Caveatron SV Rev A 3D Printed Parts Description

2021-08-03

Introduction

This document includes a description of the 3D printed parts for the Caveatron SV and notes on how to print them. Also included is information on how the 3D printed parts go together. Information on how to assemble all the other components is found in the Caveatron SV Assembly Instructions document.

Scaling

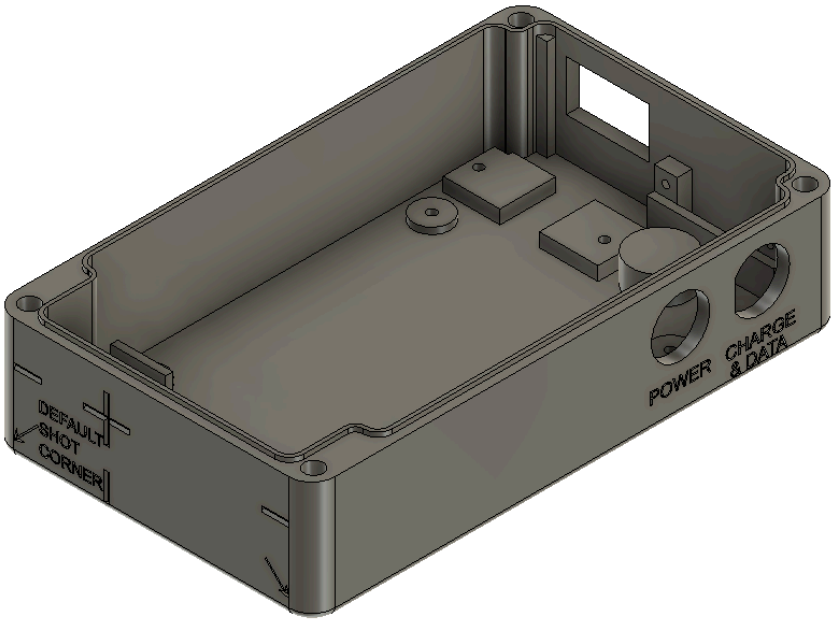
To print properly, these files must be scaled by 2540% in your slicer software.

General Printing Notes

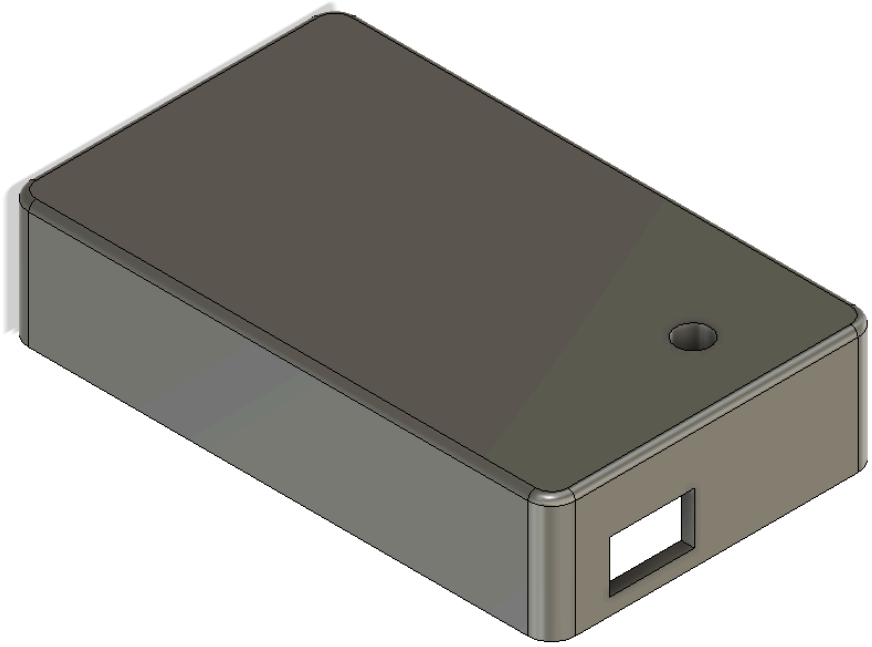
The recommended material for these parts is PETG. Print settings were 0.2 mm resolution and 20% infill. PLA is not recommended as it is not as durable. ABS may work but is more rigid and brittle so screws and inserts may not work as well. Many parts can be printed without support material. There are a few parts were support material is recommended in a few spots and if you have the ability to insert supports only in selected locations, you do not need supports everywhere.

