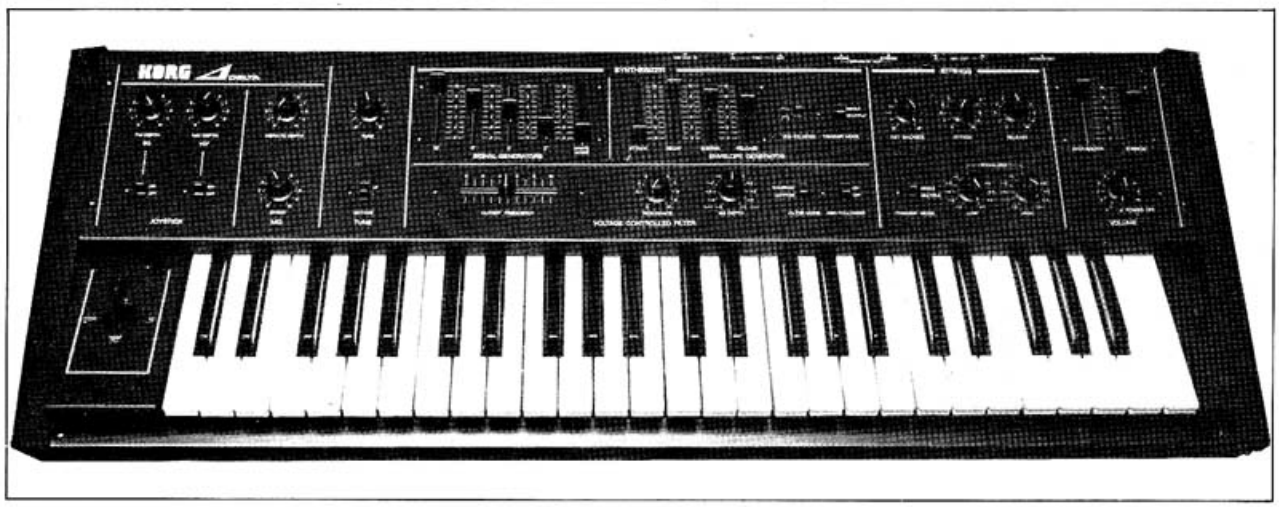
DOMINIC MILANO
KEYBOARD REPORT
The Korg Delta (DL-50)



THIS MONTH we'll be looking at the Korg Delta, a relatively low-cost keyboard ($1,160.00 list price) that offers both string machine and polyphonic synthesizer sounds. The Delta has some limitations — it's not one of those it'll-do-everything-and-the-laundry-too instruments — but it's not designed to compete in that market. It's designed to provide the player on a limited budget with a reasonably good string sound and some polyphonic synthesizer effects. It has a dual output section, so you can run the strings into one amp and the synthesizer into another, or put different effects on them. Or if you prefer, you can combine the two sounds into one composite sound using the mono output.

The Keyboard. The keyboard is four octaves, C to C. There is a two-position octave transposition switch which raises the range of the keyboard by one octave (this switch works on both the strings and the synth section). Although the keyboard isn't a standard Pratt-Read keyboard (they manufacture the keyboards found on most American synthesizers), it has a good feel, with a spring tension that isn't too tight or too loose either. The string and synth sections are independently switchable from single to multiple triggering, which provides for some interesting musical possibilities. For example, you can set the synth section to single triggering with a short decay time and low sustain level so it plays brief percussive notes and put a long release time on the string section, which allows you to play long sustained moving string lines that are articulated with occasional attacks from the synth section whenever you lift up all your fingers and then re-depress the keys.

On the instrument we were testing, there was a glitch in the multiple triggering mode that caused the instrument occasionally to fail to re-trigger when a new key was depressed. We assume this was just a minor malfunction of this particular unit. There is another feature of the Delta's keyboard logic, however, which applies across the board, and which some users might find a problem. The release segment of the envelopes on both the synth and the string sections does not occur until all the keys are lifted. This is musically very useful if you want to play staccato chords above or below a sustained line, as the chords will have a zero release time. This application may have been what led the instrument's designers to feel that the design was acceptable. The problem occurs when you try to play full chords with a long release time. Unless you lift all the keys at precisely the same time, the machine thinks you're trying to sustain one or two of the notes, and those are the only ones that sustain. The others disappear. The keyboard technique of lifting your fingers all at once isn't generally a useful technique on a lot of instruments, and it might prove difficult to acquire the necessary precision just for playing this one axe. Given the fact that the synth section has only one signal path (see below) there may not have been any cost-effective way around this problem, but it can create some awkward moments musically if you're not careful.

