



San Ramon, CA

2772J



Mech . Keyboard

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Why a Mechanical Keyboard?



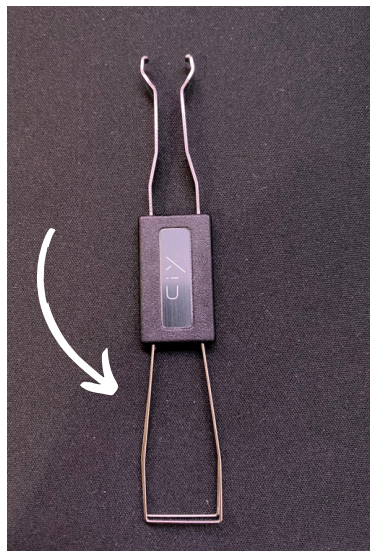
We chose to go with a mechanical keyboard because we believe it is always overlooked. We work on a keyboard as much as we do on a computer but never stop to think about the construction of the board. We were curious about how we can trigger text and commands by the press and combinations of different buttons. Hence, we took apart a mechanical keyboard to try and see what's inside and how it works.

Parts/Tools Used



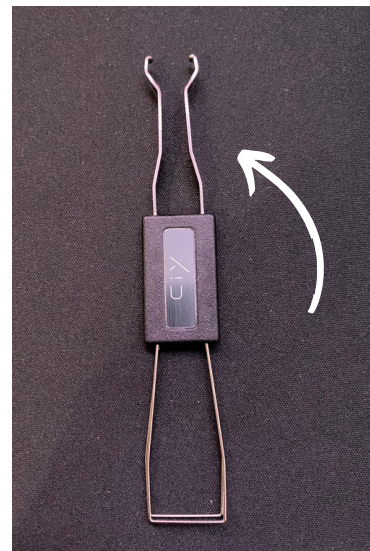
1

KEYCAP PULLER



2

SWITCH PULLER



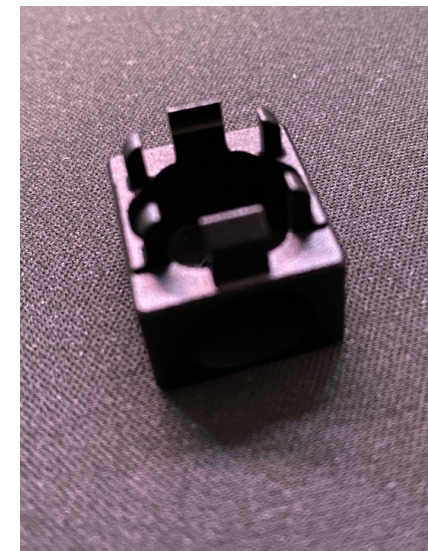
3

PHILLIPS HEAD
SCREWDRIVER



4

SWITCH OPENER



5

FOAM/SCISSORS



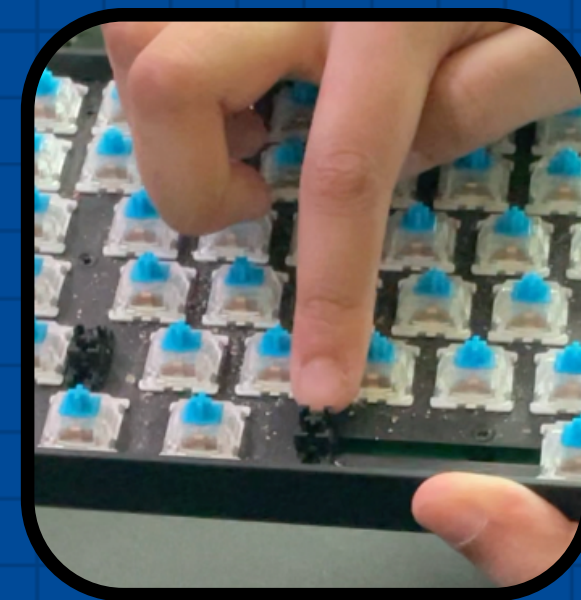
STEPS



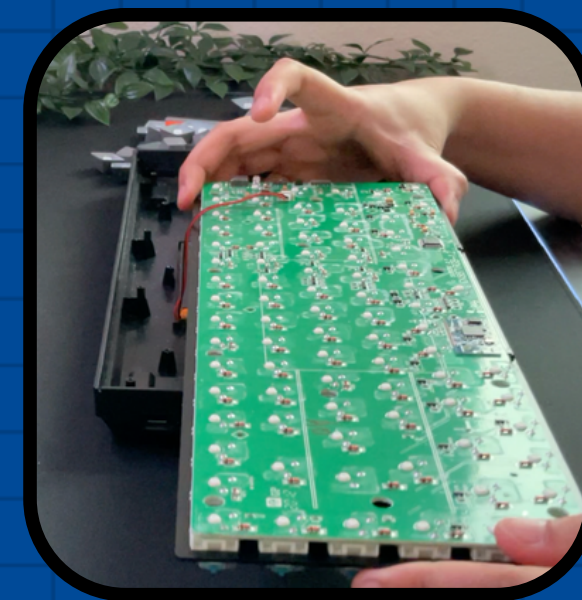
Keycaps



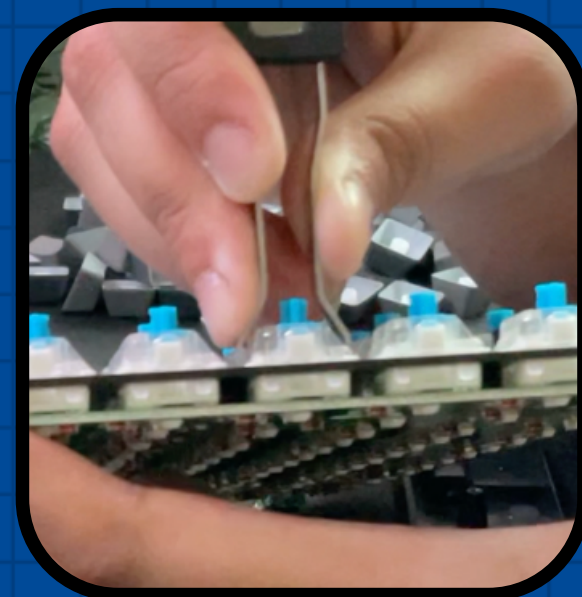
Plastic?



