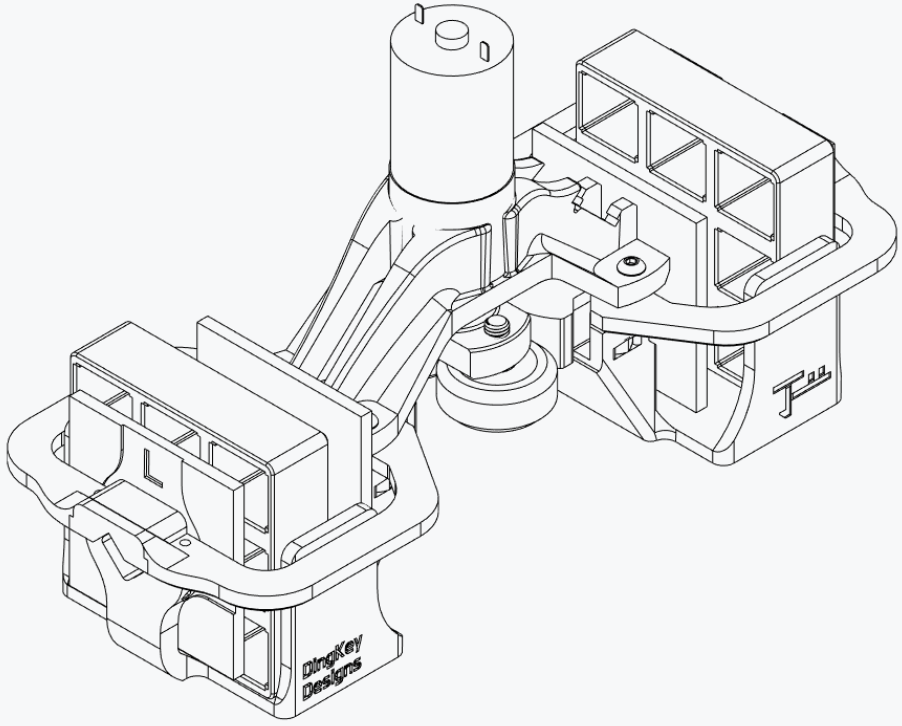
DingKey Designs



BREAK-IN MACHINE GEN 3.5 PARTS GUIDE

Revision 06-2023

Thank you for your recent purchase of a DingKey Designs product!

Please do not hesitate to reach out to us via email, Discord, Etsy, or inbox for any issues or suggestions you would like to report to us to help improve your user experience!

Please note this manual is a work-in-progress and may be updated to reflect product changes as they are rolled out.

Please take special care to read this manual to ensure proper operation of the machine and to reduce chance of parts breakage.

Feel free to discuss with other product owners in our Discord for other helpful tips and suggestions.

DingKey Designs Team

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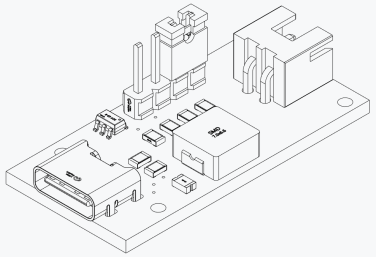
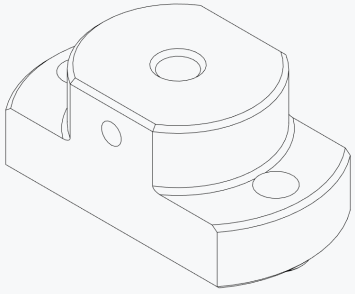


Boost Converter
GEN 1/2 can be identified with use of Micro USB Connector

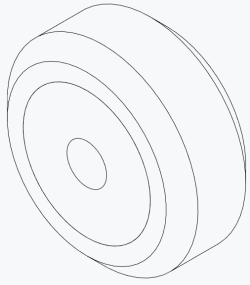
GEN 3 and later utilize Type-C Connector and JST-XH Header



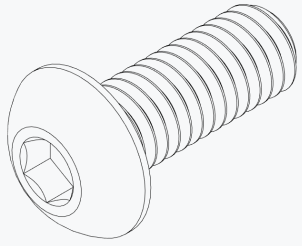
Wheel Cam
GEN 1/2 lacks screws and nuts

GEN 3 design is 3D Printed

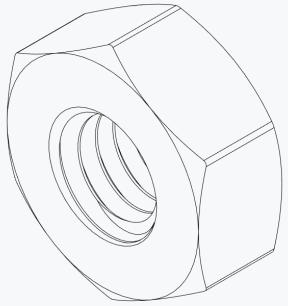
GEN 3.5 design is CNC Aluminum (shown)



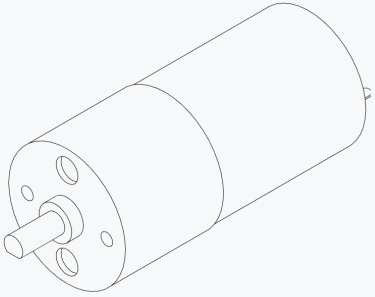
Wheel
Standard POM V-slot wheels, mounted to **Wheel Cam** using M5 fasteners.



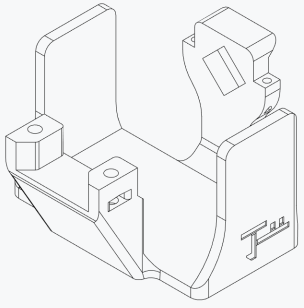
Button Head Hex Screw
Metric fastener used on the machine comes in M3 and M5 threads depending on location



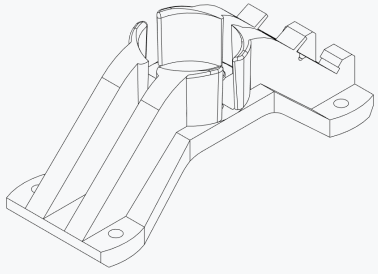
Hex Nut
Metric fastener used on the machine to secure **Motor Mount** to **Main Body**



Motor
24V DC Motor

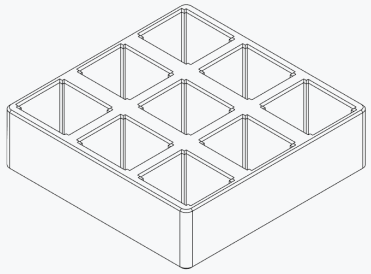


Main Body
3D Printed Plastic, located furthest from the center of the machine, can be adjusted for different switch lengths

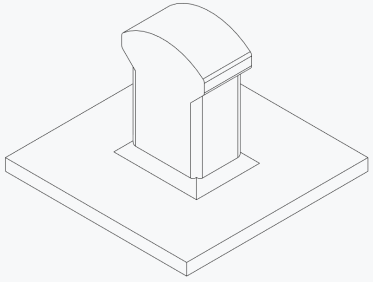


Motor Mount
Gen 1/2 can be identified with use of Micro USB Connector

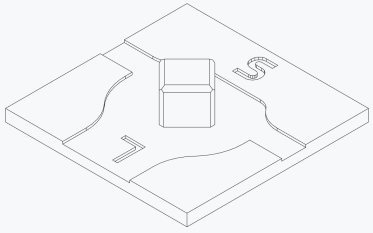
Gen 3 and later utilize Type-C Connector and JST Header



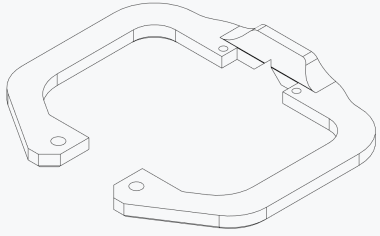
Switch Carriage
3D Printed Plastic Switch Carriage



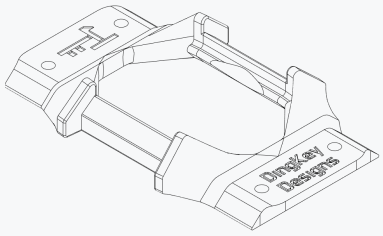
Front Piston
3D Printed Plastic, directly contacts spinning wheels attached to **Motor**



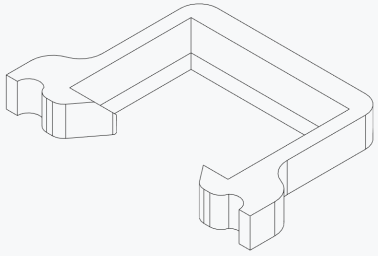
Back Piston
3D Printed Plastic, located furthest from the center of the machine, can be adjusted for different switch lengths



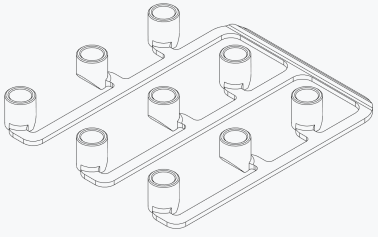
Arm
3D Printed Plastic, located between **Motor Mount** and **Main Body**, affixed with screws on GEN 2 and later



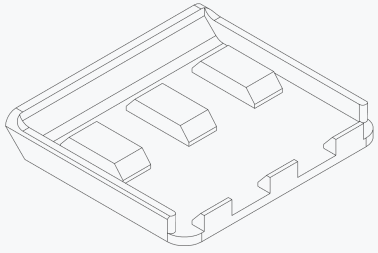
4 Way Adapter
3D Printed Plastic
GEN 1 uses dovetail design
GEN 2 and later affixed using screws



Off Center Limiter
3D Printed Plastic, attaches to **Front Piston** to limit return stroke during **Off-Center** operation

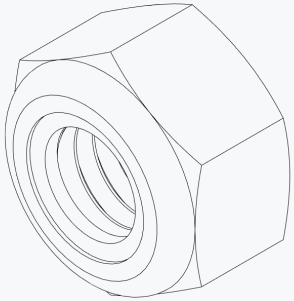


Off Center Tube Plate
3D Printed Plastic, attaches to switch stems in order to prevent damage during **Off-Center** operation



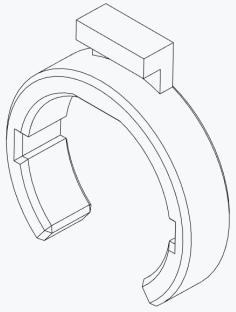
Off Center Actuator
3D Printed Plastic, used in tandem with **Tube Plate** and **Limiter** in order to facilitate proper **Off-center** operation

HARDWARE REFERENCE **(GENERATION SPECIFIC)**



Hex Locknut
Only used on certain GEN 2 and GEN 3 models.

