USER MANUAL

B-3 V

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Thank you for purchasing Arturia's B-3 V2

This manual covers the features and operation of the Arturia B-3 V2 virtual organ.

Be sure to register your software as soon as possible! When you purchased B-3 V2 you were sent a serial number and an unlock code by e-mail. These are required during the online registration process.

Special Messages

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications or features without notice or obligation.

IMPORTANT:

The software, when used in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

Introduction

Congratulations on your purchase of Arturia's B-3 V2!

We'd like to thank you for purchasing B-3 V2, a physically-modelled recreation of a tonewheel organ, which captures all the nuances and character of the original instrument to bring you the most playable and customizable virtual organ to date.

Arturia has a passion for excellence, and B-3 V2 is no exception. Listen to the preset sounds, tweak a few controls, skim through the features, or dive as deep as you like; it is easy to understand and use. We are confident that the B-3 V2 will be a valuable addition to your instrument collection, and that you'll have a lot of fun with it.

Be sure to visit the www.arturia.com website for information about all of our other great hardware and software instruments. They have become indispensable, inspiring tools for musicians around the world.

Musically yours,

The Arturia team

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1. WELCOME

Thank you for purchasing our virtual organ, B-3 V2. Unlike sample-based virtual organs which can be limited in the types of timbres and sound options they provide, B-3 V2 is based on advanced physical modelling technology, allowing for vast customization of the instrument so that you can find your perfect tone.

B-3 V2 builds on the features of our original B-3 V with many improvements to provide you with an even more realistic tonewheel organ sound, better user experience and wider sound palette. We are confident that B-3 V2 will give you many hours of playing and producing pleasure.

1.1. What is B-3 V2?

B-3 V2 is a recreation of a classic tonewheel organ, though it adds a number of additional features that were never available on the original instrument.

The original instrument works by having 91 tonewheels, each rotating near an electromagnetic pickup. Each key is connected to a fixed set of tonewheel outputs and the drawbar settings control how these are mixed together before being sent to the preamplifier.

The tube preamp shapes the sound a little bit further (filtering and distortion), also factoring in the position of the expression pedal which acts not only as a volume control but affects the frequency response of the preamp as well.

The output of the preamp is then connected into a powerful and customizable set of effects pedals for achieving a variety of different sounds.

Following the effects pedals is the amplifier with two available speaker models. The first speaker type is a rotary model. It contains a power amplifier that drives a rotating horn and a stationary woofer firing into a rotating drum reflector. The speaker actually determines many interesting spatial and frequency shifting effects in addition to the sound shaping effects of common loudspeakers. In B-3 V2 we have introduced a second type of speaker model - a popular twin reverb amplifier - to give you even more options for achieving your desired tone.

At the end of the signal flow is a new convolution reverb processor for placing the organ sound in a virtual space, ranging from concert halls and studios to vintage plate and spring reverb hardware.

1.2. History of the original instrument

The tonewheel organ was first released in the 1930s and various models were produced over the following 40 years. They generate sound by creating an electric current, rotating a metal tonewheel near an electromagnetic pickup, then amplifying that signal.

Originally aimed at churches as a more compact and affordable alternative to conventional pipe organs, tonewheel organs found favour first with gospel musicians in churches and fairly quickly after that, with jazz musicians who loved their unique sound. This was thanks to features like the organ's drawbars and various tone controls as well as the rotating speaker that sounded like nothing else at the time.

It would go on to play a central role in the rock music of the 1970s and even in pop, all the while remaining a staple instrument of jazz, blues and gospel. The fact that a lot of clubs would buy one and leave it "in residence" on the stage meant that they got used more frequently than if musicians had to bring their own keyboards. Smaller than a piano, the versatility of the organ's sound meant it could fit in with many different kinds of performances.

1.3. Notable users

- Jimmy Smith
- John Medeski
- "Brother" Jack McDuff
- Keith Emerson
- Booker T Jones
- Procol Harum
- Steve Winwood
- Gregg Allman
- Joey DeFrancesco
- Rick Wakeman
- Tyrone Downie (with the Wailers)
- James Taylor
- Cory Henry
- Rhoda Scott
- Jon Lord
- George Duke

1.4. What does B-3 V2 add to the original instrument?

A real tonewheel organ and rotary speaker are not only expensive to locate, purchase and maintain, but also physically very large and difficult to move around. So software is the ideal way to get the sound without all the hassle. In addition to recreating the original tonewheels complete with the imperfections that made them sound so unique, B-3 V2 adds a number of features not available in the original instrument.

- MIDI control of many parameters
- Four insert effect slots
- A reverb unit
- A Drawbar modulator section
- Advanced control over the rotary speaker behaviour and speed
- Attack and release controls for upper and lower manuals
- Control over key click volume and background noise
- Drawbar and tonewheel leakage controls

1.5. What's new in B-3 V2?

B-3 V2 adds a number of improvements to provide you with even more realistic organ modelling, as well as UI improvements for better user experience and more tools for scultping your sound.

- Redesigned effects section with 12 available pedals for powerful sound shaping.
- New Twin amp model for more flexibility in crafting a signature sound.
- New Room convolution reverb for applying characteristics of real acoustic spaces and vintage reverb hardware to your sound.
- Complete tonewheel redesign captures all the nuances of tonewheel behavior with unparalled detail.
- Reworked contacts model, including staggered key contact at low velocities
- Organ accurate tuning
- Various improvements to key click, tonewheel leakage, vibrato, Leslie and preamp models.

2. ACTIVATION AND FIRST START

2.1. Register and Activate

B-3 V2 works on computers equipped with Windows 7 or later and Mac OS X 10.10 or later. You can use the stand-alone version or use B-3 V2 as an Audio Unit, AAX, VST2 or VST3 instrument.

Once B-3 V2 has been installed, the next step is to register the software.

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 email address during the registration process.

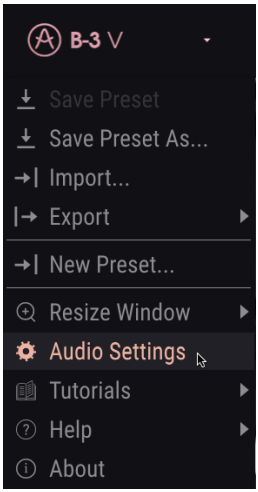
Once you have acquired an Arturia account you will be able to register the product.

2.2. Initial setup

2.2.1. Standalone Audio and MIDI settings

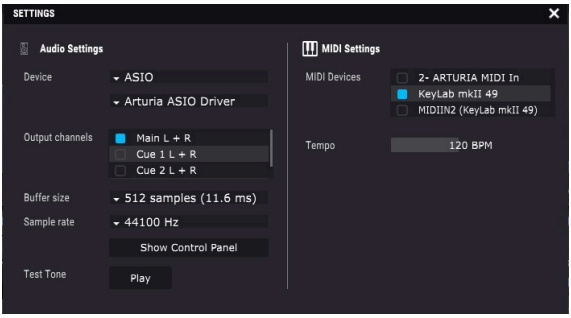
If you are running B-3 V2 as a standalone application, you will first need to configure your MIDI and Audio settings so that you can get sound and MIDI flowing in and out. Once configured, B-3 V2 will remember and recall these settings next time you launch it.

To access these settings, click the Arturia B-3 V logo at the top left corner, then click Audio Settings.



You will then see the Audio MIDI settings window. This works in the same way on both Windows and Mac OS X, although the names of the devices available to you will depend on the hardware that you are using.