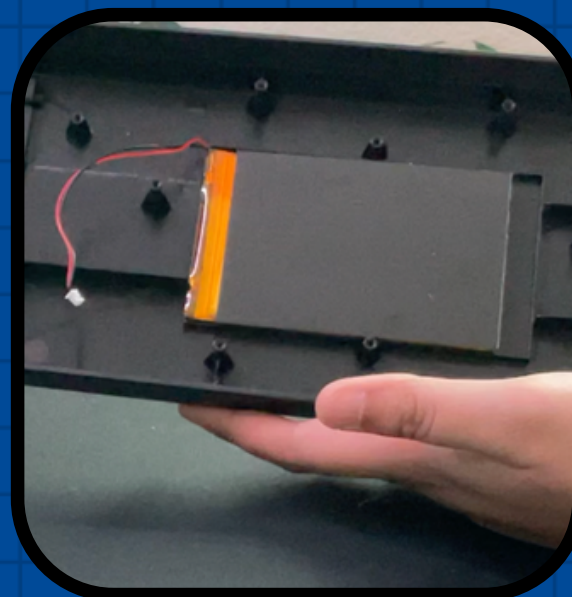
Inspection



PCB



Switches



Battery



Testing



Re-assembly

1

What We found; ABS OEM Keycaps



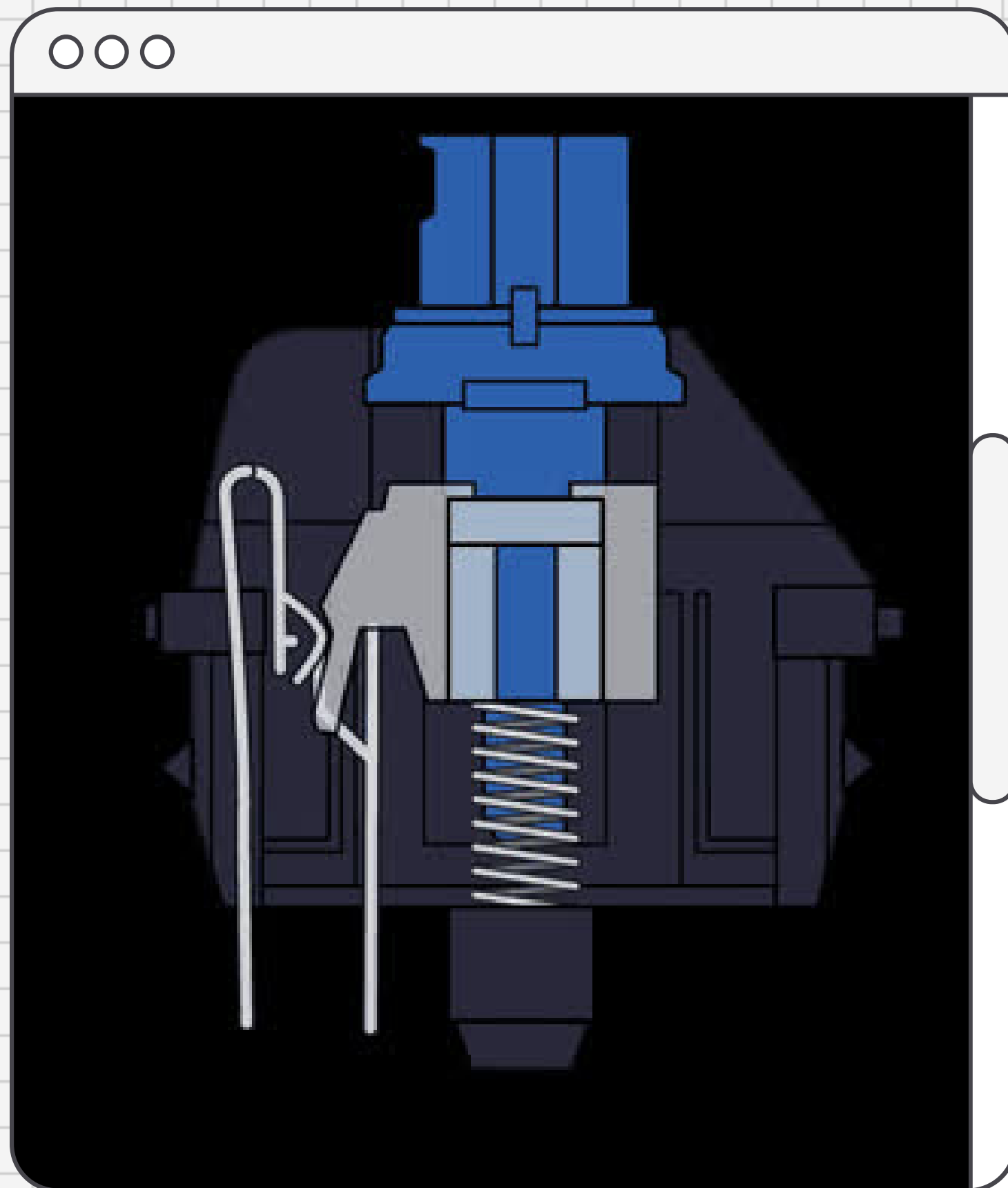
These were the first part we took apart using a keycap puller. As you can see, there's a curved pattern in the keycaps. That is called OEM profile. It is meant to be ergonomic. Upon further inspection, we noticed it was light plastic which was ABS plastic since keycaps usually only come in PBT and ABS. The ABS plastic creates a hollow and louder sound

These are mysterious parts. After some research, we learned that these are called switches. On the switch, itself was the brand ‘Gateron’. These switches are Gateron Blue “Clicky” Switches. We further took apart a switch and looked inside and watched the mechanism. Specifics are on the next page!

