ANTHOLOGY
OF
HARMONICA TUNINGS

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Introduction

The harmonica was invented in the 19th century, and it was mainly used as a cheap, simple solo self-accompanying instrument. Its default tuning was primarily designed for German folk tunes. As time went by, the instrument has developed and evolved. Music has changed, and harmonica players have faced more and more demanding tonal challenges. When diatonic harmonica entered the jazz, it became obvious that the standard tuning does not meet the modern playing standards.

With the help of players and harmonica technicians like Brendan Power, new tunings have been developed, that extend the possibilities of the instrument. This work is an attempt to structure and describe as many tunings as possible. The goal is to show the strengths and weaknesses of each tuning, and explain its logic and tonal peculiarities.

Appendix 1 lists the layout of the main tunings in all possible keys. Such charts can serve as a useful reference for harmonica technicians making custom instruments, or any practicing player learning the note layout in different keys.

Appendix 2 includes reference tables with intonation charts for some tunings.

Appendix 3 includes detailed instructions on how to create various tunings using a file, solder, or by swapping reeds.

Appendix 4 lists some recordings that use alternative tunings.

Each tuning has a unique identifier for XML classification.

AAXXXXZZ
AA - Logic type
XX - Tuning name or scale/mode
ZZ - Subtype/variation

All harmonica tunings are classified by type of logic:

1) Richter variations
2) Spiral logic
3) Fixed interval tunings
4) Hybrids
5) Oddities

This work started off an appendix for the HARP XML project (Vladimir Tomberg / Eugene Ivanov), and has gradually developed into a full-scale reference handbook. I hope this work will make alternative tunings a bit easier to comprehend, and help harmonica players become more versatile in expressing their musical ideas. Feel free to distribute the work, but please reference the original forum link, as it can and will be corrected and updated.

Eugene Ivanov

1. Richter Variations

Richter Major (RI000000)

“Richter” is the default tuning for 99% serial-produced diatonic harmonicas. There's no exact information on how it was invented, or what exact logic it is based on. So everything mentioned here is no more than a version based on analysis of the note layout.

Richter tuning was designed for folk tunes in the major scale, self-accompanied by chords in the lower octave. The tuning has Cdur on holes 123blow, and Gdur on holes 234draw. The blow notes extend in a logical looped progression of the C major triad CEGCEGCEGC across all 10 holes. The draw side suffers from the use of the G major triad on holes 234draw. Because we have already used 2draw as a doubling G (same as 3 blow) – we have to leave out the F that was supposed to follow the E on 2blow. For the same reason we had to leave out the A (supposed to be on 3draw). However, solo playing requires a full major scale in the middle and top octave, so the G major pattern can'b be continued on the draw side. Therefore 5draw is an F, and 6draw is an A (4blow-4draw-5blow-5draw-6blow-6draw give us CDEFGA). But 7 blow is a C (supposed to be a B if we followed the pattern), so we have to put the B as 7draw. This inverses the pattern in the top octave. 7-10 draws follow the sequence of the middle octave to form octaves.

RICHTER MAJOR (RI000000)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	F	A	B	D	F	A

Using advanced playing techniques, such as bending, overbending, or valves, this tuning is capable of playing chromatically in all 3 octaves. Bends (together with valve bends) are shown as flats, because they lower the pitch of the note, and overbends are marked in sharps, raising the note by 1 semitone.

RICHTER TUNING (OVERBENDS)

OVERB	D#			D#	F#	A#				
										Bb
BENDS								Eb	Gb	B
BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	F	A	B	D	F	A
BENDS	Db	Gb	Bb	Db		Ab				
		F	A							
			Ab							
OVERB							C#		G#	C#

RICHTER TUNING (VALVES)

										Bb
BENDS		Eb			Eb	Gb		Eb	Gb	B
BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	F	A	B	D	F	A
BENDS	Db	Gb F	Bb A Ab	Db		Ab	Bb	Db		Ab

Richter tuning is sometimes produced as 12- or 14-hole versions, but due to the octave shift, the usefulness of the top extra holes is questionable.

An attempt to improve the first octave is made in this variation, listed as 1.1a in Pat Missin's "Altered States" anthology. 2 draw is lowered -2 to give the missing F note.

RICHTER MAJOR VARIATION1 (RI000001)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	**F**	B	D	F	A	B	D	F	A

Steve Baker Special (RISTBS00)

Sometimes the bottom octave is doubled to extend the range of the instrument. Such a tuning is labeled by Hohner as "SBS", and by Seydel as "Low Octave".

SBS (Steve Baker Special) (RISTBS00)

BLOW	**C**	**E**	**G**	C	E	G	C	E	G	C	E	G	C	E
HOLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DRAW	**D**	**G**	**B**	D	G	B	D	F	A	B	D	F	A	B

Another variation is sometimes referred to as "Super SBS", or "Richter Low Extended", and stretches the bottom octave to the rest of the instrument. While definitely improving the coherence of the layout logic, this tuning makes it necessary to use several draw bends in the top octave, which are very difficult to hold in the right pitch.

SUPER SBS (Richter Low Extended) (RISSBS00)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	**G**	**B**	**D**	**G**	**B**	**D**

The Richter tuning gave rise to many popular variations, such as Natural Minor, Harmonic Minor, Paddy Richter, Country Tuning, and Melody Maker.

Paddy Richter (RIPADD00)

Brendan Power has popularized the so-called “Paddy Pichter” tuning, that raises 3blow up 2 semitones. This makes 1st position playing much easier, especially for Irish tunes.

On the other hand, chromatic playing has become more difficult, because 2overblow is required to complete the scale.

PADDY RICHTER TUNING (Brendan Power) (RIPADD00)

BLOW	C	E	**A**	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	F	A	B	D	F	A

The disadvantage of Paddy Richter (RIPADD00) is the absence of C major chord in the lower octave.

Major Seventh (RICOUN00)

Major Seventh, or Country Tuning, raises 5draw by 1 semitone. The draw side chords become more logical, giving a succession of G maj, B min, and D maj (instrument in the key of “C”). Barbecue Bob Maglinte points out: “Country tuning is also great for doing ballads and jazz, both of which use tons of major 7ths. Tuning 5 draw to 14 cents flat in CT works beautifully and the harmony with it just glows. You do, however, lose the so called "blues chord", meaning the 2-5 draw with the tongue blocking holes 3-4”.

MAJOR SEVENTH (COUNTRY) (RICOUN00)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	**F#**	A	B	D	F	A

An alternate version of Country Tuning has 9draw raised by 1 semitone to complete the draw octave. The tuning is listed as 1.2a in Pat Missin's “Altered States” anthology.

MAJOR SEVENTH ALT. (COUNTRY) (RICOUN01)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	**F#**	A	B	D	**F#**	A

Another variant has 10 blow lowered -1 to give a B note in the top octave. This one is listed as 1.2b in Pat Missin's "Altered States".

MAJOR SEVENTH ALT. 2 (COUNTRY) (RICOUN02)

BLOW	C	E	G	C	E	G	C	E	G	**B**
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	**F#**	A	B	D	**F#**	A

Melody Maker (RIMEMA00)

Melody Maker was designed by Lee Oskar with popular melody playing in mind. It incorporates the Paddy Richter tuning (3blow +2semitones), and an alternate version of the Country tuning (5, 9 draw +1semitone). Melody Makes is mostly aimed at 2nd position playing in major, and it is labeled the same way – for 2nd position.

MELODY MAKER (TM Lee Oskar) (RIMEMA00)

BLOW	C	E	**A**	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	**F#**	A	B	D	**F#**	A

"This is a useful tuning that can add to what you can do while playing bluegrass, old-time, fiddle tunes, and folk music. It provides Major I-IV-V chords, two octaves that can be played quickly without a need for bent notes, and for the player who can bend notes, some popular modal tunes, and even blues fills can be accomplished. It's worth a look."
(http://members.cox.net/dmurray777/lomm.shtml)

Players that use Melody Maker include Lee Oskar himself, Paul Moran, Richard Hunter.

"Melody Maker is great for third position. In third it plays in mixolydian (flat seventh) mode, just like Richter does in second. However, unlike Richter it can also play the major seventh. This is done by simple draw bends on the 1 or 4 holes, with 4 being the most useful. The blow 4 is the flat seventh.
First position is also handy sometimes because the draw 5 can be bent half a step. If a tune doesn't need that note a lot you can play the Melody Maker like a Paddy Richter.
On the Melody Maker the draw 4 and 5 head shake doesn't work, but that's a blues thing and MM isn't a traditional blues tuning. Another nice thing about the Melody Maker or Country tuned is you don't have to give up your Richters. In second position the draw 5 is a seventh in both Richter and

Melody Maker. The difference being major or dominate seventh. So playing both tunings is not confusing.“

Rex Gehlbach

Paul Farmer has used a variation of Melody maker based on Natural Minor tuning. It is listed as 1.3a in Pat Missin's “Altered States” anthology.

MELODY MAKER VARIATION (Paul Farmer) (RIMEMA01)

BLOW	C	**Eb**	G	C	**Eb**	G	**Bb**	**Eb**	G	**Bb**
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	**F**	**Bb**	D	F	A	**C**	D	F	A

Randy Goodhew has made a Melody Maker variation that is designed for playing Irish tunes. The tuning and its variation is listed as 1.3b and 1.3c in Pat Missin's “Altered States” anthology. The tuning is designed to be played in 2nd position. Here's Randy's description of the tuning:

“I wanted to slightly extend their usefulness for Irish music. I came up with a modification of the LO Melody Maker that I call the "Feadan Tuning". To me, it is similar to the range of an Irish whistle, but adds three phlagal notes at the bottom that I wish could be added to a whistle.

I make the Feadan Tuning by raising the 1 Blow, 1 Draw, and 2 Blow by a whole step each.”

