

Momoka Frog V3 Switch Review

-ThereminGoat, 06/12/2021

This whole ‘switch’ thing that we are doing as a community is really starting to get away from us a bit if you ask me. Now I know that to the vast majority of people in the community that this all is already a flurry of nonsense with new releases coming out what feels like every minute, but I definitely have a bit of a different personal perspective on it. Starting around the time that the Holy Panda aftermarket crashed into the ground, I’ve seen the rise of ‘custom colored’ switches and then the eventual transition into Durock/JWK territory by way of the Stealios Controversy. However, *now* it feels like we are starting to see a rise in ‘third wave’ manufacturers that are producing new and exciting takes on switches outside of the popular and safe options. Brands/manufacturers like KTT*, TTC*, Mengmoda, Candy, Feker, etc. are all really ramping up their outputs of switches and starting to give JWK a run for the money in terms of quality, price, and quality per price. (Technically KTT and TTC have produced stuff before now, but I’m talking about their modern uptick in production and designs.) And to that end, this rising up of new brands/manufacturers is what has brought about this reviews.

Momoka, or MMK for short and not to be confused with Mengmoda (MMG), is one of these newer brands that has sprouted up out of nowhere relative to the rest of the market. Entirely more interesting than just the new name, though, is that according to the company representative that I spoke to MMK is Japanese rather than Chinese, which is where nearly every single switch producing company or brand exists in currently. Needless to say, this piqued my interest alongside a few other factors with respect to how they are currently going about the switch development and production path. However, given that this is still the pre-background section, I do still have one final chore to take care of before getting into background discussion on MMK. I’m excited to announce that I will have a fourth sponsor/affiliate alongside Mechbox UK, Keebcats, and proto[Typist] moving forward into the future:



Figure 1: That's right baby, I've got to rake in cash for this new apartment somehow.

That's right! I've absolutely sold out my soul to make this joke because they aren't actually sponsoring me nor giving me any money to do such. Rather than attempting to reach out to the makers of the number one mobile game in the App Store, if I were *really* going to sell out, I would approach Grammarly instead. Surely there'd be a level of irony in that sponsorship given my fondness for mistakes in text. All jokes aside, the website has still not been preyed upon yet by companies with more advertising budget than actual product budget and is still entirely supported by my previously aforementioned sponsors, donors to the collection, and wonderful Patreon crew helping keep this all

afloat. My love goes out to you all for allowing me to continue to shitpost within my reviews on a regular basis.

Switch Background

In a very similar fashion to the story of most up and coming switch companies, Momoka did not really make their first appearance in western markets until after they were established to some extent. Thus, the full extent of their history all the way back to their Eastern debut is a bit lost on me and my barely English-speaking self. First popping up in the west around December of 2020, the first mention of Momoka Frogs I could recall came by way of a ZFrontier post discussing Frog V2 switches as a prelubed, 60g. linear switch option made at MMK's factory using their own molds. Shortly thereafter in Q1 2021, these switches briefly made appearances here in western markets via smaller vendors such as ThocKeys, who is a relatively new US vendor who tends to stock a fair amount of unconventional switch offerings. (I'm totally not biased, but the owner Aiwanei is also a pretty cool dude, too.)

Upon seeing these go live on ThocKeys around this time, I was lucky enough to not only secure these switches to try out, but to also make contact with MMK directly to discuss these switches. Wondering what made this specific release distinctly 'V2' and how I could get my hands on 'V1 Frogs', what the customer representative for MMK informed me was that there were actually *four* versions of Frogs rather than the two that were publicly known about at that time. While all four versions look identical to the quick glance, the following explains the details and availability surrounding each version of the Momoka Frog switch:

Momoka Frog V1 – The first iteration of Frog switches; Only available in the east with a strong chance of being exclusive to only Japan *or* China.

Momoka Frog V2 – Second iteration with improvements in factory lubrication as well as changes to tooling “made in 1/100 mm grading” according to MMK representative. These are widely available and posted for sale on Taobao, ZFrontier, etc.

Momoka Frog V3 – Third iteration with further improved factory lubing. Again, these are currently widely available and posted for sale in similar places as the V2 Frog switches.

Momoka Frog V4 – Fourth iteration currently under development. No details were discussed regarding these switches, and I was only provided with one for the collection as that was all they had to spares.