Both M3 and M5 variants can be found on certain models

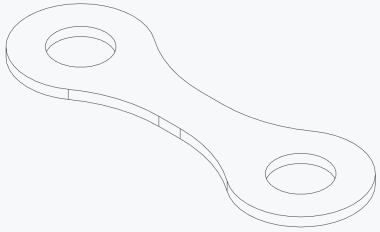


Pin Circlip
Deprecated design as of GEN 3

Originally used to secure wheel cam to GEN 1/2 motors

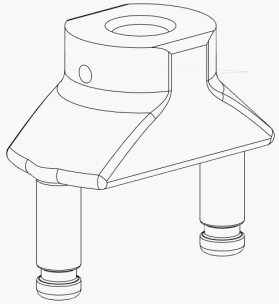
Metal Pin
Deprecated design as of GEN 1

Originally used for securing motor and mechanical parts before introduction of screws

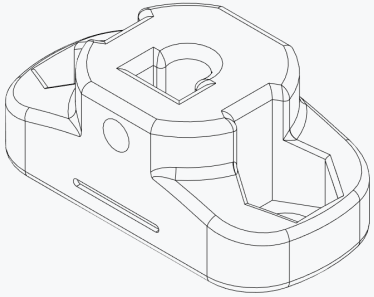


Dogbone / Wheel Clip
Deprecated design as of GEN 3

Originally used to reinforce wheel mounting posts/screws

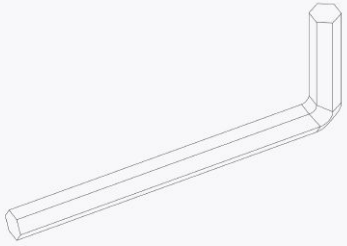


GEN 1/2 Wheel Cam
3D Printed Plastic, screw-less design



GEN 3 Wheel Cam
3D Printed Plastic, utilizes 1x M3 locknut, 2x M5 locknuts

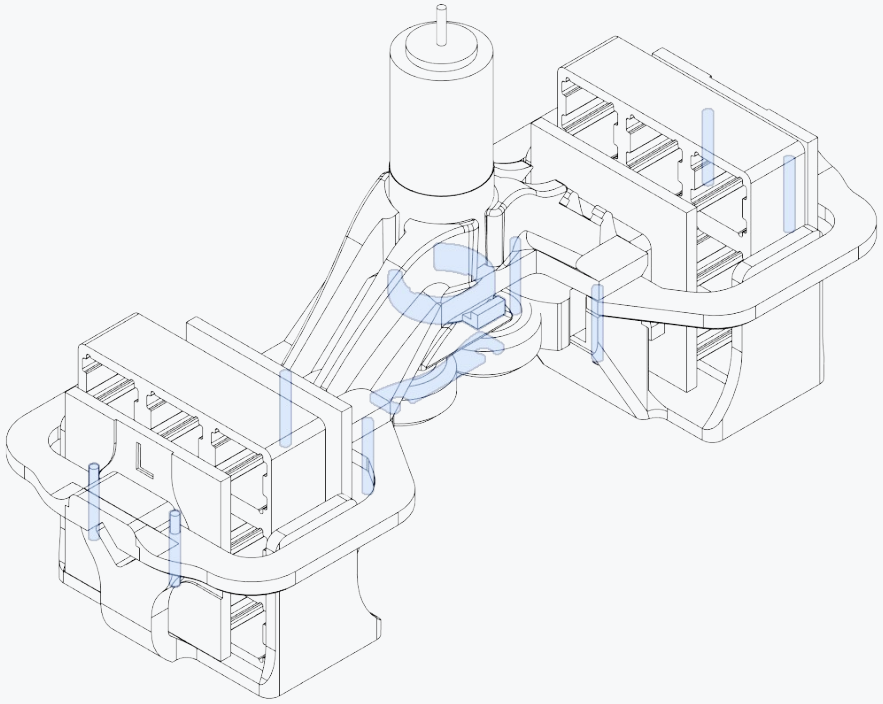
Deprecated as of GEN 3.5

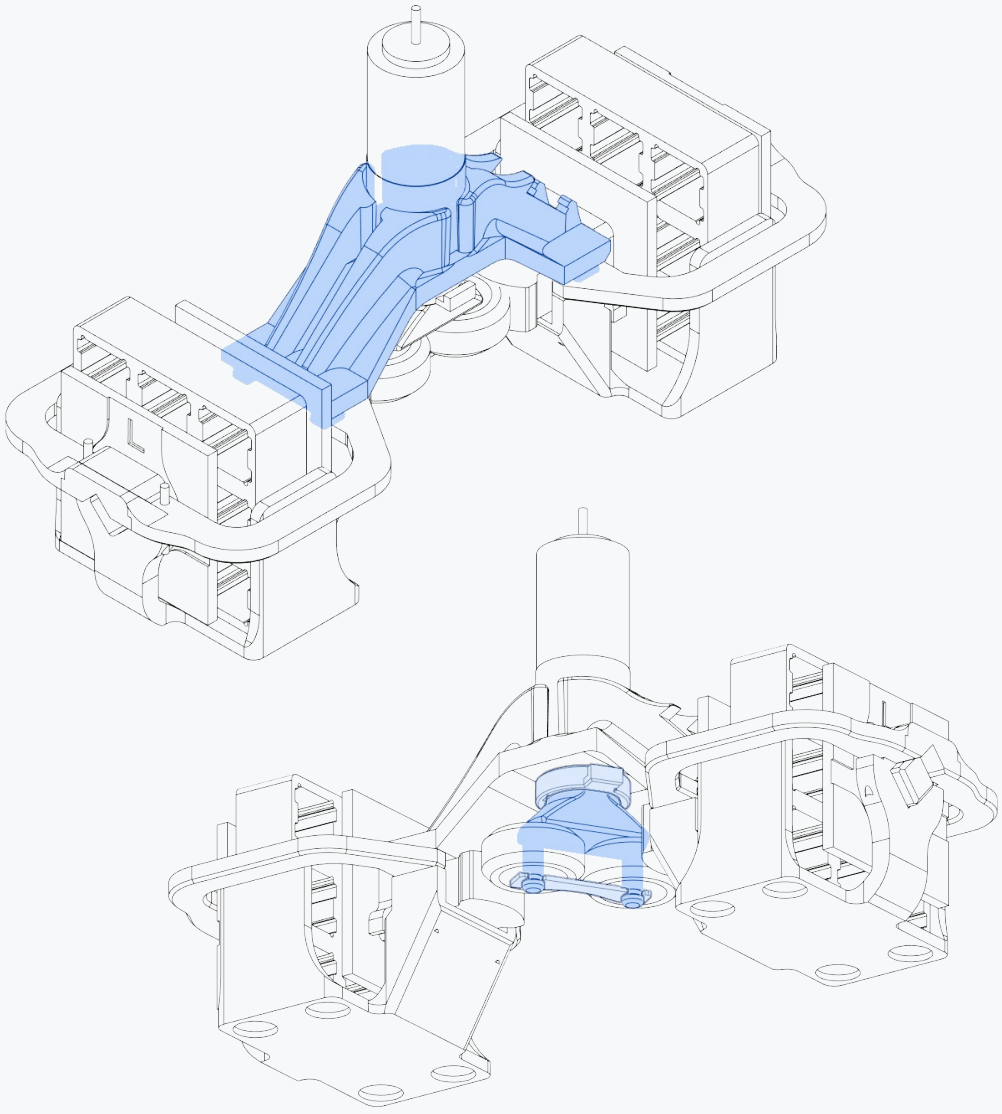


2.5MM Hex Key
Optional purchase, used for removal/installation of **Hex Screws**

GENERATION 1

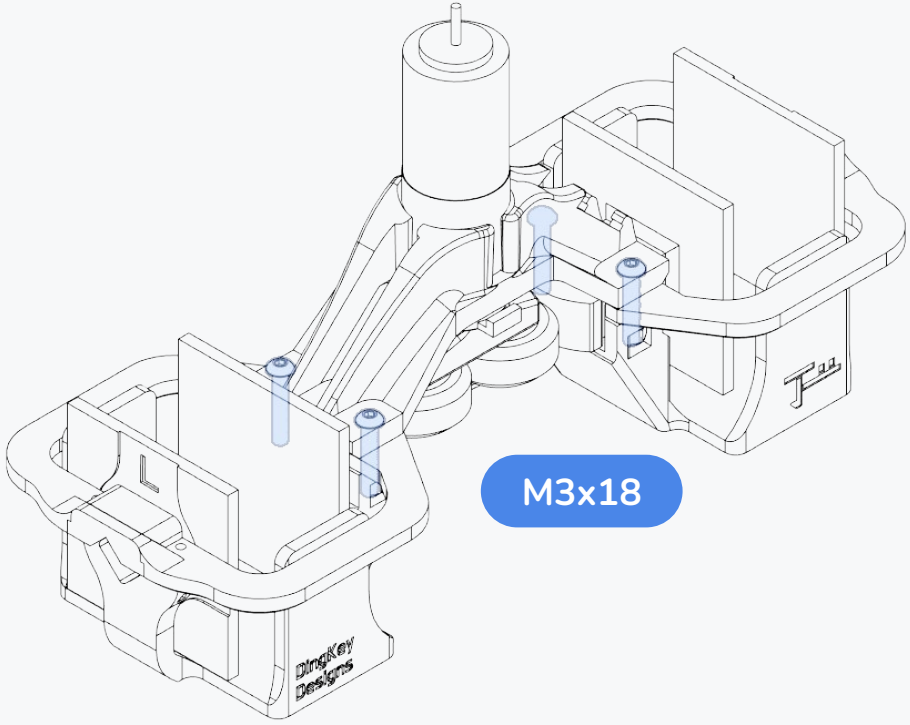
Early models can be identified by the screw-less construction, dovetail design, and most-notably, use of Micro USB on the boost converter.

