47

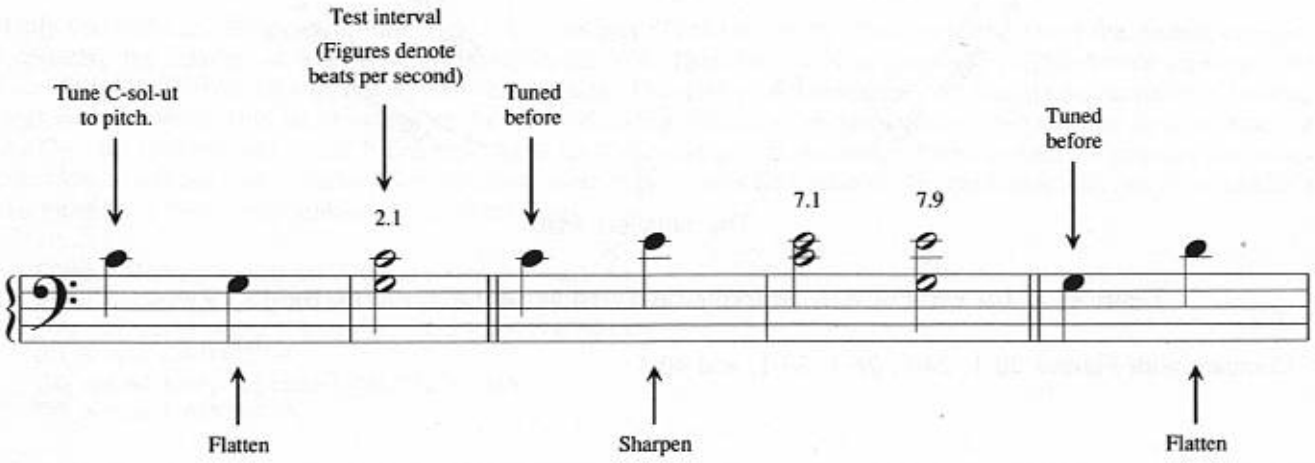
TUNING GEORGE FREDERICK HANDEL'S WELL TEMPERAMENT IN THE THEORETICALLY CORRECT MANNER

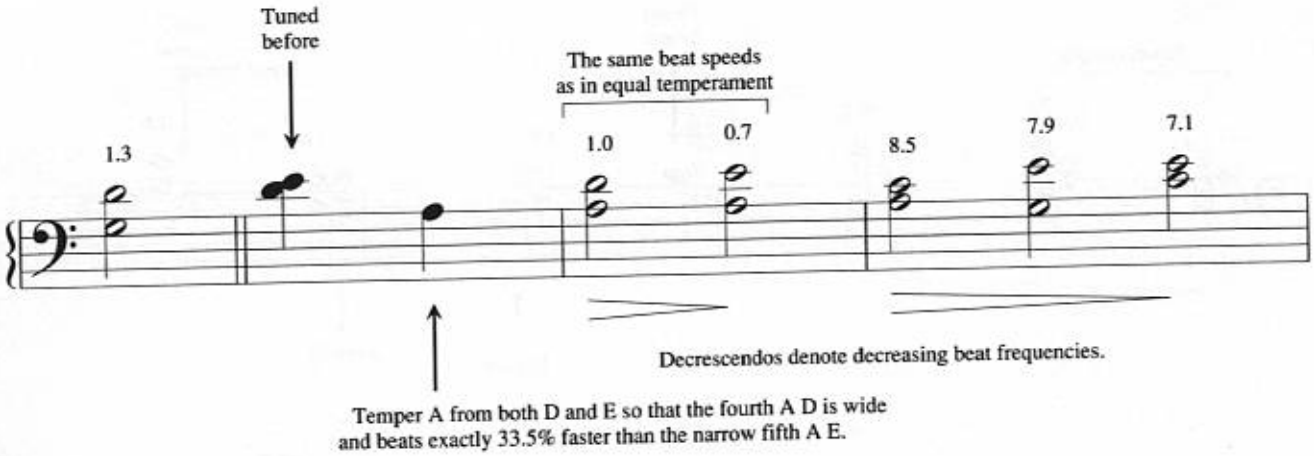
Like Rousseau, Handel transposed the original William Holder bearing plan up one octave so that control over the many gradations of fifths would be easier. The fifths then beat twice as fast, but so did the thirds and sixths. However, the thirds and sixths were not listened to for their beats. The original Handel bearing plan was created for efficient melodic tempering. Tuning by beats in a theoretically correct manner is a very different technique, so there is no purpose in adhering to the original Handel bearing plan and high pitch. The following instructions therefore utilize a modern condensed bearing plan at a lower pitch that is most efficient for twentieth-century professional tuners who can obtain a high degree of accuracy. This is the best way to imitate the sound that Handel must have had.