As stated above, the currently available and most commonly sold variant of these switches, as of the writing of this review, are the V3 with the doubly improved factory lubrication and slight mold improvements since the first release of this switch. As can also be seen above, MMK were nice enough to send me specifically segmented bags of each of the releases with printed labels in English. Aside this nice touch with respect to packaging, the fact that MMK is dedicated enough already to making sure to track changes that other companies may deem as ‘too small to matter’ makes me extremely excited



Figure 2: Fancy labeled packaging of MMK Frog versions sent to me by MMK.

as a collector of switches. Behavior as such from MMK will help prevent their Frog line, as well as future switch releases from ending up in same sort of confusing state that a company like Cherry has, where retools happen what feels like every second without any notice and people can end up buying wildly different batches not having known any changes had occurred at all.

Momoka Frog V3 switches are currently available around \$0.52-0.55 per switch price range depending on the source and quantity bought, and are marketed as a 3-pin, 62g. bottom out linear switch. According to the website as well, the top housing is made of polycarbonate whereas the base is made of nylon. In a very interesting fashion alongside their statements about these materials, Momoka also goes on to share that their springs are made of SUS304 steel, their contacts are made of CuSn₄ and that the factory lube is similar in type to GP105. While the first two bits of information about housing material are neat, the decision to go above and beyond to share details about spring, contact, and lube composition as well is both something we've not seen to date and also really should appreciate as a community.

Momoka Frog V3 Switch Performance

Note: While it will be stated multiple countless times throughout this review, I will be reviewing the *third version* of the Momoka Frog switches. Please don't confuse this with any other versions discussed in parallel

Appearance

On sheer face value, all of the Momoka Frog switch versions appear to have identical looking design choices and interesting features. All of these switches come with a light grey bottom housing, clear top housings, and then an incredibly hard to photograph teal-green stem with squared off external edges and diagonally cut internal corners. The most striking feature about this switch comes from the LED slot of the top housings which feature a unique 'smooth mountain' like design in order to better disperse PCB-bound LED light, I imagine. While bubbled LED slots have been seen previously in some TTC switches and the occasional one-off Chinese 'clone' from the 2014-2016 era, the resurgence of this phenomena is relatively limited to these as well as the newer TTC NCR switches. Aside this LED slot bubble, the other interesting feature is the 'upside down' nameplate design featuring the three bar Momoka logo followed by the factory abbreviation, MMK.



Figure 3: TTC NCR switch promotional shot displaying 'bubble-like' LED window.

Moving into the mold inspections of each of the V3 components, the top housing looks fairly unremarkable on the inside relative to the unique LED slot design. Interestingly, rather than having a solid piece like some of the previous LED bubble slots, the internal structure of the LED slot is hollow and allows for some decent access up into this bump. The only other point of note about the underside of the V3 top housings is that the singular, letter-based mold marking appears on the upper right hand side ledge as can be seen below. In other releases that contain mold letters in such location, such as all types of molds noted thus far from Durock/JWK, these letters often sit a bit to the right in the depression next to where this one is located on the MMK Frog V3 switch.

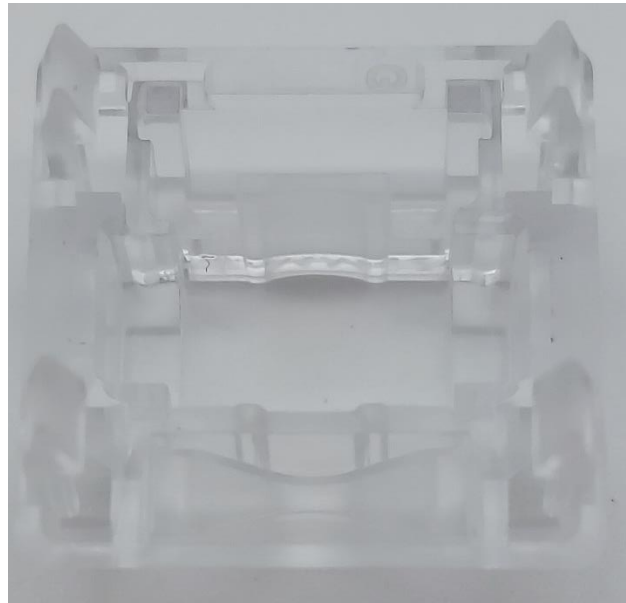


Figure 4: Internal of Momoka Frog V3 top housing showing the mold letter 'G' in the upper right-hand side of the image.