FEADAN TUNING (Randy Goodhew) (RIMEMA02)

BLOW	**D**	**F#**	**A**	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**E**	G	B	D	**F#**	A	B	D	**F#**	A

FEADAN TUNING VARIATION (Randy Goodhew) (RIMEMA02)

BLOW	**D**	**F**	**A**	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**E**	G	B	D	**F#**	A	B	D	**F#**	A

Tony Eyers came up with a similar variation of Melody Maker, that is different from Feadan Tuning in 10blow lowered -1. The tuning is listed as 1.3c in Pat Missin's “Altered States”.

MAJOR CROSS (Tony Eyers) (RIMEMA03)

BLOW	**D**	**F#**	**A**	C	E	G	C	E	G	**B**
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**E**	G	B	D	**F#**	A	B	D	**F#**	A

Natural Minor (RINAMI00)

Natural Minor tuning has 2, 5, 8 blow, and 3, 7 draw lowered by 1 semitone, changing all chords to minor. The tuning is designed to be played in "cross", or 2nd position in the natural minor scale – one fifth above the natural key (which is traditionally the same key as 1blow). Therefore, many makers label Natural Minor harmonicas by 2nd position instead. For instance, Hohner labels them by 1st position, but Seydel and LeeOskar labels them by 2nd.

NATURAL MINOR (RINAMI00)

BLOW	C	**Eb**	G	C	**Eb**	G	C	**Eb**	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	**Bb**	D	F	A	**Bb**	D	F	A

Natural Minor is capable of chromatic playing with overbends, or valves. In comparison with Richter, 1 extra bend is required on 2draw. Overblows on holes 1, 4, and 6 are no longer necessary. However, due to the lowered 8blow, bending is not possible on 8blow, and an overbend is required.

A 1st position variation of Natural Minor is called Natural Minor Straight, and is listed as 2.6 in Pat Missin's "Altered States" anthology.

NATURAL MINOR STRAIGHT (RINAMI01)

BLOW	C	**Eb**	G	C	**Eb**	G	C	**Eb**	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	**Bb**	D	F	**Ab**	**Bb**	D	F	**Ab**

Harmonic Minor (RIHAMI00)

Harmonic Minor has 2, 5, 8blow, and 6, 10 draw lowered by 1 semitone. This gives blow minor chords, a draw major chord in the low octave, and diminished chords in the middle and top octave. The latter add a very specific flavor to the sound of the instrument. The tuning is designed to be played in the 1st position in the harmonic minor scale.

HARMONIC MINOR (RIHAMI00)

BLOW	C	**Eb**	G	C	**Eb**	G	C	**Eb**	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	F	**Ab**	B	D	F	**Ab**

Harmonic Minor is not chromatic, even with the use of overbends or valves. 6 overblow should be bent up by 1 semitone to complete the chromatic scale. There are several tunings designed for harmonic minor scales, and they will be covered later in the paper.

A variation for 2nd position is called Harmonic Minor Cross. It is listed as 2.4 in Pat Missin's "Altered States" anthology.

HARMONIC MINOR CROSS (RIHAMI01)

BLOW	C	**Eb**	G	C	**Eb**	G	C	**Eb**	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	**Bb**	D	**F#**	A	**Bb**	D	**F#**	A

Easy Third (Reggae Tuning) (RIREGG00)

This tuning is designed by Dale King for simple 3rd position minor tunes. 2 draw and 3 draw are retuned -2 semitones, making first octave the same as second octave. Jamming over the chords has a reggae-like flavor. Other names for this tuning include "Do it" and "Open Irish Tuning". The tuning is listed as 11.5 in Pat Missin's "Altered States".

EASY THIRD (Reggae Tuning) (RIREGG00)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	**F**	**A**	D	F	A	B	D	F	A

Unfortunately, both the first and the second octave don't have Bb to complete the Dmin scale. It is available only as an overblow on hole 3 and 6. Nevertheless, the tuning is very intuitive and fun to play.

Another variation on this tuning is called Extended Reggae Tuning. The lower octave pattern is doubled throughout the whole harmonica. Unlike the regular Easy Third tuning, this one is very difficult to make.

EXTENDED EASY THIRD (Reggae Tuning) (RIREGG01)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	**F**	**A**	D	F	A	**D**	**F**	**A**	**D**

Open Minor (Seven) (RISEVE00)

A less popular, but nevertheless interesting minor version of the Richter tuning is the “Seven” tuning, or “Minor Seven”, or “Open Minor” with 3, 7 draw retuned 1 semitone down. This tuning is used by J.J.Milteau.

SEVEN (RISEVE00)

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	**Bb**	D	F	A	**Bb**	D	F	A

Solo Tuning (SO000000)

Even though Richter tuning is sometimes used on chromatics, it is not capable of chromatic playing on that instrument. Standard tuning for chromatic harmonica is called Solo tuning, as is de-facto the middle octave of the Richter tuning, doubled across 10, 12, 14, or 16 holes. Solo tuning is used both on the chromatic, and (less frequently) on the diatonic. It is also the default tuning for many tremolo and octave harmonicas. On the diatonic, it is capable of chromatic playing with overbends or valves.

SOLO TUNING (Diatonic, overbends) (SO000000)

OVER	D#	F#	A#		D#	F#	A#		D#	F#
BLOW	C	E	G	C	C	E	G	C	C	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	A	B	D	F	A	B	D	F
BEND	Db		Ab		Db		Ab		Db	

SOLO TUNING (Diatonic, valves) (SO000000)

VALVE	B	Eb	Gb			Eb	Gb			Eb
BLOW	C	E	G	C	C	E	G	C	C	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	A	B	D	F	A	B	D	F
BEND	Db		Ab	Bb	Db		Ab	Bb	Db	

SOLO TUNING (Chromatic) (SO000000)

SLIDE	C#	F	G#	C#	C#	F	G#	C#	C#	F	G#	C#
BLOW	C	E	G	C	C	E	G	C	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	A	B	D	F	A	B	D	F	A	B
SLIDE	D#	F#	A#	C	D#	F#	A#	C	D#	F#	A#	C

The obvious pluses of the solo tunings are octaves, and a piano-like note layout (white keys with slide out, and black keys with slide in). The minuses pointed out by the players include note doubling, and a reversed breath pattern at the end of each octave.

Solo Harmonic Minor (SOHAMI00)

A solo harmonic minor variation is possible with 2, 6, 10blow, and 3, 7, 11 draw lowered by 1 semitone. Similar to the Richter Harmonic Minor, this tuning is designed for 1st position playing. One obvious plus here is a complete octave in the harmonic minor scale. Very useful for low/superlow keys, where bending is problematic.

SOLO HARMONIC MINOR (SOHAMI00)

BLOW	C	**Eb**	G	C	C	**Eb**	G	C	C	**Eb**	G	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	**Ab**	B	D	F	**Ab**	B	D	F	**Ab**	B

Bebop (SOBEBO00)

BEBOP (SOBEBO00)

BLOW	C	E	G	**Bb**	C	E	G	**Bb**	C	E	G	**Bb**
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	A	B	D	F	A	B	D	F	A	**C**

This tuning has the following advantages:
- Playing without bends in I and XII positions, keys of C, F, Am, Dm
- Bends needed - Db, Ab
- Overbends needed - D#, F#
- On a 10-holer, the top note will be the tonic for XII position, and the lowest note will be the fifth.
- III position blues scale is like on Richters.

Basic keys: C, D, E, G, A, Dm, Em, Am, Bm
To cover those keys, you will need 4 harmonicas:
- G-harp: G, C, Em, Am
- A-harp: A, D, F#m, Hm
- E-harp: E, A, C#m, F#m
- C-harp: C, F, Am, Dm

BEBOP JAZZ (SOBEBO01)

BLOW	C	E	G	**Bb**	C	E	G	**Bb**	C	E	G	**Bb**
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	**F#**	A	B	D	**F#**	A	B	D	**F#**	A	**C**

This variation of the tuning has the following advantages:
- playing with bends, and tonics on “open” notes.
- more bent notes, less overbends (compared to SOBEBO00).
- full major/minor scale on “open” notes.
- several major/minor scales using one diatonic.
- lowest notes are tonics or fifths for the most common keys
- highest note is a tonic for the main scale
- add bends are one semitone, draw.
- Allows to play without overbends in I, II, III, IV and XII positions, keys of: C, G, D, A, F
- II position uses no bends, key of G
- Bends needed: C#, F, G#
- Overends needed: Eb

Power Chromatic (SOPOWE00)

This tuning was coined by Brendan Power around 1981. The idea is based on altered solo tuning with one note per octave doubled to get all draw bends. Works best on 12 holes. The tuning is almost chromatic, needing only one overbend per octave.

POWER CHROMATIC (BRENDAN POWER) (SOPOWE00)

OVER	D#	F	G#	C	D#	F	G#	C	D#	F
BLOW	C	D	F	A	C	D	F	A	C	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	E	G	B	D	E	G	B	D	E
BEND	Db	Eb	Gb	Bb	Db	Eb	Gb	Bb	Db	Eb

Another variation of this tuning (SOPOWE01) places the doubled note on the root C, giving C maj and D minor chords, giving it a very solo-chromatic feel. This variation is also called “Classical Tuning”. It has several advantages over the basic SOPOWE00 version: it is very similar to Solo Tuning (SO000000), and it gives more logical chords.
The downside of this tuning variation is the lack of bends on 2, 4, 6, 8, and 10 draw. It also offers far less chromatic possibilities, requiring the use of all 10 overbends.

However, this tuning is very useful on chromatic harmonicas. The doubled C falls on neighboring holes, but the breath direction is reversed, making it impossible to hit both notes at once. On a regular solo chromatic, hitting both C's will result in an unpleasant tremolo effect.

