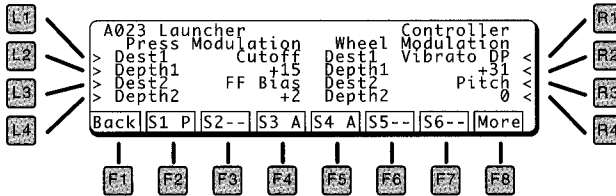# Modulation Sources

Load up ›Angelvox‹ and take a look at not only the effects control page but also the general control section.

 Angelvox—A002

You will find that the third effect which doesn't feature in the patch—Phaser—kicks in when you use the mod wheel. The mod wheel also changes the harmonic balance towards the ODD harmonics. Keyboard pressure is used to introduce Auto-panning to the sound.

When Dave originally created the patch, he set up the FF to simulate phasing when tweaked. For the purpose of this book, he has modified the patch so that both the FF and FX processor ›phase‹ the sound. If you mess with the FF BIAS and mod wheel combined, you'll hear a ›super-phaser‹ but be *careful*. This introduces a lot of previously unheard harmonic content into the sound and could seriously damage your ears and speakers so turn your amp down.

In the Control Page with Press and Wheel Modulation, you will notice that the PCM source has *no* wheel modulation. Only the ADD sources in this patch will be affected by the modulation wheel.

This type of control over each source allows you to do stuff like the following:

◆ Set up your ADD sources and PCM sources to be modulated by LEVEL using the wheel modulation.

◆ As the mod wheel rolls away from you, either the PCM or ADD sources become louder or softer in relation to or combined with each other.

◆ This effectively allows you to have two completely differ-
ent sounds available (or blends of them) at the flick of
your wrist.

◆ Change the Decay time of one or more sources so that a
source which was previously unheard (because it had a
Zero decay time set) will appear ›out of nowhere.‹ This
can radically change the way that you play the sound and
is a really interesting effect to try. The best controller to
assign this to is keyboard pressure.

◆ Simple things like vibrato can be added easily using the
LFO to modulate pitch. Traditionally this type of control is
assigned to the mod wheel.

◆ Level modulation using the LFO creates tremolo effects,
great for EPs. Again, this is traditionally assigned to the
mod wheel.

◆ Use Keyboard Scaling to modulate panning. As you play
from the low to the high end of the keyboard, the sound
changes position across the stereo field from left to right.

◆ Have the Formant Filter BIAS setting respond to velocity,
keyboard pressure, mod wheel—well, *have* it assigned,
because this is one of the really strong points of the
K5000.

◆ Use key pressure or velocity to shut down/open envelope
sustain or to change envelope attack. Soft playing = slow
attack. Hard playing = fast attack.

◆ Again key pressure can be used to switch between ODD,
EVEN, OCTAVE and 5TH harmonics in any (ADDITIVE) source
or multiple sources.

◆ Use of Zones allows you to assign different sources/
sounds to a range of the keyboard allowing splits and lay-
ers in a single patch. You could even replicate sources
with different zones so that one type of modulation could
be used on one zone and a different type on the other

while retaining the same sound for both zones. (A poor man's polyphonic aftertouch.)

And these are only a handful of simple examples. Use your imagination here—you know what you want your sound to do and how you want it to respond to your playing—this is the place to ›make it so.‹

Think of the control section as being like our dogs from the introduction chapter (they're back) who are trained to respond to hand signals. One flick of the thumb (on the mod wheel) will make them roll over (change from one source into another) while a squeeze on the tips of their ears (pressure modulation) will make them go to sleep (shut down the envelope).

▶ Use of modulation parameters have more impact on the overall sound when the same type of modulation is used on all sources— i. e. vibrato on all sources, not just the electric piano in a layered e. piano/string patch.

Conversely, and the electric piano/string layer is an ideal example, it would be preferable to have the vibrato *only* occur on one of these as the same modulation speed and type on both piano and strings would sound terrible and incredibly unnatural to the ear.

Use your modulation sources if they will benefit your patch by creating movement or change in the sound and where they will benefit you as a player.

Most of us only have two hands, so unless there have been some close—and we mean ›close‹—relationships in your family history, there will be times where the use of a foot-pedal or aftertouch for sound manipulation will come in … well … ›handy.‹ (sorry about that!)

Some things, like vibrato and tremolo, however, are best assigned to the mod wheel.

Where possible on appropriate sounds use pressure modulation as this allows you to keep both hands on the keyboard.

6 When to Use What

As you've no doubt discovered, there's a lot to your K5000 and to additive synthesis in general. With the hundreds of choices and dozens of parameters available, it's pretty easy to get a little lost—although at this stage, you should be doing OK.

This chapter covers a number of hints, tips and suggestions to assist you in making informed choices when programming which will not only accelerate sound creation but also save voices and resources in other areas of the synth engine.

ADD or PCM?

This is the first choice you need to make when creating a sound and is the most important one on a number of levels. In the table below, we have outlined the relative strengths and weaknesses of using ADD vs. PCM sources.

ADD	PCM
Can use a lot of memory for wavesets	Uses very little memory
Individual control of harmonics	No individual control over harmonics
Can use FF and DCF	Can only use DCF
Some sounds difficult to create	Fills these gaps
Slower and harder to program	Quick and easy to program
Spectrums can have lots of motion	Motions are fixed in sample
Can sound sterile, thin and synthetic	Sounds more natural, adds breath and noise partials

ADD	PCM
Needs two or more sources plus tweaking for fat, chorusing sounds	Chorusing is already provided by single samples (e. g. pads)
Weak in emulating some instruments	Better at emulation
Blends beautifully with PCM	Blends beautifully with ADD

As you can see, each method of synthesis has both good and bad points. You can also see that for both ADD and PCM we have, in the last entry, mentioned that each method blends beautifully with the other.

Additive synthesis has a strength in the esoteric and bizarre ›sounds that are familiar, yet unfamiliar or have never heard anything like it‹ area.

PCM-based (subtractive) synthesis uses samples—recordings of real acoustic instruments, noises or even electronic instruments—so they are instantly recognizable as such, dependent on how much doctoring you have or haven't done.

Let's take a look at some of the pros and cons in more detail.

Memory considerations

The K5000 uses a dynamic memory allocation scheme to store patches, sequences, arpeggios etc.—there is a finite amount of memory in the machine available for storage *but* there is not a fixed number of memory locations. The total number of wave sets—which is the company term for the additive parameter set of an ADD source—is limited to some 130 kits (without ME-1).

In plain language, this means that the number of sounds stored in the onboard memory is 128 maximum, but the maximum number of wave sets may limit this to some 60 or 70 if you make heavy use of ADD sources. The number of PCM

sources is unlimited—you can have 128 patches with six PCM sources each.

Even ADD sources that are muted need a full wavekit, so be sure to decrease the value of the SOURCES parameter in DCO COMMON when not using the corresponding sources.

After this you will have to write the patch for the wave set memory to be released. Even if you just copy an ADD source to another source location and don't change a single parameter, the copy eats up a whole ADD set.

The example indicates, reasonably accurately, the true nature and size of ADD wavesets compared with PCM sources.

Use ADD only when ADD is needed. Always check if this partial of the sound can be done using PCM. If so, use this mode. It's easier and it saves wave kit memory.

▶ You can double the maximum number of wave sets by installing the optional ME-1 memory expansion. We recommend you do so if you're a true ADDict.

Saving memory by managing sources

In the second COMMON page—EDIT/L1/F8—there is a parameter called Sources.
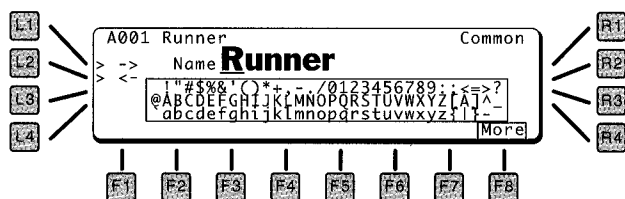
The Common parameters

This can have a value from 2 to 6. Simply changing this value to the actual number of sources you actually require for your patch will save ADD memory if you are disabling ADD sources, of course.

Always reduce the number of sources to the number you actually require.

If you reduce this value on any existing patches remember to write the patch again.

Muting/Unmuting of sources does *not* achieve the same results as reducing the number of sources available to the patch.

Saving polyphony by saving sources

Imagine that every source used in a patch requires one voice *per note*. This means that if you use up six sources, this leaves you with only 5 comma something notes of total polyphony with regard to the K5000's 32 note maximum.

This might be OK with single patches, but with multis in mind, saving sources makes a lot of sense. Here are a few source saving tips:

K5000W owners—the 32 note polyphony limitation also affects you as the 64 note polyphony your machine has is divided into *two* discrete engines with half the polyphony available to the GM synth and the other half available to the ADD synth, which is identical to that of the K5000S and R.

◆ Instead of using lots of ADD sources in order to create a thick texture, try to use only one PCM source with a thick sampled pad and add some colour on top with only one ADD source.

◆ Another alternative is using the ensemble effect. You can create huge, wide textures with only one ADD source running through the EFX section. Set E1 to ensemble and E2 to delay to ›double the width.‹

◆ Of course you can combine these methods. E. g. create a metallic pad by using one PCM source with a pad sample (PCM Wave No. 396 to 398 work fine), then adding one ADD source and running this through the ensemble effect.

ADD and PCM weak and strong points

As no synthesis method in the world is able to generate every kind of sound with at least ›good‹ quality, the ADD engine of the K5000 is no exception to this rule. We have discussed the strong points of additive synth engines more than once. To really make the best use of your K5000 you should also know where the weak points are, and how you can work around them by using PCM samples especially made for this purpose.

Additive sources—individually—are not good at creating

...

◆ Noisy sounds like voices or flutes

◆ chorusing textures

◆ natural partials (like hammer noise of a piano, bow noise of a cello, breath, sound effects)

This is where the ADD engine's PCM ROM comes in. To really make use of the PCM samples in the K5000, you should have a rough idea of what's in there and what's not. Take ten minutes *now* and listen carefully to the samples—here's how you can:

1 Select the ›Wizoolni‹ patch.

2 Press EDIT and L2, and you're in the DCO section of Source 1.

3 Set the cursor to PCM Wave No, on turn of the dial the Source is changed to PCM mode (you smarties out there may have noticed this is a hidden hint to a shortcut).

4 Start from Wave No. 342 and really play with each sample. Try every sample on different pitches. You will find that only by tuning a sample to different pitches you can create three or more completely different sound partials.

You may notice a lot of noises and textures that just can't be done using additive sources. You will also notice some sounds that could easily be achieved using additive sources—but you would need several sources and/or a lot of time. These samples are made for simplifying the process of sound creation and for saving wave set memory. Make use of this additional help from the Kawai sound designers.

🖫 Wizoolni—A001

The numbering of the ADD PCMs is due to the fact that all K5000 models share the same mask ROM for PCM samples. Only the W version uses numbers 1 to 341 for its GM samples.