Looking next to the bottom housings of the MMK Frog V3 switches, a few more interesting design choices are apparent than in the top housings. The first thing I noticed upon opening these switches is that, strangely, there appears to be a slight bit of lubricant on the rim of the bottom housing surrounding the LED slot that was consistently present across many switches open. This is something I've not seen previously. Internally, I also get the same vibe of 'likely not seen this before' with respect to how crowded the internal structuring is and in particular the plastic regions surrounding the base of the leaf. While these obviously collar the spring slightly to prevent it from bouncing around, I don't recall seeing switches which had the angled-into-leaf design of this plastic region prior. Reinforced bottoms to the slide rails, as well as the south-edge spring guard I've seen prior though.

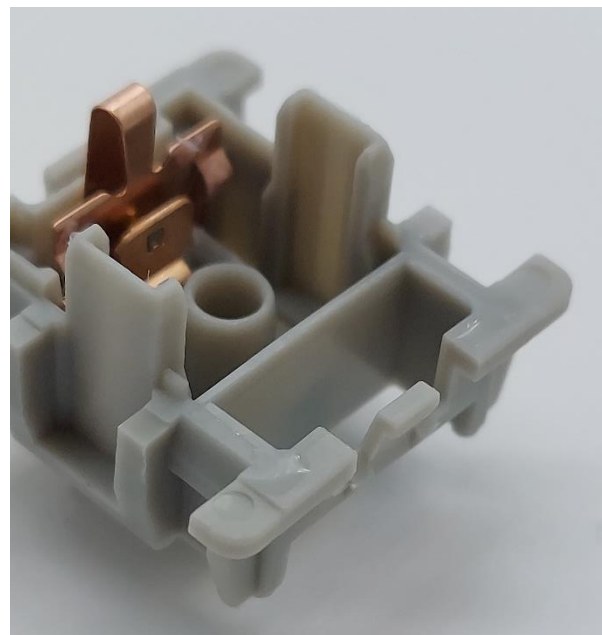


Figure 5: Bottom housing LED slot edge 'lubrication' from factory.

On the underside of the bottom housings, we see a single numeric marking in between the pins facing towards the stem pole denoting the mold mark for these housings. While the vast majority of switches keep mold pressing marks there, the vast majority do such by keeping them facing outward rather than inward, which adds another piece of evidence pointing in support of these being MMK's own molds. Additionally, and much more subtly, there is a slight bit of a woodgrain-like optical texturing to the bottom of the bottom housings that is consistent everywhere except for the pads that the leaf pins protrude through. While it is hard to see in the first place, its best able to be felt by running a fingernail across the bottom housing which gives a sort of ridged feedback.

