YAMAHA

Virtual Acoustic Synthesizer
Virtual Acoustic Tone Generator

VL Version 2

Owner's Manual

SPECIAL MESSAGE SECTION

PRODUCT SAFETY MARKINGS: Yamaha electronic products may have either labels similar to the graphics shown below or molded/stamped facsimiles of these graphics on the enclosure. The explanation of these graphics appears on this page. Please observe all cautions indicated on this page and those indicated in the safety instruction section.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL
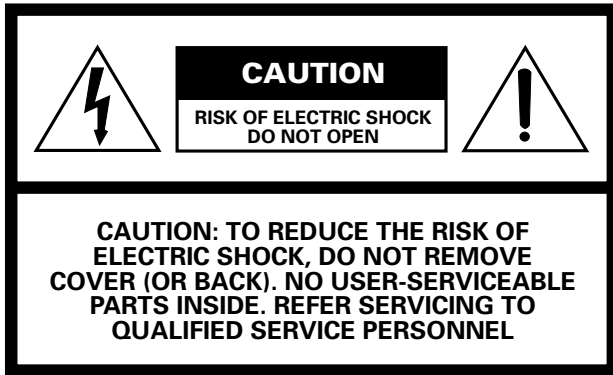
● **Explanation of Graphical Symbols**

The exclamation point within the equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

The lightning flash with arrowhead symbol within the equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.

IMPORTANT NOTICE: All Yamaha electronic products are tested and approvend by an independent safety testing laboratory in order that you may be sure that when it is properly installed and used in its normal and customary manner, all foreseeable risks have been eliminated. DO NOT modify this unit or commission others to do so unless specifically authorized by Yamaha. Product performance and/or safety standards may be diminished. Claims filed under the expressed warranty may be denied if the unit is/has been modified. Implied warranties may also be affected.

SPECFICATIONS SUBJECT TO CHANGE: The information contained in this manual is believed to be correct at the time of printing. However, Yamaha reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

ENVIRONMENTAL ISSUES: Yamaha strives to produce products that are both user safe and environmentally friendly. We sincerely believe that our products and the production

methods used to produce them, meet these goals. In keeping with both the letter and the spirit of the law, we want you to be aware of the following:

Battery Notice: This product MAY contain a small non-rechargeable battery which (if applicable) is soldered in place. The average life span of this type of battery is approximately five years. When replacement becomes neccessary, contact a qualified service representative to perform the replacement.

Warning: Do not attempt to recharge, disassemble, or incinerate this type of battery. Keep all batteries away from children. Dispose of used batteries promptly and as regulated by applicable laws. Note: In some areas, the servicer is required by law to return the defective parts. However, you do have the option of having the servicer dispose of these parts for you.

Disposal Notice: Should this product become damaged beyond repair, or for some reason its useful life is considered to be at an end, please observe all local, state, and federal regulations that relate to the disposal of products that contain lead, batteries, plastics, etc.

NOTICE: Service charges incurred due to lack of knowledge relating to how a function or effect works (when the unit is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

NAME PLATE LOCATION: The graphic below indicates the location of the name plate. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial nunber, and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.
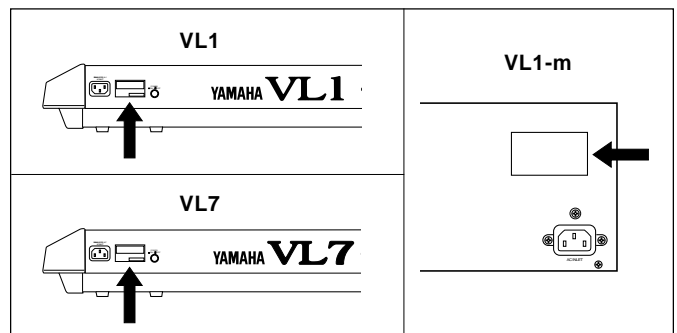
Model ————————————————

Serial No. ————————————————

Purchase Date ————————————————

92-469 ①

IMPORTANT SAFETY INSTRUCTIONS

Please refer to the IMPORTANT SAFETY INSTRUCTIONS listed below rather than those in the original Feature Reference manual. The safety instructions given here are complete and correct.

INFORMATION RELATING TO PERSONAL INJURY, ELECTRICAL SHOCK, AND FIRE HAZARD POSSIBILITIES HAS BEEN INCLUDED IN THIS LIST.

WARNING- When using any electrical or electronic product, basic precautions should always be followed. These precautions include, but are not limited to, the following:

1. Read all Safety Instructions, Installation Instructions, Special Message Section items, and any Assembly Instructions found in this manual BEFORE making any connections, including connection to the main supply.

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

3. Main Power Supply Verification: Yamaha products are manufactured specifically for the supply voltage in the area where they are to be sold. If you should move, or if any doubt exists about the supply voltage in your area, please contact your dealer for supply voltage verification and (if applicable) instructions.The required supply voltage is printed on the name plate. For name plate location, please refer to the graphic found in the Special Message Section of this manual.

4. DANGER-Grounding Instructions: This product must be grounded and therefore has been equipped with a three pin attachment plug. If this product should malfunction, the ground pin provides a path of low resistance for electrical current, reducing the risk of electrical shock. If your wall socket will not accommodate this type plug, contact an electrician to have the outlet replaced in accordance with local electrical codes. Do NOT modify the plug or change the plug to a different type!

5. WARNING: Do not place this product or any other objects on the power cord or place it in a position where anyone could walk on, trip over, or roll anything over power or connecting cords of any kind. The use of an extension cord is not recommended! If you must use an extension cord, the minimum wire size for a 25' cord (or less) is 18 AWG. NOTE: The smaller the AWG number, the larger the current handling capacity. For longer extension cords, consult a local electrician.

6. Ventilation: Electronic products, unless specifically designed for enclosed installations, should be placed in locations that do not interfere with proper ventilation. If instructions for enclosed installation are not provided, it must be assumed that unobstructed ventilation is required.

7. Temperature considerations: Electronic products should be installed in locations that do not seriously contribute to their operating temperature. Placement of this product close to heat sources such as; radiators, heat registers etc., should be avoided.

8. This product was NOT designed for use in wet/damp locations and should not be used near water or exposed to rain. Examples of wet /damp locations are; near a swimming pool, spa, tub, sink, or wet basement.

9. This product should be used only with the components supplied or; a cart ,rack, or stand that is recommended by the manufacturer . If a cart, rack, or stand is used, please observe all safety markings and instructions that accompany the accessory product.

10. The power supply cord (plug) should be disconnected from the outlet when electronic products are to be left unused for extended periods of time. Cords should also be disconnected when there is a high probability of lightning and/or electrical storm activity.

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

12. Electrical/electronic products should be serviced by a qualified service person when:

    a. The power supply cord has been damaged; or
    b. Objects have fallen, been inserted, or liquids have been spilled into the enclosure through openings; or
    c. The product has been exposed to rain; or
    d. The product does not operate, exhibits a marked change in performance; or
    e. The product has been dropped, or the enclosure of the product has been damaged.

13. This product, either alone or in combination with an amplifier and headphones or speaker/s, 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 at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
IMPORTANT: The louder the sound, the shorter the time period before damage occurs.

14. Some Yamaha products may have benches and / or accessory mounting fixtures that are either supplied as a part of the product or as optional accessories. Some of these items are designed to be dealer assembled or installed. Please make sure that benches are stable and any optional fixtures (where applicable) are well secured BEFORE using. Benches supplied by Yamaha are designed for seating only. No other uses are recommended.

PLEASE KEEP THIS MANUAL

Welcome to Version 2

■

     Whether you have purchased a VL1 Version 2, VL1-m Version 2, or VL7 Version 2 or upgraded from an original version, you are now in possession of what is currently the most advanced computer-based "physical modelling" musical synthesis system in the world.

     VL Version 2 is a software upgrade which significantly enhances the sound and playability of the original VL system in the same sense that operating system upgrades for personal computers can provide major improvements in operating ease and functionality. To employ a more musical example, upgrading from the original VL version to Version 2 takes you from the sound and response of a baby grand piano to that of a full concert grand.
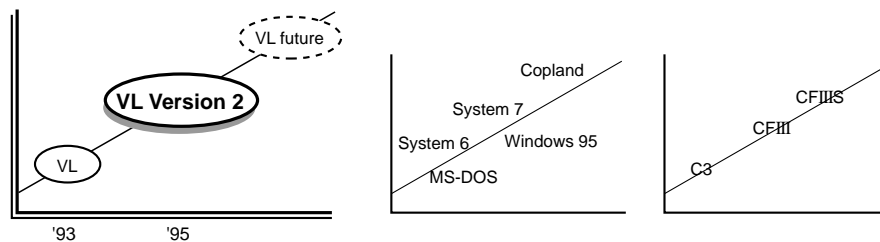
     Specifically, Version 2 applies to two main areas: 1) the physical modelling algorithm has been improved for greater simulation precision and resolution; and 2) improved effects. Please note that the changes have not been made merely in the interest of greater programming "elegance" or to fix bugs in the original system. Version 2 is a very meaningful upgrade, offering advanced sound and playability that can make a major difference in the quality of the music you create.

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About This Manual

■

This manual supplements the original VL manuals with information about the improvements and changes in Version 2. The information provided in the original VL manuals is essential for a full understanding of Version 2, and those manuals — particularly the Getting Started manual — should be read before attempting any serious work with Version 2.

This manual is made up of 5 chapters, as follows:

1. Initial Setup [➡ Page 5]
Setting up the instrument without external controllers and loading the Version 2 voices.

2. Test Driving Version 2 [➡ Page 10]
Simple procedures to help you become familiar with some of the capabilities and features of Version 2.

3. Load-converting Original VL Voices [➡ Page 19]
Loading and automatically converting original VL voices for use with Version 2.

4. New Features & Parameters [➡ Page 22]
This section lists the new features and parameters provided by Version 2.

5. Experiments [➡ Page 58]
Some experiments to help you become familiar with the way controllers and other features function in the VL instruments.

Model Name Abbreviations

Although the official names of the models described in this manual are VL1 Version 2, VL7 Version 2, and VL1-m Version 2, "Version 2" will be abbreviated to "Ver.2" in the text for easier, more efficient reading. The term "Version 2" or simply "the instrument" will be used when referring to all three models.

1: Initial Setup

The best way to appreciate the outstanding sound and playability of Version 2 is to set up and try out some of the voices. Although controllers such as a foot controller, breath controller, and footswitch are essential for maximum musical expression with Version 2, you can initially set up without them and still appreciate the extraordinary sound and playability it offers. This section will guide you through the basic setup and voice loading procedures.

> **NOTES** ■ *If you've upgraded from an original VL model and are already familiar with setup and voice selection procedures, you can skip ahead to "Test Driving Version 2", on page 10.*
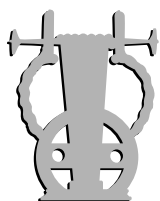
Power Supply

Before making any other connections the "female" end of the AC power cord supplied with the instrument should be firmly plugged into the rear-panel AC cord socket. Ideally the power cord should then be plugged into a convenient AC outlet after you've made all other necessary connections and placed the instrument in the position in which it will be used. Always make sure that the POWER switch is in the OFF (extended) position before plugging the power cord in an AC outlet.

> ⚠ **CAUTION!** ■ *Make sure your VL model is rated for the AC voltage supplied in the area in which it is to be used (as listed on the rear panel). Connecting the instrument to the wrong AC supply can cause serious damage to the internal circuitry and may even pose a shock hazard!*
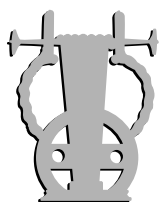
Audio Connections

● Headphones

Headphones are ideal for a fast, easy checkout. Any standard pair of stereo headphones with a 1/4" stereo phone plug and an impedance of between about 8 and 150 ohms can be used.

● Stereo Sound System

The original VL and Version 2 voices are designed to sound their best in stereo. A stereo sound system is recommended to deliver the full impact of the voices and expressive features. The OUTPUT L and R jacks can be connected directly to musical instrument amplifiers designed for keyboard use, or to the line inputs of a mixing console.

> **NOTES** ■ *If you need to drive a mono amp or other device, the output can be switched to mono (the same signal appears at the L and R outputs) by using the Output parameter described in the Feature Reference manual:*
>
> > *VL1*. . . . . . . *page 154*
> > *VL1-m* . . . . *page 153*
> > *VL7*. . . . . . . *page 152*
>
> ■ *Make sure that both the instrument and your sound system are turned OFF when making connections.*
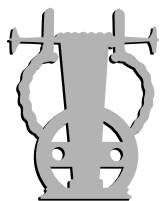
Power-on Procedure

Always follow proper procedure when powering-up a sound system to minimize the possibility of damage to the equipment (and your ears!).

1. Make sure your sound system's main level/volume control(s) and the instrument's volume control are turned all the way down prior to turning power on.

2. Turn on the instrument. If you are using a VL1-m Ver.2, turn on your MIDI keyboard or other controller after turning on the VL1-m Ver.2.

3. Turn on the sound system.

4. Raise the sound system volume to a reasonable level.

5. Gradually raise the instrument's VOLUME control while playing the keyboard to set the desired listening level.

> **NOTES ■ *VL1 Ver.2 and VL7 Ver.2:*** *these models automatically transmit MIDI control change data corresponding to their control status when their power switches are turned ON. This can interfere with operation of other MIDI equipment connected to the MIDI OUT connector. If the instrument is connected to other MIDI equipment, its power switch should be turned ON or OFF* last.
>
> **■ *VL1-m Ver.2:*** *Most keyboards and other MIDI controllers automatically transmit MIDI control change data data corresponding to their control status when the power switch is turned ON or OFF. The VL1-m Ver.2 is programmed to receive this data and respond accordingly, so it is preferable to turn the VL1-m ON* before *turning the controlling device ON.*
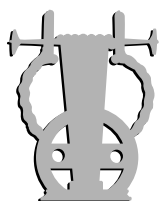
VL1-m Ver.2 MIDI Connections

The VL1-m Ver.2 can be used with just about any type of MIDI controller: keyboard, wind controller, sequencer, computer-based MIDI software, etc. Use a MIDI cable to connect the MIDI OUT terminal of the controller to the MIDI IN terminal of the VL1-m. To ensure reliable error-free transfer of MIDI data always use high-quality MIDI cables obtained from your Yamaha dealer or music equipment store. Also avoid MIDI cables that are longer than about 15 meters, since cables longer than this can pick up noise which can cause data errors.

The VL1-m Ver.2 MIDI transmit channel, receive channel, local on/off, and device number parameters are available in the utility mode "MIDI Setting" page described on page 154 of the VL1-m Feature Reference manual. Make sure these parameters are set to match the corresponding settings of the MIDI controller used with the VL1-m Ver.2.

● The VL1-m Ver.2 receives the following MIDI data:

Note	The played note(s) and velocity value.
Control Change	Modulation wheel, breath controller, foot controller, main volume, and other controller data.
Aftertouch	Keyboard aftertouch pressure.
Pitch Bend	Pitch bend wheel position.
Program Change	Voice numbers from 1 to 128.
Bulk	Voice and system data transmitted in the form of "bulk dumps."
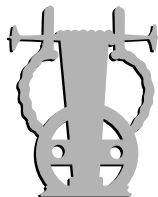
Load the Pre-programmed Voice Data

Although the factory pre-programmed voices are stored in the instrument's internal memory when it is initially shipped, there is always a possibility that all or part of the memory has been erased or modified by the time the instrument gets to you. It's a good idea to re-load all the pre-programmed data from the supplied "FACTORY SET" voice disk, as follows.

1. Insert the Voice Disk

Insert the Version 2 voice disk into the disk drive. The sliding disk shutter should go in first, and the label side of the disk should face upward.

2. Select the Utility Mode System Page

Press the [UTILITY] button to select the utility mode. Then, if it is not already se-lected when the utility mode display appears, press the [F1] button to select the "Sys-tem" function page.

```
UTIL
<System>
1:KBD Setting        5:Curve
2:TG Setting         6:Breath Mode
3:MIDI Setting       7:Miscellaneous
4:Assignable Ctrl
Sys  Bulk Disk Recl  Demo
```

3. Select the Disk Function Directory

Press the F3 function button ("Disk") to select the utility mode disk function directory.

```
UTIL
<Disk>

1:Disk Status       5:Delete File
2:Load From Disk    6:Format Disk
3:Save To Disk
4:Rename File
Sys  Bulk Disk Recl  Demo
```

4. Select "Load From Disk"

Use the cursor buttons to move the cursor to "Load From Disk" and then press ENTER.

```
UTIL/DISK/LOAD FROM DISK
<Load From Disk>

1:All               5:1 Voice
2:System
3:All Voice
4:1 Bank
Sys  Bulk Disk Recl  Demo
```

5. Select "All" and Select the "VL1_VER2.ALL" or "VL7_VER2.ALL" File

Make sure the cursor is positioned at "All" and press ENTER.

```
UTIL/DISK/LOAD FRO  ALL SRC FILE
<Load From Disk>    001:VL1_VER2:All
                    002:VL1V2_WX:All
1:All               003:VL7_VER2:All
2:System            004:VL7V2_WX:All
3:All Voice         005:ADDITION:All
4:1 Bank
Sys  Bulk Disk Rec
```

When the list of files appears use the cursor ▲ and ▼ buttons to select the "VL1_VER2.ALL" file if you have a VL1 Ver.2 or VL1-m Ver.2, or the "VL7_VER2.ALL" file if you have a VL7 Ver.2, then press ENTER again.

```
UTIL/DISK/LOAD FRO  ALL SRC FILE
<Load From Disk>    001:VL1_VER2:All
1:A
2:S  Are You Sure? Yes[INC]/No[DEC]
3:A
4:1
Sys  Bulk Disk Rec
```

6. Load the File

Loading will begin when you press the INC button in response to the "Are You Sure?" prompt. A bar graph on the display will indicate the progress of the load operation, and when all the data has been loaded "Completed!" will appear.

7. Return to the Play Mode, Eject the Disk, & Select a Voice

When the "Completed!" display appears, press the PLAY button to return to the play mode, then press the eject button below the disk drive slot to eject the disk. Store the disk in a safe place. You must now select a voice in order for the loaded data to be properly activated — see the following section.

About the Version 2 Data Disk

The Version 2 floppy disk contains the following files:

> **NOTES** ■ *These voice files cannot be used with the original VL models.*

● VL1_VER2.ALL

This file contains the voices initially loaded into the VL1 Version 2 when it is first shipped from the factory. The UTILITY/SYSTEM/BREATH MODE parameter is set to "Touch EG", so until this is changed to "BC/WX" the breath controller or a WX wind controller cannot be used.

Many of these voices can also be used on the VL7 Version 2.

● VL1V2_WX.ALL

The 32 voices included in this file have been programmed specifically for optimum playability on the VL1 Ver.2 or VL1-m Ver.2 using a Yamaha WX-series wind controller (WX7/WX11).

This selection also includes many voices which can be effectively played via a keyboard with breath control. Many voices are suitable for the rock and pop genres, so don't overlook them for keyboard control.

● VL7_VER2.ALL

This file contains the voices initially loaded into the VL7 Version 2 when it is first shipped from the factory. The UTILITY/SYSTEM/BREATH MODE parameter is set to "Touch EG", so until this is changed to "BC/WX" the breath controller or a WX wind controller cannot be used.

● VL7V2_WX.ALL

The 32 voices included in this file have been programmed specifically for optimum playability on the VL7 Ver.2 using a Yamaha WX-series wind controller (WX7/WX11).

This selection also includes many voices which can be effectively played via a keyboard with breath control. Many voices are suitable for the rock and pop genres, so don't overlook them for keyboard control.

