Le dossier technique se compose de 12 pages, numérotées de 1/12 à 12/12.
Dès que le dossier technique vous est remis, assurez-vous qu'il est complet.

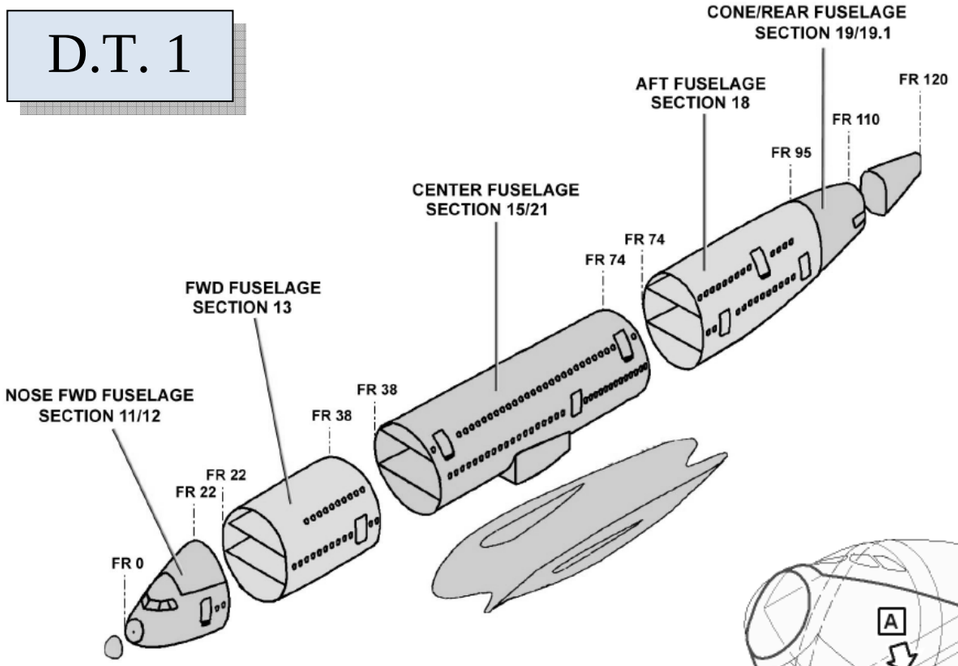
BACCALAURÉAT PROFESSIONNEL

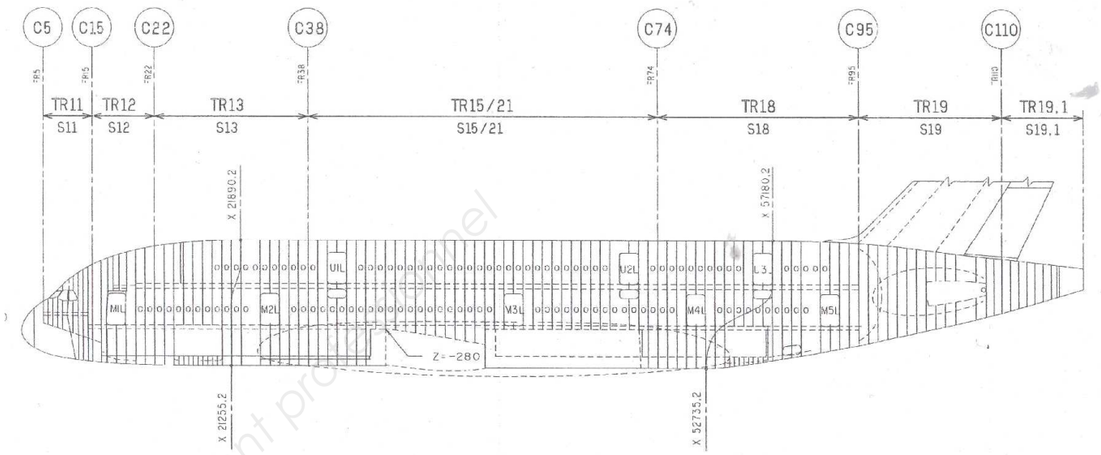
TECHNICIEN AÉROSTRUCTURE

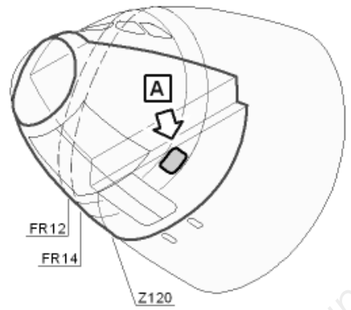
DOSSIER TECHNIQUE

CODE : 1406-TA T

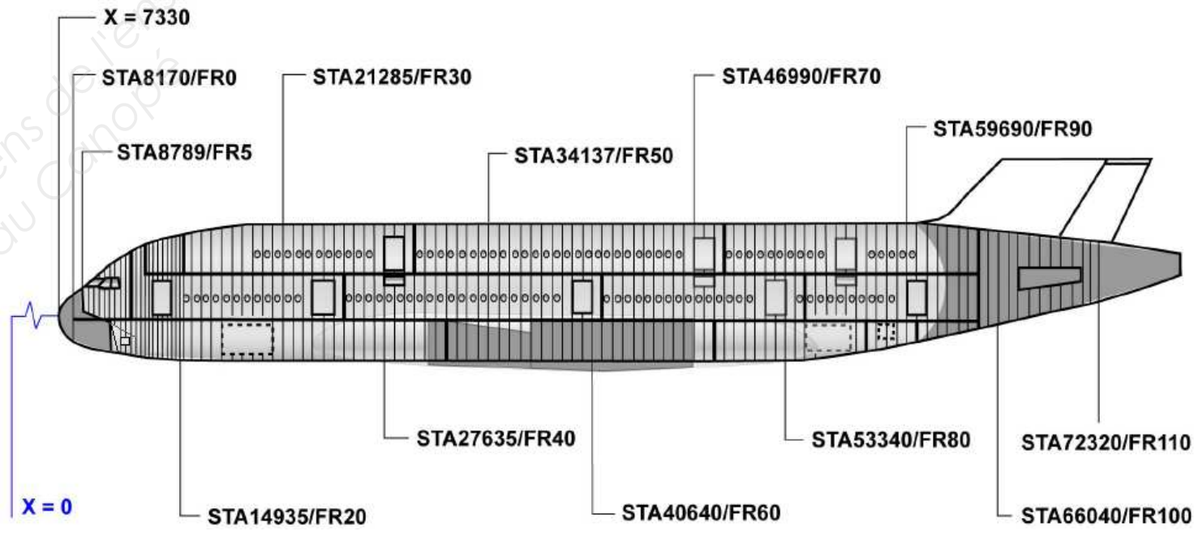
D.T. 1

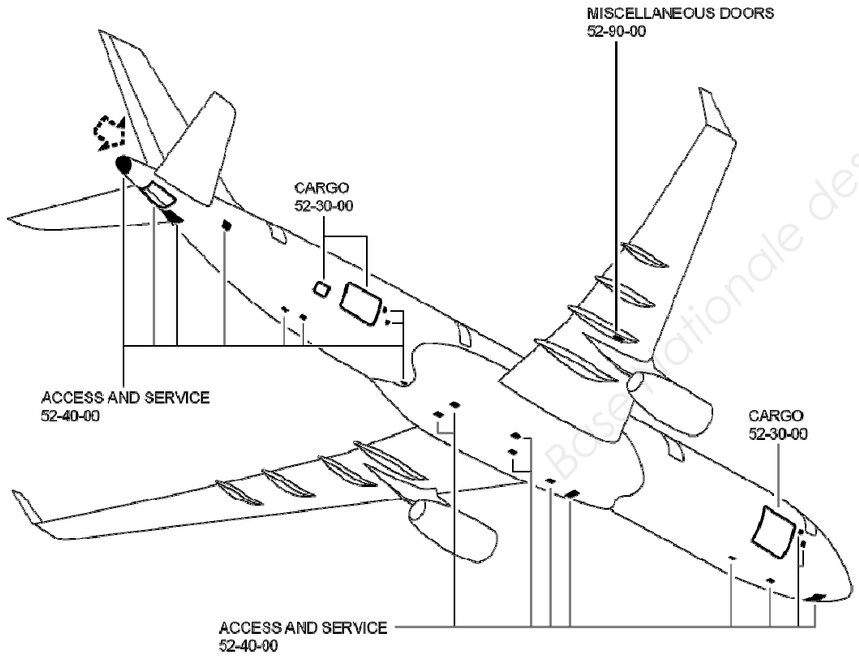


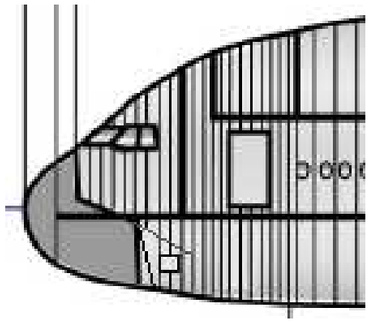




UNPRESSURIZED AREA







D.T. 2

Formulaire Résistance des matériaux	Principales familles de matériaux
τ : contrainte de cisaillement → : τ = T / S T : effort tranchant. S : aire de la section cisaillée. Condition de résistance : τ ≤ Rpg, Résistance pratique au glissement : Rpg = Reg/s s = coefficient de sécurité	- Fonte - Acier non allié - Acier faiblement allié - Acier fortement allié - Inconel (alliage nickel) - Alliage de zinc - Alliage d'aluminium - Alliage de cuivre - Alliage de titane - Polymères (thermodurcissables) - Polymères (thermoplastiques) - Composite (fibre de carbone) - Composite (fibre de verre) - Composite (fibre d'aramide)

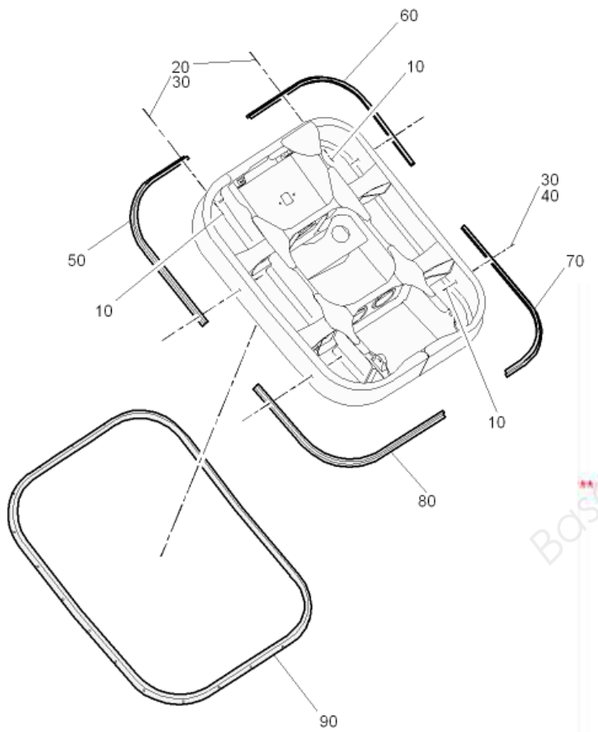
	Résistance élastique au glissement Reg
Re ≤ 270 Mpa	Reg= 0,5 x Re
270 Mpa ≤Re ≤ 520Mpa	Reg= 0,7 x Re

D.T. 3

Ajustements Usuels
(Système de l'alésage H)

Type			arbre	Alésages H6	H7	H8	H9	H10	H11	Observations
Pièces mobiles	jeu	jeu élevé	c11							Cas usuels de longues portées, mauvais alignement, dilatations...
