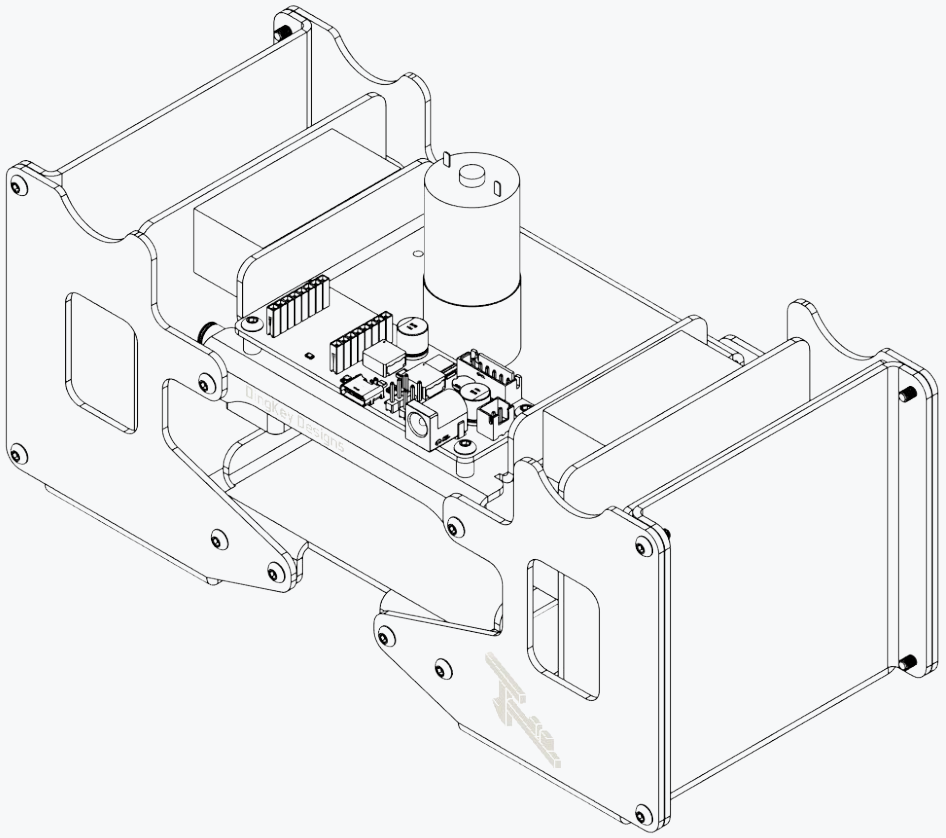
DingKey Designs



BREAK-IN MACHINE MKII PRODUCT MANUAL

Revision 02-17-2024

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!

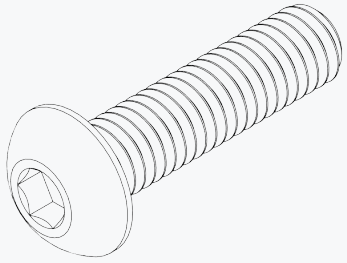
Please note this manual is a work-in-progress and may be updated to reflect product changes as they are rolled out.

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

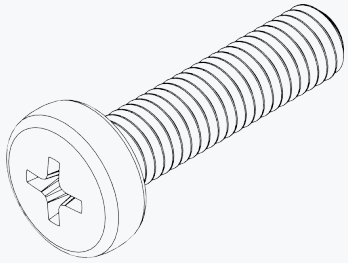
Feel free to discuss with other product owners in our Discord for other helpful tips and suggestions.

DingKey Designs Team

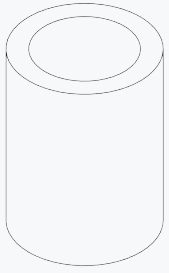
HARDWARE REFERENCE



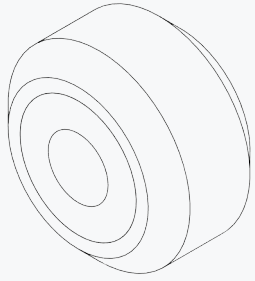
Button Head Hex Screw
Metric M3 fastener, comes in lengths of 8mm, 12mm, and 22mm



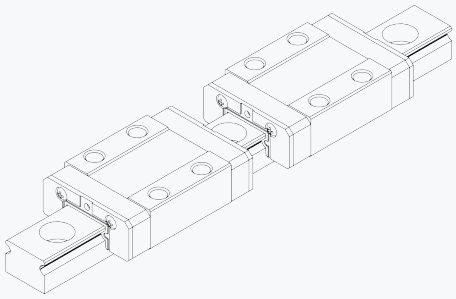
Phillips Hex Screw
Metric M5 fastener, only used for **wheel cam assembly**



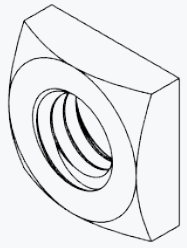
Nylon Spacer
Non-conductive nylon spacer used between **power control board** and **motor mount**



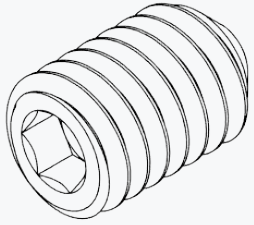
Wheel
Standard POM V-Wheel, used on **wheel cam assembly**



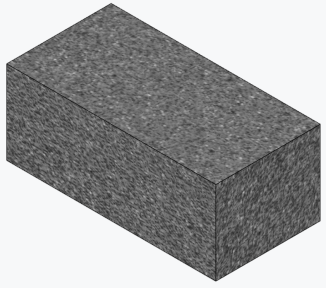
Linear Rail Assembly
Standard MGN9 Linear Rail with slider blocks, 95mm length



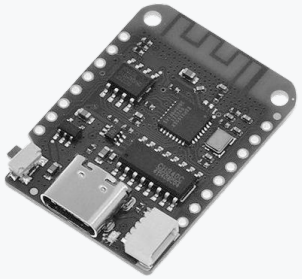
Square Nut
Metric fastener used to adjust positioning of **piston plate**



Set Screw
Metric fastener used to adjust positioning of **piston plate**



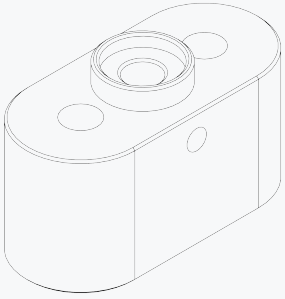
Dampening Foam
Polyurethane foam used to dampen vibrations and sound



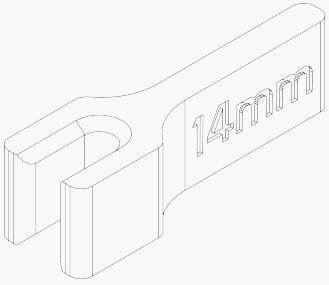
Wemos D1 MCU
ESP8266-based IOT MCU board

OLED Screen
Optional module which can be installed atop the **Wemos D1 MCU**

T-Handle Hex Key (deprecated)
2mm Hex Key used to adjust positioning of **piston plate**



Wheel Cam
CNC machined component, attaches to **motor**

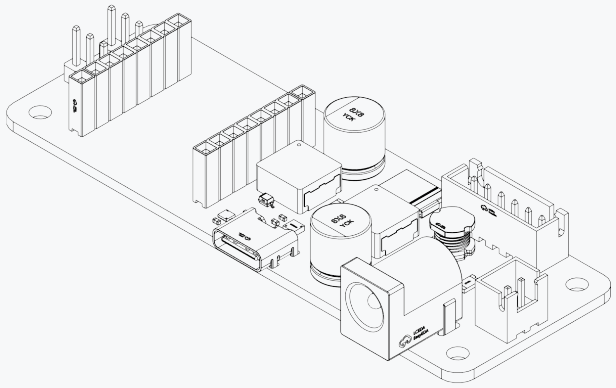


Calibration Tool
3D printed plastic calibration tool used to set standard switch actuation

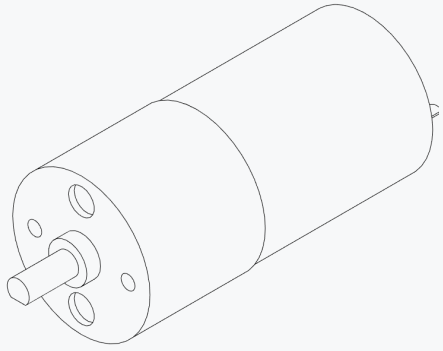
Hex Screwdriver
2mm Hex Screwdriver used to adjust positioning of **piston plate**

DC Power Adapter
12V 2A DC Power Adapter (US Plug)

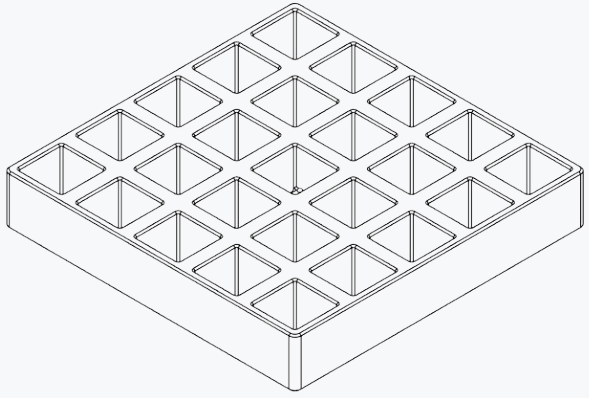
Used for DC power option for PCB



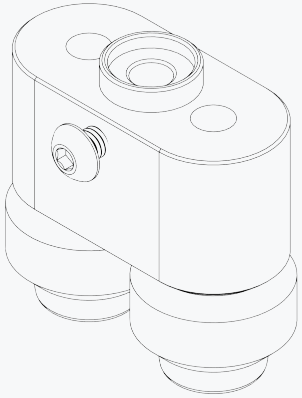
Power Control Board
Assembled PCB with components
Includes **WEMOS D1**
Optional **OLED Screen**



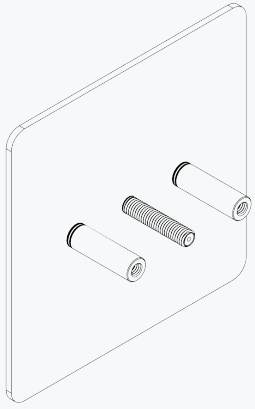
Motor
12V/170rpm DC Motor with integrated encoder module
Note new motor voltage is different from previous gens



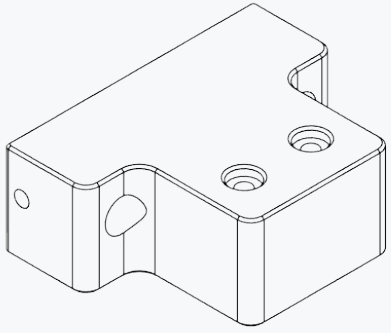
Switch Carriage
3D Printed Plastic Switch Carriage
Total Capacity: 50



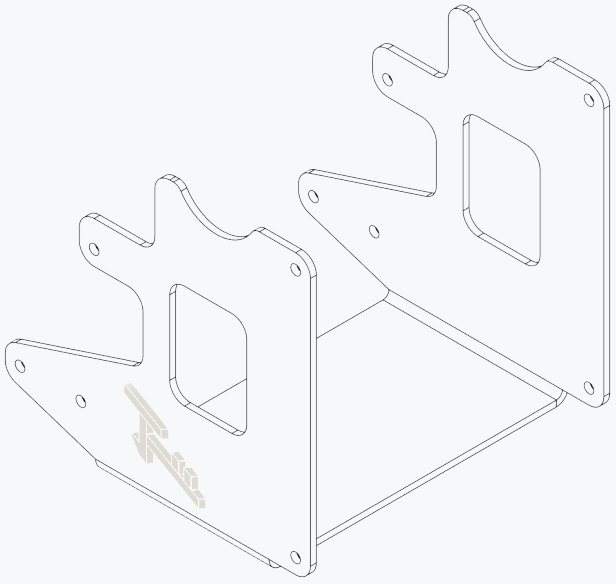
Wheel Cam Assembly
Comprised of **Wheel Cam, Wheel, Button Head Hex Screw,** and **Phillips Hex Screw**



