

Clockwork

An analogue rhythm box with a tape echo and a spring reverb built in, a send to each from every voice - and every rhythm yours to edit.

A Lab plug-in. The Lab is where new GFX plug-ins are built in the open: they may change sound or controls between versions.



Overview

Clockwork is a fifteen-voice analogue rhythm box in the spirit of the late-70s preset-rhythm machines: kick, snare, rimshot, hats, cymbal and nine hand percussion voices, all synthesised. The Stable Clockwork plays its 32 built-in rhythms as they are. This Lab version adds two things.

First, an ECHO and a SPRING are built in. Every voice has its own send to each, so the rimshot can echo while the kick stays dry, or the snare can sit in a spring while

the hats stay close. The ECHO is a tape echo timed in note values at the project tempo, with feedback, tone and wow; the SPRING is a spring reverb with the chirp of real springs, its own decay and tone, and a high-pass and low-pass filter on its send. Both tails ring on after the rhythm stops.

Second, the rhythms are yours. There are sixteen rhythm memories, saved with the project, and every step of every voice can be changed on the PATTERN grid. A new Clockwork starts with fifteen of the classic rhythms in memories 1 to 15; memory 16 is empty for your own. Any of the 32 classics can be loaded back into any memory.

Reach for it for

- Dub and reggae parts: rimshot and clave into a dotted-eighth echo
- Surf, soul and 60s-flavoured kits with a spring on the snare
- A short tape slap on the snare and hats for a live-room feel
- Latin and hand-percussion parts that echo round the kit
- Classic preset-rhythm-box parts, edited to fit the song

Playing it

Clockwork is an instrument: it has no audio input and makes its sound from its own sequencer and from MIDI.

1. Insert Clockwork on a track. It plays memory 1 (Rock 1).
2. Press RUN. The rhythm plays at the project tempo (or light FOLLOW to have it start and stop with REAPER's transport).
3. Turn up a voice's ECHO or SPRING send at the end of its row on the grid (try ECHO on the rimshot), then shape the effect with the ECHO and SPRING dials. Or pick one of the last five presets.
4. Click steps on the grid to change the rhythm.
5. Play the voices from MIDI too: General MIDI drum notes, on any channel (or the one set in MIDI CHANNEL).

Controls

Knob values show while you hover over or turn a knob; double-click a knob to reset it. The display boxes open a list when clicked.

RHYTHM

Display	The memory number and the name of the rhythm in it (the classic it came from, or User), its grid (4/4, 3/4, TRIPLETS or 16THS), its length and EDITED once you've changed it. On the right: STOPPED, the bar playing (FILL during a fill), or NEXT BAR while a new choice waits.
Memory keys 1 - 16	Which memory plays. While the sequencer runs, the new memory takes over at the end of the bar; its key and name flash until then.

ECHO

IN	Switches the echo's return in and out (it fades, so it never clicks). The dials are greyed while it's out.
TIME	The echo time as a note value at the project tempo: 1/16, 1/8 triplet, 1/16 dotted, 1/8, 1/4 triplet, 1/8 dotted (the default), 1/4, 1/2 triplet, 1/4 dotted or 1/2. A new time (or a tempo change) moves to a second playback head and crossfades to it, so the echo never slides or clicks.
FEEDBACK	How many repeats. Each pass is recorded through a soft tape saturation, so high settings thicken and blur rather than run away.
TONE	Dark to bright repeats: each repeat is filtered again, so a dark TONE makes the echoes fade into the distance.
WOW	The tape's wander and flutter, which bend the repeats' pitch a little (left and right apart, so the echo moves in the stereo field).
RETURN	The echo's level in the mix.

SPRING

IN	Switches the spring's return in and out (it fades).
DECAY	How long the springs ring, from a short splash to a long wash.

TONE	The damping inside the tank: dark and soft to bright and splashy.
HPF / LPF	A high-pass (55 Hz - 1.1 kHz, 220 Hz by default) and a low-pass (1.1 - 11 kHz, 5.5 kHz) on the send, before the tank. The high-pass keeps the low end out, so a kick can feed the spring without booming.
RETURN	The spring's level in the mix.