Working with sections of your sound

Cast your mind back to (or physically take a look at) the introduction chapter where we discussed the barking dogs and broke down the bark and howl into their composite sections—we also broke down the word ›chicken‹ into small, manageable bits.

Using the same concept, but in an altogether more ›musical‹ sense, let's take a look at the sound of a Hammond B3

organ. If we were to break it down into components—and we'll keep this simple—there would be:

◆ The key ›click‹—sounds like tapping two plastic pens together softly

◆ The glide up to the note and sustained portion—DHL and DHE

◆ The vibrato and modulation—LFO and/or FF

◆ The ›Leslie‹ speaker cabinet—FX Processor

In earlier sections we discussed how to use the 5th and OCT harmonics to set up ›footages‹ for your organ patch, so we'll dispense with this. We also took a look at the use of the DHE to shape your harmonics over time, the use of the LFO and the effects processor which basically covers items 2 through to 4 from the breakdown above.

This leaves us with item 1—the key ›click.‹ This can certainly be emulated using the ADD engine, but it is surprisingly complex to set up as an ADD source for what, we're sure you'd agree, seems to be a pretty simple sound.

Working with small ›sections‹ of an overall sound allows more accurate emulation of other instruments and allows far more control.

At this point, the best choice for both memory conservation and simplicity's sake, is to choose a PCM source (367—Org Key Click) to add to the attack portion of your sound. A method you might like to try is to ›sound out‹ the overall sound using your voice—much like you would do if you were learning a new word in another language.

In doing this, you could break the overall sound down into its bits: CH—I—CK—EN which each can be synthesized individually to form the final ›chicken‹ sound. Once you have a mental picture of what each of these samples sounds like, you may have quite a few ideas of how and where they could be applied to make your patches more realistic or even better than they already are.

ADD for masochists

Additive synthesis is ›theoretically‹ capable of reproducing *any* sound, given enough processing power and control over parameters. The K5000 is extraordinarily well specified but it doesn't really have what it takes to pull off a convincing grand piano sound—if this is what you were after, you're barking up the wrong tree. (Maybe the next generation of Kawai additive synths.)

For those of you technically ›involved‹ these are the reasons why the K5000 additive synth engine can *not* virtually emulate any sound although it offers 64 harmonics and separate envelopes for each of them:

- The harmonics follow the harmonic scale, you cannot tune each harmonic individually making it become a true ›overtone‹ or ›partial.‹

- Over and above containing loudness envelopes, the harmonics in natural sounds also have pitch envelopes creating beating, detuning, noise and inharmonic content. The K5000 engine only has an amplitude envelope for each harmonic.

- The amplitude harmonic resolution (the number of times and levels) is too low to emulate every fast and detailed change found in analyses of natural instruments.

These reasons combined explain why you would hardly be *able* to recreate a grand piano on a K5000. A reason why you would possibly not *want* to do it is because you know some higher force made us (mankind) invent digital pianos for that purpose.

Where additive excels is in creating sounds that have never been heard before.

Some sounds, which seem relatively simple like the ›key click‹ we just looked at are extremely difficult to create using additive synthesis.

You can—with some effort—combine two or more sources, tune them to intervals, thus achieving new harmonic scales!

The PCM samples were specifically selected and created for the K5000 as ›spice‹ elements for your ADD sources and also as memory conservation aids. Many of the samples are ›plucks,‹ attacks etc. which are, by their very nature, ›components‹ designed from the outset to be combined with another source.

Unless you're making music that Frank Zappa and the Residents would find weird, many of these samples are unusable, musically, on their own.

Filter Choices

Only ADD sources have a choice of filtering options between or combining the Formant Filter and the DCF. PCM sources can only use the DCF.

Your decision on whether to use either the FF and/or the DCF with your ADD source comes down to a pretty simple equation and a question you should ask yourself when creating your patch.—›Do I really need to have control over each of the bands in the harmonic spectrum?‹

If the answer is no, and all you really need to do to your waveset is apply a simple low or high pass filter to the overall source/sound, then use the DCF.

If you require a little more control, you may be able to use the DHE in combination with the DCF, rather than using the FF. The advantage of utilizing the extra control of the DHE on a handful of harmonics will make the DCF's affect more or less pronounced.

If you want a filter that literally cuts into the spectrum and creates movements in the frequency spectrum that neither the DCF nor the DHE can create—you're right on the money with the FF. This is the filter of choice for *all* sounds that *only* the K5000 is able to create. The proof of the pudding is in the factory patches.

There are some K5000 patches you might be able to simulate on a conventional synth—*but* if a patch makes heavy use of the FF, no other synth has a chance of being a (pardon the pun) ›patch‹ on the K5000.

If you really need complete control, you megalomaniac, then use the DHE, FF and DCF combined.

Fattening up your ADD and PCM sounds

Digital technology is often accused of being sterile, cold and lifeless—the K5000 does all of these very well but can also sound extremely warm. If you or another pair of critical ears thinks that your sound is a little too ›digital‹ here's a couple of ideas which will help bring it back from the dead without destroying the original colour of the patch.

The use of DHE looping as an effect to simulate chorusing and ensemble effects is great for ›fattening up‹ a digital sound. This effect can also be used very subtly to create the aural illusion of motion and change which will make it more interesting to your ear.

Increasing the level in the DHL of the first seven harmonics will make your sound much chunkier but be aware that this can radically affect the overall colour of the sound.

The GEQ in the EFX section is an easy way of balancing the overall quality of the patch. Unless you use one K5000 per patch all hooked up to separate stereo channels on your 360 channel Solid State Logic console—this is a good means of balancing sound characters between patches as well.

Often, in the context of a mix, these hard and spiky ›lifeless‹ patches lift the entire song because of their very difference and sterility.

Poly or Mono

```
  L1  \        A001 Reznator                    Common          R1
  L2   \     > Volume        128   Sources          6  <        R2
  L3    \    > Poly         POLY   AM             OFF  <         R3
  L4    /    > Portamento    OFF                                 R4
       /     > Porta Speed     0
          Back                              More
```

```
   F1    F2    F3    F4    F5    F6    F7    F8
```
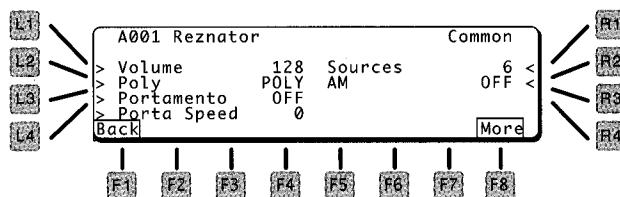
This one's pretty simple. Do you need to play chords with
your patch or not?

If not, the choice is MONO 1 or MONO 2. The difference be-
tween the two comes down to this: If you press and hold a
key, and while holding this key press a second key

MONO 1 will retrigger the envelope for the second note
played, MONO 2 won't.

If for some reason you want to create one of those motown
bass synth slides, MONO 2 is your choice. If you want to play
percussive patterns and your fingers are too lazy to leave the
keyboard before the next one hits it, MONO 1 is better.

We recommend the use of MONO 1 on lead sounds. To give
you an idea of where it differs from MONO 2, just imagine a
sax player taking breath before each note played.

Colour

This last one is a bit esoteric and not specifically related to
the K5000 functions but more to it's place in the overall ar-
rangement. Some questions you might like to consider are:

**In the context of your mix, soundtrack or whatever is the
K5000 the only synth that you're using?**

If so, we recommend that you make heavy use of PCM sources
in your patches as they are more neutral to the rest of the ar-
rangement. ›Less is more‹ is a good explanation of what
we're saying: One to three ADD sounds in a whole mix ›ac-

cents‹ and ›flavours,‹ gives the mix that ›special touch‹ and
ADD character—use six or more of them, and its just an an-
noying mess of harmonics.

**Will there be vocal parts and/or acoustic/synthetic or sam-
pled instruments?**

In this case, use the K5000's ability to add color even in
track-crowded mixes. Add a melody line here, a chord there.
Use ADD sounds with as few PCM sources as possible, but be
careful: The K5000 is not a polite relative in the whole family
of tracks—he likes to kick his companions out of the speaker
membrane.

**Is the K5000 a solo instrument or is it to be used as a colour
in the overall arrangement?**

In either case, ADD patches do a good job as long as they are
distinct in tonal character from any other ADD sounds you
may be using in the track.

7 Analyzing Patches...

Peter programmed the majority of the K5000 factory sounds. In this chapter, he'll demonstrate how he came up with some of the sounds and will show you how you can apply these techniques to create your own sounds.

Here you will learn how to analyze K5000 sounds, gain a basic insight into how they are structured and use this knowledge to implement your own ideas.

We highly recommend that you experiment with the patches as you read through this section. Switch the sources on and off alternately and take a close look at the sections as we describe them.

The graphical representation of patches in SoundDiver is excellent—and if you decide to use it, you'll avoid the hassle of scrolling through the pages on the LCD.

Sphaera

The basic waveshape of ›Sphaera‹ was derived from a Yamaha DX-7 bass. Way back when, Peter analyzed it via another additive synthesizer—the Waldorf Wave—and then manually converted and uploaded this data to the K5000. Definitely do not try this at home folks, it's just too onerous and time-consuming. Fortunately, today you have a much easier alternative: SoundDiver.

🖫 Sphaera—A032

S1 and S2 are virtually identical. They generate a linear additive wave. The essential factor here is the interaction of the soft/loud crossfade and the harmonic envelopes. The dynamics of your attack have a substantially greater influence on the sound than they would in a conventional synthesizer.

You can use SoundDiver to analyze samples for the K5000. Please refer to the *Tips and Tricks* section.

S1/S2 The SoundDiver display of the harmonic envelopes (at the left) and the soft/loud spectra (at the right) graphically illustrate the complexity of the patch.
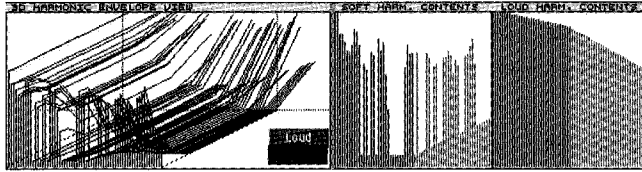
The sources are detuned and programmed with different LFO pitch modulations to achieve a more panoramic, pulsating sound.

The spectrum of the additive waveshapes has a great deal of overtone content, so the bottom end sounds a bit thin. Instead of boosting the lower harmonics, you'll come up with better results if you beef up the bottom end via a PCM waveshape as demonstrated here.

S3 plays back a looped pad sample. It was subjected to additional DCF filtering to soften it up a bit. Switch S3 on and off to hear exactly how this effect modifies the sound.

S4 is also a PCM source. It generates a metallic spectrum that slowly fades in and out of the sound via DCA envelope. Think of this effect as an exciter; it livens up the sound of sustained notes.

