

Tecsee Sapphire Switch Review

-ThereminGoat, 06/27/2021

Hey there everyone, it's me writing amidst an ever-growing mountain of boxes in my apartment. As I may have alluded to in previous reviews or content, I am moving here on Wednesday the 30th to Minnesota to begin my PhD program in the fall. Given that I currently live in Ohio, that makes the drive roughly 12 or so hours which I will be planning to do straight through the middle of the night. Needless to say, this move as well as my subsequent furniture hunting safari will likely mean that I will be a little bit late on the content next week with respect to a mail day post, measurement sheet, and potentially scorecards on the weekend. I hope you all understand my sheer distaste for skipping regularly scheduled content, as shown by me refusing to pack up any keyboard or review equipment until after I have this one last review out. I figure that would be an okay trade for a missed social media flex next week.



Figure 1: In case you've ever doubted the efficacy of these things, let me tell you they're straight up magic for packing.

Completely unrelated to both my personal life as well as the switch in review here, I also have chanced across two rather unique happenings in switches in the past few weeks that I wanted to share with you all partly for documentation purposes, but also because I can't think of a time or place where I'll record these otherwise. First and foremost, I wanted to share a further update regarding Momoka and their documentation of switches and versions of switches that I was so utterly thrilled about in my last review that I did on the Momoka Frog V3 switches. Since the release of that article, I was shown a link to a new webpage where Momoka effectively summarized the variations in versions between Frog switches that I aimed to discuss in my review, but in a much more cute and concise format. Needless to say, I think this is an absolutely invaluable tool that I wish more switch manufacturers would take note of and pick up here in the future.

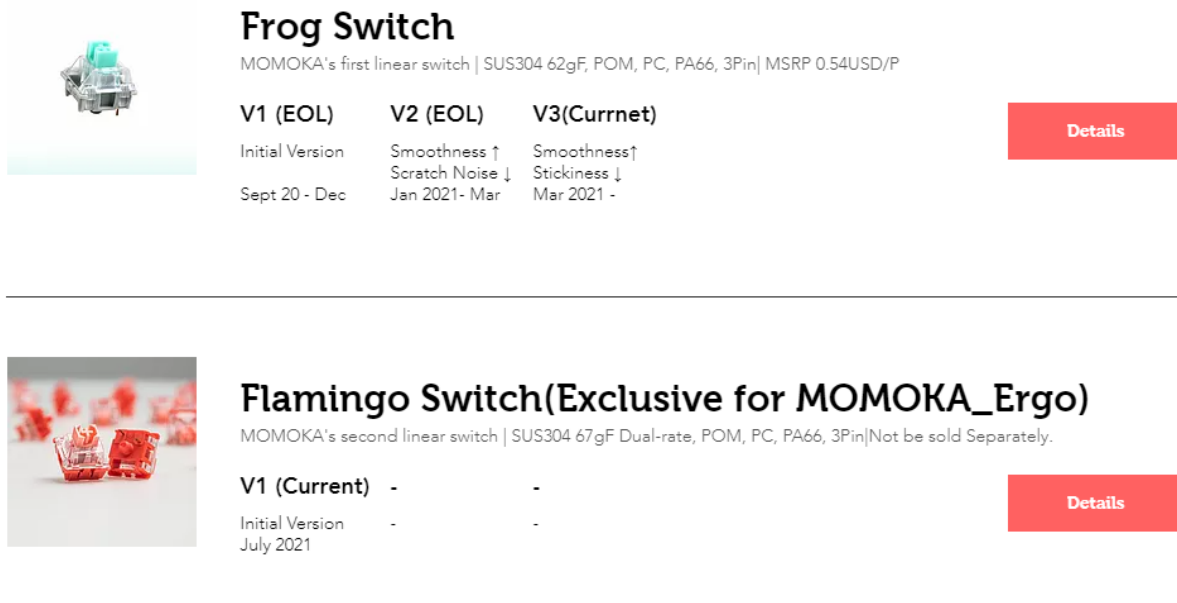


Figure 2: Every manufacturer having something like this would put me out of business.

