

# Chromatic Tempo

## Chromatic Scale – 12 Tones

The chromatic scale consists of all 12 tones existing in music within an octave. [This](#) video explains why we have a 12-step-tone-system in music.

How old is this system? It probably exists in ancient times already. But the music of the last millennium is definitely dominated by this system. It was lifted up to a higher level by the invention of the *equal temperament* – first developed in china 1584 but not until the end of the 18<sup>th</sup> century becoming a standard system in western music. An *equal temperament* is a musical temperament, or a system of tuning, in which the frequency interval between every pair of adjacent notes has the same frequency-ratio – the ratio of 1 to  $\sqrt[12]{2}$ .

## The System of Chromatic Tempos

I have transferred the system of *equal temperament* on musical tempos. As a starting point I chose *one second* (60 BPM) and the area heading downward (between 2 seconds and 1 seconds – meaning 30 – 60 BPM). Frequency doubling limits an octave in the realm of musical tones (12 semitones) – likewise limits a tempo doubling an octave in the system of the chromatic tempos.

Applying the ratio of the *equal temperament* (1 to  $\sqrt[12]{2}$ ) on the tempos beginning with 30 I came to the following BPM numbers: 30 – 31,78 (=  $30 \times \sqrt[12]{2}$ ) – 33,67 (=  $31,78 \times \sqrt[12]{2}$  etc.) – 35,68 – 37,80 – 40,05 – 42,43 – 44,95 – 47,62 – 50,45 – 53,45 – 56,63 – 60 rounded: 30 – 32 – 34 – 36 – 38 – 40 – 42 – 45 – 48 – 51 – 54 – 57 – 60.

I use this area for all my exercises with metronome except exercises in odd meters. For Beginners, for easy exercises and for exercising long phrases or even whole songs, I recommend using only every second number, because then you don't have to exercise in too much different tempos and the steps between the tempos might not be too big: (30 – 34 – 38 – 42 – 48 – 54).

But if you are practicing short phrases or rudiments close to your technical abilities, use all twelve tempos.

## Why exercising with slow tempo marks?

If a song has a tempo of i.e. ♩ = 180 BPM, you can tune your metronome on this number for practicing, but maybe you are getting nervous by hearing the fast beeps (or clicks) of the metronome. And maybe you notice that it is almost impossible for you to correct your tempo if you differed a little bit from the metronome clicking.

Tune your metronome in this case to ♩ = 90 or even better to ♩ = 45. You will feel more relaxed while hearing the slower rhythm and you will have more possibilities for correction if you differ a little bit from your metronome. This flexibility might be helpful while exercising. This approach might be better than thinking: "If it's not 100% correct it totally useless." Remember: it is an exercise, not a performance on stage.

## Why exercising with this system?

Everybody knows, what it means to double a tempo or to play half-time. But hardly anyone has an idea of playing 1 ½ times faster or one third slower. Is it unnecessary to know such things? Nature and music are

dominated by simple number ratios. Should a professional drummer ignore that when it comes to tempo relations?

I realized two basic rules:

- 1. If you can play something in a particular tempo with metronome and you want to be able to play this faster, set the metronome to a tempo  $\frac{1}{6}$  faster. But if you are already close to the limit of your technical ability, better set the metronome only  $\frac{1}{12}$  faster.**

Years of practicing, exercising and teaching has revealed to me that these ratios are ideal. They correspond to the *equal temperament*:

- The difference between one tempo and the next is not too big. Therefore, it is possible to master the exercise in the new tempo in a short time.
- The difference between one tempo and the next is not too small. Therefore, you don't need to practice too many different tempos.

With this system you get the tool to find the right BPM numbers fast. Like the *chromatic scale* it contains et al the fractions (approximately):

- (faster):  $1\frac{1}{12} - 1\frac{1}{6} - 1\frac{1}{4} - 1\frac{1}{3}$  and  $1\frac{1}{2}$
- (slower)  $\frac{23}{24} - \frac{11}{12} - \frac{7}{8} - \frac{5}{6} - \frac{3}{4} - \frac{2}{3}$  and  $\frac{1}{2}$

If you work regularly with this system and write some notes concerning your progress, you get a good sense of where your technical limits are – the exact uttermost tempos, where specific exercises are possible for you to perform. Do you like to know this? Or do you think, those knowledges are unnecessary for you?

- 2. If you cannot play something in a specific metronome tempo, try a tempo  $\frac{1}{6}$  slower. This means 4 of 12 steps slower.**

The best way to learn something new is to find out as fast as possible at which tempo you can play this with a metronome – no matter how slow this tempo might be. I call this the **root tempo**. From there you can use the **tempo method**, which means: Use rule 1. In most cases going 4 steps back is enough, to find your root tempo, but sometimes you have to try out even slower tempos.

In these cases, mentioned above: Do you think it is better to try out any BPM numbers found by intuition? Okay – then: forget this system!