2.2.1.1. Audio and MIDI Settings: Windows



Starting from the top you have the following options:

- **Device** lets you choose which audio driver you want to use for sound payback from the instrument. This might be your computer's own driver like Windows Audio, or an ASIO driver. The name of your hardware interface may appear in this field.
- **Output Channels** lets you select which of the available outputs will be used for audio output. This option will only be visible if your device has more than 1 stereo output. If it only has 1 stereo output, it will not be visible.
- **Buffer Size** lets you select the size of the audio buffer your computer uses to calculate sound. A smaller buffer means lower latency between pressing a key and hearing the note. A larger buffer means a lower CPU load as the computer has more time to think, but can result in higher latency. Find the optimum buffer size for your system. A fast, modern computer should easily be able to operate at 256 or 128 sample buffer size without creating pops or clicks in the sound. If you are getting clicks, try raising the buffer a little. The latency in milliseconds is displayed in parenthesis to the right of your selected buffer size.
- **Sample Rate** lets you set the sample rate at which audio is sent out of the instrument. The options here will depend on the capability of your audio interface hardware. 44.1kHz and 48kHz are the most widely used sample rates. Higher sample rates can be used, if you audio device supports them, however they will result in significantly higher CPU load.
- **Test Tone** helps you to troubleshoot audio issues by checking that sound can be heard through the correct device. Make sure that your volume is turned up and click the Play button to hear a brief test tone through your speakers or headphones. If you cannot hear the tone, check your device settings.
- **Show Control Panel** button here will jump to the system control panel for whatever audio device is selected.
- **MIDI Devices** list will display any currently connected MIDI controller hardware. Click the check box to accept MIDI from the devices you want to use for playing B-3 V2. In standalone mode, B-3 V2 listens for all MIDI channels so there's no need to specify a channel. Note that you can specify more than one MIDI device at once if you want to use multiple keyboards and controllers.
- **The Tempo** control allows you to set the instrument's internal tempo, which is used for modulation and time-based effects that have a sync option. This setting is only used when running B-3 V2 as a standalone application. When running it as a plug-in, the tempo will be determined by your host application.

When done, click the **OK** button.

2.2.1.2. Audio and MIDI settings: Mac OS

The audio setup process on Mac OS is very similar to Windows and the menu is accessed in the same way. The difference here is that OS X uses CoreAudio to handle audio routing and your audio devices will appear in the second dropdown menu. Apart from that, the options work the same way as described above in the Windows section above.

2.2.2. Using B-3 V2 in plug-in mode

B-3 V2 comes in VST, AU and AAX plug-in formats for use in all major DAW software like Cubase, Logic, Pro Tools, Ableton Live and so on. You can load it as a plug-in instrument and its interface and settings work in the same way as in standalone mode, with a few differences:

- Audio and MIDI settings will be handled by your DAW, instead of B-3 V2.
- The instrument will now use the tempo setting in your DAW for time-based effects like delay and tremolo, as well as modulation, when their Sync setting has been activated.
- You can automate parameters using your DAW's automation system.
- You can use more than one instance of B-3 V2 in a DAW project. In standalone mode you can only use one at a time.
- You can route B-3 V2's audio outputs more creatively inside your DAW using the DAW's own audio routing system.
- You can use third-party audio effects to process the audio output from B-3 V2.

3. USER INTERFACE

B-3 V2 has many great features, and in this chapter we'll explain what each one does. We think you'll be amazed at how quickly B-3 V2 provides you with sounds that are inspiring and perfect for all sorts of projects.

It's also really easy to work with: just a few tweaks here and there and suddenly you're in a new world of sound. That will always be the main focus of every Arturia product: unleashing your creativity while remaining easy to use.

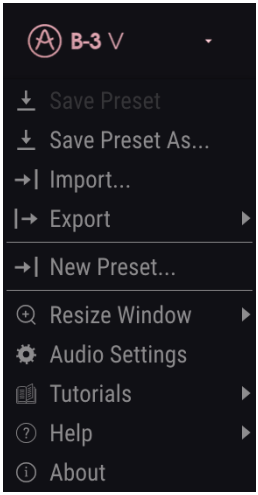
3.1. The virtual keyboard

B-3 V2 has two keyboards, one upper and one lower, just like an original tonewheel organ. These correspond to the left hand (upper) and right hand (lower) sets of drawbars located above the keyboard.

The first octave of each keyboard (the notes with their colours reversed) does not actually generate sound but rather acts as a selector for a fixed set of drawbar configurations, like in a real organ. Pressing one of these notes will call up a specific drawbar configuration but will not change any of the other settings on the organ. When you adjust drawbars, these settings will be automatically remembered in the currently selected drawbar configuration while you're working with the current preset. If you want these settings to be recalled next time you load the preset from the browser, you will need to save the preset.

3.2. Toolbar

The toolbar that runs along the top edge of the instrument both in standalone and plug-in mode provides access to many useful features. Let's look at them in detail. The first seven of these options can be found by clicking on the B-3 V section at the very top left hand corner of the instrument window.



3.2.1. Save preset

The first option lets you save a preset. When you select this you are presented with a window where you can enter information about the preset, such as name, author, bank and type. You can also add sound tags. This information can be read by the preset browser and is useful for searching presets later. You can also enter freeform text comments in the Comments field which is handy for providing a more detailed description.

3.2.2. Save preset as

This works in the same way as the Save command, but lets you save a copy of the preset instead of saving over the original. It's useful for creating variations of presets but still keeping individual copies of each one.

3.2.3. Import preset

This allows you to import a preset file. Presets are stored in the .b3x format.

3.2.4. Export preset

This allows you to export any preset as a file using this command.

3.2.5. Export bank

This option can be used to export the entire bank of presets from the instrument which is useful for backing up or sharing.

3.2.6. New preset

This option will create a new preset, initialized with default settings.

3.2.7. Resize window

B-3 V2's window can be resized from 50% to 200%. On a smaller screen such as a laptop you might want to reduce the interface size so it doesn't dominate the display. On a larger screen or a second monitor you can increase its size to get a better view of the controls.

3.2.8. Audio settings

Here you manage the way the instrument transmits sound and receives MIDI. See Audio And MIDI Settings [p.6] section of this manual for details.

3.2.9. Preset browsing quick look

The Preset Browser is opened by clicking on the button which contains four vertical lines. See The Preset Browser [p.15] section of this manual. The All Types, name field and left / right arrows in the toolbar all deal with preset selection.

3.2.10. Modulator and Advanced button

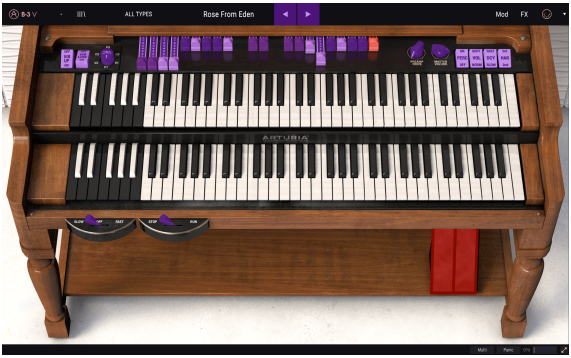
This button opens the Modulator and Advanced section. See the Mod Section [p.23] part of this manual for more on this.

3.2.11. FX button

This button opens the FX section, which allows you to add audio effects, amplification and room reverb to the organ. See the FX, Amplifier and Room Section [p.29] of this manual for more information.

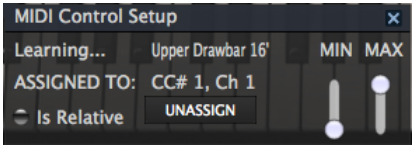
3.2.12. MIDI learn assignment

The MIDI plug icon at the right hand end of the toolbar places the instrument into MIDI learn mode. Parameters that can be assigned to MIDI controls will be shown in purple and can be mapped to physical MIDI knobs, faders or pedals on your hardware controllers. Note that you can also assign MIDI controls to parameters in the Mod and FX sections, as long as those windows are visible. To see these windows, click the Mod or FX buttons on the top toolbar.



For example you can map an expression pedal to the virtual swell pedal, or map controller buttons to the tone select switches so you can change the sound from the controller.

If you click on a purple control you'll put that parameter into learning mode. Move a dial or fader on your MIDI controller and the target goes red to show that a link has been made between the hardware control and the software parameter. You'll see a pop-up window which displays which two things are being linked and a button to unassign the two from each other.



There's also a **Min** and **Max** value slider that you can use to restrict the parameter change range from the default 0%-100%. For example you might want the amp's master volume to be controllable via hardware from 30% to 90%. If you made this setting (Min set to 0.30 and Max set to 0.90), your physical dial would not alter the volume any lower than 30% or any higher than 90% no matter how far you turned it. This is very useful for making sure you can't accidentally make the sound too quiet or too loud when performing.