● ADDITION.ALL

This file includes some excellent voices that are not in the VL1_VER2.ALL or VL7_VER2.ALL files. Most are single-element voices, so the VL1 voices can be used effectively on the VL7.
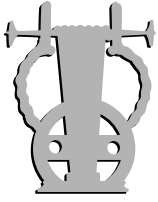
Set the Breath Mode to "Touch EG"

Once the Version 2 voices are loaded you're almost ready to try them out — "almost" because there's one more step necessary to play the voices without a breath controller:

> **NOTES** ■ *The procedure below sets the breath mode to "Touch EG" so "breath" control can be applied via keyboard touch response. This setting is automatically selected when the VL1-VER2.ALL or VL7_VER2.ALL file is loaded, so you may not need to bother with these steps if you've just loaded one of these files. It is a good idea to check, anyway.*

1. **Select the Utility Mode System Page**

Press the [UTILITY] button to select the utility mode. Then, if it is not already selected when the utility mode display appears, press the [F1] button to select the "System" function page.

```
UTIL
<System>

1:K30 Setting      5:Curve
2:TG Setting       6:Breath Mode
3:MIDI Setting     7:Miscellaneous
4:Assignable Ctrl
Sys  Bulk Disk Recl  Demo
```

2. **Set the Breath Mode to "Touch EG"**

Use the cursor keys to move the cursor to "Breath Mode", and press [ENTER] to call the "Breath Mode" function page. Make sure the cursor is located at the "Mode" parameter and use the [DEC] and [INC] buttons to select "Touch EG".

It might be a good idea to increase the value of the "VelGain" parameter a bit for easier response. The default values can be instantly recalled by pressing the [F8] (Init) function button.

```
UTIL/SYSTEM/BREATH MODE

Mode     = Touch EG    AT Hi Ofst =  64
Vel Ofst =    20             Gain =  -1
    Gain =     0        Lo Ofst =  30
TEG Time = 85.9msec          Gain =  -2

Sys  Bulk Disk Recl  Demo           Init
```

3. **Return to the Play Mode**

Press the [PLAY] button to return to the PLAY mode.
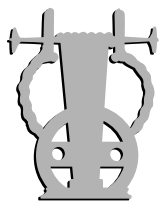
Try Some Version 2 Voices

Voice selection is described in detail in the Getting Started manual. In case you're not already familiar with the procedures, here's a summary to get you started.

1. Select the Play Mode

Press the PLAY button so that its indicator lights and the word "PLAY" appears in the upper left corner of the LCD panel.

2. Select a Voice

On the VL1 Ver.2 or VL7 Ver.2 any voice can be selected by specifying its bank using the bank keys (A, B, C, etc.), and its number using the voice number keys (1 through 16).

To select voice "D7", for example, first press the bank D key and then the voice number 7 key. The bank D key indicator will flash until the voice number 7 key is pressed and the D7 voice is actually engaged.

To select a different voice within the same bank it is only necessary to press the appropriate voice number key. To select a different bank, however, you'll always have to press both a bank key and a voice number key (or the ENTER key). This prevents unwanted voices from being selected until you've actually specified both the bank and number of the voice you want to use.

The DEC and INC buttons can also be used to select voices: press the DEC or INC button briefly to decrement or increment the voice number by one, or hold either button for continuous decrementing or incrementing in the corresponding direction. The bank will switch automatically if you cross a bank voice-number boundary.

The data dial provides a convenient way to rapidly cover a large range of voices: rotate the data dial clockwise for higher voice numbers or counter-clockwise for lower voice numbers while watching the display. The banks are automatically switched when necessary as the voice numbers are changed.

3. Set the Modulation Wheels To Their Home Positions

Roll MODULATION WHEEL 1 all the way towards you, and set MODULA-TION WHEEL 2 to its center position.

● A02 Jazz Sax

Although this voice is exactly the same as the Alto Sax voice provided with the original VL models — i.e. it has not been programmed to take advantage of the advanced simulation capabilities of Version 2 — the improved playability of Version 2 makes it play like a totally new voice. Use keyboard velocity, aftertouch, the pitch bend wheel, and modulation wheel 1 to play a sax phrase, and you'll see what we mean. An important contributing factor to this improved playability is the ability to assign Touch EG to pressure control.

● D02 BaritonSax

This voice provides a good example of the extraordinary simulation precision provided by Version 2. As with the previous voice, play a sax phrase using keyboard velocity, aftertouch, the pitch bend wheel, and modulation wheel 1. You should be able to replicate the sound of a top-level sax player with refined embouchure and technique. Later, you might want to convert-load the original A02 Tenor Sax voice (convert-loading

is described in the next section of this manual), and compare it with the D02 BaritonSax voice. The difference should be obvious.

● A04 Jazz Trumpet

Use this voice to play a trumpet phrase. Like the previous voice, you should fairly easily be able to produce the sound of a trumpet played by a highly accomplished artist. Version 2 allows a much more accurate simulation of the trumpet tubing, resulting in a highly responsive, realistic trumpet voice. This voice is ideal for jazzy phrases.

Also try the following: press the F3 (Cnt3) button to call the corresponding controller assignment display, and note that the dynamic filter ("D.Filter") is off. While most PCM synthesizers — and even the original VL — employ a dynamic filter to simulate timbral variations across the voice's dynamic range, the Version 2 simulation is so realistic that the dynamic filter is not needed. Note how the trumpet tone varies from soft to hard in response to keyboard velocity.

● B11 C Flute

Let's use this voice to try a simple experiment which illustrates one of the new features of the Version 2 physical modelling section:

1. Press the EDIT button to select the edit mode. If the entry-level edit display shown below does not appear when the EDIT button is pressed, press the EXIT button a few times until it does.

```
EDIT
 B11(027)                        █
 Voice Name = █C Flute█
 Key Mode   = Mono
 Voice Mode = Single
 E1 Name    = C Flute

Com   E1                      Name
```

2. Press the F2 (E1) button.

```
EDIT/E1
 B11(027):C Flute    /E1:C Flute   █
<Controller>
█0:Pressr█ 05:Tnguing 09:Growl   13:Damping
02:Embchr  06:Ampltd  10:Throat  14:Absrptn
03:Pitch   07:Scream  11:D.Filtr
04:Vibrato 08:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env              S&R
```

3. Press the F2 (Misc) button.

```
EDIT/E1
 B11(027):C Flute    /E1:C Flute   █
<Miscellaneous>
█1:Setting█         5:Amplitude
2:Breath Noise      6:Excitation
3:Throat Formant
4:Mixing
Ctrl Misc Modi Env
```

4. Move the cursor to "Breath Noise" and press the ENTER button.

```
EDIT/E1/MISC/BREATH NOISE
 B11(027):C Flute   /E1:C Flute      ▯
 Slit Drive    = ▨▨  Noise = Dark Woody
 Ctrl Balance  =  63 Ctrl ══════╪════◗ Slit
 HPF Cutoff Frq = 1.75 kHz▣
 LPF Cutoff Frq = 7.58 kHz▣
 Key On Reset   = off        Level = 117▣
                                      Ctrl
```

5. Move the cursor to the "Noise" parameter (currently set to "Dark Woody"), and use the DEC and INC buttons to select different noise types while playing the voice (there are 23 different noise types to choose from).

```
EDIT/E1/MISC/BREATH NOISE
▮B11(027):C Flute   /E1:C Flute      ▯
 Slit Drive    = 23  Noise = ▮Metal 1▮
 Ctrl Balance  =  63 Ctrl ══════╪════◗ Slit
 HPF Cutoff Frq = 1.75 kHz▣
 LPF Cutoff Frq = 7.58 kHz▣
 Key On Reset   = off        Level = 117▣
                                      Ctrl
```

6. Press the PLAY button to return to the play mode when done.

The noise parameter you just edited changes the noise components at the flute mouthpiece. The ability to choose from a range of noise types provides considerable voice-shaping flexibility.

● B05 FingrBass

Here's a simple experiment which demonstrates the improved flexibility of the Version 2 effects using the B05 FingrBass voice:

1. Press the EDIT button to select the edit mode. If the entry-level edit display shown below does not appear when the EDIT button is pressed, press the EXIT button a few times until it does.

```
EDIT
 B05(021)                            ▯
 Voice Name = ▮FingerBass▮
 Key Mode   = Poly
 Voice Mode = Single
 E1 Name    = FingerBass

Com  E1                              Name
```

2. Press the F1 (Com) button.

```
EDIT/COM
 B05(021):FingerBass                 ▯
<Miscellaneous>
▮1:Setting▮           5:Portamento
 2:Controller         6:Micro Tuning
 3:Element Pitch      7:Continuous Slider
 4:Element Level&Pan  8:Part Setting
▮Misc▮Efct
```

3. Press the F2 (Efct) button.

```
EDIT/COM
 B05(021):FingerBass                    ⚡
<Effect>
1:Setting
2:Modulation Effect
3:Feedback Delay
4:Reverberation
Misc Efct
```

4. Move the cursor to "Modulation Effect" and press the ENTER button.

```
EDIT/COM/EFFECT/MODULATION EFFECT
 B05(021):FingerBass                    ⚡
 Modulation Effect Type = Flanger
 Element on/off       E1: on
 Wave  = Triangle     Freq. = 0.258 Hz
 Depth =   16%        Delay =   1.40 ms
 Phase =   67.5deg
 ▲ ▼
```

5. Move the cursor to the "Modulation Effect Type" parameter (currently set to "Flanger"). Play the voice to hear the sound of the bass voice with a subtle touch of flanger, then press the INC button a few times to select the Dist+Flanger effect type. Play the voice again to hear the difference.

```
EDIT/COM/EFFECT/MODULATION EFFECT
 B05(021):FingerBass                    ⚡
 Modulation Effect Type = Dist+Flanger
 Element on/off       E1: on
 Overdrive    =  40%
 Speaker      = Combo
 Output Level =  60%
 ▲ ▼
```

6. Press the PLAY button to return to the play mode when done.

Unlike the original VL models, Version 2 allows modulation effects to be applied in series for an impressive variety of new sounds.
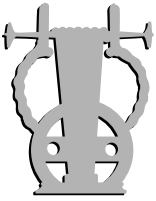
Controller Connection & Calibration

If you followed the procedures in the previous section you are already at least partly familiar with the extraordinary expressive capabilities of the VL1 Ver.2, VL7 Ver.2, or VL1-m Ver.2 — without using external controllers. The next step is to connect a foot controller and breath controller and experiment with the unprecedented expressive power at your disposal when Version 2 is used with external controllers. The BC2 Breath Controller is perhaps the most natural way to apply expressive control to the VL voices, but a foot controller can be used instead if you're more comfortable with foot control. Of course, the breath and foot controllers can also be used to simultaneously control different parameters.

● Breath Controller

The Breath Controller provides realistic expression with wind-instrument voices (volume and timbre as well as tonguing attack variations) and unprecedented control with string voices (bowed and plucked). Plug the BC2 Breath Controller supplied with the VL1 Ver.2 or VL7 Ver.2 (or an optional BC1 breath controller) into the front-panel breath controller jack.
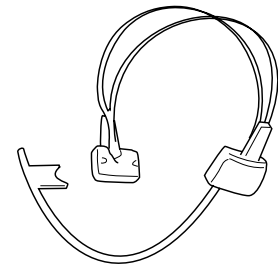
If you will be using the VL1-m Ver.2 with a wind controller a breath controller is not necessary. If you will be using the VL1-m with a keyboard, however, you should purchase an optional BC2 or BC1 Breath Controller and plug it into the front-panel breath controller jack.

Before you actually begin using the breath controller, it should be calibrated as described in the following section.

> **NOTES ■** *For more information on Breath Controller setup and operation, see the instructions packed with the supplied BC2 Breath Controller.*

● Breath Controller Calibration

Proper operation of the breath controller is vital to achieving the best possible sound and response. Although the controller is factory-calibrated to match most requirements, we recommend that you carefully calibrate the breath controller for optimum performance with your own playing style.

1. Make Sure the Breath Controller Is Connected

Make sure the breath controller is properly connected: turn the power OFF, plug in the breath controller, then turn the power ON.

2. Select the Utility Mode System Page

Press the [UTILITY] button to select the utility mode. Then, if it is not already selected when the utility mode display appears, press the [F1] button to select the "System" function page.

```
UTIL
<System>
1:K80 Setting    5:Curve
2:TG Setting     6:Breath Mode
3:MIDI Setting   7:Miscellaneous
4:Assignable Ctrl
Sys  Bulk Disk Recl   Demo
```

NOTES ■ *On the VL1 Ver.2 and VL7 Ver.2 you can move the cursor to "Assignable Ctrl" and press [ENTER] to see the current control assignments for the various controllers. Press [EXIT] when you're ready to go back to the previous page.*

■ *On the VL1-m press the [F7] (Moni) button to monitor the MIDI data received from the controllers. Press [EXIT] to return.*

3. Set the Breath Mode to "BC/WX"

Use the cursor keys to move the cursor to "Breath Mode", and press [ENTER] to call the "Breath Mode" function page. If the "Mode" parameter is not set to "BC/WX", make sure the cursor is located at the "Mode" parameter and use the [DEC] and [INC] buttons to select "BC/WX". Press [EXIT] to return to the previous page.
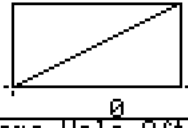
```
UTIL/SYSTEM/BREATH MODE

  Mode      = BC/WX



Sys  Bulk Disk Recl   Demo
```

4. Go To the Curve Page and Select "Brth"

Use the cursor keys to move the cursor to "Curve", then press [ENTER] to call the "Curve" function page. On the VL1 Ver.2 and VL7 Ver.2 press the [F8] function button ("Brth") to call the breath controller curve page when the curve display appears. On the VL1-m Ver.2 it is only necessary to select "BC Curve".

```
UTIL/SYSTEM/CURVE
  Breath Control
    Curve = 0(Normal)   0
                                0
Sys  Bulk Disk Recl   Demo Velo Aftr Brth
```

5. Adjust the Breath Controller Offset

The following adjustment must be performed while not blowing into the breath controller mouthpiece. Do not hold the breath controller in your mouth.

Rotate the breath controller OFFSET trimmer slowly clockwise, using the supplied screwdriver, until the vertical cursors above and below the curve graph move slightly to the right and the number below the graph is greater that "0". Then slowly rotate the trimmer carefully counter-clockwise until the number below the graph just reaches "0" (the cursors will be lined up with the left end of the graph), then stop.

6. Adjust the Breath Controller Gain

Place the breath controller mouthpiece in your mouth and blow — notice that the cursors move to right and the number below the graph increases according to how hard you blow. Adjust the breath controller GAIN trimmer so that you can comfortably vary your breath pressure between 0 and 127 on the graph. This completes the gain adjustment.

7. Readjust the Offset If Necessary

If adjusting the gain causes the offset setting to shift, readjust the offset as described in step 5.

At this point you can use the "Curve Type" parameter to select the curve type that best suits your playing style.

8. Return to the Play Mode

Press the [PLAY] button to return to the PLAY mode.

● Foot Controllers

Although the VL1 Ver.2 and VL7 Ver.2 have jacks for two foot controllers, it is not necessary to use both. To begin with plug the supplied FC7 Foot Controller into the rear-panel FOOT CONTROLLER 2 jack.

The VL1-m Ver.2 will responsd to MIDI foot controller control change data received from the controlling device.
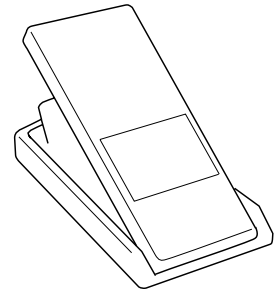
NOTES ■ *For more information on Foot Controller setup and operation, see the instructions packed with the supplied FC7 Foot Controller.*
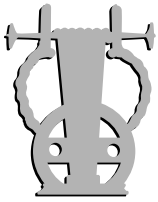
Experiment With the Controllers

Once your breath controller has been connected and calibrated, you're ready to get a feel for the type of expressive control it provides. Try selecting different voices and playing them using the keyboard, breath controller, pitch wheel, and modulation wheel 1.

To try out the foot controller as an alternative to the breath controller for breath control, unplug the breath controller and try playing different voices using the foot controller (the foot controller must be plugged into the FOOT CONTROLLER 2 jack).

Up to this point we've described a few simple experiments that should help you to become familiar with the VL Version 2 system. More detailed controller experiments are described in section 5 — "Experiments With the Controllers". We recommend that you try those experiments for a more in-depth appreciation of the instrument's unmatched musical and expressive potential.

3: Load-converting the Original VL Voices

Version 2 is compatible with all original VL voices, so if you are upgrading from an original VL model you will still be able to use the voices you are, no doubt, by now familiar with.

To be used on a Version 2 system the original voices must be converted, but this is done automatically when they are loaded: the "Now Converting and Loading!" message will appear on the display. The converted voices can then be saved to a separate disk for later re-loading and use. Don't save the converted voices back to the original voice disk, since that would overwrite the original voices which can still be used on an original VL instrument.

The new and modified parameters described in section 4 of this manual are initially set automatically. Also, the following system parameter settings are added to the original voices files:
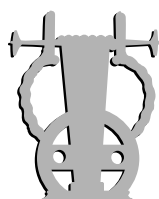
To VL1 Version 2

● VL1 Voice to VL1 Ver.2

When an "∗∗∗∗∗∗∗∗.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/TG SETTING/WX Lip	Normal
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/BC	002 Breath Cont.
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/FC1	004 Foot Cont.
UTIL/SYSTEM/BREATH MODE/Mode	BC/WX

● VL1-m Voice to VL1 Ver.2

When an "∗∗∗∗∗∗∗∗.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/ASSIGNABLE CONTROLLER/BC	002 Breath Cont.
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/FC1	004 Foot Cont.
UTIL/SYSTEM/BREATH MODE/Mode	BC/WX
Parameters not existing in Version 2 are ignored (e.g. UTIL/SYSTEM/PROGRAM CHANGE TABLE)	

● VL7 Voice to VL1 Ver.2

All VL7 voices are 1-element voices. When an "∗∗∗∗∗∗∗∗.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/TG SETTING/WX Lip	Normal
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/BC	002 Breath Cont.
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/FC1	004 Foot Cont.
UTIL/SYSTEM/BREATH MODE/Mode	BC/WX

To VL1-m Version 2

● **VL1 Voice to VL1-m Ver.2**

When an "********.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/TG SETTING/WX Lip . . . . Normal
UTIL/SYSTEM/PGM CHANGE TABLE . . . . initialized
UTIL/SYSTEM/BREATH MODE/Mode . . . . BC/WX

● **VL1-m Voice to VL1-m Ver.2**

When an "********.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/BREATH MODE/Mode . . . . BC/WX

● **VL7 Voice to VL1-m Ver.2**

All VL7 voices are 1-element voices. When an "********.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/TG SETTING/WX Lip . . . . Normal
UTIL/SYSTEM/PGM CHANGE TABLE . . . . initialized
UTIL/SYSTEM/BREATH MODE/Mode . . . . BC/WX
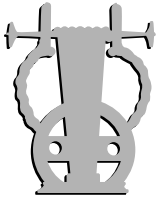
To VL7 Version 2

● **VL1 Voice to VL7 Ver.2**

Element 2 data is ignored. Voices 65 through 128 are ignored. When an "********.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/TG SETTING/WX Lip . . . . Normal
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/BC . . . . . . 002 Breath Cont.
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/FC1 . . . . . 004 Foot Cont.
UTIL/SYSTEM/BREATH MODE/Mode = BC/WX

● **VL1-m Voice to VL7 Ver.2**

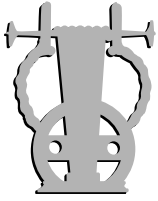Element 2 data is ignored. Voices 65 through 128 are ignored. When an "********.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/ASSIGNABLE CONTROLLER/BC . . . . . . 002 Breath Cont.
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/FC1 . . . . . 004 Foot Cont.
UTIL/SYSTEM/BREATH MODE/Mode . . . . BC/WX
Parameters not existing in Version 2 are ignored (e.g. UTIL/SYSTEM/PROGRAM CHANGE TABLE)

● VL7 Voice to VL7 Ver.2

When an "✱✱✱✱✱✱✱✱.ALL" file is loaded all original system data is left unchanged. The following new system parameters are added:

UTIL/SYSTEM/TG SETTING/WX Lip	Normal
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/BC	002 Breath Cont.
UTIL/SYSTEM/ASSIGNABLE CONTROLLER/FC1	004 Foot Cont.
UTIL/SYSTEM/BREATH MODE/Mode	BC/WX
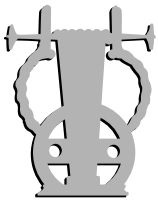
To Original VL

● Version 2 Voice to Original VL

Version 2 voices cannot be used on the original VL instruments. An "Illegal file!" error message will appear on the display and the files cannot be loaded or converted.

