3 Guided Tours

Tour 1:

The Basics

Welcome to the Guided Tours! If you have just met the ESI for the first time, we suggest that you follow these tours until you complete the Guided Tours section. This will get you up and running on the ESI in the fastest possible time. Also, you'll learn some tricks in this section that will come in handy as you play and become more familiar with the ESI. This tour covers how to:

- Load and Save to Floppy Disks
- Select Different Presets within the Bank
- Tune the ESI to Other Instruments
- Transpose the Keyboard

Loading a Bank from Floppy Disks

1. Press the Load button. Position the cursor under the drive number in line two. Select the floppy drive using the Data Entry Control.
2. Insert the first floppy disk of the selected bank and press ENTER. The display will say: Loading Bank. Remember that loading in a new bank erases the currently loaded bank, so always think twice before pressing ENTER to load the bank. (Since ESI banks can be quite large, it may require several floppy disks to hold an entire bank. Multiple floppy disks must be inserted in the proper order. That's why it's a good idea to label them numerically.)

   Play the sounds from the newly loaded disks.

★ Tip: ESI banks usually do not fit on a single floppy disk. To load multiple disk banks, insert the first disk, then replace it with the next disk when prompted by the ESI.

Saving Data to a Floppy Disk

The floppy disk drive can be used to make permanent backups of your work. This can be a time consuming process, especially with large bank sizes and is best handled using a hard disk. If you do not have a hard disk installed in, or connected to your ESI, you can back up your work to floppies. In preparation, you should try to have at least five ESI formatted, double-sided, high-density, 3.5" diskettes on hand.

To Format a Floppy Disk:

Before a floppy disk can be used by the ESI, it must be formatted using the Format Disk function.

1. Activate the Master/Global module.
2. Select Disk Utilities (7), Format Disk (6).
3. Select the floppy using the data entry control and press ENTER. Position the cursor under the drive number in line two. The ESI will normally default to the floppy drive.
4. Insert a floppy disk into the drive and press Yes to format. Formatting a disk will erase all information on the disk.

Once the format is complete, the ESI asks if you want to format another disk. Continue to format at least four more disks

5. The display asks, “Format Another?” Insert the next disk and press Yes to continue formatting. After formatting the last disk, press No.

Saving Data to a Floppy Disk:

1. Press the Save button. Position the cursor under the drive number in line two. Select the floppy drive using the Data Entry Control.
2. Insert a floppy disk and press ENTER. The display will say, “Saving Bank”. If the save requires multiple disks, the display prompts you to insert the next disk. Once the save operation is completed, the display returns to the main screen. If the save required multiple disks, make sure to label them numerically.

Using an External Hard Disk

You may connect an external hard disk, to load and save data, to the ESI external SCSI port. Before connecting any SCSI device, always make sure that power to the ESI and the external SCSI device is turned Off.

To Connect an External Hard Disk Drive

1. Turn all power Off to the ESI and the external drive.
2. Connect the external drive to the ESI using the proper type of SCSI cable. This will most likely be a 50-pin, male to male Centronics type. (Please read the SCSI section in this manual for important information on SCSI connections.)
3. Turn on the external SCSI device BEFORE the ESI.
4. Turn on the ESI.

To Format a Hard Disk Drive

Like a floppy disk, a hard disk must also be formatted before it can be used to store information.

1. Activate the Master/Global module.
2. Select Disk Utilities (7), Format Disk (6).
3. Select the hard disk using the data entry control and press ENTER. Your hard disk should appear in the list of available drives. If the hard disk is not listed, use Disk Utilities, 1 to Mount Drive. After Mounting, the hard disk should appear in the list of available drives. If it does not appear, turn everything Off, then read the SCSI chapter in this manual for possible solutions.
4. Consider the consequences of your action. Formatting the hard disk will erase everything on that disk. The display will inquire if you want to do this.
5. Press Yes to continue the formatting procedure or No to cancel the operation and return to the Module Identifier. Formatting a hard disk can take quite some time, depending on the size of the disk. Take a break.

Saving Data to a Hard Disk

The hard disk drive is used to make permanent backups of your work. Although you can back up your work to floppy disks, the capacity of the floppy drive is too small to be efficient. Only the hard disk (or its equivalent) should be used for sound storage.

To Save a Bank to Disk:

1. Press the Save button. Position the cursor under the drive number in line two. Select the disk drive using the data entry control. Press ENTER.
2. Use the Data entry control to select an Empty Bank. Empty banks are indicated as such, along with their bank number on line three. Saving to a non-empty bank erases the bank that was previously saved there.
3. Press ENTER to save the bank. The display will revert to the preset selection screen.

Loading a Bank from a Hard Disk

1. Press the Load button. The display says: Load Bank, and shows the name and number of the current bank.
2. Select the desired bank. Use the Data Entry Control to scroll through the available hard disk banks. Stop when you find the bank you want.
3. Press ENTER.

- An alternate method of loading a hard disk bank is to press Load, then type in the number of the bank using the numeric keypad. The display will show the current preset number and name. The cursor will flash underneath the first digit. Start playing the keyboard and adjust the master volume Data Entry Control for a comfortable listening level.

To check out the various presets within the bank, read on.

★ Tip: See Master/Global, Disk Utilities and the SCSI section of this manual for important information about hard disk drives.

Selecting Different Presets

The bank you just loaded contains several presets. To call up a new current preset, use the up/down cursor buttons to position the cursor under the preset number, then use the keypad underneath the display. Note that leading zeroes must be entered for preset numbers (for example, type 0, 0 and 2, not just 2, to call up preset 002). Now type the number of the desired preset on the keypad. The entered preset number these will replace the numbers indicated by the flashing cursor.

If you enter a number for which there is no preset, the display lists the entered preset number followed by “Empty Preset.” Try again.

To scroll through the presets available in the bank, turn the Data Entry Control. The various preset names will scroll on the lower display line. When this line shows the desired preset, press ENTER to make that the current preset. This is an alternative preset selection method.

★ Tip: Use the “Mount Drives” utility (Master/Global, Disk Utilities, 1) whenever an external SCSI device does not appear in the list of available devices.

Yet another method is to use the left and right cursor buttons to increment or decrement through the presets. This method allows you to arrange your presets in the proper order, then access them sequentially with a single press of a button.

When you're ready to check out some more sounds, proceed.

Tuning the ESI to Other Instruments

Select the Master/Globals module. Choose sub-module Master Tune (1). This function demonstrates how ESI uses the Data Entry Control to adjust a parameter. Play the keyboard while adjusting the Data Entry Control to change the overall tuning.

Transposing the Keyboard

Refer to the Transpose button. While holding the transpose button, play a key on the keyboard in the lower two octaves. The second C from the bottom (C2) corresponds to normal or no transposition. All transpositions are based from this C2 key. For example, pressing the G key above C2 will transpose the keyboard up a perfect fifth. If the keyboard has been transposed, the transpose LED will stay lit. Press and hold the transpose button while pressing C2 to return to normal transposition.

