

GNG 2101

Design Project User and Product Manual

Guitar Pick Grip – StrumAble – E2.2

Submitted by:

Francis Bessette, 300186999

Quynh-Ni Au, 300166103

Natalia Proano Gallegos, 300351347

Victoria Richard, 300345654

Antoine Deslauriers, 300175226

April 4th 2025

University of Ottawa

Table of Contents

Table of Contents	ii
List of Figures	iv
List of Tables	vii
List of Acronyms and Glossary	viii
1 Introduction.....	1
2 Overview.....	2
3 Getting started	3
3.1 Configuration Considerations	3
3.2 User Access Considerations	4
3.3 Accessing/setting up the System	4
3.4 System Organization & Navigation	6
3.5 Exiting the System	8
3.5.1 Remove the Grip from the Hand.....	8
3.5.2 Removing the Pick from the Grip	9
4 Using the System	10
4.1 Thumb Relief Grooves	10
4.2 Guitar Pick Interchangeability	12
5 Troubleshooting & Support	13
5.1 Special Considerations	13
5.2 Maintenance	13
5.3 Support	13

6	Product Documentation	14
6.1	Guitar Pick Grip Body.....	14
6.1.1	BOM (Bill of Materials)	14
6.1.2	Equipment list	14
6.1.3	Instructions.....	15
6.2	Wedge.....	29
6.2.1	BOM (Bill of Materials)	29
6.2.2	Equipment list	30
6.2.3	Instructions.....	30
6.3	Testing & Validation.....	34
7	Conclusions and Recommendations for Future Work	37
8	Bibliography	38
	APPENDICES	39
	APPENDIX I: Design Files	39

List of Figures

Figure 1: Final, complete design of the GPG	2
Figure 2: Appropriate user configuration for use	3
Figure 3: Seating of the thumb relief grooves at the thumb joints.....	4
Figure 4: Inserting the guitar pick into the back of the slot.....	5
Figure 5: Securing the wedge into the back of the slot.....	6
Figure 6: Checking the pick for movement	6
Figure 7: PLA body	7
Figure 8: PLA wedge.....	8
Figure 9: Removing the GPG from the thumb.....	8
Figure 10: Pull the wedge from the slot (left), or rotate the wedge from the slot (right)	9
Figure 11: Removing the pick from the GPG.....	9
Figure 12: Bent thumb for picking.....	11
Figure 13: Relaxed thumb for strumming.....	11
Figure 14 : GPG body revolve extrusion sketch.....	15
Figure 15 : GPG body revolve extrusion	16
Figure 16 : Major hole profile sketch	16
Figure 17 : Fitted thumb hole profile sketch.....	17
Figure 18 : Resultant loft of the pick support	18
Figure 19 : Guitar pick support taper sketch.....	18
Figure 20: Resulting extruded cut of the taper sketch	19
Figure 21 : Guitar pick slot sketch.....	19

Figure 22 : Combined body between the thumb slot and pick slot.....	20
Figure 23 : Creation of new plane for the thumb relief	20
Figure 24 : Thumb relief ellipse sketch	21
Figure 25 : GPG with new thumb relief.....	21
Figure 26 : Thumb locking indent sketch	22
Figure 27 : New thumb locking indent resulting from an extrude cut.....	22
Figure 28 : First manual fillet sketch	23
Figure 29: Second manual fillet sketch.....	24
Figure 30 : Thumb relief with rounded edges.....	24
Figure 31 : Pick anti-horizontal displacement supports sketch	25
Figure 32 : Extruded pick anti-horizontal displacement supports	25
Figure 33: Pick shelf with added fillets	26
Figure 34 : Guitar pick jaw sketch.....	26
Figure 35 : Extruded guitar pick jaw	27
Figure 36: Guitar pick jaw with added fillets	27
Figure 37 : Major hole fillets	28
Figure 38: Thumb fitted hole fillets.....	28
Figure 39 : Recommended print slice for the GPG body.....	29
Figure 40 : Wedge sketch	31
Figure 41 : Extruded wedge sketch.....	31
Figure 42 : Thumb grip sketch.....	32
Figure 43 : Final wedge thumb grip with added fillet	32
Figure 44 : Final wedge with added chamfer.....	33

Figure 45 : Recommended print slice for the wedge	33
Figure 46: Notch cut into pick to measure horizontal displacement	35
Figure 47 : Measuring the horizontal displacement of the pick.....	36

List of Tables

Table 1: Acronyms.....	viii
Table 2: Glossary	viii
Table 3 : Bill of Materials associated with the Guitar Pick Grip Body	14
Table 4 : Bill of Materials associated with the Wedge	30
Table 5 : Final Design Validity Tests	34
Table 6. Referenced Documents	39

List of Acronyms and Glossary

Table 1: Acronyms

Acronym	Definition
UPM	User and Product Manual
CAD	Computer Aided Design
GPG	Guitar Pick Grip
STL	Stereolithography

Table 2: Glossary

Term	Acronym	Definition

1 Introduction

This User and Product Manual (UPM) provides the information necessary for individuals with partial hand amputation to effectively use the Strum-Able guitar pick grip (GPG) and for prototype documentation. This GPG allows users who are missing partial or complete fingers, but still maintain their complete thumb, to regain the ability to hold a guitar pick. This product can also assist users who experience a lack of grip required to hold a guitar pick comfortably and securely for long periods of time.

In this document, a detailed outline of how to set up and use the product is included. It provides instructions on how the grip is worn and features are used for a comfortable playing experience. This is followed by troubleshooting instructions and assistance for any issues that may arise during use. Complete documentation of how the GPG was designed and manufactured is included below including all materials and equipment used, and design drawings to guide the manufacturing of this product. This document also discusses considerations for future work in continuation of this design.

2 Overview

Individuals with partial digit loss face a significant challenge in playing the guitar due to the difficulty of holding their guitar pick. This issue is important to address because it affects both their ability to play the instrument and their emotional and psychological well-being. For many of these individuals, playing music brings joy and self-expression. The basic functions required were a secure and comfortable grip that allowed the users to grip any medium sized guitar pick and play with ease and confidence. Current solutions can be expensive (e.g., custom prosthetics attachments), bulky (e.g., full hand straps), or not designed for users with missing digits. Our project aims to develop a pick grip that can be fastened to the user's thumb without additional assistance and require minimal cost and complexity to use. Our solution brings an ergonomic and parameterized design, which ensures a custom fit. Additionally, our pick grip can be manufactured in under an hour with durable materials, making it a reliable solution for long-term use. Other key qualities that were prioritized were low mechanical complexity and light weight. The final solution consists of a 3D-printed body and wedge (Figure 1) that allows for users to insert their own guitar picks and simple, quick installation with a single hand.



Figure 1: Final, complete design of the GPG

3 Getting started

3.1 Configuration Considerations

The pick grip is worn on the right-hand thumb, with the tapered point pointing away from the palm as shown in Figure 2. The pointed end of the pick is inserted facing the away from the palm and in line with the tapered point. The tapered side of the wedge is pressed into the pick slot at the back of the pick.



Figure 2: Appropriate user configuration for use

The two thumb relief grooves seat the grip below the thumb joint with the larger of the two grooves situated at the joint between the thumb and the palm, and the shallower groove underneath the thumb joint shown in Figure 3.



Figure 3: Seating of the thumb relief grooves at the thumb joints

The thumb is then bent to secure the grip from rotation.

3.2 User Access Considerations

In the scope of this course, the product was developed around the assumption that the user is a right-handed man with an average male thumb size and partial digit loss but a fully functional thumb. However, this product has been parameterized and is fully scalable in diameter and length to adapt to any knuckle size and shape. It can also be used for individuals with a weakened grip that prevents them from pinching a guitar pick. Therefore, the only constraints for users are if the user has neither a suitable thumb nor holds the pick in their right hand.

3.3 Accessing/setting up the System

The following section outlines the steps required to set up the Strum-Able GPG.

1. Choose a guitar pick of your preferred thickness and material. The product is designed to accommodate all standard pick profiles from 0.5mm to 1.2mm.

2. Slide the grip onto your thumb and ensure it is in a comfortable position and oriented as shown in Section 3.1 above. Having the grip on your thumb will allow an easier setup for the guitar pick and the wedge.
3. Bend your thumb to secure the grip from rotation and insert the pick by holding the body of the grip with the flat end of the slot facing upward. Then, slide the pick into the slot pointed end first. See Figure 4.



Figure 4: Inserting the guitar pick into the back of the slot

4. Line up the tapered end of the wedge to the back of the slot. Insert the wedge alongside the pick and apply pressure to the back of the wedge until it is seated as far as it will go into the slot. See Figure 5.

