Using BOSS TONE STUDIO for KATANA

This document explains basic operation of BOSS TONE STUDIO for KATANA (subsequently referred to as "TONE STUDIO").

MEMO

Operation is described here using the example of the KATANA and the Windows version of TONE STUDIO. Replace the names given here with the names of the devices you're using.

The explanations in this manual include illustrations that depict what should typically be shown by the display. Note, however, that your unit may incorporate a newer, enhanced version of the system (e.g., includes newer sounds), so what you actually see in the display may not always match what appears in the manual.

Getting Ready to Use TONE STUDIO

Important terms in TONE STUDIO

Library

This is a storage area inside TONE STUDIO.

Tone settings (livesets) that you download from BOSS TONE CENTRAL (p. 13) and tone settings that you back up from the KATANA are saved in the library.

Liveset

A liveset is a group of multiple tone settings.

Tone settings that you download from BOSS TONE CENTRAL and tone settings that you back up from TONE STUDIO are grouped as a liveset and saved in the library inside TONE STUDIO.

You can also collect your favorite tone settings to create an original liveset.

Installing the USB Driver

Before you use TONE STUDIO, the appropriate USB driver for the product you're using must be installed on your computer.

1. From the product support page, download the KATANA Driver.

To obtain the latest USB driver, access the following URL, and download and install the appropriate driver for the product you're using.

http://www.boss.info/support/

2. Double-click the downloaded KATANA Driver.

Installation begins.

Proceed with the installation as directed by the installation screens.

When the screen indicates "Installation has been completed." click the [Close] button.

The KATANA Driver has been installed on your computer.

Installing TONE STUDIO

MEMO

Before you install TONE STUDIO, the USB driver must be installed in your computer as described in "Installing the USB Driver" (p. 1).

Windows users

1. Download "BOSS TONE STUDIO for KATANA" from the product support page.

2. Double-click the downloaded file to decompress it.

3. Inside the folder created by decompressing the file, double-click "BOSS TONE STUDIO for KATANA.exe."

Installation begins.

Proceed with installation as directed by the installation screens.

When the screen indicates "Installation has been completed," click the [Close] button.

Mac OS users

1. Download "BOSS TONE STUDIO for KATANA" from the product support page.

2. Double-click the downloaded file to decompress it.

3. Double-click the decompressed file.

A "BOSS TONE STUDIO for KATANA" icon and "Applications folder" icon appear.

4. Drag and drop the "BOSS TONE STUDIO for KATANA" icon onto the "Applications folder" icon.

BOSS TONE STUDIO for KATANA is added to the applications.

Close the folder that you opened in step 3.

Starting TONE STUDIO

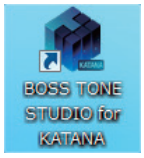
1. Use a USB cable to connect the KATANA to your computer, and then turn on the power of the KATANA.

MEMO

You can edit livesets and download livesets from BOSS TONE CENTRAL even if the KATANA is not connected to your computer via a USB cable.

However, you can't save the result of editing a tone setting. In order to save the edited tone setting, you'll need to be connected to your computer.

2. Double-click the TONE STUDIO shortcut icon.



The first time you start up, the dialog box "Choose a device connect with." appears.

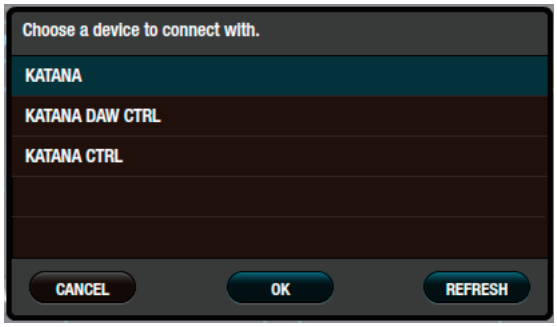
MEMO

On the second and subsequent startups, the device is selected automatically.

Mac OS users

From the Finder, in the application folder, double-click [BOSS TONE STUDIO for KATANA].

3. Choose "KATANA," and click the [OK] button.



TONE STUDIO starts.

MEMO

- Since data will be loaded from the KATANA, it may take some time until you can use TONE STUDIO.
- "KATANA DAW CTRL" is shown only in the Windows version of TONE STUDIO.
- If you accidentally selected "KATANA DAW CTRL" or "KATANA CTRL," you can change your selection via [SYSTEM]–[Device] located in the lower right of TONE STUDIO screen (p. 17).

Editing a Tone Setting

As an example, we'll explain how to edit the tone setting "CH1 KATANA."

1. In the upper left of TONE STUDIO screen, click the [EDITOR] button.

2. Click the tone setting that you want to edit. In this example, click "CH1 KATANA CH1"

3. Edit the amp settings.

You can edit a value by using the mouse to grab the knob and moving it up/down, or by selecting the value shown above the knob and using the keyboard to enter the new value. You can select the AMP TYPE setting by clicking the type names at the left of the knob.

4. **Assign effects to the [BOOSTER/MOD] knob, [DELAY/FX] knob, and [REVERB] knob.**

Select the effect when the [BOOSTER/MOD] button, [DELAY/FX] button, and [REVERB] button are lit green, red, or yellow. For details, refer to "Using Effects" (p. 8) in the owner's manual.

5. **Specify the placement of the effects.**

You can specify the placement of each effect relative to the preamp.

Setting	Explanation
CHAIN 1	**AMP** → BOOSTER/MOD → DELAY/FX → REVERB
CHAIN 2	BOOSTER/MOD → **AMP** → DELAY/FX → REVERB
CHAIN 3	BOOSTER/MOD → DELAY/FX → **AMP** → REVERB

* You can't change the placement of the reverb. It is always placed after AMP and the other effects.

* The EFFECT LOOP SEND/RETURN jacks are always placed after AMP.

6. **Edit the effects that are assigned to the [BOOSTER/MOD] knob, [DELAY/FX] knob, and [REVERB] knob.**

Using the NS (NOISE SUPPRESSOR)

NS (NOISE SUPPRESSOR) reduces the noise and hum picked up by guitar pickups. Since it suppresses the noise in synchronization with the envelope of the guitar sound (the way in which the guitar sound decays over time), it has very little effect on the guitar sound, and does not harm the natural character of the sound.

* This function can be specified only in TONE STUDIO. It cannot be specified on the KATANA unit itself.

7. Click the ON/OFF button in the screen to turn NS on.

8. Use the [THRESH] knob and [RELEASE] knob to adjust the noise.

Parameter	Value	Explanation
THRESH	0–100	Adjust this parameter as appropriate for the volume of the noise. If the noise level is high, a higher setting is appropriate. If the noise level is low, a lower setting is appropriate. Adjust this value until the decay of the guitar sound is as natural as possible. * High settings for the threshold parameter may result in there being no sound when you play with your guitar volume turned down.
RELEASE	0–100	Adjusts the time from when the noise suppressor begins to function until the noise level reaches "0."

Saving an Edited Effect to the KATANA (WRITE)

Here's how to save the edited effect to the KATANA.

1. In the upper right of the TONE STUDIO screen, click the [WRITE] button.

A dialog box appears.

2. Select the save-destination channel.

In this example, select "CH1."

NOTE

When you save, the tone setting of the selected channel is overwritten; the original settings cannot be recovered. Select a tone setting that you don't mind overwriting.

3. If you want to change the name of the tone setting, click the tone setting name field. A cursor appears, and you can use your computer keyboard to enter a tone setting name.

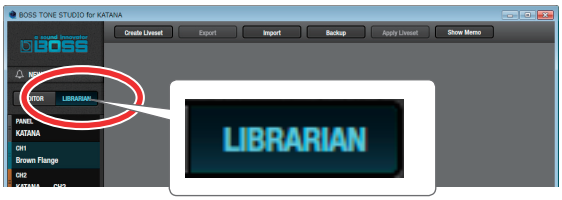
4. **Click the [OK] button.**

The the new tone setting are saved in TONE STUDIO's tone setting list and in the KATANA.

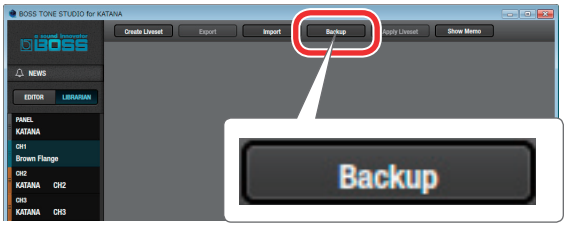
Saving All KATANA Tone Settings to TONE STUDIO (Backup)

Here's how all of the KATANA's tone settings can be saved (backed up) to a TONE STUDIO library. All tone settings are saved as a liveset.

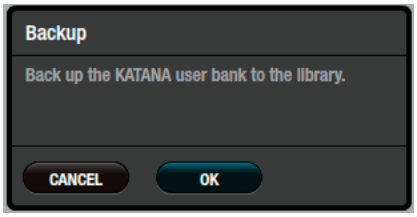
1. **In TONE STUDIO screen, click the [LIBRARIAN] button.**



2. **At the top of the TONE STUDIO screen, click the [Backup] button.**



The "Backup" dialog box appears.



3. **Click the [OK] button.**

The message "Completed." appears.

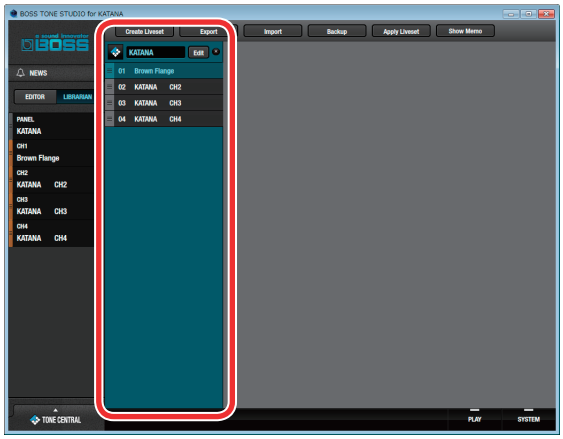
4. **Click the [OK] button.**

The tone settings are saved as a liveset in TONE STUDIO's library.