Secondly, I wanted to share a rather interesting bit of drama that I'm still a bit uncertain of in regard to the exact details surrounding such. Nonetheless, recently some controversy on ZFrontier and Aliexpress has come about with respect to the 'Budget' JWK Blacks and T1s that I showed off in my mailday a couple of weeks back. This controversy comes in the form of a seller by the name of Shenzhen Jingweike Electronics, who was attempting to sell these switches being called out and quickly closed down by a company by the name of Dongguan Jingweike Electronics. Now, for those of you who are not aware, Dongguan Jingweike (as best as my extremely anglicized phonetic spelling of Chinese will allow) is the full name of JWK, the factory that we have all known and loved for some time now. Shenzhen Jingweike, on the other hand, is *not* JWK. So, this potentially means that for the first recorded time that I am aware of thus far, we may have seen an instance of JWK switches being cloned, which is quite rich given their arrival on the scene via the Stealios Controversy. Unfortunately, due to them quickly closing down after being opened, I was not able to secure any of these potentially clone/fake switches and thus will have to rely on this ZFrontier article linked in the image below as the source of this rather interesting news.



Figure 3: "Shenzhen JWK" Taobao page screenshot before the sale was removed.

So now that I've covered Momoka *and* JWK news in the beginning of this article, let's go ahead and cover the third and final company that you are all here to hear a bit about – Tecsee.

Switch Background

So, moving onto the history of Tecsee as a brand, they've been around for... some time. In fact, they've been around for what feels like long enough that I shouldn't have opened this paragraph this way because I can't actually recall the exact timeframe when they first appeared. My best guess at the current moment is that they first started manufacturing switches sometime roughly around early to mid 2020. Regardless, within the Q2 2021 timeframe, they've become increasingly popular as a switch brand in the west and have seen many releases from larger vendors such as Cannonkeys (Neapolitan Ice Cream Switches), Kinetic Labs (Huskies/Salmons), and 1UPkeyboards (Purple Pandas). This increased exposure came about as a result of their previous success as a company, being associated with the same manufacturing facility which produced BSUN, and by extension nearly every Panda switch produced up to date. Given this rise in popularity, as well as purported but unsubstantiated split from BSUN sometime recently, they've begun to increase their western facing media presence with a website as well as Instagram pages for the company and a representative of theirs.

Coming by way of notice via the sales representative Instagram page for Tecsee, I was first introduced to the Sapphire and Ruby switches earlier in June of 2021. While the occasional sighting and word of mouth had passed about regarding these switches amongst collectors over the course of the few weeks prior to writing this article, no official announcement of these switches have been made by any major vendor. In fact, it wasn't even until within the past month or so that these were available for sale on Tecsee's website at all. Thankfully, the sales representative for the company was willing to send me some to test out/keep for my collection for the price of shipping, in addition to a couple of other goodies that I may show off on social media in the coming weeks. This even garnered me a super official invoice from them, complete with the extra special (read: expensive) stamp and signature to prove these are direct from Tecsee, themselves.



Figure 4: An official seal to know when you are in fact in too deep into switches.

Currently available only on Tecsee's website and connected sales platforms, the Sapphire switches and their linear sibling in Rubies are priced at the time of writing at \$0.80 switch and have been available since roughly the beginning of June 2021. While a couple of vendors I know have received samples of these switches as a result of previous deals with Tecsee, I am unaware of any plans for them to be sold more western facing outlets in the months to come.

Tecsee Sapphire Switch Performance

Appearance

Rarely do I ever get to start out the ‘Switch Performance’ section with noting the appearance of a switch as one of the biggest selling points about the switch overall. However, the Sapphires (and Rubies for that matter) really take the cake with respect to their outward appearance. Coming in nearly opaque but translucent blue ‘polycarbonate mix’ housings, the Sapphire switches feature an orange-yellow stem that is quite close to a Gateron FF Cheese stem in color, but ever so slightly lighter. Very unlike the FF Cheese switches, though, the Sapphires feature a mix of silvery glitter evenly dispersed throughout not only the top and bottom housings, but also the stem as well. As of the time of writing this, this is the first mass produced switch to feature a sparkle like pattern in this fashion, and it is honestly quite stunning.

