Forte™
STAGE PIANO

Musician's Guide

Including **Forte®7**

FLASH PLAY™

KURZWEIL®
It's the **sound**.®

Forte®

Forte®7

FLASH⚡PLAY™

KURZWEIL®

It's the **sound**.®

IMPORTANT SAFETY & INSTALLATION INSTRUCTIONS

INSTRUCTIONS PERTAINING TO THE RISK OF FIRE ELECTRIC SHOCK , OR INJURY TO PERSONS

WARNING: When using electric products, basic precautions should always be followed, including the following:

1. Read all the Safety and Installation Instructions and Explanation of Graphic Symbols before using the product.

2. This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a power supply cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet which is properly installed and grounded in accordance with all local codes and ordinances.

   DANGER: Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Do not modify the plug provided with the product – if it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use an adaptor which defeats the function of the equipment-grounding conductor. If you are in doubt as to whether the product is properly grounded, check with a qualified serviceman or electrician.

3. Do not use this product near water – for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.

4. This product should only be used with a stand or cart that is recommended by the manufacturer.

5. This product, either alone or in combination with an amplifier and speakers or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.

6. This product should be located so that its location or position does not interfere with its proper ventilation.

7. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.

8. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

9. This product may be equipped with a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.

10. The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time. When unplugging the power supply cord, do not pull on the cord, but grasp it by the plug.

11. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

12. The product should be serviced by qualified service personnel when:
    A. The power supply cord or the plug has been damaged;
    B. Objects have fallen, or liquid has been spilled into the product;
    C. The product has been exposed to rain;
    D. The product does not appear to be operating normally or exhibits a marked change in performance;
    E. The product has been dropped, or the enclosure damaged.

13. Do not attempt to service the product beyond that described in the user maintenance instructions. All other servicing should be referred to qualified service personnel.

14. WARNING: Do not place objects on the product's power supply cord, or place the product in a position where anyone could trip over, walk on, or roll anything over cords of any type. Do not allow the product to rest on or be installed over cords of any type. Improper installations of this type create the possibility of a fire hazard and/or personal injury.

RADIO AND TELEVISION INTERFERENCE

WARNING: Changes or modifications to the instrument not expressly approved by Young Chang could void your authority to operate the instrument.

IMPORTANT: When connecting this product to accessories and/or other equipment use only high quality shielded cables.

NOTE: This instrument has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This instrument generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this instrument does cause harmful interference to radio or television reception, which can be determined by turning the instrument off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the instrument and the receiver.

• Connect the instrument into an outlet on a circuit other than the one to which the receiver is connected.

• If necessary consult your dealer or an experienced radio/television technician for additional suggestions.

The normal function of the product may be disturbed by strong electromagnetic interference. If so, simply reset the product to resume normal operation by following the instructions in the manual. If normal function does not resume, please use the product in another location.

NOTICE

This apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

AVIS

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

SAVE THESE INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this apparatus near water.

6) Clean only with dry cloth.

7) Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet

10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11) Only use attachments/accessories specified by the manufacturer.

12) Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13) Unplug this apparatus during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Warning: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.

To completely disconnect this equipment from the AC Mains, disconnect the power supply cord plug from the AC receptacle.

This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm. Wash hands after handling. Remarks: As with most electronic equipment, the outer cables may contain phthalate and the copper alloy power plug contains lead.

Kurzweil International Contacts

Contact the Kurzweil office listed below to locate your local Kurzweil representative.

US Customers:

American Music & Sound
925 Broadbeck Dr #220
Newbury Park, CA 91320

Tel: 800-431-2609
Fax: 818-597-0411
Email: info@americanmusicandsound.com

Customers outside the US:

Young Chang Co., LTD.
178-55, Gajwa-Dong, Seo-Ku
Incheon, Korea Post Code: 404-714

Tel: +82-32-570-1576
Fax: +82-32-576-2340

www.kurzweil.com

support@kurzweil.com

www.facebook.com/kurzweilmusicsystems/

www.twitter.com/KurzweilMusic

www.youtube.com/user/KurzweilTutorials

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Chapter 1
Introducing the Forte

Congratulations on your purchase of a Kurzweil Forte® Stage Piano! Keep the manual on hand as you continue to familiarize yourself with the features and functions of your instrument.

Using this Guide with the Forte7

This manual is designed to cover both the Forte® and Forte®7 pianos. These instruments share common features and the term "Forte" is used to cover a description of both. Where there are differences, we use the name "Forte7" to help instruct owners of that instrument.

Main Features

The Forte Stage Piano is the most advanced keyboard to ever bear the Kurzweil logo. Featuring Flash-Play technology and a high resolution color display, the Forte boasts hundreds of excellent preset sounds, with a massive 16GB of ROM and 128 voice polyphony. The Forte's new sounds are modeled after Steinway Hamburg D and Vintage Yamaha C7 pianos, Rhodes ('73 and '77) and Wurlitzer electric pianos, Clavinet D6 (rhythm and treble pickups) and French Harpsichord (five dispositions).

The Forte's new piano sounds offer a full range of dynamics, from the most delicate pianissimo to the full-on thunder of the heaviest fortissimo. These piano sounds utilize long unlooped samples allowing for beautiful harmonic interplay between sustained notes.

Mechanical key release and pedal samples provide added realism. The Forte's Piano programs can also be played with "Half Damper" sustain pedal techniques (this requires a continuous switch pedal, see "Connecting a Half Damper Pedal" on page 2-8 for details).

Also included are rich new orchestral percussion instruments such as Celeste, Bells, Glockenspiel, Chimes, and Crotales (hit and bowed).

Forte also includes our fully featured Kurzweil KB3 ToneReal™ organ simulator designed to emulate classic tone wheel organs like the Hammond B3, as well as Farfisa and Vox organs.

The Forte is also a very capable MIDI controller ideally suited to controlling additional sound modules and as input to a sequencer.

Sounds

- New German & Japanese Grand Pianos
- Rhodes ('73 and '77) and Wurlitzer electric pianos, Clavinet D6 (rhythm and treble pickups) and French Harpsichord (five dispositions)
- New Orchestral Percussion: Celeste, Bells, Glockenspiel, Chimes, and Crotales (hit and bowed)
- Selected sounds from our acclaimed PC3/Artis series & Kore64 expansion
- 16GB ROM used with our highly acclaimed FX Engine.
- KB3 ToneReal ™ organ simulations with 9 sliders as drawbars (Hammond ™ simulation uses 0 voices of polyphony)
- More than 300 Factory Programs divided into 20 Categories
- 1024 User IDs to save your own Programs
- More than 150 Factory Multis
- 1024 User IDs to save your own Multis
- MP3 player audio input jack
- Full 128 voices of polyphony

Keyboard and Controllers

The Forte has an 88-key fully-weighted hammer action keyboard that provides you with a piano-like feel without adding excessive weight to the instrument. The array of physical controllers includes:

- 9 assignable sliders (with LED ladders)
- 9 switches (assignable/zone mutes/KB3 control)

- A pitch wheel
- A modulation wheel
- 1 Variation switch
- 1 Tap Tempo switch
- 2 Transpose switches
- Monopressure (Aftertouch)
- 3 jacks on the rear panel for switch pedals: SW1 (Sustain), SW2 & SW3
- 2 jacks on the rear panel for optional continuous controller pedals: CC1 (Volume) & CC2

Pedals (Optional)

As described above, the Forte has five jacks on the rear panel for optional pedal controllers.

Three jacks for switch pedals, which are typically used to control two-state (i.e., on / off) parameters such as sustain, sostenuto, and soft. A Half Damper pedal (also known as a continuous switch pedal) can be used to allow for "half pedaling" sustain techniques when playing Forte piano programs.

The remaining two jacks are for continuous control (or CC) pedals typically used to control multi-state (i.e., "continuous") parameters such as volume and wah.

Your Kurzweil dealer stocks the following pedals:

- FS-1   Standard single box-shaped switch pedal
- KFP-1   Single piano-style switch pedal
- KFP-2S Double piano-style switch pedal unit (one stereo plug)
- CC-1   Continuous pedal

Keeping the Forte/Forte7 up to date

Be sure to check the Kurzweil Music Systems website at http://www.kurzweil.com for new documentation and the latest software updates for Forte. This manual was written for Forte software release v1.40 and OS 3.55. See the Info page in Global mode to check the currently installed OS version.

Do You Have Everything?

Your Forte package should contain the following in addition to your instrument:

- Power cable
- Switch pedal
- USB cable (Type-A-to-Type-B)
- 4 self adhesive feet (see page 2-1)
- Forte Getting Started manual

If you don't have any of these components, please contact your Kurzweil / Young Chang dealer to get them.

Music Rack (Optional)

The optional KMR2 Music Rack attachment is a holder for sheet music or a computer tablet device. Contact your Kurzweil dealer for the KMR2 Music Rack. Please refer to the instructions that come with the KMR2 on attaching the music rack to the Forte.
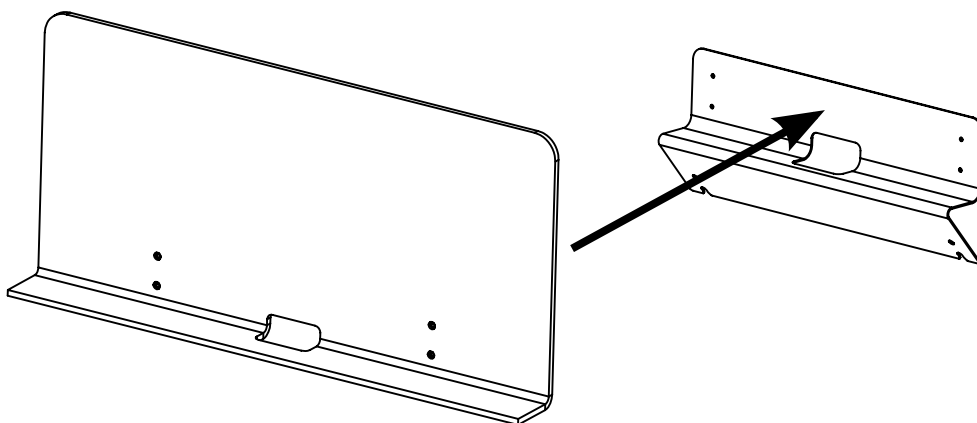
Chapter 2
Getting Started

As the excited owner of a brand-new keyboard, you've probably already unpacked your Forte and want to check it out. This chapter will help you to hook the Forte or Forte7 up to both your audio and MIDI systems, give you a quick overview of how it works, and show you how to start making great sounds with your new instrument.

Before You Start…

Don't connect anything until you make sure the Forte is properly and safely situated. If your Forte keyboard has been out in the cold, give it time to warm up to room temperature before starting it, since condensation may have formed inside.

Setting up the Forte

1. Set the keyboard on a hard, flat, level surface.

2. Four adhesive-backed rubber feet are provided with your Forte. Carefully turn the keyboard over onto a soft surface, remove the paper backing from the rubber feet and attach them.

Attach Rubber Feet Here
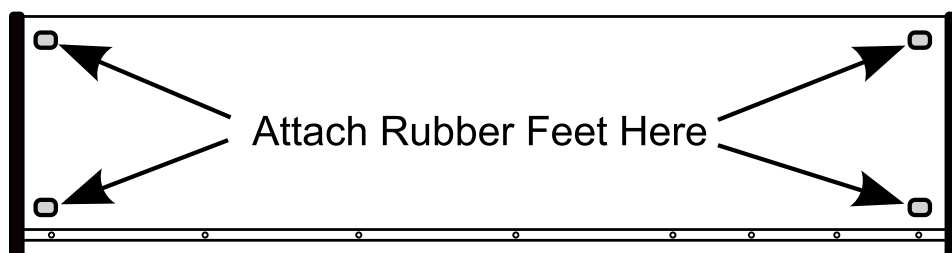
NOTE : Unless the instrument will always be used with a keyboard stand, attachment of the rubber feet is strongly advised. Otherwise protruding screws may scratch the tabletop.

3. Connect the AC power cord to the Forte. Before plugging the cable into a power outlet, check that your power source is compatible with the Forte. The Forte runs on AC power and works with voltages from 100-240 volts at 50–60 Hz. The voltage level is detected and set automatically by the Forte. If your power source does not have the standard three hole outlet, you should take the time to install a proper grounding system. This will reduce the risk of a shock. If your power outlet is not within these ranges it is recommended you use an appropriate adaptor.

4. Plug the power cable into the wall.

5. Plug the Switch Pedal into the marked SW1 (Sustain) Pedal jack on the Forte rear panel.

6. Connect stereo headphones to the headphone jack on the front left panel, or connect the audio outputs to your mixer or amplifier inputs using standard (1/4-inch) audio cables (use the Left out for mono). Balanced ("TRS" or "Stereo") cables are recommended if your mixer or amp supports balanced inputs.

7. Make sure your sound system is at a safe volume level. Also make sure that the Forte Master Volume slider (on the far left side of the front panel) is all the way down.

Using the Forte/Forte7

1. Power up the Forte using the power switch on the rear left side of the instrument, and then raise the Master Volume slider, and mixer/amp volume. Your Forte keyboard starts up in Program Mode by default. Press one of the buttons under the "Mode" label to the right of the display to switch Modes.
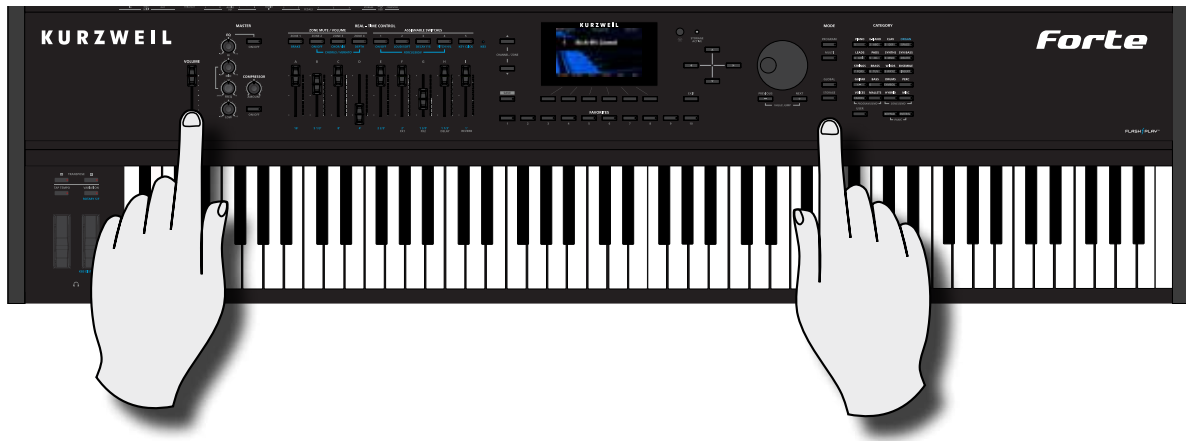
Master Volume Slider   **Mode Selection**

2. If you are connected to a mixing board and hear distortion, reduce the gain level on your mixing board, or use the pad *(a switch that decreases the input audio signal level, typically by 20dB)* if it has one.

3. To hear the capabilities of the Forte, you can play the demo songs. Press the Hybrid and Misc Category buttons simultaneously to listen to a demo song.

4. In Program Mode, scroll through the Programs using the Alpha Wheel, the Previous and Next buttons, or press a Category button to audition the sounds in the Forte. The Forte has short demos for each of the factory Programs. To hear a Program Demo for the current Program, press the Voices and Mallets Category buttons simultaneously.

The Rear Panel

The power switch and most of the Forte/Forte7 connections are located on the rear panel.

NOTE: The Forte headphone connection is *not* on the rear panel. It is located on the front left side underneath the Pitch & Modulation wheels for easy access.
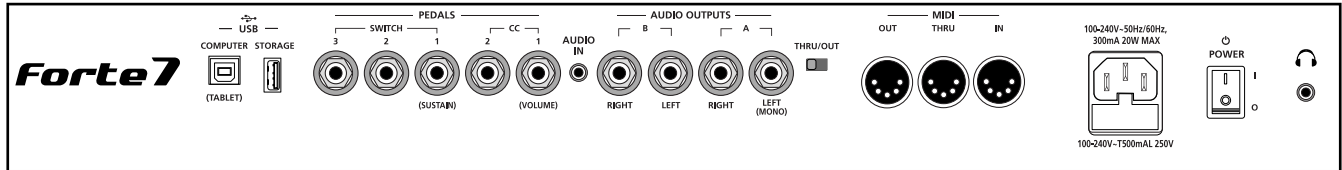
The AC Power Jack

The USB Ports

Use the "Computer" USB ports to connect the Forte to a computer/tablet in order to do the following:

- Use the Forte as a MIDI controller to play software instruments on a computer.
- Use a computer program to sequence multitrack songs on the Forte.
- Use a computer/tablet to manage the user data contents of the Forte.
- Update the software and sounds of the Forte.

Use the "Storage" USB Port to store custom Programs and Multis on a USB flash drive.

Be sure to check the Kurzweil Music Systems website at www.kurzweil.com for new documentation and software updates before using your new instrument.

The MIDI Ports (IN / THRU / OUT)

Use the MIDI ports to communicate with other MIDI modules and controllers. The Out port is the MIDI transmitting port, and the In port is the MIDI receiving port. Use the Thru port to pass MIDI data through the Forte to other instruments or modules.

By sliding the switch on the rear panel from Thru to Out, the Forte sends MIDI Out messages on both the Thru and Out ports. The USB ports can also be used to transmit MIDI messages.

Basic MIDI Hookup

To use the Forte as a MIDI controller for another sound module, use a MIDI cable to connect the MIDI port marked "OUT" to the MIDI input port of the module that you want to control.

To control the Forte using another MIDI controller, use a MIDI cable to connect the MIDI port marked "IN" to the MIDI output port of the controller that you will be using.

Using Forte MIDI Out   ## Using Forte MIDI In
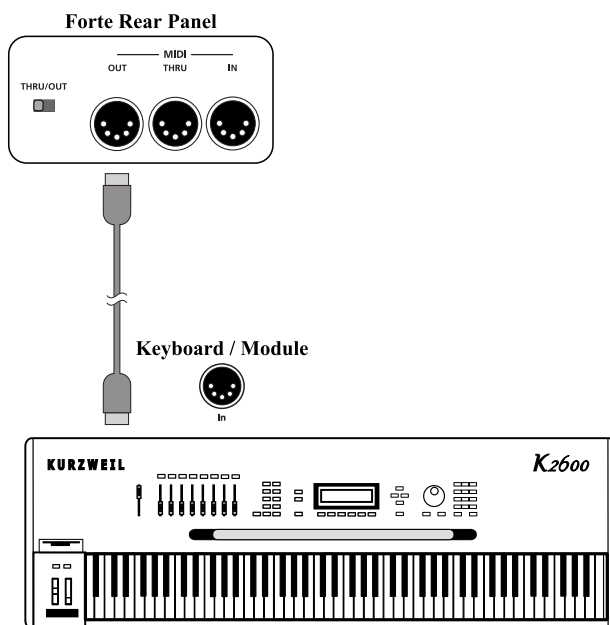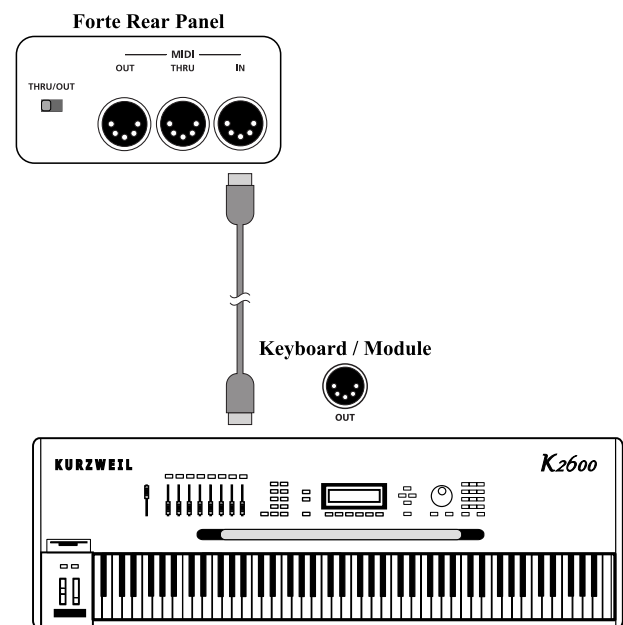
Connecting More Sound Modules

In order to connect multiple sound modules to be controlled by a single MIDI controller, the Forte can either be :

> (1) Used as the controller.

> (2) Or as a module in the MIDI daisy chain.

If the Forte is in the middle of the MIDI daisy chain, ensure that the MIDI Thru/Out selecter is set to Thru.

Scenario 1: Forte as the MIDI controller

Module 1   MIDI Thru   MIDI In   Module 2   MIDI Thru   MIDI In   Last Module

MIDI In
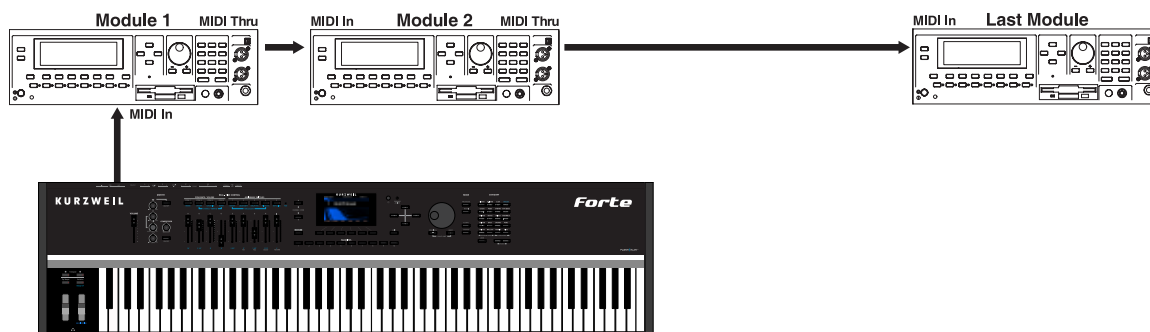
Scenario 2: Forte as the last module in the MIDI chain

Module 1   MIDI Thru   MIDI In   Module 2   MIDI Thru

MIDI In   MIDI In   Last Module

MIDI In

MIDI Out   **MIDI Controller**

KURZWEIL   *K2600*
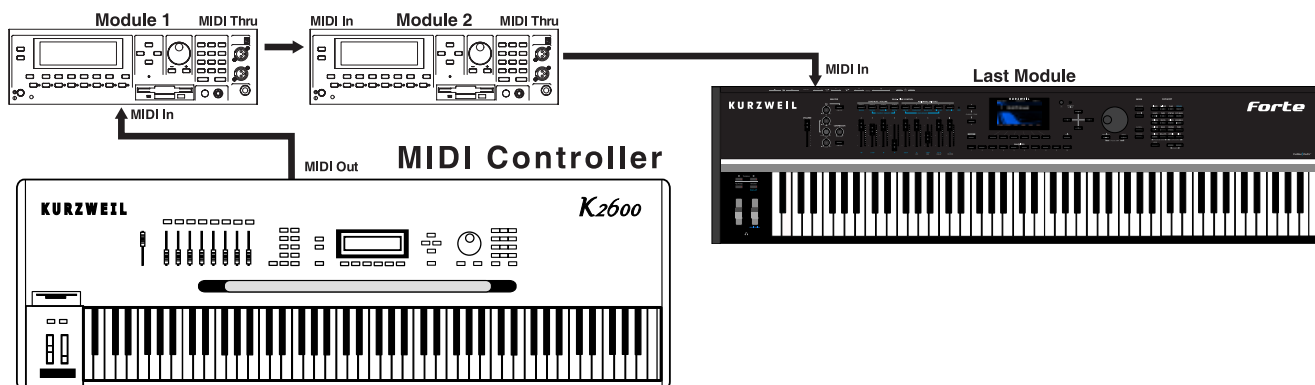
Scenario 3: Forte in the middle of the MIDI chain

Module 1   MIDI Thru

MIDI In   MIDI Thru   Module 2   MIDI In   Last Module

MIDI In

MIDI In

MIDI Controller

MIDI Out

KURZWEIL   *K2600*
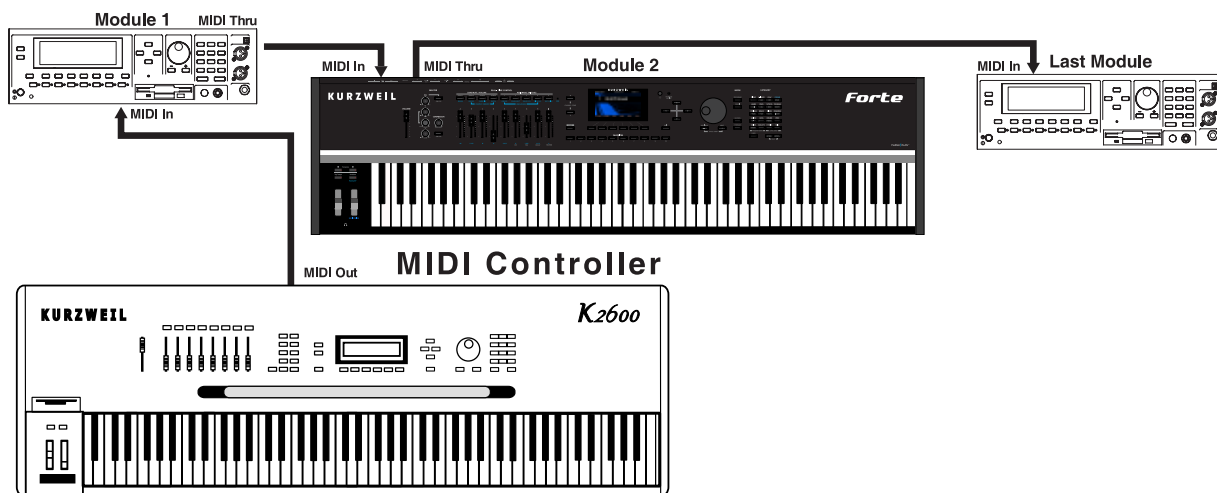
The Pedal Jacks

Use the five pedal jacks to connect controller pedals to the Forte.
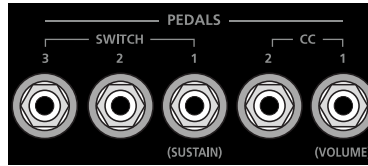
Although optional Kurzweil pedals are recommended, it is possible to use most switch or controller pedals that adhere to the following specifications.

Switch Pedals	1/4 inch tip-sleeve (mono) plug
Continuous Control (CC) Pedals	10-kOhm linear-taper potentiometer, 1/4 inch tip-ring-sleeve (stereo) plug with the wiper connected to the tip.

Pedals are all independently assignable within each Zone of every Multi.

On the back panel the Pedals are labeled as SWITCH 1/2/3, corresponding to the SW 1/2/3 labelling on the top panel. In this manual the Switch Pedals will be referred to as per the top panel (SW1, SW2 and SW3).

Here are the default control settings for the five pedals used by the Forte:

Switch Pedal 1 (SW1)	Sustain (MIDI 64)
Switch Pedal 2 (SW2)	Sostenuto (MIDI 66)
Switch Pedal 3 (SW3)	Soft (MIDI 67)
CC Pedal 1 (CC1)	Expression (Volume) (MIDI 11)
CC Pedal 2 (CC2)	Foot (MIDI 4)

The SW1 (Sustain), SW2 and SW3 Jacks

Use the pedal jacks to connect switch pedals. A switch pedal is a physical controller typically used to control two-state (i.e., "on / off") parameters, such as sustain, sostenuto, soft and Mute Zone.
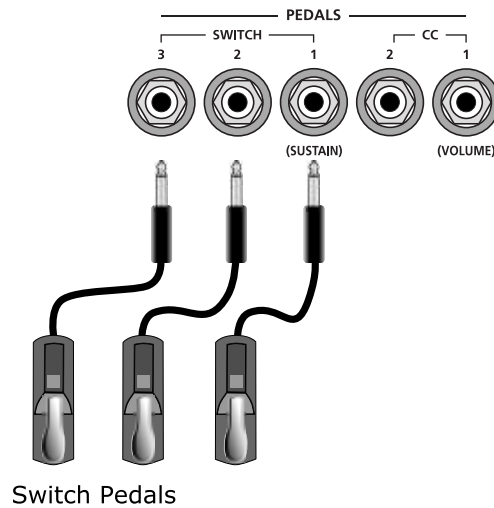
Switch Pedals

NOTE : Do not step on the switch pedals when powering up the Forte, as the state of the pedal is detected as part of the power up sequence.

The Forte supports a single switch pedal or half-damper pedal on each of the SW1, SW2 and SW3 jacks.

NOTE : Pugging CC pedals into the SW inputs is not recommended. Due to the flexible switch pedal support, CC pedals may not operate as expected in these inputs.

If you are not using a Kurzweil switch pedal, make sure it's connected before you turn on the Forte. This ensures that the pedal will work properly (it might function in reverse—off when it's down and on when it's up—if you turn on your Forte before plugging in the pedal). Similarly, don't press any of your switch pedals while powering up, as the Forte verifies each pedal's orientation during power-up. If you're pressing a pedal, you might cause it to work in reverse.

Connecting a Half Damper Pedal

Half Damper pedals where the wiper is connected to the tip (such as the KORG DS-1H™) can be connected to the SW1, SW2, and SW3 inputs on the rear panel. Some pedals have the wiper connected to the ring, and these pedals will require an adaptor to work with the Forte. When connected to the SW1 jack, a Half Damper pedal enables finer control of

sustain than a standard switch pedal. Half Damper control is enabled for programs in the Piano category. Programs outside of the Piano category will respond to Half Damper pedals as if they are standard switch pedals. Half Damper pedals can also be used to control external software and sound modules via MIDI.

Connecting a Dual Switch Pedal

You can connect a dual switch pedal with a single stereo plug, such as the Kurzweil KFP-2S, into the SW1 and SW2 jacks. You will need a Y adapter with a stereo ¼-inch jack and two mono ¼-inch plugs. Plug the Y adapter into the SW1 and SW2 jacks, then connect the dual switch pedal to the Y adapter. If the Sustain and Sostenuto functions are swapped, then swap the two mono plugs.

"Y" Connector

Double Switch Pedal
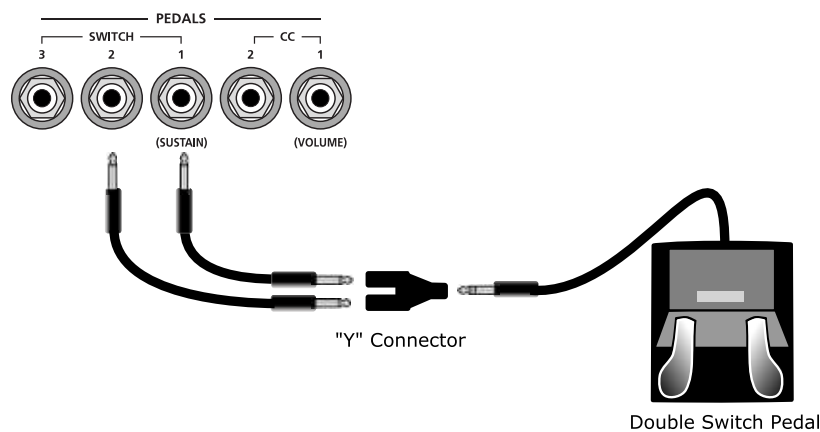
If you're not familiar with traditional piano technique, the sostenuto (center) pedal on a grand piano allows one to hold chords in the bass while continuing to play the melody without the latter notes sustaining. Any keys that are down when you depress the pedal will sustain when you let go of the keys, but new notes played afterward will not be sustained. Releasing the pedal puts things back to normal. Of course it can be programmed to do other functions as well.

The CC1 (Volume) and CC2 Jacks

Use the CC pedal jacks to connect continuous control (or CC) pedals. A CC pedal is a physical controller typically used to control multi-state (i.e., "continuous") parameters such as volume or wah.

The Kurzweil CC-1 continuous control pedal will work best with Forte, but it is also possible to use some third-party continuous control pedals designed for synthesizers.

> **NOTE : Only CC pedals should be connected to the CC pedal input.**
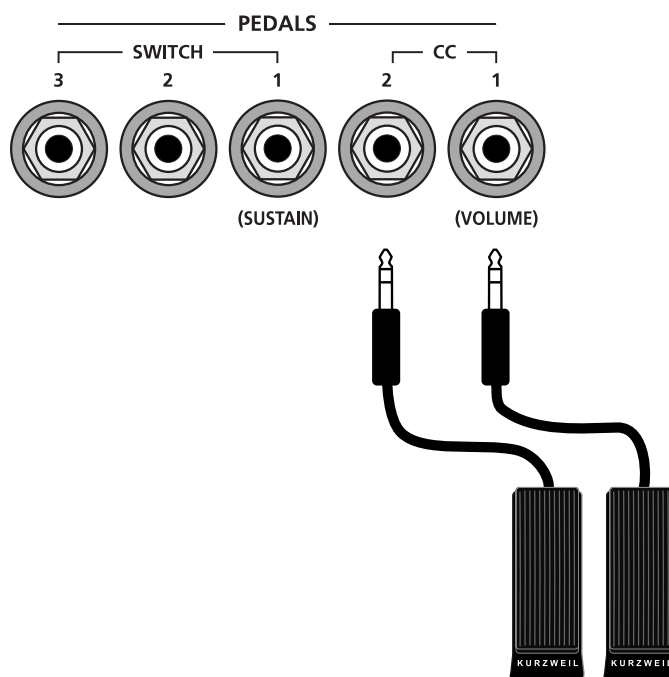
Continuous Control Pedals

The Audio Jacks (A & B Audio Ouputs)

Please refer to Connecting to Your Audio System below.

The Headphones Jack

Use the Headphones jack to listen to the Forte on stereo headphones. The headphone jack is located at the front left of the instrument, under the Pitch & Modulation wheels.

You will need a 1/4-inch-to-1/8-inch adapter in order to use headphones that have a smaller mini plug connector.

Connecting to Your Audio System

After you've turned down the level on your sound system, connect the Forte analog audio outputs to your sound system using a pair of balanced (TRS or "stereo") or unbalanced (TS or "mono") audio cables. Unbalanced cables will always work, but if you're going into balanced inputs, use balanced cables for a better signal-to-noise ratio and a bit more volume. The Forte analog outputs are balanced.

You'll find four 1/4-inch balanced audio output jacks on the rear panel, the "A" Audio Output pair and the "B" Output pair. Connect one end of each audio cable to the "A" Audio Output jacks found on the rear panel of the Forte marked "Left (Mono)" and "Right," and the other end to your mixing console or PA system inputs. If you have only one input available, use the Forte's Left (Mono) output to get the full signal in mono. Use the jack marked Headphones (located on the front/left of the instrument) to listen to Forte on headphones. When headphones are plugged in, sound still comes through the Left and Right audio jacks.

Forte connected to powered speakers and headphones
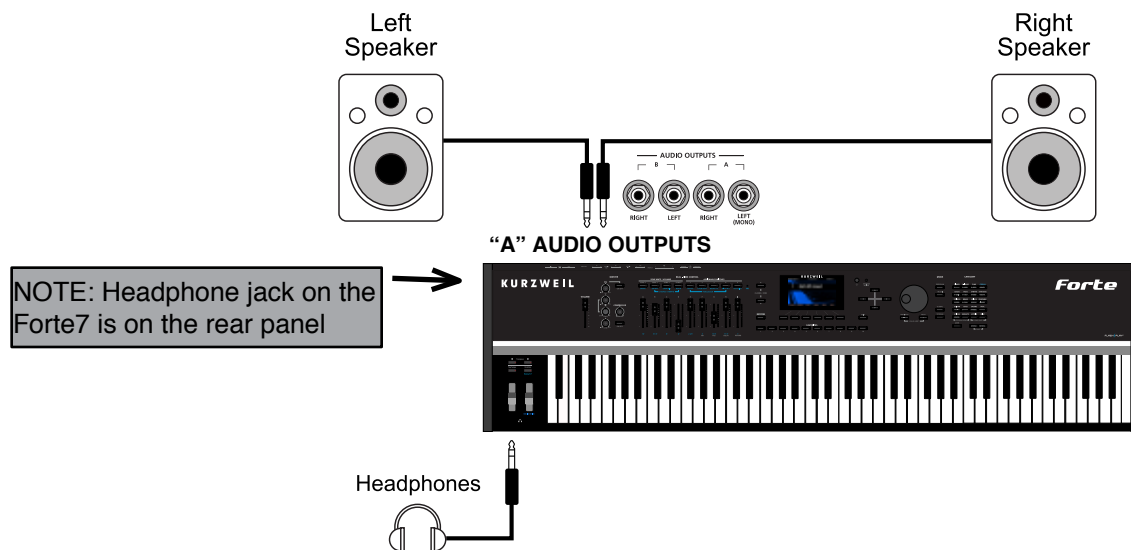
Forte connected to a mixer, powered speakers and headphones

Left Speaker

Left Mixer Out

Right Mixer Out

Right Speaker

Mixer IN

MIXER

AUDIO OUTPUTS
B   A

RIGHT   LEFT   RIGHT   LEFT (MONO)

"A" AUDIO OUTPUTS

NOTE: Headphone jack on the Forte7 is on the rear panel

KURZWEIL   Forte

Headphones
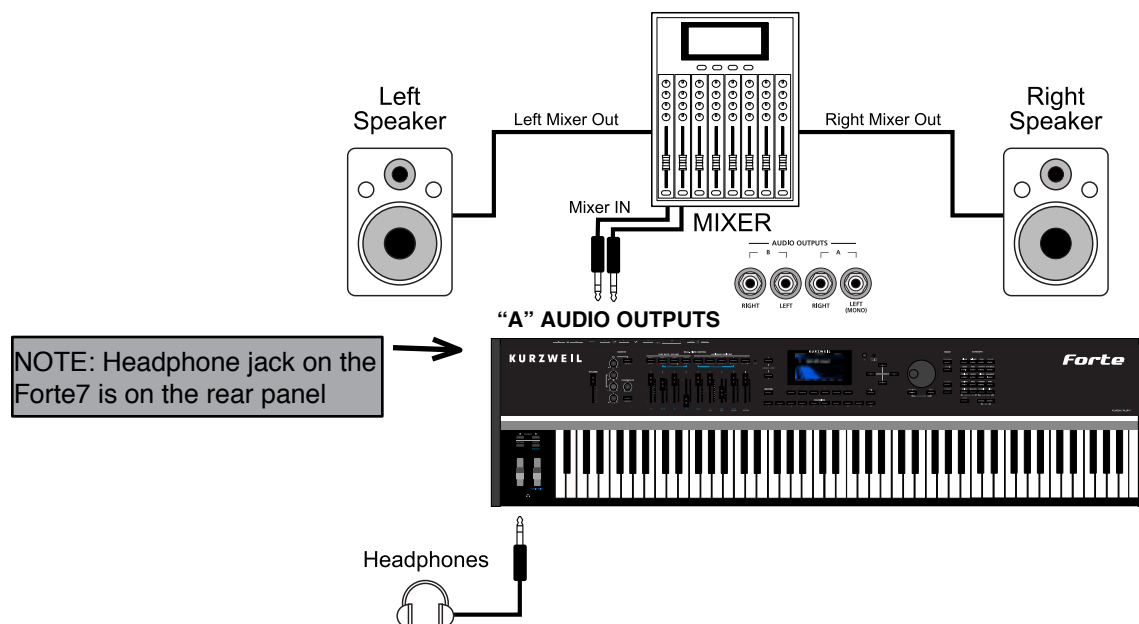
Connecting to a Computer

To connect the Forte to a computer/tablet, simply connect the provided USB cable from the Forte's USB Computer (Tablet) port to a USB port on your computer. If you wish to use your own cable, make sure that it is a Type-A-to-Type-B USB cable (the USB Computer (Tablet) port of Forte being Type B).
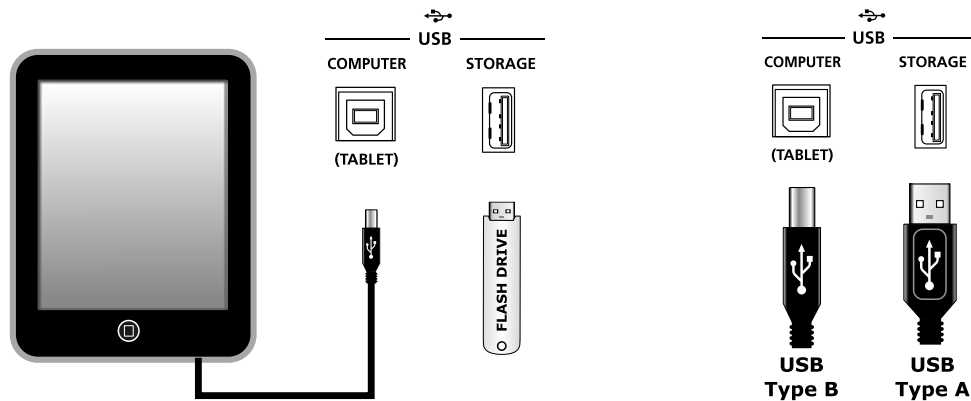
NOTE : Some devices like the iPad® will require you to purchase adaptors to connect a USB cable.

Selecting Programs and Multis

The Forte supports two types of sounds. The first type is a Program, and these are normally a single instrument, such as a piano, or an organ. A Program is similar to a "preset" or "patch" on other synthesizers. The Forte has an extensive range of factory Programs, and additional memory for further user Programs. Both factory and user Programs are arranged into 20 categories.

The other type of sound is the more complex Multi. A Multi is a combination of Programs arranged as layers and splits across the keyboard. They are similar to setups, from the Kurzweil PC series, SP series and K2 series, and are similar to Combis or Multis from other synthesizers. The Forte has a range of factory Multis and additional memory for further user Multis.

The Forte has been designed so that it is quick and easy to select Programs and Multis from the front panel.

Use the following guide to audition the factory sounds on the Forte.

Selecting Programs

The Forte always powers up in Program Mode, with selection by Category as the default. Use the Alpha Wheel or Previous/ Next buttons to browse programs in the current category. Each Category has a factory default program, generally the first in each Category. However, the user can set the Category default by selecting the desired program, pressing and holding the current Category button for a few seconds until the display indicates that the Category default program has been saved.

You can also enter specific program numbers in Keypad mode by pressing the Keypad button (the Keypad button LED will light) beneath the Category section. In this mode the Category buttons function like a standard alphanumeric keypad. In Keypad mode the list of Programs is sorted by ID number only, instead of by Category and ID. Using the Alpha Wheel or Previous/ Next buttons will select the previous or next used Program ID, regardless of category. To exit Keypad mode press the Keypad button again. The Keypad LED will turn off and the Forte reverts back to Category mode.

Another useful feature in the Forte is the ability to access a short demo song for the currently selected Program by Pressing the Voices and Mallets Category buttons simultaneously.

To return to Program Mode from a different mode, simply press the Program Mode button.

In Program Mode, pressing a Category button will select a Category Default Program for that Category. The Category Default Program can be set by the user for each Category. By default the Forte has the Category Default Program for each Category set to the first Program of each Category. To change the Category Default Program, first select the desired Program. Next, press and hold the Category button of the currently selected Category for a few seconds until the display indicates that the Category Default Program has been saved.

Selecting Multis

To play a Multi, simply press the Multi Mode Button and the Multi Mode Button LED will light. Use the Alpha Wheel or Previous/Next Buttons to browse Multis, or enter a Multi ID number by using the Category buttons as a numeric keypad. Multis are not categorized, so the Keypad button's LED is always lit in Multi Mode and the Category buttons will always function as a numeric keypad.

User Programs and Multis

In Program or Multi Mode, press the User button to view User edited Programs or Multis that you have saved or loaded to the Forte. The LED on the User button will light, you can then use the Alpha Wheel or Previous/Next buttons to scroll through only user Programs or Multis. Press the User button again to stop viewing only user Programs or Multis, or press a Category button or use keypad mode to enter a factory ID number.

Controller Info

The Sliders, Wheels, Pedals and Switches can control each of the factory Programs and Multis, to produce variations to the sound. When one of these controls is used the Forte LCD will display information about the parameter that control is assigned to. Don't forget to try out these controls as you explore the factory sounds on the Forte.

Favorites

The Forte also features Favorites Buttons to quickly recall your favorite sounds. The Favorites buttons store a set of 10 Programs and/or Multis. To assign the currently selected Program or Multi to a Favorites button, press and hold the desired Favorites button for a few seconds until the display indicates that the Favorite has been saved. To recall a Favorite Program or Multi, simply press one of the Favorites buttons. The Favorites buttons will work from whichever mode you are currently in, changing to Program Mode or Multi Mode automatically if required.

To view the names of Programs and Multis stored as favorites, press the View soft button until you see the Favorites listed at the bottom of the display. See Favorites View and Favorites Banks on page 6-9 for details.

Modes

The Forte has six main modes; Program Mode, Program Edit, Multi Mode, Multi Edit, Global Mode and Storage Mode.

Program Mode

The Forte always powers up in Program Mode, and this is where single sounds can be played straight from the keyboard, or multitimbrally via MIDI.

Controller Conventions

Generally the factory Programs have the following controllers assigned.

Forte Controller Conventions
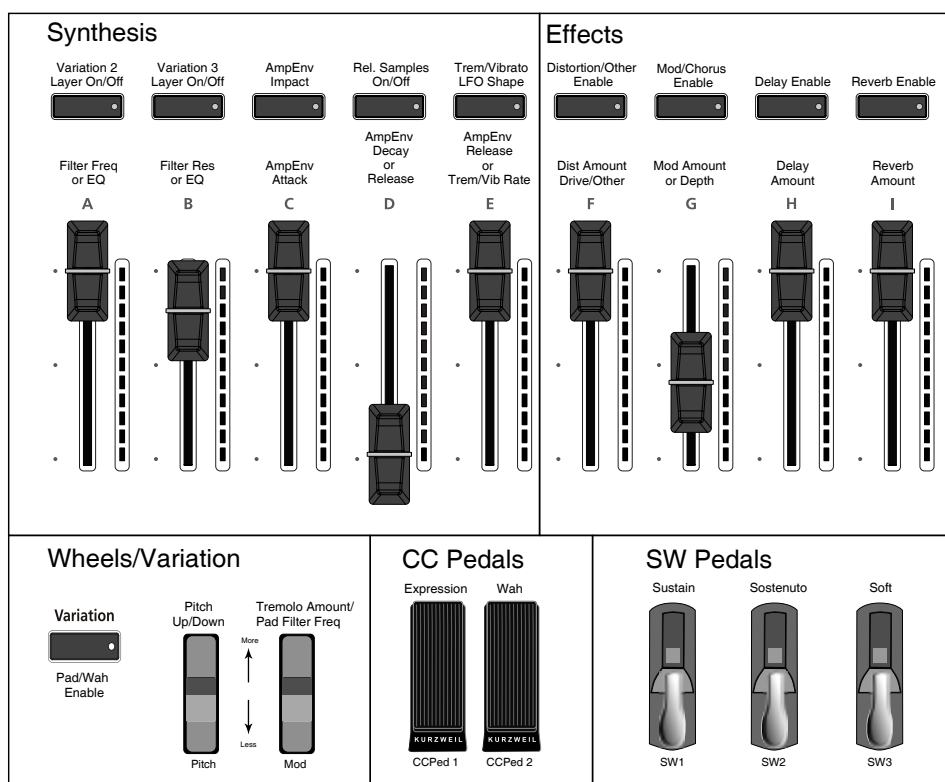
Saving Programs

If you make changes to the current Program using any of the controllers (Sliders, Wheels or Switches), the Save button's LED lights to indicate that a change has been made to that Program. The Save button is located left of the display. To save a copy of the Program with the changes you've made, press the Save button once. The Save button's LED begins to blink and it calls up the Save Dialog. The Save Dialog allows you to choose an ID number and name that will be associated with the program you are saving.

Splits and Layers

Programs can be Split into Multis, so that keys in one region of the keyboard play a different program than another region. Programs can also be Layered into Multis, so that more than one Program can be played by striking one key. Press the Split or Layer soft button to create a Split or Layer Multi containing the current Program. You will then be able to add up to three additional programs to create a Split or Layered Multi containing up to four Programs.

Program Edit Mode

Program Edit Mode allows you to change the parameters of a Program and save a customized version as a user Program. Synthesis and effects parameters can be edited or assigned to controllers. Also, Insert and Aux effects Chains can be selected.

Multi Mode

Multi mode allows you to play Multis, which are arrangements of up to 4 Programs split and/or layered in Zones across selected ranges of the keyboard. The volume of the Program in each Zone can be easily adjusted while you are playing by using sliders A through D, and each Zone can be muted and enabled by using the Zone Mute buttons above these sliders. You can create custom assignments for the remaining sliders, buttons and foot controllers to control effects and synthesis parameters of each Program.

Multi Edit Mode

Multi Edit Mode is used to modify the many parameters that make up Multis, including Program Selection, Volume, Pan, Controller assignments, effects and the layering and split options. Multi Edit Mode allows for powerful customizations of the many built in sounds available on Forte and allows you to make new and unique sound combinations for your own performances and compositions.

Global Mode

Global Mode gives you access to the global parameters of the Forte. It allows you to edit the master settings of the unit. It also allows you to restore factory defaults on the unit by performing a Hard Reset. Some of the more common settings are summarized below.

MIDI Settings

MIDI channels, modes and other parameters related to transmitting and receiving MIDI are set within the MIDI pages.

Info

The Info page displays the currently installed operating system and object versions. Use this page to check if your Forte is up to date with the most recent software and sounds posted at kurzweil.com.

System Reset

In the unlikely event that something goes wrong with the settings or software of your Forte, or if you just want to start fresh, you can return the Forte to the factory default state by doing a System Reset.

> ⚠ **NOTE : System Reset will erase ALL of the USER Programs and Multis, so it is important to back up your sounds before attempting to reset Forte. Factory Program/Multis are not affected.**

Storage Mode

Storage Mode facilitates loading and saving objects for the Forte.

Saving to External Storage

Programs and Multis that you have created can be saved to a USB Flash Drive or a computer/tablet.

Loading from External Storage

Programs and Multis can be loaded onto the Forte from USB Flash Drives or a computer/tablet. This allows you to load new sounds from Kurzweil or other developers, or to load sounds that you have previously saved.

Updating the Forte/Forte7

Please check online at www.kurzweil.com for Forte updates. Detailed instructions on updating the Forte are available with the update package. It is important that these instructions are followed closely for trouble free updating of the Forte. This manual was written for Forte software release v1.40 and OS 3.55 See the Tools page in Global mode (INFO on page 12-20) to check the currently installed OS version.

Chapter 3
Features of the Forte and Forte7

This chapter will help familiarize you with the features of the Forte. Many of these features have both general functions and mode-specific functions. For more in-depth descriptions of these features, refer to the chapters on the individual modes.

Powering Up Defaults

In general, the Forte will always remember the last selection made by the user. However, powering up the Forte resets some of these settings back to their power-on defaults.

Parameters Reset To Defaults At Power-On

- Transpose set to 0 semitones.

Parameters Remembered After Power-On

- Currently selected MIDI Channel in Program Mode.[*]
- Currently selected Program per MIDI Channel in Program Mode.[*]
- Currently selected Multi.[*]
- User Programs.
- User Multis.
- Favorites.
- Default Program per Category.
- Master EQ & Compressor switch settings.[*]
- Global Mode parameters.[*]
- Display View Mode.[*]

Must exit Global Mode to save settings.

The Front Panel

All the controls for Forte and Forte7, both musical and navigational, are on the front panel.
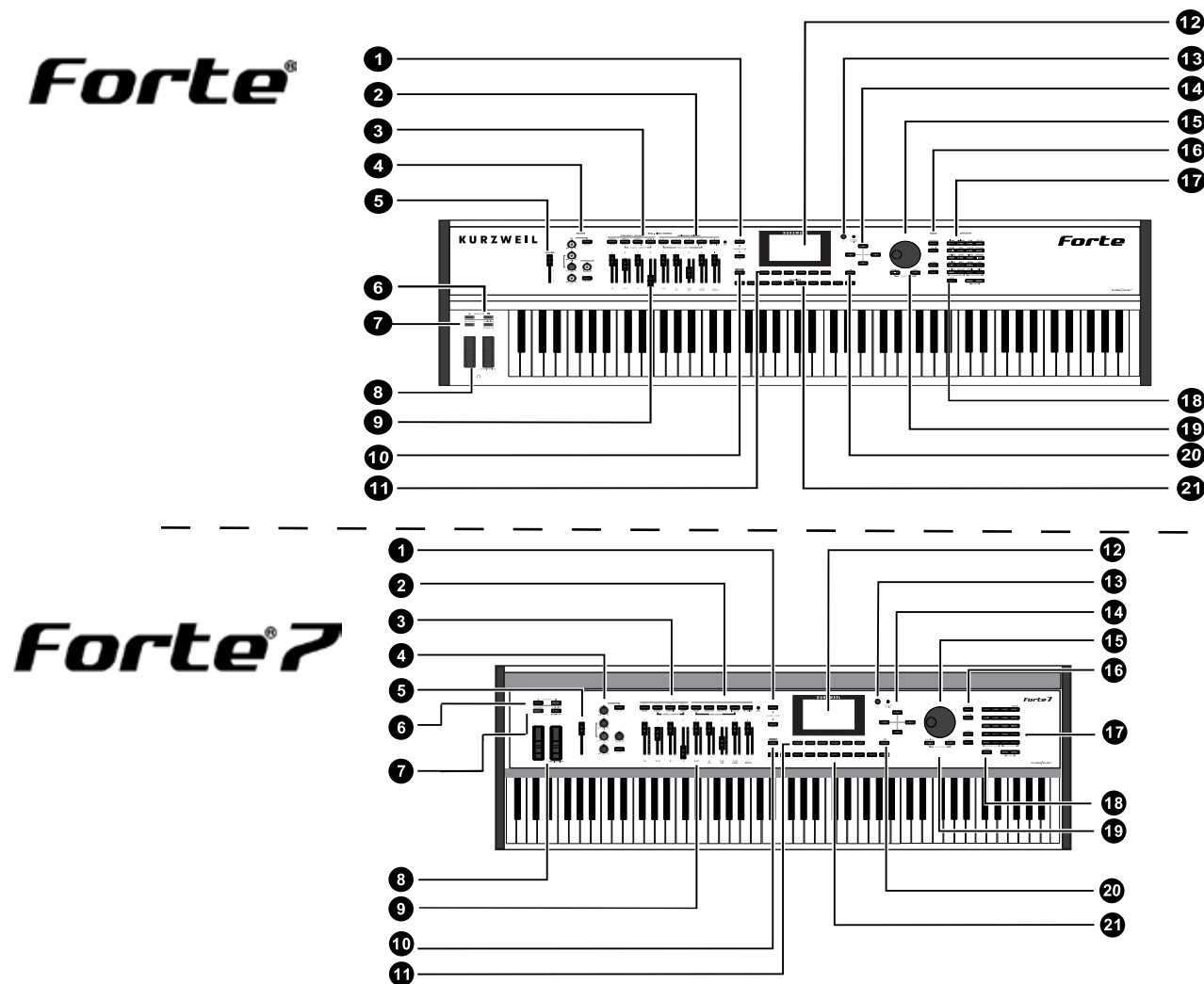
1	Channel/Zone buttons		12	LCD display
2	Five programmable switches		13	LCD brightness adjust
3	Multi Zone mute buttons		14	Navigation Buttons
4	Master EQ/Compressor		15	Rotary dial (Alpha wheel)
5	Volume slider		16	Mode buttons
6	Transpose buttons		17	Category buttons
7	Tap Tempo & Variation buttons		18	User button
8	Pitch & Modulation wheels		19	Previous/Next buttons
9	Nine programmable sliders		20	Exit button
10	Save button		21	Favorites buttons
11	Soft Buttons			

Pitch and Modulation Wheels

Pitch Wheel

The Pitch Wheel is the left most of the two wheels. It is spring-loaded, such that its center position is restored when it is not being used. That is because the Pitch Wheel is used for pitch-bending notes—its "off" position is in the center. Pushing the Pitch Wheel up bends the pitches of all notes up. Pulling the Pitch Wheel down bends the pitches of all notes down.

For some Programs the Pitch Wheel will not bend notes that are held by the sustain pedal. This is how many Guitar and Bass Programs are configured, allowing played notes to be bent over sustained notes.

For User Programs, you can program the bend amount for the Pitch Wheel using the BendRange Up and BendRange Down parameters on the EDIT: The COMMON Page on page 7-18.

For User Multis, you can program the bend amount for the Pitch Wheel using the Bend Up ST/Bend Up Ct and Bend Down ST/Bend Down Ct parameters on page 11-13.

Modulation Wheel

The Modulation Wheel is the right most of the two wheels. Unlike the Pitch Wheel, the Modulation Wheel is not spring loaded, and can be set to and left in any position between fully up and fully down. Typically, the Modulation Wheel is assigned to a parameter that alters some aspect of the sound (e.g., vibrato, filter depth) when changed.

When a KB3 Program is in use, the Modulation Wheel is assigned to control distortion.

Real Time Control

Forte Controller Conventions
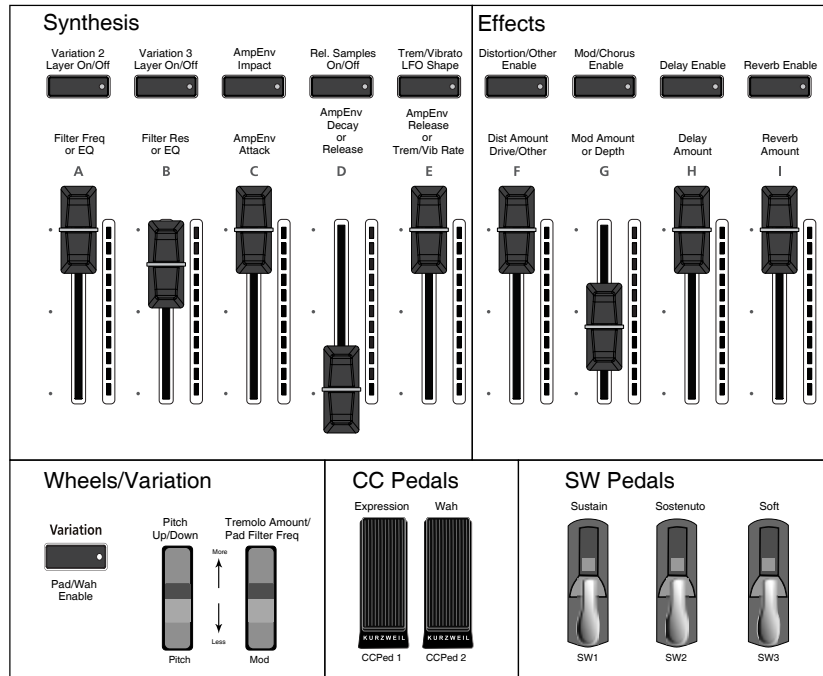
Sliders

The nine sliders on the left of the front panel are assigned to control different sound parameters and effects for each Program. In Multi Mode, Sliders A-D default to controlling volume for Zones 1-4. The sliders can also send MIDI continuous controller values to external MIDI equipment. Each slider has a handy visual LED ladder that indicates its current setting when a new Program or Multi is selected.

In Program Mode, most programs have Slider A assigned to a filter or EQ parameter in order to control the brightness of the sound. In all Programs and most Multis, Slider I controls reverb amount, while Slider H usually controls a second effect, such as delay/echo amount. The remaining sliders have different assignments depending on the selected Program/Multi. See the Controller Conventions diagram above for controller assignments commonly used by Programs.

If you select a KB3 Program, the nine sliders act like tonewheel organ drawbars. The labeling below the sliders applies to the KB3 Programs, indicating the drawbar registers that are modified by the slider.

For KB3 Programs, the sliders operate in a similar way to a Hammond organ, i.e. pulling the slider towards you increases the drawbar amount. To help illustrate this, the Forte inverts the LED ladders to indicate the drawbar (slider) position.

For standard Programs the sliders have the minimum value when they are towards the player and maximum value when they are pushed away from the player.

LED Ladders

The LED Ladders show the current value of the slider. When you change Programs or Multis the LED Ladders show the default value of the parameter assigned to the slider, which may differ from the current physical position of the slider.

Zone Mute/Volume Buttons
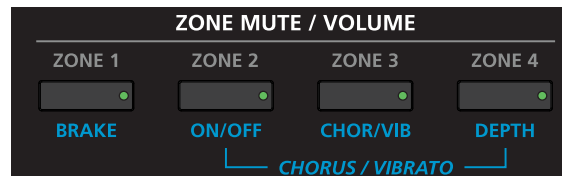
Zones are the independent regions of the keyboard that make up a Multi, for additional information see About Zones on page 10-6.

Pressing a Zone button will mute or unmute the Zone. An active/unmuted Zone button has a lit green LED. The LED of an inactive/muted Zone button is not lit.

In Program Mode the Zone buttons can be used as additional switches to control parameters of a Program. They are identified in the Program PARAMS page as zone switches. When active in Program Mode it has a lit red LED. When inactive, it is not lit.

Switches

In Program Mode, the five Switch buttons are pre-assigned to change the sound in different ways. Factory programs generally use these switches to enable effects. Switch assignments can also be changed in Program Edit mode.

In Multi Mode, you can assign the Switch buttons to control Program and effects parameters, or send MIDI CC messages to external equipment.

The Switch Button LEDs illuminate red when the switch is active.
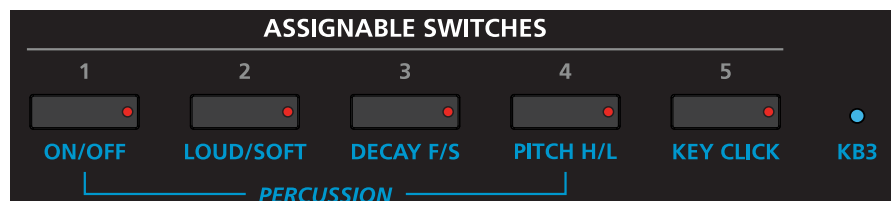
Foot Switches and Controllers

The Forte can support up to 3 Switch or Half Damper pedals as well as 2 Continuous Controller (CC) pedals. By default the Switch pedals control Sustain, Sostenuto, and Soft Pedal. The CC pedals control expression (program volume) and wah (if applicable) by default. Each pedal can also be assigned to a different function per Program or per Multi zone, or a Global mode pedal override can be set to change the default pedal functions for all Programs/Multis.

KB3 Buttons

For KB3 Programs, these buttons manipulate the KB3 sound, as per the blue labels below the button. When the LED of the button is red, the KB3 function is active.
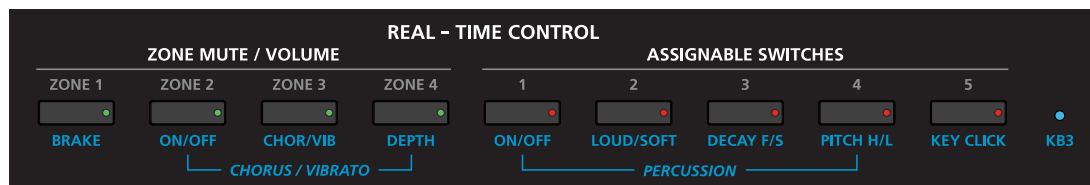
Transpose Buttons

The Transpose and Variation buttons are located at the very end of the left side of the Forte keyboard, just above the Pitch & Modulation Wheels.

The Transpose buttons can be used to change the tuning of notes played on the Forte keyboard in semitones (ST), also known as half steps. This is a convenient way to change the key of a song without learning to play it in a different key. The Transpose buttons are located to the left of the keyboard, above the Pitch and Mod Wheels. The Transpose buttons also transpose MIDI notes sent to the USB and MIDI out ports.

Press the Transpose - or + buttons to transpose the Forte keyboard down or up by one semitone. The top line of the display shows the current transposition value. Pressing both Transpose - and + simultaneously will reset the transposition to 0. To transpose up and down by octave intervals (12 ST), press the OCTAVE- and OCTAVE+ soft buttons underneath the display.

The maximum transposition value possible is +/–36 semitones.

The LEDs of the Transpose buttons indicate whether the current Program is transposed up (Transpose + LED is lit) or transposed down (Transpose – LED is lit). When there is no transposition, neither Transpose button is lit.

Variation Button

The Variation Button is a MIDI controller (default MIDI CC#29) that is programmed in most Programs to modify the sound, such as adding a pad sound, changing the effects or some other variation suited to changing with a switch.

For KB3 programs, the Variation Button controls the Rotary Speaker speed, switching between fast and slow.

Tap Tempo Button

The Tap Tempo button is a dedicated button you can use in any mode to set the Forte's tempo. When the button is being tapped to set the tempo, a message appears on the screen indicating the current tempo. The message will disappear after a few seconds. The Tap Tempo button is useful for controlling the rate of tempo synced effects, such as Delay. Many factory Programs use effects Chains containing tempo synced effects.

Save Button

The Save button is located beneath the "Save" label on the left side of the LCD screen.

In Program Mode, pressing the Save button saves the current position of the sliders, switches and wheels as a User Program. (See Save User Programs on page 6-19.)

In Multi Mode, pressing the Save button saves a copy of the current Multi. The copy is saved with the states of the Multi Zone Mute buttons but does not include the current state of the physical controllers (i.e. moved Sliders, Mod Wheel etc.). Other controller states can be edited in Multi Edit Mode. (See Saving a User Multi on page 10-15).

The Save button's LED is illuminated once you have made changes to the current Program or Multi to indicate that the Program or Multi has changed.

Master EQ & Compressor

Master EQ

The Master EQ allows you to have realtime control over the frequency response of all audio generated in either Program or Multi Modes. When the Master EQ On/Off button is "On", the rotary knobs can change the high, middle and low frequencies of the audio.

If the LED on the Master EQ On/Off button is lit, this indicates that the Master EQ section is now "on".

The HI and LOW EQ's are shelving type filters, and the MID has an adjustable center frequency with a range of approximately 2 octaves up and down centered around approximately 1.4 kHz

	Frequency	Gain
HI	~6.6 kHz	-24dB to +15dB
MID*	~1.4 kHz	-24dB to +15dB
LOW	98 Hz	-24dB to +15dB

* center of range

Compressor

Use the Master Compressor to add compression to all audio generated in either Program or Multi Modes. Press the Compressor On/Off switch to enable the master compressor. If the LED on the Master Compressor On/Off button is lit, this indicates that the Master Compressor is now "on". Turn the Compressor knob to adjust the amount of compression (left is minimum, right is maximum).

Generally, a compressor listens to an audio input signal and outputs a continuously volume adjusted version of the input signal. A small amount of compression can help a sound to blend with a band or other instruments by making the volume of each note more consistent. Large amounts of compression act more like a special effect, reducing the attack volume of notes, and increasing the decay, sustain and release volume of notes.

The Master EQ and Compressor are arranged in the signal chain as per the diagram below. While it is not possible to swap the order of the compressor and Master EQ either or both of these effects can be bypassed by using the relevant On/Off button.

Programs & Multis → COMPRESSOR → MASTER EQ → Audio Output

Audio In

On the back panel of the Forte you will find a ⅛" sized stereo audio jack labelled AUDIO IN.
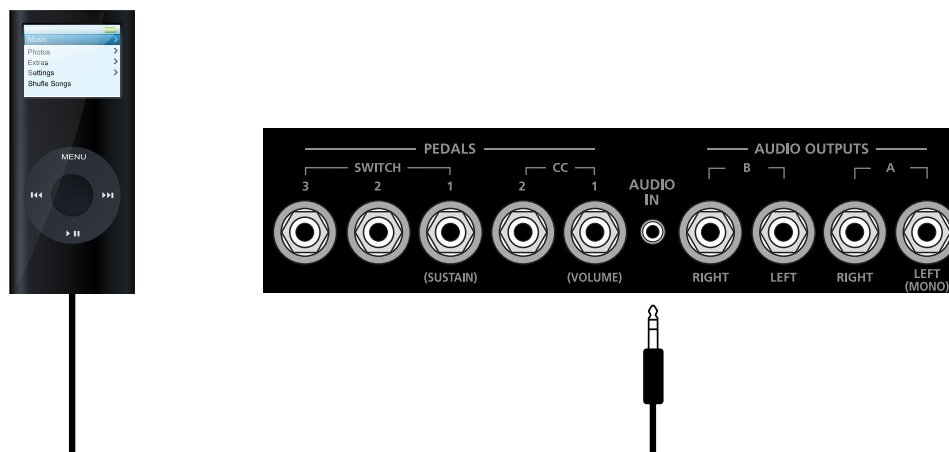
You can plug your MP3 player into the Forte and play along with the recorded music. There is no volume control for the Audio Input on the Forte itself, so you should control the mix volume of the Audio Input from the MP3 player itself.

<u>By default the audio input on Forte is Off.</u>

To turn it On you will need to go to Global Mode on the MAIN1 page and set the "Audio Input" parameter to On.

Mode Buttons

The Mode buttons are located beneath the "Mode" label on the right side of the Forte front panel.

Program Button

Pressing the Program button enters Program Mode (described in Program Mode on page 5-1 and, in further detail, in Program Mode on page Ch. 6 Program Mode). In Program Mode, you can select and play different sounds (or "Programs"). This button's LED is illuminated when you are in Program Mode. Program Mode is the default Mode — the Forte always boots up in this Mode.

Multi Button

Pressing the Multi button enters Multi Mode (described in Multi Mode on page 5-2 and, in further detail, in Ch. 10 Multi Mode). In Multi Mode, you can select different configurations of Programs, controller assignments, and MIDI channel assignments.

This button's LED is illuminated when you are in Multi Mode.

Global Button

Pressing the Global button enters Global Mode (described in Global Mode on page 5-3 and, in further detail, in Ch. 12 Global Mode). In Global Mode, you can edit parameters that control the overall behavior of the Forte. These parameters include tuning, transposition and velocity as well as being able to reset the Forte back to a factory state.

This button's LED is illuminated when you are in Global Mode.

> ⚠ **CAUTION: Performing a Reset will erase ALL User Program and User Multis, and will reset Global settings to a factory state.**

Navigation

The navigation section of the Forte front panel includes the LCD display, Previous & Next buttons, Channel / Zone buttons, and the Alpha Wheel.
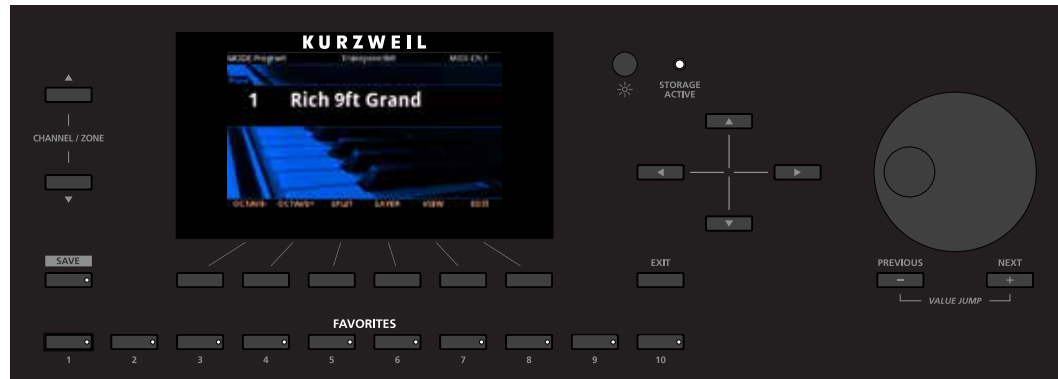
The Color LCD Display

The Forte features a high resolution color LCD display to present information and user changeable parameters.

In Program and Multi Mode, the top line of the display shows the current Mode, MIDI transposition, MIDI In/Out activity indicators, and MIDI channel (Program Mode only). The middle section of the display shows the current Program or Multi ID number and name, along with the Category name (Program Mode only) and background image. In Program Edit mode, the top line of the display shows the current mode and page name.

In Program and Multi modes, you can use the VIEW soft button to switch between three view modes: "Large" (default), "List", and "Favorites". By default, Large and Favorites view will also display controller parameter assignments when a controller is moved (Sliders, Switch buttons, Mod Wheel, and Pedals). Displaying controller parameter assignments can be disabled by using the Global Mode "Show Controllers" parameter.

In Multi Edit Mode, the top line of the display shows the current mode and page name. On the Multi Edit Main page and Controls page, the top line of the display also shows currently selected Zone number.

In Global Mode, the top line of the display shows the current mode and page name. The bottom line of the display shows the names of the Soft Buttons for the current page.

Previous (–) and Next (+) Value Buttons

Use the Previous and Next buttons to scroll through the list of values for the currently selected parameter. Pressing both the Previous and Next buttons simultaneously is referred to as the Value Jump double button press. Depending on the selected parameter, Value Jump can select the next Category default Program/Multi, jump to commonly used values, and reset parameters to default values. For more information, see Value Jump on .

Channel / Zone Buttons

In Program Mode, pressing the Channel / Zone Up button will change the MIDI transmit channel from the current channel to the next one; pressing the Channel / Zone Down button will change the MIDI transmit channel from the current channel to the previous one.

The top line of the display shows the current MIDI transmit channel. When the highest or lowest MIDI transmit channel is reached, the list will wrap back to the first or last MIDI transit channel respectively.

Pressing the Channel / Zone up down buttons simultaneously in Program Mode will reset the MIDI Channel to 1.

In Program and Multi Mode, if Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, the Channel / Zone up/down buttons will cycle through 16 banks of 10 favorite Programs/Multis. The current Favorites Bank number is displayed in the upper right hand corner of the screen.

In Multi Edit mode, pressing the Channel / Zone buttons will change the currently selected Zone on the Main page & Controls page.

NOTE : The Channel / Zone buttons are not used in Global Mode.

Alpha Wheel

Use the Alpha Wheel to scroll through the list of values for the currently selected parameter—turning the Alpha Wheel counter-clockwise will select the previous value and turning the Alpha Wheel clockwise will select the next value. You can turn the Alpha Wheel slowly to change the value by one increment or turn it quickly to jump several increments.

Display Brightness Knob

You can adjust the display brightness by turning this small knob.
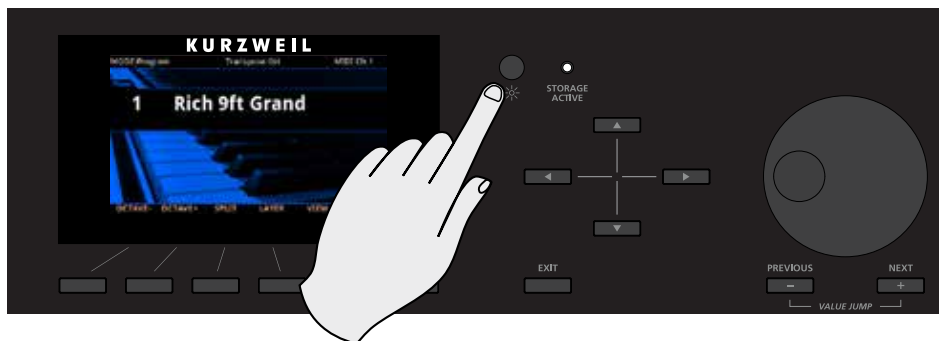
KB3 LED

The KB3 LED is on the right side of the Assignable Switches.

If the currently selected Program is a KB3 program, the KB3 button's blue LED is lit. This indicates that the front panel KB3 controls (printed in blue) are active.
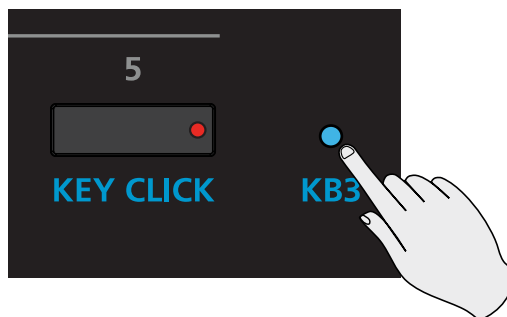
Category & Keypad

Depending on what mode you are in, the Category buttons on the Forte can be used for selecting sounds via their category, or can be used as a numeric keypad for data entry.
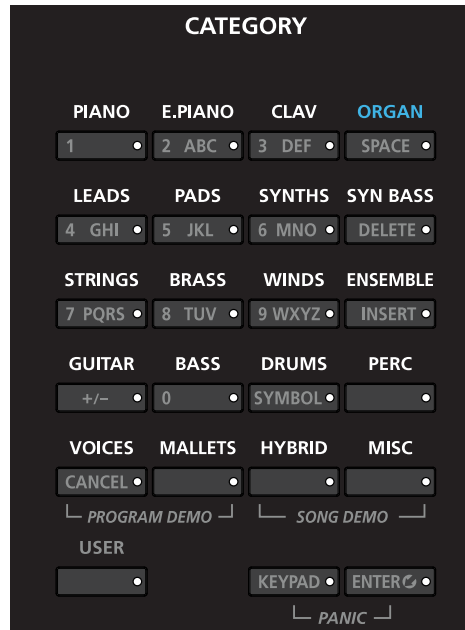
Category

The Forte makes it easy to select sounds by instrument type in Program mode. The 20 Category buttons are clearly labelled for you to choose easily. If a Category button is lit, you are currently in that selected Category.

Also, while in Multi Edit Mode with the Zone Program selected, the Category buttons will behave as they do in Program mode allowing you to select sounds by Category.

Keypad

In Program Mode, press the Keypad button to toggle between Category and Keypad functionality. If the Keypad button LED is lit, the category buttons will function as a numeric keypad. In Program Mode you can use the keypad function to select a Program by typing an ID number followed by the Enter button. The white print on the Category buttons indicates their secondary alphanumeric functions when used for data entry.

If the Keypad button LED is lit in Program Mode, the list of Programs is sorted by ID number only, instead of by Category and ID. Using the Alpha Wheel or Previous/ Next buttons will select the previous or next used Program ID, regardless of category.

When saving files with Forte, or naming your Programs & Multis, the +/- button switches the alphanumeric buttons between lowercase and uppercase text.

Double Button Presses

Several pairs of the buttons on the Forte have time-saving secondary functions when pressed simultaneously—think of them as keyboard shortcuts. For convenience of reference, descriptions of all of the double-button press functions appear below.

Value Jump

In Program Mode, the Value Jump double button press selects the first Program of each Category, as well as the Category Default Program of each Category (if a Category Default Program has been set).
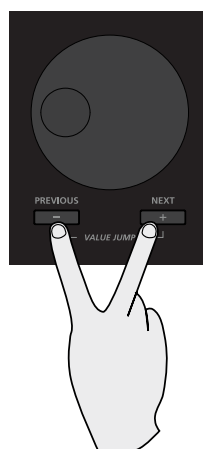
For more information on choosing a new Category Default Program, see .

In Multi Edit Mode, pressing the Value Jump double button press resets the current parameter to its default value, or jumps between multiple useful values.

Channel / Zone Jump

In Program Mode, pressing both the Channel / Zone Up and the Channel / Zone Down button resets the current MIDI channel to 1.

Reset Transposition

Pressing both Transpose + and Transpose – , or Octave + and Octave - (Soft Buttons) simultaneously will restore the current Program or Multi to having no transposition.
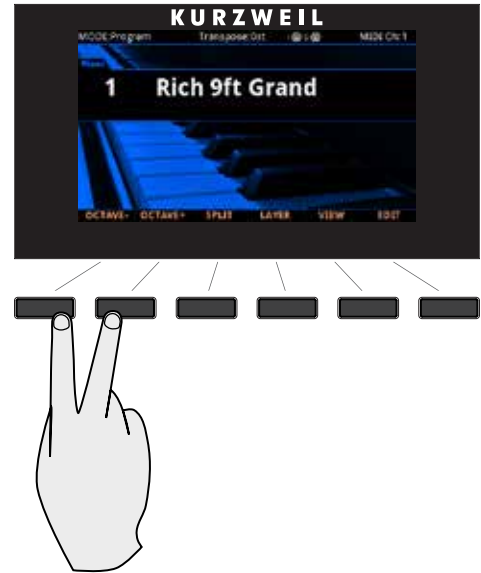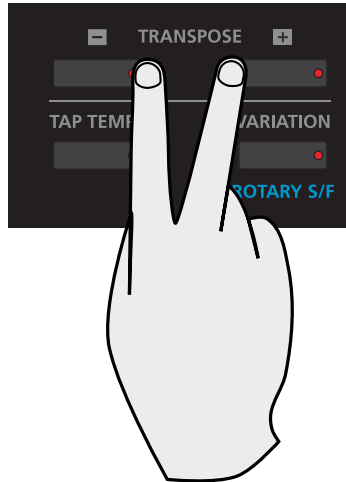
Program Demo
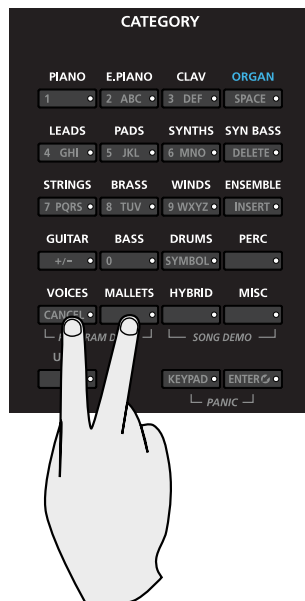
In Program Mode only, pressing the Voices & Mallets Category keypad buttons performs the Program Demo Function. The Program Demo Function plays the demo song for the currently selected Program.