Piston Plate
Sheet metal component, with two smooth standoffs, and one threaded standoff

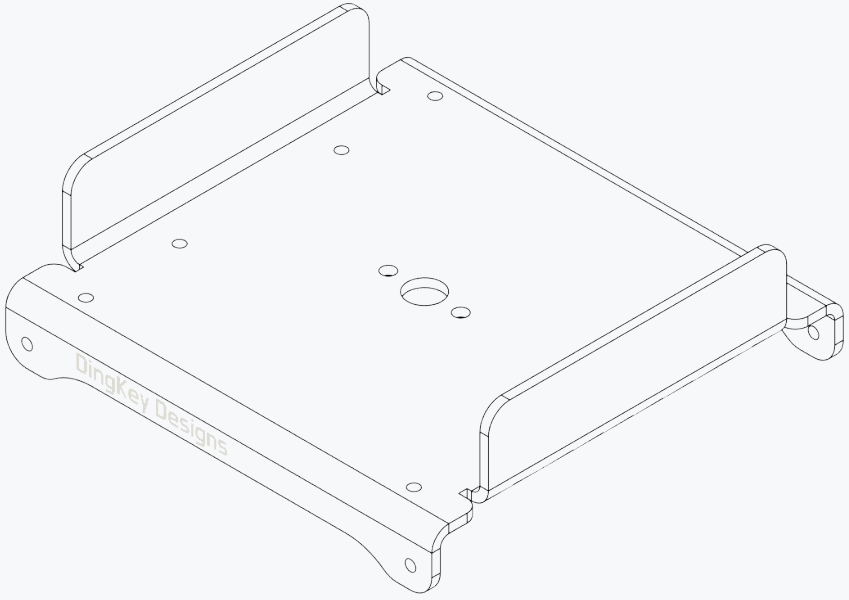


Piston Block
CNC machined component, has holes to fit standoffs of **piston plate** and allows for actuation distance adjustment



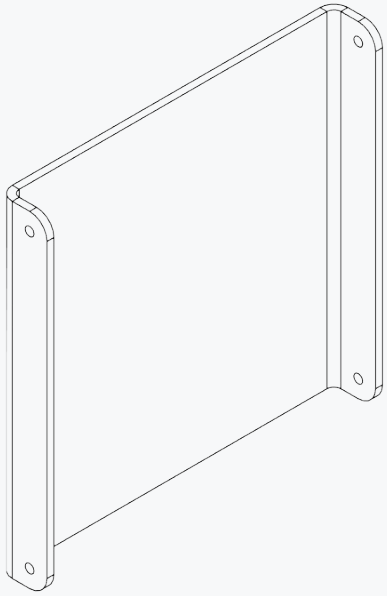
Main Body
Sheet metal component, featuring laser etched logo on one side face.

No tapped holes

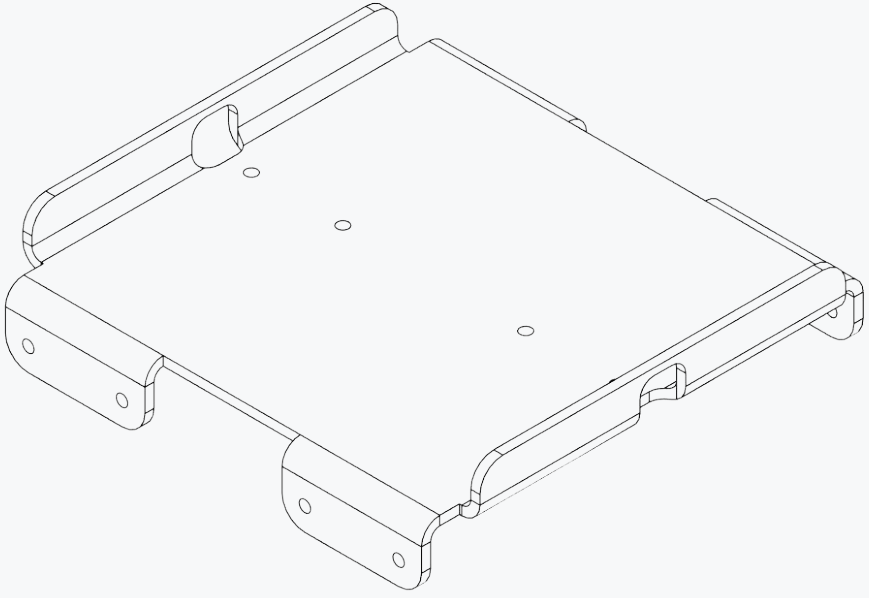


Motor Mount
Sheet metal component, features laser etched logo text on one side face

8 *tapped* holes for **power control board** mounting.



Back Plate
Sheet metal component with 4 *tapped* holes, attaches to **main body**.



Rail Mount
Sheet metal component where **linear rail assembly** attaches to, has 8 *tapped* holes.

Kit Purchase Option:
Full assembly instructions coming soon!

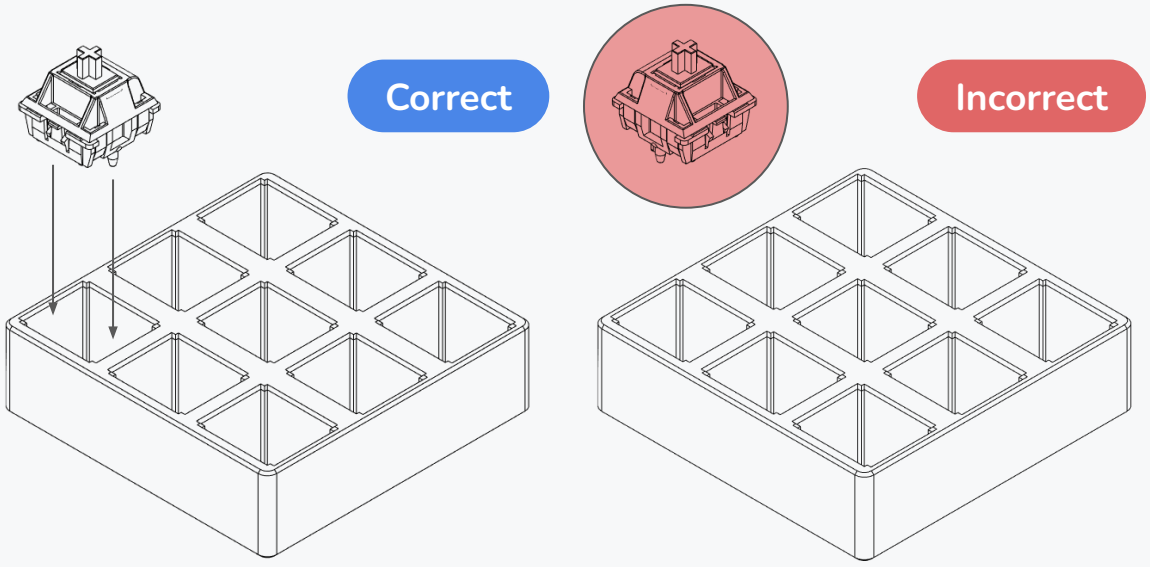
Pre-assembled Machine:
Proceed to next pages for tuning and first steps

Switch Installation

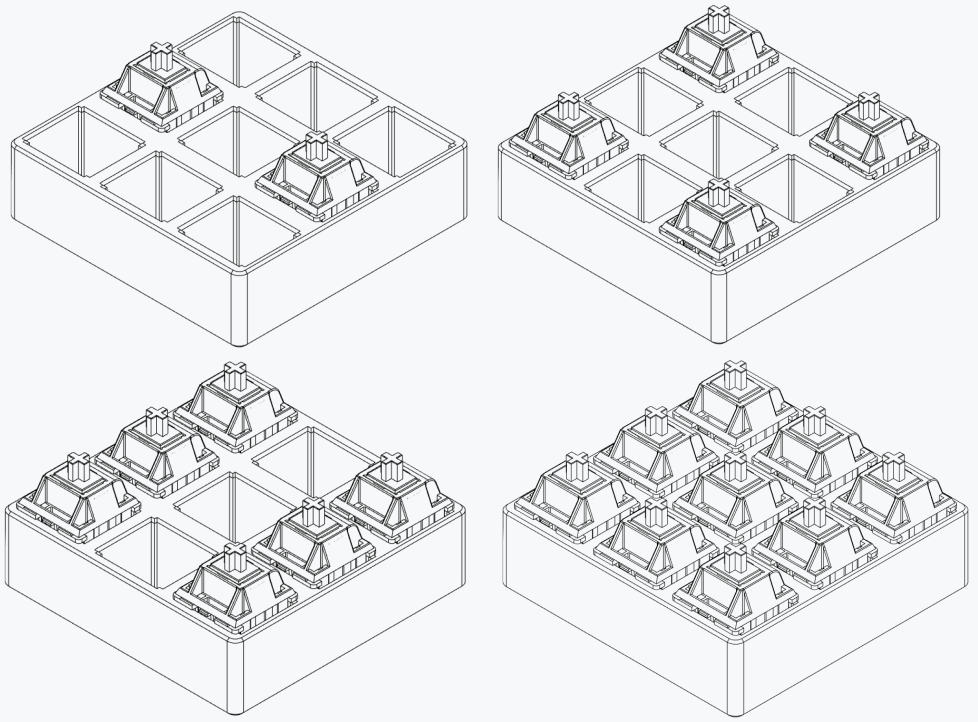
This page demonstrates example orientations and ways to load the **Switch Carriages**. Note the orientation of the switches in relation to the **rectangular** cutout. (North/South facing)

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.



