The Kawai K3 is a typical representative of those mid-80ies synthesizers: membrane buttons (instead of real buttons), an Alpha Dial which is used to edit the extensive selection of parameters, plus a six-voice hybrid sound engine. The latter consists of two wavetable oscillators, a VCF and a VCA per voice. The LED display is huge (similar to that of a Korg DW-8000, but much bigger).

In its appearance, the Kawai K3 (released in 1986) is reminiscent of the DX-7, just like the Oberheim Matrix-6, Casio CZ-Series, Sequential 2000, Roland Alpha Juno 1/2, JX-8P/10, and others.

A few general thoughts on the instrument

- The Kawai K3 is a very professional hybrid synthesizer. It's a mix of digital oscillators, additive/substractive synthesis and analog filters

- VCF and VCA give the sound a lot of depth and warmth

- The wavetable oscillators, on the other hand, can easily produce sounds similar to a PPG Wave synthesizer

DIGITAL WAVE MEMORY SYNTHESIZER

K3

- The Kawai K3 is a very good background synthesizer, thanks to the soft character of its sound. No wonder it gets along so well with digital and analog instruments in a mix. It leans more toward PPG-like bells and pads than toward classic Oberheim/Sequential-like brass sounds. It's perfect for dreamy, softly evolving arpeggio sounds and for cool drawn-in-delay electronic patterns

- Be careful using the onboard (analog) chorus! It's quite noisy (at leat in our K3), worse than most Roland chorus sections. Better turn it OFF and use an external chorus instead ...

- The OSC BAL(ance) function, on the other hand, is very professional. This parameter determines the mixing balance for the two ocillators. "-15" is oscillator No.1 only, "0" is even, and "15" is oscillator No.2 only. PRES(sure) OSC BAL(ance) is even more effective, allowing for modulation of the mixing balance between the oscillators via aftertouch. This results in organic, evolving sound clips.

- Keyboard-tracking of VCF and VCA is very flexible, too. Settings may be positive or negative, making the keyboard an important and expressive tool

Let's look more closely at the instrument ...

Digital Wave Memory

The oscillator's source consists of 33 waveforms. "0" cancels the oscillator (no sound), while waveforms No. 1-31 are factory preset waveforms. No. 32 is a user-defined waveform, and No. 33 is White Noise.

The instrument's name – DIGITAL WAVE MEMORY SYNTHESIZER – derives from this possibility of programming your own (user) waveform out of harmonic components...
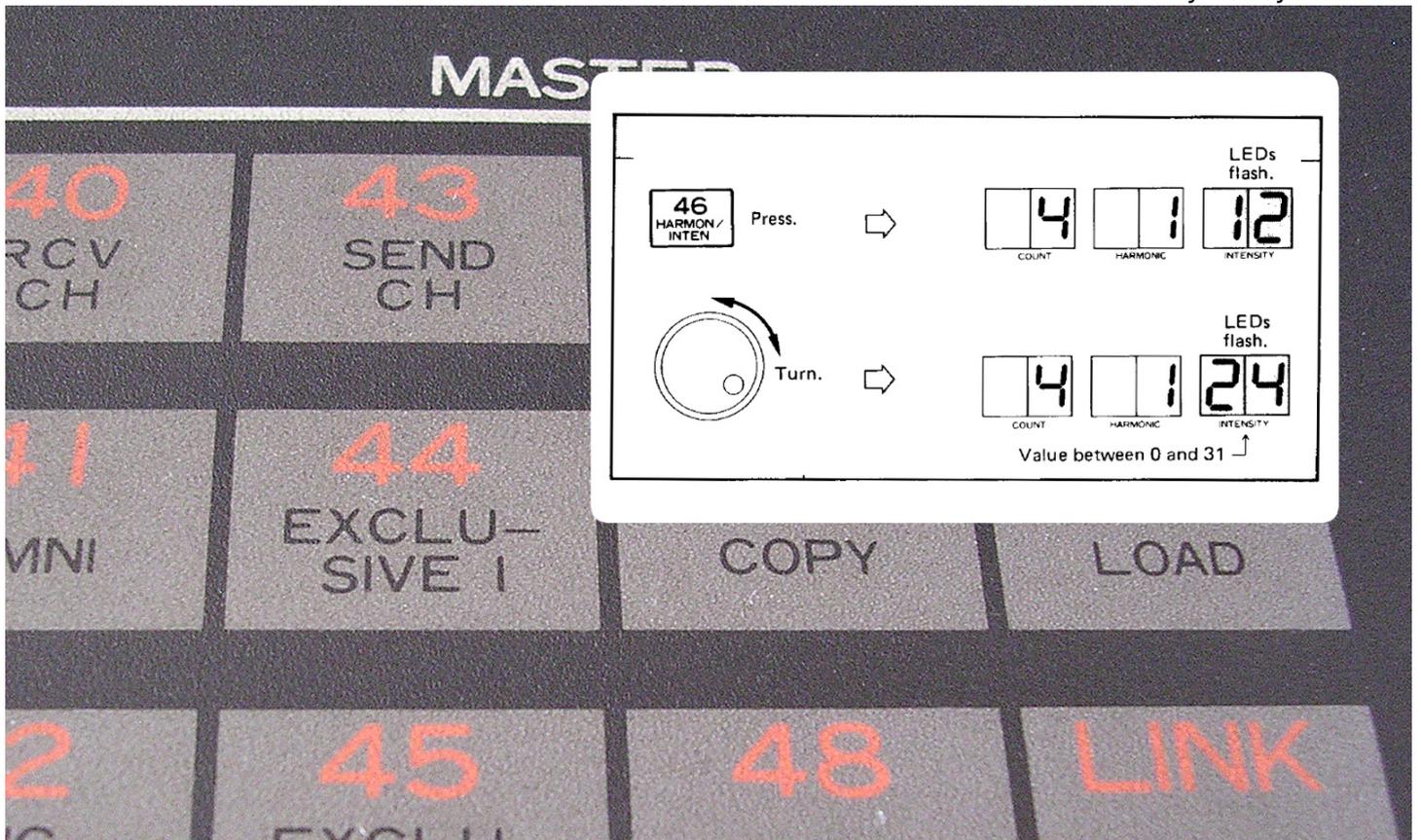
Editing a user-defined waveform

