

# ETTERSLEP

ETTERSLEP is an experimental time-based audio processor combining granular synthesis, tapped delay line and modified sample playback. The project is the result of porting the DRADD module (back) into a pedal. Thus the pedal shares the modules core trio of algorithms but offers an expanded featureset built around these. What binds this trio of algorithms together is their unnatural time-based audio manipulation. Though their methods are quite different they can all be tuned such that they appear in their own ways to stretch, bend and invert time.

## PARAMETERS:

**VOL:** Sets the master volume of the pedal. Unity gain is at 12 o'clock. Max gain is +16dB.

**MIX:** Dry/wet mixer. From 100% dry to 100% processed audio.

**TONE:** Lo/hi frequency emphasis as min/max. Flat response at noon. Interacts with the feedback knob.

**CLK:** Sets the DSP (digital signal processor) system clock frequency from 12.5kHz to 50kHz. This parameter slows down or speeds up the internal processing of the DSP. Meaning it sets the sample rate, delay memory size as well as the rate of various other parameters (see algorithm section). Additionally adjusting CLK will pitch shift the audio currently stored in the delay memory. The full range yields approximately 2 octaves of pitch shifting. Note that low CLK settings will decreased the signal-to-noise ratio.

**MOD:** Random system clock modulation depth. This produces a vibrato effect. The method used is the same as for the DRADD module. The result is a relatively clean, fluttery modulation with little distortion and artifacts.

**LOOP:** Adds looping feedback. This type of decay function controls how long incoming audio will be processed by the selected algorithm similar to the repeats parameter on a digital delay. At 3 o'clock audio will be processed continuously. Note that though processing time may appear indefinite the delay memory content will deteriorate very gradually over time. Turned all the way to max the algorithm will additionally block new audio content from entering the delay memory both through the audio input and through the feedback path (undisturbed processing).

**FEED:** Adds positive feedback across sections of the selected algorithm causing re-synthesis. The results from positive feedback will depend on the algorithm used as well as the setting of P1, P2 and TONE. See the algorithm section further down for more details. Note that positive feedback can result in runaway oscillation. A good tip is to avoid the maximum setting on startup as you might be surprised by a burst of feedback. Be careful!

**Right footswitch:** This is your bypass switch. Holding the switch longer than 500 ms will only momentarily change its status.

**Left footswitch:** Activating the left footswitch overrides either the LOOP or FEED knob, replacing its setting by that of the LEFT toggle. This allows you to swap between different LOOP or FEED settings on the fly. Holding the switch longer than 500 ms will only momentarily change the LOOP setting.

**LEFT toggle:** Decides the function of the left footswitch. Set to [LOOP] (boxed) the LOOP parameter will be maximized causing continuous, undisturbed playback of the current delay memory content. Set to LOOP the LOOP parameter will yield continuous playback while still allowing new content to be recorded into the delay memory.

Setting it to FEED will override the FEED parameter. Activating the left footswitch while in FEED mode sets the amount of feedback according to the FEED knob. Bypassing the left footswitch will set the feedback amount to a pre-scale of FEED according to an internal trimpot (with gain from 0 to 1). This perhaps odd difference in implementation compared to the LOOP modes is due to the feedback oscillation threshold being highly dependent on other parameter settings. Simply maximizing the parameter with a footswitch generally would not yield very favorable results.

**P1 and P2:** Algorithm dependent parameters. See the algorithm section further down.

**CTRL socket & toggle:** The CTRL socket lets you connect a passive expression pedal (TRS) or a control voltage source (0 to 3.3V thru TS) overriding the CLK, P1 or P2 parameter. When overridden the corresponding interface knob will be completely bypassed. The CTRL socket is protected against voltages up to  $\pm 10$  volt.

**RIGHT toggle:** Sets the bypass mode. TRUE yields true bypass. GATE yields true bypass with the addition of clearing the delay memory when the pedal is bypassed, effectively presenting a clean slate on re-activation. TRAIL yields buffered bypass with trails. Seeing as ETTERSLEP offers the unconventional combination of dry/wet-mixing and trails the MIX and VOL knobs will still affect the overall mix and volume when you bypass in this mode. An internal trimpot labeled “BBP GAIN” can be tuned to adjust the volume of the dry signal portion when the pedal is bypassed in TRAIL mode.

**PROG toggle:** Algorithm selector. Decides the functions of the P1 and P2 parameters.

### **GRAIN algorithm:**

Granular synthesizer similar to algorithms found in the FABRIKAT pedal. Allows you to stretch, shuffle and scrub incoming audio. Note that granular timestretch/scrubbing does *not* inherently cause pitch shifting (unlike tape manipulation).