Modification tips:

1 Copy other spectra in Source 1 and 2 (LFO and Copy ⇨ Source Copy).

2 Experiment with the Formant Filter in LFO Mode to generate phasing effects. You will find the requisite templates in SoundDiver.

3 When you set slower attack rates in the DCA envelopes for S1 and S2 and deactivate S3/4, you can turn Sphaera into a digital string sound. The effect is even more pronounced when you change the effect section E2 setting from ›Celeste‹ to ›Ensemble.‹

DynoSaur

💾 DynoSaur—A033

In contrast to Sphaera, ›DynoSaur‹ is based on an existing sound—that of the electromagnetic Rhodes piano. We also

relied on wave analysis to create DynoSaur. First we played a loud note on the original, sampled it, analyzed the results and manually entered this data in the K5000. Check out Source 1 to hear what we came up with.

We repeated this little song-and-dance with a soft note, the results of which you can hear on Source 2. You may notice that the volume of S1 does not increase significantly until you get ›heavy handed‹ with your attack. This effect is achieved through different settings for the velocity envelopes and different depth values for the harmonic spectrum (e. g. S2 Additive DHL Common Velo Curve), filters (DCF Velo) and volume (DCA Velo). We also set slightly different settings in the harmonic level section's soft/loud spectra.

S3 is also an additive spectrum, although creating it was a matter of trial-and-error. In other words, it is not based on a sample.

S3 Just a few harmonics suffice for a metallic spectrum, provided they are fairly high frequency harmonics.
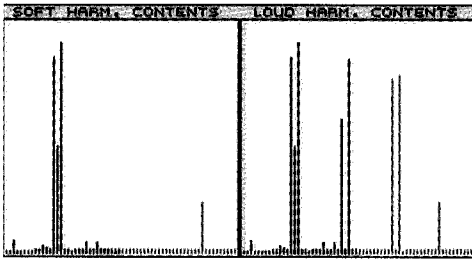
When you are dealing with additive synthesizers you should always keep in mind that you might not be able to analyze everything, but you can improvise virtually anything. As a case in point, the majority of the percussive effect in this source is achieved via fast harmonic envelopes (Additive ⇨ DHE).

You'll find it easiest to structure the soft/loud contents if you first create the soft spectrum, copy it to the loud side and boost the upper harmonics there as depicted in the illustration on the previous page.

The Rhodes sound is, as a byproduct of it's fame, predestined for analysis: The original signal is a clean, simple waveshape without complex oscillations, vibrato or abrupt changes in harmonics. As simple as the structure of the sound is, you still can't rely exclusively on analysis to come up with the most desirable results.

In the K5000, you can select a metallic waveshape for PCM sources to generate metallic contents—as is the case with S3 in this example. However, you can shape substantially more detailed sounds via an additive spectrum.

In this example, the metallic sound imitates the sound of the hammer striking the metal reed. The pitch of this sound only varies nominally over the entire range of the keyboard, so S3 has a KS pitch value of 50 cent (DCO Common). In other words, the source transposes a whole note played on your keyboard by a half-step.

When you turn the modulation wheel up, the pitch of S3 rises to achieve a brighter sound. At the same time, a chorus is added to the mix. This chorus is controlled via the CTRL page in the effect section.

For the obligatory culinary comparison: Experimenting with sound parameters is a bit like cooking. You have to measure the amount of velocity, envelope, filters and spectrum carefully—a little too much of one spice and you'll spoil the sound stew.

▶ Modification tips:

1   When you experiment with S3, you will find you can vary the sound of the electromagnetic piano radically. The following parameter groups are especially influential:

   ◆ DCO Common: Coarse, KS Pitch
   ◆ Additive Harmonic Level Edit: 7 and higher
   ◆ Additive Harmonic Envelope: DC1/DC2 Rate

2   Lower the level of even harmonics in the S1 and S2 harmonic spectra:

   ◆ Use the EVEN/ODD parameter or knob, or
   ◆ Decrease the EVEN group in Additive—DHL Level Edit.

3   S1 / S2: You can soften the sound up to create a jazz-style tone by

   a. lowering the DCF cutoff

   b. boosting the first harmonic and dampening the upper harmonics (Additive ⇨ DHL Level Edit)

c. adding the Formant Filter to the mix; it cuts the upper harmonics: Additive: FF Level Edit—Decrease the bias, slightly round off the right edge of the filter.

Gorgizmo

The secret to this sound is the Formant Filter. No synthesizer other than the K5000 can deliver anything even remotely similar.

One of Peter's standard operating procedures with additive sounds is to create two virtually identical sources and vary them slightly through different phase cancellations that create chorus/flanging-type effects and stereo panoramas. This sound was created along these lines. Usually, this type of treatment sounds better than if you try to achieve the same effect via the EFX section.

The spectrum of the two ADD sources shows a couple of prominent bumps. Generally, these bumps lend an additive sound characteristics that could be described as nasal, honking or metallic.

However, the wild effects in this sound are actually created by the Formant Filter. You're probably aware that the Formant Filter is not an audio signal filter, it actually influences the levels of the harmonics directly. Picture some one frantically turning the level of the harmonics up and down simultaneously, and you have a fairly accurate idea of what this filter is all about. Take a closer look at the Formant Filter in the following illustration.

💾 Gorgizmo—A035
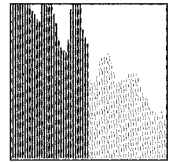
S1 In an additive spectrum, bumps generate a nasal sound in the midrange, metallic in the upper frequency range.

S1/2 The formant
comb (top) is drawn
horizontally through
the spectrum by the
FF envelope (bot-
tom).
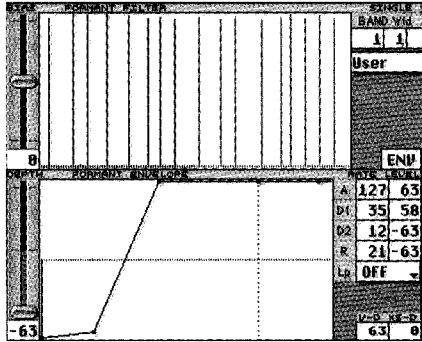
The Formant Filter features a setting much like a coarse comb. When it remains static, harmonics that match in the FF and the spectrum are audible, provided a given harmonic is turned up in both components.

Now the FF envelope draws the comb to the left and right and diverse harmonics are mixed in and out of the signal. It probably goes without saying, but just for the record: Set the values for the left / right shifting via the bias parameter.

The relatively wide gaps between the teeth of the comb are responsible for that distinctive pumping sound (kind of like an organ). If these were narrower, then more of the original spectrum would come through and this effect would be less pronounced.

All other aspects of the Gorgizmo sound are pretty basic. You shouldn't have any problems analyzing these on your own.

▶ Modification tip: Gorgizmo is a great medium for experimenting with how spectra and the Formant Filter interact. You'll come with at least a dozen other interesting sounds based on Gorgizmo. We recommend that you:

1 Mute Sources 2 – 4.

2 Replace the S1 spectrum with others. The easiest method is to use the templates in SoundDiver. If you are working directly at the

K5000, copy the spectra of other sources to S1 (Additive ⇨ DHL ⇨ Harmonic Level Copy).

3 Recall the original and try different Formant Filter settings, either via SoundDiver templates or copying (Additive ⇨ DFL ⇨ Formant Filter Level Copy).

Creaturz

Although the value of ›Creaturz‹ in musical terms is negligible, it is one of the wackiest (and coolest) sounds in the K5000 library. You won't find a better example of how the Formant Filter can be used to create sound effects.

☐ Creaturz—A036

To find out what makes Creaturz tick, follow this procedure:

1 Mute all sources except S2. S4 only lays down a PCM pad under the sound.

2 Go to the Additive section and take a close look at the Formant Filter parameters (level and envelope).

Do you see what we're getting at? Let's break the sound down to its constituent parts:

◆ The spectrum has no bearing on the effect. You can replace it with any other spectrum of your choosing to see for yourself.

◆ The source LFO generates vibrato which makes the individual creatures sound even creepier.

◆ You can see that just a single band is tweaked in the Formant Filter level (DFL). Everything outside this band is inaudible.

◆ Now take a look at the Formant Filter envelope (DFE). It is set to LFO mode. The LFO shifts the Formant Filter band randomly at intervals of approximately a third of a second.

Here's the deal: Every time the Formant Filter band matches the pitch of the key you are currently pressing, you can hear

the call of the really wild resound until the LFO moves the FF
onwards.

The sources S1, S2 and S3 are spread in the stereo pano-
rama, their LFO frequencies and FF bands are slightly dif-
ferent and the whole mess is subjected to an EFX delay, so it
sounds as if a demented choir of aliens are sounding off.

▶ Modification tip: You can do the Frankenstein number and create
creatures of your own by very slightly varying the LFO speeds and
the Formant Filter bands. But remember brute force will get you no-
where. These are sensitive beasts, a little too much twiddling and
they're gone forever.

@IsCream

@IsCream—A037   Before you read any further, give this sound try. Put on one of
your favorite tunes and jam along with it. When you feel the
urge to start soloing, make excessive use of the modulation
wheel. Afterwards, the origin of the name inside the name (I
Scream) should be abundantly clear.

Two features are responsible for the sound's edgy,
screaming tone: EFX distortion and the Formant Filter.

The distortion isn't much of a mystery. It is programmed
in the first effects processor (E1). By tweaking the Dry/Wet
knob, you can turn ›@IsCream‹ into a lead sound Kurt
Cobain would have been proud of. But before you start
wailing away in heavy mode, set it to 100:0 so you can
clearly hear what the Formant Filter is up to.

Distortion used in conjunction with synthesizer sounds
achieves the best results when the sound features an added
fifth. This is why in this case the ADD sources S1 and S2 are
programmed with an interval of seven semitones between
them—otherwise, the two sources are identical.

The SoundDiver display nicely illustrates how the spec-
trum and Formant Filter interact:
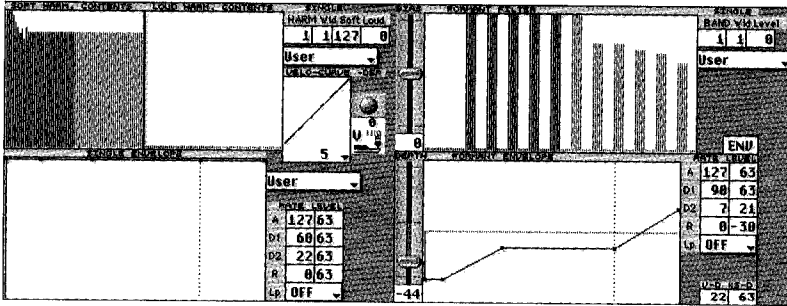
All harmonics in the spectrum (top left) have virtually equal amounts; in the Formant Filter, the fat bars generate radical sound sequences.

The spectrum is turned almost all the way up—only the lower harmonics are boosted somewhat to give the sound more ooomph. The Formant Filter can really dig in here.