			c10							
			c9							
			d10							
		jeu moyen	d9							Cas usuels pour guidages tournants ou glissant avec jeu (bon graissage assuré)
			d8							
			e9							
			e8							
			e7							
			f8							
			f7							
			f6							
		jeu faible	g6							pour guidages précis
			g5							
Pièces Immobiles	jeu	ajusté	h9							assemblage possible à la main / Pour centrages et positionnement ne peut pas transmettre des efforts / pas de détérioration des pièces au démontage
			h7							
			h6							
			h5							
	jeu incertain	très ajusté	js7							
			js6							
			js5							
		peu serré	k6							assemblage possible au "maillet" (Presse recommandée)
			k5							
			m7							
			m6							
			n6							
	serrage (interférence)	serré	p6							assemblage à la presse / Pour transmission des efforts / détérioration des pièces au démontage
			r6							
		serré fort	s7							assemblage à la presse lourde ou par dilatation (frettage)
			s6							
			t6							
			u6							
			x7							

D.T. 4

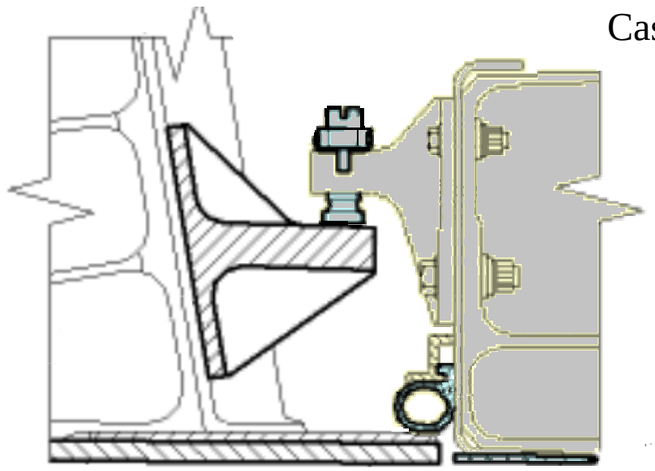


52-41-11-26-SEAL AND COVER

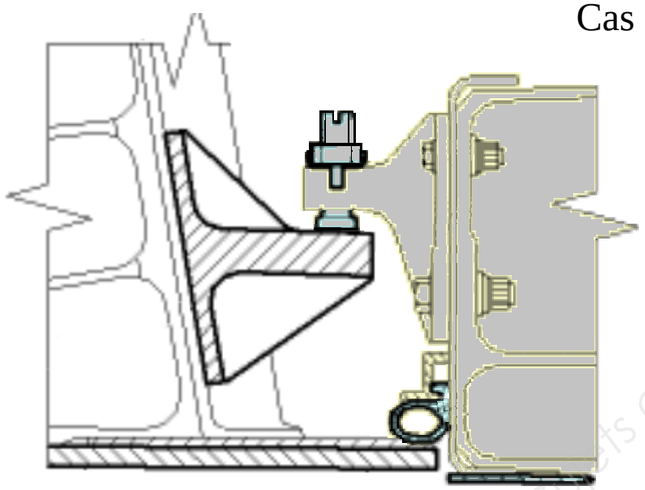
FIG - ITEM	PART NUMBER	NOMENCLATURE
26-001		SEAL AND COVER SEE 52-41-11-20 040 FOR NHA
** ON A/C [USED WITH L5241000700000]		
26 010	NAS1726-3E	NUT
26 020	NAS1133-15	SCREW
26 030	NSA5320-10	WASHER
26 040	NAS1133-7	SCREW
26 050	L5241004620000	COVER STRIP
26 060	L5241002520000	COVER STRIP
26 070	L5241002720000	COVER STRIP
26 080	L5241004720000	COVER STRIP
26 090	L0003008200000	SEAL

