



**Министерство науки и высшего образования Российской Федерации  
Федеральное государственное бюджетное  
образовательное учреждение высшего образования  
«Московский государственный технический  
университет имени Н.Э. Баумана  
(национальный исследовательский  
университет)» (МГТУ им. Н.Э. Баумана)**

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**ФАКУЛЬТЕТ «ИНФОРМАТИКА И СИСТЕМЫ УПРАВЛЕНИЯ»  
КАФЕДРА «СИСТЕМЫ АВТОМАТИЧЕСКОГО УПРАВЛЕНИЯ»**

## **Самостоятельная работа №1.6**

# **"Толщина, отверстие и профили во FreeCAD"**

## **Вариант 5**

Студент группы

Соин А.Д.  
28 марта 2025 г.

Преподаватель

Викулов А. Н.  
«\_» \_\_\_\_\_ 2025 г.

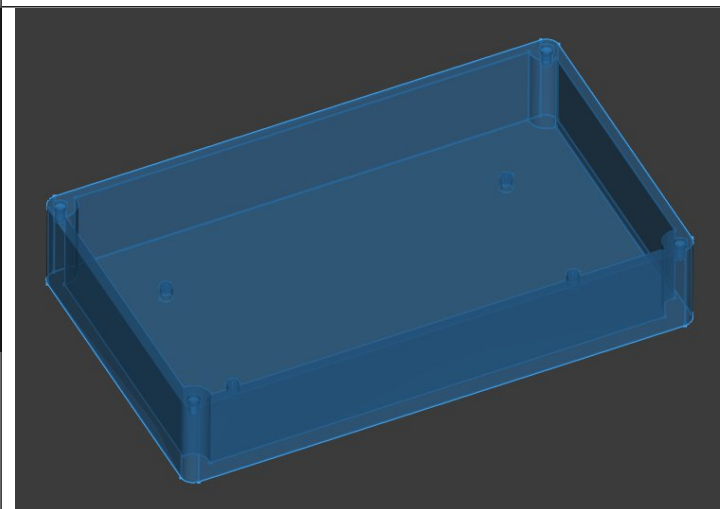
# ДЕТАЛЬ 2

## ОБЩИЙ ВИД ДЕТАЛИ

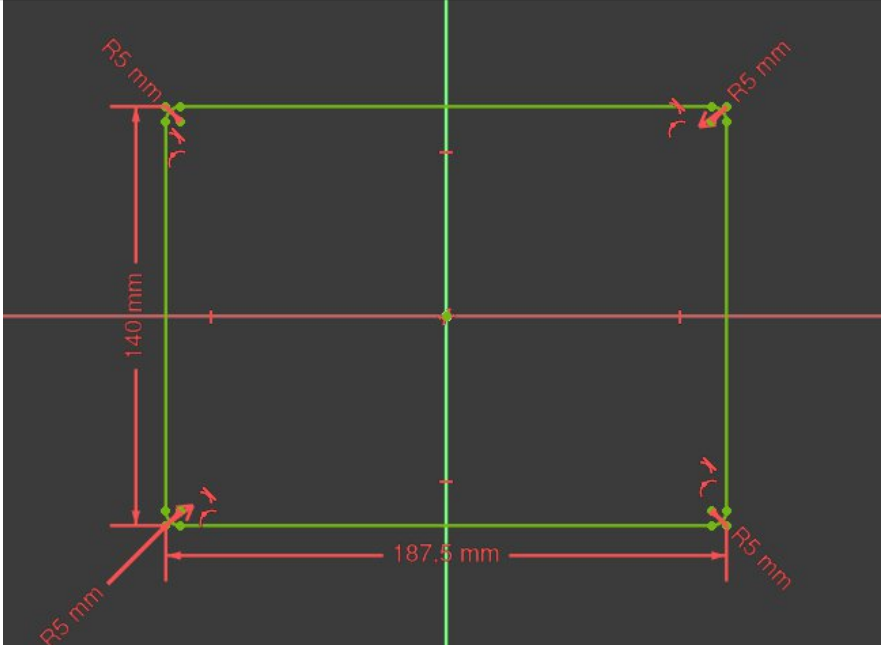
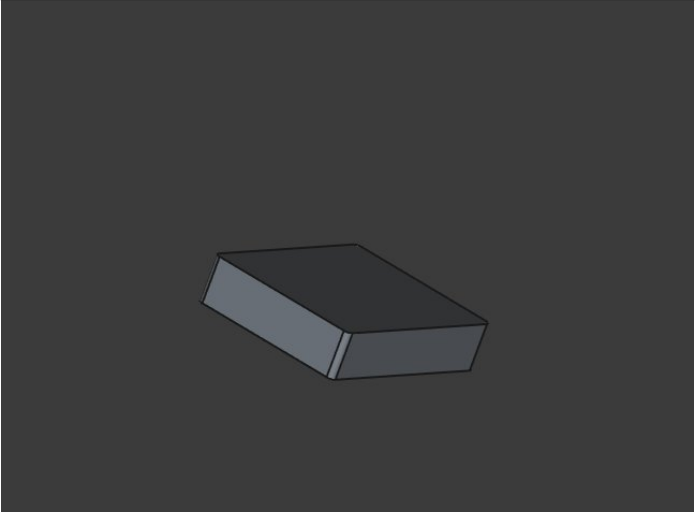
С деревом конструирования