With the fat bars, the Formant Filter mutes a group of four or five harmonics while allowing the neighboring group to pass virtually unfiltered. The result: an extremely metallic spectrum—much like that of an overdriven electric guitar.

The Formant Filter is slowly shifted by the FF envelope (at the bottom right of the illustration) to lend the sound innate dynamics even when you are not spinning away on the modulation wheel.

▶ Modification tip: As with all radical additive sounds, you can simply replace spectra or enter different Formant Filter settings to arrive at completely different sounds. Experiment at will!

Cyber@FX

For this sound, we'll give you just the one clue and let you figure out the rest for yourself: Five sources are distributed over the keyboard. You can easily emulate this type of split within a single patch via the ZONE LO/HI parameters in the Control menus.

⌨ Cyber@FX—A039

By now you should be able to analyze the individual effects on your own. After reading this and earlier chapters and experimenting with examples, you have dealt with plenty of Formant Filter applications so you shouldn't have any problems divining the structure of S1. The remainder of the sources are simple PCM sources and consequently are limited to the source parameters of the DCO, DCF and DCA.

Wizoolni

⊟ Wizoolni—A001

If you want to create an ADD patch from scratch, you need a neutral starting point—a patch in which complex elements such as the harmonic spectra and envelopes as well as the Formant Filter feature neutral settings.

Of course you could work from an existing patch, provided you want to spend anywhere from fifteen minutes to who knows how long neutralizing those parameters that are less accessible.

SoundDiver features INIT presets for diverse sound components.

In contrast to a conventional neutral patch, this patch contains diverse basic settings that are practical for use with virtually all sounds:

◆ The patch responds subtly to dynamic attack and the modulation wheel; a minimal room and the graphic EQ slightly enhances the sound quality.

◆ The first source is activated and set to ADD. The second source is preset to PCM, and in the PCM, to a neutral sawtooth wave (413).

◆ The filter is already activated, but does not yet cut the sound. However, when you rotate the cutoff knob, you will hear the filter kick in.

◆ The envelopes feature neutral settings.

◆ Rather than a useless sine waveshape, the harmonic spectrum in the Additive section is set to a sawtooth—the ideal starting point for the majority of spectra. The har-

monic envelopes feature neutral settings and subsequent-
ly have no influence on the sound.

♦ The Formant Filter is virtually neutral, only the upper
bands were slightly dampened to prevent aliasing at ex-
ceptionally high notes.

♦ The controller and effects feature practical, sensible pre-
sets but are currently inactive.

▶ When you are dealing with a synthesizer as complex as the K5000,
you'll find a good INIT setting an invaluable aid. You should take the
time to closely examine this patch before you use it. And of course
you are free to adjust the basic settings to suit your taste.

8 Adding Realtime Control

All of the K5000 synths have extensive MIDI control available from a range of sources including the front panel, external controllers like Kawai's MCB box, sustain and controller pedals or other MIDI controllers/sequencers that you might own.

The K5000S features direct access to many of these controller functions on the front panel, and as these functions are also available via an external controller, like those mentioned above in the other K5000 units, we'll concentrate on this particular keyboard.

Why would you want to have realtime control over sounds?

Just because you're playing a synth, there's no reason why you shouldn't have—at the very least—the same expressive potential as an ›acoustic‹ player—who can add expression by bending strings, adding vibrato or changing bowing, strumming.

Another point is that an electronic musical instrument goes beyond the limits of acoustic instruments. Apart from aspects like notes or dynamics, a synthesizer like the K5000 offers access to every single detail of the sound.

Realtime doesn't only mean things you can control while playing. It also refers to the dozens of sound parameters you can control from your sequencer such as moving the Formant Filter back and forth every four bars.

Another very real advantage is that the ADD engine of the K5000 series shows its true power when a little bit (or a lot) of realtime manipulation of sound takes place.

Easy sound programming with Macro Controls

You can save the changes made using the knobs. Just alter the sound to your liking and write it into memory. This is particularly useful for subtly adapting the sound to your taste.

The controls shown in the picture below are from the front panel of the K5000S. The K5000W and R allow you to access these parameters below the display.

Most of these controls work ›relatively.‹ The knobs have no fixed value range but change the value of the parameter starting from its initial setting.
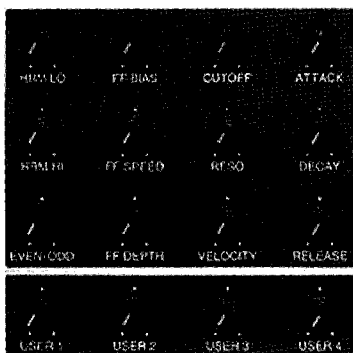
Let's take a look at the knobs from the top left.

♦ HRM LO—Controls the low harmonics in an ADD source. The Kawai sound team decided to set the divider at the 7th harmonic, so basically what it does is boost/cut the volume of the ›bottom-end‹ or bass frequencies of the harmonics in your ADD source, making your sound either a little ›beefier‹ or ›less beefy.‹ (Left = ›light‹ Right = ›chunky!‹)

◆ HRM HI—Controls the high harmonics—above the 7th harmonic—in an ADD source. This boosts/cuts the volume of the ›top-end‹ or treble frequencies of the harmonics in your ADD source, making your sound either a little ›brighter‹ or more muted. (Left = ›dull & lifeless‹ Right = ›shiny‹ ... kinda sounds like a shampoo ad, doesn't it?)

◆ EVEN/ODD—This control changes the balance between Even and Odd harmonics, making either louder or softer in relation to the other. If you had the knob turned fully left you would have EVEN Harmonics *only* ... right would be ODD harmonics *only*. A good sound to check out is ›Sphaera‹ (A001). When you listen to this, you will hear that the ODD harmonics sound more ›hollow‹ and more like a square wave whereas the EVEN harmonics sound more ›nasal‹ and like a sawtooth wave.

◆ FF BIAS—This control adjusts the center frequency of the Formant Filter in an ADD source. We already pointed out that you can imagine the FF as a 128 band equalizer. Well, that's only one side of the coin. In addition to adjusting the volume of each EQ band, you can shift the whole FF up and down in pitch by moving the bias frequency.

In patches making extensive use of the Formant Filter, this knob does evil things, so nail down any loose items. The FF is one of the strongest features of the K5000. Try it out with ›MelMaker‹. Note that this knob will only affect ADD sources whose Formant Filter setting is *not* neutral.

◆ FF SPEED—*If* your Formant Filter is set up to be modulated by the LFO or envelope, then this controller will adjust the speed at which this filtering takes place. Again, take a listen to ›MelMaker‹ and play with the control ... you'll see *exactly* what it does. (Note that this controller *only* affects ADD sources.)

◆ FF DEPTH—*If* your Formant Filter is set up to be modulated by the LFO or envelope, this controller will adjust how much the LFO and envelope affect the Formant Filter ... or

The effect of most of these controls depends on the patch and which kind of sources it uses. If a particular control knob does not affect the sound, it is probably something like an ADD parameter used with a PCM patch.

Be careful when using these controls, as they literally ›cut‹ into the harmonic spectrum. Sometimes you won't be able to return to the original patch after turning one of these controls. In this case just re-select the patch.

🖫 MelMaker—A010

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more to the point *how much* effect the Formant Filter will have on your sound ... again use ›MelMaker‹ to check this out.

▶   The controls mentioned above *only* affect ADD sources. If the patch you selected only uses PCM sources, you will not hear any effect.

◆   All of these controls can be sent and received via MIDI, so you can record and ›play‹ them literally using your sequencer.

Bronx—A007

◆   CUTOFF—The cutoff is part of the ›standard‹ filter section (DCF) and will affect both ADD and PCM sources. What it does is adjust the point at which the upper frequencies of the sound ›cut off‹ (*if* the filter is set up to be a LOWPASS filter) Play ›Bronx‹ to try this out.

◆   RESO—Again, part of the standard filter section and affecting both ADD and PCM sources, the Resonance control adds ›resonance‹ to your sound. Try this control out with ›Bronx‹ but be *careful*—it's touchy!

◆   Used in conjunction with the CUTOFF function, you can change the amount and sonic quality of the resonance—try it out!

StageMK1—A003

◆   VELOCITY—This control is *ideal* for live players and does, as the name suggests, affect the velocity range of the sound. Take a listen to ›StageMK1‹ and repeatedly play a chord while slowly adjusting the velocity knob. This particular patch is set up to switch between ›bright‹ and ›mellow‹ versions of the sound dependent on how it is played—how hard/soft you hit the keys. As you can hear, the velocity control adjusts the responsiveness of the sound so that no matter how hard/soft you play the keyboard, it won't switch between layers.

Many other things can be adjusted by velocity as we covered earlier.

◆ ATTACK—This adjusts the attack time of both the DCF and DCA envelopes of all sources. A good sound to try this out on is ›Hormonic‹ and as you'll hear, it changes a ›spiky‹ digital sound into a useful pad.

▭ Hormonic—A008

◆ DECAY—same as before, but adjusting the decay time. Load up ›Protonic‹ and play a note in the top half of the keyboard. Slowly rotate the DECAY knob left and right while continually restriking the note.

▭ Protonic—A009

The changes you are hearing in this patch are because the decay parameter has been set up to introduce the sawtooth wave (›brassy‹-sounding thing) a little way into the sound.

None of the envelope knobs affect the harmonic envelopes nor the FF envelope. However you can control the speed of the FF envelope with the FF SPEED knob.

◆ RELEASE—same story *except* that it adjusts the amount of time over which a sound is sustained or decays *after* you have released the keyboard.

It affects both the DCA and DCF Envelopes.

Let's look around the back ...

MIDI is the most powerful of your control input sources—but we won't go there just yet.

The keyboard versions have a sustain pedal jack—we'll dispense with the explanation for this one ... it is either ON or OFF.

There is also an Expression Pedal input for adding CONTIN-UOUS control over the volume (or other parameter) as you play.

The K5000S also has two extra jacks which allow you to assign a number of functions to them including arpeggiator start/stop, octave up/down etc. Great for avoiding those ›ARGHHHHH!—I've only got *two* hands!‹ fights with the band (who just don't understand you ...)

So, what can I do via MIDI with my K5000?

There are certain functions only available via MIDI which are related to system exclusive control and editing of the K5000. These can be accessed using SoundDiver which is discussed in the Tips and Tricks chapter.

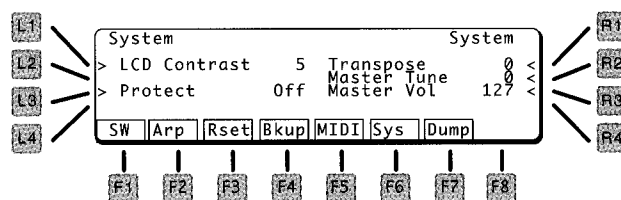Functions such as single or bank patch dumps can be initiated from the SYSTEM/DUMP page.

Multitimbral use is accessed via the SYSTEM/MIDI page—select PRG (Program Change) Receive and change it to SEC (section) using the dial.

