

USER'S MANUAL

VOX *Continental-V*



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Table of contents

Table of Contents

Project management	2
Table of contents	3
INTRODUCTION	5
1.1 The electronic organ	5
1.1.1 Introduction	5
1.1.2 The spark that started the fire: the Telharmonium	5
1.1.3 Technological innovations	6
1.2 The VOX Continental	6
1.2.1 Beginnings with Jennings	6
1.2.2 Physical features: what a looker!	7
1.2.3 The sound of renown	8
1.2.4 Maintenance	9
1.2.5 The VOX rocks: a selected discography	9
1.3 Physical modeling synthesis	10
1.3.1 Music and math: yet another link	10
1.3.2 A computational conundrum	10
1.3.3 The endless revolution	11
ACTIVATION & FIRST START	12
2.1 Register and Activate	12
2.2 Initial Setup	12
2.2.1 Audio and MIDI settings: Windows	12
2.2.2 Audio and MIDI settings: Mac OS X	13
USER INTERFACE	15
3.1 Virtual keyboards and pedals	15
3.2 The tool bar: introduction and initial setup	15
3.2.1 Audio and MIDI settings	16
3.2.2 Choose the organ color	17
3.3 Managing presets	18
3.3.1 Select a bank, type, or preset	18
3.3.2 Saving an edited preset	20
3.3.3 Import / Export a bank of presets	21
3.4 Advanced features	21
3.4.1 Extended mode	21
3.4.2 Open mode	22
3.4.3 The pedals	24
3.4.4 Output mode	25

3.4.5 The Swell pedal.....	27
3.4.6 FX Slot	28
3.4.7 The Panic button: "Stuck" happens.....	28
3.4.8 CPU meter	28
3.4.9 Global MIDI channel	29
3.4.10 MIDI control configurations	29
3.4.11 MIDI preferences: the PREF button.....	32
3.4.12 The MIDI Mode tabs	34
3.5 Types of controls.....	35
3.5.1 Potentiometers.....	35
3.5.2 Switches	36
3.6 The effects.....	36
3.6.1 Flanger	37
3.6.2 Phaser	38
3.6.3 Chorus.....	39
3.6.4 Delay	39
3.6.5 Overdrive	40
3.6.6 Wah	41
3.6.7 Leslie speaker model.....	41
3.6.8 Guitar amp model.....	42
END USER LICENSE AGREEMENT	44

1 INTRODUCTION

1.1 The electronic organ

1.1.1 Introduction

The term "organ" is quite versatile, representing a number of constructions ranging from the biological to the electromechanical. Its Greek root is the word "*organon*", which when translated literally means "*that with which one works.*" And many generations of musicians stretching back further than Johann Sebastian Bach and forward past Joey DeFrancesco would agree! The organ, in all its forms, has been at the heart of some of the greatest music ever produced.

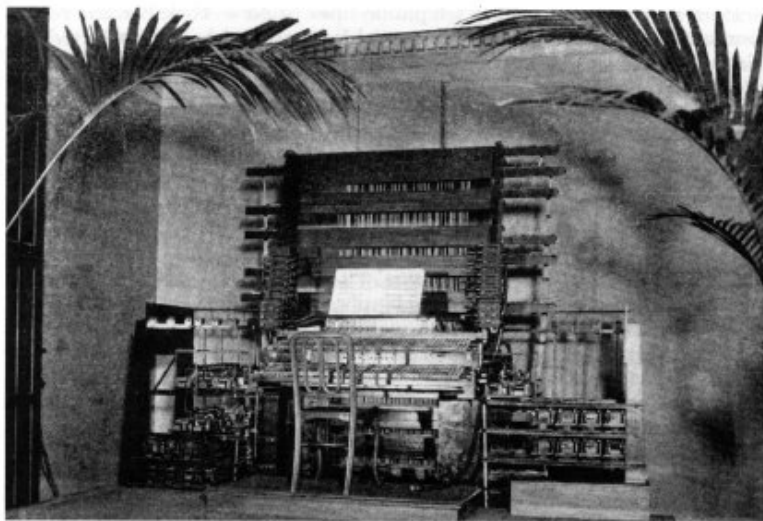
Even within the musical realm the history of the organ has many parallel branches. But prior to the late 19th century AD the method of tone production always depended on the flow of air through a pipe or past a reed, with the airflow provided courtesy of one or more humans: pumping bellows with their arms, pushing pedals with their feet, or exhaling into some device belonging to the harmonica family.

So imagine the rejoicing when someone had the idea to involve electricity! Not only did this allow the players to focus more on the music than on their heart rate; it opened up a range of technological innovations that led to a nearly infinite number of timbral possibilities. And the organ still arguably reigns supreme as the musical instrument capable of the widest diversity in both pitch and timbre. Perhaps this is why it is also found in nearly every style of music known to humankind.

There is much information available elsewhere regarding the history of the organ leading up to the 20th century. Our focus here will be on the development of the electronic organ.

1.1.2 The spark that started the fire: the Telharmonium

The very first electronic organ was the Telharmonium, invented in 1897 by Thaddeus Cahill. Only three were made, with the final model weighing almost 200 tons!



The Telharmonium (a.k.a. the "Dynamophone") was originally heard by most people through means of electrical wires attached to "paper cones", the forerunners of today's loudspeakers. The music was transmitted to various locations in New York City over the burgeoning telephone system! Crosstalk from the Telharmonium sometimes interfered with telephone conversations, so that idea didn't last long.

Between 1906 and 1908 there were a number of well-received public performances in a concert hall setting as well. "*Build it and they will come...*" (Well, they had to, didn't they? The Telharmonium wasn't exactly portable.)

Sadly, there are no surviving recordings of the Telharmonium. But there are many web sites containing a wealth of information about this fascinating and groundbreaking instrument.

1.1.3 Technological innovations

Another thing that made the Telharmonium different from other electrically-powered organs of the day was the use of an electromechanical device to generate the tones, rather than simply using electricity to blow air into a pipe or past a reed. These devices came to be known as tonewheels, and they were the progenitors of the technology later employed by the Hammond Organ Company in its legendary instruments. The resultant sound finally enabled the electronic organ to distinguish itself from the pipe organ and reed organ, and also allowed musicians to sculpt the tone of the instrument through the use of additive synthesis! We owe much to these innovations.

Another form of tone generation became available with the advent of the transistor, and with it an increase in portability and reliability. When combined with the frequency dividing technology that had been developed roughly 10 years earlier, electronic (or "combo") organs became even more affordable and easier to maintain. For example, rather than tuning hundreds of individual oscillation circuits, the technician only needed to set the fundamental frequency of 12 circuits. The rest of the pitches and their overtones were derived through the combined use of frequency dividers and phase-locked loop (PLL) frequency synthesizers. You tune one, you tune them all (times 12).

And from these discoveries sprang the VOX Continental and its descendants, arguably the most popular and influential "combo" organ series ever produced.

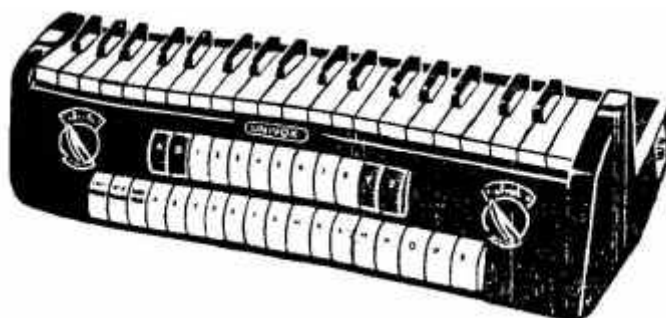
1.2 The VOX Continental

1.2.1 Beginnings with Jennings

The VOX Continental was originally created by the Jennings Musical Instrument company (JMI). JMI had been in the organ business since the 1950s, at first making accordions and then expanding into the home and church organ markets. Their first somewhat "portable" organs were instruments called the UniVOX, which were initially designed to be attached by means of metal clips beneath the right-hand side of a piano keyboard. Later they designed an adjustable, chrome-plated stand to streamline the setup process.

The UniVOX models had buttons for sound-shaping purposes, a tube-based tone generator, and a built-in amplifier and speaker. They somewhat resembled an accordion, but given their fixed position they couldn't be "arm powered" so they needed an AC power source nearby.

Pictured below is the second UniVOX model, the J10:



Like its predecessor the J6, the J10 was monophonic. But it provided an extra row of buttons for preset selection, which multiplied its usefulness and appeal. It was used on the song *Telstar*, which was a #1 hit on both sides of "the Pond" for The Tornados in December of 1962. The Tornados went on to become early adopters of the VOX Continental, scoring several more hits in the process.

After a period of development, JMI began mass-production of the first VOX Continental organ in 1962. It was later produced as a joint venture with an Italian manufacturer. There were a number of models all based on the Continental that were released with various feature differences: the Continental itself (single-manual), the Super Continental (dual-manual), the Jaguar (switches instead of drawbars), the Corinthian (similar to the Jaguar), the Baroque (built-in amp and speakers) and the 300. The 300 was the most advanced, with the equivalent of a Continental on the lower manual and an expanded Continental on the upper with different drawbars.

