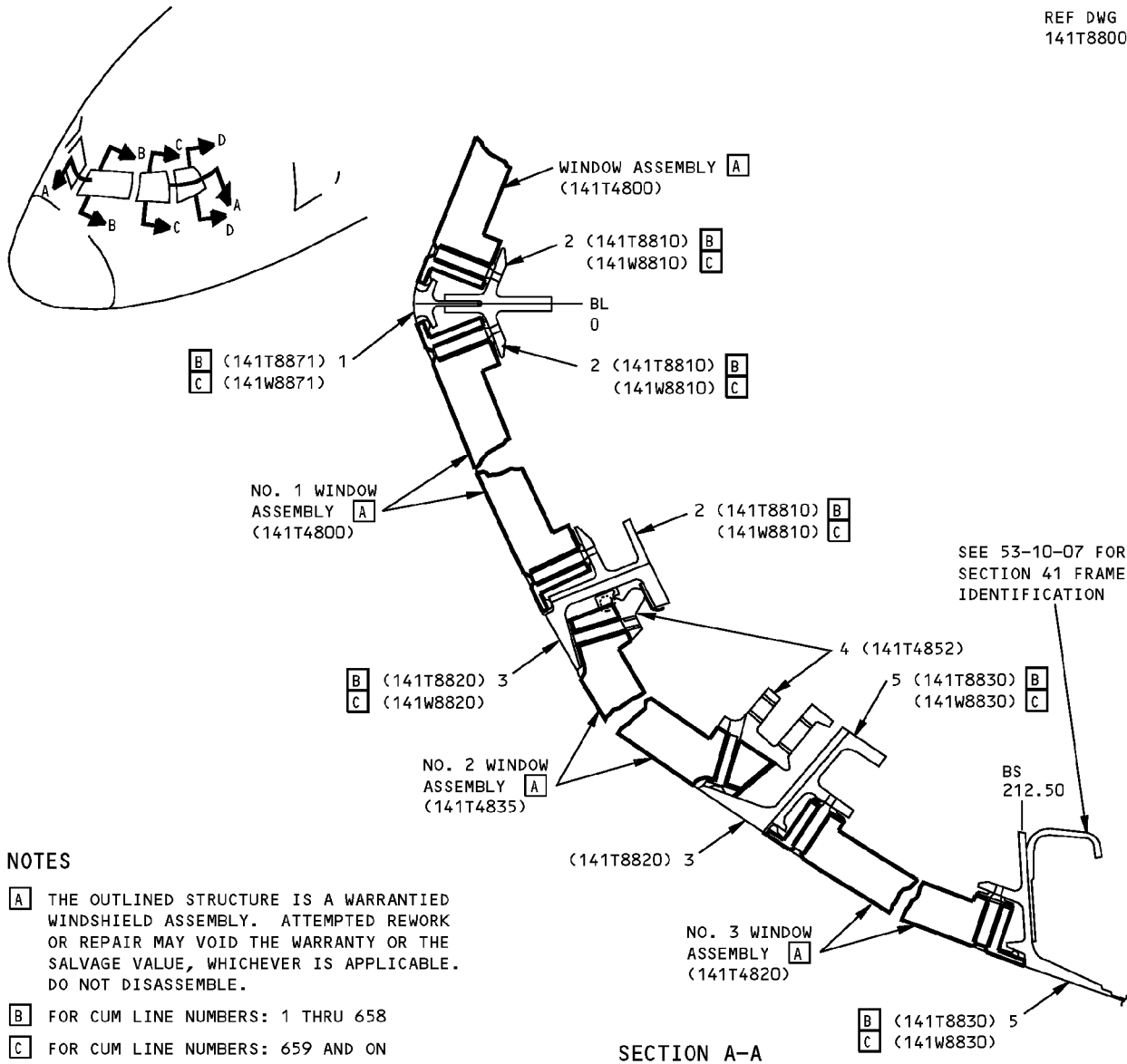


Window Structure Diagram
Figure 1

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FLIGHT COMPARTMENT WINDOW STRUCTURE

REF DWG
141T8800



NOTES

- [A] THE OUTLINED STRUCTURE IS A WARRANTIED WINDSHIELD ASSEMBLY. ATTEMPTED REWORK OR REPAIR MAY VOID THE WARRANTY OR THE SALVAGE VALUE, WHICHEVER IS APPLICABLE. DO NOT DISASSEMBLE.
- [B] FOR CUM LINE NUMBERS: 1 THRU 658
- [C] FOR CUM LINE NUMBERS: 659 AND ON

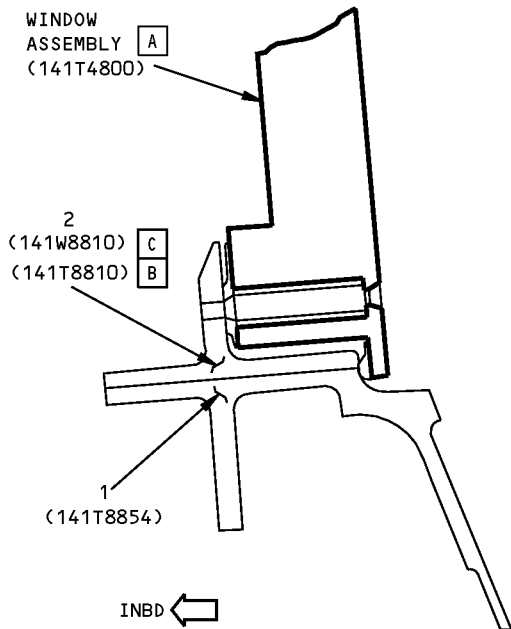
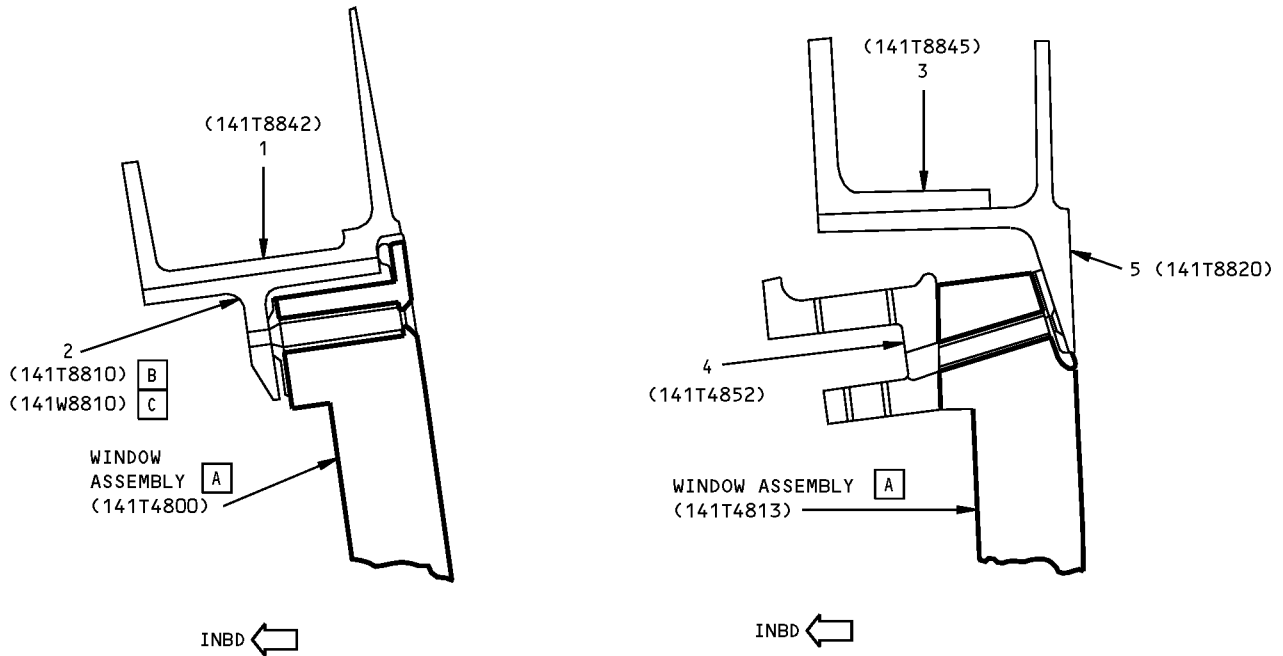
SECTION A-A

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	A-B POST FITTING		FORGING TI-6AL-4V	
2	NO. 1 WINDOW FRAME		FORGING TI-6AL-4V	
3	NO. 2 WINDOW FRAME		FORGING 7075-T73	
4	OPENABLE FRAME		FORGING 7075-T73	
5	NO. 3 WINDOW FRAME		FORGING 7075-T73	