D.T. 5

Cas 1



Cas 2



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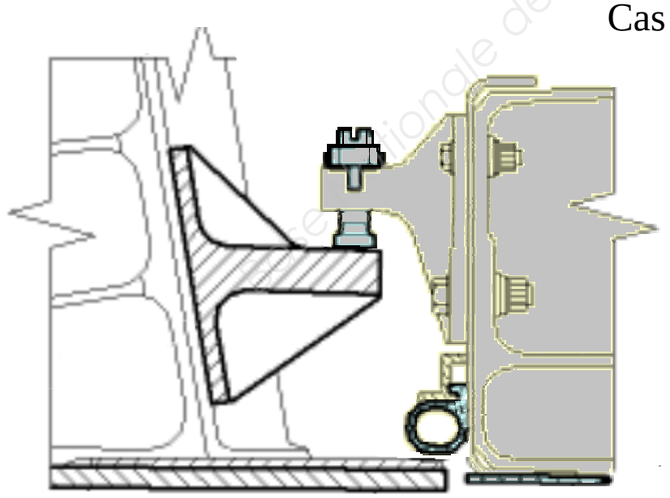
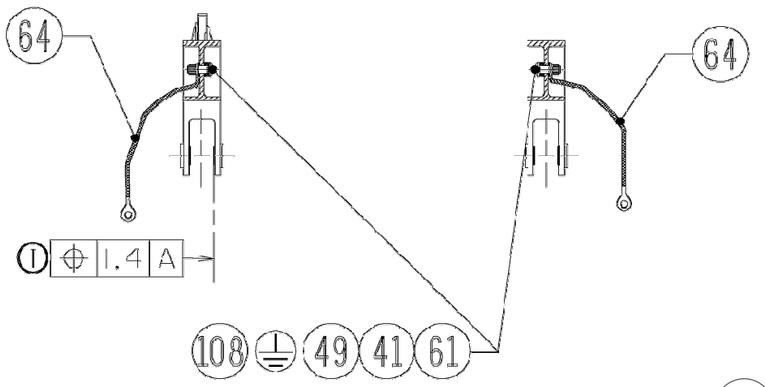
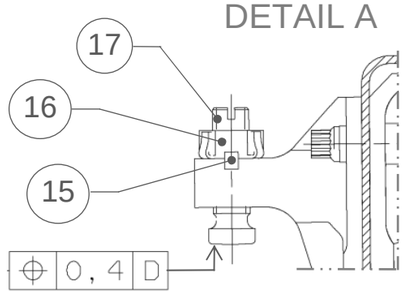


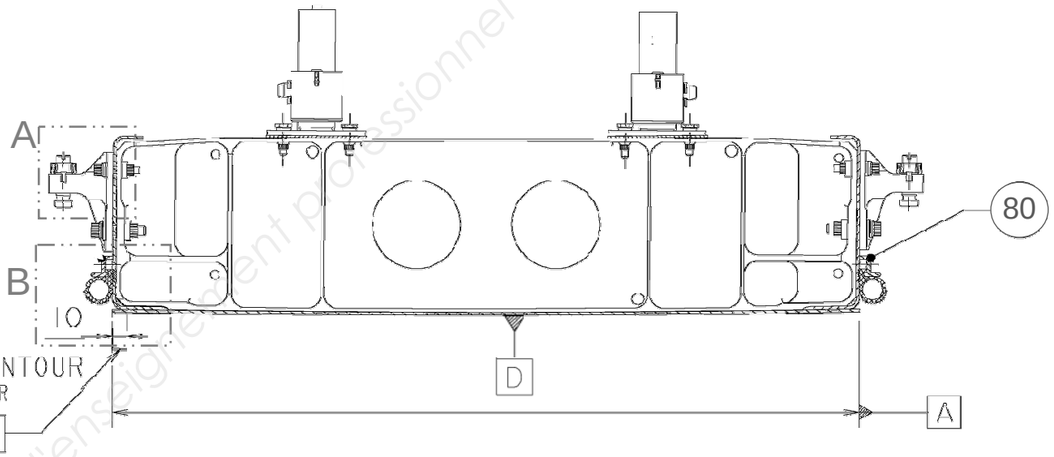
SECTION H-H
(REDRESSEE)
(ROTATED)