In roughly 1967 Tom Jennings was fired from his own company after a buyout. He then started up the Jennings Electronic Instruments (JEI) company and began making his own organs again. These organs were based on the Continental 300 but further expanded with more drawbars on the upper manual, an expanded percussion section, the addition of tremolo and spring reverb, as well as some tone presets.

The sound of the VOX organs caught on fast and they became a staple of the British invasion sound used by the Animals, The Beatles, The Zombies, and more.

1.2.2 Physical features: what a looker!

Few keyboards have a design as immediately recognized as the VOX Continental. Its distinctive shape and unique color schemes set it apart from any other portable organ.



Two views of the VOX Continental I

The chrome legs would store within the detachable lid, making the unit much easier to transport than its behemoth rival, the Hammond. The sturdy, flat, and red/orange top was a perfect place for a second keyboard, such as the Fender Rhodes Piano Bass often used by Ray Manzarek of The Doors. The inverse coloring of the keys, previously only seen on harpsichords, was the final stroke of aesthetic genius. It was an irresistible combination (or “combo”, if you will).

1.2.3 The sound of renown

The VOX Continental has a sound that is quite distinct from a Hammond organ. It is actually more flexible sonically because it does not rely merely on sine waves; it also gives the user the ability to add or substitute triangle waveforms (which were actually filtered square waves), greatly expanding the sonic palette.

Because of this flexibility its timbre has been described alternately as “bright”, “airy”, “edgy”, “smooth” and “mellow”. Where its rivals might struggle to be heard in certain settings, the VOX Continental had no trouble cutting through a guitar-heavy mix. And when a more subtle tone was required the simpler sine waveforms could be used instead, or used in combination with the triangle waveforms as “sweeteners”.

And of course, the VOX Continental V software instrument makes all of those options yours!

1.2.4 Maintenance

As much as the tuning of a VOX Continental was simplified by the frequency divider components, the electromechanical aspects of the keyboard were still of concern. For each key there was an independent contact for each drawbar stop, and as the organ aged in proportion to how much it was used, these individual contacts would begin to age as well...and often at different rates. A very old, poorly maintained VOX Continental would likely give a very different sound from key to key. The overall output can be quite unpredictable when this is the case.

Call us crazy, but we really are serious about faithfully recreating the experience of these classic instruments. So one of the interesting things we did with our VOX Continental V emulation is give you the ability to add that "unpredictability" back in! You'll find a control in Open mode labeled **Key Contact Age**. Give that a twist and see what happens! It might inject the right amount of personality into a preset you are creating.

1.2.5 The VOX rocks: a selected discography

There have been many, many albums made using the various VOX models, but here is a brief list of recordings bearing its unmistakable sound

96 Tears – Question Mark & the Mysterians
House Of The Rising Sun – The Animals
I'm Down – The Beatles
Light My Fire – The Doors
Watching the Detectives – Elvis Costello
Do You Love Me – The Dave Clark Five
I'm a Believer – The Monkees
In-A-Gadda-Da-Vida – Iron Butterfly
One Step Beyond – Madness
Working My Way Back To You – The Four Seasons

This is only a small sample, and yet it represents huge hits spanning several decades! Clearly this is a musical instrument with serious staying power and broad audience appeal.

Still a classic and in great demand, the prices of VOX organs have climbed in response to their limited availability. Thankfully, Arturia's VOX Continental V software brings this iconic instrument back to life, placing it within the reach of the modern musician with even the most modest budget.

1.3 Physical modeling synthesis

When you want to create a sound, there are many methods of synthesis from which to choose:

- **Additive**, which creates a timbre by adding various waveforms together
- **Subtractive**, in which partials of an audio signal are attenuated by a filter to reduce the original harmonic content of the sound
- **Frequency Modulation (FM)**, where waveforms are used in carrier/modulator relationships and tuned according to the harmonic series to produce overtones in the carrier waves
- **Wavetable**, which offers a wide selection of digital waveforms and then allows them to be layered, filtered, and/or used as the crossfade targets of an X/Y controller or a looping envelope
- **Sample Playback**, where recordings of a sound are triggered by a playback device, and can be transposed by increasing the playback speed when different pitches are required
- **Granular**, which splits samples into very short "grains" and allows them to be manipulated through a myriad of playback options, and
- **Physical modeling**. In this method the output waveform is calculated according to a set of equations and algorithms derived through extensive analysis of a physical sound source.

1.3.1 Music and math: yet another link

A physical model attempts to codify the laws of physics that govern a particular form of sound generation. A model typically will have multiple parameters, some of which are constants that describe the physical materials and dimensions of the instrument, while others are time-dependent components representing the player's interaction with the instrument, such as plucking a string, pressing a valve, or reducing the pressure of his embouchure, etc.

This idea has been around for a long time, but development has been hindered until recently because processors that were powerful enough to handle the computational complexity of the physical models either didn't exist or were too expensive.

But if you've been watching the technological trajectories, you know those days are in the past. And we're just as happy about that as you are.

1.3.2 A computational conundrum

Here's an example of what must be taken into account while developing a physical model. To recreate the sound of a drum, for instance, a formula must be in place to represent all of the ways the collision between a drum stick and a drum head sends shockwaves through a two-dimensional membrane. Among other things, the formula must incorporate:

- The properties of the striker: its rigidity, the velocity of the hit, the material, and how/where the strike happens
- The membrane: its mass density, elasticity, woven fabric vs. plastic vs. skin, etc.
- The sympathetic resonances of the membrane and the body of the drum
- The conditions at the membrane boundaries: is there a rigid termination to the drum's body, or are there multiple, independently adjustable pressure points?

- The ancillary and perhaps lingering response of additional components, such as the snares under a snare drum.

Similar complexities can be found in instruments such as an acoustic guitar. A few years ago, a French scientist finally completed a comprehensive modeling of all acoustic guitar parameters. The calculations to produce the sound took three days!

The second-biggest challenge of physical modeling synthesis is to simplify the algorithms wherever possible without sacrificing the essential nature of the instrument being modeled. The goal is to achieve an efficient model which can be used interactively, in real time, without limiting the spontaneous paths a musician may take during a rush of creativity.

1.3.3 The endless revolution

There are several methods of physical modeling synthesis, including Karplus-Strong algorithms, digital waveguide synthesis, and formant synthesis. Each one uses a different paradigm to bring a modeled sound to its musical fruition.

The salient point here is that physical modeling synthesis is capable of recreating the character of a “real” instrument during performance, including its subtle nuances of expression, while using a thousand times less hard drive space than the “sampling” method would take to produce an inferior result.

Not to rub it in, but we really should mention the ability of physical modeling algorithms to combine parameters into instruments that have never existed. There is no limit to the types of sounds physical modeling synthesis can produce!

And when you gather a bunch of music fanatics who also possess a knowledge of the pertinent laws of physics and an in-depth understanding of the characteristics of electronic circuits, you wind up with Arturia. And Arturia now offers you our latest brainchild, the VOX Continental V.

May it light the fires of creativity for you!

2 ACTIVATION & FIRST START

Vox V works on computers equipped with Windows 7 or 8 and Mac OS X 10.7 or later. You can use the stand-alone version or use **Vox V** as an Audio Units, AAX, VST2 or VST3 instrument.



2.1 Register and Activate

Once the Vox V has been installed, the next step is to register the software in order to obtain the activation code that will enable you to use it.

The registration process will require you to enter the serial number and the unlock code you received with the product.

In order to proceed, go to this web page and follow the instructions:

<http://www.arturia.com/register>

Note: If you don't have an Arturia account yet, you will need to create one. The process is quick, but it does require that you can access your e-mail address during the registration process.

Once you have acquired an Arturia account you will be able to register the product.

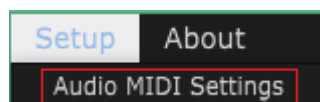
2.2 Initial Setup

At the top of the Vox V application is a pull-down menu. It houses the MIDI settings and various sound selection and output options, among other things.

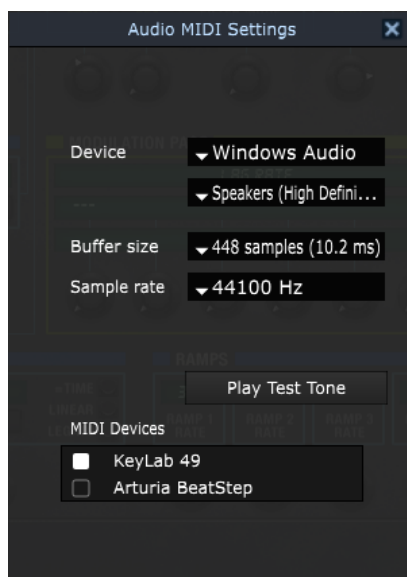
The location of this menu is slightly different for Windows and Macintosh computers, so we'll address them separately.