Enclosure Base

The main portion of the enclosure containing the bulk of the components. Support material should be used across the LRF window and the center portion of the USB and power button holes on the right side. It contains holes for the heat-set threaded inserts for the lid screws and the option tripod mount.

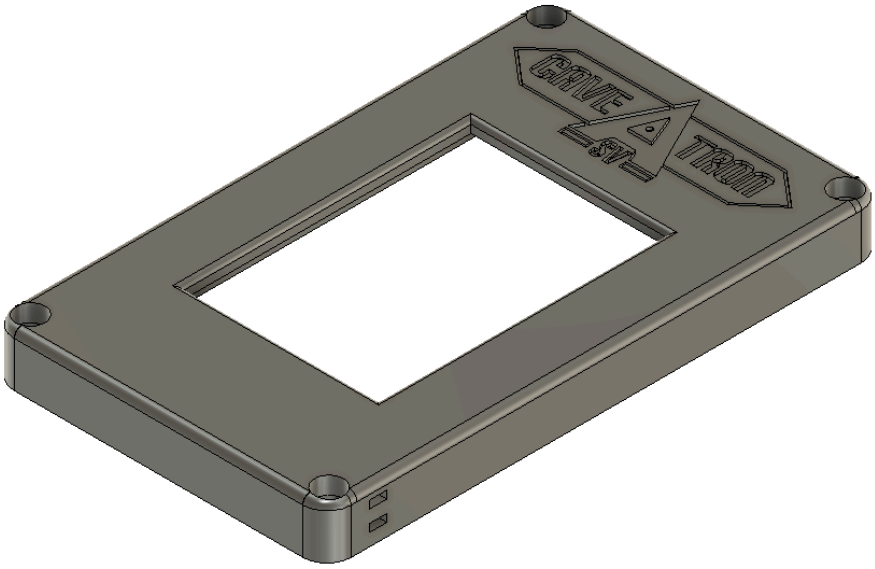


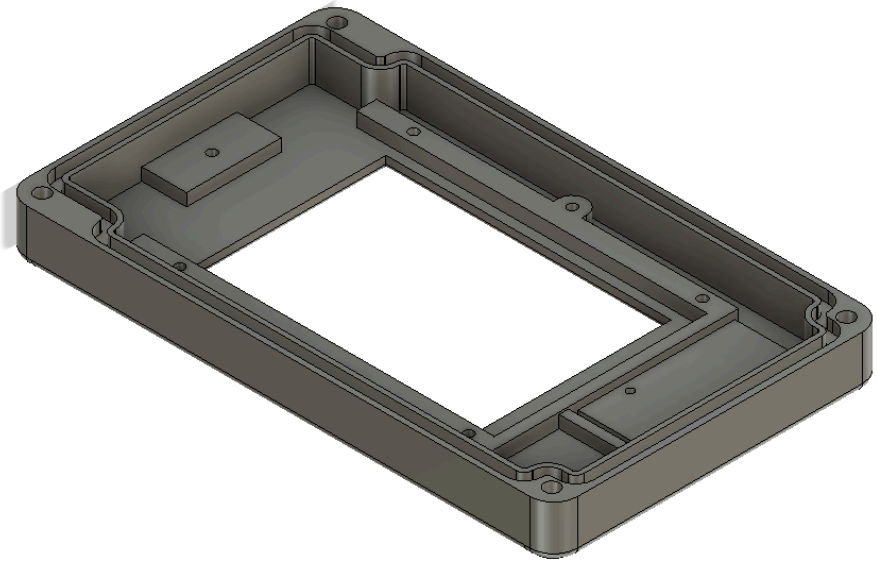
Print in this orientation



Enclosure Lid

The lid supports the LCD touchscreen, and the wrist strap. It also has a groove for the sealing O-ring. It attaches to the main enclosure base by four 6-32 flathead machine screws into the threaded inserts.





