



UNIVERSITAT POLITÈCNICA DE CATALUNYA  
BARCELONATECH

Escola Superior d'Enginyeries Industrial,  
Aeroespacial i Audiovisual de Terrassa

# Design and thermomechanical study of the case of a solid rocket motor of small dimensions

Document:

Drawings

Author:

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Director / Co-director:

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Dr. David Roca Cazorla

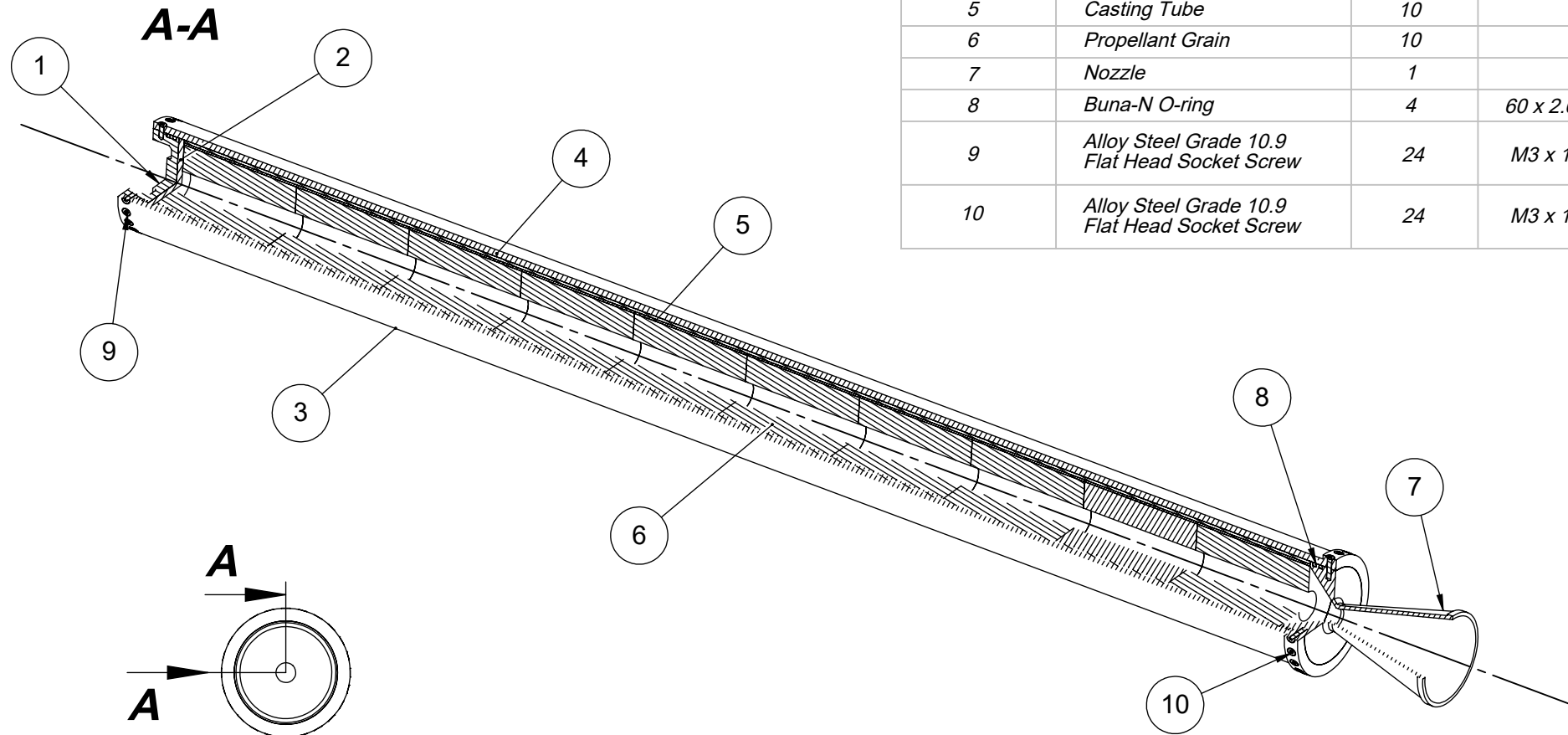
Degree:

Bachelor's degree in Aerospace  
Technology Engineering

Examination session:

Spring, 2022

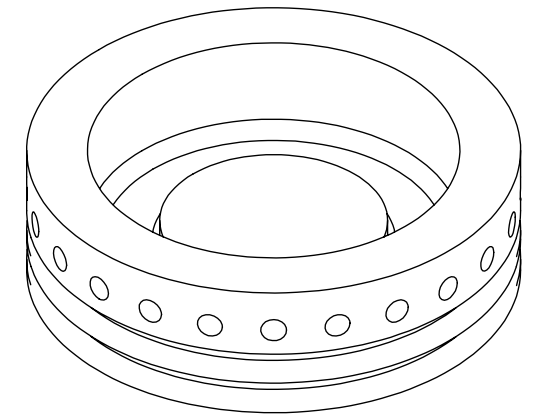
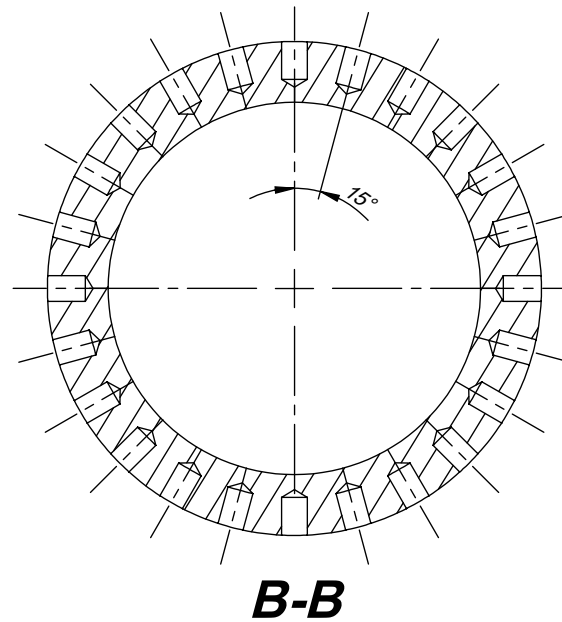
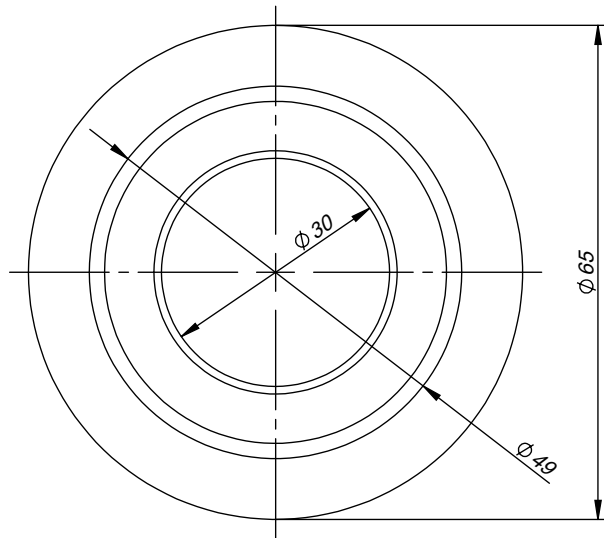
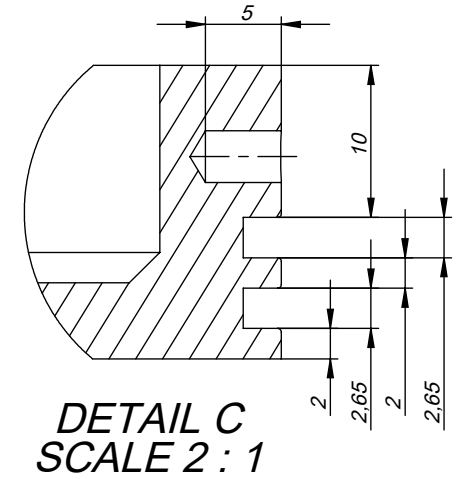
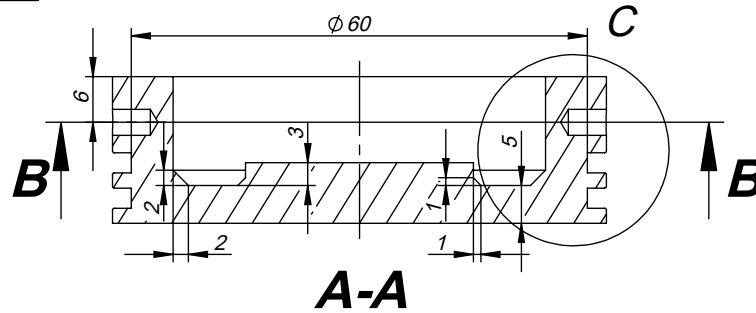
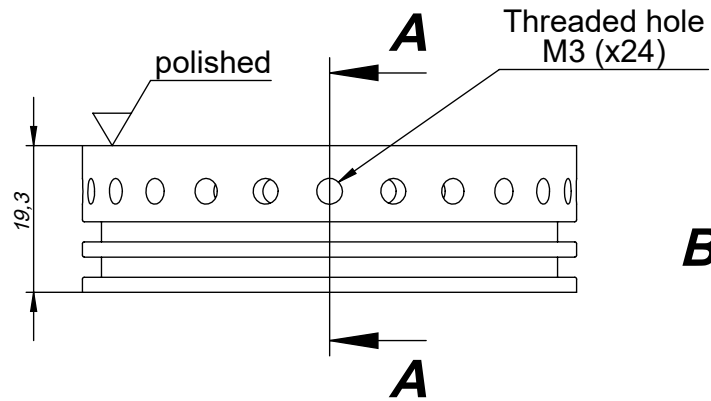
**BACHELOR FINAL THESIS**