POWER CHROMATIC (“CLASSICAL”) (SOPOWE01)

OVER	D#	F#	A#	C#	D#	F#	A#	C#	D#	F#
BLOW	C	E	G	B	C	E	G	B	C	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	A	C	D	F	A	C	D	F
BEND	Db		Ab		Db		Ab		Db	

POWER CHROMATIC “CLASSICAL” (Chromatic) (SOPOWE01)

SLIDE	C#	F	G#	C	C#	F	G#	C	C#	F	G#	C
BLOW	C	E	G	B	C	E	G	B	C	E	G	B
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	A	C	D	F	A	C	D	F	A	C
SLIDE	D#	F#	A#	C#	D#	F#	A#	C#	D#	F#	A#	C#

Such inversions can become very useful with purely diatonic variations of the tuning, such as Power Chromatic Harmonic Minor, or Power Chromatic Arabic, which are described below.

Power Chromatic Minor (SOPOWE02)

This is virtually the same tuning as the original Power Chromatic, except everything is shifted one hole down, starting from the A. Same features as the original, but with a nice minor feel. Very good chords. Works best on a 12-holer.

POWER CHROMATIC MINOR (BRENDAN POWER) (SOPOWE02)

OVER	C	D#	F	G#	C	D#	F	G#	C	D#
BLOW	A	C	D	F	A	C	D	F	A	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	B	D	E	G	B	D	E	G	B	D
BEND	Bb	Db	Eb	Gb	Bb	Db	Eb	Gb	Bb	Db

Power Chromatic Harmonic Minor (SOPOHA00)

This is a variation of the Power Chromatic tuning, designed to be played in the harmonic minor scale. Since there's no real need in bends and overbends, this tuning is suitable for full-valving. Double notes can also be intonated slightly differently for microtonal use.

POWER CHROMATIC HARMONIC MINOR (SOPOHA00)

BLOW	C	D	F	Ab	C	D	F	Ab	C	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	Eb	G	B	D	Eb	G	B	D	Eb

The tuning can be inverted to place the root note on 1 draw. This also places both doubled notes on the same hole, making it obligatory to full-valve the harmonica.

POWER CHROMATIC HARMONIC MINOR (1 Draw Inversion) (SPPOHA01)

BLOW	B	D	Eb	G	B	D	Eb	G	B	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	D	F	Ab	C	D	F	Ab	C	D

The tuning can also be reversed like (SOPOWE01) to place the double note on the root C. Full-valving is advisable.

POWER CHROMATIC HARMONIC MINOR (Double Root Note) (SOPOHA02)

BLOW	C	Eb	G	B	C	Eb	G	B	C	Eb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	Ab	C	D	F	Ab	C	D	F

It can also place the double C in the same hole like (SOPOHA01) – a Hybrid of SOPOHA01 and SOPOHA02. Full-valving is obligatory.

POWER CHROMATIC HARM. MINOR (Double Root + 1 Draw Inversion) (SOPOHA03)

BLOW	C	D	F	Ab	C	D	F	Ab	C	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	Eb	G	B	C	Eb	G	B	C	Eb

Power Chromatic Arabic (SOPOAR00)

This is a variation of the Power Chromatic tuning, designed to be played in the arabic scale. Since there's no real need in bends and overbends, this tuning is suitable for full-valving. Double notes can also be intonated slightly differently for microtonal use.

POWER CHROMATIC ARABIC (SOPOAR00)

BLOW	C	Db	F	Ab	C	Db	F	Ab	C	Db
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Db	E	G	B	Db	E	G	B	Db	E

The tuning can be inverted to place the root note on 1 draw. This also places both doubled notes on the same hole, making it obligatory to full-valve the harmonica.

POWER CHROMATIC ARABIC (1 Draw Inversion) (SOPOAR01)

BLOW	B	Db	E	G	B	Db	E	G	B	Db
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	Db	F	Ab	C	Db	F	Ab	C	Db

The tuning can also be reversed like (SOPOWE01) to place the double note on the root C. Full-valving is advisable.

POWER CHROMATIC ARABIC (Double Root Note) (SOPOAR02)

BLOW	C	E	G	B	C	E	G	B	C	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Db	F	Ab	C	Db	F	Ab	C	Db	F

It can also place the double C in the same hole like (SOPOAR01) – a Hybrid of SOPOAR01 and SOPOAR02. Full-valving is obligatory.

POWER CHROMATIC ARABIC (Double Root Note + 1 Draw Inversion) (SOPOAR03)

BLOW	C	Db	F	Ab	C	Db	F	Ab	C	Db
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	E	G	B	C	E	G	B	C	E

2. Fixed Interval Tunings

Despite being standard, solo tuning has obvious disadvantages that have spawned a series of alternative tunings for the chromatic harmonica. The most widely used and well-known is the diminished tuning.

Diminished (FIDIMI00)

The diminished logic relies upon a succession of minor thirds positioned horizontally on blows and draws. Draw notes are 2 semitones higher than blow notes. Same as with the solo tuning, the slider raises the pitch of the note by 1 semitone.

DIMINISHED (Chromatic) (FIDIMI00)

SLIDE	C#	**E**	**G**	**A#**	C#	**E**	**G**	**A#**	C#	**E**	**G**	**A#**
BLOW	C	**Eb**	**Gb**	**A**	C	**Eb**	**Gb**	**A**	C	**Eb**	**Gb**	**A**
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	**Ab**	B	D	F	**Ab**	B	D	F	**Ab**	B
SLIDE	D#	F#	**A**	C	D#	F#	**A**	C	D#	F#	**A**	C

The first obvious advantage that such a layout gives is fewer playing patterns. One has to learn three "positions" - blow, draw, and blow+slide. The draw slide notes repeat the blows.

Another reason for this tuning to make it popular is easy retuning. Any solo chromatic can be easily retuned into diminished without any special tools (no reed replacement or soldering is required).

The diminished tuning is also used on the diatonic – preferably half-valved, and with 12 hole diatonic models:

DIMINISHED (Diatonic, Valves) (FIDIMI00)

BLOW	C	Eb	Gb	A	C	Eb	Gb	A	C	Eb	Gb	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	Ab	B	D	F	Ab	B	D	F	Ab	B
BEND	Db	E	G	Bb	Db	E	G	Bb	Db	E	G	Bb

The diatonic variation of the tuning is notably harder to play – despite being fully chromatic with draw bends alone. Nevertheless, no scales/modes can be played without bends. This makes the tuning more difficult for the beginner player, preventing him/her from immediate access to the simplest melodies.

The diatonic version of the tuning is also very difficult to make – several keys of richter diatonics are required to build one diminished. As a 10-holer, diminished tuning is also limited to 30 notes (2.5 octaves).

Alfred Hirsch is playing the Diminished tuning (diatonic).

Double Diminished (FIDIMI01)

This is a variation of the diminished tuning with minor third interval across all holes, but using a 3-semitone range between blow and draw notes (like Augmented tuning). This gives many double notes, that can be useful for soloing.

DOUBLE DIMINISHED (Diatonic, valves) (FIDIMI01)

BLOW	C	Eb	Gb	A	C	Eb	Gb	A	C	Eb	Gb	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Eb	Gb	A	C	Eb	Gb	A	C	Eb	Gb	A	C
BENDS	D	F	Ab	B	D	F	Ab	B	D	F	Ab	B
	Db	E	G	Bb	Db	E	G	Bb	Db	E	G	Bb

The main idea of this tuning is to be able to play chromatically using only draw notes (with half-tone and whole tone bends). So, we don't need to change the breathing direction in quick phrases. Besides, this tuning can be used with valves. In this case we get half-tone bends on the blows notes. The pitch control on bends is quite difficult, but not more than with the augmented tuning.

Whole-tone (FIWHTO00)

Whole-Tone tuning compresses the chromatic harmonica layout into a series of major thirds. This enables a 12-hole chromatic to have an unprecedented tonal range of full 4 octaves.

WHOLE-TONE (Chromatic) (FIWHTO00)

SLIDE	C#	F	A	C#	F	A	C#	F	A	C#	F	A
BLOW	C	E	Ab	C	E	Ab	C	E	Ab	C	E	Ab
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	Gb	Bb	D	Gb	Bb	D	Gb	Bb	D	Gb	Bb
SLIDE	D#	G	B	D#	G	B	D#	G	B	D#	G	B

Due to a higher compression of the layout, there are no repeated notes. One has to learn 4 “positions”, which are, in their turn, a bit more difficult compared to the diminished tuning described earlier.

Augmented (FIAUGM00)

A diatonic version of this tuning is slightly different and is called “Augmented”. To avoid the use of overblows, the augmented tuning shifts the draw side one semitone up. Because of that, one has to use two draw bends on each hole. Augmented is also preferred half-valved.

AUGMENTED (Diatonic) (FIAUGM00)

BLOW	C	E	Ab	C	E	Ab	C	E	Ab	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Eb	G	B	Eb	G	B	Eb	G	B	Eb
BENDS	D	Gb	Bb	D	Gb	Bb	D	Gb	Bb	D
	Db	F	A	Db	F	A	Db	F	A	Db

The need of two draw bends with precise intonation make Augmented very difficult to master. Though it is very useful to play in harmonic minor mods, gypsy and the arabic scale.

Augmented tuning is also rather difficult to make, since some draw notes require reed exchange.

Eric Chafer is a renowned augmented player.

3. Spiral Tunings

Circular (SPCIRC00)

Spiral, or circular tunings can be united by a common logic. The notes of the scale are arranged in a logical, looped progression. In the classical “Circular” tuning a C major scale (C D E F G A B C) is laid out sequentially, with the first root note starting on 2draw. Thus, the tuning is designed for second position, and is often labeled accordingly.

CIRCULAR (SPCIRC00)

BLOW	G	B	D	F	A	C	E	G	B	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	A	**C**	E	G	B	D	F	A	C	E

Circular tuning features many chords and heptachords. Every note forms a chord and the corresponding intervals – thirds, fifths, sevenths. Unlike Richter logic or fixed intervals logic, spiral harmonicas have no octaves available. In fact, every new octave is reversed – that's where the name “spiral” comes from.

For the same reason, the meaning of the term “position” is different here. Octaves are played in different positions, but some keys may use the same or similar positions (breathing patterns). This will be better described in the “True Chromatic” tuning.