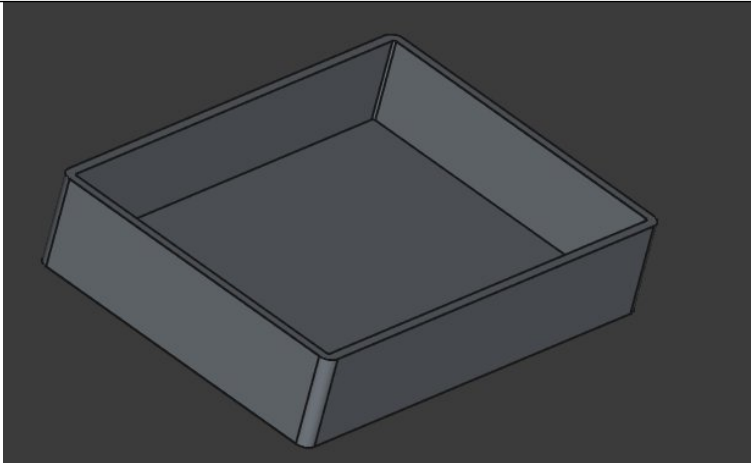
Внутренние части



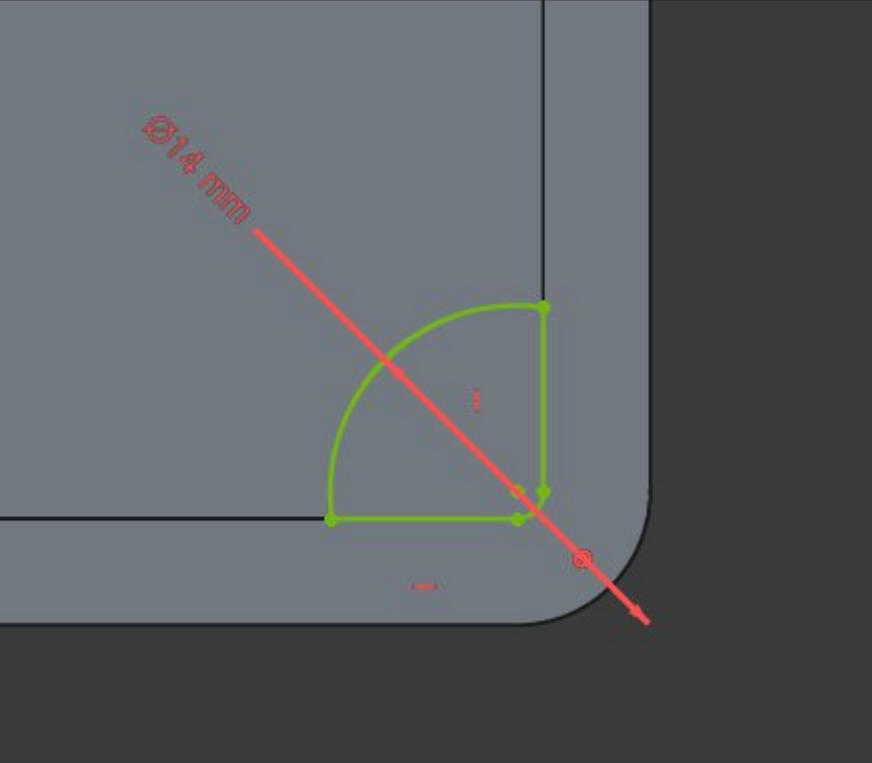
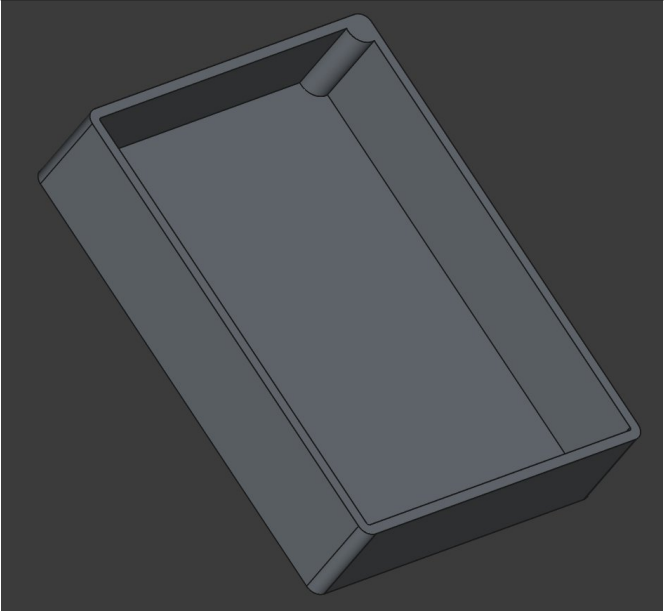
# ОСНОВА ДЕТАЛИ

Эскиз	В материале
 <p>Technical sketch of a rectangular base. The sketch shows a rectangle with a height of 140 mm and a width of 187.5 mm. The corners are rounded with a radius of R5 mm. The sketch is drawn on a dark gray background with a green grid. Red dimension lines and arrows indicate the measurements. The text 'R5 mm' is written in red at each corner. The text '140 mm' is written in red along the left vertical edge. The text '187.5 mm' is written in red along the bottom horizontal edge.</p>	 <p>3D model of the rectangular base, showing the rounded corners and the overall shape. The model is rendered in a light gray color with a dark gray shadow. It is positioned on a dark gray background.</p>

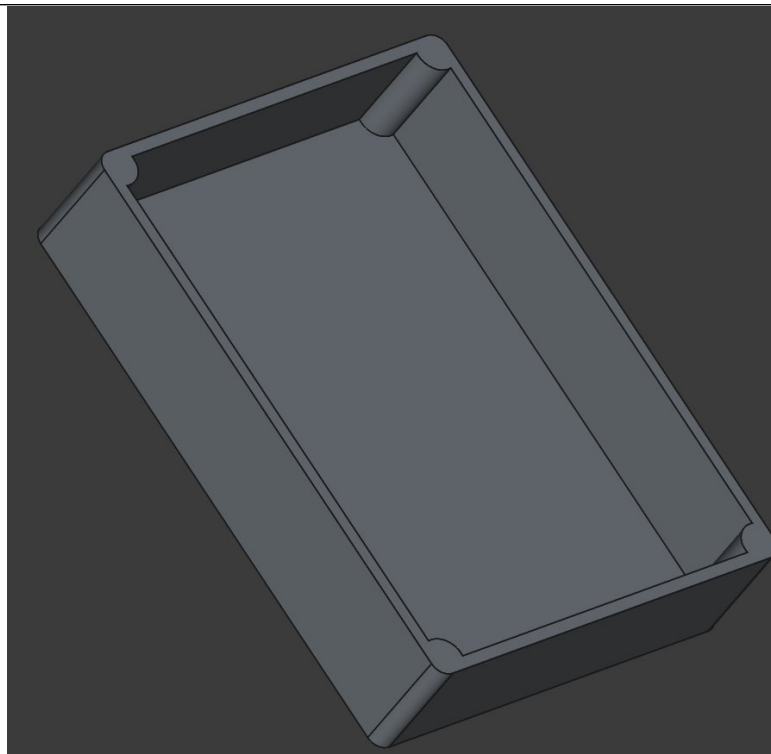
# ТОЛЩИНА

Параметры		В материале
<b>База</b>		
База	Pad [Face10]	
Support Tran...	false	
Label	Thickness	
Suppressed	false	
<b>Part Design</b>		
Refine	true	
<b>Thickness</b>		
Value	4,00 mm	
Mode	Skin	
Join	Arc	
Reversed	true	
Intersection	false	

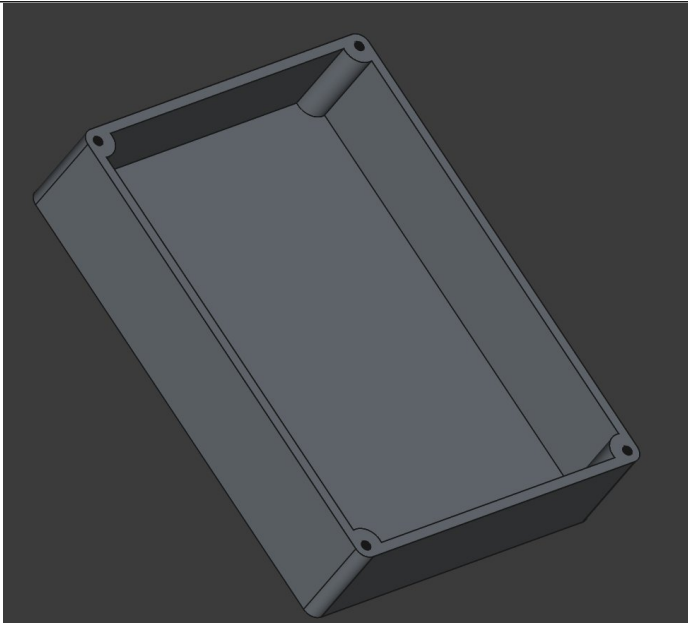
# СКРУГЛЕНИЕ ВНУТРЕННИХ УГЛОВ

Эскиз	В материале
 <p>A technical sketch of a rounded internal corner. A red arrow points to the corner with the label <math>\varnothing 14 \text{ mm}</math>. A green arc indicates the radius of the fillet. The sketch is on a dark gray background.</p>	 <p>A 3D perspective view of a rectangular part with rounded internal corners, showing the fillet in a realistic material finish. The part is dark gray and is shown against a black background.</p>