User-Defined Waveform (source: Kawai K3 Owner's Manual, page 25)

"**The sound** of a musical instrument [...] is complex. The amazing thing is that, at any particular instant, the waveform can be broken down and expressed as the sum of **a series of sinusoidal waves whose amplitudes may differ**, but whose frequencies are all whole number multiples of a single common frequency. The common frequency is called the **"fundamental"**; the others, the **"harmonics"**. In music, the second harmonic is one octave above the fundamental.

Waveform data sheet ...

USER-DEFINED WAVEFORMS

A synthesizer such as the K-3 reverses the process, mixing a series of sine waves to generate complex patterns for "natural" sounds which we recognize instantly as a piano or a saxophone. In fact, all standard oscillator waveform shapes in popular synthesizers, such as triangle, sawtooth and square waves are easy to reconstruct in this manner. Alternatively, you can choose a different set of amplitude settings and produce something totally new.

The **K-3** allows you to **create your own sound sources by specifiying** the relative intensities (amplitudes) for **any 32 of the first 128 harmonics**. Each intensity may be anywhere between 1 and 31. (Harmonics assigned an intensitiy of "0" are suppressed and do not affect the sound.)"
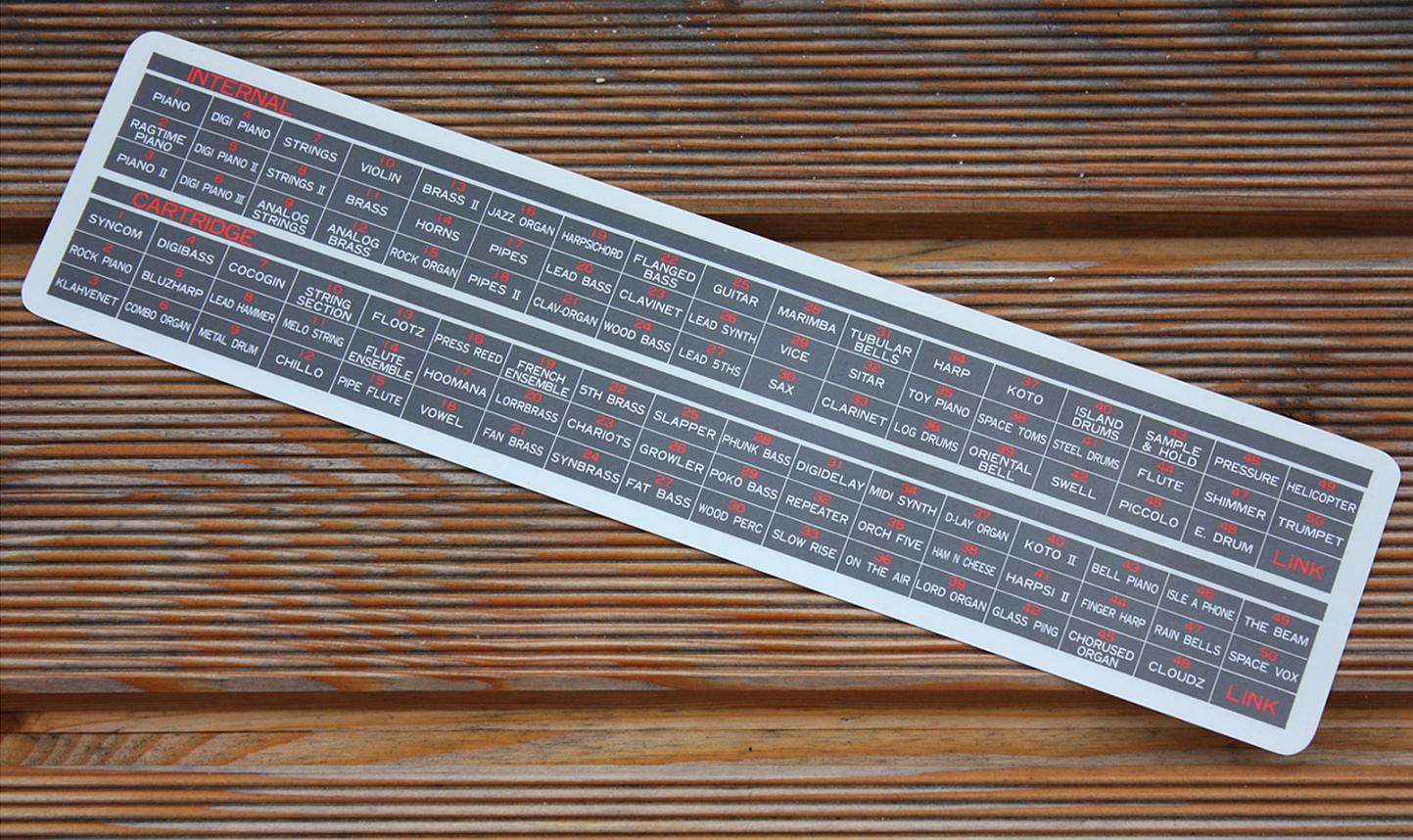
... with K3 sound list

Building up a new waveform from scratch sounds creative and interesting. But, to be honest, I never gave that a try (this was the fate of my OSCar, as well). The 31 factory waveforms of the Kawai K3 are more than sufficient – enough material to program heaps of new, interesting sounds. Still, the user-defined waveform seems to be an underrated aspect of sound programming, something I'd like to spend more time on in the future.