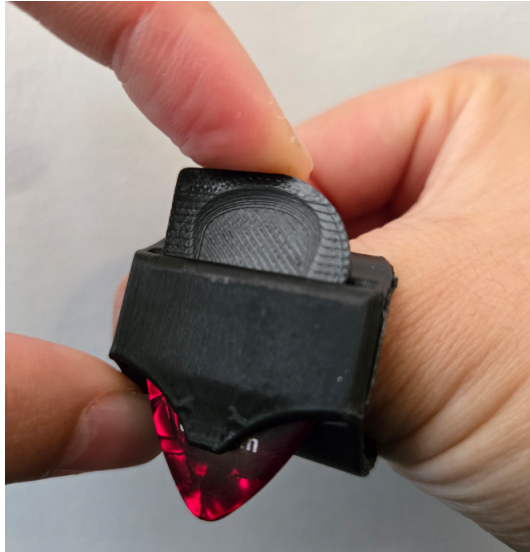


Figure 5: Securing the wedge into the back of the slot

5. Ensure the pick is secure when light pressure is applied to the sides as shown in Figure 6.

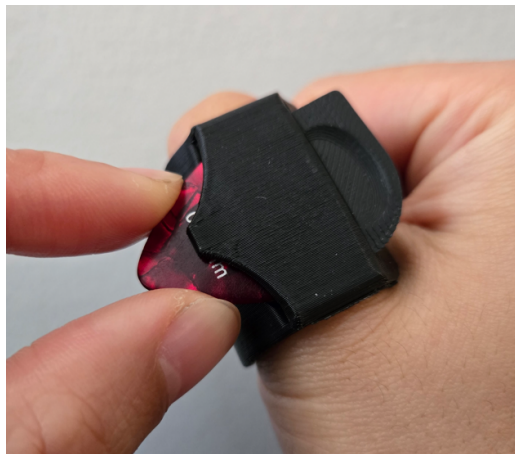


Figure 6: Checking the pick for movement

3.4 System Organization & Navigation

PLA Body

The core of the system is an ergonomically shaped PLA plastic body (Figure 7) that slides over the user's thumb. The material is lightweight yet durable, providing a secure fit without compromising comfort and usability. The body features two grooves to enhance grip during extended playing sessions.

A slot is integrated into the PLA body to accommodate guitar picks from 0.5mm to 1.2mm in thickness. The slot ensures a firm fit while maintaining easy access for replacing picks and quick adjustments.



Figure 7: PLA body

Wedge Locking System

To ensure the pick remains firmly in place, a wedge component (Figure 8) is used to secure it. This secondary attachment slides into the designated, tapered locking area to apply firm pressure. The wedge prevents unintended pick movement while still allowing for easy replacement if needed.

This parametric design allows for future adjustments, such as different wedge pressures or alternative materials, to optimize performance based on user preference.



Figure 8: PLA wedge

3.5 Exiting the System

The following section outlines how to remove the GPG and how to remove your pick from the grip.

3.5.1 Remove the Grip from the Hand

1. To remove the grip from the hand, slide the grip off the thumb as if you are removing a ring (Figure 9). The pick does not need to be removed to put on or remove the grip from the hand.



Figure 9: Removing the GPG from the thumb

3.5.2 Removing the Pick from the Grip

1. To remove the pick from the grip, use the indent on the wedge to pull the wedge from the pick slot or use the pointed side of the wedge to rotate the wedge free (Figure 10).



Figure 10: Pull the wedge from the slot (left), or rotate the wedge from the slot (right)

2. Once the wedge is removed, push the pick tip to push the pick back through the slot and remove from the back (Figure 11).

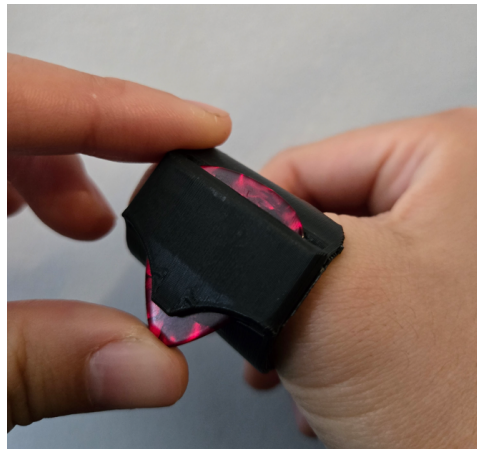


Figure 11: Removing the pick from the GPG

4 Using the System

The following sub-sections provide detailed step-by-step instructions on how to use the various functions or features of the Strum-Able GPG. The pick grip places the hand in a natural playing position which reduces the learning curve and allows users to play as they naturally would with a guitar pick. Small changes in the grip, such as the pick being held closer to the base of the thumb rather than pinched between the ends of the fingers, will require some adjustment, but the wrist and forearm movement required for strumming and picking remains the same.

The Strum-Able GPG is meant to be used and experimented with in any method of your choosing, so the following guidelines are simply suggestions for getting started.

4.1 Thumb Relief Grooves

The two thumb relief grooves (see Figure 3) allow for articulation of the thumb but also act as a rotation locking mechanism that prevents rotation of the grip around your thumb. This also allows for a simple, quick change in the rigidity of the grip to enable different playing styles and sounds.

When picking, a more rigid hold on the pick is usually preferred. By bending your thumb more (see Figure 12), this allows more accuracy of the pick movement and prevents unwanted rotation.



Figure 12: Bent thumb for picking

For strumming, a loose grip allows the pick to contact the strings on a flatter angle (see Figure 13). By loosening the bend of your thumb, a slight rotation of the pick is enabled, which coupled by the typical wrist rotation used during strumming, allows the pick to brush the strings.



Figure 13: Relaxed thumb for strumming

4.2 Guitar Pick Interchangeability

The Strum-Able GPG accommodates guitar picks from 0.5-1.2mm thick. The user can use their existing picks which can be interchanged following the pick installation instructions in Section 3.3 and 3.5.2

5 Troubleshooting & Support

5.1 Special Considerations

In the case where the thumb is not a suitable digit for the user the product can also be sized and used on the index finger. The index ring size and distance between the two joins can be inputted into the design to create a custom and perfect fit.

5.2 Maintenance

To ensure the longevity and reliability of the ABS shell, the sleeve should be washed with lukewarm water and soap to remove any sweat and debris that could accumulate. Additionally, inspecting the pick grip for cracks before each use is important. This will help identify potential issues early, preventing failure during use and ensuring the grip remains in optimal condition.

5.3 Support

To ensure optimal comfort and functionality, users should book an appointment with their local prosthetic clinic if they experience any discomfort. During these appointments, a professional can assess the fit of the grip, make necessary adjustments, and or remake the product entirely.

6 Product Documentation

The final prototype can be separated into two subsystems, as seen below. In this section, a set of instructions will be presented to replicate each subsystem CAD model and its respective 3D printed product.

6.1 Guitar Pick Grip Body

6.1.1 BOM (Bill of Materials)

To make this subsystem, the following tools and materials will be required. Assuming that this subsystem will be made for personal use, not for commercial use, a free CAD license can be used, such as the one offered by Autodesk Fusion [1]. Additionally, in a student context, the University of Ottawa offers a SolidWorks CAD license to all its Faculty of Engineering students.

Table 3 : Bill of Materials associated with the Guitar Pick Grip Body

Item	Unit Price (CAD)	Price/Product (CAD)	URL
PLA (1 kg)	24.99	0.19	3D Printing Canada
CAD License	0.00	-	Autodesk Fusion

6.1.2 Equipment list

For this subsystem, a 3D printer is necessary to obtain a physical model of the design. Additionally, a simple deburring tool may be used to remove any sharp edges that result from the 3D printing process. Both these tools are offered at the Makerspace laboratory at the University of Ottawa.

6.1.3 Instructions

The following presents step by step instructions to design and print the main body of the guitar pick grip. Note that for all sketches and calculations, the units used will be in millimeters and degrees.

First, using the desired thumb knuckle circumference, calculate the respective radius, which can be seen as the leftmost dimension in the sketch below. In this case, for a thumb knuckle of around $c = 69 \text{ mm}$, the radius $r_1 = \frac{c}{2\pi} = \frac{69 \text{ mm}}{2\pi} = 10.98 \text{ mm} \approx 11.00 \text{ mm}$. This will act as the fitted thumb hole, whilst the major hole, on the right, will be a function of r_1 such as $r_2 = 1.11r_1$. Using these values, replicate the sketch below, and perform a revolved extrusion.

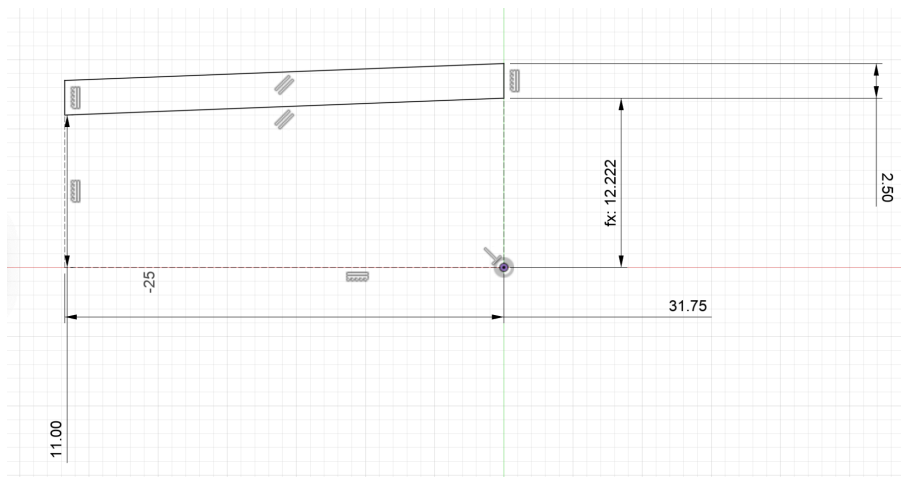


Figure 14 : GPG body revolve extrusion sketch

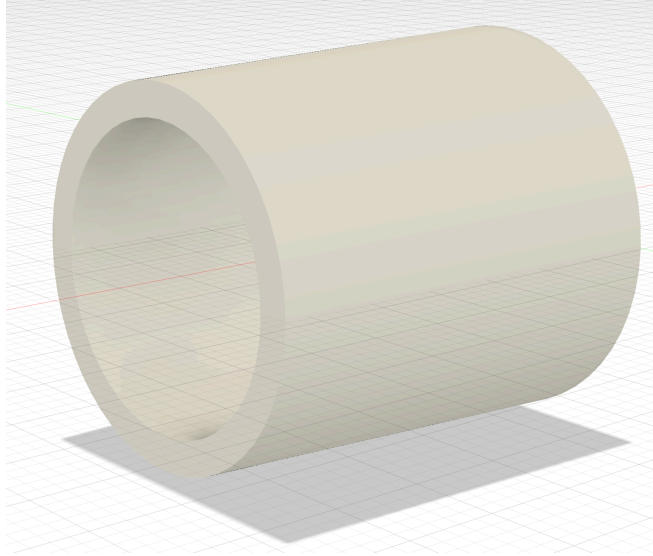


Figure 15 : GPG body revolve extrusion

Then, on the major hole surface, replicate the following sketch.

