Welcome to Dub Machines

News:

The *Dub Machines* pack has been updated to version 1.2

2nd October 2015

Version 1.2 is a free update and now available to download from your Ableton account, or to purchase new from the Ableton store.

***Dub Machines Update 1.2* should work with Live 9.1.7 or later and *Max For Live* based on Max 6.1.9 or later, but Live 9.2.x or later and Max 7.0.6 or later are highly recommended. Please make sure you are running up to date versions.**

Any problems, contact support: support@surrealmachines.com

Keep in touch here: facebook...

This update addresses:

- The 'note values' dial on the *Magnetic* 'Repeat' system is now reliably saved with the Live set

See the full 'changelog' **here**

News:

The *Dub Machines* pack has been updated, 8th October 2014.

The update includes:

- Bug fixes
- Better CPU handling
- Faster device load times
- New beat synchronisation for 'Repeat' (delay time) dials
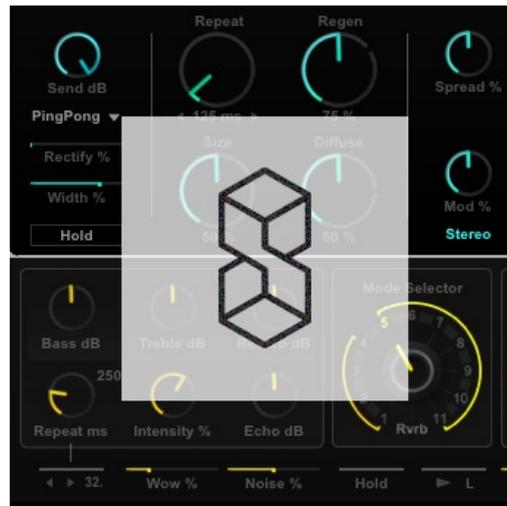- Wow & Flutter refactored for better authenticity

- Smoother modulations
- And more...

See the full 'changelog' **here**

Manual:

Dub Machines is an *Ableton Live pack* containing two analog inspired audio effect delay devices and presets.

The Dub Machines devices take full advantage of their digital engines, but their sonic power stems from analog gear and the inspiration it provides. This means that once we've studied, analysed and recreated the analog circuit with DSP... we start again!
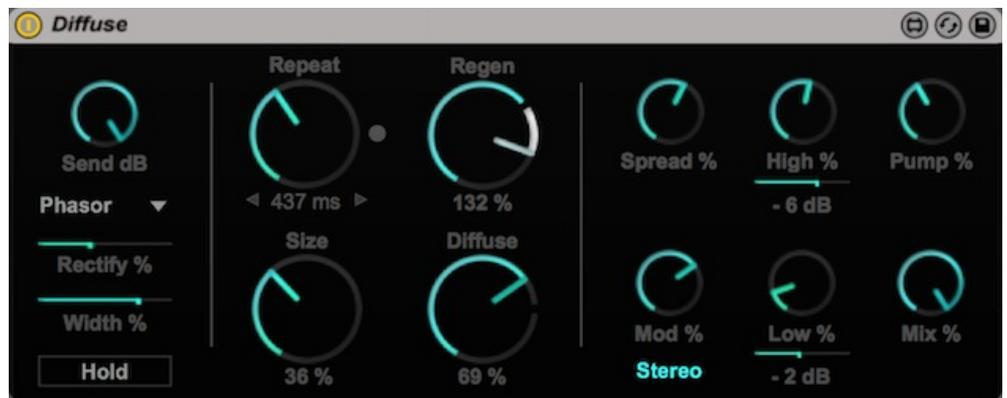
Dub Machines includes:

Magnetic

Magnetic is based on one of the most loved and tested tape delays but developed with digital twists.

Diffuse

Diffuse employs digital feedback network techniques, with a nod to some legendary analog hardware from the 70's-90's.

All elements of both devices are documented via *Live's* **Info View**

About Magnetic

We listened to samples, recordings, and measurements of the distortion, hysteresis, frequency response, errors and noise. We then sampled the **Noise** of an actual hardware unit and resampled the mechanical movement that gives the delay its **Wow** and Flutter.