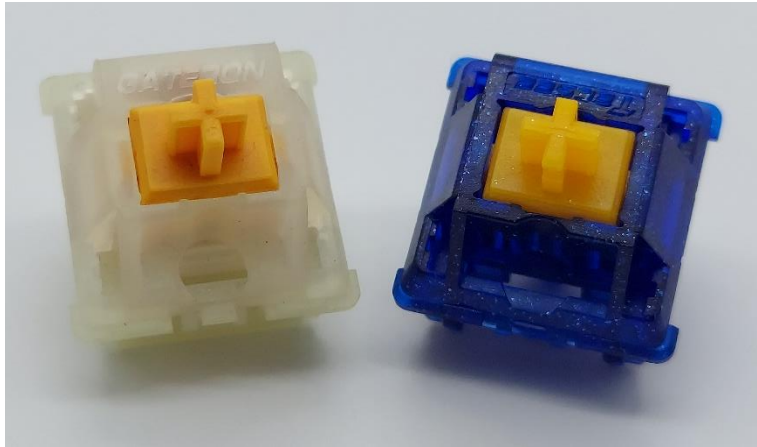


Figure 5: Stem color comparison between Gateron FF Cheese (Left) and Tecsee Sapphire (Right).

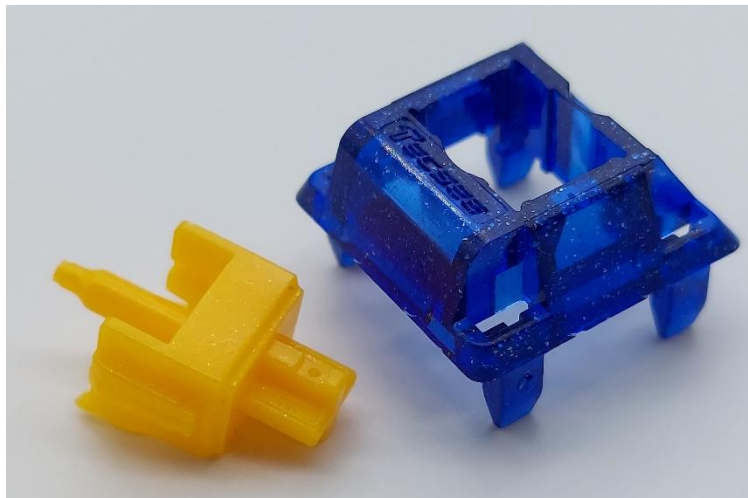


Figure 6: Sapphire top housing and stem showing sparkle distribution throughout all plastic switch components.

Internally, as well, the Tecsee Sapphire switches feature a rather interesting design for the spring which I wanted to specifically highlight given that Tecsee has introduced a slew of novel spring designs over the last few months of releases. Labeled from the manufacturer as ‘Progressive’, these 63.5g, gold plated, and normal length springs that are present in both Sapphire and Ruby switches feature a strange pattern in which the center of the spring is roughly normal looking, but the ends have increasingly tight coils as one moves out towards the edges from the center. While no accompanying force curve was

provided in order to show how exactly these may perform against something such as a standard 63.5g spring, I would imagine that these would be more likely to compress towards either end quite easily at first and then increasingly more difficulty as the larger gauge, center coils are compressed. The springs do not feature the same previously noted glitter pattern, unfortunately.

Moving on to the inspection of the molds of the Sapphire switches, the top housings appear to be fairly unremarkable save their shiny, glittery design. The exterior features the same upside-down, stamped Tecsee logo as has been seen in many of their recent releases and the LED slot is a singular open channel with the round cuttings in the center around the strip to allow for better LED placement. Internally, the top housings look fairly similar to all the previous releases I've discussed, but most similar to the Navy V1.5 releases. They feature the same central, interior LED slot mold numbering as well as the same pairs of mold indentations around the upper inner lip of the top housing. Additionally, they also feature the same tiny mold circles at the deepest part of the housing where the top of the slider rails collide with the top housing. Unlike previous releases I've noted though, the Sapphires appear to have the tiniest bit of factory lubing at this point of stem and top housing collision, though it was quite to see and even harder to photograph.



Figure 7: Tecsee's new progressive spring design. (Loss meme not included.)