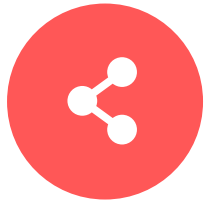


2

Gateron Blue “Clicky” Switches



Inside a Switch



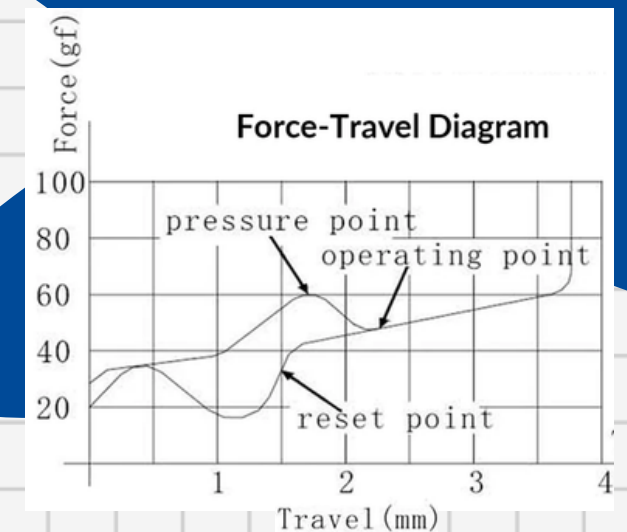
+ Tactile bump; where the clip moves down

+ When the blue stem hits the grey piece; “click”!

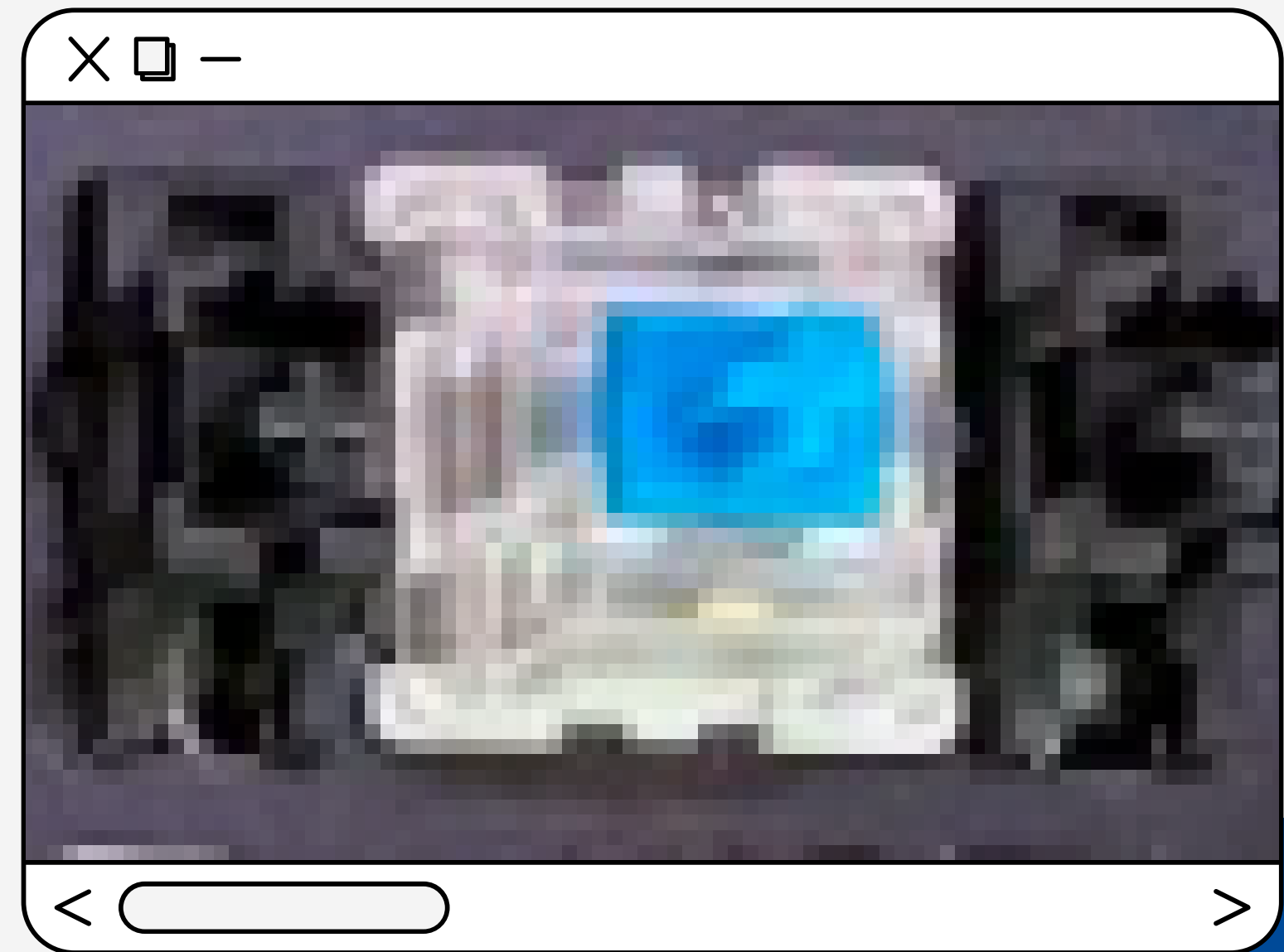
+ “Clicky”; gives a mechanical keyboard sound