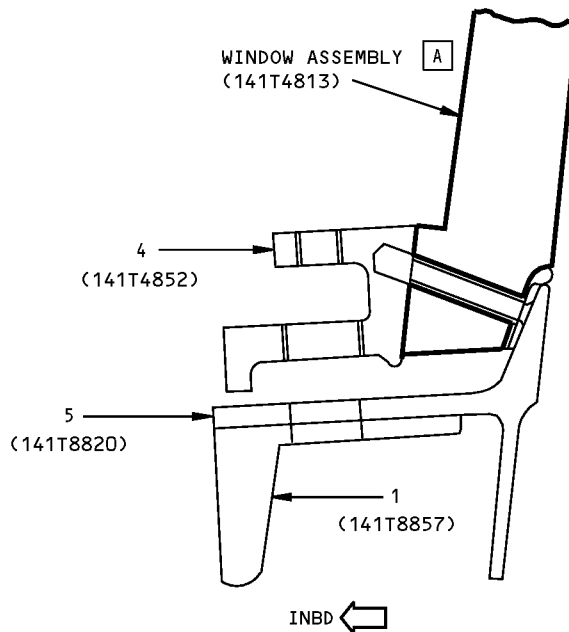
LIST OF MATERIALS FOR SECTION A-A

**Flight Compartment Window Structure Identification
Figure 1 (Sheet 1 of 3)**

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SECTION B-B

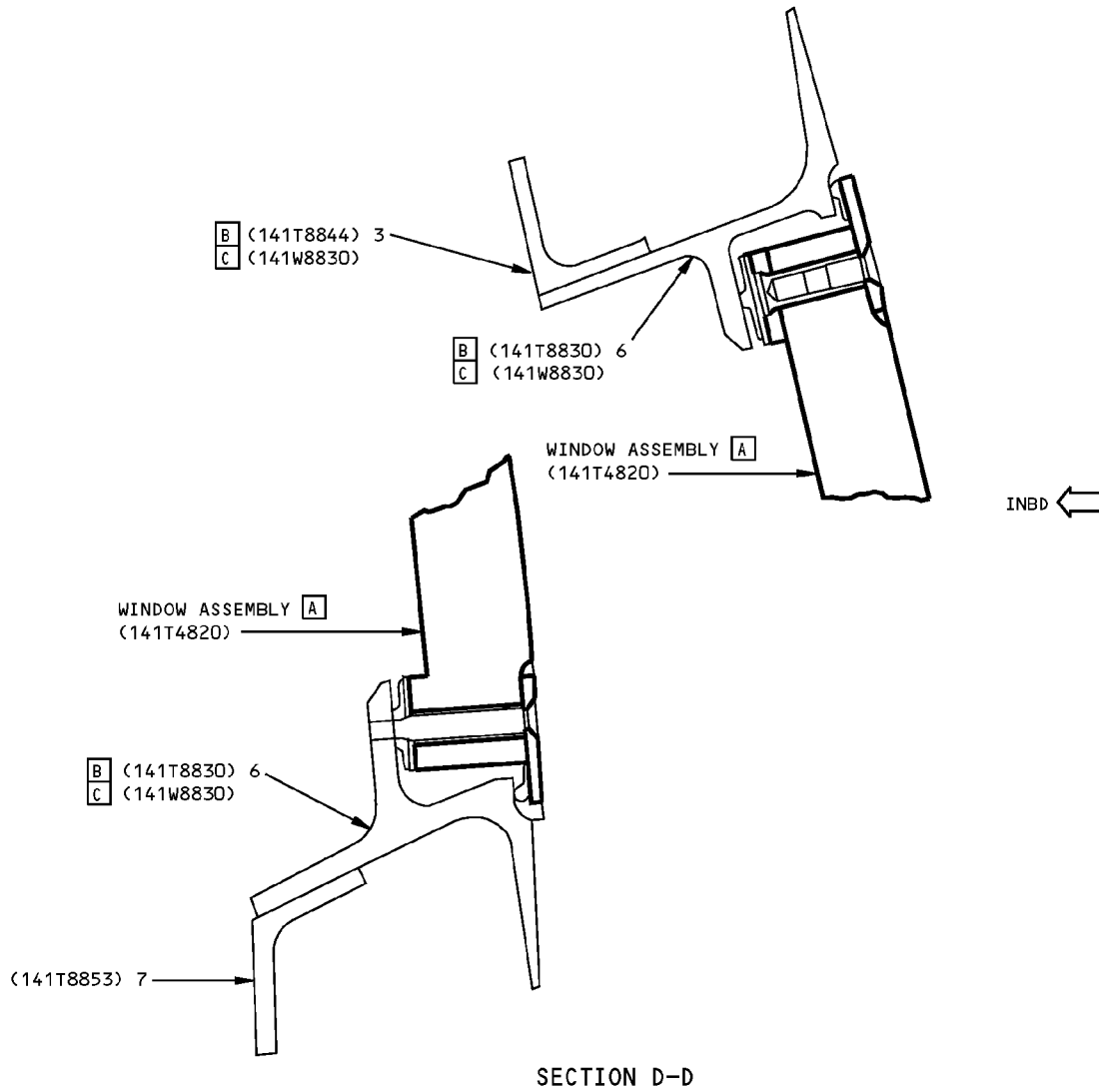


SECTION C-C



**Flight Compartment Window Structure Identification
Figure 1 (Sheet 2 of 3)**

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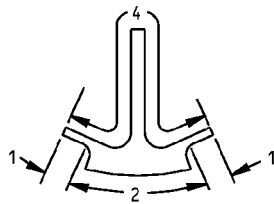
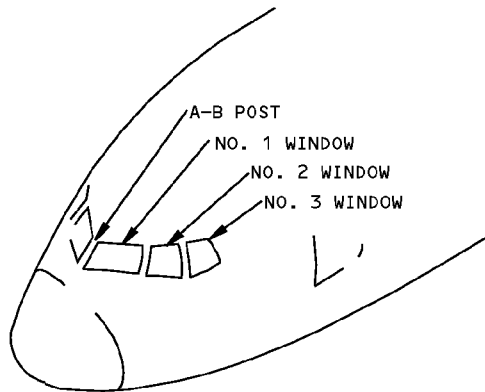
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SILL FITTING		FORGING TI-6AL-4V	
2	NO. 1 WINDOW FRAME		FORGING TI-6AL-4V	
3	SILL FITTING		FORGING 7075-T73	
4	OPENABLE FRAME		FORGING 7075-T73	
5	NO. 2 WINDOW FRAME		FORGING 7075-T73	
6	NO. 3 WINDOW FRAME		FORGING 7075-T73	
7	NO. 3 WINDOW CHORD		BAC1514-2477 7075-T6	

LIST OF MATERIAL FOR SECTIONS B-B, C-C, D-D

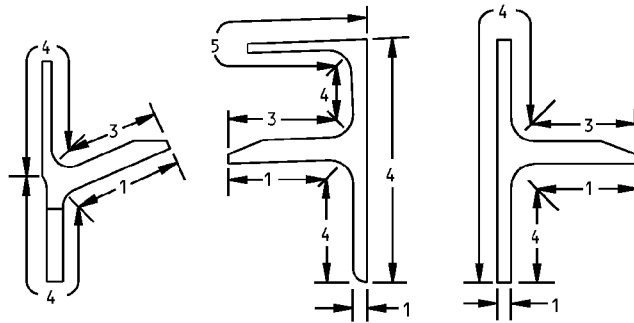
**Flight Compartment Window Structure Identification
Figure 1 (Sheet 3 of 3)**

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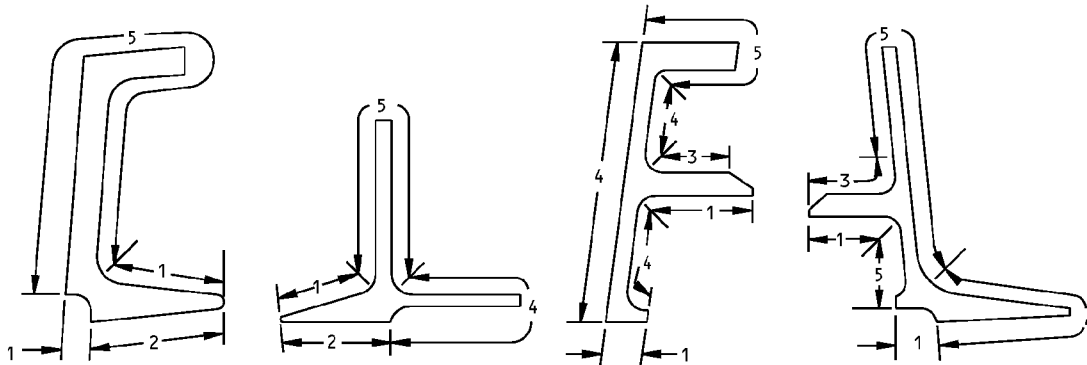
ALLOWABLE DAMAGE 1 - FLIGHT COMPARTMENT WINDOW FRAMES



A-B POST FITTING



TYP NO. 1 WINDOW FRAME SECTIONS



TYP NO. 2 WINDOW FRAME SECTIONS

TYP NO. 3 WINDOW FRAME SECTIONS

- AREA 1 - WINDOW BEARING OR WINDOW SEAL SURFACE
- AREA 2 - WINDOW FLANGE SURFACE
- AREA 3 - WINDOW ATTACHMENT SURFACE
- AREA 4 - STRUCTURE ATTACHMENT FLANGE
- AREA 5 - INBOARD FLANGE OR WEB

AREA DEFINITIONS FOR TYPICAL WINDOW FRAME CROSS SECTIONS

**Allowable Damage - Flight Compartment Window Frames
Figure 101 (Sheet 1 of 4)**



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STRUCTURAL REPAIR MANUAL**

AREA	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
1	A	B E F	SEE DETAIL VI E F	NOT PERMITTED
2	A	B C E F	SEE DETAIL VI E F	NOT PERMITTED
3	A	C E F	SEE DETAIL VI E F	NOT PERMITTED
4	A	D E F G	SEE DETAIL VI F G	NOT PERMITTED
5	A	D E F G	SEE DETAIL VI F G	NOT PERMITTED

NOTES

- FOR WINDOW PANES, REFER TO AMM 56-00

A ALL CRACKED PARTS MUST BE REPLACED

B FOR EDGE DAMAGE SEE DETAIL III. FOR OTHER DAMAGE SEE DETAIL II

C FOR CORNER DAMAGE SEE DETAIL IV. FOR OTHER DAMAGE SEE DETAIL II

D FOR EDGE DAMAGE SEE DETAILS I AND III. FOR CORNER DAMAGE SEE DETAIL IV. FOR DAMAGE UNDER FASTENER HEAD, COLLAR OR EXISTING COUNTERBORE SURFACE SEE DETAIL V. FOR OTHER DAMAGE SEE DETAIL II

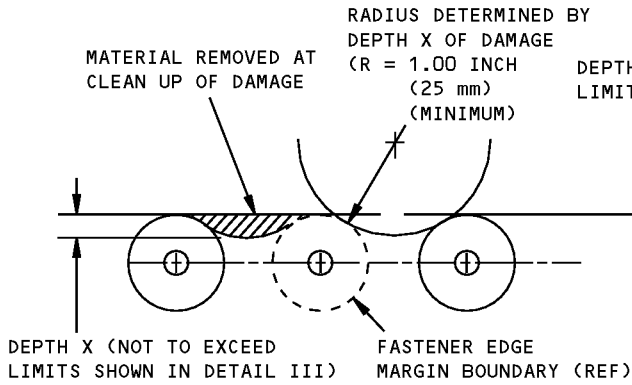
E ALL CONNECTING CURVED SURFACES OR CURVED AND PLANE SURFACES MUST BE BLENDED SMOOTHLY AND MISMATCH MUST NOT EXCEED 0.005

F SHOT PEEN ALUMINUM FRAME REWORKED AREAS (WINDOWS 2 AND 3) AS GIVEN IN SOPM 20-10-03. SHOT NUMBER 170-550. SHOT PEEN INTENSITIES WILL VARY WITH THICKNESS LEFT AFTER REWORK. REFER TO SRM 51-20-06. FINISH TO BE 125 MICROINCHES OR BETTER AFTER SHOT PEENING. TITANIUM PARTS (WINDOW 1 AND A-B POST) TO HAVE A FINISH OF 125 MICROINCHES AFTER REWORK

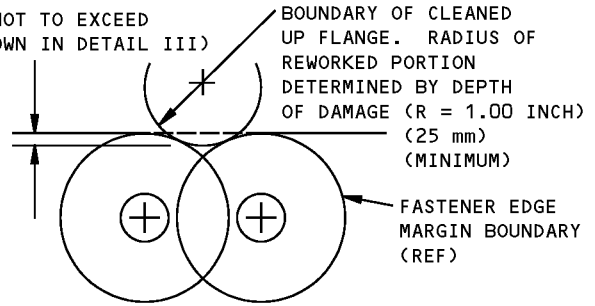
G THE REDUCTION IN CROSS SECTION AREA OF THE TOTAL ADDITIVE DAMAGES IS NOT TO EXCEED 15% OF ORIGINAL CROSS SECTIONAL AREA