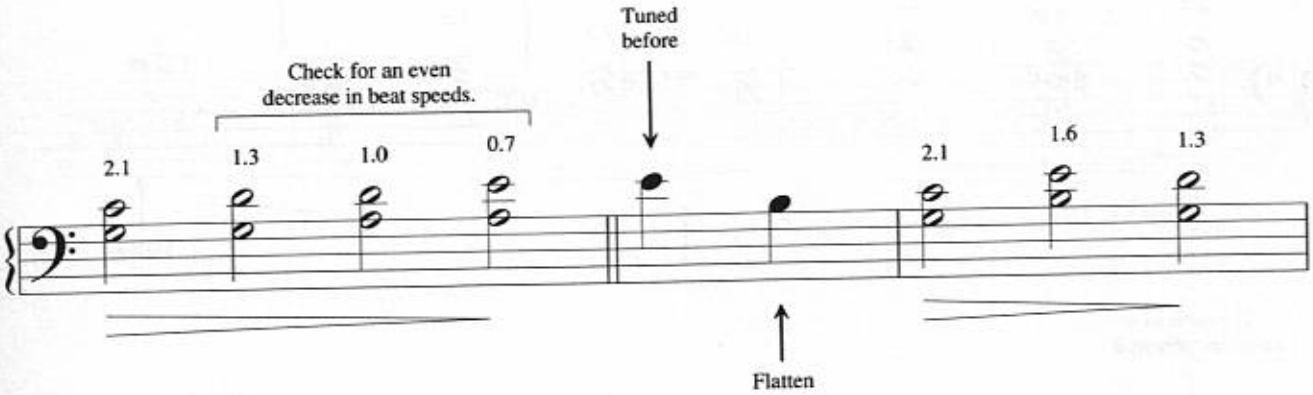
Fifths can be inverted to become fourths, and that is how the bearing plan can be condensed. A lower complimentary fourth beats the same speed as an upper complimentary fifth when the octave is in just intonation. This advantage was not applied in the eighteenth century. Very few tuners tuned or tempered fourths because they were considered to be too difficult. Understanding that the beat frequencies of fourths represent the beat frequencies of the upper fifths, one can see in the following bearing plan that the beat frequencies do correspond to Handel's descriptive instructions. The major third EG-sharp beats like a "fine" third, even finer than CE. If Handel had used this bearing plan, we would have been convinced that he tempered by beats rather than by listening melodically.