We have added slight digital stereo imperfections and modulations - you can get the classic mono effect via the **Width** parameter or can open the stereo image up and let the echos slightly bounce in and out of phase.


Convolution reverb is used for actual reproduction of a great sounding stereo-fied spring sample we made. Not only did we include four springs, we also added samples of plates, classic digital halls and a few left field character changing samples.
And you can route the *Reverb* not only in the standard **Parallel** system that the original hardware units employ, but either **Pre** or **Post** *Echo* as well.
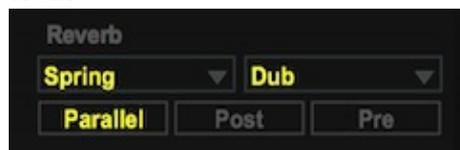
There are three different reverse options for classic tape (**P**) or stomp box (**L**) like behaviours.
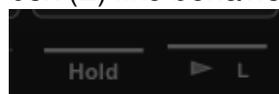
We also looked at several other tape delays from the family and carefully crafted our own new breeds as four different *machine styles*, with a control to tone it back or exaggerate the **Character**.

There are multiple gain stages, tape hysteresis, capstan wobble... not even the *Dry* signal comes out the way it went in!

Using Magnetic

Selecting between *Modes*:

The central **Mode Selector** dial changes the operation of the device by selecting different combinations of playheads (there are three spaced heads on our tape machine, as well as one erase head and one record head).
The combinations are based on classic hardware:

1-4 Echo only, 5-11 with Reverb, 12 Reverb only. However there are tricks under the hood which mean that certain settings do more than just select playheads. For example, modes 2, 6 & 7 produce exaggerated stereo spread. Explore!

Controlling the input & output signals:
The device processes *Dry* and *Wet* signals separately. Both signals travel through a custom *tape tone* and *saturation preamp* as the first part of the signal chain.

The **Input** dial ranges from 0-200%. Use 0-100% as a dub style send while used as an insert, or use 100-200% to increase saturation in the wet signal chain. The **Mix** knob is a basic Dry/Wet affair with parabolic crossfading, but remember that *Dry* does not mean unaltered signal from *Live*, but via the custom *preamp*, and is therefore simply not delayed or reverberated. This means that all audio coming out of Magnetic is tape-ified.
For tone control of the *Wet* signal, applied before the **Mix**, there are two 12dB shelf filters, **Bass** & **Treble**.
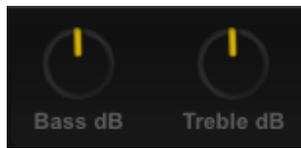
You have control over the gain stages, but the frequency response is tape-modelled and changes slightly depending on **Mode Selector**, **Character** and **Repeat** settings. Mix the individual elements of **Echo** and **Reverb** with their respective gain controls:

Reverb dB is only active in **Mode Selector** modes 5-12. **Echo** dB is always active apart from in **Mode Selector** mode 12.

Controlling delay times:

In *Magnetic* delay amount is handled in time (milliseconds) just like the hardware originals, using the **Repeat** dial. The behaviour of the dial is modelled after it's hardware equivalent so that setting your delays must be done by ear. However in *Magnetic* we also have the **Snap** arrows - these will jump down/up (left/right) whatever the current delay is in milliseconds quantised to the nearest *note value*. The note value *snap size* can be selected by clicking on the small note name display to the right of the arrows. This means that you can jump your delay times to exact rhythmic divisions in time with the *Live* set global BPM. Available note value sizes are 1/64ths, 1/32nds, 1/16ths, 1/8ths.
Note:
On a fresh instantiation of *Magnetic*, the device will always load the **Repeat** dial time with whatever one 8th note is according to your current set's current BPM setting. This means that if you change BPM often, the dial value will be different and always in time with your current set on load. But of course if loading a saved set or preset, the delay time will always be whatever you last saved it as.