The Voices & Mallets Category keypad button LEDs blink when using the Program Demo Function.

If you press these buttons from any other Mode, the display will give you a message indicating you are not in Program Mode.

Press the Cancel soft button to exit the Program Demo.

A label below the Voices & Mallets Category indicates the Program Demo double button press.

Song Demo

Pressing the Hybrid & Misc Category keypad buttons performs the Song Demo Function (described in further detail in Song Demo Function on page 3-17). With the Song Demo Function selected, you can hear a demonstration song that showcases many of the features of Forte.

A label below the Hybrid & Misc Category keypad buttons indicates the Song Demo double button press.

Panic
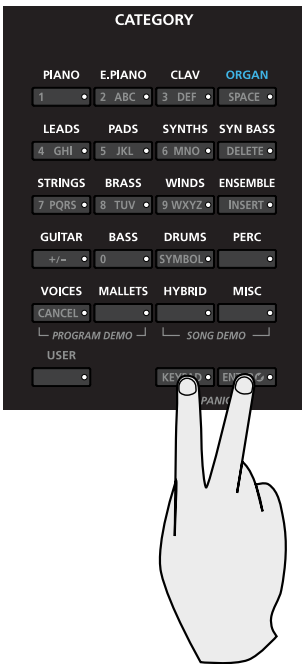
Pressing the Keypad & Enter keypad buttons simultaneously deactivates all sounding notes and control messages and sends an "all notes off" message and an "all controllers off" message on all 16 MIDI channels.

A label below the Keypad & Enter buttons indicates the Panic double button press.

Chapter 4
Terminology

This chapter provides definitions and descriptions for all of the Forte-specific terms used in this manual. Some of the terms are also used by other manufacturers.

Since there are no standard definitions for some of these terms, they are described here to avoid confusion. All of these terms appear with the first letter capitalized as proper nouns in this manual to make it easy to distinguish between the generic term and the Forte-specific term.

In addition to the terms below, and to avoid confusion, any Forte-specific feature, connector or control will have the first letter capitalized to distinguish it from the generic term.

Program	A Program is an instrument sound that plays on a MIDI channel. The sound of each Program can be modified by parameters that are assigned to the controllers (Sliders, Switch Buttons, Mod Wheel, and Pedals). See Ch. 6 Program Mode for more information on Programs.
Multi	A Multi allows up to 16 instrument sounds (Programs) to be played from the keyboard at once. A Multi has a minimum of 4 Zones, each with its own keyboard range, Program, MIDI channel, and controller assignments. See Multi Mode on Ch. 10 Multi Mode for more information on Multis.
KB3	Kurzweil's organ-modeling simulation of the original Hammond B3 with Leslie rotary speaker emulation.

Zone	A keyboard region of a Multi that has its own Program, MIDI channel, and controller assignments. See About Zones on page 10-6 for more information on Zones.
Split	A Split is a Multi containing at least two Zones that have keyboard ranges that don't overlap. This allows different keyboard ranges to play different instrument sounds. See The Split Function for more information on Splits.
Layer	A Layer is a Multi containing at least two Zones that have overlapping keyboard ranges. This allows a single keyboard range to play multiple instrument sounds. See The Layer Function on The Layer Function for more information on Layers.
MIDI Bank	A group of 128 Programs that can be navigated by MIDI compatible software or hardware.
Mode	An operating status with a unique group of operations. See Ch. 5 The Operating Modes for more information on Modes.
Pressure	Pressure applied to keys after a note is struck. It is also known as aftertouch, channel pressure, or mono pressure in other keyboards.
Reset	A process that returns Forte back to a Factory state. All User Programs and User Multis are erased. All Global Mode parameters are reset back to their default settings as well.
Factory State	The Factory State is the initial state of the Forte's Objects and Global Mode parameters when first purchased, or after performing a Reset.
Object	Anything that can be named, saved, deleted, or edited (i.e., a Program or a Multi).
KUF file	KUF (Kurzweil Unified File) file is a special file that has the objects and operating system combined that is used to update the Forte.

Chapter 5
The Operating Modes

This chapter will help familiarize you with the operating Modes of the Forte.

Each of the six Modes (Program, Program Edit, Multi, Multi Edit, Global, Storage) has its own individual chapter.

The four Functions (Split, Layer, Program Demo, and Song Demo) are described in this chapter in .

Program Mode

Program Mode is the default Mode for the Forte.

In Program Mode, instrument sounds (Programs) can be selected and played. The sound of each Program can be modified by parameters that are assigned to the controllers (Sliders, Assignable Switch buttons, Zone buttons, Mod Wheel, and Pedals). Modified Programs can be saved as User Programs by pressing the Save button.

To enter Program Mode from another Mode, press the Program Mode button.
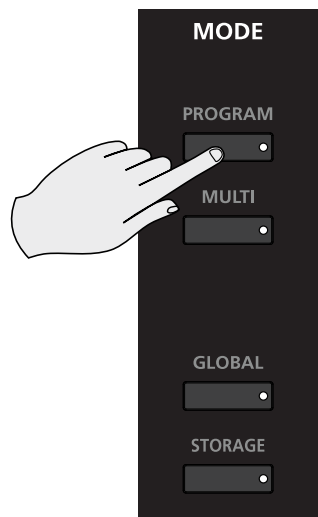
For more detailed information on Program Mode, see .

Multi Mode

Multi Mode allows you to select and play Multis.

A Multi allows up to 16 instrument sounds (Programs) to be played from the keyboard at once. A Multi has a minimum of four Zones, each with its own keyboard range, Program, MIDI channel, and controller assignments. To enter Multi Mode from another Mode, press the Multi Mode button..
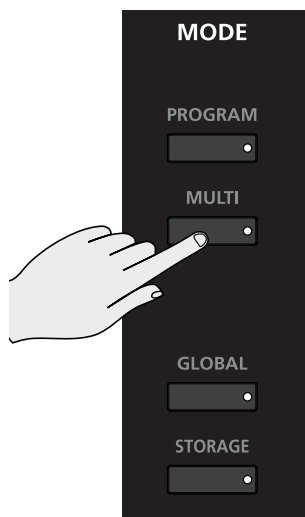
For more detailed information on Multi Mode, see .

Global Mode

⚠ **CAUTION: THIS MODE CONTAINS CERTAIN OPERATIONS THAT CANNOT BE UNDONE. Read Global Mode on page 10-1.**

Global Mode allows you to edit global parameters and MIDI settings, use diagnostic tools, view information, and restore the Forte back to factory default settings. To enter Global Mode from another Mode, press the Global Mode button.

For more detailed information on Global Mode, see Ch. 12 Global Mode.

Storage Mode

Storage Mode allows you to load or store user-created Programs and Multis with a computer or a USB thumb drive.

To save the existing User Programs/Multis choose the STORE option.

To load a file containing existing User Programs/Multis choose the LOAD option.

Whenever a storage device is being accessed, the "Storage Active" LED will be lit.
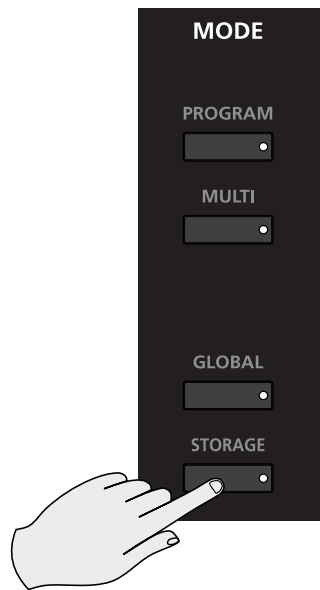
For more information on using Storage Mode, see Ch. 13 Storage Mode.

Functions

In addition to the four primary Modes, there are six Functions. Some Functions are available through dedicated buttons; others are available as Soft Buttons accessed via the buttons under the LCD screen. These Functions are not as complex as the primary Modes and are described below.

The Split Function

Pressing the Split Soft Button while in either Program or Multi Mode performs the Split Function. The Split Function allows you to split Programs and Multis such that keys in one region of the keyboard produce different sounds than another region.
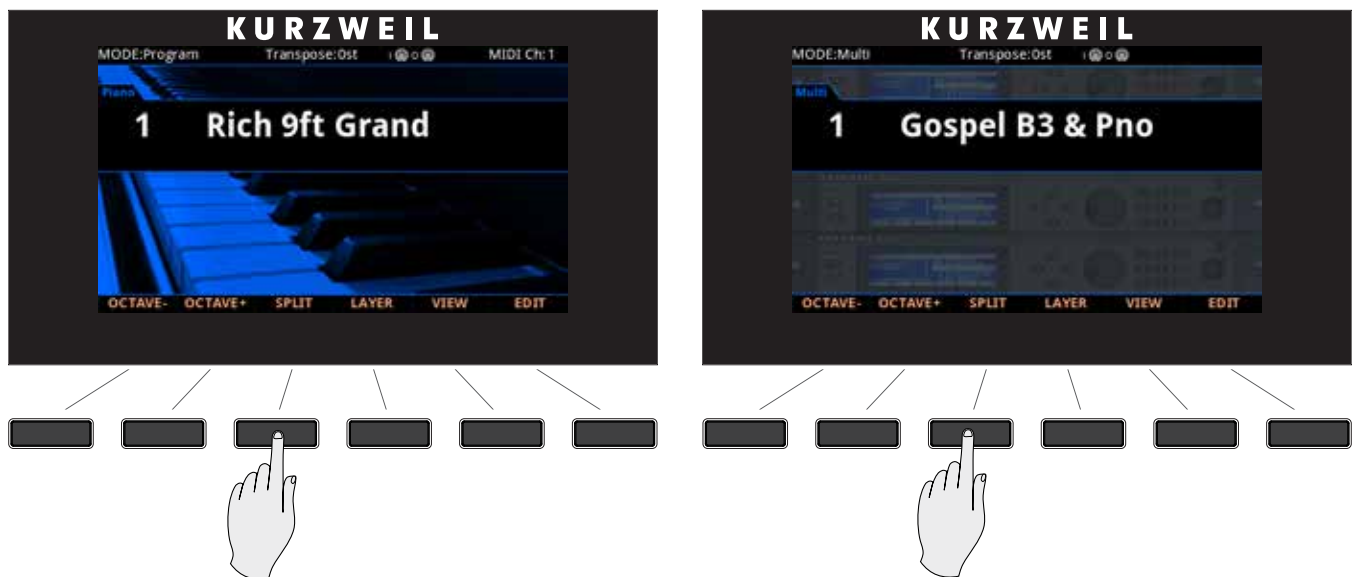
Creating Splits in Program Mode is slightly different from creating Splits in Multi Mode. See (for Splits in Program Mode) and (for Splits in Multi Mode).

The Layer Function

Pressing the Layer Soft Button while in either Program or Multi Mode performs the Layer Function. The Layer Function allows you to layer Programs and Multis such that more than one sound can be produced by striking one key.
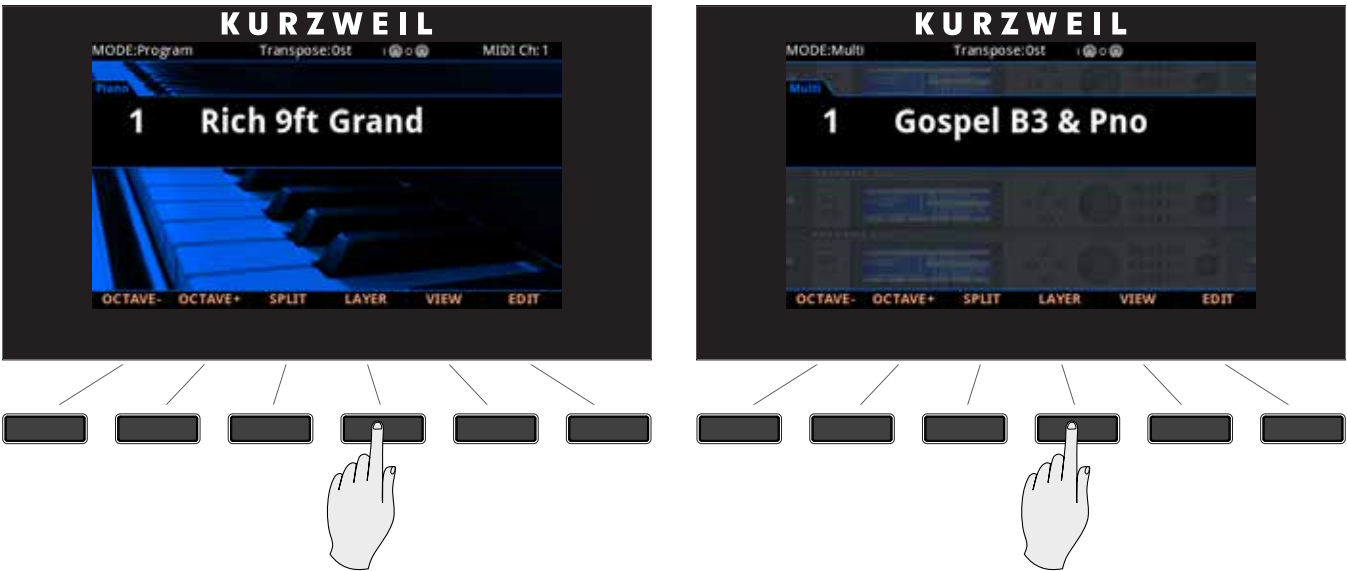
Creating Layers in Program Mode is slightly different from creating Layers in Multi Mode. See Ch. 6 Program Mode (for Layers in Program Mode) and The Layer Function on page 10-10 (for Layers in Multi Mode).

Song Demo Function

Pressing the Hybrid & Misc Category keypad buttons simultaneously performs the Song Demo Function.

Use the Song Demo Function to play built-in songs designed to demonstrate the capabilities of the Forte.

While using the Song Demo Function, the top line of the display shows the text "Song Demo". The main display shows the ID number and name of the selected Song Demo.

Use the Alpha Wheel or Previous/Next buttons to select another demonstration song. The Hybrid & Misc Category keypad LEDs blink when using the Song Demo Function.

Press the Cancel Soft Button to exit the Song Demo Function.

Program Demo Function

Pressing the Voices & Mallets Category keypad buttons simultaneously performs the Program Demo Function.

In Program Mode, use the Program Demo Function to play a built-in demo song that demonstrates the selected Program. The Voices & Mallets Category keypad button LEDs blink when using the Program Demo Function.

Press the Cancel soft button to exit the Program Demo Function.

Program Edit Mode

Program Edit Mode allows you to edit pre-existing Programs. To enter Program Edit Mode press the Edit Soft Button while in Program Mode.
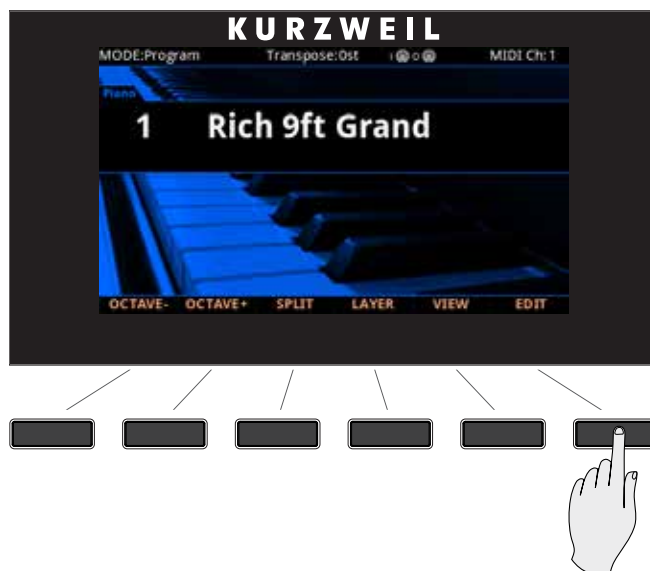
Multi Edit Mode

Multi Edit Mode allows you to edit pre-existing Multis. To enter Multi Edit Mode press the Edit Soft Button while in Multi Mode.

For more detailed information on Multi Edit Mode, see .

Chapter 6
Program Mode

This chapter will help familiarize you with the features of Program Mode.

Programs are essentially the different sounds of a MIDI instrument—they are preset instrument sounds equivalent to the "patches," "presets," or "voices" that you find on other keyboards.

About Program Mode

Program Mode is the default Mode of the Forte. It will always boot up in this Mode.

To enter Program Mode from another Mode, press the Program Mode button. While you are in Program Mode, the Program button's LED is illuminated.

The Forte starts up with Program 1 selected, or the Program that was selected the last time Global mode was exited.

If you enter Program Mode from another Mode, the current Program will be the last selected Program on the current MIDI Channel.
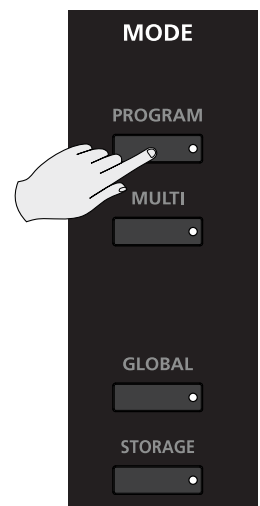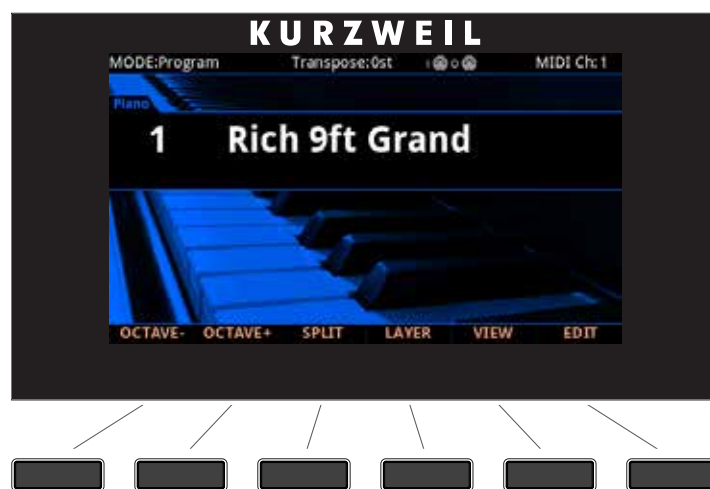
Selecting Programs

When you are in Program Mode, there are a few ways to select Programs.

- To select a Program in the current Category, use the Alpha Wheel or the Next and Previous buttons.

- To select a Program in a different Category, press the Category button of choice and then use the Alpha Wheel or the Next and Previous buttons.

- To select the default Program from a Category, simply press the relevant Category Button.

- To browse saved user Programs, press the User button, then use the Alpha Wheel or the Next and Previous buttons. Press the User button again to stop viewing only user Programs, or press a Category button or use keypad mode to enter a factory ID number.

- The Alpha Wheel and the Next and Previous buttons allow you to advance through the Programs one at a time. When you reach the end of the Category, advancing further will go the the next Category.

- If a Program is assigned to a Favorite Button, pressing that button will go directly to the assigned Program.

- To select a Program by ID number, press the Keypad Button so that its LED lights. Use the numbers on the Category buttons to enter an ID number, then press the Enter button. In Keypad mode the list of Programs is sorted by ID number only, instead of by Category and ID. Using the Alpha Wheel or Previous/ Next buttons will select the previous or next used Program ID, regardless of category. Press the Keypad Button again to return to Category selection.

Program Demo

If you want to quickly hear what a Program sounds like, try the Program Demo Function.

In Program Mode only, pressing Voices & Mallets Category buttons simultaneously performs the Program Demo Function. The Program Demo Function plays a demo song for the currently selected Program.
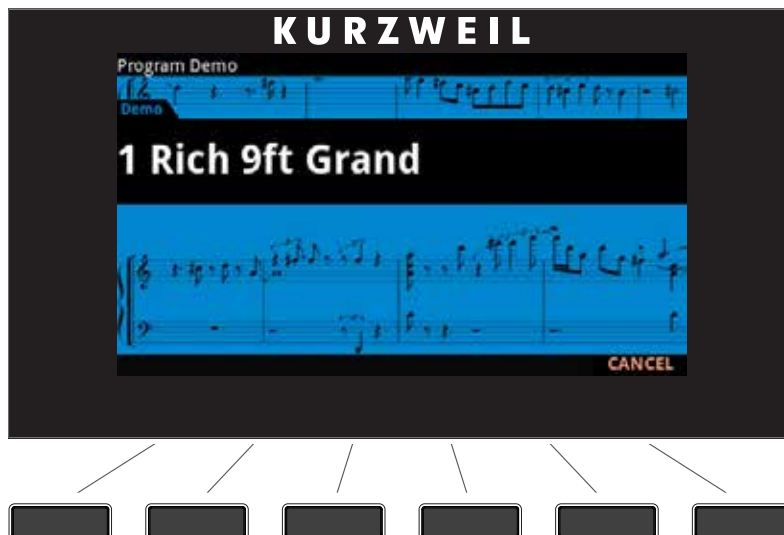
Press the Cancel soft button to exit Program Demo.

If you try to use the Program Demo Function from any other Mode, the display shows the "Please go to Program Mode to hear a Program Demo" message.

The Color Display

In Program Mode, the top line of the display shows the current Mode, MIDI transposition, MIDI In/Out activity indicators, and MIDI channel. If Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, the current Favorites Bank number will be shown instead of the current MIDI channel.

Soft button options for PROGRAM mode
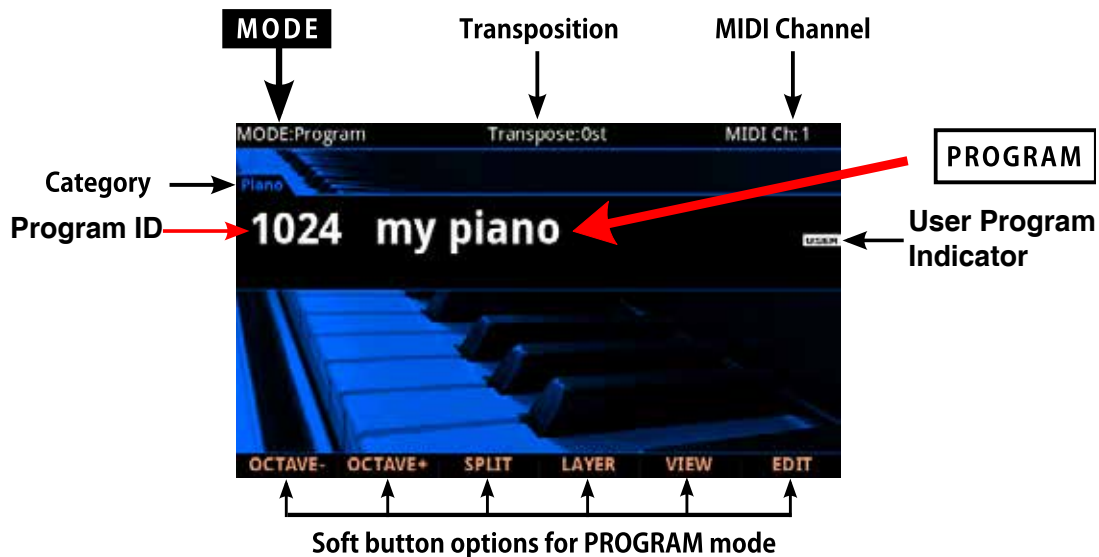
If the currently selected Program is a User Program, the User button will be lit and the "USER" indicator will appear to the right side of the Program ID number and name.

NOTE : The display can be changed to an alternate layout by pressing the "VIEW" soft button, or changing the "Display" parameter in Global Mode.
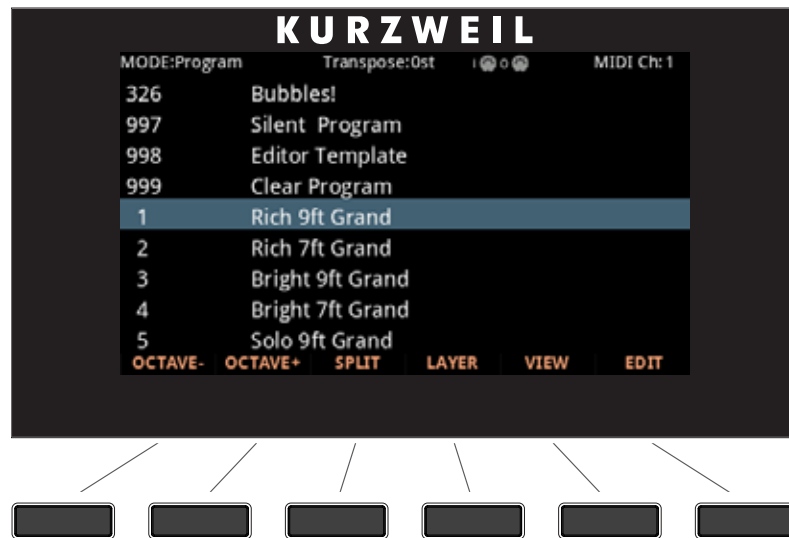
K U R Z W E I L

| MODE:Program | Transpose:0st | I 🔲 O 🔲 | MIDI Ch:1 |

326	Bubbles!
997	Silent Program
998	Editor Template
999	Clear Program
1	**Rich 9ft Grand**
2	Rich 7ft Grand
3	Bright 9ft Grand
4	Bright 7ft Grand
5	Solo 9ft Grand

OCTAVE- OCTAVE+   SPLIT   LAYER   VIEW   EDIT

Pop-Up Messages

Some actions cause the display to show pop-up messages. After a short time the display returns to show the current Program.

MIDI In/Out Activity Indicators

MIDI In/Out activity indicators are displayed at the top of the screen (shown as 2 MIDI port symbols with "I" for "in" and "O" for "out"). These indicators briefly light up when MIDI has been recently sent to or received by the Forte's MIDI/USB ports. If the symbol is green, this indicates there has been MIDI activity on that port in the last few seconds. If the symbol is red, this indicates there has been communication with the external software editor on that port in the last few seconds. If the symbol is grey, this indicates there has been no MIDI activity on that port in the last few seconds.

Alpha Wheel & Previous (–) and Next (+) Value Buttons

Use the Alpha Wheel or the Previous (-) and Next (+) buttons, to the right of the display below the Alpha Wheel, to change the current Program. Turning the Alpha Wheel counter-clockwise or pressing the Previous button will select the previous Program and turning the Alpha Wheel clockwise or pressing the Next button will select the next Program.

If the User button LED is not lit, the Alpha Wheel or the Previous (-) and Next (+) buttons will move through the Program list of each Category, showing both factory and User programs for each Category. If the User button LED is lit, the Alpha Wheel or the Previous (-) and Next (+) buttons will move through the Program list of each Category, showing only User programs for each Category. When the highest or lowest Program is reached, the list will wrap back to the first or last Program, respectively.

Value Jump Buttons

In Program Mode, the Value Jump double button press selects the first Program of each Category, as well as the Category Default Program of each Category (if a Category Default Program has been set). For more information on choosing a new Category Default Program for each Category, see Choosing Category Default Programs. If the User button is selected, Value Jump works the same way.
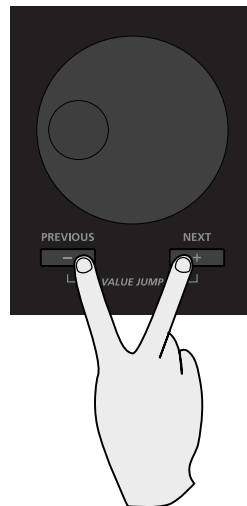
Category Buttons

The Category buttons allow you to select Programs by instrument type simply by pressing a button. You can select one Category button at a time and the current Category button's LED is lit.
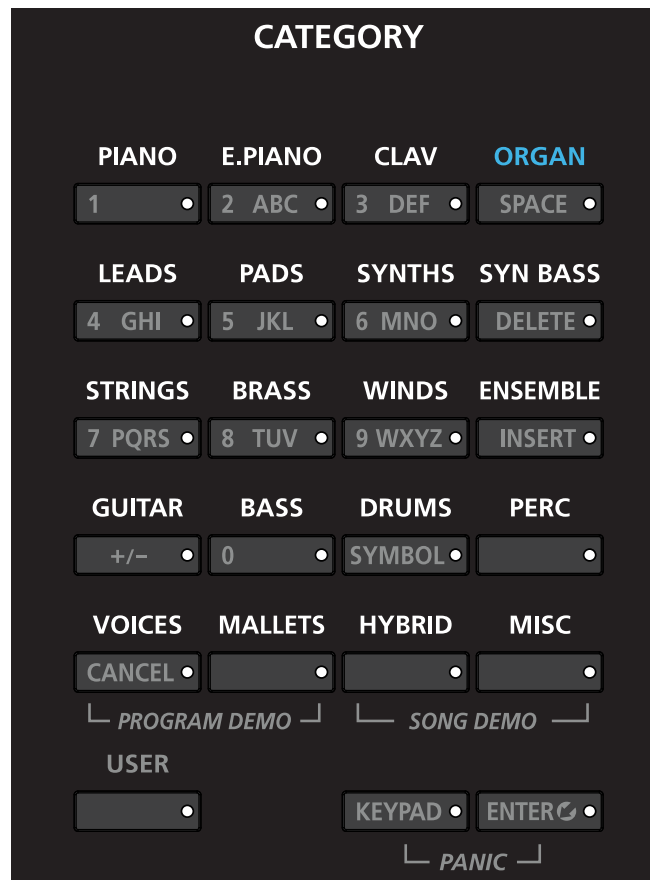
Each Category contains Programs of a single instrument type. (Ch. 14 Appendix C has a list of Programs and Categories).

You can also press one of the instrument Category buttons, then turn the Alpha Wheel clockwise or press the Next button to advance to the next Program in the Category. When you reach the end of a Category, the Forte automatically advances to the beginning of the next Category. This will also work in reverse if you turn the Alpha Wheel counter-clockwise or press the Previous button. In this case, when you reach the beginning of a Category, the Forte automatically advances to the end of the previous Category.

Keypad button

When the Keypad button is pressed and the LED is lit, the Category buttons no longer function in selecting categories. Instead, the secondary function of the Category buttons takes over and the numbers on the category buttons are now in effect.

By having the Keypad button on, you can manually type in the Program ID number followed by the Enter number and the Forte will go to that Program if it exists. If a Program does not exist, the ID will be displayed along with "Not found!". When the Keypad button and the User button are enabled, User programs are ordered by ID number instead of by category when scrolling through the Program list.

Choosing Category Default Programs

You can choose a "Category default program" from each Category that will be recalled each time you press that Category's button. To save a Category default program, first select a Program using any Program select method (Alpha wheel, Previous/Next buttons, Category buttons). A Category button for the current Category will have a lit LED. Next, press and hold the currently lit Category button until the display shows the message "Category default program saved." The Category default program has now been successfully saved.
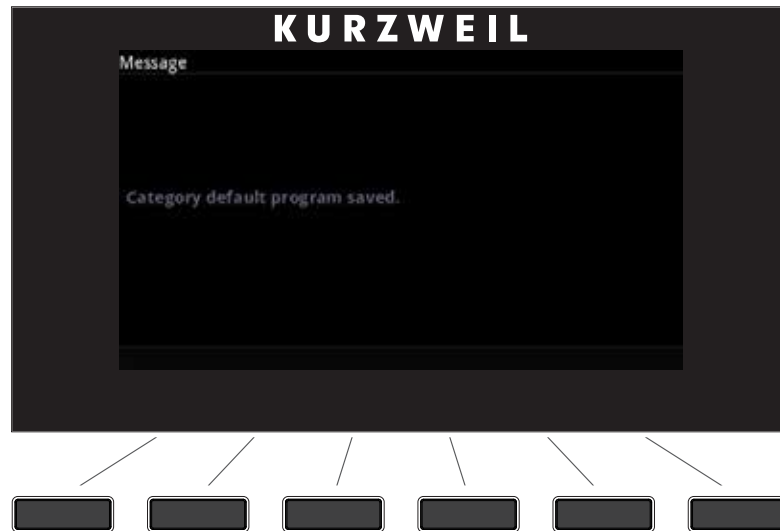
Choosing Favorites

You can save ten Favorite Programs (or Multis) from any Category to the ten Favorite Buttons beneath the display. Once saved, these favorite Programs can be recalled from any Mode with a single button press. To save the currently selected Program to a Favorite Button, press and hold a Favorite Button until the display shows a message indicating the favorite has been saved.

Favorites View and Favorites Banks

To view the names of Programs and Multis stored as Favorites, press the View soft button until you see the Favorites listed at the bottom of the display, or set the Global Mode "Display" parameter to "Favorites". If Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, you can use the Channel/Zone buttons to scroll through 16 banks of 10 Favorites, allowing you to save and access 160 Favorites. When Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, the current Favorites Bank number will be shown in the upper right hand corner of the screen instead of the current MIDI channel.

Transposition

The Transpose buttons can be used to change the tuning of notes played on the Forte keyboard in semitones (ST), also known as half-steps. This is a convenient way to change the key of a song without learning to play it in a different key. The Transpose buttons are located to the left of the keyboard, above the Pitch and Mod Wheels. The Transpose buttons also transpose MIDI notes sent to the USB and MIDI out ports.

Press the Transpose - or + buttons to transpose the Forte keyboard down or up by one semitone. The top line of the display shows the current transposition value.

To transpose up and down by octave intervals (12 ST), press the OCTAVE- and OCTAVE+ soft buttons underneath the display.

Pressing both Transpose - and +, or Octave - and + simultaneously will reset the transposition to 0.
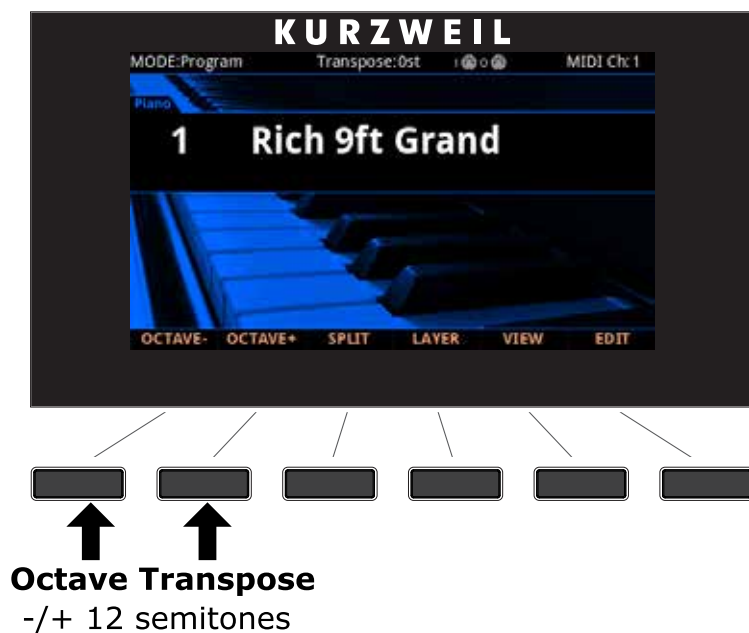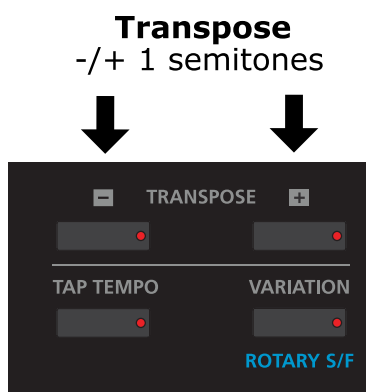
The maximum transposition value possible is +/–36 semitones.

The LEDs of the Transpose buttons indicate whether the current Program (or Multi) is transposed up (Transpose + LED is lit) or transposed down (Transpose – LED is lit). When there is no transposition, neither Transpose button is lit.

Parameter Assignments

In Program Mode, each Program has factory-set Program and Effect parameters assigned to physical controllers (Sliders, Switch buttons, Mod Wheel, and Pedals). A parameter assignment can modify an instrument sound during a performance to add variation or expression. Moving a controller changes the value of the parameter. Any time you do this, the display shows the Controller name, assigned parameter, and value.
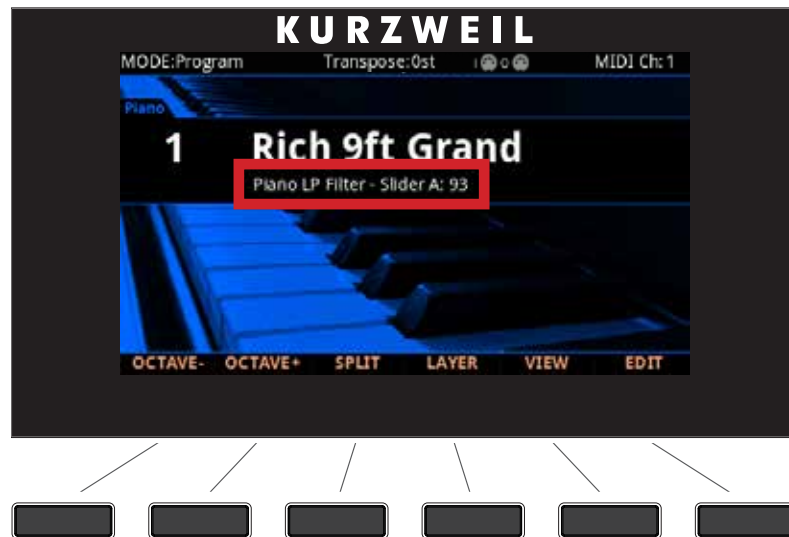
NOTE : Parameter assignments may not be visible if the VIEW soft button has been pressed, or if the "Show Controllers" parameter in Global Mode has been set to No.

If you make changes to the current Program using any of the controllers, the Save button's LED lights to indicate that a change has been made to that Program. For more information on the Save button, see

Controller Conventions

Generally the factory Programs have the following controllers assigned.

Forte Controller Conventions

Synthesis

| Variation 2 Layer On/Off | Variation 3 Layer On/Off | AmpEnv Impact | Rel. Samples On/Off | Trem/Vibrato LFO Shape |

| Filter Freq or EQ | Filter Res or EQ | AmpEnv Attack | AmpEnv Decay or Release | AmpEnv Release or Trem/Vib Rate |
| A | B | C | D | E |

Effects

| Distortion/Other Enable | Mod/Chorus Enable | Delay Enable | Reverb Enable |

| Dist Amount Drive/Other | Mod Amount or Depth | Delay Amount | Reverb Amount |
| F | G | H | I |

Wheels/Variation

Variation — Pad/Wah Enable

Pitch Up/Down — More / Less — Pitch

Tremolo Amount/ Pad Filter Freq — More / Less — Mod

CC Pedals

Expression — CCPed 1

Wah — CCPed 2

KURZWEIL

SW Pedals

Sustain — SW1

Sostenuto — SW2

Soft — SW3

The Split and Layer Soft Buttons

The soft buttons SPLIT and LAYER perform slightly different functions, but offer identical parameters.

The Split Function allows you to split Programs such that keys in one region of the keyboard produce different sounds than another region. The Layer Function allows you to layer Programs and Multis such that more than one sound can be produced by striking one key.

This is convenient, because you do not need to use Multi Edit Mode to configure Zone key ranges, Programs and volumes. Simply hit the soft button while in Program Mode to select the Function. You can then configure additional Zones, each of which may have its own Program and controller assignments. The result may be saved as a new Multi (see Ch. 10 Multi Mode for more information on Multis).

The Split Function

When you create a Split in Program Mode, you are in fact creating a Multi with two active Zones. Multis are configurations of multiple Zones, each of which may have its own Program and controller assignments.
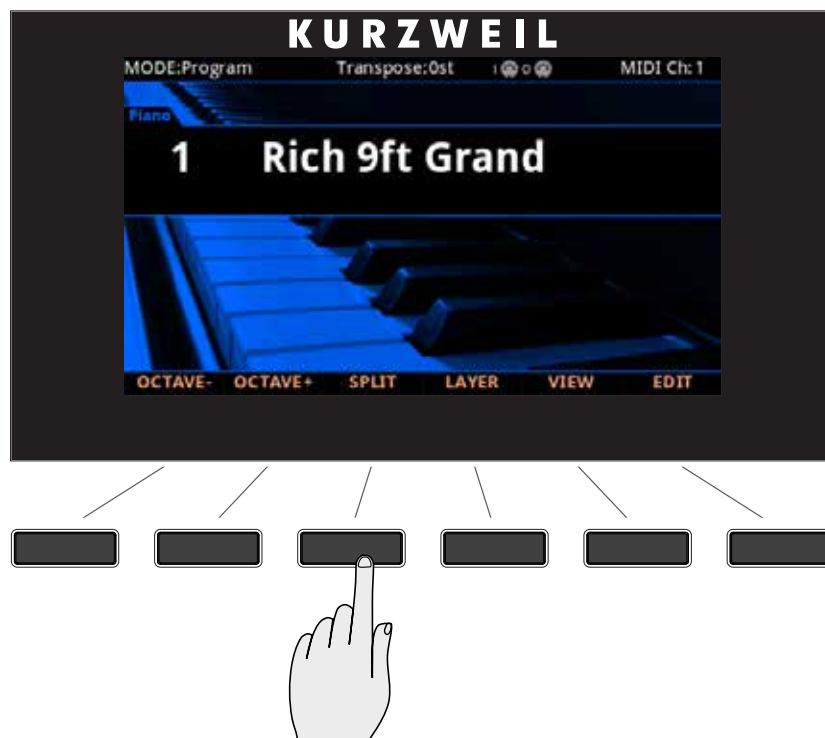
Simply hit the Split button, and the Forte automatically creates a Multi with two active Zones. The Program you were using in Program Mode is used in the right hand of the Split as the Program for Zone 1. After this you can choose a "Split Program" that will be used in the left hand of the Split as the Program for Zone 2. The Default split program is 245 Finger Bass.

ZONE 1 — (Split Program) — Right-hand Program

ZONE 2 — Left-hand Program

Once you have saved your Split as a Multi, you can continue to add Split or Layer Zones to the Multi until you reach the number of Zones allowed. The Forte will display a message if you have already reached the maximum active Zones.

The Layer Function

The Layer Function allows you to layer Programs and Multis such that more than one sound can be produced by striking one key.
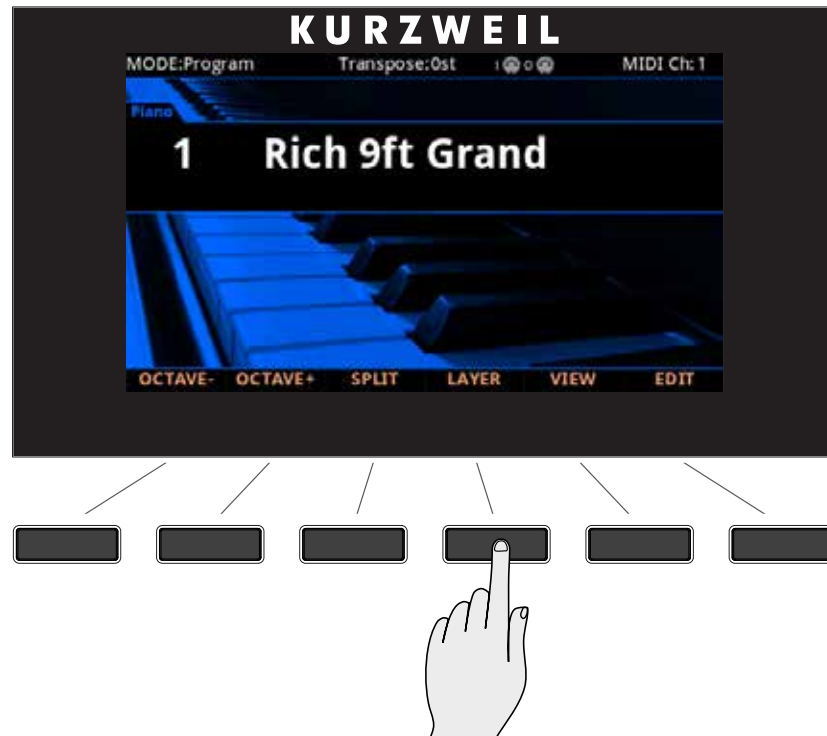
When you create a Layer in Program Mode, you are in fact creating a Multi with two active Zones (see Ch. 11 Multi Edit Mode, for more information on Multis). As previously described, Multis are configurations of multiple Zones, each of which may have its own Program and controller assignments.

ZONE 1 — Program from Program Mode

ZONE 2 — Layer Program

The Layer Function is convenient, as you do not need to use Multi Edit Mode to configure Zone key ranges, Programs, and volumes. You can simply hit the Layer button, and the Forte automatically creates a Multi with two active Zones. The Program you were using in Program Mode is used as the Program for Zone 1. It then allocates "152 Add a Pad 2" as the default program for Zone 2. Both of these Programs can be changed if needed.

Once you have saved your Layer as a Multi, you can continue to add Layer or Split Zones in Multi Mode until you reach the maximum number of active Zones. The Forte will display a message when you have reached the maximum number of active Zones. (See Ch. 10 Multi Mode, for more information on Multis.)

Split and Layer Parameters

There are five parameters (described below) that determine the behavior of Splits and Layers. Use the cursor buttons to access each of the parameters for each active Zone.

Zone Status

Selecting Split or Layer makes Zone 2 active. You can continue to add Zones to by activating additional Zones with the Stat parameter or the front panel Zone buttons. The Forte will display a message if you have already reached the maximum number of active Zones (see Ch. 10 Multi Mode, for more information on Multis).

Program

This parameter is selected by default. When performing the Split function the Program 245 Finger Bass will be applied; when performing the Layer function the Program 152 Add a Pad 2 will be applied. Choose a different Split Program using the Category buttons, the Alpha Wheel, the Previous/Next buttons, or enable the Keypad button and type an ID number followed by the Enter button.

Volume

To change the volume of a Zone, use the cursor buttons to select the Volume parameter for one of the Zones. To set a volume, use the Alpha Wheel, the Previous/Next buttons, or use the keypad function of the Category buttons to type a volume (0-127) followed by the Enter button.

Key Range

You can adjust the boundary between the left and right hand Programs on the keyboard by adjusting the Key Range low and Key Range high parameters for each Zone. The keyboard display for each Zone shows a visual indication of the Key Range by dimming keys that are outside of the Key Range.

To change the Key Range of a Zone, use the cursor buttons to select the Key Range low or Key Range high parameters for one of the Zones. Key Range low and Key Range high are the left and right parameters, respectively, below the Key Range label. With one of these parameters selected, set the Key Range by using the Alpha Wheel, the Previous/Next buttons, or use the keypad function of the Category buttons to type a key number (0-127) followed by the Enter button. With Key Range low or Key Range high selected, the value can also be changed by holding the Enter button, then pressing the desired key.

Pan

To change the panning of a Zone (left/right stereo placement), use the cursor buttons to select the Pan parameter for one of the Zones. To set a Pan value, use the Alpha Wheel, the Previous/Next buttons, or use the keypad function of the Category buttons to type a pan value (0-127) followed by the Enter button. A value of 0 is full left, 64 is center, and 127 is full right. Other values will move the stereo placement in between these positions. A value of "None" will use the last pan value used by the Zone's MIDI channel. A value of "None" can be entered by scrolling below 0, or by using the keypad function of the Category buttons to type negative 1 by pressing the +/- button and then the 1 button, followed by the Enter button.

Saving a Split or Layer

After setting the Split or Layer parameters, your changes can be saved as a Multi that it can easily be recalled in Multi Mode. Press the Save button to the left of the display to begin the saving process. A Multi name is automatically created using half of the original Program name and half of the default Zone 2 program name. This name can be edited during the saving process.

See Saving a User Multi on page 10-15 in the Multi Mode Chapter for details on saving. Once you have saved your Split as a Multi, you can continue to add Split or Layer Zones to the Multi until you reach the maximum number of active Zones.

See The Split and Layer Soft Buttons in the Multi Mode Chapter. Also, once you have saved your Split as a Multi, you can use Multi Edit Mode to edit controller assignments (like effects controls and sustain pedal per Zone), transposition per Zone, and other Multi parameters. (See Ch. 11 Multi Edit Mode for details.)

Changing the MIDI Transmit Channel

The current MIDI Transmit channel is shown on the right side of the top line of the display. Press the Channel / Zone Up or Down buttons to change the MIDI Transmit channel. A different Program can be selected for each MIDI Channel. All channels can be triggered simultaneously from an external MIDI sequencer or computer. The Aux FX Chains of the Program on the currently selected MIDI Channel are used for Programs on all Channels.

Pressing both Channel / Zone Up and Down buttons at the same time will reset the current MIDI Transmit channel to 1.
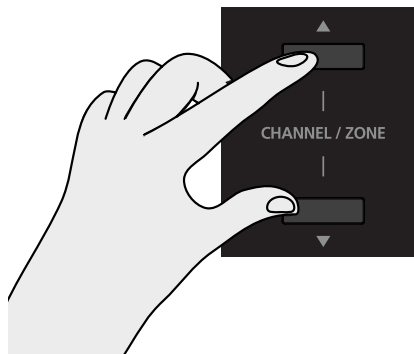
Panic

Pressing the Keypad & Enter buttons simultaneously deactivates all sounding notes and resets controller values by sending an "All Notes Off " message and a "Reset All Controllers" message on all 16 MIDI channels.

Save User Programs

If you make changes to the current Program using any of the controllers, the Save button's LED lights to indicate that a change has been made to that Program.
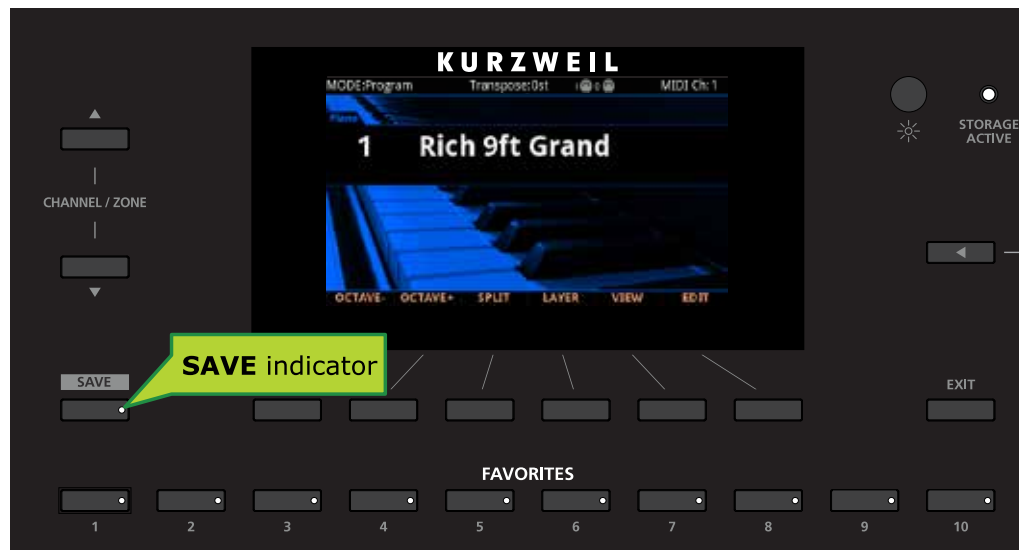
To save the changes you've made, press the Save button once to display the Save Dialog.

The display shows the first available ID number and the current Program name. You can save Programs with ID numbers from 1024 to 2047. If you are saving a Program that has not been previously edited, the next available unused ID number will be selected. If you are saving a previously edited User Program, the ID number that the Program was last saved with will be selected. Press the Value Jump double button press (Previous + Next) to toggle between selecting the ID number that the Program was last saved with and the next available unused ID number. When viewing the Save Dialog, you can quickly save the Program to the displayed ID number by pressing the Save button again.

Changing ID Numbers

To change the ID number, turn the Alpha Wheel or use the Previous/Next buttons to select the new ID number. The label underneath indicates if it is an "Unused ID". You can also use the keypad function of the Category buttons to type an ID number, followed by pressing the Enter button.
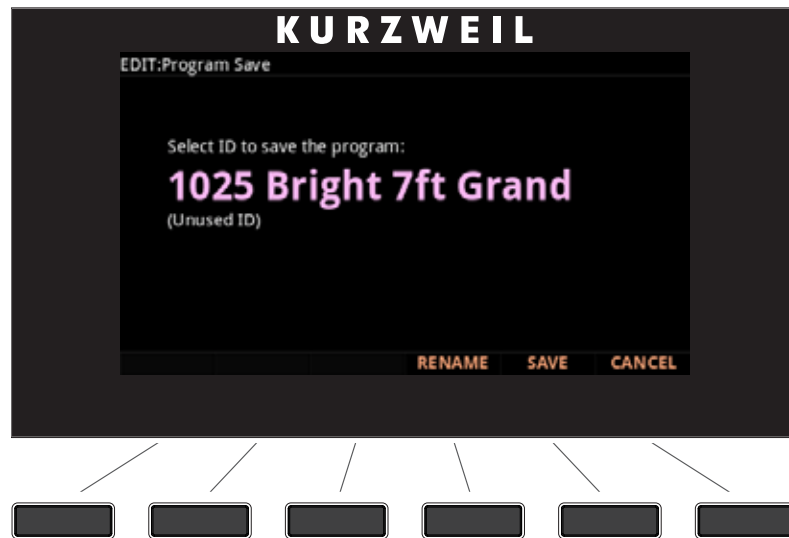
If you select an ID currently in use, the display will notify you that by saving you will "replace" the Program currently in that location. The Program name and ID is indicated.
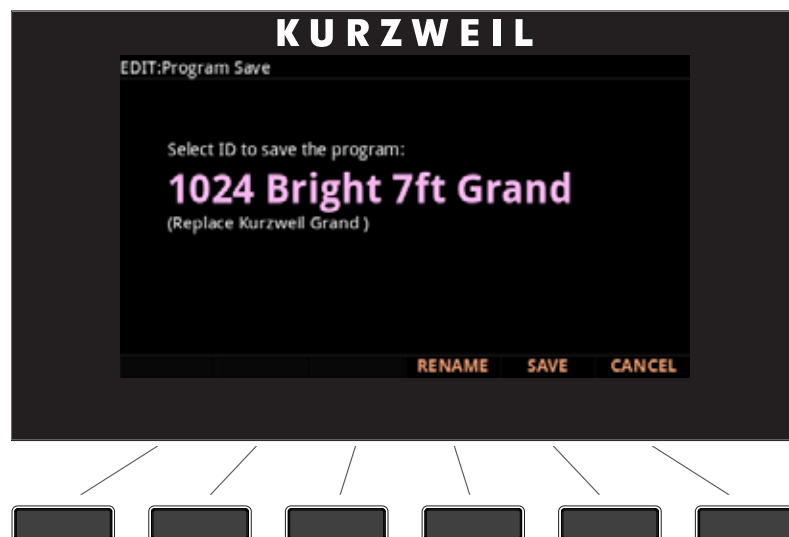
Confirm overwriting of the existing Program by pressing Save, or choose a different ID.

Naming a User Program

To rename the Program, first press the RENAME soft button. You should see the following in the display:

The display shows the current Program name. Program names can total 16 characters in length. Use the letters and numbers printed on the Category buttons to enter the new Program name. Rotating the Alpha Wheel or using the Value buttons can also change the Program name. The keypad button will be turned on automatically.

Use the Left/Right cursor buttons or <<< >>> soft buttons to move the cursor. Press the +/- button to switch between upper and lower case characters (all characters will be upper case until you press the +/- button again).

Use the Space button to change the current character to a space, the Insert button to insert a blank space (the selected character and all characters to the right will move one space to the right), and the Delete button to delete the current character (all the characters to the right will move one space to the left).

Saving a User Program

Press the Save button or Save soft button to complete the saving process, or press the Cancel soft button to exit without saving. After successfully saving, the Program will be selected in Program Mode. To find the Program again later, press the User button and scroll to the Program ID. You can also find the program by pressing the appropriate Category button and scrolling past the factory programs. Lastly, you can press the Keypad button so that its LED is lit, type the Program ID number, then press the Enter button.

KURZWEIL

EDIT:Program Save

Select ID to save the program:

1024 Rich 9ft Grand
(Unused ID)

RENAME   SAVE   CANCEL
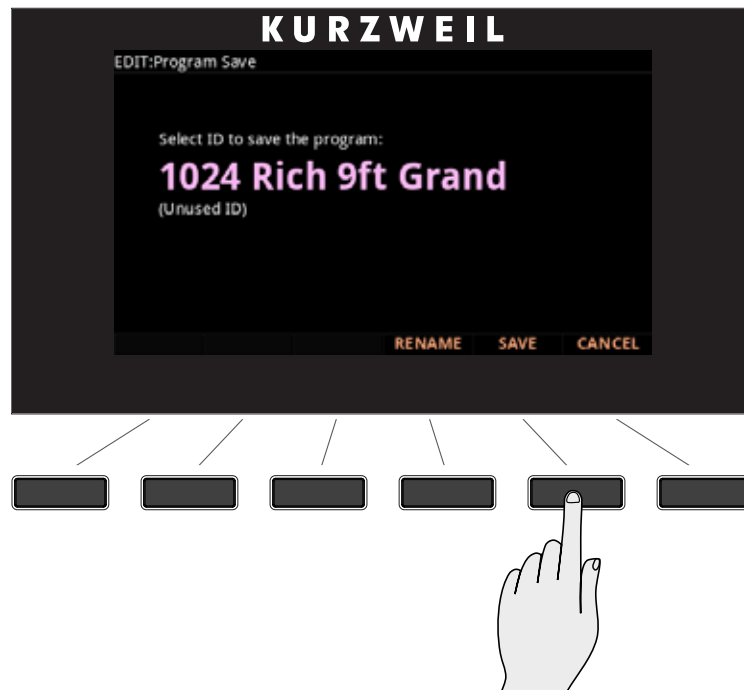
Chapter 7
Program Edit Mode

This chapter will help familiarize you with the features of Program Edit Mode.

About Program Edit Mode

> NOTE : Before you read this chapter, be sure to read Program Mode on page 6-1 for a full description of Programs.

Program Edit Mode allows you to edit and customize Programs. It gives you access to a Program's parameter controller assignments, effects, and common settings.

Any Program can be edited in Program Edit Mode and saved to one of the 1024 User locations.

To enter Program Edit Mode, first press the Program Mode button to enter Program Mode, then press the EDIT soft button.

Once you are in Program Edit Mode, press the soft buttons at the bottom of the screen to navigate to each of the Program Edit Mode pages. See the following sections for details on navigating and changing parameters.

All parameters apply only to the currently selected Program.
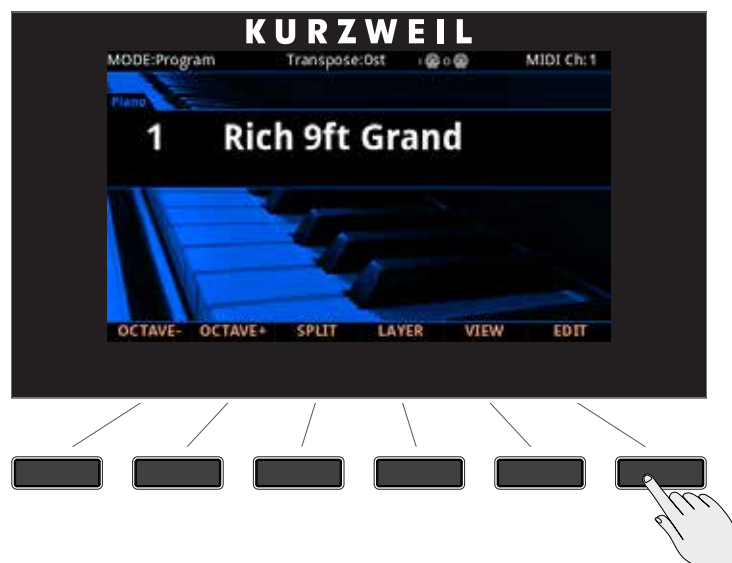
Differences Between Regular and Advanced User Type

When the Global Mode User Type parameter is set to Regular, you can access a Program's parameter controller assignments, effects, arpeggiator, and common settings. When the Global Mode User Type parameter is set to Advanced, you can access the Regular User Type pages as well as additional VAST or KB3 pages. The User Type parameter can be selected in Global Mode on the Global MAIN1 Page on page 12-2.

When User Type is set to Advanced, some editing functions can be accessed by pressing the Favorite 1 button. This is indicated by a white "F1" appearing the top of the screen when the editable parameter is selected.

Selecting Parameters

The Display

In Program Edit Mode, the top line of the display shows the current Mode and Page. Use the cursor buttons to navigate to different rows and columns.

MODE **Current Page**

EDIT:Program Parameters		
Parameter	Control	Value
Reverb Amount	Slider I	37
Pad Enable	Variation	0
Piano LP Filter	Slider A	127
Sostenuto	Sw.Pedal 2	None
Pad/String LP Filter	Slider B	0
Amp Env Attack	Slider C	0
Amp Env Decay	Slider D	0
Pad Octave Down	Zone 1 Switch	0
Pad Octave Up	Zone 2 Switch	0

PARAMS   FX   COMMON   ARP   ARPSAV

Current Parameter →

Soft button options for Program Edit mode

Alpha Wheel & Previous (–) and Next (+) Value Buttons

Use the Alpha Wheel or the Value buttons to the right of the display below the Alpha Wheel, to change the selected parameter value. Turning the Alpha Wheel counter-clockwise or pressing the Previous button will select the previous value and turning the Alpha Wheel clockwise or pressing the Next button will select the next value.

Assign

Assign is the secondary function of the Enter button. You can use the Assign function to quickly select parameters or set values for parameters by holding the Enter button while moving Forte controllers (Sliders, Switch buttons, Keys, Mod Wheel, and Pedals).

ENTER ⊘

Parameters that can use the Assign function are indicated by showing the Assign symbol in the top right corner of the display when selected.

MODE   **Assign symbol**

EDIT:Program Parameters		⊘
Parameter	Control	Value
Reverb Amount	Slider I	37
Pad Enable	Variation	0
Piano LP Filter	Slider A	127
Sostenuto	Sw.Pedal 2	None
Pad/String LP Filter	Slider B	0
Amp Env Attack	Slider C	0
Amp Env Decay	Slider D	0
Pad Octave Down	Zone 1 Switch	0
Pad Octave Up	Zone 2 Switch	0
PARAMS	**FX**	**COMMON**	**ARP**	**ARPSAV**

Using Enter + Controller

Assign will function differently depending upon whether a parameter or its control is highlighted in the display.

Select any parameter in the Parameter column, hold the Enter button and move a controller (a Slider, Switch button, Mod Wheel or Pedal). Doing this will jump to selecting the parameter that is assigned to the moved controller (if a parameter is assigned to that controller).

Select the Control column for any parameter, hold the Enter button and move a physical controller (a Slider, Switch button, Mod Wheel or Pedal). Doing this will assign the selected parameter to be controlled by the moved controller.

VAST and KB3 Programs

It is important to understand the difference between VAST programs and KB3 programs.

VAST programs contain up to 32 layers, each of which contains a keymap or KVA oscillator. Keymaps consists of a number of samples assigned to a particular keyboard range. KVA oscillators use powerful DSP (digital signal processors) to generate a range of simple and complex waveforms. See Editing VAST Programs With KVA Oscillators for more details. See VAST Program Structure below for details on VAST programs.

KB3 programs use a much different architecture. There are no layers or algorithms, just a set of oscillators (designed to emulate the tonewheels in a Hammond Organ) that start running as soon as you select a KB3 program. See KB3 Program Structure for details on KB3 programs.

VAST Program Structure

 "Figure 7-1 VAST Program Structure" on page 7-5 depicts the hierarchy of a VAST program, from individual samples all the way up to Multis, which can contain up to 16 programs.

Every VAST program contains at least one layer. A layer consists of a keymap and an algorithm for processing the samples contained in the keymap. Each sample is a separate digital recording of some kind of sound: musical, vocal, industrial, any sound at all. Individual samples are assigned to specific key ranges (from A 2 to D 3, for example), and are also assigned to be triggered at specific attack velocities. These assignments constitute the keymap.

When you trigger a note, the Forte looks to the keymap of each layer of the currently active VAST program(s) to determine which samples to play. The sound engine then fetches the requested samples and generates a digital signal representing the sound of the samples. This signal first passes through the DSP functions that make up the algorithm. It then passes through the Forte's effects processor, and finally appears—with some level of effects applied to it—at one or more of the audio outputs.

The layer is the VAST program's basic unit of polyphony, that is, each layer constitutes one of the 128 voice channels the Forte can activate at any time. If you have a program that consists of two layers covering the note range from A 0 to C 8, each key you strike triggers two voice channels.

MULTI	16 keyboard zones—each with independent program, MIDI channel, and control assignments
PROGRAM	Selected for performance and editing in Program mode; up to 32 layers per program
LAYER	A keymap processed through an algorithm, modulated by control sources
KEYMAP	Up to 128 sample roots, assigned to play at programmable key and velocity ranges
SAMPLE ROOTS	Individual digital sound recordings stored in ROM; stereo samples use two voices of polyphony

Figure 7-1 VAST Program Structure

Note: One exception to this structure is when using a KVA oscillator, the sound source for that layer is not derived from a keymap, but is generated at the algorithm stage (though keymap information is still used to set key range and maximum amplitude). After this, the structure is the same as described above. See Editing VAST Programs With KVA Oscillators on page 7-72 for more details.

Editing VAST Programs

The Forte offers two powerful editing features: Cascade Mode and Dynamic VAST .

- **Cascade Mode** lets you route any layer of a program into the DSP of any other layer. Any of the 32 layers of a program can go into any other layer.

- **Dynamic VAST** lets you "wire" your own algorithms. You can combine different DSP functions in any order you like, including parallel and serial configurations.

The Program Editor is where you begin to modify the Forte's resident sounds, and to build your own sounds around sample keymaps or KVA oscillators (see Editing VAST Programs With KVA Oscillators on page 7-72 for some differences). There's virtually no limit to the sounds you can create using the tools in the Program Editor.

Note: This section describes the Program Editor as it applies to VAST programs. See Editing KB3 Programs for information about editing KB3 programs.

The Soft Buttons in the Program Editor

There are more pages and functions in the advanced Program Editor than there are soft buttons. Therefore, two of the soft buttons are dedicated to scrolling through the list of pages and functions. If you don't see the button for the page or function you want to select, press one of the soft buttons labeled **more**, and the labels will change. This doesn't change the currently selected page, it merely changes the selection of available soft buttons.

Assigning VAST Parameters to Control Sources

Many Forte program parameters can be assigned to be controlled by the Forte's physical controllers or by MIDI CCs from an external MIDI device. For details on controllable parameters of VAST programs, see the following sections:

For VAST programs, see the following sections:

The DSP Modulation (DSPMOD) Page

The LFO+ Page

Envelope Control on page 7-52

The MOD Pages on page 8-3

FXLFO+ page on page 8-4

For KB3 programs, see the following sections:

KB3 Editor: The PITCH Page

KB3 Editor: The AMP Page

KB3 Editor: The LFO+, ARP and ARPSAV Pages

For each program, the Program Editor can be used to assign the Forte's physical controllers or external MIDI controller CC numbers to control program parameters. When editing a factory program, the PARAMS page will list all parameters that have already been assigned to a physical controller or MIDI CC. To add additional controller assignments for parameters that are not listed on the PARAMS page, an assignment must be made on one of the VAST pages.

In the VAST editor pages, controllable parameters each have a source field. Make assignments to the source field for the desired parameter. Source fields are named differently depending on their page: Src1, Src2, RateCt, Trigger, Input a, Input b, and Source. Internal control sources can also be selected here such as LFOs, Envelopes, Key Number, Key Velocity, Key Pressure, FUNs, Clocks, and more.

To assign a Forte physical controller, select the source field for the parameter, hold the Enter button and move the controller.

To assign a CC number to a source field, enter a number from 1-31 or 64-95 with the alphanumeric pad, then press Enter. A CC number for an external controller can also be set by selecting the source field for the parameter, holding the Enter button, and sending a CC value from the external MIDI controller. The Forte's physical controllers each use one of the available MIDI CC numbers, so you must choose one of the other available CC numbers when using an external MIDI control source or else the parameter will also be controlled by a Forte physical controller. See the for a list of CC numbers used by the Forte's physical controllers. Some MIDI CCs are also hard wired to control certain program parameters or functions such as MIDI 5 (Portamento Time), MIDI 7 (Program Volume), MIDI 10 (Pan), MIDI 11 (Expression/Program Volume), MIDI 64 (Sustain), MIDI 66 (Sostenuto), so if you use one of these numbers the CC will always perform the hard wired function, in addition to any other assignment you make.

Names Displayed for VAST Sources

When assigning a physical controller or CC number to a source field, the source field will show a MIDI CC number, either followed by the name of an associated Forte physical controller (such as "12 Slider A"), or followed by "MIDI" and the CC number again (such as "3 MIDI 3"). By default, the Forte's physical controllers are each associated with a specific MIDI CC number (see the Parameter Controls table below). Typically, assigning one of these associated CC numbers to a VAST source will assign the default associated Forte physical controller and display that name in the source field.

It is also possible for the associated Forte physical controller to be different from the default. For example, CC 12 is associated with Slider A by default. You could assign the DSPMOD page Pitch Src1 to "12 Slider A" for several layers of a Program. A "Pitch" parameter will appear on the Parameters page, with its Control set to Slider A. If the Control for this parameter is changed to Slider B on the Parameters page, the DSPMOD page Pitch Src1 fields will now show "12 Slider B".

In some cases, when assigning a CC number to a source field, the source field will show a MIDI CC number followed by the standard MIDI name associated with that MIDI CC number. See the Controller Destination list in the Multi Edit Mode chapter for details. Note that the standard MIDI names for CC numbers 16-19 are Ctl A through Ctl D, but these are unrelated to Slider A though Slider D.

VAST Sources and the PARAMS Page

When assigning a physical controller or CC number to a source field, a Parameter is automatically added to the PARAMS Page with the name of the first assigned VAST parameter.

If you are assigning a physical controller or CC number that is already used by a parameter on the PARAMS page, a new parameter will not be added to the PARAMS page. The new assignment will share the existing Parameter on the PARAMS page (Name, Control assignment and initial Value). The previously existing Parameter's name will not change based on the new assignment. If you have assigned one physical controller/MIDI CC to multiple VAST parameters, you may wish to edit the Parameter name to reflect this. Hit the Favorite1 button to access the parameter edit page.

When a VAST parameter source has been assigned to a physical controller or CC number, there will be an associated parameter on the PARAMS page (unless it has been manually deleted from the PARAMS page). To quickly find the associated parameter, select the VAST source field and press the Favorite1 button to jump to selecting the associated parameter on the PARAMS page.

In the example shown below, Mod Wheel is selected on the DSPMOD page. Pressing **Favorite1** jumps to the associated Pad Volume parameter on the Parameters page.

Relationship Between Controller Assignments on the PARAMS page and the VAST Pages

By default, when a new parameter is automatically added to the PARAMS page, the physical controller or CC number in the Control column will be the same CC number that was selected as a VAST source. If you select a different physical controller or CC number in the Control column of the PARAMS page, that physical controller or CC number will now control the VAST parameter, though the CC number that was originally selected as a VAST source will not change. For example, if you make your original VAST source assignment with MIDI 12 (shown as 12 Slider A), but then change Slider A to Slider B on the PARAMS page, Slider B will now control the VAST assignment, and the original VAST source will now show 12 Slider B.

On the PARAMS page, you can press the Favorite1 to see a Parameters Destination field, which shows the CC number that it sends to parameters on the VAST pages. A parameter's Destination is automatically set when the Parameter is created, and can not be changed.

Alternatively, if you have changed Control assignments on the PARAMS page and are no longer sure which VAST source assignment goes with which Parameter on the PARAMS page, you can quickly find the associated parameter by selecting the VAST source field and pressing the Favorites1 button.

The PARAMS Page

PARAMS Page Parameters

Parameter	Range Of Values	Default Value
Parameter	Program / Effect Chain dependent	-
Control	Physical controller or MIDI CC	None
Value	None, 0 to 127	None

Press the PARAMS soft button to display the PARAMS page (see above.)

The PARAMS page allows you to access all of the controllable parameters for the current The Parameters page shows a list of every parameter in the current program that has been assigned to be controlled by one of the Forte's physical controllers (or by an external MIDI CC number). The Parameters page allows you to select a different controller assignment, set an initial MIDI value for each controller assignment, and edit the name displayed for each controller assignment (names can be edited when Global User Type is set to Advanced). All VAST, KB3 and FX parameters that have been assigned to a controller or MIDI CC number are shown. When controller or MIDI assignments are made on other Program or FX Edit pages, or if an FX Chain is selected which contains controller assignments, these parameters are automatically added to the Parameters page.

Parameter

The Parameter (left) column shows a list of every VAST parameter in the current program that has been assigned to be controlled by one of the Forte's physical controllers (or by an external MIDI CC number). Effect Chain parameters are named with prefixes based on their effect type, either "INS" for parameters from Insert effects, "LFX" for parameters from layer effects, or "AUX1/AUX2" for parameters from Aux effects.

Use the navigation buttons to move up and down in the list. To quickly find a parameter that is already assigned to a controller, select the parameter column, hold the **Enter** button and move a controller to jump to it's assigned parameter.

Control

The Control (middle) column determines which physical controller (or external MIDI CC number) will control the parameter in the selected row. To quickly assign one of the Forte's physical controllers to a parameter, select the control column in the row of the desired parameter, hold the **Enter** button and move the desired controller. Alternatively, you can use the Alpha Wheel or the Value buttons to select a controller from the list, or type in the controller's MIDI number followed by the Enter button. See below for a list of Forte physical controllers and their associated MIDI numbers.

If you want to disable the controller for a parameter, you can select a value of None by scrolling to the bottom of the controller list (using the Alpha Wheel or the Value buttons), or type -1 followed by the Enter button.

To choose an external MIDI CC number as a control source, you can enter the number of the controller followed by the **Enter** button, or use the Alpha Wheel or the Value buttons. The Forte's physical controllers each use one of the available MIDI CC numbers, so you must choose one of the other available CC numbers when using an external MIDI control source or else the parameter will also be controlled by a Forte physical controller. The list below shows the available choices for the Control column. MIDI CC numbers associated with the Forte's physical controllers are highlighted in bold type.

PARAMETER CONTROLS		
None	**Slider E (MIDI 24)**	**Zone 1 Switch (MIDI 80)**
MIDI 0	**Slider F (MIDI 25)**	**Zone 2 Switch (MIDI 81**
Mod Wheel (MIDI 1)	**Slider G (MIDI 26)**	**Zone 3 Switch (MIDI 82)**
MIDI 2 to MIDI 3	**Slider H (MIDI 27)**	**Zone 4 Switch (MIDI 83)**
CC Pedal 2 (MIDI 4)	**Slider I (MIDI 28)**	MIDI 84
MIDI 5 to MIDI 10	**Variation (MIDI 29)**	**Switch 1 (MIDI 85)**
CC Pedal 1 (MIDI 11)	MIDI 30 to MIDI 63	**Switch 2 (MIDI 86)**
Slider A (MIDI 12)	**Sw. Pedal 1 (MIDI 64)**	**Switch 3 (MIDI 87)**
Slider B (MIDI 13)	MIDI 65	MIDI 88
MIDI 14 to MIDI 21	**Sw. Pedal 2 (MIDI 66)**	**Switch 4 (MIDI 89)**
Slider C (MIDI 22)	**Sw. Pedal 3 (MIDI 67)**	**Switch 5 (MIDI 90)**
Slider D (MIDI 23)	MIDI 68 to MIDI 79	MIDI 91 to MIDI 127

Table 7-1 The PARAMETER CONTROLS table

Important note about selecting a Control source

When you change the control source for a parameter, the new control source immediately sets its current value for the MIDI value of the current parameter. If the MIDI value of the parameter was set to None before changing the control source, changing the control source will set a new MIDI value, but the Value column for the parameter will still display None (see Important note about values of "None".) This can be troublesome if for example you were to change the Control Source for the Expression parameter, you may accidentally set the MIDI Value to 0, but wouldn't know it because

None would still be displayed. Also, if you set a MIDI Value to None by scrolling below 0, the MIDI value will be 0 until you change the value with the assigned controller (though None will still be displayed). If you edit the parameters of a program and suddenly can't produce any sound from the program, this may be the cause. In this case, either set the Value for Expression to something other than None, or use the Control Source that you set for Expression to increase the Value.

Value

To change the value of a parameter, use the cursor button to highlight the right column. In the value column, use the Alpha Wheel or the Value buttons to enter a MIDI value from 0-127, or a value of None by scrolling below 0. You can also use the keypad function of the Category buttons followed by the Enter button to enter a MIDI value. If you set a MIDI Value to None by scrolling below 0, the MIDI value will be 0 until you change the value with an assigned controller (though None will still be displayed). A value of None can also be selected by using the keypad to type -1, followed by the Enter button.

Important note about values of "None"

For factory programs, standard parameters like Expression (program volume), Sustain, and Sostenuto are always set to **None** by default. If you change one of these values, either on the PARAMS page in the Program Editor, or with a physical controller from Program Mode (or the Program Editor,) **the same value will be used for any other program you select**, if you select another program that uses a value of **None** for the same parameter. **These values remain set even if you don't save the program**.

This can be useful, for example, when using an expression pedal to control program volume.

By default, all factory programs have their Expression parameter set to a value of **None**, and Expression (program volume) by default can be controlled by an expression pedal plugged into the CC 1 Pedal jack. With an expression pedal plugged into the CC 1 Pedal jack, you can control the volume of any factory program, but when you select another factory program, it will have the same volume that you set with the expression pedal in the last program. This way, the volume of your programs will stay consistent, and can always be changed by the expression pedal. If you want a program to have a default volume, you must set a Value other than **None** for the Expression parameter.

For all parameters with a Value of None, any values set with a physical control will not be saved when saving the program. You must set the Value column for that parameter to something other than None in order to set and save a value. These values will remain set until changed with a controller, or until a program is loaded on the current MIDI channel that does not have a value of None for these parameters.

Parameter Edit

When the global User Type is set to Advanced, press the **Favorite1** button with a Parameter selected to view the Parameter Edit page. The Parameter Edit Page allows you to view the Parameter's Destination (MIDI CC that it sends to VAST parameters), as well as the currently assigned Control, Text name, and Value.

```
EDIT:Program Parameters Edit
Destination      13
Entry Value      0
Control          13
Text             Pad/String LP Filter




 DELETE                                      BACK
```

Use the Navigation button to step to the Text field, and press the **Favorite1** button again to enter the Parameter Text page, where you can change the name displayed for the Parameter.

```
EDIT:Program Parameter Name
P a d / S t r i n g   L P   F i l t e r




 DELETE   INSERT    <<<     >>>      OK    CANCEL
```

You may hit OK to save the new parameter name, or Cancel to return to the previous page.

You can also press the DELETE soft button to delete the current Parameter. Press the BACK soft button to return to the PARAMS page.

The FX Page
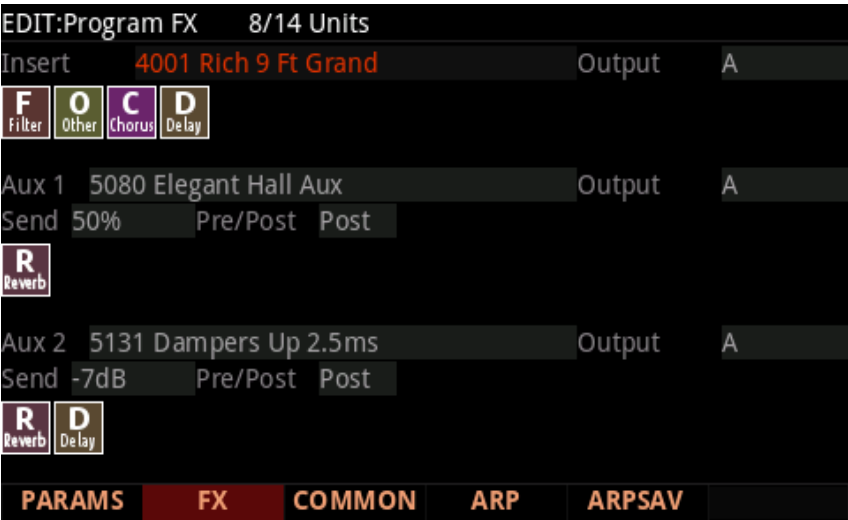
Press the FX soft button to call up the FX page (Effects page). Use this page to apply audio effects to a program. You can choose an effects chain for insert effects and an effects chain for auxiliary effects 1 and 2. When the Global Mode User Type is set to Advanced, the selected Chain can be edited by pressing the Favorites 1 button. See Ch. 8 The Effects Chain Editor for details.

The Forte's chains contain a variety of effects. Each chain displays icons representing the type of effects contained in the chain, as well as the order of effects in the chain (signal flows from left to right). The Forte's chains include different types of reverb, chorus, delay, flanger, phaser, tremolo, panner, leslie, distortion, EQ, compression, filter, envelope following filter, frequency stimulator, ring modulator, frequency offset, pitch LFO, and stereoizer.

