

Test Project

Module B - Aircraft Metal Structure Fabrication

Aircraft Maintenance

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Introduction to Test Project

The satisfactory performance of an aircraft requires continuous maintenance of its structural integrity. It is important that the metal structural repairs be made according to the approved techniques without compromising safety. The reliability of an aircraft depends on the quality of the design, as well as the workmanship used in making the repairs.

Marking Scheme

MODULE B
AIRCRAFT METAL STRUCTURE FABRICATION AND OR REPAIR
B1. Working Safety, housekeeping, and certification
B2. Calculation
B3. Assembly
B4. Rivets and Anchor nuts Installation

Instructions to the Competitor

NAME	(FIRST)	(LAST)
COUNTRY		
START TIME		
Objective	To test the Competitor's ability to interpret drawings, bend sheet metal with a high degree of accuracy, layout fastener and install solid shank rivets in accordance with the supplied drawings and AC 43.13-1B.	
Time allotted	3 hours 15mins	
Process:		
1	Each contestant will receive the following: <ul style="list-style-type: none"> • Sheet Metal Tool Kit • Drawings • One Aluminium (5086 series) 120 mm x 120 mm x 1.5 mm • One Aluminium (5086 series) 180 mm x 180mm x 1.2 mm • Rivets and nut plates. 	
2	Calculate bend allowances using empirical formula.	
3	Calculate the dimensions for the flat layouts.	
4	Determine the required rivets' length.	
5	Form Part 1, Part 3, and Part 5 (main frame) to assemble the "805 Assembly Support" as shown in the drawing.	
6	Restore workplace and perform housekeeping	

Notes:

1. All dimensions (including Parts 1, 3, and 5): Tolerance of ± 0.5 mm.
2. All edges to be smooth and nick free.
3. All corners radius to be rounded to 2 mm.
4. Use fasteners specified in the drawings.
5. All surface damage will be documented by two judges prior to the beginning of the task.
6. Anchor nuts angular installation at 45 degrees.

Computations

Bend Allowance Calculation using Empirical Formula

Name: _____ Country: _____

Bend Allowance (BA) = $[(0.01743 \times BR) + (0.0078 \times MT)] \times \text{Degree of Bend } (90^\circ)$

BR = Bend Radius

MT = Metal Thickness

Correct to three decimal places.

Part 1 and 3

Part 5

Flat Layout Calculations – Part 1 and part 3

Name: _____ Country: _____

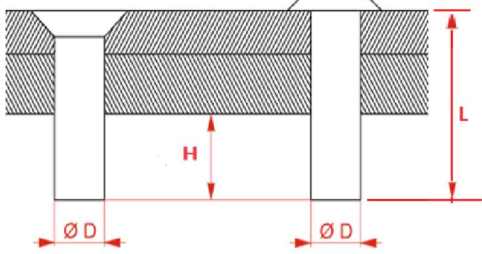
Correct to three decimal places.

Flat Layout Calculations – Part 5 (Main Frame)

