Near-Equal Temperament

Project N-ET : Part 3 of 3

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Fast Inverse Stack
(Full Manual)

Description

This is the full manual, step by step how to tune all 12 keys following the conception in first article, sub-chapter "Fast Inverse Stack" (read it first). It is recommended for professionals who understand how to tune an **inversed perfect fourth**, ratio $\frac{3}{4}$.

The overhead in Forward Stack comes from the mandatory octave downshifting. Replacing some perfect fifths with **inversed perfect fourths** ($\frac{3}{4}$) reduces the required steps from 13 to 9. This is the only new interval in this procedure. The overall process is cut by 30% which saves a lot of time in manual tuning.

Images below are an example how I would do it from my perspective. They are for educational purpose to see the whole picture of this procedure. Choose any order that fits best for you. I'm recommending to use sticky notes on every key to track your progress. Otherwise, you might get lost what has been done and what has left.

The range of the referent and jump octaves has been chosen on purpose. As already said in first article, the best hearing range for complex sounds is between $80Hz - 500Hz$.

Process

Referent octave is the kernel for all other keys. When you finish with referent octave, spread the tunes across all octaves. It is a standard, well-known technique which does not need further explanation. Remember to tune an octave exactly in ratio 2:1. DO NOT STRETCH THE OCTAVE!

Jump octave is where a single stack is being created. It is called jump because will be constantly detuned.

Keys tagged with numbers represent all required steps for a single stack.

X – Black or white "X" symbol have the meaning of already tempered tone. Do not touch this key!

X – Green "X" mark. The tune of this key will be equally tempered within the current stack.

0 – Black or white "0". The kernel of every stack. This is the initial step. In first picture it's tone A and assumes that already has the right tune of A4 = 440Hz, 432Hz… or whatever you like.
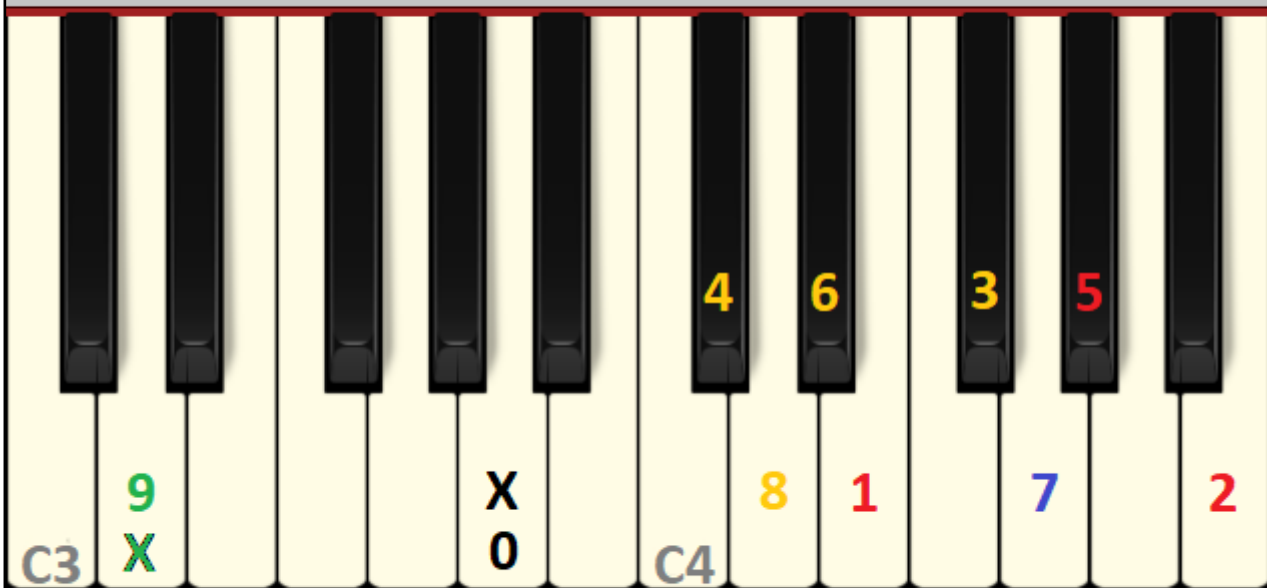
Red numbers – These are perfect fifths, ratio: $\frac{3}{2}$