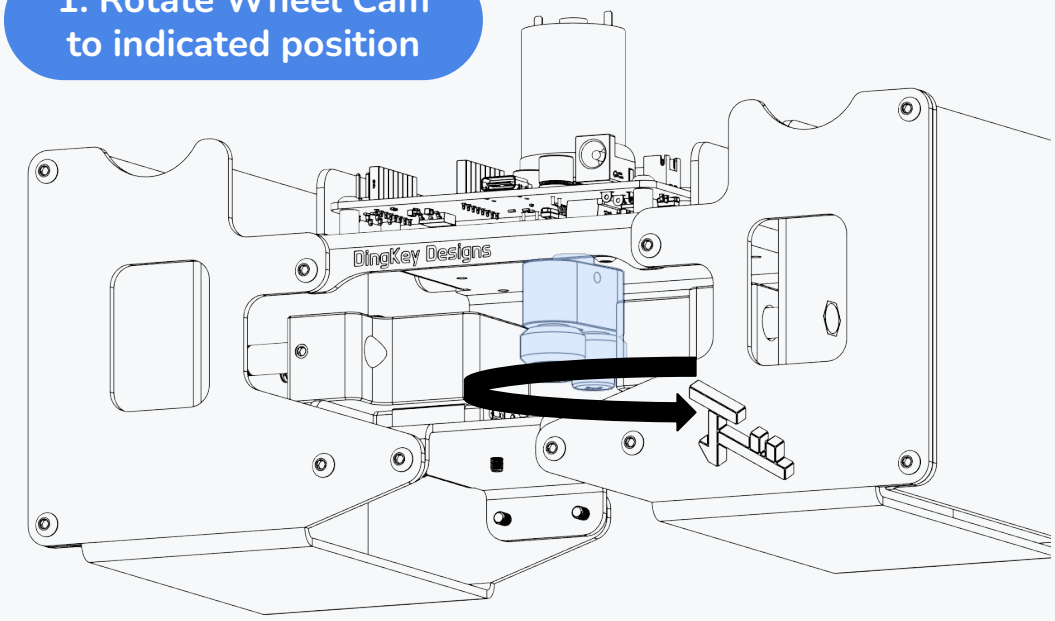
Example Configurations



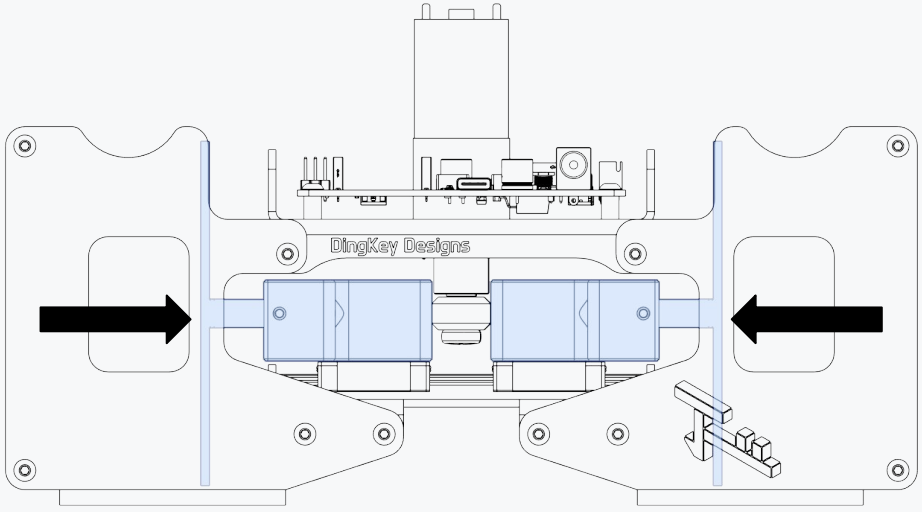
Piston Adjustment

Please refer to the previous page for carriage switch installation before performing the steps listed below.