One advantage of spiral tunings is great versatility. It is possible to change the layout so that it will start from a different note – 1 blow, 1 draw, 2blow, or any other hole.

CIRCULAR (Inversed for 1 blow) (SPCIRC01)

BLOW	**C**	E	G	B	D	F	A	C	E	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	A	C	E	G	B	D	F	A

CIRCULAR (Inversed for 1 draw) (SPCIRC02)

BLOW	B	D	F	A	C	E	G	B	D	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**C**	E	G	B	D	F	A	C	E	G

Those variations are essentially the same tuning – the only difference being the chords at the low end, and the position of the root note. The player can choose the version that suits him/her best.

Another advantage of the spiral logic is the combinability. It is possible to use any scale or mode as the tuning basis. It will have the character and flavor of the scale it is designed for, and at the same time it will utilize familiar positions (breathing patterns). In other words, if we compare two spiral tunings with the root notes in the same place, but designed for different scales, the intervals will be

in the same places on both harmonicas, only the notes will be different according to the scales they are based on. Let's describe this on the example of the “Arabic” tuning.

Arabic (SPARAB00)

The “Arabic” tuning is essentially a spiral tuning, with the first root note on 1 draw, and designed for the arabic scale (C Db E F G Ab B C). 1 Blow is out of the scale (lowered by 1 semitone) to complete the Bb major chord. Together with the C maj on 123 draw, those chords are perfect for traditional accompaniment, having a distinct oriental flavor.

ARABIC (SPARAB00)

BLOW	Bb	Db	F	Ab	C	E	G	B	Db	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**C**	E	G	B	Db	F	Ab	C	E	G

The border between the octaves have a harsh sounding combination of notes – e.g. B + Db on 4-5 draw. However, they sound very interesting in slaps, adding intensity. The “Arabic” tuning is not versatile at all – it is designed to be played in one key, and in one scale only. Due to the lack of bends on many draw notes, it is advisable to use all 20 valves to add expression and depth to the sound.

It is logical to label the tuning by 1 draw, as it is the only key in which it is supposed to be played.

Spiral Harmonic Minor (SPHAMI00)

A similar layout, but based on another scale, is the “Spiral Harmonic Minor”.

SPIRAL HARMONIC MINOR (SPHAMI00)

BLOW	Bb	D	F	Ab	C	Eb	G	B	D	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**C**	Eb	G	B	D	F	Ab	C	Eb	G

Spiral Harmonic Minor is designed for harmonic minor scale (C D Eb F G Ab B C)

It exists in two variations – with Bb Maj chord on 123 blow, or with 1blow raised one semitone up to give the seventh.

SPIRAL HARMONIC MINOR (Raised 1 blow) (SPHAMI01)

BLOW	B	D	F	Ab	C	Eb	G	B	D	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**C**	Eb	G	B	D	F	Ab	C	Eb	G

Same as the “Arabic” tuning, Spiral Harmonic Minor is designed to be played in one key, and one scale. However, it is very useful for playing in the mods of the harmonic minor. Namely, “freygish”, also called the “jewish scale” (G Ab B C D Eb F G) is played exactly the same way, only its first root note will be G on 3 draw.

It is logical to label the tuning by 1 draw, as it is the only key in which it is supposed to be played.

True Chromatic (SPTCHR00)

Another side of the spiral logic is expanded in the “True Chromatic” tuning, designed by Eugene Ivanov. All chords can be arranged in a continuous, looped progression on major and minor triads:

C Eb G Bb D F A C E G B D Gb A Db E Ab B Eb Gb Bb Db F Ab C (and looped on C minor after that).

“True Chromatic” tuning takes 4 parts of this progression and uses them as 12 blow, draw, blow+slide, and draw+slide notes on the chromatic, or blow & draw notes on the diatonic.

TRUE CHROMATIC (Chromatic) (SPTCHR00)

SLIDE	C#	E	G#	B	D#	F#	A#	C#	F	G#	C	D#
BLOW	C	Eb	G	Bb	D	F	A	C	E	G	B	D
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	A	C	E	G	B	D	Gb	A	Db	E
SLIDE	D#	F#	A#	C#	F	G#	C	D#	G	A#	D	F

TRUE CHROMATIC (Diatonic, overblows) (SPTCHR00)

OVER	D#	F#	A#	C#	F	G#	C	D#	G	A#
BLOW	C	Eb	G	Bb	D	F	A	C	E	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	A	C	E	G	B	D	Gb	A
BEND	Db	E	Ab	B	Eb	Gb	Bb	Db	F	Ab

TRUE CHROMATIC (Diatonic, valves) (SPTCHR00)

VALVE	B	D	Gb	A	Db	E	Ab	B	Eb	Gb
BLOW	C	Eb	G	Bb	D	F	A	C	E	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	A	C	E	G	B	D	Gb	A
BEND	Db	E	Ab	B	Eb	Gb	Bb	Db	F	Ab

Both the chromatic and the diatonic version are equally playable. Overblows 2, 4, 6, 8, or valved blow bends 1, 3, 5, 7, 9 are required for a complete chromatic scale on the diatonic.

Transposition from the chromatic is very easy. Draw slide notes are turned into overblows or blow bends in the next hole. Blow slide notes become draw bends.

Due to the fact that the tuning is designed around a succession of triads, many keys share the same position (playing pattern). Some harmonica keys become therefore obsolete, as they share some part of the layout. For example, a “LF” harmonica starting from hole 3 is virtually the same as a “C”.

True Chromatic has a very neutral sound with no obvious disposition towards any particular genre or scale.

TRUE CHROMATIC (Diatonic, OB / valves hybrid) (SPTCHR00)

VB / **OB**	*B*	**F#**	*Gb*	**C#**	*Db*	**G#**	*Ab*	**D#**	*Eb*	**A#**
BLOW	C	Eb	G	Bb	D	F	A	C	E	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	F	A	C	E	G	B	D	Gb	A
BEND	Db	E	Ab	B	Eb	Gb	Bb	Db	F	Ab

One particularly interesting thing you can do with this tuning is valving 1, 3, 5, 7, 9 draw and setting up overblows on 2, 4, 6, 8, 10 blow. This will give the tuning double chromaticism. The same notes will be available both as overblows, and valve bends.

True Harmonic (SPTHAR00)

True Harmonic is a variation of True Chromatic (SPTCHR00) with all even draw notes raised +1 semitone. First octave is identical to Arabic (SPARAB00). Fully chromatic without overblows. No doubling notes. Due to the chrordal structure, this tuning has a distinct arabic character. Pat Missin lists this tuning as 6.5 “Non-diatonic spiral”

TRUE HARMONIC (SPTHAR00)

BLOW	C	Eb	G	Bb	D	F	A	C	E	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	**F#**	A	**C#**	E	**G#**	B	**D#**	F#	**A#**
BEND	Db	F	Ab	C	Eb	G	Bb	D	F	A
		E		B		Gb		Db		Ab

Fourkey (SPFOUR00)

This tuning has almost the whole chromatic scale as open notes, one by one, with no inversions. Therefore it can be classified as spiral logic. Coined by Andy Newton. Pat Missin lists Fourkey as 11.24

FOURKEY TUNING (ANDY NEWTON) (SPFOUR00)

BLOW	C	D	E	G	A	C	D	E	G	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C#	Eb	F#	Ab	B	C#	Eb	F#	Ab	B

4. Hybrid Tunings

Powerbender (HYPBEN00)

In 2010, Brendan Power introduced the Powerbender tuning, positioned as an alternative to Richter with minimal changes in the lower octave, and improved playing in different keys and positions.

This tuning can be classified as a hybrid because it is comprised of 3 different layout logics: Richter, spiral, and fixed interval. 4 overblows needed for full chromatic scale, no overdraws, no note inversion.

POWERBENDER (overblows) (HYPBEN00)

OVER	D#					G#		D#	G#	
BLOW	C	E	G	C	D	F	A	C	E	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	E	G	B	D	G	C
BEND	Db	Gb	Bb	Db	Eb	Gb	Bb	Db	Gb	B
		F	A						F	Bb
			Ab							

POWERBENDER (valves) (HYPBEN00)

VALVE	B	Eb	Gb	B	Db	E	Ab	B	Eb	Ab
BLOW	C	E	G	C	D	F	A	C	E	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	E	G	B	D	G	C
BEND	Db	Gb	Bb	Db	Eb	Gb	Bb	Db	Gb	B
		F	A						F	Bb
			Ab							

Holes 1-4 are the same as Richter tuning. Holes 5-8 utilize the spiral logic (in fact they are identical to 5-8 on True Chromatic). And the top holes 9 & 10 are closer to the fixed step tuning logic.

The Powerbender tuning is a good option for the early switchers, who can feel more comfortable having the familiar bottom octave, and a more structured middle and top octave to experiment. Because the tuning combines several logic, it can also serve as a launchpad to using other tunings.

APPENDIX 1: Tuning Charts

The following charts can serve as a useful reference for harmonica technicians making custom instruments, or any practicing player learning the note layout in different keys.