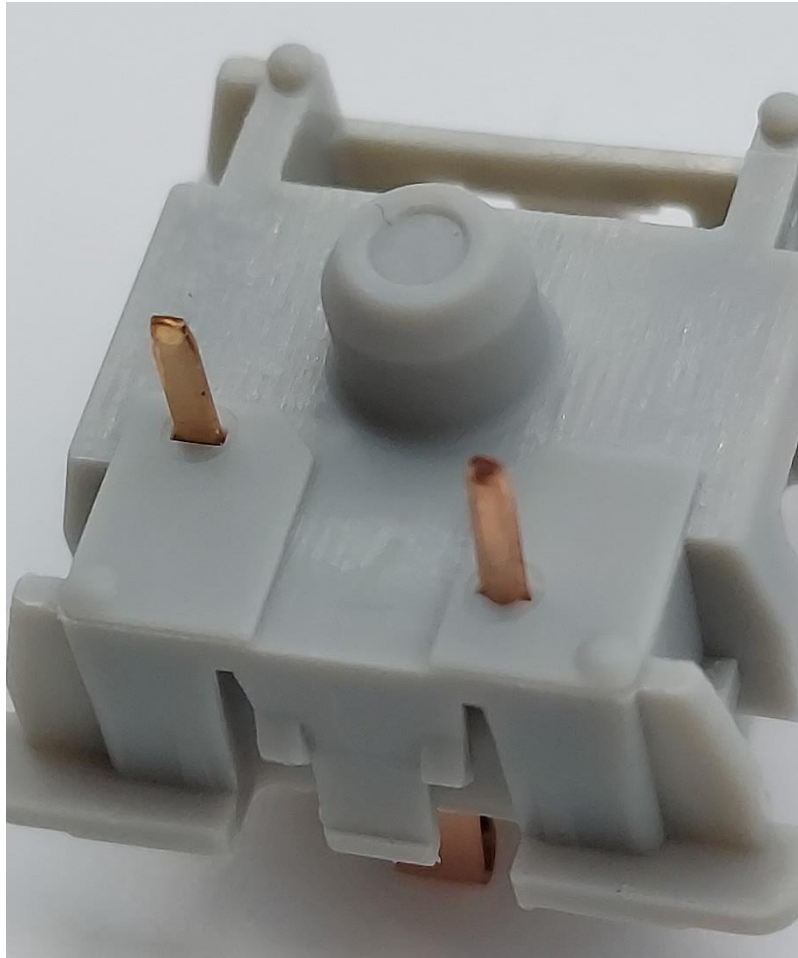


Figure 6: Bottom housing of Frog V3 switch displaying upside down '7' mold mark as well as grainy texture.

The stem design of the Momoka Frog V3 switches is fairly blasé with respect to its details relative to the other components which make up the switch. Aside the obvious dustproof-shaped nature of the stem, they feature untampered stems and a completely straight center pole with no taper to the end. It also features no discernable outward facing mold markings or injection circles unlike the similarly shaped dustproof stems I've reviewed in Gateron Kangaroo Inks. In fact, the sprue mark for the injection point is deep within the dustproof portion of the stem where the base of a keycap would normally sit. Upon visual inspection, the lubricant on these switches appears to be distributed to the lower portions of the slider rails starting just below where the edge of the front plate sits as well as on the stem legs in fairly thin application. Additionally, it does appear there is some lube applied to the slider rail, which is definitely an uncommon thing to see done from a factory's end.

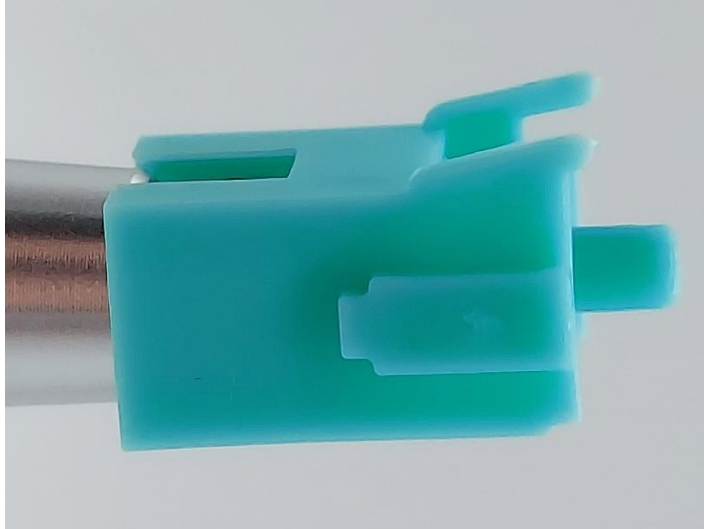


Figure 7: Subtle points of factory lube application on the Frog V3 stem including on the tip of the nearest stem leg and in the spot in the center of the slider rail.

As for the other iterations of switches, the following are any design differences that I noted with respect to them that may allow for them to be identified in the future:

V1 Frogs:

Visually, there is significantly less lube on the stems of these switches though otherwise there is not really anything to differentiate these from other releases. Initially, I had believed that a difference in mold sprue mark locations on the bottom housings of switches was indicative of differences in versions as it appeared that only certain versions had them in certain locations, though after much testing I discovered it to be an artifact of mold number rather than of switch version. (On the left-hand side of the bottom housing, in switches with '5' or '8' mold markings this injection blemish is noted on the back (or next to leaf) section where the top housing and bottom housing connect whereas on many other mold numbers this is only present in the front section of this side of the top housing.)

