
Hammond B- 3X for iPad User Manual

Hammond B-3X Overview

Chapter 1 – Hammond B-3X Overview

1.1 Introduction

Hammond B-3X is a virtual instrument that provides the full experience of playing a Hammond organ through a Leslie speaker and chain of effects. There are four tabs at the top of the Hammond B-3X interface that take you through the complete signal flow of the instrument. Use these tabs to quickly and easily craft your organ sound with familiar controls:



1.2 ORGAN tab

The Organ tab is where it all begins. Here you can see all of the classic panel controls of the legendary Hammond organ including the drawbars, percussion and chorus-vibrato as well the Leslie half-moon speed control switch. The expression slider at the right controls the output volume of the organ that is fed to the effects chain and Leslie speaker. Tap the drawbars icon at the left of the keyboard to show the inverted keys, the drawbar settings keys. Like on a classic hardware Hammond B-3, these keys store drawbar settings that you can instantly recall during

performance.



1.2.1 CONTROLS view

Tap the keyboard icon in the top bar to close the in-app keyboard and show a more focused “Controls View” of the organ. This not only hides but keyboard, but it also zooms the interface to put the emphasis on the drawbars and switches. This view is well-suited for live use when you want to have the easiest access to the organ controls and see the state of those controls as large as possible. Here you see just one set of drawbars at the bottom instead of all three at the top. Use the manual selector buttons to choose which set to view here. In this Controls View, you also have access to sliders for Leslie gain and Leslie volume as well as the spring reverb volume that is pre-Leslie and the Post FX digital reverb that is post-Leslie. Since there is no keyboard in this view, the drawbar settings keys are represented as tappable icons here, and each icon shows a graphical representation of the drawbar setting it holds.

Here you can also assign Hammond B-3X presets to MIDI program change numbers for remote recall during live or session use. Tap the list icon at the upper right to open the MIDI Program Change panel.



1.2.2 ADVANCED button (dial icon)

Tap the dial icon to open the Advaned panel. The Advanced panel is where you can fine-tune the inner workings of the organ including the amount of generator leakage, key click volume and color, percussion volume and decay time and chorus presence and mix.



1.3 STOMPS tab

The Stomps tab is next in the signal flow. The output of the organ goes into a stomp box pedal board with five fixed serial monaural effects: overdrive, graphic equalizer, wah-wah, stomp box chorus-vibrato and spring reverb control. Each stomp box can of course be enabled or bypassed, and each one has its own set of familiar controls to shape your organ tone before it goes into the cabinet section. Here you can also show and hide the in-app keyboard. When the keyboard is displayed, the stompbx interface slightly shrinks in size to accommodate it.



1.4 CABS tab

The Cabs tab is next. The Stomps pedal board feeds a parallel cabinet section where the signal is split to a Leslie speaker and guitar amp and then mixed back into stereo along with the direct signal. The Leslie has different amp and cabinet models available that can be mixed-and-matched like our AmpliTube and T-RackS Leslie plug-ins. Going further in Hammond B-3X, you can even use a guitar amp head as the amp for the Leslie cabinet. Then there is a separate guitar amp with selectable models, each with its own 4x12 cabinet. Finally, the mixer section lets you adjust the volume and panning of the four mics on the Leslie cabinet along with the volume of the parallel guitar amp and direct signal. Like the Stomps tab, here you can also show and hide the in-app keyboard. When the keyboard is displayed, the Cabs interface slightly shrinks in size to accommodate it.



1.5 POST FX tab

The Post FX section is the final element in the signal chain. After the cabinet section, you can apply traditional recording studio effects to master your organ sound using three fixed, serial effects: a FET limiter, a console equalizer and an algorithmic digital reverb. Like the Stomps and Cabs tabs, here you can also show and hide the in-app keyboard. When the keyboard is displayed, the Post FX interface slightly shrinks in size to accommodate it.

1.6 Master Volume

The app has a master volume slider which you can access by tapping the speaker icon at the top right. This also turns red to serve as a clipping meter when the output of the application is overloaded.



1.7 Settings (gear icon)

Tap the gear icon at the top right to open the Settings window where you can select and set your audio and MIDI interface, tune and transpose the instrument, and set the MIDI channels and continuous controller assignments for the most used parameters.

1.8 Registration

Register the software with IK Multimedia by tapping the user icon at the right of the top bar and then selection “Account.” Here you can enter your IK user ID and password or create a new account with IK if you don’t have one.

1.9 Features

- The first official Hammond organ virtual instrument designed in cooperation with the actual Hammond Organ Company in Chicago
- Official Leslie with 7 amps and 5 cabinets that can be mixed and matched
- Parallel guitar amp section with 2 guitar amp models and 4x12 cabinet
- 5-effect stomp box pedalboard for ultra-flexible tonal shaping

- 3-effect studio post FX section for final polish and mastering
- Advanced organ editing for tonewheel model selection, generator leakage, key click, tonal balance, percussion and chorus detailed adjustments
- Zoomed-in Controls view for live or session use
- 24 drawbar settings available within each preset
- MIDI program change preset assignments
- Assignable MIDI continuous controllers for use with external controllers
- AUv3 plug-in compatibility for use inside recording apps

Getting Started with Hammond B-3X

Chapter 2 – Getting Started with Hammond B-3X

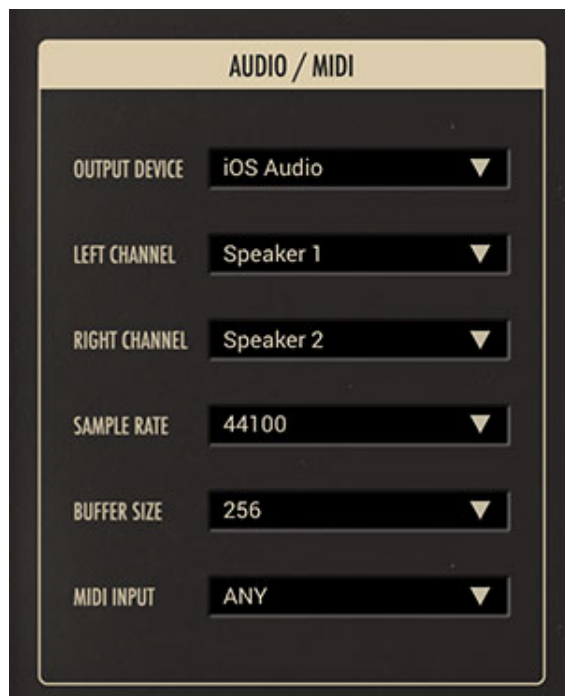
Hammond B-3X can be used as a standalone app or as a plug-in.