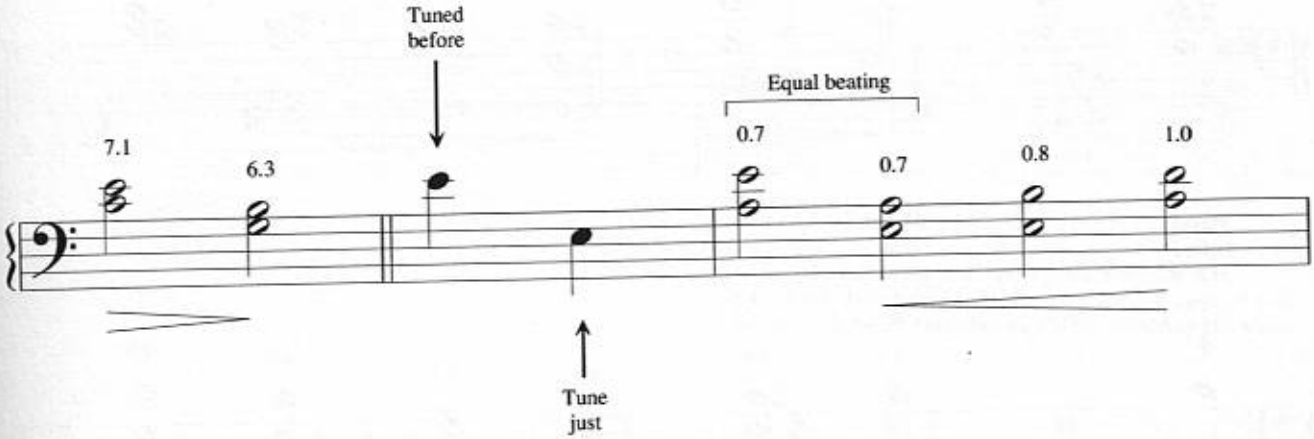
The beat frequencies in the following instructions were calculated for use with a C tuning fork at standard pitch, the C equivalent of A=440 Hz. If a lower pitch is used, reduce the beat frequencies proportionately. For examples of beat frequencies, multiply the given numbers by 60 and listen to them on the metronome.

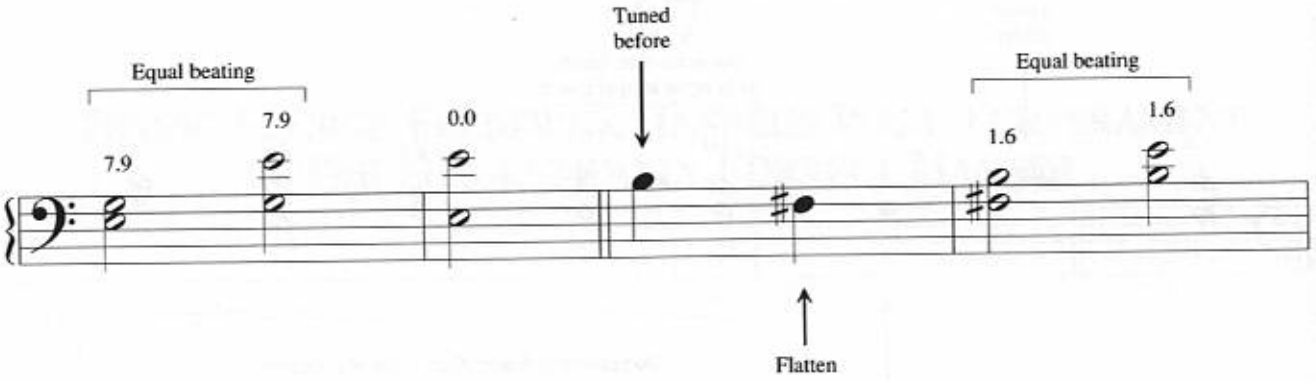
Tune the following quarter notes in the order written.