Tour 2:

Selecting Zones

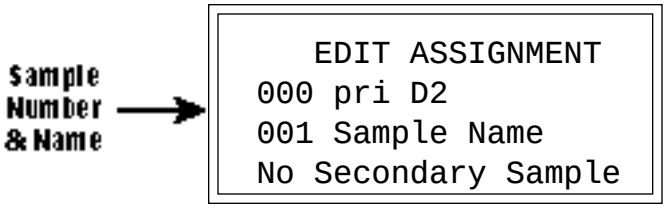
The Current Sample & Current Zone

The ESI has two modules dedicated exclusively to processing samples within a preset: Sample Management and Digital Processing. Each sample stored in a bank can be processed by the Digital Processing module independently. Therefore, we need a way to specify the current sample, which is the individual sample to be processed.

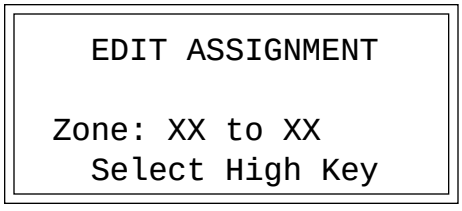
The concept of the current sample is important. To process one sample out of a preset, select one sample to be the current sample, and process it.

To Identify Which Keyboard Keys Belong to Which Sample:

1. Activate the Preset Definition module.
2. Select Edit Assignment (2).



3. Play a key on the keyboard. Line two shows the preset number and the last key pressed. Line three shows the primary sample assigned to the key, and the fourth line shows the secondary sample, if any, assigned to the key. As you run your fingers up and down the keyboard, the primary and or secondary sample numbers will change indicating the keyboard range of those samples. You can also move the Data Entry control knob to show you the sample boundaries.
4. Choose a zone and press ENTER. The display now shows the range of the current zone on the upper line of the display. Don't play any keys but press ENTER again. Now the display shows something like this, where XX is the name of the key (such as D2).



Specifying the Zone of the Dynamic Processing Module

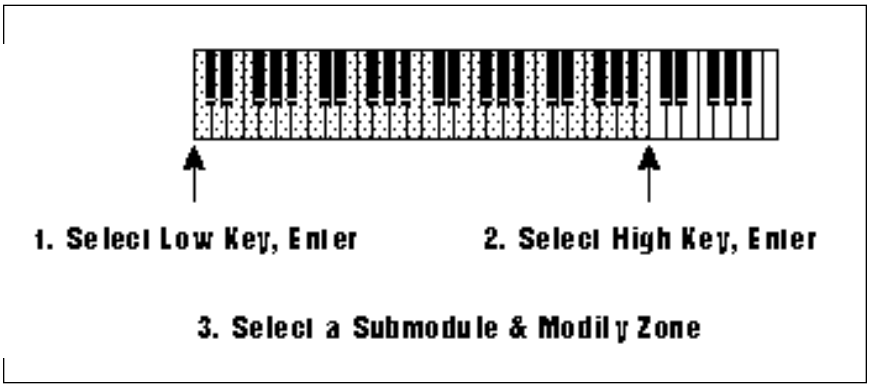
Zones are sections of the keyboard which can be selected to apply Dynamic Processing parameters or to be copied, erased or loaded from another preset. A copied zone contains samples as well as dynamic parameters. A zone can be one key or the entire keyboard range.

Now that we know how many samples there are in the preset, and the range covered by each sample, let's specify a range of keys (defined as a "zone") to be altered by the Dynamic Processing Module. Refer to Tour 3, Dynamic Processing for information about dynamic processing. This section describes how to specify a zone to be affected, starting with the lowest key.

1. Activate the Dynamic Processing module.
2. Choose Select Zone (0).
3. Specify the range of the zone. The display instructs you to “Select Low Key.” Press the lowest key on the keyboard, then press the ENTER button (whose LED is now flashing). The display then instructs you to “Select High Key”. Press a key on the keyboard near the top of the keyboard, then press ENTER. The display now shows the current zone and prompts you to “Select a Submodule”.

At this point, you can begin modifying the sounds in the bank with the Dynamic Processing module. The assigned current zone will remain as is until you either change the current zone assignment, change presets, or load another bank. If you switch between modules, the current zone remains as assigned (unless you select the Digital Processing Module, which will be a subject of a later tour).

Before proceeding, look over Dynamic Processing, 0. Select Zone to help reinforce what you've learned. Now that you know what a zone is and how to specify it, we've reached the end of this tour. Feel free to come back any time to refresh your memory. In the next tour, we'll see how to modify samples with the Dynamic Processing section.



Any range of the keyboard can be a zone. Select the low and high keys which define the zone, then select the Dynamic Processing parameter to be modified.

Tour 3:

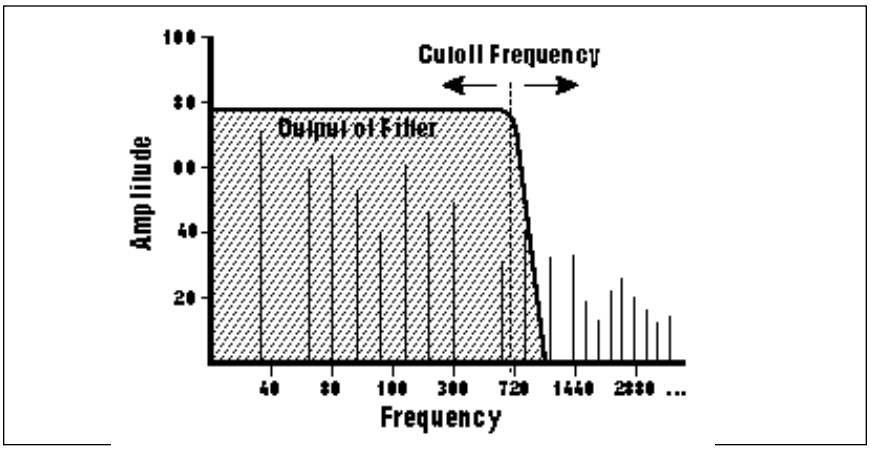
Dynamic Processing

The Dynamic Processing module consists of several interesting sound processing functions. Let's start with the Filter and VCA sections, as they are among the most important.

The VCA function contains a Voltage Controlled Amplifier that controls the amplitude envelope of a sound. The filter function contains a Voltage Controlled Filter that controls the timbre of a sound. (Note: The voltage controlled filters and amplifiers are actually implemented digitally.)

Working with the Filter

A filter is a device which allows you to remove certain components of a sound depending on its frequency. For example, a Low Pass Filter, like the one in ESI, lets the low frequencies pass and removes only the high frequencies.