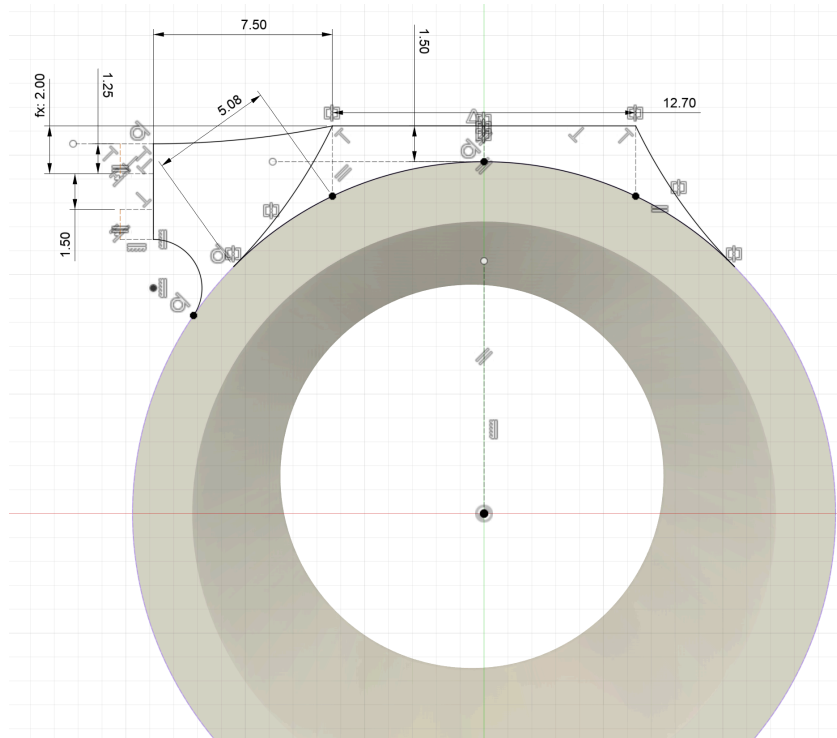


Figure 16 : Major hole profile sketch

Doing the same with the following sketch on the fitted thumb hole surface, it can be useful to create links with the dimensions used in Figure 16 above.

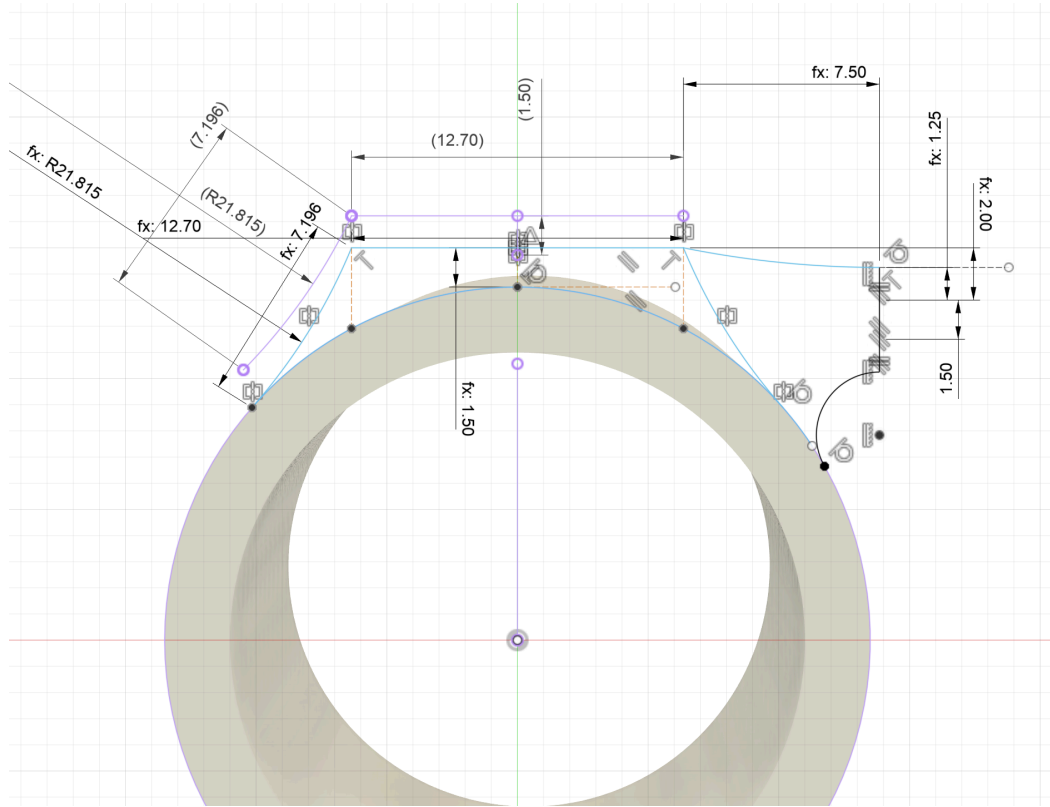


Figure 17 : Fitted thumb hole profile sketch

Now link both the sketches in Figure 16 and Figure 17 using a loft. The result should look similar to the following figure (Figure 18).

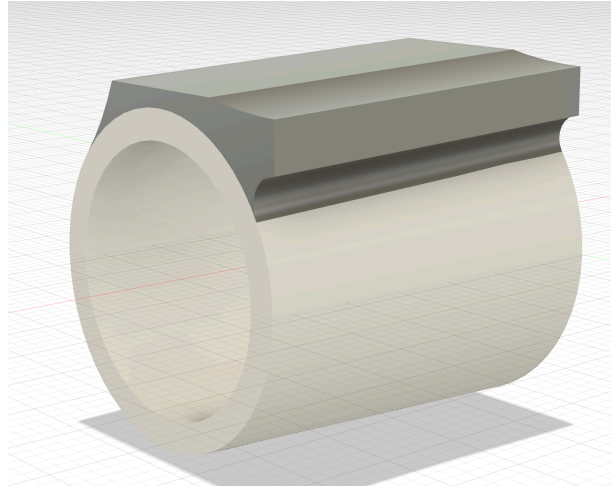


Figure 18 : Resultant loft of the pick support

Next, make the following sketch on the top surface of the pick support, and perform an extruded cut through all.

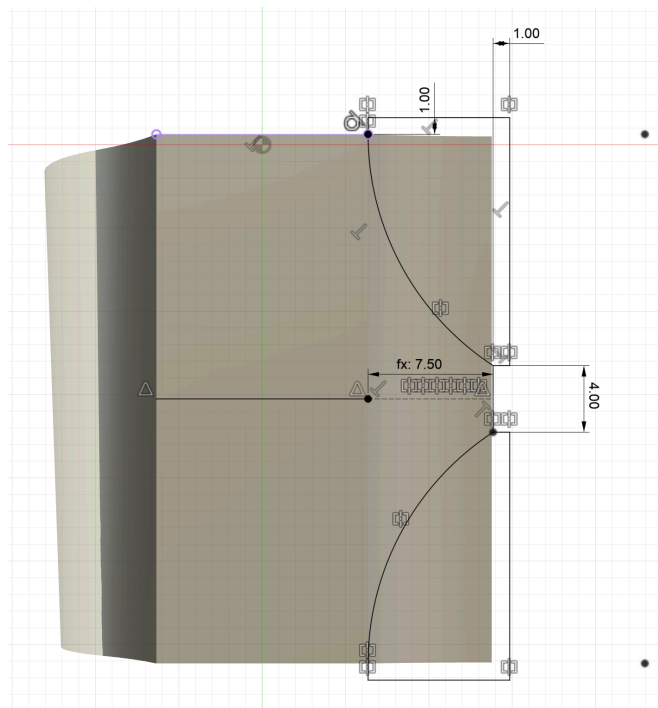


Figure 19 : Guitar pick support taper sketch

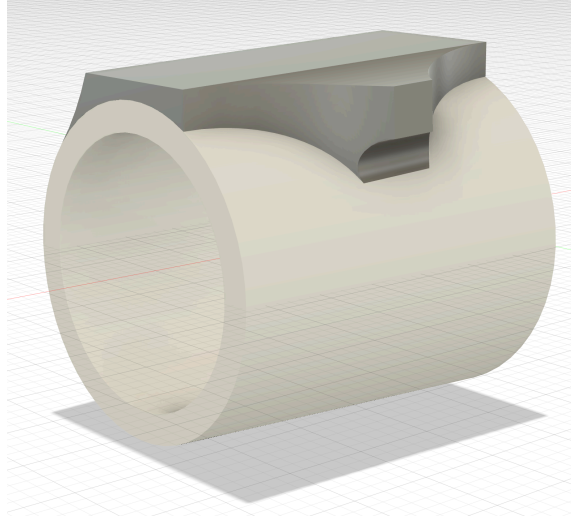


Figure 20: Resulting extruded cut of the taper sketch

Once complete, the two bodies can be joined together using the *combine* function, or its equivalent. Then, the following sketch can be drawn and extruded through all to make space for the guitar pick.