This will allow you to send/receive program changes for different MIDI channels if you have a MULTI/COMBI patch which has been set up with different channels assigned in each section.

▶ If you are using your K5000 multitimbrally with an external sequencer, you should turn OFF the ›Local‹ function in the SYSTEM/MIDI page. If Local is set to ON in this circumstance, you are effectively halving your polyphony.

Global (i. e.—for the whole machine) Transposition, Tuning, Master Volume and Memory Protect functions are available by pressing SYSTEM once and selecting the appropriate L1—L4 or R1—R4 button.

Global parameters are set in the System page.

If you would like MIDI control of the Macro Functions covered earlier in this chapter using your computer sequencing program, take a look at the supplied disk.

Dave has built an Environment for Logic/Logic Audio which allows for this type of control and also patch selection (including bank select).

The file ›K5000.lso‹ can be found in the root directory of the floppy disk. (This is appropriate for Mac and PC versions of Logic/Logic Audio.)

More infos on MIDI can be found in *FAQ & Help* on page 109.

9 FAQ & Help

In this chapter, we'll try to help you out of situations we have come across or know others come across frequently. We even invented a few possible questions and situations based on our experiences and experiments.

Please make use of our online support options discussed in *WIZOO Online Support* on page 117 if you can't find what you're looking for here.

At any rate, we recommend that you read this chapter from beginning to end—it *will* save you from a lot of potential headaches.

MIDI Questions

How do I transfer patches between the K5000 and a sequencer/data filer?

Functions such as single or bank patch dumps can be initiated from the SYSTEM/DUMP page. Ensure that both MIDI IN and MIDI OUT cables are plugged in and that the Memory Protect function (SYSTEM/L3) is OFF if you wish to receive patches. You will also need to make sure that Exclusive is turned ON in the second MIDI page (SYSTEM/MIDI/R3).

How do I set up my K5000S/R to work multitimbrally with my sequencer?

1   Select the Multi Patch you wish to use and press EDIT.
2   Press L2 (Section).
3   Select the section using F2—F5 keys.
4   Press R2 key.
5   Use Value Dial to change to the appropriate number/channel.
6   Repeat steps 3 to 5 for each section.

If you are using your K5000 multitimbrally with an external sequencer, you should turn OFF the ›Local‹ function in the SYSTEM/MIDI page. If Local is set to ON in this circumstance, you are effectively halving your polyphony.

7 Press Write to save the multi patch.

Multitimbral use is accessed via the SYSTEM/MIDI page—select PRG Receive and change it to SEC using the dial. This will allow you to send program changes for different MIDI channels if you have a MULTI/COMBI patch which has been set up with different channels assigned in each section.

Also ensure that Program Change reception is ON in the SYSTEM/MIDI/MORE page.

I'm using my K5000 as a slave MIDI device and every time I change something on my controller the K5000 ›weirds out.‹

Enabling/Disabling the transmission or reception of program changes, aftertouch and system exclusive functions can be accessed via the SYSTEM/MIDI/MORE page.

How do I record and play back all of my knob movements using my sequencer?

If you would like MIDI control of the Macro Functions using your computer sequencing program ... take a look at the supplied disk—Dave has built an Environment for Logic/Logic Audio which allows for this type of control and also patch selection (including bank select).

Feedback/recording can be done using either the front panel of your K5000 or using your mouse in Logic/Logic Audio. Logic's environment will update to reflect these changes in real time as the song plays back.

The file ›K5000.lso‹ can be found in the root directory of the floppy disk. (This file is appropriate for Mac and PC versions of Logic/Logic Audio.)

My K5000 does not respond to MIDI

In most cases, this happens when you first connect the K5000 to the rest of your MIDI system, and in almost every case this is human error. The solutions below are *really* simple, not because we regard people as fools but rather that the ›obvious‹ fix is often overlooked—even by the very experienced.

1 Check if the cable really carries MIDI events. Check connections. Try the same cable with another synth if you have one.

2 Exchange MIDI-In and MIDI-Out cables.

3 Make sure the UNIT CH (System ⇨ MIDI) and the transmit channel of the external device match.

4 If it's only Multis or Combis or the W's sequencer that do not respond, check the respective MIDI-channel settings for Sections and Tracks, and check the MUTE status of each of them.

My K5000 does not produce any sound

1 Check if you have connected the wrong audio out (INDIV instead of MAIN).

2 Try the audio cables with another synth if you have one. If this does not sound either, the reason is to be found in the audio equipment hooked up to the K5000—might be a defective cable, a mixer or amp not powered on, volume turned down ... you know the drill.

3 Check the LOCAL setting (SYSTEM--MIDI)—set it to On. (Local is automatically set to ON when powering up the K5000, so you may just try this.)

4 Switch to another patch and back again.

5 If it is a special patch that does not sound, check Source muting, check if you assigned a controller to LEVEL (EDIT ⇨ CONTROL ⇨ MORE), check foot pedal input, check EFX routing.

6 Turn the CUTOFF and the FF BIAS knobs all the way up.

7 Make sure the main volume slider is up.

> Local ON should not be used when the K5000 is hooked up to a MIDI sequencing system in an IN/OUT loop because this produces a MIDI feedback halving polyphony and changing the sound.

I've just tried to save a patch and got an ›Error 37 PROTECT ERROR‹ message

This error is because your K5000 memory is protected.

◆ Press the SYSTEM button, press the L3 button (Protect) and use the dial to change this to OFF.

My K5000 seems to have ›lost its mind‹ ... nothing works properly

This type of behavior is possibly due to the operating system becoming scrambled by a power surge or a System Exclusive message which may have been inadvertently generated by another device.

> Resetting your system in this way will re-initialize ALL of your edited patches back to the default system patches.

◆ To fix it, press the SYSTEM button and then the F3 button, followed by the F8 (Execute) button.

How do I synchronize my K5000 arpeggiator with an external sequencer/drum machine?

1 Press SYSTEM/F2 to enter the Arpeggiator page.

2 Press F3 to toggle synchronization to ON/OFF depending on whether you want to use your K5000 as the master or slave MIDI device.

Ensure that the other MIDI device/s are set to receive or send MIDI clock information dependent on whether it is the master or slave device.

If you have seen the ›Highlander‹ movies, remember ›There can be only one‹—*master clock* device, that is.

General Questions

How do I restore the system?

NEVER overwrite an older system disk with the new system. In case the new system is corrupted for any reason you may be left with a ›brain-dead‹ K5000.

Kawai is very good with providing updates of the OS for the K5000. You should definitely take advantage of these, as they always improve your value-for-money, make the handling of the K5000 easier and often add great new features.

You can always check for the newest K5000 system version on the WIZOO site or get new versions from your dealer or distributor.

In any of these cases you need to create a system disk that is accepted by the K5000.

How can I create a system disk?

Its as easy as can be: Take a fresh disk, format it in the K5000 or in any DOS-compatible drive and copy the system file onto it.

▶ It is vital that you use a freshly formatted floppy—initialization is not enough, because the K5000 is a bit intolerant to changes in the physical location of the system file on disk.

How can I update the system?

1 First make a backup of all data in the K5000 because *everything* will be overwritten during the installation of the new system.

2 Insert the system disk into the disk drive.

3 While powering up the K5000, press the following buttons on your model:

K5000S: [F2], K5000R: [F8], K5000W: [Oct Shift Down]

When the K5000 recognizes the system on disk, it will display a ›System found‹ message and start loading.

If the display reads ›Err08h,‹ the system file is not located on the first blocks of the floppy disk. In this case take a freshly formatted floppy, copy the system onto it and try again.

How do I restore the factory patches?

If for some reason you'd like to restore the factory patches, there are three ways of doing so.

1 If you bought this book together with the K5000, you could take some ›prophylactical‹ steps now and save the factory patches to a fresh disk or to a SoundDiver library. If you haven't already done so, *now* is the time to do it.

2 If you have Internet access you can download the factory settings from WIZOO.

If you have no Internet access and no backup there is only one way: You have to restore the system from the system disk as described above. This restores all factory settings including singles and multis or combis (dependent on your flavour of the K5000).

How do I tune SINGLE patches?

Press EDIT/L2 and on the next page (DCO) press L3 or L4 and use the dial to adjust your patch to whatever pitch. Note that this will need to be done for each SOURCE in the patch, by pressing the F1—F6 buttons and then L3/L4 & Dial method. When done with your edits, press WRITE.

Mac users: as the Mac usually writes the desktop file to the location the K5000 expects to find the system, you need to overwrite a system disk with the new system file to ensure the file is replaced.

The total of all detune values of the sources should be Zero to ensure the whole patch is in tune with the Master Tune.

Additive Questions

In the higher ranges of the keyboard the sound is distorted

This is digital aliasing, very common among additive synthesizers because the very high harmonics exceed the frequency range of the sound engine and are mirrored into the lower frequency spectrum. You find extensive explanations of this phenomena in *Avoiding Aliasing* on page 121.

When hitting the keys very hard the sound is distorted

Try to lower the overall level of the spectrum, the Formant Filter and the DCF. Explanations on this in *Avoiding Distortion* on page 121.

The spectrum I hear appears to be different from what I see

In most cases this is due to different SOFT and LOUD settings. You are editing the soft spectrum but due to velocity settings you are hearing the LOUD one. Set Vel Depth in the DHL Common page to Zero.

I want to edit the LOUD spectrum and *not* hear the SOFT spectrum

Set the Velocity Curve in the DHL Common to 1 and set Velo Depth to 127. Regardless of how hard you hit the keys, you will only hear the LOUD spectrum.

How do I know which FF bands match which harmonics?

In default setting—bias value 0, NO envelope—FF band 64 exactly matches the 1st harmonic on the middle C. Well—not a real help when designing sounds. We recommend that you set the Edit Group in the DFL to Each and temporarily set different harmonics to full level. This way you can easily hear the ›outline‹ of a FF band when cutting through the spectrum.

How does the FF Envelope interact with the Velo setting?

In DFE, the velocity setting works subtractively. This means that if the envelope depth is Zero, the FF will not react to ve-

locity. If it is higher than Zero, the Velo Depth setting ›sub-tracts‹ envelope depth on low velocities.

How can I make the FF bias follow the keyboard?

Only by using the envelope, because the KS Depth parameter does not affect the bias directly but the FF envelope depth—don't ask us why, we *told* the development guys several times to change that.

If you want the Formant filter to run *against* the keyboard, set DFE Env Depth to a negative value.

To make the Bias follow the keyboard ...

1 Set all DFE levels to +63

2 Set all Rates to 127

3 Set DFE Env Depth to +63

4 Set KS Depth to your liking.

SoundDiver Help

I've hooked up SoundDiver and the K5000 but nothing changes when I alter stuff using my mouse in the program

Ensure that you have *both* a MIDI IN and MIDI OUT connection established between the computer and your K5000. To work properly, the K5000 uses a ›handshaking‹ protocol for System Exclusive communication which is why both MIDI I/O need to be connected.