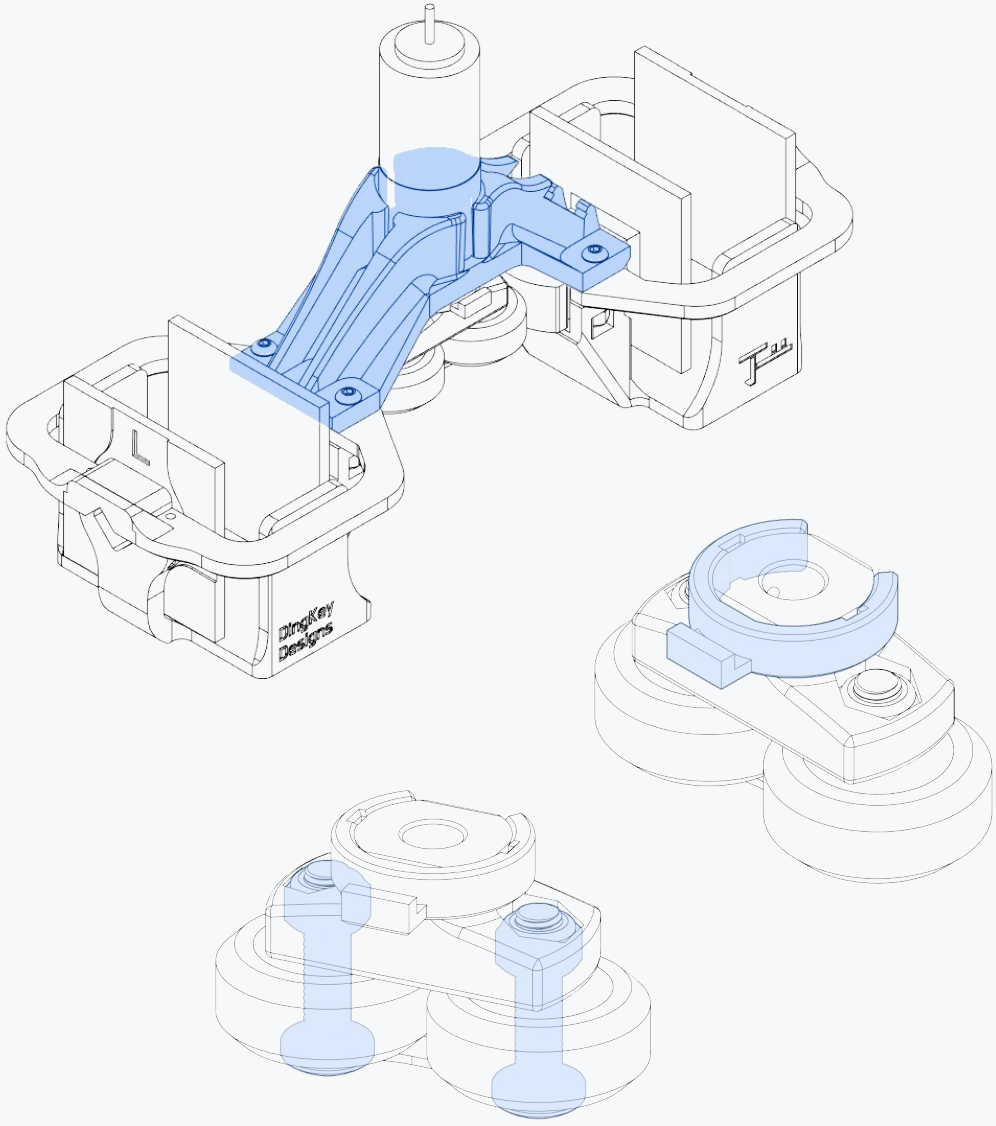




GENERATION 2

Later models revised the mounting system to use screws instead of pins, but motor and boost converter remain the same

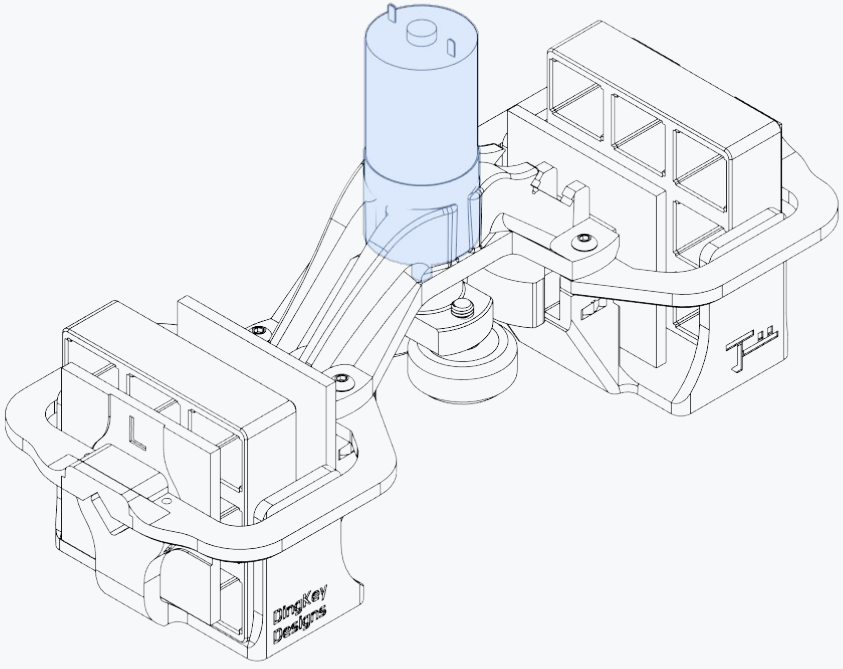


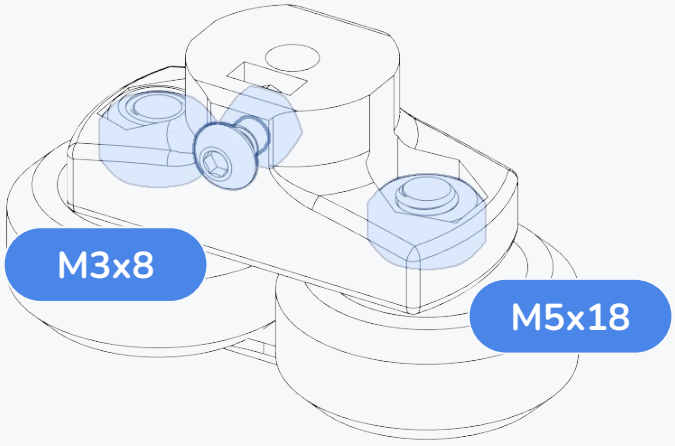


GENERATION 3 / GENERATION 3.5

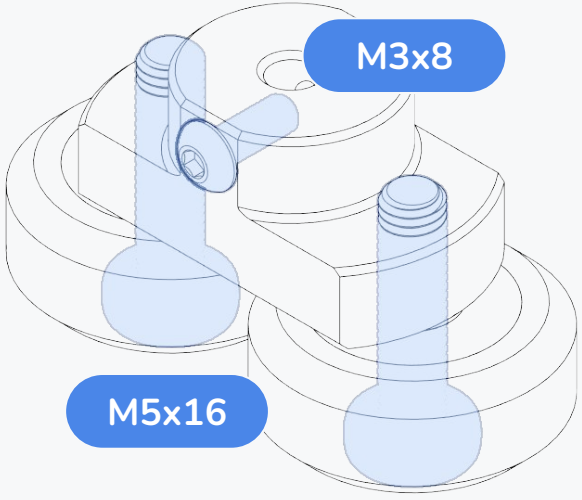
These two models are nearly identical except for a few key features. M5 locknuts have been removed and replaced with machined threads in GEN 3.5.

Motor and boost converter (not pictured) have also been updated





GEN 3 Wheel Cam Assem. (3D Printed)



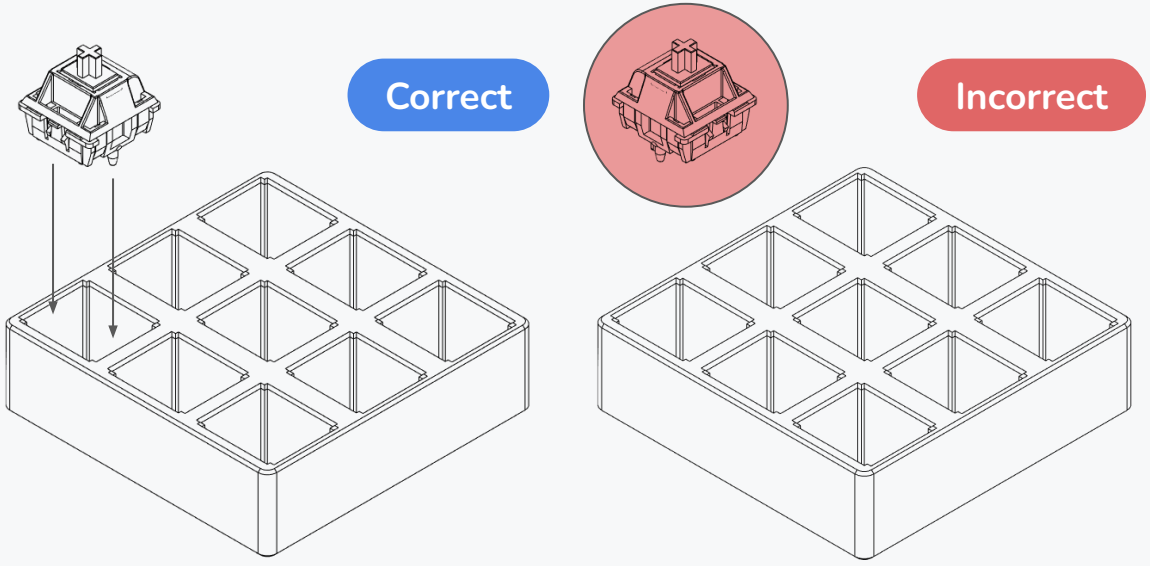
GEN 3.5 Wheel Cam Assem. (CNC Milled)