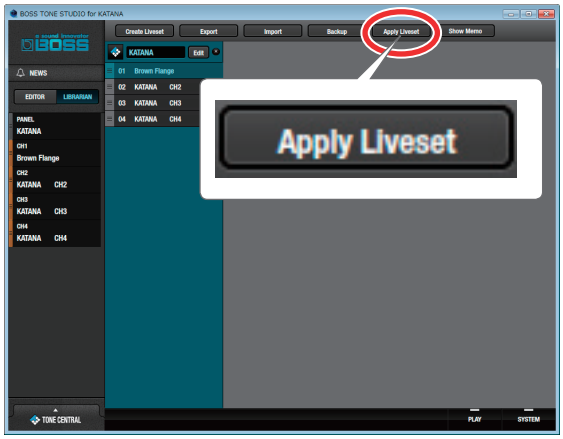
Restoring Backed-Up Liveset to the KATANA

Here's how a liveset that you saved as a backup can be restored to the KATANA's tone setting.

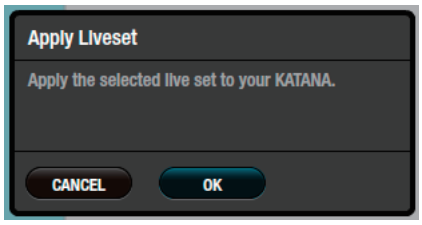
1. Click the liveset that you want to restore.



2. At the top of the TONE STUDIO screen, click the [Apply Liveset] button.



The "Apply Liveset" dialog box appears.



3. Click the [OK] button.

The selected liveset is written back into the KATANA.

Restoring a Tone Setting to the KATANA

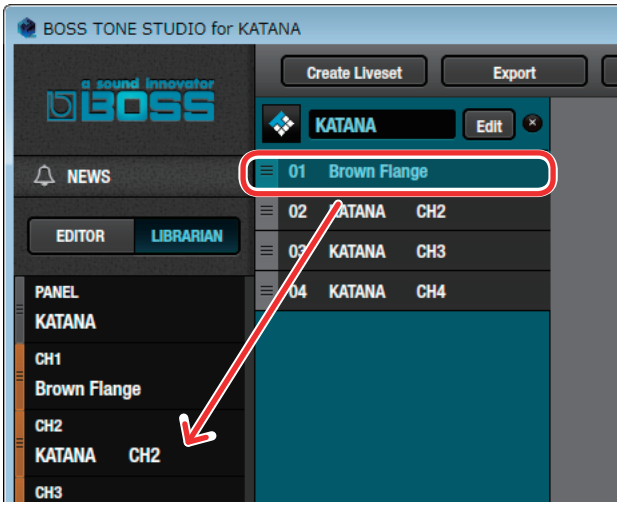
Here's how to select a tone setting from a liveset that you saved as a backup, and restore it back to the KATANA.

1. Drag and drop the tone setting that you want to restore onto the desired channel of the KATANA.

NOTE

When you drop a tone setting, it overwrites the tone setting of the selected channel; the original settings cannot be recovered. Select a tone setting that you don't mind overwriting.

In this example, drag and drop the tone setting "01 Brown Flange" onto "CH2 KATANA CH2."



On the KATANA, select TONE SETTING "CH2" and you'll be able to use the restored tone setting.

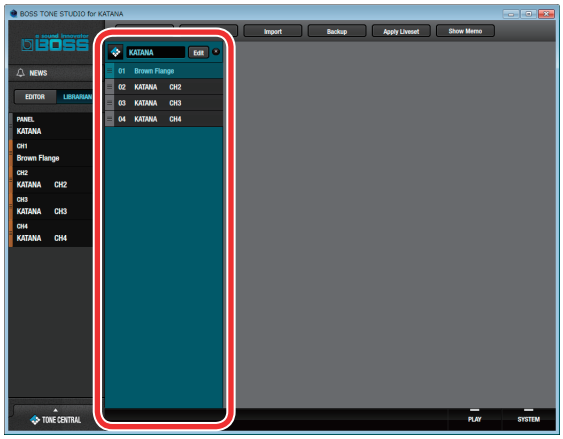
MEMO

You can also select multiple tone settings as described in "Selecting multiple tone settings" (p. 9).

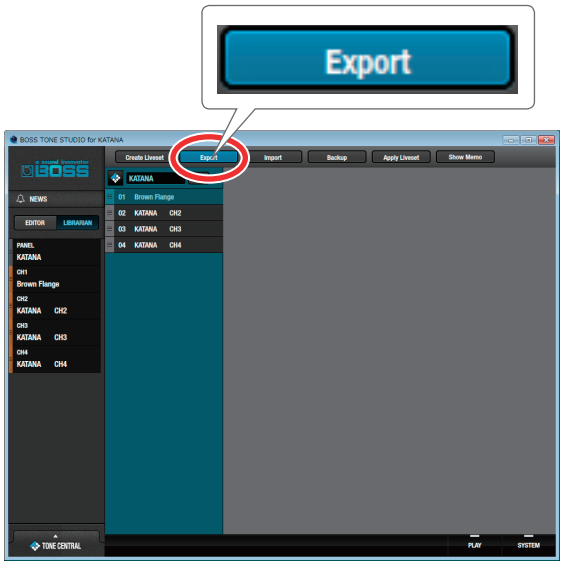
Saving a Liveset to a Computer (Export)

A liveset that you backed up can be exported to your computer (Export).

1. Click the liveset that you want to export to your computer.



2. At the top of the TONE STUDIO screen, click the [Export] button.



The "Export" dialog box appears.

MEMO

The file name will be the name of the liveset, but you can change this to a different file name if you like.

3. Enter a name and save-destination, and click the [Save] button.

The message "Completed." appears.

4. Click the [OK] button.

A liveset file (liveset-name.tsl) is created at the save-destination.

Ways to use an exported liveset

- Use a USB flash drive to copy the liveset to a different computer.
- Sent the liveset via email to another KATANA user.

Importing a Liveset from a Computer into a Library (Import)

A liveset that you exported to a computer can be imported into a TONE STUDIO library (Import).

1. At the top of the TONE STUDIO screen, click the [Import] button.

The "Import" dialog box appears.

MEMO

The name of the liveset is automatically obtained from the file name. If the file name contains double-byte characters, they will not be reflected in the liveset name.

2. Select the liveset file (extension: .tsl) that you want to import into the library, and click the [Open] button.

The liveset is imported, and the message "Completed." appears.

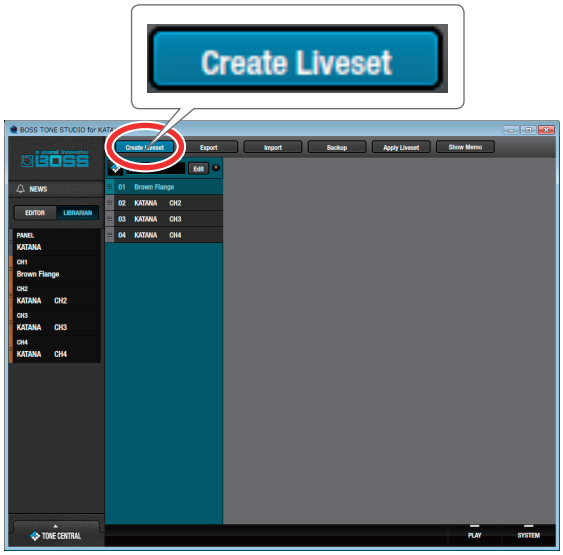
3. Click the [OK] button.

The liveset is imported into the TONE STUDIO library.

Creating an Original Liveset

You can collect your favorite tone settings to create an original liveset.

1. At the top of the TONE STUDIO screen, click the [Create Liveset] button.

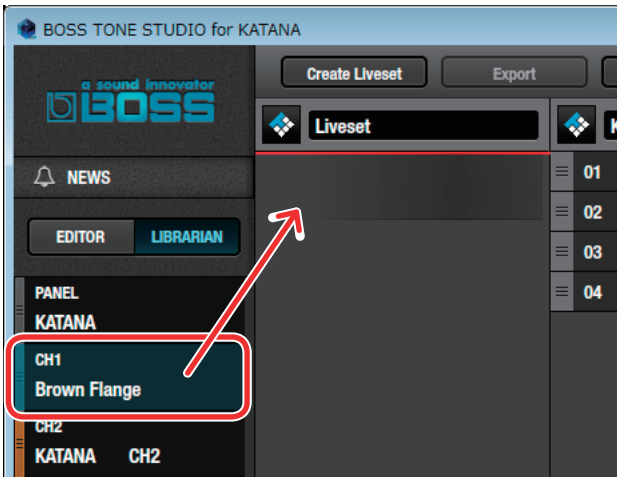


The message "Completed." appears.

2. Click the [OK] button.

An empty liveset containing no tone settings is created.

3. From the tone setting list at the left of the TONE STUDIO screen, drag and drop your favorite tone settings into the new liveset.



The selected tone settings are registered in the new liveset.

MEMO

- A maximum of 400 tone settings can be registered in one liveset. If inserting tone settings would cause the liveset to exceed 400 tone settings, the tone settings that exceed 400 are not inserted (a message is displayed).
- Tone settings that are registered in another liveset can also be dragged and dropped into the new liveset.
- You can drag and drop the tone settings in the liveset to change their order.

Copying Tone Settings

Here's how to copy a tone setting to another liveset or to a KATANA tone setting.

1. Click the tone setting that you want to copy.

MEMO

You can also select and copy multiple tone settings as described in "Selecting multiple tone settings" (p. 9).

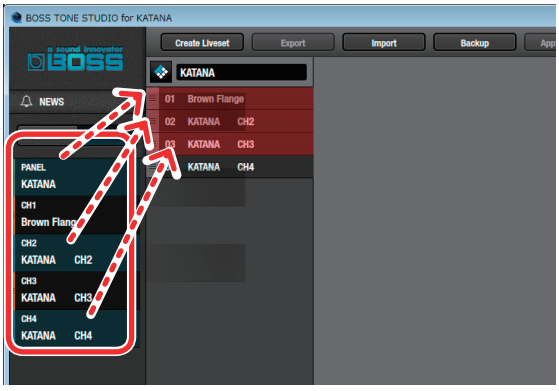
2. Drag and drop the selected tone settings onto the desired copy-destination.