**Allowable Damage - Flight Compartment Window Frames
Figure 101 (Sheet 2 of 4)**

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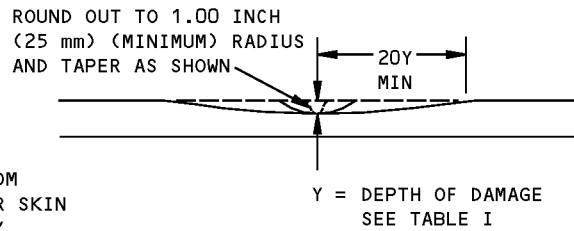
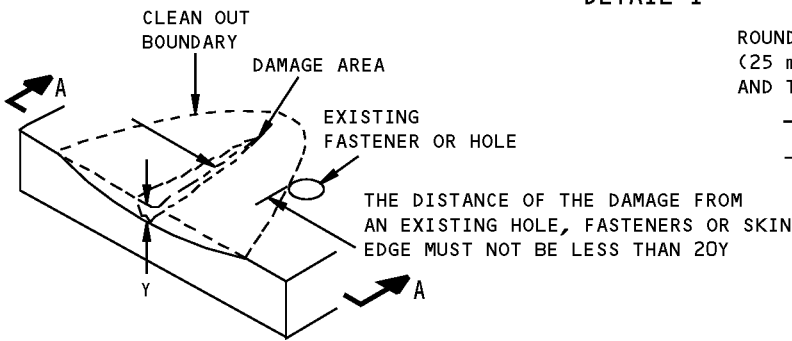


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



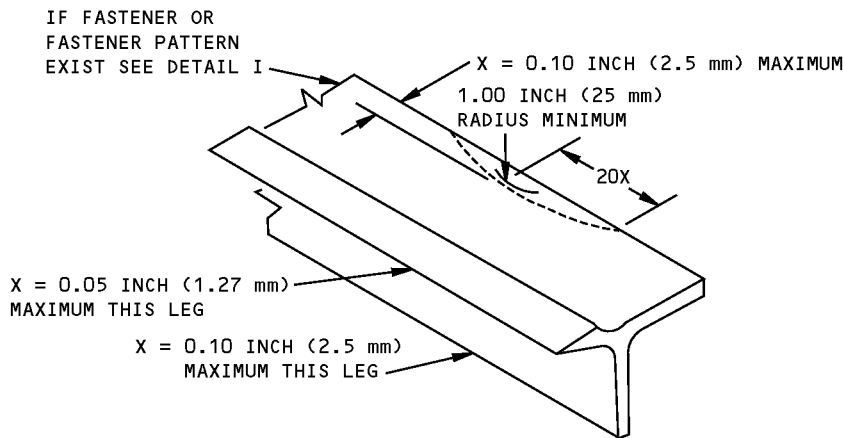
DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

**FLANGES WITH HOLE PATTERNS
DETAIL I**



SECTION A-A

**REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE
DETAIL II**

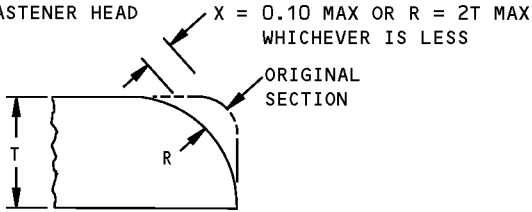


**X = DEPTH OF DAMAGE
DETAIL III**

**Allowable Damage - Flight Compartment Window Frames
Figure 101 (Sheet 3 of 4)**

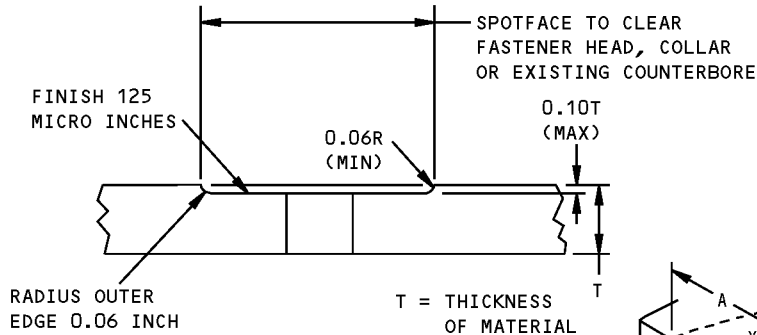
**767-300
STRUCTURAL REPAIR MANUAL**

RADIUS CORNER TO REMOVE
NICK AND TAPER TO 20 X MIN.
NEW RADIUS CAN NOT LIE
UNDER A FASTENER HEAD

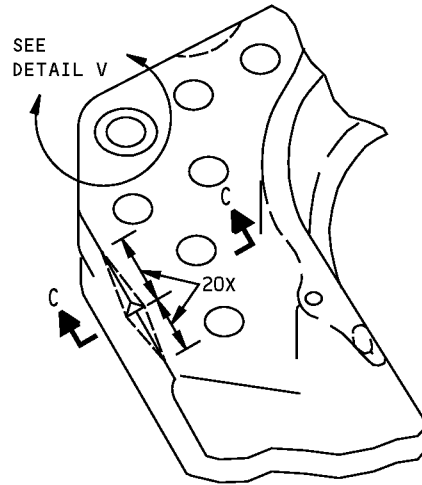


T = THICKNESS
OF MATERIAL

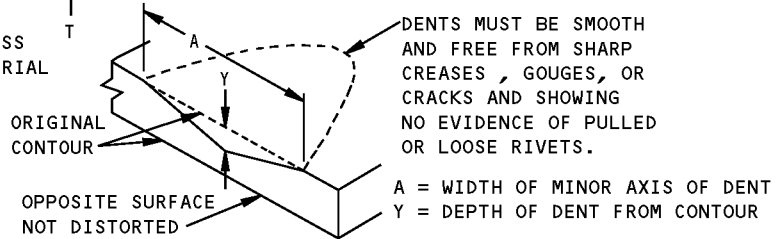
SECTION C-C



DETAIL V



DETAIL IV



$\frac{A}{Y}$ MUST NOT BE LESS THAN 30

DETAIL VI

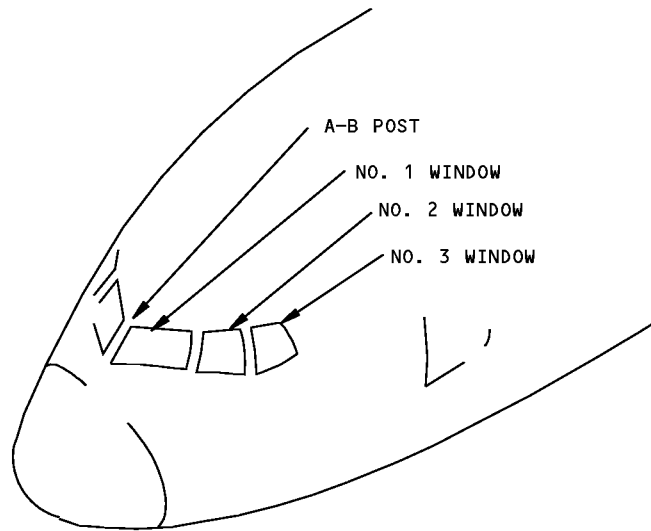
MAX ALLOWABLE SURFACE DAMAGE LIMITS AFTER CLEANUP (INCHES)			
AREA	FLANGE THICKNESS (T)	DAMAGE DEPTH (Y)	DAMAGE LENGTH BETWEEN FASTENERS (AREA 4 ONLY)
1	----	0.01	----
2	----	0.02	----
3	----	0.02	----
4 AND 5 FLANGES	UP TO 0.12	0.02	0.60
	0.12 TO 0.35	0.04	0.60
	OVER 0.35	0.06	0.60

TABLE I

**Allowable Damage - Flight Compartment Window Frames
Figure 101 (Sheet 4 of 4)**

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STRUCTURAL REPAIR MANUAL

REPAIR 1 - FLIGHT COMPARTMENT WINDOW FRAMES



NOTES

- NO TYPICAL REPAIRS TO WINDOW FRAME AVAILABLE. SPECIFIC REPAIRS TO WINDOW FRAMES WILL BE PROVIDED BASED ON SERVICE EXPERIENCE
- REFER TO SRM 56-10-02 IDENTIFICATION 1, FOR WINDOW FRAME IDENTIFICATION

86915 S0006829494_V3

Flight Compartment Window Frame Repairs
Figure 201

D634T210

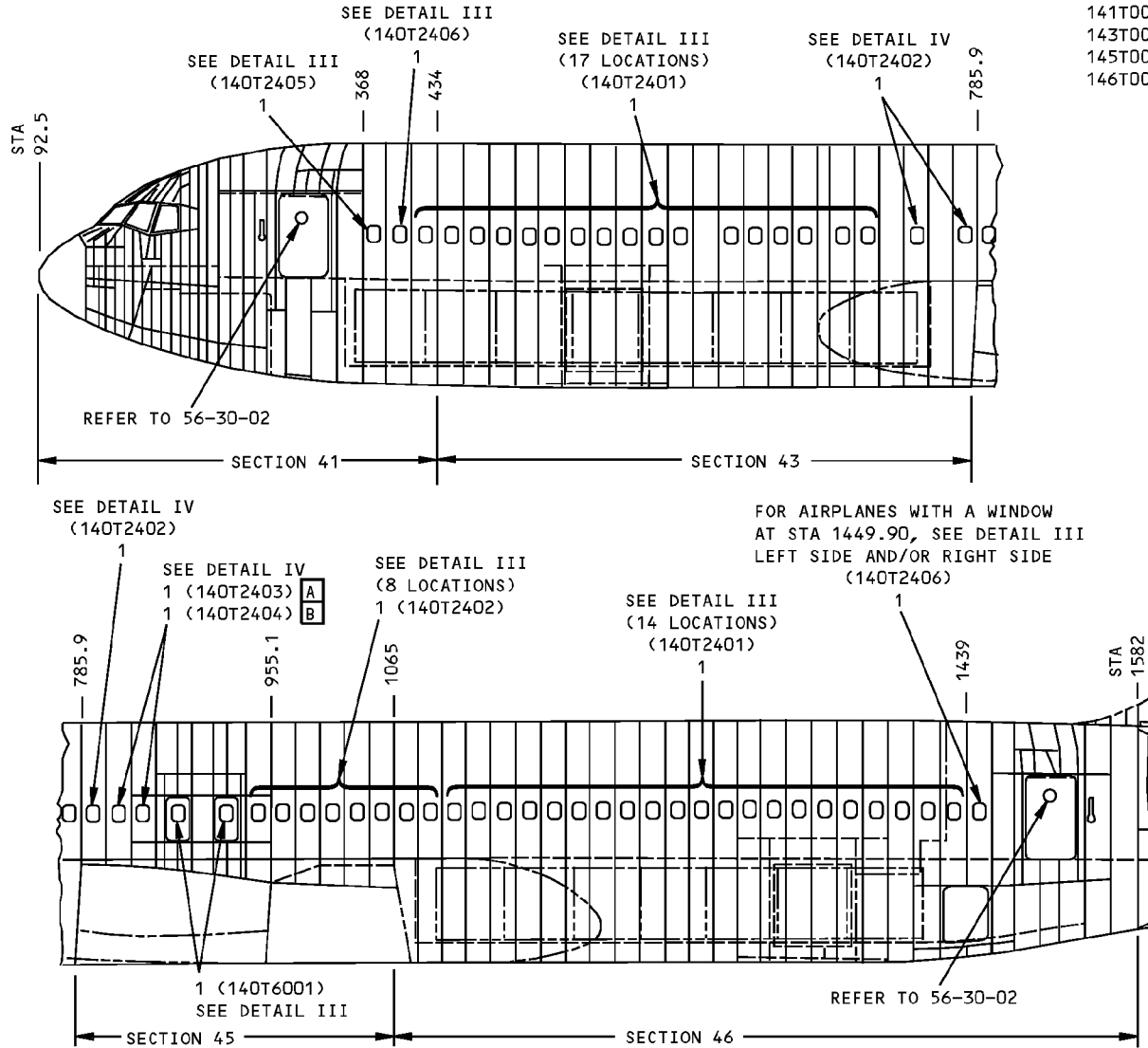
56-10-02

REPAIR 1
Page 201
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IDENTIFICATION 1 - CABIN WINDOW FRAMES

REF DWG
141T0042
143T0042
145T0042
146T0042



NOTES

- SEE DETAIL I FOR AIRPLANES WITH PASSENGER/ CREW SERVICE MID ENTRY DOOR CONFIGURATION.
- SEE DETAIL II FOR AIRPLANES WITH TYPE I DOOR EMERGENCY EXIT.