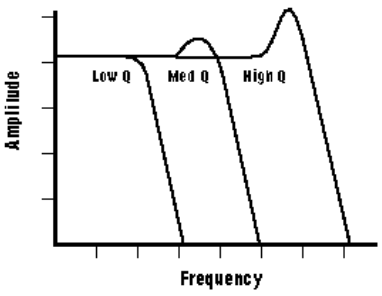
The point at which the frequencies begin to be cut is called the Cutoff Frequency (or Fc for short). A filter that lets only the high frequencies pass would be called a High Pass filter. Using a filter, we now have a way to control the harmonic content of a sampled sound. As it turns out, a low pass filter can simulate the response of many natural sounds.

For example, when a piano string is struck by its hammer, there are initially a lot of high frequencies present. If the same note is played softer, there will be fewer of the high frequencies generated by the string. We can simulate this effect by routing the velocity of the keyboard to control the amount of high frequencies that the low pass filter lets through. The result is expressive, natural control over the sound.

The VCF envelope generator is used to control the cutoff frequency of the low pass filter. This allows the frequency content to be varied dynamically over the course of the note. Dynamic filtering coupled with different samples makes for endless possibilities in the final sound.

Another control on the low pass filter is called Q or resonance. Turning up the Q of the filter tends to emphasize the frequencies around the cutoff frequency. In terms of sound, frequencies around the cutoff will tend to "ring" with high Q settings. If the filter is swept back and forth slowly with a high Q, various overtones will be "picked out" of the sound and amplified as the resonant peak sweeps over them. Bells and gongs are real world examples of sounds which have a high Q.

★ Tip: When the filter cutoff is set to 0 Hz, the sound will be completely cut off. The initial filter cutoff and all filter Fc modulators ADD algebraically to determine the actual Fc. If you are not getting sound, adjust the initial Fc or reduce the amount of modulation. Careful adjustment of the filter parameters is the secret of getting great sounds.



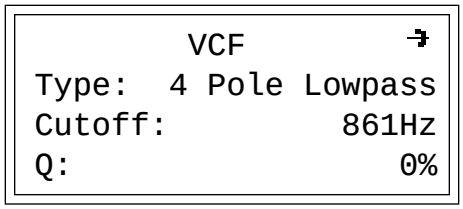
Turning up the "Q" will emphasize the frequencies around the cutoff point.

You could activate the Filter Setup function directly by keying in 3. However, let's investigate another way to select the filter function. Move the Data Entry Control to catalog the various Dynamic Processing functions. When the display shows function 3. VCF, press ENTER.

To Change the Filter Cutoff Frequency:

Increasing the cutoff frequency of a lowpass filter makes the sound brighter, decreasing the frequency makes the sound duller.

1. Activate the Dynamic Processing module, select VCF (3), and select the 4 Pole Lowpass filter. The display should look something like this:



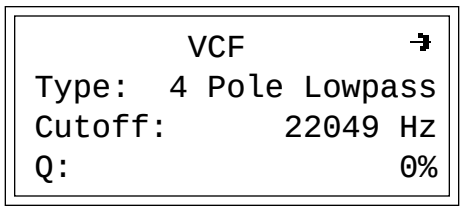
Play with the up and down cursor buttons. Note how you can move the cursor under the various parameters to be adjusted. For now, move the cursor under the Cutoff frequency on line three.

2. Select the filter cutoff frequency. To do this, vary the Data Entry Control. Note how the numbers to the right of cutoff change. Lower numbers mean a lower filter cutoff frequency (less high frequencies). Higher numbers mean a higher filter cutoff frequency (more high frequencies). Observe how only the notes within the current zone are affected by the Data Entry Control setting.

★ Tip: Although we are changing the sounds in the bank, the sounds on the disk remain unchanged. This is because we haven't saved the bank to disk. You can fool around with the bank sounds as much as you want without having to worry about altering the original sounds on the disk.

To Change Filter Q:

Increasing the Filter Q emphasizes the frequency at the cutoff point. See the diagram on the previous page.

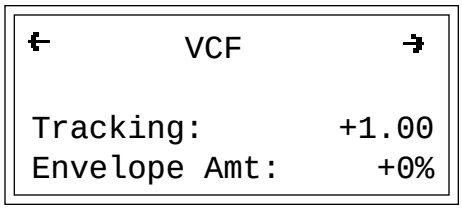


1. Move the cursor to the Q% on line four. Vary the Q using the data entry control and note the sharpness of the sound changing. Higher numbers give a sharper sound. Again, this affects only the range of notes covered by the current zone. In order to really hear the effect, set the Q at about 60 and proceed.
2. Move the cursor back to Cutoff on line three. Vary the data entry control. Note how this produces a sort of wa-wa effect. Remember, you have to re-trigger the key to hear the results of changing the Q.
3. Set Cutoff to 200 Hz and Q to about 50. The range of notes covered by the current zone should sound muted.

To Change the Filter Cutoff Envelope:

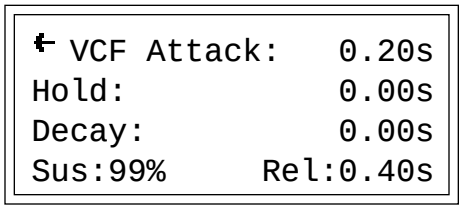
Enabling the envelope generator allows the envelope to control the cutoff frequency automatically.

1. Select page two by pressing the right cursor arrow.



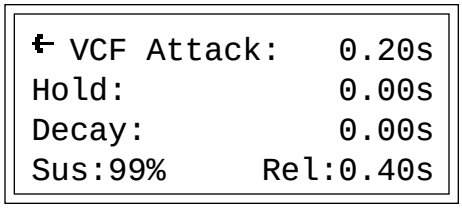
Investigate the effects of envelope control over the filtered sound by moving the cursor to the Envelope Amount. Use the Data Entry Control to set a value of +40%. This allows the envelope to control the filter cutoff frequency.

2. Select page three by pressing the right cursor.



Move the cursor under the Attack time on line one and vary the Data Entry Control. With larger values, it will take more attack time for the filter frequency to go from lowest to highest cutoff frequency. Vary the various envelope parameters, and observe the effect these changes have on the sound.

To check out inverted envelopes, set the envelope parameters as follows:



Play and hold a chord. This is a non-inverting envelope in the sense that the envelope increases the filter cutoff frequency above the initial cutoff. To select an inverting envelope where the cutoff decreases below the initial cutoff, press the left cursor arrow.

```
←        VCF          →

Tracking:          +1.00
Envelope Amt:        0%
```

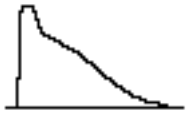
3. Move the cursor to Envelope Amount and select -40% to invert the envelope. The envelope effect is not all that noticeable when you play a chord. This is because the envelope forces the cutoff frequency in a negative direction. Since the cutoff frequency is already fairly low, it can't go that much lower. Now go back to the cutoff frequency and increase it. The effect will be far more noticeable since there will be more range available for the negative going envelope excursion.