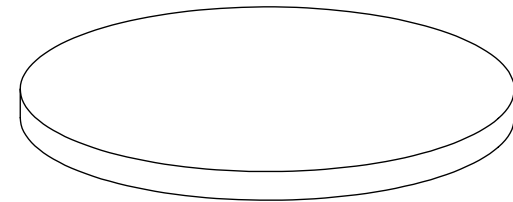
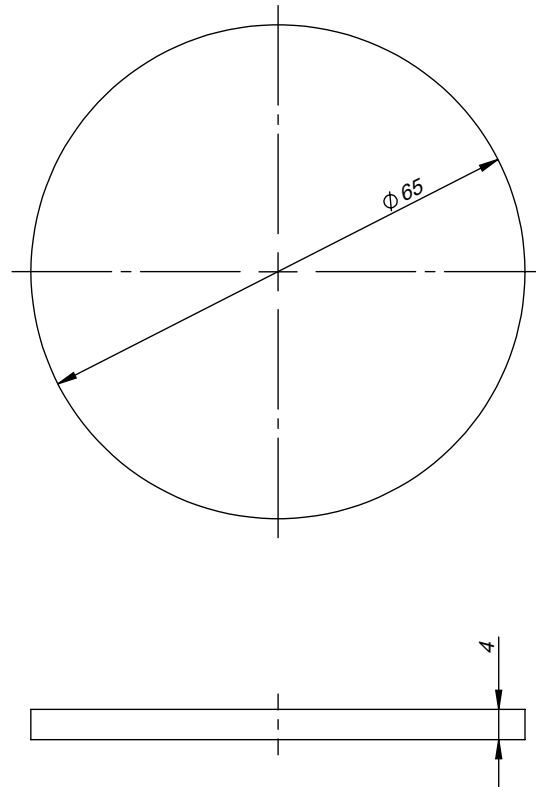
<b>Component Number</b>	<b>Component Name</b>	<b>Quantity</b>	<b>Dimensions</b>
1	Forward Closure	1	
2	Insulation Disk	1	
3	Motor Case	1	
4	Thermal Insulator	1	
5	Casting Tube	10	
6	Propellant Grain	10	
7	Nozzle	1	
8	Buna-N O-ring	4	60 x 2.65mm
9	Alloy Steel Grade 10.9 Flat Head Socket Screw	24	M3 x 10mm
10	Alloy Steel Grade 10.9 Flat Head Socket Screw	24	M3 x 16mm