Switch Installation

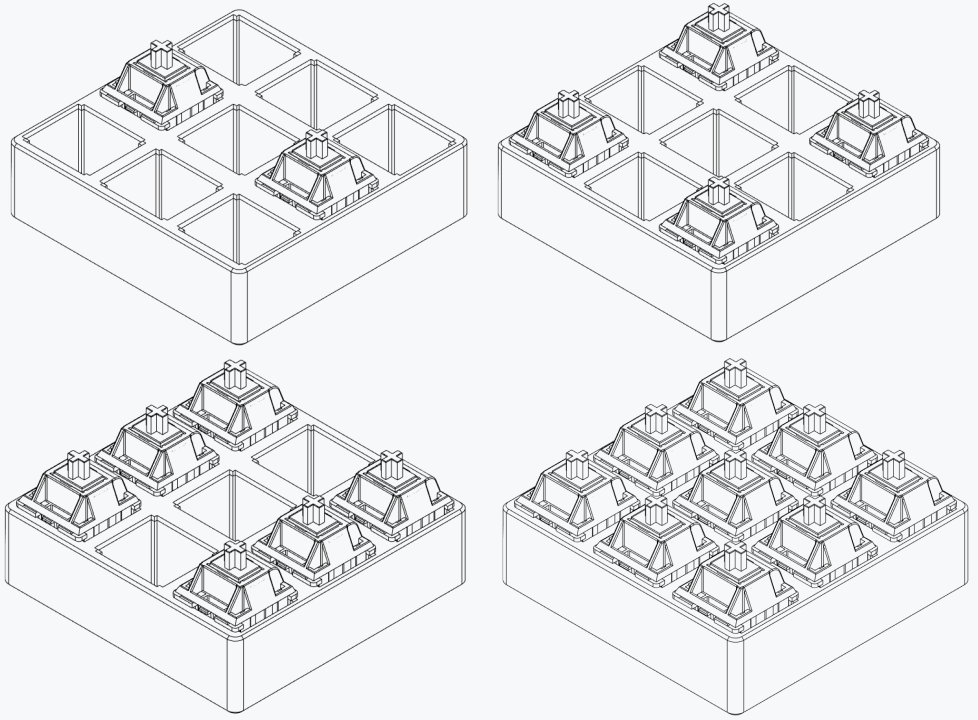
This page demonstrates example orientations and ways to load the **Switch Carriages**. Note the orientation of the switches in relation to the **rectangular** cutout. (North/South facing)

Switches are friction fit into the 3D printed plastic.

If using less than full capacity, take note of the example configurations pictured to the right.

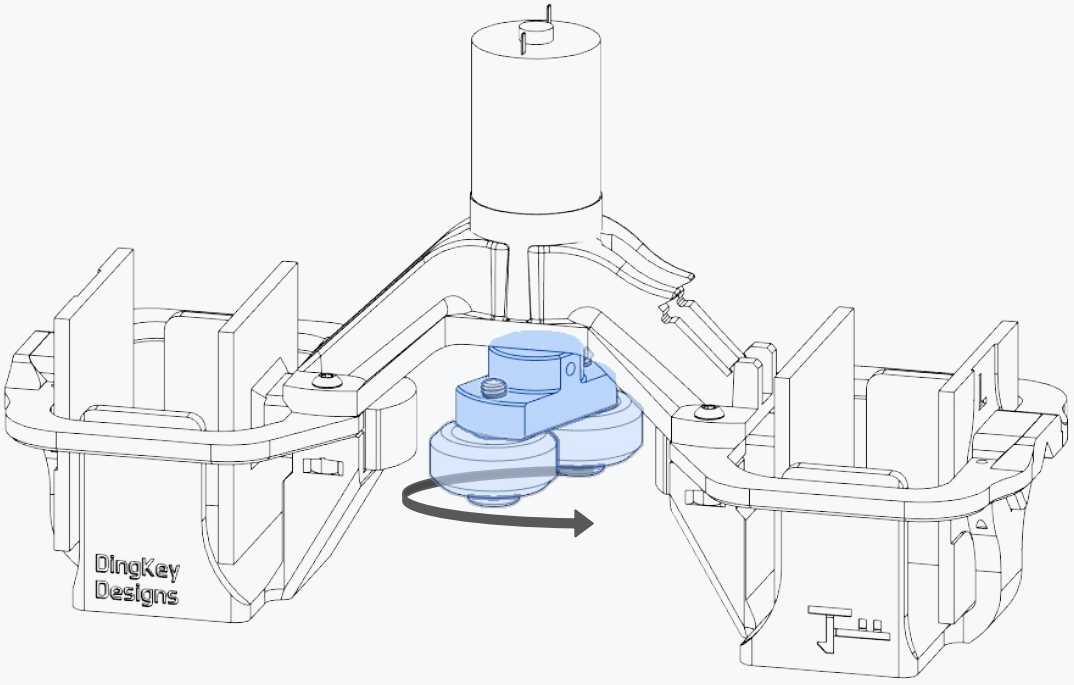


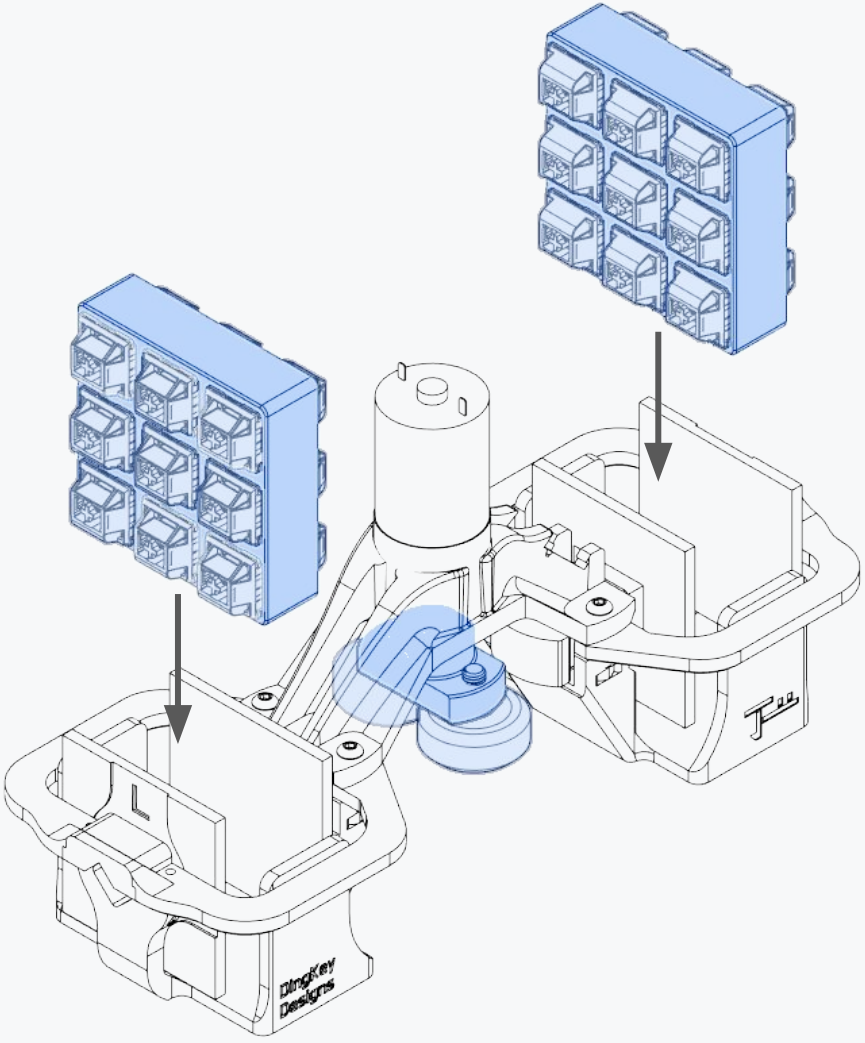
Example Configurations



Carriage Installation

Gently slide the **Carriages** into the machine in the positions shown. Manually turn the **wheel cam** to the position shown in order to allow the switch stems to fit

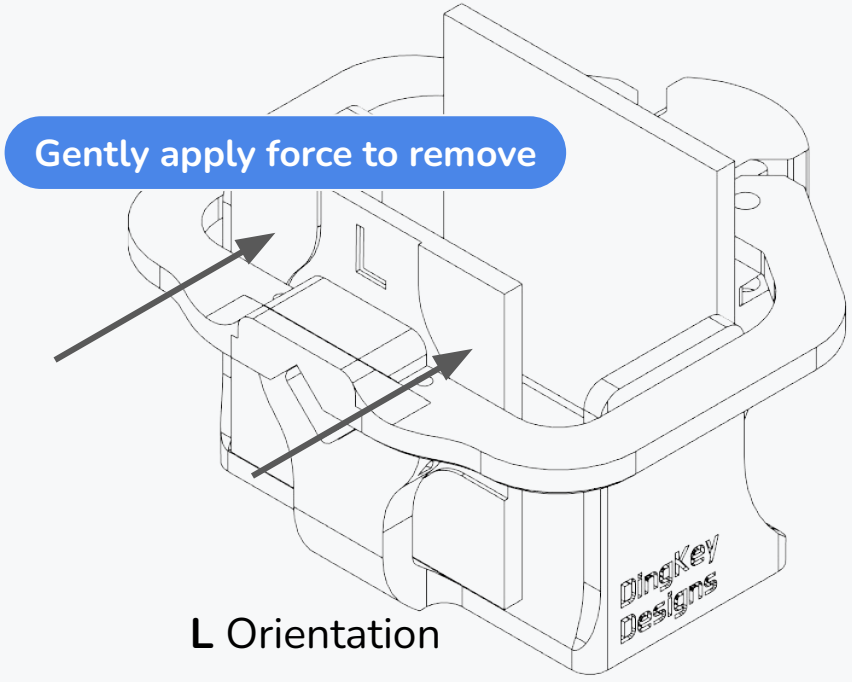




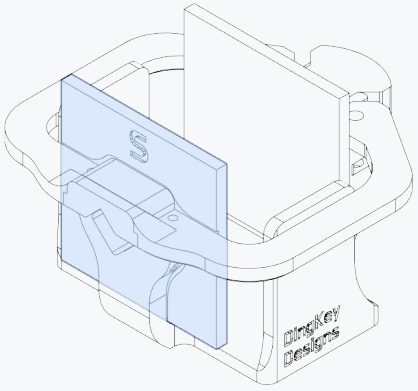
Rear Piston Adjustment

4mm Travel - Stock MX Switches or Similar - **L** Orientation
3.6mm Travel - NK Creams or Similar - **S** Orientation
3.2mm Travel/Long Pole - BCP switches - **XL** Orientation
2.8mm Travel/Extended Long Pole - **XS** Orientation