If you feel like experimenting, play with the Tracking control to affect the way the filter frequency tracks the keyboard pitch.

4. Before proceeding with the tour, reset the filter parameters to their default settings. Set Cutoff Frequency to 22049, Q to 00, Envelope Amount to +00, and Tracking to 1.00. Set the Envelope Attack to 0.00s, Hold to 0.00s, Decay to 0.00s, Sustain to 100%, and Release to 0.49s. After entering these values, press ENTER to return to the Module Identifier.

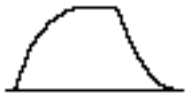
Changing the Volume Envelope with the Voltage Controlled Amplifier

The way the volume of a sound changes over time determines how we perceive that sound. For example, a bell struck with a hammer is instantly at full volume, then slowly dies away. A bowed violin sound fades in more slowly and dies away slowly. Using the VCA envelope generator, you can simulate different types of instrument volume envelopes by programming them appropriately.

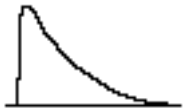


Piano

Organ



Strings



Percussion

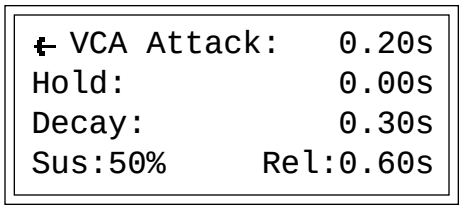
The generalized envelope shapes of a few types of sounds are shown above.

In preparation for the following experiments, let's change the Current Zone to include the entire keyboard.

1. Select the Select Zone Submodule (0). Move the data entry control to the bottom of its travel and press ENTER. Now move the data entry control to the top of its travel and press ENTER again. You have now specified the entire keyboard as the current zone.
2. Select the VCA function (2). The display shows:

```
          VCA          →
Level:               100%
Pan:                 + 0%
L          |           R
```

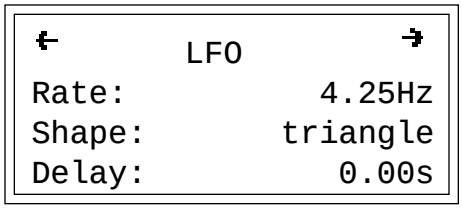
3. Select the next page of the VCA controls with the right cursor.



Move the cursor under the various envelope parameters and observe how different settings affect the sound. Before moving on, make sure you have a sound that is fairly sustained with little or no envelope attack time.

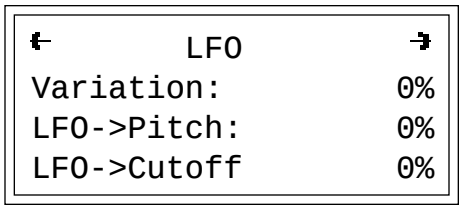
Other Dynamic Processing Options

1. Select Dynamic Setup (1). Note how the tuning, delay, and chorus controls affect the sound.
2. Add some Low Frequency Oscillator effects. Select the LFO function (4). The display shows:



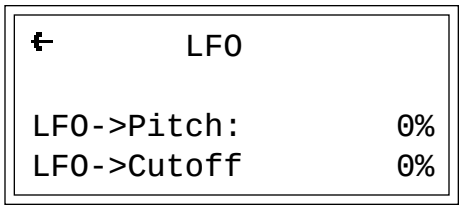
If the LFO rate is different, change the rate so that it is about 4.25 Hz.

3. Use the right cursor/page button to move to the next page of the LFO controls. The display will show something like this:



Position the cursor under each display option. Vary the Data Entry Control and observe how this affects the sound. Adding LFO to Cutoff might not sound all that noticeable. If you want a more obvious effect, bounce back to function 3. VCF and set the Cutoff to about 200 Hz and Q to about 50. This should make the LFOs effect more noticeable.

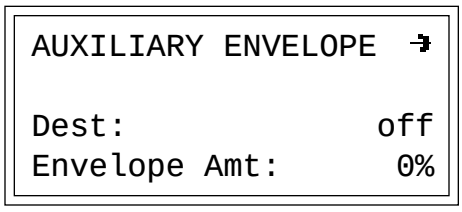
4. Select page three of the LFO controls. The display will show:



If the LFO settings aren't to your liking, use the left cursor/page button to change the LFO rate, delay, and variation.

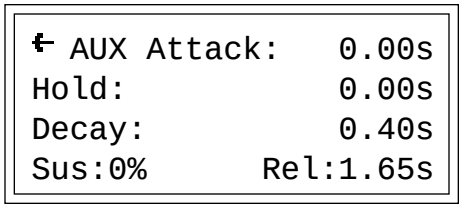
The Auxiliary Envelope

1. Select 5. Auxiliary Envelope. The display shows the first page:



Move the cursor under Destination on line two, and use the Data Entry Control to scroll through the auxiliary envelope destinations. Select Pitch as the destination, then set the Envelope Amount to -50%.

2. Select the next page using the right cursor. Set the parameters so that the display looks like this:



Now play the keyboard. Since we are using an inverted envelope, notes will bend up to pitch and then hold there. This is an effect common in many natural sounds.

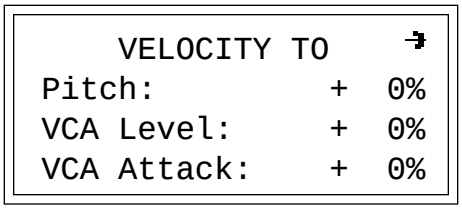
Vary the various envelope parameters, and observe the effect these changes have on the sound.

Understanding Velocity

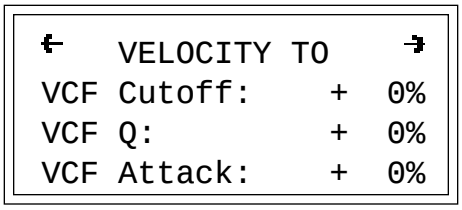
Velocity parameters control the volume of a preset using the force of a keystroke. This section describes how to set the velocity.

By now you probably have a pretty messy sound as a result of all these exercises. Let's start with a clean slate.

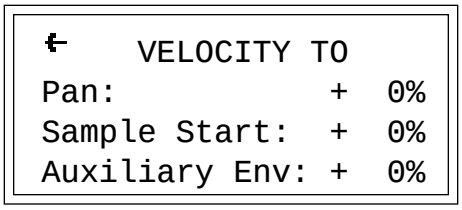
1. Press the Load Bank button, then ENTER to re-load the bank. (Feed floppies as directed.)
2. When the bank is loaded, activate the Dynamic Processing module. You do not need to specify the current zone. ESI sets the entire keyboard as the current zone by default!
4. Select Velocity To (6). The display will look something like this:



Moving on to the next velocity page we see:



Moving on to the last velocity page we see:



★ Tip: Remember that the velocity-to-envelope Attack setting interacts with the initial envelope Attack settings. Call up the envelope Attack parameters for the filter and VCA and see how different values interact with different velocity values.