Orange numbers – These are inversed perfect fourths, ratio: $\frac{3}{4}$

Blue number – This is a major third, ratio: $\frac{5}{4}$

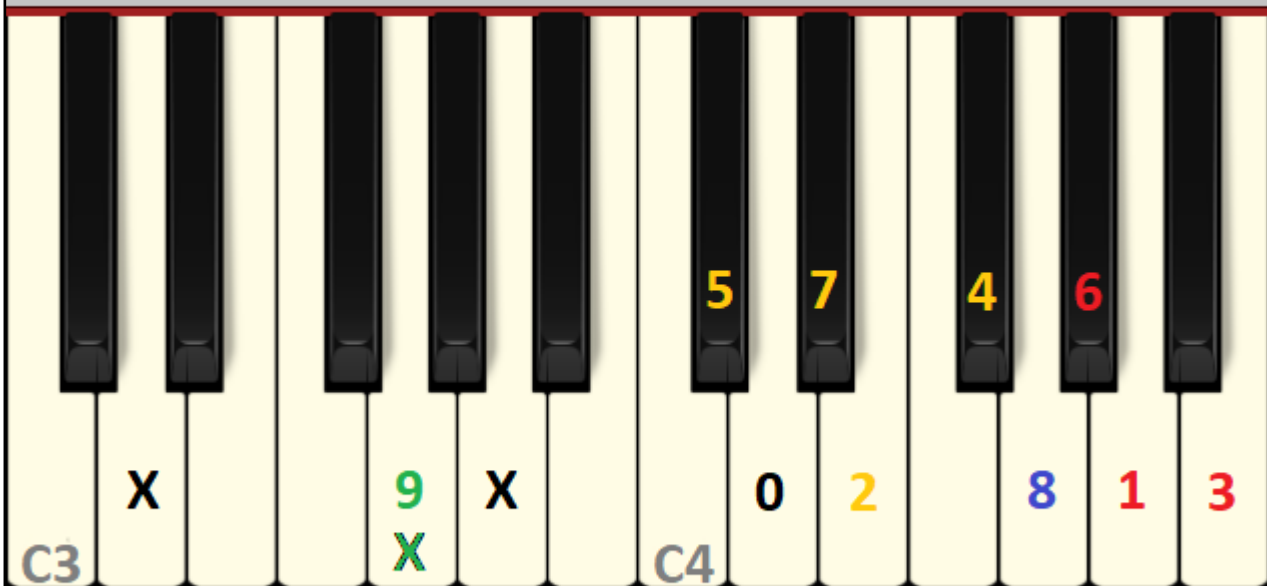**Green numbers** – Shift 1 octave down, ratio: $\frac{1}{2}$