2.1 Using Hammond B-3X as a standalone app

Launch Hammond B-3X from its icon on your home screen to use it without a host app such as a digital audio workstation (DAW). This allows Hammond B-3X to run as a self-contained software instrument. For example, you can use Hammond B-3X for live performances when there is no need for a complex sequencer setup or in a second device that is dedicated to virtual instruments as each manual of the organ can be triggered from an individual MIDI input.



When launching the Hammond B-3X app for the first time, you need to set the audio output and MIDI input. This is accomplished in the Settings window that can be opened by tapping the gear icon at the top right. Configure the Audio / MIDI fields to use with your studio or live setup.



2.1.1 Audio / MIDI

Tap the Audio / MIDI tab to set up your audio output and MIDI input. Hammond B-3X is compatible with Core Audio audio interface.

Output device

Choose which available audio interface you want to use with Hammond B-3X.

Left channel / Right channel

Set which output from your chosen output device Hammond B-3X will use for its left and right output.

Sample Rate and Buffer Size

The sample rate and buffer sizes drop-down menus let you choose your settings for Hammond B-3X. These settings are dependent on the audio interface as not all audio interfaces provide the same sample rate or buffer setting options. For the best performance in Hammond B-3X standalone, set the buffer as low as possible without hearing clicks and pops. This will provide the lowest amount of latency, the delay between playing a note and hearing the sound. Higher sample rates such as 96kHz will deliver better sound quality but at the expense of a higher CPU load.

MIDI Input

This drop-down menu determines which MIDI input of your device that Hammond B-3X will respond to. Any MIDI interface supported by device's operating system will work with Hammond B-3X.



2.1.2 Info

Tap the Hammond logo at the top right to find the specific software version number of Hammond B-3X along with additional information about the product.

2.2 Using Hammond B-3X as a plug-in

In addition to a standalone app, Hammond B-3X also works as an AUv3 plug-in instrument in major host applications such as GarageBand, Cubasis, AUM and others.

Consult your host app's user guide for specific instructions on how to use virtual instruments.



2.3 Pitch

There are three controls to adjust the master pitch of Hammond B-3X:

2.3.1 Master Tune Knob

This control changes the global pitch +/- 99 cents.

2.3.2 Transpose Knob

This control changes the incoming MIDI notes to Hammond B-3X in half steps with a range of +/- 12 semitones.

2.3.3 Pitch Bend

This field sets the pitch bend range in half steps with a range of 0 – 12 semitones. The range is the same for bending up and down.



2.4 MIDI Channels

A single instance of Hammond B-3X can respond to up to four MIDI channels:

2.4.1 Upper Manual

Set the MIDI channel for the upper manual, the top keyboard.

2.4.2 Lower Manual

Set the MIDI channel for the lower manual, the bottom keyboard.

2.4.3 Pedal

Set the MIDI channel for the pedal manual.

2.4.4 Program Change

Set the MIDI channel on which Hammond B-3X will respond to MIDI Program Change messages. Note that you must assign some presets to MIDI Program Change numbers on the Controls View in order for Hammond B-3X to respond to PC messages. For more information, see section 4.1.6 The MIDI Program Assignments Button.



2.5 MIDI Controllers

Hammond B-3X responds to MIDI Continuous Controller messages (MIDI CCs) to remotely change its settings. You can assign a MIDI CC of your choice to the listed parameters by tapping the CC value and typing a new one.

2.5.1 MIDI Learn and Reset Assignments

You can also press and hold the value to open a contextual menu where you can select “Learn...” Tap the “Learn...” option and then move your desired controller to instantly assign it to the parameter. Here you can also reset the selected parameter to its factory assignment or reset

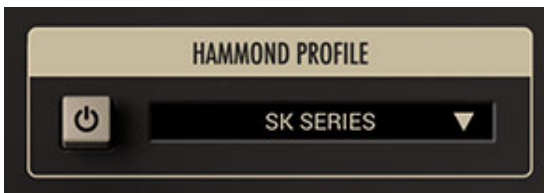
all of the parameters to their factory assignments.

2.5.2 Latch Controller

Tap the Latch button for any controller to convert a momentary switch – such as a sustain pedal – into a standard on/off switch. This is particularly useful for using the sustain pedal to change the Leslie Speed. With Latch on and Leslie Speed set to CC64 (sustain pedal), the Leslie Speed will change when you depress the sustain pedal and will stay at the new speed when you release the pedal. Then when you depress the pedal a second time, the speed will change again.

2.5.3 Invert Controller

Tap the “Inv” button for any controller to invert its behavior. This lets you customize Hammond B-3X to work with any MIDI controller keyboard or other other control surface. This can be especially useful for assigning typical MIDI controller sliders to the Hammond B-3X drawbars which are “inverted” from traditional faders. The original Hammond hardware drawbars increase the volume as they move down. Of course, usually a slider increases the volume when it moves up. So by tapping the Invert button, you can simulate this with a typical MIDI controller slider so that it is at its maximum value in the fully down position, and at its minimum value in the fully up position.



2.5.4 Hammond Profile Selector

Hammond B-3X is designed to work with the current line of Hammond-Suzuki digital organ products as well as the legacy XK-3 and XK-3c. Connect the MIDI Out of your Hammond-Suzuki product to your device using an audio and MIDI interface for iOS such as iRig Pro I/o or iRig Pro Duo, and then select the Hammond model series from the drop-down menu to let Hammond B-3X respond to the panel controls of the Hammond keyboard. Turn the Hammond Profile On / Off with the switch. Note that the Hammond Profile works alongside the MIDI Controller assignments in the section above. This allows you to use a Hammond keyboard along with another controller like an iRig Keys, Keys IO or third party controller.



2.6 Presets

Hammond B-3X has presets that are loaded from the drop-down menu at the center top of all windows. The Hammond B-3X preset includes all of the settings on Organ, Stomps, Cabs and Post FX tabs including the Advanced window settings. The preset also includes the drawbar preset settings for each of the 24 inverted keys on the upper and lower manuals.

2.6.1 Loading Presets

Tap the preset name to view the list, and scroll up or down to browse all the available presets. To load a preset, simply tap a preset name in the list.

2.6.2 Managing Presets

Tap the preset manager “hamburger” icon to the right of the preset name to view preset manager. Here you can Save, Save As... or Delete presets.

2.6.3 Setting the Default State

You can set the current state of the instrument as the default setting so that when you launch a new instance, it always starts up in that state. To do this, open the preset manager and tap “Set As Default.” If you prefer to revert to the factory default settings, then open the preset manager and tap “Restore Factory Defaults.”

The Organ Tab

Chapter 3 – The Organ Tab



3.1 Overview

Think of the Organ tab as the “home page” of Hammond B-3X. Here you see a representation of the virtual organ with its in-app that selects between two keyboard manuals and pedals along with a set of drawbars for each manual, inverted drawbar preset keys, switches for percussion and chorus-vibrato, an expression pedal for the organ output volume and the classic “half-moon” switch for changing the Leslie speed.