● Hardware System Exclusive Data Transfer

System Exclusive data can be hardware-transferred between two original VL models, or between two Version 2 VL models, but not between an original and Version 2 model.

4. New Features & Parameters

This section describes the actual improvements and new features provided in Version 2. In many cases the changes involve modifications of procedures or parameters found in the original VL models. In such cases the appropriate page numbes in the corresponding Feature Reference manuals will be listed — please refer to the original Feature Reference manuals for complete details. New features are described in full.

The block diagram below represents the overall Version 2 system. Shaded blocks are either totally new or feature significant improvements.

```
┌─────────────────────────────────────────────┐   ┌──────────────────┐
│  ┌─────────────────────────────────────────┐ │   │    Effects       │
│  │         Controllers & Envelope          │ │   │                  │
│  └─────────────────────────────────────────┘ │   │  ┌────────────┐  │
│        │                      │               │   │  │ Modulation │  │
│        ▼                      ▼               │   │  └────────────┘  │
│  ┌──────────────┐   ┌───────────────────────┐ │   │  ┌────────────┐  │
│  │              │   │       Modifiers       │ │   │  │  Feedback  │  │
│  │  Instrument  │   │  ┌─────────────────┐  │ │   │  │   Delay    │  │
│  │   Section    │   │  │ Harmonic Enhancer│  │ │   │  └────────────┘  │
│  │              │   │  ├─────────────────┤  │ │   │  ┌────────────┐  │
│  │ ┌──┐┌────┐┌─┐│   │  │ Dynamic Filter  │  │ │   │  │   Reverb   │  │
│  │ │Dr││Pipe││M││   │  ├─────────────────┤  │ │   │  └────────────┘  │
│  │ └──┘└────┘└─┘│   │  │ Freq Equalizer  │  │ │   │                  │
│  └──────────────┘   │  ├─────────────────┤  │ │   └──────────────────┘
│                     │  │ Impulse Expander│  │ │
│                     │  ├─────────────────┤  │ │
│                     │  │    Resonator    │  │ │
│                     │  └─────────────────┘  │ │
│                     └───────────────────────┘ │
└─────────────────────────────────────────────┘
```
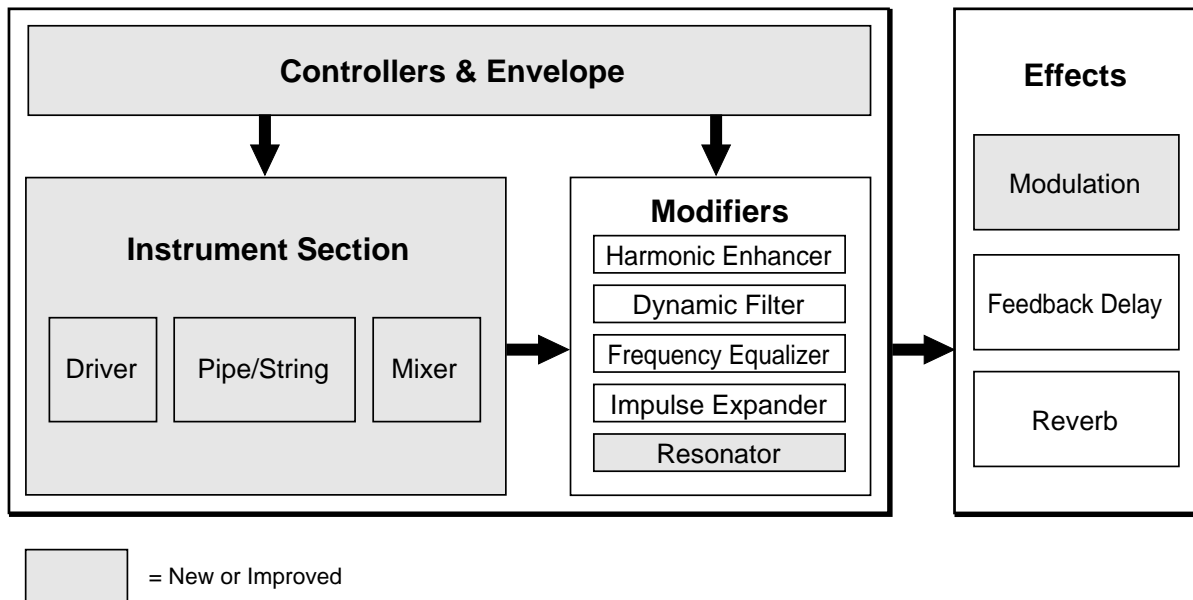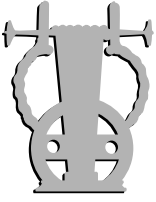
☐ = New or Improved

NOTES ■ *Please note that although most of the information provided in this manual applies equally to the VL1 Ver.2, VL1-m Ver.2, and VL7 Ver.2, any references to multiple elements — e.g. separate parameters for the E1 and E2 elements — do not apply to the VL7 Ver.2 since it employs a single element.*

Changes and additions to the functions listed below are described on the corresponding pages.

4. New Features & Parameters

PLAY

EDIT

UTILITY

PLAY Mode

● PLAY Mode Display

In Version 2 several status indicators have been added to the PLAY mode display.

```
PLAY       Touch EG  Tch=   1   Reverb on
 A01(001)            Rch=Omni   Stereo
        Vintage VL
 Mono    Dual
 E1:A_r_Pwave      E2:A_r_Pwave
 Phaser            L,C,R  Hall1
Cnt1 Cnt2 Cnt3 Cnt4  Cnt5  CS        Dir
```

• The current setting of the UTILITY/SYSTEM/BREATH MODE "Mode" parameter is shown on the top line of the PLAY mode display: "BC/WX", "Velocity", or "Touch EG" (▶ page 53).

• The current MIDI transmit and receive channels appear on lines 1 and 2 of the PLAY mode display, respectively.

• When the EDIT/Key Mode parameter is set to "Part" (▶ page 25), and the EDIT/COM/MISC/PART SETTING "Split" parameter is "off" (▶ page 28), the element 1 and 2 MIDI receive channels appear on line 4 of the PLAY mode display.

• When the EDIT/Key Mode parameter is set to "Part" (▶ page 25), and the EDIT/COM/MISC/PART SETTING "Split" parameter is set to "Static" or "Dynamic" (▶ page 28), the element 1 and 2 split point appears on line 4 of the PLAY mode display.

Feature Reference pages: VL1 ⇨ 14; VL1-m ⇨ 14; VL7 ⇨ 14

● Continuous Sliders

In the original VL models MIDI output corresponding to the CS1 and CS2 continuous slider settings was transmitted as system exclusive data. In Version 2 the continuous sliders produce MIDI output in the form of control change data: control change number 16 for CS1, and control change number 17 for CS2.
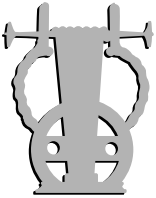
Feature Reference pages: VL1 ⇨ 19; VL1-m ⇨ 19; VL7 ⇨ 19

EDIT Mode

Initial Edit Page
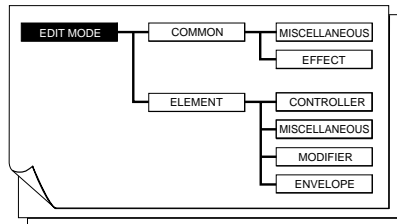
● Edit Mode Displays

In all Version 2 edit mode displays, parameters which are not available for editing do not appear. In the original models such parameters appeared on the display but could not be edited.

● Voice Name & Element Name

The voice and element name entry method has been improved for easier operation. The [F6] (◀) and [F7] (▶) function buttons are used to move the cursor to the desired position in the name rather than the cursor buttons. In Version 2 the cursor ◀ and ▶ buttons perform the same function as the [DEC] and [INC] buttons: i.e. selecting the character for the current character position. The cursor ▲ and ▼ buttons can also be used for this purpose.

Feature Reference pages: VL1 ⇨ 31; VL1-m ⇨ 31; VL7 ⇨ 31

● Key Mode

📝 *Mono, Poly, Unison, Part*

In addition to the original "Mono", "Poly", and "Unison" settings, the "Key Mode" parameter now has a "Part" setting. When "Part" is selected a range of split keyboard parameters are available via the EDIT/COM/MISC/PART SETTING page (page 28).

When the "Key Mode" parameter is set to "Poly" and the "Voice Mode" parameter is set to "Single" or "Dual", the EDIT/COM/MISC/SETTING page "Assign Mode" parameter can now be set to "Last Note" (page 26).

Feature Reference pages: VL1 ⇨ 31; VL1-m ⇨ 31

Common Miscellaneous
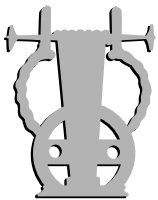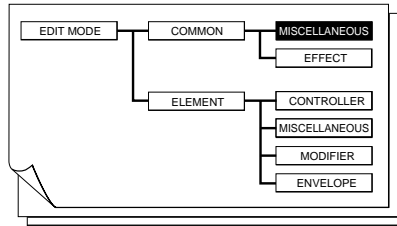
EDIT/COM/MISC/SETTING

● Assign Mode

✎ *Bottom Note, Top Note, Last Note*

When the "Key Mode" parameter is set to "Poly" and the "Voice Mode" parameter is set to "Single" or "Dual", the EDIT/MISC/SETTING page "Assign Mode" parameter can now be set to "Last Note" producing last-note key priority for these modes. The "Assign Mode" parameter will not appear when the "Unison" key mode is selected.

In order to use the "Poly Expand" parameter described below, the "Key Mode" parameter must be set to "Poly" and the "Assign Mode" parameter to "Last Note".

> *Feature Reference pages: VL1 ⇨ 35; VL1-m ⇨ 35*

● Poly Expand

✎ *off, 2…32 > 1 … 32*

This new parameter allows 2 or more VL units to be MIDI-chained for increased polyphony. The number to the left of the ">" symbol should be set to the total polyphony to be provided by the system (off, 2 … 32). The number to the right of the ">" symbol sets the number of the note to be sounded by the controlling VL (1 … 32). If this parameter is set to "3", for example, the 3rd note played in a chord will be sounded by the controlling VL.

In the VL1 Ver.2 and VL1-m Ver.2 the "Poly Expand" parameter is only available when the "Key Mode" parameter is set to "Poly" and the "Assign Mode" parameter is set to "Last Note". When the "Poly" key mode is not selected "Key mode is not POLY" will appear in place of the "Poly Expand" parameter setting, and when the "Last Note" assign mode is not selected "Asgn mode is not LAST" will appear.

The "Poly Expand" parameter is always available on the VL7 Ver.2.
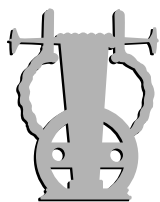
EDIT/COM/MISC/CONTROLLER

● Touch EG Gain

✎ 0 … 127

Increasing the value of this new parameter raises the lower limit of touch EG variation, producing relatively higher output and range.

Feature Reference pages: VL1 ⇨ 36; VL1-m ⇨ 36; VL7 ⇨ 34

EDIT/COM/MISC/MICROTUNING

30 new microtuning types have been added: numbers P-55 through P-84. In all these microtunings extra notes are set to the next lowest note.

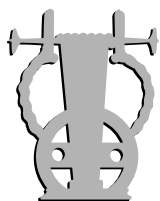| 55	Zalzal	Modern Arabic scale (white notes; in C).
56	Farabi X	Tuning from Al Farabi (c. 700 A.D.; white notes; in C).
57	Ishfahan	Medieval Arabic 8-tone scale (white keys & B♭; in C).
58	Al-Kindi	A 10th-century Arabic scale. This version uses C as the tonic. Since there are 16 notes the tonic moves to different MIDI keys (G#0, C2, E3, G#4, C6, E7).
59	Zirafkend	Medieval Arabic 8-tone scale (white notes; in C).
60	Hhidjazi	Medieval Arabic scale using only white notes (in C).
61	Rahawi	Medieval Arabic scale using only white notes (in C).
62	Hhosaini	Medieval Arabic scale using only white notes (in C).
63	African	West African xylophone tuning (white notes; in C).
64	Bagpipes	Scottish highland bagpipe tuning (in B♭).
65	Yugo Bag	Observed Yugoslavian bagpipe tuning (all notes).
66	Bulgar Bag	Observed Bulgarian bagpipe tuning (all notes).
67	Byzantine	Byzantine palace mode. Mixed tetrachords (white notes; in C).
68	Tibet	12-note Tibetan scale.
69	Ch Flute	Chinese flute observed in 1885. 'E' and 'B' are additions to the basic pentatonic scale (white notes; in C).
70	Ch Sheng	Observed Chinese sheng or mouth organ tuning (white notes; in C).
71	Dowland	John Dowland's lute tuning (17th century). A well-tempered 12-tone scale.
72	Golden	Based on the golden section, the ratios are successive terms in the Fibonacci series. (black notes; in D♭).
73	PelogSlend	Two observed Javanese gamelan scales: Pelog on white notes and Slendro on black. Both are in C.
74	Singapore	Observed Singapore marimba tuning (white notes, in C).
75	Didymus Di	A just diatonic scale from Didymus (white notes; in C).
76	Aristoxene	Aristoxene's Chromatic Malakon, or soft tuning (white notes; in C).
77	Eratosthen	Eratosthene's Enharmonic Ancient Greek. Equal tetrachords (white notes; in C).
78	Phrygian	Old Phrygian Ancient Greek. Equal tetrachords (white notes; in C).
79	Indian 1	An observed Indian mode (white notes; in C).
80	Indian 2	An observed Indian mode (white notes; in C).
81	Hirajoshi1	Observed pentatonic koto scale (black notes; in D♭).
82	Hirajoshi2	A second observed pentatonic koto scale (black notes; in D♭).
83	Korea	The "Delightful" pentatonic scale from Korea (black notes; in D♭).
84	Thai	Observed scale from Thailand (white notes; in C).

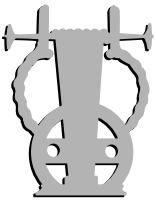*Feature Reference pages: VL1 ⇨ 42; VL1-m ⇨ 42; VL7 ⇨ 39*
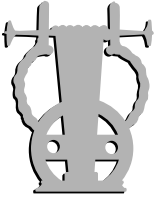
EDIT/COM/MISC/CONTINUOUS SLIDER

● Slider Assign Parameters

A range of new parameters can be assigned to the continuous sliders.

> *Feature Reference pages: VL1 ⇨ 43; VL1-m ⇨ 43; VL7 ⇨ 40*

EDIT/COM/MISC/PART SETTING

The parameters in this page become active when the "Key Mode" parameter is set to "Part". "Keymode is not Part" appears in this page when the key mode is not set to "Part".

```
EDIT/COM/MISC/PART SETTING
▤B11(027):C Flute                    ▮▨
  Split                = off
  Element 1 MIDI Rcv CH =  1
  Element 2 MIDI Rcv CH =  1
```

```
EDIT/COM/MISC/PART SETTING
▤B11(027):C Flute                    ▮▨
  Split                = Static
  Split Point          = G 3
  PB,AT&MOD Mode       = All
```

```
EDIT/COM/MISC/PART SETTING
▤B11(027):C Flute                    ▮▨
  Split                = Dynamic
  Split Point          = G 3
  PB,AT&MOD Mode       = All
  Interval             =  0
```

● Split

🖉 *off, Static, Dynamic*

When "Split" is "off", separate MIDI receive channels can be set for elements 1 and 2 allowing them to be controlled on different channels from an external MIDI controller. In this case note data received on the receive channel set in the UTILITY/SYSTEM page is ignored. Program change, continuous slider data (i.e. control change numbers 16 and 17; quick edit in the VL1-m), effect control data, polyphony control data, and main volume data are received on the main receive channel set in the UTILITY/SYSTEM page. When active, the element 1 and element 2 MIDI receive channels appear on line 5 of the PLAY mode display.

When this parameter is set to "Static" the keyboard is split at the key specified by the "Split Point" parameter (C-2 … G8). the "Split Point" parameter only appears when the static split mode is selected. Element 1 plays on all keys to the left of (and including) the split point key, while element 2 plays on all keys to the right of the split point key.

When the "Split" parameter is set to "Dynamic" the split point is automatically set to a note somewhere between two notes played on the keyboard. The split point thus moves to accomodate any combination of notes. When the "Dynamic" split mode is selected the "Interval" parameter will appear. This parameter determines the number of notes, counting from the last note played toward the first note played, at which the split point will be set. The main differences between operation in this mode and the Unison mode are that you know which element will sound when the first note (or a single note) is played, only one element sounds when a single note is played, and the split point moves automaticaly to accompdate the notes played.

● Element 1 MIDI Rcv CH
● Element 2 MIDI Rcv CH
1 … 16

These parameters appear when the "Split" mode is set to "off", allowing the MIDI receive channels for elements 1 and 2 to be set independently.

● Split Point
C-2 … G8

Sets the keyboard split point when the "Split" mode is set to "Static" or "Dynamic".

● PB, AT&MOD Mode
All, Lower, Upper

When the "Split" mode is set to "Static" or "Dynamic" this parameter determines whether the pitch bend wheel, modulation wheels, and aftertouch will affect the entire keyboard ("All"), only notes to the left of and including the split point ("Lower"), or only notes to the right of the split point ("Upper").

● Interval
0 … 24

When the "Dynamic" split mode is selected this parameter determines the number of notes, counting from the last note played toward the first note played, at which the split point will be set.

4. New Features & Parameters

EDIT

Common Effect
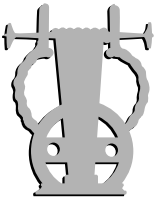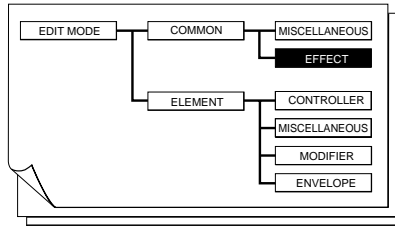
● New Modulation Effect Types

In addition to the Flanger, Pitch Change, and Distortion modulation effect types provided in the original VL models, Version 2 provides Chorus, Phaser, Symphonic, Celeste, Distortion + Flanger, and Distortion + Wah modulation effects.

Feature Reference pages: VL1 ⇨ 46; VL1-m ⇨ 46; VL7 ⇨ 44
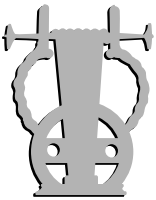
Chorus
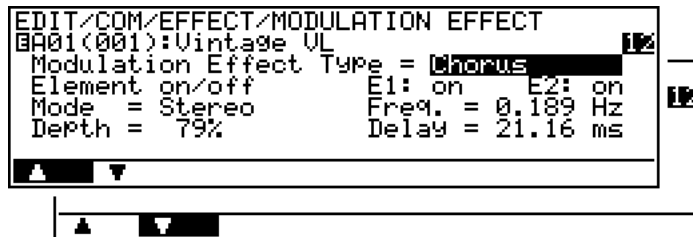

```
EDIT/COM/EFFECT/MODULATION EFFECT
▤A01(001):Vintage VL
Modulation Effect Type = Chorus
Element on/off      E1: on     E2: on
Mode   = Stereo     Freq. = 0.189 Hz
Depth =   79%       Delay = 21.16 ms
```

• Use the [F1] ("▲") and [F2] ("▼") buttons to switch between the two pages of effect parameters.

● Element on/off — E1: & E2:

🖉 *off, on.*

In this parameter the cursor can be positioned at "E1:" or "E2:" to individually turn the chorus effect on or off for elements 1 and 2, respectively. When "on" the output of the corresponding element is fed to the input of the modulation stage, and when "off" the modulation stage is bypassed. The "E2:" parameter will not appear when editing a single-element voice.