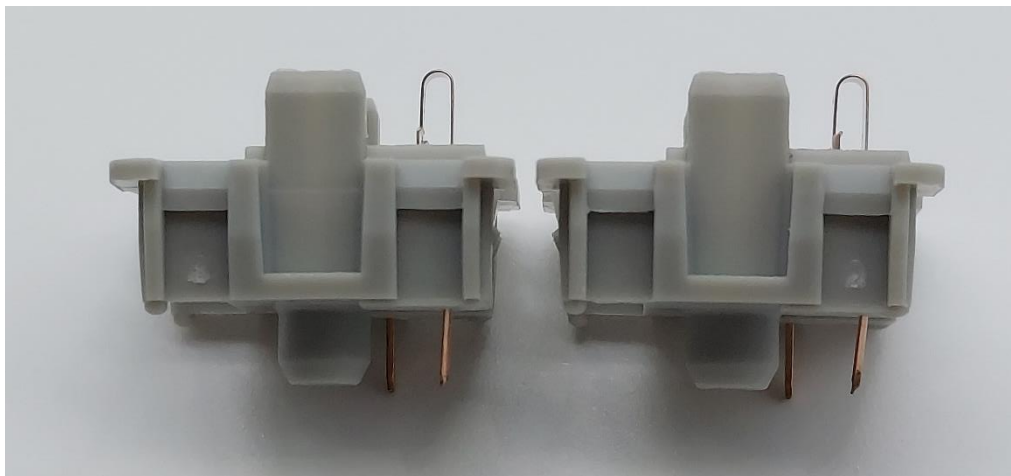


Figure 8: Mold sprue marking on Frog V3 switches. Left is representative of mold 4 whereas the right is representative of mold 8.

V2 Frogs:

Again, there are very subtle differences between the V2 and other releases of the other Frog switches. First of all, there appears notably more lube on the stems of these switches than the V1, and its present significantly higher on the slider rail and leg-edge of the stem than in the V3 switches. Additionally, but completely unsubstantiated as I struggle to be able to measure such, I also feel like V1 and V2 have a slightly steeper LED slot bubble and an increase gap between its peak and the top housing but it is such a marginal difference that I very well may be forcing it to be there mentally when it's not.

V4 Frogs:

The only real notable feature difference between the V4 Frogs and the other Frogs is the presence of a multi-staged, long spring rather than a conventionally coiled and sized spring in the other previous versions. Again, given that this switch is only a prototype, Momoka may choose not to stick to this design choice upon release of the switch in the future.

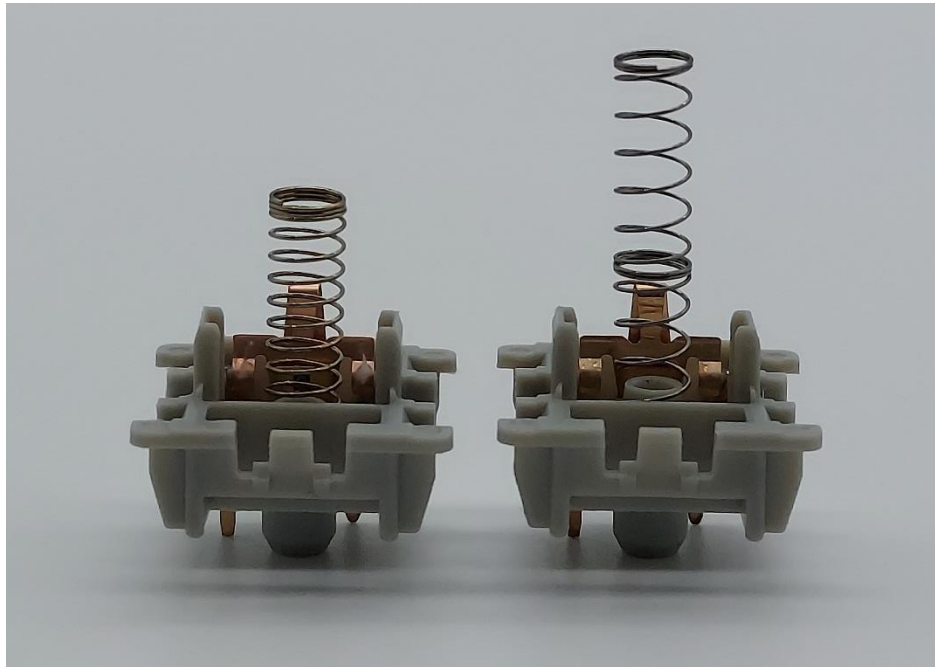


Figure 9: Differences in spring design in Momoka Frog V3 (Left) and V4 (Right) switches.