On the classic hardware Hammond B-3, the upper keyboard is called the “Swell” manual, and the lower keyboard is called the “Great” manual. It is important to understand these historical terms as they pertain to the chorus-vibrato switches.

There are two buttons that open different windows for the organ: the Controls View and the Advanced window.

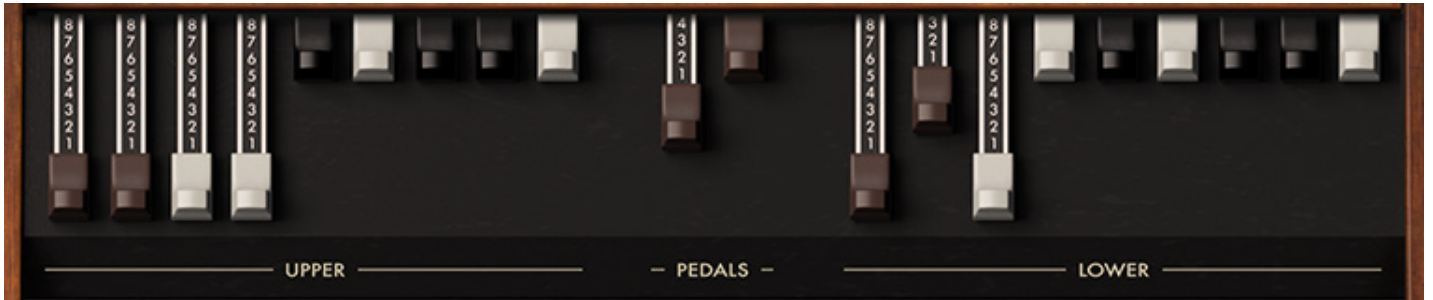
The Controls View is a zoomed-in view of just the organ controls without showing the keyboards or pedals, and this view also lets you assign Hammond B-3X presets to MIDI program change

numbers. Tap the keyboard icon in the top bar to hide the in-app keyboard and open the Controls View.

The Advanced window provides detailed adjustments for the inner workings of the organ including tonewheel model selection, tonal balance, generator leakage, key tap volume and color, percussion decay length and volume, and chorus presence boost and mix amount. Tap the dial icon at the top left to open the Advanced window.

Each of these windows has their own dedicated chapter.

3.2 Drawbars



The tone of the Hammond organ is set using nine drawbars for the keyboard, each with a range of 0 to 8. The drawbars determine that volume at which each generator plays based on the note played on the keyboard. It is a complicated matrix inside the organ that makes this work, and this architecture very much defines the sound of the Hammond organ. There are three sets of drawbars: one for the upper keyboard, one for the lower keyboard, and one for the pedals. The upper and lower sets each have nine drawbars; The pedal set has just two drawbars.

3.2.1 Drawbar Tuning

The drawbars go from low to high moving from left to right. Each drawbar represents a pipe organ length in feet. The third drawbar from left is the 8' drawbar, and this pipe length corresponds to the octaves of a piano. This means that middle C with the 8' drawbar is the same frequency as the middle of a piano.

3.2.2 Drawbar Labels and Descriptions

For each drawbar, here are the pipe length labels, the classical name and musical intervals for the nine drawbars moving from left to right going from low to high:

- **16' Bass.** This the sub-harmonic, one octave below the fundamental.
- **5 1/3' Quint.** This is the 3rd harmonic of the sub-harmonic, an octave and a fifth above the Bass drawbar. Note that this drawbar is a higher frequency than the fundamental even though the actual drawbar is positioned below the fundamental. This is because the Quint is related to the Bass (sub-harmonic) and is hence located next to it.
- **8' Neutral.** This is the fundamental frequency, the same octave as a piano.
- **4' Octave.** This is the second harmonic, one octave above the fundamental.
- **1 2/3' Nazard.** This is the 3rd harmonic of the fundamental, an octave and a fifth above the sub-harmonic.
- **2' Block Flute.** This is the fourth harmonic, two octaves above the fundamental.

- **1 3/5' Tierce.** This is the fifth harmonic, two octaves and a major third above the fundamental.
- **1 1/3' Larigot.** This is the sixth harmonic, two octaves and a fifth above the fundamental.
- **1' Siff flute.** This is the eighth harmonic, three octaves above the fundamental.

The pedals have just two drawbars since they are intended to create only bass sounds: 16' and 8'.

Each of the three manuals has its own set of drawbars that is displayed at the top of the window. The drawbars always show the current state of the tone generator mix. So the drawbar settings you see always represents the drawbar sound you hear. Since Hammond B-3X is a software instrument, we can take advantage of the dynamic software interface to always show the current position of the drawbars.

The advantages of a software instrument become apparent when you select a drawbar settings key using the 12 inverted keys at the left of each keyboard. Here is some historical information so you can understand what was done originally, and what has evolved in Hammond B-3X:

On the hardware Hammond organs, the C# through A keys select a fixed drawbar setting that is independent of that actual physical drawbars. The A# note selects the first set of drawbars at the left, and the B note selects the second set of drawbars to the right. The C note cancels the drawbar selection altogether and essentially mutes the organ.

Hammond B-3X deviates from this classic scheme because we do not have the same limitations as analog hardware. Hammond B-3X still has drawbar settings on the inverted keys, but here we take advantage of the software platform and dynamically move the drawbars to reflect each drawbar preset selected. This would be impractical on a hardware Hammond organ since this could only be accomplished with mechanically motorized sliders. This also allows Hammond B-3X to use all 12 inverted keys of each manual for drawbar settings instead of just 9 of them on the original hardware instruments.

