# 1) Description

**a) The figure of "3 row piano key system"**

**i)** The "3 row piano key system" suggests a new layout of the piano keys. ***(See Drawing #01)*.**

**ii)** It has 3 rows of keys.

(1) With this "3 row piano key system", finger arrangement when playing chords which have a root note at the top row (for example C#,D#,F,G,A,B chords) can be maintained when playing chords with the root note at the mid row (for example C,D,E,Gb,Ab,Bb chords). It means that the player can play any of the 12 basic Major chords with the same finger arrangement. This rule also applies to Minor chords. ***(See Drawing #02a, #2b #3a& #3b)***.

**iii) All key sizes are the same and wide for easy play**

The size and dimension of all the piano keys in the "3 row piano key system" remains the same as the white keys on the conventional piano, and this will make it easy to play since there is no difference in size between black and white keys, while the black key is smaller than white keys on the conventional piano ***(See Drawing #01, #05, #06, #07, #08)***.

**iv) Distance for one set of keys for one scale become shorter by 12mm**

(1) In "3 row piano key system", the distance for one set of keys that constitute a scale of one chord(132mm) is shorter than that of conventional piano (about 144mm) by 12mm (a half of the width of a key), and this will make it easier to play ***(See Drawing #05 & #06)***.

(2) Thus the size of a piano set become shorter with the "3 row piano key system". For example, the length of the key board of an 88-key piano is 1248mm long (52 White keys X 24mm = 1248mm) ***(See Drawing #07)***, while that of the "3 row piano key system" piano is 1035mm long (43.5key X 24mm = 1035mm) being shorter by 213mm***(See Drawing #08)***.

**b) Playing Music chord**

**i) About music chord**

**(1)** A Music chord is a set of musical notes that make a harmony***(See Drawing #04)*.**

**(2)** Structure of Major chord : For example C Major chord

Root note : C<Do>---(4 intervals)--- 3rd note : E<Mi>---(3 intervals)--- 5th note : G<Sol>

**(3)** Structure of Minor chord : For example A Minor chord

Root note : A<Ra>---(3 intervals)--- 3rd note : C<Do>---(4 intervals)--- 5th note : E<Mi>

(4) There are 24 basic chords as follows.

(a) 12 basic Major chords ( C, C#, D, D#, E, F, F#, G, G#, A, A#,B), and

(b) 12 basic Minor chords ( Cm, C#m, Dm, D#m, Em, Fm, F#m, Gm, G#m, Am, A#m,Bm).

(c) There are some more auxiliary chords such as Diminished Chord(For example : Cdim), Augmented Chord(For example : Caug), 7th Chord(For example : C7), 6th Chord(For example : C6), and the principle of the system applies in the same way.

**ii) Playing the chords on conventional Piano**

With conventional piano, for every chord, the player needs to memorise the combination of finger arrangement of chord individually. And it means, they need to memorise at least 24 sets of different finger arrangement to play all the 24 basic chords ***(See Drawing #02a &#02b)***

**iii) Playing the chords on the "3 row piano key system"**

**(1)** Again, the "3 row piano key system" is a new arrangement of piano keys ***(See Drawing #01).***

**(2)** "3 row piano key system" reduce from 24(twenty four) finger arrangement for the basic 24 chords to 2(two) finger arrangement for 24 chords**.** ***(See Drawing #02a &#02b)***

(a) The "3 row piano key system" needs only 2(two) finger arrangement to play all the basic 24 chords, while, with conventional piano, we need 24(twenty four) different finger arrangement.

(b) With "3 row piano key system", the player needs to memorise only 1(one) pattern of finger arrangement to play all the 12 Major basic chords ***(See Drawing #02a)***, and another 1(one) pattern of finger arrangement to play all the 12 Minor basic chords. ***(See Drawing #2b)***.

(c) In the same manner, the player needs to memorise only 1(one) finger arrangement each for individual auxiliary chord group such as Diminished Chord(For example : Cdim), Augmented Chord(For example : Caug), 7th Chord(For example : C7), 6th Chord(For example : C6).

c) **Playing Music Scale**

**i) About music Scale**

**(1)** The Music Scale consists of Major scales and Minor scales.

**(2)** Structure of Major chord scale : For example C Major chord scale

Root note<Do> : C---(2 intervals)---2nd note<Re> : D---(2 intervals)-- 3rd note<Mi> : E---(1 intervals)---4th note<Fa> : F---(2 intervals)---5th note<Sol> : G---(2 intervals)---6th note<La> : A---(2 intervals)---7th note<Si> : B---(1 intervals)

(3) Structure of Minor chord scale: For example A Minor chord scale

Root note<La> : A---(2 intervals)--- 2nd note<Si> : B---(1 intervals)--- 3rd note<Do> : C---(2 intervals)--- 4th note<Re> : D---(2 intervals)---5th

note<Mi> : E---(1 intervals)--- 6th note<Fa> : F---(2 intervals)---7th note<Sol> : G

(4) There are 24 basic scales as follows.

(a) 12 Major scale ( C, C#, D, D#, E, F, F#, G, G#, A, A#,B), and

(b) 12 Minor scale ( Cm, C#m, Dm, D#m, Em, Fm, F#m, Gm, G#m, Am, A#m,Bm).