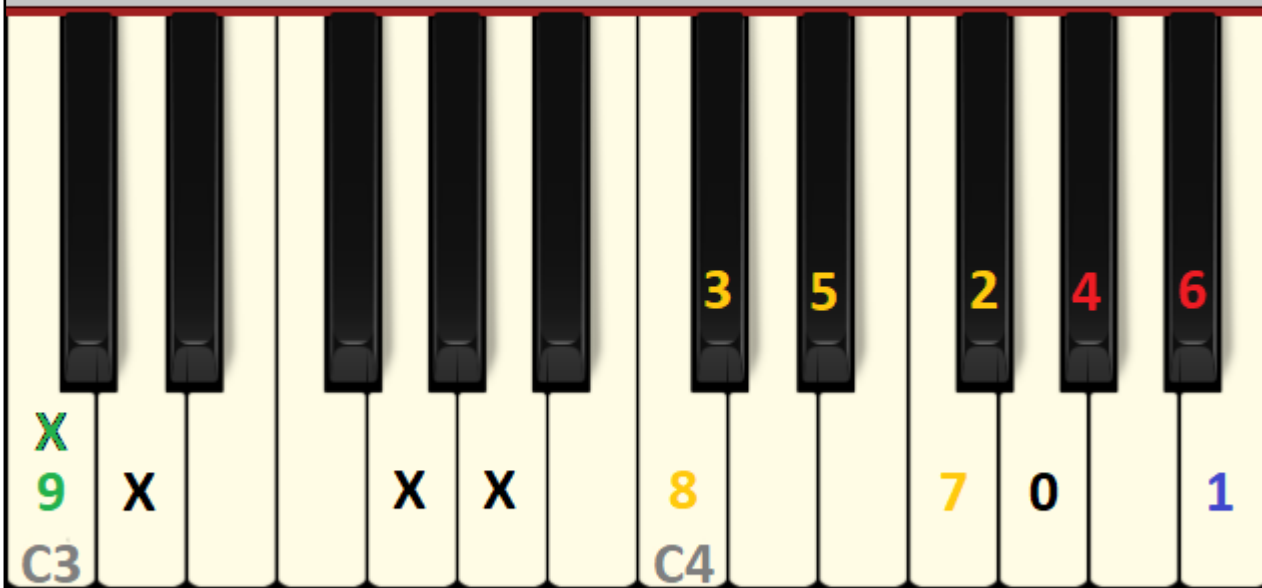# Fast Inverse Stack #01

C3 — Referent Octave | Jump Octave — C4

Referent Octave: 9 X | X 0

Jump Octave: 4 6 | 3 5 | 8 1 | 7 | 2

Fast Inverse Stack #02

C3 — Referent Octave | Jump Octave — C4

Referent Octave: X | 9 X | X
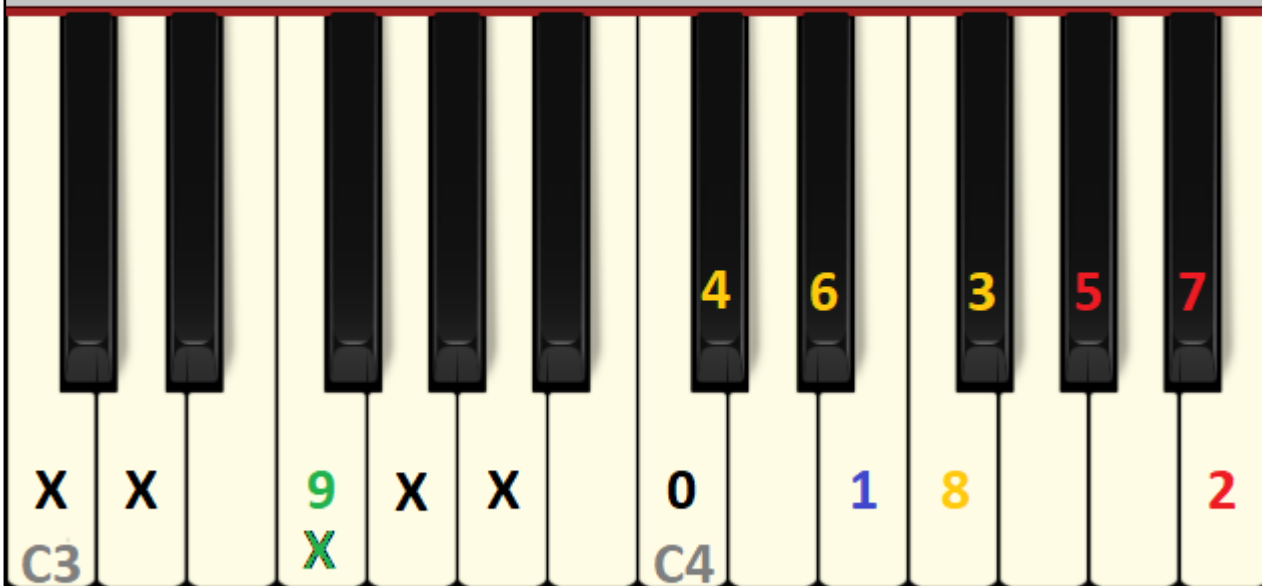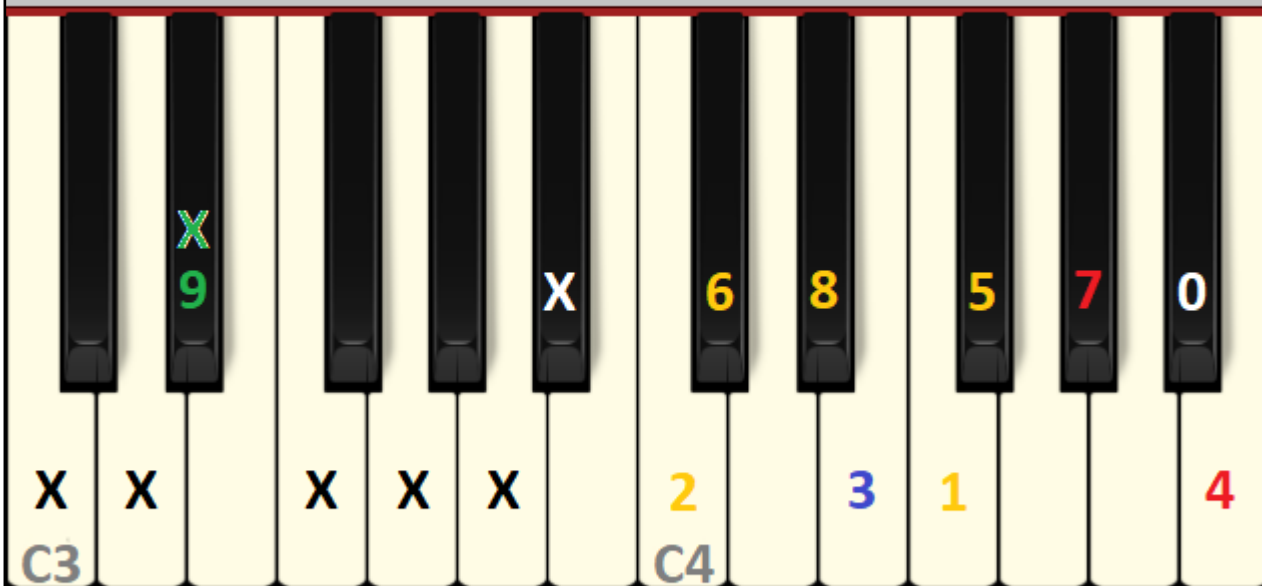
Jump Octave: 5 7 | 4 6 | 0 2 | 8 1 3