<b>Title</b>	<b>MOTOR ASSEMBLY</b>	<b>Date</b>	<b>14/06/2022</b>
<b>Author</b>	<b>Jan Canet Vidal</b>	<b>Scale</b>	<b>1:4</b>
<b>Material</b>	<b>N/A</b>	<b>Paper size</b>	<b>A4</b>
		<b>Component number</b>	<b>N/A</b>
		<b>Sheet</b>	<b>1</b>

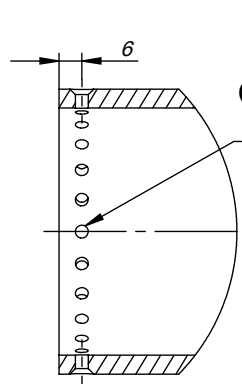
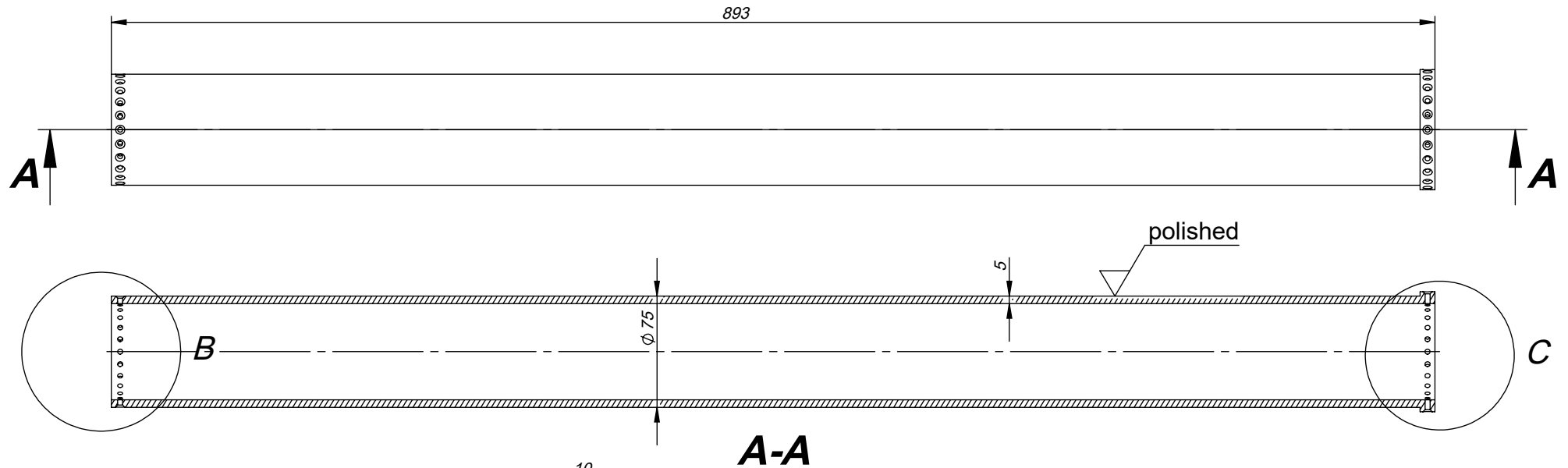




<b>Title</b>	<b>FORWARD CLOSURE</b>		<b>Date</b>	<b>14/06/2022</b>
<b>Author</b>	<b>Jan Canet Vidal</b>		<b>Scale</b>	<b>1:1</b>
			<b>Component number</b>	<b>1</b>
<b>Material</b>	<b>Aluminium 7075-T6</b>		<b>Paper size</b>	<b>A4</b>
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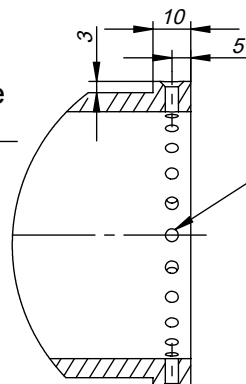


<i>Title</i>	<b>INSULATION DISK</b>	<i>Date</i>	<b>14/06/2022</b>
<i>Author</i>	<b>Jan Canet Vidal</b>	<i>Scale</i>	<b>1:1</b>
		<i>Component number</i>	<b>2</b>
<i>Material</i>	<b>Cardboard</b>	<i>Paper size</i>	<b>A4</b>
		<i>Sheet</i>	<b>3</b>