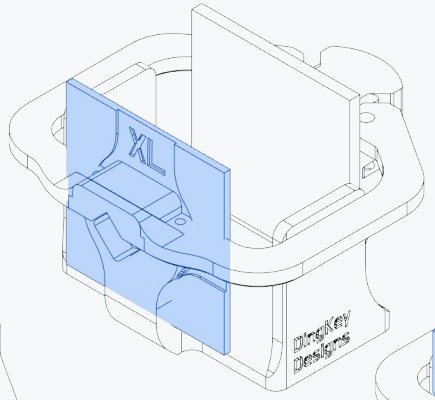
These numbers should only be viewed as a general guideline and may require manual tuning to prevent machine breakage (next slide)



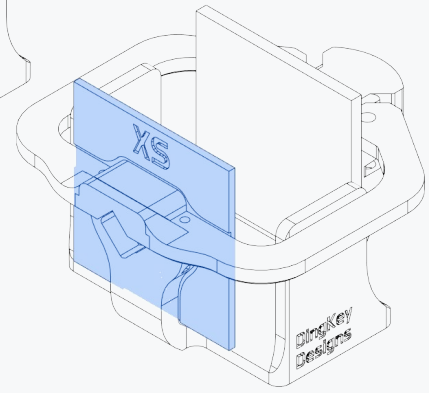
L Orientation



S Orientation



XL Orientation

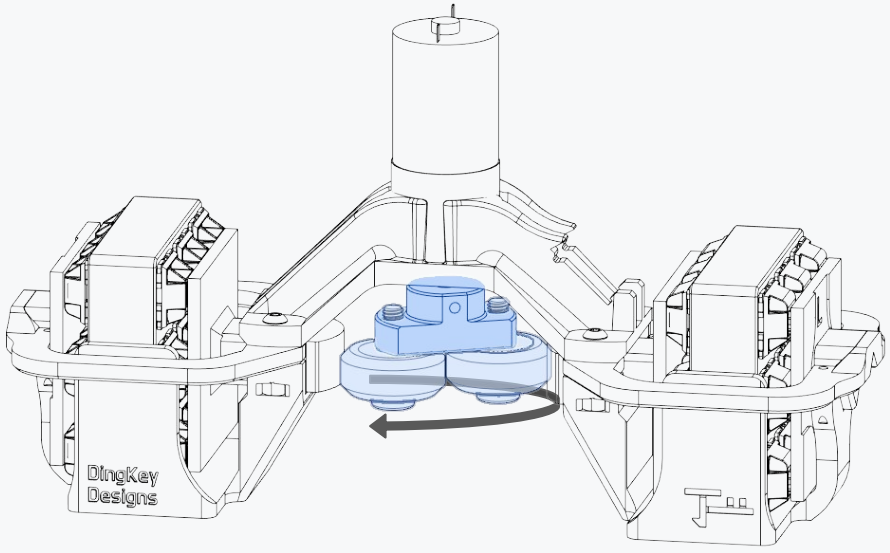


XS Orientation

Rear Piston Adjustment - Manual Tuning

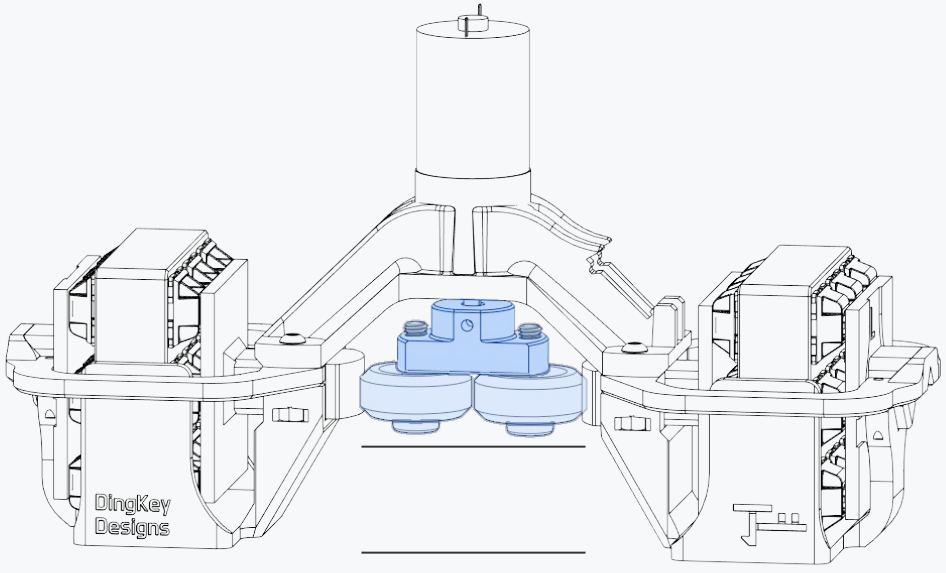
Due to limitations of 3D printing tolerances, the best practice for finding the correct rear piston for your switches is through manual tuning.

Gently rotate the **wheel cam** between full stem compression and when the **wheels** just start to contact the **front piston** head.



Check the **wheel cam** during testing to ensure it stays parallel to the rest of the machine.

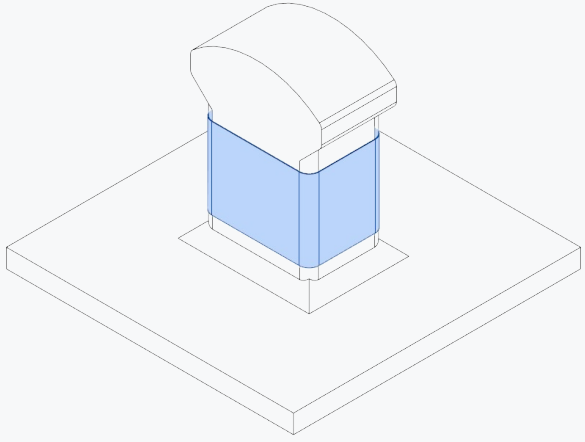
Also check to see if any parts are deflecting (most notably the **motor mount** which may bow if set incorrectly)

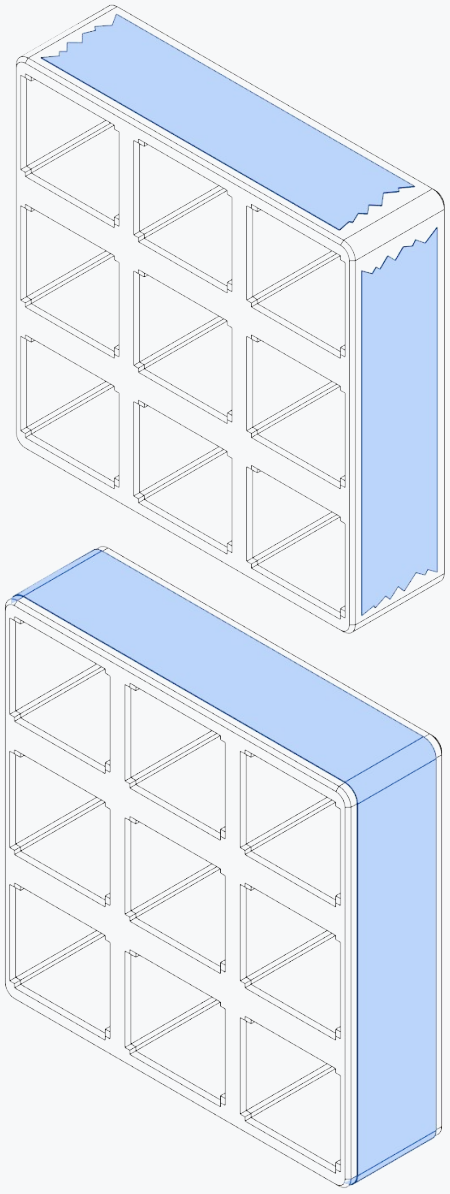


Optional

PTFE Tape (please only use 0.13mm x 13mm roll from our storefront) can be applied to the **Carriages** and **Front Piston** (requires disassembly) to facilitate smoother linear motion and to prevent plastic wear/dust buildup.

Apply **ONE LAYER** of **PTFE Tape** to the exterior surface of the **Carriage** and **Front Piston** in cut sections or as a continuous piece.

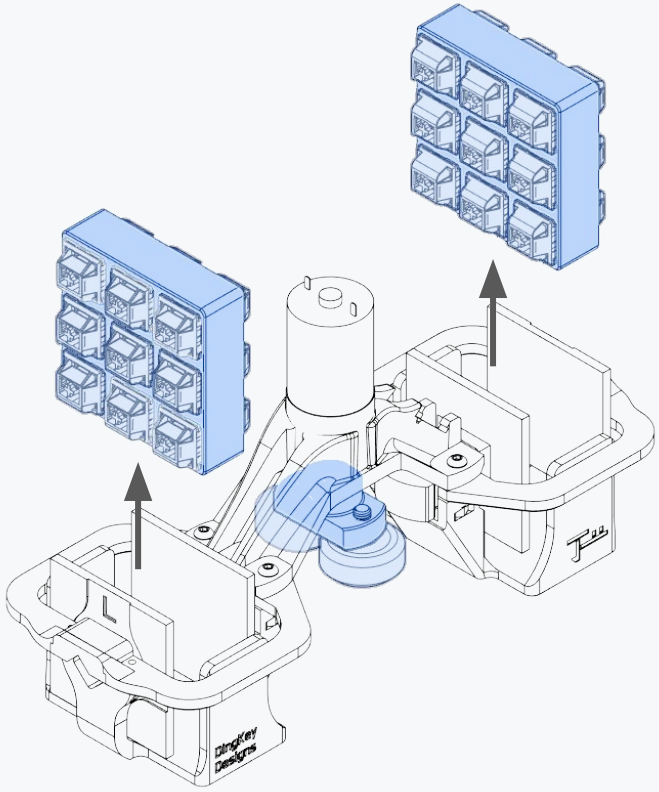




WARNING: THIS PAGE IS FOR ADVANCED USERS ONLY

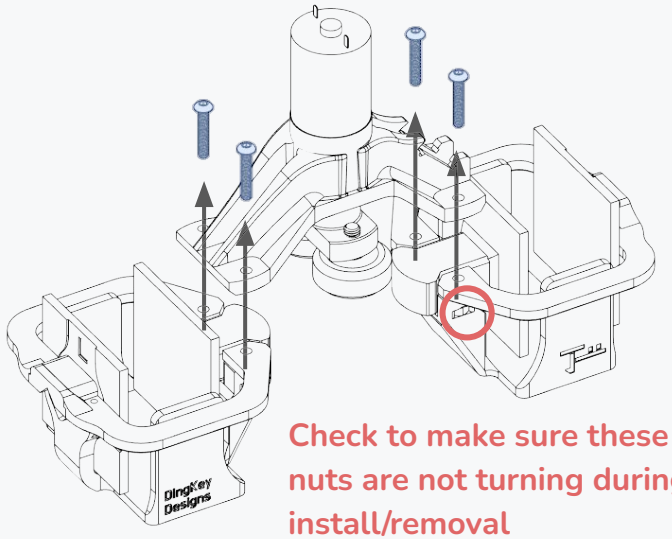
It is not advised to disassemble the machine unless ABSOLUTELY necessary

