NKEY

Special Interview Edition

Featuring the latest news about keyboards and the people who make them.

INTERVIEW: QUENTIN LEBASTARD

Quentin Lebastard of Bastard Keyboards talks about himself and his designs on the occasion of the upcoming release of the Dilemma Max.

MORGAN VENABLE AND HIS SVALBOARD

An interview with Morgan Venable, creator of Svalboard, who talks about his awesome project and the reinvention of the Datahand keyboard.

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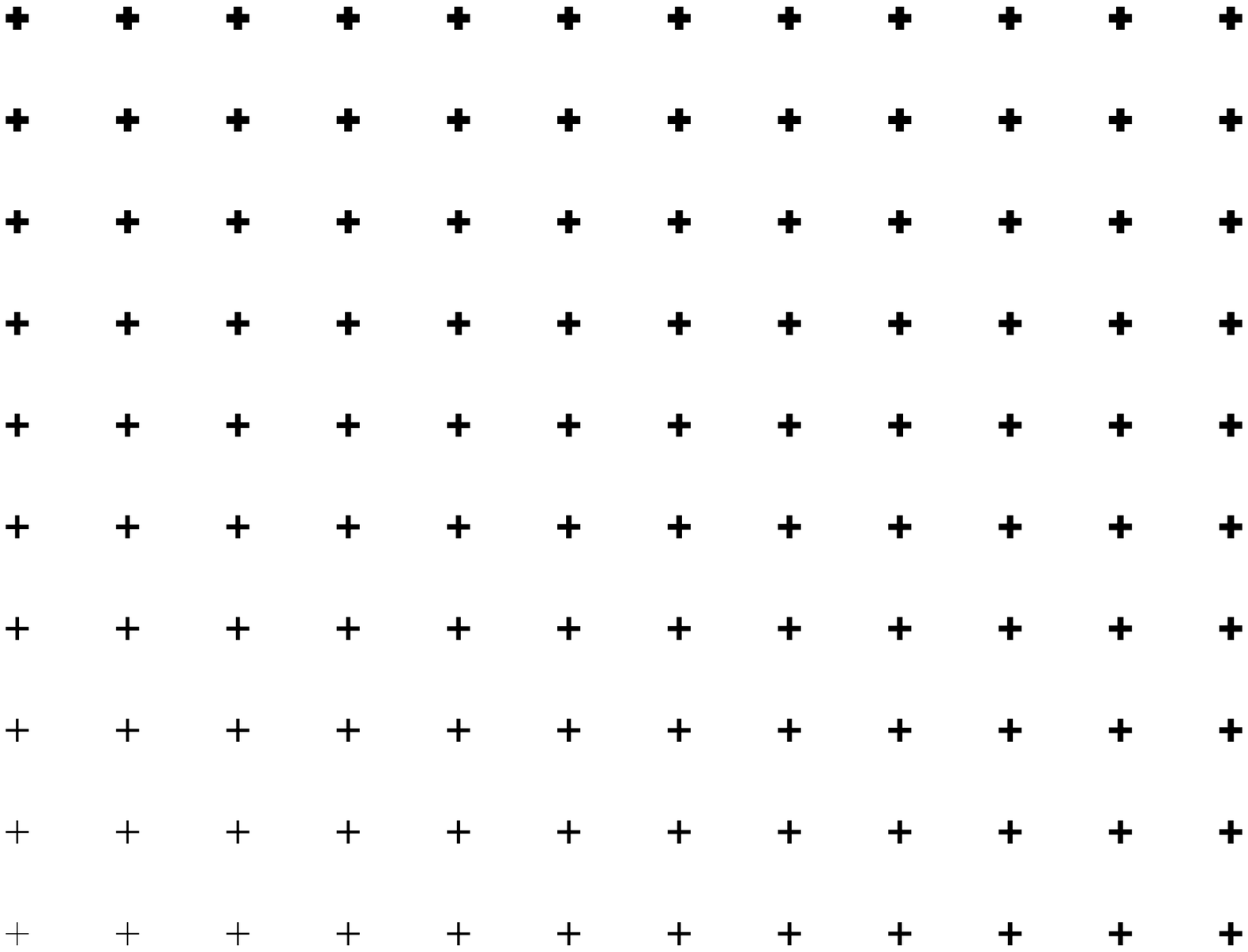

FROM THE EDITOR

There is something wonderfully refreshing about the world of custom-made mechanical keyboards. The tactile satisfaction of every keystroke, the individuality in design, and the passion that drives the artisans behind these creations are all testaments to the enduring appeal of craftsmanship in the 21st century.

As we delve deeper into the world of custom mechanical keyboards in this issue, we find ourselves not just exploring the intricate details of these magnificent devices but also the equally remarkable individuals who craft them. Behind every keyboard is a unique story, and we are delighted to bring these stories to you.

One of the most remarkable aspects of this community is the sense of camaraderie and connection that is forged among keyboard enthusiasts and artisans. Whether it's the endless late-night discussions on forums, the thrill of unboxing a new keycap set, or the joy of swapping tips and tricks, the bonds formed among fellow keyboard builders are genuine and lasting.

We believe that Nkey plays a special role in fostering these connections. Our mission has always been to be more than just a magazine; we aim to be a platform where keyboard enthusiasts can come together, share their knowledge, and celebrate their collective passion for mechanical keyboards. The pages of Nkey are a reflection of this community, and we are committed to showcasing the diversity of talent and creativity within it.

In the following pages, you'll find stories of artisans who pour their heart and soul into crafting unique mechanical keyboards. You'll read about the innovative designs, the meticulous assembly processes, and the attention to detail that make each keyboard a work of art. But beyond that, you'll also read about the relationships, friendships, and connections that are formed along the way.