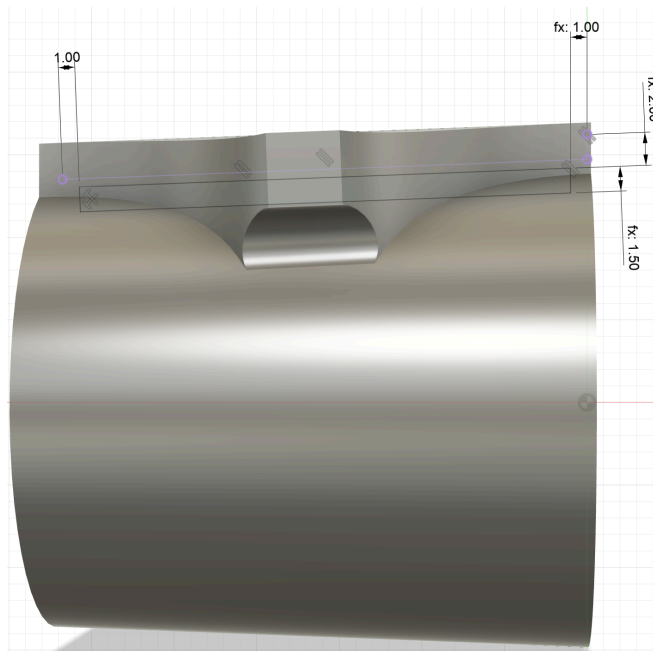


Figure 21 : Guitar pick slot sketch

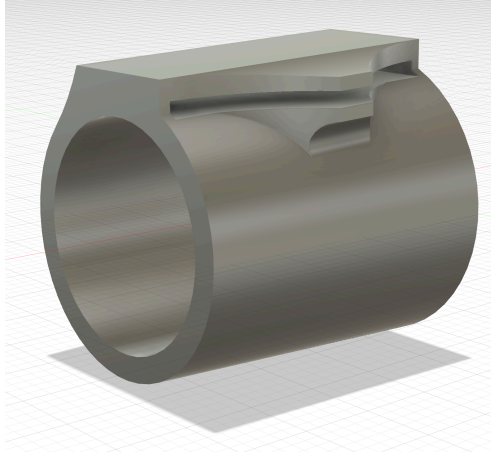


Figure 22 : Combined body between the thumb slot and pick slot

To leave room for the thumb to be entirely inserted in the GPG, the following plane can be made at 50 degrees from the vertical plane. Then, an ellipse can be drawn on this new plane and extruded through the combined body. Note that the size of this ellipse is dependent on the major hole diameter, set in Figure 14.

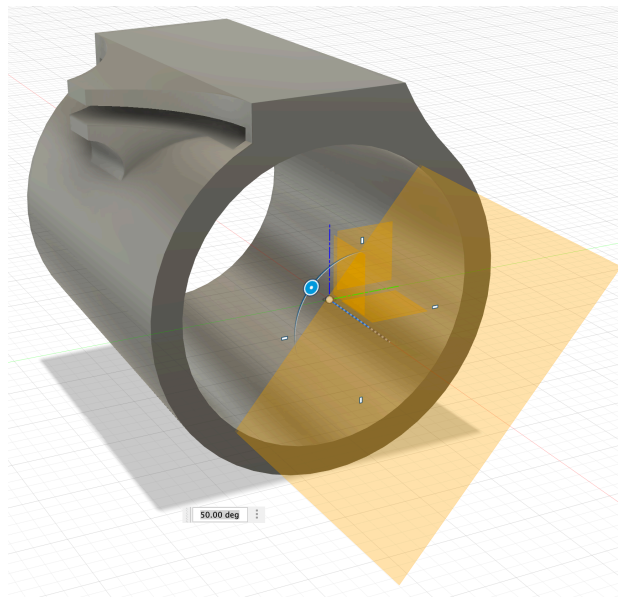


Figure 23 : Creation of new plane for the thumb relief

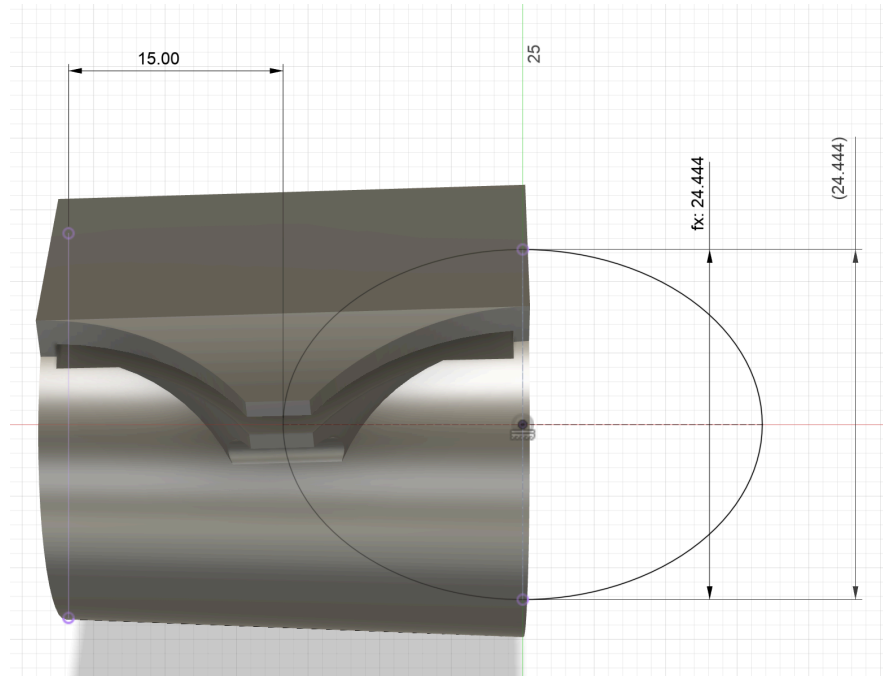


Figure 24 : Thumb relief ellipse sketch

Doing so gives the following result.

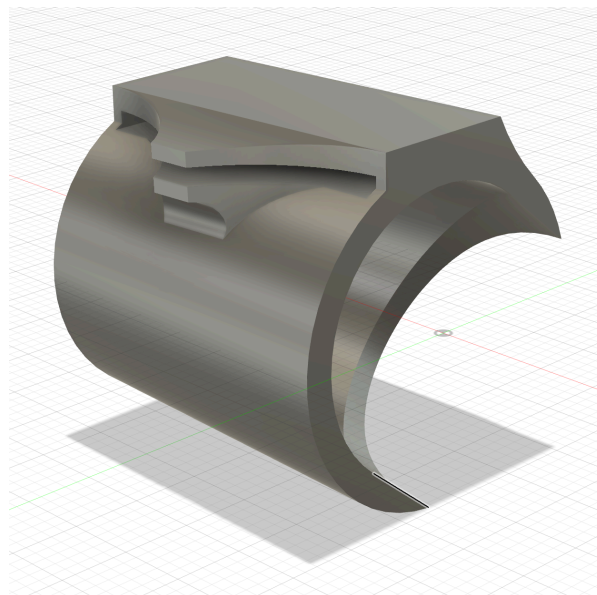


Figure 25 : GPG with new thumb relief

Now to implement the thumb locking indent, a sketch can be done on the horizontal plane, as seen in Figure 26. This can then be extrude-cut away from the pick slot.