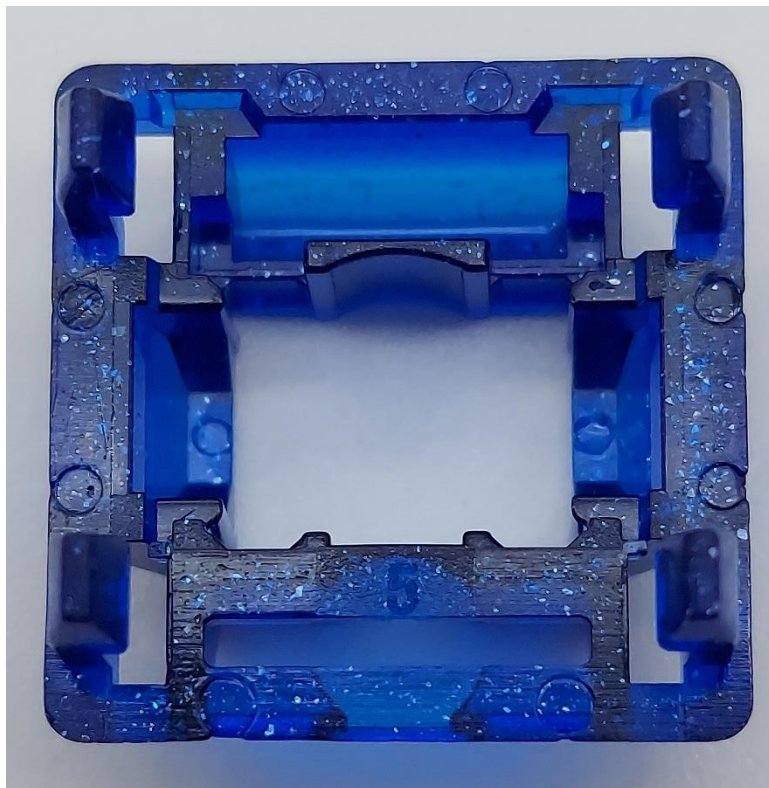


Figure 8: Interior of Tecsee Sapphire top housing showing mold markings and indentations.

Transitioning to the stems of the switches, again, everything seems fairly on par with expectations from recent Tecsee releases. These feature the commonly expected sloped slider rails towards the base and aggressively tapered, nearly tiered center pole as has been seen previously. As well, the mold circles on the front plate above the stem legs remains the same as expected. The only real point of note, which is better seen in the photo below of the bottom housing is that there appears to be an extremely light application of factory lubing to the tips of the legs of the Sapphire stems, likely done so in order to reduce stem-leaf ping as is common in switches of medium-strong to strong tactility range.

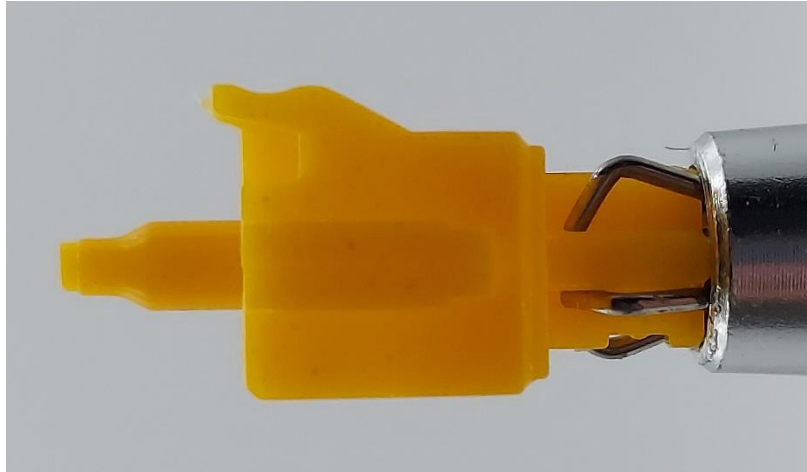


Figure 9: Tecsee Sapphire stem side profile demonstrating tactile bump.

Unlike the Naevy V1.5 switches, the bottom housing molds are a bit more in line with more recent releases such as the Husky switches from Kinetic Labs. Featuring a completely open LED slot region, these feature the eight upper lip mold circle impressions as well as the four on the base of the inside of the bottom housing along with the textured, ridged pattern noted previously in Husky switches. Externally, the bottom housings are fairly unremarkable with the mold marking being a single number which is internally facing and more centralized towards the center mast between the pins than older Tecsee releases, as can be seen below.