The world of custom mechanical keyboards is not just about typing; it's about creating, sharing, and connecting. It's about bringing people together through a shared love for a timeless tool. We hope that the articles, interviews, and features in this issue of Nkey inspire you to reach out, share your own experiences, and connect with your fellow keyboard builders.

Thank you for being a part of the Nkey community, and we look forward to continuing this incredible journey with you. Together, we'll explore the boundless creativity of custom-made mechanical keyboards and the connections that make this community truly special.

Martin Baumer
Editor-in-chief

Photo by Meranda Raucci
Cover photoillustration by Mac Farnen

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Image: The two editions of the 8BitDo Retro Mechanical Keyboard: N and Fami.
Image via www.8bitdo.com

87 keys with Kalih Box switches and two gigantic "super buttons" for $100

8BitDo enters the mechanical keyboard market with an NES homage

By Daniel Sims

Something to look forward to: Accessory company 8BitDo has built its positive reputation almost exclusively on its third-party controllers. As the company launches its first keyboard, it marks a shift toward products specifically for the PC market. However, 8BitDo's signature retro-console nostalgia remains ever-present.

Pre-orders are now open for 8BitDo's first mechanical keyboard. The 87-key device ships on September 20 in two color schemes evoking the Famicom and its American counterpart, the Nintendo Entertainment System. The retro-styled keyboard supports Windows and Android 9 or newer, with connectivity through USB, Bluetooth, and an included 2.4 GHz dongle. A nice touch originally found on 8BitDo's arcade sticks are two potentiometers for controlling volume and switching between wireless protocols.

As a nod to Nintendo's seminal 80's home consoles, the keyboard includes two extra A and B keys between the right-side Ctrl and Alt keys in case users want to play an NES game without connecting a controller. Each keyboard has a 160.2 x 74.6 x 32.3 mm, 270g set of two massive A and B "super buttons" that users can map to any input or macro. Customers can order additional packs for $20 each and connect up to four per keyboard.

Users can quickly customize the super buttons, key mappings, and macros using 8BitDo's included-but-optional Ultimate Software V2. Additionally, the tool enables different settings for individual programs.

The top-mount keyboard uses Kalih Box switches and hot-swappable dye-sublimation PBT keycaps and supports n-key rollover. Its 2000mAh rechargeable lithium-ion battery should provide around 200 hours of use with a roughly four-hour recharge time. The keyboard weighs 1,050g and measures 376.6 x 169.6 x 46.8mm.

The 8BitDo retro keyboard isn't its first product for NES-styled PC-specific input. A wireless N30 mouse with NES buttons and a control pad that the company released in 2019 would make for a good companion. However, customers should note that it supports Windows and macOS but not Android.

Keyboards from other vendors have previously tried to celebrate other Nintendo hardware. Megalodon's $200 Console 64 mimics the Nintendo Switch, including a few controller inputs on the sides of the keyboard. Hyperkin's Hyper Clack is a full-size mechanical keyboard sporting Super NES colors. Nostalgic users who don't care about Nintendo consoles can order and customize highly-accurate retro IBM keyboard replicas from a restoration project.

Interview with

Quentin Lebastard

Quentin Lebastard of Bastard Keyboards, designer of the Charybdis and Dilemma, talks about himself and his designs on the occasion of the upcoming release of the Dilemma Max.

By Tamas Dovenyi

QUENTIN LEBASTARD of Bastard Keyboards doesn't really need an introduction. As designer of keyboards like the Dilemma and all the Charybdis variants, he not just sells his pre-built boards and kits but also regularly shares his source files. I asked him a few questions on the occasion of the upcoming release of the Dilemma Max.

Could you tell us a bit about yourself?

Hey! Great to be here. I'm Quentin, a French keyboard designer operating from The Netherlands. I've been working on this project for four years now, and I'm extremely thankful to be able to call this my full-time job. What started as a single-desk keyboard building service is now a full-blown office, constantly buzzing with prototypes and ideas.

Sure, a lot of what I do can be considered work–community management, inventory, emails–but on most days it still feels like having fun and coming up with ideas. It's never boring, and I'm going to the office every day with optimism and enthusiasm.

I'm also working with Bas now, who at the start was helping on the operation side of the company, but is now also working on some cool upcoming creative projects.

How and when did this all start out?

Five years ago I was working in IT and, like most people in that field do at some point, started developing RSI issues. Back then I had already started to get into mechanical keyboards – and had a Ducky One TKL with blue switches. I then realized that I needed to get a bit more serious about my health and started to look into ergonomic keyboards. The Dactyl seemed like the best option back then, and I had just gotten a 3D printer that I wanted to put to use... From there, I built a few of them which helped tremendously my RSI, but I was not happy with their design and build experience.

A lot of people get into the hobby but few of them sell their own products. How did you end up as a keyboard maker?

I would describe the process best as organic. In September 2019 I moved to The Netherlands on what was supposed to be a short holiday to see some friends after quitting my job. Back then I was very active on Discord and Reddit publishing pictures of my design experiments, and it was gathering a lot of interest.

"I realized that I needed to get a bit more serious about my health and started to look into ergonomic keyboards."

The main issue with building Dactyls has always been their complexity – they require a good knowledge of 3D design and 3D printing, electronics design, wiring, QMK. It involves multiple topics and can become overwhelming very quick. Because of that, prebuilt Dactyls were appealing to a lot of people, and I saw that as an opportunity to help them.

From there on, I went through a lot of different ways of building them – first hand wired, then using Amoebas, then flex PCBs. First with models generated through online Dactyl generators, then with my own designs. First with hand wired Pro Micros, then with custom-designed RP2040 boards with shield PCBs.