## Practicing with music

Exercising with a practice drum kit allows you to practice with music. I don't mean learning to drum a specific song with specific drum notes – no! I mean practicing drum rudiments with music!

Working also as a DJ, I have a big well sorted and well tagged collection of music. I sorted my songs by tempo in 12 playlists. (Most Dj-software is capable to do this.) Each playlist represents  $\frac{1}{12}$  of my system of *chromatic tempos*. I sorted them from high to low, meaning that the song with the highest tempo comes first and the song with the lowest tempo is the last one in every list. In the middle of each list are the songs

located whose tempo correspond to the core number of the playlist. I have mentioned the core numbers of the twelve *chromatic tempos* in the beginning. Here is the table of the twelve playlists:

No.	↓	↑	rounded core number	core number	tempo area			
1	1/2	1	<b>30</b>	30,00	-	61,76 - 58,29	123,52 - 116,58	247,04 - 233,16
2	- 11/24	+ 1/12	32	31,78	-	65,45 - 61,76	130,90 - 123,52	261,80 - 247,04
3	- 10/24	+ 1/6	<b>34</b>	33,67	-	69,32 - 65,45	138,64 - 130,90	277,28 - 261,80
4	- 9/24	+ 1/4	36	35,68	-	73,44 - 69,32	146,88 - 138,64	293,76 - 277,28
5	- 1/3	+ 1/3	<b>38</b>	37,80	-	77,81 - 73,44	155,62 - 146,88	311,24 - 293,76
6	- 7/24	+ 5/12	40	40,05	41,22 - 40,00	82,43 - 77,81	164,86 - 155,62	323,72 - 311,24
7	- 1/4	+ 1/2	<b>42</b>	42,43	43,72 - 41,22	87,44 - 82,43	174,88 - 164,86	349,76 - 323,72
8	- 5/24	+ 7/12	45	44,95	46,27 - 43,72	92,53 - 87,44	185,06 - 174,88	370,12 - 349,76
9	- 1/6	+ 2/3	<b>48</b>	47,62	49,02 - 46,27	98,03 - 92,53	196,06 - 185,06	392,12 - 370,12
10	- 1/8	+ 3/4	51	50,45	51,93 - 49,02	103,86 - 98,03	207,72 - 196,06	400,00 - 392,12
11	- 1/12	+ 5/6	<b>54</b>	53,45	55,02 - 51,93	110,04 - 103,86	220,04 - 207,72	-
12	- 1/24	+ 11/12	57	56,63	58,29 - 55,02	116,58 - 110,04	233,16 - 220,08	-
13	1	2	60 = 30					

- The second column (from left) shows the ratios of the core numbers of each playlist to each other, if you concern the highest tempo as 1.
- The third column (from left) shows the ratios of the core numbers of each playlist to each other, if you concern the lowest tempo as 1.
- The higher tempos (300 BPM and more) are traditional tempo marks of Jazz music. Composers traditionally do not use tempo marks below 40 BPM and above 400 BPM.

I use all rows for practicing rudiments on my drum pad as well as on my exercise drum kit. (My exercise drum set has no electronic drum sounds and no midi capabilities. It consists only of exercise drum pads.)

I use the 8<sup>th</sup> row (45 BPM) also for jogging, because these songs are good for running with approximately 180 steps per minute. This frequency is used by professionals and is recommended by physicians for saving your knees. I am not well trained in running. So, I take small steps. In fact I am running very slow. But I am able to run 12 km at once after a three month break without getting knee problems.

I use the 6<sup>th</sup> row currently for inline skating (approx. 80 steps per minute).

I also made playlists with only triplet rhythms or with only waltzes. I applied the following rules:

1. For waltzes I normally assign a BPM number for whole bars – not for single beats. Thus, dance Tournament Waltzes i.e. do have tempos of 58 – 60 BPM – not 174 - 180 BPM.
2. But if the tempo of such a whole  $\frac{3}{4}$ -bar is slower than 40 BPM I use the BPM number for a single beat instead.
3. Is the tempo between 40 – 80 BPM (or is it a song of the kind mentioned in no. 2) I consider this song as a waltz – no matter which genre it is (Jazz, Blues, Rock or other). I refrain from practicing to songs with a triplet waltz-rhythm ( $\frac{9}{8}$ -rhythm).
4. Is the tempo above 80 BPM I consider the song as a song with a triplet rhythm – no matter which genre it is. In this category belongs also every song with a 16<sup>th</sup>-shuffle-rhythm between 40 – 80 BPM, though I could not find any song with a 16<sup>th</sup>-shuffle-rhythm below 60 BPM.

### **Why are the playlists sorted downward?**

The reason for that is, that this gives me the feeling, that my technical progress is bigger than it actual is. This illusion helps me to remain motivated for more exercising.

The same reason applies, when I am jogging or inline skating to the music from the playlists: The frequency declines slowly. This helps me to mobilize additional energy.