NOTE

When you drop the tone settings, they are overwritten onto the tone settings of the selected red area, and the original settings cannot be recovered. Select tone settings that you don't mind overwriting.

MEMO

- If you select non-consecutive tone settings and copy them, they are copied as successive tone settings.



- A maximum of 400 tone settings can be registered in one liveset. If inserting tone settings would cause the liveset to exceed 400 tone settings, the tone settings that exceed 400 are not inserted (a message is displayed).
- Tone settings that are registered in a liveset can be copied to your own liveset or to a new liveset. If you want to copy a tone setting to your own liveset, perform the following operation.

Computer used	Operation
Windows	While holding down your computer keyboard's [Ctrl] key, drag and drop the tone setting.
Mac OS	While holding down your computer keyboard's [option] key, drag and drop the tone setting.

Selecting multiple tone settings

By using your computer's mouse and keyboard together, you can select multiple tone settings.

Selecting a range of tone settings

Here's how to select a range of consecutive tone settings.

1. Click the first tone setting that you want to select.

2. While holding down your computer keyboard's [Shift] key, click the last tone setting that you want to select.

The first through last tone settings that you click are selected.

Selecting tone settings individually

Here's how to select just the individual tone settings that you click.

1. While holding down your computer keyboard's [Ctrl] key, click a tone setting that you want to select.

The tone setting you click is selected. The selected tone setting is highlighted.

Mac OS users

While holding down your computer keyboard's [command] key, click a tone setting that you want to select.

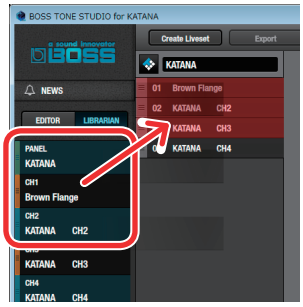
2. If you want to select other tone settings, repeat step 1.

If you hold down the [Ctrl] key and click a selected (highlighted) tone setting once again, the selection is cleared (that tone setting is no longer highlighted).

The difference between operations when selecting and copying multiple tone settings

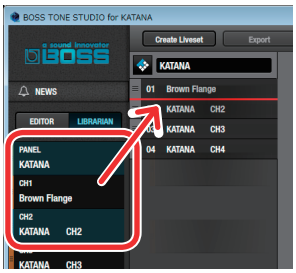
When you drag and drop the selected tone settings, the copy result will differ depending on your mouse operation.

Drag and drop when a red area is shown at the copy-destination (overwrite copy)



The tone settings are copied to the area indicated by the red color.

Drag and drop between copy-destination tone settings (insert)



The tone settings are inserted at the position of the red line. Subsequent tone settings are moved backward.

Moving Tone Settings

Here's how to move a tone setting to another liveset or to an KATANA tone setting. When you move a tone setting, it disappears from its previous location.

1. Click the tone setting that you want to move.

MEMO

You can also select and move multiple tone settings as described in "Selecting multiple tone settings" (p. 9).

2. While holding down your computer keyboard's [Alt] key, drag and drop the selected tone setting to the desired copy-destination.

Mac OS users

While holding down your computer keyboard's [command] key, drag and drop.

Deleting Tone Settings

Here's how to delete an unwanted tone setting.

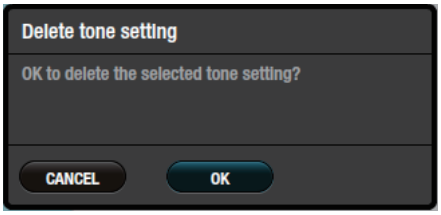
1. Click the tone setting that you want to delete.

MEMO

You can also select and delete multiple tone settings as described in "Selecting multiple tone settings" (p. 9).

2. Press your computer keyboard's [Delete] key.

The "Delete tone setting" message appears.



NOTE

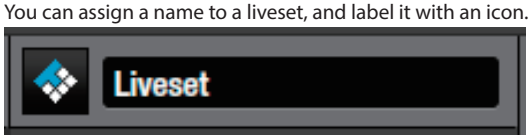
Deleted tone settings cannot be recovered. If you decide not to delete, click the [CANCEL] button.

3. Click the [OK] button.

The selected tone settings are deleted.

Editing a Liveset

You can assign a name to a liveset, and label it with an icon.

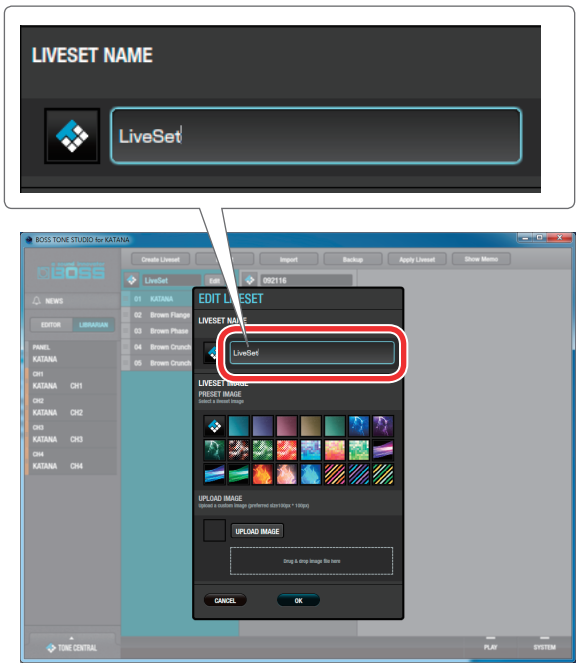


1. **Click the liveset that you want to edit.**

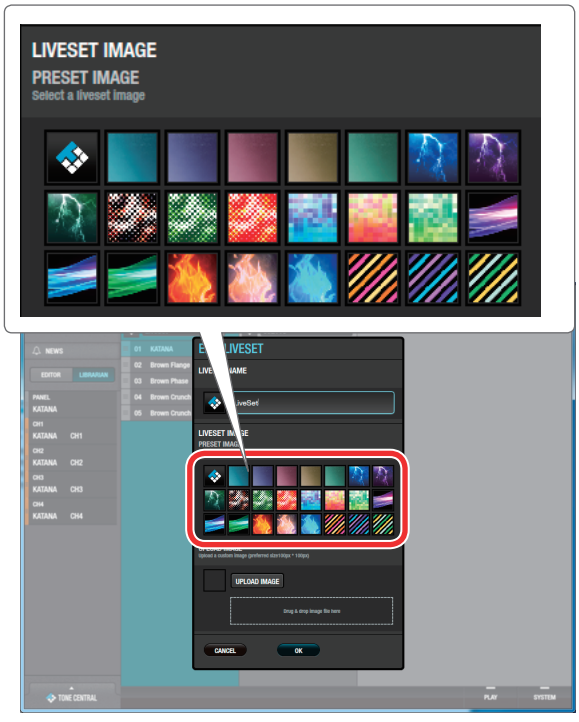
2. **Click the [Edit] button located at the right of the liveset name.**

The "EDIT LIVESET" dialog box appears.

3. **Click the liveset name, and use your computer keyboard to enter a liveset name.**



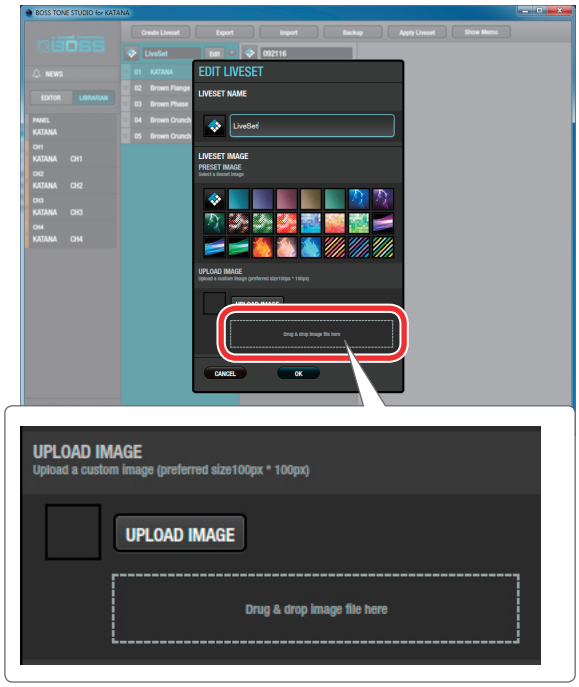
4. **Choose an icon from PRESET IMAGE.**



5. **Click the [OK] button.**

Using an original image as an icon

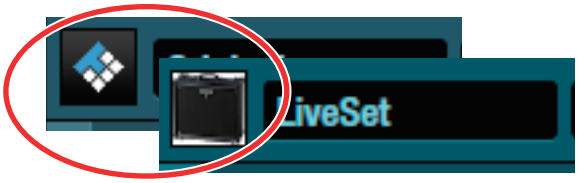
You can provide an image of your own and assign it as the icon for a liveset.



Click the [UPLOAD IMAGE] button and select an image, or drag and drop the image file into the frame shown in the illustration.

MEMO

The graphic used as the icon can be JPG format, GIF format, or PNG format. The recommended size of the graphic is 100 x 100 pixels, but it is automatically adjusted if the size is different.



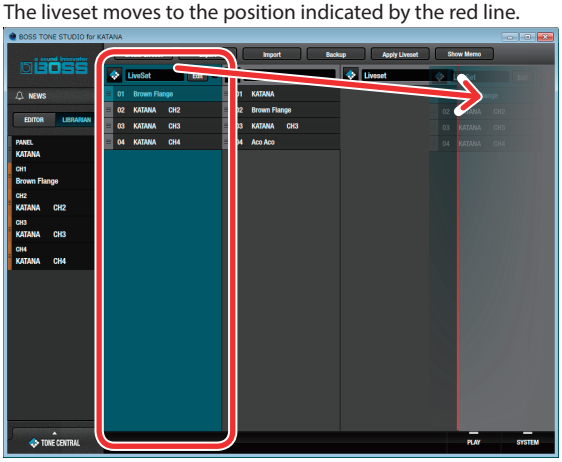
Rearranging Livesets

Here's how to rearrange the livesets that are displayed.