In the case of switches which only have two positions (up or down) you can still use minimum and maximum values in the MIDI learn popup window, but in these cases the behaviour is a little different.

It's about what values the controller sends and whether those are high or low enough to trigger the state change in a switch - which is always 0.5 or in the case of the three stage switch, 33.3/33.3/33.3 (or near enough). You can set the minimum and maximum values of the hardware MIDI control but whether it affects the software parameter depends on whether it crosses the threshold required to make the change.

Let's take an example. We want to control a 2-position switch with a hardware fader. The fader value goes from 0.0 to 1.0 and the switch state will always change when 0.5 is crossed.

The min value in the MIDI learn window corresponds with the value that will be sent (from the controller to the engine) when the fader is at its min position (same goes for the max value).

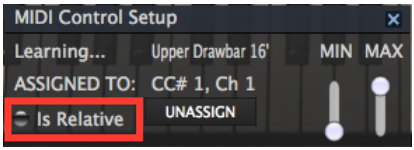
To explain this, you can try these 5 use cases:

- Set min value to 0.0 and max value to 0.49 => the switch cannot be switched on because the 0.5 value can never be crossed
- Set min value to 0.51 and max value to 1.0 => the switch cannot be switched off because the 0.5 value can never be crossed
- Set min value to 0.0 and max value to 1.0 => the switch state changes when the fader crosses its central position
- Set min value to 0.49 and max value to 1.0 => the switch state changes when the fader is very low
- Set min value to 0.0 and max value to 0.51 => the switch state changes when the fader is very high

The same goes for the three-stage switches, where instead of 0.5 being the state change value, it is divided into three thirds.

In the case of drawbars which have nine different positions the same rule applies but instead of splitting the controller range into two or three it is split into nine.

The final option in this window is a button labelled **Is relative**. This allows you to change how the parameter is adjusted from your hardware control – absolute ("Is relative" disabled), or relative ("Is relative" enabled).



This can be useful when switching presets, where a mapped software parameter may change. For example when using an absolute setting, adjusting the parameter from your hardware will immediately jump to the position of the hardware control. While with a relative setting, the hardware control will adjust the parameter from its current value in the software. Note that to use the "Is relative" option your MIDI controller needs to support relative mode. Please consult your MIDI device's user manual for information on how to change hardware controls to send relative data.

Note that the following MIDI Continuous Controller (MIDI CC) numbers are reserved and cannot be reassigned to other controls:

- Ctrl All Notes Off (CC #123)

All other MIDI CC numbers may be used to control any assignable parameter in B-3 V2.

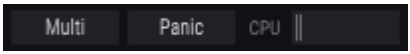
3.2.13. MIDI controller configuration

There's a small arrow at the far right hand side of the toolbar that deals with MIDI controller configurations. This allows you to manage different sets of MIDI mappings that you may have set up for controlling the instrument's parameters from MIDI hardware. You can copy the current MIDI assignment setup or delete it, import a configuration file or export the currently active one. This can be used to quickly set up different hardware MIDI keyboards or controllers with B-3 V without having to build all the assignments from scratch each time you swap hardware.

3.2.14. The lower toolbar

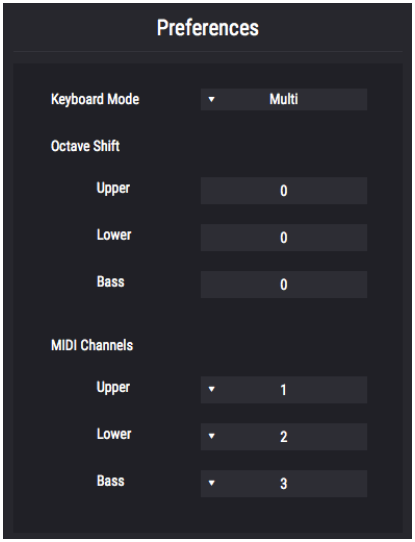
At the right hand side of the lower toolbar are three small items.

- **Keyboard Preferences** button opens a new window, where you can configure how your MIDI controller maps to the virtual keyboards.
- **Panic** button can be pressed to stop any stuck notes.
- **CPU meter** displays how much of your computer's CPU is being used by the instrument.



3.2.15. The Keyboard Preferences window

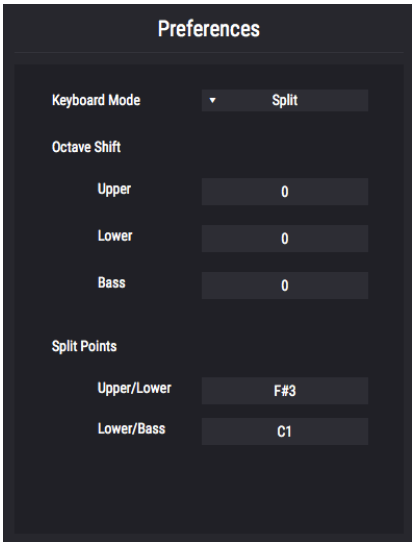
Since B-3 V has two keyboards which generate different tones, we have provided a way to choose how your MIDI keyboard will control the instrument. It provides the flexibility to play both virtual keyboards with one MIDI keyboard or play each virtual keyboard with a different MIDI keyboard. Here's how it works.



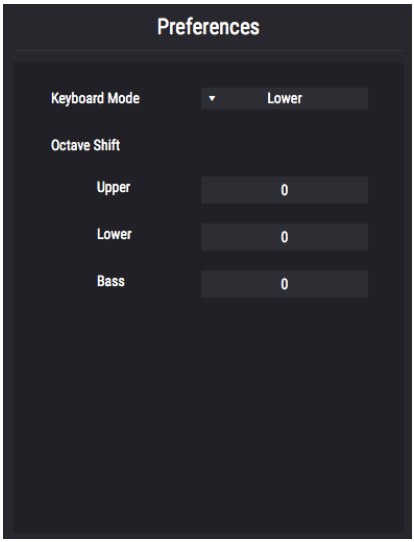
In **Multi** mode, you can assign MIDI channels to each virtual keyboard. A typical example might be to connect one MIDI keyboard to the upper keyboard on MIDI channel 1, and a second MIDI keyboard to the lower keyboard on channel 2, giving you the full range of notes at your fingertips.

If your MIDI keyboard supports it, you could split its range into two zones, assign each one a MIDI channel and achieve a similar result. This setting is usually performed on the MIDI keyboard itself.

The **Octave Shift** settings allow you to transpose the octave of either virtual keyboard up or down here, which is useful for things like assigning a smaller MIDI keyboard to control a bass part.



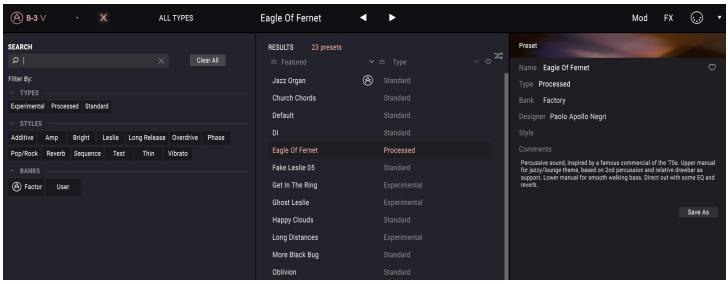
Split mode allows you to split the range of a single MIDI keyboard inside B-3 V2. This is useful if your MIDI keyboard does not itself support multiple zones and MIDI channels from the hardware. Adjust the **Split Points** parameters to define the notes at which the MIDI keyboard changes from controlling one virtual keyboard to controlling the other.



The **Lower** and **Upper** options also allow octave shifting but these modes simply assign your whole MIDI keyboard to play either the lower or upper manuals.

3.3. The Preset Browser

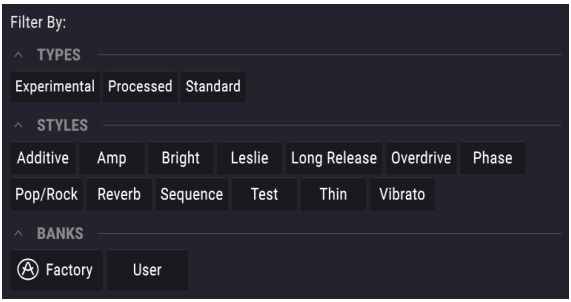
The preset browser is how you search, load and manage sounds in B-3 V. It has a couple of different views but they all access the same banks of presets. Click on the browser button (three lines and a slanted line) to access the search view.