PATTERN (the grid)

MAIN / VAR B / FILL	Which part of the rhythm is shown. MAIN always plays; VAR B adds its hits when the VAR B key is lit; FILL replaces the second half of the bar when a fill is due. A rhythm with an empty FILL part plays its bar as it is.
LENGTH	1 to 16 steps. Steps after the length are greyed.
GRID	16th notes, or triplets (three steps to the beat, twelve to a 4/4 bar).
PATTERN ...	Load any of the 32 classic rhythms into this memory (16 kit rhythms and 16 percussion-only ones), clear this part or the whole rhythm, or copy and paste a rhythm between memories.
Voice names	Click to hear the voice. The rows run kick, snare, rimshot, closed hat, open hat, cymbal, then the percussion, coloured by family: kick brown, snare and rimshot red, hats yellow, cymbal blue, percussion violet (darker = lower). The number is the voice's MIDI note.
Steps	Click to cycle off, hit, accent (an accent has a white bar). Drag along a row to paint the same value. The step playing is lit.
ECHO / SPRING	The voice's sends to the echo and the spring, 0 - 100% (0 by default). The send is taken after the voice's place in the stereo picture, so a voice panned left echoes on the left.

Every send glides, so you can turn it while the rhythm plays.

SEQUENCER

RUN	Starts and stops the rhythm; it never starts by itself. While REAPER plays, the steps follow the timeline (bar 1 = step 1); while REAPER is stopped, RUN runs on its own at the project tempo.
FOLLOW	Lit: the rhythm starts and stops with REAPER's transport (RUN then just shows it). Off by default.
VAR B	Adds the rhythm's VAR B part.
FILL	No fill, or a fill every 2, 4 or 8 bars.
ACCENT	How far apart accented and plain hits are.
SWING	Delays the off-beat sixteenths (rhythms on the 16th-note grid only).

FEEL + DRIFT

DRIFT	See Drift below. 50% is standard.
HITS	Each hit a little different: tune, decay and level.
TIMING	Loosens the rhythm: each hit comes up to this many milliseconds late.

PHASER

ON	Switches the phaser in and out (it fades, so it never clicks). The knobs are greyed while it's off.
RATE, DEPTH, FEEDBACK, MIX	A six-stage phaser on the whole kit: sweep speed, how far it sweeps, the resonance and the wet / dry mix.
STEREO	How far apart the left and right sweeps run, 0 to 180 degrees.

MASTER and the IN / OUT strip

SPREAD	How wide the voices are panned (each has its own place).
OUTPUT	-24 to +12 dB. A soft clipper on the output (always on) catches overs at the ceiling.
Meter	Left and right output level.
SAT	The GFX band saturation on the output (0% by default).
MONO / WIDTH	Makes the low end mono below a frequency (off by default), and widens the stereo image.
MIDI CHANNEL	Omni, or one channel for the MIDI notes.

EDIT (the voice page)

EDIT in the header swaps the rhythm rows for the voice page; click it again to go back. Each voice has its own row in its colour.

TUNE	-12 to +12 semitones.
DECAY	The voice's own decay, 25 to 400% of its normal length.
LEVEL	The voice's level in the kit.
ATTACK, DECAY, SUSTAIN, RELEASE	An amp envelope on top of the voice. ATTACK fades the hit in (0 - 200 ms); DECAY falls to SUSTAIN, which holds for the gate (one step from the rhythm, the held note from MIDI); then RELEASE. With SUSTAIN at 100% and RELEASE at NATURAL (the defaults) the voice sounds as it is. Try a short SUSTAIN on the open hat for a tight, gated hat.
ECHO, SPRING	The voice's sends, the same as the dials at the end of its row on the grid.
HIT	Lights when the voice plays.

