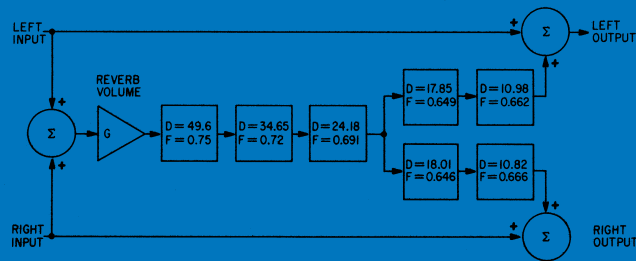# Tape Op

The Creative Music Recording Magazine

Reverb

Dave Pensado
Mary J. Blige, Beyoncé, Macy Gray

Ariel Rechtshaid
Madonna, Charli XCX, Adele

Andrija Tokic
Alabama Shakes, Hurray for the Riff Raff

Leo Abrahams
Brian Eno, David Byrne, Wild Beasts

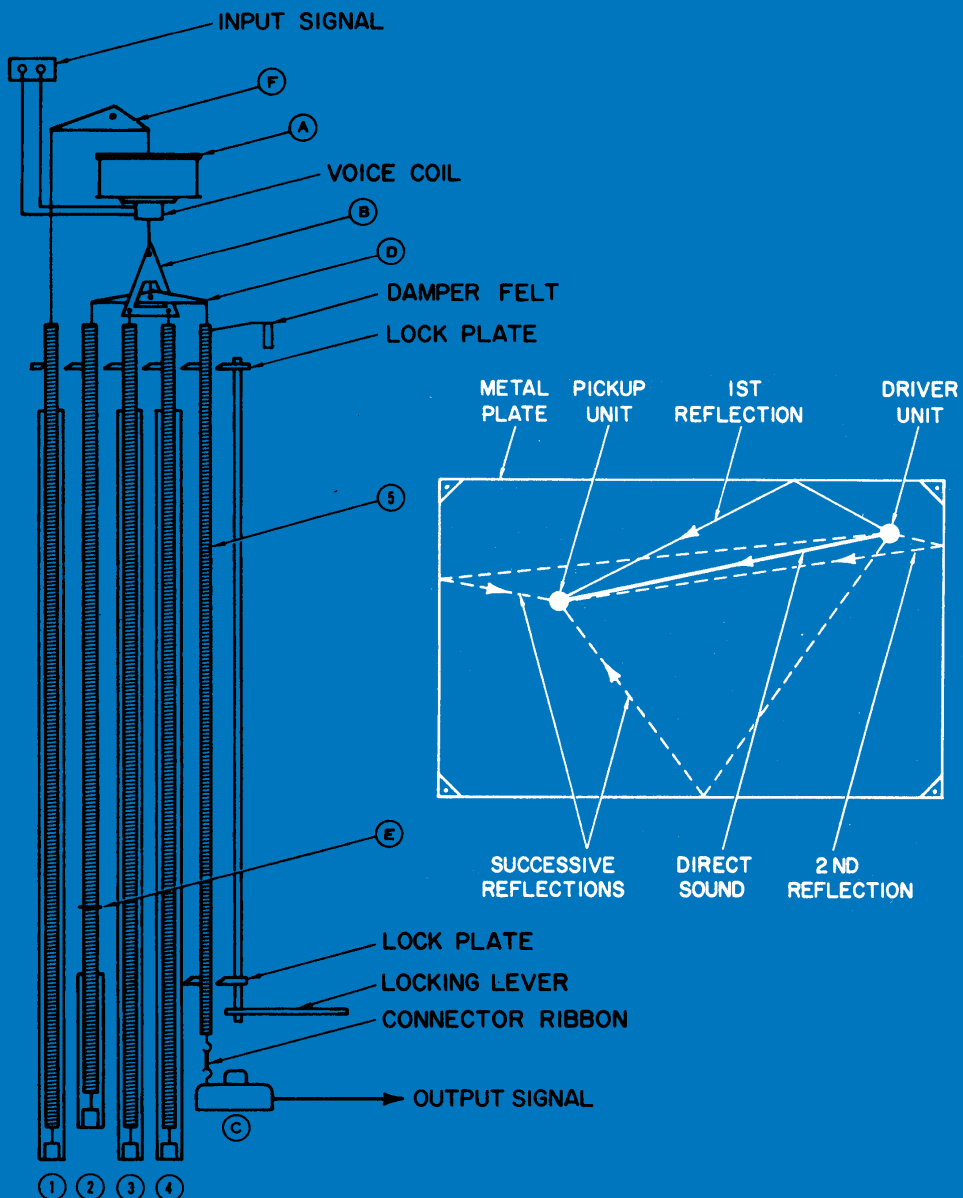**Chris Walla**
Making Tape Loops

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Eventide
DDL-500 500-series delay