FX Page Parameters

Parameter	Range Of Values	Default Value
Insert	Effect list (See Appendix F)	0 None
Aux 1	Effect list (See Appendix F)	0 None
Aux 1 Send	0 to 100%	0%
Aux 2	Effect list (See Appendix F)	0 None
Aux 2 Send	0 to 100%	0%
Aux 2 Send (Piano Programs)	Off, -95dB to 24dB	Off
Output	A, B	A
Pre/Post Ins	Post, Pre	Pre

Insert

Choose an effects Chain that will be applied to the current program. If you only need to use one Chain at a time on one MIDI channel, Insert effects may be all you need. If you plan to use multiple programs on different MIDI channels, it is best to use both Insert and Aux effects (see Aux below). Aux effects have the advantage of being available to all programs on each MIDI channel at the same time.

By default, when scrolling through the list of effects Chains for the Insert effect, only Chains with IDs from 4000-5000 will be shown. These Chains are used by the Forte factory programs, and each one will automatically apply controller assignments for effects parameters on the PARAMS page. Controller assignments for each of these Chains conform to the Controller assignments shown in the Forte Controller Conventions chart on page 6-12. To access Chains outside of this range, enter an ID number using the keypad function of the Category buttons. With the Global Mode User Type parameter set to Advanced, Chain IDs in any range can be scrolled to. See User Type on page 12-3 in the Global Mode Chapter.

Aux 1, Aux 2

Choose an effects Chain for each of the two auxiliary audio buses. An aux bus is an audio channel with a shared effects Chain that can be used by programs on any of the 16 MIDI channels. The aux effect is useful when you want to use the same type of effect for multiple channels (typically used for Reverb or Delay). You apply an aux effect to the program on a MIDI channel by "sending" the audio from that channel to an aux bus.

Every channel is connected to the aux buses, but the aux buses don't receive the signal until you turn up the aux "send" level for that channel, which controls a channel's input level to the aux bus. On each MIDI channel you can control the aux send level for that channel's program, in turn controlling how loudly you can hear the aux effect applied to that channel's program. The aux send level is set by the Aux 1 and Aux 2 Send parameters on the FX page. Many Chains also have an additional Aux send, Wet/Dry, or Amount parameter that will appear on the PARAMS page. For Reverb and Delay Chains, send parameters are often assigned by default to Slider I or Slider H respectively.

By default, when scrolling through the list of effects Chains for the Aux effects, only Chains with IDs from 5000-6000 will be shown. These Chains are used by the Forte factory programs, and each one will automatically apply controller assignments for effects parameters on the PARAMS page. Controller assignments for each of these Chains conform to the Controller assignments shown in the Forte Controller Conventions chart on page 6-12. To access Chains outside of this range, enter an ID number using the keypad function of the Category buttons. With the Global Mode User Type parameter set to Advanced, Chain IDs in any range can be scrolled to. See User Type on page 12-3 in the Global Mode Chapter.

Output

The Output parameter specifies the rear panel analog output pair to which the selected aux bus is routed. Setting the Output to A routes the signal of the selected bus to output pair A. Setting the Output to B routes the signal of the selected bus to output pair B. This is useful if you want to control the processed Aux signal with an external mixer or process the signal with additional external effects.

Auxiliary Send, Type and Mod

The Aux Send parameters determine how much of the the Program's signal is sent to each Aux FX Chain. The send values are set either in dB or wet/dry percent. When Global Mode User Type is set to Advanced, the Type and Mod parameters appear. Type determines whether dB or percent is used, and Mod selects a physical controller which can scale the Aux send value.

When type is set to %, the Aux send works as a wet/dry mix, so that as you turn up the Aux send, the program's unprocessed signal is turned down. With an Aux send set to 50% you hear an equal amount of processed and unprocessed signal (called wet and dry, respectively.) With an Aux send set to 100% you hear only the processed (wet) signal and none of the original unprocessed (dry) signal. Typically it's best to set Type to % when a continuous controller (like a Slider) is assigned to the Mod parameter, because it will give the controller more usable range then when set to dB.

When Type is set to dB, the Aux send level is set in dB and works more like a traditional send on an audio mixing board. Setting Type to dB is useful for setting a precise send value. The level of signal sent to the Chain is set in dB, the higher the value the more processed signal you will hear. When the Aux send level is set in dB, the unprocessed signal does not get turned down as the Aux send is turned up.

The Layer FX (LYR_FX) Page

Press the LYR_FX soft button to call up the Layer FX (LYR_FX) page. On this page, you can apply layer-specific effects. There are three Layer FX Modes: Use Program FX, Layer-Specific FX, and Use Another Layer's FX.

```
EDIT:Program Layer FX0/14 Units            ch_n  Layer:1/18
Layer FX Mode                     Use Program FX



 ◀ MORE     PARAMS      FX      LYR_FX   COMMON   MORE ▶
```
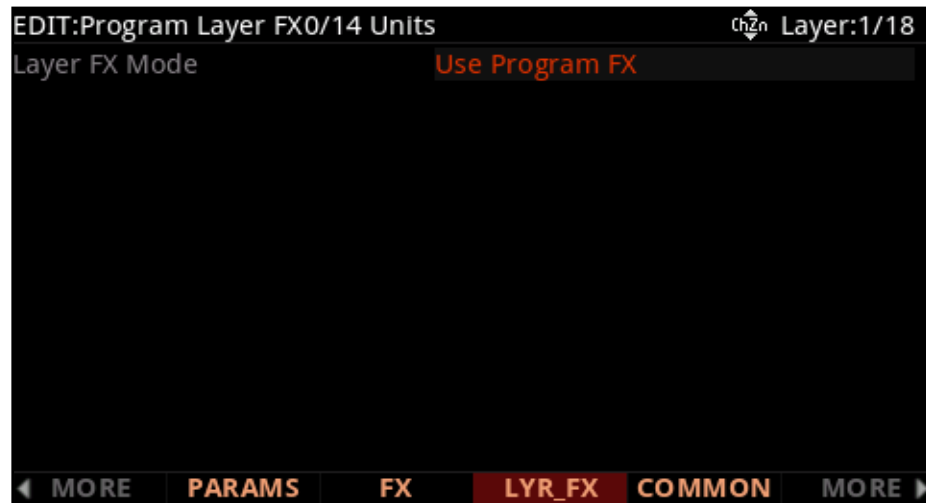
LAYER FX Page Parameters

Use Program FX Mode

With Use Program FX Mode selected, the current layer will use the effects configured on the Program FX (FX) page. See The FX Page for more information on program FX.

Layer-Specific FX Mode

With Layer-Specific FX selected, you can configure the effects for the current layer. This mode's parameters are similar to those of the FX page. This mode is shown in the following display:

All of the Layer-Specific FX mode parameters have the same functions and ranges of values as their corresponding parameters on the FX page. See The FX Page for more information on these parameters.

Use Another Layer's FX Mode

With Use Another Layer's FX selected, you can put the current layer through the effects of another layer. You can specify the layer through whose effects you wish to put the current layer.

The COMMON Page
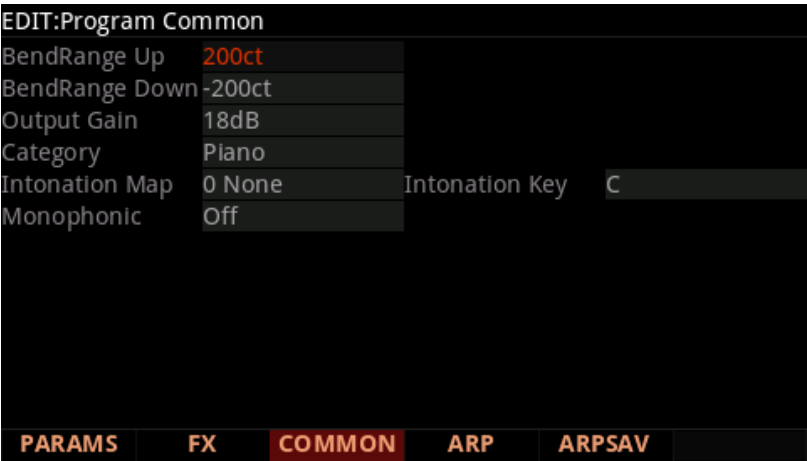
The Common Page allows adjustment of a number of general parameters for the program. Notice that when the Monophonic parameter is set to its default value of **Off**, the four monophonic parameters do not appear on the page. Some global parameters will only appear when the global User Type is set to Advanced.

Parameter	Range Of Values	Default Value
BendRange Up	-7200 cents to +7200 cents	200 ct
BendRange Down	-7200 cents to +7200 cents	-200 ct
Output Gain	-96 to 24dB	0dB
Category	None, 20 Categories	per program
Intonation Map	0-127	None (0)
Intonation Key	C - B	C
Monophonic	Off, On	Off
Legato	Off, On	On
Portamento	Off, On	On
Portamento Rate	1-3000 Key/s	70 Key/s
Mono Sample XFade	Off, On	On

COMMON Page Parameters

BendRange Up & BendRange Down

Use these parameters to define how much the pitch will change when you move the Pitch Wheel. You can set either Bend parameter to bend by up to 72 half-steps up or down. Pitch values are set in cents, where 100 cents = 1 half-step (1 semitone).

For both Bend parameters, positive values will cause the pitch to bend up, while negative values will cause the pitch to bend down. Large positive values can cause samples to bend to their maximum upward pitch shift before the Pitch Wheel is fully up (or down). This will not happen when bending the pitch down.

Output Gain

Adjusts the output level of the currently selected program by up to -96 dB or +20 dB.

Category

This parameter sets the category that the program will be grouped into when you press one of the Category buttons from the Program mode main page.

For example, if you were to edit a program in the Leads category that you want to use primarily as a Synth Bass, you could make it appear in the Syn Bass category by changing this parameter to SynBass. Set a category by using the Alpha Wheel or -/+ buttons. In addition to the category set here, all edited programs can be viewed by pressing the User button.

Intonation Map

The Intonation Map parameter works just like the Global mode Intonation Map parameter, except the Intonation Map parameter on the Program Common page only applies to the current program. (The Global mode Intonation Map parameter applies to all programs.) The Intonation Map parameter on the Program Common page allows you to set a different map for each program. When the global User Type is set to Advanced, you can edit the currently selected map and save it as a user map by pressing the **Favorite 1** button. See Editing Intonation Maps on page 12-10 for more details on intonation maps.

Intonation Key

The Intonation Key parameter works just like the Global mode Int Key parameter, except the Intonation Key parameter on the Program Common page only applies to the current program. (The Global Mode Int Key parameter applies to all programs.) The Intonation Key parameter on the Program Common page allows you to set a different Intonation Key for each program. See <u>Editing Intonation Maps on page 12-10</u> for more details on intonation keys.

Monophonic

When the Monophonic parameter is set to "Off", the current edited program is polyphonic—it can play up to 128 notes at a time (or fewer notes at a time if each note plays multiple layers).

When the Monophonic parameter is set to "On", the program will play only one note at a time, and the Legato parameter and the four Portamento parameters will appear on the Program Common page. Only monophonic programs can use Legato and Portamento. The Monophonic, Legato and Portamento parameters are not available for KB3 programs.

Legato

The Legato parameter is only available when the Monophonic parameter is set to "On". The Legato parameter is useful for emulating legato techniques of various acoustic instruments. When the Legato parameter is set to "On", a played note will trigger a new amplitude envelope only if no other notes in the program are being held. Notes played while other notes are being held will use the previously triggered amplitude envelope of the first note that was played.

Portamento

The Portamento parameter is only available when the Monophonic parameter is set to "On". When the Portamento parameter is set to "On", notes played in a monophonic Program can glide from the pitch of the previously played note to the pitch of the currently played note.

Portamento is often used in synthesizer lead sounds, or to mimic acoustic instruments like violin and bass, where a pitch glide is achieved by sliding a finger along a vibrating string.

See Portamento Rate (below) to set the Portamento glide speed, and Attack Portamento (below) to set the way that Portamento responds to played notes. See the Mono Sample XFade parameter (below) to improve the sound of Portamento in programs that use multiple samples.

Portamento Rate

The Portamento Rate parameter determines how fast a note glides from the pitch of one note to the pitch of the next played note. The value selected for this parameter determines how many seconds a note takes to glide one semitone (half-step) toward the pitch of the next played note. For example, at a setting of 12 keys/second the pitch would glide an octave every second. Select a higher value for a faster pitch glide, or a lower value for a slower pitch glide. The list of values is nonlinear; that is, the increments get larger as you scroll to higher values.

The Portamento Rate parameter determines how fast a note glides from the pitch of one note to the pitch of the next played note. The value selected for this parameter determines how many seconds a note takes to glide one semitone (half-step) toward the pitch of the next played note. For example, at a setting of 12 keys/second the pitch would glide an octave every second. Select a higher value for a faster pitch glide, or a lower value for a slower pitch glide. The list of values is nonlinear; that is, the increments get larger as you scroll to higher values.

Mono Sample XFade

When applying portamento to programs that use multiple samples (Acoustic Guitar, for example), the Forte will play more than one sample root as the pitch glides from the starting pitch to the ending pitch. This may cause a small click at each sample root transition. You can eliminate clicks by setting the Mono Sample XFade parameter to On. When the Mono Sample XFade parameter is set to On, the Forte performs a crossfade at each sample root transition to eliminate clicks.

COMMON Parameters with Advanced User Type

Additional parameters can be accessed when global User Type is set to Advanced.

Parameter	Range Of Values	Default Value
Out Pan	-64 to +64	0
Out Pan Mode	+Midi, Fixed	+Midi
Global	On, Off	On
Demo Song	Demo Song list	0 None

Out Pan, and Out Pan Mode

The Out Pan and Out Pan Mode parameters allow you to adjust the panning of the programs post-FX signal. Use the OutPan parameter to pan the signal; negative values pan the audio signal to the left channel, positive values to the right, and a value of zero pans to the center.

When the OPanMode is set to Fixed the pan position remains as defined with the OutPan parameter, ignoring MIDI pan messages. When the OPanMode is set to +MIDI, MIDI pan messages (MIDI 10) will shift the sound to the left or right of the Pan parameter setting. Message values below 64 shift it left, while those above 64 shift it right.

Globals

This parameter affects LFO2, ASR2, FUNs 2 and 4. When off, these three control sources are local; they affect each individual note in the layers that use them as a control source. They begin operating each time a note in that layer is triggered.

When the Globals parameter is set to On, these control sources become global, that is they affect every note in every layer of the current program, they're not specific to any one layer. When these control sources are global, they begin operating as soon as the program is selected. When Globals are on, LFO2, ASR2, and FUNs 2 and 4 will appear on the LFO+ page preceded by the letter G to indicate that they're global.

You'll use global control sources when you want to affect all notes in a program uniformly, and local control sources when you want to affect each note independently. For example, you'd use a global LFO controlling pitch to create a *Leslie effect* on an organ sound, since you want the effect applied to all the notes you play. You'd use a local LFO controlling pitch to create a vibrato for a solo violin, since you want to be able to vary the rate and depth of the vibrato for each note.

Demo Song

The Demo Song parameter allows you to choose the demo song for the current program. The demo song is a short, pre-programmed song that gives you a demonstration of the program in a musical context. You can play a program's demo song in Program mode by simultaneously pressing the Voices and Mallets Category buttons.

The KEYMAP Page

Press the **KEYMAP** soft button to call up the KEYMAP page. The parameters on this page affect sample root selection, i.e., which samples are played on which keys.

```
EDIT:Program Keymap          F1:EDIT          Ch̄Zn Layer:1/17
Keymap 1          1794 Damper Pedal fas
Keymap 2          1794 Damper Pedal fas
Stereo            On
Transpose         0ST
Key Tracking      100ct/key
Velocity Tracking 0ct
Alt Method        Switched
Alt Control       OFF
Timbre Shift      0ST
Play Back Mode    Normal
String Resonance  Off

◄ MORE    KEYMAP    LAYER    ARP    ARPSAV    MORE ►
```

KEYMAP Page Parameters

Parameter	Range of Values	Default
Keymap	Keymap List	1 Piano f Left
Stereo	Off, On	Off
Transpose	-128 to 127 semitones	0
Key Tracking	± 2400 cents per key	100
Velocity Tracking	± 7200 cents	0
Alt Method	Switched, Continuous	Switched
Alt Control	Control Source List	Off
Timbre Shift	± 60 semitones	0
Playback Mode	Norm, Rvrs, Bidirectional, Noise	Normal
String Resonance	Off, On	Off

Stereo

You'll use this parameter when you're working with stereo samples. When you set this parameter to **On**, an additional Keymap parameter appears. The two keymap parameters are distinguished as Keymap 1 and Keymap 2. The KEYMAP page parameters will affect both keymaps. When the Stereo parameter is set to **On**, the OUTPUT page for the current layer will show an additional Pan parameter.

The Forte contains both stereo and mono samples. Keymaps designed for stereo use are labeled with names beginning with "Stereo" or ending in "Left," "Right," "L," or "R." For stereo keymap playback, set Stereo "On" and assign corresponding Left and Right keymaps to Keymap1 and Keymap2 respectively. For keymaps beginning with "Stereo," assign the same keymap to both Keymap1 and Keymap2. If you select the same keymap for Keymap1 and Keymap2, the Forte automatically uses the left side for Keymap1 and the right side for Keymap2.

Once you have the keymaps assigned, go to the OUTPUT page and set the panning for each sample as desired. Keep in mind that using stereo keymaps reduces the polyphony of the program. For example, if you had a two-layer program with stereo keymaps in each layer, each note you play would use 4 of your 128 voices, allowing a total of 32 notes before all the voices have been used.

If you're not using stereo samples, you should set this parameter's value to Off.

Keymap

Assign a keymap to the current layer. Keymaps are collections of samples assigned to note and velocity ranges. With the Keymap parameter selected, press the Favorite1 button to enter the Keymap editor (see Ch. 9 Keymap and Sample Editing for details).

Transpose (Xpose)

Transpose the current keymap up as much as 127 semitones (ten octaves and a perfect fifth) or down as much as 128 semitones (ten octaves and a minor sixth).

Key Tracking (KeyTrk)

This is one of the six common DSP control parameters. On the KEYMAP page, key tracking affects the interval between notes. The default value of **100 cents** (a cent is a hundredth of a semitone) gives you the normal semitone interval between each note. Higher values increase the interval; lower values decrease it. Negative values will cause the pitch to decrease as you play higher notes.

When you make changes to this parameter, you'll need to keep in mind that KeyTrk on the KEYMAP page works in conjunction with Pitch KeyTrk on the DSPCTL page. Therefore, you'll need to check the KeyTrk value on both pages to see how key tracking works within a program. Unless you're looking for nonstandard note intervals, the values of the Pitch KeyTrk parameters on the DSPCTL and KEYMAP pages should add up to 100 cents.

Velocity Tracking (VelTrk)

This is another common DSP control parameter. As with the other parameters on the KEYMAP page, this shifts the position of the keymap. Different attack velocities will play different pitch shifts of the sample root assigned to that note range. If the shift is great enough, the next higher or lower sample root will be played, which in some cases (many drum programs, for example) will play an entirely different sound. Positive values will play higher pitches of the sample root when you use hard attack velocities (they shift the keymap downward), while negative values will play lower pitches.

Method (AltMethod)

See Alternative Switch (AltControl and AltMethod) on page 7-26.

Timbre Shift

This parameter works only on multi-sample keymaps, and changes the root selection for each key you play. With this parameter you can radically alter the current layer's timbre (basic sound characteristics). The nature of the change depends on the timbre itself, so this parameter calls for experimentation. Basically, timbre shifting changes a note's timbre by imposing different harmonic qualities onto the note. A timbre-shifted note retains its original pitch, but its harmonics are those of the same timbre at a higher or lower pitch. Positive values for this parameter tend to brighten a sound, while negative values darken.

Here's an example. If you shift the timbre up 4 semitones, then playing C 4 will result in the *pitch* C 4, but will actually play the sample normally assigned to G# 3, and shift its pitch up four semitones. This will increase the playback rate of the sample, so although the pitch remains normal, the timbre is brighter. You'd get the same effect by setting the Xpose parameter on the KEYMAP page to -4 semitones, then setting the Pitch parameter on the DSPCTL page to +4 semitones. For multi-sample layers with narrow key ranges, large amounts of timbre shifting will cause different sample roots to be played back.

Playback Mode

This gives you numerous options for manipulating the samples in the current layer as you trigger them. Normal leaves the samples unaffected, while Reverse plays them in reverse. At a value of Reverse, the samples will continue to loop as long as notes are sustained. To play them just once in reverse, you would adjust the length of the layer's amplitude envelope (explained later in this chapter). BiDirect (bidirectional) causes the samples to loop infinitely, alternating between normal and reversed playback. Noise replaces the samples with a white noise generator.

Alternative Controller (AltControl)

See Alternative Switch (AltControl and AltMethod) below.

Alternative Switch (AltControl and AltMethod)

Many, but not all, Forte sample roots have been pre-assigned a carefully chosen alternate sample start point that can be selected using the Alternate Switch feature (AltControl and AltMethod parameters). This feature allows you to control the sample playback start/end time triggered by any control source. (The alternate sample start point can be adjusted by editing a sample, see <u>Editing Samples on page 9-10</u> for details).

Use the AltControl parameter to specify a control source that will cause the sample to begin or end at the Alt point. Then use the AltMethod parameter to choose between switched and continuous calculation of the Alt point. If the value of AltMethod is Switched, the Forte will use the Alt point when the relevant control source is at a value greater than 64 at Note Start. If AltMethod is Continuous, the Alt point will vary depending on the value of the relevant control source at Note Start.

As an example, suppose you're working with a flute keymap and wish to control the amount of chiff heard at the beginning of the sound. On the KEYMAP page in the Program Editor, set AltControl to MWheel. Now the Mod Wheel controls how much of the initial sample attack is used. If you set AltMethod to Switched and move the Mod Wheel at least half-way up, at Note Start the sample will begin at the pre-set alternate start point (in this case, slightly past the initial chiff). If you set the AltMethod to Continuous, the Forte will interpolate the sample's starting point based on the position of the Mod Wheel. If the Mod Wheel is 75% of the way up at Note Start. the sample will begin 75% of the way between normal and alternate start points.

Emulating Legato Play

If you place the Alt point after the initial attack transients of the sample, then you can use the Alt Switch to emulate legato playing in an acoustic instrument. Setting the AltControl parameter to Chan St (Channel State) will cause the alternate sample start point to be used whenever another note is already being held. (Chan St sends a value of 127 whenever at least one note is being held in the program's MIDI channel.) This allows non-overlapping notes to use the sample's standard start point, while overlapping notes will use the alternate start point. Most of the Forte's ROM samples have their Alt points set for purposes of legato play. In most cases the difference in attacks is subtle, but for some sounds, like drums, the difference can be more noticeable.

String Resonance (Kurzweil String Resonance)

Sympathetic string resonance in an acoustic piano is the phenomenon of undamped piano strings resonating as a result of sound from other notes/keys. This can be observed if one plays a C, continues holding down the key after the sound has decayed, and then forcibly presses and quickly releases another C key. The undamped strings of the held-down C key will audibly ring, providing a highly tuned "echo", commonly known as sympathetic string resonance.

The String Resonance parameter works in conjunction with the FX preset "600 String Resonance" to emulate the sound of strings resonating in an acoustic piano. When combined, these two components create KSR (Kurzweil String Resonance). Factory programs in the Piano category are set up to use KSR, and they provide a good example of how the two components should be used. When making your own program with KSR, it may be easiest to use an FX Chain from one of these programs, since they already contain controller assignments for KSR. In these Programs and Chains the dry/wet mix of the KSR effect can be controlled with slider F, and the effect can be enabled or disabled with assignable switch 2. When making your own Chain, the FX preset "600 String Resonance" should be used for the first box of the Program's insert Chain.

When a layer has the String Resonance parameter set to On, the FX preset "600 String Resonance" monitors which keys are being held on that layer and uses them to tune the algorithm in the FX preset. Any audio that passes though the FX preset while these keys are held will cause emulated strings to resonate based on this tuning. When using KSR, layers which contain samples of piano notes should have the String Resonance parameter set to On. Layers that do not play samples of piano notes (such as layers for mechanical key release noise, pedal noise, string/synth layers etc) should have the String Resonance parameter set to Off. (Layers set to Off will still resonate any other strings that have been emulated.) If more than one layer in a program is set to play piano notes for the exact same velocity and key range, the FX preset will function the best if only one of those layers has the String Resonance parameter set to On.

In an acoustic piano, it is possible to strike and hold a key very lightly so that a note is not played, but the key's strings will still become undamped and will resonate when other keys are played. KSR can simulate this behavior. To do so, select the layer in the program which has the lowest velocity range and which has the String Resonance parameter set to On. On the Layer page, set the Enable parameter to GAttVel, and set the Enable Min parameter to 2. This will allow notes played with a velocity of 1 to tune the algorithm in FX preset "600 String Resonance" without playing a note. (This only works for velocities of 1. Velocities above 1 will not tune the algorithm without playing a note, even if the Enable Min parameter is set to a higher value.)

The LAYER Page

Press the LAYER soft button to call up the LAYER page. Here you'll set a number of parameters that affect the current layer's keyboard range, attack and release characteristics, and response to various controls.

```
EDIT:Program Layer                         ⟳ ᴄʰᶻⁿ Layer:1/6
Low Key          C 0          Delay Control     OFF
High Key         C 8          Min Delay         0.000s
Low Velocity     ppp          Max Delay         0.000s
High Velocity    fff          Enable            ON
Enable Low       64           Enable High       127
Bend             All          Enable Sense      Norm
Trigger          Norm         Opaque            Off
Sustain Pedal    On2          Sostenuto Pedal   On
Freeze Pedal     On
Ignore Release   Off
Hold Through Att Off
Hold Until Decay Off
  ◄ MORE    KEYMAP    LAYER    ARP    ARPSAV    MORE ►
```

LAYER Page Parameters

Parameter	Range of Values	Default
Low Key	C -1 to G 9	C 0
High Key	C -1 to G 9	C 8
Low Velocity	ppp to fff	ppp
High Velocity	ppp to fff	fff
Enable Low	± 127	64
Bend	Off, Key, All	All
Trigger	Normal, Reversed, Pedal Down, Pedal Up	Normal
Sustain Pedal	Off, On, On2, On3	On
Freeze Pedal	Off, On	On
Ignore Release	Off, On	Off
Hold Through Attack	Off, On	Off
Hold Until Decay	Off, On	Off
Delay Control	Control Source list	Off
Minimum Delay	0 to 25 seconds	0
Maximum Delay	0 to 25 seconds	0
Enable	Control Source list	On
Enable Sense	Normal, Reversed	Normal
Enable High	± 127	127
Opaque	Off, On	Off
Sostenuto Pedal	Off, On	On

Low Key

This sets the lowest active note for the current layer. This parameter's value cannot be set higher than the value for HiKey. The standard MIDI key range is C 1—G 9 (0-127). Middle C is C 4.

High Key

Here you set the highest active note for the current layer. This parameter's value cannot be set lower than the value for Low Key.

Low Velocity

With this parameter you define the lowest attack velocity at which the layer will be enabled (generate a sound). The values for this parameter and the next are expressed in the standard musical dynamics markings, similar to the values available for the velocity maps. Attack velocities that are below this threshold will not trigger notes. If you set this parameter's value higher than the High Velocity value, the layer will not play at all.

High Velocity

Similarly, this will set the highest attack velocity at which the layer will be enabled. Attack velocities above this threshold will not trigger notes in this layer.

Using Low Velocity and High Velocity you can set up velocity switching between up to eight layers. If you need even more, you can do it using the Enable and Enable Sense parameters on page 7-30.

Pitch Bend Mode (Bend)

This determines how Pitch bend control messages will affect the current layer. A value of All bends all notes that are on when the Pitch bend message is generated. A value of Key bends only those notes whose triggers are physically on when the Pitch bend message is generated (notes held with the sustain pedal, for example, won't bend). This is great for playing guitar solos on top of chords—play a chord, hold it with the Sustain pedal, then play your licks and bend them all you want; the chord won't bend with it. A value of Off disables Pitch bend for the current layer. To apply the same Pitch Bend Mode setting to the entire program, make sure to set the same setting for each layer.

Trigger

The Trigger parameter determines how notes in the current layer are triggered. The default setting is Norm, which causes notes to be triggered when a key is pressed down and a MIDI note on message is received by the layer. A setting of Rvrs causes notes to be triggered when a key is released and a MIDI note off message is received by the layer (velocity is determined by the release velocity of the released key).

A setting of PdlDN or PdlUP causes a note to be triggered when the sustain pedal is respectively pressed down or released (typically used for triggering mechanical pedal noise samples). The sustain pedal will trigger MIDI note 60 with a velocity of 64.

Delay Control

Here you select, from the Control Source list, a control source that will delay the start of all notes in the current layer. The length of the delay is determined by Minimum Delay and MaxDly (described below). You'll assign a continuous control like MWheel for the Delay Control parameter when you want to vary the delay time, and a switch control if you want the delay to either be its minimum value (switch off), or its maximum (switch on). The delay control will affect only those notes triggered after the delay control source is moved; the delay time is calculated at each note start, based on the status of the delay control source at that time.

Minimum Delay, Maximum Delay

The length of the delay is determined by these two parameters. When the control source assigned to Delay Control is at its minimum, the delay will be equal to the value of Minimum Delay. The delay will be equal to the value of Maximum Delay when the control source is at its maximum. If Delay Control is set to OFF, you get the minimum delay. If it's set to ON, you get the maximum delay. This doesn't change the note's attack time, just the time interval between the Note On message and the start of the attack. The delay is measured in seconds.

Enable

This assigns a control source to activate or deactivate the layer. When the value of the assigned control source is between the minimum and maximum thresholds set by the Sense parameter, the layer is active. When the value of the assigned control source is below the minimum or above the maximum, the layer is inactive. By default, many layers have the Enable parameter set to ON, so the minimum and maximum thresholds don't matter. They're relevant only when Enable is set to a specific control source (like MWheel).

Some local control sources (KeyNum and AttVel, for example) are not valid for the Enable parameter. In these cases, you should use the global equivalent (GKeyNum and GAttVel in this example).

Enable Sense

This parameter determines how and when a layer is enabled by the control source assigned for the Enable parameter. Enable Sense has three values: orientation, minimum, and maximum.

Suppose for a moment that you're editing a program, and in the current layer you've set the value of Enable to MWheel, which causes the Mod Wheel to control whether the layer is active. The default values for Enable Sense are as follows: orientation is Norm; minimum is 64, and maximum is 127. This means that when the Mod Wheel is less than halfway up, the layer is disabled. The layer plays only when the Mod Wheel is more than halfway up.

Change the orientation to Rvrs, and the layer plays only when the Mod Wheel is *less* than halfway up. Change the orientation back to Norm, and change the minimum to 127. Now the layer plays only when the Mod Wheel is *all* the way up.

You could use this parameter to set up a two-layer program that would let you use a MIDI control to switch between layers, say a guitar sound and a distorted guitar. Both layers would have their Enable parameters set to the same control source, say MWheel. One layer would have its Enable Sense orientation set to Norm, and the other would have it set to Rvrs. Both layers would have their Enable Sense minimums set to 64, and their maximums to 127. The first layer would play when your Mod Wheel was above its midpoint, and the second layer would play when the Mod Wheel was below its midpoint. (You could achieve the same effect by having the Enable Sense orientation in both layers set to Norm, and the minimum and maximum values set as follows: minimum 0 and maximum 63 for one layer; minimum 64 and maximum 127 for the other).

Using this parameter in conjunction with the Enable parameter, you can easily create velocity-switching for as many layers as you have in your program. This is useful for drum programs, since you can define a different velocity-trigger level for each of the 32 layers available in drum programs.

First, set the Enable parameter for the Layer 1 to a value of GAttVel (global attack velocity). This causes the layer to play based on the attack velocity of your keystrokes. Then set the Enable Sense parameter to a value of Norm, and adjust its minimum and maximum values (the two numerals to the right of Norm) to a narrow range. Don't use negative values, since they don't apply when you're using GAttVel as the layer enabler. Repeat this for each layer in the program.

Opaque

An opaque layer blocks all higher-numbered layers in its range, allowing only the opaque layer to play. This is an easy way to change a small range of notes in a program, leaving the original sound playing above and below the new sound.

Start with a one-layer program, and create a new layer (Layer 2) with the NEWLYR soft button. On the KEYMAP page for Layer 2, select the keymap you want to use, then on the LAYER page, set Layer 2's range (say, C 3 to D 3), and set its Opaque parameter to On. Then go to Layer 1, and duplicate it (with the DUPLYR soft button); the duplicate layer becomes Layer 3. You now have a three-layer program. Delete Layer 1 (the original layer); Layer 2 (the new layer you created) becomes Layer 1, and Layer 3 becomes Layer 2. Now Layer 2 blocks out Layer 3 (the duplicate of the original layer) at the notes C 3–D 3.

Sustain Pedal

When this parameter is on, the layer will respond to all sustain messages (Controller destination 64, Sustain). When off, the current layer will ignore sustain messages. On2 means that the sustain pedal will not catch the release of a note that is still sounding when the sustain message is received; this can be very useful in a program that uses amplitude envelopes with a long release time.

On3 enables the use of half damper pedal techniques when using a compatible continuous switch pedal (such as the Korg DS-1H). On3 emulates the behavior of an acoustic piano's sustain pedal by increasing the release portion of the current layer's amplitude envelope as the pedal is pressed down, before becoming fully sustained. This allows you to use a sustain pedal to control note release length and sustain.

Sostenuto Pedal

When Sostenuto is on, the layer will respond to all sostenuto messages (Controller destination 66, Sostenuto). When off, the layer ignores sostenuto messages. Sostenuto, as you may know, is a feature found on pianos that have three pedals. Pressing the Sostenuto pedal on a piano (usually the middle pedal) sustains the notes whose keys you were holding down when you pressed the pedal. Notes played after the pedal is already down do not get sustained.

Freeze Pedal

This parameter activates or deactivates the layer's response to Freeze pedal messages (Controller destination 69, Freeze). The Freeze pedal control causes all notes that are on to sustain without decay until the Freeze pedal control goes off. If a note is already decaying, it will freeze at that level.

Ignore Release

When Ignore Release is off, the layer responds normally to Note Off messages. When on, the layer will ignore all Note Off messages that it receives. This should be used only with sounds that decay to silence when a note is held, otherwise the sounds will sustain forever (press the Keypad and Enter buttons simultaneously to stop sustained notes). This parameter can come in handy when your Forte is slaved to a drum machine or sequencer, which sometimes generates Note Ons and Note Offs so close together that the envelope doesn't have time to play before the note is released. If used in combination with Hold Through Attack or Hold Until Decay (see below). Ignore Release allows you play staccato, yet still hear the entire length of the attack and decay sections of the amplitude envelope.

Hold Through Attack (Hold Through Att)

When on, this parameter causes all notes in the layer to sustain through the entire first attack segment of their amplitude envelopes, even if the notes have been released. If you have a sound with a slow attack, or an attack that's delayed with the delay control, setting this parameter to On will make sure your notes reach full amplitude even if you're playing fast. When set to Off, notes will release as soon as you release the note (generate a Note Off). If the first attack segment of the layer's amplitude envelope is very short, you probably won't notice a difference between values of On and Off.

Hold Until Decay

When on, this parameter causes all notes in the layer to sustain through all three attack segments in their amplitude envelopes even if the notes have been released. Looped amplitude envelopes will not loop, however, if the notes are released before reaching the end of the final attack segment. Notes will go into their normal releases if they are released after the envelope has looped. When set to Off, notes will release as soon as a Note Off message is generated.

The Wiring Algorithm (ALG) Page

Press the **ALG** soft button to call up the Wiring Algorithm (ALG) page. The top line of the display gives you the usual mode reminder, and tells you which layer you're looking at, as well as how many layers are in the current program. You can view the ALG pages of any other layers in the program by using the **Channel/Zone** buttons.

The basic definition: an algorithm is the "wiring" (signal path) of a sample to the audio outputs, through a series of digital signal processing (DSP) functions that you select. The Forte's algorithms are the core of <u>V</u>ariable <u>A</u>rchitecture <u>S</u>ynthesis <u>T</u>echnology. The DSP functions are synthesis tools (filters, oscillators, etc). that you assign to the various stages of the algorithm. The DSP functions you choose determine the type of synthesis you use.

The central portion of the page shows the algorithm for the currently selected layer. You see the number of the algorithm and a graphic representation of the signal path, as well as the currently selected DSP functions within the signal path.

To use a different algorithm, select the Algorithm parameter and use any data entry method to select a different one. To change the DSP function within an algorithm, move the cursor to the block you want to change, then use the Alpha Wheel or **Previous-/Next+** buttons. There's a staggering number of combinations of algorithms and DSP functions alone, not to mention the numerous controls that can be used to modify the DSP functions.

Note: Changing a layer's algorithm can affect the layer's sound drastically. It's a good idea to bring down the volume of your Forte or your sound system before changing algorithms.

Algorithm Basics

Each of the available algorithms represents a preset signal path. (See the Dynamic VAST section below for details on making user algorithms with custom signal paths.) Take a look at Algorithm 1 in the diagram below. It's one of the simplest algorithms.

The DSP functions are represented by the rectangular blocks. The lines connecting the blocks together indicate the flow of the digital signal from left to right; they represent what we call the "wire" of the algorithm: the actual physical path that the signal follows through the algorithm. Selecting different algorithms can be compared to connecting different DSP functions with different wiring diagrams.

Think of the left side of each block as its input, and the right side as its output. Depending on the algorithm, the signal may split into two wires, enabling part of the signal to bypass certain portions of the algorithm. Split wires may rejoin within the algorithm, or they may pass all the way through as split signals. If the last block has two wires at its output, we call it a double-output algorithm. If it has one wire, it's a single-output algorithm, even if there are two wires in earlier portions of the algorithm.

Each block of the algorithm represents a certain function in the signal path. In every non-cascaded algorithm (see Alt Input for Algorithms (Cascade Mode) below), the signal flows first through a one-stage DSP function that controls the pitch of the samples in the keymap (this function is represented as a block labeled PITCH). In fact, the first DSP function in

each algorithm always controls pitch, even though it doesn't apply in every instance and, as will be explained later in this section, it is bypassed in cascaded algorithms. Similarly, the last DSP function always controls the final amplitude of the signal (this function is represented as a block labeled AMP).

The number of function-parameters a DSP function can have depends on the relative size of its function-block on the Algorithm page (four slots is the largest block size). For instance, a function-block that is three slots long can have up to three function-parameters, whereas a function-block that is two slots long can have up to two function-parameters. For each function-parameter, there's a corresponding "subpage" on both the DSPCTL and DSPMOD pages. On the DSPCTL subpages, there are fine adjust and hard-wired parameters with which you can make fixed adjustments to the function-parameter. On the DSPMOD subpages, there are programmable parameters that you can assign to any control source in the Controller List to modulate the function-parameter. The various DSP parameter-types are described in Common DSP Control Parameters. More information on the subpages can be found in The DSP Control (DSPCTL) Page and The DSP Modulation (DSPMOD) Page.

Highlighting any of the function-blocks on the ALG page and pressing the Favorite1 button takes you to the DSPCTL page.

Common DSP Control Parameters

The type of DSP function available for any function block depends on the algorithm. Some of the specialized functions like the PANNER are always located just before the final AMP function. Others, like the two-input functions, appear only in algorithms that are structured for two-input functions.

You can change the nature of each layer of a program simply by assigning different DSP functions to the layer's algorithm. Your level of control goes much deeper than that, however. Each DSP function has one or more parameters to which you can patch a variety of control sources to modify the behavior of the DSP functions themselves.

The parameters on the various control-input pages are very similar; in fact, there are six parameters that appear on almost every page. Consequently we refer to them as the common DSP control parameters. Although the parameters on the control-input pages differ slightly from function to function, you can expect to see some or all of the common DSP control parameters whenever you select the control-input page for any of the DSP functions.
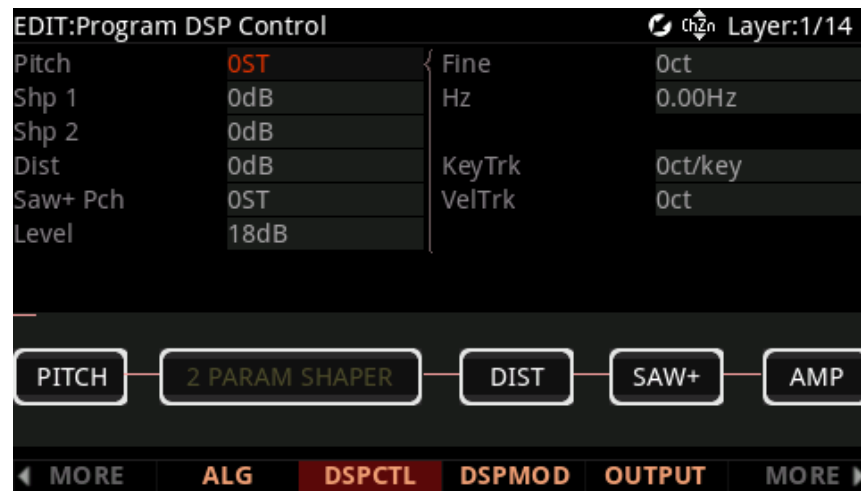
You'll recognize the common DSP control parameters, along with several other parameters. Keep in mind that there's a set of common control parameters for each of the DSP functions; in this case we're describing them only as they apply to the pitch control function.

Function-parameter

Unlike the other five common DSP parameters, the function-parameters are accessible on both the DSPCTL page and the DSPMOD page. They are listed along the left-hand side of each page; any changes made to them on one page are reflected in the other. The label of each function-parameter depends on its function in the current program's algorithm. For example, the Pitch function's function-parameter is labeled Pitch; whereas the two-block Lopass function's function-parameters are labeled LP Frq and LP Res.

By adjusting the function-parameter, you can add a fixed amount of adjustment to any DSP function. For the Pitch function, adjusting the function-parameter will change the pitch in semitone increments. Use this as a starting point to set the pitch where you want it to be normally. This will shift the pitch of the currently selected layer, and will affect the playback rate of sampled sounds. Sampled sounds have an upper limit on pitch adjustment. It's normal for the pitches of sampled sounds to "pin" (stop getting higher) when you adjust the pitch upward in large amounts. The oscillator waveforms can be pitched higher. Any sound can be pitched downward without limit.

The primary use of adjusting the function-parameter or fine adjust parameter (which will be explained under the next heading) is to offset the cumulative effects of the other DSP function parameters. For example, you might set a high value for key tracking (defined below) for a dramatic change in effect across the keyboard. The effect might be too much at one end of the keyboard, however, so you could use one of the adjust parameters to reduce the initial amount of that effect.

The Forte always uses real values of measurement, rather than just arbitrary numbers, for adjustable parameters. This means that you specify pitch in semitones (ST) and cents (ct), and amplitude in decibels (dB).

Remember that the parameters on the control-input pages are cumulative—they can add to or subtract from the effects of the other parameters on the page, depending on their values. For example, even if you've adjusted the pitch of a sample so high that it pins, the effects of the other parameters may bring the pitch back down to a workable range.

Fine Adjust Parameter

You can add slight detuning to the pitch with the fine adjust parameters. Notice that there are actually two fine adjust parameters for the Pitch function: one that changes the pitch in cents (100ths of a semitone), and one that changes it according to its frequency (in increments of Hertz—cycles per second). Since we're discussing the universal control sources here, and not specifically pitch, we'll move on for now, as the Hz parameter applies only to pitch-related functions.

Hard-wired Parameters

Key Tracking

This is a quick way to get additional control based on the MIDI note number of each note you trigger. Key tracking applies a different control signal value for each note number. In the case of pitch, key tracking enables you to change the tuning of each note relative to its normal pitch.

Middle C is the zero point. Regardless of the key tracking value, there is no effect on Middle C. If you set a nonzero value for key tracking, the effect increases for each note above or below Middle C. In the case of pitch, for example, say you assign a value of **5 cents per key** for the key tracking parameter. Triggering Middle C (C 4 on the Forte) will play a normal C 4. Triggering C♯ 4 will play a note 5 cents higher than C♯ 4. Triggering D 4 will play a note 10 cents higher than D 4, and so on. Notes below Middle C will be tuned lower than their normal pitches. If you set a negative value for key tracking, notes above Middle C will be tuned lower than their normal pitches.

Keep in mind that key tracking on the DSPCTL page works in conjunction with the key tracking parameter on the KEYMAP page. This is why you can set the KeyTrk parameter on the DSPCTL page to 0ct/key, and notes still increase in pitch by 100 cents/key as you go up the keyboard. It's because the KeyTrk parameter on the KEYMAP page is already set at 100 cents per key.

Velocity Tracking

A positive value for velocity tracking will raise the pitch as you trigger notes with higher attack velocities. This is great for getting a trace of detuning based on your attack velocity, especially in drum programs, where you can make the pitch of the drum samples rise slightly with higher-velocity Note Ons, just as drums do when you strike them harder. Negative values will lower the pitch as you increase the attack velocity.

Programmable Parameters

Source 1 (Src1)

This parameter takes its value from a long list of control sources including every MIDI control number, a host of LFOs, ASRs, envelopes and other programmable sources.

Src1 works in tandem with the parameter beneath it on the page: Depth. Choose a control source from the list for Src1, then set a value for Depth. When the control source assigned to Src1 is at its maximum, the pitch will be altered to the full depth you set. For example, if you set Src1 to MWheel, and set Depth to **1200 ct**, the pitch will rise as you push the Mod Wheel up on your Forte or MIDI controller, reaching a maximum of 1200 ct (12 semitones, or one octave).

Source 2 (Src2)

This one's even more programmable. Like Src1, you choose a control source from the list. But instead of setting a fixed depth, you can set a minimum and maximum depth, then assign another control source to determine how much depth you get.

Alt Input for Algorithms (Cascade Mode)

Cascade mode is a particularly powerful feature of the Forte that allows you to create unique algorithms of previously unattainable levels of complexity. The following three figures show the signal path of a program configured using the Forte's Cascade mode:
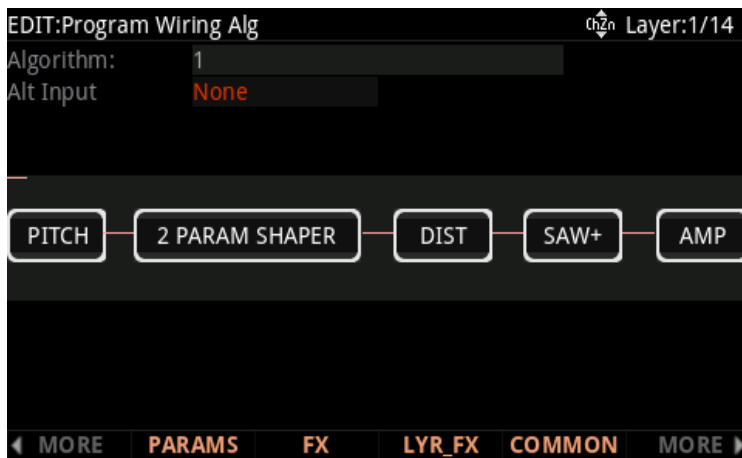
On the ALG (Algorithm) page of every layer, the Alt Input parameter lets you select any other layer to go through the current layer's DSP. You can set it up so that layer 1 goes into layer 2 into 3 (as shown above). If you turn down the volume on layers 1 and 2, then you are hearing true cascading—it's like a big chain with each algorithm feeding into the next, and what you hear is layer 3's output. You can also have the volumes of all three layers turned up, which will mix the signal of all three layers. You could, in the same program, also decide to run layer 4 into 5 into 6 into 13 into 25 if you wanted. Any of the 32 layers can go into any other layer.

The Cascade mode algorithms (very much like triple mode on a K2600) start at ID 101. Note in the above figures how algorithm 101 looks very similar to algorithm 1. Each Cascade mode algorithm corresponds to its non-cascade equivalent, which has the same ID number minus 100. For example, algorithm 105 is a cascade mode version of algorithm 5. On the Alg page, select which layer you want to have running through your cascade layer with the Alt Input parameter. Make sure to turn down the Amp volume on your source layers if you only want to hear what's coming out of the final cascade layer.

Dynamic VAST

The Dynamic VAST editor is yet another particularly powerful feature of the Forte that allows you to edit the wiring of an algorithm. With Dynamic VAST, literally thousands of wiring schemes are possible. Using Cascade mode in conjunction with Dynamic VAST gives you almost infinite control over your program's sound and behavior by enabling you to create your own unique, complex algorithms.

To enter the Dynamic VAST editor, select the Program Wiring Alg page by pressing the ALG soft button. Highlight the Algorithm parameter, select an algorithm, and press the Favorite1 button. This action calls up the EDIT: Wiring Alg page in which you can edit the wiring of the selected algorithm.

Parameter	Range of Values	Default
Inputs	1, 2	1
Outputs	1, 2	1
Number of Blocks	1 to 4	2
Output Mode	Normal, Sep. L/R	Normal

In addition to having a selectable function, each function block has three editable parameters: number of inputs, number of outputs, and block size (the Output Mode parameter is an editable parameter of the algorithm as a whole). When you first enter the EditAlg page, there will be a cursor in the parameter field, and the first block of the algorithm will be highlighted. To select a block for editing, move the cursor down the display until no parameter field is highlighted; then, using the < and > buttons, highlight the block you wish to edit. Press the ^ button to move the cursor back into the parameter fields, and then select the parameter you wish to edit.

The Output Mode parameter determines the number of outputs from the algorithm. With Output Mode set to Normal, the algorithm has one output. With Output Mode set to Sep. L/R, the algorithm has two outputs, each of which is sent to a separate stereo channel.

To edit the signal path, select either an input of a block or an output of the entire algorithm. By scrolling with Alpha Wheel or the Previous- and Next+ buttons, you can see every possible configuration for that selected signal path.

The DSP Control (DSPCTL) Page

Before reading further, be sure to read Algorithm Basics and Common DSP Control Parameters.

Press the DSPCTL soft button to call up the DSP Control (DSPCTL) page, which is displayed below:
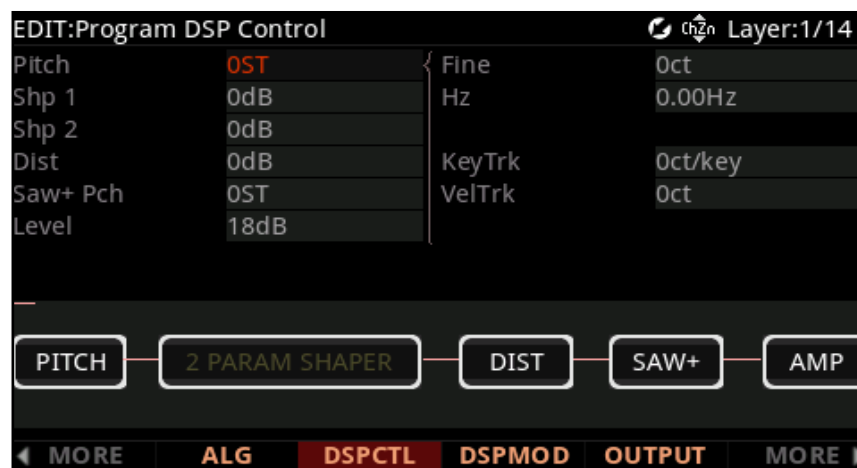
DSP Control Page Parameters

Function	Parameter	Range of Values	Default
Pitch	Pitch	-128 to 127 semitones	0
	Fine Adjust	± 100 cents	0
	Hertz Adjust	± 10.00 Hertz	0
	Key Tracking	± 2400 cents/key	0
	Velocity Tracking	± 7200 cents	0
(Function)	*(Function-Parameter)*	*(Depends on Function)*	*(Depends on Function)*
(Function)	*(Function-Parameter)*	*(Depends on Function)*	*(Depends on Function)*
(Function)	*(Function-Parameter)*	*(Depends on Function)*	*(Depends on Function)*
(Function)	*(Function-Parameter)*	*(Depends on Function)*	*(Depends on Function)*
Level	Level	-96 to 24 decibels	-6
	Key Tracking	± 2.00 decibels/key	0
	Velocity Tracking	± 96 decibels	35

Each field in the left-hand column of the page is a function-parameter of the current layer's algorithm. You can coarsely adjust the function-parameter in these left-hand fields—as noted in Common DSP Control Parameters, any adjustments made to the function-parameters on the DSPCTL page are reflected in the corresponding function-parameters on the DSPMOD page. The right-hand side of the DSPCTL page is the subpage of the highlighted function-parameter—on the subpage are the fine adjust parameters and hard-wired parameters. To access the parameters on the subpage, highlight the function-parameter you wish to edit, and then press the > button to move the cursor into the subpage. The label of a function-parameter depends on its corresponding function-block in the current layer's algorithm.

The DSP Modulation (DSPMOD) Page

Before reading further, be sure to read Algorithm Basics on page 7-34 and Common DSP Control Parameters.

Press the DSPMOD soft button to call up the DSP Modulation (DSPMOD) page, which displays the the current layer's algorithm, and highlights the corresponding function-block when you select parameters.
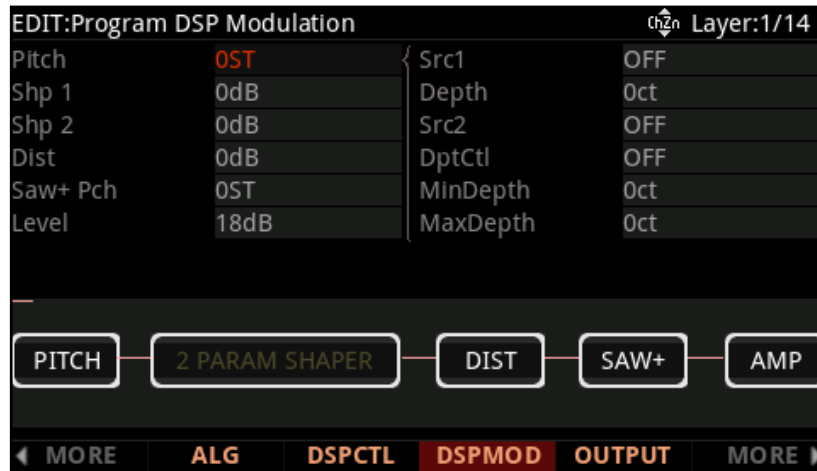
DSP Mod Page Parameters

Parameter	Range of Values	Default
Source 1	Control Source List	Off
Depth	*(Depends on Function)*	0
Source 2	Control Source List	Off
Depth Control	Control Source List	Off
Minimum Depth	*(Depends on Function)*	0
Maximum Depth	*(Depends on Function)*	0

Each field in the left-hand column of the page is a function-parameter of the current layer's algorithm. You can coarsely adjust the function-parameter in these left-hand fields—as noted in Common DSP Control Parameters, any adjustments made to the function-parameters on the DSPMOD page are reflected in the corresponding function-parameters on the DSPCTL page. The right-hand side of the DSPCTL page is the subpage of the highlighted function-parameter—on the subpage are the programmable parameters. To access the parameters on the subpage, highlight the function-parameter you wish to edit, and then press the > button to move the cursor into the subpage.

Each function-parameter's subpage contains the programmable parameters of the highlighted function-parameter. By assigning control sources to modulate a function-parameter, you can enable real-time control of your program's sound and behavior. You can assign Src1 to any control source, and can specify its maximum value with the Depth parameter. Src2 is different—you can assign it to any control source, but can also assign a control source to its maximum value with the DptCtl parameter. You can then specify the range of Src2's depth with the MinDepth and MaxDepth parameters.

> Note: The Forte features an easy shortcut for quickly assigning any of the realtime controllers (sliders, wheels, buttons, etc.) to a currently selected parameter (such as the Src1 and Src2 parameters above). Simply hold the Enter button and move the desired controller.

The LFO+ Page

This page provides access to a number of oscillators, envelopes, and functions used to build a VAST program.

About LFOs

LFOs are low-frequency oscillators. LFOs are used to automate the modulation of a parameter based on the shape and frequency of an audio waveform. You'll use the LFO page to define the behavior of the two LFOs available to each layer. LFOs are periodic (repeating) control sources. The basic elements are the rate, which defines how frequently the LFO repeats, and shape, which defines the waveform of the modulation signal it generates.

With the Forte, you can set upper and lower limits on each LFO's rate, and assign a control source to change the LFO's rate in realtime, if you wish.

Because of its periodic nature, the LFO is perfect for creating effects like vibrato (cyclic variation in pitch) and tremolo (cyclic variation in amplitude). When you're editing LFOs, or any control source, remember that it must be assigned to control some parameter before you'll hear the effects of your edits.

LFO1 is always local, meaning that it's triggered with each Note On event, and runs independently for each note in the layer. LFO2 is local by default, but can be made global. This is done on the COMMON page, by setting the Globals parameter to **On**, which causes LFO2, ASR2, FUN2 and FUN4 all to become global. Global controls uniformly affect every note in each layer.

LFO+ Page Parameters

Parameter Group (Available for each of LFO1 and LFO2)	Range of Values	Default
Minimum Rate	1/4 note, 1/8 note, 1/8 triplet, 1/16 note, 0 to 24 Hz	0.00
Maximum Rate	0 to 24 Hz	0.00
Rate Control	Control Source List	Off
LFO Shape	LFO Shape List (Ref. Guide)	Sine
LFO Start Phase	0, 90, 180, 270 Degrees	0

Minimum Rate

This is the slowest rate at which the LFO runs. When its Rate Control is set to **OFF**, or when the control source assigned to it is at its minimum, the LFO runs at its minimum rate. As previously mentioned, the values 1/4 note, 1/8 note, 1/8 triplet, and 1/16 note sync the Minimum Rate with the Forte's system tempo. Of course, if you choose to tempo sync your LFO, then the LFO rate is fixed, and you can specify neither Maximum Rate nor Rate Control. The display changes as shown below:

Maximum Rate

This is the fastest possible rate for the LFO. When its Rate Control is set to ON, or when the control source assigned to it is at its maximum, the LFO runs at its maximum rate.

Rate Control

Assign any control source in the list to modulate the LFO's rate between its minimum and maximum. A continuous control like the Mod Wheel is a natural choice, enabling you to get just about any rate between minimum and maximum. But you can use a switch control too, to get just the minimum or maximum with nothing in between. Assigning MPress (aftertouch) as the rate control for an LFO vibrato gives you an easy way to increase the vibrato rate in realtime, as you can on many acoustic instruments.

LFO Shape

The shape of the LFO waveform determines the nature of its effect on the signal its modulating. An easy way to check the effects of the different LFO shapes is to set **LFO1** as the value for the Src1 parameter for Pitch on the DSPMOD page, and set the Depth for Src1 to 400 cents or so. Then go to the LFO+ page, set the Min and Max rates for LFO1 at 0.00 Hz and 4.00 Hz or so, and set the Rate control to MWheel. Now play your MIDI controller and you'll hear the LFO's rate change when you move its Mod Wheel. Select different LFO Shapes and check out the effect on the pitch.

LFO Phase

Use this parameter to determine the starting point of the LFO's cycle. One complete cycle of the LFO is 360 degrees. 0 degrees phase corresponds to a control signal value of 0, becoming positive. Each 90-degree increment in the phase represents a quarter-cycle of the LFO.

When an LFO is local, the phase parameter gives you control over the starting point of the LFO for each note (for example, you could make sure every vibrato started below the pitch you played instead of at the pitch you played). The LFO's phase also affects global LFOs, although it's often indistinguishable, since global LFOs start running as soon as the program containing them is selected, even if you don't play any notes.

About ASRs

ASRs are three-section unipolar envelopes—attack, sustain, and release. The Forte's ASRs can be triggered by a programmable control source, and can be delayed. ASR1 is always a local control. ASR2 is local by default, but becomes global if the Globals parameter on the COMMON page is set to **On**. ASRs are frequently used to ramp the depth of pitch or amplitude in a vibrato or tremolo, enabling delays in those effects.

Parameter	Range of Values	Default
Trigger	Control Source List	Off
Mode	Normal, Hold, Repeat	Normal
Delay	0 to 30 seconds	0 seconds
Attack	0 to 30 seconds	0 seconds
Release	0 to 30 seconds	0 seconds

Trigger

This defines the control source that starts the current layer's ASRs. The ASR starts when the trigger switches from off to on. If the Trigger parameter is set to ON, a global ASR starts running immediately when you select a program that contains it. A *local* ASR starts running as soon as you trigger a note in the layer that contains it. Switch controls are better suited for ASR triggers because of their binary (on/off) nature. A continuous control will trigger the ASRs when its signal value is above its midpoint.

Mode

This parameter sets the sustain section of the ASR. The ASR's mode determines what the ASR does when it finishes its attack section. If the Mode parameter is set to Normal, the ASR will run directly from its attack section to its release section (no sustain). At a setting of Repeat, the ASR will cycle through the attack and release sections, then loop forward and cycle through again until the ASR's trigger switches off. If the mode is set to Hold, the ASR maintains its position at the end of the attack section until the ASR's trigger switches off. The ASR then goes into its release section. If the ASR's trigger switches off before the attack section is complete, the ASR goes directly to its release section.

Delay

When the ASR's trigger switches on, the ASR will start immediately if this parameter is set to zero. Nonzero values will cause a corresponding delay between the ASR trigger and the start of the ASR.

Attack

This defines how long the ASR takes to ramp up from minimum to maximum effect on whatever it's patched to.

Release

This defines how long the ASR takes to fade to minimum from its maximum. If the ASR's trigger switches off before the ASR has reached maximum, the ASR releases from that level.

About FUNs

FUN is short for function. The Forte's four FUNs greatly extend the flexibility of the control sources. Each FUN accepts input from any two control sources, performs a selectable function on the two input signals, and sends the result as its output, which can be assigned like any other control source. Using the FUNs involves defining them on the FUN page, then assigning one or more of them as control sources.

There are three parameters for each FUN. Inputs a and b can be any control source from the Control Source list. The control sources you want to combine are the ones you'll assign as the values for these parameters.

The Function parameter determines what mathematical function is applied to the two inputs. When a FUN has been assigned as a control source, the Forte reads the values of the two control sources defined as Inputs **a** and **b**. It then processes them according to the setting for the Function parameter, and the resulting value is the FUN's output.

All inputs to FUNs are scaled to a value in the range 0 to +1 or -1 to +1. A unipolar input has a value between 0 and +1. A bipolar signal has a value between -1 and +1. For a unipolar switch type input, OFF equals 0, and ON equals +1. For a bipolar input, -ON equals -1, and ON equals +1. The 0-127 range of MIDI controllers gets scaled into these ranges. Unipolar inputs to FUNs include MIDI switches and continuous controllers (sliders, wheels, etc). Some continuous controllers can be bipolar as well. For example, the control source list has 2 choices for Mod Wheel: Mod Wheel (unipolar) and Bi-Mwl (bipolar). Envelopes and LFOs can be unipolar or bipolar depending on their settings.

The output of FUNs can act as unipolar or bipolar control sources; it depends on the values of the input signals and the nature of the function you choose. When the output of a FUN is used as a Mod control source, the -1 to +1 range of values is scaled based on the Depth setting of the Mod source. See the K2600 Musician's Guide at kurzweil.com for more details and a description of each available FUN.

The Amplitude Envelope (AMPENV) Page

Amplitude envelopes have three sections: attack, decay, and release. The attack section determines how long each note takes to reach its assigned amplitude level after you trigger a Note On event. The decay section determines how quickly and how much a sustained sound fades before a Note Off is triggered. The release section determines how quickly a sound fades to silence *after* a Note Off is triggered.

Press the AMPENV soft button to reach the Amplitude Envelope page. For many programs, it will look like the diagram below, which tells you that the amplitude envelope for the current layer is the sample's default "natural" envelope. Many factory ROM programs use the natural envelope, which is custom designed for each sample and waveform during its original development process. A natural envelope usually contains more detail than a user envelope, and may make samples of acoustic instruments sound more realistic.
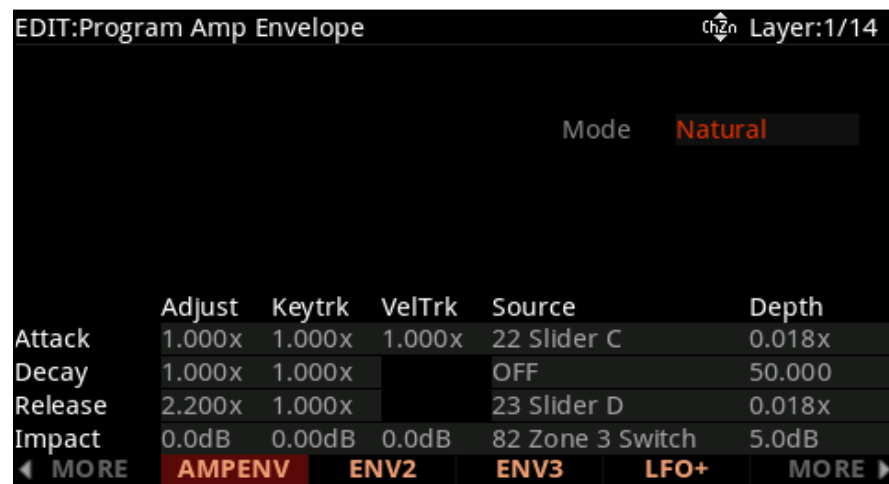
If you want to build your own amplitude envelope, just turn the Alpha Wheel a click. The value **N**atural will change to User, and a set of AMPENV parameters will appear. The sound will change when you do this, because the default settings for the User envelope, as shown in the diagram below, take effect as soon as you leave Natural mode. Returning to Natural mode applies the original amplitude envelope once again.
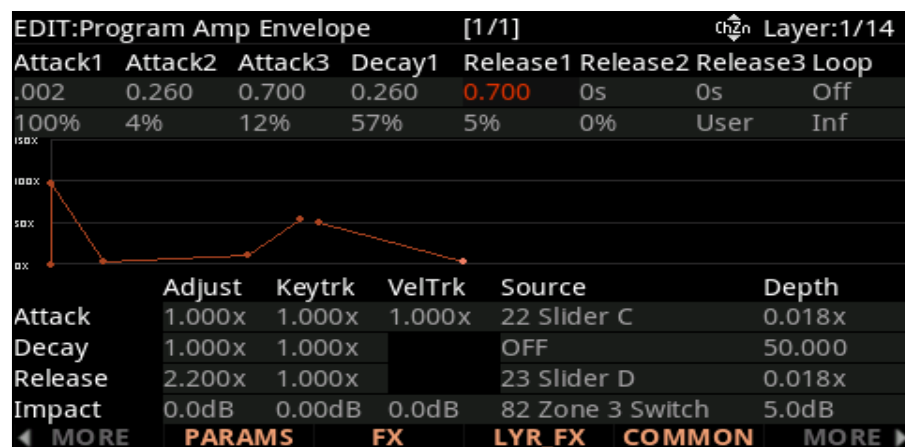
You'll tweak the parameters on the AMPENV page when you want to shape the amplitude characteristics of your sounds. A graphic view of the amplitude envelope will appear on the display to give you a visual sense of the envelope's characteristics. The dots along the envelope graphic indicate the breakpoints between the envelope's various segments.

The AMPENV page's top line gives you the usual location reminder, points out the currently selected layer, and tells you the relative scale of the envelope's graphic view. The envelope graphic shrinks in scale as the segment times get longer. This auto-zoom feature maximizes the available display space. Try lengthening one of the segment times. The envelope graphic will stretch to fill the display from left to right. When it fills the display, it will shrink to half its size, and the top line will indicate that the scale has changed (from [1/1] to [1/2], for example).

Each of the user envelope parameters on this page has two values, as listed below. For the envelope segments, the first (upper) value is the duration of the segment, and the second is the amplitude level at the completion of the segment. For the Loop parameter, the values define how the envelope loops, and how many times the loop cycles.

Parameter Group	Parameter	Range of Values
Attack Segment 1, 2, 3	Time	0 to 60 seconds
	Level	0 to 100%
Decay Segment	Time	0 to 60 seconds
	Level	0 to 100%
Release Segment 1, 2, 3	Time	0 to 60 seconds
	Level	0 to 150% (Release Segment 3 is always set to 0%)
Loop	Type	Off, Forward, Bidirectional
	# of loops	Infinite, 1 to 31 times

Attack Segment Times

These indicate how long it takes for the current layer's amplitude to reach its final level from its starting level.

Attack Segment Levels

These are the final levels that each segment achieves at completion. The levels are expressed as percentages of the maximum possible amplitude for the current layer. Attack segment 1 always starts at zero amplitude, and moves to its assigned level in the time specified by its time value. So the default settings of **0 seconds** and **100%** mean that the first segment of the attack section moves instantly from zero amplitude to 100% amplitude. Increase the time of Attack segment 1 if you want the sound to ramp up more slowly.

Attack segments 2 and 3 affect the sound only when you set a nonzero value for time. They will then move to their assigned levels in the time specified. Their starting levels are equal to the final levels of the preceding segment.

Decay Segment

The decay section has only one segment. It has values for time and level, just as for the attack section. The decay section begins as soon as the attack section has been completed. It starts at the same amplitude level as the attack segment preceding it, and moves to its assigned level in the time specified. You'll hear a note's decay section only when the attack section is completed before a Note Off message is generated for that note.

To create a sustaining envelope, simply set the Decay segment's level to a nonzero value.

Release Segments

Like the attack and decay sections, each of the three segments in the release section has values for time and level. Each segment reaches its assigned level in the time specified for that segment. Release segment 1 starts at the Note Off event for each note, at the current amplitude level of that note—whether it's in the attack section or the decay section. It then moves to its assigned level in the time specified. Release segments 2 and 3 start at the final levels of the segments before them.

 Release segments 1 and 2 can be set to any level from 0 to 150%. Release segment 3 always has a level of **0%**, so you can't adjust its level. In place of its Level parameter you see a parameter that lets you toggle between User envelopes and the sound's preprogrammed natural envelope.

Loop Type

There are seven different values for Loop type.

A value of Off disables looping for the current layer's amplitude envelope.

Values of seg1F, seg2F, and seg3F are forward loops. In each case, the amplitude envelope plays through the attack and decay sections, then loops back to the beginning of the first, second, or third attack segments, respectively.

Values of seg1B, seg2B, and seg3B, are bidirectional loops. The amplitude envelope plays through the attack and decay sections, then reverses and plays backward to the beginning of the first, second, or third attack segment, respectively. When it reaches the beginning of the assigned attack segment, it reverses again, playing forward to the end of the decay section, and so on.

Number of Loops

A value of Inf makes the amplitude envelope loop until a Note Off is generated. Values of 1 through 31 indicate how many times the loop will repeat after the amplitude envelope has played once through its normal cycle.

Regardless of the loop type and the number of loops, each note goes into its release section as soon as its *Note State* goes off (that is, when a Note Off is generated). The envelope will continue to loop as long as Note State remains on, whether it's held on by a pedal, by the IgnRel parameter (described in or anything else.

Envelope Control

The parameters on the bottom half of the AMPENV page give you realtime control over the rates of each section of the amplitude envelope for both natural and user envelopes. The Impact parameters are also available. The column on the left lists the three section types of the amplitude envelope (as well as Impact), and each corresponding line lists the values for the five DSP control parameters that are available for each section type.

The DSP control parameters are: Adjust, Key tracking, Velocity tracking, and Source/Depth, listed at the top of each corresponding column. When AMPENV is set to User mode, the Attack and Release sections on this page apply to the attack and release sections on the AMPENV page. It's important to keep in mind that the values for the various parameters are cumulative, meaning that, if for example you set attack to be controlled by Keytrk and VelTrk, the resulting change on Attack would be affected by the combination of the values produced by KeyTrk and VelTrk. This will affect the attack sections of natural envelopes. Additionally, the bottom line of this page lets you make use of the Impact feature, which lets you boost or cut the amplitude of the first 20 milliseconds of a note's attack.

The parameters and values in the following table apply to *each* of the three envelope sections—attack, decay, and release. We'll describe them only once, since their functions are largely the same for each envelope section. The only difference is with velocity tracking, which is only available as a parameter to control attack sections of the amplitude envelope (however, you can assign attack velocity as the value for the Source parameter in each of the sections).

The values of each of these parameters multiply the *rates* of the envelope sections they control. Values greater than 1.000x make the envelope sections run faster (they increase the rate), while values less than 1.000x make the envelope sections run *slower*. Say for example that on the current layer's AMPENV page you had set the Decay section's time at 2.00 seconds, and its level at 0%. This sets the layer's amplitude to fade to silence two seconds after the completion of the last attack segment. The decay time is two seconds; the decay rate is 50% per second. Now if you set the Decay Adjust parameter to a value of 2.000x, you've increased the decay rate by a factor of two, making it twice as fast. The rate increases to 100% per second, and the decay time is now one second instead of two.

Note: Since 0 multiplied by any number equals 0, the envelope control parameters on this page will have no effect on any AMPENV sections set to 0 seconds. A way around this is to change any AMPENV sections set to 0 to 0.02 seconds.

Parameter Group (Available for each of Att, Dec, Rel, Imp)	Range of Values
Adjust	0.018 to 50.000x (-24.0 to 24.0 dB for Imp)
Key Tracking	0.018 to 50.000x (-2.00 to 2.00 dB for Imp)
Velocity Tracking	0.018 to 50.000x (Not available for Dec or Rel; -24.0 to 24.0 dB for Imp)
Source	Control Source List
Depth	0.018 to 50.000x (-24.0 to 24.0 dB for Imp)

Adjust

This is the familiar Coarse adjust found on many other pages. Use it here to change the rate of one of the envelope sections without reprogramming the envelope itself. This parameter doesn't give you realtime control over the envelope. It is, however, a good way to adjust the natural envelopes without switching to a User envelope and trying to approximate the Natural envelope.

Key Tracking

This uses the MIDI note number of each key as the control input for the current layer's corresponding envelope section. When the value of this parameter is greater than 1.000x, notes above C 4 will make the envelope section run faster, while notes below C 4 will make it run slower. When the value of this parameter is less than 1.000x, notes above C 4 will make the envelope section run slower, and notes below C 4 will make it run faster. This gives you realtime envelope control right from your MIDI controller. You might use it, for example, to cause an acoustic guitar sound to decay quicker at the high end of the keyboard (set the key tracking to a positive value).

Velocity Tracking

Use your attack velocity as the control input for the current layer's attack section (this parameter doesn't apply to decay or release). When the value of this parameter is greater than 1.000x, attack velocities greater than 64 make the attack section run faster, and attack velocities below 64 make it run slower. This gives you realtime attack control over the envelope.

Source, Depth

These two parameters work together to let you assign a control like the Mod Wheel to affect the current layer's amplitude envelope in realtime. The value of the Source parameter defines which control affects the envelope section, and the value of the Depth parameter defines how much the rate is multiplied when the control is at its maximum value, 127. No effect is had when the control is at its minimum value, 0, and Depth values are scaled for controller values in between.

> Note: For each note triggered, you can only set the controller value that will scale the Depth parameter of an envelope section before that section of the envelope is triggered. For controllers assigned for Attack, the controller value used will be the last received before the note is triggered. For controllers assigned for Decay, the controller value used will be the last received before the final section of the attack envelope reaches its maximum amplitude. For controllers assigned for Release, the controller value used will be the last received before the note is released. To put it another way, for each envelope section, you cannot change the rate of a note's envelope once that section of the envelope has been triggered.

Impact

Impact can boost or cut note volume by up to 24 dB during the first 20 milliseconds of the attack of an envelope. This feature is an easy way to get more "thump" from your bass and drum sounds.

The Envelope 2 (ENV2) and Envelope 3 (ENV3) Pages

The Forte offers two envelopes in addition to AMPENV. Like AMPENV, ENV2 and ENV3 can be assigned like any other control source. Unlike AMPENV, however, ENV2 and ENV3 can be bipolar. This means that you can set negative values for them. (Obviously, you can't have an amplitude less than zero, so AMPENV is unipolar—the values range from **either 0 to 100% or 0 to 150%**). A bipolar envelope controlling pitch, for example, could modulate the pitch both above and below its original level.

Another difference is that AMPENV *always* controls the amplitude of the layer, so even if you use it as a control source for other functions, it will still affect the layer's amplitude. ENV2 and ENV3 affect only those layers that have them assigned as a control source. Also, AMPENV uses an exponential attack (the amplitude rises much faster at the end of the attack segment than it does at the beginning), while ENV2 and ENV3 use linear attacks (the attack segment increases at the same rate from start to finish).

The pages for Envelopes 2 and 3 are reached with the soft buttons **ENV2** and **ENV3**. When you select these pages, you'll find a display that looks very much like the AMPENV page. The only differences are that you can program an amount for Rel3; the Rel1 and Rel2 limits, which are ±100%.

The Arpeggiator Function

ARP soft button

Pressing the Arp soft button brings up the Arpeggiator editor, where you can adjust many parameters. (Certain editing capabilities are only available when the Global User Type is set to Advanced. See Arpeggiator Editing in Classic Mode for more info.)

The Arpeggiator takes note input from the keyboard (or via MIDI) and outputs a rhythmic and/or melodic pattern of MIDI notes. The Arpeggiator can affect both the internal programs and external MIDI instruments.

The Arpeggiator processes notes by playing them repeatedly, and/or transposing them up and down the keyboard. You have control over note output velocity, order, duration, transposition, and more. You can control several arpeggiator parameters in real time. You can also assign and edit specific patterns for note shifting, velocity shifting, and duration, either as separate patterns, or as a combination of all three in Step Sequencer mode. The Arpeggiator also has several different "latch" settings, which allows the arpeggiator to continue to play after you have released the keys.

The Arpeggiator Function

Some Arpeggiator parameters may be determined by the ArpPreset, which can be saved with the Program.

ARP Page Parameters

Parameter	Range of Values	Default
Arp Preset	0-148 factory presets; 1024 user presets	0 (None)
State	On/Off	Off
Arp Mode	Classic, StepSeq	Classic
Tempo	System, 20-320 bpm	System
Latch	Standard, Overplay, Arpeg, Add, Auto, AutoHold, 1NoteAuto, 1NoteAutLo, 1NoteAutHi	Standard
Limit Option	Stop, Reset, Unipolar, Bipolar, Float Res, Float Uni, Float Bip	Unipolar
KeyRange	all keys	C1 - G9
Beats	1/1 (Whole Notes) to 1/384 (96 notes per beat)	1/16 (16th Notes)
ShiftMode	Alg (algorithm) or Patt (pattern)	Alg
ShiftLimit	0-60 semitones	24
Shift (Alg) Shift Pattern (Patt)	± 88 Semitones 1-69 Preset patterns	0 Off
Play Order	Played, Upwards, Downwards, UpDown, UpDown Repeat, Random, Shuffle, Walking, Simultaneous	Played

Arp Preset

Use the Arp Preset parameter to recall factory or user created Arpeggiator settings. An Arp Preset contains settings for all of the parameters on the ARP page (except for the State and KeyRange parameters, which are stored with the Program/Multi). Scrolling through the Arp Presets is an easy way to discover the different possibilities of the arpeggiator, or to find a preset similar to what you want and continue to edit it from there.

You can save your current settings as an Arp Preset by pressing the ArpSav soft button. If you select a different Arp Preset before saving your current Arpeggiator settings, the current Arpeggiator settings will be replaced by the settings from the preset without showing a warning. Be sure to save your settings as an Arp Preset if you want to be able to recall them after making additional changes. Even if you don't save the current Arpeggiator settings as an Arp Preset, the most recent settings will always be saved with the program when the program is saved. Changing any of the Arp parameters will change the Preset to "0 Edited Arp", to indicate that the previous preset settings are no longer being used.

State

Use the State parameter to turn the Arpeggiator On or Off. See the S.Buttons 1-2 parameter in Chapter 12 for an easy way to control the arpeggiator in Program and Multi Mode. In a Multi, this parameter can also be switched on using Controller number 147 (ArpOn) and switched off using Controller number 148 (ArpOff).

Arp Mode

The two Arpeggiator modes, Classic and StepSeq, offer different means of shaping and editing Arpeggiator patterns. Depending upon this mode, the ARP page will provide access to different options and editable patterns. In StepSeq mode, you can edit sequences step-by-step, specifying Note, Velocity, Duration and Beat for each step in a sequence. In Classic mode, ARP will offer factory-programmed note-Shift, Velocity and Duration patterns. These are editable when the global User Type is set to Advanced. Every Arp Preset is saved to one of these modes.

Tempo

The Arpeggiator tempo parameter specifies beats-per-minute. When set to System it will use the value set on the TEMPO page in Global Mode (see TEMPO on page 12-18 for details). If a specific Arpeggiator tempo is saved with an Arp Preset, the Global tempo will be set to that value when the preset is selected.

For quick access to the Global TEMPO page from any other page, press the left and right navigation buttons simultaneously. You can then use the Alpha Wheel for real time control over the Arpeggiator tempo, overriding the saved preset value.

Latch

Latch determines how the Arpeggiator responds to notes when they are they are triggered.