3.3 Drawbar Setting Keys

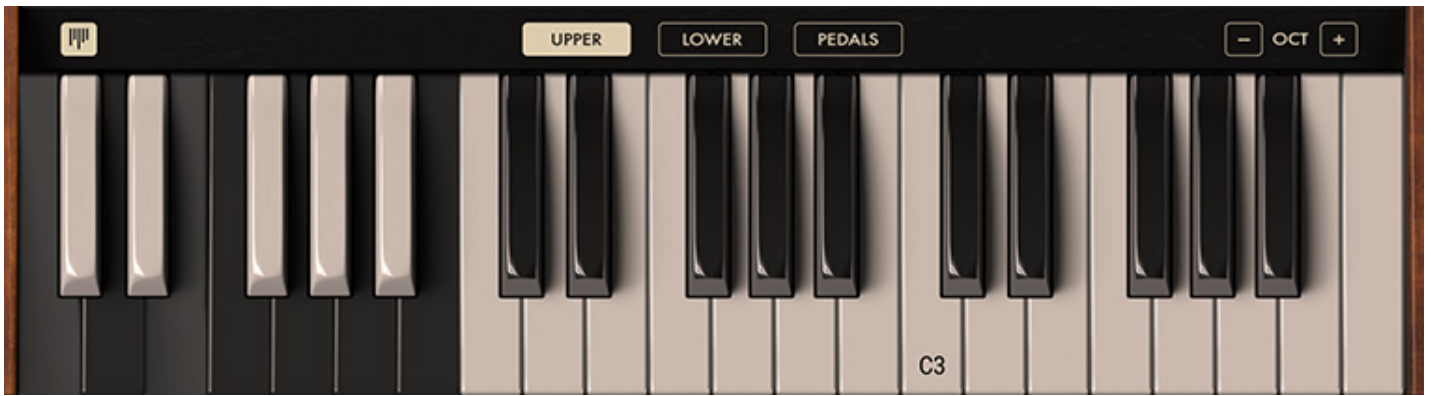


Like the hardware Hammond organ, Hammond B-3X has 12 inverted keys at the left of each keyboard which are nothing more than switches to instantly load drawbar settings. A “drawbar setting” is simply the position of the nine drawbars for the keyboard. Each inverted key is an individual drawbar setting. To load a drawbar setting, simply press its inverted key. You do not need to save individual drawbar setting keys – the drawbar settings are saved when you save the preset. The selected inverted key is automatically updated with the current position of the drawbars. So if you change a drawbar preset and want to revert to saved version, then reload the regular preset from the preset drop-down menu at the center top. Each Hammond B-3X preset stores the state of all 24 of the inverted drawbar setting keys. This allows you to set up 24 different drawbar combinations within each preset.

3.3.1 Drawbar Settings vs. Presets

It is important to understand the hierarchy here. The “drawbar setting” is a subset of the “preset.” The “preset” stores all of the information on the Organ, Stomps, Cabs and Post FX windows, and then the “drawbar settings” are a subset of that preset – each preset contains the 24 different drawbar settings (12 on each keyboard) that are stored with it. This again deviates a bit from the hardware Hammond organ where the inverted drawbar setting keys are always the same. This is because there are obviously no “presets” on a hardware Hammond organ that store the all the settings like the state of the percussion and chorus-vibrato switches, the Leslie speed and settings, other effects, etc.

3.3.2 Managing Drawbar Settings



If you would like revert an individual drawbar setting the factory settings, press and hold the inverted key for the desired drawbar setting and select “Restore Factory Setting.” Similarly, you can copy and paste drawbar settings from one inverted key to another by pressing and holding the source and destination keys and using the copy and paste functions respectively.

3.4 Percussion



Hammond B-3X recreates the classic “percussion” sound of the original hardware Hammond B-3 and C-3 organs. The percussion is a decaying element that sounds at either 2nd or 3rd harmonic and is added to main sustaining organ tone. The original intention was to emulate the crisp attacks of marimba, xylophone and harp. However, over time, the “Hammond percussion” sound has become known as an identifiable and stylized timbre all its own. Percussion is only available on the upper keyboard – the swell manual – same as the original B-3 and C-3 hardware organs.

There are four white rocker switches at the upper right of the organ that control the percussion:

3.4.1 Percussion On/Off Switch

Set the PERC switch to On or Off to enable or disable the percussion. Note again that percussion is only playable from the upper keyboard.

3.4.2 Percussion Volume Switch

The PERC VOLUME switch sets the level of percussion in relation to the regular sustaining organ tone. Choose between SOFT and NORMAL.

3.4.3 Percussion Decay Switch

The PERC DECAY switch sets the decay time of the percussion. Choose between FAST and

SLOW.

3.4.4 Percussion Harmonic Switch

The PERC HARM SEL switch selects at which harmonic the percussion will play. Chose between SECOND and THIRD. The second harmonic is an octave above the fundamental; The third harmonic is an octave and a fifth above the fundamental.



Tap the ADVANCED button (dial icon) at the top left of the organ window to access additional controls for the percussion. Here you can fine-tune the overall percussion decay length and the volume. There is also a switch available called “Volume Compensation” that keeps the regular sustaining organ tone from dropping in volume when the percussion is enabled. This is a common modification in hardware Hammond B-3 instruments, so the option is provided here in software as well.

3.5 Chorus-Vibrato



Hammond organs offer a chorus-vibrato effect that is generated by a mechanical scanner and electronic delay lines. “Vibrato” is the effect alone, and “chorus” is a mix of the effect with the dry signal. The speed of the effect is fixed – it is derived from the generator run motor on the hardware Hammond organs. There are three depths of vibrato and chorus that can be selected using the “Vibrato and Chorus” knob. The effect can be applied to the upper and lower keyboards independently. When the chorus is selected, there is a slight high frequency presence boost applied to the sound.

There are three controls at the upper left of the organ to control the Chorus-Vibrato:

3.5.1 Vibrato Swell Switch

The VIBRATO SWELL switch enables the chorus-vibrato effect for the Swell manual, the upper keyboard.

3.5.2 Vibrato Great Switch

The VIBRATO GREAT switch enables the chorus-vibrato effect for the Great manual, the lower keyboard.

3.5.3 Vibrato and Chorus Selector Knob

The VIBRATO AND CHORUS knob is a rotary switch that selects between three different depths for vibrato and chorus. V1, V2 and V3 are the three vibrato depths with V1 as the minimum depth and V3 as the maximum. C1, C2 and C3 are the three chorus depths with C1 as the minimum and C3 as the maximum.



3.5.4 Chorus Advanced Controls

Tap the ADVANCED button at the bottom left of the organ window to access additional controls for the chorus effect. Here you adjust the mix of the chorus by changing the balance of the effect and dry signal +/- 20%. Often a straight 50/50 is not desired, so here you have some additional control to customize your sound. You can also adjust the amount of high frequency presence boost that is applied when the chorus effect is selected.

3.6 Other Organ Controls

The Organ window also has an Expression pedal and a half-moon switch for Leslie speed.

3.6.1 Expression Slider

The Expression slider controls the master output volume of the organ. This is the level that feeds the Stomps, Cabs and Post FX in the same way that the volume knob on a guitar affects the input level of all effects that come after it. The Expression slider can be useful to adjust the overdrive gain of the various amps and effects in real-time since more volume from the organ will drive the amps and effects harder.

3.6.2 Leslie Speed Switch



At the lower left of the organ is the famous Leslie half-moon switch that lets you change the speed of the Leslie horn and drum from fast to slow. There is also a separate button available for the Brake which stops the horn and drum from rotating. Hammond B-3X presents the Brake as a separate switch from the slow and fast speed switch so that different MIDI controllers can be used for the speed and the brake. The state of the Leslie speed is also mirrored on the CABS SETUP panel where you can also fine-tune the rates of both the fast and slow settings as well as the acceleration and deceleration of the horn and drum when changing between speeds.