1. Click the liveset that you want to rearrange.

2. Drag and drop the liveset name.

The liveset moves to the position indicated by the red line.



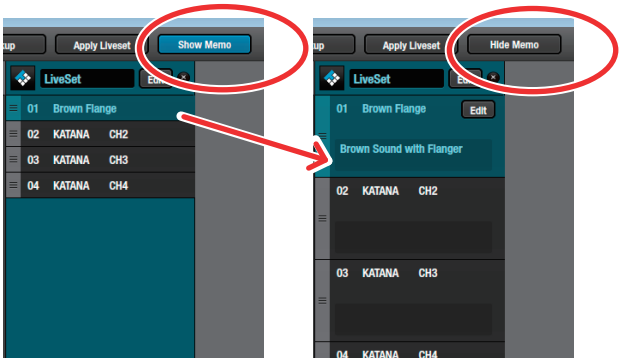
Showing/Hiding a Liveset's Memo Information

You can turn on/off the display of the memo information held by each tone setting.

When memo information display is turned off, more tone settings can be shown in a single screen.

1. Click the [Show Memo] button to show the tone setting memo information.

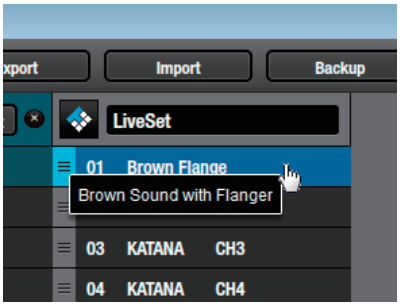
Now if you click the [Hide Memo] button, the tone setting memo information is hidden.



Memo display OFF　　Memo display ON

MEMO

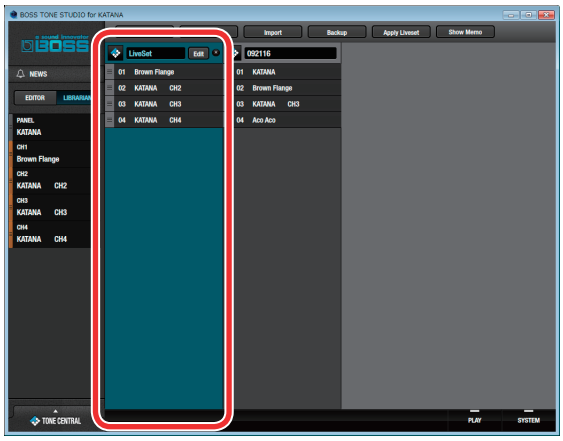
Even if memo display is OFF, the memo appears as a popup when you move the mouse cursor to the tone setting name.



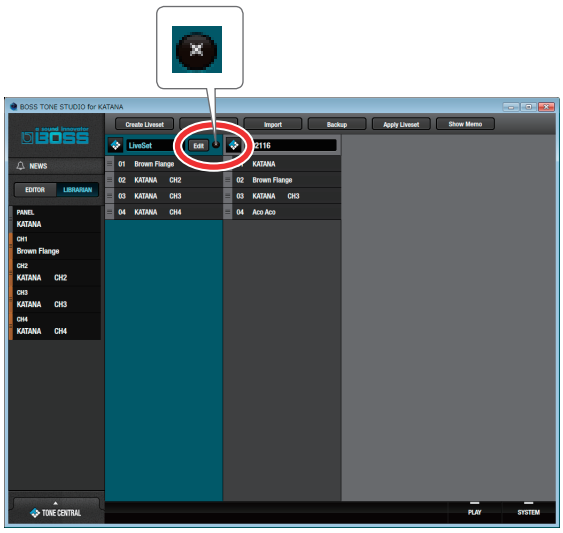
Deleting a Liveset

Here's how to delete a liveset that you no longer need.

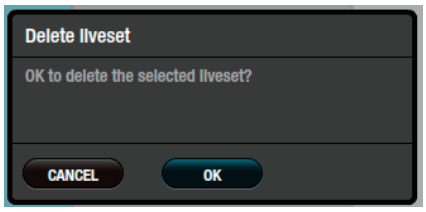
1. Click the liveset that you want to delete.



2. Click the [X] button.



The "Delete liveset" message appears.



NOTE

The deleted liveset cannot be recovered. If you decide to cancel without deleting, click the [CANCEL] button.

3. Click the [OK] button.

The selected liveset is deleted.

Using the BOSS TONE CENTRAL Library

Downloading Livesets from BOSS TONE CENTRAL

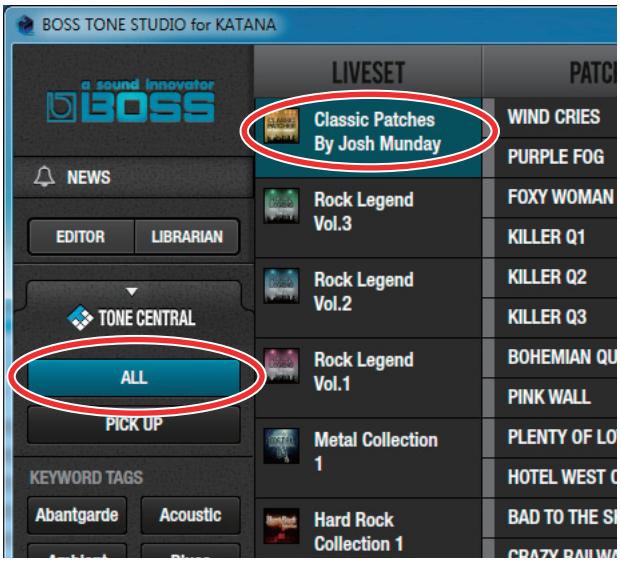
Livesets that have been published on BOSS TONE CENTRAL can be downloaded and used on the KATANA.

1. In the lower left of the TONE STUDIO screen, click the [TONE CENTRAL] button.

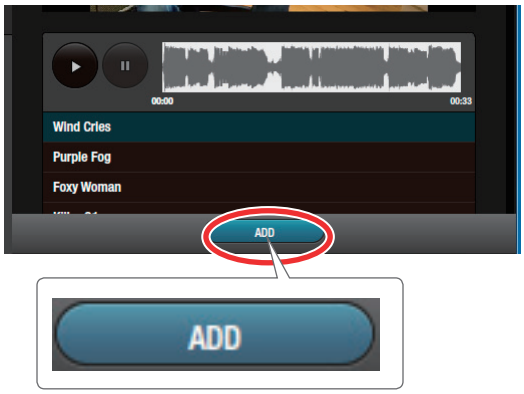
The tone settings published on BOSS TONE CENTRAL are listed together with explanations of the tone settings.

2. In KEYWORD TAGS, select a genre; then in LIVESET, select the liveset that you want to download.

In this example, select "Classic Patches By Josh Munday"



3. **At the bottom of the screen, click the [ADD] button.**

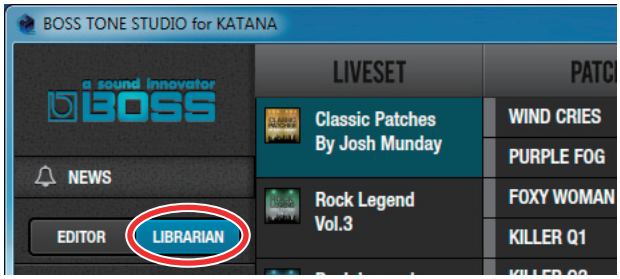


The liveset is downloaded, and the message "Completed." appears.

MEMO

Downloads from BOSS TONE STUDIO are done in units of livesets. You can't download individual tone settings, nor add individual tone settings to the library.

4. **Click the [LIBRARIAN] button again.**



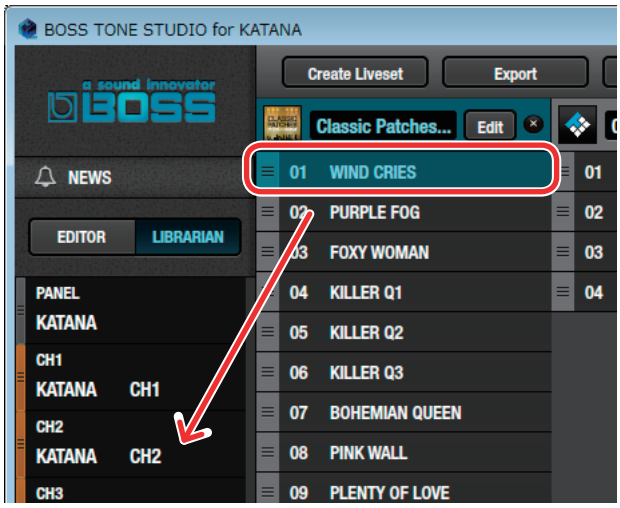
The liveset you downloaded appears.

5. **Drag and drop tone settings from the downloaded liveset into the desired tone setting numbers of the KATANA.**

NOTE

When you drop a tone setting, it overwrites the tone setting of the selected number; the original settings cannot be recovered. Select a tone setting that you don't mind overwriting.

In this example, drag and drop the tone setting "01 WIND CRIES" onto "CH2 KATANA CH2."



Select tone setting "U03" on the KATANA to use the newly added tone setting.

Using the Audio Player

You can use the audio player built into TONE STUDIO to listen to audio data.

You can prepare audio backing data for your song, and mix it with the sound of the KATANA and enjoy performing along with it.