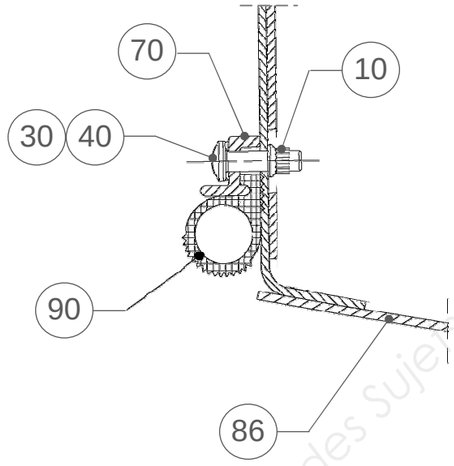
DETAIL A

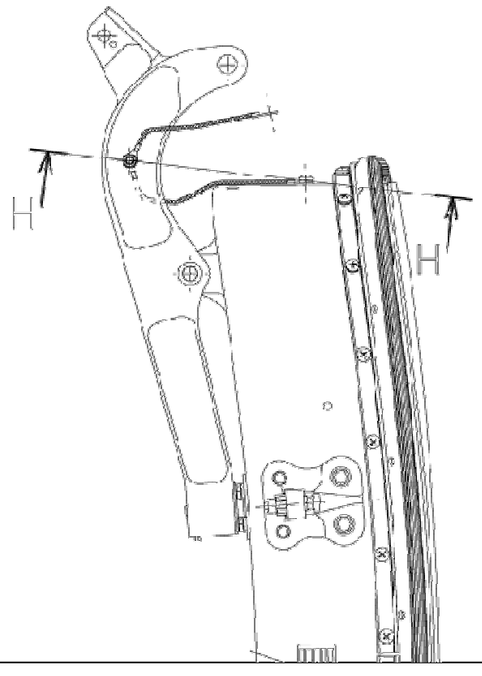


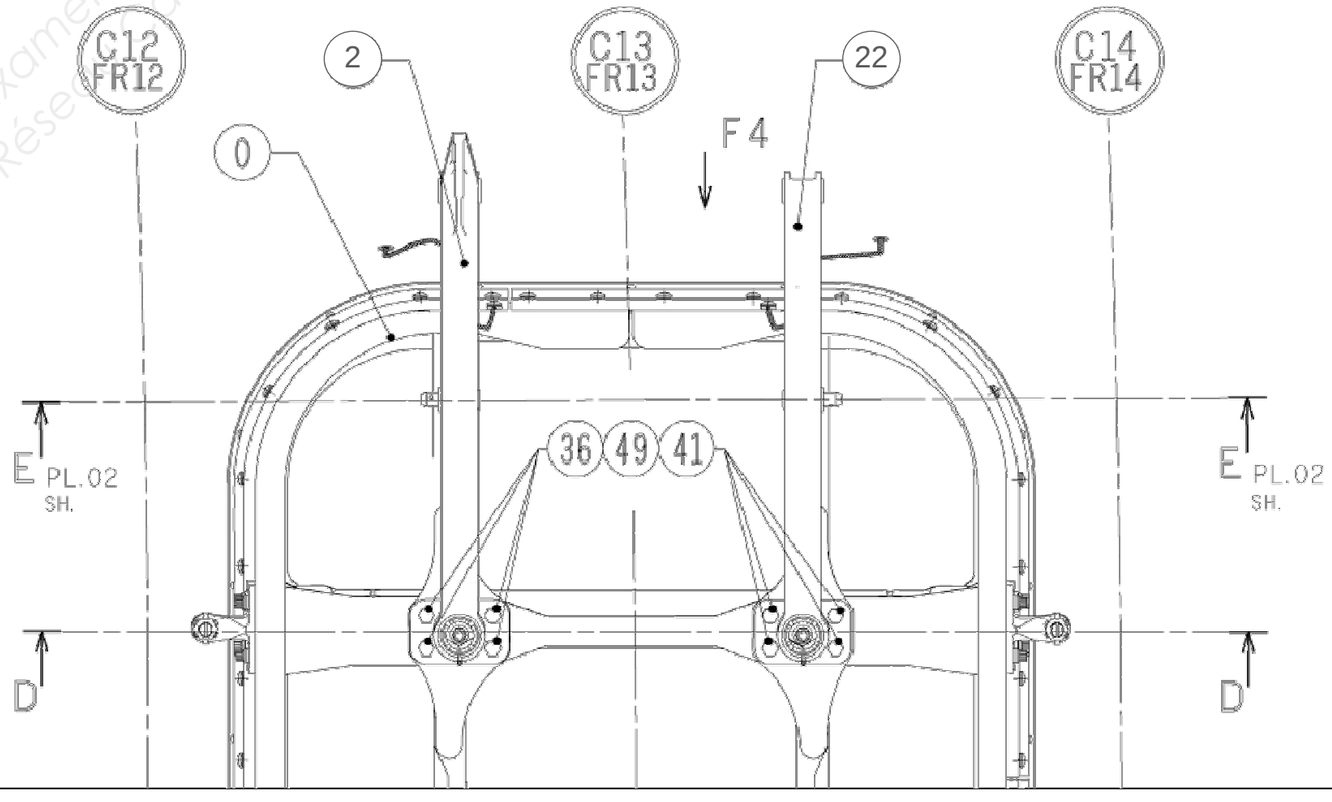
SECTION D - D



DETAIL B







DAMAGE CLASSIFICATION

1. General

A. The term 'damage' includes any and every type of permanent deformation or alteration to any cross-section of a structural component.

B. Deformation or alteration to the cross-section of a structural component results from many causes, which can be generally categorized into four main groups (Refer to Table 1):

- Mechanical action (Group A)
- Chemical or electro-chemical reaction (Group B)
- Thermal action or cycling (Group C)
- Inherent metallurgical characteristics (Group D)

2. Examination of Damage

CAUTION: HIDDEN DAMAGE CAN LEAD TO A FAILURE OF THE REPAIR OR SURROUNDING STRUCTURE.

A. Examine the type and extent of the damage.

B. To determine the damage category:

- remove all unwanted material from the surface of the damaged component,
- cut out all broken, bent, heated or damaged areas of the component,
- remove all loose rivets.

(1) In all forms of damage, particularly where shock has been sustained, secondary damage is likely to exist. Therefore, a close examination of the structure surrounding the initial damage must be made. Damage caused by transmission of force may be located some distance from the impact, resulting in structure deformation, drawn rivets or bolt holes.

(2) If misalignment or twisting of the airplane structure is suspected, alignment and/or leveling checks must be carried out.

3. Damage Categories

A. After cleaning and investigating the damage and surrounding area, the damage must be classified into one of the following categories, also taking into account the location of the damage.

(1) Repairable Damage

The damage must be classified either as 'Allowable Damage' or as damage which requires a repair.

(a) Refer to Allowable Damage (Chapter 51-11-11)

(b) Non allowable Damage

Damage which exceeds the 'Allowable Damage' limits can be repaired by cutting out the damaged area of a structural component and inserting or attaching a reinforcing piece. These specific repairs are to be found in each chapter of this manual.

(2) Non repairable Damage

Non repairable damage is defined as damage to structural components which cannot be repaired and where replacement of the complete component is recommended as a repair is not practical or economical. Refer to Chapter 51-72-11 for 'Replacement of Structural Components'.

TERM	GROUP				DEFINITION
	A	B	C	D	
Scratch	X				A scratch is a line of damage of any depth and length in the material which causes a cross-sectional area change. A sharp object usually causes it.
Gouge	X				A gouge is a damage area of any size which results in a cross-sectional area change. It is usually caused by contact with a relatively sharp object which produces a continuous, sharp or smooth channel-like groove in the material.
Mark	X				A mark is a damaged area of all sizes where a concentration of scratches, nicks, chips, burrs or gouges etc. is shown. You must prepare the damage as an area and not as a series of individual scratches, gouges etc.
Crack	X				A crack is a partial fracture or complete break in the material.
Dent	X				A dent is a damaged area which is pushed in, with respect to its usual contour. There is no cross-sectional area change in the material, area edges are smooth.
Nick	X				A small decrease of material due to a knock etc. at the edge of a member or skin.

Definition of Damage

Table 1

D.T. 7 bis

TERM	GROUP				DEFINITION
	A	B	C	D	
Distortion	X		X		Any twisting, bending or permanent strain which results in misalignment or change of shape. May be caused by impact from a foreign object, but usually results from vibration or movement of adjacent attached components. This group includes bending, buckling, deformation, imbalance, misalignment, pinching, and twisting.
Corrosion		X		X	The destruction of metal by chemical or electrochemical effect.
Crease	X				A damaged area which is pushed in or folded back on itself. The edges are sharp or well specified lines or ridges.
Abrasion	X		X		An abrasion is a damage area of all sizes which causes change in a cross-sectional area because of scuffing, rubbing, scraping or other surface erosion. It is usually rough and irregular.
Debonding	X	X	X		Debonding is when a separation of materials occurs due to an adhesive failure.
Delamination	X	X	X		Delamination is when the separation of plies occurs in a multi-laminate material. This can be caused by the material being hit - Impact Delamination, or when there is a resin failure for any other reason.
Fretting	X				Surface damage at the interface between elements of the joints resulting from very small angular or linear movements. Evidence of fretting is usually the production of fine black powder staining.

Definition of Damage

Table 1

D.T. 8

STRUCTURE CLASSIFICATION

1. General

A. A schematic breakdown of the aircraft structure showing the relationship between primary and secondary structure and 'Principal Structural Elements' (PSE), is given in Figure 1. These are identified as follows:

- primary structure is on the left of the vertical line,
- secondary structure is on the right of the vertical line,
- PSE is shown as a shaded/lined area within primary structure.