Push Feel

With respect to the main metric that differentiates a good linear switch from a bad one, smoothness, the Momoka Frog V3 switches are definitely towards the good end of that scale. Of the 70 switches that I tried, all of them were smooth on par with a medium to medium-light level of hand lubing and didn't have any pockets of scratch nor consistent scratch throughout their push feel. As well, they were all fairly consistently lubed with some degree of variation in terms of smoothness in which some switches felt a bit lighter and less 'inhibited' than their slightly more lubed counterparts. Overall, they all would go fairly well together in a batch without the occasional switch sticking out as 17x or 0.3x lubed as the rest of them. As a brief aside, as well, the V3s definitely do feel a bit better 'fine-tuned' than the V2 and V1 switches with respect to smoothness. Whereas the V1s were quite plain feeling and didn't appear to have much of a lubricating feel at all, the V3s were noticeably more 'lubed' in feeling. Additionally,

the V3s were significantly more consistent than the V2s, which even in the small batch I received, had a much more noticeably wide range of lubing amounts.

The housing collisions of this switch, as well, are both fairly solid but definitely towards the lighter and more thin side than not. Without having actually looked up the material of the housings at first upon testing, I had initially assumed them to have a polycarbonate top housing and a polycarbonate-based, blended material bottom housing. Even though the topping out isn't harsh, sharp, or thin feeling, it still does have a bit of a plasticky type collision that is most commonly seen in polycarbonate housings as opposed to other material types. As for the bottom housings, they have a slightly more solid and deep feeling collision than in the topping out, though they definitely do not carry the slap-like, heavy thump in bottoming out that one would traditionally expect of Nylon housings. Without an ability to necessarily measure it, I would venture to guess that the reason that these bottom housings sound 'thinner' than traditional expectations for Nylon housings is that they very well could be a thinner material setting given that this is a new manufacturer without prior switch experience.

Sound

Surprisingly, the sound doesn't exactly mimic the push feeling of these switches, as they sound a bit more muted and firm than the bottoming and topping out would leave one to initially believe. The bottoming out, altogether, is quite muted and subtle sounding unlike the more thin and higher pitched sounding polycarbonate housings I've tested previously. As for the topping out, it has a bit more of a muted, solid sounding body to it than traditionally sharp, pointed, and thin topping out sounds, which was a pleasant surprise. While it is still definitely louder you might initially guess by that description, its by no means a harsh or unpleasant sound, rather simply a louder one. Other than the housing collisions, there was notably no spring ping, leaf ping, nor scratch sound in any of the V3 switches that I tested, regardless of the slight variance in factory lubing.

Wobble

Overall, the stem wobble on these switches is fairly average relative to the current offerings of switches which have hyper developed their tolerances with respect to stem wobble. While there is some wobble in the N/S direction that may be noticeable if you are more sensitive to wobble and/or are using taller profile caps, there is significantly less wobble both absolutely and likely to be noticed in the E/W direction. Otherwise, there is no top housing wobble even having opened and closed one a couple of times during inspection.

Measurements

Momoka Frog V3 Measurements			
Component		Denotation	mm.
Stem	Front/Back Plate Length	A	7.03
	Stem Width	B	5.51
	Stem Length with Rails	C	8.63
	Rail Width	D	2.18
	Center Pole Width	E	1.91
	Rail Height	F	5.04
	Total Stem Height	G	12.36
Bottom Housing	Diagonal Between Rails	L	9.66
	Interior Length Across	M	9.39
	Rail Width	N	2.75
	Center Hole Diameter	O	2.12
Top Housing	Horizontal Stem Gap	X	7.31
	Vertical Stem Gap	Y	5.76
Methods	Number of Switches Used		3
	Replication Per Measurement		3

Other

In addition to the collector-service points I provided MMK earlier for being transparent and organized with their revision changes with respect to their Frog switches, one of the other things that I want to award them a few points here for is their ease of accessibility and collaboration with content creators. Surprisingly, for once, I am actually late to the party on Momoka Frog reviews given that so many other creators were able to receive switches in a timely, well priced manner, and without any expectation nor requirement for publishing standards. While I can't expect every switch company to go out of their way to do this upon every release, and especially so for production houses which make many switch offerings per year rather than one, this certainly should be the way that product testing should be done for switches in my opinion. The ability for content creators at *all* levels to be able to easily access a decent amount of switches for testing only allows for a better range of voices, experience levels, and types of content to be represented in the community.