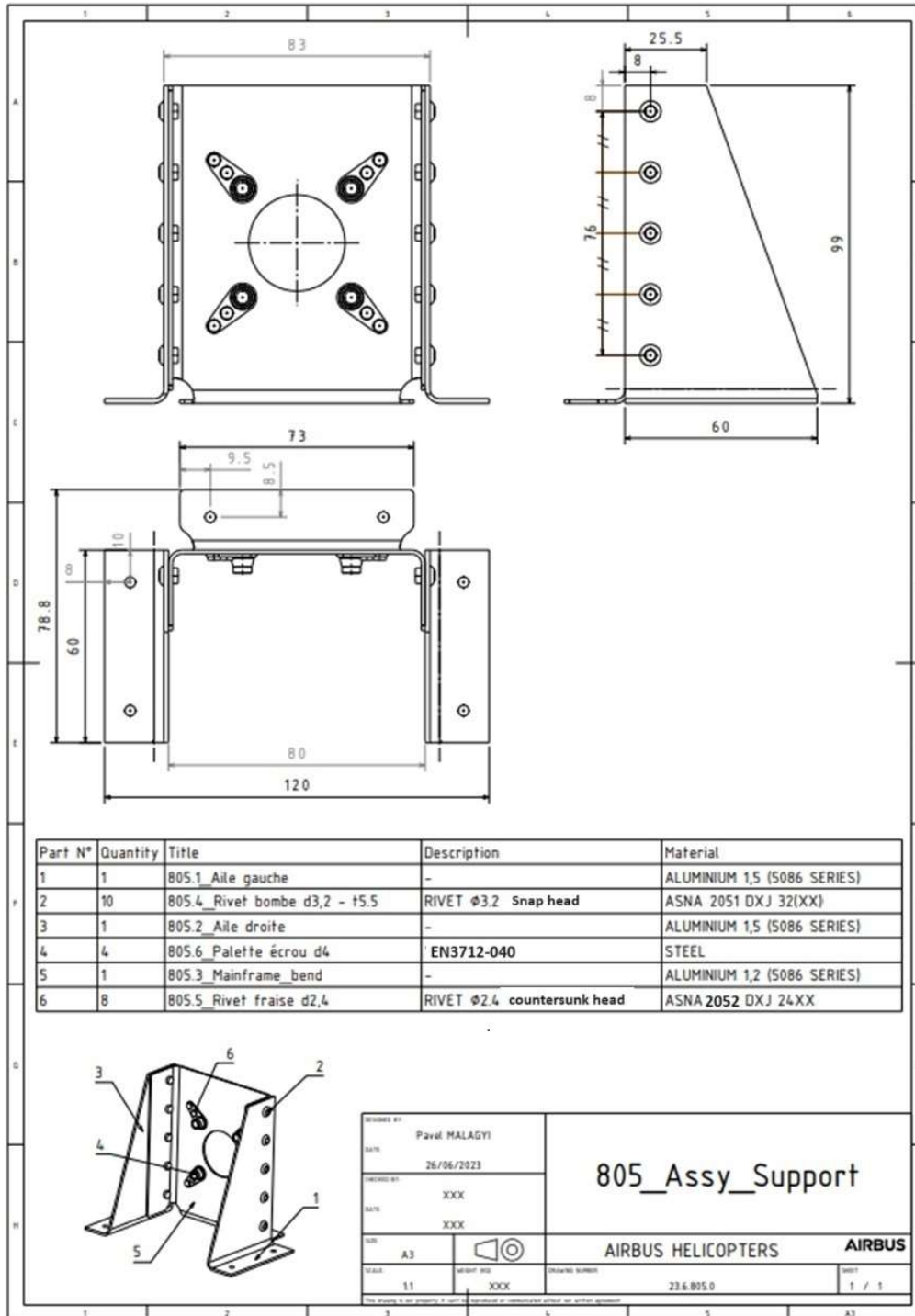
Name: _____ Country: _____

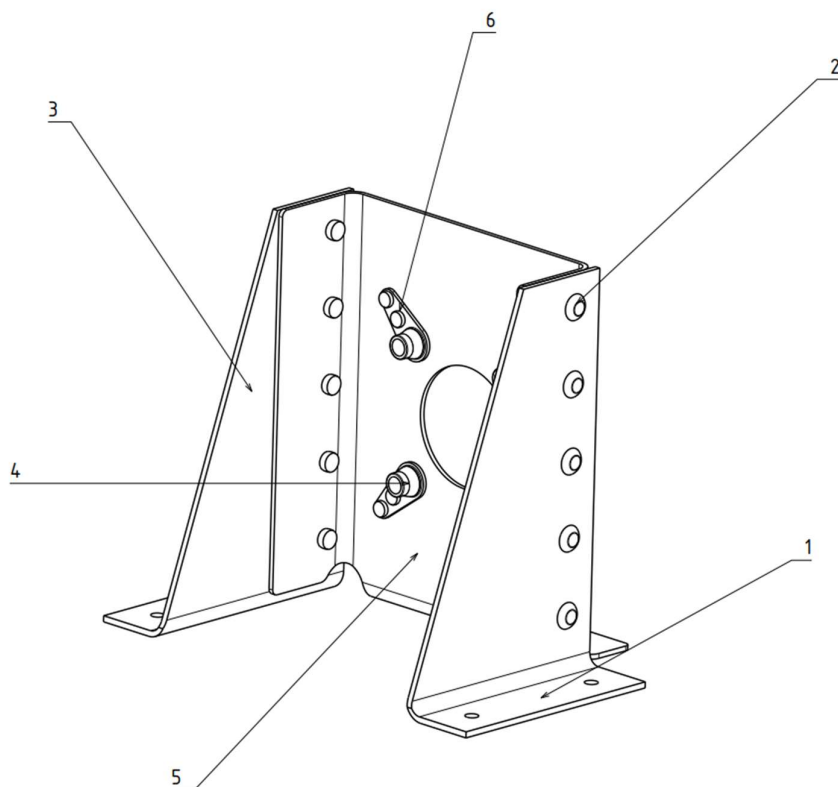
Correct to three decimal places.

Rivet Length “L” Calculation

	<p>Calculate rivet length (L) for Part 2 and Part 6.</p> <p>The theoretical length obtained with the formula is rounded to three decimal places.</p>
<p>Part 2</p> <p>Calculation of theoretical Length before installation for the solid rivet</p>	<p>Part 6</p> <p>Calculation of theoretical Length before installation for the solid rivet</p>

Drawings





Quantity	Matériau	Description
1	ALUMINIUM (5086 SERIES) 120 X 120 X 1,5	for parts no.1 & 3
1	ALUMINIUM (5086 SERIES) 180 X 180 X 1,2	for part no.5
10	ASNA 2051 DXJ 32(XX)05	RIVET $\phi 3.2$ (Snap head) for parts no.2
8	ASNA 2052 DXJ 24XX	RIVET $\phi 2.4$ (countersunk head) for parts no.6
4	EN3712-040	for part no.4 Nut plate

DESIGNED BY: Pavel MALAGYI		805_Assy_Support	
DATE: 26/06/2023			
CHECKED BY: XXX			
DATE: XXX		AIRBUS HELICOPTERS AIRBUS	
SIZE: A3	WEIGHT (KG): XXX	DRAWING NUMBER: 23.6.805.0	SHEET: 1 / 1
This drawing is our property. It can't be reproduced or communicated without our written agreement.			
1	2	3	4
5		A3	