Joystick Controller. The Delta provides for pitch-bend and modulation control with a joystick, which is positioned just where a left-hand controller should be — to the left of the keyboard. Just above the joystick on the panel are the controls associated with it. There are two rotary pots with associated on-off switches that determine whether or not the pots are active. One pot, the frequency modulation depth pot, determines how much of the joystick's signal is routed to the oscillators, and the other pot, the filter cutoff frequency modulation pot, determines how much of the joystick's signal is routed to the filter cutoff frequency. The joystick's frequency modulation always applies to both the string section and the synth section, while the joystick's filter modulation applies only to the synth section, since that section is the one with the voltage-controlled filter.

Moving the joystick to the right bends the pitch upward by a maximum of a fifth; moving it to the left bends the pitch downward by the same amount. The frequency modulation depth pot acts as a limiter on the range of the joystick's pitch-bending function. Setting the knob at 10 gives you the perfect fifth range, setting it at 5 limits the range to a major third, and so on. The joystick is spring-loaded to return to center, and there's a fairly large area in the center where no pitch change occurs, which means you can't bend continuously from flat to sharp without going across a dead area, but you can be assured of always returning to the correct pitch.

Moving the joystick away from you adds vibrato to both the string section and the synth section. The speed of the vibrato is controlled by a pot labelled MG (for modulation generator) speed. The speed of this low-frequency oscillator is indicated by a tiny red LED that blinks. A vibrato depth pot lets you adjust the initial amount of vibrato applied continuously to the tone, and the joystick adds vibrato above this amount.

Moving the joystick toward you adds noise modulation. The noise source used for modulation on the instrument we were testing was rather low-pitched, and caused an irregular wobbling in the pitch that was still too clean to make a really intense expressive effect. We would have liked to hear a higher-pitched dirty hiss. Alternatively, this position on the joystick could have been used for adding square wave modulation for a trill effect. As it is now, the noise modulation effect is mostly not very useful.

Tuning Controls. Immediately to the right of the modulation controls are the octave switch we mentioned before, and a tuning pot. The tuning pot lets you adjust the tuning of the entire instrument in a continuous range of a half-step up or down.

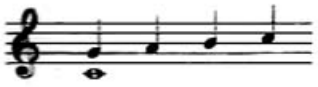
Synthesizer Section. The synthesizer section of the Delta is the simplest type of polyphonic synthesizer, since there is only one signal path. However, the instrument does offer complete polyphony and many synthesizer-type sounds at a reasonable price. We'll have more to say below about the limitations of having only one signal path. The synth section contains a tone-generator panel, one ADSR envelope generator, filter controls, and a switch to disconnect the envelope generator from the VCA.

The tone-generating circuitry of the synth section is controlled by a panel of five sliders which let you mix together and adjust the relative volume of square waves at 16', 8', 4', and 2' (that is, four separate but permanently synced tones at four successive octaves); the fifth slider introduces white noise to the tone. Having only square waves is a limitation, but by setting up the relative volumes of the octaves in a descending staircase shape, you can make a fairly convincing staircase wave, and when this is smoothed out by the filter it sounds enough like a sawtooth wave to make the basis for a pretty good brass patch.

To the right of the tone-generator sliders is a standard ADSR envelope generator, also controlled by sliders. The ADSR is routed to the VCA by an on-off switch which lets you choose between an enveloped VCA sound and an open-shut VCA sound. The same envelope generator controls the filter, which is a multi-mode (lowpass or bandpass) 24dB/octave filter. The filter includes a horizontal slider to control the cutoff frequency, a rotary pot for controlling the amount of resonance (the resonance can't be turned up high enough to get the filter to oscillate), and a pot for adjusting the amount of envelope voltage that's applied to the filter. This envelope depth pot is the type that adds a positive envelope when turned to the right and a negative envelope when turned to the left.