Move the Data Entry Control to select different values, and note the effects. With positive velocity sent to the VCA, the ESI plays softer as you play softer. In other words, the ESI equates harder play with the nominal volume setting and goes down from there as you play softer.

Continue to move the cursor to the other available parameters and vary the Data Entry Control. Notice that the filter cutoff frequency lowers as you play softer. The amount downward change is dependent on the value in the display.

Filter Q is affected differently than Level or Filter Cutoff. It raises from the initial setting as you play harder. Also, note that velocity can be set to affect Q inversely. In other words, if the filter is set to a high Q setting, playing harder on the keyboard will lower the Q.

Tour 4:

Realtime Control Programming

Ever wanted to add vibrato to a grand piano? Or bend its pitch? The Realtime Control functions in the Preset Definition module can do this, and lots more.

Pitch-Bending

First, let's check out pitch-bending. Pitch-bend can be enabled or disabled for any zone within a preset. Let's have pitch bend affect only the lower half of the keyboard. Activate Dynamic Processing, 0. Select Zone. Specify the upper half of the keyboard as the current zone.

Next key in Dynamic Processing, 8. Realtime Control Enable. Use the cursor/page buttons to see a list of modulation destinations. Pitch will be set to On. Press Off, and like magic, you can now pitch-bend only the lower half of the keyboard. If modulation does not seem to be affecting a zone, make sure that modulation is enabled.

Want to change the pitch bend range? Activate the Preset Definition module, select Pitch Bend Range (7).

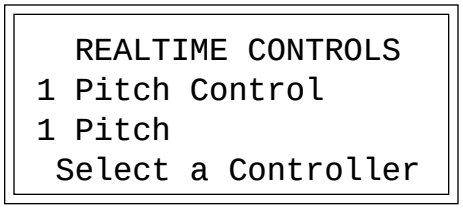
Modulation Wheel Destinations

The ESI offers two modulation options: Pre-programmed, which adds a constant, selectable amount of modulation, and Realtime, where the player adds in modulation by using one of the wheels or other controllers.

Each wheel on your MIDI controller can be assigned to a particular destination. For example, if the left wheel is assigned to pitch, then rotating the wheel bends pitch. If assigned to the filter, rotating the wheel varies the cutoff frequency.

Let's set up for the next part of the tour. Choose preset 01 as the current preset if it is not already selected. Activate the Dynamic Processing module and assign the entire keyboard as the current zone if necessary. Select Realtime Enable (8). Use the cursor/page buttons to select On for all of the enable options. This will make it easier to hear the results of the next series of experiments.

Now activate the Preset Definition module, 0. Realtime Controls. To make “live” playing as simple as possible, the display works somewhat differently for this module. The display shows:



Use the Data Entry Control to scroll through the available Realtime Control sources and their currently assigned destinations.

Control Sources

1: Pitch Control
2: Mod Control
3: Pressure Control
4: Pedal Control
5: MIDI A Control (can be assigned to any MIDI controller #)
6: MIDI B Control (can be assigned to any MIDI controller #)
7: Footswitch 1 (on your MIDI controller)
8: Footswitch 2 (on your MIDI controller)

Modulation Destinations

! Caution: Only one controller can be assigned to a destination. For example, if you assigned mod. control to VCF cutoff and then assigned pressure to VCF cutoff, the ESI would automatically turn off the mod. control to VCF cutoff routing.

0: Off
1: Pitch
2: VCF Cutoff
3: VCA Level
4: LFO->Pitch
5: LFO -> Cutoff
6: LFO ->VCA
7: Pan
8: Attack
9: Crossfade
10: VCF Note-On Q

Footswitch Destinations

0: Off
1: Sustain
2: Cross/Switch
3: Unused 1
4: Unused 2
5: Unused 3
6: Unused A
7: Unused B
8: Preset Increment
9: Preset Decrement

Each of the modulation destinations (0-10) can be controlled by control source via data sent over MIDI. Each of the footswitch destinations (0-9) can be controlled by sources 7 and 8. Destinations 3-7 are from the EIII.

You'll be happy to know that Realtime Control settings are memorized for each individual preset, so if desired, each preset can react to the Realtime controls and MIDI controllers in different ways.

Selecting a Control Source and Destination

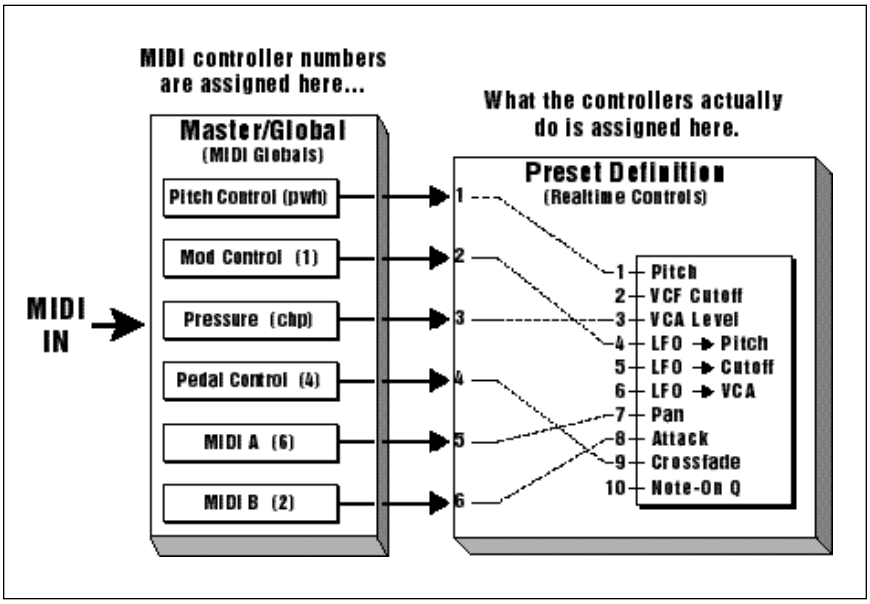
1. Activate the Preset Definition module.
2. Select Realtime Controls (0).
3. Select Pitch Control as a control source. Move the cursor down to the next line. The display will direct you to "Select a Destination".

The left wheel should be assigned to 1: Pitch. Vary the wheel and check that the keyboard pitch is indeed affected. If sections of the keyboard are not affected, check that pitch control is enabled in the Dynamic Processing module, Realtime Enable (8) submodule.

Now try assigning the pitch control to 2: VCF Cutoff. Rotating the wheel towards you should produce a more muted sound.