The internal memory allows storage of *one* user-defined waveform; another *one* may be written in the memory cartridge. For my taste, the 31 factory waveforms are enough to start with.
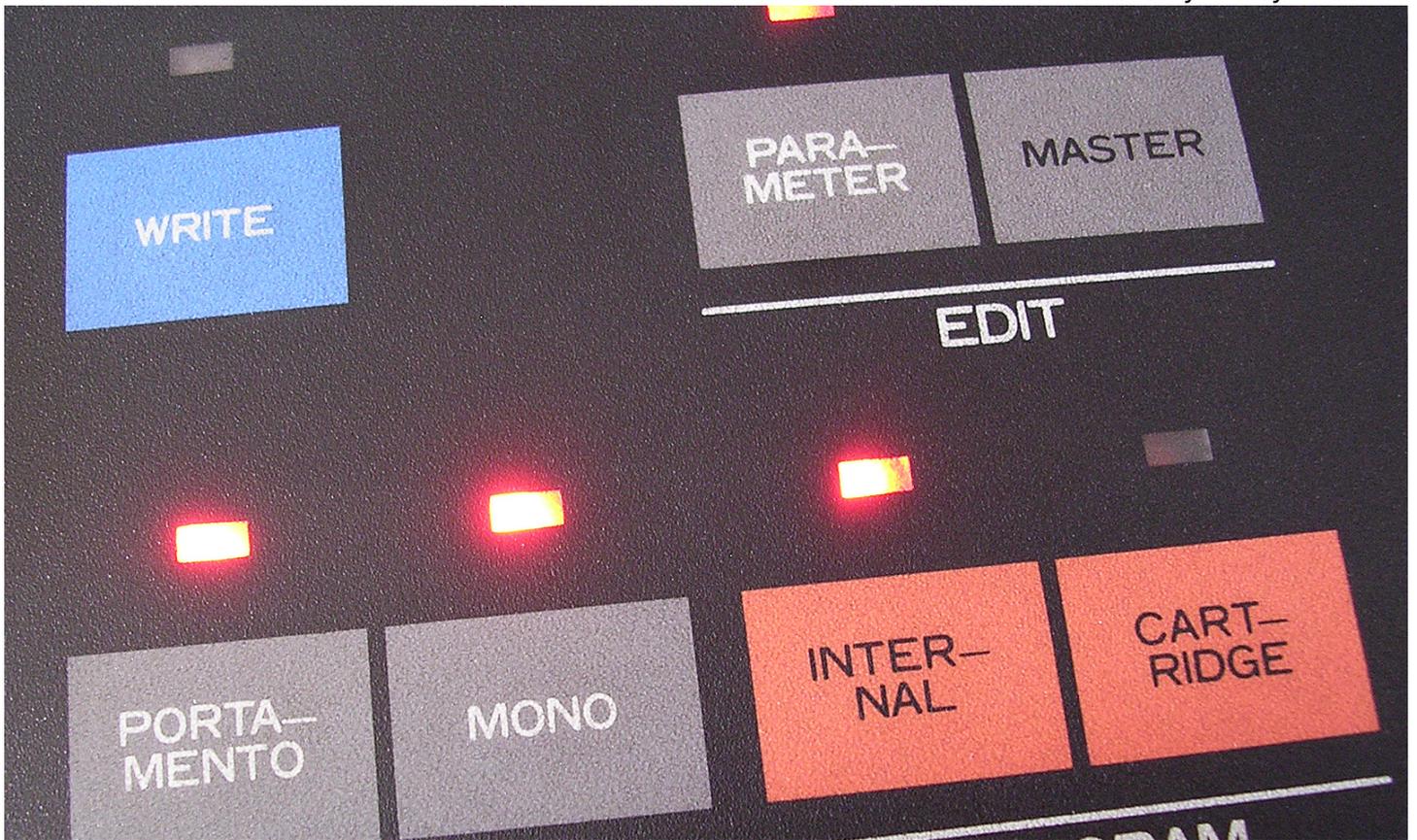
Factory Waveforms

If you like the sound of the old PPG Wave 2, 2.2 or 2.3, then you'll fall for the Kawai K3, too. The 31 factory waveforms are a nice mix of soft, sometimes nasal tones. The analog VCF/VCA section adds a lot of depth to them, giving you deep, lush analog/digital sounds.

Now, please listen to the soundfile "all waveforms" at the end of the article. It contains – what surprise – all 32 waveforms (31 factory- and 1 user-waveform, noise is left out). As with the old PPG synths, the amplitudes of the single waveforms differ considerably. That makes continuous wavetable sequencing a little difficult – you don't want any waveform to "jump" out of the speakers, while, in the next second, others seem to fade away into nothing.