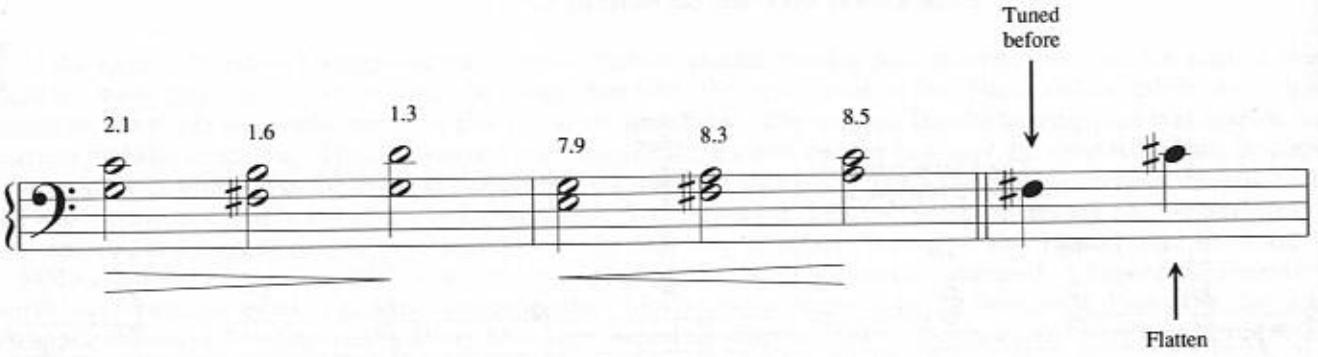


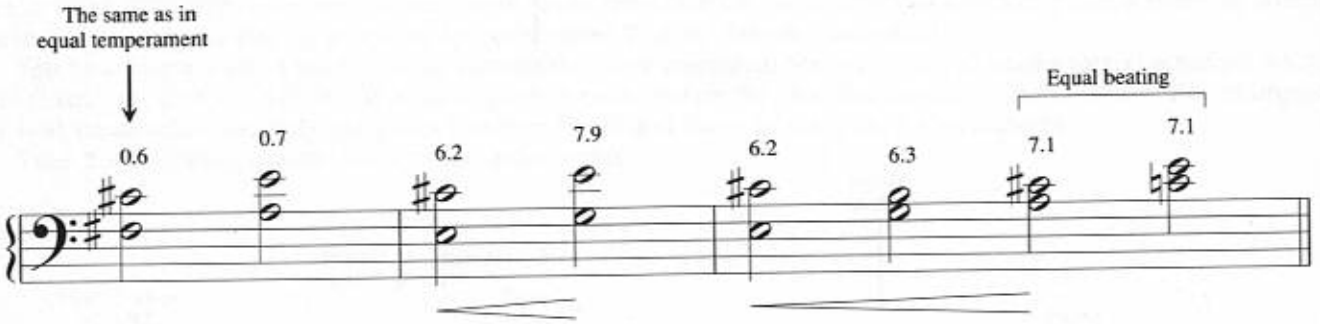

Tuned
before
The same beat speeds
as in equal temperament
1.3
1.0
0.7
8.5
7.9
7.1
Decrescendos denote decreasing beat frequencies.
Temper A from both D and E so that the fourth A D is wide
and beats exactly 33.5% faster than the narrow fifth A E.