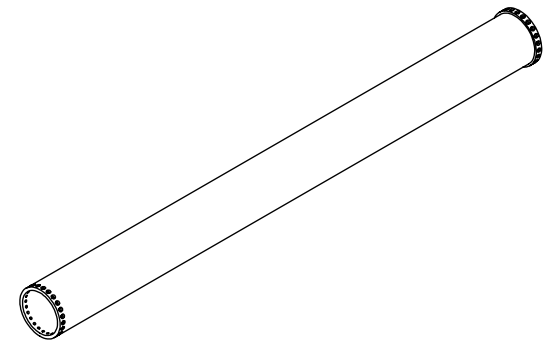
Countersunk hole  
M3 (x24)

*DETAIL B*  
SCALE 1 : 2



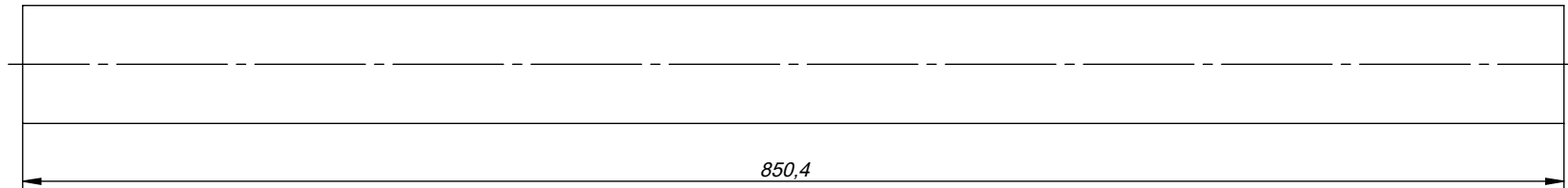
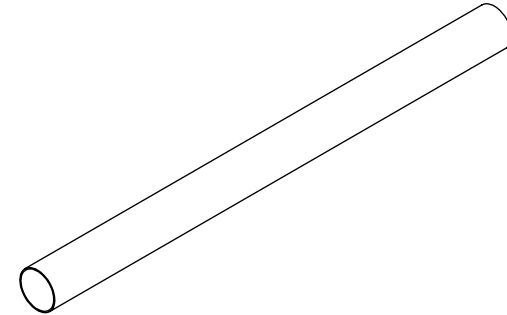
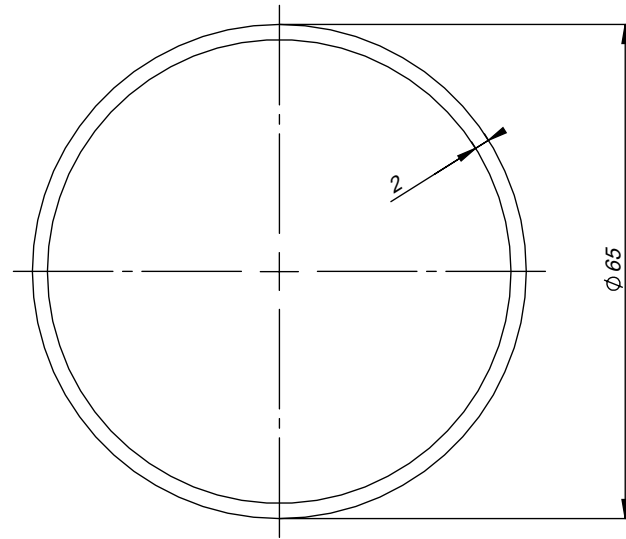
Countersunk hole  
M3 (x24)