Whenever I ended up with new ideas, new designs, the main goal was to help others. For this, open source made sense – but for those not willing to "get their hands dirty", selling prebuilts and kits is a way to help them while financing my full-time work on innovation.

I guess there were some bumps in the road.

Designing keyboards ("maker") is not related at all to selling them ("shop"). Selling products entails very different skills and topics, like communication, inventory, versioning, after sales support, packaging, build guide editing, you name it.

Above: Quentin Lebastard of Bastard Keyboards. Image via KBD.news

It's not for everyone and brings its own challenges – and it takes out a huge chunk of time that could otherwise be used for designing. Working on this as a team rather than just myself has been very helpful, and it enables my work on design so it's very much worth it.

Working in a field that's so new makes things even more complicated – standards have to be worked on, and any decisions taken upstream can have consequences on designs for years as I try to make everything as backwards compatible as possible. Because all of the work until now around commercially sold Dactyl-likes (Kinesis, Datahand...) had been kept closed source, I had to reinvent the wheel (and share the process). There has been countless projects around Dactyls, but nothing with a quality high enough that I was happy with – I wanted to take it from a "weekend project" that you have to tinker with and debug a lot, to a more streamlined experience that can also be reused in other designs.

Designing and building keyboards for others also brings the quality requirements a lot higher – while I can afford a few quirks on designs that I use myself, if I ship to others the quality standard needs to be there. For this I've always focused on starting things very simple, and from there slowly upgrading – the Dilemma is the most recent example: I started with a very barebones 3x5+2 that brought only one new thing (the trackpad), and from there slowly upgraded it (integrated MCU, RGB, rotary encoders, more keys...).

Could you draw a quick timeline with all the notable keyboard models you designed?

I don't have the exact dates on hand, but the main events that defined my work would be:

The original **Scylla** design. This was my first Dactyl design in Fusion 360, that came out of wanting a better looking Dactyl that was easier to print, build, and maintain.

The **Skeletyl**: this started as kind of a joke, as I never expected a keyboard with so little keys to become so popular. I wanted to experiment with new design techniques and came up with the skeleton design method, which was also quickly adopted by other designers. This was the first design I open sourced, and the others followed quickly.

The **Charybdis**: this was... a challenge. Back then there were a few existing builds (e.g. Tractyl manuform), but they required obscure PCBs and a lot of tinkering. I had to design a sensor PCB from scratch, as well as a reusable 3d holder assembly for it. This was a bet that worked out – the parts are now reused by a lot of other designs. Not only this, but the code in QMK back then for trackballs was... fragmented. Drashna and Charly put in countless hours to make this a better experience, and we now have code directly in QMK's drivers with a ton of neat features.

The **Splinky**: this is not exactly a keyboard, but it's the "brain" of all my 3D designs. I started using Pro Micros

Left: Bastard Keyboards Skeletyl
Right: Bastard Keyboards Dilemma
Images via bastardkb.com

and Elite-Cs, but Corona hit and made those 32u4 extremely expensive to source. With the discord community and other vendors, we worked on a standard pinout for the new, cheaper RP2040 chip by Raspberry (RP2040_CE), which means all those new powerful RP2040 boards can be used interchangeably.

The **Dilemma**: I've wanted to work on flat keyboards for a while and already experimented with a Sweep-like and Atreus-like. I wanted something that could be used on the go (when bringing a Dactyl is complicated), and also brought something new to the table (trackpad), all while not being too alien that it would scare adopters. It worked out well, and the new versions are bringing more and more features.

What aspects of the hobby and manufacturing do you like or are you interested in the most?

What I like so much about my job is that it involves so many different aspects. When I started four years ago I was mostly invested into the 3D design part, and the last year it's been mostly electronics.

I try to keep things fresh – at the moment I'm trying to invest a bit more into photography and video (for guides and tutorials). There's nothing super concrete yet, but it's important for me to keep going out of my comfort zone.

Recently I had to design the silkscreen for the Dilemma Max and decided to learn Illustrator. It was a real challenge as I was also on a tight timeline, but it turned out great and I'm now using this tool in other parts of my designs as well.

My most favorite part by far though is the community – there are so many crazy ideas out there, and working on open-source keyboards means I can be part of it and contribute to it. Seeing mods and forks of my keyboards is the best reward there can be.

Your recently announced product is the Max variant of the Dilemma. It seems to be a natural next step in the line-up. Was this a community request?

This was definitely a community request. In all my keyboards, I have 4x6, 3x6 and 3x5 variants. When I started developing the Dilemma I decided to go with an "extreme" package, 3x5, just like the Skeletyl. This was because it enabled me to do some rapid and cheap prototyping compared to something bigger and more complex. I had only one big objective – produce a modern split keyboard with a trackpad. While the trackpad part worked well, I had to sacrifice other parts (RGB, integrated components) just to keep things simple.

When looking at my 3D keyboards, the big format (4x6) is the most popular – and that's understandable. For someone who has little to no experience in splits, going with a 4x6 means it's a less-big of

a jump. It's less intimidating, and having a number row feels familiar compared to homerow mods and multiple layers. It definitely provides a less intimidating way of getting into ergo. This aligns with my goals – help people find a keyboard that works better with their body. Having a bigger one means they are more tempted to try it, and maybe later switch to the smaller version.

Because of this, the demand for a bigger Dilemma was there – and with the experience I got designing the Dilemma I felt confident I could go ahead with a bigger design.

Bringing a real product to the market is much more difficult than creating a prototype for yourself. What are some possible challenges which are not so obvious for the uninitiated?

