

## On the Subject of Mechanical Switches

*Tic Tac TAK TAK TAK*

This module contains five computer keyboard keys with switches that may produce different sounds.

To solve the module, hold the keys in the order of their switches.

If the wrong key is held, you will see its correct color, but you will receive a strike when releasing it. The module will then reset and the switches will change.

Keys are numbered 1 to 5 based on the order their switches appear in Table 1 from top to bottom then left to right. If there are duplicates of the same switch, number the duplicate keys as they appear in reading order on the module. To listen to a switch, press and hold the key for no longer than half a second. See Appendix MSKB for a list of switches.

**Table 1:**

Cherry								
Black	Red	Brown	Blue	Clear	White	Green	Grey (Linear)	Grey (Tactile)
Speed Silver				Speed Gold				
Gateron								
Black	Red	Brown	Blue	Clear	Yellow	Green	Tealios	Zealios
								Aliaz
Kailh Box								
Black	Red	Brown	White	Navy	Jade	Dark Yellow	Burnt Orange	Pale Blue
Kailh Pro								
Burgundy	Purple	Green						
			Kailh					
			Speed Silver	Speed Copper	Speed Bronze			
						Razer		
						Green	Orange	Yellow

**Table 2:**

If all the switches are Cherry switches.	1 2 3 4 5
If there are exactly two red switches.	2 4 5 3 1
If there are exactly three blue switches.	1 4 5 2 3
If there is only one Speed switch.	5 2 1 4 3
If there are exactly four brown switches.	4 1 2 3 5
If there are exactly two Razer switches.	2 3 5 4 1
If there is only one white switch.	4 1 5 2 3
If there are exactly three Kailh Box switches.	1 5 2 3 4
If there are exactly three green switches.	2 5 3 4 1
If there are exactly two Razer switches.	3 4 1 5 2
If more than half of the switches are Gateron and Kailh Pro.	2 3 1 4 5
If there is exactly one Gateron switch.	4 3 5 1 2
If all the switches are Kailh Box switches.	3 1 2 4 5
If there are exactly four Gateron switches.	2 4 1 3 5
If there are both at least one Tealios and one Zealios switch.	1 5 4 3 2
If all the switches are a different category.	4 2 3 1 5
Otherwise:	5 4 3 2 1

Using [Table 2](#), find the first applicable rule. Place each of the keys in the first five slots in reading order of [Table 3](#), in the order to the right of the selected rule, ignoring the rule the key starts on. These are the keys' starting positions.

Each space on [Table 3](#) refers to a rule in the [List of Rules](#).

To find the keys' ending positions, perform the following steps below for a total of 10 iterations.

- Take all of the characters of the bomb's serial number and convert any letters to numbers from the letter's position in the alphabet.
- Take the digital root of all the converted serial number digits.
- For each number, if it is less than 5, move the specified key down-left on [Table 3](#). Otherwise, move the specified key down-right.

- Start with key 1. Move this key once on Table 3 in the direction specified by the first character of the bomb's serial number.
- Then, move key 2 twice on Table 3 using the directions of the second and third characters of the serial number.
- Continue to each of the remaining keys in numerical order and move them the amount equivalent to their number, using the directions of the next consecutive serial number characters.
- If at any point you reach a serial number character beyond the sixth character, return to the first character and continue from there.

When moving a key, follow the first of these rules that applies:

1. If a key cannot move in the specified direction because a space in that direction doesn't exist, the new specified direction for this move is downwards in the opposite horizontal direction.
2. If a key cannot move in the specified direction because the space in that direction is occupied by another key, rotate Table 3 90° counter-clockwise.
3. If a key cannot move downwards in either horizontal direction and the last space it landed on for the current iteration was true, rotate Table 3 90° clockwise.
4. If a key cannot move downwards in either horizontal direction, rotate Table 3 180°.
5. If a key cannot move downwards or upwards in either horizontal direction, the key does not move. The rule on the space it's on is ignored.

Continue following the rules above until the key moves (unless if rule 5 applied). Table 3 will keep its rotation for the rest of the module. When the key lands on a space, check its corresponding rule in the List of Rules. If the rule is true, follow the applicable rule below:

- If this movement was the last movement for the key in the current iteration, rotate Table 3 90° counter-clockwise.
- Otherwise, rotate Table 3 90° clockwise.

Once the keys are in the ending positions, press and hold the keys on the module in the order in which they first appear in reading order on Table 3 in its original rotation. However, if the bomb has any unlit indicators with a letter in common with a key's color, the keys that don't have priority over those that do. Each key must be held for at least 5 seconds, unless if told otherwise.