If you feel adventurous, check out the other control destinations. Note that if you select a destination that is already specified for one of the other control sources, the old assignment will be de-selected and that control source will be turned off (0).

Think about it for a bit... the left wheel can control a destination, the right wheel can control a different one (as can a MIDI pedal). There are other MIDI control possibilities as well. These assignments can be different for each preset, and particular controller destinations can be disabled for different presets and samples. We're talking versatility here, so if you feel like taking the next couple of hours and checking out all the possibilities, by all means, do so!



The Realtime Control screen is a digital patchbay where performance controls are routed to the various synthesizer parameters.

Oh yes, and there are footswitches too. But before experimenting with the footswitches (sources 7 and 8), we need to understand the difference between looped and unlooped sounds. Basically, a sustain looped sound is one where a portion of the sound is put into an infinite repeat loop for as long as you hold down the key. This is similar to the infinite repeat function on digital delay lines. Looping allows you to sustain a normally non-sustaining sound for as long as you like. An unlooped sound is not artificially sustained, and therefore lasts its normal length.

Keeping this in mind, refer to the Preset Definition module, 0. Realtime Controls, footswitch destinations 0-9. (Destinations 3-7 are EIII functions which were not implemented in the ESI. The numbers were retained to maintain compatibility.) Assign various functions to the footswitches. You will find that some sounds lend themselves to the sustain function better than other sounds, and we heartily encourage you to experiment.

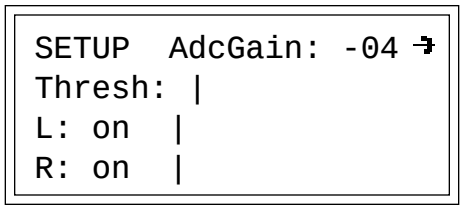
Tour 5: Sampling

Sampling involves more than just sticking a microphone in front of something—sampling is an art. This guided tour gives you the basics, and also lays the groundwork for the guided tour of the Digital Processing Module. In preparation for this guided tour, please read section 5, Sample Management module.

Sampling

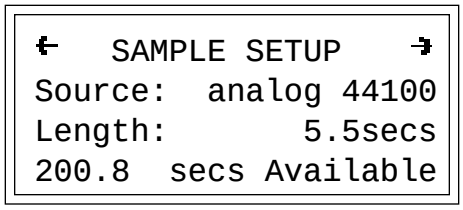
For this guided tour, simply connect a microphone (or another audio source such as a CD player) directly to either the left or right sample input.

1. Activate the Master/Globals module.
2. Select 3. Erase Bank. Answer Yes to the display's query. This clears out the memory, which gives us maximum sampling time.
3. Activate the Sample Management Module, 5. Setup. The display shows:



If you are sampling in mono, move the cursor to the input that you are not using and turn it off with the On/Off buttons. Otherwise, leave both channels on.

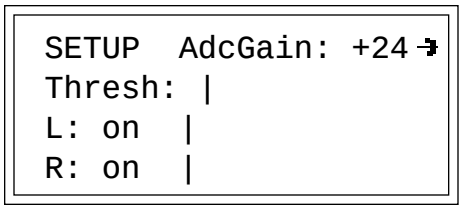
4. Use the right cursor/page button to view the next page of the Setup section.



Check the available sampling time. This will vary depending on how much memory you have in your ESI.

5. Change the source using the data entry control for analog sampling. Set the source to either Analog 22050 Hz or Analog 44100 Hz.

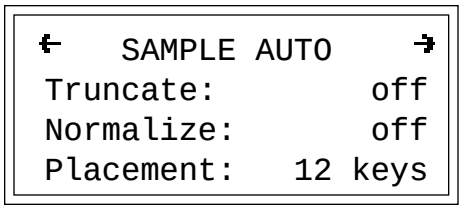
6. Use the left cursor/page button to go back to the first page.



★ Tip: The optimum gain level setting for ESI is +00. For high-quality sampling, use an external microphone preamplifier such as the one built into your mixer. The mic preamp in the ESI, while acceptable for some applications, is not designed to be used for ultra-critical sampling.

Speaking into the microphone, you should see the VU meter move, indicating that the ESI is receiving signal. Place the cursor on line one of the display and use the Data Entry Control to adjust the input gain. Adjust the gain so that the peak bar comes close to the extreme right side without actually reaching it.

7. Go on to the third page of Sample Setup by pressing the right cursor button twice. The display shows:



Set the automatic parameters as shown. The auto-placement parameter determines where the samples we are going to take will be automatically placed. In this case, with auto-placement set at 12 keys, the first sample will be placed on the lowest octave (C1 to B1), the next sample on the next octave up (C2 to B2), and so on.

! Caution: When sampling in stereo, the Threshold circuit only reads the left channel to initiate sampling.

8. Go back to the first page and set the Threshold using the data entry control. Set it up a few bars from the bottom so that the ambient room noise does not cause the ESI to trigger falsely. Press ENTER to return to the Module Identifier.
9. Select Arm Sampling (7). You're ready to sample! Speak into the microphone. As soon as the level exceeds the threshold, the display will say "Sampling." Chat away freely. If you run out of inspiration, press Escape to stop sampling.

More Sampling

Continue to experiment with sampling. Try setting a particular sample length, or using forced sampling instead of threshold-sensitive sampling, or assigning the sampled sound to other portions of the keyboard. Also, practice terminating the sampling process.

Let's try another sample. Notice that the ESI, will overwrite the existing sample unless you exit and re-enter the sample module. The new sample is automatically assigned to the next higher octave. This assignment can always be modified in the Sample Management module, 6. Place Sample.

Saving the Sample

To save the sample as part of a preset, de-activate the Sample/Management module. Since memory was cleared prior to sampling, the ESI created a preset (00) called “Untitled Preset.” This is the preset that holds your new sample. Had you sampled into a bank with existing presets, the sample would have been stored with the current preset.

Remember, this guided tour is intended simply as an overview to give you a feel for the sampling process. Good sampling requires skill, patience, and above all, practice!

Tour 6: Digital Processing

Background and Setup

Digital processing allows you loop samples stored in the bank. In this guided tour we'll learn how to do this. First, though, we need to create a couple of samples with which we can practice.

1. Clear the bank of memory. Use the Master/Globals module, 3. Erase Bank.
2. Make a sample of yourself speaking. Following the directions in Guided Tour No. 5, select a four second sample length (Sample Management module, Setup). After setting the threshold and other parameters, arm sampling and start jabbering.
3. Take another four second sample. De-activate, then re-activate the module to sample. You will not have to do any setup — just hit 7. Arm Sampling, and talk away. You will then have two samples suitable for experimentation.
4. Assign your samples to a keyboard zone. Use 6. Place Sample.

Choosing the Current Sample

Activate the Digital Processing module. This module acts upon the current sample. To select another sample, press 0. Select Sample.