Richter Major
(RI000000)

C

BLOW	C	E	G	C	E	G	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	F	A	B	D	F	A

C#

BLOW	C#	F	G#	C#	F	G#	C#	F	G#	C#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D#	G#	C	D#	F#	A#	C	D#	F#	A#

D

BLOW	D	F#	A	D	F#	A	D	F#	A	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	E	A	C#	E	G	B	C#	E	G	B

Eb

BLOW	Eb	G	Bb	Eb	G	Bb	Eb	G	Bb	Eb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F	Bb	D	F	Ab	C	D	F	Ab	C

E

BLOW	E	G#	B	E	G#	B	E	G#	B	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F#	B	D#	F#	A	C#	D#	F#	A	C#

F

BLOW	F	A	C	F	A	C	F	A	C	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G	C	E	G	Bb	D	E	G	Bb	D

Richter Major
(RI000000)

F#

BLOW	F#	A#	C#	F#	A#	C#	F#	A#	C#	F#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G#	C#	F	G#	B	D#	F	G#	B	D#

G

BLOW	G	B	D	G	B	D	G	B	D	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	A	D	F#	A	C	E	F#	A	C	E

Ab

BLOW	Ab	C	Eb	Ab	C	Eb	Ab	C	Eb	Ab
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Bb	Eb	G	Bb	Db	F	G	Bb	Db	F

A

BLOW	A	C#	E	A	C#	E	A	C#	E	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	B	E	G#	B	D	F#	G#	B	D	F#

Bb

BLOW	Bb	D	F	Bb	D	F	Bb	D	F	Bb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	F	A	C	Eb	G	A	C	Eb	G

B

BLOW	B	D#	F#	B	D#	F#	B	D#	F#	B
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C#	F#	A#	C#	E	G#	A#	C#	E	G#

Natural Minor
(RINAMI00)

C

BLOW	C	Eb	G	C	Eb	G	C	Eb	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	Bb	D	F	A	Bb	D	F	A

C#

BLOW	C#	E	G#	C#	E	G#	C#	E	G#	C#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D#	G#	B	D#	F#	A#	B	D#	F#	A#

D

BLOW	D	F	A	D	F	A	D	F	A	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	E	A	C	E	G	B	C	E	G	B

Eb

BLOW	Eb	Gb	Bb	Eb	Gb	Bb	Eb	Gb	Bb	Eb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F	Bb	Db	F	Ab	C	Db	F	Ab	C

E

BLOW	E	G	B	E	G	B	E	G	B	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F#	B	D	F#	A	C#	D	F#	A	C#

F

BLOW	F	Ab	C	F	Ab	C	F	Ab	C	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G	C	Eb	G	Bb	D	Eb	G	Bb	D

Natural Minor
(RINAMI00)

F#

BLOW	F#	A	C#	F#	A	C#	F#	A	C#	F#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G#	C#	E	G#	B	D#	E	G#	B	D#

G

BLOW	G	Bb	D	G	Bb	D	G	Bb	D	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	A	D	F	A	C	E	F	A	C	E

Ab

BLOW	Ab	B	Eb	Ab	B	Eb	Ab	B	Eb	Ab
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Bb	Eb	Gb	Bb	Db	F	Gb	Bb	Db	F

A

BLOW	A	C	E	A	C	E	A	C	E	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	B	E	G	B	D	F#	G	B	D	F#

Bb

BLOW	Bb	Db	F	Bb	D	F	Bb	Db	F	Bb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	F	Ab	C	Eb	G	Ab	C	Eb	G

B

BLOW	B	D	Gb	B	D	Gb	B	D	Gb	B
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Db	Gb	A	Db	E	Ab	A	Db	E	Ab

Harmonic Minor
(RIHAMI00)

C

BLOW	C	Eb	G	C	Eb	G	C	Eb	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	F	Ab	B	D	F	Ab

C#

BLOW	C#	E	G#	C#	E	G#	C#	E	G#	C#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D#	G#	C	D#	F#	A	C	D#	F#	A

D

BLOW	D	F	A	D	F	A	D	F	A	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	E	A	Db	E	G	Bb	Db	E	G	Bb

Eb

BLOW	Eb	Gb	Bb	Eb	Gb	Bb	Eb	Gb	Bb	Eb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F	Bb	D	F	Ab	B	D	F	Ab	B

E

BLOW	E	G	B	E	G	B	E	G	B	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Gb	B	Eb	Gb	A	C	Eb	Gb	A	C

F

BLOW	F	Ab	C	F	Ab	C	F	Ab	C	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G	C	E	G	Bb	Db	E	G	Bb	Db

Harmonic Minor
(RIHAMI00)

F#

BLOW	F#	A	C#	F#	A	C#	F#	A	C#	F#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G#	C#	F	G#	B	D	F	G#	B	D

G

BLOW	G	Bb	D	G	Bb	D	G	Bb	D	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	A	D	Gb	A	C	Db	Gb	A	C	Db

Ab

BLOW	Ab	B	Eb	Ab	B	Eb	Ab	B	Eb	Ab
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Bb	Eb	G	Bb	Db	E	G	Bb	Db	E

A

BLOW	A	C	E	A	C	E	A	C	E	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	B	E	Ab	B	D	F	Ab	B	D	F

Bb

BLOW	Bb	Db	F	Bb	Db	F	Bb	Db	F	Bb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	F	A	C	Eb	Gb	A	C	Eb	Gb

B

BLOW	B	D	Gb	B	D	Gb	B	D	Gb	B
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Db	Gb	Bb	Db	E	G	Bb	Db	E	G

Solo Tuning
(SO000000)

C

BLOW	C	E	G	C	C	E	G	C	C	E	G	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	A	B	D	F	A	B	D	F	A	B

C#

BLOW	C#	F	G#	C#	C#	F	G#	C#	C#	F	G#	C#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D#	F#	A#	C	D#	F#	A#	C	D#	F#	A#	C

D

BLOW	D	F#	A	D	D	F#	A	D	D	F#	A	D
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	E	G	B	C#	E	G	B	C#	E	G	B	C#

Eb

BLOW	Eb	G	Bb	Eb	Eb	G	Bb	Eb	Eb	G	Bb	Eb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F	Ab	C	D	F	Ab	C	D	F	Ab	C	D

E

BLOW	E	G#	B	E	E	G#	B	E	E	G#	B	E
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F#	A	C#	D#	F#	A	C#	D#	F#	A	C#	D#

F

BLOW	F	A	C	F	F	A	C	F	F	A	C	F
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G	Bb	D	E	G	Bb	D	E	G	Bb	D	E

Solo Tuning
(SO000000)

F#

BLOW	F#	A#	C#	F#	F#	A#	C#	F#	F#	A#	C#	F#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G#	B	D#	F	G#	B	D#	F	G#	B	D#	F

G

BLOW	G	B	D	G	G	B	D	G	G	B	D	G
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	A	C	E	F#	A	C	E	F#	A	C	E	F#

Ab

BLOW	Ab	C	Eb	Ab	Ab	C	Eb	Ab	Ab	C	Eb	Ab
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Bb	Db	F	G	Bb	Db	F	G	Bb	Db	F	G

A

BLOW	A	C#	E	A	A	C#	E	A	A	C#	E	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	B	D	F#	G#	B	D	F#	G#	B	D	F#	G#

Bb

BLOW	Bb	D	F	Bb	Bb	D	F	Bb	Bb	D	F	Bb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C	Eb	G	A	C	Eb	G	A	C	Eb	G	A

B

BLOW	B	D#	F#	B	B	D#	F#	B	B	D#	F#	B
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C#	E	G#	A#	C#	E	G#	A#	C#	E	G#	A#

Solo Harmonic Minor
(SOHAMI00)

C

BLOW	C	Eb	G	C	C	Eb	G	C	C	Eb	G	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	Ab	B	D	F	Ab	B	D	F	Ab	B

C#

BLOW	C#	E	G#	C#	C#	E	G#	C#	C#	E	G#	C#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D#	F#	A	C	D#	F#	A	C	D#	F#	A	C

D

BLOW	D	F	A	D	D	F	A	D	D	F	A	D
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	E	G	Bb	C#	E	G	Bb	C#	E	G	Bb	C#

Eb

BLOW	Eb	Gb	Bb	Eb	Eb	Gb	Bb	Eb	Eb	Gb	Bb	Eb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F	Ab	B	D	F	Ab	B	D	F	Ab	B	D

E

BLOW	E	G	B	E	E	G	B	E	E	G	B	E
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F#	A	C	D#	F#	A	C	D#	F#	A	C	D#

F

BLOW	F	Ab	C	F	F	Ab	C	F	F	Ab	C	F
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G	Bb	Db	E	G	Bb	Db	E	G	Bb	Db	E

Solo Harmonic Minor
(SOHAMI00)

F#

BLOW	F#	A	C#	F#	F#	A	C#	F#	F#	A	C#	F#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G#	B	D	F	G#	B	D	F	G#	B	D	F

G

BLOW	G	Bb	D	G	G	Bb	D	G	G	Bb	D	G
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	A	C	Eb	F#	A	C	Eb	F#	A	C	Eb	F#

Ab

BLOW	Ab	B	Eb	Ab	Ab	B	Eb	Ab	Ab	B	Eb	Ab
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Bb	Db	E	G	Bb	Db	E	G	Bb	Db	E	G

A

BLOW	A	C	E	A	A	C	E	A	A	C	E	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	B	D	F	G#	B	D	F	G#	B	D	F	G#

Bb

BLOW	Bb	Db	F	Bb	Bb	Db	F	Bb	Bb	Db	F	Bb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C	Eb	Gb	A	C	Eb	Gb	A	C	Eb	Gb	A

B

BLOW	B	D	F#	B	B	D	F#	B	B	D	F#	B
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C#	E	G	A#	C#	E	G	A#	C#	E	G	A#

Power Chromatic
(SOPOWE00)

C

BLOW	C	D	F	A	C	D	F	A	C	D	F	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	E	G	B	D	E	G	B	D	E	G	B

C#

BLOW	C#	D#	F#	A#	C#	D#	F#	A#	C#	D#	F#	A#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D#	F	G#	C	D#	F	G#	C	D#	F	G#	C

D

BLOW	D	E	G	B	D	E	G	B	D	E	G	B
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	E	F#	A	C#	E	F#	A	C#	E	F#	A	C#

Eb

BLOW	Eb	F	Ab	C	Eb	F	Ab	C	Eb	F	Ab	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F	G	Bb	D	F	G	Bb	D	F	G	Bb	D

E

BLOW	E	F#	A	C#	E	F#	A	C#	E	F#	A	C#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F#	G#	B	D#	F#	G#	B	D#	F#	G#	B	D#

F

BLOW	F	G	Bb	D	F	G	Bb	D	F	G	Bb	D
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G	A	C	E	G	A	C	E	G	A	C	E

Power Chromatic
(SOPOWE00)