B. Figure 2 identifies in general primary and secondary structure.

C. A list of PSE's is given in this chapter where applicable.

D. The structure of the aircraft is classified either as primary or secondary.

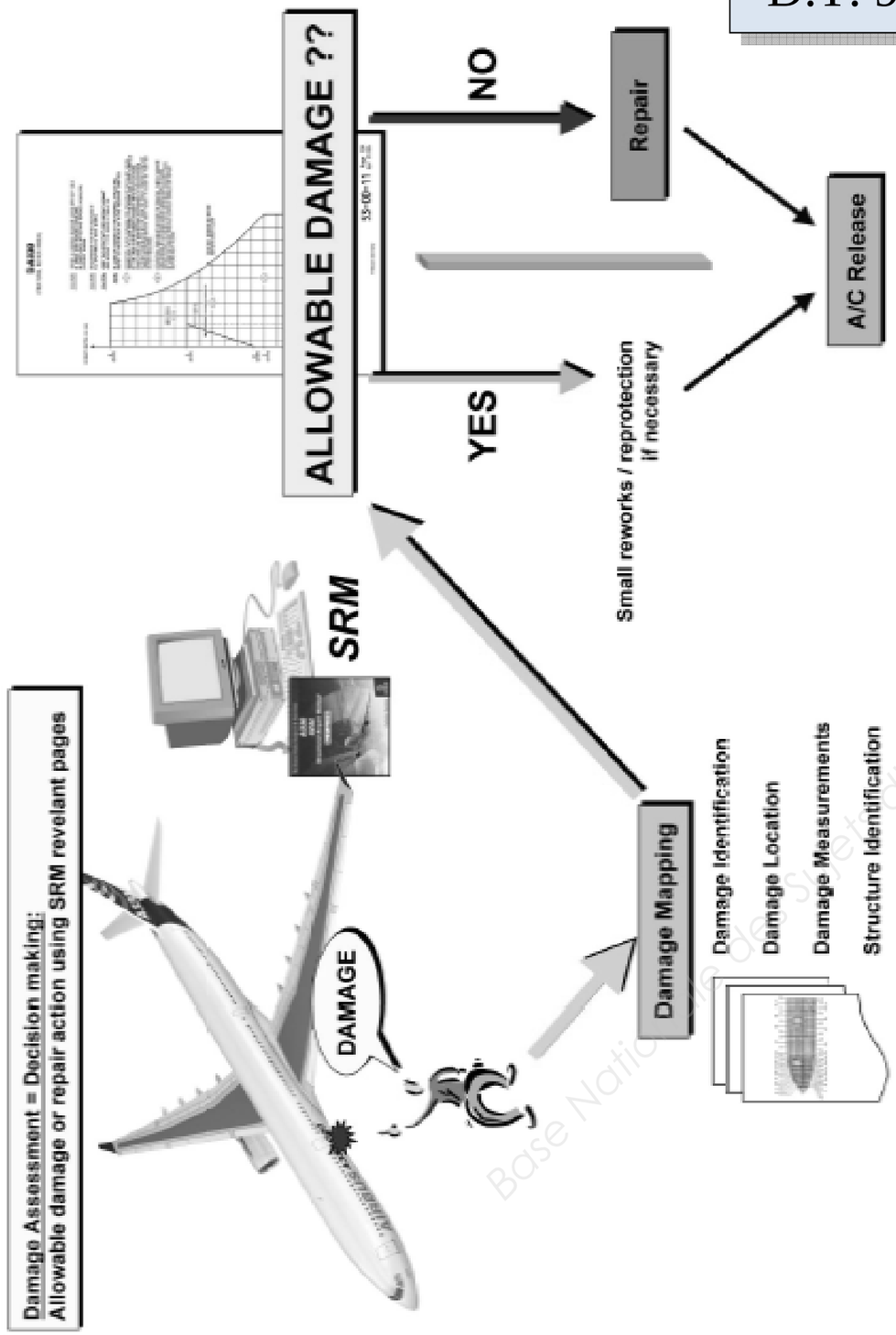
E. Primary structure is that structure which contributes significantly to carrying flight, ground and pressurization loads.

F. Secondary structure is that structure which carries only air or inertial loads generated on or within the secondary structure.

G. Within the primary structure there are elements that are designated PSE. PSE's are those elements that contribute significantly to carrying flight, ground and pressurization loads, and whose integrity is essential in maintaining the overall structural integrity of the airplane.

NOTE: Where two items that are PSE are connected together and the connecting item is removable then the connecting item is also to be considered as PSE.

D.T. 9



D.T. 10

DOORS - AVIONICS COMPARTMENT FWD

1. General

These repairs are applicable for damage to the doors of the avionics compartment FWD. The general repairs are listed in Table 201, the specific repairs are listed in Table 202. The appropriate repairs are described in more detail in the relevant Chapter.

NOTE: For Damage/Repair Data Recording refer to Chapter 51-11-15.

NOTE: REFER TO EACH REPAIR TO DETERMINE THE REPAIR APPLICABILITY.

2. Safety Precautions

WARNING: OBEY THE MANUFACTURER'S INSTRUCTIONS WHEN YOU USE CLEANING AGENT, BONDING AND ADHESIVE COMPOUND, SEALANT, SPECIAL MATERIAL AND STRUCTURE PAINT. THESE MATERIALS ARE DANGEROUS.

CAUTION: THERE MUST BE A MINIMUM DISTANCE OF FOUR FASTENER SPACINGS BETWEEN THE OUTER ROWS OF ADJACENT REPAIR.

CAUTION: USE ONLY SPECIFIED CLEANING AGENTS AND SOLUTIONS OR THEIR EQUIVALENTS. THE SURFACE PROTECTION COULD BE DAMAGED IF UNSPECIFIED MATERIALS ARE USED. IT IS IMPORTANT THAT THE MANUFACTURER'S MIXING, APPLICATION AND TREATMENT INSTRUCTIONS ARE FOLLOWED.

CAUTION: OBEY THE INSPECTION INSTRUCTIONS GIVEN IN THE RELEVANT REPAIR.

CAUTION: FOR REPAIRS CONTAINING NO WEIGHT VARIANT EFFECTIVITY TABLE REFER TO THE WEIGHT VARIANT EXCLUSION TABLE, PARAGRAPH 23, GIVEN IN THE INTRODUCTION OF THE SRM.

FOR REPAIR EFFECTIVITY RELATED TO AIRCRAFT TYPE, REFER TO PARAGRAPH 3, GIVEN IN THE INTRODUCTION OF THE SRM.

CAUTION: HIDDEN DAMAGE CAN LEAD TO A FAILURE OF THE REPAIR OR SURROUNDING STRUCTURE.