The Controls View

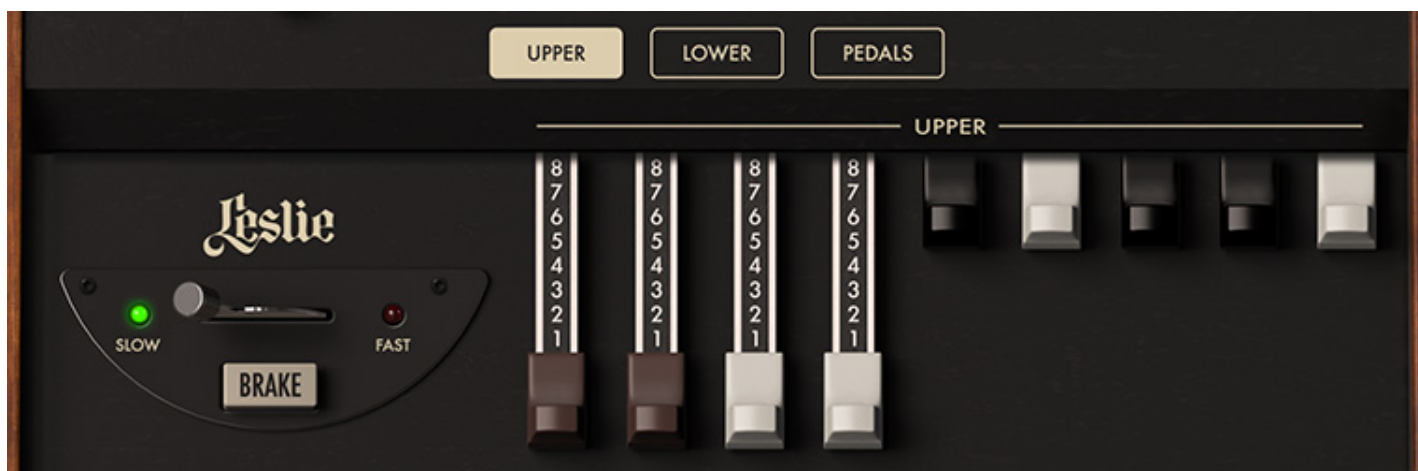
Chapter 4 – The Controls View



4.1 Overview

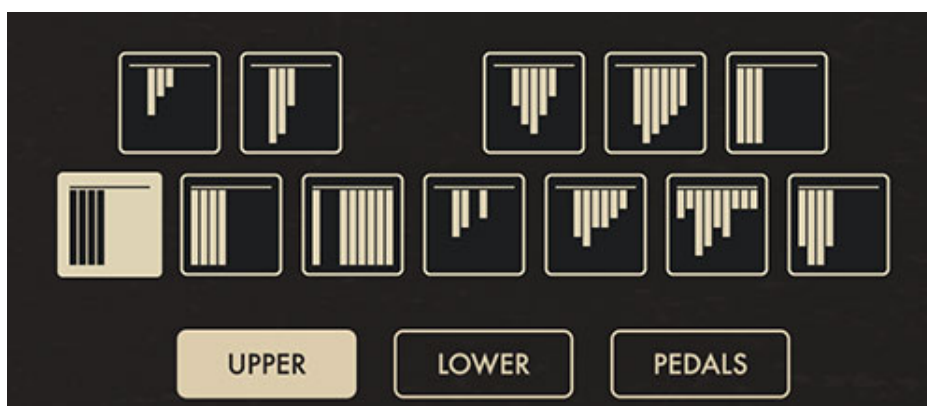
From the Organ tab, tap the CONTROLS button (dial icon) at the top left to open the Controls View. The Controls View zooms in on the organ controls and hides the keyboard. This view is intended for live performance where you need to see the actual controls of the organ more prominently.

4.1.1 Drawbars



One selectable set of drawbars is displayed larger here and moved to the bottom of the screen so you can press and slide them more easily. The functionality is the same as on the main Organ tab view.

4.1.2 Drawbar Settings



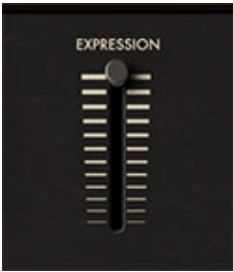
Since there are no inverted keys in the Controls View (no keys at all, in fact!), the Drawbar Settings are presented here as buttons above the selected set of drawbars. The buttons show a graphic representation of the drawbar levels for each drawbar setting. Tap a Drawbar Setting button here to instantly load it. You can also press and hold a Drawbar Setting to manage it in the same way as on the main Organ tab view to Copy, Paste or Restore Drawbar Settings.

4.1.3 Percussion and Chorus-Vibrato Switches



The four percussion switches, the three chorus-vibrato switches and the Vibrato and Chorus selector knob have the identical functionality as the main Organ tab view. They are just a bit larger here and more spread out for easier identification and quick access.

4.1.4 Expression Slider



The Expression slider here is the same as on the main Organ tab view.

4.1.5 Reverb Sliders



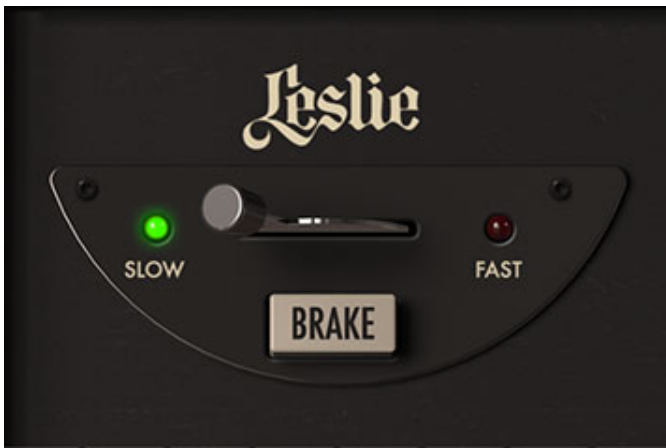
There are two sliders to set the level of two different reverb units in Hammond B-3X. The Stomp Reverb slider controls the mix level of the Spring reverb stomp box on the STOMPS tab. Any changes to the control will be mirrored on the STOMPS tab and vice-versa. The Post FX Reverb slider controls the mix of the digital reverb effect in the POST FX tab. Similarly, any changes made here will be mirrored on the POST FX tab.

4.1.6 Leslie Gain and Volume Sliders

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There are two sliders to set the gain (overdrive) of the Leslie amp and the output level of the Leslie. Since adding gain also increases the volume, you can use these sliders together to get the amount of overdrive you want while keeping the volume under control. Like the Reverb sliders, these controls are mirrored on the CABS tab on the Leslie Amp and Mixer panels. Adjusting the controls here in the ORGAN tab will affect the same controls on the CABS tab and vice-versa.