**(5)** A Major Scale is a set of music notes, which includes basic 7tone ( Do-Re-Mi-Fa-Sol-La-Si ). Each major scale is rooted on 12keys ( C, C#, D, D#, E, F, F#, G, G#, A, A#,B).***(See Drawing #03a)*****.**

**(6)** A Minor Scale is a set of music notes, which includes basic 7tone ( La-Si-Do-Re-Mi-Fa-Sol ). Each minor scale is rooted on 12keys ( Cm, C#m, Dm, D#m, Em, Fm, F#m, Gm, G#m, Am, A#m,Bm) ***(See Drawing #03b)*****.**

**ii) Playing the scales on conventional Piano**

With conventional piano, for every scale , the player needs to memorise the combination of finger arrangement of each scale individually. And it means, they need to memorise at least 24 sets of different finger arrangement to play all the 24 basic scales. ***(See Drawing #03a &#03b)***

**iii) Playing the scales on the "3 row piano key system"**

**(1)** Again, the "3 row piano key system" is a new arrangement of piano keys ***(See Drawing #01).***

(2) "3 row piano key system" reduces from 24(twenty four) finger arrangement for 24 scales to 2(two) finger arrangement for 24 scales**.** ***(See Drawing #03a &#03b)***

(a) The "3 row piano key system" needs only 2(two) finger arrangement to play all the 24 scales, while, with conventional piano, we need 24(twenty four) different finger arrangement.

(b) With "3 row piano key system", the player needs to memorise only 1(one) pattern of finger arrangement to play all the 12 Major scales ***(See Drawing #03a)***, and another 1(one) pattern of finger arrangement to play all the 12 Minor scales. ***(See Drawing #3b).***

**d) Playing when the Basic scale(Basic chord) changes within the same musical piece**

i) It occasionally happens that there are changes on the Basic scale of the music in a same song. (for example : C chord is changed to F chord etc.).

ii) Normally, we use 3 chords in a song, which are I, IV, & V chord. For example, in the music with basic chord beginning on C, we use chords C(I),F(IV) & G7(V).This same song can occasionally include minor chords Am,Dm & E7.

iii) When there is a change in the Basic chord, for example, C chord is changed to F chord, we need to play twice as many chords as what we play before the change. The chords we need to play are C,F & G7 and F,Bb & C7, and Am,Dm, E7, Dm, Gm & A7 if minor chords get involved.

iv) With “3 row piano key system”, even when the Basic chord is changed, the player needs only 1 pattern of finger arrangement, or 2 in the case where minor chords are involved, without memorising all the finger arrangement of 6 chords(C, F, G7, F, Bb & C7) or 12(C, F, G7, F, Bb, C7, Am, Dm, E7, Dm, Gm & A7) chords in the case where minor chords are involved.

## 2) Claim

**a) (CLAIM 1) 3 rows of keys**

i) The key arrangement of “3 row piano key system” makes it possible to maintain the same finger arrangement when playing the chords which have root note at the top row (for example C#, D#, F, G, A, B chords), and those chords with the root note at the mid row (for example C, D, E, Gb, Ab, Bb chords). It means that the player can move around with same finger arrangement to play all the 12 Major chords (See Drawing #01, #2a, #2b, #3a & #3b) instead of the 12 finger arrangement required in the conventional piano. This rule also applies to Minor chords and Auxiliary chords. ***(See Drawing #01)***.

**b) (CLAIM 2 )Arrangement of Keys with even interval**

**i)** In “3 row piano key system”, at the mid row of keys, the keys are arranged at even intervals. For example, C and D are placed side by side with 2 intervals between them. The same applies to D and E, E and F#, F# and G#, G# and A#, A# and C. ***(See Drawing #01)***

**ii)** In “3 row piano key system”, at the top and bottom rows of keys, the keys are arranged at even intervals as well. For example, C# and D# are placed side by side with 2 intervals between them. The same applies to D# and F, F and G, G and A, A and B, B and C#.***(See Drawing #01)***

**iii)** The arrangement of the keys in the top row and second row are arranged in such a way that either one row is ahead of the other by one interval. The arrangement of the keys in the 3rd row will follow the top row. ***(See Drawing #01)***

**iv)** This arrangement of keys makes it possible to use the same finger arrangement for all 12 basic Major chords. The same applies to 12 Minor chords, 12 Major scales, 12 Minor scales, and the Auxiliary chords and scales. ***(See Drawing #01, 2a, 2b, 3a & 3b)***

**c) (CLAIM 3) The colour of the keys remains the same as the conventional piano keys.**

**i)** Although the arrangement is changed, the colour of the keys remains the same as the conventional piano keys for easy recognition.

**ii)** The white colour is for C,D,E,F,G,A,B keys, while the black is for C#,D#,F#,G#,A#.

**d) (CLAIM 4) Size of all the individual keys are same and remain as big as white key of conventional piano**

i) The size of each key in the "3 row piano key system" is as big as the white key in the conventional piano. All the keys in the "3 row piano key system" have the same size. That is to say, the white keys and the black keys are of the same size. ***(See Drawing #05 & #06)***.