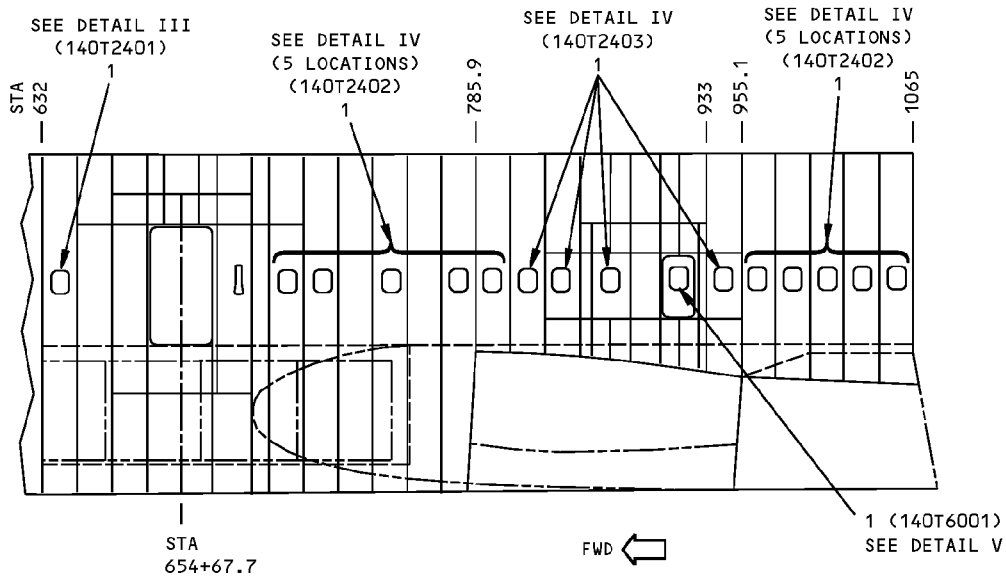
A FOR AIRPLANES WITH THE CONFIGURATION NOT LISTED IN **B**.

B FOR 767-300ER (400K) AIRPLANES WITH THE DUAL EMERGENCY EXIT CONFIGURATION.

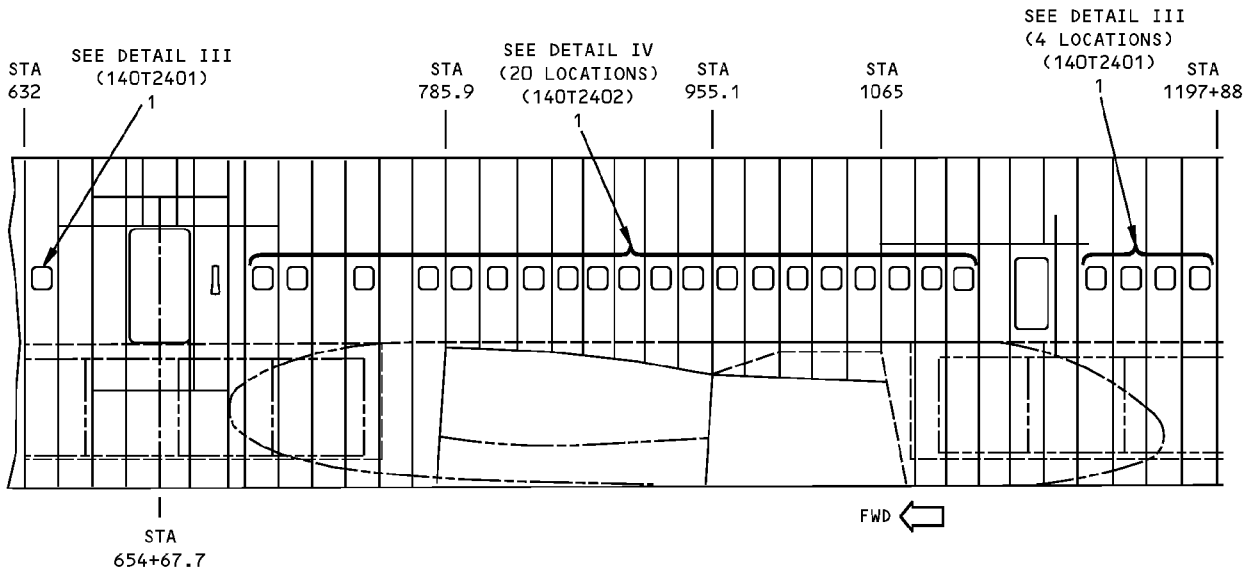


**Cabin Window Frame Identification
Figure 1 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



**PASSENGER/CREW SERVICE MID ENTRY DOOR CONFIGURATION
DETAIL I**



**TYPE 1 DOOR EMERGENCY EXIT CONFIGURATION
DETAIL II**

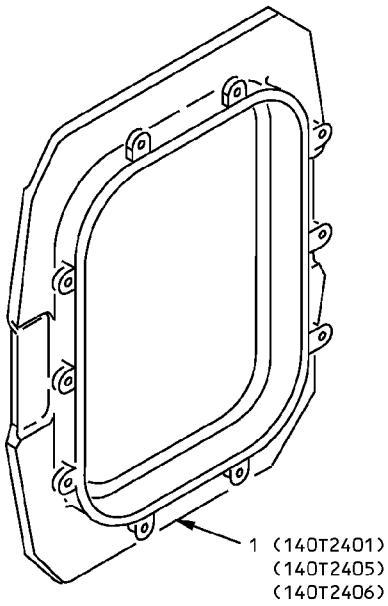
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WINDOW FRAME		FORGING 7075-T73	

LIST OF MATERIALS

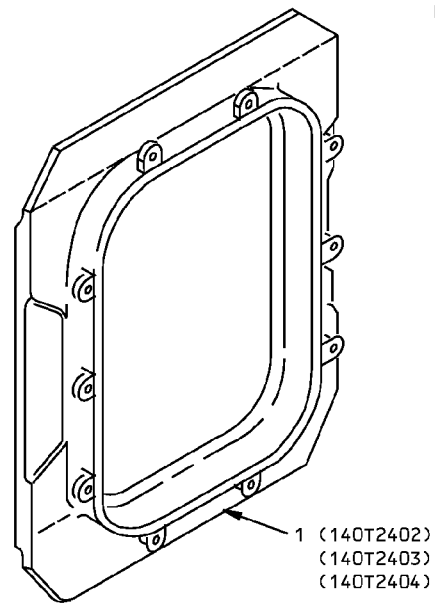
**Cabin Window Frame Identification
Figure 1 (Sheet 2 of 3)**

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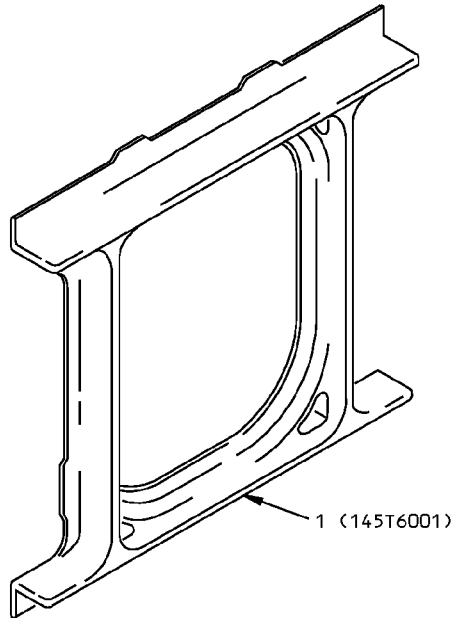
REF DWG
140T2400



DETAIL III



DETAIL IV



DETAIL V

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WINDOW FRAME		FORGING 7075-T73	

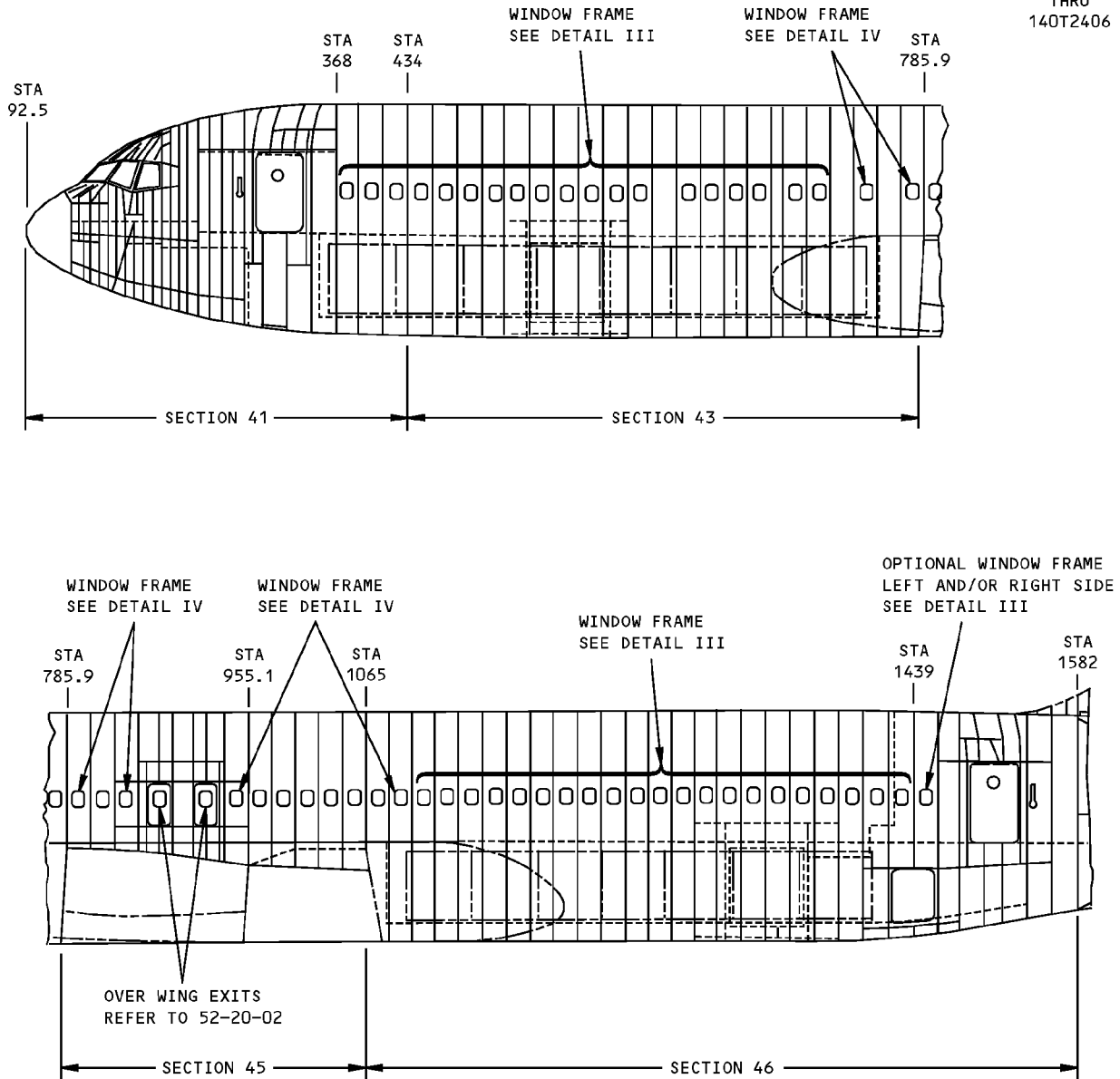
LIST OF MATERIALS FOR DETAILS III, IV, AND V