2.2.1 Audio and MIDI settings: Windows

Click on the **Setup > Audio MIDI Settings** menu:



The next window you'll see is the same one that appears when the software starts for the first time:

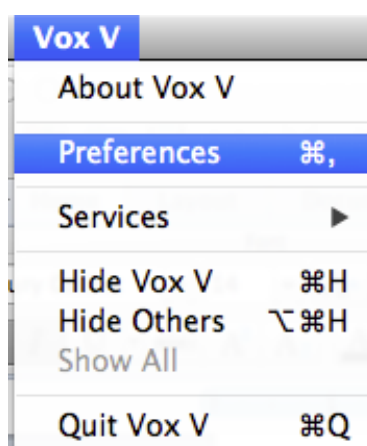


Here the pull-down menus and boxes allow you to:

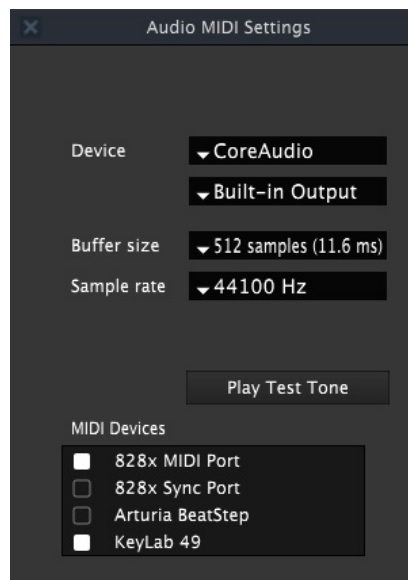
- Select the audio interface
- Set the audio output port
- Set the buffer size
- Set the sample rate
- Play a test tone to check your audio configuration
- Select which MIDI input port(s) will be recognized

2.2.2 Audio and MIDI settings: Mac OS X

The process is similar for Mac OS X. Select Preferences from the Vox V pull-down menu:



Another window will open with options for connecting audio and MIDI interfaces:



Mac OS X Audio MIDI Settings window

The above window shows one of several configuration options. The settings indicate the selection of an Arturia controller as one of the MIDI sources, while the setting “Built-in Output” means the user will hear the sound of the Vox V through the computer’s speakers as opposed to the external USB audio interface. If a different configuration is desired, all you need to do is select a different audio device in the drop-down menu and then check and uncheck the various MIDI Devices until you have exactly what you need.

Other options enable you to:

- choose the memory buffer size (a smaller size will increase the CPU load but will reduce latency, and vice versa)
- choose a sample rate between 44,100 Hz and 192,000 Hz.

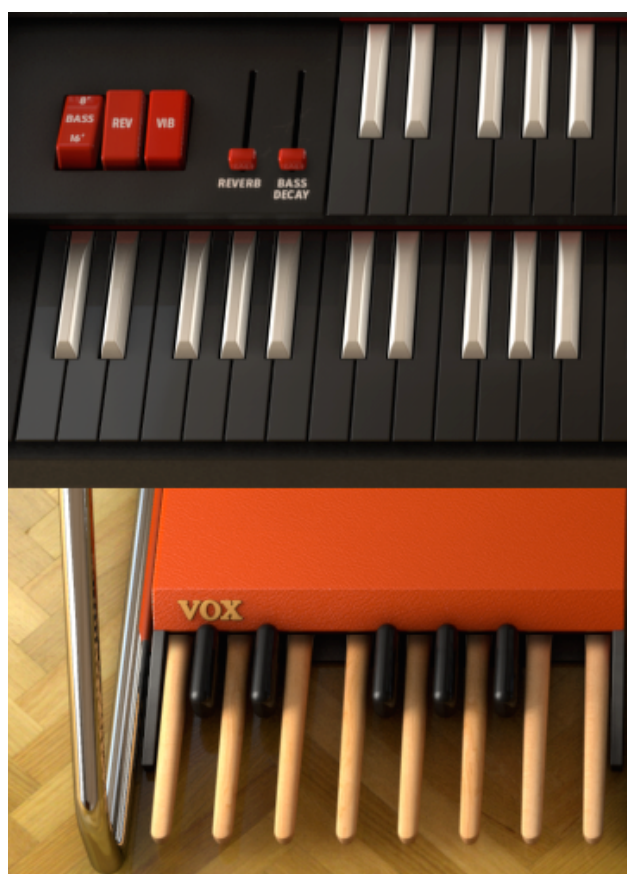
You can also play a test tone to make sure the audio interface responds properly. Just click the “Play Test Tone” button and a simple, clear tone will play. It shuts itself off after one second, so if you need to hear it again just click the button a second time.

3 USER INTERFACE

In this chapter we will describe the many features available to you with VOX Continental V. As with every Arturia product, we have gone to great lengths to make the use of this software instrument as simple and as much fun as possible.

3.1 Virtual keyboards and pedals

The virtual keyboards and pedal board in the main VOX Continental V window allow you to play a sound without the need for an external MIDI device. Just click on a virtual key or pedal to hear the corresponding sound. Drag the cursor across the keys or pedals to hear a glissando.



3.2 The tool bar: introduction and initial setup

Across the top of the main VOX V window is a narrow strip known as the **tool bar**. It houses the preferences and MIDI settings, various sound selection and output options, and gives access to advanced editing functions, among other things.

3.2.1 Audio and MIDI settings

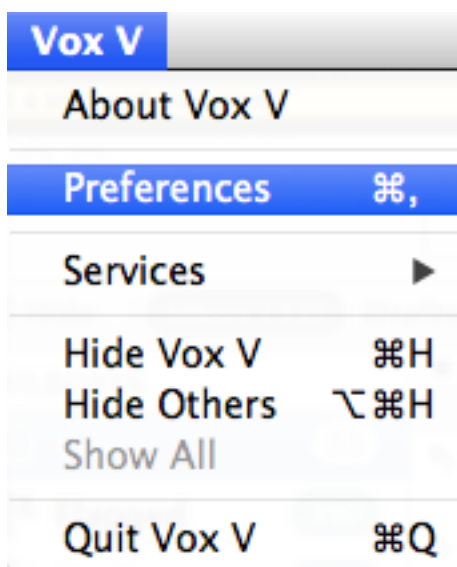
Windows: Click on the **Setup > Audio MIDI Settings** menu:

[insert picture of Windows Setup/Audio MIDI Settings menu]

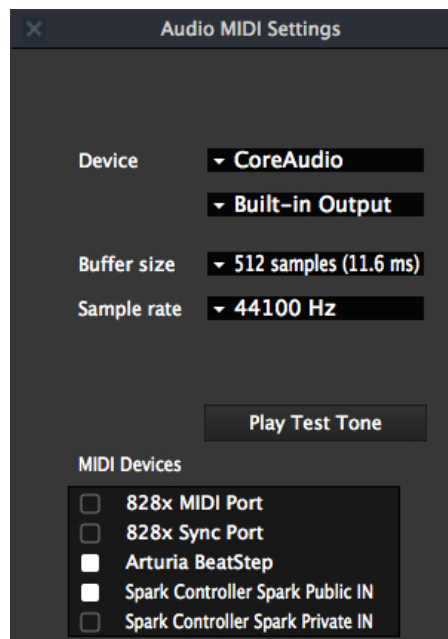
This is the same dialog box that appears when starting the software for the first time. Here you can:

- Select the audio interface
- Set the audio output port
- Set the buffer size
- Set the sample rate
- Select which MIDI input port(s) will be recognized

Mac OS X: Select Preferences from the VOX V pull-down menu:



Another window will open that shows your options for connection audio and MIDI interfaces:



Mac OS X Audio MIDI Settings window

The above window illustrates one of several configuration options. The settings indicate the selection of two Arturia controllers as MIDI sources, while the setting “Built-in Output” means the user will hear the sound of the VOX Continental V through the computer’s speakers as opposed to the external USB audio interface. If a different configuration is desired, all you need to do is select a different audio device in the drop-down menu and then check and uncheck the various MIDI Devices until you have exactly what you need.

Other options enable you to:

- choose the memory buffer size (a smaller size will increase the CPU load but will reduce latency, and vice versa)
- choose a sample rate between 44100 Hz and 96000 Hz.

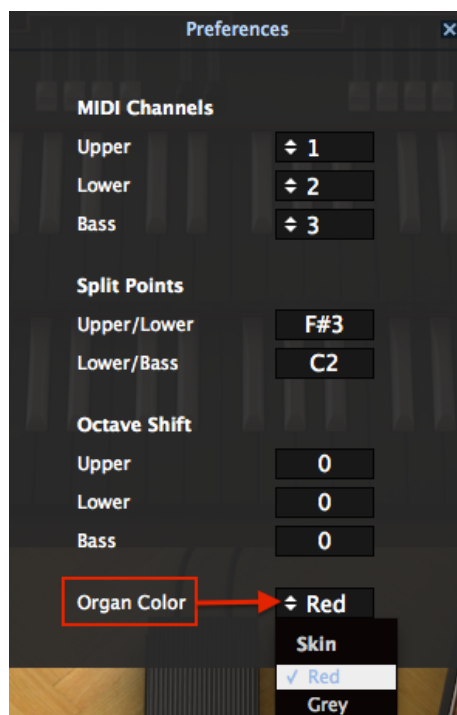
You can also play a test tone to make sure the audio interface responds properly. Just click the “Play Test Tone” button and a simple, clear tone will play. It shuts itself off after one second, so if you need to hear it again just click the button a second time.