Comparison Notes to Other Notable Linear Switches

Note – These are not aimed at being comprehensive comparisons between all factors of these switches as this would simply be too long for this writeup. These are little notes of interest I generated when comparing these pieces to the Momoka Frog V3s side by side.



Figure 10: Switches for comparison. (L-R, Top-Bot: Lavender, TTC Gold Pink, Gateron Cap Yellow, Akko CS Rose Red, Original Aspiration, Kailh Speed Silver)

Lavender

- The most immediately notable difference between the Momoka Frog V3s and the Lavenders is simply how muted, thick, and deep feeling/sounding the Lavenders are. They are more in line with what people want from linear switches currently, but they also have a lot less ‘character’ than the Frog V3 switches.
- While the E/W stem wobble between these two switches is comparable, the Momoka Frog V3s have a bit more N/S stem wobble than the Lavenders.
- For being of relatively similar weight (within 5 g. of each other), I would say that the Lavenders feel overall significantly more heavy than the Frog V3s, even if they are only a couple of grams heavier in terms of bottoming out.

TTC Gold Pink

- Riding off of the previous note about ‘subjective weighting’ of the switches, even though the Gold Pinks are rated as being significantly lighter than the Frog V3s, they feel much more similar to the Frog V3s than the Lavenders do.
- The Momoka Frog V3s are just a hair bit better than the Gold Pinks with respect to scratch sound, but a bit more noticeably better in terms of scratch when it comes to push feel.
- Given the lighter spring weight in the Gold Pinks, they have a bit more N/S stem wobble than the Momoka Frog V3s.

Gateron Cap Yellow

- While the Frog V3s are overall a bit louder than the Cap Yellows, the amount of heavy, bass tones are distinctly more present in the Gateron Cap Yellows than in the Frog V3s.

- Even though the Gateron Cap Yellows are a bit smoother than the 'average' Gateron KS-3 or KS-9 switch, they are still a bit more scratchy than the Momoka Frog V3s.
- In both the N/S and E/W directions, the Gateron Cap Yellows have significantly more stem wobble than the Frog V3 switches.

Akko CS Rose Red

- In terms of sound, the most distinguishing feature between the two of these switches, aside the fact that the Frog V3s are overall louder, is the noticeable spring ping sound in the CS Rose Reds.
- Overall, the CS Rose Reds definitely feel significantly more 'thick', as if they have a heavier and less optimized coating of lubricant than the Frog V3s. (This also lends to a reduction in the 'character' of the switch as I discussed above for the Lavender comparison.)
- The stem wobble, in both directions, is fairly comparable between these two switches.

Original Aspiration

- The Original Aspirations are about the same magnitude in sound as the Momoka Frog V3 switches, but the sound is more pointed and sharp whereas the Frogs have a bit more of a wide, full bodied sound to them.
- The OA switches are also noticeably more scratchy in sound and especially so in push feel than the Momoka Frog V3s.
- With respect to stem wobble, the Original Aspirations have quite a bit more N/S stem wobble than the Momoka Frog V3s, and only a minor bit more stem wobble in the E/W direction.

Kailh Speed Silver

- Overall, the Kailh Speed Silvers are noticeably more quiet at all points throughout the stroke than the Momoka Frog V3s, as well as a bit more muted with respect to topping and bottoming out.
- As many would be able to immediately imagine, in stock form the Kailh Speed Silvers are significantly more scratchy throughout the strokes.
- As well, there is a bit more stem wobble, and some top housing wobble, that is present in the Speed Silvers that is simply missing from the Momoka Frog V3 switches altogether.

Scores and Statistics

Note – These scores are not necessarily completely indicative of the nuanced review above. If you've skipped straight to this section, I can only recommend that you at least glance at the other sections above in order to get a stronger idea of my opinion about these switches.

Momoka Frog V3		
28	/35	Push Feel
19	/25	Wobble
6	/10	Sound
17	/20	Context
8	/10	Other
78	/100	Total

Push Feel

The Momoka Frog V3s strike a surprisingly good balance between a well applied factory lubed smoothness and the character of an unmodified switch. With the only substantial detractors being a slightly more thin than desirable topping and bottoming out, these linears are otherwise quite solid performing and within an acceptable bounds of consistency in a large batch.

Wobble

An overall subtle, but potentially noticeable E/W stem wobble with a slightly more noticeable N/S stem wobble with no top housing wobble. the MMK Frog V3s are pretty par for course with respect to modern, more wobble-tuned switch releases.