**Cabin Window Frame Identification
Figure 1 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CABIN WINDOW FRAMES

REF DWG
140T2401
THRU
140T2406



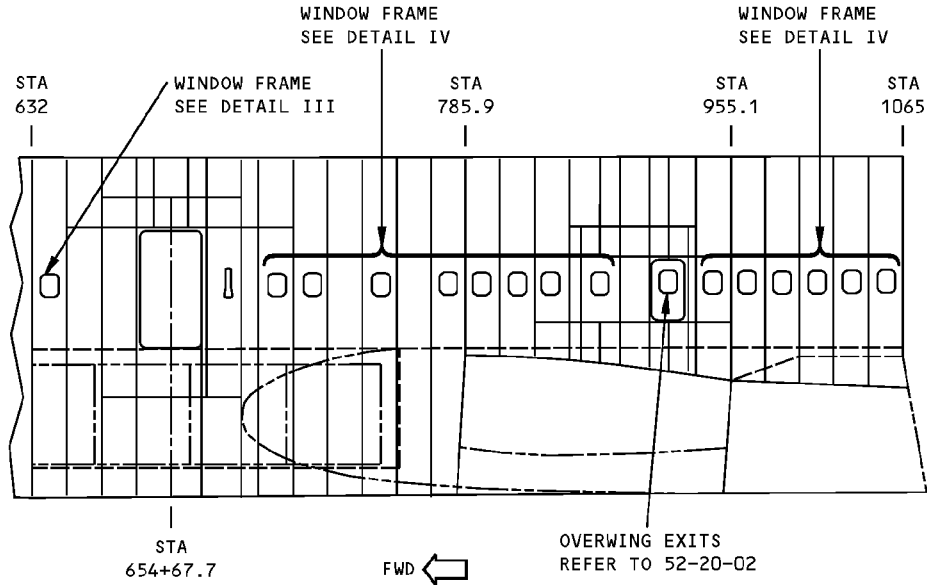
NOTE: SEE DETAIL I FOR AIRPLANES WITH THE PASSENGER/CREW SERVICE MID ENTRY DOOR CONFIGURATION.

SEE DETAIL II FOR AIRPLANES WITH THE TYPE I DOOR EMERGENCY EXIT.

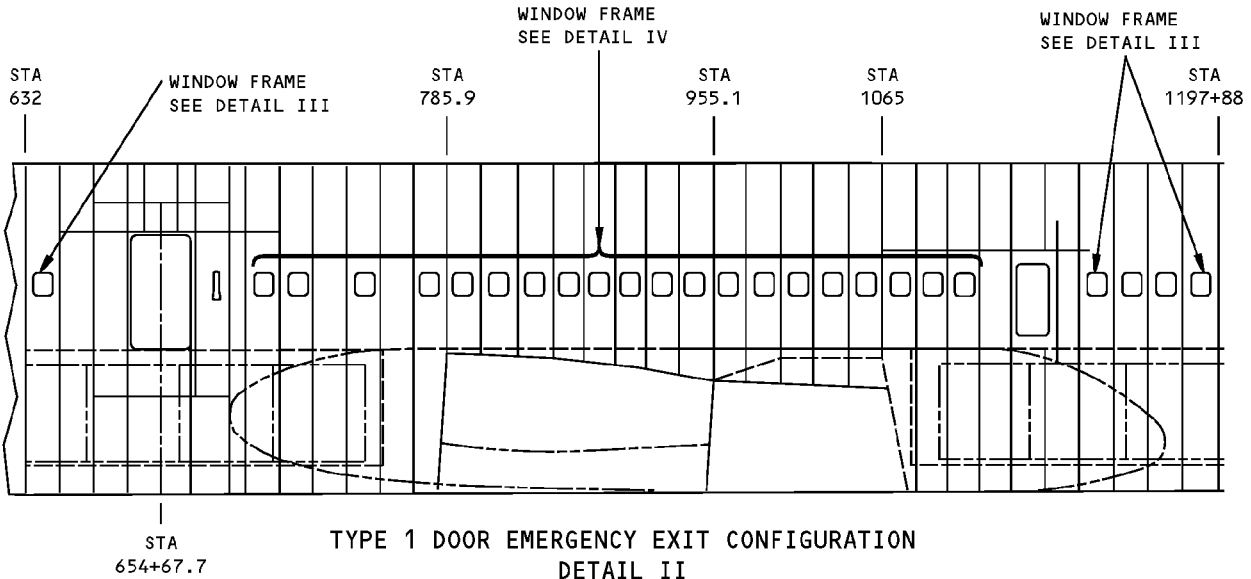
SEE DETAIL III AND IV FOR THE WINDOW FRAME DETAILS.

**Allowable Damage - Cabin Window Frames
Figure 101 (Sheet 1 of 7)**

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STRUCTURAL REPAIR MANUAL**



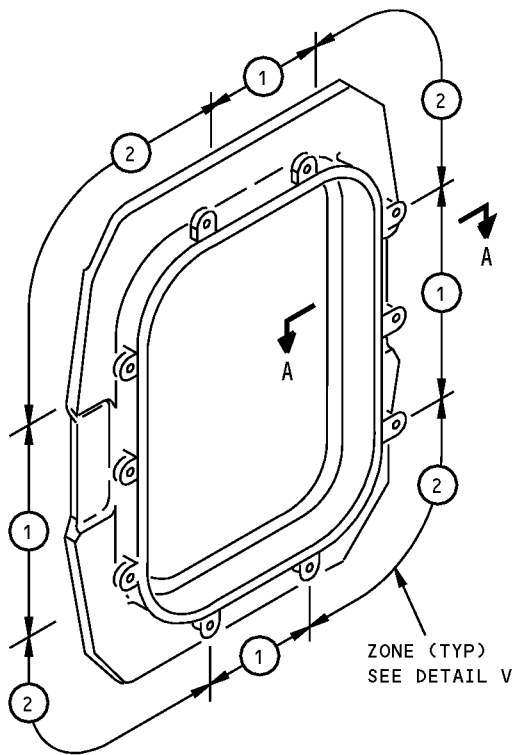
**PASSENGER/CREW SERVICE MID ENTRY DOOR CONFIGURATION
DETAIL I**



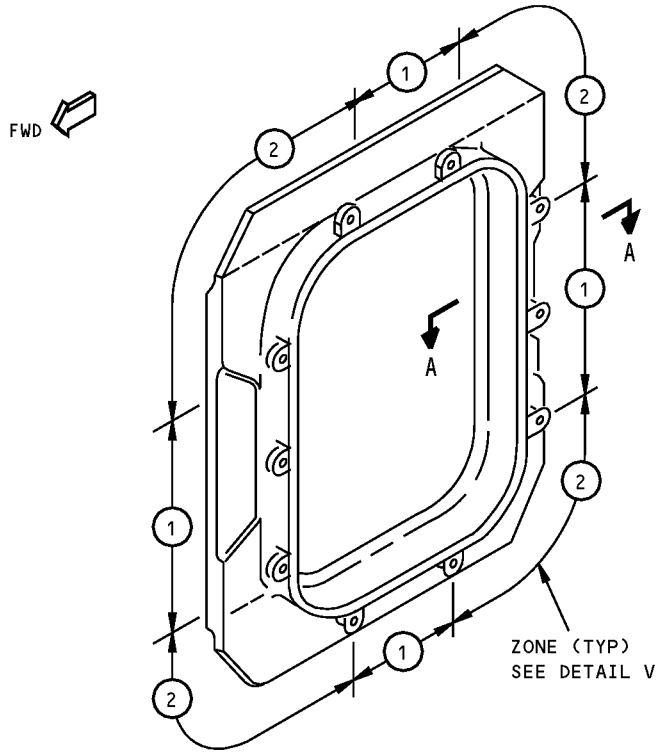
**TYPE 1 DOOR EMERGENCY EXIT CONFIGURATION
DETAIL II**

**Allowable Damage - Cabin Window Frames
Figure 101 (Sheet 2 of 7)**

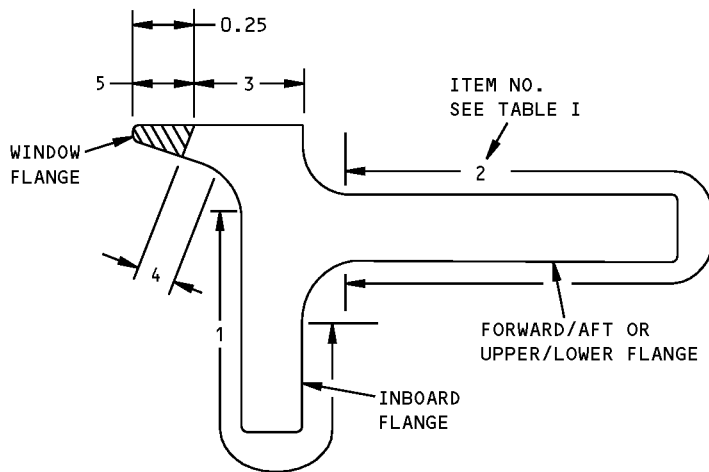
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STRUCTURAL REPAIR MANUAL**



DETAIL III



DETAIL IV



SECTION A-A

**Allowable Damage - Cabin Window Frames
Figure 101 (Sheet 3 of 7)**

STRUCTURAL REPAIR MANUAL

ZONE	ITEM	MAX ALLOWABLE DEPTH OF DAMAGE AFTER CLEANUP [G][L] (INCH)		CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION [H]
		EDGE	SURFACE		
①	1	0.100	[I]	[A]	[A][B]
	2	0.100	[J]	[A]	[A][B][D][E]
	3	---	0.020	[C]	[B]
	4	---	0.030	[C]	[B]
	5	---	0.010	[C]	[B] (SURFACE)
	5	0.060	---	[C]	[F][K] (EDGE)
②	1	0.060	[I]	[A]	[A][B]
	2	0.060	[J]	[A]	[A][B][D][E]
	3	---	0.020	[C]	[B]
	4	---	0.015	[C]	[B]
	5	---	0.010	[C]	[B] (SURFACE)
	5	0.060	---	[C]	[F][K] (EDGE)

NOTES

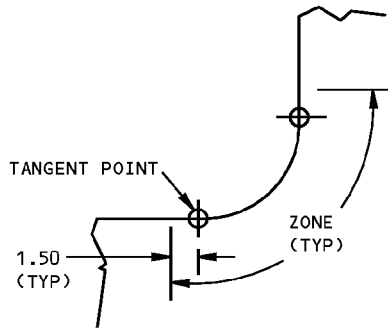
- REFER TO SRM 51-10-02 FOR THE INSPECTION AND REMOVAL OF DAMAGE.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFINISH REWORKED AREAS AS SHOWN IN AMM 51-20-00.
- MAKE THE SURFACE OF THE REWORKED AREAS SMOOTH WITH A FINISH OF 125 MICROINCHES Ra.
- SHOT PEEN THE REWORKED AREAS AFTER REMOVAL OF THE DAMAGE AS SHOWN IN SRM 51-20-06 AND SOPM 20-10-03. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT AFTER REWORK.
- APPLY A CHEMICAL CONVERSION COATING TO THE REWORKED AREAS. REFER TO SRM 51-20-01.