3.2.2 Choose the organ color

“VOX Continental” normally conjures up mental images of “the organ with the orange/red top.” But the family history actually includes quite a few gray tops, which were mostly dual-manual units made in the UK by VOX and (later) JMI.

Again, being sticklers for authenticity we have given you the option to select whichever of the two colors you prefer. The choice you make is stored with the preset, so you can have gray for one preset and red/orange for the next.

To make this selection, click the **PREF** button in the upper right corner of the VOX V window. This will open another window, which has a field toward the bottom labeled Organ Color:



Click the pull-down menu window and you will be able to select between the two options.

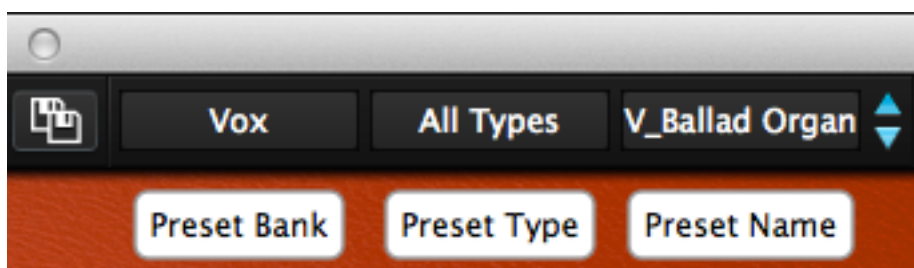
3.3 Managing presets

Presets preserve the settings for any sounds you create with VOX Continental V. When saving a preset you will designate the “bank” and “type” to which it belongs. Each bank contains a certain number of types, which are there to help you categorize the presets into groups such as “FX”. Each type contains within itself a certain number of presets.

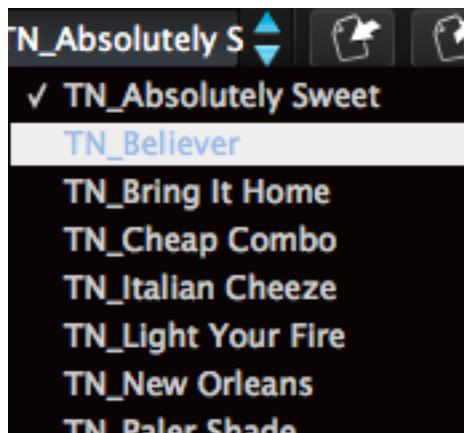
VOX Continental V ships with several banks of factory presets, but it is possible to create your own “user” banks, each containing a number of types and presets. The factory banks, types and presets cannot be overwritten, but they are great starting points for creating new presets. Then you can use the **SAVE AS** feature to save the changes as your own presets.

3.3.1 Select a bank, type, or preset

The bank, type and preset selections are permanently displayed in the plug-in tool bar.

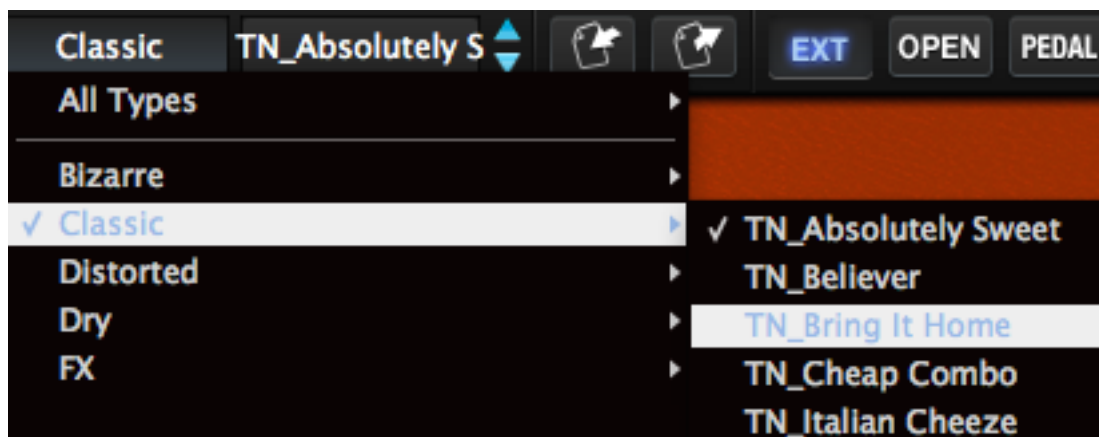


To choose a new preset in the current Bank and Type, click on the Preset Name field. A drop-down menu will appear with a list of the available presets in that category. Or if you know which preset you want inside that category and don't need to look at the list, simply use the blue arrows to move up and down through the choices. Either way, as soon as the preset has been chosen the new sound will be available for your MIDI controller or your sequencer.



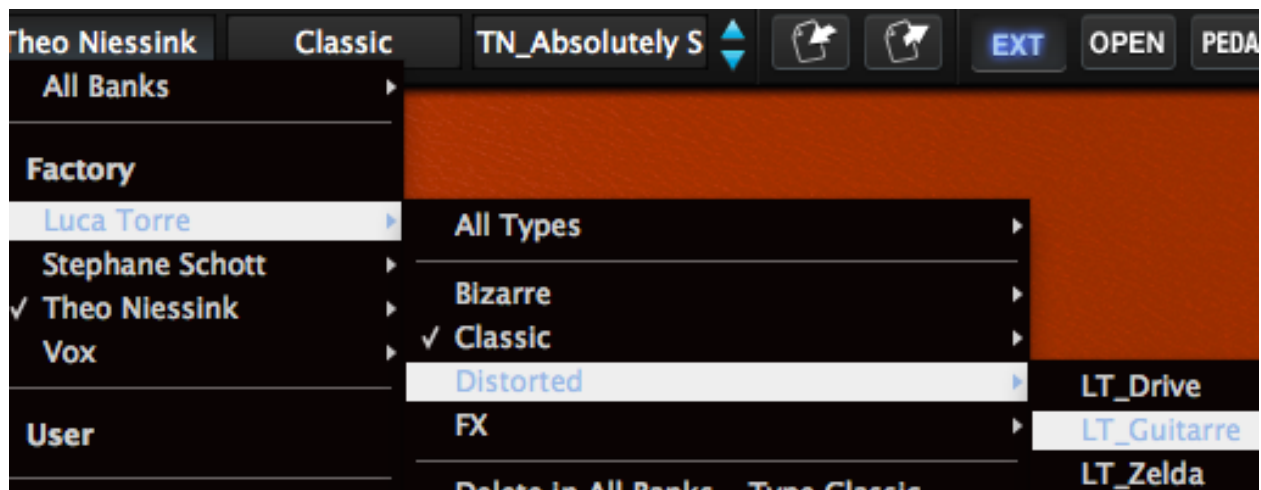
Selecting a new preset

To choose a different **type** of preset in the same bank, click on the Preset Type button (the middle one of the three). A drop-down menu will appear with a list of the types of presets contained in the same bank (Classic, Distorted, etc.). Each type listed in the menu contains a sub-menu with its own list of preset names. Follow the arrows to choose the desired preset from within these sub-menus.



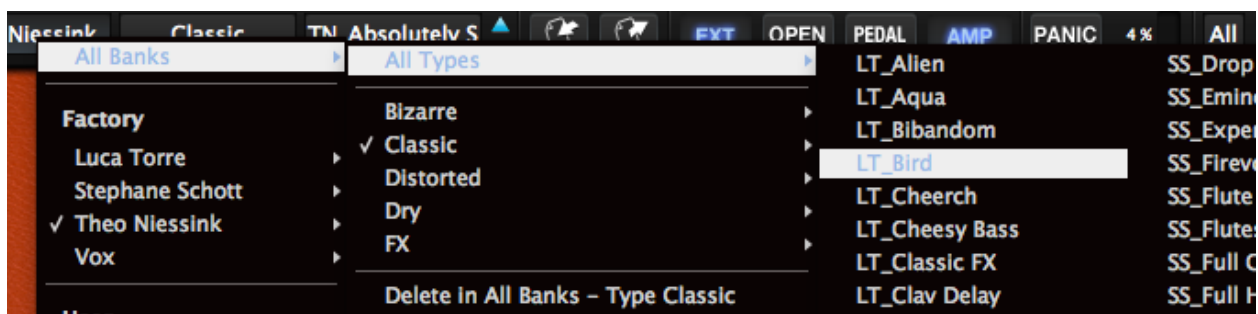
Selecting a new preset inside the Preset Type menu

To choose a preset in another **bank**, click on the Preset Bank button (the left-most of the three). A drop-down menu will appear with a list of the available banks, within which sub-menus exist for the preset type and preset name. Navigate to the preset name level to choose a new preset.