Sadly, there's no modulation of the wavetable possible (unlike those PPG synths). All you can do is scroll through the waveforms. OSC BAL(ance) via aftertouch, on the other hand, creates "morphing sounds"…

Keyboard Features

Speaking of pressure modulation: a whole bunch of features turns the K3 keyboard into a highly versatile pro-instrument …

Velocity

- VELO VCF – controls VCF cutoff frequency
- VELO VCA – controls VCA output level

Aftertouch

- PRES OSC BALANCE – mixes balance between the oscillators
- PRES VCF – controls VCF cutoff frequency
- PRES VCA – controls VCA output level
- PRES LFO-OSC determines the amount of vibrato added
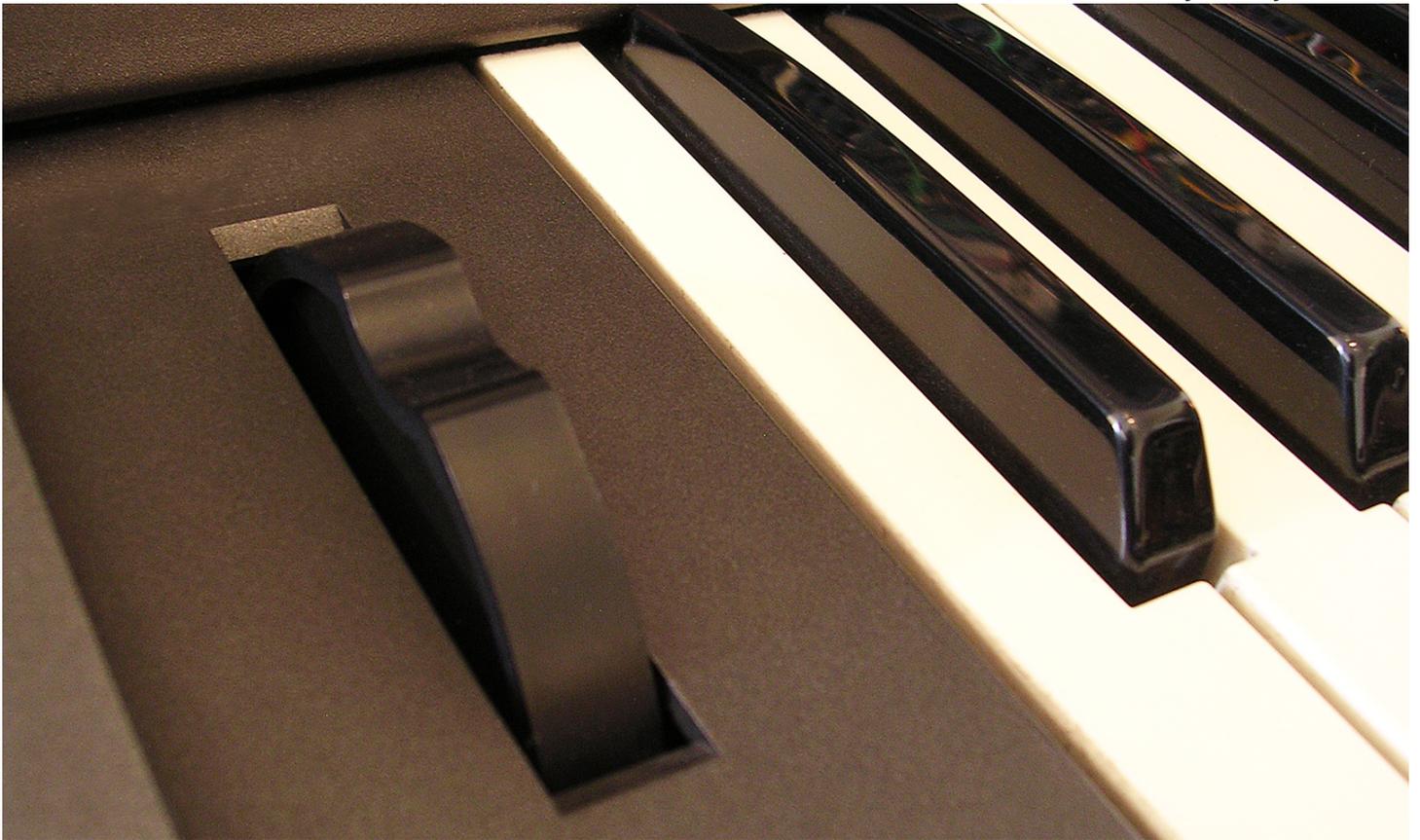
Keytracking

- VCF (pos / neg)
- VCA (pos / neg)