1. Rotate Wheel Cam to indicated position

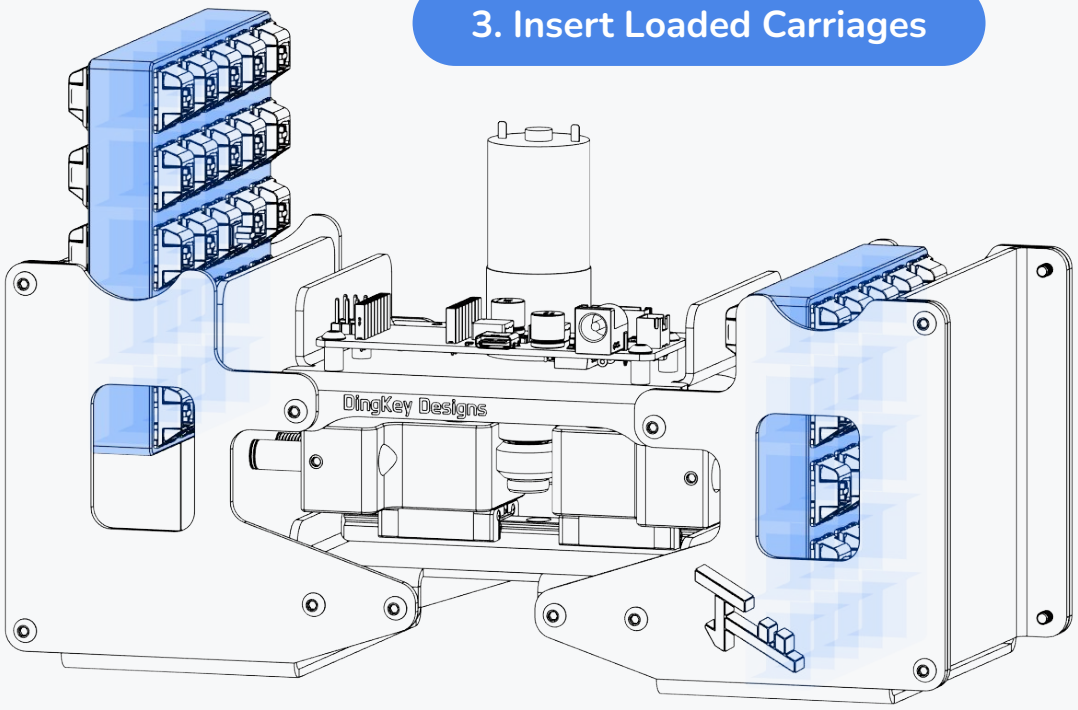


2. Push pistons until making full contact with wheel cam

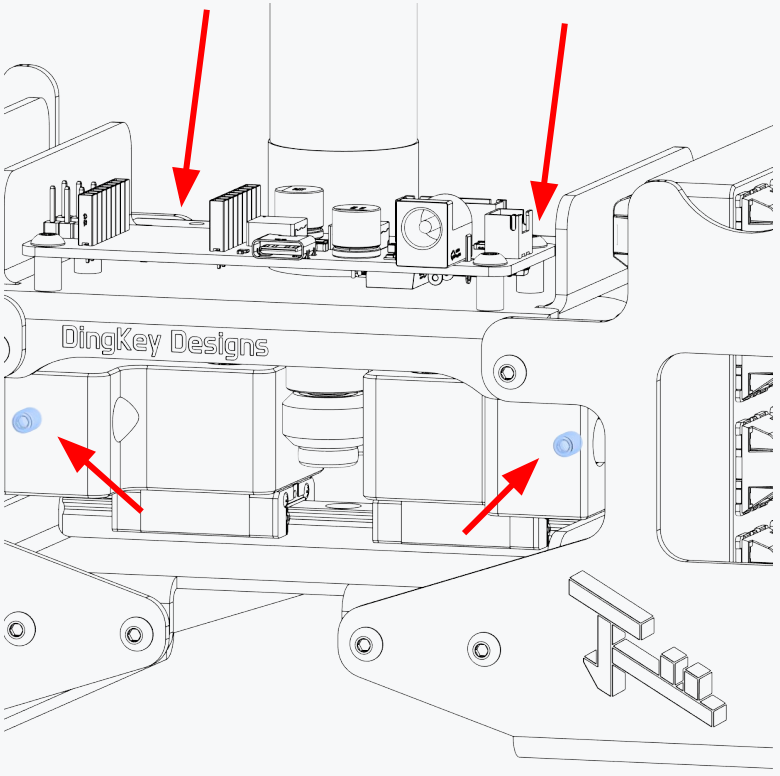


Piston Adjustment

3. Insert Loaded Carriages

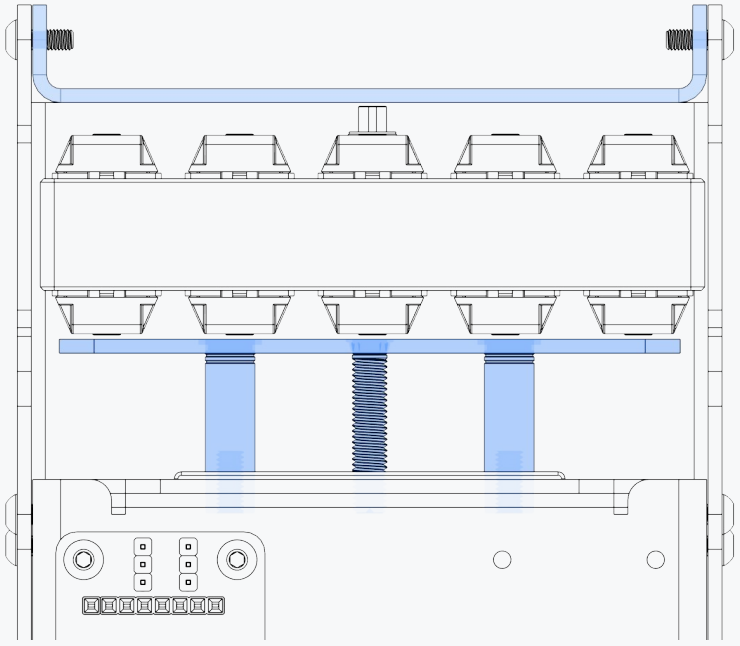


4. Locate set screws on both sides and rear of piston blocks



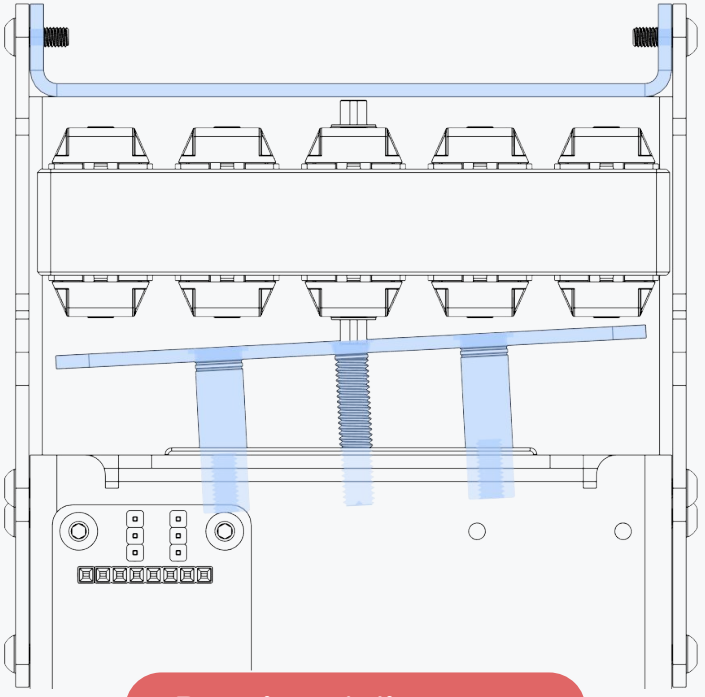
Piston Adjustment

5. Check for parallel alignment between Piston Plate and Back Plate



Correct

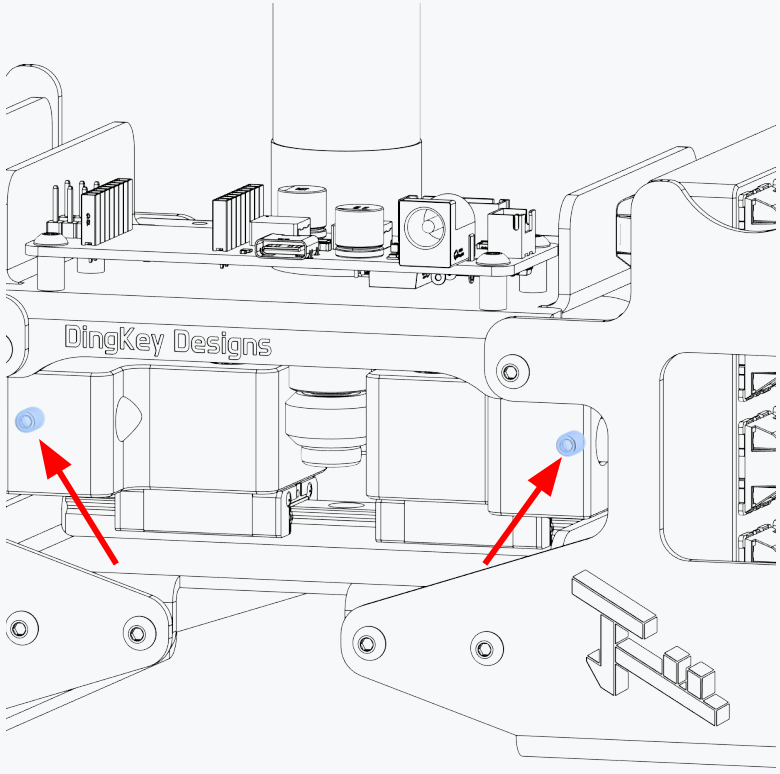
If correct, proceed to slide 16



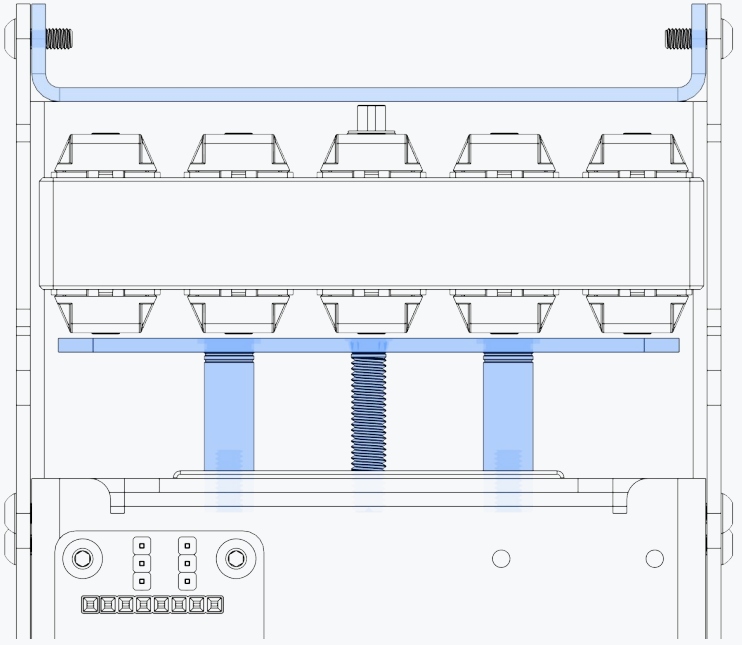
Requires Adjustment

Piston Adjustment

6. If needed, loosen set screws and tilt piston as needed

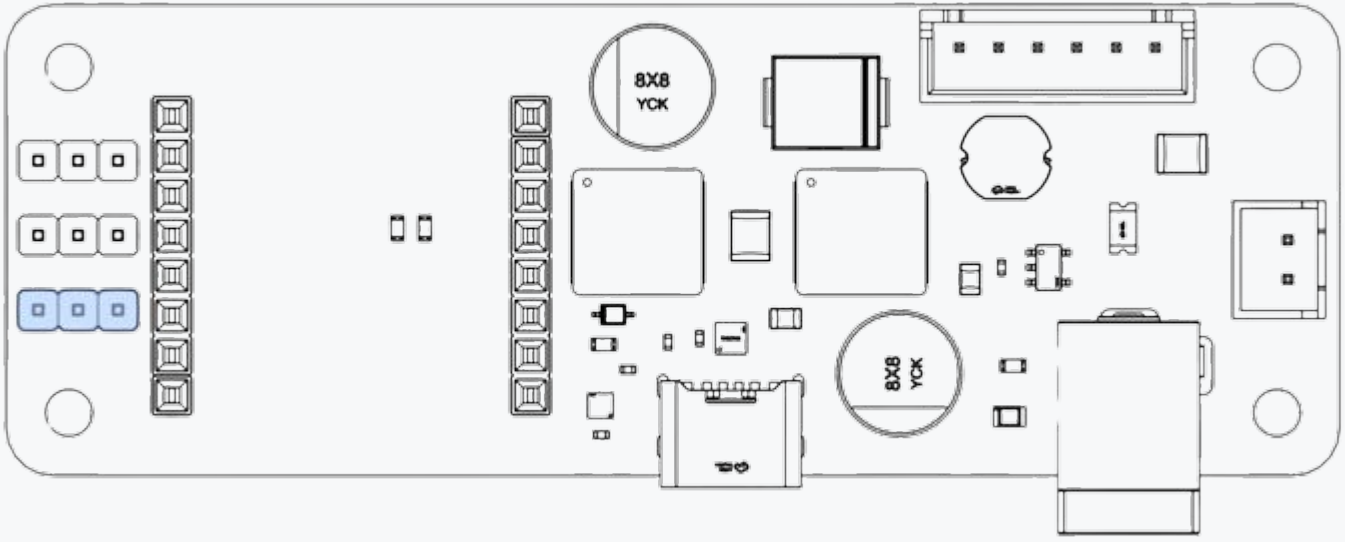


7. After adjustment, retighten screws with provided T-handle tool



Correct

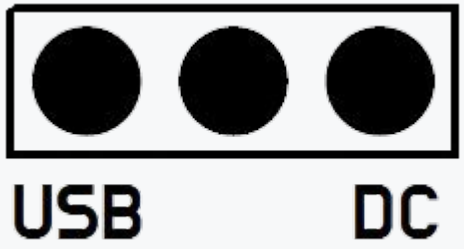
Powering Up (Power Source Selection)

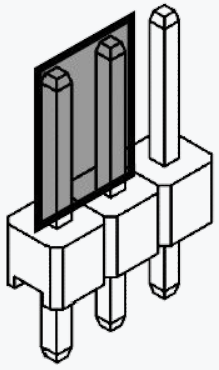


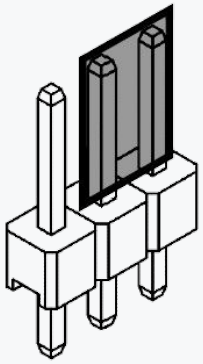
Locate the bottom most jumper on the Control Board

Set jumper position based on power source

Default jumper position is set to USB source

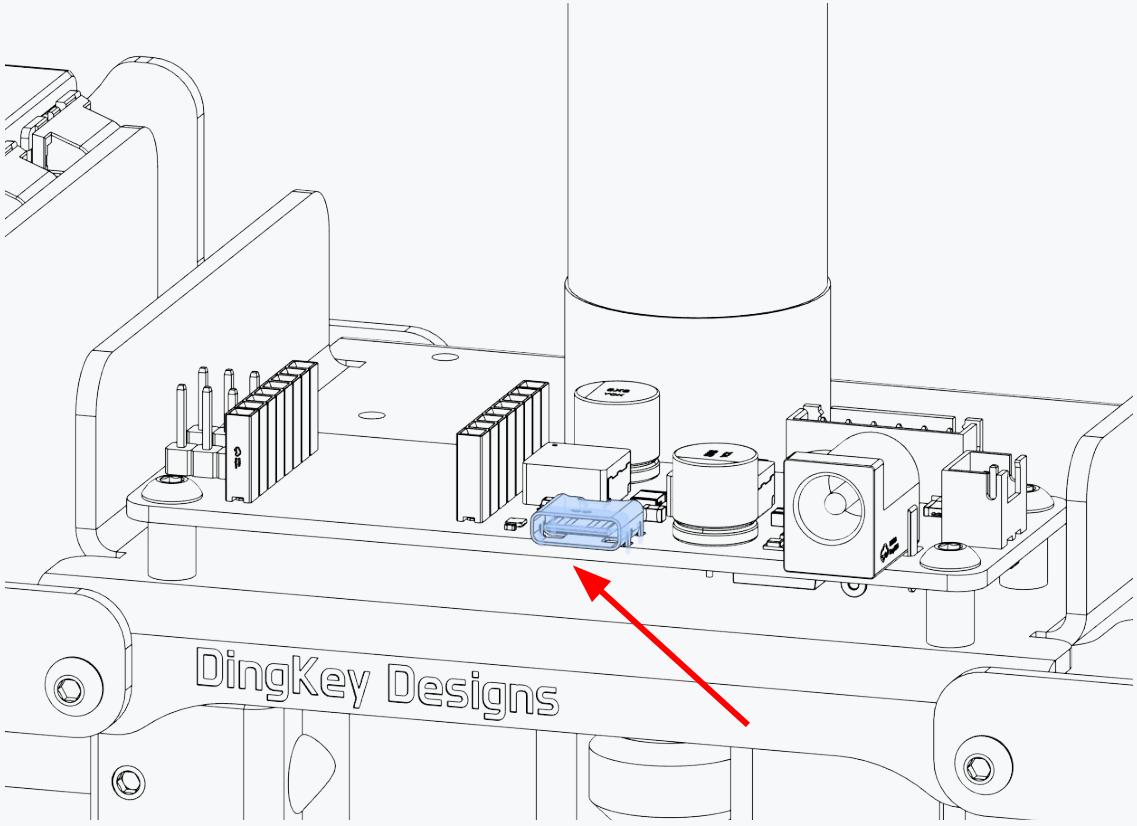






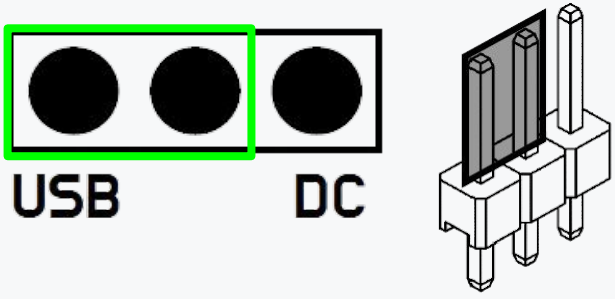
Powering Up (USB Source)

Please make sure you have completed the **Piston Adjustment** section before the following steps.



Locate the USB C port in the middle of the power control board

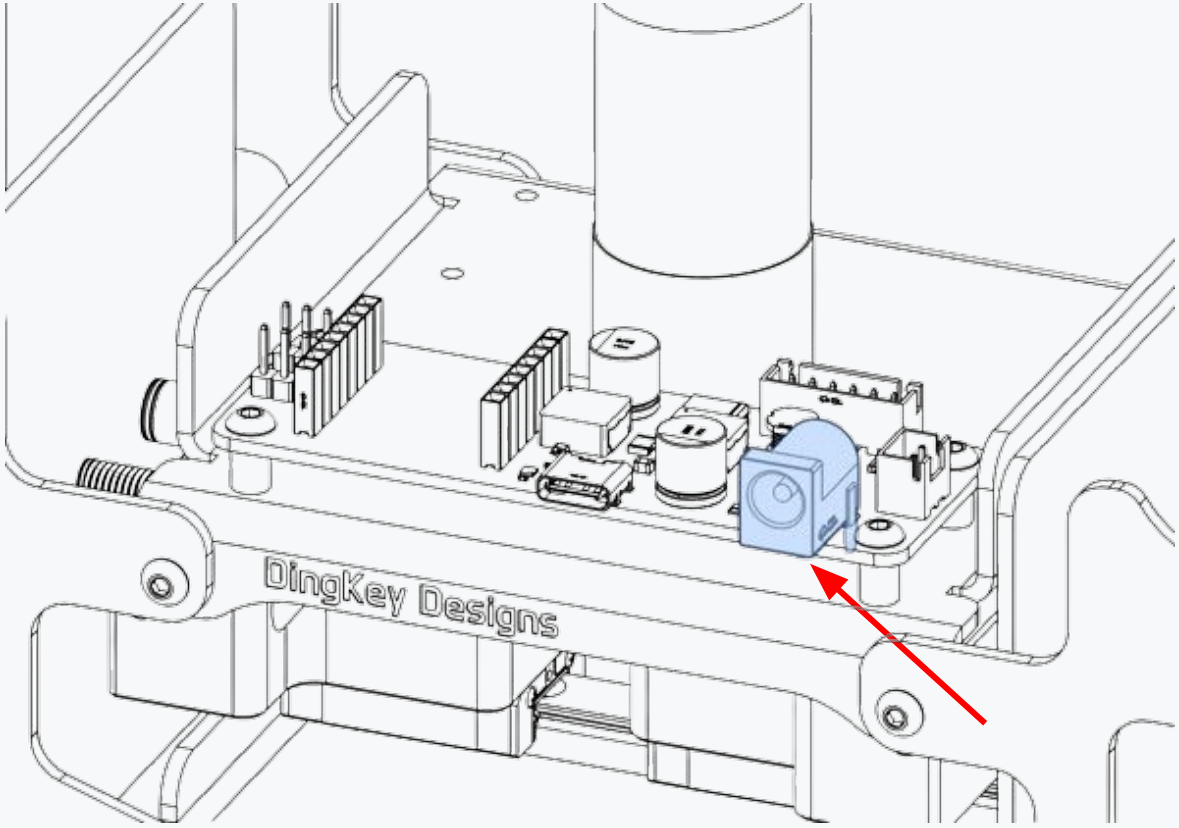
Attach 3A capable USB C cord/brick to THIS PORT ONLY