**Note:** In this manual, when a rule refers to a color, the switch must have that color in its name.

**Table 3:**

<b>32</b>		<b>9</b>		<b>40</b>		<b>2</b>		<b>11</b>
	<b>8</b>		<b>12</b>		<b>4</b>		<b>41</b>	
<b>15</b>		<b>39</b>		<b>25</b>		<b>30</b>		<b>35</b>
	<b>20</b>		<b>18</b>		<b>22</b>		<b>17</b>	
<b>19</b>		<b>31</b>		<b>26</b>		<b>37</b>		<b>24</b>
	<b>36</b>		<b>7</b>		<b>5</b>		<b>33</b>	
<b>16</b>		<b>38</b>		<b>27</b>		<b>21</b>		<b>1</b>
	<b>3</b>		<b>13</b>		<b>28</b>		<b>10</b>	
<b>29</b>		<b>6</b>		<b>14</b>		<b>34</b>		<b>23</b>

**List of Rules:**

- 1. The bomb has at least two lit indicators
- 2. The bomb has a vowel in its serial number
- 3. This key is a Kailh Pro key
- 4. The bomb has an even number of modules
- 5. The bomb was initiated on a Sunday
- 6. The bomb has at least three unique numbers in its serial number
- 7. This key a Cherry key
- 8. This key is red
- 9. The bomb has at least two modules with 'Simon' in its name
- 10. The bomb has exactly one indicator
- 11. The bomb has an even number of batteries
- 12. The bomb has an odd amount of DVI-D ports

- 13. The bomb has an empty port plate
- 14. This key is blue
- 15. There are no ports present on the bomb
- 16. There are no port plates present on the bomb
- 17. This key is a Kailh Box key
- 18. This key is clear
- 19. The bomb does not have a module with 'Simon' in its name.
- 20. The bomb has exactly one Mechanical Switches module.
- 21. The bomb has an odd number of batteries
- 22. The bomb has at least one module with 'Piano Keys' in its name
- 23. The bomb has at least one Turn The Key or Forget Me Not module
- 24. The bomb has exactly three port plates
- 25. This key is a Gateron key
- 26. This key's number is 3 or 4
- 27. This key's number is 2
- 28. This key's number is 3
- 29. This key's number is 2 or 5
- 30. The bomb has an odd number of indicators
- 31. The bomb has an odd number of parallel ports
- 32. This key is either purple or yellow
- 33. The bomb has an even number in its serial number
- 34. The bomb has exactly two batteries
- 35. This key is a Razer key
- 36. The bomb has a zero in its serial number
- 37. This key is either brown or black
- 38. The bomb has exactly one battery
- 39. The bomb has exactly five ports
- 40. The bomb has exactly three indicators
- 41. The bomb has exactly one Souvenir module

**Things to note when holding down the keys:**

- The key may flash an incorrect color when held. If so, and the key's correct color is red, orange, yellow, or green, release the key when the last digit of the bomb's timer is the difference of the values of the correct color and the incorrect color. The correct color's value is the column number on Table 1 where the key's switch is located, starting at 1. The incorrect color's value is determined with the list below.

Red = 1, Orange = 2, Yellow = 3, Green = 4, Blue = 5, Purple = 6, White = 10

- If the key starts flickering rapidly, it is faulty. Release it immediately. Failure to do so in less than two seconds will result in a strike.
- If the key is not displaying a color, and the key is *not* clear, release the key when the last digit of the bomb's timer is the column number on Table 1 where the key's switch is located, starting at 1.

**Things to note when idle:**

A key may be flashing its light even when you've not interacted with it. It will either be always lit or it will be displaying a letter in Morse code.

- If the light is always lit *and* its color is the key's correct color, do not interact with the key for at least a minute after the module resets.
- If the light is always lit *but* its color is *not* the key's correct color, you can only interact with the key when the last digit of the bomb's timer is the following value for the corresponding color:

Blue/White = 0, Red/Green = 2, Orange = 4, Purple = 6, Yellow = 7, Black = 9

This rule *does not* affect release times.

- If the light is displaying a Morse code letter, *and* if the bomb has any lit indicators containing the displayed letter, you must tap the key three times in less than two seconds before holding it.
- If the light is displaying a Morse code letter, *but* if the bomb does *not* have any lit indicators containing the displayed letter, take the displayed letter and convert it to a number based on its position in the alphabet. Take the digital root of this number. You can only interact with the key when the last digit of the bomb's timer is the calculated value.

However, if this value is equal to the last digit of the bomb's serial number, you can only interact with the key when the *second-to-last* digit of the bomb's timer is the calculated number modulo 6.

**Morse Code:**

## How to Interpret

1. A short flash represents a dot.
2. A long flash represents a dash.
3. There is a long gap between letters.
4. There is a very long gap before the word repeats.