● Mode

🖉 *Monaural, Stereo.*

When set to "Stereo" the chorus effect is applied independently to the left and right-channel signals. When "Monaural", chorus is applied to a mix of the left and right-channel signals.
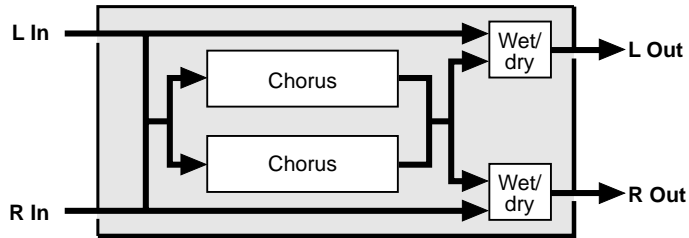
■ **Monaural Mode Block Diagram**

■ **Stereo Mode Block Diagram**
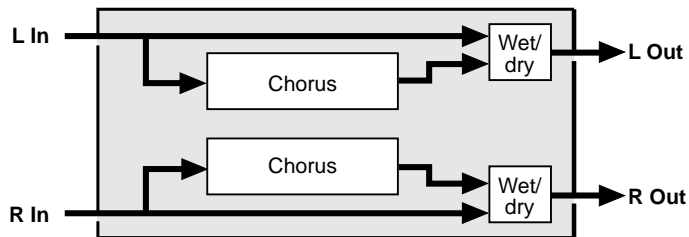
● Freq.

📝 *0.057 … 40.0 Hz.*

Sets the speed of modulation and therefore the rate of chorus effect variation.

● Depth

📝 *0 … 100%.*

Sets the depth of modulation. Higher values produce deeper modulation and therefore a more pronounced chorus effect.

● Delay

📝 *0.33 … 32.87 ms.*

Sets the chorus delay time (the chorus effect is basically produced by modulating the delay time of one signal in relation to another). The higher the value the more pronounced the chorus effect.

● FB Gain

📝 *-100 … 100 %.*

Determines the amount of effect-sound feedback returned to the input of the chorus stage. Higher negative or positve values produce a more pronounced effect.

● High

📝 *0.1 … 1.0.*

Determines the amount of high-frequency effect-sound feedback returned to the input of the chorus stage. Lower values produce more cut in the high-frequency range.

● Wet/Dry Balance

📝 *0 … 100 %.*

Sets the balance between the direct ("dry") and effect ("wet") sound. Higher values produce a greater proportion of effect sound in relation to direct sound.

EDIT

Phaser

```
EDIT/COM/EFFECT/MODULATION EFFECT
▤A01(001):Vintage VL
 Modulation Effect Type = Phaser
 Element on/off      E1: on      E2: on
 Mode   = Stereo     Stage    =    6
 Freq.  = 0.271 Hz   Depth    =   89%
 Offset =   70%
```

- Use the F1 ("▲") and F2 ("▼") buttons to switch between the two pages of effect parameters.

● Element on/off — E1: & E2:

off, on.

   In this parameter the cursor can be positioned at "E1:" or "E2:" to individually turn the phaser effect on or off for elements 1 and 2, respectively. When "on" the output of the corresponding element is fed to the input of the modulation stage, and when "off" the modulation stage is bypassed. The "E2:" parameter will not appear when editing a single-element voice.

● Mode

Monaural, Stereo.

   When set to "Stereo" the phaser effect is applied independently to the left and right-channel signals. When "Monaural", the phaser effect is applied to a mix of the left and right-channel signals.

■ **Monaural Mode Block Diagram**
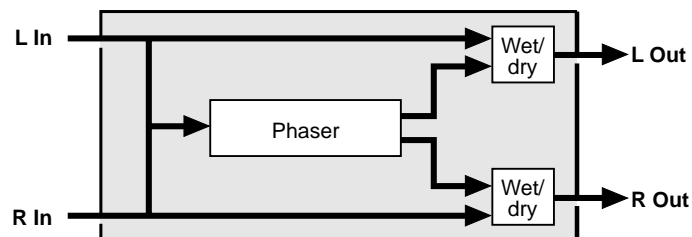
■ **Stereo Mode Block Diagram**

● Stage
▱ 4 , 6 in Stereo Mode; 4, 6, 8, 10, 12 in Monaural Mode.

Sets the number of phase-shift "stages" used by the phaser effect. More stages produce a more pronounced effect.

● Freq.
▱ 0.057 … 40.0 Hz.

Sets the speed of modulation and therefore the rate of phaser effect variation.

● Depth
▱ 0 … 100%.

Sets the depth of modulation. Higher values produce deeper modulation and therefore a more pronounced phaser effect.

● Offset
▱ 0 … 100%.

Sets the frequency range to which the phase effect is applied. The higher the value the higher the frequency range affected by the phaser effect.

● Phase (Stereo Mode)
▱ -180.0 … 180.0 deg.

● Diffusion (Monaural Mode)
▱ off, on.

When the Stereo mode is selected, this parameter becomes "Phase" and sets the phase different between the left and right channel phaser signals. The larger the value, the greater the "spread" in the sound. A setting of "0" produces a centered effect.

When the Monaural mode is selected this parameter becomes "Diffusion" and determines whether the effect has a stereo spread ("on") or is a centered monaural signal ("off").

● FB Gain
▱ -100 … 100 %.

Determines the amount of effect-sound feedback returned to the input of the phaser stage. Higher negative or positve values produce a more pronounced effect.
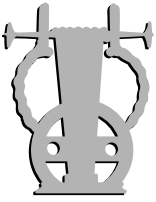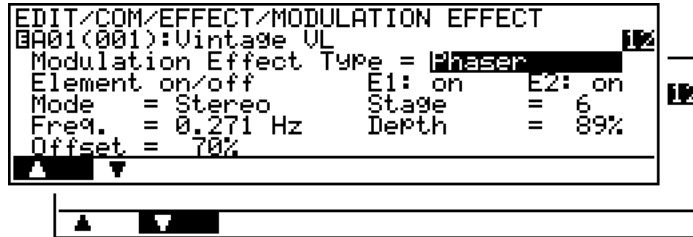
● Wet/Dry Balance
▱ 0 … 100 %.

Sets the balance between the direct ("dry") and effect ("wet") sound. Higher values produce a greater proportion of effect sound in relation to direct sound.

4. New Features & Parameters

EDIT

Symphonic

```
EDIT/COM/EFFECT/MODULATION EFFECT
▤A01(001):Vintage VL
 Modulation Effect Type = Symphonic
 Element on/off     E1: on    E2: on
 Mode  = Stereo     Lo-Fi =    5
 Freq. = 0.162 Hz
 Depth =   50%
 ▲    ▼
```

- Use the [F1] ("▲") and [F2] ("▼") buttons to switch between the two pages of effect parameters.

● Element on/off — E1: & E2:

✐ off, on.

In this parameter the cursor can be positioned at "E1:" or "E2:" to individually turn the symphonic effect on or off for elements 1 and 2, respectively. When "on" the output of the corresponding element is fed to the input of the modulation stage, and when "off" the modulation stage is bypassed. The "E2:" parameter will not appear when editing a single-element voice.
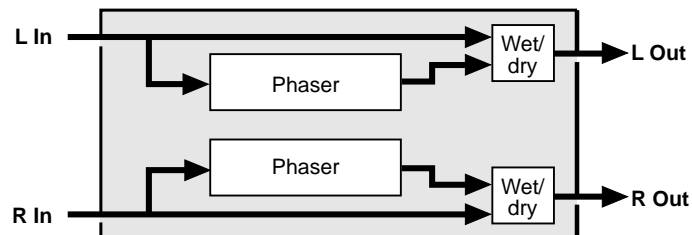
● Mode

✐ Monaural, Stereo.

When set to "Stereo" the symphonic effect is applied independently to the left and right-channel signals. When "Monaural", the symphonic effect is applied to a mix of the left and right-channel signals.

■ **Monaural Mode Block Diagram**
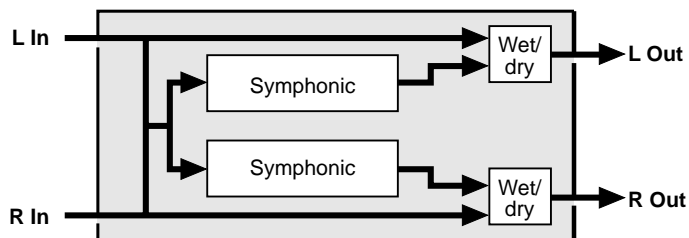
■ **Stereo Mode Block Diagram**
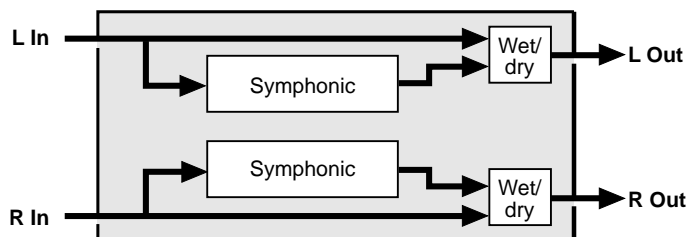
● Freq.

✎ *0.057 … 40.0 Hz.*

Sets the speed of modulation and therefore the rate of symphonic effect variation.

● Depth

✎ *0 … 100%.*

Sets the depth of modulation. Higher values produce deeper modulation and therefore a more pronounced symphonic effect.

● Diffusion

✎ *0 … 10.*

Diffusion determines the amount of stereo "spread". The higher the value the greater the spread. When set to "0" the symphonic effect is a centered monaural signal.

● Lo-Fi

✎ *off, 1 … 12.*

This parameter can be used to give the symphonic effect a more analog feel. Higher values produce a smoother effect in the high-frequency range.

● Wet/Dry Balance

✎ *0 … 100 %.*

Sets the balance between the direct ("dry") and effect ("wet") sound. Higher values produce a greater proportion of effect sound in relation to direct sound.

4. New Features & Parameters

EDIT

Celeste

```
EDIT/COM/EFFECT/MODULATION EFFECT
BA01(001):Vintage VL
  Modulation Effect Type = Celeste
  Element on/off      E1: on      E2: on
  Mode  = Stereo      Freq.  = 0.271 Hz
  Depth =   65%
  Delay =   3.93 ms
```
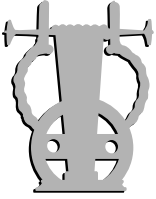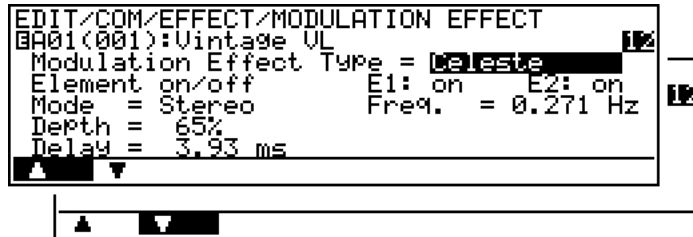
*   Use the F1 ("▲") and F2 ("▼") buttons to switch between the two pages of effect parameters.

● Element on/off — E1: & E2:

🖉 *off, on.*

In this parameter the cursor can be positioned at "E1:" or "E2:" to individually turn the celeste effect on or off for elements 1 and 2, respectively. When "on" the output of the corresponding element is fed to the input of the modulation stage, and when "off" the modulation stage is bypassed. The "E2:" parameter will not appear when editing a single-element voice.

● Mode

🖉 *Monaural, Stereo.*

When set to "Stereo" the celeste effect is applied independently to the left and right-channel signals. When "Monaural", the celeste effect is applied to a mix of the left and right-channel signals.

■ **Monaural Mode Block Diagram**
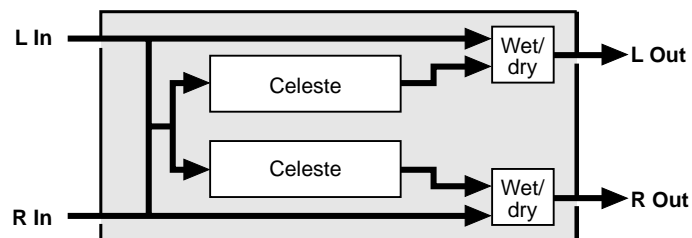
■ **Stereo Mode Block Diagram**
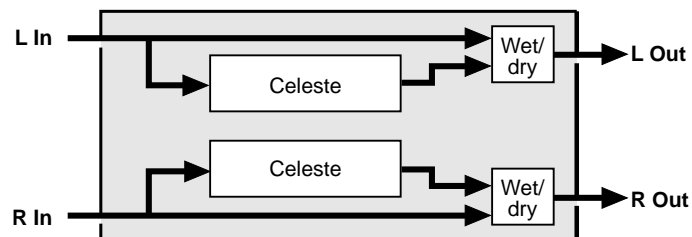
● Freq.

0.057 … 40.0 Hz.

Sets the speed of modulation and therefore the rate of celeste effect variation.

● Depth

0 … 100%.

Sets the depth of modulation. Higher values produce deeper modulation and therefore a more pronounced celeste effect.

● Delay

0.33 … 32.87 ms.

Sets the celeste delay time (the celeste effect is basically produced by modulating the delay time of one signal in relation to another). The higher the value the more pronounced the celeste effect.
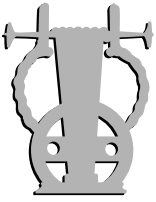
● FB Gain

-100 … 100 %.

Determines the amount of effect-sound feedback returned to the input of the celeste stage. Higher negative or positve values produce a more pronounced effect.
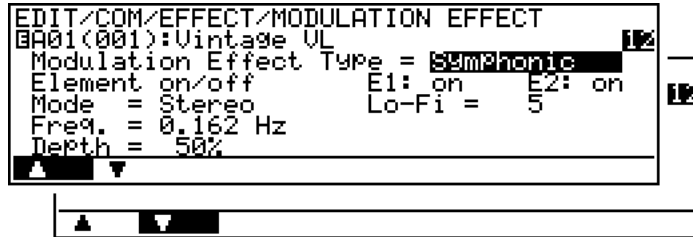
● Lo-Fi

off, 1 … 12.

This parameter can be used to give the celeste effect a more analog feel. Higher values produce a smoother effect in the high-frequency range.

● Wet/Dry Balance

0 … 100 %.

Sets the balance between the direct ("dry") and effect ("wet") sound. Higher values produce a greater proportion of effect sound in relation to direct sound.

4. New Features & Parameters

EDIT

Dist+Flanger

```
EDIT/COM/EFFECT/MODULATION EFFECT
▤A01(001):Vintage VL                    I½
  Modulation Effect Type = Dist+Flanger
  Element on/off      E1: on    E2: on
  Overdrive   =  40%
  Speaker     = Combo                   I½
  Output Level =  60%                   9
 ▲   ▼
     Flanger Balance =    50%
 ▲      ▼
```
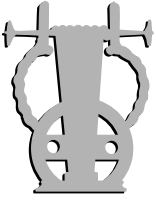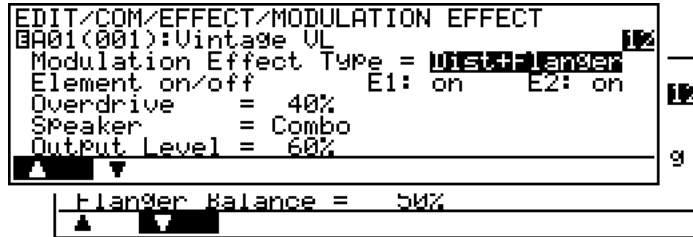
*   Use the [F1] ("▲") and [F2] ("▼") buttons to switch between the two pages of effect parameters.

■ **Dist+Flanger Effect Block Diagram**

● **Element on/off — E1: & E2:**

✎ *off, on.*

In this parameter the cursor can be positioned at "E1:" or "E2:" to individually turn the Dist+Flanger effect on or off for elements 1 and 2, respectively. When "on" the output of the corresponding element is fed to the input of the modulation stage, and when "off" the modulation stage is bypassed. The "E2:" parameter will not appear when editing a single-element voice.

● **Overdrive**

✎ *0 … 100 %.*

Sets the intensity of the overdrive or distortion effect. Higer values produce more distortion.

● **Speaker**

✎ *Flat, Stack, Combo, Twin, Radio, Megaphone.*

Simulates a variety of speaker types and configurations via which the distortion sound might be reproduced.

Flat	No speaker — the sound of a "direct feed" to a recording or sound reinforcement console.
Stack	The powerful, expansive sound of stacked speaker cabinets.
Combo	A single 12" speaker unit in an open-backed enclosure.
Twin	Two 12" speaker units in a relatively small open-backed enclosure.
Radio	The small, compressed, but pleasant tone of a radio receiver.
Megaphone	Constricted tone with emphasis on the middle frequencies.

● Output Level

🖉 *0 … 100 %.*

Sets the output level of the distortion sound. Higher values send higher-level signal to the flanger stage.

● Freq.

🖉 *0.057 … 40.0 Hz.*

Sets the speed of modulation and therefore the rate of flanger effect variation.

● Depth

🖉 *0 … 100 %.*

Sets the depth of modulation. Higher values produce deeper modulation and therefore a more pronounced flanger effect.

● Delay

🖉 *0.33 … 32.87 ms.*

Sets the flanger delay time (the flanger effect is basically produced by modulating the delay time of one signal in relation to another). Shorter delay times produce the greatest effect in the high-frequency range, while longer delay times extend the effect to the middle and lower frequencies. Delays longer than about 5 milliseconds produce a more chorus-like effect

● Phase

🖉 *-180.0 … 180.0 deg.*

Sets the phase different between the left and right channel flanger signals. The larger the value, the greater the "spread" in the sound. A setting of "0" produces a centered effect.

● FB Gain

🖉 *-100 … 100 %.*

Determines the amount of effect-sound feedback returned to the input of the flanger stage. Higher negative or positve values produce a more pronounced effect.

● High

🖉 *0.1 … 1.0.*

Determines the amount of high-frequency effect-sound feedback returned to the input of the flanger stage. Lower values produce more cut in the high-frequency range.

● Flanger Balance

🖉 *0 … 100 %.*

Sets the balance between the distortion and flanger effect sound. Higher values produce a greater proportion of flanger sound in relation to distortion sound.
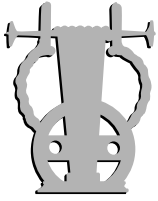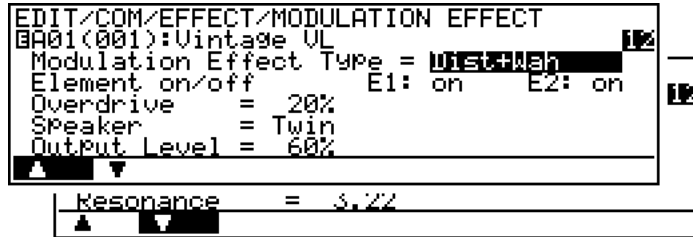
4. New Features & Parameters

EDIT

Dist+Wah

```
EDIT/COM/EFFECT/MODULATION EFFECT
■A01(001):Vintage VL                    1▨
  Modulation Effect Type = Dist+Wah
  Element on/off      E1: on    E2: on
  Overdrive    =   20%
  Speaker      = Twin
  Output Level =   60%
 ▲  ▼
     Resonance    =   3.22
  ▲    ▼
```

- Use the F1 ("▲") and F2 ("▼") buttons to switch between the two pages of effect parameters.

■ Dist+Flanger Effect Block Diagram
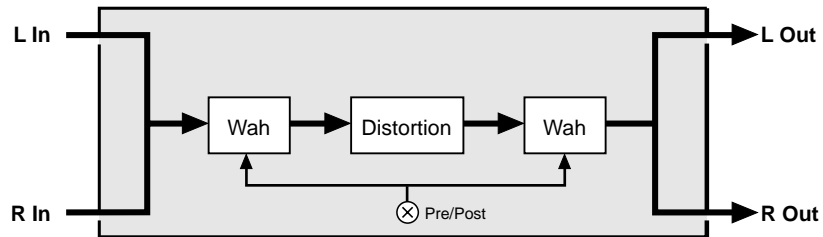
● **Element on/off — E1: & E2:**

✎ *off, on.*

In this parameter the cursor can be positioned at "E1:" or "E2:" to individually turn the Dist+Wah effect on or off for elements 1 and 2, respectively. When "on" the output of the corresponding element is fed to the input of the modulation stage, and when "off" the modulation stage is bypassed. The "E2:" parameter will not appear when editing a single-element voice.