However, **Repeat** also has a *sync mode* via the switch to the right of the dial:


In this mode all delay time changes can be made (and automated) beat

synchronously. The beat steps also respond to the step sizes menu and can be changed between 1/64ths, 1/32nds, 1/16ths, 1/8ths. In combination with the **Mode Selector**, complex rhythmic divisions can be set up between the three tape play heads with **Repeat** in either setting.

In beats mode, the dial will remain at the same division even when your global BPM changes, although visually the dial will update to indicate the changing number of divisions afforded by the BPM difference; whereas in milliseconds mode the dial will never move. Because beats mode does not represent 'time' but 'division', it would be possible to move outside the minimum and maximum delay times (10 to 1000 milliseconds) at lower BPM and divisions. To indicate that this is 'clipped', the division display text *italicises* when more divisions cannot be used. When using higher BPM settings, the dial simply visually updates to indicate the larger amount of divisions available. The maximum number of divisions is 64.

Controlling feedback:
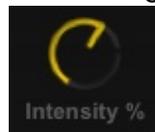
Feedback is attenuated through the **Intensity** dial and affects *Echo*. As you increase the **Intensity** *percentage* you will hear the global *delay* starting to repeat and loop back on itself. It is controlling a gain stage which sends the output of the delay signal back into its input. This gives the device it's classic tape feel and is coloured by specially crafted *nonlinearities* and *filters*.
At 100% and device default settings the feedback will give an infinite sustain. Values greater than 100% will cause heavy distortion and self-oscillation. The speed of distortion and oscillation is greatly affected by the delay time set with the **Repeat** dial - smaller delay times will cause more immediate saturation.

*The relationship between **Intensity** and **Repeat** is crucial to that analog feel and is what gave original hardware units their unpredictability and swagger. Map them to your favourite controller and discover new sonic possibilities.*

Advanced features...

By clicking the **Breakout** button you leave behind faithful hardware emulation and enter a world of more extreme sonic adventures.

The **Character Tab** and **Character Slider** give you access to imaginary machines that are related to but diverge from standard hardware possibilities.

These tabs offer different *tone* and *saturation* characteristics via different internal distortion types, as well as modifying the behaviour of everything from the way signals are mixed together to the way feedback responds to **Repeat** and **Intensity** interactions. The response of the internal *trap filters* are also modified, giving each choice it's very own style. The **Character Slider** gives you the option to exaggerate the effects of switching between different *machine styles*. Most notably it modifies the sound from a more pure and new to a more aggressive, overdriven and old feel. At default 25% the *tape system* is in its most hardware emulation like state.

The **Reverb Route** section can have a drastic effect on your sounds.

In **Parallel** the effects are in... parallel, meaning input signal is sent identically to both *Echo* & *Reverb* then output signals are *summed*. In **Pre** the input signal travels

preamp -> reverb -> echos -> output,

in **Post** the signal travels

preamp -> echos -> reverb -> output.

This can be switched on the fly.
Use the menus above to switch between different *categories* (left menu) and different *impulse responses* (right menu).

The **Processing** tab:

Here you have the option to select between *processing* types with different *oversampling* options. Selections also modify types of *nonlinearities* and *envelope followers* in the various saturation stages.

*Warning: **4x** significantly increases the CPU load of the device; **2x** or **4x** do not always translate as 'better'.*

Use **2x** if working with very high gain settings (*Bass*, *Treble*, *Reverb*, *Echo*, *Input*) as this will avoid any potential digital distortion when

overdriving all gain stages at the same time - this is useful if performing live and / or improvising with a controller.

You may find that **4x** is useful if you want to perform very fast modulations on the *Bass* or *Treble* dials, as in **4x** these filter coefficients changes are calculated at a higher sample rate.

Or use **2x** or **4x** settings if working with exclusively high frequency audio or if using the device in a constant state of high feedback and self oscillation where oversampling can significantly improve the quality of the output.

Or, use these settings for the specific sound differences they offer.