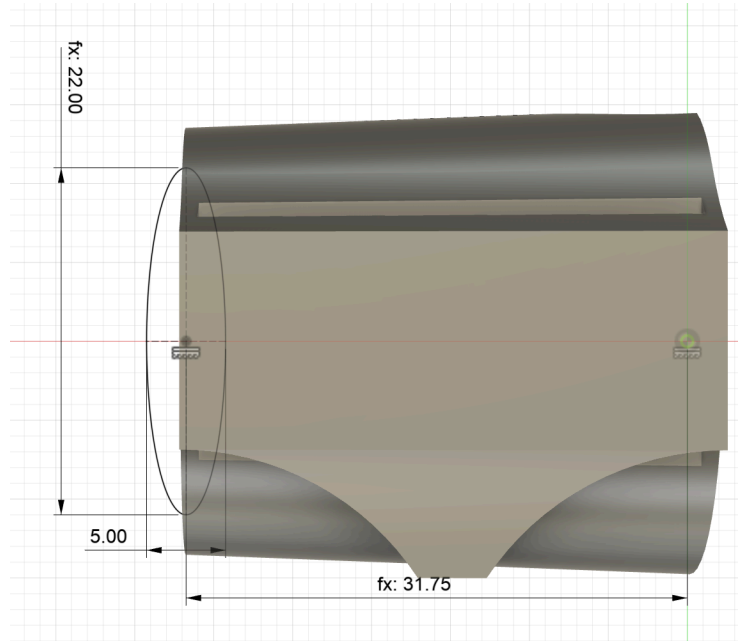


Figure 26 : Thumb locking indent sketch

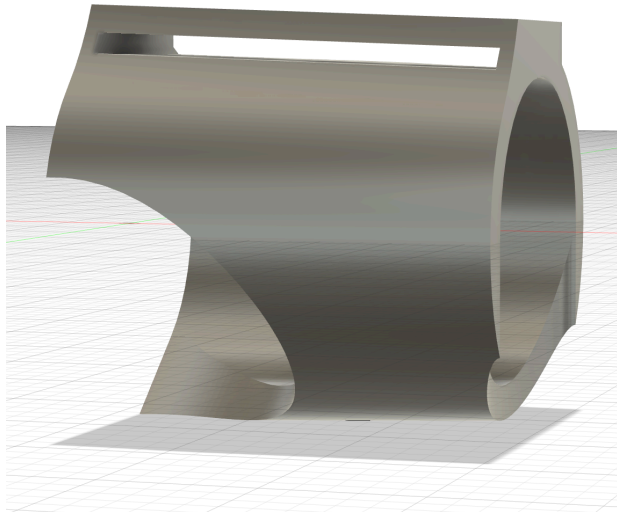


Figure 27 : New thumb locking indent resulting from an extrude cut

To improve comfort and remove sharp edges, fillets must be implemented at the major hole of the GPG. Due to the complexity of the edges and surfaces in that area, the fillet feature cannot be used adequately. As a result, some manual fillets will be made, as seen in the following figures. These sketches are made using tangent arcs aligned with the existing curves on the model and are then extrude-cut into the main body. Note that new planes were made, tangent with the respective surfaces, to sketch at the proper locations.

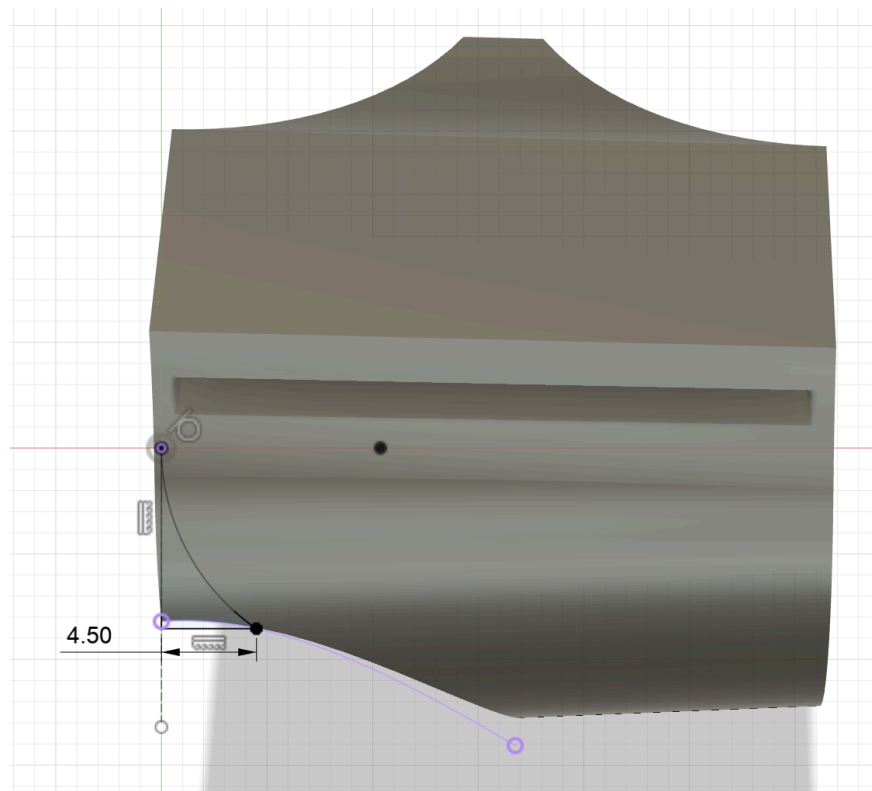


Figure 28 : First manual fillet sketch

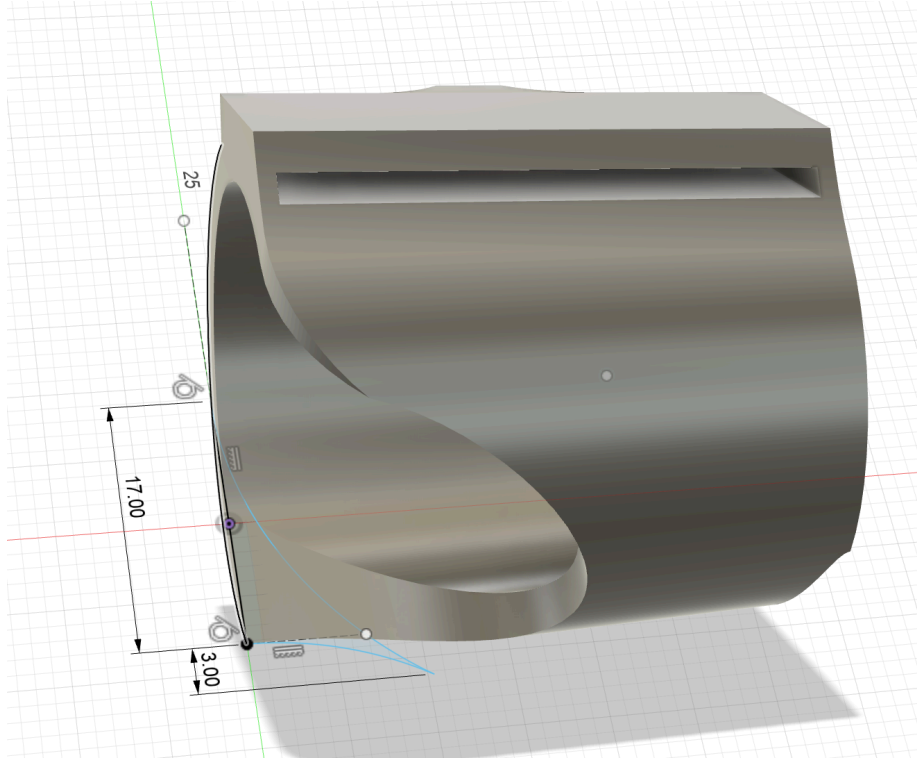


Figure 29: Second manual fillet sketch

Once extruding both fillets, the following result is obtained.

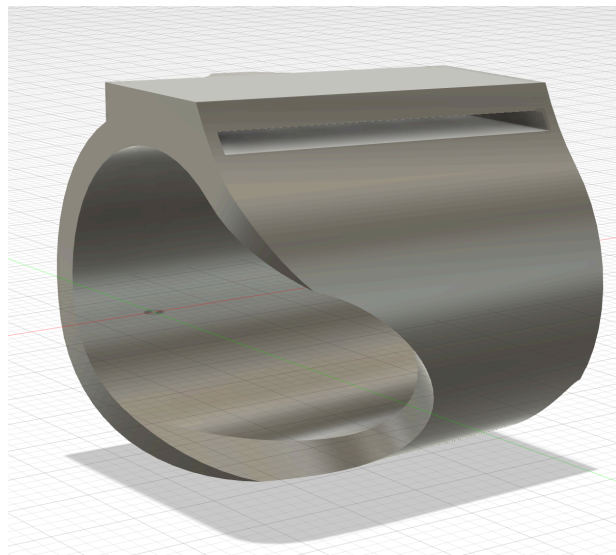


Figure 30 : Thumb relief with rounded edges

Now looking inside the pick slot using a section view, a sketch can be made to add supports which will prevent the pick from sliding horizontally. This sketch can be seen in the following figure, in which the dimensions of a typical guitar pick were used as a reference. Subsequently, the extruded result is in Figure 32.