Keys means that the Arpeggiator plays only while you are holding one or more keys down (or note triggers on). As you play different notes, they get added to the Arpeggiator, and as you release notes, they get taken out. If you play notes faster than the Arpeggiator's current tempo, each subsequent note will be added to the arpeggiation at the next division of a beat. This can cause a lag between the time you play the note and the time you hear it in the arpeggiation.

In the next three modes, the Arpeggiator latches notes only when MIDI Controller 157 (Latch) sends a value of On (64 or higher). An easy way to experiment with these modes is to assign the Mod Wheel to send MIDI 157.

In **Overplay** mode, the Arpeggiator latches any notes that are being held when Latch turns on, and continues playing them, even after you let them go, until Latch turns off. Any notes that you play after Latch is already on do not get arpeggiated, even if they're in the arpeggiation range.

Arpeg is similar: any notes held when Latch goes on are latched and arpeggiated, and keep going until Latch goes off. Any notes you play outside the arpeggiation range play normally. Notes that you play inside the arpeggiation range do not play normally; rather, if you hold them on, they become part of the arpeggiation. They drop out of the arpeggiation as soon as you release them.

Like Overplay and Arpeggiation, **Add** means that all notes being held when Latch goes on get latched, and keep playing until Latch goes off (even if you've released the notes). Any notes you play after Latch is already on also get latched.

Auto is independent of Latch; every note you play is automatically latched, and the Arpeggiator runs as long as you hold at least one arpeggiated note. As long as you keep holding on at least one note (it doesn't have to be the same note the whole time), every note you play in the arpeggiation range gets latched.

Pedals is sort of a combination of Keys, Add, and Overplay modes. It relies on both Latch (MIDI 157) and Latch2 (MIDI 158). If neither latch controller is on, notes will arpeggiate only while you are holding down keys (similar to Keys mode). If you activate Controller 158, the keys currently held down will latch, and any additional keys played while Controller 158 is on will also latch (similar to Add mode). When Controller 158 is off, any keys that are not currently held down will be removed from the arpeggiation. If you activate Controller 157, keys currently held down will latch, and any additional keys played while Controller 157 is on will play normally (similar to Overplay mode). This mode is called Pedals mode because you might want to assign Footswitch 1 to Latch (Controller 157) and Footswitch 2 to Latch2 (Controller 158) to make the pedals function similarly to sustain and sostenuto pedals. Additionally, you could assign one Footswitch to SusLatch (Controller 160)—doing this makes the Footswitch act as a sustain pedal when Arp is off, and as a Latch pedal when Arp is on.

Autohold is similar to Auto. Holding at least one arpeggiated note on and playing other notes latches those notes. Unlike in Auto mode, if you stop holding at least one arpeggiated note on, the arpeggiation continues playing (although you can't latch any more notes). In this case, if you strike another key within the Multi's arpeggiation range, you start a new arpeggiation sequence. Autohold is useful for arpeggiating chords: when you play a chord, it gets latched, and continues arpeggiating after you release the chord. When you play another chord, the previous chord gets unlatched, and the new one gets latched. You can use the Panic soft button to stop arpeggiation at any time.

1NoteAuto is similar to Autohold, except only the last note played is latched (even if previously played notes are still being held.) 1NoteAuto is specifically designed for use with Shift Patterns (see above) because Shift Patterns are designed to be played from one note at a time (though you can use 1NoteAuto without a Shift Pattern as well.) Using 1NoteAuto for zones that use a Shift Pattern ensures that Shift Patterns will sound correct by only allowing one note at a time to trigger the pattern. You can use the Panic soft button to stop arpeggiation at any time. 1NoteAutoLow and 1NoteAutoHi are also designed for use with Shift Patterns. They work similarly to 1NoteAuto, except 1NoteAutoLow always latches the lowest note when holding multiple notes, and 1NoteAutoHi always latches the highest note when holding multiple notes. You can also use these latch types without a Shift Pattern if desired.

Limit Option

This parameter determines what the Arpeggiator does when it has shifted the currently latched notes up (or down) to the shift limit. **Stop** causes the Arpeggiator to stop when it reaches the shift limit. **Reset** causes the Arpeggiator to return to its original pitch and repeat the latched cycle of notes, transposing each cycle according to the settings for Shift Amount and Shift Limit. If the limit allows the notes to go out of MIDI range (for example, if you set Shift to **12**, set the limit to 60, and play C6), then those "ghost" notes don't sound, but they take up rhythmic space: the Arpeggiator waits for the cycle to play itself out before starting over.

Unipolar means that after playing up to the shift limit, the Arpeggiator begins shifting notes in the opposite direction, until it reaches the original pitch, where it reverses again. To determine the next note when it reaches the shift limit, the Arpeggiator calculates the interval between the shift limit and what the next note would be if the shift limit weren't there. It then plays the note that is the calculated interval lower than the last note before the shift limit. The same thing happens in reverse when the arpeggiated notes get back down to the original pitch. The following table makes this easier to visualize by showing the result of arpeggiating one note (C4) in Unipolar mode, with Shift Amount set to 3 ST and various values for Shift Limit.

Shift Limit	Resulting Arpeggiation (When LimitOption is Unipolar)			Comment
	Up	**Down**	**Up**	
6 ST (F#4)	C4, D#4, F#4,	D#4, C4	D#4, …	Same notes play in both directions when Shift Limit is a multiple of Shift Amount
7 ST (G4)	C4, D#4, F#4,	E4, C#4,	D#4, …	Last upward note before shift limit is F#4, next upward note would be A4, which is 2 ST from shift limit (G4); therefore first downward note is E4 (2 ST below last upward note)
8 ST (G#4)	C4, D#4, F#4,	F4, D4,	D#4, …	A4 is 1 ST from shift limit, therefore first downward note is F4 (1 ST lower than last upward note)
9 ST (A4)	C4, D#4, F#4, A4	F#4, D#4, C4,	D#4, …	All symmetrical again; now A4 is within shift limit
10 ST (A#4)	C4, D#4, F#4, A4,	G4, E4, C#4,	D#4, …	Next upward note would be C5, which is 2 ST from shift limit
11 ST (B4)	C4, D#4, F#4, A4,	G#4, F4, D4,	D#4, …	C5 is 1 ST from shift limit
12 ST (C5)	C4, D#4, F#4, A4, C5,	A4, F#4, D#4, C4,	D#4, …	Symmetrical again, including C5

Bipolar starts out the same way as Unipolar, but during downward note shifting, it continues past the original pitch until it hits the shift limit in the *opposite* direction, where it reverses again.

Float Res adds a bit of apparent randomness to the process. "Float" means that when the Arpeggiator reaches the shift limit, it resets—but not to its original pitch as with plain Reset. Like Unipolar and Bipolar, it looks at the first note that would exceed the shift limit, and calculates the interval between that note and the shift limit. It then restarts the cycle of latched notes, transposing the entire cycle by the interval it just calculated, then shifting each subsequent cycle by the value of Shift Amount, until it reaches the shift limit again.

Here's a very simple example. Suppose that the only note in the Arpeggiator cycle is C4, Shift Amount is 4 (a third), and Shift Limit is 7 (so notes won't get shifted above G4). The Arpeggiator plays C4, then E4. The next note should be G#4, but that's above the shift limit—so the Forte calculates the difference between that G#4 and the shift limit (G4): one semitone. It adds that difference to the original starting note (C4) and plays that note next—C#4. The next note (F4) is within the shift limit, but the next note (A4) isn't, so it gets translated into D4—and so on.

Float Uni uses the same concept and applies it to Unipolar mode: when the Arpeggiator reaches the shift limit, it calculates the difference between the next note and the limit, and transposes the next cycle of notes down by that interval, then shifts each subsequent cycle down until it reaches the original pitch. Float Bip is similar to Float Uni, but the downward shift limit isn't the original pitch, it's the negative of the Shift Limit value.

The Arpeggiator can be a lot of fun, even if you don't always understand exactly what it's doing. Keep in mind that the stranger the algorithm you set up, the more unlikely the notes will stay close to one key, so if you want to create something that's going to sound at all diatonic, keep it simple.

Key Range (Low Key and High Key)

The Arpeggiator processes notes within the range of these parameters. Notes outside the specified range play normally, and do not become part of the arpeggiation sequence. Set the Low Key and HiKey parameters using the data entry wheel or buttons.

Beats

The Beats parameter sets the number of notes per beat. The tempo is based on quarter notes. Therefore, if you set Beats to 1/4, you will get one note per beat of the clock. At 1/16, you will get 4 notes per beat, and so forth. The maximum value is 96 notes per beat (1/384), but at most tempos, divisions smaller than 1/64 will sound pretty much the same.

To find a Beats value, multiply the notes you want per beat by 4. For example, 4 notes per beat (16th notes) would be 4*4=16, a Beats value of 1/16. Three notes per beat (8th note triplets) would be 3*4=12, a Beats value of 1/12. Six notes per beat (16th note triplets) would be 6*4=24, a Beats value of 1/24.

Shift Mode

The Alg (algorithm) option will let you create note sequences based upon a fixed Shift Amount. When you select Patt (pattern), the ShiftPatt parameter option will appear, allowing you to select one of several factory- defined patterns.

Shift Limit

Limit determines how far up or down the Arpeggiator shifts from the original note. The minimum value is 0, and the maximum is 60. When the Arpeggiator reaches the limit, the Arpeggiator responds according to the setting for the Limit Option parameter.

Shift (Shift Amount)

You can tell the Arpeggiator to transpose all of the currently latched notes each time it plays through them. Shift Amount determines how much transposition will occur for each cycle of notes. For example, if you have latched C4 and F4, and you assign a Shift Amount of 2, the Arpeggiator will play C4, F4, D4, G4, E4, A4, and so on until it reaches the Limit value. The Shift Amount values can range from -88 to 88, with 0 (the default) being no transposition.

Shift Pattern (ShiftPatt)

When the Shift Mode is set to Pattern, ShiftPatt engages a step sequencer for arpeggiator note patterns. The inputted note number of each played key is shifted according to a sequenced pattern, thus "Shift Pattern." The Forte has 69 pre-programed shift patterns including many useful chords, intervals, and rhythms. (You can also create your own custom patterns using the StepSeq editor.) Steps are played back at the rate set for Beats. Keep in mind that Shift Patterns are affected by every parameter on the ARP page, which can be the cause of unexpected variation, or a way to add interesting variation to a pattern.

Shift Patterns are most easily used and understood when triggered by only one key at a time. One way to prevent triggering from multiple keys is to use one of the Latch types 1NoteAuto, 1NoteAutoLow, or 1NoteAutoHi when using a shift pattern. Triggering shift patterns from one key allows the pre-programed patterns to sound like what you would expect from their names. If no other keys are playing, patterns will start over each time a key is pressed (there are some exceptions to this when using Arpeggiator Latch parameters other than "Keys," though a newly triggered pattern will always start at step 1). When triggering Shift Patterns from more than one key at a time, each consecutive step of the pattern shifts the note from a different inputted key, the order of which is decided by the Play Order parameter. This means that each key will not be shifted by every step of the pattern, causing you to only hear part of the pattern from each key, often making the pattern unrecognizable. Though triggering a Shift pattern from multiple keys can be used creatively, it can also make it hard to predict what the output will be.

Play Order

This parameter determines the order in which the Forte plays arpeggiated notes. Played causes them to play back in the chronological order in which you played and latched them. Upwards means that notes play in ascending pitch order, regardless of their chronological order. Downwards means descending pitch order. UpDown causes notes to play from lowest pitch to highest, then from highest pitch to lowest, repeating the cycle until you stop the arpeggiation. The notes at the very top and very bottom only play once. UpDown Repeat is similar to UpDown, except that the notes at the top and bottom play twice (repeat) when the Arpeggiator reverses direction.

Random plays the currently latched notes in completely random order. Shuffle plays them at random, but keeps track of the notes so that no note repeats until all of the others have played. Walk is a "random walk" order: each successive note is either the next or previous note (in chronological order). For example, suppose you've latched four notes—G4, B4, D5, and F5—in that order. The first note the Arpeggiator plays is the G4. The second note will be either B4 (the next note chronologically), or F5 (the "previous" note chronologically— that is, the last latched note). If the second note is B4, the third note will be either D5 or G4. If the second note is F5, the third note will be either G4 or D5.

Simultaneous makes the Arpeggiator latch each note you play and repeat it in time with the Tempo value, sort of like a digital delay with no decay. If you play a C and hold it while you play an E and a G, the Arpeggiator will play all three notes at the same time and at the same tempo. Simultaneous also works well with Shift and Limit, allowing you to shift multiple notes simultaneously.

Classic Arp Modes and Patterns

Velocity

Velocity sets the attack velocity of the played notes. With Velocity set to First, all notes play at the velocity of the first played note. With Velocity set to Played, each note repeats with the same velocity you played it at. With Velocity set to Last, all notes play at the velocity of the most recently played note. With Velocity set to Aftertouch, the velocities are controlled by keyboard pressure: as you hold and push down on any key, the velocities get higher, and as you ease up they get lower.

With Velocity set to MIDI 109, MIDI controller 109 continually sets the arpeggiator velocity. This works well when MIDI controller 109 is set to a knob or expression pedal.

With Velocity set to Fixed, all notes play with the same velocity. The default Fixed velocity is 100. Like MIDI 109, You can control this velocity amount in real-time by assigning a controller to VelFixed, controller destination number is 175. Input from any physical controller assigned to send VelFixed (or any entry value for a controller assigned to send VelFixed) overrides the programmed value of the Velocity parameter, disabling it until you select a different Multi (or in Program mode, until you select a different control setup on the MIDI-mode TRANSMIT page).

Velocity Pat

The Pattern option engages a step sequencer for arpeggiator velocity patterns, which shifts the velocity of each arpeggiated note according to a sequenced pattern. There are numerous pre programed velocity patterns to choose from, some of which create rhythms by using velocity values of -127 or "none" to leave rests in the arpeggiation. The sequencer uses the velocity received from the first note played as the center position to shift velocities up or down from. If no other keys are playing, patterns will start over each time a key is pressed (there are some exceptions to this when using ARP Latch parameters other than "Keys," though a newly triggered pattern will always start at step 1.) When triggering velocity patterns from more than one key at a time, each consecutive step of the pattern shifts the velocity from a different inputted key, the order of which is decided by the Play Order parameter on the ARP page.

When the global User Type is set to Advanced, Velocity patterns may be edited. See the section Editing Velocity Patterns below.

The Velocity Modes **Human1** through **Human4** randomly change played note velocity within a range in order to make arpeggiation sound more human like, with each note varying slightly in velocity. The Human settings use the velocity received from the first note played as the center of the randomization range. Each note of the arpeggiator will randomly choose a velocity within the given range. (See the table below for velocity ranges.)

The Velocity Modes **Chimp1** through **Chimp4** function in a similar fashion to the Human settings (see above.) Like the Human settings, the Chimp settings randomly change played note velocity within a range, but the Chimp settings have larger randomization ranges. The Chimp settings use the velocity received from the first note played as the center of the randomization range. Each note of the arpeggiator will randomly choose a velocity within the given range. (See the table below for velocity randomization ranges.)

> Note: For Human and Chimp modes, if the velocity of the first played note is low enough that the selected randomization range could result in a velocity of zero, some notes may have a velocity of zero and therefore produce no sound..

Velocity Setting	Velocity Randomization Range
Human1	± 3
Human2	± 6
Human3	± 10
Human4	± 15
Chimp1	± 25
Chimp2	± 35
Chimp3	± 50
Chimp4	± 64

Velocity Modes **MissNotes1** through **MissNotes9** makes the Forte randomly miss playing a percentage of inputted notes. See the table below for percentages and their equivalent settings. Each of these settings also randomly changes some of the inputted velocities in a range of ± 5, with the purpose of simulating a more human played sound.

> Note: Missed Notes are actually output as notes with a velocity of zero.

Velocity Setting	Approximate % of Notes Missed
MissNotes1	% 10
MissNotes2	% 20
MissNotes3	% 30
MissNotes4	% 40
MissNotes5	% 50
MissNotes6	% 60
MissNotes7	% 70
MissNotes8	% 80
MissNotes9	% 90

Duration

Duration determines how long each arpeggiated note plays. 100% means that a note sustains until the next one sounds—very legato. 50% means that the note fills half the space between itself and the next note. The lowest value is 1%—staca*ttissimo*. This parameter has no effect on percussion sounds or other sounds whose duration is fixed.

Duration Pattern

Selecting Pattern as the Duration Mode engages a step sequencer for arpeggiator note duration patterns. There are 7 pre-programed duration patterns you may choose from, and 1024 locations in which to save user-generated patterns. See the section Editing Duration Patterns below for more information.

Arpeggiator Editing in StepSeq Mode

Many ArpPresets use StepSeq for the ArpMode. In this mode, the ARP page will give you the ability to create a unique Arpegiattor pattern step-by-step. Select a parameter using the navigation buttons (to change steps, first put the cursor on the Step line, then move left or right). Use the Number of Steps parameter to add or subtract steps.

The Step Seq specifies four fixed parameters for each step: Note, Velocity, Duration and Beats. Use the navigation buttons to move between pattern steps, use the Alpha Wheel, alphanumeric pad, or plus/minus buttons to enter the parameter values for each step.

Note values create the shift pattern for the Step sequence. Notes are specified in half-steps from the last latched note (represented as 0). Thus, this series of notes: 0, 4, 7 will play a triad in sequence. Note values can range from -128 to +127, with negative numbers shifting below the latched note.

Velocity values shift each steps velocity up or down from the last latched note played or received. Values range from -127 to +127 (with 0 representing the origin value).

Duration is specified in cents, from 0-100, as a percentage of the specified Beat.

Beats sets the pattern rhythm, using fractions of the Beat rate set by the Tempo parameter. A Beat to 1/4 will be a quarter note based on the clock Tempo.

To find a Beats value, multiply the notes you want per beat by 4. For example, 4 notes per beat (16th notes) would be 4*4=16, a Beats value of 1/16. Three notes per beat (8th note triplets) would be 3*4=12, a Beats value of 1/12. Six notes per beat (16th note triplets) would be 6*4=24, a Beats value of 1/24.

Colored oval graphics provide a quick visual interpretation of the Step Sequence, where: color=note number, height=velocity level, and width=duration. The line under each oval changes length depending on the Beats value for the current step.

Use the **Number Steps** parameter to set the number of steps in the current sequence.

Arpeggiator Editing in Classic Mode

Set the global User Type to Advanced to access the Classic pattern editor pages. The ARP page will then give access to Shift, Velocity and Duration pattern editors. Set the desired parameter to **Pattern,** then select the pattern parameter and hit **Favorite1** to enter the editor page. Shift, Velocity and Duration Mode step sequencers allow you to precisely control how your Arpeggiator (or MIDI note input) is processed.

The Classic Arp Mode parameters are these:

Parameter	Range of Values	Default
ShftPattrn (Shift Pattern)	Off, *1-69 factory patterns*	Off
Velocity	First, Played, Last, Aftertouch, MIDI 109, Fixed, Pattern *(1-74 factory patterns plus user created patterns)* Human1-4, Chimp1-4, MissNotes1-9	Played
Velocity (Fixed)	1 to 100	100
Duration	Fixed, Pattern	
Duration (Fixed)	1% to 100%	100%

You can edit the included patterns by pressing the Favorite 1 when a pattern is highlighted in the VelocityPat field.

```
EDIT:Program Arpeggiator          F1:EDIT
ArpPreset       0 Edited Arp            State      Off
Mode            Classic          Tempo             System
Latch           Keys             Limit Option      Unipolar
KeyRange        C -1      ... G 9  Beats            1/8
Shift Mode      Alg              Shift Limit       24
Shift Amount    0ST              Play Order        Played
Velocity        Pattern
Velocity Patt   1 PseudoSine
Duration Mode   Pattern
Duration Patt   0 None


◄  MORE      KEYMAP      LAYER      ARP      ARPSAV      MORE ►
```

Editing Velocity Patterns

Each pattern can have up to 48 steps, and each step can shift velocities by ± 127 steps. You can insert a step with a value of "none" by entering -127 and then shifting down one more step. A step with the value "none" causes the arpeggiator to play nothing for that step, allowing you to create rhythmic patterns by using "none" to leave spaces. Pressing STEP- removes the last step in the list, pressing STEP+ inserts a new velocity step at the end of the list (the pattern editor remembers the values of removed steps until you save or exit.) Use the navigation buttons to move between pattern steps, use the Alpha Wheel, or Previous-/Next+ buttons to enter the velocity shift amount for each step.

```
EDIT:Arp Velocity Pattern
Step 1     0        Step 13    -1
Step 2     16       Step 14    -15
Step 3     32       Step 15    -33
Step 4     16       Step 16    -19
Step 5     0        Step 17    -2
Step 6     -16      Step 18    16
Step 7     -32      Step 19    33
Step 8     -16      Step 20    18
Step 9     1        Step 21    0
Step 10    18       Step 22    -16
Step 11    34       Step 23    -28
Step 12    14       Step 24    -12


STEP-      STEP+                           DELETE
```

Press DELETE to delete the pattern from memory. Pressing **Exit** will offer the opportunity to save the pattern you have edited. Pressing YES gives you the option to rename the pattern and save. To create a new VelPatt, edit an existing pattern and choose Rename when saving.

Press the ARPSAV soft button to save your new pattern as an Arp Preset. Press **Exit** to return to the ARP page. When exiting the Progam editor, it will automatically give you the option to save the pattern with a User Program if changes have been made.

> Note: For patterns with negative velocity values, if the velocity of the first played note is low enough that a pattern step could result in a velocity of zero, some notes may have a velocity of zero and therefore produce no sound.

Editing Duration Patterns

Press the **Favorite1** button when a pattern is highlighted in the DurationPatt field to access the editor. This page displays the pattern's total number of steps. Pressing STEP- removes the last step in the list, pressing STEP+ inserts a new note step at the end of the list (the pattern editor remembers the values of removed steps until you save or exit.) Use the navigation buttons to move between pattern steps, use the Alpha Wheel, alphanumeric pad, or Previous-/Next+ buttons to enter the note shift amount for each step.
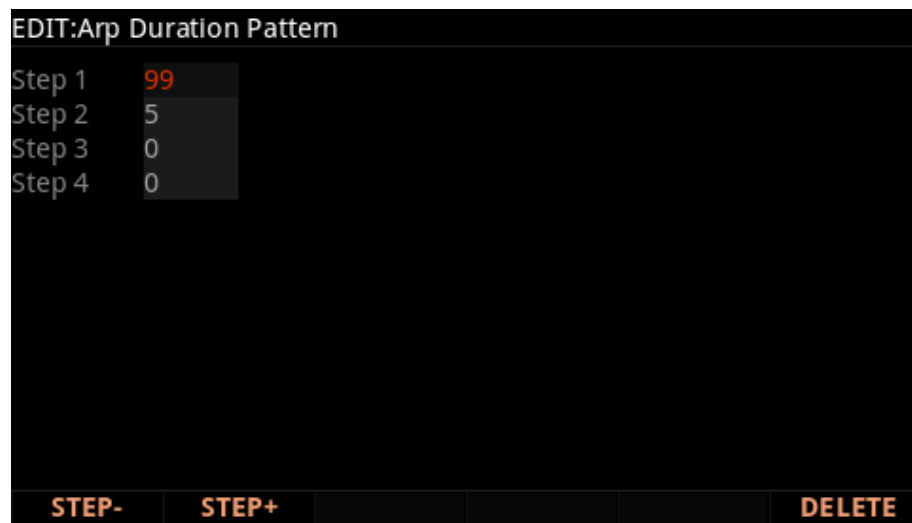
```
EDIT:Arp Duration Pattern

Step 1    99
Step 2    5
Step 3    0
Step 4    0




       STEP-        STEP+                                          DELETE
```

Press DELETE to delete the pattern from memory. Pressing EXIT will offer the opportunity to save the pattern you have edited. Pressing YES gives you the option to rename the pattern and save. To create a new Duration pattern, edit an existing pattern and choose Rename when saving. Press the **Exit** button to return to the ARP page. Your pattern will be available in the Duration Patt parameter.

Press the ARPSAV soft button to save your new pattern as an Arp Preset. When you hit the **Exit** button to leave the Program editor, you will be given the option to save a new User Program with any changes you have made. See Saving a User Program for details.

ArpSave

If you have adjusted any Arpeggiator settings, you have the option of saving a new Arp Preset to a User location, where it will be available to use with other Programs and Multis. The Arp Preset is saved independently from the Program itself.

Press the ARPSAV soft button to initiate a save. You will have the option to select the location and name for your Arp Preset, using the Alpha Wheel or alphanumeric buttons.

When you hit **Exit** to leave the Program editor, you will be given the option to save a new User Program with any changes you have made. See Saving a User Program for details. All settings are saved except for the State and KeyRange parameters, which are stored with the Program/Multi.

The Layer Utility and HELP Functions

Some of the soft buttons in Program Edit Mode perform a function when pressed, as well as some of the Favorites buttons. The soft buttons described below appear when the global User Type parameter is set to Advanced.

New Layer (NEWLYR)

Create a new layer, numbered one above the highest existing layer. When you press this button, the Forte will tell you that it is creating a new layer, then will return to the page you were on. The new layer becomes the current layer, and is the highest-numbered layer in the program. If the current program already has its maximum number of layers, the Forte will tell you that you can't add any more.

Duplicate Layer (DUPLYR)

Create a copy of the current layer, duplicating the settings of all its parameters. The copy becomes the current layer, and is the highest-numbered layer in the program.

Import Layer (IMPLYR)

Copy a specific layer from another program into the current program. This button brings up a dialog that prompts you to select a layer number and a program number. The dialog tells you the currently selected layer, and the total number of layers in the program. Use the LAYER– or LAYER+ soft buttons (or the alpha wheel) to change the layer number. If the current program has only one layer, pressing these buttons will have no effect. Use PROG– or PROG+ soft buttons (or the alpha wheel) to change the program number.

While you are in this dialog, you can listen to the layer you are selecting to import, along with all other layers in the current program. If you want to hear the layer to be imported by itself, you must mute the other layers.

When you have selected the desired layer from the desired program, press the IMPORT soft button, and the selected layer will be copied from the selected program, becoming the current layer. Importing layers is a convenient alternative to creating layers from scratch. If you have a favorite string sound, for example, and you want to use it in other programs, just import its layer(s) into the program you're building. This will preserve the envelopes and all the control settings so you don't have to reprogram them.

Delete Layer (DELLYR)

Press this button to view the Delete Layer Page. You can select a Layer to delete by using the Channel/Zone buttons. Press the DELETE soft button to delete the selected Layer, or press the BACK soft button to cancel.

Delete

Press the DELETE soft button to delete the current Program (factory Programs can not be deleted). Press DELETE, and you will be given a choice to DELETE or CANCEL. Press DELETE again, and an "*Are You Sure*?" message will appear. Press YES to delete the Program, or CANCEL to cancel.

Help

Press the HELP soft button to view the Help page, where you can view a description of functions assigned to the Favorites buttons.

Favorites 1: Edit

The Favorites 1 button works as an Edit button while in the Program Editor. Press the Favorites 1 button to enter sub editors when the following fields are selected: Parameters on the PARAMS page, FX Chains on the FX or LYR FX pages, Intonation Map on the COMMON page, Keymaps on the KEYMAP page, Samples within the Keymap editor, Patterns on the ARP page (Shift, Velocity, and Duration), and Algorithm on the ALG page. The top line of the display will show the F1:EDIT icon when a sub editor is available.

When a VAST Mod source has been assigned to a physical controller or CC number, you can select the VAST source field and press the Favorites 1 button to jump to selecting the associated parameter on the Parameters Page. When a VAST Mod source has been assigned to an envelope, LFO, ASR or FUN, you can select the VAST source field and press the Favorites 1 button to jump to selecting an associated field on one of the envelope pages or the LFO+ page. The top line of the display will show the F1:JUMP icon when a jumpable parameter is selected.

Favorites 2: Compare On/Off

Press the Favorites 2 button to temporarily recall an unedited version of the program, allowing you to compare your edited program with the original program. Press the Favorites 2 button again to return to the edited version of the Program

Favorites 3: Solo Current Layer

Press the Favorites 3 button to temporarily solo the currently selected Layer. Press the Favorites 3 button again to un-solo the currently selected Layer.

Favorites 4: Mute Current Layer

Press the Favorites 4 button to mute the currently selected Layer. Press the Favorites 4 button again to un-mute the currently selected Layer.

Favorites 5: Bypass FX

Press the Favorites 5 button to temporarily bypass the Insert and Aux FX Chains. Press the Favorites 5 button again to re-enable the Insert and Aux FX Chains.

Bypassing the FX is useful for checking the output level of a program with and without its FX Chains. If the output level of a program is the same with and without the FX being bypassed, it will prevent sudden jumps in volume that can occur when switching programs while notes are being held. When a new program is selected while notes from the last program are still being held, the FX Chains from the last program may be "stolen" by the new program if there are not enough FX resources for both programs. You may hear a sudden jump in volume if the output of a program is too quiet or too loud without its FX Chains. To fix this, usually the output gain in the last box of the Insert Chain should be adjusted until the program volume is the same with and without bypassing the FX. Afterwards, you may need to adjust the Common Page OutGain of the program to match its level with other programs.

Favorites 6: New Parameter

When assigning a physical controller or CC number to a VAST source field, a Parameter is automatically added to the Parameters Page (unless the physical controller/MIDI CC is already being used by an existing Parameter on the Parameters Page). In other cases it may be desirable to manually create a new Parameter. Press the Favorites 6 button to create a new Parameter. At the prompt, choose a Destination and then name the Parameter. The Parameter Destination is the default MIDI CC number that the Parameter will send to the Program. The Destination also becomes the default Control for the Parameter. Once the parameter is created, you can change its Control on the Parameters Page.

Favorites 9: Edit Description

Press the Favorites 9 button to enter description editor, where you can edit the program description text. Program descriptions appear on the Parameters page at the bottom of the Parameters list. The program description can be useful for providing extra information about a program, keeping notes about parameter assignments, or adding your name when sharing programs

Favorites 10: Help

Press the Favorites 10 button to jump to the Help page.

Editing VAST Programs With KVA Oscillators

The Forte uses KVA oscillators as another way to generate sounds in VAST programs. Unlike keymaps, which play samples stored in ROM, KVA oscillators create DSP-generated waveforms every time they are triggered. The KVA oscillators can create a range of waveforms, from high quality simple waveforms familiar to users of classic analog synths, to complex waveforms which take advantage of the Forte's internal processing power and complex signal routing capabilities. Though the Forte does have keymaps containing samples of basic synth waveforms, the use of KVA oscillators provides users with better portamento, more modulation options, higher sound quality, and other advantages which will be explained in this section. Learning to use KVA oscillators instead of keymaps (where appropriate) is simple and will increase the versatility of your VAST editing capabilities. VAST programs using layers with KVA oscillators can also be combined with other layers using keymaps.

Basic Use of KVA Oscillators

Minimal Settings for Basic Use of KVA Oscillators:

These are the minimal settings that a KVA layer needs in order to function in the style of a classic analog synth:

1. Edit:Program Keymap Page: Set the Keymap parameter to 999 Silence.

2. EDIT:Program Amp Envelope Page: Set the Envelope mode to User, and adjust the amplitude envelope to your liking (see The Amplitude Envelope (AMPENV) Page on page 7-49).

3. EDIT:Program Wiring Alg Page: Pick an Algorithm and set an Oscillator (see Setting KVA Oscillator Type).

Further basic VAST settings that you will likely want to adjust are:

- Monophonic On/Off (see The COMMON Page on page 7-18)
- Level Velocity Tracking (see The DSP Control (DSPCTL) Page)

Read the *Setting KVA Oscillator Type* section below to learn about how to set each type of oscillator. After doing this, you can experiment with making KVA programs by following the above settings, and then setting and listening to each type of oscillator. Once you understand how to do this, read on to the Advanced Use Of KVA Oscillators (see below) to learn how to make your KVA patches more expressive through the use of DSP modulation.

Pitch Settings for KVA Oscillators

Each oscillator (except for noise functions) has its own pitch parameters, and is unaffected by pitch settings that would normally affect keymaps (such as those on the Keymap page). On a program layer, the coarse pitch parameter for the oscillator in use can be found on both the DSPCTL and DSPMOD pages, in the parameters list below the standard Pitch parameter for keymaps. For each oscillator, its coarse pitch parameter is named by an abbreviation of the oscillator name followed by "Pch." For example, the coarse pitch parameter for a saw wave oscillator will be called Saw Pch. On the DSPCTL sub page for any oscillator Pch. parameter, you can adjust fine pitch by cents and Hertz, as well as KeyTrk and VelTrk settings for pitch.

Note: Be sure to differentiate between the different pitch parameters, each used either only for keymaps or only for KVA oscillators. The Pitch parameter on the top left of the DSPCTL and DSPMOD pages always appears in VAST programs but only affects the pitch of keymaps. If a KVA oscillator is being used, this Pitch parameter will have no affect on the layer's pitch, in which case the oscillator Pch. parameter described above must be used to control the pitch of the oscillator.

Setting KVA Oscillator Type

The Forte comes with 22 Different KVA oscillators. There are 11 high quality anti-aliased oscillators (free of digital artifacts) and 11 oscillators that exhibit some aliasing (digital artifacts) in the higher octaves. The anti-aliased oscillators use up more DSP resources than the ones with aliasing, but the improvement in sound quality is quite noticeable. We strongly recommend using the anti-aliased oscillators for most applications.

The tables below list KVA oscillators by type and function block size. Before setting an oscillator, you must choose an algorithm which includes a block that matches the block size for the oscillator that you wish to use. See The Wiring Algorithm (ALG) Page and Algorithm Basics on page 7-34 for more on selecting algorithms. Once you have picked an algorithm with the desired block size, highlight the block and use the Alpha Wheel to scroll through the available functions until you find the desired oscillator.

The SYNC SQUARE oscillator is an 8 block oscillator that requires the use of two layers (4 blocks each) and the Alt Input feature of cascade mode. See below for details on setting up the Sync Square oscillator.

Note: If you put more than one oscillator in an algorithm, you will only hear the output of the last oscillator in the algorithm, unless an algorithm is used to route the earlier oscillator around the last oscillator and into a MIX function block, or if the last oscillator processes its audio input.

Anti-Aliased Oscillators	
Size	**Name/Type**
1 Block	LPNOIZ (noise + low pass filter)
2 Blocks	SINE
	SINE+
	SAW
	RES NOISE (noise + low pass filter with resonance)
	SQUARE
3 Blocks	PWM (Pulse Width Modulation)
4 Blocks	SYNC SAW
	SUPER SAW
	TRIPLE SAW
8 Blocks	SYNC SQUARE (master) >>, >>SYNC SQUARE (slave) *(4 blocks each)*

Aliased Oscillators	
Size	**Name/Type**
1 Block	SINE
	SAW
	TRI
	SQUARE
	NOISE
	SINE+
	SAW+
	NOISE+
	SW+SHP (Sawtooth + Shaper)
2 Blocks	SHAPED SAW
	PWM (Pulse Width Modulation)

Setting Up The Sync Square Oscillator

The Sync Square oscillator is actually comprised of two oscillators, a master and a slave, set up to emulate the way sync square oscillators worked on classic analog synthesizers. To create a program using Sync Square, select **Program 998 Editor Template**. Select "none" on the KEYMAP page. Select "user" on the AMPENV page for an amp envelope. On the ALG page, select Algorithm 5 at the top of the page. Use the cursor buttons to select the function block and use the alpha wheel to select the "SYNC SQUARE (master) >>" function. Next, press the << soft button to change soft button pages until you see "DupLyr." Press DupLyr to duplicate the layer, creating layer 2. In layer 2, on the ALG page, change the function block to ">> SYNC SQUARE (slave)", and set the Alt Input parameter to "Layer 1." The final step is to go to Layer 1's DSPCTL page and turn the Level parameter all the way down, to -96dB (this ensures that you will only hear the output of the slave oscillator on layer 2, which is the intended function of Sync Square).

Now the Sync Square oscillator should be working. The "Syncoff" parameter, Sync Offset, is the main parameter for shaping the tone of this sound. Syncoff sets the sync offset between the master and slave square waves in each corresponding oscillator, which changes the shape of the waveform output by the slave oscillator. The Sync Square oscillator is most expressive

when the Syncoff parameter is modulated during performance. Use the DSPMOD page to assign an envelope or continuous controller like the Mod Wheel for this parameter to hear the effect (see The DSP Modulation (DSPMOD) Page, as well as The DSP Control (DSPCTL) Page and Common DSP Control Parameters in Algorithm Basics on page 7-34, for details on setting up modulation and other ways to control parameters, and see The Envelope 2 (ENV2) and Envelope 3 (ENV3) Pages for details on using envelopes as modulation sources). See Advanced Use Of KVA Oscillators below for some similar examples of how to set and control modulation for oscillator specific functions and other parameters.

To add a DSP function to the Sync Square oscillator, you'll need to use cascade mode. For example, to add a filter, duplicate one of the layers to create layer 3. On layer 3, select the ALG page and choose one of the cascade mode algorithms, algorithms 101-131. For this example, lets use alg 105 with the filter "4Pole Mogue LP" selected for the function block. For the Alt Input parameter, select Layer 2. This routes a pre-Level parameter copy of Layer 2's output into Layer 3. Go to layer 2's DSPCTL page and turn its level down to -96dB (otherwise the un-filtered sound from layer 2 will be audible as well as the filtered sound in layer 3). Now you can hear the Sync Square from layers 1 and 2 running through the filter in layer 3. See Advanced Use Of KVA Oscillators below for examples of how to set and control modulation of filter parameters.

Advanced Use Of KVA Oscillators

Read the KVA sections above before moving on to this section.

If you have tried the program described above in Basic Use of KVA Oscillators, you may have noticed that there is no variation in the notes played aside from pitch. Layers and programs created with KVA oscillators can become much more expressive by introducing variation with DSP modulation. For a KVA oscillator layer, you can use DSP modulation just as you would for keymap layers (see Common DSP Control Parameters, The DSP Modulation (DSPMOD) Page, and The DSP Control (DSPCTL) Page). Several KVA oscillators also have their own modulation parameters that must be accessed to control the oscillator's intended function. Aside from these methods, KVA layers can also be altered by using keymaps with natural amplitude envelopes. See below for details on each method.

Examples of Simple DSP Control and Modulation:

Select the Program 998 Editor Template and press the EDIT soft button. Go to the KEYMAP page and set Keymap to 999 Silence. Next, go to the AMPENV page and set the mode to User, set Att1 time to .002 and Rel1 time to 0.02 (this gives you basic control of attack and release envelopes with sliders C and D). Press the ALG soft button and select Algorithm 8. Select the leftmost empty function block and use the alpha wheel to scroll to the PWM oscillator. Play some notes to hear the sound of the PWM oscillator.

Select the rightmost empty function block and use the alpha wheel to scroll to the LOPASS block. You should immediately hear a difference in the sound of the program, because the LOPASS function is set by default to cut some of the high frequencies from any signal that passes through it, in this case the PWM signal is passing through. With the LOPASS function still selected, press the Favorite1 button. This brings you to the main parameter for the LOPASS object on the DSPCTL page, which is LP Frq (you can also reach this page using the DSPCTL soft button). Here you can adjust the initial value of the function, in this case it is cut off frequency for the low pass filter. For this example, leave this initial value set to its default. With the LP Frq parameter selected, press right on the cursor button to get to this function's sub page (the right half of the display). Select the Veltrk parameter and use the alpha wheel or alpha numeric pad to turn it all the way up to 10800ct. Now keyboard velocities will affect the LP Frq parameter. A velocity of 127 will cause the filter's cut off frequency to move up 10800 cents from its initial value, a velocity of 0 will have no effect on the cut off frequency, and values in between will increase the cut off frequency by a scaling between 0 and 10800 cents. Overall, this will cause higher played velocities to increase the cut off frequency, making the oscillator sound brighter, and lower velocities to lower the cut off frequency, making the oscillator sound duller. This method can be used to control any DSP function that is loaded into an algorithm. See Common DSP Control Parameters for other control parameters available on the DSPCTL page.

Alternatively, you could assign cut off frequency to be controlled by any continuous controller, such as the Mod Wheel. Start again with the unedited Program 998 Editor Template. Follow the same steps as above, but instead of changing any parameters on the DSPCTL page, press the DSPMOD soft button to reach the DSP Modulation page. On the left side of the screen, choose the parameter for LP Frq, and then press the right cursor button to reach the LP Frq sub page. On this sub page, you can assign any continuous controller to control the cut off frequency of the LOPASS function (or the main parameter for any function loaded in the current algorithm). Select the Src1 parameter, hold the Enter button and move the Mod Wheel to quickly select MWheel (the Mod Wheel) as your control source. Next, press the cursor down button to select the Depth parameter, then use the alpha wheel or alpha numeric pad to turn it all the way up to 10800ct. Now the Mod Wheel will affect the LP Frq parameter. Moving the Mod Wheel all the way up (a value of 127) will cause the filter's cut off frequency to move up 10800 cents from its initial value, moving the Mod Wheel all the way down (a value of 0) will have no effect on the cut off frequency, and values in between will increase the cut off frequency by a scaling between 0 and 10800 cents. Now you have the same control over cut off frequency as you did in the previous example, but now it is controlled by the Mod Wheel. Overall, moving the Mod Wheel up will increase the cut off frequency, making the oscillator sound brighter, and moving the Mod Wheel down will lower the cut off frequency, making the oscillator sound duller. This is useful to control a classic "filter sweep" sound. The above method can be used to control any DSP function that is loaded into an algorithm, and you can choose any continuous controller as a control source.

Oscillator Specific Control And Modulation Parameters:

Several KVA oscillators also have their own modulation parameters that must be accessed to control the oscillator's intended function. Below is a list of these oscillators and their distinctive parameters, grouped by block size. Though the following parameters could be left at one setting, utilizing one of the DSPCTL or DSPMOD techniques described in the above examples will expose a wider range of expression from each oscillator.

1 Block:

LPNOIZ

A noise generator combined with a low pass filter. Use the Noiz Frq parameter to control the cut off frequency of the filter.

NOISE

A simple noise generator. Use the Noise parameter to control the noise initial amplitude.

SW + SHP (Sawtooth + Shaper)

This oscillator is capable of basic FM Synthesis. Its distinctive parameter is Pch Coar. This oscillator must come after the sound source in an algorithm (either keymap or oscillator) in order to hear the effect of Pch Coar, which can radically change whatever the oscillator receives as an input. Works well placed after a Sine source.

SINE+ [Aliased (not recommended)]

Same as 2 block version, but without the Sine+Am parameter.

SAW+ [Aliased (not recommended)]

A saw oscillator that can add an input signal to its output.

NOISE+ [Aliased (not recommended)]

A noise oscillator that can add an input signal to its output.

2 Block:

SINE+

A sine oscillator that can add an input signal to its output. The Sin+ Pch and Sine+ Am parameters affect the pitch and amplitude of the sine waveform without affecting the pitch of the input source.

RES NOISE

A noise generator combined with a low pass filter with resonance control. Use the Noiz Frq parameter to control the cut off frequency of the filter. Use the Noiz Q parameter to control the amplitude of the resonance (a boost or cut at the cut off frequency). One technique for use of this function is to set a high value for Noiz Q (so that you hear a the resonance create a tone,) and then on the DSPCTL page set C4 as an initial frequency for Noiz Frq, and set Keytrk to 100ct/key on the Noiz Frq sub page. Doing this causes the noise resonance frequency to match the note of the key played.

SHAPED SAW

The Shaped Saw oscillator is a sawtooth oscillator with the ability to morph its output shape between sawtooth and sine wave (without crossfading). This oscillator's distinctive parameter is Shape, which controls the morphing. With Shape set to 0, the oscillator produces a pure sawtooth wave. With Shape set to 127, the oscillator produces a pure sine wave. Values in between morph between the two wave shapes.

PWM (Pulse Width Modulation) [Aliased (not recommended)]

This oscillator's distinctive parameter is PWM Wid, which adjusts pulse width from values of 1-99. With PWM Wid set to a value of 50, PWM produces a square wave. The further the PWM Wid parameter is set from 50, the narrower the pulse width becomes, changing the shape of the output waveform and thus altering the oscillator's tonal quality.

3 Block:

PWM (Pulse Width Modulation) [Anti-Aliased (recommended)]

Same as 2 Block PWM, See above.

4 Block:

SYNC SAW

Sync Saw consists of two saw waves, one that you hear (the slave) and one that controls the slave (the master). This oscillator's distinctive parameter is SyncOff, which controls the offset of the slave and master waves. With SyncOff set to 0, the master has no effect on the slave. When an offset is set, the slave restarts its wave cycle every time the master wave completes a cycle. Offsets cause the slave to restart its cycle in the middle of normal sawtooth cycles, which causes the slave's waveform shape and sound to be altered.

SUPER SAW

The Super Saw oscillator consists of two saw waves. This oscillator's distinctive parameter is Detune, which has settings from 0-50 cents, allowing you to detune both of the saw waves by up to 50 cents away from the root pitch of the key played. Detune affects both saw waves, one is detuned above the original root pitch, and the other is detuned below the original root pitch.

TRIPLE SAW

The Triple Saw oscillator consists of three saw waves. This oscillator's distinctive parameter is Detune, which has settings from 0-50 cents, allowing you to detune two of the saw waves by up to 50 cents away from the root pitch of the key played. Detune affects two of the saw waves, one is detuned above the original root pitch, and the other is detuned below the original root pitch. The third saw wave always plays the root pitch and is not affected by Detune.

8 Block:

SYNC SQUARE (master) >>, >>SYNC SQUARE (slave)

See above, <u>Setting Up The Sync Square Oscillator</u>.

Use Of Keymaps and Natural Amplitude Envelopes With KVA Oscillators:

Keymaps are important in layers using KVA oscillators, even though their samples are not usually heard in these layers (see the note below for exceptions). Keymap selection is important because the maximum amplitude set for each key in the keymap is applied to the oscillator. For most uses of KVA oscillators, users will want to use the 999 Silence keymap because each key in the keymap is set to the same maximum amplitude, unlike many instrument keymaps. The 999 Silence keymap ensures uniform amplitude behavior of an oscillator, and with the amplitude envelope set to user mode, users can easily shape all aspects of an oscillator's amplitude. The Forte also has the ability to apply natural amplitude envelopes to oscillators. With an amplitude envelope set to natural mode, each oscillator note takes on the amplitude qualities of each sample in a keymap (with each note relative to sample key placement). Each sample in a keymap has a natural envelope that was created during it's original development process. Natural envelopes have much more detail than what is possible to create with the user amplitude envelope, and they are useful when trying to mimic specific instrument amplitude envelopes. When using this technique, remember that the maximum amplitude of each key is set by the current keymap. You can still control the overall parameters of a natural envelope by using the ENVCTL page.

Note: The samples from a keymap are not heard when using an oscillator, unless an algorithm is used to route the keymap signal around the oscillator and into a MIX function block, or unless it is an oscillator that processes its audio input.

KB3 Program Structure

There's nothing quite like the sound of the classic Hammond™ B-3 tone wheel organ, especially when played through a Leslie™ rotating speaker system. We've done extensive testing and analysis with several tone wheel organs, and created our own models to emulate the unique tone wheel sound. We even took into account the way that older organs start to sound different (and arguably better) as their capacitors begin to leak—and we included a parameter that lets you vary the amount of grunge (leakage) in your sound.

KB3 programs use oscillators to emulate the tone wheel sound. Each oscillator operates independently, and has its own pitch and amplitude control. You can control how many oscillators are used for a KB3 program. There are two oscillators per voice, for a total of 256. You can use up to 91 of them in a KB3 program (the 92nd is reserved to produce key click). Because the oscillators start running as soon as you select a KB3 program, there are always voices available—unlike VAST programs, which start "stealing" notes when you reach the polyphony limit.

The oscillators—we'll call them tone wheels from here on—are divided into an upper and lower group. The upper tone wheels use the samples in the Forte's keymaps to generate sound, while the lower tone wheels use sine waves. You can change the keymap of a KB3 program's upper tone wheels to produce a large array of sounds. By changing the keymap from sine to a saw wave it is possible to emulate the sound of classic combo organs like the Vox™ and Farfisa™ models. Also, KB3 programs that emulate Hammond organs (which use Keymap 150) do not use any of the Forte's 128 voices of polyphony, but instead use DSP generated sine waves (this does not apply to KB3 Programs that emulate Vox or Farfisa organs, which use other Keymaps).

KB3 programs are also routed through vibrato, rotary speaker, preamp and distortion effects, see below for details.

KB3 Mode

KB3 programs are different enough from VAST programs that we use the term KB3 mode to describe what's going on when you play a KB3 program. Whenever you play a KB3 program, you are in KB3 mode. The blue LED on the front panel will light when the current program is a KB3 program. You can play KB3 programs only on a single channel at a time.

If you want to create your own KB3 program, start by editing an existing KB3 program.

KB3 Effects And Real-time Controls

You have real-time control over many components of KB3 programs directly from the front panel. The sliders emulate the drawbars that are so essential to the tone wheel sound, while the buttons above them (the Assignable Switches) can control the KB3 effects: Leslie, vibrato, chorus, and percussion.

Drawbars

One of the standard performance features of many tone wheel organs is the set of drawbars for emulating the stops on a pipe organ. Moving the drawbars controls the amplitude of either the fundamentals or the harmonics of the notes. The Forte's sliders serve as the nine drawbars found on most tone wheel organs. Pushing the sliders up is the equivalent of pushing the drawbars in (removing fundamentals or harmonics).

Subharmonics		Fundamental	Harmonics					
16'	5 ^{1}/3'	8'	4'	2 ^{2}/3'	2'	1 ^{3}/5'	1 ^{1}/3'	1'
Slider A	Slider B	Slider C	Slider D	Slider E	Slider F	Slider G	Slider H	Slider I

Table 7-2 Standard Drawbar Settings for the Hammond B3

KB3 Mode Effects Buttons (Assignable Switches)

When using a KB3 program, the switches above the sliders control KB3 effects, and the blue KB3 LED is lit. The KB3 function is labeled below each switch, their LEDs indicate the status of the various effects for the current KB3 program. This status is saved as part of each program. You can change the effects in real time by pressing the switches.

In KB3 mode these switches also respond to and send MIDI Controller messages.

Additional Controller Assignments In KB3 Mode

Other default assignments for factory KB3 programs include:

CC Pedal 1 (volume) controls preamp volume, which emulates the volume control of an organ preamp. The PreampResp parameter must be set to On for this to work (the default setting). See PreampResp for details.

The Mod Wheel controls Distortion Drive.

Switch Pedal 1 (sustain) controls the rotary speaker effect, which toggles the Rotary speed between slow or fast. This has the same effect as using Rotary S/F (**Variation** button).

Editing KB3 Programs

You can edit a wide assortment of any KB3 program's parameters. You can also create your own KB3 programs, though you must start with an existing KB3 program to do this. A regular Forte program cannot be turned into a KB3 program. If you're not sure whether the current program is a KB3 program, check the KB3 button (located above the right most slider). If the blue LED is on, then the current program is a KB3 program.

Enter the KB3 program editor by pressing the EDIT soft button while a KB3 program is selected in program mode. You'll quickly see that the KB3 editor differs from the standard VAST program editor.

KB3 Programming Tips

This following section provides some starting points for creating your own KB3 programs.

The most prominent difference between organ vintages is the number of tone wheels used. Keep in mind, however, that the sound of an actual tone wheel organ will depend not only on its age, but also on how well it has been maintained.

Octave folding, where an octave (or part of an octave) is repeated at the top or bottom of the keyboard, is handled automatically by KB3 Mode, emulating the folding done on actual tone wheel organs.

Early Tone Wheel Organs. Instruments of this period had 91 tone wheels. To get this sound, go to the TONEWL page, select 91 tone wheels, and set lowest pitch to C 1. Start with the **Junky** Wheel Volume Map and **Bob's** Organ Map. You may also want to increase the Key Click level, since this tends to become louder on older organs.

Middle Period Organs. To model one of these instruments, set 82 tone wheels and a low note of A 1. Use the **Mellow** Wheel Volume Map and **Eric's** Organ Map. Set Key Click to a moderate level.

The Classic B-3. For this sound, choose 79 tone wheels and set the low note to be C 2. The best settings here are the **Bright** Wheel Volume Map and **Peck's** Organ Map. You may also want to reduce the Key Click level.

KB3 Editor: The Parameters (PARAMS) Page

This page is similar to the VAST editor Parameters page; see The PARAMS Page on page 7-10. In KB3 programs, the Parameters page contains some parameters which do not appear on any other page: Rotary Slow/Fast, Rotary Brake, Chorus/Vibrato On/Off, Chorus/Vibrato Select, and Chorus/Vibrato Depth.

KB3 Editor: The Program FX (FX) Page

This page is the same as the VAST Program editor FX page (see The FX Page on page 7-14).

KB3 Editor: The COMMON Page

In addition to parameters for Output Gain, Output Pan, Pan Mode and Demo Song (described about in COMMON Parameters with Advanced User Type), the KB3 Editor COMMON Page contains common organ emulation parameters specific to KB3 programs.

Parameter	Range of Values
Preamp/Expression Response	Off, On
Leakage	-96.0 to 0.0 dB, in 0.5-dB increments
Leak Mode	None, Type A, Type X, Type Y, Type Z, Type R
Volume Adjust	-96 to 96 dB
Bend Range Up	± 7200 cents
Bend Range Down	± 7200 cents

PreampResp

Set this parameter On or Off to enable or disable the preamp+expression pedal part of the KB3 model. Turning this On (the default) makes KB3 programs function like stock organs. The expression pedal in this case is more than a volume pedal; it actually functions like a "loudness control," varying the frequency response to compensate for the ear's sensitivity at different volumes. In addition, the preamp provides a de-emphasis curve to compensate for the built-in tone wheel volume pre-emphasis. Turning preamp response Off emulates organs that have been modified to have a direct out (before the preamp and expression pedal). Set PreampResp to Off to disable the volume pedal.

Exp Pedal

Use this parameter to set which rear panel CC Pedal input will control volume for the current KB3 program. With a setting of Expression/Foot, volume can be controlled by a CC pedal plugged into either the rear panel input labeled CC Pedal 1 (volume), or the rear panel input labeled CC Pedal 2. With a setting of Expression, volume can be controlled by a CC pedal plugged into the rear panel input labeled CC Pedal 1 (volume). With a setting of Foot, volume can be controlled by a CC pedal plugged into the rear panel input labeled CC Pedal 2. With a setting of None, volume control from both CC pedal inputs is disabled.

Leakage

Controls the level of the simulated crosstalk and signal "bleed" of adjacent tone wheels in the model. This is provided to help "dirty up" the sound to make it a bit more realistic. A setting of -96 dB gives the purest tones; other values add more simulated leakage. This level is scaled by the drawbar levels, as well as the expression pedal level.

LeakMode

Selects between different leakage models, determining which leakage harmonics are emphasized. TypeA provides an overall tone wheel leakage, with all tone wheels leaking a small amount. TypeX, TypeY, TypeZ, and TypeR emulate different degrees of drawbar leakage, where the leakage components correspond to the nine drawbars, instead of all the tone wheels.

VolAdjust

Adjust the pre-insert FX volume of the KB3 model.

Bend Range Up, Bend Range Down

Respectively control the upward and downward pitch bend ranges of the KB3 program.

KB3 Editor: The Tone Wheels (TONEWL) Page

KB3 Mode uses DSP-generated waveforms for the lower half of its tone wheels and samples for the upper half of its tone wheels. Using the parameters on the TONEWL page, you can specify which sample you wish to use, the number of tone wheels (which will affect how many other voices are available to you), and other related settings. When Keymap 150 is selected, DSP-generated waveforms are also used for the upper tone wheels, and none of the Forte's 128 voices are used.

Parameter	Range of Values
Upper Tone Wheel Keymap	Sample List
Upper Volume Adjust	-96 to 96 dB
Number of Tone Wheels	24 to 91
Organ Map	Equal, Peck's, Bob's, Eric's
Wheel Volume Map	Equal, Bright, Mellow, Junky
Globals	On, Off
Lower Transposition	-120 to 127 semitones
Upper Transposition	-168 to 87 semitones

Upper Tone Wheel Keymap

Use this parameter to indicate the keymap (and thereby the samples) to use for the upper tone wheels. You can use any keymap from ROM, though you must specify a keymap that uses looped samples for KB3 Mode to work correctly. When in Program mode, the keymap assigned to the program appears in the info box When Keymap 150 is selected, DSP-generated waveforms are used for the upper tone wheels, and none of the Forte's 128 voices are used.

Upper Volume Adjust

This parameter lets you adjust the amplitude of the upper tone wheels relative to amplitude of the lower tone wheels.

Number of Tone Wheels

This parameter lets you specify the number of tone wheels used by a KB3 program. The classic tone wheel organs used 91 tone wheels, though the lowest 12 were for the pedals only. Therefore, you may find 79 a good number of tone wheels to specify for realistic organ emulations. You can specify up to 91 tone wheels.

When Keymap 150 is selected, DSP-generated waveforms are used for the upper tone wheels, and none of the Forte's 128 voices are used no matter how many tone wheels have been selected. When Keymaps other than 150 are used, the number of Forte voices used by a KB3 program is typically half the number of tone wheels selected (in some cases 1 more voice may be used).

So, for example, when using a Keymap other than 150, 79 tone wheels would use 40 voices. This would leave you 88 voices for other programs. Keep in mind that these voices are permanently allocated and running while the KB3 program is selected, and cannot be stolen.

Organ Map

The organ map controls the relative amplitude of each key, per drawbar. Like the wheel volume maps, these maps are based on measurements we've made on actual organs. Equal uses the same volume for each key and drawbar, and is not based on a real B3. Peck's is a good normal map, from a B3 in good condition. Eric's is a bit more idealized; it's smoothed out, but less realistic. Bob's is more uneven, based on an old B3.

Wheel Volume Map

The wheel volume map determines the volume level for each tone wheel. We've provided several tone wheel volume maps here, based on measurements we've taken on different organs. Equal is a map with all tone wheels at the same volume. It's not based on a real B3. Bright is a good normal map, based on a B3 in good condition. Junky is based on a B3 with an uneven, rolled-off response. Mellow is somewhere between Bright and Junky.

You can also apply EQ to control wheel volumes based on the frequencies of each tone wheel. See KB3 Editor: The EQ Page.

Globals

The Globals parameter affects LFO2, ASR2, and FUNs 2 and 4. When Globals is set to Off, these four control sources are local; they affect each pair of tone wheels individually. They begin operating each time a tone wheel is turned on. When Globals is set to On, these control sources become global, and they affect every tone wheel of the current program simultaneously. Since all tone wheels are turned on nearly simultaneously when a program is selected, you typically will not notice a difference between having Globals set to On or Off. In some cases, it may be possible to hear differences in the modulation of each pair of tone wheels when using these control sources with Globals set to Off.

Lower Transpose (Xpose) / Upper Transpose (Xpose)

These two parameters let you transpose the upper and/or lower tone wheels in semitone steps away from their default tunings.

KB3 Editor: The Drawbars (DRAWBAR) Page

Press the Drawbr soft button to view the DRAWBAR Page. This page lets you edit KB3's drawbars.
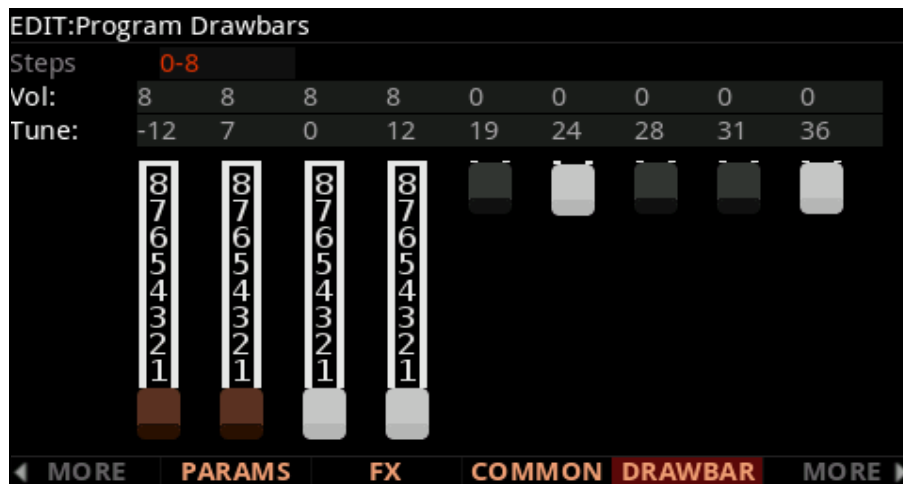
Drawbars Parameters

Steps

This parameter lets you specify the increments by which drawbar volumes will change. Choose either 0–8, to approximate the drawbar settings on actual organs, or choose 0–127 for a finer degree of resolution.

Volume

Use the Volume parameter to set the preset volume of each of the nine drawbars. The available values will be
0–8 or 0–127, depending on the setting of the Steps parameter.

Tune

This parameter lets you tune each of the nine drawbars up or down in semitone steps. The values for the Tune parameter on the DRAWBR page shown above represent standard drawbar settings on a real B3, as shown in the table below.

Subharmonics		Fundamental	Harmonics						
16'	5 ^{1}/3'	8'	4'	2 ^{2}/3'	2'	1 ^{3}/5'	1 ^{1}/3'	1'
Slider A	Slider B	Slider C	Slider D	Slider E	Slider F	Slider G	Slider H	Slider I

Figure 7-2 Standard Drawbar Settings for the Hammond B3

KB3 Editor: The PITCH Page

The PITCH page parameters for KB3 programs are much like the Pitch parameters for VAST programs on the DSPMOD page. The only difference is that for KB3 programs, there are no Hz, KeyTrk, or VelTrk parameters. For a full description of the PITCH-page parameters, see Common DSP Control Parameters, The DSP Control (DSPCTL) Page and The DSP Modulation (DSPMOD) Page.

```
EDIT:Program Pitch
Coarse          0ST        Source 1        OFF
Fine            0ct        Depth           0ct
                           Source 2        OFF
                           Depth Control   OFF
                           Min Depth       0ct
                           Max Depth       0ct




 ◀ MORE    TONEWHL    PITCH      AMP       EQ      MORE ▶
```

KB3 Editor: The AMP Page

The AMP page parameters for KB3 programs is much like the AMP page parameters for VAST programs. The only difference is that for KB3 programs, there are no KeyTrk or VelTrk parameters. For a full description of the AMP page parameters, see Common DSP Control Parameters, The DSP Control (DSPCTL) Page and The DSP Modulation (DSPMOD) Page.

```
EDIT:Program Amp
Coarse              -1dB            Source 1        OFF
                                    Depth           0dB
                                    Source 2        OFF
                                    Depth Control   OFF
                                    Min Depth       0dB
                                    Max Depth       0dB



  ◄ MORE    TONEWHL    PITCH      AMP        EQ       MORE ►
```

KB3 Editor: The KEYCLICK Page

The Key Click feature adds a decaying burst of pitched noise to the attack of notes. Unlike the percussion, the key click is "multi-triggered," which means that every new note will trigger it. The parameters on this page primarily control the decay, volume, and pitch of the key click.

```
EDIT:Program Key Click

Key Click       On              Random          9%
Volume          -70.0dB         Retrig Threshold -31.5dB
Decay           0.075s          Note Attack     Normal
Velocity Track  0%              Note Release    Normal
Pitch           98              Key Track Amount -5.0%/key
Key             B 3



  ◄ MORE    PERC      KEYCLK     ARP       ARPSAV    MORE ►
```
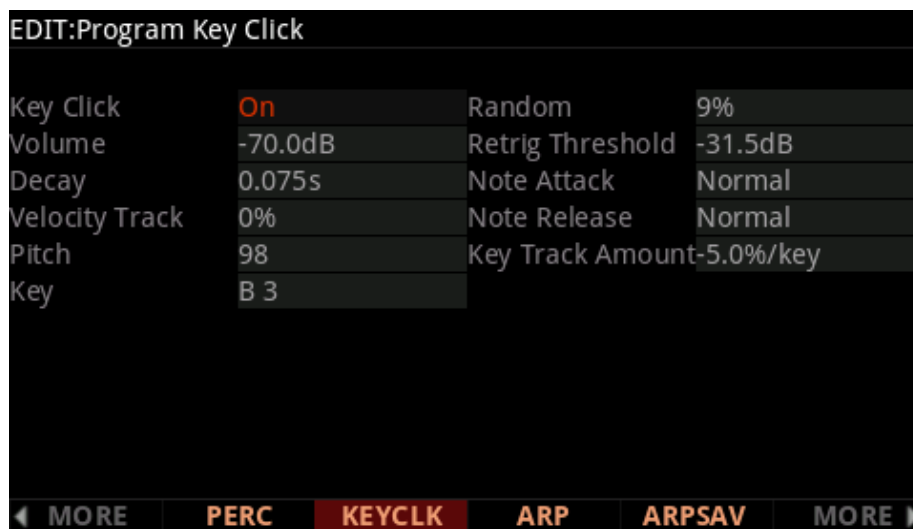
KeyClick Parameters

Parameter	Range of Values
Key Click	Off, On
Volume	-96.0 to 0.0 dB, in 0.5-dB increments
Decay	0.005 to 1.280 seconds, in 0.005-second increments
Velocity Trk	0 to 100%
Pitch	1 to 120
Key	B3
Random	0 to 100%
Retrig Thresh	-96.0 to 0.0 dB, in 0.5-dB increments
Note Attack	Normal, Hard, PercHard
Note Release	Normal, Hard
Key Track Amount	-10% - 0%/key

KeyClick

This is where you turn Key Click on or off. With KeyClick set to Off, you may still hear a click depending on your Note Attack and Note Release settings (see below).

Volume

This parameter sets the level of the keyclick; the noise decays from the level you set here. This level is scaled by the drawbar levels, as well as the expression pedal level.

Decay

Sets the basic decay time of the noise envelope. Smaller values produce a shorter burst.

Velocity Track

Controls the degree to which key velocity affects the key click volume. A value of zero means that the key velocity has no effect on the key click volume (which is like a real tone wheel organ). Other values add volume as the velocity increases. This parameter typically only applies when playing a KB3 program from an external MIDI device.

Pitch

Sets the basic pitch of the key click noise, relative to the highest tonewheel's pitch. The pitch is controlled by a steep lowpass filter applied to white noise. The filter's cut off frequency is controlled relative to key number, higher keys move the cutoff frequency up, lower keys move the cutoff frequency down.

Random

Controls the degree to which a random amount of amplitude variation is added to the key click.

ReTrigThresh

This parameter lets you set the volume level below which key click must decay before it will be retriggered.

Note Attack

Controls the attack characteristic of notes. Normal provides a smoothed attack, while a setting of Hard has an instant attack and will produce an audible click, in addition to any amount of key click specified with the other parameters on this page (you might prefer not to specify any additional key click when you use this setting). PercHard sets a hard attack level for percussion only; notes without percussion use a normal attack.

Note Release

Controls the release characteristic of notes. A setting of Normal has a smoothed release, while a setting of Hard has an instant release. Hard will produce an audible click.

Key and Key Track Amount

The Key and Key Track Amount parameters are used to scale the volume of the key click based on each note played, to make the key click volume lower for lower keys. The Key parameter sets the key at at which scaling will begin. All notes below the selected key will scale the key click volume based on the setting of the Key Track Amount parameter. The Key Track Amount parameter is used to control the rate at which the key click volume will change below the selected key.

KB3 Editor: The PERC Page

Percussion is a characteristic feature of tone wheel organs. It's especially useful while soloing, since percussion adds an extra "plink" (actually an extra tone at a defined harmonic) to the attack. You can reach the percussion parameters by pressing the PERC soft buttons.

EDIT:Program Percussion

Percussion	Off	LowHarm	DrawBar6
Volume	Loud	HighHarm	DrawBar5
Decay	Slow	StealBar	DrawBar9
Harmonic	Low		
VelTrack	0%		

	PercLevel	DecayTime	OrgLevel
Loud+Fast	5.1dB	0.44s	-2.0dB
Loud+Slow	6.0dB	0.60s	-2.0dB
Soft+Fast	4.0dB	0.24s	0.0dB
Soft+Slow	4.0dB	0.60s	0.0dB

◄ MORE	PERC	KEYCLK	ARP	ARPSAV	MORE ►

PERC Parameters

Parameter	Range of Values
Percussion	Off, On
Volume	Soft, Loud
Decay	Slow, Fast
Harmonic	Low, High
Velocity Tracking	0 to 100%
Low Harmonic	Drawbar 1 to 9
High Harmonic	Drawbar 1 to 9
Steal Bar	Drawbar 1 to 9

Percussion

This is where you turn the percussion effect on or off. Percussion is created by a decaying envelope applied to one of the nine drawbars. The percussion effect is "single-triggered," which means that once it's triggered, it won't trigger again until all keys (or whatever you're using to trigger notes) go up. So if no keys are down, and you play a chord, percussion gets applied to all notes in the chord (and in fact, to all notes that are triggered during the short duration of the percussion envelope). Once the envelope runs its course, any notes you play while at least one key is held down get no percussion. You can turn percussion on or off by pressing Assignable Switch 1 (labeled [Percussion] On/Off).

Volume

This parameter switches between loud and soft percussion settings. The actual amplitude is set on the PERC page. You can toggle between loud and soft by pressing Assignable Switch **2** (labeled [Percussion] Loud/Soft).

Decay

This parameter switches between fast and slow percussion settings. The actual decay rate is set on the PERC page. You can toggle between slow and fast decay by pressing Assignable Switch **3** (labeled [Percussion] Decay F/S).

Harmonic

This parameter switches between high and low harmonic percussion settings. The actual pitch is controlled by the LowHarm and HighHarm parameters. You can toggle between low and high harmonics by pressing Assignable Switch **4** (labeled [Percussion] Pitch H/L).

VelTrack

Here is where you specify the degree to which key velocity controls percussion volume. A value of zero corresponds to no velocity tracking, which is like a real tone wheel organ. Other values add velocity tracking, so that increased velocity results in louder percussion. This parameter typically only applies when playing a KB3 program from an external MIDI device.

LowHarm

Controls which drawbar is used as the basis for the percussion when Harmonic is set to **Low**. On an actual tone wheel organ, this is Drawbar 4 (2nd harmonic). The actual pitch obtained depends on the drawbar tuning.

HighHarm

Controls which drawbar is used as the basis for the percussion when Harmonic is set to High. On an actual tone wheel organ, this is Drawbar 5 (3rd harmonic). The actual pitch obtained depends on the drawbar tuning.

StealBar

Controls which drawbar is disabled when the percussion effect is turned on. On an unmodified tone wheel organ, the ninth drawbar is the one disabled. Any drawbar can be selected.

PercLevel, DecayTime, OrgLevel

Parameter Group (Available for each combination of the Volume and Decay parameters on the PERC page)	Range of Values
Percussion Level	0 to 24.0 dB
Decay Time	0.01 to 5.10 seconds, in 0.02-second increments
Organ Volume Level	-12.0 to 12.0 dB

With these parameters you can control the amplitude and decay time of the percussion effect for all combinations of the Volume and Decay parameters (on the PERC page). You can also adjust the level of the organ relative to the percussion, for accurate emulation of classic organs.

KB3 Editor: The EQ Page

The four column headers on this page represent two shelving bands of equalization and two parametric bands. The KB3 EQ offered here, though, is not implemented as a true EQ section; instead, it adjusts the volume of the tone wheels based on frequency. If the tone wheels are based on sine waves, then this acts similarly to a real EQ.
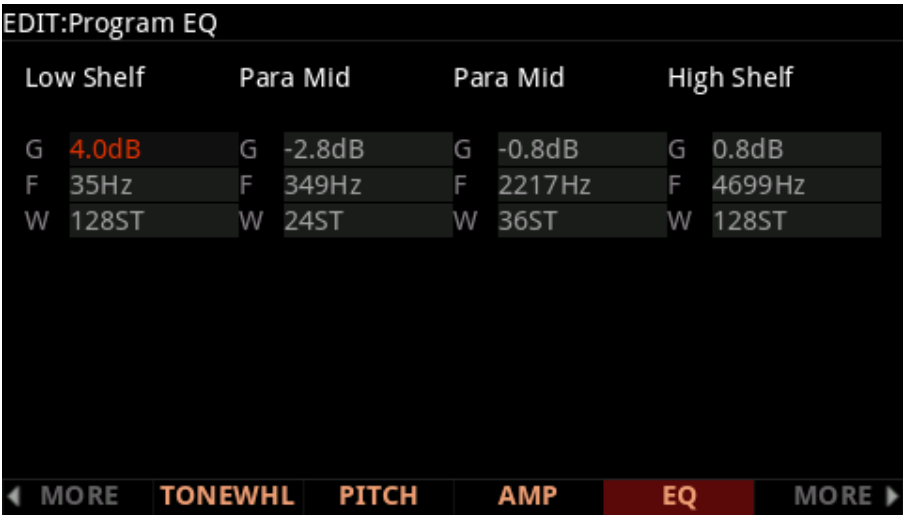
Parameter Group (Available for each EQ band)	Range of Values
Gain	-24.0 to 24.0 dB, in 0.2-dB increments
Frequency	16 to 25088 Hz, in varying increments
Width	-128 to 128 Semitones, in 2-semitone increments

Each EQ section has Gain (G), Frequency (F), and Width (W) controls. Frequency controls the center frequency of the band. Width controls the bandwidth. Gain controls the amount of boost or cut.

KB3 Editor: The LFO+, ARP and ARPSAV Pages

These pages are the same for KB3 programs as they are for VAST programs, so we won't describe them again here. For descriptions of these pages see:

The LFO+ Page on page 7-44

The Arpeggiator Function on page 7-55

Chapter 8
The Effects Chain Editor

The Global Mode User Type parameter must be set to Advanced (see User Type) to access the editing functions described in this chapter.

When in Program Edit Mode on the FX page, pressing the Favorite 1 button while a Chain (other than 0 None) is highlighted—on any of the various effects pages—will call up the Chain editor.

You may edit Effects Chains containing up to 16 effects boxes using up to 32 DSP units. Choose from 18 types of effects boxes, including hundreds of effects box algorithms and presets. Create custom controller assignments and apply modulation with LFOs, ASRs and mathematical functions.

From the Program editor, the program's Insert and Aux Chains can be edited from the FX and LYRFX pages. In Multi Edit Mode, Chains selected for Aux overrides can be edited from the AUX1 and AUX2 pages.

A Chain is made up of one or more effect-boxes, with each box containing a single effect. You can have up to 16 effect-boxes in a Chain. The settings for all of the parameters of each effect-box are also stored within the Chain. There are 30 Mod Controls that allow for real-time control over any parameter from any effect-box in the Chain. Per Chain Control sources are also provided to be used as inputs to the effect Mods (two FXLFOs, two FXASRs, and four FXFUNs.) These work similarly to the LFOs, ASRs and FUNs in Program mode, but are only available for use with the effect Mods.

The MAIN Page

In the Chain Editor, pressing the MAIN soft button calls up the MAIN page. This is where you configure the length of a Chain and select the individual effects that make up the Chain.
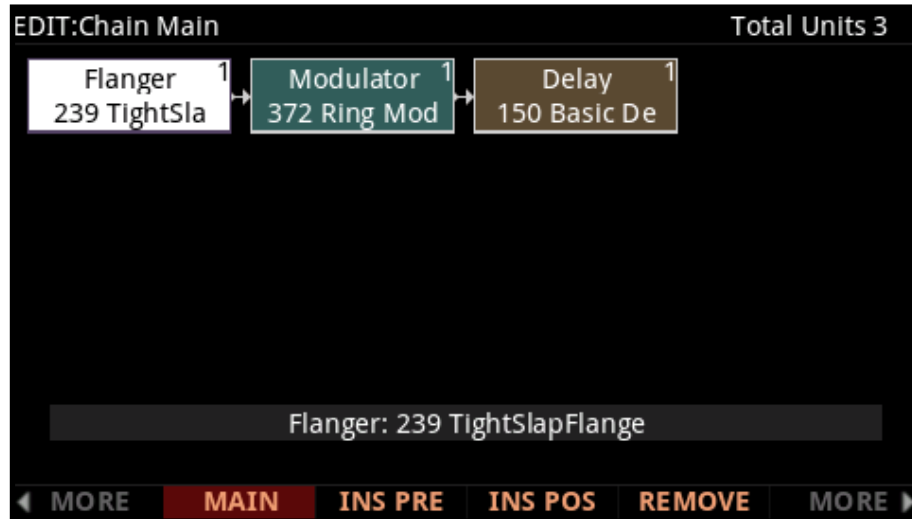
At the top right of the display is the number of DSP units used by the currently selected effect- box, and by the Chain as a whole. There are a total of 32 units available for all of the Chains that are currently loaded by programs and any active Aux overrides from Multi Mode.

> NOTE: In some configurations, not all 32 units are available for use with multi-unit effects because of the way the DSP is allocated internally.

Like all other representations of signal paths in the Forte display, the program signal moves from left to right through the Chain. Use the cursor buttons to select an effect-box or empty spot in the Chain. The effect loaded into the selected effect-box can be changed by numeric entry, with the Alpha Wheel, or with the +/– buttons; and can be changed with either the effect-box or the Effect field at the bottom of the page highlighted. The +/- double button press will jump to the next effect "category."

Pressing the INSPRE soft button adds a new effect-box to the Chain in the currently selected block-slot, and pushes the currently selected effect-box down the Chain to the right. (If you have run out of DSP units, you will not be able to create additional effects boxes.) Pressing the REMOVE soft button takes the currently selected effect out of the Chain.

Editing Effect-boxes

To edit the parameters of an effect, select its effect-box on the MAIN page and press the Favorite1 button. For each effect, there are one or more pages of parameters that are specific to that effect. See Effects Parameters on page 8-7 for details on parameters for each type of effect. Any parameter controlled by an effect Mod will display a value of FxMod and cannot be edited. To return to the MAIN page of the chain editor, press the Exit button.

EDIT:Chain Preset Parameters 3		
Hi Enable	On	
Hi Drive	8.5dB	
Hi Xfer1	59%	
Hi Xfer2	69%	
Hi Delay	4samps	
Hi Mix	-7.5dB	

| Para 1 | Para 2 | Para 3 |

The MOD Pages

There are three pages for configuring effects mods: MOD1 - MOD3. All pages are essentially identical in appearance and function. See below for an example MOD page:

EDIT:Chain MODs 1				
Box:	Param:	Adjust:	Source:	Depth:
Box3	Wet/Dry	13%Wet	FXFUN1	55%Wet
Box1	Out Gain	-6.5dB	FXFUN2	0dB
None			OFF	
None			FXFUN3	
None			FXFUN3	
None			OFF	
None			OFF	
None			OFF	
None			OFF	
None			OFF	

| ◄ MORE | MOD1 | MOD2 | MOD3 | FXLFO+ | MORE ► |

Box

The Box parameter specifies which effect-box in the Chain to which the Mod will be applied.

Param

The Param parameter selects which parameter of the specified box's effect will be modulated.

Adjust

The Adjust parameter sets a fixed value for the specified parameter (Param) that is applied before any modulation.

Source

The Source parameter determines the Control source that will modulate the parameter (Param) in real-time. This can be any of the normal channel Control sources (sliders, mod wheel, pedals, etc.) or one of the Chain-specific Control sources (FXLFOs, FXASRs, and FXFUNs).

Depth

The Depth parameter determines the range of modulation that the Controller will apply. When the Control source has a value of 0, the parameter's (Param's) value will be the Adjust value. When the control source is all the way up, the parameter's (Param's) value will be the Adjust value plus the Depth value.

FXLFO+ page

This is where you can edit the Effects-only Control sources. These are Control sources that can be used by the effects Mods in the current Chain. The parameters on these pages work exactly like those of the corresponding Control sources in program mode (see).

EDIT:Chain LFO/ASR/FUN						
	MnRate	MxRate	RateCt		Shape	Phase
FXLFO1	0.00H	0.45H	Express		3/4 +Sine	0deg
FXLFO2	0.00H	0.00H	OFF		None	0deg
	Trigger		Mode	Delay	Attack	Release
FXASR1	OFF		Norm	0s	0s	0s
FXASR2	OFF		Norm	0s	0s	0s
	Input a		Input b		Function	
FXFUN1	MIDI89		MIDI27		a*b	
FXFUN2	MIDI87		MIDI26		a*b	
FXFUN3	MIDI86		MIDI25		a*b	
FXFUN4	OFF		OFF		None	
◀ MORE	MAIN		INS PRE	INS POS	REMOVE	MORE ▶

INFO page

Press the INFO soft button to go to the Chain Info page where you can edit the controller assignment info for the current Chain. Chain Info allows you to add a description for each FX Mod you have assigned. On the Chain Info page, use the **Channel/Zone** buttons to scroll through the current Chain's list of controller assignment info. Each assignment Info entry has a MIDI controller number and a Text parameter to describe what the assignment controls. One Info entry can be made for each MIDI CC number.

Chain Info allows you to see a name for each FX Mod controller assignment, as well as set an initial controller value for each FX Mod in each Program. When assigning a physical controller or CC number to a source field on one of the FX Mod pages, a Chain Info entry is automatically added to the Chain Info Page with the name of the FX parameter. Chain Info entries are also automatically deleted when their associated FX Mods are removed or unassigned from the FX Mod pages.