**e) (CLAIM 5) Shorter distance for each set of keys in one scale(Do, Re, Mi, Fa, Sol, La, Si) by 12mm**

i) In "3 row piano key system", even though the size of the individual key is same as conventional piano, the distance for a set of keys that complete a scale of one chord(132mm) is shorter than that of the conventional piano (about 144mm) by 12mm (a half of the width of a key), and this will make it easier to play ***(See Drawing #05 & #06)***.

**f) (CLAIM 6) 1 finger arrangement which applies to 12 basic Major chord*(See Drawing #02a)***.

**g) (CLAIM 7) 1 finger arrangement which applies to 12 basic Minor chord*(See Drawing #02b)***.

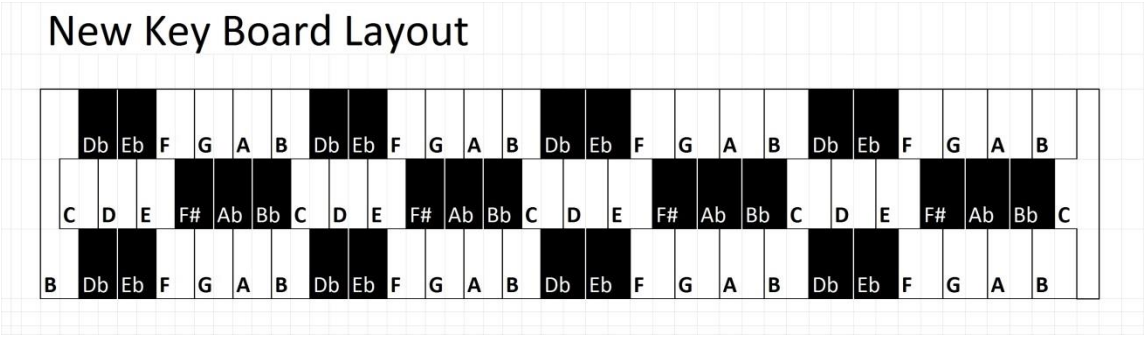
**h) (CLAIM 8) 1 finger arrangement which applies to 12 basic Major chord Scale*(See Drawing #03a)***.