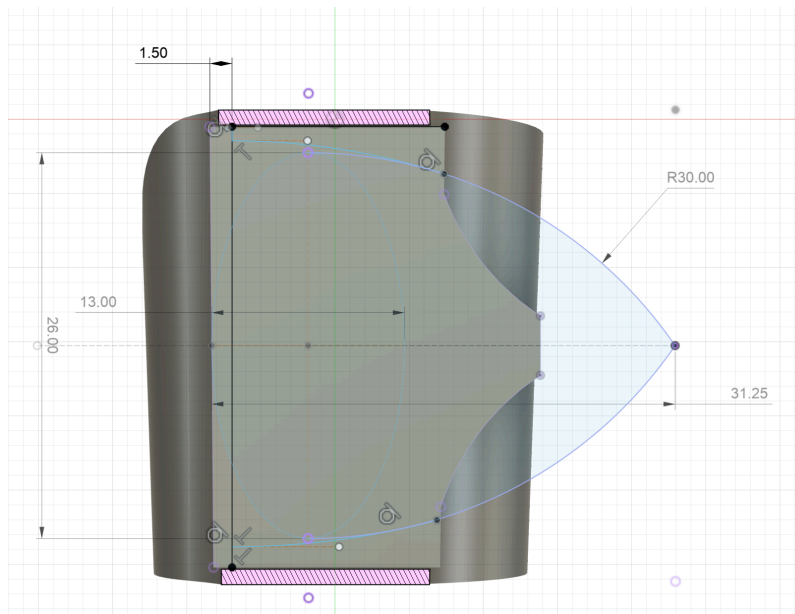


Figure 31 : Pick anti-horizontal displacement supports sketch

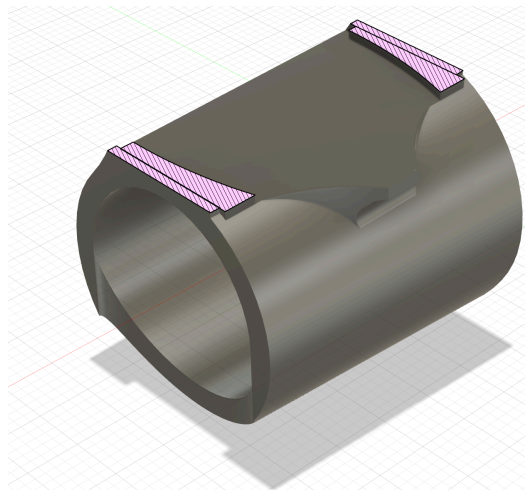


Figure 32 : Extruded pick anti-horizontal displacement supports

To limit sharp corners and edges, fillets of varying sizes can be made, as seen in the following figure. Note that these fillets can have any radius as chosen by the user.

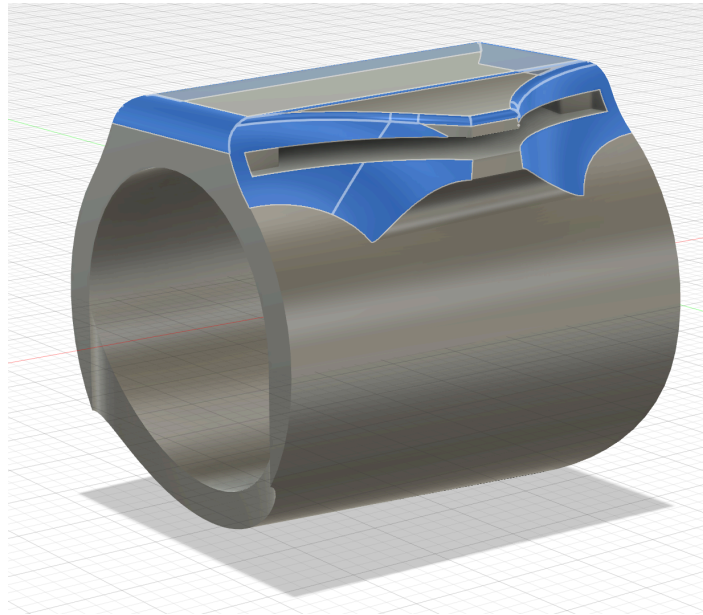


Figure 33: Pick shelf with added fillets

To implement the guitar pick jaw, a sketch can be made on the tip of the pick shelf.

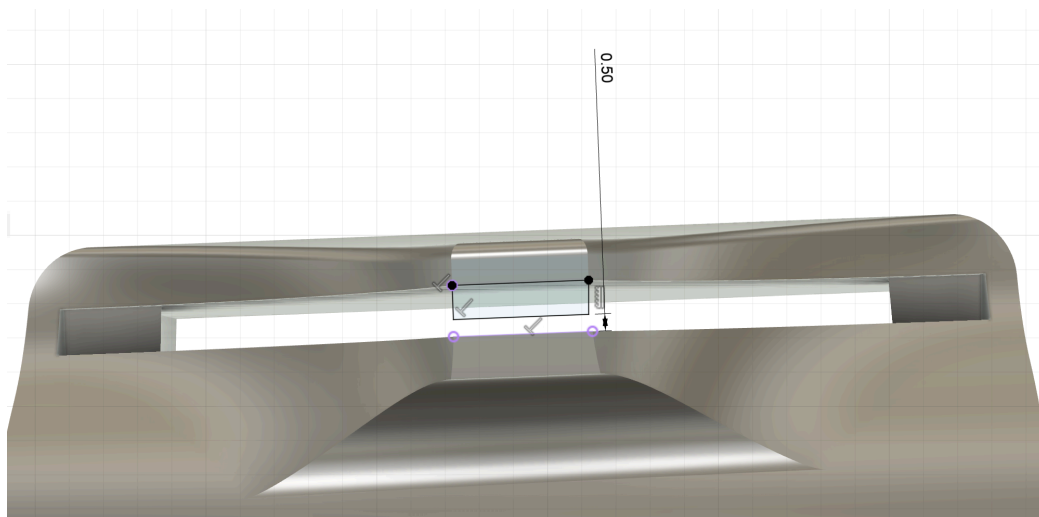


Figure 34 : Guitar pick jaw sketch

Then, by extruding this sketch to 2.00 mm and adding fillets of any selected sizes, the following results are obtained.

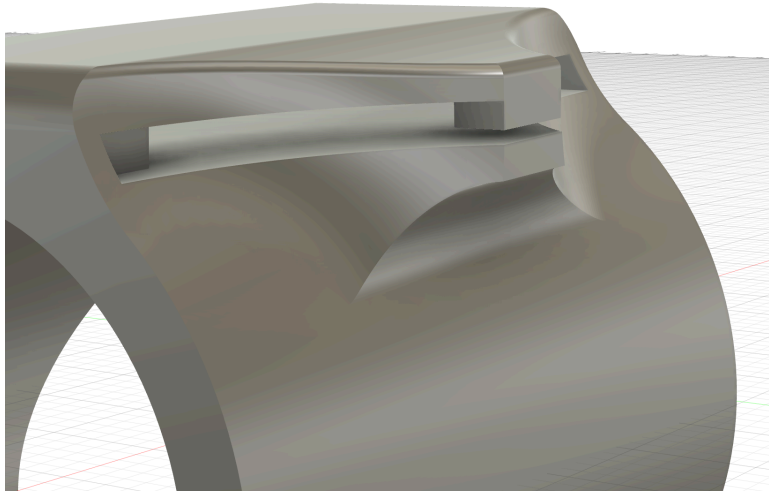


Figure 35 : Extruded guitar pick jaw

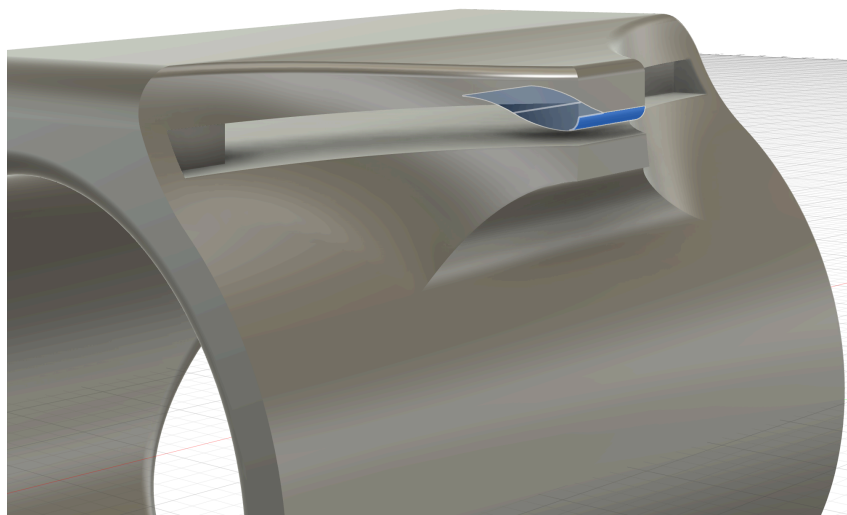


Figure 36: Guitar pick jaw with added fillets

To finalize the GPG body model, some fillets must be added to the major hole and thumb fitted holes. These fillets can be of any non-constant radius.