● **Overdrive**

✎ *0 … 100 %.*

Sets the intensity of the overdrive or distortion effect. Higher values produce more distortion.

● **Speaker**

✎ *Flat, Stack, Combo, Twin, Radio, Megaphone.*

Simulates a variety of speaker types and configurations via which the distortion sound might be reproduced.

Flat	No speaker — the sound of a "direct feed" to a recording or sound reinforcement console.
Stack	The powerful, expansive sound of stacked speaker cabinets.
Combo	A single 12" speaker unit in an open-backed enclosure.
Twin	Two 12" speaker units in a relatively small open-backed enclosure.
Radio	The small, compressed, but pleasant tone of a radio receiver.
Megaphone	Constricted tone with emphasis on the middle frequencies.

● Output Level

✎   0 … 100 %.

Sets the output level of the distortion sound. Higher values produce higher level.

● Mode

✎   LPF, BPF, HPF.

Determines the type of filter used by the wah effect: LPF = Low Pass Filter; BPF = Band Pass Filter; HPF = High Pass Filter.

● Wah Pre/Post

✎   Pre, Post.

Determines whether the wah effect is placed before the distortion effect ("Pre") or after the distortion effect ("Post").

● Cutoff Freq

✎   26.9 Hz … 11.9 kHz.

Sets the central cutoff frequency for the wah effect.

● Resonance

✎   1.0 … 15.6.

Sets the amount of emphasis at the wah effect cutoff frequency, and therefore the depth of the wah effect. Higher values produce greater emphasis at the cutoff frequency.

● Sens

✎   0 … 100 %.

Determines the amount of cutoff frequency variation or sweep. Higher values produce a broader frequency variation. A setting of "0" results in no cutoff frequency variation.

4. New Features & Parameters

EDIT

Element Controller

```
EDIT MODE ──── COMMON ──── MISCELLANEOUS
                        └── EFFECT

           └── ELEMENT ──── CONTROLLER
                        ├── MISCELLANEOUS
                        ├── MODIFIER
                        └── ENVELOPE
```
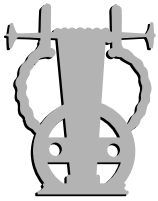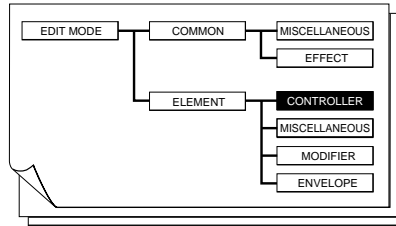
● Controller Parameter Displays

When a controller is "off", unnecessary parameters no longer appear on the display.

Element Miscellaneous
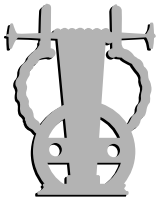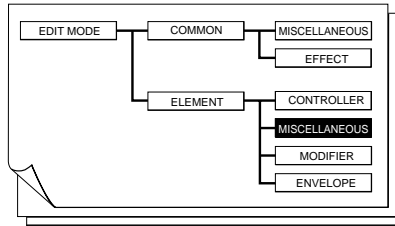
EDIT/E1/MISC/BREATH NOISE

● Noise

In Version 2 it is possible to select from 23 different breath noise types:

Normal	A coarse noise type ("Normal Harsh").
Harsh 1	Coarse noise with emphasis in the low-frequency region.
Harsh 2	A variation of the Harsh 1 type.
Lo Lips 1	Lip-reed type noise with emphasis in the low-frequency region.
Lo Lips 2	A variation of Lo Lips 1.
Mid Lips 1	Lip-reed type noise with emphasis in the mid-frequency region.
Mid Lips 2	A variation of Mid Lips 1.
Hi Lips 1	Lip-reed type noise with emphasis in the high-frequency region.
Hi Lips 2	A variation of Hi Lips 1.
Jet	Jet-reed type noise.
Lo Jet	Jet-reed type noise with emphasis in the low-frequency region.
Mid Jet	Jet-reed type noise with emphasis in the mid-frequency region.
Hi Jet	Jet-reed type noise with emphasis in the high-frequency region.
Steam 1	Steam noise type 1.
Steam 2	Steam noise type 2.
Steam 3	Steam noise type 3.
Steam 4	Steam noise type 4.
Plastic 1	Man-made "artificial" noise type 1.
Plastic 2	Man-made "artificial" noise type 2.
Dark Woody	Noise with a woody resonance.
Metal 1	Metallic noise type 1.
Metal 2	Metallic noise type 2.
Rain	Sound-effect type rain-like noise.

Feature Reference pages: VL1 ⇨ 86; VL1-m ⇨ 86; VL7 ⇨ 84

EDIT/E1/MISC/THROAT FORMANT/KSC (Pitch)

The number of breakpoints has been increased from four to eight, allowing much greater key-scaling precision.

Feature Reference pages: VL1 ⇨ 93; VL1-m ⇨ 93; VL7 ⇨ 91
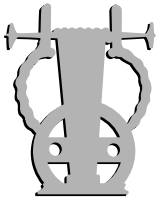
EDIT/E1/MISC/MIXING

● Tap Setting

✎ *Driving Point, Fixed, KeyTrack, Fixed(Straight), KeyTrack(Straight)*

In the original VL models the "Tap Setting" parameter had only two settings: "Variable" and "Driving Point". In Version 2 five settings are available: "Driving Point", "Fixed", "KeyTrack", "Fixed(Straight)", and "KeyTrack(Straight)".

The "Driving Point" setting has the same effect as in the original version, while the "KeyTrack" setting is equivalent to the original "Variable" setting. When the "Fixed" setting is selected the driving point is fixed at the position specified by the "Tap Location" parameter — directly in microseconds through milliseconds: from 20.8 µsec to 946 µsec, and then from 1.01 msec to 42.7 msec. The "Fixed(Straight)" and "KeyTrack(Straight)" parameters are essentially the same as the "Fixed" and "KeyTrack" parameters, except that they cover a broader range of settings for greater sonic variation.

The number of Tap Location key-scaling breakpoints has been increased from 6 to 8 for exacting control.

Feature Reference pages: VL1 ⇨ 98; VL1-m ⇨ 98; VL7 ⇨ 96
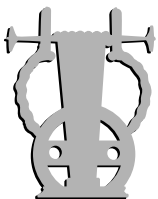
EDIT/E1/MISC/EXCITATION

The parameters in this page can be used to apply a pulse-wave excitation signal to the string or reed to create a plucked effect.

```
EDIT/E1/MISC/EXCITATION
▌A01(001):Vintage VL/E1:A_r_Pwave      ▐▌
 Lvl To P/S  =  -10▌   VlSns To Lvl =     0
        Drv  =   10▌           LPF =     0
 LPF Cutoff  = 31.1  Hz▌        PW  =     0
 Pulse Width = ▌0.0%▌

                                   KSC
```

- An inverse "K" next to a value means that key scaling can be applied to that parameter. Position the cursor at the appropriate parameter and then press the F7 ("KSC") button or ENTER button to go directly to the key scaling page for that parameter. You can return to the excitation parameter page by pressing the EXIT button.

● Lvl to P/S

✎ -127 … 127

Sets the level of excitation signal applied to the pipe or string. Negative values produce a reverse-phase excitation signal.

● Lvl to Drv

✎ -127 … 127

Sets the level of excitation signal applied to the driver. Negative values produce a reverse-phase excitation signal.

● LPF Cutoff

✎ 31.1 Hz … 24.0 kHz

Sets the cutoff frequency of the low-pass filter applied to the excitation signal.

● Pulse Width

✎ 0.0 … 99.2 %

Sets the pulse width of the excitation signal. Higher values produce a broader pulse width.

■ **Pulse Width at 50%**

■ **Pulse Width at 70%**
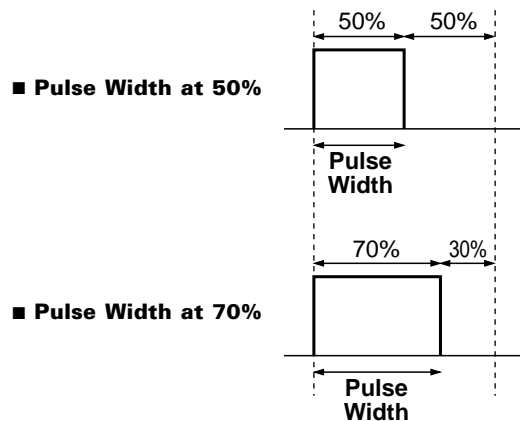
● VlSns to Lvl

✎ 0 … 16

Sets the sensitivity of excitation signal level to keyboard velocity. Higher values produce a greater variation in excitation signal level in response to keyboard velocity.

● VlSns to LPF

✎ 0 … 16

Sets the sensitivity of the excitation signal low pass filter cutoff frequency to keyboard velocity. Higher values produce a greater variation in filter cutoff frequency in response to keyboard velocity.

● VlSns to PW

✎ -16 … 16

Sets the sensitivity of excitation signal pulse width to keyboard velocity. Higher values produce a greater variation in excitation signal pulse width in response to keyboard velocity. Negative values result in reduced pulse width.

4. New Features & Parameters

EDIT
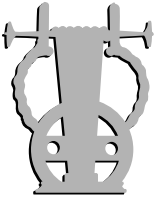
Excitation Level to Pipe/String Key Scaling

Excitation level to pipe/string key scaling produces natural excitation level to pipe/string variations across the range of the keyboard by allowing different level offset values to be applied to each of three breakpoints set at appropriate keys.

```
EDIT/E1/MISC/EXCITATION/KSC
▊A01(001):Vintage VL/E1:A_r_Pwave        ▮▮
                     LvlP/S = ▬▮▮
                      1: C 2        36
                      2: G 3        20
                      3: C 5       -36
                                  FPag
```
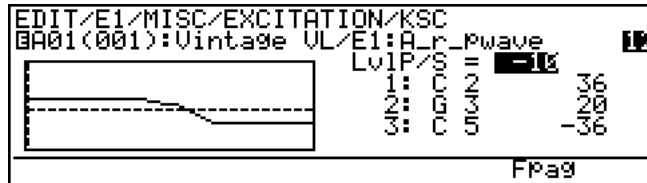
- The [F6] and [F7] buttons ("Bpag" and "Fpag") can be used to go directly backward or forward to the next excitation key scaling page without having to return to the main parameter page.

● LvlP/S

✎ *-127 … 127.*

The "LvlP/S" parameter is linked to the main throat formant "Lvl to P/S" parameter, and has the same effect. This value also determines the main level to pipe/string level on which all key-scaled variations are based (indicated by a dotted line on the graph).

● Breakpoint 1 … 3 Key

✎ *C-2 … G8.*

Allows three separate key scaling breakpoints to be set at any notes between C-2 and G8. You can position the cursor at the appropriate breakpoint key parameter and use any of the normal data entry procedures, or use the keyboard. To use the keyboard for breakpoint entry, position the cursor at the appropriate breakpoint key parameter, press the [F8] button ("Kbd"), and then press the key at which you want to set the breakpoint while "Kbd" appears in inverse characters.

No breakpoint can be set to a key lower than the breakpoint to its left.

● Breakpoint 1 … 3 Offset

✎ *-127 … 127.*

Set the amount offset for each of the breakpoints defined by the breakpoint key parameters, above. Negative values reduce the level, and positive values increase the level at the corresponding breakpoint. No matter what offset value is chosen, the actual level will never exceed its minimum or maximum absolute value. When different offset values are applied to adjacent breakpoints, the level varies smoothly between the breakpoints.

Excitation Level to Driver Key Scaling

Excitation level to driver key scaling produces natural excitation level to driver variations across the range of the keyboard by allowing different level offset values to be applied to each of three breakpoints set at appropriate keys.

```
EDIT/E1/MISC/EXCITATION/KSC
BA01(001):Vintage VL/E1:A_r_Pwave    I
                    LvlDrv =    10
                      1: C 2         -28
                      2: G 3          12
                      3: C 5          36
                              Bpag Fpag
```
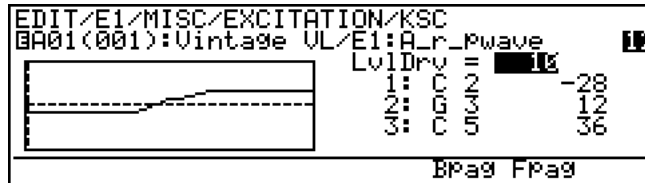
- The ⎡F6⎤ and ⎡F7⎤ buttons ("Bpag" and "Fpag") can be used to go directly backward or forward to the next excitation key scaling page without having to return to the main parameter page.

● LvlDrv

 -127 … 127.

The "LvlDrv" parameter is linked to the main excitation "Lvl to Drv" parameter, and has the same effect. This value also determines the main level to driver value on which all key-scaled variations are based (indicated by a dotted line on the graph).

● Breakpoint 1 … 3 Key

 C-2 … G8.

Allows three separate key scaling breakpoints to be set at any notes between C-2 and G8. You can position the cursor at the appropriate breakpoint key parameter and use any of the normal data entry procedures, or use the keyboard. To use the keyboard for breakpoint entry, position the cursor at the appropriate breakpoint key parameter, press the ⎡F8⎤ button ("Kbd"), and then press the key at which you want to set the breakpoint while "Kbd" appears in inverse characters.

No breakpoint can be set to a key lower than the breakpoint to its left.

● Breakpoint 1 … 3 Offset

 -127 … 127.

Set the amount offset for each of the breakpoints defined by the breakpoint key parameters, above. Negative values reduce the level, and positive values increase the level at the corresponding breakpoint. No matter what offset value is chosen, the actual level will never exceed its minimum or maximum absolute value. When different offset values are applied to adjacent breakpoints, the level varies smoothly between the breakpoints.

4. New Features & Parameters

EDIT

Excitation LPF Cutoff Key Scaling

Excitation LPF cutoff key scaling produces natural LPF frequency variations across the range of the keyboard by allowing different cutoff frequency offset values to be applied to each of three breakpoints set at appropriate keys.
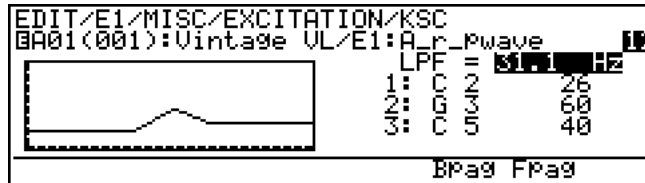
```
EDIT/E1/MISC/EXCITATION/KSC
BA01(001):Vintage VL/E1:A_r_pwave      I%
                          LPF = 31.1 Hz
                        1: C 2        26
                        2: G 3        60
                        3: C 5        40

                              Bpag Fpag
```

- The [F6] and [F7] buttons ("Bpag" and "Fpag") can be used to go directly backward or forward to the next excitation key scaling page without having to return to the main parameter page.

● LPF

🖉 *31.1 Hz … 24.0 kHz.*

The "LPF" parameter is linked to the main excitation "LPF Cutoff" parameter, and sets the cutoff frequency of the excitation low-pass filter. This value also determines the main cutoff frequency on which all key-scaled variations are based (indicated by a dotted line on the graph).

● Breakpoint 1 … 3 Key

🖉 *C-2 … G8.*

Allows three separate key scaling breakpoints to be set at any notes between C-2 and G8. You can position the cursor at the appropriate breakpoint key parameter and use any of the normal data entry procedures, or use the keyboard. To use the keyboard for breakpoint entry, position the cursor at the appropriate breakpoint key parameter, press the [F8] button ("Kbd"), and then press the key at which you want to set the breakpoint while "Kbd" appears in inverse characters.

No breakpoint can be set to a key lower than the breakpoint to its left.

● Breakpoint 1 … 3 Offset

🖉 *-64 … 63.*

Set the amount of cutoff frequency offset for each of the breakpoints defined by the breakpoint key parameters, above. Negative values lower the cutoff frequency, and positive values raise the cutoff frequency at the corresponding breakpoint. No matter what offset value is chosen, the actual cutoff frequency will never exceed its minimum or maximum absolute value. When different offset values are applied to adjacent break-points, the cutoff frequency varies smoothly between the breakpoints.
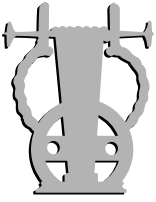
Excitation Pulse Width Key Scaling

Excitation pulse width key scaling produces natural pulse width variations across the range of the keyboard by allowing different pulse width offset values to be applied to each of three breakpoints set at appropriate keys.

```
EDIT/E1/MISC/EXCITATION/KSC
BA01(001):Vintage VL/E1:A_r_Pwave       I
                            PW = 0.0%
                          1: C 2       32
                          2: G 3       16
                          3: C 5       48
                              Bpag
```
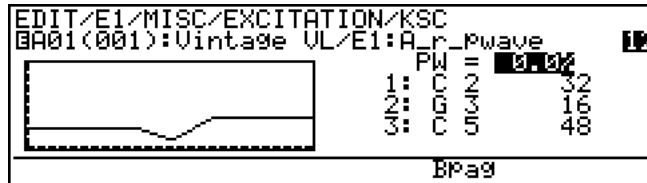
- The F6 button ("Bpag") can be used to go directly back to the next excitation key scaling page without having to return to the main parameter page.

● PW

✐ *0.0 … 99.2 %.*

The "PW" parameter is linked to the main excitation "pulse width" parameter, and has the same effect. This value also determines the main pulse width on which all key-scaled variations are based (indicated by a dotted line on the graph).
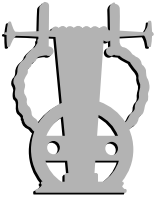
● Breakpoint 1 … 3 Key

✐ *C-2 … G8.*

Allows three separate key scaling breakpoints to be set at any notes between C-2 and G8. You can position the cursor at the appropriate breakpoint key parameter and use any of the normal data entry procedures, or use the keyboard. To use the keyboard for breakpoint entry, position the cursor at the appropriate breakpoint key parameter, press the F8 button ("Kbd"), and then press the key at which you want to set the breakpoint while "Kbd" appears in inverse characters.

No breakpoint can be set to a key lower than the breakpoint to its left.

● Breakpoint 1 … 3 Offset

✐ *-64 … 63.*

Set the amount of pulse frequency offset for each of the breakpoints defined by the breakpoint key parameters, above. Negative values reduce the pulse width, and positive values increase the pulse width at the corresponding breakpoint. No matter what offset value is chosen, the actual pulse width will never exceed its minimum or maximum absolute value. When different offset values are applied to adjacent breakpoints, the pulse width varies smoothly between the breakpoints.

4. New Features & Parameters

EDIT

Element Modifier
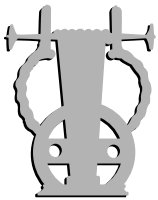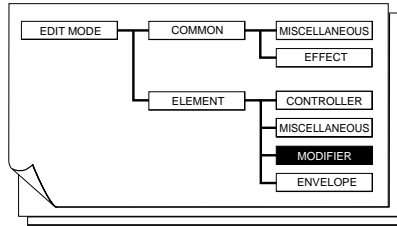
EDIT/E1/MODIFIER/HARMOMNIC ENHANCER

In Version 2 the number of key scaling breakpoints for the following parameters has been increased as listed.

Carrier HPF	Increased from 2 to 4 breakpoints
Carrier Over Drive	Increased from 2 to 4 breakpoints
Carrier Level	Increased from 4 to 6 breakpoints
Balance	Increased from 2 to 4 breakpoints

Feature Reference pages: VL1 ⇨ 110~114; VL1-m ⇨ 110~114; VL7 ⇨ 108~112
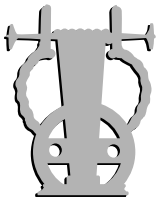
EDIT/E1/MODIFIER/EQUALIZER AUXILIARY

● **Post EQ Boost**

🖉 *-12.0 … 12.0 dB*

In version 2 the Equalizer Auxiliary features a "Post EQ Boost" parameter which allows the post harmonic-enhancer signal to be boosted by -12 to 12 dB.

Also, the number of key scaling breakpoints for the following parameters has been increased as listed.