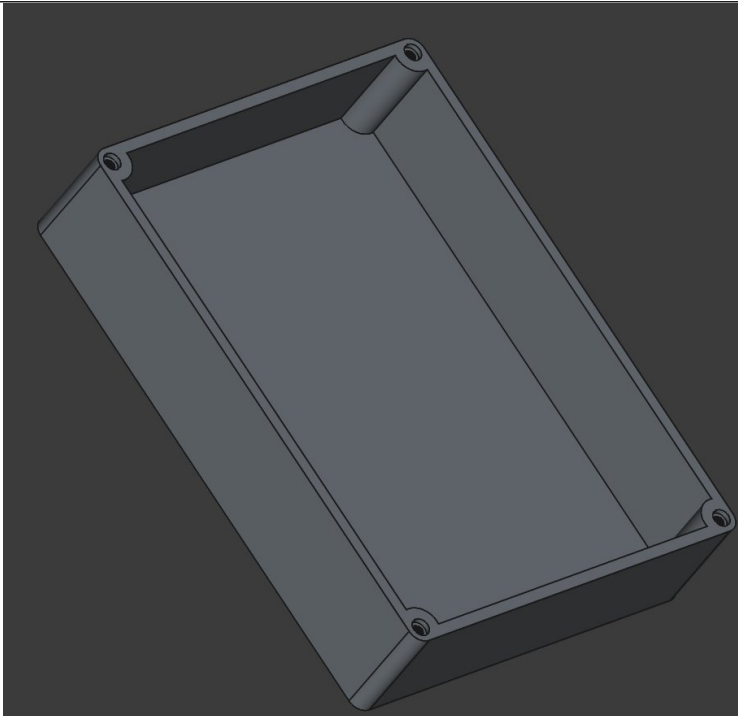
# МНОЖЕСТВЕННОЕ ПРЕОБРАЗОВАНИЕ

Параметры - Отражение		Параметры - Отражение 1		<div>В материале</div> 
База		База		
Originals		Originals		
Transform M...	Transform tool shapes	Transform M...	Transform tool shapes	
Label	Mirrored	Label	Mirrored001	
Suppressed	false	Suppressed	false	
Mirrored		Mirrored		
Mirror Plane	YZ_Plane (YZ-плоскость)	Mirror Plane	XZ_Plane (XZ-плоскость)	
Part Design		Part Design		
Refine	true	Refine	true	

# ОТВЕРСТИЕ

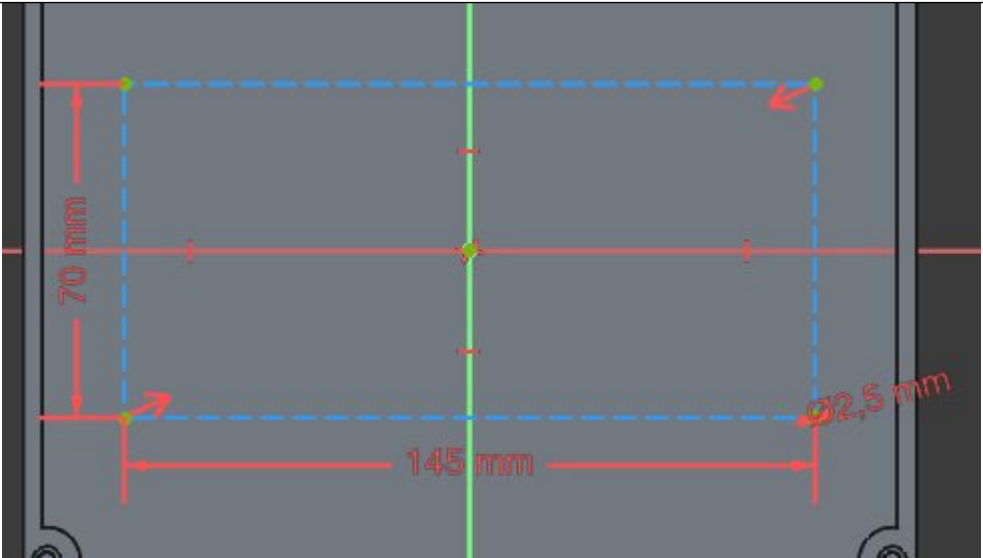
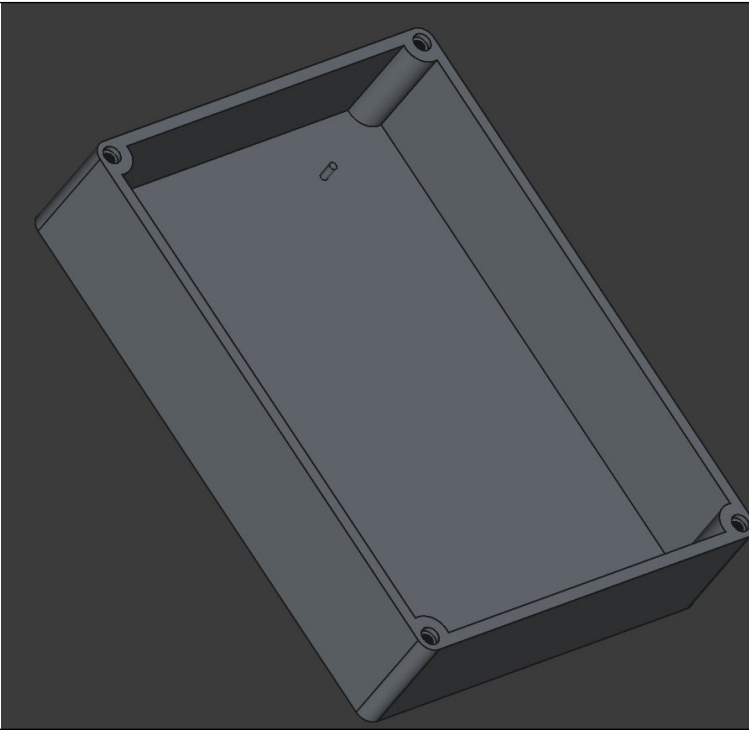
Параметры		В материале
<b>Hole</b>		
Threaded	true	
Model Thread	true	
Thread Type	ISOMetricFineProfile	
Thread Size	M4x0.5	
Thread Class	4G	
Thread Fit	Standard	
Diameter	3,52 mm	
Thread Direct...	Right	
Hole Cut Type	None	
Hole Cut Cust...	false	
Hole Cut Dia...	6,10 mm	
Hole Cut Depth	0,00 mm	
Hole Cut Cou...	90,00 °	
Depth Type	Dimension	
Depth	8,00 mm	
Drill Point	Angled	
Drill Point An...	118,00 °	
Drill For Depth	false	
Tapered	false	
Tapered Angle	90,00 °	
Thread Dept...	Hole Depth	
Thread Depth	8,00 mm	
Use Custom ...	false	
Custom Thre...	0,00 mm	
<b>Part Design</b>		
Refine	true	
<b>Sketch Based</b>		