F#

BLOW	F#	G#	B	D#	F#	G#	B	D#	F#	G#	B	D#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G#	A#	C#	F	G#	A#	C#	F	G#	A#	C#	F

G

BLOW	G	A	C	E	G	A	C	E	G	A	C	E
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	A	B	D	F#	A	B	D	F#	A	B	D	F#

Ab

BLOW	Ab	Bb	Db	F	Ab	Bb	Db	F	Ab	Bb	Db	F
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Bb	C	Eb	G	Bb	C	Eb	G	Bb	C	Eb	G

A

BLOW	A	B	D	F#	A	B	D	F#	A	B	D	F#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	B	C#	E	G#	B	C#	E	G#	B	C#	E	G#

Bb

BLOW	Bb	C	Eb	G	Bb	C	Eb	G	Bb	C	Eb	G
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C	D	F	A	C	D	F	A	C	D	F	A

B

BLOW	B	C#	E	G#	B	C#	E	G#	B	C#	E	G#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C#	D#	F#	A#	C#	D#	F#	A#	C#	D#	F#	A#

Power Chromatic Minor
(SOPOWE02)

C

BLOW	C	Eb	F	Ab	C	Eb	F	Ab	C	Eb	F	Ab
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	G	Bb	D	F	G	Bb	D	F	G	Bb

C#

BLOW	C#	E	F#	A	C#	E	F#	A	C#	E	F#	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D#	F#	G#	B	D#	F#	G#	B	D#	F#	G#	B

D

BLOW	D	F	G	Bb	D	F	G	Bb	D	F	G	Bb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	E	G	A	C	E	G	A	C	E	G	A	C

D#

BLOW	D#	F#	G#	B	D#	F#	G#	B	D#	F#	G#	B
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F	G#	A#	C#	F	G#	A#	C#	F	G#	A#	C#

E

BLOW	E	G	A	C	E	G	A	C	E	G	A	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F#	A	B	D	F#	A	B	D	F#	A	B	D

F

BLOW	F	Ab	Bb	Db	F	Ab	Bb	Db	F	Ab	Bb	Db
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G	Bb	C	Eb	G	Bb	C	Eb	G	Bb	C	Eb

Power Chromatic Minor
(SOPOWE02)

F#

BLOW	F#	A	B	D	F#	A	B	D	F#	A	B	D
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G#	B	C#	E	G#	B	C#	E	G#	B	C#	E

G

BLOW	G	Bb	C	Eb	G	Bb	C	Eb	G	Bb	C	Eb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	A	C	D	F	A	C	D	F	A	C	D	F

Ab

BLOW	Ab	B	Db	E	Ab	B	Db	E	Ab	B	Db	E
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Bb	Db	Eb	Gb	Bb	Db	Eb	Gb	Bb	Db	Eb	Gb

A

BLOW	A	C	D	F	A	C	D	F	A	C	D	F
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	B	D	E	G	B	D	E	G	B	D	E	G

Bb

BLOW	Bb	Db	Eb	Gb	Bb	Db	Eb	Gb	Bb	Db	Eb	Gb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C	Eb	F	Ab	C	Eb	F	Ab	C	Eb	F	Ab

B

BLOW	B	D	E	G	B	D	E	G	B	D	E	G
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C#	E	F#	A	C#	E	F#	A	C#	E	F#	A

Circular
(SPCIRC00)
Labeled by 2 draw!

C

BLOW	G	B	D	F	A	C	E	G	B	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	A	**C**	E	G	B	D	F	A	C	E

C#

BLOW	G#	C	D#	F#	A#	C#	F	G#	C	D#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	A#	**C#**	F	G#	C	D#	F#	A#	C#	F

D

BLOW	A	C#	E	G	B	D	F#	A	C#	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	B	**D**	F#	A	C#	E	G	B	D	F#

Eb

BLOW	Bb	D	F	Ab	C	Eb	G	Bb	D	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	**Eb**	G	Bb	D	F	Ab	C	Eb	G

E

BLOW	B	D#	F#	A	C#	E	G#	B	D#	F#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C#	**E**	G#	B	D#	F#	A	C#	E	G#

F

BLOW	C	E	G	Bb	D	F	A	C	E	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	**F**	A	C	E	G	Bb	D	F	A

Circular
(SPCIRC00)
Labeled by 2 draw!

F#

BLOW	C#	F	G#	B	D#	F#	A#	C#	F	G#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D#	**F#**	A#	C#	F	G#	B	D#	F#	A#

G

BLOW	D	F#	A	C	E	G	B	D	F#	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	E	**G**	B	D	F#	A	C	E	G	B

Ab

BLOW	Eb	G	Bb	Db	F	Ab	C	Eb	G	Bb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F	**Ab**	C	Eb	G	Bb	Db	F	Ab	C

A

BLOW	E	G#	B	D	F#	A	C#	E	G#	B
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F#	**A**	C#	E	G#	B	D	F#	A	C#

Bb

BLOW	F	A	C	Eb	G	Bb	D	F	A	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G	**Bb**	D	F	A	C	Eb	G	Bb	D

B

BLOW	F#	A#	C#	E	G#	B	D#	F#	A#	C#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G#	**B**	D#	F#	A#	C#	E	G#	B	D#

True Chromatic

(SPTCHR00)

Basic Keys (by importance level)

C

BLOW	C	Eb	G	Bb	D	F	A	C	E	G	B	D
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D	F	A	C	E	G	B	D	Gb	A	Db	E

C#

BLOW	C#	E	G#	B	D#	F#	A#	C#	F	G#	C	D#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	D#	F#	A#	C#	F	G#	C	D#	G	A#	D	F

Bb

BLOW	Bb	Db	F	Ab	C	Eb	G	Bb	D	F	A	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	C	Eb	G	Bb	D	F	A	C	E	G	B	D

B

BLOW	B	D	Gb	A	Db	E	Ab	B	Eb	Gb	Bb	Db
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Db	E	Ab	B	Eb	Gb	Bb	Db	F	Ab	C	Eb

A

BLOW	A	C	E	G	B	D	Gb	A	Db	E	Ab	B
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	B	D	Gb	A	Db	E	Ab	B	Eb	Gb	Bb	Db

- D is the same as high A with 2 extra low holes
- Eb is the same as Bb with 2 extra low holes
- E is the same as B with 2 extra low holes
- F is the same as C with 2 extra low holes.
- F# is the same as C# with 2 extra low holes
- G is the same as C shifted 2 holes above (2 extra holes at the top and 2 holes missing in the low octave)
- Ab is the same as C# shifted 2 holes above (2 extra holes at the top and 2 holes missing in the low octave)

True Chromatic

(SPTCHR00)

Additional Keys

D

BLOW	D	F	A	C	E	G	B	D	Gb	A	Db	E
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	E	G	B	D	Gb	A	Db	E	Ab	B	Eb	Gb

Eb

BLOW	Eb	Gb	Bb	Db	F	Ab	C	Eb	G	Bb	D	F
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	F	Ab	C	Eb	G	Bb	D	F	A	C	E	G

E

BLOW	E	G	B	D	Gb	A	Db	E	Ab	B	Eb	Gb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Gb	A	Db	E	Ab	B	Eb	Gb	Bb	Db	F	Ab

F

BLOW	F	Ab	C	Eb	G	Bb	D	F	A	C	E	G
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G	Bb	D	F	A	C	E	G	B	D	Gb	A

F#

BLOW	F#	A	C#	E	G#	B	D#	F#	A#	C#	F	G#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	G#	B	D#	F#	A#	C#	F	G#	C	D#	G	A#

G

BLOW	G	Bb	D	F	A	C	E	G	B	D	Gb	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	A	C	E	G	B	D	Gb	A	Db	E	Ab	B

Ab

BLOW	Ab	B	Eb	Gb	Bb	Db	F	Ab	C	Eb	G	Bb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	Bb	Db	F	Ab	C	Eb	G	Bb	D	F	A	C

Arabic

(SPARAB00)

Labeled by 1 draw!

C

BLOW	Bb	Db	F	Ab	C	E	G	B	Db	F	Ab	C
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**C**	E	G	B	Db	F	Ab	C	E	G	B	Db

C#

BLOW	B	D	F#	A	C#	F	G#	C	D	F#	A	C#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**C#**	F	G#	C	D	F#	A	C#	F	G#	C	D

D

BLOW	C	Eb	G	Bb	D	F#	A	C#	Eb	G	Bb	D
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**D**	F#	A	C#	Eb	G	Bb	D	F#	A	C#	Eb

Eb

BLOW	Db	E	Ab	B	Eb	G	Bb	D	E	Ab	B	Eb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**Eb**	G	Bb	D	E	Ab	B	Eb	G	Bb	D	E

E

BLOW	D	F	A	C	E	Ab	B	Eb	F	A	C	E
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**E**	Ab	B	Eb	F	A	C	E	Ab	B	Eb	F

F

BLOW	Eb	Gb	Bb	Db	F	A	C	E	Gb	Bb	Db	F
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**F**	A	C	E	Gb	Bb	Db	F	A	C	E	Gb

Arabic

(SPARAB00)

Labeled by 1 draw!

F#

BLOW	E	G	B	D	F#	A#	C#	F	G	B	D	F#
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**F#**	A#	C#	F	G	B	D	F#	A#	C#	F	G

G

BLOW	F	Ab	C	Eb	G	B	D	F#	Ab	C	Eb	G
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**G**	B	D	F#	Ab	C	Eb	G	B	D	F#	Ab

Ab

BLOW	Gb	A	Db	E	Ab	C	Eb	G	A	Db	E	Ab
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**Ab**	C	Eb	G	A	Db	E	Ab	C	Eb	G	A

A

BLOW	G	Bb	D	F	A	C#	E	G#	Bb	D	F	A
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**A**	C#	E	G#	Bb	D	F	A	C#	E	G#	Bb

Bb

BLOW	Ab	B	Eb	Gb	Bb	D	F	A	B	Eb	Gb	Bb
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**Bb**	D	F	A	B	Eb	Gb	Bb	D	F	A	B

B

BLOW	A	C	E	G	B	D#	F#	A#	C	E	G	B
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	**B**	D#	F#	A#	C	E	G	B	D#	F#	A#	C

Spiral Harmonic Minor

Raised 1 Blow (SPHAMI01)

Labeled by 1 draw!