Playing Back Audio Data

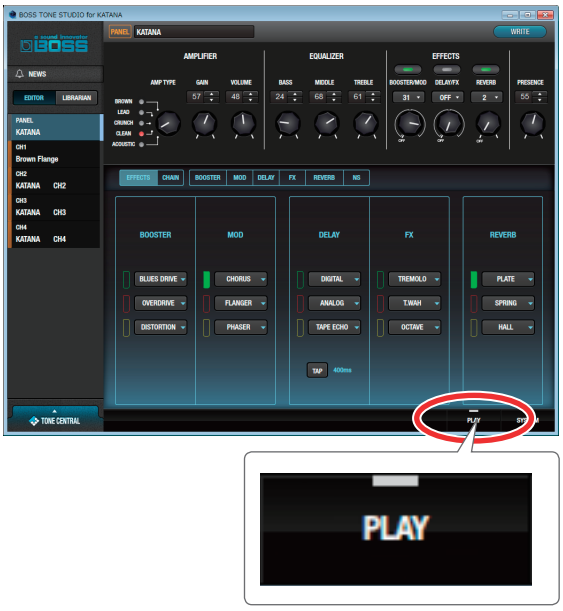
Audio data that can be played back from TONE STUDIO must be in the following format.

- Sampling Frequency: 44.1 kHz
- Bit depth: 16-bit (linear)
- Number of channels: 2 channels (stereo)
- Format: WAV

Loading and playing audio data

1. **On your computer, prepare the audio data that you want to play back.**

2. **In the lower right of the TONE STUDIO screen, click the [PLAY] button.**



3. Click the [IMPORT] button.

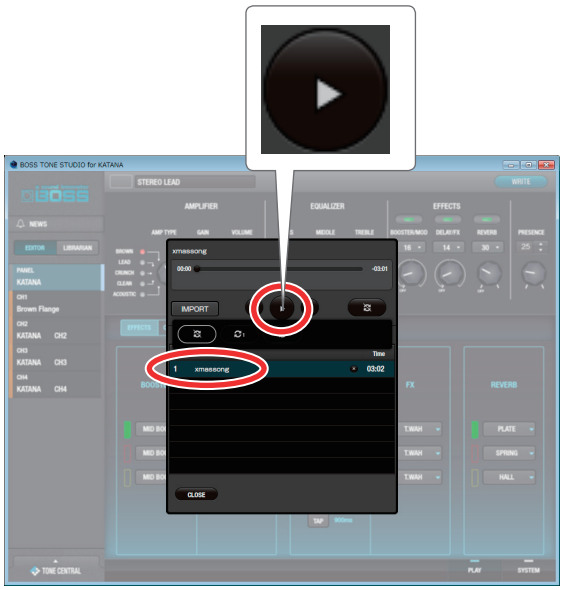
The "Select File" dialog box appears.

4. Select the audio file that you want to play back, and click the [Open] button.

The audio file is loaded into the audio player, and appears in the list.

5. From the list, select the audio file that you want to load, and click the [►] button.

The audio file plays.



Looping the audio data

1. Prepare the audio file that you want to play back, as described in steps 1–4 of "Loading and playing audio data" (p. 14).

2. Click the loop button.

Now you can select the loop method.

3. Click the loop icon to select the loop method.

Loop icon	Method of the loop
	Not looped (play to the end and stop).
	The selected song is looped (the selected song plays repeatedly).
	Continue playing the songs in the list (when the last song in the list has finished playing, return to the first song and continue playback).

4. Click the loop button once again.

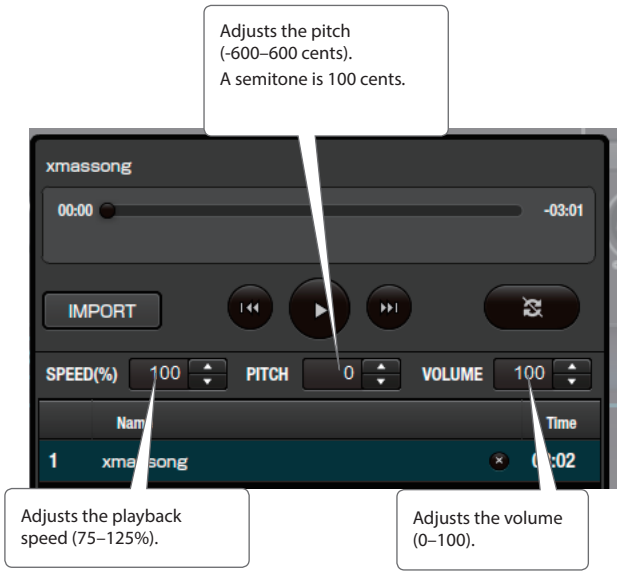
You return to the previous display.

MEMO

The selected loop method remains effective even when you return to the previous display.

Changing the playback speed or pitch

You can change the playback speed of the audio data or adjust its pitch.



MEMO

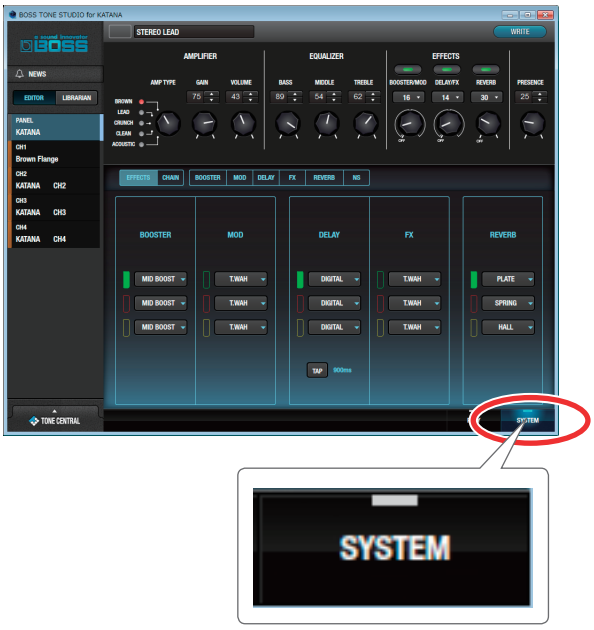
You can make the settings using the [▼] [▲] buttons or by entering a numeric value from the computer keyboard.

Selecting the Device Controlled by TONE STUDIO

Here's how to select the device controlled by TONE STUDIO.

1. In the lower right of the TONE STUDIO screen, click the [SYSTEM] button.

The "SYSTEM" screen appears.



2. Click the [Device] button.

The "Device" screen appears.

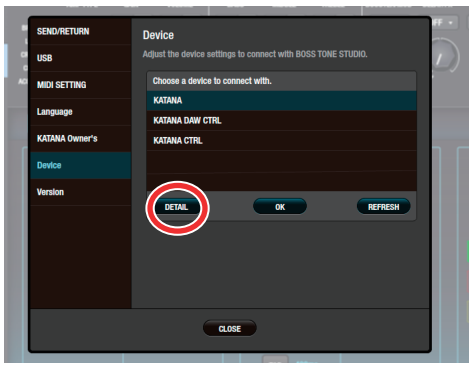
3. In the list of displayed devices, click [KATANA].

4. Click the [OK] button.

Making detailed device settings

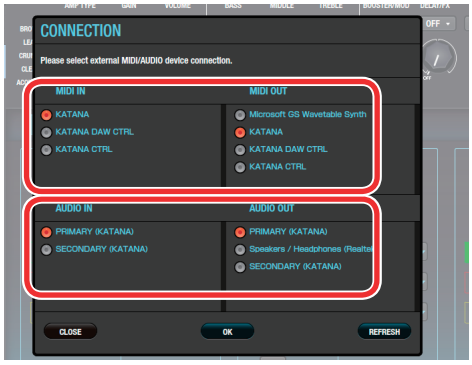
You can make detailed settings such as the input/output destinations for MIDI data and audio signals.

1. After performing steps 1–3 of "Selecting the Device Controlled by TONE STUDIO" (p. 16), click the [DETAIL] button.



The "CONNECTION" screen appears.

2. Make settings for MIDI input/output and audio signal input/output.



MEMO

Select the same type for MIDI IN and MIDI OUT. Connection is not possible if you select different settings.

KATANA Effect Parameter list

BOOSTER

Various boosters and distortion effects can be selected.

BOOSTER Type

Type	Explanation
CLEAN BOOST	This not only functions as a booster, but also produces a clean tone that has punch even when used alone.
TREBLE BOOST	This is a booster that has bright characteristics.
MID BOOST	This is a booster with unique characteristics in the midrange. Making the connection before the COSM amp produces sound suitable for solos.
CRUNCH OD	A lustrous crunch sound with an added element of amp distortion.
BLUES DRIVE	This is a crunch sound of the BOSS BD-2. This produces distortion that faithfully reproduces the nuances of picking.
OVERDRIVE	This models the sound of the BOSS OD-1. This produces sweet, mild distortion.
NATURAL OD	This is an overdrive sound that provides distortion with a natural feeling.
WARM OD	This is a warm overdrive.
TURBO OD	This is the high-gain overdrive sound of the BOSS OD-2.
T-SCREAM	This models an Ibanez TS-808.
DISTORTION	This gives a basic, traditional distortion sound.
FAT DS	A distortion sound with thick distortion.
DST+	This models a MXR DISTORTION+.
GUV DS	This models a Marshall GUV'NOR.
RAT	This models a Proco RAT.
METAL ZONE	This models the sound of the BOSS MT-2. It produces a wide range of metal sounds, from old style to slash metal.
METAL DS	This is distortion sound that is ideal for performances of heavy riffs.
'60S FUZZ	This models a FUZZFACE. It produces a fat fuzz sound.
MUFF FUZZ	This models an Electro-Harmonix Big Muff π.
OCT FUZZ	A fuzz sound with rich harmonic content.

BOOSTER Parameters

Parameter	Value	Explanation
ON/OFF	OFF, ON	Turns this effect on/off.
TYPE	Refer to BOOSTER Type	
DRIVE	0–120	Adjusts the depth of distortion.
TONE	-50–+50	This adjusts the tone.
BOTTOM	-50–+50	Adjusts the tone for the low frequency range. Turning this to the left (counterclockwise) produces a sound with the low end cut; turning it to the right boosts the low end in the sound.
EFFECT LEVEL	0–100	Adjusts the volume of the effect sound.
SOLO SW	OFF, ON	Switches to a tone that is suitable for solos.
SOLO LEVEL	0–100	Adjusts the volume level when the Solo Sw is ON.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

MOD/FX

With MOD and FX, you can select the effect to be used from the following. You can select the same effect for MOD and FX.