- [A] DAMAGE REMOVED ON EDGE OF A FLANGE ACCORDING TO DETAILS VI OR VIII IS PERMITTED PROVIDED THE DEPTH IS NO MORE THAN THE MAXIMUM DEPTH AND THE MINIMUM FASTENER EDGE MARGIN IS MAINTAINED. ALL OTHER CRACKS ARE NOT PERMITTED.
- [B] DAMAGE REMOVED PER DETAIL VIII IS PERMITTED PROVIDED THE DEPTH IS NO MORE THAN THE MAXIMUM PERMISSIBLE DEPTH.
- [C] CRACKS ARE NOT PERMITTED. REPLACE THE FRAME.

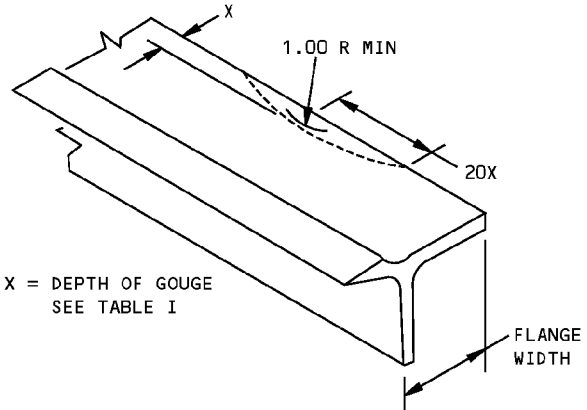
- [D] DAMAGE ON SURFACES IN THE REGIONS OF FASTENER HEADS OR COLLARS IS PERMITTED PROVIDED THAT THE DAMAGE CAN BE REMOVED BY SPOTFACING AS SHOWN IN DETAIL IX.
- [E] REMOVE CORROSION DAMAGE AS SHOWN IN DETAIL X.
- [F] DAMAGE REMOVED ON EDGE OF A FLANGE ACCORDING TO DETAIL VI IS PERMITTED PROVIDED THE DEPTH IS NO MORE THAN THE MAXIMUM PERMISSIBLE DEPTH. ALL SHARP EDGES MUST BE 0.06R MINIMUM.
- [G] REDUCTION IN CROSS-SECTIONAL AREA CAN BE NO MORE THAN 15% OF INITIAL AREA.
- [H] MINOR DENTS AND SURFACE DEPRESSIONS ARE PERMITTED PROVIDED THAT THE PENETRATION IS NO MORE THAN THE MAXIMUM PERMISSIBLE DEPTHS FOR NICKS OR GOUGES. HOLES AND PUNCTURES ARE NOT PERMITTED.
- [I] 0.030 PERMITTED IN FLANGE SURFACE THICKNESS UP TO 0.35 INCH. 0.060 PERMITTED IN FLANGE SURFACE THICKNESS OVER 0.35 INCH.
- [J] 0.020 IS PERMITTED IN FLANGE SURFACE THICKNESS LESS THAN 0.12 INCH. 0.040 IS PERMITTED IN FLANGE SURFACE THICKNESS BETWEEN 0.12 INCH AND 0.35 INCH. 0.060 IS PERMITTED IN FLANGE SURFACE THICKNESS OVER 0.35 INCH.
- [K] REFER TO DETAIL IX FOR EDGE DEFINITION AFTER REWORK.
- [L] RESTORE DRAWING FILLETS AND RADII.

Allowable Damage - Cabin Window Frames
Figure 101 (Sheet 4 of 7)

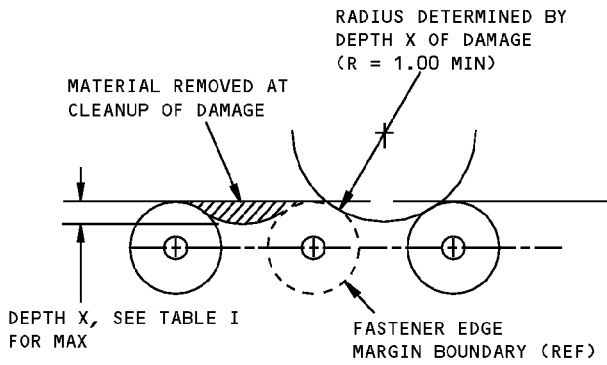
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STRUCTURAL REPAIR MANUAL**



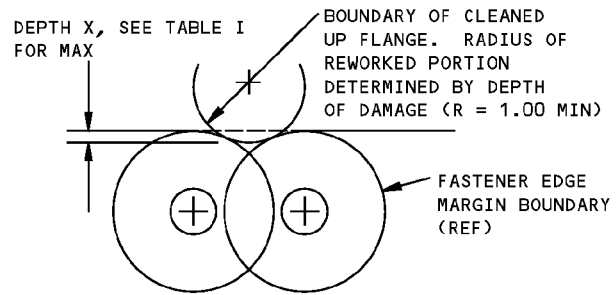
DETAIL V



**REMOVAL OF NICK OR GOUGE DAMAGE ON AN EDGE
DETAIL VI**

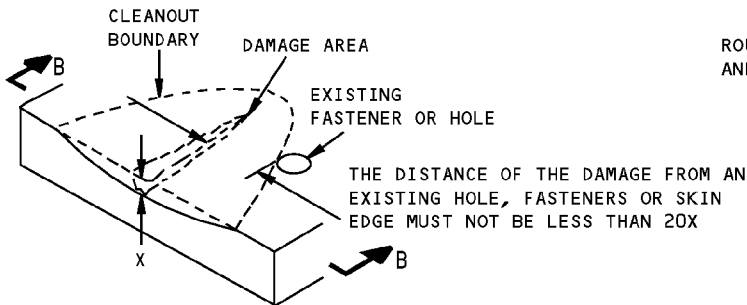


**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP**

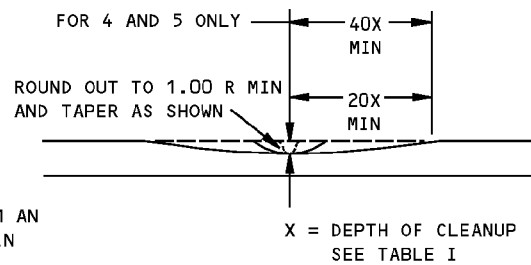


**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP**

DETAIL VII



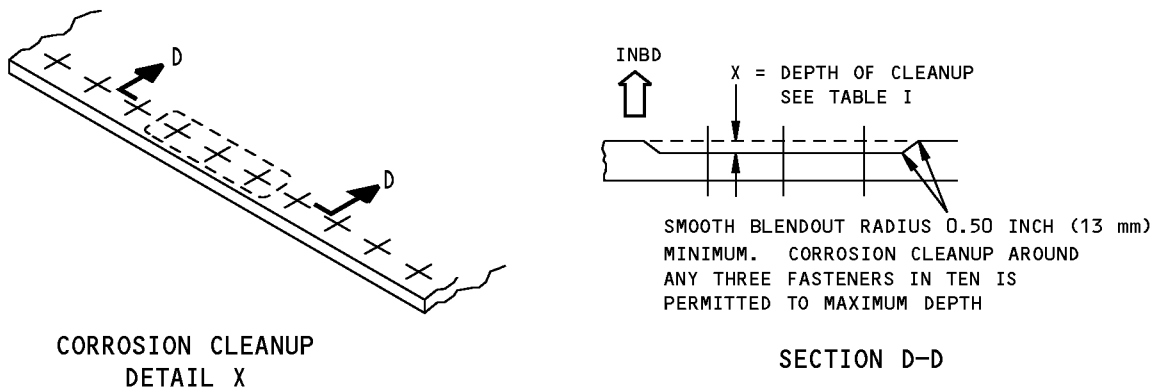
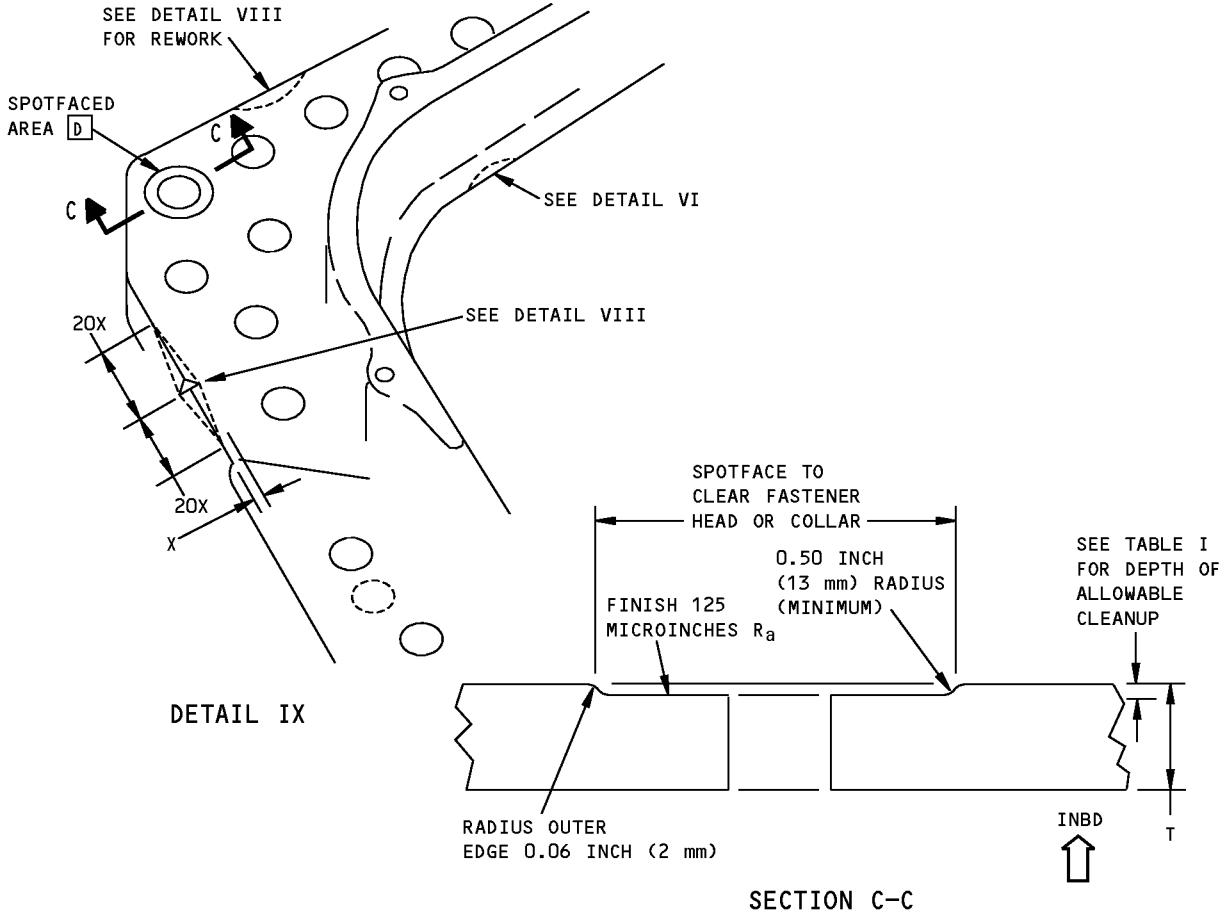
**REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE
DETAIL VIII**