HPF Cutoff Freq	Increased from 3 to 4 breakpoints
LPF Cutoff Freq	Increased from 3 to 4 breakpoints

Feature Reference pages: VL1 ⇨ 120~121; VL1-m ⇨ 120~121; VL7 ⇨ 118~119
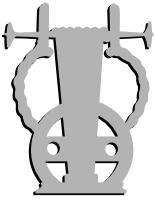
EDIT/E1/MODIFIER/RESONATOR

The resonator display layout has been improved with the addition of F1 (▲) and F2 (▼) function buttons that can be used to switch between two pages of parameters.

● Delay Time

✎ *0.042 … 42.67 msec*

In Version 2 the Resonator "Delay Time" range has been increase while the size of the delay time increments has been decreased for greater precision. The new delay time range is from 0.042 msec to 42.67 msec.

Feature Reference pages: VL1 ⇨ 126; VL1-m ⇨ 126; VL7 ⇨ 124

● Conjunction

✎ *-64 … 63*

A "Conjunction" parameter has been added which can be used to adjust the frequency balance of the resonator. The conjunction range is from -64 to 63.

Element Envelope
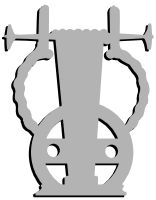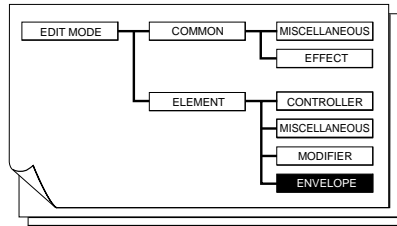
EDIT/E1/ENV/EMBOUCHURE&PITCH

Two parameters have been added to this page for greater programming flexibility.

● Attack Rate

✎ *0 … 127*

Sets the rate of variation from the initial level to the attack level. Key scaling with two breakpoints is provided.

● Attack Lvl

✎ *-64… 63*

Sets the level following the initial level, after the Attack Rate vaiation. Key scaling with two breakpoints is provided.
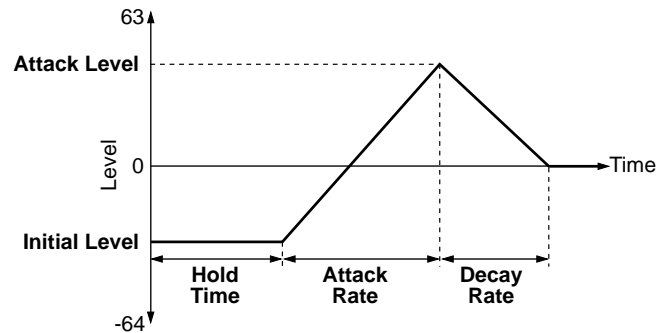
Feature Reference pages: VL1 ⇨ 130; VL1-m ⇨ 130; VL7 ⇨ 128
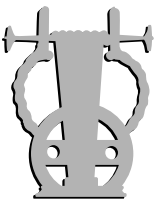
EDIT/E1/ENV/VIBRATO

● Speed Shift

✎ *0 … 16*

The "`Speed Shift`" parameter range has been increased to allow faster variation. At the new maximum setting of "16", the speed can be increased to a maximum of 40 times its normal setting via the controller.

Feature Reference pages: VL1 ⇨ 135; VL1-m ⇨ 135; VL7 ⇨ 133
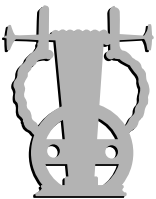
EDIT/E1/ENV/GROWL

● Speed Shift

✎ *0 … 16*

A "`Speed Shift`" parameter has been added which determines the amount of speed variation that can be applied via the controller assigned to growl. The higher the setting the greater the increase in speed. At the maximum setting of "16", the speed can be increased to a maximum of 40 times its normal setting via the controller.

Feature Reference pages: VL1 ⇨ 141; VL1-m ⇨ 141; VL7 ⇨ 139

UTILITY Mode

Utility System
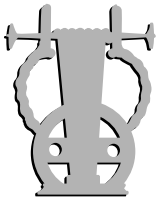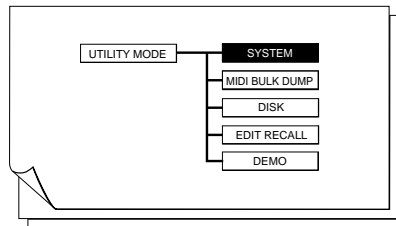
UTIL/SYSTEM/KBD SETTING

● Octave SW Hold

✎ *off, on, Half PB, Full PB*

New settings for the "Octave SW Hold" parameter allow the octave hold switches to be used as trill switches to produce semitone and whole-tone trills. When "Half PB" is selected pressing the UP or DOWN octave hold switch shifts the pitch up or down by a semitone. With the "Full PB" setting the octave hold switches shift the pitch a whole tone. In both cases pitch returns to normal when the switch is released.

> **NOTES** ■ *Do not use the octave hold switches while operating the PITCH wheel!*

Feature Reference pages: VL1 ⇨ 153; VL7 ⇨ 151
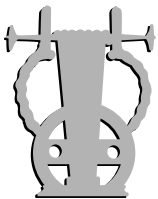
UTIL/SYSTEM/TG SETTING

● WX Lip

✎ *Normal, Expand*

The keyboard-based VL models — the VL1 Ver.2 and VL7 Ver.2 — now include the "WX Lip" parameter originally found only in the VL1-m.

This parameter can be set to "Expand" when using a WX11 or WX7 Wind Controller in the tight-lip mode to expand the normally limited lip pitch bend range of these controllers to the full range available on the VL instrument. Set to "Normal" when using a WX11 or WX7 in the loose-lip mode, or when using an external keyboard or other non-wind controller.

EDIT
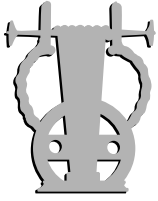
UTILITY

UTIL/SYSTEM/ASSIGNABLE CONTROLLER

"BC" (Breath Controller) and "FC1" (Foot Controller 1) assignments have been added to this page for increased controller assignment versatility — and considerably enhanced master-keyboard functionality.

Feature Reference pages: VL1 ⇨ 156; VL7 ⇨ 154

UTIL/SYSTEM/CURVE

● Velocity Curve

📝 *Normal, Soft, Wide, Hard, Fix1, Fix5 … Fix127*

In addition to the original "Normal", "Soft", "Wide", and "Hard" settings, the "Velocity Curve" parameter now has a range of "Fix" settings (i.e. the velocity can be "Fixed" at a wide range of constant levels).

● After Touch/Breath Curve

📝 *-16 … 0(Normal) … 16, Wide*

Instead of the original "Normal", "Soft", "Wide", and "Hard" settings, the Version 2 "After Touch Curve" and "Breath Curve" parameters have been expanded to cover a range from -16 through 0 (Normal) to +16 and Wide. In the new system a setting of "-9" corresponds to the "Soft" setting in the original VL modes. Toward the other end of the range a setting of "9" corresponds to the original "Hard" setting.

Feature Reference pages: VL1 ⇨ 157; VL1-m ⇨ 156; VL7 ⇨ 155
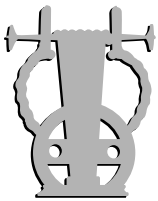
UTIL/SYSTEM/BREATH MODE

Version 2 makes it possible to assign pressure control to keyboard velocity or touch EG so that the all-important VL pressure characteristics can be taken full advantage of even without using a breath/wind controller.

● Mode

📝 *BC/WX, Velocity, Touch EG*

Selects the physical controller which will be assigned to the VL pressure controller. Select "BC/WX" for normal control via a BC1/BC2 breath controller or WX7/WX11 Wind Controller; "Velocity" to control pressure via keyboard initial touch response; or "Touch EG" to control pressure via a touch EG.

Breath Controller data will be ignored when "Velocity" or "Touch EG" is selected.

● Vel Ofst (Velocity & Touch EG Modes)

📝 *0 … 127*

The value of the "Vel Ofst" (Velocity Offset) parameter is added to the actual keyboard velocity value, thus "offsetting" the velocity to produce the ideal pressure response. This parameter appears only when the "Velocity" or "Touch EG" mode is selected.

● Vel Gain (Velocity & Touch EG Modes)

✐ *-7 … 0 … 7*

"Vel Gain" (Velocity Gain) can be used to reduce (negative values) or increase (positive vales) the velocity gain, thus adjusting the range of velocity data for ideal pressure response. "Vel Gain" corresponds to the angle of the velocity curve. This parameter appears only when the "Velocity" or "Touch EG" mode is selected.

● TEG Time (Touch EG Mode)

✐ *18.0 msec … 4.43 sec*

● AT Hi Ofst (Touch EG Mode)

✐ *0 … 127*

● AT Hi Gain (Touch EG Mode)

✐ *-7 … 0 … 7*

● AT Lo Ofst (Touch EG Mode)

✐ *0 … 127*

● AT Lo Gain (Touch EG Mode)

✐ *-7 … 0 … 7*

These parameters become available when the "Touch EG" mode is selected, and determine how the touch EG keyboard velocity and aftertouch data interact to produce the touch EG data used for pressure control.

TEG Time (Touch EG Time) determines how long velocity data is valid before aftertouch data takes over. In other words, when a note is initially played, pressure is controlled by keyboard velocity (as determined by the "Vel Ofst" and "Vel Gain" parameters described above), then it is controlled by keyboard aftertouch. Higher values produce a slower change.

The "AT Hi Ofst" and "AT Hi Gain" parameters set the upper limit of the aftertouch range, while the "AT Lo Ofst" and "AT Lo Gain" parameters set the lower limit of the aftertouch range.
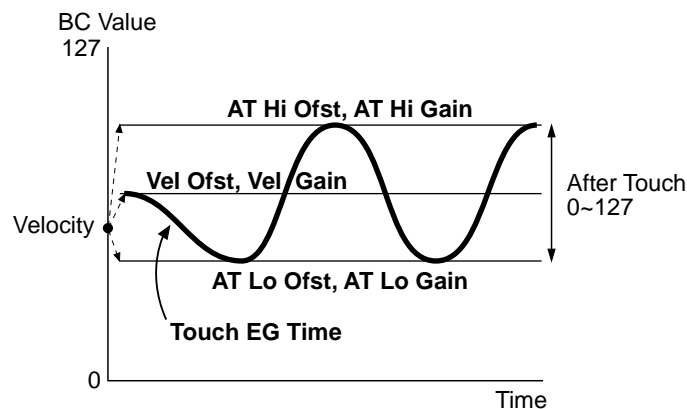
NOTES ■ *When the "Velocity" or "Touch EG" mode is selected, the* F8 *("Init") function button can be used to recall the preset values for all related parameters (except "Mode"). Press* INC *in response to the "Are You Sure?" prompt to initialize, or* DEC *to cancel.*
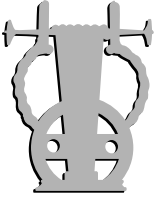
UTIL/SYSTEM/MISCELLANEOUS

The Greeting Message input method has been modified in the same way as the voice and element name input method.

The F6 (◄) and F7 (►) function buttons are used to move the cursor to the desired position in the name rather than the cursor buttons. In Version 2 the cursor ◄ and ► buttons perform the same function as the DEC and INC buttons: i.e. selecting the character for the current character position. The cursor ▲ and ▼ buttons can also be used for this purpose.

Feature Reference pages: VL1 ⇨ 158; VL1-m ⇨ 158; VL7 ⇨ 157
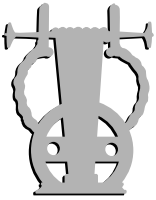
UTIL/DISK/LOAD FROM DISK

The disk load process has been updated to allow full compatibility with voice and system data from the original VL models. When an original VL voice disk is loaded "Now Converting and Loading!" appears on the display and the loaded data is automatically converted for use with Version 2. Please note that this does not affect the actual sound of the voices in any way since the voice data is not modified to take advantage of the new capabilities of Version 2.

NOTES ■ *Since the voice names are not changed by this "convert-load" process, saving the voices back to the original disk will overwrite the original voice data — USE CAUTION!*

■ *The converted voices can be saved to a different disk, as required.*

■ *The converted data cannot be loaded and used with the original VL models.*

Feature Reference pages: VL1 ⇨ 164; VL1-m ⇨ 164; VL7 ⇨ 164

■ CONTROL & SIGNAL FLOW

Instrument section

Velocity

Aftertouch

Breath controller

Modulation wheels

Foot controllers

Foot switches

Continuous sliders

Pitch wheel

Breath attack

Touch EG

EG

Excitation
Throat formant
Pressure
Growl
Breath noise
Scream
Tonguing
Embouchure
Vibrato
Pitch
Damping
Absorption

LFO

EG

LFO

Harmonic enhancer

Dynamic filter
Amplitude

EG

Effect control

Driver

Pipe / String

Mixer

Modifiers

Harmonic
Enhancer

Dynamic
Filter

Frequency
Equalizer

Impulse
Expander

Resonator

Effects

Modulation

Feedback Delay

Reverb

Output

5: Experiments

This section presents some experiments that will help you to become familiar with how the VL controllers and other features work.

Preparation

The floppy disks supplied with the original VL models include a file named "EXAMPLE :ALL" which contains a number of voices programmed specifically for use in the experiments described in this section. Before going on to the experiments themselves, load the voices and, if necessary, turn memory protection off as described below.

1. Press [UTILITY].

2. Press [F1] (Sys) to go to the utility system menu.

```
UTIL
<System>

1:KBD Setting      5:Curve
2:TG Setting       6:Breath Mode
3:MIDI Setting     7:Miscellaneous
4:Assignable Ctrl
Sys  Bulk Disk Recl  Demo
```

3. Use the cursor buttons to select "Miscellaneous".

4. Press [ENTER]. The system miscellaneous parameter page will appear.

```
UTIL/SYSTEM/MISCELLANEOUS

 Display         = Normal
 Confirm         = on
 Memory Protect  = on
 Greeting Message = These are Examples

Sys  Bulk Disk Recl  Demo
```

5. Use the cursor buttons to select the "Memory Protect" parameter.

6. Press [DEC] to turn the "Memory Protect" parameter "off".

7. Insert the supplied floppy disk into the disk drive.

8. Press [F3] (Disk) to go to the utility disk menu.

```
UTIL
<Disk>

1:Disk Status      5:Delete File
2:Load From Disk   6:Format Disk
3:Save To Disk
4:Rename File
Sys  Bulk Disk Recl  Demo
```

9. Use the cursor buttons to select "2: Load From Disk".

10. Press [ENTER]. The LOAD FROM DISK menu will appear.

```
UTIL/DISK/LOAD FROM DISK
<Load From Disk>

1:All              5:1 Voice
2:System
3:All Voice
4:1 Bank
Sys  Bulk Disk Recl  Demo
```

11. Use the cursor buttons to select "1: All".

12. Press [ENTER] and a list of the files on the disk will appear.

13. Use the cursor buttons to select "EXAMPLE :ALL".

14. Press [ENTER]. The "Are You Sure?" confirmation prompt will appear (unless the confirmation message parameter is off).

15. Press [INC] to load the EXAMPLE file. "Completed!" will appear on the display when the data has been loaded.

16. Press [EXIT].

17. Press [PLAY].

The example voice file we'll use for the following experiments should now be properly loaded. Voices A01 through A05 are the ones we'll use on the VL1 Ver.2 and VL7 Ver.2. On the VL1-m Ver.2 we'll use A01 through A06. These voices have been specifically created to facilitate understanding of the way the VL system works. All other voices are unchanged.

Changing Controller Functions

Here's how you can change the function of the modulation wheel (MW1 on the VL1 Ver.2 and VL7 Ver.2) as it applies to the AltoSax voice.

1. Since we won't be using the breath controller, foot controller, or footswitch for this experiment, begin by disconnecting them from the instrument. Just disonnect the breath controller from the VL1-m.

2. Roll the modulation wheel (MW1 on the VL1 Ver.2 and VL7 Ver.2) all the way towards you.

3. Make sure the PLAY button indicator is lit. If it is not, press the PLAY button to engage the PLAY mode.

4. Select voice number A01 — the "AltoSax" voice.

5. On the VL1 Ver.2 and VL7 Ver.2, the MODULATION 2 wheel is initially set to produce the same effect as the breath controller. With the wheel rolled all the way up, the sound is the same as applying maximum pressure to the breath controller. Roll the MODULATION 2 wheel up to its maximum position.

   This step is not necessary on the VL1-m Ver.2.

6. Press the F1 (Cnt) function button to call the CON-TROLLER VIEW 1 display.

   Note that the "Modulation" wheel is assigned to "Vibrato".

```
PLAY/CONTROLLER VIEW 1
 A01(001):AltoSax
                   |Element1        |
Pressure           |Breath Con      |
Embouchure         |Pitch Bend      |
Pitch              |Pitch Bend      |
Vibrato            |Modulation      |
Cnt1 Cnt2 Cnt3 Cnt4  Cnt5   CS      Dir
```

7. While playing the keyboard with the right hand, try operating the modulation wheel (MW1 on the VL1 Ver.2 and VL7 Ver.2) and note how it controls the vibrato effect.

8. Press the F3 (Cnt3) function button to call the CON-TROLLER VIEW 3 display.

   Note that no controller is assigned to "Growl".

```
PLAY/CONTROLLER VIEW 3
 A01(001):AltoSax
                   |Element1        |
Growl              |off             |
Throat Formant     |After Touc      |
D.Filter           |off             |
H.Enhancer         |Breath Con      |
Cnt1 Cnt2 Cnt3 Cnt4  Cnt5   CS      Dir
```

9. Press EXIT to return to the main PLAY mode display.

10. Press EDIT to go to the EDIT mode. The EDIT button indicator should light. If the top-level EDIT display — shown below — does not appear, press EXIT as many times as necessary until it does.

```
EDIT
 A01(001)
 Voice Name = AltoSax
 Key Mode   = Mono
 Voice Mode = Single
 E1 Name    = AltoSax

Com  E1                           Name
```

11. Press the F2 (E1 or EL) function button to go to the element edit menu. If the "Ctrl" display shown below does not appear, press the F1 (Ctrl) button.

```
EDIT/E1
 A01(001):AltoSax    /E1:AltoSax
<Controller>
01:Pressr  05:Tnguing 09:Growl   13:Damping
02:Embchr  06:Ampltd  10:Throat  14:Absrptn
03:Pitch   07:Scream  11:D.Filtr
04:Vibrato 08:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env                       S&R
```

12. Use the cursor buttons to highlight the "04. Vibrato" item in the menu.

```
EDIT/E1
 A01(001):AltoSax    /E1:AltoSax
<Controller>
01:Pressr  05:Tnguing 09:Growl   13:Damping
02:Embchr  06:Ampltd  10:Throat  14:Absrptn
03:Pitch   07:Scream  11:D.Filtr
04:Vibrato 08:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env                       S&R
```

13. Press ENTER to go to the VIBRATO parameter page.

```
EDIT/E1/CTRL/VIBRATO
 A01(001):AltoSax    /E1:AltoSax
 Controller = Modulation Wheel
 Depth      =    127


                         Bpag Fpag Para
```

14. Make sure that "Modulation Wheel" is highlighted — if not, use the cursor buttons to highlight it.

15. Press DEC to turn the parameter "off".

```
EDIT/E1/CTRL/VIBRATO
 A01(001):AltoSax    /E1:AltoSax
 Controller = off



                         Bpag Fpag Para
```

16. Press EXIT to return to the element edit menu.

17. Use the cursor buttons to highlight "09: Growl".

```
EDIT/E1
⊟A01(001):AltoSax    /E1:AltoSax      ▮
<Controller>
00:Pressr  05:Tnguing 09:Growl  13:Damping
02:Embchr  06:Ampltd  10:Throat  14:Absrptn
03:Pitch   07:Scream  11:D.Filtr
04:Vibrato 08:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env                      S&R
```

18. Press ENTER to go to the GROWL parameter page.

```
EDIT/E1/CTRL/GROWL
⊟A01(001):AltoSax    /E1:AltoSax      ▮
 Controller
      = off

 Value =    0
                         BPag FPag Para
```

19. Make sure that "off" is highlighted — if not, use the cursor buttons to highlight it.

20. Press INC to set the growl controller assignment to "Modulation Wheel".

```
EDIT/E1/CTRL/GROWL
⊟A01(001):AltoSax    /E1:AltoSax      ▮
 Controller
      = Modulation Wheel
 Depth =    127
 Curve =      0
                         BPag FPag Para
```

21. Now try operating the modulation wheel (MW1) while playing the keyboard. The wheel should control the growl effect.

Although this is a simple example of how controller functions can be changed as required, it does demonstrate the versatile playability provided by the VL system.