Truncating A Sample

Use the Digital Processing module, 3. Truncation, to truncate the ends off samples. Vary the Data Entry Control as you play a key in the range assigned to the current sample. Notice the start of the sample will disappear. Use this technique to get rid of silence at the start of a sample or for effects. Move the cursor using the up and down arrow keys to the End display. Use the Data Entry Control to truncate any undesired part from the end of the sample.

When you are satisfied with your truncating efforts, press ENTER. The ESI will automatically make a backup of the sample on the hard disk, (if you have one connected) in case you decide that you don't like the truncation after all.

If desired, change the current sample (Digital Processing, 0. Select Sample) and experiment with truncating the other sample you took.

Looping A Sample

If you haven't yet done so, activate the Digital Processing Module and assign the current sample.

1. Select 2. Loop to graphically see how looping affects a sample. Since the loop function is on, if you play and hold a key in the current sample, it will play indefinitely.
2. Try modifying the loop. Adjust the Start and Length values. Note that if the length equals the full length of the sample, you will not be able to set a new start point. Reduce the length, and you should be able to adjust the start point. For practice, try looping individual words or sentence fragments.

A Practice Sampling Session

Plug a microphone into the rear panel left Sample Input jack (or through a DAT into the optional digital I/O).

1. Erase all memory (Master/Globals, 3. Erase Bank).
2. Set the Sample Source for either Analog or Digital sampling (Sample Management, 5. Setup). "Source" is located on the second page in the Setup submodule. If you are using the optional digital inputs, match the sample rate to that of your DAT recorder or the sample will play back at the wrong pitch.
3. Set the level (Sample Management, 5. Setup). Sing Ahhhh into the microphone. (This is an easy sound to loop.) The VU level should not quite reach the top of its range. Adjust the gain using the Data Entry Control, until a good level is attained.
4. Set the threshold (Sample Management, 5. Setup). This should be set about five or six bars from the left. When the input sound exceeds this level, recording will start.
5. Select 7. Arm Sampling, to arm the sampling process. OK, now get ready to sing Ahhhhh.
6. Sing Ahhhhh! When you are out of breath, press ESCAPE to stop sampling.
7. Play the keyboard in the assigned range to hear the results. The sound should default to the lower keyboard range, C1-B1. The original pitch of the sample should be located at G1.
8. Truncate the silence off of the beginning and end of the sound. Activate the Digital Processing module. The ESI will default to the only sample in the unit, which is the one you just made.
9. Select 3, Truncation to enable the truncation function. Adjust the start and end points by moving the Data Entry Control to remove any silence or unwanted portion of the sound. You must play the keyboard after you move the Data Entry Control in order to hear the results of the Data Entry Control change. Press ENTER to exit truncation.
10. Activate the Digital Processing module, 2. Loop. Now we are ready to loop the sound.

To loop, first move the Data Entry Control to make the loop length about half a second long. Next, move the start point into the sustained portion of the ahhh sound so that the ticking sound becomes softer. The idea is to loop the “hhh” portion of the “ahhh” but not the “a “ part. The loop length can be adjusted so that it matches the rhythm or wavering of the sound. When you get a fairly good loop, press ENTER. The display says: “Auto Correlate? Y/N.” Press Yes. You now should have a fairly good loop. If not, adjust the start point and again Auto Correlate. It takes practice, but you'll get it. That's it! Feel free to play around with other digital and dynamic processors such as the filter, chorus and LFO.

Basically, these are the steps you will go through every time you have a sampling session:

- Take the sample
- Truncate the sample
- Loop the sample, if desired
- Assign the sample to a keyboard position (Place Sample)
- Continue to refine and make presets

Of course, you will probably develop your own order and style of sampling techniques. The purpose of this guided tour is to acquaint you with the concept of looping. There is much more to the subject than simply fooling around with looping words from a spoken sample. Please remember too that looping is a very complex process which requires a great deal of practice to achieve proficiency. The best way to fully understand looping is to experiment with a variety of signals.

Sample Placement

For sound effects or drums, try setting the Sample Auto Placement (Sample Management, 5) to white keys. This is a good way to keep your samples organized when doing rapid-fire sampling. Instead of using the Auto Sample Placement feature, you can set up your own placements before or after sampling. To place a sample, refer to Sample Management, 6. Place Sample.

- Select the sample.
- Select primary or secondary layers.
- Select the original key.
- Select the low key of the range.
- Select the high key of the range.

You can create a preset template by erasing the samples from a favorite preset, then saving the bank. As you take new samples, they will automatically be mapped onto the keyboard with Dynamic Processing parameters.

Time To Save?

Maybe you haven't created any masterpieces during these experiments, but maybe you have. If you want to save a preset to disk, by all means do so.

More Magic…

Contestants, it's time to play, The Backwards Talking Game!
In preparation, first erase all memory (Master/Globals, Erase Bank), then take a sample of your voice speaking your name.

1. Activate the Digital Processing Module.
2. Select Digital Tools I (7), Reverse (3). The display shows:

```
REVERSE secs samples
Start:   0.00  00000
End:     1.62  35670
Size:    1.62  35670
```

3. Press ENTER to reverse the sample. The display defaults to the entire sample. Play the sample back. Hey, it's backwards! Now practice saying your name backwards until you feel that you have learned it well. Think you've got it, do you? OK, now sample yourself saying the reversed version of your name, and then of course..... reverse that! We guarantee loads of fun and maybe some surprising insights.

Cut and Paste

This exercise details how to cut portions out of a sample and paste it into another sample or even the same sample at a different location..

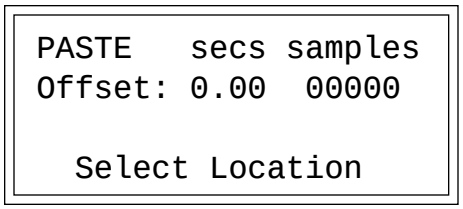
1. Erase all memory using Master/Global, Erase Bank (3).
2. Take yet another sample of your voice. Set the sample length to about 1.2 seconds. This time say, “Cut and Paste”. Pronounce the words clearly and distinctly.
3. Activate the Digital Processing module, Cut Region (5). We are going to rearrange this sample phrase to say: Paste and Cut.
4. Select the sample you just created. Use the Data Entry Control to choose the sample, then press ENTER. The display shows:

```
CUT     secs samples
Start:  0.00  00000
End:    1.00  44096
Size:   1.00  44096
```

The original pitch of the sample will appear on key C4, the fourth C up from the bottom.

5. Move the cursor under End on line three. Adjust the Data Entry Control so that only the word “cut” is heard. Press ENTER. The display will inform you that the ESI is backing up the sample, and then will return you to the module identifier.

6. Select Paste Region (6). Use the Data Entry Control to select the sample to which you want to paste. The display shows:



Adjust the offset past that “tt” sound of the word paste. Again use the left and right cursor keys once you get close. Press ENTER. The sample should now say, “and paste, cut”.