Another possible problem is to be found on the K5000 in the SYSTEM/MIDI/MORE page (SYSTEM/F5/F8) The Exclusive option (R3) must be turned ON for the K5000 to work with SoundDiver.

Everything's hooked up properly but I can't hear any changes that I'm making ... so what's the point?

In the MIDI menu in SoundDiver, ensure that both AutoSurf and Autoplay are *enabled.* AutoPlay sends a test note each time you change a parameter, AutoSurf automatically sends patches you select in the Memory Manager or the Library to the K5000.

I have made changes on my K5000 but SoundDiver does not recognize them.

When working with SoundDiver we strongly recommend that you make changes to patches *only* in SoundDiver as it always tries to maintain synchronicity between the K5000's internal memory and it's own memory manager. This way of working has *many* advantages, but be aware that you're likely to run into problems such as patches being overwritten or lost when editing directly on the K5000's front panel.

I was naughty and *have* made changes directly on the K5000, now I want to get them into SoundDiver

1 To be safe, first switch on the memory protect of the K5000 (SYSTEM ⇨ SYS—Protect on).

2 Launch SoundDiver.

3 In the Memory Manager window, click into the ›ADD Singles Bank A‹ bar, after this, click on the icon showing a question mark and a keyboard or choose ›Request‹ from the MIDI menu.

From time to time the screen freezes in SoundDiver

The K5000 features a volatile RAM area for temporary changes. These changes have to be written in to the flash memory of the K5000 from time to time. This procedure is called backup and is carried out automatically, freezing everything but doing no harm. You can set a longer ›Backup Delay‹ in the Memory-Manager window (Special Parameters) or switch backup off completely by setting the Backup Delay to Zero. For more specific help on using SoundDiver, refer to the online help within the program and/or check out the Internet resources listed in the help file.

10 K5000 Tips'n Tricks

We think the title for this is pretty self explanatory. Apart from covering the K5000 indepth this chapter has a bit of a look at SoundDiver—not to explain how to use it, it already has online help—here, we're more interested in covering the use of templates. From reading the preceding chapters, you will have noticed that we're both pretty insistent about this and with good reason—additive synthesis has one major drawback—there are *so many* parameters to set up just to get *started*.

So *please* take heed and use the *groups* and copy functions in the various parts of the synth to speed up your sound creation. In professional circles, there are a handful of people who get the work and continue to get the work—the *fast*.

WIZOO Online Support

Book Updates
For every book WIZOO offers a web page with all the latest updates, new system versions and links to sites and pages offering patches and information. Point your browser to

    http://www.wizoo.com/docs/english/bookservice/K5000.htm

and there you go!

Extensive use of these information and material resources saves you time, helps you get into contact with other users and contributes to expanding your horizons.

Website
In case of problems you cannot solve with this book, WIZOO offers comprehensive online support on any aspect of electronic music production, synthesizers and MIDI.

◆ Check our FAQ Area in Wizdom Valley for frequently asked questions on a variety of matters.

◆ Make use of our link database in order to find internet links to K5000 or synthesis related pages and sites:

  http://www.wizoo.com/docs/english/links.htm

◆ Check our Newbie section in Wizdom Valley for introductions on synthesis, MIDI and more.

◆ Search our Web Site for your issue—just click the Search button in the navigation frame and type in a term.

E-mail

In case you do *not* find an answer to a problem in this book or our website, you're welcome to send us an e-mail:

e-mail address: userinput@wizoo.com
subject: K5000 <shortdescription of your problem>
e. g.: K5000 arpeggiator doesn't work

This service is free to all K5000 programming guide owners, but please

◆ only one question per e-mail

◆ keep it short and precise

◆ be patient, our crew has to answer literally hundreds of questions per day

◆ note that we cannot guarantee to give a sufficient answer and we may have to refer you to the manufacturer's hotline.

If you keep these simple rules in mind, it's very probable that we can help you. Best of all—its free, so be happy, dance, sing and tell your friends.

Optimal EQ settings

The K5000 has a certain ›mid-stressed‹ sound quality. Peter always uses an EQ setting on the mixing console which improves the overall sound quality of the K5000 by—he swears—30 % at least and makes it sound more ›expensive‹ and HiFi.

⊟ BEST EQ—A048

You may like to try this as well. Generally the EQ setting balances the sensitive frequency range around 3 to 4 kHz which is usually a pain in the ear when using additive synthesizers, it increases the ›nice‹ high and low frequencies as well. We recommend using this setting rather than the internal graphic EQ in the EFX section, because the internal one is not very effective.

This setting is suitable for a 4-band parametric EQ, originally set up on a digital console:

Freq/Hz	100	670	2800	12500
Q	Low Shelf	2,5	5	Hi Shelf
dB	+5	−2	−5	+6
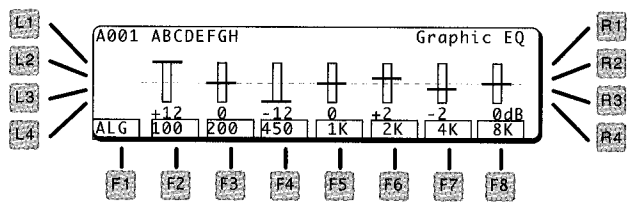
If for some reason you are limited to the internal EQ in the EFX section, this setting at least leans towards a HiFi characteristic:

100	200	450	1K	2K	4K	8K
+5	0	−2	0	−3	−4	+6

Try these settings with additive, very brilliant patches like ›@iScream‹ or ›DstPulse.‹

Copy Functions

Utilising the copy functions in all areas of the K5000 is a great idea. If a professional programmer or yourself has programmed an envelope template or waveset, a Formant Filter setting, a modulation routing or an effects combination that is just *great*, then there is no reason not to make use of it as a basis for your own experiments.

Additive Tips and Tricks

This is just ›a‹ collection of useful pro-tips. Additive programming is a matter of feel, intuition and routine, and you'll very likely develop lots of personal favourite ›tricks‹ when getting into the K5000. These are our personal favourites.

Always be careful when changing harmonic levels

There's an audible difference between an equalizer and a harmonic spectrum, so don't use the harmonic levels like EQ bands. Be careful when changing harmonic levels, especially in the lower area (up to 7th and 8th harmonics) as a slight change can alter the tonal character of the spectrum completely.

The same is true for all Formant Filter bands—honestly speaking, it's true for *every* parameter in the additive domain.

Simulating ›natural‹ sounds with additive synthesis

No other synthesis technique—FM included—needs as much experience and routine in method as additive synthesis does. Be patient—it will take months until you get a ›feel‹ for which harmonics are best used for particular sounds.

1 Actually the best way to get into spectrums is studying the spectrums provided with the factory presets and SoundDiver. Really look

INTO them in the ADDITIVE EDIT or in SoundDiver. Change harmonics and listen to what this change does to the sound.

2 Another good way of learning additive spectrums is analyzing cyclic waves of natural sounds. We provided a few of them with the floppy disk—analyze them in SoundDiver and have a close look at the spectrum. Try creating cyclic waves of your own—download samples from the WWW (look at our link base for URLs) and extract cyclic waves using a shareware sample editor like CoolEdit (Windows) or D-SoundPro (Mac).

Avoiding Aliasing

Without going into a really deep explanation: Aliasing is an unpleasant harmonic distortion you may experience with some additive sounds when playing in the higher range of the keyboard.

⊟ ALIAS—A049

There are several ways of reducing it and there's no sure-fire solution for every case. We recommend that you try these methods in the order they appear and see if they fix your problem:

1 Try lowering the cutoff frequency of the DCF. You can use the Cutoff knob for all sources, but you have more control if you use the Cutoff parameter in the DCF page.

2 Try a lower or negative ›KS to Cut‹ value in the DCF page

3 Set the 64th harmonic to a value of Zero in the additive DHL page

4 Use a negative value for KS to Gain in the additive DHL Common Page.

5 Try to increase the Formant Filter bias.

6 Set the highest Formant Filter band to Zero and lower the BIAS value so that the sound is *not* changed but the aliasing disappears.

Avoiding Distortion

The internal additive engine of the K5000 has a level limit you can exceed by using spectrums with lots of loud harmonics, by setting certain levels too high and many other parameters which can ›max out‹ your machine. This usually leads to unwanted digital distortion. In some cases you can use this as a sound effect, but in most cases it's just an-

⊟ DISTORT—A050

noying. If you run into digital distortion, try these steps in order of appearance until you get to a step that removes the distortion:

1 Mute the sources except one. If the distortion is gone, it may be caused by the fact that the total of the combined source levels are too high.

2 Isolate the source producing the distortion by unmuting until it ›kicks in.‹

3 Decrease the total Volume value in the COMMON page for the problem source/s.

4 If this doesn't work, set it back to the original value. Proceed the same way for all other steps.

5 Decrease the SOURCE VOLUME in the CONTROL PAGE.

6 Decrease the DCF LEVEL or the RESONANCE in the SOURCE DCF page.

Next steps only for ADDITIVE Sources:

7 Decrease the TOTAL GAIN value in the ADDITIVE DHL LEVEL COMMON page.

8 Decrease all harmonic levels in the DHL page using the ALL group, both for SOFT and LOUD settings.

9 Decrease the overall Formant Filter band levels in the DFL Level Edit page using the ALL group.

If all of these steps don't help, unplug the K5000 from your fuzz box and plug it directly into your mixer.

Using Harmonic Level Copy
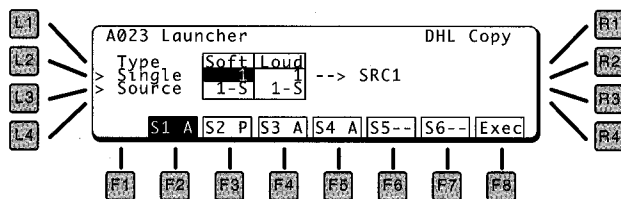
The implementation of the Harmonic Level Copy drives everybody nuts. Be sure: every time we visit system pro-

grammer Mr. Kondo in Japan, it costs him a beer—we drink it to your health. At any rate—you have to make do with the current implementation of this, so let's help you to at least understand what it does:

In the table below:

Type	Soft	Loud	
Single	1	1	⇨ SRC1
Source	1-S	1-S	

What it means is:

Type	Soft	Loud	
Single	The single patch FROM which the copy will be taken	The single patch FROM which the copy will be taken	The destination source
Source	The Source and S/L partial FROM which the spectrum is taken and copied to the SOFT partial	The Source and S/L partial FROM which the spectrum is taken and copied to the LOUD partial	

Example: Say you're working on Patch A035. You have set the SOFT partial and now you want to copy it to the LOUD portion of the same source, SRC3.

Against everything you might intuitively want to do, you have to set it like this:

Type	Soft	Loud	
Single	35	35	⇨ SRC1
Source	3-S	3-S	

The Copy Function always copies from patch memory, not from the edit buffer. If for example you want to copy a freshly changed S1 to S2, first write the patch and then use Copy.