4.1.7 Leslie Half-Moon Switch

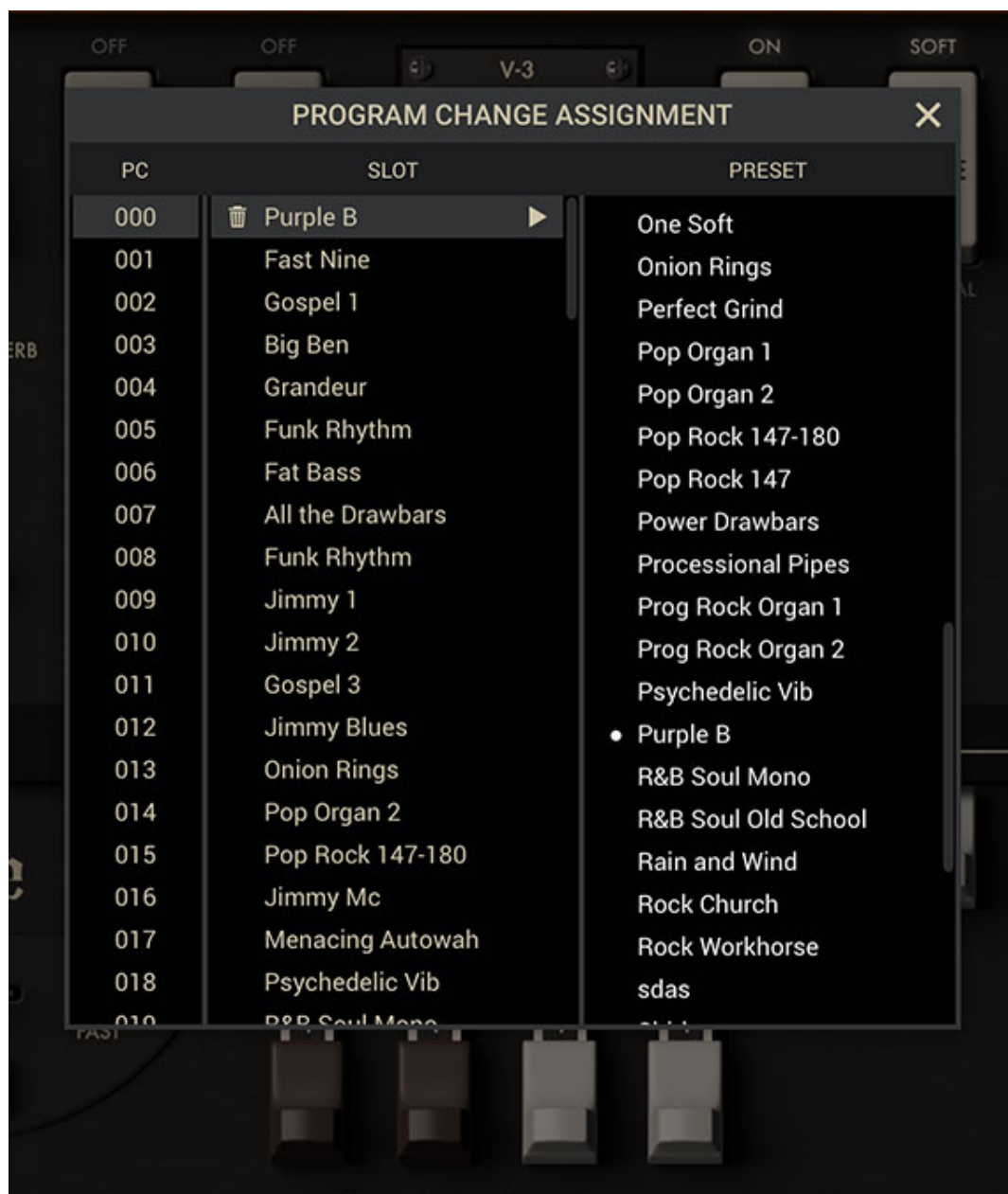


The functionality is identical to the main Organ tab view. Here you can change the speed of the Leslie from slow to fast and also use the Brake to stop the horn and drum from spinning. The controls are enlarged here for easier identification and access.

4.1.8 The MIDI Program Assignments Button

This is an element that is unique to the Controls View. Tap the list icon at the upper right of the wooden panel to open the MIDI Program Change Assignments window.

4.1.9 MIDI Program Assignments



Here you will see a list of the MIDI Program Change numbers from 0 to 127 in the left column. The next column lets you assign any of the Hammond B-3X presets to a MIDI Program Change number so that when the instrument receives that PC change message, the assigned preset will automatically load. Tap a cell in the second column to view the list of all the available presets, then simply tap of those presets to assign it to the MIDI Program Change number. To remove the assignment, tap the Trash Can icon at the left of the cell.

Note that MIDI Program Change assignments are necessarily stored globally for the instrument and not stored with the preset.

The Advanced Panel

Chapter 5 – The Advanced Panel



5.1 Overview

Tap the ADVANCED button (dial icon) at the upper left of the ORGAN tab view to open the Advanced Panel. This provides several under-the-hood controls to let you fine-tune your organ and customize its sound to suit your song and production. All settings on the Advanced Panel are stored with the preset. So you can change these settings for different songs and recall them at will.

5.2 The Tonewheels Section



This section of the panel adjusts the tonewheels, the actual sound generators of the organ. The hardware Hammond organ uses 91 spinning tonewheels to generate all of the needed pitches in the instrument. The tones are mixed together in a matrix based on the drawbar positions and the notes played. Here you can control the tonewheels further.

5.2.1 Model Selector



We have modeled the tonewheels of several different classic hardware Hammond organs to capture the unique color and personality of each. Choose a tonewheel set from the drop-down menu. The tonewheel models are listed by the musical genre that they most closely are affiliated with, then the model of the actual Hammond organ (B-3, C-3, A-100, etc.), and then the serial number of the specific instrument modeled.

5.2.2 Tonal Balance

This knob sets the balance of the higher frequency tones to the rest of the tone generators. Positive values give you a brighter sound, and negative values give you a darker sound. The center position is the natural, authentic sound of each tonewheel set.

5.2.3 Generator Leakage

The 91 tonewheels are positioned in close proximity to each other, and they are arranged with harmonious tonewheels next to each other. This is because there is an inherent crosstalk or “leakage” between the tonewheels. The generator leakage has become a signature aspect of the Hammond organ sound. This control lets you adjust the amount of leakage or crosstalk between the tonewheel generators. The center position (5.00) is the natural, authentic sound of each tonewheel set. Values above this increase the generator leakage for a more “dirty” sound; Values below this decrease the amount of leakage for a more “clean” sound. Note that extreme values here may make the organ sound unnaturally clean or dirty. Adjust to taste.