**i) (CLAIM 9) 1 finger arrangement which applies to 12 basic Minor chord Scale*(See Drawing #03b)***.

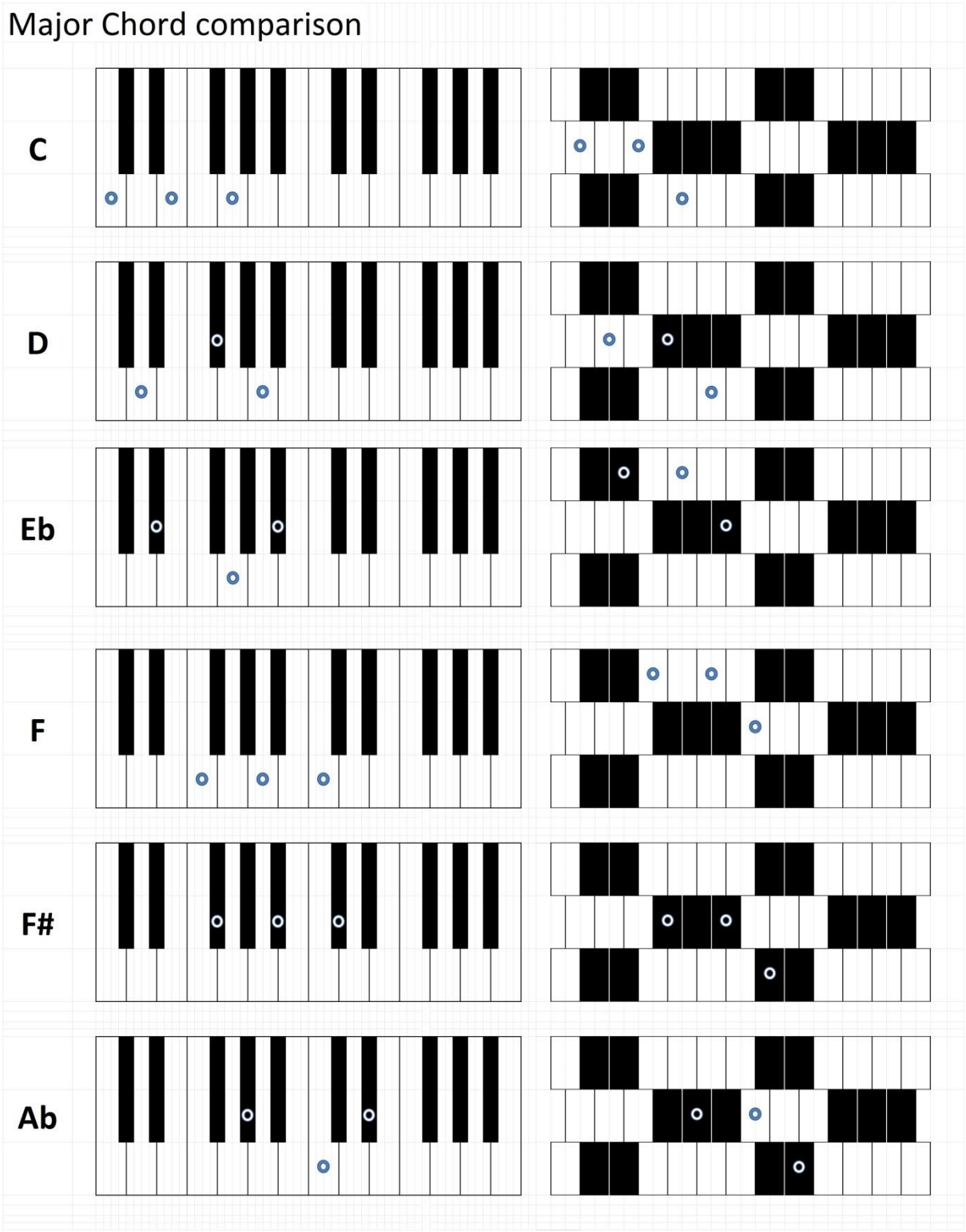
## 3) Drawing

a) Drawing #01 -- "3 row piano key system" layout with key name
b) Drawing #02a -- Comparison between Major chords on conventional piano key system and "3 row piano key system"
c) Drawing #02b -- Comparison between Minor chord on conventional piano key system and "3 row piano key system"
d) Drawing #03a -- Comparison between Major chord scales on conventional piano key system and "3 row piano key system"
e) Drawing #03b-- Comparison between Minor chord scales on conventional piano key system and "3 row piano key system"
f) Drawing #04 -- Example of Music Chords
g) Drawing #05 –Key dimension of conventional piano key system
h) Drawing #06 -- Key dimension of "3 row piano key system"
i) Drawing #07 – conventional 88key piano key board shape
j) Drawing #08 – "3 row piano key system" key board shape equivalent to a conventional 88key piano key board

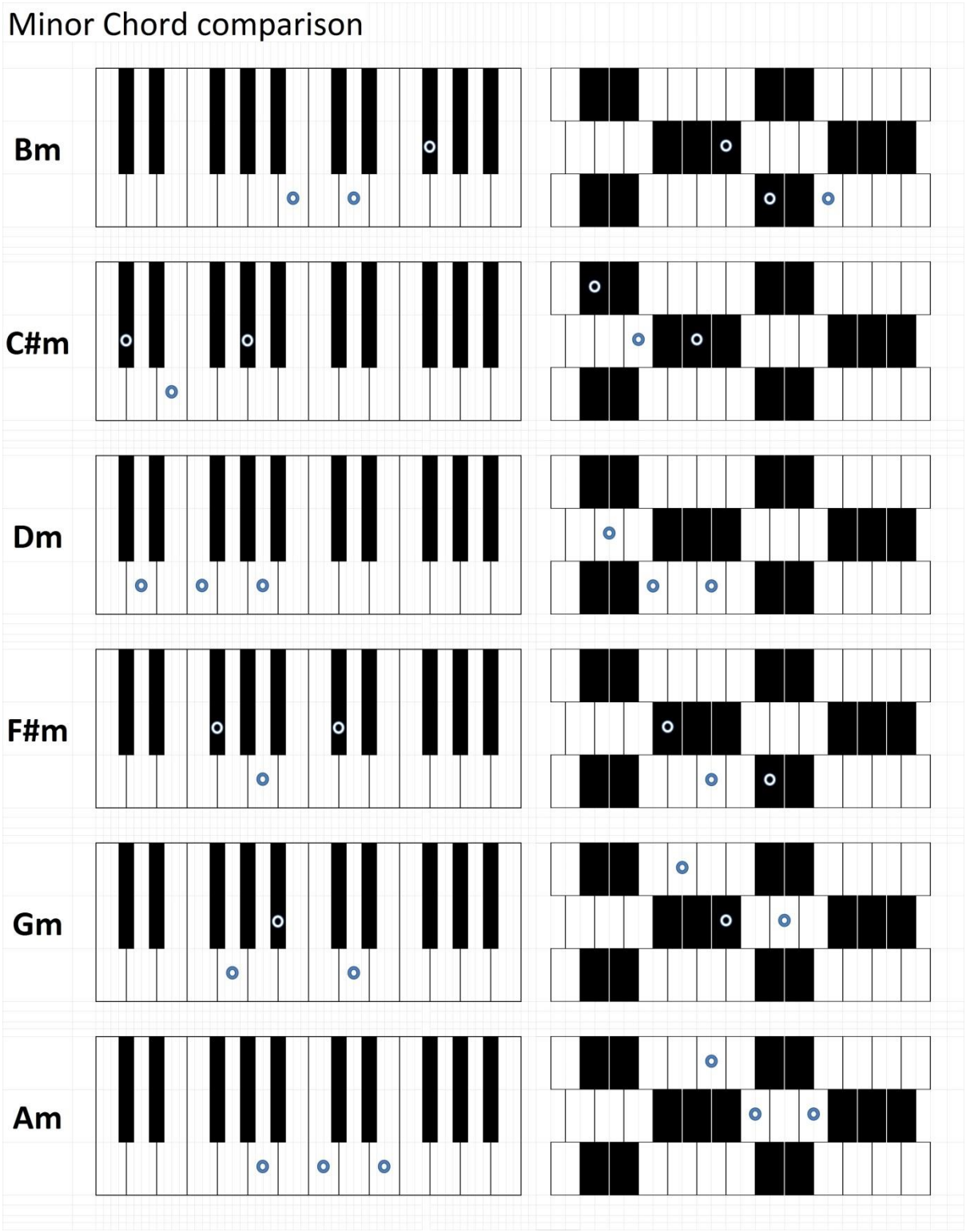
a)Drawing #01 -- “3 row piano key system” layout with key name