In addition to the switch that determines whether the filter functions in lowpass or bandpass mode, there is a switch for connecting or disconnecting the keyboard control voltage from the filter. One of the more puzzling things about the Delta's design is that the keyboard control voltage as it's applied to the filter doesn't move in the half-steps of the chromatic keyboard. It moves in half-octave jumps. As a result, it's just as well that the filter can't be made to oscillate, as there would be no way of playing a chromatic scale on it. Most of the time this abrupt jump in the filter cutoff frequency as you play up the keyboard isn't too noticeable, but if you're holding down a bass note while playing a melody above it, it can be a bit disconcerting to hear the bass note suddenly get brighter every time your lead line crosses the threshold of an *F♯* or a *C*.

The fact that the synth section has only a single signal path means that if you've selected multiple triggering, any time you play a new note the entire chord you're holding down will be retriggered. In other words, if you play this —



— you'll hear this:

On the other hand, if you select single triggering with a low sustain level, lead line notes will tend to become inaudible as long as you're holding down chords below them, since the instrument won't retrigger until a space of time, however brief, in which *no* keys are held down. Both triggering options have possibilities and limitations, but it's great to see instrument designers offering musicians the choice. Another nice feature of the instrument is that you can use an external switch trigger source (another synthesizer or rhythm unit with a switch trigger output) to trigger the Delta. The owner's manual comes with a supplement that shows the patches for doing this. With one of the two sections switched to single triggering and the other to multiple, the external trigger source will retrigger notes being held down on the keyboard in the single trigger section, while you're supplying the triggers to the multiple trigger section from the keyboard for playing on top of the automatically retriggering chords.

The String Section. The string section has its own AR envelope generator and tone controls, as well as a pot for adjusting the mix of an 8' pitch and a 16' pitch. Setting this knob in the middle gives you both octaves of strings simultaneously, while hard right gives you 8' only and hard left gives you 16' only. On the unit we were testing the attack control had a range of from zero time to a maximum of one second of complete silence followed by about seven seconds of increasing volume. The maximum release time was about ten seconds. The two tone controls on the string section are a treble cut/boost and a bass cut/boost. There is also, as already mentioned, a switch on the string section for choosing between single and multiple triggering.

Output Section. At the far right of the control panel are a pair of sliders, one for adjusting the volume of the synth section and the other for adjusting the volume of the strings. As already mentioned, these outputs can be routed to separate amps, or they can be mixed. There is also a master volume control with the instrument's on-off switch built into it. A small red LED lets you know that the instrument is on.

Back Panel. The back panel has output jacks on it for headphones, high- and low-level output jacks for the combined signal from both sections, and separate outputs for the two sections. Switch trigger input and output jacks are also provided, but there is no control voltage output from the keyboard for controlling another synthesizer. There is an input for controlling the filter cutoff frequency from an external source such as a voltage pedal. The power cord is permanently attached, and there are two posts on the back of the Delta to wind the cord on when it's not in use — a very practical feature that a lot of manufacturers seem to forget about. The unit also comes with an owner's manual, panel overlays (or so we're told; we weren't sent any, but we were told Korg has just started including them), and a dust cover (!).

Conclusion. Having a fully polyphonic keyboard with both string and synthesizer sounds makes for a versatile, useful instrument. At first the design seems to be pretty limited, but in the course of experimenting with the controls, we found that you could get quite a few different effects and some real nice sounds out of the instrument. Using different kinds of attack and release characteristics on the two sections lets you combine them into some intriguing composite sounds. The string sound is good — there's a lot of internal phasing that makes for a rich tone. As with any string synthesizer, adding an echo unit or a flanger will help it sound really big. The controls are logically laid out and easy to get to. The owner's manual is in English, German, and French, and has some good patches in it, including brass, electric piano, acoustic bass, synthesizer bass, jazz bass, new wave organ, and harmonica. The instrument is small and light — 33" (83.6 cm) wide, 6" (15.3 cm) high, and 15" (37.8 cm) deep, 22 lbs (10 kg) —making it very portable. It's housed in a brown metal exterior, and the controls are labelled in highly visible yellow-gold.

The Delta isn't the last word in synthesizers, but for the player who is doing casuals or lounge work and would like to add an inexpensive keyboard for string and synthesizer parts, it's definitely worth checking out. ■