C

BLOW	B	D	F	Ab	C	Eb	G	B	D	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**C**	Eb	G	B	D	F	Ab	C	Eb	G

C#

BLOW	C	D#	F#	A	C#	E	G#	C	D#	F#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**C#**	E	G#	C	D#	F#	A	C#	E	G#

D

BLOW	Db	E	G	Bb	D	F	A	Db	E	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**D**	F	A	Db	E	G	Bb	D	F	A

Eb

BLOW	D	F	Ab	B	Eb	Gb	Bb	D	F	Ab
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**Eb**	Gb	Bb	D	F	Ab	B	Eb	Gb	Bb

E

BLOW	Eb	Gb	A	C	E	G	B	Eb	Gb	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**E**	G	B	Eb	Gb	A	C	E	G	B

F

BLOW	E	G	Bb	Db	F	Ab	C	E	A	Bb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**F**	Ab	C	E	G	Bb	Db	F	Ab	C

Spiral Harmonic Minor

Raised 1 Blow (SPHAMI01)

Labeled by 1 draw!

F#

BLOW	F	G#	B	D	F#	A	C#	F	G#	B
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**F#**	A	C#	F	G#	B	D	F#	A	C#

G

BLOW	Gb	A	C	Eb	G	Bb	D	Gb	A	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**G**	Bb	D	Gb	A	C	Eb	G	Bb	D

Ab

BLOW	G	Bb	Db	E	Ab	B	Eb	G	Bb	Db
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**Ab**	B	Eb	G	Bb	Db	E	Ab	B	Eb

A

BLOW	Ab	B	D	F	A	C	E	Ab	B	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**A**	C	E	Ab	B	D	F	A	C	E

Bb

BLOW	A	C	Eb	Gb	Bb	Db	F	A	B	Eb
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**Bb**	Db	F	A	B	Eb	Gb	Bb	Db	F

B

BLOW	Bb	Db	E	G	B	D	Gb	Bb	Db	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	**B**	D	Gb	Bb	Db	E	G	B	D	Gb

Powerbender
(HYPBEN00)

C

BLOW	C	E	G	C	D	F	A	C	E	A
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D	G	B	D	E	G	B	D	G	C

C#

BLOW	C#	F	G#	C#	D#	F#	A#	C#	F	A#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	D#	G#	C	D#	F	G#	C	D#	G#	C#

D

BLOW	D	F#	A	D	E	G	B	D	F#	B
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	E	A	C#	E	F#	A	C#	E	A	D

Eb

BLOW	Eb	G	Bb	Eb	F	Ab	C	Eb	G	C
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	F	Bb	D	F	G	Bb	D	F	Bb	Eb

E

BLOW	E	Ab	B	E	Gb	A	Db	E	Ab	Db
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Gb	B	Eb	Gb	Ab	B	Eb	Gb	B	E

F

BLOW	F	A	C	F	G	Bb	D	F	A	D
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G	C	E	G	A	C	E	G	C	F

Powerbender
(HYPBEN00)

F#

BLOW	F#	A#	C#	F#	G#	B	D#	F#	A#	D#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	G#	C#	F	G#	A#	C#	F	G#	C#	F#

G

BLOW	G	B	D	G	A	C	E	G	B	E
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	A	D	F#	A	B	D	F#	A	D	G

Ab

BLOW	Ab	C	Eb	Ab	Bb	Db	F	Ab	C	F
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Bb	Eb	G	Bb	C	Eb	G	Bb	Eb	Ab

A

BLOW	A	C#	E	A	B	D	F#	A	C#	F#
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	B	E	G#	B	C#	E	G#	B	E	A

Bb

BLOW	Bb	D	F	Bb	C	Eb	G	Bb	D	G
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	C	F	A	C	D	F	A	C	F	Bb

B

BLOW	B	Eb	Gb	B	Db	F	Ab	B	Eb	Ab
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	Db	Gb	Bb	Db	Eb	Gb	Bb	Db	Gb	B

APPENDIX 2: Intonation Charts

Those charts provide information on different intonation options for some tunings.

Numbers represent deviations in cents from the absolute pitch.

Richter Major (RI000000)

Just Intonation, 1 Position

BLOW	0	-14	+2	0	-14	+2	0	-14	+2	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+4	+2	-12	+4	-2	-16	-12	+4	-2	-16

Just Intonation, 2 Position

BLOW	0	-14	+2	0	-14	+2	0	-14	+2	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+4	+2	-12	+4	-29	+6	-12	+4	-29	+6

Just Intonation, 3 Position

BLOW	0	-14	+2	0	-14	+2	0	-14	+2	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+4	+2	-12	+4	+20	+6	-12	+4	+20	+6

Compromise

BLOW	0	-14	+2	0	-14	+2	0	-14	+2	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+4	+2	-12	+4	-2	+6	-12	+4	-2	+6

Natural Minor (RINAMI00)

Just Intonation, 2 Position

BLOW	-2	+14	0	-2	+14	0	-2	+14	0	-2
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+2	0	+16	+2	+18	+4	+16	+2	+18	+4

Harmonic Minor (RIHAMI00)

Just Intonation, 1 position

BLOW	-2	+14	0	-2	+14	0	-2	+14	0	-2
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+4	+2	-12	+4	+20	-13	-12	+4	+20	-13

Solo Harmonic Minor (SOHAMI00)

Just Intonation

BLOW	-2	+14	0	-2	-2	+14	0	-2	-2	+14
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+4	+20	-13	-12	+4	+20	-13	-12	+4	+20

Circular (SPCIRC00)

Compromise

BLOW	0	-14	0	-2	+6	0	-14	0	-14	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	-14	0	-14	0	-14	0	+16	0	+14	0

True Chromatic (SPTCHR00)

Compromise

BLOW	0	+16	0	+16	0	+16	0	+16	0	+16	0	+16
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	0	+16	0	+16	0	+16	0	+16	0	+16	0	+16

Arabic (SPARAB00)

Just Intonation

BLOW	0	+16	0	+16	0	+16	0	+16	0	+16	0	+16
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	+16	0	+16	0	+16	0	+16	0	+16	0	+16	0

Spiral Harmonic Minor (SPHAMI00)

Just Intonation

BLOW	+20	+4	+20	-13	0	+14	+2	-12	+4	+20
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	+14	+2	-12	+4	+20	-13	0	+14	+2

Spiral Harmonic Minor Raised 1 Blow (SPHAMI01)

Just Intonation

BLOW	-12	+4	+20	-13	0	+14	+2	-12	+4	+20
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	+14	+2	-12	+4	+20	-13	0	+14	+2

True Harmonic (SPTHAR00)

Compromise

BLOW	0	+16	0	+16	0	+16	0	+16	0	+16
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+16	0	+16	0	+16	0	+16	0	+16	0

Powerbender (HYPBEN00)

Compromise

BLOW	0	-14	+2	0	0	0	0	0	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+4	+2	-12	+4	0	+2	-12	+4	+2	0

*True Chromatic for the chromatic harmonica is intonated the same way, odd holes to 0 cents, even holes to +16 cents both for slide-in and slide-out notes.

*Circular tuning, 5 – 8 draw will always be a bit dissonant

APPENDIX 3: Retuning Schemes

This part of the work provides some tips on the most efficient ways to retune standard Richter harmonicas into various alternative tunings.

The dark and light grey table cell color shows reed swap.

Make sure you also check the TUNE-O-MATIC software here:

www.truechromatic.com/tune-o-matic/index.html

You can also take advantage of SEYDEL's Harp Configurator to make pre-configured diatonics and chromatics in alternative tunings:

http://www.seydel1847.de/epages/Seydel.sf/sec1UW2JtFRHTM/?ObjectPath=/Shops/Seydel/Categories/Configurator/Konfigurator

PADDY RICHTER (RIPADD00)

Same Key

BLOW	0	0	+2	0	0	0	0	0	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	0	0	0	0	0	0	0	0	0

MAJOR SEVEN (Country) (RICOUN00)

Same Key

BLOW	0	0	0	0	0	0	0	0	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	0	0	0	+1	0	0	0	0	0

MELODY MAKER (RIMEMA00)

Same Key

BLOW	0	0	+2	0	0	0	0	0	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	0	0	0	+1	0	0	0	+1	0

NATURAL MINOR (RINAMI00)

Same Key

BLOW	0	-1	0	0	-1	0	0	-1	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	0	-1	0	0	0	-1	0	0	0

NATURAL MINOR (RIHAMI00)

Same Key

BLOW	0	-1	0	0	-1	0	0	-1	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	0	0	0	0	-1	0	0	0	-1

EASY THIRD (Reggae) (RIREGG00)

Same Key

BLOW	0	0	0	0	0	0	0	0	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	-2	-2	0	0	0	0	0	0	0

OPEN MINOR (RISEVE00)

Same Key

BLOW	0	0	0	0	0	0	0	0	0	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	0	-1	0	0	0	-1	0	0	0

DIMINISHED (FIDIMI00)

Scenario 1: 10-Hole diatonic.

+3 semitones

BLOW	+3	+2	+2	0	-1	-1	-3	-4	-4	-6
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+3	+1	0	0	0	-1	0	0	0	-1

The overall key of the instrument shifts UP by 3 semitones to minimize reed replacement. To make a “C” diatonic, you should start off with an “A” Richter and retune using the above mentioned scheme. Reeds 1 draw & 1 blow usually don't sustain filing up by 3 semitones, so it is advisable to replace them. Same goes for 8, 9, 10 blow.

Scenario 2: 12-Hole diatonic from solo tuning, or chromatic.