Voltage Controlled Filter: The ANALOG K3

*"T*he VCF seems to be the most interesting part of the bunch: six well known chip SSM 2044 with resonant Low Pass Filter -24db/oct, however keep in mind that the Cutoff and the rest of the parameters are CPU scaled values."
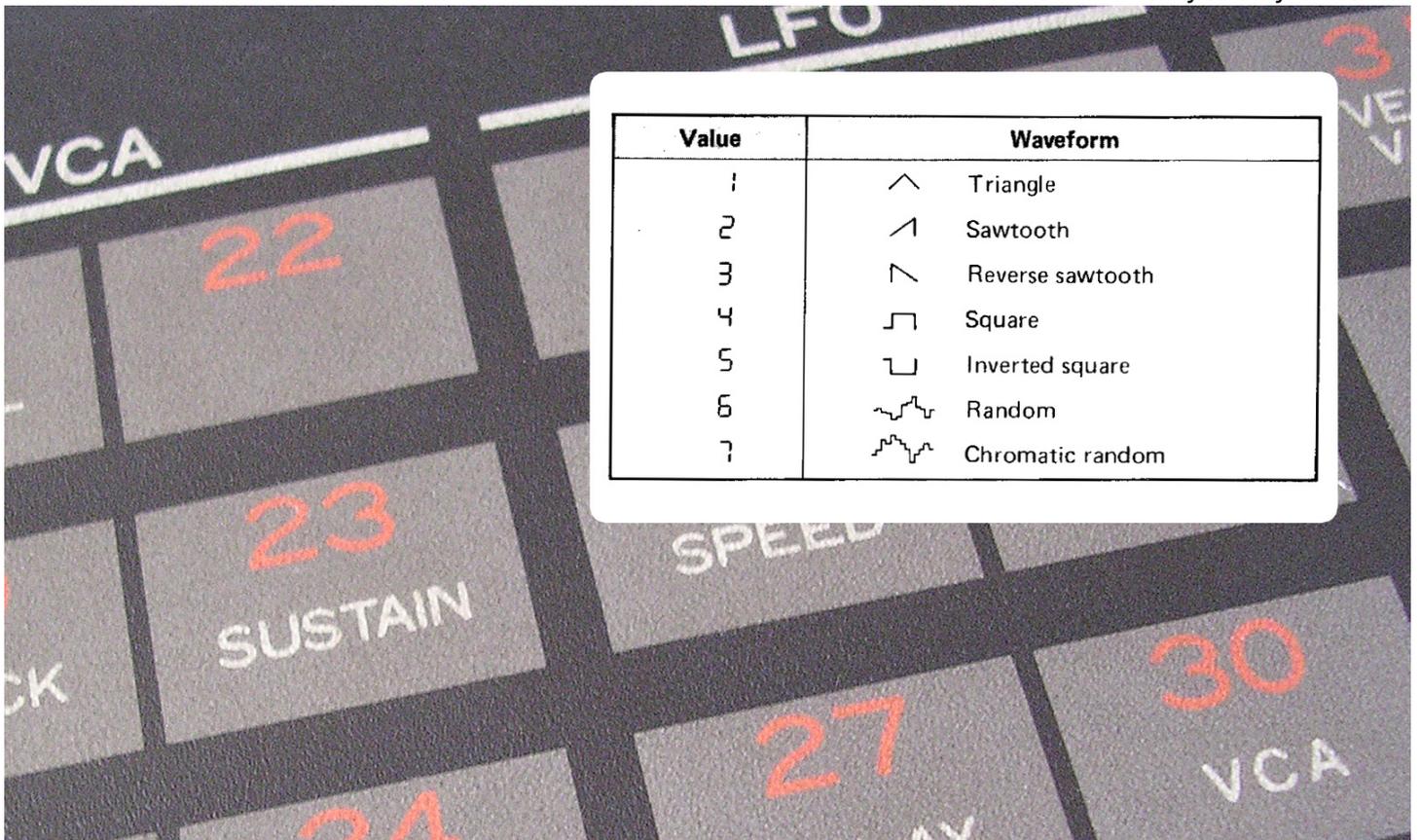
(Source: http://www.polynominal.com).
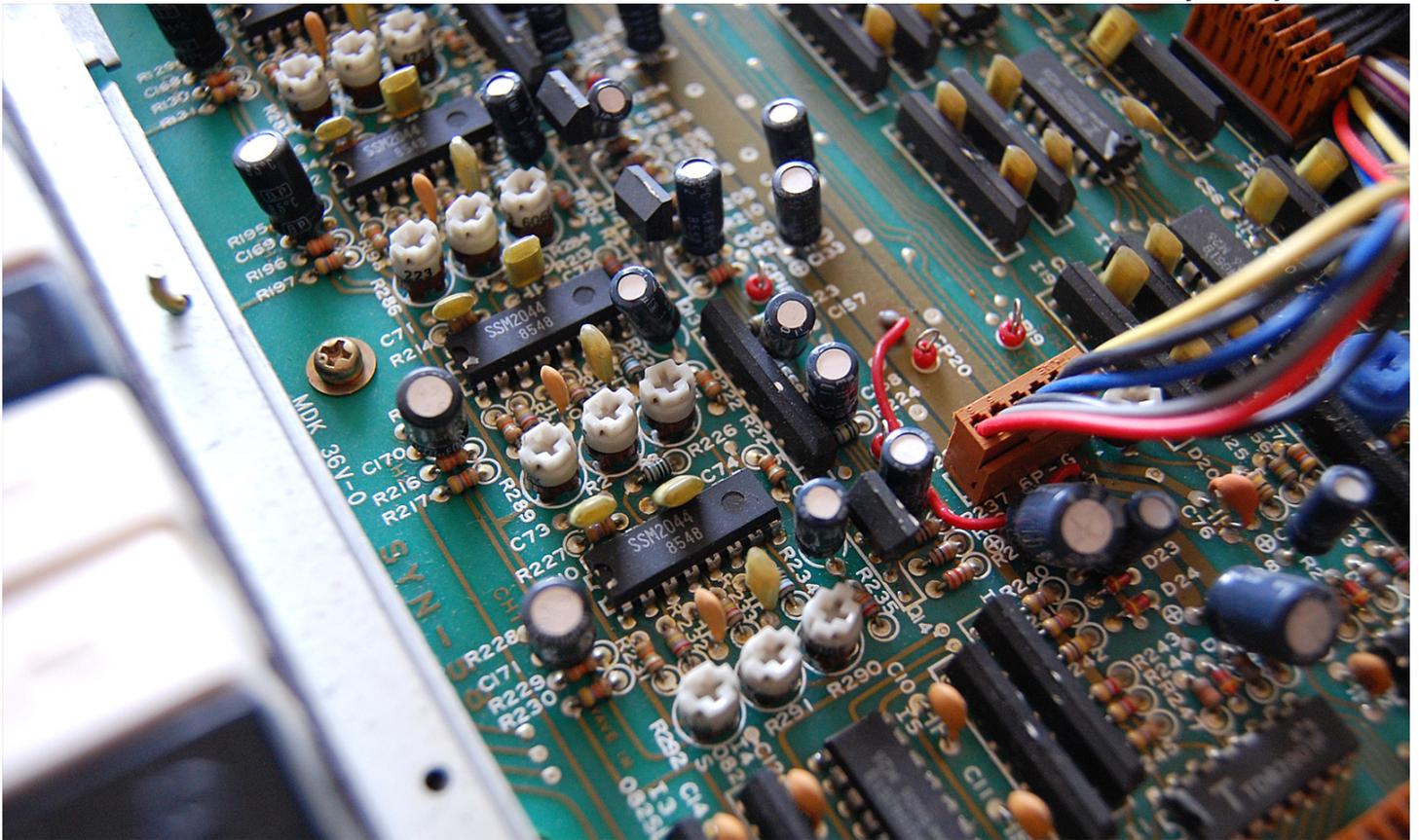
SSM2044 VCF