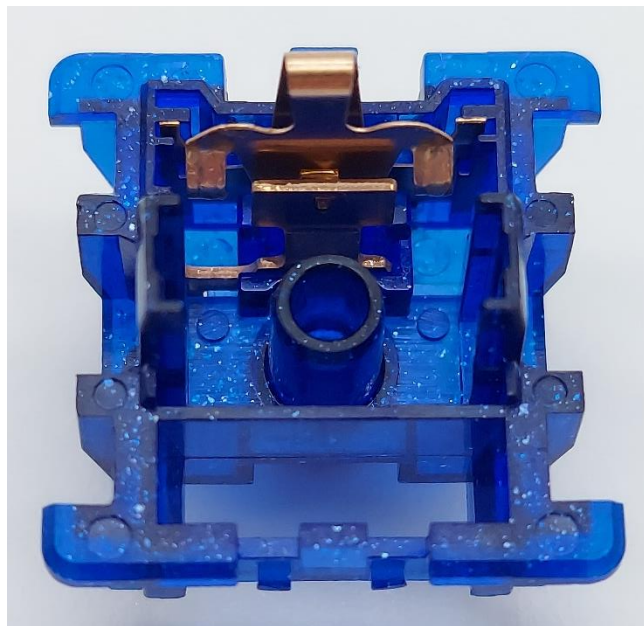


Figure 10: Interior of Tecsee Sapphire bottom housing showing mold circles as well as ridged interior base.

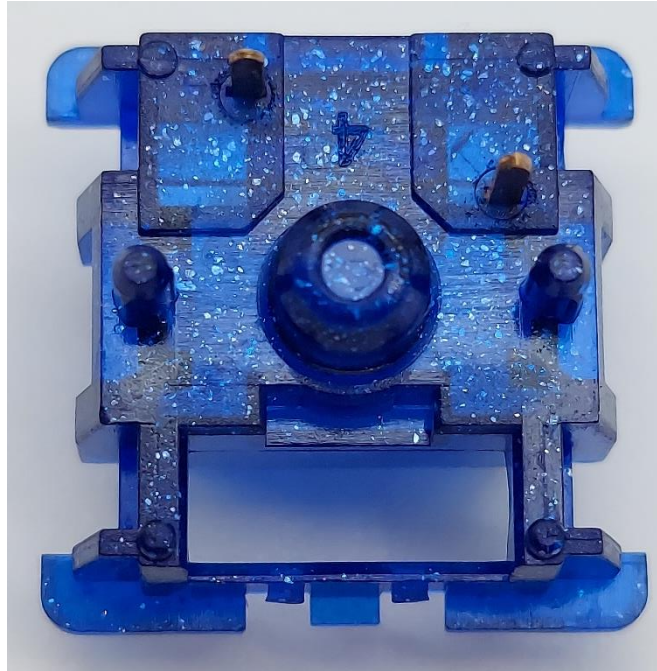


Figure 11: Exterior of Tecsee Sapphire bottom housing showing mold numbering and LED slot design.

Push Feel

Often times when I review switches with any level of factory lubing to them, I find it a bit hard to distinguish the exact benefit of each of the points of lube application on the stems and housings. Both fortunately and unfortunately, though, I was able to do such for the Tecsee Sapphires in this review. As previously stated, coming pre-lubed on the very tip of the stem legs and at the very top of the top housing, the Sapphires are fairly smooth tactile switches with a front-of-press, mid to heavy strength tactile bump when perfect. Even though it is a bit hard to quantify tactile strength to other people as they don't quite share the same preferences as you, these sit pretty squarely in between mid-range and heavier tactiles, with a strong ability to appeal to individuals who prefer either type. I suspect that part of the reason that people from both mid and heavy strength tactile switch preferences would prefer this comes from the fact that the tactile bump feels quite 'long' and speed bump like, rather than sharp and pointy, which helps mellow out some of the harshness that ultra-high strength tactile switches have become known for.

In less optimal states than above though, some of the better qualities of the push feel of the Sapphires drop off a bit. When the factory lubing is missing or less-than-desired on the stem legs, which occurred in about 20% of the switches I tested, it caused the tactile bump to feel (and sound) quite a bit more pingy and less smooth than would be expected for a drawn out, long tactile bump. While this is one point of modification that can be relatively easily fixed after having these in hand, attempting to lube the stem-leaf interface in any tactile switch is a fairly precarious practice and could cause less experienced lubers to over-lube and deaden their tactile bumps.

The housing collisions for the Sapphires, as well, are one of those instances in which optimal and suboptimal experiences are noticeably different. In optimal conditions, in which a minor amount of lube is present at the top interior of the top housing, the switches have a fairly surprisingly well-balanced topping out and bottoming out experience, with both feeling quite solid and muted. Even though the top housing is a bit thinner, it is still close enough to the bottoming out that it would lead me to believe that the 'polycarbonate mix' of these housings is actually more like a 60% Polycarbonate, 40% Something mixture instead of a 90/10 split. Without this lubrication though, which showed in about 30-40% of the

switches I tested, the topping out becomes thinner and less ‘muted’ while appearing to feel more like my general expectation for polycarbonate housings.