Selecting a new preset inside the Preset Bank menu

In the Preset Bank menu the “All Banks” option allows you to navigate directly to any preset type or any preset in any bank. This gives you direct access to all of the presets of a given type, such as the FX presets, no matter which bank they are in.



Selecting a new preset through the All Banks > All Types menus

One more important thing to know: When a preset has been modified, an asterisk appears next to its name in the tool bar.

3.3.2 Saving an edited preset

To save the changes you've made to the current preset, click on the “Save” button in the tool bar. It has the icon of a single floppy disk:



If you want to keep the original program you'll need to give the edited one a new name. So click on the “Save as” button in the tool bar, which looks like two floppy disks on top of each other. A drop-down menu will appear and let you choose a new name and location for the edited preset.



Note: Factory presets can't be overwritten. So If that's what you started with, clicking the "Save" button will automatically open the "Save as" menu so you can save the edited preset as a user preset.

3.3.3 Import / Export a bank of presets

It is possible to import or export entire banks of VOX Continental V presets. To import a bank, click on the bank import button on the tool bar:



After clicking this button a window will appear so you can choose the bank to import (look for the ".VOX" extension). Choose the desired bank and click "Open". The new bank of presets will automatically appear among the available banks.

You can also export your own sounds as a means of backing them up, using them on another computer, or sharing them with other users. And while you can only import an entire bank at once, it's possible to export a single preset, a Preset Type (a specific category of presets), or an entire Preset bank.

To do this, click on the preset bank export button in the tool bar of the program, which looks like this:



Select the type of export you want to perform (bank, type or preset) and a window will appear, allowing you to choose a destination folder and name for the item(s) you are exporting.

3.4 Advanced features

3.4.1 Extended mode



When you click the EXT button you will notice immediately that Extended mode adds extra drawbars for each of the VOX Continental V organ manuals, and one more drawbar for the pedals. But it does more than that: it also adds an extra effect switch on the left side of the upper manual (TREM, for tremolo) and changes the "percussion" switches to the right of the lower manual, adding one more button overall but also altering which percussion stops are available for the preset.

The best way to illustrate this is to compare the two modes side-by-side:

3.4.1.1 Upper manual drawbars

Standard	16'	8'	4'	II	III				~	M	
Extended	16'	8'	5-1/3'	4'	2-2/3'	2'	1-3/5'	1'	~	M	S

Note: See the next page for definitions of II, III, ~, M and S.

3.4.1.2 Lower manual drawbars

Standard	16'	8'	4'	IV					~	M	
Extended	16'	8'	5-1/3'	4'	2-2/3'	2'	1-3/5'	1'	~	M	S

Note: See below for definitions of IV, ~, M and S.

3.4.1.3 Pedal drawbars

Standard	~	M	
Extended	~	M	S

Note: See below for definitions of ~, M and S.

Definitions:

II = a mix of 5-1/3' and 1-3/5'

III = a mix of 2-2/3', 2' and 1'

IV = a mix of 2-2/3', 2', 1-3/5', & 1'

~ = sine wave output per drawbar, also known as the "Flute" stop

M = filtered square wave output per drawbar; this is labeled the "Reed" stop

S = sawtooth wave output per drawbar; only in Extended mode, and called the "String" stop.

3.4.1.4 Bass / Effect switches

Standard	8' / 16'	Rev	Vib	
Extended	8' / 16'	Rev	Trem	Vib

There are some important things to remember about the Bass / Effect switches:

- The 8' / 16' switch selects the octave range for the pedals
- The Vib switch adds vibrato to both organ manuals and the pedals
- The Trem switch adds tremolo only to the upper manual

Note also that the amount of reverb is controlled by the Reverb slider next to the Bass / Effect switches. The Bass Decay slider specifies the amount of time the bass note will continue to sound after the pedal is released.

3.4.1.5 Percussion switches

Standard	8'	4'	Mix	Short / Long	
Extended	8'	4'	2-2/3'	1'	Short / Long

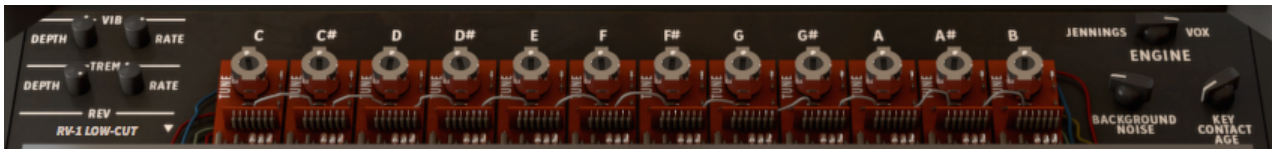
There are two important things to remember about the Percussion feature:

- **Mix** provides a percussive element with two pitches: 5-1/3' and 1-3/5'
- The Percussion only affects the upper manual.

3.4.2 Open mode



Open mode offers a slew of parameters “under the hood” that further expand the capabilities of VOX Continental V. This is where you select the engine type (VOX or Jennings), the reverb type, set the vibrato/tremolo rates and depths, add or remove background noise, fine-tune the octave dividers, and turn the instrument into an “antique” with the Key Contact Age control.



Here's a list of the Open mode features, from left to right and top to bottom:

Vibrato Depth This allows you to control how deep the vibrato will be for the preset. You'll only hear vibrato if the Vib button is toggled to On, though.

Note: Vibrato is a global effect; it affects the upper/lower organ manuals and the pedal equally.

Vibrato Rate Sets the speed of the vibrato.

Tremolo Depth This allows you to control how deep the tremolo will be for the preset. You'll only hear tremolo if the Trem button is set to On, though.

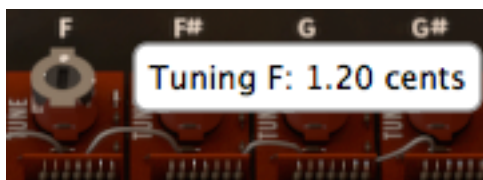
Note: Tremolo only affects the upper manual. It has no effect on the lower manual or the pedal.

Tremolo Rate Sets the speed of the tremolo.

Rev (Reverb) New to VOX Continental V is the inclusion of a convolution reverb, derived from the impulse responses of three different spring reverb models: the Spring King, the RV-1 and the RV-2. Use this parameter to select the one that best fits the preset you are creating:



Tuning controls The VOX Continental utilizes “octave divider” circuits to generate the pitches in each octave. These controls allow you to fine-tune the notes in the chromatic scale. So if you'd like to create a preset using altered intonation, for example, these are the controls to use.



The range of each “potentiometer” is +/- 50 cents in 0.4 cent increments. But if you need finer resolution, right-click on your mouse and then click and drag the tuning potentiometer (a.k.a “pot”). This allows tuning to be done in increments as small as 0.025 cents.

Engine The large switch toggles the engine mode between two choices: **VOX** and **Jennings**. A few minor differences exist in the circuitry between the two organ lines, resulting in a subtle distinction in the overall tone quality. You may find you prefer one over the other, but functionally they are identical.

Background Noise As analog circuits age a certain amount of instability in various components can give rise to a higher noise floor. VOX Continental V models even this “undesirable” condition, but allows you to control the amount of the background noise with this rotary knob. The range is from -90 dB (completely sterile) to -30 dB (positively bristling with “maturity”).

Key Contact Age The design of the organ keyboards gives them a fair amount of character. Each key has a separate contact for each drawbar stop, and as these connections age the contacts age as well...and often at different rates. This knob allows you to dial in as much of this unpredictability as you would like, from none (0.00%) to “desperately in need of service” (100.0%). The overall output can be very different from key to key, which could be quite interesting in its own right or in conjunction with the effects VOX Continental V provides.

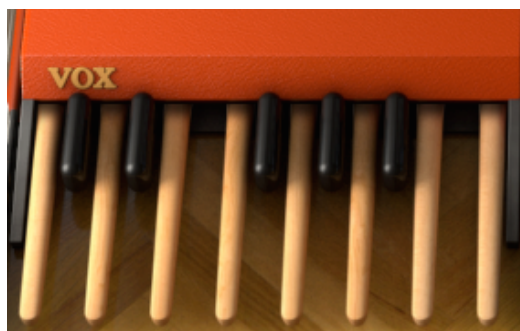
Another good thing to know is that you can enter Open mode simply by clicking on the top of the organ. You can close it with a click, too, but since the top is not available you must click on the back edge inside “the hood,” just beyond the tuning controls and the other knobs.

3.4.3 The pedals



Sometimes the keyboard player needs to hold down the low end during a song. Knowing this, the people at VOX were kind enough to offer a pedal board as an optional accessory. But the good folks at Arturia have included it for free in VOX Continental V.