3.3.1. Searching presets

The Search screen has a number of sections. By clicking on the **Search** field at the top left you can quickly enter any search term to filter the preset list by patch name. The **Results** column is updated to show the results of your search. Press the **X** button in the search field to clear the search.

3.3.2. Filtering using tags



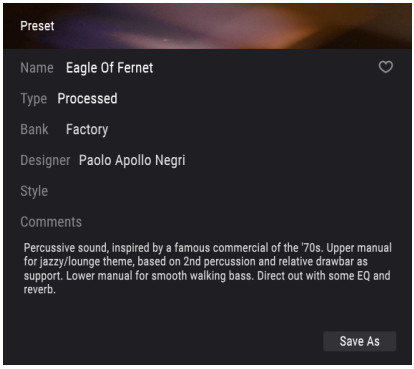
You can also search using different tags. For example if you click on the Lead and Organ options in the Types field you can show only presets that match those tags. The tag fields can be shown or hidden by using the small +/- buttons in their title fields. Results columns can be sorted by clicking the arrow button in their own section.

You can use multiple search fields to perform narrower searches. So by entering a text search and also specifying type, bank and characteristics options you could see only the presets that match those exact criteria. Deselect any tag in any area to remove that criteria and widen the search without having to go back and start again.

The second Results column can be switched to show Type, Sound Designer or Bank tags depending on how you like to search. Click on its options menu button (the three horizontal libes) to the left of its title.

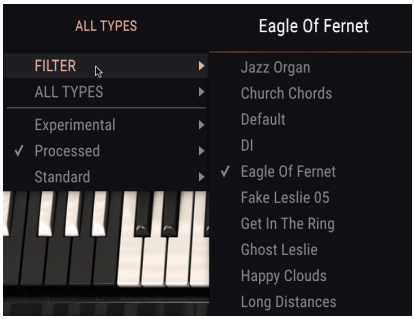
3.3.3. The preset Info section

The Preset Info section on the right side shows you information about the selected preset. If you want to make changes to a factory preset such as changing its name, adding comments or tags, you have to re-save it as a user preset using the Save As command in the main menu. When you have done this, the Info section will gain Edit and Delete buttons that you can use to change the information stored inside the preset. Factory presets can't be overwritten.

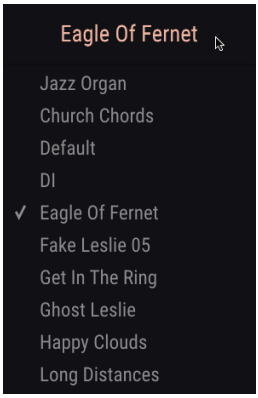


3.3.4. The second preset view

The menu in the middle of the top toolbar shows you a different view. The first option in this menu is called **Filter** and will hold a record of whatever search terms or tags you last searched for in the main Search field. So if you searched for Jazz, those results will appear here.



Selecting the **All Types** option will provide a list of all patches. The Categories shown beneath group sounds based on their Type like keys, pads, bass and so on.



Clicking on the name field in the centre of the toolbar will show you a list of all available presets and will also change based on what you have entered in the Search field. So again if you have searched for "jazz", this shortcut menu will only show you patches that match that tag. The left and right arrows in the toolbar will load the next or previous preset in the list: either the full list, or the filtered list if you have entered a search term.

3.3.5. Playlists

In the lower left corner of the Preset Browser window is a feature titled Playlists. This is used to collect presets into collection groups, such as a set list for a particular performance or a set of presets related to a particular studio project.

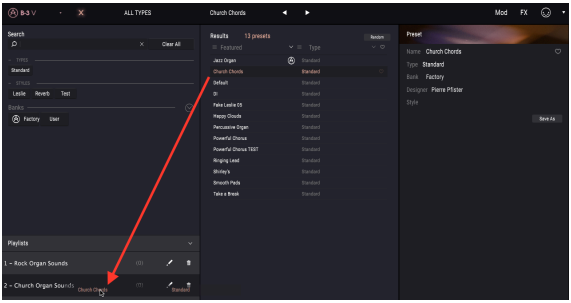
3.3.5.1. Add a playlist

To create a playlist, click the + **New Playlist** button:

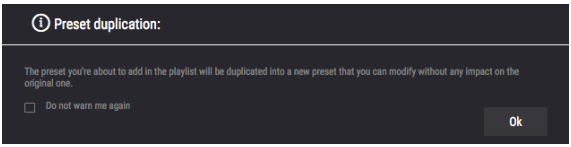
Give the playlist a name and it will appear in the Playlists menu. To rename the playlist at any time, click the pencil icon at the end of its row.

3.3.5.2. Add a preset to the playlist

You can use the Search window to locate the presets you want to add to your playlist. Once you have found the right preset, click and drag it onto the playlist name.



You will see a message which tells you that the new preset will be duplicated. B3-V2 will create a copy of the preset so that you can modify settings in the playlist presets without impacting the original preset it is based on, and vice versa.



To view the contents of a playlist, click on the playlist name.

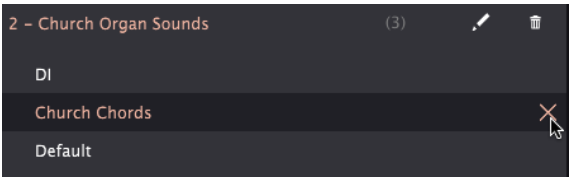
3.3.5.3. Re-order the presets in the playlist

Presets may be reorganized within a playlist. For example, to move a preset from slot 3 to slot 1, drag and drop the preset to the desired location.

This will move the preset into the new location.

3.3.5.4. Remove a preset from the playlist

To remove a preset from a playlist, click the **X** at the end of the preset row.

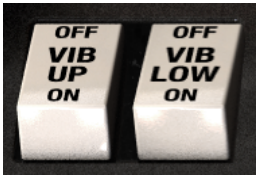


3.3.5.5. Delete a playlist

To delete a playlist, click the **trashcan** icon at the end of the playlist row.

3.4. Front panel

3.4.1. The vibrato switches

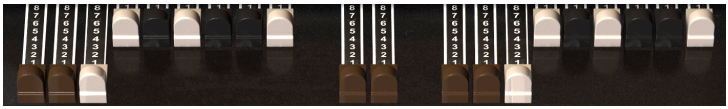


These switches let you toggle vibrato on or off independently for the upper and lower virtual keyboards.

3.4.2. The Vibrato and Chorus mode knob

This knob lets you select between three different chorus and three different vibrato types that will be applied to the virtual keyboards when their vibrato switches are activated. The position of this knob represents three different depths for each kind of effect. So C1 is a light chorus and C3 is more intense. Similarly, V1 is light vibrato and V3 is deeper. The three settings could be thought of as Small, Wide and Full.

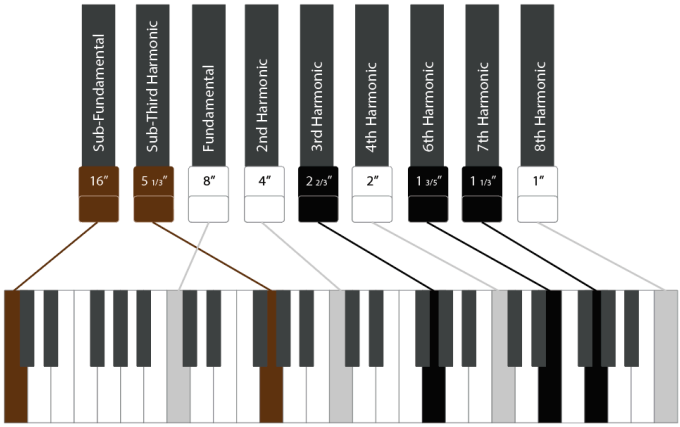
3.4.3. The Drawbars



Every sound or note is made up of a fundamental and harmonics. The fundamental can be considered as the "root" of the sound and harmonics are higher frequencies you can hear, which add some shape to the sound.