Before going on to the next experiment, cancel the edits you just made as follows:

22. Press PLAY to return to the PLAY mode. Note that an inverse "E" appears to the left of the voice number in the upper left corner of the display, indicating that the voice has been edited but not yet stored.

23. Press the number 1 voice button on the VL1 Ver.2 or VL7 Ver.2. On the VL1-m Ver.2 press INC and then DEC. The "E" will disappear and the original pre-edit voice will be restored.

This technique can be used as a safety feature when editing: to restore the original voice after making one or more edits, simply return to the PLAY mode and re-select the same voice number without storing the voice. As long as the edited voice has not been stored, the same result can be achieved by selecting a different voice. The EDIT RECALL function described in the Feature Reference manuals can also be used to restore a voice that has not yet been stored.

Multiple Functions to One Controller

Lets try adding aftertouch "scream" control to a Shakuhachi voice.

1. Since we won't be using the breath controller, foot controller, or footswitch for this experiment, begin by disconnecting them from the instrument. Just disconnect the breath controller from the VL1-m Ver.2.

2. Roll the modulation wheel (MW1) all the way towards you.

3. Make sure the PLAY button indicator is lit. If it is not, press the PLAY button to engage the PLAY mode.

4. Select voice number A03 — the "Shakuhachi" voice.

5. Roll the VL1 Ver.2 or VL7 Ver.2 MODULATION 2 wheel up to its maximum position. This step is not necessary on the VL1-m Ver.2.

6. Press the F3 (Cnt) function button to call the CON-TROLLER VIEW 3 display.

Note that "Aftertouch" is assigned to "Growl".

```
PLAY/CONTROLLER VIEW 3
 A03(003):Shakuhachi
                   Element1
Growl             After Touc
Throat Formant    off
D.Filter          Breath Att
H.Enhancer        off
Cnt1 Cnt2 Cnt3 Cnt4  Cnt5   CS      Dir
```

7. Play the keyboard and try varying the pressure applied to the keys after the notes are played to hear how aftertouch affects growl.

8. Press the [F2] (Cnt2) function button to call the CON-
TROLLER VIEW 2 display.

   Note that no controller is assigned to "Scream".

```
PLAY/CONTROLLER VIEW 2
 A03(003):Shakuhachi
                 Element1
Tonguing         off
Amplitude        off
Scream           off
Breath Noise     off
Cnt1 Cnt2 Cnt3 Cnt4  Cnt5  CS       Dir
```

9. Press [EXIT] to return to the main PLAY mode display.

10. Press [EDIT] to go to the EDIT mode. The [EDIT] button
indicator should light. If the top-level EDIT display —
shown below — does not appear, press [EXIT] as many
times as necessary until it does.

11. Press the [F2] (E1 or EL) function button to go to the
element edit menu. If the "Ctrl" display shown below
does not appear, press the [F1] (Ctrl) button.

```
EDIT/E1
 A03(003):Shakuhachi/E1:Shakuhachi   1
<Controller>
00:Pressr  06:Tnguing 09:Growl   13:Damping
02:Embchr  06:Ampltd  10:Throat  14:Absrptn
03:Pitch   07:Scream  11:D.Filtr
04:Vibrato 08:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env                      S&R
```

12. Use the cursor buttons to highlight the "07. Scream" item
in the menu.

13. Press [ENTER] to go to the SCREAM parameter page.

```
EDIT/E1/CTRL/SCREAM
 A03(003):Shakuhachi/E1:Shakuhachi   1
 Controller
          = off

 Value =    0
                            BPag FPag
```

14. Make sure that "off" is highlighted — if not, use the
cursor buttons to highlight it.

15. Rotate the data dial clockwise until "After Touch" is
selected for the "Controller" parameter.

```
EDIT/E1/CTRL/SCREAM
 A03(003):Shakuhachi/E1:Shakuhachi   1
 Controller
          = After Touch
 Depth =   127
 Curve =     0
                            BPag FPag
```

16. Use the cursor buttons to highlight the "Depth" param-
eter.

17. Use the data dial to set the "Depth" parameter to "50".
Note how the graph in the display changes in response to
this edit.

```
EDIT/E1/CTRL/SCREAM
 A03(003):Shakuhachi/E1:Shakuhachi   1
 Controller
          = After Touch
 Depth =    50
 Curve =     0
                            BPag FPag
```

18. Try playing the keyboard with aftertouch pressure again.
Now you should be able to control the scream effect in
addition to the growl effect.

   The ability to assign a single controller to multiple
functions in this way makes it possible to create complex
effects as well as subtle musical nuances while playing.
   Before going on to the next experiment, cancel the edits
you just made as follows:

19. Press [PLAY] to return to the PLAY mode. Note that an
inverse "E" appears to the left of the voice number in the
upper left corner of the display, indicating that the voice
has been edited but not yet stored.

20. Press the number [3] voice button on the VL1 Ver.2 or
VL7 Ver.2. On the VL1-m Ver.2 press [INC] and then
[DEC]. The "E" will disappear and the original pre-edit
voice will be restored.

Try Out The Controller Functions

The experiments described in this section provide an opportunity to discover just how controller functions like pressure and embouchure affect the sound.

NOTES ■ *For the following experiments it is assumed that MODULATION WHEEL 2 is set to the same control number as the breath controller (the initial "EXAMPLE:ALL" file setting). If the MODULATION WHEEL 2 control change number has been changed for any reason, it should be reset to the initial value for these experiments.*

■ VL1 Ver.2/VL7 Ver.2 Preparations

Carry out the steps listed below to prepare the VL1 Ver.2 or VL7 Ver.2 for the following experiments. A separate preparation procedure is provided for the VL1-m Ver.2.

1. Disconnect the breath controller, foot controller, and footswitch.

2. Set MODULATION WHEEL 2 to its central position.

3. Make sure the PLAY mode is engaged. If it isn't, press the [PLAY] button.

4. Select voice A3 (Shakuhachi).

5. Press [EDIT].

6. Press the [F2] (E1 or EL) function button to go to the element edit menu.

```
EDIT/E1
 A03(003):Shakuhachi/E1:Shakuhachi   ▌
<Controller>
①:Pressr  ⑥:Tnguing ⑨:Growl    13:Damping
②:Embchr  ⑥:Ampltd  10:Throat   14:Absrptn
③:Pitch   ⑦:Scream  11:D.Filtr
④:Vibrato ⑧:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env              S&R
```

7. Use the cursor buttons to select the "01: Pressr" item.

8. Press [ENTER] to go to the PRESSURE parameter page.

```
EDIT/E1/CTRL/PRESSURE
 A03(003):Shakuhachi/E1:Shakuhachi   ▌
Controller
      = Breath Controller
Depth = 127
Curve =   2
                           Fpag
```

9. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

10. Rotate the data dial counter-clockwise to turn the pressure controller "off".

11. Press [F7] (Fpag) to go to the next controller page.

```
EDIT/E1/CTRL/EMBOUCHURE
▌A03(003):Shakuhachi/E1:Shakuhachi   ▌
Controller  = Pitch Bend
Upper Depth =  127
Lower Depth = -127
Mode        = Center Base
                          BPag Fpag
```

12. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

13. Rotate the data dial counter-clockwise to turn the embouchure controller "off".

14. Repeat steps 11 through 13 to turn "off" the controllers for pitch, vibrato, tonguing, amplitude, scream, breath noise, growl, throat formant, dynamic filter, harmonic enhancer, damping, and absorption in the same way.

NOTES ■ *You can use the [F6] (Bpag) function key to step back one controller page if necessary.*

15. When all the controller parameters listed above have been turned "off", press [EXIT] to return to the element edit menu.

Once you have completed the above steps all controllers will disengaged and should have absolutely no effect on the sound. Play the keyboard and try out the modulation wheels, just to be sure.

■ **VL1-m Ver.2 Preparation**

Carry out the steps listed below to prepare the VL1-m Ver.2 for the following experiments.

1. Disconnect the breath controller.

2. Make sure the PLAY mode is engaged. If it isn't, press the [PLAY] button.

3. Select voice A06 (Shakuhachi).

> **NOTES ■** *In the A06 Shakuhachi voice all controllers are turned "off", making it a rather dull voice from a musical standpoint. This voice has been provided specifically for use in the following experiments, and is not intended for music applications.*

4. Press [EDIT].

5. Press the [F2] (E1) function button to go to the element edit menu. If the display shown below doesn't appear, press the [F1] (Ctrl) button.

```
EDIT/E1
 A06(006):Shakuhach2/E1:Shakuhachi      ◫
<Controller>
00:Pressr  05:Tnguing 09:Growl   13:Damping
02:Embchr  06:Ampltd  10:Throat  14:Absrptn
03:Pitch   07:Scream  11:D.Filtr
04:Vibrato 08:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env                      S&R
```

01: **Pressure**

1. Use the cursor buttons to highlight the "01: Pressr" item in the element edit display.

2. Press [ENTER] to go to the PRESSURE parameter display.

```
EDIT/E1/CTRL/PRESSURE
█A03(003):Shakuhachi/E1:Shakuhachi      ◫
 Controller
        = Off▬▬▬▬▬▬▬▬▬▬▬


                              Fpag
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press [INC] once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

In addition to volume, pressure affects the timbre of the sound.

6. Press [DEC] once to turn the "Controller" parameter "off".

7. Press [EXIT].

02 : **Embouchure**

1. Use the cursor buttons to highlight the "02: Embchr" item in the element edit display.

2. Press [ENTER] to go to the EMBOUCHURE parameter display.

```
EDIT/E1/CTRL/EMBOUCHURE
█A03(003):Shakuhachi/E1:Shakuhachi      ◫
 Controller  = Off▬▬▬▬▬▬▬▬▬▬▬



                          Bpag Fpag
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press [INC] once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

Embouchure generally refers to the pressure of the player's lips on the reed or mouthpiece. In the case of the Shakuhachi voice, embouchure controls the size of the airstream entering the mouthpiece, resulting in variations in both pitch and timbre.

6. Press DEC once to turn the "Controller" parameter "off".

7. Press EXIT.

03 : Pitch

1. Use the cursor buttons to highlight the "03: Pitch" item in the element edit display.

2. Press ENTER to go to the PITCH parameter display.

```
EDIT/E1/CTRL/PITCH
BA03(003):Shakuhachi/E1:Shakuhachi    ⊞
 Controller  = off


                              BPag FPag
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press INC once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

    This controller produces smooth changes in pitch corresponding to changes in the length of the instrument's pipe or string.

6. Press DEC once to turn the "Controller" parameter "off".

7. Press EXIT.

04 : Vibrato

1. Use the cursor buttons to highlight the "04: Vibrato" item in the element edit display.

2. Press ENTER to go to the VIBRATO parameter display.

```
EDIT/E1/CTRL/VIBRATO
BA03(003):Shakuhachi/E1:Shakuhachi    ⊞
 Controller = off


                         BPag FPag Para
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press INC once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

    The wheel controls the depth of the vibrato effect — a periodic variation in pitch and embouchure.

6. Press the F8 (Para) function button to go to the vibrato parameter page. The F8 (Para) function button becomes available whenever detailed parameters are available for the selected controller. You can return to the main controller page by pressing the F8 (Ctrl) function button in the parameter page.

```
EDIT/E1/ENV/VIBRATO
BA03(003):Shakuhachi/E1:Shakuhachi    ⊞
 Delay Time  = 124  Attack Rate  = 105
 Sustain Lvl =   0  Vibrato Dpth = 127
 Dpth To Emb =  80  Dpth To Ptch =   3
 Offset      =  15  Randomness   =   0
 Speed       = 50   Speed Shift  =   2
                              KSC Ctrl
```

7. Use the cursor buttons to highlight the "Speed" parameter.

8. Use the data dial to set the "Speed" parameter to about "45".

9. Try operating the modulation wheel (MW1) while playing the keyboard again. The vibrato speed should be noticeably slower.

10. Use the cursor buttons to highlight the "Dpth To Emb" parameter.

11. Use the data dial to set the "Dpth To Emb" parameter to "0".

12. Use the cursor buttons to highlight the "Dpth To Ptch" parameter.

13. Use the data dial to set the "Dpth To Ptch" parameter to "127".

14. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

    Compared to the sound in step 6, which was mostly an embouchure variation, the effect now consists entirely of pitch variation. Exceptionally realistic vibrato effects can be created by carefully balancing the pitch and embouchure components of the effect.

15. Press F8 (Ctrl) to go back to the controller page.

16. Press DEC once to turn the "Controller" parameter "off".

17. Press EXIT.

05 : Tonguing

1. Use the cursor buttons to highlight the "05: Tnguing" item in the element edit display.

2. Press ⌈ENTER⌉ to go to the TONGUING parameter display.

```
EDIT/E1/CTRL/TONGUING
⌐A03(003):Shakuhachi/E1:Shakuhachi    ⒧
 Controller
      = Off

                              BPag FPag
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press ⌈INC⌉ once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

Tonguing generally refers to the technique of controlling the reed with the tongue. The shakuhachi does not have a reed, but, with a VL instrument it becomes possible to apply tonguing effects to a shakuhachi voice. Tonguing produces variations in both volume and timbre.

6. Press ⌈DEC⌉ once to turn the "Controller" parameter "off".

7. Press ⌈EXIT⌉.

06 : Amplitude

1. Use the cursor buttons to highlight the "06: Ampltd" item in the element edit display.

2. Press ⌈ENTER⌉ to go to the AMPLITUDE parameter display.

```
EDIT/E1/CTRL/AMPLITUDE
⌐A03(003):Shakuhachi/E1:Shakuhachi    ⒧
 Controller
      = Off

                              BPag FPag
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press ⌈INC⌉ once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

Amplitude is purely a volume variation, with no effect on pitch or timbre.

6. Press ⌈DEC⌉ once to turn the "Controller" parameter "off".

7. Press ⌈EXIT⌉.

07 : Scream

1. Use the cursor buttons to highlight the "07: Scream" item in the element edit display.

2. Press ⌈ENTER⌉ to go to the SCREAM parameter display.

```
EDIT/E1/CTRL/SCREAM
⌐A03(003):Shakuhachi/E1:Shakuhachi    ⒧
 Controller
      = Off

 Value =    0
                              BPag FPag
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press ⌈INC⌉ once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

As its name implies, "scream" can produce some really wild variations.

6. Press ⌈DEC⌉ once to turn the "Controller" parameter "off".

7. Press ⌈EXIT⌉.

08 : Breath Noise

1. Use the cursor buttons to highlight the "08: B.Noise" item in the element edit display.

2. Press ⌈ENTER⌉ to go to the BREATH NOISE parameter display.

```
EDIT/E1/CTRL/BREATH NOISE
⌐A03(003):Shakuhachi/E1:Shakuhachi    ⒧
 Controller
      = Off

 Value =    0
                          BPag FPag Para
```

5: Experiments

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press ⌈INC⌋ once to set the "Controller" parameter to "Modulation Wheel".

5. Press the ⌈F8⌋ (Para) function button to go to the breath noise parameter page.

```
EDIT/E1/MISC/BREATH NOISE
▒A03(003):Shakuhachi/E1:Shakuhachi    ▌
 Slit Drive    = ▐▌  Noise = Normal
 Ctrl Balance  =  63 Ctrl ──────▌ Slit
 HPF Cutoff Frq = 31.1  Hz▒
 LPF Cutoff Frq = 24.0 kHz▒
 Key On Reset   = off       Level =  60▒
                                    Ctrl
```

6. Use the cursor buttons to highlight the "Ctrl Balance" parameter.

7. Use the data dial to set the "Ctrl Balance" parameter to "-64".

8. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.
    You should hear a corresponding variation in the amount of breath noise in the sound.

9. When done, reset the "Ctrl Balance" parameter to "63".

10. Press ⌈F8⌋ (Ctrl) to go back to the controller page.

11. Press ⌈DEC⌋ once to turn the "Controller" parameter "off".

12. Press ⌈EXIT⌋.

09 : Growl

1. Use the cursor buttons to highlight the "09: Growl" item in the element edit display.

2. Press ⌈ENTER⌋ to go to the GROWL parameter display.

```
EDIT/E1/CTRL/GROWL
▒A03(003):Shakuhachi/E1:Shakuhachi    ▌
 Controller
     = ▐off▌▌▌▌▌▌▌▌▌▌

 Value =    0
                         BP▒9 FP▒9 Para
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press ⌈INC⌋ once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.
    Growl is basically a periodic pressure variation similar to the "growl" effect sax players often use. Growl produces variations in both volume and timbre.

6. Press ⌈DEC⌋ once to turn the "Controller" parameter "off".

7. Press ⌈EXIT⌋.

10 : Throat Formant

1. Use the cursor buttons to highlight the "10: Throat" item in the element edit display.

2. Press ⌈ENTER⌋ to go to the THROAT FORMANT parameter display.

```
EDIT/E1/CTRL/THROAT FORMANT
▒A03(003):Shakuhachi/E1:Shakuhachi    ▌
 Controller
     = ▐off▌▌▌▌▌▌▌▌▌▌

 Value =    0
                         BP▒9 FP▒9 Para
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press ⌈INC⌋ once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.
    The throat formant function corresponds to the resonance of the player's throat and lungs, and can produce large variations in the overall sound.

6. Press ⌈DEC⌋ once to turn the "Controller" parameter "off".

7. Press ⌈EXIT⌋.

11 : Dynamic Filter

1. Use the cursor buttons to highlight the "11: D.Filtr" item in the element edit display.

2. Press [ENTER] to go to the DYNAMIC FILTER parameter display.

```
EDIT/E1/CTRL/DYNAMIC FILTER
▓A03(003):Shakuhachi/E1:Shakuhachi    ▐
 Controller
        = off



                               BPag FPag Para
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press [INC] once to set the "Controller" parameter to "Modulation Wheel".

5. Press the [F8] (Para) function button to go to the dynamic filter parameter page.

```
EDIT/E1/MODIFIER/DYNAMIC FILTER
▓A03(003):Shakuhachi/E1:Shakuhachi    ▐
 Filter Mode    = LPF    Input Gain = 127
 Balance        =  63    Dry ═════╪═╕ Wet
 Cutoff Tracking = KeyTrack
 Cutoff Freq.   =  2.94oct▓
 Resonance      =  1.16▓
                                       Ctrl
```

6. Use the cursor buttons to highlight the "Cutoff Freq." parameter.

7. Use the data dial to set the "Cutoff Freq." parameter to "-1.00 oct".

8. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

The effect you hear should be that of varying the cutoff frequency of a low-pass filter.

9. Use the cursor buttons to highlight the "Filter Mode" parameter.

10. Press [INC] to set the "Filter Mode" parameter to "BPF".

11. Try operating the modulation wheel (MW1) while playing the keyboard again. Now you have a variable-frequency bandpass filter.

12. Press [INC] again to set the "Filter Mode" parameter to "HPF".

13. Try operating the modulation wheel (MW1) while playing the keyboard again. This time you have a variable-frequency high-pass filter.

Use the [DEC] and [INC] buttons to select the various filter types and compare their sound.

14. When done set the "Filter Mode" to "LPF".

15. Select the "Cutoff Freq." parameter and set it to "2.94 oct".

16. Press [F8] (Ctrl) to go back to the controller page.

17. Press [DEC] once to turn the "Controller" parameter "off".

18. Press [EXIT].

12 : Harmonic Enhancer

1. Use the cursor buttons to highlight the "12: H.Enhnc" item in the element edit display.

2. Press [ENTER] to go to the HARMONIC ENHANCER parameter display.

```
EDIT/E1/CTRL/HARMONIC ENHANCER
▓A03(003):Shakuhachi/E1:Shakuhachi    ▐
 Controller
        = off



                               BPag FPag Para
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press [INC] once to set the "Controller" parameter to "Modulation Wheel".

5. Press the [F8] (Para) function button to go to the harmonic enhancer parameter page.