When an FX Chain is selected in a Program, the Chain Info entries appear on the Program Parameters page. Chain Info names are also shown on the main Program and Multi Mode Pages when moving an assigned controller. The Program Parameters page allows you to remap existing Chain FX Mod controller assignments, as well as set an initial MIDI value for each assignment. This allows you to reuse the same Chain in several Programs, and each of the Chain FX Mods can have a different controller assignment or initial value in each Program.

Each MIDI CC number can have one Chain Info entry. When setting an FX Mod source field, if the selected physical controller or CC number is already used by a different FX Mod in the Chain, a new Chain Info entry will not be added to the Chain Info Page. The new FX Mod will share the existing Chain Info entry for the same physical controller/MIDI CC. The name of the previously existing Chain Info entry will not change based on the new FX Mod. If you have assigned one physical controller/MIDI CC to multiple FX Mods, you may wish to edit the Info name to reflect this.

To edit a Chain Info name, first go to the Chain Info page, then use the **Channel/Zone** buttons to select the Info entry from the list. Press the Text soft button to enter the text editor for the currently selected Info entry. After making text changes, press the OK soft button, or press the cancel soft button to exit the text editor without making changes. Be sure to save the Chain when exiting the Chain editor in order to save your changes.

In some cases it may be desirable to manually create a new Chain Info entry. Press the New soft button, then choose an available MIDI CC. Once the Info entry is created, you can change its name using the Text soft button.

You can delete a Chain Info entry by selecting it on the Chain Info page and pressing the Delete soft button.

The Chain Utility Soft Buttons

Some of the soft buttons in the Chain Editor perform a function when pressed, as well as some of the Favorites buttons.

INFO

On this page you can use the TEXT soft button to access a text editor to change a chain label.
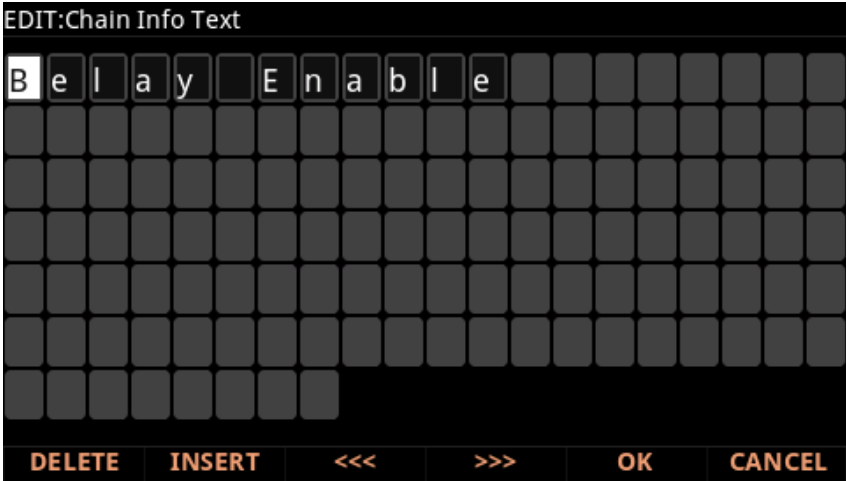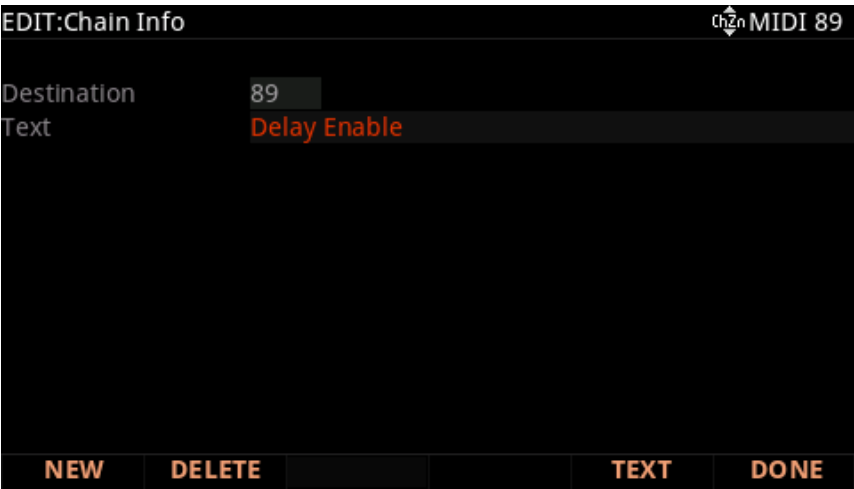
DELETE

Press the Delete soft button to delete the current Chain (factory Chains can not be deleted). Press Delete, and you will be given a choice to Delete or Cancel. Press Delete again, and an "Are You Sure?" message will appear. Press Yes to delete the Chain, or Cancel to cancel.
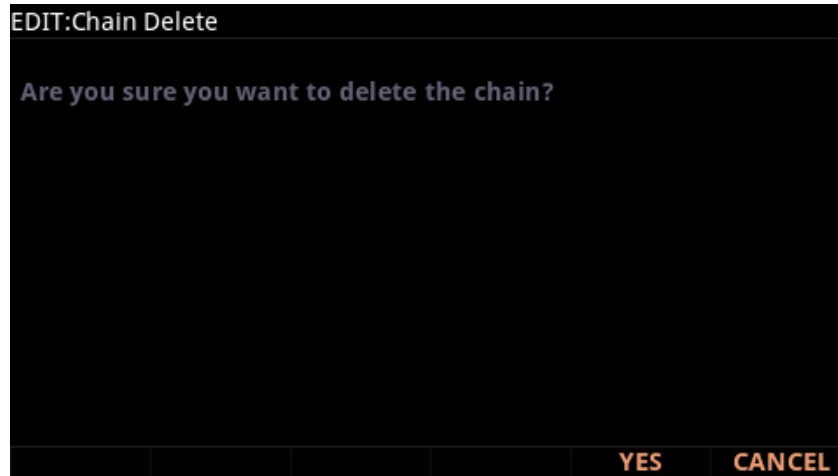
EDIT:Chain Delete

Are you sure you want to delete the chain?

YES   CANCEL

HELP

Press the HELP soft button to view the Help page, where you can view a description of functions assigned to the Favorites buttons.

Favorites 1: Edit

When an FX box is selected on the Chain Edit MAIN page, press the Favorites 1 button to edit the selected box and view its parameters.

Favorites 5: Bypass Box

Press the Favorites 5 button to temporarily bypass the currently selected FX box in the Chain. Press the Favorites 5 button again to re-enable the selected box.

Favorites 10: Help

Press the Favorites 10 button to view the HELP page.

Effects Parameters

This section contains descriptions of the Forte's many effects parameters, and instructions on how to use them. Read through this section to get a good general understanding of the parameters.

The descriptions here do not include all of the parameters associated with every effect, and some effects may not have some of the parameters described here for their category. A more complete reference, with every effect and the meaning and range of every parameter, arranged in the order they appear on the screen, can be found in the KSP8 Algorithm Reference Guide on the Kurzweil website, www.kurzweil.com.

General Parameters

There are a number of parameters that are common to all or almost all effects, and we'll deal with those first.

Wet/Dry balances the levels of the processed and unprocessed signals output from the effect. Wet represents the processed signal, while dry represents the unprocessed signal. The range is 0% wet (the signal is unprocessed) through 100% wet (no dry signal is present). Values between 0% and 100% blend the two signals, for example, at 20% the output signal is 20% wet (processed) and 80% dry (unprocessed.) A setting of 50% wet means the dry and processed signals are roughly equal in level. In some effects, separate Wet/Dry parameters are provided for the Left and Right input channels. In some cases, this parameters can have negative values, which indicate that the Wet signal is polarity-inverted.

When an effect with the Wet/Dry parameter is used in Chain that has been selected as an Aux effect, Wet/Dry is automatically set to 100% wet and cannot be adjusted. This is because when using an Aux effect, the dry signal is already effectively at 100% on the main audio bus (not routed through the Aux effect.) In this case, turning up the Aux send level will blend the 100% wet signal (from the Aux bus) with the dry signal on the main audio bus.

Out Gain sets the gain at the output of an effect.

In/Out enables or disables the effect. You can think of it as a Wet/Dry parameter with only two

HF Damping (high frequency damping) is the cutoff (-3 dB) frequency of a 6dB/octave lowpass filter that's inserted before the processor. High frequencies above the set cutoff frequency will be filtered out. In the case of processors where multiple iterations of the signal are heard, such as in a delay, each iteration of the signal will pass through the filter, and will therefore be duller.

XCouple (Cross Couple). In stereo effects, this controls how much of any signal being fed back is going to the channel opposite to the one where it first appeared. At 100%, all feedback from signals at the left input goes to the right channel and vice versa, causing a "spreading" or in the case of delay lines, a "ping-pong" effect. At 0%, fed-back signals stay with the channel they came in on.

A->B cfg (configuration). In combination effects that contain two (or more) components, the order in which the signal passes through the two components can be changed with this parameter. Combination effects are usually named with a "->", as in 484 "Flange->Shaper." For example, 484 "Flange->Shaper" can be configured so the signal passes through the flanger first and then the shaper, or through the shaper first and then the flanger. The cfg parameter determines the configuration, and its value is context-sensitive—in this example, the choices would be "Fl->Shp" and "Shp->Fl."

A/Dry->B is also found in many combination effects, and controls the amount of signal that will pass dry (unprocessed) through the first component into the second component. Different combination effects use different variations on this parameter, depending on the context. The range is 0 to 100%.

Reverbs

Room Type changes the configuration of the effect to simulate a wide array of room types and sizes including booths, small rooms, chambers, halls and large spaces. Because this parameter changes the structure of the reverb effect, you need to be careful when assigning it a MOD— changing it in real time while signal is passing through it is likely to cause audible artifacts. Room types in different effects with similar names do not necessarily sound the same.

Rvrb Time is the RT60—the time it takes for the reverb to decay to 60 dB below its initial level—in seconds. It is accurate assuming that several other parameters (HF Damping, Diff Scale, Size Scale, and Density) are at their nominal levels. It is adjustable up to "Inf", which creates an infinitely-sustaining reverb.

LateRvbTim adjusts the basic decay time of the late portion of the reverb after diffusion.

L Pre Dly and R Pre Dly (Pre-Delay) is the time between the start of a sound and the output of the first reverb reflections from that sound. Longer pre-delays can help make larger spaces sound more realistic. Longer times can also help improve the clarity of a mix by separating the reverb signal from the dry signal, so the dry signal is not obscured. You can set a separate time for the left and right reverb signals using L Pre Dly and R Pre Dly.

EarRef Lvl adjusts the mix level of the early-reflection portion of effects which offer early reflections.

Late Lvl adjusts the mix level of the late-reverb portion of effects which offer early reflections.

Diff Scale scales the "diffusion" of the early reflections, that is, how spread out they are as a group over time. At very low settings, the early reflections start to sound quite discrete, and at higher settings the early reflections are seamless. It is adjustable from 0.00 to 2.00, with 1.00 being nominal for the given Room Type.

Density controls how tightly the early reflections are packed in time. Low Density settings group the early reflections close together, while higher values spread the reflections for a smoother reverb. It is adjustable from 0.00 to 4.00, with 1.00 being nominal (and usually optimal) for the given Room Type.

Expanse controls the amount of late reverb energy biased toward the edges of the stereo image. A setting of 0% will bias energy towards the center. Moving away from 0% will bias energy towards the sides. Positive and negative values will have a different character.

Build adjusts the envelope of certain portions of the reverb. Positive values speed up the envelope, and negative values slow it down.

Size Scale changes the size of the current room. Altering this parameter will change the reverb time and also cause some coloration of the reverb. It is adjustable from 0.00 to 4.00, with 1.00 being nominal (and usually optimal) for the given Room Type.

InfinDecay, when turned "On", causes the reverb tail to decay infinitely. When it's "Off", the decay time is determined by the "Rvrb Time" or "LateRvbTim" parameters. This is a good parameter to control with a footswitch.

Wet Bal (Wet Balance). Some reverb effects are actually two stereo reverbs in one, with each one receiving a different mono signal. This balances the outputs of the two reverbs—0% means they are being mixed equally.

Delays

There are two types of taps in the Multitap delays: The "Loop" tap, which has a feedback loop back to its input, and the numbered taps. The numbered taps can be single iterations or they can repeat as part of a loop, but they do not have individual feedback paths.

Fdbk (Feedback) Level controls the repeating function of the Loop Tap. A setting of 0% means there will only be a single delay, while a setting of 100% means the signal keeps repeating without ever stopping.

Both types of taps are individually adjustable from 0 to 2.55 seconds. The Loop Crs and Tap*n* Crs (**n** being the number of the tap) parameters set the coarse value of the loop in 20-ms increments, while the Loop Fine and Tap*n* Fine parameters set the fine value in 0.2-ms increments.

In Delay effects that use tempo to determine tap lengths, there is a Tempo parameter which can be set from 1 to 255 BPM or to "System." The Loop Length and Tap*n* Delays are then expressed in beats relative to that overall Tempo.

Hold is a switch that, when turned on, "locks" any signal currently in the delay and plays it until Hold is turned off. When Hold is on, no signal can enter the delay and Feedback is set to 100%. A good parameter to control with a footswitch.

Dry Bal (Balance) is the left/right balance of the dry signal. At -100%, only the left dry signal goes to the left output, while at 100% only the right dry signal passes to the right output, and at 0%, equal amounts of the left and right dry signals pass to their respective outputs.

Tapn Level is the level of each numbered tap, from 0% to 100%, relative to the overall output of the effect.

Tapn Bal is the left/right balance of each of the numbered taps. At -100%, only the left channel of tap n goes to the left output, while at 100% only the right channel of tap n goes to the right output. At 0%, equal amounts of the left and right channels of the tap pass to their respective outputs. In some delays, pairs of taps (1 and 5, 2 and 6, etc.) are controlled together as stereo pairs.

DelayScale lets you change the lengths of all the taps together. Its range is 0 to 10x.

Note: It is possible for the Forte to run out of delay memory with over-generous settings of DelayScale or very slow Tempos. Some Delay effects will simply go to a maximum value and stay there, while in some, a calculation is made that automatically cuts the delay times in half, thereby maintaining a relationship with tempo.

Complex Echo

This effect has two feedback taps per channel as well as three independent taps, and also a feedback diffuser for "smearing" the delays. Feedback line 1 feeds the signal back to the delay input of the same channel, while feedback line 2 feeds the signal back to the opposite channel.

FB2/FB1>FB is a balance control between feedback lines 1 and 2. 0% (minimum) turns off feedback line 2, only allowing use of feedback line 1. 50% is an even mix of both lines, and 100% (maximum) turns off line 1.

L Diff Dly and **R Diff Dly** adjusts the delay lengths of the diffusers. Range is 0 to 100 ms. Diff Amt adjusts the diffuser intensity. Range is 0 to 100%.

C Fdbk n Dly adjusts the delay length of the C channel's nth feedback tap, fed back to the C channel's delay input. Range is 0 to 2600 ms.

Spectral Multitap Delays

These 4- and 6-tap delays have their feedback and output taps modified with shapers and filters. In the feedback path of each tap are a diffuser, hipass filter, lopass filter, and imager. Each delay tap has a shaper, comb filter, and balance and level controls.

Fdbk Image sets the amount that the stereo image is shifted each time it passes through the feedback line. Range is -100 to 100%.

Tap n Shapr adjusts the intensity of the shaper at each output tap. Range is 0.10 to 6.00 x. Tap n Pitch adjusts the frequency of the comb filter at each output tap. Range is C-1 to C8, in semitones.

Tap n PtAmt adjusts the intensity of the comb filter at each output tap. Range is 0 to 100%.

Gated Ducking Delay

This runs the last thing you played through a looping delay, but only outputs the delay signal when you aren't playing. Gated Ducking Delay is great for that announcer sound, sound, sound, so popular in Monster Truck radio spots.

DegenRegen

This one's a big looping delay with lots of gain, distortion and filtering, and with a compressor to keep it all under control.

Equalizers (EQ)

The Forte has both Graphic and Parametric EQ effects. Parametric EQ sections are also found on a number of combination effects.

The **Graphic** equalizer is available as stereo (linked parameters for left and right) or dual mono (independent controls for left and right). It has 10 bandpass filters per channel, each of whose gain is adjustable from -12 dB to +24 dB.

Like all graphic equalizers, the filter response is not perfectly flat when all gains are set to the same level (except at 0 dB), but rather has ripple from band to band. To minimize this ripple, it is best to center the overall settings around 0 dB.

The **Parametric** equalizer ("5-Band EQ") has two bands of shelving filters and three bands of true parametric EQ.

Treb Freq and **Bass Freq** set the center frequencies for the shelving filters. Both of these are adjustable over the full range of 16 to 25088 Hz, in increments of a semitone.

Treb Gain and **Bass Gain** control the amount of cut or boost above (Treb) or below (Bass) the center frequency. The range is -79 to +24 dB.

Midn Gain sets the cut or boost for the parametric band n, with a range of -79 to +24 dB. Midn Freq sets the center frequency for parametric band n, with a range of 16 to 25088 Hz, in increments of a semitone.

Midn Width set the bandwidth of the filter on band n, with a range of 0.01 to 5 octaves.

Enhancers

Enhancers modify the spectral content of the input signal by boosting existing spectral content, or stimulating new ones. Two and three-band versions are provided.

Drive adjusts the input into each band. Increasing the drive will increase the effects. Range is -79.0 to 24.0 dB.

Xfer adjusts the intensity of the transfer curves. Range is -100 to 100%.

EQ Morpher

This effect uses two four-band bandpass filters, A and B, and moves between them. This can produce very convincing human vocal type sounds.

FreqScale offsets the filter frequencies for each set of filters. After setting the filter parameters (Freq, Gain, and Width), the FreqScale parameters will move each of the four filter frequencies together by the same relative pitch. Range is -8600 to 8600 cents.

Morph A>B. When set to 0% the "A" parameters are controlling the filters, and when set to 100%, the "B" parameters control the filters. Between 0 and 100%, the filters are at interpolated positions. When morphing from A to B settings, the A filter #1 will change to the B filter #1, A filter #2 moves to B filter #2, and so on. Range is 0 to 100%.

Compressors, Expanders, and Gates

A wide range of Compression and Expansion effects is available in the Forte. The various effects include different combinations of:

- compressors with soft-knee characteristic—the compression action comes in gradually as the signal level approaches the threshold
- compressors with hard-knee characteristic—the compression action comes in abruptly when the signal reaches the threshold
- expanders
- multiband compressors that break the signal up into three frequency bands and compress them all separately
- sidechains or output EQs
- reverbs and compressors in combination
- gates
- gated reverbs

All of the Compression effects use these parameters:

FdbkComprs (Feedback Compression) selects whether to use feed-forward (set this to "Out") or feed-back (set this to "In") compression. The feed-forward configuration uses the input signal as a side-chain source, which is useful when the compressor has to act really quickly. The feed-back configuration uses the compressor output as the side-chain source, which lends itself to more subtle, but not as quick-reacting, compression.

Atk (Attack) Time for the compressor is adjustable from 0.0 to 228.0 ms. Rel (Release) Time for the compressor is adjustable from 0 to 3000 ms.

SmoothTime smooths the output of the expander's envelope detector by putting a lowpass filter in the control signal path. Smoothing will affect the Attack or Release times only when this parameter is longer than one of the other times. The range is 0.0 to 228.0 ms.

Signal Dly (Delay) puts a small delay in the signal relative to the sidechain processing, so that the compressor (or gate) "knows" what the input signal is going to be before it has to act on it. This means the compression can kick in before an attack transient arrives. In the SoftKneeCompress and HardKneeCompress effects, delay is really only useful in feed-forward configuration (FdbkComprs is "Out"). For other compressors, the delay can be useful in feedback configuration (FdbkComprs is "In"). The range is 0 to 25 ms.

Ratio is the amount of gain reduction imposed on the compressed signal, adjustable from 1.0:1 (no reduction) to 100:1, and Inf:1.

Threshold is the level in dBFS (decibels relative to full scale) above which the signal begins to be compressed. Adjustable from -79.0 to 0 dB.

MakeUpGain allows additional output gain to compensate for gain reduction in the compressor. It is essentially the same parameter as Out Gain, with which it is summed. The minimum is -79.0, and the maximum summed gain (MakeUpGain + Out Gain) is +24.0 dB.

Expansion

Effects containing Expanders have these controls:

Atk or **Exp Atk** (Attack), how fast the expander turns off when the input signal rises above the threshold level, adjustable from 0.0 to 228.0 ms.

Rel or **Exp Rel** (Release), how fast the expander turns back on after the signal drops below the threshold level, adjustable from 0 to 3000 ms.

Ratio or **Exp Ratio**, how much the gain is reduced below the expansion threshold, adjustable from 1:1.0 (no expansion) to 1:17 (extreme downward expansion).

Threshold or **Exp Threshold**, the level below which the signal is expanded, adjustable from -79.0 to 0 dB.

In addition, the two-segment compressors with expander have separate Ratio and Threshold controls for each of the compression segments.

Multiband Compression

The Multiband Compression effect has Attack, Release, Smooth, Signal Delay, Ratio, Threshold, and MakeUp Gain parameters for each of the three bands ("Low", "Mid", and "High"). In addition, it has:

Crossover1 and Crossover2. These set the frequencies which divide the three compression frequency bands. The two parameters are interchangeable, so either may contain the higher frequency value. The range is 16 to 25088 Hz, in increments of a semitone.

Gates

SC Input lets you select which input channel(s) will control the sidechain, which is responsible for opening and closing the gate. It can be set to L, R, or the average of the two channels, (L+R)/2. You can use this, if you arrange the signal paths and pan controls appropriately, to gate one mono signal with a different mono signal.

Gate Time is the time that the gate will stay open after the sidechain signal reaches the Threshold. Its range is 0 to 3000ms.

Ducking reverses the action of the gate. Normally this if set to "Off", and the gate opens when the input signal rises above the threshold. But when this is "On", the gate closes when the input signal rises above the threshold.

Super Gate

Super Gate is a more sophisticated gate that includes these two functions:

Env Time is the amount of time it takes for the sidechain signal envelope to drop below the threshold. If this time is too short, the gate can close and open too quickly from amplitude modulation in the sidechain signal. If it is too long, the gate may stay closed until the envelope has a chance to fall, and some signals would not get through. This parameter is only in effect when Retrigger is Off.

Retrigger determines whether the gate timer will reset itself each time the sidechain signal goes above the threshold. If it is "On", the timer resets itself, and therefore the gate stays open as long as the signal is above the threshold, or keeps going above the threshold, within the interval specified by Gate Time. If it is "Off", the gate closes down after Env Time has elapsed, regardless off the sidechain level, and the sidechain level must fall below the threshold and come back up again before the gate will open again.

Chorus

Chorus is an effect which gives the illusion of multiple voices playing in unison. The effect is achieved by detuning copies of the original signal and summing the detuned copies back with the original. Low frequency oscillators (LFOs) are used to modulate the positions of output taps from a delay line. The movement of the taps causes the pitch of the signal to shift up and down, producing the required detuning.

The choruses are available as stereo or dual mono. The stereo choruses have the parameters for the left and right channels ganged, while the dual mono choruses have separate left and right controls.

Fdbk Level is the level of the feedback signal from the LFO1 delay tap into the delay line. Negative values polarity-invert the feedback signal.

Tap Lvl sets the levels of the LFO-modulated delay taps. Negative values polarity-invert the signal. Setting any tap level to 0% turns it off.

Tap Pan sets the stereo position for a given tap's output. The range is -100% for fully left, to 100% for fully right.

Atk Time (attack time) is the time for the gate to ramp from closed to open (reverse if Ducking is on) after the signal rises above threshold, adjustable from 0.0 to 228.0 ms.

Rel Time (release time) is the time for the gate to ramp from open to closed (reverse if Ducking is on) after the gate timer has elapsed, adjustable from 0 to 3000 ms.

LFO Rate sets the speed of modulation of the delay lines with a range of 0.01 to 10 Hz.

LFO Dpth sets the maximum detuning depth of the LFO-modulated delay lines, with a range from 0 to 50 cents (= 1/2 semitone).

Tap Dly adds extra delay in front of the LFO modulated delay taps from 0 to 230 ms.

L/R Phase or **LFOn LRPhs** adjusts the relative phases of the LFOs for the left and right channels in the stereo Choruses.

Flanger

Flanging is the process of adding or subtracting a signal with a time-displaced replica of itself, which results in a series of notches in the frequency spectrum, generally referred to as a comb filter. In the Forte, the flanger is a multi-tap delay line, all (but one) of whose taps can have their lengths modulated up and down by a low frequency oscillator (LFO). The rate of the LFO is expressed in Tempo.

StatDlyLvl (Static Delay Level) is the level of the first, non-moving tap. Negative values invert the polarity of the tap. The range is -100 to 100%; 0% turns the tap off.

DlyCrs and **DlyFin** are the coarse and fine length controls for the Static delay (StatDly...) and for the minimum value of the moving delays (Dlyn...). The coarse range is 0 to 228 ms, and the fine range adjusts the coarse range in samples (= 1/48,000 sec = 20.8μsec) from -127 to 127.

Xcurs Crs and **Xcurs Fin** determine how far the LFO-modulated delay taps can move from the center of their ranges. The total range of the LFO sweep is twice the excursion. If the excursion is set to 0, the LFO does not move and the tap behaves like a simple delay line set to the minimum delay. The coarse range is 0 to 228 ms; the range 0 to 5 ms is most effective for flanging. The fine range adjusts the coarse range in samples from -127 to 127.

Quantize

This effect produces digital distortion known as quantization noise, by limiting the number of bits available to the signal. See effect 329 "Aliaser."

DynamRange (dynamic range) controls how many bits to remove from the signal data words. The lower the level, the greater the distortion. At 0 dB the hottest of signals will toggle between only two quantization levels, thereby producing a square wave. Every 6 dB added doubles the number of quantization levels, reducing the noise and getting closer to the original signal. If the signal has a lot of headroom (available signal level before digital clipping), then not all quantization levels will be reached. Range is 0 to 144 dB.

Headroom sets the available signal level before digital clipping. Setting this properly prevents the signal from getting too loud at low levels of DynamRange. You want to have it match the amount of level still available above the input signal: this is done by finding the DynamRange level at which the signal starts getting louder, and setting Headroom to match the DynamRange value. Range is 0 to 144 dB.

DC Offset adds a positive DC Offset to the input signal, which allows you to alter the position where digital zero is with respect to your signal. At low DynamRange settings, this can cause the output to "sputter." Range is Off/-79.0 to 0.0 dB.

LaserVerb

LaserVerb is a type of reverb which produces a delayed train of closely spaced reflections, or impulses. As time passes, the spacing between the impulses gets wider, which creates a discernible buzzy pitch that gets lower as the spacing increases. The signal can be fed back into itself to extend the effect.

Dly Coarse is the overall delay length, which controls the duration or decay time. 0.5 sec is a good starting point. Range is 0 to 1.3 seconds in the 2 DSP unit version of the effect, and 0 to 2 seconds in the 3 DSP unit version.

Dly Fine adjusts the delay with a resolution down to 0.2 ms. Range is -20.0 to 20.0 ms. Spacing determines the starting pitch of the descending buzz and how fast it descends, by setting the initial separation of impulses and the subsequent rate of increasing impulse separation. The spacing between impulses is given in samples (20.8μs). At low values, the buzz starts at high frequencies and drops slowly, while at high values the buzz starts at a lower pitch and drops rapidly. Range is 0.0 to 40.0 samples, with a resolution of 0.2 sample.

Contour controls the overall shape of the reverb. When set to a high value, sounds passed through the reverb start at a high level, and it slowly decays. As the control value is reduced, it takes more time for the effect to build up before decaying. At a value of around 34%, the reverb behaves like a reverse reverb, building up to a hit. When it is set to zero, the effect acts like a simple delay. Range is 0 to 100%.

Filters

Resonant Filter

Frequency (or Freq) is the fixed resonant frequency of the filter. Its range is 16 to 8372 Hz.

Envelope Filter

Envelope Filter is a resonant filter whose center frequency can be made to vary according to the level of the incoming signal.

There are four types of Resonant Filter effects in the Forte. All of them have these parameters in common:

Filter Type (or **FiltType**) can be Lowpass, Highpass, Bandpass, or Notch (band-cut). Resonance is the resonance of the filter, adjustable from 0 to 50 dB.

Filter Type can be Lowpass, Highpass, Bandpass, or Notch (band-cut).

Min Freq is the minimum resonant frequency of the filter, that is, the filter frequency when the input gain is below the triggering threshold. Its range is 16 to 8372 Hz.

Sweep determines how far the resonant frequency moves when the input level increases. At positive levels it moves up in pitch, and at negative levels it moves down. The highest possible resonant frequency is 8372 Hz, the lowest is 0 Hz. This parameter's range is -100% to +100%.

Resonance is the resonance of the filter, adjustable from 0 to 50 dB.

Atk Rate adjusts the upward slew of the attack portion of the envelope detector. Range is 0 to 300.0 dB/sec.

Rel Rate adjusts the downward slew of the release portion. Range is 0 to 300.0 dB/sec.

Smooth Rate slows down the envelope follower. If it is set to a lower rate than Atk Rate or Rel Rate, it can dominate those parameters. Range is 0 to 300.0 dB/sec.

Triggered Filter

The Triggered Filter is a sweeping resonant filter that triggers when a certain input threshold is reached, and then follows its own envelope, consisting of an instantaneous attack and an exponential release, rather than the envelope of the input signal.

Max Freq is the resonant frequency of the filter at the peak of the internal envelope. It can be set lower than Min Freq (above), in which case the filter will sweep downwards, then back up. Range is 16 to 8372 Hz.

Trigger is the input-signal threshold at which the envelope detector triggers. Range is -79 to 0 dB.

Retrigger is the input-signal threshold at which the envelope detector resets, so that it can trigger again. This parameter is only useful when it is set below the value of Trigger. Range is from -79 to 0 dB.

Env Rate is the envelope detector decay rate. This can be used to prevent false triggering. When the signal envelope falls below the retrigger level, the filter can be triggered again when the signal rises above the trigger level. Since the input signal can fluctuate rapidly, it is necessary to adjust the rate at which the signal envelope can fall to the retrigger level. The range is 0 to 300.0 dB/sec.

Rel Rate is the downward slew (release) rate of the triggered envelope generator. The range is 0 to 300.0 dB/sec.

Smth Rate slows down the envelope follower. If set lower than the release rate, it will dominate it. You can also use the smoothing rate to lengthen the attack of the internal envelope. The range is 0 to 300.0 dB/sec.

LFO Filter

The LFO filter is continuously swept between two resonant frequencies over a period of time. The LFO frequency, expressed in BPM and beats, can be fixed or set to follow System tempo.

Min Freq and **Max Freq** are the low and high limits of the resonant frequency as the filter is swept. You can set the Min Freq higher than the Max Freq, in which case the filter will sweep "upside down" relative to the controlling clock. The range for both is 16 to 8372 Hz.

LFO Shape is the waveform type for the LFO. Choices are Sine, Saw+, Saw-, Pulse, and Tri.

LFO PlsWid (Pulse Width). When the LFO Shape is set to Pulse, this sets the pulse width as a percentage of the waveform period. When the width is set to 50%, the result is a square wave. This parameter has no effect if other waveform types are chosen. Range is 0 to 100%.

LFO Smooth smooths (removes the higher harmonics from) the Saw+, Saw-, and Pulse waveforms. A Sawtooth wave becomes more like a triangle wave, and a Pulse wave becomes more like a sine wave. Range is 0 to 100%.

Distortion

Distortion effects on the Forte may also include a parametric equalizer or a cabinet simulator.

Dist Drive applies a boost to the input signal to overdrive the distortion effect into soft clipping. This will tend to make the signal very loud, so you may have to reduce the Out Gain as this parameter is increased. Range is 0 to 96 dB.

Warmth is a lowpass filter in the distortion control path. This filter may be used to reduce some of the harshness of some distortion settings without reducing the bandwidth of the signal. Range is 16 to 25088 Hz.

Highpass allows you to reduce the bass content of the distortion content in the smaller distortion effects that don't have true parametric EQ. Range is 16 to 25088 Hz.

Cab Preset selects from eight cabinet simulations which have been created based on measurements of real guitar amplifier cabinets. The presets are: Basic, Lead 12, 2x12, Open 12, Open 10, 4x12, Hot 2x12, and Hot 12.

Cab Bypass switches on and off the cabinet-simulation part of the effect. When this is set to "In", the cabinet simulation is active; when it is "Out", there is no cabinet action.

Cabinet HP and **Cabinet LP** are highpass and lowpass filters to set the frequency response limits of the cabinets. Range of both filters is 16 to 25088 Hz.

Polydistort

This is a more complex distortion effect that provides two, four, or six stages of distortion.

Curve n controls the curvature of the individual distortion stages. 0% is no curvature (no distortion at all). At 100%, the curve bends over smoothly and becomes perfectly flat right before it goes into clipping. Maximum value is 127%.

LP n Freq are shelving frequencies for one-pole lowpass filters on each of the distortion stages. LP0 Freq handles the initial low pass prior to the first distortion stage. The other low pass controls follow their respective distortion stages. Range is 16 to 25088 Hz.

Rotating Speakers

An effect that includes Rotating Speakers breaks the signal into two frequency bands, "rotates" each band separately through a virtual speaker, and then combines the outputs with a pair of virtual "microphones" whose angle relative to the speakers is adjustable. A number of very sophisticated parameters have been included in the Rotating Speakers effect, to give the effect a great degree of realism. Because of the complexity of the effects, you might want to approach any parameters that seem a little obscure to you with caution.

Roto InOut engages or bypasses the rotary speaker effect.

There are four virtual microphones, with two each on the woofer (LoMic A and LoMic B) and on the tweeter (HiMic A and HiMic B). Each microphone has:

Pos (position), the angle of the microphone from the front of the virtual speaker, from -180 to 180degrees;

Lvl (level) from 0 to 100%; and Pan, the left/right panning of the microphone's output, from -100% (full left) to 100% (full right). Other parameters:

Lo Beam W and **Hi Beam W** set the acoustic radiation patterns ("beam width") of the two drivers in the rotating speaker. If you imagine looking down on the rotating speaker, this is the angle between the -6 dB levels of the beam. The range is from 45° to 360°. At 360°, the driver is omnidirectional.

Xover (Crossover) is the frequency at which high and low frequency bands are split and sent to separate rotating drivers. The range is 16 to 25088 Hz.

Lo Gain and **Hi Gain** are the gains of the signal passing through the rotating woofer or tweeter, respectively. The range is Off/-79.0 to 24.0 dB.

Lo Size and **Hi Size** are the effective sizes (radius of rotation) of the rotating speakers in millimeters. This affects the amount of Doppler shift or vibrato of the low frequency signal. The range is 0 to 250 mm.

Lo Trem and **Hi Trem** control the depth of tremolo (amplitude modulation) of the signals. It is expressed as a percentage of full scale tremolo. The range is 0 to 100%.

LoResonate and **HiResonate** are simulations of cabinet resonant modes expressed as a percentage. For realism, you should use very low settings. The range is 0 to 100%.

Lo Res Dly and **Hi Res Dly** are the number of samples of delay in each resonator circuit in addition to the rotation excursion delay. The range is 10 to 2550 samples.

LoResXcurs and **HiResXcurs** are the number of samples of delay to sweep through the resonator at the rotation rate of each rotating speaker. The range is 0 to 510 samples.

ResH/LPhs sets the relative phases of the high and low resonators. The angle value in degrees is somewhat arbitrary and you can expect the effect of this parameter to be rather subtle. The range is 0 to 360.0 degrees.

Mic Angle is the angle of the virtual microphones in degrees from the "front" of the rotating speaker. For the left microphone the angle increases clockwise (when viewed from the top), while for the right microphone the angle increases counter-clockwise. Assigning a MOD to this parameter should be done with caution: real-time adjustments to it will result in large sample skips, which will cause clicks in the signal passing through. The range is 0 to 360.0 degrees. (In Distort + Rotary only.)

The following parameters relate to rotation speed:

Speed sets the rotating speakers to run at either the slow rate or the fast rate. Brake, when set to "On", slows the rotating speakers to a halt.

Lo Mode, in the "Normal" setting, will give you full control of the low frequency speaker with the Speed parameter. The "NoAccel" setting will hold the low frequency speaker at the slow speed, and the Speed parameter will have no effect on its speed, though Brake will still work. In the "Stopped" position, the low frequency speaker will not spin at all.

Lo Slow and **Hi Slow** are the rotation rates in hertz (Hz) of the speakers when Speed is set to "Slow."

Lo Fast and **Hi Fast** are the rotation rate in hertz (Hz) of the speakers when Speed is set to "Fast." LoSlow>Fst and HiSlow>Fst are the times for the speakers to accelerate from the slow speed to LoFst>Slow and HiFst>Slow are the times for the speaker to decelerate from the fast speed to the slow speed.

LoAccelCrv and **HiAccelCrv** are the shapes of the acceleration curves for the speakers. 0% is a constant acceleration. Positive values cause the speaker to speed up slowly at first then quickly reach the fast rate. Negative values cause a quick initial speed-up then slowly settle in to the fast speed. If set to a low negative value, it will overshoot.

LoSpinDir and **HiSpinDir** are the directions of rotation of the speakers. The choice is clockwise (CW) or counter-clockwise (CCW).

Vibrato/Chorus

The Vibrato/Chorus effect simulates the vibrato and chorus effects on a tone wheel organ, and is used in conjunction with the Rotary Speaker. It has several unique parameters:

VibChInOut is an in/out switch for the Vibrato/Chorus effect.

Vib/Chor is the type of Vibrato/Chorus effect to be used. The choices are from three vibratos, "V1", "V2", "V3", or three choruses, "C1", "C2", "C3."

Tremolo and AutoPan

Tremolo is amplitude modulation using an LFO. AutoPan moves the signal between the left and right channels, using an LFO. They have several parameters in common and several unique ones.

LFO Rate is the rate of the LFO. The range is 0 to 10.00 Hz, or 0 to 12.00 x the tempo.

Rate Scale multiplies the speed of the LFO rate into the audio range. The range is 1 to 25088 x. When above 16x, the values increment in semitone steps. When the LFO Rate is set to 1.00 Hz, the value of this parameter is equal to the LFO frequency in Hertz.

LFO Shape is the waveform type for the LFO. Choices are Sine, Saw+, Saw-, Pulse, and Tri.

LFO PlsWid or Pulse Width. When the LFO Shape is set to Pulse, this sets the pulse width as a percentage of the waveform period. When the width is set to 50%, the result is a square wave. This parameter has no effect if other waveform types are chosen. Range is 0 to 100%.

AutoPan

Origin determines the axis for the panning motion. At 0%, the panning is centered between the speakers. Positive values shift the axis to the right, while negative values shift it to the left. At -100% or +100% (the range limits), there is no panning action.

ImageWidth is the width of the original input program material before it is auto-panned. At 0% (minimum), the input image is shrunk to a single point source, allowing maximum panning excursion. At 100% (maximum), the original width is maintained so no panning can occur.

Pan Width controls the amount of pan excursion. It is the percentage of total panning motion available after Origin and ImageWidth are set. Range is 0 to 100%.

CentrAtten (Attenuation) is the amount the signal level drops as it is panned through the center of the stereo image. For the smoothest tracking, a widely accepted subjective reference is -3dB. Values above -3dB will cause somewhat of a bump in level as an image passes through the center, while values below -3dB will cause a dip. Range is -12 to 0 dB.

Tremolo

Depth controls the amount of attenuation applied when the LFO is at its deepest excursion point. Range is 0 to 100%.

LFO Phase shifts the phase of the tremolo LFO relative to the beat reference. Range is 0.0 to 360.0 degrees.

50% Weight is the relative amount of attenuation added when the LFO is at the -6dB point. This causes the LFO shape to bow up (positive values) or down (negative values). Range is -16 to 3 dB.

L/R Phase sets the phase relationship of the channels. "In" flips the left channel's LFO out of phase, with the result that the effect turns into an auto-balancer. "Out" leaves the left LFO alone.

Pitcher

Pitcher applies a filter to the input signal which has a series of peaks in the frequency response.

These peaks are normally adjusted so that their frequencies are all multiples of a specific, selectable frequency, which imposes a strong sense of pitch at the selected fundamental frequency.

Pitch. The fundamental pitch imposed upon the input, in MIDI note numbers from C-1 to G9. Ptch Offst is an offset from the pitch frequency in semitones, from -12.0 to 12.0. It can be useful to assign pitch bend, a ribbon, or another continuous controller to this parameter through a MOD.

Odd Wts, **Pair Wts**, **Quartr Wts**, **Half Wts** are parameters that control the shape of the frequency response of Pitcher. An exact description of what each one does is, unfortunately, impossible, since there is a great deal of interaction between them. For more information and examples, see the KSP8 Algorithm Reference Guide available as a free download at www. kurzweil.com.

Ring Modulation

Ring modulation multiplies two signals (the "carrier" and the "modulator") together to produce unusual, often non-harmonic, overtones. The Ring Modulator effect in the Forte has two modes: "**L*R**" in which two mono signals are modulated together; and "**Osc**", in which the input is stereo, and it is modulated with the sum of five waveforms that are generated from oscillators within the effect itself. Four of these oscillators are sine waves, while one (Oscillator 1) offers a selection of waveforms.

Wet/Dry. When the effect is in "L*R" mode, this controls how much of the left signal only is passed dry (the right signal isn't passed dry at all).

Mod Mode selects between the two modes, L*R or Osc.

Osc1 Lvl is the level of Oscillator 1, from 0 to 100%.

Osc1 Freq is the frequency of Oscillator 1, from 16 to 25088 Hz.

Osc1 Shape is the waveshape of Oscillator 1, selectable from Sine, Saw+, Saw-, Pulse, and Tri.

Osc1PlsWid (Pulse Width). When Osc1 Shape is set to Pulse, this sets the pulse width as a percentage of the waveform period. When the width is set to 50%, the result is a square wave. This parameter has no effect if other waveform types are chosen. Range is 0 to 100%.

Osc1Smooth smooths (removes the higher harmonics from) the Saw+, Saw-, and Pulse waveforms. A Sawtooth wave becomes more like a triangle wave, and a Pulse wave becomes more like a sine wave. Range is 0 to 100%.

The other four oscillators, **Sine2** through **Sine5**, each have **Lvl** and **Freq** controls.

Stereo Simulation

The Mono to Stereo effect converts a monaural input to simulated stereo output.

In Select selects the input signal to be "stereo-ized." It can be Left, Right, or both: (L+R)/2. CenterGain is the level of the summed left and right channels. Range is Off/-79.0 to 24.0 dB.

Diff Gain is the level of the difference signal produced, which is the spatial component of the stereo signal. Range is Off/-79.0 to 24.0 dB.

DiffBassG controls the gain of a bass-shelf filter on the difference signal. By boosting the low frequency components of the difference signal, you can increase the sense of acoustic envelopment. Range is -79.0 to 24.0 dB.

DiffBassF is the transition frequency for the bass-shelf frequency. Range is 16 to 25088 Hz.

The processed signal is split into three frequency bands—Lo, Mid, and High—each of which can be delayed and panned separately.

Crossover1 and **2** are the two Crossover frequencies at which the band-split filters split the signal into three bands. The two parameters are interchangeable: either may have a higher frequency than the other. Range is 16 to 25088 Hz.

Pan [*High/Mid/Low*] sets the pan position for each band. Range is -100% (fully left) to 100% (fully right.)

Delay [*High/Mid/Low*] sets the delay for each band. Range is 0 to 1000 ms.

Stereo Image

This effect provides enhancement for a stereo signal. It also features a stereo correlation meter. It uses some parameters from **Mono to Stereo** and some from **Stereo Analyze** (following).

The Keymap Editor

Chapter 9
Keymap and Sample Editing

The Keymap Editor

The Keymap Editor lets you customize the Forte's factory preset keymaps and save them to RAM. You can also build your own keymaps from scratch (see Building a Keymap).

Keymaps are an integral part of every layer of a program. Each keymap contains a set of parameters determining which sample(s) the Forte will play when you trigger a note. Each layer has at least one keymap, but it can have two keymaps when you're working with stereo samples. Each of these stereo keymaps uses two of the 128 available voices.

Each keymap consists of a set of key (note) ranges—C 4 to G 4, for example. The entire span of each keymap is from C 0 to G 10. Each range has a sample root assigned within the range. Each sample root is a distinct ROM or RAM sample. Within each key range, the sample root is transposed up and down to play on each of the range's notes. You can view each range by changing the value of the Key Range parameter on the Keymap-editor page. You can mix samples of different timbres within a single keymap, and even tune individual keys to any pitch by defining key ranges to single notes and assigning samples to each of those notes.

When you trigger a note, the Forte identifies the key range where the Note On event occurred. It also checks the attack velocity value of the note. It then addresses its memory, and retrieves the sample root that's assigned to that key range and attack velocity value. If the note that's triggered is not the note where the sample root is assigned, the sample is transposed to play at the correct pitch. The Forte then generates the digital signal that represents the sound of the note. At this point the keymap's job is done, and the signal proceeds through the layer's algorithm and on to the audio outputs.

You can assign as many key ranges to a keymap as you like, even creating a separate range for each note. This would allow you to tune each key independently, to create microtonal tunings. For keymaps that use a single timbre, like the Grand Piano, there's a key range for each sample root stored in memory. For acoustic instrumental sounds, the more key ranges you have for a keymap, the more realistic the sound will be, since there will be less pitch shifting of the sample root within the key range.

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Of course, you can assign sample roots with different timbres within the same keymap. Many of the drum kit keymaps in ROM, for example, have about 20 key ranges, with several different timbres assigned as the sample roots. You can also create a keymap with a single key range that spans from C 0 to G 10, if you want to stretch a single sample root from C 0 to G 10. Keep in mind, however, that samples can only be transposed upward by an octave from the sample's original pitch. Samples can be transposed downward without limit.

Think of a keymap as if it were a single piece of string, divided into different sections that adjoin one another. Sections cannot overlap. If you have one range that goes from C4 to F4 and another that goes from F#4 to C5, then if you change the first range to be C4 to G4, the second one will change to be G#4 to C5.

Also, you can't have "nothing" assigned to a key range. Even if it is Silence (#999), there will always be a sample assigned to every range in the keymap. This is something to watch out for when creating drum programs. For example, let's say you are creating a program with 20 layers. Each layer has its own keymap, which has just one sample assigned to part of the keyboard with the rest of the key range assigned to Silence. Make sure that you limit the note range of each layer using the LoKey and HiKey parameters on the LAYER page in the Program Editor. If each layer covers the entire range, then each note you played would trigger 20 voices (one for each layer). You would only hear one drum per note because all the other layers are triggering "Silence." Because of the voice-stealing algorithms in the Forte, the voices would almost immediately become available again, since they have no amplitude. But for one brief instant, the voice would be triggered, which could cause other voices to be cut off.

You can also create multi-velocity keymaps—that is, keymaps that will play different timbres depending on the attack velocities of your Note On events. For example, Keymap 7 Piano 3Vel L has 3 velocity ranges. Each key range in a multi-velocity keymap contains two or more distinct sample roots that the Forte chooses between, according to the attack velocity of the note. See Velocity Range (VelRange).

The Keymap Editor is nested within the Program Editor. The first step in using the Keymap Editor is to select the keymap you want to edit. This is done on the KEYMAP page in the Program Editor, using the Keymap parameter. Once you've done this, just press the **Favorite1** button, and you'll enter the Keymap Editor.
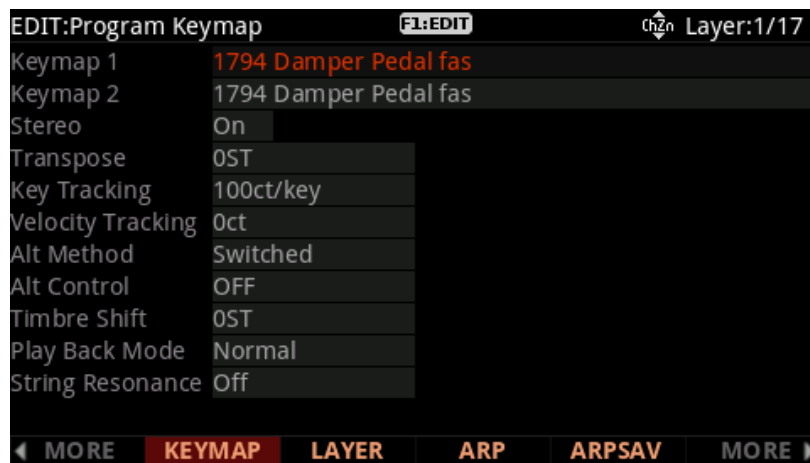
If you want to edit a different keymap, press the Exit button to return to the KEYMAP page in the Program Editor and select the desired keymap. If you want to build a keymap from scratch, start with the keymap **999 Silence** (Building a Keymap). This keymap template contains one key range from C 0 to G 10, and is a convenient starting point for adding key ranges and assigning sample roots.

The Keymap-editor page looks like this:
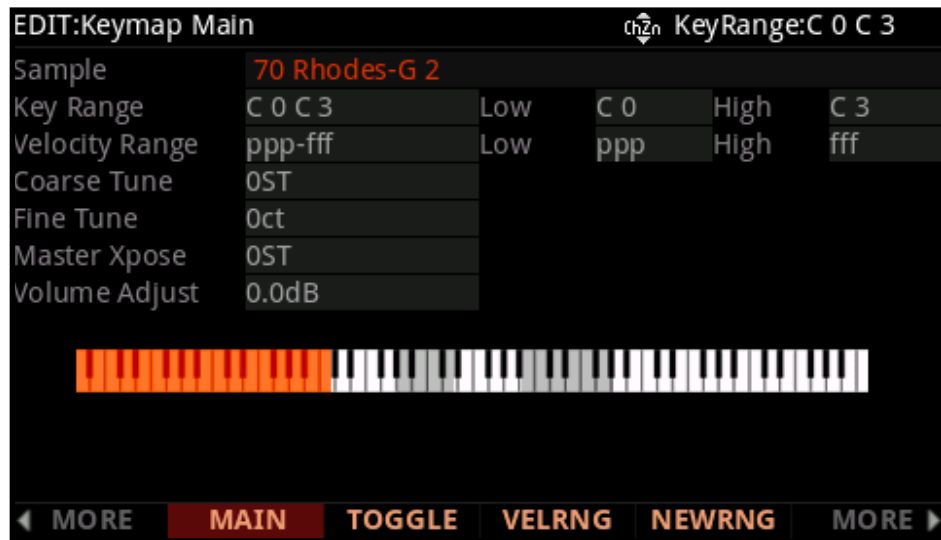
Parameter	Range of Values
Sample	Sample Root list
Key Range	Variable from C0-G10
Low Key	C 0 to G 10
High Key	C 0 to G 10
Velocity Range (VelRange)	Variable from ppp-fff
Low Velocity (Lo)	ppp-fff
High Velocity (Hi)	ppp-fff
Coarse Tune	–128 to 127 semitones
Fine Tune	-49 to 50 cents
Master Transpose	-126 ST to127 semitones
Volume Adjust	± 24 dB

Keymap Editor Parameters

Sample

This is where you assign a sample root to the current key range. Depending on the nature of the sample root—an individual sample or a block of sample roots—the sample's name looks a bit different in the display. Each sample's name consists of three parts: a numeral, a name, and a note number—for example, **999 Silence-C4**. Additionally, the name of stereo samples will end with an **S**. (To use a stereo sample, the Stereo parameter must be set to **On** in the Program Editor, and two keymaps must be selected.)

The numeral is the sample block ID. If the sample object is an individual sample, the sample block ID is the same as the sample's object ID. If the sample object is a group of sample roots, the object ID of the first root in the group determines the sample block ID. The remaining roots in the block have the same ID, and differ only in their note numbers.

Next comes the name of the sample, which typically describes the sample's timbre. The final part of the sample's name refers to the pitch at which it was originally sampled. For many timbres, multiple samples are made at various pitches. As you scroll through the Sample list, you'll see only the pitch of the sample change until you reach the next sample block. The sample's original pitch is set in the Sample Editor (see Root Key). This determines which key will play the sample at its original pitch when a sample is used in a key range (see Key Range below).

Key Range

A keyrange is a range of keyboard keys that plays one sample (per velocity range, see Velocity Range (VelRange) below for details). Each sample in a key range (per velocity range) is transposed based on each sample's RootKey parameter so that it plays at the correct pitch on the keyboard relative to its root key (see Editing Samples for details on the RootKey parameter). Other keys within the key range transpose the sample chromatically relative to the root key. Sample pitch relative to the root key can also be offset using the Coarse Tune and Fine Tune parameters, see below).

The **KeyRange** parameter shows you which key range you're currently viewing or editing (key ranges are named by their lowest and highest notes). Changing the value of the **KeyRange** parameter selects from the available key ranges, and allows you to view or edit the sample assignment and other parameters of the selected key range. When the Key Range parameter is selected, you can also scroll through available key ranges using the Alpha Wheel or the Previous-/Next+ buttons. Multiple key ranges are only shown if the current Keymap uses more than one key range. If the top line of the Edit Keymap page displays KeyRange, you can scroll through the available key ranges with any parameter on the page selected using the **Channel/Zone** buttons. (Press the TOGGLE soft button to toggle the top line between displaying KeyRange and VelRange.)

With the Keyrange parameter selected, keyranges can also be selected by holding the **Enter** button and playing a key. The keyrange assigned to that key will be selected.

Low Key (Lo), High Key (Hi)

With these parameters you can use any of the data entry methods to change the low and high notes of the current key range. You can extend a key range to the full capacity of the Forte (C 0 to G 10). If you extend the current key range into another, the boundaries of the other key range will become shortened to accommodate the key range you are extending. If the keyrange you are extending covers another keyrange, the other key range will be deleted.

The setting for the low key cannot be higher than the setting for the high key. Similarly, the setting for the high key cannot be lower than the setting for the low key.

Velocity Range (VelRange)

This parameter shows the keyboard velocity range (in dynamic levels) that will trigger a sample for the current KeyRange. In a key range with more than one velocity range, each velocity range can use a different sample, as well as different CoarseTune, FineTune, and VolumeAdjust settings. Velocity ranges are intended for use with instrument samples recorded at different velocities. This helps to make playing sampled instruments sound more realistic. Sample volumes are also scaled based on keyboard velocity within each velocity range. Velocity ranges for the current Keymap are set using the VELRNG soft button(see Velocity Ranges (VelRng) or the Low Velocity (Lo), High Velocity (Hi) parameters below). All keyranges in a Keymap share the same set of velocity ranges. Up to eight velocity ranges can be used.

When the VelRange parameter is selected, you can scroll through available velocity ranges using the Alpha Wheel or the **Previous-/Next+** buttons. Multiple velocity ranges are only shown if the current Keymap uses more than one velocity range. If the top line of the Edit Keymap page displays VelRange, you can scroll through the available velocity ranges with any parameter on the page selected using the **Channel/Zone** buttons. (Press the TOGGLE soft button to toggle the top line between displaying VelRange and KeyRange).

Low Velocity (Lo), High Velocity (Hi)

Use these parameters to set the velocity range of the current key range. If you extend the current velocity range into another, the boundaries of the other velocity range will become shortened to accommodate the velocity range you are extending. If the velocity range you are extending covers another velocity range, the other velocity range will be deleted.

Coarse Tune

Coarse Tune allows you to transpose a sample for a given range. This is extremely useful when you have set the Root key of the sample for one note but want to assign the sample to a different part of the keyboard and still be able to play it without transposition (see Root Key for details). For example, if you originally set the Root key at C4 but want the sample assigned to C3, you would set Coarse Tune to 12ST, transposing it up one octave. Now the original pitch will play at C3, one octave down. If you examine the drum and percussion kit keymaps in ROM, you will see that we have done this. Most of our ROM drum samples have the Root key set at C4.

There's a short cut for adjusting the Coarse Tune automatically so that the sample plays with minimal transposition in the assigned key range. See Special Double Button Presses in the Keymap Editor.

Fine Tune

This gives you further pitch control. Once the sample's pitch is close to the desired note, use the Fine tune to sharpen or flatten it as much as a half-semitone.

Master Transpose (MasterXpose)

This parameter does not really pertain to the keymap itself. Instead it is identical to the Transpose amount set with the cheek block **Transpose** buttons or OCTAV-/OCTAV+ soft buttons on the Program and Multi mode select pages. If you change the transpose value here, the same value will be reflected by the **Transpose** button LEDs as well as in the top bar of the Program and Multi mode select pages, and vice versa. It transposes the entire instrument globally. The MasterXpose parameter allows you to easily see the transpose value while in the keymap editor. It is also useful for assigning samples across the entire keyboard when using a keyboard that has fewer than 88 notes.

Volume Adjust

Here you can adjust the volume of the notes in the current key range. This enables you to make each key range play at the same volume even if the samples in the various ranges were recorded at different volumes.

The Soft Buttons in the Keymap editor

Toggle

Pressing the TOGGLE soft button switches the function that the **Channel/Zone** buttons perform while on the Edit Keymap page. Press the TOGGLE soft button to toggle the top line between displaying **KeyRange** or **VelRange**. If the top line of the page displays **KeyRange**, then the **Channel/Zone** buttons will scroll between the available key ranges in the key map (if the current key map has more than one key range). The note range for each key range will also be displayed on the top line. If the top line of the page displays **VelRange**, then the **Channel/Zone** buttons will scroll between the available velocity ranges in the key map (if the current key map has more than one velocity range). The dynamic range for each velocity range will also be displayed on the top line.

Velocity Ranges (VelRng)

Press the VELRNG soft buttonto view the VEL RANGES page. Use the VEL RANGES page to add, edit or delete velocity ranges for the current keymap. The VEL RANGES page shows a chart of a keymap's entire available dynamic range, from most quiet (ppp) to most loud (fff). Velocity ranges can also be adjusted from the Edit Keymap page, but the VEL RANGES page provides a chart as a visual aid. Each keymap can be split into a maximum of eight velocity ranges. Each key range in a keymap can use its own sample for each velocity range. All key ranges in a keymap share the same velocity ranges.

Press the **Split** soft button to split the currently selected velocity range into two ranges (until the maximum of eight velocity ranges have been created). Press the **Delete** soft button to delete the currently selected velocity range. Press the **Exit** soft button to return to the Edit Keymap page.

On the VEL RANGES page, the currently selected velocity range is highlighted in the chart, and its name is displayed in the VelRange field. With the VelRange field selected, you can use the Alpha Wheel or Previous-/Next+ buttons to move between the available velocity ranges (if there is more than one velocity range available). You can also use the **Channel/Zone** buttons at any time to move between the available velocity ranges. If there is more than one velocity range available, you can adjust the dynamic range of each using Lo and Hi parameters. These Hi and Lo parameters are the same as the Low Velocity (Lo) and High Velocity (Hi) parameters on the Edit Keymap page (see Low Velocity (Lo), High Velocity (Hi) for details). Changes made with either set of parameters are shown on both pages.

New Range (NewRng)

The NEWRNG soft button lets you define a new keyrange to edit, whether it's to assign a different sample, or to adjust the pitch or volume. Just press NEWRNG, then play the note you want as the low note, then the high note. The Forte will prompt you for each note. When you trigger the high note, you'll return to the Keymap-editor page, and the new keyrange you defined will be selected. The next change you make will affect only that edit range.

If you set a new keyrange that's completely within an existing key range, the existing key range will be split into two keyranges, with the new keyrange between the two. At this point, you must change at least one parameter of the new keyrange before editing a different keyrange, otherwise the new keyrange will be merged with the adjacent keyranges. If you set a new keyrange that overlaps part or all of another key range, the sample assigned to the lower key range will be applied to the new keyrange. Again, at this point you must change at least one parameter of the new keyrange before editing a different keyrange, otherwise the new keyrange will be merged with the lower keyrange that it overlapped.

Assign

The ASSIGN soft button lets you select a sample, then specify the key range to which it's assigned. This enables you to insert a new key range within the current keymap. When you press the ASSIGN soft button, a dialog appears that prompts you to select a sample from the Samples list. Scroll through the list, then press the OK soft button. You'll then be prompted

to define the new key range by playing the notes you want to be the lowest and highest notes of the range. (Press the **Cancel** soft button if you change your mind.) When you trigger the low and high notes, the new key range is inserted. If the new key range partially overlaps an adjacent key range, the existing key range will be adjusted to accommodate the new range. If the new key range completely overlaps an existing key range, the original key range will be replaced.

Saving Changes to a Keymap

When you hit the Exit button from the Keymap Main page, a page will come up with option to rename, save or cancel your changes.

Rename

Call up the page that enables you to change the name of the current keymap.

Save Yes/No

Start the process of saving the current keymap, or return to the Keymap page

Cancel

Cancel the changes and return to the Keymap Main editor page.

Special Double Button Presses in the Keymap Editor

Suppose you have a sample whose root key is C 4, and you want to assign it to A 0, because you don't expect to play it often. If you want it to play back without transposition, you'll have to adjust the Coarse Tune parameter. Calculating the right value for Coarse Tune can get tedious if you're assigning a large number of samples. Fortunately, there's a short cut.

1. Assign a sample root to a key range, either using the Lo, Hi, and Sample parameters or using the ASSIGN soft button.

2. Highlight the value of the Coarse Tune parameter.

3. Press the **Previous-/Next+** buttons at the same time. The value of Coarse Tune changes automatically. If the sample is assigned to one note, the Forte sets Coarse Tune so that the note plays the sample without transposition. If the sample is assigned to a range of notes, the Forte sets Coarse Tune so that the middle note of the range plays the sample without transposition.

Building a Keymap

Read below for detailed directions on manually creating and editing a keymap. To build a keymap, start in Program Mode and select program **999 Clear Program**. Then go to Program Edit Mode by pressing the **EDIT** soft button. Next press the **KEYMAP** soft button, and the KEYMAP page will appear. The Keymap parameter **999 Silence** will be automatically selected. This makes it easier to recognize the key ranges that have samples assigned to them when you start assigning samples. You can actually choose any program or keymap you want to start with, but by choosing these, you are starting with a "blank slate."

With the Keymap parameter still selected, press the **Favorite1** button, and you'll enter the Keymap Editor. The Key Range parameter will be automatically selected, and you see its values: C 0 to G 10 (the entire MIDI keyboard range). The Sample parameter will have a value of **999 Silence-C 4**.

Now you're ready to start assigning samples to key ranges within the keymap. We'll assume that you've loaded samples with roots at C 1, C 2, C 3, etc. and that you plan to assign a root to each octave. To begin, press the ASSIGN soft button. The display will prompt you to select a sample. Use the Alpha Wheel to scroll to one of your samples, or type its ID on the alphanumeric pad and press **Enter**. When you've found the sample you want to use, press the OK soft button. The display will say "Strike low key…" Trigger A 0 (MIDI note number 21, the lowest A on a standard 88-note keyboard). The display will change to say "Strike High Key…"Now trigger F 1 (MIDI note number 29). The display will return to the Keymap-editor page. The Key Range parameter will show A 0–F 1, and the Sample parameter will show the sample you selected when you started the range assignment.

Each sample in a key range is automatically transposed based on each sample's RootKey parameter so that it plays at the correct pitch on the keyboard relative to its root key (see [Editing Samples](#) for details on the RootKey parameter). Other keys within the key range transpose the sample chromatically relative to the root key. Automatic transposition based on each sample's RootKey is important if you want your sample to play in tune with other Forte programs or other instruments. The Forte makes this easy if your samples have the correct RootKey settings (as the Forte's factory samples do). Generally you should set a keyrange so that the sample's RootKey (displayed at the end of the sample name) is in the middle of the range. If you set a key range that does not cover the sample's RootKey, the sample will have to automatically transpose by many semitones, and will likely not sound correct. Samples are also limited to an octave of upward transposition from the sample's original pitch. If you set a keyrange too high based on the Root Key, some samples may not be able to transpose upward far enough to play in tune, and many keys may play the same note (the highest note that the sample can be transposed to). Automatic transposition relative to the root key can be offset using the Coarse Tune and Fine Tune parameters on the Edit Keymap page (see [Coarse Tune](#) and [Fine Tune on page 9-6](#)).

Continuing with the example, press the ASSIGN soft button again. Select another sample root at the prompt, and press the OK soft button. Now trigger F# 1 for the Low Key prompt, and F 2 for the High Key prompt. At this point you've defined two key ranges, the first from A 0 to F 1, and the second from F# 1 to F 2. You can repeat the process as many times as you want, creating a new key range each time.

Once you have your samples assigned, you may need to transpose them so that they play back at the correct pitch within the range you have chosen. To do this, highlight the Key Range parameter, scroll to the range you need, then highlight the Coarse Tune parameter. Adjust Coarse Tune to bring the sample to the proper pitch within that key range. Then scroll back up to the Key Range parameter, select the next range, and continue as needed.

Here's a fairly important point that may or may not affect your keymap construction. Suppose you want to build a keymap that uses the same sample in several adjacent key ranges, and you plan to add a bit of detuning to the samples in each range. You might think that you could build the keymap first, then go into the Sample Editor and tweak the sample settings of each keyrange when the keymap is finished. Yes, but…

Suppose you used the technique we described above to assign a vocal sample whose root was C 4 to a key range from A 3 to E 4. Then you assigned the same sample to a key range from F 4 to B 4. You might be surprised to find that when you finished the F 4–B 4 key range and the Keymap-editor page reappeared, the current key range would not be F 4 to B 4, but A 3 to B 4! This is because the Forte automatically merges adjacent key ranges that are identical (this is done to save memory). Therefore, some parameter must be different in each adjacent key range you create if you want to build keymaps using the technique we just described. So if you want to use the same samples in adjacent key ranges with, for example, minor pitch or volume modification, you should make those changes to the current sample on the Keymap-editor page *before* assigning the next range.

Editing Samples

To enter the Sample Editor, first select the program you wish to edit in Program mode. With the program selected, press the EDIT soft button to enter the Program Editor. In the program editor the KEYMAP page will be selected (if not press the KEYMAP soft button). With the KeyMap parameter selected on the KEYMAP page, press the **Favorite1** button again to enter the Keymap Editor. On the Edit Keymap page, select the KeyRange parameter and use the Alpha Wheel or **Previous-/Next+** buttons to choose one of the available key ranges (if there is more than one keyrange). You can edit the existing sample of a keyrange, or choose a new sample for the keyrange and edit that. When the Keymap parameter is selected you can hold the **Enter** button and trigger notes to select different key ranges.

If you want to select a different sample, use the cursor buttons to select the Sample parameter. Use the Alpha Wheel to select a sample. Press the **Favorite1** button once more, and you'll enter the Sample Editor. The sample will play through the effects of the current program. The name of stereo samples end with an **S**. To use a stereo sample, the Stereo parameter must be set to On in the Program Editor, and two keymaps must be selected, see The KEYMAP Page on page 7-23.

The Sample Edit Main Page

On the Sample Main page, you'll set several parameters that affect the behavior of the current sample. These parameters affect the entire sample. The right side of the top line displays the root number and RootKey of the sample. For stereo samples, **L** or **R** is displayed after the Root# parameter to indicate that you are viewing parameters for the left or right channel of the sample. Use the **Channel/Zone** buttons to move between channels of stereo samples. Although you can edit parameters for the left and right channels of a sample, both channels can only be heard if the Stereo parameter is set to On in the Program Editor, and the same keymap is selected for the Keymap1 and Keymap2 parameters in the Program Editor. If the Stereo parameter is set to Off in the Program Editor, only the left channel of stereo samples will be heard in mono. If the sample is part of a group of sample roots, you can also use the **Channel/Zone** buttons to scroll through each sample in the group. A representative page is shown below:

EDIT:Sample Main		Root#:1 (G 2)	
Root Key	G 2	Loop Switch	On
Pitch Adjust	0ct	PlayBack	Normal
Volume Adjust	-8.5dB	Alt Sense	Normal
Alt Vol Adjust	-16.0dB	Ignore Release	Off
Decay Rate	4dB/s	Sample Rate	19959Hz
Release Rate	499dB/s	Number Samples	90Ks
Start Sample	0	Alt Start Sample	9953
Loop Sample	89842	End Sample	90046

MAIN

Parameter	Range of Values
Root Key Number	C -1 to G 9
Pitch Adjust	Variable (depends on sample rate)
Volume Adjust	-64.0 to 63.5 dB
Alternative Volume Adjust	-64.0 to 63.5 dB
Decay Rate	0 to 5000 dB per second
Release Rate	0 to 5000 dB per second
Loop Switch	Off, On
Playback Mode	Normal, Reverse, Bidirectional
Alternative Sample Sense	Normal, Reverse
Ignore Release	Off, On

Root Key

The root key represents the keyboard key at which the sample will play back without transposition (that is, at the same pitch as the pitch of the original sample). Use the **Previous-/Next+** buttons or Alpha Wheel to select a RootKey note, or use the alphanumeric pad followed by the **Enter** button to enter a RootKey by MIDI note number.

Pitch Adjust

Use this parameter to change the pitch of the sample relative to the key from which it's played. Setting a value of 100cts, for example, will cause the sample to play back one semitone higher than normal. This parameter is handy for fine tuning samples to each other if they're slightly out of tune.

Volume Adjust

Uniformly boost or cut the amplitude of the entire sample.

Alternative Start Volume Adjust (AltVolAdjust)

This parameter sets the amplitude of the sample when the alternative start is used. See for a discussion.

Decay Rate

This parameter defines how long the sample takes to decay (fade) to zero amplitude (silence). Decay Rate affects each sample individually, and is in effect only when the amplitude envelope for the program (the Mode parameter on the AMPENV page in the Program Editor) is set to Natural. If Mode is User, the settings on the AMPENV page override the setting for DecayRate.

DecayRate takes effect in the loop portion of the sample, after all the attack stages of the amplitude envelope are complete.

Release Rate

The release rate determines how long the sample will take to decay to zero amplitude when the note trigger is released. The higher the value, the faster the release rate. This release affects each sample individually, and is in effect only when the amplitude envelope for the program (the Mode parameter on the AMPENV page in the Program Editor) is set to **Natural**. In this case, the release begins as soon as the note is released. If Mode is **User**, the settings on the AMPENV page override the setting for ReleaseRate.

To create an extended sample loop that will play data after the sample's loop on key-up, set the Alternative Start sample pointer after the sample end pointer, then set a relatively low value for the release rate.

Loop Switch

This parameter activates or deactivates the looping of the currently selected sample. When set to On, the sample will loop according to the settings on the TRIM page. When set to **Off**, the sample will play through to its End point and stop.

Playback Mode (Playback)

This parameter lets you modify the direction in which the sample is played. Set it to a value of Reverse if you want the sample to play from its End point to its Start point. Choose a value of Bidirectional to cause the sample to play from Start to End, then reverse direction and play again from End to Loop and back, repeating until the note trigger is released (this works only when the Loop Switch parameter is set to **On**).

Alternative Sample Sense (AltSense)

This provides a convenient way to activate the alternative start of a sample. When set to Normal, the alternative start will be used when the Alt Switch control is On (this is set on The KEYMAP Page) or when the control source assigned to it is above its midpoint. When set to Reverse, the alternative start will be used when the Alt Switch control is Off, or when the control source assigned to it is below its midpoint.

Ignore Release (IgnRelease)

When set to a value of Off, the sample will release normally when the note trigger is released. When set to On, the note will not release, even when the note trigger is released. This setting should be used only with samples that normally decay to silence; non-decaying samples will play forever at this setting. This parameter is equivalent to the IgnRelease parameter on the LAYER page, but affects only the currently selected sample.

SampleRate and NumSamples

These parameters cannot be edited, but show the sample's sample rate and the sample's length in samples. Samples that are longer than 1 million samples are displayed a 1Ms.

The Sample Trim parameters below let you set the Start, Alternative Start, Loop, and End points of the current sample. The right side of the top line displays the root number of the sample. If the sample is part of a group of sample roots, you can use the **Channel/Zone** buttons to scroll through each sample in the group.

Selecting these parameters and adjusting their values enables you to modify how the sample plays back when notes are triggered. Each of these parameter points are expressed in individual samples. For example, a one second sample at a sample rate of 44,100Hz would have 44,100 values available to adjust for each of these parameters.

Start

The Start point determines the beginning of the current sample. You can truncate the beginning of the sample by increasing the value of the Start parameter. You might do this to remove silence at the beginning of a sample, or to remove some or all of the attack. You can't decrease the Start point of samples below zero.

Alternative Start

The Alternative Start parameter lets you set a second, optional start or end point for the current sample. The Alternative Start will be used when the Alt Switch parameter on the KEYMAP page is set to On, or when it's set to a specific control source and that control source is generating a value of more than +.5. (For example, if you assign MWheel as the control source for the Alt Switch parameter, the Alternative Start will be used when the Mod Wheel—or whatever control source you have set to send MWheel—is above its halfway point.) The Alternative Start can be set before, after, or at the same point as the Start or End.

If you set the Alternative Start after the End, you can extend the play of looped samples. Normally, looped samples will play through to the End, then will loop back to the Loop point, and continue looping like this until the note is released, when they go into their normal release. If the Alternative Start is set after the End, looped samples will loop in the same way while notes are sustained. As soon as you release the notes, however, the samples will play through to the Alternative Start point before going into release.

Loop

The Loop parameter sets the beginning of the looped portion of the current sample. The Loop can be set at any point before the End, including before the Start and Alternative Start. If you try to move it after the End, the End will move with it.

End

The End parameter sets the point at which the current sample will stop playback. Typically you'll use this parameter to trim unwanted silence off the end of a sample, although you can use it to shorten a sample as much as you want.

Note On Saving Samples: Trimmed portions of a sample are not saved. Trimmed portions before the Start, or Alternative Start points. Trimmed portions of a sample saved to a user ID will be deleted. Trimmed portions before the Start or Alternative Start points (whichever has a lower value) will be lost upon saving to a user ID, and whichever parameter had a lower value will have a value of zero the next time it is loaded (values for all other sample point parameters will be adjusted relatively). Trimmed portions after the Alternative Start or End points (whichever has a higher value) will be lost upon saving to a user ID. The original untrimmed sample is always available by selecting the sample's original factory ID number. Saving trimmed factory samples to user IDs will not change the sound of factory samples, keymaps, or Programs.

Chapter 10
Multi Mode

This chapter will help familiarize you with the features of Multi Mode.

Multis are configurations of 4-16 Zones (explained below in About Multi Mode), each of which may have its own Program, controller assignments, and MIDI transmit channel. A Zone can also be configured to control an external sound module or computer software through a MIDI or USB cable.

About Multi Mode

To enter Multi Mode from another Mode, press the Multi Mode button.

While you are in Multi Mode, the Multi button's indicator LED is illuminated.

When you enter Multi Mode after powering on the Forte, Multi 1 will be selected, or the Multi that was selected the last time Global mode was exited.

Selecting Multis

When you are in Multi Mode, there a few ways to select Multis.

- The Alpha Wheel, Next and Previous buttons and the Cursor buttons allow you to advance through the Multis one at a time.
- Typing in a Multi ID with the keypad function of the Category buttons, followed by pressing the Enter button.
- Pressing the User Button goes to the first saved user Multi.
- If a Multi is assigned to a Favorite Button, pressing that button will go directly to the assigned Multi, changing Modes if necessary.

The Color Display

In Multi Mode, the top line of the display shows the current Mode, MIDI transposition, and MIDI In/Out activity indicators. If Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, the current Favorites Bank number will be shown in the top right corner of the screen.

Soft button options for Multi Edit mode
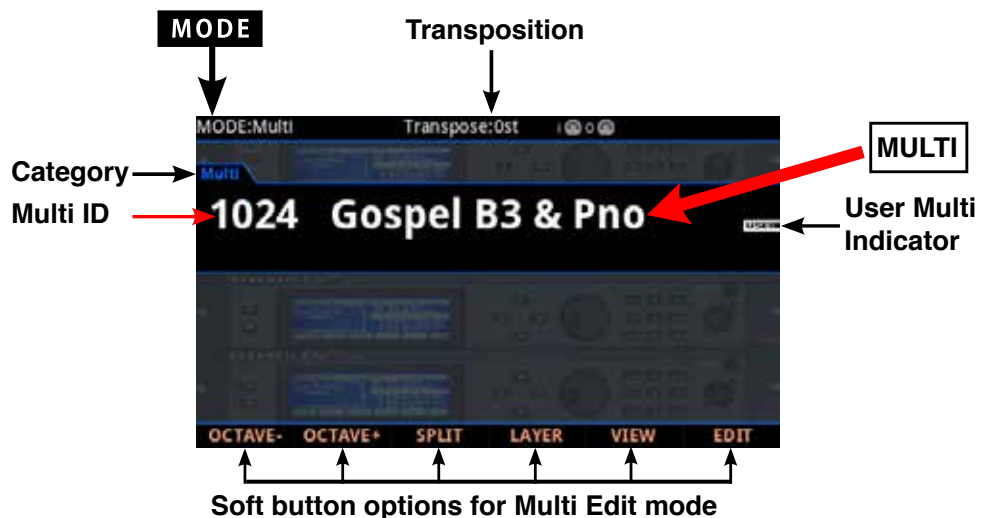
If the currently selected Multi is a User Multi, the "USER" indicator will appear to the right side of the Multi ID number and name.

> **NOTE : The display can be changed to an alternate layout by pressing the "VIEW" soft button, or by changing the "Display" parameter in Global Mode.**

Pop-Up Messages

Some actions cause the display to show pop-up messages. After a short time the display returns to show the current Multi.

MIDI In/Out Activity Indicators

MIDI In/Out activity indicators are displayed at the top of the screen (shown as 2 MIDI port symbols with "I" for "in" and "O" for "out"). These indicators briefly light up when MIDI has been recently sent to or received by the Forte's MIDI/USB ports. If the symbol is green, this indicates there has been MIDI activity on that port in the last few seconds. If the symbol is red, this indicates there has been communication with the external software editor on that port in the last few seconds. If the symbol is grey, this indicates there has been no MIDI activity on that port in the last few seconds.

Alpha Wheel & Previous (–) and Next (+) Value Buttons

Use the Alpha Wheel or the Value buttons (to the right of the display below the Alpha Wheel) to change the current Multi. Turning the Alpha Wheel counter-clockwise or pressing the Previous button will select the previous Multi, and turning the Alpha Wheel clockwise or pressing the Next button will select the next Multi. When the highest or lowest Multi is reached, the list will wrap back to the first or last Multi, respectively.

Value Jump Buttons

In Multi Mode, the Value Jump double button press increments the Multi IDs by 10 with each press. If the currently selected Multi is ID 4, using the Value Jump double button press will select Multi ID 14. If pressed again, Multi ID 24 will be selected, and so on. When the end of the Multi list is reached, a Multi at the beginning of the list will be selected.

The Cursor Buttons

Use the Cursor buttons (to the right of the display) to change the current Multi. The Right and Down arrowed buttons will increment the current Multi, and the Left and Up arrowed buttons will decrement the current Multi.

Category Buttons

In Multi Mode, Multis are not organized by category. Because of this, the Keypad button LED is always lit in Multi Mode, and the category buttons function as a numeric keypad. To select a Multi by ID number, use the keypad function of the Category buttons to type an ID number, followed by pressing the Enter button.

CATEGORY

PIANO	E.PIANO	CLAV	ORGAN
1	2 ABC	3 DEF	SPACE

LEADS	PADS	SYNTHS	SYN BASS
4 GHI	5 JKL	6 MNO	DELETE

STRINGS	BRASS	WINDS	ENSEMBLE
7 PQRS	8 TUV	9 WXYZ	INSERT

GUITAR	BASS	DRUMS	PERC
+/−	0	SYMBOL	

VOICES	MALLETS	HYBRID	MISC
CANCEL			

└ PROGRAM DEMO ┘   └ SONG DEMO ┘

USER

| | | KEYPAD | ENTER |

└ PANIC ┘

Choosing Favorites

You can save ten Favorite Multis (or Programs) from any Category to the ten Favorite Buttons beneath the display. Once saved, these favorite Multis can be recalled from any Mode with a single button press.

To save the currently selected Multi to a Favorite Button, press and hold a Favorite Button until the display shows a message indicating the favorite has been saved.