And our pedals are a lot easier to set up: Just click the Pedal button and a one-octave set of pedals will appear. They have a dedicated set of drawbars, an octave range switch to the left of the upper manual, and a slider called **Bass Decay** that controls the release time of the pedal sound. They can be set to respond to their own MIDI channel, too, just like the upper and lower organ manuals.



You can also click on the top of the pedals, or on the floor where they should be, and the pedals will appear or be stowed away.

Note: when the pedals have been retracted their MIDI channel will no longer respond to incoming data. The lowest octave of the lower manual will play the bass sound instead on its MIDI channel.

3.4.4 Output mode

Direct

There are three output options, which are placed in the signal path after the FX unit. Click on the "Direct" button and you will see the following options:



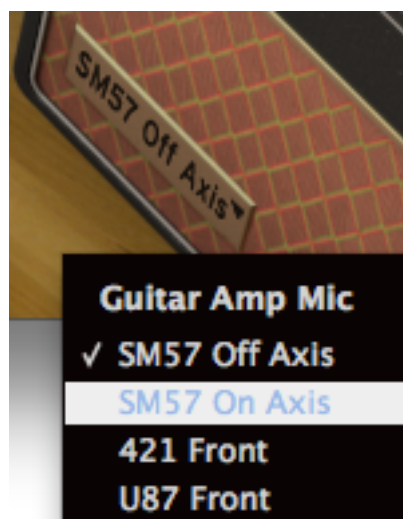
- **Direct:** The VOX Continental V and the FX unit are connected directly to the output, bypassing the Guitar and Leslie cabinet models. You can still use the built-in convolution reverb that resides in the VOX Continental V if you like.
- **Guitar amp:** The output from the VOX Continental V and the FX unit pass through a modeled guitar amp with multiple speaker and mic placement options. The reverb is a simple spring reverb, exactly like what amplifiers would've had "back in the day".



To select a different speaker output model, click the label in the upper portion of the amplifier's face:



To select a different microphone model, click on the label in the lower-left corner of the amplifier's face:



- **Leslie:** The Leslie speaker is normally associated with Hammond organs, but we think it works great with a VOX Continental! It adds that unbeatable Doppler effect to the sound along with a bit of “crunch” at higher output levels.



3.4.5 The Swell pedal

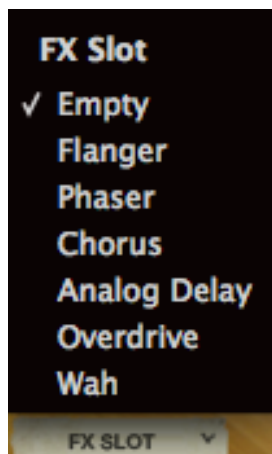


Whether you're using the pedal board, an amplifier or an FX pedal, the Swell pedal is always there in the middle of the floor under the organ. You can click and drag the top of the pedal to set the overall level, or you can assign the Swell pedal to the MIDI controller of your choice.

3.4.6 FX Slot



Next to the Swell pedal is a "jump-up" menu labeled "FX Slot". Click the arrow next to the label and a list of available effects will appear:



There's nothing complicated about using the various FX, but for a description of each effect and its parameters, please refer to [chapter 4.6 \(The effects\)](#).

3.4.7 The Panic button: "Stuck" happens



If there is an interruption to the MIDI data being received by your computer, you can end up with notes that become "stuck". This means they have not yet received a Note Off message. The wizards at Arturia have outfitted the VOX Continental V software with a button that will solve this problem: just calmly click the PANIC button and all will be well.

3.4.8 CPU meter

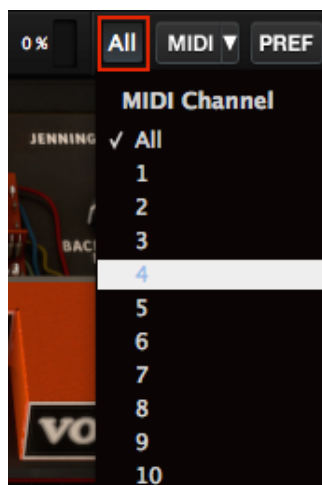
The CPU meter gives real-time feedback as to the amount of processing power is being used by VOX Continental V at any given moment. In addition to the numerical value there is a level meter that lights up as the load increases.



Note: The CPU meter only reports the processing load related to VOX Continental V, not the combined system load of all programs and plug-ins that may running at the same time.

3.4.9 Global MIDI channel

You can choose which MIDI channel will be used to access VOX Continental V. If you select ALL, the software can respond to data from any of the 16 MIDI channels (you can specify which ones using the [MIDI preference settings](#)).



If you select a channel here, only data arriving on that MIDI channel will be received. So when the Global channel matches the MIDI channel for one of the three instruments (Upper, Lower, or Bass) that sound will be able to receive MIDI data. When it lands on a channel outside of those assignments, the sound of the Upper instrument will be available to incoming MIDI data.

While we're talking about it, there's a window under the PREF button where you can specify the MIDI channels for each manual and the pedals. See [section 4.4.1.1](#) for a description.

3.4.10 MIDI control configurations

All knobs, sliders and switches on the VOX Continental V can be assigned to external MIDI controllers. But before trying any of this, make sure the MIDI control device you want to use is connected to your computer, and that your DAW and/or the VOX Continental V software are correctly configured to receive MIDI events from that controller. (See [section 4.2.1](#) for information about the Arturia side of that equation.)

3.4.10.1 MIDI menu

The MIDI menu on the right side of the tool bar provides access to sets of definable MIDI controller assignments known as **configs** (configurations). Click on the arrow to the right of the word "MIDI" and a drop-down menu will appear.

This menu is composed of two main areas:



The first section of the MIDI menu (**MIDI controller configs**) is split in two, and provides four features:

- **Copy Current Config...**: This duplicates the current config, allows you to give it a new name, and places it at the bottom of the config list. Changes made to this config can be exported to your computer or a memory stick for transfer to another computer.
- **Delete Current Config**: The current config is indicated by a check mark in the bottom portion of the MIDI menu. If you select "Delete Current Config" a confirmation box will open in the middle of the VOX V main window. Either click "Cancel" to abort the process or click "OK" to proceed. The deleted config will be removed from the list in the MIDI menu, but it will still exist in the folder to which it was exported previously. It can be imported later if needed.
- **Import Config**: A config which has been exported can be loaded into VOX Continental V through this process. You can import configs from another user who has already mapped the controls for a particular MIDI controller, for example.
- **Export Current Config**: Use this feature to export your configs one by one to a folder on your computer or to an external memory device (USB stick, hard drive, etc.). This can serve two purposes: as a backup in case a config is accidentally deleted, and as a way to share your configs with other users.

The second and lowest section of the MIDI menu contains the list of existing configurations. The one with the check mark to the left of its name is the current config. To select a new one, click on its name and it will become the current config.

3.4.10.2 Assigning MIDI controls

Every control in VOX Continental V is available for external MIDI control: drawbars, switches, buttons, knobs, tuning pots, the swell pedal, and each FX parameter, right down to the "stomp box" on/off switch. The Guitar Amp Cab and Mic settings are fair game, too. You can even assign a MIDI controller to handle the job of switching between the convolution reverb models.

If you're ready to give this a try, click the **MIDI** button in the tool bar (not the arrow to its right; the actual button). It will remain highlighted to indicate that the VOX Continental V software has entered "learn mode".

At this point all of the assignable controls will be highlighted in purple. VOX V has so many of these that we've split them into two pictures:



MIDI-assignable controls in the top half of the VOX Continental V



MIDI-assignable controls in the lower half of the VOX Continental V

In the picture above one of the controls has been selected (the Chorus Type switch on the FX unit). A **MIDI Control Setup** window for that switch now shows the parameter name, its Min/Max range, and whether the control has already been assigned to a MIDI Continuous Controller number (CC#).

In this case the control has not yet been assigned; it is waiting for a controller on an external device to be activated so it can “learn” the MIDI CC# and establish a relationship between the two. You'll notice that as soon as a new assignment is made, the control being edited will turn red.

A controller assignment can be removed by clicking the **UNASSIGN** button. The word “UNASSIGNED” will then be shown in the MIDI Control Setup window for that control.

Here's another example. Looking closely you'll see a black rectangle around the drawbar being edited. It has been assigned to a MIDI CC# and will respond to those messages when received.



A black rectangle outlines the edited drawbar. Note the inverted Min / Max values in the MCS window.

Once you have finished linking the controls to your controller, you have completed making a new config. Be sure to use the Export function described [in section 4.4.10.1](#) to back it up.

To close the MIDI Control Setup window and exit learn mode, click the **MIDI** button again.

3.4.10.3 Minimum / maximum controller ranges

Values for minimum and maximum operational range can be set for each assignable control. After this the control will still receive the full range of its assigned MIDI CC#, but will scale its response so these values are spread out within the min / max range of the control.

In other words, if the Min value is set to 50 and the Max value is set to 100:

- a MIDI CC value of 0 will result in a value of 50 for the selected VOX V parameter
- a MIDI CC value of 127 will result in a value of 100 for the VOX V parameter
- a MIDI CC value that falls between 1 and 126 will result in a value somewhere between 50 and 100 on the VOX V parameter.