*DETAIL C*  
SCALE 1 : 2

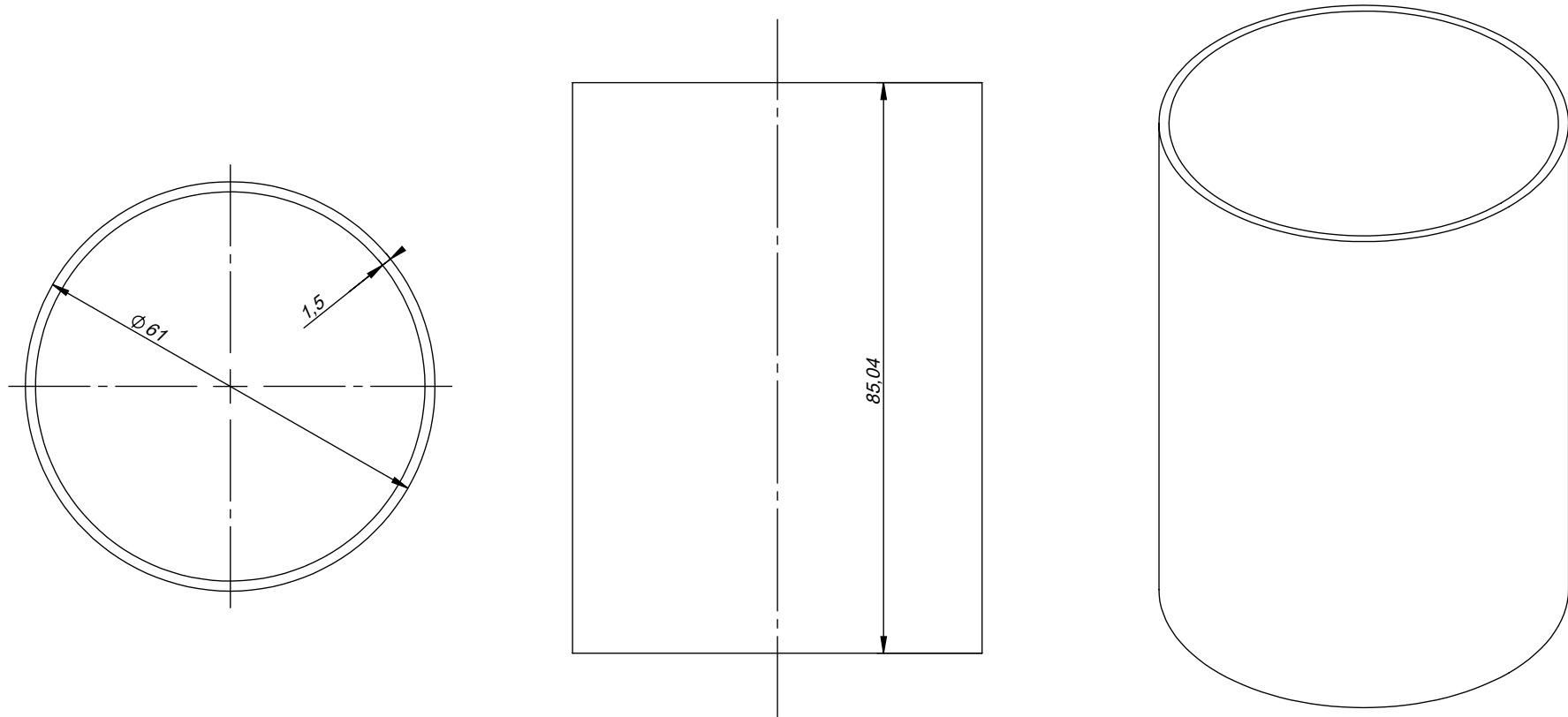


<i>Title</i>	<b>MOTOR CASE</b>		<i>Date</i>	<b>14/06/2022</b>	
<i>Author</i>	<b>Jan Canet Vidal</b>		<i>Scale</i>	<b>1:4</b>	<i>Component number</i>
<i>Material</i>	<b>Aluminium 6061-T6</b>		<i>Paper size</i>	<b>A4</b>	<b>3</b>
					<i>Sheet</i>
					<b>4</b>