That is definitely true, and something that's hard to fully grasp unless you are also managing products. Like I mentioned previously, the quality requirements are much higher. Rather than sticking to very general concepts, I thought it'd maybe be interesting to give a few concrete examples.

Technical: When I first started working on the original Dilemma 3x5, trackpads in ergo keyboards were still a very new thing. After settling for the Cirque trackpad, I had to find a way to connect it – either soldering a few bodge wires and desoldering a resistor, or using an FPC connector. Having to desolder a resistor and bodge a few wires is fine when you're designing a one-off for yourself, or even for enthusiasts, but I wanted something truly easily accessible.

"What I like so much about my job is that it involves so many different aspects. When I started four years ago I was mostly invested into the 3D design part, and the last year it's been mostly electronics."

Because of that I decided to switch to an FPC connector, which meant ordering the boards assembled from the factory rather than bare. This brought a lot of issues and design complexity, but in the end made builds slightly easier.

Quality requirements, and where to stop.
Going into the Dilemma Max, I felt confident because the Dilemma was already a polished product. Every time I make a new product I go through three or four revisions, and this time was no stranger. While things went overall well, I had a few issues with components placed too close, or zone patterns being different because I overlooked them. For some builders or vendors that's in the acceptable range of defects, but not for me. You need to draw a line on where you decide a product is good enough to ship, and even if high that line needs to be there.

Firmware and all technicalities.
However, hardware is not everything. For a product that works great out-of-the-box, you also need great firmware. Because I work on innovative products this has always been a problem – there was no standard code for the trackball when it came out, and very little features.

I'm extremely lucky to be in touch with amazing volunteers who write and maintain the code for all my keyboards. This means not only developing code for either new features or new keyboards, but also updating as the hardware changes (eg. with the move to RP2040 or to VIA).

To ensure a smooth experience in both hardware and firmware, I have the habit of shipping early versions to enthusiasts and developers. While they get an "imperfect" version of the product, they always give some invaluable feedback

Bastard Keyboards Scylla
Image via bastardkb.com

and start working on the firmware. This enables me to find issues I'd otherwise either not see or much later, and get a firmware that's much better than if I'd had to do it (I suck at QMK).

Diagonal stuff. Finally, because I'm creating keyboards that are going to be built by multiple people with different backgrounds in DIY, I need to make sure the process goes smoothly. This means that during the design process, the 3D and electronic parts have to be made in a way where it's expected there will be mistakes. It can and will happen that the screw inserts are not installed properly, the components are installed in reverse, there are shorts and cut traces and burnt plastic. People will make mistakes, and I need to work on making those mistakes less likely to happen, but also make sure that the keyboard is easy to fix.

From the start, I needed to do some choices which don't necessarily make a lot of sense for an expert (eg. big screws, using Splinkys, reversible PCBs, ribbon cables instead of FPC), but these make the build process easier and less prone to mistakes.

On top of this, there's of course the build guides – another aspect that comes on top of the simple design of the keyboard, involving photography and editing, video recording and script writing. In my experience, creating a build guide really puts all the little details in the spotlight – if there's some part of the build that's awkward, suddenly you have to explain it in details and it puts you in front of your design choices.

What's your current setup? Favorite layout, switches, keycap profile?

When typing this I'm using a Charybdis Nano, nylon, metal plates with magsafe and tripod adapter, tangerine switches, and DES caps. For some time I was using a wireless CNano with trash switches, but it kept having issues with connecting to my Windows machine and the trackball dropping out, so I switched back to my old design.

I'm a fan of light linear switches, so I might find something even lighter than the tangerines for my next build. I don't plan on moving away from DES though – shoutout to Asymplex, those are the most comfortable keycaps I've ever used, and his new thumb cluster for the Skeletyl is killer.

When traveling, I use a Dilemma with sunset switches and MBK keycaps.

What's your favorite keyboard designed by someone else?

I'm a huge fan of the designs by Geist, specifically the Totem and Klor. One of the most difficult things you can do as an artist is create something that can be appreciated even by the uninitiated, and in that aspect he absolutely nails it. There is so much attention to every detail, and an aesthetic that is carefully crafted, and it really shows in the final build – no detail is left to luck. I also got the chance of meeting him in Leipzig, super chill guy.

What's next? Any upcoming projects or future plans you can tell us about?

In the future I want to start working again on metal plates for tripods. I'm also still working on upgrading the build guides, and working on transport cases. Very long-term, I'm still slowly working on adding Bluetooth to our offer. Bas is also working on epoxy DES caps, to add it to our offer.

Hall Effect keyboards: What you need to know

By Calder Limmen

Graphics by Mac Farnen

Magnets are cool, and the closest thing to magic in the world. It gets even cooler when you learn about Hall Effect sensors and the possibility to get an analog input signal. That's the part we're interested in. The Hall Effect sensor detects the position of a magnet by measuring the displaced electrons in a current caused by the electromagnetic force. It is often used for proximity, positioning, and speed detection.

It can be something as simple as your notebook detecting it's closed, small motors to determine the speed or position by counting the rotations or joysticks in gamepad controllers. It's even used in keyboards. Suspense rising, we're getting there. Hall Effect keyboard switches have a magnet that emits an electromagnetic force to displace electrons in a Hall Effect sensor. The first Hall Effect keyboard switches emerged on the market in 1968 using monster sized Micro switch switches by Honeywell.

These days you can find Hall Effect keys in industries that require high reliability. Such as aerospace, underwater devices, and military. Due to the reliable and durable nature of the technology. You don't often find it in consumer-grade keyboards, since it was expensive to mass-produce. However, in modern day, Hall Effect sensors itself are relatively inexpensive. And used for a lot of different applications (economies of scale). Now that keyboard switches are also widely available, this is a problem of the past.