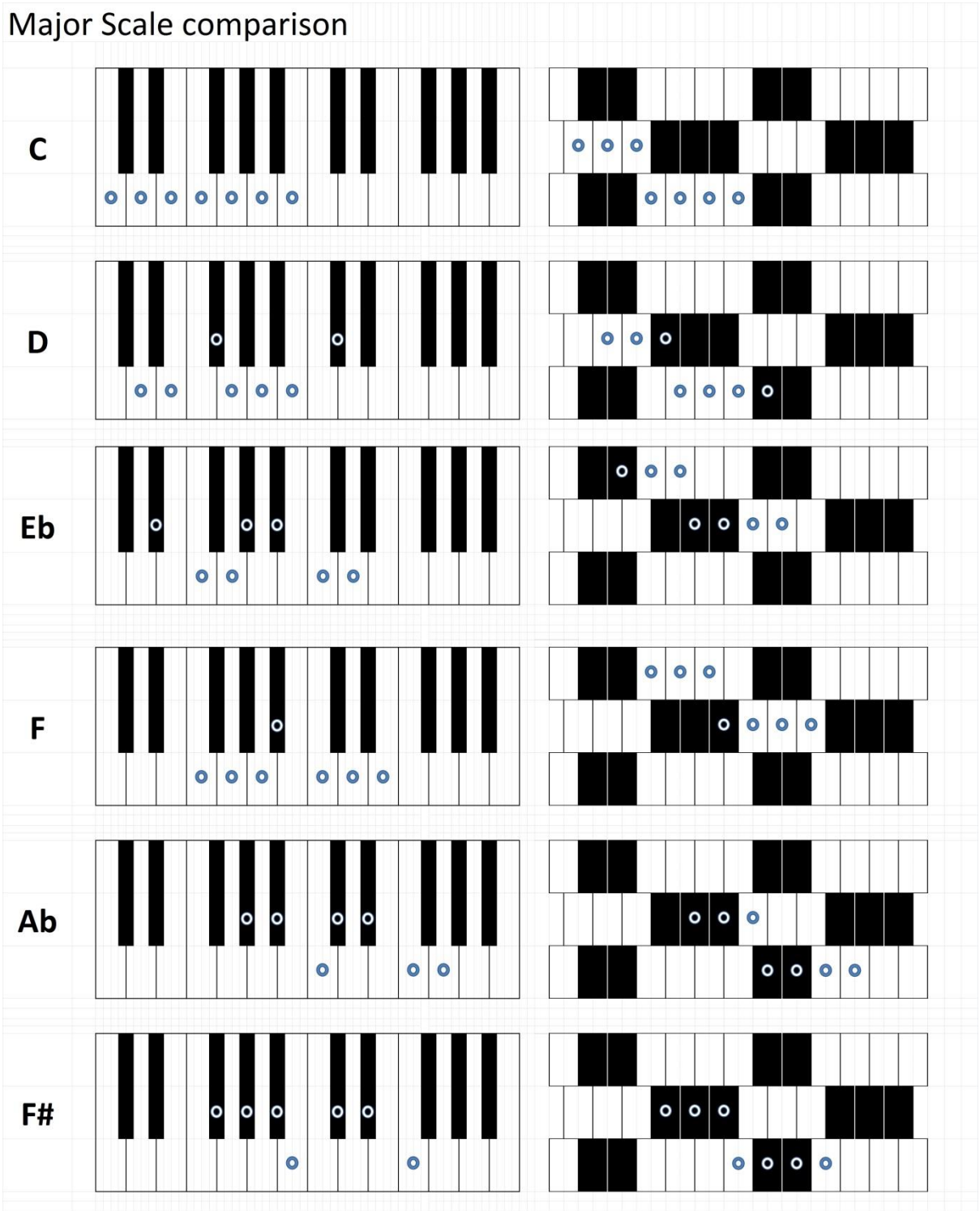
b)Drawing #02a -- Comparison between Major chords on conventional piano key system and “3 row piano key system”