If a Favorite button has a Program saved to it and is pressed, Forte will leave Multi Mode and enter Program Mode.
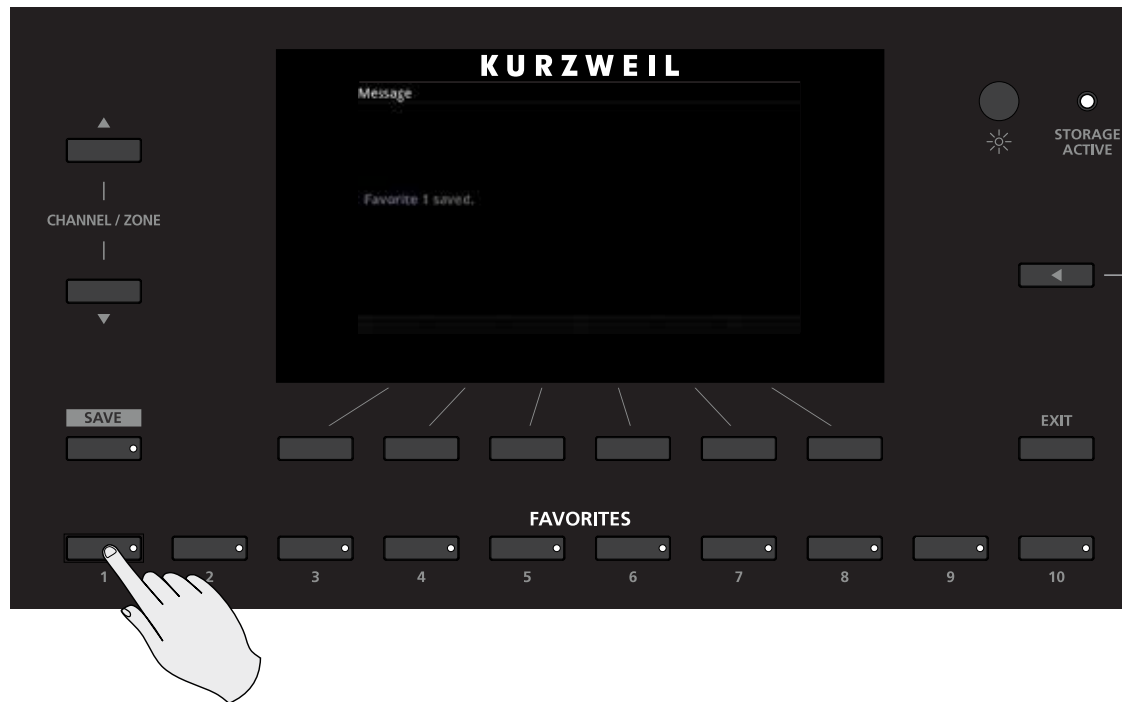
Favorites View and Favorites Banks

To view the names of Programs and Multis stored as Favorites, press the View soft button until you see the Favorites listed at the bottom of the display, or set the Global Mode "Display" parameter to "Favorites." If Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, you can use the Channel/Zone buttons to scroll through 16 banks of 10 Favorites, allowing you to save and access 160 Favorites. When Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, the current Favorites Bank number will be shown in the upper right hand corner of the screen.

About Zones

Zones are the independent regions of the keyboard that make up a Multi.

A Multi has 4-16 Zones, each one having its own Program, controller assignments, and MIDI transmit channel. Zones can be mutually exclusive regions of the keyboard, or they can overlap. A Zone can also be configured to control an external sound module or computer software through a MIDI or USB cable.

Muting Zones

Pressing a Zone button will mute or unmute the Zone.

An active/unmuted Zone button has a lit green LED. The LED of an inactive/muted Zone button is not lit.

Transposition

The Transpose buttons can be used to change the tuning of notes played on the Forte keyboard in semitones (ST), also known as half-steps. This is a convenient way to change the key of a song without learning to play it in a different key. The Transpose buttons are located to the left of the keyboard, above the Pitch and Mod Wheels. The Transpose buttons also transpose MIDI notes sent to the USB and MIDI out ports.

Press the Transpose - or + buttons to transpose the Forte keyboard down or up by one semitone. The top line of the display shows the current transposition value.

Pressing both Transpose - and + simultaneously will reset the transposition to 0.

To transpose up and down by octave intervals (12 ST), press the OCTAVE- and OCTAVE+ soft buttons underneath the display.

Transpose
-/+ 1 semitones

Octave Transpose
-/+ 12 semitones

The maximum transposition value possible is +/–36 semitones.

The LEDs of the Transpose buttons indicate whether the current Multi is transposed up (Transpose + LED is lit) or transposed down (Transpose – LED is lit). When there is no transposition, neither Transpose button is lit.

> **NOTE : Transposition is applied to all Programs in the Zones within the Multi. The Zone layout on the keyboard however still remains fixed.**

Parameter Assignments

In Multi Mode, each Multi has factory-set Program and Effect parameters assigned to physical controllers (Sliders, Switch buttons, Mod Wheel, and Pedals). A parameter assignment can modify an instrument sound during a performance to add variation or expression. Moving a controller changes the value of the parameter. Any time you do this, the display shows the Controller name, assigned parameter, and value.

NOTE : Parameter assignments may not be visible if the VIEW soft button has been pressed, or the "Display" parameter in Global Mode has been changed.

Controller Conventions

In Multi Mode, the Zone Mute Switches above Sliders A through D control the Active/Muted status of Zones 1 through 4. In the Factory Multis, Sliders A through D generally control the volume for Zones 1 through 4. Sliders H and I generally control Delay and Reverb amount. The remaining Sliders and Switches generally control various effects and synthesis parameters.

The Split and Layer Soft Buttons

The soft buttons SPLIT and LAYER perform slightly different functions, but offer identical parameters.

The Split Function allows you to split Programs such that keys in one region of the keyboard produce different sounds than another region. The Layer Function allows you to layer Programs and Multis such that more than one sound can be produced by striking one key.

You do not need to use Multi Edit Mode to configure Zone key ranges, Programs and volumes. Simply hit the soft button while in Multi Mode to select the Function. You can then configure additional Zones, each of which may have its own Program and controller assignments. The result may be saved as a new Multi.

There are five parameters, described below, that determine the behavior of the Split or Layer. Use the cursor buttons to access each of the parameters for each active Zone.

The Split Function
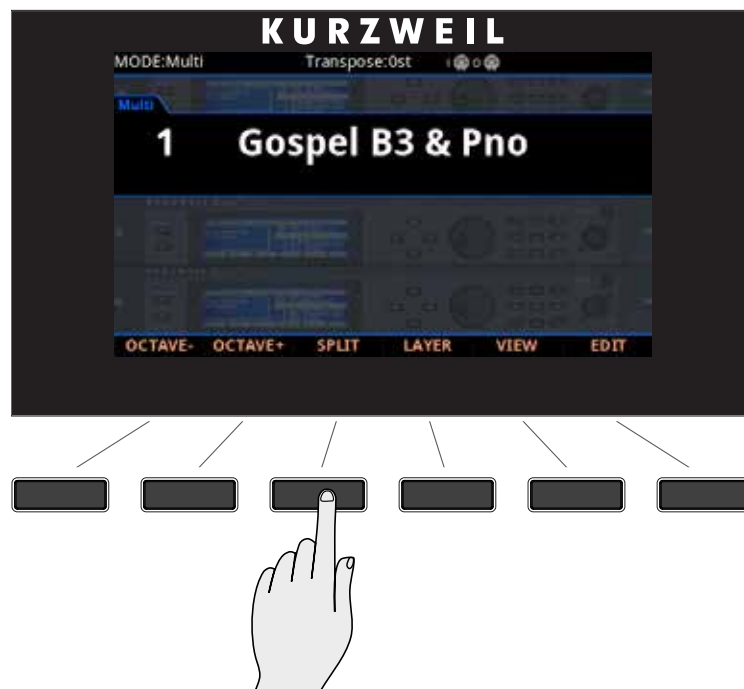
When you create a Split in a Multi, you are in fact activating a new Zone within the current Multi. If the current Multi already has its maximum number of active Zones and you press the Split Function soft button, then a message will appear on the display indicating that you have reached the maximum number of active Zones. Once you have saved your Split, you can continue to add Split or Layer Zones to the Multi until you reach the maximum number of active Zones.

When you press the Split button, and the Forte automatically activates another Zone in the Multi for you. The previously active Zones will keep their previously assigned keyboard ranges. After this you can choose a Program that will be used in the left hand as a Split Program for the newly activated Zone.

The Layer Function
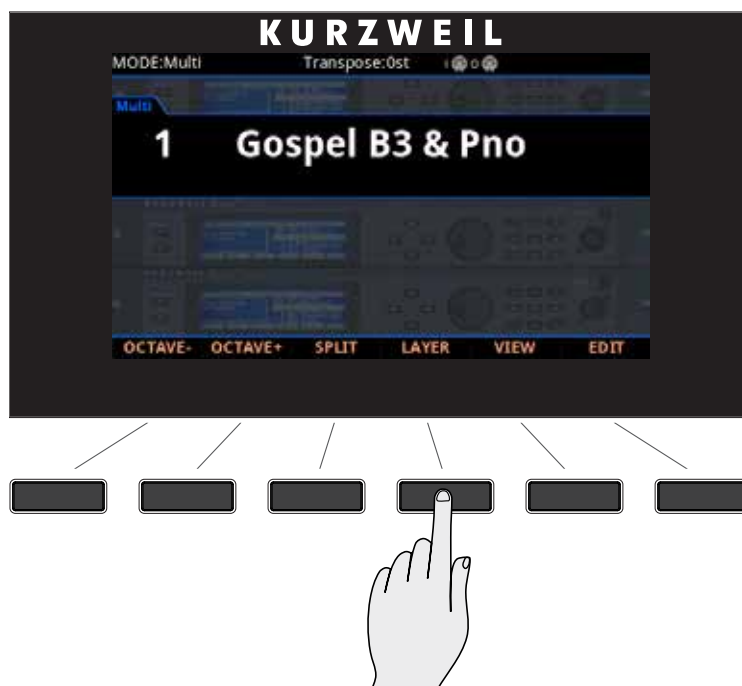
When you create a Layer in a Multi, you are activating a new Zone within the current Multi. If the current Multi already has its maximum number of active Zones and you press the Layer Function soft button, then a message will appear on the display indicating that you have reached the maximum number of active Zones. Once you have saved your Layer, you can continue to add Layer or Split Zones to the Multi until you reach the maximum number of active Zones.

Split and Layer Parameters

Zone Status

Selecting Split or Layer makes a new Zone active. You can continue to add Zones to the Multi by activating additional Zones with the Stat parameter or the front panel Zone buttons. The Forte will display a message if you have already reached the maximum number of active Zones (see About Zones on page 10-6 for more information on Zones).

Program

The Program parameter for the first available Zone determines the Program for the left-hand side of the Split, also known as the "Split Program". This parameter is selected by default when performing the Split function, and the default Split Program (245 Finger Bass) will be selected. Choose a Split Program using the Category buttons, the Alpha Wheel, the Previous/Next buttons, or enable the Keypad button and type an ID number followed by the Enter button.

Volume

To change the volume of a Zone, use the cursor buttons to select the Volume parameter for one of the Zones. To set a volume, use the Alpha Wheel, the Previous/Next buttons, or use the keypad function of the Category buttons to type a volume (0-127) followed by the Enter button.

Key Range

You can adjust the boundary between the left and right hand Programs on the keyboard by adjusting the Key Range low and Key Range high parameters for each Zone. The keyboard display for each Zone shows a visual indication of the Key Range by dimming keys that are outside of the Key Range.

To change the Key Range of a Zone, use the cursor buttons to select the Key Range low or Key Range high parameters for one of the Zones. Key Range low and Key Range high are the left and right parameters, respectively, below the Key Range label. With one of these parameters selected, set the Key Range by using the Alpha Wheel, the Previous/Next buttons, or use the keypad function of the Category buttons to type a key number (0-127) followed by the Enter button. With Key Range low or Key Range high selected, the value can also be changed by holding the Enter button, then pressing the desired key.

Pan

To change the panning of a Zone (left/right stereo placement), use the cursor buttons to select the Pan parameter for one of the Zones. To set a Pan value, use the Alpha Wheel, the Previous/Next buttons, or use the keypad function of the Category buttons to type a pan value (0-127) followed by the Enter button. A value of 0 is full left, 64 is center, and 127 is full right. Other values will move the stereo placement in between these positions. A value

of "None" will use the last pan value used by the Zone's MIDI channel. A value of "None" can be entered by scrolling below 0, or by using the keypad function of the Category buttons to type negative 1 by pressing the +/- button and then the 1 button, followed by the Enter button.

Saving a Split or Layer

After setting the Split parameters, press the Save button to the left of the display to begin the saving process. A Multi name is automatically created using half of the Zone 1 Program name and half of the Zone 2 Program name. This name can be edited during the saving process. See Save User Multis below for details on saving.

Once you have saved your Split or Layer, you can continue to add Zones to the Multi until you reach the maximum number of active Zones. Also, once you have saved your Split, you can use Multi Edit Mode to edit controller assignments (like effects controls and sustain pedal per Zone), transposition per Zone, and other Multi parameters. (See Multi Edit Mode on page 11-1 for details.)

Save User Multis

To save changes to the current User Multi, or to save a changed Factory Multi to a User Category, press the Save button once.
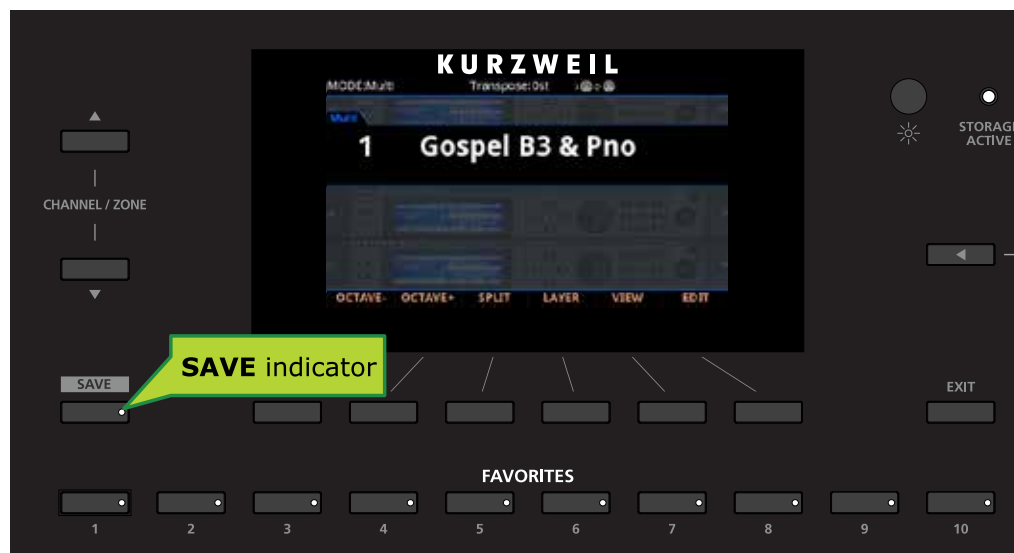
You can save Multis with ID numbers from 1024 to 2047. If you are saving a Multi that has not been previously edited, the next available unused ID number will be selected. If you are saving a previously edited User Multi, the ID number that the Multi was last saved with will be selected. Press the Value Jump double button press (Previous + Next) to toggle between selecting the ID number that the Multi was last saved with and the next available unused ID number. When viewing the Save Dialog, you can quickly save the Multi to the displayed ID number by pressing the Save button again.

Changing ID Numbers

To change the ID number, turn the Alpha Wheel or use the Value buttons to select the new ID number. The label underneath indicates if it is an "Unused ID". You can also use the keypad function of the Category buttons to type an ID number, followed by pressing the Enter button.
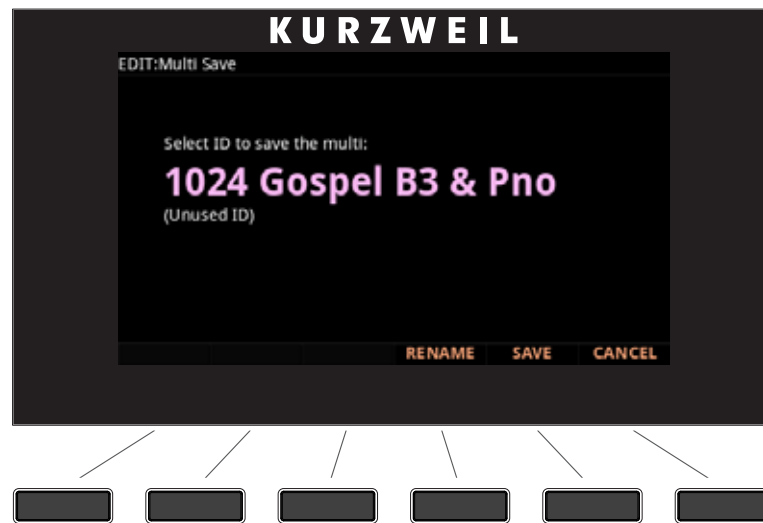
If you select an ID currently in use, the display will indicate if you want to "replace" the Multi currently in that location. The Multi name and ID is indicated.
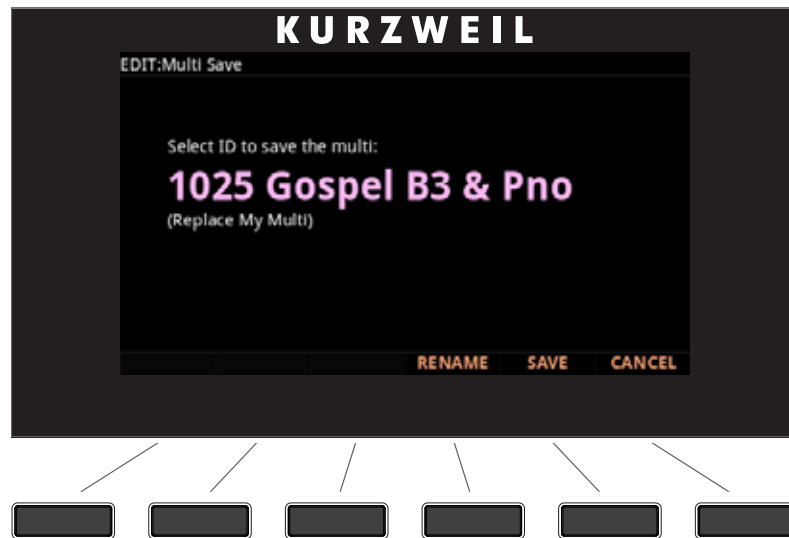
Confirm overwriting of the existing Multi by pressing Save, or choose a different ID.

Naming a User Multi

To rename the Multi, first press the Rename soft button. You will see the naming screen in the display.
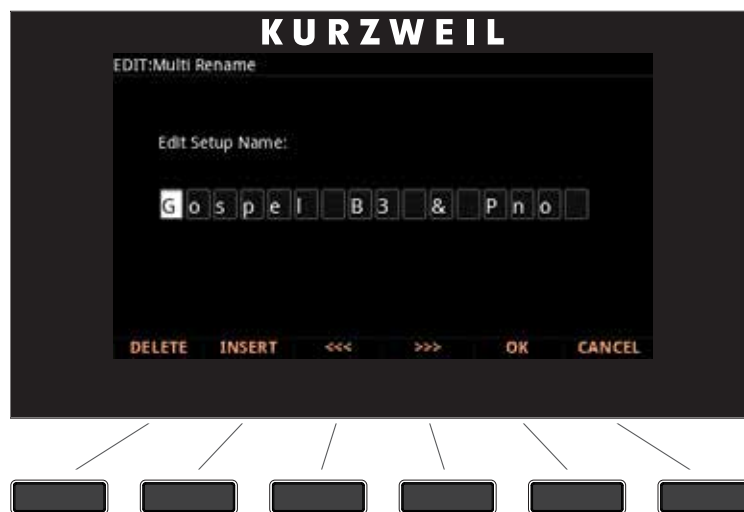
The display shows the current Multi name. Multi names can total 16 characters in length. Use the letters and numbers printed on the Category buttons to enter the new Multi name. Rotating the Alpha Wheel or using the Value buttons can also change the Multi name.

Use the Left/Right cursor buttons or <<< >>> soft buttons to move the cursor. Press the +/- button to switch between upper and lower case characters (all characters will be upper case until you press the +/- button again).

Use the Space button to change the current character to a space, the Insert button to insert a blank space (the selected character and all characters to the right will move one space to the right), and the Delete button to delete the current character (all the characters to the right will move one space to the left).

Saving a User Multi

Press the Save button or Save soft button to complete the saving process, or press the Cancel soft button to exit without saving. After successfully saving, the Multi will be selected in Multi Mode. To find the Multi again later, press the User button and scroll to the Multi ID. You can also type the Multi ID number, then press the Enter button.
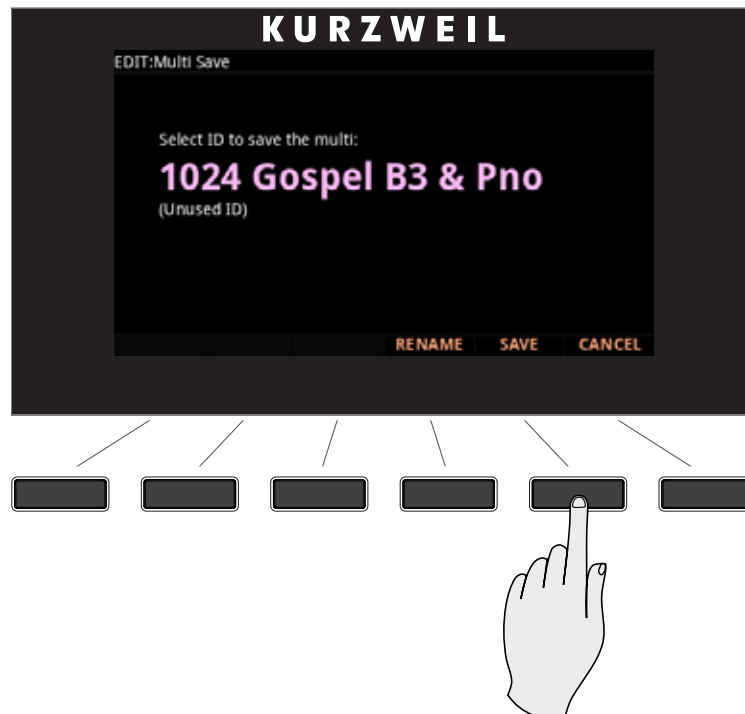
Chapter 11
Multi Edit Mode

About Multi Edit Mode

> NOTE : Before you read this chapter, be sure to read Multi Mode on page 8-1 for a full description of Multis.

Multi Edit Mode allows you to edit and create Multis and gives you access to a Multi's Common parameters and Zone specific parameters. Multis are configurations of 4-16 Zones, each of which may have its own Program, controller assignments, and MIDI transmit channel. A Zone can also be configured to control an external sound module or computer software through a MIDI or USB cable.

In Multi Edit Mode, you can customize the Program, controller assignments, and MIDI transmit channel of the Zones in a Multi, in addition to many other parameters. Any Multi can be edited in Multi Edit Mode and saved to one of the 1024 User IDs.

To enter Multi Edit Mode, first press the Multi Mode button to enter Multi Mode, and then press the EDIT soft button.

Once you are in Multi Edit Mode, press the soft buttons at the bottom of the screen to navigate to each of the Multi Edit Mode pages. See the sections below for details on navigating and changing parameters and Zones. All parameters apply only to the currently selected Zone, except for parameters on the Common Page and certain controller parameters, which apply to all Zones. On the Controls page, if a parameter is selected which applies to all Zones, "All Zones" will be displayed in the top right corner of the display.

User Type: Advanced

This Chapter describes Multi Edit Mode when the Global Mode ""User Type"" parameter is set to "Regular." When User Type is set to Advanced, Multi Edit Mode behaves the same way, except you are able to access up to 16 Zones by using the **Channel/Zone** up/down buttons. On the Multi Edit Overview page, Zones will be shown in groups of 4: 1-4, 5-8, 9-12 and 13-16. When User Type is set to Regular (the default), Multi Edit Mode can access 4 Zones. For both User Type settings, a Multi can have a minimum of 4 Zones.

When User Type is set to Advanced, additional soft buttons appear in Multi Edit Mode. Additional Zone function soft buttons include NEWZN (new Zone), DUPZN (duplicate Zone) which duplicates the currently selected Zone, IMPZN (import Zone) which allows you to import a Zone from any Multi, and DELZN (delete Zone) which will delete the currently selected Zone. New, duplicated or imported Zones are added after the highest numbered Zone of the Multi. A Multi can have a minimum of 4 Zones and a maximum of 16 Zones.

The ARPSAV, DELETE, and HELP soft buttons also appear. ARPSAV allows you to save the arpeggiator settings of the current Zone as an arpeggiator preset. DELETE allows you to delete the current Multi (if it is a User Multi). Press the HELP soft button (or Favorites button 10) to view a list of the secondary functions of the Favorite buttons. When User Type is set to Advanced, the Favorites 1 button allows you to edit the currently selected Program on the Overview page, or the currently select Aux Override Chain on the FX page.

Selecting Parameters

The Display

In Multi Edit Mode, the top line of the display shows the current Mode, Page, and current selected Zone.

MODE   **Current Page**   **Current Zone**

Current Parameter →

EDIT:Multi Main			ChZn Zone:1/4
Transpose	0ST	VelMode	Traditional
Notemap	Linear	VelScale	100%
Destination	USB+MIDI+LOCAL	VelOffset	0
Out	Auto	VelCurve	Linear
Channel	1	LoVel	1
BankMode	Ctl 0/32	HiVel	127
MidiBank	2		
MidiProg	53		
EntryPrgChg	On		
Bend Up ST	2ST	Bend Up CT	0ct
Bend Down ST	2ST	Bend Down CT	0ct

OVERVIEW	MAIN	CONTROLS	ARP	FX	COMMON

Soft button options for Multi Edit mode

Changing Zones

Use the **Channel/Zone** Up and Down buttons to change the currently selected Zone.

The top right corner of the display of the MAIN & CONTROLS pages shows the currently selected Zone out of the total number of Zones, or "All Zones" if the parameter applies to all Zones.

On the Multi Edit Overview page the **Channel/Zone** Up/Down buttons will change Zones in reverse order from how they do on other Multi Edit pages. Pressing Zone Down will select a higher Zone and pressing Zone Up will select a lower Zone. The buttons are reversed on this page so that pressing Zone Up/Down will move you visually up/down on the display. A simultaneous double button press of Zone Up/Down will jump to Zone 1.

Alpha Wheel & Previous (–) and Next (+) Value Buttons

Use the Alpha Wheel or the Value buttons, to the right of the display below the Alpha Wheel, to change the selected parameter value. Turning the Alpha Wheel counter-clockwise or pressing the Previous button will select the previous value and turning the Alpha Wheel clockwise or pressing the Next button will select the next value.

Assign

Assign is the secondary function of the Enter button. You can use the Assign function to quickly select parameters or set values for parameters by holding the Enter button while moving Forte controllers (Sliders, Switch buttons, Keys, Mod Wheel, and Pedals).

ENTER ⟳

Parameters that can use the Assign function are indicated by showing the Assign symbol in the top right corner of the display when selected.

Assign Symbol

Pressing a key, switch, or moving a controller while holding down the Enter button will perform Assign in the following cases.

Enter + Controller

In Multi Edit Mode on the Controls page, when the Controller parameter is selected, holding the Enter button and moving a controller (a Slider, Switch button, Mod Wheel or Pedal) will jump to selecting that controller in the current Zone. This allows you to quickly select a controller.

In a Controller destination field in Multi Edit Mode, Enter + Controller will assign the Destination of the touched controller to the selected controller.

Using Enter + Controller in an OnValue or OffValue field or in an Entry Position or Exit Value field, will set the value of that controller to the field value. For example if you want to set an OnValue to a value of 100, you can hold Enter and move a controller to quickly set OnValue to 100.

Enter + Key

In Multi Edit Mode, on the Overview page, with the Low Key Range or High Key Range parameter selected, hold the Enter button and strike a key to set the Low Key or High Key. This will also work on the Control page with a Switch selected, when Mode = Chord. The value of the Key fields can be set using Enter + Key.

Zone Parameters

Each of the Zones in a Multi has multiple parameters that determine its behavior. Since the Zones of a Multi are independent of each other, changing a parameter for a certain Zone will not affect the parameters of any other Zone. There are some exceptions to this, for example, the parameters on the Common Page are common to all Zones. Also, on the Controllers Page for Switch Controllers, the parameters Type, Entry State, and Exit State are common to all Zones. Lastly, on the Controllers Page for Continuous Controllers, the parameters Entry Position and Exit Value are common to all Zones.

The top right corner of the display of the MAIN & CONTROLS pages shows the currently selected Zone out of the total number of Zones, or "All Zones" if the parameter applies to all Zones.

The Zone parameters for each page are explained in detail below.

OVERVIEW Page

The Overview Page shows four Zones in an easy graphical layout. The current Program, Volume and Panning position of the Zone, along with the state and active keyboard region can be quickly set on this page.
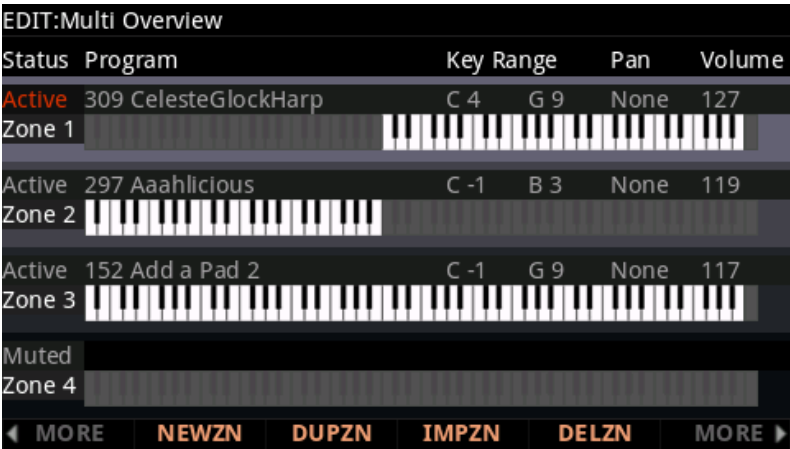
OVERVIEW Page Parameters

Parameter	Range Of Values	Default Value
Status	Active, Muted	Active
Program	Program List	-
Key Range	C-1 to G9	C-1 to G9
Pan	None, 0 to 127	64
Volume	None, 0 to 127	127

Status

The Status parameter determines whether the currently selected Zone is active or muted. You can set this parameter to either of two states: Active or Muted.

Program

The Program parameter determines the Program to be loaded for the currently selected Zone. You can set this parameter to any Forte Program (1 – 2047). The display shows the Program number and name.

The Value Jump double button press (Previous and Next buttons) jumps to selecting the first Program of each Category, as well as the Category Default Program of each Category (if a Category Default Program has been set).

Key Range

The Key Range is made up of two parameters that define the region of the keyboard the Zone is allocated to. The value to the left affects the lowest key, the value to the right the upper key. The keyboard graphic in the Overview page clearly illustrates the Zone's current region

The lowest key determines the lower boundary of the currently selected Zone. You can set this parameter to any note from C-1 to G9. If, for example, you set the lowest key to C4, then only keys at or above C4 will trigger a note for the currently selected Zone. Keys below C4 will not trigger a note.

The highest key parameter determines the higher boundary of the currently selected Zone. You can set this parameter to any note from C-1 to G9. If, for example, you set the highest key to C4, then only keys at or below C4 will trigger a note for the currently selected Zone. Keys above C4 will not trigger a note.

You can also set the lowest key higher then the highest key and vice versa. This allows you to split a Zone into two areas where the lowest and highest keys now define the region that the Zone does not play on.

Pan

The Pan parameter determines the Pan MIDI message that the currently selected Zone sends when the Multi is loaded. You can set this parameter to any pan setting from None, 0 (full left pan) to 127 (full right pan). To pan to center, select 64 for this parameter.

None can be entered as -1 on the keypad.

Volume

The Volume parameter determines the Volume MIDI message that the currently selected Zone sends when the Multi is loaded. You can set this parameter to any volume setting from None, 0 to 127.

None can be entered as -1 on the keypad.

MAIN Page

The Main Page shows the current settings that are specific for the currently selected Zone. The top right hand corner of the display indicates the currently selected Zone of a total of 4 Zones.

MAIN Page Parameters

Parameter	Range Of Values	Default Value
Transpose	-128 to +127 ST (semitones)	0 ST
Notemap	Off, Linear, 1 of 2, 2 of 2, 1 of 3, 2 of 3, 3 of 3, 1 of 4, 2 of 4, 3 of 4, 4 of 4, Inverse, Constant,	Linear
Destination	NONE, LOCAL, MIDI, MIDI+LOCAL, USB, USB+LOCAL, USB+MIDI, USB+LOCAL+MIDI	USB+LOCAL+MIDI
Out	Auto, A, B	Auto
Channel	1 to 16	1
BankMode	None, Ctl 0, Ctl 32, Ctl 0/32, K2600	Ctl 0/32
MidiBank	None, 0 to 16383	-
MidiProg	(Depends on BankMode)	-
EntryPrgChg	On, Off	On
Bend Up ST	Prog, 0 to 127 ST (semitones)	2 ST
Bend Down ST	Prog, 0 to 127 ST (semitones)	2 ST
VelMode	Traditional, Fixed	Traditional
Velocity	0 - 127 (when VelMode = Fixed)	127
VelScale	-300 to +300 %	100 %
VelOffset	-128 to 127	0
VelCurve	Linear, Compress, Expand, Cross-fade, Bump, Rvrs Linear, Rvrs Expand, Rvrs Compress, Rvrs Crossfade	Linear
LoVel	1 to 127	1
HiVel	1 to 127	127
Bend Up CT	Prog, 0 to 100 ct (cents)	0 ct
Bend Down CT	Prog, 0 to 100 ct (cents)	0 ct

Transpose

The Transpose parameter determines the transposition for the currently selected Zone. You can set this to any value from -128 semitones to 127 semitones.

Note Map

Note Map lets you change the way notes are sent from the Forte.

The default setting is Linear: all notes go out as played. Pressing the Minus button takes you to Off; no notes are sent, but controllers and other non-note data are.

Setting Note Map to Inverse effectively turns the keyboard upside-down, with the highest key being A 0 and the lowest C 9. If you set Note Map to Constant, all of the keys on the keyboard will play the same note. The note defaults to C4, but you can change this with the Transpose parameter. This works well when you want the sound from a particular key to play with every note of another zone. For example, playing a ride cymbal with every note in a bass line.

Next are the alternating note maps, which let you divide the keyboard in some unique ways. If you are using two or more MIDI devices (including the Forte), you can expand polyphony by assigning each zone to a different alternating note map. For example, if you have two Fortes, you can assign two zones to each play the same program on a different Forte, thereby doubling polyphony.

To split a zone into one of two alternating note maps, set Note Map to 1 of 2; now the zone plays on every second key, starting on C, but won't play on any other keys. Set another zone to 2 of 2, and this zone will play on every second key, starting on C#, thus covering the remaining keys. Three and four-zone alternating notemaps work the same way, but cause each zone to play only on every third and every fourth key, respectively.

Destination

The Destination parameter determines whether MIDI data generated by the keyboard and physical controllers of the currently selected Zone is sent to a Forte Program, through the MIDI Out/USB ports, or all three. You can set this parameter to any of the eight combinations for the three destinations for this parameter:

Note that this parameter works in conjunction with the Global parameter of the same name (see) and both are active. They act like filters, so if one is set to MIDI, and the other is set to Local + MIDI, transmission will be limited to MIDI only.

> ⚠️ **CAUTION: It is possible to stop all MIDI transmission, in Multi Mode, if one Destination parameter is set to Local, and the other is set to MIDI.**

Setting	MIDI Out	USB	FORTE
NONE			
LOCAL			Yes
MIDI	Yes		
MIDI + LOCAL	Yes		Yes
USB		Yes	
USB + LOCAL		Yes	Yes
USB + MIDI	Yes	Yes	
USB + LOCAL + MIDI	Yes	Yes	Yes

NONE

Unused Zones are set to None to avoid transmitting MIDI on these zones. The Zone will still be able to receive incoming MIDI.

LOCAL

When Destination is set to LOCAL, MIDI data from the Zone is sent only to the Forte Program. MIDI data from this Zone is not sent to the MIDI Out or USB ports.

MIDI

When Destination is set to MIDI, MIDI data from the Zone is sent only to the MIDI Out ports. MIDI data is not sent to a Forte Program or the USB ports from this Zone.

MIDI + LOCAL

When Destination is set to MIDI+LOCAL, MIDI data from the Zone is sent to a Forte Program and to the MIDI Out ports.

USB

When Destination is set to USB, MIDI data from the Zone is sent only to the USB ports.

USB + LOCAL

When Destination is set to USB+LOCAL, MIDI data from the Zone is sent to a Forte Program and to the USB ports.

USB + MIDI

When Destination is set to USB+MIDI, MIDI data from the Zone is sent to the USB & MIDI Out ports only. MIDI data is not sent to a Forte Program on this Zone.

USB + LOCAL + MIDI

When Destination is set to USB+LOCAL +MIDI, MIDI data from the Zone is sent to the USB & MIDI Out ports, as well as the Forte Program on this Zone.

Out

Use the Out parameter to set the rear panel audio outputs used for each zone of the current Multi. This parameter determines the output settings for the main program signal and insert effects of each zone

A setting of Auto will make that zone output audio based on the settings for the program used by that zone. Program output settings are set in the Program Editor using the Output parameter on the FX page.

A setting of A will output Zone audio to the "A" Balanced Analog Outputs.

A setting of B will output Zone audio to the "B" Balanced Analog Outputs.

Channel

The Channel parameter determines the MIDI transmit and receive channel for the currently selected Zone. You can set this parameter to any of the 16 MIDI channels (1-16).

You can assign different Zones to the same channel, but only one Program can be loaded in a channel at a particular time. The Program loaded will be whichever program change message is received last.

BankMode

The Bank Mode parameter determines the controller number with which MIDI Bank change messages are transmitted. For MIDI Bank change messages, various manufacturers have chosen different MIDI controller numbers. Most have chosen 0, 32, or both. In the case of the Kurzweil K2600, it responds to controller 32, but is limited to 100 programs per bank.

You can set this parameter to any of the following:

None	MIDI Bank change messages are disabled.
Ctl0	MIDI Bank change messages are sent with controller number 0.
Ctl32	MIDI Bank change messages are sent with controller number 32.
Ctl0/32	MIDI Bank change messages are sent with both controller numbers 0 and 32.
K2600	MIDI Bank change messages are sent with controller number 32. (K2600 Program numbers 0-99.)

MidiBank

The MIDI Bank parameter determines the MIDI Bank change message that the currently selected Zone sends when the Multi is loaded. You can set this parameter to a MIDI Bank change message from 0 to 16383.

When using the Forte as a MIDI controller, sending a MIDI Bank change message (along with a MIDI Program change message) when a Multi is loaded ensures that the Program loaded on the other sound modules in your MIDI chain is the Program that you want.

For example, if you've configured a Multi to work in a specific way with Program 32 in Bank 5 of a connected sound module, then set MIDI Bank to 5 and MIDI Program to 32. This way, whenever you load this Multi, the sound module will automatically load Program 32 in Bank 5. Pressing both Previous & Next buttons simultaneously will set this parameter to the Bank number of the currently selected Local Program.

> NOTE : When you change the Program parameter, the MIDI Bank and MIDI Program parameters will automatically change to match the Bank and Program numbers of the Program that you select for Local Program. For example, if you choose Program 178, then MIDI Bank will change to 1 and MIDI Program will change to 50.

MidiProg

The MIDI Program parameter determines the MIDI Program change message that the currently selected Zone sends when the Multi is loaded. You can set this parameter to a MIDI Program change message from 0 to 127.

When using the Forte as a MIDI controller, sending a MIDI Program change message (along with a MIDI bank change message) when a Multi is loaded ensures that the Program loaded on the other sound modules in your MIDI chain is the Program that you want. For example, if you've configured a Multi to work in a specific way with Program 32 in Bank 5 of a connected sound module, then set MIDI Bank to 5 and MIDI Program to 32. This way, whenever you load this Multi, the sound module will automatically load Program 32 in Bank 5.

> NOTE : When you change the Program parameter, the MIDI Bank and MIDI Program parameters will automatically change to match the Bank and Program numbers of the Program that you select for Local Program. For example, if you choose Program 178, then MIDI Bank will change to 1 and MIDI Program will change to 50.

EntryPrgChg

The Entry Program Change parameter determines whether or not the currently selected Zone will send a MIDI Program change message when the Multi is loaded. You can set this parameter to either Off or On. When set to On, the Zone will send a MIDI Program change message with the Program specified for the MIDI Program parameter.

Bend Up / Down ST & Bend Up / Down CT

Bend Up ST and Bend Down ST sends a bend range message to an internal program or a MIDI device, telling it how to define subsequent pitch bend messages. You can set this parameter to any value between 0 semitones and 127 semitones, or to Prog, which uses the Bend Range Up / Down of the currently selected Program for the Zone. The value can be entered numerically, and entering -1 will select Prog. (value that the Program would use in Program Mode).

Bend Up CT and Bend Down CT lets you fine tune the value for Bend Up ST & Bend Down ST (semitones). 100 cents equals one semitone, or one half step; you can set this parameter anywhere between 0 and 100 cents.

VelMode

The Velocity Mode parameter determines the method that the Forte maps the keyboard's strike velocity to MIDI velocity. Set to "Traditional" the keyboards velocity will translate to a MIDI velocity depending how hard you strike it. With a setting of "Fixed", the velocity is set to a pre-determined value regardless of how hard or soft the keyboard is played.

A setting of "Fixed" will remove some of the other Velocity settings in the MAIN page and replace it with a parameter called Velocity that has range of values from 0 to 127.

VelScale

The Velocity Scale parameter lets you amplify or diminish velocity response from -300% to 300%. Normal response is 100%. Higher values make the keyboard more sensitive (you don't need to play as hard to get higher MIDI velocities) while lower values make it less sensitive (playing harder doesn't change MIDI velocity as much). You can also set the scale to a negative number, in which case the velocity response is turned upside-down: playing harder produces a softer sound and vice versa. This is useful for creating velocity-based crossfades between zones.

See the following section on VelOffset for ideas about negative scaling.

VelOffset

The Velocity Offset parameter also changes the velocity response, but in a more direct way, by adding or subtracting a constant to the key velocity.

For example, if this is set to 25 (assuming a scale of 100%), then 25 is added to the velocity of every keystroke, usually making the sound that much louder. The softest possible keystroke will have a value of 25, while a keystroke with velocity of 102 will produce the same sound as a note with velocity 127 (102+25=127). Negative values diminish the response: a setting of -25 means the loudest velocity available will be 102, while any keystroke 25 or below will produce a velocity of 1 (a velocity value of zero has a special meaning in MIDI and cannot be used for Note Ons).

You can think of Scale as being a proportional change to the velocity, while Offset is a linear change. The maximum values for Offset are ±127.

Offset and Scale work together. If scaling takes the velocity out of the ballpark — for example, you want to set it to 300% but that puts all of your notes at maximum velocity — using a negative offset, say around -60, can make it possible to still play at different volumes, although your curve will still be a lot steeper than normal. If you use a negative scaling, then you must use an offset: otherwise all of your velocities will end up as zeroes (well, ones actually, since a MIDI note-on with velocity zero is interpreted by some modules as a note-off message). So to get true inverse scaling (that is, minus 100%), you must set an offset of 127 to get the full range of velocities. Setting the offset to 127 and the scale to -100% (which is the same as the reverse linear curve):

> NOTE : That Offset and Scale affect only MIDI velocities; that is, these parameters don't change Velocity Tracking in the programs themselves. Therefore, some programs (such as organ sounds, which often have low VelTrk values) may respond only subtly to Offset and Scale, or not at all.

VelCurve

The Velocity Curve parameter lets you taper the velocity response. The default setting is **Linear**, which means that the output velocity changes directly proportionally to the played velocity.

Expand produces a curve that is less steep than the linear curve at keystrike velocities below 64, and steeper than the linear curve at keystrike velocities above 64. In other words, when you're playing softly, you'll notice velocity differences less than with a linear curve, while when you're playing hard, you'll notice velocity differences more.

Compress produces a velocity curve that is the opposite of the expanded curve—that is, you'll notice velocity differences more when you're playing softly than when you're playing hard.

Crossfade is designed to be used in tandem with the Reverse Crossfade curve, enabling you to perform smooth crossfades between different programs.

Bump tapers velocity response to resemble a bell curve, so that notes are loudest when your keystrike velocity is 64. Notes get softer as the keystrike velocity approaches 0 or 127.

The next four velocity curves are Reverse Linear (**Rvrs Linear)**, Reverse Expand (**Rvrs Expand**), Reverse Compress (**Rvrs Compress**), and Reverse Crossfade (**Rvrs Crossfade**). These taper velocity in reverse of the five curves we just covered. For example, Reverse Linear's response is such that striking a key harder will produce a lower volume, striking it softer will produce a higher volume, and so on. This provides a convenient way to achieve negative scaling, by letting you set one parameter instead of two.

LoVel, HiVel

LoVel (Low Velocity) and HiVel (High Velocity) set the minimum and maximum velocity limits that the current zone transmits.

A keystroke in the current zone whose velocity — *after* it has been scaled and offset — is below the minimum does not generate a Note On. Neither does a keystroke whose velocity after processing is above the maximum. These parameters are useful for "velocity switching"—having a key play different sounds depending on how hard you strike it.

The values can be anywhere from 1 to 127. As with other parameters, zones can overlap or be totally discrete, or be identical. Usually, LoVel will have a smaller value than HiVel, but as with LoKey and HiKey, you may also create a gap in velocity response, by setting HiVel to a lower value than LoVel.

CONTROLS Page

Press the CONTROLS soft button to view pages where you can set parameters for each of the Forte physical controllers. Broadly speaking the Forte has switch controllers (such as buttons and Foot Switches) and continuous controllers (such as the wheels, sliders and foot controllers). Keyboard keys may also be assigned as controllers. These controller types have different parameters available to them on the Controls page, which are described below.

Switch Controllers

Parameter	Range Of Values
Controller	See Controller List
Mode	Off, MIDI CC, Chord (Chord is only available for Switch Controllers)
Type	Momentary, Toggled
Destination	See Multi Destination Control List
OnValue	None, 0 to 127
OffValue	None, 0 to 127
Entry State	None, Off, On
Exit State	None, Off, On
Velocity	Auto, 1 to 127
Key1....Key8	None, C-1 to G9

You can select any of the Forte's physical controllers by moving the cursor to the "Controller" parameter, and using either the Alpha Wheel or Value buttons to scroll the list. Alternatively, you can also position the cursor in the "Controller" parameter, hold down the Enter button and move the controller you wish to edit.

Controller

The Controller parameter allows you to assign any of the Forte's physical controllers (sliders, switches, mod and pitch wheels, foot switches and expression pedals) to control a program specific parameter or MIDI controller number for the currently selected zone.

First, use the Channel /Zone buttons to the left of the display to select the desired zone that you wish to assign a controller for. Next, on the CONTROLS page, use the cursor buttons to select the "Controller" field, hold the Enter button on the alphanumeric pad and then move any of the Forte's physical controllers. This will select that controller and display its available parameters. (You can also scroll through the list of controllers in the Control page by selecting the Controller field with the cursor buttons and using the Alpha Wheel or the Value buttons to scroll through the list.)

If a pedal is selected which has a pedal override enabled in Global mode, a message "Global Pedal Override is enabled" will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

FORTE SWITCH CONTROLLERS	
Sw. Pedal 1	Switch 1
Sw. Pedal 2	Switch 2
Sw. Pedal 3	Switch 3
Variation	Switch 4
Key1-Key12	Switch 5
Zone 1-4 Sw	

Select a Switch controller from the list above; the Switch controller parameters are described below.

Mode

Switch Controllers have three modes: Off, MIDI CC, or Chord.

With a value of Off, the controller is disabled for this zone.

With a value of MIDI CC, the controller has the ability to transmit MIDI control messages.

Switch controls can also be set to Chord mode. In Chord mode, the switch can play a chord containing up to 8 notes.
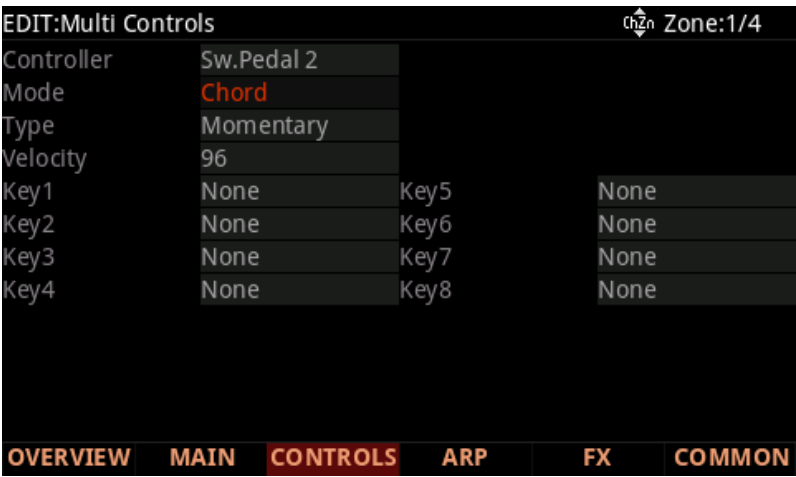
Key1.....Key8

The Key1, Key2, Key3, Key4, Key5, Key6, Key7, Key8 parameters are available when the Mode is set to "Chord" . Use the Key(1 to 8) parameters to select the note to be played. The note is displayed by MIDI note name.

To select a note, select the KeyNum field with the cursor buttons, hold the Enter button on the alphanumeric pad, then play the desired note on the keyboard. You can also change the note in the field by using the Alpha Wheel or -/+ buttons.

Type

The Type parameter determines the switching behavior of Foot Switches and buttons. This is a Common parameter that affects all Zones.

Momentary	A momentary switch is one that is only in the "on" state when it is pressed. As soon as you release the switch, it goes into the "off" state.
Toggled	A toggled switch is one that maintains its state after it is pressed. So, if the switch is currently in the "off" state, pressing it once will put it in the "on" state. Pressing it again will put it back in the "off" state.

Destination

Use the Destination parameter to assign the Forte physical controllers (Sliders, Pedals, Switches, Mod Wheel, etc.) to control Program parameters or send MIDI continuous controller messages (CCs) to external MIDI gear. If a CC number is assigned to a parameter in the Program of the current Zone, the parameter name will be listed in the Destination list in place of that CC number.

The Destination parameter determines the MIDI CC controller number that a physical controller will send to the Program in the currently selected Zone. By default, these CC messages are also sent to the MIDI Out and USB ports on the Channel of that Zone.

On Value

The On Value is the MIDI value sent when a switch controller is set to On. You can set this parameter to any number between 0 and 127, or to None.

Off Value

The Off Value is the MIDI value sent when a switch controller is set to Off. You can set this parameter to any number between 0 and 127, or to None.

Entry State

The Entry State parameter determines the state of the Foot Switch or button that is sent as a MIDI message when the current Multi is loaded. You can set this parameter to None, On, or Off. This parameter is common to all Zones.

None can be entered with the alphanumeric function of the Category buttons as -1.

If Entry State is set to None, then when you load the current Multi, no value will be transmitted. If you specify an Entry State, then a MIDI controller message with this value will be sent when you load the current Multi.

Exit State

The Exit State parameter determines the state of the Foot Switch or button that is sent as a MIDI message when the current Multi is exited. You can set this parameter to None, On, or Off. This parameter is common to all Zones.

None is entered with the alphanumeric function of the Category buttons as -1.

If Exit State is set to None, then when you leave the current Multi by selecting another Multi or Program, the Foot Switch or button will remain at whatever value corresponds to its current position. If you specify an Exit State, then a MIDI controller message with this value will be sent when you select a different Multi or Program.

Velocity

The Velocity parameter only appears if the Mode is set to "Chord" and is for use with switch controllers. Use the Velocity parameter to select a MIDI attack velocity (0-127) for the note(s) designated in the Key1 to Key8 field(s.) Alternatively, set the Velocity field to Auto and the note's velocity will be the velocity set by the KeyVel Multi Destination (see KeyVel on page 11-25).

Key Controllers

When the Controller parameter is set to a Key (Key1-Key12) and Mode is set to something other than "Off" the Key controller parameters appear.

EDIT:Multi Controls				ChZn Zone:1/4
Controller	Key1			
Mode	MIDI CC			
Type	Momentary			
Key	None	Do	Both	
Destination	OFF			
OnValue	None			
OffValue	None			
Entry State	None			
Exit State	None			

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Key

Use the Controller parameter "Key" to select which of the Forte's Keys you wish to use as a switch controller. With the Key parameter selected, you can set a key by holding the Enter button and striking the desired key.

Do

The Do parameter determines whether the key will play a note and perform a switch function, or whether the key will only perform a switch function. Set the Do parameter to "Both" to play a note and perform a switch function, or set it to "OnlySw" to only perform a switch function.

The list of CC controller numbers below (see page 11-25) shows the default assignments for each destination. Programs respond to some of these CCs for standard MIDI functions like volume and panning. Other external MIDI gear (sound modules, computer software) may respond to standard MIDI CC messages as well. Standard MIDI CC's range from 0-127 and can be received by the Forte from external devices, while destinations 128-146 are internal to the Forte only.

Key1.....Key8

When the Mode is set to "Chord" the Key1-8 parameters are available . Use the Key(1 to 8) parameters to select the note to be played. The note is displayed by MIDI note name.

To select a note, select the KeyNum field with the cursor buttons, hold the Enter button on the alphanumeric pad, then play the desired note on the keyboard. You can also change the note in the field by using the Alpha Wheel or -/+ buttons.

Continuous Controllers

```
EDIT:Multi Controls                    Zone:1/4
Controller        Modwheel
Mode              MIDI CC


Destination       Dist Drive  (MIDI 1)
Scale             100%
Add               0
Curve             Linear
Entry Position    None
Exit Value        0



OVERVIEW    MAIN    CONTROLS    ARP      FX    COMMON
```
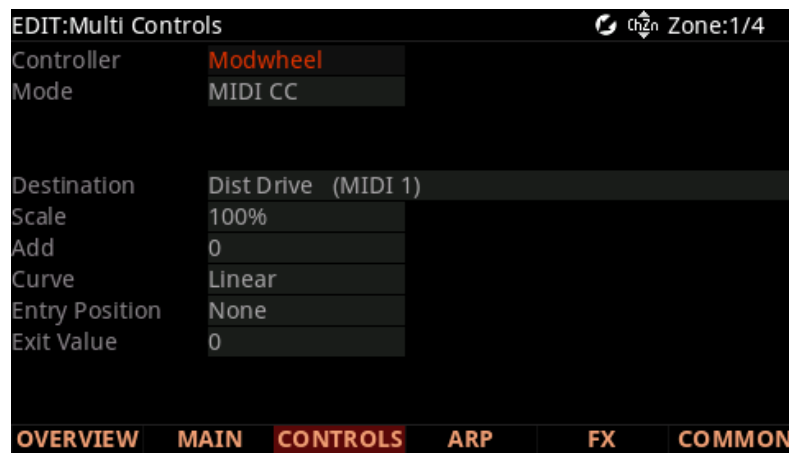
Parameter	Range Of Values	Default Value
Controller	See Controller List	-
Mode	Off, MIDI CC	-
Destination	See Multi Destination Control List	-
Scale	-300% to +300%	100%
Add	-128 to 127	0
Curve	Linear, Compress, Expand, Cross-fade, Bump, Rvrs Linear, Rvrs Expand, Rvrs Compress, Rvrs Crossfade	Linear
Entry Position	None, 0 to 127	-
Exit Value	None, 0 to 127	-

Controller

The Controller parameter allows you to assign any of the Forte's physical controllers (sliders, switches, mod and pitch wheels, foot switches and expression pedals) to control a program specific parameter or MIDI controller number for the currently selected zone.

First, use the Channel /Zone buttons to the left of the display to select the desired zone that you wish to assign a controller for. Next, on the CONTROLS page, use the cursor buttons to select the "Controller" field, hold the Enter button on the alphanumeric pad and then move any of the Forte's physical controllers. This will select that controller and display its available parameters. (You can also scroll through the list of controllers on the Control page by selecting the Controller field with the cursor buttons and using the Alpha Wheel or the Value buttons to scroll through the list.) If a pedal is selected which has a pedal override enabled in Global mode, a message "Global Pedal Override is enabled" will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

FORTE CONTINUOUS CONTROLLERS	
Mod Wheel	**Slider A**
PitchUp	**Slider B**
PitchDown	**Slider C**
CC Pedal 1	**Slider D**
CC Pedal 2	**Slider E**
Pressure	**Slider F**
	Slider G
	Slider H
	Slider I

Select a Continuous controller from the list above, the Continuous controller parameters are described below.

Mode

Continuous Controllers have two modes: Off, or MIDI CC.

With a value of Off, the controller is disabled for this zone.

With a value of MIDI CC, the controller has the ability to transmit MIDI control messages.

Scale

After you've selected a continuous physical controller, you can modify the controller's response in a similar way that you can modify velocity response.

Scale lets you amplify or diminish the action of the controller. Full scale is 100%. Higher values will make the controller more sensitive, and lower values will make it less so. Setting the scale to a negative number makes the controller action work in reverse. As with velocity, you can use a controller to crossfade between two zones by setting the scaling for one zone positive and the other negative. Maximum scale values are +300% and -300%.

Add

This adds or subtracts a constant to the controller, and at the same time sets minimum or maximum values. If Add is 25, the minimum value of the controller will be 25. If it is -25 (and scale is 100%) the first one-fifth of the controller's movement ($25/127 \approx 1/5$) will send a value of 0, and the maximum value of the controller will be 102 (= 127-25). As with velocity, Scale is a proportional change to the controller, while Add is a linear change. The values for Add range from -128 to 127.

Curve

The Curve parameter lets you taper the velocity response. The default setting is **Linear**, which means that the output velocity changes directly proportionally to the played velocity.

Expand produces a curve that is less steep than the linear curve at keystrike velocities below 64, and steeper than the linear curve at keystrike velocities above 64. In other words, when you're playing softly, you'll notice velocity differences less than with a linear curve, while when you're playing hard, you'll notice velocity differences more.

Compress produces a velocity curve that is the opposite of the expanded curve—that is, you'll notice velocity differences more when you're playing softly than when you're playing hard.

Crossfade is designed to be used in tandem with the Reverse Crossfade curve, enabling you to perform smooth crossfades between different programs.

Bump tapers velocity response to resemble a bell curve, so that notes are loudest when your keystrike velocity is 64. Notes get softer as the keystrike velocity approaches 0 or 127.

The next four velocity curves are Reverse Linear (**Rvrs Linear)**, Reverse Expand (**Rvrs Expand**), Reverse Compress (**Rvrs Compress**), and Reverse Crossfade (**Rvrs Crossfade**). These taper velocity in reverse of the five curves we just covered. For example, Reverse Linear's response is such that striking a key harder will produce a lower volume, striking it softer will produce a higher volume, and so on. This provides a convenient way to achieve negative scaling, by letting you set one parameter instead of two.

Entry Position

The Entry Position value allows you to specify an initial value for a controller in a setup that will be sent whenever you select that Multi. For example, if you want to make sure that all of the modulation in a zone is turned off when you select a Multi, assign a physical controller to a destination of MIDI 01 (MWheel) and set Entry Value to 0.

Entry Position refers to the position of the physical controller. For Sliders the Entry Position is indicated by the LED Ladder along side the Slider. The Entry Position is common to all Zones, however the Curve, Scale and Add modifiers are applied to the Entry Position (and the controller value) individually on each zone, allowing the one controller to send different values to the assigned destinations on different zones, if desired.

Entry Position ignores the current position of the physical controller when the Multi is selected. In fact, if the Multi Controllers parameter in Global Mode (see page 12-6) is set to Pass Entry, and the physical controller is above or below the entry value when the Multi is selected (which it often is), moving the controller will have no effect until it is past the entry value. In the modulation example above, moving the assigned controller won't turn on any modulation until it's pushed all the way down, and then up again.

If the Multi Controllers parameter is set to Instant, any movement of the physical controller will immediately be assigned to the controller. This may cause an abrupt change in the sound.

An Entry Position of None is quite different from a value of 0. None means that there will be no initial controller command when the Multi is selected, and any subsequent movement of the physical controller will be effective.

Exit Value

The Exit Value tells the Forte to send a value for that controller whenever you leave the Multi, either by selecting another Multi or by selecting a different mode altogether. It can be very useful when a controller is doing something to the sound, and you don't want that effect to continue after you leave the Multi.

For example, if you want to make sure a zone's modulation wheel returns to normal whenever you leave a Multi, you would set Exit Value to 0.

A setting of None means no message is sent when exiting the Multi.

Destination

Use the Destination parameter to assign the Forte physical controllers (Sliders, Pedals, Switches, Mod Wheel, etc.) to control Program parameters or send MIDI continuous controller messages (CCs) to external MIDI gear. If a CC number is assigned to a parameter in the Program of the current Zone, the parameter name will be listed in the Destination list in place of that CC number.

The Destination parameter determines the MIDI CC controller number that a physical controller will send to the Program in the currently selected Zone. By default, these CC messages are also sent to the MIDI Out and USB ports on the Channel of that Zone.

The list of CC controller numbers below shows the default assignments for each destination. Programs respond to some of these CCs for standard MIDI functions like volume and panning. Other external MIDI gear (sound modules, computer software) may respond to standard MIDI CC messages as well.

Controlling Program Parameter Assignments from Multi Mode

Commonly you will want to assign a physical controller in a Multi to control the same Program parameter that it controlled in Program Mode. In the Destination parameter list, destinations that are assigned to parameters for the Program of the current Zone will show the Program Parameter name in place of the standard Controller Destination name. Select one of these destinations to control an assigned Program parameter.

The Controller Destination List

The table below contains the available values for the MIDI CC (continuous controller) destinations. The Forte's physical controllers can send MIDI values to these destinations in order to control the parameters of Forte Programs, Multis, Forte system parameters, or external MIDI equipment.

Controller Number	Controller Destination	Description
0	OFF/Bank	By default, when you enter 0 or Clear for the Destination parameter, the destination will be assigned to OFF. To select Bank as the destination, use the Value buttons.
1	MWheel	Default destination for the Modulation Wheel
2	Breath	Default assignment for breath controller in compatible synths
3	MIDI 03	MIDI Controller 3
4	Foot	Default assignment for continuous foot controller in compatible synths
5	PortTim	Monophonic Forte Programs respond to this Controller if portamento is turned on.
6	Data	MIDI Controller 6
7	Volume	MIDI Volume
8	Balance	MIDI Balance
9	MIDI 09	MIDI Controller 9
10	Pan	MIDI Pan
11	Express	Default assignment for CC Pedal. In most Programs it acts as a volume control. It scales between 0 and the current value of Volume.
12	MIDI 12	Default assignment for Slider A
13	MIDI 13	Default assignment for Slider B
14-21	MIDI 14-21	MIDI Controllers 14-21
22	MIDI 22	Default assignment for Slider C
23	MIDI 23	Default assignment for Slider D
24	MIDI 24	Default assignment for Slider E
25	MIDI 25	Default assignment for Slider F
26	MIDI 26	Default assignment for Slider G
27	MIDI 27	Default assignment for Slider H
28	MIDI 28	Default assignment for Slider I
29	MIDI 29	Default assignment for Variation switch
30-31	MIDI 30-31	MIDI Controllers 30–31
32	MIDI Bank	MIDI Bank change message
33–63	MIDI 33–63	MIDI Controllers 33–63
64	Sustain	Default destination for Sustain Pedal
65	MIDI 65	
66	Sostenuto	Default destination for Sostenuto Pedal (Sustains notes that are currently down, but not notes played subsequently.)
67	Soft	Lowers the volume by a preset amount and may soften the timbre as well.
68	Legato	Forces mono playback.
69	Freeze	Envelopes freeze at current state.
70–79	MIDI 70–79	MIDI Controllers 70–79
80	MIDI 80	Default assignment for Switch 1 (Zone 1 Switch)
81	MIDI 81	Default assignment for Switch 2 (Zone 2 Switch)

CONTROLS Page

Controller Number	Controller Destination	Description
82	MIDI 82	Default assignment for Switch 3 (Zone 3 Switch)
83	MIDI 83	Default assignment for Switch 4 (Zone 4 Switch)
84	Portamento	Standard MIDI controller for setting Portamento starting note
85	MIDI 85	Default assignment for Switch 5 (Assignable Switch 1)
86	MIDI 86	Default assignment for Switch 6 (Assignable Switch 2)
87	MIDI 87	Default assignment for Switch 7 (Assignable Switch 3)
88	MIDI 88	
89	MIDI 89	Default assignment for Switch 8 (Assignable Switch 4)
90	MIDI 90	Default assignment for Switch 9 (Assignable Switch 5)
91–95	MIDI 91–95	MIDI Controllers 94–95
96	Data Inc	Equivalent to pressing the Next Value button
97	Data Dec	Equivalent to pressing the Previous Value button
98	NRegParL	Non–Registered Parameter Least Significant Byte
99	NRegParM	Non–Registered Parameter Most Significant Byte
100	RegParL	Registered Parameter Least Significant Byte
101	RegParM	Registered Parameter Most Significant Byte
102–109	MIDI 102–109	MIDI Controllers 102–109
110-119	MIDI 110–119	Reserved - Not available for use in the Forte.
120	Sound Off	Stops all sound in the corresponding channel.
121	RstCtls	Resets Controllers to defaults in the corresponding channel.
122	Local	
123	Notes Off	Sends Note Off Message to all playing notes in the corresponding channel.
124	Poly	
125	Omni	
126	Mono On	
127	Mono Off	
128	Pitch	Values above 64 and below 64 bend the pitch up and down, respectively.
129	PitchRev	Values above 64 and below 64 bend the pitch down and up, respectively
130	PitchUp	Values above 0 bend the pitch up
131	PitchDwn	Values above 0 bend the pitch down
132	Pressure	Default Destination for Pressure
133	Tempo	Tempo
134	KeyNum	Triggers playback of notes by Key Number—e.g., C4 is 60. Send a velocity first with Destination135, KeyVel.
135	KeyVel	Key Velocity
136	ProgInc	Program Increment—increments current Program number.
137	ProgDec	Program Decrement—decrements current Program number.
138	ProgGoto	Go to Program—selects Program.
139	MultiInc	Multi Increment—increments current Multi number.
140	MultiDec	Multi Decrement—decrements current Multi number.
141	SetpGoto	Go to Multi—selects Multi.
145	TransUp	Transpose Up (ST)
146	TransDown	Transpose Down (ST)

Controller Number	Controller Destination	Description
149	MuteZn	Mute Zone – Values above 64 will mute the zone that sends values to this destination, values below or equal to 64 will unmute the zone.
161	Panic	Sends an "all notes off" message and an "reset all controllers" message on all 16 MIDI channels.
162	SoloZn	Solo Zone - Values above 64 will solo the zone that sends values to this destination, values below or equal to 64 will unsolo the zone. When a zone is soloed, the Zone Mute button LED for the soloed Zone will turn red. All other Zones will be muted and their Zone Mute button LEDs will turn orange. Pressing any muted/orange Zone buttons will make that Zone the soloed zone. Pressing the soloed zone button will cancel solo mode. To return to Solo mode the original controller assigned to Solo Zone (162) will need to be re-engaged.
180	Chan Intonation	Selects the Intonation Map (IDs 0-127) in a MIDI channel in real time. On the Multi Edit CONTROLS page, when setting a switch controller to this Destination the name of the selected Intonation Map will be displayed. For example: 18 (EastMed).
181	Chan Int Key	Selects the Intonation Key (C through B) in a MIDI channel in real time. On the Multi Edit CONTROLS page, when setting a switch controller to this Destination the MIDI number and note name of the selected Intonation Key will be displayed. For example: 41 (D#).

FX Page

The Forte contains Kurzweil's acclaimed effects processor, and when combined with Multi Mode it puts the power of an entire studio of audio effects at your fingertips. This section contains everything you'll need to know in order to use the Forte's effects in Multi Mode.

Press the FX soft button to enter the FX page.
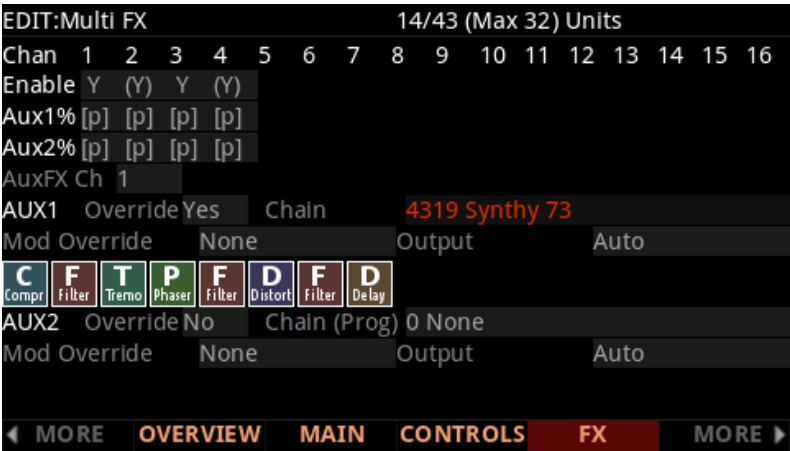
FX Page Parameters

Parameter	Range Of Values	Default Value
Enable	Y, N, (Y)	Y
AUX1	[p], 0 to 100%	[p]
AUX2	[p], 0 to 100%	[p]
Aux FX Channel	1 to 16	1
AUX1 Override	Yes, No	[p]
AUX2 Override	Yes, No	No
Chain	Effects List (Appendix F)	No
Mod Override	None, Control source	None
Output	Auto A, B	Auto

Enable

Use the Enable parameter to enable or disable the Insert effects Chain of the Program in each MIDI channel. (The MIDI channel for each Zone can be set on the Zone Main page.) Each MIDI channel can be set to Y to enable Insert effects, or to N to disable Insert effects. Use the Alpha Wheel or Value buttons to change between Y and N. Some MIDI channels set to Y may be displayed as (Y). This means that there are not enough effects resources available for that channel, and that channel's Insert effects are not loaded. If you want to use the Insert effects Chain for a channel displayed as (Y), try setting other channels to N.

Aux FX Channel

The Aux FX Channel determines the FX channel through which the aux sends of all of the zones in the current Multi are sent. For example, if a zone 2 in a Multi has a program with 25 Basic Delay 1/8 as an Aux FX, and zone 2 is assigned to channel 5, then setting the Aux FX Channel to 5 sends the programs of all of the zones in the Multi through zone 2's Program's Aux FX (i.e., through 25 Basic Delay 1/8).

AUX1, AUX2

The setting for the AUX1 (Auxiliary 1) & AUX2 (Auxiliary 2) parameters determines if the auxiliary send level for the selected Zone program is overridden, and if so, by what value. The two Auxiliary effects busses are global to all zones/channels on the Forte. The default value of [p] means "no override" (i.e., use the values specified in the program.) To override the send level value, select the AUX1 or AUX 2 send level parameter for the desired Zone, and enter a new value with the Alpha Wheel, -/+ buttons, or enter a value with alphanumeric pad and press the Enter button.

NOTE: In most factory ROM programs, the send level for Aux 1 is controlled by an Aux mod set to MIDI28 (slider I.) If a send level override is set, it will usually be scaled by the entry value for slider I each time a program is selected. To defeat this behavior, set the Mod Override parameter to ON, then set the Send Level override value.

AUX1 Override, AUX2 Override

Normally, the Aux Effects Chains are specified by the program on the specified Aux Effects channel. When Override is set to Yes, the Chain parameter can be selected, allowing you to choose a different Aux effect Chain.

Set Override to Yes to select an override Aux Chain on this page. Set Override to No to use the Aux FX chain of the specified Aux FX Channel.

Chain

When AUX1 Override or AUX2 Override is set to Yes, you can select an override Aux Chain for the corresponding Aux Effect. The Chain parameter can not be selected when Override is set to No, and "(Prog)" is shown as a reminder that the Chain from the Program on the Aux FX Channel is being used. (See Appendix F Ch. 14 Effects Chains, on page F-1 for a full list of available Effect Chains).

Mod Override

These parameters can be used to override the Aux Mod Control source of each Aux Chain (Aux Mod Control sources are set in the program of the specified Aux Effects channel.) Set a physical controller or other Mod Control source to scale the Aux send level between 0% and the value set for the aux send level. A setting of None yields no override in Mod Control source, and uses the Mod Control source specified in the program of the specified Aux Effects channel.

Output

This parameter specifies the physical audio output pair for the corresponding Aux Chain's output. The settings A and B refer respectively to the A and B physical audio outputs of the Forte. Setting Output to Auto uses the output pair specified in the program on the specified Aux Effects channel.

COMMON Page

The COMMON page contains parameters that affect every zone in the current Multi.

Press the COMMON soft button to enter the COMMON page.

```
EDIT:Multi Common
Tempo          120.00
ClockSource    Internal
KB3 Channel    1




OVERVIEW   MAIN   CONTROLS   ARP      FX      COMMON
```

COMMON Page Parameters

Parameter	Range Of Values	Default Value
Tempo	20 to 400 BPM	120
Clock Source	Internal, External	Internal
KB3 Channel	1 to 16	1

Tempo

When Clock Source (see Clock Source on page 12-5) is set to Internal, the Tempo parameter sets the Forte's system tempo for this Multi. The Tempo parameter values are in units of BPM (beats per minute). This controls the tempo of any tempo based effects.

You can also set the tempo using the Tap Tempo button (located on the front panel above the Pitch Bend Wheel.) Tap the Tap Tempo button on beat for a measure or two at the desired tempo to set a tempo. This also brings up the Tap Tempo page (see Tap Tempo Button on page 3-7).

Clock Source

With the Clock Source parameter, you can set the Forte—within the current Multi—to generate its own tempo by setting Clock Source to Internal, or you can set the Forte to sync up with the tempo from another device—assuming the device is sending MIDI clock data to the Forte via MIDI or USB—by setting Clock Source to External. When Clock Source is set to External, the Tempo parameter disappears from the display.

KB3 Channel

If KB3 Programs are selected for more than one Zone, this parameter specifies which MIDI Channel has priority to load a KB3 Program. Only one KB3 Program can be loaded at a time. You can set this parameter to a value between 1 and 16. If you want a KB3 Program to play in a zone, you should set the KB3 channel to the channel of the Zone.

The ARP Page

The Arpeggiator in Multi Mode is very similar to the Program Mode arpeggiator. See The Arpeggiator Function on page 7-55 Program Edit Mode Chapter for a full description of each arpeggiator parameter.

In Multi Mode, the Arpeggiator works the same as in Program Mode, except there is one arpeggiator per Zone. The Arpeggiator in each Zone can each have different settings, and they can be played at the same time. Also, in Multi Mode the Arpeggiator page does not have the Tempo parameter, instead the Tempo parameter on the Multi Common page should be used.

Unlike the Arpeggiator in Program Mode, the Arpeggiator in Multi Mode has the Sync Type parameter. Setting the Sync Type parameter to AnyBeat will keep arpeggiators in sync to the same beat pulse across multiple Zones. When the Sync Type parameter is set to AnyBeat, playing an arpeggiator in one Zone will wait for the next beat of any currently playing arpeggiators before starting. Set the Sync Type parameter to Off if you don't want to keep arpeggiators in sync.

Arp Save

See ArpSave on page 7-69 in the Program Edit Mode chapter for information.

About Auxiliary Effects

Programs and Multis both have an auxiliary effect send. An auxiliary effect is an effect that is not in the direct path of the sound, but rather, it "receives" and processes the sound applying the effect, which is mixed back with the original sound. The following diagram illustrates the signal path of a sound through the auxiliary effect: On the Forte, the auxiliary effects are global to all channels and Zones, Programs and Multi's. One effect chain can be loaded into each of Aux1 and Aux2, and these are used for any Program or Multi that has active Aux Sends.
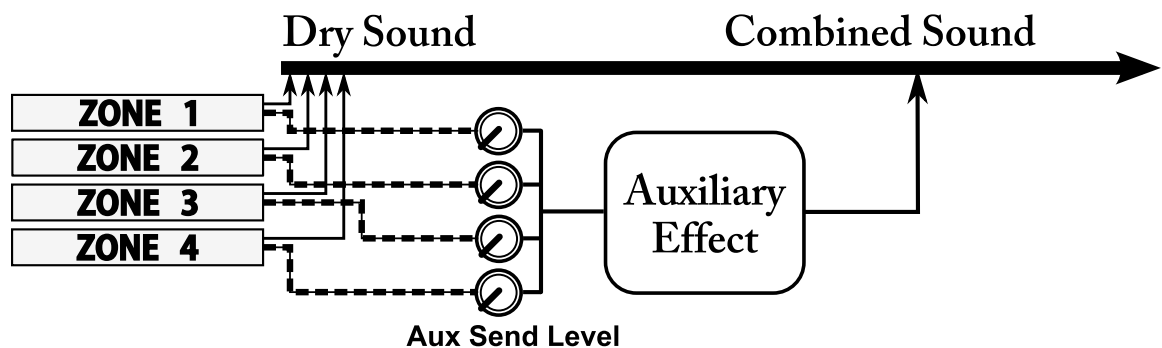
The AUX1 and AUX2 parameters (on the FX page) determines the level the auxiliary effect will process the sound for that Zone.

Save and Delete User Multis

For details on saving user Multis, see Saving a User Multi on page 10-15 of the Multi Mode chapter.

For details on deleting user Multis, see DELETE Page on page 12-21.

Chapter 12
Global Mode

About Global Mode

Global Mode gives you access to the global parameters of the Forte. It allows you to edit the master settings of the unit. It also allows you to restore factory defaults on the unit by performing a Hard or Soft Reset.

> ⚠ **CAUTION: Performing a Hard Reset will erase ALL User Programs, User Multis and reset Global settings to a factory state.**

To enter Global Mode from another Mode, press the Global Mode button.

Soft button options for Global mode
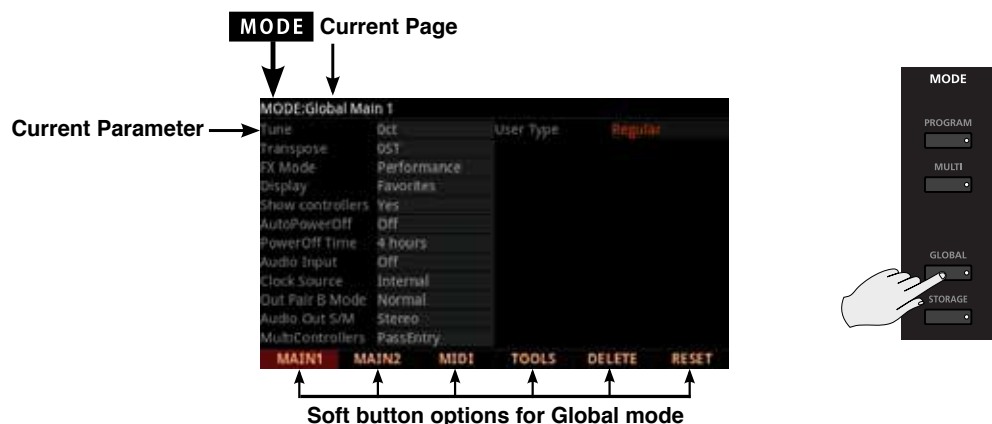
While you are in Global Mode, the Global button's indicator LED is lit.

When you enter Global Mode, the last selected parameter since power-up (or the Tune parameter if you're entering Global Mode for the first time since power-up) will be the currently selected parameter.

Selecting and Editing Parameters

To scroll through the parameters of Global Mode, use the Up/Down Arrow buttons.

First, using the buttons underneath the display, select the page you need.

To edit the currently selected parameter, use the Alpha Wheel or the Previous and Next buttons. Pressing both Previous & Next buttons simultaneously (called Value Jump) will jump to a different value depending on the parameter selected. The jump value is mentioned in each of the parameter descriptions below.

MAIN1 Page

The MAIN1 page in Global Mode allows you to set up how effects are applied, tuning and the way things are displayed on the Forte LCD display.
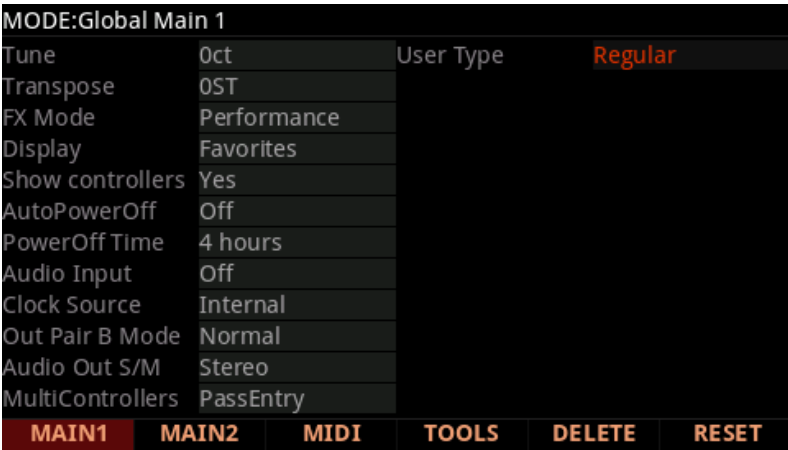
Parameter	Range of Values	Default Value
Tune	-100 to 100 Cents (Ct)	0ct
User Type	Regular, Advanced	Regular
Transpose	-128 to 127 Semitones (ST)	0ST
Program Tempo	Program, System	Program
FX Mode	Performance, Multitrack	Performance
Display	Large, Favorites, List	Large
Show Controllers	Yes, No	Yes
Auto Power Off	On, Off	On
Power Off Time	15 & 30 mins, 1 hr, 2 hr, 4 hr, 8hr	4 hours
Audio Input	On, Off	Off
Clock Source	Internal, External	Internal
Out Pair B Mode	Normal, Mirror Out Pair A	Normal
Audio Out S/M	Stereo, Auto	Stereo
Multi Controllers	Instant, Pass Entry	Instant

Tune

The Tuning parameter allows you to fine-tune the unit in cents—one cent is one hundredth of a semitone (100 cents comprise a semitone). You can select any tuning from -100 cents to 100 cents. By default this parameter is set to 0.