The drawbars let you shape your organ sound by mixing the fundamental and harmonics.

B-3 V has 9 drawbars for each virtual keyboard (upper and lower), and 2 bass pedal drawbars for a total of 20. The 9 drawbards for the upper keyboard are located on the left, and the 9 drawbars for the lower keyboard are located on the right, with the 2 bass pedal drawbars located in the middle. Pulling a drawbar out will increase the volume of that tonewheel in steps starting at zero (no sound) all the way to 8 (full volume). Each set of nine drawbars is organised in asdending fashion, such that the bars on the left control lower tones and the ones on the right control higher tones.



Think of the leftmost two (brown) drawbars as "sub" tones, the middle four as "foundation" tones in the midrange, and the three to the furthest right as "brilliance", controlling higher frequencies.

Due to the fact that each drawbar has nine positions there are literally millions of possible combinations of settings and sounds and this is what makes tonewheel organs so flexible, capable of everything from subtle, minimal tones to very complex, rich and powerful sounds.

Part of the skill of being an organ player is in mastering the drawbars, manipulating them in real time to change the sound dynamically during a performance. This is something you will see a good organ player doing very frequently as they play their instrument. For a software organ it can be helpful to map MIDI sliders or knobs to the drawbars to give you a similar kind of control. See the MIDI Learn Assignment [p.10] section of this manual for information on how to assign MIDI controls.

3.4.4. Preamp Drive

This control can be used to set the amount of drive applied to the preamp. Increasing the amount will add a slightly overdriven effect to the sound, introducing bite and grit which can be desirable for certain kinds of music.

3.4.5. Master Volume

This controls the master volume output of the organ.

3.4.6. The Percussion section

This section allow you to add a percussive attack to the sound. Note that this only applies to notes played on the upper virtual keyboard.

- **Perc On/Off** - Enables or disables the percussive attack.
- **Vol Soft/Norm** - Sets the volume of the percussive attack.
- **Decay Fast/Slow** - When set to Slow, the percussion tone will decay slowly. Set to Fast, it will decay rapidly.
- **Percussion Harmonic Selector** - This sets the pitch of the Percussion sound. Second means the pitch is up one octave above the Fundamental Drawbar. Third means the pitch is up an octave and a fifth above the Fundamental Drawbar.

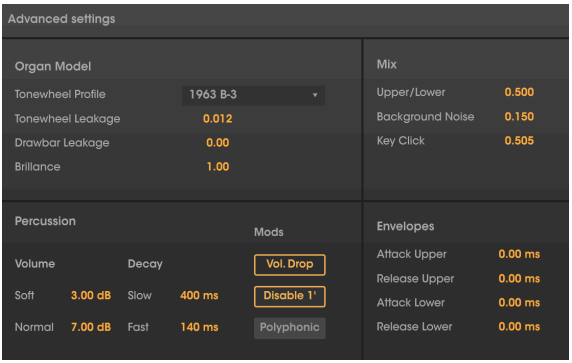
3.4.7. The Swell pedal

The swell pedal is situated pre-amplifier and connects directly to the organ. Since an organ is not velocity-sensitive, meaning that pressing the keys will generate the same volume regardless of how hard you press them, the Swell pedal is an important way of adding volume fluctuations for a more expressive performance. Assigning a MIDI hardware pedal to the Swell pedal is a good way to get more creative control over your performance. See the MIDI Learn Assignment [p.10] section of this manual for information on how to assign MIDI controls.

3.5. The Mod Section

The Mod section houses the modulation options and advanced settings for B-3V. Click the **Mod** button located on the top toolbar to view these panels.

3.5.1. Advanced Settings



The Advanced section allows you to make further changes to the way sound is generated. There are four subsections.

In the Organ Model subsection you can adjust how the various components of the instrument interact, giving you the ability to tweak the components to create an ultra-realistic simulation of the organ condition - from clean and pristine to banged up and worn:

- **Tonewheel Profile** allows you to select a profile from one of 7 classic organs. These tonewheel profiles were meticulously modelled from the original instruments to capture all of their unique sound characteristics.
- **Tonewheel Leakage** controls the amount of signal that is allowed to leak from each tonewheel. The more leakage you allow, the more imprecise the sound because the tonewheels will all start to interfere with each other. However allowing some leakage can help to give a more authentic sound.
- **Drawbar Leakage** lets you manually control the amount of each drawbar that leaks into the ones either side of it. Set to zero, there is no leakage.
- **Brilliance** controls the amount of boost applied to the middle and upper frequencies.

In the Mix subsection, you can adjust the relative volumes of each aspect of the sound.

- **Upper/Lower** adjust the relative volume balance of the two virtual manuals.
- **Background Noise** can be added for a more deliberately imperfect sound.
- **Key Click** volume can be turned up or down, altering the organ's sound to make it more or less percussive when keys are pressed.

In the Percussion subsection you can further tweak the behavior of the percussive sound.

- **Volume** specifies loudness for the soft and normal switch on the main panel.
- **Decay** specifies the decay time (in milliseconds) for the slow and fast decay switch on the main panel.
- **Volume Drop** reduces the volume of the instrument when you set percussion to Normal.
- **Disable 1'** removes the 1' drawbar tone from the sustained tone when the percission is on.
- **Polyphonic Percussion** allows you to trigger the percussion sound polyphonically.

In the Envelopes subsection you can adjust the shape of the sound for each virtual keyboard.

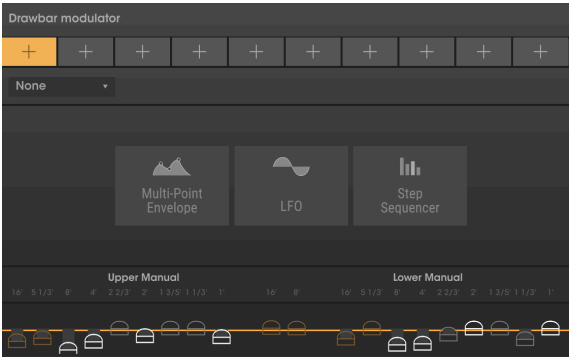
- The **Attack** parameter changes the speed at which a note comes in once a key is pressed.
- The **Release** parameter adjusts how long the sound will fade out after a key is released.

Each virtual keyboard can be adjusted independently. For regular organ sounds these would all be set very low, but if you raise them you can get more synth-like sounds.

3.5.2. Drawbar Modulators

3.5.2.1. What this section does

The organ sound can be quite static if the player does not interact with it much. A true tonewheel organ player will move the drawbars a lot while playing, to add evolution to the sound. We decided to pursue that idea by letting the user automate the movement of drawbars using envelopes, LFOs and step sequencers. This opens a lot of possibilities for sound design. It can be used to create sharp attacks with lots of harmonics that turn into a softer sound. It can also be used to create atmospheric, evolving sounds. The harmonic relationship between drawbars means that the sound will always feel natural, even when the drawbars are heavily modulated.



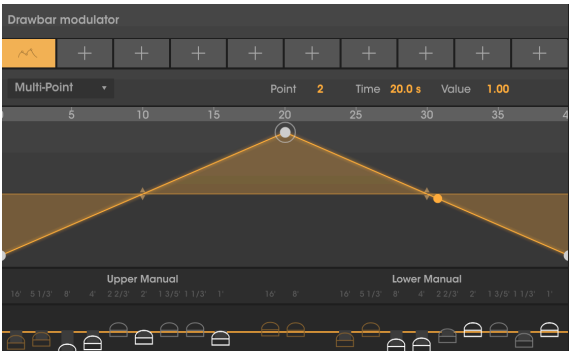
The Drawbar Modulators allow you to modulate the values of the drawbars over time. There are ten modulator slots at the top of this section, each of which can hold either an LFO, multi-point envelope, or step sequencer.

To add a modulator to a slot, click the + button and select from one of the three types. To swap one type of modulator for another at any time, click the down arrow above the slot and select a different type from the menu.

Below we will explain the difference between each type of modulator.

3.5.2.2. Envelope modulator

This lets you draw your own modulation shape by adding and manipulating points on a curve.



Click anywhere in the window to add a point. Right-click on a point to remove it.