+ Spring; affects actuation force

+ Actuation force: 60 g
Travel distance: 2 mm



Another mysterious part unlocked!
We noticed these black holder-type attachments near larger keys. After some shaking, testing, dismantling, and research we came to the conclusion that these are stabilizers. Since larger keys can move around a lot, they require stabilizers to eradicate rattle for a smoother typing experience!

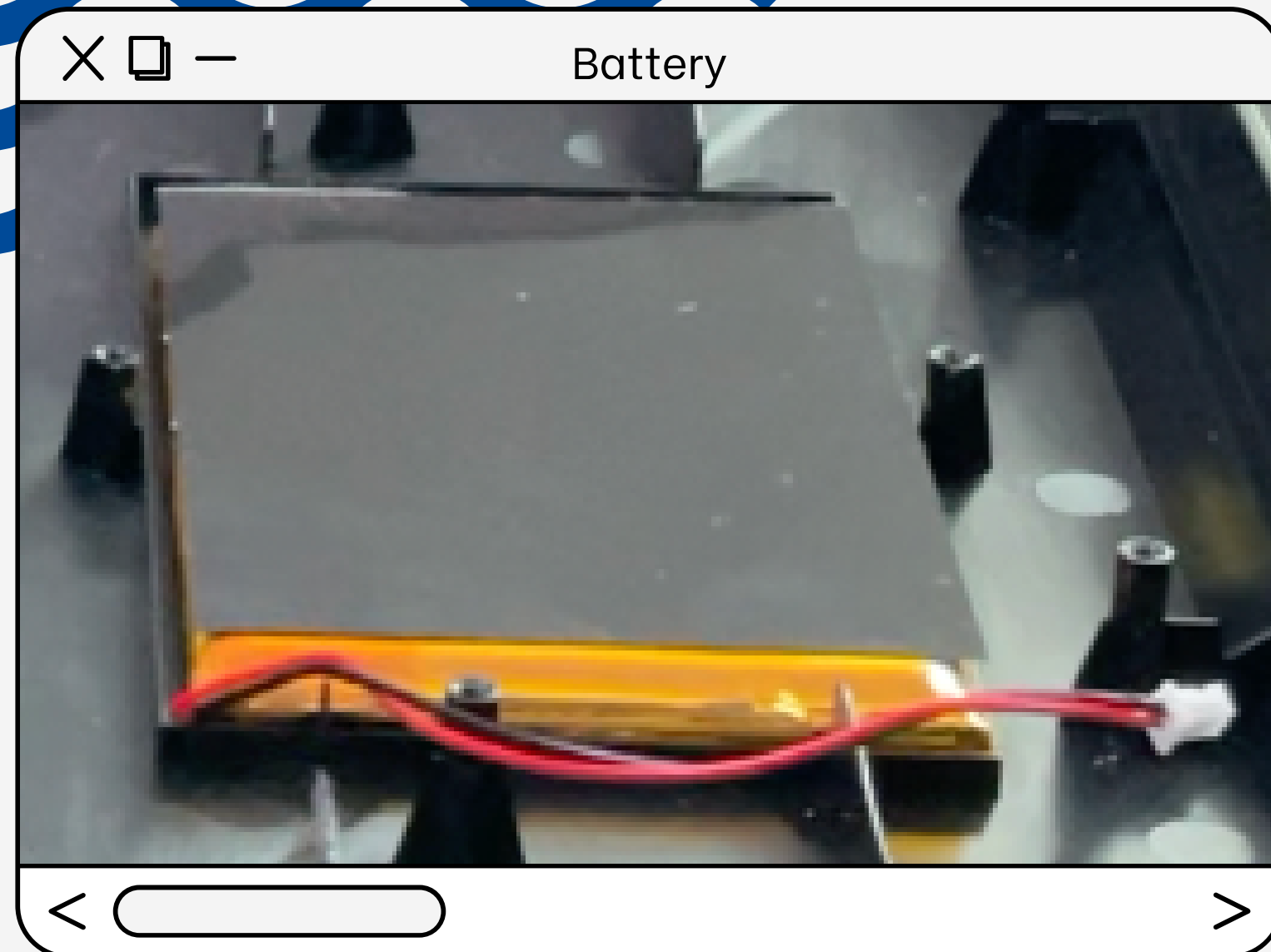


3

Stablizers; AKA “Stabs”