Caution! You always have to set the parameters correctly for *both* partials—SOFT and LOUD, even if you want to change only one of them. Otherwise your freshly created spectrum might disappear into harmonic heaven.

Using Soft and Loud

The use of Soft and Loud settings in the DHL are an easy way to achieve patches with harmonic content that responds to velocity. Here's our guide to using this feature the smart way:

The DHL Common
Page
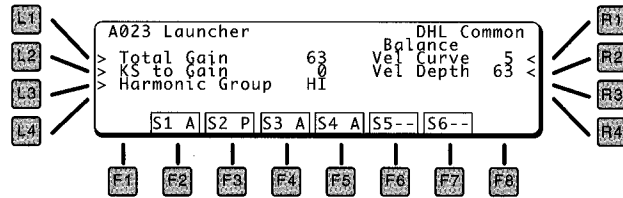
⊟ Wizoolni—A001

1 First make sure the VELO DEPTH value in the DHL Common page is ze-roed. This ensures that you only hear the SOFT setting. Also use neu-tral settings for the DCF and the FF so that they don't get in the way of the DHL. The ›Wizoolni‹ patch shows you neutral settings.

2 Set or copy your ›average spectrum‹—the one that you want to hear at mid-high velocity—to the SOFT DHL setting.

3 Now copy that spectrum to the LOUD setting using Harmonic Level Copy.

4 After copying the average spectrum to LOUD, set the SOFT spectrum to the softest sound you want it to reach at low velocity. You may use the BRIGHT edit group for this.

5 Afterwards set VELO CURVE and ENV DEPTH values in the DHL Common page. A good starting point is Velo Curve = 2 and Env Depth = 100.

6 Now add harmonics to the LOUD spectrum, checking by playing with different velocities.

Set all the other source parameters like FF, DCF and DCA. After this, check the SOFT and LOUD effects and balance them against DCF and FF with the Env Depth settings in the DHL COMMON.

Control of the harmonic content—shaping sound

In sculpting the harmonic content control—by velocity or time—in an additive source, you have several possibilities.

We'd like to give you a guideline on which to use in what case:

◆ Slight velo control over the harmonic content is easily achieved by using Soft/Loud. However this determines only the static DHL spectrum when a key is hit, it does not affect the spectral changes over time. Use the DHE for this.

◆ More efficient, raw velo control of the harmonic content is achieved by using the DCF in Lowpass mode. You cannot control individual harmonics, but this method is best for simulating the dull ⇨ bright velo changes of natural instruments.

◆ Drastic timbral changes over time, by velocity or LFO are the territory of the Formant Filter.

◆ Resonant filter characteristics can be achieved by two methods: DCF or FF. DCF is easy, fast and leaves the FF free for more distinct and precise changes to the sound. FF can simulate the DCF and allows you to literally draw the filter curve but involves much more effort.

Here's how the ADD pros use these features for great ADD patches:

◆ First the DHL and the soft/loud-balance is programmed, slight changes in time are created in the DHE.

◆ Then the Formant Filter is programmed—characteristic, bias and envelope are set to virtually saw through the harmonic spectrum

◆ The last stage is the DCF—it is used to tame the rough, biting sound created by the FF.

Simulate Flanging by Formant Filter

By setting all Formant Filter bands to a level of 100, then setting each 5th or 6th band to 127 and applying LFO modulation of the BIAS you can create ›custom‹ flangers.

🖫 FF FLANG—A043

Create Resonance in the Formant Filter

► The FF is the only filter you can shape to your liking. You can create ten bumps or three pyramids or the silhouette of your favourite Baywatch body lying on the beach ...

▣ FF RES—A044

You can easily add resonance to a Formant Filter setting by creating a bump around the ›cutoff frequency.‹ You can use the GEQ group setting for the draft bump and then refine it band by band.

FF Resonance is added to a normal lowpass filter (left) by drawing a sharp bump (right).
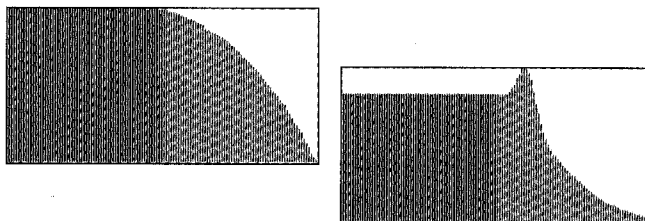
Create bell-like spectrums

▣ BELL LIK—A045

This is *very* easy: Although the ›shimmering,‹ resounding quality of bell-like sounds may make you assume that there are hundreds of harmonics involved, only three or four are enough in most cases.

1 To create the basic bell sound, start from a harmonic above 6, set it to full level.

2 Take another one with an inharmonic relation to your first one— e. g. 11, another one—let's say at 17 and maybe 20. Set them all to full level—there you go—easy huh?

3 To make the bell sound more ›harmonic‹ and musically useful, introduce harmonics 1 and 2.

4 To give it more bite in the upper frequency range, multiply the ›odd‹ harmonic numbers by 2 and add these harmonics as well.

Create biting leads

First rule: You cannot have enough harmonics.
Second rule: Create a ›hi-pass‹ on the first three harmonics. E. g. Harmonic 1 level = 50, 2 = 80, 3 = 95 ...

Third rule: Use DCF to create a fat shape and achieve easy control over the harmonics using wheel and velocity.

SoundDiver

As mentioned above, we're not going to teach you how to use SoundDiver, but we strongly recommend that you do actually *use* it.

We humans are very visually orientated critters, and while the display on the K5000 is nice, it's no match for a computer monitor in size or in the amount of what it can show you at one time. After the initial shock of seeing a K5000 patch in it's entirety in SoundDiver (and the string of expletives that usually ensue) you get a really good ›feel‹ for where everything is in the signal path and, after a while, start to visually relate the 3D waveform view with a particular sonic character—you start to ›see‹ what a waveform is going to sound like.

SoundDiver obviously has the ability to send the MIDI data in realtime to your K5000 so that any changes you make are heard as you actually do them, which further links your understanding of how the various components work.

Sorry if this sounds like a commercial for SoundDiver, but much of what you have already learned in this book will make even more sense if you use it.

Another great bonus with SoundDiver (SD) are the templates—most of which were created by Peter—that cover a range of K5000 functions. Let's take a look at some.

Wavesets

In the single edit mode of SD, there are a number of predefined wavesets or waveform shapes for the DHL which cover everything from basses to organs, electric pianos, bells and even SAWTOOTH and SQUARE waves. Given these ›instant‹

starting points for sounds—no programming required—SD allows you to build patches in minutes.
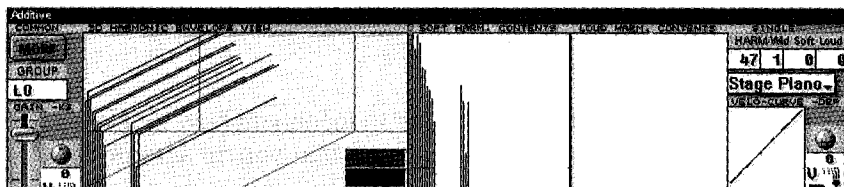
DHL ›Waveform‹ templates are selected by clicking the flip menu where ›Stage Piano‹ is displayed.

This can certainly be achieved using the front panel of the K5000, but having most, if not all, of the hard work done for you and ›ready to go‹ is great on two levels. One is speed, and the second—at least while you're learning about your K5000 and additive synthesis—is as a tutor. If you open the appropriate page on your K5000's front panel (DHL Edit) you will see the changes made in SD happen on the LCD.

Also in this section are a number of DHL Envelope templates, covering plucks, pianos, slow pads and more so that you can apply individual envelope shapes quickly to individual harmonics in your waveset, or to entire groups.

DHE templates are selected by clicking the flip menu where ›Pad slow‹ is displayed.
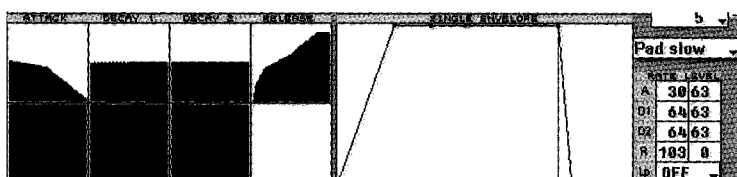
The greatest function of all, in Dave's opinion, is the ›Draw‹ edit mode. In this mode of editing—an alternative to group editing—you can literally use the mouse to draw new wavesets in the DHL. Needless to say, this is unbelievably fast for coming up with the ›raw‹ version of your sound, and from here, using the envelope templates make sound editing a joyous experience.
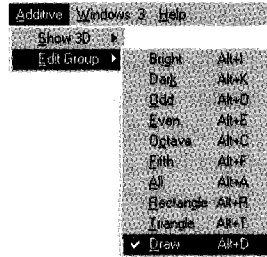
Draw mode and others can be selected in the Edit Group menu.

Listen to ›StTramp‹ which is a completely initialized patch with a loud and soft waveset drawn in—the default filter bypass was turned off, no effects, no EQ etc.—this *rough* patch took literally five seconds to create and has the makings of a great SuperTramp electric piano sound.

StTramp—A041

Sample Importing

One of SoundDiver's neatest tricks is the ability to import WAV or AIFF samples and convert them into wavesets.

On the Disk included you will find several sample files to analyze and use for K5000 sounds (see *Disk Content* on page 137).

The main bonus with this feature is the sheer number of starting points for sonic experimentation. You have—out there in the big, wide world—a limitless supply of sounds to pilfer. In the K5000, you have control over these sounds—a nice combination.

Here's a checklist of qualities to look for in raw sample material you wish to analyze that will ensure good results:

This function will *not* allow you to import a drum loop with a vocal and pull out the harmonics that constitute the singer's voice, nor will it sound *exactly* like the original sample. It is an interpretation or a conversion, if you will, from one form to another—not a facsimile.

◆ No beating, detuning, chorusing, pitch changes. The analysis function tries to find the fundamental and then builds the harmonic spectrum. Every change in pitch or phase that creates frequencies outside the pure harmonic spectrum will result in aliasing, noise or distortion.

◆ The less changes over time, the better the analyis result. The harmonic envelopes of the K5000 cannot cope with

the complex harmonic changes of something like a musi-
cal phrase.

◆ Cyclic waveforms yield the best results if it comes to
›color‹ of a sound. If you want to have the sound of your
voice forming a digital choir in the K5000, sing a note, ex-
tract one cycle, analyze it and then build the sound from
this spectrum by using source detuning and the ensemble
effect. Don't analyze a chorused sample!

◆ When analyzing, preferably use the part of the sound that
contains the highest amount of harmonics. You can recre-
ate percussive changes very easy using DHE or DCF. If you,
for example, want to build a clavinet sound from a clavi-
net sample, use a cyclic extract taken from the sustained
portion of the sound—100 ms or so after attack. You can
recreate the hit or snap by adding a PCM attack sample.