Sound

Fairly loud in the realm of linear switches, the topping and bottoming out are decently well muted and full body while still having a bit of the high-pitched edge that one would expect of polycarbonate, or polycarbonate-based housings. Further application of lube or films really does improve the sound noticeably and gives it more full-bodied depth to the sound.

Context

Coming from a new company in Momoka, these switches strike out strong with good availability, reasonable pricing, unique design choices, and tracking of iterative changes that are almost too hard to tell apart. So long as they continue on this trend of design, as well as community engagement, MMK really is setting a strong precedent for switch companies.

Other

The MMK Frog V3s really are a great example of how companies can continue to push the envelope, even subtly, in an already over-saturated switch market. I suspect (and hope) that future versions of the Frog switches will continue on this path of minutiae perfection and incredible documentation.

Statistics

Average Score			Momoka Frog V3		
26.0	/35	Push Feel	28	/35	Push Feel
16.4	/25	Wobble	19	/25	Wobble
5.8	/10	Sound	6	/10	Sound
12.4	/20	Context	17	/20	Context
6.0	/10	Other	8	/10	Other
66.6	/100	Total	78	/100	Total
Frog V3 Overall Rank			T-#12/92 (78/100)		
Frog V3 'Hard' Rank			T-#21/92 (53/70)		
Frog V3 'Soft' Rank			T-#1/92 (25/30)		

Final Conclusions

Overall, I'm fairly impressed with how these Momoka Frog V3s, as well as all of the other versions for that matter, turned out. It's not often that you get to try a company that is not only new to switches entirely but *also* friendly with respect to transparency and internal organization. To make matters only that much better, the Frog V3 switches turned out as a fairly good, competitive-for-price option out there for people who are a fan of these kinds of linear switches. I say 'these kinds' with an emphasis on these newer, dustproof stemmed, mid to light weight linear options that have popped up in a couple of different brands, but specifically TTC throughout the last handful of months of switches. Whether or not you care to really pay that close of attention to the switches that you do buy, it is a good thing to note and support when a company is tracking and continuing to address the things they feel are not quite 'perfect' with respect to molds and factory lubing. I genuinely hope that the community continues to see future iterations of Momoka Frogs as well as other Momoka switches, and especially so for the western markets. (That last part is not just because I'm over here, either.)

Sponsors/Affiliates

Mechbox.co.uk

- A wonderful UK based operation which sells singles to switches that I've used above in my comparisons for collectors and the curious alike. Matt has gone out of his way to help me build out big parts of my collection, and buying something using this link supports him as well as my content!

Keebcats UK

- A switch peripheral company based out of the UK which sells everything switch adjacent you could ask for, they've been a huge help recently with my film and lube supply for personal builds, and they want to extend that help to you too. **Use code 'GOAT15' for 15% off your first order when you check them out!**

Proto[Typist] Keyboards

- An all-things keyboard vendor based out of the UK, proto[Typist] is a regular stocker of everything from switches to the latest keyboard and keycap groupbuys. While I've bought things from the many times in the past, they also are a sponsor of my work and allow me to get some of the great switches I write about!

Further Reading

Momoka's Frog Switch Website

Link: <https://www.momoka.co/frogswitch>

Wayback: <https://web.archive.org/web/20210612002612/https://www.momoka.co/frogswitch>

ThocKey's MMK Frog V3 Sales Page

Link: <https://thokeys.com/mmk-frog-switch-v3-10-pack/>

Wayback: <https://web.archive.org/web/20210612002435/https://thokeys.com/mmk-frog-switch-v3-10-pack/>

Mechboards.co.uk Frog Switch Sales Page

Link: <https://mechboards.co.uk/shop/switches/momoka-frog-switches/>

Wayback:

<https://web.archive.org/web/20210419120446/https://mechboards.co.uk/shop/switches/momoka-frog-switches/>

Keebworks Momoka Frog Switch Review

Link: <https://keebworks.com/momoka-frog-linear/>

Wayback: <https://web.archive.org/web/20210612002216/https://keebworks.com/momoka-frog-linear/>

Momoka Frog Switch Typing Test

Link: https://www.youtube.com/watch?v=qR6ypyeIOHk&ab_channel=in%E5%A4%96%E8%AE%BE