# ОТВЕРСТИЕ 1

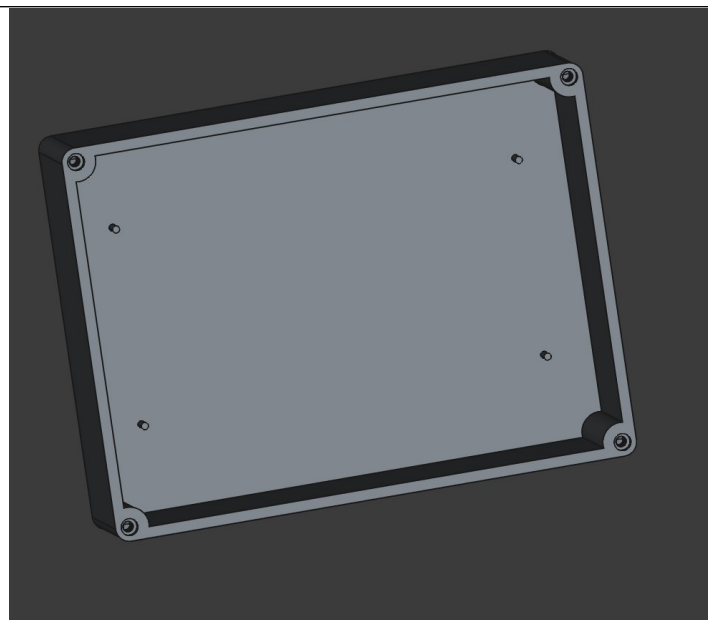
Параметры		В материале
<b>Hole</b>		
Threaded	false	
Model Thread	false	
Thread Type	None	
Thread Size	None	
Thread Class	None	
Thread Fit	Standard	
Diameter	6,00 mm	
Thread Direct...	Right	
Hole Cut Type	None	
Hole Cut Cust...	false	
Hole Cut Dia...	6,10 mm	
Hole Cut Depth	0,00 mm	
Hole Cut Cou...	90,00 °	
Depth Type	Dimension	
Depth	2,00 mm	
Drill Point	Flat	
Drill Point An...	118,00 °	
Drill For Depth	false	
Tapered	false	
Tapered Angle	90,00 °	
Thread Dept...	Hole Depth	
Thread Depth	2,00 mm	
Use Custom ...	false	
Custom Thre...	0,00 mm	
<b>Part Design</b>		
Refine	true	



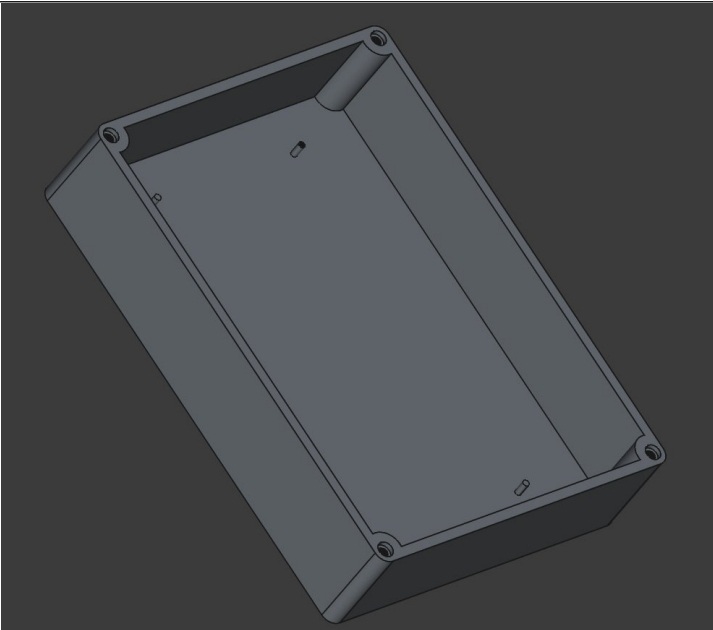
# СТОЙКИ

Эскиз	В материале
 <p>The sketch shows a top-down view of a rectangular tray. A central green vertical line represents the fold. Red dimension lines indicate a width of 145 mm and a height of 70 mm for the main body. A dashed blue rectangle outlines the tray's footprint. Yellow dots mark the corners of the body, and red arrows point to them. A red dimension of 32,5 mm is shown at the bottom right corner, indicating the distance from the edge to the fold line.</p>	 <p>A 3D perspective rendering of the physical tray, showing its rectangular shape, depth, and the fold line. The tray is dark gray with visible rivets at the corners of the body.</p>

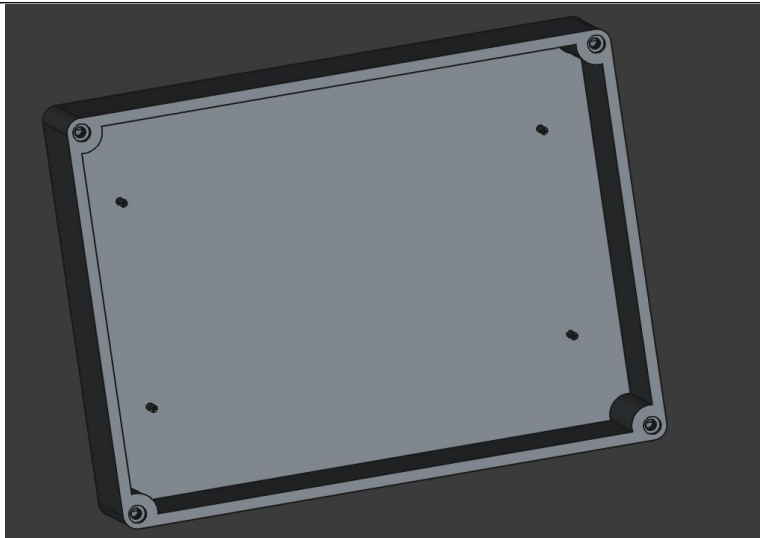
# МНОЖЕСТВЕННОЕ ПРЕОБРАЗОВАНИЕ

Параметры - Отражение 2		Параметры - Отражение 3		В материале
База		База		
Originals		Originals		
Transform M...	Transform tool shapes	Transform M...	Transform tool shapes	
Label	Mirrored002	Label	Mirrored003	
Suppressed	false	Suppressed	false	
Mirrored		Mirrored		
Mirror Plane	Sketch002 [V_Axis]	Mirror Plane	XZ_Plane (XZ-плоскость)	
Part Design		Part Design		
Refine	true	Refine	true	

## ОТВЕРСТИЕ 2

Параметры		В материале																																																		
<div><div>Hole</div><table><tr><td>Threaded</td><td>true</td></tr><tr><td>Model Thread</td><td>true</td></tr><tr><td>Thread Type</td><td>ISOMetricFineProfile</td></tr><tr><td>Thread Size</td><td>M1.6x0.2</td></tr><tr><td>Thread Class</td><td>4G</td></tr><tr><td>Thread Fit</td><td>Standard</td></tr><tr><td>Diameter</td><td>1,42 mm</td></tr><tr><td>Thread Direct...</td><td>Right</td></tr><tr><td>Hole Cut Type</td><td>None</td></tr><tr><td>Hole Cut Cust...</td><td>false</td></tr><tr><td>Hole Cut Dia...</td><td>6,10 mm</td></tr><tr><td>Hole Cut Depth</td><td>0,00 mm</td></tr><tr><td>Hole Cut Cou...</td><td>90,00 °</td></tr><tr><td>Depth Type</td><td>Dimension</td></tr><tr><td>Depth</td><td>4,00 mm</td></tr><tr><td>Drill Point</td><td>Angled</td></tr><tr><td>Drill Point An...</td><td>118,00 °</td></tr><tr><td>Drill For Depth</td><td>false</td></tr><tr><td>Tapered</td><td>false</td></tr><tr><td>Tapered Angle</td><td>90,00 °</td></tr><tr><td>Thread Dept...</td><td>Hole Depth</td></tr><tr><td>Thread Depth</td><td>4,00 mm</td></tr><tr><td>Use Custom ...</td><td>false</td></tr><tr><td>Custom Thre...</td><td>0,00 mm</td></tr></table><div><div>Part Design</div><table><tr><td>Refine</td><td>true</td></tr></table></div></div>		Threaded	true	Model Thread	true	Thread Type	ISOMetricFineProfile	Thread Size	M1.6x0.2	Thread Class	4G	Thread Fit	Standard	Diameter	1,42 mm	Thread Direct...	Right	Hole Cut Type	None	Hole Cut Cust...	false	Hole Cut Dia...	6,10 mm	Hole Cut Depth	0,00 mm	Hole Cut Cou...	90,00 °	Depth Type	Dimension	Depth	4,00 mm	Drill Point	Angled	Drill Point An...	118,00 °	Drill For Depth	false	Tapered	false	Tapered Angle	90,00 °	Thread Dept...	Hole Depth	Thread Depth	4,00 mm	Use Custom ...	false	Custom Thre...	0,00 mm	Refine	true	
Threaded	true																																																			
Model Thread	true																																																			
Thread Type	ISOMetricFineProfile																																																			
Thread Size	M1.6x0.2																																																			
Thread Class	4G																																																			
Thread Fit	Standard																																																			
Diameter	1,42 mm																																																			
Thread Direct...	Right																																																			
Hole Cut Type	None																																																			
Hole Cut Cust...	false																																																			
Hole Cut Dia...	6,10 mm																																																			
Hole Cut Depth	0,00 mm																																																			
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Depth	4,00 mm																																																			
Drill Point	Angled																																																			
Drill Point An...	118,00 °																																																			
Drill For Depth	false																																																			
Tapered	false																																																			
Tapered Angle	90,00 °																																																			
Thread Dept...	Hole Depth																																																			
Thread Depth	4,00 mm																																																			
Use Custom ...	false																																																			
Custom Thre...	0,00 mm																																																			
Refine	true																																																			