The most recent attempt making a consumer-grade Hall Effect keyboard, or magnet keyboard if you like, was by Acepad Technology (APT). They made their own custom magnet switch with an off-the-shelve Hall Effect sensor on the PCB. But, what all these keyboards have in common is that they were made for digital input. Not analog input.. There's only been one (DIY) attempt on making an analog input keyboard by Benjamin Heckendorn, in the Ben Heck show in 2012. He's a genius and still active on Twitter. But this is far from something standard or available. That's what we want to change and made Wooting's own Hall Effect keyboard switches: The Lekker switch.

Let's dive in and dissect all this information in a simplified manner.

The Hall Effect is a measurement of displaced electrons in an electric current caused by an electromagnetic force. That electromagnetic force being a magnet. The electric current being anything that conducts electricity. A magnet has an invisible "magnetic" field that radiates from its core, like gravity from the earth, pulling in or pushing away objects with magnetic properties. Like steel, but not aluminum.

This magnetic field also pulls in or pushes away electrodes (electricity balls) in an electric current (a flow of electricity) causing a split of positive and negative electrodes. Which can be measured with another electric current connected on one side to the positive- and other side negative electrodes, creating a potential difference (a rate of electricity flowing from one to another point). To put it in other words. Imagine that the split in between positive and negative electrodes is the same as a battery with a minus and plus side. Now to create an electric flow, you connect the minus and plus side using a copper wire. To know how fast or strong the electric flow is, you connect a light bulb in between. Just like those electrical engineering 101 toys.

You can consider the Hall Effect sensor as the heart of this technology. It will make or break your keyboard unless you're able to solder things. The Hall Effect sensors these days are an all-in-one type of integrated circuits (IC). They are well shielded from electromagnetic interference (EMI), have a simple construction, and no dependencies. There's no physical connection needed between the sensor and the magnet. Furthermore, its operational performance is also not affected by any environmental conditions, such as water, dust, light or dirt. It's no wonder that it's used in operation critical industries for its reliability and durability.

Of course, it's a little bit more complicated when it comes to sensing an analog input signal. The positioning of the magnet towards the sensor. And the calibration between the magnet and sensor both greatly influence the result. But the basic concept remains. Since there's no connection between the sensor and the switch, the switch can be hot-swappable. The switch durability will entirely depend on the magnet and switch quality itself. Even if it fails, you can swap it for a new one.

New customizable IBM Model F keyboards are now available

By Daniel Sims

Photography by Meranda Raucci

For a few hundred dollars, keyboard enthusiasts can now order a wide range of faithful reproductions of IBM's 1981 Model F keyboard. The new selection lets connoisseurs enjoy the advantages of top-tier classic keyboards without 1980s design constraints.

Refurbished and reproduced Model M or Model F keyboards have been available for a while for around a couple hundred dollars. However, the refurbished models weren't designed for modern devices. The revival initiative from Model F Labs maintains IBM's original high industrial standards in a wide array of form factors for modern use cases.

The keyboards are based on IBM's expired bucking spring switch patents, which project founder Joe Strandberg considers superior to modern cherry mechanical switches for typing (the jury is out on how they compare for gaming). They also use case designs of zinc, aluminum, and steel to maintain that original IBM heft, ranging between 3.2 and 8.3 lbs.

Old designs and standards combined with modern USB-C interfaces allow for maximum compatibility. Additionally, the keyboards work with Android and iOS. Open-source firmware lets users customize the keys for different languages, layouts, and other needs.

Customers can order from over a dozen form factors. Some hew close to the original Model F design, while others combine the Model M design with Model F-based internals. Compact and split keyboard designs are also available. Users can choose between keyboards with 77, 62, 50, 104, or 122 keys. All models let customers choose between various colors and keycap styles.

Expectedly, the major drawback here is cost. After IBM stopped making the legendary keyboards in the 1990s, manufacturers transitioned to membrane and cherry keys to offer consumers cheaper options. Model F Labs instead looks to offer uncompromising build quality.

Although the new Model Fs run between $350 and $580, Strandberg claims they cost just half the inflation-adjusted price of IBM's originals. In exchange for paying $200 more than most modern mechanical keyboards, you get durability. Model F Labs claims it designs its products to last decades like many of the 80s models people still use today.

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An interview with Morgan Venable, creator of Svalboard, who talks about his awesome project and the reinvention of the Datahand keyboard.