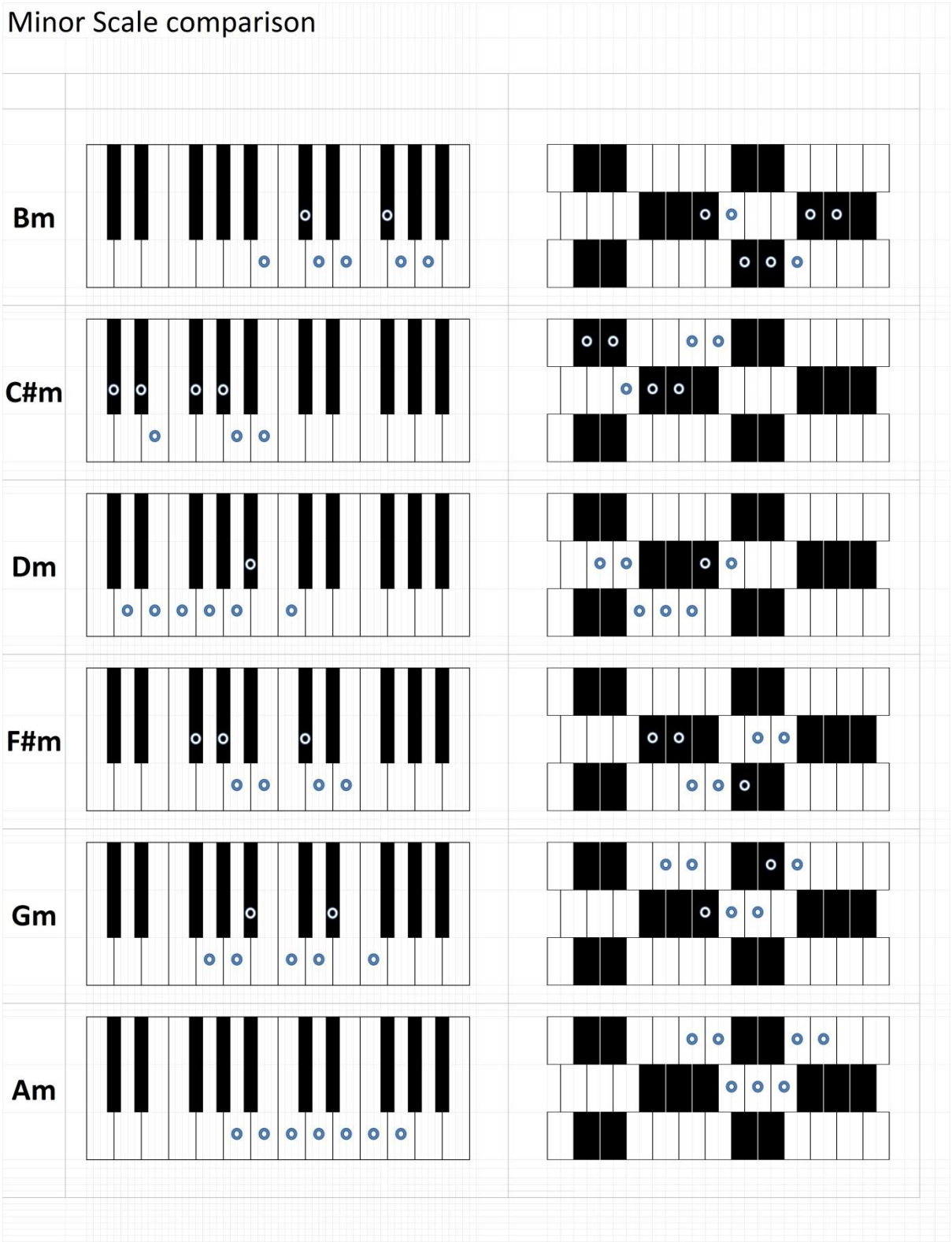
c)Drawing #02b -- Comparison between Minor chord on conventional piano key system and “3 row piano key system”



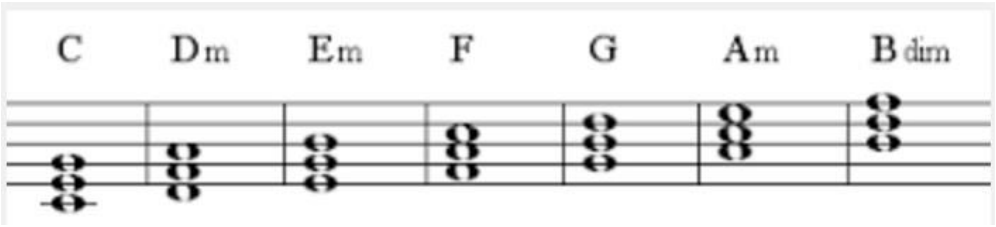
d)Drawing #03a -- Comparison between Major chord scales on conventional piano key system and “3 row piano key system”



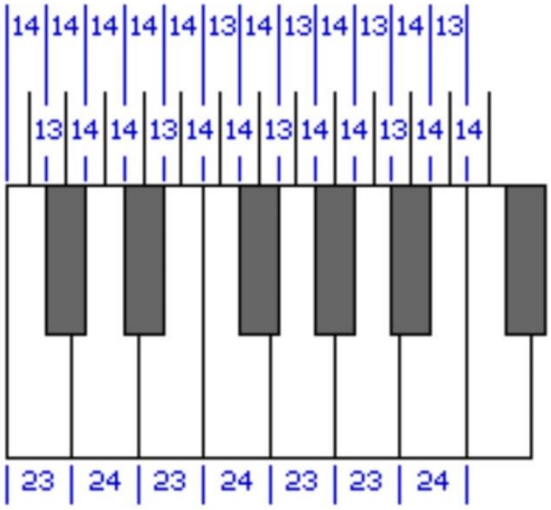
e)Drawing #03b-- Comparison between Minor chord scales on conventional piano key system and “3 row piano key system”