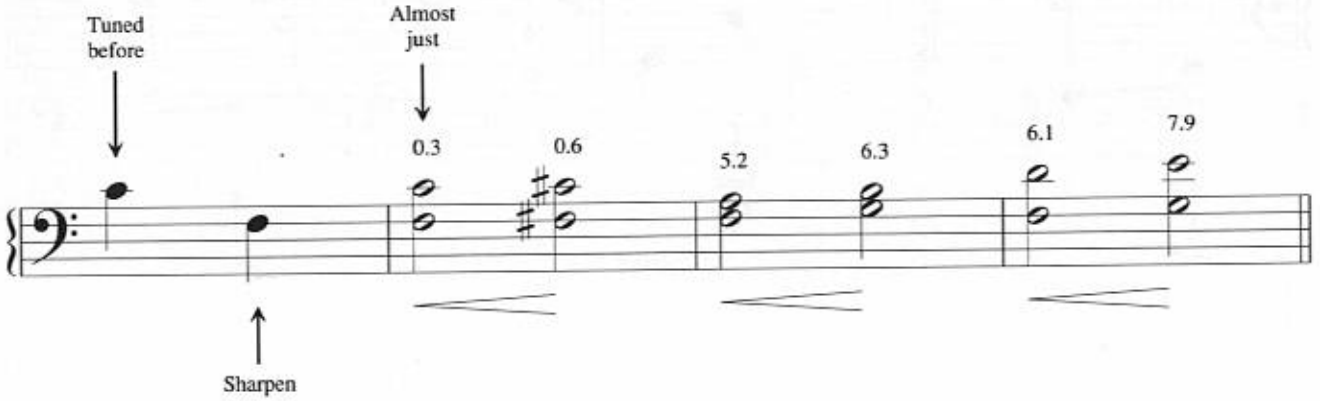

Tuned
before
Check for an even
decrease in beat speeds.
2.1
1.3
1.0
0.7
2.1
1.6
1.3
Flatten