Sound

In their most optimal state, these switches are quite good sounding in terms of both the tactile bump as well as their housing collisions. Specifically, the tactile bump has a sort of snappiness to it, though with a bit of the edge taken off. While not overly aggressive in terms of overall volume, it sits pretty evenly between the near muted bump of lightweight tactile switches and the usually overpowering snap of ultra-high strength tactile switches. That being said, for those switches missing that slight bit of stem-leaf lubrication, there is an additional ping noise that is unfortunately fairly noticeable at all typing speeds and would be aggravated by the usage of harder plate materials and cases with more hollow internal spacing.

As for bottoming and topping out noises, these switches pretty well match the push feel description in which they’re fairly solid and muted sounding at both ends, with the topping out sounding just a bit higher pitched and thinner than the bottoming out. Again, without lubricant in this top housing area, the switches overall get a bit louder and less consistent sounding, though this is much more easily fixed than in the lubing of the stem-leaf interface for tactile switches. Overall, the sound is much closer to a nylon or even nylon-blend style housing than it is polycarbonate, which normally tend to have a very shrill, thin, and plasticky sound to their housing collisions. This, along with the feelings noted above, further my personal suspicion that this ‘polycarbonate blend’ used in the housings is likely one in which it has a majority polycarbonate, but not an overwhelming majority at that.

Wobble

Surprisingly, even though the mold designs for these switches look fairly similar to other recent Tecsee releases which I’ve both picked up and reviewed, the wobble is slightly different than the rest of those. While these have the same slightly noticeable, potentially bothersome levels of stem wobble, it’s a bit stronger in the N/S direction than in the E/W direction rather than well balanced. Overall though, unless you’re particularly picky about wobble or reviewing switches for a part time job, I doubt this would bother most people who try it.

Measurements

<i>Tecsee Sapphire Measurements</i>			
	Component	Denotation	mm.
Stem	Front/Back Plate Length	A	7.17
	Stem Width	B	5.53
	Stem Length with Rails	C	8.62
	Rail Width	D	1.93
	Center Pole Width	E	1.92
	Rail Height	F	5.22
	Total Stem Height	G	13.79
Bottom Housing	Diagonal Between Rails	L	9.38
	Interior Length Across	M	9.49
	Rail Width	N	2.59
	Center Hole Diameter	O	2.14
Top Housing	Horizontal Stem Gap	X	7.59
	Vertical Stem Gap	Y	6.02
Methods	Number of Switches Used		3
	Replication Per Measurement		3

Other

While not necessarily inherent to the switch itself, nor likely to the experience of buying a full package of switches from Tecsee directly, the sample bags that I was sent were done so including a rather well detailed label about the switch specifications as seen below. Even though this level of transparency is something that more and more switch manufacturers are beginning to do here in the west, I still do really appreciate this level of transparency and will continue to applaud it every time I do see it in the hopes that it catches on even more.



Figure 13: Tecsee sample bag with label detailing the switch specifications as well as the name of packer and day they were packed.

Comparison Notes to Other Notable Tactile 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 Sapphires side by side.

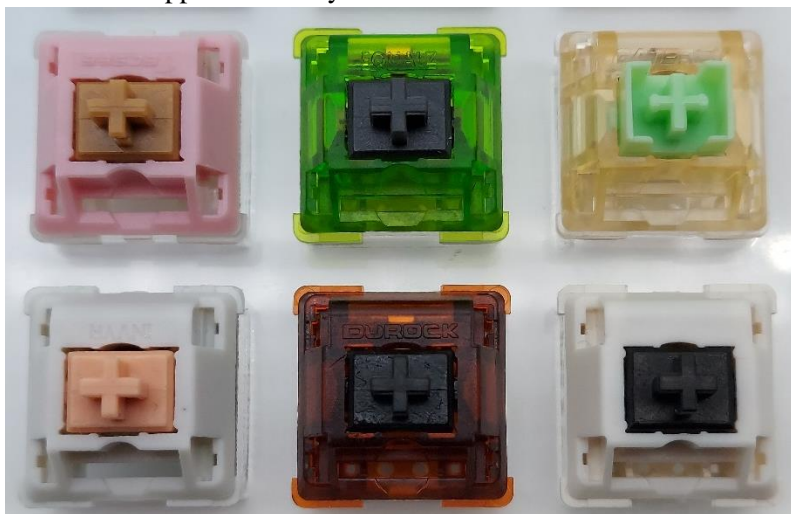


Figure 14: Switches for comparison. (L-R, Top-Bot: Neapolitan Ice Cream, Kiwi, Gateron Kangaroo Ink, Massdrop x Invyr Holy Panda, Dark Amber T1, Moyu Black)