The filter sounds quite good. At high settings, the resonance produces self-oscillation, giving you all those typical electronic drum sounds and special effects.

Actually, there are *two* filters in the K3: a classical Low Pass Filter and a High Pass Filter (called LOW CUT). The latter can only be adjusted manually, similar to the HPF on many Roland synths.

VCF and VCA have their own ADSR envelope generator. Like with many mid-80ies synthesizers, the envelopes are not the instrument's strongest point. Their attack is not too fast, they're a little sluggish.

Low Frequency Oscillator

"The onboard LFO, again, is a standard module with the parameters SHAPE, SPEED and DELAY. A couple of extra waveforms – like random or chromatic random – give it a nice touch, though …

Value	Waveform	
1	∧	Triangle
2	⟋	Sawtooth
3	⟍	Reverse sawtooth
4	⊓	Square
5	⊔	Inverted square
6	∿	Random
7	∿	Chromatic random

K3 LFO waveforms

GREATSYNTHESIZERS.com

DELAY is for the LFO, but it also modifies the AUTO BEND function of the oscillator section, too. That's a great feature, good for expressive synth soli.

The LFO in general affects the oscillators (vibrato), the VCF and the VCA.

Performance

We have already spoken of velocity, aftertouch and other strong keyboard functions. Sadly, the rest of the instrument's performance section is not that comprehensive. The K3 commands just one lonely wheel. And that's for pitch bending only, adjustable in semitones.

Kawai K3 and Stereoping Synth Controller

GREATSYNTHESIZERS.com

The MIDI implementation, on the other hand, is sufficient. There's a very complete midi exclusive system for remote editing of every parameter.

And … ah, yes. We didn't mention that *Increment Knob* yet. This one is really a bargain! It feels wonderful and is a very precise tool – quite a pleasure to use, really! I think it's much better than the data-slider of its competitor, the Korg DW-8000.

INCREMENT Dial with Memory Function

Although there's no direct access to the individual sound parameters, the K3 data wheel allows for instant access to "one" individual parameter per sound.

"The K3 lets you change the value of a parameter even during a performance simply by rotating the INCREMENT dial. To set a particular parameter for live editing, simply assign it to the tone patch program just before you "lock in" the tone patch to memory. When you turn the INCREMENT dial (no need to press Parameter) you will automatically be adjusting the last parameter you set."

(K3 Owner's Manual, page 38).

MONO and LINK Function

Two more performance features. MONO "stacks" the oscillators to provide a fat lead synthesizer sound. It turns the K3 monophonic, with 12 oscillators at your fingertips.

LINK allows you to store, in advance, a sequence of up to 31 tone patch programs into a chain. This does not sound really spectacular, but I can imagine the tone patch chain to be used to program a sort of wave sequence! Press the LINK button (or a foot switch plugged into the PROGRAM UP jack on the synthesizer's rear panel) to jump from one sound to the other. But while I think about it … using *program change* via MIDI is probably the more elegant way to generate a simple wave sequence.

Chorus (and other effects)

This section contains more than a simple chorus. Parameter 39 (CHORUS) has 7 levels:

- 0 = no effect
- 1 = Chorus I
- 2 = Chorus II
- 3 = Chorus III
- 4 = Tremolo
- 5 = Chorus IV
- 6 = Chorus V
- 7 = Delay

These are stereo chorus, tremolo and delay effects for creating tone patches with "realistic, studio quality effects" (?). This is what the K3 manual says. Hm …. reality is somewhat different. Most of the effects tend to be very noisy, making it far better to turn them OFF and to use modern, external effect units instead.