Same Key

BLOW	0	-1	-1	-3	0	-1	-1	-3	0	-1	-1	-3
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	0	0	-1	0	0	0	-1	0	0	0	-1	0

Since most 12-hole diatonics and chromatics are SOLO tuning, we assume that the initial harmonica is solo-tuned. The overall key of the instrument stays the same. No reed replacement required.

AUGMENTED (FIAUGM00)

10-Hole diatonic.

Same Key

BLOW	0	0	+1	0	0	+1	0	0	+1	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+1	0	0	+1	+2	+2	+4	+5	+6	+6

Reeds 7, 8, 9 , 10 draw must be changed. Be extremely careful when filing reeds up!

POWER CHROMATIC (SOPOWE00)

Scenario 1: 10-Hole diatonic.

+3 semitones

BLOW	+3	+1	+1	0	-1	-2	-4	-4	-4	-7
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+3	0	-1	0	0	-2	-1	0	0	-2

The overall key of the instrument shifts UP by 3 semitones to minimize reed replacement. To make a “C” diatonic, you should start off with an “A”Richter and retune using the above mentioned scheme. Reeds 1 draw & 1 blow usually don't sustain filing up by 3 semitones, so it is advisable to replace them. Same goes for 7, 8, 9, 10 blow.

Scenario 2: 12-Hole diatonic from solo tuning, or chromatic.

Same Key

BLOW	0	-2	-2	-3	0	-2	-2	-3	0	-2	-2	-3
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	0	-1	-2	0	0	-1	-2	0	0	-1	-2	0

Since most 12-hole diatonics and chromatics are SOLO tuning, we assume that the initial harmonica is solo-tuned. The overall key of the instrument stays the same. No reed replacement required.

POWER CHROMATIC MINOR (SOPOWE02)

Scenario 1: 10-Hole diatonic.

+3 semitones

BLOW	+3	+2	+1	-1	-1	-1	-4	-5	-4	-6
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+3	+1	-1	-1	0	-1	-1	-1	0	-1

The overall key of the instrument shifts UP by 3 semitones to minimize reed replacement. To make a “C” diatonic, you should start off with an “A”Richter and retune using the above mentioned scheme. Reeds 1 draw & 1 blow usually don't sustain filing up by 3 semitones, so it is advisable to replace them. Same goes for 7, 8, 9, 10 blow.

Scenario 2: 12-Hole diatonic from solo tuning, or chromatic.

Same Key

BLOW	0	-1	-2	-3	0	-1	-2	-3	0	-1	-2	-3
HOLE	1	2	3	4	5	6	7	8	9	10	11	12
DRAW	0	0	-2	-2	0	0	-2	-2	0	0	-2	-2

Since most 12-hole diatonics and chromatics are SOLO tuning, we assume that the initial harmonica is solo-tuned. The overall key of the instrument stays the same.

Reeds 4, 8, and 10 must be swapped to avoid filing down by -4 semitones.

CIRCULAR (SPCIRC00)

Scenario 1: One diatonic harmonica, no reed swap.

-1 semitone

BLOW	-1	-1	-1	-3	-3	-3	-4	-5	-4	-6
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	-1	-3	-3	-3	-2	-3	-2	-1	-1	-1

The overall key of the instrument shifts DOWN by 1 semitone to avoid filing the top reeds up. 7, 8, 9, 10 blow need to be retuned using **solder**.

Scenario 2: One diatonic harmonica, with reed swap.

+1 semitone

BLOW	+1	+1	+1	-1	-1	-1	-1	-1	0	-1
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+1	-1	-1	-1	0	-1	-1	-1	-1	-2

The overall key of the instrument shifts UP by 1 semitone to avoid filing the top reeds up. 7, 8, 9, 10 blow need to be swapped with 7, 8, 9, 10 draw. No extra reeds are necessary.

Scenario 3: Two diatonic harmonicas, no reed swap.

-

BLOW	+2	+2	+2	0	0	0	-1	-2	-1	-3
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	-2	-2	-2	-1	-2	-1	0	0	0

You will need the draw reedplate in the final key, and the blow reedplate from a harmonica two semitones lower. So, to produce a “C” Circular, you will need a “C” draw reedplate, and a “Bb” blow reedplate. All notes are safe to retune using a file.

TRUE CHROMATIC (SPTCHR00)

Scenario 1: One diatonic harmonica, no reed swap.

-1 semitone

BLOW	-1	-2	-1	-3	-3	-3	-4	-5	-4	-6
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	-1	-3	-3	-3	-2	-3	-1	-1	0	-1

The overall key of the instrument shifts DOWN by 1 semitone to avoid filing the top reeds up.
7, 8, 9, 10 blow need to be retuned using **solder**.

Scenario 2: One diatonic harmonica, with reed swap.

+1 semitone

BLOW	+1	0	+1	-1	-1	-1	-1	-1	0	-1
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+1	-1	-1	-1	0	-1	0	-1	0	-2

The overall key of the instrument shifts UP by 1 semitone to avoid filing the top reeds up.
7, 8, 9, 10 blow need to be swapped with 7, 8, 9, 10 draw. No extra reeds are necessary.

Scenario 3: Two diatonic harmonicas, no reed swap.

-

BLOW	+2	+1	+2	0	0	0	-1	-2	-1	-3
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	-2	-2	-2	-1	-2	0	0	+1	0

You will need the draw reedplate in the final key, and the blow reedplate from a harmonica two semitones lower. So, to produce a “C” True Chromatic, you will need a “C” draw reedplate, and a “Bb” blow reedplate. All notes are safe to retune using a file.

ARABIC (SPARAB00)

Scenario 1: One diatonic harmonica, no reed swap.

-1 semitone

BLOW	-1	-2	-1	-3	-3	-2	-4	-4	-5	-6
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	-1	-2	-3	-2	-3	-3	-2	-1	0	-1

The overall key of the instrument shifts DOWN by 1 semitone to avoid filing the top reeds up.
7, 8, 9, 10 blow need to be retuned using **solder**.

Scenario 2: One diatonic harmonica, with reed swap.

+1 semitone

BLOW	+1	0	+1	-1	-1	0	-2	0	-1	-1
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+1	0	-1	0	-1	-1	0	-1	0	-2

The overall key of the instrument shifts UP by 1 semitone to avoid filing the top reeds up.
8, 9, 10 blow need to be swapped with 8, 9, 10 draw. No extra reeds are necessary.

Scenario 3: Two diatonic harmonicas, no reed swap.

-

BLOW	+2	+1	+2	0	0	+1	-1	-1	-2	-3
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	-1	-2	-1	-2	-2	-1	0	+1	0

You will need the draw reedplate in the final key, and the blow reedplate from a harmonica two semitones lower. So, to produce a “C” Arabic, you will need a “C” draw reedplate, and a “Bb” blow reedplate. All notes are safe to retune using a file.

SPIRAL HARMONIC MINOR (SPHAMI01)
(Raised 1 Blow)

Scenario 1: One diatonic harmonica, no reed swap.

-1 semitone

BLOW	+1	0	0	-2	-2	-2	-3	-3	-3	-5
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	-1	-2	-3	-2	-3	-3	-2	-1	0	-1

The overall key of the instrument shifts DOWN by 1 semitone to avoid filing the top reeds up.
7, 8, 9, 10 blow need to be retuned using **solder**.

Scenario 2: One diatonic harmonica, with reed swap.

+1 semitone

BLOW	+2	+1	+1	-1	-1	-1	-1	0	0	-1
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	+1	-1	-1	0	0	-1	0	-1	-1	-2

The overall key of the instrument shifts UP by 1 semitone to avoid filing the top reeds up.
8, 9, 10 blow need to be swapped with 8, 9, 10 draw. No extra reeds are necessary.

Scenario 3: Two diatonic harmonicas, no reed swap.

-

BLOW	+3	+2	+2	0	0	0	-1	-1	-1	-3
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	-2	-2	-1	-1	-2	-1	0	0	0

You will need the draw reedplate in the final key, and the blow reedplate from a harmonica two semitones lower. So, to produce a “C” Spiral Harmonic Minor, you will need a “C” draw reedplate, and a “Bb” blow reedplate. All notes are safe to retune using a file.

POWERBENDER (HYPBEN00)

Scenario 1: One diatonic harmonica, with reed swap.

Same Key

BLOW	0	0	0	0	-2	-2	-3	-2	-1	0
HOLE	1	2	3	4	5	6	7	8	9	10
DRAW	0	0	0	0	-1	-2	0	-2	0	0

8, 9, 10 blow need to be swapped with 8, 9, 10 draw. No extra reeds are necessary.

APPENDIX 4: Sound Reference

This part of the work provides links to videos & audio that uses alternative tunings.

PADDY RICHTER (RIPADD00)

Brendan Power – Jolly Beggarman / Crowly Reel

http://www.myspace.com/alfredhirsch

MAJOR SEVENTH (RICOUN00)

Buddy Green

Texas Gales, The Butterfly Kid, Oh Shenadoah, The Pear Tree, Ashokan Farewell

POWER CHROMATIC (SOPOWE00)

Brendan Power - Dallas Airport Rag

http://www.youtube.com/watch?v=u5PFtAhsreM

DIMINISHED (FIDIMI00)

Alfred Hirsch – all recordings.

http://www.myspace.com/alfredhirsch

AUGMENTED (FIAUGM00)

Eric Chafer – all recordings

http://www.planetharmonica.com/EricChafer.htm

TRUE CHROMATIC (SPTCHR00)

Alex Paclin – Soul Flight

http://www.youtube.com/watch?v=y3QF-1AF66g

Jim & Kevin MacLeod – Relent

http://www.truechromatic.com/Relent-Jim.mp3

POWERBENDER (HYPBEN00)

Brendan Power

http://www.youtube.com/watch?v=3uWojEL4BVw

About the Author

Eugene Ivanov is a harmonica player and customizer from Russia. If you encounter any typos, please notify the author about it. If you would like to contribute to the development of this classification, you can contact Eugene using one of the following options:

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References

Pat Missin – Altered States (http://www.patmissin.com/tunings/tunings.html)

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