# МНОЖЕСТВЕННОЕ ПРЕОБРАЗОВАНИЕ

Параметры - Отражение 4		Параметры - Отражение 5		В материале
База		База		
Originals		Originals		
Transform M...	Transform tool shapes	Transform M...	Transform tool shapes	
Label	Mirrored004	Label	Mirrored005	
Suppressed	false	Suppressed	false	
Mirrored		Mirrored		
Mirror Plane	YZ_Plane (YZ-плоскость)	Mirror Plane	XZ_Plane (XZ-плоскость)	
Part Design		Part Design		
Refine	true	Refine	true	

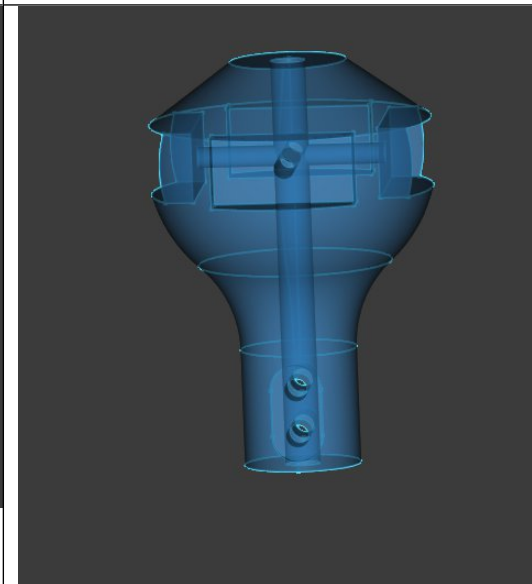
# ДЕТАЛЬ 3

## ОБЩИЙ ВИД ДЕТАЛИ

С деревом конструирования

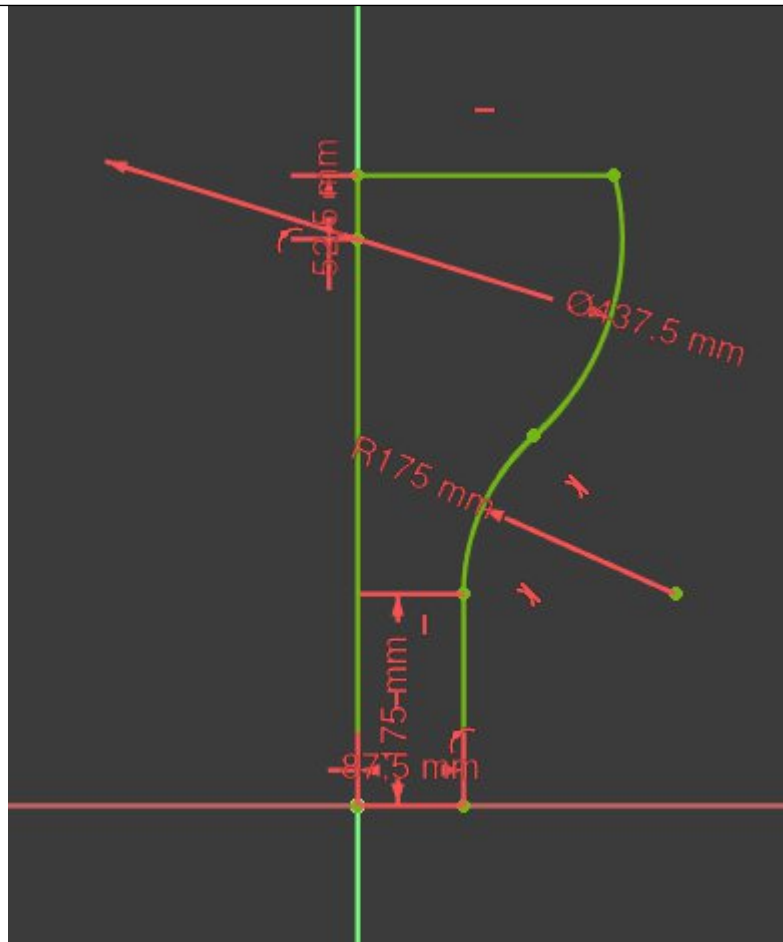


Внутренние части

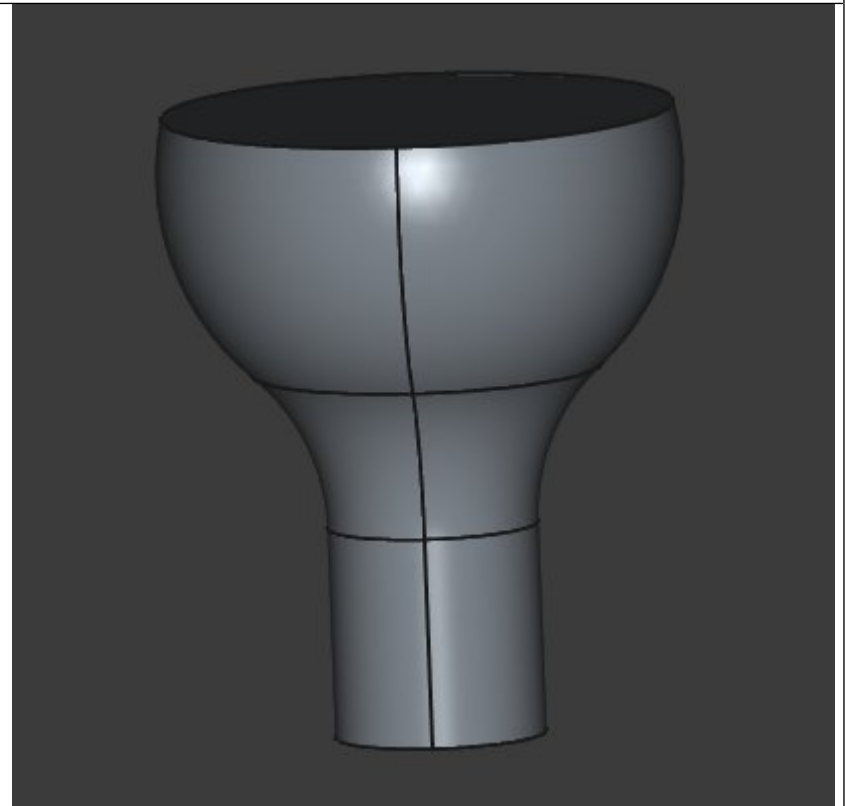