Value	Chorus effect
0	None
1	Chorus I
2	Chorus II
3	Chorus III
4	Tremolo
5	Chorus IV
6	Chorus V
7	Delay
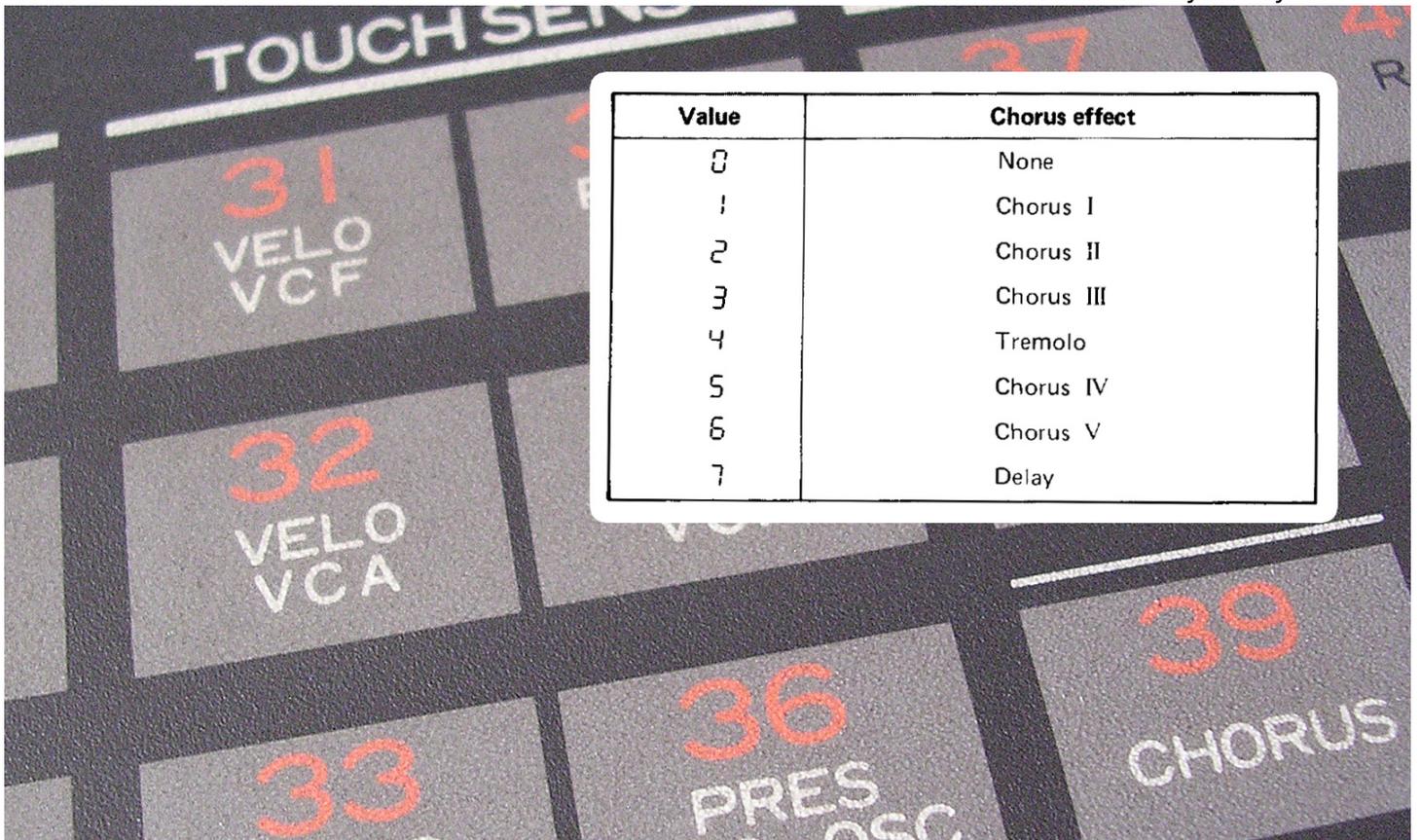
K3 chorus settings

K3 versus DW-8000 – a question of hardware

I never feel good about comparing instruments with each other. But sometimes you just can't avoid it, when discussing products with similar features. The Korg DW-8000 (again, a typical 80ies hybrid instrument with a mix of digital and analog components) is often seen as a direct competitor to the Kawai K3. It has 16 waveforms plus VCF and VCA. The arpeggiator is wonderful – a nice toy to play with, and an inspirational tool for creative soundscapes. The joystick is very flexible, allowing for modulations in both X/Y directions. All in all, the performance section on the DW-8000 is better than that on the K3. Soundwise, I'd call the K3 a little more PPG-like, while the DW-8000 offers more raw analog sounds. Both instruments are professional synthesizers with a character in their own.

So, that's the performance / sound point of view: on the up and up, the DW-8000 is a little ahead. And … ah yes … the Korg is 8-voice, while the Kawai is only 6-voice.

But hardware is another important aspect. Ever played a Korg DW-8000? It rests in a cheap plastic box, with a brittle keyboard and an LED display prone to errors (not LCD, this was our mistake, it's an LED of course). The tip of the joystick has been said to fall off, and the wobbly knobs lean in many directions, depending on where and how you press them. If you lean the instrument against the wall, it'll have a bent chassis within weeks ("banana boat"). I'm exaggerating a little, that's for sure.

Nevertheless: nothing like that will happen with your Kawai K3. This is a heavy chap (15 kg), solidly made, with a proper keyboard, a wood-finish front panel and a huge (and reliable) LED display. The single pitch wheel is a proper – if not very flexible – performance tool, and the increment knob is a joy to use. Admittedly, real knobs would be far better than membrane switches!