5.2.4 Key Click On

When a key is pressed, it opens a “gate” for the mixed tones to sound. The tonewheels are

continuously running and do not start and stop with each key press and release. Therefore, it is common to catch the combined tones somewhere in their wave cycle that is not a “zero crossing,” and clicking sound results. Because the hardware Hammond organ sound generation is wholly analog, the non-zero crossing click is actually a pleasing, percussive sound and different than the digital clicks that occur with poorly edited samples or audio tracks. Hammond B-3X has modeled this analog key click sound, and you can adjust the volume of it here. This controls sets the level of key click when the note is pressed down.

5.2.5 Key Click Off

The same kind of click occurs when the note is released. But you may want to set the volume of the note release click to a different level than the note on click, depending on your playing technique. The note release click can be a prominent percussive sound, so if you don't release your notes in time with the music, this can become distracting and unwelcome. Use the Key Click Off knob to set the volume of your note release key click accordingly.

5.2.6 Key Click Color

The key click sound is naturally quite bright. You may want to darken the click sound to make it less prominent, or conversely, you may want to brighten the click sound to make it more dominant for super-rhythmic playing. Use the Key Click Color knob to adjust the spectrum of the click sound to suit your style and taste.

5.3 The Percussion Section



There are three controls available here to fine-tune the percussion system of your organ.

5.3.1 Percussion Volume Knob

The percussion is calibrated to match the volume of most classic Hammond organs. However, you may to emphasize or de-emphasize the percussion for a particular song. This control lets you adjust the overall volume of the percussion by 20% up or down. This trimming adjustment affects both states of the PERC VOLUME switch.

5.3.2 Volume Compensation Switch

The traditional behavior of the hardware Hammond organ is that when the PERC VOLUME is in the NORMAL position, the volume of the main sustaining organ tone drops. Many organs have been modified to keep the main sustaining tone at the same volume and just add in the

percussion. This switch represents that popular modification. Turn the Volume Compensation switch on to keep the main sustaining organ tone at the same level when the percussion is enabled. For stock factory Hammond organ behavior, set this switch to the off position.

5.3.3 Decay Time Knob

This control trims the overall decay of the percussion for both the fast and slow decay times. The percussion decay is calibrated to match the time of most classic Hammond organs, but again, you may want to lengthen or shorten the decay time to suit a particular song.



5.4 The Chorus Section

The chorus effect is created in the organ when the vibrato is mixed in with the dry signal. These controls let you fine-tune the sound of the chorus effect.

5.4.1 Presence Boost

The way the chorus effect is created in the Hammond organ results a high frequency presence boost. We have modeled the authentic presence boost, but you may want to increase this for a specific song. Use this control to increase the high frequency presence boost when one of the chorus depths is selected.

5.4.2 Chorus Mix

A perfectly calibrated Hammond organ chorus has the vibrato signal and dry signal mixed together at a 50/50 balance. But over time, this balance can change as components age. Some players prefer a slightly different balance – either with slightly more vibrato signal or slightly more dry signal. This control lets you change the balance of the vibrato and dry signal by 20% in either direction.

The Stomps Tab

Chapter 6 – The Stomps Tab



The output of the organ goes into a five-effect stomp box pedal board. This lets you add style and color to the basic organ sound before it goes into the Leslie. The five effects are fixed in a serial mono configuration, and the settings of all the effects are stored with the preset.

Here are the five stomp box effects:

6.1 Overscream



Based on Ibanez® Tube Screamer. This is a model of a classic overdrive/distortion pedal which has become the go-to overdrive pedal for some of the most influential guitar players of all time, and it naturally works great on the Hammond organ as well. Its basic controls make it easy to dial in the exact sound you want.

6.2 EQ PG



This classic American studio graphic equalizer was designed as a variation to the standard three and four band console EQs. It uses an all-discrete signal path and proportional Q design with a ten-band graphic approach instead of the semi-parametric three and four band design of other modules.

6.3 Chorus C1



Based on Boss® CE-1. A model of a classic bucket brigade analog Chorus/Vibrato unit. It provides both analog Chorus and analog Vibrato effects, when in Chorus mode the modulation will be lush and slow, when in Vibrato effect the modulation will be faster and more noticeable. Note that the Hammond B-3X version is mono only since the entire stomp box pedal board chain must remain mono to feed the Leslie input.

6.4 Wah



This effect is modeled after the classic wah pedal used often in the 60s and 70s. The filter can be controlled using the pedal or set the AUTO threshold to automatically open the filter based on the input volume.

6.5 Spring Reverb



This reverb sounds very close to a real mechanical spring unit featuring

their signature warmth with that typical metallic and resonant vibe. The effect is monaural.

The Cabs Tab

Chapter 7 – The Cabs Tab



7.1 Cabs Overview

The output of the Stomps is split to feed two parallel amps: a Leslie and a guitar amp. The four mics of the Leslie with the guitar amp are then combined along with the direct signal in a stereo mixer. The Cabs tab has five buttons at the lower left that load different panels where you can adjust specific settings for the Leslie, the guitar amp and the mixer.

7.2 The Setup Panel



Tap the SETUP button to configure the Leslie cabinet miking and adjust the two speeds of the rotating speakers including the acceleration and deceleration times when you change between

slow and fast.

7.2.1 Mic Distance Knob

The Leslie cabinet is miked with four microphones: two on the horn and two on the drum. This control moves all four mics farther away from the cabinet as you it clockwise. For the widest stereo image and most pronounced rotation effect, set this control to its minimum value for a close-miked sound.

7.2.2 Mic Setup Switches

Choose between two miking configurations: 90° and 180°. 90° is the most common miking configuration with all microphones on one side of the cabinet. 180° is an alternate miking technique that creates a wider soundstage and more even rotational sound. Let your ears be the judge as to which miking configuration works best for your song.

7.2.3 Slow Speed, Fast Speed Knobs

These two knobs adjust the rate of the two speeds of the Leslie +/-20% in either direction. The center position is the actual measured rate of the rotating speakers for each speed, but you may wish to slightly adjust those rates to suit your song.

7.2.4 Leslie Speed Control Switch

This is the same control as the half-moon switch on the Organ tab view. It is included here as a simple slider switch for convenience so you can quickly switch between the slow and fast speeds when dialing in any rate changes for the rotating speakers.

7.2.5 Acceleration Knob

This knob lets you change the rate of the acceleration when you switch from the slow speed to the fast speed. The range is 0.25X to 4X the actual calibrated rate of the rotating speakers.

7.2.5 Deceleration Knob

This knob lets you change the rate of the deceleration when you switch from the fast speed to the slow speed. The range is 0.25X to 4X the actual calibrated rate of the rotating speakers.