# ОСНОВА ДЕТАЛИ

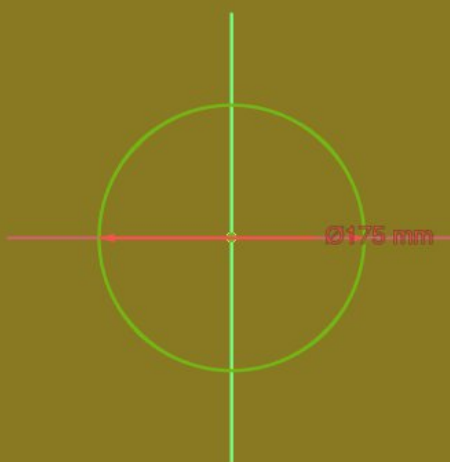
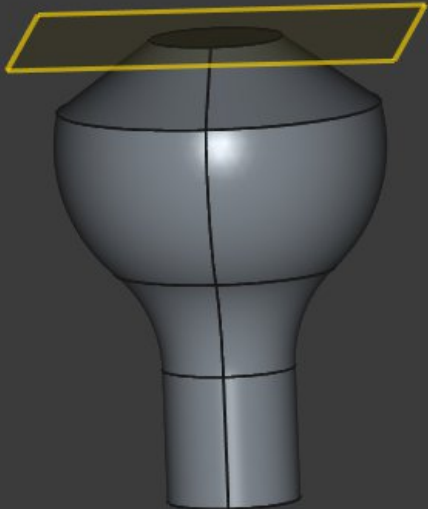
Эскиз



В материале

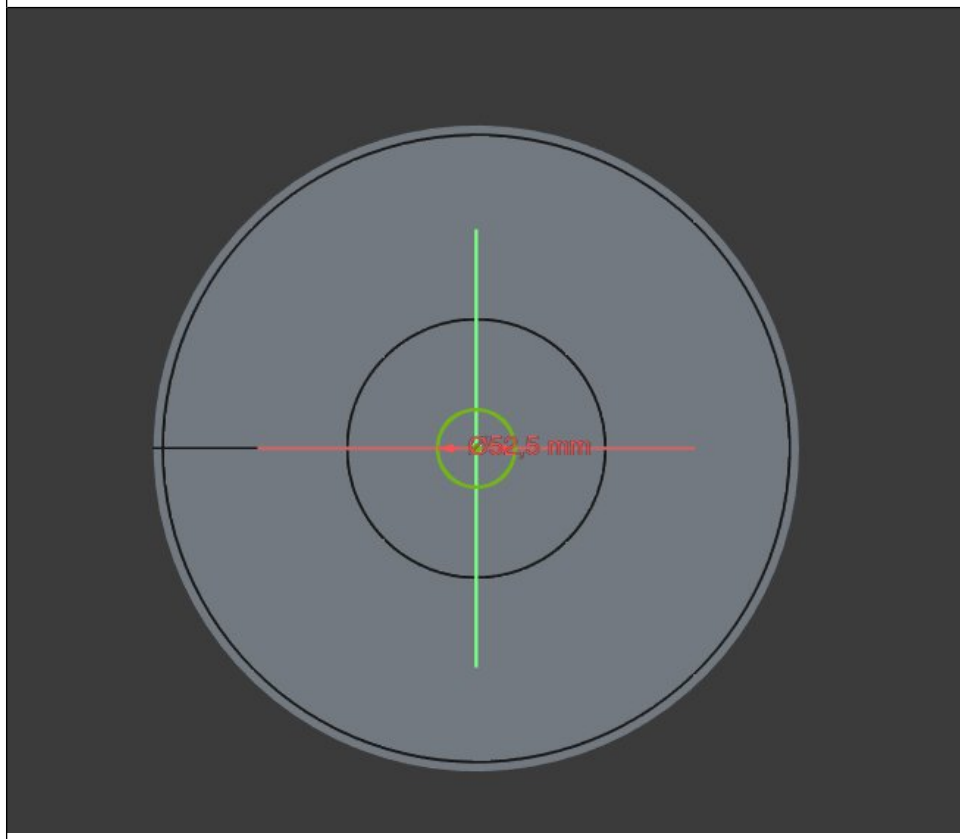


# ВЕРШИНА

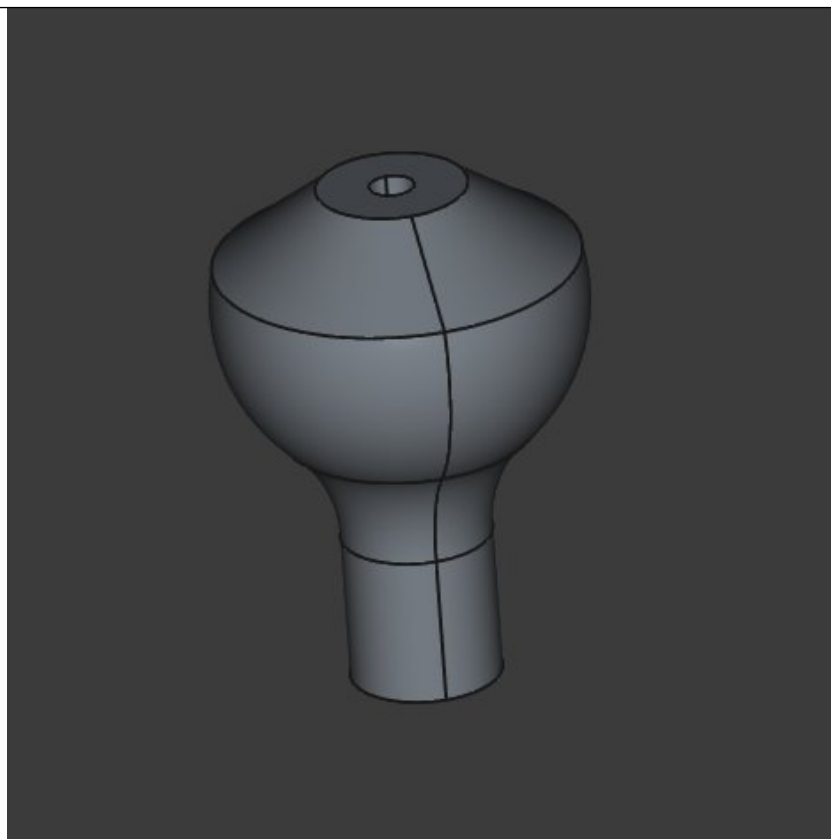
Параметры вспомогательной плоскости	Эскиз	В материале
<b>Attachment</b> Attacher Engr... Engine Plane Attachment S... XY_Plane (XY плоскость) Map Mode FlatFace Map Reversed false ▶ Attachment ... [[(0,00 0,00 1,00); 0,00 °; (0,00 mm 0,00 mm 612,50 mm)]] <b>База</b> ▶ Placement [[(0,00 0,00 1,00); 0,00 °; (0,00 mm 0,00 mm 612,50 mm)]] Label DatumPlane <b>Size</b> Resize Mode Automatic Length 509,66 mm Width 509,66 mm		