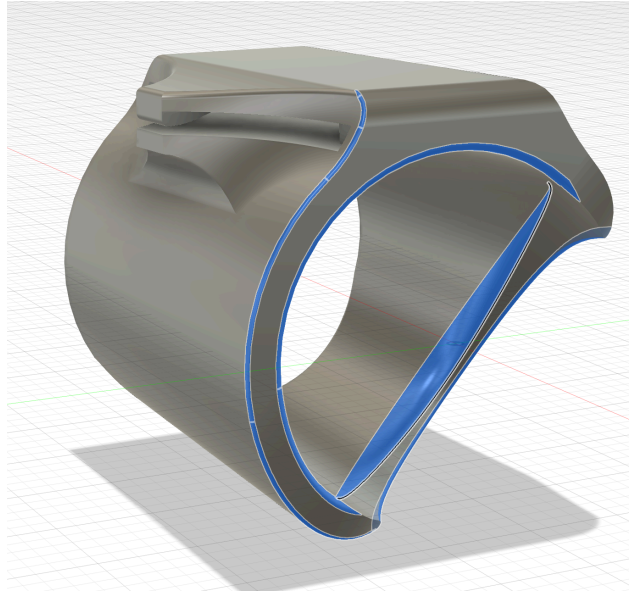


Figure 37 : Major hole fillets

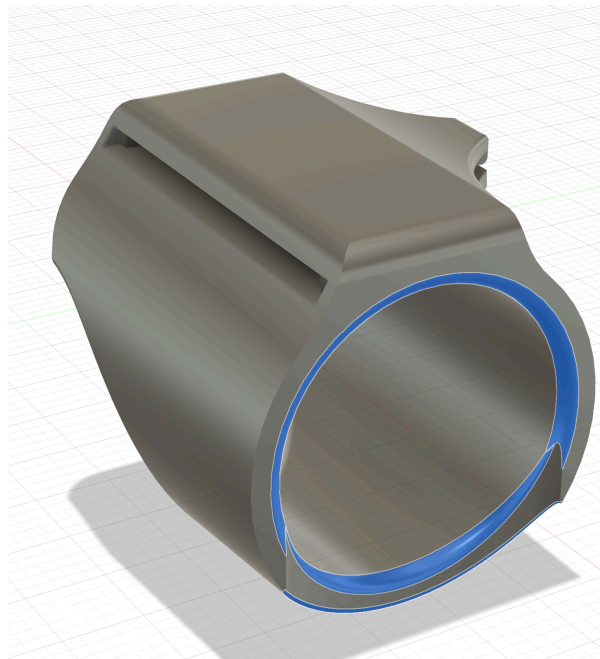


Figure 38: Thumb fitted hole fillets

Lastly, to print the GPG model, the CAD designed above can be exported as an .stl file, and imported into any 3D printing slicer. With standard PLA printing settings, depending on the printer used, and a single support placed under the thumb relief, the product can be printed on its base. Note that it may be useful to implement a two-layer raft, which could help the print bed adhesion. The following figure presents the recommended print slice.

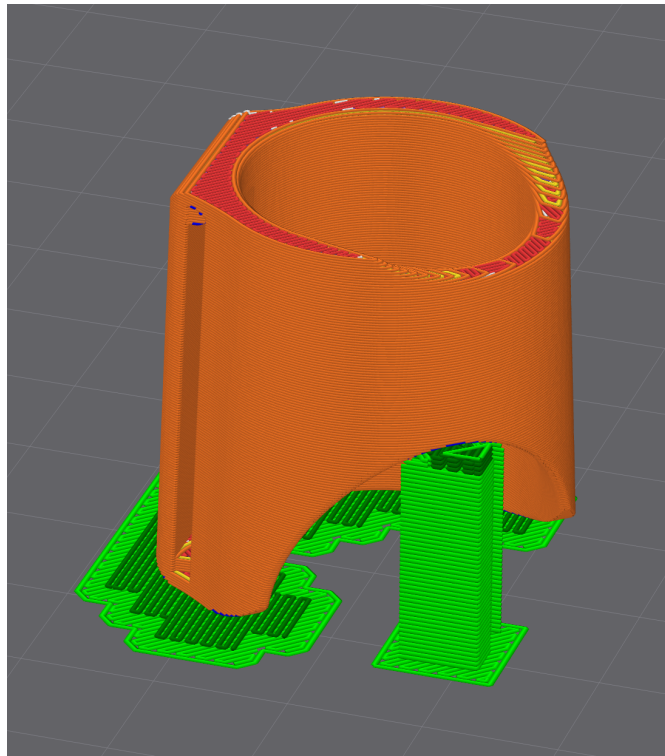


Figure 39 : Recommended print slice for the GPG body

6.2 Wedge

6.2.1 BOM (Bill of Materials)

To make this subsystem, the following tools and materials will be required. Assuming that this subsystem will be made for personal use, not for commercial use, a free CAD license can be

used, such as the one offered by Autodesk Fusion [1]. Additionally, in a student context, the University of Ottawa offers a SolidWorks CAD license to all its Faculty of Engineering students.

Table 4 : Bill of Materials associated with the Wedge

Item	Unit Price (CAD)	Price/Product (CAD)	URL
PLA (1 kg)	24.99	0.19	3D Printing Canada
CAD License	0.00	-	Autodesk Fusion

6.2.2 Equipment list

For this subsystem, a 3D printer is necessary to obtain a physical model of the design. Additionally, a simple deburring tool may be used to remove sharper edges that result from the 3D printing process. Both these tools are offered at the Makerspace laboratory at the University of Ottawa.

6.2.3 Instructions

For the wedge model, the following sketch in Figure 40 can first be made.

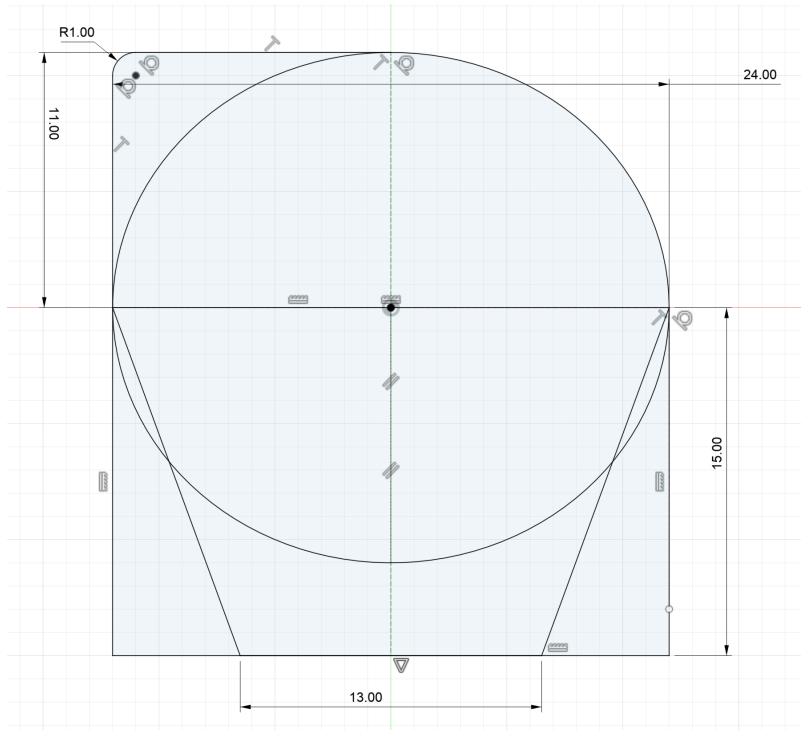


Figure 40 : Wedge sketch

Then, parts of this sketch can be extruded to 2.2 mm, as seen below.

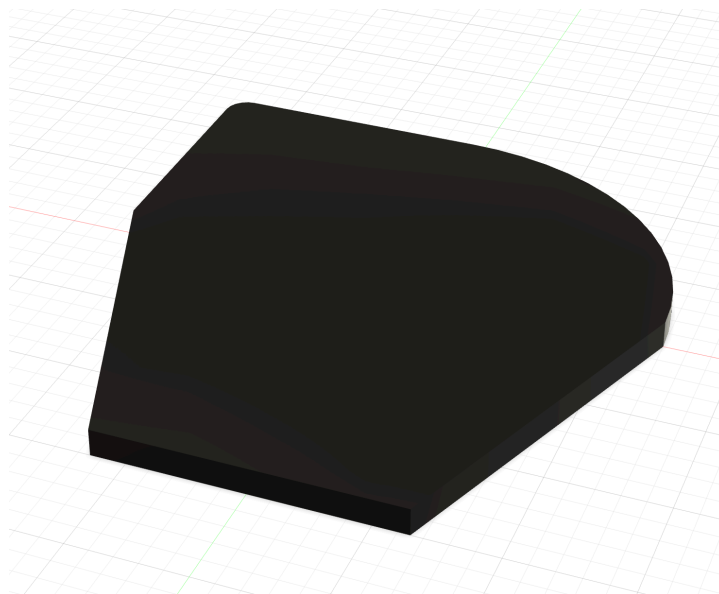


Figure 41 : Extruded wedge sketch

Now, to add a thumb grip, an ellipse can be drawn on the top surface, as presented below, and extrude cut at a thickness of 1.00 mm.

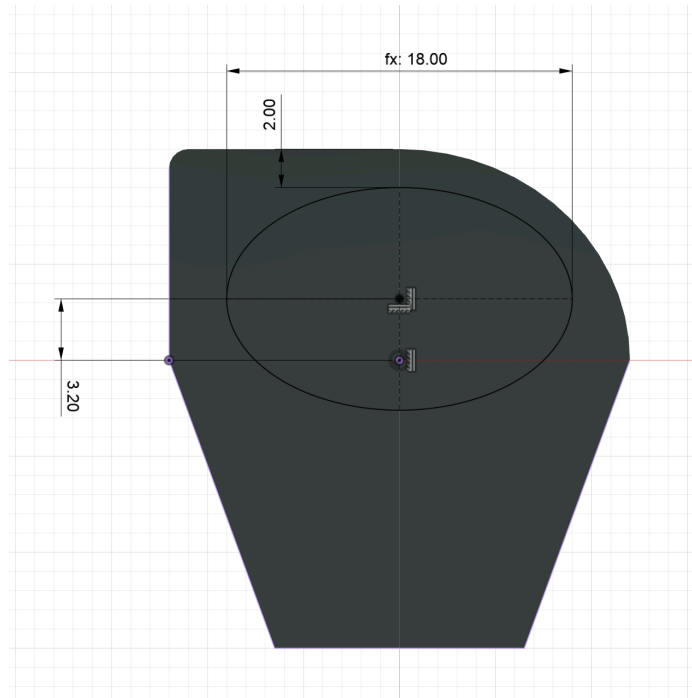


Figure 42 : Thumb grip sketch

To improve its comfort of use, a 5.00 mm radius fillet can be added, as seen in Figure 43.