3. Repair Scheme for General Repairs

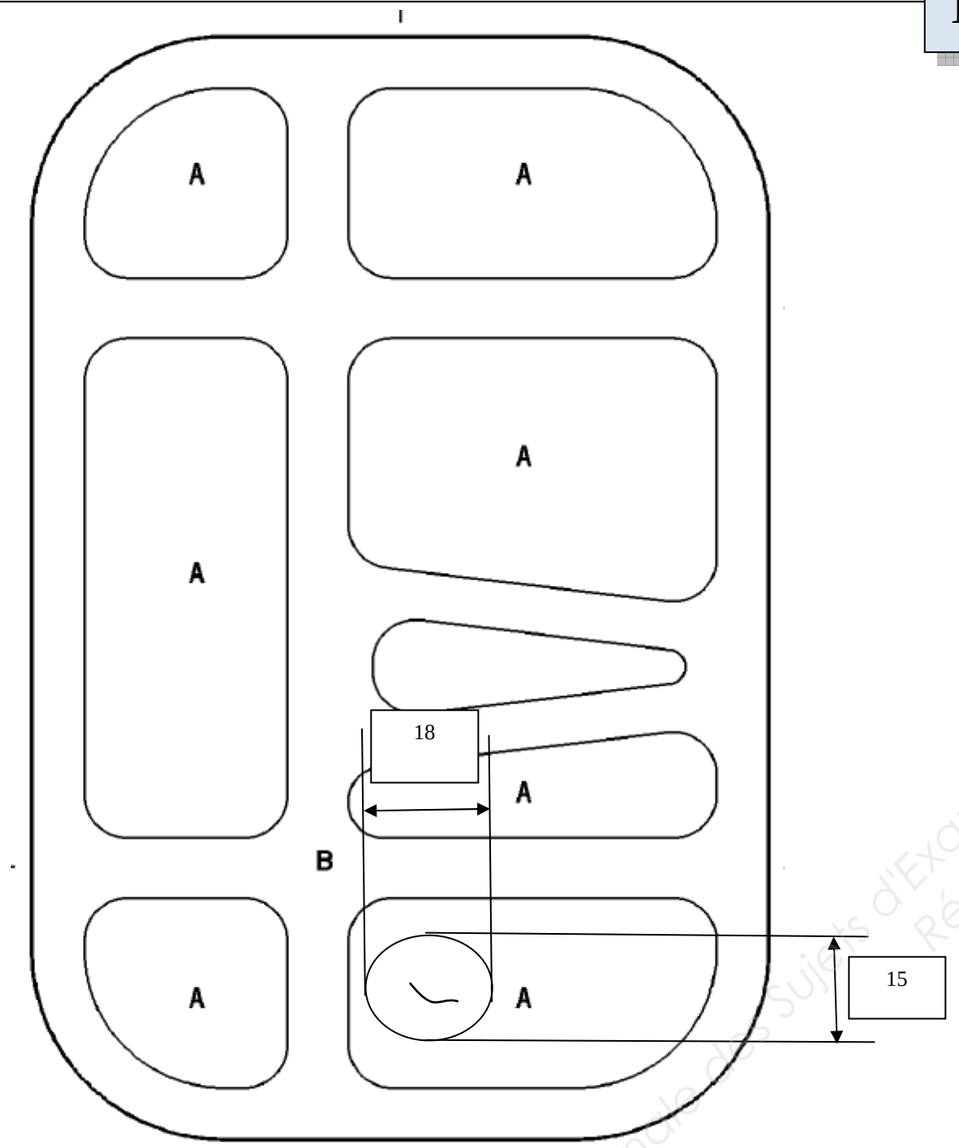
REPAIR PROCEDURE	CHAPTER	FIGURE	REMARKS
Avionic Compartment Doors - Skin Damage External Repair Principle	52-41-00	201	-

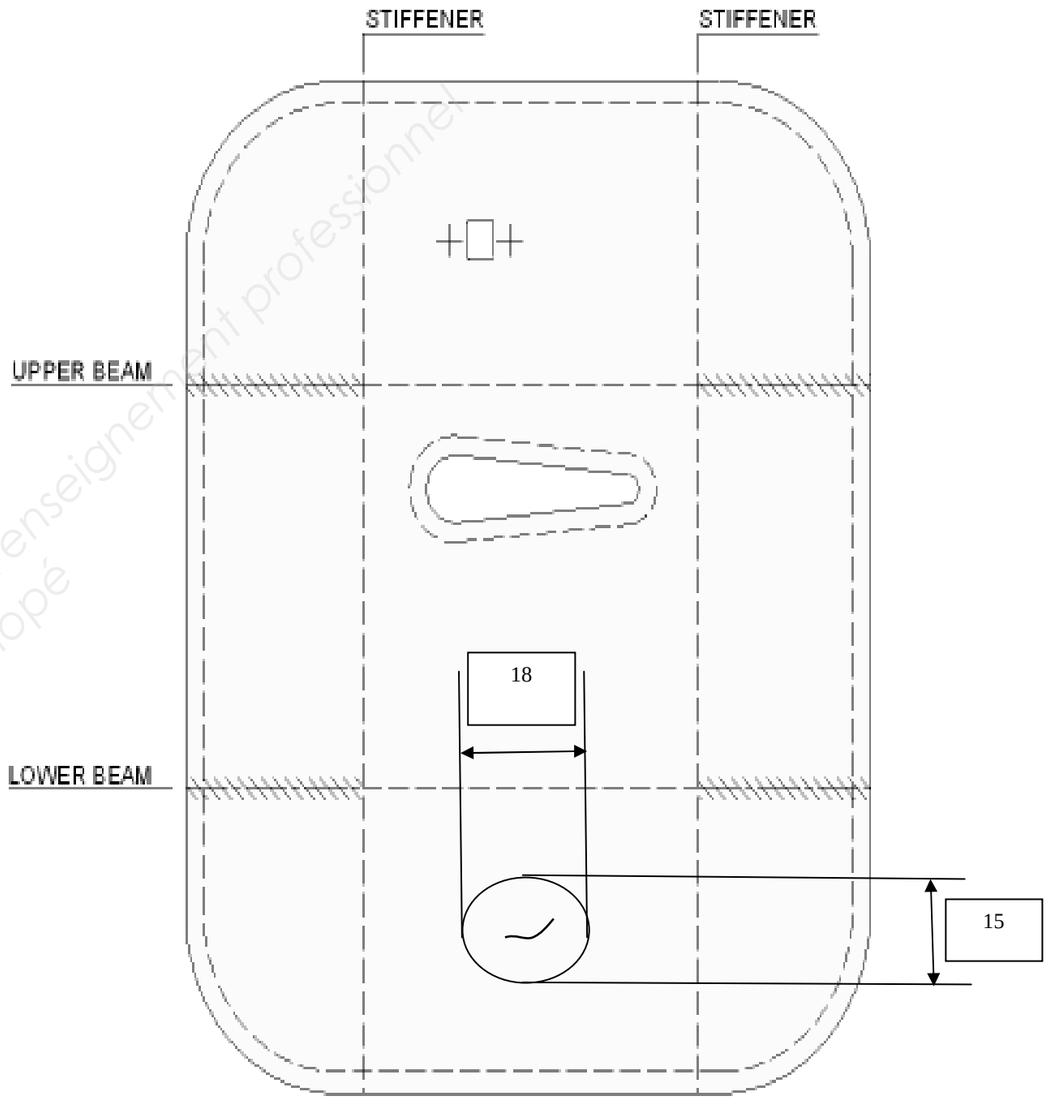
Table 201

4. Repair Scheme for Specific Repairs

REPAIR PROCEDURE	PARAGRAPH	FIGURE
No Specific Repairs applicable	-	-

Table 202





THICKNESS CODE TABLE

CODE	THICKNESS mm	(in.)
A	1.4	(0.055)
B	1.8	(0.071)