Fast Inverse Stack #03

Referent Octave | Jump Octave

Fast Inverse Stack #04

Referent Octave | Jump Octave
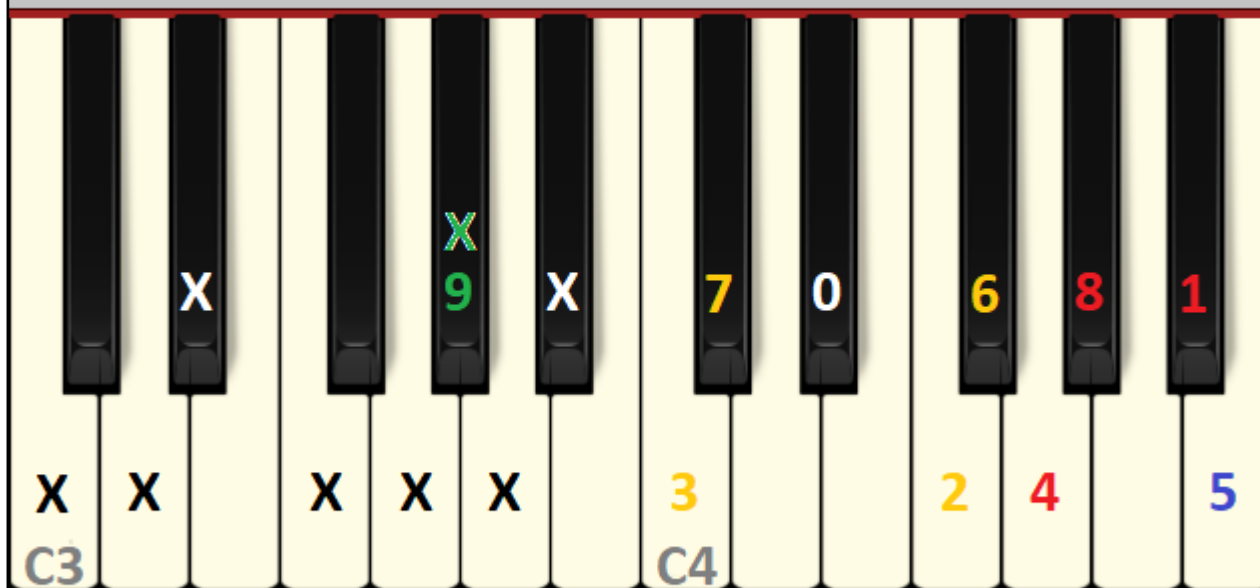
Fast Inverse Stack #05