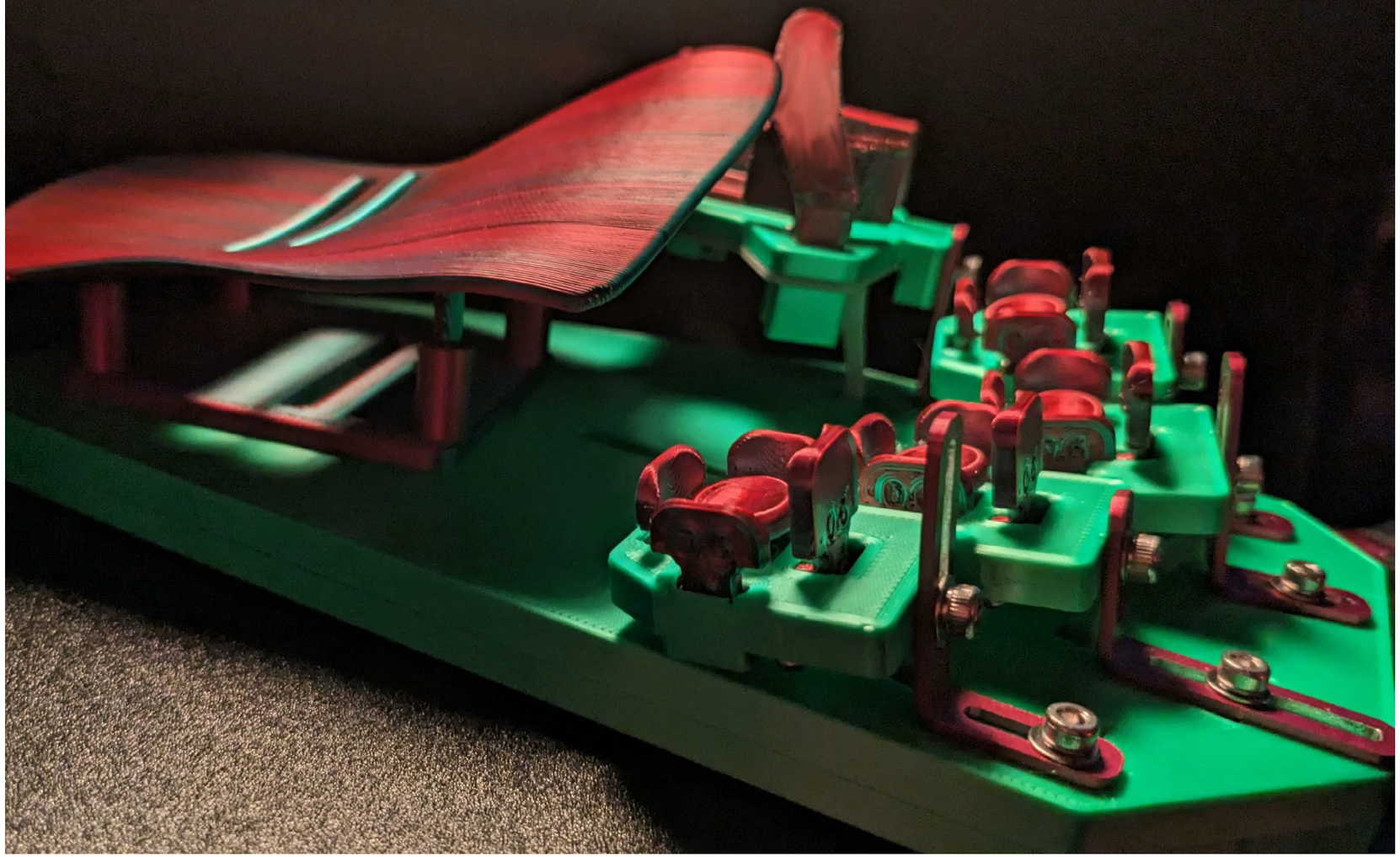
Morgan Venable and his Svalboard

A reinvention of the legendary Datahand keyboard.

By Tamas Dovenyi

Graphics by Mac Farnen

Right: Svalboard keyboard
Image via svalboard.com



THE DATAHAND is such a weirdo, but still makes a lot of sense. It's high on my list of retro stuff I know I'll never be able to acquire.

How did you come across it?

I bought my first Datahand rig in 2002 after a typhoon soaked my old MS Natural on the way to work in Fuchinobe, Japan, where I was interning at the time. It totally fixed my typing RSI. Completely. I really buy into the basic thesis that we do way too much physical work to type – human hands are quite fragile, and even more so in the repetitive stress injury RSI-prone portion of the population, which grows ever larger as more and more people write software for a living.

How long did it take to develop the design?

About 8 months? When one of my precious Datahand units got damaged during travel in summer 2022, I got serious about building a replacement. Then I learned about *JesusFreke*'s lalboard project. I built one (with lots of help from JesusFreke), and immediately knew it was worth taking farther. Svalboard is a production evolution of the core key mechanism concept of the lalboard. That was August 2022 – and in April 2023 I sold the first Svalboard Alpha units. I work fast when I get the bit between my teeth, I guess. Svalboard's main steps forward are a unique fitment system that can adapt optimally to any hand size and finger anatomy and a dramatically improved center key that never sticks and has print-time-customizable force.

Can you tell me about the name?

It refers to the Svalbard Global Seed Vault, with a tip of the hat to lalboard. I think of Svalboard as preserving and evolving the Datahand lineage for future generations. I'm committed to a living design which can always be repaired, updated and modified by product owners. All mechanical parts can be produced on a hobby-grade 3D printer or SLA machine and all pinouts are available if you want to hack your own electrical modifications. I also sell replacement PCBAs.

Could you point out the main differences between typing on the Svalboard and more traditional keyboards?

90% less physical work! And a magical tactile magnetic key force profile! The critical differences from most keyboards: The north, south, east and west keys tilt outwards, you just brush them sideways with your fingertips. The center keys feel more traditional, but with the same magnet breakaway profile. The lateral movements are different, but easy enough to learn, and you can always remap keys to suit the movements your own hands prefer. The thumb clusters have 5 keys each plus a two-stage press on the down key, so you can really let your thumbs do the heavy lifting with modifier keys. 3-key combos are possible with a single thumb.

What are the usual first reactions of users and what to expect on the longer term?

Datahand was renowned for its dedicated user base and longevity. The older folks still using a Datahand (most of us are 40+ at this point...) are incredibly committed to it. They're still using rigs older than a lot of your readership! The concept really delivers. But they are also adapting faster than I expected – many are shifting to use Svalboard at work within a week or two, and most others at 3-4 weeks! Eventual typing speeds will generally equal your best speed on other keyboards. With 90% less work, and dramatically less injury and inflammation!

"I really buy into the basic thesis that we do way too much physical work to type – human hands are quite fragile, and even more so in the repetitive stress injury RSI-prone portion of the population, which grows ever larger as more and more people write software for a living."