7. Go back to Cut Region (5). Cut out the word “and” using the same procedure you used for “cut”.
8. Adjust the offset past the “tt” sound of the word paste.
9. Back in Paste Region (6), use the left and right cursor keys to adjust the offset. Once you get close, press ENTER. The sample should now say, “paste and cut”, although it might sound a little strange. That's the basic technique. Practice makes perfect.

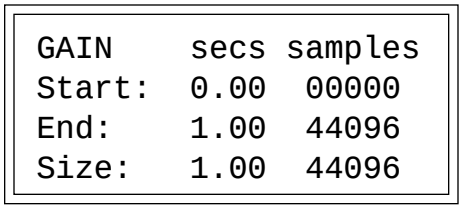
Now that you have gotten a feel for cut and paste, make up your own experiments using the various other options such as mixing and crossfading.

Gain Change & Taper

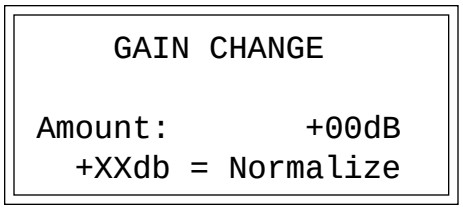
Sample your voice saying “Ahhh” for one second. This time when you sample, set the Gain so that the signal only reaches about halfway up the VU meter at its peak. Also make sure that the sample time runs out before you finish singing so that the sample is cut off prematurely. We're intentionally creating problems so that we can fix them using Taper and Gain Change.

First, let's boost the gain to full level using one of the digital tools, Gain Change. The term for this operation is called normalization. (Don't worry, it won't make you or your samples normal.)

1. Activate the Digital Processing module.
2. Select Digital Tools I (7), Gain Change (2). The display shows:

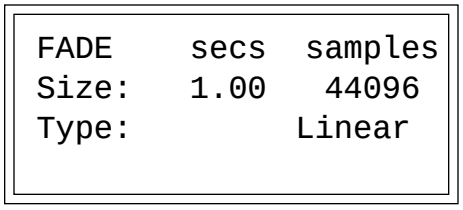


We want to normalize the entire sample (which is already selected), so just press ENTER. The display now shows:



Where XX is the amount of gain needed to achieve normalization or full level.

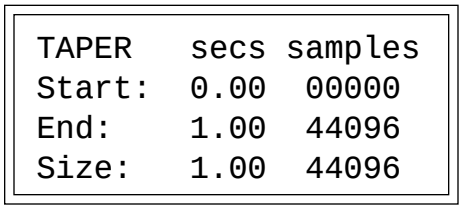
3. Set the amount of gain so that it matches the normalization reading. Press ENTER to accept the selection. The display shows:



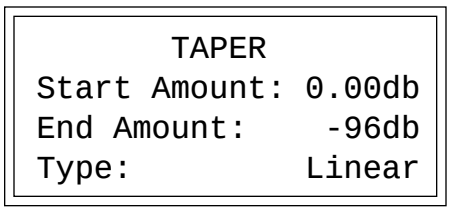
4. We don't want a fade in this example, so simply press ENTER to affect the gain change.

The sample should now be at a higher volume. Note that you can use the Digital Processing module, Undo (9) to cancel the effects of Gain Change. Use this feature to further experiment with different Gain Change settings.

5. Select Taper (1). Now let's taper the end of the sample so that it smoothly fades out instead of ending in a thump. The display shows:



6. Move the start point to about 0.70 seconds and press ENTER. The display changes to:



The Start and End amounts on lines two and three are already at the correct settings. There will be no attenuation at the Start point, tapering to full attenuation at the End point of the sample.

7. Move the cursor to Type on line four. Select Exp 2, then press ENTER. The sample should now smoothly fade out instead of ending abruptly. And remember that Digital Processing, 9. Undo will cancel the effects of Taper. You can use this feature to further experiment with different Taper settings.

Pitch Change

Finally we're getting to the fun stuff! Pitch Change allows you to change the pitch of a sample without changing the time relationship between events.

1. Take a sample of your voice speaking… anything.
2. Activate the Digital Processing module.
3. Select Submodule 0, Select Sample. Since you may have multiple samples in memory at this point. Use the Select Sample function to pick the one you want to Pitch Change. Use the data entry knob to select the samples, then press ENTER. Each sample will be placed over the entire keyboard range.
4. Select Digital Tools II (8), Pitch Change (5). The display shows:

★ Tip: If you really want to mutate a sample, repeatedly tune the pitch up and down. Try the same thing using Time Compression.

```
     PITCH CHANGE
Tune:         -700cts
Type:           mid-2
```

Set the Tune control to about +700 cents (a perfect fifth up). Set the Type to mid-2. The pitch change Type is not critical, but mid-2 seems to work well for voice. Press Enter to begin the pitch change.

If you have a hard disk connected, the ESI will automatically back up your sample before processing it. If you don't like the resulting pitch change, press Digital Processing, Undo.

Tour 7:

Managing the Bank

The following functions don't necessarily do terribly glamorous things, but they are exceedingly useful for managing your banks of sound data. This guided tour acquaints you with these utilities. To see how they work, load any bank from the hard disk.

Erasing A Preset

Activate the Preset Management module, 3. Erase Preset and erase preset 01. Don't worry, it will just be gone from the bank, not the disk. And we can get it back anyway by...

Loading A Preset

Refer again to the Preset Management module, 1. Load Preset. This time load preset 01. Now it's back in the bank again.

This is the basic method for creating a bank with presets from other banks. The bank can only be saved as a whole. Therefore, individual presets are loaded into the bank, and when the bank is arranged to your specifications, it is then saved to disk.

Other Bank Management Functions

The other bank management functions, including copy, rename, create, and preset size, are pretty much self-explanatory. Refer to the Preset Management module, 4. Copy Preset, 2. Rename Preset, 5. Create Preset, and 6. Preset Size. Try these various functions to get a feel for how they work.

On Your Own…

The proceeding guided tours cover only the basics. To cover every possibility of how to use the ESI would drown you in words. It's better that you just start playing! The best way to learn about the ESI is to power up and dive right in. Remember, you can experiment as much as you want on stuff in the bank. You have to actually save the bank to disk in order to alter the contents of the disk. In case you're a nervous type, you can even lock the disk (see Disk Utilities in Chapter 4, Master/ Global for more information).

Try to spend some time not playing, but rather practicing, with the instrument. After you're a bit more familiar with the ESI, read the manual and delve deeply into a particular module or function. The ESI is like an audio construction set, where sounds can be captured, held, processed, mutated, sped up, slowed down... and so much more. Take advantage of all it has to offer.

The more you practice with your ESI, the more you'll be able to put your personal stamp on the music you play. And when you do play, you'll know the instrument well enough so that you are free to concentrate solely on your music.