With MODE set in the range ccw from noon the algorithm performs continuous timestretching. In this mode the MOVE knob sets the timestretch speed and direction. The range ccw from noon yields reverse playback from regular speed at min. to freeze at noon. Similarly the range cw from noon yields forward playback from regular speed at max to freeze at noon.

With MODE set in the range cw from noon the algorithm performs manual sample scrubbing. In this mode the MOVE knob lets you manually “read” through the delay memory.

As well as letting you select between these two main modes of operation the MODE knob will add increasing amounts of grain shuffling/randomization when adjusted towards noon from either direction. At noon the grain positions are completely randomized, making the position of the MOVE knob

insignificant. Added with restraint shuffling gives the synthesis a more fluid character while excessive usage yields chaos.

Adding looping feedback increases how long incoming audio will be processed before decaying. Adding positive feedback yields artificial sounding decay flavors, more or less fluid/metallic in timbre depending on the parameter settings. The delay memory size range is approximately 2500ms to 600ms dependent on the CLK setting. Additionally CLK will affect the grain size and grain generation rate.

### **TDL algorithm:**

Tapped delay line (TDL) effect. In essence this is a delay with a whole bunch of outputs that lets you produce various unnatural reverb/delay effects including gated and reversed reverbs.

The SHAPE knob blends between three different TDL shapes. Minimum produces a fade-out delay shape (decaying reverb), noon produces a flat delay shape (gate reverb) and maximum produces a fade-in delay shape (reverse reverb).

The VERB knob adjusts the composition and processing of the TDL outputs. Turning the parameter ccw from noon doubles the tap density for added thickness. Turning the parameter cw from noon adds a smearing pseudo-reverb effect by feeding the TDL outputs through a chain of all-pass filters.

Adding looping feedback increases how long incoming audio will be repeated through the TDL shape before decaying. Adding positive feedback yields results similar to a reverb/delay decay function applied post-TDL. The delay memory size range allocated to the TDL “shape” is approximately 2300ms to 550ms dependent on the CLK setting. Additionally CLK will affect the tap spacing for the TDL and the character of the pseudo-reverb.

### **TAPE algorithm:**

Variable sample playback similar to algorithms found in FABRIKAT. Note that changing the playback speed *will* pitch shift the audio (similar to tape manipulation).

Assuming that the RAND knob is set to noon the OCT knob sets the playback speed and direction of incoming audio. The OCT parameter is divided into quantized steps. Three for reversed and three for forward playback:

[rev. 2x speed] - [rev. regular] - [rev. 1/2 speed] - [forw. 1/2 speed] - [forw. regular] - [forw. 2x speed]

Changing the playback speed causes the audio to be pitch shifted. 2x speed playback yields +1 octave while 1/2 speed yields -1 octave. This is similar to adjusting the playback speed of a tape deck. Note that slowing down the playback speed will decrease the audio fidelity.

Turning the RAND knob ccw causes the playback to randomly skip between forward and reverse playback while retaining the speed/pitch set by OCT. Turning RAND cw causes the playback to randomly skip between different directions *and* speeds. The random skipping rate increases the further the RAND knob is moved away from noon (both cw and ccw).

Adding looping feedback increases how long incoming audio will be processed before decaying. Adding positive feedback can yields recursive octaving and other unpredictable results. The delay memory size range is approximately 2500ms to 600ms dependent on the CLK setting. Additionally CLK will affect the rate of the RAND function.

## INTERNAL PARAMETERS

There are two internal miniature switches. **Z/100** reduces the input impedance to 10kOhm. **PAD** adds a -10dB input pad (damping). These may be useful when running line level signals through the pedal. Note that this will change the unity position of the volume knob.

The **EXP** trimpot is used to calibrate the CTRL function. It is recommended that you don't adjust its setting. The **FEED** trimpot sets the maximum amount of feedback available through the FEED knob on the interface (max default setting). The **FEED 'OFF'** trimpot sets the pre-scale amount of feedback for the feedback override function (see the LEFT toggle section) (50/50 default setting). The **BBP GAIN** trimpot affects the amount of dry signal present when bypassed in the TRAIL mode (50/50 default setting).

## TECHNICAL SPECIFICATIONS

Input Impedance	1M $\Omega$
Output Impedance	<1k $\Omega$
Power supply	9 VDC center negative (normal BOSS/Ibanez/1Spot power supply) Does not support battery operation
Current Draw	200 mA
Dimensions	125 x 95 x 62 mm
Weight	450 g