Selecting the Type

MOD/FX Type

This is a list of the effects that can be selected for MOD/FX.

Effect Name	Explanation
CHORUS	Frequency band division is employed to produce two different choruses, one for low frequencies and one for higher frequencies. This allows you to achieve a more natural chorus sound.
FLANGER	The flanging effect gives a twisting, jet-airplane-like character to the sound.
PHASER	By adding varied-phase portions to the direct sound, the phaser effect gives a whooshing, swirling character to the sound.
UNI-V	This models a Uni-Vibe. Although this resembles a phaser effect, it also provides a unique undulation that you can't get with a regular phaser.
TREMOLO	Tremolo is an effect that creates a cyclic change in volume.
VIBRATO	This effect creates vibrato by slightly modulating the pitch.
ROTARY	This produces an effect like the sound of a rotary speaker.
RING MOD (Ring Modulator)	This creates a bell-like sound by ring-modulating the guitar sound with the signal from the internal oscillator. The sound can be unmusical and lack distinctive pitches.
SLOW GEAR	This produces a volume-swell effect ("violin-like" sound).
SLICER	This consecutively interrupts the sound to create the impression that a rhythm backing phrase is being played.
COMP (Compressor)	This is an effect that produces a long sustain by evening out the volume level of the input signal. You can also use it as a limiter to suppress only the sound peaks and prevent distortion.
LIMITER	The limiter attenuates loud input levels to prevent distortion.
T. WAH (Touch Wah)	You can produce a wah effect with the filter changing in response to the guitar level.
AUTO WAH	This changes the filtering over a periodic cycle, providing an automatic wah effect.
PEDAL WAH	You can use an expression pedal connected to the FX jack on the rear panel of the GA-FC foot controller (sold separately) to control the wah effect in real time.
GRAPHIC EQ (Graphic Equalizer)	This adjusts the tone. You can adjust the sound quality in ten bands.
PARAMETRIC EQ (Parametric Equalizer)	This adjusts the tone. You can adjust the sound quality in four bands. You can adjust the sound quality in four bands.
GUITAR SIM (Guitar Simulator)	Simulation of the characteristics of particular guitar components such as pickups and different guitar bodies allows you to switch among a number of different guitar types all while using a single guitar.

Effect Name	Explanation
AC.GUITAR SIM (Acoustic Guitar Simulator)	This transforms the sound of an electric guitar into the sound of an acoustic guitar.
AC. PROCESSOR (Acoustic Processor)	This processor allows you to change the sound produced by the pickup on an acoustic electric guitar, creating a richer sound similar to that obtained with a microphone placed close to the guitar.
WAVE SYNTH	This is a synth sound that processes the guitar input signal.
OCTAVE	This adds a note one octave lower, creating a richer sound.
PITCH SHIFTER	This effect changes the pitch of the original sound (up or down) within a range of two octaves.
HARMONIST	Harmonist is an effect where the amount of shifting is adjusted according to an analysis of the guitar input, allowing you to create harmony based on diatonic scales.
HUMANIZER	This can create human vowel-like sounds.

MOD/FX Efffect Parameters

CHORUS

Frequency band division is employed to produce two different choruses, one for low frequencies and one for higher frequencies. This allows you to achieve a more natural chorus sound.

Parameter	Value	Explanation
LOW RATE	0–100,	Adjust the speed of the chorus effect for the low frequency range.
LOW DEPTH	0–100	Adjust the depth of the chorus effect for the low frequency range. If you wish to use this as a doubling effect, use a setting of 0.
LOW PRE DELAY	0.0 ms–40.0 ms	Adjusts the delay of the effect sound in the low-frequency range. Extending the pre-delay will produce the sensation of multiple sounds (doubling effect).
LOW LEVEL	0–100	Adjusts the volume of the effect sound in the low-frequency range.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.
HIGH RATE	0–100,	Adjust the speed of the chorus effect for the high frequency range.
HIGH DEPTH	0–100	Adjust the depth of the chorus effect for the high frequency range. If you wish to use this as a doubling effect, use a setting of 0.
HIGH PRE DELAY	0.0 ms–40.0 ms	Adjusts the delay of the effect sound in the high-frequency range. Extending the pre-delay will produce the sensation of multiple sounds (doubling effect).
HIGH LEVEL	0–100	Adjusts the volume of the effect sound in the high-frequency range.
XOVER FREQUENCY (CROSSOVER FREQUENCY)	100 Hz–4.00 kHz	This sets the frequency dividing the low- and high-frequency ranges.

FLANGER

The flanging effect gives a twisting, jet-airplane-like character to the sound.

Parameter	Value	Explanation
RATE	0–100	This sets the rate of the flanging effect.
DEPTH	0–100	Determines the depth of the flanging effect.
RESO (RESONANCE)	0–100	Determines the amount of resonance (feedback). Increasing the value will emphasize the effect, creating a more unusual sound.
MANUAL	0–100	Adjusts the center frequency at which to apply the effect.
EFFECT LEVEL	0–100	Adjusts the volume of the flanger.
LOW CUT	FLAT, 55 Hz–800 Hz	This sets the frequency at which the low cut filter begins to take effect. When "Flat" is selected, the low cut filter will have no effect.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

PHASER

By adding varied-phase portions to the direct sound, the phaser effect gives a whooshing, swirling character to the sound.

Parameter	Value	Explanation
TYPE	Selects the number of stages that the phaser effect will use.	
	4 STAGE	This is a four-phase effect. A light phaser effect is obtained.
	8 STAGE	This is a eight-phase effect. It is a popular phaser effect.
	12 STAGE	This is a twelve-phase effect. A deep phase effect is obtained.
	BiPHASE	This is the phaser with two phase shift circuits connected in series.
RATE	0–100	This sets the rate of the phaser effect.
DEPTH	0–100	Determines the depth of the phaser effect.
RESO (RESONANCE)	0–100	Determines the amount of resonance (feedback). Increasing the value will emphasize the effect, creating a more unusual sound.
MANUAL	0–100	Adjusts the center frequency of the phaser effect.
EFFECT LEVEL	0–100	Adjusts the volume of the phaser.
STEP RATE	OFF, 0–100	This sets the cycle of the step function that changes the rate and depth. When it is set to a higher value, the change will be finer. Set this to "Off" when not using the Step function.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

UNI-V

This models a Uni-Vibe.

Although this resembles a phaser effect, it also provides a unique undulation that you can't get with a regular phaser.

Parameter	Value	Explanation
RATE	0–100	Adjusts the rate of the UNI-V effect.
DEPTH	0–100	Adjusts the depth of the UNI-V effect.
LEVEL	0–100	Adjusts the volume.

TREMOLO

Tremolo is an effect that creates a cyclic change in volume.

Parameter	Value	Explanation
WAVE SHAPE	0–100	Adjusts changes in volume level. A higher value will steepen wave's shape.
RATE	0–100	Adjusts the frequency (speed) of the change.
DEPTH	0–100	Adjusts the depth of the effect.
LEVEL	0–100	Adjusts the volume.

VIBRATO

This effect creates vibrato by slightly modulating the pitch.

Parameter	Value	Explanation
RATE	0–100	Adjusts the rate of the vibrato.
DEPTH	0–100	Adjusts the depth of the vibrato.
LEVEL	0–100	Adjusts the volume.

ROTARY

This produces an effect like the sound of a rotary speaker.

Parameter	Value	Explanation
RATE	0–100	This parameter adjusts the SPEED SELECT of rotation when set to "FAST."
DEPTH	0–100	This parameter adjusts the amount of depth in the rotary effect.
LEVEL	0–100	Adjusts the volume.

RING MOD

The sound can be unmusical and lack distinctive pitches.

Parameter	Value	Explanation
MODE	This selects the mode for the ring modulator.	
	NORMAL	This is a normal ring modulator.
	INTELLIGENT	By ring-modulating the input signal, a bell like sound is created. The intelligent ring modulator changes the oscillation frequency according to the pitch of the input sound and therefore produces a sound with the sense of pitch, which is quite different from NORMAL. This effect does not give a satisfactory result if the pitch of the guitar sound is not correctly detected. So, you must use single notes, not chords.
FREQUENCY	0–100	Adjusts the frequency of the internal oscillator.
EFFECT LEVEL	0–100	Adjusts the volume of the effect sound.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

SLOW GEAR

This produces a volume-swell effect ("violin-like" sound).

Parameter	Value	Explanation
SENS	0–100	Adjusts the sensitivity of the slow gear. When it is set to a lower value, the effect of the slow gear can be obtained only with a stronger picking, while no effect is obtained with a weaker picking. When the value is set higher, the effect is obtained even with a weak picking.
RISE TIME	0–100	Adjusts the time needed for the volume to reach its maximum from the moment you begin picking.
LEVEL	0–100	Adjusts the volume of the effect sound.

SLICER

This consecutively interrupts the sound to create the impression that a rhythm backing phrase is being played.

Parameter	Value	Explanation
PATTERN	P1–P20	Select the slice pattern that will be used to cut the sound.
RATE	0–100	Adjust the rate at which the sound will be cut.
TRIGGER SENS	0–100	Adjust the sensitivity of triggering. With low settings of this parameter, softly picked notes will not retrigger the phrase (i.e., the phrase will continue playing), but strongly picked notes will retrigger the phrase so that it will playback from the beginning. With high settings of this parameter, the phrase will be retriggered even by softly picked notes.
EFFECT LEVEL	0–100	Adjusts the volume of the effect sound.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

COMP

This is an effect that produces a long sustain by evening out the volume level of the input signal. You can also use it as a limiter to suppress only the sound peaks and prevent distortion.