Jumper diagram

Powering Up (DC Source)

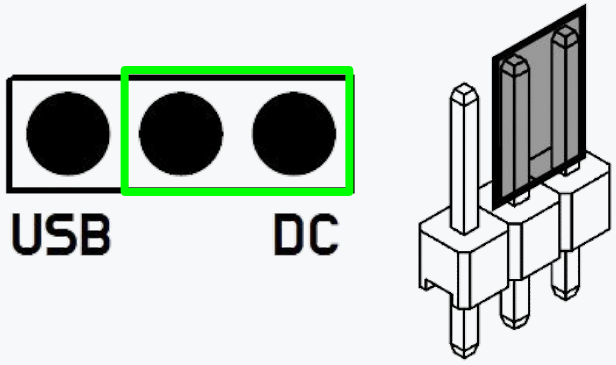
Please make sure you have completed the **Piston Adjustment** section before the following steps.



Locate the DC Barrel Jack near the right side of the board

Barrel Jack Specs:
5.5mm x 2.5mm Socket

DOUBLE CHECK POLARITY BEFORE PLUGGING IN

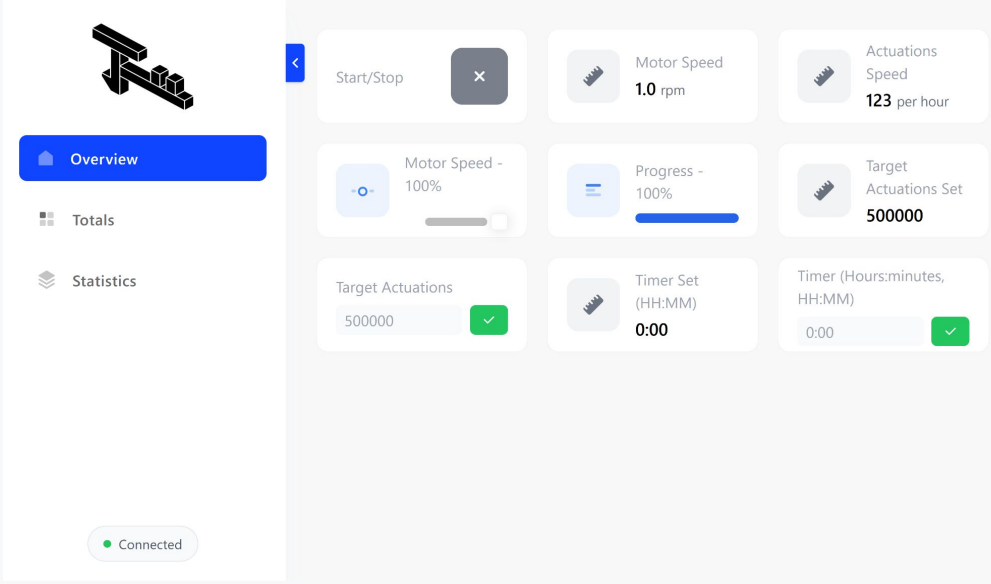


Advanced Control

Each DingKey Designs MK2 Break-in Machine is equipped with a Wemos D1 MCU which is able to create its own WiFi access point for ease of remote control and operation

Through our web interface, you are able to start/stop the machine, view machine motor RPM and actuation count, as well as set target actuation and timer function for runtime.

1. Connect to DingKeyWiFi-#### signal on device of choice
   a. The 4 digits will increment as you power up more than 1 machine - i.e 0001, 0002
   b. Password is **keyboard**
2. Type in **10.10.10.1** in your browser URL
   a. You should see a screen similar to this:
   b. Works on desktop and mobile



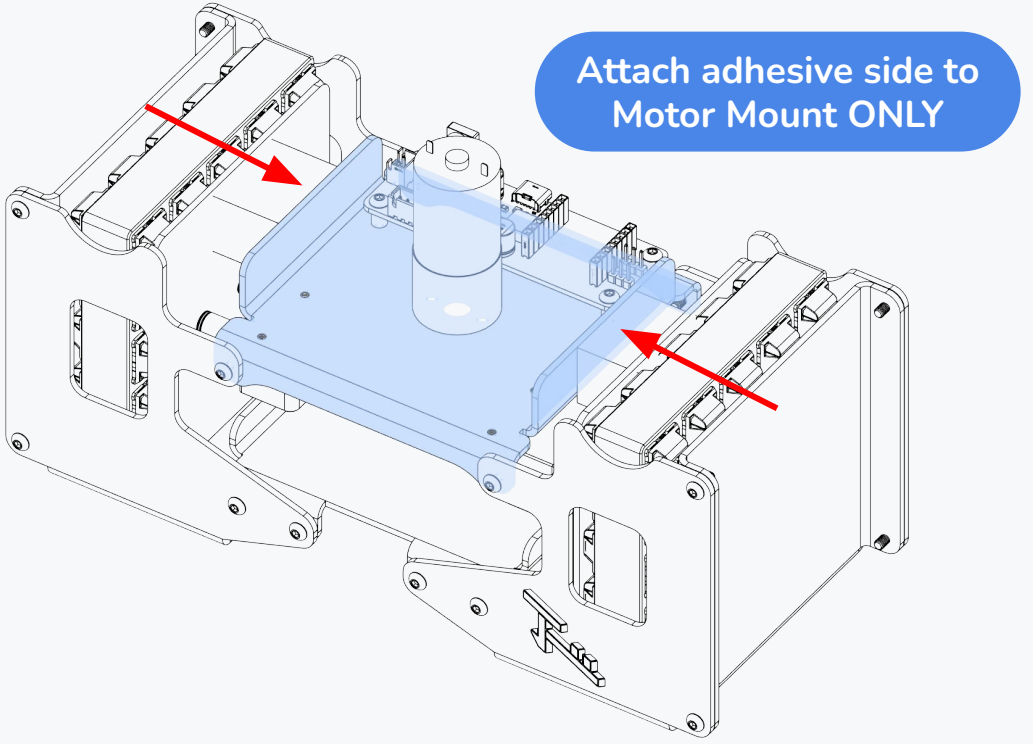
If equipped with OLED screen:
The WiFi name and IP will be displayed upon power up.
The screen will also display stats at-a-glance such as RPM and actuations.

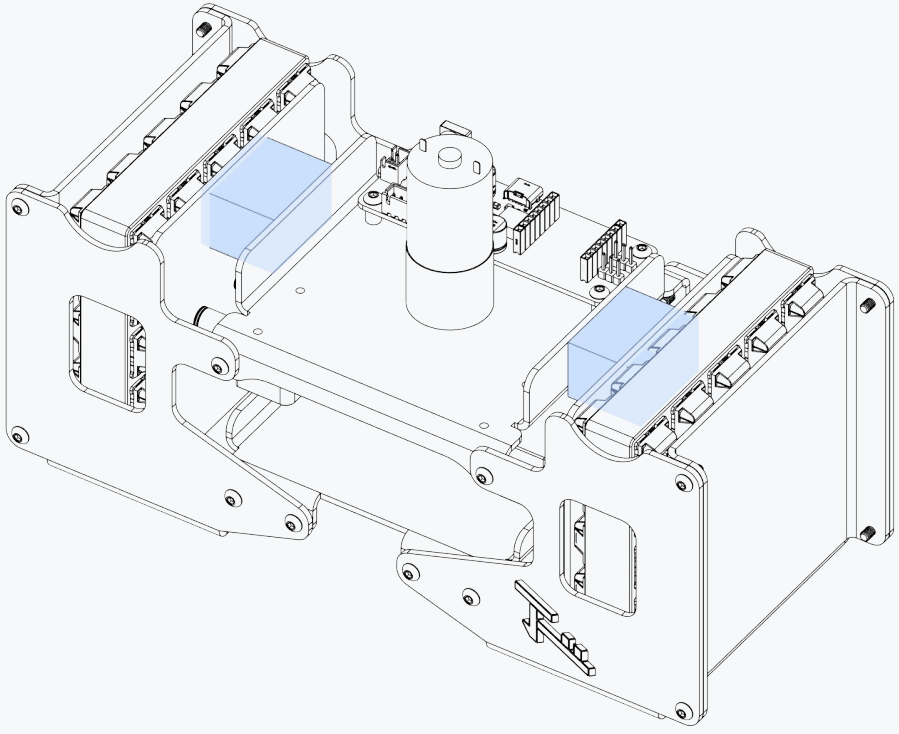
Sound Dampening

If desired, you may install the self-adhesive **PU Foam** shipped with your machine.

Please cut the **70mm** length strip located in the clear bag into 2x **30mm** strips before installing

Please refer to the images below for installation positioning.

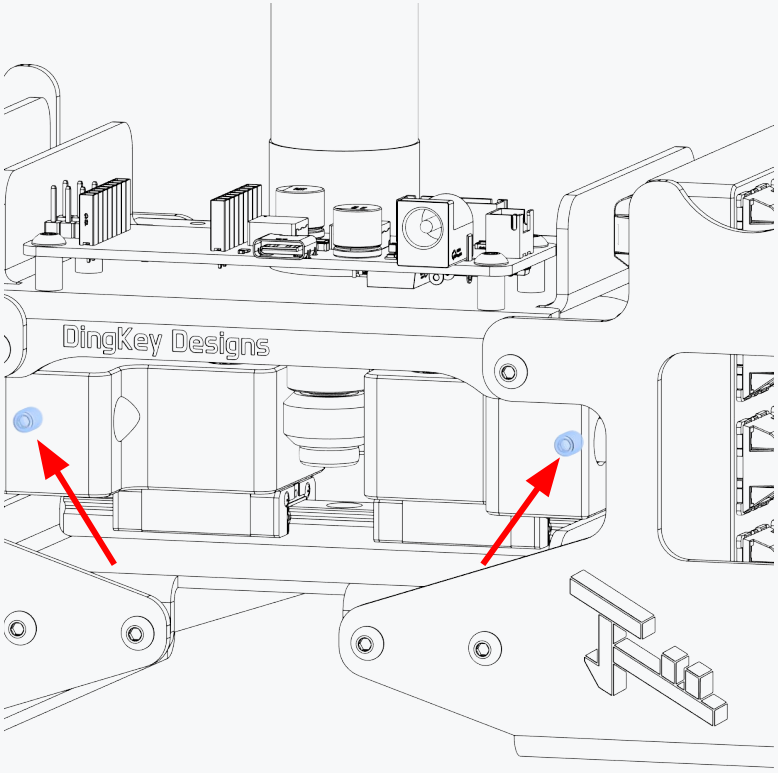




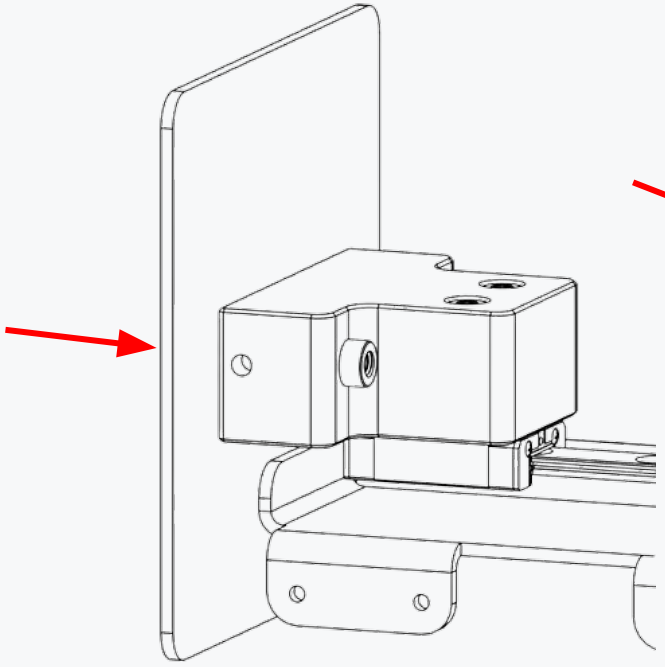
Off-Center Kit (BETA)