Referent Octave | **Jump Octave**

Fast Inverse Stack #06
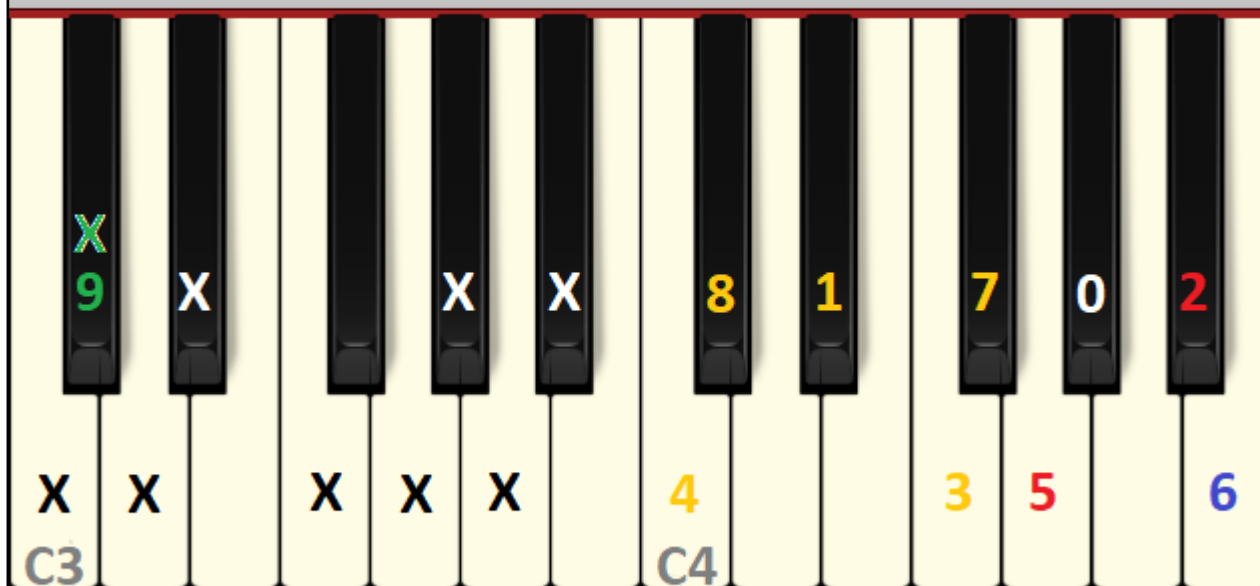

Referent Octave | **Jump Octave**

Fast Inverse Stack #07
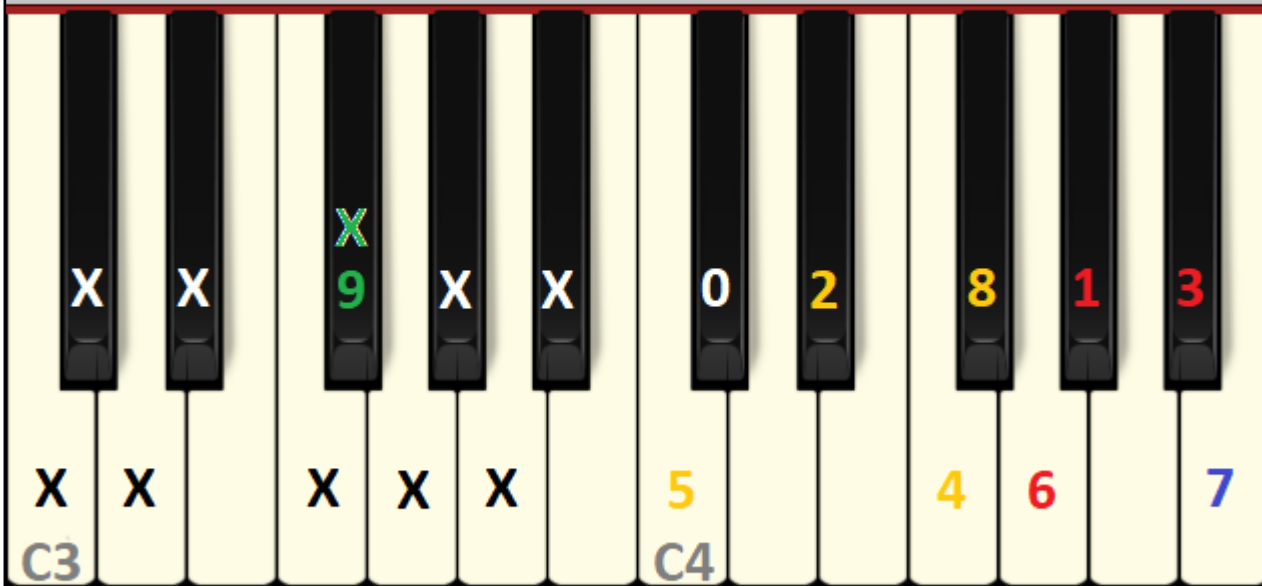
Referent Octave | Jump Octave

Fast Inverse Stack #08

Referent Octave | Jump Octave

Fast Inverse Stack #09

Referent Octave | Jump Octave

Fast Inverse Stack #10

Referent Octave | Jump Octave

Fast Inverse Stack #11

Referent Octave | Jump Octave