Step 1



Step 2

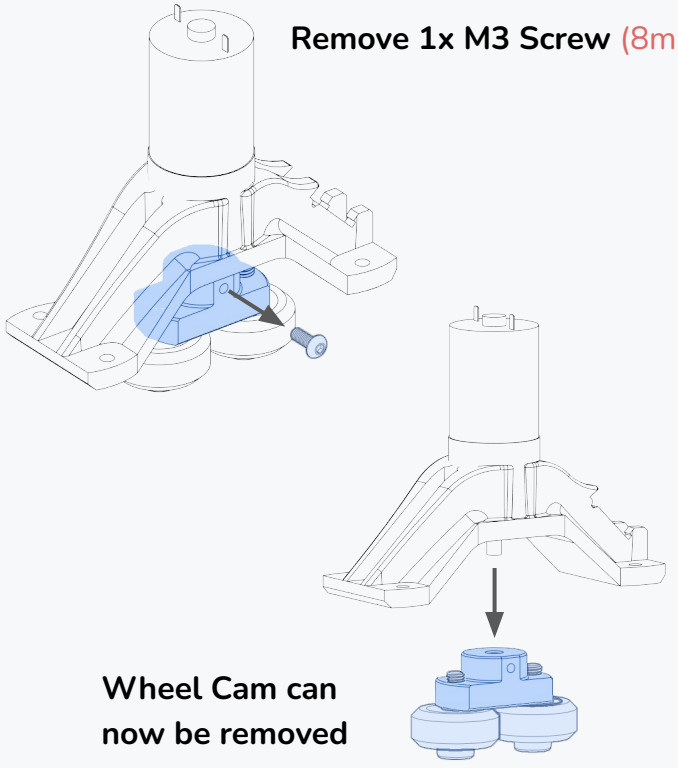
Remove 4x M3 Screws (18mm)
using 2.5mm Hex Key



Check to make sure these nuts are not turning during install/removal

Step 3

Remove 1x M3 Screw (8mm)

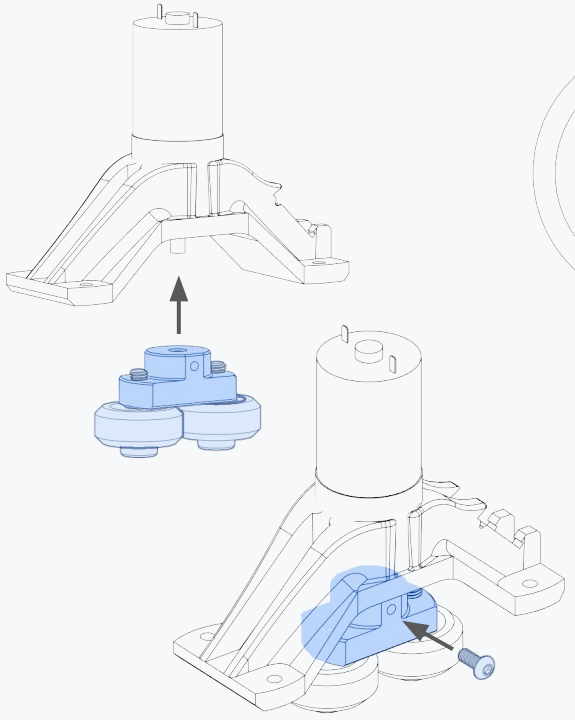


Wheel Cam can now be removed

WARNING: THIS PAGE IS FOR ADVANCED USERS ONLY

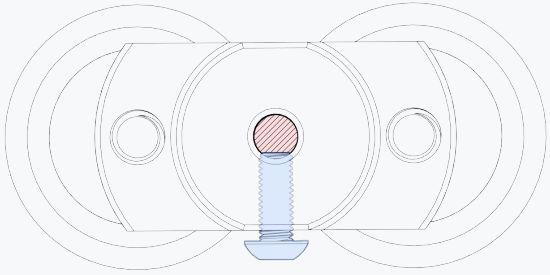
The machine can be reassembled in the same, reversed process

Step 1



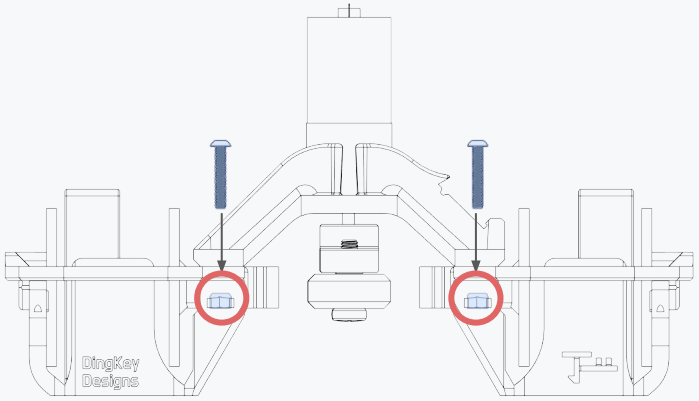
Install 1x M3 Screw (8mm)

IMPORTANT

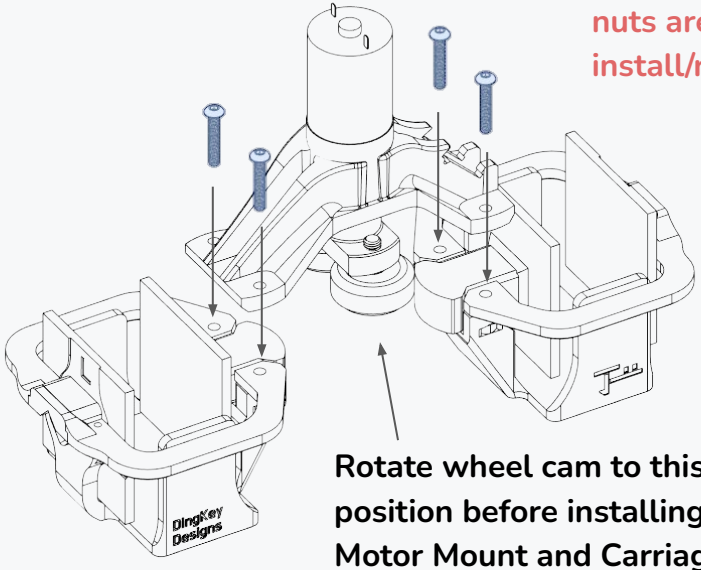


Wheel Cam screw MUST be aligned with FLAT section of motor shaft

Step 2

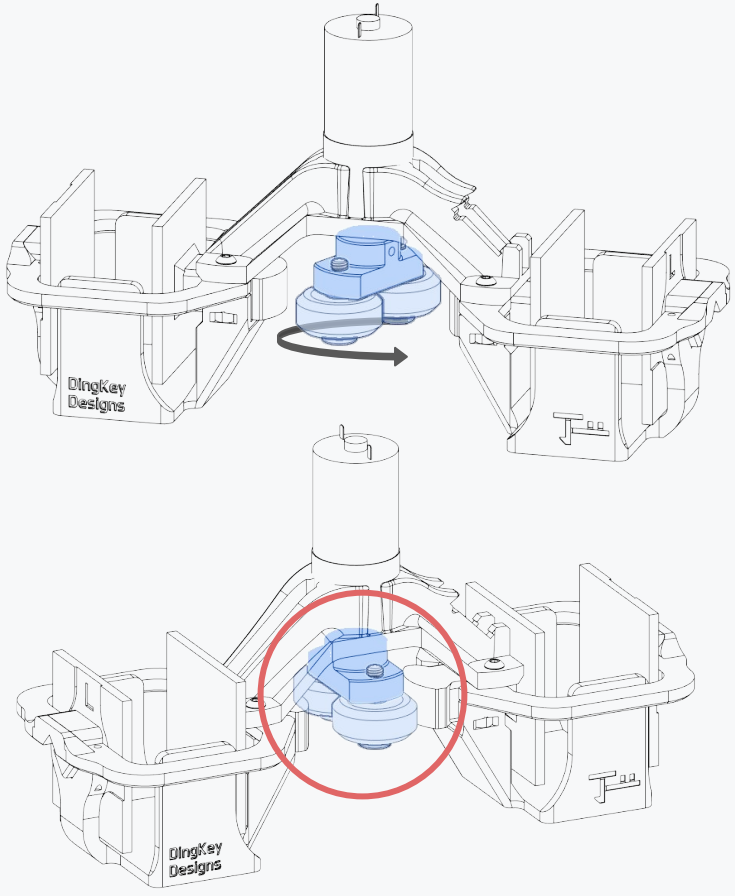


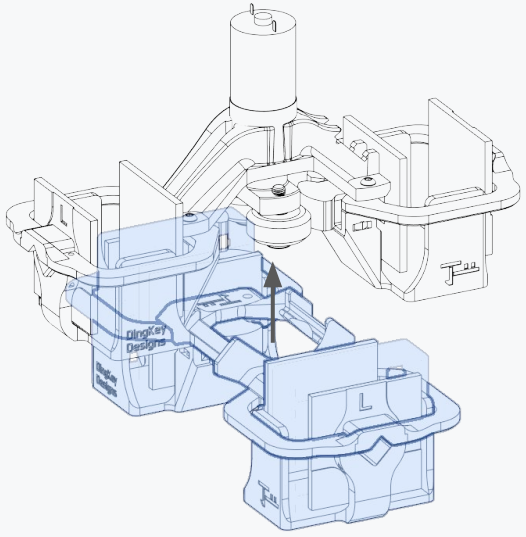
Check to make sure these nuts are not turning during install/removal



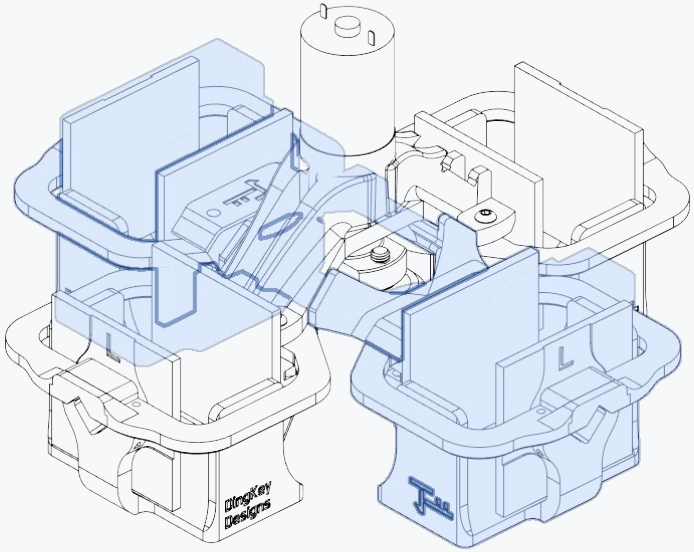
Rotate wheel cam to this position before installing Motor Mount and Carriages

To aid in the installation of the **4 Way Adapter**, first rotate the **Wheel Cam** to the position shown and ensure no **Carriages** are present.