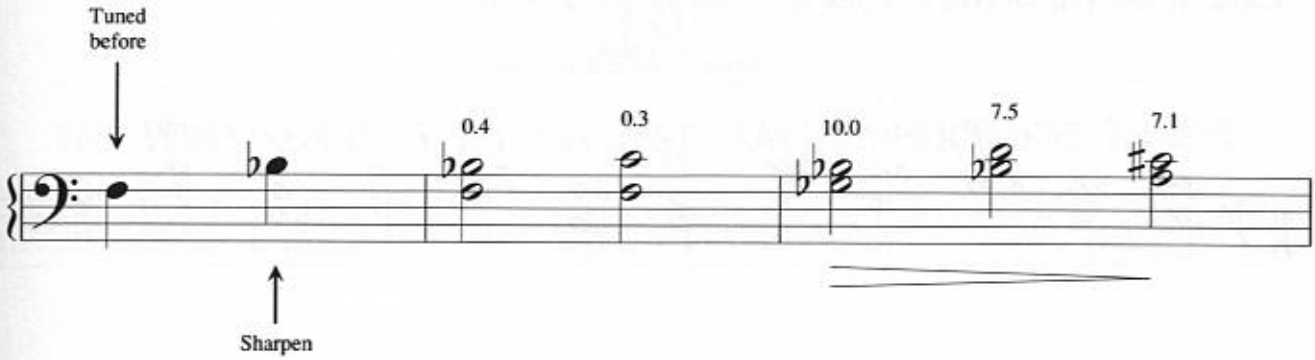

Tuned
before
Equal beating
7.1
6.3
0.7
0.7
0.8
1.0
Tune
just

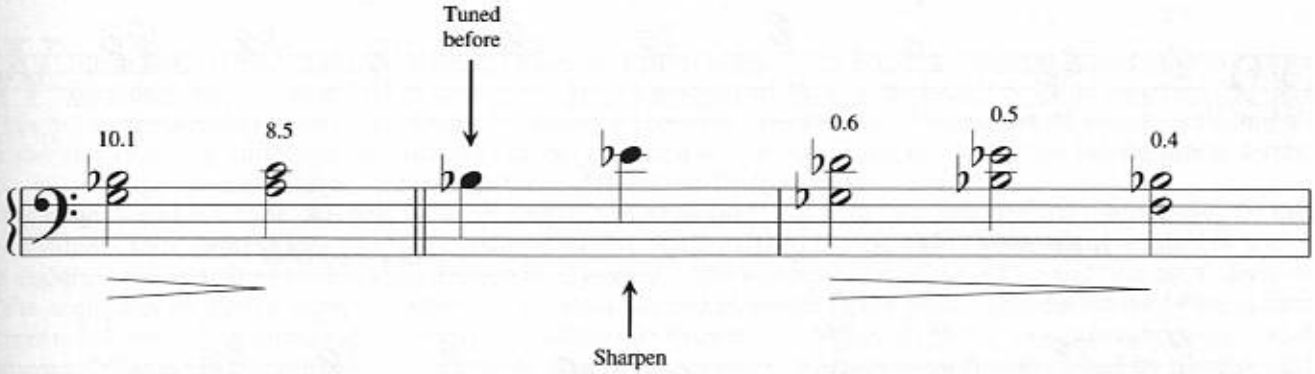

Equal beating
7.9
7.9
0.0
Tuned
before
Equal beating
1.6
1.6
Flatten

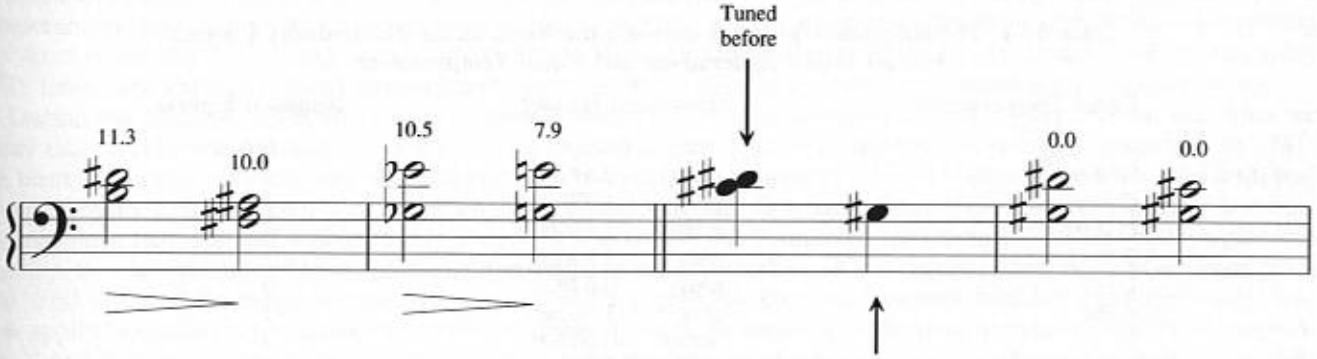

2.1
1.6
1.3
7.9
8.3
8.5
Tuned
before
Flatten


The same as in
equal temperament
0.6
0.7
6.2
7.9
6.2
6.3
Equal beating
7.1
7.1

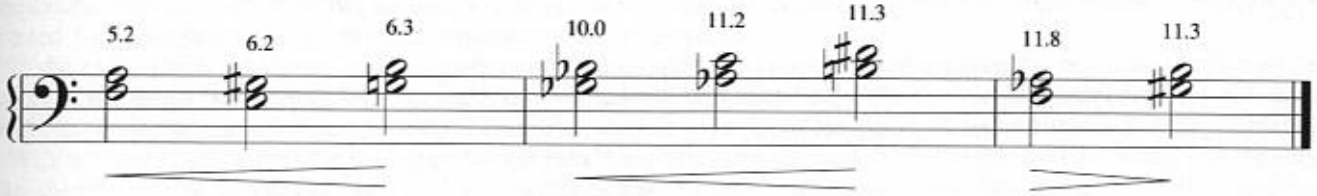

Tuned
before
Almost
just
0.3
0.6
5.2
6.3
6.1
7.9
Sharpen







Tune or equalize G♯ from both C♯ and D♯. The fifth G♯ D♯ and the fourth G♯ C♯ should be just. However, if they are only reasonably pure, they should be considered acceptable.



Check the following intervals as a final test within the E to E octave.