So, on the hardware side, Kawai K3 wins.

K3m – Doubling Polyphony Up To 12 Voices

The K3 is also available as K3m synthesizer module. The latter is identical to the keyboard version, with one small exception: the spill-over function. It allows to chain a second K3m (or a K3) for double polyphony. 12-voices sounds so much better than 6-voices, right?

StereoPing K3 / K3 M Controller

StereoPing offers a specialized midicontroller allowing realtime edits on the K3 / K3M.

"The midicontroller will be plugged in between the midi sending device and your synth. It merges incoming midi data with it's own parameter change commands and forwards both to your synthesizer. Means: you can perfectly fire your synth with midinotes while tweaking it's sound with the synth controller – realtime.

Kawai K3 and Stereoping Synth Controller

The 16 dials of the Synth Controller are split in 3 color layers, each knob has printed up to 3 parameters under the knob. By pressing one of the 3 immluminated push buttons you select one of the layers. In consequence you got up tp 48 parameters in direct access.

The Synth Controller also got a built in translator converting incoming ordinary CC ('Controller Change') data into the complex Sysex commands. You can remote or automate your parameter changes using Midi-CC data. (Translator only present in editions using SysEx-data for parameter changes)."

(Source: stereoping.com)

Kawai K3 and Stereoping Synth Controller

To sum it up

The Kawai K3 is a highly respectable wavetable synthesizer. Those who like the sound of the PPG Wave series (and, eventually, of the Prophet VS, too), might be very happy programming – and playing – it. It's a very special instrument. Not one for orchestral string pads, but good for evolving, organic electronic music. It's one hybrid synthesizer you won't come across every day.

The K3 doesn't have that many bad features. Turn off the noisy chorus (if that is the case with your K3) and you'll be just fine! Slow envelopes are a common phenomenon on many mid-80ies synthesizers. The VCF is ok, not as well sounding as any of those "big" polysynths (Roland Jupiter-8, etc.), but much better than most of the digital substitutes that followed a few years later.

Kawai K3 auction (c) MercatinoMusicale 10/2022

By the way, there is *one* smaller deficit we noticed on our K3 instruments (2x Kawai K3, 1x Kawai K3M): the ripple voltage of the power supply is – possibly – quite noisy. I don't know if this is true of all K3 models, but one of my K3 is really loud (and a second one is quite noisy, too). As with the Oberheim Xpander, your studio then seems to be full of bumblebees once you turn the instrument on …

Kawai K3m auction (c) eBay 10/2022
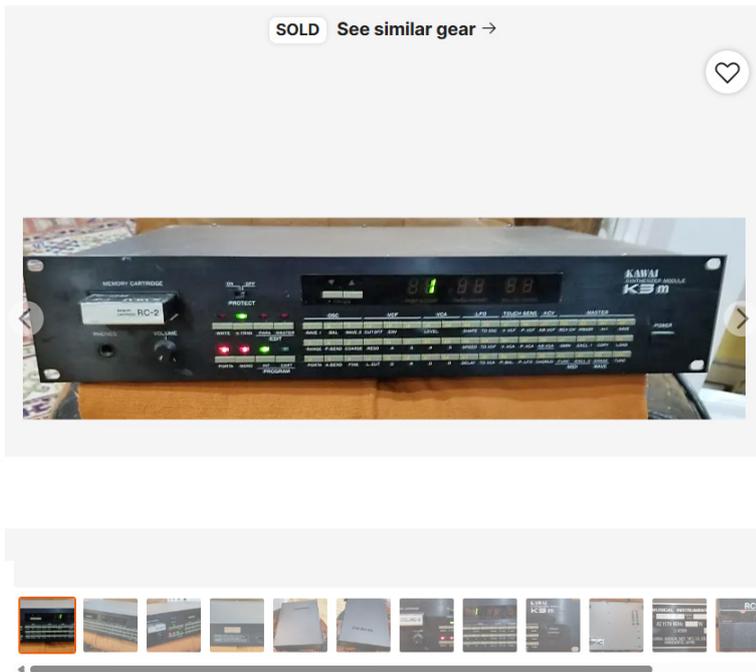
Kawai K3M auction, 2024 (c) reverb.com

Nonetheless, the Kawai K3 is a professional machine. Try to find one, if you like its sound – and don't forget to turn off the internal chorus!

The following sound samples start with an excerpt of Robert Witteks excellent K3 audio workshop. See www.synthesizer.at for more information (German only).

1. Tutorial (excerpt) / Synthesizer.at - Robert Wittek
2. Mix with Korg M1 and GeneralMusic S3
3. StereoPing Live Editing 1
4. StereoPing Live Editing 2
5. StereoPing Live Editing 3
6. StereoPing Live Editing 4
7. Vangelis-Like
8. Vangelis-Like with chorus
9. Mix with GeneralMusic S3
10. Mix with ARP 2600
11. 3 Track Wavetable Sample
12. Filter Resonance
13. Analog Brass
14. Osc BALance
15. Noisy Chorus
16. Slow Movement
17. Saxophone Sample
18. All 32 waveforms

Kawai K3
Digital Wave Memory Synthesizer

1986 – 1988 (?)

Polyphonic Analog/Digital Synthesizer
6 Voices

Links:
[Vintage Synth Explorer](#)
[Review by Robert Wittek (German only)](#)
[Hardware Controller by StereoPing](#)

Kawai K3 Synth Demo (by synth4ever):

Kawai K3 Synth Demo (by tritonrecordings):