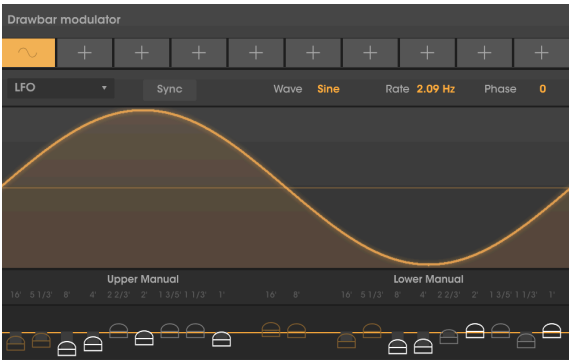
You can set up to 16 points in the Envelope window, and you can drag points around after you've placed them.

To change the curve between points, click and drag the yellow up/down arrows in that segment.

To zoom in and out for a better view, click the time display above the envelope ares and drag the mouse up or down.

3.5.2.3. LFO

LFO stands for Low Frequency Oscillator. This is a type of modulation waveform that oscillates between minimum and maximum value at a given rate and shape.



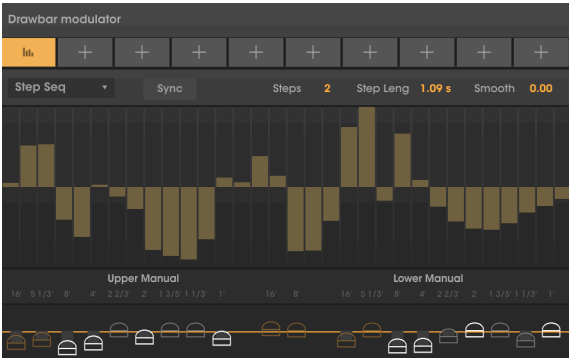
You can choose between five different **Wave** shapes - Sine, Triangle, Saw, Ramp and Square.

Rate describes the frequency at which the waveform is "scanned".

Sync switch allows you to sync the Rate to a tempo-locked time interval. When Sync is turned on, the Rate control will display Note divisions. When Sync is turned off, Rate will display continuous time values.

Phase functions as a start offset for the waveform, in degrees - between 0 (beginning of the waveform) and 360 (end of the waveform).

3.5.2.4. Step Sequencer



The Step Sequencer allows you to enter modulation in steps, which can be good for creating more rhythmic types of modulations.

There are 32 steps available and you can specify the length of the sequence using the Steps control.

Step Length describes the rate at which the sequence will proceed through each step.

Sync allows you to sync the Step Length to a tempo-locked time interval. When Sync is turned on, the Step Length control will display Note divisions. When Sync is turned off, Rate will display continuous time values.

Smooth control specifies whether transitions between steps happen immediately or more smoothly. At minimum value no smoothing will be applied. At higher values interpolation will occur from one step value to the next.

3.5.2.5. Assigning modulation amount to drawbars

Each modulation slot can be set to modulate one or several drawbars at a time, allowing you to create interesting movement and relationship between the partials of the sound over time. On the bottom of the Voice Modulator section, you will see representations of each drawbar as a "puck".

To change the modulation amount for a given tonewheel click and drag the tonewheel puck up or down. When the puck is dragged above the horizontal yellow line, the modulation will be positive, meaning that when the modulation signal goes up, the drawbar will be extended out so that you will hear that tonewheel. If the puck is dragged below the yellow line the modulation will work inversely - when the modulation signal goes up, the drawbar will be retracted and less sound will come out of it.

To reset the modulation amount for a given tonewheel (i.e. no modulation), double-click its puck and it will reset to the middle.

Note that the position of the drawbars in the main organ interface has no influence on these modulations.

3.6. FX, Amp and Room Section

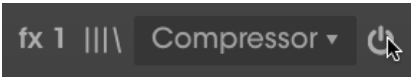
B-3 V2 features a new FX section, which now houses the amplifier, room convolution reverb, and effects pedals. The FX section can be accessed by clicking the FX button located on the top toolbar.

There are four slots for creating your own custom configuration of FX modules, followed by a fixed amplifier and room reverb.

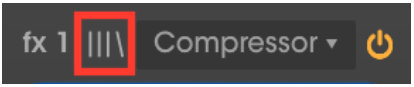
There are three global controls at the top of the FX section:

- **In Gain** adjusts the volume of the signal sent into the chain. Be careful when using the In Gain knob after you've created an effects chain containing compressors and limiters, as this may affect the dynamics of the sound.
- **Out Gain** adjusts the volume of the processed sound.
- **Bypass** disables the effects, amp and room so that you are only hearing the unprocessed sound from the instrument. This can be useful if you intend to process the sound with other types of amplification or effects in your DAW.

To disable a module in the chain, click the **power** button at the top of the corresponding module. When disabled, the module will be bypassed and will have no effect on the sound. To enable a module, click the power button again.

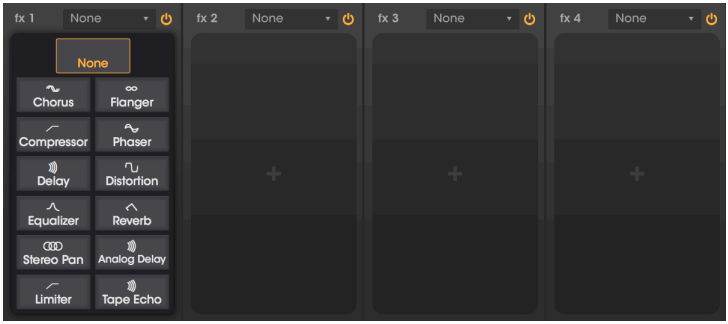


You can save and recall presets for effects, amplifier, or room reverb by clicking on the three horizontal lines at the top of the corresponding module.



3.6.1. Effects

Let's first look at the effects pedal section. Here you can add up to four different effects pedals to shape the sound. You can place as many or as few effects as you need in the four slots and effects slots can remain empty.



To load an effect, click the + button in the middle of the slot and select from one of the 12 available effects pedals. Alternatively, you can click the pull-down menu at the top of the fx slot and you will be presented with the same menu of 12 effects.

To change an effect pedal position in the signal chain, hover over the body of the pedal until the cursor changes to a hand icon then click and drag it to a different slot. If there is an effect already loaded in the target slot, it will swap positions with the one you drag on top of it.

Let's now look at the various types of available effects pedals.

3.6.1.1. Chorus pedal

Chorus works by taking an audio signal and mixing it with one or more delayed and pitch-modulated copies of itself, making the sounds harmonically richer and adding a sense of movement and space.

This effect can be observed in live vocal choirs where multiple singers perform the same melodic line which, due to small differences in each performer's timing and pitch, creates a thicker, moving sound.

Control	Description
LFO Freq	Controls the frequency of the LFO that will modulate the delayed signal to produce the effect.
Depth	Sets the depth of the modulation applied by the LFO.
Feedback	Adds feedback to the chorus, to achieve a harsher or ringing tone.
Delay	Controls the amount of delay applied to the signal. The more delay, the deeper the chorus effect.
Voices	Sets the number of "voices" (delay lines) the effect will use, with a different starting phase for each voice, to achieve a higher chorus density.
Stereo	Switches the Chorus output between mono and stereo.
Shape	Lets you choose the wave shapre of the modulating LFO.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.2. Flanger pedal

The Flanger works by mixing identical copies of the input signal, with one signal delayed by a small and gradually changing amount of time. While the Chorus works with longer delay times, the Flanger uses much shorter delay times which produces a characteristic undulating swept comb filter effect.

Control	Description
LFO Freq	Controls the frequency of the LFO that will modulate the delayed signal to produce the effect.
Depth	Sets the depth of the modulation applied by the LFO.
Feedback	Adds feedback to the flanger signal, to achieve a harsher or ringing tone.
Stereo	Switches the Flanger output between mono and stereo.
Phase Invert	Inverts the phase of the flanger signal to create effect variations through phase cancellations.
LP Filter	Filters the frequencies above the cutoff point, to achieve a more muted sound.
HP Filter	Filters the frequencies below the cutoff point to achieve a brighter, less boomy sound.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.3. Compressor pedal

A Compressor reduces the volume of the audio signal above a defined threshold which has the effect of smoothing out volume differences between loud and quiet sections. By making the louder sections quieter, this allows you to apply additional gain to the signal to make the quieter sections louder. The Compressor is a very useful tool for creating a more balanced sound that sits well in a mix.