f)Drawing #04 --  Example of Music Chords

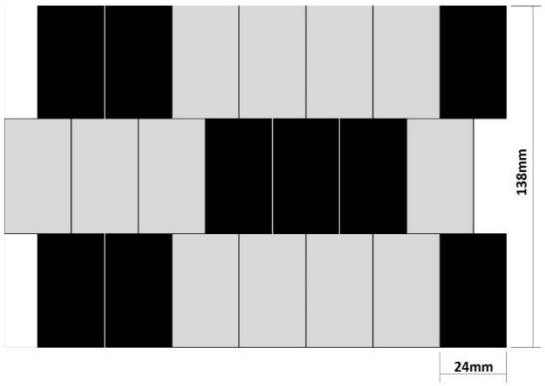



g)Drawing #05 –Key dimension of conventional piano key system



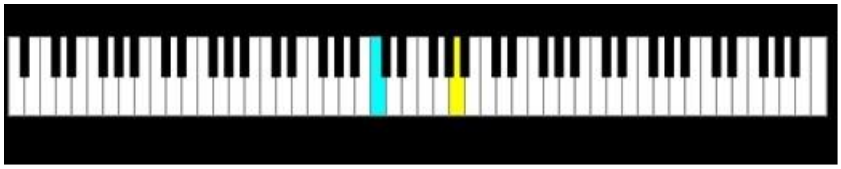

**Dimension of current piano key**

h)Drawing  #06 -- Key dimension of “3 row piano key system”

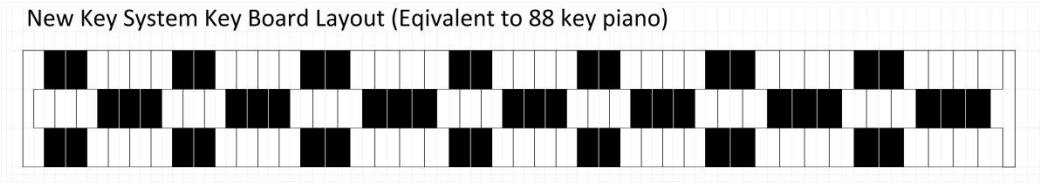



**Key Dimension**

i) Drawing #07 – conventional 88key piano key board



j) Drawing #08 – “3 row piano key system” key board equivalent to a conventional 88key piano key board




# 4) Abstract

**a) The purpose of invention**

**i) Much easier and very simple to play piano**

(1) The purpose of this invention is that, by introducing the “3 row piano key system”, playing piano will be much easier and very simple for everybody.

**(2)** With this system, anybody can play piano without spending a lot of time and effort to practice and memorise the chords and scales, which discourages the people from continuing to play the piano.

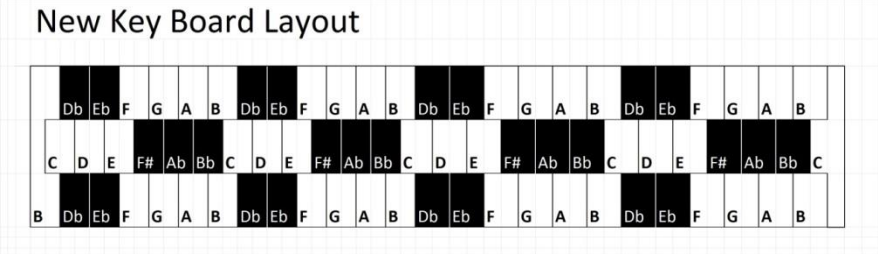
(3) It is possible for player to use only 1(one) type of finger arrangement for all the 12(twelve) basic major chord ( C, C#, D, D#, E, F, F#, G, G#, A, A#,B). This principle also applies to 12 basic Minor chords ( Cm, C#m, Dm, D#m, Em, Fm, F#m, Gm, G#m, Am, A#m,Bm), and to 12(twelve) major scales, 12 minor scales and all the other auxiliary chords such as Diminished Chords(For example : Cdim), Augmented Chords(For example : Caug), $7^{th}$ Chords(For example : C7), 6th Chords(For example : C6).