Currently the Off-Center Kit for the MK2 machine is in beta, please feel free to give us any feedback regarding the product

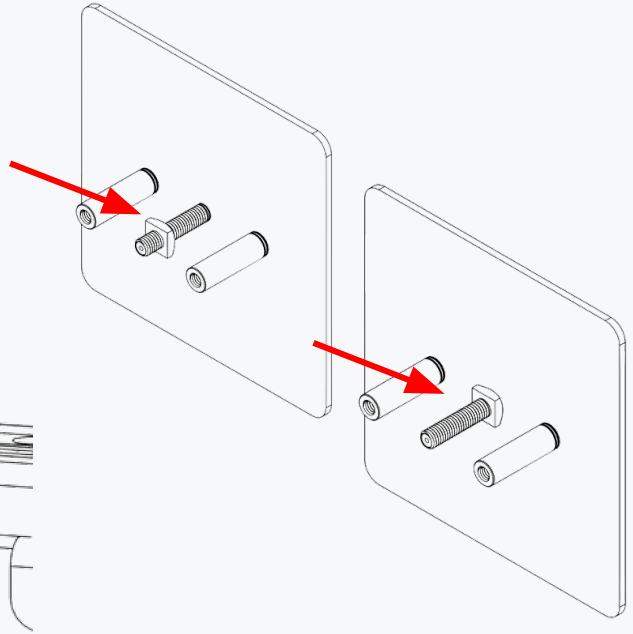
1. Loosen set screws



2. Set piston to shortest position



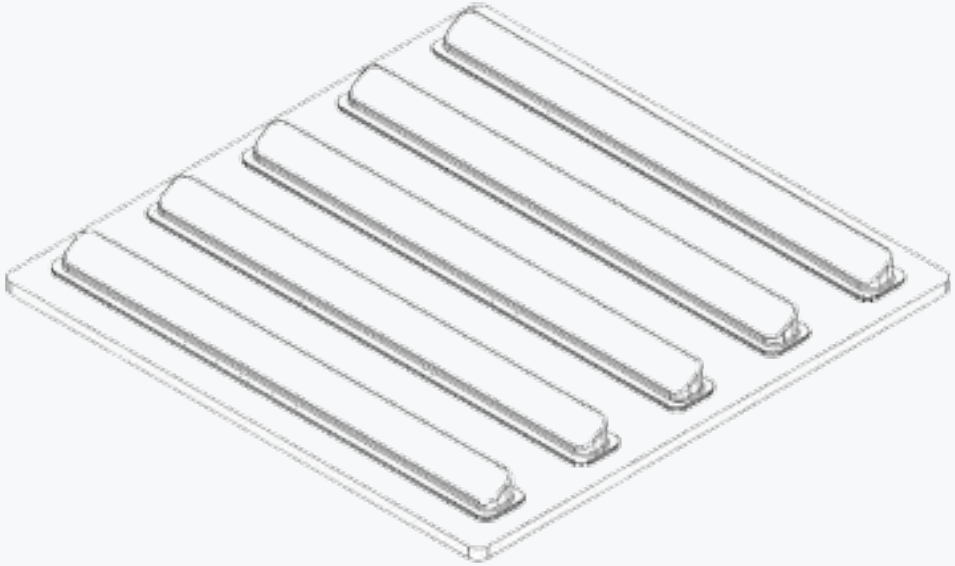
Turn square nut clockwise to shorten/tighten



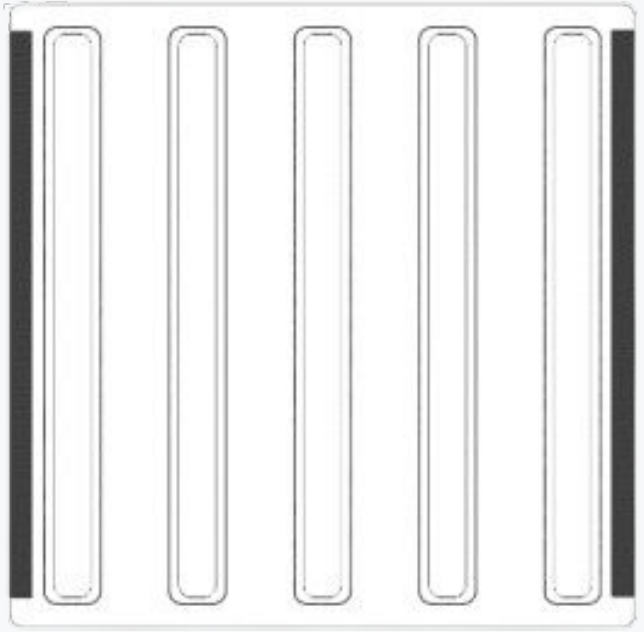
Off-Center Kit (BETA)

Currently the Off-Center Kit for the MK2 machine is in beta, please feel free to give us any feedback regarding the product

3. Insert silicone wedges into plate



4. Apply included PTFE tape to edges

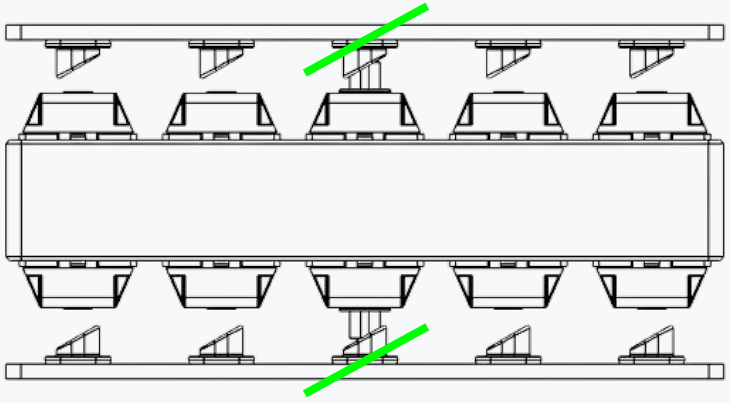


Tape is parallel with wedges

Off-Center Kit (BETA)

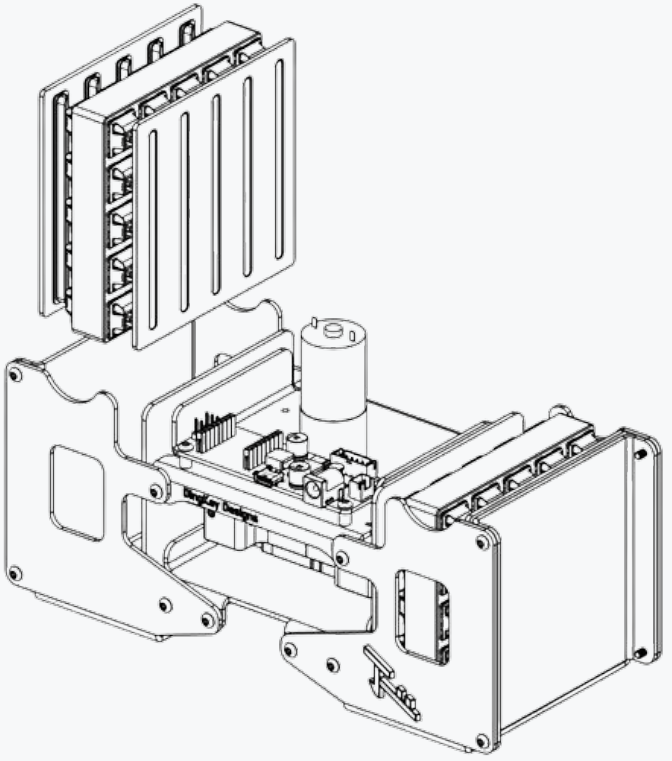
Currently the Off-Center Kit for the MK2 machine is in beta, please feel free to give us any feedback regarding the product

5. Set up OC “sandwich”



Note orientation of wedges

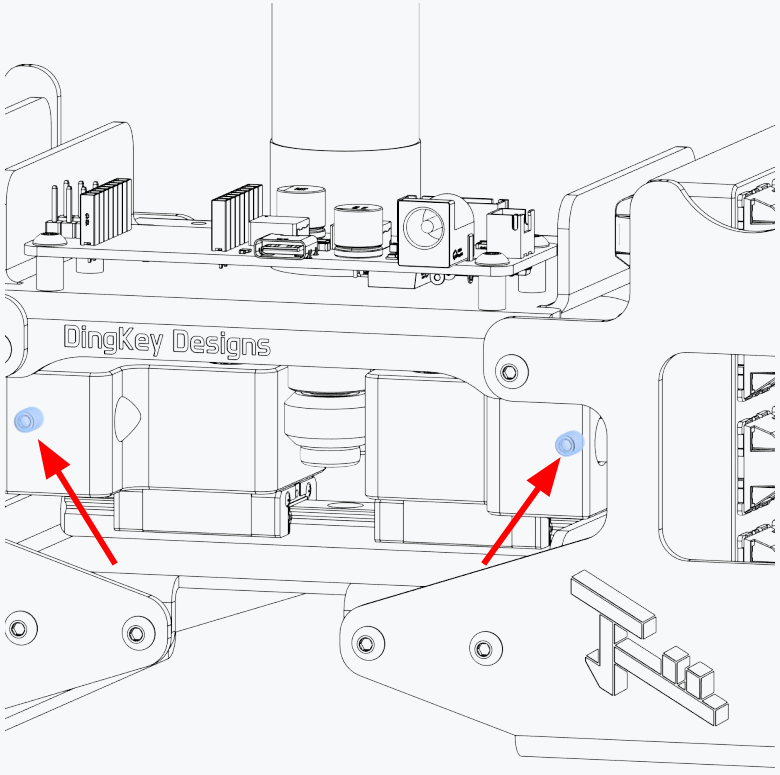
6. Install into machine



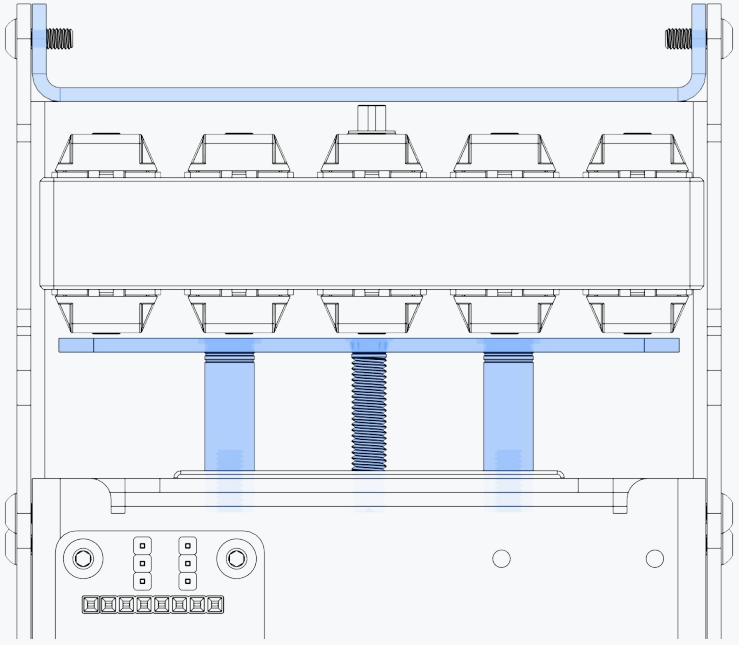
Off-Center Kit (BETA)