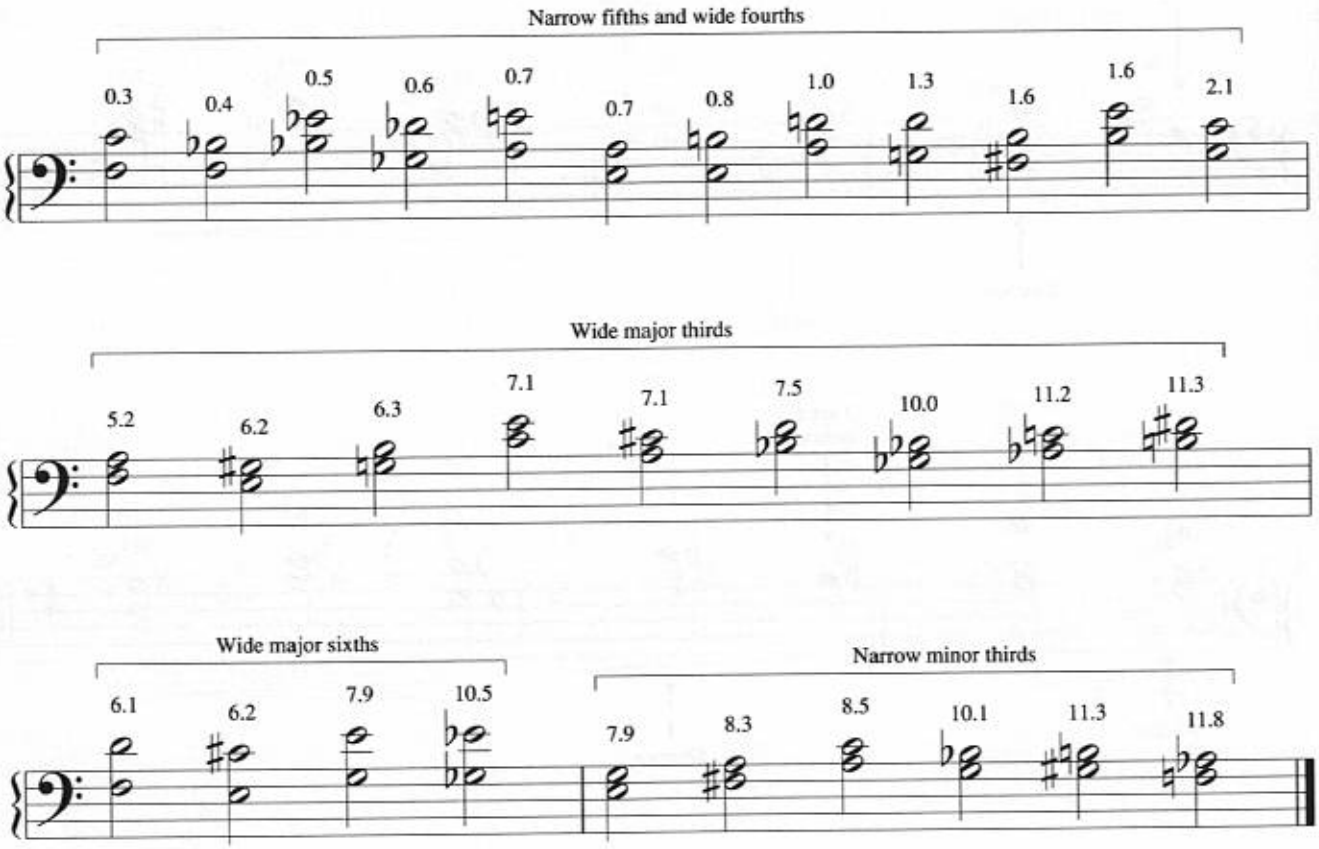


Table 47-1: The Differences in Cents Between the Notes of the Theoretically Correct Handel Well Temperament and Equal Temperament.

Equal Temperament	Theoretical Handel		Rounded Figures
A	zero difference		0 cents
G-sharp	minus	0.54740	−1
G	plus	1.72040	+2
F-sharp	minus	2.58060	−3
F	plus	3.44080	+3
E	plus	0.07820	0
E-flat	plus	1.40760	+1
D	minus	0.07820	0
C-sharp	minus	2.50240	−3
C	plus	4.45740	+4
B	minus	0.78200	−1
B-flat	plus	2.42420	+2

Compare this table with Tables 22-1, 25-1, 27-1, 40-1, and 41-1.