Neapolitan Ice Creams

- Neapolitan Ice Creams are noticeably more loud overall compared to the Sapphire switches, even the unlubed, less than optimal ones.
- There is a tiny bit more stem wobble in the N/S direction in the Sapphires than in the Neapolitan Ice Creams, though overall the wobble on the Sapphires is better given that they don't have the same 'crunching' issue as talked about in my review.
- While not exactly the biggest metric sought after in tactile switches, the Sapphires feel a slight bit smoother than the Neapolitan Ice Cream switches in stock form, though not by much.

Kiwis

- In terms of overall tactile strength, and especially considering the difference in length of tactile bump, the Tecsee Sapphire switches feel like a more 'stretched out' version of Kiwis. While the tactile bump is just a bit less harsh in the Sapphires, it feels more spread out over a longer part of the stroke than the Kiwi switches.
- Even the sub-optimal, pingy Sapphire switches do not share the same level of spring or leaf ping as the Kiwi switches in terms of both sound and push feel.
- The topping out feeling of the Kiwis is just the tiniest bit more firm and solid feeling than the topping out of the Tecsee Sapphire switches.

Gateron Kangaroo Inks

- The Kangaroo Inks are leaps and bounds louder than the Sapphire switches, on account of both the housing collisions as well as the actual tactile bump itself. (No Kangaroos were harmed in the making of that pun.)
- Even though the tactile bumps are located in the same position at the start of the downstroke, the Gateron Kangaroo Inks feel slightly more towards the front of the downstroke due to the high initial force required to get the bump started as compared to the progressive springs in the Sapphires.
- As is the case with many higher strength tactile switches, the Kangaroo Inks feel a bit less balanced than the Sapphires, with the housing collisions feeling a bit stronger than the tactile bump. In the Sapphires, these are much more of a consistently strong feeling at all three points.

Massdrop x Invyr Holy Pandas

- Of all of the switches on this list, this Holy Panda and the Tecsee Sapphires have the most similar strength tactile bump, though the Sapphires do feel a bit longer and more stretched out.
- The Massdrop x Invyr Holy Pandas are noticeably more scratchy and intermittently pingy than the optimal Sapphire switches.
- The Tecsee Sapphires are noticeably better in both directions for stem wobble than the Massdrop x Invyr Holy Pandas.

Dark Amber T1s

- The Tecsee Sapphires have a bit stronger tactile bump than the Dark Amber T1s, as well as a more spread out or 'longer' tactile bump.
- Overall, the optimally lubed Tecsee Sapphires are noticeably better than the Dark Ambers with respect to stem-leaf ping, though the ones missing this lubrication in this area are about the same in terms of ping.

- The Sapphire switches are both significantly louder and less ‘muted’ in terms of tone than the Dark Amber T1 switches.

Moyu Blacks

- Without much surprise to anyone who has tried them, the Moyu Blacks are definitely the more tactile of the two switches in this comparison, having a much more short, snappy, and harsh bump to them.
- In terms of overall sound, the Moyu Blacks are significantly louder and more sharp at the housing collisions due to the high spring weight and hard bottoming out on the stem pole, as opposed to the more muted and solid sound that comes from the Sapphires (even though it coincidentally also bottoms out on the stem pole).
- The Tecsee Sapphires are marginally worse with respect to the stem wobble than the Moyu Blacks, though, and it could easily be attributable to the difference in spring weight between the two.

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.

Tecsee Sapphire		
30	/35	Push Feel
17	/25	Wobble
7	/10	Sound
11	/20	Context
8	/10	Other
73	/100	Total

Push Feel

Tecsee Sapphires are an excellent middle ground between mid-strength and high tactility switches featuring a nearly start of downstroke, yet well dispersed tactile bump aided by a novel progressive spring design. As well, even though there is the occasional ping and the housings leave a little bit to be desired, the polycarbonate blend used in them really drives home a solid, muted, and consistent feeling with the tactile bump strength.