Okay, Eventide has just officially become my favorite pro audio manufacturer on the planet. I had almost finished this already favorable review, and then I got something in the mail that made me come back and add this glowing intro. When Joe Waltz at Eventide asked for my address to send me an "audio demo" of the *DDL-500*, I was a little surprised to be getting a CD demo sent through the postal service in 2015. What arrived this morning, instead, was a 7" white vinyl sampler featuring awesome snippets made by engineers (and *Tape Op* contributors) Joel Hamilton and Francisco Botero at Studio G Brooklyn, along with some stellar musicians like Sasha Dobson, Kenny Wollesen, and Mikael Jorgensen. This 7" calling card confirms that Eventide gear serves extremely well while getting weird and wild in the studio, that the company takes aesthetics as seriously as they take audio, and that they wave their freak flag proudly. Anyhow, now on to my review of their excellent new product.

Fitting for one of the companies that introduced digital delay lines to the audio world over forty years ago, Eventide's first foray into the 500-series market is the *DDL-500*, a mono digital delay box with a deceptively extensive amount of control over its various parameters. At its most basic, the *DDL-500* provides up to 10 seconds of delay, with a ridiculously high sampling rate of 192 kHz. One byproduct of that high sampling rate is that you get 160 seconds of delay (that's over 2.5 minutes, folks) at the much less pristine rate of 12 kHz, for which I'm sure someone will find an amazing, creative use, but it will decidedly not be in a pop radio hit.

Simple controls on the *DDL-500* include an input level knob and a +20 dB input gain switch, which allow you to boost your levels to hit the analog soft-limit circuit harder, creating a very pleasing distortion, at least for most sources. There is a feedback level control, ranging from 0–110%, as well as a switch for flipping the polarity of the signal present in the feedback loop. The LPF control sets the corner frequency (down to 400 Hz) of a 12 dB/octave low-pass filter applied to the delayed signal, and there is a switch for engaging the LPF. Rounding out the simple controls are a dry/wet mix knob, an output level control, and a switch to engage the hard-bypass relay.

Slightly more unique features include a pre-feedback 1/4" Insert jack, which allows you to put your delayed signal through any processing chain you desire. This could be a simple EQ, distortion, or some more unique effect, like a phaser or ring modulator — pretty much any stompbox or rack effect can enter into the picture via Insert. There's also a Kill + Dry switch, which allows whatever is caught in your feedback path to continue looping, but cuts off the input from feeding the delay circuit. (Your dry signal feeding the mix control is also still passing, so unless you're at 100% wet, you'll still hear the input coming

through as well.) Next is a Delay Multiply switch, which works in tandem with the multi-function Delay rotary control — I'll explain more about that in the next paragraph — to set a multiplier factor for your delay time. This is actually changing the sampling rate, which also starts altering the sound towards its extreme setting of 16× (12 kHz), given the Nyquist-Shannon sampling theorem of discrete-time ("digital") signals (Google it). In essence, you start losing high end the lower the sampling rate gets, but the tradeoff is more sampling time. There is also an Infinite Repeat button, which captures whatever is present in the delay buffer and loops it indefinitely. This switch is really excellent at helping to capture impromptu off-kilter loops or create stutter effects, depending on the length of your delay time. The Tap button allows you to set your delay time by hand (or rather, by finger). The LED display changes from showing the delay time in seconds/milliseconds to momentarily show the BPM of the delay while you are tapping. You can then depress the Tap button and turn the rotary control to set a "divider" for the Tap tempo. In other words, you can set it so that each tap represents a quarter note, sixteenth note triplet, or full bar, for example.

The Delay rotary encoder deserves its own paragraph, being a multifunction control with many jobs — the most basic of which is to set the delay time. When I first sat down at the *DDL-500*, I was surprised at how slowly the numbers change while turning the knob — like, fractions of milliseconds slow. Then I referred to the essential Quick Reference Guide — the only documentation for the *DDL-500* that is currently available, which surprisingly (and impressively) fits on a single page — and realized that if you push the encoder inward while turning, it gives you a coarse control, which allows you to move much faster through the 10 second range. Other functions of the Delay knob (already mentioned) are in conjunction with the Tap Button and Delay Multiplier, and it also serves as your main control in System Mode. (This is where I know I'm going to lose some of you, if name-dropping a digital audio theorem hadn't already driven you away. For those of you who only want to use single-function stuff that you don't need a manual to fully understand, please move on to the next review. For those of you willing to learn a few steps in order to get a huge amount of functionality out of a very small footprint, read on.) Entering System Mode is achieved by holding down the Delay knob and Tap button for three seconds. From there you can choose your Delay Glide time (the amount of time it takes for your delay time to readjust, or "settle down," after having been changed), assign the functions of the ring and tip of your Remote jack, or set the range of a continuous external delay control (such as an expression pedal or LFO).