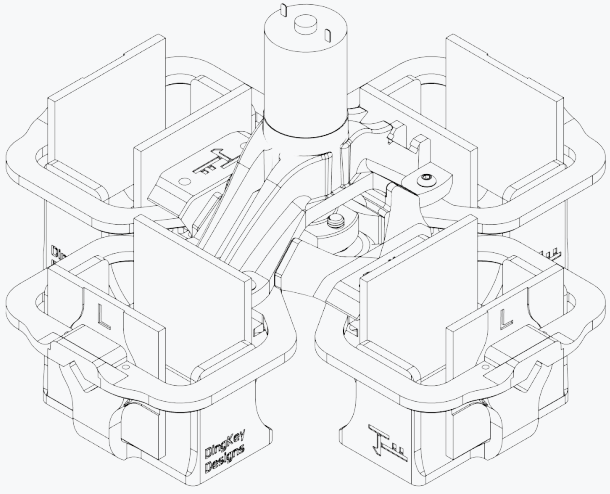




Lift machine over 4 way



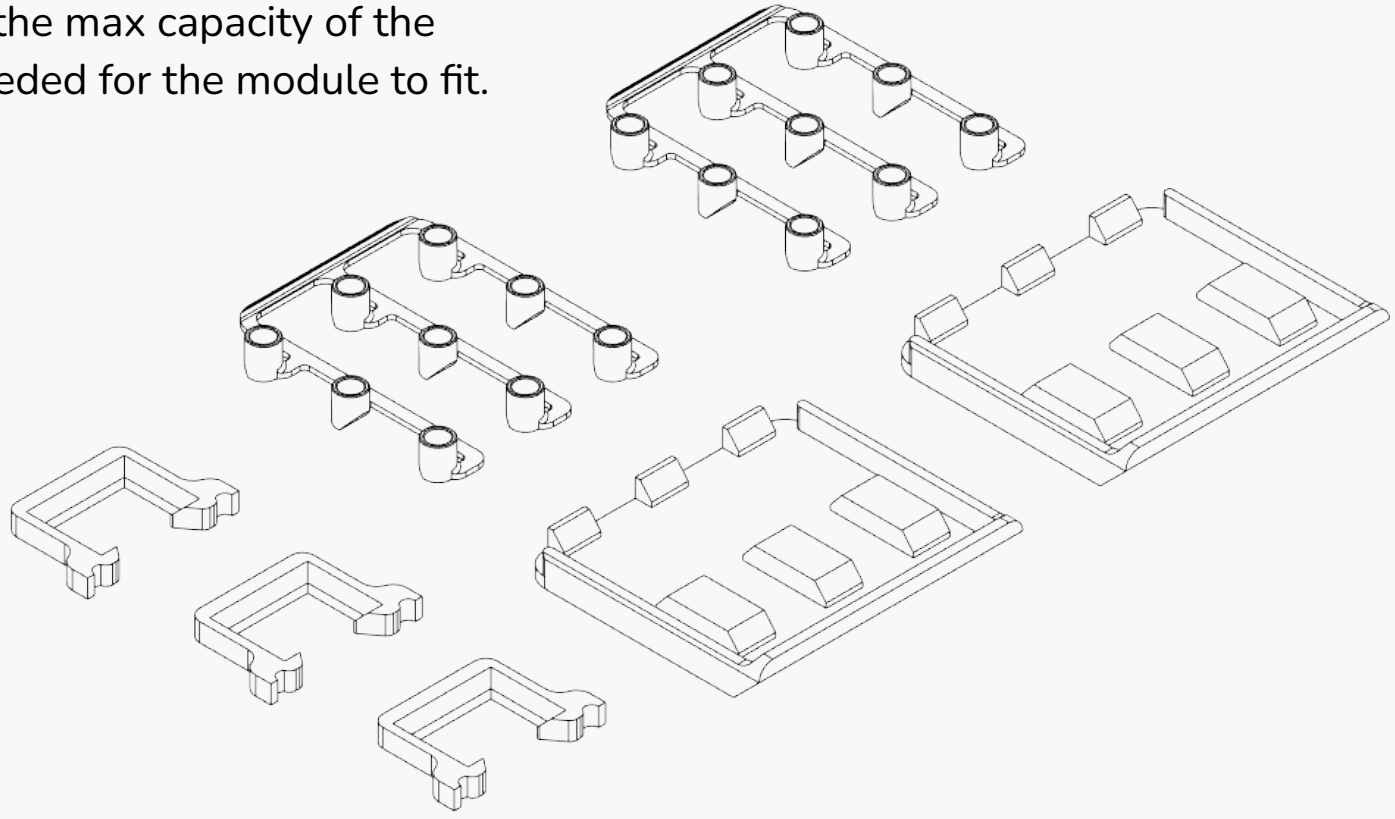
Gently lower and friction fit



Off-Center Kit and Manual can be found at this link or on the **Documents** page of the website.
[DingKey Designs - OffCenter Kit Manual]

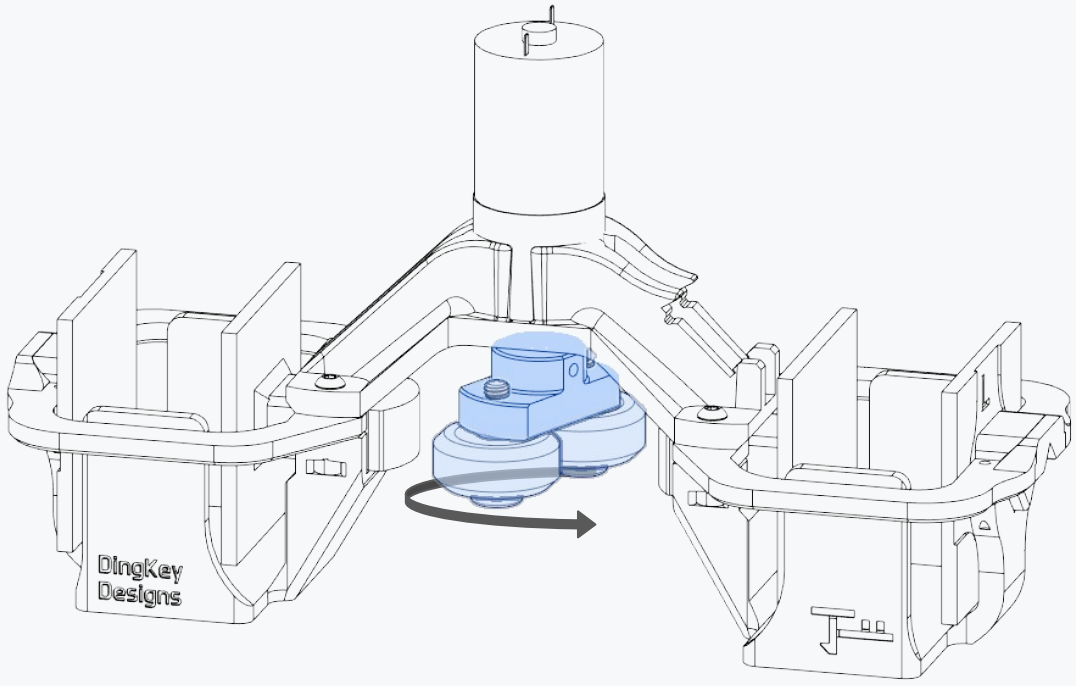
Use of the **Off-Center Kit** will limit the max capacity of the machine to half due to the space needed for the module to fit.

Off Center Kit Contents



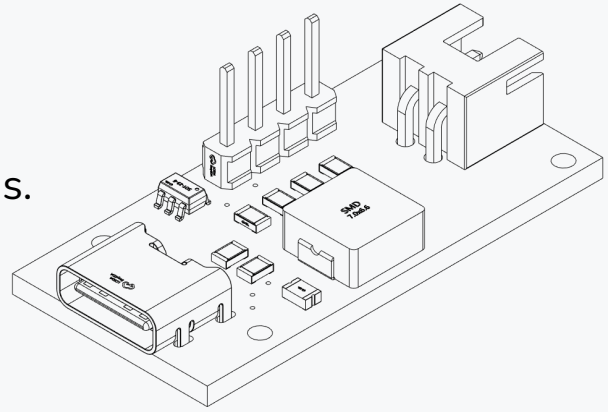
Motor Dry Run Period

Due to motor inconsistencies, it is recommended to run the machine as shown (without carriages/switches installed) for around 30 minutes before normal usage in order to allow the motor brushes to evenly wear in before additional load is introduced with switches.