# ОТВЕРСТИЕ

Эскиз

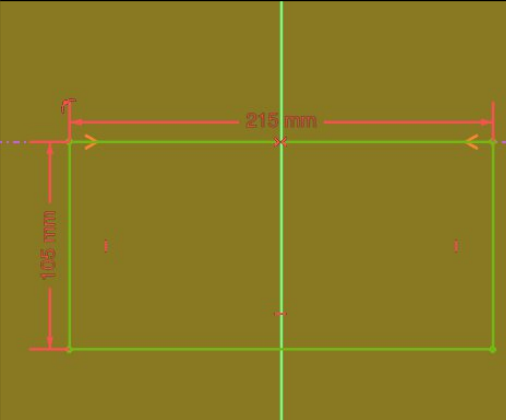
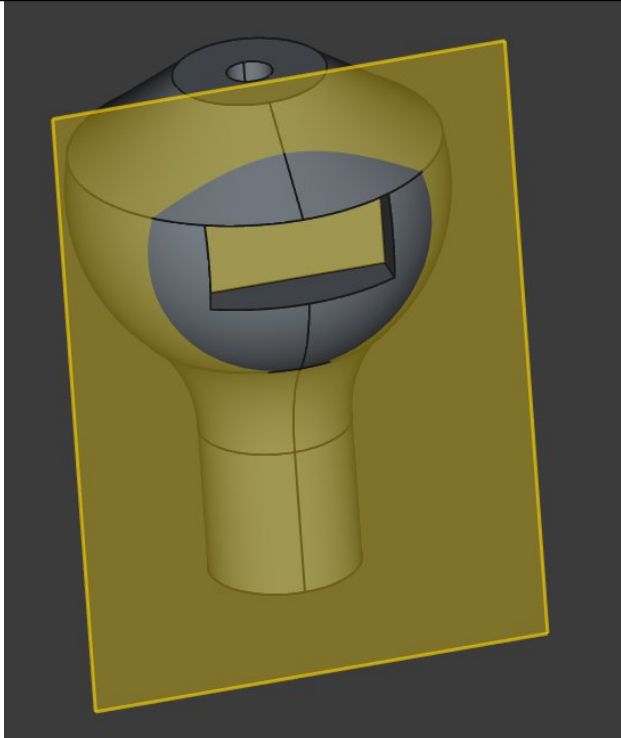


В материале

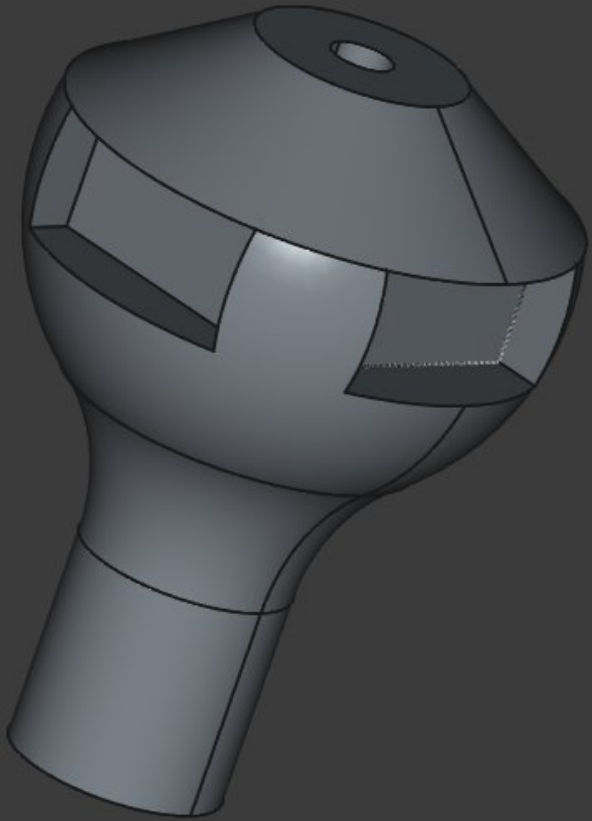




# ВЫРЕЗ

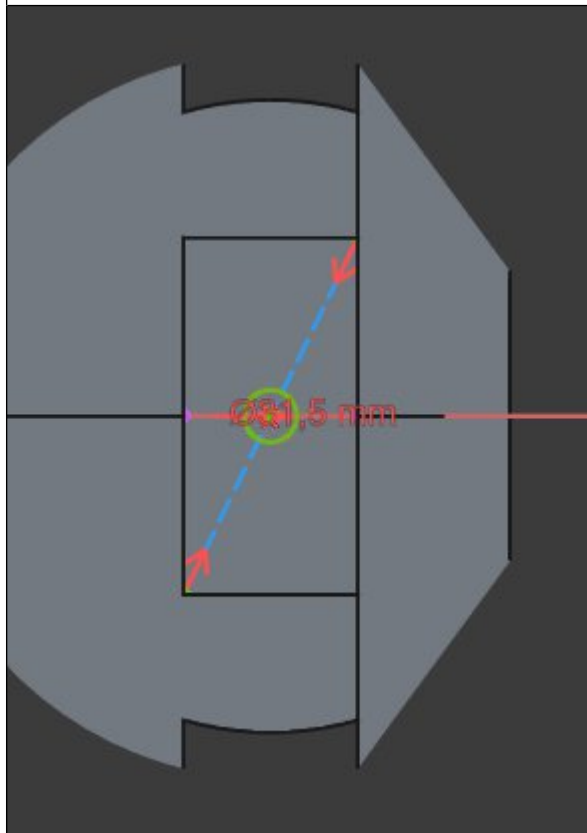
Параметры вспомогательной плоскости	Эскиз	В материале
<b>Attachment</b> Attacher Engi... Engine Plane Attachment S... [YZ_Plane (YZ-плоскость), Sketch003.Vertex1] Map Mode ParallelPlane Map Reversed false Attachment ... [(0,00 0,00 1,00); 0,00 °; (0,00 mm 0,00 mm 0,00 mm)] <b>База</b> Placement [(0,58 0,58 0,58); 120,00 °; (141,23 mm -0,00 mm 0,00 mm)] Label DatumPlane001 <b>Size</b> Resize Mode Automatic Length 528,78 mm Width 741,57 mm		

# КРУГОВОЙ МАССИВ

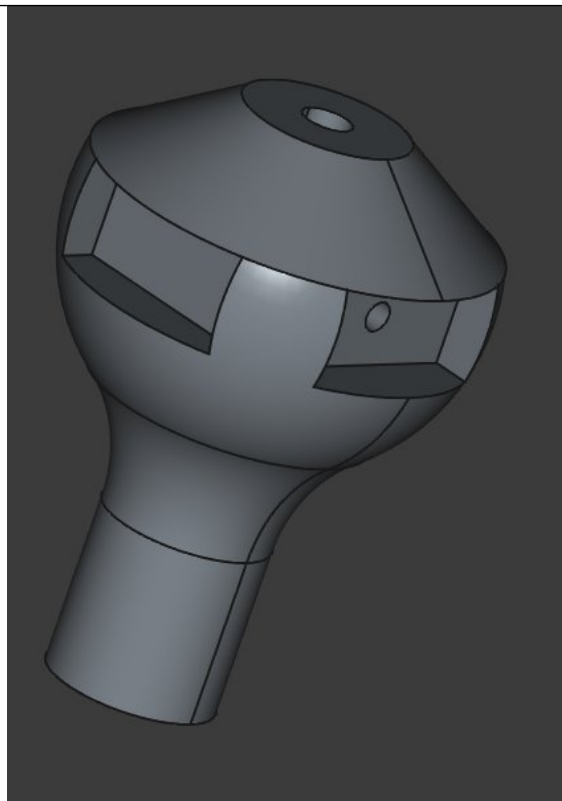
Параметры	В материале
<b>База</b>	
Reversed	
Mode	
Угол	
Offset	
Occurrences	
Originals	
Transform M...	
Label	
Suppressed	
<b>Part Design</b>	
Refine	
<b>Polar Pattern</b>	
Ось	