Currently the Off-Center Kit for the MK2 machine is in beta, please feel free to give us any feedback regarding the product

7. Adjust set screws once more



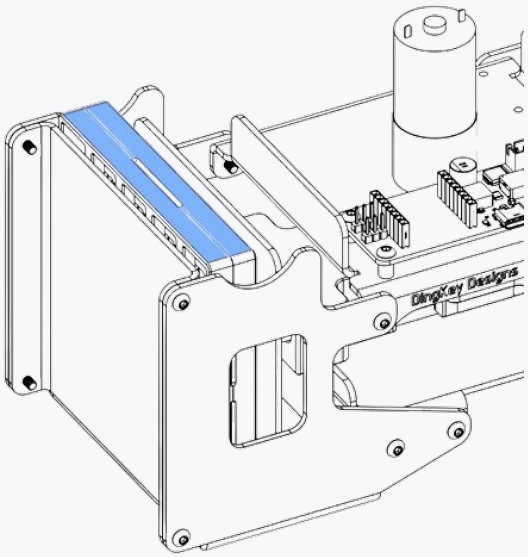
8. Check for parallel alignment between Piston Plate and Back Plate



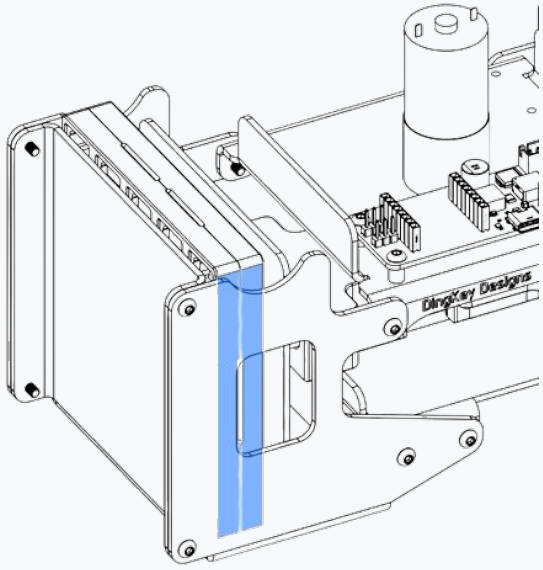
Off-Center Kit (BETA)

Carriage positioning system

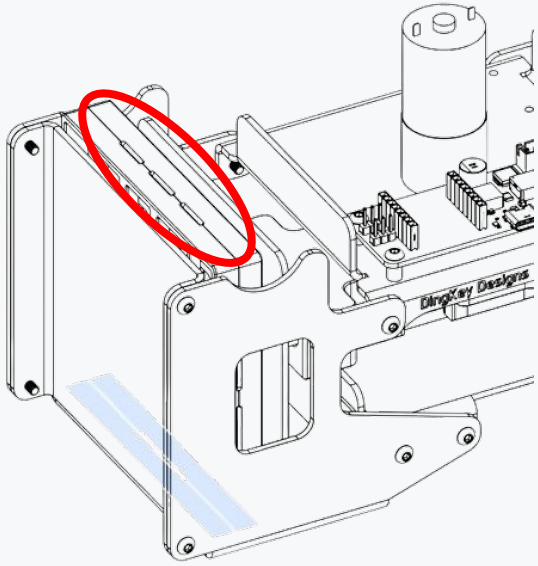
Position 1



Position 2

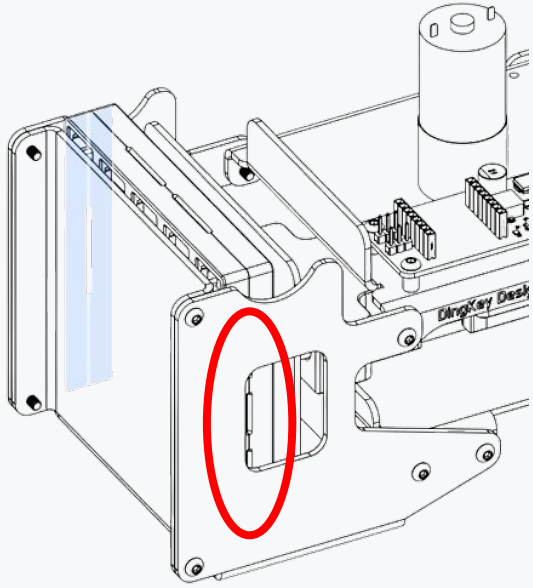


Position 3



3 notches are visible on top

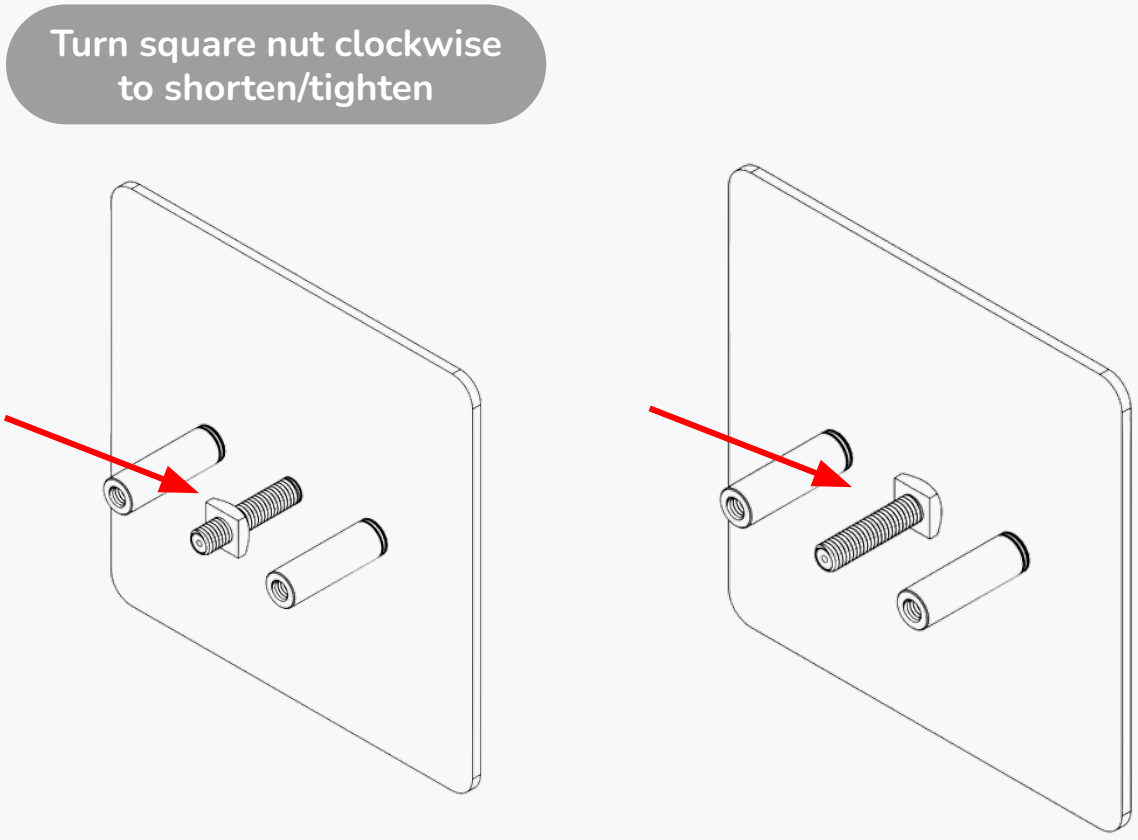
Position 4



3 notches are visible to logo face

Long-pole switch operation (WIP)

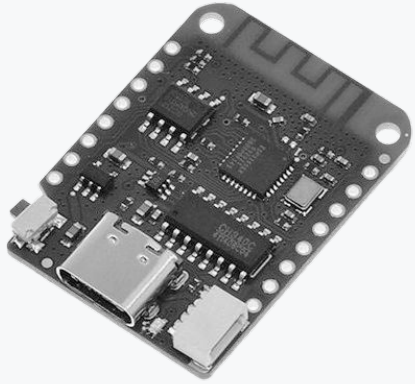
Gradually adjust the square nut tighter/looser until no additional resistance or overactuation is felt by the switch stems.



If you have long-pole switches please contact us via Discord ticket for tuning instructions.

If power delivery issues are encountered please also contact us via Discord ticket.

Full write-up is WIP

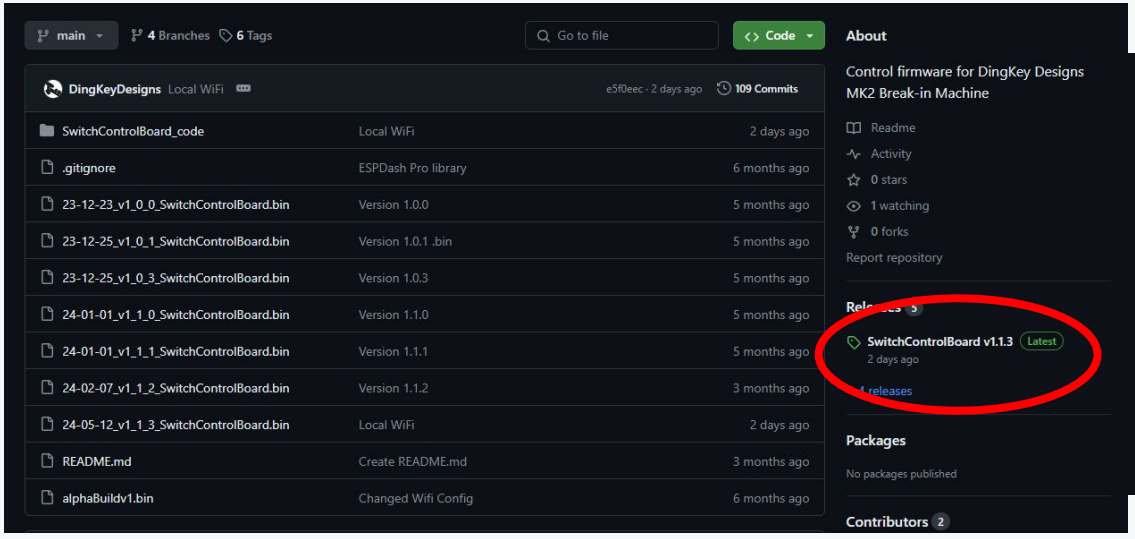


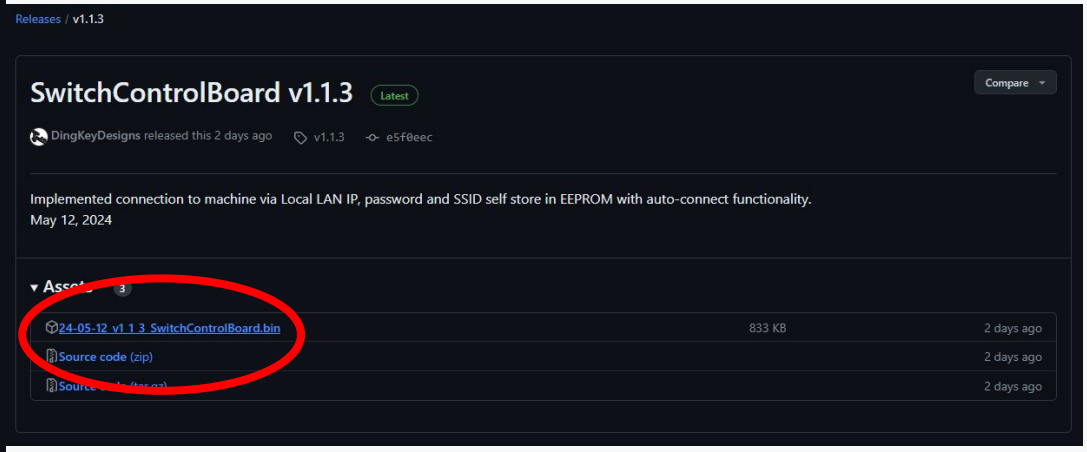
Firmware Updates

In the event of firmware updates, new builds can be found here on our GitHub:
https://github.com/DingKeyDesigns/SwitchControlBoard