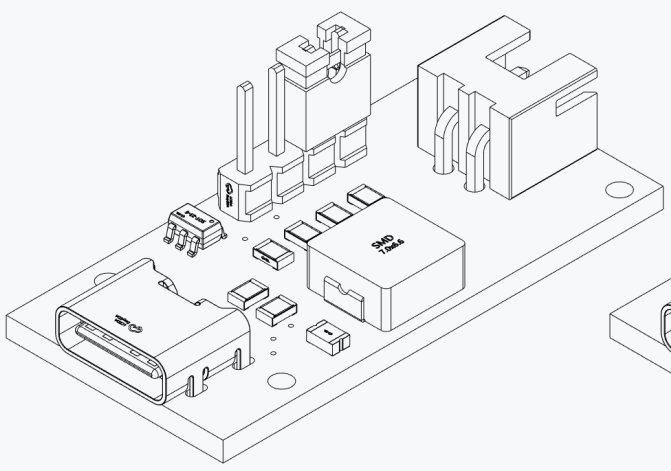


Speed Adjustment

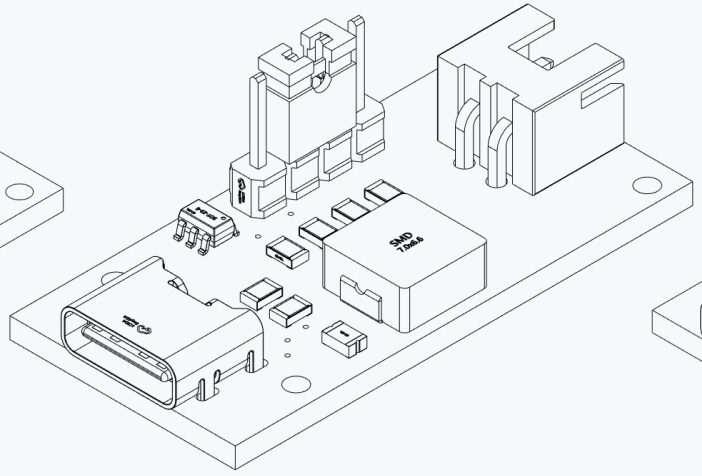
GEN 3 and later models with the USB C **Boost Converter** have 3 preset speeds. Take careful note of where the jumper position is set.



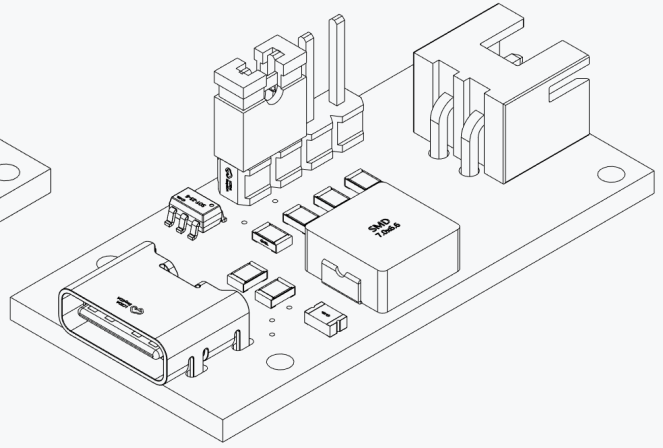
No Jumper: 100%



1-2 Connected: 100%



2-3 Connected: 75%



3-X Connected: 50%

HOW TO GET HELP

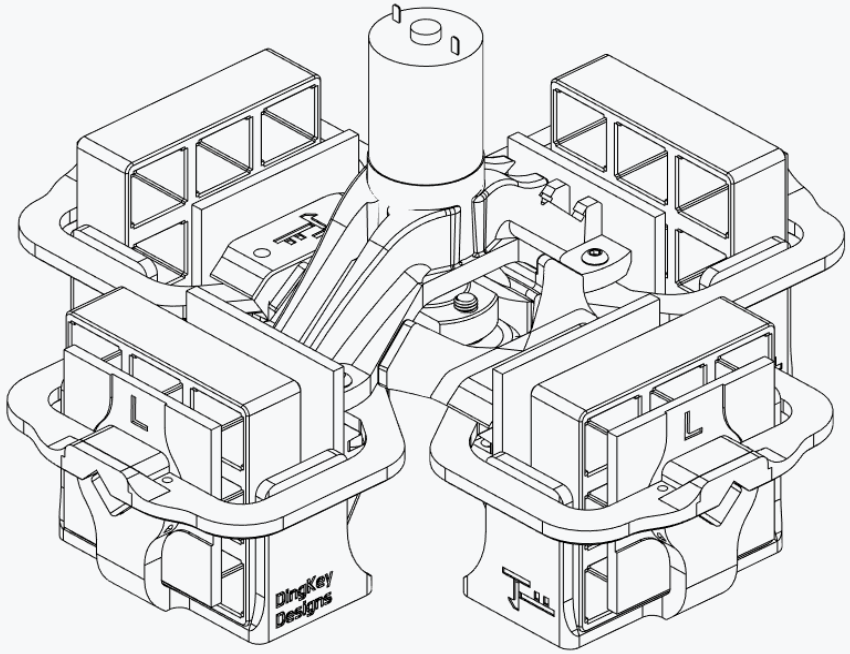
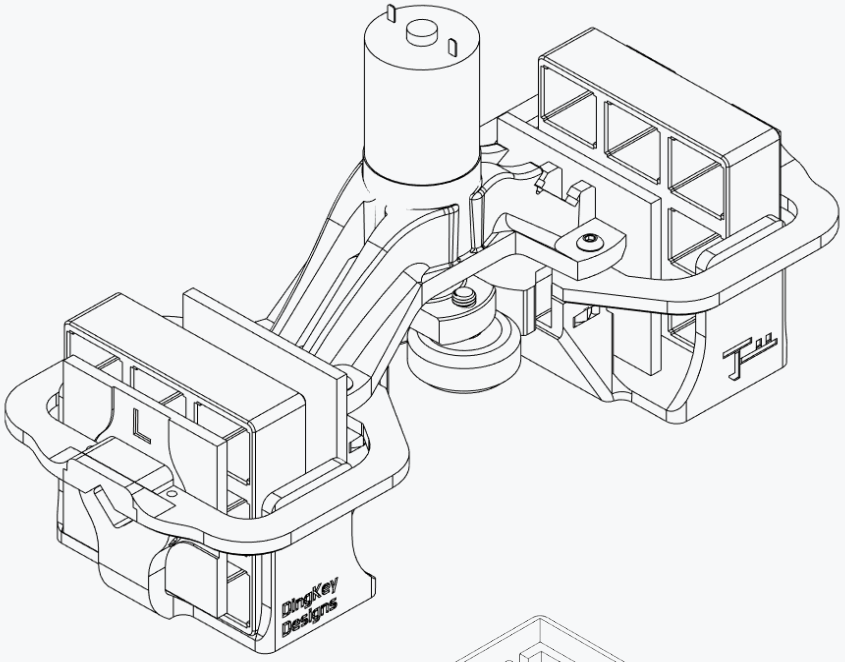
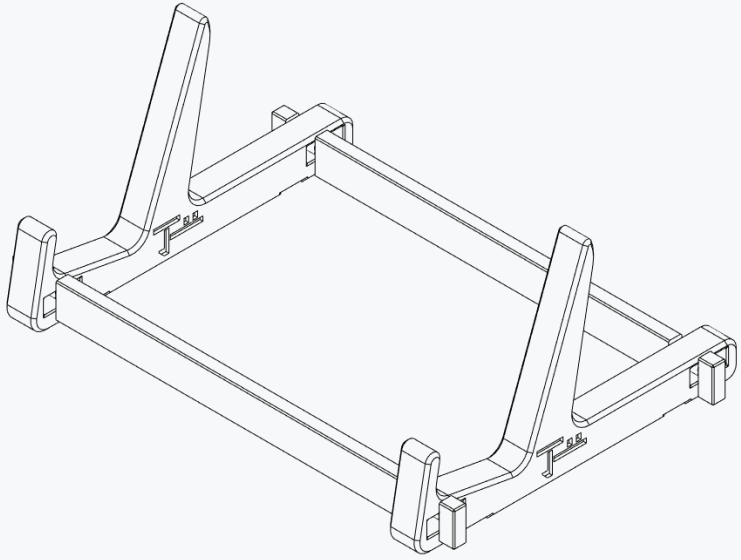
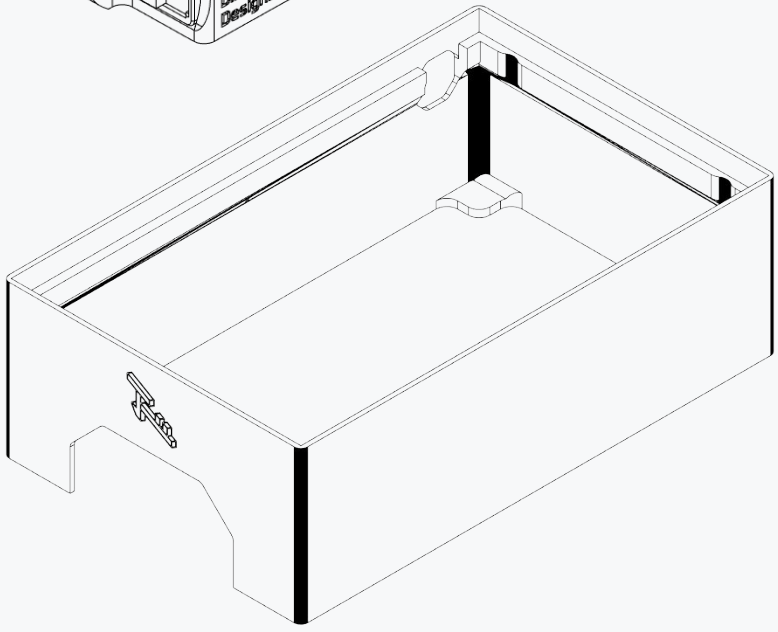
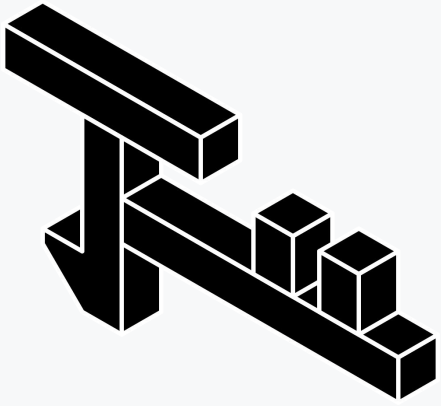
Please do not hesitate to contact us via our Discord, Email, or Shopify Inbox communication options if you have any further questions regarding usage of the machine. This manual is still WIP and may be updated to reflect future changes.

Here at DingKey Designs we are still trying to keep up with everyday life so please allow up to **2-3 business days** for a reply if we do not respond within a few hours.

Thank you for all your continued support of our product.

Stay tuned for future developments!

Discord https://discord.gg/sR28xtXAaU

dingkeyus@gmail.com

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