Control	Description
Threshold	Sets the level above which volume compression will be applied to the sound.
Ratio	Sets the amount of compression. Higher values mean more compression/gain reduction. For example, a ratio of 5 means that for every 5db of volume above the Threshold, the signal will only go up by 1db.
Attack	Sets the time it takes for the compressor to reach the maximum compression once Threshold is reached.
Release	Sets the time it takes for the compression to return to zero once the audio volume falls below the Threshold.
Out Gain	Manual volume gain (make up) amplification to compensate for the reduction due to compression.
Make Up	Turns automatic gain (make up) compensation on and off.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.4. Phaser pedal

Phasing is the psychedelic sweeping effect that was popular in the 1960s and 70s and adds a sense of movement and swirling to the sound. It works by creating a copy of the input signal, feeding it through a series of all pass filters which create peaks and valleys in the frequency spectrum, then mixing it back with the original signal. As the all pass filters are modulated, frequencies that are out of phase cancel each other, producing the phaser's characteristis "whoosh" sweeping effect.

Control	Description
Freq	Sets the harmonic center of the phase modulation effect
Poles	Determines the steepness (number of poles) of the all-pass filters that will process the modulation signal.
Feedback	Controls the amount of phase resonance by adding feedback to the signal.
Stereo	Controls the stereo spread of the signal. At the lowest value, the signal will be mono.
Rate	Controls the speed of the LFO that will modulate the phasing effect.
Amount	Controls the amount of modulation applied by the LFO.
Sync	Synchronizes the modulation speed to the internal tempo, or your DAW's tempo when using as a plug-in.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.5. Delay pedal

Delay adds dimension and spaciousness to the signal, by creating echoes that can be spread over the stereo image. When using longer delay times, this can also add a rhythmic quality to the sound, especially when working with sounds that have a more pronounced attack.

Control	Description
Time	Controls the time the delayed line will sound after the original signal. May be tempo-synced.
Feedback	Adjusts how many times the delayed line will repeat (more feedback, more delay lines).
Stereo	Controls the stereo spread of the signal. At the lowest value, the signal will be mono.
Sync	Synchronizes the delay time to the internal tempo, or your DAW's tempo when running as a plug-in. When synced, the Time value will then display values in note format.
Ping Pong	In ping-pong mode, delay lines will alternate between left and right in the stereo field.
LP Filter	Filters the frequencies above the cutoff point to achieve a more muted sound.
HP Filter	Filters the frequencies below the cutoff point to achieve a brighter, less boomy sound.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.6. Distortion pedal

This pedal offers 4 different types of distortion, ranging from subtle drive, crunch and grit to extreme distortion, fuzz and bitcrushing.

Use the left and right arrows to select one of the 4 distortion types. Each type will have its own associated controls below.

Bitcrusher: This effect distorts the sound by reducing the number of bits used to define the waveform. The less bits used, the more the signal is degraded and distorted. Downsampling is another way of inducing distortion. As the sample rate is reduced, aliasing is introduced to the sound, creating "ghost partials" in the spectrum.

Control	Description
Bit Depth	Reduces the number of bits used to represent the waveform.
Downsampling	Reduces the sample-rate of the input signal.
Dry/Wet	Controls the balance between processed and unprocessed sound.

Overdrive: The Overdrive effect is well known by guitar players and adds a "fuzziness" to the sound. This effect is modelled after a solid-state circuit.

Control	Description
Drive	Controls the distortion intensity.
Out Gain	Controls the volume of the processed signal output.
Tone	Controls the brightness of the resulting signal.
Dry/Wet	Controls the balance between processed and unprocessed sound.

Wavefolder: This is a type of Distotion effect where the signal is amplified until it clips, then the peaks above the clip point are folded downward. Usually, this type of distortion enriches the spectrum with high-frequency content and can produce complex frequencies out of simple waveforms.

Control	Description
Drive	Controls the distortion intensity.
Out Gain	Controls the volume of the processed signal output.
Type	Controls the shape of the wavefolding. Hard produces more distortion.
Dry/Wet	Controls the balance between processed and unprocessed sound.

Waveshaper: This distortion effect applies a mathematical shaping function to the input signal to produce a modified output. The result may be anything between subtle overdrive to pure noise.

Control	Description
Drive	Controls the distortion intensity.
Out Gain	Controls the volume of the processed signal output.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.7. Equalizer pedal

An equalizer is a bank of filters where each filter works in a specific band of the frequency spectrum, boosting or cutting those frequencies to change the overall spectrum balance. It can be used for subtle tone adjustments, or for accentuating certain bands to allow them to cut through the mix.

The Equalizer has three bands - a shelf in the low region (Low Shelf), a bell in the middle (Peak), and a shelf in the high region (High Shelf).

Each band features a gain control and a frequency control.

The mid band also features a Q (bandwidth) control, which allows you to specify the width of the cut or boost to mid frequencies. Small values can be used for a more surgical cut or boost, while larger values affect more frequencies around the cut-off (center) frequency.

Control	Description
Low Shelf Gain	Controls the gain/attenuation (between -15 dB and 15 dB) of the Low Shelf band.
Low Shelf Frequency	Controls the shelf frequency of the Low Shelf band (between 50 Hz and 500 Hz).
Peak Gain	Controls the gain/attenuation (between -15 dB and 15 dB) of the Peak band.
Peak Frequency	Controls the peak frequency of the Peak band (between 40 Hz and 20 kHz).
Peak Q	Controls the Q (bandwidth) of the Peak band (between 0.001 and 15.0).
High Shelf Gain	Controls the gain/attenuation (between -15 dB and 15 dB) of the High Shelf band.
High Shelf Frquency	Controls the shelf frequency of the High Shelf band (between 1 kHz and 10 kHz).
Scale	Controls the depth of the equalization effect.

3.6.1.8. Reverb pedal

The Reverb pedal allows you to place the sound in a virtual space. This is an algorithmic Reverb, unlike the Room module at the end of the effects chain which is convolution-based. However, this Reverb can be placed anywhere in the signal chain, so that other effects can be applied to the sound after it has been processed by the reverb.

Control	Description
Pre Delay	Controls the time between the original signal and the first echoes (early reflections).
Size	Controls the size of the room or space (basically, the reverb "body"). The bigger the size, the more reverb that's added.
Decay	Controls the length of the reverb effect. Should be articulated with the Damping parameter for a more realistic effect.
Damping	In a room, this parameter defines the absorption coefficient of the reflection surfaces. The higher the damping, the faster high frequencies will decay.
M/S	Adjusts the stereo wideness of the effect, from mono to an increasingly wide stereo image. Takes advantage of Mid/Side processing.
LP Filter	Filters the frequencies above the cutoff point to achieve a more muted sound.
HP Filter	Filters the frequencies below the cutoff point to achieve a brighter, less boomy sound.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.9. Stereo Pan pedal

The Stereo Pan pedal can be used to add stereo motion to the sound. It uses an LFO (low frequency oscillator) to bounce the sound between the left and right channel to create a sense of movement.

Control	Description
Rate	Controls the speed of the LFO. Can be synced to internal tempo, or your DAW's tempo when running as a plug-in.
Shape	Defines the shape of the LFO. Available options are Sine, Triangle, Saw, Ramp, and Square.
Sync	Synchronizes the cycle of the LFO to the internal tempo, or your DAW's tempo when running as a plug-in.
LP Mono	When set to On, the low frequencies are not modulated by the effect.
Dry/ Wet	Controls the balance between processed and unprocessed sound.

3.6.1.10. Analog Delay pedal

Analog Delay is another type of delay pedal with a slightly different sound. The principle is the same - the input audio is recorded and played back after a small amount of time. A feedback circuit then introduces more copies of the delayed audio back into the original signal.

This particular delay pedal is great for more dubby sounds with lots of feedback. Since this delay is modeled after analog hardware, it will introduce more coloration than the other Delay pedal options.