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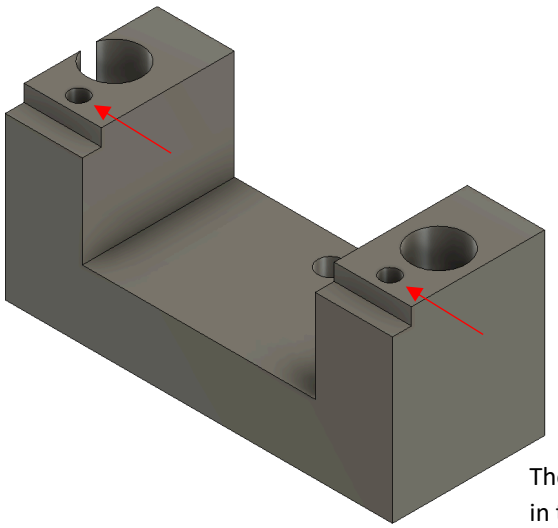
LRF Cradle Bracket

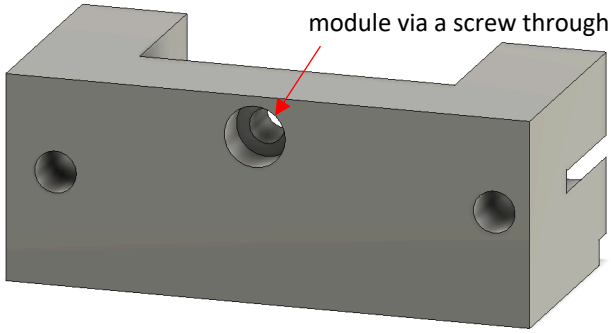
The JRT LRF is placed into this bracket which attaches it to the Main Enclosure Base.



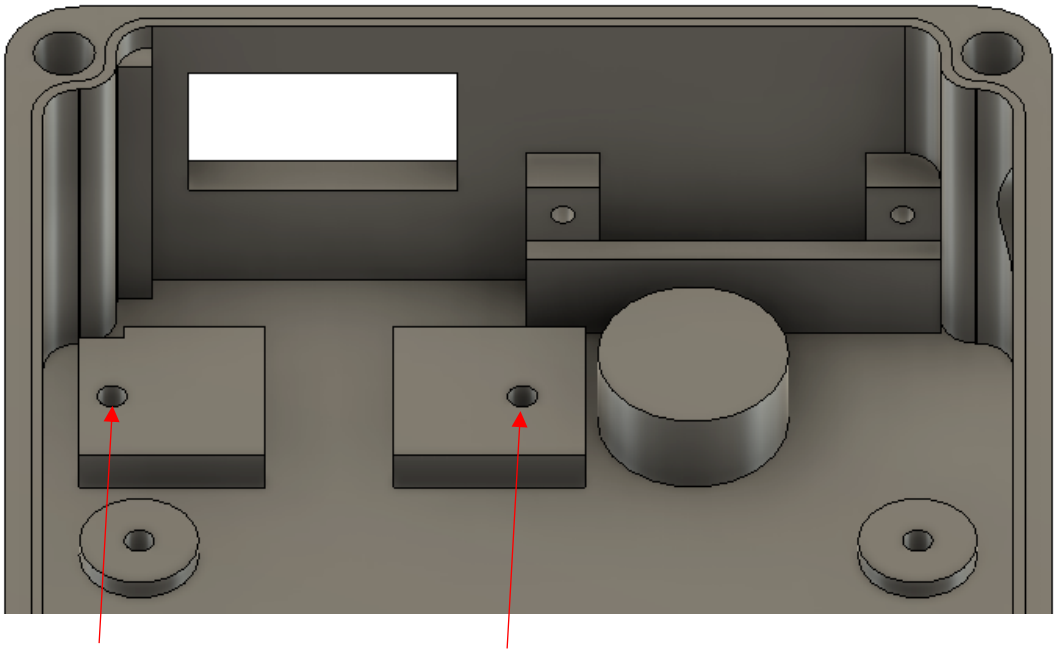
Print in this orientation

The LRF clamp installs
in the marked holes.

The Cradle bracket attaches to the LRF
module via a screw through this hole.



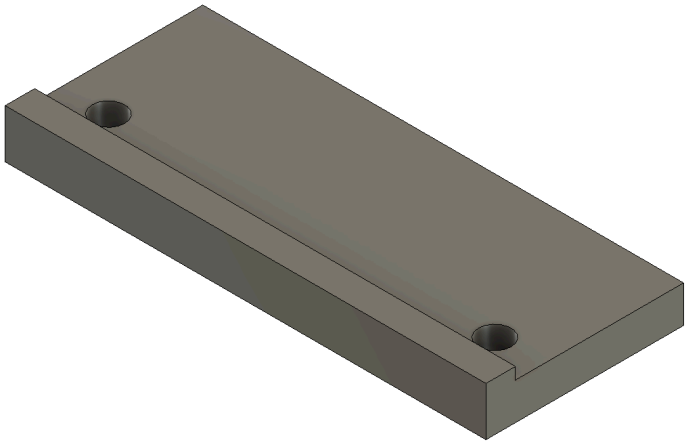
A through-hole from the underside allows a 2-28 thread-rolling screw to be screwed into the hole in the LRF module. Two through holes on either side are for two 4-20 thread-rolling screws to affix the bracket to the Main Enclosure Base. The additional small holes on top are for attaching the LRF clamp. Note the orientation of the bracket when attaching the LRF and installing it into the Main Enclosure Base. The centered through-hole for the LRF needs to be toward the front window of the enclosure.