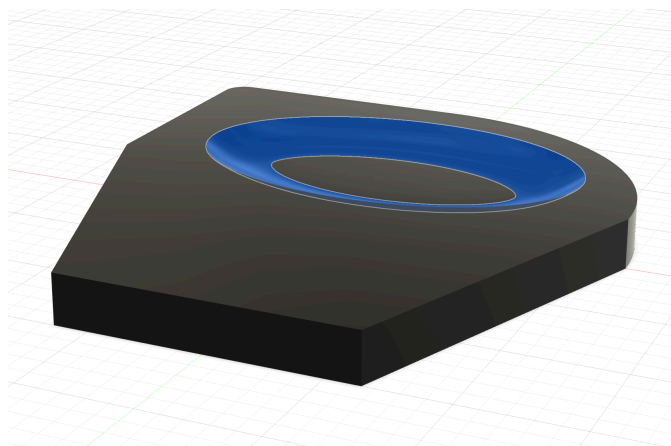


Figure 43 : Final wedge thumb grip with added fillet

Lastly, a 23.00 mm chamfer at an angle of 4.90 degrees can be added to form the wedge's increasing thickness.

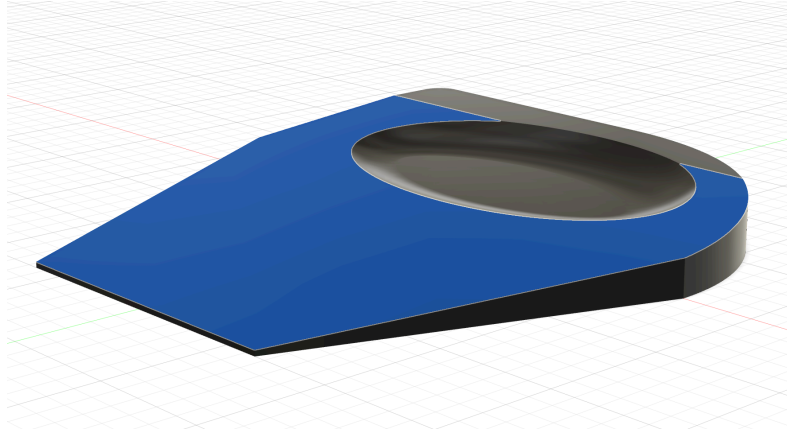


Figure 44 : Final wedge with added chamfer

To print the wedge model, the CAD designed above can be exported as an .stl file, and imported into any 3D printing slicer. With standard PLA printing settings, and a layer thickness of 0.08 mm, the product can be printed. The following figure presents the recommended print slice.

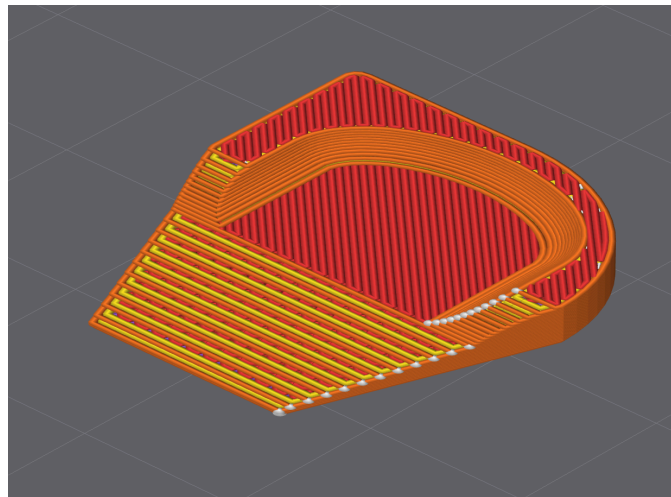


Figure 45 : Recommended print slice for the wedge

6.3 Testing & Validation

To validate the prototype of the final design, a few critical tests were done. The following table presents these tests along with their respective results.

Table 5 : Final Design Validity Tests

No.	Test	Target	Spec.	Results	Unit
1	Time to put on/remove product	<10	3	seconds	
2	Time to insert/remove pick	<15	10	seconds	
3	Length of time the grip can be used before discomfort	2	>2	hrs.	
4	Location of pinch areas or sharp corners	N	N	Y/N	
5	Restriction of circulation	N	N	Y/N	
6	Weight	<25	6.0	grams	
7	Horizontal movement of pick (after 1 min)	<2	0.1	mm	
8	Vertical movement of pick (after 1 min)	±0.1	<0.1	mm	
9	Horizontal movement of pick (after 1 hr)	<2	1	mm	
10	Vertical movement of pick (after 1 hr)	±0.1	<0.1	mm	
11	Height that the product can be dropped from without functional damage	2	>2	m	

To first verify the design's ease of use, the product was used by a few people who were timed while putting on and removing the product comfortably. The average of those times came out at 3 seconds, proving that the product was easy to install with a single hand. A similar test was also done to insert and remove a guitar pick, to which an average of 10 seconds was obtained. This confirms that the design is accessible since each result attains its target specification.

Then, the product's fit and comfort was tested by having a guitar player use the guitar pick grip for at least two hours. During this playing time, there were no reports of discomfort, pinch

areas, sharp corners or restriction of circulation. To ensure that the product was not too heavy for the user, a food scale was used. Weighing only 6.0 grams, it was confirmed that the guitar pick grip would not be burdensome.

To verify the final product's pick gripping ability, measurements were taken before and after playing with the GPG for various lengths of time to determine the pick's vertical and horizontal movement. To measure the horizontal movement, a notch was cut into the tip of a guitar pick (Figure 46) which was then inserted into the GPG. A measurement was taken using a caliper between the notch and one corner of the pick jaw as shown in Figure 47. It was then used to play the guitar for 1 minute, after which another measurement was taken. The same was done after playing for 1 hour. The vertical displacement was measured similarly using the top of the pick jaw as a reference. With all results coming in below the target specifications, the final prototype was deemed acceptable at gripping the pick.



Figure 46: Notch cut into pick to measure horizontal displacement

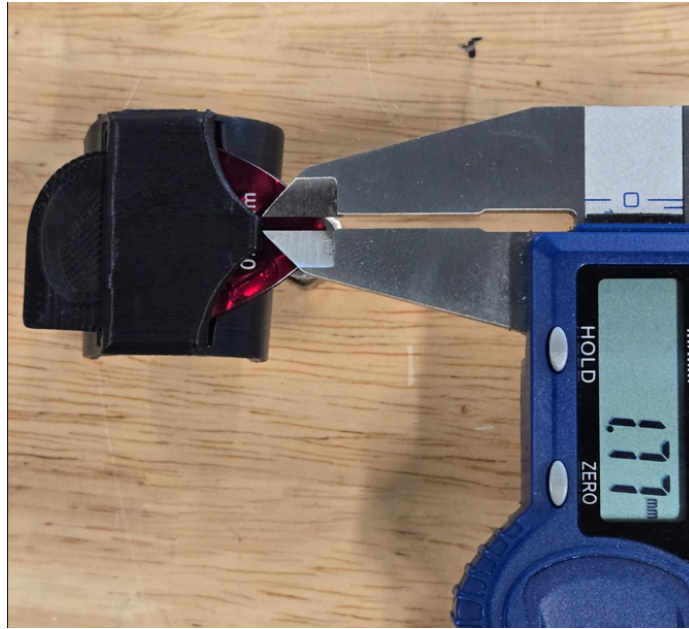


Figure 47 : Measuring the horizontal displacement of the pick

Lastly, to verify the product's durability, it was dropped from a height of 2 meters onto a wooden floor. This drop caused no visible damage, which confirmed that the design was sufficiently strong to withstand accidental falls.

7 Conclusions and Recommendations for Future Work

In conclusion, this document outlines the product setup, provides guidance on best practices for usage and maintenance, includes troubleshooting tips, and offers full design and manufacturing details, including materials, equipment, and design. Throughout this project, we learned the importance of accessibility and how the design needs to focus on the client's needs, comfort, and preferences. We realize the importance of affordability, which broadens our product reach so that more people with digit loss regain their long-term passion for playing guitar. Moreover, we discovered the importance of feedback and iteration in shaping a successful design. Our initial concept evolved significantly through prototyping, and many features were abandoned due to complexity or failure to meet the target criteria. It is important not to get attached to a specific solution and be willing to scrap an idea for a better solution even if you have already dedicated time and resources to it.

If we had a few more months to work on the project, we would like to compare our testing results among different materials (e.g., ABS) and manufacturing methods (e.g., injection molding). We would also like to provide a mirrored model for left-handed individuals. Lastly, something we had to abandon due to the lack of time but would be important to add was performing more testing for long-term usability and comfort, particularly on a larger population and including users with missing digits.

8 Bibliography

[1] “Fusion 360 | 3D CAD, CAM, CAE, & PCB Cloud-Based Software | Autodesk,” *Autodesk.com*, Feb. 12, 2021. <https://www.autodesk.com/ca-en/products/fusion-360/overview?term=1-YEAR&tab=subscription>

APPENDICES

APPENDIX I: Design Files

Table 6. Referenced Documents

Document Name	Document Location and/or URL	Issuance Date
Maker Repo	GNG2101 - E2.2 - Strum-Able MakerRepo	04-04-2025
Technical Drawing	GNG2101 - E2.2 - Strum-Able MakerRepo	04-04-2025