```
EDIT/E1/MODIFIER/HARMONIC ENHANCER
▓A03(003):Shakuhachi/E1:Shakuhachi    ▐
 Signal Select = Normal
 HPF Cutoff    = 17.0  Hz▓
 Over Drive    = 1.542▓
 Level         = 127▓
 Balance       = -64▓    Dry ╞═══╪═══╡ Wet
Crr  Mod                               Ctrl
```

6. Use the cursor buttons to highlight the "Balance" parameter.

7. Use the data dial to set the "Balance" parameter to "63".

8. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.

The harmonic enhancer works by varying the harmonic content of the sound.

9. When done, reset the "Balance" parameter to "-64".

10. Press [F8] (Ctrl) to go back to the controller page.

11. Press [DEC] once to turn the "Controller" parameter "off".

12. Press [EXIT].

13 : Damping

Up to this point we've used the Shakuhachi voice. The "Damping" and "Absorption" functions which follow, however, are more easily understood by using a string instrument — we'll use an electric guitar voice.

VL1 Ver.2 & VL7 Ver.2 USERS! ■ *Before beginning this experiment VL1 Ver.2 and VL7 Ver.2 users should turn modulation-wheel vibrato control "off" for this voice. Refer to the procedure outlined in "Changing Controller Functions" on page 59.*

1. Press [PLAY].

2. Select the A05 voice (ElecGtr).

3. Press [EDIT].

4. Press the [F2] (E1 or EL) function button to go to the element edit menu. If necessary also press the [F1] (Ctrl) button to call the controller menu.

```
EDIT/E1
 A05(005):ElecGtr    /E1:ElecGtr      ⅱ
 <Controller>
0:Pressr  5:Tnguing 9:Growl   13:Damping
2:Embchr  6:Ampltd  10:Throat  14:Absrptn
3:Pitch   7:Scream  11:D.Filtr
4:Vibrato 8:B.Noise 12:H.Enhnc
Ctrl Misc Modi Env                    S&R
```

NOTES ■ *Steps 5 through 9, below, are not necessary on the VL1-m Ver.2. Simply use the cursor buttons to highlight the "13: Damping" item in the element edit display and press [ENTER].*

5. Use the cursor buttons to highlight the "14: Absrptn" item in the element edit display.

6. Press [ENTER] to go to the ABSORPTION parameter display.

7. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

8. Rotate the data dial counter-clockwise to turn the "Controller" parameter "off".

9. Press the [F6] (Bpag) function button to go back to the DAMPING parameter display.

10. Make sure that the "Controller" parameter is set to "Modulation Wheel". Since breath control is not assigned to any other function at this point, you can go right ahead and try out the damping function.

11. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.
Note how damping changes the decay of the sound. With the wheel rolled all the way up there is no damping, while rolling the wheel all the way toward you produces maximum damping.

12. Press [DEC] once to turn the "Controller" parameter "off".

13. Press [EXIT].

14 : Absorption

1. Use the cursor buttons to highlight the "14: Absrptn" item in the element edit display.

2. Press [ENTER] to go to the ABSORPTION parameter display.

```
EDIT/E1/CTRL/ABSORPTION
▊A05(005):ElecGtr    /E1:ElecGtr      ⅱ
 Controller
     = Off
                              Bpag
```

3. If necessary, use the cursor buttons to highlight the current setting of the "Controller" parameter.

4. Press [INC] once to set the "Controller" parameter to "Modulation Wheel".

5. Try operating the modulation wheel (MW1) while playing the keyboard, and note how the sound changes.
Absorption simulates the high-frequency absorption which occurs at certain parts of the instrument and the player's body, producing a somewhat muted effect. With the wheel rolled all the way up there is no absorption, while rolling the wheel all the way toward you produces maximum absorption.

6. Press [DEC] once to turn the "Controller" parameter "off".

7. Press [EXIT].

Editing the Pressure Envelope

Each VL voice has preset pressure, embouchure, and other envelope settings that determine how the voice will respond to control on a time basis. For example, even though you might use a controller to apply maximum pressure right at the beginning of a note, the voice will actually respond more slowly, building up from minimum pressure to maximum over a time specified by its pressure envelope. This simulates the natural response of a brass instrument or string. The envelopes actually have several other time-based parameters that control the voice's response. In the following experiment we'll try adjusting the pressure envelope and see how it affects the sound.

1. Disconnect the breath controller, foot controller, and footswitch. Just disconnect the breath controller from the VL1-m Ver.2.

2. Press the PLAY button to engage the PLAY mode.

3. Select the A04 voice — "Violin".

4. Press EDIT to go to the EDIT mode.

5. Press the F2 (E1 or EL) function button to go to the element edit menu.

6. Press F4 (Env) to go to the envelope menu.

```
EDIT/E1
 A04(004):Violin      /E1:Violin      🔲
<Envelope>
1:Pressure            5:Amplitude&Filter
2:Embouchure&Pitch
3:Vibrato
4:Growl
Ctrl Misc Modi Env
```

7. Use the cursor buttons to highlight the "1: Pressure" item in the menu.

8. Press ENTER to go to the PRESSURE envelope parameter page.

```
EDIT/E1/ENV/PRESSURE
 A04(004):Violin      /E1:Violin      🔲
EG Mode              = ADSR
Attack Rate Offset   =     0
Release Rate Offset  =     0
Velocity Sens To Level =  12
             To Rate   =   11
```

9. Use the cursor buttons to highlight the "Attack Rate Offset" parameter.

10. Alternately use the data dial to change the setting of the "Attack Rate Offset" parameter and play the keyboard to hear how it affects the sound.

Note that as you increase the value the attack speed increases, while lower values produce a slower attack. with some voices keyboard velocity also affects the attack time. With this particular voice this effect becomes more obvious when the "Attack Rate Offset" parameter is set to a negative value. Sensitivity of the envelope to keyboard velocity is determined by the "Velocity Sens To Rate" parameter.

The Resonance-enhancing Modifiers

Here we'll experiment with two modifiers that can be used to simulate the resonance of a wind or string instrument's body — the Impulse Expander and Resonator — using a violin voice

1. Disconnect the breath controller, foot controller, and footswitch. Just disconnect the breath controller from the VL1-m Ver.2.

2. Press the PLAY button to engage the PLAY mode.

3. Select the A04 voice — "Violin".

4. Press EDIT to go to the EDIT mode.

5. Press the F2 (E1 or EL) function button to go to the element edit menu.

6. Press F3 (Modi) to go to the modifier menu.

```
EDIT/E1
 A04(004):Violin   /E1:Violin      ⓘ
<Modifier>
1:Harmonic Enhancer 5:IE & RSN Setting
2:Dynamic Filter    6:Impulse Expander
3:Equalizer Auxilry 7:Resonator
4:Equalizer Band
Ctrl Misc Modi Env
```

7. Use the cursor buttons to highlight the "5: IE & RSN Setting" item in the menu.

8. Press ENTER to go to the IE & RSN SETTING page.

```
EDIT/E1/MODIFIER/IE & RSN SETTING
 A04(004):Violin   /E1:Violin      ⓘ
     ┌──┐      ┌──┐
 ──→ │IE│ ─→□─→│RSN│→□→□→        
     │off│      │on │        ┐ R
 ──→ └──┘ →□───────────────→ ┘
                             └──── L
                              Para
```

The "block" to the left of this display represents the Impulse Expander, and the block to the right is the Resonator. In this case the Impulse Expander is "off" and the Resonator is "on".

9. Use the cursor buttons to highlight the "on" parameter in the Resonator block.

10. Press DEC to turn the Resonator "off".

11. Use the cursor buttons to highlight the "off" parameter in the Impulse Expander block.

12. While playing the keyboard, use the INC and DEC buttons to turn the Impulse Expander "on" and "off" to hear how it affects the sound.

You should notice that when the Impulse Expander is "on" the sound has a "metallic" resonance. The effect is most obvious on the attack and decay. The effect can be further emphasized by adjusting the modulation wheel (MW1) to add some vibrato.

Turn the Impulse Expander "off" and proceed.

13. Use the cursor buttons to highlight the "off" parameter in the Resonator block.

14. While playing the keyboard, use the INC and DEC buttons to turn the Resonator "on" and "off" to hear how it affects the sound.

When the Resonator is "on" you should hear a resonance that is more "woody" than that produced by the Impulse Expander. The effect can be further emphasized by adjusting the modulation wheel (MW1) to add some vibrato.

Effects

Finally, lets use the Alto Sax voice to experiment with some of the VL effects.

1. Disconnect the breath controller, foot controller, and footswitch. Just disconnect the breath controller from the VL1-m Ver.2.

2. Press the PLAY button to engage the PLAY mode.

3. Select the "A1" voice.

4. Press EDIT to go to the EDIT mode.

5. Press the F1 (COM) function button to go to the common edit mode.

6. Press F2 (Efct) to go to the effect menu.

```
EDIT/COM
 A01(001):AltoSax            ‖
<Effect>
1:Setting
2:Modulation Effect
3:Feedback Delay
4:Reverberation
Misc Efct
```

7. Use the cursor buttons to highlight the "2: Modulation Effect" item in the menu.

8. Press ENTER to go to the MODULATION EFFECT parameter page.

```
EDIT/COM/EFFECT/MODULATION EFFECT
 A01(001):AltoSax            ‖
Modulation Effect Type = Pitch Change
Element on/off     E1: on
Mode    = Monaural
1 Pitch =     0        Fine =    2
1 Output =   80%
```

9. Use the cursor buttons to highlight the "Modulation Effect Type" parameter.

10. Press DEC to change "Pitch Change" to "Flanger".

11. Play the keyboard to hear the Flanger effect.

12. Press EXIT to return to the effect menu.

13. Use the cursor buttons to highlight the "3: Feedback Delay" item in the menu.

14. Press ENTER to go to the FEEDBACK DELAY parameter page.

```
EDIT/COM/EFFECT/FEEDBACK DELAY
 A01(001):AltoSax            ‖
Delay Type    = L R
Return        = 18%
Lch Delay Time = 250ms   Level =  90%
Lch FB Gain   =  25%     High =  0.7
```

15. Use the cursor buttons to highlight the "Return" parameter.

16. Use the data dial to set the "Return" parameter to "90".

17. Play the keyboard to hear the Feedback Delay effect.

18. Press EXIT to return to the effect menu.

19. Use the cursor buttons to highlight the "4: Reverberation" item in the menu.

20. Press ENTER to go to the REVERBERATION parameter page.

```
EDIT/COM/EFFECT/REVERBERATION
 A01(001):AltoSax            ‖
Reverb Type       = Room1
Return            = 68%
Reverb Time       =   1.0sec
Reverb Time Boost =   0
High Control      = 0.8
```

21. Use the cursor buttons to highlight the "Reverb Time" parameter.

22. Use the data dial to set the "Reverb Time" parameter to "6.0 sec".

23. Play the keyboard to hear the Reverberation effect.

Unlike external effect units, the VL effects can be individually specified for each voice so the appropriate effect is automatically recalled whenever a voice is selected.

Virtual Acoustic Synthesizer **VL1** Version 2

Specifications

■

● Tone Generator

Type	S/VA (Self-oscillating Virtual Acoustic Synthesis.
Modifiers	Harmonic Enhancer. Dynamic Filter (LPF, HPF, BPF, BEF, with resonance). Equalizer (5 bands with frequency, resonace, and boost/cut control). Impulse Expander. Resonator.
Effects	32-bit digital signal processor, stereo in/stereo out. Modulation effects (flanger, pitch change, distorion, chorus, phaser, symphonic, celeste, dist.+flanger, dist.+wah). Feed back delay (mono, L,R, L,C,R). Reverberation (hall1, hall2, room1, room2, studio, plate, space, reverse).
Play Mode	Voice mode only. Smallest tone generator units: elements. Voices use 1 or 2 elements. Voices are composed on "common data" and "element data".
Polyphony	2 notes max.
Assign Modes	Mono, Poly, Unison, Part

● Memory

Internal	128 voices.
Disk	3.5" 2DD or 2HD floppy disk.

● Keyboard

Keys	49 (C scale, FS type)
Sensitivity	Velocity. Channel aftertouch.

● Controllers

	Master volume slider. Pitch bend wheel. Data entry dial.	Continuous sliders x 2. Modulation wheel x 2. LCD contrast control.

● Panel Switches

	Play (with LED).	Edit (with LED).
	Utility (with LED).	Octave x 2 (with LEDs).
	Copy.	Store.
	Bank select x 8 (with LEDs).	Program change x 16 (with LEDs).
	Data entry x 2.	Cursor x 4.
	Function x 8.	
	Exit.	Enter.

● Display

	240 x 64 dot backlit liquid crystal display.

● Connectors

Front Panel	Stereo headphones.	Breath controller.
Rear Panel	Output x 2 (L and R).	Foot controller x 2.
	Foot switch x 2.	MIDI IN.
	MIDI OUT.	MIDI THRU.

● Output Level

Line	2.5 ±2 dBm into 10 kΩ.
Headphones	7.5 ±2 dBm into 150 Ω.

● Power Requirements

	UL/CSA: 120V, 16W
	Europe: 220-240V, 16W

● General

Dimensions	914 (W) x 380 (D) x 105 (H) mm.
Weight	12.5 kg

● Accessories

	Power cable.	BC2 Breath Controller.
	FC7 Foot Controller.	Floppy disk x 2.
	Owners manuals x 5.	Version 2 sticker.

* Specifications subject to change without notice.

Virtual Acoustic Tone Generator **VL1**-m Version 2
Specifications

■

● **Tone Generator**

Type	S/VA (Self-oscillating Virtual Acoustic Synthesis).
Modifiers	Harmonic Enhancer. Dynamic Filter (LPF, HPF, BPF, BEF, with resonance). Equalizer (5 bands with frequency, resonace, and boost/cut control). Impulse Expander. Resonator.
Effects	32-bit digital signal processor, stereo in/stereo out. Modulation effects (flanger, pitch change, distorion, chorus, phaser, symphonic, celeste, dist.+flanger, dist.+wah). Feed back delay (mono, L,R, L,C,R). Reverberation (hall1, hall2, room1, room2, studio, plate, space, reverse).
Play Mode	Voice mode only. Smallest tone generator units: elements. Voices use 1 or 2 elements. Voices are composed on "common data" and "element data".
Polyphony	2 notes max.
Assign Modes	Mono, Poly, Unison, Part

● **Memory**

Internal	128 voices.
Disk	3.5" 2DD or 2HD floppy disk.

● **Controls**

	Master volume.　　　　　　　　　LCD contrast control. Data entry dial.

● Panel Switches

	Play (with LED).	Edit (with LED).
	Utility (with LED).	
	Copy.	Store.
	Data entry x 2.	Cursor x 4.
	Function x 8.	
	Exit.	Enter/Sound.

● Display

	240 x 64 dot backlit liquid crystal display.

● Connectors

Front Panel	Stereo headphones.	Breath controller.
Rear Panel	Output x 2 (L and R).	MIDI IN.
	MIDI OUT.	MIDI THRU.

● Output Level

Line	2.5 ±2 dBm into 10 kΩ.
Headphones	2.0 ±2 dBm into 33 Ω.

● Power Requirements

	UL/CSA: 120V, 16W
	Europe: 220-240V, 16W

● General

Dimensions	480 (W) x 361 (D) x 132 (H) mm.
Weight	7.5 kg

● Accessories

	Power cable.	Floppy disk x 2.
	Owners manuals x 5.	MIDI cable.
	Version 2 sticker.	

* Specifications subject to change without notice.

Virtual Acoustic Synthesizer **VL7** Version 2
Specifications

■

● Tone Generator

Type	S/VA (Self-oscillating Virtual Acoustic Synthesis), monophonic.
Modifiers	Harmonic Enhancer. Dynamic Filter (LPF, HPF, BPF, BEF, with resonance). Equalizer (5 bands with frequency, resonace, and boost/cut control). Impulse Expander. Resonator.
Effects	32-bit digital signal processor, stereo in/stereo out. Modulation effects (flanger, pitch change, distorion, chorus, phaser, symphonic, celeste, dist.+flanger, dist.+wah). Feed back delay (mono, L,R, L,C,R). Reverberation (hall1, hall2, room1, room2, studio, plate, space, reverse).
Play Mode	Voice mode only. Smallest tone generator unit: element. Voices use element. Voices are composed on "common data" and "element data".
Polyphony	1 note.

● Memory

Internal	64 voices.
Disk	3.5" 2DD or 2HD floppy disk.

● Keyboard

Keys	49 (C scale, FS type)
Sensitivity	Velocity. Channel aftertouch.

● Controllers

	Master volume slider. Pitch bend wheel. Data entry dial.	Continuous sliders x 2. Modulation wheel x 2. LCD contrast control.

● **Panel Switches**

Play (with LED).	Edit (with LED).
Utility (with LED).	Octave x 2 (with LEDs).
Copy.	Store.
Bank select x 4 (with LEDs).	Program change x 16 (with LEDs).
Data entry x 2.	Cursor x 4.
Function x 8.	
Exit.	Enter.

● **Display**

240 x 64 dot backlit liquid crystal display.

● **Connectors**

Front Panel	Stereo headphones.	Breath controller.
Rear Panel	Output x 2 (L and R).	Foot controller x 2.
	Foot switch x 2.	MIDI IN.
	MIDI OUT.	MIDI THRU.

● **Output Level**

Line	2.5 ±2 dBm into 10 kΩ.
Headphones	2.0 ±2 dBm into 33 Ω.

● **Power Requirements**

UL/CSA: 120V, 16W
Europe: 220-240V, 16W

● **General**

Dimensions	914 (W) x 380 (D) x 105 (H) mm.
Weight	12.3 kg

● **Accessories**

Power cable.	BC2 Breath Controller.
FC7 Foot Controller.	Floppy disk x 2.
Owners manuals x 5.	Version 2 sticker.

* Specifications subject to change without notice.

Index

■

Appendix

For details of products, please contact your nearest Yamaha or the authorized distributor listed below.

Pour plus de détails sur les produits, veuillez-vous adresser à Yamaha ou au distributeur le plus proche de vous figurant dans la liste suivante.

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Tel: 01-2859177

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SF-00101 Helsinki, Finland
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BP 70-77312 Marne-la-Valée Cedex 2, France
Tel: 01-64-61-4000

OTHER COUNTRIES
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International Marketing Division
Nakazawa-cho 10-1, Hamamatsu, Japan 430
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ASIA

HONG KONG
Tom Lee Music Co., Ltd.
11/F., Silvercord Tower 1, 30 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: 730-1098

INDONESIA
PT. Yamaha Music Indonesia (Distributor)
PT. Nusantik
Gedung Yamaha Music Center, Jalan Jend. Gatot Subroto Kav. 4, Jakarta 12930, Indonesia
Tel: 21-520-2577

KOREA
Cosmos Corporation
#131-31, Neung-Dong, Sungdong-Ku, Seoul Korea
Tel: 02-466-0021~5

MALAYSIA
Yamaha Music Malaysia, Sdn., Bhd.
16-28, Jalan SS 2/72, Petaling Jaya, Selangor, Malaysia
Tel: 3-717-8977

PHILIPPINES
Yupangco Music Corporation
339 Gil J. Puyat Avenue, P.O. Box 885 MCPO, Makati, Metro Manila, Philippines
Tel: 819-7551

SINGAPORE
Yamaha Music Asia Pte., Ltd.
Blk 17A Toa Payoh #01-190 Lorong 7
Singapore 1231
Tel: 354-0133

TAIWAN
Kung Hsue She Trading Co., Ltd.
No. 322, Section 1, Fu Hsing S. Road, Taipei 106, Taiwan. R.O.C.
Tel: 02-709-1266

THAILAND
Siam Music Yamaha Co., Ltd.
865 Phornprapha Building, Rama I Road, Patumwan, Bangkok 10330, Thailand
Tel: 2-215-3443

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AUSTRALIA
Yamaha Music Australia Pty. Ltd.
17-33 Market Street, South Melbourne, Vic. 3205, Australia
Tel: 3-699-2388

NEW ZEALAND
Music Houses of N.Z. Ltd.
146/148 Captain Springs Road, Te Papapa, Auckland, New Zealand
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