About Diffuse

Diffuse is a digital/analog hybrid. We took some of our best research from the *Magnetic* project and fused it together with a classic reverb design used in the early digital delay units. All parameters are decoupled and simplified into elegant macros to give you complete control over *smearing*, *echos* and *damping* all within easily manageable means. Lots of *nonlinearities*, and smooth tape style delay changes.
We could not resist adding some crazy features: a digital **Rectify** to add some top end and sizzle
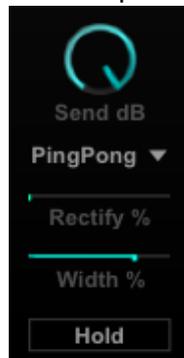
and a specially designed dynamics tool **Pump**

to duck the delay out of the way of the dry signal and pull it back up again for long sustained trails which don't get in the way of the music.

Using Diffuse

The four main controls of **Diffuse**:

Repeat sets the initial delay time for the signal going into the *feedback delay network*. You can move it continuously or change in 1/32nd quantised steps using the **Prev** & **Next** arrows below for precise rhythmical snapping.

Note:

On a fresh instantiation of *Diffuse*, the device will always load the **Repeat** dial time with whatever one 16th note is according to your current set's current BPM setting. This means that if you change BPM often, the dial value will be different and always in time with your current set on load. But of course if loading a saved set or preset, the delay time will always be whatever you last saved it as.

However, **Repeat** also has a *sync mode* via the switch to the right of the dial:

In this mode all delay time changes can be made beat synchronously.

In beats mode, the dial will remain at the same division even when your global BPM changes, although visually the dial will update to indicate the changing number of divisions afforded by the BPM difference; whereas in milliseconds mode the dial will never move. Because beats mode does not represent 'time' but 'division', it would be possible to move outside the minimum and maximum delay times (56 to 1000 milliseconds) at lower BPM. To indicate that this is 'clipped', the division display text *italicises* when more divisions cannot be used. When using higher BPM settings, the dial simply visually updates to indicate the larger amount of divisions available. The maximum number of divisions is 32.

The **Size** and **Diffuse** dials will alter the effect of the reverberation. There are multiple delay lines in the device and **Size** calculates each line's delay time based on **Repeat**, pitch & time factors and allowances for **Mod** and **Spread**. Delay line delay times are additive in the context of the network. The **Diffuse** dial directly controls the size, sign and phase of each delay line's *feedback* and *direct/wet mix*. Try low **Size** amounts and high **Diffuse** amounts and you will hear the roughness of

the effect, whereas dial in large **Size** and medium **Diffuse** amounts and you will get that buttery smoothness. The *Diffuse* device is all about the **Diffuse** dial!

Regen is the *global feedback* control. It attenuates the level of delays output feeding back into delays input - how much the trapped signal loop is *regenerating* itself. From 0 to 100 percent you will achieve dry to sustained audio, the nearer 100 % the more the **Diffuse** amount will come to prominence. Over 100% you can achieve intense screeching and distortion. With the carefully selected *nonlinearities* in the *feedback loop* the *saturation* at this point can go into *self-oscillation*. How speedily and noticeably all this happens is dependent on other device settings and the sort of audio you are processing. Happy regenerating.

Input:
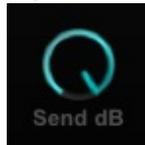
The **Send** dial attenuates input to the wet signal. Use it to do dub style sending while used as an insert. With **Regen** values above 100%, turning **Send** all the way down will leave a constantly evolving tail.

Damping and Tone:

Control damping with the **High** and **Low** frequency *tone* dials. A higher percentage represents a greater damping effect. The **dB** sliders below each dial control the amount of *attenuation*. These controls globally effect multiple and independent EQ stages in each delay line.

Modulation:

The **Mod** dial controls the amplitude of modulation - how much the *delay sizes* of each delay line will be affected by the internal *LFOs*. The **Stereo/Mono** button switches between all LFOs having the same affect on both left & right delay lines (Mono) to left/right separation in the LFOs (Stereo). With high **Mod** settings you can get that 1980's digital smearing effect.

Modes:

Modes in *Diffuse* are more subtle than in *Magnetic*. They set up the device to respond differently based on internal settings of *stereo balance*, *delay time offsets*, *amplitude offsets*, *phase* and more. Explore!

SURREAL MACHINES