–Morgan Venable
creator of the Svalboard

Could you tell us about the inner mechanism of the switches?

The side keys really are *JesusFreke*'s genius. The keys just sit in the wells, and when you push them, the key magnet and the well magnet are separated and the force falls away. The force profile drops off SUPER fast. It's crazy tactile. This means your fingers have no incentive to hammer down looking for positive feedback, and everything stays super light. When you release, they snap back together with a satisfying click. There's a little retention feature so they don't go flying, but no other hinges or hardware! The center key is my own design, with that same steep force drop off and 20g force. Forces can be tuned by offsetting magnets more in the printed keys, so you can go even lighter (or heavier) if you desire.

I like how customizable the Svalboard is. I can imagine you can set it up for a bunch of different hand sizes and finger lengths.

Yes! This is truly the core of the design — it can accommodate just about every human hand from adolescents on up. So far I have users with pretty tiny hands all the way up to basketball-player sizes, too. And they can all use the same device (once adjusted). Thermoformable, Adjustable Palm rests — X/Y/Yaw adjustment for hand size, and can be modified for different heights, too. If you want to use something different, the sled design is easy to adapt for gel pads or any other rest you want to use or make yourself. I even have a retro carrier for the original DH palm rests! Fingers — X/Y/Z/Yaw/Roll adjustment for perfect anatomical fit. Tenting — The design has about 6-15 degree tenting adjustment inherently, and supports M5 legs, fixed printed tents, and standard 1/4-20 camera hardware for any angle you want. Fingertips — three sizes, 14, 16, 18 mm widths. Default is 16. I love the super snug 14 mm fit!

Talk to me about keycap customization for Svalboard – what options are there?

The customization options are infinite. They're 100% customizable at build time... even the forces can be changed by printing a different magnet offset! I provide STLs and STEP files for customers who want to customize shapes, too, but so far I'm doing all the key assembly myself. I do full custom colors for all my Alpha customers — keys, clusters, palm rests, cases, everything. I love the colorful expression, the playfulness of it.

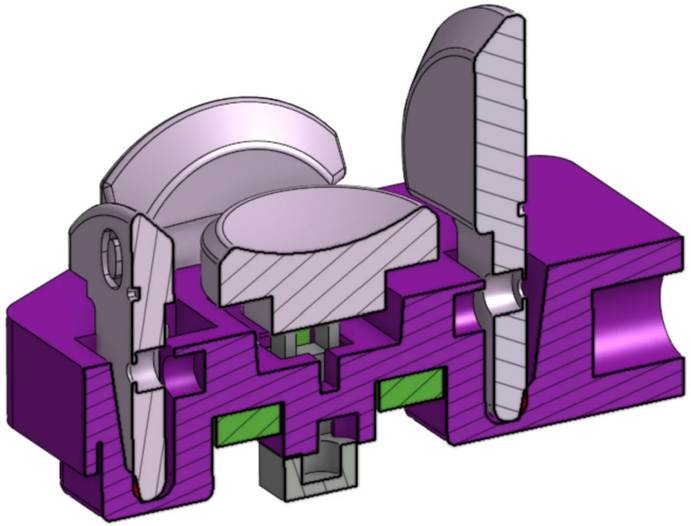
How customizable is the key map?

Default layouts are QWERTY-ish, Dvorak-ish, and Colemak-ish. Numbers are on the home row, symbols above, and there's a function/nav layer as well. Svalboard runs Vial-QMK by default, so you have 100% freedom. Real-time remapping with tap-dance is amazing. There is also a vanilla QMK fork if you want to go that route. I can't wait to see what people come up with!

The original DataHand cost about $1295 (yikes!) in the '90s. The Svalboard is "just" $750, but this price is still quite steep. Can you talk about that?

We all know that cheaping out on the important things (mattress, chair, keyboard, cheese, etc) is usually a bad idea. Your career and your health are hard to put a price on. If you account for inflation, this product now costs about a quarter of what it did in 1990 dollars. That's an amazing testament to globalization and additive manufacturing. It's incredible what one person can do today! And Svalboard is so much better than Datahand I can't even go back to my old rigs anymore. I tried to do a full day on one of my old DH rigs recently and it felt like such a big step backwards in comfort, I had to quit after the morning. Helping people find relief from pain is the core mission here. Volume and lower prices can only come when you've proven the concept in the market and only if the market is big enough. I hope I can get there someday! I believe it's possible with some real volume, but... this isn't a 40,000-unit product like Moonlander.

Below: Cross-sectional render of a Svalboard cluster. Image via svalboard.com



But there's a recently introduced trial program available?

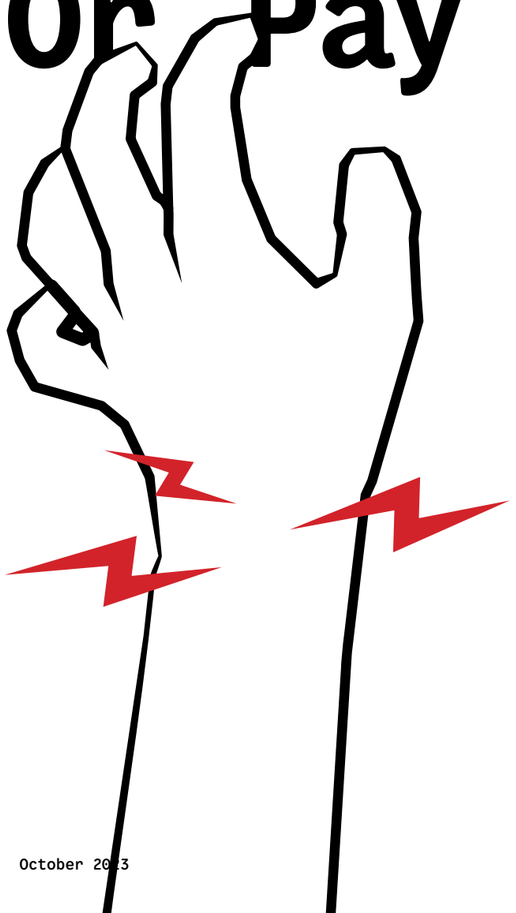
Yes! Despite the above, my goal is to make Svalboard available to everyone I can. I offer a very generous trial/return policy, where your full custom device is returnable minus a refurbish fee of $100/month, assuming it's returned in functional and clean condition. If that plunge is too big, a very limited number of rental units are available at $200/mo (plus shipping costs). Some portion of that will be applicable towards a purchase. This is a very early offering and terms will evolve as I figure out what works for people and for the business.