The header

PRESETS, arrows and display	PRESETS (or a click on the display) opens the list of presets; the arrow keys step through them. The presets are also in REAPER's parameter list, as the last parameter (Preset), for screen readers.
EDIT	Opens and closes the voice page.
MIDI	Blinks on each MIDI note.
S / M / L	Panel size: small, medium or large. The panel also shrinks to fit the plug-in window.
?	Opens a pop-up with the design credit, the GFX website address and the address of this manual. Click anywhere to close it.

Drift

DRIFT is the old box's parts and its power supply. The drums' tuning wanders slowly and each hit is tuned a little differently; the noise voices' brightness and the cymbal and cowbell's metal tone wander too. And the supply sags under busy, accented playing: a run of loud hits pulls the pitch down (up to 10 cents) and the level a touch (up to 0.4 dB), recovering over about 300 ms. The echo's tape speed wanders too (up to 0.4% at 50%), so its repeats drift a little in pitch. 50% is the standard amount (the same wander as the Stable Clockwork's default), 100% twice that, 0% steady.

Presets

Init sets every control back to the start (the rhythm memories are kept). The next ten are kits: they set each voice's tune, decay and level, reset the envelopes and leave the voices dry. The last five show off the ECHO and SPRING. No preset changes the rhythms.

Init	Everything back to the start: memory 1, the Classic kit, dry.
Classic	The box as it comes.
Tight and Dry	Short decays all round.

Deep and Boomy	Tuned down, long kick.
Bright	Tuned up a little, slightly shorter.
Long Tails	Everything rings on.
Disco	A bigger kick, hats and tambourine forward.
Latin	The percussion forward, kick and snare back.
Lo-Fi	Tuned down, short, the cymbals quieter.
Electro	A deep, long kick and a punchy snare.
Brushes	A soft, long snare, quiet hats and cymbal.
Dub Rim	Rimshot, clave and cowbell into a dark, wobbly dotted-eighth echo; a touch on the snare, which also gets some spring.
Spring Snare	A long, bright spring on the snare and rimshot, a little on the bongos, conga and hats; no echo.
Tape Slap	A short sixteenth-note slap on the snare, hats and rimshot.
Echo Percussion	The Latin balance, the hand percussion into a quarter-triplet echo and a little spring.
Surf Room	A spring on everything but the kick, and a quiet quarter-note echo on the snare.

The rhythm memories

A new Clockwork starts with these classics in memories 1 to 15: Rock 1, Rock 2, Disco, Funk, Ballad, Pop, Shuffle, Slow Rock, Swing, Waltz, Bossa Nova, Samba, Rhumba, Cha-Cha and Tango. Memory 16 is empty. PATTERN ... also offers Beguine and sixteen percussion-only rhythms (Tumbao, Salsa, Bossa Perc, Batucada, Rumba Perc, Mambo, Afro 6/8, Calypso, Reggae Perc, Merengue, Baiao, Shaker Pop, Tamb Soul, Martillo, Guaguanco, Cumbia).

MIDI

General MIDI drum notes play the voices: 35 / 36 kick, 37 rimshot, 38 / 40 snare, 42 / 44 closed hat, 46 open hat, 49 / 51 / 52 / 55 / 57 / 59 cymbal, 54 tambourine, 56 cowbell, 60 / 61 bongos, 62 - 64 conga, 70 maracas, 73 / 74 guiro, 75 clave, 80 / 81 metal beat. Velocity sets the level. MIDI passes through to the next plug-in.

Tips

- Echo on the rimshot or clave only, with the kick and snare dry, is the classic dub move: try TIME on 1/8 dotted and FEEDBACK around 60%.
- Push FEEDBACK up and turn TONE down for repeats that fade into the distance; the saturation keeps them from running away.
- Raise the spring's HPF before sending the kick to it, or keep the kick dry.
- Ride a voice's ECHO send for single throws: automate it up for one hit at the end of a phrase.
- Every voice's sends are on the EDIT page too, beside its tune, decay and envelope.

File: gfx-lab-g-clockwork.jsfx