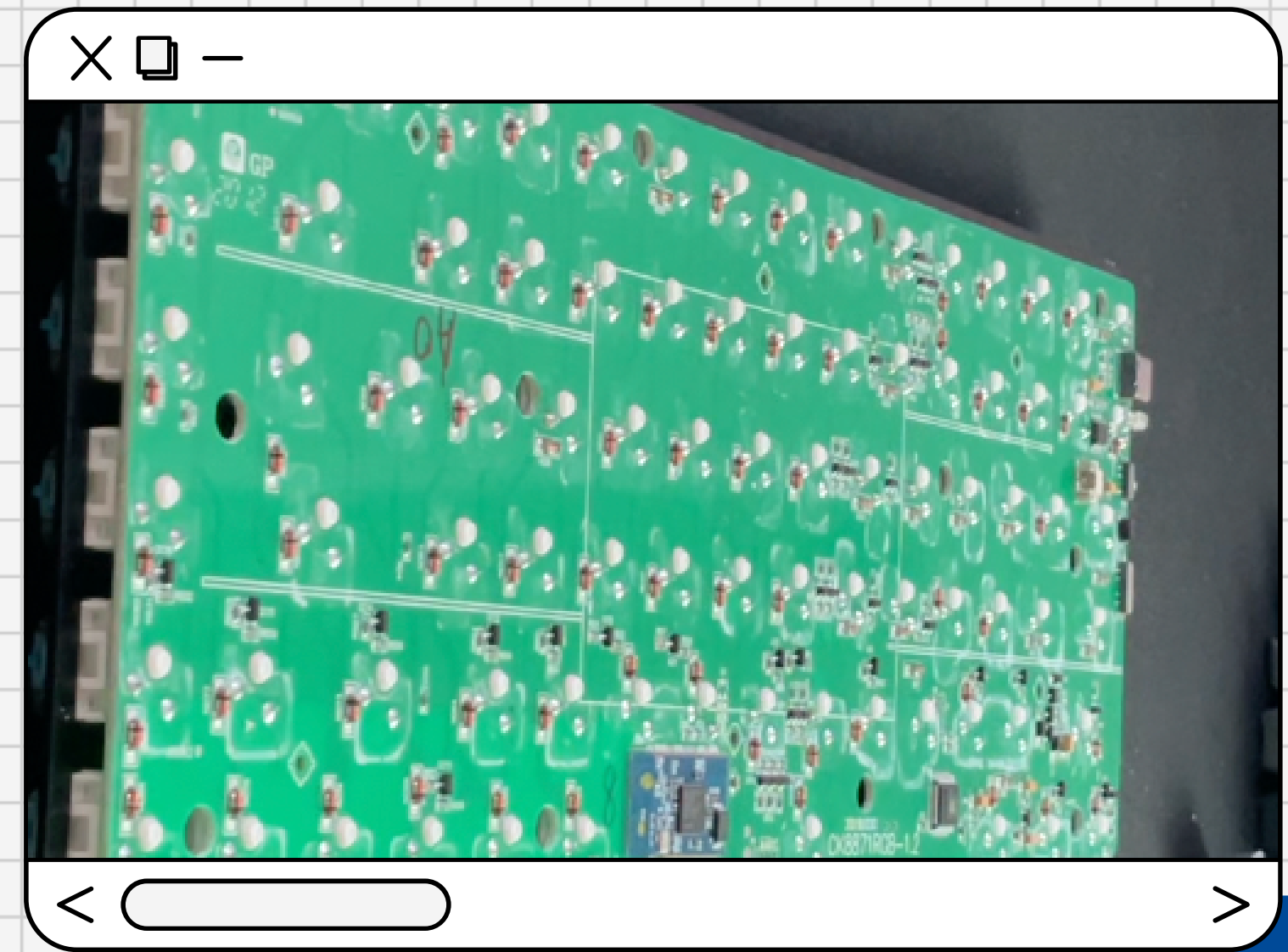
4

Battery



At the very bottom of the case, we found a battery. We saw earlier that this keyboard has both cable and Bluetooth connection so this makes sense. The battery was nicely sealed so we decided against opening it. The cable only had a positive and negative cable

The PCB was also a very mysterious part. The job of the PCB is to register the actuation into electric signals which then get passed on to whatever is connected to the keyboard. Connected to the PCB were not only the switches but the outlets for the cable.



5

PCB

Summary/Conclusion

and....?



Today we learned how the wonderful thing called a mechanical keyboard works. At first, we were quite careful and confused but we kept going taking things apart one by one. As we discovered new parts from keycaps to switches to PCB to battery, we had a lot of fun researching each part alongside testing the mechanism. The most fascinating thing we learned was that there are a ridiculous amount of switches in the world and it is so customizable! There's linear, tactile and clisky. In the future, we hope to continue taking things apart and learning how they work from the inside. Maybe we'll take apart our broken VEX cortex next.

Save

Cancel

opening a mech keeb



Video of the Process



CREDITS



Tan, Paul. “Gateron Mechanical Switch Guide.” Keychron, Keychron | Wireless Mechanical Keyboards for Mac, Windows and Android, 28 Mar. 2020, <https://www.keychron.com/blogs/news/gateron-mechanical-switch-guide>.



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“Keychron K2 Keycap Set.” Keychron, <https://www.keychron.com/products/keychron-k2-keycap-set-1>.