◆ Normalize the sample before analyzing it. This yields a
higher resolution allowing the analysis algorithm to better
represent the differences in level between the individual
harmonics.

◆ Be aware, however, that normalising algorithms usually
›dither‹ the sound resulting in an amount of quantize
noise—in a ›best case‹ scenario leaving the sample as it
was but with increased dynamic range. Some raw sample
material may actually produce better results from analy-
sis if left alone—i. e. *not* normalized.

Filtering

MANHATTA—A046   Peter, being the seasoned traveller that he is, has also cre-
ated a few Formant Filter presets called ›Manhattan,‹ ›Mt.
Fuji‹ and ›Cologne‹ which resemble the shape of the city sky-
lines and Japan's most famous tourist attraction, amongst a
number of others.
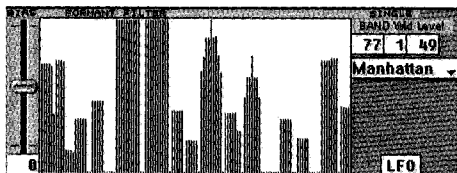
These presets are not only nice to look at, they are also extremely useful and in some cases extremely bizarre settings for your FF.

FX and Control

While not overly blessed with templates, selecting modulation sources and destinations is a snap in SD. Effects routings are equally as easy to set up and more importantly, allow you to see the signal flow much more clearly than on the LCD.

Tip: Click on the ENV parameter in the FF envelope section and it will change to the FF LFO, allowing you to adjust these parameters.
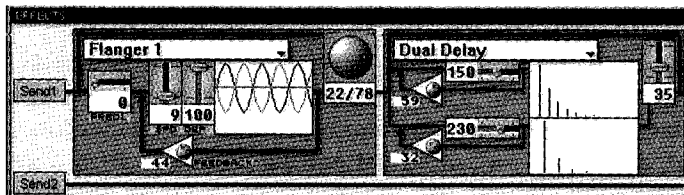
General SoundDiver Info

Emagic have a >treasure hunt< mentality. This is probably due to the fact that the guys in the programming team are big kids who have a lot of fun creating their software and love surprising people with hidden functions.

SoundDiver has a number of these such as the click on ENV in the FF section mentioned above. Additionally with every parameter, even graphic sliders and knobs which have no obvious numeric value, you can double-click on them and type in the number directly.

In the DCO Sources area under TYPE, you can change from ADD to PCM. When PCM is selected as the source, a flip menu will apear below it showing you a list of all of the PCM wave-
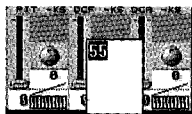
The hidden truth behind every double-click

form names available—much nicer than scrolling through the list of numbers on the K5000's LCD.

Clicking on the ›Syn saw 1 Cyc‹ flip menu will show you a list of all of the K5000 waveforms you can use for subtractive synthesis.

Also in the DCA section, you can select velocity curves as graphics which is again much nicer than a list of numbers.

One downside is that even running in 1024×768 resolution, there just isn't enough monitor real estate to see the entire patch. To get around this, for each source, there is a button to the left. This will show up as a large green bar if you are looking at the parameters of a particular source. Clicking once on this will reduce it to a small grey button. Use this feature as it's a great aid to keep everything easy to see and understand.

Learn and use the keyboard commands. They are *much* faster than using the mouse and will speed up your use of SD tenfold.

Another tool in the screen real estate battle is a function called ›Screensets.‹ This function allows you to save ›snapshots‹ of your window positioning, zoom settings within windows and more—all of which can be retrieved with a single keypress. There are 90 of these customizable windows at your disposal.

Shortcut Keys

The K5000 front panel contains a number of shortcut keys which take you to various pages in the operating system in EDIT mode. To access these shortcuts you must first press the EDIT button followed by the appropriate shortcut key as follows:

Key	Function
00	Selects SOURCE 1
01	Selects SOURCE 2

Key	Function
02	Selects SOURCE 3
0	Selects SOURCE 4
1	Selects SOURCE 5
2	Selects SOURCE 6
03	Opens COMMON page
3	Opens EFFECTS routing page
04	Opens DHL MENU (Only if an ADD source is selected)
4	Opens DHE MENU (Only if an ADD source is selected)
05	Opens DFL MENU (Only if an ADD source is selected)
5	Opens DFE MENU (Only if an ADD source is selected)
06	Opens DCO MENU
6	Opens DCO ENVELOPE page
07	Opens DCF MENU
7	Opens DCF ENVELOPE page
08	Opens DCA MENU
8	Opens DCA ENVELOPE page
09	Opens LFO page
9	Opens CONTROL parameters page

When you're in edit mode, this saves a lot of time by by-passing the multiple presses of the EXIT or BACK button to return to the menu you wanted to access. Simply use the shortcuts shown above and you'll find that things go much faster.

Once you're in EDIT mode, you don't need to hit the EDIT button again until you're ready to exit your editing session, rather use the short-cut keys directly.

Appendix

Glossary of Terms

Additive Synthesis The process of combining fundamental tones and related harmonics to create sound.

Aliasing A form of harmonic distortion resulting in the creation of false (alias) low frequency tones.

Amplitude Another word for volume.

Amplitude Envelope A control for manipulating the volume of a whole sound or part of a sound over time.

Bias Alters the center frequency, a weighting an audio signal to one end or the other i. e. lower or higher frequencies. Pertinent to the Formant Filter in the K5000.

DCO Digitally Controlled Oscillator: generates sound.

DCF Digitally Controlled Filter: contours the colour of the sound generated by the DCO.

DCA Digitally Controlled Amplifier: controls the volume of the signal passed from the DCO and DCF over time.

Distortion A generally unpleasant sound caused by feeding an audio signal from an output source into an input source at high gain, effectively overloading the input.

Envelope A tool used for shaping sound over time.

Equalizer (EQ) Adds or reduces the amount of gain to a particular frequency or range of frequencies in an audio signal.

Filter Is used to shape a waveform or complete sound altering the colour of the signal.

Filter Envelope Used to control the filter over time.

Formant Filter A combination of the Equalizer and Filter as described above with control of up to 128 frequency bands.

Groups A collection of mathematically related harmonics.

Harmonic An overtone related to the fundamental frequency mathematically. E. g. the 2nd harmonic is at twice the frequency of the fundamental, 4th harmonic at four times the frequency of the fundamental a. s. o.

Harmonic Envelope Used to control the volume of each harmonic over time.

Key Pressure Also called aftertouch is a control for sound manipulation and modulation which responds to pressure on the keyboard *after* the initial note is struck.

Key Scaling A control for sound manipulation and modulation which responds to position on the keyboard i. e. what note number is being played.

LFO Low Frequency Oscillator: is used as a modulator for a range of K5000 functions.

Loop A cyclic repetition of a sound or section of a sound.

MIDI Abbreviation for Musical Instrument Digital Interface: is used for control of the K5000, synchronization, sound storage and communication with other MIDI devices.

Modulation Control of another function using a modulator/controller. E. g. use of the modulation wheel to add vibrato to a sound or key pressure to change (modulate) pitch.

Mono(phonic) Only plays one note at a time.

Poly(phonic) Can play many notes at one time.

PCM Pulse Code Modulation: a method of digitally encoding and storing sampled audio material into computer memory.

RAM Random Access Memory: used for storage and editing of material on the K5000.

ROM Read Only Memory: contains non-volatile sample material on the K5000. See PCM.

Sample A digital recording of an audio signal. See PCM.

Subtractive Synthesis The process of creating sound by combining harmonically rich waveforms and cutting away (subtracting) portions to achieve a result.

Synchronization The act of running the K5000 arpeggiator/sequencer to match tempo, start, stop and continue commands from an external MIDI device and vice versa.

Velocity Alters the way a sound responds to playing based on how hard the keyboard is struck.

Velocity Curve Alters the way a sound responds to playing based on where on the keyboard a note is struck.

Wave Set A combination or a set of harmonics and their respective harmonic envelopes.

Disk Content

File List

K5000.LSO	Logic Environment for K5000
K5000ENV.TXT	Readme text for Logic Environment
WIZOO.LIB	Example patches in SoundDiver format
WIZOO.KAA	Example patches as K5000 ALL-file to be directly loaded into the K5000 using the built-in floppy drive
AIFF	Folder containing samples for SoundDiver analysis—AIFF format for Mac and PC
WAV	Folder containing samples for SoundDiver analysis—WAV format for PC

Patch List

No.	Name	additional info
A001	Wizoolni	Init Patch
A002	Angelvox	
A003	StageMKI	
A004	Engage	
A005	@Clustaz	
A006	Magnetic	
A007	Bronx	
A008	Hormonic	
A009	Protonic	
A010	MelMaker	
A011	SmthWssn	
A012	SAWTOOTH	Sawtooth wave
A013	SQUARE	Square wave
A014	BRIGHT	DHL group setting
A015	DARK	dto.
A016	ODD	dto.
A017	EVEN	dto.
A018	5THS	dto.
A019	OCTAVES	dto.
A020	VELCURVE	Try different Velo Curves in DHL Common
A021	DHE WAVE	A spectrum created by DHE instead of DHL
A022	DHE LOOP	
A023	LFO FADE	
A024	DCF LOPA	Lowpass DCF
A025	DCF HIPA	Hipass DCF
A026	DCF RESO	Reso effect
A027	FF	Lowpass created by Formant Filter

No.	Name	additional info
A028	FILTER	Like A027, created by DCF
A029	PITCHENV	Brass effect created by Pitch Envelope
A030	CONTROL	Complex FX and Source Control by ModWheel
A031	GosplOrg	
A032	Sphaera	
A033	DynoSaur	
A034	TB5005	
A035	Gorgizmo	
A036	Creaturz	
A037	@IsCream	
A038	Myst2006	
A039	Cyber@FX	
A040	@Vocodor	
A041	StTRAMP	
A042	ORGAN FO	Organ Spectrum made in one minute using Octave and Fifths
A043	FF FLANG	
A044	FF RES	
A045	BELL LIK	
A046	MANHATTA	
A047	SPLIT/ZO	Split created using source zones
A048	BEST EQ	recommended overall EQ setting
A049	ALIAS	Typical example of aliasing on upper key range
A050	DISTORT	Typical example of distortion

List of Samples

These samples are provided for experimenting with the analysis functions in SoundDiver's ADD editor. In each ADD source there is an ›Import‹ button where you can load an AIFF or WAV file. Both formats are provided with the disk. You can check the samples with any sample playback software on your PC.

ACOUBASS	Acoustic Bass
BANDONEO	Bandoneon
DX7PIANO	DX7 Rhodes
HARPSICH	Harpsichord
NYLONGIT	Nylon Guitar
RHODES	Natural Rhodes
SLAPBASS	Slap Bass
STRATOCS	Stratocaster

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Finally, the long awaited programming guide for all K-5000 users, featuring:
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