Parameter	Value	Explanation
TYPE	BOSS COMP	This models a BOSS CS-3.
	HI-BAND	This is a compressor that adds an even stronger effect in the high end.
	LIGHT	This is a compressor with a light effect.
	D-COMP	This models a MXR DynaComp.
	ORANGE	This is modeled on the sound of the Dan Armstrong ORANGE SQUEEZER.
	FAT	When applied heavily, this compressor effect provides a fat tone with a boosted midrange.
	MILD	When applied heavily, this compressor effect produces a sweet tone with the high end cut.
SUSTAIN	0–100	Adjusts the range (time) over which low-level signals are boosted. Larger values will result in longer sustain.
ATTACK	0–100	Adjusts the strength of the picking attack when the strings are played. Higher values result in s sharper attack, creating a more clearly defined sound.
LEVEL	0–100	Adjusts the volume.
TONE	-50–+50	This adjusts the tone.

LIMITER

The limiter attenuates loud input levels to prevent distortion.

Parameter	Value	Explanation
TYPE	Selects the limiter type.	
	BOSS LIMITER	This selects a stereo limiter.
	RACK 160D	This models a dbx 160X.
	VTG RACK U (VINTAGE RACK U)	This models a UREI 1178.
THRESHOLD	0–100	Adjust this as appropriate for the input signal from your guitar. When the input signal level exceeds this threshold level, limiting will be applied.
RATIO	1:1–INF:1	This selects the compression ratio used with signals in excess of the threshold level.
ATTACK	0–100	Adjusts the strength of the picking attack when the strings are played. Higher values result in s sharper attack, creating a more clearly defined sound.
RELEASE	0–100	Adjusts the release time.
LEVEL	0–100	Adjusts the volume.

T. WAH

You can produce a wah effect with the filter changing in response to the guitar level.

Parameter	Value	Explanation
MODE	Selects the wah mode.	
	LPF	Low pass filter. This provides a wah effect over a wide frequency range.
	BPF	Band pass filter. This provides a wah effect in a narrow frequency range.
POLAR	Selects the direction in which the filter will change in response to the input.	
	DOWN	The frequency of the filter will fall.
	UP	The frequency of the filter will rise.
SENS	0–100	Specifies the sensitivity with which the filter changes in the direction specified by the POLAR setting. Higher values will produce a stronger tone which emphasizes the wah effect more. With a setting of 0, the strength of picking will have no effect.
FREQ	0–100	Adjusts the center frequency of the Wah effect.
PEAK	0–100	Adjusts the way in which the wah effect applies to the area around the center frequency. Higher values will produce a stronger tone which emphasizes the wah effect more. With a value of 50 a standard wah sound will be produced.
EFFECT LEVEL	0–100	Adjusts the volume of the effect sound.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

AUTO WAH

This changes the filtering over a periodic cycle, providing an automatic wah effect.

Parameter	Value	Explanation
MODE	Selects the wah mode.	
	LPF	Low pass filter. This provides a wah effect over a wide frequency range.
	BPF	Band pass filter. This provides a wah effect in a narrow frequency range.
RATE	0–100	Adjusts the frequency (speed) of the change.
DEPTH	0–100	Adjusts the depth of the effect.
FREQ	0–100	Adjusts the center frequency of the Wah effect.
PEAK	0–100	Adjusts the way in which the wah effect applies to the area around the center frequency. Higher values will produce a stronger tone which emphasizes the wah effect more. With a value of 50 a standard wah sound will be produced.
EFFECT LEVEL	0–100	Adjusts the volume of the effect sound.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

PEDAL WAH

You can control the wah effect in real time by adjusting the expression pedal connected to the FX jack on the rear panel of the GA-FC foot controller (sold separately).

Parameter	Value	Explanation
TYPE	Selects the wah mode.	
	CRY WAH	This models the sound of the CRY BABY wah pedal popular in the '70s.
	VO WAH	This models the sound of the VOX V846.
	FAT WAH	This is a wah sound featuring a bold tone.
	LIGHT WAH	This wah has a refined sound with no unusual characteristics.
	7STRING WAH	This expanded wah features a variable range compatible with seven-string and baritone guitars.
	RESO WAH	This completely original effect offers enhancements on the characteristic resonances produced by analog synth filters.
PEDAL POS (PEDAL POSITION)	0–100	Adjusts the position of the wah pedal. * This parameter is used after it's been assigned to an EXP Pedal or similar controller.
PEDAL MIN	0–100	Selects the tone produced when the heel of the EXP Pedal is depressed.
PEDAL MAX	0–100	Selects the tone produced when the toe of the EXP Pedal is depressed.
EFFECT LEVEL	0–100	Adjusts the volume of the effect sound.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

GRAPHIC EQ

This adjusts the tone. You can adjust the sound quality in ten bands.

Parameter	Value
31 Hz	-20–+20 dB
62 Hz	
125 Hz	
250 Hz	
500 Hz	
1 kHz	
2 kHz	
4 kHz	
8 kHz	
16 kHz	
LEVEL	-20–+20 dB

PARAMETRIC EQ

This adjusts the tone. You can adjust the sound quality in four bands.

Parameter	Value	Explanation
LOW GAIN	-20–+20 dB	Adjusts the low frequency range tone.
LOW-MID GAIN	-20–+20 dB	Adjusts the low-middle frequency range tone.
HIGH-MID GAIN	-20–+20 dB	Adjusts the high-middle frequency range tone.
HIGH GAIN	-20–+20 dB	Adjusts the high frequency range tone.
LEVEL	-20–+20 dB	Adjusts the overall volume level of the equalizer.
LOW-MID FREQUENCY	20 Hz–10.0 kHz	Specifies the center of the frequency range that will be adjusted by the LOW-MID GAIN.
LOW-MID Q	0.5–16	Adjusts the width of the area affected by the EQ centered at the LOW-MID FREQ. Higher values will narrow the area.
HIGH-MID FREQUENCY	20 Hz–10.0 kHz	Specifies the center of the frequency range that will be adjusted by the HIGH-MID GAIN.
HIGH-MID Q	0.5–16	Adjusts the width of the area affected by the EQ centered at the HIGH-MID FREQ. Higher values will narrow the area.
LOW CUT	FLAT, 20 Hz–800 Hz	This sets the frequency at which the low cut filter begins to take effect. When "Flat" is selected, the low cut filter will have no effect.
HIGH CUT	630 Hz– 12.5 kHz, FLAT	This sets the frequency at which the high cut filter begins to take effect. When "FLAT" is selected, the high cut filter will have no effect.

GUITAR SIM

Simulation of the characteristics of particular guitar components such as pickups and different guitar bodies allows you to switch among a number of different guitar types all while using a single guitar.

Parameter	Value	Explanation
TYPE	Selects the type of the guitar simulator.	
	S → H	Changes from a single-coil pickup tone to a humbucking pickup tone.
	H → S	Changes from a humbucking pickup tone to a single-coil pickup tone.
	H → HF (HALF TONE)	Changes from a humbucking pickup tone to a single-coil pickup half tone.
	S → HOLLOW	Changes a single-coil pickup tone to a hollow body tone with the body resonance added.
	H → HOLLOW	Changes a humbucking pickup tone to a hollow body tone with the body resonance added.
	S → AC (ACOUSTIC)	Changes a single-coil pickup tone to an acoustic guitar tone.
	H → AC (ACOUSTIC)	Changes a humbucking pickup tone to an acoustic guitar tone.
	P → AC (PIEZO → ACOUSTIC)	Changes a piezo pickup tone to an acoustic guitar tone.
LOW	-50–+50	Adjusts the low frequency range tone.
HIGH	-50–+50	Adjusts the high frequency range tone.
BODY	0–100	Adjusts the way the body sounds when TYPE is set to S → HOLLOW, H → HOLLOW, S → AC, H → AC or P → AC. The body sound increases as the value is raised; reducing the value produces a tone similar to that from a piezo pickup.
LEVEL	0–100	Adjusts the volume of the effect sound.

AC. GUITAR SIM

This effect simulates the tonal character of an acoustic guitar.

Parameter	Value	Explanation
BODY	0–100	Adjusts the body resonance.
LOW	-50–+50	Specifies the sense of volume for the low-frequency range.
HIGH	-50–+50	Specifies the sense of volume for the high-frequency range.
LEVEL	0–100	Specifies the volume of the effect.

AC. PROCESSOR

This processor allows you to change the sound produced by the pickup on an acoustic electric guitar, creating a richer sound similar to that obtained with a microphone placed close to the guitar.

Parameter	Value	Explanation
TYPE	Selects the modeling type.	
	SMALL	This is the sound of a small-bodied acoustic guitar.
	MEDIUM	This is a standard, unadorned acoustic guitar sound.
	BRIGHT	This is a bright acoustic guitar sound.
	POWER	This is a powerful acoustic guitar sound.
BASS	-50–+50	Adjusts the tone for the low frequency range.
MIDDLE	-50–+50	Adjusts the midrange balance.
TREBLE	-50–+50	Adjusts the tone for the high frequency range.
PRESENCE	-50–+50	Adjusts the balance in the extended upper range.
LEVEL	0–100	Adjusts the volume.
MIDDLE FREQ	20.0 Hz–10.0 kHz	Specifies the frequency range to be adjusted with Middle.

WAVE SYNTH

This is a synth sound that processes the guitar input signal.

* When you use a wave synthesizer, observe the following points.

- Because of the need to analyze the pitch, chords (two or more sounds played simultaneously) cannot be played. Be sure to mute all the other strings and play only one note at a time.
- If the unit cannot detect the attack, it may not sound correctly. If the unit cannot detect the attack, it may not sound correctly.
- The sensitivity may vary according to the guitar's TONE knob and pickup type.

Parameter	Value	Explanation
WAVE	Selects a wave type which the synth sound is based.	
	SAW	Creates a synth sound with a saw waveform ( ).
	SQUARE	Creates a synth sound with the square waveform ( ).
CUTOFF	0–100	Adjusts the frequency where the harmonics contents of the sound are cut off.
RESONANCE	0–100	This adjusts the amount of resonance (and the tone coloration) in the synth sound. The higher the value, the more the synth tone coloration is emphasized.
SYNTH LEVEL	0–100	Adjusts the volume of the synth sound.
FILTER SENS	0–100	This adjusts the amount of filtering applied in response to the input.
FILTER DECAY	0–100	This sets the time needed for the filter to finish its sweep.
FILTER DEPTH	0–100	Adjusts the depth of the filter. When the value is higher, the filter will change more drastically.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

OCTAVE

This adds a note one octave lower, creating a richer sound.