The Cradle bracket installs to the enclosure base at the marked holes.

LRF Clamp

Secures the LRF module in place.

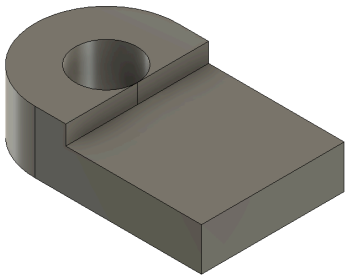


Print in this orientation

It is flipped over from the orientation shown here to install on the top of the LRF cradle bracket using two 2-28 thread rolling screws. Be sure that the step at the rear of the part is downward and wraps over the similar step on the LRF itself.

LCD Clamp

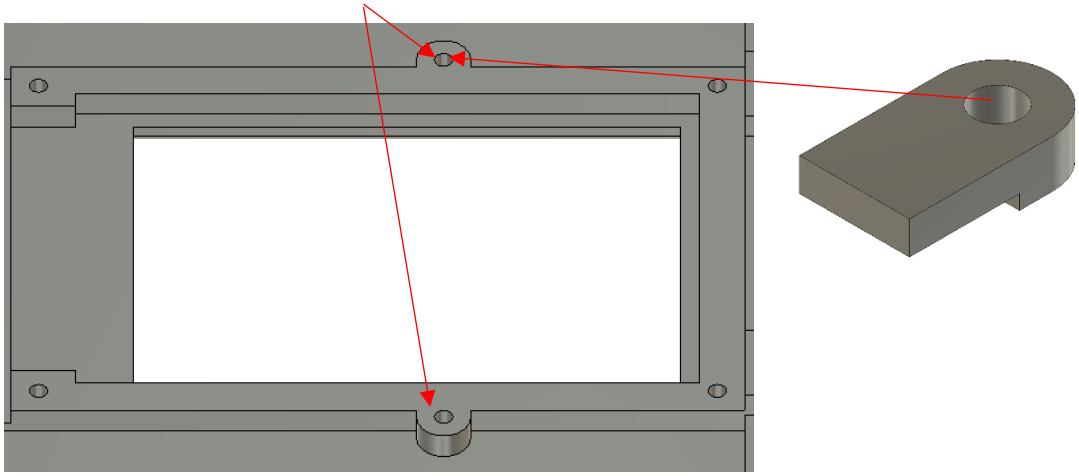
Provides additional support to the long side of the LCD modules. Two of these need to be printed.



Print in this orientation

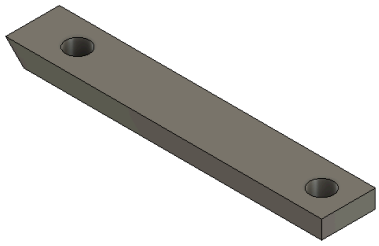
A 4-20 thread rolling screw inserts through the LCD Clamp into threads into the hole indicated. The clamp is oriented so that the recessed part is down facing the LCD.

4-20 screw inserted through
the LCD Clamp threads in here.