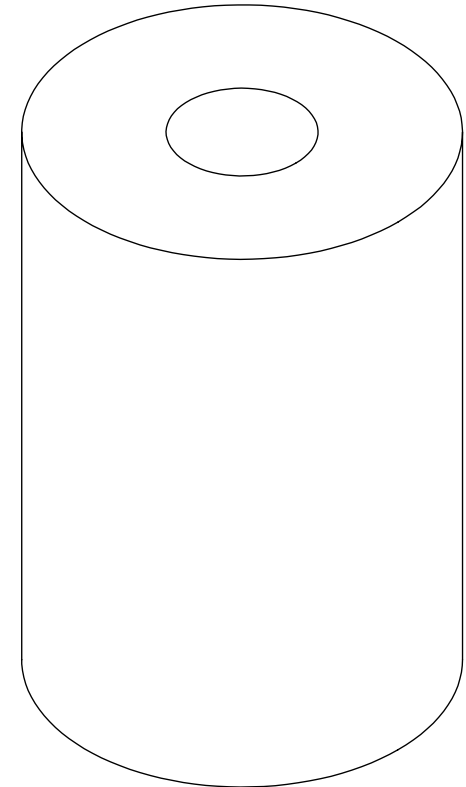
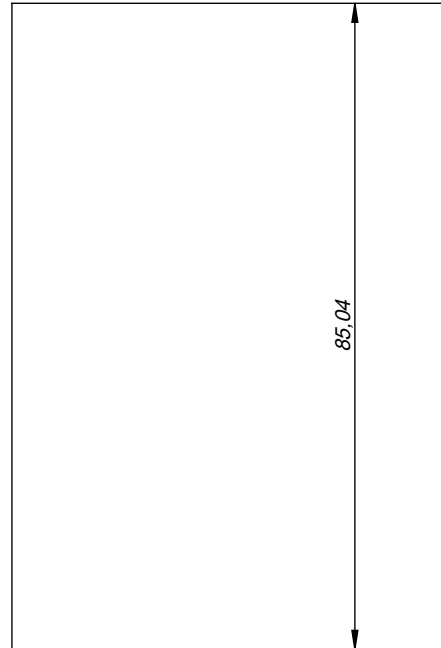
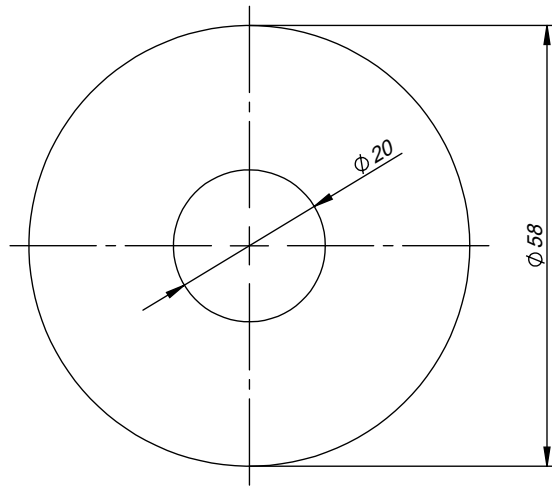
SCALE 1:1



<i>Title</i>	<b>THERMAL INSULATOR</b>	<i>Date</i>	<b>14/06/2022</b>		
<i>Author</i>	<b>Jan Canet Vidal</b>	<i>Scale</i>	<b>1:4</b>	<i>Component number</i>	<b>4</b>
<i>Material</i>	<b>Cardboard</b>	<i>Paper size</i>	<b>A4</b>	<i>Sheet</i>	<b>5</b>