User Type

The User Type parameter allows you to show or hide advanced features of the Forte. By default, User Type is set to Regular. Setting User Type to Regular hides advanced features and makes some modes easier to navigate. Setting User Type to Advanced gives you access to additional features.

See the chapter for each mode for details on Advanced features in each mode. Setting User Type to Advanced enables the following features:

- Program and Multi mode: In Favorites view, access 16 Banks of Favorite Programs and Multis using the Channel Up/Down buttons.
- Program Edit mode: Access full VAST, KB3 and FX editing. Scroll through a larger range of FX Chain IDs. Access arpeggiator Pattern editing (note shift, velocity and duration). Edit User Intonation Maps.
- Multi Edit mode: Access 16 Zones. Nested Program editing from the Overview page. Nested Aux Override Chain editing from the FX page. Arpeggiator Pattern editing (note shift, velocity and duration).
- Global mode: Access the MAIN1 Program Tempo parameter. Access Key Velocity Map editing. Edit User Intonation Maps.

Transpose

The Transpose parameter allows you to tune the pitch of the unit in semitones.

Program Tempo

The Program Tempo parameter is shown when the User Type parameter is set to Advanced. When this is set to Program, each program can be saved with a specific tempo, or be set to use the system tempo. Tempo is used for the Arpeggiator as well as Tempo synced effects. This is set on the Program Edit Arp page (see Tempo on page 7-57). Per-program Tempos can also be overridden by the by selecting System for the Global tempo parameter.

FX Mode

The FX Mode parameter determines how the Forte responds to interrupts with regards to effects. You can set this parameter to either Performance or Multitrack.

With FX Mode set to Performance, the Forte minimizes disruption of existing effects when changing Programs, and entry values will not disrupt sustained notes when changing Programs in Program Mode. When controlling the Forte from an external sequencer in Program Mode, setting FX Mode to Multitrack will minimize effect disruption.

Display

The Display parameter allows you to change the way that Programs and Multis are displayed on the Program and Multi Mode main pages by selecting one of three different "views". The default is "Large" view, which displays the Program or Multi name with large text, along with the category name and background image. "Favorites" view is the same as Large view, plus the names of 10 favorite Programs and/or Multis are shown at the bottom of the display. "List" view displays the current Program or Multi as a selected item in a scrollable circular list that shows the next and previous Programs or Multis. "Large" and "Favorites" views can also show controller assignments and values when a controller is moved (Sliders, Switch buttons, Wheels, and Pedals). See "Show Controllers" below for details.

If Favorites view is selected and the Global Mode User Type parameter has been set to Advanced, you can use the Channel/Zone buttons in Program and Multi Mode to scroll through 16 banks of 10 Favorite Programs and/or Multis, allowing you to save and access 160 Favorites. With these settings, Program and Multi mode will show the current Favorites Bank number in the upper right hand corner of the screen instead of the current MIDI channel.

Show Controllers

When "Large" or "Favorites" view is selected for the Display parameter (see above), the Program and Multi Mode main pages can briefly show controller assignments and values when a controller is moved (Sliders, Switch buttons, Wheels, and Pedals). Set this parameter to "Yes" to briefly show controller assignments when a controller is moved, or set it to "No" to hide controller assignments.

Auto Power Off

The auto power off parameter turns the power saving feature on. When the Auto Power Off parameter is set to On, the Forte will automatically power off after the Power Off Time has expired, from the last key press (physical or MIDI), button press, controller movement, or USB MIDI activity.

Power Off Time

If the Auto Power Off parameter is set to On, then the Forte will power off after the time selected by the Power Off Time parameter has elapsed. The Forte will display the following warnings before powering off. Press a key or move any Forte control to dismiss the warning message. After dismissing this message, the Forte will wait the selected amount of time before showing this warning again.
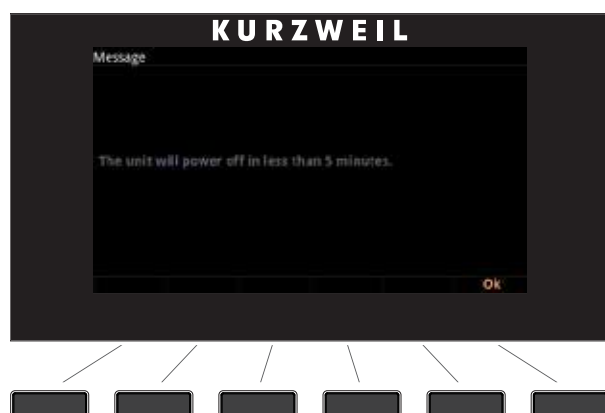
Audio Input

If you have an MP3 audio player plugged into the Forte's rear "Audio In" jack, setting this to On will allow audio to be heard. This signal will be mixed with sounds normally generated by the Forte.

Clock Source

With the Clock Source parameter set to Internal, Forte plays using its own Tempo. If you wish to sync the Forte to the tempo of an external device, use the External setting.

Out Pair B Mode

The B Audio Outputs can either be used as a second set of stereo (auxiliary) outputs by setting this parameter to "Normal" or they can be used to mirror the main A Audio Outputs by setting this parameter to "Mirror Primary Outputs". By default this parameter is set to Normal.

Audio Out S/M

The audio outputs are normally used as a stereo pair; however, on occasion the Forte might be operated in Mono mode by plugging an audio jack into the Left A Audio Output. Setting this parameter to Auto allows the Forte to detect the audio connections and adjust to mono output if required. The parameter can be set to Stereo, to force the Forte to output a stereo signal always and ignore the audio output detection. By default this parameter is set to Auto.

Multi Controllers

When a multi is selected, this parameter determines how the sliders respond to movement. When set to instant, moving a slider will result in the assigned parameter immediately jumping to the slider position. With some parameters an abrupt change to the sound may be undesirable. In this case set this parameter to PassEntry and the slider will only become active when the slider is moved past the Multi Entry Value. This results in smooth changes to the sound.

MAIN2 Page

The MAIN2 page in Global Mode allows you to set up the feel and response of the Forte keyboard to your playing style, the intonation key of music, as well as how pianos and drums respond.

Parameter	Range of Values	Default Value
Velocity Map	Linear, Light1, Light2, Light3, Hard1, Hard2, Hard3, PianoTouch, Easy Touch, GM Receive	Linear
Key Velocity Map list	-50 - +50	0 None
Pressure Map	Easiest, Easier, Easy, Linear, Hard, Harder, Hardest	Linear
Press S Override	None, 0% - 300%	None

Parameter	Range of Values	Default Value
Intonation Map	0 None, 1 Equal, 2 Just,3 Just/b7th, 4 Harmonic, 5 Just-Harm, 6 Werkmeister, 7 1/5thComma, 8 1/4thComma, 9 IndianRaga, 10 Arabic, 11 BaliJava1, 12 BaliJava2, 13 BaliJava3, 14 Tibetan, 15 Carlos A, 16 Pyth/aug4, 17 Pyth/dim5, 18 EastMed	1 Equal
Int. Key	C, C#, D, D#, E, F, F#, G, G#, A, A#, B	C
DrumRemap	None, GM	None
Pedal Noise	Off, On	On
S.Buttons 1-2	Octave	Octave
SW1, SW2, SW3 Override	Sustain, Sostenuto, Soft, Data Inc, Data Dec, Favorite Inc, Favorite Dec, Arp On/Off	None
CC1, CC2 Override	ModWheel, Foot, Volume, Expression, Pressure	None
Rotary Override	Button+Pedal, Button	Button+Pedal

Velocity Map

The Velocity Map parameter determines the way the Forte generates MIDI velocity information. Different maps generate different MIDI velocity values for the same physical key strike velocity .

The default map (Linear) provides the widest range of velocity expression, but you may want to choose a different map if the default does not suit your playing style. You can select from any of the following settings:

Light3 **Light2** **Light1**	Makes it increasingly easier to produce high MIDI velocity values for the same key strike velocity (with Light3 being the easiest). These maps work best for those with a light touch.
Linear	The Forte default map. Linear, allows MIDI velocities to pass unchanged. It follows a linear response.
Hard1 **Hard2** **Hard3**	Makes it increasingly harder to produce high MIDI velocity values for the same key strike velocity (with Hard3 being the hardest). These maps work best for those with a heavy touch.
PianoTouch	Simulates the general velocity response of an acoustic piano, and is best suited for playing acoustic piano programs.
Easy Touch	Similar to the Light1/Light2/Light3 settings. Makes higher velocities easier to play, but allows more sensitive control over playing high velocities by not boosting the MIDI velocity for fast strike velocities as much as it does for medium strike velocities.
GM Receive	Mimics the velocity response commonly used by keyboards that use the General MIDI (GM) sound set. The GM Receive map makes medium strike velocities produce higher MIDI velocities compared to the Linear map.

Key Velocity Map

Adjust the velocity response per key. Select the "1 Flat" map and press the Favorites 1 button to edit the map (the Global Mode MAIN1 User Type parameter must be set to Advanced). In the Key Velocity Map editor, keys can be selected by scrolling, or using the Assign function of the Enter button (hold the Enter button and strike a key). Velocity response for each key can be adjusted by +/- 50. After making changes in the Key Velocity Map editor, press the SAVE soft button if you wish to save your changes as a user Key Velocity Map. Use the save dialog to select an ID to save to (32-127) and rename the map if desired.

Pressure Map

The Pressure Map parameter determines the way the Forte controls Pressure (Aftertouch). Different maps generate different MIDI pressure values for the same physical key depending on how hard you press and hold the key.

Easiest Easier Easy	Makes it increasingly easier to produce high MIDI pressure values (with Easiest being the easiest).
Linear	The Forte default map. Linear, allows MIDI pressure (aftertouch) to pass unchanged. It follows a linear response.
Hard Harder Hardest	Makes it increasingly harder to produce high MIDI pressure values (with Hardest requiring most pressure).

Press S Override

In addition to the Pressure Map parameter, Press S Override provides fine adjustment of key pressure (aftertouch) sensitivity. A setting of 0% prevents the generation of pressure messages.

S.Buttons 1-2

This sets the function of Soft buttons 1 and 2 in Program/Multi Mode. Select Octave for OCTAVE-/OCTAVE+ buttons, which will transpose all MIDI notes played on the keyboard, or Select Arp for ARP ON/LATCH buttons. In Program mode ARP ON enables the arpeggiator for the current program. In Multi mode ARP ON enables the arpeggiator for any Zones in the current Multi which have an Arp Mode setting other than Off. LATCH enables the arpeggiator Latch function for any currently enabled arpeggiators, based on the Latch setting of each arpeggiator.

Intonation Map

Most modern western music uses what is known as equal temperament. This means that the interval between each semitone of the 12 tone octave is precisely the same as every other semitone.

However, many different intonation intervals have evolved over the centuries and across cultures and instruments, so equal temperament will not sound appropriate for certain styles of music. The Forte supplies you with 18 different factory intonation maps which are useful for a range of different styles. You can further customize each map or create your own by editing a map (see Editing Intonation Maps below.) Each of these maps defines different intervals between each of the semitones in a single octave (used for all octaves) by setting pitch offsets for each note in cents.

Like many instruments before the adaptation of equal temperament, most of these intonation maps were designed to sound best in one specific key. Though some may have historically been in a different key, all of the Forte's factory intonation maps are set to root note C by default. You can change the root key of the current intonation map by using the Int.Key parameter (see the Intonation Key (Int.Key) section below.)

0 None	No intonation map is used, intonation is equal.
1 Equal	No detuning of any intervals. The standard for modern western music.
2 Just	Tunings are defined based on the ratios of the frequencies between intervals. The original tuning of Classical European music.
3 Just/b7th	Similar to Just, but with the Dominant 7th flatted an additional 15 cents.
4 Harmonic	The perfect 4th, Tritone, and Dominant 7th are heavily flatted.
5 JustHarm	Approximation of a historical intonation.
6 Werkmeister	Named for its inventor, Andreas Werkmeister, it was developed to enable transposition with less dissonance than classic equal temperament.
7 1/5thComma	Approximation of a historical intonation based on the comma system.
8 1/4thComma	Approximation of a historical intonation based on the comma system.
9 IndianRaga	Based on the tunings for traditional Indian music.
10 Arabic	Oriented toward the tunings of Mid-Eastern music.
11 BaliJava1	Based on the pentatonic scale of Balinese and Javanese music.
12 BaliJava2	A variation on BaliJava1, slightly more subtle overall.
13 BaliJava3	A more extreme variation.
14 Tibetan	Based on the Chinese pentatonic scale.
15 Carlos A	Developed by Wendy Carlos, an innovator in microtonal tunings, this intonation map flats each interval increasingly, resulting in an octave with quarter-tone intervals.
16 Pyth/aug4	This is a Pythagorean tuning, based on the Greek pentatonic scale. The tritone is 12 cents sharp.
17 Pyth/dim5	This is a Pythagorean tuning, based on the Greek pentatonic scale. The tritone is 12 cents flat.
18 EastMed	Eastern Mediterranean. The Major 3rd and Major 7th are flat by 50 cents.

Editing Intonation Maps

To edit an intonation map or create a new map, the Global mode User Type parameter must be set to Advanced. Select an existing map and press the Favorite 1 button to bring up the intonation editor (see below.) Intonation maps are based around a root key, use the Channel up/down buttons to change the root key, and the layout of keys will shift in the display (this is the same as changing the Int.Key parameter (see Intonation Key (Int.Key) below.) Intonation Key is not saved with the intonation map.) Use the cursor to move between notes. Each note can be shifted by ± 200 cents (100 cents=1 half-step.) Use the alpha wheel, or plus/minus buttons to enter the desired cent shift amount for each note.

Press the Save soft button to bring up the save dialog which allows you to rename the map and choose an ID to save to. Edited user intonation maps can be saved to IDs 32-127. Press the Exit soft button to return to the Global Main 2 page without saving your changes. When exiting the editor, it will automatically give you the option to save the map if changes have been made.

Int. Key (Intonation Key)

This sets the tonic, or base note from which the currently selected intonation map calculates its intervals. If you select G as the intonation key, for example, and the intonation map you select tunes the minor 2nd down by 50 cents, then G# will be a quartertone flat relative to equal intonation. If you change the intonation key to D, then D# will be a quartertone flat. If you use nonstandard intonations, you'll want to set Int.Key to the key you're playing in.

If the Intonation parameter is set to Equal, changing Int.Key has no effect.

Drum Remap

This parameter will remap all Drum programs to conform to the General MIDI (GM) drum map, a standard drum map used in many keyboards and synthesizers. The GM drum map isn't optimally intuitive in terms of playability, so by default the Forte uses a unique keymap that is more intuitive and lends better to performance. However, the GM drum map is so commonplace that many players feel more comfortable playing drum programs with the GM drum map. Because of this, the Forte is designed such that you can remap drum programs to the GM drum map.

When the Drum Remap is set to None, no remapping takes place in Program mode.

When the Drum Remap is set to GM, the Forte remaps Drum programs to the GM drum map.

Pedal Noise

Some piano Programs have a Pedal Noise feature programmed into the sound. This parameter allows you to turn the Pedal Noise off if you prefer not to use it. If it is on, it will only activate noise on those Programs that have been programmed to use it.

Switch Pedal Overrides

The Switch Pedal Override parameters (SW1-3 Override) allow the controller assignments for the Switch Pedals to be changed for all Programs and Multis. (KB3 organ programs have a separate override for the SW1 pedal, see the Rotary Override section below for details.) The alternative assignments available for the Switch Pedal Overrides include the standard pedal controls of Sustain, Sostenuto and Soft as well as DataInc, DataDec, FavoriteInc and FavoriteDec, which can be used to change Programs, Multis or Favorites by using a pedal.

Use the DataInc and DataDec assignments (data increment/decrement) to select the next or previous ID when you depress the pedal. If you are in Program mode, DataInc and DataDec will select the next or previous Program. If you are in Multi mode, DataInc and DataDec will select the next or previous Multi.

Use the FavoriteInc and FavoriteDec assignments (Favorite increment/decrement) to select the next or previous Favorite when you depress the pedal. If you are not playing any Favorites, FavoriteInc and FavoriteDec will select the first Favorite, or the last Favorite that was selected since turning on the Forte.

In Multi Edit Mode, if a pedal is selected which has a pedal override enabled in Global mode, a message "Global Pedal Override is enabled" will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

In Multi Edit Mode, setting a Pedal Mode to "Off" will disable the override for that Pedal in the selected Zone. It can be useful in Multi Mode to disable the Pedal Override for some Zones. For example, you may want to use a Pedal Override to control Sustain in all Zones of a Multi, but disable Sustain for one Zone.

When a Pedal Switch Override is used, the pedal will behave in Multi Mode as if the OnValue and OffValue are set to 127 and 0 respectively (this will not be shown in Multi Edit Mode). When a Pedal Switch Override is set to Sustain, Sostenuto or Soft, the pedal will behave in Multi Mode as if Pedal Type is set to Momentary (this will not be shown in Multi Edit Mode). When set to DataInc, DataDec, FavoriteInc or FavoriteDec the pedal will behave in Multi Mode as if Pedal Type is set to Toggle (this will not be shown in Multi Edit Mode).

CC Pedal Overrides

In a similar manner to Switch Pedal Overrides, the CC Pedal Override parameters (CC1-2 Override) allow the Continuous Control Pedal assignments to be changed for all Programs and Multis. The alternative assignments available for the CC Pedal Overrides include Mod Wheel (MIDI CC 1), Foot/Wah (MIDI CC 4), Volume (MIDI CC7), Expression (MIDI CC11) and Pressure.

In Multi Edit Mode, if a pedal is selected which has a pedal override enabled in Global mode, a message "Global Pedal Override is enabled" will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

Rotary Override

By default KB3 organ programs have the Slow/Fast speed control for the Rotary speaker effect assigned to the Variation Button and the Sustain Pedal (SW1). The Rotary Override parameter allows you set the sustain pedal to function as sustain for all KB3 Programs, instead of Rotary Slow/Fast. The Variation button will always control the Rotary speed, regardless of this parameter's setting.

MIDI Page

The Forte can transmit and receive MIDI via its MIDI ports and USB. The MIDI page in Global Mode allows you to configure how this will be handled.

```
MODE:Global MIDI
Destination      USB+MIDI+LOCAL
Change Multis    Immediate
Bank Select      Ctl 0/32
PrgChangeMode    Extended
Local Kbd Chan   None
SysEx Id         0
Program Change   On




    MAIN1    MAIN2    MIDI    TOOLS    DELETE    RESET
```

Parameter	Range of Values	Default Value
Destination	NONE, LOCAL, MIDI, MIDI+LOCAL, USB, USB+LOCAL, USB+MIDI, USB+MIDI+LOCAL	USB+MIDI+LOCAL
ChangeMultis	Immediate, AllKeysUp	Immediate
Bank Select	Ctl 0, Ctl 32, Ctl 0/32	Ctl 0/32
PrgChangeMode	Extended, K2600	Extended
LocalKbdChan	None, 1 to 16	None
SysExID	0 to 127	0
Program Change	On, Off	On

Destination

The Destination parameter determines the destination of MIDI data generated by striking keys or activating controllers. This data can be sent to the Forte sound engine, through the MIDI out ports, or both. You can set this parameter to NONE, or any combination of the three available destinations.

Note that this parameter is always active and works in conjunction with the Multi Mode Destination parameter (see). These parameters act like filters, so if the Multi Mode Destination parameter is set to USB+MIDI+LOCAL and the Global Mode parameter is set to LOCAL, the MIDI data will only be transmitted locally.

NONE	No MIDI data transmission from the Forte. The Forte can still receive incoming MIDI data.
LOCAL	MIDI data is sent only to the Forte sound engine. MIDI Out is disabled.
MIDI	MIDI data is sent only through MIDI Out. The sounds of the Forte are disabled
MIDI+LOCAL	MIDI data is sent both to the Forte sound engine and through the MIDI Out.
USB	MIDI data is sent only through the USB port. The sounds of the Forte are disabled
USB+LOCAL	MIDI data is sent both to the Forte sound engine and through the USB port.
USB+MIDI	MIDI data is sent both to the MIDI OUT and USB port.
USB+MIDI+LOCAL	MIDI data is sent to the MIDI OUT, USB port. and to the Forte sound engine.

If you want to play the Forte, but not send any MIDI information to other MIDI instruments, then select LOCAL.

If you want to use the Forte strictly as a MIDI controller for the other modules in your MIDI chain using the MIDI port, then select MIDI.

If you want to make use of the Forte's sounds as well as use it as a MIDI controller (MIDI port), then select MIDI+LOCAL.

If you want to use the Forte strictly as a MIDI controller for the other modules in your MIDI chain using the USB (Computer) port, then select USB.

If you want to use the Forte strictly as a MIDI controller for the other modules in your MIDI chain using the MIDI port and the USB (Computer) port , then select USB+MIDI.

If you want make use of the Forte's sounds and use it as a MIDI controller for the other modules in your MIDI chain using the MIDI port and the USB (Computer) port , then select USB+MIDI+LOCAL.

> ⚠ **CAUTION: It is possible to stop all MIDI transmission, in Multi Mode, if the Destination parameter is set to LOCAL, and the other is set to MIDI or USB.**

Change Multis

The Change Multis parameter determines the exact timing of Multi changes when you select a different Multi, either by a normal data entry method or via MIDI program change commands.

Choose AllKeysUp to indicate that you want Multi changes to take place only when you've released all currently held notes.

Choose Immediate to indicate that you want such changes to happen immediately when you select the Multi.

Bank Select

The Bank Mode parameter determines the controller number with which MIDI Bank change messages are received.

For MIDI Bank change messages, various manufacturers have chosen different MIDI controller numbers. Most have chosen Ctl 0, Ctl 32, or both. You can set this parameter to any of the following three controller IDs:

Ctl 0	MIDI Bank change messages are sent with controller number 0.
Ctl 32	MIDI Bank change messages are sent with controller number 32.
Ctl 0 / 32	MIDI Bank change messages are sent with both controller numbers 0 and 32.

PrgChangeMode

The Program Change Mode (ProgChangeMode) parameter determines the format of program change messages received by the Forte.

Program Change Type	For Use With
Extended	Bank changes and Program changes. A bank has 128 IDs. Note that our system will recognize 16 banks, from 0 to 15. (2048 IDs). This is for connecting a PC2 or a generic MIDI device as a controller device.
K2600	Bank changes and Program changes. A bank has 100 IDs. Our system will recognize in this case 21 banks, from 0 to 20. For example, with MIDI out from a K2600 into the MIDI in of the Forte, if you scroll or enter a number in the K2600, you will see the same numbers in the K2600 and in the Forte if the programs exist.

LocalKbdChan (Local Keyboard Channel)

Changing the setting of the Local Keyboard Channel parameter is useful only when the Forte is receiving MIDI information from an external source. Perhaps you have a favorite MIDI keyboard that you use to control all the gear in your studio, or you use a lot of outboard sequencing. If you're using the Forte as a standalone music workstation or performance keyboard, you can ignore this parameter and leave it set to None.

The local keyboard channel enables the Forte to receive MIDI information on a single channel, then rechannelize that information so you can play and control all Zones of a Multi, even if your MIDI source transmits on only one channel.

Program Mode

When you're in Program Mode, the local keyboard channel remaps incoming information to the Forte's current channel. When using the local keyboard channel, all the MIDI information received on the Local Keyboard Channel gets sent, after being remapped to the Forte's MIDI Out and USB ports.

You may find it more convenient to use the local keyboard channel. In this case, the Forte remaps incoming MIDI to the Forte's current channel, so in Program Mode, you'll always play the Program on the Forte's current channel. Incoming MIDI also gets sent to the Forte's MIDI Out and USB port. When this parameter is set, you will need to transmit on the local keyboard channel from your DAW or controller keyboard for the Forte to respond correctly.

Multi Mode

Things are a bit different for playing Multis. In this case, you must use the LocalKbdChan to be able to play and control all of the Multis Zones. Set LocalKbdChan to match the channel your external MIDI source is using (for example: your MIDI source transmits on Channel 1, set LocalKbdChan to 1). All MIDI information that the Forte receives on the local keyboard channel gets remapped to the channels and control destinations used by the Zones in the Multi.

The Forte also remaps certain MIDI Controller messages that it receives on the Local Keyboard Channel so that they correspond (in most cases) to the default assignments for the Forte's physical controllers (Mod Wheel, sliders, etc.). Physical controller assignments are handled by Multis and are defined per Zone in Multi Edit Mode. Each Zone of a Multi has its own controller assignments.

Sysex ID

The SysEx ID parameter determines the ID number for the unit if you are using more than one device with the same MIDI manufacturer ID number. You can set this parameter to any number from 0 to 127.

Unless you have multiple Forte keyboards receiving Sysex messages from a single source, you will not need to change the Sysex ID from the default setting of 0.

If you do have multiple Fortes receiving Sysex messages from a single source, make sure each Forte has a different Sysex ID. This will allow you to direct Sysex messages to the appropriate Forte by specifying which unit with the Sysex ID byte that's included with every Sysex message.

To have the unit respond to Sysex messages regardless of the Sysex ID, set Sysex ID to 127.

Program Change

Use the Program Change parameter to enable or disable sending program change messages to external MIDI devices.

TOOLS Page

Pressing the TOOLS soft button calls up a page that gives you access to several analytic and diagnostic tools. Additionally, pressing the two center soft buttons will call up the TOOLS page from any mode. Press the "EXIT" button when finished.

```
MODE:Global Tools




              Choose an option or press Exit button:




  ◀ MORE   MIDI OUT   MIDI IN   TEMPO   INFO   MORE ▶
```

MIDI OUT and MIDI IN

Press the MIDI OUT or MIDI IN soft buttons to view the MIDI Scope page for the MIDI Out or In ports, where you can monitor MIDI messages in real time. The MIDI OUT Scope page allows you to view MIDI messages sent from the Forte, while the MIDI IN Scope page allows you to view MIDI messages received by the Forte. The MIDI OUT Scope page is useful for making sure controls are assigned as you want them, checking note velocities, and checking controller values or other MIDI messages. The MIDI IN Scope page is useful for checking MIDI messages sent to the Forte from external MIDI devices. Each MIDI Scope page can store a history of 512 messages. Use the cursor Up and Down buttons to scroll up through the list of messages. The most recently sent or received message will be labeled number 1 at the bottom of the list.

```
MODE:Global MIDI OUT Scope
10: Note Off     ch 01  key 076  vel 034
9: Note On      ch 01  key 079  vel 059
8: Note On      ch 01  key 041  vel 039
7: Note On      ch 01  key 050  vel 035
6: Note On      ch 01  key 079  vel 053
5: Note On      ch 01  key 072  vel 026
4: Note Off     ch 01  key 050  vel 035
3: Note Off     ch 01  key 079  vel 034
2: Note Off     ch 01  key 041  vel 044
1: Note Off     ch 01  key 072  vel 036
   ◄ MORE   MIDI OUT   MIDI IN   TEMPO   INFO   MORE ►
```
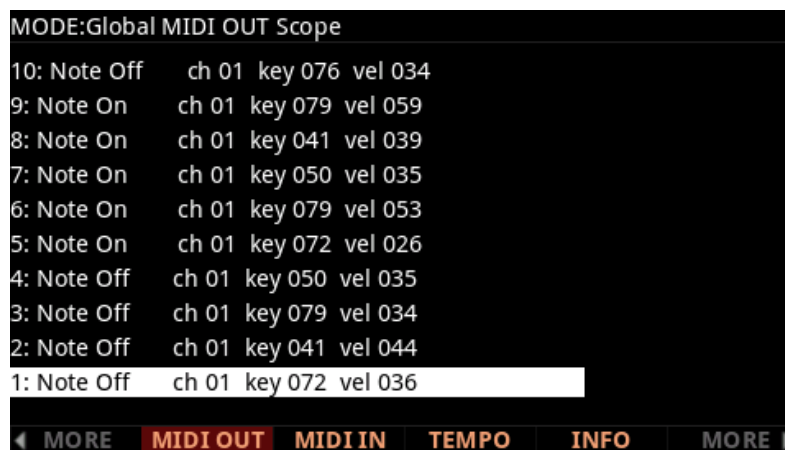
TEMPO

Press the TEMPO soft button to go to the TEMPO page. When the Clock Source parameter is set to Internal (see Clock Source on page 12-4), the Tempo parameter sets the Forte's System Tempo. The Tempo parameter values are in units of BPM (beats per minute).

```
MODE:Global Tempo



                  Tempo     120.00



   ◄ MORE   MIDI OUT   MIDI IN   TEMPO   INFO   MORE ►
```
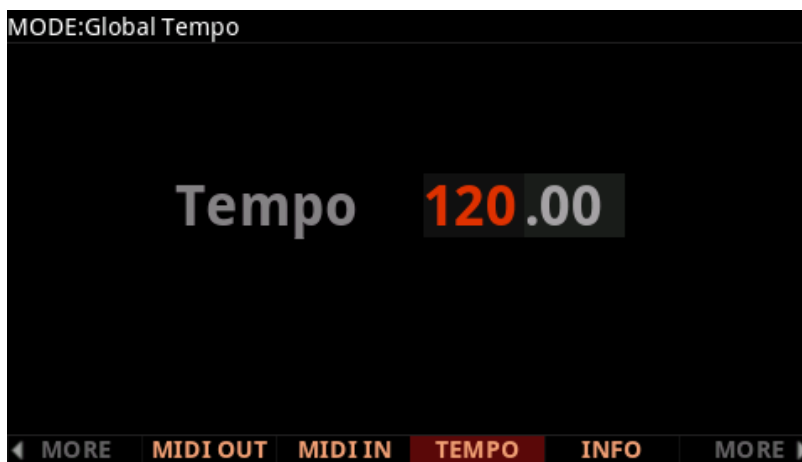
Note: You can also call up the TEMPO page from any other page by pressing the left and right navigation buttons simultaneously. Hit the Exit button to return to the previous screen.

In Program Mode, System Tempo can control the rate of each Program's arpeggiator, as well as the rate of any tempo synced Insert or Aux effects that each program may use. Most programs will default to using the System Tempo, though some programs may be programmed use their own tempo (for details see Tempo on page 7-58) All programs can be set to use the System Tempo by setting the Global Mode User Type parameter to Advanced, then setting the Global Mode Program Tempo parameter to "System". For details see

In Multi Mode, System Tempo is is ignored and the Multi Common Tempo of each Multi is used for all programs in a Multi.

Set the Tempo parameter with the Previous-/Next+ buttons, the Alpha Wheel, or alphanumeric entry. You can also set the system tempo by tapping the Tap Tempo button at the desired speed. You need to tap at least twice for a tempo to be calculated, though tapping several times (like on each beat of one or more measures) works best. The newly tapped tempo is displayed in the tempo field.

VOICES

Pressing the Voices soft button calls up the Voice Status page, which shows the Forte's active voice channels as you play.

The Voice Status pages displays each active voice as an "M" for mono voices or displays stereo pairs of voices as an "S". Whatever symbol the page displays, when the key of a voice is released, that voice's symbol on the Voices Status page turns into a "D" during the release portion of that voice's envelope. When the voice decays to silence, it is no longer active, and the "D" disappears.
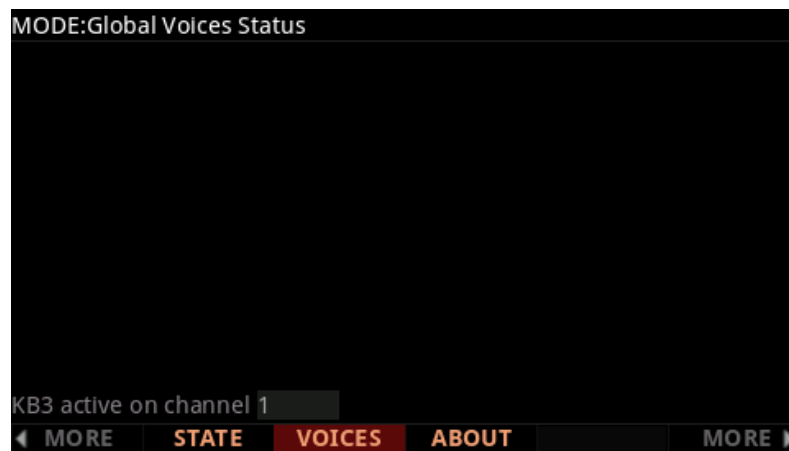
The Voice Status page gives you an indication of the envelope level of each voice, though not necessarily the volume level. Nonetheless, this can give you a valuable indication of how your voices are being used. For example, if all or most of the voices are active, then there's a good chance that when voice stealing takes place an audible voice will be reallocated.

KB3 Programs that simulate Hammond™ organs do not use any of the Forte's 128 voices of polyphony (this does not apply to KB3 Programs that emulate Vox™ or Farfisa™ organs). Only one KB3 Program can be active on the Forte's 16 MIDI channels at any time. The bottom of the voices page indicates which of the Forte's 16 MIDI channels (if any) has an active KB3 program.

STATE

This utility shows the internal state of the MIDI CCs in any channel at a particular time.

```
MODE:Global MIDI State
Channel          1
MIDI CC          0
MSB              0
LSB              0




    ◄ MORE      STATE     VOICES    ABOUT              MORE ►
```
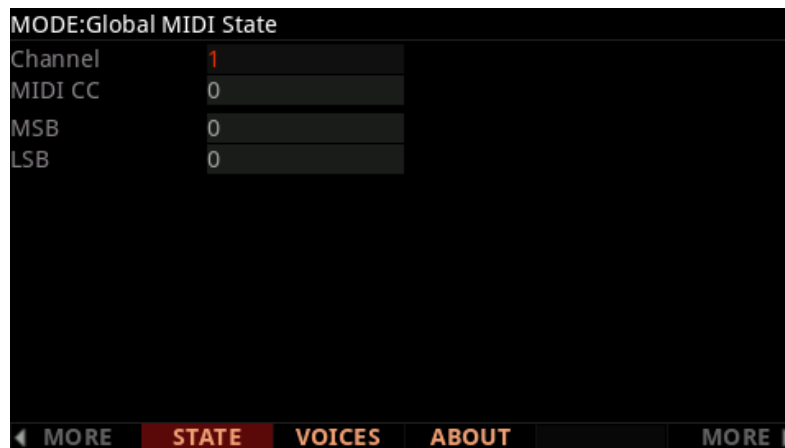
Typical use: "My channel X does not make any sound". Is it MIDI 7 (Volume), is it MIDI 11 (Expression) or is it something else? With STATE you can check the status for various CCs per channel. Use the cursor buttons to select the Channel or MIDI CC fields, then use the alpha wheel or previous/next buttons to select the desired Channel and MIDI CC to view.

INFO

The INFO page contains the system information indicating what version of operating system and objects is currently installed in your Forte keyboard.

Go to the Kurzweil website at http://www.kurzweil.com and make sure that you have the latest operating system available.

```
MODE:Global Info
O/S Version      3.55.26621
Object Version   1.40.1
Scanner Version  0.28




    ◄ MORE    MIDI OUT   MIDI IN    TEMPO      INFO     MORE ►
```

ABOUT

The ABOUT Page displays the Forte splash screen and automatically scrolls a list of credits and acknowledgments.

DELETE Page

The DELETE page is useful in deleting unwanted user-created objects in your Forte.

```
MODE:Global Delete
  ArpPreset       1024 Happy 4th
  ArpPreset       1025 Pix
  Program         1024 Head Trumpet
  Program         1025 Chaka Clav
  Multi           1024 Mock On!
  Mast.Table      1 Forte Master Table
  ShiftPatt       1024 ginor




  DELETE                                      BACK
```

Select the object that you wish to delete and press the DELETE soft button. This action cannot be undone.

> ⚠ **CAUTION: Be aware that deleting programs will permanently remove them from the Forte. If you wish to load the Program back into the Forte in the future, ensure that you save the Program to a flash drive or computer/tablet before deleting them.**

RESET Page

Press the Reset soft button to view the Global Reset page, where you can choose to perform a Soft Reset or Hard Reset. A Soft Reset restores all Global mode settings to their factory defaults. A Hard Reset restores all Global mode settings to their factory defaults, and deletes all user Programs and Multis.

CAUTION: Be aware that performing a reset on the Forte will result in changes that can not be reversed. Kurzweil recommends that you save (STORE) all your Programs and Multis that you wish to keep before performing a reset on the Forte.

Press the RESET button to enter the reset process. You can CANCEL at any time if you are unsure, or do not want to proceed.

Reset Global Mode parameters only (Soft Reset)

If you want to keep all your User Programs & User Multis and only reset the Global Mode parameters, then press "Soft" on the Global Reset page.

User PROGRAMs	No changes; nothing is reset.
User MULTIs	No changes; nothing is reset.
Global Mode	ALL GLOBAL PARAMETERS ARE RESET TO THE ORIGINAL FACTORY DEFAULTS.

Reset Forte To Its Factory State (Hard Reset)

The factory state means all your existing User Programs & User Multis will be permanently erased. This cannot be undone. Make sure you have used the Store function to backup all of the Programs and Multis that you wish to keep. All Global Mode parameters will be reset to default settings.

> ⚠️ **CAUTION: Performing the following reset, will result in ALL User Programs & User Multis being erased. Global parameters are returned to their default state. This cannot be reversed. Kurzweil recommends that you save (STORE) all your Programs and Multis that you wish to keep before performing a reset on Forte.**

User PROGRAMs	ALL USER PROGRAMS ARE DELETED.
User MULTIs	ALL USER MULTIS ARE DELETED.
Global Mode	ALL GLOBAL PARAMETERS ARE RESET TO THE ORIGINAL FACTORY DEFAULTS.

```
MODE:Global Reset




SOFT: Restores factory defaults.
HARD: Restores factory defaults and deletes user objects.




   HARD                              SOFT    CANCEL
```

Press the "Hard" soft button on the Global Reset page to perform a Hard Reset, and you will be prompted to continue.

Press "Yes" if you wish to proceed with the Hard Reset.

Press "Cancel" if you are unsure, or do not wish to proceed with the reset.

Chapter 13
Storage Mode

Storage mode lets you use a USB device (such as a thumb drive) or a computer to load, store, back up, and copy files between the Forte and the outside world.

Storage mode in the Forte allows flexibility to organize files and their contents. It's features can save you time by allowing you to select and organize files and directories.

The rear panel connections used for storing and loading files are:

- USB (Type A) Storage port

- USB (Type B) Computer/Tablet port

About Storage Mode

To enter Storage mode, press the Storage button. While you are in Storage mode, the Storage button's LED is illuminated.
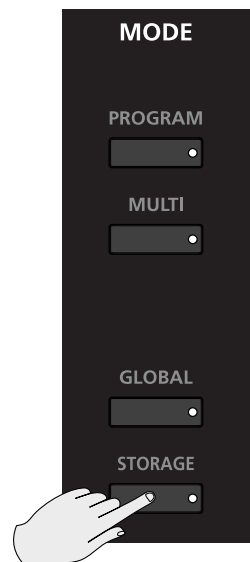
Whenever the Forte is accessing a storage device, the Storage Active LED will be lit.

Use this page to select the storage device you wish to use with the navigation arrows or the Alpha wheel. When a device is selected, you can then chose to Load or Store. If a storage device is not connected, Forte will prompt you with a message to do so.

The top line of the display indicates you are in Storage Mode.

Storage Mode Common Features

The following features are used in storage mode when saving or loading files.

Directories

A directory lets you group files together as you might separate documents using folders in a file cabinet. By default all storage devices have at least one "root" directory. To organize files in a USB device; you can create additional directories, as well as subdirectories within directories. Directories appear in the file list with the indicator <DIR> to the right of the directory name.

Path

When you choose the STORE or LOAD soft buttons on the Storage mode main page, you will have to choose exactly where in the storage device you wish to store to, or load from. This location is called a directory. When you need to choose a directory, you will see the Path field. The Path field shows the current directory on the current device.

When you choose a storage function for a connected device, Forte automatically chooses the root (top-level) directory for the Path field. The root directory is displayed as a backslash:

Path:\

When viewing a page that has the Path field, if their are any directories available in the root directory, you will be able to choose them from a list using the alpha wheel, cursor buttons, or - /+ (Previous/Next) buttons. Then, press the Open soft button to open that directory. The name of the directory will be displayed in the Path field. For example, if you have a directory called SOUNDS that is located in the current device's root directory, the Path field will appear as:

Path:\SOUNDS\

The backslash character is a directory separator, as in the following Path:

Path: \BACKUP\COVERBAND\SONGS\

This represents the directory SONGS, which is a subdirectory of the COVERBAND directory, which is a subdirectory of the BACKUP directory in the root directory. If the path is too long to fit on the display, it gets abbreviated. The maximum length of a path in the Forte is 64 characters (including the backslash characters).

Using the Open soft button causes you to navigate into directories and their subdirectories, away from the root directory. To navigate out of subdirectories back towards the root directory, use the Parent soft button to move one level back from the current directory

Common Dialogues

These are dialogues that the Forte calls up when about to perform certain storage functions.

The Select Directory Dialogue

When storing, the Forte will prompt you to select a directory in which to store.

There are three navigating soft buttons on the left side of the bottom of the page:

NewDir	Create new directory. Calls up the New Directory dialogue (see the following section)
Open	Opens the highlighted directory
Parent	Moves you up one level in the directory hierarchy. If the display is already at the root directory, this button has no effect.

When you have chosen your directory, press the OK soft button to call up the File Name dialogue (see the following section) and complete the storing process.

The File Name / New Directory Dialogue

When you create a new file in Storage mode, or create a new directory, the Forte prompts you to enter the name. This File Name dialogue appears as shown below:
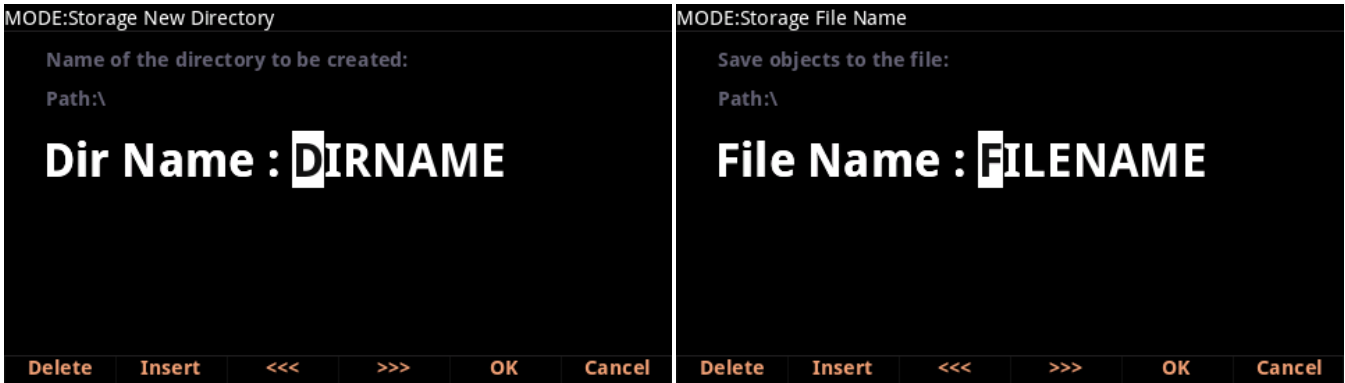
New file names will default to either FILENAME (after a powerup), or the name of the most recent file stored or loaded. New directory names will default to either DIRNAME (after a power up), or the name of the most recent directory created. You can edit the name using the keypad, alpha wheel, -/+ buttons, Left and Right cursor buttons, the Delete and Insert soft buttons, and the << and >> soft buttons.

Press the OK soft button to finish the operation.

The STORE Page

The STORE button allows you to store a file containing User Programs, User Multis and the User Master Table to a computer or storage device connected via a USB connection.
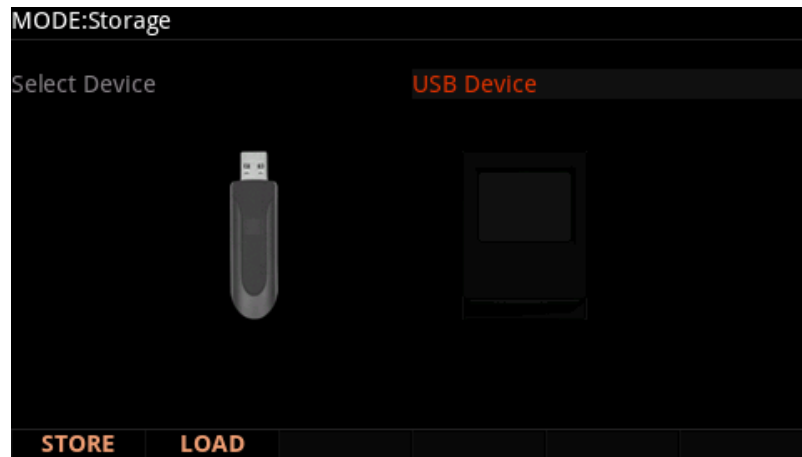
NOTE : If the Forte is currently connected to your computer as a MIDI controller, Saving or Loading a file in the PC Virtual Drive will temporarily disconnect the Forte USB MIDI connection for approximately 1 second. After Saving or Loading, the Forte may need to be reselected as a MIDI device in your computer program. Loading or Saving to the Flash Drive will not disconnect the USB MIDI connection.

Before you press the STORE selection button in Global Mode, make sure you have plugged the USB device into the Forte.

If you are storing sounds to your computer or Tablet, then use the cable that plugs into the computer/Tablet USB port on the rear panel of the Forte.

If you are storing sounds to a USB flash drive, plug them into the Device USB port on the rear panel of the Forte.

Pressing STORE

Press the STORE button when you have a storage device plugged into a USB port.

If no USB connection is detected by the Forte, you will see the error message "Error: No valid device inserted."

Store All

Press the "All" soft button to store all user objects into a single file, or press Cancel to return to the previous page. Pressing "All" calls up the Select Directory dialogue. The Forte stores files using the file extension .FOR. After storing, the Forte will display a message indicating if the store was successful or if a problem occurred.

Store Advanced

Press the "Advanced" soft button to go to the Storage Advanced page where you can select one or multiple individual objects to store, instead of saving all user objects. The Storage Advanced page shows a list of all user objects grouped by type. Use the cursor up/down buttons to navigate through the list. The object that is currently highlighted in red can be selected or deselected for storing by pressing the "Select" soft button. An asterisk (*) appears between the ID and object type of selected objects.

After selecting objects to store, press the "Store" soft button to store the selected objects to the current storage device, or press Cancel to return to the previous page. Pressing "Store" calls up the Select Directory dialogue. The Forte stores files using the file extension .FOR. After storing, the Forte will display a message indicating if the store was successful or if a problem occurred.
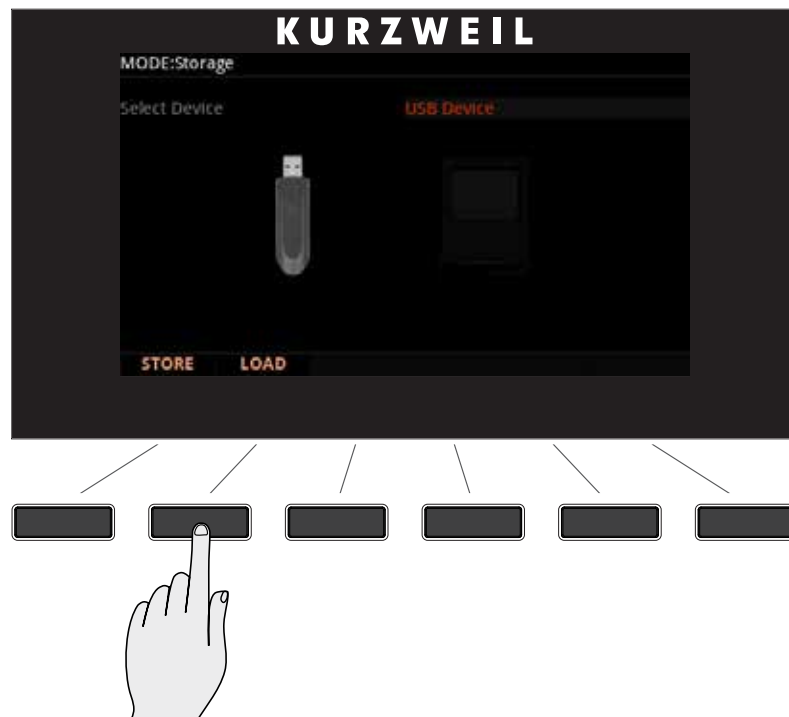
The LOAD Page

The LOAD button calls up the LOAD page where you can load compatible files from a storage device.

> **NOTE : If the Forte is currently connected to your computer as a MIDI controller, Saving or Loading a file in the PC Virtual Drive will temporarily disconnect the Forte USB MIDI connection for approximately 1 second. After Saving or Loading, the Forte may need to be reselected as a MIDI device in your computer program. Loading or Saving to the Flash Drive will not disconnect the USB MIDI connection.**
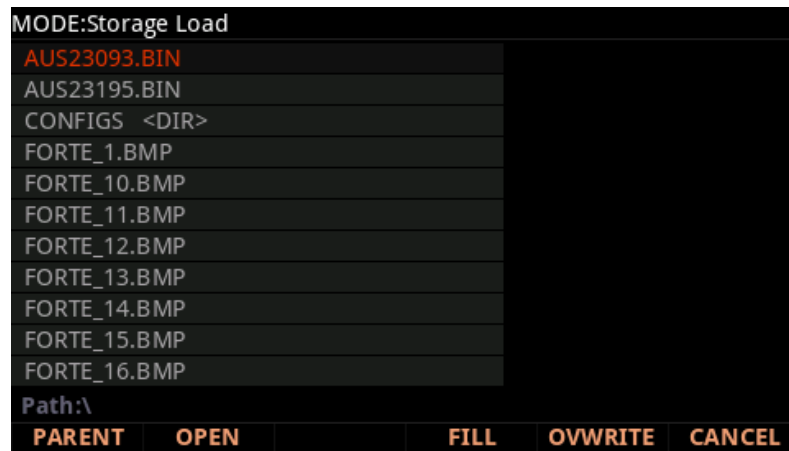
Before you press the LOAD selection button in StorageMode, make sure you have plugged the USB device containing your User Programs and/or Multis into the back of the Forte.

If your User Programs/Multis are located on your computer or Tablet, then use the cable that plugs into the computer/Tablet USB port on the rear panel of the Forte.

If your User Programs/Multis are located on a USB flash drive, plug them into the Device USB port on the rear panel of the Forte.

Pressing LOAD

Press the LOAD button when you have the hardware containing your User Programs/Multis plugged into the USB port.

```
MODE:Storage Load
AUS23093.BIN
AUS23195.BIN
CONFIGS  <DIR>
FORTE_1.BMP
FORTE_10.BMP
FORTE_11.BMP
FORTE_12.BMP
FORTE_13.BMP
FORTE_14.BMP
FORTE_15.BMP
FORTE_16.BMP
Path:\
 PARENT    OPEN            FILL    OVWRITE   CANCEL
```

If no USB connection is detected by Forte, you will see the error message "Error: No valid device inserted.".

Use the cursor buttons, -/+ buttons or the Alpha Wheel to browse the files in the currently selected storage device.

You can press the Open soft button to browse within a selected folder, or to browse individual objects within a selected Kurzweil object file (see the Compatible Files section below for details).

When browsing individual objects within a Kurzweil object file, you can select one or multiple individual objects to load. Objects within a Kurzweil file are shown in a list and grouped by object type. The object that is currently highlighted in red can be selected or deselected for loading by pressing the "Select" soft button. An asterisk (*) appears next to selected objects.

After selecting a file or individual objects to load, press the FILL or OVWRTE soft button to continue.

OPEN	Pressing the Open soft button will open the highlighted folder, or open the highlighted Kurzweil file allowing you to select individual objects
PARENT	Selecting Parent will close an existing open folder.
FILL	Selecting FILL means you would like to keep the existing User Programs or Multis. Forte will now load the User Programs/Multis into the first empty ID slot it finds, and then subsequent empty slots.
OVERWRITE (OVWRTE)	Selecting OVWRTE first deletes all the existing User Programs or Multis, and then loads the new User Programs or Multis into the first user location at ID number 1024 onwards.

During the load process the screen will show information about the objects that are being loaded. At the end, the screen will display a message indicating if the load process was successful, or if there were errors.

Example Using LOAD

The following example shows how each different loading methods affect how four programs load into the User bank that already contains programs.

Example: Starting with the following objects already stored in the Forte User bank:

Programs currently in Forte	
Program ID	Program Name
1024	3rd World Order
1025	PC3 Strings
1028	JuPiTaR BazZ
1031	VA1 Lead

Suppose you were to load a FOR (Forte) file containing the following Programs:

File to be Loaded	
Program ID	Program Name
1025	Synth Horn
1026	NYJazzy
1027	Saxxy
1028	Stabbatha

The two tables below show the results if you use FILL or OVWRITE with the User Bank.

Forte Bank after using FILL	
Program ID	Program Name
1024	3rd World Order
1025	PC3 Strings
1026	Synth Horn
1027	NYJazzy
1028	JuPiTaR BazZ
1029	Saxxy
1030	Stabbatha
1031	VA1 Lead
1053	Rhoady EP

Forte Bank after using OVWRITE	
Program ID	Program Name
1025	Synth Horn
1026	NYJazzy
1027	Saxxy
1028	Stabbatha

Compatible Files

Forte can load .PC3, .P3K, .PLE, .ART, .SPX and, .FOR files.

The Forte will read PC3-family files and will attempt a conversion of the objects on those files. While this process will not convert the objects 100%, it should get very close to the original sound.

Chapter 14
System Mode

⚠ **CAUTION: DO NOT ATTEMPT TO MAKE ANY CHANGES IN SYSTEM MODE UNTIL YOU HAVE READ AND FULLY UNDERSTOOD THIS CHAPTER**

This chapter will help you familiarize you with the functions of System Mode.

System Mode allows you to manage and upgrade the OS software of your Forte as well as perform diagnostic tests of the instrument's various internal systems and processes. Note that the functions that you have access to in System Mode govern the operation of your Forte, so only use System Mode when you must perform essential maintenance tasks.


To enter System Mode, follow these steps:

1. Power off your Forte.

2. Press and the hold the **ENTER** button, and power on the unit. Make sure to keep holding the **ENTER** button until "Entering System Mode" is displayed:

3. Release the **ENTER** button—at this point, you are in System Mode.

Run Forte

This is the first System Mode menu item.

Pressing the **"Run Forte"** soft button will load the OS and the Forte will start up as if you just switched on the unit.

If the Forte operating system fails to load up, you will see an error message with an error code.
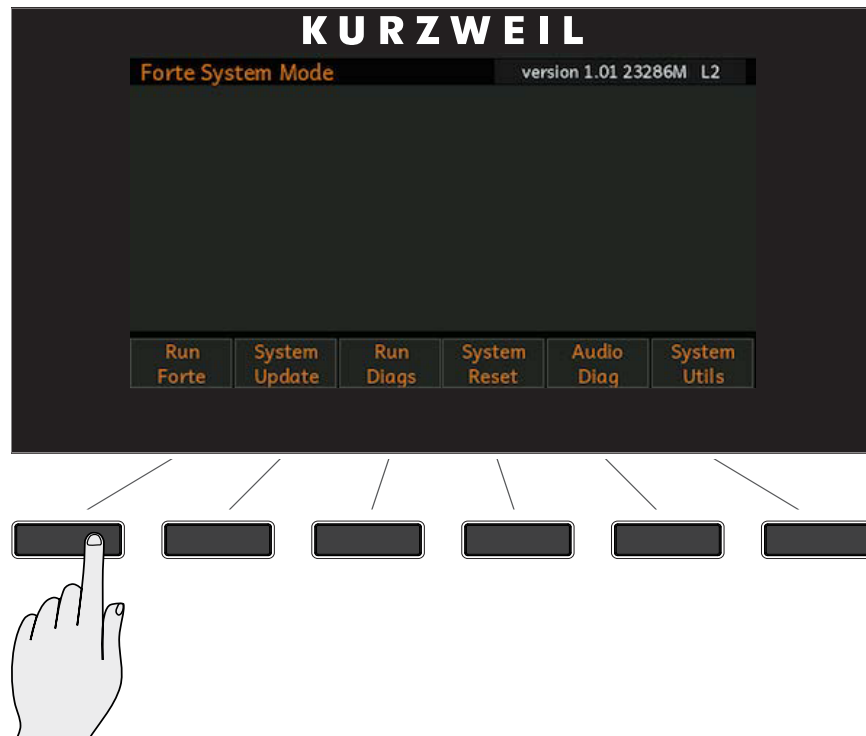
System Update

System Update allows you to keep your Forte running the latest available OS (Operating System), which you can download from the Kurzweil website.

The file that is used to install a new OS version with sounds is combined into one file called a KUF (Kurzweil Unified File).

A USB flash drive or computer (using a USB cable) can be used to perform the System Update.
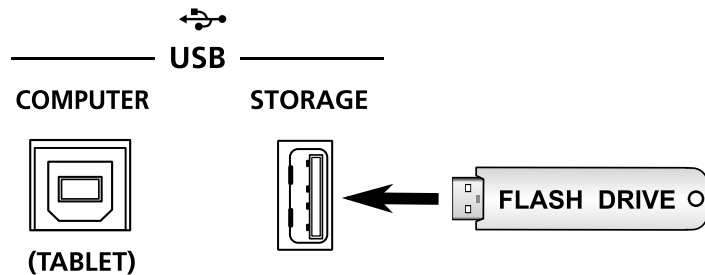
Storage

Select storage type.

USB Device   PC USB   Back

> ⚠ **Caution: Before Updating, be sure to back up any custom programming.**

> ⚠ **Caution: It is important that the install is not disrupted once loading begins. Powering off the Forte or your PC, removing the USB device or USB cable in the middle of loading could leave the Forte inoperable and then require repair service to restore.**
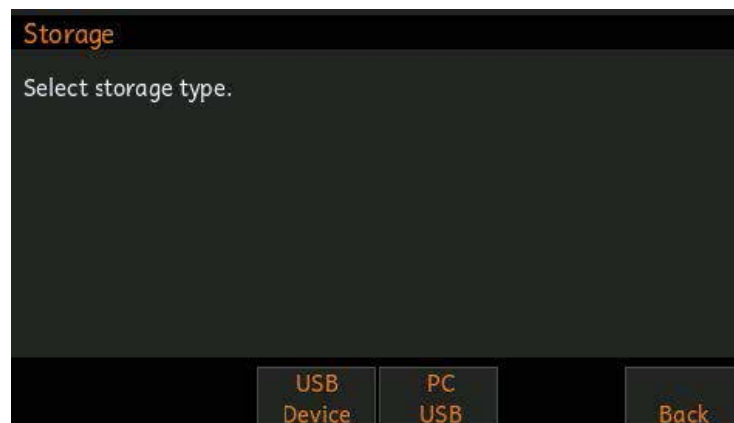
Install Using a USB Flash Drive

1. Download the System Update file from the Kurzweil website or another reliable source and save it in a known folder or directory on your flash drive.

2. Connect the flash drive to the USB STORAGE slot of Forte (powered off).

3. Follow the instructions specified on Page 12-1 to enter System Mode.

4. In System Mode, select System Update.

5. Select USB Device as the storage type.

6. If the system was able to read the USB flash drive that was plugged in, it will display a list of files and folders as shown below. You can use the arrow buttons or Alpha wheel to move up and down the list. Select the UP soft button if you want to go up to the parent directory level. If the KUF file is selected, select the OK button.

You will see a progress bar indicating the progress. If update was successful you will see a confirmation message. If there was a failure you will see a self-explanatory failure message (with error code) to indicate the failure.

Install Using a Computer/Tablet

1. Download the System Update file from the Kurzweil website or another reliable source and save it in a known folder or directory accessible to your computer/tablet.

2. Connect the Forte (powered off) to the computer/tablet with the USB cable provided into the USB Computer/Tablet slot.

3. Follow the instructions specified on Page 12-1 to enter System Mode.

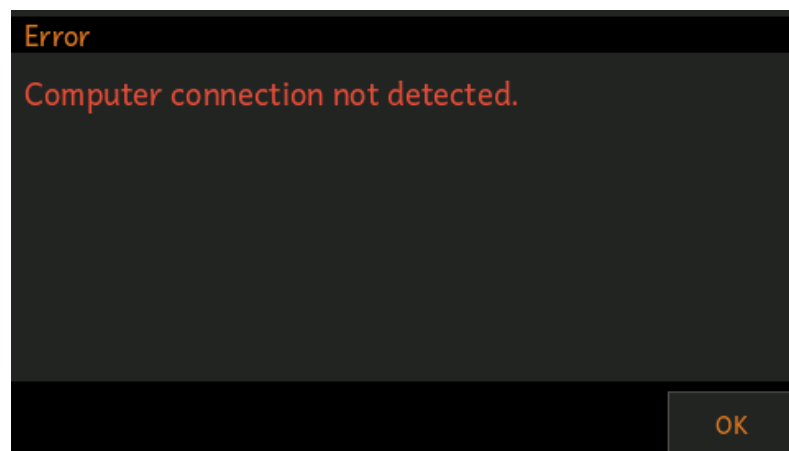4. In System Mode, select System Update.

5. Select PC USB as the storage type.

6.   If the Forte cannot detect a connection to the computer/tablet it will display the message below.

7. If the connection was detected, you will be prompted with the above message. Copy the KUF file to the virtual drive that appears on the computer/tablet and press OK.
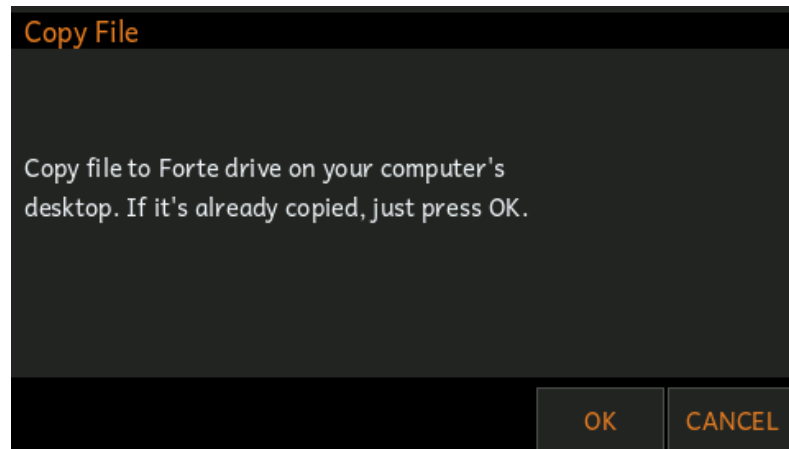
8. Select the file from the list displayed on the next screen and Press OK.

You will see a progress bar indicating the progress. If update was successful you will see a confirmation message. If there was a failure you will see a self-explanatory failure message (with error code) to indicate the failure.
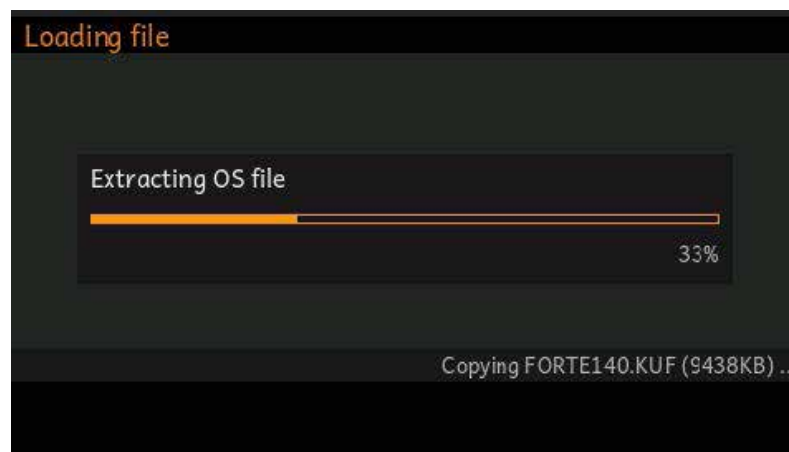
Run Diagnostics

You will most likely not need to use the Run Diagnostics operations in normal cases.

These operations are mostly used at the factory and service centers by technicians for troubleshooting hardware problems. But, in some cases you might be required to run these diagnostics for troubleshooting and diagnosing symptoms. In these cases, follow the directions of Kurzweil Technical Support.
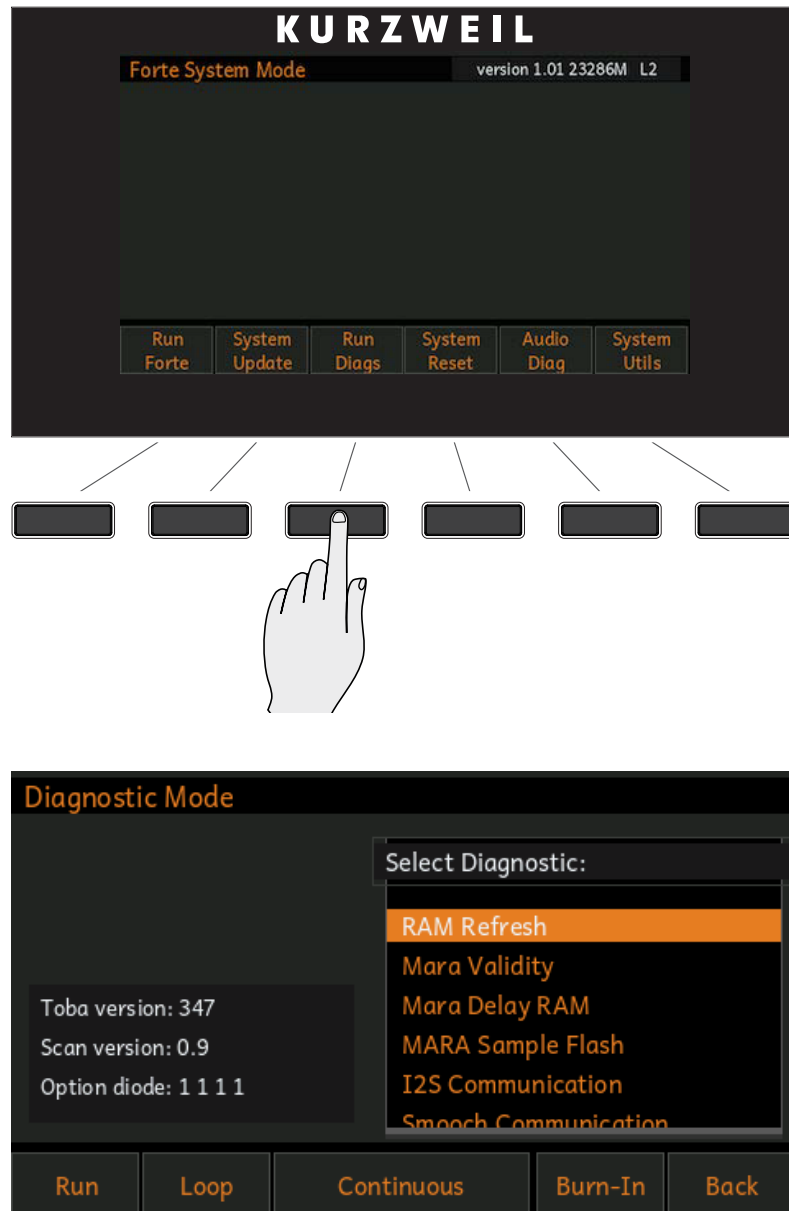
System Reset

⚠ **CAUTION: THIS OPERATION ERASES ALL USER PROGRAMS & MULTIS.**

System Reset will restore the Forte back to a Factory State. In addition to all user Programs and Multis being deleted, Global Mode settings will be restored to factory defaults.

To clear all user Programs/Multis and restore the factory default state, select the System Reset menu option.
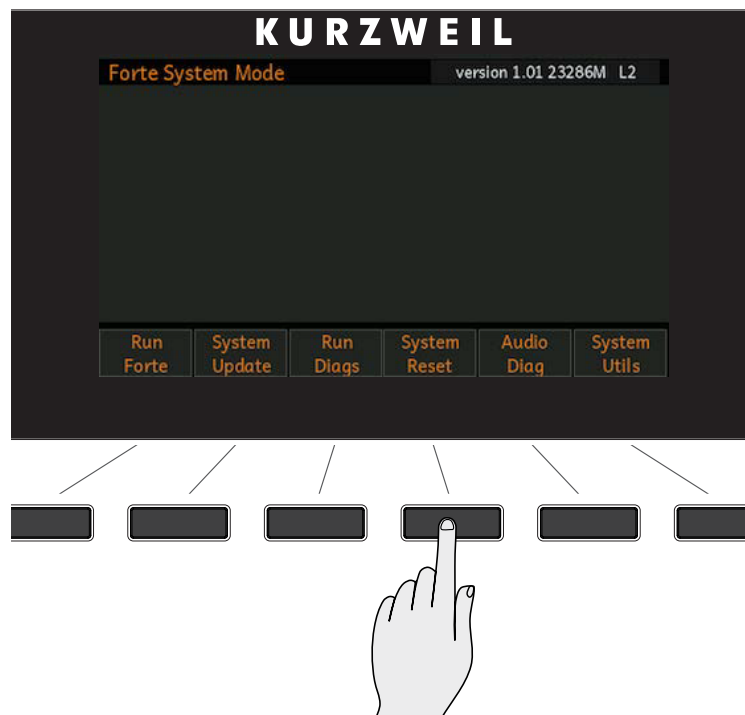
The Forte will now ask the question "This will delete all user objects. Are you sure?"

System Reset

This will delete all user objects.
Are you sure?
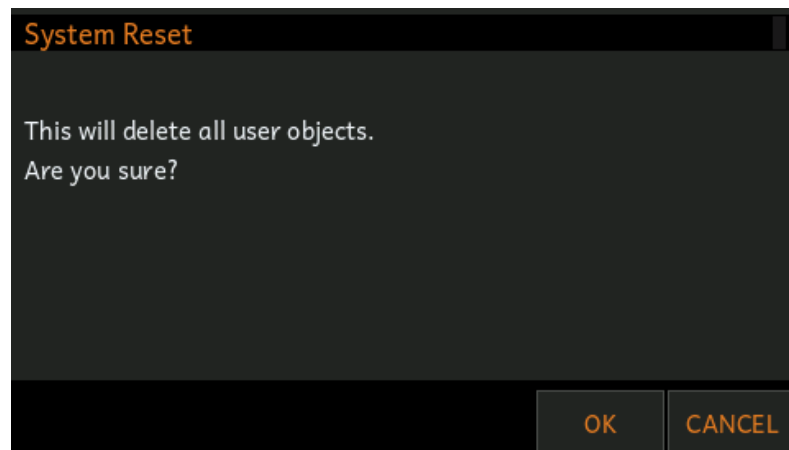
OK   CANCEL

If you are not sure what you are about to do, select CANCEL. This will exit the System Reset process and take you back to the System Mode menu.

If you select OK the Forte will proceed with erasing all of the user objects (Programs & Multis) in the Forte and restoring the instrument back to a Factory State.

If you have completed the System Reset, select OK.

System reset complete

All user objects removed.

OK
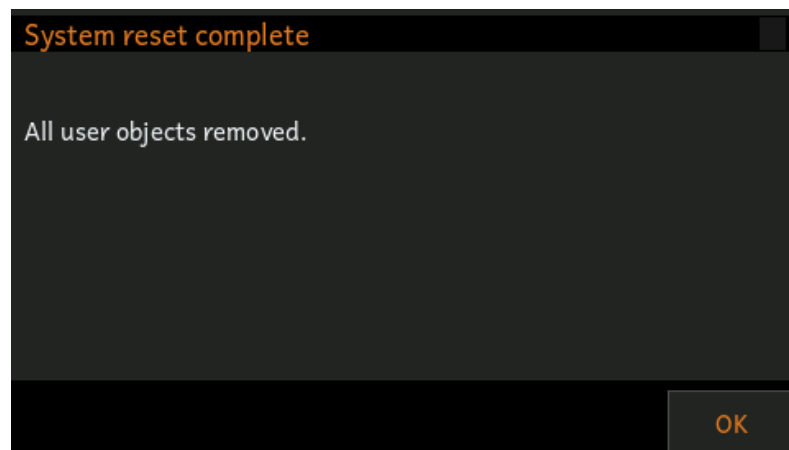
Remember to save your User Programs and User Multis to your computer following the instructions in the The STORE Page on page 13-5. Once deleted, these files are completely removed from the Forte and there is no way to retrieve them.

System Utilities

System Utilities contains various utilities for system administration.
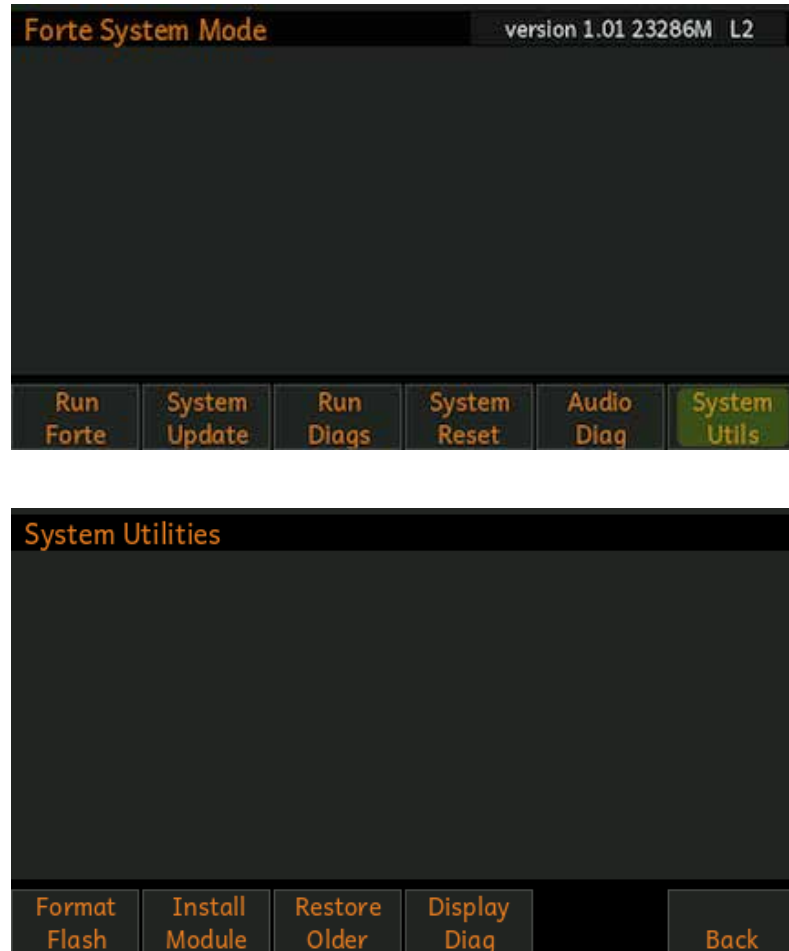
Select "Back" if you wish to exit and return back to the System Mode menu.

Format Flash

> ⚠️ **CAUTION: THIS OPERATION ERASES THE OPERATING SYSTEM, ALL FACTORY OBJECTS AND ALL USER OBJECTS.**

Performing this operation will format the Forte's system flash memory and erase the OS software as well as *all* Objects. Do not do this unless you think it is necessary in order to improve the performance of your Forte. Should you decide to do so, be sure to back up all of your files and software. After you do this, System Mode will still be available, so you can run updates and get your Forte up-and-running again. After a Format the unit will come up in System Mode by default.

To perform a Format, follow these steps:

1. Follow the instructions specified on Page 12-1 to enter System Mode.

2. Select System Utilities.

3. Press Format Flash.
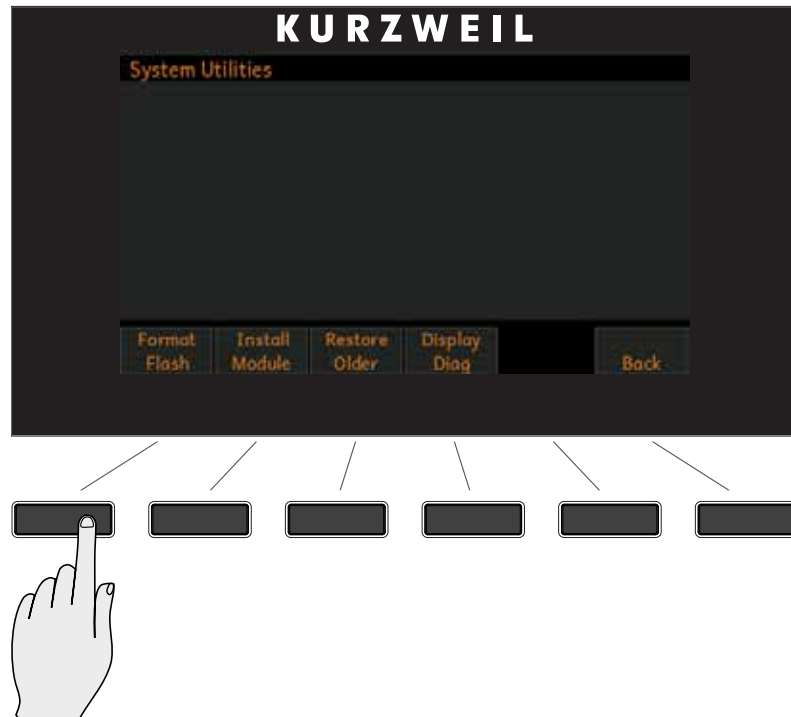
4. The next screen wants to make sure that formatting the flash and deleting everything is really what you want to do. Select OK to format the internal flash memory. Select CANCEL if you do not wish to proceed.
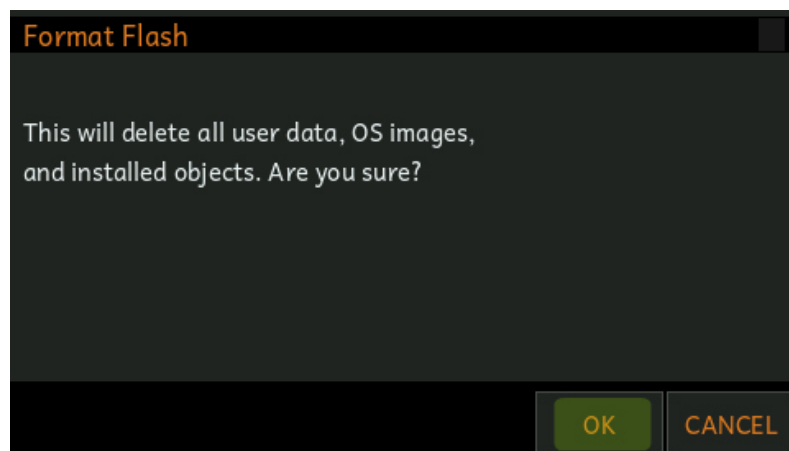
5. When formatting of the internal flash memory is completed, the display will show the message "Done formatting flash.". Press OK.
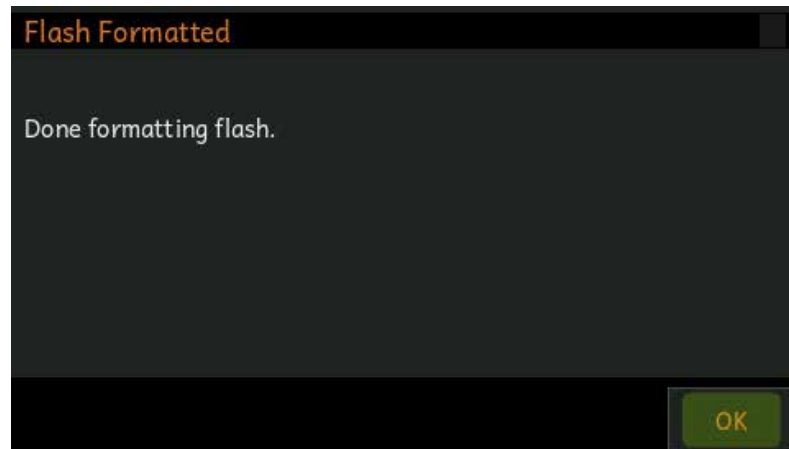
Install Module

This option allows the installation of individual files. You may be guided by Kurzweil Technical Support to use this option if needed.

Restore Older

If you have updated the Forte but wish to return to the earlier version, you can use the Restore Older option.

Display Diag

This option allows diagnostics of the color LCD display. You may be guided by Kurzweil Technical Support to use this option if needed.

Chapter 15
Troubleshooting

Maintenance

Aside from normal care in handling and use, your Forte requires no regular maintenance. Clean with a soft dry cloth. Never use abrasives or solvents as they may damage the unit's paint, markings, and display screen. There are no batteries inside to replace—ever. Instead of volatile SRAM used in most other instruments, your Forte uses nonvolatile Flash Memory for storage, which retains information without power.