Note that a “squashed” range such as in the example above means there won't be a 1:1 correlation between the motion of the MIDI controller and the response of the VOX V parameter; it may take two or more adjacent values of the controller before the VOX V parameter will change.

It is also possible to invert the Min and Max values so the parameter responds “backward,” as in the picture on the previous page. This comes in handy when dealing with drawbars, if the external MIDI controller doesn't have a “drawbar” mode.

3.4.11 MIDI preferences: the PREF button

With a fully decked-out VOX Continental organ the organist could play three parts at the same time: the upper manual, the lower manual, and the pedal board. So naturally, the VOX Continental V software can respond to three separate MIDI channels simultaneously.

But Arturia didn't stop there. We allowed for other possibilities, such as those times when you just want to plug a keyboard controller into your computer and jam. So it's also possible to access all three instruments (Upper, Lower, and Bass) from a single incoming MIDI channel, shift their octave ranges to spread them across the controller's keys, and then specify the split points between them.

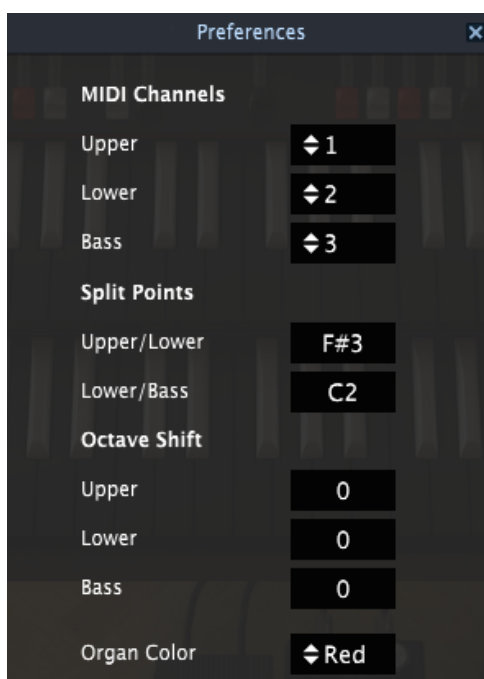
For details on how to switch instantly between multi-channel and single-channel performance, [see section 4.4.12](#).

Notice that we used the word "Bass" instead of "pedals" in the second paragraph of this section. That's because the part the pedals would otherwise play is made available to the master controller keyboard in that scenario, and the left hand is then able to play the bass part on the keys. The pedals still have an impact on MIDI reception, though, depending on whether they are deployed. More about this later.

To access these great features, press the "PREF" button in the tool bar:



The MIDI Preferences menu will appear in the middle of the VOX Continental V window. From here you can set all of the parameters we've discussed in this section so far, plus choose the organ color (Red or Grey).



The MIDI Preferences window

To change any of the parameters you see in this window, click in the value field next to its name and make a selection from the drop-down menu that appears.

Here's a description of what these parameters do:

- **MIDI Channels:** Multi mode only. Set the Upper, Lower and Bass to independent channels, or set one or more to "All" for an interesting form of Omni mode response (see [section 4.4.11.1](#) for an explanation).
- **Split Points:** Determines the boundaries between each instrument when in Split mode.

- **Octave Shift:** Places the selected instrument in a different range of MIDI notes without affecting the pitches it will play. For example, in Multi mode with the pedals deployed, when Octave Shift = 0 for the Bass it will respond to MIDI notes from C1 to C2. When Octave Shift = -1, the same pitches of the Bass sound will respond to MIDI notes C2 to C3. (See [section 4.4.12](#) for a description of the MIDI Modes.)

It's important to remember that the note range of each instrument cannot exceed the limits of their physical counterparts: 4 octaves per keyboard, 1 octave for the pedals (13 notes total).

To close the MIDI Preferences window, click on the small 'x' in the upper right-hand corner.

3.4.11.1 Omni mode vs. "MIDI Channel = All"

Technically, Omni mode means "listens to all 16 MIDI channels." So in the interest of accuracy we gave our "most inclusive" MIDI Channel setting the label "All". This reflects the hierarchy of MIDI channel assignments in VOX Continental V, starting with the [Global MIDI channel](#) and working its way through the available instruments to the Bass channel.

Here's how it works:

- The Global MIDI channel setting acts as a filter, either passing all channels down the chain of command or allowing only one specific channel to pass to the instruments.
- Next come the Upper/Lower/Bass MIDI channels, in that order. If any one of those instruments is set to All, its channel receives any data transmitted to the remaining MIDI channels, leaving nothing for the next in line.
- If one or more of the instruments are set to the same MIDI channel, then a similar thing happens. For example, if both the Upper and Lower instruments are set to receive on MIDI channel 1, then the Lower instrument will not receive anything. The Bass could, though, as long as it is set to any other MIDI channel.

That makes perfect sense to us, but perhaps an example using some actual MIDI channel numbers would be useful. We'll assume the Global MIDI channel is set to "All" for this example:

- When Upper is set to All it receives data on all 16 MIDI channels. This crowds out the Lower and Bass instruments; they cannot be accessed on any MIDI channel.
- When the Upper is set to 1 and Lower is set to All, the Lower instrument allows Upper to be on channel 1 but intercepts any data it finds on MIDI channels 2-16. This crowds out the Bass instrument; it cannot be accessed on any MIDI channel.
- When Upper is set to 1, Lower is set to 2 and Bass is set to All, the Bass instrument allows Upper to be on channel 1, Lower to be on channel 2, and the Bass responds to all other channels (3-16).

Armed with that knowledge, experiment with these settings and see what they do. We think they'll prove themselves useful.

3.4.12 The MIDI Mode tabs

There's a really quick way to switch between multi-channel and single-channel performance when using an external MIDI keyboard controller: the MIDI Mode tabs.



Note: For the following examples we will assume the [Global MIDI channel](#) is set to All.

Simply select the MIDI Mode tab that corresponds to the configuration you need:

- **Multi:** This places the Upper and Lower manuals and pedals on independent MIDI channels. If the pedals have been retracted they share a MIDI channel with the Lower manual. The MIDI channel values are set inside the [MIDI Preferences](#) menu.
- **Split:** No matter which MIDI channel is received, all three instruments will be available to the external MIDI device on that channel. They will be spread across the MIDI note range according to the Split Point settings as defined in the [MIDI Preferences](#) menu.
- **Bass:** No matter which MIDI channel receives the note data, the Bass sound will be the only one to respond. The organ keyboards will only be available to the cursor.
- **Lower:** Any incoming data will trigger the Lower manual, regardless of its MIDI channel setting. The other two instruments can only be played by the cursor, unless the pedals have been retracted; in this case the Bass sound will be triggered below the split point by incoming MIDI data.
- **Upper:** Data received on any MIDI channel will trigger only the Upper manual; the other instruments will respond only to the cursor as noted above, depending on the status of the pedal board.

So there's an important point to emphasize about the first two MIDI Mode tab settings: when the pedals have been retracted their MIDI channel will no longer respond to incoming data. The lowest octave of the lower manual will play the bass sound instead on its MIDI channel.

Also, keep in mind the MIDI Mode tabs only determine the way VOX Continental V responds to incoming MIDI data. They make no difference in what happens when notes are triggered by the cursor. The presence or absence of the pedal board is the only factor that affects the way the lower manual responds to the cursor.

3.5 Types of controls

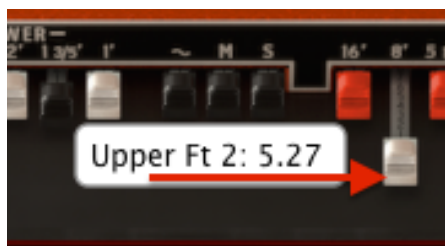
The VOX Continental V has two basic types of controls: potentiometers and switches. Let's take a look at each.

3.5.1 Potentiometers

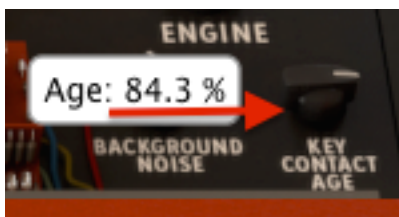
A potentiometer determines the value of a parameter when it is moved from one position to another. There are two types of potentiometers:

- **Faders:** these are called "drawbars" in VOX Continental V
- **Rotary:** also known as "knobs", "pots" or "encoders".

To edit a drawbar, click on it and drag it up and down. This will increase or decrease the value of the selected item, while displaying the new values in a small window near the drawbar.



A similar action is used to edit a rotary control: click on it and drag the cursor up and down. This will rotate the knob graphic and display the new values in a small window nearby.



3.5.1.1 Coarse vs. Fine adjustments

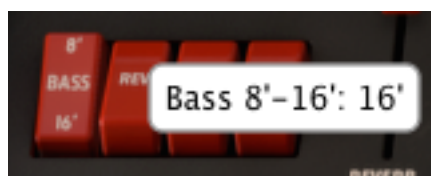
Normally controls will make coarse adjustments to parameter values. However, they can also make fine adjustments, allowing for greater precision. This is possible by dragging the cursor while holding the **Control** key, or by using the **right click** first and then dragging the cursor.