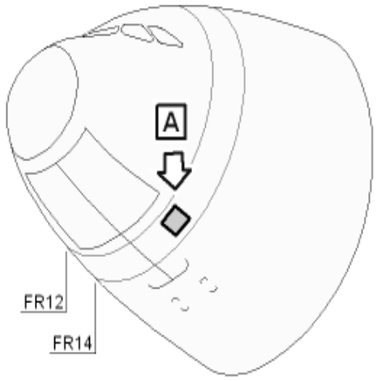
A

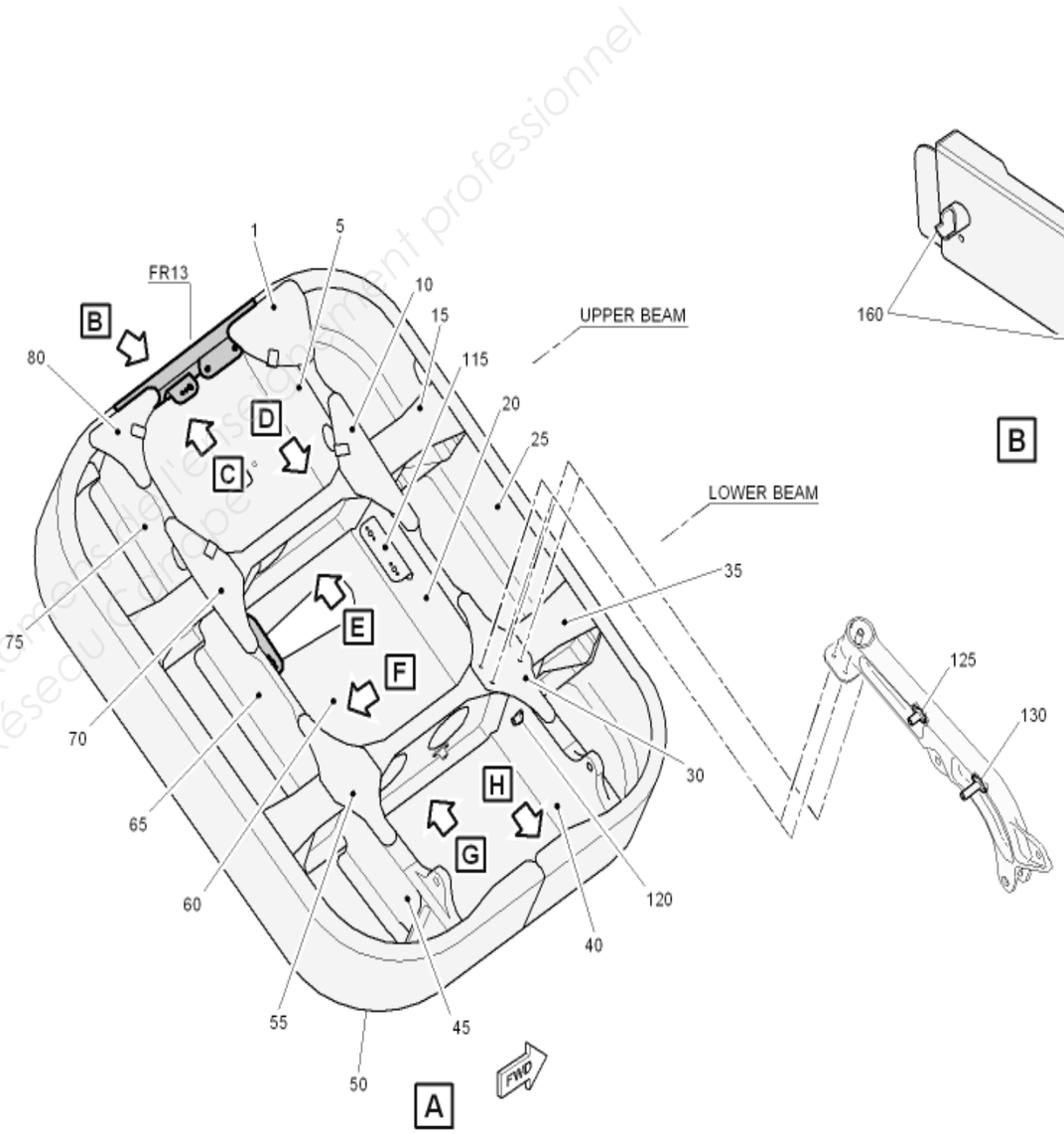
FWD

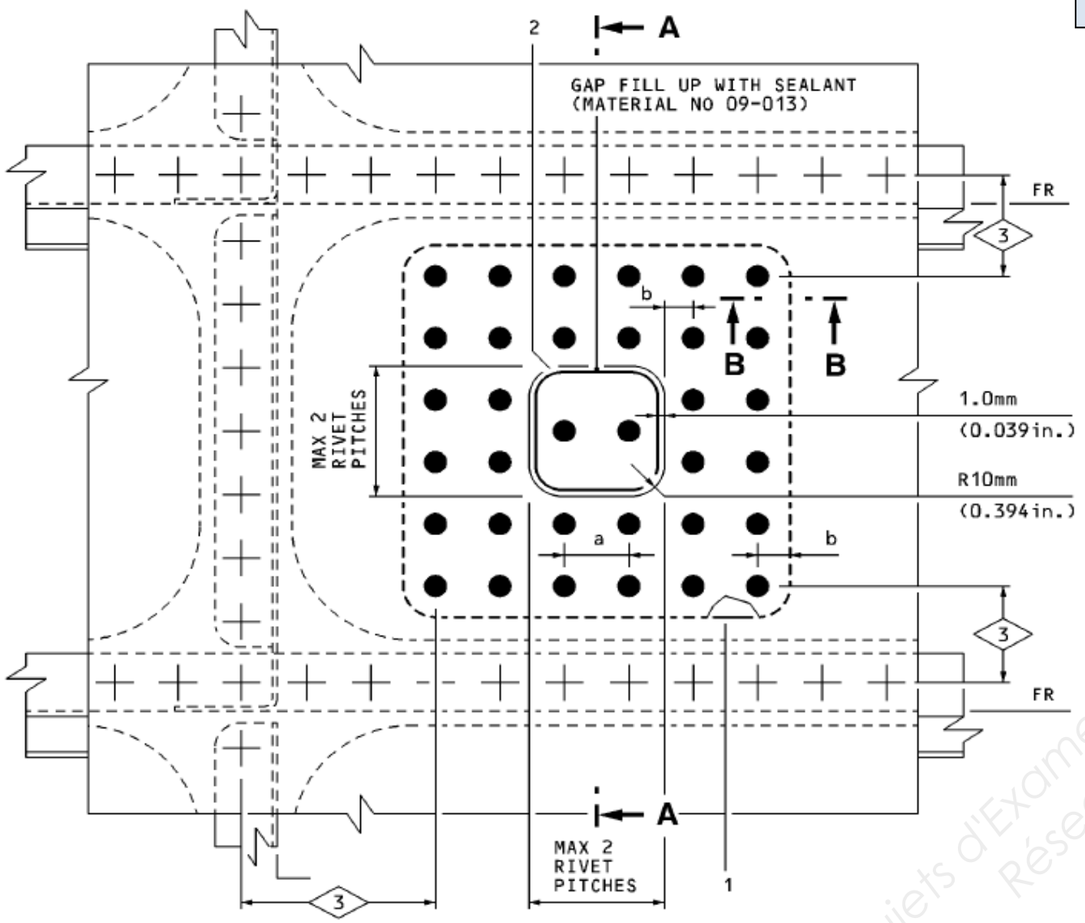
H

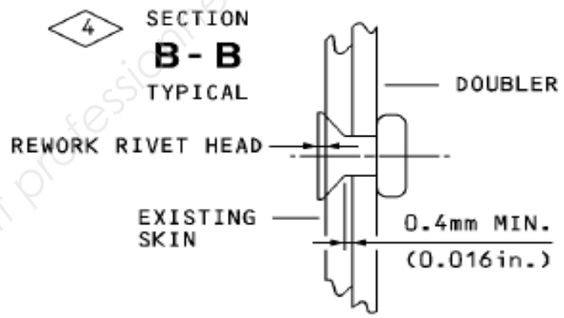
D.T. 12

ITEM	NOMENCLATURE	P/N
001-B	PLATE	L52410153200
005-B	FRAME	L52410152200
010-A	PLATE	L52410038200
015-B	BEAM	L52410150200
020-A	FRAME	L52410019200
025-B	STRIP SKIN	L52410148200
030-A	PLATE	L52410042200
035-A	BEAM	L52410014200
040-A	FRAME	L52410035200
045-A	FRAME	L52410034200
050-B	STRIP SKIN	L52410149200
055-A	PLATE	L52410051200
060-B	PANEL	L52410158200
065-A	FRAME	L52410016200
070-A	PLATE	L52410037200
075-B	FRAME	L52410151200
080-B	PLATE	L52410154200
085-A	SPLICE	L52410024200
090-A	ANGLE	L52410040200
110-A	FITTING	L52410146200
115-A	BRACKET	L52410137200
120-A	BRACKET	ASNA2327-3-4
125-A	BRACKET	ASNA2327-3-6
130-A	BRACKET	ASNA2327-3-10
135-A	BRACKET	L52410156200
140-A	BRACKET	L53918154200
145-A	FITTING	L52410144200
150-A	BRACKET	ASNA2327-3-3
155-A	BRACKET	ASNA2328-3-8
160-A	BUSH	L52410193200







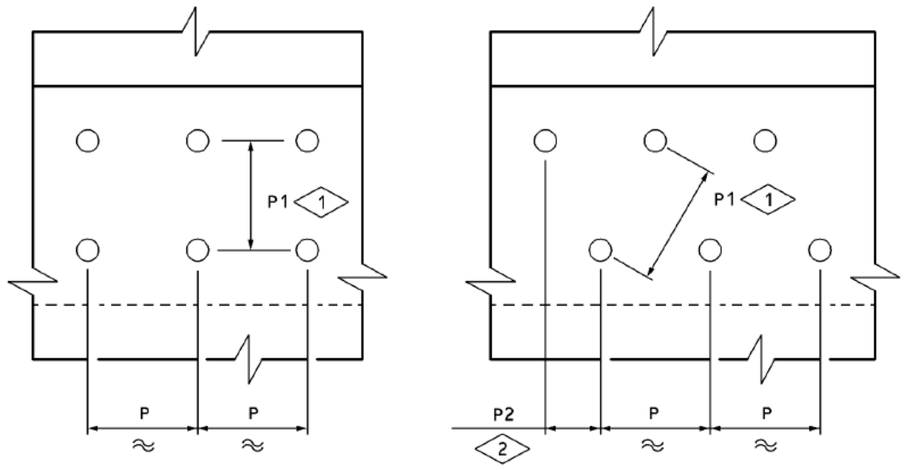


1. REFERENCE FOR THE SKIN THICKNESS IS THE MAXIMUM THICKNESS OF THE CHEMICALLY MILLED POCKETS AROUND THE CUTOUT, (REFER TO FIGURE 201).
2. IF ORIGINAL FASTENER WAS NOT A SOLID ALUMINUM FASTENER REFER TO CHAPTER 51-43-00 FOR OVERSIZE REPLACEMENT.
3. THE DOUBLER MUST NOT END ABOVE A STRINGER OR FRAME. EXTEND THE DOUBLER IF NECESSARY BY ONE RIVET ROW AFTER THE FRAME OR STRINGER.
4. COMPARE THE MINIMUM REQUIRED SKIN/DOUBLER THICKNESS WITH SRM CHAPTER 51-46-11, OTHERWISE THE RIVET HEADS HAVE TO BE REWORKED.

REPAIR MATERIAL										
			EXISTING SKIN 1							
ITEM	NOMEN-CLATURE	MATERIAL	1.2mm (0.047in.)	1.4mm (0.056in.)	1.5mm (0.059in.)	1.6mm (0.063in.)	1.7mm (0.067in.)	1.8mm (0.072in.)	2.0mm (0.079in.)	2.2mm (0.087in.)
1	DOUBLER	CLAD2024T3	1.4mm (0.056in.)	1.4mm (0.056in.)	1.6mm (0.063in.)		1.8mm (0.072in.)		2.0mm (0.079in.)	2.2mm (0.087in.)
2	FILLER	CLAD2024T3	SAME THICKNESS AS EXISTING SKIN							