Wobble

The stem wobble is really noticeable in the N/S direction and somewhat noticeable in the E/W direction. Even though this isn’t a massive issue for these switches, it’s still on par with recent Tecsee releases.

Sound

When they are good, they're good. These switches are solid, muted, and relatively firm in the tactile bump as well as the housing collisions. While not the loudest tactile switch you've ever heard, they really do well at balancing the sound between housings and bump.

Context

While this score may be a tiny bit critical given the relative newness of these switches, their quite high price upon release mixed with limited availability and especially their inconsistencies in factory lubing really hurt the score of what otherwise seems like an interesting looking, fairly well performing mid to high strength tactile switch.

Other

As a collector and historian, the Sapphires absolutely were exciting to me for their unique usage of sparkles in the housings and stems as well as the first-of-a-kind spring design. While these don't necessarily have groundbreaking performance, they're definitely a switch that will be remembered for these qualities long into Tecsee's future.

Statistics

Average Score			Tecsee Sapphire		
26.0	/35	Push Feel	30	/35	Push Feel
16.4	/25	Wobble	17	/25	Wobble
5.8	/10	Sound	7	/10	Sound
12.4	/20	Context	11	/20	Context
6.0	/10	Other	8	/10	Other
66.6	/100	Total	73	/100	Total
Sapphire Overall Rank			T-#25/96 (73/100)		
Sapphire 'Hard' Rank			T-#18/96 (54/70)		
Sapphire 'Soft' Rank			T-#40/96 (19/30)		

Final Conclusions

While I've taken a look at several Tecsee releases over the course of the last few months of reviewing, I can say that in the process of writing this Sapphire review that my expectations have not been moved as far in such a short amount of time as compared to the other releases. By no means are these the absolute best performing Tecsee switches I've seen, nor are they the most innovative, but for a switch that looks this nice, I've grown accustomed to thinking they would be more fluff than substance. In my experience, the more a company focuses on design and appearance of their switches, the less and

less they actually dedicate to performance aspects, and this has felt even more true lately given the broad rise of “recolours” and low effort switch design. So, naturally I went into this review expecting that these would feel a whole lot worse than they looked, and even more so than they actually performed. It’s for this exact reason that I can say this is the largest leap I’ve taken from pre- to post-review sentiment in some time.

Even though this says a lot about the general performance of the Tecsee Sapphires, as I genuinely do think they are a decent option performance wise if you don’t mind dropping the money for the sparkly exterior, I think it speaks more to what Tecsee and recent manufacturers have achieved. It wasn’t until quite recently that we’ve finally been able to reach a level of switch manufacturing and design such that switches can be extremely high quality with respect to performance, have custom molds, *and* have exterior color designs and patterns that really pop out from amongst the crowd. While I think that the Sapphires may carve out their own little niche here if ever sold in the west at their current price at the time of writing this review, I think they’ll be more remembered in the long running switch history as an interesting note about performance and quality finally catching up to each other. I hope that I’ll see these someday in a board at a meetup, or hell, even one of my boards someday if they could just drive that price down a tiny bit.

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

Tecsee's Website Sales Page for Sapphires

Link: <https://tecseekeys.com/products/tecsee-ruby-switch-4>

Wayback: <https://web.archive.org/web/20210625223012/https://tecseekeys.com/products/tecsee-ruby-switch-4>

Tecsee's Aliexpress Sales Page for Sapphires

Link: <https://www.aliexpress.com/item/1005002666297919.html>

Wayback:

<https://web.archive.org/web/20210625223225/https://www.aliexpress.com/item/1005002666297919.html>

Mechbox.co.uk's Tecsee Sapphire Sales Page

Link: <https://mechbox.co.uk/products/tecsee-sapphire-switch?variant=40143793291426>

Wayback: <https://web.archive.org/web/20210625223446/https://mechbox.co.uk/products/tecsee-sapphire-switch?variant=40143793291426>

Tecsee Sapphire Amazon Sales Page

Link: <https://www.amazon.com/Material-Switches-Mechanical-Keyboards-Progressive/dp/B095GXT33M>

Wayback: <https://web.archive.org/web/20210625223625/https://www.amazon.com/Material-Switches-Mechanical-Keyboards-Progressive/dp/B095GXT33M>