To reset the parameter value to its default setting, double click on the knob. This will set it to the center position immediately (works only on some parameters).

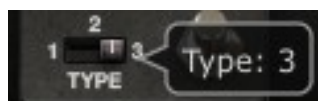
3.5.2 Switches

VOX Continental V has two types of switches. Simply click on these switches to change their state.

Some are the "on/off" style, such as the Bass 8' – 16' switch:



Others allow several choices, such as the Chorus Type switch in the FX:

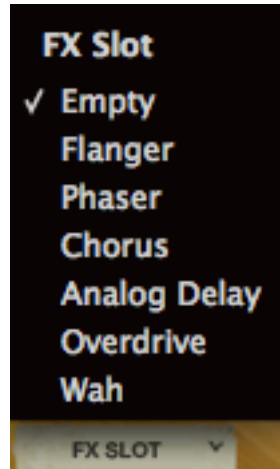


3.6 The effects

To add one of the effects to the VOX Continental V output, click the arrow to the right of the words "FX SLOT" at the bottom of the main window.



A pop-up menu will show you the available FX choices:



When you select an effect it will appear on the virtual floor below the VOX Continental.

We'll take each of the FX Slot menu choices one at a time, starting from the top.

The first one is labeled **Empty**. Selecting this option will close the FX pedal and the FX Slot menu, removing the FX device from the signal path.

But **Empty** isn't the only option if you just want to hear the sound without the FX unit temporarily. You'll notice that almost every FX device also has a bypass button, which when clicked will cause the FX mix to become 100% dry. A red LED indicates when the FX device is on, so when you bypass the effect the LED will turn off.

The only FX device without a bypass switch is the Wah pedal. That unit is basically a filter, so the way to remove it from the signal path is to push the pedal all the way forward by clicking the pedal top and dragging the cursor all the way up. When you reach a value of 100% the pedal is wide open (bypassed).

One more thing: All FX parameters are MIDI-assignable, which means they "learn" the controllers on your external USB MIDI device. For information about this process, refer to the section on ["configs"](#).

What follows is a description of each available FX device.

3.6.1 Flanger



Delay	Sets the delay time, which changes the harmonic content.
Depth	Sets the modulation depth. This is set to “max out” at less than 100% to limit runaway feedback.
Rate	Sets the modulation rate for the delay time.
Res.	Short for “Resonance.” This control adds positive or negative feedback for a harsher or “ringing” sound. Set this straight up for zero feedback.

A flanging effect is created by combining two identical signals, delaying one of the signals by a small amount, and then modulating the delay time. The recombined output produces a sound that sweeps up through the harmonics of the original signal and back down.

Flanging can create both subtle and extreme effects, depending on the **Rate** and **Depth** of the modulation. With higher Depth settings you will begin to hear changes to the pitch of the sound. This is how the circuits in an analog flanger work, and we have taken care to recreate these conditions.

3.6.2 Phaser



Rate	Sets the speed of the phaser
Depth	Sets the depth of the phaser activity
Feedback	Controls the amount of phaser resonance
Stereo	Determines the stereo width of the overall effect

The phase shifter was one of the most popular effects used with electric instruments in the 1970s. It works by splitting the incoming signal, changing the phase of one side, and recombining it with the unaffected signal. This creates a notch-comb filter sweeps through the frequency spectrum.

You can then modulate the phase of the affected half with an oscillator, with the frequency determined by the **Rate** control. The **Depth** knob sets the amplitude for the action of the filtering, while **Feedback** amplifies certain harmonics. Phase shifting is easily identified by a characteristic “whooshing” sound that sweeps through the frequency spectrum.

3.6.3 Chorus



Type	Select one of three chorus types
Rate	Adjusts the speed of the chorus
Delay	Sets the amount of delay applied to the input signal
Amount	Controls the depth of the chorus
Mix	Changes the balance between the input signal and processed signal
Stereo Rate	Sets the speed of the stereo effect
Stereo Width	Controls the width of the stereo effect

A chorus module recreates the sound of multiple takes of an instrument being combined in a mix. Even with the best of performances there are always differences in tuning or timing, and when taken to either extreme the results can range from slow and lush to a wobbling, quick vibrato.

The speed of the effect is set by the **Rate** knob, while its depth and width are controlled by the **Amount** and **Delay** knobs, respectively. The resulting “frequency blur” is different for the left and right halves of the signal, which allows us to derive a stereo signal from a mono signal. The difference between the two halves then can be set with the **Stereo width**, with the speed of the left-right rotation under the control of the **Stereo rate** knob.

The **Mix** control sets the ratio between the input signal and the treated signal, while the **Type** switch selects between three different chorus models: simple, medium, and complex.

3.6.4 Delay



Delay	Sets the delay time. (The delay is mono for authenticity.)
LFO rate	Controls the modulation rate
Feedback	Adjusts Feedback
FB Tone	Changes feedback filtering
Mix	Alters wet/dry mix
LFO Depth	Sets the amount of delay time modulation (which follows a sine wave)

A delay repeats a sound, like an echo, giving it more space and depth. This analog delay reproduces the sound of the old solid state units that used analog bucket brigade circuits. The **Delay** knob allows you to select a time between 12ms and 1000ms for the delay. The **Feedback** knob sets the feedback level. The **FB Tone** knob controls a feedback filtering effect: low-pass to the left, high-pass to the right. You can set the delay modulation by changing the **LFO rate** and **LFO depth** values. The **Mix** potentiometer sets the ratio between the original and modified signals.

3.6.5 Overdrive



Drive	Controls the amount of distortion
Output	Sets the output trim level
Tone	Sweeps the low-pass filter

An overdrive effect “saturates” and distorts a sound by increasing the volume of a signal then clipping the excess. The **Drive** knob sets the amount of the saturated sound. The **Tone** knob controls the distortion filtering. You can adjust the output level by setting the **Output** knob.

3.6.6 Wah



This FX device emulates a standard “wah-wah” pedal. By default it is assigned to MIDI CC #11 (Expression). You can also click and drag on the top of the pedal to change the filter frequency of the “wah” effect.

3.6.7 Leslie speaker model



Speed Selects rotor speed: stop/slow/fast

High Depth Adjusts high rotor frequency modulation (Doppler effect)

High Width Sets modulation amount of stereo panning for high rotor

High Shape Controls variable high rotor amplitude modulation

Low Width Adjusts depth of low rotor panning modulation

Low Shape Sets low rotor amplitude modulation amount

Rate Fine control adjustment for rotor speed

Level Controls output level

The Leslie speaker, most commonly associated with Hammond organs, takes advantage of the Doppler effect by using an electric motor to rotate an acoustic horn around a loudspeaker, sending its sound in a 360-degree circle. This results in a modulating pitch effect on the audio source. The speed of the modulation itself can be modulated, allowing for an unparalleled level of expressiveness during a performance. And using a Leslie with a VOX Continental organ takes the instrument to a completely different world.

The **High Shape** and **High Width** set the parameters of the high rotor (amplitude and pan of the treble sounds).

The **Low Shape** and **Low Width** set the parameters of the low rotor (amplitude and pan of the lower-frequency sounds).

Speed and **Rate** adjust the rotor speed or stop it altogether.

High Depth controls the famous Doppler effect of the Leslie speaker

Level sets the output audio gain.

3.6.8 Guitar amp model



Volume Controls the output level

Drive Adjusts the amount of “crunch”

Reverb Increases or decreases the amount of spring reverb

Low Boost or cut of low-frequency EQ

Mid Boost or cut of midrange EQ

High Boost or cut of high-frequency EQ

Amp Type Select one of four amplifier models

Mic Type Select one of four classic microphone models

This output option faithfully recreates the characteristics of a physical guitar amplifier. In the early years of the British Invasion dedicated keyboard amplifiers other than a Leslie did not exist. So in most cases, the original “band” experience with a VOX Continental organ was plugging the VOX into a guitar amp. These models are reminiscent of everything from the garage to the main stage.

Low, **Mid** and **Hi** knobs offer tone-sculpting options. They boost or cut the levels of specific frequency bands.

The **Drive** knob sets the amount of saturation, and the **Reverb** knob sets the level for a simple, built-in spring reverb.

The **Cabinet** pull-down menu allows you to select between four types of guitar amp cabinets (1x12” Blackface, 2x12” Blackface, 4x10” Tweed or 4x12” HalfStack). Each of these classic cabinets have different tonal characteristics. You can select the type of cabinet by clicking the cabinet name.

The **Microphone** menu gives you a choice of four types of microphones and positions (SM57 Off Axis, SM57 On Axis, “421” Front or U87 Front). This is a simulation of the most common ways to use a microphone on a guitar amplifier. You can select the type of microphone by clicking the microphone label on the bottom left corner of the cabinet.

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