FASTENER SYMBOLS		+	REFERENCE ONLY							
		● 2	NSA1097DD5	NAS1097DD5			NAS1097DD6			
			NSA5410-32							
PITCH a			ACCORDING TO EXISTING PITCH OR REFER TO CHAPTER 51-47-00							
MARGIN b			REFER TO CHAPTER 51-47-00							

NS6 53 00 11 2 BSMM 00 0

Small Skin - Internal Repair for Skin Thickness between 1.2 mm (0.047 in.) and 2.2 mm (0.087 in.)
Figure 221 (sheet 2)



NOTE:

<1> 'P1'MUST BE EQUAL OR GREATER THAN 'P'MINIMUM.

<2> 'P2'MUST BE EQUAL 0.5P.

NOMINAL FASTENER DIAMETER		PITCH VALUES					
		FACTOR	MINIMUM PITCH		FACTOR	MAXIMUM PITCH	
mm	in.		mm	in.		mm	in.
4.0	0.1560	4.0 D	16.000	0.630	5.0 D	20.000	0.787
4.8	0.1900	4.0 D	19.200	0.756	5.0 D	24.000	0.945
6.4	0.2500	4.0 D	25.600	1.008	5.0 D	32.000	1.260
7.9	0.3125	3.875 D	30.613	1.205	5.0 D	39.500	1.555
9.5	0.3750	3.750 D	35.625	1.403	5.0 D	47.500	1.870

Example of Pitch Data for Bolt and Pin Holes

Table 1

NOTE: Pitching for Taper-Loks will follow the above guide lines unless specified otherwise by specific repair instructions.

(4) The edge distance values applicable to the protruding head fasteners for the wing structure are quoted in terms of the fastener nominal shank diameter 'D'. For example, factor 2.0 x 'D' = edge distance (Refer to Table 2 and Figure 2).

(5) The edge distance values applicable to the countersunk head fasteners for the wing structure only are given in Table 2.

(6) The edge distance values applicable to protruding and countersunk head fasteners are given in Table 3.

(7) Figure 3 shows an example of edge distance and chamfer for the installation of fasteners in external doublers.

NOMINAL FASTENER DIAMETER		EDGE DISTANCE VALUES						
		ONLY APPLICABLE TO PROTRUDING HEAD FASTENERS			VALUES APPLICABLE TO COUNTERSUNK HEAD FASTENERS			
		FACTOR	MIN. EDGE DISTANCE		SHALLOW		FULL	
					MIN. EDGE DISTANCE		MIN. EDGE DISTANCE	
mm	in.		mm	in.	mm	in.	mm	in.
4.0	0.1560	2.0 D	8.0	0.3149	-	-	-	-
4.8	0.1900	2.0 D	9.7	0.3819	13.0	0.5118	14.6	0.5748

Table 2