This all brings me to the Remote jack itself, which is the most innovative feature of the *DDL-500* and deserves a bit of explanation. It is a standard 1/4" TRS jack, but the ring and tip conductors can be assigned to different parameters, in one of two categories: Momentary or Continuous. The Momentary choices are Tap, Infinite Repeat, Delay Multiplier Active, Kill + Dry, or Active. Basically this gives you the ability to toggle any of those parameters (or tap out a tempo) from any external foot or hand switch wired to be "normally open." You can even assign three different switches to control three different parameters, if you're handy with a wee bit of cable construction or can find a suitable three-button footswitch on the market. To access two parameters at a time, a simple "Y cable," or a male TRS to dual female TS adapter, will do the trick. The Continuous choices are Delay Time, Inverted Delay Time, Delay Glide, and Delay Multiplier Value. Unfortunately, there is no external control over Feedback or the LPF frequency, since those are purely analog controls, but I guess you can't have it all; you'll just have to tweak those with your fingers. (Note to Eventide: In a future

firmware update, I would love the capability to control the Delay Sweep Range via CV/expression pedal.)

Regarding the basic sound of the *DDL-500*, three words come immediately to mind: inviting, open, and enveloping. Even in full-range 192 kHz mode, with no LPF engaged, there is still some euphonic magic imparted on the delayed sound, especially when the input is goosed up a bit. Utilizing the low-pass filter gets you into warm, creamy territory, and dividing the sample-rate decreases your fidelity, but without sounding self-consciously "lo-fi." All of the engineers at Figure 8 Recording, where I did my testing of the *DDL-500* over a number of months, were first and foremost impressed with the mere sound of the thing, even before we started digging under the hood to access the more advanced functionality. However, plugging into the Remote jack is what really makes the *DDL-500* stand out above other delay units. There are so many possible combinations of external control, but there were a few I especially enjoyed. First off, simply using an expression pedal to control the delay time is plain, wacky fun. Remember the first time you cranked up the feedback, tweaked the delay time on your Boss DD-2, and were trampled over by the army of chipmunks and walruses rushing towards you? Yeah, that kinda never gets old. Next, setting an external LFO to control the delay time, and an expression pedal to vary the glide time, I achieved some super interesting effects, with the sensation of the delays rushing to catch up, then falling back behind, at a pace set by my foot's position. (I used the LFO on my Moogerfooger CP-251, although any ol' LFO with a CV output will do. You do need to bring your own, though — there is no internal modulation source on the *DDL-500*.) With the initial delay time set very short, this turned into a phasing/flanging effect with an awesomely unique character. Then I hooked up a momentary switch to the Infinite Repeat function, and a 16-step sequencer to the Delay Multiplier Value. Capturing a loop with the switch, I could then play that loop in a really musical way by varying the voltage amounts of each step, and the tempo of the sequencer itself. This was an example of using a source sound, manipulating it almost past recognition, but retaining enough DNA of the original sound that it slipped into the song easily alongside its parent sonic source, despite the mangling it had received. It's worth mentioning here that absolutely none of the extensive time manipulation or modulation I was doing exhibited zippering or other undesirable digital delay artifacts. It's also worth mentioning that a simple MIDI-CV converter would allow you to sync changes made to the *DDL-500* to a DAW's session tempo, and you could control the various parameters via DAW automation.

If it's not already obvious, I really enjoy using the *Eventide DDL-500*. I will be purchasing my review unit despite its non-trivial price tag, and despite the fact that I own many other hardware delays and echoes — analog and digital — a few of which were made by Eventide themselves. Everyone at Figure 8 Recording agreed that it has a unique feel and sound, partly due to the fact that the only digital part of the audio path is the delay line itself. The rest of the *DDL-500* employs high-quality analog components, which makes for a richer sound than most modern digital delays have. Even as a simple space-creating slapback on a vocal, the *DDL-500* sonically stands above many other choices. But the extensive abilities it has to interface with expression pedals and control voltage sources take it to the next level, making it an extremely powerful and unique effects box. Eventide's dedication to letting their stuff get weird keeps me excited about their new products, which all somehow manage to fit into their formidable legacy, yet feel modern at the same time.

($899 street; www.eventide.com)

–Eli Crews <www.elicrews.com>