7.3 The Leslie Amp Panel



Tap the LESLIE AMP button to independently select the amplifier model and the cabinet model, adjust the gain of the amp, set the input high pass filter frequency, adjust the amp's 3-band

equalizer and set the Leslie output volume.

7.3.1 Amplifier Selector

Choose the amplifier for the Leslie. Like our AmpliTube and T-RackS Leslie plug-ins, you can mix-and-match different amplifiers with different cabinets to custom-configure your Leslie exactly the way you want. Choose between the model 147, classic 122, modern 122A, 3300W and G37 / Studio 12 Leslie amps or two tube guitar amps, the British Lead, based on the Marshall® Plexi S100, and the HiAmp, based on the Hiwatt® Custom 100 DR 103. You can also choose “No Amp” to remove any amplifier coloration from the sound and just use the rotating speaker element on its own.

7.3.2 Gain

Set the gain of the Leslie amplifier. Higher values will generally provide overdrive and distortion unless the output of the organ is extremely low. Note that the setting of the effects on the Stomps tab will affect the gain of the Leslie amplifier.

7.3.3 Input HPF

This is a high-pass filter on the input of the Leslie amplifier. Turn the control clockwise to cut unwanted low frequencies. This can be especially useful with higher gain settings where the low frequencies can drive the distortion more than you may want. Note that the Input HPF is not available on all of the amp models.

7.3.4 Amplifier EQ

This is a typical 3-band equalizer like those that appear on guitar amplifiers. Use this EQ to sculpt the basic tone of the Leslie with 12dB of boost or cut before the rotating speaker effect.

7.3.5 Leslie Volume Knob

This controls the output volume of the Leslie. This is the same control as the “Leslie” knob that appears in the Mixer Panel. It is provided in both locations for convenience.

7.4 Leslie EQ Panel



Tap the Leslie EQ button to view the Leslie Equalizer. This is a stereo processor that EQs the

microphones. It has a high and low shelf band with adjustable corner frequency and a true parametric midrange with Q control. All bands have a range of $\pm 15\text{dB}$. Note that this is a separate EQ from the Leslie Amp EQ on the Leslie Amp Panel. Between these two equalizers, you have access to tremendous tonal sculpting power to get your Leslie cabinet sounding exactly the way you imagine it.

7.5 Guitar Amp Panel



Hammond B-3X has a dedicated guitar amp that runs in parallel with the Leslie.

7.5.1 Amp Model Selector

Select the model of guitar amp to use between British Lead (based on the Marshall Plexi S100) and HiAmp (based on the Hiwatt Custom 100 DR103).

7.5.2 Guitar Amp EQ Knobs

Use the Bass, Middle, Treble and Presence knobs to sculpt the tone of the guitar amp. Note that the British Lead and HiAmp models have different amplifier topologies, so the EQ settings affect the gain of each amp model differently. The guitar amp EQ can also be extremely useful when blending in the guitar amp with the Leslie.

7.5.3 Spring Reverb Knob

This controls the volume of the spring reverb effect in the guitar amp. Note that this is a separate spring reverb from the Spring stomp box pedal on the Stomps tab and the Digital Reverb on the Post FX tab. If you find that your sound is too reverberant, check the levels of the Spring on the

Stomps tab, the Spring Reverb in the guitar amp and the Digital Reverb on the Post FX tab.

7.5.4 Guitar Amp Volume Knob

This is the master output level of the guitar amp. It is the same control as the “Guitar Amp” knob in the Mixer Panel. It is provided in both locations for convenience.

7.6 The Mixer Panel



The last button on the Cabs tab opens the Mixer Panel. Here you can set the volume and pan position of the four microphones on the Leslie cabinet, adjust the combined volume of those four Leslie mics, and also set the volume of the guitar amp and the direct signal.

7.6.1 Drum L and R Volume Knobs

These knobs set the level of the left and right microphones on the Leslie drum, the bass speaker of the cabinet.

7.6.2 Drum Link Switch

This switch links the volume of the left and right microphones on the Leslie drum so that when you move one knob, the other automatically moves with it.

7.6.3 Drum Pan Sliders

The sliders above Drum L and Drum R knobs set the pan position of the left and right microphones on the Leslie low frequency drum. They are panned out wide left and right by default, but you can change the panning here to suit your song.

7.6.4 Horn L and R Volume Knobs

These knobs set the level of the left and right microphones on the Leslie horn, the high frequency speaker of the cabinet.

7.6.5 Horn Link Switch

This switch links the volume of the left and right microphones on the Leslie horn so that when you move one knob, the other automatically moves with it.

7.6.6 Horn Pan Sliders

The sliders above Horn L and Horn R knobs set the pan position of the left and right microphones

on the Leslie high frequency horn. They are panned out wide left and right by default, but you can change the panning here to suit your song.

7.6.7 Leslie Knob

This controls the master volume of the Leslie. It is the mix of all four microphones. Note that this is the same control as the “Volume” knob on the Leslie Amp Panel.

7.6.8 Guitar Amp Knob

This controls the master volume of the guitar amp. It is the same control as the “Volume” knob on the Guitar Amp Panel.

7.6.9 D.I. Knob

This controls the volume of the direct signal before the Leslie and Guitar Amp. The direct signal is the output of the Stomps tab, the signal that then is fed into the Leslie and Guitar Amp. It is often useful to mix in the direct signal with the cabinets for increased clarity.

The Post FX Tab

Chapter 8 – The Post FX Tab



8.1 Overview

After the Leslie, guitar amp and direct signal are mixed together, the stereo signal goes through a “Post FX” section of studio processors. This lets you master your organ sound with studio-quality effects for final polish.

The Post FX tab includes three fixed stereo processors in series:

8.2 Limiter 76



Based on the UREI® 1176 Limiting Amplifier The Limiter 76 is modeled after what is probably the most used, most known, most wanted, and most universally recognized compressor / limiter in the audio industry. There are probably no professionally created records without tracks using this unit. This FET-based compressor is a true legend and a piece of history with a unique sound largely thanks to its input transformer and class A output stage.

8.3 EQ-81



Based on the Neve® 1081 channel strip The EQ-81 delivers that legendary British warmth and tone with a few twists. The key here is in the versatility of the EQ section sporting four independent bands rounded out by high and low pass filters. This effect is particularly useful when a more precise intervention on a track is needed, still maintaining tone and organic, analog warmth in the signal path.

8.4 Reverb



This classic algorithmic digital reverberation effect simulates the sound of rooms and other spaces. Note that this is separate effect from the Spring and Spring Reverb effects on the Stomps and Cab tabs. If you find that your sound is too reverberant, check the levels of all three reverb units in Hammond B-3X.