**ii) Freedom in choosing keys of the music to play**

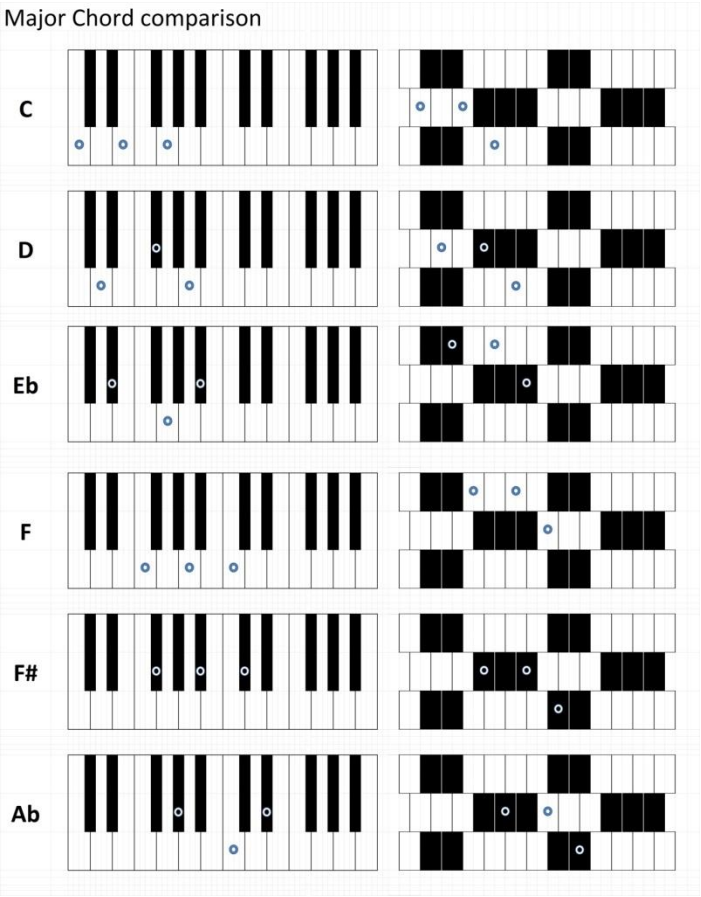
For professionals as well as amateurs, this system will help them to save a lot of time in practicing piano chords and scales, and furthermore they can freely play the piano with any basic keys. This “3 row piano key system” enables the piano to fit into any musical environment with more freedom in the selection of keys, especially for an ensemble which consists of many kinds of musical instruments with different keys.

**b) The figure of “3 row piano key system”**

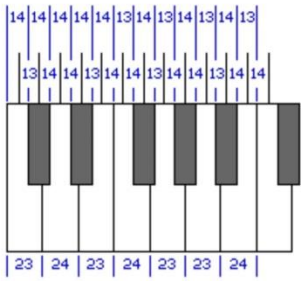
i) New key board layout



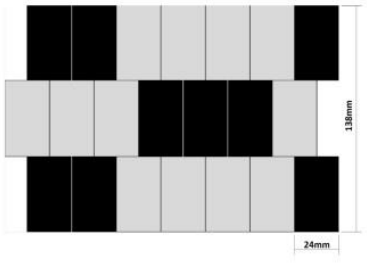

ii) It has 3 rows of keys, which makes all the finger arrangement for 12 basic Major chords the same as seen in the drawing below. This rule also applies to Minor chord system, auxiliary chord system and Major & Minor scales (See Drawings 2b,3a and 3b).




iii) **All the keys are as wide** as the white keys of conventional piano **and big for easy playing, as there is** no difference in size between black and white keys. Currently the black keys are smaller than white keys on the conventional piano.

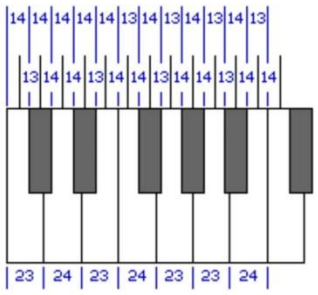



Dimension of current piano key

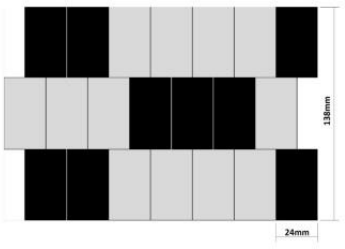



Key Dimension

c) **Distance for one set of keys for one scale is reduced from 144mm to 132mm shorter by 12mm**(a half of the width of a key) and this will make it easier to play. Thus the size of a piano set become shorter with the “3 row piano key system”.

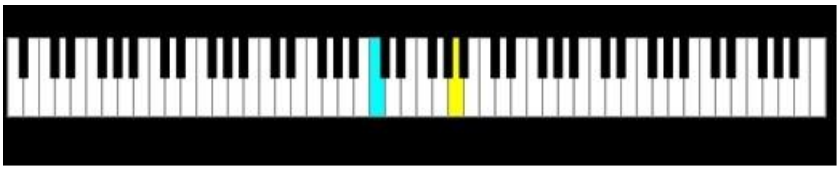



Dimension of current piano key

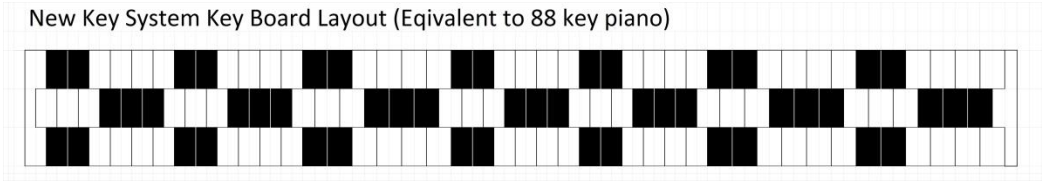



Key Dimension

**d) The size of a piano set become shorter in length** with the “3 row piano key system”. For example, the length of the key board of a current 88-key piano is 1248mm long (52 White keys X 24mm = 1248mm), while that of the ‘new key system’ piano is 1035mm long (43.5key X 24mm = 1035mm) being shorter by 213mm.



New Key System Key Board Layout (Eqivalent to 88 key piano)



--The End—