# ОТВЕРСТИЕ

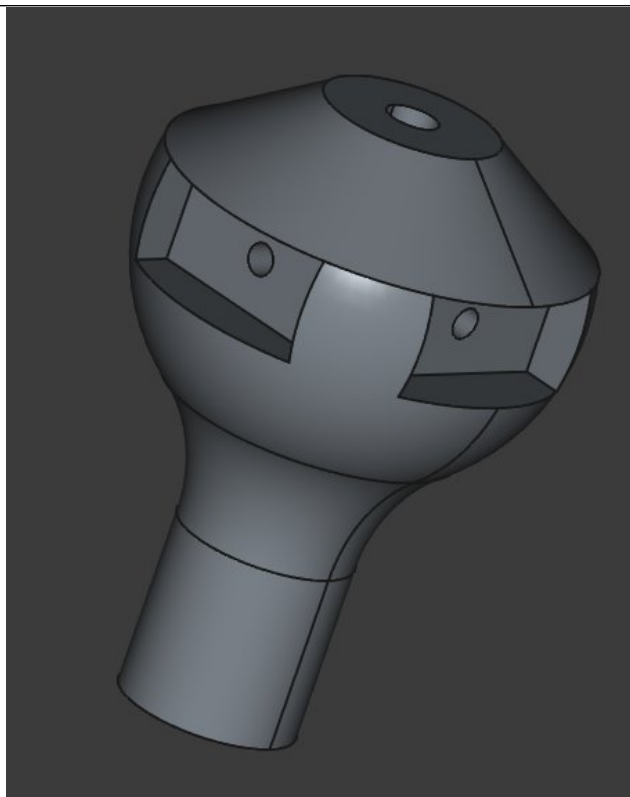
Эскиз



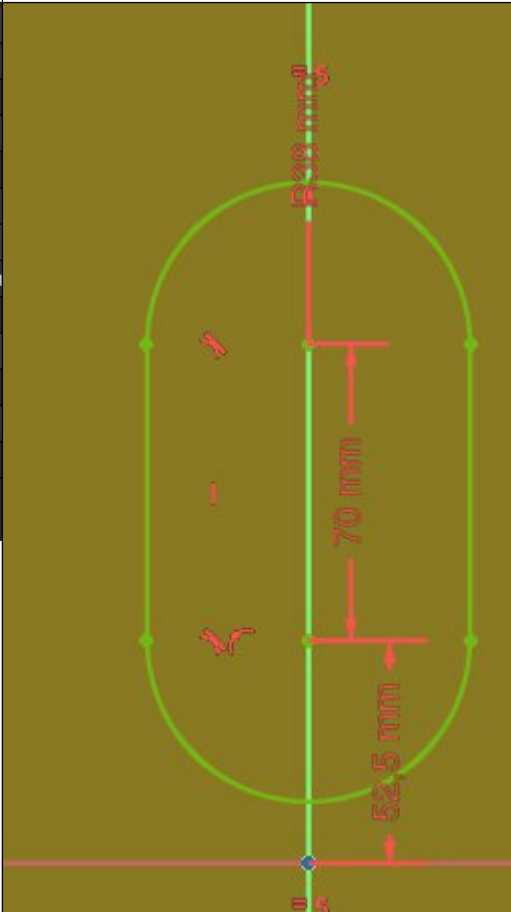
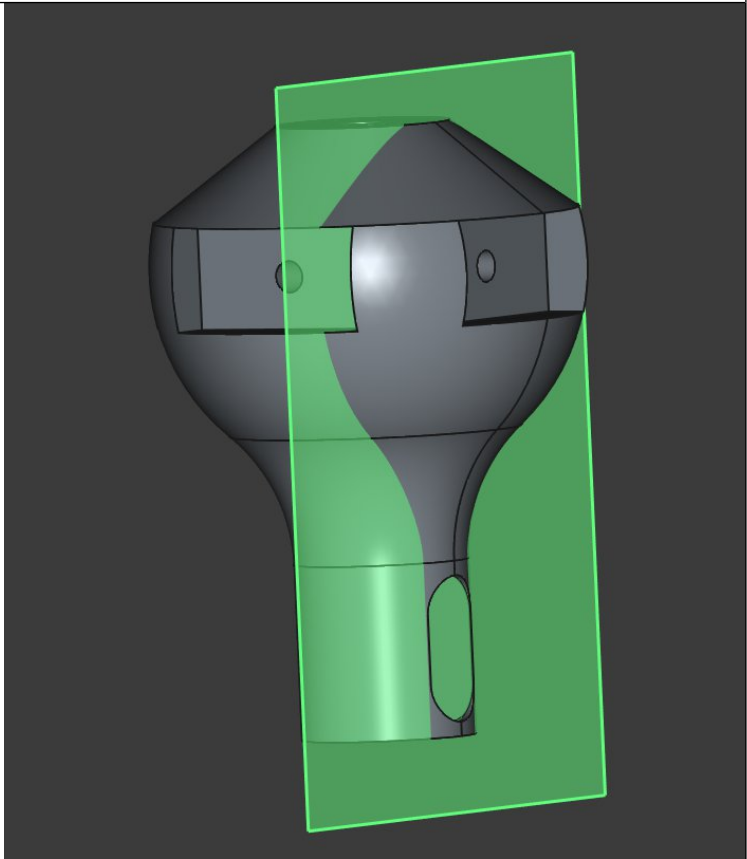
В материале



# КРУГОВОЙ МАССИВ 1

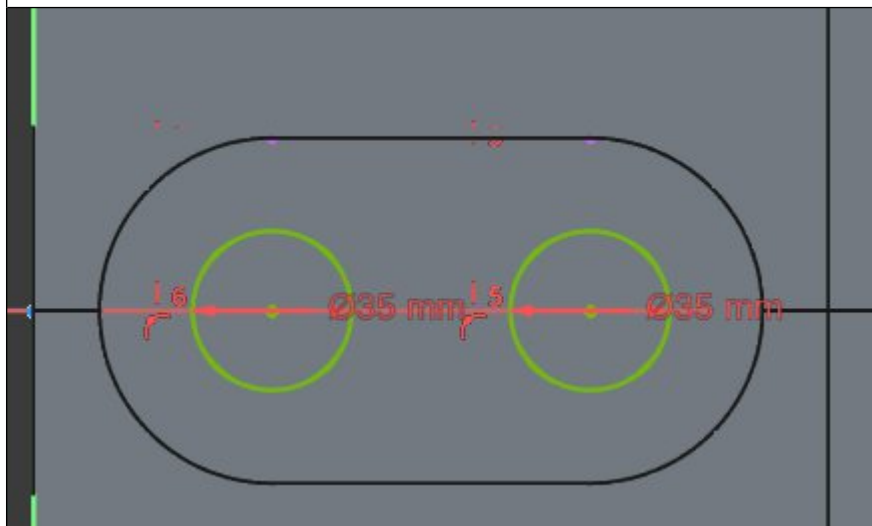
Параметры		В материале	
База			
Reversed	false		
Mode	angle		
Угол	360,00 °		
Offset	120,00 °		
Occurrences	4		
Originals	Pocket002		
Transform M...	Transform tool shapes		
Label	PolarPattern001		
Suppressed	false		
Part Design			
Refine	true		
Polar Pattern			
Ось	Z_Axis (Ось-Z)		

# ВЫРЕЗ

Параметры вспомогательной плоскости	Эскиз	В материале
<b>Attachment</b> Attacher Engi... Engine Plane Attachment S... [YZ_Plane (YZ-плоскость), Sketch003.Vertex3] Map Mode ParallelPlane Map Reversed false Attachment ... [(0,00 0,00 1,00); 0,00 °; (0,00 mm 0,00 mm 0,00 mm)]		
<b>База</b> Placement [(0,58 0,58 0,58); 120,00 °; (77,41 mm -0,00 mm 0,00 mm)] Label DatumPlane002		
<b>Size</b> Resize Mode Automatic Length 528,78 mm Width 741,57 mm		

# ОТВЕРСТИЕ

Эскиз



В материале