SECTION B-B

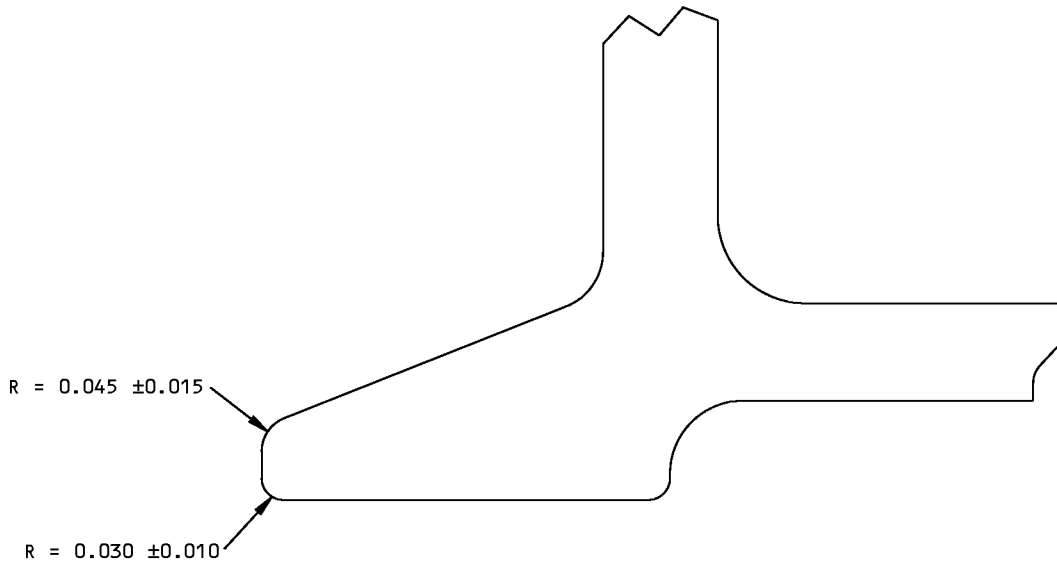
**Allowable Damage - Cabin Window Frames
Figure 101 (Sheet 5 of 7)**

STRUCTURAL REPAIR MANUAL



**Allowable Damage - Cabin Window Frames
Figure 101 (Sheet 6 of 7)**

767-300
STRUCTURAL REPAIR MANUAL



EDGE DEFINITION AFTER REWORK
DETAIL XI

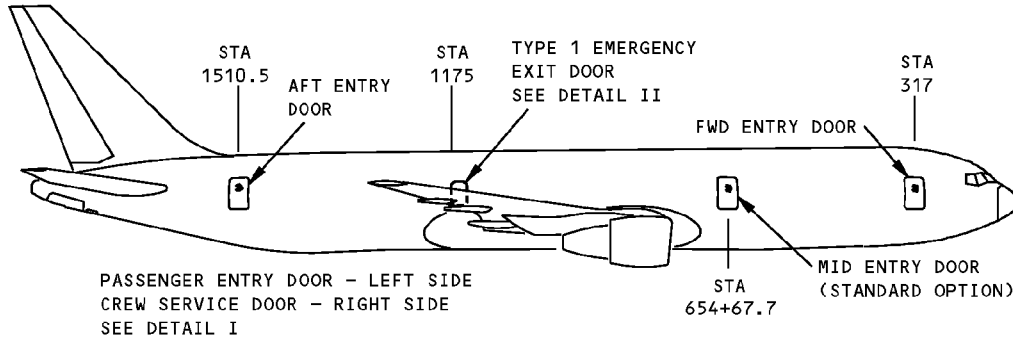
Allowable Damage - Cabin Window Frames
Figure 101 (Sheet 7 of 7)

D634T210

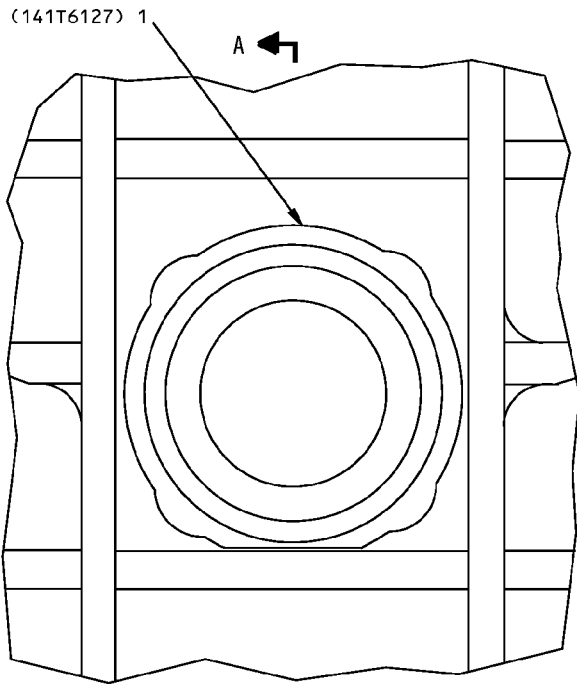
56-20-02
ALLOWABLE DAMAGE 1
Page 107
Aug 15/2006

**767-300
STRUCTURAL REPAIR MANUAL**

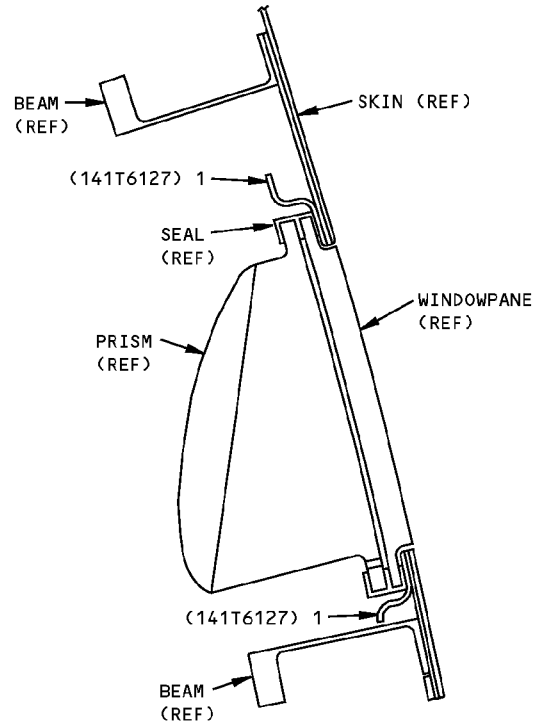
IDENTIFICATION 1 - DOOR WINDOW STRUCTURE



REF DWGS
141T6121
143T6121
146T6121



INBOARD VIEW



SECTION A-A

TYPICAL FOR ALL PASSENGER/CREW ENTRY DOORS
DETAIL I

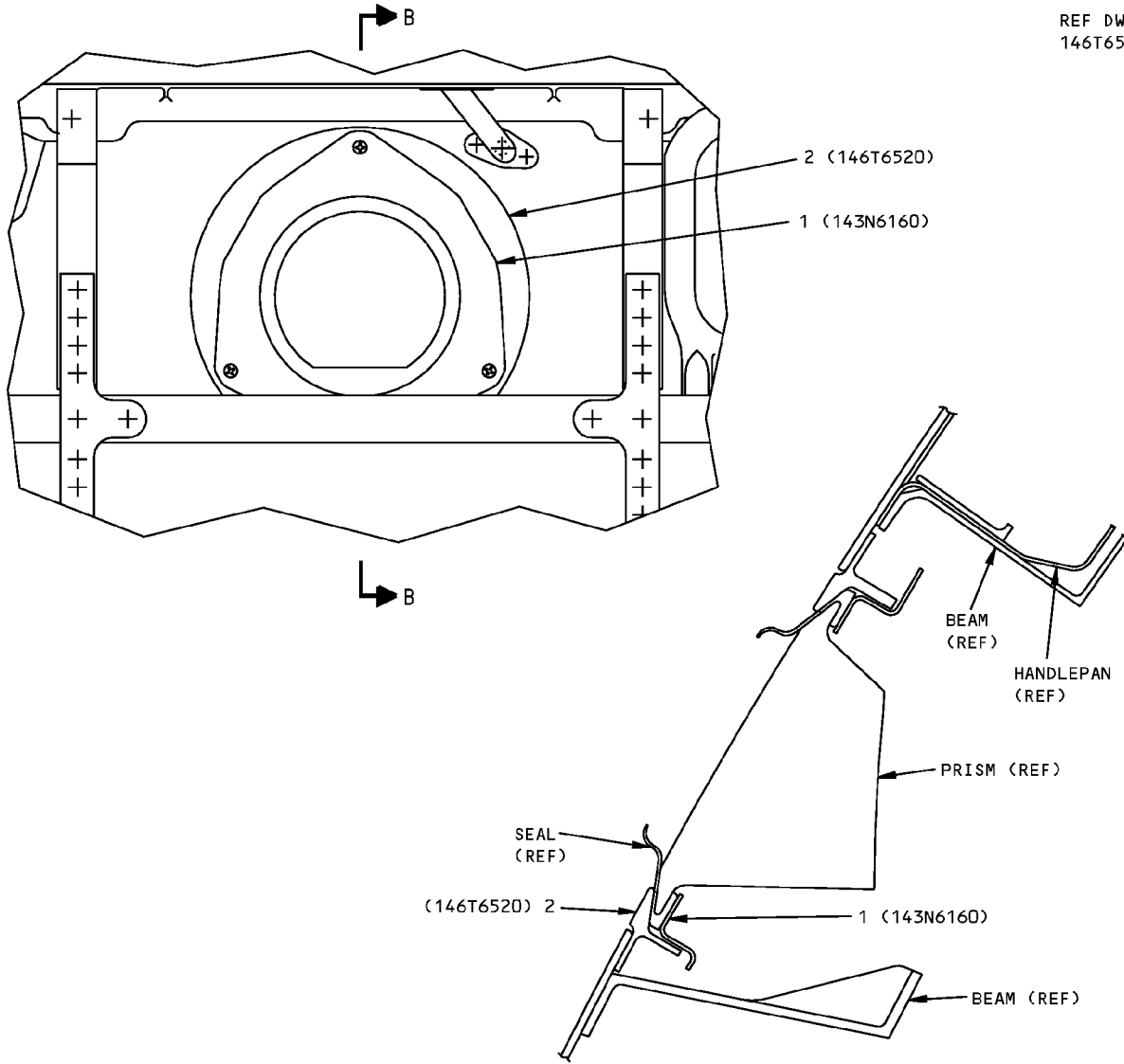
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SUPPORT RING	0.080	CLAD 2024-T42	

