

Elucidation of the Role of Six Positions of the Eighteen Positions Installed on Shohei Tanaka's Japanese "Just Intonation" Reed Organs: A Test of the Fifth Reed Organ and an Examination of the Data

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In 1932, Shohei Tanaka (1862–1945) invented a Japanese "just intonation" reed organ (hereafter J-"JI"RO), based on 1/8 schisma temperament. The instrument's innovative design allows a performer to shift pitches up or down uniformly by moving the keyboard to any one of the 18 positions.

However, since a transposition shifts the tonic to one of 12 pitches, six of the instrument's 18 installed positions appear to be unnecessary. As for the role that these six positions play, Tanaka School literature provides very little insight. Furthermore, it is difficult to determine which six of the 18 are unnecessary.

In this paper, I examined pitch data obtained from tests conducted on the inner structure of the fifth J-"JI"RO (1938), along with secondary documents, in order to identify the six seemingly unnecessary positions and determine what role they might play.

First, through testing, I confirmed two specific parts of the J-"JI"RO and its 46 tones. Mindful of the shifting keyboard, I identified the 31 tones that are produced by the 21 keys within one octave, as well as the intervallic relationships between these 31 tones. Next, I examined and deciphered the uppercase and lowercase letters on the nameplate that indicate each position. Then, I compared the 18 J-"JI"RO positions to the 12 German "JI"RO positions.

As a result, I identified 12 "primary positions" and six "secondary positions." Individually, the primary 12 produce either 30 or 31 different pitches. The secondary six range from 24 to 29 different pitches. Hypothetically, within the "secondary positions," I am of the view that a sum of the value of approx. 0.244 cents (which are subtracted from each perfect fifth) can avoid movements that exceed a schisma of approx. 1.954 cents on a keyboard transposition.