Common Problems

Below is a list of the most commonly encountered problems and diagnoses for each.

Power Problems

This is the normal power-up sequence:

1. The display backlight turns on.

2. "Loading…" appears on the display for a few seconds.

3. The Forte enters Program Mode with Program 1 selected, or the Program that was selected the last time Global mode was exited.

If nothing at all happens when you turn the power switch on, check if one of the following might be the issue:

ISSUE	The power cable is not plugged securely into the wall outlet.
REMEDY	Plug the power cable securely into the wall outlet.

ISSUE	**The power cable is not plugged securely into the Forte power jack.**
REMEDY	Plug the power cable securely into the Forte power jack.

ISSUE	**The wall outlet, power strip, or extension cord is defective or damaged.**
REMEDY	Use a different wall outlet, power strip, or extension cord.

If there's evidence of the unit receiving power, but operation is abnormal, check if one of the following might be the issue:

ISSUE	**The wall outlet voltage is below 90 volts due to overload.**
REMEDY	Try a different outlet on a different circuit.

Display "Brightness"

ISSUE	**The Display is blank or difficult to read.**
REMEDY	Slowly turn the Display brightness knob (located above the Navigation buttons) to adjust the Display.

Audio Problems

⚠ **CAUTION: Do not troubleshoot audio problems using headphones. Additionally, always be aware of the volume levels on the Forte and on the connected audio system or mixer.**

NOTE: When diagnosing audio problems, set the Forte to play a Song Demo rather then intermittently pressing keys. This will prevent any unexpectedly loud volume changes.

If there is no sound from your Forte, check if one of the following might be the issue:

ISSUE	The volume slider is turned down.
REMEDY	Slowly push the volume slider up.

ISSUE	The volume control on the audio system or mixer is turned down.
REMEDY	Slowly turn the volume control up.

ISSUE	The signal source selection on the audio system or mixer is incorrect.
REMEDY	Set the volume of the audio or mixer to the lowest level, select the correct signal source, and then slowly turn up the volume.

ISSUE	The audio cables are not securely plugged into the Forte, audio system, or mixer.
REMEDY	Set the volume of the audio or mixer to the lowest level, securely plug in the audio cables on both ends, and then slowly turn up the volume.

ISSUE	The Destination parameter stops MIDI Data.
REMEDY	Change the Global Mode (MIDI page) "Destination" parameter to USB+MIDI+LOCAL (see page 12-13)

ISSUE	The audio cable is of an incorrect type.
REMEDY	Obtain and securely connect an audio cable of the correct type. The Forte accepts both balanced (TRS) and unbalanced (TS) 1/4-inch audio cables.

If you can hear sound but it is low or distorted, check if one of the following might be the issue:

ISSUE	A received MIDI volume message has specified a low volume.
REMEDY	Set the volume of the audio system or mixer to the lowest level. Disconnect all MIDI cables, set the "Destination" parameter in Global Mode (MIDI page) to LOCAL or USB+MIDI+LOCAL and reset the volume level on the Forte, by pressing Panic (see page 3-18). Finally, slowly turn up the volume level of the audio system or mixer.

ISSUE	The current Multi has another controller assigned to volume, and it is turned down.
REMEDY	Select a different Multi. Or change the problematic controller setting by editing the Multi in Multi Edit Mode.

ISSUE	The audio system input is set for low impedance instead of high impedance.
REMEDY	Set the volume of the audio system or mixer to the lowest level, change the impedance setting, and then slowly turn up the volume of the audio system or mixer.

ISSUE	The input trim to the audio system or mixer is set too low.
REMEDY	Slowly turn up the trim.

MIDI Problems

If you are experiencing problems sending MIDI to an external module, check if one of the following might be the issue:

ISSUE	The MIDI cable is not securely plugged in at both ends.
REMEDY	Securely plug in the MIDI cable at both ends.

ISSUE	The MIDI connections are wrong.
REMEDY	To send MIDI, plug the MIDI cable into the Forte's MIDI Out port and into the module's MIDI In port.

ISSUE	The MIDI cable is defective.
REMEDY	Obtain and securely connect a new MIDI cable.

ISSUE	The MIDI transmit channel does not match that of the receiving device.
REMEDY	Change the channel on either the Forte or on the device such that the channels match.

If there are problems with the internal sound module receiving MIDI from an external device like a computer sequencer, check if one of the following might be the issue:

ISSUE	The MIDI transmit channel of the transmitting device does not match that of the receiving Program or Zone on the Forte.
REMEDY	Change the channel on either the Forte or on the computer such that the channels match.

ISSUE	The MIDI cable is not securely plugged in at both ends.
REMEDY	Securely plug in the MIDI cable at both ends.

ISSUE	The MIDI connections are wrong.
REMEDY	To receive MIDI, plug the MIDI cable into the Forte's MIDI In port and into the module's MIDI Out port.

Pedal Problems

Before you consult this section, be sure to read .

Switch Pedal Problems

If you are having problems with connecting or using a switch pedal, check if one of the following might be the issue:

- Sustain or Sostenuto is stuck "on." Be sure the pedal is plugged in before switching on the power. Turn power off, then on, if necessary.

- The pedal is acting backwards ("on" when up instead of down). Power cycle the unit making sure to NOT press on the pedal during startup.

If None of the Above...

If your problem is not covered above, or if none of the suggestions seem to work, first check back and review the relevant sections of this manual. Many difficulties are just programming problems caused by settings of Multi parameters. If you want to be sure that all of the factory defaults are in place, see the RESET Page on page 12-21.

Also be sure to check Kurzweil's website for additional Forte information that may have been published since this manual was written: www.kurzweil.com.

If you still have problems, contact Kurzweil support in your country or at www.kurzweil.com/support/. You may also find unofficial help at some of the internet communities listed at www.kurzweil.com/community/.

Service Centers

Contact the nearest Young Chang office Kurzweil service representative. See page iv in the front of this manual for contact information.

Restoring Factory Defaults

For restoring your Forte back to the factory defaults, see Global Mode Reset on page 12-21

> ⚠ **CAUTION: Restoring factory defaults cannot be undone. Back up your files before doing so by using Storage mode; see "Store All" on page 11-6.**

Diagnostics

You will most likely not need to use the System Mode diagnostic operations in normal cases. These operations are mostly used at the factory and service centers by engineers for troubleshooting hardware problems. But, in some cases you might be required to run these diagnostics for troubleshooting and diagnosing symptoms. In these cases, follow the direction of an authorized Kurzweil technician.

Appendix A
MIDI Implementation

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1	Memorized
	Changed	1–16	1–16	
Mode	Default	Mode 3	Mode 3	Use Multi-track mode (see FX Mode (Global Mode) on page page 10-4 for multi-timbral applications)
	Messages			
	Altered			
Note Number			0–127	
	True Voice	0–127	0–127	
Velocity	Note ON	O	O	
	Note OFF	O	O	
Aftertouch	Keys	X	O	
	Channels	O	O	
Pitch Bender		O	O	
Control Change		O 0–31 32–63 (LSB) 64–127	O 0–31 32–63 (LSB) 64–127	Controller assignments are programmable
Program Change		0 to 2,097,151	0–511	Standard and custom formats
	True #	0–127	0–127	
System Exclusive		O	O	
System Common	Song Pos.	X	X	
	Song Sel.	X	X	
	Tune	X	X	
System Real Time	Clock	O	O	
	Messages	O	O	
Aux Messages	Local Control	O	O	
	All Notes Off	O	O	
	Active Sense	X	X	
	Reset	X	X	
Notes		Manufacturer's ID = 07 Device ID: default = 0; programmable 0–127		
Mode 1: Omni On, Poly **Mode 3: Omni Off, Poly**		Mode 2: Omni On, Mono Mode 4: Omni Off, Mono		O = Yes X = No

Appendix B
Physical Specifications[1]

Keyboard:	88-key, fully-weighted hammer-action with velocity and pressure (After Touch) sensitive adjustable keys. 88-key model uses Fatar TP/40L with pressure.
Display:	480 x 272 pixel high resolution color LCD with front-panel brightness adjust.
Polyphony:	128 Voice Polyphony, dynamically allocated.
Multitimbral:	16 parts (one per MIDI channel).
Quick Split / Layer:	Easy access with adjustable volume and panning.
Programs:	321 Factory plus 1024 User Programs.
Multis:	186 Factory Multis, plus 1024 User Multi locations with 4 programmable zones for splits and layers.
Effects:	Hundreds of complex effect chains, incorporated into programs. Chains are not editable, but insert and aux chains can be selected.
Controllers:	• Pitch wheel • Modulation wheel • Volume Slider • 9 front panel sliders with LED ladders • 9 switches (assignable / zone mutes / KB3 control) • 1 Variation switch • 1 Tap Tempo switch • 5 Master EQ/Compressor Knobs • 2 EQ/Compressor On/Off Switches • 3 switch pedal inputs, each supporting single switch pedal or single half damper pedal. • 2 continuous control pedal inputs • 2 Transpose buttons
Analog Outputs:	Four 1/4" TRS Balanced Outputs (Two Stereo Pairs, A & B) 24-bit D-to-A Converters Frequency Response 20Hz-20kHz +/- 0.1dB +21dBu Maximum Output Level -113dB Signal-to-Noise Ratio (A-weighted) 0.003% THD+N (1kHz @ -1 dBFS)
Headphones:	1/4" Front-Mounted Stereo Headphone Output Frequency Response 20Hz-20kHz +/- 0.5dB Maximum Output Power 130mW into 32 Ohms -100dB Signal-to-Noise Ratio (A-weighted) 0.03% THD+N (1kHz @ 100mW Output into 32 Ohm Load) Output Impedance: < 1 Ohms Load Impedance: > 24 Ohms
MIDI:	IN, THRU (Switchable to OUT), OUT
USB:	Complete MIDI functionality over USB User Program / Multi file transfer to/from PC / Mac / Tablet/ USB Flash Drives. Operating System updates from PC / Mac / USB Flash Drive
Height:	FORTE 5.5" (14 cm) FORTE7: 5.5" (14 cm)
Depth:	FORTE 15.5" (39.5 cm) FORTE7: 15.6" (39.7 cm)
Length:	FORTE 54.5" (138.5 cm) FORTE7: 43.2" (109.7cm)
Weight:	FORTE: 48 lbs (21.77 kg) FORTE7: 41.45 lbs (18.8 kg)
Power:	Internal switch-mode power supply 100-240 VAC, 50/60 Hz, 300mA (20W max)

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1   Specifications subject to change without notice

Appendix C
Programs

Object Version : 1.40.1

ID	PIANO	ID	PIANO
1	Rich 9ft Grand	17	70's Album
2	Rich 7ft Grand	18	Artis Grand
3	Bright 9ft Grand	19	Legacy Grand
4	Bright 7ft Grand	20	New Age
5	Solo 9ft Grand	21	Piano & Harp
6	Solo 7ft Grand	22	Piano & Choir
7	Vintage Upright	23	Mood Ring
8	Vintage Grand	24	Ambience
9	Elegant Grand	25	Film Piano
10	New Orleans	26	Soul Piano
11	Dark & Distant	27	Pub Piano
12	Piano & Pad	28	Double Grand
13	Piano & Strings	29	Mono Upright
14	Punchy Edge	30	Double Squash
15	R&B Stack	31	Vintage Squash
16	SuperPop	32	House Piano

ID	E. PIANO	ID	E. PIANO	ID	E. PIANO
33	Rooftop 73 Rhds	50	Phase Dist Wurly	67	RoyalKingWakeman
34	Steely Dyno 77	51	Bright Fuzz Wrly	68	StageTines Soft
35	Vintage Amp Wrly	52	Tramp Amp Wurly	69	Suitcase Tines
36	Amped Bell 73	53	FM EP 1	70	RealTouch73 Suit
37	BarkDist 77 Rhds	54	FM EP 2	71	RealTouch77 Suit
38	Beck'sRetroWurly	55	Rhotary Rhds '73	72	RealTouch Wurly
39	Phasey 73 Rhds	56	Elec Grand Stack		
40	Mr. SparkleTop73	57	BrightRMI Pn/Hrp		
41	Aged Tolex 77	58	Tight Bright FM		
42	Smooth 70s 73	59	Gabriel's Melt		
43	FusionChorDyno73	60	CP80 Enhanced		
44	Chorus 77 Rhds	61	VideoKilledRadio		
45	73/77StereoBells	62	UK Pop CP70		
46	Env Filt 73 Rhds	63	MistyMountain EP		
47	Ray's Wurly	64	No Quarter Pnt		
48	Deep Fuzz Wurly	65	Black Friday		
49	T-Bone Wurly	66	Sly Ballad		

ID	CLAV	ID	CLAV
73	Chaka Clav	81	Fr Harpsi L84U8
74	SupaStevie(CB)	82	Fr Harpsi L48
75	Funkadelic Relic	83	Fr Harpsi Lute
76	ZEP Clav	84	Fr Harpsi L8
77	HeartbreakerWAH	85	Fr Harpsi U8
78	Chameleon Wah	84	Fr Harpsi L8
79	Stevie Fuzz Amp	85	Fr Harpsi U8
80	OutOfPhasPickups		

ID	ORGAN	ID	ORGAN
89	Classic B3	105	All Stops
90	Funky Perc	106	AllStops AllVox
91	Soul Perc	107	Pipe Stops
92	First Three	108	Chapel Organ
93	PerfectStrangers	109	Pipes & Voices
94	70s Drawbars	110	16' Open Flute
95	Progbars	111	16' Ped Reed
96	Ezra II	112	16' Reed A
97	Ezra's Burner	113	16' Viol
98	Classic Traffic	114	LateNighter
99	Mr Smith	115	Testify
100	HotTubeGospel	116	The Ninth Bar
101	VASTBars1-3,8&9	117	Blues Harmonica
102	Doors Vox	118	ParisCmboAccordn
103	Animals Vox	119	MellowAccordion
104	Farfisa	120	BrazilAccordion
		327	Magic Carpet B3

ID	LEADS	ID	LEADS
121	Press Lead	131	Minipulse 4Pole
122	Cars Square Lead	132	FrankensteinWah
123	Keytar Hero(Wah)	133	Candy*O SyncLead
124	Voyage Lead	134	Raw & Bleedin'
125	SimpleHipHopLead	135	Dist Filter Lead
126	SquareChirpLead		
127	Vector Lead		
128	80's Lead Synth		
129	Dark Wobbles		
130	Daft Lead		

ID	PADS	ID	PADS
137	Film Score Pad	146	Lush Pad
138	Majestic Pad	147	Deeper Water
139	So Lush Pad	148	Lush Rhythm Pad
140	Bladerunner ARP	149	Cosmic Sus Pedal
141	CrotaleScape Pad	150	Slo Syn Orch
142	Undercurrents	151	Add A Pad 1
143	Fairlight Pad	152	Add a Pad 2
144	Phase Shimmer	330	Reverse Universe
145	Evolving Pad	331	Pan Strings 3
		332	5th-Scape

ID	SYNTHS	ID	SYNTHS
153	Super Saw	161	Big Old Jupiter
154	Bright Vector	162	Punchy Synth
155	Classic SynBrass	163	Touch Trance
156	MW S&H Filt	164	Square Bell
157	80's Heaven	165	Perc Vector
158	PolySynth Stack	166	Tesla Coil
159	Chillwave Chords	167	Warbly Pong SQR
160	Classic Saws	168	Gangsta Wrap
		340	SyncoDeMayo

ID	SYNTH BASS	ID	SYNTH BASS
169	Woodhouse Bass	176	Noise Bass
170	Aggro OctoBass	177	The Way It Is
171	KneeDeepMinimoog	178	Dolby Bass
172	Squeeze Mini	350	Leviathan Bass
173	Iceman Bass	351	Decepticon Bass
174	ANGRYBass	352	Latch Bass
175	Big Synth Bass	353	APG-ish Bass

ID	STRINGS	ID	STRINGS
179	Adagio Strings	187	Full Pizzicato
180	Big LA Strings	188	Lead Violins II
181	Fast Strings	189	AggressDivisiStr
182	Slow String Trem	190	Yesesis Tron Str
183	AdagioTutti 8ves	191	Moby TurntblTron
184	Adagio Octaves	192	Solo Violin fast
185	NashvilleStrings	193	Solo Cello fast
186	Poltergeist Pad	194	Arpegg/Solo Harp

ID	BRASS		ID	BRASS
195	Session Hornz		203	Lead Trumpet
196	High-End Horns		204	Solo Trombone
197	Split SectionSW		205	Jubilee Trumpets
198	Mancini Brass		206	Wah Trumpet
199	GB Hornz+Syn		207	Mr. West Horns
200	Super-8 Brass		208	Bullit Brass
201	Brass Fanfare		209	Dr. StAb'N SwEll
202	Low Orch Brass		210	MiamiBrassSectns
ID	WINDS		ID	WINDS
211	Mostly Saxes		215	Solo Tenor Sax
212	UniSaxSection		216	Clarinet/Flute
213	Bassoon/Oboe		217	Solo Bari Sax
214	Solo Alto Sax		218	StrawberryFlutes
ID	ENSEMBLE			
219	Gothic Climax			
220	Winds & Strings			
221	3Way Split Mltrn			
ID	GUITAR		ID	GUITAR
227	Rich 'Caster		235	SuperflyWahCast
228	Rich Les		236	Jack the Ripper
229	Studio 'Caster		237	Boutique Six Str
230	Phase Pick Les		238	Boutique 12 Str
231	TimeWarpCaster		239	Real Nylon
232	Kinda Krunchy		240	Mandolin Plus
233	Brown Sound		241	Banjo Plus
234	Stompbox Les		242	Dulciliere
ID	BASS		ID	BASS
243	P-Bass		247	Jaco Fretless
244	Motown Bass		248	AC Buzzer Bass
245	Finger Bass		249	Beasties Bass
246	Flea/Bootsy		250	Levin/GabrlFrtls

ID	DRUMS	ID	DRUMS
251	Kit 1 Open Rock	259	Kit 9 Big Buzz
252	Kit 2 J Geils	260	Kit 10 DeadRockr
253	Kit 3 West Boxy	261	Kit 11 Low Rock
254	Kit 4 SquashRock	262	Kit 12 GaddsLair
255	Kit 5 Beatbox101	263	Kit 13 KirkeeB
256	Kit 6 Full Room	264	Kit 14 ModernRok
257	Kit 7 Brush	265	Kit 15 Drum&Bass
258	Kit 8 CopperRing	266	Kit 16 Skrlx
ID	**PERCUSSION**	**ID**	**PERCUSSION**
267	Celeste	274	Percussionist
268	Octave Celeste	275	BongoConga
269	Bells	276	TalkingDrum
270	Carillon	277	Perc Accessory
271	Basic Orch Perc	278	Carnival Perc
272	Orch Timpani	279	Vocal Percussion
273	Natural Perc	280	Rogers Celeste
ID	**VOICES**	**ID**	**VOICES**
283	Mixed Choir	291	Slo Orch Chorus
284	Manhattan Voices	292	Aaah Vocals
285	Choir Complete	293	Jazzy Ballad Vox
286	NYC in LA	294	Bright Syn Vox
287	Crystal Voices	295	AntiqueAhhChorus
288	Cathedral Vox	296	Vox Orgel
289	Silent Sorrow	297	Aaahlicious
290	Swept Tron Voice	298	PolyTechnobreath
ID	**MALLETS**	**ID**	**MALLETS**
299	Glockenspiel	304	Chimes
300	Real Vibes	305	Bigger Chimes
301	Stereo Marimba	306	Crotales Hits
302	Xylophone	307	Metal Marimba
303	XHarmonicStlDrum	308	SteamPunkMallets
		309	CelesteGlockHarp

ID	HYBRID
315	Celeste Palette
316	Bellestrum VTrg
317	Toy Piano
318	Bunch of Bells
319	Synthy 73
320	Wurzzicato
321	Comp Cro + Pad
322	Clavestrum

ID	MISCELLANEOUS
323	Bowed Crotales
324	Bells and Bows
325	Bass Pedal
326	Bubbles!
997	Silent Program
998	Editor Template
999	Clear Program

Appendix D
KB3 Programs

Introducing KB3 Programs

There's nothing quite like the sound of the classic Hammond™ B-3 tone wheel organ, especially when played through a Leslie™ rotating speaker system. We've done extensive testing and analysis with several tone wheel organs, and created our own models to emulate the unique tone wheel sound. We even took into account the way that older organs start to sound different (and arguably better) as their capacitors begin to leak—and we included a parameter that varies the amount of grunge (leakage) in your sound.

First Some History

Countless blues, jazz, and rock recordings have centered around the distinctive sound created by classic tone wheel organs (such as the Hammond B-3) played through rotating speaker systems like the Leslie. Not only is the sound great, but it's supremely versatile, since the player can control timbre in real-time by adjusting drawbars that add or remove harmonics from the fundamental tone. Other cool sound-shaping tools include a percussive emphasis that can be added to each note and the capability to change speaker rotation speed. Many people, in fact, feel that the tone wheel organ was the first popular synthesizer. And although these organs haven't been made for years, they are still sought after, restored, and lugged about by legions of dedicated keyboard players. This despite archaic electronics, inscrutable wiring, and an unwieldy heft that tops 400 pounds.

Duplicating the sound and flexibility of these organs – without the nasty side effects – is the goal of KB3 Mode.

KB3 Improvements in the Forte

KB3 Programs in the Forte contain improvements over previous Kurzweil models including improved Leslie emulation Chains, Key Click, Leakage, and cabinet emulation.

Also, KB3 programs that emulate Hammond organs do not use any of the Forte's 128 voices of polyphony (this does not apply to KB3 Programs that emulate Vox or Farfisa organs).

Drawbars

The drawbars on a tone wheel organ emulate pipes of different lengths on a pipe organ. In either case, they are controlled by changing the positions of a number of "stops". As the organist pulls out or pushes in these stops, he adds or reduces harmonics. Whether it's pipes or drawbars, though, the stops work like this: pull one out to add more of an overtone; push it in to reduce the volume of the overtone.

The stops on the most popular tone wheel organs are: 16', 5⅓', 8', 4', 2⅔', 2', 1⅗', 1⅓'. and 1'. Note that they are still measured in feet, a carryover from pipe organ days. The 16' and 5⅓' stops are considered the subharmonic group, while the third stop, 8', produces the fundamental of a tone, and stops 4-9 produce harmonics above the fundamental. By making use of different combinations of these harmonics, a rich sort of additive synthesis is possible. Best of all, you can make radical changes to the tone dynamically as you play.

The nine sliders of the Forte are set to control the drawbars, as listed in blue below the sliders. Pulling the slider towards the keyboard increases the amount of the drawbar that is heard.

KB3 Mode Buttons

The nine buttons above the sliders on the Forte have special capabilities in KB3 Mode that are listed in blue, below the Multi Zone Mute Buttons and Programmable Switches. These are:

Brake

Brake starts and stops the rotary speaker effect. This effect is not immediate, instead the rotary speaker effect gradually slows down and speeds up, in a similar way that a real rotary speaker reacts.

Chorus/Vibrato

On/Off

This parameter turns the chorus or vibrato effect on and off.

Chor/Vib

This parameter determines which modulation effect is used. The choice is Vibrato or Chorus

Chorus/Vibrato Depth

This parameter determines how much of the effect is applied to the KB3 sounds. There are two levels of both Chorus and Vibrato available, depending on the setting for the Chor/Vib button.

Percussion

Percussion is a characteristic feature of tone wheel organs. It's especially useful while soloing, since percussion adds an extra plink (actually an extra tone at a defined harmonic) to the attack of individual notes. When you play more than one note simultaneously, only the first note you play will trigger the envelope of the percussion tone, though notes played shortly afterwards will also be affected by this envelope. When you play chords, all of the notes played simultaneously will get the percussive effect (provided percussion hasn't already been triggered.)

Percussion On/Off

This is where you turn the percussion effect on or off. Percussion is created by a decaying envelope applied to one of the nine drawbars (usually the 4th drawbar for the low pitch and the 5th drawbar for the high pitch. The highest drawbar is normally stolen to generate the percussion sound). The percussion effect is "single-triggered", which means that once it's triggered, it won't trigger again until all keys go up.

The KB3 engine in the Forte is capable of generating the Percussion effect without stealing any of the drawbars, and while not authentic, is occasionally used on Forte Programs.

Percussion Loud/Soft

This parameter switches between loud and soft percussion settings.

Percussion Decay F/S

This parameter switches between fast and slow percussion settings.

Percussion Pitch H/L

This parameter switches between high and low harmonic percussion settings.

KeyClick

The Key Click feature adds a decaying burst of pitched noise to the attack of notes. Unlike the percussion, the key click is "multi-triggered", which means that every new note will trigger it.

This button controls whether the Key Click parameter is switched on or off.

Variation

The Variation button acts as a Slow/Fast switch for the Rotary speaker effect. By default, the sustain pedal (SW1) also controls Rotary Slow/Fast. You can set the sustain pedal to function as sustain for all KB3 Programs (instead of Rotary Slow/Fast) by using the Rotary Override parameter in Global mode. You can also make different Rotary Slow/Fast controller assignments for each Program or Multi by using the Parameters page in Program Edit Mode or the Multi Controls page in Multi Edit Mode.

Appendix E
Multis

Object Version : 1.40.1

1	Gospel B3 & Pno	ID	MULTI	ID	MULTI
2	Min Ho Worship	36	Endless Dream	71	Controlled Synth
3	Celestial Palace	37	EP & Synbass	72	FM-Disco Pop
4	Universe Pad	38	Chill Kit/Chords	73	Bossa Me
5	Triumphant!	39	Daydream EP	74	Prepared Marimba
6	Massive Mono	40	Big Choir 5ths	75	EBass/FMEP & Pad
7	Sea Breeze	41	Plucked Sus Strs	76	Cool Vibes
8	The Shire w Oboe	42	Alien Choir	77	Funked Up MWheel
9	Futurescape	43	Synth & Strings	78	Harpsichord&Orch
10	Vox n Glox	44	Pizz & Glock	79	BaroqOrgan&Strgs
11	Jazz Combo Split	45	Burning Lead	80	E Bass/B3 Perc
12	Triggered Comper	46	Jungle Marimba	81	Dual Manuals
13	Blues Harp Jam	47	ClavWithBenefits	82	Tron Vox/MW Tron
14	Trancendental	48	Introspektakular	83	Multi Percussion
15	MassivePitchBend	49	Pad Organ	84	Open Doors
16	Parisian Night	50	Organ and Rhodes	85	Keyboard Arsenal
17	Acid Brass Group	51	Choir Beckons	86	Shimmering Pad
18	BaroquePipeOrgan	52	The 9th Circle	87	Clav Lead
19	Mwl SuperStrings	53	Celestial Mallet	88	Trumpet/Flute
20	Cloudwalk Keys	54	Bellsy Galore	89	LiteBrite
21	Glitter Glue	55	Mohawk Monophono	90	Distorted Keys
22	Hollow Keys	56	Lefty Rhds/B3	91	Maximalist Organ
23	Liquid Pad	57	Composite EP	92	Multi Strings
24	Sus Pedal Rave	58	Far Out EP	93	Multi Harpsichrd
25	Gtr/Bass Ballad	59	Dreamy Piano	94	Fierce Mono Lead
26	Quad Pad	60	Folk String Band	95	PolySaw Synth
27	Piano, Steel+Pad	61	Hybrid Pad/Lead	96	Spider's Silk
28	Funky Bass Split	62	VelBrassSalsaJam	97	Fairy Tale Glock
29	Cartoon Pizz	63	Rock On!	98	Epic Pad
30	Hip Hop Thirds	64	ABs/Brs & MWStrg	99	Plucked Ambience
31	Loaded Switches	65	BsKik&Snare\Orgn	100	Dubly Bass&Piano
32	Euro Chords	66	Vel Orchestra	101	Betty Boop
33	Distorted Stack	67	Dream Catcher	102	70's Prog Fusion
34	CP, FM & Pad	68	Strummer	103	EnvloProg Fusion
35	Piano +Gtr +Pad	69	70's Ballad	104	Rhodes Surprise
35	Piano +Gtr +Pad	70	80's Power Rock	105	Piano Trio Ped2

ID	MULTI	ID	MULTI	ID	MULTI
106	Pedal Drummer!	145	Aero Dream	254	Layer Default
107	EP & Pedal Pads	146	Str/Cel/Vox/Glok	255	Forte Control
108	3Octave Pno/Bass	147	Sparkler	256	Clear Multi
109	Piano Vel Brass	148	Guitar+Synth		
110	Rhode Sweetness	149	Neo-Baroque		
111	Double Drummer	150	Dirty Funk Split		
112	VelocityBell Pad	151	Mystical Synth		
113	Piano Lesson	152	Stacked Organ		
114	Fuzzy Wurly/Bass	153	Glitzy Keys		
115	Trem Wurly Layer	154	Phat Horns		
116	Clavinorgethizer	155	Buggin Bells		
117	Quad Stack 1	156	Breathy Synth		
118	Quad Stack 2	157	Clean Lead		
119	MW Orch Strings	158	Piano+Strings		
120	Cathedral Organ	159	SlurpyPad-O		
121	BaroqueEnsembles	160	DramaPad		
122	PipeOrgnVox&Orch	161	Mercury Rise		
123	Island Girl	162	Static Pad		
124	Ice Age	163	Windy City		
125	Janet's Strut	164	Square Coil		
126	Windy Pad	165	French Nylon		
127	Wurly/Horns	166	Psychedelic Pad		
128	Vocal Organ	167	Floating Pad		
129	Full Blast Horns	168	Brass Pad		
130	Clocks	169	String Pad		
131	Enchanted Forest	170	Large Choir		
132	Sleepy Hollow	171	Medieval Ages		
133	Klezmer	172	Gamelan		
134	Kurzland Report	173	Pure Imagination		
135	Why Am I Here?	174	DnB Split		
136	Voyager	175	Dub Reggae		
137	Year oftheDragon	176	Toxic Split		
138	Bring It MW	177	Jazzy Key Trigs		
139	Reflections	178	Motion Synth/Pad		
140	Hybrid Clavier	179	SloStrCelesta		
141	Gabriel's Keys	180	SloStr/Cel/Rhds		
142	Boz Low Down	181	Disklosure Split		
143	Prog Split	182	Game ofTrombones		
144	Don't Stop	253	Split Default		

Appendix F
Effects Chains

Object Version : 1.40.1

ID	EFFECT	ID	EFFECT	ID	EFFECT
1	Little Booth	34	Soft Flange	67	Reverse Reverb
2	Soundboard	35	Wetlip Flange	68	Reverse Reverb 2
3	Small Dark Room	36	Flanged Taps	69	Oil Tank Reverb
4	Sax Chamber	37	Slow Deep Phaser	70	Laser Reverb
5	Small Hall	38	Fast&Slow Phaser	71	Gated Laserverb
6	Medium Hall	39	Phaser EGT	72	ReverseLaserverb
7	Green Room	40	Thin Phase Sweep	73	Envelope Followr
8	Opera House	41	Tremolo BPM	74	Envelope Filter2
9	Real Nice Verb	42	Simple Panner	75	Trip Filter
10	Empty Stage	43	Thin Phase Sweep	76	Stereoizer
11	Med Drum Room	44	Leslie start	77	Barberpole Phzr
12	AbbeyPianoHall	45	SubtleDistortion	78	Laser Dly Reverb
13	Predelay Hall	46	EPiano Distortzn	79	Degenerator
14	Sweeter Hall	47	Distortion + EQ	80	Basic Delay 1/8
15	Concert Hall	48	Ray's EP	81	Arp Delay Loop
16	Symphony Hall	49	Scooped Distort	82	HipHop Piano DDL
17	Cathedral Chorus	50	Burning Tubes!	121	Sly Leslie K
18	DeepChorsDlyHall	51	3BandDrumComp	129	Basic Delay 1/8
19	Omni Stage	52	Snare Compressor	147	Deeper Water
20	Classic Plate	53	Snare Cmp w/Rvb	176	Lead EGT6
21	MediumWarm Plate	54	Kick Compressor	193	LitePad2
22	Real Plate	55	Hard Knee Comprs	203	PhaseDly1
23	Smooth Plate	56	Bass Comp Mutrn	204	ThinphaseSweep
24	Gated Plate	57	PnoEnhancement	206	hhpitchr1
25	Basic Delay 1/8	58	LA2A for Strings	209	Snarcmp1
26	4-Tap Delay BPM	59	Resonant Filter	210	SymphonyHall 1
27	Echo Plecks BPM	60	Aux Echoplex	211	SymphonyHall 2
28	Timbered Taps	61	Bandsweep Filter	212	SymphonyHall 3
29	Dub Delay	62	Hi FrequencyStim	213	Jazz Stage
30	Sm Stereo Chorus	63	Ring Modulation	214	Live Room
31	Chorusier	64	Frequency Offset	215	String Chamber
32	Stereo Chorus	65	Lazer Tag Flange	216	Fife Stage
33	Dense Chorus	66	Fallout PitchLFO	217	Live RecitalHall

ID	EFFECT	ID	EFFECT	ID	EFFECT
218	AbbeyBrasHall2	273	OmniStage	331	Warm Leslie K
219	Smooth Long Hall	274	OmniStage	332	NewLord 1 K
220	kickcmp3	275	gshot vrb	333	CrunchLesl122 K
223	kickcmp4	276	deep part1	334	HotLeslie122b K
224	snarcmp4	277	DblSloFlangeCmp	335	BostonLeslieK
226	kickcmp5	278	alphacentauri1	336	CrunchLesl122 K
229	Bright Hat Room	279	Timbered Taps 2	337	Hot Leslie 122e
230	BrightFlange	300	GospelDistLes K	338	HotLeslie122f K
233	snarshaper6	301	GimmeSumLeslieK	339	Soul Leslie122 4
240	Reverb2	302	DF OrganRoom	340	Leslie B 122 K
241	500msDelay K	303	GimmeSomeLesl	341	JoeyLeslie122 K
242	Organ Chamber1	304	GimmeSomeLesl2	342	HotLeslie122g K
243	TapChorusLes LE2	305	500msDelay K	343	HotLeslie122h K
244	Organ Latch 1/8	306	Organ Chamber1	344	TapChorusLes K
245	Organ Phaser	307	Organ Latch 1/8	345	SlwPhasdLeslieK
246	Organ CDR 1	308	Organ Phaser	363	NonKB3 A K
247	nuLeslie122K	309	Organ CDR 1	364	Warm Leslie12 K
248	Mitch's Leslie K	310	AcceleratLes2 K	365	WrmDstlLes1dwK
249	TapChorusLes K2	312	ExpressLeslie K	366	BrighDistlLes1K
255	Flange+Delay	313	Leslie 122 a K	367	DistleratLes6 K
257	Empty Stage II	314	Mitch's LeslieK	368	BrightDistlLesK
258	AbbeyPianoHall 2	315	Melvin'sLeslieK	369	DistlLes HotGs
259	Opera House II	316	Greg's Leslie K	370	Prog Leslie1K
260	Vintage Strings2	317	RoomyLeslie122K	371	LightDistlLes2K
261	Classic Plate II	318	SoftLeslie122 K	372	DW Leslie13 K
262	Recital Hall II	319	CrnchLesli147 K	373	LeeMichaels 1 K
263	Small Hall II	320	Thimmer Leslie	374	NonKB3 A K
264	Real Niceverb II	321	Jimmy's Leslie 2	375	DWLeslie12 K
265	Medium Hall II	323	Organ Taps	376	DistlLes 5 K
266	Small Dark Room2	324	Leslie Clean K	377	Sly Leslie K
267	PnoRvb II	325	Leslie 122 K	378	LightDistlLes K
268	ShortPnoRvb III	326	Jimmy'sBrake	379	FisherLeslie
269	PnoEnhancRvb3	327	Jimmy'sBrake K	380	SoulLeslie122 K
270	RevComp5	328	Greg's LatcherK	381	Big Pop PianoCmp
271	Clunker II	329	Nice Leslie K	382	PianoVerb1
272	St CHDly II	330	Clean Leslie K	383	Pro Piano Cmp

ID	EFFECT	ID	EFFECT	ID	EFFECT
384	DistlLes HotGs	423	DrumFatty3	463	CagesRoom
385	NewLord 1	424	Fierce Lead	464	CmpRecitalHall
386	SystemTemp Tap	425	CompTrem	465	StrRecitalHall1
387	WaterDistSynth	426	12StWarmCrunch	466	StrRecitalHall2
388	FlangeVoiceHall	427	Phaser EGT	467	RecitalHall
389	BrightFlangeHall	428	SnareComp1	468	MyJacoART
390	SoulLeslie122 K	429	ASDrumComp1	469	UprightBassRoom
391	FlngRecitalHall	430	KickComp1	470	Levin Chorus
392	Med Drum Room	431	60's BigDrumRoom	472	Bright Room
393	Dual Filters +	432	AS SynthDist2	473	Med Dark Room
394	Dual Filterzz	433	AS CmpVerb4Drms	474	BasicReverb
395	Cathedral Vx	434	AGT EnhCD	477	Medium Hall 4U
396	BurningTubes5	435	CDRecitalHall	478	KickComp2
397	PunchBassAmp	436	Nylon EnhCD	479	ColdPliano 2
399	RevverLeslie	437	RealDrmComp3	480	FDR PercRoom
400	Bradley's Barn 1	439	ChrsDblRoom	482	NylonAgtVerb
401	Bradley's Barn 2	440	EnhcBassAmp	483	3BandDrumComp
403	LA2A for Strings	441	FlangVoiceHall2	484	KikComp 4:1
405	DrmCDR 1	442	Vocals w FXnMic	485	ToxicStrings
406	DrumFatty	443	RealDrmComp4	486	3BandDrumComp2
407	DrumFattyDry	445	Harpolicious	487	Scoopd Dist EGT2
408	AS Drum Room2	446	ChrsDly	488	NotScoopd Dist
409	DrumFattyRoom	447	EGT Hall	489	HeavyBuckers
410	RealDrmComp2	448	Burning Tubes	491	ProBassComp
411	ChrsDly	449	Chorus AGT	492	NYCTripStrings
412	RealDrmComp	450	SynthLead	493	ProBassComp2
413	DrumSlap Sys	451	SynthBassAmp	496	DirtLordAmp LE
414	RealDrmComp2	452	MosqueySwirl	500	Setup Aux Verb
415	TiteDrmComp	454	PadFX2	501	Setup Aux DDL
416	Marimba Hall	455	PadFX1	517	Early Reflection
417	Gated Plate 144m	456	Chr & Echo	518	Pad Depth Pt1
418	AS Dub Delay	457	Vocals w FX	519	Gunshot Verb
419	HipHop Hall	458	DrySynthCDR	520	AlphaCentauri 1
420	AGT Reverb	459	WetSynthCDR	521	BasicCDR
421	Gated Plate2144m	461	VibesRoom	522	Synthorc BPM
422	WarmCruncher	462	PercussionRoom	523	BPM Flange Dly

ID	EFFECT	ID	EFFECT	ID	EFFECT
524	DblSloFlangeCmp	560	CmPhDiRe4Drms5	603	Gated Plate
525	Deep ChorusVerb	561	JADrumAmp2b	604	JAJazzCmps
526	ChorDlyWet26-28	562	DrmFatener/ Ech2	605	JA Rl Nce Verb
527	Light ChorusVerb	563	DrmCMP4PrgFX7	606	JADrumAmp1
528	Chor Delay 26 27	564	EnhCD4DRUMS2	607	JADrumAmp2
529	Pitcher Slider A	565	Little Booth2	608	DrumFXcmpdly1
530	Pad Depth Pt1	566	DrmFlngDlyVrbCm2	609	Drum Freq Offset
531	PolyPitcher 2	567	CmEqDeRe4DrmsSTa	610	CheapDrmDist
532	LFO Pitcher	568	CmEqDeRe4DrmsSTb	611	SynthDist4Drms
533	Wet Hall for Pad	569	DrumFattyDry2	612	DrmCMP4PrgFX4
534	DrmCMP4PrgFX2	570	DrumFattyDry3	613	DrmThnphseSweep
535	Kick Compressor2	571	AS Drum Room2a	614	StereoizerW/Verb
536	Snare Compresso2	572	Gated Plate2144b	615	DrmCMP4PrgFX2
537	DrmCMP4PrgFX	573	DrumFatty4	616	CmPhDiRe4Drms
538	Kick Compressor2	574	DrumFattyRoom3	617	CmPhDeRe4Drms
539	Snare Compresso3	575	ASDrumComp1a	618	CmEqDeRe4Drms
540	Snare Compresso4	576	AS Drum Room2a	619	CmEqDeRe4DrmsST
541	HOP Drum Reverb5	577	DrumFatty3a	620	DrmFatener/ Ech
542	Stereoizer2/Verb	578	AS SynthDist2b	621	DrmPhaseVerb
543	CmPhDiRe4Drms2	579	HipHop Hall2	622	DrmFlngDlyVrbCmp
544	Stereoizer3/Verb	580	AS CmpVerb4Drms4	623	Drum VerbW/Ster
545	Stereoizer5/Verb	581	DrumFattyRoom4	624	Verb/Str/Cmp
546	DrmCMP4PrgFX5	582	DrumFattyRoom5	625	Verb/Str/Dist
547	HOP Drum Reverb5	583	AbbeyBrushHall	626	EnhCD4DRUMS
548	Stereoizer6/Verb	584	HOP Drum Reverb6	627	GatePltPhs3bnd
549	DrmCMP4PrgFX6	585	HOP Drum Reverb7	628	RevVrbFlgV
550	CmPhDiRe4Drms2	586	CmPhDiRe4Drms	629	DrmCMPVb4PrgFX2
551	CmPhDiRe4Drms3	587	DrmFatener/ Ech2	630	3BndCmp4Snr
552	DrumFXcmpdly1a	588	Tuna Hall	631	HOP Drum Reverb1
553	CmEqDeRe4DrmsST2	589	Gated Plywood	632	StereoW/VerbHFD
554	GatePltPhs3bnd2	590	PlywoodDrumFuzz	633	SnrFatener& Ech
555	SynthDist4Drms2	591	AnvilDrumFuzz	634	Warm Drum Plate
556	CmPhDiRe4Drms4	592	Drum Pad Reverb1	635	Dly/vrb BPM
557	DirtLordAmp 2	600	DrumFuzz	636	Drm vrb Long
558	JADrumAmp2a	601	Snare Comp/EQ	637	Real drm plate
559	CmEqDeRe4DrmsST3	602	hhpitchrja	638	Deep Fuzz Vrb

ID	EFFECT	ID	EFFECT	ID	EFFECT
639	Flange+Delay	691	Blueman1	730	BasicChorusDly 2
640	MySynthDist	692	CompDelay12	731	Double Leslie 8
641	DrmphseDlySweep	694	SmallDarkRoom3	732	Wallflower Ch
642	CmDeRe4Drms	695	PlainComp15	733	ChPanDlyComp
643	Sweet drum Hall	696	RevComp4	734	CheeseChorus
644	StevieTrem EP 1	697	EP RotoAmp12	735	Double Leslie 14
645	Beater EP1	700	HiMutron 1	736	CompDelay
646	Jamerson1	701	Sax Chamber 21	737	SynFatener& Ech3
648	SlyBASSComp1	702	BigDarkRoomDW	738	BIGCompDelay
651	Trampler 1	703	New Gtr 31	739	UprightPiano
652	HipHop Drms1	704	PnoRvb 14	740	SitarCmpRvb
654	HipHop Drms2	705	Small Hall11	741	AC Bass 3
655	TOP Drum Reverb1	706	PnoRvb21	742	VoxKB3
656	HOP Drum Reverb1	707	Empty Stage 11	743	Blackfriday
657	HopKickcmp1	708	Mutron 2	744	Blackestfriday
658	NoQuarter	709	Double Leslie 12	745	Flange 4
659	TechnoHHDly 1/8	710	Double Leslie 5	746	DoubldistLslie20
660	HOP Drum Reverb3	711	PlainComp12	747	Double Leslie15
661	HopKickcmp7	712	Double Leslie 11	750	Good Leslie1
662	Roomverb1	713	CDR Synth	754	Good Leslie4
663	Kickcmp6	714	SynthFlangenDely	756	GoodLeslie 6
664	Snarcmp11	715	QuantzEnhanceSyn	757	WhitrShadeLeslie
665	Reverb3	716	BladerunnrRvb	758	Inagadadavita
666	Small Dark Room	717	Deep FuzzBass 1	759	GoodLordLeslie
667	Snarcmp12	718	Eber Bass	760	Small HallComp1
668	Kickcmp13	719	SynFatener& Ech2	762	GoodLeslie 5
670	BeastieDrums	720	CP80Enhanc1	764	ShortPnoRvb31
671	Clunker13	721	Fisher'sHarm Mic	765	St CHDly
675	Funksnare9	722	AbbeyPianoHall2	766	Synphase1
676	Funksnare8	723	Medium Hall 2	768	St CHDly
680	EPDistPhase1	724	Fagen Phaser	771	Walrus EP
681	RayEP 1	725	Double Leslie 10	772	EPChr16
682	Deep Fuzz 1	726	SmallWurly	773	Siberia
685	Deep Fuzz 31	727	Basic WurlyEP	775	Deep Fuzz 5
687	ReverseVerb1	728	Double Leslie 13	780	Flange Echo 2
690	Acidflute	729	Cheese Horns	781	ARPMosque Room

ID	EFFECT	ID	EFFECT	ID	EFFECT
782	Chr & Echo	823	ChrsDly4	861	Little Mu
784	Mutron Clav 2	824	Leslie Basic	862	SmallHornChamber
785	Siberia II	825	MoogBASSComp5	863	OmniStageDW
786	EnhanceComp1	827	EPChr1 Dyno	864	Clunker50
787	Shaper->Reverb2	828	Synphase17	865	PnoEQCmp3
788	Clav Phase1	829	Leslie Comp 1	866	Comp4
790	SynlaserFlange 1	830	PhaseDly104	867	3DogEP 1
792	RockyRaccoon	831	GoodLeslie 52	868	CompDelay
793	Squire	832	CPChrRvb1	869	PnoEnhanc22
794	Flange 4	833	DistLeslie Basic	870	cheap Chamber
795	Deep Fuzz Clav	834	CompKit111	871	EPChr11
797	Clav Comp1	835	CarlosSyn	872	Old Chamber
798	SmallClav	836	MaroonSynbass	873	ChefAid 1
799	Synth Shimmer	838	FloydEP1	874	Zep Fuzz 1
801	PhaseDly1	839	PnoCmpSndBoard 1	875	Bernie Clav
802	Shredlead1	840	SuperTrmpPhase	876	ClavRotoAmp
803	ThinphaseSweep	841	Wurly 1	877	Dark Niceverb
804	EnvComp41	842	ShortPlate4EPs	878	Basic RayEP 3
805	MoogBASSComp11	843	ShortPlate4EPs2	879	LatinHornCmp
806	SynFatener& Ech4	844	Aux Dark Room 2	880	Basic RayEP 2
807	Shredlead15	845	Elton1	881	Raffas DX7
808	PlainComp21	846	Aux Chamber	882	EPChr6
809	Garth	847	BowiePno1	883	PnoEnhanc3
810	BassFleaCompMu	848	BluesPnoCmpRvb 1	884	SynEnhancement
811	Chr & Echo 2	849	New Gtr 31	885	CompKik11
812	BasicCDR2	850	Soundboard 3	886	VintChamber
813	ShaperFuzzLead 2	851	OmniStage	887	SmallWurly2
814	AM Big Band	852	Double Leslie	888	Deep FuzzPnt 1
815	Clunker20	853	MedPlateJazFlute	889	Comp70
816	PadFX3	854	MistyMntn EP 2	890	FooldAgainVox
817	SynFatener& Ech5	855	PnoEnhanc22	891	CompKik111
818	MarleyClav1	856	ClavPhase1	892	Vintage Horns 3
819	Flange Echo 4	857	MedRoom10	893	Leslie Gospl
820	Deep Fuzz Clav 3	858	EPChr11	894	EPChr60
821	GetBack1	859	HardRhds1	895	Syn Lead A
822	Deep Fuzz Clav 5	860	PnoEnhancement	896	Deep Fuzz 51

ID	EFFECT	ID	EFFECT	ID	EFFECT
897	4-Tap Delay BPM2	933	Cheese Horns2	969	Blackfriday2
898	Shredlead3	934	SynthCDR20	970	CompDelay101
899	Synphase1	935	Vintage Horns 2	971	Sax Chamber 2
900	Synphase2	936	Chorus Pan Delay	972	Clunker501
901	SynthTrem2	937	Snarcmp101	973	Horn Plate 1
902	DWAuxRvb1	938	Filter1	974	Vintage Horns
903	Small Dark Room2	939	Syncpulsedw	975	BrightFlange2
904	Sax Chamber2	940	Kickcmp501	976	ThinphaseSweep2
905	Small Hall2	941	Snarshaper601	977	Small Comp102
906	Medium Hall2	942	ProBassComp3	978	EPPhase1
907	Real Niceverb	943	SynEnv5	979	NonKB3LesliePdl2
908	Opera House2	944	SnareComp101	980	FlangeComp3
909	Mosque Room2	945	BostonLeslie2	981	Mutron Clav 201
910	Bright Hall	946	Kickcmp104	982	SynChorusDly202
911	Echplex 1	947	Leslie MShoals	983	RayEP 1
912	AbbeyPianoHall	948	Snarcmp121	984	EnhanceComp121
913	Recital Hall 2	949	WhitrShadeLesli3	985	Clunker IIa
914	Echplex 2	950	Snarcmp112	986	Pad Depth Pt1
915	Medm Warm Plate2	951	Snarcmp113	987	AuxChorusHall
916	EQVelMorph	952	EnvKickcmp1	988	TechnoSyn1
917	Aux Echplex	953	Kickcmp602	989	Synphase102
918	Farfisa1	954	Snarcmp112	990	CompDelay
919	Good Leslie33	955	HipHop Drms101	991	CompMeltrn
920	Zep Leslie	956	PnoCmpSndBoard10	992	ARP
921	Snarcmp801	957	Epicsnare1	993	Triplet delay
922	kickcmp401	958	JumpSynth	994	Bigverb
923	Deep Fuzz 6	959	Funksnare88	995	Syncpulse
924	SynEnv4	960	Kickcmp441	996	compbass 2
925	SmallComp9	961	Upright3	997	CompDelay3
926	KickComp201	962	HopKickcmp701	998	Comp501
927	GoodLeslie 9	963	Leslie Comp 2	999	RMIPhase1
928	Falgor Gtr	964	Kickcmp301	1000	Joey Leslie 122
929	KickComp701	965	PnoRvb 1	1001	SynChorusDlydw2
930	Good Leslie34	966	PnoRvb2	1003	ECello2
931	Syncblip	967	HipHop Drms201	1004	violin2
932	CompDelay3	968	Breakdrums1	1005	Small StringRoom

ID	EFFECT	ID	EFFECT	ID	EFFECT
1006	Viola2	1045	Heartbreaker	1125	7ft Solo
1007	Cello2	1046	S DW AlbumEQ1	1126	D TMP flat EQ
1008	FalgorwahGtr	1047	DynoChor73	1127	7ft Squashed
1009	Accdn Booth	1048	73DWPHASE2	1128	7ft Warm Jazz
1010	BRASS EQ/Comp	1049	Double Grand3	1129	9ft Classic
1011	SynTrem	1050	Dampers Up Forte	1130	Rhodes Multi as1
1012	InfinSynCathedr	1051	ChorVerb for Pad	1131	77ClikFix02
1013	Delay + Plate1	1052	dyn77Template	1132	7ft Smooth
1014	SEM TRIdw	1053	SynChor&Dly1	1133	9ft w Strings
1015	SynthLeaddw	1054	Dampers Up Forte	1134	German Grand
1016	SynPadDW	1055	German Grand4	1135	Concert Grand
1017	AGT EnhCDdw	1100	Small Hall	1136	Warm Grand 1
1018	'CasterTremdw	1101	steincoNcert2	1137	D Template 3
1019	LesTremdw	1102	steincoNcert3	1138	Rich 7 ft Grand
1020	StdioCasterRigdw	1103	warm stein1	1139	7ft Vintage Rock
1021	PercVerb1	1104	9ft ppp	1140	Darker D
1025	Rhodes FX 1	1105	Studio Piano as	1141	Oscar's Grand eq
1026	Small Hall	1106	dancestudioyam1	1142	7ft Squashed2
1027	Tweet piano	1107	Slo Attack Hall	1143	Clear 9ft Grand
1028	Y Grand EQ 2	1108	7-Ft Piano asFN	1144	2.0ms Hall
1029	Soundboard 3	1109	big stein 1	1145	Warm 7ft Grand
1030	9-Ft Piano FX2	1110	77ClikFix01	1146	.78ms Hall
1031	77DWVintAmp2hi	1111	crtalsdelay 1	1147	House 7ft Grand
1032	Tremolo BPM	1112	brtpunch yam	1148	New Age Grand
1033	Pianarama! verb	1113	7ft RockVerb1	1149	Rhodes MultiFX 1
1034	Solaris	1114	7Ft Vintage Rock	1150	Rhodes Aux Verb1
1035	SolarisGateLazer	1115	Vintage Class C	1151	Rhodes MultiFX 2
1036	Existential Taps	1116	Dance Studio	1152	Rhodes Aux Verb2
1037	URage_CmpRvb	1117	DanceStudioVerb	1153	1.6ms Hall
1038	77DWDYNOAmp1	1118	OldSquashed D	1154	1.6ms Plate
1039	LintBuster LD	1119	New Age Stn 1	1155	9ft Solo Grand
1040	RSessionGTR	1120	big warm stein	1156	9ft DarkDistant
1041	77DWDYNOAmp2	1121	big warm C	1157	7ft C
1042	77DWDYNOAmp3	1122	Darker D	1158	9ft Bright Grand
1043	Y DW Rock EQ	1123	Dampers Up Forte	1159	7ft Bright Grand
1044	Y DW Rock EQ2	1124	damperverb 2unit	1160	Harpsichord 1

ID	EFFECT	ID	EFFECT	ID	EFFECT
1161	Harpsichord 2	1211	Soft Rhodes	1417	NAMMClavFuzz1
1162	Vintage Squashed	1212	Soft Rhodes2	1418	ClavNAMMPhasDst1
1163	House 9ft Grand	1213	SoftStTrem Rhds	1419	ClavNAMMPhasDst2
1164	Super Pop eq	1214	73SparkleTop	1420	73DWPHASE2
1165	Scoop 9ft Grand	1230	Supa Clav	1421	77DWChor2
1166	Brt Scoop 9ft	1231	Heartbreaker	1422	73DWPHASDist1
1167	Brt Scoop 7ft	1232	Relic Clav	1423	73DWPHASDist2
1168	ARTISCncertPnAS1	1233	Steely Fuzz	1424	73DWPHASDistWah
1169	9ft Solo Grand2	1234	Stevie Fuzz	1425	77DWPHASDstWah1
1170	Dampers Upright	1235	Trampler	1426	73DWPHASDistWah2
1171	German Grand2	1236	Trampler2	1427	73DWVintamp2
1172	Double Grand1	1237	OutaPhasePickups	1428	77DWVintAmpWah
1173	Piano + Pad	1238	Chaka Wah	1429	DampersUp
1174	9ft w Strings2	1239	ChameleonWah	1430	Sweet PnoHall
1175	FM n K EQ2	1240	Beck Wurly	1431	77 cdr g1 t
1176	Artis Pluck EQ2	1241	BlkCrows Wurly	1432	Sweet PnoHall 2
1177	German Grand3	1242	Clav Chamber	1440	DeepfuzWurly1
1178	Double Grand3	1300	Weapon Chain	1500	Rds AuxVerb Long
1179	German Grand4	1301	Double Chorus	1501	Comp Piano FX
1180	damperverb 4unit	1400	73DWPHASE1	1502	Piano MultiFX 1
1181	Mono Upright	1401	77NAMMChor1	1503	Dist Clav FX
1182	CMartPiano 1	1402	77NAMMChor2	1504	Dist Clav CB FX
1183	Dampers Up 2.5ms	1403	73NAMMPHASDist1	1505	Synth HF Stim
1184	Brt Upright7ft	1404	77DWDstTrem1Wah	1506	Synth HF Stim 2
1185	Concert GrandEQ7	1405	73DWStTrem1	1507	SuperSaw Aux
1200	JSP Comp & EQ	1406	73NAMMStTremDst1	1508	SuperSaw
1201	Album Plate	1407	73NAMMStTremDst2	1509	Chroma FM3
1202	DW 70s AlbumEQ1	1408	77NAMMVintAmp1	1510	KB3 Aux2 Booth
1203	Y DW Elton EQ2	1409	DWWurlyVintAmp1	1511	GANGsta Wrap 2
1204	DW70sAlbumEQSoft	1410	WurlyRayAmp1	1512	KB3 Aux2 Booth 2
1205	Ghost EQ Soft	1411	NAMMSuperTrmpPha	1513	Organ Chamber2
1206	DarkUpright EQ	1412	DWWurlyPhasDst1	1514	NonKB3 A KX 2
1207	BriteUpright EQ	1413	DWWurlyBriteAmp1	1520	String Multi FX1
1208	Upright Room	1414	NAMMWrlyDeepFuzz	1521	SymphonyHall Aux
1209	70s Blues 7ft	1415	NAMMWrlyDeepFuz2	1522	MltiFX for Stngs
1210	Tramp Amp	1416	NAMMClavTrampler	1530	Rhodes-Chorus

ID	EFFECT	ID	EFFECT	ID	EFFECT
1531	Rhodes-Flange	1657	Ambient Pno EQ	1701	FunkyPerc Les 01
1532	Rhodes-Phaser	1658	Blown Spkr Ins	1702	SoulPerc Les 01
1533	Rhodes-Rotary	1659	Recital Piano3	1703	PerfectStrLes01
1534	Rhodes-Env Filt	1660	FM n K EQ	1704	70s Drwbars Les1
1550	Rhodes1 Aux	1661	FM Hall	1705	Prog Bars Les01
1551	Rhodes Aux Room1	1662	ConcertK lite1	1706	FirstThree Les03
1552	DampersUp	1663	ConcertK lite2	1707	Ezra II Les 01
1553	Tines FX	1664	Soundboard as	1708	kb3 cab1
1554	9-Ft Piano FX	1665	ConcertK 4sc	1709	FunkyPerc Les 01
1555	DampersUp	1666	damper verb	1710	SoulPerc Les 01
1556	Sweet PnoHall	1667	ConcertK EQonly	1711	FunkyPerc Les X
1557	Sweet PnoHall 2	1668	Artis Y Grand2a	1712	70s Drwbars Les1
1558	Tines FX	1669	Artis YHall 2	1713	Prog Bars Les01
1559	9-Ft Piano FX	1670	Upright Room	1714	FirstThree Les03
1606	Artis KHall	1671	ParlorPianoEQ	1715	Ezra II Les 01
1610	Artis LrgKHall	1672	ParlorVerb	1716	SoulPerc Les X
1611	Upright EQ	1673	PianoTmplateEQ1	1717	FirstThree LesX
1612	Artis LrgKHall	1674	ModJazz K2	1718	PerfectStrLes X
1613	ConcertGrand1	1675	Brgt Soundboard	1719	70s Drwbars LesX
1617	ModJazz Plate 1	1676	Recital EQ	1720	Prog Bars Les X
1619	Punch Room	1677	Radio Pop EQ	1721	Ezra II Les X
1627	Concert Grand EQ	1680	Concert GrandEQ4	1722	CrunchLesl122 X
1628	Y Grand EQ 2	1681	Soundboard 4	1723	SoulLeslie122 X
1630	Bright Y EQ2	1682	ModJazz K3	1724	Jimmy'sBrakeX
1632	Artis K Pop EQ	1683	Upright EQ2	1725	DistlLes HotGsX
1633	Dark n Distant	1684	Pianarma EQ+Cm4	1726	NonKB3 A KX
1634	Artis Pluck EQ1	1685	JSP Comp & EQ2	1727	Leslie 122 K X
1635	Artis Y EQ	1686	Recital Piano 3	1728	LightDistlLes KX
1640	Bebop Piano	1687	ArtEQCMPas2	1729	Clean Leslie KX
1643	ModJazz K1	1688	Weapon Chain2	1800	Wurly Template
1648	Piano + Pad	1689	MarquisPiano3	1801	Clav Template
1649	Delay Piano	1692	ClassicBLesFstv4	1802	Rhodes Aux Huge
1650	Mono EQ	1693	Concert GrandEQ6	1803	7ft Aux Verb1
1651	RecitalHall	1694	ClassicBLesFstv4	1804	9-Ft Piano FX
1655	BigChorusPiano2	1696	ClassicBLesFstvX	1805	Yam ppp
1656	Lrg Ambience I	1700	kb3 cab1	1806	CDR Aux Reverb

ID	EFFECT	ID	EFFECT	ID	EFFECT
1807	Dark Wobbles	2053	Pad Depth Forte	3207	Tenor Sax
1808	Tines Aux Rev	2054	ChorVerb for Pad	3208	GANGsta Wrap
1809	Synth Dist CDly	2055	Symphony Harpsi	3209	Basic Delay 3/16
1810	Mosque w/Inf Rev	2101	ChoDistDly2	3210	DblSloFlangeCmp
1811	MosqueySwirl Aux	2102	Dark Room 2	3211	Pan Trem BPM
1812	Forte Lead Insrt	2103	Carrot Rev	3212	Pan Trem BPM OOP
1813	Comp Lead Insert	2104	Carrot 1a	3213	BPM Pad ChDeRv
1814	CDR Just Reverb	2108	Cab-Reverb	3214	supersaw 2
1815	Wah Synth Insert	2110	PithrFlngDistDly	3215	Slow Phase
1816	Forte Lead GTR	2150	MarquisPiano3	3216	BPM Trance
1817	Phase+CH+Delay	2200	BluesPnoCmpRvb 1	3217	Lazer DUB
1818	Dist/Wah Insert	2201	BluesPnoCmpRvb 2	3218	Krafty Monks
1819	Comp Plex Insert	2202	BluesPnoCmpRvb 3	3219	dist Booth
1820	Comp Mu Aliaser	2203	ArtEQDW1	3220	Delay + Plate
1821	Elegant Hall Aux	2204	ArtEQCMPDW5	3221	Dist Booth Dly
1822	FlangVoXHall2Aux	2205	ArtEQCMPDW6	3222	Sonny More l)
1823	FlangVoiceInsert	2206	ChessRecords1	3223	JSP Synth CDL
1824	Cathedral Vx Aux	2207	ArtEQCMPDW7	3224	Synker1
1921	MarquisPiano3	2208	MarquisPiano1	3225	SynCompMu1
2000	GM Reverb	2209	MarquisPiano2	3226	Shred Gtr
2001	GM Chorus	2210	Rachverb	3227	Shred Gtr Wah
2002	Indie Piano	2211	MarquisPiano5	3228	Chunky G 1
2003	BluesPnoCmpRvb 2	2212	ChessRecords2	3229	AuxGtrEchplex
2004	ArtEQ3	2300	JK FX Template	3230	Synth Delay 1/4
2005	ArtEQDW4	2303	jk AUX1	3231	Bari Sax
2006	ArtEQDW5	2500	Pianarma EQ+Cmp	3232	Electric Mermaid
2007	ArtEQDW7	2501	Pianarama! verb	3233	Solo Trumpet
2008	ArtEQDW8	2502	KikComp 4:1	3234	FLIP'n Chorus!
2009	ArtOddHarm	2560	MarimbDelay BPM	3235	FLIP'n Delay!
2010	SoftPnoCmpRvb 1	3200	SEM TRI	3236	RedHot Dst/Cho
2011	SterPnoCmpRvb 2	3201	RAVE WIND	3237	RedHot Reverb
2012	SoftPnoCmpRvb 2	3202	Chroma FM	3238	RedHot Delay
2013	SterPnoCmpRvb 3	3203	Chroma FM2	3239	Miami Gated Room
2050	Concert Piano FX	3204	Iceman Bass	3240	Miami Plate Rvb
2051	Studio Piano FX	3205	Mandocaster	3241	SnarkyDimplix Rb
2052	Dampers Up Forte	3206	Daft Lead	3242	FLIP'n Distortn!

ID	EFFECT	ID	EFFECT	ID	EFFECT
3243	Synth Brass Env	3279	Synth Bass CDR	3315	Syn Brass Plate
3244	Van BrownSound	3280	BOC Deverb	3316	Syn Str Hall
3245	Van Reverb	3281	Gtr Niceverb	3317	E-Bow 1
3246	Gated Plate	3282	TripleCaster1	3318	THX
3247	Van EQ	3283	TripleCaster2	3319	WorldCDR1
3248	WarmCruncher2	3284	TripleCaster3	3320	WarmCDR
3249	Scorb4Tap/Rv BPM	3285	TripleCaster4	3321	Chunky G 1
3250	Scorb-olo BPM	3286	TripleCaster5	3322	OBI 1
3251	Here Lil' Boy!	3287	TripleCaster6	3323	SYnBassCompMu
3252	DiPulsulator	3288	TripleCasterWah	3324	MarimbDelay BPM
3253	PadmePlecks BPM	3289	TripleCasterEQ	3325	DW GatedLaserver
3254	ToodleTrem	3290	TripleCaster31	3326	Chillwave Chords
3255	ToodleDelay 1/8	3291	TrumpetWah	3327	Burning Keys 3
3256	Zap Chamber	3292	E-Bow	3328	EnhanceSyn
3257	'CasterTrem	3293	1/2-1/4DlyBPM	3329	Burning Keys 6
3258	LesTrem	3294	Phase	3330	StTaps1
3259	AS Laser Reverb	3295	EQVelMorph L	3331	Flange Mayhem2
3260	as Laser Reverb	3296	EQVelMorph R	3332	Mute Gtr1
3261	NuBeautyDist	3297	HF Stim	3333	SynthCDR
3262	AmbientPanner	3298	InstantHillbilly	3334	3str Gtr Wah2
3263	NuBeautyDist2	3299	HoRnYFlAnGePaRtY	3335	WorldMandolinCDR
3264	HammerDulceComp	3300	BRASS EQ/Comp	3336	Padme's lil' Pal
3265	Dulcimer Chorus	3301	MouthyFilter	3337	Squeeze Cmp
3266	HammerDulceRoom3	3302	Super8 Horn Dly	3338	Klockwork
3267	HammerDulceComp2	3303	BrassMod+AMRadio	3339	Bass Fishing
3268	LesChorus	3304	7thHeaven Plate	3340	Wave Rider
3269	EGT Multi 1	3305	7thHeavenCmpSlap	3341	TripleCaster6
3270	Kinda Krunchy2	3306	Bullitt PDlyHall	3342	TripleCasterWah
3271	Pan Trem BPM OOP	3307	Bunny Delay 3	3343	Mr.West Horns
3272	SEM Shape	3308	Van Brown LITE	3344	TripleCaster31
3273	Bright Syn Pad	3309	Van ChDly LITE	3345	SynPnoPhase1
3274	Synth Delay/RVB	3310	Sax-susolo Plate	3346	PBS on VHS
3275	Syn Chor DDL	3311	THX	3347	Attack Trance
3276	Syn Dist/Delay	3312	StdioCasterFXRig	3348	HPF Drum Taps
3277	huge space 2	3313	BonzoCompLTE	3349	Lectro Plate
3278	SynPad	3314	BonzoLTE GateRvb	3350	Nasty Syn Brass

ID	EFFECT	ID	EFFECT	ID	EFFECT
3351	Syn Str Hall	3472	SnrEnhanceComp	4015	R&B Stack
3352	BOC Deverb	3473	NewKickComp 1	4016	Super Pop
3353	Popcorn Plate	3474	CmpVerb4Drms2	4017	70s Album
3354	Plantasia Plate	3475	DistCompRev4Drms	4018	Artis Grand
3355	New Horns 1	3476	DrmCMP4PrgNew	4019	Legacy Grand
3356	Phase DW	3477	Ricochet Verb	4020	New Age Grand
3357	SynChor&Dly1	3478	VerbW/Stereo 2	4021	Piano & Harp
3358	Mando EQ	3479	DubDelayer	4022	Piano & Choir
3359	WorldMandolnCDR1	3480	DarkDrumSlap Sys	4023	Mood Ring
3360	Dist Booth Dly	3481	ExpStereoDrmHall	4024	Ambience
3361	Synth Bass CDR	3482	Snr Enhnce HiCut	4025	Film Piano
3362	Infin Cathedral	3483	Trans DrmComp	4026	Soul Piano
3363	Forte Pad Insert	3484	CmEqDeRe4DrmSTb	4027	Pub Piano
3364	Punch-a-ghost	3485	CmpDistRev4Drms	4028	Double Grand
3365	ElecMandolin	3486	VinylDistImage	4029	Mono Upright
3366	Gallo Dist+ EQ	3487	Dub hall	4030	Double Squash
3367	UnderCurrnts	3489	JK GatedLaserver	4031	Vintage Squash
3368	UnderCurAux	3490	JK Marimba Hall	4032	House Piano
3369	DW Laser Reverb	3491	JK Green Room	4033	Rooftop 73 Rhds
3370	Cathedral ChorDW	3492	JK Laser Reverb	4034	Steely Dyno 77
3456	BreakdrumsNEWKIK	3493	Dubstep Drumz	4035	Vintage Amp Wrly
3457	Lil' Drum Booth	3494	DubDelayer	4036	Amped Bell 73
3458	Small Drum Space	4001	Rich 9 Ft Grand	4037	BarkDist 77 Rhds
3459	Small Cmpsd Spce	4002	Rich 7 Ft Grand	4038	Becks Retro Wrly
3460	More Drum Air	4003	Rock 9 Ft Grand	4039	Phasey 73 Rhds
3461	Full Drum Room	4004	Bright 7ft Grand	4040	Mr. SparkleTop73
3462	Brite Drum Space	4005	Solo 9 Ft Grand	4041	Aged Tolex 77
3463	Garage Drums	4006	Solo 7 Ft Grand	4042	Smooth 70's 73
3464	Expandn'DrumHall	4007	Vintage Upright	4043	FusionChorDyno73
3465	Expandn'Drum 481	4008	Vintage Grand	4044	Chorus 77 Rhds
3466	Expandn'DrumPLTE	4009	Elegant Grand	4045	73/77 StereoBels
3467	Expandn'Drum GYM	4010	New Orleans	4046	Env Filt Rhds
3468	SnappyDrumCmpVrb	4011	Dark & Distant	4047	Ray's Wurly
3469	Drum Enhancer	4012	Piano + Pad	4048	Deep Fuzz Wurly
3470	DrumComp subtle	4013	Piano & Strings	4049	T-Bone Wurly
3471	Snare Enhancer	4014	Punchy Edge	4050	Phase Dist Wurly

ID	EFFECT	ID	EFFECT	ID	EFFECT
4051	Bright Fuzz Wrly	4093	PerfectStrLes X	4129	Dark Wobbles
4052	Tramp Amp Wurly	4094	70s Drwbars LesX	4130	Daft Lead
4053	FM EP 1	4095	Prog Bars Les X	4131	Minipulse 4Pole
4054	FM EP 2	4096	Ezra II Les X	4132	Frankenstein Wah
4055	Rhotary Rhds 73	4097	CrunchLesl122 X	4133	Candy*O Sync
4056	Elec Grand Stack	4098	SoulLeslie122 X	4134	Raw & Bleedin
4057	BrightRMI Pn/Hrp	4099	Jimmy'sBrakeX	4135	Dist Filter Lead
4058	Tight Bright FM	4100	DistlLes HotGsX	4137	Film Score Pad
4059	Gabriel's Melt	4101	NonKB3 A KX 2	4138	Majestic Pad
4060	CP80 Enhanced	4102	VoxKB3	4139	So Lush Pad
4061	VideoKilledRadio	4103	VoxKB3	4140	Bladerunner ARP
4062	UK Pop CP70	4104	Farfisa1	4141	CrotaleScape Pad
4063	MistyMountain EP	4105	All Stops	4142	UnderCurrents
4064	No Quarter Pnt	4106	AllStopsAllVox	4143	Fairlight Pad
4065	Black Friday	4107	Pipe Stops	4144	Phase Shimmer
4066	Sly Ballad	4108	Chapel Organ	4145	Evolving Pad
4067	RoyalKingWakeman	4109	Pipes & Voices	4146	Lush Pad
4068	StageTines Soft	4110	16' Open Flute	4147	Deeper Water
4069	Suitcase Tines	4111	16' Ped Reed	4148	Lush Rhythm Pad
4073	Chaka Clav	4112	16' Reed A	4149	Cosmic Sus Pedal
4074	SupaStevie CB	4113	16' Viol	4150	Solo Syn Orch
4075	Funkadelic Relic	4114	Leslie 122 K X	4151	Add A Pad 1
4076	ZEP Clav	4115	LightDistlLes KX	4152	Add A Pad 2
4077	HeartbreakerWAH	4116	Clean Leslie KX	4153	Super Saw
4078	Chameleon Wah	4117	Fisher'sHarm Mic	4154	Bright Vector
4079	Stevie Fuzz Amp	4118	SmallComp9	4155	Classic SynBrass
4080	OutOfPhasPickups	4119	Accdn Booth	4156	MW S&H Filt
4081	Fr Harpsi L84U8	4120	Accdn Booth	4157	80's Heaven
4082	Fr Harpsi L48	4121	Press Lead	4158	PolySynth Stack
4083	Fr Harpsi Lute	4122	Cars Square Lead	4159	Chillwave Chords
4084	Fr Harpsi L8	4123	Keytar Hero(Wah)	4160	Classic Saws
4085	Fr Harpsi U8	4124	Voyage Lead	4161	Big Old Jupiter
4089	ClassicBLesFstvX	4125	SimpleHipHopLead	4162	Punchy Synth
4090	FunkyPerc Les X	4126	SquareChirpLead	4163	Touch Trance
4091	SoulPerc Les X	4127	Vector Lead	4164	Square Bell
4092	FirstThree LesX	4128	80s Lead Synth	4165	Perc Vector

ID	EFFECT	ID	EFFECT	ID	EFFECT
4166	Tesla Coil	4202	Low Orch Brass	4249	Beasties Bass
4167	Warbly Pong SQR	4203	Lead Trumpet	4250	Levin/Gabrlfrtls
4168	Gangsta Wrap	4204	Solo Trombone	4258	Motown Bass
4169	Woodhouse Bass	4205	Jubilee Trumpets	4259	Finger Bass
4170	Aggro OctoBass	4206	Wah Trumpet	4260	Flea/Bootsy
4171	KneeDeepMiniMoog	4207	Mr. West Horns	4267	Celeste
4172	Squeeze Mini	4208	Bullit Brass	4268	Octave Celeste
4173	Iceman Bass	4209	Dr. StAb'N SwEll	4269	Bells
4174	ANGRY Bass	4211	Mostly Saxes	4270	Carillon
4175	Big Synth Bass	4212	UniSaxSection	4271	Basic Orch Perc
4176	Noise Bass	4213	Bassoon/Oboe	4272	Orch Timpani
4177	The Way It Is	4214	Solo Alto Sax	4273	Natural Perc
4178	Dolby Bass	4215	Solo Tenor Sax	4274	Percussionist
4179	Adagio Strings	4216	Flute/Clarinet	4275	Bongo Conga
4180	Big LA Strings	4217	Solo Bari Sax	4276	Talking Drum
4181	Fast Strings	4218	StrawberryFlutes	4277	Accessory
4182	Slow String Trem	4227	Rich 'Caster	4278	Carnival Perc
4183	AdagioTutti 8ves	4228	Rich Les	4279	Vocal Percussion
4184	Adagio Octaves	4229	SuperStudioCast	4280	Rogers Celeste
4185	NashvilleStrings	4230	PhasePickles	4283	Mixed Choir
4186	Poltergeist Pad	4231	TimeWarpCaster	4284	Manhattan Voices
4187	Full Pizzicato	4232	Kinda Krunchy	4285	Choir Complete
4188	Lead Violins II	4233	Brown Sound LTE	4286	NYC in LA
4189	AggressDivisiStr	4234	RedHot/StudioStr	4287	Crystal Voices
4190	Yesesis Tron Str	4235	SuperFlyWahCast	4288	Cathedral Vox
4191	Moby TurntblTron	4236	Jack the Ripper	4289	Silent Sorrow
4192	Solo Cello Fast	4237	Boutique Six Str	4290	Swept Tron Voice
4193	Solo Cello Fast	4238	Boutique 12 Str	4291	Slo Orch Chorus
4194	Solo Harp	4239	Real Nylon	4292	Aaah Vocals
4195	Session Hornz	4240	3Str Mandolin	4293	Jazzy Ballad Vox
4196	High-End Horns	4243	P-Bass	4294	Bright Syn Vox
4197	Split SectionSW	4244	Motown Bass	4295	AntiqueAhhChorus
4198	Mancini Brass	4245	Finger Bass	4296	Vox Angel
4199	GB Hornz+Syn	4246	Flea/Bootsy	4297	Aaahlicious
4200	Super-8 Brass	4247	Jaco Fretless	4298	PolyTechnobreath
4201	Brass Fanfare	4248	AC Buzzer Bass	4299	Glockenspiel

ID	EFFECT	ID	EFFECT	ID	EFFECT
4300	Real Vibes	5016	Clav Chamber	5052	Miami Gated Room
4301	Stereo Marinba	5017	Green Room	5053	Miami Plate Rvb
4302	Xylophone	5018	AbbeyBrasHall2	5054	Tenor Sax
4303	XHarmonicStlDrum	5019	MedRoom10	5055	Bari Sax
4304	Chimes	5020	Medium Hall	5056	Small Dark Room2
4305	Bigger Chimes	5021	CDR Just Reverb	5057	Small Hall II
4306	Crotales Hits	5022	Real Niceverb	5058	Omni Stage
4307	Metal Marimba	5023	Small Hall	5059	DeepChorsDlyHall
4308	SteamPunkMallets	5024	Mosque w/Inf Rev	5060	AGT Reverb
4309	CeleseGlockHarp	5025	CDR Aux Reverb	5061	NylonAgtVerb
4316	Bellestrum VTrg	5026	Live RecitalHall	5062	Small Dark Room
4317	Toy Piano	5027	MosqueySwirl Aux	5063	HammerDulceRoom3
4318	Bunch of Bells	5028	BladerunnrRvb	5064	AbbeyPianoHall
4319	Synthy 73	5029	Dark Room 2	5065	Lil' Drum Booth
4320	Wurzzicato	5030	UnderCurAux	5066	Gated Plate 144m
4321	Comp Cro + Pad	5031	AbbeyPianoHall2	5067	SnappyDrumCmpVrb
4322	Clavestrum	5032	JK GatedLaserver	5068	More Drum Air
4323	Bowed Crotales	5033	SymphonyHall 1	5069	Full Drum Room
4324	Bells and Bows	5034	Gunshot Verb	5070	Expandn'DrumHall
4325	Bass Pedal	5035	SuperSaw Aux	5071	DrmCMPVb4PrgFX2
5000	Small Hall	5036	7ft Aux Verb1	5072	Aux Dark Room 2
5001	ShortPlate4EPs	5037	Cathedral Chorus	5073	CmpVerb4Drms2
5002	Sax Chamber	5038	SymphonyHall Aux	5074	Garage Drums
5003	Rhodes1 Aux	5039	Bradley's Barn 1	5075	SymphonyHall 3
5004	Real Nice Verb	5040	SymphonyHall 2	5076	Med Drum Room
5005	Opera House	5041	Empty Stage II	5077	PercussionRoom
5006	Rhodes Aux Room1	5042	AbbeyPianoHall 2	5078	PercVerb1
5007	Opera House2	5043	Sax Chamber 21	5079	Med Drum Room
5008	Medm Warm Plate2	5044	Smooth Long Hall	5080	Elegant Hall Aux
5009	Sax Chamber2	5045	Horn Plate 1	5081	FlangVoXHall2Aux
5010	Mosque Room2	5046	Super8 Horn Dly	5082	Cathedral Vx Aux
5011	ShortPlate4EPs2	5047	Solo Trumpet	5083	Classic Plate II
5012	Small Hall2	5048	Predelay Hall	5084	Real Niceverb II
5013	Medium Hall2	5049	Gtr Niceverb	5085	BigDarkRoomDW
5014	Tines Aux Rev	5050	Bullitt PDlyHall	5086	Empty Stage 11
5015	Little Booth	5051	7thHeaven Plate	5087	Cab-Reverb

ID	EFFECT
5088	jk AUX1
5089	Empty Stage
5090	DF OrganRoom
5091	KB3 Aux2 Booth
5092	KB3 Aux2 Booth 2
5093	Organ Chamber2
5094	KB3 Cab 1
5095	KB3 Cab 2
5096	Plebe Chamber
5097	1.6ms Hall
5098	Artis KHall
5099	2.0ms Hall
5100	Sweet PnoHall 2
5101	FM Hall
5102	.78ms Hall
5103	Album Plate
5104	OmniStage
5105	Artis LrgKHall
5106	Sweet PnoHall 2
5107	Lrg Ambience l
5108	Upright Room
5109	Upright Room
5110	.78ms Hall
5111	OmniStage 200
5112	Omni Stage Short
5113	Omni Stage 3

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