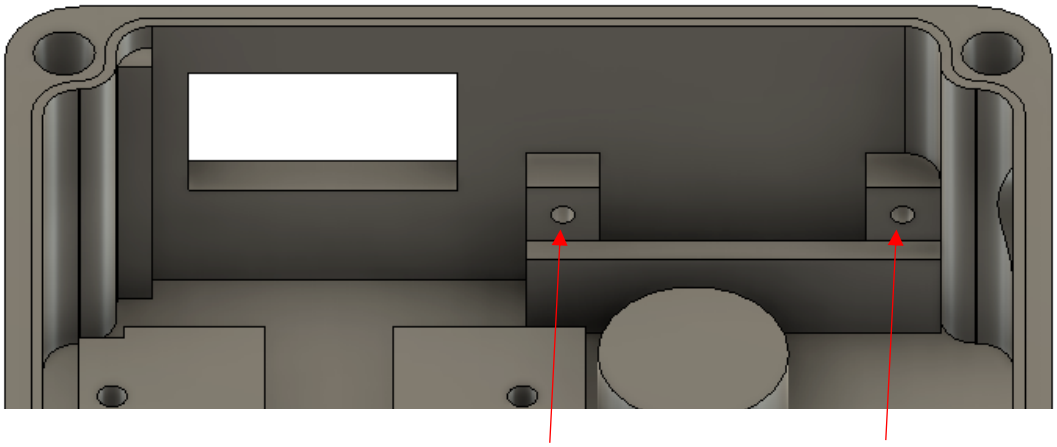
Buzzer Clamp

Secures the piezo buzzer in place.



Print in this orientation

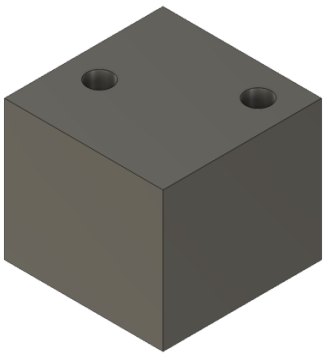
This piece presses against backside of piezo buzzer (which is inserted into a slot at the bottom of the Main Enclosure Base). The Buzzer Clamp attaches to the Main Enclosure Base via two 2-28 thread rolling screws threaded into mounting points on the front of the enclosure.



The Cradle bracket installs to the enclosure base at the marked holes.

AltIMU Bracket

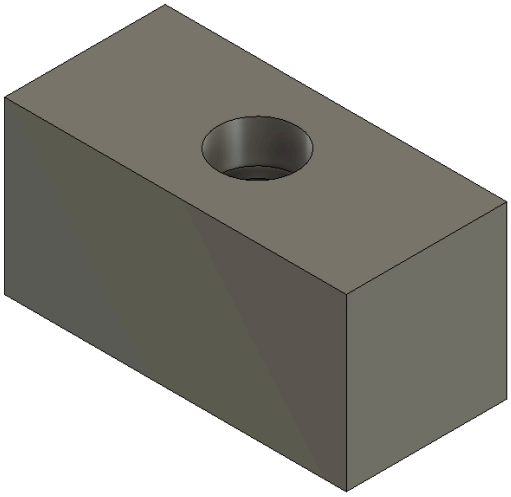
Secures the MinIMU or AltIMU module to the PCB.



This part does not directly attach to any other 3D part but instead attaches between IMU module and holes in the PCB using 2-28 thread-rolling screws inserted from the bottom of the PCB. One or two screws attach the IMU module to the bracket from the top. The MinIMU uses only one of the top screw holes in the bracket whereas the AltIMU uses both bracket holes.

Battery Clamp

Secures the battery in place. This part is attached to the underside of the Main Enclosure Lid with a single 4-20 thread rolling screw. Two small pieces of adhesive-backed foam should be attached to the side that presses down on the battery.



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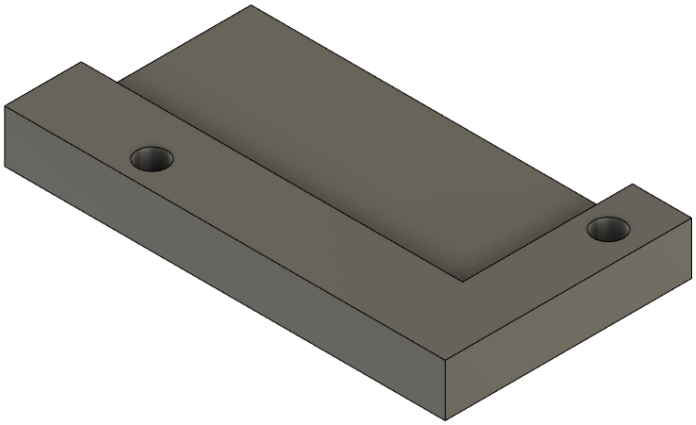
Bluetooth Module Clamp (Optional)

Secures the Bluetooth module in place on the underside of the Main Enclosure Lid.



Print in this orientation

The cutout in this part fits over the Bluetooth module and holds it to the underside of the lid. It attaches with two 2-28 thread-rolling screws.