

# Project Debbie



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# Parts and Assembly

## Production of Parts

### 3d-printed Parts

The parts of Debbie are mainly 3D printed. There are 3 parts that are laser cut, which are the bottom plate, middle plate and upper plate.

Below is the name of the STL file to be 3d printed, the amount of parts that has to be printed and their infill density.

We strongly recommend these parts to be printed with carbon filament.

All of these parts are found within the respective Folder inside the „Hardware“-folder

#### Battery:

Name	Amount	Infill
case.stl	x3	70%
cover.stl	x2	100%
cover_closed.stl	x1	100%

#### Body:

Name	Amount	Infill
back.stl	x1	70%
bolt.stl	x4	100%
front.stl	x1	70%
lower_back_plate_switch_charger.stl	x1	100%
side.stl	x2	70%
upper_back_plate_usb_hdmi.stl	x1	100%

#### Camera:

Name	Amount	Infill
holder.stl	x1	100%
holder_base.stl	x1	100%
holder_top.stl	x1	100%

### Legs:

Name	Amount	Infill
lower_leg_left.stl	x2	70%
lower_leg_right.stl	x2	70%
rubber_tip.stl	x4	40%
thigh.stl	x4	50%

### Mounts:

Name	Amount	Infill
distance_rod.stl	x4	100%
servoarm_left.stl	x2	100%
servoarm_right.stl	x2	100%
servoholder_left.stl	x2	100%
servoholder_left_B.stl	x2	100%
servoholder_right.stl	x2	100%
servoholder_right_B.stl	x2	100%

### **Laser-cut Parts**

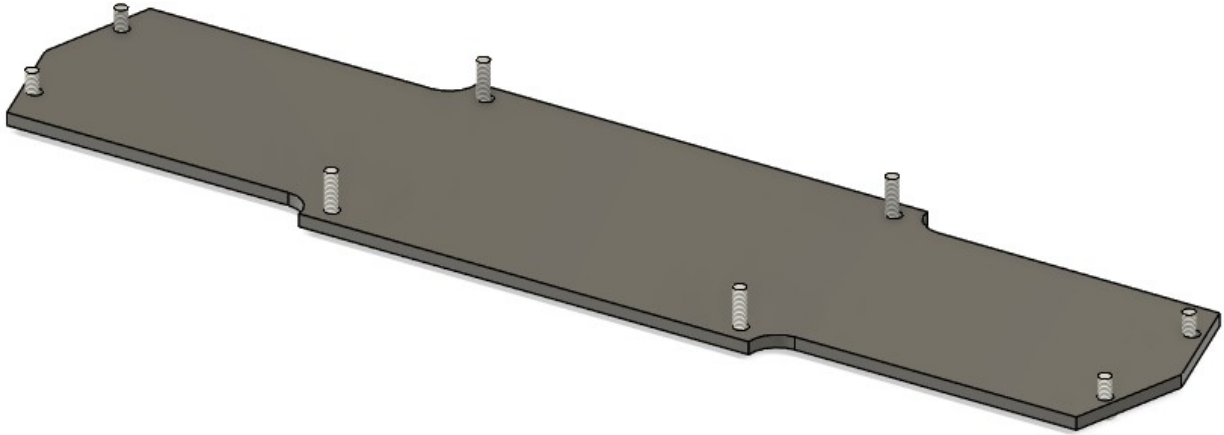
As mentioned before, there are 3 laser-cut parts. These are the following: bottom plate, middle plate and upper plate.

All of these parts are to be lasered with 3mm plastic. Whatever color you use depends on your personal preference.