Parameter	Value	Explanation
RANGE	This selects the register to which the effect is applied.	
	RANGE 1 (B1–E6)	B1 (corresponds to the sound of an open 7th string) to E6 (corresponds to the 1st string played at the 24th fret)
	RANGE 2 (B1–E5)	B1 (corresponds to the sound of an open 7th string) to E5 (corresponds to the 1st string played at the 12th fret)
	RANGE 3 (B1–E4)	B1 (corresponds to the sound of an open 7th string) to E4 (corresponds to the sound of an open 1st string)
	RANGE 4 (B1–E3)	B1 (corresponds to the sound of an open 7th string) to E3 (corresponds to the 4th string played at the 2nd fret)
EFFECT LEVEL	0–100	Adjusts the volume of the sound one octave below.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

PITCH SHIFTER

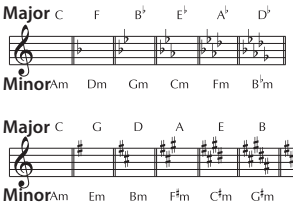
This effect changes the pitch of the original sound (up or down) within a range of two octaves.

Parameter	Value	Explanation
VOICE	Selects the number of voices for the pitch shift sound.	
	1VOICE	One-voice pitch-shifted sound output in monaural.
	2VOICE	Two-voice pitch-shifted sound (PS1, PS2) output in monaural.
PS1:PITCH PS2:PITCH	-24–+24	Adjusts the amount of pitch shift (the amount of interval) in semitone steps.
1:LEVEL 2:LEVEL	0–100	Adjusts the volume of the pitch shifter.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.
PS1:MODE PS2:MODE	Selection for the pitch shifter mode.	
	FAST, MEDIUM, SLOW	The response is slower in the order of FAST, MEDIUM and SLOW, but the modulation is lessened in the same order.
	MONO	MONO is used for inputting single notes. * You may be unable to produce the intended effect when playing chords (two or more notes played simultaneously).
PS1:FINE PS2:FINE	-50–+50	Make fine adjustments to the interval. The amount of the change in the Fine 100 is equivalent to that of the Pitch 1.
PS1:PRE DELAY PS2:PRE DELAY	0 ms–300 ms	Adjusts the time from when the direct sound is heard until the pitch shifted sounds are heard. Normally you can leave this set at 0 ms. * When set to BPM, the value of each parameter will be set according to the value of the "MASTER BPM" specified for each patch. This makes it easier to achieve effect sound settings that match the tempo of the song. * If, due to the tempo, the time is longer than the range of allowable settings, it is then synchronized to a period either 1/2 or 1/4 of that time.
PS1:FEEDBACK	0–100	Adjusts the feedback amount of the pitch shift sound.

HARMONIST

Harmonist is an effect where the amount of shifting is adjusted according to an analysis of the guitar input, allowing you to create harmony based on diatonic scales.

* Because of the need to analyze the pitch, chords (two or more sounds played simultaneously) cannot be played. Be sure to mute all the other strings and play only one note at a time.
* If the unit cannot detect the attack, it may not sound correctly. If the unit cannot detect the attack, it may not sound correctly.
* The sensitivity may vary according to the guitar's TONE knob and pickup type.

Parameter	Value	Explanation
VOICE	Selects the number of voices for the pitch shift sound.	
	1VOICE	One pitch-shifted voice is output in monaural.
	2VOICE	Two pitch-shifted voices are output in monaural.
HR1:HARMONY HR2:HARMONY	-2 oct–+2 oct, USER	This determines the pitch of the sound added to the input sound, when you are making a harmony. It allows you to set it by up to 2 octaves higher or lower than the input sound. When the scale is set to USER, this parameter sets the user scale number to be used.
MASTER KEY	C (Am)–B (G#m)	The key setting corresponds to the key of the song (#, b) as follows. 
DIR.MIX (DIRECT MIX)	0–100	Adjusts the volume of the direct sound.
HR1:PRE DELAY HR2:PRE DELAY	0 ms–300 ms,	Adjusts the time from when the direct sound is heard until the harmonist sounds are heard. Normally you can leave this set at 0 ms.
HR1:FEEDBACK	0–100	Adjusts the feedback amount of the harmonist sound.
HR1:LEVEL HR2:LEVEL	0–100	Adjusts the volume of the harmony sound.

Parameter		Value	Explanation
USER SCALE *1 *2	C	-24𝄫C–+24𝄪C	You can specify a pitch in the range two octaves above or below the direct sound.
	Db	-24𝄫D♭–+24𝄪D♭	
	D	-24𝄫D–+24𝄪D	
	Eb	-24𝄫E♭–+24𝄪E♭	
	E	-24𝄫E–+24𝄪E	
	F	-24𝄫F–+24𝄪F	
	F#	-24𝄫F♯–+24𝄪F♯	
	G	-24𝄫G–+24𝄪G	
	Ab	-24𝄫A♭–+24𝄪A♭	
	A	-24𝄫A–+24𝄪A	
	Bb	-24𝄫B♭–+24–𝄪B♭	
	B	-24𝄫B–+24𝄪B	

*1 This can be specified if HR1:HARMONY or HR2:HARMONY is "USER."

*2 The correspondence between the note names and the knobs differs depending on the specified KEY. Knob [1] of the first page is the tonic (root note) of the specified KEY. The table shows the example of when KEY is set to C (Am).

HUMANIZER

This can create human vowel-like sounds.

Parameter	Value	Explanation
MODE	This sets the mode that switches the vowels.	
	PICKING	It changes from VOWEL 1 to VOWEL 2 along with the picking. The time spent for the change is adjusted with the rate.
	AUTO	By adjusting the rate and depth, two vowels (VOWEL 1 and VOWEL 2) can be switched automatically.
VOWEL 1	a, e, i, o, u	Selects the first vowel.
VOWEL 2	a, e, i, o, u	Selects the second vowel.
RATE	0–100	Adjusts the cycle for changing the two vowels.
DEPTH	0–100	Adjusts the depth of the effect.
LEVEL	0–100	Adjusts the volume.
SENS *1	0–100	Adjusts the sensitivity of the humanizer. When it is set to a lower value, no effect of the humanizer is obtained with weaker picking, while stronger picking produces the effect. When it is set to a higher value, the effect of the humanizer can be obtained whether the picking is weak or strong.
MANUAL *2	0–100	Adjusts the cycle for changing the two vowels. When it is set to lower than 50, the time for VOWEL 1 is shorter. When it is set to higher than 50, the time for VOWEL 1 is longer.

*1 Setting available when MODE is set to PICKING.

*2 Setting available when MODE is set to AUTO.

DELAY

This effect adds delayed sound to the direct sound, giving more body to the sound or creating special effects.

DELAY Type

TYPE	Explanation
DIGITAL	This is a simple monaural delay.
ANALOG	This gives a mild analog delay sound.
TAPE ECHO	This setting provides the characteristic wavering sound of the tape echo.
REVERSE	This produces an effect where the sound is played back in reverse.
MODULATE	This delay adds a pleasant wavering effect to the sound.

DELAY Parameters

Parameter	Value	Explanation
ON/OFF	OFF, ON	Turns this effect on/off.
TYPE	Refer to DELAY Type	
DELAY TIME	1 ms–2000 ms	Adjusts the delay time.
FEEDBACK	0–100	Adjusts the volume that is returned to the input. A higher value will increase the number of the delay repeats.
HIGH CUT	630 Hz–12.5 kHz, FLAT	This sets the frequency at which the high cut filter begins to take effect. When "FLAT" is selected, the high cut filter will have no effect.
EFFECT LEVEL	0–120	Adjusts the volume of the delay sound.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.

REVERB

This effect adds reverberation to the sound.

REVERB Type

TYPE	Explanation
PLATE	Simulates plate reverberation (a reverb unit that uses the vibration of a metallic plate). Provides a metallic sound with a distinct upper range.
ROOM	Simulates the reverberation in a small room. Provides warm reverberations.
HALL 1	Simulates the reverberation in a concert hall. Provides clear and spacious reverberations.
SPRING	This simulates the sound of a guitar amp's built-in spring reverb.
MODULATE	This reverb adds the wavering sound found in hall reverb to provide an extremely pleasant reverb sound.

REVERB Parameters

Parameter	Value	Explanation
ON/OFF	OFF, ON	Turns this effect on/off.
TYPE	Refer to REVERB Type	
REVERB TIME	0.1 s–10.0 s	Adjusts the length (time) of reverberation.
PRE DELAY	0 ms–500 ms	Adjusts the time until the reverb sound appears.
EFFECT LEVEL	0–100	Adjusts the volume of the reverb sound.
DIRECT MIX	0–100	Adjusts the volume of the direct sound.
LOW CUT	FLAT, 20 Hz–800 Hz	This sets the frequency at which the low cut filter begins to take effect. When "Flat" is selected, the low cut filter will have no effect.
HIGH CUT	630 Hz– 12.5 kHz, FLAT	This sets the frequency at which the high cut filter begins to take effect. When "FLAT" is selected, the high cut filter will have no effect.
DENSITY	0–10	Adjusts the density of the reverb sound.
SPRING SENS **(TYPE = SPRING only)**	0–100	Adjusts the sensitivity of the spring effect. When the value is set higher, the effect is obtained even with a weak picking.

NS

This effect reduces the noise and hum picked up by guitar pickups. Since it suppresses the noise in synchronization with the envelope of the guitar sound (the way in which the guitar sound decays over time), it has very little effect on the guitar sound, and does not harm the natural character of the sound.

NS Parameters

Parameter	Value	Explanation
THRESHOLD	0–100	Adjust this parameter as appropriate for the volume of the noise. If the noise level is high, a higher setting is appropriate. If the noise level is low, a lower setting is appropriate. * High settings for the threshold parameter may result in there being no sound when you play with your guitar volume turned down.
RELEASE	0–100	Adjusts the time from when the noise suppressor begins to function until the noise level reaches "0."