How long is the waiting list?

The wait time is about 2 weeks right now. I still work directly with every customer to help assess their overall ergo needs and their specific needs from Svalboard in that context. I've met so many lovely people so far, and I'm looking forward to meeting many more!

Avoiding Repetitive Stress Injury:

Invest In Yourself Now, Or Pay Later



By Kristina Panos

THERE I was, thirty years after I first sat down at an Apple IIe, and I suddenly found myself wondering if I would ever use a computer again without pain. How could I work if I couldn't use a computer anymore? I had to seriously ask myself this question. It took a bit of a winding road to figure out what was going on and two EMGs to confirm it, but after all these years, it was clear to the medical community that I had developed a repetitive stress injury (RSI) called cubital tunnel syndrome in my left arm.

Cubital tunnel syndrome is like carpal tunnel, but in your elbow instead of your wrist. What a misnomer! Sometimes my pain went all the way from my armpit to my fingertips and made me want to gnaw my own arm off. I don't think you can really understand neuropathy unless you've felt this weird, annoying type of pain firsthand. I hope you never do.

Graphics by Mac Farnen

Can you stop and seriously imagine not being able to use a computer for the rest of your life? Or at least feeling that way because doing so causes incredibly annoying pain? I feel like we're all vaguely aware of the standard list of anti-RSI precautions, but let's review: Maintain good posture—sit with feet flat on the floor, wrists straight, elbows at 90°, put the screen an arm's length away at eye level and take frequent short breaks.

Yes, those are all fine and good. But there are other things you can do to avoid computer-related RSIs, like using ergonomic inputs, and building a custom setup that fits you exactly. This isn't a study kiosk at the university library we're talking about—this is your battle station! The problem is that many people are stubborn, and won't go out of their way to do anything to proactively prevent these injuries. But you don't have to cross a bridge when you come to it if you have a map that shows you a way around the body of water.

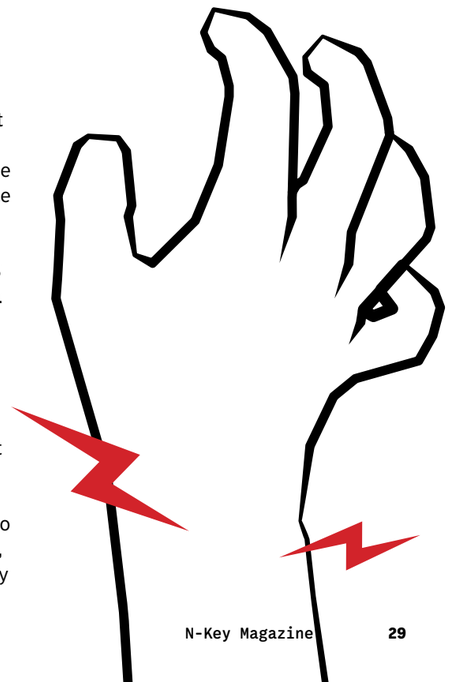
When I started my old office job, there was a brief overview of good ergonomics. I was offered an adjustable foot stool which I took, and a keyboard tray which I didn't and probably should have. Instead, I ground my arms into the desk for many years as I typed and used the mouse. When we moved buildings and no longer had beveled desk edges, that's when I was really in trouble.

Don't be happy with whatever is available. Ergonomics are for everyone at any time, so don't wait until you need them urgently. While it's true that companies are legally bound to provide ergonomic assessments and alternative equipment, they're probably not going to come up to you with an IT cart full of options. You'll have to make it known that you need it. Be proactive with ergonomics, not reactive. Someone in another department wanted a standing desk, so the office manager stayed late one night and raised a section of his desk along the cubicle wall.

Now that I work from home, I am most of the way to the perfect battle station. I finally got an adjustable-height desk that goes low enough that I can sit at it with my feet flat on the floor and have my elbows bent at 90° angles. It's huge and low to the ground, like a conference room table for children. But who cares what it looks like? I spend most of my waking hours at this desk. That's 12-16 hours a day. It needs to fit me properly. Throw in the expensive miracle chair, the funny keyboard, and the trackball mouse, and I am back in business.

You might be happy with what you've got now, but that doesn't mean it won't give you problems down the line. I'm not telling you to go out and buy all new equipment, but you should listen to your body. If you have leg or back pain, start with a better chair. Wrist pain? Try some ergonomic keyboards and mice. I think you should care about your setup, and I don't mean to take care that everything matches or has RGB. The choice of a keyboard is an important one and should not be based solely on aesthetics. You use these things how many hours a week?

I know, I know. Keeping to all these anti-RSI recommendations feels totally uncool, like riding a skateboard in public with a full set of neon protective gear on. But as long as you're aware of the signs and keep the precautions against it in the back of your mind, you might just be alright. All it takes is one bad habit, repeated mindlessly dozens of times a day.



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