Steps to Flashing:

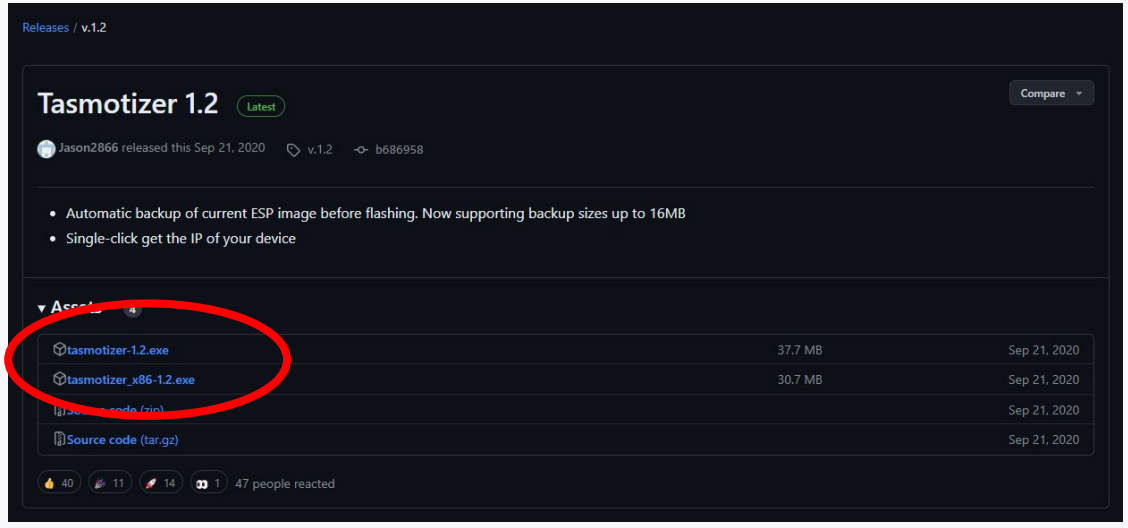
1. Make sure you have a USB C cable with data transfer capabilities
2. Head to our GitHub and download the latest release of the machine firmware.





Steps to Flashing:

3. Download Tasmotizer flashing software for ESP8266 (Windows)
https://github.com/tasmota/tasmotizer
(For Mac or Windows, you can use **esptool**, although this is CLI based)



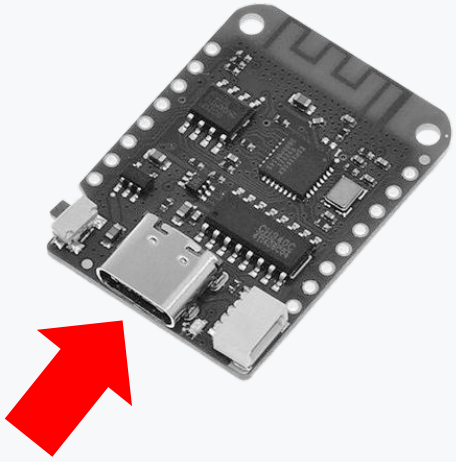
4. You may also need to download the CH340 driver in order for the Wemos module to be recognized by your device
https://www.wemos.cc/en/latest/ch340_driver.html

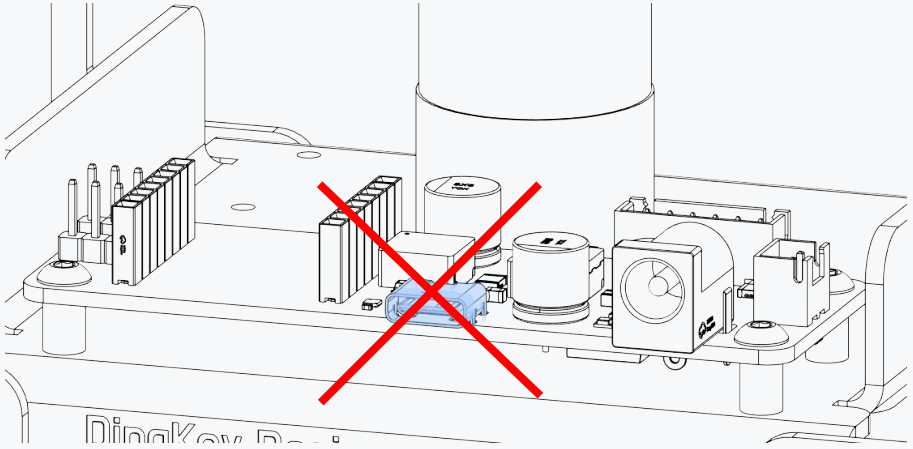
Steps to Flashing:

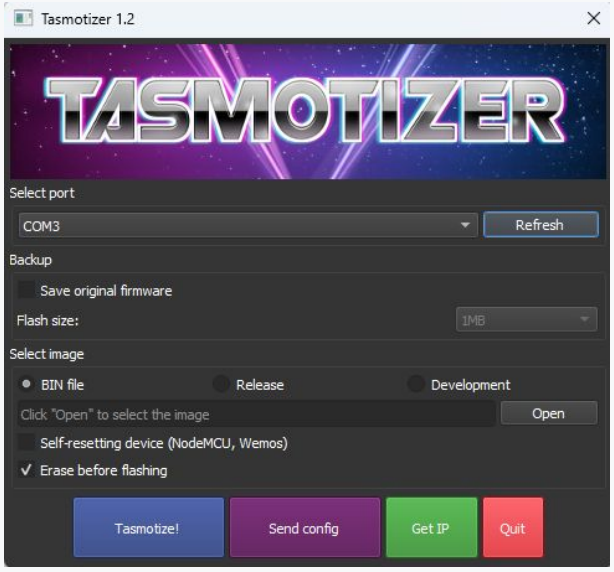
5. Open the Tasmotizer software

The software should automatically recognize the Wemos upon connecting the device if you have the CH340 drivers installed.

Make sure you are plugged into the USB C port on the MCU itself rather than the power delivery board.







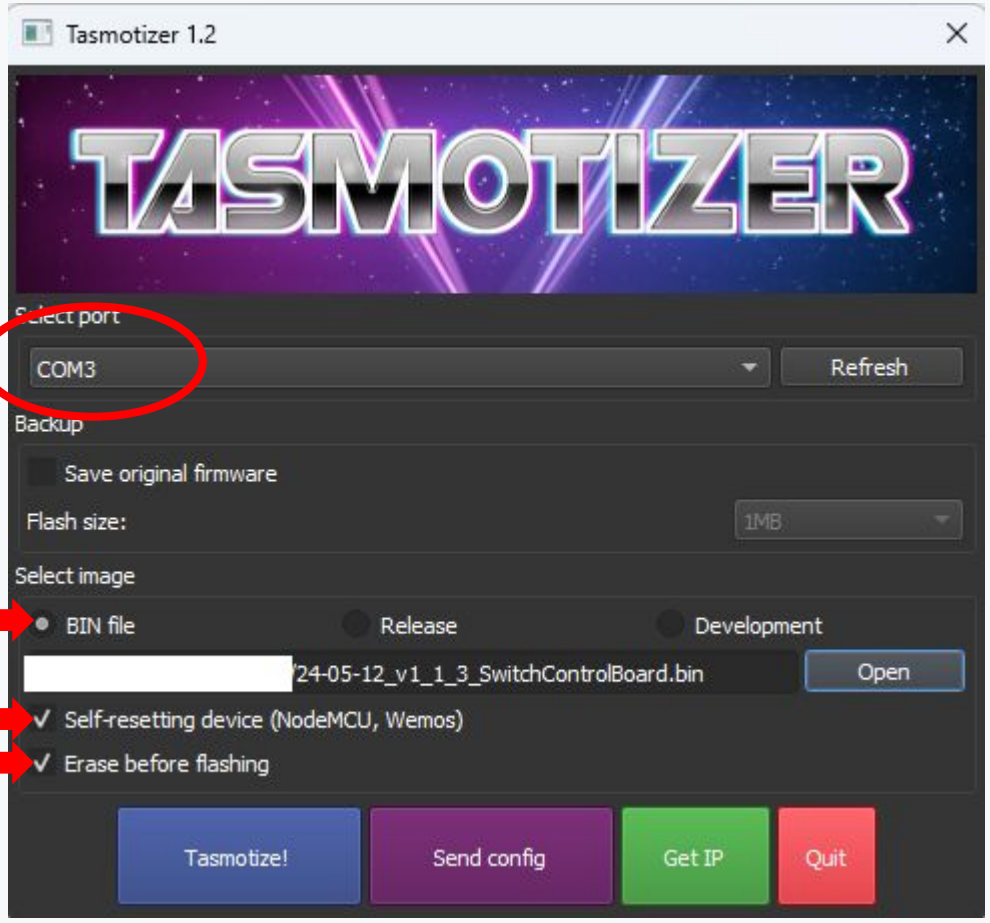
Steps to Flashing:

6. Select the BIN file option and click open to select the proper firmware file you downloaded earlier

See red arrows for settings to have checked before flashing.

The COM port may have a different number than shown here.

7. Once you have verified these settings, hit the **Tasmotize** button.

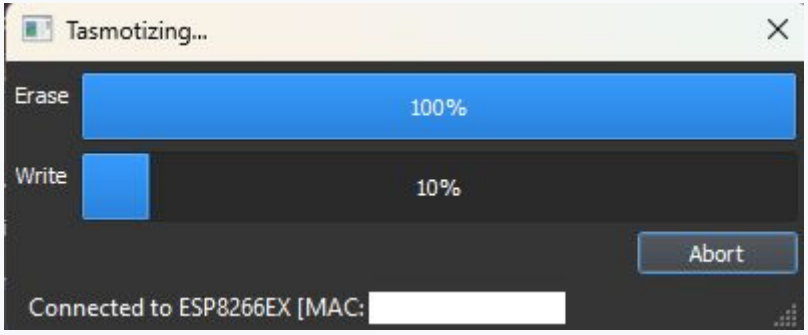


Steps to Flashing:

8. Wait for flashing process to finish

9. Once finished, you may have to replug the USB cable to prompt MCU restart.

This concludes the firmware updating process!



Contact

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

DingKey Designs