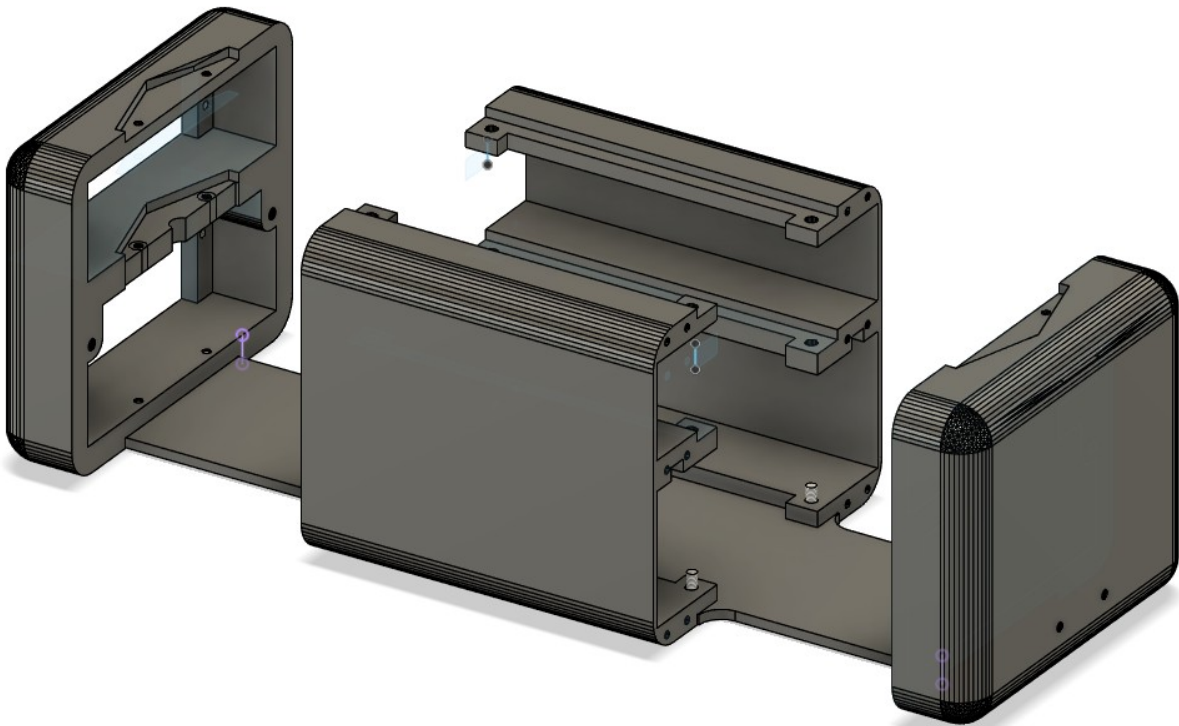
## Assembly

### Main Body

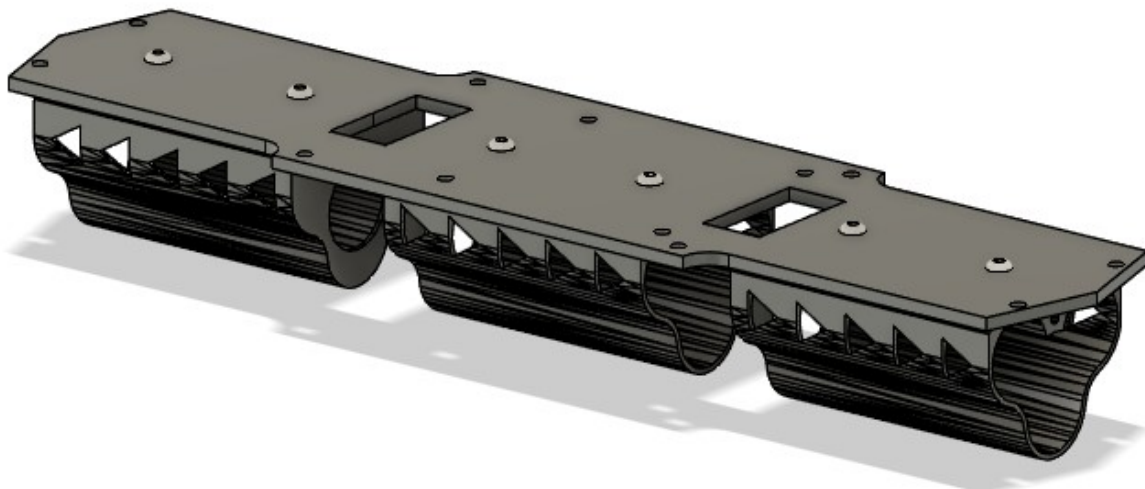
Step 1: Take the bottom plate and insert 4 screws like so:



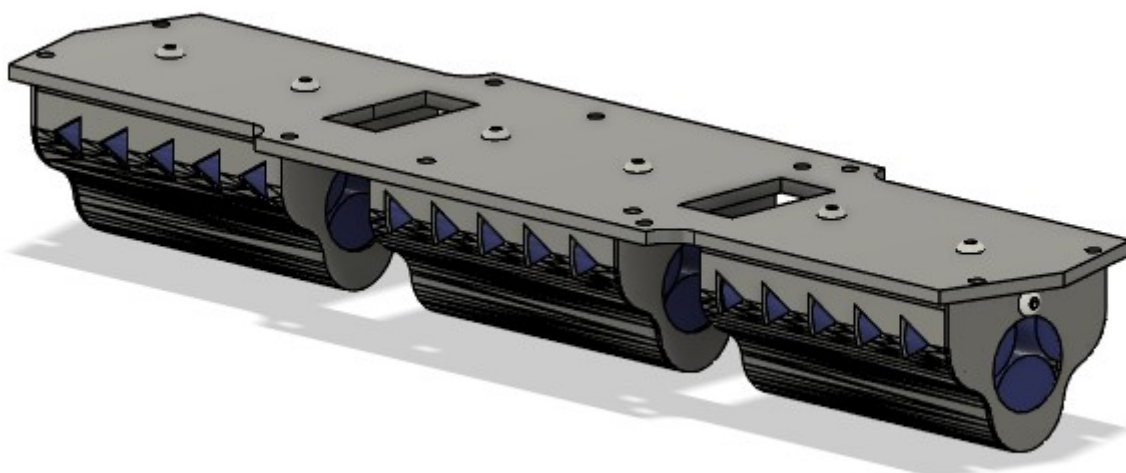
Step 2: Attach side plates and front/back-plates:



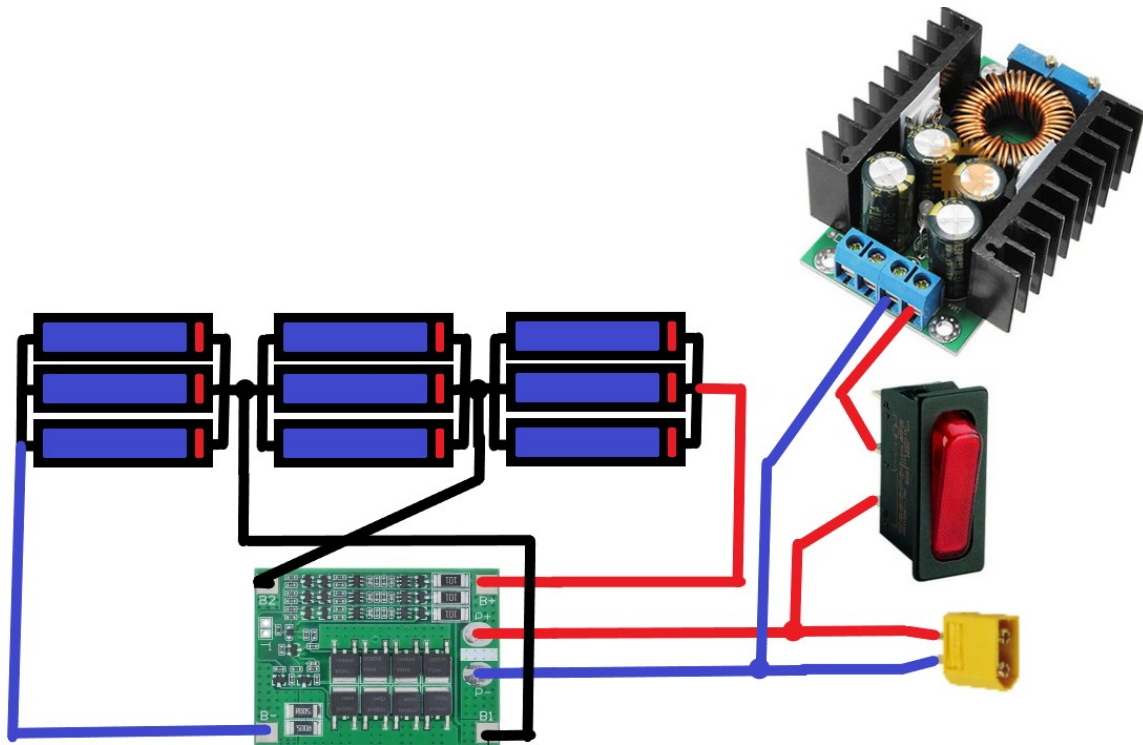
Step 3: Attach battery cases to the middle plate:



Step 4: Put the batteries into the cases and attach the covers:

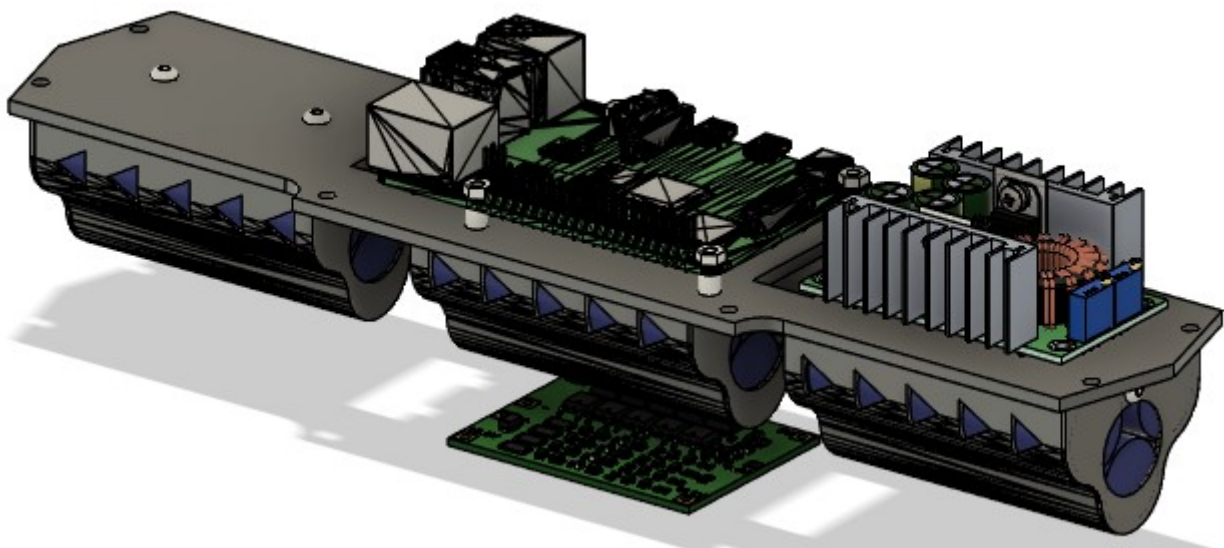


Wire the battery, BMS, switch and step-down according to this diagram:



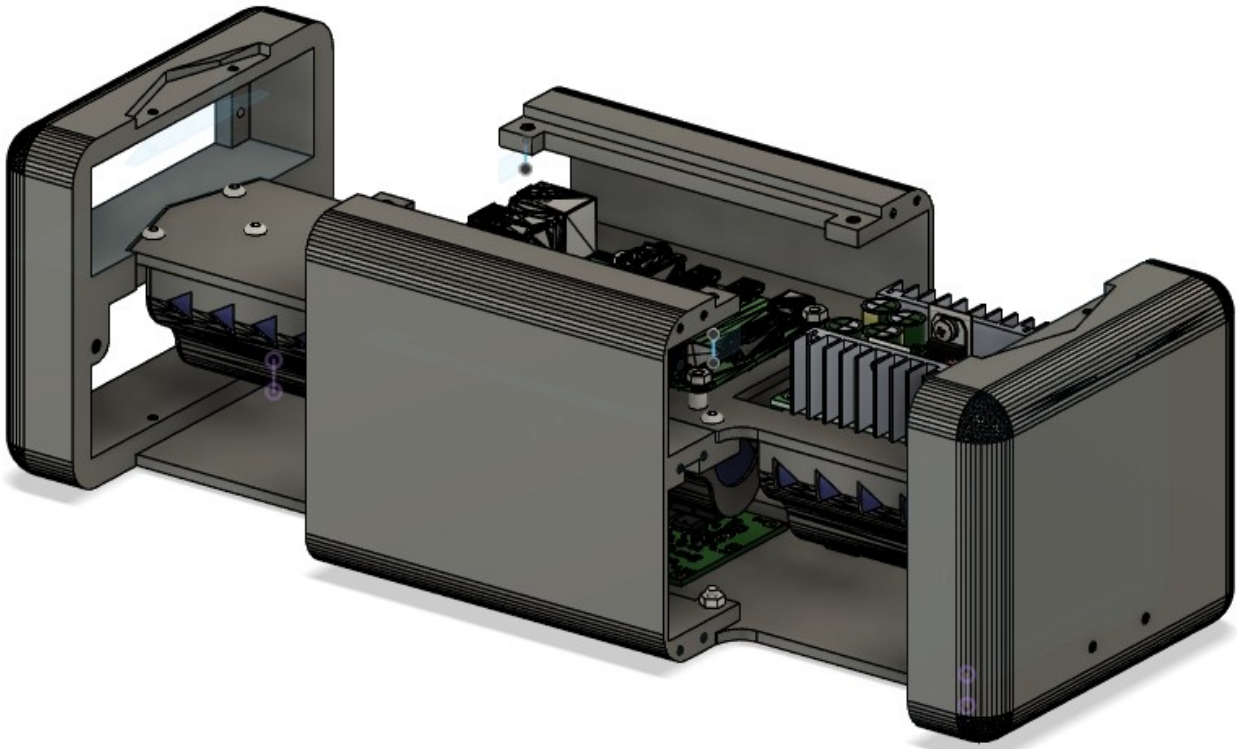
Dont forget to route the wires that lead to the step-down in a way that they can go through the opening of the middle plate in the front. The step-down will act as the main power source for all components later and must be set to an output of 5 volts. Put the ampere limiter to the lowest so that the full amps can be used. The XT-60 and the Switch will be at the back, so make the wires long enough for that to be possible.

Step 5: Attach the Raspberry pi to the Middle plate:

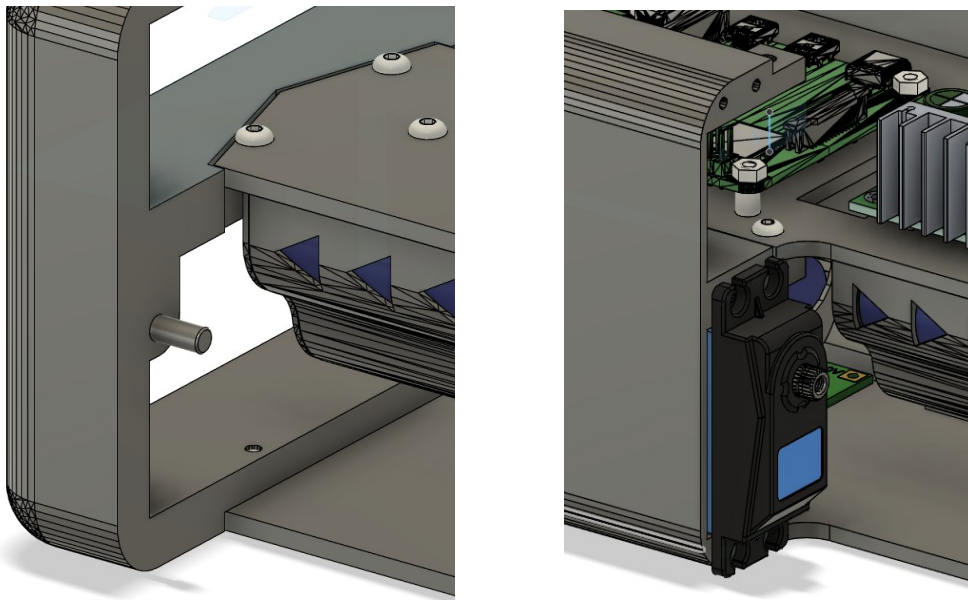




Step 6: Put the Middle plate into the body:



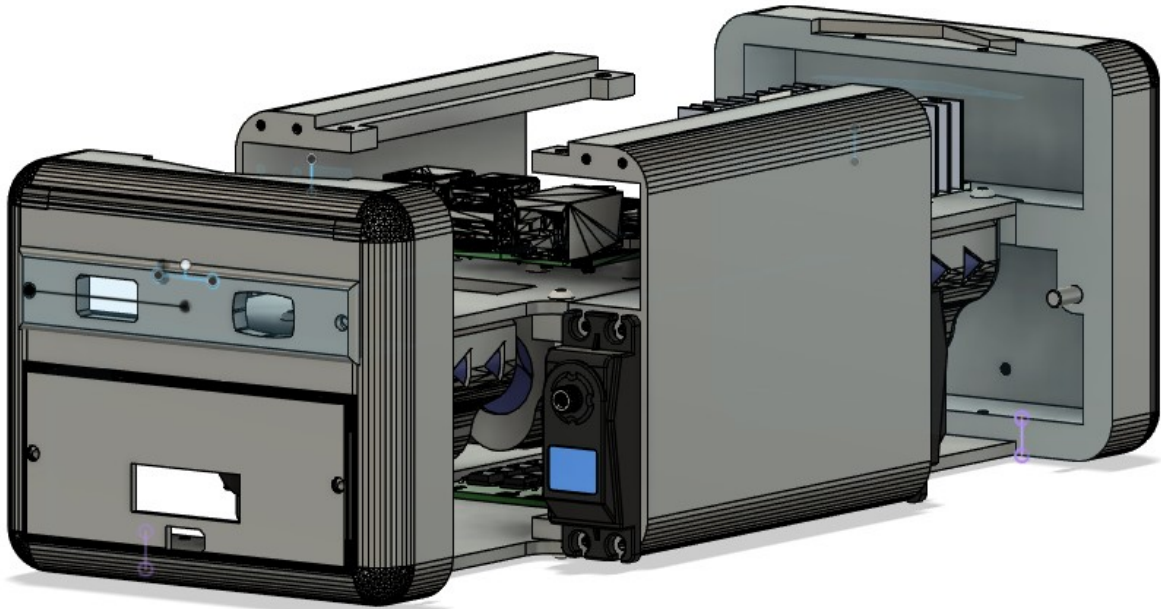
Step 7: Attach the side-axis Servos and bolts:



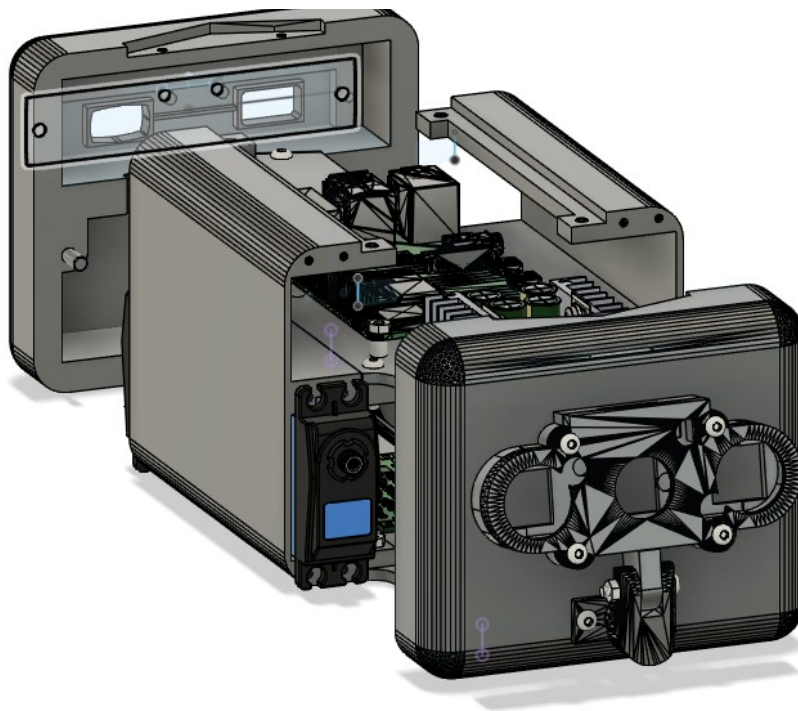
Route the wires of all Servos through the openings on the back-and front - openings of the middle plate.



Step 8: Attach the upper and lower backplate. Glue the switch and the XT-60 in their holes and glue the HDMI and USB extension cables into the upper backplate.



Step 9: Attach the Camera-Mount and the Camera



Put the ribbon cable of the camera through the small slit above.

## Legs