LIST OF MATERIALS FOR DETAIL I

**Door Window Structure Identification
Figure 1 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWGS
146T6505



SECTION B-B

**TYPE 1 DOOR EMERGENCY EXIT
DETAIL II**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SEAL RETAINER	0.063	CLAD 2024-T42	
2	WINDOW FRAME		7075-T73 FORGING OPTIONAL 7075-T7351 PLATE	

LIST OF MATERIALS FOR DETAIL II

**Door Window Structure Identification
Figure 1 (Sheet 2 of 2)**

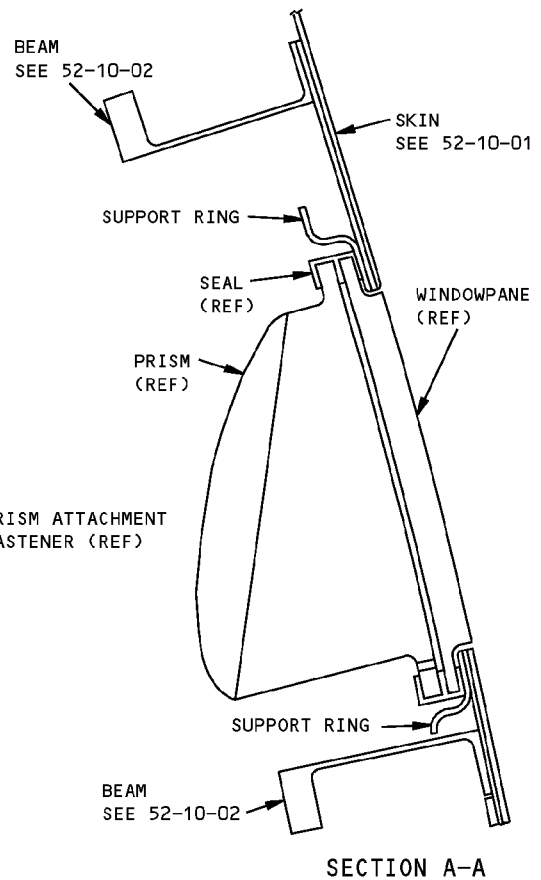
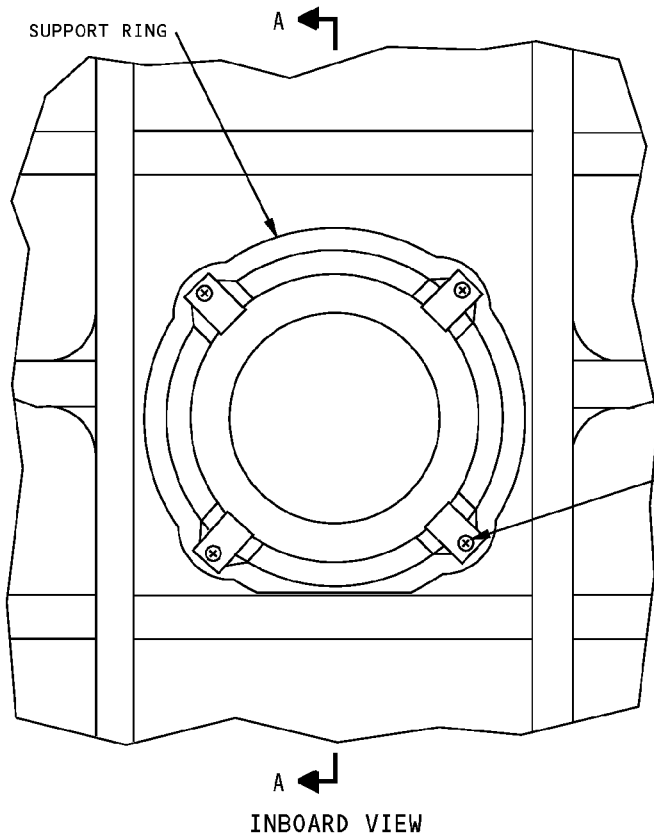
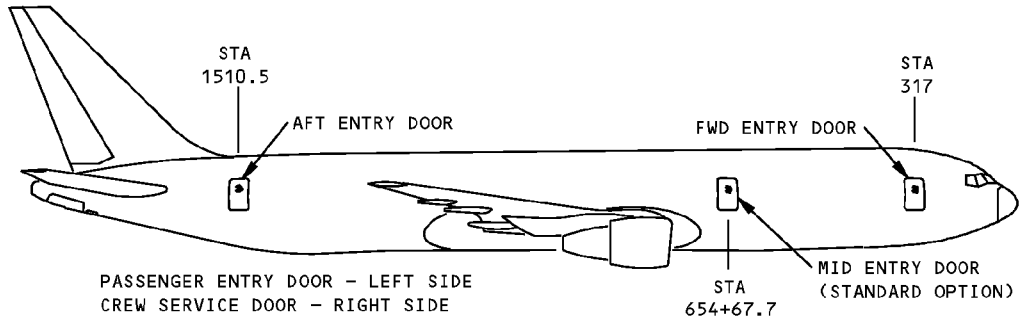
IDENTIFICATION 1
Page 2
Apr 01/2005

56-30-02

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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - DOOR WINDOW STRUCTURE



TYPICAL FOR ALL PASSENGER/CREW ENTRY DOORS

LOCATION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
SUPPORT RING	A	B	NOT ALLOWED	NOT ALLOWED

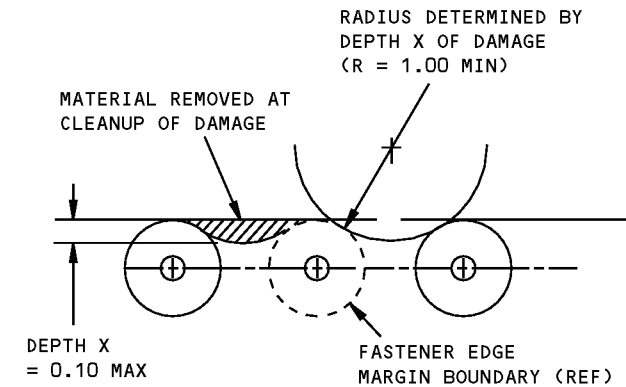
TABLE I

**Allowable Damage - Door Window Structure
Figure 101 (Sheet 1 of 3)**

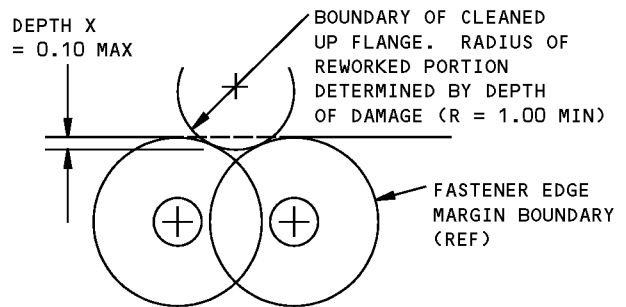
**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

- REFINISH REWORKED AREAS PER AMM 51-21
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS I AND II **C**
- B** REMOVE EDGE DAMAGE PER DETAILS I AND II. ELSEWHERE REMOVE DAMAGE PER DETAIL III AND IV **C**
- C** REPLACE RING IF DAMAGE IS ADJACENT TO PRISM ATTACHMENT FASTENERS OR EXCEEDS ALLOWABLE DAMAGE LIMITS CONTAINED HEREIN



DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP

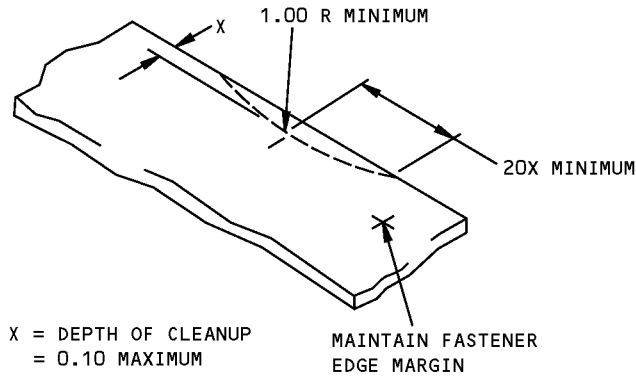


DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP

DETAIL I

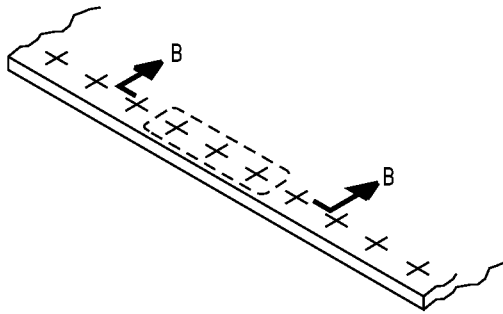
**Allowable Damage - Door Window Structure
Figure 101 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

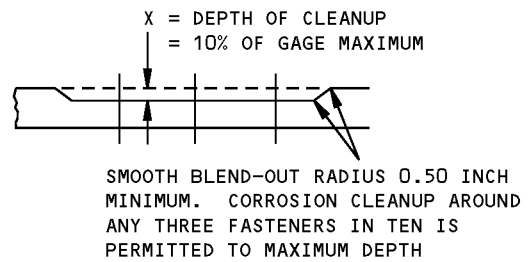


**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE**

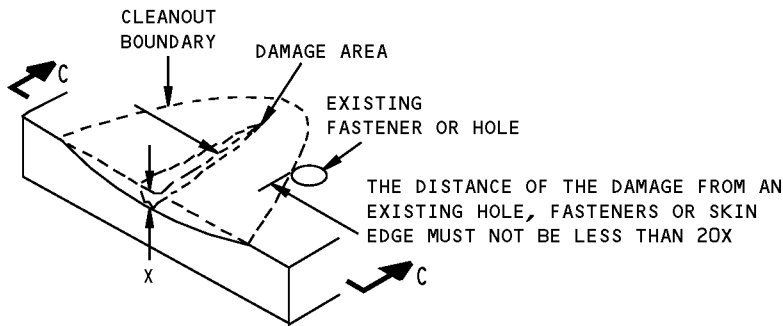
DETAIL II



**CORROSION CLEANUP
DETAIL III**

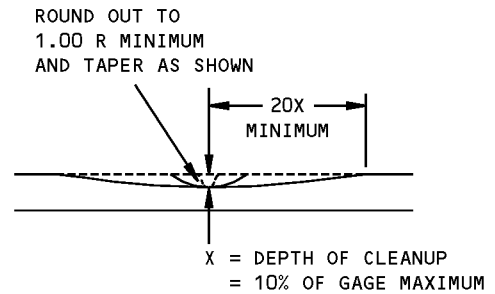


SECTION B-B



**REMOVAL OF NICK, GOUGE AND
SCRATCH DAMAGE ON A SURFACE**

DETAIL IV



SECTION C-C

**Allowable Damage - Door Window Structure
Figure 101 (Sheet 3 of 3)**