Control	Description
Time	Specifies the time interval between the original and delayed signal. May be synced to internal tempo, or your DAW's tempo.
Feedback	Adjusts how many times the delayed line will repeat (more feedback, more delay lines).
Sync	Synchronizes the delay times to the internal tempo, or your DAW's tempo when running as a plug-in.
Feedback Tone	Controls the tone (brightness) of the resulting feedback delays.
Rate	Controls the rate of the LFO modulation source. When Sync is on, the rate is synced to the internal tempo, or your DAW's tempo when running as a plug-in, and is expressed in note values.
Depth	Controls the amount of modulation.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.11. Limiter pedal

The Limiter is a type of compressor that serves a very specific purpose. It essentially works as a volume "ceiling" to prevent the signal from going above a certain volume. This is especially useful when working with sounds with a wide dynamic range and many effects that could potentially cause the signal to clip and result in clicks and pops.

Control	Description
Input Gain	Controls the amount of gain added to the input signal. The VU Meter gives a visual reference of the current volume.
Release	Controls the time it takes for the audio to recover from limiting.
Output Level	Controls the output gain, after limiting.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.1.12. Tape Echo pedal

The Tape Echo pedal is a recreation of a famous tape echo unit from the 70s and 80s, which worked by recording snippets of the input audio onto magnetic tape, then playing them back with a delay. Due to the nature of magnetic tape, this imparts a natural tape saturation effect to the delays.

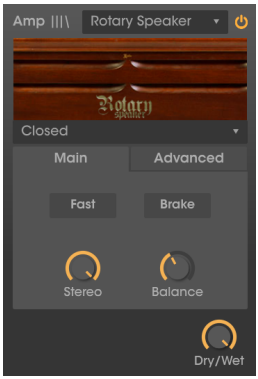
Control	Description
Bass	Controls the volume of low frequencies.
Treble	Controls the volume of high frequencies.
Time	Specifies the time interval between the original and delayed echo signal. May be tempo-synced.
Sync	Synchronizes the echo times to the internal tempo, or your DAW's tempo when running as a plug-in.
Intensity	Controls the number of echoes that are produced and, therefore, the intensity of the effect.
Input	Controls the volume of the input signal.
Echo	Controls the volume of the echo signal.
Dry/Wet	Controls the balance between processed and unprocessed sound.

3.6.2. Amp

Following the effects pedal slots is the Amplifier. This is a fixed module and cannot be reordered in the signal chain. There are two available types of amps - a rotary speaker, as well as a model of a popular twin amp. Each amplifier type has its own unique sound and features.

You can select the desired amplifier from the menu at the top.

3.6.2.1. The Rotary Speaker



Rotary speaker cabinets were invented by Donald Leslie in 1940. They became inseparable add-ons to the Hammond organ, to the point of being almost impossible to see one without the other, but have also been used with many other types of instruments due to their distinct swirling sound character.

The Leslie expressiveness was largely due to the independently rotating speaker elements inside the cabinet - a horn (for higher frequencies) and drum (for lower frequencies) - which could rotate at variable speeds to produce the characteristic swirling effect that greatly contributed to the fame of the Hammond organs.

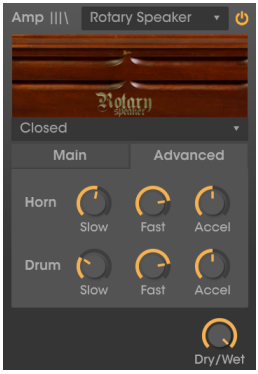
The Leslie 122 cabinet was the most popula and was designed specifically for the Hammond. Later, Leslie created the Leslie 147 which was intended to be a "universal" cabinet to be used with any organ.

- The pull-down menu in the upper left corner allows you to switch among different types of cabinet models - **Closed, Open, 122 Closed, 122 Open, 147 Open**. Each option gives a subtle variation on the sound.
- **Fast** switch controls whether the horn and drum rotate at slow or fast speeds. In the off position, the speaker elements will rotate at their slow rate, specified by the Horn Slow and Drum Slow settings in the Advanced tab. In the on position, the speaker elements will rotate at a fast rate, specified by the Horn Fast and Drum Fast knobs in the Advanced tab. This setting can also be accessed from the main panel Slow / Fast lever.

- **Brake** switch controls whether the rotary speaker is moving or not. When toggled on, speaker rotation will stop. When toggled off, speaker rotation will resume based on the position of the other rotation settings in this panel. The Brake can also be accessed from the main panel Stop / Run lever.

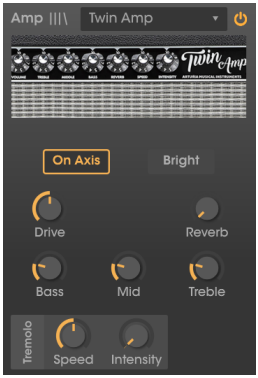
- **Stereo** controls the amount of stereo spacing between the two elements. Turned hard left, the sound is more mono and to the right it becomes wider.
- **Balance** lets you set the mixture between the horn and drum sound for a more muted or brighter effect.
- **Dry / Wet** adjusts the blend of the direct "dry" sound (post pedal effects) and the "wet" sound through the rotary speaker. Turn up this knob to hear more of the rotary speaker effect.

There are a few additional settings in the Advanced tab:



- **Horn Slow** and **Drum Slow** knobs specify the rotation speed of each element when the Fast switch is in the off (slow) position. The slow rotation range is O.1OOHz to 2Hz.
- **Horn Fast** and **Drum Fast** knobs specify the rotation speed of each element when the Fast switch is in the on (fast) position. The fast rotation range is 2Hz to 8Hz.
- **Horn Acceleration** and **Drum Acceleration** knobs control how quickly the speed changes when switching from slow to fast, or when using the Brake. At low settings, it will take longer for the speed to change. At high settings, the speed change will happen quicker.

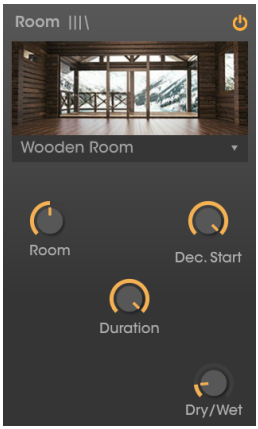
3.6.2.2. Twin Amp



This amplifier is modelled after a famous guitar amp to give you even more options for achieving your desired tone. Twin Amp models all of the characteristics and features of the original amp, including Tremolo as well as two microphone placement positions.

- **On Axis** chooses whether the virtual microphone capturing sound from the speaker is placed on axis (pointing straight at the speaker) or off axis (pointing at an angle). This will give a slightly different tone to the sound, with on axis resulting in a brighter, more present tone.
- **Bright** switch accentuates the higher frequencies of the sound, adding sheen and sparkle to the tone.
- **Drive** knob controls an additional preamp stage that adds overdrive and saturation to the sound.
- **Bass** / **Mid** / **Treble** knobs adjust the volumes of the corresponding EQ bands.
- **Reverb** knob lets you dial in reverberation amount. Twin Amp uses a modelled spring reverb.
- **Speed knob** controls the speed of the Tremolo effect.
- **Intensity** knob controls the intensity of the Tremolo effect.

3.6.3. Room



The last processor in the effects signal chain is the Room, a high-quality convolution reverb processor. This too is a fixed module and cannot be reordered in the chain. Convolution reverb works differently than algorithmic reverb - instead of simulating a virtual "room" and how a sound reverberates in it via algorithmic calculations, convolution uses impulse responses sampled from real spaces and hardware units. These impulse responses capture reverberation characteristics, such as frequency response and decay, of the given space into a sonic "signature". The convolution processor then allows you to "convolve" your sound with this signature to imprint its reverberation characteristics onto your own sound.

The menu at the top allows you to pick from 9 different types of convolution reverb, ranging from concert halls and studios to vintage plate and spring reverb hardware.

There are four controls which allow you to further shape the character of the reverb:

- **Room** controls the size and tone of the space. A larger space will usually sound darker.
- **Duration** controls the duration of the reverb tail.
- **Decay Start** controls when the reverberated sound starts fading out.
- **Dry** / **Wet** controls the mix amount of dry and reverberated signals.

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