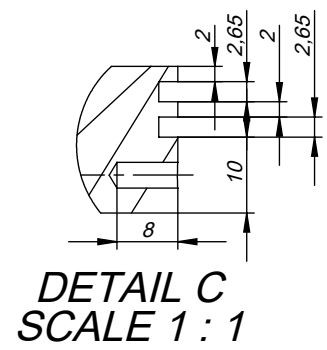
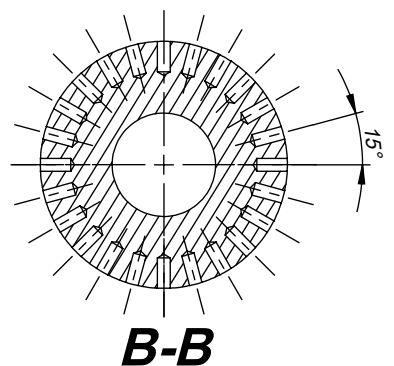
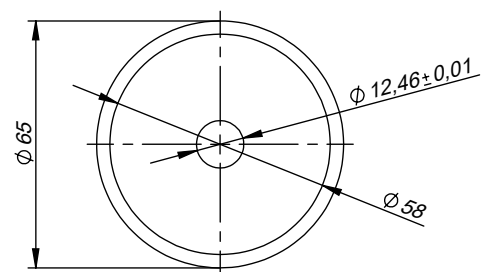
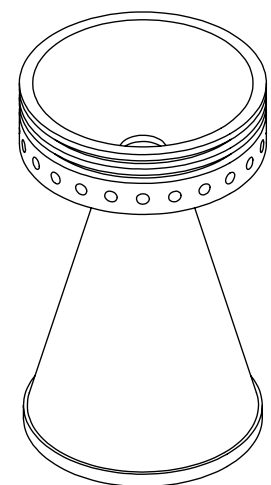
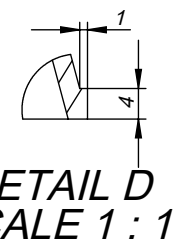
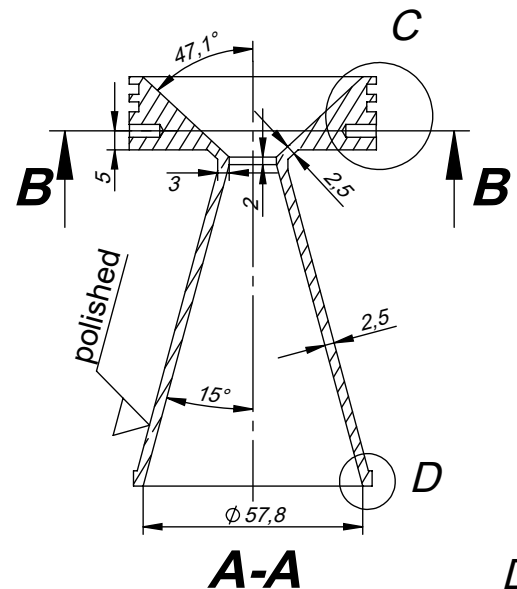
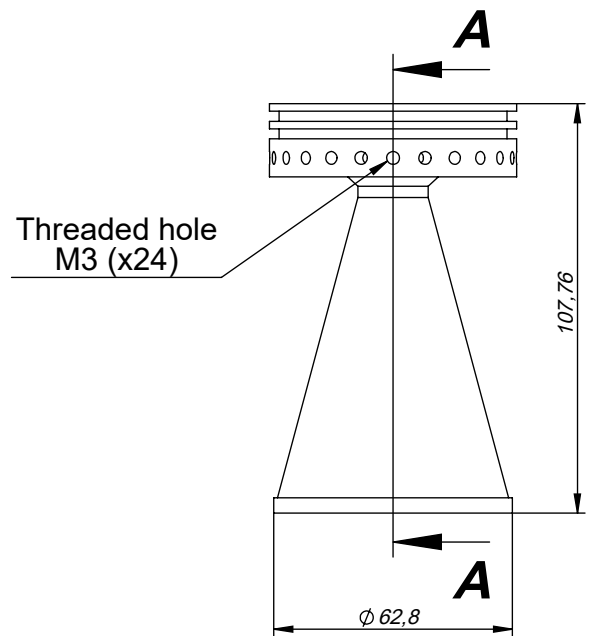


<i>Title</i>	<b>CASTING TUBE</b>	<i>Date</i>		<b>14/06/2022</b>	
<i>Author</i>	<b>Jan Canet Vidal</b>	<i>Scale</i>	<b>1:1</b>	<i>Component number</i>	<b>5</b>
<i>Material</i>	<b>Cardboard</b>	<i>Paper size</i>	<b>A4</b>	<i>Sheet</i>	<b>6</b>



<i>Title</i>	<b>PROPELLANT GRAIN</b>		<i>Date</i>	<b>14/06/2022</b>	
<i>Author</i>	<b>Jan Canet Vidal</b>		<i>Scale</i>	<b>1:1</b>	<i>Component number</i>
<i>Material</i>	<b>AP/HTPB/Al composite propellant</b>		<i>Paper size</i>	<b>A4</b>	<i>Sheet</i>
					<b>6</b>
					<b>7</b>





Title	<b>NOZZLE</b>		Date	<b>14/06/2022</b>	
Author	<b>Jan Canet Vidal</b>		Scale	<b>1:2</b>	Component number
Material	<b>Molybdenum</b>		Paper size	<b>A4</b>	Sheet
					<b>7</b>
					<b>8</b>