A	● —
B	— ● ● ●
C	— ● — ●
D	— ● ●
E	●
F	● ● — ●
G	— — ●
H	● ● ● ●
I	● ●
J	● — — —
K	— ● —
L	● — ● ●
M	— —
N	— ●
O	— — —
P	● — — ●
Q	— — — ● —
R	● — ●
S	● ● ●
T	—

U	● ● —
V	● ● ● —
W	● — —
X	— ● ● —
Y	— ● — —
Z	— — ● ●

1	● — — — —
2	● ● — — —
3	● ● ● — —
4	● ● ● ● —
5	● ● ● ● ●
6	— ● ● ● ●
7	— — ● ● ●
8	— — — ● ●
9	— — — — ●
0	— — — — —

**Appendix MSKB:**

Switch Identification				
Cherry Black	Cherry Red	Cherry Brown	Cherry Blue	Cherry Clear
Linear 60cn Force 2mm Actuation 4mm Travel Distance	Linear 45cn Force 2mm Actuation 4mm Travel Distance	Tactile 45cn Force 2mm Actuation 4mm Travel Distance	Clicky 50cn Force 2.2mm Actuation 4mm Travel Distance	Tactile 65cn Force 2mm Actuation 4mm Travel Distance
Cherry White	Cherry Green	Cherry Grey (Tactile)	Cherry Grey (Linear)	Cherry Speed Silver
Clicky 85cn Force 2mm Actuation 4mm Travel Distance	Tactile 80cn Force 2.2mm Actuation 4mm Travel Distance	Tactile 80cn Force 2mm Actuation 4mm Travel Distance	Linear 80cn Force 2mm Actuation 4mm Travel Distance	Linear 45cn Force 1.2mm Actuation 3.4mm Travel Distance
Gateron Black	Gateron Red	Gateron Brown	Gateron Blue	Gateron Clear
Linear 50cn Force 2mm Actuation 4mm Travel Distance	Linear 50cn Force 2mm Actuation 4mm Travel Distance	Tactile 50cn Force 2mm Actuation 4mm Travel Distance	Clicky 55cn Force 2.2mm Actuation 4mm Travel Distance	Linear 35cn Force 2mm Actuation 4mm Travel Distance
Gateron Yellow	Gateron Green	Gateron Tealios	Gateron Zealios	Gateron Aliaz
Linear 50cn Force 2mm Actuation 4mm Travel Distance	Clicky 80cn Force 2mm Actuation 4mm Travel Distance	Linear 67cn Force NA NA	Tactile 62-78cn Force NA NA	Silent Tactile 60-100cn Force 2mm Actuation 4mm Travel Distance
Kailh Box Black	Kailh Box Red	Kailh Box Brown	Kailh Box White	Kailh Box Navy
Linear 60cn Force 1.8mm Actuation 3.6mm Travel Distance	Linear 45cn Force 1.8mm Actuation 3.6mm Travel Distance	Tactile 60cn Force 1.8mm Actuation 3.6mm Travel Distance	Clicky 55cn Force 1.8mm Actuation 3.6mm Travel Distance	Clicky 75cn Force 1.7mm Actuation 3.6mm Travel Distance

Switch Identification				
Kailh Box Jade	Kailh Box Dark Yellow	Kailh Box Burnt Orange	Kailh Box Pale Blue	Kailh Pro Burgundy
Clicky 65cn Force 1.7mm Actuation 3.6mm Travel Distance	Linear 70cn Force 1.8mm Actuation 3.6mm Travel Distance	Tactile 70cn Force 1.8mm Actuation 3.6mm Travel Distance	Clicky 70cn Force 1.8mm Actuation 3.6mm Travel Distance	Linear 50cn Force 1.7mm Actuation 3.6mm Travel Distance
Kailh Pro Purple	Kailh Pro Green	Kailh Speed Silver	Kailh Speed Copper	Kailh Speed Bronze
Tactile 50cn Force 1.7mm Actuation 3.6mm Travel Distance	Clicky 50cn Force 1.7mm Actuation 3.6mm Travel Distance	Linear 50cn Force 1.1mm Actuation 3.5mm Travel Distance	Tactile 50cn Force 1.1mm Actuation 3.5mm Travel Distance	Clicky 50cn Force 1.1mm Actuation 3.5mm Travel Distance
Kailh Speed Gold	Razer Green	Razer Orange	Razer Yellow	
Clicky 50cn Force 1.4mm Actuation 3.5mm Travel Distance	Clicky 50cn Force 1.9mm Actuation 4mm Travel Distance	Silent Linear 45cn Force 1.9mm Actuation 4mm Travel Distance	Linear 45cn Force 1.2mm Actuation 3.5mm Travel Distance	